GARMIN
Garmin International, Inc.
1200 East 151st Street
Olathe, Kansas 66062
P: 913-397-8200 F: 913-397-8282

05-Feb-26

**Manufacturer:** Garmin International, Inc.
**Address:** 1200 E. 151st St.
Olathe, KS 66062-3426
U.S.A.
**Chile Representative:** Matías Rodríguez Correa
Rosario Norte 660 piso 24, Las Condes Santiago
Province CP 7550083, Chile
**Contact Email:** matias.rodriguez@garmin.com

**Subject:** SUBTEL, Chile (Resolution 737) Certification Compliance 2026

**Commercial Name:** Vivoactive 6

| | **Información (Information)** |
|---|---|
| **Tipo de equipo (Equipment type)** | Portable Digital Transceiver |
| **Marca (Brand)** | Garmin GARMIN. |
| **Modelo (Model)** | A04951 |
| **Tecnología o modulación (Technology or modulation)** | ASK for NFC / GFSK for ANT/ GFSK for BLE / GFSK for BTBR / π/4-DQPSK, 8DPSK for BTEDR / DSSS for 802.11b / OFDM for 802.11g/n |
| **Frecuencias (Frequencies)** | 13.56 MHz / 2402-2480 MHz / 2402-2480 MHz / 2402-2480 MHz / 2402-2480 MHz / 2412-2462 MHz |
| **Ganancia de antena (dBi) (Antenna gain (dBi)** | ANT 0.21 dBi / BLE 0.21 dBi / 802.15.1 0.21 dBi / 802.15.1 0.21 dBi / 802.11b/g/n 0.21 dBi |
| **P.i.r.e. (E.I R P.)** | -48.11 dBm, 0.00 mW /-48.39 dBm, 0.00 mW / 4.61 dBm, 2.89 mW / 8.24 dBm, 6.66 mW / 7.70 dBm, 5.88 mW / 13.10 dBm, 20.41 mW |
| **Módulos (Modules)** | NFC, ANT, BLE, BTBR, BTEDR, WiFi |

As all measurements for NFC are made in radiated mode to comply with the field strength limits, gain information is not required to be noted in the reports or any additional documentation. Declaration of Conformity Statement: the equipment previously identified complies with the provisions established in the Technical Standard for Small Range Equipment, approved by Exempt Resolution No.1,985 of 2017, of the Undersecretary of Telecommunications.

Declaración de conformidad: El equipo anteriormente identificado cumple con las disposiciones establecidas en la Norma Técnica para Equipos de Corto Alcance, aprobada mediante la Resolución Exenta N° 1.985 de 2017, de la Subsecretaría de Telecomunicaciones.

# FCC Test Report

| | | |
|---|---|---|
| **FCC ID** | : | **IPH-04951** |
| **Equipment** | : | **Fitness Product** |
| **Model No.** | : | **A04951** |
| **Brand Name** | : | **GARMIN** |
| **Applicant** | : | **Garmin International, Inc.** |
| **Address** | : | **1200 E. 151st Street Olathe, KS 66062 United States** |
| **Standard** | : | **47 CFR FCC Part 15.247** |
| **Received Date** | : | **Aug. 27, 2024** |
| **Tested Date** | : | **Aug. 30 ~ Sep. 05, 2024** |

**We, International Certification Corporation, would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It shall not be reproduced except in full without the written approval of our laboratory.**

**Reviewed by:** **Approved by:**

**Along Chen / Assistant Manager** **Gary Chang / Manager**

# Table of Contents

# Release Record

| Report No. | Version | Description | Issued Date |
|---|---|---|---|
| FR450901AD | Rev. 01 | Initial issue | Oct. 25, 2024 |

# Summary of Test Results

| FCC Rules | Test Items | Measured | Result |
|---|---|---|---|
| 15.207 | AC Power Line Conducted Emission | [dBuV]: 0.489MHz<br>43.54 (Margin -12.65dB) - QP | Pass |
| 15.247(d)<br>15.209 | Unwanted Emissions | [dBuV/m at 3m]: 51.1MHz<br>27.48 (Margin -12.52dB) - PK | Pass |
| 15.247(d) | Band Edge | Meet the requirement of limit | Pass |
| 15.247(b)(1) | Conducted Output Power | Power [dBm]: 10.77 | Pass |
| 15.247(a)(1)(iii) | Number of Hopping Channels | Meet the requirement of limit | Pass |
| 15.247(a)(1) | Hopping Channel Separation | Meet the requirement of limit | Pass |
| 15.247(a)(1)(iii) | Dwell Time | Meet the requirement of limit | Pass |
| 15.203 | Antenna Requirement | Meet the requirement of limit | Pass |

| **Declaration of Conformity:** |
|---|
| The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. |
| **Comments and Explanations:** |
| The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification. |

# 1 General Description

## 1.1 Information

### 1.1.1 Specification of the Equipment under Test (EUT)

| RF General Information | | | | |
|---|---|---|---|---|
| **Frequency Range (MHz)** | **Bluetooth Mode** | **Ch. Frequency (MHz)** | **Channel Number** | **Data Rate** |
| 2400-2483.5 | BR | 2402-2480 | 0-78 [79] | 1 Mbps |
| 2400-2483.5 | EDR | 2402-2480 | 0-78 [79] | 2 Mbps |
| 2400-2483.5 | EDR | 2402-2480 | 0-78 [79] | 3 Mbps |
| Note 1: RF output power specifies that Maximum Peak Conducted Output Power.<br>Note 2: Bluetooth BR uses a GFSK.<br>Note 3: Bluetooth EDR uses a combination of π/4-DQPSK and 8DPSK. | | | | |

### 1.1.2 Antenna Details

| Ant. No. | Brand | Model | Type | Connector | Gain (dBi) |
|---|---|---|---|---|---|
| 1 | Garmin | 117-02243-2X | Slot | No | 0.21 |

### 1.1.3 Power Supply Type of Equipment under Test (EUT)

| | |
|---|---|
| **Power Type** | 5Vdc from host<br>3.87Vdc from battery |

### 1.1.4 Accessories

| Accessories | | |
|---|---|---|
| **No.** | **Equipment** | **Description** |
| 1 | Battery | Brand: Garmin<br>Model: 361-00162-00<br>Rating: 3.87V, 220mAh |
| 2 | USB cable | Brand: GARMIN<br>Model: 320-01602-00<br>0.56m shielded without core |

### 1.1.5 Channel List

| Frequency band (MHz) | | | | 2400~2483.5 | | | |
|---|---|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 0 | 2402 | 20 | 2422 | 40 | 2442 | 60 | 2462 |
| 1 | 2403 | 21 | 2423 | 41 | 2443 | 61 | 2463 |
| 2 | 2404 | 22 | 2424 | 42 | 2444 | 62 | 2464 |
| 3 | 2405 | 23 | 2425 | 43 | 2445 | 63 | 2465 |
| 4 | 2406 | 24 | 2426 | 44 | 2446 | 64 | 2466 |
| 5 | 2407 | 25 | 2427 | 45 | 2447 | 65 | 2467 |
| 6 | 2408 | 26 | 2428 | 46 | 2448 | 66 | 2468 |
| 7 | 2409 | 27 | 2429 | 47 | 2449 | 67 | 2469 |
| 8 | 2410 | 28 | 2430 | 48 | 2450 | 68 | 2470 |
| 9 | 2411 | 29 | 2431 | 49 | 2451 | 69 | 2471 |
| 10 | 2412 | 30 | 2432 | 50 | 2452 | 70 | 2472 |
| 11 | 2413 | 31 | 2433 | 51 | 2453 | 71 | 2473 |
| 12 | 2414 | 32 | 2434 | 52 | 2454 | 72 | 2474 |
| 13 | 2415 | 33 | 2435 | 53 | 2455 | 73 | 2475 |
| 14 | 2416 | 34 | 2436 | 54 | 2456 | 74 | 2476 |
| 15 | 2417 | 35 | 2437 | 55 | 2457 | 75 | 2477 |
| 16 | 2418 | 36 | 2438 | 56 | 2458 | 76 | 2478 |
| 17 | 2419 | 37 | 2439 | 57 | 2459 | 77 | 2479 |
| 18 | 2420 | 38 | 2440 | 58 | 2460 | 78 | 2480 |
| 19 | 2421 | 39 | 2441 | 59 | 2461 | --- | --- |

### 1.1.6 Test Tool and Duty Cycle

| Test Tool | BT Test, Version: 28.17<br>Bluetooth Simulator, Brand: R&S, Model: CMW270 | |
|---|---|---|
| **Modulation Mode** | **Duty Cycle Of Test Signal (%)** | **Duty Factor (dB)** |
| DH5 | 76.85% | 1.14 |
| 2DH5 | 76.85% | 1.14 |
| 3DH5 | 77.05% | 1.13 |

### 1.1.7 Power Index of Test Tool

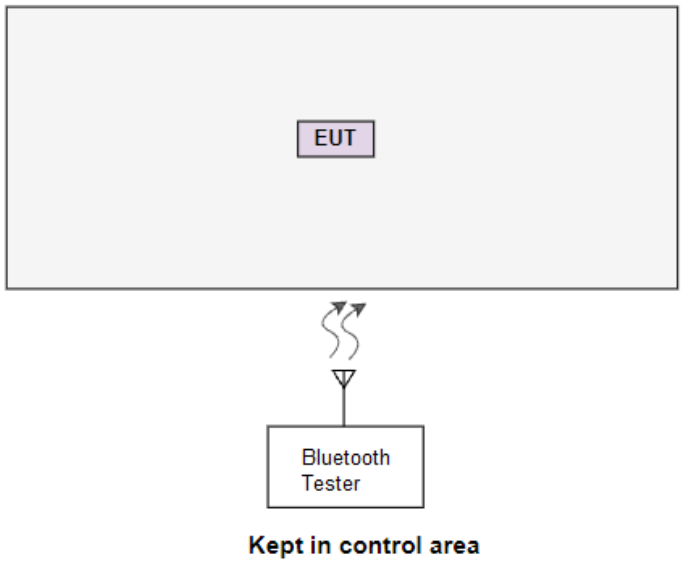
| Modulation Mode | Test Frequency (MHz) | | |
|---|---|---|---|
| | **2402** | **2441** | **2480** |
| GFSK/1Mbps | default | default | default |
| π/4-DQPSK /2Mbps | default | default | default |
| 8DPSK/3Mbps | default | default | default |

## 1.2 Local Support Equipment List

| Support Equipment List | | | | | |
|---|---|---|---|---|---|
| **No.** | **Equipment** | **Brand** | **Model** | **FCC ID** | **Remarks** |
| 1 | Adapter | Samsung | TA-800 | --- | --- |

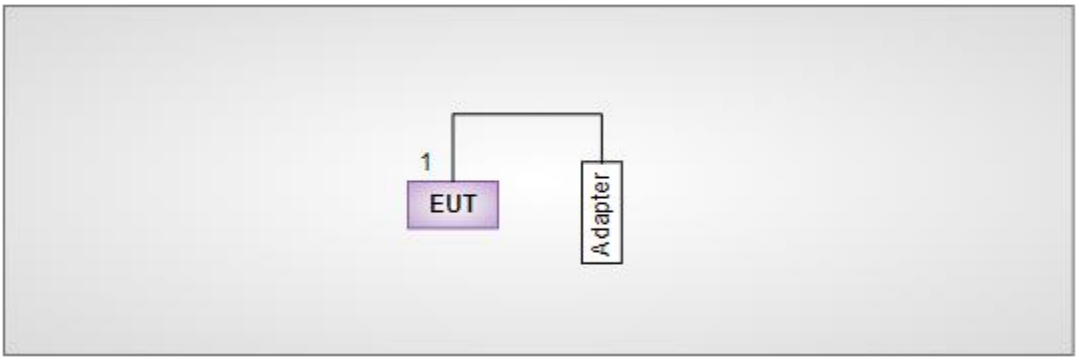
## 1.3 Test Setup Chart

**Test Setup Diagram (Battery Mode)**




**Kept in control area**

**Test Setup Diagram (Charging Mode)**




| No. | Signal cable / Length (m) |
|---|---|
| 1 | USB, 0.56m shielded. |

## 1.4 The Equipment List

| Test Item | Conducted Emission | | | | |
|---|---|---|---|---|---|
| **Test Site** | Conduction room 1 / (CO01-WS) | | | | |
| **Tested Date** | Sep. 05, 2024 | | | | |
| **Instrument** | **Brand** | **Model No.** | **Serial No.** | **Calibration Date** | **Calibration Until** |
| Receiver | R&S | ESR3 | 101658 | Feb. 23, 2024 | Feb. 22, 2025 |
| LISN | R&S | ENV216 | 101579 | May 09, 2024 | May 08, 2025 |
| LISN (Support Unit) | SCHWARZBECK | Schwarzbeck 8127 | 8127667 | Jan. 10, 2024 | Jan. 09, 2025 |
| RF Cable-CON | Woken | CFD200-NL | CFD200-NL-001 | Oct. 11, 2023 | Oct. 10, 2024 |
| 50 ohm terminal | NA | 50 | 01 | Jun. 19, 2024 | Jun. 18, 2025 |
| Measurement Software | AUDIX | e3 | 6.120210k | NA | NA |
| Note: Calibration Interval of instruments listed above is one year. | | | | | |

| Test Item | RF Conducted | | | | |
|---|---|---|---|---|---|
| **Test Site** | (TH01-WS) | | | | |
| **Tested Date** | Sep. 03 ~ Sep. 04, 2024 | | | | |
| **Instrument** | **Brand** | **Model No.** | **Serial No.** | **Calibration Date** | **Calibration Until** |
| Spectrum Analyzer | R&S | FSV40 | 101910 | Apr. 18, 2024 | Apr. 17, 2025 |
| Power Meter | Anritsu | ML2495A | 1241002 | Nov. 21, 2023 | Nov. 20, 2024 |
| Power Sensor | Anritsu | MA2411B | 1207366 | Nov. 21, 2023 | Nov. 20, 2024 |
| Attenuator | Pasternack | PE7005-10 | 10-2 | Oct. 05, 2023 | Oct. 04, 2024 |
| Measurement Software | Sporton | SENSE-15247_FS | V5.11 | NA | NA |
| Wireless connectivity tester | R&S | CMW270 | 100856 | Nov. 14, 2023 | Nov. 13, 2024 |
| Note: Calibration Interval of instruments listed above is one year. | | | | | |

| Test Item | Radiated Emission | | | | |
|---|---|---|---|---|---|
| Test Site | 966 chamber1 / (03CH01-WS) | | | | |
| Tested Date | Aug. 30 ~ Sep. 02, 2024 | | | | |
| **Instrument** | **Brand** | **Model No.** | **Serial No.** | **Calibration Date** | **Calibration Until** |
| Receiver | R&S | ESR3 | 101657 | Mar. 05, 2024 | Mar. 04, 2025 |
| Spectrum Analyzer | R&S | FSV40 | 101498 | Nov. 23, 2023 | Nov. 22, 2024 |
| Loop Antenna | R&S | HFH2-Z2 | 100330 | Oct. 31, 2023 | Oct. 30, 2024 |
| Bilog Antenna | SCHWARZBECK | VULB9168 | VULB9168-522 | Aug. 09, 2024 | Aug. 08, 2025 |
| Horn Antenna 1G-18G | SCHWARZBECK | BBHA 9120 D | BBHA 9120 D 1096 | Nov. 27, 2023 | Nov. 26, 2024 |
| Horn Antenna 18G-40G | SCHWARZBECK | BBHA 9170 | BBHA 9170517 | Oct. 30, 2023 | Oct. 29, 2024 |
| Preamplifier | EMC | EMC02325 | 980225 | Jun. 17, 2024 | Jun. 16, 2025 |
| Preamplifier | EMC | EMC118A45SE | 980898 | Jul. 05, 2024 | Jul. 04, 2025 |
| Preamplifier | EMC | EMC184045SE | 980903 | Jul. 30, 2024 | Jul. 29, 2025 |
| Loop Antenna Cable | KOAX KABEL | 101354-BW | 101354-BW | Oct. 03, 2023 | Oct. 02, 2024 |
| LF cable 3M | Woken | CFD400NL-LW | CFD400NL-001 | Oct. 03, 2023 | Oct. 02, 2024 |
| LF cable 11M | EMC | EMCCFD400-NW-NW-11000 | 200801 | Oct. 03, 2023 | Oct. 02, 2024 |
| LF cable 1M | EMC | EMCCFD400-NM-NM-1000 | 160502 | Oct. 03, 2023 | Oct. 02, 2024 |
| RF Cable | EMC | EMC104-35M-35M-8000 | 210920 | Oct. 03, 2023 | Oct. 02, 2024 |
| RF Cable | EMC | EMC104-35M-35M-3000 | 210922 | Oct. 03, 2023 | Oct. 02, 2024 |
| Attenuator | Pasternack | PE7005-10 | 10-1 | Oct. 05, 2023 | Oct. 04, 2024 |
| HIGHPASS FILTER 3.1-18G | WHK | WHK3.1/18G-10SS | 39 | Oct. 05, 2023 | Oct. 04, 2024 |
| Measurement Software | Sporton | SENSE-EMI | V5.11 | NA | NA |
| Measurement Software | Sporton | SENSE-15247_FS | V5.11 | NA | NA |
| Wireless connectivity tester | R&S | CMW270 | 100856 | Nov. 14, 2023 | Nov. 13, 2024 |
| Note: Calibration Interval of instruments listed above is one year. | | | | | |

## 1.5 Test Standards

47 CFR FCC Part 15.247
ANSI C63.10-2013

## 1.6 Reference Guidance

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

## 1.7 Deviation from Test Standard and Measurement Procedure

None

## 1.8 Measurement Uncertainty

The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

| Measurement Uncertainty | |
|---|---|
| **Parameters** | **Uncertainty** |
| Bandwidth | ±34.130 Hz |
| Conducted power | ±0.808 dB |
| Power density | ±0.583 dB |
| Conducted emission | ±2.715 dB |
| AC conducted emission | ±2.92 dB |
| Radiated emission ≤ 1GHz | ±3.41 dB |
| Radiated emission > 1GHz | ±4.59 dB |
| Time | ±0.1% |

# 2 Test Configuration

## 2.1 Testing Facility

| | |
|---|---|
| **Test Laboratory** | International Certification Corporation |
| **Test Site** | CO01-WS, 03CH01-WS, TH01-WS |
| **Address of Test Site** | No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.) |

- FCC Designation No.: TW2732
- FCC site registration No.: 181692
- ISED#: 10807A
- CAB identifier: TW2732

## 2.2 The Worst Test Modes and Channel Details

| Test item | Modulation Mode | Test Frequency (MHz) | Data Rate (Mbps) | Test Configuration |
|---|---|---|---|---|
| Conducted Emissions<br>Radiated Emissions ≤ 1GHz | Charging mode | --- | --- | 2 |
| Unwanted Emissions ≤ 1GHz | 8DPSK | 2441 | 3Mbps | 1 |
| | Charging mode | --- | --- | 2 |
| Unwanted Emissions > 1GHz | GFSK<br>8DPSK | 2402, 2441, 2480<br>2402, 2441, 2480 | 1Mbps<br>3Mbps | 1 |
| Conducted Output Power | GFSK<br>Л/4 DQPSK<br>8DPSK | 2402, 2441, 2480<br>2402, 2441, 2480<br>2402, 2441, 2480 | 1Mbps<br>2Mbps<br>3Mbps | 1 |
| Number of Hopping Channels | GFSK<br>Л/4 DQPSK<br>8DPSK | 2402~2480<br>2402~2480<br>2402~2480 | 1Mbps<br>2Mbps<br>3Mbps | 1 |
| Hopping Channel Separation<br>20dB and Occupied bandwidth | GFSK<br>Л/4 DQPSK<br>8DPSK | 2402, 2441, 2480<br>2402, 2441, 2480<br>2402, 2441, 2480 | 1Mbps<br>2Mbps<br>3Mbps | 1 |
| Dwell Time | GFSK<br>Л/4 DQPSK<br>8DPSK | 2402<br>2402<br>2402 | 1Mbps<br>2Mbps<br>3Mbps | 1 |

**NOTE:**
1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **Z-plane** result was found as the worst case and was shown in this report.
2. The test configurations are listed as follows:
   1) Mode 1: Battery mode
   2) Mode 2: Charging mode

# 3 Transmitter Test Results

## 3.1 Unwanted Emissions into Restricted Frequency Bands

### 3.1.1 Limit of Unwanted Emissions into Restricted Frequency Bands

| Restricted Band Emissions Limit | | | |
|---|---|---|---|
| **Frequency Range (MHz)** | **Field Strength (uV/m)** | **Field Strength (dBuV/m)** | **Measure Distance (m)** |
| 0.009~0.490 | 2400/F(kHz) | 48.5 - 13.8 | 300 |
| 0.490~1.705 | 24000/F(kHz) | 33.8 - 23 | 30 |
| 1.705~30.0 | 30 | 29 | 30 |
| 30~88 | 100 | 40 | 3 |
| 88~216 | 150 | 43.5 | 3 |
| 216~960 | 200 | 46 | 3 |
| Above 960 | 500 | 54 | 3 |

**Note 1:**
Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit
**Note 2:**
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

### 3.1.2 Test Procedures

1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

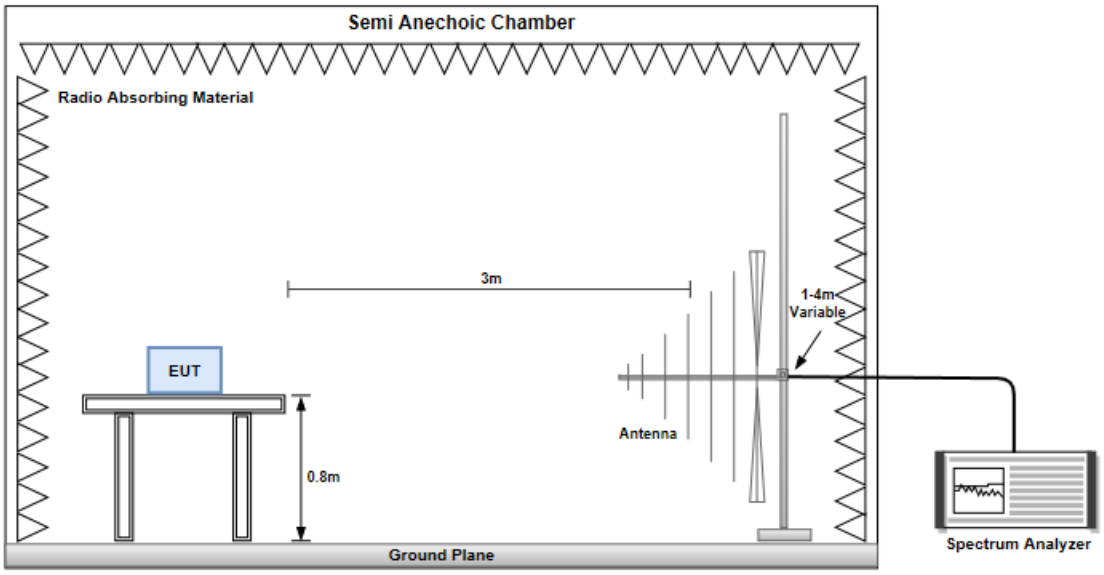
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. Radiated emission above 1GHz / Peak value
   RBW=1MHz, VBW=3MHz and Peak detector
3. Radiated emission above 1GHz / Average value for harmonics
   The average value is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula for DH5 packet type which has worst duty factor:

$$20\log(\text{Duty cycle}) = 20\log\frac{1\text{s} / 1600 * 5}{100\text{ ms}} = -30.1\text{dB}$$

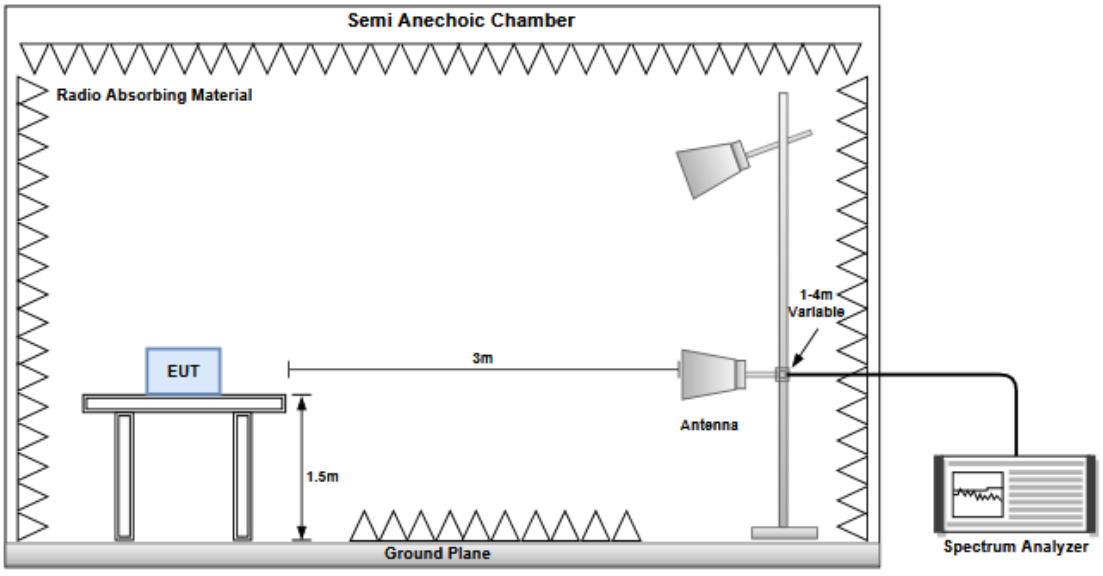
4. Radiated emission above 1GHz / Average value for other emissions
   RBW=1MHz, VBW=1/T and Peak detector

### 3.1.3 Test Setup

**Radiated Emissions below 1 GHz**




**Radiated Emissions above 1 GHz**




### 3.1.4 Test Results

Refer to Appendix A.

## 3.2 Unwanted Emissions into Non-Restricted Frequency Bands

### 3.2.1 Limit of Unwanted Emissions into Non-Restricted Frequency Bands

Peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz.

### 3.2.2 Test Procedures

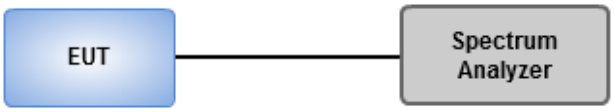
**Reference level measurement**

1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Use the peak marker function to determine the maximum PSD level

**Emission level measurement**

1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Scan Frequency range is up to 25GHz
4. Use the peak marker function to determine the maximum amplitude level

### 3.2.3 Test Setup




### 3.2.4 Test Results

| Ambient Condition | 23-24°C / 62-65% | Tested By | Roger Lu |
|---|---|---|---|

Refer to Appendix B.

## 3.3 Conducted Output Power

### 3.3.1 Limit of Conducted Output Power

☐ 1 Watt
For frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non overlapping hopping channels, and all frequency hopping systems in the 5725–5850 MHz band.

☒ 0.125 Watt
For all other frequency hopping systems in the 2400–2483.5 MHz band.

☐ 0.125 Watt
For Frequency hopping systems operating in the 2400–2483.5 MHz band have hopping channel carrier frequencies that are separated by two-thirds of the 20 dB bandwidth of the hopping channel.

### 3.3.2 Test Procedures

1. A wideband power meter is used for power measurement. Bandwidth of power senor and meter is 50MHz

2 If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power

### 3.3.3 Test Setup


### 3.3.4 Test Results

| **Ambient Condition** | 23-24°C / 62-65% | **Tested By** | Roger Lu |
|---|---|---|---|

Refer to Appendix C.

## 3.4 Number of Hopping Frequency

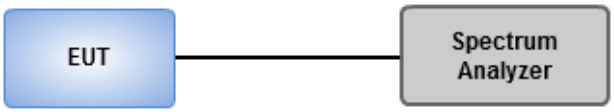
### 3.4.1 Limit of Number of Hopping Frequency

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels.

### 3.4.2 Test Procedures

1. Set RBW = 100kHz, VBW = 300kHz, Sweep time = Auto, Detector = Peak Trace max hold.
2 Allow trace to stabilize.

### 3.4.3 Test Setup




### 3.4.4 Test Results

| **Ambient Condition** | 23-24°C / 62-65% | **Tested By** | Roger Lu |
|---|---|---|---|

Refer to Appendix D.

## 3.5 20dB and Occupied Bandwidth

### 3.5.1 Test Procedures

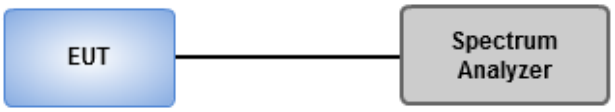
**20dB Bandwidth**

1. Set RBW=20kHz, VBW=100kHz, Sweep time = Auto, Detector=Peak , Trace max hold
2 Allow trace to stabilize
3 Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

**Occupied Bandwidth**

1. Set RBW=20kHz, VBW=100kHz, Sweep time = Auto, Detector=Sample , Trace max hold
2 Allow trace to stabilize
3. Use Occupied bandwidth function of spectrum analyzer to measuring 99% occupied bandwidth

### 3.5.2 Test Setup




### 3.5.3 Test Results

| | | | |
|---|---|---|---|
| **Ambient Condition** | 23-24°C / 62-65% | **Tested By** | Roger Lu |

Refer to Appendix E.

# 3.6 Channel Separation

## 3.6.1 Limit of Channel Separation

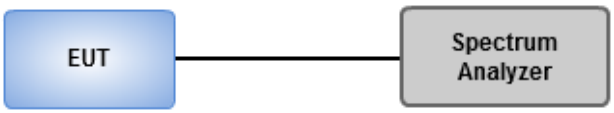
☐ Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

☒ Frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

## 3.6.2 Test Procedures

1. Set RBW=30kHz, VBW=100kHz,Sweep time = Auto, Detector=Peak Trace max hold
2. Allow trace to stabilize
3. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The EUT shall show compliance with the appropriate regulatory limit

## 3.6.3 Test Setup




## 3.6.4 Test Results

| Ambient Condition | 23-24°C / 62-65% | Tested By | Roger Lu |
|---|---|---|---|

Refer to Appendix F.

## 3.7 Number of Dwell Time

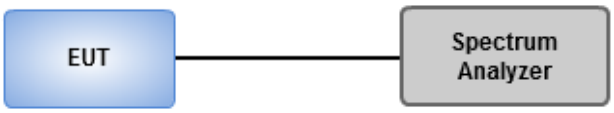
### 3.7.1 Limit of Dwell time

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

### 3.7.2 Test Procedures

1. Set RBW=300 kHz, VBW=1 MHz, Sweep time=8 ms, Detector=Peak, Span=0 Hz,Trace max hold.
2 Enable gating and trigger function of spectrum analyzer to measure burst on time.
3. Set RBW=300 kHz, VBW=1 MHz, Sweep time=5 s / 2 s, Detector=Peak, Span=0 Hz,Trace max hold.
4. Enable gating and trigger function of spectrum analyzer to measure burst on number of transmission.
5 Set RBW=300 kHz, VBW=1 MHz, Sweep time=31.6 s / 8 s, Detector=Peak, Span=0 Hz,Trace max hold.
6 Enable gating and trigger function of spectrum analyzer to measure burst on number of transmission of entire time cycle.

### 3.7.3 Test Setup




### 3.7.4 Test Results

| | | | |
|---|---|---|---|
| **Ambient Condition** | 23-24°C / 62-65% | **Tested By** | Roger Lu |

Refer to Appendix G.

## 3.8 AC Power Line Conducted Emissions

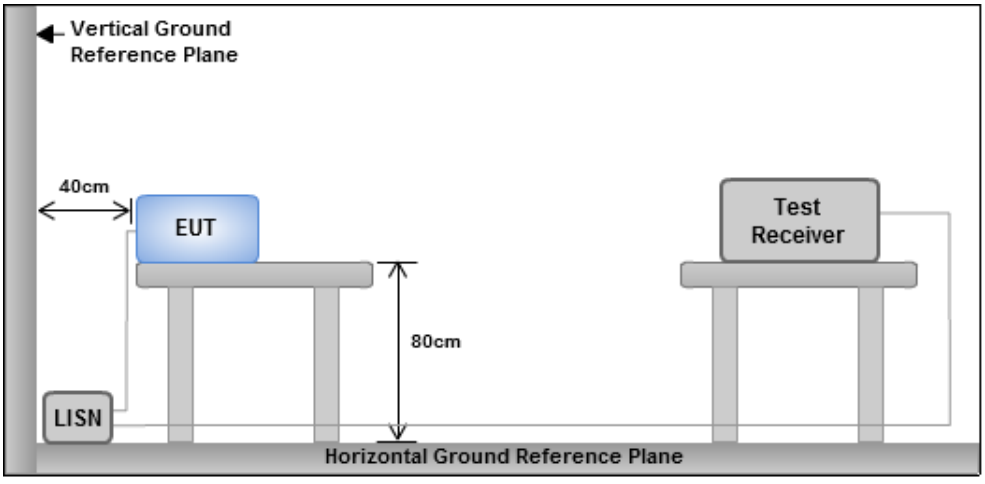
### 3.8.1 Limit of AC Power Line Conducted Emissions

| Conducted Emissions Limit | | |
|---|---|---|
| **Frequency Emission (MHz)** | **Quasi-Peak** | **Average** |
| 0.15-0.5 | 66 - 56 * | 56 - 46 * |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |
| Note 1: * Decreases with the logarithm of the frequency. | | |

### 3.8.2 Test Procedures

1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
3. AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.
4. This measurement was performed with AC 120V/60Hz

### 3.8.3 Test Setup




Note: 1. Support units were connected to second LISN.

2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

### 3.8.4 Test Results

Refer to Appendix H.

# 4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corporation (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website http://www.icertifi.com.tw.

| **Linkou** | **Kwei Shan** | **Kwei Shan Site II** |
|---|---|---|
| Tel: 886-2-2601-1640 | Tel: 886-3-271-8666 | Tel: 886-3-271-8640 |
| No.30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan (R.O.C.) | No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)<br>No.2-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.) | No.14-1, Lane 19, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.) |

If you have any suggestion, please feel free to contact us as below information.

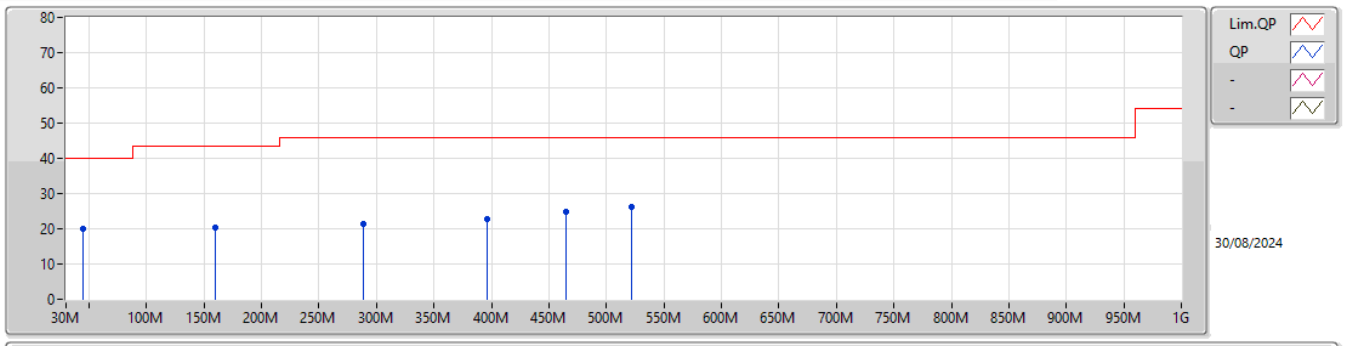
Tel: 886-3-271-8666
Fax: 886-3-318-0345
Email: ICC_Service@icertifi.com.tw

**==END==**

**Summary**

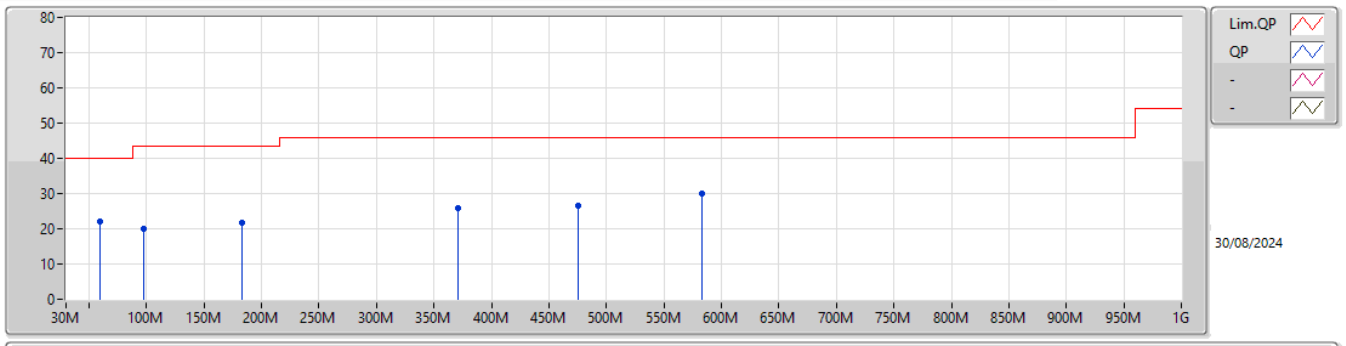
| Mode | Result | Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Condition |
|---|---|---|---|---|---|---|---|
| Mode 1 | Pass | PK | 582.9M | 29.84 | 46.00 | -16.16 | Vertical |
| Mode 2 | Pass | PK | 51.1M | 27.48 | 40.00 | -12.52 | Vertical |

**Mode 1**



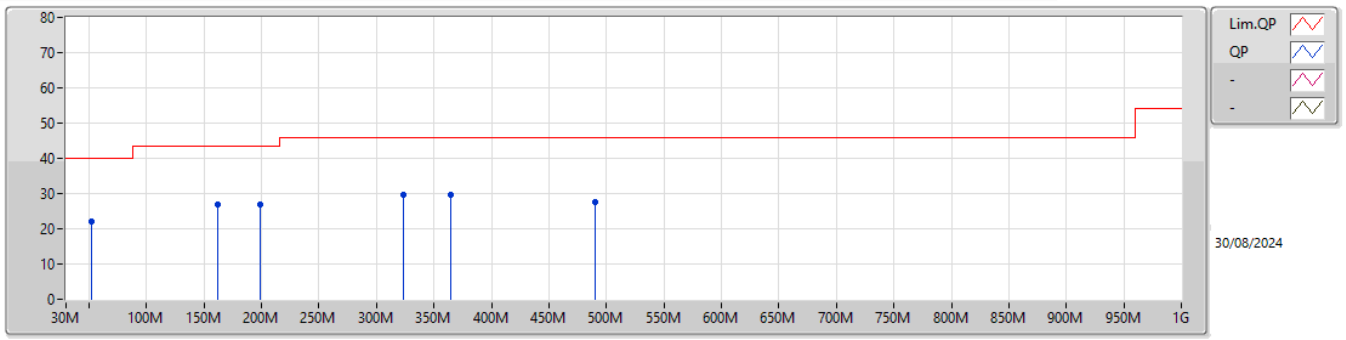

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| PK | 45.0M | 20.14 | 40.00 | -19.86 | -8.52 | 3 | Horizontal | - | - | - | 28.66 | 19.00 | 0.60 | 28.12 |
| PK | 159.7M | 20.37 | 43.50 | -23.13 | -8.68 | 3 | Horizontal | - | - | - | 29.05 | 18.40 | 1.18 | 28.26 |
| PK | 288.2M | 21.45 | 46.00 | -24.55 | -8.26 | 3 | Horizontal | - | - | - | 29.71 | 18.36 | 1.62 | 28.24 |
| PK | 396.2M | 22.92 | 46.00 | -23.08 | -5.61 | 3 | Horizontal | - | - | - | 28.53 | 20.72 | 1.84 | 28.17 |
| PK | 464.4M | 24.94 | 46.00 | -21.06 | -3.86 | 3 | Horizontal | - | - | - | 28.80 | 22.29 | 2.04 | 28.19 |
| PK | 521.6M | 26.37 | 46.00 | -19.63 | -2.70 | 3 | Horizontal | - | - | - | 29.07 | 23.27 | 2.23 | 28.20 |

**Mode 1**



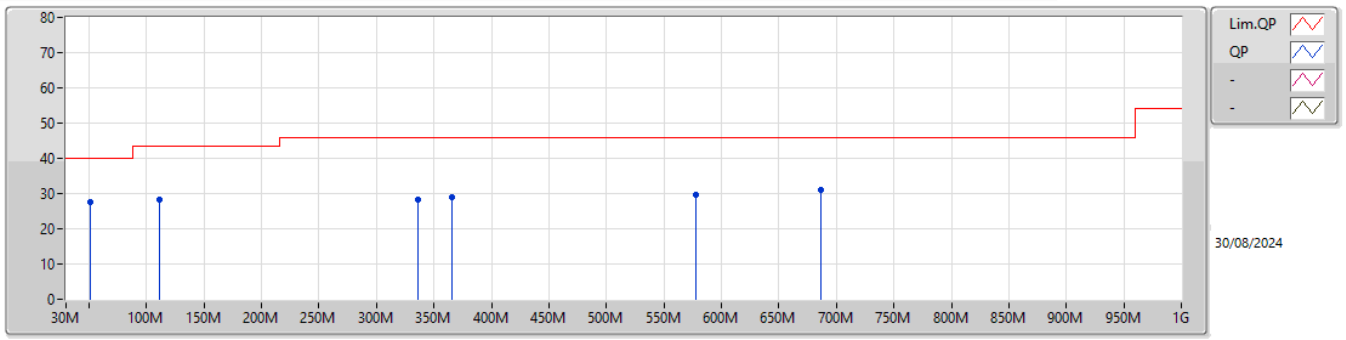

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| PK | 59.2M | 22.13 | 40.00 | -17.87 | -9.03 | 3 | Vertical | - | - | - | 31.16 | 18.42 | 0.71 | 28.16 |
| PK | 97.3M | 20.05 | 43.50 | -23.45 | -13.67 | 3 | Vertical | - | - | - | 33.72 | 13.63 | 0.93 | 28.23 |
| PK | 182.6M | 21.76 | 43.50 | -21.74 | -10.49 | 3 | Vertical | - | - | - | 32.25 | 16.50 | 1.28 | 28.27 |
| PK | 371.4M | 25.92 | 46.00 | -20.08 | -6.24 | 3 | Vertical | - | - | - | 32.16 | 20.16 | 1.79 | 28.19 |
| PK | 475.6M | 26.53 | 46.00 | -19.47 | -3.71 | 3 | Vertical | - | - | - | 30.24 | 22.40 | 2.08 | 28.19 |
| PK | 582.9M | 29.84 | 46.00 | -16.16 | -1.31 | 3 | Vertical | - | - | - | 31.15 | 24.46 | 2.41 | 28.18 |

**Mode 2**




| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| PK | 52.2M | 21.98 | 40.00 | -18.02 | -8.37 | 3 | Horizontal | - | - | - | 30.35 | 19.12 | 0.65 | 28.14 |
| PK | 162.1M | 26.75 | 43.50 | -16.75 | -8.87 | 3 | Horizontal | - | - | - | 35.62 | 18.20 | 1.19 | 28.26 |
| PK | 198.4M | 26.82 | 43.50 | -16.68 | -11.55 | 3 | Horizontal | - | - | - | 38.37 | 15.40 | 1.33 | 28.28 |
| PK | 323.9M | 29.67 | 46.00 | -16.33 | -7.34 | 3 | Horizontal | - | - | - | 37.01 | 19.18 | 1.70 | 28.22 |
| PK | 364.3M | 29.70 | 46.00 | -16.30 | -6.52 | 3 | Horizontal | - | - | - | 36.22 | 19.89 | 1.78 | 28.19 |
| PK | 490.1M | 27.46 | 46.00 | -18.54 | -3.37 | 3 | Horizontal | - | - | - | 30.83 | 22.70 | 2.13 | 28.20 |

**Mode 2**



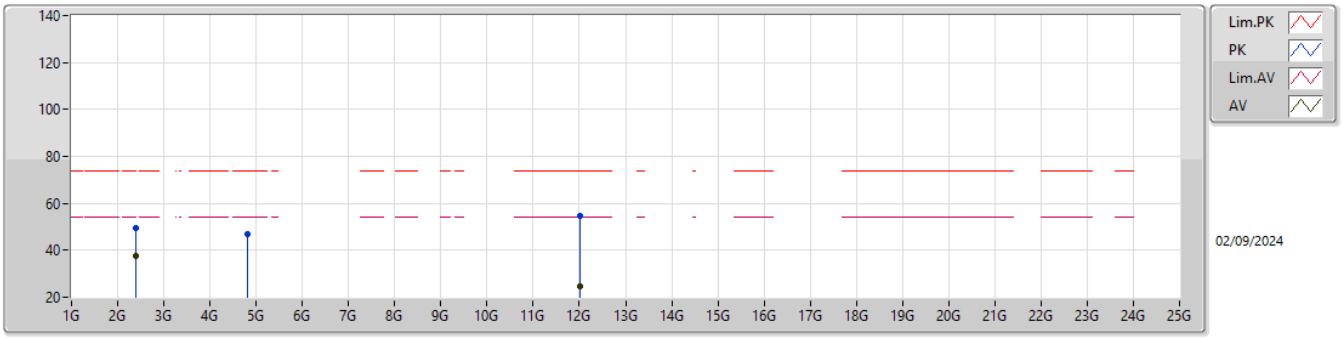

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| PK | 51.1M | 27.48 | 40.00 | -12.52 | -8.22 | 3 | Vertical | - | - | - | 35.70 | 19.28 | 0.64 | 28.14 |
| PK | 111.6M | 28.31 | 43.50 | -15.19 | -11.82 | 3 | Vertical | - | - | - | 40.13 | 15.42 | 1.00 | 28.24 |
| PK | 336.2M | 28.29 | 46.00 | -17.71 | -7.18 | 3 | Vertical | - | - | - | 35.47 | 19.30 | 1.73 | 28.21 |
| PK | 366M | 29.12 | 46.00 | -16.88 | -6.47 | 3 | Vertical | - | - | - | 35.59 | 19.94 | 1.78 | 28.19 |
| PK | 578.3M | 29.62 | 46.00 | -16.38 | -1.45 | 3 | Vertical | - | - | - | 31.07 | 24.33 | 2.40 | 28.18 |
| PK | 686M | 30.99 | 46.00 | -15.01 | 0.58 | 3 | Vertical | - | - | - | 30.41 | 25.80 | 2.81 | 28.03 |

**Summary**

| Mode | Result | Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Dist (m) | Condition | Azimuth (°) | Height (m) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.4-2.4835GHz | - | - | - | - | - | - | - | - | - | - | - |
| BT-BR(1Mbps) | Pass | AV | 2.4835G | 38.98 | 54.00 | -15.02 | 3 | Vertical | 177 | 2.27 | - |
| BT-EDR(3Mbps) | Pass | AV | 2.4835G | 40.12 | 54.00 | -13.88 | 3 | Vertical | 175 | 2.27 | - |

**2.4-2.4835GHz_BT-BR(1Mbps)**

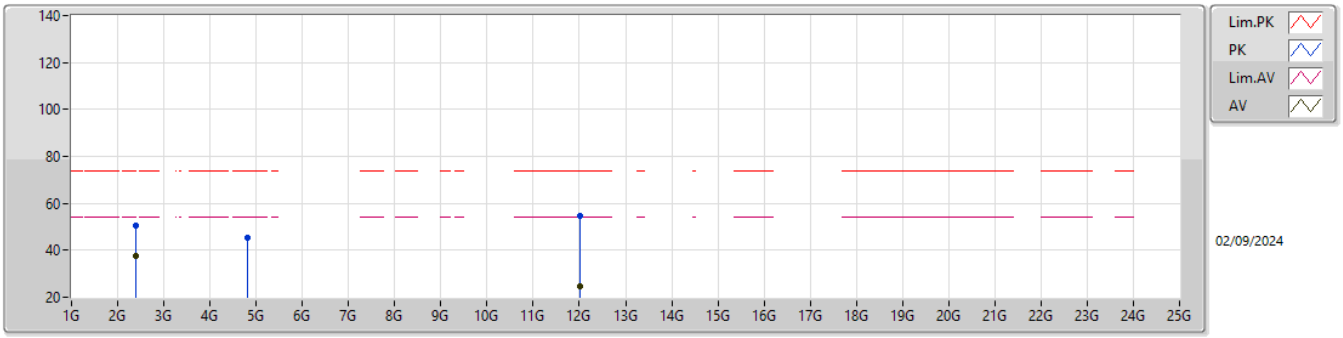
**2402MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 37.33 | 54.00 | -16.67 | 41.67 | 3 | Horizontal | 232 | 2.94 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 49.35 | 74.00 | -24.65 | 53.69 | 3 | Horizontal | 232 | 2.94 | - | 27.60 | 4.95 | 36.89 |
| AV | 4.804G | 16.96 | 54.00 | -37.04 | - | 3 | Horizontal | - | - | - | - | - | - |
| PK | 4.804G | 47.06 | 74.00 | -26.94 | 47.44 | 3 | Horizontal | 268 | 1.45 | - | 31.29 | 6.85 | 38.52 |
| AV | 12.01G | 24.64 | 54.00 | -29.36 | - | 3 | Horizontal | - | - | - | - | - | - |
| PK | 12.01G | 54.74 | 74.00 | -19.26 | 48.42 | 3 | Horizontal | 54 | 1.13 | - | 39.20 | 10.02 | 42.90 |

**2.4-2.4835GHz_BT-BR(1Mbps)**

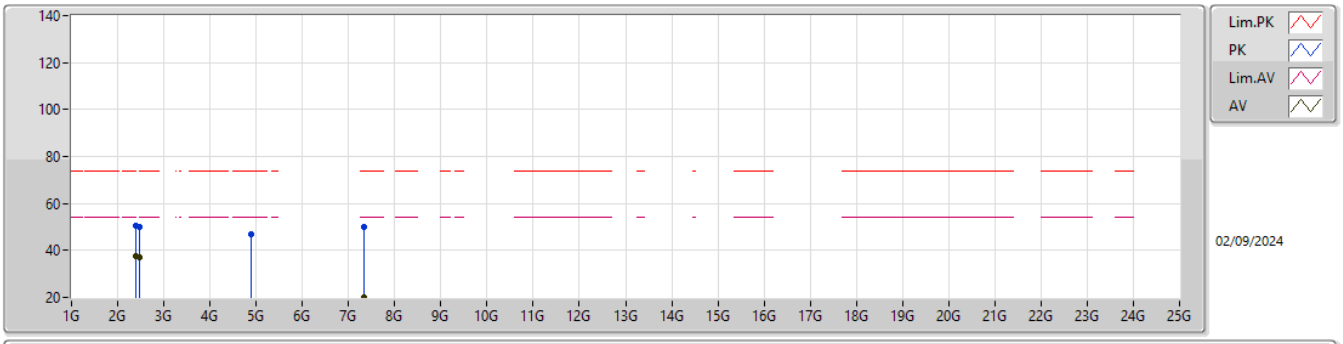
**2402MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 37.42 | 54.00 | -16.58 | 41.76 | 3 | Vertical | 175 | 1.65 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 50.41 | 74.00 | -23.59 | 54.75 | 3 | Vertical | 175 | 1.65 | - | 27.60 | 4.95 | 36.89 |
| AV | 4.804G | 15.16 | 54.00 | -38.84 | - | 3 | Vertical | - | - | - | - | - | - |
| PK | 4.804G | 45.26 | 74.00 | -28.74 | 45.64 | 3 | Vertical | 150 | 1.33 | - | 31.29 | 6.85 | 38.52 |
| AV | 12.01G | 24.72 | 54.00 | -29.28 | - | 3 | Vertical | - | - | - | - | - | - |
| PK | 12.01G | 54.82 | 74.00 | -19.18 | 48.50 | 3 | Vertical | 78 | 1.05 | - | 39.20 | 10.02 | 42.90 |

**2.4-2.4835GHz_BT-BR(1Mbps)**

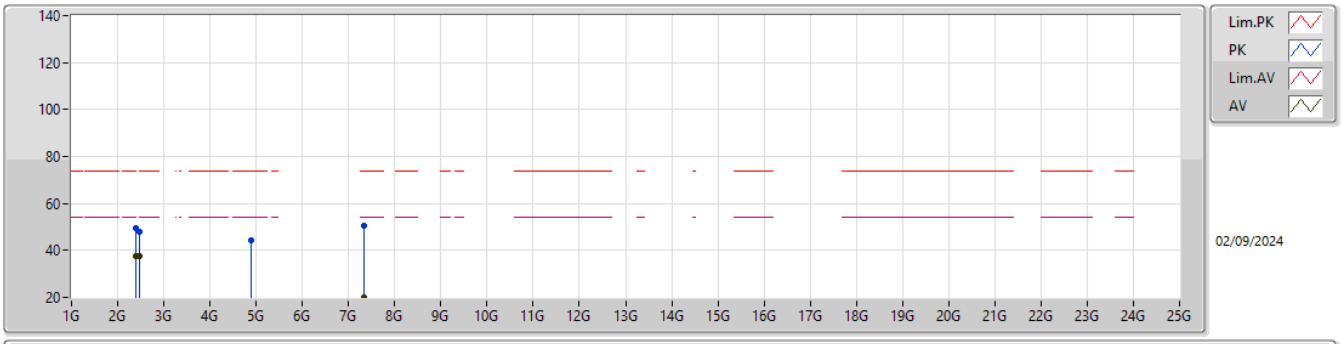
**2441MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 37.56 | 54.00 | -16.44 | 41.90 | 3 | Horizontal | 243 | 3.04 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 50.52 | 74.00 | -23.48 | 54.86 | 3 | Horizontal | 243 | 3.04 | - | 27.60 | 4.95 | 36.89 |
| AV | 2.4835G | 37.22 | 54.00 | -16.78 | 41.94 | 3 | Horizontal | 243 | 3.04 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 50.05 | 74.00 | -23.95 | 54.77 | 3 | Horizontal | 243 | 3.04 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.882G | 16.87 | 54.00 | -37.13 | - | 3 | Horizontal | - | - | - | - | - | - |
| PK | 4.882G | 46.97 | 74.00 | -27.03 | 47.48 | 3 | Horizontal | 262 | 1.33 | - | 31.14 | 6.92 | 38.57 |
| AV | 7.323G | 19.81 | 54.00 | -34.19 | - | 3 | Horizontal | - | - | - | - | - | - |
| PK | 7.323G | 49.91 | 74.00 | -24.09 | 44.73 | 3 | Horizontal | 147 | 1.22 | - | 36.15 | 8.43 | 39.40 |

**2.4-2.4835GHz_BT-BR(1Mbps)**

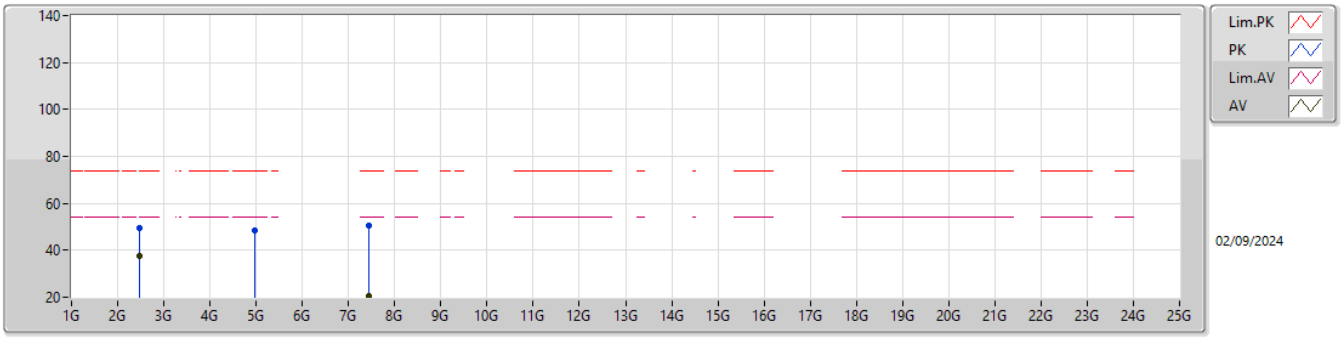
**2441MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 37.41 | 54.00 | -16.59 | 41.75 | 3 | Vertical | 162 | 2.33 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 49.51 | 74.00 | -24.49 | 53.85 | 3 | Vertical | 162 | 2.33 | - | 27.60 | 4.95 | 36.89 |
| AV | 2.4835G | 37.33 | 54.00 | -16.67 | 42.05 | 3 | Vertical | 162 | 2.33 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 47.95 | 74.00 | -26.05 | 52.67 | 3 | Vertical | 162 | 2.33 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.882G | 14.45 | 54.00 | -39.55 | - | 3 | Vertical | - | - | - | - | - | - |
| PK | 4.882G | 44.55 | 74.00 | -29.45 | 45.06 | 3 | Vertical | 150 | 1.52 | - | 31.14 | 6.92 | 38.57 |
| AV | 7.323G | 20.22 | 54.00 | -33.78 | - | 3 | Vertical | - | - | - | - | - | - |
| PK | 7.323G | 50.32 | 74.00 | -23.68 | 45.14 | 3 | Vertical | 278 | 3.15 | - | 36.15 | 8.43 | 39.40 |

**2.4-2.4835GHz_BT-BR(1Mbps)**

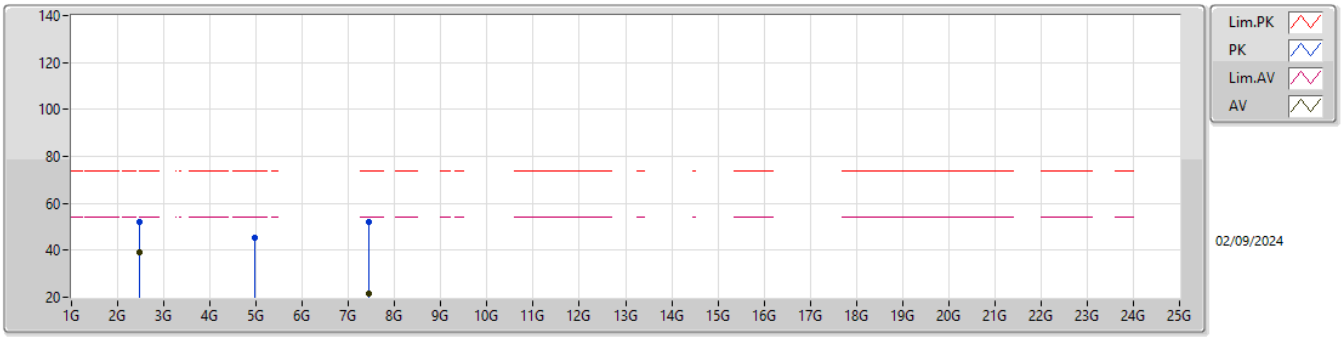
**2480MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.4835G | 37.51 | 54.00 | -16.49 | 42.23 | 3 | Horizontal | 232 | 3.02 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 49.41 | 74.00 | -24.59 | 54.13 | 3 | Horizontal | 232 | 3.02 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.96G | 18.15 | 54.00 | -35.85 | - | 3 | Horizontal | - | - | - | - | - | - |
| PK | 4.96G | 48.25 | 74.00 | -25.75 | 48.52 | 3 | Horizontal | 236 | 2.27 | - | 31.36 | 6.99 | 38.62 |
| AV | 7.44G | 20.61 | 54.00 | -33.39 | - | 3 | Horizontal | - | - | - | - | - | - |
| PK | 7.44G | 50.71 | 74.00 | -23.29 | 45.41 | 3 | Horizontal | 235 | 1.36 | - | 36.34 | 8.50 | 39.54 |

**2.4-2.4835GHz_BT-BR(1Mbps)**

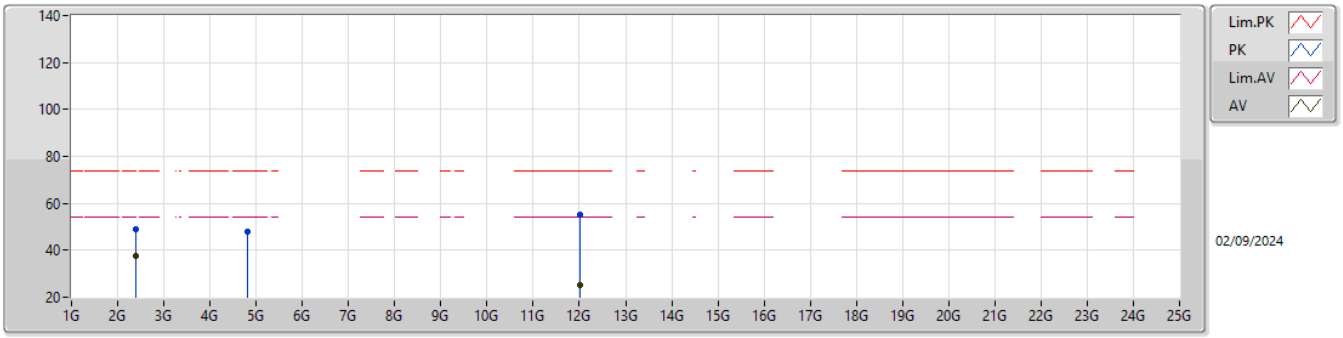
**2480MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.4835G | 38.98 | 54.00 | -15.02 | 43.70 | 3 | Vertical | 177 | 2.27 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 52.12 | 74.00 | -21.88 | 56.84 | 3 | Vertical | 177 | 2.27 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.96G | 15.37 | 54.00 | -38.63 | - | 3 | Vertical | - | - | - | - | - | - |
| PK | 4.96G | 45.47 | 74.00 | -28.53 | 45.74 | 3 | Vertical | 138 | 1.26 | - | 31.36 | 6.99 | 38.62 |
| AV | 7.44G | 21.72 | 54.00 | -32.28 | - | 3 | Vertical | - | - | - | - | - | - |
| PK | 7.44G | 51.82 | 74.00 | -22.18 | 46.52 | 3 | Vertical | 269 | 3.22 | - | 36.34 | 8.50 | 39.54 |

**2.4-2.4835GHz_BT-EDR(3Mbps)**

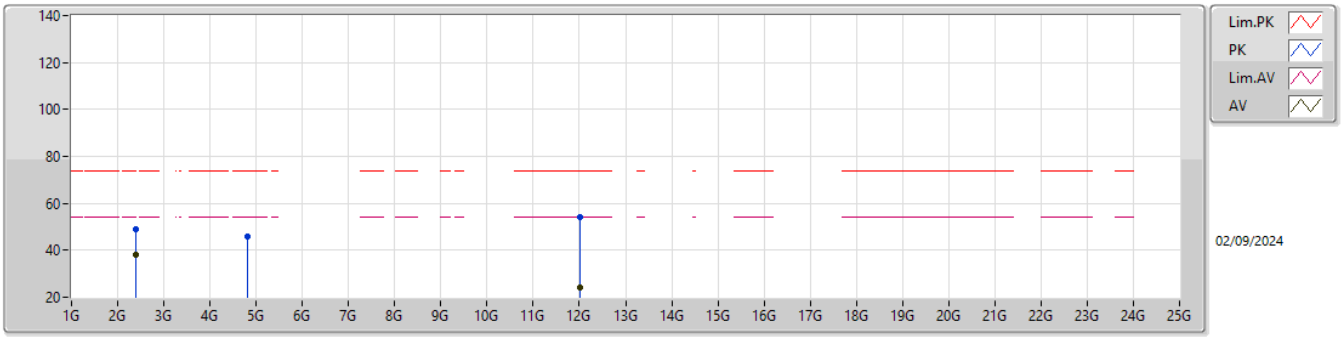
**2402MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 37.34 | 54.00 | -16.66 | 41.68 | 3 | Horizontal | 226 | 2.96 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 48.90 | 74.00 | -25.10 | 53.24 | 3 | Horizontal | 226 | 2.96 | - | 27.60 | 4.95 | 36.89 |
| AV | 4.804G | 18.01 | 54.00 | -35.99 | - | 3 | Horizontal | - | - | - | - | - | - |
| PK | 4.804G | 48.11 | 74.00 | -25.89 | 48.49 | 3 | Horizontal | 261 | 1.19 | - | 31.29 | 6.85 | 38.52 |
| AV | 12.01G | 25.23 | 54.00 | -28.77 | - | 3 | Horizontal | - | - | - | - | - | - |
| PK | 12.01G | 55.33 | 74.00 | -18.67 | 49.01 | 3 | Horizontal | 16 | 1.09 | - | 39.20 | 10.02 | 42.90 |

**2.4-2.4835GHz_BT-EDR(3Mbps)**

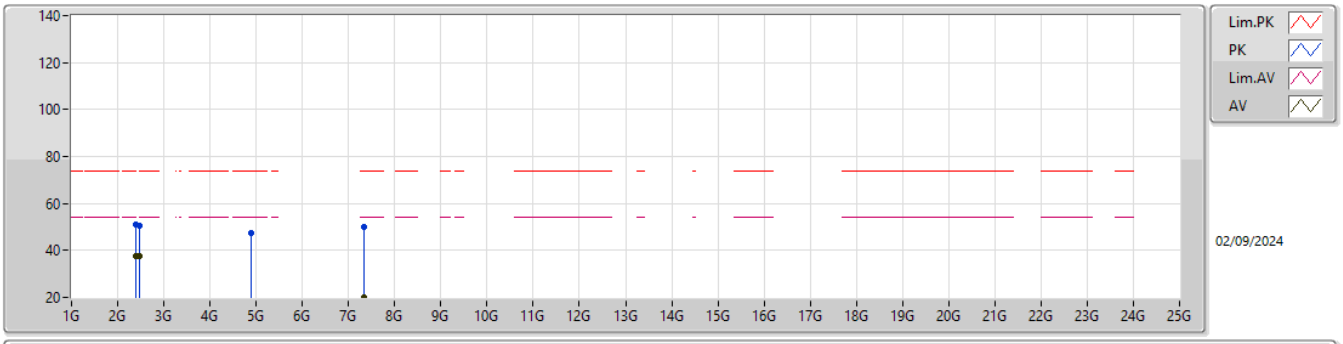
**2402MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 38.16 | 54.00 | -15.84 | 42.50 | 3 | Vertical | 152 | 1.63 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 48.81 | 74.00 | -25.19 | 53.15 | 3 | Vertical | 152 | 1.63 | - | 27.60 | 4.95 | 36.89 |
| AV | 4.804G | 15.94 | 54.00 | -38.06 | - | 3 | Vertical | - | - | - | - | - | - |
| PK | 4.804G | 46.04 | 74.00 | -27.96 | 46.42 | 3 | Vertical | 274 | 2.58 | - | 31.29 | 6.85 | 38.52 |
| AV | 12.01G | 24.18 | 54.00 | -29.82 | - | 3 | Vertical | - | - | - | - | - | - |
| PK | 12.01G | 54.28 | 74.00 | -19.72 | 47.96 | 3 | Vertical | 84 | 1.17 | - | 39.20 | 10.02 | 42.90 |

**2.4-2.4835GHz_BT-EDR(3Mbps)**

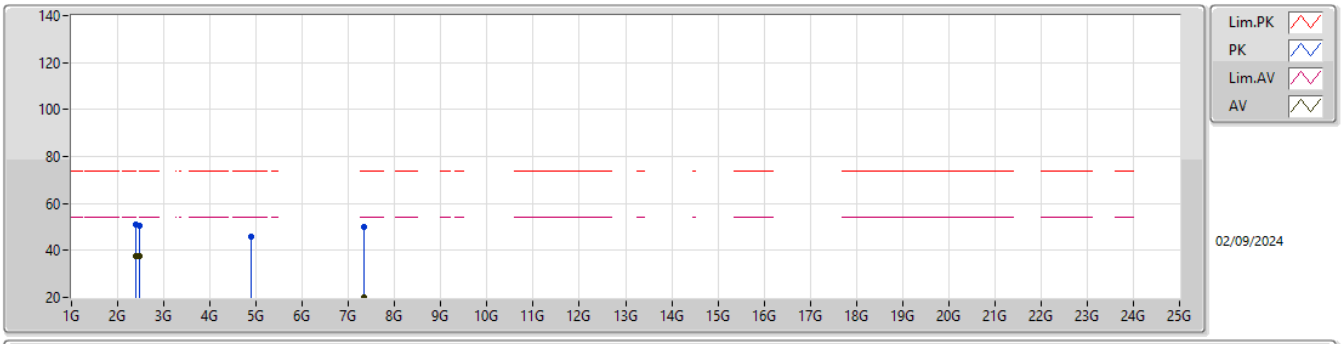
**2441MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 37.78 | 54.00 | -16.22 | 42.12 | 3 | Horizontal | 229 | 3.09 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 50.99 | 74.00 | -23.01 | 55.33 | 3 | Horizontal | 229 | 3.09 | - | 27.60 | 4.95 | 36.89 |
| AV | 2.4835G | 37.48 | 54.00 | -16.52 | 42.20 | 3 | Horizontal | 229 | 3.09 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 50.70 | 74.00 | -23.30 | 55.42 | 3 | Horizontal | 229 | 3.09 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.882G | 17.46 | 54.00 | -36.54 | - | 3 | Horizontal | - | - | - | - | - | - |
| PK | 4.882G | 47.56 | 74.00 | -26.44 | 48.07 | 3 | Horizontal | 236 | 1.67 | - | 31.14 | 6.92 | 38.57 |
| AV | 7.323G | 20.12 | 54.00 | -33.88 | - | 3 | Horizontal | - | - | - | - | - | - |
| PK | 7.323G | 50.22 | 74.00 | -23.78 | 45.04 | 3 | Horizontal | 85 | 1.37 | - | 36.15 | 8.43 | 39.40 |

**2.4-2.4835GHz_BT-EDR(3Mbps)**

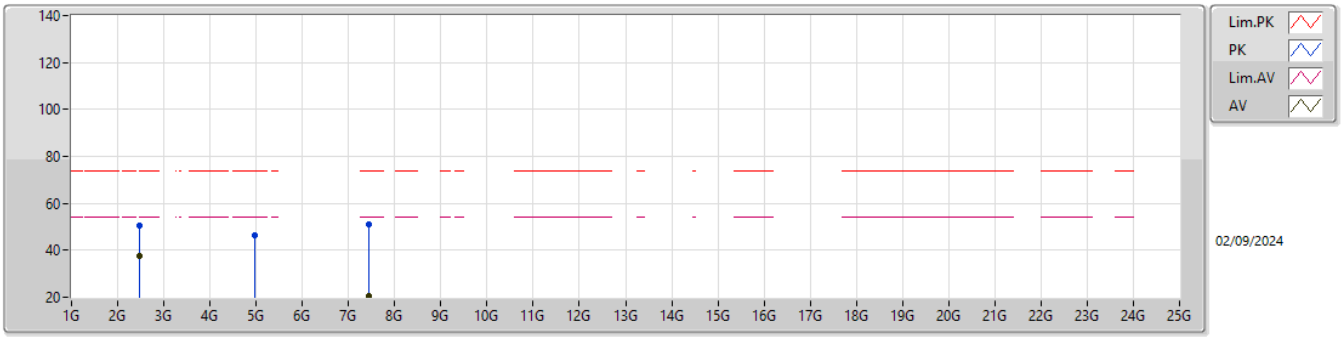
**2441MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 37.78 | 54.00 | -16.22 | 42.12 | 3 | Vertical | 175 | 1.75 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 51.21 | 74.00 | -22.79 | 55.55 | 3 | Vertical | 175 | 1.75 | - | 27.60 | 4.95 | 36.89 |
| AV | 2.4835G | 37.51 | 54.00 | -16.49 | 42.23 | 3 | Vertical | 175 | 1.75 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 50.70 | 74.00 | -23.30 | 55.42 | 3 | Vertical | 175 | 1.75 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.882G | 15.96 | 54.00 | -38.04 | - | 3 | Vertical | - | - | - | - | - | - |
| PK | 4.882G | 46.06 | 74.00 | -27.94 | 46.57 | 3 | Vertical | 150 | 1.76 | - | 31.14 | 6.92 | 38.57 |
| AV | 7.323G | 19.88 | 54.00 | -34.12 | - | 3 | Vertical | - | - | - | - | - | - |
| PK | 7.323G | 49.98 | 74.00 | -24.02 | 44.80 | 3 | Vertical | 297 | 1.78 | - | 36.15 | 8.43 | 39.40 |

**2.4-2.4835GHz_BT-EDR(3Mbps)**

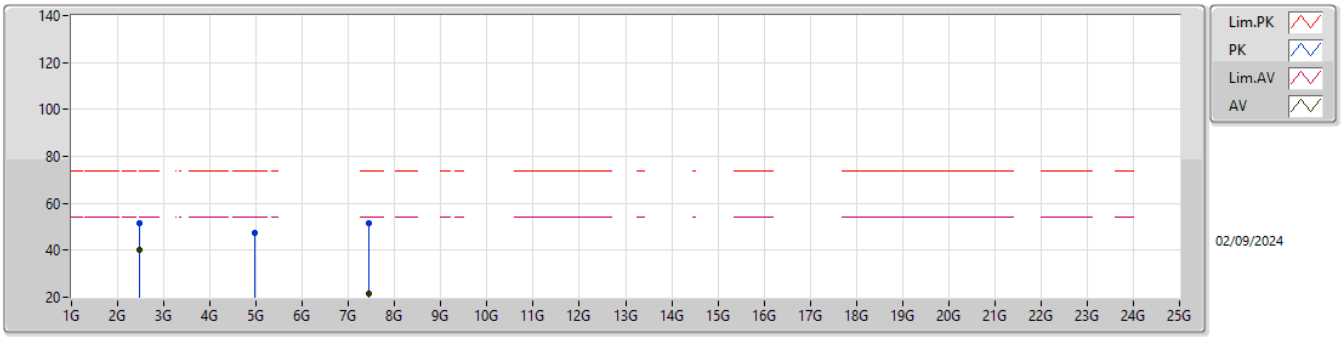
**2480MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.4835G | 37.67 | 54.00 | -16.33 | 42.39 | 3 | Horizontal | 228 | 3.01 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 50.42 | 74.00 | -23.58 | 55.14 | 3 | Horizontal | 228 | 3.01 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.96G | 16.53 | 54.00 | -37.47 | - | 3 | Horizontal | - | - | - | - | - | - |
| PK | 4.96G | 46.63 | 74.00 | -27.37 | 46.90 | 3 | Horizontal | 199 | 1.14 | - | 31.36 | 6.99 | 38.62 |
| AV | 7.44G | 20.76 | 54.00 | -33.24 | - | 3 | Horizontal | - | - | - | - | - | - |
| PK | 7.44G | 50.86 | 74.00 | -23.14 | 45.56 | 3 | Horizontal | 25 | 1.05 | - | 36.34 | 8.50 | 39.54 |

**2.4-2.4835GHz_BT-EDR(3Mbps)**

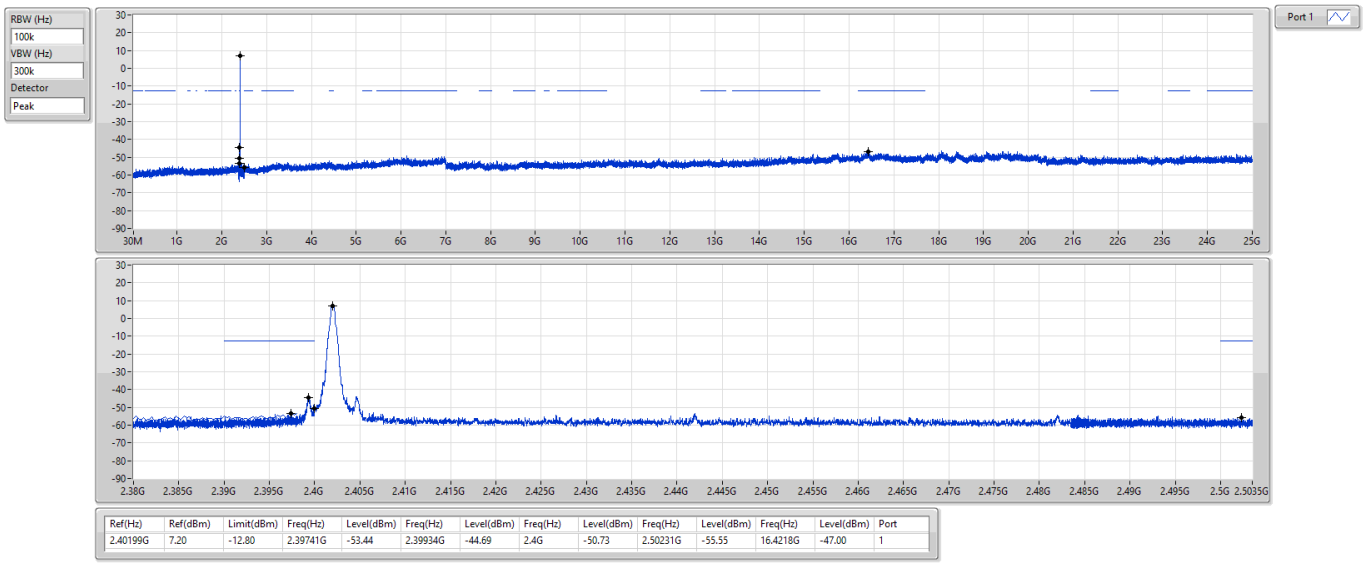
**2480MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.4835G | 40.12 | 54.00 | -13.88 | 44.84 | 3 | Vertical | 175 | 2.27 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 51.50 | 74.00 | -22.50 | 56.22 | 3 | Vertical | 175 | 2.27 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.96G | 17.31 | 54.00 | -36.69 | - | 3 | Vertical | - | - | - | - | - | - |
| PK | 4.96G | 47.41 | 74.00 | -26.59 | 47.68 | 3 | Vertical | 275 | 2.91 | - | 31.36 | 6.99 | 38.62 |
| AV | 7.44G | 21.30 | 54.00 | -32.70 | - | 3 | Vertical | - | - | - | - | - | - |
| PK | 7.44G | 51.40 | 74.00 | -22.60 | 46.10 | 3 | Vertical | 75 | 1.25 | - | 36.34 | 8.50 | 39.54 |

**2.4-2.4835GHz_BT-BR(1Mbps)** **CSENdB-FS**

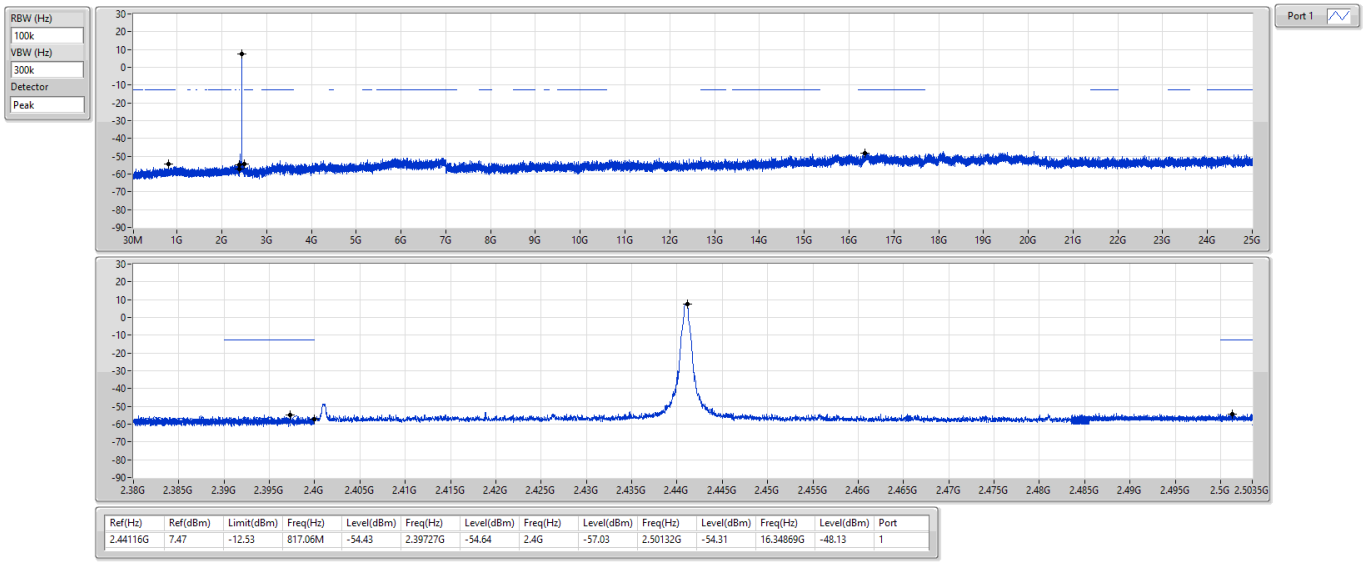
**2402MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.40199G | 7.20 | -12.80 | 2.39741G | -53.44 | 2.39934G | -44.69 | 2.4G | -50.73 | 2.50231G | -55.55 | 16.4218G | -47.00 | 1 |

**2.4-2.4835GHz_BT-BR(1Mbps)** **CSENdB-FS**

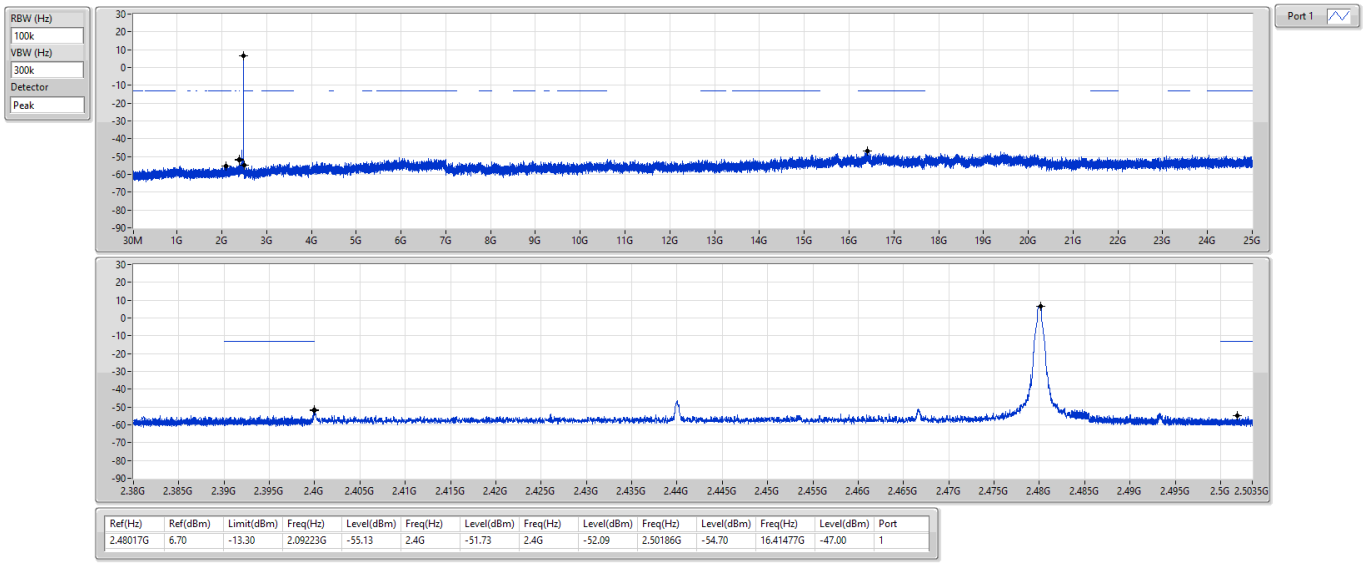
**2441MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.44116G | 7.47 | -12.53 | 817.06M | -54.43 | 2.39727G | -54.64 | 2.4G | -57.03 | 2.50132G | -54.31 | 16.34869G | -48.13 | 1 |

**2.4-2.4835GHz_BT-BR(1Mbps)** **CSENdB-FS**

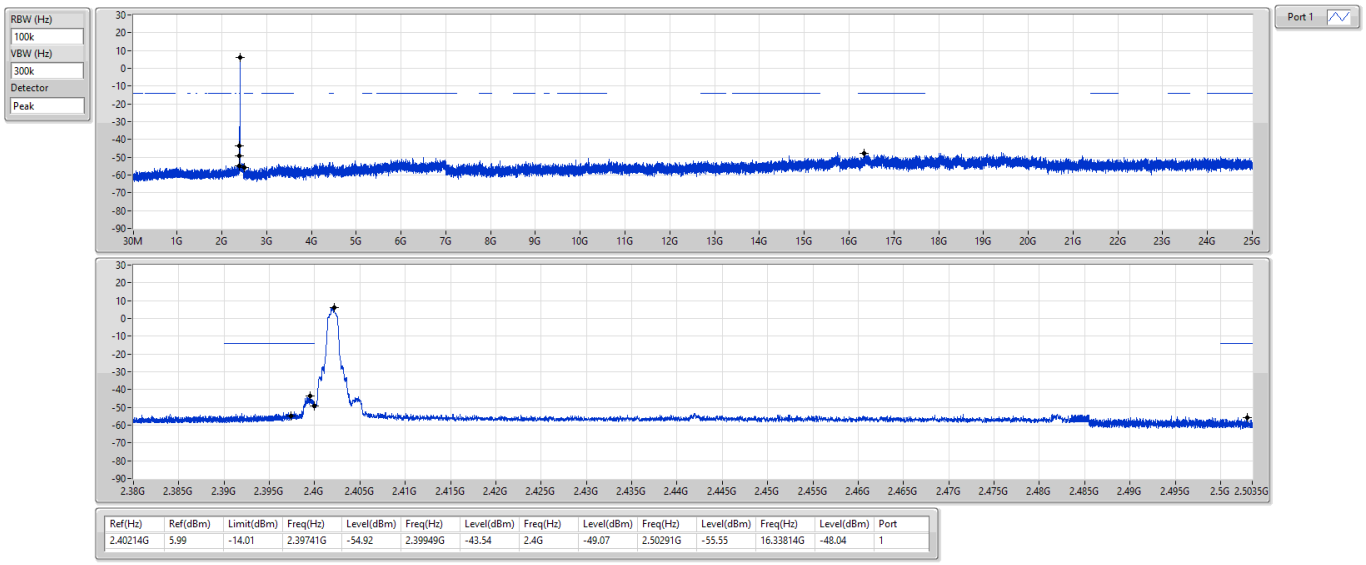
**2480MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.48017G | 6.70 | -13.30 | 2.09223G | -55.13 | 2.4G | -51.73 | 2.4G | -52.09 | 2.50186G | -54.70 | 16.41477G | -47.00 | 1 |

**2.4-2.4835GHz_BT-EDR(2Mbps)** **CSENdB-FS**

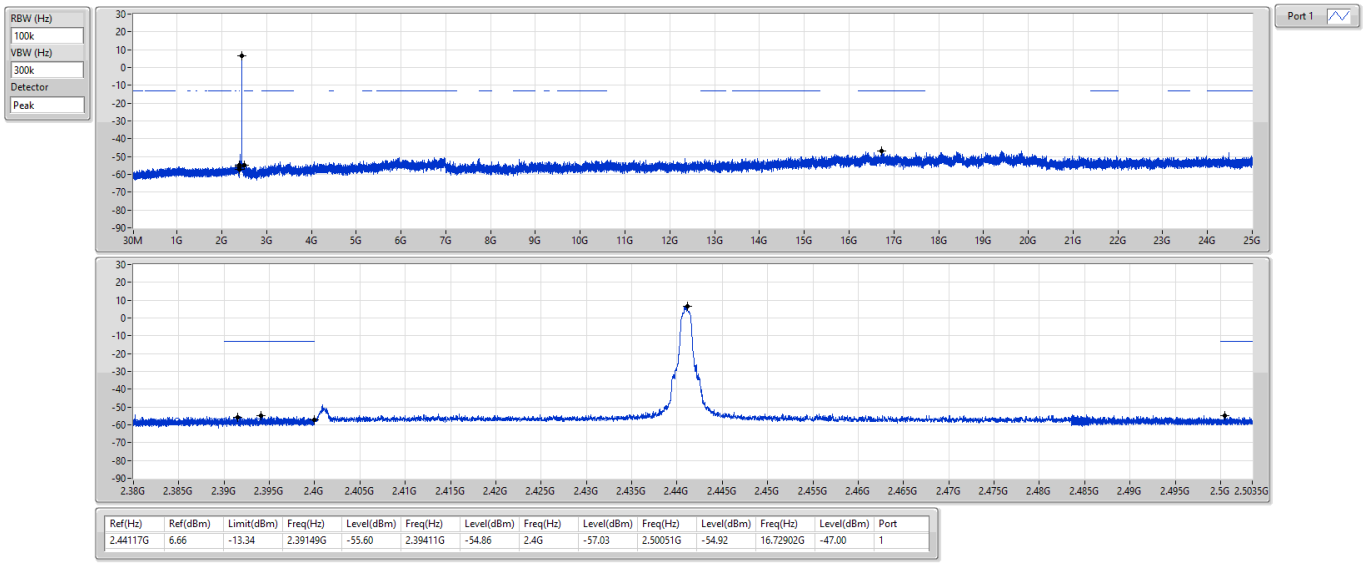
**2402MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.40214G | 5.99 | -14.01 | 2.39741G | -54.92 | 2.39949G | -43.54 | 2.4G | -49.07 | 2.50291G | -55.55 | 16.33814G | -48.04 | 1 |

**2.4-2.4835GHz_BT-EDR(2Mbps)** **CSENdB-FS**

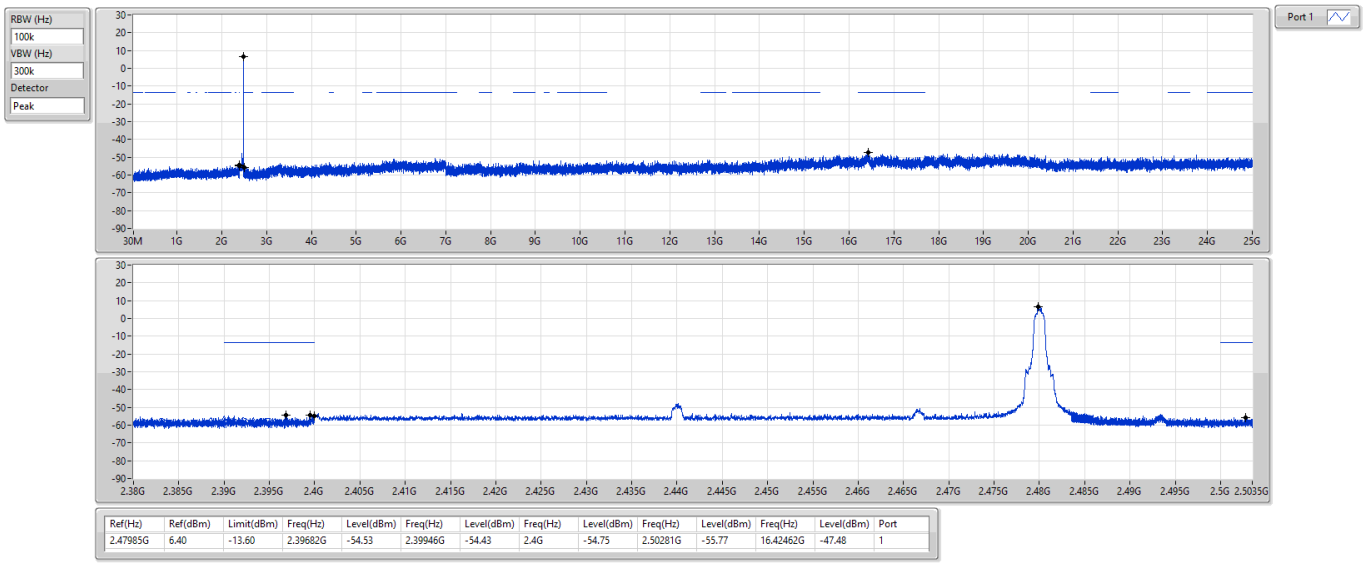
**2441MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.44117G | 6.66 | -13.34 | 2.39149G | -55.60 | 2.39411G | -54.86 | 2.4G | -57.03 | 2.50051G | -54.92 | 16.72902G | -47.00 | 1 |

**2.4-2.4835GHz_BT-EDR(2Mbps)** **CSENdB-FS**

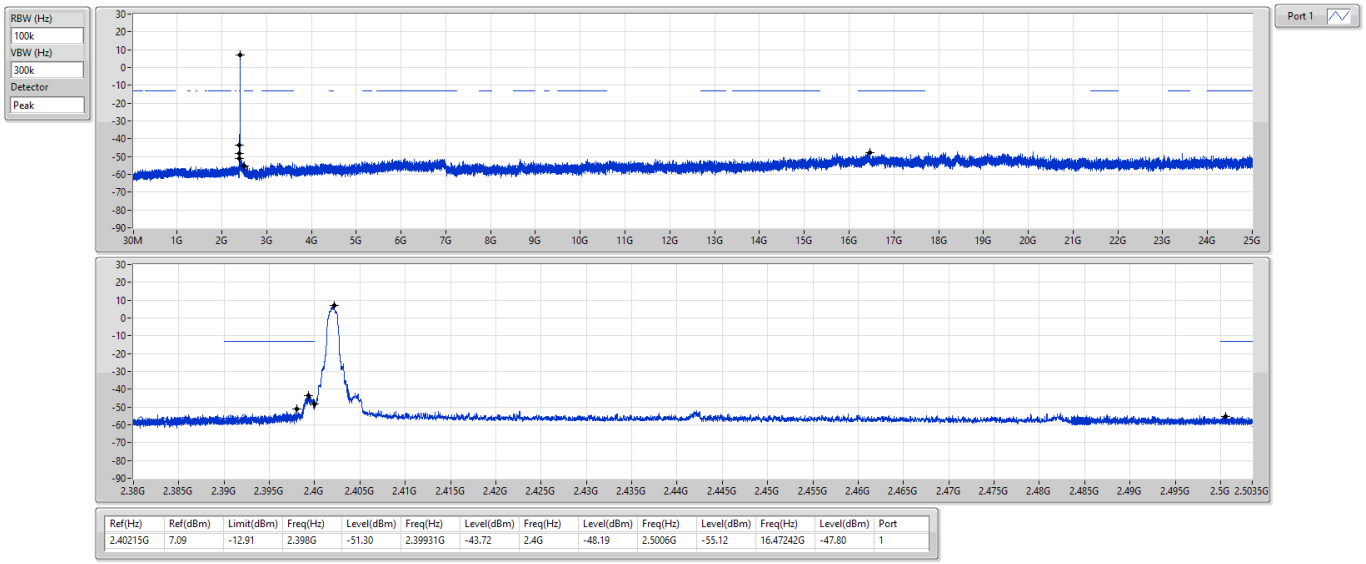
**2480MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.47985G | 6.40 | -13.60 | 2.39682G | -54.53 | 2.39946G | -54.43 | 2.4G | -54.75 | 2.50281G | -55.77 | 16.42462G | -47.48 | 1 |

**2.4-2.4835GHz_BT-EDR(3Mbps)** **CSENdB-FS**

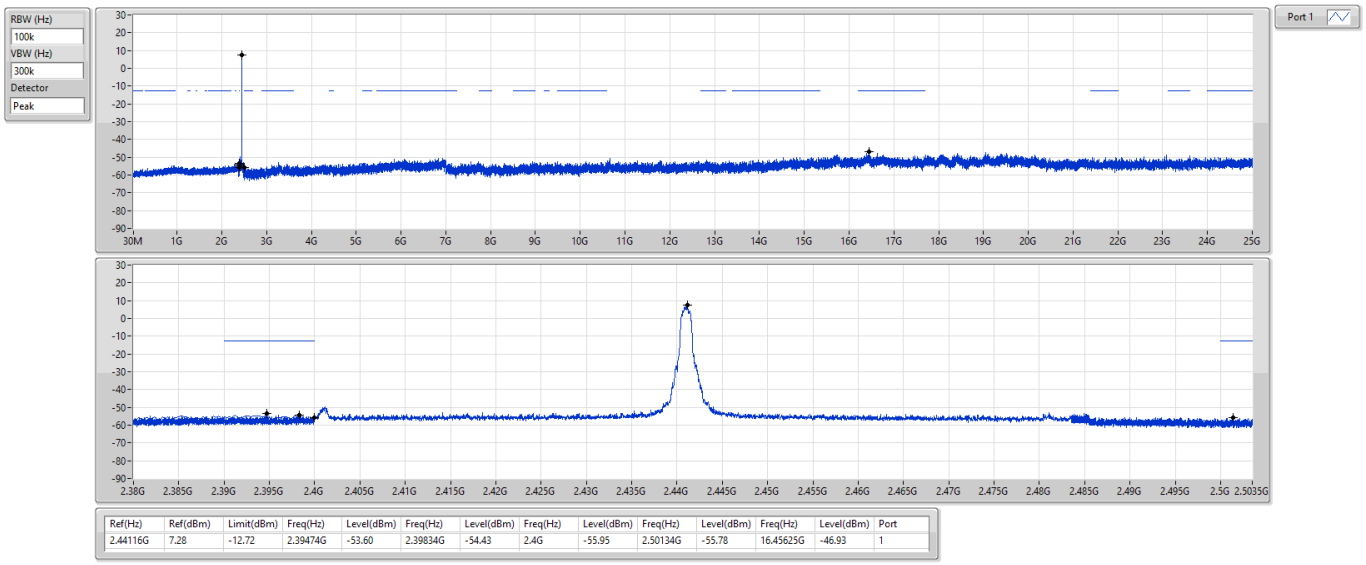
**2402MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.40215G | 7.09 | -12.91 | 2.398G | -51.30 | 2.39931G | -43.72 | 2.4G | -48.19 | 2.5006G | -55.12 | 16.47242G | -47.80 | 1 |

**2.4-2.4835GHz_BT-EDR(3Mbps)** **CSENdB-FS**

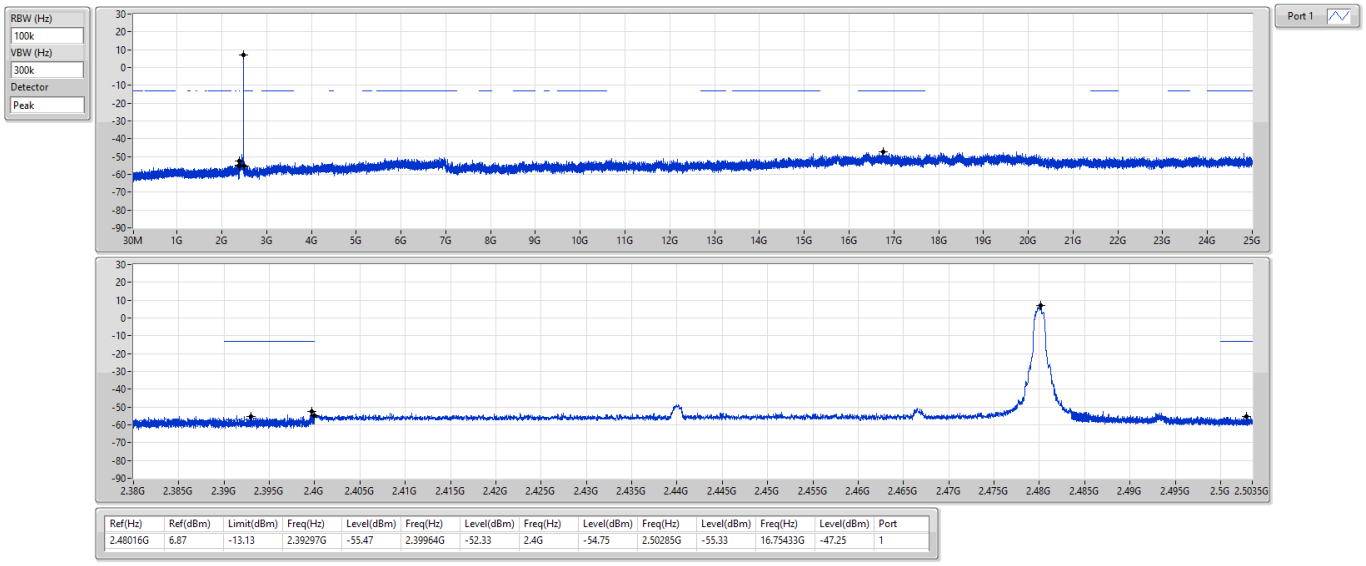
**2441MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.44116G | 7.28 | -12.72 | 2.39474G | -53.60 | 2.39834G | -54.43 | 2.4G | -55.95 | 2.50134G | -55.78 | 16.45625G | -46.93 | 1 |

**2.4-2.4835GHz_BT-EDR(3Mbps)** **CSENdB-FS**

**2480MHz**

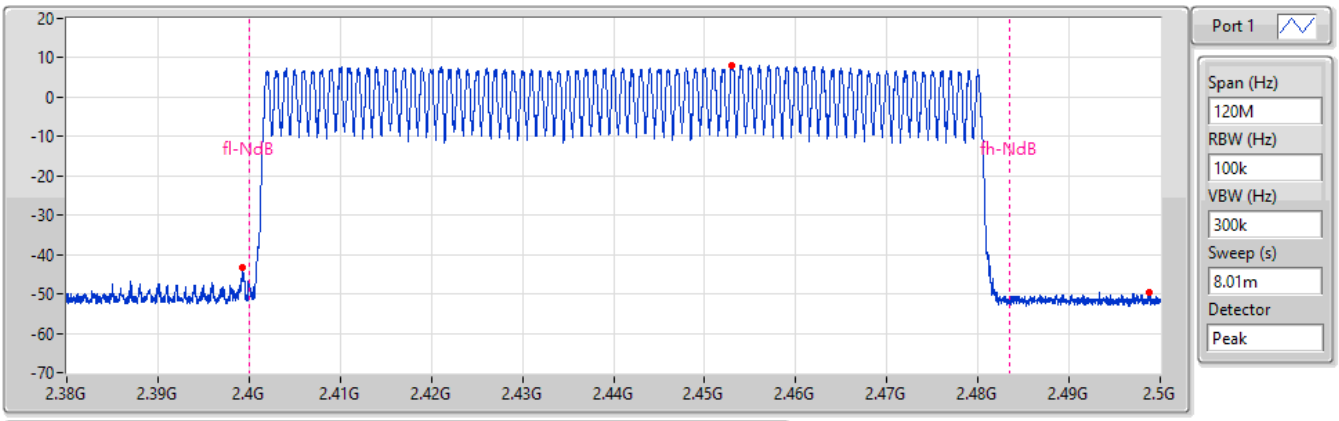



| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.48016G | 6.87 | -13.13 | 2.39297G | -55.47 | 2.39964G | -52.33 | 2.4G | -54.75 | 2.50285G | -55.33 | 16.75433G | -47.25 | 1 |

**2.4-2.4835GHz_BT-BR(1Mbps)**

**2402MHz**

**Hopping Ch Bandedge (Non-restricted Band)**

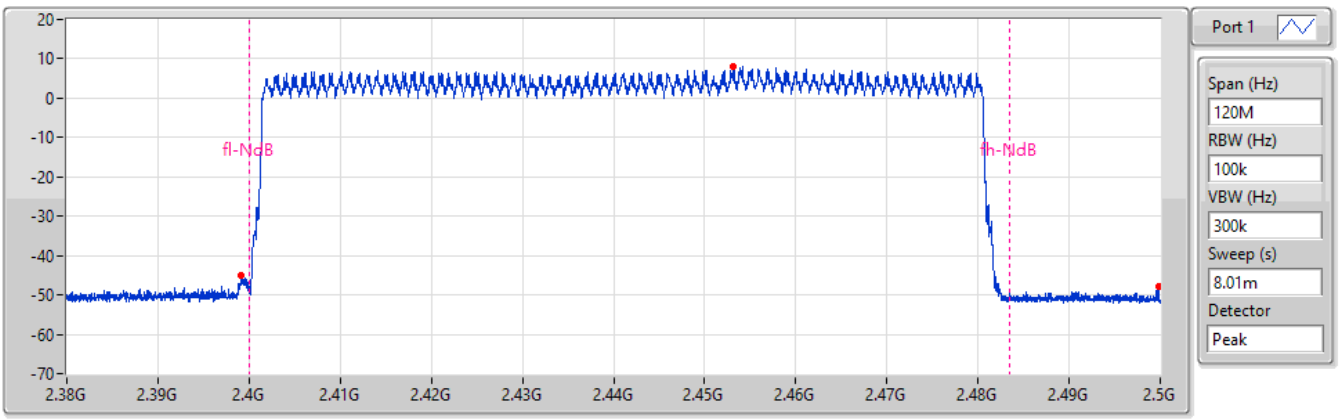



| Limit(dBm) | Ref(Hz) | Ref(dBm) | BE-l(Hz) | BE-l(dBm) | BE-h(Hz) | BE-h(dBm) |
|---|---|---|---|---|---|---|
| -11.79 | 2.453005G | 8.21 | 2.39929G | -43.16 | 2.498755G | -49.51 |

**2.4-2.4835GHz_BT-EDR(2Mbps)**

**2402MHz**

**Hopping Ch Bandedge (Non-restricted Band)**

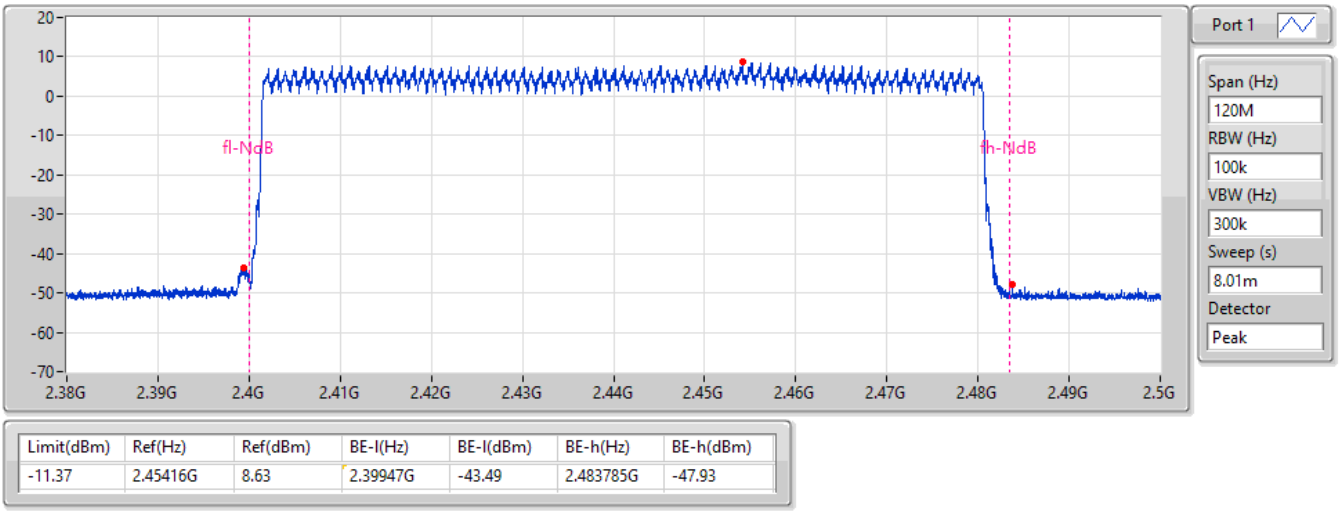



| Limit(dBm) | Ref(Hz) | Ref(dBm) | BE-l(Hz) | BE-l(dBm) | BE-h(Hz) | BE-h(dBm) |
|---|---|---|---|---|---|---|
| -11.99 | 2.45317G | 8.01 | 2.399185G | -45.12 | 2.49985G | -47.71 |

**2.4-2.4835GHz_BT-EDR(3Mbps)**

**2402MHz**

**Hopping Ch Bandedge (Non-restricted Band)**




| Limit(dBm) | Ref(Hz) | Ref(dBm) | BE-l(Hz) | BE-l(dBm) | BE-h(Hz) | BE-h(dBm) |
|---|---|---|---|---|---|---|
| -11.37 | 2.45416G | 8.63 | 2.39947G | -43.49 | 2.483785G | -47.93 |

**Summary**

| Mode | Total Power (dBm) | Total Power (W) |
|---|---|---|
| 2.4-2.4835GHz | - | - |
| BT-BR(1Mbps) | 8.79 | 0.00757 |
| BT-EDR(2Mbps) | 9.81 | 0.00957 |
| BT-EDR(3Mbps) | 10.77 | 0.01194 |

**Result**

| Mode | Result | Antenna Gain (dBi) | Total Power (dBm) | Power Limit (dBm) | EIRP (dBm) | EIRP Limit (dBm) |
|---|---|---|---|---|---|---|
| BT-BR(1Mbps) | - | - | - | - | - | - |
| 2402MHz | Pass | 0.21 | 8.42 | 21.00 | 8.63 | 27.00 |
| 2441MHz | Pass | 0.21 | 8.79 | 21.00 | 9.00 | 27.00 |
| 2480MHz | Pass | 0.21 | 8.03 | 21.00 | 8.24 | 27.00 |
| BT-EDR(2Mbps) | - | - | - | - | - | - |
| 2402MHz | Pass | 0.21 | 9.15 | 21.00 | 9.36 | 27.00 |
| 2441MHz | Pass | 0.21 | 9.81 | 21.00 | 10.02 | 27.00 |
| 2480MHz | Pass | 0.21 | 9.51 | 21.00 | 9.72 | 27.00 |
| BT-EDR(3Mbps) | - | - | - | - | - | - |
| 2402MHz | Pass | 0.21 | 10.28 | 21.00 | 10.49 | 27.00 |
| 2441MHz | Pass | 0.21 | 10.77 | 21.00 | 10.98 | 27.00 |
| 2480MHz | Pass | 0.21 | 10.16 | 21.00 | 10.37 | 27.00 |

DG = Directional Gain; Port X = Port X output power

**Summary**

| Mode | Total Power (dBm) | Total Power (W) |
|---|---|---|
| 2.4-2.4835GHz | - | - |
| BT-BR(1Mbps) | 8.03 | 0.00635 |
| BT-EDR(2Mbps) | 6.93 | 0.00493 |
| BT-EDR(3Mbps) | 7.49 | 0.00561 |

**Result**

| Mode | Result | Antenna Gain (dBi) | Total Power (dBm) | Power Limit (dBm) | EIRP (dBm) | EIRP Limit (dBm) |
|---|---|---|---|---|---|---|
| BT-BR(1Mbps) | - | - | - | - | - | - |
| 2402MHz | Pass | 0.21 | 7.72 | - | 7.93 | - |
| 2441MHz | Pass | 0.21 | 8.03 | - | 8.24 | - |
| 2480MHz | Pass | 0.21 | 7.30 | - | 7.51 | - |
| BT-EDR(2Mbps) | - | - | - | - | - | - |
| 2402MHz | Pass | 0.21 | 6.25 | - | 6.46 | - |
| 2441MHz | Pass | 0.21 | 6.93 | - | 7.14 | - |
| 2480MHz | Pass | 0.21 | 6.56 | - | 6.77 | - |
| BT-EDR(3Mbps) | - | - | - | - | - | - |
| 2402MHz | Pass | 0.21 | 7.05 | - | 7.26 | - |
| 2441MHz | Pass | 0.21 | 7.49 | - | 7.70 | - |
| 2480MHz | Pass | 0.21 | 6.91 | - | 7.12 | - |

Note: Average power is for reference only

**Summary**

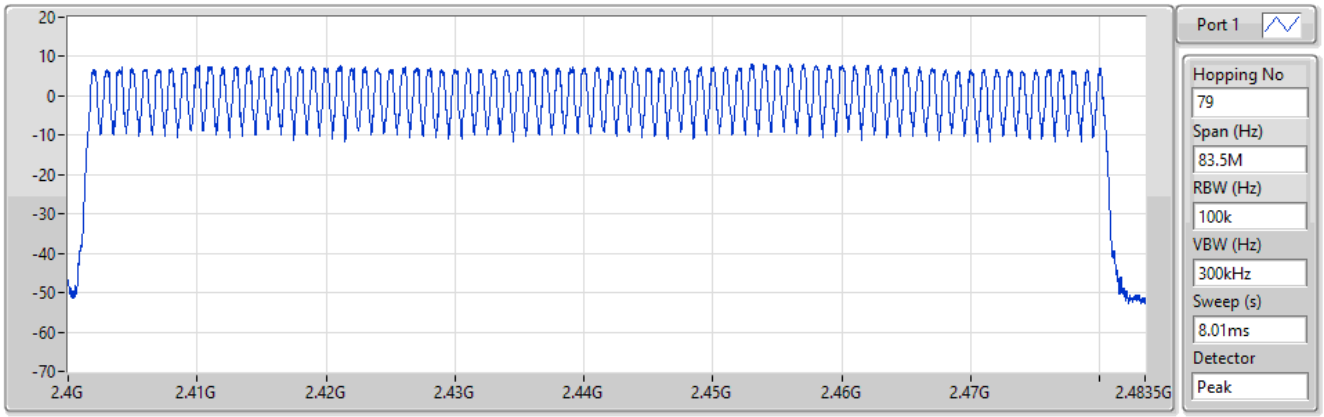
| Mode<br>2.4-2.4835GHz | Max-Hop No<br>- |
|---|---|
| BT-BR(1Mbps) | 79 |
| BT-EDR(2Mbps) | 79 |
| BT-EDR(3Mbps) | 79 |

**Result**

| Mode<br>BT-BR(1Mbps) | Result<br>- | Hopping No<br>- | Limit<br>- |
|---|---|---|---|
| 2402MHz | Pass | 79 | 15 |
| BT-EDR(2Mbps) | - | - | - |
| 2402MHz | Pass | 79 | 15 |
| BT-EDR(3Mbps) | - | - | - |
| 2402MHz | Pass | 79 | 15 |

**2.4-2.4835GHz_BT-BR(1Mbps)** **Hopping-FS**

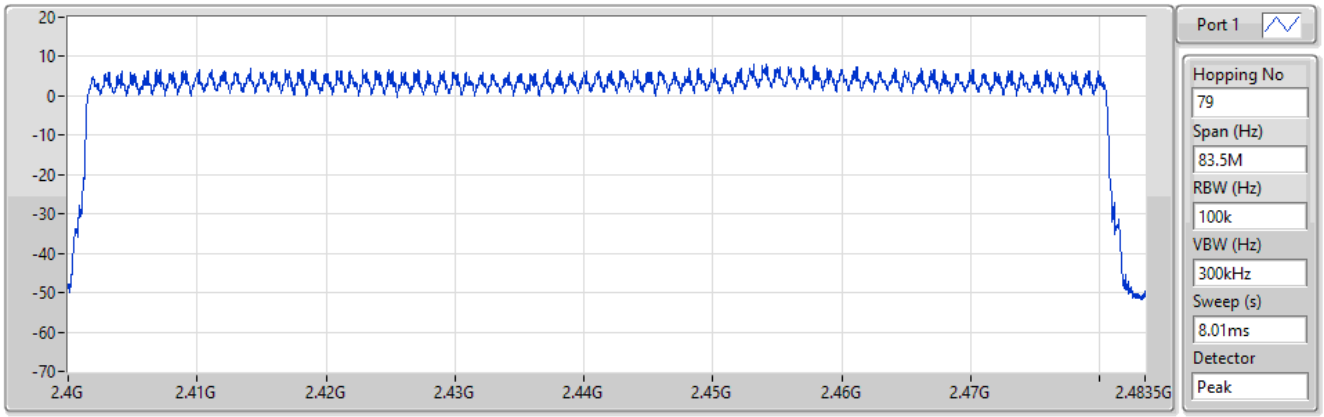
**2402MHz**




| Hopping No | Limit |
|---|---|
| 79 | 15 |

**2.4-2.4835GHz_BT-EDR(2Mbps)** **Hopping-FS**

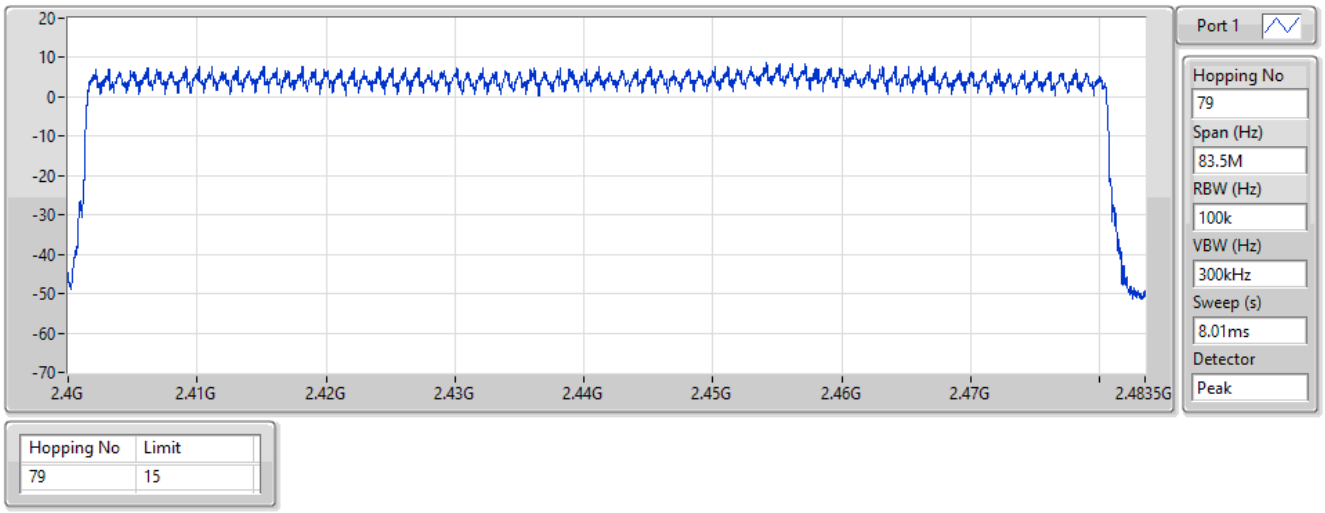
**2402MHz**




| Hopping No | Limit |
|---|---|
| 79 | 15 |

**2.4-2.4835GHz_BT-EDR(3Mbps)** **Hopping-FS**

**2402MHz**




| Hopping No | Limit |
|---|---|
| 79 | 15 |

**Summary**

| Mode | Max-N dB (Hz) | Max-OBW (Hz) | ITU-Code | Min-N dB (Hz) | Min-OBW (Hz) |
|---|---|---|---|---|---|
| 2.4-2.4835GHz | - | - | - | - | - |
| BT-BR(1Mbps) | 924k | 890.805k | 891KF1D | 921.25k | 873.313k |
| BT-EDR(2Mbps) | 1.315M | 1.184M | 1M18G1D | 1.315M | 1.181M |
| BT-EDR(3Mbps) | 1.29M | 1.193M | 1M19G1D | 1.287M | 1.192M |

Max-N dB = Maximum 20dB down bandwidth; Max-OBW = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 20dB down bandwidth; Min-OBW = Minimum 99% occupied bandwidth

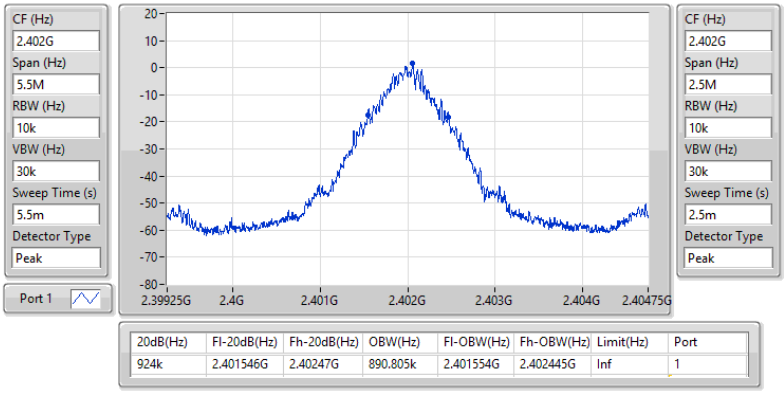
**Result**

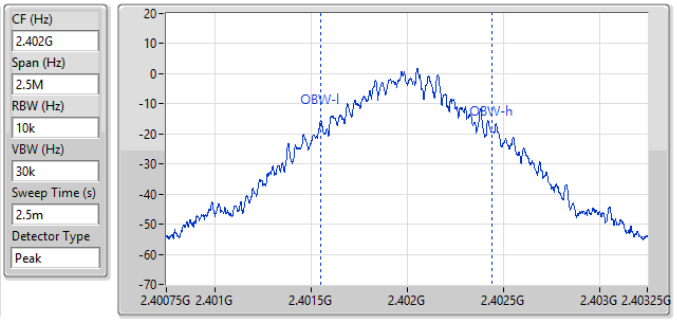
| Mode | Result | Limit (Hz) | Port 1-N dB (Hz) | Port 1-OBW (Hz) |
|---|---|---|---|---|
| BT-BR(1Mbps) | - | - | - | - |
| 2402MHz | Pass | Inf | 924k | 890.805k |
| 2441MHz | Pass | Inf | 921.25k | 878.311k |
| 2480MHz | Pass | Inf | 921.25k | 873.313k |
| BT-EDR(2Mbps) | - | - | - | - |
| 2402MHz | Pass | Inf | 1.315M | 1.184M |
| 2441MHz | Pass | Inf | 1.315M | 1.184M |
| 2480MHz | Pass | Inf | 1.315M | 1.181M |
| BT-EDR(3Mbps) | - | - | - | - |
| 2402MHz | Pass | Inf | 1.29M | 1.192M |
| 2441MHz | Pass | Inf | 1.287M | 1.192M |
| 2480MHz | Pass | Inf | 1.29M | 1.193M |

