Testing Laboratory 3787

# RADIO TEST REPORT

| | | |
|---|---|---|
| FCC ID | : | ZQ6-AP6275S |
| Equipment | : | Wi-Fi/Bluetooth Module |
| Brand Name | : | AMPAK Technology Inc. |
| Model Name | : | AP6275S |
| Applicant | : | AMPAK Technology Inc.<br>3F, No. 1, Jen Al Road, Hsinchu Industrial Park,Hsinchu City 30352 , Taiwan (R.O.C.) |
| Manufacturer | : | BILLIONTON SYSTEMS INC.<br>No. 21, Sui-Lih Rd., Hsin-Chu City 300, Taiwan (R.O.C.) |
| Standard | : | 47 CFR FCC Part 15.247 |

The product was received on Jun. 17, 2024, and testing was started from Jun. 24, 2024 and completed on Sep. 10, 2024. We, Sporton International Inc. Hsinchu Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. Hsinchu Laboratory, the test report shall not be reproduced except in full.

Approved by: Rex Liao

*Sporton International Inc. Hsinchu Laboratory*
*No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)*

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# History of this test report

| Report No. | Version | Description | Issued Date |
|---|---|---|---|
| FR412214AD | 01 | Initial issue of report | Sep. 19, 2024 |
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# Summary of Test Result

| Report Clause | Ref Std. Clause | Test Items | Result (PASS/FAIL) | Remark |
|---|---|---|---|---|
| 1.1.2 | 15.203 | Antenna Requirement | PASS | - |
| 3.1 | 15.207 | AC Power-line Conducted Emissions | PASS | - |
| 3.2 | 15.247(a) | DTS Bandwidth | PASS | - |
| 3.3 | 15.247(b) | Maximum Conducted Output Power | PASS | - |
| 3.4 | 15.247(e) | Power Spectral Density | PASS | - |
| 3.5 | 15.247(d) | Emissions in Non-restricted Frequency Bands | PASS | - |
| 3.6 | 15.247(d) | Emissions in Restricted Frequency Bands | PASS | - |

| **Conformity Assessment Condition:** |
|---|
| 1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.<br>2. The measurement uncertainty please refer to each test result in the chapter "Measurement Uncertainty". |
| **Disclaimer:** |
| The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity. |

**Reviewed by: Sam Chen**
**Report Producer: Sophia Shiung**

# 1 General Description

## 1.1 Information

### 1.1.1 RF General Information

| Frequency Range (MHz) | Bluetooth Mode | Ch. Frequency (MHz) | Channel Number |
|---|---|---|---|
| 2400-2483.5 | LE | 2402-2480 | 0-39 [40] |

| Band | Mode | BWch (MHz) | Nant |
|---|---|---|---|
| 2.4-2.4835GHz | BT-LE(1Mbps) | 1.0 | 1TX |
| 2.4-2.4835GHz | BT-LE(2Mbps) | 2.0 | 1TX |

Note:
- Bluetooth LE uses a GFSK modulation.
- BWch is the nominal channel bandwidth.

### 1.1.2 Antenna Information

| Ant. | Brand | Model Name | Antenna Type | Connector | Gain (dBi) |
|---|---|---|---|---|---|
| 1 | PULSE ELECTRONICS PTE LTD | TZ2412W | Dipole | Reversed-SMA | Note 1 |
| 2 | | | | | |

Note 1:

| Ant. | Port | | | Gain (dBi) | | |
|---|---|---|---|---|---|---|
| | WLAN 2.4GHz | WLAN 5GHz | Bluetooth | WLAN 2.4GHz | WLAN 5GHz | Bluetooth |
| 1 | 1 | 1 | 1 | 3.68 | 4.65 | 3.68 |
| 2 | 2 | 2 | - | 3.68 | 4.65 | - |

Note 2: The above information was declared by manufacturer.
Note 3: Directional gain information

| Type | Maximum Output Power | Power Spectral Density |
|---|---|---|
| Non-BF | Directional gain = Max.gain + array gain.<br>For power measurements on IEEE 802.11 devices<br>Array Gain = 0 dB (i.e., no array gain) for N ANT ≤ 4 | $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ |
| BF | $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ | $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$ |

Ex.

Directional Gain (NSS1) formula : $Directiona\ lGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$

$NSS1(g1,1) = 10^{G1/20}$ ; $NSS1(g1,2) = 10^{G2/20}$ ; $NSS1(g1,2) = 10^{G3/20}$; $NSS1(g1,2) = 10^{G4/20}$

$gj,k = (Nss1(g1,1) + Nss1(g1,2) + Nss1(g1,3) + Nss1(g1,4))^2$

$DG = 10 \log[(Nss1(g1,1) + Nss1(g1,2) + Nss1(g1,3) + Nss1(g1,4))^2 / N_{ANT}] => 10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2 / N_{ANT}]$

Where ;

2.4G G1= 3.68 dBi ;G2= 3.68 dBi ;

5G UNII-1 G1 = 4.65 dBi; G2 = 4.65 dBi;
5G UNII-2A G1 = 4.65 dBi; G2 = 4.65 dBi;
5G UNII-2C G1 = 4.65 dBi; G2 = 4.65 dBi;
5G UNII-3 G1 = 4.65 dBi; G2 = 4.65 dBi;

2.4G DG = 6.69 dBi

5G UNII-1 DG = 7.66 dBi
5G UNII-2A DG = 7.66 dBi
5G UNII-2C DG = 7.66 dB
5G UNII-3 DG = 7.66 dBi

Note 4: **For 2.4GHz function:**
**For IEEE 802.11 b/g/n/ax (2TX/2RX):**
Port 1 and Port 2 can be used as transmitting/receiving antenna.
Port 1 and Port 2 could transmit/receive simultaneously.
**For 5GHz function:**
**For IEEE 802.11 a/n/ac/ax (2TX/2RX):**
Port 1 and Port 2 can be used as transmitting/receiving antenna.
Port 1 and Port 2 could transmit/receive simultaneously.
**For Bluetooth function (1TX/1RX):**
Only Port 1 can be used as transmitting/receiving antenna.

### 1.1.3 Mode Test Duty Cycle

| Mode | DC | DCF (dB) | T (s) | VBW (Hz)_1/T |
|---|---|---|---|---|
| BT-LE(1Mbps) | 0.607 | 2.17 | 379.375u | 3k |
| BT-LE(2Mbps) | 0.313 | 5.04 | 195.625u | 10k |

Note:
- DC is Duty Cycle.
- DCF is Duty Cycle Factor.

### 1.1.4 EUT Operational Condition

| | | | | |
|---|---|---|---|---|
| **EUT Power Type** | From host system | | | |
| **Function** | ☒ | Point-to-multipoint | ☐ | Point-to-point |
| **Test Software Version** | For Conducted: Terminal 3.6.2<br>For Radiated: BlueTool 1.9.7.4 | | | |
| **Support Mode** | ☒ | LE 1M PHY: 1 Mb/s | | |
| | ☐ | LE Coded PHY (S=2): 500 Kb/s | | |
| | ☐ | LE Coded PHY (S=8): 125 Kb/s | | |
| | ☒ | LE 2M PHY: 2 Mb/s | | |

Note: The above information was declared by manufacturer.

## 1.2 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR FCC Part 15.247
- ANSI C63.10-2013

The following reference test guidance is not within the scope of accreditation of TAF.

- FCC KDB 558074 D01 v05r02
- FCC KDB 414788 D01 v01r01

## 1.3 Testing Location Information

| Testing Location Information | |
|---|---|
| Test Lab.：Sporton International Inc. Hsinchu Laboratory | |
| Hsinchu (TAF: 3787) | ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)<br>TEL: 886-3-656-9065 FAX: 886-3-656-9085<br>Test site Designation No. TW3787 with FCC.<br>Conformity Assessment Body Identifier (CABID) TW3787 with ISED. |

| Test Condition | Test Site No. | Test Engineer | Test Environment (°C / %) | Test Date |
|---|---|---|---|---|
| RF Conducted | TH03-CB | Owen Hsu | 23.7~25.1 / 57~61 | Jun. 25, 2024~ Jun. 28, 2024 |
| Radiated < 1GHz | 03CH01-CB | Gordon_Hung | 21.6~22.7 / 56~59 | Aug. 26, 2024~ Sep. 04, 2024 |
| | 03CH04-CB | | 22.7~23.8 / 56~59 | |
| Radiated > 1GHz | 03CH03-CB | Gordon_Hung | 21.4~22.5 / 55~58 | Jun. 24, 2024~ Jun. 25, 2024 |
| AC Conduction | CO01-CB | Ryan Huang | 22~23 / 61~63 | Aug. 27, 2024~ Sep. 10, 2024 |

## 1.4 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

| Test Items | Uncertainty | Remark |
|---|---|---|
| Conducted Emission (150kHz ~ 30MHz) | 3.8 dB | Confidence levels of 95% |
| Radiated Emission (9kHz ~ 30MHz) | 4.1 dB | Confidence levels of 95% |
| Radiated Emission (30MHz ~ 1,000MHz) | 4.2 dB | Confidence levels of 95% |
| Radiated Emission (1GHz ~ 18GHz) | 4.2 dB | Confidence levels of 95% |
| Radiated Emission (18GHz ~ 40GHz) | 4.0 dB | Confidence levels of 95% |
| Conducted Emission | 3.1 dB | Confidence levels of 95% |
| Output Power Measurement | 0.8 dB | Confidence levels of 95% |
| Power Density Measurement | 3.1 dB | Confidence levels of 95% |
| Bandwidth Measurement | 2.1 % | Confidence levels of 95% |

# 2 Test Configuration of EUT

## 2.1 Test Channel Mode

| Mode |
|---|
| BT-LE(1Mbps) |
| 2402MHz |
| 2440MHz |
| 2480MHz |
| BT-LE(2Mbps) |
| 2402MHz |
| 2440MHz |
| 2478MHz |
| 2480MHz |

## 2.2 The Worst Case Measurement Configuration

| The Worst Case Mode for Following Conformance Tests | |
|---|---|
| **Tests Item** | AC power-line conducted emissions |
| **Condition** | AC power-line conducted measurement for line and neutral<br>Test Voltage: 120Vac / 60Hz |
| **Operating Mode** | Normal Link |
| 1 | EUT_Bluetooth |
| 2 | EUT_WLAN 2.4GHz |
| 3 | EUT_WLAN 5GHz |
| For operating, mode 1 is the worst case and it was recorded in this test report. | |

| The Worst Case Mode for Following Conformance Tests | |
|---|---|
| **Tests Item** | DTS Bandwidth<br>Maximum Conducted Output Power<br>Power Spectral Density<br>Emissions in Non-restricted Frequency Bands |
| **Test Condition** | Conducted measurement at transmit chains |

| The Worst Case Mode for Following Conformance Tests | |
|---|---|
| **Tests Item** | Emissions in Restricted Frequency Bands |
| **Test Condition** | Radiated measurement<br>If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type. |
| **Operating Mode < 1GHz** | Normal Link |
| | The EUT was performed at X axis, Y axis and Z axis positions with each function at Radiated measurement > 1GH, and the worst cases were found at Z axis for WLAN 2.4GHz and 5GHz, and Y axis for Bluetooth. Thus, the measurement will follow these same test configurations. |
| 1 | EUT in Y axis_Bluetooth |
| 2 | EUT in Z axis_WLAN 2.4GHz |
| 3 | EUT in Z axis_WLAN 5GHz |
| For operating, mode 1 is the worst case and it was recorded in this test report. | |
| **Operating Mode > 1GHz** | CTX |
| | The EUT was performed at X axis, Y axis and Z axis positions, and the worst case was found at Y axis. Thus, the measurement will follow this same test configuration. |
| 1 | EUT in Y axis |

## 2.3 EUT Operation during Test

**For CTX Mode:**

The EUT was programmed to be in continuously transmitting mode.

**For Normal Link Mode:**

During the test, the EUT operation to normal function.

## 2.4 Accessories

N/A

## 2.5 Support Equipment

**For AC Conduction:**

| Support Equipment | | | | |
|---|---|---|---|---|
| **No.** | **Equipment** | **Brand Name** | **Model Name** | **FCC ID** |
| A | EUT Fixture | AMPAK Technology Inc. | P6276S_EVB_V01 | N/A |
| B | BT Fixture | AMPAK Technology Inc. | UART_V06 | N/A |
| C | Wireless Connectivity Tester | R&S | CMW270 | N/A |
| D | Control NB | DELL | E6430 | N/A |
| E | Earphone | SHYARO CHI | MIC-04 | N/A |
| F | Mouse | HP | FM100 | N/A |

**For Radiated < 1GHz:**

| Support Equipment | | | | |
|---|---|---|---|---|
| **No.** | **Equipment** | **Brand Name** | **Model Name** | **FCC ID** |
| A | NB | Lenovo | 42T4430 | N/A |
| B | EUT Fixture | AMPAK Technology Inc. | P6276S_EVB_V01 | N/A |
| C | Earphone | e-Power | S90W | N/A |
| D | Mouse | Logitech | M-U0026 | N/A |
| E | BT Connectivity Tester | Anritsu | MB8852B | N/A |
| F | BT Fixture | AMPAK Technology Inc. | UART_V06 | N/A |

**For Radiated > 1GHz:**

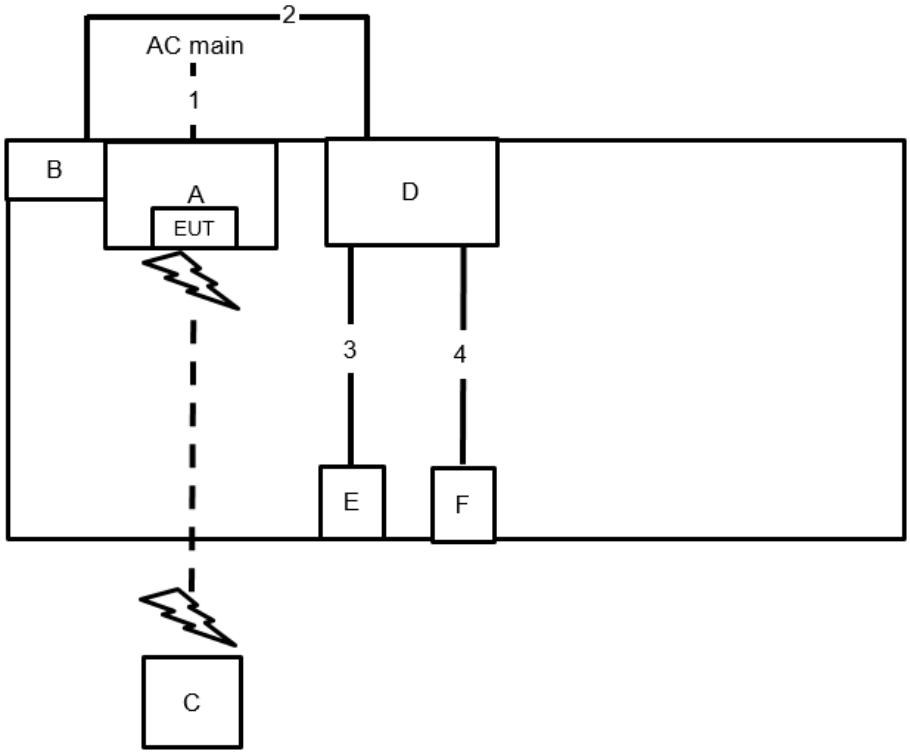
| Support Equipment | | | | |
|---|---|---|---|---|
| **No.** | **Equipment** | **Brand Name** | **Model Name** | **FCC ID** |
| A | DC Power Supply | MOTECH | LPS-305 | N/A |
| B | PC | AMPAK Technology Inc. | H81-PLUS | N/A |
| C | BT fixture | AMPAK Technology Inc. | UART_V06 | N/A |
| D | EUT Fixture | AMPAK Technology Inc. | P6276S_EVB_V01 | N/A |