Port X-N dB = Port X 20dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

**2.4-2.4835GHz_BT-BR(1Mbps)** **EBW-FS**

**2402MHz**

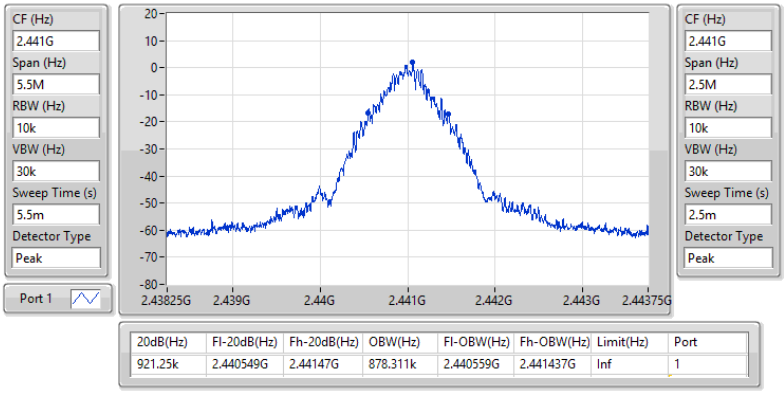


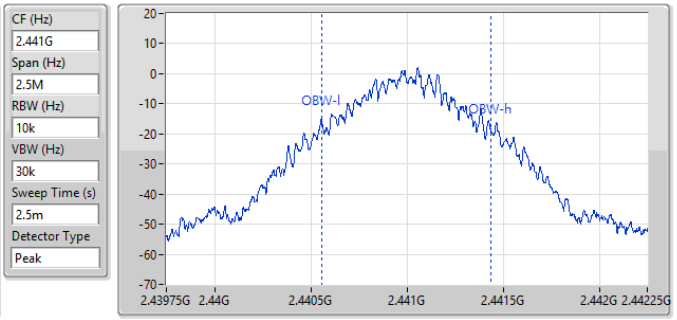




| 20dB(Hz) | Fl-20dB(Hz) | Fh-20dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 924k | 2.401546G | 2.40247G | 890.805k | 2.401554G | 2.402445G | Inf | 1 |

**2.4-2.4835GHz_BT-BR(1Mbps)** **EBW-FS**

**2441MHz**

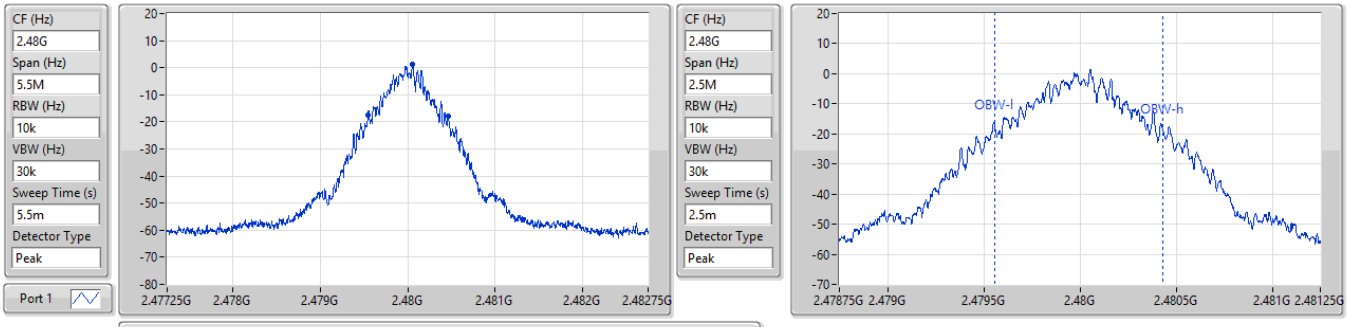



| 20dB(Hz) | Fl-20dB(Hz) | Fh-20dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 921.25k | 2.440549G | 2.44147G | 878.311k | 2.440559G | 2.441437G | Inf | 1 |

**2.4-2.4835GHz_BT-BR(1Mbps)** **EBW-FS**

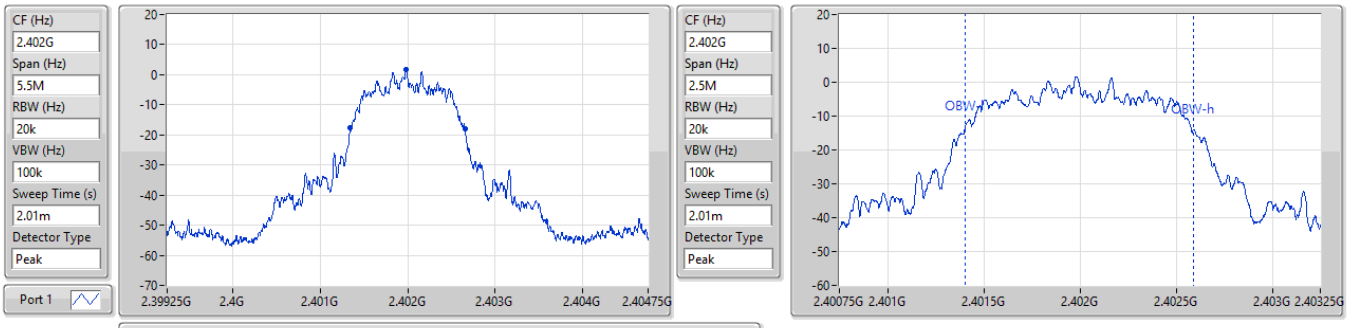
**2480MHz**




| 20dB(Hz) | Fl-20dB(Hz) | Fh-20dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 921.25k | 2.479546G | 2.480468G | 873.313k | 2.479558G | 2.480431G | Inf | 1 |

**2.4-2.4835GHz_BT-EDR(2Mbps)** **EBW-FS**

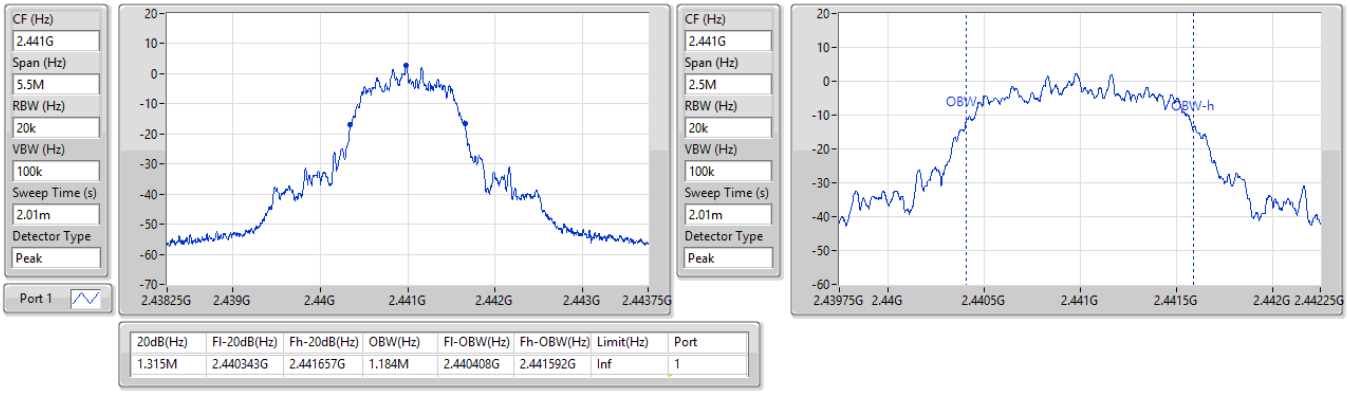
**2402MHz**




| 20dB(Hz) | Fl-20dB(Hz) | Fh-20dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 1.315M | 2.401343G | 2.402657G | 1.184M | 2.401405G | 2.40259G | Inf | 1 |

**2.4-2.4835GHz_BT-EDR(2Mbps)** **EBW-FS**

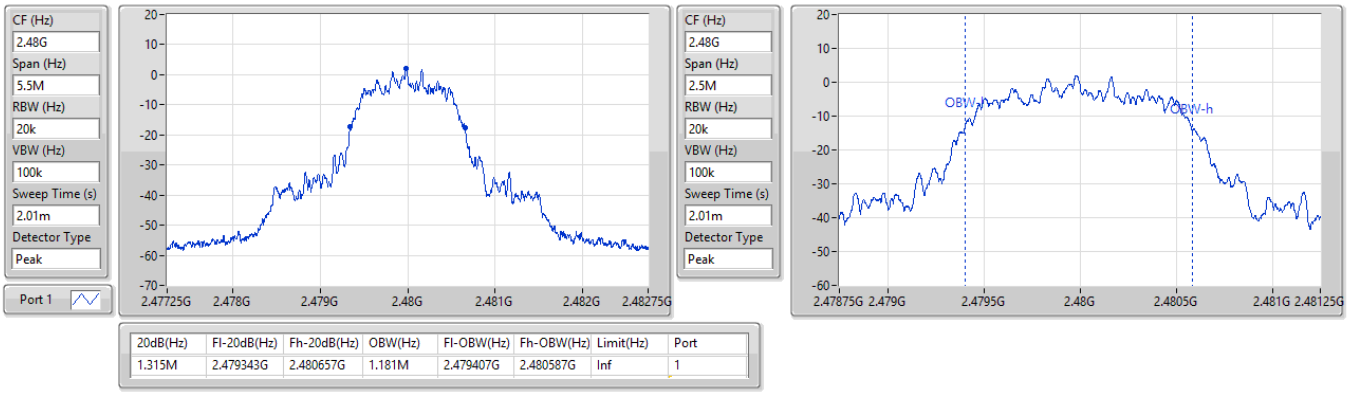
**2441MHz**




| 20dB(Hz) | Fl-20dB(Hz) | Fh-20dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 1.315M | 2.440343G | 2.441657G | 1.184M | 2.440408G | 2.441592G | Inf | 1 |

**2.4-2.4835GHz_BT-EDR(2Mbps)** **EBW-FS**

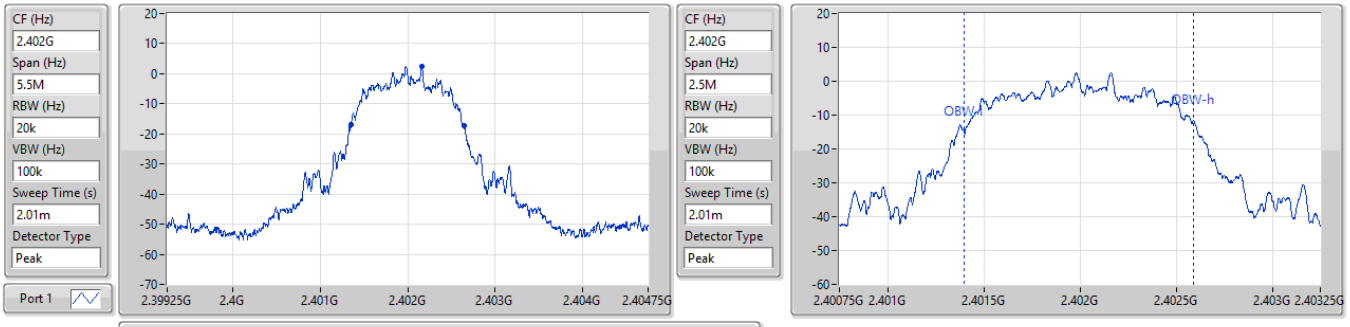
**2480MHz**




| 20dB(Hz) | Fl-20dB(Hz) | Fh-20dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 1.315M | 2.479343G | 2.480657G | 1.181M | 2.479407G | 2.480587G | Inf | 1 |

**2.4-2.4835GHz_BT-EDR(3Mbps)** **EBW-FS**

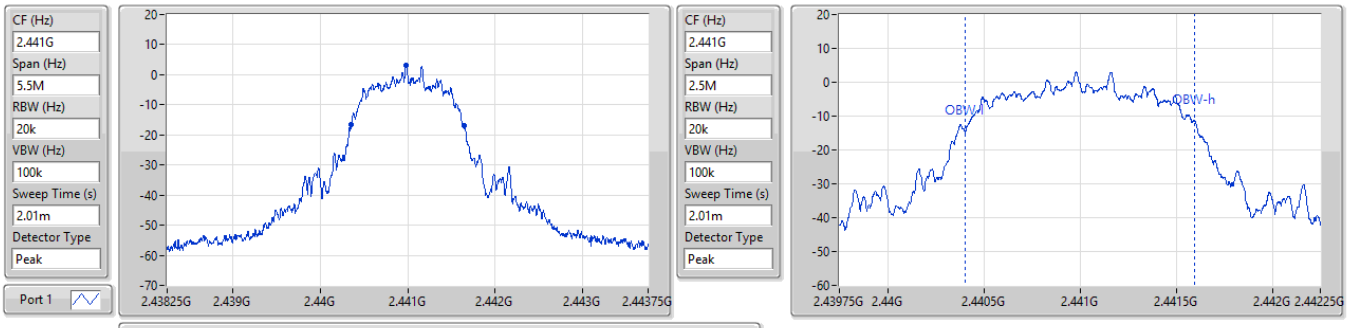
**2402MHz**




| 20dB(Hz) | Fl-20dB(Hz) | Fh-20dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 1.29M | 2.401351G | 2.402641G | 1.192M | 2.401399G | 2.402591G | Inf | 1 |

**2.4-2.4835GHz_BT-EDR(3Mbps)** **EBW-FS**

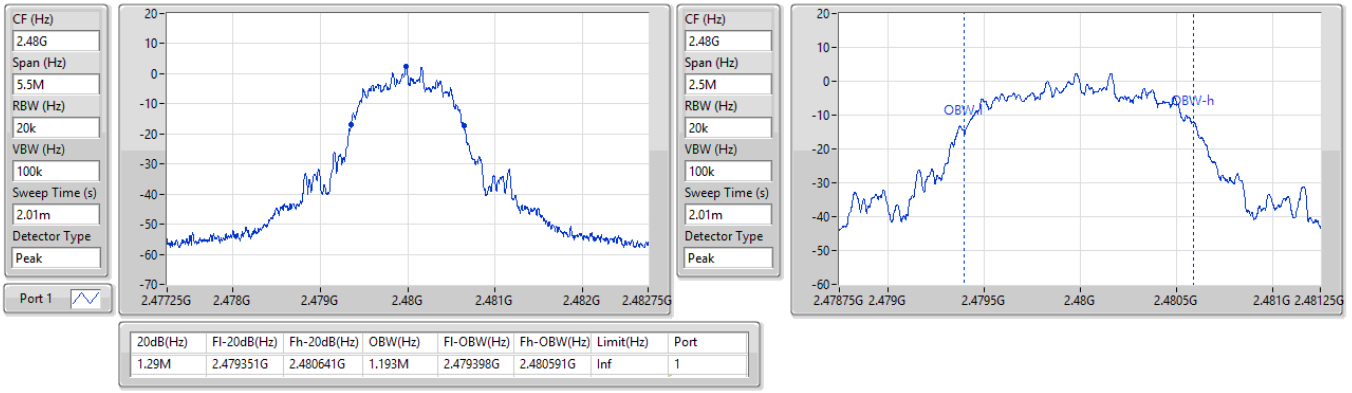
**2441MHz**




| 20dB(Hz) | Fl-20dB(Hz) | Fh-20dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 1.287M | 2.440354G | 2.441641G | 1.192M | 2.440402G | 2.441593G | Inf | 1 |

**2.4-2.4835GHz_BT-EDR(3Mbps)** **EBW-FS**

**2480MHz**




| 20dB(Hz) | Fl-20dB(Hz) | Fh-20dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 1.29M | 2.479351G | 2.480641G | 1.193M | 2.479398G | 2.480591G | Inf | 1 |

**Summary**

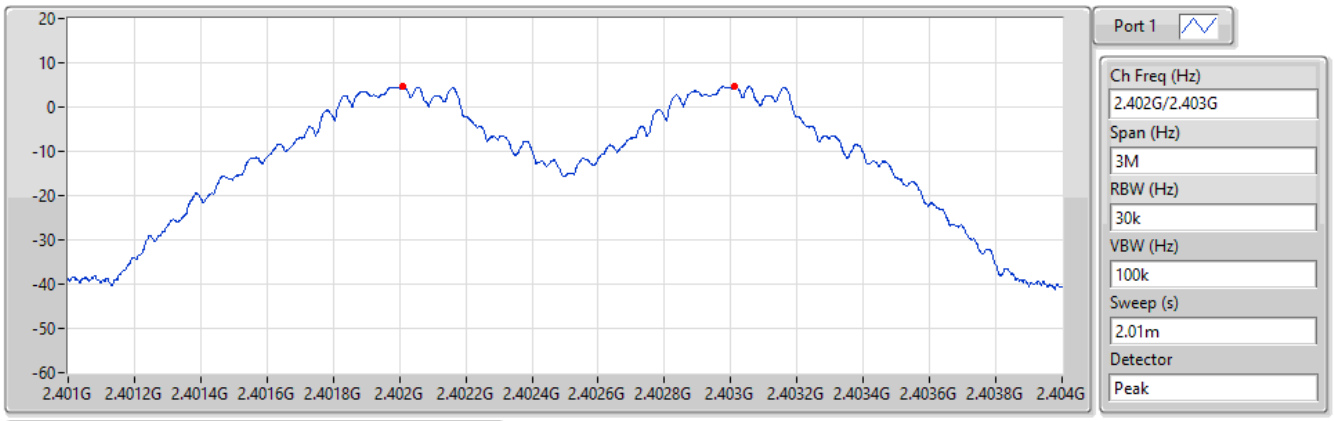
| Mode | Max-Space (Hz) | Min-Space (Hz) |
|---|---|---|
| 2.4-2.4835GHz | - | - |
| BT-BR(1Mbps) | 1.035M | 1.002M |
| BT-EDR(2Mbps) | 1.0005M | 1.0005M |
| BT-EDR(3Mbps) | 1.002M | 1.0005M |

**Result**

| Mode | Result | Fl (Hz) | Fh (Hz) | Ch.Space (Hz) | Limit (Hz) |
|---|---|---|---|---|---|
| BT-BR(1Mbps) | - | - | - | - | - |
| 2402MHz | Pass | 2.40201G | 2.403012G | 1.002M | 615.384k |
| 2441MHz | Pass | 2.440978G | 2.442013G | 1.035M | 613.5525k |
| 2480MHz | Pass | 2.479008G | 2.480012G | 1.0035M | 613.5525k |
| BT-EDR(2Mbps) | - | - | - | - | - |
| 2402MHz | Pass | 2.401987G | 2.402988G | 1.0005M | 875.79k |
| 2441MHz | Pass | 2.440986G | 2.441986G | 1.0005M | 875.79k |
| 2480MHz | Pass | 2.478987G | 2.479988G | 1.0005M | 875.79k |
| BT-EDR(3Mbps) | - | - | - | - | - |
| 2402MHz | Pass | 2.40216G | 2.403162G | 1.002M | 859.14k |
| 2441MHz | Pass | 2.44116G | 2.44216G | 1.0005M | 857.142k |
| 2480MHz | Pass | 2.479158G | 2.48016G | 1.002M | 859.14k |

**2.4-2.4835GHz_BT-BR(1Mbps)** **Channel Separation-FS**

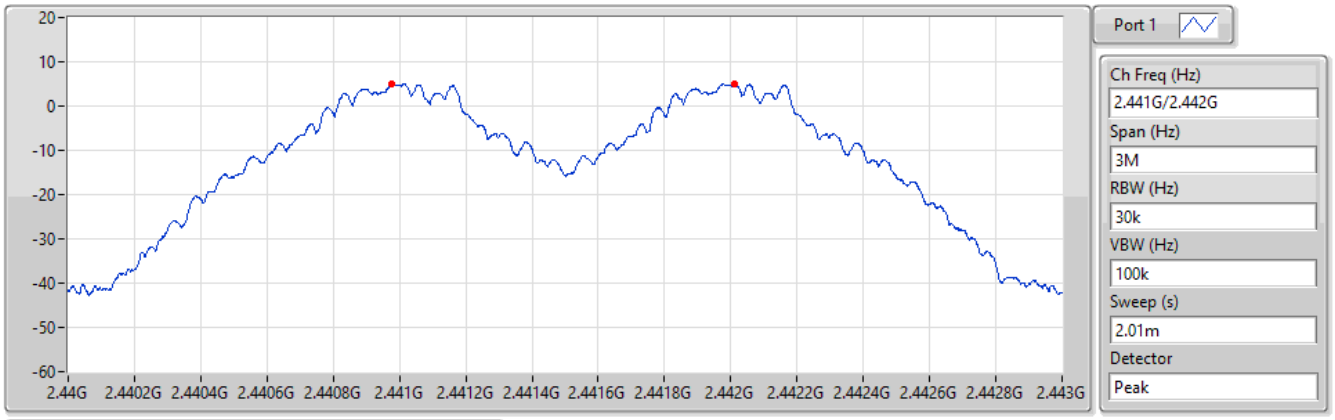
**2.402G/2.403GHz**




| Fl(Hz) | Fh(Hz) | Ch.Space(Hz) | Limit(Hz) |
|---|---|---|---|
| 2.40201G | 2.403012G | 1.002M | 615.384k |

**2.4-2.4835GHz_BT-BR(1Mbps)** **Channel Separation-FS**

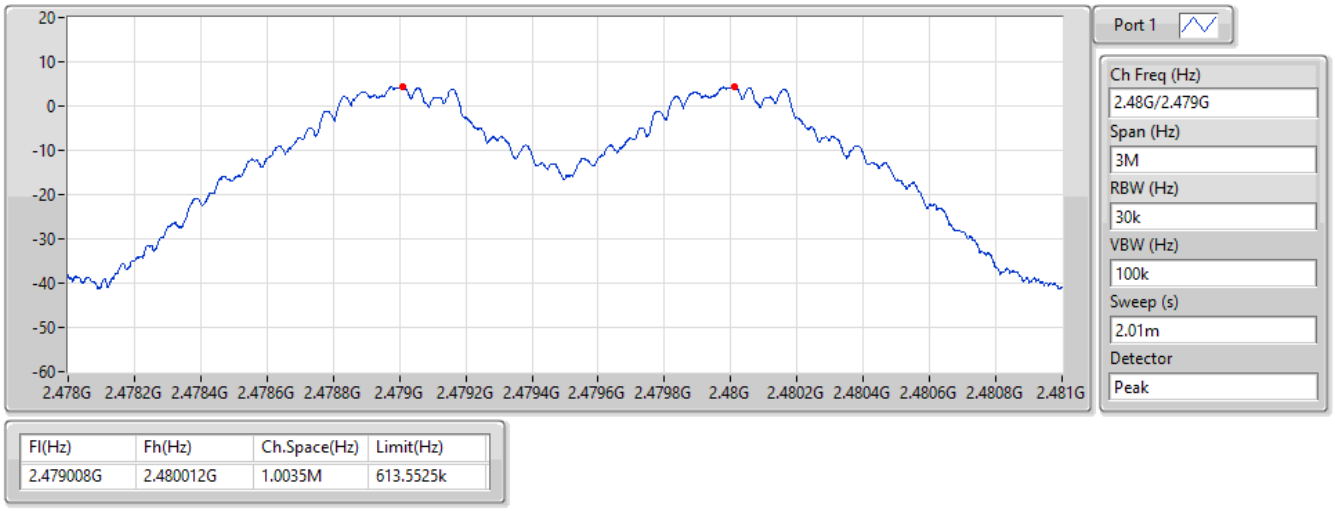
**2.441G/2.442GHz**




| Fl(Hz) | Fh(Hz) | Ch.Space(Hz) | Limit(Hz) |
|---|---|---|---|
| 2.440978G | 2.442013G | 1.035M | 613.5525k |

**2.4-2.4835GHz_BT-BR(1Mbps)** **Channel Separation-FS**

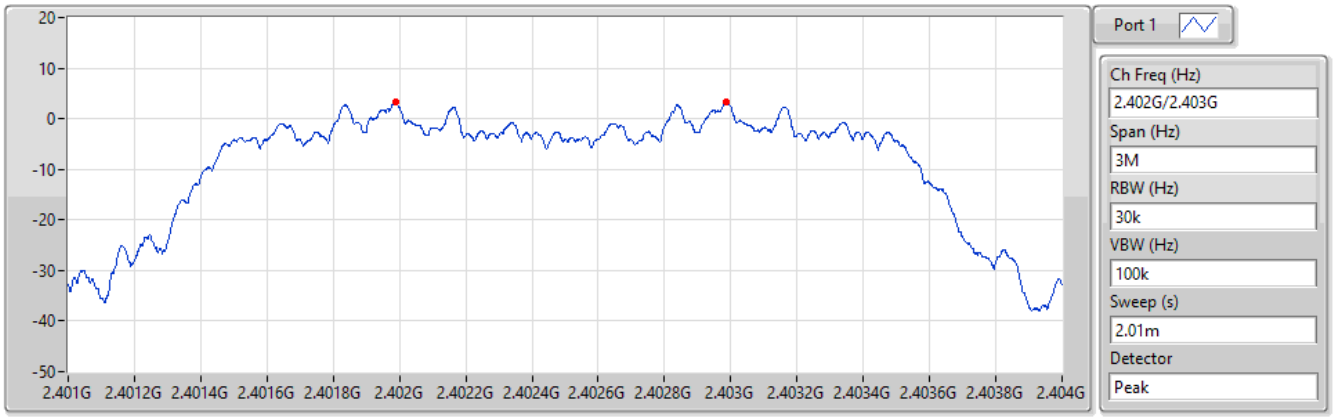
**2.48G/2.479GHz**




| Fl(Hz) | Fh(Hz) | Ch.Space(Hz) | Limit(Hz) |
|---|---|---|---|
| 2.479008G | 2.480012G | 1.0035M | 613.5525k |

**2.4-2.4835GHz_BT-EDR(2Mbps)** **Channel Separation-FS**

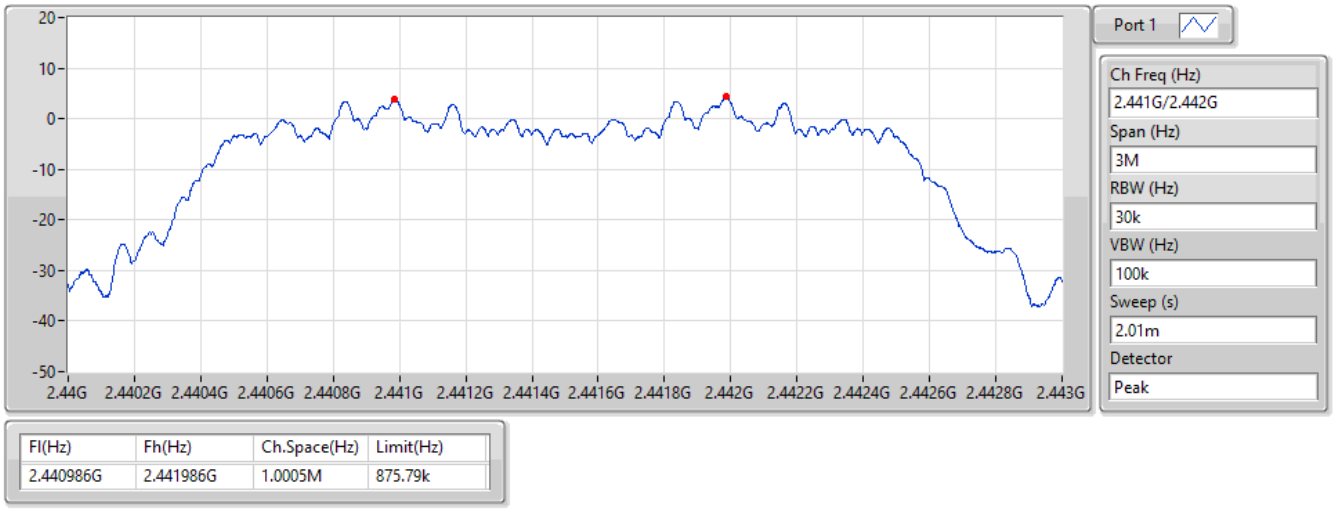
**2.402G/2.403GHz**




| Fl(Hz) | Fh(Hz) | Ch.Space(Hz) | Limit(Hz) |
|---|---|---|---|
| 2.401987G | 2.402988G | 1.0005M | 875.79k |

**2.4-2.4835GHz_BT-EDR(2Mbps)** **Channel Separation-FS**

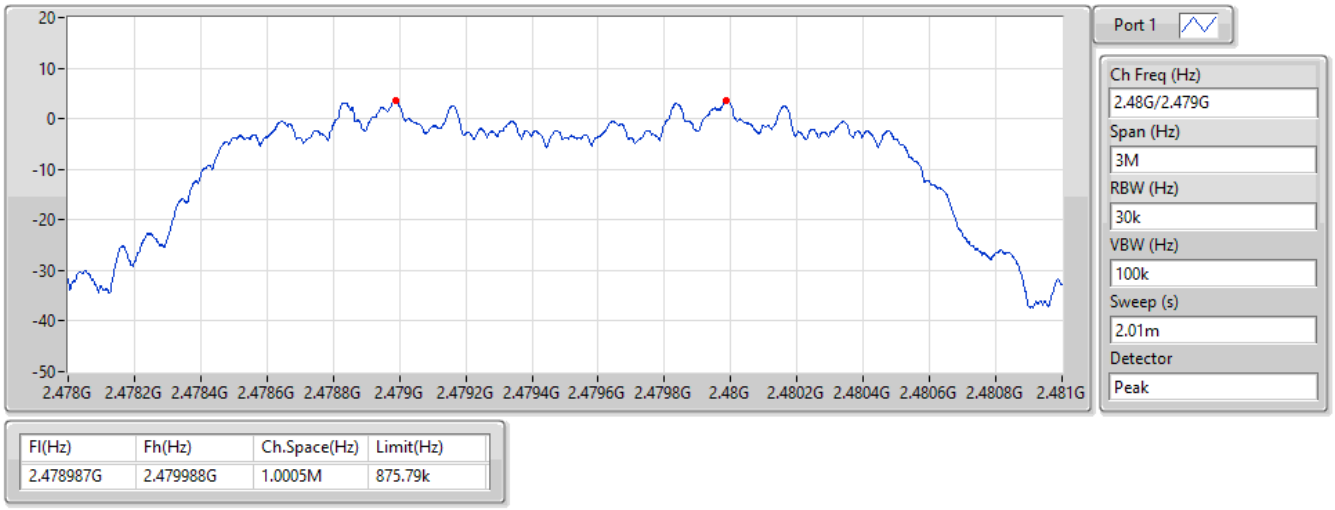
**2.441G/2.442GHz**




| Fl(Hz) | Fh(Hz) | Ch.Space(Hz) | Limit(Hz) |
|---|---|---|---|
| 2.440986G | 2.441986G | 1.0005M | 875.79k |

**2.4-2.4835GHz_BT-EDR(2Mbps)** **Channel Separation-FS**

**2.48G/2.479GHz**




| Fl(Hz) | Fh(Hz) | Ch.Space(Hz) | Limit(Hz) |
|---|---|---|---|
| 2.478987G | 2.479988G | 1.0005M | 875.79k |

**2.4-2.4835GHz_BT-EDR(3Mbps)** **Channel Separation-FS**

**2.402G/2.403GHz**


| Fl(Hz) | Fh(Hz) | Ch.Space(Hz) | Limit(Hz) |
|---|---|---|---|
| 2.40216G | 2.403162G | 1.002M | 859.14k |

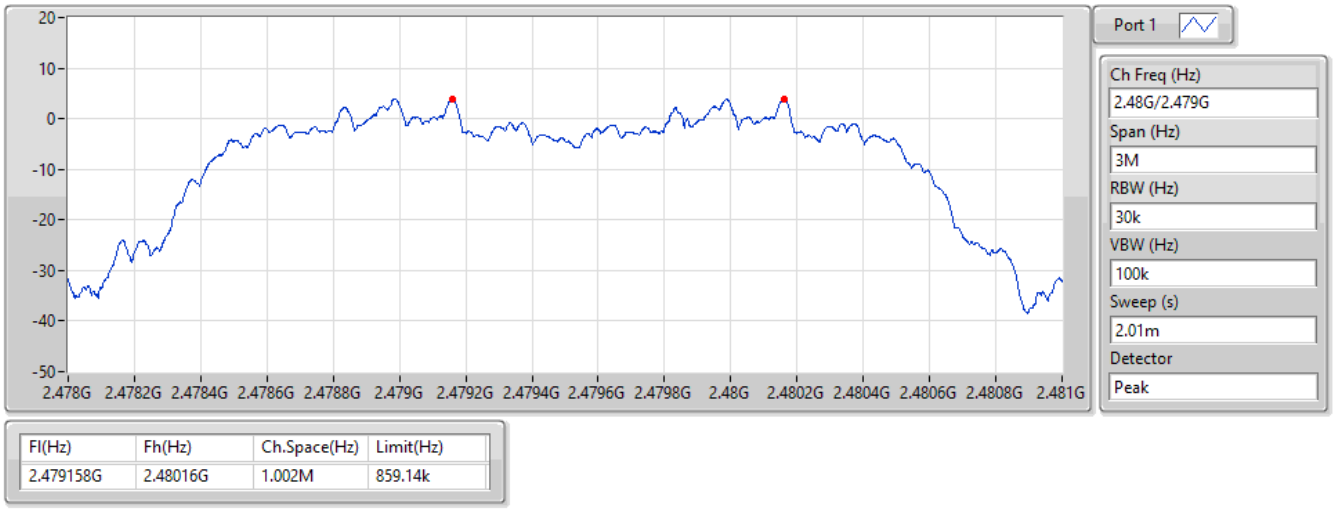
**2.4-2.4835GHz_BT-EDR(3Mbps)** **Channel Separation-FS**

**2.441G/2.442GHz**


| Fl(Hz) | Fh(Hz) | Ch.Space(Hz) | Limit(Hz) |
|---|---|---|---|
| 2.44116G | 2.44216G | 1.0005M | 857.142k |

**2.4-2.4835GHz_BT-EDR(3Mbps)** **Channel Separation-FS**

**2.48G/2.479GHz**




| Fl(Hz) | Fh(Hz) | Ch.Space(Hz) | Limit(Hz) |
|---|---|---|---|
| 2.479158G | 2.48016G | 1.002M | 859.14k |

**Summary**

| 2.4-2.4835GHz | - |
|---|---|
| BT-BR-AFH(1Mbps) | 287.875m_DH5-AFH |
| BT-BR-Non AFH(1Mbps) | 309.23918m_DH5 |
| BT-EDR-AFH(2Mbps) | 311.202m_DH5-AFH |
| BT-EDR-Non AFH(2Mbps) | 309.80324m_DH5 |
| BT-EDR-AFH(3Mbps) | 288.725m_DH5-AFH |
| BT-EDR-Non AFH(3Mbps) | 346.731m_DH5 |

**Result/ Non AFH mode**

| Mode | Result | Period (s) | Dwell (s) | Limit (s) | Tx On (ms) | Number of transmission in a 5 s |
|---|---|---|---|---|---|---|
| BT-BR-Non AFH(1Mbps) | - | - | - | - | - | - |
| 2402MHz_DH5 | PASS | 31.6 | 0.30924 | 0.4 | 2.87825 | 17 |
| BT-EDR-Non AFH(2Mbps) | - | - | - | - | - | - |
| 2402MHz_DH5 | PASS | 31.6 | 0.30980 | 0.4 | 2.88350 | 17 |
| BT-EDR-Non AFH(3Mbps) | - | - | - | - | - | - |
| 2402MHz_DH5 | PASS | 31.6 | 0.34673 | 0.4 | 2.88750 | 19 |

Note 1: Dwell time =Number of transmission in a 5 second x Tx On Time x 6.32

Note 2: DH5 was the worst mode.

**Result/ AFH mode**

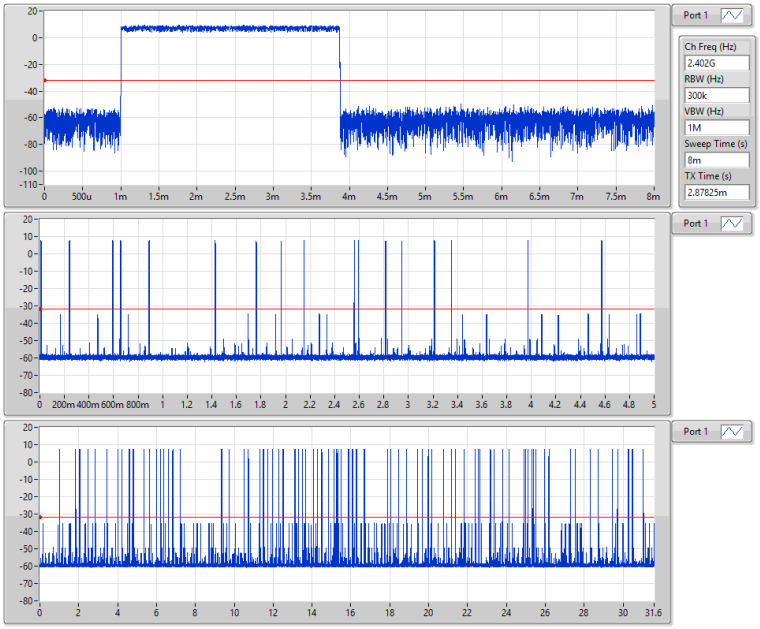
| Mode | Result | Period (s) | Dwell (s) | Limit (s) | Tx On (ms) | Number of transmission in a 2 s |
|---|---|---|---|---|---|---|
| BT-BR-AFH(1Mbps) | - | - | - | - | - | - |
| 2402MHz_DH5 | PASS | 8 | 0.28788 | 0.4 | 2.87875 | 25 |
| BT-EDR-AFH(2Mbps) | - | - | - | - | - | - |
| 2402MHz_DH5 | PASS | 8 | 0.31120 | 0.4 | 2.88150 | 27 |
| BT-EDR-AFH(3Mbps) | - | - | - | - | - | - |
| 2402MHz_DH5 | PASS | 8 | 0.28873 | 0.4 | 2.88725 | 25 |

Note 1: Dwell time =Number of transmission in a 2 second x Tx On Time x 4

Note 2: DH5 was the worst mode.

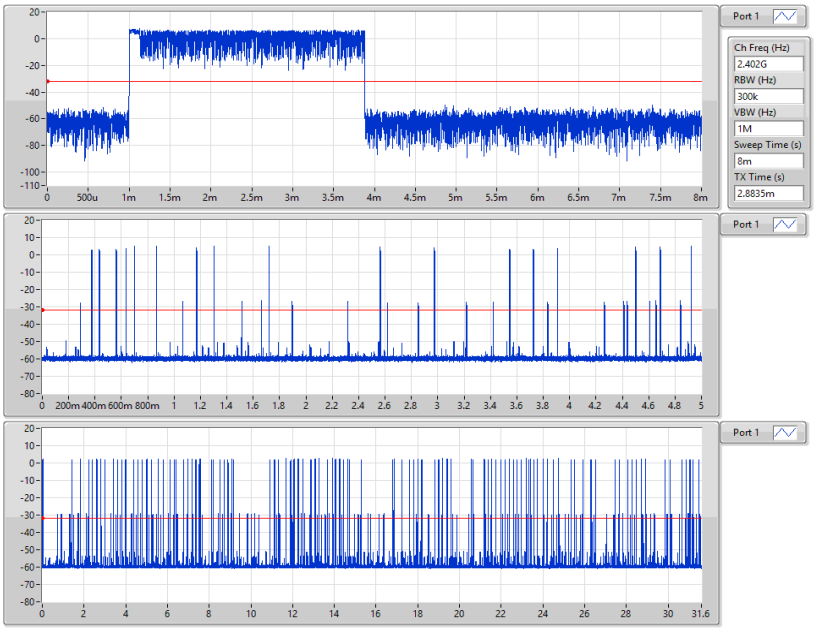
**2.4-2.4835GHz_BT-BR-Non AFH(1Mbps)** **Dwell-FS**

**2402MHz**




**2.4-2.4835GHz_BT-EDR-Non AFH(2Mbps)** **Dwell-FS**

**2402MHz**

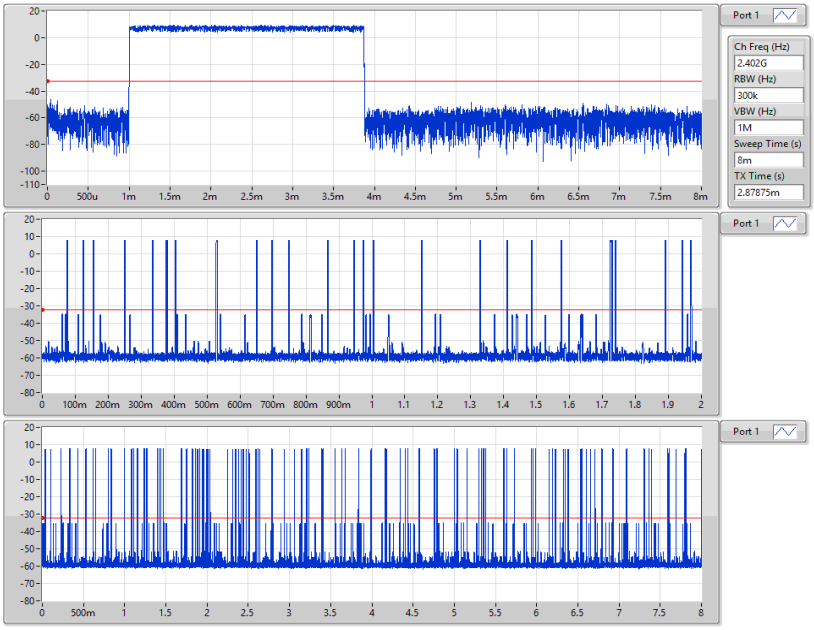


**2.4-2.4835GHz_BT-EDR-Non AFH(3Mbps)** **Dwell-FS**

**2402MHz**

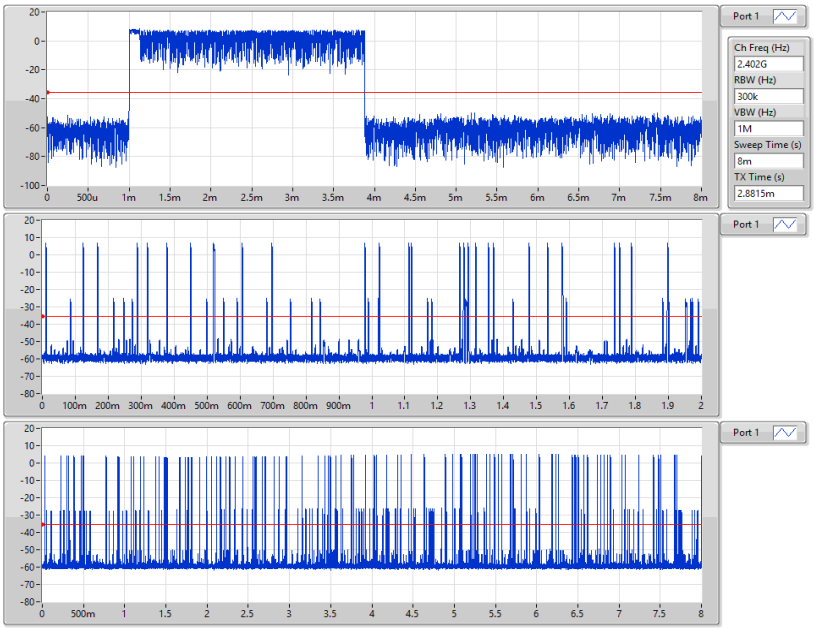

**2.4-2.4835GHz_BT-BR-AFH(1Mbps)** **Dwell-FS**

**2402MHz**



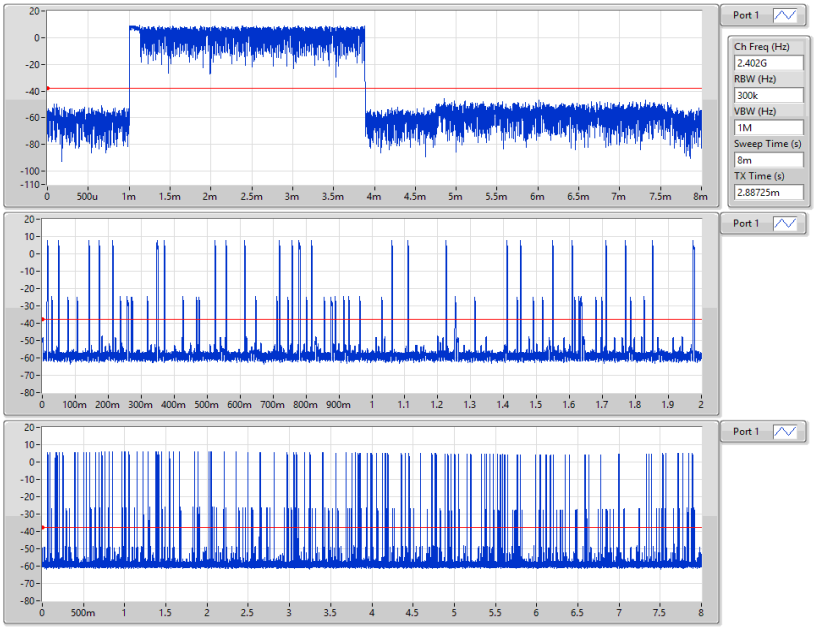
**2.4-2.4835GHz_BT-EDR-AFH(2Mbps)** **Dwell-FS**

**2402MHz**



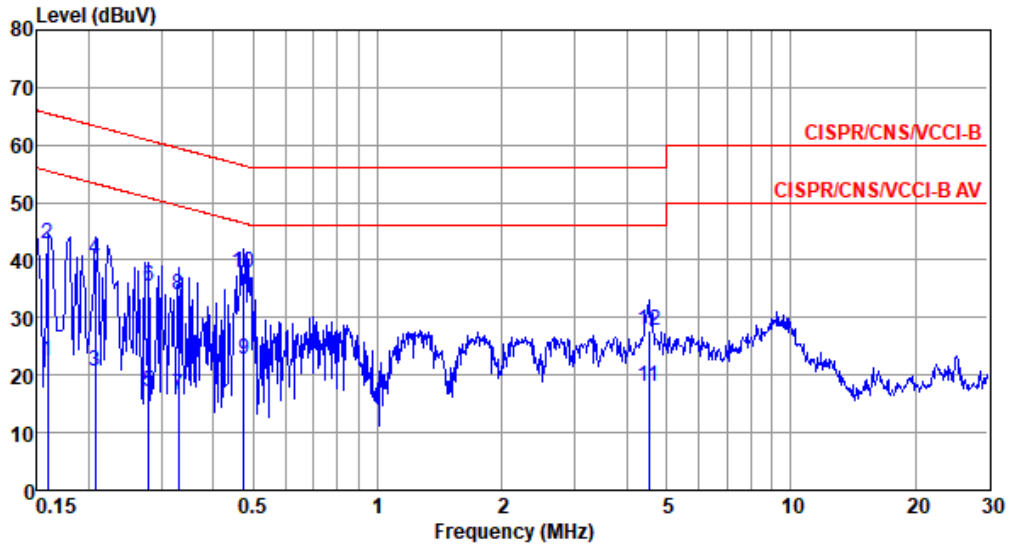

**2.4-2.4835GHz_BT-EDR-AFH(3Mbps)** **Dwell-FS**

**2402MHz**



| | |
|---|---|
| **Modulation Mode** | Charging Mode |
| **Power Phase** | Line |

Test by : Joe Liao_AN Temperature: 25°C Humidity: 64%

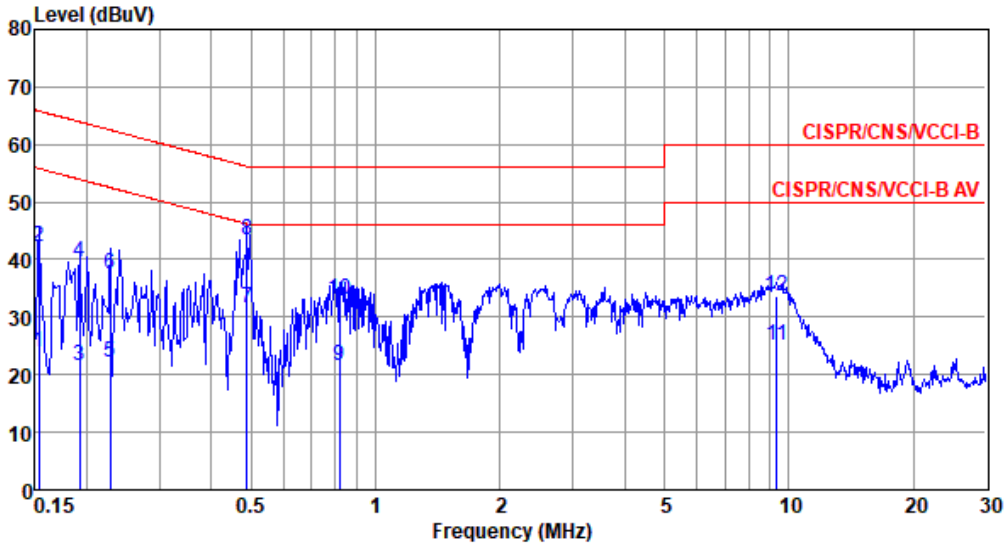



| | Freq | Level | Limit Line | Over Limit | Read Level | Factor | Cable loss | Aux | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dBuV | dB | dBuV | dB | dB | dB | |
| 1 | 0.159 | 22.55 | 55.52 | -32.97 | 12.69 | 9.65 | 0.08 | 0.13 | Average |
| 2 | 0.159 | 42.69 | 65.52 | -22.83 | 32.83 | 9.65 | 0.08 | 0.13 | QP |
| 3 | 0.207 | 20.68 | 53.32 | -32.64 | 10.80 | 9.65 | 0.06 | 0.17 | Average |
| 4 | 0.207 | 40.18 | 63.32 | -23.14 | 30.30 | 9.65 | 0.06 | 0.17 | QP |
| 5 | 0.279 | 17.09 | 50.85 | -33.76 | 7.16 | 9.65 | 0.07 | 0.21 | Average |
| 6 | 0.279 | 35.42 | 60.85 | -25.43 | 25.49 | 9.65 | 0.07 | 0.21 | QP |
| 7 | 0.330 | 16.44 | 49.44 | -33.00 | 6.50 | 9.64 | 0.07 | 0.23 | Average |
| 8 | 0.330 | 34.07 | 59.44 | -25.37 | 24.13 | 9.64 | 0.07 | 0.23 | QP |
| 9 | 0.474 | 22.82 | 46.45 | -23.63 | 12.84 | 9.64 | 0.08 | 0.26 | Average |
| 10* | 0.474 | 37.74 | 56.45 | -18.71 | 27.76 | 9.64 | 0.08 | 0.26 | QP |
| 11 | 4.525 | 18.02 | 46.00 | -27.98 | 7.74 | 9.68 | 0.20 | 0.40 | Average |
| 12 | 4.525 | 27.70 | 56.00 | -28.30 | 17.42 | 9.68 | 0.20 | 0.40 | QP |

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

| | |
|---|---|
| **Modulation Mode** | Charging Mode |
| **Power Phase** | Neutral |

Test by : Joe Liao_AN Temperature: 25°C Humidity: 64%




| | Freq | Level | Limit Line | Over Limit | Read Level | Factor | Cable loss | Aux | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dBuV | dB | dBuV | dB | dB | dB | |
| 1 | 0.153 | 23.82 | 55.82 | -32.00 | 13.96 | 9.66 | 0.08 | 0.12 | Average |
| 2 | 0.153 | 42.15 | 65.82 | -23.67 | 32.29 | 9.66 | 0.08 | 0.12 | QP |
| 3 | 0.192 | 21.58 | 53.93 | -32.35 | 11.71 | 9.65 | 0.06 | 0.16 | Average |
| 4 | 0.192 | 39.45 | 63.93 | -24.48 | 29.58 | 9.65 | 0.06 | 0.16 | QP |
| 5 | 0.228 | 22.20 | 52.52 | -30.32 | 12.31 | 9.65 | 0.06 | 0.18 | Average |
| 6 | 0.228 | 37.49 | 62.52 | -25.03 | 27.60 | 9.65 | 0.06 | 0.18 | QP |
| 7 | 0.489 | 31.54 | 46.19 | -14.65 | 21.56 | 9.64 | 0.08 | 0.26 | Average |
| 8* | 0.489 | 43.54 | 56.19 | -12.65 | 33.56 | 9.64 | 0.08 | 0.26 | QP |
| 9 | 0.817 | 21.57 | 46.00 | -24.43 | 11.54 | 9.65 | 0.09 | 0.29 | Average |
| 10 | 0.817 | 33.16 | 56.00 | -22.84 | 23.13 | 9.65 | 0.09 | 0.29 | QP |
| 11 | 9.352 | 25.03 | 50.00 | -24.97 | 14.53 | 9.74 | 0.34 | 0.42 | Average |
| 12 | 9.352 | 33.70 | 60.00 | -26.30 | 23.20 | 9.74 | 0.34 | 0.42 | QP |

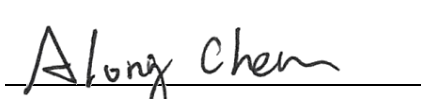
Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

# FCC Test Report

| | | |
|---|---|---|
| **FCC ID** | : | **IPH-04951** |
| **Equipment** | : | **Fitness Product** |
| **Model No.** | : | **A04951** |
| **Brand Name** | : | **GARMIN** |
| **Applicant** | : | **Garmin International, Inc.** |
| **Address** | : | **1200 E. 151st Street Olathe, KS 66062 United States** |
| **Standard** | : | **47 CFR FCC Part 15.247** |
| **Received Date** | : | **Aug. 27, 2024** |
| **Tested Date** | : | **Aug. 29 ~ Sep. 05, 2024** |

**We, International Certification Corporation, would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It shall not be reproduced except in full without the written approval of our laboratory.**

**Reviewed by:** **Approved by:**



**Along Chen / Assistant Manager**

**Gary Chang / Manager**

# Table of Contents

# Release Record

| Report No. | Version | Description | Issued Date |
|---|---|---|---|
| FR450901AE | Rev. 01 | Initial issue | Oct. 25, 2024 |

# Summary of Test Results

| FCC Rules | Test Items | Measured | Result |
|---|---|---|---|
| 15.207 | AC Power Line Conducted Emissions | [dBuV]: 0.489MHz<br>43.54 (Margin -12.65dB) - QP | Pass |
| 15.247(d)<br>15.209 | Unwanted Emissions | [dBuV/m at 3m]: 2.4835GHz<br>44.83 (Margin -9.17dB) - AV | Pass |
| 15.247(b)(3) | Conducted Output Power | Power [dBm]: 4.62 | Pass |
| 15.247(a)(2) | 6dB Bandwidth | Meet the requirement of limit | Pass |
| 15.247(e) | Power Spectral Density | Meet the requirement of limit | Pass |
| 15.203 | Antenna Requirement | Meet the requirement of limit | Pass |

| **Declaration of Conformity:** |
|---|
| The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. |
| **Comments and Explanations:** |
| The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification. |

# 1 General Description

## 1.1 Information

### 1.1.1 Specification of the Equipment under Test (EUT)

| RF General Information | | | | |
|---|---|---|---|---|
| **Frequency Range (MHz)** | **Bluetooth Mode** | **Ch. Freq. (MHz)** | **Channel Number** | **Data Rate** |
| 2400-2483.5 | LE | 2402-2480 | 40 | 1 Mbps |
| | | 2404-2478 | 37 | 2 Mbps |
| Note: Bluetooth LE (Low energy) uses GFSK modulation. | | | | |

### 1.1.2 Antenna Details

| Ant. No. | Brand | Model | Type | Connector | Gain (dBi) |
|---|---|---|---|---|---|
| 1 | Garmin | 117-02243-2X | Slot | No | 0.21 |

### 1.1.3 Power Supply Type of Equipment under Test (EUT)

| | |
|---|---|
| **Power Type** | 5Vdc from host<br>3.87Vdc from battery |

### 1.1.4 Accessories

| Accessories | | |
|---|---|---|
| **No.** | **Equipment** | **Description** |
| 1 | Battery | Brand: Garmin<br>Model: 361-00162-00<br>Rating: 3.87V, 220mAh |
| 2 | USB cable | Brand: GARMIN<br>Model: 320-01602-00<br>0.56m shielded without core |

### 1.1.5 Channel List

| Frequency band (MHz) | | | | 2402-2480 / BT-LE(1Mbps) | | | |
|---|---|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 37 | 2402 | 9 | 2422 | 18 | 2442 | 28 | 2462 |
| 0 | 2404 | 10 | 2424 | 19 | 2444 | 29 | 2464 |
| 1 | 2406 | 38 | 2426 | 20 | 2446 | 30 | 2466 |
| 2 | 2408 | 11 | 2428 | 21 | 2448 | 31 | 2468 |
| 3 | 2410 | 12 | 2430 | 22 | 2450 | 32 | 2470 |
| 4 | 2412 | 13 | 2432 | 23 | 2452 | 33 | 2472 |
| 5 | 2414 | 14 | 2434 | 24 | 2454 | 34 | 2474 |
| 6 | 2416 | 15 | 2436 | 25 | 2456 | 35 | 2476 |
| 7 | 2418 | 16 | 2438 | 26 | 2458 | 36 | 2478 |
| 8 | 2420 | 17 | 2440 | 27 | 2460 | 39 | 2480 |

| Frequency band (MHz) | | | | 2404-2478 / BT-LE(2Mbps) | | | |
|---|---|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 0 | 2404 | 10 | 2424 | 20 | 2446 | 30 | 2466 |
| 1 | 2406 | 11 | 2428 | 21 | 2448 | 31 | 2468 |
| 2 | 2408 | 12 | 2430 | 22 | 2450 | 32 | 2470 |
| 3 | 2410 | 13 | 2432 | 23 | 2452 | 33 | 2472 |
| 4 | 2412 | 14 | 2434 | 24 | 2454 | 34 | 2474 |
| 5 | 2414 | 15 | 2436 | 25 | 2456 | 35 | 2476 |
| 6 | 2416 | 16 | 2438 | 26 | 2458 | 36 | 2478 |
| 7 | 2418 | 17 | 2440 | 27 | 2460 | -- | -- |
| 8 | 2420 | 18 | 2442 | 28 | 2462 | -- | -- |
| 9 | 2422 | 19 | 2444 | 29 | 2464 | -- | -- |

### 1.1.6 Test Tool and Duty Cycle

| Test Tool | BLE Test, Version: 28.17 | |
|---|---|---|
| Modulation Mode | Duty Cycle Of Test Signal (%) | Duty Factor (dB) |
| BT-LE(1Mbps) | 100.00% | 0.00 |
| BT-LE(2Mbps) | 100.00% | 0.00 |

### 1.1.7 Power Index of Test Tool

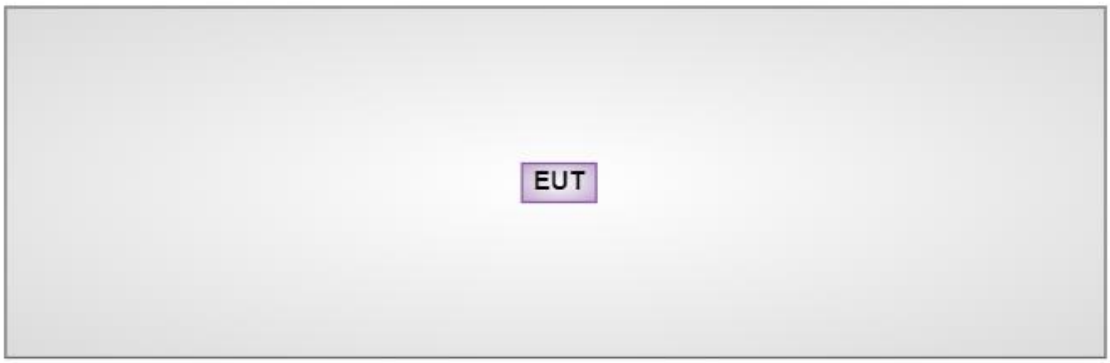
| Modulation Mode | Test Frequency (MHz) | | |
|---|---|---|---|
| | 2402 | 2440 | 2480 |
| BT-LE(1Mbps) | default | default | default |

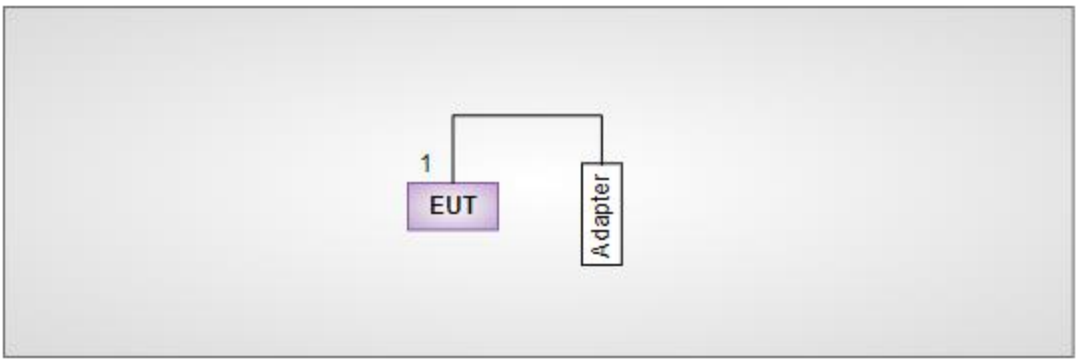
| Modulation Mode | Test Frequency (MHz) | | |
|---|---|---|---|
| | 2404 | 2440 | 2478 |
| BT-LE(2Mbps) | default | default | default |

## 1.2 Local Support Equipment List

| Support Equipment List | | | | | |
|---|---|---|---|---|---|
| **No.** | **Equipment** | **Brand** | **Model** | **FCC ID** | **Remarks** |
| 1 | Adapter | Samsung | TA-800 | --- | --- |

## 1.3 Test Setup Chart

| Test Setup Diagram (Battery Mode) |
|---|
|   |

| Test Setup Diagram (Charging Mode) | |
|---|---|
|   | |
| **No.** | **Signal cable / Length (m)** |
| 1 | USB, 0.56m shielded. |

## 1.4 Test Equipment List and Calibration Data

| Test Item | Conducted Emission | | | | |
|---|---|---|---|---|---|
| **Test Site** | Conduction room 1 / (CO01-WS) | | | | |
| **Tested Date** | Sep. 05, 2024 | | | | |
| **Instrument** | **Brand** | **Model No.** | **Serial No.** | **Calibration Date** | **Calibration Until** |
| Receiver | R&S | ESR3 | 101658 | Feb. 23, 2024 | Feb. 22, 2025 |
| LISN | R&S | ENV216 | 101579 | May 09, 2024 | May 08, 2025 |
| LISN (Support Unit) | SCHWARZBECK | Schwarzbeck 8127 | 8127667 | Jan. 10, 2024 | Jan. 09, 2025 |
| RF Cable-CON | Woken | CFD200-NL | CFD200-NL-001 | Oct. 11, 2023 | Oct. 10, 2024 |
| 50 ohm terminal | NA | 50 | 01 | Jun. 19, 2024 | Jun. 18, 2025 |
| Measurement Software | AUDIX | e3 | 6.120210k | NA | NA |
| Note: Calibration Interval of instruments listed above is one year. | | | | | |

| Test Item | Radiated Emission | | | | |
|---|---|---|---|---|---|
| **Test Site** | 966 chamber1 / (03CH01-WS) | | | | |
| **Tested Date** | Aug. 29 ~ Sep. 02, 2024 | | | | |
| **Instrument** | **Brand** | **Model No.** | **Serial No.** | **Calibration Date** | **Calibration Until** |
| Receiver | R&S | ESR3 | 101657 | Mar. 05, 2024 | Mar. 04, 2025 |
| Spectrum Analyzer | R&S | FSV40 | 101498 | Nov. 23, 2023 | Nov. 22, 2024 |
| Loop Antenna | R&S | HFH2-Z2 | 100330 | Oct. 31, 2023 | Oct. 30, 2024 |
| Bilog Antenna | SCHWARZBECK | VULB9168 | VULB9168-522 | Aug. 09, 2024 | Aug. 08, 2025 |
| Horn Antenna 1G-18G | SCHWARZBECK | BBHA 9120 D | BBHA 9120 D 1096 | Nov. 27, 2023 | Nov. 26, 2024 |
| Horn Antenna 18G-40G | SCHWARZBECK | BBHA 9170 | BBHA 9170517 | Oct. 30, 2023 | Oct. 29, 2024 |
| Preamplifier | EMC | EMC02325 | 980225 | Jun. 17, 2024 | Jun. 16, 2025 |
| Preamplifier | EMC | EMC118A45SE | 980898 | Jul. 05, 2024 | Jul. 04, 2025 |
| Preamplifier | EMC | EMC184045SE | 980903 | Jul. 30, 2024 | Jul. 29, 2025 |
| Loop Antenna Cable | KOAX KABEL | 101354-BW | 101354-BW | Oct. 03, 2023 | Oct. 02, 2024 |
| LF cable 3M | Woken | CFD400NL-LW | CFD400NL-001 | Oct. 03, 2023 | Oct. 02, 2024 |
| LF cable 11M | EMC | EMCCFD400-NW-NW-11000 | 200801 | Oct. 03, 2023 | Oct. 02, 2024 |
| LF cable 1M | EMC | EMCCFD400-NM-NM-1000 | 160502 | Oct. 03, 2023 | Oct. 02, 2024 |
| RF Cable | EMC | EMC104-35M-35M-8000 | 210920 | Oct. 03, 2023 | Oct. 02, 2024 |
| RF Cable | EMC | EMC104-35M-35M-3000 | 210922 | Oct. 03, 2023 | Oct. 02, 2024 |
| Attenuator | Pasternack | PE7005-10 | 10-1 | Oct. 05, 2023 | Oct. 04, 2024 |
| HIGHPASS FILTER 3.1-18G | WHK | WHK3.1/18G-10SS | 39 | Oct. 05, 2023 | Oct. 04, 2024 |
| Measurement Software | Sporton | SENSE-EMI | V5.11 | NA | NA |
| Measurement Software | Sporton | SENSE-15247_FS | V5.11 | NA | NA |
| Note: Calibration Interval of instruments listed above is one year. | | | | | |

| Test Item | RF Conducted | | | | |
|---|---|---|---|---|---|
| Test Site | (TH01-WS) | | | | |
| Tested Date | Sep. 03, 2024 | | | | |
| **Instrument** | **Brand** | **Model No.** | **Serial No.** | **Calibration Date** | **Calibration Until** |
| Spectrum Analyzer | R&S | FSV40 | 101910 | Apr. 18, 2024 | Apr. 17, 2025 |
| Power Meter | Anritsu | ML2495A | 1241002 | Nov. 21, 2023 | Nov. 20, 2024 |
| Power Sensor | Anritsu | MA2411B | 1207366 | Nov. 21, 2023 | Nov. 20, 2024 |
| Attenuator | Pasternack | PE7005-10 | 10-2 | Oct. 05, 2023 | Oct. 04, 2024 |
| Measurement Software | Sporton | SENSE-15247_FS | V5.11 | NA | NA |
| Note: Calibration Interval of instruments listed above is one year. | | | | | |

## 1.5 Test Standards

47 CFR FCC Part 15.247
ANSI C63.10-2013

## 1.6 Reference Guidance

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

## 1.7 Deviation from Test Standard and Measurement Procedure

None

## 1.8 Measurement Uncertainty

The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

| Measurement Uncertainty | |
|---|---|
| **Parameters** | **Uncertainty** |
| Bandwidth | ±34.130 Hz |
| Conducted power | ±0.808 dB |
| Power density | ±0.583 dB |
| Conducted emission | ±2.715 dB |
| AC conducted emission | ±2.92 dB |
| Unwanted Emission ≤ 1GHz | ±3.41 dB |
| Unwanted Emission > 1GHz | ±4.59 dB |

# 2 Test Configuration

## 2.1 Testing Facility

| | |
|---|---|
| **Test Laboratory** | International Certification Corporation |
| **Test Site** | CO01-WS, 03CH01-WS, TH01-WS |
| **Address of Test Site** | No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.) |

- FCC Designation No.: TW2732
- FCC site registration No.: 181692
- ISED#: 10807A
- CAB identifier: TW2732

## 2.2 The Worst Test Modes and Channel Details

| Test item | Modulation Mode | Test Frequency (MHz) | Test Configuration |
|---|---|---|---|
| AC Power Line Conducted Emissions | Charging mode | --- | 2 |
| Unwanted Emissions ≤ 1GHz | BT-LE(1Mbps) | 2402 | 1 |
| | Charging mode | --- | 2 |
| Unwanted Emissions > 1GHz | BT-LE(1Mbps)<br>BT-LE(2Mbps) | 2402, 2440, 2480<br>2404, 2440, 2478 | 1 |
| Conducted Output Power<br>6dB bandwidth<br>Power spectral density | BT-LE(1Mbps)<br>BT-LE(2Mbps) | 2402, 2440, 2480<br>2404, 2440, 2478 | 1 |

**NOTE:**
1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **Z-plane** result was found as the worst case and was shown in this report.
2. The test configurations are listed as follows:
   1) Mode 1: Battery mode
   2) Mode 2: Charging mode

# 3 Transmitter Test Results

## 3.1 6dB and Occupied Bandwidth

### 3.1.1 Limit of 6dB Bandwidth

The minimum 6dB bandwidth shall be at least 500 kHz.

### 3.1.2 Test Procedures

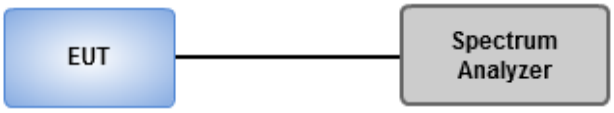
**6dB Bandwidth**

1. Set resolution bandwidth (RBW) = 100 kHz, Video bandwidth = 300 kHz.
2. Detector = Peak, Trace mode = max hold.
3. Sweep = auto couple, Allow the trace to stabilize.
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6dB relative to the maximum level measured in the fundamental emission.

**Occupied Bandwidth**

1. Set resolution bandwidth (RBW) = 1% ~ 5 % of OBW, Video bandwidth = 3 x RBW
2. Detector = Sample, Trace mode = max hold.
3 Sweep = auto couple, Allow the trace to stabilize.
4. Use the OBW measurement function of spectrum analyzer to measure the occupied bandwidth.

### 3.1.3 Test Setup




### 3.1.4 Test Results

| | | | |
|---|---|---|---|
| **Ambient Condition** | 23°C / 65% | **Tested By** | Roger Lu |

Refer to Appendix A.

## 3.2 Conducted Output Power

### 3.2.1 Limit of Conducted Output Power

Conducted power shall not exceed 1Watt.

Antenna gain <= 6dBi, no any corresponding reduction is in output power limit.

### 3.2.2 Test Procedures

A broadband RF power meter is used for output power measurement. The video bandwidth of power meter is greater than DTS bandwidth of EUT. If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power.

### 3.2.3 Test Setup


### 3.2.4 Test Results

| **Ambient Condition** | 23°C / 65% | **Tested By** | Roger Lu |
|---|---|---|---|

Refer to Appendix B.

## 3.3 Power Spectral Density

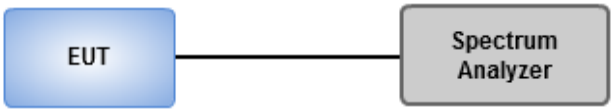
### 3.3.1 Limit of Power Spectral Density

Power spectral density shall not be greater than 8 dBm in any 3 kHz band.

### 3.3.2 Test Procedures

1. Set the RBW = 3 kHz, VBW = 10 kHz.
2. Detector = Peak, Sweep time = auto couple.
3. Trace mode = max hold, allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum amplitude level.

### 3.3.3 Test Setup




### 3.3.4 Test Results

| **Ambient Condition** | 23°C / 65% | **Tested By** | Roger Lu |
|---|---|---|---|

Refer to Appendix C.

## 3.4 Unwanted Emissions in Restricted Frequency Bands

### 3.4.1 Limit of Unwanted Emissions in Restricted Frequency Bands

| Restricted Band Emissions Limit | | | |
|---|---|---|---|
| **Frequency Range (MHz)** | **Field Strength (uV/m)** | **Field Strength (dBuV/m)** | **Measure Distance (m)** |
| 0.009~0.490 | 2400/F(kHz) | 48.5 - 13.8 | 300 |
| 0.490~1.705 | 24000/F(kHz) | 33.8 - 23 | 30 |
| 1.705~30.0 | 30 | 29 | 30 |
| 30~88 | 100 | 40 | 3 |
| 88~216 | 150 | 43.5 | 3 |
| 216~960 | 200 | 46 | 3 |
| Above 960 | 500 | 54 | 3 |

**Note 1:**
Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit
**Note 2:**
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

### 3.4.2 Test Procedures

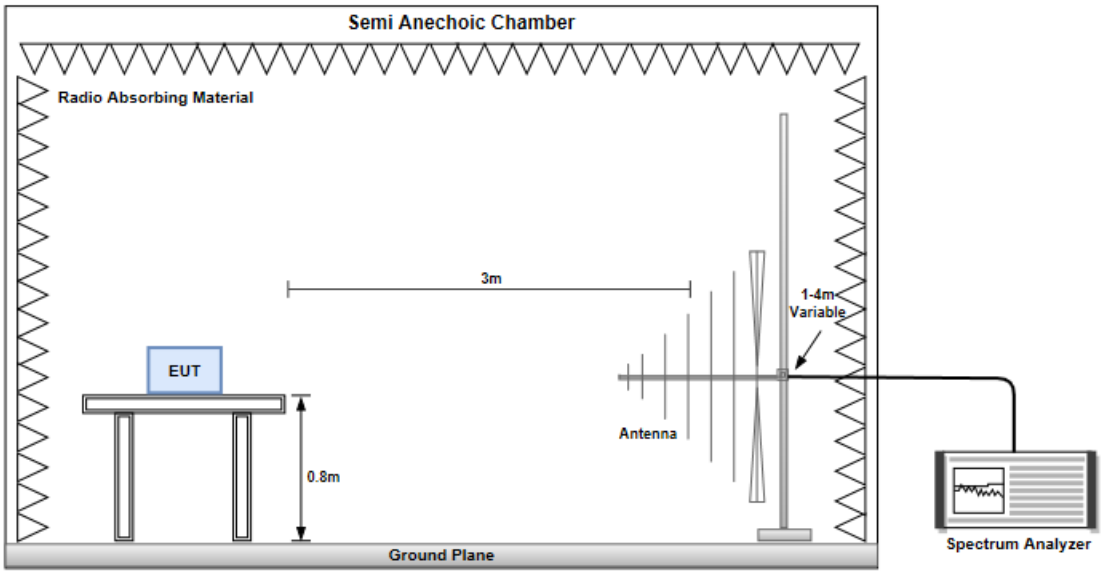
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

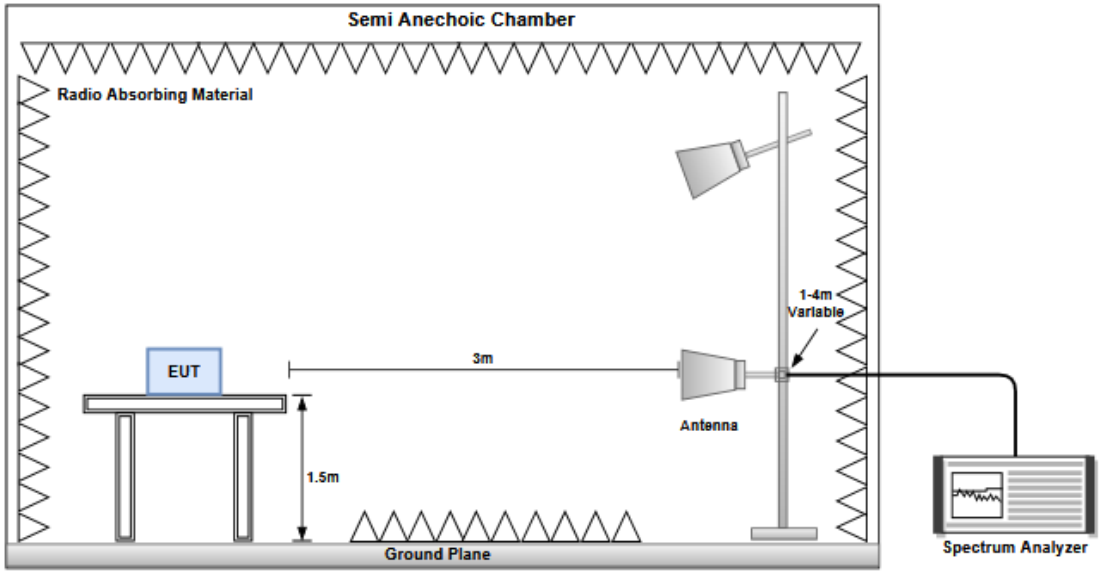
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above 1GHz.

### 3.4.3 Test Setup

**Radiated Emissions below 1 GHz**




**Radiated Emissions above 1 GHz**




### 3.4.4 Test Results

Refer to Appendix D.

## 3.5 Emissions in non-restricted Frequency Bands

### 3.5.1 Emissions in non-restricted frequency bands limit

Peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz.

### 3.5.2 Test Procedures

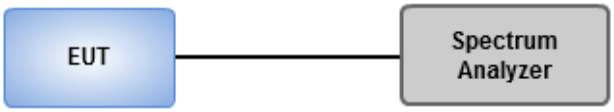
**Reference level measurement**

1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Use the peak marker function to determine the maximum PSD level

**Emission level measurement**

1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Scan Frequency range is up to 25GHz
4. Use the peak marker function to determine the maximum amplitude level

### 3.5.3 Test Setup




### 3.5.4 Test Results

| | | | |
|---|---|---|---|
| **Ambient Condition** | 23°C / 65% | **Tested By** | Roger Lu |

Refer to Appendix E.

# 3.6 AC Power Line Conducted Emissions

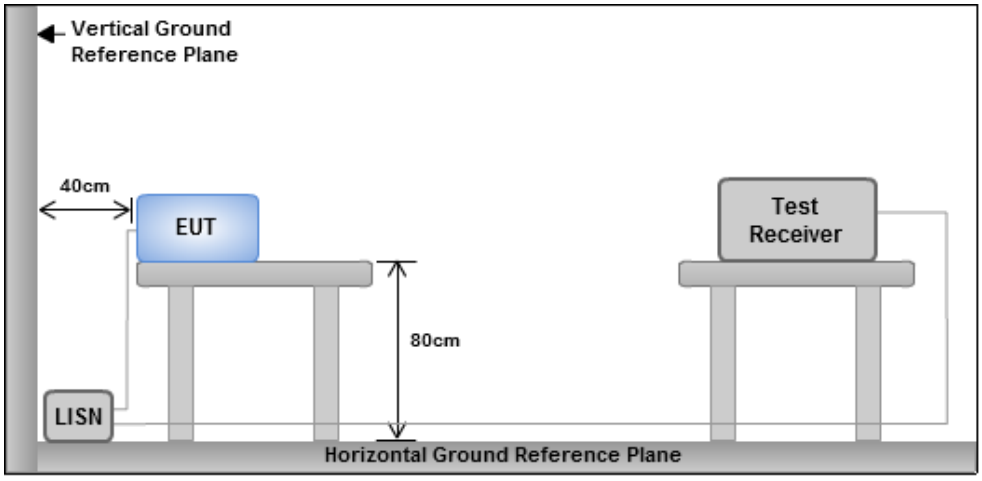
## 3.6.1 Limit of AC Power Line Conducted Emissions

| Conducted Emissions Limit | | |
|---|---|---|
| **Frequency Emission (MHz)** | **Quasi-Peak** | **Average** |
| 0.15-0.5 | 66 - 56 * | 56 - 46 * |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |
| Note 1: * Decreases with the logarithm of the frequency. | | |

## 3.6.2 Test Procedures

1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
3. AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.
4. This measurement was performed with AC 120V/60Hz

## 3.6.3 Test Setup




Note: 1. Support units were connected to second LISN.

2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

## 3.6.4 Test Results

Refer to Appendix F.

# 4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corporation (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website http://www.icertifi.com.tw.

**Linkou**

Tel: 886-2-2601-1640

No.30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan (R.O.C.)

**Kwei Shan**

Tel: 886-3-271-8666

No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

No.2-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

**Kwei Shan Site II**

Tel: 886-3-271-8640

No.14-1, Lane 19, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

If you have any suggestion, please feel free to contact us as below information.

Tel: 886-3-271-8666
Fax: 886-3-318-0155
Email: ICC_Service@icertifi.com.tw

**==END==**

**Summary**

| Mode | Max-N dB (Hz) | Max-OBW (Hz) | ITU-Code | Min-N dB (Hz) | Min-OBW (Hz) |
|---|---|---|---|---|---|
| 2.4-2.4835GHz | - | - | - | - | - |
| BT-LE(1Mbps) | 875k | 1.362M | 1M36F1D | 751.25k | 1.221M |
| BT-LE(2Mbps) | 1.6M | 2.644M | 2M64F1D | 1.413M | 2.549M |

Max-N dB = Maximum 6dB down bandwidth; Max-OBW = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 6dB down bandwidth; Min-OBW = Minimum 99% occupied bandwidth

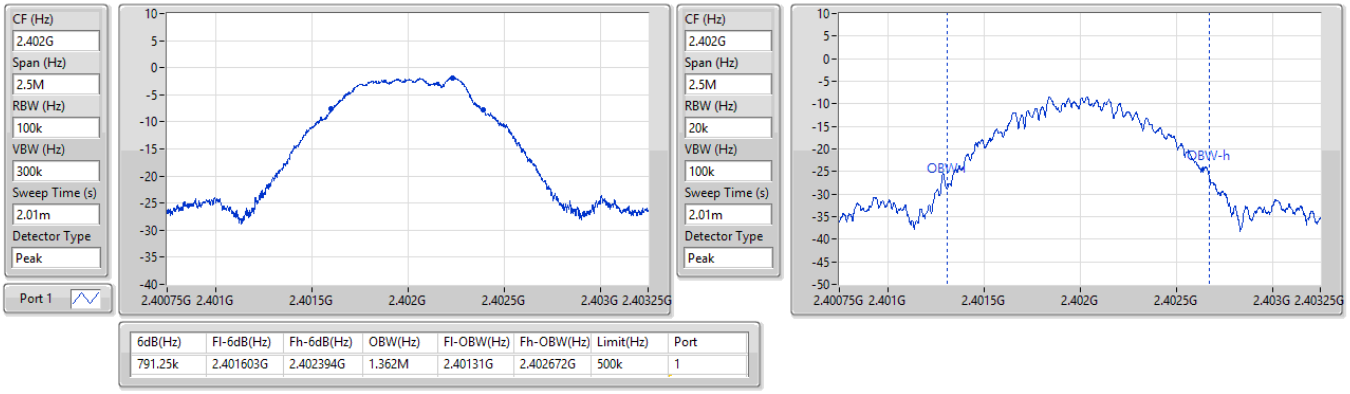
**Result**

| Mode | Result | Limit (Hz) | Port 1-N dB (Hz) | Port 1-OBW (Hz) |
|---|---|---|---|---|
| BT-LE(1Mbps) | - | - | - | - |
| 2402MHz | Pass | 500k | 791.25k | 1.362M |
| 2440MHz | Pass | 500k | 751.25k | 1.221M |
| 2480MHz | Pass | 500k | 875k | 1.341M |
| BT-LE(2Mbps) | - | - | - | - |
| 2404MHz | Pass | 500k | 1.42M | 2.644M |
| 2440MHz | Pass | 500k | 1.413M | 2.549M |
| 2478MHz | Pass | 500k | 1.6M | 2.596M |

Port X-N dB = Port X 6dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

**2.4-2.4835GHz_BT-LE(1Mbps)** **EBW-DTS**

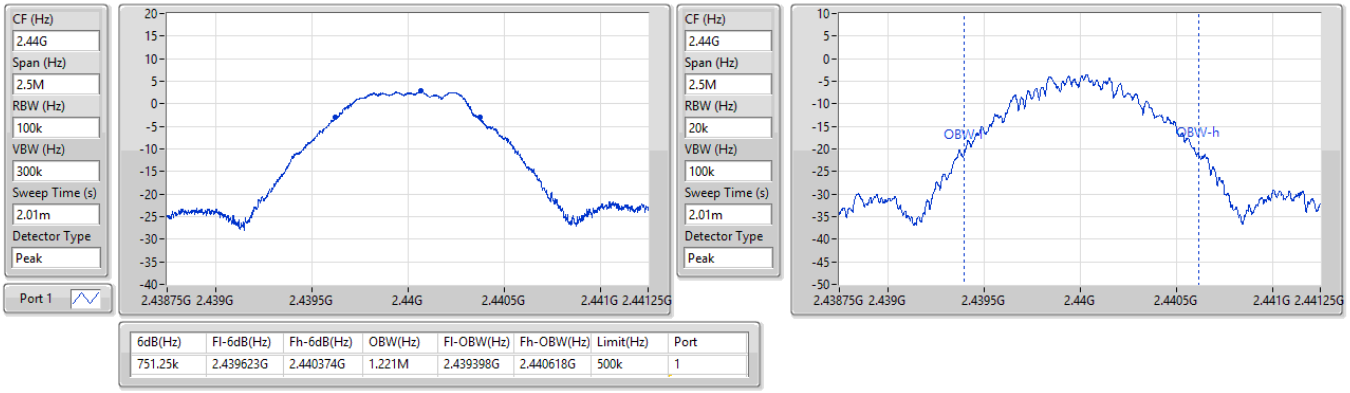
**2402MHz**




| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 791.25k | 2.401603G | 2.402394G | 1.362M | 2.40131G | 2.402672G | 500k | 1 |

**2.4-2.4835GHz_BT-LE(1Mbps)** **EBW-DTS**

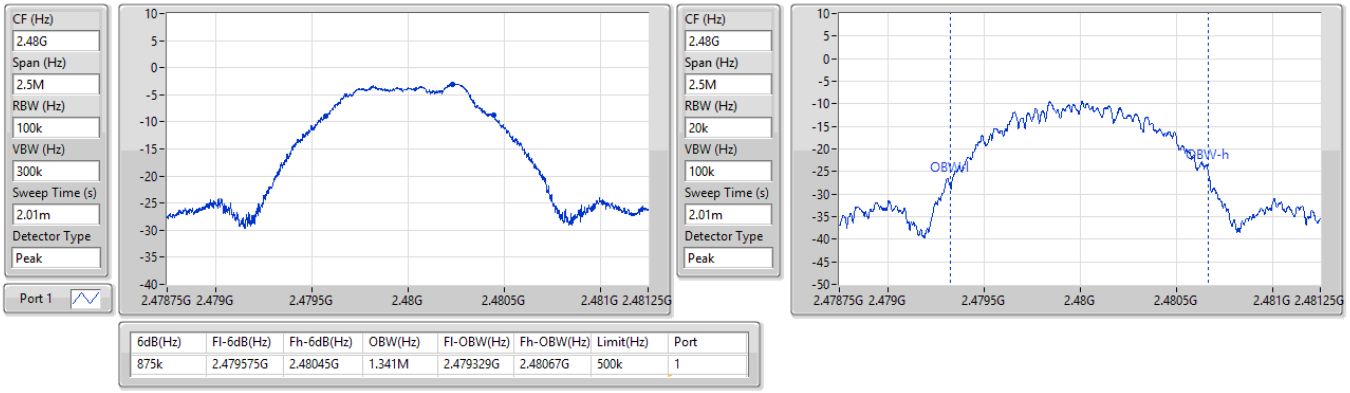
**2440MHz**




| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 751.25k | 2.439623G | 2.440374G | 1.221M | 2.439398G | 2.440618G | 500k | 1 |

**2.4-2.4835GHz_BT-LE(1Mbps)** **EBW-DTS**

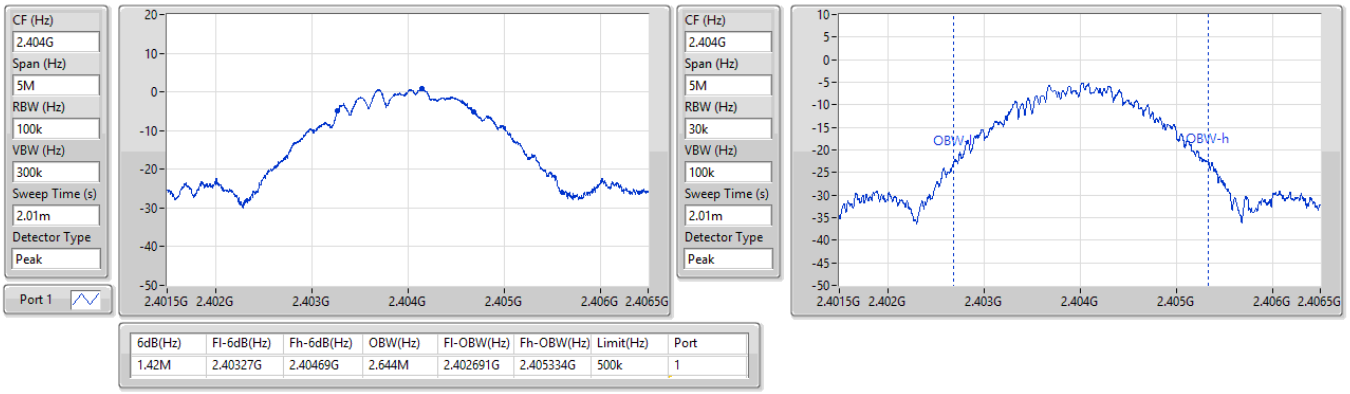
**2480MHz**




| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 875k | 2.479575G | 2.48045G | 1.341M | 2.479329G | 2.48067G | 500k | 1 |

**2.4-2.4835GHz_BT-LE(2Mbps)** **EBW-DTS**

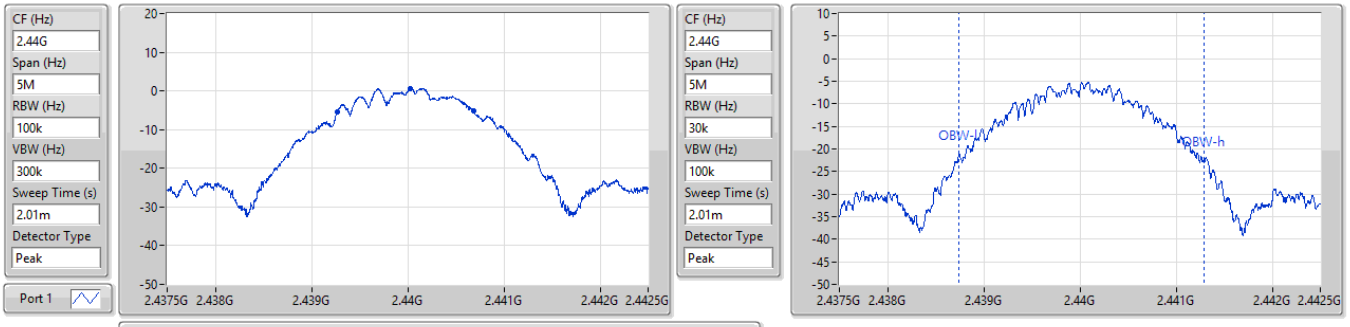
**2404MHz**




| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 1.42M | 2.40327G | 2.40469G | 2.644M | 2.402691G | 2.405334G | 500k | 1 |

**2.4-2.4835GHz_BT-LE(2Mbps)** **EBW-DTS**

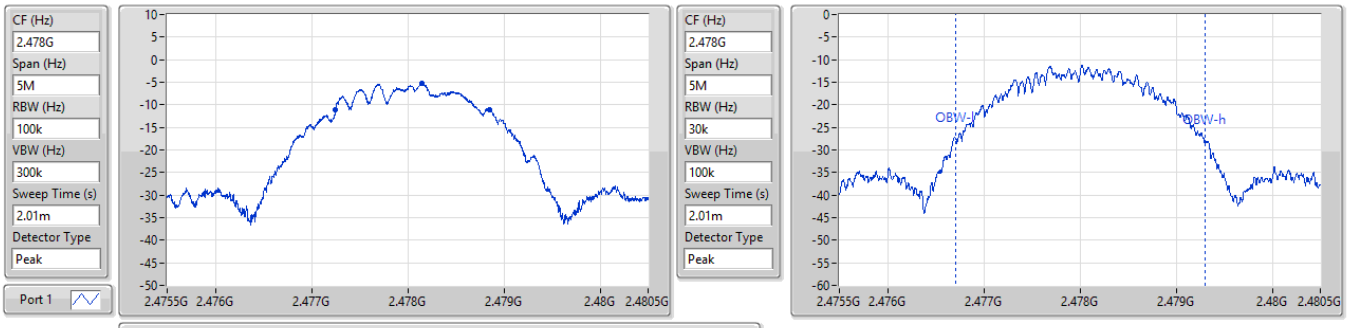
**2440MHz**




| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 1.413M | 2.43927G | 2.440683G | 2.549M | 2.438738G | 2.441287G | 500k | 1 |

**2.4-2.4835GHz_BT-LE(2Mbps)** **EBW-DTS**

**2478MHz**




| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 1.6M | 2.477248G | 2.478848G | 2.596M | 2.476706G | 2.479302G | 500k | 1 |

**Summary**

| Mode | Total Power (dBm) | Total Power (W) |
|---|---|---|
| 2.4-2.4835GHz | - | - |
| BT-LE(1Mbps) | 4.62 | 0.00290 |
| BT-LE(2Mbps) | 4.52 | 0.00283 |

**Result**

| Mode | Result | Antenna Gain (dBi) | Total Power (dBm) | Power Limit (dBm) | EIRP (dBm) | EIRP Limit (dBm) |
|---|---|---|---|---|---|---|
| BT-LE(1Mbps) | - | - | - | - | - | - |
| 2402MHz | Pass | 0.21 | 0.17 | 30.00 | 0.38 | 36.00 |
| 2440MHz | Pass | 0.21 | 4.62 | 30.00 | 4.83 | 36.00 |
| 2480MHz | Pass | 0.21 | -1.11 | 30.00 | -0.90 | 36.00 |
| BT-LE(2Mbps) | - | - | - | - | - | - |
| 2404MHz | Pass | 0.21 | 4.52 | 30.00 | 4.73 | 36.00 |
| 2440MHz | Pass | 0.21 | 4.45 | 30.00 | 4.66 | 36.00 |
| 2478MHz | Pass | 0.21 | -1.21 | 30.00 | -1.00 | 36.00 |

**Summary**

| Mode | Total Power (dBm) | Total Power (W) |
|---|---|---|
| 2.4-2.4835GHz | - | - |
| BT-LE(1Mbps) | 4.40 | 0.00275 |
| BT-LE(2Mbps) | 4.39 | 0.00275 |

**Result**

| Mode | Result | Antenna Gain (dBi) | Total Power (dBm) | Power Limit (dBm) | EIRP (dBm) | EIRP Limit (dBm) |
|---|---|---|---|---|---|---|
| BT-LE(1Mbps) | - | - | - | - | - | - |
| 2402MHz | Pass | 0.21 | -0.06 | - | 0.15 | - |
| 2440MHz | Pass | 0.21 | 4.40 | - | 4.61 | - |
| 2480MHz | Pass | 0.21 | -1.31 | - | -1.10 | - |
| BT-LE(2Mbps) | - | - | - | - | - | - |
| 2404MHz | Pass | 0.21 | 4.39 | - | 4.60 | - |
| 2440MHz | Pass | 0.21 | 4.34 | - | 4.55 | - |
| 2478MHz | Pass | 0.21 | -1.37 | - | -1.16 | - |

Note: Average power is for reference only.

**Summary**

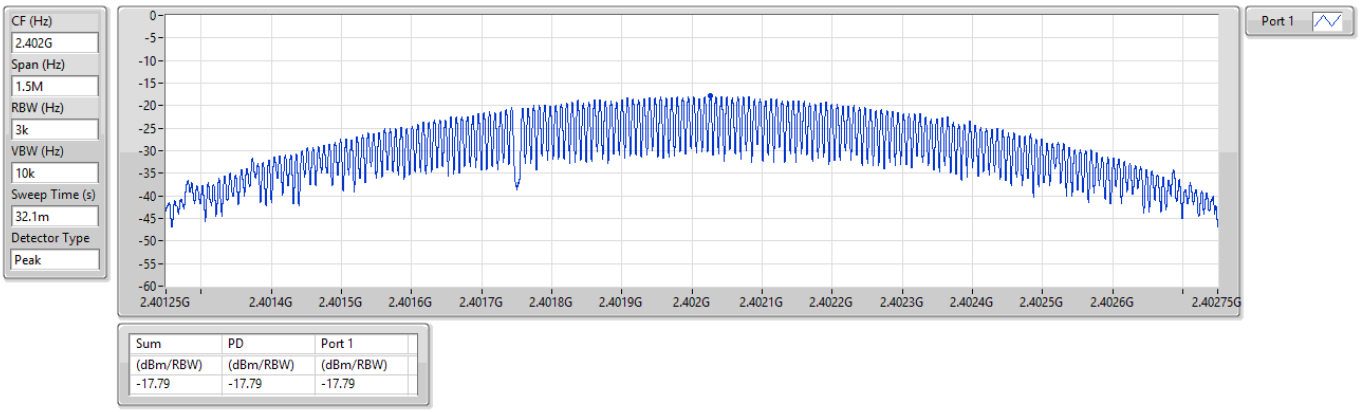
| Mode | PD (dBm/3kHz) |
|---|---|
| 2.4-2.4835GHz | - |
| BT-LE(1Mbps) | -12.85 |
| BT-LE(2Mbps) | -13.10 |

**Result**

| Mode | Result | Antenna Gain (dBi) | Power Density (dBm/3kHz) | Power Density Limit (dBm/3kHz) |
|---|---|---|---|---|
| BT-LE(1Mbps) | - | - | - | - |
| 2402MHz | Pass | 0.21 | -17.79 | 8.00 |
| 2440MHz | Pass | 0.21 | -12.85 | 8.00 |
| 2480MHz | Pass | 0.21 | -18.40 | 8.00 |
| BT-LE(2Mbps) | - | - | - | - |
| 2404MHz | Pass | 0.21 | -13.13 | 8.00 |
| 2440MHz | Pass | 0.21 | -13.10 | 8.00 |
| 2478MHz | Pass | 0.21 | -19.52 | 8.00 |

**2.4-2.4835GHz_BT-LE(1Mbps)** **PSD**

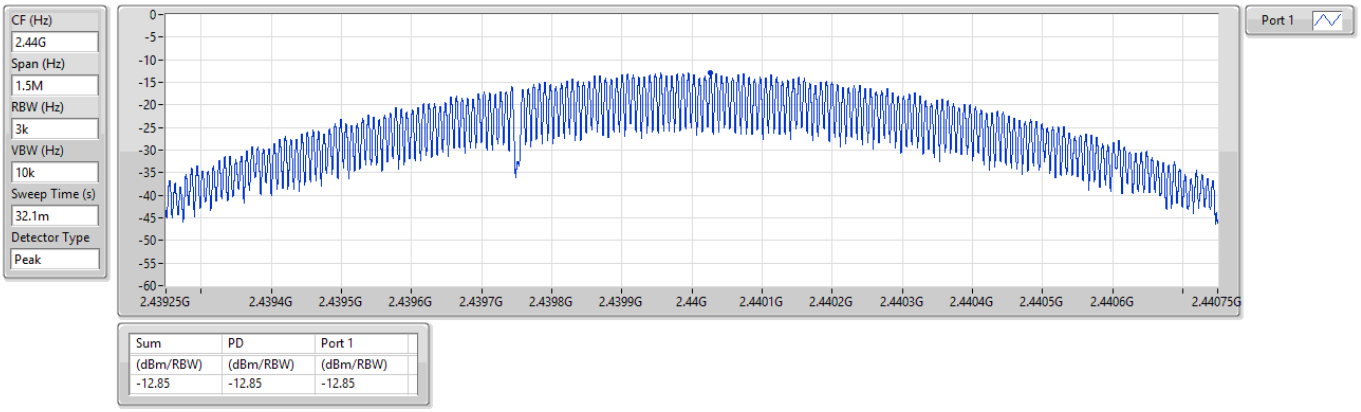
**2402MHz**




| Sum | PD | Port 1 |
|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -17.79 | -17.79 | -17.79 |

**2.4-2.4835GHz_BT-LE(1Mbps)** **PSD**

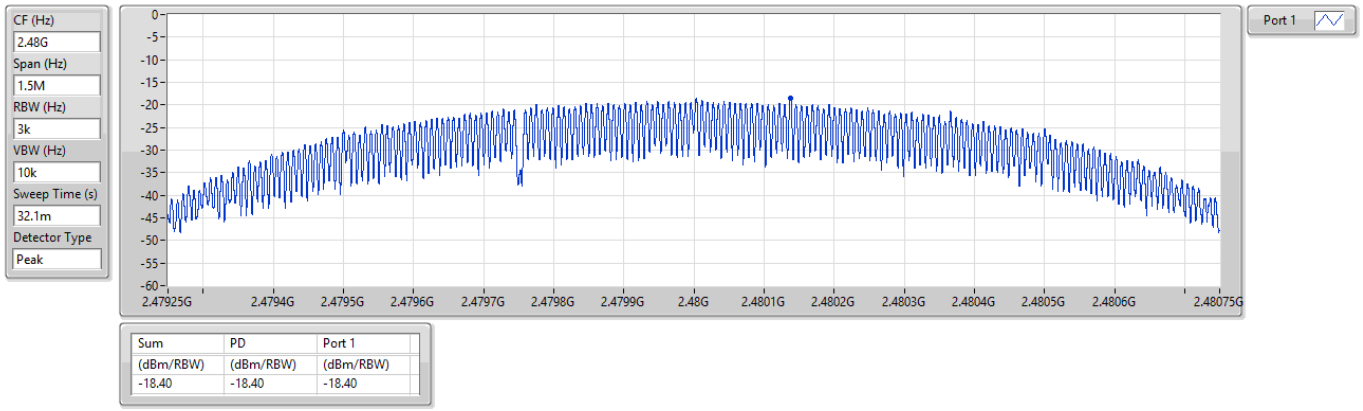
**2440MHz**




| Sum | PD | Port 1 |
|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -12.85 | -12.85 | -12.85 |

**2.4-2.4835GHz_BT-LE(1Mbps)** **PSD**

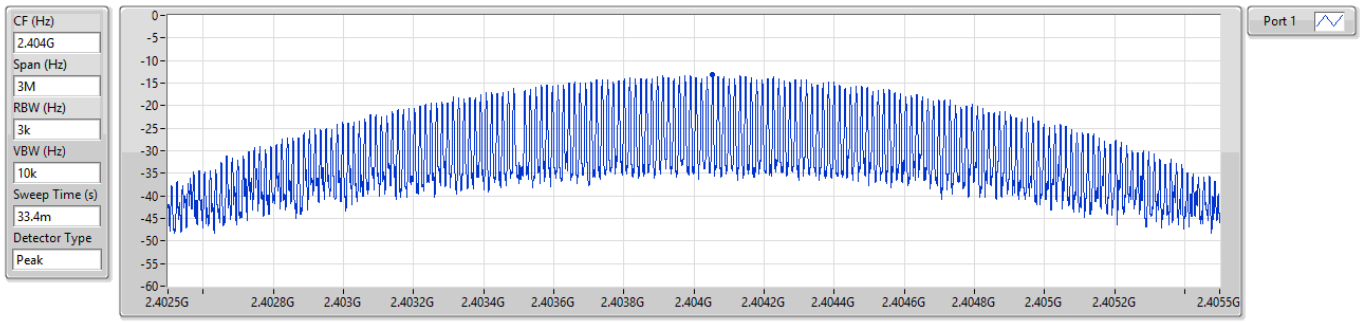
**2480MHz**




| Sum | PD | Port 1 |
|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -18.40 | -18.40 | -18.40 |

**2.4-2.4835GHz_BT-LE(2Mbps)** **PSD**

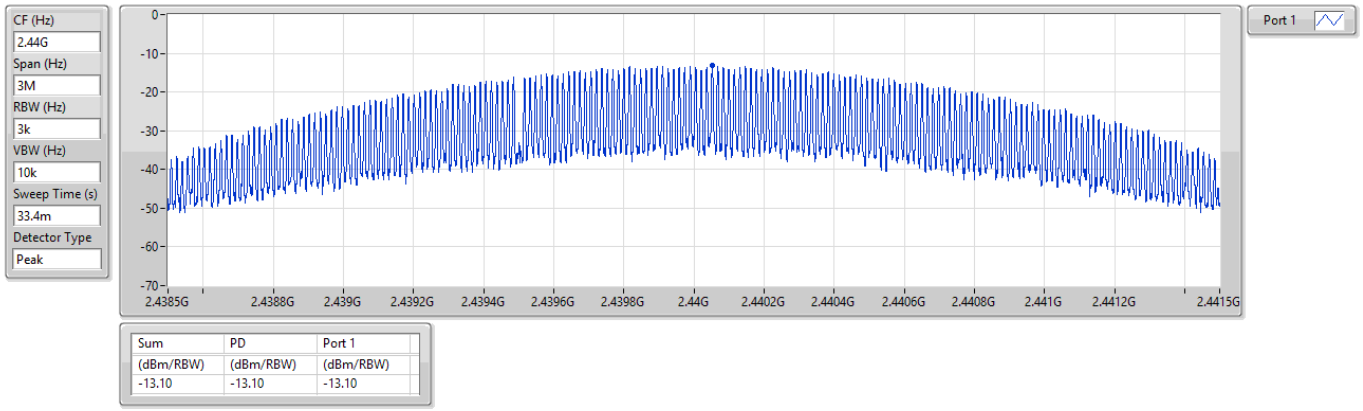
**2404MHz**




| Sum | PD | Port 1 |
|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -13.13 | -13.13 | -13.13 |

**2.4-2.4835GHz_BT-LE(2Mbps)** **PSD**

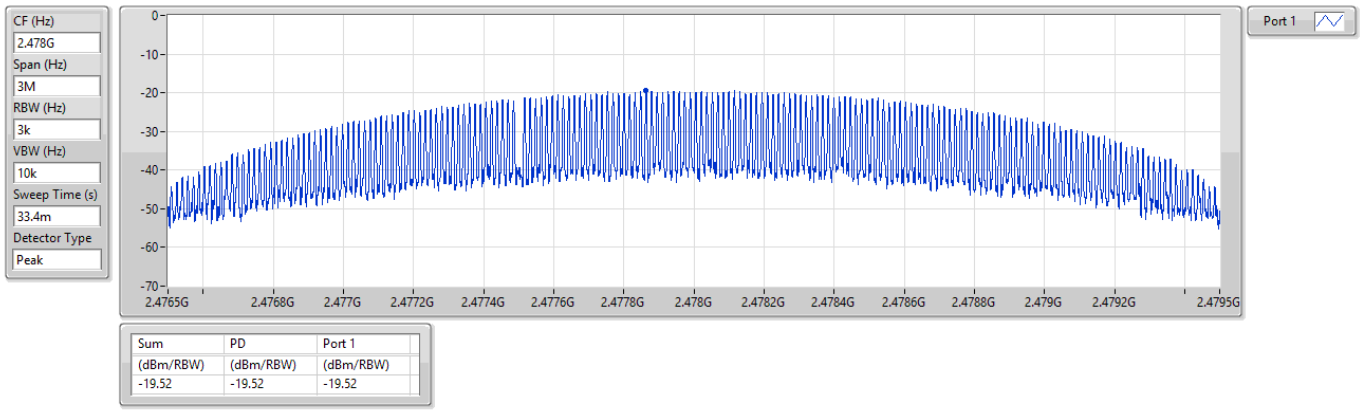
**2440MHz**




| Sum | PD | Port 1 |
|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -13.10 | -13.10 | -13.10 |

**2.4-2.4835GHz_BT-LE(2Mbps)** **PSD**

**2478MHz**

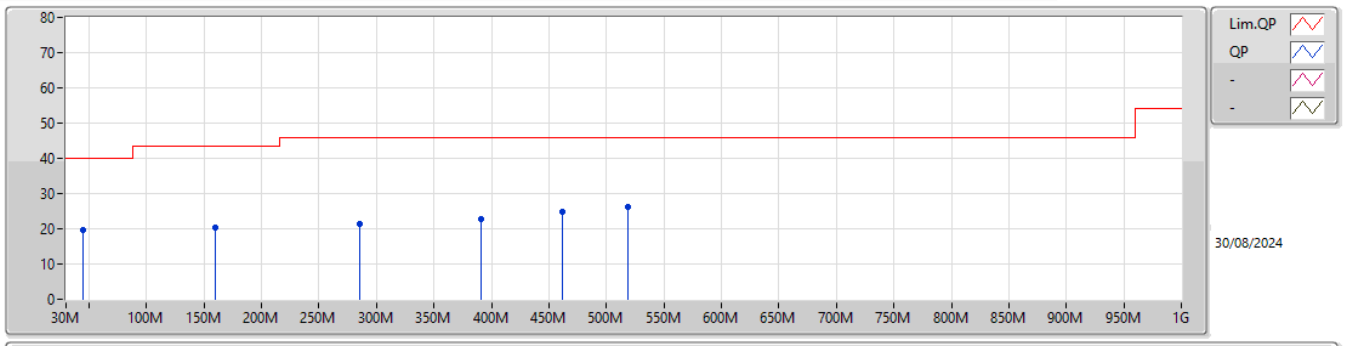



| Sum | PD | Port 1 |
|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -19.52 | -19.52 | -19.52 |

**Summary**

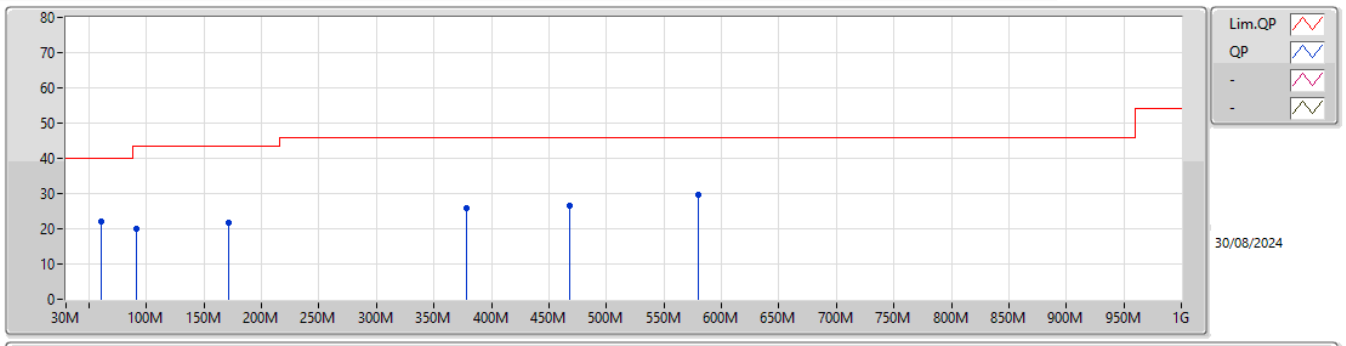
| Mode | Result | Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Condition |
|---|---|---|---|---|---|---|---|
| Mode 1 | Pass | PK | 579.4M | 29.54 | 46.00 | -16.46 | Vertical |
| Mode 2 | Pass | PK | 51.1M | 27.48 | 40.00 | -12.52 | Vertical |

**Mode 1**



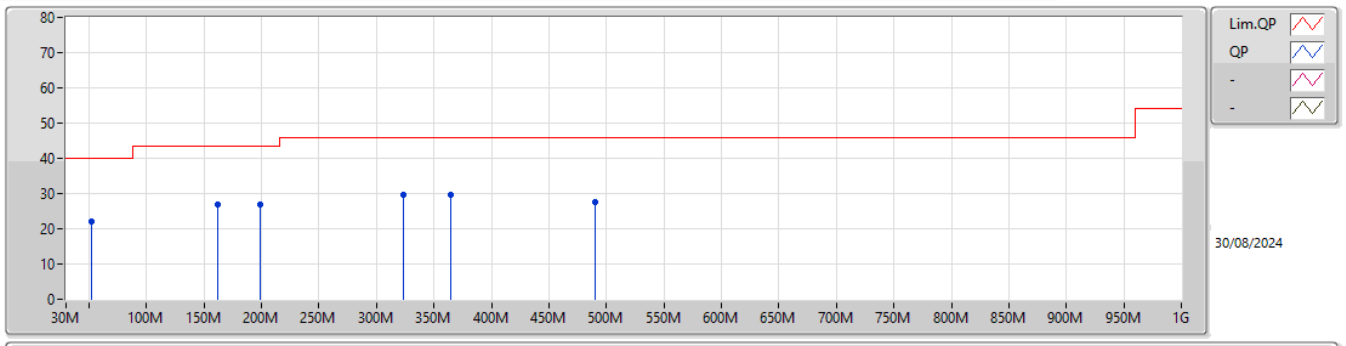

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| PK | 45.1M | 19.80 | 40.00 | -20.20 | -8.52 | 3 | Horizontal | - | - | - | 28.32 | 19.01 | 0.60 | 28.13 |
| PK | 160.1M | 20.26 | 43.50 | -23.24 | -8.69 | 3 | Horizontal | - | - | - | 28.95 | 18.39 | 1.18 | 28.26 |
| PK | 285.6M | 21.31 | 46.00 | -24.69 | -8.32 | 3 | Horizontal | - | - | - | 29.63 | 18.31 | 1.61 | 28.24 |
| PK | 391.5M | 22.88 | 46.00 | -23.12 | -5.72 | 3 | Horizontal | - | - | - | 28.60 | 20.63 | 1.83 | 28.18 |
| PK | 461.9M | 24.90 | 46.00 | -21.10 | -3.92 | 3 | Horizontal | - | - | - | 28.82 | 22.24 | 2.03 | 28.19 |
| PK | 518.5M | 26.22 | 46.00 | -19.78 | -2.74 | 3 | Horizontal | - | - | - | 28.96 | 23.24 | 2.22 | 28.20 |

**Mode 1**



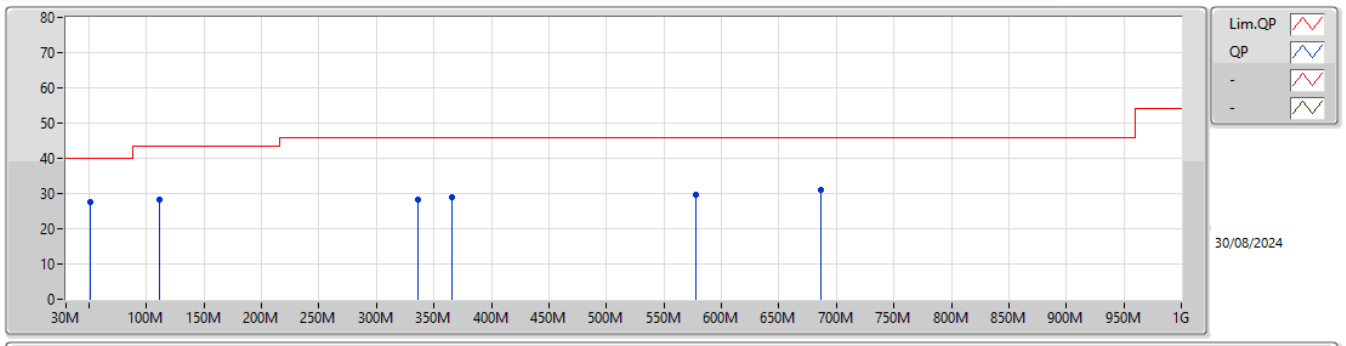

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| PK | 60.1M | 21.97 | 40.00 | -18.03 | -8.97 | 3 | Vertical | - | - | - | 30.94 | 18.47 | 0.72 | 28.16 |
| PK | 91.1M | 19.91 | 43.50 | -23.59 | -14.51 | 3 | Vertical | - | - | - | 34.42 | 12.80 | 0.90 | 28.21 |
| PK | 171.2M | 21.70 | 43.50 | -21.80 | -9.26 | 3 | Vertical | - | - | - | 30.96 | 17.78 | 1.23 | 28.27 |
| PK | 378.5M | 25.86 | 46.00 | -20.14 | -5.93 | 3 | Vertical | - | - | - | 31.79 | 20.44 | 1.81 | 28.18 |
| PK | 468.2M | 26.41 | 46.00 | -19.59 | -3.83 | 3 | Vertical | - | - | - | 30.24 | 22.30 | 2.06 | 28.19 |
| PK | 579.4M | 29.54 | 46.00 | -16.46 | -1.40 | 3 | Vertical | - | - | - | 30.94 | 24.38 | 2.40 | 28.18 |

**Mode 2**




| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| PK | 52.2M | 21.98 | 40.00 | -18.02 | -8.37 | 3 | Horizontal | - | - | - | 30.35 | 19.12 | 0.65 | 28.14 |
| PK | 162.1M | 26.75 | 43.50 | -16.75 | -8.87 | 3 | Horizontal | - | - | - | 35.62 | 18.20 | 1.19 | 28.26 |
| PK | 198.4M | 26.82 | 43.50 | -16.68 | -11.55 | 3 | Horizontal | - | - | - | 38.37 | 15.40 | 1.33 | 28.28 |
| PK | 323.9M | 29.67 | 46.00 | -16.33 | -7.34 | 3 | Horizontal | - | - | - | 37.01 | 19.18 | 1.70 | 28.22 |
| PK | 364.3M | 29.70 | 46.00 | -16.30 | -6.52 | 3 | Horizontal | - | - | - | 36.22 | 19.89 | 1.78 | 28.19 |
| PK | 490.1M | 27.46 | 46.00 | -18.54 | -3.37 | 3 | Horizontal | - | - | - | 30.83 | 22.70 | 2.13 | 28.20 |

**Mode 2**



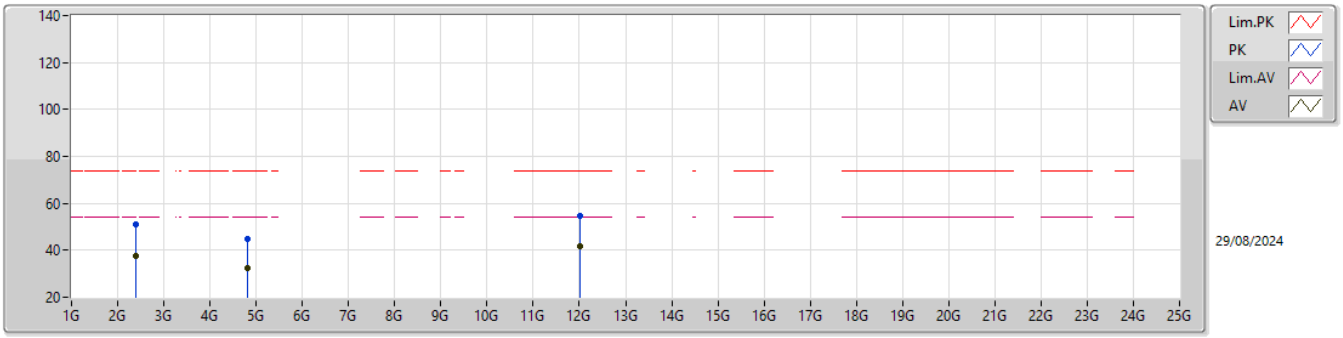

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| PK | 51.1M | 27.48 | 40.00 | -12.52 | -8.22 | 3 | Vertical | - | - | - | 35.70 | 19.28 | 0.64 | 28.14 |
| PK | 111.6M | 28.31 | 43.50 | -15.19 | -11.82 | 3 | Vertical | - | - | - | 40.13 | 15.42 | 1.00 | 28.24 |
| PK | 336.2M | 28.29 | 46.00 | -17.71 | -7.18 | 3 | Vertical | - | - | - | 35.47 | 19.30 | 1.73 | 28.21 |
| PK | 366M | 29.12 | 46.00 | -16.88 | -6.47 | 3 | Vertical | - | - | - | 35.59 | 19.94 | 1.78 | 28.19 |
| PK | 578.3M | 29.62 | 46.00 | -16.38 | -1.45 | 3 | Vertical | - | - | - | 31.07 | 24.33 | 2.40 | 28.18 |
| PK | 686M | 30.99 | 46.00 | -15.01 | 0.58 | 3 | Vertical | - | - | - | 30.41 | 25.80 | 2.81 | 28.03 |

**Summary**

| Mode | Result | Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Dist (m) | Condition | Azimuth (°) | Height (m) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.4-2.4835GHz | - | - | - | - | - | - | - | - | - | - | - |
| BT-LE(1Mbps) | Pass | AV | 12.01G | 41.81 | 54.00 | -12.19 | 3 | Vertical | 22 | 1.00 | - |
| BT-LE(2Mbps) | Pass | AV | 2.4835G | 44.83 | 54.00 | -9.17 | 3 | Vertical | 183 | 2.02 | - |

**2.4-2.4835GHz_BT-LE(1Mbps)**

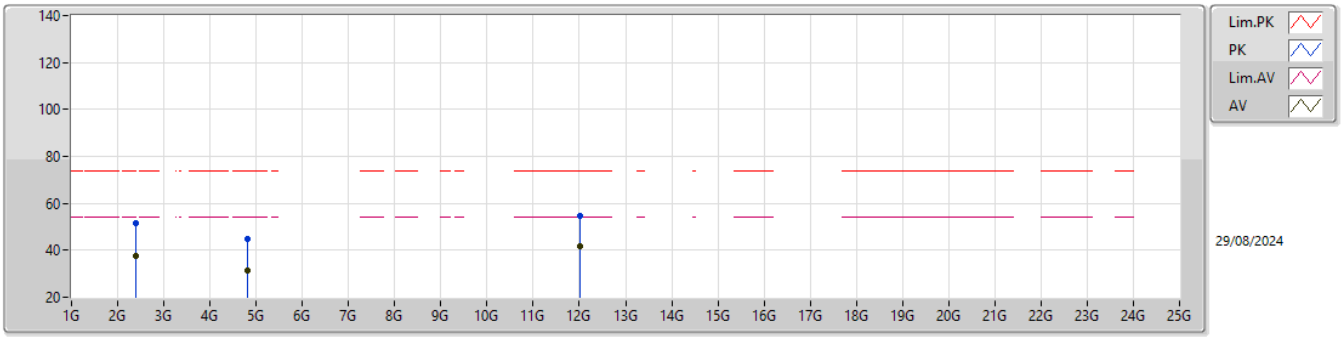
**2402MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 37.45 | 54.00 | -16.55 | 41.79 | 3 | Horizontal | 221 | 1.00 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 51.26 | 74.00 | -22.74 | 55.60 | 3 | Horizontal | 221 | 1.00 | - | 27.60 | 4.95 | 36.89 |
| AV | 4.804G | 32.65 | 54.00 | -21.35 | 33.03 | 3 | Horizontal | 14 | 1.00 | - | 31.29 | 6.85 | 38.52 |
| PK | 4.804G | 44.86 | 74.00 | -29.14 | 45.24 | 3 | Horizontal | 14 | 1.00 | - | 31.29 | 6.85 | 38.52 |
| AV | 12.01G | 41.79 | 54.00 | -12.21 | 35.47 | 3 | Horizontal | 35 | 1.00 | - | 39.20 | 10.02 | 42.90 |
| PK | 12.01G | 54.58 | 74.00 | -19.42 | 48.26 | 3 | Horizontal | 35 | 1.00 | - | 39.20 | 10.02 | 42.90 |

**2.4-2.4835GHz_BT-LE(1Mbps)**

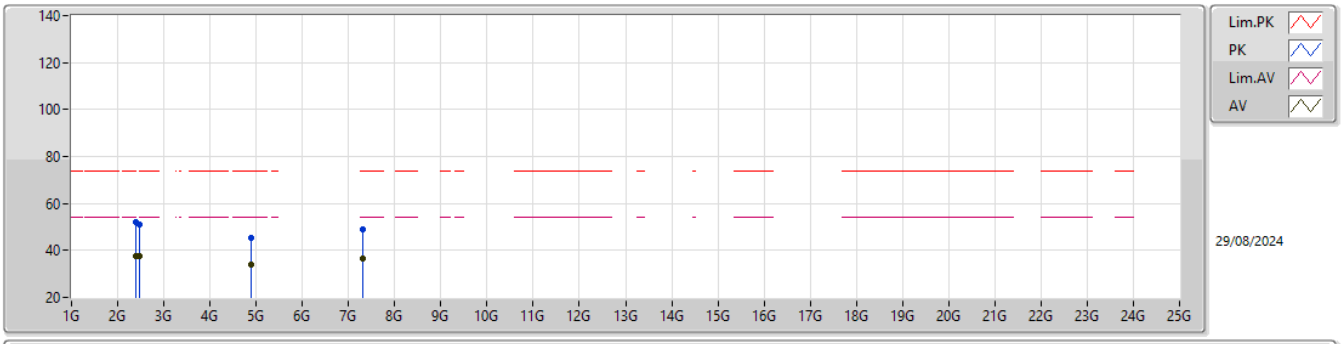
**2402MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 37.75 | 54.00 | -16.25 | 42.09 | 3 | Vertical | 185 | 1.99 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 51.57 | 74.00 | -22.43 | 55.91 | 3 | Vertical | 185 | 1.99 | - | 27.60 | 4.95 | 36.89 |
| AV | 4.804G | 31.54 | 54.00 | -22.46 | 31.92 | 3 | Vertical | 36 | 1.00 | - | 31.29 | 6.85 | 38.52 |
| PK | 4.804G | 44.65 | 74.00 | -29.35 | 45.03 | 3 | Vertical | 36 | 1.00 | - | 31.29 | 6.85 | 38.52 |
| AV | 12.01G | 41.81 | 54.00 | -12.19 | 35.49 | 3 | Vertical | 22 | 1.00 | - | 39.20 | 10.02 | 42.90 |
| PK | 12.01G | 54.69 | 74.00 | -19.31 | 48.37 | 3 | Vertical | 22 | 1.00 | - | 39.20 | 10.02 | 42.90 |

**2.4-2.4835GHz_BT-LE(1Mbps)**

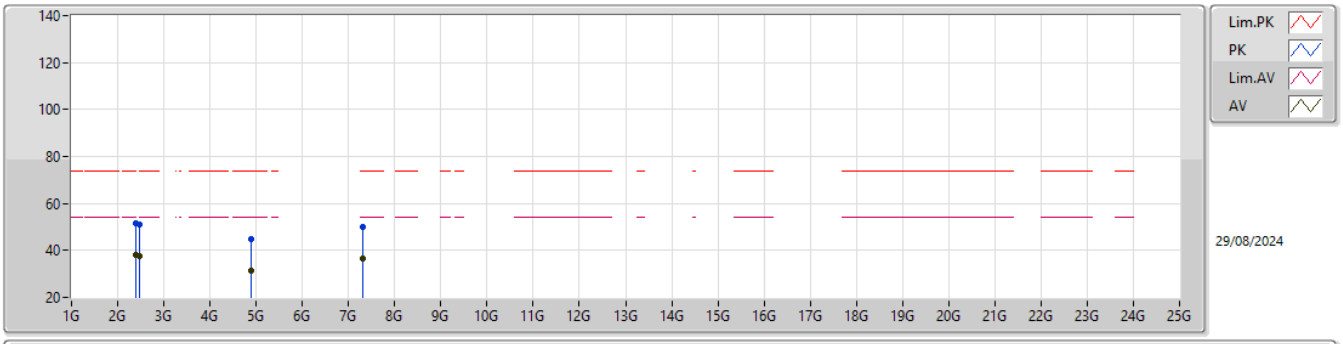
**2440MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 37.82 | 54.00 | -16.18 | 42.16 | 3 | Horizontal | 228 | 1.00 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 51.91 | 74.00 | -22.09 | 56.25 | 3 | Horizontal | 228 | 1.00 | - | 27.60 | 4.95 | 36.89 |
| AV | 2.4835G | 37.67 | 54.00 | -16.33 | 42.39 | 3 | Horizontal | 228 | 1.00 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 50.81 | 74.00 | -23.19 | 55.53 | 3 | Horizontal | 228 | 1.00 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.88G | 34.00 | 54.00 | -20.00 | 34.51 | 3 | Horizontal | 16 | 1.00 | - | 31.14 | 6.92 | 38.57 |
| PK | 4.88G | 45.37 | 74.00 | -28.63 | 45.88 | 3 | Horizontal | 16 | 1.00 | - | 31.14 | 6.92 | 38.57 |
| AV | 7.32G | 36.38 | 54.00 | -17.62 | 31.18 | 3 | Horizontal | 25 | 1.00 | - | 36.16 | 8.43 | 39.39 |
| PK | 7.32G | 49.02 | 74.00 | -24.98 | 43.82 | 3 | Horizontal | 25 | 1.00 | - | 36.16 | 8.43 | 39.39 |

**2.4-2.4835GHz_BT-LE(1Mbps)**

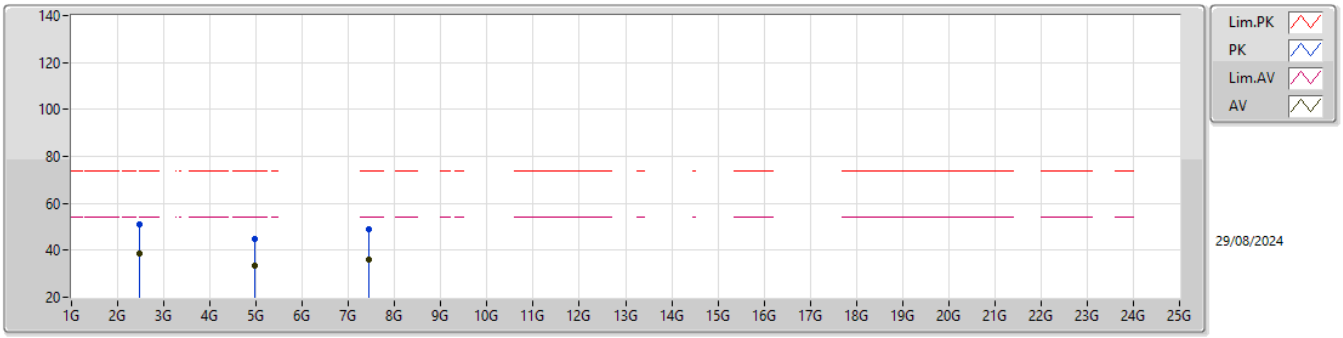
**2440MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 37.94 | 54.00 | -16.06 | 42.28 | 3 | Vertical | 180 | 1.95 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 51.79 | 74.00 | -22.21 | 56.13 | 3 | Vertical | 180 | 1.95 | - | 27.60 | 4.95 | 36.89 |
| AV | 2.4835G | 37.62 | 54.00 | -16.38 | 42.34 | 3 | Vertical | 180 | 1.95 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 51.02 | 74.00 | -22.98 | 55.74 | 3 | Vertical | 180 | 1.95 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.88G | 31.62 | 54.00 | -22.38 | 32.13 | 3 | Vertical | 25 | 1.00 | - | 31.14 | 6.92 | 38.57 |
| PK | 4.88G | 45.03 | 74.00 | -28.97 | 45.54 | 3 | Vertical | 25 | 1.00 | - | 31.14 | 6.92 | 38.57 |
| AV | 7.32G | 36.46 | 54.00 | -17.54 | 31.26 | 3 | Vertical | 41 | 1.00 | - | 36.16 | 8.43 | 39.39 |
| PK | 7.32G | 49.89 | 74.00 | -24.11 | 44.69 | 3 | Vertical | 41 | 1.00 | - | 36.16 | 8.43 | 39.39 |

**2.4-2.4835GHz_BT-LE(1Mbps)**

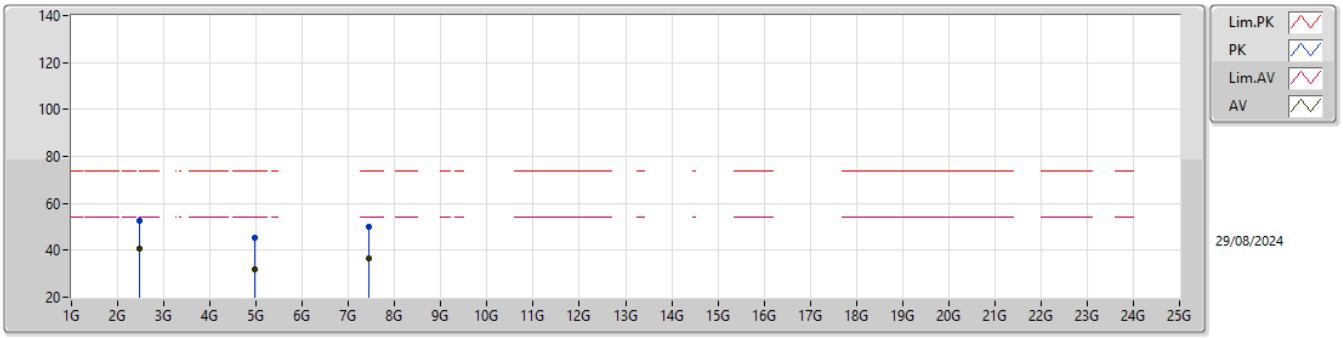
**2480MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.4835G | 38.52 | 54.00 | -15.48 | 43.24 | 3 | Horizontal | 221 | 1.00 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 50.96 | 74.00 | -23.04 | 55.68 | 3 | Horizontal | 221 | 1.00 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.96G | 33.65 | 54.00 | -20.35 | 33.92 | 3 | Horizontal | 19 | 1.00 | - | 31.36 | 6.99 | 38.62 |
| PK | 4.96G | 45.02 | 74.00 | -28.98 | 45.29 | 3 | Horizontal | 19 | 1.00 | - | 31.36 | 6.99 | 38.62 |
| AV | 7.44G | 36.21 | 54.00 | -17.79 | 30.91 | 3 | Horizontal | 12 | 1.00 | - | 36.34 | 8.50 | 39.54 |
| PK | 7.44G | 48.96 | 74.00 | -25.04 | 43.66 | 3 | Horizontal | 12 | 1.00 | - | 36.34 | 8.50 | 39.54 |

**2.4-2.4835GHz_BT-LE(1Mbps)**

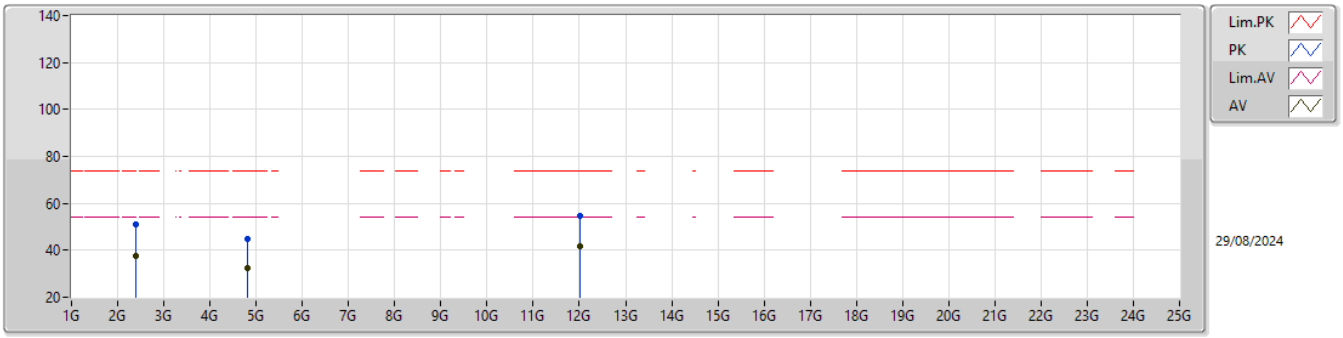
**2480MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.4835G | 40.65 | 54.00 | -13.35 | 45.37 | 3 | Vertical | 182 | 2.01 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 52.34 | 74.00 | -21.66 | 57.06 | 3 | Vertical | 182 | 2.01 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.96G | 31.68 | 54.00 | -22.32 | 31.95 | 3 | Vertical | 12 | 1.00 | - | 31.36 | 6.99 | 38.62 |
| PK | 4.96G | 45.12 | 74.00 | -28.88 | 45.39 | 3 | Vertical | 12 | 1.00 | - | 31.36 | 6.99 | 38.62 |
| AV | 7.44G | 36.52 | 54.00 | -17.48 | 31.22 | 3 | Vertical | 25 | 1.00 | - | 36.34 | 8.50 | 39.54 |
| PK | 7.44G | 49.94 | 74.00 | -24.06 | 44.64 | 3 | Vertical | 25 | 1.00 | - | 36.34 | 8.50 | 39.54 |

**2.4-2.4835GHz_BT-LE(2Mbps)**

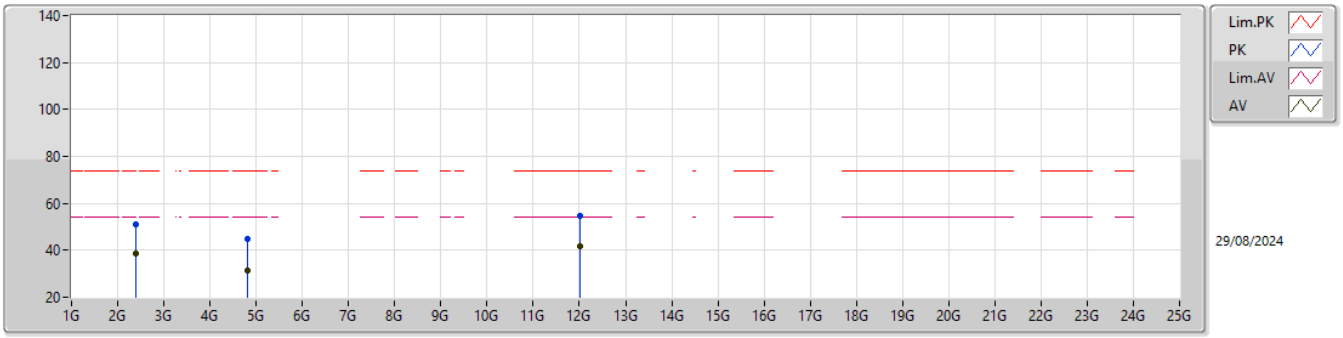
**2404MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 37.52 | 54.00 | -16.48 | 41.86 | 3 | Horizontal | 224 | 1.00 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 51.28 | 74.00 | -22.72 | 55.62 | 3 | Horizontal | 224 | 1.00 | - | 27.60 | 4.95 | 36.89 |
| AV | 4.808G | 32.45 | 54.00 | -21.55 | 32.83 | 3 | Horizontal | 13 | 1.00 | - | 31.28 | 6.86 | 38.52 |
| PK | 4.808G | 44.81 | 74.00 | -29.19 | 45.19 | 3 | Horizontal | 13 | 1.00 | - | 31.28 | 6.86 | 38.52 |
| AV | 12.02G | 41.72 | 54.00 | -12.28 | 35.39 | 3 | Horizontal | 28 | 1.00 | - | 39.20 | 10.02 | 42.89 |
| PK | 12.02G | 54.49 | 74.00 | -19.51 | 48.16 | 3 | Horizontal | 28 | 1.00 | - | 39.20 | 10.02 | 42.89 |

**2.4-2.4835GHz_BT-LE(2Mbps)**

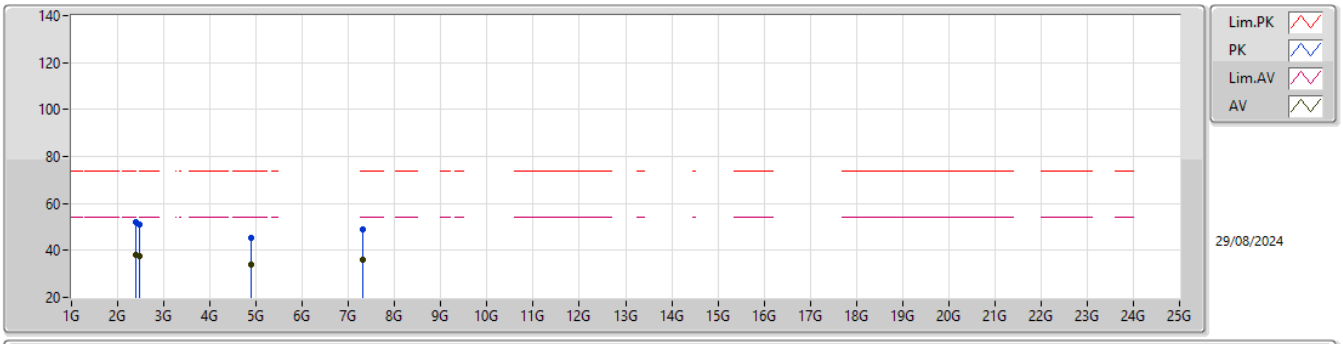
**2404MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 38.85 | 54.00 | -15.15 | 43.19 | 3 | Vertical | 181 | 2.02 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 51.15 | 74.00 | -22.85 | 55.49 | 3 | Vertical | 181 | 2.02 | - | 27.60 | 4.95 | 36.89 |
| AV | 4.808G | 31.45 | 54.00 | -22.55 | 31.83 | 3 | Vertical | 29 | 1.00 | - | 31.28 | 6.86 | 38.52 |
| PK | 4.808G | 44.62 | 74.00 | -29.38 | 45.00 | 3 | Vertical | 29 | 1.00 | - | 31.28 | 6.86 | 38.52 |
| AV | 12.02G | 41.78 | 54.00 | -12.22 | 35.45 | 3 | Vertical | 34 | 1.00 | - | 39.20 | 10.02 | 42.89 |
| PK | 12.02G | 54.62 | 74.00 | -19.38 | 48.29 | 3 | Vertical | 34 | 1.00 | - | 39.20 | 10.02 | 42.89 |

**2.4-2.4835GHz_BT-LE(2Mbps)**

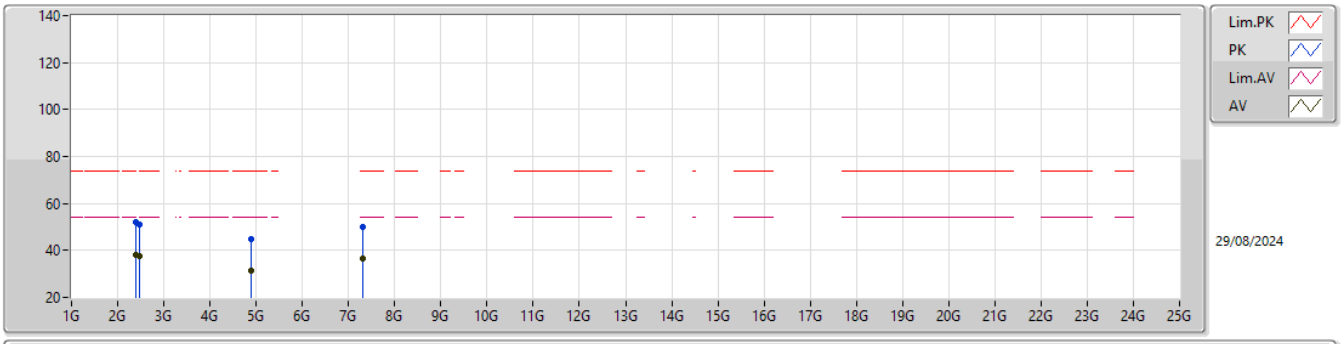
**2440MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 37.89 | 54.00 | -16.11 | 42.23 | 3 | Horizontal | 222 | 1.00 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 51.96 | 74.00 | -22.04 | 56.30 | 3 | Horizontal | 222 | 1.00 | - | 27.60 | 4.95 | 36.89 |
| AV | 2.4835G | 37.69 | 54.00 | -16.31 | 42.41 | 3 | Horizontal | 222 | 1.00 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 50.92 | 74.00 | -23.08 | 55.64 | 3 | Horizontal | 222 | 1.00 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.88G | 33.84 | 54.00 | -20.16 | 34.35 | 3 | Horizontal | 11 | 1.00 | - | 31.14 | 6.92 | 38.57 |
| PK | 4.88G | 45.29 | 74.00 | -28.71 | 45.80 | 3 | Horizontal | 11 | 1.00 | - | 31.14 | 6.92 | 38.57 |
| AV | 7.32G | 36.25 | 54.00 | -17.75 | 31.05 | 3 | Horizontal | 42 | 1.00 | - | 36.16 | 8.43 | 39.39 |
| PK | 7.32G | 48.94 | 74.00 | -25.06 | 43.74 | 3 | Horizontal | 42 | 1.00 | - | 36.16 | 8.43 | 39.39 |

**2.4-2.4835GHz_BT-LE(2Mbps)**

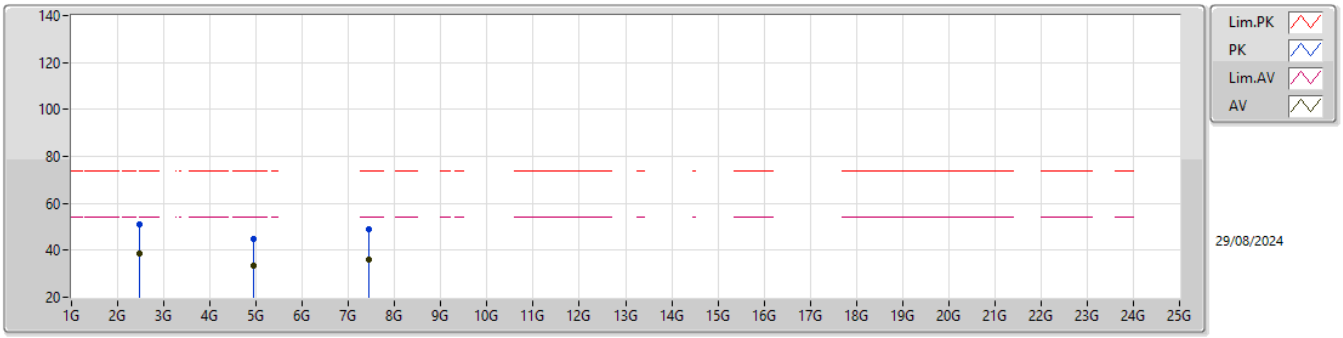
**2440MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 37.96 | 54.00 | -16.04 | 42.30 | 3 | Vertical | 176 | 1.91 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 51.84 | 74.00 | -22.16 | 56.18 | 3 | Vertical | 176 | 1.91 | - | 27.60 | 4.95 | 36.89 |
| AV | 2.4835G | 37.54 | 54.00 | -16.46 | 42.26 | 3 | Vertical | 176 | 1.91 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 51.11 | 74.00 | -22.89 | 55.83 | 3 | Vertical | 176 | 1.91 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.88G | 31.59 | 54.00 | -22.41 | 32.10 | 3 | Vertical | 34 | 1.00 | - | 31.14 | 6.92 | 38.57 |
| PK | 4.88G | 44.86 | 74.00 | -29.14 | 45.37 | 3 | Vertical | 34 | 1.00 | - | 31.14 | 6.92 | 38.57 |
| AV | 7.32G | 36.35 | 54.00 | -17.65 | 31.15 | 3 | Vertical | 45 | 1.00 | - | 36.16 | 8.43 | 39.39 |
| PK | 7.32G | 49.82 | 74.00 | -24.18 | 44.62 | 3 | Vertical | 45 | 1.00 | - | 36.16 | 8.43 | 39.39 |

**2.4-2.4835GHz_BT-LE(2Mbps)**

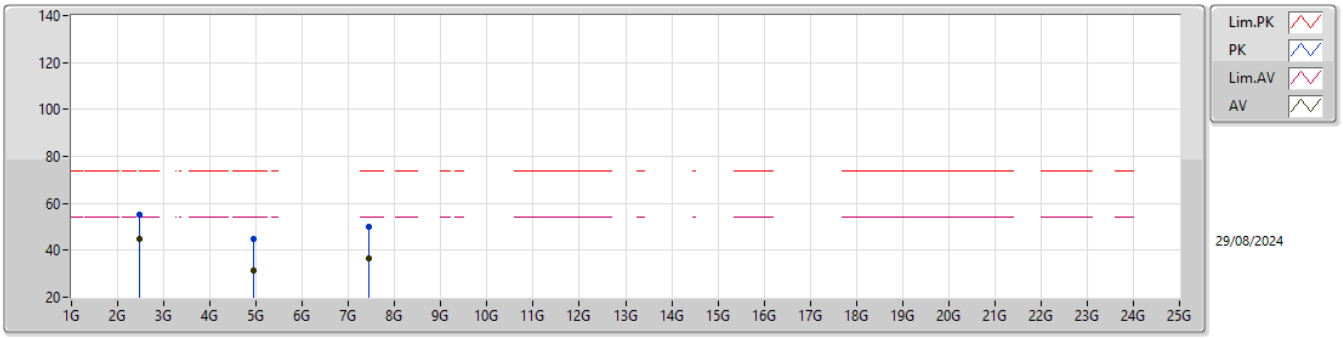
**2478MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.4835G | 38.61 | 54.00 | -15.39 | 43.33 | 3 | Horizontal | 228 | 1.00 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 51.04 | 74.00 | -22.96 | 55.76 | 3 | Horizontal | 228 | 1.00 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.956G | 33.52 | 54.00 | -20.48 | 33.81 | 3 | Horizontal | 23 | 1.00 | - | 31.34 | 6.99 | 38.62 |
| PK | 4.956G | 44.89 | 74.00 | -29.11 | 45.18 | 3 | Horizontal | 23 | 1.00 | - | 31.34 | 6.99 | 38.62 |
| AV | 7.434G | 36.15 | 54.00 | -17.85 | 30.89 | 3 | Horizontal | 45 | 1.00 | - | 36.30 | 8.50 | 39.54 |
| PK | 7.434G | 48.91 | 74.00 | -25.09 | 43.65 | 3 | Horizontal | 45 | 1.00 | - | 36.30 | 8.50 | 39.54 |

**2.4-2.4835GHz_BT-LE(2Mbps)**

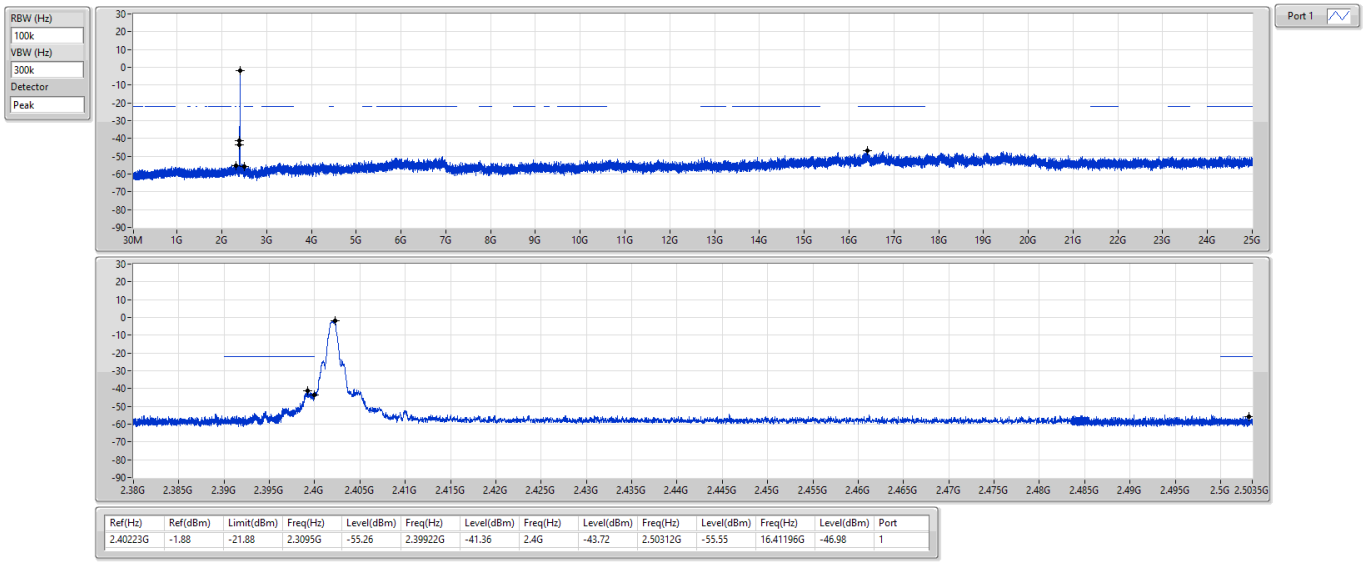
**2478MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.4835G | 44.83 | 54.00 | -9.17 | 49.55 | 3 | Vertical | 183 | 2.02 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 55.15 | 74.00 | -18.85 | 59.87 | 3 | Vertical | 183 | 2.02 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.956G | 31.54 | 54.00 | -22.46 | 31.83 | 3 | Vertical | 16 | 1.00 | - | 31.34 | 6.99 | 38.62 |
| PK | 4.956G | 44.98 | 74.00 | -29.02 | 45.27 | 3 | Vertical | 16 | 1.00 | - | 31.34 | 6.99 | 38.62 |
| AV | 7.434G | 36.46 | 54.00 | -17.54 | 31.20 | 3 | Vertical | 21 | 1.00 | - | 36.30 | 8.50 | 39.54 |
| PK | 7.434G | 49.85 | 74.00 | -24.15 | 44.59 | 3 | Vertical | 21 | 1.00 | - | 36.30 | 8.50 | 39.54 |

**2.4-2.4835GHz_BT-LE(1Mbps)** **CSENdB-DTS**

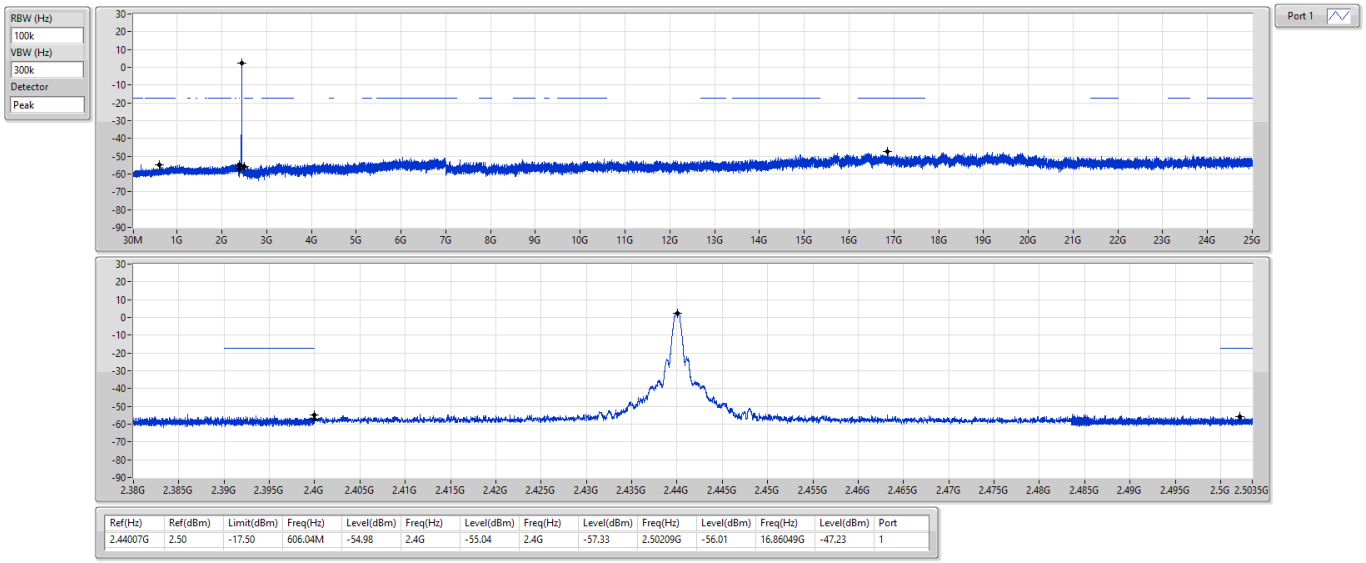
**2402MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.40223G | -1.88 | -21.88 | 2.3095G | -55.26 | 2.39922G | -41.36 | 2.4G | -43.72 | 2.50312G | -55.55 | 16.41196G | -46.98 | 1 |

**2.4-2.4835GHz_BT-LE(1Mbps)** **CSENdB-DTS**

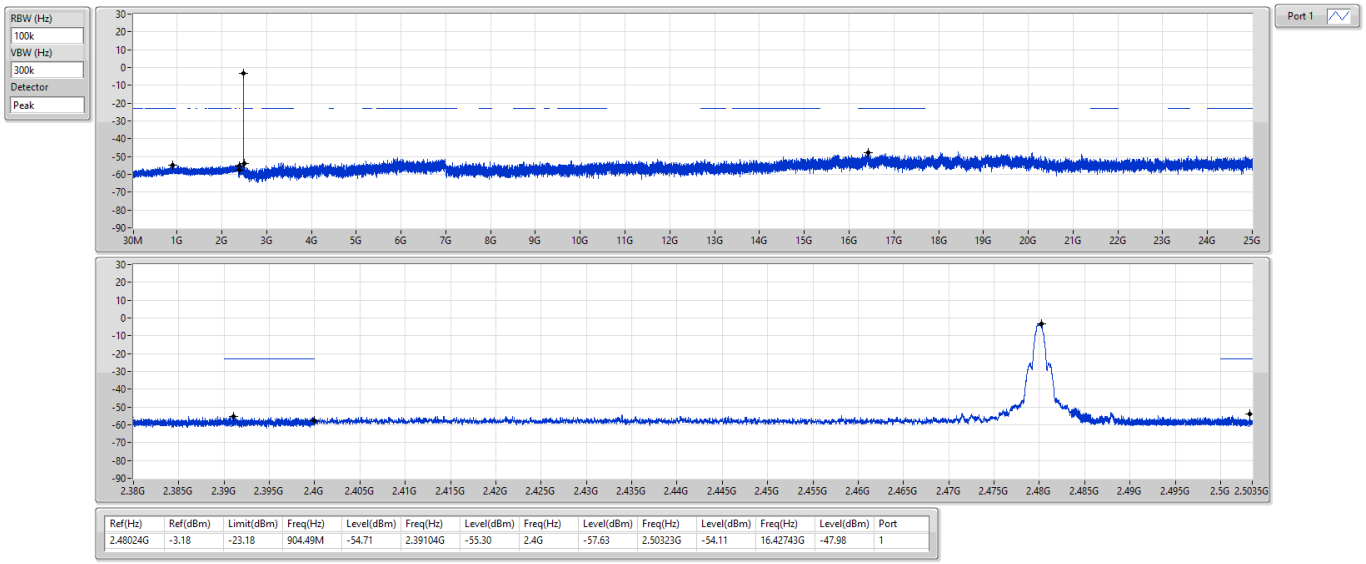
**2440MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.44007G | 2.50 | -17.50 | 606.04M | -54.98 | 2.4G | -55.04 | 2.4G | -57.33 | 2.50209G | -56.01 | 16.86049G | -47.23 | 1 |

**2.4-2.4835GHz_BT-LE(1Mbps)** **CSENdB-DTS**

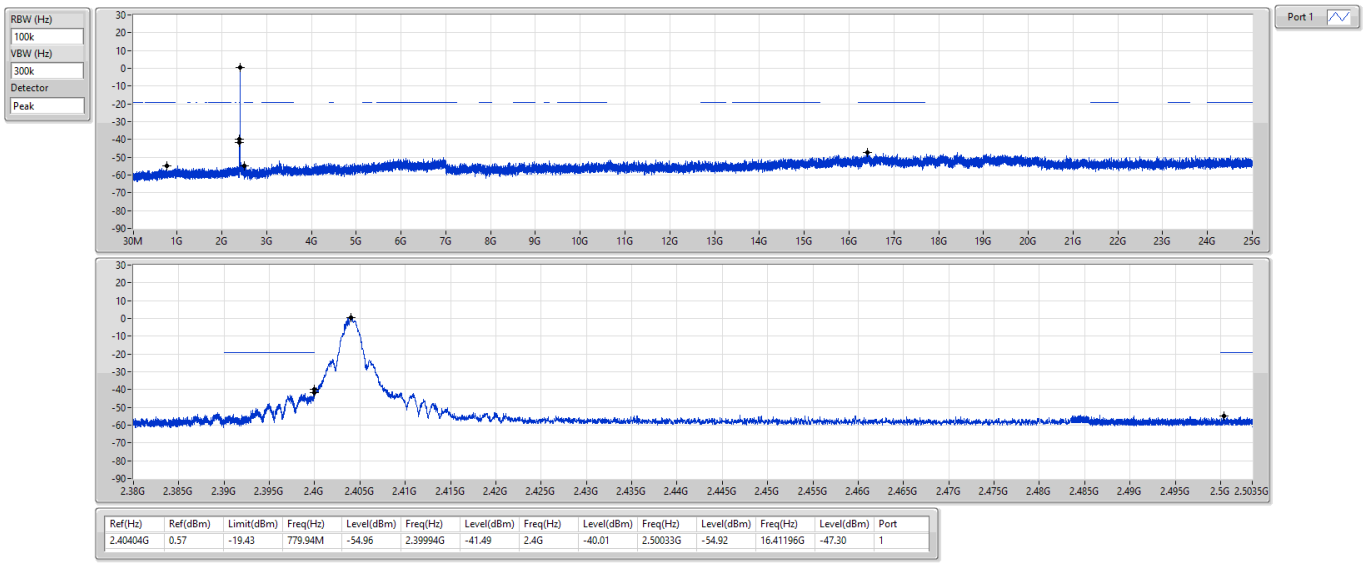
**2480MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.48024G | -3.18 | -23.18 | 904.49M | -54.71 | 2.39104G | -55.30 | 2.4G | -57.63 | 2.50323G | -54.11 | 16.42743G | -47.98 | 1 |

**2.4-2.4835GHz_BT-LE(2Mbps)** **CSENdB-DTS**

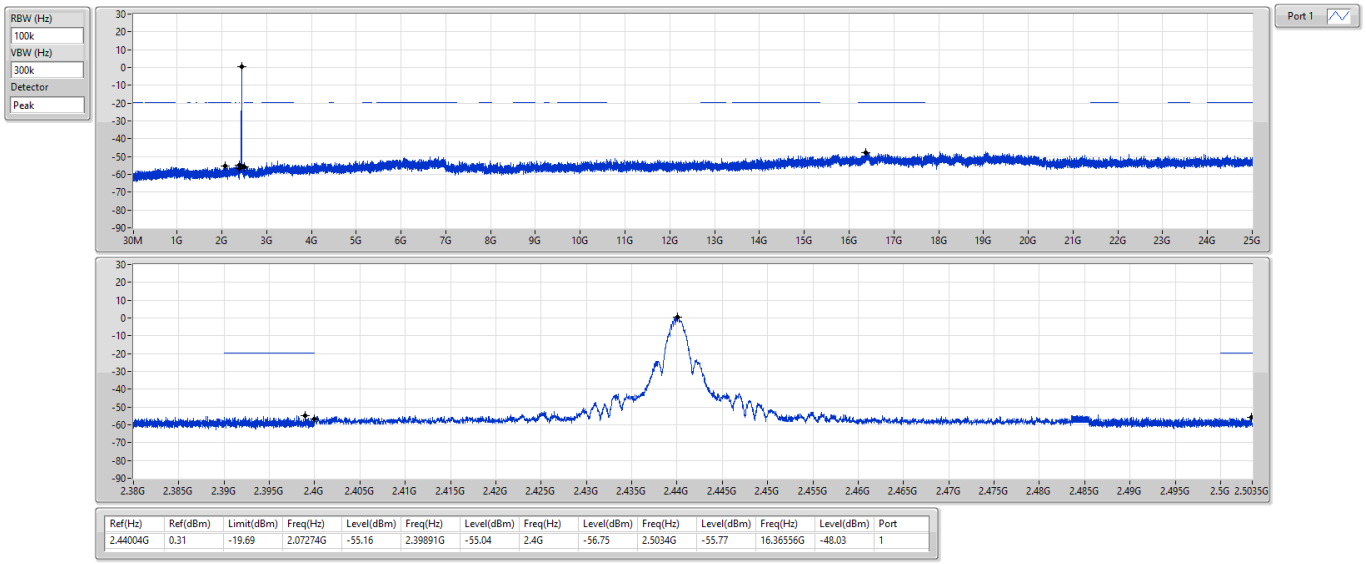
**2404MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.40404G | 0.57 | -19.43 | 779.94M | -54.96 | 2.39994G | -41.49 | 2.4G | -40.01 | 2.50033G | -54.92 | 16.41196G | -47.30 | 1 |

**2.4-2.4835GHz_BT-LE(2Mbps)** **CSENdB-DTS**

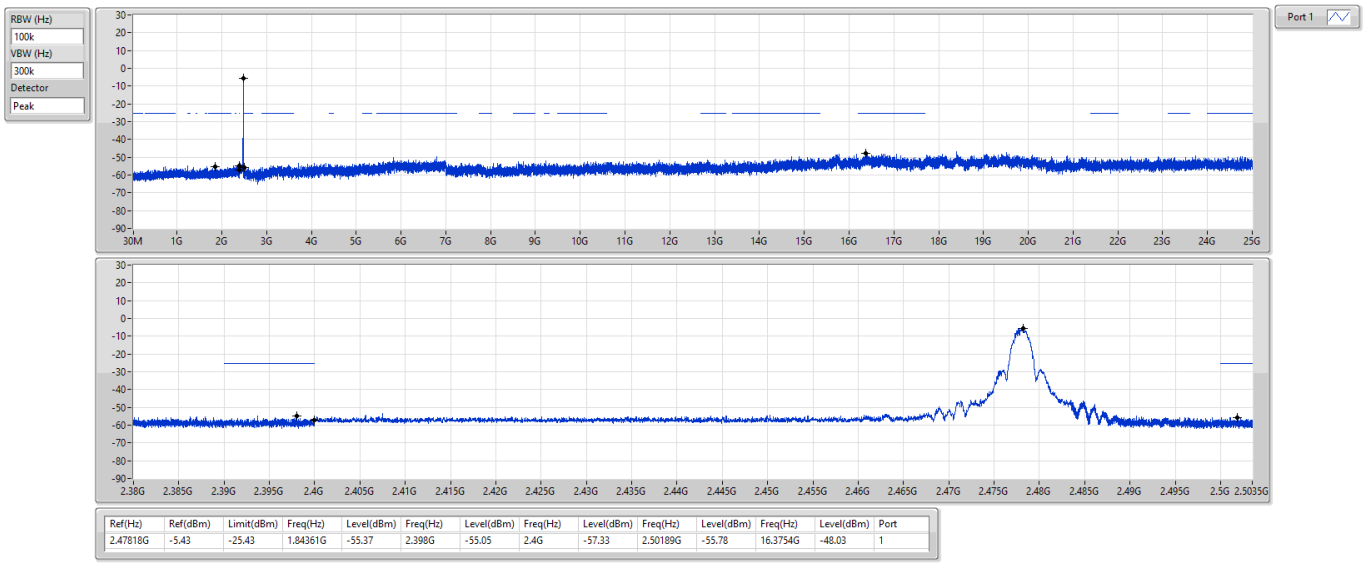
**2440MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.44004G | 0.31 | -19.69 | 2.07274G | -55.16 | 2.39891G | -55.04 | 2.4G | -56.75 | 2.5034G | -55.77 | 16.36556G | -48.03 | 1 |

**2.4-2.4835GHz_BT-LE(2Mbps)** **CSENdB-DTS**

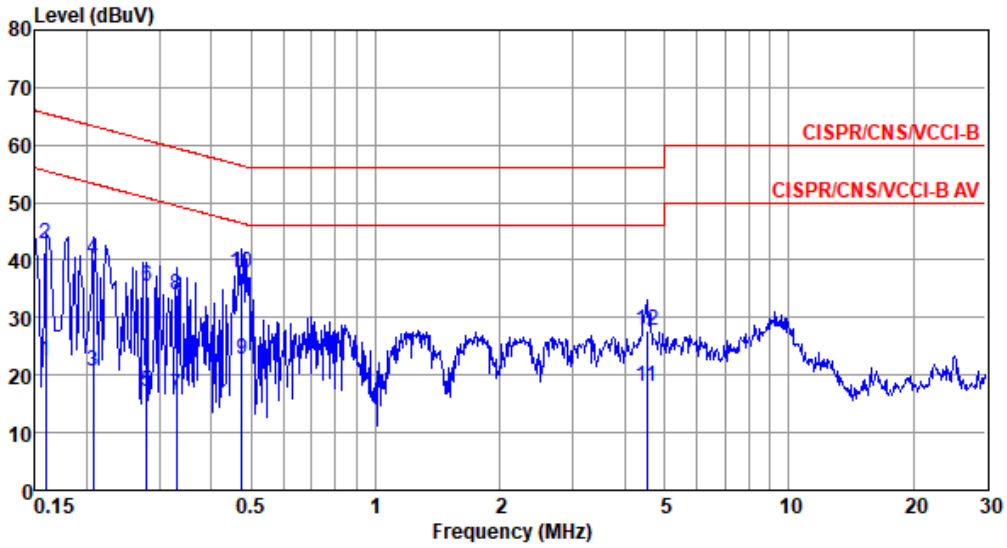
**2478MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.47818G | -5.43 | -25.43 | 1.84361G | -55.37 | 2.398G | -55.05 | 2.4G | -57.33 | 2.50189G | -55.78 | 16.3754G | -48.03 | 1 |

| | |
|---|---|
| **Modulation Mode** | Charging Mode |
| **Power Phase** | Line |

Test by : Joe Liao_AN Temperature: 25°C Humidity: 64%

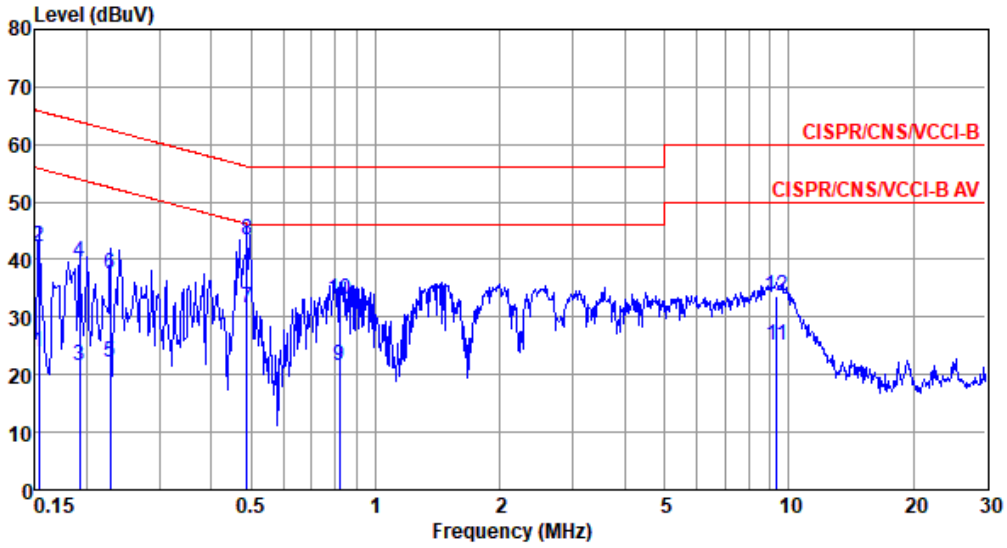



| | Freq | Level | Limit Line | Over Limit | Read Level | Factor | Cable loss | Aux | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dBuV | dB | dBuV | dB | dB | dB | |
| 1 | 0.159 | 22.55 | 55.52 | -32.97 | 12.69 | 9.65 | 0.08 | 0.13 | Average |
| 2 | 0.159 | 42.69 | 65.52 | -22.83 | 32.83 | 9.65 | 0.08 | 0.13 | QP |
| 3 | 0.207 | 20.68 | 53.32 | -32.64 | 10.80 | 9.65 | 0.06 | 0.17 | Average |
| 4 | 0.207 | 40.18 | 63.32 | -23.14 | 30.30 | 9.65 | 0.06 | 0.17 | QP |
| 5 | 0.279 | 17.09 | 50.85 | -33.76 | 7.16 | 9.65 | 0.07 | 0.21 | Average |
| 6 | 0.279 | 35.42 | 60.85 | -25.43 | 25.49 | 9.65 | 0.07 | 0.21 | QP |
| 7 | 0.330 | 16.44 | 49.44 | -33.00 | 6.50 | 9.64 | 0.07 | 0.23 | Average |
| 8 | 0.330 | 34.07 | 59.44 | -25.37 | 24.13 | 9.64 | 0.07 | 0.23 | QP |
| 9 | 0.474 | 22.82 | 46.45 | -23.63 | 12.84 | 9.64 | 0.08 | 0.26 | Average |
| 10* | 0.474 | 37.74 | 56.45 | -18.71 | 27.76 | 9.64 | 0.08 | 0.26 | QP |
| 11 | 4.525 | 18.02 | 46.00 | -27.98 | 7.74 | 9.68 | 0.20 | 0.40 | Average |
| 12 | 4.525 | 27.70 | 56.00 | -28.30 | 17.42 | 9.68 | 0.20 | 0.40 | QP |

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

| | |
|---|---|
| **Modulation Mode** | Charging Mode |
| **Power Phase** | Neutral |

Test by : Joe Liao_AN Temperature: 25°C Humidity: 64%




| | Freq | Level | Limit Line | Over Limit | Read Level | Factor | Cable loss | Aux | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dBuV | dB | dBuV | dB | dB | dB | |
| 1 | 0.153 | 23.82 | 55.82 | -32.00 | 13.96 | 9.66 | 0.08 | 0.12 | Average |
| 2 | 0.153 | 42.15 | 65.82 | -23.67 | 32.29 | 9.66 | 0.08 | 0.12 | QP |
| 3 | 0.192 | 21.58 | 53.93 | -32.35 | 11.71 | 9.65 | 0.06 | 0.16 | Average |
| 4 | 0.192 | 39.45 | 63.93 | -24.48 | 29.58 | 9.65 | 0.06 | 0.16 | QP |
| 5 | 0.228 | 22.20 | 52.52 | -30.32 | 12.31 | 9.65 | 0.06 | 0.18 | Average |
| 6 | 0.228 | 37.49 | 62.52 | -25.03 | 27.60 | 9.65 | 0.06 | 0.18 | QP |
| 7 | 0.489 | 31.54 | 46.19 | -14.65 | 21.56 | 9.64 | 0.08 | 0.26 | Average |
| 8* | 0.489 | 43.54 | 56.19 | -12.65 | 33.56 | 9.64 | 0.08 | 0.26 | QP |
| 9 | 0.817 | 21.57 | 46.00 | -24.43 | 11.54 | 9.65 | 0.09 | 0.29 | Average |
| 10 | 0.817 | 33.16 | 56.00 | -22.84 | 23.13 | 9.65 | 0.09 | 0.29 | QP |
| 11 | 9.352 | 25.03 | 50.00 | -24.97 | 14.53 | 9.74 | 0.34 | 0.42 | Average |
| 12 | 9.352 | 33.70 | 60.00 | -26.30 | 23.20 | 9.74 | 0.34 | 0.42 | QP |

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

# FCC Test Report

| | | |
|---|---|---|
| **FCC ID** | : | **IPH-04951** |
| **Equipment** | : | **Fitness Product** |
| **Model No.** | : | **A04951** |
| **Brand Name** | : | **GARMIN** |
| **Applicant** | : | **Garmin International, Inc.** |
| **Address** | : | **1200 E. 151st Street Olathe, KS 66062 United States** |
| **Standard** | : | **47 CFR FCC Part 15.225** |
| **Received Date** | : | **Aug. 27, 2024** |
| **Tested Date** | : | **Aug. 30 ~ Sep. 05, 2024** |

**We, International Certification Corporation, would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It shall not be reproduced except in full without the written approval of our laboratory.**

**Reviewed by:** **Approved by:**

**Along Chen / Assistant Manager** **Gary Chang / Manager**

# Table of Contents

# Release Record

| Report No. | Version | Description | Issued Date |
|---|---|---|---|
| FR450901NF | Rev. 01 | Initial issue | Oct. 25, 2024 |

# Summary of Test Results

| FCC Rules | Test Items | Measured | Result |
|---|---|---|---|
| 15.207 | AC Power Line Conducted Emissions | [dBuV]: 0.489MHz<br>43.54 (Margin -12.65dB) - QP | Pass |
| 15.225(a)~(c) | Field strength of fundamental emissions and spectrum mask | Meet the requirement of limit | Pass |
| 15.225(d) | Field strength of any emissions appearing outside of the 13.110-14.010 MHz band | Meet the requirement of limit | Pass |
| 15.225(e) | Frequency tolerance | Meet the requirement of limit | Pass |
| 15.215 (c) | 20dB bandwidth | Meet the requirement of limit | Pass |
| 15.203 | Antenna Requirement | Meet the requirement of limit | Pass |

| **Declaration of Conformity:** |
|---|
| The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. |
| **Comments and Explanations:** |
| The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification. |

# 1 General Description

## 1.1 Information

### 1.1.1 Specification of the Equipment under Test (EUT)

| RF General Information | | | |
|---|---|---|---|
| **Frequency Range (MHz)** | **Modulation** | **Ch. Frequency (MHz)** | **Channel Number** |
| 13.553 – 13.567 | ASK | 13.56 | 1 |

### 1.1.2 Antenna Details

| Ant. No. | Brand | Model | Type | Connector |
|---|---|---|---|---|
| 1 | VIKING TECH CORPORATION | NLI14JTR60 | Inductive | No |

### 1.1.3 EUT Operational Condition

| | | | |
|---|---|---|---|
| **Power Type** | 5Vdc from host<br>3.87Vdc from battery | | |
| **Operational Voltage** | ☒ Vnom (3.87 V) | ☒ Vmax (4.45 V) | ☒ Vmin (3.5 V) |
| **Operational Climatic** | ☒ Tnom (20°C) | ☒ Tmax (60°C) | ☒ Tmin (-20°C) |

### 1.1.4 Accessories

| No. | Equipment | Description |
|---|---|---|
| 1 | Battery | Brand: Garmin<br>Model: 361-00162-00<br>Rating: 3.87V, 220mAh |
| 2 | USB cable | Brand: GARMIN<br>Model: 320-01602-00<br>0.56m shielded without core |

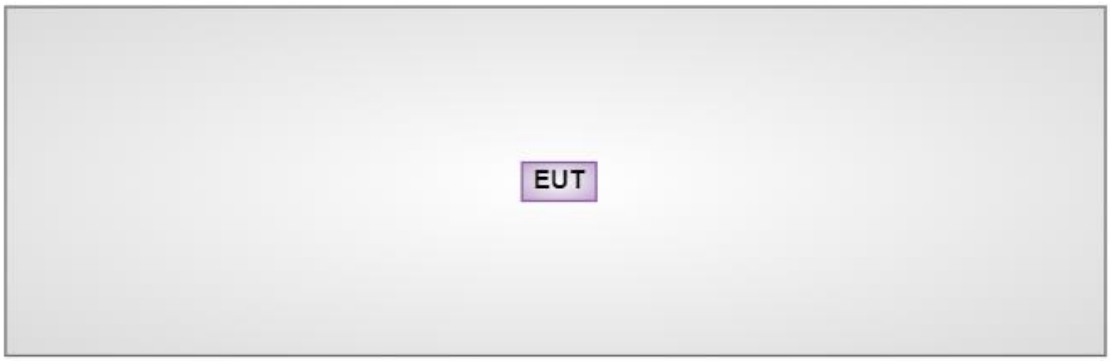
### 1.1.5 Test Tool and Power Index

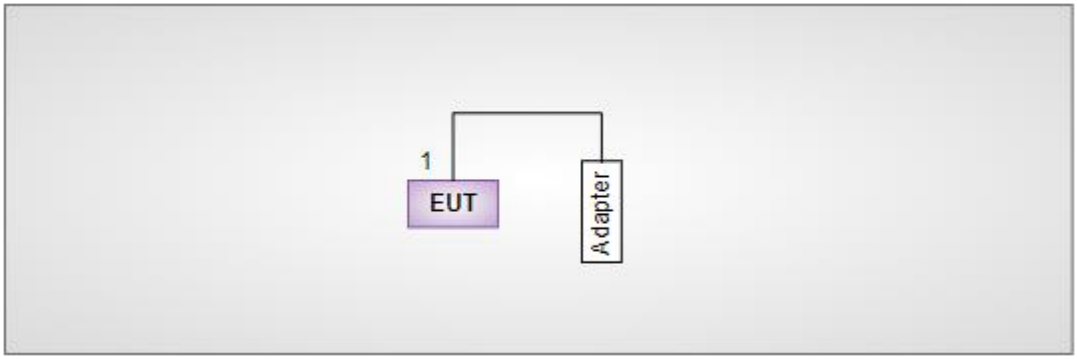
| | |
|---|---|
| **Test Tool** | NFC Test, Version: 2101 |
| **Power Index** | Default |

## 1.2 Local Support Equipment List

| Support Equipment List | | | | | |
|---|---|---|---|---|---|
| **No.** | **Equipment** | **Brand** | **Model** | **FCC ID** | **Remarks** |
| 1 | Adapter | Samsung | TA-800 | --- | --- |

## 1.3 Test Setup Chart

| Test Setup Diagram (Battery Mode) |
|---|
|   |

| Test Setup Diagram (Charging Mode) | |
|---|---|
|   | |
| **No.** | **Signal cable / Length (m)** |

## 1.4 The Equipment List

| Test Item | Conducted Emission | | | | |
|---|---|---|---|---|---|
| **Test Site** | Conduction room 1 / (CO01-WS) | | | | |
| **Tested Date** | Sep. 05, 2024 | | | | |
| **Instrument** | **Brand** | **Model No.** | **Serial No.** | **Calibration Date** | **Calibration Until** |
| Receiver | R&S | ESR3 | 101658 | Feb. 23, 2024 | Feb. 22, 2025 |
| LISN | R&S | ENV216 | 101579 | May 09, 2024 | May 08, 2025 |
| LISN (Support Unit) | SCHWARZBECK | Schwarzbeck 8127 | 8127667 | Jan. 10, 2024 | Jan. 09, 2025 |
| RF Cable-CON | Woken | CFD200-NL | CFD200-NL-001 | Oct. 11, 2023 | Oct. 10, 2024 |
| 50 ohm terminal | NA | 50 | 01 | Jun. 19, 2024 | Jun. 18, 2025 |
| Measurement Software | AUDIX | e3 | 6.120210k | NA | NA |
| Note: Calibration Interval of instruments listed above is one year. | | | | | |

| Test Item | Radiated Emission | | | | |
|---|---|---|---|---|---|
| **Test Site** | 966 chamber1 / (03CH01-WS) | | | | |
| **Tested Date** | Aug. 30, 2024 | | | | |
| **Instrument** | **Brand** | **Model No.** | **Serial No.** | **Calibration Date** | **Calibration Until** |
| Receiver | R&S | ESR3 | 101657 | Mar. 05, 2024 | Mar. 04, 2025 |
| Loop Antenna | R&S | HFH2-Z2 | 100330 | Oct. 31, 2023 | Oct. 30, 2024 |
| Bilog Antenna | SCHWARZBECK | VULB9168 | VULB9168-522 | Aug. 09, 2024 | Aug. 08, 2025 |
| Preamplifier | EMC | EMC02325 | 980225 | Jun. 17, 2024 | Jun. 16, 2025 |
| Loop Antenna Cable | KOAX KABEL | 101354-BW | 101354-BW | Oct. 03, 2023 | Oct. 02, 2024 |
| LF cable 3M | Woken | CFD400NL-LW | CFD400NL-001 | Oct. 03, 2023 | Oct. 02, 2024 |
| LF cable 11M | EMC | EMCCFD400-NW-NW-11000 | 200801 | Oct. 03, 2023 | Oct. 02, 2024 |
| LF cable 1M | EMC | EMCCFD400-NM-NM-1000 | 160502 | Oct. 03, 2023 | Oct. 02, 2024 |
| Measurement Software | Sporton | SENSE-EMI | V5.11 | NA | NA |
| Note: Calibration Interval of instruments listed above is one year. | | | | | |

| Test Item | RF Conducted | | | | |
|---|---|---|---|---|---|
| **Test Site** | (TH01-WS) | | | | |
| **Tested Date** | Aug. 30, 2024 | | | | |
| **Instrument** | **Brand** | **Model No.** | **Serial No.** | **Calibration Date** | **Calibration Until** |
| Spectrum Analyzer | R&S | FSV40 | 101910 | Apr. 18, 2024 | Apr. 17, 2025 |
| Power Meter | Anritsu | ML2495A | 1241002 | Nov. 21, 2023 | Nov. 20, 2024 |
| Power Sensor | Anritsu | MA2411B | 1207366 | Nov. 21, 2023 | Nov. 20, 2024 |
| TEMP&HUMIDITY CHAMBER | GIANT FORCE | GCT-225-40-SP-SD | MAF1212-002 | Jul. 01, 2024 | Jun. 30, 2025 |
| DC POWER SOURCE | GW INSTEK | GPC-6030D | GES855395 | Nov. 03, 2023 | Nov. 02, 2024 |
| Note: Calibration Interval of instruments listed above is one year. | | | | | |

## 1.5 Test Standards

47 CFR FCC Part 15.225
ANSI C63.10-2013

## 1.6 Deviation from Test Standard and Measurement Procedure

None

## 1.7 Measurement Uncertainty

The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

| Measurement Uncertainty | |
|---|---|
| **Parameters** | **Uncertainty** |
| Bandwidth | ±34.130 Hz |
| Radiated emission ≤ 30MHz | ±2.3 dB |
| Radiated emission ≤ 1GHz | ±3.41 dB |
| Temperature | ±0.4 °C |
| AC conducted emission | ±2.92 dB |

# 2 Test Configuration

## 2.1 Testing Facility

| | |
|---|---|
| **Test Laboratory** | International Certification Corporation |
| **Test Site** | CO01-WS, 03CH01-WS, TH01-WS |
| **Address of Test Site** | No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.) |

- FCC Designation No.: TW2732
- FCC site registration No.: 181692
- ISED#: 10807A
- CAB identifier: TW2732

## 2.2 The Worst Test Modes and Channel Details

| Test item | Modulation Mode | Test Frequency (MHz) | Test Configuration |
|---|---|---|---|
| AC Power Line Conducted Emissions | Charging mode | --- | 2 |
| Field strength of fundamental emissions | NFC | 13.56 | 1 |
| Unwanted Emissions into Restricted Frequency Bands < 30MHz | NFC | 13.56 | 1 |
| Unwanted Emissions into Restricted Frequency Bands > 30MHz | NFC | 13.56 | 1 |
| | Charging mode | --- | 2 |
| Frequency tolerance | NFC | 13.56 | 1 |
| 20dB bandwidth | NFC | 13.56 | 1 |

**NOTE:**
1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **X-plane** result was found as the worst case and was shown in this report.
2. The test configurations are listed as follows:
   1) Mode 1: Battery mode
   2) Mode 2: Charging mode

# 3 Transmitter Test Results

## 3.1 20dB and Occupied Bandwidth

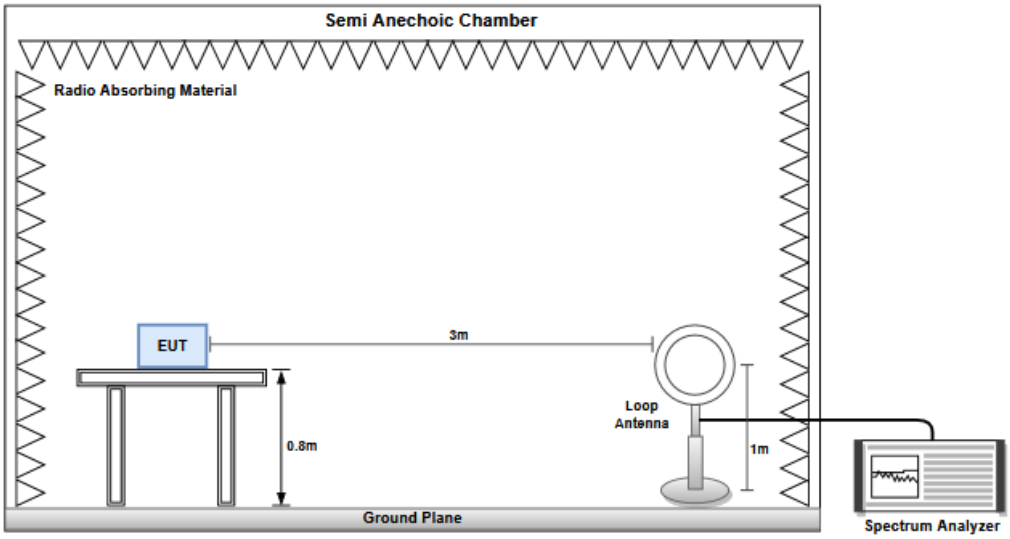
### 3.1.1 Limit of 20dB Bandwidth

The upper and lower frequency of the 20dB bandwidth shall within 13.553~13.567 MHz

### 3.1.2 Test Procedures

1. Set resolution bandwidth (RBW) = 1 kHz, Video bandwidth = 3 kHz.
2. Detector = Peak, Trace mode = max hold.
3. Sweep = auto couple, Allow the trace to stabilize.
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 20dB relative to the maximum level measured in the fundamental emission.

### 3.1.3 Test Setup




### 3.1.4 Test Result

| Ambient Condition | 26°C / 62% | Tested By | Allen Lee |
|---|---|---|---|

Refer to Appendix A.

## 3.2 Field Strength of Fundamental Emissions

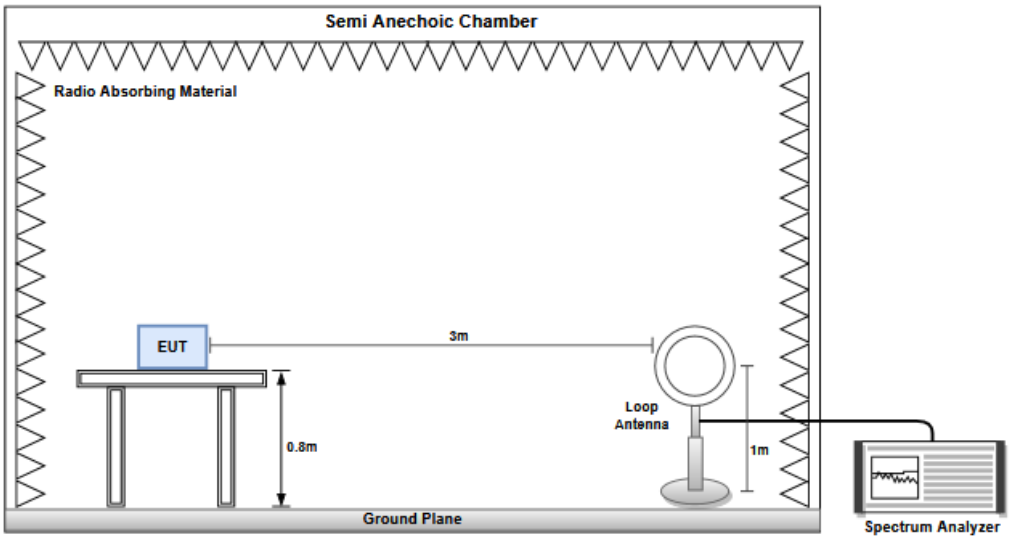
### 3.2.1 Field Strength of Fundamental Emissions

The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.

### 3.2.2 Test Procedures

1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at a height of 0.8 m test table above the ground plane.
2. Measurement is made with the antenna positioned in both the open and close planes of polarization. . Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, and the antenna rotated to repeat the measurements for both the open and close antenna polarizations.

### 3.2.3 Test Setup




### 3.2.4 Test Result

| Ambient Condition | 26°C / 62% | Tested By | Allen Lee |
|---|---|---|---|

Refer to Appendix B.

## 3.3 Unwanted Emissions into Restricted Frequency Bands

### 3.3.1 Limit of Unwanted Emissions into Restricted Frequency Bands

1) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.
2) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.
3) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in below table

| Restricted Band Emissions Limit | | | |
|---|---|---|---|
| **Frequency Range (MHz)** | **Field Strength (uV/m)** | **Field Strength (dBuV/m)** | **Measure Distance (m)** |
| 0.009~0.490 | 2400/F(kHz) | 48.5 - 13.8 | 300 |
| 0.490~1.705 | 24000/F(kHz) | 33.8 - 23 | 30 |
| 1.705~30.0 | 30 | 29 | 30 |
| 30~88 | 100 | 40 | 3 |
| 88~216 | 150 | 43.5 | 3 |
| 216~960 | 200 | 46 | 3 |
| Above 960 | 500 | 54 | 3 |

**Note 1:**
Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit
**Note 2:**
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

### 3.3.2 Test Procedures

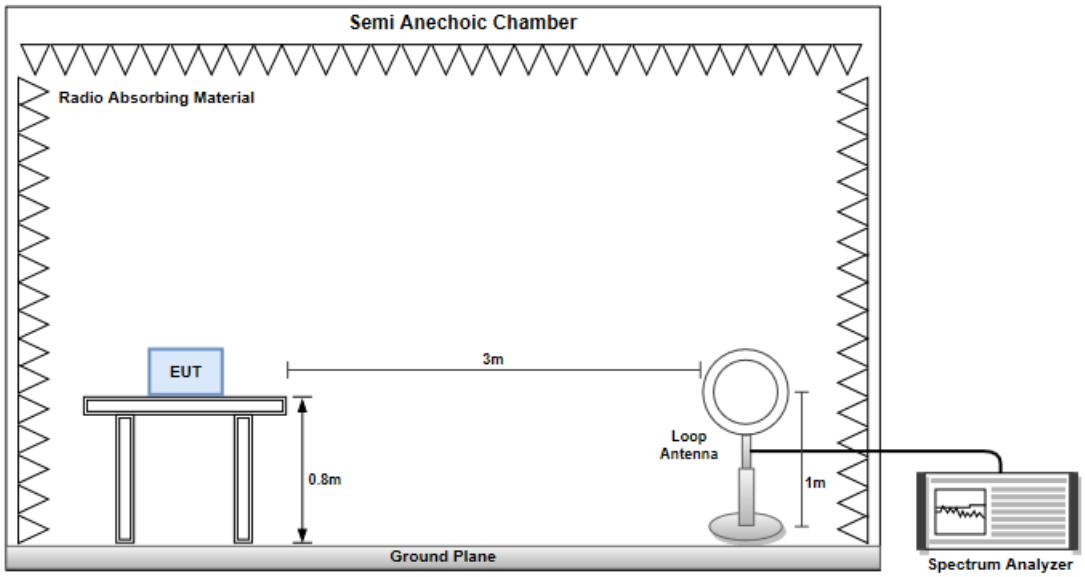
4. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at a height of 0.8 m test table above the ground plane.
5. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
6. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

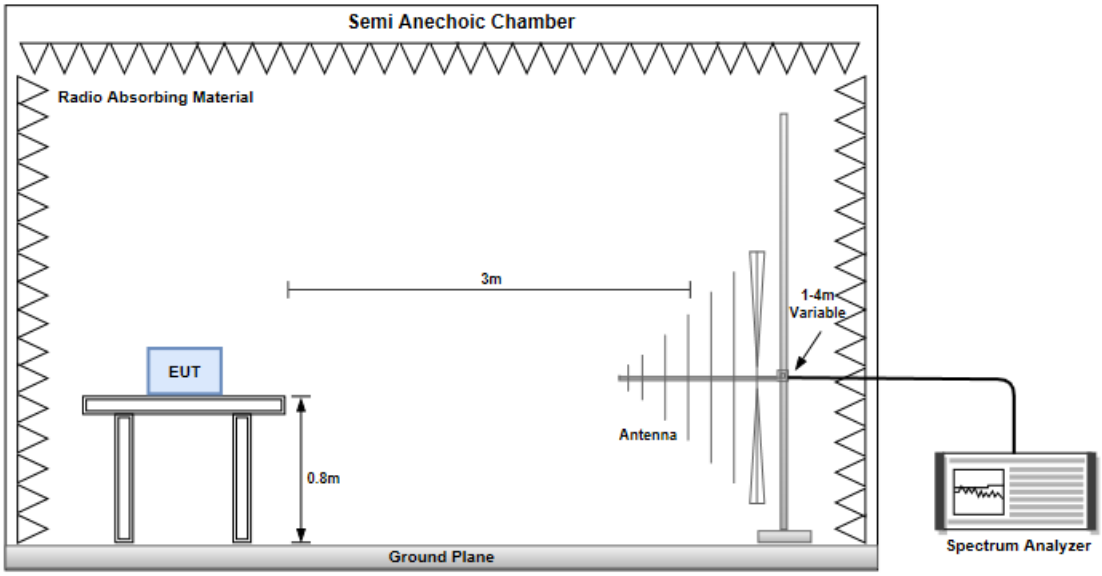
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.

### 3.3.3 Test Setup

**Radiated Emissions below 30MHz**




**Radiated Emissions below 1 GHz**




### 3.3.4 Test Results

Refer to Appendix C.

## 3.4 Frequency Stability

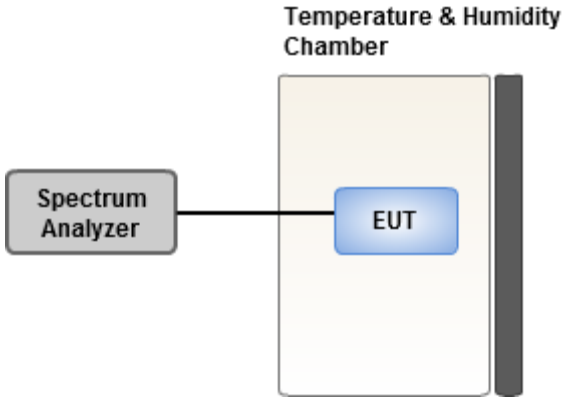
### 3.4.1 Frequency Stability Limit

Carrier frequency stability shall be maintained to ±0.01% (±100 ppm).

### 3.4.2 Test Procedures

| Test Method | |
|---|---|
| ☒ | Refer as ANSI C63.10, clause 6.8 for frequency stability tests |
| | ☒ Frequency stability with respect to ambient temperature |
| | ☒ Frequency stability when varying supply voltage |
| ☐ | For conducted measurement. |
| ☒ | For radiated measurement. The equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted power level. |

### 3.4.3 Test Setup




### 3.4.4 Test Result

| Ambient Condition | 26°C / 62% | Tested By | Allen Lee |
|---|---|---|---|

Refer to Appendix D.

# 3.5 AC Power Line Conducted Emissions

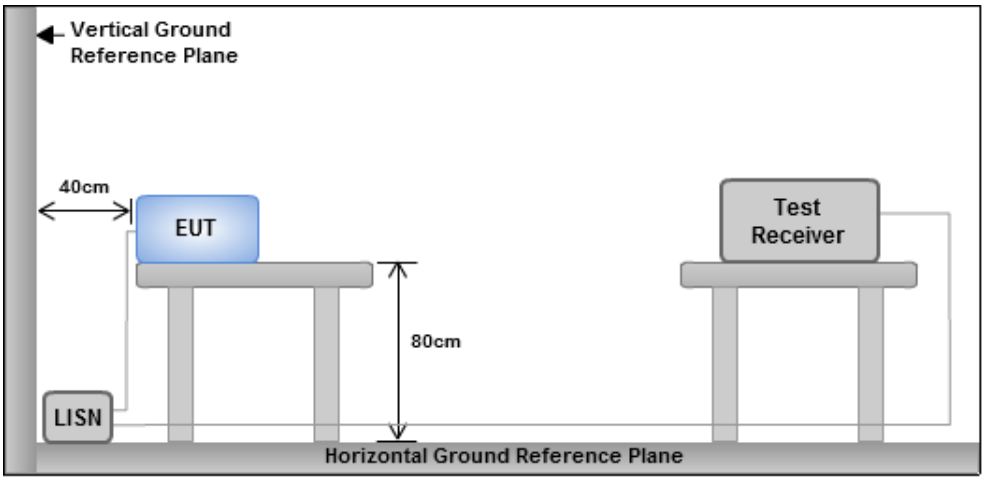
## 3.5.1 Limit of AC Power Line Conducted Emissions

| Conducted Emissions Limit | | |
|---|---|---|
| **Frequency Emission (MHz)** | **Quasi-Peak** | **Average** |
| 0.15-0.5 | 66 - 56 * | 56 - 46 * |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |
| Note 1: * Decreases with the logarithm of the frequency. | | |

## 3.5.2 Test Procedures

1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
3. AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.
4. This measurement was performed with AC 120V / 60Hz.

## 3.5.3 Test Setup




Note: 1. Support units were connected to second LISN.

2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

## 3.5.4 Test Result

Refer to Appendix E.

# 4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corporation (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website http://www.icertifi.com.tw.

**Linkou**

Tel: 886-2-2601-1640

No.30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan (R.O.C.)

**Kwei Shan**

Tel: 886-3-271-8666

No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

No.2-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

**Kwei Shan Site II**

Tel: 886-3-271-8640

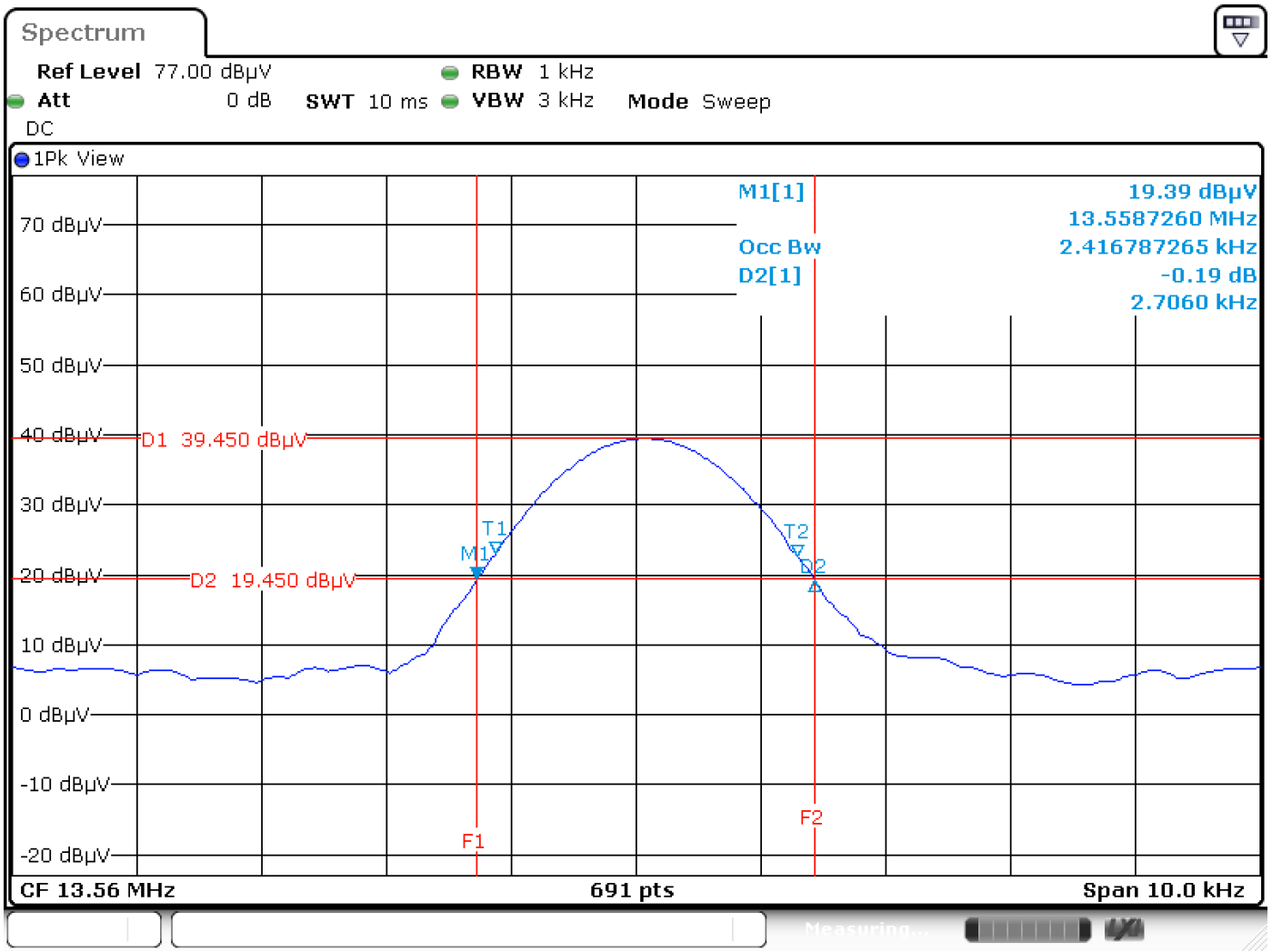
No.14-1, Lane 19, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

If you have any suggestion, please feel free to contact us as below information.

Tel: 886-3-271-8666
Fax: 886-3-318-0345
Email: ICC_Service@icertifi.com.tw

**==END==**

| Modulation Mode | Freq. (MHz) | 20dB Bandwidth (kHz) | $F_L$ at 20dB BW (MHz) | $F_H$ at 20dBBW (MHz) | 99% Bandwidth (kHz) |
|---|---|---|---|---|---|
| NFC | 13.56 | 2.706 | 13.558726 | 13.561432 | 2.416787265 |
| **Limit** | | N/A | 13.553 | 13.567 | N/A |



| Field Strength of Fundamental Emissions Result | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Polarization** | **Emission Frequency (MHz)** | **Emission Level (dBuV/m)** | **Limit (dBuV/m)** | **Margin (dB)** | **SA Reading (dBuV)** | **Factor (dB)** | **Remark** |
| Open | 13.56 | 43.22 | 105.39 | -62.17 | 19.4 | 23.82 | QP |

| Field Strength of Fundamental Emissions Result | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Polarization** | **Emission Frequency (MHz)** | **Emission Level (dBuV/m)** | **Limit (dBuV/m)** | **Margin (dB)** | **SA Reading (dBuV)** | **Factor (dB)** | **Remark** |
| Close | 13.56 | 47.12 | 105.39 | -58.27 | 23.3 | 23.82 | QP |

| Field Strength of Fundamental Emissions Result | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Polarization** | **Emission Frequency (MHz)** | **Emission Level (dBuV/m)** | **Limit (dBuV/m)** | **Margin (dB)** | **SA Reading (dBuV)** | **Factor (dB)** | **Remark** |
| Ground parallel | 13.56 | 41.93 | 105.39 | -63.46 | 18.11 | 23.82 | QP |

Note: Emission level = SA reading + Factor

## Unwanted Emissions (Below 30MHz)

| Field Strength of Fundamental Emissions Result | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Polarization** | **Emission Frequency (MHz)** | **Emission Level (dBuV/m)** | **Limit (dBuV/m)** | **Margin (dB)** | **SA Reading (dBuV)** | **Factor(dB)** | **Remark** |
| Open | 13.41 | 27.8 | 62 | -34.2 | 4 | 23.8 | QP |
| Open | 13.553 | 27.92 | 71.87 | -43.95 | 4.1 | 23.82 | QP |
| Open | 13.567 | 28.03 | 71.86 | -43.83 | 4.2 | 23.83 | QP |
| Open | 13.71 | 27.85 | 61.81 | -33.96 | 4 | 23.85 | QP |
| Open | 27.12 | 23.55 | 49.54 | -25.99 | 2.8 | 20.75 | QP |

| Field Strength of Fundamental Emissions Result | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Polarization** | **Emission Frequency (MHz)** | **Emission Level (dBuV/m)** | **Limit (dBuV/m)** | **Margin (dB)** | **SA Reading (dBuV)** | **Factor(dB)** | **Remark** |
| Close | 13.41 | 28 | 62 | -34 | 4.2 | 23.8 | QP |
| Close | 13.553 | 28.92 | 71.87 | -42.95 | 5.1 | 23.82 | QP |
| Close | 13.567 | 28.83 | 71.86 | -43.03 | 5 | 23.83 | QP |
| Close | 13.71 | 27.95 | 61.81 | -33.86 | 4.1 | 23.85 | QP |
| Close | 27.12 | 23.65 | 49.54 | -25.89 | 2.9 | 20.75 | QP |

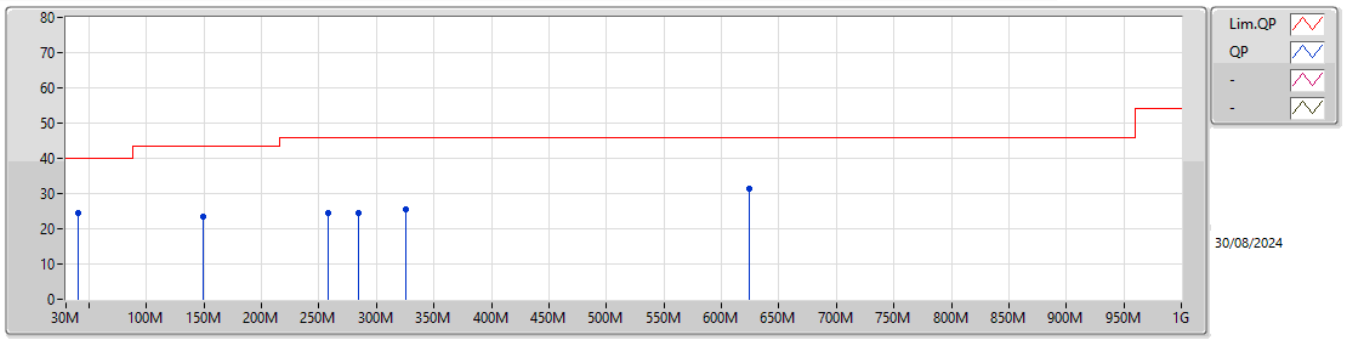
| Field Strength of Fundamental Emissions Result | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Polarization** | **Emission Frequency (MHz)** | **Emission Level (dBuV/m)** | **Limit (dBuV/m)** | **Margin (dB)** | **SA Reading (dBuV)** | **Factor(dB)** | **Remark** |
| Ground parallel | 13.41 | 27.8 | 62 | -34.2 | 4 | 23.8 | QP |
| Ground parallel | 13.553 | 27.92 | 71.87 | -43.95 | 4.1 | 23.82 | QP |
| Ground parallel | 13.567 | 27.93 | 71.86 | -43.93 | 4.1 | 23.83 | QP |
| Ground parallel | 13.71 | 27.85 | 61.81 | -33.96 | 4 | 23.85 | QP |
| Ground parallel | 27.12 | 23.65 | 49.54 | -25.89 | 2.9 | 20.75 | QP |

Note: Emission level = SA reading + Factor

**Summary**

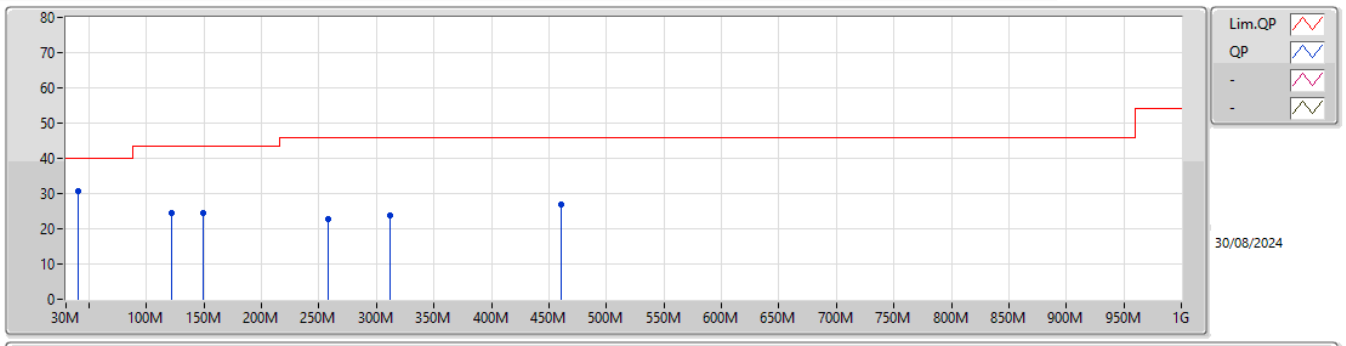
| Mode | Result | Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Condition |
|---|---|---|---|---|---|---|---|
| Mode 1 | Pass | PK | 40.6M | 30.70 | 40.00 | -9.30 | Vertical |
| Mode 2 | Pass | PK | 51.9M | 26.25 | 40.00 | -13.75 | Vertical |

**Mode 1**



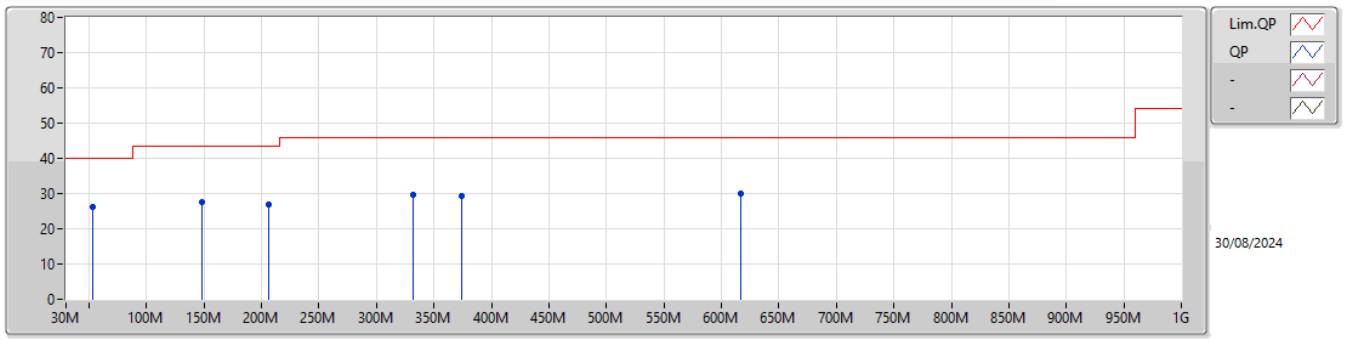

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| PK | 40.6M | 24.40 | 40.00 | -15.60 | -9.03 | 3 | Horizontal | - | - | - | 33.43 | 18.50 | 0.58 | 28.11 |
| PK | 149.1M | 23.51 | 43.50 | -19.99 | -8.89 | 3 | Horizontal | - | - | - | 32.40 | 18.22 | 1.14 | 28.25 |
| PK | 257.6M | 24.60 | 46.00 | -21.40 | -9.54 | 3 | Horizontal | - | - | - | 34.14 | 17.20 | 1.51 | 28.25 |
| PK | 284.7M | 24.45 | 46.00 | -21.55 | -8.35 | 3 | Horizontal | - | - | - | 32.80 | 18.29 | 1.60 | 28.24 |
| PK | 325.4M | 25.45 | 46.00 | -20.55 | -7.29 | 3 | Horizontal | - | - | - | 32.74 | 19.21 | 1.71 | 28.21 |
| PK | 623.8M | 31.44 | 46.00 | -14.56 | -0.10 | 3 | Horizontal | - | - | - | 31.54 | 25.48 | 2.56 | 28.14 |

**Mode 1**



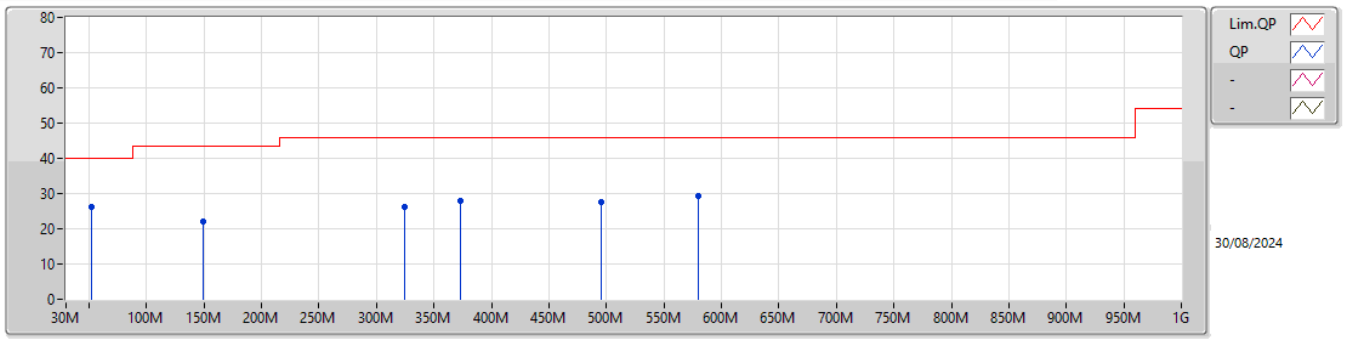

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| PK | 40.6M | 30.70 | 40.00 | -9.30 | -9.03 | 3 | Vertical | - | - | - | 39.73 | 18.50 | 0.58 | 28.11 |
| PK | 122M | 24.41 | 43.50 | -19.09 | -10.90 | 3 | Vertical | - | - | - | 35.31 | 16.30 | 1.04 | 28.24 |
| PK | 149.1M | 24.54 | 43.50 | -18.96 | -8.89 | 3 | Vertical | - | - | - | 33.43 | 18.22 | 1.14 | 28.25 |
| PK | 257.6M | 22.78 | 46.00 | -23.22 | -9.54 | 3 | Vertical | - | - | - | 32.32 | 17.20 | 1.51 | 28.25 |
| PK | 311.9M | 23.68 | 46.00 | -22.32 | -7.56 | 3 | Vertical | - | - | - | 31.24 | 18.98 | 1.68 | 28.22 |
| PK | 461M | 27.02 | 46.00 | -18.98 | -3.94 | 3 | Vertical | - | - | - | 30.96 | 22.22 | 2.03 | 28.19 |

**Mode 2**




| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| PK | 53.6M | 26.14 | 40.00 | -13.86 | -8.36 | 3 | Horizontal | - | - | - | 34.50 | 19.14 | 0.65 | 28.15 |
| PK | 147.7M | 27.73 | 43.50 | -15.77 | -8.78 | 3 | Horizontal | - | - | - | 36.51 | 18.33 | 1.14 | 28.25 |
| PK | 206M | 26.91 | 43.50 | -16.59 | -11.77 | 3 | Horizontal | - | - | - | 38.68 | 15.16 | 1.35 | 28.28 |
| PK | 331.4M | 29.78 | 46.00 | -16.22 | -7.19 | 3 | Horizontal | - | - | - | 36.97 | 19.30 | 1.72 | 28.21 |
| PK | 373.8M | 29.42 | 46.00 | -16.58 | -6.14 | 3 | Horizontal | - | - | - | 35.56 | 20.25 | 1.80 | 28.19 |
| PK | 616.5M | 30.05 | 46.00 | -15.95 | -0.36 | 3 | Horizontal | - | - | - | 30.41 | 25.26 | 2.53 | 28.15 |

**Mode 2**

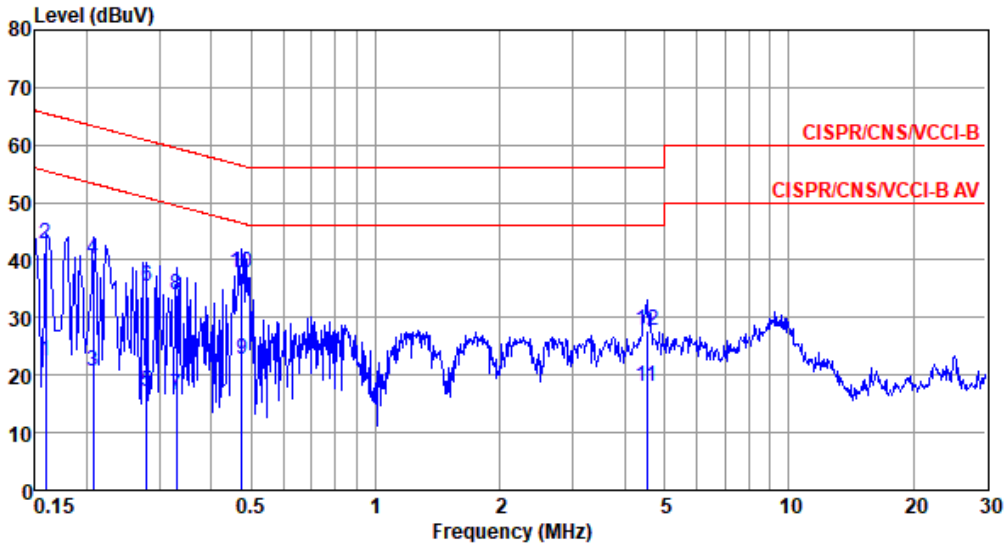



| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| PK | 51.9M | 26.25 | 40.00 | -13.75 | -8.37 | 3 | Vertical | - | - | - | 34.62 | 19.12 | 0.65 | 28.14 |
| PK | 148.9M | 22.14 | 43.50 | -21.36 | -8.90 | 3 | Vertical | - | - | - | 31.04 | 18.21 | 1.14 | 28.25 |
| PK | 324M | 26.22 | 46.00 | -19.78 | -7.34 | 3 | Vertical | - | - | - | 33.56 | 19.18 | 1.70 | 28.22 |
| PK | 372.8M | 28.00 | 46.00 | -18.00 | -6.18 | 3 | Vertical | - | - | - | 34.18 | 20.21 | 1.80 | 28.19 |
| PK | 495.5M | 27.71 | 46.00 | -18.29 | -3.25 | 3 | Vertical | - | - | - | 30.96 | 22.80 | 2.15 | 28.20 |
| PK | 579.6M | 29.28 | 46.00 | -16.72 | -1.40 | 3 | Vertical | - | - | - | 30.68 | 24.38 | 2.40 | 28.18 |

| Frequency: 13.56 MHz | Frequency Drift (ppm) | | | |
|---|---|---|---|---|
| **Temperature (°C)** | **0 minute** | **2 minutes** | **5 minutes** | **10 minutes** |
| T20°C Vmax | 2.95 | 3.69 | 4.42 | 5.16 |
| T20°C Vmin | 1.47 | 2.95 | 5.16 | 5.90 |
| T60°C Vnom | 2.29 | 1.33 | 0.81 | -0.44 |
| T50°C Vnom | 2.21 | 1.99 | 1.77 | 0.29 |
| T40°C Vnom | 3.47 | 2.36 | 1.33 | 0.81 |
| T30°C Vnom | 3.54 | 2.43 | 1.55 | 0.66 |
| T20°C Vnom | 3.10 | 2.29 | 1.99 | 1.03 |
| T10°C Vnom | 4.42 | 4.06 | 3.76 | 3.39 |
| T0°C Vnom | 7.37 | 7.23 | 6.71 | 6.42 |
| T-10°C Vnom | 9.59 | 9.29 | 8.70 | 8.11 |
| T-20°C Vnom | 12.54 | 12.17 | 11.80 | 11.58 |
| Vnom [V]: 3.87 | | Vmax [V]: 4.45 | | Vmin [V]: 3.5 |
| Tnom [°C]: 20 | | Tmax [°C]: 60 | | Tmin [°C]: -20 |

| | |
|---|---|
| **Modulation Mode** | Charging Mode |
| **Power Phase** | Line |

Test by : Joe Liao_AN Temperature: 25°C Humidity: 64%

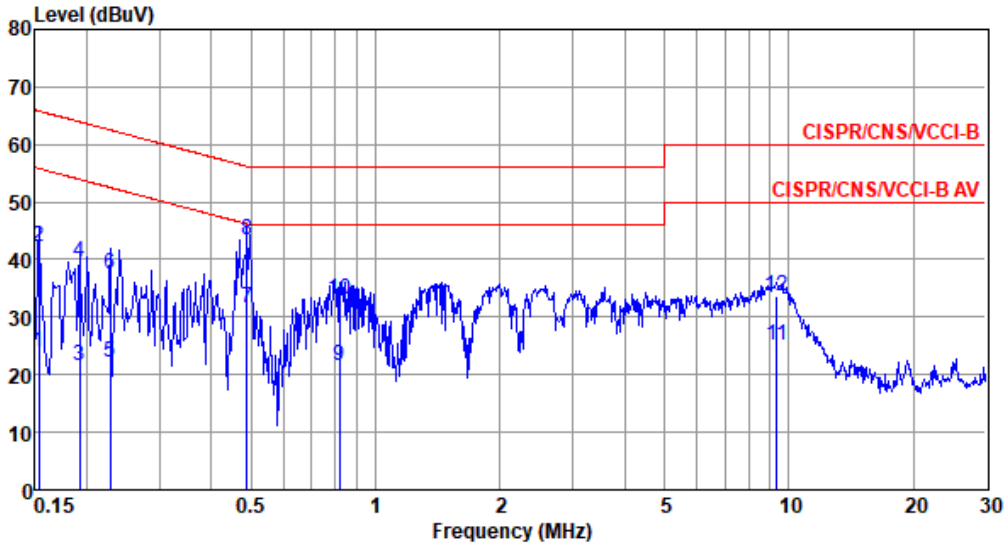



| | Freq | Level | Limit Line | Over Limit | Read Level | Factor | Cable loss | Aux | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dBuV | dB | dBuV | dB | dB | dB | |
| 1 | 0.159 | 22.55 | 55.52 | -32.97 | 12.69 | 9.65 | 0.08 | 0.13 | Average |
| 2 | 0.159 | 42.69 | 65.52 | -22.83 | 32.83 | 9.65 | 0.08 | 0.13 | QP |
| 3 | 0.207 | 20.68 | 53.32 | -32.64 | 10.80 | 9.65 | 0.06 | 0.17 | Average |
| 4 | 0.207 | 40.18 | 63.32 | -23.14 | 30.30 | 9.65 | 0.06 | 0.17 | QP |
| 5 | 0.279 | 17.09 | 50.85 | -33.76 | 7.16 | 9.65 | 0.07 | 0.21 | Average |
| 6 | 0.279 | 35.42 | 60.85 | -25.43 | 25.49 | 9.65 | 0.07 | 0.21 | QP |
| 7 | 0.330 | 16.44 | 49.44 | -33.00 | 6.50 | 9.64 | 0.07 | 0.23 | Average |
| 8 | 0.330 | 34.07 | 59.44 | -25.37 | 24.13 | 9.64 | 0.07 | 0.23 | QP |
| 9 | 0.474 | 22.82 | 46.45 | -23.63 | 12.84 | 9.64 | 0.08 | 0.26 | Average |
| 10* | 0.474 | 37.74 | 56.45 | -18.71 | 27.76 | 9.64 | 0.08 | 0.26 | QP |
| 11 | 4.525 | 18.02 | 46.00 | -27.98 | 7.74 | 9.68 | 0.20 | 0.40 | Average |
| 12 | 4.525 | 27.70 | 56.00 | -28.30 | 17.42 | 9.68 | 0.20 | 0.40 | QP |

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

| Modulation Mode | Charging Mode |
|---|---|
| Power Phase | Neutral |

Test by : Joe Liao_AN Temperature: 25°C Humidity: 64%




| | Freq | Level | Limit Line | Over Limit | Read Level | Factor | Cable loss | Aux | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dBuV | dB | dBuV | dB | dB | dB | |
| 1 | 0.153 | 23.82 | 55.82 | -32.00 | 13.96 | 9.66 | 0.08 | 0.12 | Average |
| 2 | 0.153 | 42.15 | 65.82 | -23.67 | 32.29 | 9.66 | 0.08 | 0.12 | QP |
| 3 | 0.192 | 21.58 | 53.93 | -32.35 | 11.71 | 9.65 | 0.06 | 0.16 | Average |
| 4 | 0.192 | 39.45 | 63.93 | -24.48 | 29.58 | 9.65 | 0.06 | 0.16 | QP |
| 5 | 0.228 | 22.20 | 52.52 | -30.32 | 12.31 | 9.65 | 0.06 | 0.18 | Average |
| 6 | 0.228 | 37.49 | 62.52 | -25.03 | 27.60 | 9.65 | 0.06 | 0.18 | QP |
| 7 | 0.489 | 31.54 | 46.19 | -14.65 | 21.56 | 9.64 | 0.08 | 0.26 | Average |
| 8* | 0.489 | 43.54 | 56.19 | -12.65 | 33.56 | 9.64 | 0.08 | 0.26 | QP |
| 9 | 0.817 | 21.57 | 46.00 | -24.43 | 11.54 | 9.65 | 0.09 | 0.29 | Average |
| 10 | 0.817 | 33.16 | 56.00 | -22.84 | 23.13 | 9.65 | 0.09 | 0.29 | QP |
| 11 | 9.352 | 25.03 | 50.00 | -24.97 | 14.53 | 9.74 | 0.34 | 0.42 | Average |
| 12 | 9.352 | 33.70 | 60.00 | -26.30 | 23.20 | 9.74 | 0.34 | 0.42 | QP |

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

# FCC Test Report

| | | |
|---|---|---|
| **FCC ID** | : | **IPH-04951** |
| **Equipment** | : | **Fitness Product** |
| **Model No.** | : | **A04951** |
| **Brand Name** | : | **GARMIN** |
| **Applicant** | : | **Garmin International, Inc.** |
| **Address** | : | **1200 E. 151st Street Olathe, KS 66062 United States** |
| **Standard** | : | **47 CFR FCC Part 15.249** |
| **Received Date** | : | **Aug. 27, 2024** |
| **Tested Date** | : | **Aug. 30 ~ Sep. 05, 2024** |

**We, International Certification Corporation, would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It shall not be reproduced except in full without the written approval of our laboratory.**

| **Reviewed by:** | **Approved by:** |
|---|---|
| **Along Chen / Assistant Manager** | **Gary Chang / Manager** |

# Table of Contents

# Release Record

| Report No. | Version | Description | Issued Date |
|---|---|---|---|
| FR450901AF | Rev. 01 | Initial issue | Oct. 25, 2024 |

# Summary of Test Results

| FCC Rules | Test Items | Measured | Result |
|---|---|---|---|
| 15.207 | AC Power Line Conducted Emissions | [dBuV]: 0.489MHz<br>43.54 (Margin -12.65dB) - QP | Pass |
| 15.249(a) | Field Strength of Fundamental | Meet the requirement of limit | Pass |
| 15.249(a)(d) | Field Strength of Harmonics and Emissions Radiated outside of the Specified Frequency Bands | Meet the requirement of limit | Pass |
| 15.215(c) | 20dB bandwidth | Meet the requirement of limit | Pass |
| 15.203 | Antenna Requirement | Meet the requirement of limit | Pass |

| **Declaration of Conformity:** |
|---|
| The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. |
| **Comments and Explanations:** |
| The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification. |

# 1 General Description

## 1.1 Information

### 1.1.1 Specification of the Equipment under Test (EUT)

| RF General Information | | | | |
|---|---|---|---|---|
| **Frequency Range (MHz)** | **Modulation** | **Ch. Freq. (MHz)** | **Channel Number** | **Data Rate** |
| 2400-2483.5 | GFSK | 2402-2480 | 1-79 [79] | 1 Mbps |

### 1.1.2 Antenna Details

| Ant. No. | Brand | Model | Type | Connector | Gain (dBi) |
|---|---|---|---|---|---|
| 1 | Garmin | 117-02243-2X | Slot | No | 0.21 |

### 1.1.3 Power Supply Type of Equipment under Test (EUT)

| | |
|---|---|
| **Power Type** | 5Vdc from host<br>3.87Vdc from battery |

### 1.1.4 Accessories

| No. | Equipment | Description |
|---|---|---|
| 1 | Battery | Brand: Garmin<br>Model: 361-00162-00<br>Rating: 3.87V, 220mAh |
| 2 | USB cable | Brand: GARMIN<br>Model: 320-01602-00<br>0.56m shielded without core |

### 1.1.5 Channel List

| Frequency band (MHz) | | | | 2400~2483.5 | | | |
|---|---|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 1 | 2402 | 21 | 2422 | 41 | 2442 | 61 | 2462 |
| 2 | 2403 | 22 | 2423 | 42 | 2443 | 62 | 2463 |
| 3 | 2404 | 23 | 2424 | 43 | 2444 | 63 | 2464 |
| 4 | 2405 | 24 | 2425 | 44 | 2445 | 64 | 2465 |
| 5 | 2406 | 25 | 2426 | 45 | 2446 | 65 | 2466 |
| 6 | 2407 | 26 | 2427 | 46 | 2447 | 66 | 2467 |
| 7 | 2408 | 27 | 2428 | 47 | 2448 | 67 | 2468 |
| 8 | 2409 | 28 | 2429 | 48 | 2449 | 68 | 2469 |
| 9 | 2410 | 29 | 2430 | 49 | 2450 | 69 | 2470 |
| 10 | 2411 | 30 | 2431 | 50 | 2451 | 70 | 2471 |
| 11 | 2412 | 31 | 2432 | 51 | 2452 | 71 | 2472 |
| 12 | 2413 | 32 | 2433 | 52 | 2453 | 72 | 2473 |
| 13 | 2414 | 33 | 2434 | 53 | 2454 | 73 | 2474 |
| 14 | 2415 | 34 | 2435 | 54 | 2455 | 74 | 2475 |
| 15 | 2416 | 35 | 2436 | 55 | 2456 | 75 | 2476 |
| 16 | 2417 | 36 | 2437 | 56 | 2457 | 76 | 2477 |
| 17 | 2418 | 37 | 2438 | 57 | 2458 | 77 | 2478 |
| 18 | 2419 | 38 | 2439 | 58 | 2459 | 78 | 2479 |
| 19 | 2420 | 39 | 2440 | 59 | 2460 | 79 | 2480 |
| 20 | 2421 | 40 | 2441 | 60 | 2461 | --- | --- |

### 1.1.6 Test Tool and Duty Cycle

| Test Tool | ANT Test, Version: 28.17 | |
|---|---|---|
| Duty Cycle and Duty Factor | Duty Cycle (%) | Duty Factor (dB) |
| | 100.00% | 0.00 |

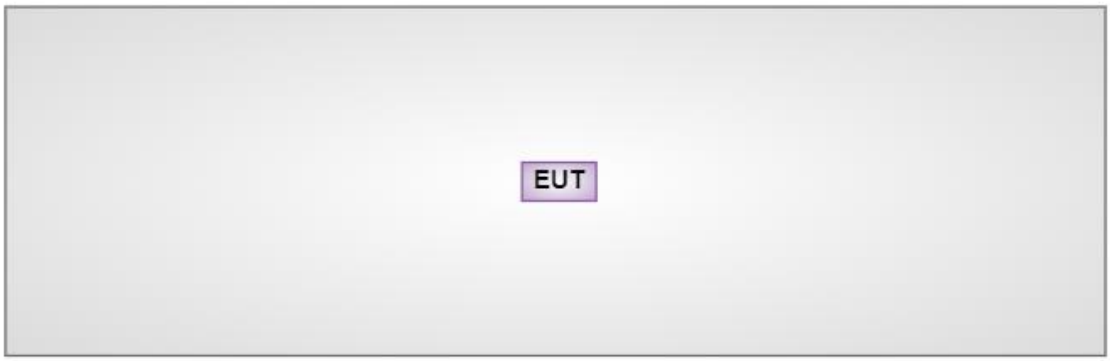
### 1.1.7 Power Index of Test Tool

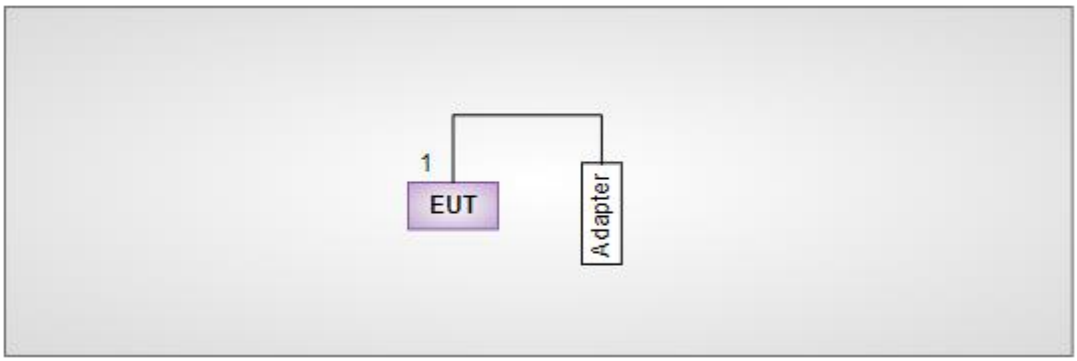
| Modulation Mode | Test Frequency (MHz) | | |
|---|---|---|---|
| | 2402 | 2441 | 2480 |
| ANT+ | Default | Default | Default |

## 1.2 Local Support Equipment List

| Support Equipment List | | | | | |
|---|---|---|---|---|---|
| **No.** | **Equipment** | **Brand** | **Model** | **FCC ID** | **Remarks** |
| 1 | Adapter | Samsung | TA-800 | --- | --- |

## 1.3 Test Setup Chart

| Test Setup Diagram (Battery Mode) |
|---|
|   |

| Test Setup Diagram (Charging Mode) | |
|---|---|
|   | |
| **No.** | **Signal cable / Length (m)** |

## 1.4 The Equipment List

| Test Item | Radiated Emission | | | | |
|---|---|---|---|---|---|
| Test Site | 966 chamber1 / (03CH01-WS) | | | | |
| Tested Date | Aug. 30 ~ Sep. 02, 2024 | | | | |
| **Instrument** | **Brand** | **Model No.** | **Serial No.** | **Calibration Date** | **Calibration Until** |
| Receiver | R&S | ESR3 | 101657 | Mar. 05, 2024 | Mar. 04, 2025 |
| Spectrum Analyzer | R&S | FSV40 | 101498 | Nov. 23, 2023 | Nov. 22, 2024 |
| Loop Antenna | R&S | HFH2-Z2 | 100330 | Oct. 31, 2023 | Oct. 30, 2024 |
| Bilog Antenna | SCHWARZBECK | VULB9168 | VULB9168-522 | Aug. 09, 2024 | Aug. 08, 2025 |
| Horn Antenna 1G-18G | SCHWARZBECK | BBHA 9120 D | BBHA 9120 D 1096 | Nov. 27, 2023 | Nov. 26, 2024 |
| Horn Antenna 18G-40G | SCHWARZBECK | BBHA 9170 | BBHA 9170517 | Oct. 30, 2023 | Oct. 29, 2024 |
| Preamplifier | EMC | EMC02325 | 980225 | Jun. 17, 2024 | Jun. 16, 2025 |
| Preamplifier | EMC | EMC118A45SE | 980898 | Jul. 05, 2024 | Jul. 04, 2025 |
| Preamplifier | EMC | EMC184045SE | 980903 | Jul. 30, 2024 | Jul. 29, 2025 |
| Loop Antenna Cable | KOAX KABEL | 101354-BW | 101354-BW | Oct. 03, 2023 | Oct. 02, 2024 |
| LF cable 3M | Woken | CFD400NL-LW | CFD400NL-001 | Oct. 03, 2023 | Oct. 02, 2024 |
| LF cable 11M | EMC | EMCCFD400-NW-NW-11000 | 200801 | Oct. 03, 2023 | Oct. 02, 2024 |
| LF cable 1M | EMC | EMCCFD400-NM-NM-1000 | 160502 | Oct. 03, 2023 | Oct. 02, 2024 |
| RF Cable | EMC | EMC104-35M-35M-8000 | 210920 | Oct. 03, 2023 | Oct. 02, 2024 |
| RF Cable | EMC | EMC104-35M-35M-3000 | 210922 | Oct. 03, 2023 | Oct. 02, 2024 |
| Attenuator | Pasternack | PE7005-10 | 10-1 | Oct. 05, 2023 | Oct. 04, 2024 |
| HIGHPASS FILTER 3.1-18G | WHK | WHK3.1/18G-10SS | 39 | Oct. 05, 2023 | Oct. 04, 2024 |
| Measurement Software | Sporton | SENSE-EMI | V5.11 | NA | NA |
| Measurement Software | Sporton | SENSE-15247_FS | V5.11 | NA | NA |
| Note: Calibration Interval of instruments listed above is one year. | | | | | |

| Test Item | Conducted Emission | | | | |
|---|---|---|---|---|---|
| Test Site | Conduction room 1 / (CO01-WS) | | | | |
| Tested Date | Sep. 05, 2024 | | | | |
| **Instrument** | **Brand** | **Model No.** | **Serial No.** | **Calibration Date** | **Calibration Until** |
| Receiver | R&S | ESR3 | 101658 | Feb. 23, 2024 | Feb. 22, 2025 |
| LISN | R&S | ENV216 | 101579 | May 09, 2024 | May 08, 2025 |
| LISN (Support Unit) | SCHWARZBECK | Schwarzbeck 8127 | 8127667 | Jan. 10, 2024 | Jan. 09, 2025 |
| RF Cable-CON | Woken | CFD200-NL | CFD200-NL-001 | Oct. 11, 2023 | Oct. 10, 2024 |
| 50 ohm terminal | NA | 50 | 01 | Jun. 19, 2024 | Jun. 18, 2025 |
| Measurement Software | AUDIX | e3 | 6.120210k | NA | NA |
| Note: Calibration Interval of instruments listed above is one year. | | | | | |

## 1.5 Test Standards

47 CFR FCC Part 15.249
ANSI C63.10-2013

## 1.6 Deviation from Test Standard and Measurement Procedure

None

## 1.7 Measurement Uncertainty

The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

| Measurement Uncertainty | |
|---|---|
| **Parameters** | **Uncertainty** |
| Bandwidth | ±34.130 Hz |
| AC conducted emission | ±2.92 dB |
| Unwanted Emission ≤ 1GHz | ±3.41 dB |
| Unwanted Emission > 1GHz | ±4.59 dB |

# 2 Test Configuration

## 2.1 Testing Facility

| | |
|---|---|
| **Test Laboratory** | International Certification Corporation |
| **Test Site** | CO01-WS, 03CH01-WS |
| **Address of Test Site** | No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.) |

- FCC Designation No.: TW2732
- FCC site registration No.: 181692
- ISED#: 10807A
- CAB identifier: TW2732

## 2.2 The Worst Test Modes and Channel Details

| Test item | Modulation Mode | Test Frequency (MHz) | Data Rate | Test Configuration |
|---|---|---|---|---|
| AC Power Line Conducted Emissions | Charging | --- | --- | 2 |
| Field Strength of Fundamental | GFSK | 2402, 2441, 2480 | 1 Mbps | 1 |
| Unwanted Emissions ≤ 1GHz | GFSK | 2441 | 1 Mbps | 1 |
| | Charging | --- | --- | 2 |
| Unwanted Emissions > 1GHz<br>20dB bandwidth | GFSK | 2402, 2441, 2480 | 1 Mbps | 1 |

**NOTE:**
1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **Z-plane** result was found as the worst case and was shown in this report.
2. The test configurations are listed as follows:
   1) Mode 1: Battery mode
   2) Mode 2: Charging mode

# 3 Transmitter Test Results

## 3.1 Unwanted Emission

This section includes field strength of fundamental, field strength of harmonics and emissions radiated outside of the operating frequency bands.