**For RF Conducted:**

| Support Equipment | | | | |
|---|---|---|---|---|
| **No.** | **Equipment** | **Brand Name** | **Model Name** | **FCC ID** |
| A | PC | AMPAK Technology Inc. | H81-PLUS | N/A |
| B | EUT Fixture | AMPAK Technology Inc. | P6276S_EVB_V01 | N/A |
| C | BT Fixture | AMPAK Technology Inc. | UART_V06 | N/A |
| D | DC Power Supply | MOTECH | LPS-305 | N/A |

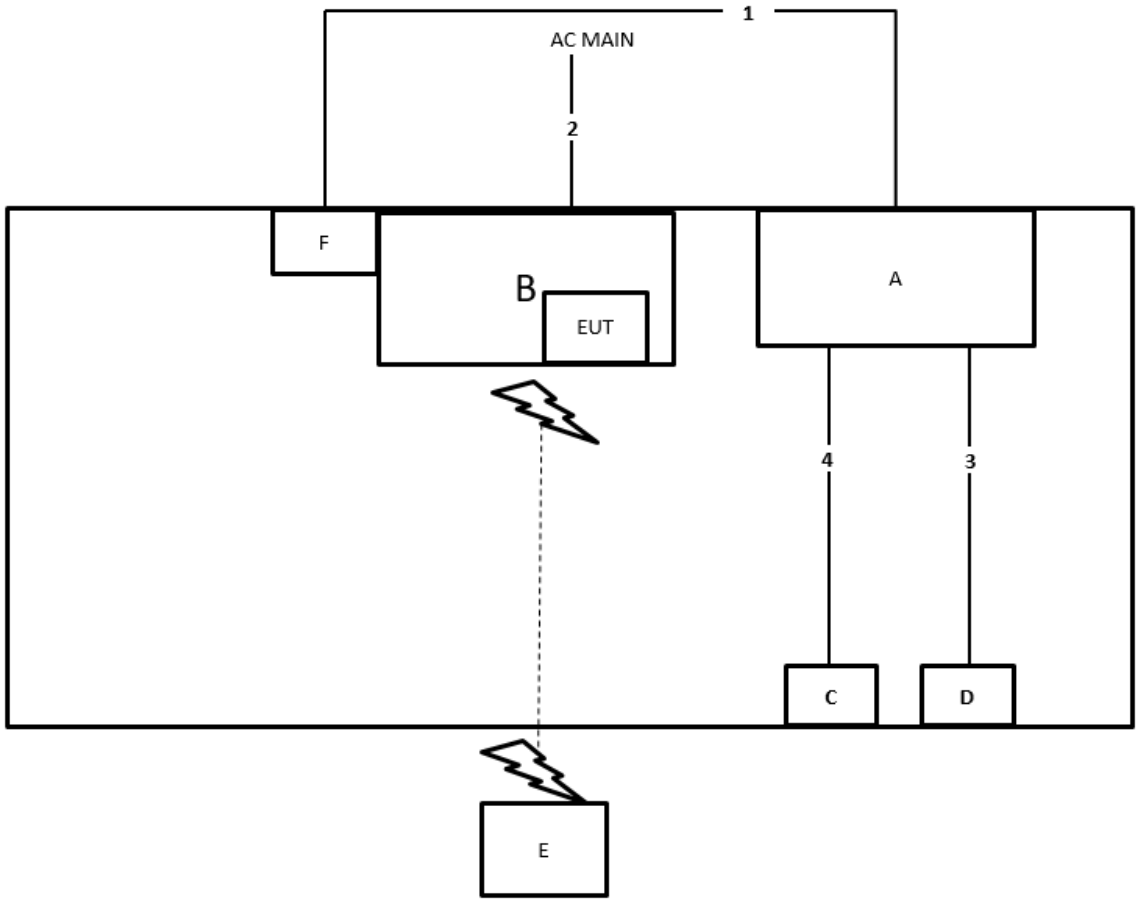
## 2.6 Test Setup Diagram

**Test Setup Diagram – AC Line Conducted Emission Test**



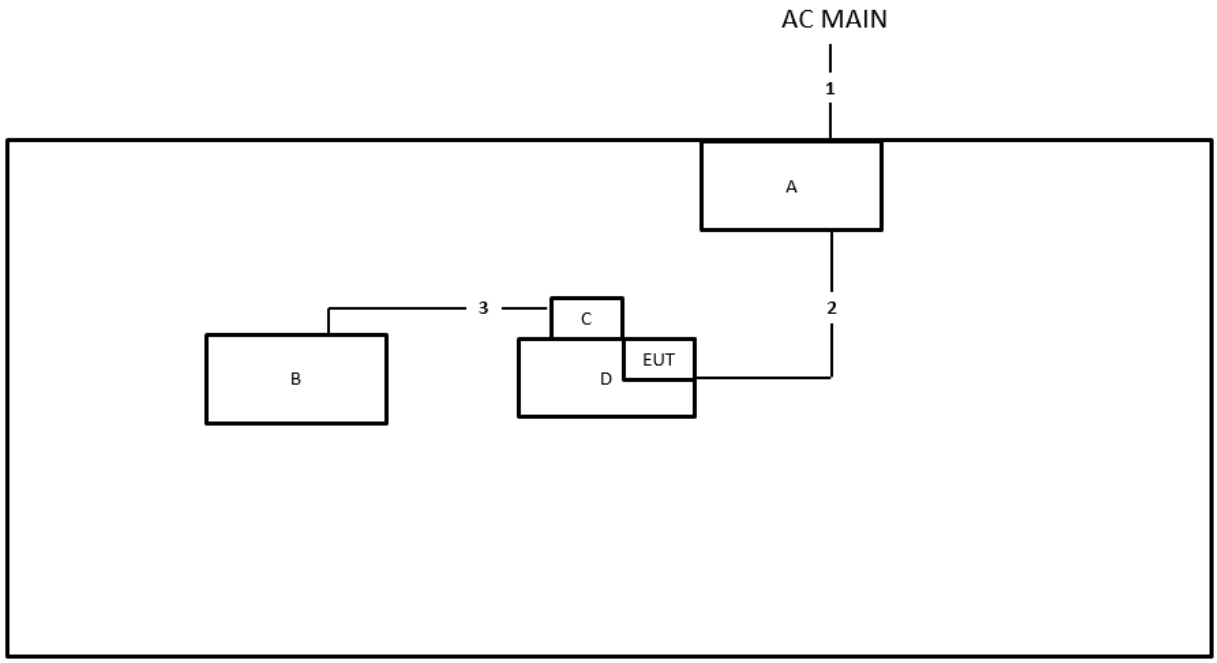

| Item | Connection | Shielded | Length |
|---|---|---|---|
| 1 | Power cable | Yes | 1m |
| 2 | Mini USB cable | Yes | 1m |
| 3 | Audio cable | No | 1.5m |
| 4 | USB cable | Yes | 1.8m |

**Test Setup Diagram - Radiated Test < 1GHz**




| Item | Connection | Shielded | Length |
|---|---|---|---|
| 1 | Mini USB cable | Yes | 1m |
| 2 | Power cable | No | 1.5m |
| 3 | USB cable | Yes | 1m |
| 4 | Audio cable | No | 1.5m |

**Test Setup Diagram - Radiated Test > 1GHz**




| Item | Connection | Shielded | Length |
|---|---|---|---|
| 1 | Power cable | No | 1m |
| 2 | Crocodile clip cable*2 | No | 1m |
| 3 | USB to Mini cable | Yes | 1.5m |

# 3 Transmitter Test Result

## 3.1 AC Power-line Conducted Emissions

### 3.1.1 AC Power-line Conducted Emissions Limit

| AC Power-line 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. | | |

### 3.1.2 Measuring Instruments

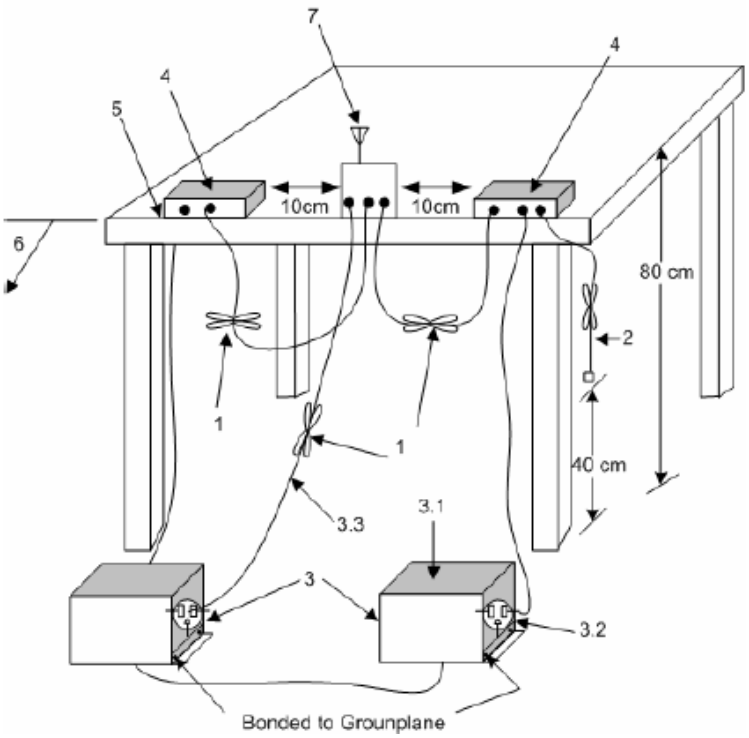
Refer a test equipment and calibration data table in this test report.

### 3.1.3 Test Procedures

| Test Method |
|---|
| ▪ Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions. |

### 3.1.4 Test Setup

**AC Power-line Conducted Emissions**




1—Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long.
2—The I/O cables that are not connected to an accessory shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
3—EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω loads. LISN may be placed on top of, or immediately beneath, reference ground plane.
3.1—All other equipment powered from additional LISN(s).
3.2—A multiple-outlet strip may be used for multiple power cords of non-EUT equipment.
3.3—LISN at least 80 cm from nearest part of EUT chassis.
4—Non-EUT components of EUT system being tested.
5—Rear of EUT, including peripherals, shall all be aligned and flush with edge of tabletop.
6—Edge of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.
7—Antenna can be integral or detachable. If detachable, then the antenna shall be attached for this test.

### 1.1.1. Measurement Results Calculation

The measured Level is calculated using:

a. Corrected Reading: LISN Factor (LISN) + Attenuator (AT/AUX) + Cable Loss (CL) + Read Level (Raw) = Level

b. Margin = -Limit + Level

### 3.1.5 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

# 3.2 DTS Bandwidth

## 3.2.1 6dB Bandwidth Limit

| 6dB Bandwidth Limit |
|---|
| **Systems using digital modulation techniques:** |
| ▪ 6 dB bandwidth ≥ 500 kHz. |

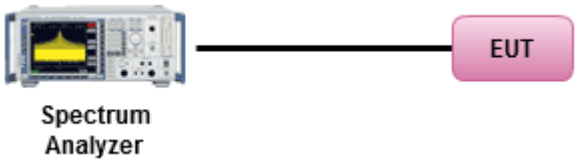
## 3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

## 3.2.3 Test Procedures

| Test Method | |
|---|---|
| ▪ For the emission bandwidth shall be measured using one of the options below: | |
| | ☒ Refer as FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.1 Option 1 for 6 dB bandwidth measurement. |
| | ☐ Refer as FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.2 Option 2 for 6 dB bandwidth measurement. |
| | ☐ Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing. |

## 3.2.4 Test Setup

| Emission Bandwidth |
|---|
|   |

## 3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

# 3.3 Maximum Conducted Output Power

## 3.3.1 Maximum Conducted Output Power Limit

| Maximum Conducted Output Power Limit | |
|---|---|
| | ▪ If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W) |
| | ▪ Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)$ dBm |
| | ▪ Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)/3$ dBm |
| | ▪ Smart antenna system (SAS): |
| | - Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)/3$ dBm |
| | - Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)/3$ dBm |
| | - Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)/3 + 8$dB dBm |
| **$P_{Out}$** = maximum peak conducted output power or maximum conducted output power in dBm,<br>**$G_{TX}$** = the maximum transmitting antenna directional gain in dBi. | |

## 3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

## 3.3.3 Test Procedures

| Test Method | |
|---|---|
| ▪ Maximum Peak Conducted Output Power | |
| | ☐ Refer as FCC KDB 558074, clause 8.3.1.1 & C63.10 clause 11.9.1.1 (RBW ≥ EBW method). |
| | ☐ Refer as FCC KDB 558074, clause 8.3.1.3 & C63.10 clause 11.9.1.3 (peak power meter). |
| ▪ Maximum Conducted Output Power | |
| | [duty cycle ≥ 98% or external video / power trigger] |
| | ☐ Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.2 Method AVGSA-1. |
| | ☐ Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.3 Method AVGSA-1A. (alternative) |
| | duty cycle < 98% and average over on/off periods with duty factor |
| | ☐ Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.4 Method AVGSA-2. |
| | ☐ Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.5 Method AVGSA-2A (alternative) |
| | ☐ Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.6 Method AVGSA-3 |
| | ☐ Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.7 Method AVGSA-3A (alternative) |
| | Measurement using a power meter (PM) |
| | ☐ Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.1 Method AVGPM (using an RF average power meter). |
| | ☒ Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.2 Method AVGPM-G (using an gate RF average power meter). |

| | |
|---|---|
| ▪ For conducted measurement. | |
| | ▪ If the EUT supports multiple transmit chains using options given below:<br>Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them. |
| | ▪ If multiple transmit chains, EIRP calculation could be following as methods:<br>$P_{total} = P_1 + P_2 + \ldots + P_n$<br>(calculated in linear unit [mW] and transfer to log unit [dBm])<br>$EIRP_{total} = P_{total} + DG$ |

### 3.3.4 Test Setup

| Maximum Conducted Output Power (Power Meter) |
|---|
|  |

### 3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

# 3.4 Power Spectral Density

## 3.4.1 Power Spectral Density Limit

| Power Spectral Density Limit |
|---|
| ▪ Power Spectral Density (PSD)≤8 dBm/3kHz |

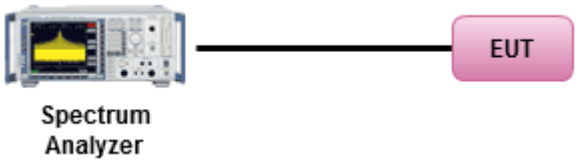
## 3.4.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

## 3.4.3 Test Procedures

| Test Method | | |
|---|---|---|
| ▪ Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option). | | |
| | ☒ Refer as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10 Method Max. PSD. | |
| | [duty cycle ≥ 98% or external video / power trigger] | |
| ▪ For conducted measurement. | | |
| | ▪ If The EUT supports multiple transmit chains using options given below: | |
| | | ☐ Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the NTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace. |
| | | ☐ Option 2: Measure and sum spectral maxima across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs. These operations shall be performed separately over frequency spans that have different out-of-band or spurious emission limits, |
| | | ☐ Option 3: Measure and add 10 log(N) dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with the limit. |

### 3.4.4 Test Setup

| Power Spectral Density |
| --- |
|  |

### 3.4.5 Test Result of Power Spectral Density

Refer as Appendix D

# 3.5 Emissions in Non-restricted Frequency Bands

## 3.5.1 Emissions in Non-restricted Frequency Bands Limit

| Un-restricted Band Emissions Limit | |
|---|---|
| **RF output power procedure** | **Limit (dBc)** |
| Peak output power procedure | 20 |
| Average output power procedure | 30 |

Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.