### 3.1.1 Limit of field strength of fundamental and field strength of harmonics

| Fundamental Frequency | Field strength of fundamental (millivolts/meter) | Field strength of harmonics (microvolts/meter) |
|---|---|---|
| 2400–2483.5 MHz | 50 | 500 |

### 3.1.2 Limit of Unwanted Emissions

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in below table, whichever is the lesser attenuation.

| Radiated emission limits | | | |
|---|---|---|---|
| **Frequency Range (MHz)** | **Field Strength (uV/m)** | **Field Strength (dBuV/m)** | **Measure Distance (m)** |
| 0.009~0.490 | 2400/F(kHz) | 48.5 - 13.8 | 300 |
| 0.490~1.705 | 24000/F(kHz) | 33.8 - 23 | 30 |
| 1.705~30.0 | 30 | 29 | 30 |
| 30~88 | 100 | 40 | 3 |
| 88~216 | 150 | 43.5 | 3 |
| 216~960 | 200 | 46 | 3 |
| Above 960 | 500 | 54 | 3 |

**Note 1:**
Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit
**Note 2:**
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

### 3.1.3 Test Procedures

1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

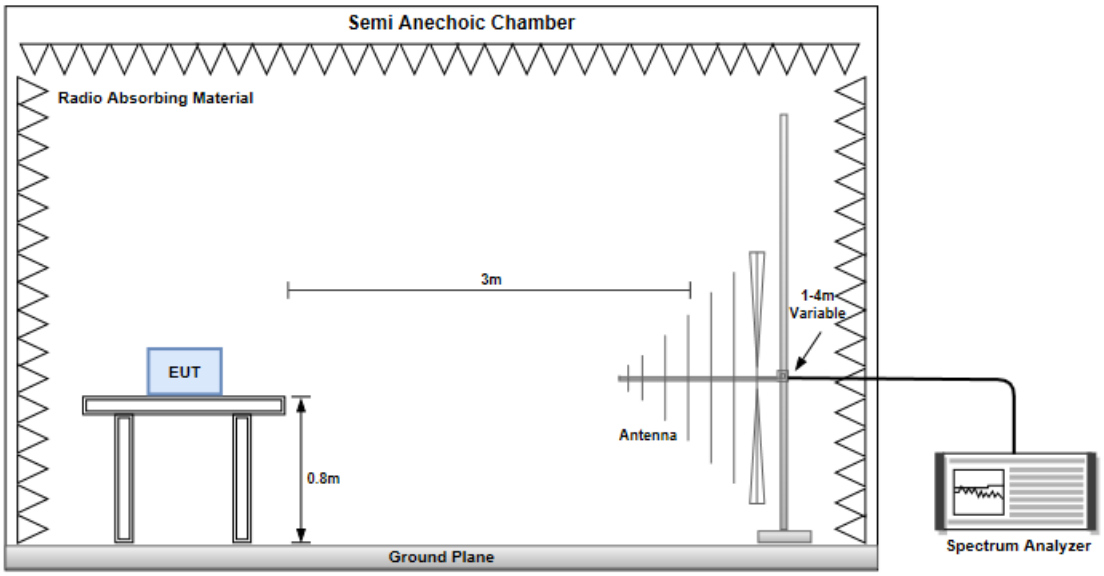
1. Radiated emission below 1GHz
   120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission
2. Radiated emission above 1GHz / Peak value except fundamental
   RBW=1MHz, VBW=3MHz and Peak detector
3. Radiated emission above 1GHz / Average value for field strength of fundamental and harmonics
   The average value is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula:

$$20\log(\text{Duty cycle}) = 20\log\frac{0.44783\text{x}1\text{ms}}{100\text{ ms}} = -46.98\text{dB}$$

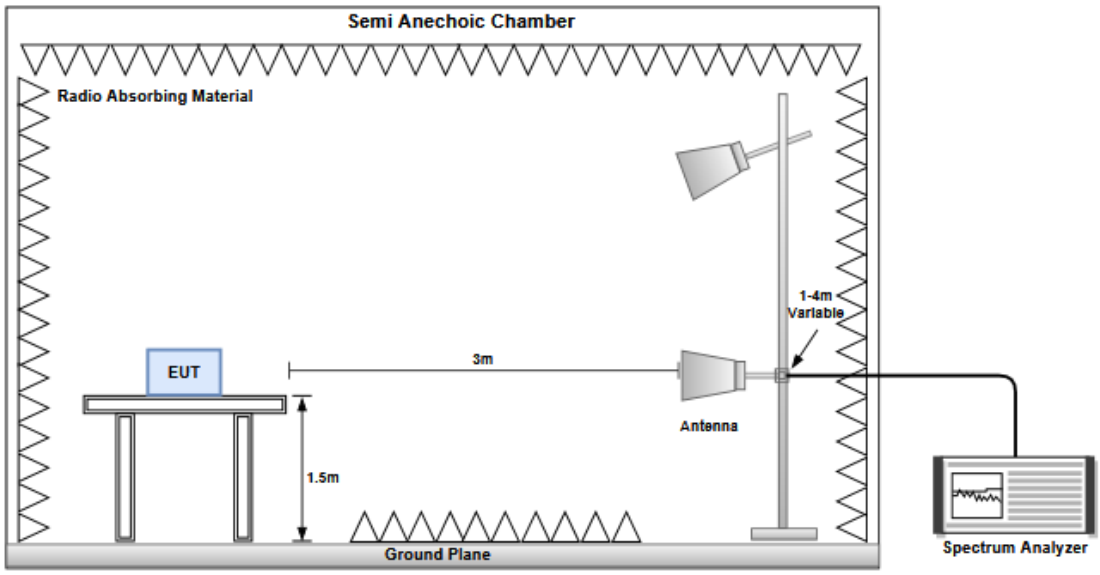
4. Radiated emission above 1GHz / Average value for other emissions
   RBW=1MHz, VBW=1/T and Peak detector
5. Radiated emission Peak value for fundamental
   RBW=2MHz, VBW=10MHz and Peak detector

### 3.1.4 Test Setup

**Radiated Emissions below 1 GHz**




**Radiated Emissions above 1 GHz**




### 3.1.5 Test Results

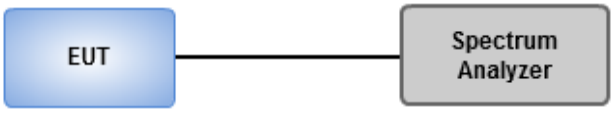
Refer to Appendix A.

## 3.2 20dB and Occupied Bandwidth

### 3.2.1 Test Procedures

1. Set resolution bandwidth (RBW) = 20 kHz, Video bandwidth = 100 kHz.
2. Detector = Peak, Trace mode = max hold
3. Sweep = auto couple, Allow the trace to stabilize.
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 20dB relative to the maximum level measured in the fundamental emission.
5. Use the occupied measurement function of specturm analyzer to measure 99% occupied bandwidth.

### 3.2.2 Test Setup




### 3.2.3 Test Results

| | | | |
|---|---|---|---|
| **Ambient Condition** | 26°C / 61% | **Tested By** | Allen Lee |

Refer to Appendix B.

## 3.3 AC Power Line Conducted Emissions

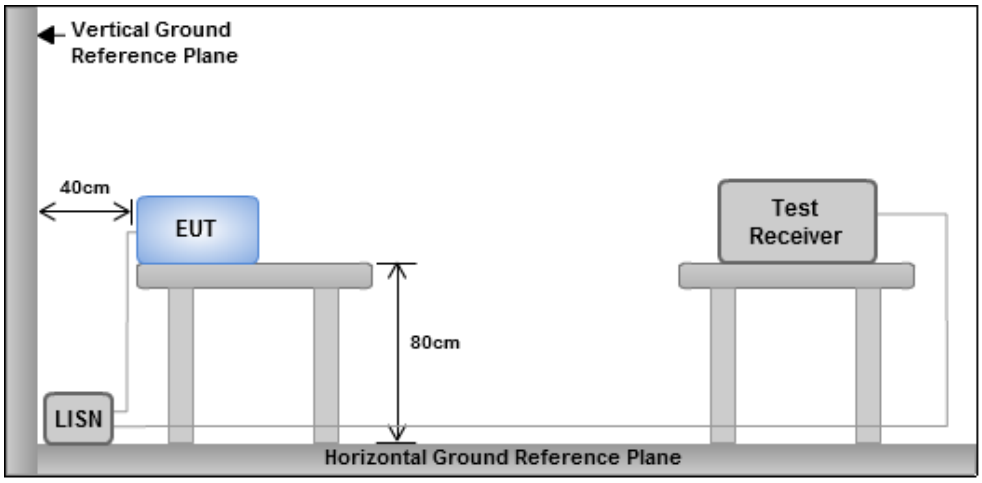
### 3.3.1 Limit of AC Power Line Conducted Emissions

| Conducted Emissions Limit | | |
|---|---|---|
| **Frequency Emission (MHz)** | **Quasi-Peak** | **Average** |
| 0.15-0.5 | 66 - 56 * | 56 - 46 * |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |
| Note 1: * Decreases with the logarithm of the frequency. | | |

### 3.3.2 Test Procedures

1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
3. AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.
4. This measurement was performed with AC 120V / 60Hz.

### 3.3.3 Test Setup




Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

### 3.3.4 Test Results

Refer to Appendix C.

# 4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corporation (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website http://www.icertifi.com.tw.

**Linkou**

Tel: 886-2-2601-1640

No.30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan (R.O.C.)

**Kwei Shan**

Tel: 886-3-271-8666

No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

No.2-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

**Kwei Shan Site II**

Tel: 886-3-271-8640

No.14-1, Lane 19, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

If you have any suggestion, please feel free to contact us as below information.

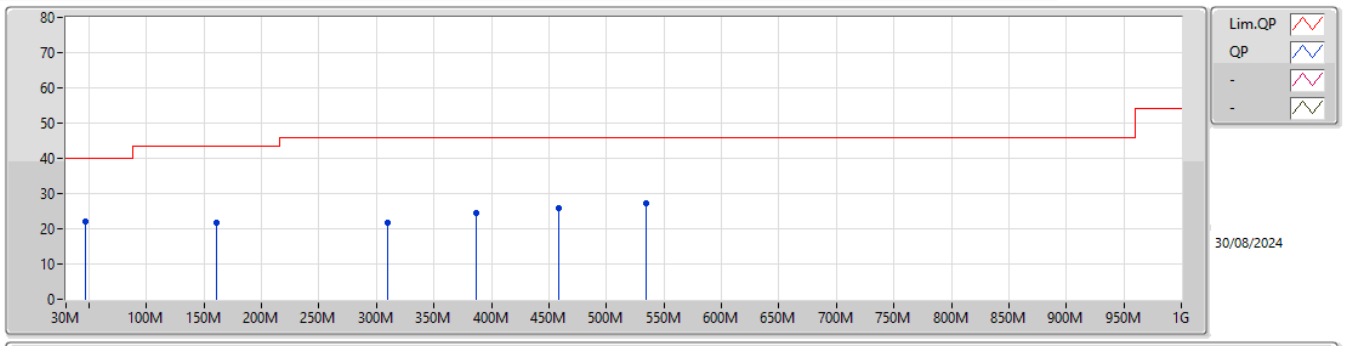
Tel: 886-3-271-8666
Fax: 886-3-318-0345
Email: ICC_Service@icertifi.com.tw

**==END==**

**Summary**

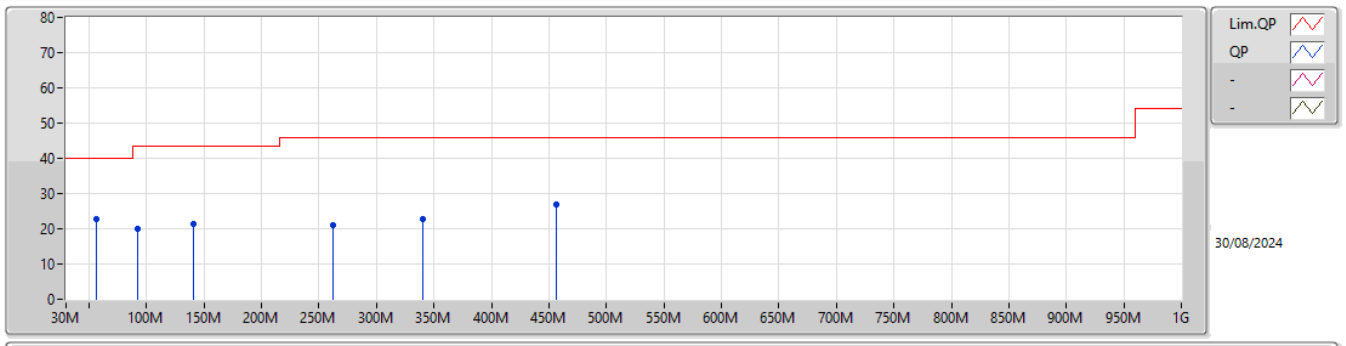
| Mode | Result | Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Condition |
|---|---|---|---|---|---|---|---|
| Mode 1 | Pass | PK | 56.7M | 22.60 | 40.00 | -17.40 | Vertical |
| Mode 2 | Pass | PK | 51.1M | 27.48 | 40.00 | -12.52 | Vertical |

**Mode 1**



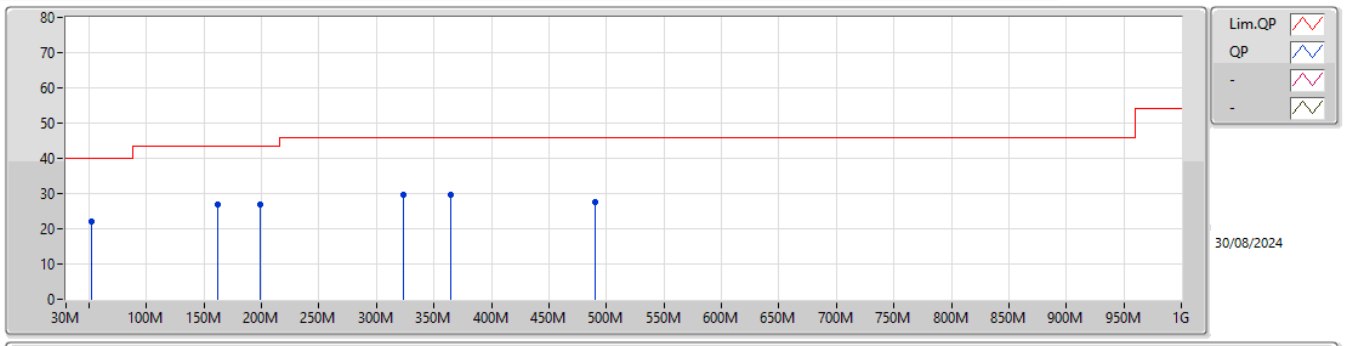

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| PK | 46.4M | 22.04 | 40.00 | -17.96 | -8.46 | 3 | Horizontal | - | - | - | 30.50 | 19.06 | 0.61 | 28.13 |
| PK | 161.4M | 21.82 | 43.50 | -21.68 | -8.81 | 3 | Horizontal | - | - | - | 30.63 | 18.26 | 1.19 | 28.26 |
| PK | 309.4M | 21.86 | 46.00 | -24.14 | -7.65 | 3 | Horizontal | - | - | - | 29.51 | 18.89 | 1.68 | 28.22 |
| PK | 386.9M | 24.65 | 46.00 | -21.35 | -5.82 | 3 | Horizontal | - | - | - | 30.47 | 20.54 | 1.82 | 28.18 |
| PK | 458.3M | 25.95 | 46.00 | -20.05 | -4.00 | 3 | Horizontal | - | - | - | 29.95 | 22.17 | 2.02 | 28.19 |
| PK | 534.2M | 27.35 | 46.00 | -18.65 | -2.65 | 3 | Horizontal | - | - | - | 30.00 | 23.28 | 2.26 | 28.19 |

**Mode 1**



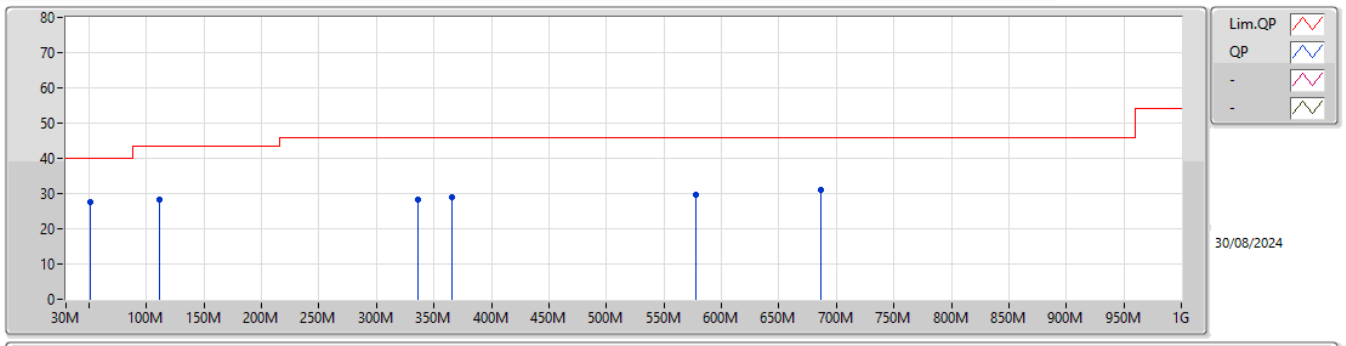

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| PK | 56.7M | 22.60 | 40.00 | -17.40 | -8.57 | 3 | Vertical | - | - | - | 31.17 | 18.90 | 0.68 | 28.15 |
| PK | 92.7M | 20.14 | 43.50 | -23.36 | -14.23 | 3 | Vertical | - | - | - | 34.37 | 13.08 | 0.91 | 28.22 |
| PK | 141M | 21.44 | 43.50 | -22.06 | -9.24 | 3 | Vertical | - | - | - | 30.68 | 17.90 | 1.11 | 28.25 |
| PK | 262.5M | 21.05 | 46.00 | -24.95 | -9.33 | 3 | Vertical | - | - | - | 30.38 | 17.40 | 1.52 | 28.25 |
| PK | 340.5M | 22.59 | 46.00 | -23.41 | -7.17 | 3 | Vertical | - | - | - | 29.76 | 19.31 | 1.73 | 28.21 |
| PK | 456M | 26.93 | 46.00 | -19.07 | -4.06 | 3 | Vertical | - | - | - | 30.99 | 22.12 | 2.01 | 28.19 |

**Mode 2**




| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| PK | 52.2M | 21.98 | 40.00 | -18.02 | -8.37 | 3 | Horizontal | - | - | - | 30.35 | 19.12 | 0.65 | 28.14 |
| PK | 162.1M | 26.75 | 43.50 | -16.75 | -8.87 | 3 | Horizontal | - | - | - | 35.62 | 18.20 | 1.19 | 28.26 |
| PK | 198.4M | 26.82 | 43.50 | -16.68 | -11.55 | 3 | Horizontal | - | - | - | 38.37 | 15.40 | 1.33 | 28.28 |
| PK | 323.9M | 29.67 | 46.00 | -16.33 | -7.34 | 3 | Horizontal | - | - | - | 37.01 | 19.18 | 1.70 | 28.22 |
| PK | 364.3M | 29.70 | 46.00 | -16.30 | -6.52 | 3 | Horizontal | - | - | - | 36.22 | 19.89 | 1.78 | 28.19 |
| PK | 490.1M | 27.46 | 46.00 | -18.54 | -3.37 | 3 | Horizontal | - | - | - | 30.83 | 22.70 | 2.13 | 28.20 |

## Mode 2



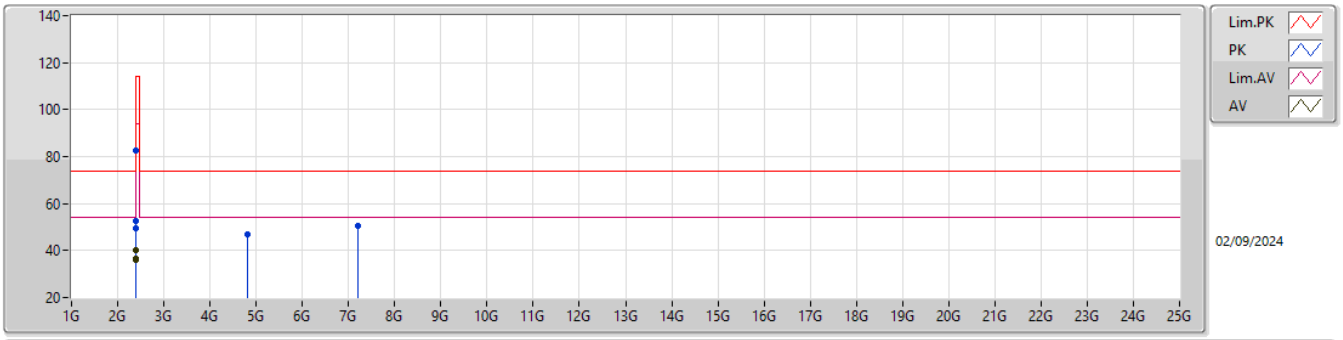

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| PK | 51.1M | 27.48 | 40.00 | -12.52 | -8.22 | 3 | Vertical | - | - | - | 35.70 | 19.28 | 0.64 | 28.14 |
| PK | 111.6M | 28.31 | 43.50 | -15.19 | -11.82 | 3 | Vertical | - | - | - | 40.13 | 15.42 | 1.00 | 28.24 |
| PK | 336.2M | 28.29 | 46.00 | -17.71 | -7.18 | 3 | Vertical | - | - | - | 35.47 | 19.30 | 1.73 | 28.21 |
| PK | 366M | 29.12 | 46.00 | -16.88 | -6.47 | 3 | Vertical | - | - | - | 35.59 | 19.94 | 1.78 | 28.19 |
| PK | 578.3M | 29.62 | 46.00 | -16.38 | -1.45 | 3 | Vertical | - | - | - | 31.07 | 24.33 | 2.40 | 28.18 |
| PK | 686M | 30.99 | 46.00 | -15.01 | 0.58 | 3 | Vertical | - | - | - | 30.41 | 25.80 | 2.81 | 28.03 |

**Summary**

| Mode | Result | Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Dist (m) | Condition | Azimuth (°) | Height (m) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.4-2.4835GHz | - | - | - | - | - | - | - | - | - | - | - |
| ANT+ (GFSK) | Pass | AV | 2.4G | 46.84 | 54.00 | -7.16 | 3 | Vertical | 172 | 2.37 | - |

**2.4-2.4835GHz_ANT+ (GFSK)**

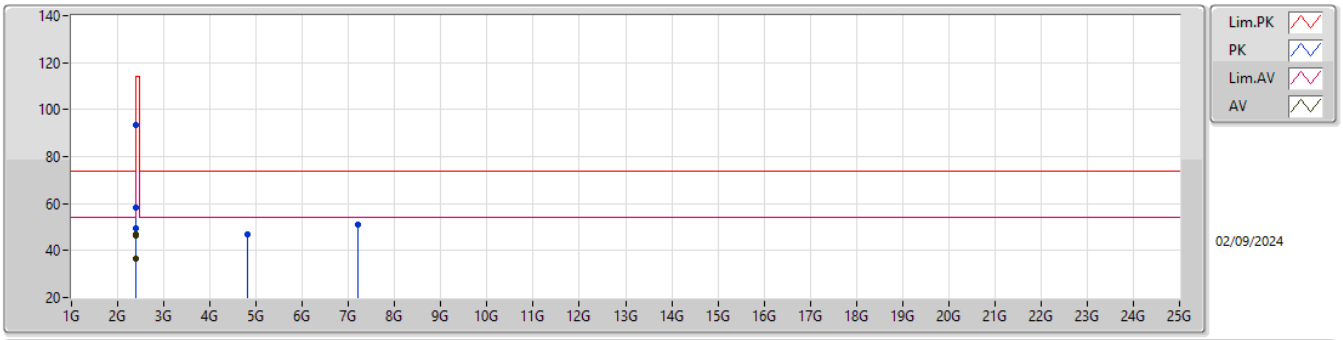
**2402MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 36.54 | 54.00 | -17.46 | 40.88 | 3 | Horizontal | 253 | 2.29 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 49.47 | 74.00 | -24.53 | 53.81 | 3 | Horizontal | 253 | 2.29 | - | 27.60 | 4.95 | 36.89 |
| AV | 2.4G | 40.07 | 54.00 | -13.93 | 44.41 | 3 | Horizontal | 253 | 2.29 | - | 27.60 | 4.96 | 36.90 |
| PK | 2.4G | 52.56 | 74.00 | -21.44 | 56.90 | 3 | Horizontal | 253 | 2.29 | - | 27.60 | 4.96 | 36.90 |
| AV | 2.402G | 35.78 | 94.00 | -58.22 | - | 3 | Horizontal | - | - | - | - | - | - |
| PK | 2.402G | 82.76 | 114.00 | -31.24 | 87.13 | 3 | Horizontal | 253 | 2.29 | - | 27.58 | 4.96 | 36.91 |
| AV | 4.804G | 0.17 | 54.00 | -53.83 | - | 3 | Horizontal | - | - | - | - | - | - |
| PK | 4.804G | 47.15 | 74.00 | -26.85 | 47.53 | 3 | Horizontal | 182 | 2.37 | - | 31.29 | 6.85 | 38.52 |
| AV | 7.206G | 3.40 | 54.00 | -50.60 | - | 3 | Horizontal | - | - | - | - | - | - |
| PK | 7.206G | 50.38 | 74.00 | -23.62 | 45.07 | 3 | Horizontal | 215 | 1.79 | - | 36.20 | 8.36 | 39.25 |

**2.4-2.4835GHz_ANT+ (GFSK)**

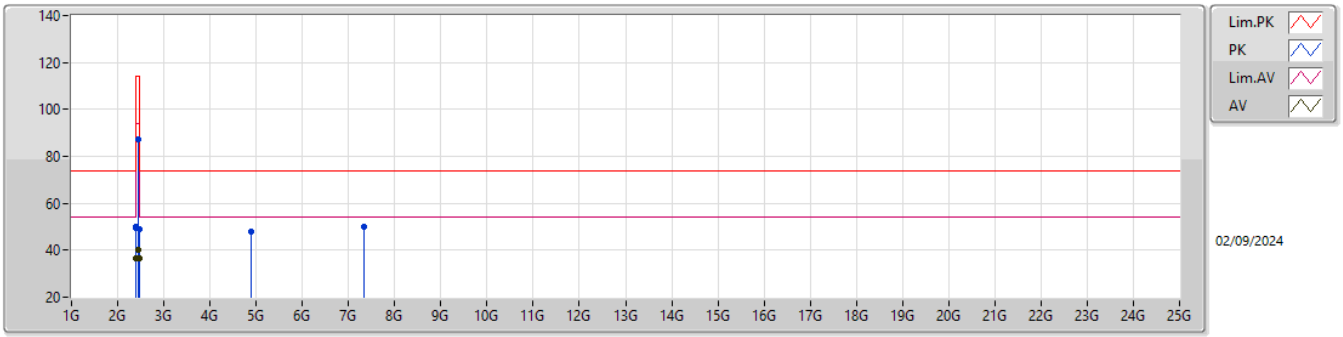
**2402MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 36.70 | 54.00 | -17.30 | 41.04 | 3 | Vertical | 172 | 2.37 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 49.26 | 74.00 | -24.74 | 53.60 | 3 | Vertical | 172 | 2.37 | - | 27.60 | 4.95 | 36.89 |
| AV | 2.4G | 46.84 | 54.00 | -7.16 | 51.18 | 3 | Vertical | 172 | 2.37 | - | 27.60 | 4.96 | 36.90 |
| PK | 2.4G | 58.19 | 74.00 | -15.81 | 62.53 | 3 | Vertical | 172 | 2.37 | - | 27.60 | 4.96 | 36.90 |
| AV | 2.402G | 46.23 | 94.00 | -47.77 | - | 3 | Vertical | - | - | - | - | - | - |
| PK | 2.402G | 93.21 | 114.00 | -20.79 | 97.58 | 3 | Vertical | 172 | 2.37 | - | 27.58 | 4.96 | 36.91 |
| AV | 4.804G | 0.12 | 54.00 | -53.88 | - | 3 | Vertical | - | - | - | - | - | - |
| PK | 4.804G | 47.10 | 74.00 | -26.90 | 47.48 | 3 | Vertical | 142 | 2.01 | - | 31.29 | 6.85 | 38.52 |
| AV | 7.206G | 4.02 | 54.00 | -49.98 | - | 3 | Vertical | - | - | - | - | - | - |
| PK | 7.206G | 51.00 | 74.00 | -23.00 | 45.69 | 3 | Vertical | 27 | 2.31 | - | 36.20 | 8.36 | 39.25 |

**2.4-2.4835GHz_ANT+ (GFSK)**

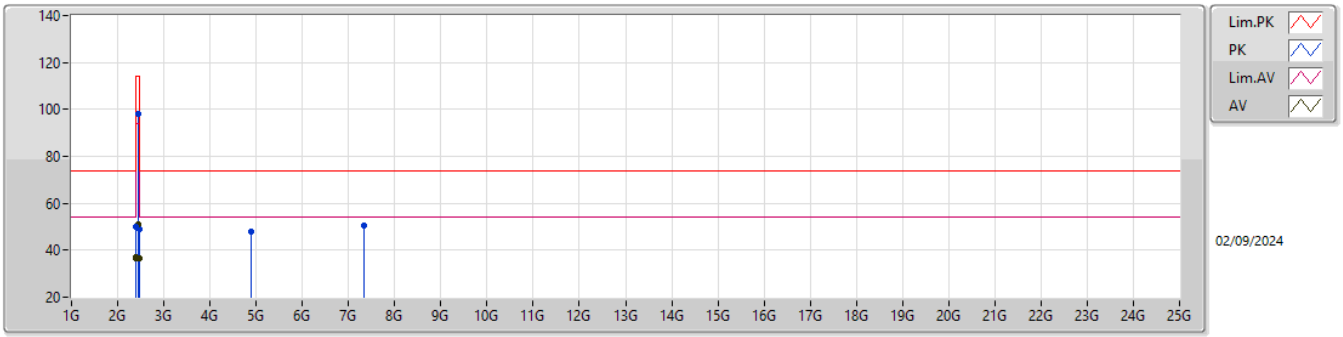
**2441MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 36.55 | 54.00 | -17.45 | 40.89 | 3 | Horizontal | 232 | 3.11 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 49.71 | 74.00 | -24.29 | 54.05 | 3 | Horizontal | 232 | 3.11 | - | 27.60 | 4.95 | 36.89 |
| AV | 2.4G | 36.71 | 54.00 | -17.29 | 41.05 | 3 | Horizontal | 232 | 3.11 | - | 27.60 | 4.96 | 36.90 |
| PK | 2.4G | 49.81 | 74.00 | -24.19 | 54.15 | 3 | Horizontal | 232 | 3.11 | - | 27.60 | 4.96 | 36.90 |
| AV | 2.441G | 40.28 | 94.00 | -53.72 | - | 3 | Horizontal | - | - | - | - | - | - |
| PK | 2.441G | 87.26 | 114.00 | -26.74 | 91.99 | 3 | Horizontal | 232 | 3.11 | - | 27.20 | 5.01 | 36.94 |
| AV | 2.4835G | 36.50 | 54.00 | -17.50 | 41.22 | 3 | Horizontal | 232 | 3.11 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 49.14 | 74.00 | -24.86 | 53.86 | 3 | Horizontal | 232 | 3.11 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.882G | 0.90 | 54.00 | -53.10 | - | 3 | Horizontal | - | - | - | - | - | - |
| PK | 4.882G | 47.88 | 74.00 | -26.12 | 48.39 | 3 | Horizontal | 176 | 2.21 | - | 31.14 | 6.92 | 38.57 |
| AV | 7.323G | 2.94 | 54.00 | -51.06 | - | 3 | Horizontal | - | - | - | - | - | - |
| PK | 7.323G | 49.92 | 74.00 | -24.08 | 44.74 | 3 | Horizontal | 219 | 1.86 | - | 36.15 | 8.43 | 39.40 |

**2.4-2.4835GHz_ANT+ (GFSK)**

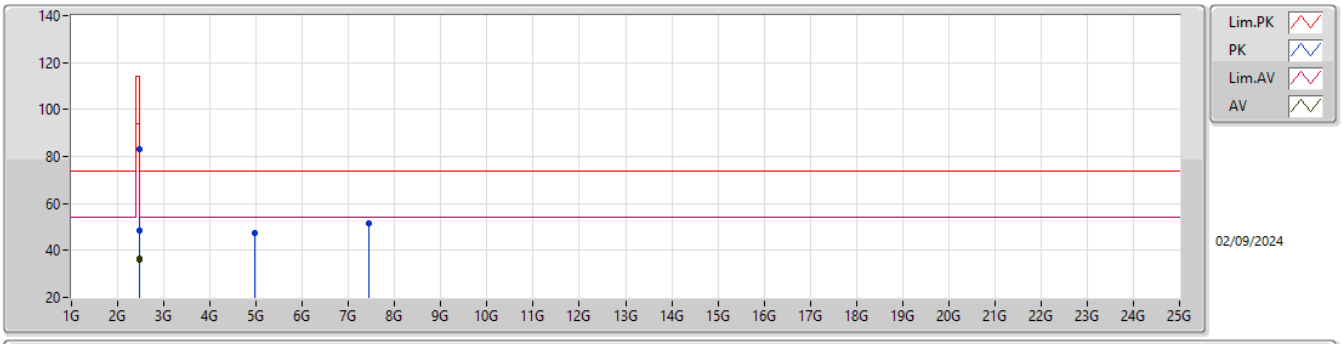
**2441MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 36.61 | 54.00 | -17.39 | 40.95 | 3 | Vertical | 184 | 2.34 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 49.84 | 74.00 | -24.16 | 54.18 | 3 | Vertical | 184 | 2.34 | - | 27.60 | 4.95 | 36.89 |
| AV | 2.4G | 36.89 | 54.00 | -17.11 | 41.23 | 3 | Vertical | 184 | 2.34 | - | 27.60 | 4.96 | 36.90 |
| PK | 2.4G | 49.88 | 74.00 | -24.12 | 54.22 | 3 | Vertical | 184 | 2.34 | - | 27.60 | 4.96 | 36.90 |
| AV | 2.441G | 50.98 | 94.00 | -43.02 | - | 3 | Vertical | - | - | - | - | - | - |
| PK | 2.441G | 97.96 | 114.00 | -16.04 | 102.69 | 3 | Vertical | 184 | 2.34 | - | 27.20 | 5.01 | 36.94 |
| AV | 2.4835G | 36.32 | 54.00 | -17.68 | 41.04 | 3 | Vertical | 184 | 2.34 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 49.06 | 74.00 | -24.94 | 53.78 | 3 | Vertical | 184 | 2.34 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.882G | 0.71 | 54.00 | -53.29 | - | 3 | Vertical | - | - | - | - | - | - |
| PK | 4.882G | 47.69 | 74.00 | -26.31 | 48.20 | 3 | Vertical | 136 | 2.03 | - | 31.14 | 6.92 | 38.57 |
| AV | 7.323G | 3.40 | 54.00 | -50.60 | - | 3 | Vertical | - | - | - | - | - | - |
| PK | 7.323G | 50.38 | 74.00 | -23.62 | 45.20 | 3 | Vertical | 31 | 2.28 | - | 36.15 | 8.43 | 39.40 |

**2.4-2.4835GHz_ANT+ (GFSK)**

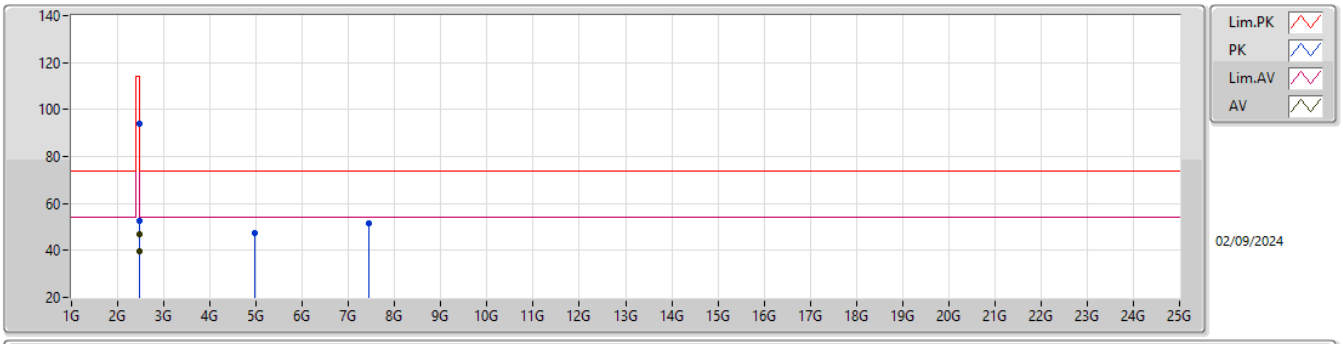
**2480MHz_TX**



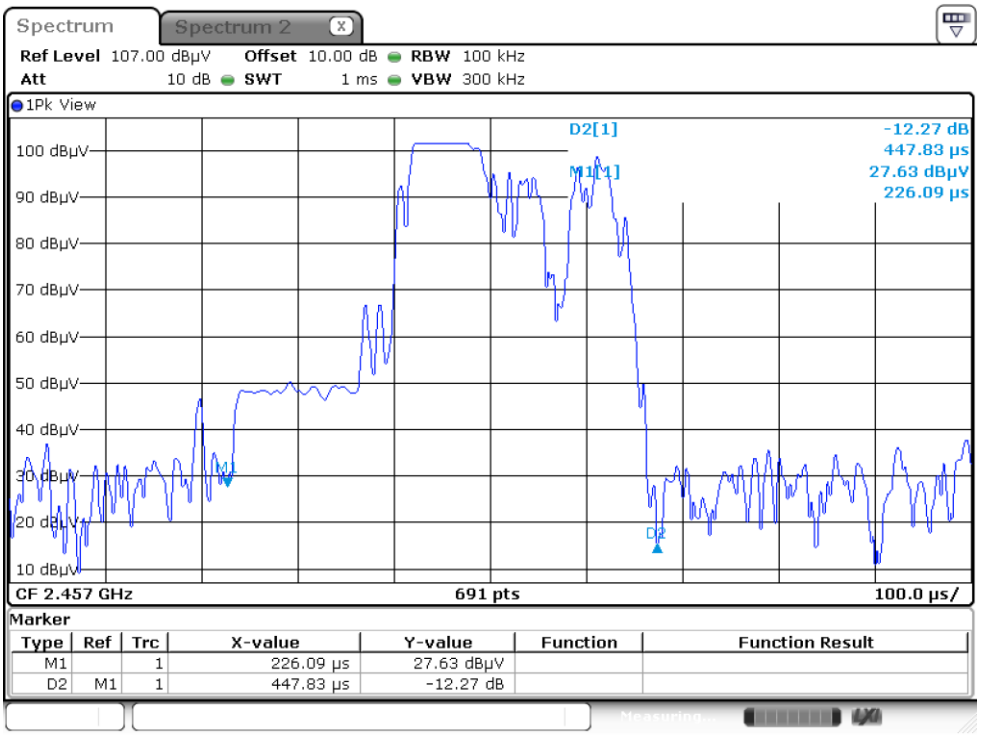

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.48G | 36.12 | 94.00 | -57.88 | - | 3 | Horizontal | - | - | - | - | - | - |
| PK | 2.48G | 83.10 | 114.00 | -30.90 | 87.82 | 3 | Horizontal | 217 | 2.98 | - | 27.20 | 5.06 | 36.98 |
| AV | 2.4835G | 36.70 | 54.00 | -17.30 | 41.42 | 3 | Horizontal | 217 | 2.98 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 48.69 | 74.00 | -25.31 | 53.41 | 3 | Horizontal | 217 | 2.98 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.96G | 0.48 | 54.00 | -53.52 | - | 3 | Horizontal | - | - | - | - | - | - |
| PK | 4.96G | 47.46 | 74.00 | -26.54 | 47.73 | 3 | Horizontal | 164 | 1.70 | - | 31.36 | 6.99 | 38.62 |
| AV | 7.44G | 4.58 | 54.00 | -49.42 | - | 3 | Horizontal | - | - | - | - | - | - |
| PK | 7.44G | 51.56 | 74.00 | -22.44 | 46.26 | 3 | Horizontal | 213 | 1.76 | - | 36.34 | 8.50 | 39.54 |

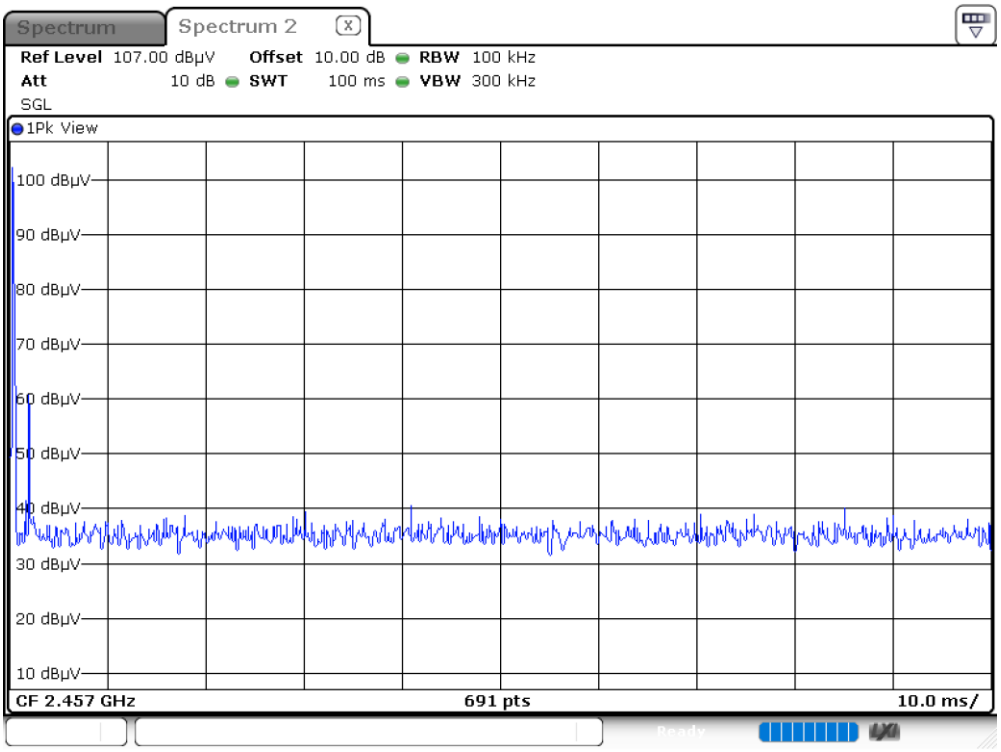
**2.4-2.4835GHz_ANT+ (GFSK)**

**2480MHz_TX**



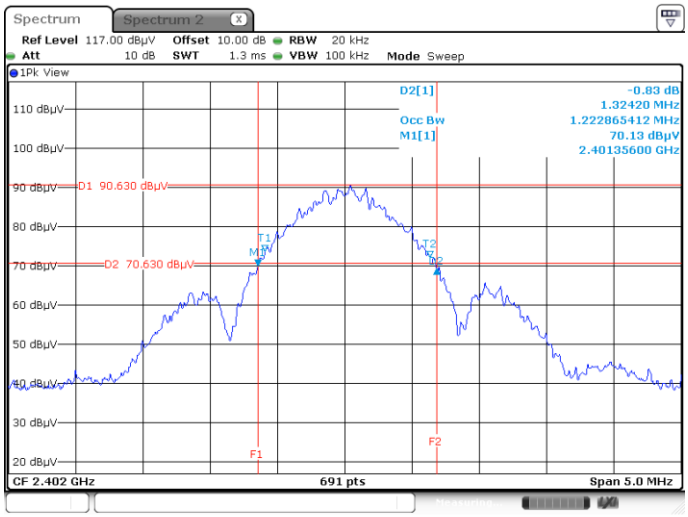
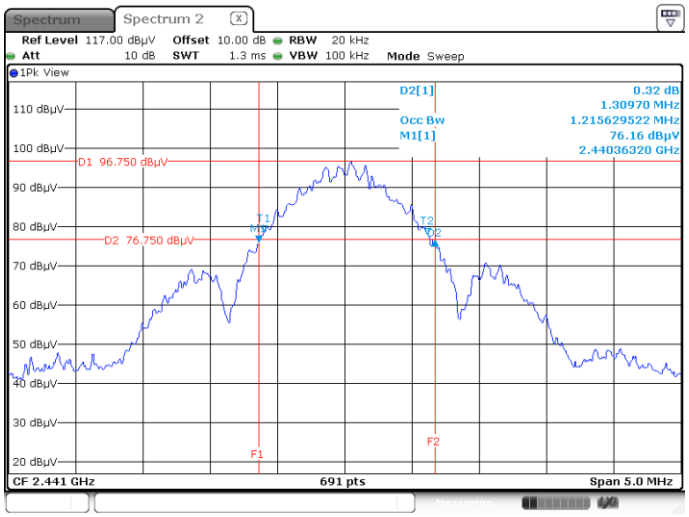
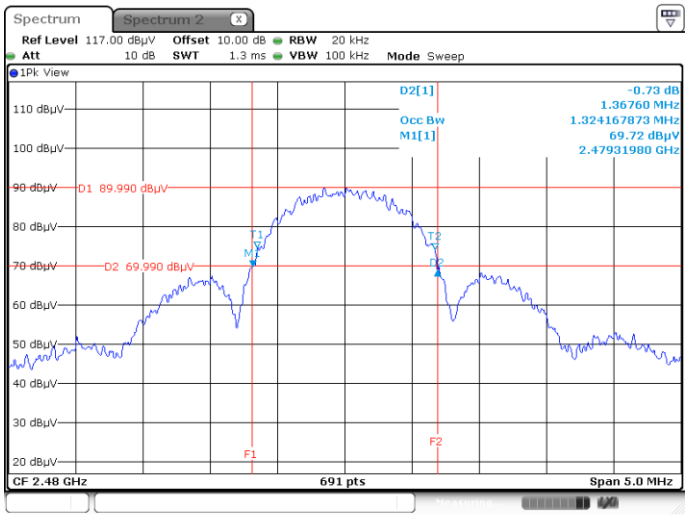

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.48G | 46.90 | 94.00 | -47.10 | - | 3 | Vertical | - | - | - | - | - | - |
| PK | 2.48G | 93.88 | 114.00 | -20.12 | 98.60 | 3 | Vertical | 187 | 2.53 | - | 27.20 | 5.06 | 36.98 |
| AV | 2.4835G | 39.60 | 54.00 | -14.40 | 44.32 | 3 | Vertical | 187 | 2.53 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 52.39 | 74.00 | -21.61 | 57.11 | 3 | Vertical | 187 | 2.53 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.96G | 0.27 | 54.00 | -53.73 | - | 3 | Vertical | - | - | - | - | - | - |
| PK | 4.96G | 47.25 | 74.00 | -26.75 | 47.52 | 3 | Vertical | 144 | 2.15 | - | 31.36 | 6.99 | 38.62 |
| AV | 7.44G | 4.34 | 54.00 | -49.66 | - | 3 | Vertical | - | - | - | - | - | - |
| PK | 7.44G | 51.32 | 74.00 | -22.68 | 46.02 | 3 | Vertical | 30 | 2.25 | - | 36.34 | 8.50 | 39.54 |



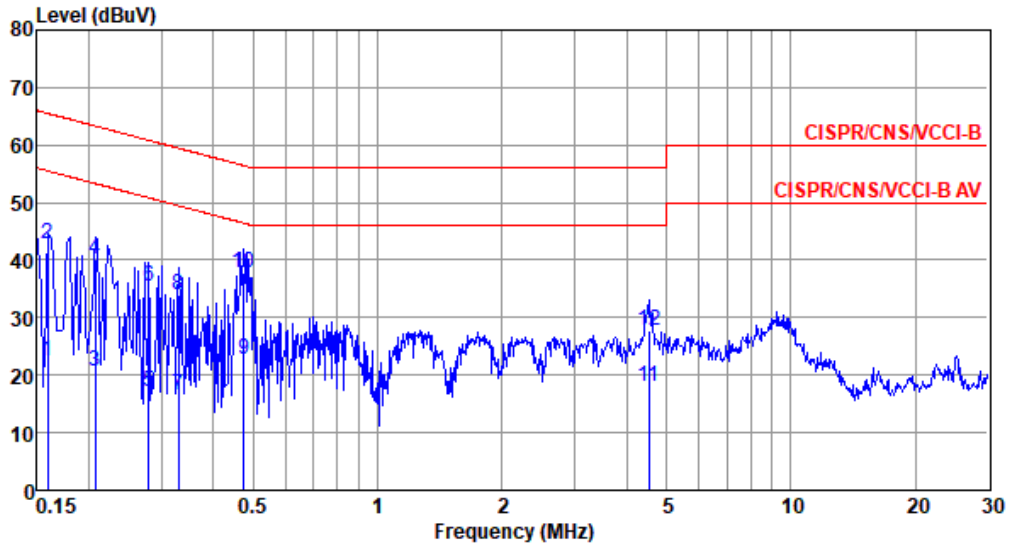

$$20\log(\text{Duty cycle}) = 20\log\frac{0.44783\text{x}1\text{ ms}}{100\text{ ms}} = -46.98\text{dB}$$

| Frequency (MHz) | 20dB Bandwidth (MHz) | 99% Occupied Bandwidth (MHz) |
|---|---|---|
| 2402 | 1.324 | 1.223 |
| 2442 | 1.310 | 1.216 |
| 2480 | 1.368 | 1.324 |

| 2402 MHz | 2442 MHz |
|---|---|
|  |  |
| 2480 MHz | -- |
|  | -- |

| **Modulation Mode** | Charging Mode |
|---|---|
| **Power Phase** | Line |

Test by : Joe Liao_AN Temperature: 25°C Humidity: 64%

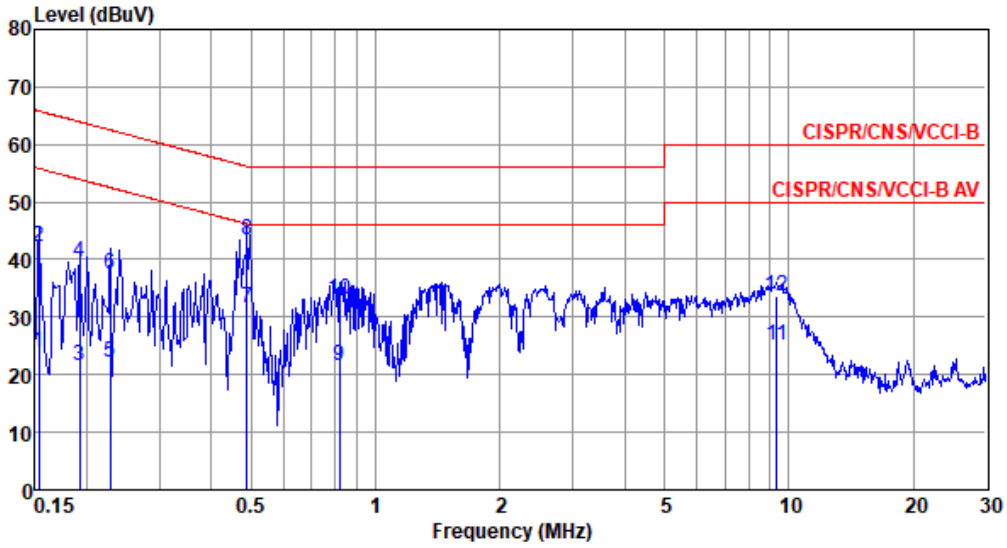



| | Freq | Level | Limit Line | Over Limit | Read Level | Factor | Cable loss | Aux | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dBuV | dB | dBuV | dB | dB | dB | |
| 1 | 0.159 | 22.55 | 55.52 | -32.97 | 12.69 | 9.65 | 0.08 | 0.13 | Average |
| 2 | 0.159 | 42.69 | 65.52 | -22.83 | 32.83 | 9.65 | 0.08 | 0.13 | QP |
| 3 | 0.207 | 20.68 | 53.32 | -32.64 | 10.80 | 9.65 | 0.06 | 0.17 | Average |
| 4 | 0.207 | 40.18 | 63.32 | -23.14 | 30.30 | 9.65 | 0.06 | 0.17 | QP |
| 5 | 0.279 | 17.09 | 50.85 | -33.76 | 7.16 | 9.65 | 0.07 | 0.21 | Average |
| 6 | 0.279 | 35.42 | 60.85 | -25.43 | 25.49 | 9.65 | 0.07 | 0.21 | QP |
| 7 | 0.330 | 16.44 | 49.44 | -33.00 | 6.50 | 9.64 | 0.07 | 0.23 | Average |
| 8 | 0.330 | 34.07 | 59.44 | -25.37 | 24.13 | 9.64 | 0.07 | 0.23 | QP |
| 9 | 0.474 | 22.82 | 46.45 | -23.63 | 12.84 | 9.64 | 0.08 | 0.26 | Average |
| 10* | 0.474 | 37.74 | 56.45 | -18.71 | 27.76 | 9.64 | 0.08 | 0.26 | QP |
| 11 | 4.525 | 18.02 | 46.00 | -27.98 | 7.74 | 9.68 | 0.20 | 0.40 | Average |
| 12 | 4.525 | 27.70 | 56.00 | -28.30 | 17.42 | 9.68 | 0.20 | 0.40 | QP |

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

| | |
|---|---|
| **Modulation Mode** | Charging Mode |
| **Power Phase** | Neutral |

Test by : Joe Liao_AN Temperature: 25°C Humidity: 64%




| | Freq | Level | Limit Line | Over Limit | Read Level | Factor | Cable loss | Aux | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dBuV | dB | dBuV | dB | dB | dB | |
| 1 | 0.153 | 23.82 | 55.82 | -32.00 | 13.96 | 9.66 | 0.08 | 0.12 | Average |
| 2 | 0.153 | 42.15 | 65.82 | -23.67 | 32.29 | 9.66 | 0.08 | 0.12 | QP |
| 3 | 0.192 | 21.58 | 53.93 | -32.35 | 11.71 | 9.65 | 0.06 | 0.16 | Average |
| 4 | 0.192 | 39.45 | 63.93 | -24.48 | 29.58 | 9.65 | 0.06 | 0.16 | QP |
| 5 | 0.228 | 22.20 | 52.52 | -30.32 | 12.31 | 9.65 | 0.06 | 0.18 | Average |
| 6 | 0.228 | 37.49 | 62.52 | -25.03 | 27.60 | 9.65 | 0.06 | 0.18 | QP |
| 7 | 0.489 | 31.54 | 46.19 | -14.65 | 21.56 | 9.64 | 0.08 | 0.26 | Average |
| 8* | 0.489 | 43.54 | 56.19 | -12.65 | 33.56 | 9.64 | 0.08 | 0.26 | QP |
| 9 | 0.817 | 21.57 | 46.00 | -24.43 | 11.54 | 9.65 | 0.09 | 0.29 | Average |
| 10 | 0.817 | 33.16 | 56.00 | -22.84 | 23.13 | 9.65 | 0.09 | 0.29 | QP |
| 11 | 9.352 | 25.03 | 50.00 | -24.97 | 14.53 | 9.74 | 0.34 | 0.42 | Average |
| 12 | 9.352 | 33.70 | 60.00 | -26.30 | 23.20 | 9.74 | 0.34 | 0.42 | QP |

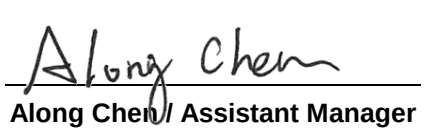
Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

# FCC Test Report

| | | |
|---|---|---|
| **FCC ID** | : | **IPH-04951** |
| **Equipment** | : | **Fitness Product** |
| **Model No.** | : | **A04951** |
| **Brand Name** | : | **GARMIN** |
| **Applicant** | : | **Garmin International, Inc.** |
| **Address** | : | **1200 E. 151st Street Olathe, KS 66062 United States** |
| **Standard** | : | **47 CFR FCC Part 15.247** |
| **Received Date** | : | **Aug. 27, 2024** |
| **Tested Date** | : | **Aug. 29 ~ Sep. 05, 2024** |

**We, International Certification Corporation, would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It shall not be reproduced except in full without the written approval of our laboratory.**

**Reviewed by:** **Approved by:**



**Along Chen / Assistant Manager**

**Gary Chang / Manager**

# Table of Contents

# Release Record

| Report No. | Version | Description | Issued Date |
|---|---|---|---|
| FR450901AC | Rev. 01 | Initial issue | Oct. 25, 2024 |

# Summary of Test Results

| FCC Rules | Test Items | Measured | Result |
|---|---|---|---|
| 15.207 | AC Power Line Conducted Emission | [dBuV]: 0.489MHz<br>43.54 (Margin -12.65dB) - QP | Pass |
| 15.247(d)<br>15.209 | Unwanted Emissions | [dBuV/m at 3m]: 12.06G<br>42.09 (Margin -11.91dB) - AV | Pass |
| 15.247(b)(3) | Conducted Output Power | Max Power [dBm]: 17.13 | Pass |
| 15.247(a)(2) | 6dB Bandwidth | Meet the requirement of limit | Pass |
| 15.247(e) | Power Spectral Density | Meet the requirement of limit | Pass |
| 15.203 | Antenna Requirement | Meet the requirement of limit | Pass |

| **Declaration of Conformity:** |
|---|
| The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. |
| **Comments and Explanations:** |
| The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification. |

# 1 General Description

## 1.1 Information

### 1.1.1 Specification of the Equipment under Test (EUT)

| RF General Information | | | | | |
|---|---|---|---|---|---|
| **Frequency Range (MHz)** | **IEEE Std. 802.11** | **Ch. Freq. (MHz)** | **Channel Number** | **Transmit Chains ($N_{TX}$)** | **Data Rate / MCS** |
| 2400-2483.5 | b | 2412-2462 | 1-11 [11] | 1 | 1-11 Mbps |
| 2400-2483.5 | g | 2412-2462 | 1-11 [11] | 1 | 6-54 Mbps |
| 2400-2483.5 | n (HT20) | 2412-2462 | 1-11 [11] | 1 | MCS 0-7 |
| Note 1: RF output power specifies that Maximum Peak Conducted Output Power.<br>Note 2: DSSS-DBPSK, DQPSK, CCK modulation<br>OFDM - BPSK, QPSK, 16QAM and 64QAM modulation. | | | | | |

### 1.1.2 Antenna Details

| Ant. No. | Brand | Model | Type | Connector | Gain (dBi) |
|---|---|---|---|---|---|
| 1 | Garmin | 117-02243-2X | Slot | No | 0.21 |

### 1.1.3 Configuration of Equipment under Test (EUT)

| | |
|---|---|
| **Power Type** | 5Vdc from host<br>3.87Vdc from battery |

### 1.1.4 Accessories

| Accessories | | |
|---|---|---|
| **No.** | **Equipment** | **Description** |
| 1 | Battery | Brand: Garmin<br>Model: 361-00162-00<br>Rating: 3.87V, 220mAh |
| 2 | USB cable | Brand: GARMIN<br>Model: 320-01602-00<br>0.56m shielded without core |

### 1.1.5 Channel List

| Channel | Frequency(MHz) |
|---|---|
| 1 | 2412 |
| 2 | 2417 |
| 3 | 2422 |
| 4 | 2427 |
| 5 | 2432 |
| 6 | 2437 |
| 7 | 2442 |
| 8 | 2447 |
| 9 | 2452 |
| 10 | 2457 |
| 11 | 2462 |

### 1.1.6 Test Tool and Duty Cycle

| Test Tool | WiFi Test, Version: 28.17 00 | | |
|---|---|---|---|
| Duty Cycle and Duty Factor | Mode | Duty Cycle (%) | Duty Factor (dB) |
| | 11b | 100.00% | 0.00 |
| | 11g | 100.00% | 0.00 |
| | HT20 | 100.00% | 0.00 |

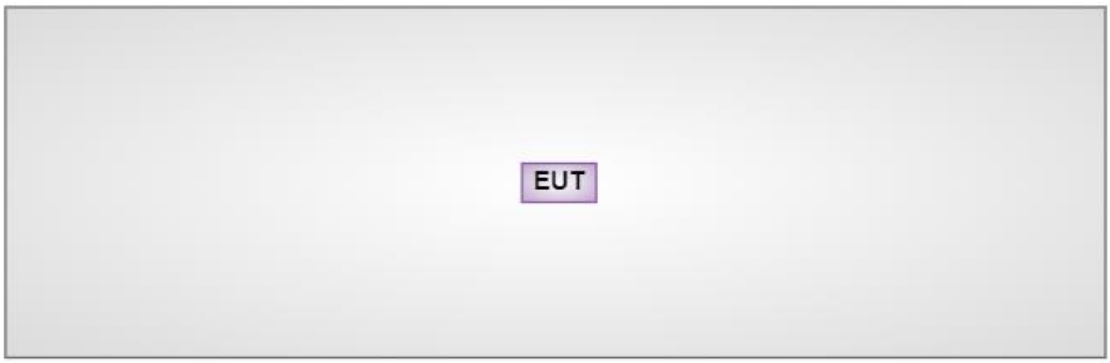
### 1.1.7 Power Index of Test Tool

| Modulation Mode | Test Frequency (MHz) | Power Index |
|---|---|---|
| 11b | 2412 | default |
| 11b | 2437 | default |
| 11b | 2462 | default |
| 11g | 2412 | default |
| 11g | 2437 | default |
| 11g | 2462 | default |
| HT20 | 2412 | default |
| HT20 | 2437 | default |
| HT20 | 2462 | default |

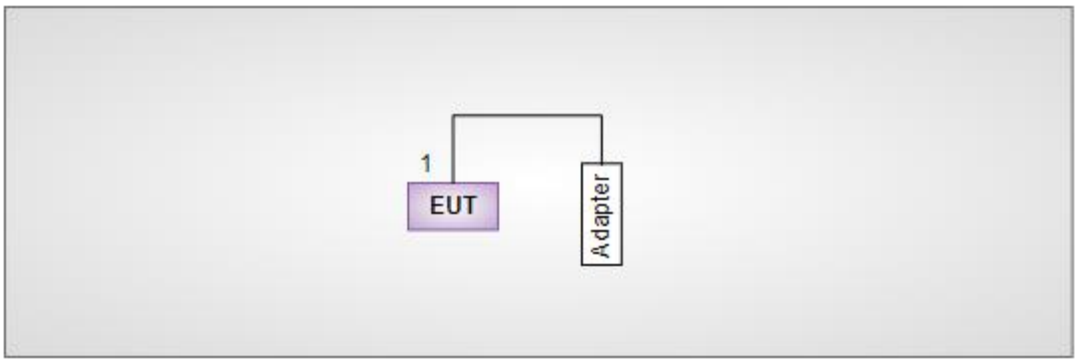
## 1.2 Local Support Equipment List

| Support Equipment List | | | | | |
|---|---|---|---|---|---|
| **No.** | **Equipment** | **Brand** | **Model** | **FCC ID** | **Remarks** |
| 1 | Adapter | Samsung | TA-800 | --- | --- |

## 1.3 Test Setup Chart

| Test Setup Diagram (Battery Mode) |
|---|
|  |



| Test Setup Diagram (Charging Mode) | |
|---|---|
|  | |



| **No.** | **Signal cable / Length (m)** |
|---|---|
| 1 | USB, 0.56m shielded. |

## 1.4 The Equipment List

| Test Item | Conducted Emission | | | | |
|---|---|---|---|---|---|
| **Test Site** | Conduction room 1 / (CO01-WS) | | | | |
| **Tested Date** | Sep. 05, 2024 | | | | |
| **Instrument** | **Brand** | **Model No.** | **Serial No.** | **Calibration Date** | **Calibration Until** |
| Receiver | R&S | ESR3 | 101658 | Feb. 23, 2024 | Feb. 22, 2025 |
| LISN | R&S | ENV216 | 101579 | May 09, 2024 | May 08, 2025 |
| LISN (Support Unit) | SCHWARZBECK | Schwarzbeck 8127 | 8127667 | Jan. 10, 2024 | Jan. 09, 2025 |
| RF Cable-CON | Woken | CFD200-NL | CFD200-NL-001 | Oct. 11, 2023 | Oct. 10, 2024 |
| 50 ohm terminal | NA | 50 | 01 | Jun. 19, 2024 | Jun. 18, 2025 |
| Measurement Software | AUDIX | e3 | 6.120210k | NA | NA |
| Note: Calibration Interval of instruments listed above is one year. | | | | | |

| Test Item | Radiated Emission | | | | |
|---|---|---|---|---|---|
| **Test Site** | 966 chamber1 / (03CH01-WS) | | | | |
| **Tested Date** | Aug. 29 ~ Sep. 02, 2024 | | | | |
| **Instrument** | **Brand** | **Model No.** | **Serial No.** | **Calibration Date** | **Calibration Until** |
| Receiver | R&S | ESR3 | 101657 | Mar. 05, 2024 | Mar. 04, 2025 |
| Spectrum Analyzer | R&S | FSV40 | 101498 | Nov. 23, 2023 | Nov. 22, 2024 |
| Loop Antenna | R&S | HFH2-Z2 | 100330 | Oct. 31, 2023 | Oct. 30, 2024 |
| Bilog Antenna | SCHWARZBECK | VULB9168 | VULB9168-522 | Aug. 09, 2024 | Aug. 08, 2025 |
| Horn Antenna 1G-18G | SCHWARZBECK | BBHA 9120 D | BBHA 9120 D 1096 | Nov. 27, 2023 | Nov. 26, 2024 |
| Horn Antenna 18G-40G | SCHWARZBECK | BBHA 9170 | BBHA 9170517 | Oct. 30, 2023 | Oct. 29, 2024 |
| Preamplifier | EMC | EMC02325 | 980225 | Jun. 17, 2024 | Jun. 16, 2025 |
| Preamplifier | EMC | EMC118A45SE | 980898 | Jul. 05, 2024 | Jul. 04, 2025 |
| Preamplifier | EMC | EMC184045SE | 980903 | Jul. 30, 2024 | Jul. 29, 2025 |
| Loop Antenna Cable | KOAX KABEL | 101354-BW | 101354-BW | Oct. 03, 2023 | Oct. 02, 2024 |
| LF cable 3M | Woken | CFD400NL-LW | CFD400NL-001 | Oct. 03, 2023 | Oct. 02, 2024 |
| LF cable 11M | EMC | EMCCFD400-NW-NW-11000 | 200801 | Oct. 03, 2023 | Oct. 02, 2024 |
| LF cable 1M | EMC | EMCCFD400-NM-NM-1000 | 160502 | Oct. 03, 2023 | Oct. 02, 2024 |
| RF Cable | EMC | EMC104-35M-35M-8000 | 210920 | Oct. 03, 2023 | Oct. 02, 2024 |
| RF Cable | EMC | EMC104-35M-35M-3000 | 210922 | Oct. 03, 2023 | Oct. 02, 2024 |
| Attenuator | Pasternack | PE7005-10 | 10-1 | Oct. 05, 2023 | Oct. 04, 2024 |
| HIGHPASS FILTER 3.1-18G | WHK | WHK3.1/18G-10SS | 39 | Oct. 05, 2023 | Oct. 04, 2024 |
| Measurement Software | Sporton | SENSE-EMI | V5.11 | NA | NA |
| Measurement Software | Sporton | SENSE-15247_FS | V5.11 | NA | NA |
| Note: Calibration Interval of instruments listed above is one year. | | | | | |

| Test Item | RF Conducted | | | | |
|---|---|---|---|---|---|
| Test Site | (TH01-WS) | | | | |
| Tested Date | Sep. 03, 2024 | | | | |
| **Instrument** | **Brand** | **Model No.** | **Serial No.** | **Calibration Date** | **Calibration Until** |
| Spectrum Analyzer | R&S | FSV40 | 101910 | Apr. 18, 2024 | Apr. 17, 2025 |
| Power Meter | Anritsu | ML2495A | 1241002 | Nov. 21, 2023 | Nov. 20, 2024 |
| Power Sensor | Anritsu | MA2411B | 1207366 | Nov. 21, 2023 | Nov. 20, 2024 |
| Attenuator | Pasternack | PE7005-10 | 10-2 | Oct. 05, 2023 | Oct. 04, 2024 |
| Measurement Software | Sporton | SENSE-15247_FS | V5.11 | NA | NA |
| Note: Calibration Interval of instruments listed above is one year. | | | | | |

## 1.5 Test Standards

47 CFR FCC Part 15.247
ANSI C63.10-2013

## 1.6 Reference Guidance

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

## 1.7 Deviation from Test Standard and Measurement Procedure

None

## 1.8 Measurement Uncertainty

The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

| Measurement Uncertainty | |
|---|---|
| **Parameters** | **Uncertainty** |
| Bandwidth | ±34.130 Hz |
| Conducted power | ±0.808 dB |
| Power density | ±0.583 dB |
| Conducted emission | ±2.715 dB |
| AC conducted emission | ±2.92 dB |
| Unwanted Emission ≤ 1GHz | ±3.41 dB |
| Unwanted Emission > 1GHz | ±4.59 dB |

# 2 Test Configuration

## 2.1 Testing Facility

| | |
|---|---|
| **Test Laboratory** | International Certification Corporation |
| **Test Site** | CO01-WS, 03CH01-WS, TH01-WS |
| **Address of Test Site** | No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.) |

- FCC Designation No.: TW2732
- FCC site registration No.: 181692
- ISED#: 10807A
- CAB identifier: TW2732

## 2.2 The Worst Test Modes and Channel Details

| Test item | Modulation Mode | Test Frequency (MHz) | Data Rate | Test Configuration |
|---|---|---|---|---|
| AC Power Line Conducted Emission | Charging mode | --- | --- | 2 |
| Unwanted Emissions ≤ 1GHz | HT20 | 2437 | MCS 0 | 1 |
| | Charging mode | --- | --- | 2 |
| Unwanted Emissions >1GHz<br>Conducted Output Power<br>6dB bandwidth<br>Power spectral density | 11b<br>11g<br>HT20 | 2412 / 2437 / 2462<br>2412 / 2437 / 2462<br>2412 / 2437 / 2462 | 1 Mbps<br>6 Mbps<br>MCS 0 | 1 |

**NOTE:**
1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **Z-plane** result was found as the worst case and was shown in this report.
2. The test configurations are listed as follows:
   1) Mode 1: Battery mode
   2) Mode 2: Charging mode

# 3 Transmitter Test Results

## 3.1 6dB and Occupied Bandwidth

### 3.1.1 Limit of 6dB Bandwidth

The minimum 6dB bandwidth shall be at least 500 kHz.

### 3.1.2 Test Procedures

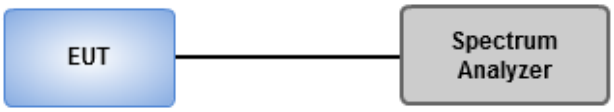
**6dB Bandwidth**

1. Set resolution bandwidth (RBW) = 100 kHz, Video bandwidth = 300 kHz.
2. Detector = Peak, Trace mode = max hold.
3. Sweep = auto couple, Allow the trace to stabilize.
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6dB relative to the maximum level measured in the fundamental emission.

**Occupied Bandwidth**

1. Set resolution bandwidth (RBW) = 1% ~ 5 % of OBW, Video bandwidth = 3 x RBW
2. Detector = Sample, Trace mode = max hold.
3 Sweep = auto couple, Allow the trace to stabilize.
4. Use the OBW measurement function of spectrum analyzer to measure the occupied bandwidth.

### 3.1.3 Test Setup




### 3.1.4 Test Results

| | | | |
|---|---|---|---|
| **Ambient Condition** | 23°C / 65% | **Tested By** | Roger Lu |

Refer to Appendix A.

## 3.2 Conducted Output Power

### 3.2.1 Limit of Conducted Output Power

Conducted power shall not exceed 1Watt.

Antenna gain <= 6dBi, no any corresponding reduction is in output power limit.

Antenna gain > 6dBi

Non Fixed, point to point operations.
The conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dB

Fixed, point to point operations
Systems operating in the 2400–2483.5 MHz band that are used exclusively for fixed, point-to-point Operations, maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

### 3.2.2 Test Procedures

A broadband RF power meter is used for output power measurement. The video bandwidth of power meter is greater than DTS bandwidth of EUT. If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power.

### 3.2.3 Test Setup


### 3.2.4 Test Results

| | | | |
|---|---|---|---|
| **Ambient Condition** | 23°C / 65% | **Tested By** | Roger Lu |

Refer to Appendix B.

## 3.3 Power Spectral Density

### 3.3.1 Limit of Power Spectral Density

Power spectral density shall not be greater than 8 dBm in any 3 kHz band.

### 3.3.2 Test Procedures

**Peak PSD**

1. Set the RBW = 3 kHz, VBW = 10 kHz.
2. Detector = Peak, Sweep time = auto couple.
3. Trace mode = max hold, allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum amplitude level.

**Average PSD, duty cycle ≥ 98%**

1. Set the RBW = 3 kHz, VBW = 10 kHz.
2. Detector = RMS, Sweep time = auto couple.
3. Sweep time = auto couple.
4. Employ trace averaging (RMS) mode over a minimum of 100 traces.
5. Use the peak marker function to determine the maximum amplitude level.

**Average PSD, duty cycle < 98%**

1 Set the RBW = 3 kHz, VBW = 10 kHz

2 Detector = RMS, Sweep time = auto couple.

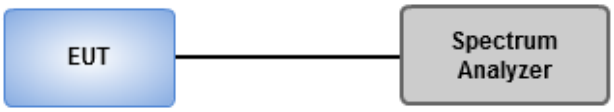
3 Sweep time = auto couple.

4 Employ trace averaging (RMS) mode over a minimum of 100 traces.

5 Use the peak marker function to determine the maximum amplitude level.

6 Add 10 log (1/x), where x is the duty cycle.

### 3.3.3 Test Setup




### 3.3.4 Test Results

| | | | |
|---|---|---|---|
| **Ambient Condition** | 23°C / 65% | **Tested By** | Roger Lu |

Refer to Appendix C.

## 3.4 Unwanted Emissions into Restricted Frequency Bands

### 3.4.1 Limit of Unwanted Emissions into Restricted Frequency Bands

| Restricted Band Emissions Limit | | | |
|---|---|---|---|
| **Frequency Range (MHz)** | **Field Strength (uV/m)** | **Field Strength (dBuV/m)** | **Measure Distance (m)** |
| 0.009~0.490 | 2400/F(kHz) | 48.5 - 13.8 | 300 |
| 0.490~1.705 | 24000/F(kHz) | 33.8 - 23 | 30 |
| 1.705~30.0 | 30 | 29 | 30 |
| 30~88 | 100 | 40 | 3 |
| 88~216 | 150 | 43.5 | 3 |
| 216~960 | 200 | 46 | 3 |
| Above 960 | 500 | 54 | 3 |

**Note 1:**
Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit
**Note 2:**
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

### 3.4.2 Test Procedures

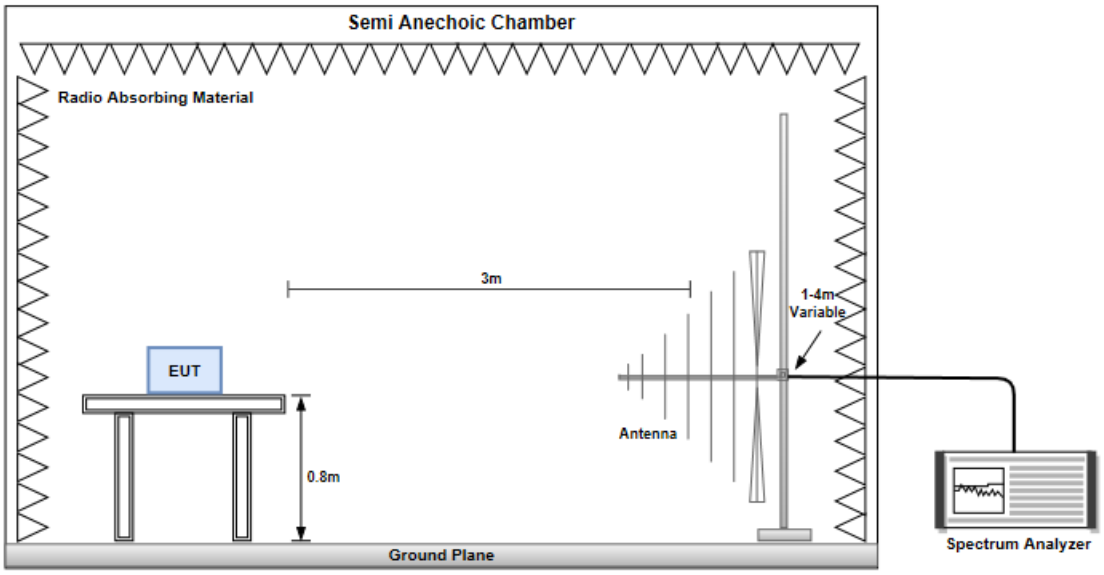
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

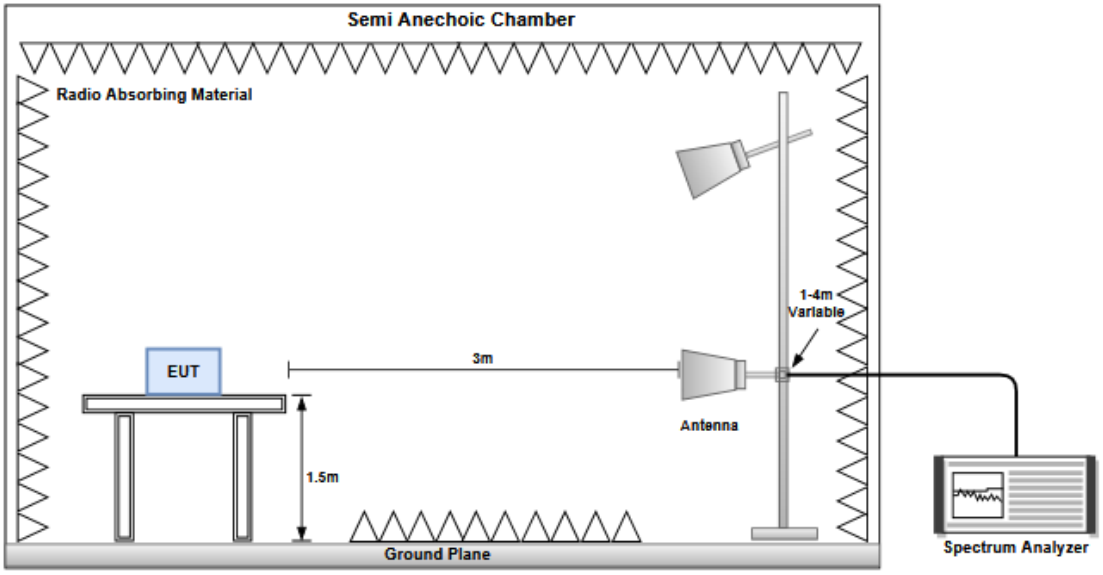
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above 1GHz.

### 3.4.3 Test Setup

**Radiated Emissions below 1 GHz**




**Radiated Emissions above 1 GHz**




### 3.4.4 Test Results

Refer to Appendix D.

# 3.5 Emissions in Non-Restricted Frequency Bands

## 3.5.1 Emissions in Non-Restricted Frequency Bands Limit

Peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz.

## 3.5.2 Test Procedures

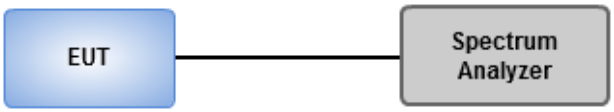
**Reference level measurement**

1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Use the peak marker function to determine the maximum PSD level

**Emission level measurement**

1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Scan Frequency range is up to 25GHz
4. Use the peak marker function to determine the maximum amplitude level

## 3.5.3 Test Setup




## 3.5.4 Test Results

| | | | |
|---|---|---|---|
| **Ambient Condition** | 23°C / 65% | **Tested By** | Roger Lu |

Refer to Appendix E.

## 3.6 AC Power Line Conducted Emissions

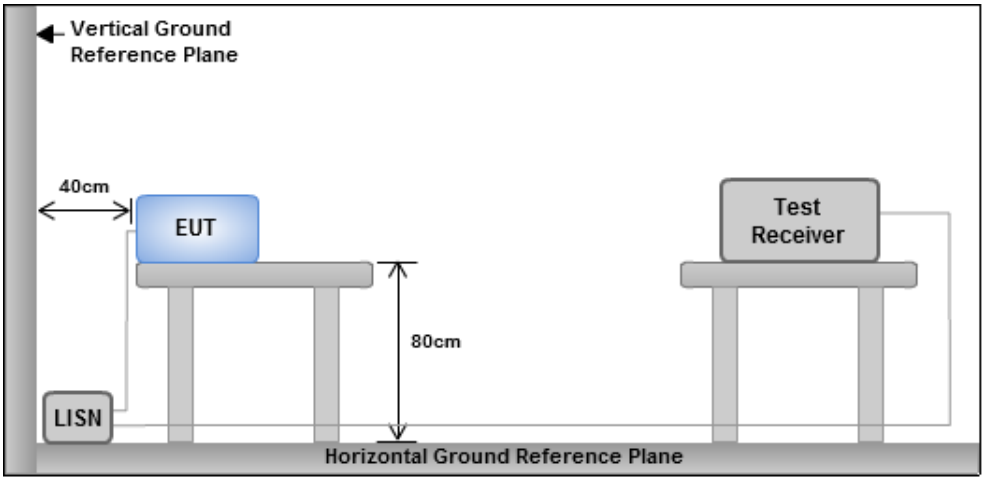
### 3.6.1 Limit of AC Power Line Conducted Emissions

| Conducted Emissions Limit | | |
|---|---|---|
| **Frequency Emission (MHz)** | **Quasi-Peak** | **Average** |
| 0.15-0.5 | 66 - 56 * | 56 - 46 * |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |
| Note 1: * Decreases with the logarithm of the frequency. | | |

### 3.6.2 Test Procedures

1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
3. AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.
4. This measurement was performed with AC 120V / 60Hz.

### 3.6.3 Test Setup




Note: 1. Support units were connected to second LISN.

2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

### 3.6.4 Test Results

Refer to Appendix F.

# 4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corporation (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website http://www.icertifi.com.tw.

**Linkou**

Tel: 886-2-2601-1640

No.30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan (R.O.C.)

**Kwei Shan**

Tel: 886-3-271-8666

No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

No.2-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

**Kwei Shan Site II**

Tel: 886-3-271-8640

No.14-1, Lane 19, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

If you have any suggestion, please feel free to contact us as below information.

Tel: 886-3-271-8666
Fax: 886-3-318-0345
Email: ICC_Service@icertifi.com.tw

**==END==**

**Summary**

| Mode | Max-N dB (Hz) | Max-OBW (Hz) | ITU-Code | Min-N dB (Hz) | Min-OBW (Hz) |
|---|---|---|---|---|---|
| 2.4-2.4835GHz | - | - | - | - | - |
| 802.11b_Nss1,(1Mbps)_1TX | 9.525M | 14.858M | 14M9G1D | 9.025M | 14.063M |
| 802.11g_Nss1,(6Mbps)_1TX | 16.45M | 16.624M | 16M6D1D | 15.9M | 16.008M |
| 802.11n HT20_Nss1,(MCS0)_1TX | 17.6M | 17.491M | 17M5D1D | 15.45M | 16.717M |

Max-N dB = Maximum 6dB down bandwidth; Max-OBW = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 6dB down bandwidth; Min-OBW = Minimum 99% occupied bandwidth

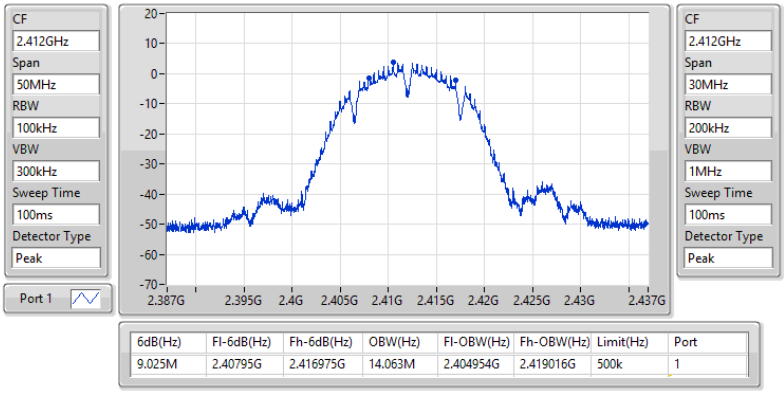
**Result**

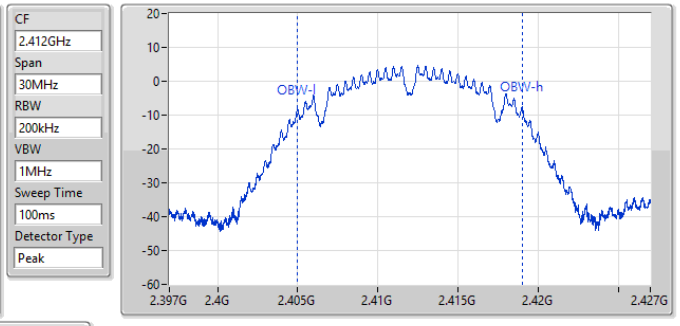
| Mode | Result | Limit (Hz) | Port 1-N dB (Hz) | Port 1-OBW (Hz) |
|---|---|---|---|---|
| 802.11b_Nss1,(1Mbps)_1TX | - | - | - | - |
| 2412MHz | Pass | 500k | 9.025M | 14.063M |
| 2437MHz | Pass | 500k | 9.05M | 14.858M |
| 2462MHz | Pass | 500k | 9.525M | 14.768M |
| 802.11g_Nss1,(6Mbps)_1TX | - | - | - | - |
| 2412MHz | Pass | 500k | 15.9M | 16.008M |
| 2437MHz | Pass | 500k | 16.375M | 16.624M |
| 2462MHz | Pass | 500k | 16.45M | 16.558M |
| 802.11n HT20_Nss1,(MCS0)_1TX | - | - | - | - |
| 2412MHz | Pass | 500k | 15.45M | 16.717M |
| 2437MHz | Pass | 500k | 17.6M | 17.491M |
| 2462MHz | Pass | 500k | 17.3M | 17.441M |

Port X-N dB = Port X 6dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

**2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX** **EBW**

**2412MHz**

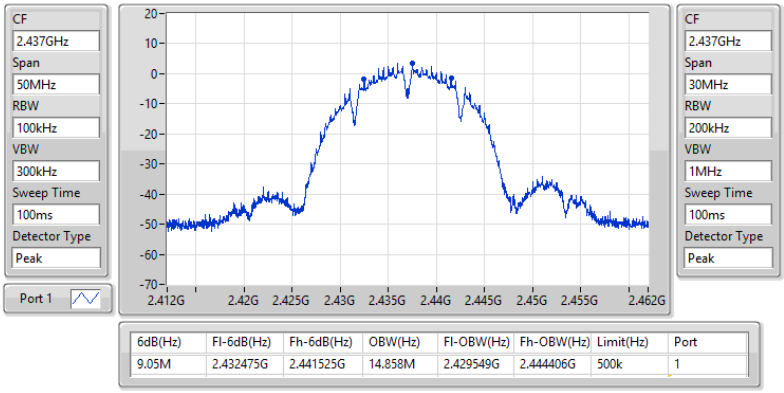


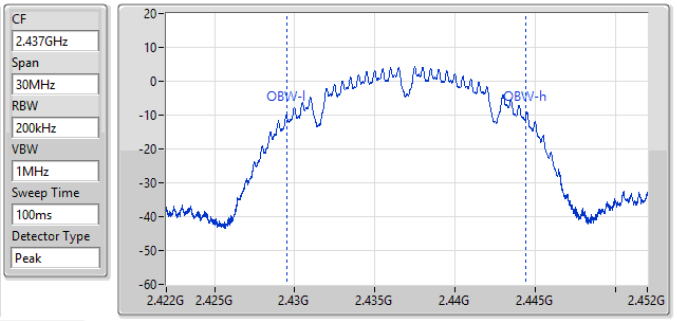




| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 9.025M | 2.40795G | 2.416975G | 14.063M | 2.404954G | 2.419016G | 500k | 1 |

**2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX** **EBW**

**2437MHz**

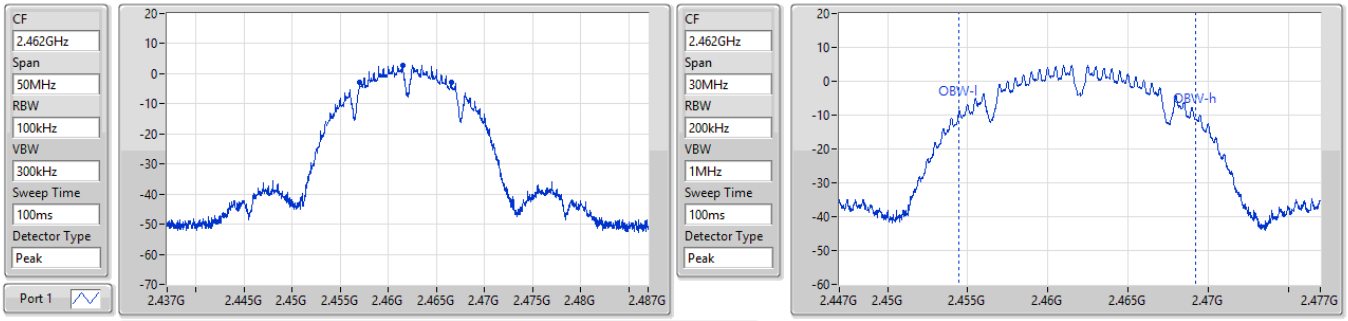



| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 9.05M | 2.432475G | 2.441525G | 14.858M | 2.429549G | 2.444406G | 500k | 1 |

**2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX** **EBW**

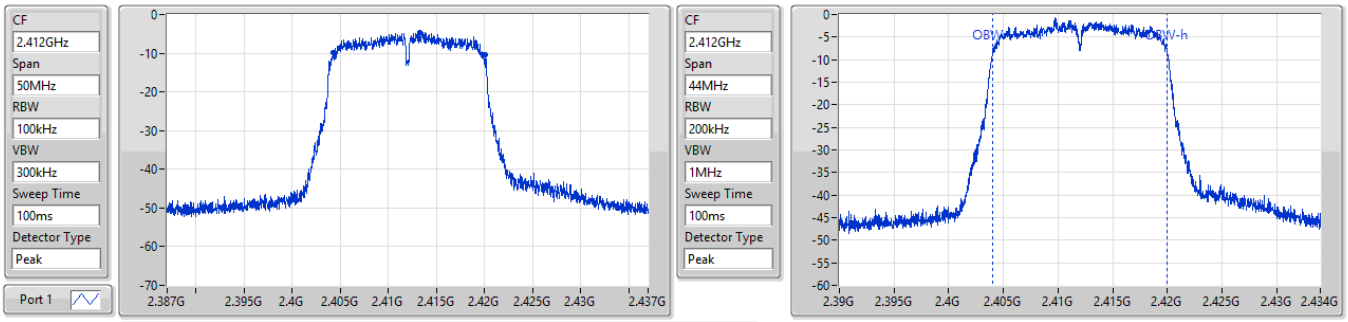
**2462MHz**




| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 9.525M | 2.457G | 2.466525G | 14.768M | 2.454459G | 2.469226G | 500k | 1 |

**2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX** **EBW**

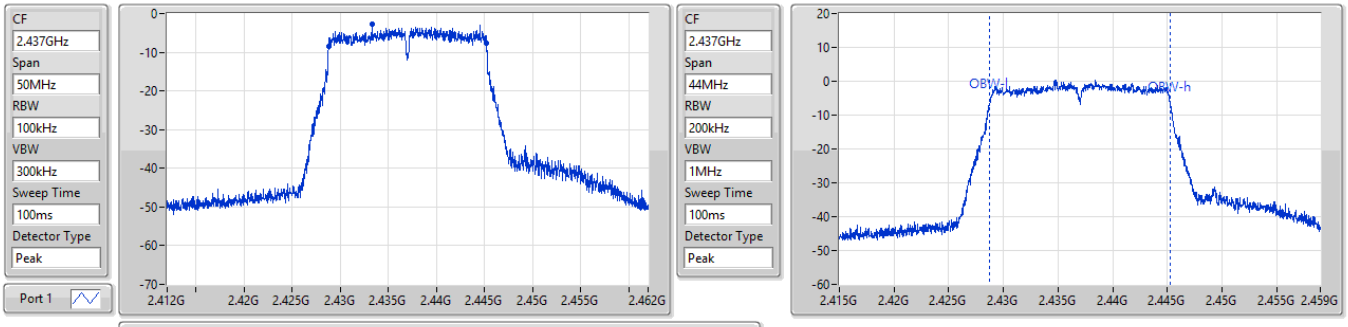
**2412MHz**




| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 15.9M | 2.404225G | 2.420125G | 16.008M | 2.404018G | 2.420026G | 500k | 1 |

**2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX** **EBW**

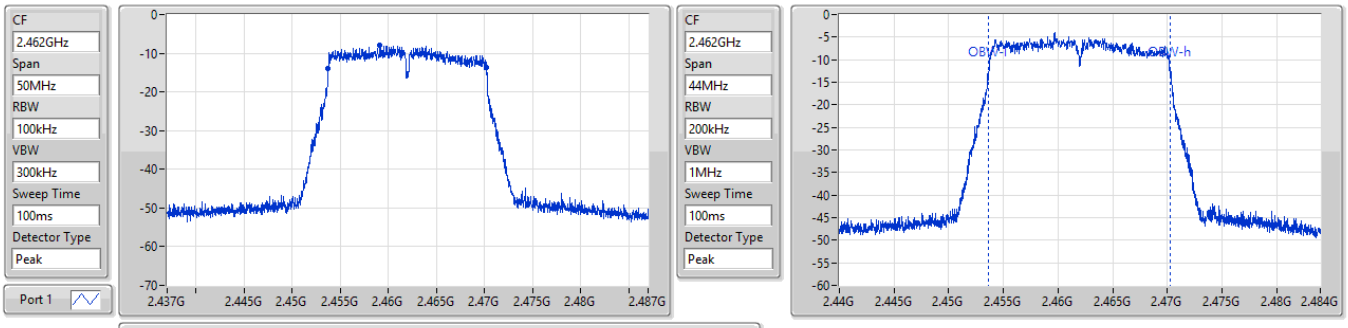
**2437MHz**




| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 16.375M | 2.4288G | 2.445175G | 16.624M | 2.428688G | 2.445312G | 500k | 1 |

**2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX** **EBW**

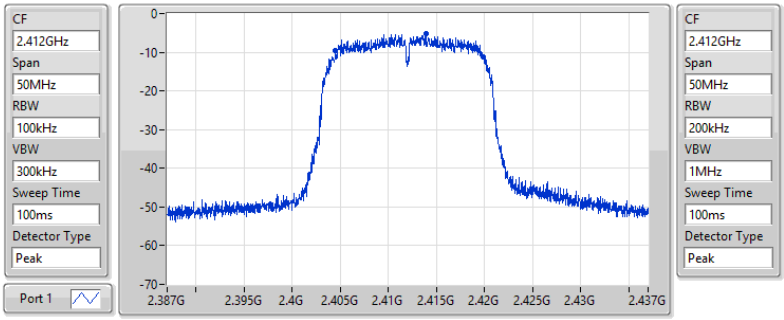
**2462MHz**

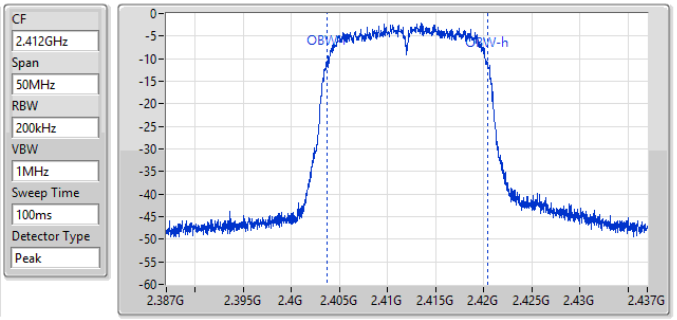



| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 16.45M | 2.453725G | 2.470175G | 16.558M | 2.453666G | 2.470224G | 500k | 1 |

**2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX** **EBW**

**2412MHz**

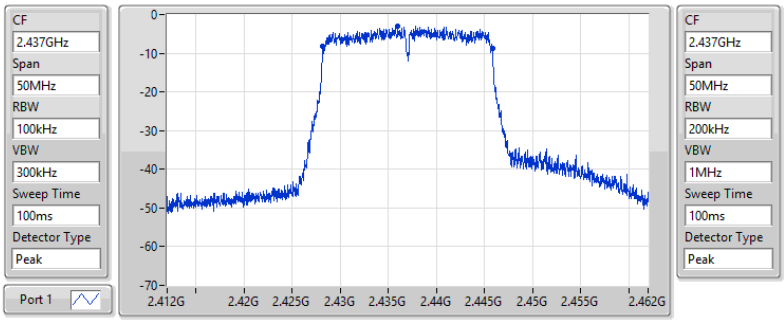


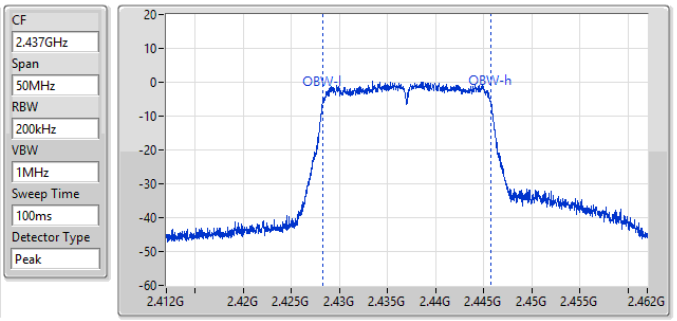




| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 15.45M | 2.40445G | 2.4199G | 16.717M | 2.403654G | 2.420371G | 500k | 1 |

**2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX** **EBW**

**2437MHz**

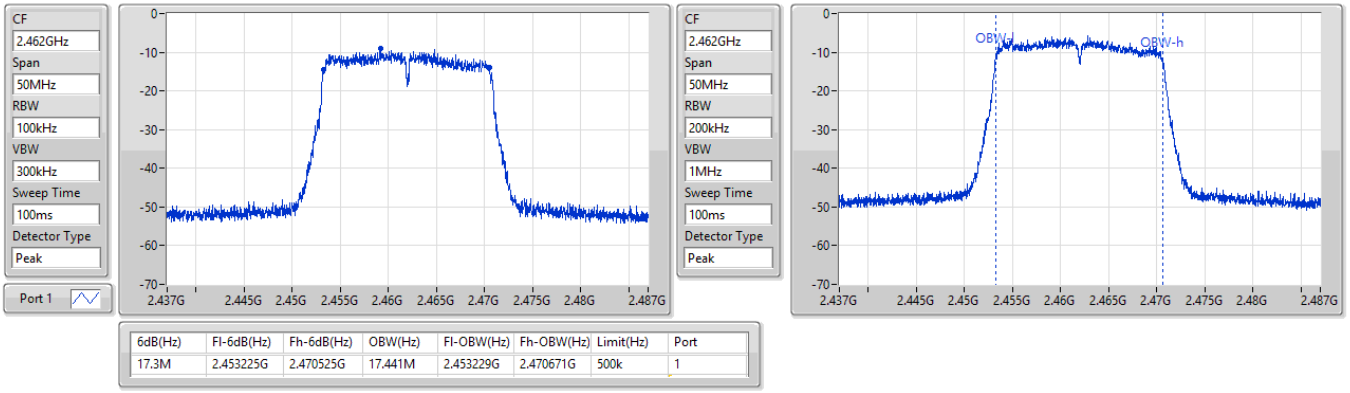



| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 17.6M | 2.4282G | 2.4458G | 17.491M | 2.428254G | 2.445746G | 500k | 1 |

**2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX** **EBW**

**2462MHz**




| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 17.3M | 2.453225G | 2.470525G | 17.441M | 2.453229G | 2.470671G | 500k | 1 |

**Summary**

| Mode | Total Power (dBm) | Total Power (W) |
|---|---|---|
| 2.4-2.4835GHz | - | - |
| 802.11b_Nss1,(1Mbps)_1TX | 12.89 | 0.01945 |
| 802.11g_Nss1,(6Mbps)_1TX | 10.31 | 0.01074 |
| 802.11n HT20_Nss1,(MCS0)_1TX | 10.41 | 0.01099 |

**Result**

| Mode | Result | DG (dBi) | Port 1 (dBm) | Total Power (dBm) | Power Limit (dBm) | EIRP (dBm) | EIRP Limit (dBm) |
|---|---|---|---|---|---|---|---|
| 802.11b_Nss1,(1Mbps)_1TX | - | - | - | - | - | - | - |
| 2412MHz | Pass | 0.21 | 12.49 | 12.49 | - | 12.70 | - |
| 2437MHz | Pass | 0.21 | 12.42 | 12.42 | - | 12.63 | - |
| 2462MHz | Pass | 0.21 | 12.89 | 12.89 | - | 13.10 | - |
| 802.11g_Nss1,(6Mbps)_1TX | - | - | - | - | - | - | - |
| 2412MHz | Pass | 0.21 | 8.54 | 8.54 | - | 8.75 | - |
| 2437MHz | Pass | 0.21 | 10.31 | 10.31 | - | 10.52 | - |
| 2462MHz | Pass | 0.21 | 5.57 | 5.57 | - | 5.78 | - |
| 802.11n HT20_Nss1,(MCS0)_1TX | - | - | - | - | - | - | - |
| 2412MHz | Pass | 0.21 | 7.68 | 7.68 | - | 7.89 | - |
| 2437MHz | Pass | 0.21 | 10.41 | 10.41 | - | 10.62 | - |
| 2462MHz | Pass | 0.21 | 4.02 | 4.02 | - | 4.23 | - |

DG = Directional Gain; Port X = Port X output power
Note : Conducted average output power is for reference

**Summary**

| Mode | Total Power (dBm) | Total Power (W) |
|---|---|---|
| 2.4-2.4835GHz | - | - |
| 802.11b_Nss1,(1Mbps)_1TX | 15.16 | 0.03281 |
| 802.11g_Nss1,(6Mbps)_1TX | 16.48 | 0.04446 |
| 802.11n HT20_Nss1,(MCS0)_1TX | 17.13 | 0.05164 |

**Result**

| Mode | Result | DG (dBi) | Port 1 (dBm) | Total Power (dBm) | Power Limit (dBm) | EIRP (dBm) | EIRP Limit (dBm) |
|---|---|---|---|---|---|---|---|
| 802.11b_Nss1,(1Mbps)_1TX | - | - | - | - | - | - | - |
| 2412MHz | Pass | 0.21 | 14.87 | 14.87 | 30.00 | 15.08 | 36.00 |
| 2437MHz | Pass | 0.21 | 14.83 | 14.83 | 30.00 | 15.04 | 36.00 |
| 2462MHz | Pass | 0.21 | 15.16 | 15.16 | 30.00 | 15.37 | 36.00 |
| 802.11g_Nss1,(6Mbps)_1TX | - | - | - | - | - | - | - |
| 2412MHz | Pass | 0.21 | 14.62 | 14.62 | 30.00 | 14.83 | 36.00 |
| 2437MHz | Pass | 0.21 | 16.48 | 16.48 | 30.00 | 16.69 | 36.00 |
| 2462MHz | Pass | 0.21 | 11.63 | 11.63 | 30.00 | 11.84 | 36.00 |
| 802.11n HT20_Nss1,(MCS0)_1TX | - | - | - | - | - | - | - |
| 2412MHz | Pass | 0.21 | 13.78 | 13.78 | 30.00 | 13.99 | 36.00 |
| 2437MHz | Pass | 0.21 | 17.13 | 17.13 | 30.00 | 17.34 | 36.00 |
| 2462MHz | Pass | 0.21 | 10.67 | 10.67 | 30.00 | 10.88 | 36.00 |

DG = Directional Gain; Port X = Port X output power

**Summary**

| Mode | PD (dBm/RBW) |
|---|---|
| 2.4-2.4835GHz | - |
| 802.11b_Nss1,(1Mbps)_1TX | -10.84 |
| 802.11g_Nss1,(6Mbps)_1TX | -16.45 |
| 802.11n HT20_Nss1,(MCS0)_1TX | -15.76 |

RBW = 3kHz;

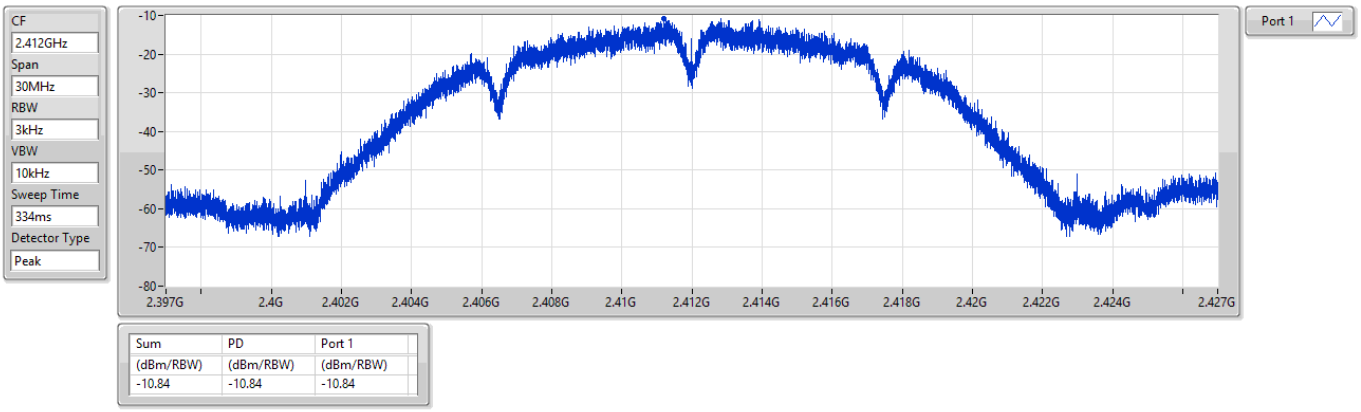
**Result**

| Mode | Result | DG (dBi) | Port 1 (dBm/RBW) | PD (dBm/RBW) | PD Limit (dBm/RBW) |
|---|---|---|---|---|---|
| 802.11b_Nss1,(1Mbps)_1TX | - | - | - | - | - |
| 2412MHz | Pass | 0.21 | -10.84 | -10.84 | 8.00 |
| 2437MHz | Pass | 0.21 | -11.04 | -11.04 | 8.00 |
| 2462MHz | Pass | 0.21 | -11.32 | -11.32 | 8.00 |
| 802.11g_Nss1,(6Mbps)_1TX | - | - | - | - | - |
| 2412MHz | Pass | 0.21 | -17.10 | -17.10 | 8.00 |
| 2437MHz | Pass | 0.21 | -16.45 | -16.45 | 8.00 |
| 2462MHz | Pass | 0.21 | -20.57 | -20.57 | 8.00 |
| 802.11n HT20_Nss1,(MCS0)_1TX | - | - | - | - | - |
| 2412MHz | Pass | 0.21 | -18.27 | -18.27 | 8.00 |
| 2437MHz | Pass | 0.21 | -15.76 | -15.76 | 8.00 |
| 2462MHz | Pass | 0.21 | -21.79 | -21.79 | 8.00 |

DG = Directional Gain; RBW = 3kHz;
PD = Power density; Port X = Port X Power Density;

**2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX** **PSD**

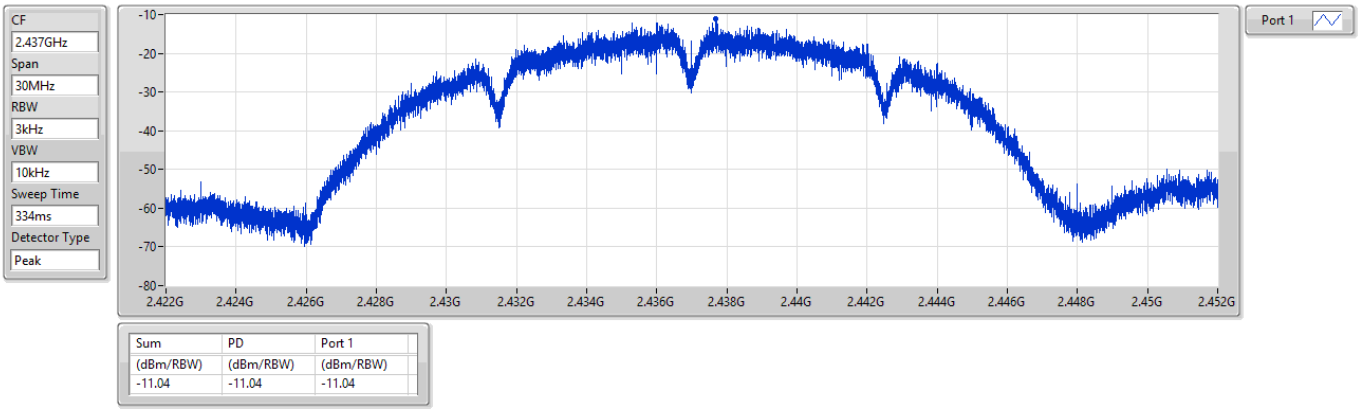
**2412MHz**




| Sum | PD | Port 1 |
|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -10.84 | -10.84 | -10.84 |

**2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX** **PSD**

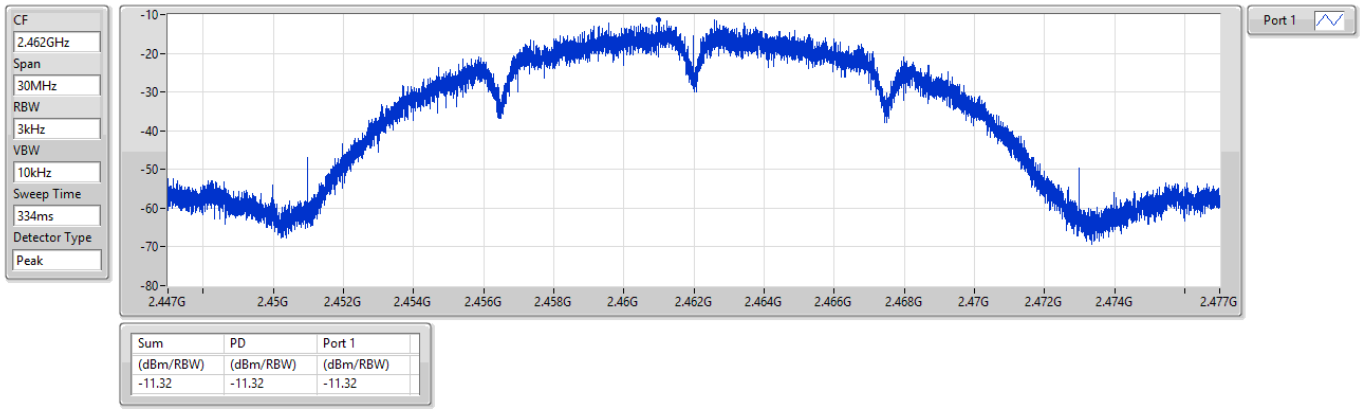
**2437MHz**




| Sum | PD | Port 1 |
|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -11.04 | -11.04 | -11.04 |

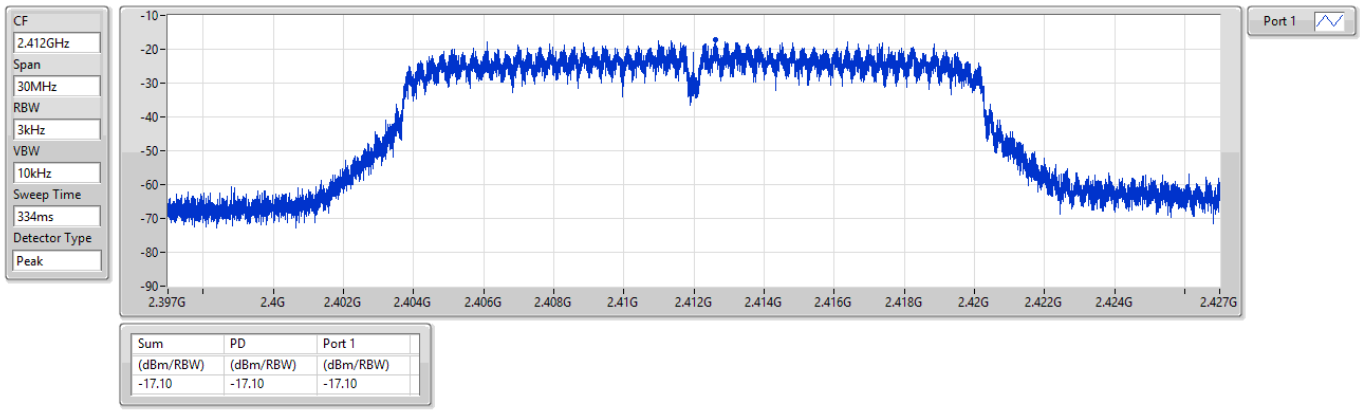
**2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX** **PSD**

**2462MHz**



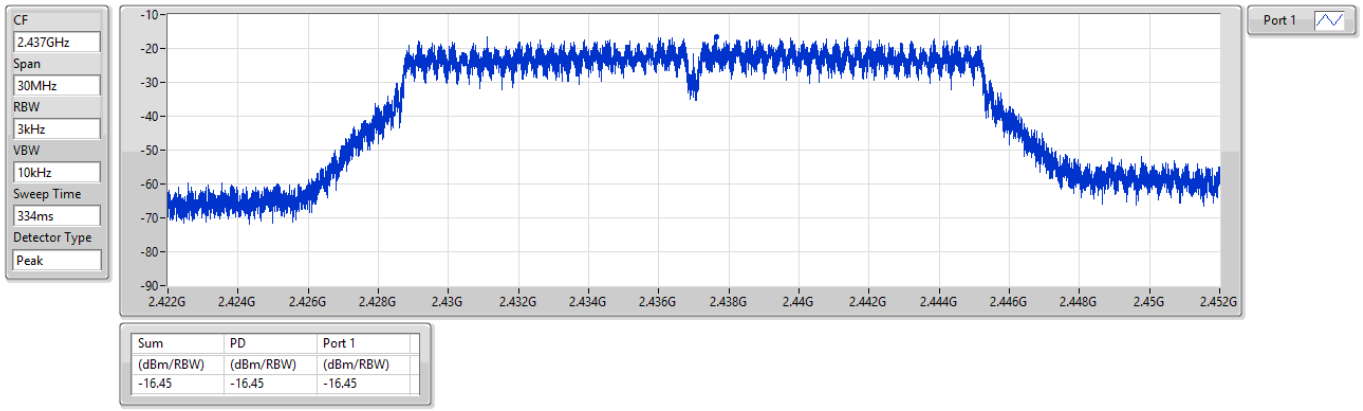

**2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX** **PSD**

**2412MHz**



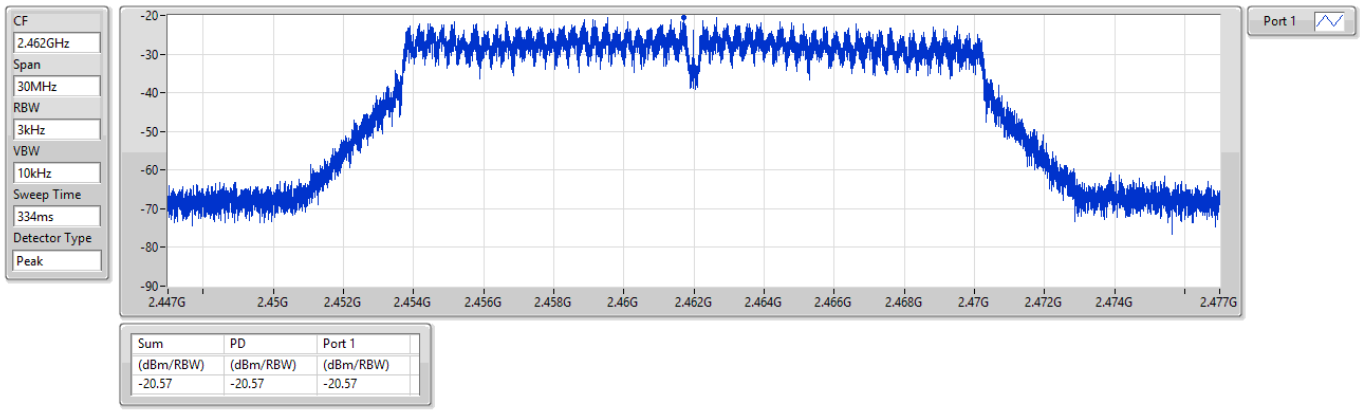
**2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX** **PSD**

**2437MHz**



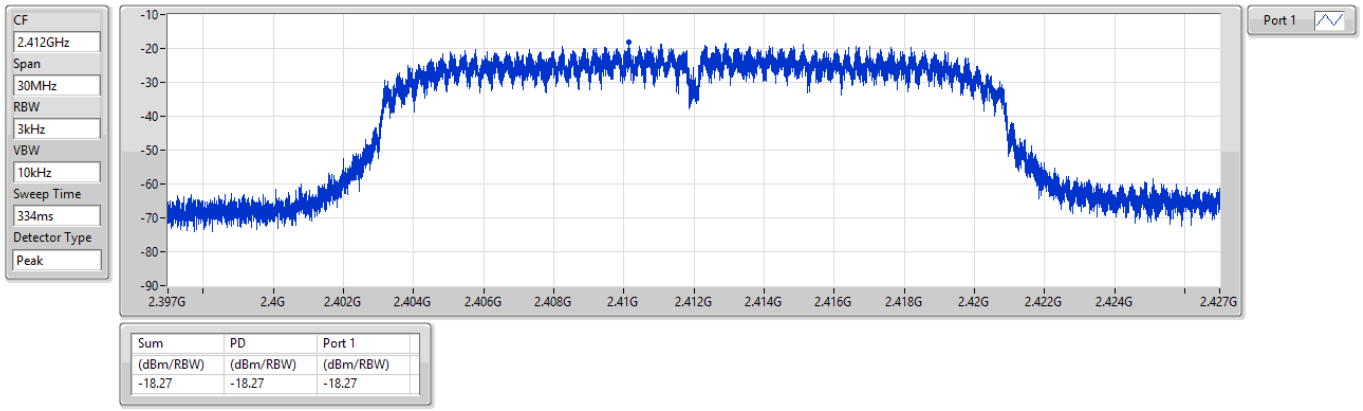

**2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX** **PSD**

**2462MHz**



**2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX** **PSD**

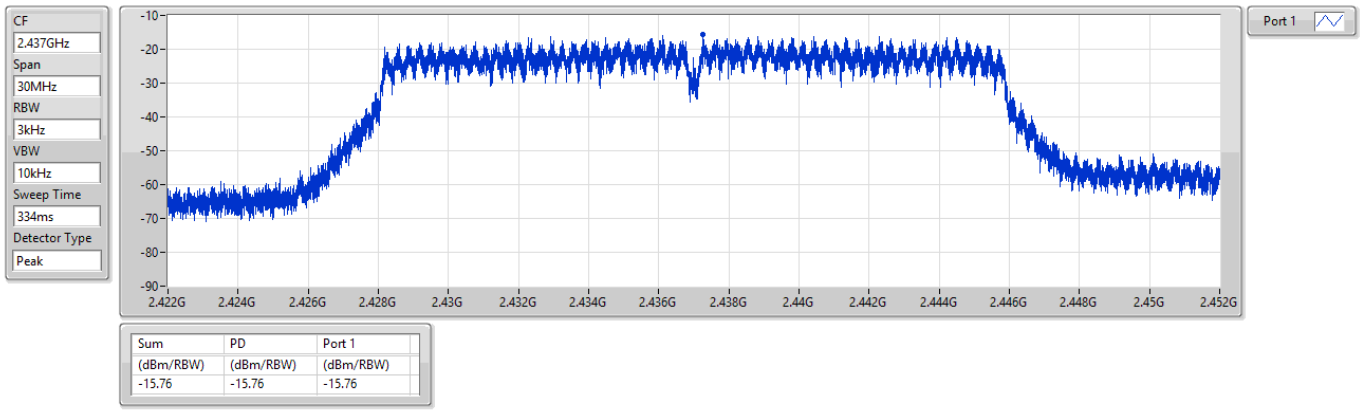
**2412MHz**




| Sum | PD | Port 1 |
|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -18.27 | -18.27 | -18.27 |

**2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX** **PSD**

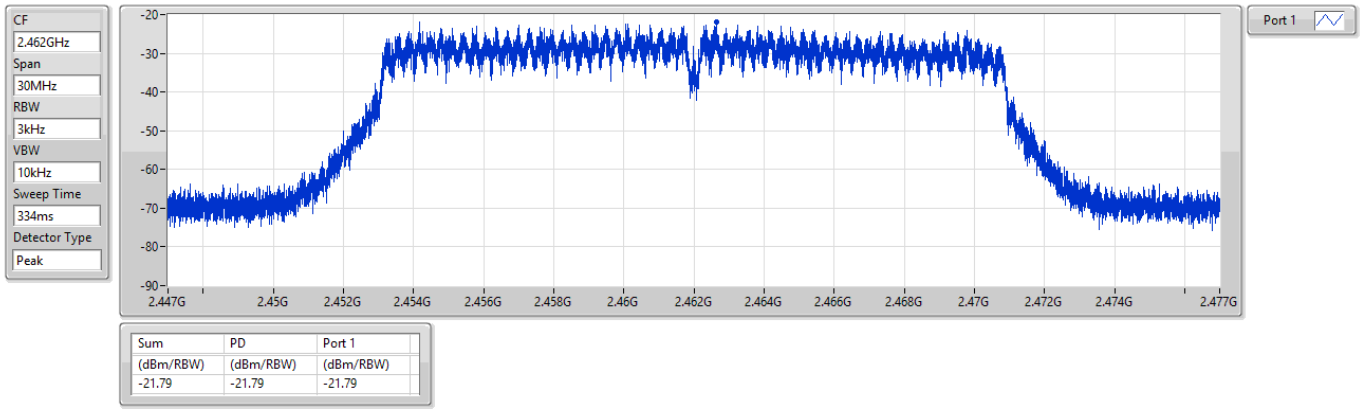
**2437MHz**




| Sum | PD | Port 1 |
|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -15.76 | -15.76 | -15.76 |

**2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX** **PSD**

**2462MHz**

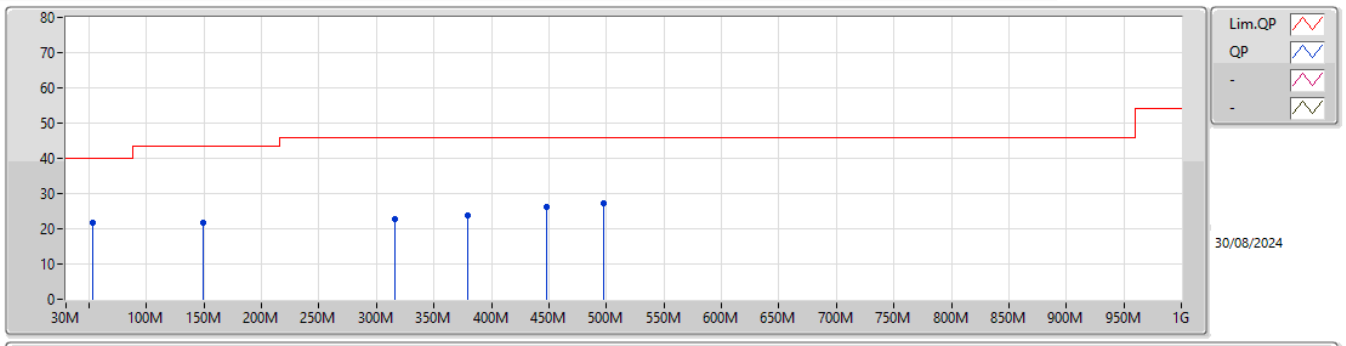



| Sum | PD | Port 1 |
|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -21.79 | -21.79 | -21.79 |

**Summary**

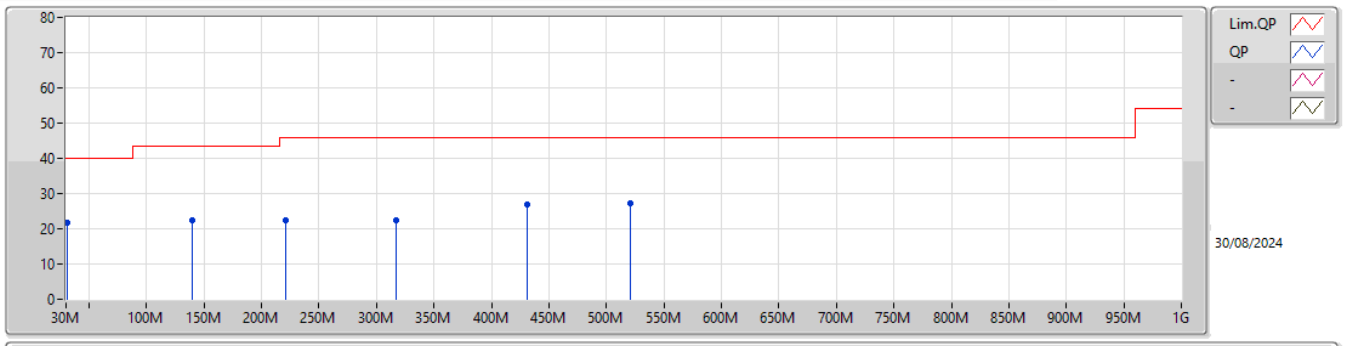
| Mode | Result | Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Condition |
|---|---|---|---|---|---|---|---|
| Mode 1 | Pass | PK | 53.1M | 21.72 | 40.00 | -18.28 | Horizontal |
| Mode 2 | Pass | PK | 51.1M | 27.48 | 40.00 | -12.52 | Vertical |

**Mode 1**



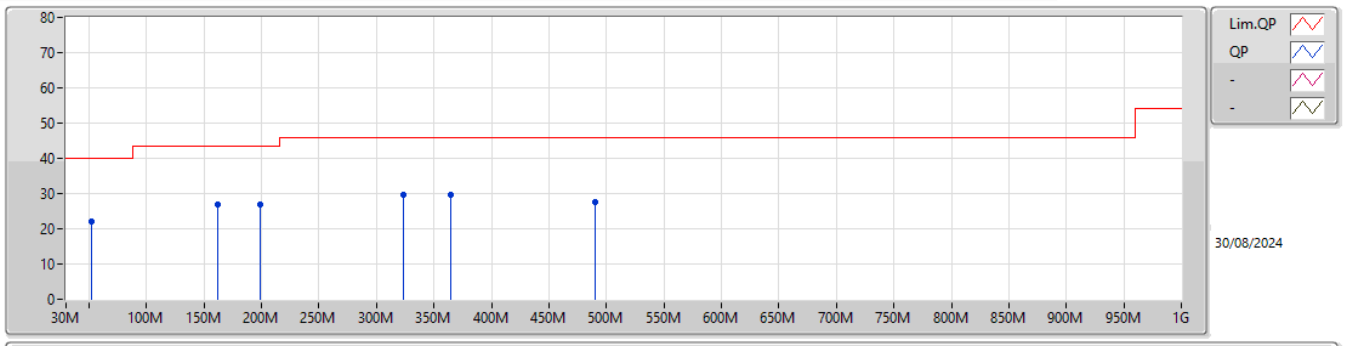

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| PK | 53.1M | 21.72 | 40.00 | -18.28 | -8.31 | 3 | Horizontal | - | - | - | 30.03 | 19.19 | 0.65 | 28.15 |
| PK | 149.4M | 21.71 | 43.50 | -21.79 | -8.83 | 3 | Horizontal | - | - | - | 30.54 | 18.28 | 1.14 | 28.25 |
| PK | 316M | 22.74 | 46.00 | -23.26 | -7.43 | 3 | Horizontal | - | - | - | 30.17 | 19.10 | 1.69 | 28.22 |
| PK | 379.6M | 23.71 | 46.00 | -22.29 | -5.89 | 3 | Horizontal | - | - | - | 29.60 | 20.48 | 1.81 | 28.18 |
| PK | 448.2M | 26.19 | 46.00 | -19.81 | -4.17 | 3 | Horizontal | - | - | - | 30.36 | 22.03 | 1.98 | 28.18 |
| PK | 498M | 27.23 | 46.00 | -18.77 | -3.24 | 3 | Horizontal | - | - | - | 30.47 | 22.80 | 2.16 | 28.20 |

**Mode 1**



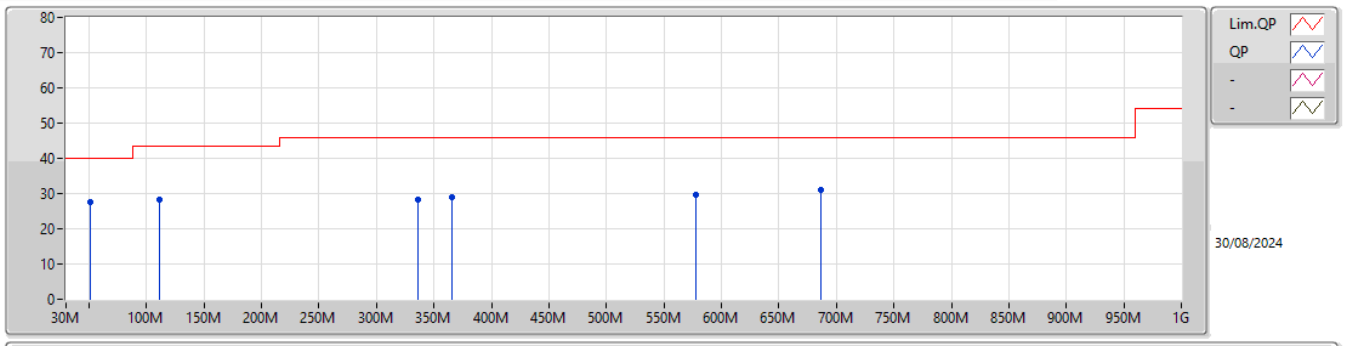

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| PK | 31M | 21.70 | 40.00 | -18.30 | -9.88 | 3 | Vertical | - | - | - | 31.58 | 17.70 | 0.50 | 28.08 |
| PK | 140.1M | 22.26 | 43.50 | -21.24 | -9.33 | 3 | Vertical | - | - | - | 31.59 | 17.81 | 1.11 | 28.25 |
| PK | 220.8M | 22.36 | 46.00 | -23.64 | -11.80 | 3 | Vertical | - | - | - | 34.16 | 15.08 | 1.39 | 28.27 |
| PK | 317.6M | 22.55 | 46.00 | -23.45 | -7.43 | 3 | Vertical | - | - | - | 29.98 | 19.10 | 1.69 | 28.22 |
| PK | 431.5M | 26.90 | 46.00 | -19.10 | -4.68 | 3 | Vertical | - | - | - | 31.58 | 21.56 | 1.94 | 28.18 |
| PK | 520.4M | 27.10 | 46.00 | -18.90 | -2.69 | 3 | Vertical | - | - | - | 29.79 | 23.29 | 2.22 | 28.20 |

**Mode 2**




| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| PK | 52.2M | 21.98 | 40.00 | -18.02 | -8.37 | 3 | Horizontal | - | - | - | 30.35 | 19.12 | 0.65 | 28.14 |
| PK | 162.1M | 26.75 | 43.50 | -16.75 | -8.87 | 3 | Horizontal | - | - | - | 35.62 | 18.20 | 1.19 | 28.26 |
| PK | 198.4M | 26.82 | 43.50 | -16.68 | -11.55 | 3 | Horizontal | - | - | - | 38.37 | 15.40 | 1.33 | 28.28 |
| PK | 323.9M | 29.67 | 46.00 | -16.33 | -7.34 | 3 | Horizontal | - | - | - | 37.01 | 19.18 | 1.70 | 28.22 |
| PK | 364.3M | 29.70 | 46.00 | -16.30 | -6.52 | 3 | Horizontal | - | - | - | 36.22 | 19.89 | 1.78 | 28.19 |
| PK | 490.1M | 27.46 | 46.00 | -18.54 | -3.37 | 3 | Horizontal | - | - | - | 30.83 | 22.70 | 2.13 | 28.20 |

**Mode 2**



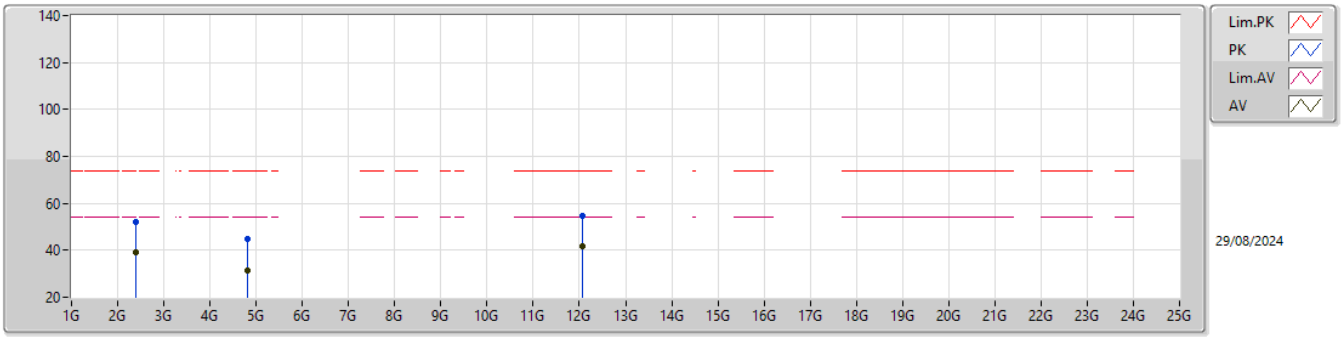

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| PK | 51.1M | 27.48 | 40.00 | -12.52 | -8.22 | 3 | Vertical | - | - | - | 35.70 | 19.28 | 0.64 | 28.14 |
| PK | 111.6M | 28.31 | 43.50 | -15.19 | -11.82 | 3 | Vertical | - | - | - | 40.13 | 15.42 | 1.00 | 28.24 |
| PK | 336.2M | 28.29 | 46.00 | -17.71 | -7.18 | 3 | Vertical | - | - | - | 35.47 | 19.30 | 1.73 | 28.21 |
| PK | 366M | 29.12 | 46.00 | -16.88 | -6.47 | 3 | Vertical | - | - | - | 35.59 | 19.94 | 1.78 | 28.19 |
| PK | 578.3M | 29.62 | 46.00 | -16.38 | -1.45 | 3 | Vertical | - | - | - | 31.07 | 24.33 | 2.40 | 28.18 |
| PK | 686M | 30.99 | 46.00 | -15.01 | 0.58 | 3 | Vertical | - | - | - | 30.41 | 25.80 | 2.81 | 28.03 |

**Summary**

| Mode | Result | Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Dist (m) | Condition | Azimuth (°) | Height (m) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.4-2.4835GHz | - | - | - | - | - | - | - | - | - | - | - |
| 802.11b_Nss1,(1Mbps)_1TX | Pass | AV | 12.06G | 41.80 | 54.00 | -12.20 | 3 | Vertical | 41 | 1.00 | - |
| 802.11g_Nss1,(6Mbps)_1TX | Pass | AV | 12.06G | 42.09 | 54.00 | -11.91 | 3 | Vertical | 35 | 1.00 | - |
| 802.11n HT20_Nss1,(MCS0)_1TX | Pass | AV | 12.06G | 41.95 | 54.00 | -12.05 | 3 | Vertical | 28 | 1.00 | - |

**2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX**

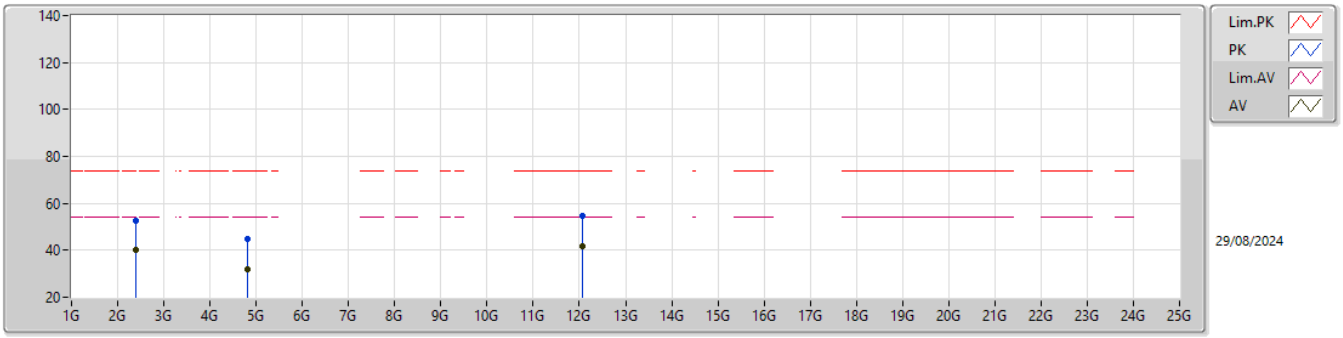
**2412MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 39.24 | 54.00 | -14.76 | 43.58 | 3 | Horizontal | 291 | 1.00 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 51.86 | 74.00 | -22.14 | 56.20 | 3 | Horizontal | 291 | 1.00 | - | 27.60 | 4.95 | 36.89 |
| AV | 4.824G | 31.56 | 54.00 | -22.44 | 31.97 | 3 | Horizontal | 29 | 1.00 | - | 31.25 | 6.87 | 38.53 |
| PK | 4.824G | 44.94 | 74.00 | -29.06 | 45.35 | 3 | Horizontal | 29 | 1.00 | - | 31.25 | 6.87 | 38.53 |
| AV | 12.06G | 41.75 | 54.00 | -12.25 | 35.34 | 3 | Horizontal | 36 | 1.00 | - | 39.22 | 10.03 | 42.84 |
| PK | 12.06G | 54.59 | 74.00 | -19.41 | 48.18 | 3 | Horizontal | 36 | 1.00 | - | 39.22 | 10.03 | 42.84 |

**2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX**

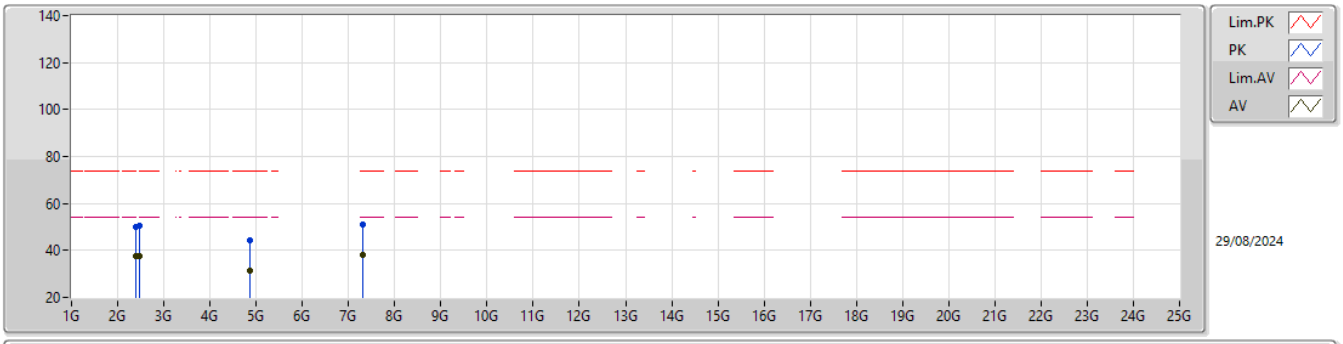
**2412MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 39.95 | 54.00 | -14.05 | 44.29 | 3 | Vertical | 184 | 2.21 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 52.34 | 74.00 | -21.66 | 56.68 | 3 | Vertical | 184 | 2.21 | - | 27.60 | 4.95 | 36.89 |
| AV | 4.824G | 31.74 | 54.00 | -22.26 | 32.15 | 3 | Vertical | 22 | 1.00 | - | 31.25 | 6.87 | 38.53 |
| PK | 4.824G | 45.03 | 74.00 | -28.97 | 45.44 | 3 | Vertical | 22 | 1.00 | - | 31.25 | 6.87 | 38.53 |
| AV | 12.06G | 41.80 | 54.00 | -12.20 | 35.39 | 3 | Vertical | 41 | 1.00 | - | 39.22 | 10.03 | 42.84 |
| PK | 12.06G | 54.66 | 74.00 | -19.34 | 48.25 | 3 | Vertical | 41 | 1.00 | - | 39.22 | 10.03 | 42.84 |

**2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX**

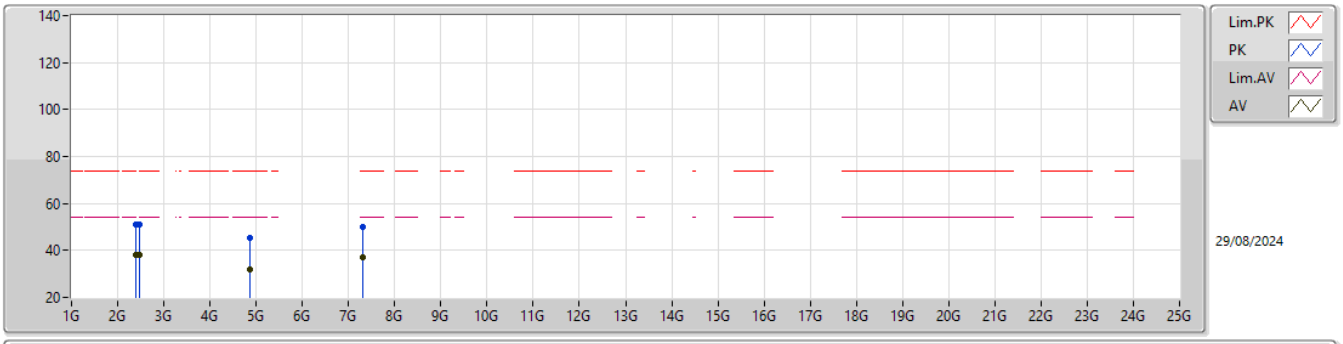
**2437MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 37.44 | 54.00 | -16.56 | 41.78 | 3 | Horizontal | 293 | 1.00 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 50.25 | 74.00 | -23.75 | 54.59 | 3 | Horizontal | 293 | 1.00 | - | 27.60 | 4.95 | 36.89 |
| AV | 2.4835G | 37.61 | 54.00 | -16.39 | 42.33 | 3 | Horizontal | 293 | 1.00 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 50.64 | 74.00 | -23.36 | 55.36 | 3 | Horizontal | 293 | 1.00 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.874G | 31.57 | 54.00 | -22.43 | 32.06 | 3 | Horizontal | 24 | 1.00 | - | 31.15 | 6.92 | 38.56 |
| PK | 4.874G | 44.54 | 74.00 | -29.46 | 45.03 | 3 | Horizontal | 24 | 1.00 | - | 31.15 | 6.92 | 38.56 |
| AV | 7.311G | 37.92 | 54.00 | -16.08 | 32.69 | 3 | Horizontal | 235 | 1.00 | - | 36.18 | 8.43 | 39.38 |
| PK | 7.311G | 50.81 | 74.00 | -23.19 | 45.58 | 3 | Horizontal | 235 | 1.00 | - | 36.18 | 8.43 | 39.38 |

**2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX**

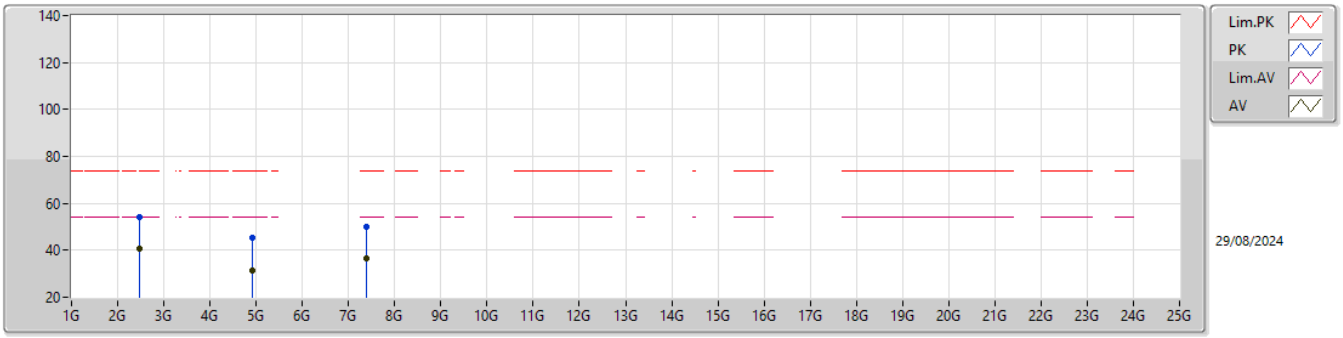
**2437MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 38.02 | 54.00 | -15.98 | 42.36 | 3 | Vertical | 182 | 2.23 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 50.91 | 74.00 | -23.09 | 55.25 | 3 | Vertical | 182 | 2.23 | - | 27.60 | 4.95 | 36.89 |
| AV | 2.4835G | 38.14 | 54.00 | -15.86 | 42.86 | 3 | Vertical | 182 | 2.23 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 51.22 | 74.00 | -22.78 | 55.94 | 3 | Vertical | 182 | 2.23 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.874G | 31.69 | 54.00 | -22.31 | 32.18 | 3 | Vertical | 15 | 1.00 | - | 31.15 | 6.92 | 38.56 |
| PK | 4.874G | 45.12 | 74.00 | -28.88 | 45.61 | 3 | Vertical | 15 | 1.00 | - | 31.15 | 6.92 | 38.56 |
| AV | 7.311G | 37.01 | 54.00 | -16.99 | 31.78 | 3 | Vertical | 26 | 1.00 | - | 36.18 | 8.43 | 39.38 |
| PK | 7.311G | 50.01 | 74.00 | -23.99 | 44.78 | 3 | Vertical | 26 | 1.00 | - | 36.18 | 8.43 | 39.38 |

**2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX**

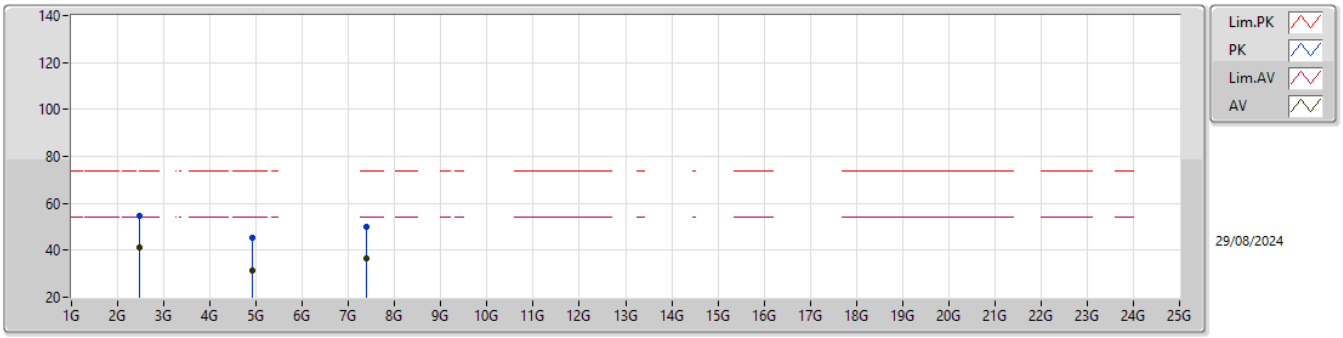
**2462MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.4835G | 40.93 | 54.00 | -13.07 | 45.65 | 3 | Horizontal | 295 | 1.00 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 53.96 | 74.00 | -20.04 | 58.68 | 3 | Horizontal | 295 | 1.00 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.924G | 31.25 | 54.00 | -22.75 | 31.69 | 3 | Horizontal | 28 | 1.00 | - | 31.20 | 6.96 | 38.60 |
| PK | 4.924G | 45.11 | 74.00 | -28.89 | 45.55 | 3 | Horizontal | 28 | 1.00 | - | 31.20 | 6.96 | 38.60 |
| AV | 7.386G | 36.42 | 54.00 | -17.58 | 31.33 | 3 | Horizontal | 31 | 1.00 | - | 36.10 | 8.47 | 39.48 |
| PK | 7.386G | 49.75 | 74.00 | -24.25 | 44.66 | 3 | Horizontal | 31 | 1.00 | - | 36.10 | 8.47 | 39.48 |

**2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX**

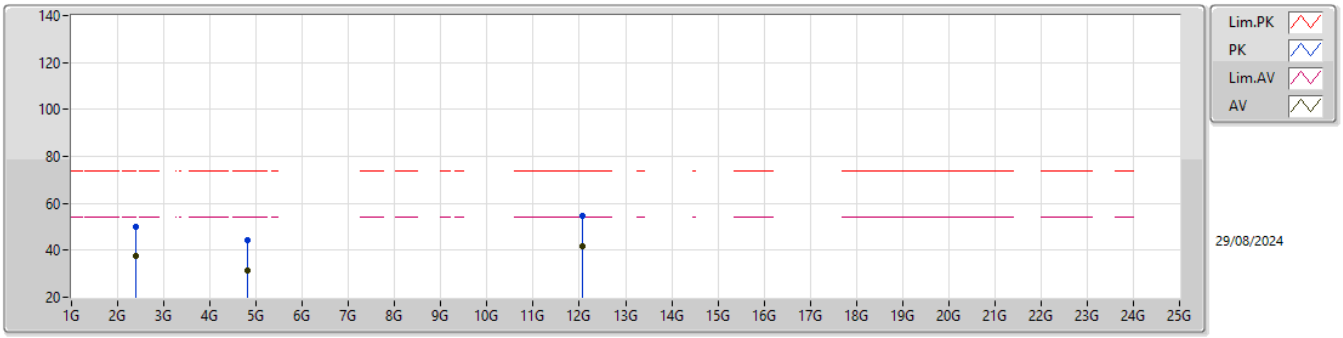
**2462MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.4835G | 41.12 | 54.00 | -12.88 | 45.84 | 3 | Vertical | 180 | 2.24 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 54.43 | 74.00 | -19.57 | 59.15 | 3 | Vertical | 180 | 2.24 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.924G | 31.32 | 54.00 | -22.68 | 31.76 | 3 | Vertical | 15 | 1.00 | - | 31.20 | 6.96 | 38.60 |
| PK | 4.924G | 45.21 | 74.00 | -28.79 | 45.65 | 3 | Vertical | 15 | 1.00 | - | 31.20 | 6.96 | 38.60 |
| AV | 7.386G | 36.51 | 54.00 | -17.49 | 31.42 | 3 | Vertical | 38 | 1.00 | - | 36.10 | 8.47 | 39.48 |
| PK | 7.386G | 49.81 | 74.00 | -24.19 | 44.72 | 3 | Vertical | 38 | 1.00 | - | 36.10 | 8.47 | 39.48 |

**2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX**

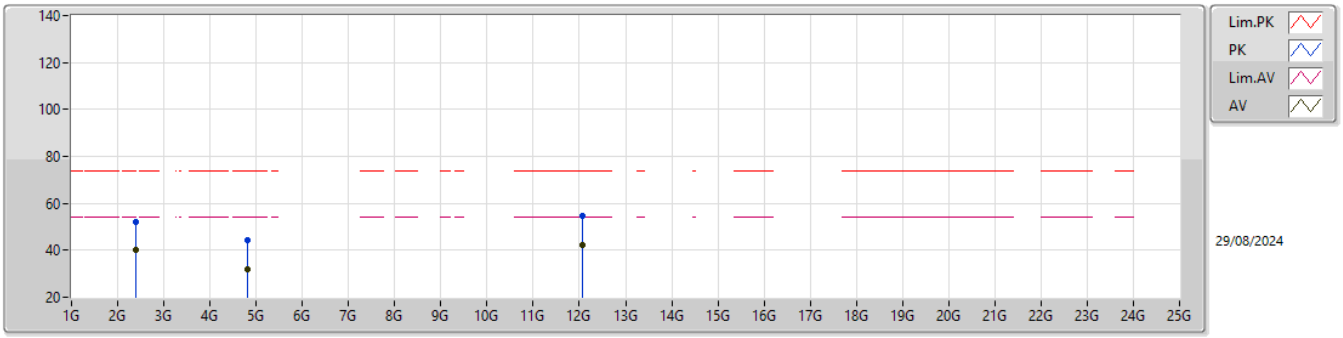
**2412MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 37.45 | 54.00 | -16.55 | 41.79 | 3 | Horizontal | 291 | 1.00 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 49.99 | 74.00 | -24.01 | 54.33 | 3 | Horizontal | 291 | 1.00 | - | 27.60 | 4.95 | 36.89 |
| AV | 4.824G | 31.54 | 54.00 | -22.46 | 31.95 | 3 | Horizontal | 22 | 1.00 | - | 31.25 | 6.87 | 38.53 |
| PK | 4.824G | 44.36 | 74.00 | -29.64 | 44.77 | 3 | Horizontal | 22 | 1.00 | - | 31.25 | 6.87 | 38.53 |
| AV | 12.06G | 41.97 | 54.00 | -12.03 | 35.56 | 3 | Horizontal | 19 | 1.00 | - | 39.22 | 10.03 | 42.84 |
| PK | 12.06G | 54.74 | 74.00 | -19.26 | 48.33 | 3 | Horizontal | 19 | 1.00 | - | 39.22 | 10.03 | 42.84 |

**2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX**

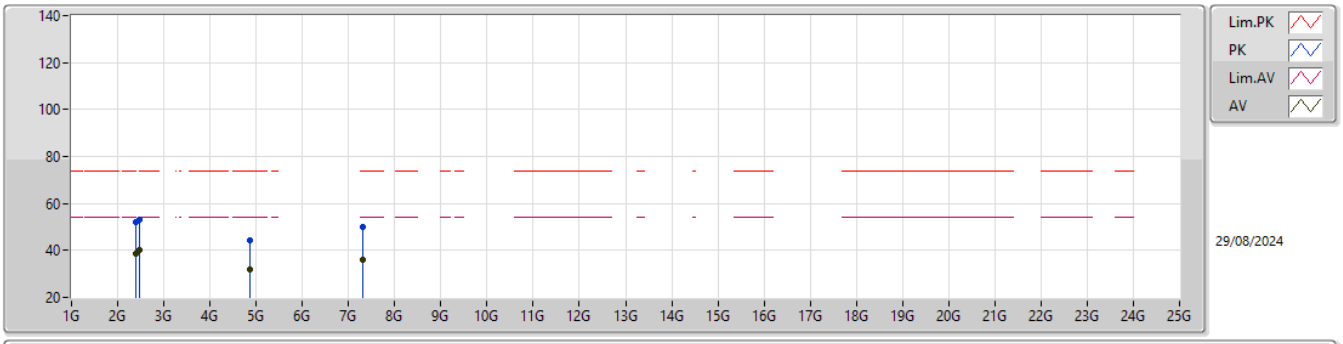
**2412MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 40.06 | 54.00 | -13.94 | 44.40 | 3 | Vertical | 180 | 2.14 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 51.95 | 74.00 | -22.05 | 56.29 | 3 | Vertical | 180 | 2.14 | - | 27.60 | 4.95 | 36.89 |
| AV | 4.824G | 31.67 | 54.00 | -22.33 | 32.08 | 3 | Vertical | 29 | 1.00 | - | 31.25 | 6.87 | 38.53 |
| PK | 4.824G | 44.43 | 74.00 | -29.57 | 44.84 | 3 | Vertical | 29 | 1.00 | - | 31.25 | 6.87 | 38.53 |
| AV | 12.06G | 42.09 | 54.00 | -11.91 | 35.68 | 3 | Vertical | 35 | 1.00 | - | 39.22 | 10.03 | 42.84 |
| PK | 12.06G | 54.80 | 74.00 | -19.20 | 48.39 | 3 | Vertical | 35 | 1.00 | - | 39.22 | 10.03 | 42.84 |

**2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX**

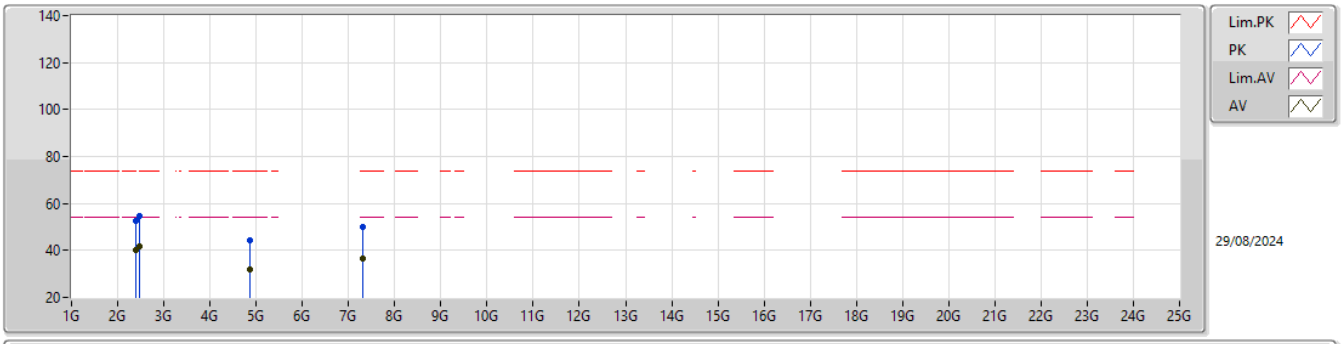
**2437MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 38.86 | 54.00 | -15.14 | 43.20 | 3 | Horizontal | 294 | 1.00 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 51.99 | 74.00 | -22.01 | 56.33 | 3 | Horizontal | 294 | 1.00 | - | 27.60 | 4.95 | 36.89 |
| AV | 2.4835G | 40.32 | 54.00 | -13.68 | 45.04 | 3 | Horizontal | 294 | 1.00 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 53.21 | 74.00 | -20.79 | 57.93 | 3 | Horizontal | 294 | 1.00 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.874G | 31.68 | 54.00 | -22.32 | 32.17 | 3 | Horizontal | 29 | 1.00 | - | 31.15 | 6.92 | 38.56 |
| PK | 4.874G | 44.45 | 74.00 | -29.55 | 44.94 | 3 | Horizontal | 29 | 1.00 | - | 31.15 | 6.92 | 38.56 |
| AV | 7.311G | 36.24 | 54.00 | -17.76 | 31.01 | 3 | Horizontal | 33 | 1.00 | - | 36.18 | 8.43 | 39.38 |
| PK | 7.311G | 49.81 | 74.00 | -24.19 | 44.58 | 3 | Horizontal | 33 | 1.00 | - | 36.18 | 8.43 | 39.38 |

**2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX**

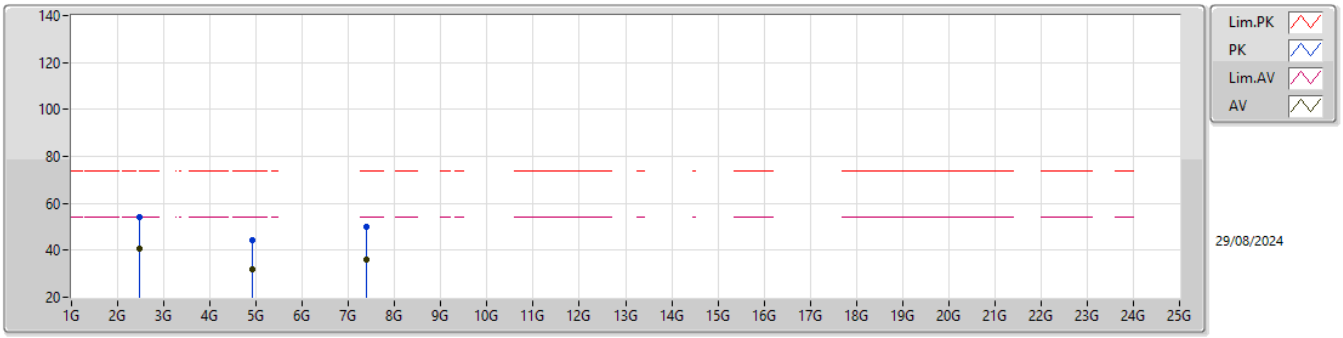
**2437MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 39.98 | 54.00 | -14.02 | 44.32 | 3 | Vertical | 185 | 2.11 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 52.55 | 74.00 | -21.45 | 56.89 | 3 | Vertical | 185 | 2.11 | - | 27.60 | 4.95 | 36.89 |
| AV | 2.4835G | 41.47 | 54.00 | -12.53 | 46.19 | 3 | Vertical | 185 | 2.11 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 54.69 | 74.00 | -19.31 | 59.41 | 3 | Vertical | 185 | 2.11 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.874G | 31.78 | 54.00 | -22.22 | 32.27 | 3 | Vertical | 24 | 1.00 | - | 31.15 | 6.92 | 38.56 |
| PK | 4.874G | 44.52 | 74.00 | -29.48 | 45.01 | 3 | Vertical | 24 | 1.00 | - | 31.15 | 6.92 | 38.56 |
| AV | 7.311G | 36.31 | 54.00 | -17.69 | 31.08 | 3 | Vertical | 11 | 1.00 | - | 36.18 | 8.43 | 39.38 |
| PK | 7.311G | 49.99 | 74.00 | -24.01 | 44.76 | 3 | Vertical | 11 | 1.00 | - | 36.18 | 8.43 | 39.38 |

**2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX**

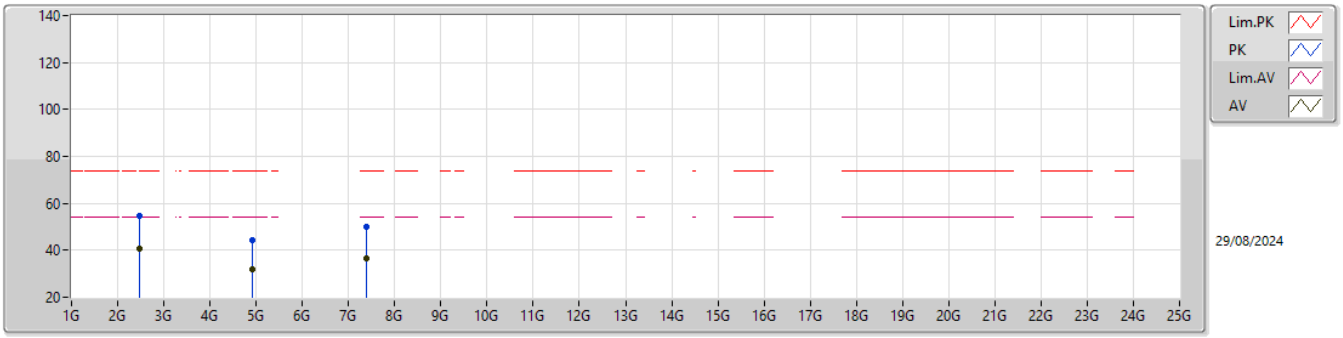
**2462MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.4835G | 40.52 | 54.00 | -13.48 | 45.24 | 3 | Horizontal | 292 | 1.00 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 53.91 | 74.00 | -20.09 | 58.63 | 3 | Horizontal | 292 | 1.00 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.924G | 31.78 | 54.00 | -22.22 | 32.22 | 3 | Horizontal | 36 | 1.00 | - | 31.20 | 6.96 | 38.60 |
| PK | 4.924G | 44.45 | 74.00 | -29.55 | 44.89 | 3 | Horizontal | 36 | 1.00 | - | 31.20 | 6.96 | 38.60 |
| AV | 7.386G | 36.21 | 54.00 | -17.79 | 31.12 | 3 | Horizontal | 14 | 1.00 | - | 36.10 | 8.47 | 39.48 |
| PK | 7.386G | 50.04 | 74.00 | -23.96 | 44.95 | 3 | Horizontal | 14 | 1.00 | - | 36.10 | 8.47 | 39.48 |

**2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX**

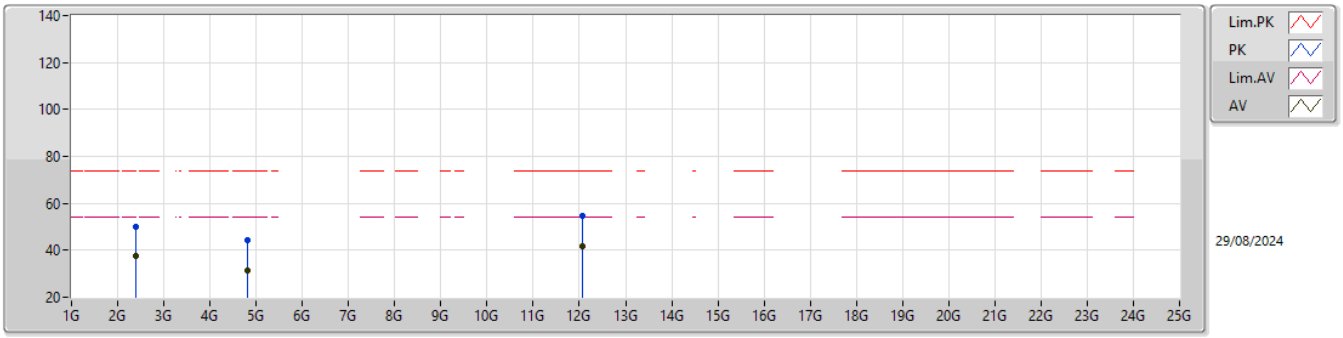
**2462MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.4835G | 40.74 | 54.00 | -13.26 | 45.46 | 3 | Vertical | 183 | 2.10 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 54.55 | 74.00 | -19.45 | 59.27 | 3 | Vertical | 183 | 2.10 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.924G | 31.82 | 54.00 | -22.18 | 32.26 | 3 | Vertical | 25 | 1.00 | - | 31.20 | 6.96 | 38.60 |
| PK | 4.924G | 44.56 | 74.00 | -29.44 | 45.00 | 3 | Vertical | 25 | 1.00 | - | 31.20 | 6.96 | 38.60 |
| AV | 7.386G | 36.35 | 54.00 | -17.65 | 31.26 | 3 | Vertical | 22 | 1.00 | - | 36.10 | 8.47 | 39.48 |
| PK | 7.386G | 50.14 | 74.00 | -23.86 | 45.05 | 3 | Vertical | 22 | 1.00 | - | 36.10 | 8.47 | 39.48 |

**2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX**

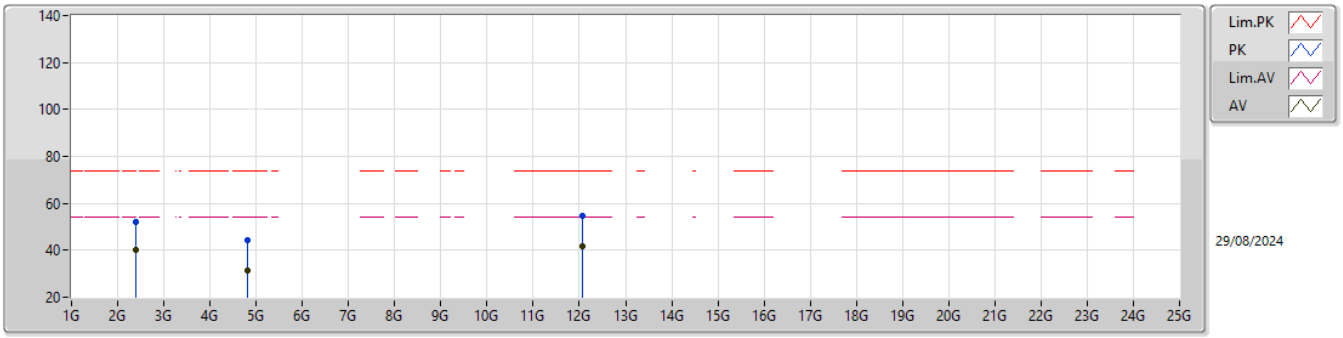
**2412MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 37.41 | 54.00 | -16.59 | 41.75 | 3 | Horizontal | 294 | 1.00 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 49.86 | 74.00 | -24.14 | 54.20 | 3 | Horizontal | 294 | 1.00 | - | 27.60 | 4.95 | 36.89 |
| AV | 4.824G | 31.46 | 54.00 | -22.54 | 31.87 | 3 | Horizontal | 25 | 1.00 | - | 31.25 | 6.87 | 38.53 |
| PK | 4.824G | 44.32 | 74.00 | -29.68 | 44.73 | 3 | Horizontal | 25 | 1.00 | - | 31.25 | 6.87 | 38.53 |
| AV | 12.06G | 41.85 | 54.00 | -12.15 | 35.44 | 3 | Horizontal | 31 | 1.00 | - | 39.22 | 10.03 | 42.84 |
| PK | 12.06G | 54.69 | 74.00 | -19.31 | 48.28 | 3 | Horizontal | 31 | 1.00 | - | 39.22 | 10.03 | 42.84 |

**2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX**

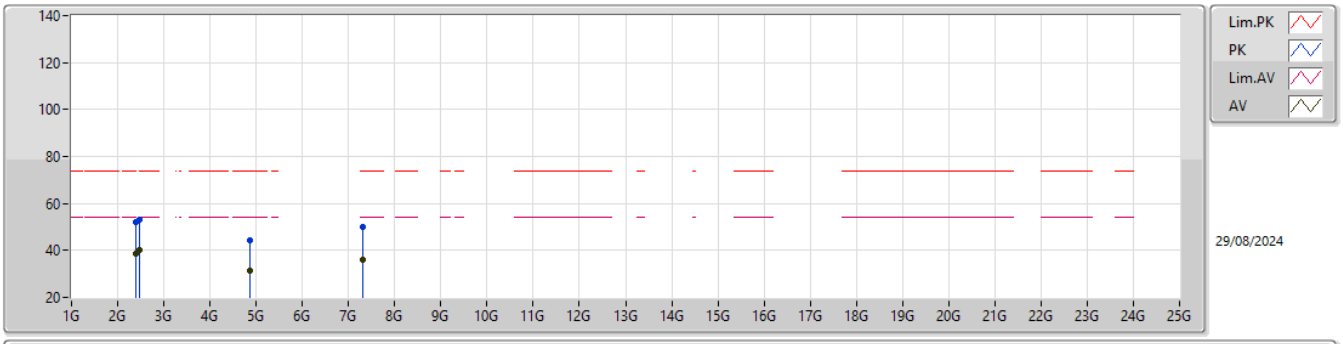
**2412MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 39.95 | 54.00 | -14.05 | 44.29 | 3 | Vertical | 182 | 2.16 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 51.86 | 74.00 | -22.14 | 56.20 | 3 | Vertical | 182 | 2.16 | - | 27.60 | 4.95 | 36.89 |
| AV | 4.824G | 31.58 | 54.00 | -22.42 | 31.99 | 3 | Vertical | 16 | 1.00 | - | 31.25 | 6.87 | 38.53 |
| PK | 4.824G | 44.39 | 74.00 | -29.61 | 44.80 | 3 | Vertical | 16 | 1.00 | - | 31.25 | 6.87 | 38.53 |
| AV | 12.06G | 41.95 | 54.00 | -12.05 | 35.54 | 3 | Vertical | 28 | 1.00 | - | 39.22 | 10.03 | 42.84 |
| PK | 12.06G | 54.76 | 74.00 | -19.24 | 48.35 | 3 | Vertical | 28 | 1.00 | - | 39.22 | 10.03 | 42.84 |

**2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX**

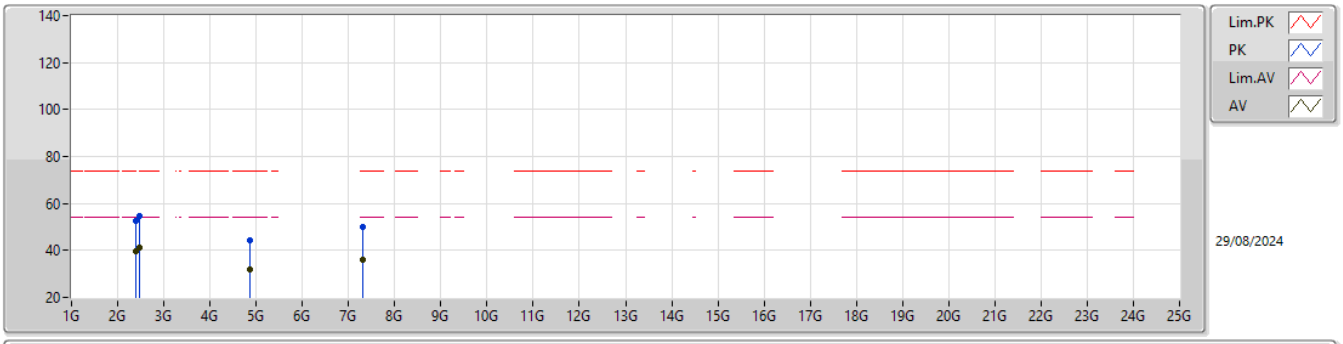
**2437MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 38.75 | 54.00 | -15.25 | 43.09 | 3 | Horizontal | 289 | 1.00 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 51.86 | 74.00 | -22.14 | 56.20 | 3 | Horizontal | 289 | 1.00 | - | 27.60 | 4.95 | 36.89 |
| AV | 2.4835G | 40.28 | 54.00 | -13.72 | 45.00 | 3 | Horizontal | 289 | 1.00 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 53.16 | 74.00 | -20.84 | 57.88 | 3 | Horizontal | 289 | 1.00 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.874G | 31.62 | 54.00 | -22.38 | 32.11 | 3 | Horizontal | 31 | 1.00 | - | 31.15 | 6.92 | 38.56 |
| PK | 4.874G | 44.39 | 74.00 | -29.61 | 44.88 | 3 | Horizontal | 31 | 1.00 | - | 31.15 | 6.92 | 38.56 |
| AV | 7.311G | 36.11 | 54.00 | -17.89 | 30.88 | 3 | Horizontal | 26 | 1.00 | - | 36.18 | 8.43 | 39.38 |
| PK | 7.311G | 49.75 | 74.00 | -24.25 | 44.52 | 3 | Horizontal | 26 | 1.00 | - | 36.18 | 8.43 | 39.38 |

**2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX**

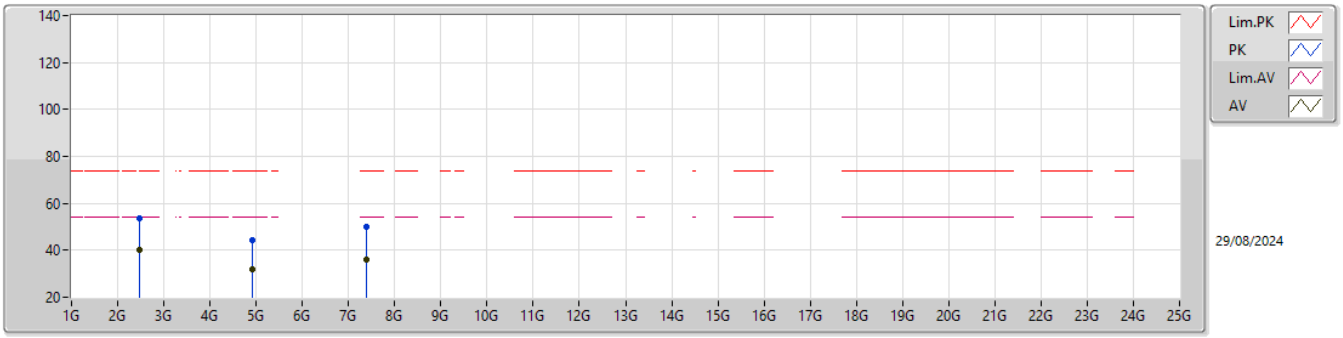
**2437MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.39G | 39.85 | 54.00 | -14.15 | 44.19 | 3 | Vertical | 182 | 2.13 | - | 27.60 | 4.95 | 36.89 |
| PK | 2.39G | 52.46 | 74.00 | -21.54 | 56.80 | 3 | Vertical | 182 | 2.13 | - | 27.60 | 4.95 | 36.89 |
| AV | 2.4835G | 41.41 | 54.00 | -12.59 | 46.13 | 3 | Vertical | 182 | 2.13 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 54.56 | 74.00 | -19.44 | 59.28 | 3 | Vertical | 182 | 2.13 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.874G | 31.68 | 54.00 | -22.32 | 32.17 | 3 | Vertical | 29 | 1.00 | - | 31.15 | 6.92 | 38.56 |
| PK | 4.874G | 44.45 | 74.00 | -29.55 | 44.94 | 3 | Vertical | 29 | 1.00 | - | 31.15 | 6.92 | 38.56 |
| AV | 7.311G | 36.29 | 54.00 | -17.71 | 31.06 | 3 | Vertical | 22 | 1.00 | - | 36.18 | 8.43 | 39.38 |
| PK | 7.311G | 49.85 | 74.00 | -24.15 | 44.62 | 3 | Vertical | 22 | 1.00 | - | 36.18 | 8.43 | 39.38 |

**2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX**

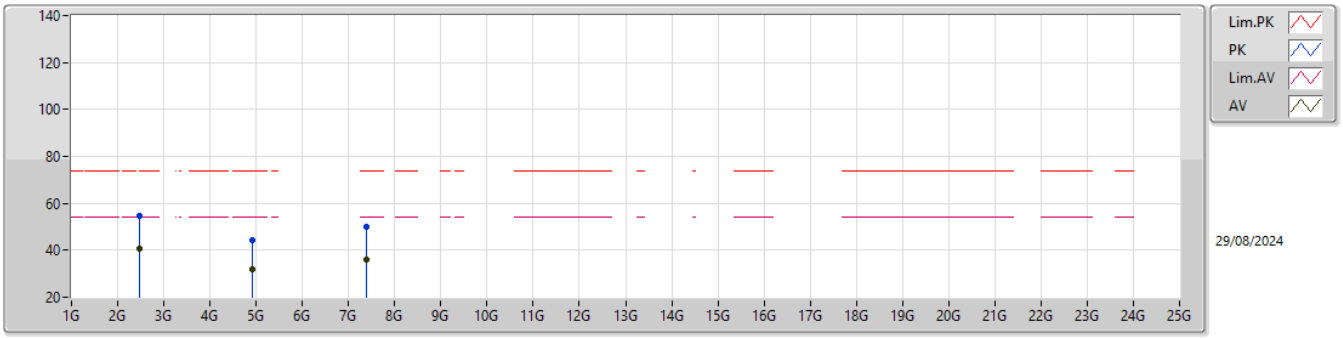
**2462MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.4835G | 40.41 | 54.00 | -13.59 | 45.13 | 3 | Horizontal | 289 | 1.00 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 53.82 | 74.00 | -20.18 | 58.54 | 3 | Horizontal | 289 | 1.00 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.924G | 31.65 | 54.00 | -22.35 | 32.09 | 3 | Horizontal | 21 | 1.00 | - | 31.20 | 6.96 | 38.60 |
| PK | 4.924G | 44.36 | 74.00 | -29.64 | 44.80 | 3 | Horizontal | 21 | 1.00 | - | 31.20 | 6.96 | 38.60 |
| AV | 7.386G | 36.12 | 54.00 | -17.88 | 31.03 | 3 | Horizontal | 15 | 1.00 | - | 36.10 | 8.47 | 39.48 |
| PK | 7.386G | 49.95 | 74.00 | -24.05 | 44.86 | 3 | Horizontal | 15 | 1.00 | - | 36.10 | 8.47 | 39.48 |

**2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX**

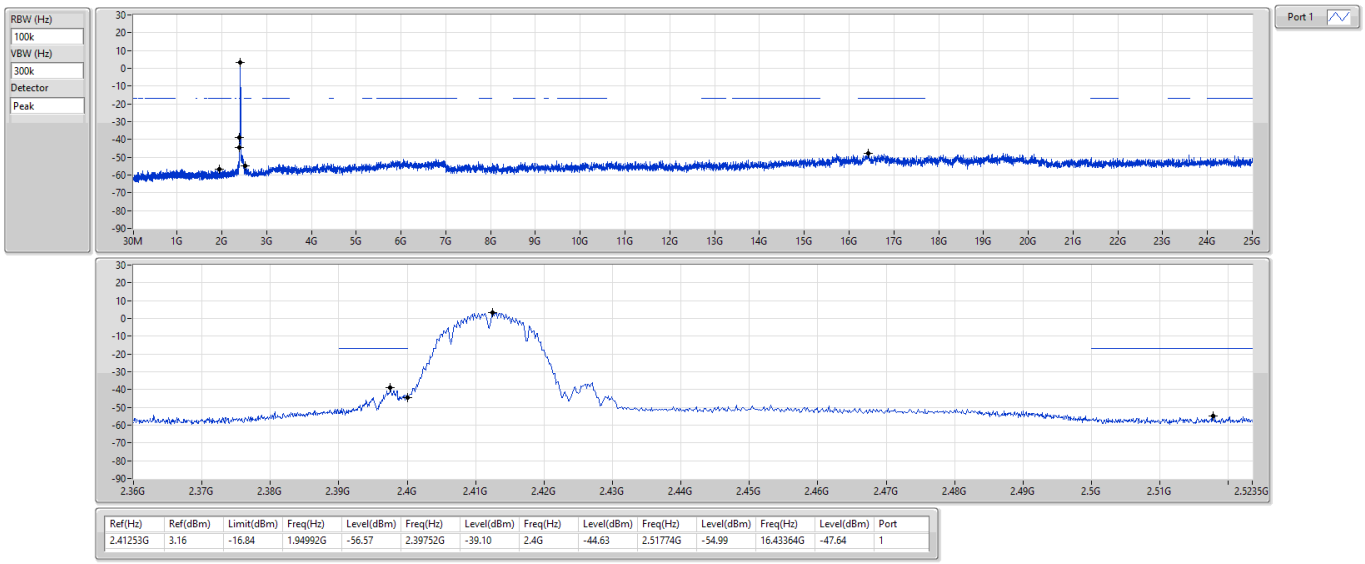
**2462MHz_TX**




| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB/m) | (dB) | (dB) |
| AV | 2.4835G | 40.62 | 54.00 | -13.38 | 45.34 | 3 | Vertical | 188 | 2.16 | - | 27.20 | 5.06 | 36.98 |
| PK | 2.4835G | 54.43 | 74.00 | -19.57 | 59.15 | 3 | Vertical | 188 | 2.16 | - | 27.20 | 5.06 | 36.98 |
| AV | 4.924G | 31.76 | 54.00 | -22.24 | 32.20 | 3 | Vertical | 36 | 1.00 | - | 31.20 | 6.96 | 38.60 |
| PK | 4.924G | 44.51 | 74.00 | -29.49 | 44.95 | 3 | Vertical | 36 | 1.00 | - | 31.20 | 6.96 | 38.60 |
| AV | 7.386G | 36.29 | 54.00 | -17.71 | 31.20 | 3 | Vertical | 11 | 1.00 | - | 36.10 | 8.47 | 39.48 |
| PK | 7.386G | 50.08 | 74.00 | -23.92 | 44.99 | 3 | Vertical | 11 | 1.00 | - | 36.10 | 8.47 | 39.48 |

**2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX** **CSENdB**

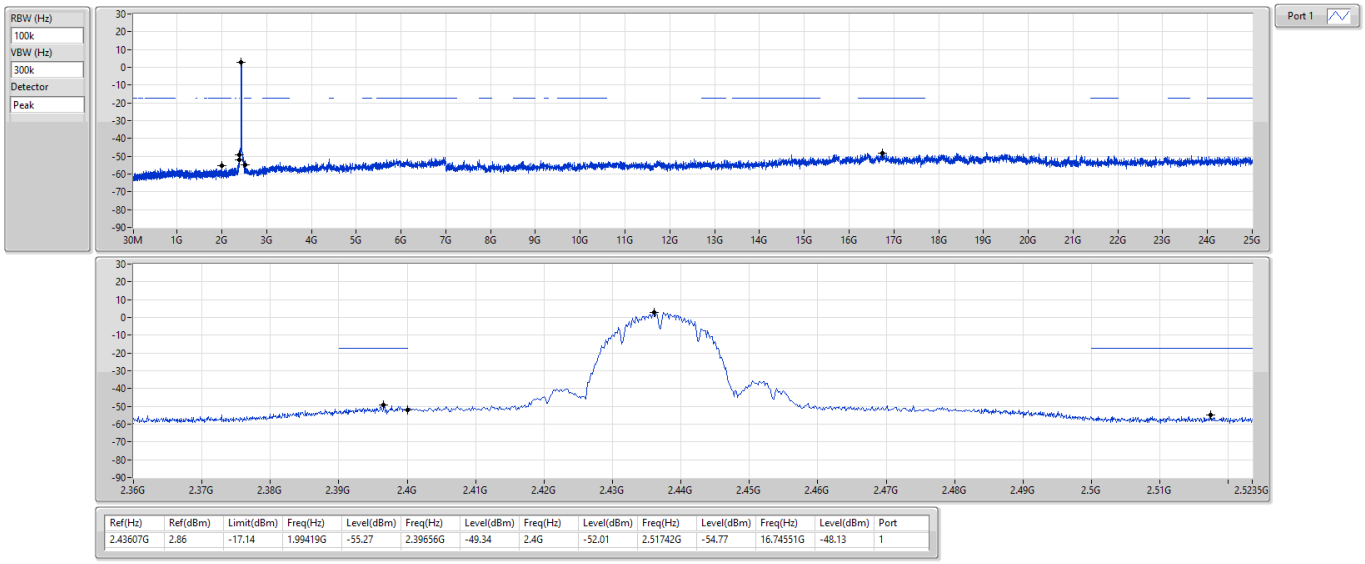
**2412MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.41253G | 3.16 | -16.84 | 1.94992G | -56.57 | 2.39752G | -39.10 | 2.4G | -44.63 | 2.51774G | -54.99 | 16.43364G | -47.64 | 1 |

**2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX** **CSENdB**

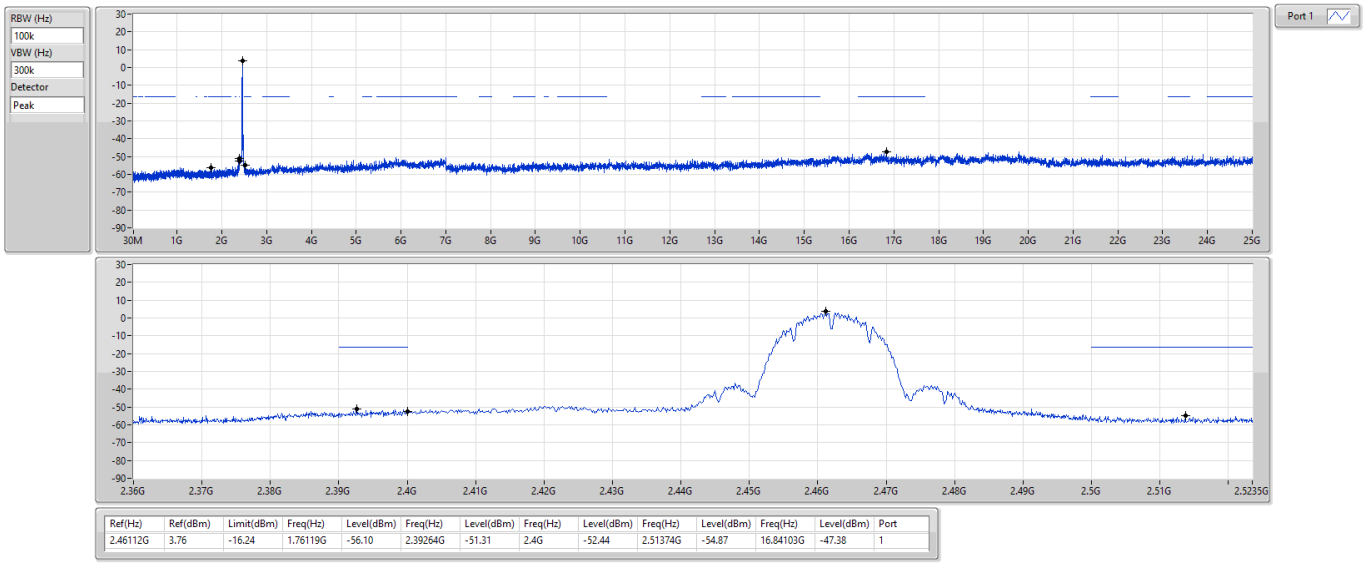
**2437MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.43607G | 2.86 | -17.14 | 1.99419G | -55.27 | 2.39656G | -49.34 | 2.4G | -52.01 | 2.51742G | -54.77 | 16.74551G | -48.13 | 1 |

**2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX** **CSENdB**

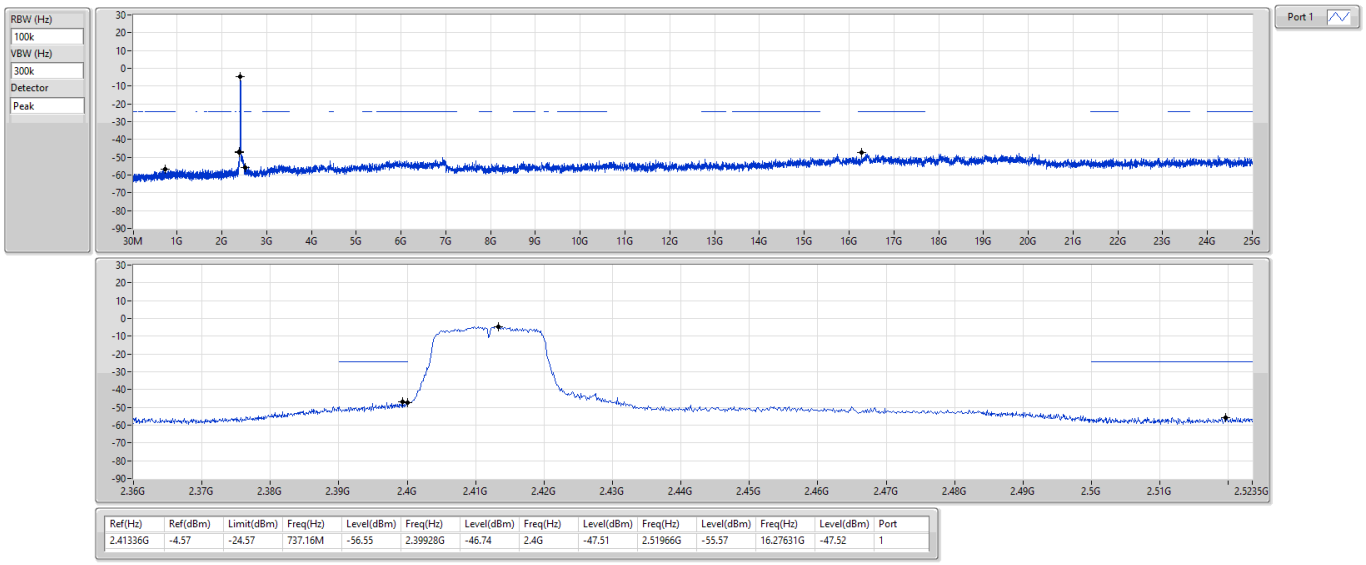
**2462MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.46112G | 3.76 | -16.24 | 1.76119G | -56.10 | 2.39264G | -51.31 | 2.4G | -52.44 | 2.51374G | -54.87 | 16.84103G | -47.38 | 1 |

**2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX** **CSENdB**

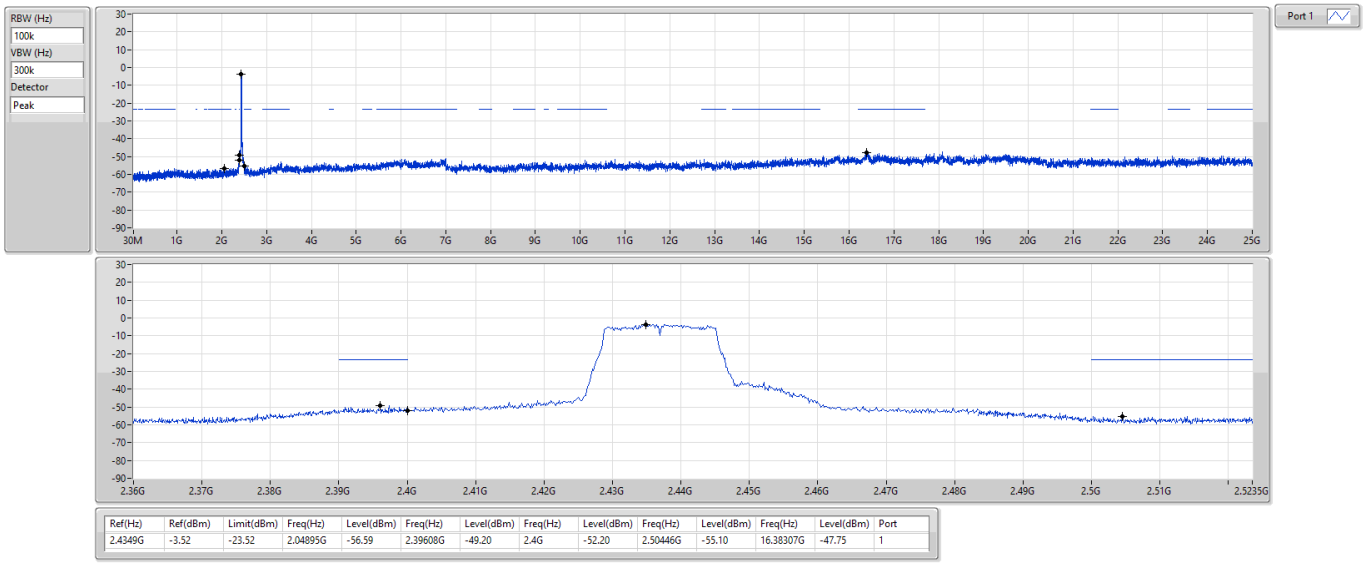
**2412MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.41336G | -4.57 | -24.57 | 737.16M | -56.55 | 2.39928G | -46.74 | 2.4G | -47.51 | 2.51966G | -55.57 | 16.27631G | -47.52 | 1 |

**2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX** **CSENdB**

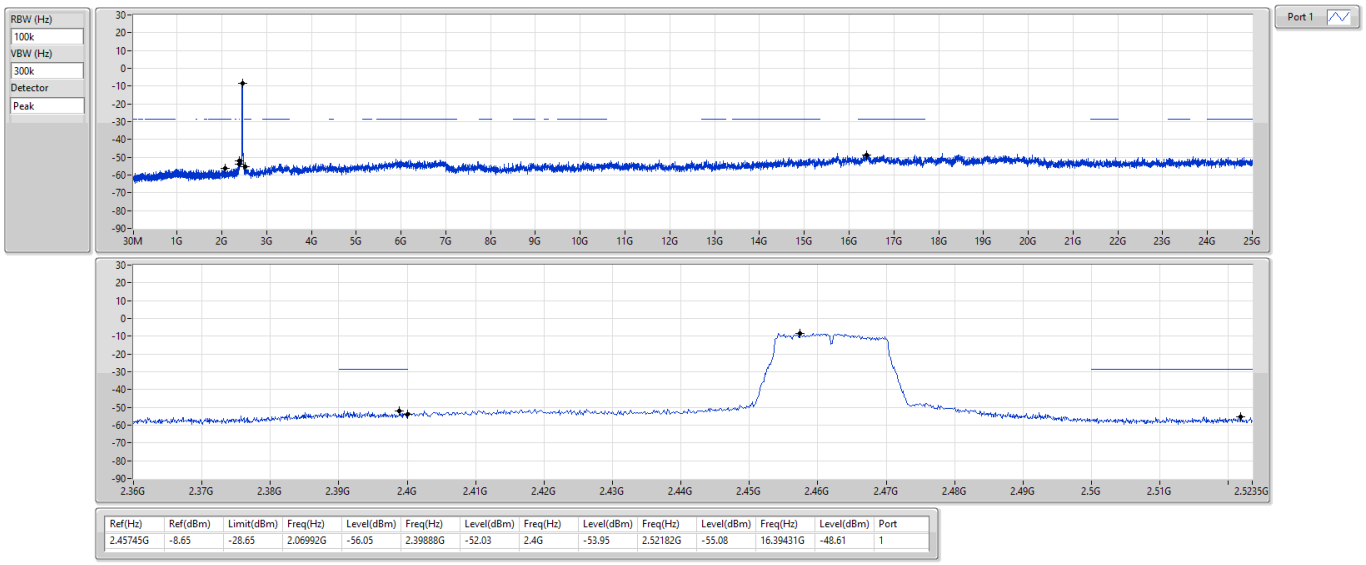
**2437MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.4349G | -3.52 | -23.52 | 2.04895G | -56.59 | 2.39608G | -49.20 | 2.4G | -52.20 | 2.50446G | -55.10 | 16.38307G | -47.75 | 1 |

**2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX** **CSENdB**

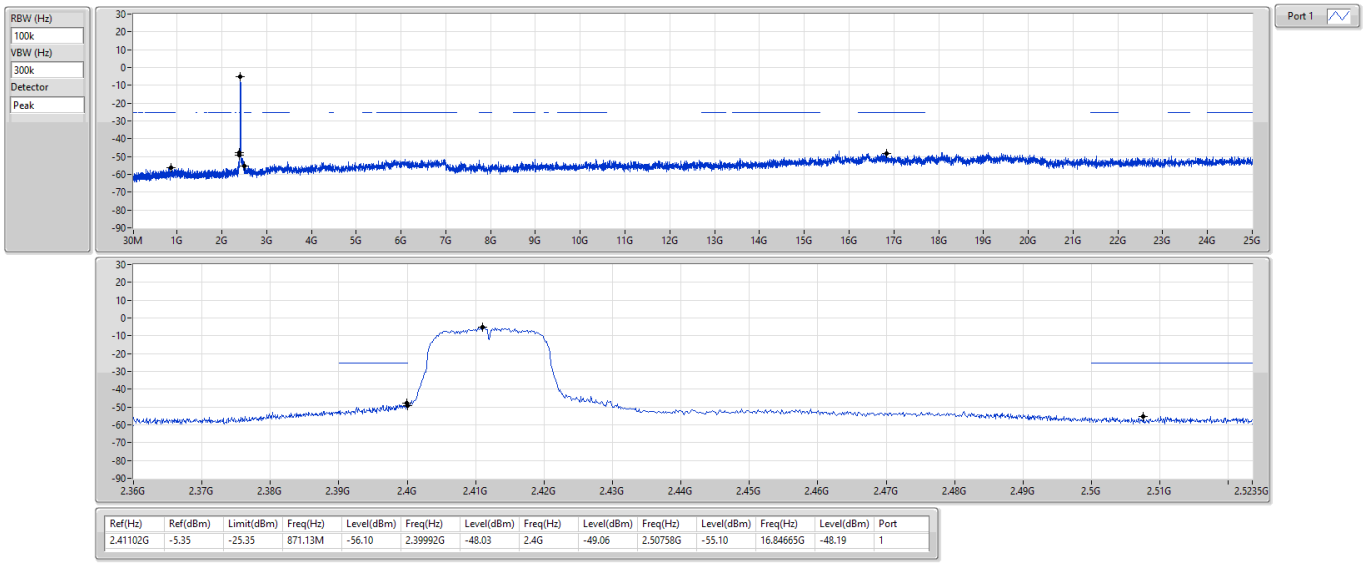
**2462MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.45745G | -8.65 | -28.65 | 2.06992G | -56.05 | 2.39888G | -52.03 | 2.4G | -53.95 | 2.52182G | -55.08 | 16.39431G | -48.61 | 1 |

**2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX** **CSENdB**

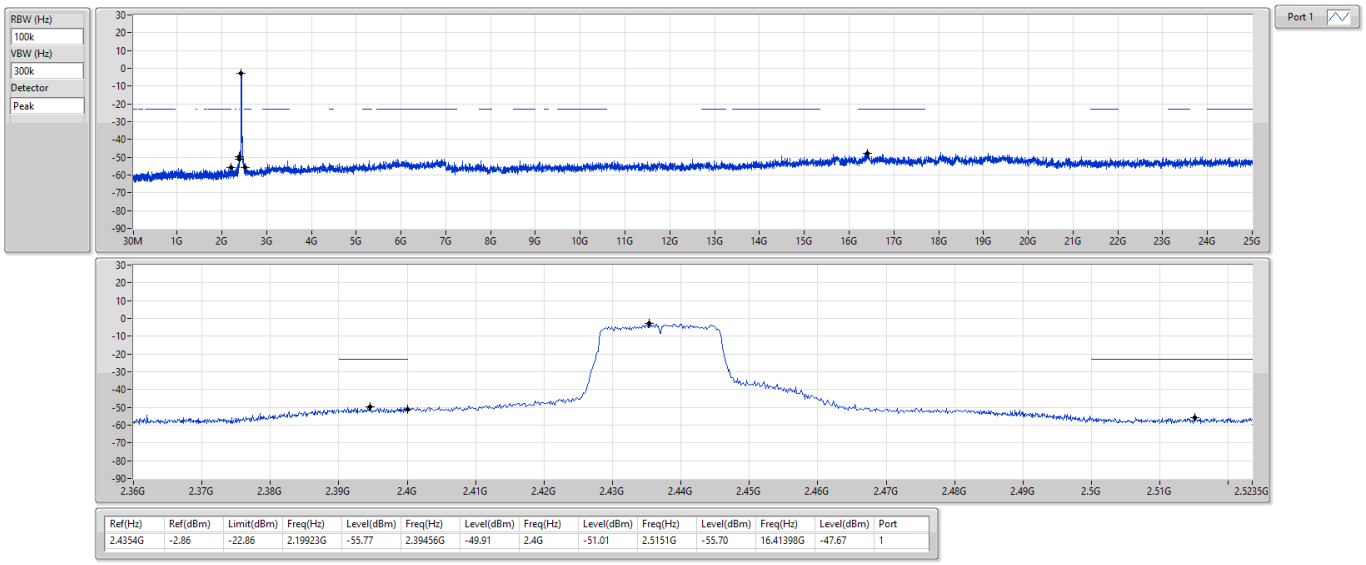
**2412MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.41102G | -5.35 | -25.35 | 871.13M | -56.10 | 2.39992G | -48.03 | 2.4G | -49.06 | 2.50758G | -55.10 | 16.84665G | -48.19 | 1 |

**2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX** **CSENdB**

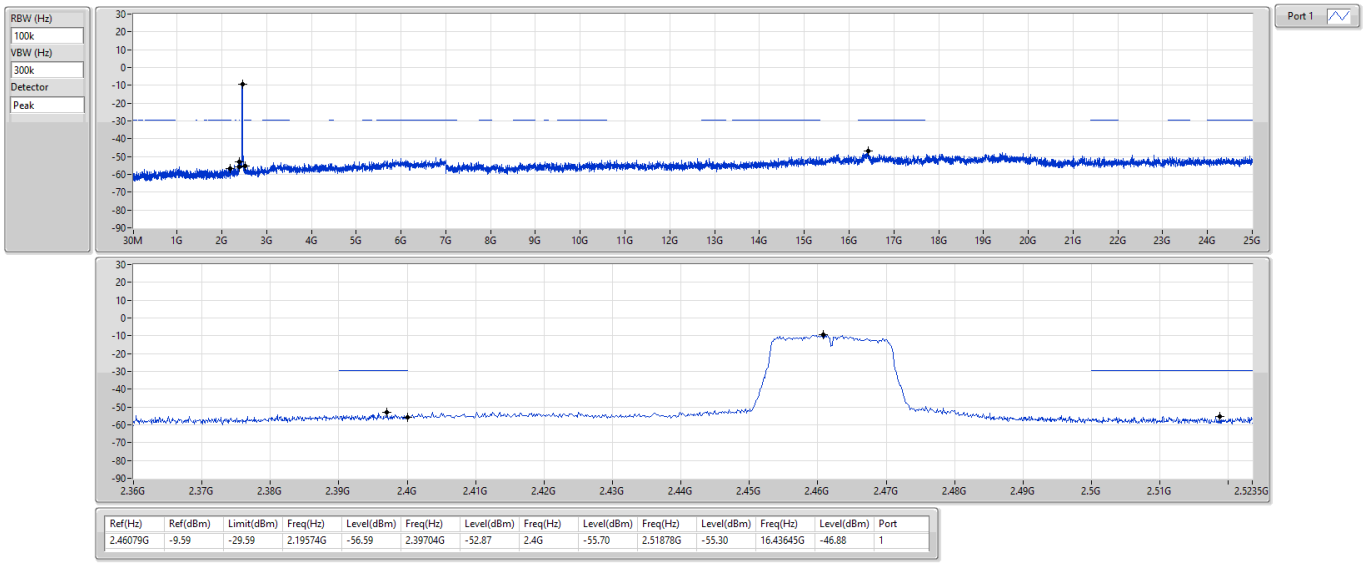
**2437MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.4354G | -2.86 | -22.86 | 2.19923G | -55.77 | 2.39456G | -49.91 | 2.4G | -51.01 | 2.5151G | -55.70 | 16.41398G | -47.67 | 1 |

**2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX** **CSENdB**

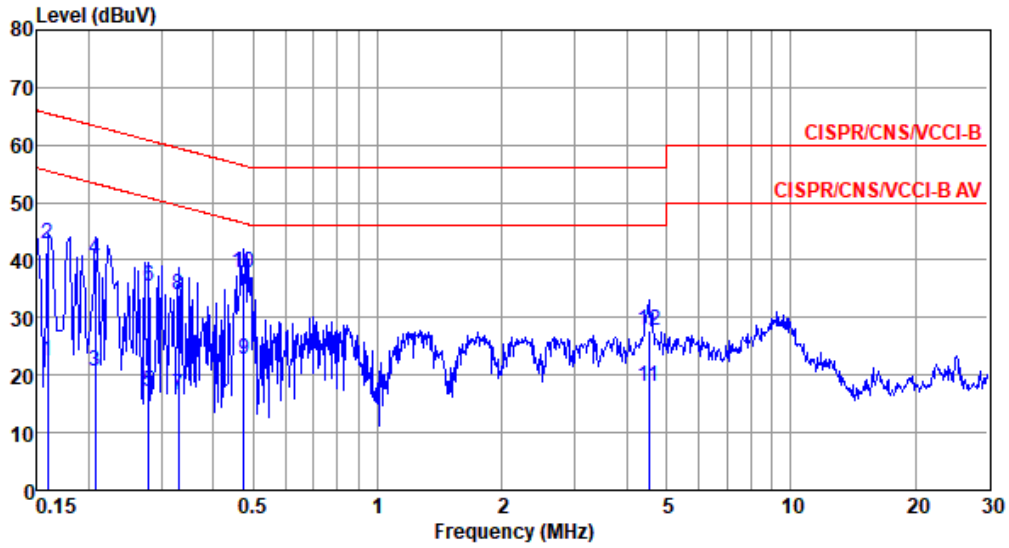
**2462MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.46079G | -9.59 | -29.59 | 2.19574G | -56.59 | 2.39704G | -52.87 | 2.4G | -55.70 | 2.51878G | -55.30 | 16.43645G | -46.88 | 1 |

| **Modulation Mode** | Charging Mode |
|---|---|
| **Power Phase** | Line |

Test by : Joe Liao_AN Temperature: 25°C Humidity: 64%

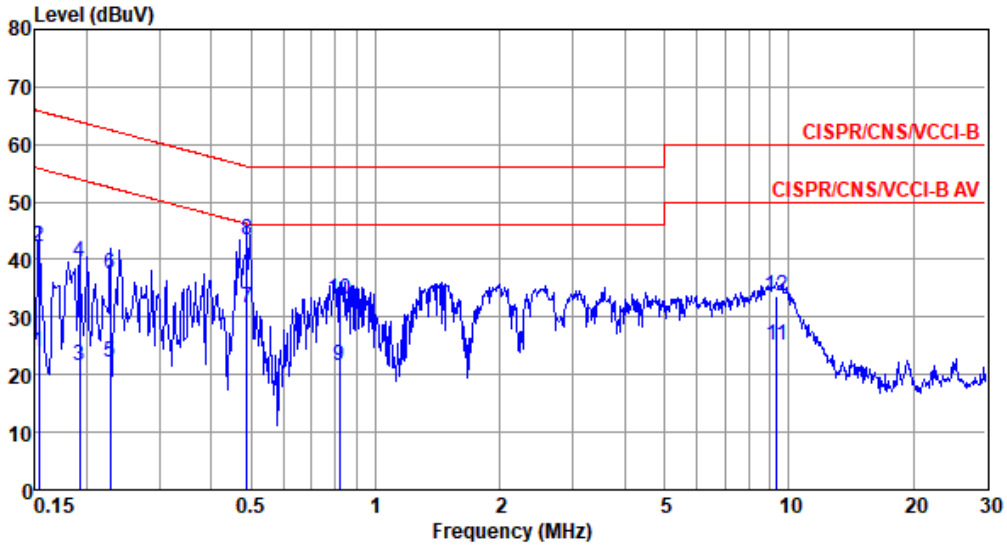



| | Freq | Level | Limit Line | Over Limit | Read Level | Factor | Cable loss | Aux | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dBuV | dB | dBuV | dB | dB | dB | |
| 1 | 0.159 | 22.55 | 55.52 | -32.97 | 12.69 | 9.65 | 0.08 | 0.13 | Average |
| 2 | 0.159 | 42.69 | 65.52 | -22.83 | 32.83 | 9.65 | 0.08 | 0.13 | QP |
| 3 | 0.207 | 20.68 | 53.32 | -32.64 | 10.80 | 9.65 | 0.06 | 0.17 | Average |
| 4 | 0.207 | 40.18 | 63.32 | -23.14 | 30.30 | 9.65 | 0.06 | 0.17 | QP |
| 5 | 0.279 | 17.09 | 50.85 | -33.76 | 7.16 | 9.65 | 0.07 | 0.21 | Average |
| 6 | 0.279 | 35.42 | 60.85 | -25.43 | 25.49 | 9.65 | 0.07 | 0.21 | QP |
| 7 | 0.330 | 16.44 | 49.44 | -33.00 | 6.50 | 9.64 | 0.07 | 0.23 | Average |
| 8 | 0.330 | 34.07 | 59.44 | -25.37 | 24.13 | 9.64 | 0.07 | 0.23 | QP |
| 9 | 0.474 | 22.82 | 46.45 | -23.63 | 12.84 | 9.64 | 0.08 | 0.26 | Average |
| 10* | 0.474 | 37.74 | 56.45 | -18.71 | 27.76 | 9.64 | 0.08 | 0.26 | QP |
| 11 | 4.525 | 18.02 | 46.00 | -27.98 | 7.74 | 9.68 | 0.20 | 0.40 | Average |
| 12 | 4.525 | 27.70 | 56.00 | -28.30 | 17.42 | 9.68 | 0.20 | 0.40 | QP |

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

| | |
|---|---|
| **Modulation Mode** | Charging Mode |
| **Power Phase** | Neutral |

Test by : Joe Liao_AN Temperature: 25°C Humidity: 64%




| | Freq | Level | Limit Line | Over Limit | Read Level | Factor | Cable loss | Aux | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dBuV | dB | dBuV | dB | dB | dB | |
| 1 | 0.153 | 23.82 | 55.82 | -32.00 | 13.96 | 9.66 | 0.08 | 0.12 | Average |
| 2 | 0.153 | 42.15 | 65.82 | -23.67 | 32.29 | 9.66 | 0.08 | 0.12 | QP |
| 3 | 0.192 | 21.58 | 53.93 | -32.35 | 11.71 | 9.65 | 0.06 | 0.16 | Average |
| 4 | 0.192 | 39.45 | 63.93 | -24.48 | 29.58 | 9.65 | 0.06 | 0.16 | QP |
| 5 | 0.228 | 22.20 | 52.52 | -30.32 | 12.31 | 9.65 | 0.06 | 0.18 | Average |
| 6 | 0.228 | 37.49 | 62.52 | -25.03 | 27.60 | 9.65 | 0.06 | 0.18 | QP |
| 7 | 0.489 | 31.54 | 46.19 | -14.65 | 21.56 | 9.64 | 0.08 | 0.26 | Average |
| 8* | 0.489 | 43.54 | 56.19 | -12.65 | 33.56 | 9.64 | 0.08 | 0.26 | QP |
| 9 | 0.817 | 21.57 | 46.00 | -24.43 | 11.54 | 9.65 | 0.09 | 0.29 | Average |
| 10 | 0.817 | 33.16 | 56.00 | -22.84 | 23.13 | 9.65 | 0.09 | 0.29 | QP |
| 11 | 9.352 | 25.03 | 50.00 | -24.97 | 14.53 | 9.74 | 0.34 | 0.42 | Average |
| 12 | 9.352 | 33.70 | 60.00 | -26.30 | 23.20 | 9.74 | 0.34 | 0.42 | QP |

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

# FCC Co-Location Test Report

| | | |
|---|---|---|
| **FCC ID** | : | **IPH-04951** |
| **Equipment** | : | **Fitness Product** |
| **Model No.** | : | **A04951** |
| **Brand Name** | : | **GARMIN** |
| **Applicant** | : | **Garmin International, Inc.** |
| **Address** | : | **1200 E. 151st Street Olathe, KS 66062 United States** |
| **Standard** | : | **47 CFR FCC Part 15.247**<br>**47 CFR FCC Part 15.249**<br>**47 CFR FCC Part 15.225** |
| **Received Date** | : | **Aug. 27, 2024** |
| **Tested Date** | : | **Sep. 04, 2024** |

**We, International Certification Corporation, would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It shall not be reproduced except in full without the written approval of our laboratory.**

| **Reviewed by:** | **Approved by:** |
|---|---|
| **Along Chen / Assistant Manager** | **Gary Chang / Manager** |

# Table of Contents

# Release Record

| Report No. | Version | Description | Issued Date |
|---|---|---|---|
| FR450901CO | Rev. 01 | Initial issue | Oct. 25, 2024 |

# Summary of Test Results

| FCC Rules | Test Items | Measured | Result |
|---|---|---|---|
| 15.247(d)<br>15.209<br>15.225(d)<br>15.249(a)(d) | Radiated Emissions | [dBuV/m at 3m]: 38.5 MHz<br>31.08 (Margin -8.92dB) - PK | Pass |

| **Declaration of Conformity:** |
|---|
| The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. |
| **Comments and Explanations:** |
| The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification. |

# 1 General Description

## 1.1 Information

### 1.1.1 Specification of the Equipment under Test (EUT)

| | |
|---|---|
| **BT** | |
| **Operating Frequency** | 2402 MHz ~ 2480 MHz |
| **Modulaton Type** | Bluetooth LE: GFSK<br>Bluetooth BR(1Mbps): GFSK<br>Bluetooth EDR (2Mbps): π/4-DQPSK<br>Bluetooth EDR (3Mbps): 8-DPSK |
| **ANT+** | |
| **Operating Frequency** | 2402 MHz ~ 2480 MHz |
| **Modulaton Type** | GFSK |
| **NFC** | |
| **Operating Frequency** | 13.553 MHz – 13.567 MHz |
| **Modulaton Type** | ASK |
| **WiFi** | |
| **Operating Frequency** | 802.11b/g/n/: 2412 MHz ~ 2462 MHz |
| **Modulation Type** | 802.11b: DSSS (DBPSK / DQPSK / CCK)<br>802.11g/n: OFDM (BPSK / QPSK / 16QAM / 64QAM) |

### 1.1.2 Antenna Details

Bluetooth EDR / LE / ANT+ / WiFi

| Ant. No. | Brand | Model | Type | Connector | Gain (dBi) |
|---|---|---|---|---|---|
| 1 | Garmin | 117-02243-2X | Slot | No | 0.21 |

NFC

| Ant. No. | Brand | Model | Type | Connector |
|---|---|---|---|---|
| 1 | VIKING TECH CORPORATION | NLI14JTR60 | Inductive | No |

### 1.1.3 Power Supply Type of Equipment under Test (EUT)

| | |
|---|---|
| **Power Type** | 5Vdc from host<br>3.87Vdc from battery |

## 1.2 The Equipment List

| Test Item | Radiated Emission | | | | |
|---|---|---|---|---|---|
| Test Site | 966 chamber1 / (03CH01-WS) | | | | |
| Tested Date | Sep. 04, 2024 | | | | |
| **Instrument** | **Brand** | **Model No.** | **Serial No.** | **Calibration Date** | **Calibration Until** |
| Receiver | R&S | ESR3 | 101657 | Mar. 05, 2024 | Mar. 04, 2025 |
| Spectrum Analyzer | R&S | FSV40 | 101498 | Nov. 23, 2023 | Nov. 22, 2024 |
| Loop Antenna | R&S | HFH2-Z2 | 100330 | Oct. 31, 2023 | Oct. 30, 2024 |
| Bilog Antenna | SCHWARZBECK | VULB9168 | VULB9168-522 | Aug. 09, 2024 | Aug. 08, 2025 |
| Horn Antenna 1G-18G | SCHWARZBECK | BBHA 9120 D | BBHA 9120 D 1096 | Nov. 27, 2023 | Nov. 26, 2024 |
| Horn Antenna 18G-40G | SCHWARZBECK | BBHA 9170 | BBHA 9170517 | Oct. 30, 2023 | Oct. 29, 2024 |
| Preamplifier | EMC | EMC02325 | 980225 | Jun. 17, 2024 | Jun. 16, 2025 |
| Preamplifier | EMC | EMC118A45SE | 980898 | Jul. 05, 2024 | Jul. 04, 2025 |
| Preamplifier | EMC | EMC184045SE | 980903 | Jul. 30, 2024 | Jul. 29, 2025 |
| Loop Antenna Cable | KOAX KABEL | 101354-BW | 101354-BW | Oct. 03, 2023 | Oct. 02, 2024 |
| LF cable 3M | Woken | CFD400NL-LW | CFD400NL-001 | Oct. 03, 2023 | Oct. 02, 2024 |
| LF cable 11M | EMC | EMCCFD400-NW-NW-11000 | 200801 | Oct. 03, 2023 | Oct. 02, 2024 |
| LF cable 1M | EMC | EMCCFD400-NM-NM-1000 | 160502 | Oct. 03, 2023 | Oct. 02, 2024 |
| RF Cable | EMC | EMC104-35M-35M-8000 | 210920 | Oct. 03, 2023 | Oct. 02, 2024 |
| RF Cable | EMC | EMC104-35M-35M-3000 | 210922 | Oct. 03, 2023 | Oct. 02, 2024 |
| HIGHPASS FILTER 3.1-18G | WHK | WHK3.1/18G-10SS | 39 | Oct. 05, 2023 | Oct. 04, 2024 |
| Measurement Software | Sporton | SENSE-EMI | V5.11 | NA | NA |
| Note: Calibration Interval of instruments listed above is one year. | | | | | |

## 1.3 Test Standards

47 CFR FCC Part 15.247
47 CFR FCC Part 15.249
47 CFR FCC Part 15.225

## 1.4 Reference Guidance

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

## 1.5 Deviation from Test Standard and Measurement Procedure

None

## 1.6 Measurement Uncertainty

The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

| Measurement Uncertainty | |
|---|---|
| **Parameters** | **Uncertainty** |
| Unwanted Emission ≤ 1GHz | ±3.41 dB |
| Unwanted Emission > 1GHz | ±4.59 dB |

# 2 Test Configuration

## 2.1 Testing Facility

| Test Laboratory | International Certification Corporation |
|---|---|
| Test Site | 03CH01-WS |
| Address of Test Site | No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.) |

- FCC Designation No.: TW2732
- FCC site registration No.: 181692
- ISED#: 10807A
- CAB identifier: TW2732

## 2.2 The Worst Test Modes and Channel Details

| Test item | Modulation Mode |
|---|---|
| Unwanted Emissions | 1. WiFi 11n HT20 2437MHz + NFC13.56MHz |
| | 2. BT EDR 8-DPSK 2441MHz + NFC 13.56MHz |
| | 3. ANT+ 2440MHz + NFC 13.56MHz |
| **NOTE:** The selected channel is the maximum power channel of WiFi+ NFC, BT + NFC, ANT+ + NFC mode. | |

# 3 Transmitter Test Results

## 3.1 Unwanted Emissions into Restricted Frequency Bands

### 3.1.1 Limit of Unwanted Emissions into Restricted Frequency Bands

| Restricted Band Emissions Limit | | | |
|---|---|---|---|
| **Frequency Range (MHz)** | **Field Strength (uV/m)** | **Field Strength (dBuV/m)** | **Measure Distance (m)** |
| 0.009~0.490 | 2400/F(kHz) | 48.5 - 13.8 | 300 |
| 0.490~1.705 | 24000/F(kHz) | 33.8 - 23 | 30 |
| 1.705~30.0 | 30 | 29 | 30 |
| 30~88 | 100 | 40 | 3 |
| 88~216 | 150 | 43.5 | 3 |
| 216~960 | 200 | 46 | 3 |
| Above 960 | 500 | 54 | 3 |

**Note 1:**
Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit
**Note 2:**
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

### 3.1.2 Test Procedures

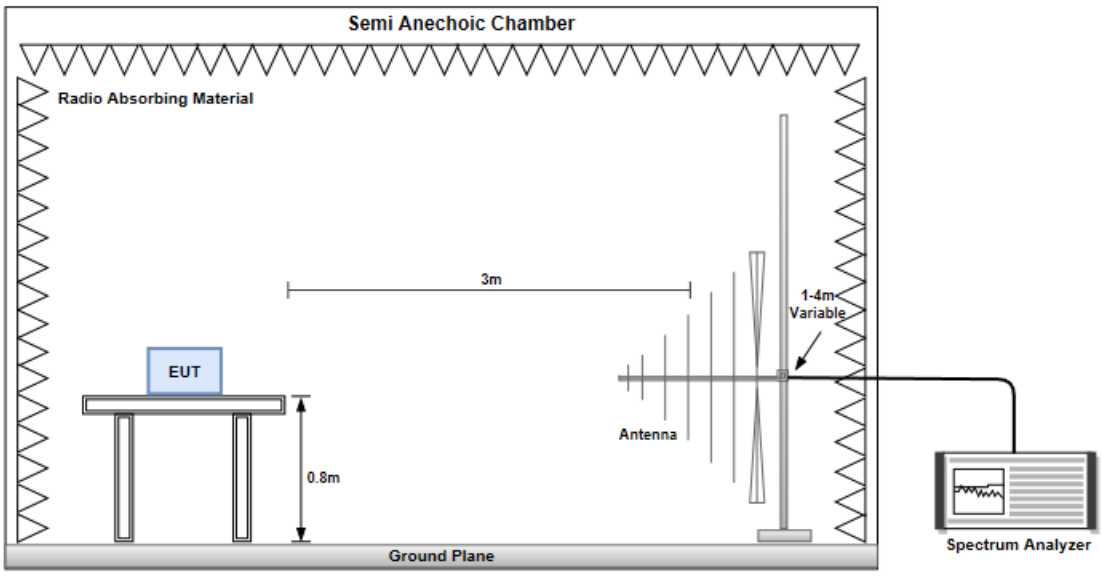
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m.
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

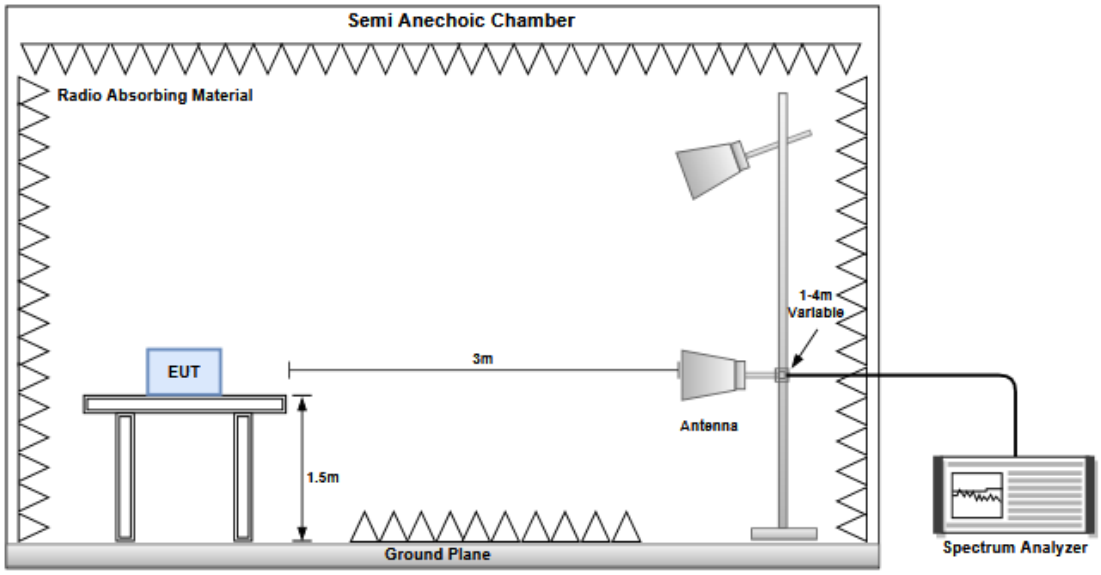
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above 1GHz.

### 3.1.3 Test Setup

**Radiated Emissions below 1 GHz**




**Radiated Emissions above 1 GHz**




### 3.1.4 Test Results

Refer to Appendix A.

# 4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corporation (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website http://www.icertifi.com.tw.

| **Linkou** | **Kwei Shan** | **Kwei Shan Site II** |
|---|---|---|
| Tel: 886-2-2601-1640 | Tel: 886-3-271-8666 | Tel: 886-3-271-8640 |
| No.30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan (R.O.C.) | No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)<br>No.2-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.) | No.14-1, Lane 19, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.) |

If you have any suggestion, please feel free to contact us as below information.