## 3.5.2 Measuring Instruments

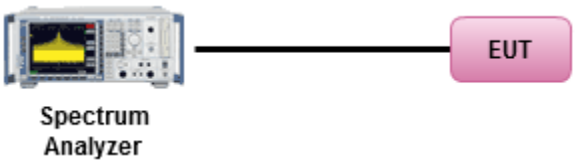
Refer a test equipment and calibration data table in this test report.

## 3.5.3 Test Procedures

| Test Method |
|---|
| ▪ Refer as FCC KDB 558074, clause 8.5 for unwanted emissions into non-restricted bands. |

## 3.5.4 Test Setup

**Emissions in Non-restricted Frequency Bands**




## 3.5.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix E

# 3.6 Emissions in Restricted Frequency Bands

## 3.6.1 Emissions in Restricted Frequency Bands Limit

| 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: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB / decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

Note 3: Using the distance of 1m during the test for above 18 GHz, and the test value to correct for the distance factor at 3m.

## 3.6.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

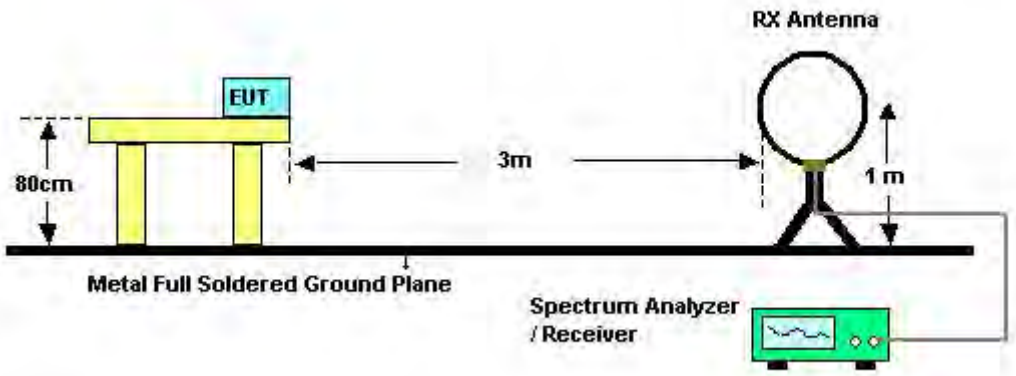
### 3.6.3 Test Procedures

| Test Method |
|---|
| ▪ The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor]. |
| ▪ Refer as ANSI C63.10, clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band. |
| ▪ For the transmitter unwanted emissions shall be measured using following options below: |
| ▪ Refer as FCC KDB 558074, clause 8.6 for unwanted emissions into restricted bands. |
| ☐ Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.1(trace averaging for duty cycle ≥98%). |
| ☐ Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.2(trace averaging + duty factor). |
| ☒ Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.3(Reduced VBW≥1/T). |
| ☐ Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). VBW ≥ 1/T, where T is pulse time. |
| ☐ Refer as ANSI C63.10, clause 7.5 average value of pulsed emissions. |
| ☒ Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.4 measurement procedure peak limit. |
| ▪ For the transmitter band-edge emissions shall be measured using following options below: |
| ▪ Refer as FCC KDB 558074 clause 8.7 & c63.10 clause 11.13.1, When the performing peak or average radiated measurements, emissions within 2 MHz of the authorized band edge may be measured using the marker-delta method described below. |
| ▪ Refer as FCC KDB 558074, clause 8.7 (ANSI C63.10, clause 6.10.6) for marker-delta method for band-edge measurements. |
| ▪ Refer as FCC KDB 558074, clause 8.7 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz). |
| ▪ For conducted unwanted emissions into restricted bands (absolute emission limits).<br>Devices with multiple transmit chains using options given below:<br>(1) Measure and sum the spectra across the outputs or<br>(2) Measure and add 10 log(N) dB |
| ▪ For FCC KDB 662911 The methodology described here may overestimate array gain, thereby resulting in apparent failures to satisfy the out-of-band limits even if the device is actually compliant. In such cases, compliance may be demonstrated by performing radiated tests around the frequencies at which the apparent failures occurred. |

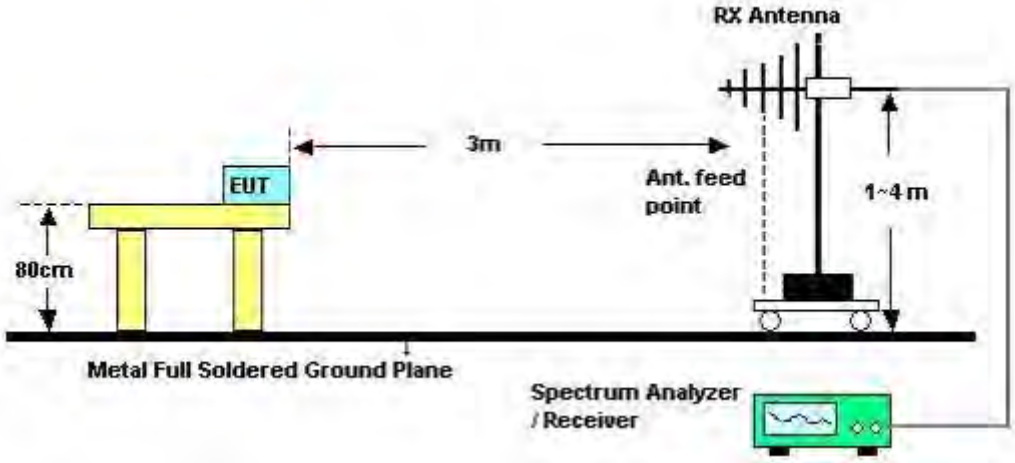
### 3.6.4 Test Setup

**Emissions in Restricted Frequency Bands**

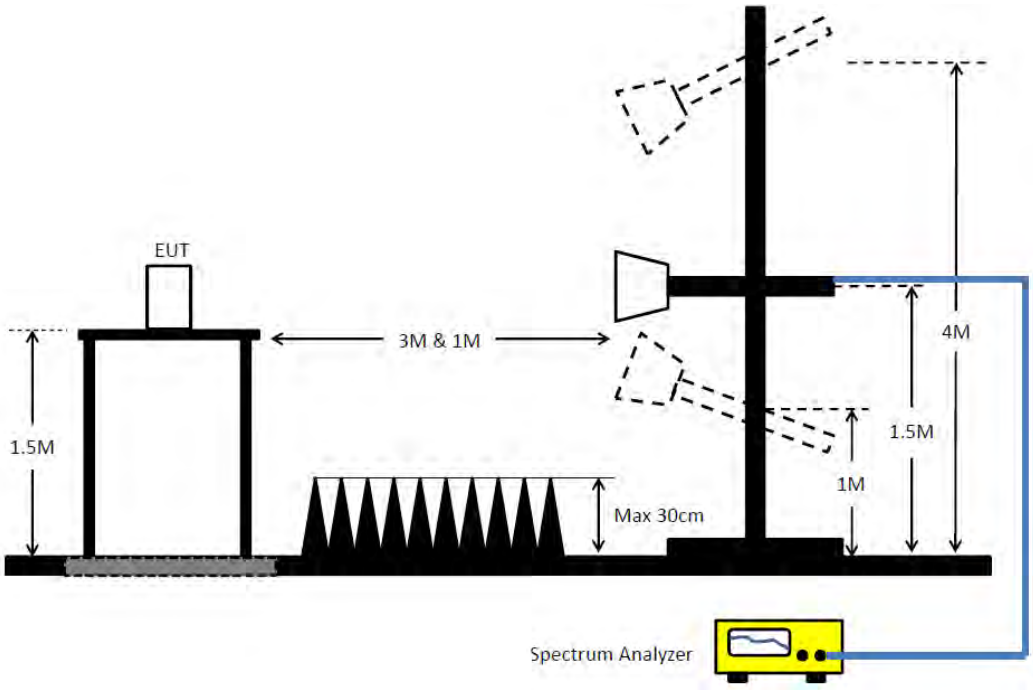
**9kHz ~30MHz**




**30MHz~1GHz**



**Above 1GHz**




### 3.6.5 Measurement Results Calculation

The measured Level is calculated using:
Corrected Reading: Antenna factor (AF) + Cable loss (CL) + Read level (Raw) - Preamp factor (PA)(if applicable) = Level.

### 3.6.6 Emissions in Restricted Frequency Bands (Below 30MHz)

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to KDB414788 Radiated Test Site, and the result came out very similar.
All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.
The radiated emissions were investigated from 9 kHz or the lowest frequency generated within the device, up to the 10th harmonic or 40 GHz, whichever is appropriate.

### 3.6.7 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix F

# 4 Test Equipment and Calibration Data

| Instrument | Brand | Model No. | Serial No. | Characteristics | Calibration Date | Calibration Due Date | Remark |
|---|---|---|---|---|---|---|---|
| EMI Receiver | Agilent | N9038A | My52260123 | 9kHz ~ 8.4GHz | Mar. 01, 2024 | Feb. 28, 2025 | Conduction (CO01-CB) |
| LISN | F.C.C. | FCC-LISN-50-16-2 | 04083 | 150kHz ~ 100MHz | Feb. 19, 2024 | Feb. 18, 2025 | Conduction (CO01-CB) |
| LISN | Schwarzbeck | NSLK 8127 | 8127647 | 9kHz ~ 30MHz | Apr. 24, 2024 | Apr. 23, 2025 | Conduction (CO01-CB) |
| Pulse Limiter | Rohde& Schwarz | ESH3-Z2 | 100430 | 9kHz ~ 30MHz | Feb. 08, 2024 | Feb. 07, 2025 | Conduction (CO01-CB) |
| COND Cable | Woken | Cable | Low cable-CO01 | 9kHz ~ 30MHz | Oct. 17, 2023 | Oct. 16, 2024 | Conduction (CO01-CB) |
| Test Software | SPORTON | SENSE-EMI | V5.11 | 150kHz-30MHz | N.C.R. | N.C.R. | Conduction (CO01-CB) |
| Loop Antenna | Teseq | HLA 6121 | 65417 | 9kHz - 30 MHz | Oct. 13, 2023 | Oct. 12, 2024 | Radiation (03CH01-CB) |
| 3m Semi Anechoic Chamber NSA | TDK | SAC-3M | 03CH01-CB | 30MHz ~ 1GHz | Jan. 18, 2024 | Jan. 17, 2025 | Radiation (03CH01-CB) |
| BILOG ANTENNA with 6dB Attenuator | TESEQ & EMCI | CBL6112D N-6-06 | 37880 & AT-N0609 | 20MHz ~ 2GHz | Feb. 18, 2024 | Feb. 17, 2025 | Radiation (03CH01-CB) |
| Pre-Amplifier | SGH | SGH0301 | 20230109-2 | 10M~1GHz | Jun. 22, 2024 | Jun. 21, 2025 | Radiation (03CH01-CB) |
| Signal Analyzer | R&S | FSV3044 | 101437 | 10kHz ~ 44GHz | Nov. 28, 2023 | Nov. 27, 2024 | Radiation (03CH01-CB) |
| EMI Test Receiver | R&S | ESR7 | 102172 | 9kHz ~ 7GHz | Oct. 20, 2023 | Oct. 19, 2024 | Radiation (03CH01-CB) |
| RF Cable-low | Woken | RG402 | Low Cable-31+32 | 30MHz ~ 1GHz | Aug. 02, 2024 | Aug. 01, 2025 | Radiation (03CH01-CB) |
| Test Software | SPORTON | SENSE-EMI | V5.11.8 | 30MHz-40GHz | N.C.R. | N.C.R. | Radiation (03CH01-CB) |
| Loop Antenna | Teseq | HLA 6121 | 65417 | 9kHz - 30 MHz | Oct. 13, 2023 | Oct. 12, 2024 | Radiation (03CH04-CB) |
| 3m Semi Anechoic Chamber NSA | TDK | SAC-3M | 03CH04-CB | 30MHz ~ 1GHz | Jul. 31, 2024 | Jul. 30, 2025 | Radiation (03CH04-CB) |
| BILOG ANTENNA with 6dB attenuator | Schaffner & EMCI | CBL6112B & N-6-06 | 22021&AT-N0607 | 30MHz ~ 1GHz | Oct. 07, 2023 | Oct. 06, 2024 | Radiation (03CH04-CB) |
| Pre-Amplifier | EMCI | EMC330N | 980391 | 20MHz ~ 3GHz | May 22, 2024 | May 21, 2025 | Radiation (03CH04-CB) |
| Spectrum Analyzer | R&S | FSP40 | 100142 | 9kHz~40GHz | Mar. 19, 2024 | Mar. 18, 2025 | Radiation (03CH04-CB |
| EMI Test Receiver | R&S | ESR7 | 102172 | 9kHz ~ 7GHz | Oct. 20, 2023 | Oct. 19, 2024 | Radiation (03CH04-CB) |
| RF Cable-low | Woken | RG402 | Low Cable-03+67 | 30MHz – 1GHz | Oct. 02, 2023 | Oct. 01, 2024 | Radiation (03CH04-CB) |
| Test Software | SPORTON | SENSE-EMI | V5.11.8 | 30MHz-40GHz | N.C.R. | N.C.R. | Radiation (03CH04-CB) |

| Instrument | Brand | Model No. | Serial No. | Characteristics | Calibration Date | Calibration Due Date | Remark |
|---|---|---|---|---|---|---|---|
| 3m Semi Anechoic Chamber VSWR | TDK | SAC-3M | 03CH03-CB | 1GHz ~18GHz 3m | May 03, 2024 | May 02, 2025 | Radiation (03CH03-CB) |
| Horn Antenna | ETS・Lindgren | 3115 | 6821 | 750MHz~18GHz | Jan. 24, 2024 | Jan. 23, 2025 | Radiation (03CH03-CB) |
| Horn Antenna | Schwarzbeck | BBHA 9170 | BBHA9170252 | 15GHz ~ 40GHz | Sep. 04, 2023 | Sep. 03, 2024 | Radiation (03CH03-CB) |
| Pre-Amplifier | Agilent | 8449B | 3008A02097 | 1GHz ~ 26.5GHz | Jun. 30, 2023 | Jun. 29, 2024 | Radiation (03CH03-CB) |
| Pre-Amplifier | SGH | SGH184 | 20221107-3 | 18GHz ~ 40GHz | Nov. 24, 2023 | Nov. 23, 2024 | Radiation (03CH03-CB) |
| Spectrum Analyzer | R&S | FSP40 | 100019 | 9kHz ~ 40GHz | Jun. 12, 2023 | Jun. 11, 2024 | Radiation (03CH03-CB) |
| Spectrum Analyzer | R&S | FSP40 | 100019 | 9kHz ~ 40GHz | Jun. 11, 2024 | Jun. 10, 2025 | Radiation (03CH03-CB) |
| RF Cable-high | Woken | RG402 | High Cable-20+29 | 1GHz ~ 18GHz | Feb. 29, 2024 | Feb. 28, 2025 | Radiation (03CH03-CB) |
| RF Cable-high | Woken | RG402 | High Cable-29 | 1GHz ~ 18GHz | Feb. 29, 2024 | Feb. 28, 2025 | Radiation (03CH03-CB) |
| High Cable | Woken | WCA0929M | 40G#5+6 | 1GHz ~ 40 GHz | Jan. 11, 2024 | Jan. 10, 2025 | Radiation (03CH03-CB) |
| Test Software | SPORTON | SENSE-15247 _FS | V5.11.18 | 2.4GHz-2.4835GHz | N.C.R. | N.C.R. | Radiation (03CH03-CB) |
| Spectrum analyzer | R&S | FSV40 | 101028 | 9kHz~40GHz | Dec. 22, 2023 | Dec. 21, 2024 | Conducted (TH03-CB) |
| Power Sensor | Anritsu | MA2411B | 1726195 | 300MHz~40GHz | Sep. 04, 2023 | Sep. 03, 2024 | Conducted (TH03-CB) |
| Power Meter | Anritsu | ML2495A | 1035008 | 300MHz~40GHz | Sep. 04, 2023 | Sep. 03, 2024 | Conducted (TH03-CB) |
| RF Cable | Woken | RG402 | High Cable-11 | 30MHz –18 GHz | Oct. 02, 2023 | Oct. 01, 2024 | Conducted (TH03-CB) |
| RF Cable | Woken | RG402 | High Cable-12 | 30MHz –18 GHz | Oct. 02, 2023 | Oct. 01, 2024 | Conducted (TH03-CB) |
| RF Cable | Woken | RG402 | High Cable-13 | 30MHz –18 GHz | Oct. 02, 2023 | Oct. 01, 2024 | Conducted (TH03-CB) |
| RF Cable-high | Woken | RG402 | High Cable-14 | 1 GHz –18 GHz | Oct. 02, 2023 | Oct. 01, 2024 | Conducted (TH03-CB) |
| RF Cable-high | Woken | RG402 | High Cable-15 | 1 GHz –18 GHz | Oct. 02, 2023 | Oct. 01, 2024 | Conducted (TH03-CB) |
| Switch | SPTCB | SP-SWI | SWI-03 | 1 ~26.5 GHz | Oct. 03, 2023 | Oct. 02, 2024 | Conducted (TH03-CB) |
| Test Software | SPORTON | SENSE-15247 _FS | V5.11.18 | 2.4GHz-2.4835GHz | N.C.R. | N.C.R. | Conducted (TH03-CB) |

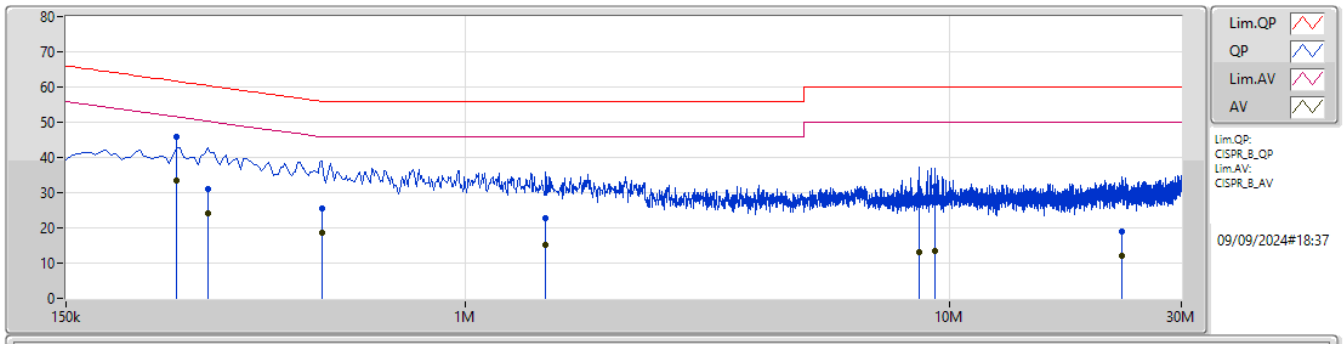
Note: Calibration Interval of instruments listed above is one year.

NCR means Non-Calibration required.

Summary

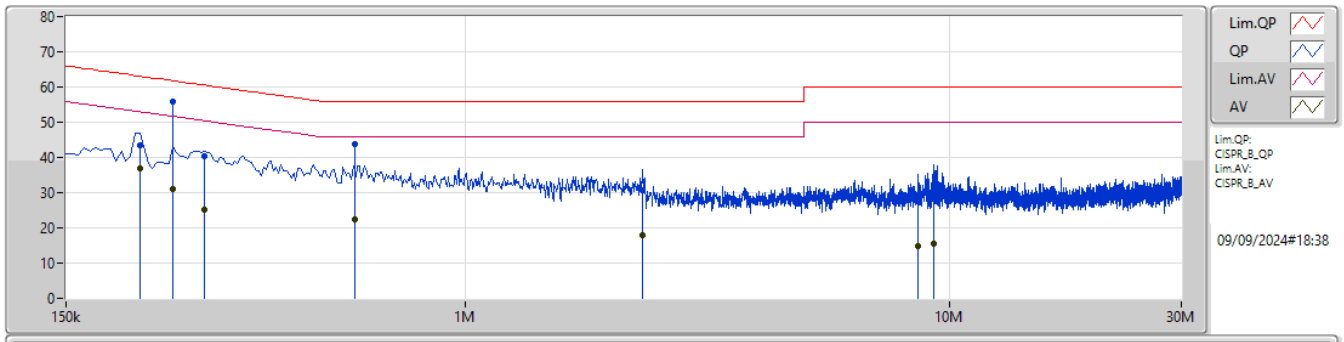
| Mode | Result | Type | Freq (Hz) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Condition |
|---|---|---|---|---|---|---|---|
| Mode 1 | Pass | QP | 249k | 55.72 | 61.79 | -6.07 | Neutral |

**Mode 1**




| Type | Freq | Level | Limit | Margin | Factor | Condition | Comment | Raw | LISN | CL | AT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV) | (dBuV) | (dB) | (dB) | | | (dBuV) | (dB) | (dB) | (dB) |
| QP | 253.5k | 45.91 | 61.64 | -15.73 | 9.92 | Line | "Worst" | 35.99 | 0.04 | 0.02 | 9.86 |
| AV | 253.5k | 33.36 | 51.64 | -18.28 | 9.92 | Line | - | 23.44 | 0.04 | 0.02 | 9.86 |
| QP | 294k | 31.12 | 60.42 | -29.30 | 9.94 | Line | - | 21.18 | 0.05 | 0.02 | 9.87 |
| AV | 294k | 24.13 | 50.42 | -26.29 | 9.94 | Line | - | 14.19 | 0.05 | 0.02 | 9.87 |
| QP | 505.5k | 25.68 | 56.00 | -30.32 | 9.98 | Line | - | 15.70 | 0.06 | 0.02 | 9.90 |
| AV | 505.5k | 18.76 | 46.00 | -27.24 | 9.98 | Line | - | 8.78 | 0.06 | 0.02 | 9.90 |
| QP | 1.464M | 22.70 | 56.00 | -33.30 | 10.02 | Line | - | 12.68 | 0.08 | 0.04 | 9.90 |
| AV | 1.464M | 15.02 | 46.00 | -30.98 | 10.02 | Line | - | 5.00 | 0.08 | 0.04 | 9.90 |
| QP | 8.637M | 29.51 | 60.00 | -30.49 | 10.26 | Line | - | 19.25 | 0.21 | 0.14 | 9.91 |
| AV | 8.637M | 12.98 | 50.00 | -37.02 | 10.26 | Line | - | 2.72 | 0.21 | 0.14 | 9.91 |
| QP | 9.33M | 31.79 | 60.00 | -28.21 | 10.27 | Line | - | 21.52 | 0.22 | 0.14 | 9.91 |
| AV | 9.33M | 13.52 | 50.00 | -36.48 | 10.27 | Line | - | 3.25 | 0.22 | 0.14 | 9.91 |
| QP | 22.637M | 18.87 | 60.00 | -41.13 | 10.60 | Line | - | 8.27 | 0.32 | 0.24 | 10.04 |
| AV | 22.637M | 12.13 | 50.00 | -37.87 | 10.60 | Line | - | 1.53 | 0.32 | 0.24 | 10.04 |

**Mode 1**




| Type | Freq | Level | Limit | Margin | Factor | Condition | Comment | Raw | LISN | CL | AT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV) | (dBuV) | (dB) | (dB) | | | (dBuV) | (dB) | (dB) | (dB) |
| QP | 213k | 43.30 | 63.09 | -19.79 | 9.93 | Neutral | - | 33.37 | 0.06 | 0.02 | 9.85 |
| AV | 213k | 36.81 | 53.09 | -16.28 | 9.93 | Neutral | - | 26.88 | 0.06 | 0.02 | 9.85 |
| QP | 249k | 55.72 | 61.79 | -6.07 | 9.94 | Neutral | "Worst" | 45.78 | 0.06 | 0.02 | 9.86 |
| AV | 249k | 31.09 | 51.79 | -20.70 | 9.94 | Neutral | - | 21.15 | 0.06 | 0.02 | 9.86 |
| QP | 289.5k | 40.25 | 60.53 | -20.28 | 9.95 | Neutral | - | 30.30 | 0.06 | 0.02 | 9.87 |
| AV | 289.5k | 25.28 | 50.53 | -25.25 | 9.95 | Neutral | - | 15.33 | 0.06 | 0.02 | 9.87 |
| QP | 591k | 43.83 | 56.00 | -12.17 | 9.99 | Neutral | - | 33.84 | 0.07 | 0.02 | 9.90 |
| AV | 591k | 22.44 | 46.00 | -23.56 | 9.99 | Neutral | - | 12.45 | 0.07 | 0.02 | 9.90 |
| QP | 2.319M | 30.67 | 56.00 | -25.33 | 10.08 | Neutral | - | 20.59 | 0.11 | 0.08 | 9.89 |
| AV | 2.319M | 18.07 | 46.00 | -27.93 | 10.08 | Neutral | - | 7.99 | 0.11 | 0.08 | 9.89 |
| QP | 8.583M | 27.87 | 60.00 | -32.13 | 10.27 | Neutral | - | 17.60 | 0.22 | 0.14 | 9.91 |
| AV | 8.583M | 14.70 | 50.00 | -35.30 | 10.27 | Neutral | - | 4.43 | 0.22 | 0.14 | 9.91 |
| QP | 9.276M | 31.78 | 60.00 | -28.22 | 10.28 | Neutral | - | 21.50 | 0.23 | 0.14 | 9.91 |
| AV | 9.276M | 15.54 | 50.00 | -34.46 | 10.28 | Neutral | - | 5.26 | 0.23 | 0.14 | 9.91 |

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) | 681.25k | 1.052M | 1M05F1D | 600k | 1.043M |
| BT-LE(2Mbps) | 1.52M | 2.077M | 2M08F1D | 1.335M | 2.074M |

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

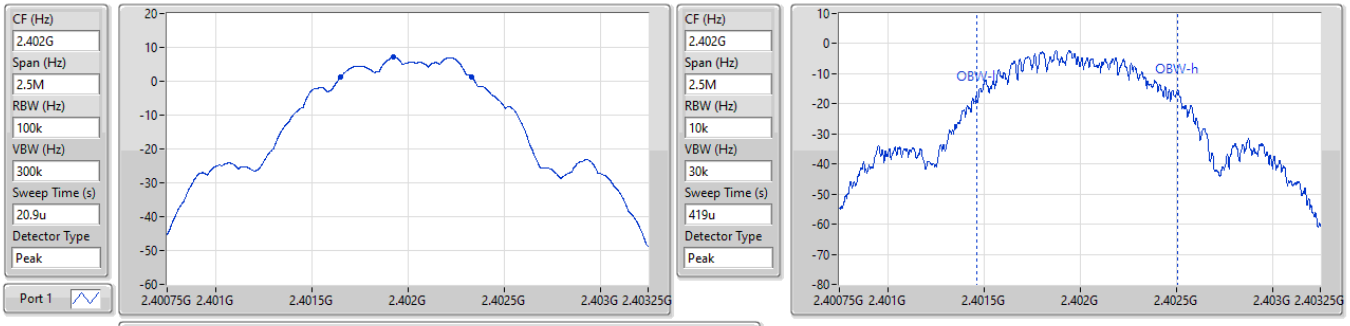
| Mode | Result | Limit (Hz) | Port 1-N dB (Hz) | Port 1-OBW (Hz) |
|---|---|---|---|---|
| BT-LE(1Mbps) | - | - | - | - |
| 2402MHz | Pass | 500k | 681.25k | 1.043M |
| 2440MHz | Pass | 500k | 600k | 1.052M |
| 2480MHz | Pass | 500k | 632.5k | 1.046M |
| BT-LE(2Mbps) | - | - | - | - |
| 2402MHz | Pass | 500k | 1.38M | 2.077M |
| 2440MHz | Pass | 500k | 1.335M | 2.074M |
| 2480MHz | Pass | 500k | 1.52M | 2.076M |