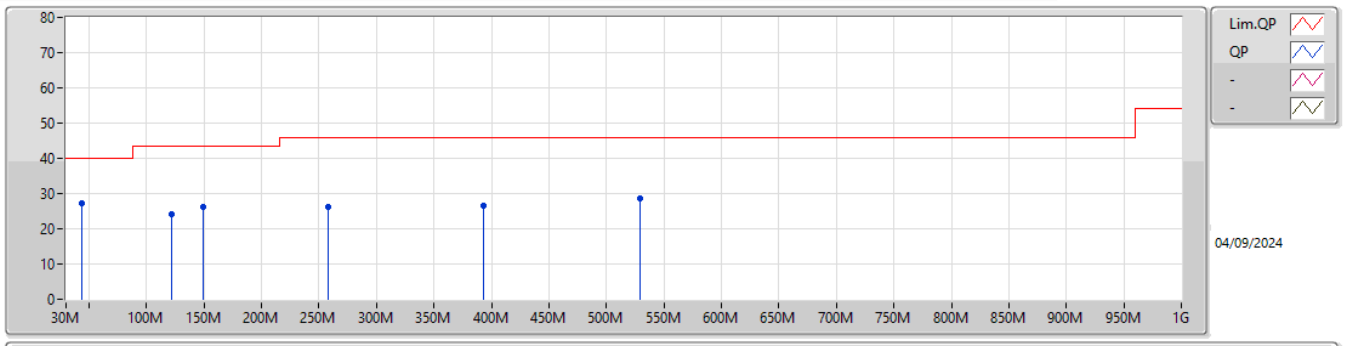
Tel: 886-3-271-8666
Fax: 886-3-318-0345
Email: ICC_Service@icertifi.com.tw

**==END==**

**Summary**

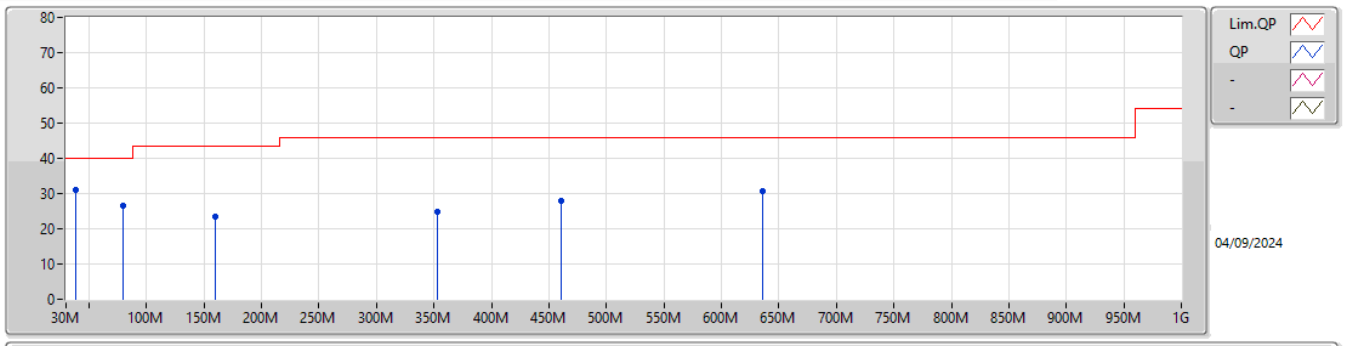
| Mode | Result | Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Condition |
|---|---|---|---|---|---|---|---|
| Mode 1 | Pass | PK | 38.3M | 30.93 | 40.00 | -9.07 | Vertical |
| Mode 2 | Pass | PK | 38.2M | 30.75 | 40.00 | -9.25 | Vertical |
| Mode 3 | Pass | PK | 38.5M | 31.08 | 40.00 | -8.92 | Vertical |

**Mode 1**



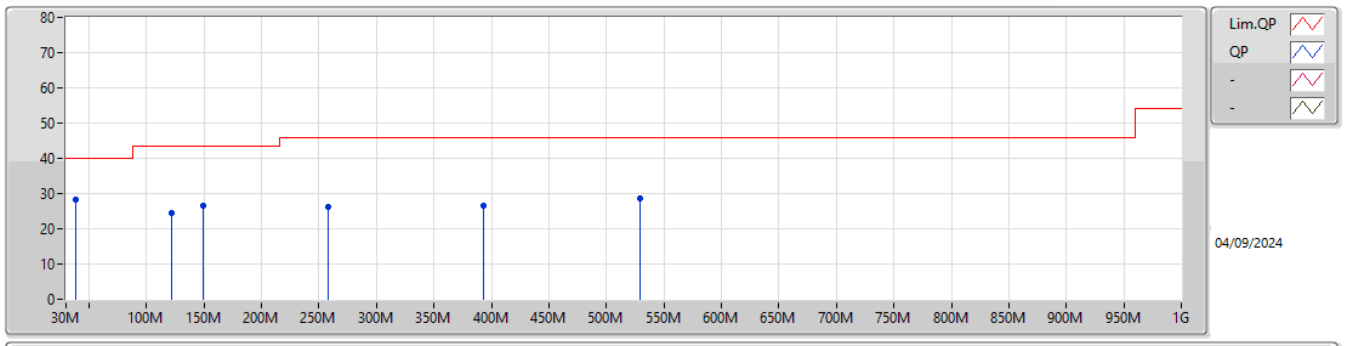

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| PK | 43.7M | 27.08 | 40.00 | -12.92 | -8.74 | 3 | Horizontal | - | - | - | 35.82 | 18.79 | 0.59 | 28.12 |
| PK | 122M | 24.06 | 43.50 | -19.44 | -10.90 | 3 | Horizontal | - | - | - | 34.96 | 16.30 | 1.04 | 28.24 |
| PK | 149.1M | 26.36 | 43.50 | -17.14 | -8.89 | 3 | Horizontal | - | - | - | 35.25 | 18.22 | 1.14 | 28.25 |
| PK | 257.6M | 26.21 | 46.00 | -19.79 | -9.54 | 3 | Horizontal | - | - | - | 35.75 | 17.20 | 1.51 | 28.25 |
| PK | 393.2M | 26.66 | 46.00 | -19.34 | -5.67 | 3 | Horizontal | - | - | - | 32.33 | 20.66 | 1.84 | 28.17 |
| PK | 528.9M | 28.77 | 46.00 | -17.23 | -2.74 | 3 | Horizontal | - | - | - | 31.51 | 23.20 | 2.25 | 28.19 |

**Mode 1**



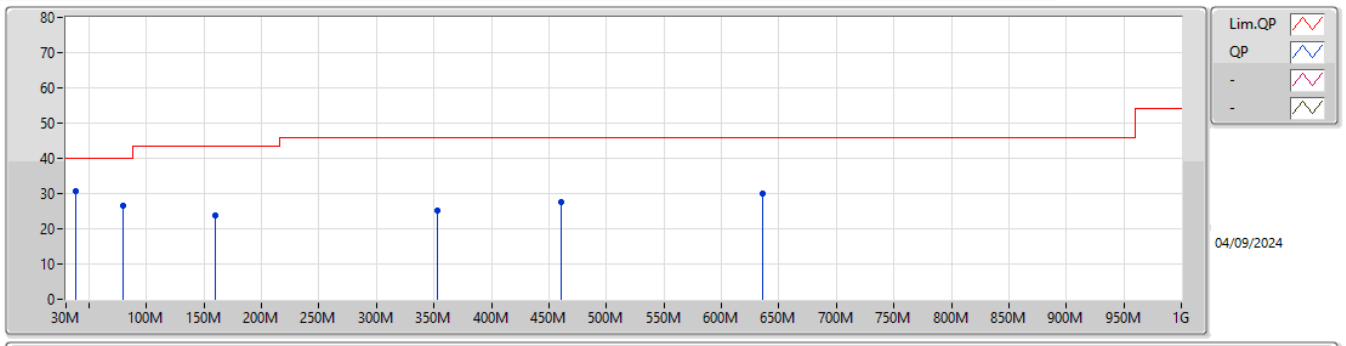

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| PK | 38.3M | 30.93 | 40.00 | -9.07 | -9.20 | 3 | Vertical | - | - | - | 40.13 | 18.33 | 0.57 | 28.10 |
| PK | 80M | 26.69 | 40.00 | -13.31 | -13.55 | 3 | Vertical | - | - | - | 40.24 | 13.80 | 0.84 | 28.19 |
| PK | 160M | 23.50 | 43.50 | -20.00 | -8.68 | 3 | Vertical | - | - | - | 32.18 | 18.40 | 1.18 | 28.26 |
| PK | 352.5M | 25.00 | 46.00 | -21.00 | -6.84 | 3 | Vertical | - | - | - | 31.84 | 19.60 | 1.76 | 28.20 |
| PK | 461M | 27.98 | 46.00 | -18.02 | -3.94 | 3 | Vertical | - | - | - | 31.92 | 22.22 | 2.03 | 28.19 |
| PK | 635.8M | 30.80 | 46.00 | -15.20 | -0.02 | 3 | Vertical | - | - | - | 30.82 | 25.50 | 2.60 | 28.12 |

**Mode 2**



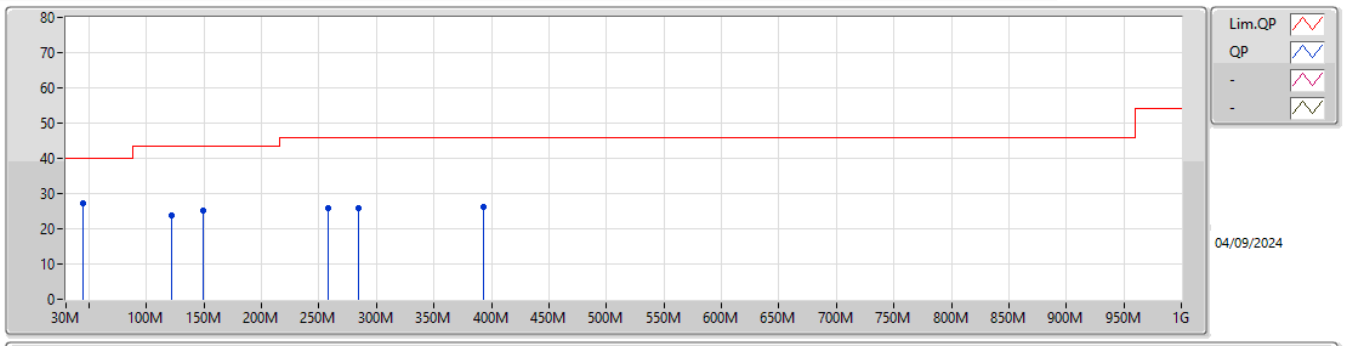

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| PK | 38.4M | 28.42 | 40.00 | -11.58 | -9.20 | 3 | Horizontal | - | - | - | 37.62 | 18.34 | 0.57 | 28.11 |
| PK | 122M | 24.33 | 43.50 | -19.17 | -10.90 | 3 | Horizontal | - | - | - | 35.23 | 16.30 | 1.04 | 28.24 |
| PK | 149.1M | 26.42 | 43.50 | -17.08 | -8.89 | 3 | Horizontal | - | - | - | 35.31 | 18.22 | 1.14 | 28.25 |
| PK | 257.6M | 26.12 | 46.00 | -19.88 | -9.54 | 3 | Horizontal | - | - | - | 35.66 | 17.20 | 1.51 | 28.25 |
| PK | 393.2M | 26.62 | 46.00 | -19.38 | -5.67 | 3 | Horizontal | - | - | - | 32.29 | 20.66 | 1.84 | 28.17 |
| PK | 528.9M | 28.70 | 46.00 | -17.30 | -2.74 | 3 | Horizontal | - | - | - | 31.44 | 23.20 | 2.25 | 28.19 |

**Mode 2**



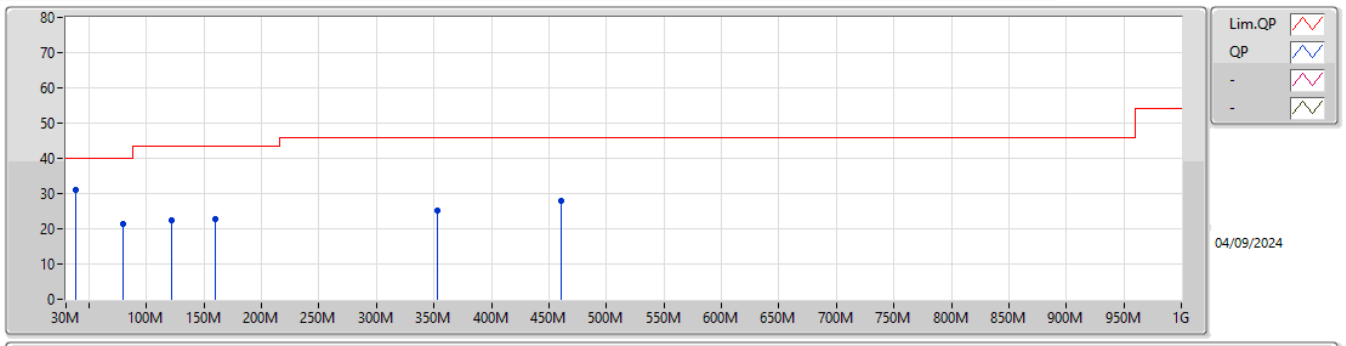

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| PK | 38.2M | 30.75 | 40.00 | -9.25 | -9.21 | 3 | Vertical | - | - | - | 39.96 | 18.32 | 0.57 | 28.10 |
| PK | 80M | 26.44 | 40.00 | -13.56 | -13.55 | 3 | Vertical | - | - | - | 39.99 | 13.80 | 0.84 | 28.19 |
| PK | 160M | 23.68 | 43.50 | -19.82 | -8.68 | 3 | Vertical | - | - | - | 32.36 | 18.40 | 1.18 | 28.26 |
| PK | 352.5M | 25.05 | 46.00 | -20.95 | -6.84 | 3 | Vertical | - | - | - | 31.89 | 19.60 | 1.76 | 28.20 |
| PK | 461M | 27.59 | 46.00 | -18.41 | -3.94 | 3 | Vertical | - | - | - | 31.53 | 22.22 | 2.03 | 28.19 |
| PK | 635.8M | 29.99 | 46.00 | -16.01 | -0.02 | 3 | Vertical | - | - | - | 30.01 | 25.50 | 2.60 | 28.12 |

**Mode 3**




| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| PK | 45.2M | 27.23 | 40.00 | -12.77 | -8.51 | 3 | Horizontal | - | - | - | 35.74 | 19.02 | 0.60 | 28.13 |
| PK | 122M | 23.94 | 43.50 | -19.56 | -10.90 | 3 | Horizontal | - | - | - | 34.84 | 16.30 | 1.04 | 28.24 |
| PK | 149.1M | 25.06 | 43.50 | -18.44 | -8.89 | 3 | Horizontal | - | - | - | 33.95 | 18.22 | 1.14 | 28.25 |
| PK | 257.6M | 25.70 | 46.00 | -20.30 | -9.54 | 3 | Horizontal | - | - | - | 35.24 | 17.20 | 1.51 | 28.25 |
| PK | 284.7M | 25.99 | 46.00 | -20.01 | -8.35 | 3 | Horizontal | - | - | - | 34.34 | 18.29 | 1.60 | 28.24 |
| PK | 393.2M | 26.09 | 46.00 | -19.91 | -5.67 | 3 | Horizontal | - | - | - | 31.76 | 20.66 | 1.84 | 28.17 |

**Mode 3**

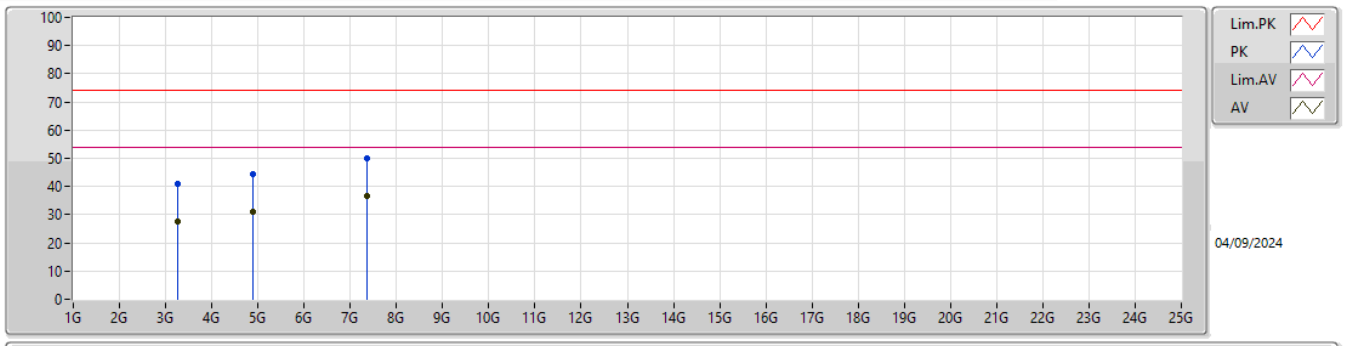



| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| PK | 38.5M | 31.08 | 40.00 | -8.92 | -9.19 | 3 | Vertical | - | - | - | 40.27 | 18.35 | 0.57 | 28.11 |
| PK | 79.9M | 21.25 | 40.00 | -18.75 | -13.53 | 3 | Vertical | - | - | - | 34.78 | 13.82 | 0.84 | 28.19 |
| PK | 122M | 22.42 | 43.50 | -21.08 | -10.90 | 3 | Vertical | - | - | - | 33.32 | 16.30 | 1.04 | 28.24 |
| PK | 160M | 22.72 | 43.50 | -20.78 | -8.68 | 3 | Vertical | - | - | - | 31.40 | 18.40 | 1.18 | 28.26 |
| PK | 352.6M | 25.20 | 46.00 | -20.80 | -6.84 | 3 | Vertical | - | - | - | 32.04 | 19.60 | 1.76 | 28.20 |
| PK | 461M | 28.06 | 46.00 | -17.94 | -3.94 | 3 | Vertical | - | - | - | 32.00 | 22.22 | 2.03 | 28.19 |

**Summary**

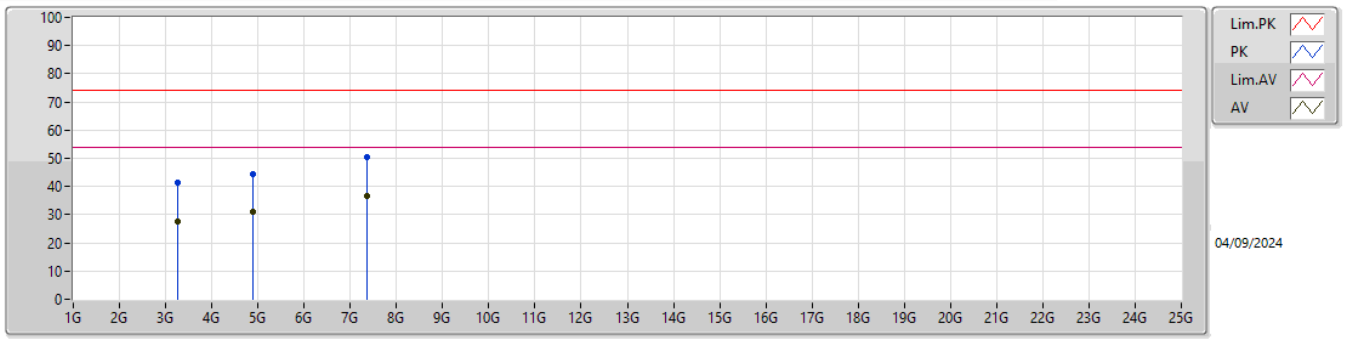
| Mode | Result | Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Condition |
|---|---|---|---|---|---|---|---|
| Mode 1 | Pass | AV | 7.36524G | 36.84 | 54.00 | -17.16 | Vertical |
| Mode 2 | Pass | AV | 7.30944G | 36.63 | 54.00 | -17.37 | Vertical |
| Mode 3 | Pass | AV | 7.30944G | 36.75 | 54.00 | -17.25 | Horizontal |

**Mode 1**



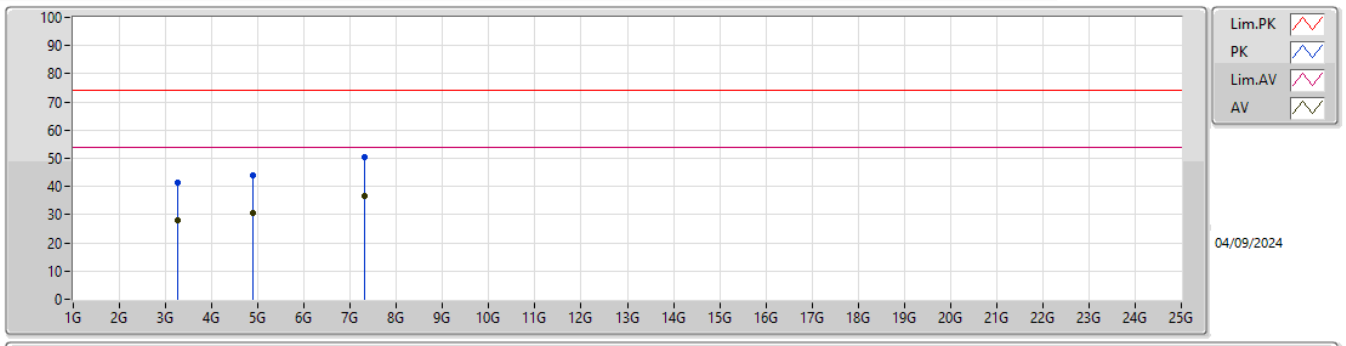

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| AV | 3.2506G | 27.69 | 54.00 | -26.31 | -2.76 | 3 | Horizontal | 206 | 1.00 | - | 30.45 | 28.50 | 5.82 | 37.08 |
| PK | 3.2506G | 41.13 | 74.00 | -32.87 | -2.76 | 3 | Horizontal | 206 | 1.00 | - | 43.89 | 28.50 | 5.82 | 37.08 |
| AV | 4.88756G | 30.84 | 54.00 | -23.16 | -0.52 | 3 | Horizontal | 155 | 1.00 | - | 31.36 | 31.12 | 6.93 | 38.57 |
| PK | 4.88756G | 44.20 | 74.00 | -29.80 | -0.52 | 3 | Horizontal | 155 | 1.00 | - | 44.72 | 31.12 | 6.93 | 38.57 |
| AV | 7.36524G | 36.75 | 54.00 | -17.25 | 5.11 | 3 | Horizontal | 51 | 1.00 | - | 31.64 | 36.10 | 8.46 | 39.45 |
| PK | 7.36524G | 50.21 | 74.00 | -23.79 | 5.11 | 3 | Horizontal | 51 | 1.00 | - | 45.10 | 36.10 | 8.46 | 39.45 |

**Mode 1**



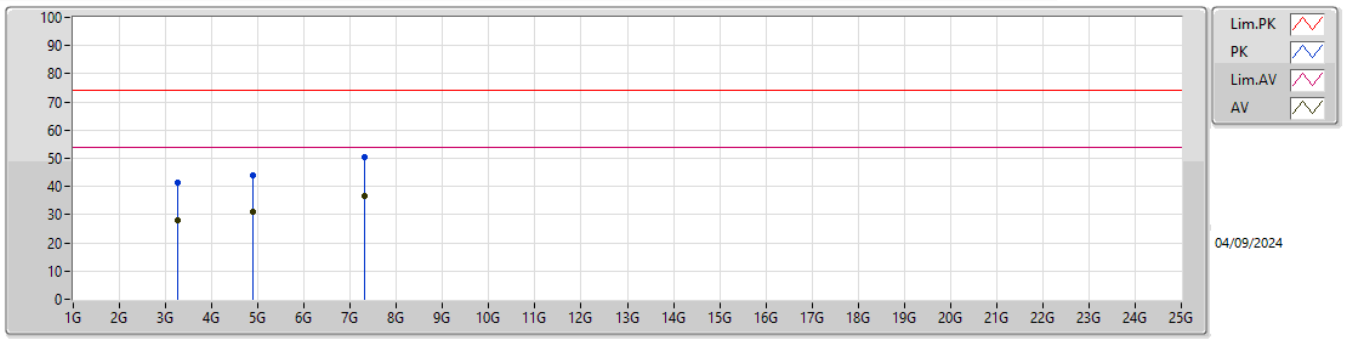

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| AV | 3.2506G | 27.71 | 54.00 | -26.29 | -2.76 | 3 | Vertical | 41 | 1.00 | - | 30.47 | 28.50 | 5.82 | 37.08 |
| PK | 3.2506G | 41.29 | 74.00 | -32.71 | -2.76 | 3 | Vertical | 41 | 1.00 | - | 44.05 | 28.50 | 5.82 | 37.08 |
| AV | 4.88756G | 30.95 | 54.00 | -23.05 | -0.52 | 3 | Vertical | 193 | 1.00 | - | 31.47 | 31.12 | 6.93 | 38.57 |
| PK | 4.88756G | 44.35 | 74.00 | -29.65 | -0.52 | 3 | Vertical | 193 | 1.00 | - | 44.87 | 31.12 | 6.93 | 38.57 |
| AV | 7.36524G | 36.84 | 54.00 | -17.16 | 5.11 | 3 | Vertical | 102 | 1.00 | - | 31.73 | 36.10 | 8.46 | 39.45 |
| PK | 7.36524G | 50.39 | 74.00 | -23.61 | 5.11 | 3 | Vertical | 102 | 1.00 | - | 45.28 | 36.10 | 8.46 | 39.45 |

## Mode 2



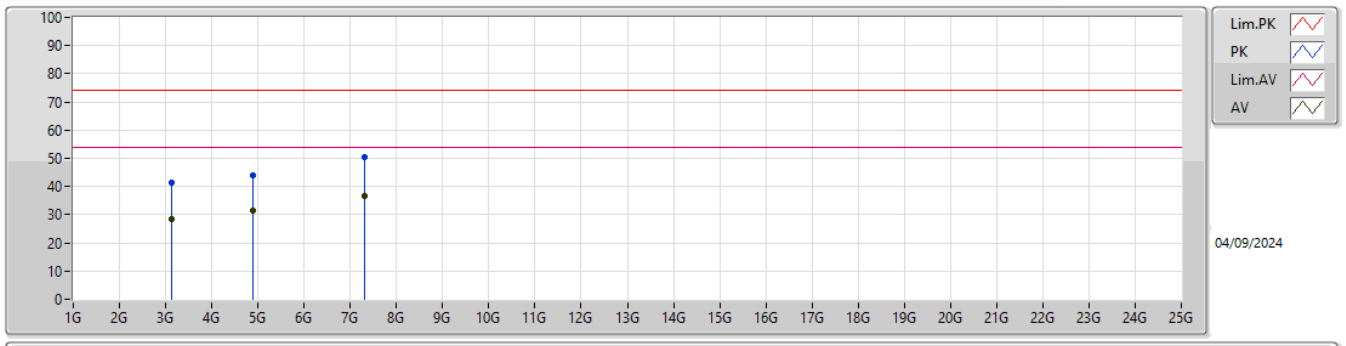

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) | | |
| AV | 3.2546G | 28.11 | 54.00 | -25.89 | -2.77 | 3 | Horizontal | 196 | 1.00 | - | 30.88 | 28.49 | 5.82 | 37.08 | | |
| PK | 3.2546G | 41.52 | 74.00 | -32.48 | -2.77 | 3 | Horizontal | 196 | 1.00 | - | 44.29 | 28.49 | 5.82 | 37.08 | | |
| AV | 4.89556G | 30.74 | 54.00 | -23.26 | -0.53 | 3 | Horizontal | 301 | 1.00 | - | 31.27 | 31.11 | 6.94 | 38.58 | | |
| PK | 4.89556G | 43.76 | 74.00 | -30.24 | -0.53 | 3 | Horizontal | 301 | 1.00 | - | 44.29 | 31.11 | 6.94 | 38.58 | | |
| AV | 7.30944G | 36.55 | 54.00 | -17.45 | 5.23 | 3 | Horizontal | 242 | 1.00 | - | 31.32 | 36.18 | 8.43 | 39.38 | | |
| PK | 7.30944G | 50.57 | 74.00 | -23.43 | 5.23 | 3 | Horizontal | 242 | 1.00 | - | 45.34 | 36.18 | 8.43 | 39.38 | | |

## Mode 2



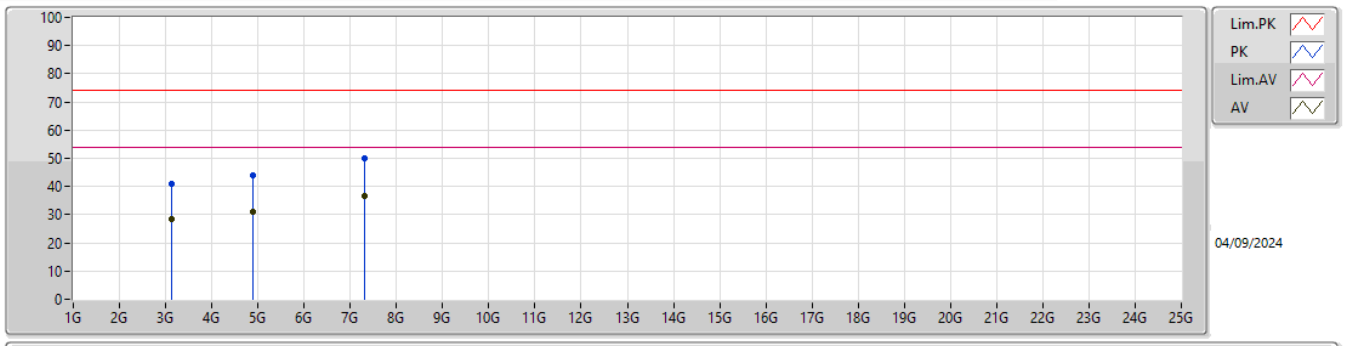

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| AV | 3.2546G | 28.03 | 54.00 | -25.97 | -2.77 | 3 | Vertical | 112 | 1.00 | - | 30.80 | 28.49 | 5.82 | 37.08 |
| PK | 3.2546G | 41.43 | 74.00 | -32.57 | -2.77 | 3 | Vertical | 112 | 1.00 | - | 44.20 | 28.49 | 5.82 | 37.08 |
| AV | 4.89556G | 30.85 | 54.00 | -23.15 | -0.53 | 3 | Vertical | 215 | 1.00 | - | 31.38 | 31.11 | 6.94 | 38.58 |
| PK | 4.89556G | 43.86 | 74.00 | -30.14 | -0.53 | 3 | Vertical | 215 | 1.00 | - | 44.39 | 31.11 | 6.94 | 38.58 |
| AV | 7.30944G | 36.63 | 54.00 | -17.37 | 5.23 | 3 | Vertical | 45 | 1.00 | - | 31.40 | 36.18 | 8.43 | 39.38 |
| PK | 7.30944G | 50.45 | 74.00 | -23.55 | 5.23 | 3 | Vertical | 45 | 1.00 | - | 45.22 | 36.18 | 8.43 | 39.38 |

**Mode 3**




| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| AV | 3.13256G | 28.46 | 54.00 | -25.54 | -2.34 | 3 | Horizontal | 291 | 1.00 | - | 30.80 | 28.93 | 5.74 | 37.01 |
| PK | 3.13256G | 41.26 | 74.00 | -32.74 | -2.34 | 3 | Horizontal | 291 | 1.00 | - | 43.60 | 28.93 | 5.74 | 37.01 |
| AV | 4.89556G | 31.27 | 54.00 | -22.73 | -0.53 | 3 | Horizontal | 164 | 1.00 | - | 31.80 | 31.11 | 6.94 | 38.58 |
| PK | 4.89556G | 43.92 | 74.00 | -30.08 | -0.53 | 3 | Horizontal | 164 | 1.00 | - | 44.45 | 31.11 | 6.94 | 38.58 |
| AV | 7.30944G | 36.75 | 54.00 | -17.25 | 5.23 | 3 | Horizontal | 59 | 1.00 | - | 31.52 | 36.18 | 8.43 | 39.38 |
| PK | 7.30944G | 50.28 | 74.00 | -23.72 | 5.23 | 3 | Horizontal | 59 | 1.00 | - | 45.05 | 36.18 | 8.43 | 39.38 |

## Mode 3




| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| AV | 3.13256G | 28.40 | 54.00 | -25.60 | -2.34 | 3 | Vertical | 25 | 1.00 | - | 30.74 | 28.93 | 5.74 | 37.01 |
| PK | 3.13256G | 41.03 | 74.00 | -32.97 | -2.34 | 3 | Vertical | 25 | 1.00 | - | 43.37 | 28.93 | 5.74 | 37.01 |
| AV | 4.89556G | 31.12 | 54.00 | -22.88 | -0.53 | 3 | Vertical | 178 | 1.00 | - | 31.65 | 31.11 | 6.94 | 38.58 |
| PK | 4.89556G | 43.98 | 74.00 | -30.02 | -0.53 | 3 | Vertical | 178 | 1.00 | - | 44.51 | 31.11 | 6.94 | 38.58 |
| AV | 7.30944G | 36.71 | 54.00 | -17.29 | 5.23 | 3 | Vertical | 94 | 1.00 | - | 31.48 | 36.18 | 8.43 | 39.38 |
| PK | 7.30944G | 50.14 | 74.00 | -23.86 | 5.23 | 3 | Vertical | 94 | 1.00 | - | 44.91 | 36.18 | 8.43 | 39.38 |

# FCC SAR TEST REPORT

| | | |
|---|---|---|
| FCC ID | : | IPH-04951 |
| Equipment | : | Fitness Product |
| Brand Name | : | GARMIN |
| Model Name | : | A04951 |
| Applicant | : | Garmin International, Inc.<br>1200 E. 151st Street Olathe, KS 66062 United States |
| Manufacturer | : | Garmin Corp.<br>No.68, Zhangshu 2nd Rd., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C) |
| Standard | : | FCC 47 CFR Part 2 (2.1093) |

**The product was received on Sep. 16, 2024 and testing was started from Sep. 18, 2024 and completed on Sep. 18, 2024. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample provide by manufacturer and the test data has been evaluated in accordance with the test procedures given in 47 CFR Part 2.1093 and FCC KDB and has been pass the FCC requirement.**

**The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. Laboratory, the test report shall not be reproduced except in full.**

Approved by: Cona Huang / Deputy Manager

*Sporton International Inc. Wensan Laboratory*
*No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan*

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# History of this test report

| Report No. | Version | Description | Issued Date |
|---|---|---|---|
| FA482809 | 01 | Initial issue of report | Oct. 15, 2024 |
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# 1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) for **Garmin International, Inc., Fitness Product, A04951**, are as follows.

| Equipment Class | Frequency Band | Highest SAR Summary<br>Extremity (Separation 0mm)<br>10g SAR (W/kg) | Highest Simultaneous Transmission 10g SAR (W/kg) |
|---|---|---|---|
| DTS | 2.4GHz WLAN | 0.31 | 0.31 |
| DSS | Bluetooth | 0.06 | |
| DXX | 13.56MHz | < 0.01 | |
| Date of Testing: | | 2024/9/18 | |

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation and the FCC designation No. TW3786 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test. This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (4.0 W/kg for Extremity 10g SAR) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications

**Reviewed by: Jason Wang**
**Report Producer: Daisy Peng**

# 2. Guidance Applied

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards, the below KDB standard may not including in the TAF code without accreditation.

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02

# 3. Equipment Under Test (EUT) Information

## 3.1 General Information

| Product Feature & Specification | |
|---|---|
| **Equipment Name** | Fitness Product |
| **Brand Name** | GARMIN |
| **Model Name** | A04951 |
| **FCC ID** | IPH-04951 |
| **Wireless Technology and Frequency Range** | WLAN 2.4 GHz Band: 2400 MHz ~ 2483.5 MHz<br>Bluetooth: 2400 MHz ~ 2483.5 MHz<br>NFC : 13.56 MHz<br>ANT+: 2402 MHz ~ 2480 MHz |
| **Mode** | WLAN: 802.11b/g/n HT20<br>Bluetooth BR/EDR/LE<br>NFC: ASK<br>ANT+: GFSK |
| **HW Version** | 105-04951-01 |
| **SW Version** | 2.0 |

# 4. RF Exposure Limits

## 4.1 Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

## 4.2 Controlled Environment

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. The exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

**Limits for Occupational/Controlled Exposure (W/kg)**

| Whole-Body | Partial-Body | Hands, Wrists, Feet and Ankles |
|---|---|---|
| 0.4 | 8.0 | 20.0 |

**Limits for General Population/Uncontrolled Exposure (W/kg)**

| Whole-Body | Partial-Body | Hands, Wrists, Feet and Ankles |
|---|---|---|
| 0.08 | 1.6 | 4.0 |

1. Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

# 5. Specific Absorption Rate (SAR)

## 5.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

## 5.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$\mathbf{SAR} = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\mathbf{dm}}\right) = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\boldsymbol{\rho}\mathbf{dv}}\right)$$

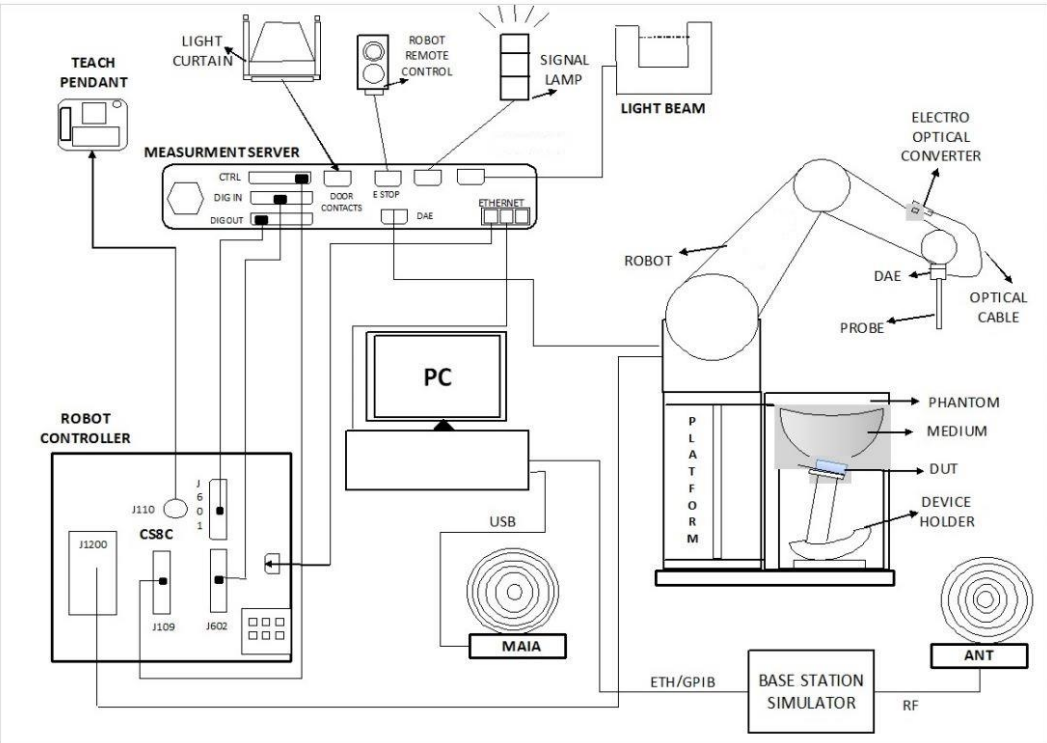
SAR is expressed in units of Watts per kilogram (W/kg)

$$\mathbf{SAR} = \frac{\boldsymbol{\sigma}|\mathbf{E}|^{\mathbf{2}}}{\boldsymbol{\rho}}$$

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

# 6. System Description and Setup

**The DASY system used for performing compliance tests consists of the following items:**




- The DASY system in SAR Configuration is shown above
- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running windows software and the DASY software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

## 6.1 Test Site Location

The SAR measurement facilities used to collect data are within both Sporton Lab list below test site location are accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190 and 3786) and the FCC designation No. TW1190 and TW3786 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test.

| Laboratory | EMC & Wireless Communications Laboratory | | Wensan Laboratory | | | | |
|---|---|---|---|---|---|---|---|
| Test Site Location | TW1190<br>No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan | | TW3786<br>No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan | | | | |
| Test Site No. | SAR01-HY | SAR03-HY | SAR08-HY | SAR09-HY | SAR15-HY | SAR18-HY | SAR21-HY |
| | SAR04-HY | SAR05-HY | SAR11-HY | SAR12-HY | SAR16-HY | SAR19-HY | SAR22-HY |
| | SAR06-HY | SAR10-HY | SAR13-HY | SAR14-HY | SAR17-HY | SAR20-HY | |

## 6.2 E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by SPEAG).The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. This probe has a built in optical surface detection system to prevent from collision with phantom.

**<ES3DV3 Probe>**

| | | |
|---|---|---|
| **Construction** | Symmetric design with triangular core<br>Interleaved sensors<br>Built-in shielding against static charges<br>PEEK enclosure material (resistant to organic solvents, e.g., DGBE) |  |
| **Frequency** | 4 MHz – 4 GHz;<br>Linearity: ±0.2 dB (30 MHz – 4 GHz) | |
| **Directivity** | ±0.2 dB in TSL (rotation around probe axis)<br>±0.3 dB in TSL (rotation normal to probe axis) | |
| **Dynamic Range** | 5 µW/g – >100 mW/g;<br>Linearity: ±0.2 dB | |
| **Dimensions** | Overall length: 337 mm (tip: 20 mm)<br>Tip diameter: 3.9 mm (body: 12 mm)<br>Distance from probe tip to dipole centers: 3.0 mm | |

**<EX3DV4 Probe>**

| | | |
|---|---|---|
| **Construction** | Symmetric design with triangular core<br>Built-in shielding against static charges<br>PEEK enclosure material (resistant to organic solvents, e.g., DGBE) |  |
| **Frequency** | 4 MHz – >6 GHz<br>Linearity: ±0.2 dB (30 MHz – 6 GHz) | |
| **Directivity** | ±0.3 dB in TSL (rotation around probe axis)<br>±0.5 dB in TSL (rotation normal to probe axis) | |
| **Dynamic Range** | 10 µW/g – >100 mW/g<br>Linearity: ±0.2 dB (noise: typically <1 µW/g) | |
| **Dimensions** | Overall length: 337 mm (tip: 20 mm)<br>Tip diameter: 2.5 mm (body: 12 mm)<br>Typical distance from probe tip to dipole centers: 1 mm | |

## 6.3 Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.

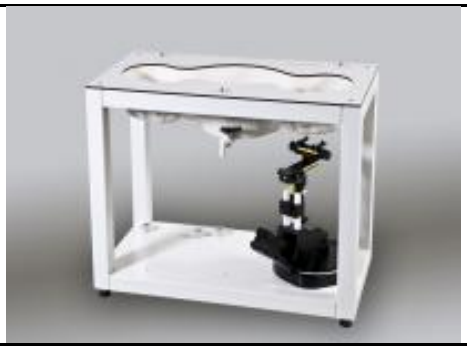
The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

**Fig 5.1 Photo of DAE**

## 6.4 Phantom

**<SAM Twin Phantom>**

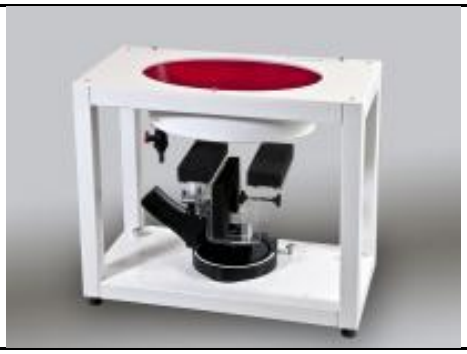
| | |
|---|---|
| **Shell Thickness** | 2 ± 0.2 mm;<br>Center ear point: 6 ± 0.2 mm |
| **Filling Volume** | Approx. 25 liters |
| **Dimensions** | Length: 1000 mm; Width: 500 mm; Height: adjustable feet |
| **Measurement Areas** | Left Hand, Right Hand, Flat Phantom |



The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

**<ELI Phantom>**

| | |
|---|---|
| **Shell Thickness** | 2 ± 0.2 mm (sagging: <1%) |
| **Filling Volume** | Approx. 30 liters |
| **Dimensions** | Major ellipse axis: 600 mm<br>Minor axis: 400 mm |



The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

## 6.5 Device Holder

**<Mounting Device for Hand-Held Transmitter>**

In combination with the Twin SAM V5.0/V5.0c or ELI phantoms, the Mounting Device for Hand-Held Transmitters enables rotation of the mounted transmitter device to specified spherical coordinates. At the heads, the rotation axis is at the ear opening. Transmitter devices can be easily and accurately positioned according to IEC 62209-1, IEEE 1528, FCC, or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat). And upgrade kit to Mounting Device to enable easy mounting of wider devices like big smart-phones, e-books, small tablets, etc. It holds devices with width up to 140 mm.

Mounting Device for Hand-Held Transmitters

Mounting Device Adaptor for Wide-Phones

**<Mounting Device for Laptops and other Body-Worn Transmitters>**

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the mounting device in place of the phone positioned. The extension is fully compatible with the SAM Twin and ELI phantoms.

Mounting Device for Laptops

# 7. Measurement Procedures

The measurement procedures are as follows:

(a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
(b) Place the EUT in the positions as Appendix D demonstrates.
(c) Set scan area, grid size and other setting on the DASY software.
(d) Measure SAR results for the highest power channel on each testing position.
(e) Find out the largest SAR result on these testing positions of each band
(f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

(a) Power reference measurement
(b) Area scan
(c) Zoom scan
(d) Power drift measurement

## 7.1 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

(a) Extraction of the measured data (grid and values) from the Zoom Scan
(b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
(c) Generation of a high-resolution mesh within the measured volume
(d) Interpolation of all measured values form the measurement grid to the high-resolution grid
(e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
(f) Calculation of the averaged SAR within masses of 1g and 10g

## 7.2 Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

## 7.3 Area Scan

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum found in the scanned area, within a range of the global maximum. The range (in dB0 is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

Area scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

| | ≤ 3 GHz | > 3 GHz |
|---|---|---|
| Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface | 5 ± 1 mm | ½·δ·ln(2) ± 0.5 mm |
| Maximum probe angle from probe axis to phantom surface normal at the measurement location | 30° ± 1° | 20° ± 1° |
| Maximum area scan spatial resolution: $\Delta x_{Area}$, $\Delta y_{Area}$ | ≤ 2 GHz: ≤ 15 mm<br>2 – 3 GHz: ≤ 12 mm | 3 – 4 GHz: ≤ 12 mm<br>4 – 6 GHz: ≤ 10 mm |
| | When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device. | |

## 7.4 Zoom Scan

Zoom scans are used assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10 gram of simulated tissue. The zoom scan measures points (refer to table below) within a cube shoes base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

Zoom scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

| | | | ≤ 3 GHz | > 3 GHz |
|---|---|---|---|---|
| Maximum zoom scan spatial resolution: $\Delta x_{Zoom}$, $\Delta y_{Zoom}$ | | | ≤ 2 GHz: ≤ 8 mm<br>2 – 3 GHz: ≤ 5 mm* | 3 – 4 GHz: ≤ 5 mm*<br>4 – 6 GHz: ≤ 4 mm* |
| Maximum zoom scan spatial resolution, normal to phantom surface | uniform grid: $\Delta z_{Zoom}(n)$ | | ≤ 5 mm | 3 – 4 GHz: ≤ 4 mm<br>4 – 5 GHz: ≤ 3 mm<br>5 – 6 GHz: ≤ 2 mm |
| | graded grid | $\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface | ≤ 4 mm | 3 – 4 GHz: ≤ 3 mm<br>4 – 5 GHz: ≤ 2.5 mm<br>5 – 6 GHz: ≤ 2 mm |
| | | $\Delta z_{Zoom}(n>1)$: between subsequent points | ≤ 1.5·$\Delta z_{Zoom}(n-1)$ | |
| Minimum zoom scan volume | x, y, z | | ≥ 30 mm | 3 – 4 GHz: ≥ 28 mm<br>4 – 5 GHz: ≥ 25 mm<br>5 – 6 GHz: ≥ 22 mm |

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

## 7.5 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

## 7.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5%, the SAR will be retested.

# 8. Test Equipment List

| Manufacturer | Name of Equipment | Type/Model | Serial Number | Calibration | |
|---|---|---|---|---|---|
| | | | | Last Cal. | Due Date |
| SPEAG | 2450MHz System Validation Kit(2) | D2450V2 | 929 | Nov. 21, 2022 | Nov. 19, 2024 |
| SPEAG | 13MHz System Validation Kit(2) | CLA13 | 1011 | Jul. 10, 2023 | Jul. 08, 2025 |
| SPEAG | Data Acquisition Electronics | DAE4 | 699 | Feb. 13, 2024 | Feb. 12, 2025 |
| SPEAG | Data Acquisition Electronics | DAE4ip | 1800 | Jun. 18, 2024 | Jun. 17, 2025 |
| SPEAG | Dosimetric E-Field Probe | EX3DV4 | 3931 | Oct. 24, 2023 | Oct. 23, 2024 |
| SPEAG | Dosimetric E-Field Probe | EX3DV4 | 7793 | Mar. 01, 2024 | Feb. 28, 2025 |
| Testo | Hygro meter | 608-H1 | 45196600 | Nov. 02, 2023 | Nov. 01, 2024 |
| R&S | BT Base Station | CBT | 101136 | Oct. 22, 2023 | Oct. 21, 2024 |
| SPEAG | Device Holder | N/A | N/A | N/A | N/A |
| Anritsu | Signal Generator | MG3710A | 6201502524 | Sep. 27, 2023 | Sep. 26, 2024 |
| Keysight | ENA Network Analyzer | E5071C | MY46104758 | Oct. 30, 2023 | Oct. 29, 2024 |
| SPEAG | Dielectric Probe Kit | DAK-3.5 | 1126 | Sep. 19, 2023 | Sep. 18, 2024 |
| SPEAG | Dielectric Probe Kit | DAK-12 | 1156 | Jul. 15, 2024 | Jul. 14, 2025 |
| LINE SEIKI | Digital Thermometer | DTM3000-spezial | 3690 | Aug. 07, 2024 | Aug. 06, 2025 |
| Anritsu | Power Meter | ML2495A | 1419002 | Aug. 13, 2024 | Aug. 12, 2025 |
| Anritsu | Power Sensor | MA2411B | 1911176 | Aug. 13, 2024 | Aug. 12, 2025 |
| Anritsu | Spectrum Analyzer | MS2830A | 6201396378 | Jul. 09, 2024 | Jul. 08, 2025 |
| Mini-Circuits | Power Amplifier | ZVE-8G+ | 6418 | Oct. 16, 2023 | Oct. 15, 2024 |
| ATM | Dual Directional Coupler | C122H-10 | P610410z-02 | Note 1 | |
| Warison | Directional Coupler | WCOU-10-50S-10 | WR889BMC4B1 | Note 1 | |
| Woken | Attenuator 1 | WK0602-XX | N/A | Note 1 | |
| PE | Attenuator 2 | PE7005-10 | N/A | Note 1 | |
| PE | Attenuator 3 | PE7005- 3 | N/A | Note 1 | |

**General Note:**

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check source.
2. The dipole calibration interval can be extended to 3 years with justification according to KDB 865664 D01. The dipoles are also not physically damaged, or repaired during the interval. The justification data in appendix C can be found which the return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration for each dipole.

# 9. System Verification

## 9.1 Tissue Verification

The tissue dielectric parameters of tissue-equivalent media used for SAR measurements must be characterized within a temperature range of 18℃ to 25℃, measured with calibrated instruments and apparatuses, such as network analyzers and temperature probes. The temperature of the tissue-equivalent medium during SAR measurement must also be within 18℃ to 25℃ and within ± 2℃ of the temperature when the tissue parameters are characterized. The tissue dielectric measurement system must be calibrated before use. The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements.
The liquid tissue depth was at least 15cm in the phantom for all SAR testing

**<Tissue Dielectric Parameter Check Results>**

| Frequency (MHz) | Liquid Temp. (℃) | Conductivity (σ) | Permittivity ($\varepsilon_r$) | Conductivity Target (σ) | Permittivity Target ($\varepsilon_r$) | Delta (σ) (%) | Delta ($\varepsilon_r$) (%) | Limit (%) | Date |
|---|---|---|---|---|---|---|---|---|---|
| 13 | 22.6 | 0.728 | 54.573 | 0.75 | 55.00 | -2.93 | -0.78 | ±5 | 2024/9/18 |
| 2450 | 22.4 | 1.760 | 38.700 | 1.80 | 39.20 | -2.22 | -1.28 | ±5 | 2024/9/18 |

## 9.2 System Performance Check Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

| Date | Frequency (MHz) | Input Power (mW) | Dipole S/N | Probe S/N | DAE S/N | Measured 10g SAR (W/kg) | Targeted 10g SAR (W/kg) | Normalized 10g SAR (W/kg) | Deviation (%) | Test Site |
|---|---|---|---|---|---|---|---|---|---|---|
| 2024/9/18 | 13 | 1000 | CLA13-1011 | EX3DV4 - SN3931 | DAE4 Sn699 | 0.308 | 0.340 | 0.308 | -9.41 | SAR-11 |
| 2024/9/18 | 2450 | 50 | D2450V2-929 | EX3DV4 - SN7793 | DAE4ip Sn1800 | 1.260 | 24.700 | 25.2 | 2.02 | SAR-18 |

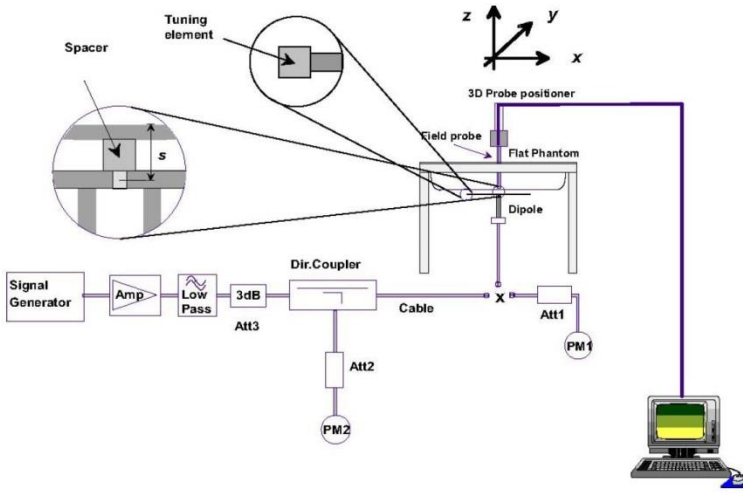



Fig 8.3.1 System Performance Check Setup

Fig 8.3.2 Setup Photo

# 10. RF Exposure Positions

## 10.1 Extremity Exposure

For smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, According to KDB648474 D04v01r03, the following phablet procedures should be applied to evaluate SAR compliance for each applicable wireless modes and frequency band. Devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance

1. The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.

2. The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions.6 The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.

# 11. WiFi/Bluetooth Output Power (Unit: dBm)

**General Note:**

1. The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures. For “Not required”, SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, additional output power measurements were not necessary.
2. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration must be determined for each standalone and aggregated frequency band, according to the transmission mode configuration with the highest maximum output power specified for production units to perform SAR measurements. If the same highest maximum output power applies to different combinations of channel bandwidths, modulations and data rates, additional procedures are applied to determine which test configurations require SAR measurement. When applicable, an initial test position may be applied to reduce the number of SAR measurements required for next to the ear, UMPC mini-tablet or hotspot mode configurations with multiple test positions.
3. For 2.4 GHz 802.11b DSSS, either the initial test position procedure for multiple exposure test positions or the DSSS procedure for fixed exposure position is applied; these are mutually exclusive. For 2.4 GHz and 5 GHz OFDM configurations, the initial test configuration is applied to measure SAR using either the initial test position procedure for multiple exposure test position configurations or the initial test configuration procedures for fixed exposure test conditions. Based on the reported SAR of the measured configurations and maximum output power of the transmission mode configurations that are not included in the initial test configuration, the subsequent test configuration and initial test position procedures are applied to determine if SAR measurements are required for the remaining OFDM transmission configurations. In general, the number of test channels that require SAR measurement is minimized based on maximum output power measured for the test sample(s).
4. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel for each frequency band.
5. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures.18 The initial test position procedure is described in the following:
   a. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
   b. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
   c. For all positions/configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

| <2.4GHz WLAN> | | | | | | |
|---|---|---|---|---|---|---|
| | Mode | Channel | Frequency (MHz) | Average power (dBm) | Tune-Up Limit | Duty Cycle % |
| 2.4GHz WLAN | 802.11b 1Mbps | 1 | 2412 | 12.49 | 12.50 | 100.00 |
| | | 6 | 2437 | 12.42 | 12.50 | |
| | | 11 | 2462 | 12.89 | 13.00 | |
| | 802.11g 6Mbps | 1 | 2412 | 8.54 | 9.00 | 100.00 |
| | | 6 | 2437 | 10.31 | 10.50 | |
| | | 11 | 2462 | 5.57 | 6.00 | |
| | 802.11n-HT20 MCS0 | 1 | 2412 | 7.68 | 8.00 | 100.00 |
| | | 6 | 2437 | 10.41 | 10.50 | |
| | | 11 | 2462 | 4.02 | 4.50 | |

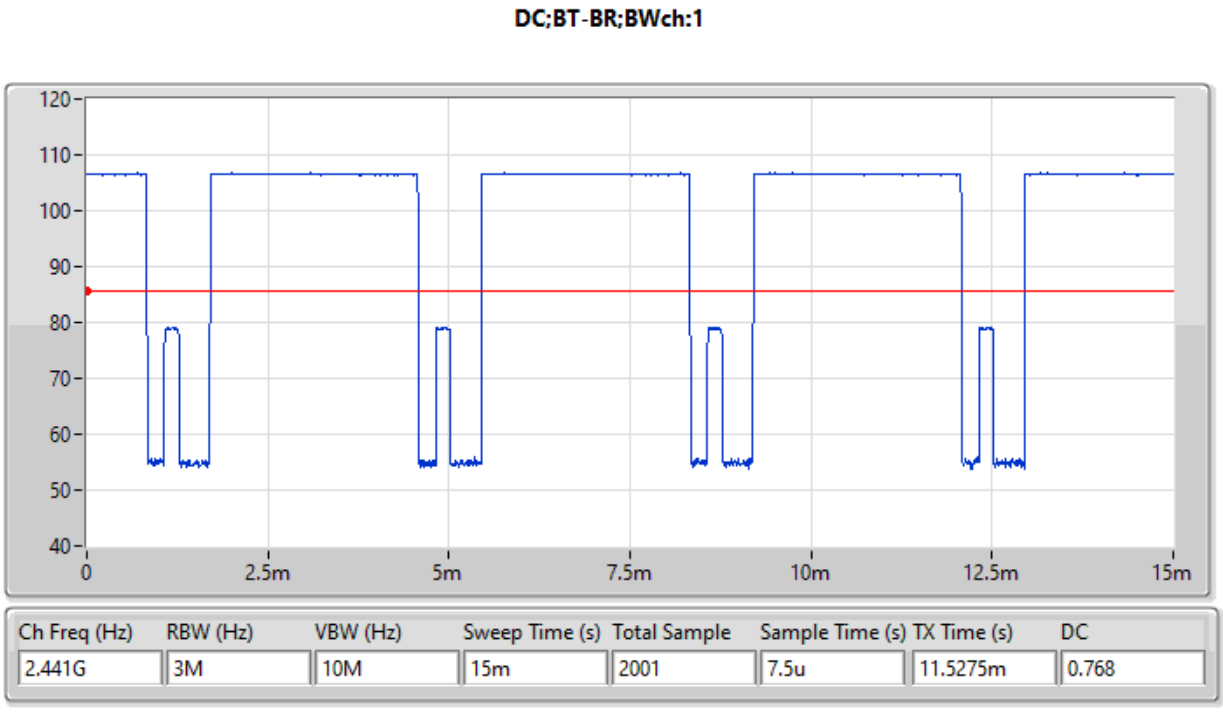
**<2.4GHz Bluetooth>**

| | Mode | Channel | Frequency (MHz) | Average power (dBm) | Tune-Up Limit | Duty Cycle % |
|---|---|---|---|---|---|---|
| Bluetooth | BR / EDR 1Mbps | 0 | 2402 | 7.72 | 8.50 | 76.80 |
| | | 39 | 2441 | 8.03 | 8.50 | |
| | | 78 | 2480 | 7.30 | 8.50 | |
| | BR / EDR 2Mbps | 0 | 2402 | 6.25 | 7.00 | 76.80 |
| | | 39 | 2441 | 6.93 | 7.00 | |
| | | 78 | 2480 | 6.56 | 7.00 | |
| | BR / EDR 3Mbps | 0 | 2402 | 7.05 | 7.50 | 77.00 |
| | | 39 | 2441 | 7.49 | 7.50 | |
| | | 78 | 2480 | 6.91 | 7.50 | |
| | LE 1Mbps | 0 | 2402 | -0.06 | 0.00 | 100.00 |
| | | 19 | 2440 | 4.40 | 4.50 | |
| | | 39 | 2480 | -1.31 | -1.00 | |
| | LE 2Mbps | 1 | 2404 | 4.39 | 4.50 | 100.00 |
| | | 19 | 2440 | 4.34 | 4.50 | |
| | | 38 | 2478 | -1.37 | -1.00 | |

**General Note:**

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps due to its highest average power and duty cycle is 76.80% considered in SAR testing, and the duty cycle would be scaled to theoretical 83.3% in reported SAR calculation.

BT Duty cycle



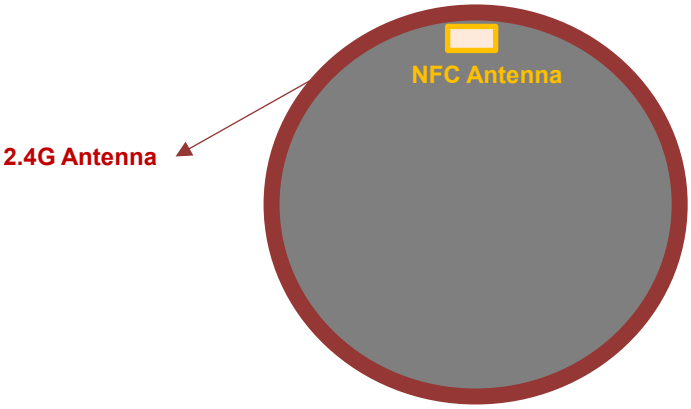
**<2.4GHz ANT +>**

| Mode | Channel | Frequency (MHz) | Average power (dBm) | Tune-Up Limit | Duty Cycle % |
|---|---|---|---|---|---|
| Ant + | 0 | 2402 | 0.36 | 0.50 | 100.00 |
| | 39 | 2441 | 4.34 | 4.50 | |
| | 78 | 2480 | -0.90 | -0.50 | |

**General Note:**

1. According to KDB 447498D01 SAR test exclusion, the ANT + max power is 4.5dBm and calculated test exclusion value is 0.83 which is <= 3, SAR testing is not required.

## 12. Antenna Location




***Front View***

# 13. SAR Test Results

**General Note:**

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
4. The wrist bands should be strapped together to represent normal use conditions. SAR for wrist exposure is evaluated with the back of the device positioned in direct contact against a flat phantom filled with body tissue-equivalent medium.

**WLAN Note:**

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
2. Per KDB 248227 D01v02r02, WLAN5.2GHz SAR testing is not required when the WLAN5.3GHz band highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for WLAN5.2GHz band.
3. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
4. For all positions / configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
5. During SAR testing the WLAN transmission was verified using a spectrum analyzer.

**NFC Note:**

1. NFC mainly operate in hand-held extremity exposure conditions, therefore Standalone 10-g extremity SAR testing for NFC will be performed with active mode.
2. NFC SAR test tissue-simulating liquid parameter: refer to IEC/IEEE 62209-1528 2020.

## 13.1 Extremity SAR

### <WLAN SAR>

| Plot No. | Band | Mode | Test Position | Gap (mm) | Ch. | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Duty Cycle % | Duty Cycle Scaling Factor | Power Drift (dB) | Measured 10g SAR (W/kg) | Reported 10g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | WLAN2.4GHz | 802.11b 1Mbps | Back | 0mm | 11 | 2462 | 12.89 | 13.00 | 1.026 | 100 | 1.000 | -0.07 | 0.304 | 0.312 |
| | WLAN2.4GHz | 802.11b 1Mbps | Back | 0mm | 1 | 2412 | 12.49 | 12.50 | 1.002 | 100 | 1.000 | 0.03 | 0.248 | 0.249 |
| | WLAN2.4GHz | 802.11b 1Mbps | Back | 0mm | 6 | 2437 | 12.42 | 12.50 | 1.019 | 100 | 1.000 | -0.08 | 0.264 | 0.269 |

### <Bluetooth SAR>

| Plot No. | Band | Mode | Test Position | Gap (mm) | Ch. | Freq. (MHz) | Average Power (dBm) | Tune-Up Limit (dBm) | Tune-up Scaling Factor | Duty Cycle % | Duty Cycle Scaling Factor | Power Drift (dB) | Measured 10g SAR (W/kg) | Reported 10g SAR (W/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | Bluetooth | 1Mbps | Back | 0mm | 39 | 2441 | 8.03 | 8.50 | 1.114 | 76.80 | 1.085 | -0.08 | 0.053 | 0.064 |

### <NFC SAR>

| Plot No. | Band | Mode | Test Position | Gap (mm) | Freq. (MHz) | Power Drift (dB) | Measured 10g SAR (W/kg) |
|---|---|---|---|---|---|---|---|
| 03 | NFC | ASK | Back | 0mm | 13.56 | 0 | 0.001 |

## 14. Simultaneous Transmission Analysis

| NO. | Simultaneous Transmission Configurations | Extremity |
|---|---|---|
| 1. | WLAN2.4GHz + NFC | Yes |
| 2. | Bluetooth + NFC | Yes |
| 3. | ANT+ + NFC | Yes |

**General Note:**

1. When the standalone ANT+ SAR is not required, an estimated 10g SAR according to KDB 447498 D01 section 4.3.2 is 0.047W/kg is using for Sim-Tx analysis.
2. The Scaled SAR summation is calculated based on the same configuration and test position.
3. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
   i) Scalar SAR summation < 1.6W/kg.
   ii) SPLSR = (SAR1 + SAR2)^1.5 / (min. separation distance, mm), and the peak separation distance is determined from the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$, where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
   iii) If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.
   iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.

### 14.1 Extremity Exposure Conditions

| Exposure Position | 1 | 2 | 3 | 4 | 1+3 Summed 10g SAR (W/kg) | 2+3 Summed 10g SAR (W/kg) | 3+4 Summed 10g SAR (W/kg) |
|---|---|---|---|---|---|---|---|
| | WLAN2.4GHz | Bluetooth | NFC | ANT + | | | |
| | 10g SAR (W/kg) | 10g SAR (W/kg) | 10g SAR (W/kg) | Estimated 10g SAR (W/kg) | | | |
| Back | 0.312 | 0.064 | 0.001 | 0.047 | **0.313** | **0.065** | **0.048** |

**Test Engineer：** Casper Hsu

## 15. Uncertainty Assessment

Per KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be ≤ 30%, for a confidence interval of k = 2. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. For this device, the highest measured highest measured 10-g SAR is less 3.75W/kg. Therefore, the measurement uncertainty table is not required in this report.
Declaration of Conformity:
The test results with all measurement uncertainty excluded is presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

## 16. References


[1] FCC 47 CFR Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”

[2] ANSI/IEEE Std. C95.1-1992, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, September 1992

[3] IEEE Std. 1528-2013, “IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, Sep 2013

[4] SPEAG DASY System Handbook

[5] FCC KDB 248227 D01 v02r02, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Oct 2015.

[6] FCC KDB 447498 D01 v06, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Oct 2015

[7] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.

[8] FCC KDB 865664 D02 v01r02, “RF Exposure Compliance Reporting and Documentation Considerations” Oct 2015.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2024/09/18

# System Check_Head_13MHz

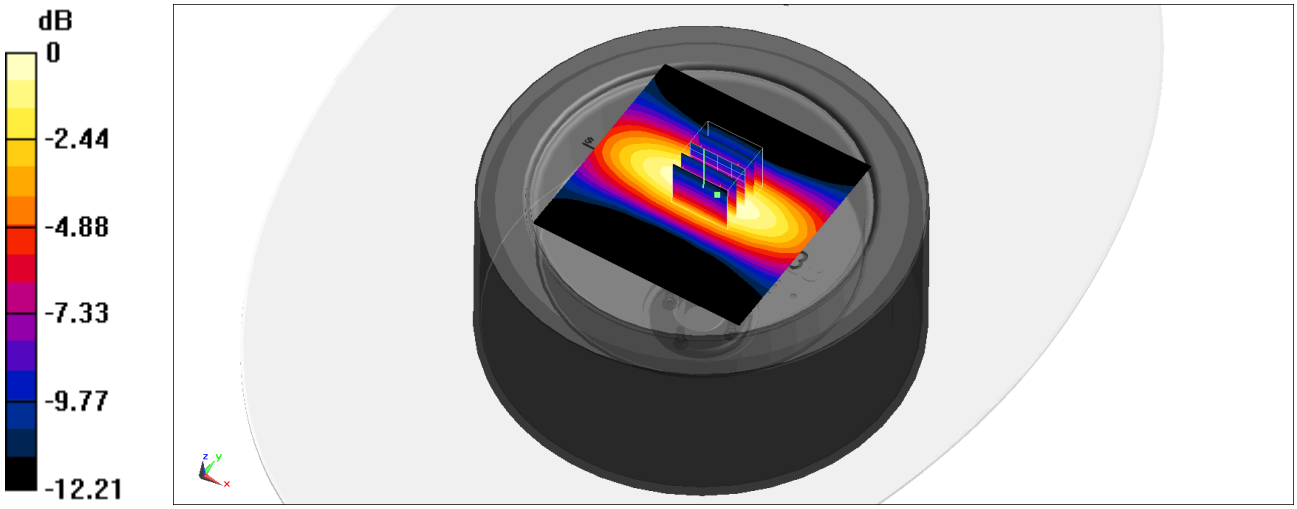
## DUT: CLA13-1011

Communication System: CW; Frequency: 13 MHz
Medium: HSL_13_240918 Medium parameters used : f = 13 MHz; $\sigma$ = 0.728 S/m; $\varepsilon_r$ = 54.573; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.6 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3931; ConvF(18.48, 18.48, 18.48) @ 13 MHz; Calibrated: 2023/10/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn699; Calibrated: 2024/2/13
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP-1029
- Measurement SW: DASY52, Version 52.10 (4);SEMCAD X Version 14.6.14 (7501)

**Pin=1000mW/Area Scan (81x81x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.749 W/kg

**Pin=1000mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.37 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.949 W/kg
**SAR(1 g) = 0.492 W/kg; SAR(10 g) = 0.308 W/kg**
Smallest distance from peaks to all points 3 dB below = 16 mm
Ratio of SAR at M2 to SAR at M1 = 52.9%
Maximum value of SAR (measured) = 0.740 W/kg




0 dB = 0.740 W/kg = -1.31 dBW/kg

Date: 2024-09-18

**System Check_Head_2450MHz**

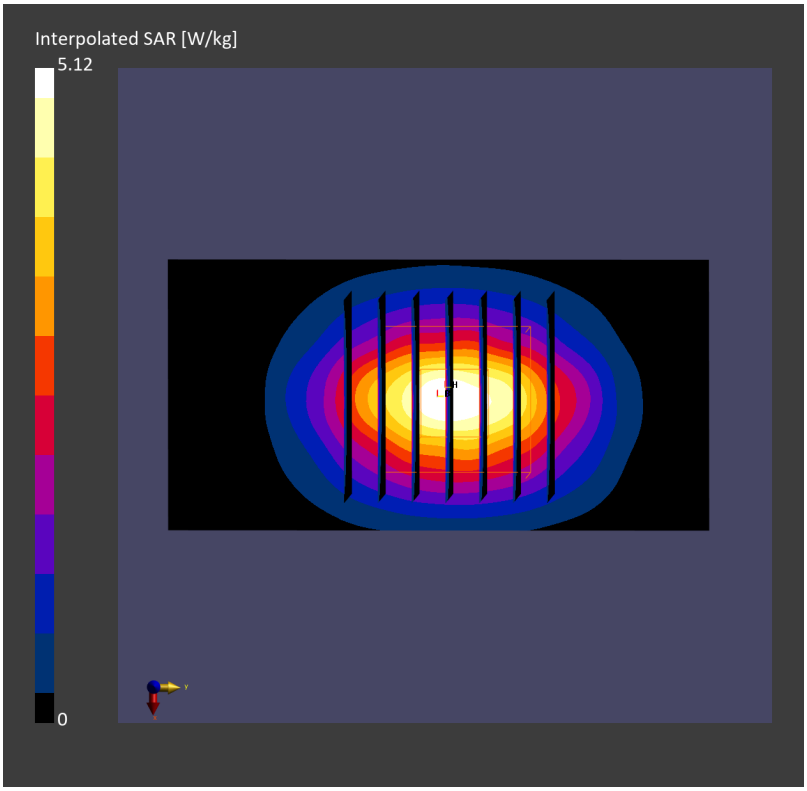
**DUT: D2450V2 - SN929**

Communication System: CW; Frequency: 2450.000 MHz
Medium: HSL_2450_240918 Medium parameters used: f= 2450.000 MHz; $\sigma$= 1.76 S/m; $\varepsilon_r$ = 38.7
Ambient Temperature: 23.4°C; Liquid Temperature: 22.4°C

DASY8 Configuration:
- Probe: EX3DV4 - SN7793; ConvF(6.63, 6.87, 6.92); Calibrated: 2024-03-01
- Sensor-Surface: 1.4 mm
- Electronics: DAE4ip Sn1800; Calibrated: 2024-06-18
- Phantom: Twin-SAM V8.0 (30deg probe tilt); Serial: 2144; Section: Flat
- Measurement Software: 16.2.4.2524
- UID: CW

**Pin=17.0dBm/Area Scan (40.0 mm x 80.0 mm)**: Measurement Grid: 10.0 mm x 10.0 mm
SAR (1g) = 2.63 W/kg; SAR (10g) = 1.21 W/kg;

**Pin=17.0dBm/Zoom Scan (30.0 mm x 30.0 mm x 30.0 mm)**: Measurement Grid: 5.0 mm x 5.0 mm x 1.5 mm
Power Drift = -0.05 dB
SAR (1g) = 2.60 W/kg; SAR (8g) = 1.38 W/kg; SAR (10g) = 1.26 W/kg
Smallest distance from peaks to all points 3 dB below = 9.0 mm
Ratio of SAR at M2 to SAR at M1 = 81.8 %



Date: 2024-09-18

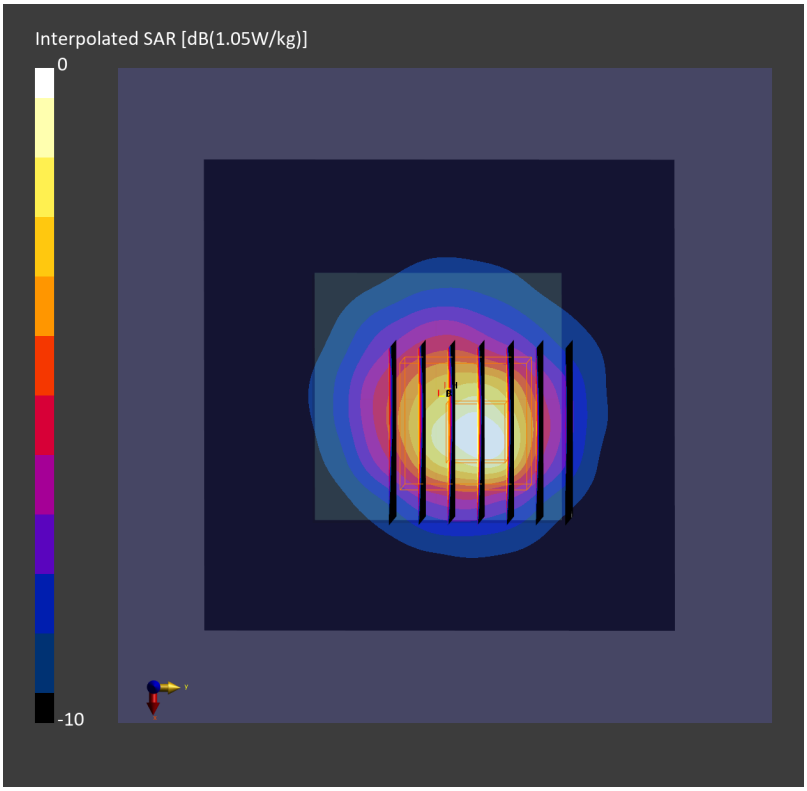
**#01_WLAN2.4GHz_802.11b 1Mbps_Back_0mm_Ch11**

Communication System: IEEE 802.11b ; Frequency: 2462.000 MHz
Medium: HSL Medium parameters used: f= 2462.000 MHz; $\sigma$= 1.78 S/m; $\varepsilon_r$ = 38.7
Ambient Temperature: 23.3°C; Liquid Temperature: 22.3°C

DASY8 Configuration:
- Probe: EX3DV4 - SN7793; ConvF(6.63, 6.87, 6.92); Calibrated: 2024-03-01
- Sensor-Surface: 1.4 mm
- Electronics: DAE4ip Sn1800; Calibrated: 2024-06-18
- Phantom: Twin-SAM V8.0 (30deg probe tilt); Serial: 2144; Section: Flat
- Measurement Software: 16.2.4.2524
- UID: WLAN, 10415-AAA

**Area Scan (80.0 mm x 80.0 mm)**: Measurement Grid: 10.0 mm x 10.0 mm
SAR (1g) = 0.587 W/kg; SAR (10g) = 0.282 W/kg;

**Zoom Scan (30.0 mm x 30.0 mm x 30.0 mm)**: Measurement Grid: 5.0 mm x 5.0 mm x 1.5 mm
Power Drift = -0.07 dB
SAR (1g) = 0.596 W/kg; SAR (8g) = 0.334 W/kg; SAR (10g) = 0.304 W/kg
Smallest distance from peaks to all points 3 dB below = 9.9 mm
Ratio of SAR at M2 to SAR at M1 = 84.3 %



Date: 2024-09-18

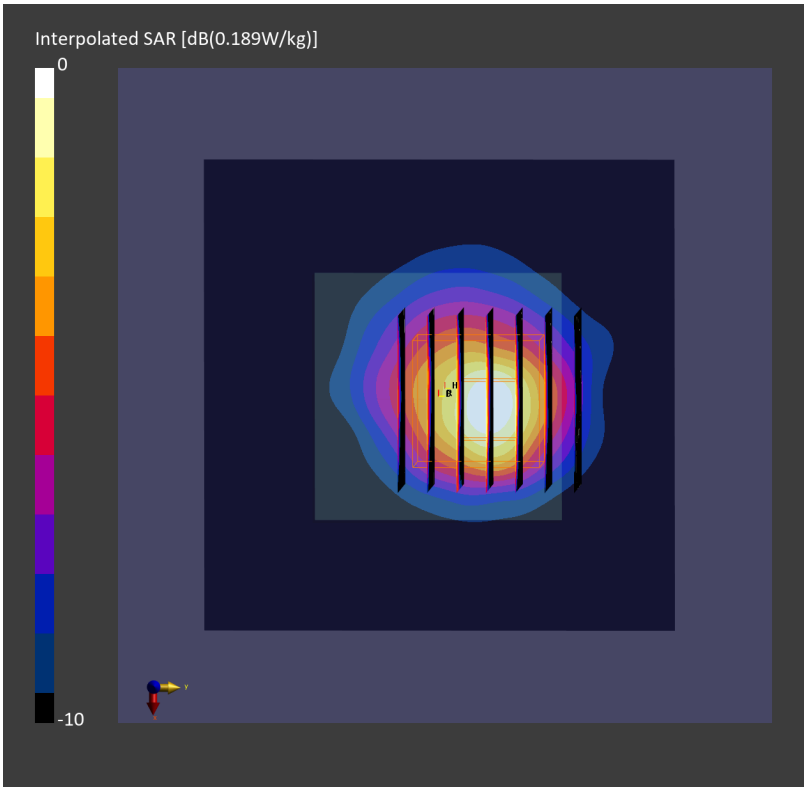
**#02_Bluetooth_1Mbps_Back_0mm_Ch39**

Communication System: IEEE 802.15.1 Bluetooth ; Frequency: 2441.000 MHz
Medium: HSL_2450_240918 Medium parameters used: f= 2441.000 MHz; $\sigma$= 1.76 S/m; $\varepsilon_r$ = 38.8
Ambient Temperature: 23.4°C; Liquid Temperature: 22.4°C

DASY8 Configuration:
- Probe: EX3DV4 - SN7793; ConvF(6.63, 6.87, 6.92); Calibrated: 2024-03-01
- Sensor-Surface: 1.4 mm
- Electronics: DAE4ip Sn1800; Calibrated: 2024-06-18
- Phantom: Twin-SAM V8.0 (30deg probe tilt); Serial: 2144; Section: Flat
- Measurement Software: 16.2.4.2524
- UID: Bluetooth, 10032-CAA

**Area Scan (80.0 mm x 80.0 mm)**: Measurement Grid: 10.0 mm x 10.0 mm
SAR (1g) = 0.100 W/kg; SAR (10g) = 0.048 W/kg;

**Zoom Scan (30.0 mm x 30.0 mm x 30.0 mm)**: Measurement Grid: 5.0 mm x 5.0 mm x 1.5 mm
Power Drift = -0.08 dB
SAR (1g) = 0.106 W/kg; SAR (8g) = 0.058 W/kg; SAR (10g) = 0.053 W/kg
Smallest distance from peaks to all points 3 dB below = 9.0 mm
Ratio of SAR at M2 to SAR at M1 = 85.0 %



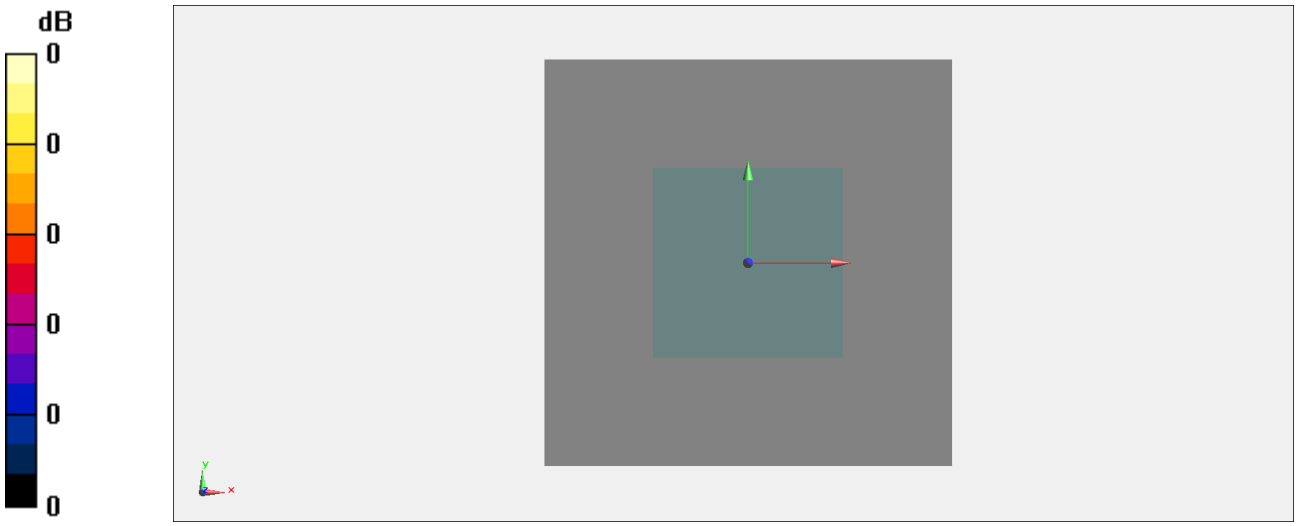
Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2024/9/18

## #03_NFC_ASK_13.56MHz_Back_0mm

Communication System: UID 0, NFC; Frequency: 13.56 MHz
Medium: HSL_13_240918 Medium parameters used: f = 13.56 MHz; $\sigma$ = 0.728 S/m; $\varepsilon_r$ = 54.562; $\rho$ = 1000 kg/m$^3$
Ambient Temperature：23.6 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3931; ConvF(18.48, 18.48, 18.48) @ 13.56 MHz; Calibrated: 2023/10/24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn699; Calibrated: 2024/2/13
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP-1029
- Measurement SW: DASY52, Version 52.10 (4);SEMCAD X Version 14.6.14 (7501)

**Area Scan (61x61x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 0 V/m; Power Drift = 0 dB
**Fast SAR: SAR(1 g) = 0.001 W/kg; SAR(10 g) = 0.001 W/kg**
Maximum value of SAR (interpolated) = 0 W/kg




0 dB = 0.0257 W/kg = -15.90 dBW/kg

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**Accreditation No.: SCS 0108**

**Client** Sporton

**Certificate No: D2450V2-929_Nov22/2**

# CALIBRATION CERTIFICATE (Replacement of No: D2450V2-929_Nov22)

| | |
|---|---|
| Object | D2450V2 - SN:929 |
| Calibration procedure(s) | QA CAL-05.v11<br>Calibration Procedure for SAR Validation Sources between 0.7-3 GHz |
| Calibration date | November 21, 2022 |

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Power meter NRP | SN: 104778 | 04-Apr-22 (No. 217-03525/03524) | Apr-23 |
| Power sensor NRP-Z91 | SN: 103244 | 04-Apr-22 (No. 217-03524) | Apr-23 |
| Power sensor NRP-Z91 | SN: 103245 | 04-Apr-22 (No. 217-03525) | Apr-23 |
| Reference 20 dB Attenuator | SN: BH9394 (20k) | 04-Apr-22 (No. 217-03527) | Apr-23 |
| Type-N mismatch combination | SN: 310982 / 06327 | 04-Apr-22 (No. 217-03528) | Apr-23 |
| Reference Probe EX3DV4 | SN: 7349 | 31-Dec-21 (No. EX3-7349_Dec21) | Dec-22 |
| DAE4 | SN: 601 | 31-Aug-22 (No. DAE4-601_Aug22) | Aug-23 |

| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
|---|---|---|---|
| Power meter E4419B | SN: GB39512475 | 30-Oct-14 (in house check Oct-22) | In house check: Oct-24 |
| Power sensor HP 8481A | SN: US37292783 | 07-Oct-15 (in house check Oct-22) | In house check: Oct-24 |
| Power sensor HP 8481A | SN: MY41093315 | 07-Oct-15 (in house check Oct-22) | In house check: Oct-24 |
| RF generator R&S SMT-06 | SN: 100972 | 15-Jun-15 (in house check Oct-22) | In house check: Oct-24 |
| Network Analyzer Agilent E8358A | SN: US41080477 | 31-Mar-14 (in house check Oct-22) | In house check: Oct-24 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | Jeton Kastrati | Laboratory Technician | |
| Approved by: | Sven Kühn | Technical Manager | |

Issued: January 18, 2023

**Calibration Laboratory of**
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**Accreditation No.: SCS 0108**

**Glossary:**

| | |
|---|---|
| TSL | tissue simulating liquid |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A | not applicable or not measured |

**Calibration is Performed According to the Following Standards:**

a) IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

c) DASY System Handbook

**Methods Applied and Interpretation of Parameters:**

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The source is mounted in a touch configuration below the center marking of the flat phantom.
- *Return Loss:* This parameter is measured with the source positioned under the liquid filled phantom (as described in the measurement condition clause). The Return Loss ensures low reflected power. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

## Measurement Conditions

DASY system configuration, as far as not given on page 1.

| | | |
|---|---|---|
| **DASY Version** | DASY52 | V52.10.4 |
| **Extrapolation** | Advanced Extrapolation | |
| **Phantom** | Modular Flat Phantom | |
| **Distance Dipole Center - TSL** | 10 mm | with Spacer |
| **Zoom Scan Resolution** | dx, dy, dz = 5 mm | |
| **Frequency** | 2450 MHz ± 1 MHz | |

## Head TSL parameters

The following parameters and calculations were applied.

| | **Temperature** | **Permittivity** | **Conductivity** |
|---|---|---|---|
| **Nominal Head TSL parameters** | 22.0 °C | 39.2 | 1.80 mho/m |
| **Measured Head TSL parameters** | (22.0 ± 0.2) °C | 38.4 ± 6 % | 1.87 mho/m ± 6 % |
| **Head TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Head TSL

| **SAR averaged over 1 cm³ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 13.4 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **52.4 W/kg ± 17.0 % (k=2)** |

| **SAR averaged over 10 cm³ (10 g) of Head TSL** | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 6.25 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **24.7 W/kg ± 16.5 % (k=2)** |

## Appendix (Additional assessments outside the scope of SCS 0108)

### Antenna Parameters with Head TSL

| | |
|---|---|
| Impedance, transformed to feed point | 52.9 Ω + 4.7 jΩ |
| Return Loss | - 25.5 dB |

### General Antenna Parameters and Design

| | |
|---|---|
| Electrical Delay (one direction) | 1.162 ns |

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

| | |
|---|---|
| Manufactured by | SPEAG |

## DASY5 Validation Report for Head TSL

Date: 21.11.2022

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:929**

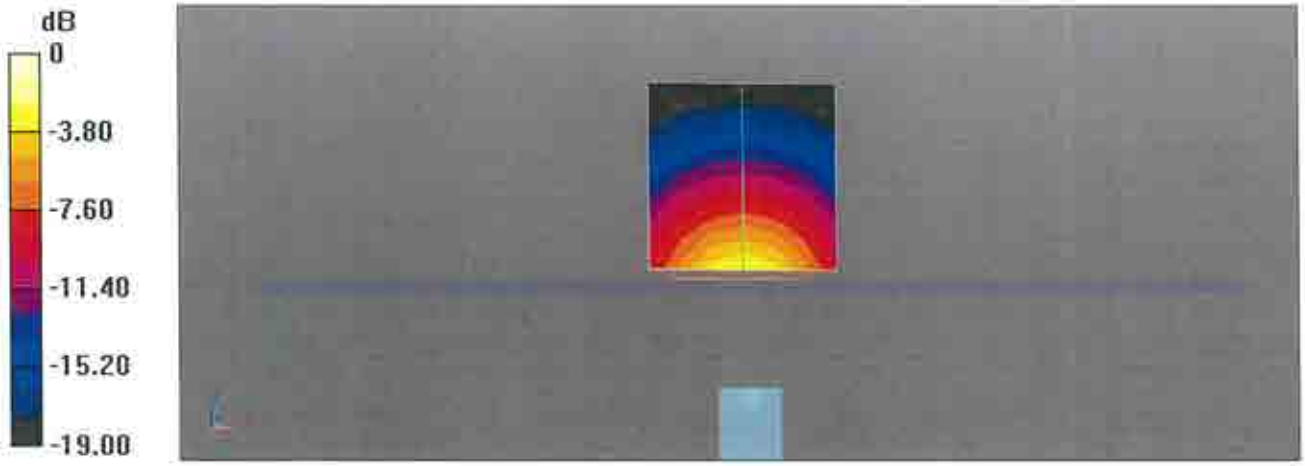
Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; $\sigma$ = 1.87 S/m; $\varepsilon_r$ = 38.4; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.96, 7.96, 7.96) @ 2450 MHz; Calibrated: 31.12.2021
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 31.08.2022
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

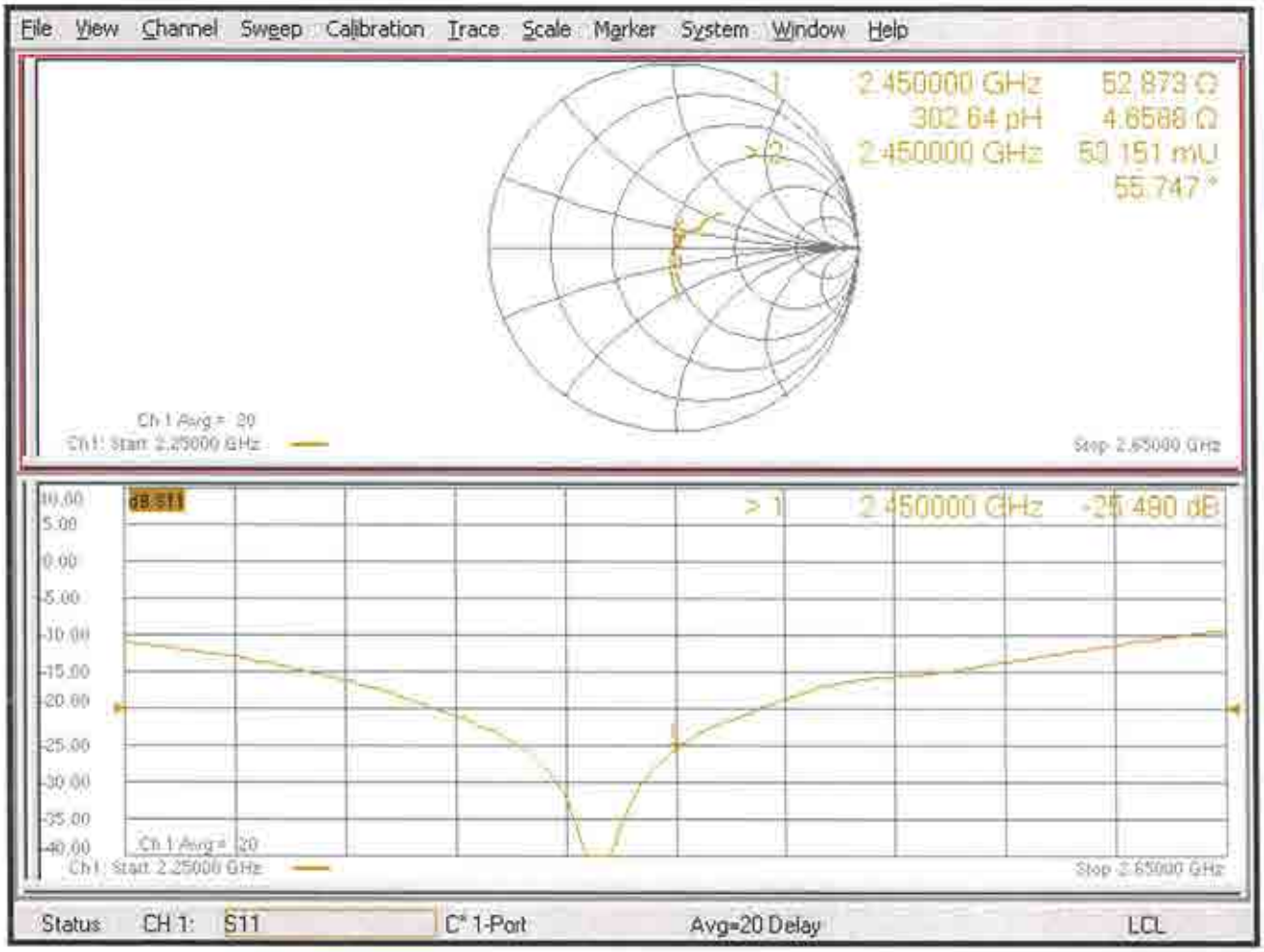
### Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 115.9 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 26.1 W/kg
**SAR(1 g) = 13.4 W/kg; SAR(10 g) = 6.25 W/kg**
Smallest distance from peaks to all points 3 dB below = 9 mm
Ratio of SAR at M2 to SAR at M1 = 51.5%
Maximum value of SAR (measured) = 21.8 W/kg




0 dB = 21.8 W/kg = 13.38 dBW/kg

## Impedance Measurement Plot for Head TSL



# Appendix: Transfer Calibration at Four Validation Locations on SAM Head[1]

## Evaluation Condition

| | | |
|---|---|---|
| **Phantom** | SAM Head Phantom | For usage with cSAR3D**V2**-R/L |

## SAR result with SAM Head (Top ≅ C0)

| **SAR averaged over 1 cm³ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR for nominal Head TSL parameters | normalized to 1W | **55.9 W/kg ± 17.5 % (k=2)** |

| **SAR averaged over 10 cm³ (10 g) of Head TSL** | condition | |
|---|---|---|
| SAR for nominal Head TSL parameters | normalized to 1W | **26.2 W/kg ± 16.9 % (k=2)** |

## SAR result with SAM Head (Mouth ≅ F90)

| **SAR averaged over 1 cm³ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR for nominal Head TSL parameters | normalized to 1W | **57.0 W/kg ± 17.5 % (k=2)** |

| **SAR averaged over 10 cm³ (10 g) of Head TSL** | condition | |
|---|---|---|
| SAR for nominal Head TSL parameters | normalized to 1W | **27.5 W/kg ± 16.9 % (k=2)** |

## SAR result with SAM Head (Neck ≅ H0)

| **SAR averaged over 1 cm³ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR for nominal Head TSL parameters | normalized to 1W | **53.7 W/kg ± 17.5 % (k=2)** |

| **SAR averaged over 10 cm³ (10 g) of Head TSL** | condition | |
|---|---|---|
| SAR for nominal Head TSL parameters | normalized to 1W | **25.1 W/kg ± 16.9 % (k=2)** |

## SAR result with SAM Head (Ear ≅ D90)

| **SAR averaged over 1 cm³ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR for nominal Head TSL parameters | normalized to 1W | **34.4 W/kg ± 17.5 % (k=2)** |

| **SAR averaged over 10 cm³ (10 g) of Head TSL** | condition | |
|---|---|---|
| SAR for nominal Head TSL parameters | normalized to 1W | **17.5 W/kg ± 16.9 % (k=2)** |

[1] Additional assessments outside the current scope of SCS 0108

## D2450V2, serial no. 929 Extended Dipole Calibrations

If dipoles are verified in return loss (<-20dB, within 20% of prior calibration), and in impedance (within 5 ohm of prior calibration), the annual calibration is not necessary and the calibration interval can be extended.

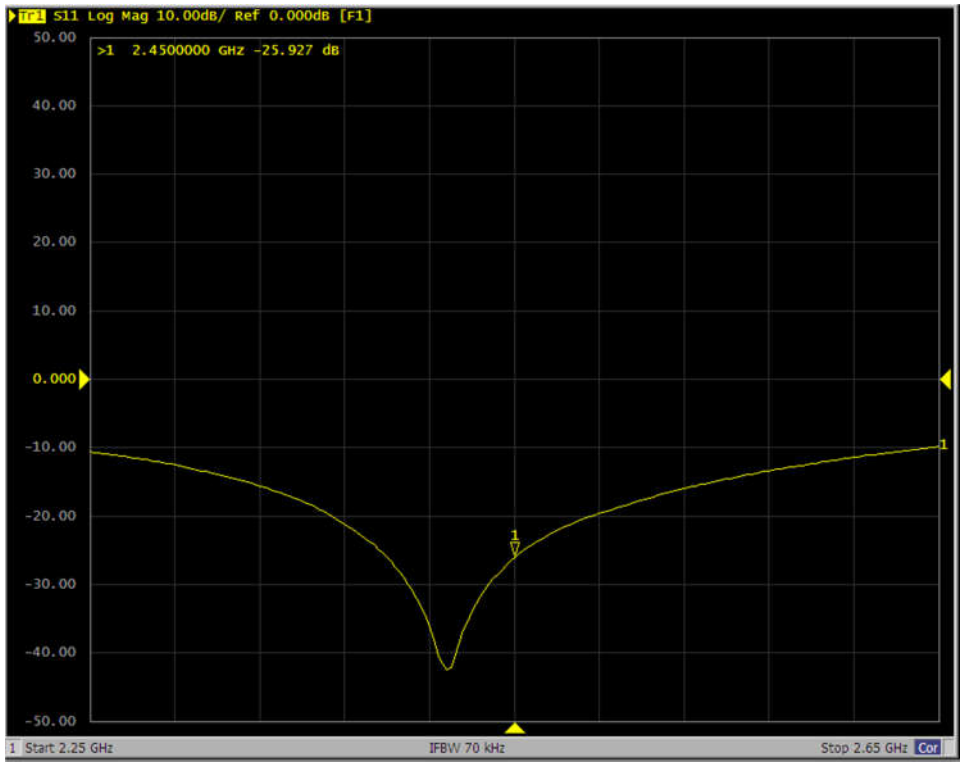
**<Justification of the extended calibration>**

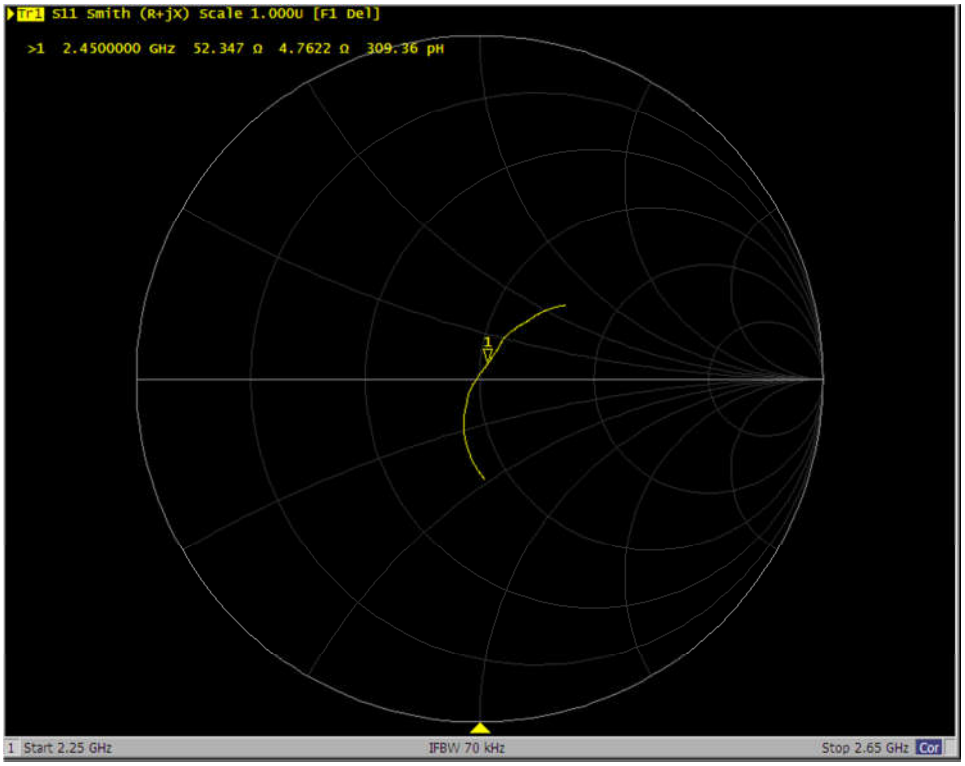
| D**2450**V2 – serial no. **929** | | | | | | |
|---|---|---|---|---|---|---|
| | **2450MHZ** | | | | | |
| Date of Measurement | Return-Loss (dB) | Delta (%) | Real Impedance (ohm) | Delta (ohm) | Imaginary Impedance (ohm) | Delta (ohm) |
| 11.21.2022 (Cal. Report) | -25.5 | | 52.9 | | 4.7 | |
| 11.20.2023 (extended) | -25.9 | 1.57 | 52.3 | -0.6 | 4.8 | 0.1 |

The return loss is < -20dB, within 20% of prior calibration; the impedance is within 5 ohm of prior calibration. Therefore the verification result should support extended calibration.

**<Dipole Verification Data> - D2450 V2, serial no. 929 (Data of Measurement : 11.20.2023)**

**2450MHz - Head**



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**Accreditation No.: SCS 0108**

**Client** **Sporton**
**Taoyuan City**

**Certificate No.** **CLA13-1011_Jul23**

# CALIBRATION CERTIFICATE

Object: CLA13 - SN: 1011

Calibration procedure(s): QA CAL-15.v10
Calibration Procedure for SAR Validation Sources below 700 MHz

Calibration date: July 10, 2023

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Power meter NRP2 | SN: 104778 | 30-Mar-23 (No. 217-03804/03805) | Mar-24 |
| Power sensor NRP-Z91 | SN: 103244 | 30-Mar-23 (No. 217-03804) | Mar-24 |
| Power sensor NRP-Z91 | SN: 103245 | 30-Mar-23 (No. 217-03805) | Mar-24 |
| Reference 20 dB Attenuator | SN: CC2552 (20x) | 30-Mar-23 (No. 217-03809) | Mar-24 |
| Type-N mismatch combination | SN: 310982 / 06327 | 30-Mar-23 (No. 217-03810) | Mar-24 |
| Reference Probe EX3DV4 | SN: 3877 | 06-Jan-23 (No. EX3-3877_Jan23) | Jan-24 |
| DAE4 | SN: 654 | 27-Jan-23 (No. DAE4-654_Jan23) | Jan-24 |

| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
|---|---|---|---|
| Power meter NRP2 | SN: 107193 | 08-Nov-21 (in house check Dec-22) | In house check: Dec-24 |
| Power sensor NRP-Z91 | SN: 100922 | 15-Dec-09 (in house check Dec-22) | In house check: Dec-24 |
| Power sensor NRP-Z91 | SN: 100418 | 01-Jan-04 (in house check Dec-22) | In house check: Dec-24 |
| RF generator HP 8648C | SN: US3642U01700 | 04-Aug-99 (in house check Jun-22) | In house check: Jun-24 |
| Network Analyzer Agilent E8358A | SN: US41080477 | 31-Mar-14 (in house check Oct-22) | In house check: Oct-24 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | Jeffrey Katzman | Laboratory Technician | |
| Approved by: | Sven Kühn | Technical Manager | |

Issued: July 19, 2023

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Accreditation No.: **SCS 0108**

**Glossary:**

| | |
|---|---|
| TSL | tissue simulating liquid |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A | not applicable or not measured |

**Calibration is Performed According to the Following Standards:**

a) IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Additional Documentation:**

c) DASY System Handbook

**Methods Applied and Interpretation of Parameters:**

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The source is mounted in a touch configuration below the center marking of the flat phantom.
- *Return Loss:* This parameter is measured with the source positioned under the liquid filled phantom (as described in the measurement condition clause). The Return Loss ensures low reflected power. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

## Measurement Conditions

DASY system configuration, as far as not given on page 1.

| | | |
|---|---|---|
| **DASY Version** | DASY5 | V52.10.4 |
| **Extrapolation** | Advanced Extrapolation | |
| **Phantom** | ELI4 Flat Phantom | Shell thickness: 2 ± 0.2 mm |
| **EUT Positioning** | Touch Position | |
| **Zoom Scan Resolution** | dx, dy = 4.0 mm, dz = 1.4 mm | Graded Ratio = 1.4 (Z direction) |
| **Frequency** | 13 MHz ± 1 MHz | |

## Head TSL parameters

The following parameters and calculations were applied.

| | **Temperature** | **Permittivity** | **Conductivity** |
|---|---|---|---|
| **Nominal Head TSL parameters** | 22.0 °C | 55.0 | 0.75 mho/m |
| **Measured Head TSL parameters** | (22.0 ± 0.2) °C | 53.1 ± 6 % | 0.72 mho/m ± 6 % |
| **Head TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Head TSL

| **SAR averaged over 1 cm³ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR measured | 1 W input power | 0.531 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **0.544 W/kg ± 18.4 % (k=2)** |

| **SAR averaged over 10 cm³ (10 g) of Head TSL** | condition | |
|---|---|---|
| SAR measured | 1 W input power | 0.332 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **0.340 W/kg ± 18.0 % (k=2)** |

## Appendix (Additional assessments outside the scope of SCS 0108)

### Antenna Parameters with Head TSL

| | |
|---|---|
| Impedance, transformed to feed point | 50.4 Ω - 0.3 jΩ |
| Return Loss | - 45.9 dB |

### Additional EUT Data

| | |
|---|---|
| Manufactured by | SPEAG |

## DASY5 Validation Report for Head TSL

Date: 10.07.2023

Test Laboratory: SPEAG, Zurich, Switzerland

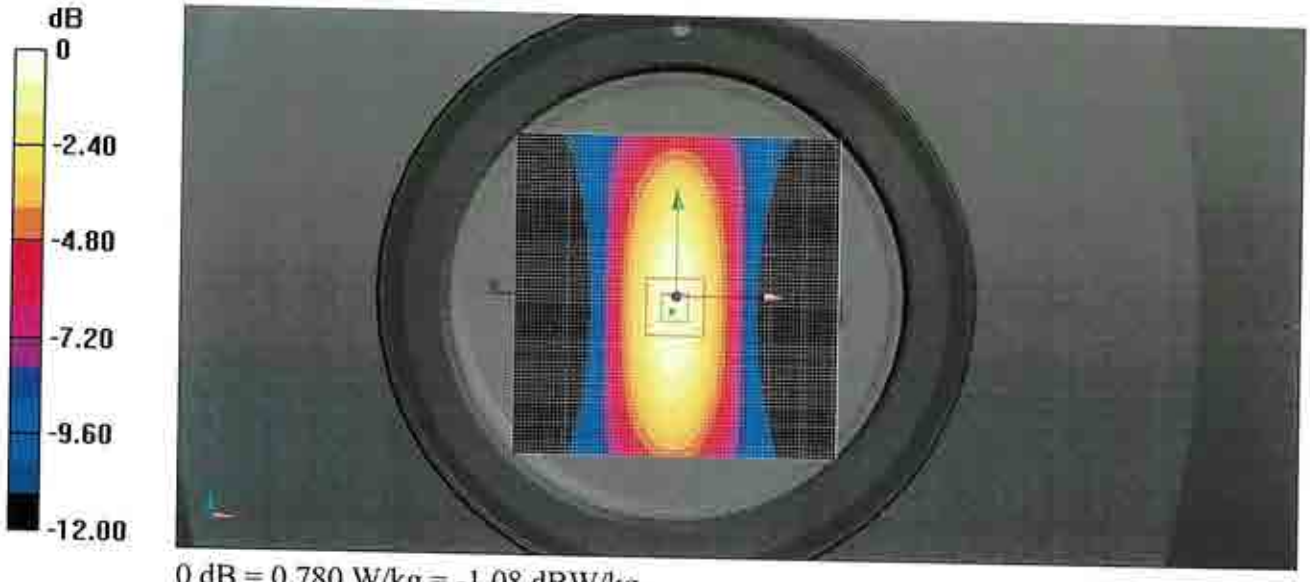
**DUT: CLA13; Type: CLA13; Serial: CLA13 - SN: 1011**

Communication System: UID 0 - CW; Frequency: 13 MHz
Medium parameters used: f = 13 MHz; $\sigma$ = 0.72 S/m; $\varepsilon_r$ = 53.1; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

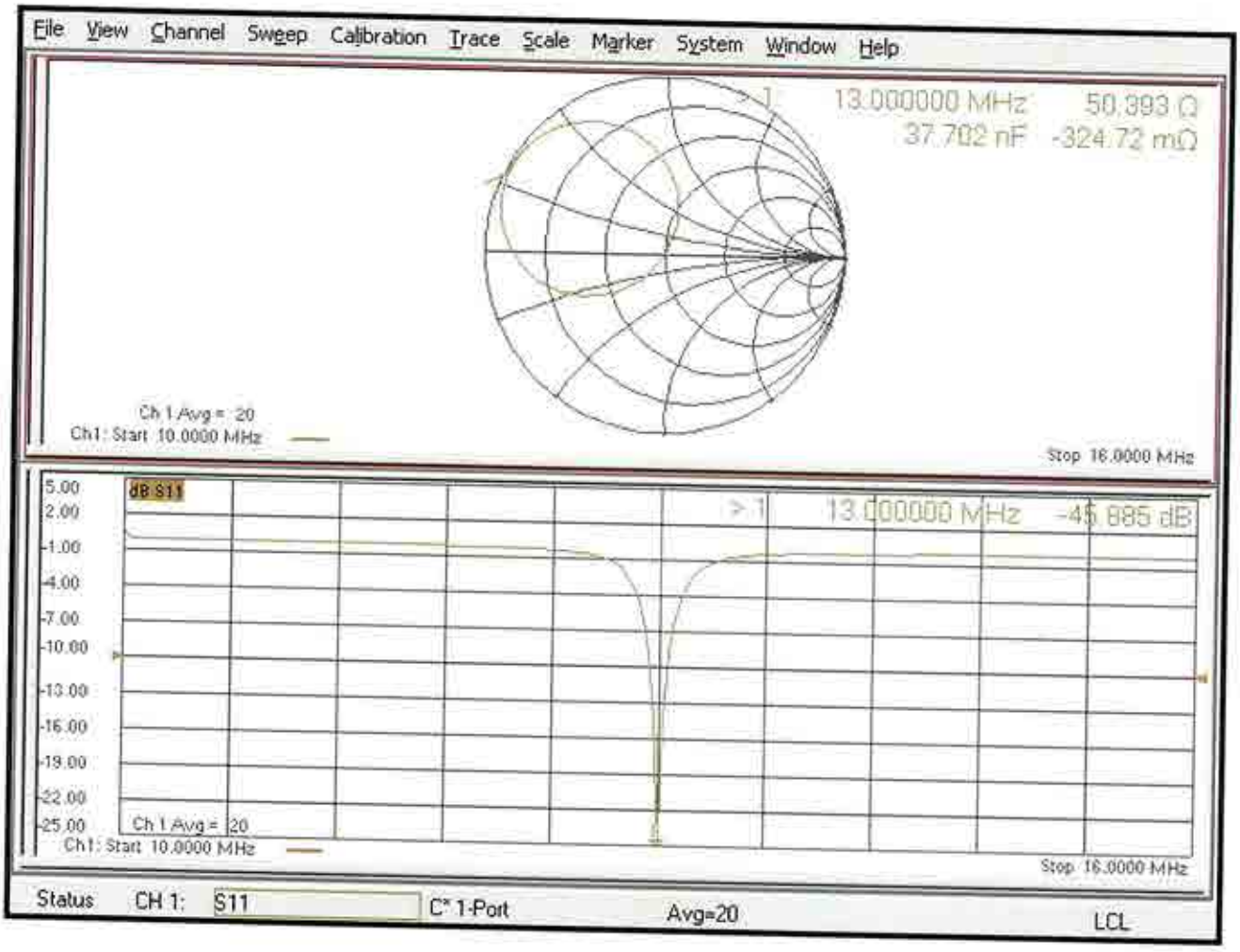
- Probe: EX3DV4 - SN3877; ConvF(15.33, 15.33, 15.33) @ 13 MHz; Calibrated: 06.01.2023
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn654; Calibrated: 27.01.2023
- Phantom: ELI v6.0; Type: QDOVA003AA; Serial: TP:2034
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

**CLA Calibration for HSL-LF Tissue/CLA-13, touch configuration, Pin=1W/Zoom Scan, dist=1.4mm (8x10x8)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 30.74 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.05 W/kg
**SAR(1 g) = 0.531 W/kg; SAR(10 g) = 0.332 W/kg**
Smallest distance from peaks to all points 3 dB below = 20.9 mm
Ratio of SAR at M2 to SAR at M1 = 79.4%
Maximum value of SAR (measured) = 0.780 W/kg




0 dB = 0.780 W/kg = -1.08 dBW/kg

## Impedance Measurement Plot for Head TSL



## CLA13, serial no. 1011 Extended Dipole Calibrations

If dipoles are verified in return loss (<-20dB, within 20% of prior calibration), and in impedance (within 5 ohm of prior calibration), the annual calibration is not necessary and the calibration interval can be extended.

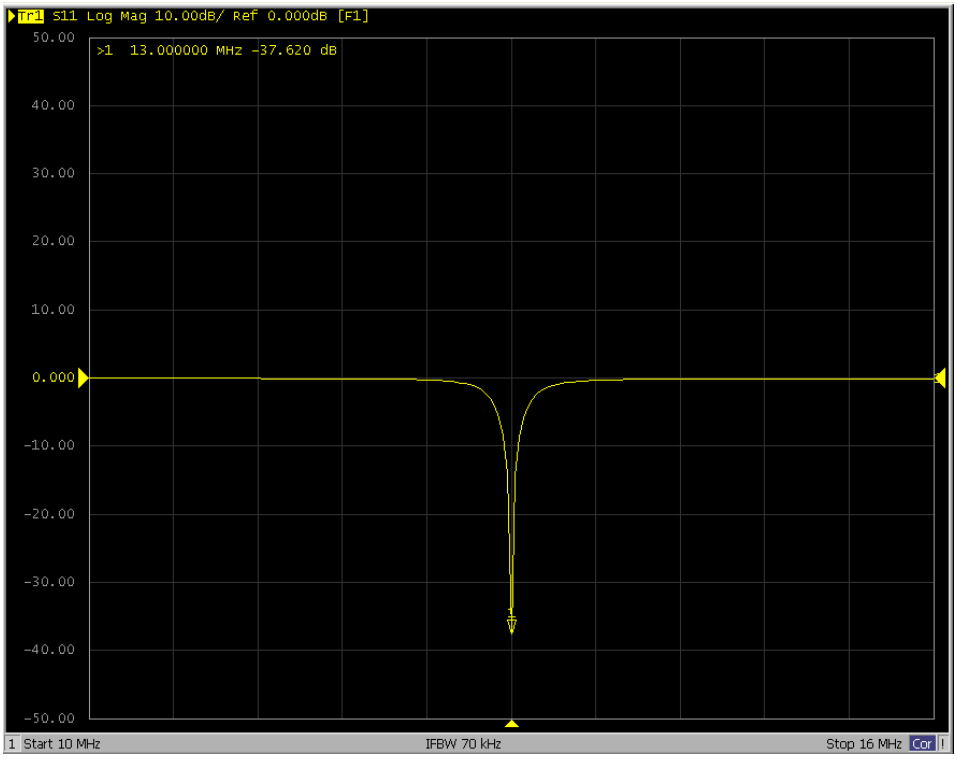
**<Justification of the extended calibration>**

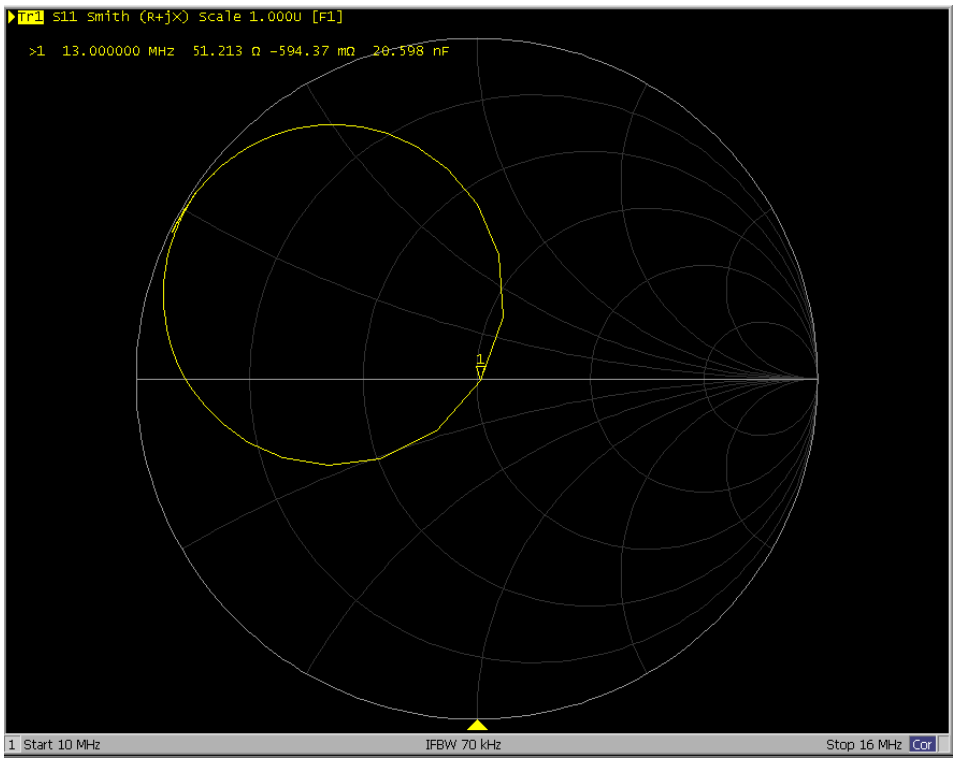
| **CLA13** – serial no. **1011** | | | | | | |
|---|---|---|---|---|---|---|
| | **13MHZ** | | | | | |
| Date of Measurement | Return-Loss (dB) | Delta (%) | Real Impedance (ohm) | Delta (ohm) | Imaginary Impedance (ohm) | Delta (ohm) |
| 07.10.2023 (Cal. Report) | -45.885 | | 50.393 | | -0.32472 | |
| 07.09.2024 (extended) | -37.62 | 18.012 | 51.213 | 0.82 | -0.59437 | -0.2697 |

The return loss is < -20dB, within 20% of prior calibration; the impedance is within 5 ohm of prior calibration. Therefore the verification result should support extended calibration.

**<Dipole Verification Data> - CLA13, serial no. 1011 (Data of Measurement : 07.09.2024)**

**CLA13 MHz - Head**




**SPORTON INTERNATIONAL INC.**
TEL : 886-3-327-3456
FAX : 886-3-328-4978

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**Accreditation No.: SCS 0108**

**Client** **Sporton**
Taoyuan City

**Certificate No: DAE4-699_Feb24**

# CALIBRATION CERTIFICATE

| | |
|---|---|
| Object | DAE4 - SD 000 D04 BO - SN: 699 |
| Calibration procedure(s) | QA CAL-06.v30<br>Calibration procedure for the data acquisition electronics (DAE) |
| Calibration date: | February 13, 2024 |

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Keithley Multimeter Type 2001 | SN: 0810278 | 29-Aug-23 (No:37421) | Aug-24 |
| **Secondary Standards** | **ID #** | **Check Date (in house)** | **Scheduled Check** |
| Auto DAE Calibration Unit | SE UWS 053 AA 1001 | 23-Jan-24 (in house check) | In house check: Jan-25 |
| Calibrator Box V2.1 | SE UMS 006 AA 1002 | 23-Jan-24 (in house check) | In house check: Jan-25 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | Dominique Steffen | Laboratory Technician | |
| Approved by: | Sven Kühn | Technical Manager | |

Issued: February 14, 2024

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Accreditation No.: **SCS 0108**

## Glossary

| | |
|---|---|
| DAE | data acquisition electronics |
| Connector angle | information used in DASY system to align probe sensor X to the robot coordinate system. |

## Methods Applied and Interpretation of Parameters

- *DC Voltage Measurement:* Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- *Connector angle*: The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
  - *DC Voltage Measurement Linearity:* Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
  - *Common mode sensitivity:* Influence of a positive or negative common mode voltage on the differential measurement.
  - *Channel separation:* Influence of a voltage on the neighbor channels not subject to an input voltage.
  - *AD Converter Values with inputs shorted:* Values on the internal AD converter corresponding to zero input voltage
  - *Input Offset Measurement*: Output voltage and statistical results over a large number of zero voltage measurements.
  - *Input Offset Current:* Typical value for information; Maximum channel input offset current, not considering the input resistance.
  - *Input resistance:* Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
  - *Low Battery Alarm Voltage:* Typical value for information. Below this voltage, a battery alarm signal is generated.
  - *Power consumption:* Typical value for information. Supply currents in various operating modes.

## DC Voltage Measurement

A/D - Converter Resolution nominal

| | | | | |
|---|---|---|---|---|
| High Range: | 1LSB = | 6.1μV , | full range = | -100...+300 mV |
| Low Range: | 1LSB = | 61nV , | full range = | -1.....+3mV |

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| Calibration Factors | X | Y | Z |
|---|---|---|---|
| High Range | 404.768 ± 0.02% (k=2) | 403.401 ± 0.02% (k=2) | 404.569 ± 0.02% (k=2) |
| Low Range | 3.93391 ± 1.50% (k=2) | 3.95047 ± 1.50% (k=2) | 3.97832 ± 1.50% (k=2) |

## Connector Angle

| | |
|---|---|
| **Connector Angle** to be used in DASY system | 169.0 ° ± 1 ° |

## Appendix (Additional assessments outside the scope of SCS0108)

### 1. DC Voltage Linearity

| High Range | | Reading (μV) | Difference (μV) | Error (%) |
|---|---|---|---|---|
| Channel X | + Input | 199993.89 | 0.77 | 0.00 |
| Channel X | + Input | 20003.70 | 2.56 | 0.01 |
| Channel X | - Input | -20002.43 | 0.67 | -0.00 |
| Channel Y | + Input | 199996.54 | 3.62 | 0.00 |
| Channel Y | + Input | 19997.73 | -3.28 | -0.02 |
| Channel Y | - Input | -20002.77 | 0.33 | -0.00 |
| Channel Z | + Input | 200000.11 | 7.11 | 0.00 |
| Channel Z | + Input | 19998.68 | -2.33 | -0.01 |
| Channel Z | - Input | -20002.12 | 1.05 | -0.01 |

| Low Range | | Reading (μV) | Difference (μV) | Error (%) |
|---|---|---|---|---|
| Channel X | + Input | 2000.43 | 0.35 | 0.02 |
| Channel X | + Input | 200.72 | 0.51 | 0.25 |
| Channel X | - Input | -199.08 | 0.47 | -0.23 |
| Channel Y | + Input | 2000.69 | 0.77 | 0.04 |
| Channel Y | + Input | 199.80 | -0.27 | -0.14 |
| Channel Y | - Input | -199.98 | -0.33 | 0.17 |
| Channel Z | + Input | 2000.07 | 0.26 | 0.01 |
| Channel Z | + Input | 199.56 | -0.51 | -0.26 |
| Channel Z | - Input | -200.48 | -0.87 | 0.44 |

### 2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| | Common mode Input Voltage (mV) | High Range Average Reading (μV) | Low Range Average Reading (μV) |
|---|---|---|---|
| Channel X | 200 | -2.12 | -3.53 |
| | - 200 | 5.06 | 3.79 |
| Channel Y | 200 | 22.87 | 23.13 |
| | - 200 | -23.86 | -24.27 |
| Channel Z | 200 | 8.26 | 7.85 |
| | - 200 | -9.42 | -9.50 |

### 3. Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| | Input Voltage (mV) | Channel X (μV) | Channel Y (μV) | Channel Z (μV) |
|---|---|---|---|---|
| Channel X | 200 | - | -1.51 | -2.98 |
| Channel Y | 200 | 7.63 | - | -1.12 |
| Channel Z | 200 | 4.95 | 6.16 | - |

## 4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| | High Range (LSB) | Low Range (LSB) |
|---|---|---|
| Channel X | 16101 | 15140 |
| Channel Y | 16429 | 16207 |
| Channel Z | 16290 | 15568 |

## 5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Input 10MΩ

| | Average (μV) | min. Offset (μV) | max. Offset (μV) | Std. Deviation (μV) |
|---|---|---|---|---|
| Channel X | 0.68 | -0.35 | 1.81 | 0.38 |
| Channel Y | -0.39 | -1.70 | 0.93 | 0.50 |
| Channel Z | 0.22 | -0.73 | 0.98 | 0.33 |

## 6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

## 7. Input Resistance (Typical values for information)

| | Zeroing (kOhm) | Measuring (MOhm) |
|---|---|---|
| Channel X | 200 | 200 |
| Channel Y | 200 | 200 |
| Channel Z | 200 | 200 |

## 8. Low Battery Alarm Voltage (Typical values for information)

| Typical values | Alarm Level (VDC) |
|---|---|
| Supply (+ Vcc) | +7.9 |
| Supply (- Vcc) | -7.6 |

## 9. Power Consumption (Typical values for information)

| Typical values | Switched off (mA) | Stand by (mA) | Transmitting (mA) |
|---|---|---|---|
| Supply (+ Vcc) | +0.01 | +6 | +14 |
| Supply (- Vcc) | –0.01 | -8 | -9 |

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**Accreditation No.: SCS 0108**

**Client** **Sporton**
Taoyuan City

**Certificate No: DAE4ip-1800_Jun24**

# CALIBRATION CERTIFICATE

| | |
|---|---|
| Object | DAE4ip - SD 000 D14 AG - SN: 1800 |
| Calibration procedure(s) | QA CAL-06.v30<br>Calibration procedure for the data acquisition electronics (DAE) |
| Calibration date: | June 18, 2024 |

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
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| Keithley Multimeter Type 2001 | SN: 0810278 | 29-Aug-23 (No:37421) | Aug-24 |
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| Auto DAE Calibration Unit | SE UWS 053 AA 1001 | 23-Jan-24 (in house check) | In house check: Jan-25 |
| Calibrator Box V2.1 | SE UMS 006 AA 1002 | 23-Jan-24 (in house check) | In house check: Jan-25 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | Adrian Gehring | Laboratory Technician | |
| Approved by: | Sven Kühn | Technical Manager | |

Issued: June 18, 2024

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
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Swiss Calibration Service

Accreditation No.: **SCS 0108**

## Glossary

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| DAE | data acquisition electronics |
| Connector angle | information used in DASY system to align probe sensor X to the robot coordinate system. |

## Methods Applied and Interpretation of Parameters

- *DC Voltage Measurement:* Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
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- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
  - *DC Voltage Measurement Linearity:* Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
  - *Common mode sensitivity:* Influence of a positive or negative common mode voltage on the differential measurement.
  - *Channel separation:* Influence of a voltage on the neighbor channels not subject to an input voltage.
  - *AD Converter Values with inputs shorted:* Values on the internal AD converter corresponding to zero input voltage
  - *Input Offset Measurement*: Output voltage and statistical results over a large number of zero voltage measurements.
  - *Input Offset Current*: Typical value for information; Maximum channel input offset current, not considering the input resistance.
  - *Input resistance:* Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
  - *Low Battery Alarm Voltage:* Typical value for information. Below this voltage, a battery alarm signal is generated.
  - *Power consumption:* Typical value for information. Supply currents in various operating modes.