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**

25/06/2024

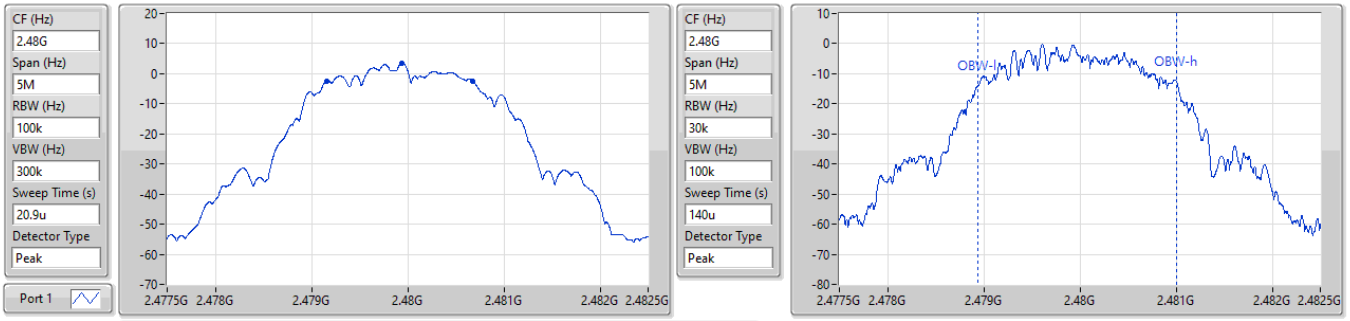



| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 681.25k | 2.401651G | 2.402333G | 1.043M | 2.401467G | 2.40251G | 500k | 1 |

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

**2480MHz**

25/06/2024




| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 1.52M | 2.479155G | 2.480675G | 2.076M | 2.478934G | 2.48101G | 500k | 1 |

Summary

| Mode | Total Power (dBm) | Total Power (W) |
|---|---|---|
| 2.4-2.4835GHz | - | - |
| BT-LE(1Mbps) | 8.33 | 0.00681 |
| BT-LE(2Mbps) | 8.10 | 0.00646 |

Result

| Mode | Result | DG (dBi) | Total Power (dBm) | Power Limit (dBm) |
|---|---|---|---|---|
| BT-LE(1Mbps) | - | - | - | - |
| 2402MHz | Pass | 3.68 | 8.07 | 30.00 |
| 2440MHz | Pass | 3.68 | 8.33 | 30.00 |
| 2480MHz | Pass | 3.68 | 7.83 | 30.00 |
| BT-LE(2Mbps) | - | - | - | - |
| 2402MHz | Pass | 3.68 | 7.72 | 30.00 |
| 2440MHz | Pass | 3.68 | 8.10 | 30.00 |
| 2480MHz | Pass | 3.68 | 7.52 | 30.00 |

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

Summary

| Mode | PD (dBm/RBW) |
|---|---|
| 2.4-2.4835GHz | - |
| BT-LE(1Mbps) | -7.22 |
| BT-LE(2Mbps) | -10.01 |

RBW = 3kHz;

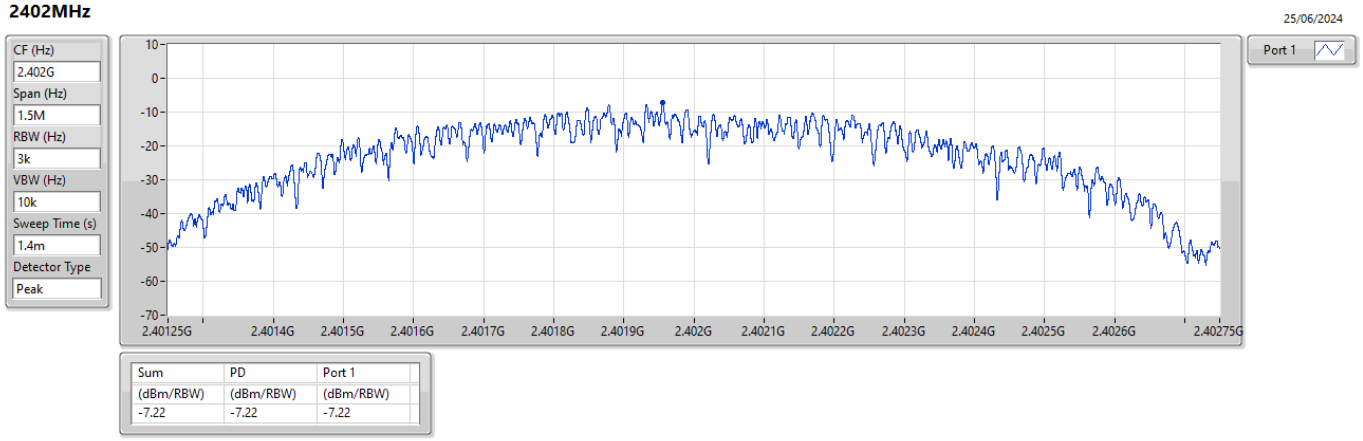
Result

| Mode | Result | DG (dBi) | PD (dBm/RBW) | PD Limit (dBm/RBW) |
|---|---|---|---|---|
| BT-LE(1Mbps) | - | - | - | - |
| 2402MHz | Pass | 3.68 | -7.22 | 8.00 |
| 2440MHz | Pass | 3.68 | -7.64 | 8.00 |
| 2480MHz | Pass | 3.68 | -7.54 | 8.00 |
| BT-LE(2Mbps) | - | - | - | - |
| 2402MHz | Pass | 3.68 | -10.57 | 8.00 |
| 2440MHz | Pass | 3.68 | -10.01 | 8.00 |
| 2480MHz | Pass | 3.68 | -10.83 | 8.00 |

DG = Directional Gain; RBW = 3kHz;
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X Power Density;

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

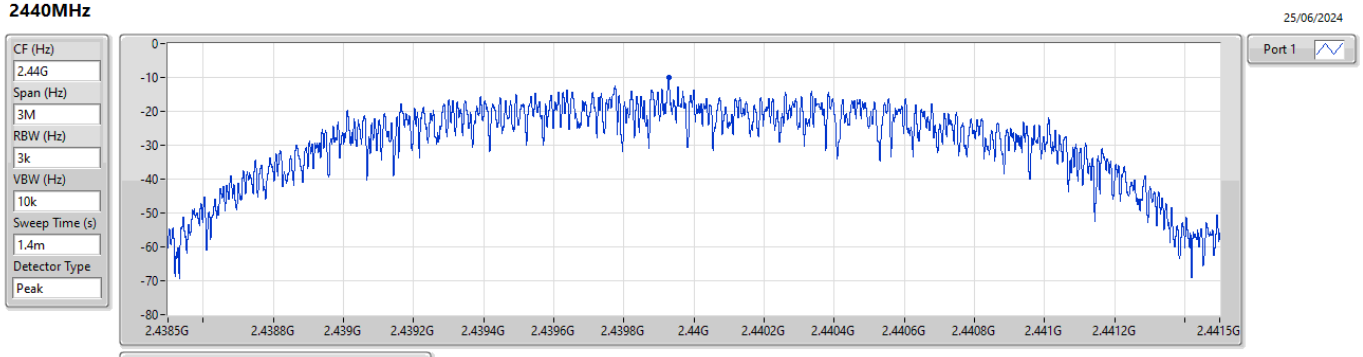
**2402MHz**




| Sum | PD | Port 1 |
|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -7.22 | -7.22 | -7.22 |

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

**2440MHz**




| Sum | PD | Port 1 |
|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -10.01 | -10.01 | -10.01 |

Summary

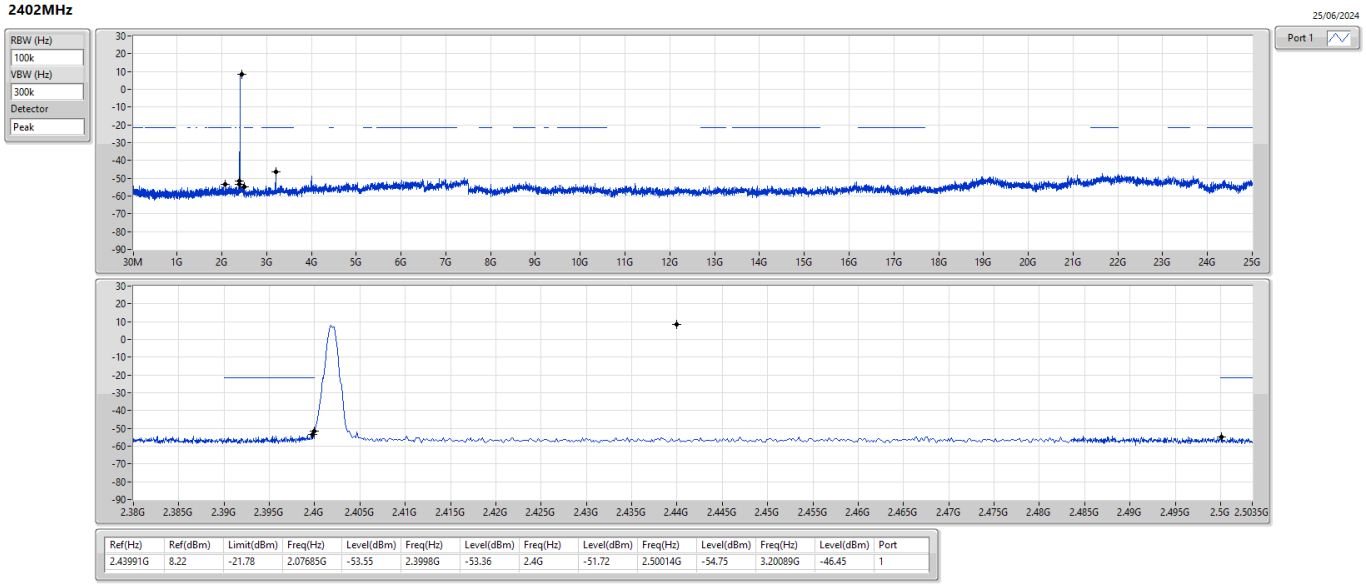
| Mode | Result | Ref (Hz) | Ref (dBm) | Limit (dBm) | Freq (Hz) | Level (dBm) | Freq (Hz) | Level (dBm) | Freq (Hz) | Level (dBm) | Freq (Hz) | Level (dBm) | Freq (Hz) | Level (dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.4-2.4835GHz | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| BT-LE(1Mbps) | Pass | 2.43991G | 8.22 | -21.78 | 2.07685G | -53.55 | 2.3998G | -53.36 | 2.4G | -51.72 | 2.50014G | -54.75 | 3.20089G | -46.45 | 1 |
| BT-LE(2Mbps) | Pass | 2.43991G | 6.84 | -23.16 | 2.14853G | -53.37 | 2.4G | -37.87 | 2.4G | -33.89 | 2.50142G | -54.83 | 3.20089G | -46.33 | 1 |

Result

| Mode | Result | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BT-LE(1Mbps) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2402MHz | Pass | 2.43991G | 8.22 | -21.78 | 2.07685G | -53.55 | 2.3998G | -53.36 | 2.4G | -51.72 | 2.50014G | -54.75 | 3.20089G | -46.45 | 1 |
| 2440MHz | Pass | 2.43991G | 8.22 | -21.78 | 1.85948G | -53.80 | 2.39588G | -54.60 | 2.4G | -57.23 | 2.50186G | -54.46 | 21.81675G | -46.51 | 1 |
| 2480MHz | Pass | 2.43991G | 8.22 | -21.78 | 34.7M | -54.32 | 2.39056G | -54.27 | 2.4G | -56.84 | 2.5027G | -55.09 | 21.69301G | -48.27 | 1 |
| BT-LE(2Mbps) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2402MHz | Pass | 2.43991G | 6.84 | -23.16 | 2.14853G | -53.37 | 2.4G | -37.87 | 2.4G | -33.89 | 2.50142G | -54.83 | 3.20089G | -46.33 | 1 |
| 2440MHz | Pass | 2.43991G | 6.84 | -23.16 | 34.7M | -54.09 | 2.39484G | -54.08 | 2.4G | -57.47 | 2.50322G | -55.22 | 21.72676G | -47.15 | 1 |
| 2480MHz | Pass | 2.43991G | 6.84 | -23.16 | 2.3001G | -54.06 | 2.3968G | -55.01 | 2.4G | -57.23 | 2.50246G | -54.96 | 21.72395G | -47.78 | 1 |

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

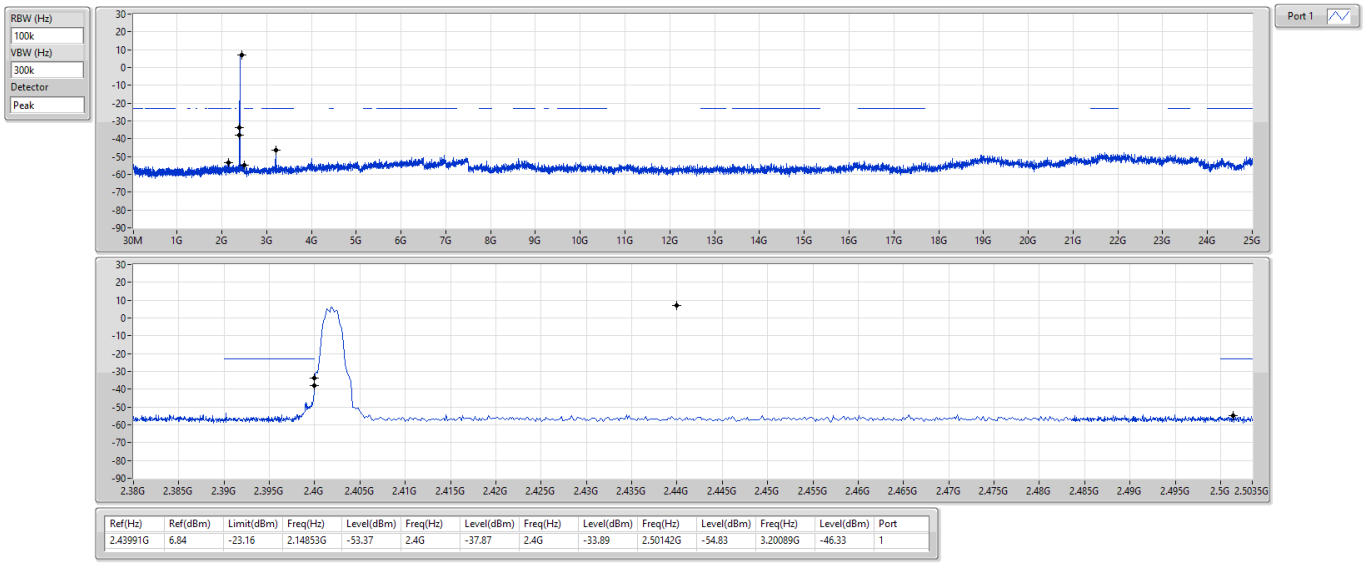
2402MHz




| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.43991G | 8.22 | -21.78 | 2.07685G | -53.55 | 2.3998G | -53.36 | 2.4G | -51.72 | 2.50014G | -54.75 | 3.20089G | -46.45 | 1 |

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

2402MHz

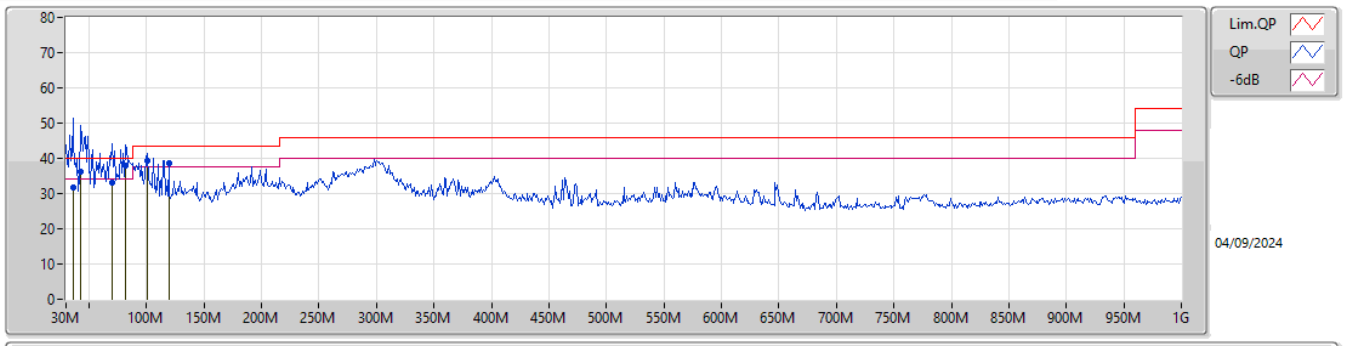



| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.43991G | 6.84 | -23.16 | 2.14853G | -53.37 | 2.4G | -37.87 | 2.4G | -33.89 | 2.50142G | -54.83 | 3.20089G | -46.33 | 1 |

Summary

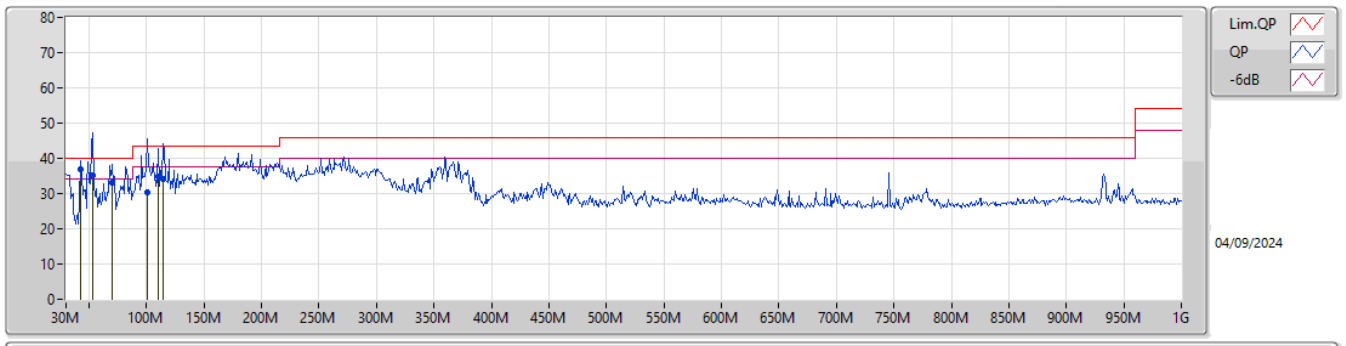
| Mode | Result | Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Condition |
|---|---|---|---|---|---|---|---|
| Mode 1 | Pass | QP | 81.41M | 37.80 | 40.00 | -2.20 | Vertical |

## 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) |
| QP | 35.82M | 31.77 | 40.00 | -8.23 | -9.49 | 3 | Vertical | 346 | 1.50 | - | 41.26 | 20.79 | 0.37 | 30.65 |
| QP | 42.61M | 36.20 | 40.00 | -3.80 | -13.05 | 3 | Vertical | 103 | 2.00 | - | 49.25 | 17.18 | 0.43 | 30.66 |
| QP | 69.77M | 33.01 | 40.00 | -6.99 | -17.64 | 3 | Vertical | 281 | 2.00 | - | 50.65 | 12.45 | 0.65 | 30.74 |
| QP | 81.41M | 37.80 | 40.00 | -2.20 | -16.95 | 3 | Vertical | 212 | 1.50 | "Worst" | 54.75 | 13.37 | 0.74 | 31.06 |
| QP | 100.81M | 39.33 | 43.50 | -4.17 | -12.64 | 3 | Vertical | 238 | 1.50 | - | 51.97 | 17.23 | 0.82 | 30.69 |
| PK | 119.24M | 38.45 | 43.50 | -5.05 | -11.61 | 3 | Vertical | 131 | 1.00 | - | 50.06 | 18.48 | 0.94 | 31.03 |

## Mode 1



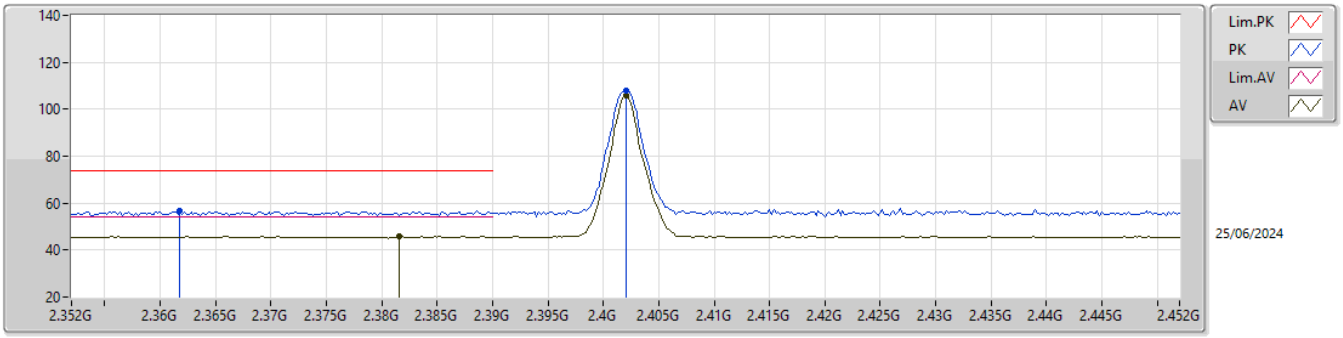

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB/m) | (m) | | (°) | (m) | | (dBuV) | (dB/m) | (dB) | (dB) |
| QP | 42.61M | 36.74 | 40.00 | -3.26 | -13.05 | 3 | Horizontal | 320 | 2.00 | "Worst" | 49.79 | 17.18 | 0.43 | 30.66 |
| QP | 53.28M | 35.22 | 40.00 | -4.78 | -17.39 | 3 | Horizontal | 185 | 1.50 | - | 52.61 | 13.14 | 0.55 | 31.08 |
| QP | 69.77M | 33.22 | 40.00 | -6.78 | -17.64 | 3 | Horizontal | 352 | 2.00 | - | 50.86 | 12.45 | 0.65 | 30.74 |
| QP | 100.81M | 30.34 | 43.50 | -13.16 | -12.64 | 3 | Horizontal | 251 | 2.00 | - | 42.98 | 17.23 | 0.82 | 30.69 |
| QP | 110.51M | 34.86 | 43.50 | -8.64 | -11.88 | 3 | Horizontal | 267 | 3.00 | - | 46.74 | 18.11 | 0.88 | 30.87 |
| QP | 114.39M | 34.06 | 43.50 | -9.44 | -11.73 | 3 | Horizontal | 261 | 3.00 | - | 45.79 | 18.30 | 0.91 | 30.94 |

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 | 2.4835G | 52.93 | 54.00 | -1.07 | 3 | Vertical | 266 | 1.92 | - |

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

**2402MHz_TX**

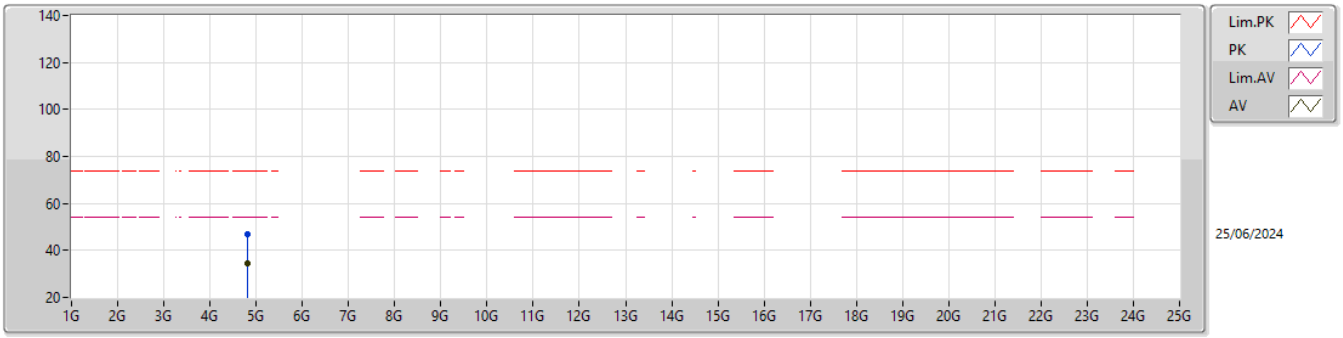



EUT Y_1TX
Setting Default
03-C-E-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.3618G | 56.65 | 74.00 | -17.35 | 24.11 | 3 | Vertical | 259 | 1.64 | - | 28.20 | 4.34 | - |
| AV | 2.3816G | 45.78 | 54.00 | -8.22 | 13.20 | 3 | Vertical | 259 | 1.64 | - | 28.22 | 4.36 | - |
| PK | 2.402G | 107.69 | Inf | -Inf | 75.01 | 3 | Vertical | 259 | 1.64 | - | 28.30 | 4.38 | - |
| AV | 2.402G | 105.79 | Inf | -Inf | 73.11 | 3 | Vertical | 259 | 1.64 | - | 28.30 | 4.38 | - |

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

**2402MHz_TX**

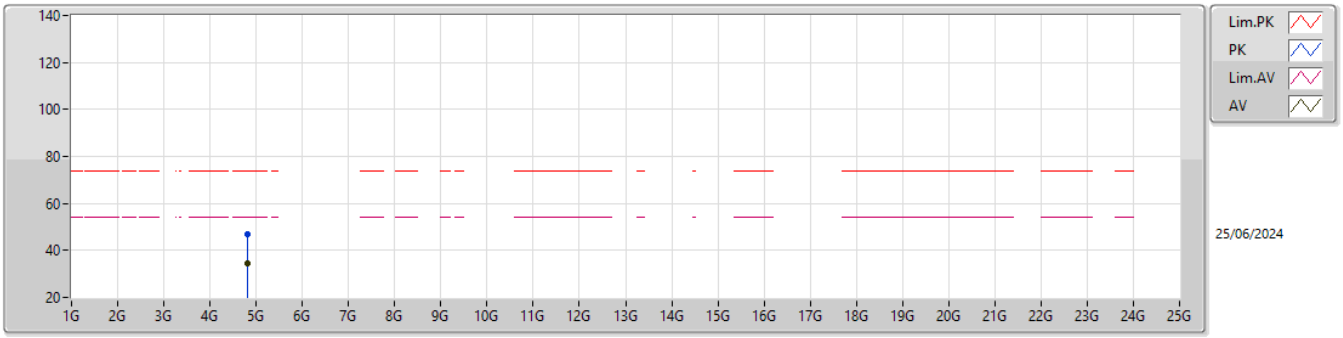



EUT Y_1TX
Setting Default
03-C-P-5

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.80448G | 46.96 | 74.00 | -27.04 | 42.16 | 3 | Vertical | 25 | 2.96 | - | 33.21 | 6.27 | 34.68 |
| AV | 4.8051G | 34.44 | 54.00 | -19.56 | 29.64 | 3 | Vertical | 25 | 2.96 | - | 33.21 | 6.27 | 34.68 |

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

**2402MHz_TX**

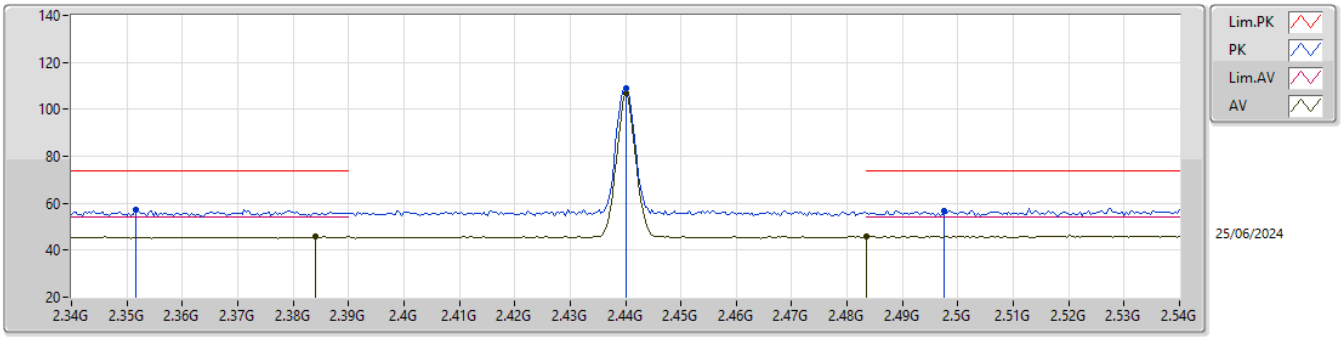



EUT Y_1TX
Setting Default
03-C-P-5

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.80062G | 46.90 | 74.00 | -27.10 | 42.11 | 3 | Horizontal | 236 | 1.24 | - | 33.20 | 6.26 | 34.67 |
| AV | 4.80604G | 34.31 | 54.00 | -19.69 | 29.51 | 3 | Horizontal | 236 | 1.24 | - | 33.21 | 6.27 | 34.68 |