## DC Voltage Measurement

A/D - Converter Resolution nominal

| | | | | |
|---|---|---|---|---|
| High Range: | 1LSB = | 6.1μV , | full range = | -100...+300 mV |
| Low Range: | 1LSB = | 61nV , | full range = | -1.....+3mV |

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| Calibration Factors | X | Y | Z |
|---|---|---|---|
| High Range | 405.038 ± 0.02% (k=2) | 404.846 ± 0.02% (k=2) | 404.942 ± 0.02% (k=2) |
| Low Range | 4.00038 ± 1.50% (k=2) | 3.98978 ± 1.50% (k=2) | 4.01084 ± 1.50% (k=2) |

## Connector Angle

| | |
|---|---|
| **Connector Angle** to be used in DASY system | 121.5 ° ± 1 ° |

## Appendix (Additional assessments outside the scope of SCS0108)

### 1. DC Voltage Linearity

| High Range | | Reading (μV) | Difference (μV) | Error (%) |
|---|---|---|---|---|
| Channel X | + Input | 199994.36 | -0.85 | -0.00 |
| Channel X | + Input | 20000.61 | -1.56 | -0.01 |
| Channel X | - Input | -20001.81 | 0.59 | -0.00 |
| Channel Y | + Input | 199994.45 | -0.73 | -0.00 |
| Channel Y | + Input | 19999.44 | -2.57 | -0.01 |
| Channel Y | - Input | -20003.95 | -1.27 | 0.01 |
| Channel Z | + Input | 199995.19 | 0.09 | 0.00 |
| Channel Z | + Input | 20000.47 | -1.51 | -0.01 |
| Channel Z | - Input | -20004.58 | -1.99 | 0.01 |

| Low Range | | Reading (μV) | Difference (μV) | Error (%) |
|---|---|---|---|---|
| Channel X | + Input | 2001.22 | 0.35 | 0.02 |
| Channel X | + Input | 201.24 | 0.18 | 0.09 |
| Channel X | - Input | -198.22 | 0.35 | -0.18 |
| Channel Y | + Input | 2000.76 | 0.01 | 0.00 |
| Channel Y | + Input | 200.39 | -0.49 | -0.25 |
| Channel Y | - Input | -199.54 | -0.72 | 0.36 |
| Channel Z | + Input | 2000.78 | 0.10 | 0.00 |
| Channel Z | + Input | 200.23 | -0.71 | -0.35 |
| Channel Z | - Input | -199.90 | -1.06 | 0.53 |

### 2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| | Common mode Input Voltage (mV) | High Range Average Reading (μV) | Low Range Average Reading (μV) |
|---|---|---|---|
| Channel X | 200 | -16.95 | -18.65 |
| | - 200 | 20.25 | 18.71 |
| Channel Y | 200 | -11.10 | -11.39 |
| | - 200 | 10.30 | 9.83 |
| Channel Z | 200 | 1.36 | 1.13 |
| | - 200 | -3.33 | -3.52 |

### 3. Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| | Input Voltage (mV) | Channel X (μV) | Channel Y (μV) | Channel Z (μV) |
|---|---|---|---|---|
| Channel X | 200 | - | 1.37 | -3.16 |
| Channel Y | 200 | 5.34 | - | 2.59 |
| Channel Z | 200 | 8.46 | 2.65 | - |

## 4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| | High Range (LSB) | Low Range (LSB) |
|---|---|---|
| Channel X | 16168 | 16010 |
| Channel Y | 15845 | 15633 |
| Channel Z | 15934 | 13099 |

## 5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Input 10MΩ

| | Average (μV) | min. Offset (μV) | max. Offset (μV) | Std. Deviation (μV) |
|---|---|---|---|---|
| Channel X | -0.57 | -1.62 | 0.53 | 0.31 |
| Channel Y | -0.51 | -1.39 | 0.34 | 0.33 |
| Channel Z | -0.88 | -1.62 | 0.12 | 0.32 |

## 6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

## 7. Input Resistance (Typical values for information)

| | Zeroing (kOhm) | Measuring (MOhm) |
|---|---|---|
| Channel X | 200 | 200 |
| Channel Y | 200 | 200 |
| Channel Z | 200 | 200 |

## 8. Low Battery Alarm Voltage (Typical values for information)

| Typical values | Alarm Level (VDC) |
|---|---|
| Supply (+ Vcc) | +7.9 |
| Supply (- Vcc) | -7.6 |

## 9. Power Consumption (Typical values for information)

| Typical values | Switched off (mA) | Stand by (mA) | Transmitting (mA) |
|---|---|---|---|
| Supply (+ Vcc) | +0.01 | +6 | +14 |
| Supply (- Vcc) | -0.01 | -8 | -9 |

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**Accreditation No.: SCS 0108**

**Client** **Sporton**
Taoyuan City

**Certificate No.** **EX-3931_Oct23**

# CALIBRATION CERTIFICATE

| | |
|---|---|
| Object | EX3DV4 - SN:3931 |
| Calibration procedure(s) | QA CAL-01.v10, QA CAL-12.v10, QA CAL-14.v7, QA CAL-23.v6, QA CAL-25.v8<br>Calibration procedure for dosimetric E-field probes |
| Calibration date | October 24, 2023 |

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID | Cal Date (Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Power meter NRP2 | SN: 104778 | 30-Mar-23 (No. 217-03804/03805) | Mar-24 |
| Power sensor NRP-Z91 | SN: 103244 | 30-Mar-23 (No. 217-03804) | Mar-24 |
| OCP DAK-3.5 (weighted) | SN: 1249 | 05-Oct-23 (OCP-DAK3.5-1249_Oct23) | Oct-24 |
| OCP DAK-12 | SN: 1016 | 05-Oct-23 (OCP-DAK12-1016_Oct23) | Oct-24 |
| Reference 20 dB Attenuator | SN: CC2552 (20x) | 30-Mar-23 (No. 217-03809) | Mar-24 |
| DAE4 | SN: 660 | 16-Mar-23 (No. DAE4-660_Mar23) | Mar-24 |
| Reference Probe ES3DV2 | SN: 3013 | 06-Jan-23 (No. ES3-3013_Jan23) | Jan-24 |

| Secondary Standards | ID | Check Date (in house) | Scheduled Check |
|---|---|---|---|
| Power meter E4419B | SN: GB41293874 | 06-Apr-16 (in house check Jun-22) | In house check: Jun-24 |
| Power sensor E4412A | SN: MY41498087 | 06-Apr-16 (in house check Jun-22) | In house check: Jun-24 |
| Power sensor E4412A | SN: 000110210 | 06-Apr-16 (in house check Jun-22) | In house check: Jun-24 |
| RF generator HP 8648C | SN: US3642U01700 | 04-Aug-99 (in house check Jun-22) | In house check: Jun-24 |
| Network Analyzer E8358A | SN: US41080477 | 31-Mar-14 (in house check Oct-22) | In house check: Oct-24 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by | Claudio Leubler | Laboratory Technician | |
| Approved by | Sven Kühn | Technical Manager | |

Issued: October 24, 2023

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

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## Glossary

| | |
|---|---|
| TSL | tissue simulating liquid |
| NORMx,y,z | sensitivity in free space |
| ConvF | sensitivity in TSL / NORMx,y,z |
| DCP | diode compression point |
| CF | crest factor (1/duty_cycle) of the RF signal |
| A, B, C, D | modulation dependent linearization parameters |
| Polarization $\varphi$ | $\varphi$ rotation around probe axis |
| Polarization $\vartheta$ | $\vartheta$ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis |
| Connector Angle | information used in DASY system to align probe sensor X to the robot coordinate system |

## Calibration is Performed According to the Following Standards:

a) IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices – Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

## Methods Applied and Interpretation of Parameters:

- *NORMx,y,z*: Assessed for E-field polarization $\vartheta = 0$ ($f \le 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the $E^2$-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- *DCPx,y,z*: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal. DCP does not depend on frequency nor media.
- *PAR*: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z: A, B, C, D* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters*: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \le 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ±50 MHz to ±100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle*: The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

# Parameters of Probe: EX3DV4 - SN:3931

## Basic Calibration Parameters

| | Sensor X | Sensor Y | Sensor Z | Unc ($k = 2$) |
|---|---|---|---|---|
| Norm ($\mu V/(V/m)^2$) [A] | 0.50 | 0.55 | 0.48 | ±10.1% |
| DCP (mV) [B] | 100.9 | 101.6 | 102.6 | ±4.7% |

## Calibration Results for Modulation Response

| UID | Communication System Name | | A dB | B $dB\sqrt{\mu V}$ | C | D dB | VR mV | Max dev. | Max Unc[E] $k = 2$ |
|---|---|---|---|---|---|---|---|---|---|
| 0 | CW | X | 0.00 | 0.00 | 1.00 | 0.00 | 186.3 | ±3.8% | ±4.7% |
| | | Y | 0.00 | 0.00 | 1.00 | | 173.5 | | |
| | | Z | 0.00 | 0.00 | 1.00 | | 186.8 | | |
| 10352 | Pulse Waveform (200Hz, 10%) | X | 20.00 | 87.87 | 18.87 | 10.00 | 60.0 | ±3.9% | ±9.6% |
| | | Y | 20.00 | 92.60 | 22.35 | | 60.0 | | |
| | | Z | 20.00 | 90.21 | 20.61 | | 60.0 | | |
| 10353 | Pulse Waveform (200Hz, 20%) | X | 20.00 | 91.44 | 19.80 | 6.99 | 80.0 | ±2.5% | ±9.6% |
| | | Y | 20.00 | 92.96 | 21.37 | | 80.0 | | |
| | | Z | 20.00 | 91.04 | 20.15 | | 80.0 | | |
| 10354 | Pulse Waveform (200Hz, 40%) | X | 20.00 | 116.14 | 30.63 | 3.98 | 95.0 | ±3.1% | ±9.6% |
| | | Y | 20.00 | 96.45 | 21.58 | | 95.0 | | |
| | | Z | 20.00 | 95.69 | 21.22 | | 95.0 | | |
| 10355 | Pulse Waveform (200Hz, 60%) | X | 1.73 | 160.00 | 68.26 | 2.22 | 120.0 | ±2.5% | ±9.6% |
| | | Y | 20.00 | 105.29 | 24.20 | | 120.0 | | |
| | | Z | 20.00 | 105.74 | 24.63 | | 120.0 | | |
| 10387 | QPSK Waveform, 1 MHz | X | 20.00 | 116.38 | 33.97 | 1.00 | 150.0 | ±3.5% | ±9.6% |
| | | Y | 2.24 | 72.46 | 18.68 | | 150.0 | | |
| | | Z | 2.04 | 70.72 | 17.62 | | 150.0 | | |
| 10388 | QPSK Waveform, 10 MHz | X | 7.08 | 92.88 | 27.42 | 0.00 | 150.0 | ±2.9% | ±9.6% |
| | | Y | 3.22 | 75.31 | 19.53 | | 150.0 | | |
| | | Z | 2.74 | 72.44 | 18.21 | | 150.0 | | |
| 10396 | 64-QAM Waveform, 100 kHz | X | 3.26 | 82.61 | 30.64 | 3.01 | 150.0 | ±3.3% | ±9.6% |
| | | Y | 5.61 | 84.03 | 25.49 | | 150.0 | | |
| | | Z | 4.45 | 80.01 | 23.72 | | 150.0 | | |
| 10399 | 64-QAM Waveform, 40 MHz | X | 4.32 | 72.53 | 19.45 | 0.00 | 150.0 | ±3.0% | ±9.6% |
| | | Y | 3.84 | 69.32 | 17.26 | | 150.0 | | |
| | | Z | 3.68 | 68.47 | 16.74 | | 150.0 | | |
| 10414 | WLAN CCDF, 64-QAM, 40 MHz | X | 5.02 | 67.60 | 17.33 | 0.00 | 150.0 | ±3.8% | ±9.6% |
| | | Y | 5.04 | 66.51 | 16.31 | | 150.0 | | |
| | | Z | 4.89 | 66.07 | 15.98 | | 150.0 | | |

Note: For details on UID parameters see Appendix

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of Norm X,Y,Z do not affect the $E^2$-field uncertainty inside TSL (see Pages 5 and 6).
[B] Linearization parameter uncertainty for maximum specified field strength.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

# Parameters of Probe: EX3DV4 - SN:3931

## Sensor Model Parameters

| | C1 fF | C2 fF | $\alpha$ $V^{-1}$ | T1 $ms\,V^{-2}$ | T2 $ms\,V^{-1}$ | T3 ms | T4 $V^{-2}$ | T5 $V^{-1}$ | T6 |
|---|---|---|---|---|---|---|---|---|---|
| x | 33.3 | 254.15 | 37.83 | 20.00 | 0.00 | 5.10 | 0.00 | 0.00 | 1.05 |
| y | 49.7 | 377.05 | 36.93 | 21.08 | 0.80 | 5.10 | 1.50 | 0.32 | 1.02 |
| z | 44.7 | 333.46 | 35.82 | 25.49 | 0.23 | 5.10 | 2.00 | 0.13 | 1.01 |

## Other Probe Parameters

| | |
|---|---|
| Sensor Arrangement | Triangular |
| Connector Angle | 136.6° |
| Mechanical Surface Detection Mode | enabled |
| Optical Surface Detection Mode | disabled |
| Probe Overall Length | 337 mm |
| Probe Body Diameter | 10 mm |
| Tip Length | 9 mm |
| Tip Diameter | 2.5 mm |
| Probe Tip to Sensor X Calibration Point | 1 mm |
| Probe Tip to Sensor Y Calibration Point | 1 mm |
| Probe Tip to Sensor Z Calibration Point | 1 mm |
| Recommended Measurement Distance from Surface | 1.4 mm |

**Note:** Measurement distance from surface can be increased to 3–4 mm for an *Area Scan* job.

# Parameters of Probe: EX3DV4 - SN:3931

## Calibration Parameter Determined in Head Tissue Simulating Media

| f (MHz)[C] | Relative Permittivity[F] | Conductivity[F] (S/m) | ConvF X | ConvF Y | ConvF Z | Alpha[G] | Depth[G] (mm) | Unc ($k = 2$) |
|---|---|---|---|---|---|---|---|---|
| 6 | 55.0 | 0.75 | 21.05 | 21.05 | 21.05 | 0.00 | 1.00 | ±13.3% |
| 13 | 55.0 | 0.75 | 18.48 | 18.48 | 18.48 | 0.00 | 1.00 | ±13.3% |
| 750 | 41.9 | 0.89 | 10.48 | 10.48 | 10.48 | 0.50 | 0.82 | ±12.0% |
| 835 | 41.5 | 0.90 | 9.90 | 9.90 | 9.90 | 0.40 | 0.91 | ±12.0% |
| 900 | 41.5 | 0.97 | 9.64 | 9.64 | 9.64 | 0.31 | 1.03 | ±12.0% |
| 1450 | 40.5 | 1.20 | 9.21 | 9.21 | 9.21 | 0.30 | 0.80 | ±12.0% |
| 1750 | 40.1 | 1.37 | 8.95 | 8.95 | 8.95 | 0.22 | 0.86 | ±12.0% |
| 1900 | 40.0 | 1.40 | 8.43 | 8.43 | 8.43 | 0.16 | 0.86 | ±12.0% |
| 2000 | 40.0 | 1.40 | 8.33 | 8.33 | 8.33 | 0.12 | 0.86 | ±12.0% |
| 2300 | 39.5 | 1.67 | 8.10 | 8.10 | 8.10 | 0.10 | 0.90 | ±12.0% |
| 2450 | 39.2 | 1.80 | 7.83 | 7.83 | 7.83 | 0.10 | 0.90 | ±12.0% |
| 2600 | 39.0 | 1.96 | 7.56 | 7.56 | 7.56 | 0.10 | 0.90 | ±12.0% |
| 3300 | 38.2 | 2.71 | 7.30 | 7.30 | 7.30 | 0.30 | 1.35 | ±14.0% |
| 3500 | 37.9 | 2.91 | 7.26 | 7.26 | 7.26 | 0.30 | 1.35 | ±14.0% |
| 3700 | 37.7 | 3.12 | 7.12 | 7.12 | 7.12 | 0.30 | 1.35 | ±14.0% |
| 3900 | 37.5 | 3.32 | 6.62 | 6.62 | 6.62 | 0.35 | 1.60 | ±14.0% |
| 4100 | 37.2 | 3.53 | 6.42 | 6.42 | 6.42 | 0.40 | 1.60 | ±14.0% |
| 4400 | 36.9 | 3.84 | 6.10 | 6.10 | 6.10 | 0.40 | 1.60 | ±14.0% |
| 4600 | 36.7 | 4.04 | 6.06 | 6.06 | 6.06 | 0.40 | 1.70 | ±14.0% |
| 4800 | 36.4 | 4.25 | 5.95 | 5.95 | 5.95 | 0.40 | 1.70 | ±14.0% |
| 4950 | 36.3 | 4.40 | 5.71 | 5.71 | 5.71 | 0.40 | 1.80 | ±14.0% |
| 5250 | 35.9 | 4.71 | 5.17 | 5.17 | 5.17 | 0.40 | 1.80 | ±14.0% |
| 5600 | 35.5 | 5.07 | 4.48 | 4.48 | 4.48 | 0.40 | 1.80 | ±14.0% |
| 5750 | 35.4 | 5.22 | 4.80 | 4.80 | 4.80 | 0.40 | 1.80 | ±14.0% |

[C] Frequency validity above 300 MHz of ±100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ±50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ±10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Validity of ConvF assessed at 6 MHz is 4–9 MHz, and ConvF assessed at 13 MHz is 9–19 MHz. Above 5 GHz frequency validity can be extended to ±110 MHz.

[F] The probes are calibrated using tissue simulating liquids (TSL) that deviate for $\varepsilon$ and $\sigma$ by less than ±5% from the target values (typically better than ±3%) and are valid for TSL with deviations of up to ±10%. If TSL with deviations from the target of less than ±5% are used, the calibration uncertainties are 11.1% for 0.7 - 3 GHz and 13.1% for 3 - 6 GHz.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ±1% for frequencies below 3 GHz and below ±2% for frequencies between 3–6 GHz at any distance larger than half the probe tip diameter from the boundary.

# Parameters of Probe: EX3DV4 - SN:3931

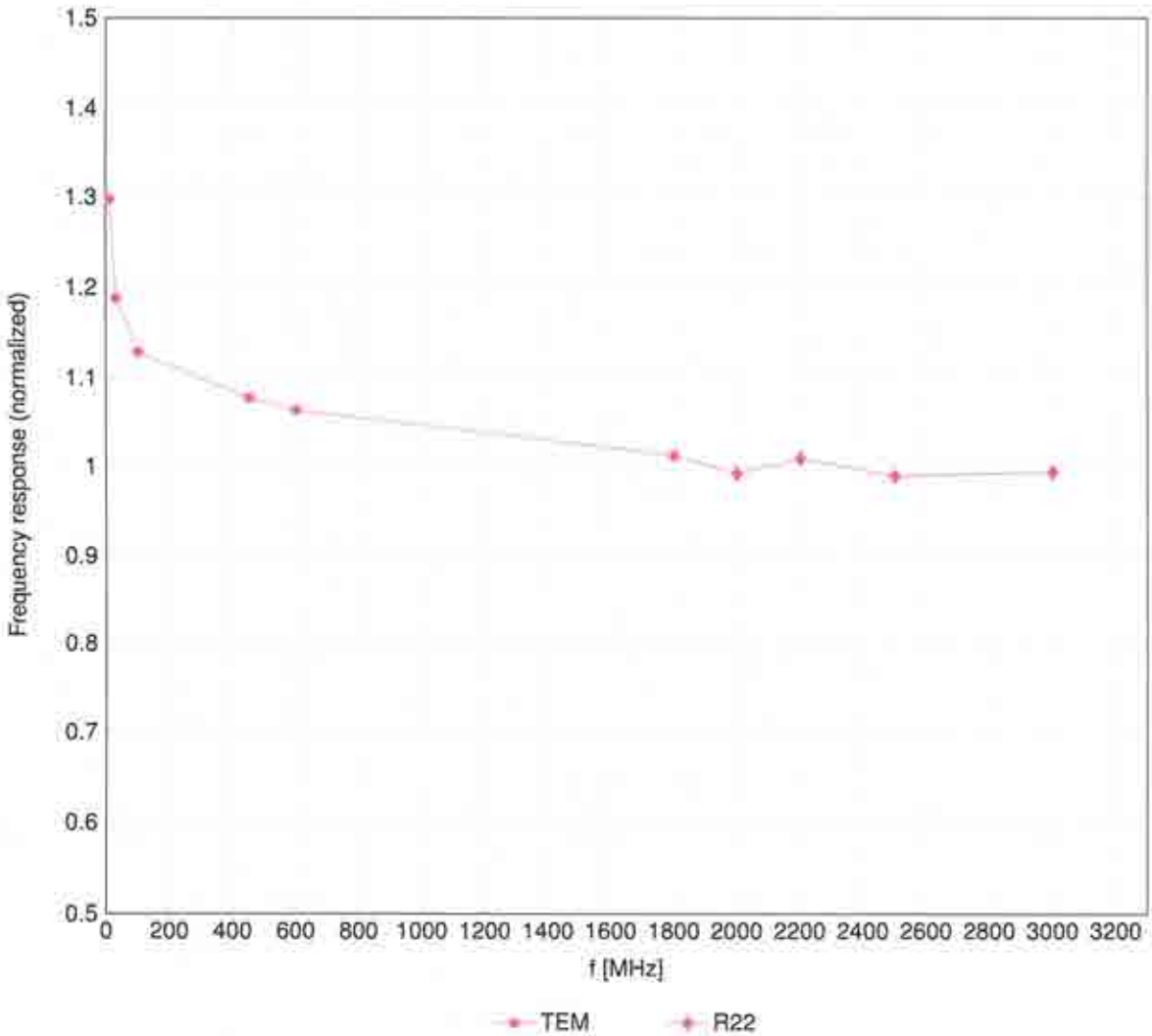
## Calibration Parameter Determined in Head Tissue Simulating Media

| f (MHz)[C] | Relative Permittivity[F] | Conductivity[F] (S/m) | ConvF X | ConvF Y | ConvF Z | Alpha[G] | Depth[G] (mm) | Unc ($k = 2$) |
|---|---|---|---|---|---|---|---|---|
| 6500 | 34.5 | 6.07 | 5.50 | 5.50 | 5.50 | 0.20 | 2.50 | ±18.6% |

[C] Frequency validity at 6.5 GHz is −600/+700 MHz, and ±700 MHz at or above 7 GHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] The probes are calibrated using tissue simulating liquids (TSL) that deviate for $\varepsilon$ and $\sigma$ by less than ±10% from the target values (typically better than ±6%) and are valid for TSL with deviations of up to ±10%.
[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ±1% for frequencies below 3 GHz; below ±2% for frequencies between 3–6 GHz; and below ±4% for frequencies between 6–10 GHz at any distance larger than half the probe tip diameter from the boundary.

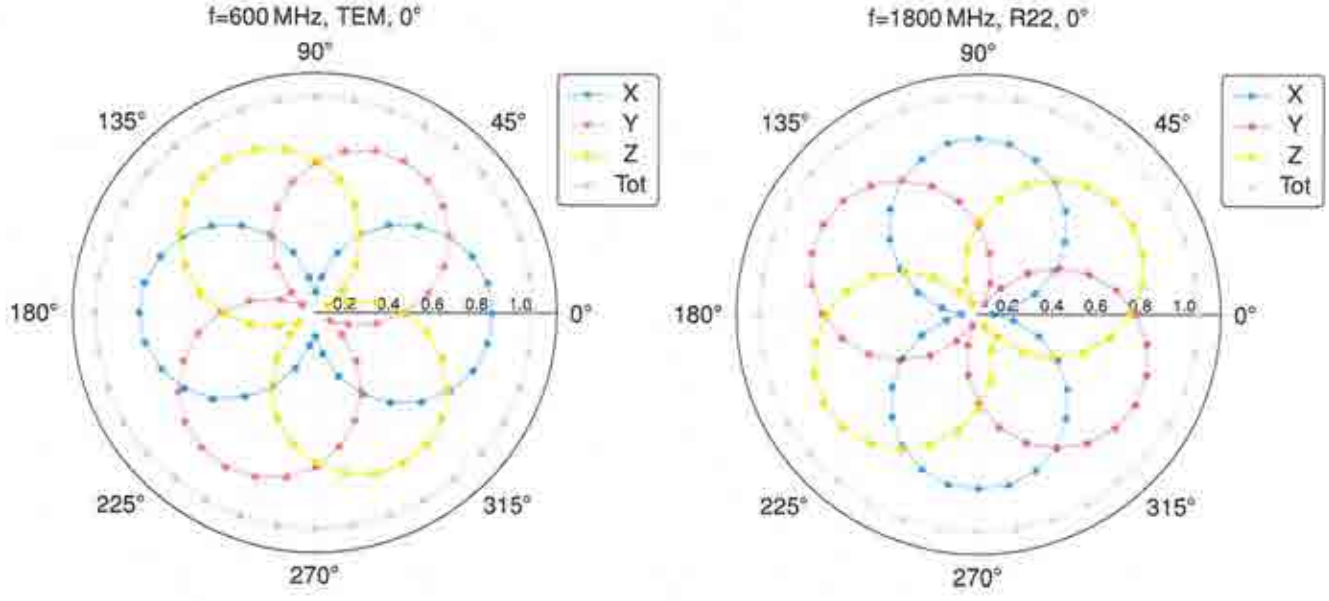
## Frequency Response of E-Field

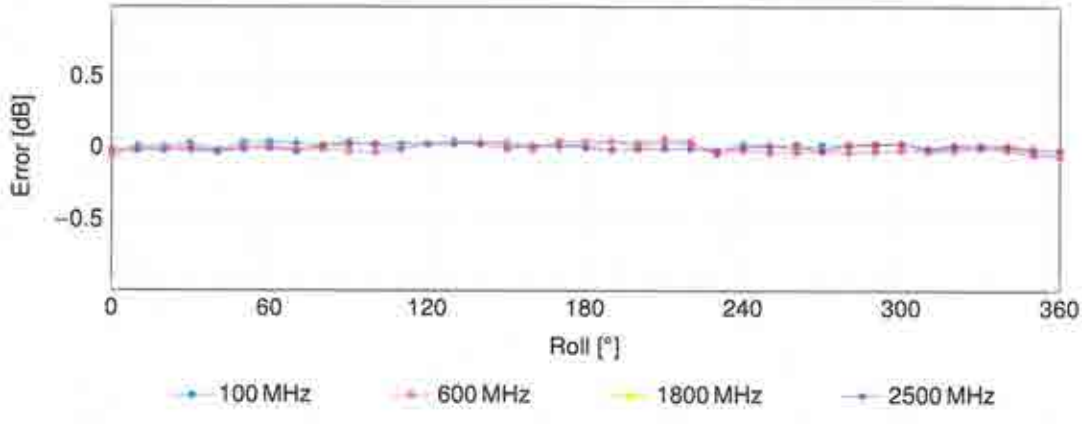
(TEM-Cell:ifi110 EXX, Waveguide:R22)




Uncertainty of Frequency Response of E-field: ±6.3% (k=2)

## Receiving Pattern ($\phi$), $\vartheta = 0°$

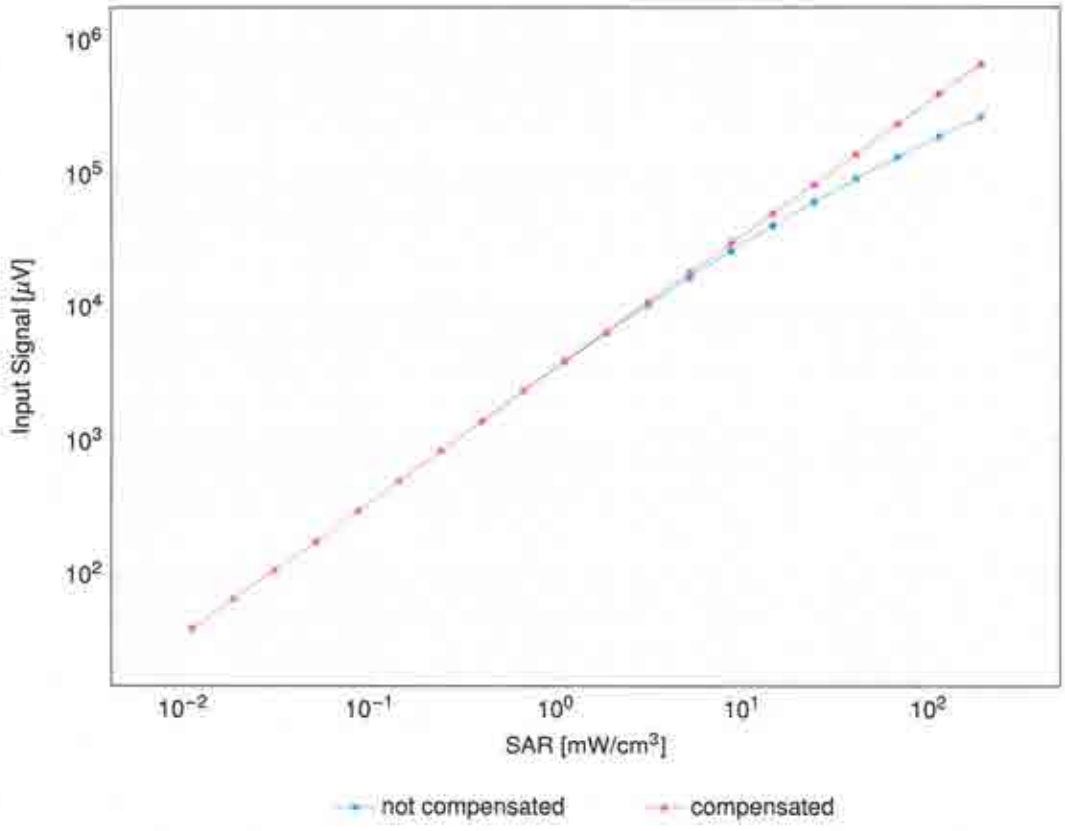


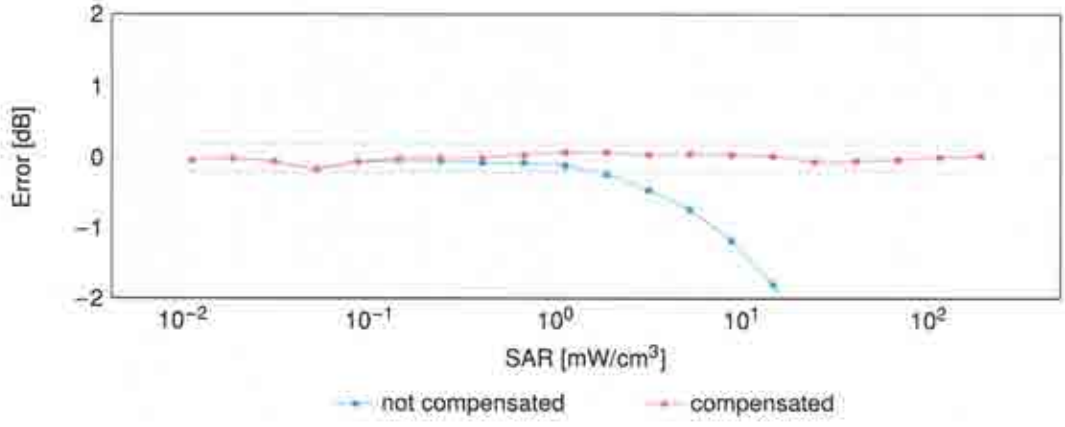




Uncertainty of Axial Isotropy Assessment: ±0.5% (k=2)

## Dynamic Range f($SAR_{head}$)

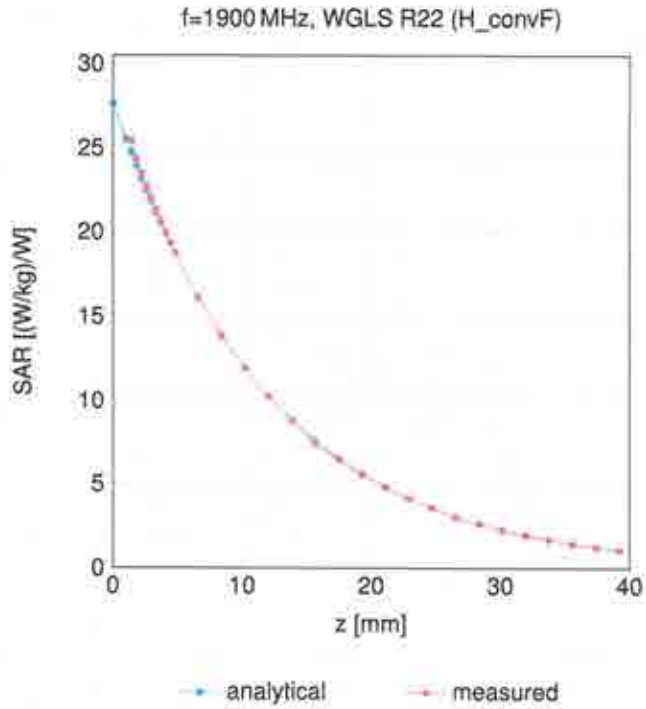
(TEM cell, $f_{eval}$ = 1900 MHz)



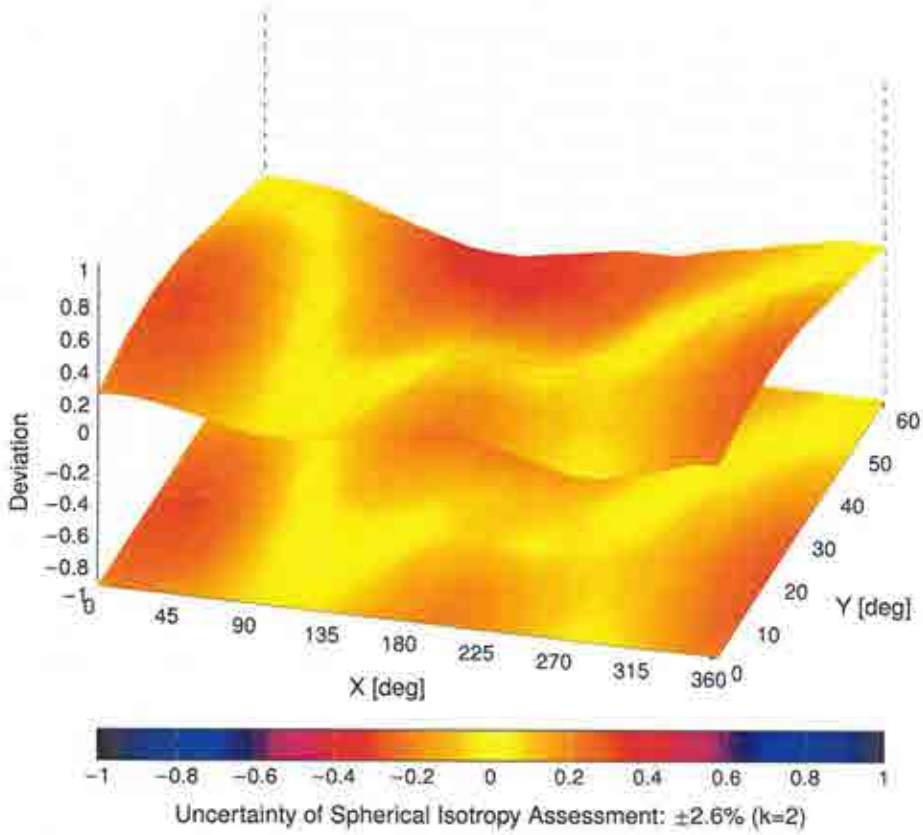

Uncertainty of Linearity Assessment: ±0.6% (k=2)

## Conversion Factor Assessment




## Deviation from Isotropy in Liquid

**Error ($\phi$,$\theta$), f = 900 MHz**



# Appendix: Modulation Calibration Parameters

| UID | Rev | Communication System Name | Group | PAR (dB) | Unc$^E$ $k = 2$ |
|---|---|---|---|---|---|
| 0 | | CW | CW | 0.00 | ±4.7 |
| 10010 | CAB | SAR Validation (Square, 100 ms, 10 ms) | Test | 10.00 | ±9.6 |
| 10011 | CAC | UMTS-FDD (WCDMA) | WCDMA | 2.91 | ±9.6 |
| 10012 | CAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps) | WLAN | 1.87 | ±9.6 |
| 10013 | CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps) | WLAN | 9.46 | ±9.6 |
| 10021 | DAC | GSM-FDD (TDMA, GMSK) | GSM | 9.39 | ±9.6 |
| 10023 | DAC | GPRS-FDD (TDMA, GMSK, TN 0) | GSM | 9.57 | ±9.6 |
| 10024 | DAC | GPRS-FDD (TDMA, GMSK, TN 0-1) | GSM | 6.56 | ±9.6 |
| 10025 | DAC | EDGE-FDD (TDMA, 8PSK, TN 0) | GSM | 12.62 | ±9.6 |
| 10026 | DAC | EDGE-FDD (TDMA, 8PSK, TN 0-1) | GSM | 9.55 | ±9.6 |
| 10027 | DAC | GPRS-FDD (TDMA, GMSK, TN 0-1-2) | GSM | 4.80 | ±9.6 |
| 10028 | DAC | GPRS-FDD (TDMA, GMSK, TN 0-1-2-3) | GSM | 3.55 | ±9.6 |
| 10029 | DAC | EDGE-FDD (TDMA, 8PSK, TN 0-1-2) | GSM | 7.78 | ±9.6 |
| 10030 | CAA | IEEE 802.15.1 Bluetooth (GFSK, DH1) | Bluetooth | 5.30 | ±9.6 |
| 10031 | CAA | IEEE 802.15.1 Bluetooth (GFSK, DH3) | Bluetooth | 1.87 | ±9.6 |
| 10032 | CAA | IEEE 802.15.1 Bluetooth (GFSK, DH5) | Bluetooth | 1.16 | ±9.6 |
| 10033 | CAA | IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1) | Bluetooth | 7.74 | ±9.6 |
| 10034 | CAA | IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3) | Bluetooth | 4.53 | ±9.6 |
| 10035 | CAA | IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5) | Bluetooth | 3.83 | ±9.6 |
| 10036 | CAA | IEEE 802.15.1 Bluetooth (8-DPSK, DH1) | Bluetooth | 8.01 | ±9.6 |
| 10037 | CAA | IEEE 802.15.1 Bluetooth (8-DPSK, DH3) | Bluetooth | 4.77 | ±9.6 |
| 10038 | CAA | IEEE 802.15.1 Bluetooth (8-DPSK, DH5) | Bluetooth | 4.10 | ±9.6 |
| 10039 | CAB | CDMA2000 (1xRTT, RC1) | CDMA2000 | 4.57 | ±9.6 |
| 10042 | CAB | IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate) | AMPS | 7.78 | ±9.6 |
| 10044 | CAA | IS-91/EIA/TIA-553 FDD (FDMA, FM) | AMPS | 0.00 | ±9.6 |
| 10048 | CAA | DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24) | DECT | 13.80 | ±9.6 |
| 10049 | CAA | DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12) | DECT | 10.79 | ±9.6 |
| 10056 | CAA | UMTS-TDD (TD-SCDMA, 1.28 Mcps) | TD-SCDMA | 11.01 | ±9.6 |
| 10058 | DAC | EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3) | GSM | 6.52 | ±9.6 |
| 10059 | CAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps) | WLAN | 2.12 | ±9.6 |
| 10060 | CAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps) | WLAN | 2.83 | ±9.6 |
| 10061 | CAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps) | WLAN | 3.60 | ±9.6 |
| 10062 | CAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps) | WLAN | 8.68 | ±9.6 |
| 10063 | CAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps) | WLAN | 8.63 | ±9.6 |
| 10064 | CAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps) | WLAN | 9.09 | ±9.6 |
| 10065 | CAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps) | WLAN | 9.00 | ±9.6 |
| 10066 | CAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps) | WLAN | 9.38 | ±9.6 |
| 10067 | CAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps) | WLAN | 10.12 | ±9.6 |
| 10068 | CAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps) | WLAN | 10.24 | ±9.6 |
| 10069 | CAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps) | WLAN | 10.56 | ±9.6 |
| 10071 | CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps) | WLAN | 9.83 | ±9.6 |
| 10072 | CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps) | WLAN | 9.62 | ±9.6 |
| 10073 | CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps) | WLAN | 9.94 | ±9.6 |
| 10074 | CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps) | WLAN | 10.30 | ±9.6 |
| 10075 | CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps) | WLAN | 10.77 | ±9.6 |
| 10076 | CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps) | WLAN | 10.94 | ±9.6 |
| 10077 | CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps) | WLAN | 11.00 | ±9.6 |
| 10081 | CAB | CDMA2000 (1xRTT, RC3) | CDMA2000 | 3.97 | ±9.6 |
| 10082 | CAB | IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate) | AMPS | 4.77 | ±9.6 |
| 10090 | DAC | GPRS-FDD (TDMA, GMSK, TN 0-4) | GSM | 6.56 | ±9.6 |
| 10097 | CAC | UMTS-FDD (HSDPA) | WCDMA | 3.98 | ±9.6 |
| 10098 | CAC | UMTS-FDD (HSUPA, Subtest 2) | WCDMA | 3.98 | ±9.6 |
| 10099 | DAC | EDGE-FDD (TDMA, 8PSK, TN 0-4) | GSM | 9.55 | ±9.6 |
| 10100 | CAF | LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK) | LTE-FDD | 5.67 | ±9.6 |
| 10101 | CAF | LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM) | LTE-FDD | 6.42 | ±9.6 |
| 10102 | CAF | LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM) | LTE-FDD | 6.60 | ±9.6 |
| 10103 | CAH | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK) | LTE-TDD | 9.29 | ±9.6 |
| 10104 | CAH | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM) | LTE-TDD | 9.97 | ±9.6 |
| 10105 | CAH | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM) | LTE-TDD | 10.01 | ±9.6 |
| 10108 | CAH | LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK) | LTE-FDD | 5.80 | ±9.6 |
| 10109 | CAH | LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM) | LTE-FDD | 6.43 | ±9.6 |
| 10110 | CAH | LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK) | LTE-FDD | 5.75 | ±9.6 |
| 10111 | CAH | LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM) | LTE-FDD | 6.44 | ±9.6 |

| UID | Rev | Communication System Name | Group | PAR (dB) | Unc$^E$ $k=2$ |
|---|---|---|---|---|---|
| 10112 | CAH | LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM) | LTE-FDD | 6.59 | ±9.6 |
| 10113 | CAH | LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM) | LTE-FDD | 6.62 | ±9.6 |
| 10114 | CAD | IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK) | WLAN | 8.10 | ±9.6 |
| 10115 | CAD | IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM) | WLAN | 8.46 | ±9.6 |
| 10116 | CAD | IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM) | WLAN | 8.15 | ±9.6 |
| 10117 | CAD | IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK) | WLAN | 8.07 | ±9.6 |
| 10118 | CAD | IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM) | WLAN | 8.59 | ±9.6 |
| 10119 | CAD | IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM) | WLAN | 8.13 | ±9.6 |
| 10140 | CAF | LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM) | LTE-FDD | 6.49 | ±9.6 |
| 10141 | CAF | LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM) | LTE-FDD | 6.53 | ±9.6 |
| 10142 | CAF | LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK) | LTE-FDD | 5.73 | ±9.6 |
| 10143 | CAF | LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM) | LTE-FDD | 6.35 | ±9.6 |
| 10144 | CAF | LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM) | LTE-FDD | 6.65 | ±9.6 |
| 10145 | CAG | LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK) | LTE-FDD | 5.76 | ±9.6 |
| 10146 | CAG | LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM) | LTE-FDD | 6.41 | ±9.6 |
| 10147 | CAG | LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM) | LTE-FDD | 6.72 | ±9.6 |
| 10149 | CAF | LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM) | LTE-FDD | 6.42 | ±9.6 |
| 10150 | CAF | LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM) | LTE-FDD | 6.60 | ±9.6 |
| 10151 | CAH | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK) | LTE-TDD | 9.28 | ±9.6 |
| 10152 | CAH | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM) | LTE-TDD | 9.92 | ±9.6 |
| 10153 | CAH | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM) | LTE-TDD | 10.05 | ±9.6 |
| 10154 | CAH | LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK) | LTE-FDD | 5.75 | ±9.6 |
| 10155 | CAH | LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM) | LTE-FDD | 6.43 | ±9.6 |
| 10156 | CAH | LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK) | LTE-FDD | 5.79 | ±9.6 |
| 10157 | CAH | LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM) | LTE-FDD | 6.49 | ±9.6 |
| 10158 | CAH | LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM) | LTE-FDD | 6.62 | ±9.6 |
| 10159 | CAH | LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM) | LTE-FDD | 6.56 | ±9.6 |
| 10160 | CAF | LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK) | LTE-FDD | 5.82 | ±9.6 |
| 10161 | CAF | LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM) | LTE-FDD | 6.43 | ±9.6 |
| 10162 | CAF | LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM) | LTE-FDD | 6.58 | ±9.6 |
| 10166 | CAG | LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK) | LTE-FDD | 5.46 | ±9.6 |
| 10167 | CAG | LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM) | LTE-FDD | 6.21 | ±9.6 |
| 10168 | CAG | LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM) | LTE-FDD | 6.79 | ±9.6 |
| 10169 | CAF | LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK) | LTE-FDD | 5.73 | ±9.6 |
| 10170 | CAF | LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM) | LTE-FDD | 6.52 | ±9.6 |
| 10171 | AAF | LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM) | LTE-FDD | 6.49 | ±9.6 |
| 10172 | CAH | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK) | LTE-TDD | 9.21 | ±9.6 |
| 10173 | CAH | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM) | LTE-TDD | 9.48 | ±9.6 |
| 10174 | CAH | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM) | LTE-TDD | 10.25 | ±9.6 |
| 10175 | CAH | LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK) | LTE-FDD | 5.72 | ±9.6 |
| 10176 | CAH | LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM) | LTE-FDD | 6.52 | ±9.6 |
| 10177 | CAJ | LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK) | LTE-FDD | 5.73 | ±9.6 |
| 10178 | CAH | LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM) | LTE-FDD | 6.52 | ±9.6 |
| 10179 | CAH | LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM) | LTE-FDD | 6.50 | ±9.6 |
| 10180 | CAH | LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM) | LTE-FDD | 6.50 | ±9.6 |
| 10181 | CAF | LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK) | LTE-FDD | 5.72 | ±9.6 |
| 10182 | CAF | LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM) | LTE-FDD | 6.52 | ±9.6 |
| 10183 | AAE | LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM) | LTE-FDD | 6.50 | ±9.6 |
| 10184 | CAF | LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK) | LTE-FDD | 5.73 | ±9.6 |
| 10185 | CAF | LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM) | LTE-FDD | 6.51 | ±9.6 |
| 10186 | AAF | LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM) | LTE-FDD | 6.50 | ±9.6 |
| 10187 | CAG | LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK) | LTE-FDD | 5.73 | ±9.6 |
| 10188 | CAG | LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM) | LTE-FDD | 6.52 | ±9.6 |
| 10189 | AAG | LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM) | LTE-FDD | 6.50 | ±9.6 |
| 10193 | CAD | IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK) | WLAN | 8.09 | ±9.6 |
| 10194 | CAD | IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM) | WLAN | 8.12 | ±9.6 |
| 10195 | CAD | IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM) | WLAN | 8.21 | ±9.6 |
| 10196 | CAD | IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK) | WLAN | 8.10 | ±9.6 |
| 10197 | CAD | IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM) | WLAN | 8.13 | ±9.6 |
| 10198 | CAD | IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM) | WLAN | 8.27 | ±9.6 |
| 10219 | CAD | IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK) | WLAN | 8.03 | ±9.6 |
| 10220 | CAD | IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM) | WLAN | 8.13 | ±9.6 |
| 10221 | CAD | IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM) | WLAN | 8.27 | ±9.6 |
| 10222 | CAD | IEEE 802.11n (HT Mixed, 15 Mbps, BPSK) | WLAN | 8.06 | ±9.6 |
| 10223 | CAD | IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM) | WLAN | 8.48 | ±9.6 |
| 10224 | CAD | IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM) | WLAN | 8.08 | ±9.6 |

| UID | Rev | Communication System Name | Group | PAR (dB) | Unc$^E$ $k = 2$ |
|---|---|---|---|---|---|
| 10225 | CAC | UMTS-FDD (HSPA+) | WCDMA | 5.97 | ±9.6 |
| 10226 | CAC | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM) | LTE-TDD | 9.49 | ±9.6 |
| 10227 | CAC | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM) | LTE-TDD | 10.26 | ±9.6 |
| 10228 | CAC | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK) | LTE-TDD | 9.22 | ±9.6 |
| 10229 | CAE | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM) | LTE-TDD | 9.48 | ±9.6 |
| 10230 | CAE | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM) | LTE-TDD | 10.25 | ±9.6 |
| 10231 | CAE | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK) | LTE-TDD | 9.19 | ±9.6 |
| 10232 | CAH | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM) | LTE-TDD | 9.48 | ±9.6 |
| 10233 | CAH | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM) | LTE-TDD | 10.25 | ±9.6 |
| 10234 | CAH | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK) | LTE-TDD | 9.21 | ±9.6 |
| 10235 | CAH | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM) | LTE-TDD | 9.48 | ±9.6 |
| 10236 | CAH | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM) | LTE-TDD | 10.25 | ±9.6 |
| 10237 | CAH | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK) | LTE-TDD | 9.21 | ±9.6 |
| 10238 | CAG | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM) | LTE-TDD | 9.48 | ±9.6 |
| 10239 | CAG | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM) | LTE-TDD | 10.25 | ±9.6 |
| 10240 | CAG | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK) | LTE-TDD | 9.21 | ±9.6 |
| 10241 | CAC | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM) | LTE-TDD | 9.82 | ±9.6 |
| 10242 | CAC | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM) | LTE-TDD | 9.86 | ±9.6 |
| 10243 | CAC | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK) | LTE-TDD | 9.46 | ±9.6 |
| 10244 | CAE | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM) | LTE-TDD | 10.06 | ±9.6 |
| 10245 | CAE | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM) | LTE-TDD | 10.06 | ±9.6 |
| 10246 | CAE | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK) | LTE-TDD | 9.30 | ±9.6 |
| 10247 | CAH | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM) | LTE-TDD | 9.91 | ±9.6 |
| 10248 | CAH | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM) | LTE-TDD | 10.09 | ±9.6 |
| 10249 | CAH | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK) | LTE-TDD | 9.29 | ±9.6 |
| 10250 | CAH | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM) | LTE-TDD | 9.81 | ±9.6 |
| 10251 | CAH | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM) | LTE-TDD | 10.17 | ±9.6 |
| 10252 | CAH | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK) | LTE-TDD | 9.24 | ±9.6 |
| 10253 | CAG | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM) | LTE-TDD | 9.90 | ±9.6 |
| 10254 | CAG | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM) | LTE-TDD | 10.14 | ±9.6 |
| 10255 | CAG | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK) | LTE-TDD | 9.20 | ±9.6 |
| 10256 | CAC | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM) | LTE-TDD | 9.96 | ±9.6 |
| 10257 | CAC | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM) | LTE-TDD | 10.08 | ±9.6 |
| 10258 | CAC | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK) | LTE-TDD | 9.34 | ±9.6 |
| 10259 | CAE | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM) | LTE-TDD | 9.98 | ±9.6 |
| 10260 | CAE | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM) | LTE-TDD | 9.97 | ±9.6 |
| 10261 | CAE | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK) | LTE-TDD | 9.24 | ±9.6 |
| 10262 | CAH | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM) | LTE-TDD | 9.83 | ±9.6 |
| 10263 | CAH | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM) | LTE-TDD | 10.16 | ±9.6 |
| 10264 | CAH | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK) | LTE-TDD | 9.23 | ±9.6 |
| 10265 | CAH | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM) | LTE-TDD | 9.92 | ±9.6 |
| 10266 | CAH | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM) | LTE-TDD | 10.07 | ±9.6 |
| 10267 | CAH | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK) | LTE-TDD | 9.30 | ±9.6 |
| 10268 | CAG | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM) | LTE-TDD | 10.06 | ±9.6 |
| 10269 | CAG | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM) | LTE-TDD | 10.13 | ±9.6 |
| 10270 | CAG | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK) | LTE-TDD | 9.58 | ±9.6 |
| 10274 | CAC | UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10) | WCDMA | 4.87 | ±9.6 |
| 10275 | CAC | UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4) | WCDMA | 3.96 | ±9.6 |
| 10277 | CAA | PHS (QPSK) | PHS | 11.81 | ±9.6 |
| 10278 | CAA | PHS (QPSK, BW 884 MHz, Rolloff 0.5) | PHS | 11.81 | ±9.6 |
| 10279 | CAA | PHS (QPSK, BW 884 MHz, Rolloff 0.38) | PHS | 12.18 | ±9.6 |
| 10290 | AAB | CDMA2000, RC1, SO55, Full Rate | CDMA2000 | 3.91 | ±9.6 |
| 10291 | AAB | CDMA2000, RC3, SO55, Full Rate | CDMA2000 | 3.46 | ±9.6 |
| 10292 | AAB | CDMA2000, RC3, SO32, Full Rate | CDMA2000 | 3.39 | ±9.6 |
| 10293 | AAB | CDMA2000, RC3, SO3, Full Rate | CDMA2000 | 3.50 | ±9.6 |
| 10295 | AAB | CDMA2000, RC1, SO3, 1/8th Rate 25 fr. | CDMA2000 | 12.49 | ±9.6 |
| 10297 | AAE | LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK) | LTE-FDD | 5.81 | ±9.6 |
| 10298 | AAE | LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK) | LTE-FDD | 5.72 | ±9.6 |
| 10299 | AAE | LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM) | LTE-FDD | 6.39 | ±9.6 |
| 10300 | AAE | LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM) | LTE-FDD | 6.60 | ±9.6 |
| 10301 | AAA | IEEE 802.16e WiMAX (29:18, 5 ms, 10 MHz, QPSK, PUSC) | WiMAX | 12.03 | ±9.6 |
| 10302 | AAA | IEEE 802.16e WiMAX (29:18, 5 ms, 10 MHz, QPSK, PUSC, 3 CTRL symbols) | WiMAX | 12.57 | ±9.6 |
| 10303 | AAA | IEEE 802.16e WiMAX (31:15, 5 ms, 10 MHz, 64QAM, PUSC) | WiMAX | 12.52 | ±9.6 |
| 10304 | AAA | IEEE 802.16e WiMAX (29:18, 5 ms, 10 MHz, 64QAM, PUSC) | WiMAX | 11.86 | ±9.6 |
| 10305 | AAA | IEEE 802.16e WiMAX (31:15, 10 ms, 10 MHz, 64QAM, PUSC, 15 symbols) | WiMAX | 15.24 | ±9.6 |
| 10306 | AAA | IEEE 802.16e WiMAX (29:18, 10 ms, 10 MHz, 64QAM, PUSC, 18 symbols) | WiMAX | 14.67 | ±9.6 |

| UID | Rev | Communication System Name | Group | PAR (dB) | Unc$^E$ $k = 2$ |
|---|---|---|---|---|---|
| 10307 | AAA | IEEE 802.16e WiMAX (29:18, 10 ms, 10 MHz, QPSK, PUSC, 18 symbols) | WiMAX | 14.49 | ±9.6 |
| 10308 | AAA | IEEE 802.16e WiMAX (29:18, 10 ms, 10 MHz, 16QAM, PUSC) | WiMAX | 14.46 | ±9.6 |
| 10309 | AAA | IEEE 802.16e WiMAX (29:18, 10 ms, 10 MHz, 16QAM, AMC 2x3, 18 symbols) | WiMAX | 14.58 | ±9.6 |
| 10310 | AAA | IEEE 802.16e WiMAX (29:18, 10 ms, 10 MHz, QPSK, AMC 2x3, 18 symbols) | WiMAX | 14.57 | ±9.6 |
| 10311 | AAE | LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK) | LTE-FDD | 6.06 | ±9.6 |
| 10313 | AAA | iDEN 1:3 | iDEN | 10.51 | ±9.6 |
| 10314 | AAA | iDEN 1:6 | iDEN | 13.48 | ±9.6 |
| 10315 | AAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle) | WLAN | 1.71 | ±9.6 |
| 10316 | AAB | IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle) | WLAN | 8.36 | ±9.6 |
| 10317 | AAD | IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle) | WLAN | 8.36 | ±9.6 |
| 10352 | AAA | Pulse Waveform (200Hz, 10%) | Generic | 10.00 | ±9.6 |
| 10353 | AAA | Pulse Waveform (200Hz, 20%) | Generic | 6.99 | ±9.6 |
| 10354 | AAA | Pulse Waveform (200Hz, 40%) | Generic | 3.98 | ±9.6 |
| 10355 | AAA | Pulse Waveform (200Hz, 60%) | Generic | 2.22 | ±9.6 |
| 10356 | AAA | Pulse Waveform (200Hz, 80%) | Generic | 0.97 | ±9.6 |
| 10387 | AAA | QPSK Waveform, 1 MHz | Generic | 5.10 | ±9.6 |
| 10388 | AAA | QPSK Waveform, 10 MHz | Generic | 5.22 | ±9.6 |
| 10396 | AAA | 64-QAM Waveform, 100 kHz | Generic | 6.27 | ±9.6 |
| 10399 | AAA | 64-QAM Waveform, 40 MHz | Generic | 6.27 | ±9.6 |
| 10400 | AAE | IEEE 802.11ac WiFi (20 MHz, 64-QAM, 99pc duty cycle) | WLAN | 8.37 | ±9.6 |
| 10401 | AAE | IEEE 802.11ac WiFi (40 MHz, 64-QAM, 99pc duty cycle) | WLAN | 8.60 | ±9.6 |
| 10402 | AAE | IEEE 802.11ac WiFi (80 MHz, 64-QAM, 99pc duty cycle) | WLAN | 8.53 | ±9.6 |
| 10403 | AAB | CDMA2000 (1xEV-DO, Rev. 0) | CDMA2000 | 3.76 | ±9.6 |
| 10404 | AAB | CDMA2000 (1xEV-DO, Rev. A) | CDMA2000 | 3.77 | ±9.6 |
| 10406 | AAB | CDMA2000, RC3, SO32, SCH0, Full Rate | CDMA2000 | 5.22 | ±9.6 |
| 10410 | AAH | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9, Subframe Conf=4) | LTE-TDD | 7.82 | ±9.6 |
| 10414 | AAA | WLAN CCDF, 64-QAM, 40 MHz | Generic | 8.54 | ±9.6 |
| 10415 | AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle) | WLAN | 1.54 | ±9.6 |
| 10416 | AAA | IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle) | WLAN | 8.23 | ±9.6 |
| 10417 | AAC | IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 99pc duty cycle) | WLAN | 8.23 | ±9.6 |
| 10418 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Long preambule) | WLAN | 8.14 | ±9.6 |
| 10419 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Short preambule) | WLAN | 8.19 | ±9.6 |
| 10422 | AAC | IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK) | WLAN | 8.32 | ±9.6 |
| 10423 | AAC | IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM) | WLAN | 8.47 | ±9.6 |
| 10424 | AAC | IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM) | WLAN | 8.40 | ±9.6 |
| 10425 | AAC | IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK) | WLAN | 8.41 | ±9.6 |
| 10426 | AAC | IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM) | WLAN | 8.45 | ±9.6 |
| 10427 | AAC | IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM) | WLAN | 8.41 | ±9.6 |
| 10430 | AAE | LTE-FDD (OFDMA, 5 MHz, E-TM 3.1) | LTE-FDD | 8.28 | ±9.6 |
| 10431 | AAE | LTE-FDD (OFDMA, 10 MHz, E-TM 3.1) | LTE-FDD | 8.38 | ±9.6 |
| 10432 | AAD | LTE-FDD (OFDMA, 15 MHz, E-TM 3.1) | LTE-FDD | 8.34 | ±9.6 |
| 10433 | AAD | LTE-FDD (OFDMA, 20 MHz, E-TM 3.1) | LTE-FDD | 8.34 | ±9.6 |
| 10434 | AAB | W-CDMA (BS Test Model 1, 64 DPCH) | WCDMA | 8.60 | ±9.6 |
| 10435 | AAG | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.82 | ±9.6 |
| 10447 | AAE | LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%) | LTE-FDD | 7.56 | ±9.6 |
| 10448 | AAE | LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clippin 44%) | LTE-FDD | 7.53 | ±9.6 |
| 10449 | AAD | LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Cliping 44%) | LTE-FDD | 7.51 | ±9.6 |
| 10450 | AAD | LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%) | LTE-FDD | 7.48 | ±9.6 |
| 10451 | AAB | W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%) | WCDMA | 7.59 | ±9.6 |
| 10453 | AAE | Validation (Square, 10 ms, 1 ms) | Test | 10.00 | ±9.6 |
| 10456 | AAC | IEEE 802.11ac WiFi (160 MHz, 64-QAM, 99pc duty cycle) | WLAN | 8.63 | ±9.6 |
| 10457 | AAB | UMTS-FDD (DC-HSDPA) | WCDMA | 6.62 | ±9.6 |
| 10458 | AAA | CDMA2000 (1xEV-DO, Rev. B, 2 carriers) | CDMA2000 | 6.55 | ±9.6 |
| 10459 | AAA | CDMA2000 (1xEV-DO, Rev. B, 3 carriers) | CDMA2000 | 8.25 | ±9.6 |
| 10460 | AAB | UMTS-FDD (WCDMA, AMR) | WCDMA | 2.39 | ±9.6 |
| 10461 | AAC | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.82 | ±9.6 |
| 10462 | AAC | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.30 | ±9.6 |
| 10463 | AAC | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.56 | ±9.6 |
| 10464 | AAD | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.82 | ±9.6 |
| 10465 | AAD | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.32 | ±9.6 |
| 10466 | AAD | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.57 | ±9.6 |
| 10467 | AAG | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.82 | ±9.6 |
| 10468 | AAG | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.32 | ±9.6 |
| 10469 | AAG | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.56 | ±9.6 |
| 10470 | AAG | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.82 | ±9.6 |
| 10471 | AAG | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.32 | ±9.6 |

| UID | Rev | Communication System Name | Group | PAR (dB) | Unc[E] $k = 2$ |
|---|---|---|---|---|---|
| 10472 | AAG | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.57 | ±9.6 |
| 10473 | AAF | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.82 | ±9.6 |
| 10474 | AAF | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.32 | ±9.6 |
| 10475 | AAF | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.57 | ±9.6 |
| 10477 | AAG | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.32 | ±9.6 |
| 10478 | AAG | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.57 | ±9.6 |
| 10479 | AAC | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.74 | ±9.6 |
| 10480 | AAC | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.18 | ±9.6 |
| 10481 | AAC | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.45 | ±9.6 |
| 10482 | AAD | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.71 | ±9.6 |
| 10483 | AAD | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.39 | ±9.6 |
| 10484 | AAD | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.47 | ±9.6 |
| 10485 | AAG | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.59 | ±9.6 |
| 10486 | AAG | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.38 | ±9.6 |
| 10487 | AAG | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.60 | ±9.6 |
| 10488 | AAG | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.70 | ±9.6 |
| 10489 | AAG | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.31 | ±9.6 |
| 10490 | AAG | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.54 | ±9.6 |
| 10491 | AAF | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.74 | ±9.6 |
| 10492 | AAF | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.41 | ±9.6 |
| 10493 | AAF | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.55 | ±9.6 |
| 10494 | AAG | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.74 | ±9.6 |
| 10495 | AAG | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.37 | ±9.6 |
| 10496 | AAG | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.54 | ±9.6 |
| 10497 | AAC | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.67 | ±9.6 |
| 10498 | AAC | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.40 | ±9.6 |
| 10499 | AAC | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.68 | ±9.6 |
| 10500 | AAD | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.67 | ±9.6 |
| 10501 | AAD | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.44 | ±9.6 |
| 10502 | AAD | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.52 | ±9.6 |
| 10503 | AAG | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.72 | ±9.6 |
| 10504 | AAG | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.31 | ±9.6 |
| 10505 | AAG | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.54 | ±9.6 |
| 10506 | AAG | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.74 | ±9.6 |
| 10507 | AAG | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.36 | ±9.6 |
| 10508 | AAG | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.55 | ±9.6 |
| 10509 | AAF | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.99 | ±9.6 |
| 10510 | AAF | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.49 | ±9.6 |
| 10511 | AAF | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.51 | ±9.6 |
| 10512 | AAG | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.74 | ±9.6 |
| 10513 | AAG | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.42 | ±9.6 |
| 10514 | AAG | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.45 | ±9.6 |
| 10515 | AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 99pc duty cycle) | WLAN | 1.58 | ±9.6 |
| 10516 | AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 99pc duty cycle) | WLAN | 1.57 | ±9.6 |
| 10517 | AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc duty cycle) | WLAN | 1.58 | ±9.6 |
| 10518 | AAC | IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 99pc duty cycle) | WLAN | 8.23 | ±9.6 |
| 10519 | AAC | IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle) | WLAN | 8.39 | ±9.6 |
| 10520 | AAC | IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc duty cycle) | WLAN | 8.12 | ±9.6 |
| 10521 | AAC | IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 99pc duty cycle) | WLAN | 7.97 | ±9.6 |
| 10522 | AAC | IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 99pc duty cycle) | WLAN | 8.45 | ±9.6 |
| 10523 | AAC | IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 99pc duty cycle) | WLAN | 8.08 | ±9.6 |
| 10524 | AAC | IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 99pc duty cycle) | WLAN | 8.27 | ±9.6 |
| 10525 | AAC | IEEE 802.11ac WiFi (20 MHz, MCS0, 99pc duty cycle) | WLAN | 8.36 | ±9.6 |
| 10526 | AAC | IEEE 802.11ac WiFi (20 MHz, MCS1, 99pc duty cycle) | WLAN | 8.42 | ±9.6 |
| 10527 | AAC | IEEE 802.11ac WiFi (20 MHz, MCS2, 99pc duty cycle) | WLAN | 8.21 | ±9.6 |
| 10528 | AAC | IEEE 802.11ac WiFi (20 MHz, MCS3, 99pc duty cycle) | WLAN | 8.36 | ±9.6 |
| 10529 | AAC | IEEE 802.11ac WiFi (20 MHz, MCS4, 99pc duty cycle) | WLAN | 8.36 | ±9.6 |
| 10531 | AAC | IEEE 802.11ac WiFi (20 MHz, MCS6, 99pc duty cycle) | WLAN | 8.43 | ±9.6 |
| 10532 | AAC | IEEE 802.11ac WiFi (20 MHz, MCS7, 99pc duty cycle) | WLAN | 8.29 | ±9.6 |
| 10533 | AAC | IEEE 802.11ac WiFi (20 MHz, MCS8, 99pc duty cycle) | WLAN | 8.38 | ±9.6 |
| 10534 | AAC | IEEE 802.11ac WiFi (40 MHz, MCS0, 99pc duty cycle) | WLAN | 8.45 | ±9.6 |
| 10535 | AAC | IEEE 802.11ac WiFi (40 MHz, MCS1, 99pc duty cycle) | WLAN | 8.45 | ±9.6 |
| 10536 | AAC | IEEE 802.11ac WiFi (40 MHz, MCS2, 99pc duty cycle) | WLAN | 8.32 | ±9.6 |
| 10537 | AAC | IEEE 802.11ac WiFi (40 MHz, MCS3, 99pc duty cycle) | WLAN | 8.44 | ±9.6 |
| 10538 | AAC | IEEE 802.11ac WiFi (40 MHz, MCS4, 99pc duty cycle) | WLAN | 8.54 | ±9.6 |
| 10540 | AAC | IEEE 802.11ac WiFi (40 MHz, MCS6, 99pc duty cycle) | WLAN | 8.39 | ±9.6 |

| UID | Rev | Communication System Name | Group | PAR (dB) | Unc$^E$ $k = 2$ |
|---|---|---|---|---|---|
| 10541 | AAC | IEEE 802.11ac WiFi (40 MHz, MCS7, 99pc duty cycle) | WLAN | 8.46 | ±9.6 |
| 10542 | AAC | IEEE 802.11ac WiFi (40 MHz, MCS8, 99pc duty cycle) | WLAN | 8.65 | ±9.6 |
| 10543 | AAC | IEEE 802.11ac WiFi (40 MHz, MCS9, 99pc duty cycle) | WLAN | 8.65 | ±9.6 |
| 10544 | AAC | IEEE 802.11ac WiFi (80 MHz, MCS0, 99pc duty cycle) | WLAN | 8.47 | ±9.6 |
| 10545 | AAC | IEEE 802.11ac WiFi (80 MHz, MCS1, 99pc duty cycle) | WLAN | 8.55 | ±9.6 |
| 10546 | AAC | IEEE 802.11ac WiFi (80 MHz, MCS2, 99pc duty cycle) | WLAN | 8.35 | ±9.6 |
| 10547 | AAC | IEEE 802.11ac WiFi (80 MHz, MCS3, 99pc duty cycle) | WLAN | 8.49 | ±9.6 |
| 10548 | AAC | IEEE 802.11ac WiFi (80 MHz, MCS4, 99pc duty cycle) | WLAN | 8.37 | ±9.6 |
| 10550 | AAC | IEEE 802.11ac WiFi (80 MHz, MCS6, 99pc duty cycle) | WLAN | 8.38 | ±9.6 |
| 10551 | AAC | IEEE 802.11ac WiFi (80 MHz, MCS7, 99pc duty cycle) | WLAN | 8.50 | ±9.6 |
| 10552 | AAC | IEEE 802.11ac WiFi (80 MHz, MCS8, 99pc duty cycle) | WLAN | 8.42 | ±9.6 |
| 10553 | AAC | IEEE 802.11ac WiFi (80 MHz, MCS9, 99pc duty cycle) | WLAN | 8.45 | ±9.6 |
| 10554 | AAD | IEEE 802.11ac WiFi (160 MHz, MCS0, 99pc duty cycle) | WLAN | 8.48 | ±9.6 |
| 10555 | AAD | IEEE 802.11ac WiFi (160 MHz, MCS1, 99pc duty cycle) | WLAN | 8.47 | ±9.6 |
| 10556 | AAD | IEEE 802.11ac WiFi (160 MHz, MCS2, 99pc duty cycle) | WLAN | 8.50 | ±9.6 |
| 10557 | AAD | IEEE 802.11ac WiFi (160 MHz, MCS3, 99pc duty cycle) | WLAN | 8.52 | ±9.6 |
| 10558 | AAD | IEEE 802.11ac WiFi (160 MHz, MCS4, 99pc duty cycle) | WLAN | 8.61 | ±9.6 |
| 10560 | AAD | IEEE 802.11ac WiFi (160 MHz, MCS6, 99pc duty cycle) | WLAN | 8.73 | ±9.6 |
| 10561 | AAD | IEEE 802.11ac WiFi (160 MHz, MCS7, 99pc duty cycle) | WLAN | 8.56 | ±9.6 |
| 10562 | AAD | IEEE 802.11ac WiFi (160 MHz, MCS8, 99pc duty cycle) | WLAN | 8.69 | ±9.6 |
| 10563 | AAD | IEEE 802.11ac WiFi (160 MHz, MCS9, 99pc duty cycle) | WLAN | 8.77 | ±9.6 |
| 10564 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 99pc duty cycle) | WLAN | 8.25 | ±9.6 |
| 10565 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc duty cycle) | WLAN | 8.45 | ±9.6 |
| 10566 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 99pc duty cycle) | WLAN | 8.13 | ±9.6 |
| 10567 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc duty cycle) | WLAN | 8.00 | ±9.6 |
| 10568 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc duty cycle) | WLAN | 8.37 | ±9.6 |
| 10569 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc duty cycle) | WLAN | 8.10 | ±9.6 |
| 10570 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc duty cycle) | WLAN | 8.30 | ±9.6 |
| 10571 | AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 90pc duty cycle) | WLAN | 1.99 | ±9.6 |
| 10572 | AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle) | WLAN | 1.99 | ±9.6 |
| 10573 | AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc duty cycle) | WLAN | 1.98 | ±9.6 |
| 10574 | AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 90pc duty cycle) | WLAN | 1.98 | ±9.6 |
| 10575 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle) | WLAN | 8.59 | ±9.6 |
| 10576 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle) | WLAN | 8.60 | ±9.6 |
| 10577 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle) | WLAN | 8.70 | ±9.6 |
| 10578 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle) | WLAN | 8.49 | ±9.6 |
| 10579 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc duty cycle) | WLAN | 8.36 | ±9.6 |
| 10580 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle) | WLAN | 8.76 | ±9.6 |
| 10581 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle) | WLAN | 8.35 | ±9.6 |
| 10582 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle) | WLAN | 8.67 | ±9.6 |
| 10583 | AAC | IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc duty cycle) | WLAN | 8.59 | ±9.6 |
| 10584 | AAC | IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc duty cycle) | WLAN | 8.60 | ±9.6 |
| 10585 | AAC | IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc duty cycle) | WLAN | 8.70 | ±9.6 |
| 10586 | AAC | IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc duty cycle) | WLAN | 8.49 | ±9.6 |
| 10587 | AAC | IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc duty cycle) | WLAN | 8.36 | ±9.6 |
| 10588 | AAC | IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc duty cycle) | WLAN | 8.76 | ±9.6 |
| 10589 | AAC | IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc duty cycle) | WLAN | 8.35 | ±9.6 |
| 10590 | AAC | IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc duty cycle) | WLAN | 8.67 | ±9.6 |
| 10591 | AAC | IEEE 802.11n (HT Mixed, 20 MHz, MCS0, 90pc duty cycle) | WLAN | 8.63 | ±9.6 |
| 10592 | AAC | IEEE 802.11n (HT Mixed, 20 MHz, MCS1, 90pc duty cycle) | WLAN | 8.79 | ±9.6 |
| 10593 | AAC | IEEE 802.11n (HT Mixed, 20 MHz, MCS2, 90pc duty cycle) | WLAN | 8.64 | ±9.6 |
| 10594 | AAC | IEEE 802.11n (HT Mixed, 20 MHz, MCS3, 90pc duty cycle) | WLAN | 8.74 | ±9.6 |
| 10595 | AAC | IEEE 802.11n (HT Mixed, 20 MHz, MCS4, 90pc duty cycle) | WLAN | 8.74 | ±9.6 |
| 10596 | AAC | IEEE 802.11n (HT Mixed, 20 MHz, MCS5, 90pc duty cycle) | WLAN | 8.71 | ±9.6 |
| 10597 | AAC | IEEE 802.11n (HT Mixed, 20 MHz, MCS6, 90pc duty cycle) | WLAN | 8.72 | ±9.6 |
| 10598 | AAC | IEEE 802.11n (HT Mixed, 20 MHz, MCS7, 90pc duty cycle) | WLAN | 8.50 | ±9.6 |
| 10599 | AAC | IEEE 802.11n (HT Mixed, 40 MHz, MCS0, 90pc duty cycle) | WLAN | 8.79 | ±9.6 |
| 10600 | AAC | IEEE 802.11n (HT Mixed, 40 MHz, MCS1, 90pc duty cycle) | WLAN | 8.88 | ±9.6 |
| 10601 | AAC | IEEE 802.11n (HT Mixed, 40 MHz, MCS2, 90pc duty cycle) | WLAN | 8.82 | ±9.6 |
| 10602 | AAC | IEEE 802.11n (HT Mixed, 40 MHz, MCS3, 90pc duty cycle) | WLAN | 8.94 | ±9.6 |
| 10603 | AAC | IEEE 802.11n (HT Mixed, 40 MHz, MCS4, 90pc duty cycle) | WLAN | 9.03 | ±9.6 |
| 10604 | AAC | IEEE 802.11n (HT Mixed, 40 MHz, MCS5, 90pc duty cycle) | WLAN | 8.76 | ±9.6 |
| 10605 | AAC | IEEE 802.11n (HT Mixed, 40 MHz, MCS6, 90pc duty cycle) | WLAN | 8.97 | ±9.6 |
| 10606 | AAC | IEEE 802.11n (HT Mixed, 40 MHz, MCS7, 90pc duty cycle) | WLAN | 8.82 | ±9.6 |
| 10607 | AAC | IEEE 802.11ac WiFi (20 MHz, MCS0, 90pc duty cycle) | WLAN | 8.64 | ±9.6 |
| 10608 | AAC | IEEE 802.11ac WiFi (20 MHz, MCS1, 90pc duty cycle) | WLAN | 8.77 | ±9.6 |

| UID | Rev | Communication System Name | Group | PAR (dB) | Unc$^E$ k = 2 |
|---|---|---|---|---|---|
| 10609 | AAC | IEEE 802.11ac WiFi (20 MHz, MCS2, 90pc duty cycle) | WLAN | 8.57 | ±9.6 |
| 10610 | AAC | IEEE 802.11ac WiFi (20 MHz, MCS3, 90pc duty cycle) | WLAN | 8.78 | ±9.6 |
| 10611 | AAC | IEEE 802.11ac WiFi (20 MHz, MCS4, 90pc duty cycle) | WLAN | 8.70 | ±9.6 |
| 10612 | AAC | IEEE 802.11ac WiFi (20 MHz, MCS5, 90pc duty cycle) | WLAN | 8.77 | ±9.6 |
| 10613 | AAC | IEEE 802.11ac WiFi (20 MHz, MCS6, 90pc duty cycle) | WLAN | 8.94 | ±9.6 |
| 10614 | AAC | IEEE 802.11ac WiFi (20 MHz, MCS7, 90pc duty cycle) | WLAN | 8.59 | ±9.6 |
| 10615 | AAC | IEEE 802.11ac WiFi (20 MHz, MCS8, 90pc duty cycle) | WLAN | 8.82 | ±9.6 |
| 10616 | AAC | IEEE 802.11ac WiFi (40 MHz, MCS0, 90pc duty cycle) | WLAN | 8.82 | ±9.6 |
| 10617 | AAC | IEEE 802.11ac WiFi (40 MHz, MCS1, 90pc duty cycle) | WLAN | 8.81 | ±9.6 |
| 10618 | AAC | IEEE 802.11ac WiFi (40 MHz, MCS2, 90pc duty cycle) | WLAN | 8.58 | ±9.6 |
| 10619 | AAC | IEEE 802.11ac WiFi (40 MHz, MCS3, 90pc duty cycle) | WLAN | 8.86 | ±9.6 |
| 10620 | AAC | IEEE 802.11ac WiFi (40 MHz, MCS4, 90pc duty cycle) | WLAN | 8.87 | ±9.6 |
| 10621 | AAC | IEEE 802.11ac WiFi (40 MHz, MCS5, 90pc duty cycle) | WLAN | 8.77 | ±9.6 |
| 10622 | AAC | IEEE 802.11ac WiFi (40 MHz, MCS6, 90pc duty cycle) | WLAN | 8.68 | ±9.6 |
| 10623 | AAC | IEEE 802.11ac WiFi (40 MHz, MCS7, 90pc duty cycle) | WLAN | 8.82 | ±9.6 |
| 10624 | AAC | IEEE 802.11ac WiFi (40 MHz, MCS8, 90pc duty cycle) | WLAN | 8.96 | ±9.6 |
| 10625 | AAC | IEEE 802.11ac WiFi (40 MHz, MCS9, 90pc duty cycle) | WLAN | 8.96 | ±9.6 |
| 10626 | AAC | IEEE 802.11ac WiFi (80 MHz, MCS0, 90pc duty cycle) | WLAN | 8.83 | ±9.6 |
| 10627 | AAC | IEEE 802.11ac WiFi (80 MHz, MCS1, 90pc duty cycle) | WLAN | 8.88 | ±9.6 |
| 10628 | AAC | IEEE 802.11ac WiFi (80 MHz, MCS2, 90pc duty cycle) | WLAN | 8.71 | ±9.6 |
| 10629 | AAC | IEEE 802.11ac WiFi (80 MHz, MCS3, 90pc duty cycle) | WLAN | 8.85 | ±9.6 |
| 10630 | AAC | IEEE 802.11ac WiFi (80 MHz, MCS4, 90pc duty cycle) | WLAN | 8.72 | ±9.6 |
| 10631 | AAC | IEEE 802.11ac WiFi (80 MHz, MCS5, 90pc duty cycle) | WLAN | 8.81 | ±9.6 |
| 10632 | AAC | IEEE 802.11ac WiFi (80 MHz, MCS6, 90pc duty cycle) | WLAN | 8.74 | ±9.6 |
| 10633 | AAC | IEEE 802.11ac WiFi (80 MHz, MCS7, 90pc duty cycle) | WLAN | 8.83 | ±9.6 |
| 10634 | AAC | IEEE 802.11ac WiFi (80 MHz, MCS8, 90pc duty cycle) | WLAN | 8.80 | ±9.6 |
| 10635 | AAC | IEEE 802.11ac WiFi (80 MHz, MCS9, 90pc duty cycle) | WLAN | 8.81 | ±9.6 |
| 10636 | AAD | IEEE 802.11ac WiFi (160 MHz, MCS0, 90pc duty cycle) | WLAN | 8.83 | ±9.6 |
| 10637 | AAD | IEEE 802.11ac WiFi (160 MHz, MCS1, 90pc duty cycle) | WLAN | 8.79 | ±9.6 |
| 10638 | AAD | IEEE 802.11ac WiFi (160 MHz, MCS2, 90pc duty cycle) | WLAN | 8.86 | ±9.6 |
| 10639 | AAD | IEEE 802.11ac WiFi (160 MHz, MCS3, 90pc duty cycle) | WLAN | 8.85 | ±9.6 |
| 10640 | AAD | IEEE 802.11ac WiFi (160 MHz, MCS4, 90pc duty cycle) | WLAN | 8.98 | ±9.6 |
| 10641 | AAD | IEEE 802.11ac WiFi (160 MHz, MCS5, 90pc duty cycle) | WLAN | 9.06 | ±9.6 |
| 10642 | AAD | IEEE 802.11ac WiFi (160 MHz, MCS6, 90pc duty cycle) | WLAN | 9.06 | ±9.6 |
| 10643 | AAD | IEEE 802.11ac WiFi (160 MHz, MCS7, 90pc duty cycle) | WLAN | 8.89 | ±9.6 |
| 10644 | AAD | IEEE 802.11ac WiFi (160 MHz, MCS8, 90pc duty cycle) | WLAN | 9.05 | ±9.6 |
| 10645 | AAD | IEEE 802.11ac WiFi (160 MHz, MCS9, 90pc duty cycle) | WLAN | 9.11 | ±9.6 |
| 10646 | AAH | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,7) | LTE-TDD | 11.96 | ±9.6 |
| 10647 | AAG | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7) | LTE-TDD | 11.96 | ±9.6 |
| 10648 | AAA | CDMA2000 (1x Advanced) | CDMA2000 | 3.45 | ±9.6 |
| 10652 | AAF | LTE-TDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%) | LTE-TDD | 6.91 | ±9.6 |
| 10653 | AAF | LTE-TDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%) | LTE-TDD | 7.42 | ±9.6 |
| 10654 | AAE | LTE-TDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%) | LTE-TDD | 6.96 | ±9.6 |
| 10655 | AAF | LTE-TDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%) | LTE-TDD | 7.21 | ±9.6 |
| 10658 | AAB | Pulse Waveform (200Hz, 10%) | Test | 10.00 | ±9.6 |
| 10659 | AAB | Pulse Waveform (200Hz, 20%) | Test | 6.99 | ±9.6 |
| 10660 | AAB | Pulse Waveform (200Hz, 40%) | Test | 3.98 | ±9.6 |
| 10661 | AAB | Pulse Waveform (200Hz, 60%) | Test | 2.22 | ±9.6 |
| 10662 | AAB | Pulse Waveform (200Hz, 80%) | Test | 0.97 | ±9.6 |
| 10670 | AAA | Bluetooth Low Energy | Bluetooth | 2.19 | ±9.6 |
| 10671 | AAC | IEEE 802.11ax (20 MHz, MCS0, 90pc duty cycle) | WLAN | 9.09 | ±9.6 |
| 10672 | AAC | IEEE 802.11ax (20 MHz, MCS1, 90pc duty cycle) | WLAN | 8.57 | ±9.6 |
| 10673 | AAC | IEEE 802.11ax (20 MHz, MCS2, 90pc duty cycle) | WLAN | 8.78 | ±9.6 |
| 10674 | AAC | IEEE 802.11ax (20 MHz, MCS3, 90pc duty cycle) | WLAN | 8.74 | ±9.6 |
| 10675 | AAC | IEEE 802.11ax (20 MHz, MCS4, 90pc duty cycle) | WLAN | 8.90 | ±9.6 |
| 10676 | AAC | IEEE 802.11ax (20 MHz, MCS5, 90pc duty cycle) | WLAN | 8.77 | ±9.6 |
| 10677 | AAC | IEEE 802.11ax (20 MHz, MCS6, 90pc duty cycle) | WLAN | 8.73 | ±9.6 |
| 10678 | AAC | IEEE 802.11ax (20 MHz, MCS7, 90pc duty cycle) | WLAN | 8.78 | ±9.6 |
| 10679 | AAC | IEEE 802.11ax (20 MHz, MCS8, 90pc duty cycle) | WLAN | 8.89 | ±9.6 |
| 10680 | AAC | IEEE 802.11ax (20 MHz, MCS9, 90pc duty cycle) | WLAN | 8.80 | ±9.6 |
| 10681 | AAC | IEEE 802.11ax (20 MHz, MCS10, 90pc duty cycle) | WLAN | 8.62 | ±9.6 |
| 10682 | AAC | IEEE 802.11ax (20 MHz, MCS11, 90pc duty cycle) | WLAN | 8.83 | ±9.6 |
| 10683 | AAC | IEEE 802.11ax (20 MHz, MCS0, 99pc duty cycle) | WLAN | 8.42 | ±9.6 |
| 10684 | AAC | IEEE 802.11ax (20 MHz, MCS1, 99pc duty cycle) | WLAN | 8.26 | ±9.6 |
| 10685 | AAC | IEEE 802.11ax (20 MHz, MCS2, 99pc duty cycle) | WLAN | 8.33 | ±9.6 |
| 10686 | AAC | IEEE 802.11ax (20 MHz, MCS3, 99pc duty cycle) | WLAN | 8.28 | ±9.6 |

| UID | Rev | Communication System Name | Group | PAR (dB) | Unc$^E$ $k = 2$ |
|---|---|---|---|---|---|
| 10687 | AAC | IEEE 802.11ax (20 MHz, MCS4, 99pc duty cycle) | WLAN | 8.45 | ±9.6 |
| 10688 | AAC | IEEE 802.11ax (20 MHz, MCS5, 99pc duty cycle) | WLAN | 8.29 | ±9.6 |
| 10689 | AAC | IEEE 802.11ax (20 MHz, MCS6, 99pc duty cycle) | WLAN | 8.55 | ±9.6 |
| 10690 | AAC | IEEE 802.11ax (20 MHz, MCS7, 99pc duty cycle) | WLAN | 8.29 | ±9.6 |
| 10691 | AAC | IEEE 802.11ax (20 MHz, MCS8, 99pc duty cycle) | WLAN | 8.25 | ±9.6 |
| 10692 | AAC | IEEE 802.11ax (20 MHz, MCS9, 99pc duty cycle) | WLAN | 8.29 | ±9.6 |
| 10693 | AAC | IEEE 802.11ax (20 MHz, MCS10, 99pc duty cycle) | WLAN | 8.25 | ±9.6 |
| 10694 | AAC | IEEE 802.11ax (20 MHz, MCS11, 99pc duty cycle) | WLAN | 8.57 | ±9.6 |
| 10695 | AAC | IEEE 802.11ax (40 MHz, MCS0, 90pc duty cycle) | WLAN | 8.78 | ±9.6 |
| 10696 | AAC | IEEE 802.11ax (40 MHz, MCS1, 90pc duty cycle) | WLAN | 8.91 | ±9.6 |
| 10697 | AAC | IEEE 802.11ax (40 MHz, MCS2, 90pc duty cycle) | WLAN | 8.61 | ±9.6 |
| 10698 | AAC | IEEE 802.11ax (40 MHz, MCS3, 90pc duty cycle) | WLAN | 8.89 | ±9.6 |
| 10699 | AAC | IEEE 802.11ax (40 MHz, MCS4, 90pc duty cycle) | WLAN | 8.82 | ±9.6 |
| 10700 | AAC | IEEE 802.11ax (40 MHz, MCS5, 90pc duty cycle) | WLAN | 8.73 | ±9.6 |
| 10701 | AAC | IEEE 802.11ax (40 MHz, MCS6, 90pc duty cycle) | WLAN | 8.86 | ±9.6 |
| 10702 | AAC | IEEE 802.11ax (40 MHz, MCS7, 90pc duty cycle) | WLAN | 8.70 | ±9.6 |
| 10703 | AAC | IEEE 802.11ax (40 MHz, MCS8, 90pc duty cycle) | WLAN | 8.82 | ±9.6 |
| 10704 | AAC | IEEE 802.11ax (40 MHz, MCS9, 90pc duty cycle) | WLAN | 8.56 | ±9.6 |
| 10705 | AAC | IEEE 802.11ax (40 MHz, MCS10, 90pc duty cycle) | WLAN | 8.69 | ±9.6 |
| 10706 | AAC | IEEE 802.11ax (40 MHz, MCS11, 90pc duty cycle) | WLAN | 8.66 | ±9.6 |
| 10707 | AAC | IEEE 802.11ax (40 MHz, MCS0, 99pc duty cycle) | WLAN | 8.32 | ±9.6 |
| 10708 | AAC | IEEE 802.11ax (40 MHz, MCS1, 99pc duty cycle) | WLAN | 8.55 | ±9.6 |
| 10709 | AAC | IEEE 802.11ax (40 MHz, MCS2, 99pc duty cycle) | WLAN | 8.33 | ±9.6 |
| 10710 | AAC | IEEE 802.11ax (40 MHz, MCS3, 99pc duty cycle) | WLAN | 8.29 | ±9.6 |
| 10711 | AAC | IEEE 802.11ax (40 MHz, MCS4, 99pc duty cycle) | WLAN | 8.39 | ±9.6 |
| 10712 | AAC | IEEE 802.11ax (40 MHz, MCS5, 99pc duty cycle) | WLAN | 8.67 | ±9.6 |
| 10713 | AAC | IEEE 802.11ax (40 MHz, MCS6, 99pc duty cycle) | WLAN | 8.33 | ±9.6 |
| 10714 | AAC | IEEE 802.11ax (40 MHz, MCS7, 99pc duty cycle) | WLAN | 8.26 | ±9.6 |
| 10715 | AAC | IEEE 802.11ax (40 MHz, MCS8, 99pc duty cycle) | WLAN | 8.45 | ±9.6 |
| 10716 | AAC | IEEE 802.11ax (40 MHz, MCS9, 99pc duty cycle) | WLAN | 8.30 | ±9.6 |
| 10717 | AAC | IEEE 802.11ax (40 MHz, MCS10, 99pc duty cycle) | WLAN | 8.48 | ±9.6 |
| 10718 | AAC | IEEE 802.11ax (40 MHz, MCS11, 99pc duty cycle) | WLAN | 8.24 | ±9.6 |
| 10719 | AAC | IEEE 802.11ax (80 MHz, MCS0, 90pc duty cycle) | WLAN | 8.81 | ±9.6 |
| 10720 | AAC | IEEE 802.11ax (80 MHz, MCS1, 90pc duty cycle) | WLAN | 8.87 | ±9.6 |
| 10721 | AAC | IEEE 802.11ax (80 MHz, MCS2, 90pc duty cycle) | WLAN | 8.76 | ±9.6 |
| 10722 | AAC | IEEE 802.11ax (80 MHz, MCS3, 90pc duty cycle) | WLAN | 8.55 | ±9.6 |
| 10723 | AAC | IEEE 802.11ax (80 MHz, MCS4, 90pc duty cycle) | WLAN | 8.70 | ±9.6 |
| 10724 | AAC | IEEE 802.11ax (80 MHz, MCS5, 90pc duty cycle) | WLAN | 8.90 | ±9.6 |
| 10725 | AAC | IEEE 802.11ax (80 MHz, MCS6, 90pc duty cycle) | WLAN | 8.74 | ±9.6 |
| 10726 | AAC | IEEE 802.11ax (80 MHz, MCS7, 90pc duty cycle) | WLAN | 8.72 | ±9.6 |
| 10727 | AAC | IEEE 802.11ax (80 MHz, MCS8, 90pc duty cycle) | WLAN | 8.66 | ±9.6 |
| 10728 | AAC | IEEE 802.11ax (80 MHz, MCS9, 90pc duty cycle) | WLAN | 8.65 | ±9.6 |
| 10729 | AAC | IEEE 802.11ax (80 MHz, MCS10, 90pc duty cycle) | WLAN | 8.64 | ±9.6 |
| 10730 | AAC | IEEE 802.11ax (80 MHz, MCS11, 90pc duty cycle) | WLAN | 8.67 | ±9.6 |
| 10731 | AAC | IEEE 802.11ax (80 MHz, MCS0, 99pc duty cycle) | WLAN | 8.42 | ±9.6 |
| 10732 | AAC | IEEE 802.11ax (80 MHz, MCS1, 99pc duty cycle) | WLAN | 8.46 | ±9.6 |
| 10733 | AAC | IEEE 802.11ax (80 MHz, MCS2, 99pc duty cycle) | WLAN | 8.40 | ±9.6 |
| 10734 | AAC | IEEE 802.11ax (80 MHz, MCS3, 99pc duty cycle) | WLAN | 8.25 | ±9.6 |
| 10735 | AAC | IEEE 802.11ax (80 MHz, MCS4, 99pc duty cycle) | WLAN | 8.33 | ±9.6 |
| 10736 | AAC | IEEE 802.11ax (80 MHz, MCS5, 99pc duty cycle) | WLAN | 8.27 | ±9.6 |
| 10737 | AAC | IEEE 802.11ax (80 MHz, MCS6, 99pc duty cycle) | WLAN | 8.36 | ±9.6 |
| 10738 | AAC | IEEE 802.11ax (80 MHz, MCS7, 99pc duty cycle) | WLAN | 8.42 | ±9.6 |
| 10739 | AAC | IEEE 802.11ax (80 MHz, MCS8, 99pc duty cycle) | WLAN | 8.29 | ±9.6 |
| 10740 | AAC | IEEE 802.11ax (80 MHz, MCS9, 99pc duty cycle) | WLAN | 8.48 | ±9.6 |
| 10741 | AAC | IEEE 802.11ax (80 MHz, MCS10, 99pc duty cycle) | WLAN | 8.40 | ±9.6 |
| 10742 | AAC | IEEE 802.11ax (80 MHz, MCS11, 99pc duty cycle) | WLAN | 8.43 | ±9.6 |
| 10743 | AAC | IEEE 802.11ax (160 MHz, MCS0, 90pc duty cycle) | WLAN | 8.94 | ±9.6 |
| 10744 | AAC | IEEE 802.11ax (160 MHz, MCS1, 90pc duty cycle) | WLAN | 9.16 | ±9.6 |
| 10745 | AAC | IEEE 802.11ax (160 MHz, MCS2, 90pc duty cycle) | WLAN | 8.93 | ±9.6 |
| 10746 | AAC | IEEE 802.11ax (160 MHz, MCS3, 90pc duty cycle) | WLAN | 9.11 | ±9.6 |
| 10747 | AAC | IEEE 802.11ax (160 MHz, MCS4, 90pc duty cycle) | WLAN | 9.04 | ±9.6 |
| 10748 | AAC | IEEE 802.11ax (160 MHz, MCS5, 90pc duty cycle) | WLAN | 8.93 | ±9.6 |
| 10749 | AAC | IEEE 802.11ax (160 MHz, MCS6, 90pc duty cycle) | WLAN | 8.90 | ±9.6 |
| 10750 | AAC | IEEE 802.11ax (160 MHz, MCS7, 90pc duty cycle) | WLAN | 8.79 | ±9.6 |
| 10751 | AAC | IEEE 802.11ax (160 MHz, MCS8, 90pc duty cycle) | WLAN | 8.82 | ±9.6 |
| 10752 | AAC | IEEE 802.11ax (160 MHz, MCS9, 90pc duty cycle) | WLAN | 8.81 | ±9.6 |

| UID | Rev | Communication System Name | Group | PAR (dB) | Unc$^E$ $k = 2$ |
|---|---|---|---|---|---|
| 10753 | AAC | IEEE 802.11ax (160 MHz, MCS10, 90pc duty cycle) | WLAN | 9.00 | ±9.6 |
| 10754 | AAC | IEEE 802.11ax (160 MHz, MCS11, 90pc duty cycle) | WLAN | 8.94 | ±9.6 |
| 10755 | AAC | IEEE 802.11ax (160 MHz, MCS0, 99pc duty cycle) | WLAN | 8.64 | ±9.6 |
| 10756 | AAC | IEEE 802.11ax (160 MHz, MCS1, 99pc duty cycle) | WLAN | 8.77 | ±9.6 |
| 10757 | AAC | IEEE 802.11ax (160 MHz, MCS2, 99pc duty cycle) | WLAN | 8.77 | ±9.6 |
| 10758 | AAC | IEEE 802.11ax (160 MHz, MCS3, 99pc duty cycle) | WLAN | 8.69 | ±9.6 |
| 10759 | AAC | IEEE 802.11ax (160 MHz, MCS4, 99pc duty cycle) | WLAN | 8.58 | ±9.6 |
| 10760 | AAC | IEEE 802.11ax (160 MHz, MCS5, 99pc duty cycle) | WLAN | 8.49 | ±9.6 |
| 10761 | AAC | IEEE 802.11ax (160 MHz, MCS6, 99pc duty cycle) | WLAN | 8.58 | ±9.6 |
| 10762 | AAC | IEEE 802.11ax (160 MHz, MCS7, 99pc duty cycle) | WLAN | 8.49 | ±9.6 |
| 10763 | AAC | IEEE 802.11ax (160 MHz, MCS8, 99pc duty cycle) | WLAN | 8.53 | ±9.6 |
| 10764 | AAC | IEEE 802.11ax (160 MHz, MCS9, 99pc duty cycle) | WLAN | 8.54 | ±9.6 |
| 10765 | AAC | IEEE 802.11ax (160 MHz, MCS10, 99pc duty cycle) | WLAN | 8.54 | ±9.6 |
| 10766 | AAC | IEEE 802.11ax (160 MHz, MCS11, 99pc duty cycle) | WLAN | 8.51 | ±9.6 |
| 10767 | AAE | 5G NR (CP-OFDM, 1 RB, 5 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 7.99 | ±9.6 |
| 10768 | AAD | 5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.01 | ±9.6 |
| 10769 | AAD | 5G NR (CP-OFDM, 1 RB, 15 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.01 | ±9.6 |
| 10770 | AAD | 5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.02 | ±9.6 |
| 10771 | AAD | 5G NR (CP-OFDM, 1 RB, 25 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.02 | ±9.6 |
| 10772 | AAD | 5G NR (CP-OFDM, 1 RB, 30 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.23 | ±9.6 |
| 10773 | AAD | 5G NR (CP-OFDM, 1 RB, 40 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.03 | ±9.6 |
| 10774 | AAD | 5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.02 | ±9.6 |
| 10775 | AAD | 5G NR (CP-OFDM, 50% RB, 5 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.31 | ±9.6 |
| 10776 | AAD | 5G NR (CP-OFDM, 50% RB, 10 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.30 | ±9.6 |
| 10777 | AAC | 5G NR (CP-OFDM, 50% RB, 15 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.30 | ±9.6 |
| 10778 | AAD | 5G NR (CP-OFDM, 50% RB, 20 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.34 | ±9.6 |
| 10779 | AAC | 5G NR (CP-OFDM, 50% RB, 25 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.42 | ±9.6 |
| 10780 | AAD | 5G NR (CP-OFDM, 50% RB, 30 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.38 | ±9.6 |
| 10781 | AAD | 5G NR (CP-OFDM, 50% RB, 40 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.38 | ±9.6 |
| 10782 | AAD | 5G NR (CP-OFDM, 50% RB, 50 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.43 | ±9.6 |
| 10783 | AAE | 5G NR (CP-OFDM, 100% RB, 5 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.31 | ±9.6 |
| 10784 | AAD | 5G NR (CP-OFDM, 100% RB, 10 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.29 | ±9.6 |
| 10785 | AAD | 5G NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.40 | ±9.6 |
| 10786 | AAD | 5G NR (CP-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.35 | ±9.6 |
| 10787 | AAD | 5G NR (CP-OFDM, 100% RB, 25 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.44 | ±9.6 |
| 10788 | AAD | 5G NR (CP-OFDM, 100% RB, 30 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.39 | ±9.6 |
| 10789 | AAD | 5G NR (CP-OFDM, 100% RB, 40 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.37 | ±9.6 |
| 10790 | AAD | 5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.39 | ±9.6 |
| 10791 | AAE | 5G NR (CP-OFDM, 1 RB, 5 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 7.83 | ±9.6 |
| 10792 | AAD | 5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 7.92 | ±9.6 |
| 10793 | AAD | 5G NR (CP-OFDM, 1 RB, 15 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 7.95 | ±9.6 |
| 10794 | AAD | 5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 7.82 | ±9.6 |
| 10795 | AAD | 5G NR (CP-OFDM, 1 RB, 25 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 7.84 | ±9.6 |
| 10796 | AAD | 5G NR (CP-OFDM, 1 RB, 30 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 7.82 | ±9.6 |
| 10797 | AAD | 5G NR (CP-OFDM, 1 RB, 40 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.01 | ±9.6 |
| 10798 | AAD | 5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 7.89 | ±9.6 |
| 10799 | AAD | 5G NR (CP-OFDM, 1 RB, 60 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 7.93 | ±9.6 |
| 10801 | AAD | 5G NR (CP-OFDM, 1 RB, 80 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 7.89 | ±9.6 |
| 10802 | AAD | 5G NR (CP-OFDM, 1 RB, 90 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 7.87 | ±9.6 |
| 10803 | AAD | 5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 7.93 | ±9.6 |
| 10805 | AAD | 5G NR (CP-OFDM, 50% RB, 10 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.34 | ±9.6 |
| 10806 | AAD | 5G NR (CP-OFDM, 50% RB, 15 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.37 | ±9.6 |
| 10809 | AAD | 5G NR (CP-OFDM, 50% RB, 30 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.34 | ±9.6 |
| 10810 | AAD | 5G NR (CP-OFDM, 50% RB, 40 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.34 | ±9.6 |
| 10812 | AAD | 5G NR (CP-OFDM, 50% RB, 60 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.35 | ±9.6 |
| 10817 | AAE | 5G NR (CP-OFDM, 100% RB, 5 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.35 | ±9.6 |
| 10818 | AAD | 5G NR (CP-OFDM, 100% RB, 10 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.34 | ±9.6 |
| 10819 | AAD | 5G NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.33 | ±9.6 |
| 10820 | AAD | 5G NR (CP-OFDM, 100% RB, 20 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.30 | ±9.6 |
| 10821 | AAD | 5G NR (CP-OFDM, 100% RB, 25 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.41 | ±9.6 |
| 10822 | AAD | 5G NR (CP-OFDM, 100% RB, 30 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.41 | ±9.6 |
| 10823 | AAD | 5G NR (CP-OFDM, 100% RB, 40 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.36 | ±9.6 |
| 10824 | AAD | 5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.39 | ±9.6 |
| 10825 | AAD | 5G NR (CP-OFDM, 100% RB, 60 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.41 | ±9.6 |
| 10827 | AAD | 5G NR (CP-OFDM, 100% RB, 80 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.42 | ±9.6 |
| 10828 | AAD | 5G NR (CP-OFDM, 100% RB, 90 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.43 | ±9.6 |

| UID | Rev | Communication System Name | Group | PAR (dB) | Unc[E] $k = 2$ |
|---|---|---|---|---|---|
| 10829 | AAD | 5G NR (CP-OFDM, 100% RB, 100 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.40 | ±9.6 |
| 10830 | AAD | 5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 7.63 | ±9.6 |
| 10831 | AAD | 5G NR (CP-OFDM, 1 RB, 15 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 7.73 | ±9.6 |
| 10832 | AAD | 5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 7.74 | ±9.6 |
| 10833 | AAD | 5G NR (CP-OFDM, 1 RB, 25 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 7.70 | ±9.6 |
| 10834 | AAD | 5G NR (CP-OFDM, 1 RB, 30 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 7.75 | ±9.6 |
| 10835 | AAD | 5G NR (CP-OFDM, 1 RB, 40 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 7.70 | ±9.6 |
| 10836 | AAD | 5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 7.66 | ±9.6 |
| 10837 | AAD | 5G NR (CP-OFDM, 1 RB, 60 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 7.68 | ±9.6 |
| 10839 | AAD | 5G NR (CP-OFDM, 1 RB, 80 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 7.70 | ±9.6 |
| 10840 | AAD | 5G NR (CP-OFDM, 1 RB, 90 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 7.67 | ±9.6 |
| 10841 | AAD | 5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 7.71 | ±9.6 |
| 10843 | AAD | 5G NR (CP-OFDM, 50% RB, 15 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.49 | ±9.6 |
| 10844 | AAD | 5G NR (CP-OFDM, 50% RB, 20 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.34 | ±9.6 |
| 10846 | AAD | 5G NR (CP-OFDM, 50% RB, 30 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.41 | ±9.6 |
| 10854 | AAD | 5G NR (CP-OFDM, 100% RB, 10 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.34 | ±9.6 |
| 10855 | AAD | 5G NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.36 | ±9.6 |
| 10856 | AAD | 5G NR (CP-OFDM, 100% RB, 20 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.37 | ±9.6 |
| 10857 | AAD | 5G NR (CP-OFDM, 100% RB, 25 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.35 | ±9.6 |
| 10858 | AAD | 5G NR (CP-OFDM, 100% RB, 30 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.36 | ±9.6 |
| 10859 | AAD | 5G NR (CP-OFDM, 100% RB, 40 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.34 | ±9.6 |
| 10860 | AAD | 5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.41 | ±9.6 |
| 10861 | AAD | 5G NR (CP-OFDM, 100% RB, 60 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.40 | ±9.6 |
| 10863 | AAD | 5G NR (CP-OFDM, 100% RB, 80 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.41 | ±9.6 |
| 10864 | AAD | 5G NR (CP-OFDM, 100% RB, 90 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.37 | ±9.6 |
| 10865 | AAD | 5G NR (CP-OFDM, 100% RB, 100 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.41 | ±9.6 |
| 10866 | AAD | 5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.68 | ±9.6 |
| 10868 | AAD | 5G NR (DFT-s-OFDM, 100% RB, 100 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.89 | ±9.6 |
| 10869 | AAE | 5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 120 kHz) | 5G NR FR2 TDD | 5.75 | ±9.6 |
| 10870 | AAE | 5G NR (DFT-s-OFDM, 100% RB, 100 MHz, QPSK, 120 kHz) | 5G NR FR2 TDD | 5.86 | ±9.6 |
| 10871 | AAE | 5G NR (DFT-s-OFDM, 1 RB, 100 MHz, 16QAM, 120 kHz) | 5G NR FR2 TDD | 5.75 | ±9.6 |
| 10872 | AAE | 5G NR (DFT-s-OFDM, 100% RB, 100 MHz, 16QAM, 120 kHz) | 5G NR FR2 TDD | 6.52 | ±9.6 |
| 10873 | AAE | 5G NR (DFT-s-OFDM, 1 RB, 100 MHz, 64QAM, 120 kHz) | 5G NR FR2 TDD | 6.61 | ±9.6 |
| 10874 | AAE | 5G NR (DFT-s-OFDM, 100% RB, 100 MHz, 64QAM, 120 kHz) | 5G NR FR2 TDD | 6.65 | ±9.6 |
| 10875 | AAE | 5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 120 kHz) | 5G NR FR2 TDD | 7.78 | ±9.6 |
| 10876 | AAE | 5G NR (CP-OFDM, 100% RB, 100 MHz, QPSK, 120 kHz) | 5G NR FR2 TDD | 8.39 | ±9.6 |
| 10877 | AAE | 5G NR (CP-OFDM, 1 RB, 100 MHz, 16QAM, 120 kHz) | 5G NR FR2 TDD | 7.95 | ±9.6 |
| 10878 | AAE | 5G NR (CP-OFDM, 100% RB, 100 MHz, 16QAM, 120 kHz) | 5G NR FR2 TDD | 8.41 | ±9.6 |
| 10879 | AAE | 5G NR (CP-OFDM, 1 RB, 100 MHz, 64QAM, 120 kHz) | 5G NR FR2 TDD | 8.12 | ±9.6 |
| 10880 | AAE | 5G NR (CP-OFDM, 100% RB, 100 MHz, 64QAM, 120 kHz) | 5G NR FR2 TDD | 8.38 | ±9.6 |
| 10881 | AAE | 5G NR (DFT-s-OFDM, 1 RB, 50 MHz, QPSK, 120 kHz) | 5G NR FR2 TDD | 5.75 | ±9.6 |
| 10882 | AAE | 5G NR (DFT-s-OFDM, 100% RB, 50 MHz, QPSK, 120 kHz) | 5G NR FR2 TDD | 5.96 | ±9.6 |
| 10883 | AAE | 5G NR (DFT-s-OFDM, 1 RB, 50 MHz, 16QAM, 120 kHz) | 5G NR FR2 TDD | 6.57 | ±9.6 |
| 10884 | AAE | 5G NR (DFT-s-OFDM, 100% RB, 50 MHz, 16QAM, 120 kHz) | 5G NR FR2 TDD | 6.53 | ±9.6 |
| 10885 | AAE | 5G NR (DFT-s-OFDM, 1 RB, 50 MHz, 64QAM, 120 kHz) | 5G NR FR2 TDD | 6.61 | ±9.6 |
| 10886 | AAE | 5G NR (DFT-s-OFDM, 100% RB, 50 MHz, 64QAM, 120 kHz) | 5G NR FR2 TDD | 6.65 | ±9.6 |
| 10887 | AAE | 5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 120 kHz) | 5G NR FR2 TDD | 7.78 | ±9.6 |
| 10888 | AAE | 5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 120 kHz) | 5G NR FR2 TDD | 8.35 | ±9.6 |
| 10889 | AAE | 5G NR (CP-OFDM, 1 RB, 50 MHz, 16QAM, 120 kHz) | 5G NR FR2 TDD | 8.02 | ±9.6 |
| 10890 | AAE | 5G NR (CP-OFDM, 100% RB, 50 MHz, 16QAM, 120 kHz) | 5G NR FR2 TDD | 8.40 | ±9.6 |
| 10891 | AAE | 5G NR (CP-OFDM, 1 RB, 50 MHz, 64QAM, 120 kHz) | 5G NR FR2 TDD | 8.13 | ±9.6 |
| 10892 | AAE | 5G NR (CP-OFDM, 100% RB, 50 MHz, 64QAM, 120 kHz) | 5G NR FR2 TDD | 8.41 | ±9.6 |
| 10897 | AAC | 5G NR (DFT-s-OFDM, 1 RB, 5 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.66 | ±9.6 |
| 10898 | AAB | 5G NR (DFT-s-OFDM, 1 RB, 10 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.67 | ±9.6 |
| 10899 | AAB | 5G NR (DFT-s-OFDM, 1 RB, 15 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.67 | ±9.6 |
| 10900 | AAB | 5G NR (DFT-s-OFDM, 1 RB, 20 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.68 | ±9.6 |
| 10901 | AAB | 5G NR (DFT-s-OFDM, 1 RB, 25 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.68 | ±9.6 |
| 10902 | AAB | 5G NR (DFT-s-OFDM, 1 RB, 30 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.68 | ±9.6 |
| 10903 | AAB | 5G NR (DFT-s-OFDM, 1 RB, 40 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.68 | ±9.6 |
| 10904 | AAB | 5G NR (DFT-s-OFDM, 1 RB, 50 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.68 | ±9.6 |
| 10905 | AAB | 5G NR (DFT-s-OFDM, 1 RB, 60 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.68 | ±9.6 |
| 10906 | AAB | 5G NR (DFT-s-OFDM, 1 RB, 80 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.68 | ±9.6 |
| 10907 | AAC | 5G NR (DFT-s-OFDM, 50% RB, 5 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.78 | ±9.6 |
| 10908 | AAB | 5G NR (DFT-s-OFDM, 50% RB, 10 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.93 | ±9.6 |
| 10909 | AAB | 5G NR (DFT-s-OFDM, 50% RB, 15 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.96 | ±9.6 |
| 10910 | AAB | 5G NR (DFT-s-OFDM, 50% RB, 20 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.83 | ±9.6 |

| UID | Rev | Communication System Name | Group | PAR (dB) | Unc[E] $k = 2$ |
|---|---|---|---|---|---|
| 10911 | AAB | 5G NR (DFT-s-OFDM, 50% RB, 25 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.93 | ±9.6 |
| 10912 | AAB | 5G NR (DFT-s-OFDM, 50% RB, 30 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.84 | ±9.6 |
| 10913 | AAB | 5G NR (DFT-s-OFDM, 50% RB, 40 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.84 | ±9.6 |
| 10914 | AAB | 5G NR (DFT-s-OFDM, 50% RB, 50 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.85 | ±9.6 |
| 10915 | AAB | 5G NR (DFT-s-OFDM, 50% RB, 60 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.83 | ±9.6 |
| 10916 | AAB | 5G NR (DFT-s-OFDM, 50% RB, 80 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.87 | ±9.6 |
| 10917 | AAB | 5G NR (DFT-s-OFDM, 50% RB, 100 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.94 | ±9.6 |
| 10918 | AAC | 5G NR (DFT-s-OFDM, 100% RB, 5 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.86 | ±9.6 |
| 10919 | AAB | 5G NR (DFT-s-OFDM, 100% RB, 10 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.86 | ±9.6 |
| 10920 | AAB | 5G NR (DFT-s-OFDM, 100% RB, 15 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.87 | ±9.6 |
| 10921 | AAB | 5G NR (DFT-s-OFDM, 100% RB, 20 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.84 | ±9.6 |
| 10922 | AAB | 5G NR (DFT-s-OFDM, 100% RB, 25 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.82 | ±9.6 |
| 10923 | AAB | 5G NR (DFT-s-OFDM, 100% RB, 30 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.84 | ±9.6 |
| 10924 | AAB | 5G NR (DFT-s-OFDM, 100% RB, 40 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.84 | ±9.6 |
| 10925 | AAB | 5G NR (DFT-s-OFDM, 100% RB, 50 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.95 | ±9.6 |
| 10926 | AAB | 5G NR (DFT-s-OFDM, 100% RB, 60 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.84 | ±9.6 |
| 10927 | AAB | 5G NR (DFT-s-OFDM, 100% RB, 80 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.94 | ±9.6 |
| 10928 | AAC | 5G NR (DFT-s-OFDM, 1 RB, 5 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.52 | ±9.6 |
| 10929 | AAC | 5G NR (DFT-s-OFDM, 1 RB, 10 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.52 | ±9.6 |
| 10930 | AAC | 5G NR (DFT-s-OFDM, 1 RB, 15 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.52 | ±9.6 |
| 10931 | AAC | 5G NR (DFT-s-OFDM, 1 RB, 20 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.51 | ±9.6 |
| 10932 | AAC | 5G NR (DFT-s-OFDM, 1 RB, 25 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.51 | ±9.6 |
| 10933 | AAC | 5G NR (DFT-s-OFDM, 1 RB, 30 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.51 | ±9.6 |
| 10934 | AAC | 5G NR (DFT-s-OFDM, 1 RB, 40 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.51 | ±9.6 |
| 10935 | AAD | 5G NR (DFT-s-OFDM, 1 RB, 50 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.51 | ±9.6 |
| 10936 | AAC | 5G NR (DFT-s-OFDM, 50% RB, 5 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.90 | ±9.6 |
| 10937 | AAC | 5G NR (DFT-s-OFDM, 50% RB, 10 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.77 | ±9.6 |
| 10938 | AAC | 5G NR (DFT-s-OFDM, 50% RB, 15 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.90 | ±9.6 |
| 10939 | AAC | 5G NR (DFT-s-OFDM, 50% RB, 20 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.82 | ±9.6 |
| 10940 | AAC | 5G NR (DFT-s-OFDM, 50% RB, 25 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.89 | ±9.6 |
| 10941 | AAC | 5G NR (DFT-s-OFDM, 50% RB, 30 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.83 | ±9.6 |
| 10942 | AAC | 5G NR (DFT-s-OFDM, 50% RB, 40 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.85 | ±9.6 |
| 10943 | AAD | 5G NR (DFT-s-OFDM, 50% RB, 50 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.95 | ±9.6 |
| 10944 | AAC | 5G NR (DFT-s-OFDM, 100% RB, 5 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.81 | ±9.6 |
| 10945 | AAC | 5G NR (DFT-s-OFDM, 100% RB, 10 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.85 | ±9.6 |
| 10946 | AAC | 5G NR (DFT-s-OFDM, 100% RB, 15 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.83 | ±9.6 |
| 10947 | AAC | 5G NR (DFT-s-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.87 | ±9.6 |
| 10948 | AAC | 5G NR (DFT-s-OFDM, 100% RB, 25 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.94 | ±9.6 |
| 10949 | AAC | 5G NR (DFT-s-OFDM, 100% RB, 30 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.87 | ±9.6 |
| 10950 | AAC | 5G NR (DFT-s-OFDM, 100% RB, 40 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.94 | ±9.6 |
| 10951 | AAD | 5G NR (DFT-s-OFDM, 100% RB, 50 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.92 | ±9.6 |
| 10952 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 15 kHz) | 5G NR FR1 FDD | 8.25 | ±9.6 |
| 10953 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 15 kHz) | 5G NR FR1 FDD | 8.15 | ±9.6 |
| 10954 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 15 kHz) | 5G NR FR1 FDD | 8.23 | ±9.6 |
| 10955 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 15 kHz) | 5G NR FR1 FDD | 8.42 | ±9.6 |
| 10956 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 30 kHz) | 5G NR FR1 FDD | 8.14 | ±9.6 |
| 10957 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 30 kHz) | 5G NR FR1 FDD | 8.31 | ±9.6 |
| 10958 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 30 kHz) | 5G NR FR1 FDD | 8.61 | ±9.6 |
| 10959 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 30 kHz) | 5G NR FR1 FDD | 8.33 | ±9.6 |
| 10960 | AAC | 5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 15 kHz) | 5G NR FR1 TDD | 9.32 | ±9.6 |
| 10961 | AAB | 5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 15 kHz) | 5G NR FR1 TDD | 9.36 | ±9.6 |
| 10962 | AAB | 5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 15 kHz) | 5G NR FR1 TDD | 9.40 | ±9.6 |
| 10963 | AAB | 5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 15 kHz) | 5G NR FR1 TDD | 9.55 | ±9.6 |
| 10964 | AAC | 5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 30 kHz) | 5G NR FR1 TDD | 9.29 | ±9.6 |
| 10965 | AAB | 5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 30 kHz) | 5G NR FR1 TDD | 9.37 | ±9.6 |
| 10966 | AAB | 5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 30 kHz) | 5G NR FR1 TDD | 9.55 | ±9.6 |
| 10967 | AAB | 5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 30 kHz) | 5G NR FR1 TDD | 9.42 | ±9.6 |
| 10968 | AAB | 5G NR DL (CP-OFDM, TM 3.1, 100 MHz, 64-QAM, 30 kHz) | 5G NR FR1 TDD | 9.49 | ±9.6 |
| 10972 | AAB | 5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 11.59 | ±9.6 |
| 10973 | AAB | 5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 9.06 | ±9.6 |
| 10974 | AAB | 5G NR (CP-OFDM, 100% RB, 100 MHz, 256-QAM, 30 kHz) | 5G NR FR1 TDD | 10.28 | ±9.6 |
| 10978 | AAA | ULLA BDR | ULLA | 1.16 | ±9.6 |
| 10979 | AAA | ULLA HDR4 | ULLA | 8.58 | ±9.6 |
| 10980 | AAA | ULLA HDR8 | ULLA | 10.32 | ±9.6 |
| 10981 | AAA | ULLA HDRp4 | ULLA | 3.19 | ±9.6 |
| 10982 | AAA | ULLA HDRp8 | ULLA | 3.43 | ±9.6 |

| UID | Rev | Communication System Name | Group | PAR (dB) | Unc[E] $k = 2$ |
|---|---|---|---|---|---|
| 10983 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 40 MHz, 64-QAM, 15 kHz) | 5G NR FR1 TDD | 9.31 | ±9.6 |
| 10984 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 50 MHz, 64-QAM, 15 kHz) | 5G NR FR1 TDD | 9.42 | ±9.6 |
| 10985 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 40 MHz, 64-QAM, 30 kHz) | 5G NR FR1 TDD | 9.54 | ±9.6 |
| 10986 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 50 MHz, 64-QAM, 30 kHz) | 5G NR FR1 TDD | 9.50 | ±9.6 |
| 10987 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 60 MHz, 64-QAM, 30 kHz) | 5G NR FR1 TDD | 9.53 | ±9.6 |
| 10988 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 70 MHz, 64-QAM, 30 kHz) | 5G NR FR1 TDD | 9.38 | ±9.6 |
| 10989 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 80 MHz, 64-QAM, 30 kHz) | 5G NR FR1 TDD | 9.33 | ±9.6 |
| 10990 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 90 MHz, 64-QAM, 30 kHz) | 5G NR FR1 TDD | 9.52 | ±9.6 |
| 11003 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 30 MHz, 64-QAM, 15 kHz) | 5G NR FR1 TDD | 10.24 | ±9.6 |
| 11004 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 30 MHz, 64-QAM, 30 kHz) | 5G NR FR1 TDD | 10.73 | ±9.6 |
| 11005 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 25 MHz, 64-QAM, 15 kHz) | 5G NR FR1 FDD | 8.70 | ±9.6 |
| 11006 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 30 MHz, 64-QAM, 15 kHz) | 5G NR FR1 FDD | 8.55 | ±9.6 |
| 11007 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 40 MHz, 64-QAM, 15 kHz) | 5G NR FR1 FDD | 8.46 | ±9.6 |
| 11008 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 50 MHz, 64-QAM, 15 kHz) | 5G NR FR1 FDD | 8.51 | ±9.6 |
| 11009 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 25 MHz, 64-QAM, 30 kHz) | 5G NR FR1 FDD | 8.76 | ±9.6 |
| 11010 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 30 MHz, 64-QAM, 30 kHz) | 5G NR FR1 FDD | 8.95 | ±9.6 |
| 11011 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 40 MHz, 64-QAM, 30 kHz) | 5G NR FR1 FDD | 8.96 | ±9.6 |
| 11012 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 50 MHz, 64-QAM, 30 kHz) | 5G NR FR1 FDD | 8.68 | ±9.6 |
| 11013 | AAA | IEEE 802.11be (320 MHz, MCS1, 99pc duty cycle) | WLAN | 8.47 | ±9.6 |
| 11014 | AAA | IEEE 802.11be (320 MHz, MCS2, 99pc duty cycle) | WLAN | 8.45 | ±9.6 |
| 11015 | AAA | IEEE 802.11be (320 MHz, MCS3, 99pc duty cycle) | WLAN | 8.44 | ±9.6 |
| 11016 | AAA | IEEE 802.11be (320 MHz, MCS4, 99pc duty cycle) | WLAN | 8.44 | ±9.6 |
| 11017 | AAA | IEEE 802.11be (320 MHz, MCS5, 99pc duty cycle) | WLAN | 8.41 | ±9.6 |
| 11018 | AAA | IEEE 802.11be (320 MHz, MCS6, 99pc duty cycle) | WLAN | 8.40 | ±9.6 |
| 11019 | AAA | IEEE 802.11be (320 MHz, MCS7, 99pc duty cycle) | WLAN | 8.29 | ±9.6 |
| 11020 | AAA | IEEE 802.11be (320 MHz, MCS8, 99pc duty cycle) | WLAN | 8.27 | ±9.6 |
| 11021 | AAA | IEEE 802.11be (320 MHz, MCS9, 99pc duty cycle) | WLAN | 8.46 | ±9.6 |
| 11022 | AAA | IEEE 802.11be (320 MHz, MCS10, 99pc duty cycle) | WLAN | 8.36 | ±9.6 |
| 11023 | AAA | IEEE 802.11be (320 MHz, MCS11, 99pc duty cycle) | WLAN | 8.09 | ±9.6 |
| 11024 | AAA | IEEE 802.11be (320 MHz, MCS12, 99pc duty cycle) | WLAN | 8.42 | ±9.6 |
| 11025 | AAA | IEEE 802.11be (320 MHz, MCS13, 99pc duty cycle) | WLAN | 8.37 | ±9.6 |
| 11026 | AAA | IEEE 802.11be (320 MHz, MCS0, 99pc duty cycle) | WLAN | 8.39 | ±9.6 |

[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

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**Accreditation No.: SCS 0108**

**Client** **Sporton**
**Taoyuan City**

**Certificate No.** **EX-7793_Mar24**

# CALIBRATION CERTIFICATE

| | |
|---|---|
| Object | EX3DV4 - SN:7793 |
| Calibration procedure(s) | QA CAL-01.v10, QA CAL-12.v10, QA CAL-14.v7, QA CAL-23.v6, QA CAL-25.v8<br>Calibration procedure for dosimetric E-field probes |
| Calibration date | March 01, 2024 |

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3) °C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID | Cal Date (Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Power meter NRP2 | SN: 104778 | 30-Mar-23 (No. 217-03804/03805) | Mar-24 |
| Power sensor NRP-Z91 | SN: 103244 | 30-Mar-23 (No. 217-03804) | Mar-24 |
| OCP DAK-3.5 (weighted) | SN: 1249 | 05-Oct-23 (OCP-DAK3.5-1249_Oct23) | Oct-24 |
| OCP DAK-12 | SN: 1016 | 05-Oct-23 (OCP-DAK12-1016_Oct23) | Oct-24 |
| Reference 20 dB Attenuator | SN: CC2552 (20x) | 30-Mar-23 (No. 217-03809) | Mar-24 |
| DAE4 | SN: 660 | 23-Feb-24 (No. DAE4-660_Feb24) | Feb-25 |
| Reference Probe EX3DV4 | SN: 7349 | 03-Nov-23 (No. EX3-7349_Nov23) | Nov-24 |

| Secondary Standards | ID | Check Date (in house) | Scheduled Check |
|---|---|---|---|
| Power meter E4419B | SN: GB41293874 | 06-Apr-16 (in house check Jun-22) | In house check: Jun-24 |
| Power sensor E4412A | SN: MY41498087 | 06-Apr-16 (in house check Jun-22) | In house check: Jun-24 |
| Power sensor E4412A | SN: 000110210 | 06-Apr-16 (in house check Jun-22) | In house check: Jun-24 |
| RF generator HP 8648C | SN: US3642U01700 | 04-Aug-99 (in house check Jun-22) | In house check: Jun-24 |
| Network Analyzer E8358A | SN: US41080477 | 31-Mar-14 (in house check Oct-22) | In house check: Oct-24 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by | Jeffrey Katzman | Laboratory Technician | |
| Approved by | Sven Kühn | Technical Manager | |

Issued: March 01, 2024

**Calibration Laboratory of**
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

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**Accreditation No.: SCS 0108**

## Glossary

| | |
|---|---|
| TSL | tissue simulating liquid |
| NORMx,y,z | sensitivity in free space |
| ConvF | sensitivity in TSL / NORMx,y,z |
| DCP | diode compression point |
| CF | crest factor (1/duty_cycle) of the RF signal |
| A, B, C, D | modulation dependent linearization parameters |
| Polarization $\varphi$ | $\varphi$ rotation around probe axis |
| Polarization $\vartheta$ | $\vartheta$ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis |
| Connector Angle | information used in DASY system to align probe sensor X to the robot coordinate system |

## Calibration is Performed According to the Following Standards:

a) IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices – Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

## Methods Applied and Interpretation of Parameters:

- *NORMx,y,z*: Assessed for E-field polarization $\vartheta = 0$ ($f \le 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the $E^2$-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- *DCPx,y,z*: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal. DCP does not depend on frequency nor media.
- *PAR*: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z: A, B, C, D* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters*: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \le 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ±50 MHz to ±100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle*: The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

# Parameters of Probe: EX3DV4 - SN:7793

## Basic Calibration Parameters

| | Sensor X | Sensor Y | Sensor Z | Unc ($k = 2$) |
|---|---|---|---|---|
| Norm ($\mu V/(V/m)^2$) [A] | 0.56 | 0.66 | 0.58 | ±10.1% |
| DCP (mV) [B] | 108.9 | 109.4 | 110.0 | ±4.7% |

## Calibration Results for Modulation Response

| UID | Communication System Name | | A dB | B $dB\sqrt{\mu V}$ | C | D dB | VR mV | Max dev. | Max Unc[E] $k = 2$ |
|---|---|---|---|---|---|---|---|---|---|
| 0 | CW | X | 0.00 | 0.00 | 1.00 | 0.00 | 130.9 | ±1.3% | ±4.7% |
| | | Y | 0.00 | 0.00 | 1.00 | | 116.0 | | |
| | | Z | 0.00 | 0.00 | 1.00 | | 128.3 | | |
| 10352 | Pulse Waveform (200Hz, 10%) | X | 1.77 | 61.85 | 7.13 | 10.00 | 60.0 | ±3.1% | ±9.6% |
| | | Y | 1.52 | 60.40 | 6.36 | | 60.0 | | |
| | | Z | 1.37 | 60.00 | 6.20 | | 60.0 | | |
| 10353 | Pulse Waveform (200Hz, 20%) | X | 0.85 | 60.00 | 5.19 | 6.99 | 80.0 | ±2.8% | ±9.6% |
| | | Y | 0.80 | 60.00 | 4.96 | | 80.0 | | |
| | | Z | 10.00 | 72.00 | 9.00 | | 80.0 | | |
| 10354 | Pulse Waveform (200Hz, 40%) | X | 0.44 | 60.00 | 4.33 | 3.98 | 95.0 | ±2.9% | ±9.6% |
| | | Y | 0.00 | 123.11 | 0.68 | | 95.0 | | |
| | | Z | 0.43 | 60.00 | 4.11 | | 95.0 | | |
| 10355 | Pulse Waveform (200Hz, 60%) | X | 0.25 | 60.00 | 3.90 | 2.22 | 120.0 | ±1.7% | ±9.6% |
| | | Y | 6.68 | 159.97 | 3.62 | | 120.0 | | |
| | | Z | 0.26 | 60.00 | 3.52 | | 120.0 | | |
| 10387 | QPSK Waveform, 1 MHz | X | 0.86 | 71.00 | 17.05 | 1.00 | 150.0 | ±3.2% | ±9.6% |
| | | Y | 0.54 | 64.26 | 13.10 | | 150.0 | | |
| | | Z | 0.63 | 67.45 | 15.20 | | 150.0 | | |
| 10388 | QPSK Waveform, 10 MHz | X | 1.70 | 69.93 | 16.30 | 0.00 | 150.0 | ±0.9% | ±9.6% |
| | | Y | 1.36 | 66.66 | 14.35 | | 150.0 | | |
| | | Z | 1.51 | 68.83 | 15.34 | | 150.0 | | |
| 10396 | 64-QAM Waveform, 100 kHz | X | 1.87 | 66.33 | 16.96 | 3.01 | 150.0 | ±0.9% | ±9.6% |
| | | Y | 1.75 | 65.01 | 15.92 | | 150.0 | | |
| | | Z | 1.81 | 65.85 | 16.57 | | 150.0 | | |
| 10399 | 64-QAM Waveform, 40 MHz | X | 3.01 | 67.62 | 15.97 | 0.00 | 150.0 | ±1.3% | ±9.6% |
| | | Y | 2.81 | 66.55 | 15.22 | | 150.0 | | |
| | | Z | 2.90 | 67.39 | 15.71 | | 150.0 | | |
| 10414 | WLAN CCDF, 64-QAM, 40 MHz | X | 3.96 | 66.92 | 15.85 | 0.00 | 150.0 | ±2.2% | ±9.6% |
| | | Y | 3.74 | 66.10 | 15.27 | | 150.0 | | |
| | | Z | 3.81 | 66.86 | 15.65 | | 150.0 | | |

Note: For details on UID parameters see Appendix

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of Norm X,Y,Z do not affect the $E^2$-field uncertainty inside TSL (see Pages 5 and 6).
[B] Linearization parameter uncertainty for maximum specified field strength.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

# Parameters of Probe: EX3DV4 - SN:7793

## Sensor Model Parameters

| | C1 fF | C2 fF | $\alpha$ $V^{-1}$ | T1 $ms\,V^{-2}$ | T2 $ms\,V^{-1}$ | T3 ms | T4 $V^{-2}$ | T5 $V^{-1}$ | T6 |
|---|---|---|---|---|---|---|---|---|---|
| x | 9.3 | 65.66 | 32.24 | 4.58 | 0.00 | 4.90 | 0.61 | 0.00 | 1.00 |
| y | 9.0 | 63.48 | 31.86 | 1.44 | 0.00 | 4.90 | 0.67 | 0.00 | 1.00 |
| z | 8.0 | 56.61 | 32.17 | 4.17 | 0.00 | 4.90 | 0.57 | 0.00 | 1.00 |

## Other Probe Parameters

| | |
|---|---|
| Sensor Arrangement | Triangular |
| Connector Angle | 38.3° |
| Mechanical Surface Detection Mode | enabled |
| Optical Surface Detection Mode | disabled |
| Probe Overall Length | 337 mm |
| Probe Body Diameter | 10 mm |
| Tip Length | 9 mm |
| Tip Diameter | 2.5 mm |
| Probe Tip to Sensor X Calibration Point | 1 mm |
| Probe Tip to Sensor Y Calibration Point | 1 mm |
| Probe Tip to Sensor Z Calibration Point | 1 mm |
| Recommended Measurement Distance from Surface | 1.4 mm |

**Note:** Measurement distance from surface can be increased to 3–4 mm for an *Area Scan* job.

# Parameters of Probe: EX3DV4 - SN:7793

## Calibration Parameter Determined in Head Tissue Simulating Media

| f (MHz)[C] | Relative Permittivity[F] | Conductivity[F] (S/m) | ConvF X | ConvF Y | ConvF Z | Alpha[G] | Depth[G] (mm) | Unc ($k = 2$) |
|---|---|---|---|---|---|---|---|---|
| 750 | 41.9 | 0.89 | 8.70 | 8.49 | 8.82 | 0.32 | 1.42 | ±11.0% |
| 835 | 41.5 | 0.90 | 8.44 | 8.25 | 8.69 | 0.40 | 1.27 | ±11.0% |
| 900 | 41.5 | 0.97 | 8.10 | 8.02 | 8.34 | 0.37 | 1.27 | ±11.0% |
| 1750 | 40.1 | 1.37 | 7.16 | 7.51 | 7.61 | 0.26 | 1.27 | ±11.0% |
| 1900 | 40.0 | 1.40 | 7.04 | 7.34 | 7.41 | 0.23 | 1.43 | ±11.0% |
| 2000 | 40.0 | 1.40 | 6.97 | 7.25 | 7.29 | 0.29 | 1.27 | ±11.0% |
| 2300 | 39.5 | 1.67 | 6.80 | 7.06 | 7.10 | 0.31 | 1.27 | ±11.0% |
| 2450 | 39.2 | 1.80 | 6.63 | 6.87 | 6.92 | 0.31 | 1.27 | ±11.0% |
| 2600 | 39.0 | 1.96 | 6.52 | 6.78 | 6.82 | 0.30 | 1.27 | ±11.0% |
| 3300 | 38.2 | 2.71 | 6.33 | 6.55 | 6.58 | 0.35 | 1.27 | ±13.1% |
| 3500 | 37.9 | 2.91 | 6.20 | 6.41 | 6.45 | 0.35 | 1.27 | ±13.1% |
| 3700 | 37.7 | 3.12 | 6.14 | 6.36 | 6.41 | 0.36 | 1.27 | ±13.1% |
| 5250 | 35.9 | 4.71 | 4.89 | 5.03 | 5.05 | 0.36 | 1.62 | ±13.1% |
| 5600 | 35.5 | 5.07 | 4.12 | 4.35 | 4.32 | 0.38 | 1.75 | ±13.1% |
| 5800 | 35.3 | 5.27 | 4.37 | 4.42 | 4.46 | 0.35 | 1.86 | ±13.1% |

[C] Frequency validity above 300 MHz of ±100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ±50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ±10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Validity of ConvF assessed at 6 MHz is 4–9 MHz, and ConvF assessed at 13 MHz is 9–19 MHz. Above 5 GHz frequency validity can be extended to ±110 MHz.