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

**2440MHz_TX**

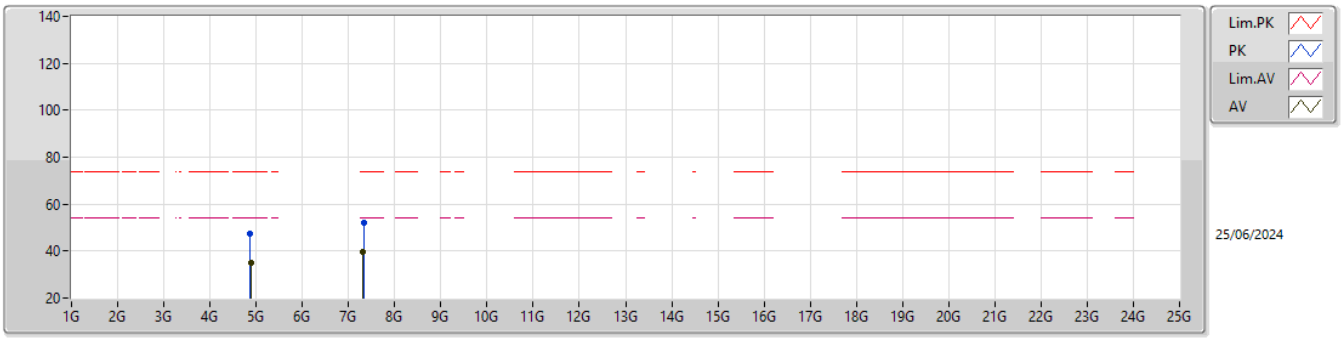



EUT Y_1TX
Setting Default
03-C-E-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.3516G | 57.27 | 74.00 | -16.73 | 24.82 | 3 | Vertical | 258 | 1.72 | - | 28.12 | 4.33 | - |
| AV | 2.384G | 45.68 | 54.00 | -8.32 | 13.08 | 3 | Vertical | 258 | 1.72 | - | 28.24 | 4.36 | - |
| PK | 2.44G | 109.07 | Inf | -Inf | 76.36 | 3 | Vertical | 258 | 1.72 | - | 28.30 | 4.41 | - |
| AV | 2.44G | 107.07 | Inf | -Inf | 74.36 | 3 | Vertical | 258 | 1.72 | - | 28.30 | 4.41 | - |
| PK | 2.4976G | 56.89 | 74.00 | -17.11 | 24.05 | 3 | Vertical | 258 | 1.72 | - | 28.40 | 4.44 | - |
| AV | 2.4835G | 45.87 | 54.00 | -8.13 | 13.10 | 3 | Vertical | 258 | 1.72 | - | 28.34 | 4.43 | - |

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

**2440MHz_TX**

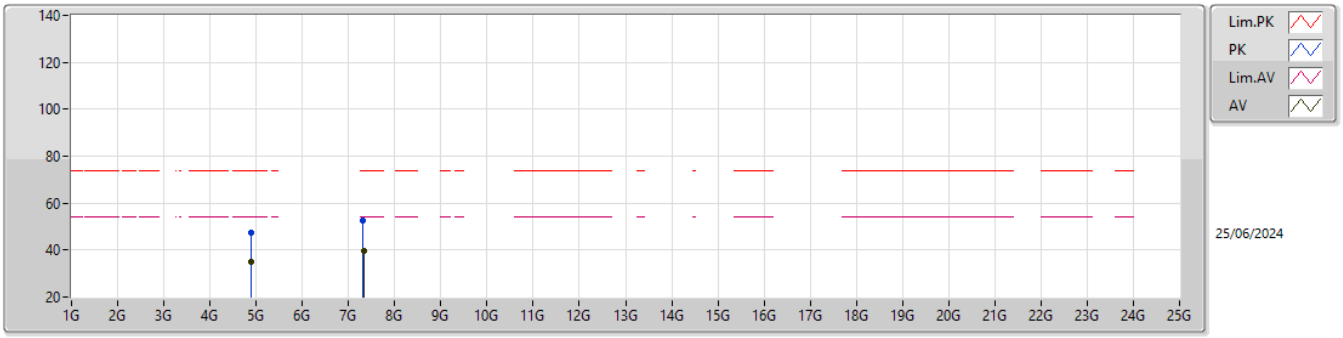



EUT Y_1TX
Setting Default
03-C-P-5

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.87536G | 47.35 | 74.00 | -26.65 | 42.36 | 3 | Vertical | 286 | 2.62 | - | 33.35 | 6.37 | 34.73 |
| AV | 4.87896G | 34.96 | 54.00 | -19.04 | 29.97 | 3 | Vertical | 286 | 2.62 | - | 33.36 | 6.37 | 34.74 |
| PK | 7.32474G | 51.82 | 74.00 | -22.18 | 41.91 | 3 | Vertical | 151 | 1.55 | - | 36.80 | 8.48 | 35.37 |
| AV | 7.3193G | 39.73 | 54.00 | -14.27 | 29.84 | 3 | Vertical | 151 | 1.55 | - | 36.78 | 8.48 | 35.37 |

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

**2440MHz_TX**

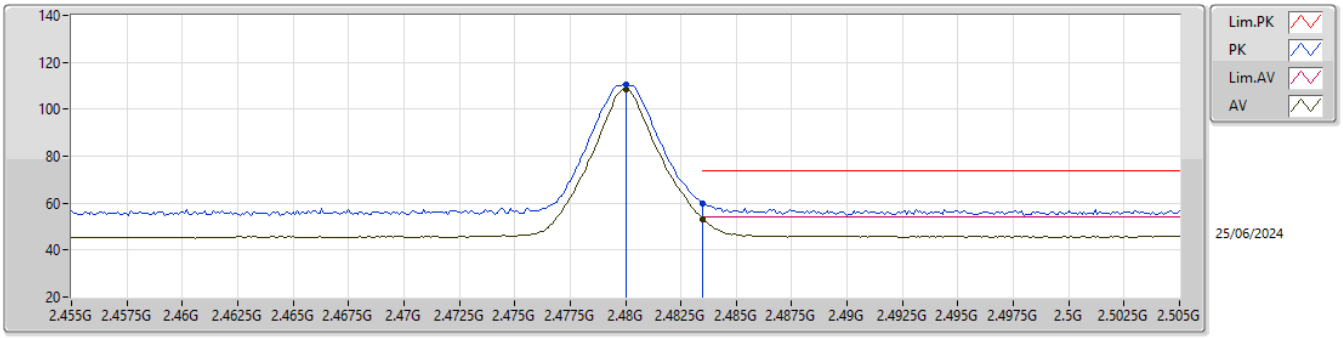



EUT Y_1TX
Setting Default
03-C-P-5

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.8787G | 47.37 | 74.00 | -26.63 | 42.38 | 3 | Horizontal | 321 | 1.35 | - | 33.36 | 6.37 | 34.74 |
| AV | 4.87932G | 35.08 | 54.00 | -18.92 | 30.09 | 3 | Horizontal | 321 | 1.35 | - | 33.36 | 6.37 | 34.74 |
| PK | 7.31688G | 52.43 | 74.00 | -21.57 | 42.56 | 3 | Horizontal | 49 | 2.81 | - | 36.77 | 8.48 | 35.38 |
| AV | 7.323G | 39.88 | 54.00 | -14.12 | 29.98 | 3 | Horizontal | 49 | 2.81 | - | 36.79 | 8.48 | 35.37 |

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

**2480MHz_TX**

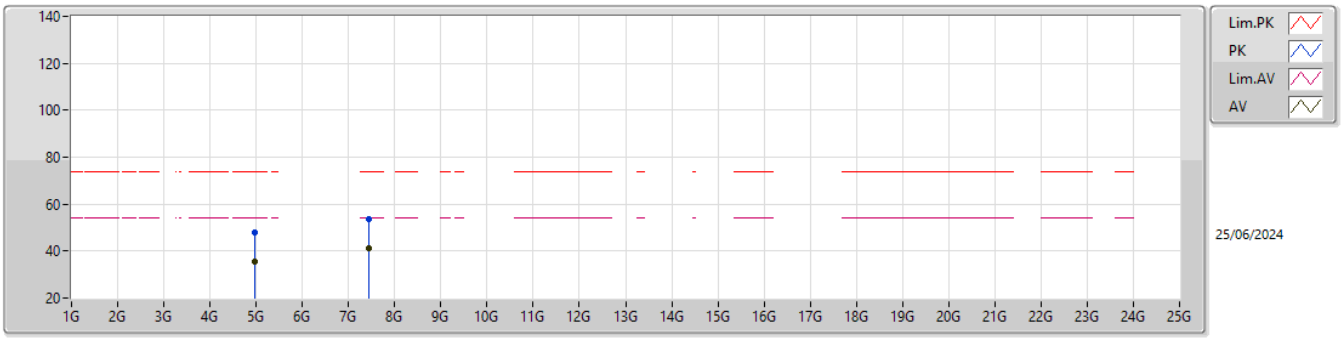



EUT Y_1TX
Setting Default
03-C-E-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.48G | 110.36 | Inf | -Inf | 77.63 | 3 | Vertical | 266 | 1.92 | - | 28.30 | 4.43 | - |
| AV | 2.48G | 108.50 | Inf | -Inf | 75.77 | 3 | Vertical | 266 | 1.92 | - | 28.30 | 4.43 | - |
| PK | 2.4835G | 59.86 | 74.00 | -14.14 | 27.09 | 3 | Vertical | 266 | 1.92 | - | 28.34 | 4.43 | - |
| AV | 2.4835G | 52.93 | 54.00 | -1.07 | 20.16 | 3 | Vertical | 266 | 1.92 | - | 28.34 | 4.43 | - |

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

**2480MHz_TX**

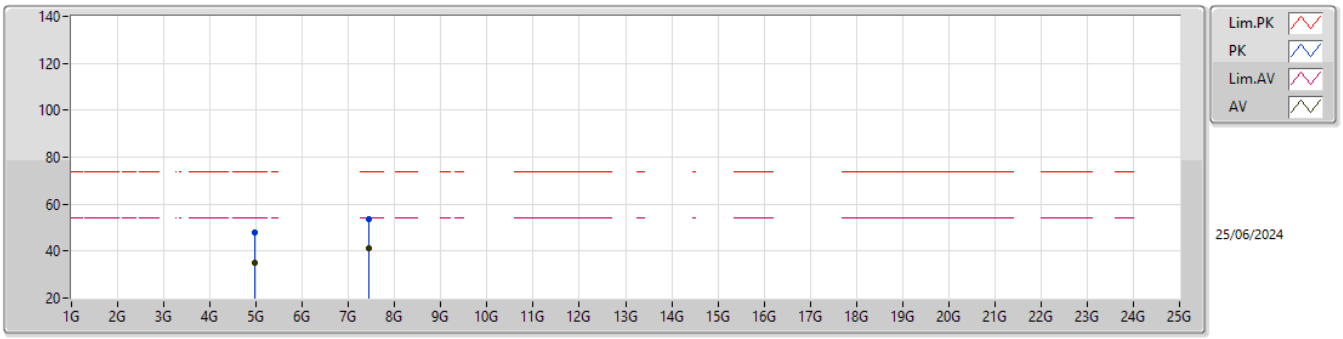



EUT Y_1TX
Setting Default
03-C-P-5

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.95848G | 47.75 | 74.00 | -26.25 | 42.47 | 3 | Vertical | 273 | 2.14 | - | 33.60 | 6.48 | 34.80 |
| AV | 4.95678G | 35.28 | 54.00 | -18.72 | 30.00 | 3 | Vertical | 273 | 2.14 | - | 33.60 | 6.48 | 34.80 |
| PK | 7.4448G | 53.84 | 74.00 | -20.16 | 43.79 | 3 | Vertical | 91 | 1.35 | - | 36.81 | 8.54 | 35.30 |
| AV | 7.43666G | 41.08 | 54.00 | -12.92 | 31.03 | 3 | Vertical | 91 | 1.35 | - | 36.83 | 8.53 | 35.31 |

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

**2480MHz_TX**

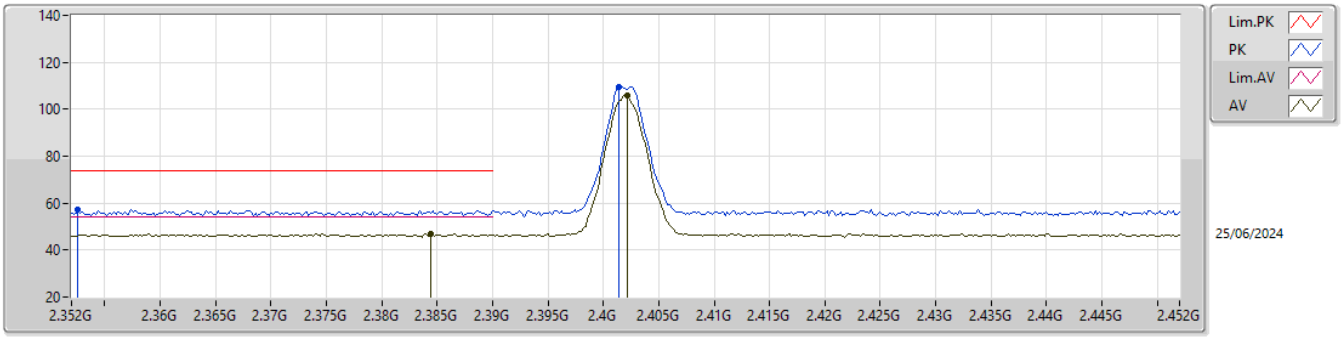



EUT Y_1TX
Setting Default
03-C-P-5

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.96486G | 48.05 | 74.00 | -25.95 | 42.76 | 3 | Horizontal | 8 | 2.73 | - | 33.60 | 6.49 | 34.80 |
| AV | 4.95918G | 35.21 | 54.00 | -18.79 | 29.93 | 3 | Horizontal | 8 | 2.73 | - | 33.60 | 6.48 | 34.80 |
| PK | 7.44208G | 53.49 | 74.00 | -20.51 | 43.44 | 3 | Horizontal | 331 | 1.58 | - | 36.82 | 8.53 | 35.30 |
| AV | 7.43612G | 40.99 | 54.00 | -13.01 | 30.94 | 3 | Horizontal | 331 | 1.58 | - | 36.83 | 8.53 | 35.31 |