[F] The probes are calibrated using tissue simulating liquids (TSL) that deviate for $\varepsilon$ and $\sigma$ by less than ±5% from the target values (typically better than ±3%) and are valid for TSL with deviations of up to ±10% if SAR correction is applied.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ±1% for frequencies below 3 GHz and below ±2% for frequencies between 3–6 GHz at any distance larger than half the probe tip diameter from the boundary.

# Parameters of Probe: EX3DV4 - SN:7793

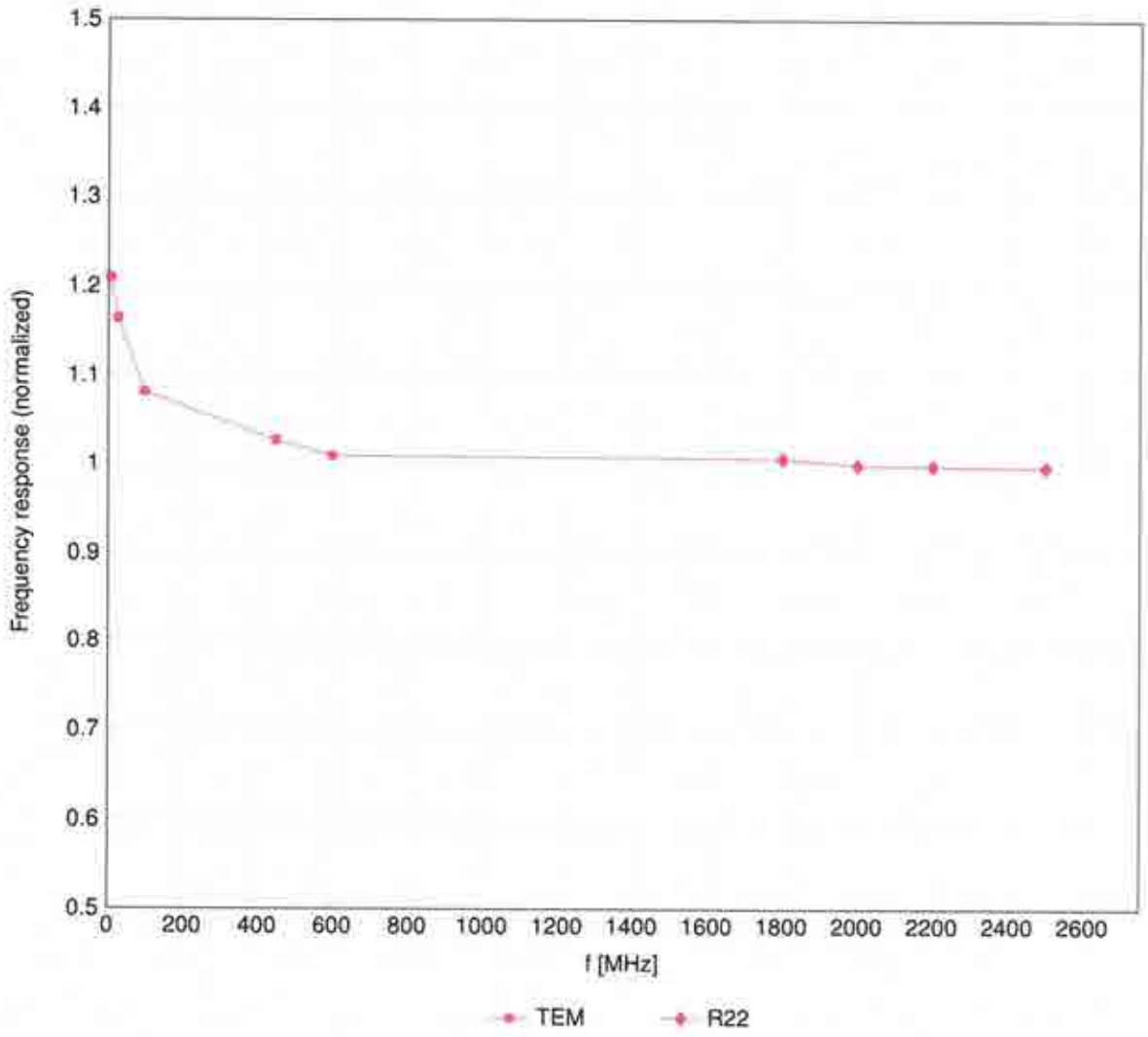
## Calibration Parameter Determined in Head Tissue Simulating Media

| f (MHz)[C] | Relative Permittivity[F] | Conductivity[F] (S/m) | ConvF X | ConvF Y | ConvF Z | Alpha[G] | Depth[G] (mm) | Unc ($k = 2$) |
|---|---|---|---|---|---|---|---|---|
| 6500 | 34.5 | 6.07 | 4.75 | 4.82 | 4.91 | 0.20 | 2.00 | ±18.6% |

[C] Frequency validity at 6.5 GHz is −600/+700 MHz, and ±700 MHz at or above 7 GHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] The probes are calibrated using tissue simulating liquids (TSL) that deviate for $\varepsilon$ and $\sigma$ by less than ±10% from the target values (typically better than ±6%) and are valid for TSL with deviations of up to ±10%.
[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ±1% for frequencies below 3 GHz; below ±2% for frequencies between 3–6 GHz; and below ±4% for frequencies between 6–10 GHz at any distance larger than half the probe tip diameter from the boundary.

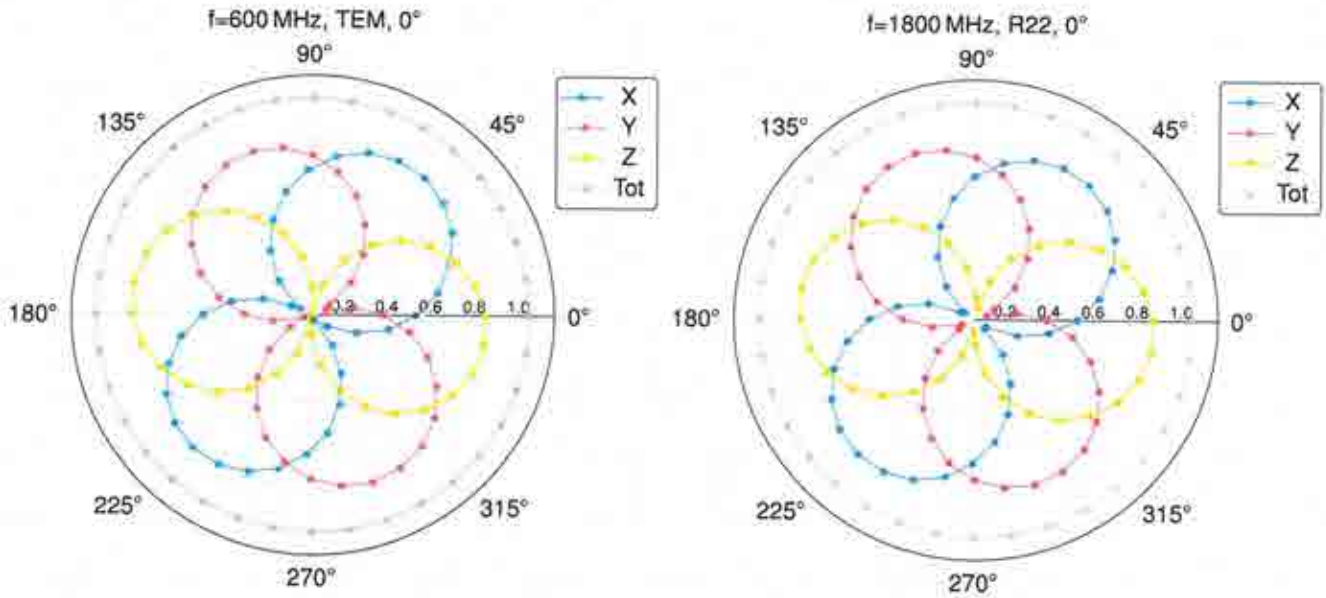
## Frequency Response of E-Field

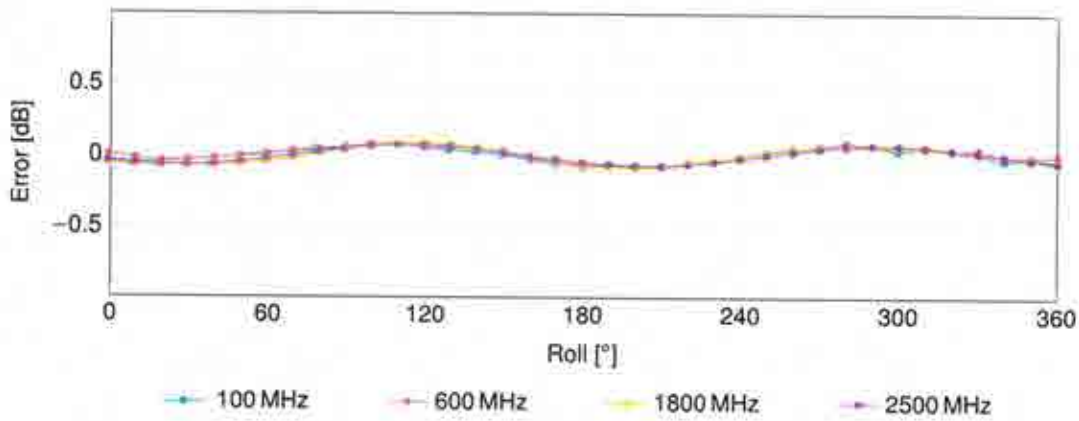
(TEM-Cell:ifi110 EXX, Waveguide:R22)




Uncertainty of Frequency Response of E-field: ±6.3% (k=2)

## Receiving Pattern ($\phi$), $\vartheta = 0°$

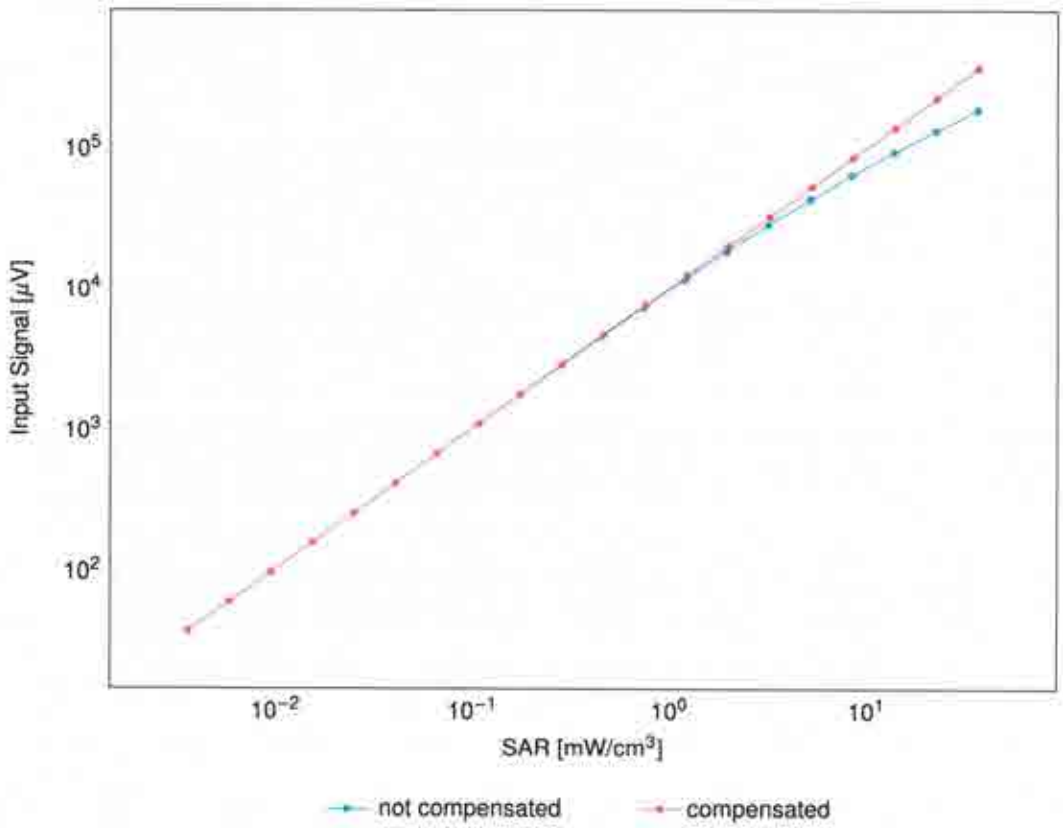


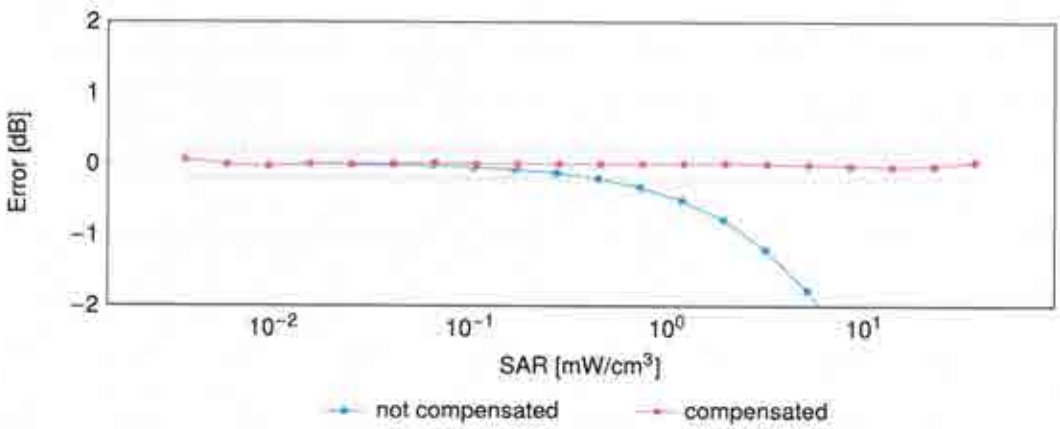




Uncertainty of Axial Isotropy Assessment: ±0.5% (k=2)

## Dynamic Range f($SAR_{head}$)

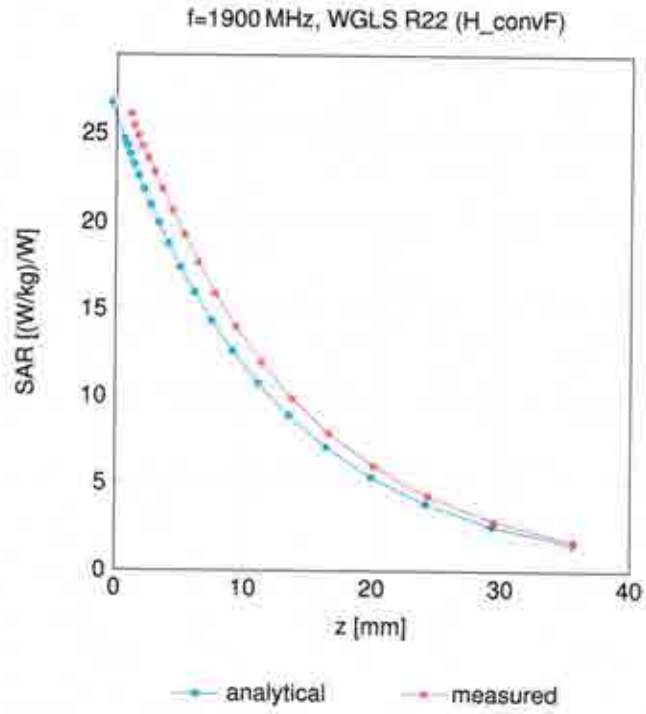
(TEM cell, $f_{eval}$ = 1900 MHz)



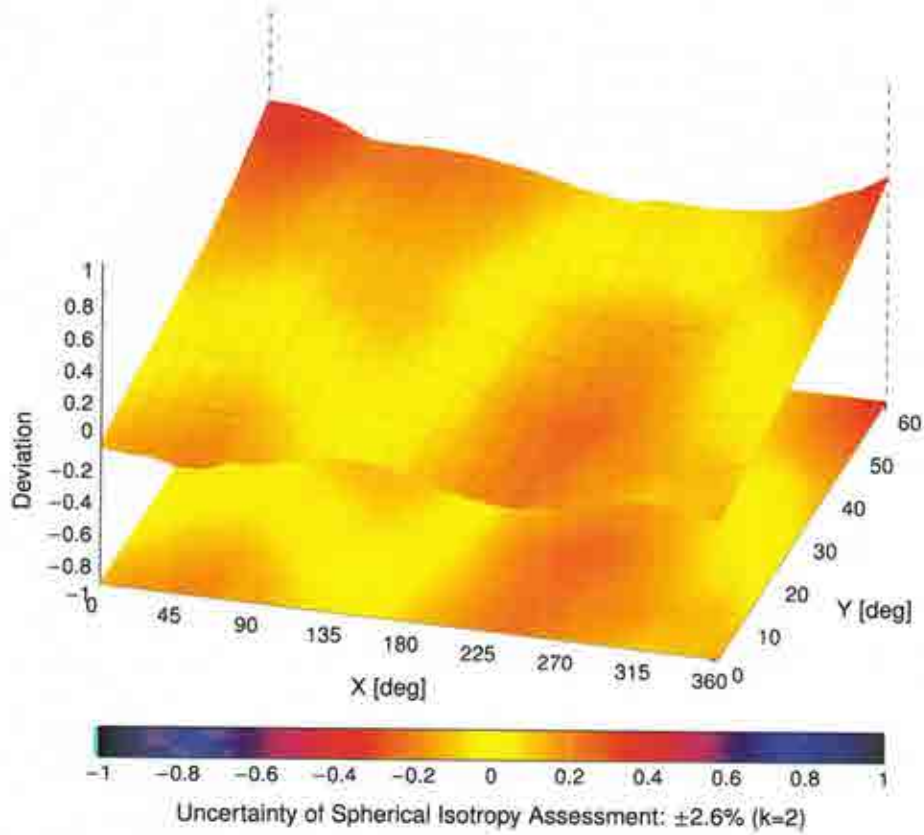

Uncertainty of Linearity Assessment: ±0.6% (k=2)

## Conversion Factor Assessment




## Deviation from Isotropy in Liquid

Error ($\phi, \theta$), f = 900 MHz




Uncertainty of Spherical Isotropy Assessment: ±2.6% (k=2)

# Appendix: Modulation Calibration Parameters

| UID | Rev | Communication System Name | Group | PAR (dB) | Unc$^E$ $k = 2$ |
|---|---|---|---|---|---|
| 0 | | CW | CW | 0.00 | ±4.7 |
| 10010 | CAB | SAR Validation (Square, 100 ms, 10 ms) | Test | 10.00 | ±9.6 |
| 10011 | CAC | UMTS-FDD (WCDMA) | WCDMA | 2.91 | ±9.6 |
| 10012 | CAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps) | WLAN | 1.87 | ±9.6 |
| 10013 | CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps) | WLAN | 9.46 | ±9.6 |
| 10021 | DAC | GSM-FDD (TDMA, GMSK) | GSM | 9.39 | ±9.6 |
| 10023 | DAC | GPRS-FDD (TDMA, GMSK, TN 0) | GSM | 9.57 | ±9.6 |
| 10024 | DAC | GPRS-FDD (TDMA, GMSK, TN 0-1) | GSM | 6.56 | ±9.6 |
| 10025 | DAC | EDGE-FDD (TDMA, 8PSK, TN 0) | GSM | 12.62 | ±9.6 |
| 10026 | DAC | EDGE-FDD (TDMA, 8PSK, TN 0-1) | GSM | 9.55 | ±9.6 |
| 10027 | DAC | GPRS-FDD (TDMA, GMSK, TN 0-1-2) | GSM | 4.80 | ±9.6 |
| 10028 | DAC | GPRS-FDD (TDMA, GMSK, TN 0-1-2-3) | GSM | 3.55 | ±9.6 |
| 10029 | DAC | EDGE-FDD (TDMA, 8PSK, TN 0-1-2) | GSM | 7.78 | ±9.6 |
| 10030 | CAA | IEEE 802.15.1 Bluetooth (GFSK, DH1) | Bluetooth | 5.30 | ±9.6 |
| 10031 | CAA | IEEE 802.15.1 Bluetooth (GFSK, DH3) | Bluetooth | 1.87 | ±9.6 |
| 10032 | CAA | IEEE 802.15.1 Bluetooth (GFSK, DH5) | Bluetooth | 1.16 | ±9.6 |
| 10033 | CAA | IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1) | Bluetooth | 7.74 | ±9.6 |
| 10034 | CAA | IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3) | Bluetooth | 4.53 | ±9.6 |
| 10035 | CAA | IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5) | Bluetooth | 3.83 | ±9.6 |
| 10036 | CAA | IEEE 802.15.1 Bluetooth (8-DPSK, DH1) | Bluetooth | 8.01 | ±9.6 |
| 10037 | CAA | IEEE 802.15.1 Bluetooth (8-DPSK, DH3) | Bluetooth | 4.77 | ±9.6 |
| 10038 | CAA | IEEE 802.15.1 Bluetooth (8-DPSK, DH5) | Bluetooth | 4.10 | ±9.6 |
| 10039 | CAB | CDMA2000 (1xRTT, RC1) | CDMA2000 | 4.57 | ±9.6 |
| 10042 | CAB | IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate) | AMPS | 7.78 | ±9.6 |
| 10044 | CAA | IS-91/EIA/TIA-553 FDD (FDMA, FM) | AMPS | 0.00 | ±9.6 |
| 10048 | CAA | DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24) | DECT | 13.80 | ±9.6 |
| 10049 | CAA | DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12) | DECT | 10.79 | ±9.6 |
| 10056 | CAA | UMTS-TDD (TD-SCDMA, 1.28 Mcps) | TD-SCDMA | 11.01 | ±9.6 |
| 10058 | DAC | EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3) | GSM | 6.52 | ±9.6 |
| 10059 | CAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps) | WLAN | 2.12 | ±9.6 |
| 10060 | CAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps) | WLAN | 2.83 | ±9.6 |
| 10061 | CAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps) | WLAN | 3.60 | ±9.6 |
| 10062 | CAE | IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps) | WLAN | 8.68 | ±9.6 |
| 10063 | CAE | IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps) | WLAN | 8.63 | ±9.6 |
| 10064 | CAE | IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps) | WLAN | 9.09 | ±9.6 |
| 10065 | CAE | IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps) | WLAN | 9.00 | ±9.6 |
| 10066 | CAE | IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps) | WLAN | 9.38 | ±9.6 |
| 10067 | CAE | IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps) | WLAN | 10.12 | ±9.6 |
| 10068 | CAE | IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps) | WLAN | 10.24 | ±9.6 |
| 10069 | CAE | IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps) | WLAN | 10.56 | ±9.6 |
| 10071 | CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps) | WLAN | 9.83 | ±9.6 |
| 10072 | CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps) | WLAN | 9.62 | ±9.6 |
| 10073 | CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps) | WLAN | 9.94 | ±9.6 |
| 10074 | CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps) | WLAN | 10.30 | ±9.6 |
| 10075 | CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps) | WLAN | 10.77 | ±9.6 |
| 10076 | CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps) | WLAN | 10.94 | ±9.6 |
| 10077 | CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps) | WLAN | 11.00 | ±9.6 |
| 10081 | CAB | CDMA2000 (1xRTT, RC3) | CDMA2000 | 3.97 | ±9.6 |
| 10082 | CAB | IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate) | AMPS | 4.77 | ±9.6 |
| 10090 | DAC | GPRS-FDD (TDMA, GMSK, TN 0-4) | GSM | 6.56 | ±9.6 |
| 10097 | CAC | UMTS-FDD (HSDPA) | WCDMA | 3.98 | ±9.6 |
| 10098 | CAC | UMTS-FDD (HSUPA, Subtest 2) | WCDMA | 3.98 | ±9.6 |
| 10099 | DAC | EDGE-FDD (TDMA, 8PSK, TN 0-4) | GSM | 9.55 | ±9.6 |
| 10100 | CAF | LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK) | LTE-FDD | 5.67 | ±9.6 |
| 10101 | CAF | LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM) | LTE-FDD | 6.42 | ±9.6 |
| 10102 | CAF | LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM) | LTE-FDD | 6.60 | ±9.6 |
| 10103 | CAH | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK) | LTE-TDD | 9.29 | ±9.6 |
| 10104 | CAH | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM) | LTE-TDD | 9.97 | ±9.6 |
| 10105 | CAH | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM) | LTE-TDD | 10.01 | ±9.6 |
| 10108 | CAH | LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK) | LTE-FDD | 5.80 | ±9.6 |
| 10109 | CAH | LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM) | LTE-FDD | 6.43 | ±9.6 |
| 10110 | CAH | LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK) | LTE-FDD | 5.75 | ±9.6 |
| 10111 | CAH | LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM) | LTE-FDD | 6.44 | ±9.6 |

| UID | Rev | Communication System Name | Group | PAR (dB) | Unc$^E$ $k=2$ |
|---|---|---|---|---|---|
| 10112 | CAH | LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM) | LTE-FDD | 6.59 | ±9.6 |
| 10113 | CAH | LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM) | LTE-FDD | 6.62 | ±9.6 |
| 10114 | CAE | IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK) | WLAN | 8.10 | ±9.6 |
| 10115 | CAE | IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM) | WLAN | 8.46 | ±9.6 |
| 10116 | CAE | IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM) | WLAN | 8.15 | ±9.6 |
| 10117 | CAE | IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK) | WLAN | 8.07 | ±9.6 |
| 10118 | CAE | IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM) | WLAN | 8.59 | ±9.6 |
| 10119 | CAE | IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM) | WLAN | 8.13 | ±9.6 |
| 10140 | CAF | LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM) | LTE-FDD | 6.49 | ±9.6 |
| 10141 | CAF | LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM) | LTE-FDD | 6.53 | ±9.6 |
| 10142 | CAF | LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK) | LTE-FDD | 5.73 | ±9.6 |
| 10143 | CAF | LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM) | LTE-FDD | 6.35 | ±9.6 |
| 10144 | CAF | LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM) | LTE-FDD | 6.65 | ±9.6 |
| 10145 | CAG | LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK) | LTE-FDD | 5.76 | ±9.6 |
| 10146 | CAG | LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM) | LTE-FDD | 6.41 | ±9.6 |
| 10147 | CAG | LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM) | LTE-FDD | 6.72 | ±9.6 |
| 10149 | CAF | LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM) | LTE-FDD | 6.42 | ±9.6 |
| 10150 | CAF | LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM) | LTE-FDD | 6.60 | ±9.6 |
| 10151 | CAH | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK) | LTE-TDD | 9.28 | ±9.6 |
| 10152 | CAH | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM) | LTE-TDD | 9.92 | ±9.6 |
| 10153 | CAH | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM) | LTE-TDD | 10.05 | ±9.6 |
| 10154 | CAH | LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK) | LTE-FDD | 5.75 | ±9.6 |
| 10155 | CAH | LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM) | LTE-FDD | 6.43 | ±9.6 |
| 10156 | CAH | LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK) | LTE-FDD | 5.79 | ±9.6 |
| 10157 | CAH | LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM) | LTE-FDD | 6.49 | ±9.6 |
| 10158 | CAH | LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM) | LTE-FDD | 6.62 | ±9.6 |
| 10159 | CAH | LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM) | LTE-FDD | 6.56 | ±9.6 |
| 10160 | CAF | LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK) | LTE-FDD | 5.82 | ±9.6 |
| 10161 | CAF | LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM) | LTE-FDD | 6.43 | ±9.6 |
| 10162 | CAF | LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM) | LTE-FDD | 6.58 | ±9.6 |
| 10166 | CAG | LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK) | LTE-FDD | 5.46 | ±9.6 |
| 10167 | CAG | LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM) | LTE-FDD | 6.21 | ±9.6 |
| 10168 | CAG | LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM) | LTE-FDD | 6.79 | ±9.6 |
| 10169 | CAF | LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK) | LTE-FDD | 5.73 | ±9.6 |
| 10170 | CAF | LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM) | LTE-FDD | 6.52 | ±9.6 |
| 10171 | AAF | LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM) | LTE-FDD | 6.49 | ±9.6 |
| 10172 | CAH | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK) | LTE-TDD | 9.21 | ±9.6 |
| 10173 | CAH | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM) | LTE-TDD | 9.48 | ±9.6 |
| 10174 | CAH | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM) | LTE-TDD | 10.25 | ±9.6 |
| 10175 | CAH | LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK) | LTE-FDD | 5.72 | ±9.6 |
| 10176 | CAH | LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM) | LTE-FDD | 6.52 | ±9.6 |
| 10177 | CAJ | LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK) | LTE-FDD | 5.73 | ±9.6 |
| 10178 | CAH | LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM) | LTE-FDD | 6.52 | ±9.6 |
| 10179 | CAH | LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM) | LTE-FDD | 6.50 | ±9.6 |
| 10180 | CAH | LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM) | LTE-FDD | 6.50 | ±9.6 |
| 10181 | CAF | LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK) | LTE-FDD | 5.72 | ±9.6 |
| 10182 | CAF | LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM) | LTE-FDD | 6.52 | ±9.6 |
| 10183 | AAE | LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM) | LTE-FDD | 6.50 | ±9.6 |
| 10184 | CAF | LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK) | LTE-FDD | 5.73 | ±9.6 |
| 10185 | CAF | LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM) | LTE-FDD | 6.51 | ±9.6 |
| 10186 | AAF | LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM) | LTE-FDD | 6.50 | ±9.6 |
| 10187 | CAG | LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK) | LTE-FDD | 5.73 | ±9.6 |
| 10188 | CAG | LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM) | LTE-FDD | 6.52 | ±9.6 |
| 10189 | AAG | LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM) | LTE-FDD | 6.50 | ±9.6 |
| 10193 | CAE | IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK) | WLAN | 8.09 | ±9.6 |
| 10194 | CAE | IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM) | WLAN | 8.12 | ±9.6 |
| 10195 | CAE | IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM) | WLAN | 8.21 | ±9.6 |
| 10196 | CAE | IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK) | WLAN | 8.10 | ±9.6 |
| 10197 | CAE | IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM) | WLAN | 8.13 | ±9.6 |
| 10198 | CAE | IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM) | WLAN | 8.27 | ±9.6 |
| 10219 | CAE | IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK) | WLAN | 8.03 | ±9.6 |
| 10220 | CAE | IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM) | WLAN | 8.13 | ±9.6 |
| 10221 | CAE | IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM) | WLAN | 8.27 | ±9.6 |
| 10222 | CAE | IEEE 802.11n (HT Mixed, 15 Mbps, BPSK) | WLAN | 8.06 | ±9.6 |
| 10223 | CAE | IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM) | WLAN | 8.48 | ±9.6 |
| 10224 | CAE | IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM) | WLAN | 8.08 | ±9.6 |

| UID | Rev | Communication System Name | Group | PAR (dB) | Unc$^E$ $k=2$ |
|---|---|---|---|---|---|
| 10225 | CAC | UMTS-FDD (HSPA+) | WCDMA | 5.97 | ±9.6 |
| 10226 | CAC | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM) | LTE-TDD | 9.49 | ±9.6 |
| 10227 | CAC | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM) | LTE-TDD | 10.26 | ±9.6 |
| 10228 | CAC | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK) | LTE-TDD | 9.22 | ±9.6 |
| 10229 | CAE | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM) | LTE-TDD | 9.48 | ±9.6 |
| 10230 | CAE | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM) | LTE-TDD | 10.25 | ±9.6 |
| 10231 | CAE | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK) | LTE-TDD | 9.19 | ±9.6 |
| 10232 | CAH | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM) | LTE-TDD | 9.48 | ±9.6 |
| 10233 | CAH | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM) | LTE-TDD | 10.25 | ±9.6 |
| 10234 | CAH | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK) | LTE-TDD | 9.21 | ±9.6 |
| 10235 | CAH | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM) | LTE-TDD | 9.48 | ±9.6 |
| 10236 | CAH | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM) | LTE-TDD | 10.25 | ±9.6 |
| 10237 | CAH | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK) | LTE-TDD | 9.21 | ±9.6 |
| 10238 | CAG | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM) | LTE-TDD | 9.48 | ±9.6 |
| 10239 | CAG | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM) | LTE-TDD | 10.25 | ±9.6 |
| 10240 | CAG | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK) | LTE-TDD | 9.21 | ±9.6 |
| 10241 | CAC | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM) | LTE-TDD | 9.82 | ±9.6 |
| 10242 | CAC | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM) | LTE-TDD | 9.86 | ±9.6 |
| 10243 | CAC | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK) | LTE-TDD | 9.46 | ±9.6 |
| 10244 | CAE | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM) | LTE-TDD | 10.06 | ±9.6 |
| 10245 | CAE | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM) | LTE-TDD | 10.06 | ±9.6 |
| 10246 | CAE | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK) | LTE-TDD | 9.30 | ±9.6 |
| 10247 | CAH | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM) | LTE-TDD | 9.91 | ±9.6 |
| 10248 | CAH | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM) | LTE-TDD | 10.09 | ±9.6 |
| 10249 | CAH | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK) | LTE-TDD | 9.29 | ±9.6 |
| 10250 | CAH | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM) | LTE-TDD | 9.81 | ±9.6 |
| 10251 | CAH | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM) | LTE-TDD | 10.17 | ±9.6 |
| 10252 | CAH | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK) | LTE-TDD | 9.24 | ±9.6 |
| 10253 | CAG | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM) | LTE-TDD | 9.90 | ±9.6 |
| 10254 | CAG | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM) | LTE-TDD | 10.14 | ±9.6 |
| 10255 | CAG | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK) | LTE-TDD | 9.20 | ±9.6 |
| 10256 | CAC | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM) | LTE-TDD | 9.96 | ±9.6 |
| 10257 | CAC | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM) | LTE-TDD | 10.08 | ±9.6 |
| 10258 | CAC | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK) | LTE-TDD | 9.34 | ±9.6 |
| 10259 | CAE | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM) | LTE-TDD | 9.98 | ±9.6 |
| 10260 | CAE | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM) | LTE-TDD | 9.97 | ±9.6 |
| 10261 | CAE | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK) | LTE-TDD | 9.24 | ±9.6 |
| 10262 | CAH | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM) | LTE-TDD | 9.83 | ±9.6 |
| 10263 | CAH | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM) | LTE-TDD | 10.16 | ±9.6 |
| 10264 | CAH | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK) | LTE-TDD | 9.23 | ±9.6 |
| 10265 | CAH | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM) | LTE-TDD | 9.92 | ±9.6 |
| 10266 | CAH | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM) | LTE-TDD | 10.07 | ±9.6 |
| 10267 | CAH | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK) | LTE-TDD | 9.30 | ±9.6 |
| 10268 | CAG | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM) | LTE-TDD | 10.06 | ±9.6 |
| 10269 | CAG | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM) | LTE-TDD | 10.13 | ±9.6 |
| 10270 | CAG | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK) | LTE-TDD | 9.58 | ±9.6 |
| 10274 | CAC | UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10) | WCDMA | 4.87 | ±9.6 |
| 10275 | CAC | UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4) | WCDMA | 3.96 | ±9.6 |
| 10277 | CAA | PHS (QPSK) | PHS | 11.81 | ±9.6 |
| 10278 | CAA | PHS (QPSK, BW 884 MHz, Rolloff 0.5) | PHS | 11.81 | ±9.6 |
| 10279 | CAA | PHS (QPSK, BW 884 MHz, Rolloff 0.38) | PHS | 12.18 | ±9.6 |
| 10290 | AAB | CDMA2000, RC1, SO55, Full Rate | CDMA2000 | 3.91 | ±9.6 |
| 10291 | AAB | CDMA2000, RC3, SO55, Full Rate | CDMA2000 | 3.46 | ±9.6 |
| 10292 | AAB | CDMA2000, RC3, SO32, Full Rate | CDMA2000 | 3.39 | ±9.6 |
| 10293 | AAB | CDMA2000, RC3, SO3, Full Rate | CDMA2000 | 3.50 | ±9.6 |
| 10295 | AAB | CDMA2000, RC1, SO3, 1/8th Rate 25 fr. | CDMA2000 | 12.49 | ±9.6 |
| 10297 | AAE | LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK) | LTE-FDD | 5.81 | ±9.6 |
| 10298 | AAE | LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK) | LTE-FDD | 5.72 | ±9.6 |
| 10299 | AAE | LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM) | LTE-FDD | 6.39 | ±9.6 |
| 10300 | AAE | LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM) | LTE-FDD | 6.60 | ±9.6 |
| 10301 | AAA | IEEE 802.16e WiMAX (29:18, 5 ms, 10 MHz, QPSK, PUSC) | WiMAX | 12.03 | ±9.6 |
| 10302 | AAA | IEEE 802.16e WiMAX (29:18, 5 ms, 10 MHz, QPSK, PUSC, 3 CTRL symbols) | WiMAX | 12.57 | ±9.6 |
| 10303 | AAA | IEEE 802.16e WiMAX (31:15, 5 ms, 10 MHz, 64QAM, PUSC) | WiMAX | 12.52 | ±9.6 |
| 10304 | AAA | IEEE 802.16e WiMAX (29:18, 5 ms, 10 MHz, 64QAM, PUSC) | WiMAX | 11.86 | ±9.6 |
| 10305 | AAA | IEEE 802.16e WiMAX (31:15, 10 ms, 10 MHz, 64QAM, PUSC, 15 symbols) | WiMAX | 15.24 | ±9.6 |
| 10306 | AAA | IEEE 802.16e WiMAX (29:18, 10 ms, 10 MHz, 64QAM, PUSC, 18 symbols) | WiMAX | 14.67 | ±9.6 |

| UID | Rev | Communication System Name | Group | PAR (dB) | Unc$^E$ $k=2$ |
|---|---|---|---|---|---|
| 10307 | AAA | IEEE 802.16e WiMAX (29:18, 10 ms, 10 MHz, QPSK, PUSC, 18 symbols) | WiMAX | 14.49 | ±9.6 |
| 10308 | AAA | IEEE 802.16e WiMAX (29:18, 10 ms, 10 MHz, 16QAM, PUSC) | WiMAX | 14.46 | ±9.6 |
| 10309 | AAA | IEEE 802.16e WiMAX (29:18, 10 ms, 10 MHz, 16QAM, AMC 2x3, 18 symbols) | WiMAX | 14.58 | ±9.6 |
| 10310 | AAA | IEEE 802.16e WiMAX (29:18, 10 ms, 10 MHz, QPSK, AMC 2x3, 18 symbols) | WiMAX | 14.57 | ±9.6 |
| 10311 | AAE | LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK) | LTE-FDD | 6.06 | ±9.6 |
| 10313 | AAA | iDEN 1:3 | iDEN | 10.51 | ±9.6 |
| 10314 | AAA | iDEN 1:6 | iDEN | 13.48 | ±9.6 |
| 10315 | AAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc duty cycle) | WLAN | 1.71 | ±9.6 |
| 10316 | AAB | IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc duty cycle) | WLAN | 8.36 | ±9.6 |
| 10317 | AAE | IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc duty cycle) | WLAN | 8.36 | ±9.6 |
| 10352 | AAA | Pulse Waveform (200Hz, 10%) | Generic | 10.00 | ±9.6 |
| 10353 | AAA | Pulse Waveform (200Hz, 20%) | Generic | 6.99 | ±9.6 |
| 10354 | AAA | Pulse Waveform (200Hz, 40%) | Generic | 3.98 | ±9.6 |
| 10355 | AAA | Pulse Waveform (200Hz, 60%) | Generic | 2.22 | ±9.6 |
| 10356 | AAA | Pulse Waveform (200Hz, 80%) | Generic | 0.97 | ±9.6 |
| 10387 | AAA | QPSK Waveform, 1 MHz | Generic | 5.10 | ±9.6 |
| 10388 | AAA | QPSK Waveform, 10 MHz | Generic | 5.22 | ±9.6 |
| 10396 | AAA | 64-QAM Waveform, 100 kHz | Generic | 6.27 | ±9.6 |
| 10399 | AAA | 64-QAM Waveform, 40 MHz | Generic | 6.27 | ±9.6 |
| 10400 | AAF | IEEE 802.11ac WiFi (20 MHz, 64-QAM, 99pc duty cycle) | WLAN | 8.37 | ±9.6 |
| 10401 | AAF | IEEE 802.11ac WiFi (40 MHz, 64-QAM, 99pc duty cycle) | WLAN | 8.60 | ±9.6 |
| 10402 | AAF | IEEE 802.11ac WiFi (80 MHz, 64-QAM, 99pc duty cycle) | WLAN | 8.53 | ±9.6 |
| 10403 | AAB | CDMA2000 (1xEV-DO, Rev. 0) | CDMA2000 | 3.76 | ±9.6 |
| 10404 | AAB | CDMA2000 (1xEV-DO, Rev. A) | CDMA2000 | 3.77 | ±9.6 |
| 10406 | AAB | CDMA2000, RC3, SO32, SCH0, Full Rate | CDMA2000 | 5.22 | ±9.6 |
| 10410 | AAH | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9, Subframe Conf=4) | LTE-TDD | 7.82 | ±9.6 |
| 10414 | AAA | WLAN CCDF, 64-QAM, 40 MHz | Generic | 8.54 | ±9.6 |
| 10415 | AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle) | WLAN | 1.54 | ±9.6 |
| 10416 | AAA | IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc duty cycle) | WLAN | 8.23 | ±9.6 |
| 10417 | AAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 99pc duty cycle) | WLAN | 8.23 | ±9.6 |
| 10418 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Long preambule) | WLAN | 8.14 | ±9.6 |
| 10419 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc duty cycle, Short preambule) | WLAN | 8.19 | ±9.6 |
| 10422 | AAD | IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK) | WLAN | 8.32 | ±9.6 |
| 10423 | AAD | IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM) | WLAN | 8.47 | ±9.6 |
| 10424 | AAD | IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM) | WLAN | 8.40 | ±9.6 |
| 10425 | AAD | IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK) | WLAN | 8.41 | ±9.6 |
| 10426 | AAD | IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM) | WLAN | 8.45 | ±9.6 |
| 10427 | AAD | IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM) | WLAN | 8.41 | ±9.6 |
| 10430 | AAE | LTE-FDD (OFDMA, 5 MHz, E-TM 3.1) | LTE-FDD | 8.28 | ±9.6 |
| 10431 | AAE | LTE-FDD (OFDMA, 10 MHz, E-TM 3.1) | LTE-FDD | 8.38 | ±9.6 |
| 10432 | AAD | LTE-FDD (OFDMA, 15 MHz, E-TM 3.1) | LTE-FDD | 8.34 | ±9.6 |
| 10433 | AAD | LTE-FDD (OFDMA, 20 MHz, E-TM 3.1) | LTE-FDD | 8.34 | ±9.6 |
| 10434 | AAB | W-CDMA (BS Test Model 1, 64 DPCH) | WCDMA | 8.60 | ±9.6 |
| 10435 | AAG | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.82 | ±9.6 |
| 10447 | AAE | LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%) | LTE-FDD | 7.56 | ±9.6 |
| 10448 | AAE | LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clippin 44%) | LTE-FDD | 7.53 | ±9.6 |
| 10449 | AAD | LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Cliping 44%) | LTE-FDD | 7.51 | ±9.6 |
| 10450 | AAD | LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%) | LTE-FDD | 7.48 | ±9.6 |
| 10451 | AAB | W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%) | WCDMA | 7.59 | ±9.6 |
| 10453 | AAE | Validation (Square, 10 ms, 1 ms) | Test | 10.00 | ±9.6 |
| 10456 | AAD | IEEE 802.11ac WiFi (160 MHz, 64-QAM, 99pc duty cycle) | WLAN | 8.63 | ±9.6 |
| 10457 | AAB | UMTS-FDD (DC-HSDPA) | WCDMA | 6.62 | ±9.6 |
| 10458 | AAA | CDMA2000 (1xEV-DO, Rev. B, 2 carriers) | CDMA2000 | 6.55 | ±9.6 |
| 10459 | AAA | CDMA2000 (1xEV-DO, Rev. B, 3 carriers) | CDMA2000 | 8.25 | ±9.6 |
| 10460 | AAB | UMTS-FDD (WCDMA, AMR) | WCDMA | 2.39 | ±9.6 |
| 10461 | AAC | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.82 | ±9.6 |
| 10462 | AAC | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.30 | ±9.6 |
| 10463 | AAC | LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.56 | ±9.6 |
| 10464 | AAD | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.82 | ±9.6 |
| 10465 | AAD | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.32 | ±9.6 |
| 10466 | AAD | LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.57 | ±9.6 |
| 10467 | AAG | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.82 | ±9.6 |
| 10468 | AAG | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.32 | ±9.6 |
| 10469 | AAG | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.56 | ±9.6 |
| 10470 | AAG | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.82 | ±9.6 |
| 10471 | AAG | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.32 | ±9.6 |

| UID | Rev | Communication System Name | Group | PAR (dB) | Unc$^E$ $k = 2$ |
|---|---|---|---|---|---|
| 10472 | AAG | LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.57 | ±9.6 |
| 10473 | AAF | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.82 | ±9.6 |
| 10474 | AAF | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.32 | ±9.6 |
| 10475 | AAF | LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.57 | ±9.6 |
| 10477 | AAG | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.32 | ±9.6 |
| 10478 | AAG | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.57 | ±9.6 |
| 10479 | AAC | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.74 | ±9.6 |
| 10480 | AAC | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.18 | ±9.6 |
| 10481 | AAC | LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.45 | ±9.6 |
| 10482 | AAD | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.71 | ±9.6 |
| 10483 | AAD | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.39 | ±9.6 |
| 10484 | AAD | LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.47 | ±9.6 |
| 10485 | AAG | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.59 | ±9.6 |
| 10486 | AAG | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.38 | ±9.6 |
| 10487 | AAG | LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.60 | ±9.6 |
| 10488 | AAG | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.70 | ±9.6 |
| 10489 | AAG | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.31 | ±9.6 |
| 10490 | AAG | LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.54 | ±9.6 |
| 10491 | AAF | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.74 | ±9.6 |
| 10492 | AAF | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.41 | ±9.6 |
| 10493 | AAF | LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.55 | ±9.6 |
| 10494 | AAG | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.74 | ±9.6 |
| 10495 | AAG | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.37 | ±9.6 |
| 10496 | AAG | LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.54 | ±9.6 |
| 10497 | AAC | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.67 | ±9.6 |
| 10498 | AAC | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.40 | ±9.6 |
| 10499 | AAC | LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.68 | ±9.6 |
| 10500 | AAD | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.67 | ±9.6 |
| 10501 | AAD | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.44 | ±9.6 |
| 10502 | AAD | LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.52 | ±9.6 |
| 10503 | AAG | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.72 | ±9.6 |
| 10504 | AAG | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.31 | ±9.6 |
| 10505 | AAG | LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.54 | ±9.6 |
| 10506 | AAG | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.74 | ±9.6 |
| 10507 | AAG | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.36 | ±9.6 |
| 10508 | AAG | LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.55 | ±9.6 |
| 10509 | AAF | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.99 | ±9.6 |
| 10510 | AAF | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.49 | ±9.6 |
| 10511 | AAF | LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.51 | ±9.6 |
| 10512 | AAG | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 7.74 | ±9.6 |
| 10513 | AAG | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.42 | ±9.6 |
| 10514 | AAG | LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Subframe=2,3,4,7,8,9) | LTE-TDD | 8.45 | ±9.6 |
| 10515 | AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 99pc duty cycle) | WLAN | 1.58 | ±9.6 |
| 10516 | AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 99pc duty cycle) | WLAN | 1.57 | ±9.6 |
| 10517 | AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc duty cycle) | WLAN | 1.58 | ±9.6 |
| 10518 | AAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 99pc duty cycle) | WLAN | 8.23 | ±9.6 |
| 10519 | AAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc duty cycle) | WLAN | 8.39 | ±9.6 |
| 10520 | AAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc duty cycle) | WLAN | 8.12 | ±9.6 |
| 10521 | AAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 99pc duty cycle) | WLAN | 7.97 | ±9.6 |
| 10522 | AAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 99pc duty cycle) | WLAN | 8.45 | ±9.6 |
| 10523 | AAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 99pc duty cycle) | WLAN | 8.08 | ±9.6 |
| 10524 | AAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 99pc duty cycle) | WLAN | 8.27 | ±9.6 |
| 10525 | AAD | IEEE 802.11ac WiFi (20 MHz, MCS0, 99pc duty cycle) | WLAN | 8.36 | ±9.6 |
| 10526 | AAD | IEEE 802.11ac WiFi (20 MHz, MCS1, 99pc duty cycle) | WLAN | 8.42 | ±9.6 |
| 10527 | AAD | IEEE 802.11ac WiFi (20 MHz, MCS2, 99pc duty cycle) | WLAN | 8.21 | ±9.6 |
| 10528 | AAD | IEEE 802.11ac WiFi (20 MHz, MCS3, 99pc duty cycle) | WLAN | 8.36 | ±9.6 |
| 10529 | AAD | IEEE 802.11ac WiFi (20 MHz, MCS4, 99pc duty cycle) | WLAN | 8.36 | ±9.6 |
| 10531 | AAD | IEEE 802.11ac WiFi (20 MHz, MCS6, 99pc duty cycle) | WLAN | 8.43 | ±9.6 |
| 10532 | AAD | IEEE 802.11ac WiFi (20 MHz, MCS7, 99pc duty cycle) | WLAN | 8.29 | ±9.6 |
| 10533 | AAD | IEEE 802.11ac WiFi (20 MHz, MCS8, 99pc duty cycle) | WLAN | 8.38 | ±9.6 |
| 10534 | AAD | IEEE 802.11ac WiFi (40 MHz, MCS0, 99pc duty cycle) | WLAN | 8.45 | ±9.6 |
| 10535 | AAD | IEEE 802.11ac WiFi (40 MHz, MCS1, 99pc duty cycle) | WLAN | 8.45 | ±9.6 |
| 10536 | AAD | IEEE 802.11ac WiFi (40 MHz, MCS2, 99pc duty cycle) | WLAN | 8.32 | ±9.6 |
| 10537 | AAD | IEEE 802.11ac WiFi (40 MHz, MCS3, 99pc duty cycle) | WLAN | 8.44 | ±9.6 |
| 10538 | AAD | IEEE 802.11ac WiFi (40 MHz, MCS4, 99pc duty cycle) | WLAN | 8.54 | ±9.6 |
| 10540 | AAD | IEEE 802.11ac WiFi (40 MHz, MCS6, 99pc duty cycle) | WLAN | 8.39 | ±9.6 |

| UID | Rev | Communication System Name | Group | PAR (dB) | Unc$^E$ $k = 2$ |
|---|---|---|---|---|---|
| 10541 | AAD | IEEE 802.11ac WiFi (40 MHz, MCS7, 99pc duty cycle) | WLAN | 8.46 | ±9.6 |
| 10542 | AAD | IEEE 802.11ac WiFi (40 MHz, MCS8, 99pc duty cycle) | WLAN | 8.65 | ±9.6 |
| 10543 | AAD | IEEE 802.11ac WiFi (40 MHz, MCS9, 99pc duty cycle) | WLAN | 8.65 | ±9.6 |
| 10544 | AAD | IEEE 802.11ac WiFi (80 MHz, MCS0, 99pc duty cycle) | WLAN | 8.47 | ±9.6 |
| 10545 | AAD | IEEE 802.11ac WiFi (80 MHz, MCS1, 99pc duty cycle) | WLAN | 8.55 | ±9.6 |
| 10546 | AAD | IEEE 802.11ac WiFi (80 MHz, MCS2, 99pc duty cycle) | WLAN | 8.35 | ±9.6 |
| 10547 | AAD | IEEE 802.11ac WiFi (80 MHz, MCS3, 99pc duty cycle) | WLAN | 8.49 | ±9.6 |
| 10548 | AAD | IEEE 802.11ac WiFi (80 MHz, MCS4, 99pc duty cycle) | WLAN | 8.37 | ±9.6 |
| 10550 | AAD | IEEE 802.11ac WiFi (80 MHz, MCS6, 99pc duty cycle) | WLAN | 8.38 | ±9.6 |
| 10551 | AAD | IEEE 802.11ac WiFi (80 MHz, MCS7, 99pc duty cycle) | WLAN | 8.50 | ±9.6 |
| 10552 | AAD | IEEE 802.11ac WiFi (80 MHz, MCS8, 99pc duty cycle) | WLAN | 8.42 | ±9.6 |
| 10553 | AAD | IEEE 802.11ac WiFi (80 MHz, MCS9, 99pc duty cycle) | WLAN | 8.45 | ±9.6 |
| 10554 | AAE | IEEE 802.11ac WiFi (160 MHz, MCS0, 99pc duty cycle) | WLAN | 8.48 | ±9.6 |
| 10555 | AAE | IEEE 802.11ac WiFi (160 MHz, MCS1, 99pc duty cycle) | WLAN | 8.47 | ±9.6 |
| 10556 | AAE | IEEE 802.11ac WiFi (160 MHz, MCS2, 99pc duty cycle) | WLAN | 8.50 | ±9.6 |
| 10557 | AAE | IEEE 802.11ac WiFi (160 MHz, MCS3, 99pc duty cycle) | WLAN | 8.52 | ±9.6 |
| 10558 | AAE | IEEE 802.11ac WiFi (160 MHz, MCS4, 99pc duty cycle) | WLAN | 8.61 | ±9.6 |
| 10560 | AAE | IEEE 802.11ac WiFi (160 MHz, MCS6, 99pc duty cycle) | WLAN | 8.73 | ±9.6 |
| 10561 | AAE | IEEE 802.11ac WiFi (160 MHz, MCS7, 99pc duty cycle) | WLAN | 8.56 | ±9.6 |
| 10562 | AAE | IEEE 802.11ac WiFi (160 MHz, MCS8, 99pc duty cycle) | WLAN | 8.69 | ±9.6 |
| 10563 | AAE | IEEE 802.11ac WiFi (160 MHz, MCS9, 99pc duty cycle) | WLAN | 8.77 | ±9.6 |
| 10564 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 99pc duty cycle) | WLAN | 8.25 | ±9.6 |
| 10565 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc duty cycle) | WLAN | 8.45 | ±9.6 |
| 10566 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 99pc duty cycle) | WLAN | 8.13 | ±9.6 |
| 10567 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc duty cycle) | WLAN | 8.00 | ±9.6 |
| 10568 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc duty cycle) | WLAN | 8.37 | ±9.6 |
| 10569 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc duty cycle) | WLAN | 8.10 | ±9.6 |
| 10570 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc duty cycle) | WLAN | 8.30 | ±9.6 |
| 10571 | AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 90pc duty cycle) | WLAN | 1.99 | ±9.6 |
| 10572 | AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 90pc duty cycle) | WLAN | 1.99 | ±9.6 |
| 10573 | AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc duty cycle) | WLAN | 1.98 | ±9.6 |
| 10574 | AAA | IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 90pc duty cycle) | WLAN | 1.98 | ±9.6 |
| 10575 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc duty cycle) | WLAN | 8.59 | ±9.6 |
| 10576 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc duty cycle) | WLAN | 8.60 | ±9.6 |
| 10577 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc duty cycle) | WLAN | 8.70 | ±9.6 |
| 10578 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc duty cycle) | WLAN | 8.49 | ±9.6 |
| 10579 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc duty cycle) | WLAN | 8.36 | ±9.6 |
| 10580 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc duty cycle) | WLAN | 8.76 | ±9.6 |
| 10581 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc duty cycle) | WLAN | 8.35 | ±9.6 |
| 10582 | AAA | IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc duty cycle) | WLAN | 8.67 | ±9.6 |
| 10583 | AAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc duty cycle) | WLAN | 8.59 | ±9.6 |
| 10584 | AAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc duty cycle) | WLAN | 8.60 | ±9.6 |
| 10585 | AAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc duty cycle) | WLAN | 8.70 | ±9.6 |
| 10586 | AAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc duty cycle) | WLAN | 8.49 | ±9.6 |
| 10587 | AAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc duty cycle) | WLAN | 8.36 | ±9.6 |
| 10588 | AAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc duty cycle) | WLAN | 8.76 | ±9.6 |
| 10589 | AAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc duty cycle) | WLAN | 8.35 | ±9.6 |
| 10590 | AAD | IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc duty cycle) | WLAN | 8.67 | ±9.6 |
| 10591 | AAD | IEEE 802.11n (HT Mixed, 20 MHz, MCS0, 90pc duty cycle) | WLAN | 8.63 | ±9.6 |
| 10592 | AAD | IEEE 802.11n (HT Mixed, 20 MHz, MCS1, 90pc duty cycle) | WLAN | 8.79 | ±9.6 |
| 10593 | AAD | IEEE 802.11n (HT Mixed, 20 MHz, MCS2, 90pc duty cycle) | WLAN | 8.64 | ±9.6 |
| 10594 | AAD | IEEE 802.11n (HT Mixed, 20 MHz, MCS3, 90pc duty cycle) | WLAN | 8.74 | ±9.6 |
| 10595 | AAD | IEEE 802.11n (HT Mixed, 20 MHz, MCS4, 90pc duty cycle) | WLAN | 8.74 | ±9.6 |
| 10596 | AAD | IEEE 802.11n (HT Mixed, 20 MHz, MCS5, 90pc duty cycle) | WLAN | 8.71 | ±9.6 |
| 10597 | AAD | IEEE 802.11n (HT Mixed, 20 MHz, MCS6, 90pc duty cycle) | WLAN | 8.72 | ±9.6 |
| 10598 | AAD | IEEE 802.11n (HT Mixed, 20 MHz, MCS7, 90pc duty cycle) | WLAN | 8.50 | ±9.6 |
| 10599 | AAD | IEEE 802.11n (HT Mixed, 40 MHz, MCS0, 90pc duty cycle) | WLAN | 8.79 | ±9.6 |
| 10600 | AAD | IEEE 802.11n (HT Mixed, 40 MHz, MCS1, 90pc duty cycle) | WLAN | 8.88 | ±9.6 |
| 10601 | AAD | IEEE 802.11n (HT Mixed, 40 MHz, MCS2, 90pc duty cycle) | WLAN | 8.82 | ±9.6 |
| 10602 | AAD | IEEE 802.11n (HT Mixed, 40 MHz, MCS3, 90pc duty cycle) | WLAN | 8.94 | ±9.6 |
| 10603 | AAD | IEEE 802.11n (HT Mixed, 40 MHz, MCS4, 90pc duty cycle) | WLAN | 9.03 | ±9.6 |
| 10604 | AAD | IEEE 802.11n (HT Mixed, 40 MHz, MCS5, 90pc duty cycle) | WLAN | 8.76 | ±9.6 |
| 10605 | AAD | IEEE 802.11n (HT Mixed, 40 MHz, MCS6, 90pc duty cycle) | WLAN | 8.97 | ±9.6 |
| 10606 | AAD | IEEE 802.11n (HT Mixed, 40 MHz, MCS7, 90pc duty cycle) | WLAN | 8.82 | ±9.6 |
| 10607 | AAD | IEEE 802.11ac WiFi (20 MHz, MCS0, 90pc duty cycle) | WLAN | 8.64 | ±9.6 |
| 10608 | AAD | IEEE 802.11ac WiFi (20 MHz, MCS1, 90pc duty cycle) | WLAN | 8.77 | ±9.6 |

| UID | Rev | Communication System Name | Group | PAR (dB) | Unc$^E$ $k=2$ |
|---|---|---|---|---|---|
| 10609 | AAD | IEEE 802.11ac WiFi (20 MHz, MCS2, 90pc duty cycle) | WLAN | 8.57 | ±9.6 |
| 10610 | AAD | IEEE 802.11ac WiFi (20 MHz, MCS3, 90pc duty cycle) | WLAN | 8.78 | ±9.6 |
| 10611 | AAD | IEEE 802.11ac WiFi (20 MHz, MCS4, 90pc duty cycle) | WLAN | 8.70 | ±9.6 |
| 10612 | AAD | IEEE 802.11ac WiFi (20 MHz, MCS5, 90pc duty cycle) | WLAN | 8.77 | ±9.6 |
| 10613 | AAD | IEEE 802.11ac WiFi (20 MHz, MCS6, 90pc duty cycle) | WLAN | 8.94 | ±9.6 |
| 10614 | AAD | IEEE 802.11ac WiFi (20 MHz, MCS7, 90pc duty cycle) | WLAN | 8.59 | ±9.6 |
| 10615 | AAD | IEEE 802.11ac WiFi (20 MHz, MCS8, 90pc duty cycle) | WLAN | 8.82 | ±9.6 |
| 10616 | AAD | IEEE 802.11ac WiFi (40 MHz, MCS0, 90pc duty cycle) | WLAN | 8.82 | ±9.6 |
| 10617 | AAD | IEEE 802.11ac WiFi (40 MHz, MCS1, 90pc duty cycle) | WLAN | 8.81 | ±9.6 |
| 10618 | AAD | IEEE 802.11ac WiFi (40 MHz, MCS2, 90pc duty cycle) | WLAN | 8.58 | ±9.6 |
| 10619 | AAD | IEEE 802.11ac WiFi (40 MHz, MCS3, 90pc duty cycle) | WLAN | 8.86 | ±9.6 |
| 10620 | AAD | IEEE 802.11ac WiFi (40 MHz, MCS4, 90pc duty cycle) | WLAN | 8.87 | ±9.6 |
| 10621 | AAD | IEEE 802.11ac WiFi (40 MHz, MCS5, 90pc duty cycle) | WLAN | 8.77 | ±9.6 |
| 10622 | AAD | IEEE 802.11ac WiFi (40 MHz, MCS6, 90pc duty cycle) | WLAN | 8.68 | ±9.6 |
| 10623 | AAD | IEEE 802.11ac WiFi (40 MHz, MCS7, 90pc duty cycle) | WLAN | 8.82 | ±9.6 |
| 10624 | AAD | IEEE 802.11ac WiFi (40 MHz, MCS8, 90pc duty cycle) | WLAN | 8.96 | ±9.6 |
| 10625 | AAD | IEEE 802.11ac WiFi (40 MHz, MCS9, 90pc duty cycle) | WLAN | 8.96 | ±9.6 |
| 10626 | AAD | IEEE 802.11ac WiFi (80 MHz, MCS0, 90pc duty cycle) | WLAN | 8.83 | ±9.6 |
| 10627 | AAD | IEEE 802.11ac WiFi (80 MHz, MCS1, 90pc duty cycle) | WLAN | 8.88 | ±9.6 |
| 10628 | AAD | IEEE 802.11ac WiFi (80 MHz, MCS2, 90pc duty cycle) | WLAN | 8.71 | ±9.6 |
| 10629 | AAD | IEEE 802.11ac WiFi (80 MHz, MCS3, 90pc duty cycle) | WLAN | 8.85 | ±9.6 |
| 10630 | AAD | IEEE 802.11ac WiFi (80 MHz, MCS4, 90pc duty cycle) | WLAN | 8.72 | ±9.6 |
| 10631 | AAD | IEEE 802.11ac WiFi (80 MHz, MCS5, 90pc duty cycle) | WLAN | 8.81 | ±9.6 |
| 10632 | AAD | IEEE 802.11ac WiFi (80 MHz, MCS6, 90pc duty cycle) | WLAN | 8.74 | ±9.6 |
| 10633 | AAD | IEEE 802.11ac WiFi (80 MHz, MCS7, 90pc duty cycle) | WLAN | 8.83 | ±9.6 |
| 10634 | AAD | IEEE 802.11ac WiFi (80 MHz, MCS8, 90pc duty cycle) | WLAN | 8.80 | ±9.6 |
| 10635 | AAD | IEEE 802.11ac WiFi (80 MHz, MCS9, 90pc duty cycle) | WLAN | 8.81 | ±9.6 |
| 10636 | AAE | IEEE 802.11ac WiFi (160 MHz, MCS0, 90pc duty cycle) | WLAN | 8.83 | ±9.6 |
| 10637 | AAE | IEEE 802.11ac WiFi (160 MHz, MCS1, 90pc duty cycle) | WLAN | 8.79 | ±9.6 |
| 10638 | AAE | IEEE 802.11ac WiFi (160 MHz, MCS2, 90pc duty cycle) | WLAN | 8.86 | ±9.6 |
| 10639 | AAE | IEEE 802.11ac WiFi (160 MHz, MCS3, 90pc duty cycle) | WLAN | 8.85 | ±9.6 |
| 10640 | AAE | IEEE 802.11ac WiFi (160 MHz, MCS4, 90pc duty cycle) | WLAN | 8.98 | ±9.6 |
| 10641 | AAE | IEEE 802.11ac WiFi (160 MHz, MCS5, 90pc duty cycle) | WLAN | 9.06 | ±9.6 |
| 10642 | AAE | IEEE 802.11ac WiFi (160 MHz, MCS6, 90pc duty cycle) | WLAN | 9.06 | ±9.6 |
| 10643 | AAE | IEEE 802.11ac WiFi (160 MHz, MCS7, 90pc duty cycle) | WLAN | 8.89 | ±9.6 |
| 10644 | AAE | IEEE 802.11ac WiFi (160 MHz, MCS8, 90pc duty cycle) | WLAN | 9.05 | ±9.6 |
| 10645 | AAE | IEEE 802.11ac WiFi (160 MHz, MCS9, 90pc duty cycle) | WLAN | 9.11 | ±9.6 |
| 10646 | AAH | LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Subframe=2,7) | LTE-TDD | 11.96 | ±9.6 |
| 10647 | AAG | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7) | LTE-TDD | 11.96 | ±9.6 |
| 10648 | AAA | CDMA2000 (1x Advanced) | CDMA2000 | 3.45 | ±9.6 |
| 10652 | AAF | LTE-TDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%) | LTE-TDD | 6.91 | ±9.6 |
| 10653 | AAF | LTE-TDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%) | LTE-TDD | 7.42 | ±9.6 |
| 10654 | AAE | LTE-TDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%) | LTE-TDD | 6.96 | ±9.6 |
| 10655 | AAF | LTE-TDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%) | LTE-TDD | 7.21 | ±9.6 |
| 10658 | AAB | Pulse Waveform (200Hz, 10%) | Test | 10.00 | ±9.6 |
| 10659 | AAB | Pulse Waveform (200Hz, 20%) | Test | 6.99 | ±9.6 |
| 10660 | AAB | Pulse Waveform (200Hz, 40%) | Test | 3.98 | ±9.6 |
| 10661 | AAB | Pulse Waveform (200Hz, 60%) | Test | 2.22 | ±9.6 |
| 10662 | AAB | Pulse Waveform (200Hz, 80%) | Test | 0.97 | ±9.6 |
| 10670 | AAA | Bluetooth Low Energy | Bluetooth | 2.19 | ±9.6 |
| 10671 | AAC | IEEE 802.11ax (20 MHz, MCS0, 90pc duty cycle) | WLAN | 9.09 | ±9.6 |
| 10672 | AAC | IEEE 802.11ax (20 MHz, MCS1, 90pc duty cycle) | WLAN | 8.57 | ±9.6 |
| 10673 | AAC | IEEE 802.11ax (20 MHz, MCS2, 90pc duty cycle) | WLAN | 8.78 | ±9.6 |
| 10674 | AAC | IEEE 802.11ax (20 MHz, MCS3, 90pc duty cycle) | WLAN | 8.74 | ±9.6 |
| 10675 | AAC | IEEE 802.11ax (20 MHz, MCS4, 90pc duty cycle) | WLAN | 8.90 | ±9.6 |
| 10676 | AAC | IEEE 802.11ax (20 MHz, MCS5, 90pc duty cycle) | WLAN | 8.77 | ±9.6 |
| 10677 | AAC | IEEE 802.11ax (20 MHz, MCS6, 90pc duty cycle) | WLAN | 8.73 | ±9.6 |
| 10678 | AAC | IEEE 802.11ax (20 MHz, MCS7, 90pc duty cycle) | WLAN | 8.78 | ±9.6 |
| 10679 | AAC | IEEE 802.11ax (20 MHz, MCS8, 90pc duty cycle) | WLAN | 8.89 | ±9.6 |
| 10680 | AAC | IEEE 802.11ax (20 MHz, MCS9, 90pc duty cycle) | WLAN | 8.80 | ±9.6 |
| 10681 | AAC | IEEE 802.11ax (20 MHz, MCS10, 90pc duty cycle) | WLAN | 8.62 | ±9.6 |
| 10682 | AAC | IEEE 802.11ax (20 MHz, MCS11, 90pc duty cycle) | WLAN | 8.83 | ±9.6 |
| 10683 | AAC | IEEE 802.11ax (20 MHz, MCS0, 99pc duty cycle) | WLAN | 8.42 | ±9.6 |
| 10684 | AAC | IEEE 802.11ax (20 MHz, MCS1, 99pc duty cycle) | WLAN | 8.26 | ±9.6 |
| 10685 | AAC | IEEE 802.11ax (20 MHz, MCS2, 99pc duty cycle) | WLAN | 8.33 | ±9.6 |
| 10686 | AAC | IEEE 802.11ax (20 MHz, MCS3, 99pc duty cycle) | WLAN | 8.28 | ±9.6 |

| UID | Rev | Communication System Name | Group | PAR (dB) | Unc$^E$ $k=2$ |
|---|---|---|---|---|---|
| 10687 | AAC | IEEE 802.11ax (20 MHz, MCS4, 99pc duty cycle) | WLAN | 8.45 | ±9.6 |
| 10688 | AAC | IEEE 802.11ax (20 MHz, MCS5, 99pc duty cycle) | WLAN | 8.29 | ±9.6 |
| 10689 | AAC | IEEE 802.11ax (20 MHz, MCS6, 99pc duty cycle) | WLAN | 8.55 | ±9.6 |
| 10690 | AAC | IEEE 802.11ax (20 MHz, MCS7, 99pc duty cycle) | WLAN | 8.29 | ±9.6 |
| 10691 | AAC | IEEE 802.11ax (20 MHz, MCS8, 99pc duty cycle) | WLAN | 8.25 | ±9.6 |
| 10692 | AAC | IEEE 802.11ax (20 MHz, MCS9, 99pc duty cycle) | WLAN | 8.29 | ±9.6 |
| 10693 | AAC | IEEE 802.11ax (20 MHz, MCS10, 99pc duty cycle) | WLAN | 8.25 | ±9.6 |
| 10694 | AAC | IEEE 802.11ax (20 MHz, MCS11, 99pc duty cycle) | WLAN | 8.57 | ±9.6 |
| 10695 | AAC | IEEE 802.11ax (40 MHz, MCS0, 90pc duty cycle) | WLAN | 8.78 | ±9.6 |
| 10696 | AAC | IEEE 802.11ax (40 MHz, MCS1, 90pc duty cycle) | WLAN | 8.91 | ±9.6 |
| 10697 | AAC | IEEE 802.11ax (40 MHz, MCS2, 90pc duty cycle) | WLAN | 8.61 | ±9.6 |
| 10698 | AAC | IEEE 802.11ax (40 MHz, MCS3, 90pc duty cycle) | WLAN | 8.89 | ±9.6 |
| 10699 | AAC | IEEE 802.11ax (40 MHz, MCS4, 90pc duty cycle) | WLAN | 8.82 | ±9.6 |
| 10700 | AAC | IEEE 802.11ax (40 MHz, MCS5, 90pc duty cycle) | WLAN | 8.73 | ±9.6 |
| 10701 | AAC | IEEE 802.11ax (40 MHz, MCS6, 90pc duty cycle) | WLAN | 8.86 | ±9.6 |
| 10702 | AAC | IEEE 802.11ax (40 MHz, MCS7, 90pc duty cycle) | WLAN | 8.70 | ±9.6 |
| 10703 | AAC | IEEE 802.11ax (40 MHz, MCS8, 90pc duty cycle) | WLAN | 8.82 | ±9.6 |
| 10704 | AAC | IEEE 802.11ax (40 MHz, MCS9, 90pc duty cycle) | WLAN | 8.56 | ±9.6 |
| 10705 | AAC | IEEE 802.11ax (40 MHz, MCS10, 90pc duty cycle) | WLAN | 8.69 | ±9.6 |
| 10706 | AAC | IEEE 802.11ax (40 MHz, MCS11, 90pc duty cycle) | WLAN | 8.66 | ±9.6 |
| 10707 | AAC | IEEE 802.11ax (40 MHz, MCS0, 99pc duty cycle) | WLAN | 8.32 | ±9.6 |
| 10708 | AAC | IEEE 802.11ax (40 MHz, MCS1, 99pc duty cycle) | WLAN | 8.55 | ±9.6 |
| 10709 | AAC | IEEE 802.11ax (40 MHz, MCS2, 99pc duty cycle) | WLAN | 8.33 | ±9.6 |
| 10710 | AAC | IEEE 802.11ax (40 MHz, MCS3, 99pc duty cycle) | WLAN | 8.29 | ±9.6 |
| 10711 | AAC | IEEE 802.11ax (40 MHz, MCS4, 99pc duty cycle) | WLAN | 8.39 | ±9.6 |
| 10712 | AAC | IEEE 802.11ax (40 MHz, MCS5, 99pc duty cycle) | WLAN | 8.67 | ±9.6 |
| 10713 | AAC | IEEE 802.11ax (40 MHz, MCS6, 99pc duty cycle) | WLAN | 8.33 | ±9.6 |
| 10714 | AAC | IEEE 802.11ax (40 MHz, MCS7, 99pc duty cycle) | WLAN | 8.26 | ±9.6 |
| 10715 | AAC | IEEE 802.11ax (40 MHz, MCS8, 99pc duty cycle) | WLAN | 8.45 | ±9.6 |
| 10716 | AAC | IEEE 802.11ax (40 MHz, MCS9, 99pc duty cycle) | WLAN | 8.30 | ±9.6 |
| 10717 | AAC | IEEE 802.11ax (40 MHz, MCS10, 99pc duty cycle) | WLAN | 8.48 | ±9.6 |
| 10718 | AAC | IEEE 802.11ax (40 MHz, MCS11, 99pc duty cycle) | WLAN | 8.24 | ±9.6 |
| 10719 | AAC | IEEE 802.11ax (80 MHz, MCS0, 90pc duty cycle) | WLAN | 8.81 | ±9.6 |
| 10720 | AAC | IEEE 802.11ax (80 MHz, MCS1, 90pc duty cycle) | WLAN | 8.87 | ±9.6 |
| 10721 | AAC | IEEE 802.11ax (80 MHz, MCS2, 90pc duty cycle) | WLAN | 8.76 | ±9.6 |
| 10722 | AAC | IEEE 802.11ax (80 MHz, MCS3, 90pc duty cycle) | WLAN | 8.55 | ±9.6 |
| 10723 | AAC | IEEE 802.11ax (80 MHz, MCS4, 90pc duty cycle) | WLAN | 8.70 | ±9.6 |
| 10724 | AAC | IEEE 802.11ax (80 MHz, MCS5, 90pc duty cycle) | WLAN | 8.90 | ±9.6 |
| 10725 | AAC | IEEE 802.11ax (80 MHz, MCS6, 90pc duty cycle) | WLAN | 8.74 | ±9.6 |
| 10726 | AAC | IEEE 802.11ax (80 MHz, MCS7, 90pc duty cycle) | WLAN | 8.72 | ±9.6 |
| 10727 | AAC | IEEE 802.11ax (80 MHz, MCS8, 90pc duty cycle) | WLAN | 8.66 | ±9.6 |
| 10728 | AAC | IEEE 802.11ax (80 MHz, MCS9, 90pc duty cycle) | WLAN | 8.65 | ±9.6 |
| 10729 | AAC | IEEE 802.11ax (80 MHz, MCS10, 90pc duty cycle) | WLAN | 8.64 | ±9.6 |
| 10730 | AAC | IEEE 802.11ax (80 MHz, MCS11, 90pc duty cycle) | WLAN | 8.67 | ±9.6 |
| 10731 | AAC | IEEE 802.11ax (80 MHz, MCS0, 99pc duty cycle) | WLAN | 8.42 | ±9.6 |
| 10732 | AAC | IEEE 802.11ax (80 MHz, MCS1, 99pc duty cycle) | WLAN | 8.46 | ±9.6 |
| 10733 | AAC | IEEE 802.11ax (80 MHz, MCS2, 99pc duty cycle) | WLAN | 8.40 | ±9.6 |
| 10734 | AAC | IEEE 802.11ax (80 MHz, MCS3, 99pc duty cycle) | WLAN | 8.25 | ±9.6 |
| 10735 | AAC | IEEE 802.11ax (80 MHz, MCS4, 99pc duty cycle) | WLAN | 8.33 | ±9.6 |
| 10736 | AAC | IEEE 802.11ax (80 MHz, MCS5, 99pc duty cycle) | WLAN | 8.27 | ±9.6 |
| 10737 | AAC | IEEE 802.11ax (80 MHz, MCS6, 99pc duty cycle) | WLAN | 8.36 | ±9.6 |
| 10738 | AAC | IEEE 802.11ax (80 MHz, MCS7, 99pc duty cycle) | WLAN | 8.42 | ±9.6 |
| 10739 | AAC | IEEE 802.11ax (80 MHz, MCS8, 99pc duty cycle) | WLAN | 8.29 | ±9.6 |
| 10740 | AAC | IEEE 802.11ax (80 MHz, MCS9, 99pc duty cycle) | WLAN | 8.48 | ±9.6 |
| 10741 | AAC | IEEE 802.11ax (80 MHz, MCS10, 99pc duty cycle) | WLAN | 8.40 | ±9.6 |
| 10742 | AAC | IEEE 802.11ax (80 MHz, MCS11, 99pc duty cycle) | WLAN | 8.43 | ±9.6 |
| 10743 | AAC | IEEE 802.11ax (160 MHz, MCS0, 90pc duty cycle) | WLAN | 8.94 | ±9.6 |
| 10744 | AAC | IEEE 802.11ax (160 MHz, MCS1, 90pc duty cycle) | WLAN | 9.16 | ±9.6 |
| 10745 | AAC | IEEE 802.11ax (160 MHz, MCS2, 90pc duty cycle) | WLAN | 8.93 | ±9.6 |
| 10746 | AAC | IEEE 802.11ax (160 MHz, MCS3, 90pc duty cycle) | WLAN | 9.11 | ±9.6 |
| 10747 | AAC | IEEE 802.11ax (160 MHz, MCS4, 90pc duty cycle) | WLAN | 9.04 | ±9.6 |
| 10748 | AAC | IEEE 802.11ax (160 MHz, MCS5, 90pc duty cycle) | WLAN | 8.93 | ±9.6 |
| 10749 | AAC | IEEE 802.11ax (160 MHz, MCS6, 90pc duty cycle) | WLAN | 8.90 | ±9.6 |
| 10750 | AAC | IEEE 802.11ax (160 MHz, MCS7, 90pc duty cycle) | WLAN | 8.79 | ±9.6 |
| 10751 | AAC | IEEE 802.11ax (160 MHz, MCS8, 90pc duty cycle) | WLAN | 8.82 | ±9.6 |
| 10752 | AAC | IEEE 802.11ax (160 MHz, MCS9, 90pc duty cycle) | WLAN | 8.81 | ±9.6 |

| UID | Rev | Communication System Name | Group | PAR (dB) | Unc$^E$ $k = 2$ |
|---|---|---|---|---|---|
| 10753 | AAC | IEEE 802.11ax (160 MHz, MCS10, 90pc duty cycle) | WLAN | 9.00 | ±9.6 |
| 10754 | AAC | IEEE 802.11ax (160 MHz, MCS11, 90pc duty cycle) | WLAN | 8.94 | ±9.6 |
| 10755 | AAC | IEEE 802.11ax (160 MHz, MCS0, 99pc duty cycle) | WLAN | 8.64 | ±9.6 |
| 10756 | AAC | IEEE 802.11ax (160 MHz, MCS1, 99pc duty cycle) | WLAN | 8.77 | ±9.6 |
| 10757 | AAC | IEEE 802.11ax (160 MHz, MCS2, 99pc duty cycle) | WLAN | 8.77 | ±9.6 |
| 10758 | AAC | IEEE 802.11ax (160 MHz, MCS3, 99pc duty cycle) | WLAN | 8.69 | ±9.6 |
| 10759 | AAC | IEEE 802.11ax (160 MHz, MCS4, 99pc duty cycle) | WLAN | 8.58 | ±9.6 |
| 10760 | AAC | IEEE 802.11ax (160 MHz, MCS5, 99pc duty cycle) | WLAN | 8.49 | ±9.6 |
| 10761 | AAC | IEEE 802.11ax (160 MHz, MCS6, 99pc duty cycle) | WLAN | 8.58 | ±9.6 |
| 10762 | AAC | IEEE 802.11ax (160 MHz, MCS7, 99pc duty cycle) | WLAN | 8.49 | ±9.6 |
| 10763 | AAC | IEEE 802.11ax (160 MHz, MCS8, 99pc duty cycle) | WLAN | 8.53 | ±9.6 |
| 10764 | AAC | IEEE 802.11ax (160 MHz, MCS9, 99pc duty cycle) | WLAN | 8.54 | ±9.6 |
| 10765 | AAC | IEEE 802.11ax (160 MHz, MCS10, 99pc duty cycle) | WLAN | 8.54 | ±9.6 |
| 10766 | AAC | IEEE 802.11ax (160 MHz, MCS11, 99pc duty cycle) | WLAN | 8.51 | ±9.6 |
| 10767 | AAG | 5G NR (CP-OFDM, 1 RB, 5 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 7.99 | ±9.6 |
| 10768 | AAE | 5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.01 | ±9.6 |
| 10769 | AAD | 5G NR (CP-OFDM, 1 RB, 15 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.01 | ±9.6 |
| 10770 | AAE | 5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.02 | ±9.6 |
| 10771 | AAD | 5G NR (CP-OFDM, 1 RB, 25 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.02 | ±9.6 |
| 10772 | AAE | 5G NR (CP-OFDM, 1 RB, 30 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.23 | ±9.6 |
| 10773 | AAF | 5G NR (CP-OFDM, 1 RB, 40 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.03 | ±9.6 |
| 10774 | AAE | 5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.02 | ±9.6 |
| 10775 | AAF | 5G NR (CP-OFDM, 50% RB, 5 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.31 | ±9.6 |
| 10776 | AAE | 5G NR (CP-OFDM, 50% RB, 10 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.30 | ±9.6 |
| 10777 | AAC | 5G NR (CP-OFDM, 50% RB, 15 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.30 | ±9.6 |
| 10778 | AAE | 5G NR (CP-OFDM, 50% RB, 20 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.34 | ±9.6 |
| 10779 | AAC | 5G NR (CP-OFDM, 50% RB, 25 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.42 | ±9.6 |
| 10780 | AAE | 5G NR (CP-OFDM, 50% RB, 30 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.38 | ±9.6 |
| 10781 | AAF | 5G NR (CP-OFDM, 50% RB, 40 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.38 | ±9.6 |
| 10782 | AAE | 5G NR (CP-OFDM, 50% RB, 50 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.43 | ±9.6 |
| 10783 | AAG | 5G NR (CP-OFDM, 100% RB, 5 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.31 | ±9.6 |
| 10784 | AAE | 5G NR (CP-OFDM, 100% RB, 10 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.29 | ±9.6 |
| 10785 | AAD | 5G NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.40 | ±9.6 |
| 10786 | AAE | 5G NR (CP-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.35 | ±9.6 |
| 10787 | AAD | 5G NR (CP-OFDM, 100% RB, 25 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.44 | ±9.6 |
| 10788 | AAE | 5G NR (CP-OFDM, 100% RB, 30 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.39 | ±9.6 |
| 10789 | AAF | 5G NR (CP-OFDM, 100% RB, 40 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.37 | ±9.6 |
| 10790 | AAE | 5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 8.39 | ±9.6 |
| 10791 | AAG | 5G NR (CP-OFDM, 1 RB, 5 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 7.83 | ±9.6 |
| 10792 | AAE | 5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 7.92 | ±9.6 |
| 10793 | AAD | 5G NR (CP-OFDM, 1 RB, 15 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 7.95 | ±9.6 |
| 10794 | AAE | 5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 7.82 | ±9.6 |
| 10795 | AAD | 5G NR (CP-OFDM, 1 RB, 25 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 7.84 | ±9.6 |
| 10796 | AAE | 5G NR (CP-OFDM, 1 RB, 30 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 7.82 | ±9.6 |
| 10797 | AAF | 5G NR (CP-OFDM, 1 RB, 40 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.01 | ±9.6 |
| 10798 | AAE | 5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 7.89 | ±9.6 |
| 10799 | AAF | 5G NR (CP-OFDM, 1 RB, 60 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 7.93 | ±9.6 |
| 10801 | AAF | 5G NR (CP-OFDM, 1 RB, 80 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 7.89 | ±9.6 |
| 10802 | AAE | 5G NR (CP-OFDM, 1 RB, 90 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 7.87 | ±9.6 |
| 10803 | AAF | 5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 7.93 | ±9.6 |
| 10805 | AAE | 5G NR (CP-OFDM, 50% RB, 10 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.34 | ±9.6 |
| 10806 | AAD | 5G NR (CP-OFDM, 50% RB, 15 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.37 | ±9.6 |
| 10809 | AAE | 5G NR (CP-OFDM, 50% RB, 30 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.34 | ±9.6 |
| 10810 | AAF | 5G NR (CP-OFDM, 50% RB, 40 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.34 | ±9.6 |
| 10812 | AAF | 5G NR (CP-OFDM, 50% RB, 60 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.35 | ±9.6 |
| 10817 | AAG | 5G NR (CP-OFDM, 100% RB, 5 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.35 | ±9.6 |
| 10818 | AAE | 5G NR (CP-OFDM, 100% RB, 10 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.34 | ±9.6 |
| 10819 | AAD | 5G NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.33 | ±9.6 |
| 10820 | AAE | 5G NR (CP-OFDM, 100% RB, 20 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.30 | ±9.6 |
| 10821 | AAD | 5G NR (CP-OFDM, 100% RB, 25 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.41 | ±9.6 |
| 10822 | AAE | 5G NR (CP-OFDM, 100% RB, 30 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.41 | ±9.6 |
| 10823 | AAF | 5G NR (CP-OFDM, 100% RB, 40 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.36 | ±9.6 |
| 10824 | AAE | 5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.39 | ±9.6 |
| 10825 | AAF | 5G NR (CP-OFDM, 100% RB, 60 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.41 | ±9.6 |
| 10827 | AAF | 5G NR (CP-OFDM, 100% RB, 80 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.42 | ±9.6 |
| 10828 | AAE | 5G NR (CP-OFDM, 100% RB, 90 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.43 | ±9.6 |

| UID | Rev | Communication System Name | Group | PAR (dB) | Unc$^E$ $k = 2$ |
|---|---|---|---|---|---|
| 10829 | AAF | 5G NR (CP-OFDM, 100% RB, 100 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 8.40 | ±9.6 |
| 10830 | AAE | 5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 7.63 | ±9.6 |
| 10831 | AAD | 5G NR (CP-OFDM, 1 RB, 15 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 7.73 | ±9.6 |
| 10832 | AAE | 5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 7.74 | ±9.6 |
| 10833 | AAD | 5G NR (CP-OFDM, 1 RB, 25 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 7.70 | ±9.6 |
| 10834 | AAE | 5G NR (CP-OFDM, 1 RB, 30 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 7.75 | ±9.6 |
| 10835 | AAF | 5G NR (CP-OFDM, 1 RB, 40 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 7.70 | ±9.6 |
| 10836 | AAE | 5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 7.66 | ±9.6 |
| 10837 | AAF | 5G NR (CP-OFDM, 1 RB, 60 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 7.68 | ±9.6 |
| 10839 | AAF | 5G NR (CP-OFDM, 1 RB, 80 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 7.70 | ±9.6 |
| 10840 | AAE | 5G NR (CP-OFDM, 1 RB, 90 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 7.67 | ±9.6 |
| 10841 | AAF | 5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 7.71 | ±9.6 |
| 10843 | AAD | 5G NR (CP-OFDM, 50% RB, 15 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.49 | ±9.6 |
| 10844 | AAE | 5G NR (CP-OFDM, 50% RB, 20 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.34 | ±9.6 |
| 10846 | AAE | 5G NR (CP-OFDM, 50% RB, 30 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.41 | ±9.6 |
| 10854 | AAE | 5G NR (CP-OFDM, 100% RB, 10 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.34 | ±9.6 |
| 10855 | AAD | 5G NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.36 | ±9.6 |
| 10856 | AAE | 5G NR (CP-OFDM, 100% RB, 20 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.37 | ±9.6 |
| 10857 | AAD | 5G NR (CP-OFDM, 100% RB, 25 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.35 | ±9.6 |
| 10858 | AAE | 5G NR (CP-OFDM, 100% RB, 30 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.36 | ±9.6 |
| 10859 | AAF | 5G NR (CP-OFDM, 100% RB, 40 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.34 | ±9.6 |
| 10860 | AAE | 5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.41 | ±9.6 |
| 10861 | AAF | 5G NR (CP-OFDM, 100% RB, 60 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.40 | ±9.6 |
| 10863 | AAF | 5G NR (CP-OFDM, 100% RB, 80 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.41 | ±9.6 |
| 10864 | AAE | 5G NR (CP-OFDM, 100% RB, 90 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.37 | ±9.6 |
| 10865 | AAF | 5G NR (CP-OFDM, 100% RB, 100 MHz, QPSK, 60 kHz) | 5G NR FR1 TDD | 8.41 | ±9.6 |
| 10866 | AAF | 5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.68 | ±9.6 |
| 10868 | AAF | 5G NR (DFT-s-OFDM, 100% RB, 100 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.89 | ±9.6 |
| 10869 | AAE | 5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 120 kHz) | 5G NR FR2 TDD | 5.75 | ±9.6 |
| 10870 | AAE | 5G NR (DFT-s-OFDM, 100% RB, 100 MHz, QPSK, 120 kHz) | 5G NR FR2 TDD | 5.86 | ±9.6 |
| 10871 | AAE | 5G NR (DFT-s-OFDM, 1 RB, 100 MHz, 16QAM, 120 kHz) | 5G NR FR2 TDD | 5.75 | ±9.6 |
| 10872 | AAE | 5G NR (DFT-s-OFDM, 100% RB, 100 MHz, 16QAM, 120 kHz) | 5G NR FR2 TDD | 6.52 | ±9.6 |
| 10873 | AAE | 5G NR (DFT-s-OFDM, 1 RB, 100 MHz, 64QAM, 120 kHz) | 5G NR FR2 TDD | 6.61 | ±9.6 |
| 10874 | AAE | 5G NR (DFT-s-OFDM, 100% RB, 100 MHz, 64QAM, 120 kHz) | 5G NR FR2 TDD | 6.65 | ±9.6 |
| 10875 | AAE | 5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 120 kHz) | 5G NR FR2 TDD | 7.78 | ±9.6 |
| 10876 | AAE | 5G NR (CP-OFDM, 100% RB, 100 MHz, QPSK, 120 kHz) | 5G NR FR2 TDD | 8.39 | ±9.6 |
| 10877 | AAE | 5G NR (CP-OFDM, 1 RB, 100 MHz, 16QAM, 120 kHz) | 5G NR FR2 TDD | 7.95 | ±9.6 |
| 10878 | AAE | 5G NR (CP-OFDM, 100% RB, 100 MHz, 16QAM, 120 kHz) | 5G NR FR2 TDD | 8.41 | ±9.6 |
| 10879 | AAE | 5G NR (CP-OFDM, 1 RB, 100 MHz, 64QAM, 120 kHz) | 5G NR FR2 TDD | 8.12 | ±9.6 |
| 10880 | AAE | 5G NR (CP-OFDM, 100% RB, 100 MHz, 64QAM, 120 kHz) | 5G NR FR2 TDD | 8.38 | ±9.6 |
| 10881 | AAE | 5G NR (DFT-s-OFDM, 1 RB, 50 MHz, QPSK, 120 kHz) | 5G NR FR2 TDD | 5.75 | ±9.6 |
| 10882 | AAE | 5G NR (DFT-s-OFDM, 100% RB, 50 MHz, QPSK, 120 kHz) | 5G NR FR2 TDD | 5.96 | ±9.6 |
| 10883 | AAE | 5G NR (DFT-s-OFDM, 1 RB, 50 MHz, 16QAM, 120 kHz) | 5G NR FR2 TDD | 6.57 | ±9.6 |
| 10884 | AAE | 5G NR (DFT-s-OFDM, 100% RB, 50 MHz, 16QAM, 120 kHz) | 5G NR FR2 TDD | 6.53 | ±9.6 |
| 10885 | AAE | 5G NR (DFT-s-OFDM, 1 RB, 50 MHz, 64QAM, 120 kHz) | 5G NR FR2 TDD | 6.61 | ±9.6 |
| 10886 | AAE | 5G NR (DFT-s-OFDM, 100% RB, 50 MHz, 64QAM, 120 kHz) | 5G NR FR2 TDD | 6.65 | ±9.6 |
| 10887 | AAE | 5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 120 kHz) | 5G NR FR2 TDD | 7.78 | ±9.6 |
| 10888 | AAE | 5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 120 kHz) | 5G NR FR2 TDD | 8.35 | ±9.6 |
| 10889 | AAE | 5G NR (CP-OFDM, 1 RB, 50 MHz, 16QAM, 120 kHz) | 5G NR FR2 TDD | 8.02 | ±9.6 |
| 10890 | AAE | 5G NR (CP-OFDM, 100% RB, 50 MHz, 16QAM, 120 kHz) | 5G NR FR2 TDD | 8.40 | ±9.6 |
| 10891 | AAE | 5G NR (CP-OFDM, 1 RB, 50 MHz, 64QAM, 120 kHz) | 5G NR FR2 TDD | 8.13 | ±9.6 |
| 10892 | AAE | 5G NR (CP-OFDM, 100% RB, 50 MHz, 64QAM, 120 kHz) | 5G NR FR2 TDD | 8.41 | ±9.6 |
| 10897 | AAE | 5G NR (DFT-s-OFDM, 1 RB, 5 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.66 | ±9.6 |
| 10898 | AAC | 5G NR (DFT-s-OFDM, 1 RB, 10 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.67 | ±9.6 |
| 10899 | AAB | 5G NR (DFT-s-OFDM, 1 RB, 15 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.67 | ±9.6 |
| 10900 | AAC | 5G NR (DFT-s-OFDM, 1 RB, 20 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.68 | ±9.6 |
| 10901 | AAB | 5G NR (DFT-s-OFDM, 1 RB, 25 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.68 | ±9.6 |
| 10902 | AAC | 5G NR (DFT-s-OFDM, 1 RB, 30 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.68 | ±9.6 |
| 10903 | AAD | 5G NR (DFT-s-OFDM, 1 RB, 40 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.68 | ±9.6 |
| 10904 | AAC | 5G NR (DFT-s-OFDM, 1 RB, 50 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.68 | ±9.6 |
| 10905 | AAD | 5G NR (DFT-s-OFDM, 1 RB, 60 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.68 | ±9.6 |
| 10906 | AAD | 5G NR (DFT-s-OFDM, 1 RB, 80 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.68 | ±9.6 |
| 10907 | AAE | 5G NR (DFT-s-OFDM, 50% RB, 5 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.78 | ±9.6 |
| 10908 | AAC | 5G NR (DFT-s-OFDM, 50% RB, 10 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.93 | ±9.6 |
| 10909 | AAB | 5G NR (DFT-s-OFDM, 50% RB, 15 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.96 | ±9.6 |
| 10910 | AAC | 5G NR (DFT-s-OFDM, 50% RB, 20 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.83 | ±9.6 |

| UID | Rev | Communication System Name | Group | PAR (dB) | Unc$^E$ $k = 2$ |
|---|---|---|---|---|---|
| 10911 | AAB | 5G NR (DFT-s-OFDM, 50% RB, 25 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.93 | ±9.6 |
| 10912 | AAC | 5G NR (DFT-s-OFDM, 50% RB, 30 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.84 | ±9.6 |
| 10913 | AAD | 5G NR (DFT-s-OFDM, 50% RB, 40 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.84 | ±9.6 |
| 10914 | AAC | 5G NR (DFT-s-OFDM, 50% RB, 50 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.85 | ±9.6 |
| 10915 | AAD | 5G NR (DFT-s-OFDM, 50% RB, 60 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.83 | ±9.6 |
| 10916 | AAD | 5G NR (DFT-s-OFDM, 50% RB, 80 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.87 | ±9.6 |
| 10917 | AAD | 5G NR (DFT-s-OFDM, 50% RB, 100 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.94 | ±9.6 |
| 10918 | AAE | 5G NR (DFT-s-OFDM, 100% RB, 5 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.86 | ±9.6 |
| 10919 | AAC | 5G NR (DFT-s-OFDM, 100% RB, 10 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.86 | ±9.6 |
| 10920 | AAB | 5G NR (DFT-s-OFDM, 100% RB, 15 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.87 | ±9.6 |
| 10921 | AAC | 5G NR (DFT-s-OFDM, 100% RB, 20 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.84 | ±9.6 |
| 10922 | AAB | 5G NR (DFT-s-OFDM, 100% RB, 25 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.82 | ±9.6 |
| 10923 | AAC | 5G NR (DFT-s-OFDM, 100% RB, 30 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.84 | ±9.6 |
| 10924 | AAD | 5G NR (DFT-s-OFDM, 100% RB, 40 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.84 | ±9.6 |
| 10925 | AAC | 5G NR (DFT-s-OFDM, 100% RB, 50 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.95 | ±9.6 |
| 10926 | AAD | 5G NR (DFT-s-OFDM, 100% RB, 60 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.84 | ±9.6 |
| 10927 | AAD | 5G NR (DFT-s-OFDM, 100% RB, 80 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 5.94 | ±9.6 |
| 10928 | AAD | 5G NR (DFT-s-OFDM, 1 RB, 5 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.52 | ±9.6 |
| 10929 | AAD | 5G NR (DFT-s-OFDM, 1 RB, 10 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.52 | ±9.6 |
| 10930 | AAC | 5G NR (DFT-s-OFDM, 1 RB, 15 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.52 | ±9.6 |
| 10931 | AAC | 5G NR (DFT-s-OFDM, 1 RB, 20 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.51 | ±9.6 |
| 10932 | AAC | 5G NR (DFT-s-OFDM, 1 RB, 25 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.51 | ±9.6 |
| 10933 | AAC | 5G NR (DFT-s-OFDM, 1 RB, 30 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.51 | ±9.6 |
| 10934 | AAC | 5G NR (DFT-s-OFDM, 1 RB, 40 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.51 | ±9.6 |
| 10935 | AAD | 5G NR (DFT-s-OFDM, 1 RB, 50 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.51 | ±9.6 |
| 10936 | AAD | 5G NR (DFT-s-OFDM, 50% RB, 5 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.90 | ±9.6 |
| 10937 | AAD | 5G NR (DFT-s-OFDM, 50% RB, 10 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.77 | ±9.6 |
| 10938 | AAC | 5G NR (DFT-s-OFDM, 50% RB, 15 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.90 | ±9.6 |
| 10939 | AAC | 5G NR (DFT-s-OFDM, 50% RB, 20 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.82 | ±9.6 |
| 10940 | AAC | 5G NR (DFT-s-OFDM, 50% RB, 25 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.89 | ±9.6 |
| 10941 | AAC | 5G NR (DFT-s-OFDM, 50% RB, 30 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.83 | ±9.6 |
| 10942 | AAC | 5G NR (DFT-s-OFDM, 50% RB, 40 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.85 | ±9.6 |
| 10943 | AAD | 5G NR (DFT-s-OFDM, 50% RB, 50 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.95 | ±9.6 |
| 10944 | AAD | 5G NR (DFT-s-OFDM, 100% RB, 5 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.81 | ±9.6 |
| 10945 | AAD | 5G NR (DFT-s-OFDM, 100% RB, 10 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.85 | ±9.6 |
| 10946 | AAC | 5G NR (DFT-s-OFDM, 100% RB, 15 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.83 | ±9.6 |
| 10947 | AAC | 5G NR (DFT-s-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.87 | ±9.6 |
| 10948 | AAC | 5G NR (DFT-s-OFDM, 100% RB, 25 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.94 | ±9.6 |
| 10949 | AAC | 5G NR (DFT-s-OFDM, 100% RB, 30 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.87 | ±9.6 |
| 10950 | AAC | 5G NR (DFT-s-OFDM, 100% RB, 40 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.94 | ±9.6 |
| 10951 | AAD | 5G NR (DFT-s-OFDM, 100% RB, 50 MHz, QPSK, 15 kHz) | 5G NR FR1 FDD | 5.92 | ±9.6 |
| 10952 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 15 kHz) | 5G NR FR1 FDD | 8.25 | ±9.6 |
| 10953 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 15 kHz) | 5G NR FR1 FDD | 8.15 | ±9.6 |
| 10954 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 15 kHz) | 5G NR FR1 FDD | 8.23 | ±9.6 |
| 10955 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 15 kHz) | 5G NR FR1 FDD | 8.42 | ±9.6 |
| 10956 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 30 kHz) | 5G NR FR1 FDD | 8.14 | ±9.6 |
| 10957 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 30 kHz) | 5G NR FR1 FDD | 8.31 | ±9.6 |
| 10958 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 30 kHz) | 5G NR FR1 FDD | 8.61 | ±9.6 |
| 10959 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 30 kHz) | 5G NR FR1 FDD | 8.33 | ±9.6 |
| 10960 | AAE | 5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 15 kHz) | 5G NR FR1 TDD | 9.32 | ±9.6 |
| 10961 | AAC | 5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 15 kHz) | 5G NR FR1 TDD | 9.36 | ±9.6 |
| 10962 | AAB | 5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 15 kHz) | 5G NR FR1 TDD | 9.40 | ±9.6 |
| 10963 | AAC | 5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 15 kHz) | 5G NR FR1 TDD | 9.55 | ±9.6 |
| 10964 | AAE | 5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 30 kHz) | 5G NR FR1 TDD | 9.29 | ±9.6 |
| 10965 | AAC | 5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 30 kHz) | 5G NR FR1 TDD | 9.37 | ±9.6 |
| 10966 | AAB | 5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 30 kHz) | 5G NR FR1 TDD | 9.55 | ±9.6 |
| 10967 | AAC | 5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 30 kHz) | 5G NR FR1 TDD | 9.42 | ±9.6 |
| 10968 | AAD | 5G NR DL (CP-OFDM, TM 3.1, 100 MHz, 64-QAM, 30 kHz) | 5G NR FR1 TDD | 9.49 | ±9.6 |
| 10972 | AAC | 5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 15 kHz) | 5G NR FR1 TDD | 11.59 | ±9.6 |
| 10973 | AAD | 5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz) | 5G NR FR1 TDD | 9.06 | ±9.6 |
| 10974 | AAD | 5G NR (CP-OFDM, 100% RB, 100 MHz, 256-QAM, 30 kHz) | 5G NR FR1 TDD | 10.28 | ±9.6 |
| 10978 | AAA | ULLA BDR | ULLA | 1.16 | ±9.6 |
| 10979 | AAA | ULLA HDR4 | ULLA | 8.58 | ±9.6 |
| 10980 | AAA | ULLA HDR8 | ULLA | 10.32 | ±9.6 |
| 10981 | AAA | ULLA HDRp4 | ULLA | 3.19 | ±9.6 |
| 10982 | AAA | ULLA HDRp8 | ULLA | 3.43 | ±9.6 |

| UID | Rev | Communication System Name | Group | PAR (dB) | Unc[E] $k = 2$ |
|---|---|---|---|---|---|
| 10983 | AAC | 5G NR DL (CP-OFDM, TM 3.1, 40 MHz, 64-QAM, 15 kHz) | 5G NR FR1 TDD | 9.31 | ±9.6 |
| 10984 | AAB | 5G NR DL (CP-OFDM, TM 3.1, 50 MHz, 64-QAM, 15 kHz) | 5G NR FR1 TDD | 9.42 | ±9.6 |
| 10985 | AAC | 5G NR DL (CP-OFDM, TM 3.1, 40 MHz, 64-QAM, 30 kHz) | 5G NR FR1 TDD | 9.54 | ±9.6 |
| 10986 | AAB | 5G NR DL (CP-OFDM, TM 3.1, 50 MHz, 64-QAM, 30 kHz) | 5G NR FR1 TDD | 9.50 | ±9.6 |
| 10987 | AAC | 5G NR DL (CP-OFDM, TM 3.1, 60 MHz, 64-QAM, 30 kHz) | 5G NR FR1 TDD | 9.53 | ±9.6 |
| 10988 | AAB | 5G NR DL (CP-OFDM, TM 3.1, 70 MHz, 64-QAM, 30 kHz) | 5G NR FR1 TDD | 9.38 | ±9.6 |
| 10989 | AAC | 5G NR DL (CP-OFDM, TM 3.1, 80 MHz, 64-QAM, 30 kHz) | 5G NR FR1 TDD | 9.33 | ±9.6 |
| 10990 | AAB | 5G NR DL (CP-OFDM, TM 3.1, 90 MHz, 64-QAM, 30 kHz) | 5G NR FR1 TDD | 9.52 | ±9.6 |
| 11003 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 30 MHz, 64-QAM, 15 kHz) | 5G NR FR1 TDD | 10.24 | ±9.6 |
| 11004 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 30 MHz, 64-QAM, 30 kHz) | 5G NR FR1 TDD | 10.73 | ±9.6 |
| 11005 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 25 MHz, 64-QAM, 15 kHz) | 5G NR FR1 FDD | 8.70 | ±9.6 |
| 11006 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 30 MHz, 64-QAM, 15 kHz) | 5G NR FR1 FDD | 8.55 | ±9.6 |
| 11007 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 40 MHz, 64-QAM, 15 kHz) | 5G NR FR1 FDD | 8.46 | ±9.6 |
| 11008 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 50 MHz, 64-QAM, 15 kHz) | 5G NR FR1 FDD | 8.51 | ±9.6 |
| 11009 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 25 MHz, 64-QAM, 30 kHz) | 5G NR FR1 FDD | 8.76 | ±9.6 |
| 11010 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 30 MHz, 64-QAM, 30 kHz) | 5G NR FR1 FDD | 8.95 | ±9.6 |
| 11011 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 40 MHz, 64-QAM, 30 kHz) | 5G NR FR1 FDD | 8.96 | ±9.6 |
| 11012 | AAA | 5G NR DL (CP-OFDM, TM 3.1, 50 MHz, 64-QAM, 30 kHz) | 5G NR FR1 FDD | 8.68 | ±9.6 |
| 11013 | AAB | IEEE 802.11be (320 MHz, MCS1, 99pc duty cycle) | WLAN | 8.47 | ±9.6 |
| 11014 | AAB | IEEE 802.11be (320 MHz, MCS2, 99pc duty cycle) | WLAN | 8.45 | ±9.6 |
| 11015 | AAB | IEEE 802.11be (320 MHz, MCS3, 99pc duty cycle) | WLAN | 8.44 | ±9.6 |
| 11016 | AAB | IEEE 802.11be (320 MHz, MCS4, 99pc duty cycle) | WLAN | 8.44 | ±9.6 |
| 11017 | AAB | IEEE 802.11be (320 MHz, MCS5, 99pc duty cycle) | WLAN | 8.41 | ±9.6 |
| 11018 | AAB | IEEE 802.11be (320 MHz, MCS6, 99pc duty cycle) | WLAN | 8.40 | ±9.6 |
| 11019 | AAB | IEEE 802.11be (320 MHz, MCS7, 99pc duty cycle) | WLAN | 8.29 | ±9.6 |
| 11020 | AAB | IEEE 802.11be (320 MHz, MCS8, 99pc duty cycle) | WLAN | 8.27 | ±9.6 |
| 11021 | AAB | IEEE 802.11be (320 MHz, MCS9, 99pc duty cycle) | WLAN | 8.46 | ±9.6 |
| 11022 | AAB | IEEE 802.11be (320 MHz, MCS10, 99pc duty cycle) | WLAN | 8.36 | ±9.6 |
| 11023 | AAB | IEEE 802.11be (320 MHz, MCS11, 99pc duty cycle) | WLAN | 8.09 | ±9.6 |
| 11024 | AAB | IEEE 802.11be (320 MHz, MCS12, 99pc duty cycle) | WLAN | 8.42 | ±9.6 |
| 11025 | AAB | IEEE 802.11be (320 MHz, MCS13, 99pc duty cycle) | WLAN | 8.37 | ±9.6 |
| 11026 | AAB | IEEE 802.11be (320 MHz, MCS0, 99pc duty cycle) | WLAN | 8.39 | ±9.6 |

[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.