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

**2402MHz_TX**

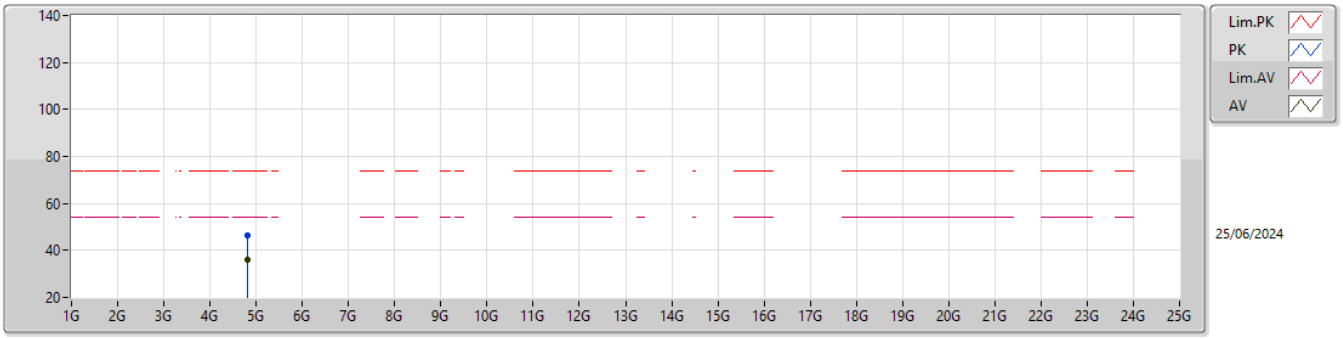



EUT Y_1TX
Setting Default
03-C-E-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.3526G | 57.02 | 74.00 | -16.98 | 24.56 | 3 | Vertical | 293 | 2.26 | - | 28.13 | 4.33 | - |
| AV | 2.3844G | 46.77 | 54.00 | -7.23 | 14.17 | 3 | Vertical | 293 | 2.26 | - | 28.24 | 4.36 | - |
| PK | 2.4014G | 109.61 | Inf | -Inf | 76.93 | 3 | Vertical | 293 | 2.26 | - | 28.30 | 4.38 | - |
| AV | 2.4022G | 105.72 | Inf | -Inf | 73.04 | 3 | Vertical | 293 | 2.26 | - | 28.30 | 4.38 | - |

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

**2402MHz_TX**

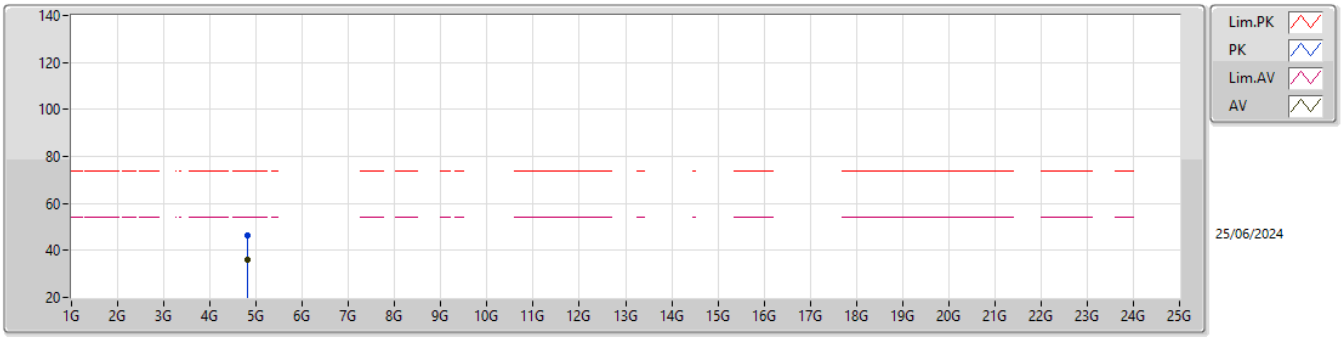



EUT Y_1TX
Setting Default
03-C-P-5

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.80544G | 46.53 | 74.00 | -27.47 | 41.73 | 3 | Vertical | 24 | 2.52 | - | 33.21 | 6.27 | 34.68 |
| AV | 4.80656G | 36.20 | 54.00 | -17.80 | 31.40 | 3 | Vertical | 24 | 2.52 | - | 33.21 | 6.27 | 34.68 |

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

**2402MHz_TX**

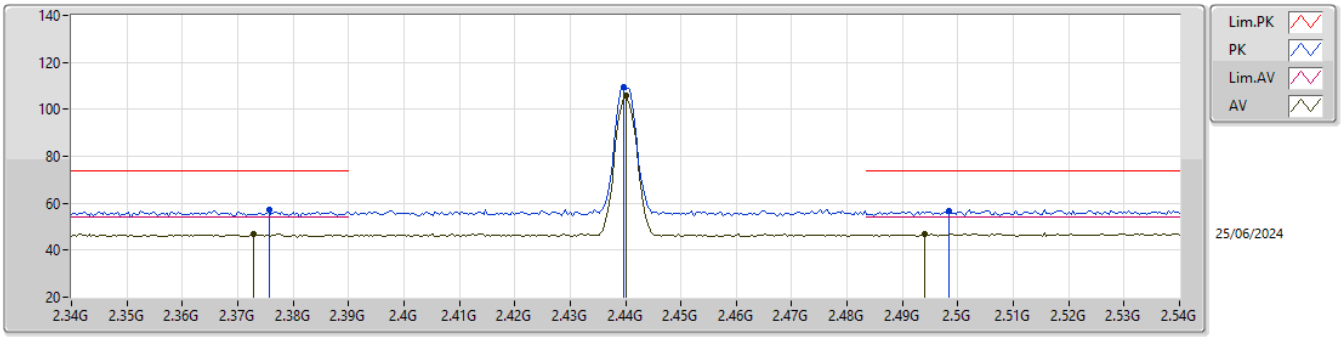



EUT Y_1TX
Setting Default
03-C-P-5

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.80504G | 46.35 | 74.00 | -27.65 | 41.55 | 3 | Horizontal | 210 | 2.35 | - | 33.21 | 6.27 | 34.68 |
| AV | 4.80014G | 35.91 | 54.00 | -18.09 | 31.12 | 3 | Horizontal | 210 | 2.35 | - | 33.20 | 6.26 | 34.67 |

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

**2440MHz_TX**

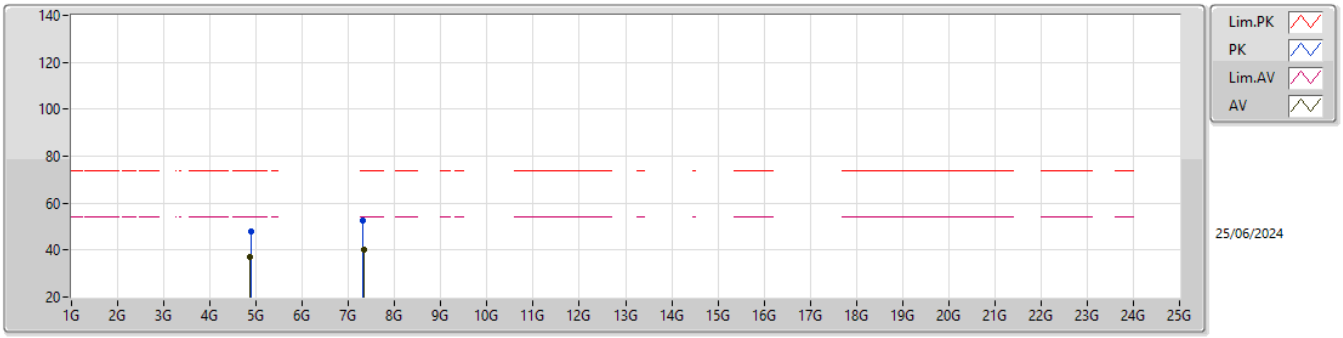



EUT Y_1TX
Setting Default
03-C-E-2

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.3756G | 57.28 | 74.00 | -16.72 | 24.73 | 3 | Vertical | 262 | 2.00 | - | 28.20 | 4.35 | - |
| AV | 2.3728G | 47.10 | 54.00 | -6.90 | 14.55 | 3 | Vertical | 262 | 2.00 | - | 28.20 | 4.35 | - |
| PK | 2.4396G | 109.38 | Inf | -Inf | 76.67 | 3 | Vertical | 262 | 2.00 | - | 28.30 | 4.41 | - |
| AV | 2.44G | 105.72 | Inf | -Inf | 73.01 | 3 | Vertical | 262 | 2.00 | - | 28.30 | 4.41 | - |
| PK | 2.4984G | 56.57 | 74.00 | -17.43 | 23.73 | 3 | Vertical | 262 | 2.00 | - | 28.40 | 4.44 | - |
| AV | 2.494G | 46.83 | 54.00 | -7.17 | 13.99 | 3 | Vertical | 262 | 2.00 | - | 28.40 | 4.44 | - |

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

**2440MHz_TX**

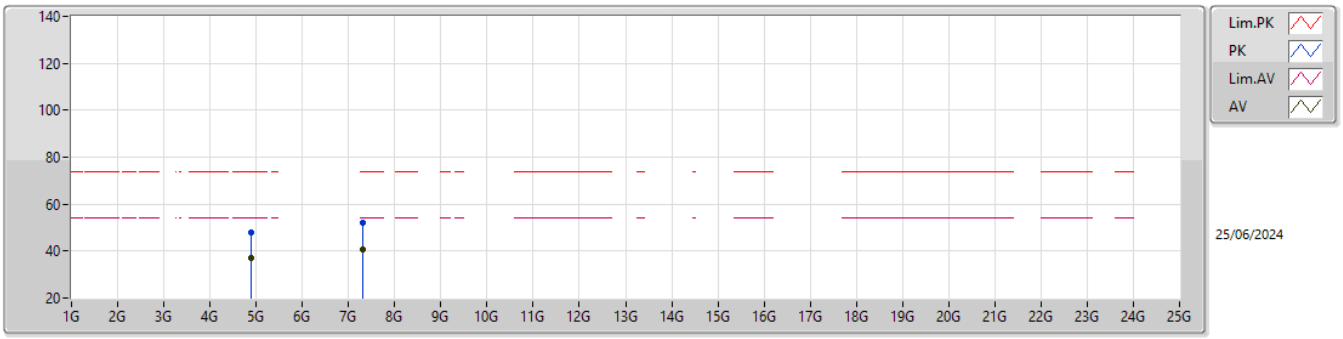



EUT Y_1TX
Setting Default
03-C-P-5

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.8811G | 48.03 | 74.00 | -25.97 | 43.04 | 3 | Vertical | 192 | 2.73 | - | 33.36 | 6.37 | 34.74 |
| AV | 4.87706G | 36.88 | 54.00 | -17.12 | 31.89 | 3 | Vertical | 192 | 2.73 | - | 33.35 | 6.37 | 34.73 |
| PK | 7.31638G | 52.34 | 74.00 | -21.66 | 42.47 | 3 | Vertical | 68 | 2.35 | - | 36.77 | 8.48 | 35.38 |
| AV | 7.32464G | 40.26 | 54.00 | -13.74 | 30.35 | 3 | Vertical | 68 | 2.35 | - | 36.80 | 8.48 | 35.37 |

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

**2440MHz_TX**

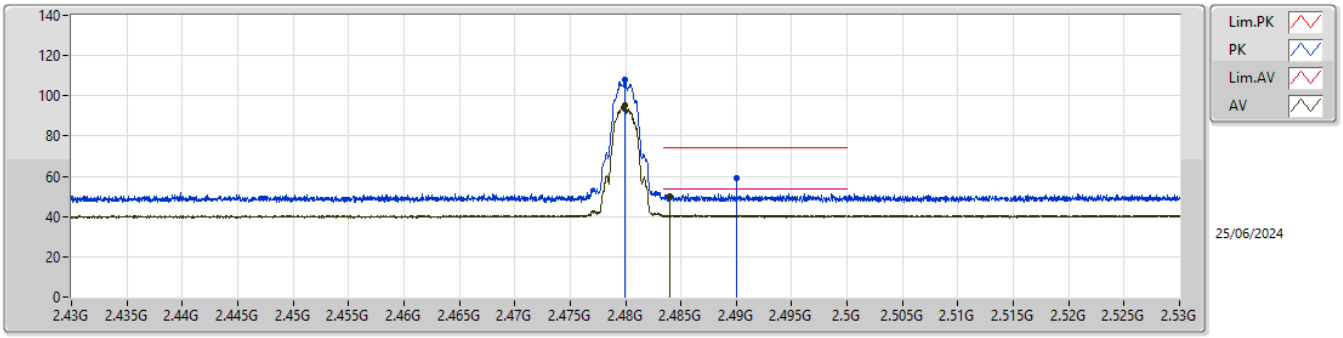



EUT Y_1TX
Setting Default
03-C-P-5

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.8839G | 47.68 | 74.00 | -26.32 | 42.67 | 3 | Horizontal | 255 | 1.17 | - | 33.37 | 6.38 | 34.74 |
| AV | 4.87936G | 36.87 | 54.00 | -17.13 | 31.88 | 3 | Horizontal | 255 | 1.17 | - | 33.36 | 6.37 | 34.74 |
| PK | 7.31688G | 52.05 | 74.00 | -21.95 | 42.18 | 3 | Horizontal | 19 | 1.46 | - | 36.77 | 8.48 | 35.38 |
| AV | 7.31626G | 40.49 | 54.00 | -13.51 | 30.62 | 3 | Horizontal | 19 | 1.46 | - | 36.77 | 8.48 | 35.38 |

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

**2480MHz_TX**

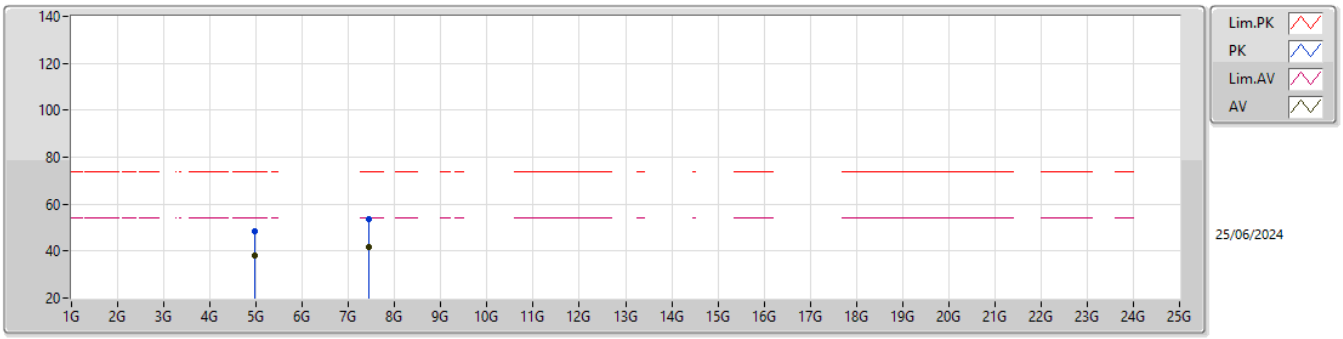



EUT Y_1TX
Setting Default
03-C-P-5

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 2.49G | 58.91 | 74.00 | -15.09 | 26.07 | 3 | Vertical | 75 | 1.77 | BP 1MHz | 28.40 | 4.44 | - |
| PK | 2.47995G | 108.09 | Inf | -Inf | 75.36 | 3 | Vertical | 75 | 1.77 | - | 28.30 | 4.43 | - |
| AV | 2.484G | 49.96 | 54.00 | -4.04 | 17.19 | 3 | Vertical | 75 | 1.77 | BP 1MHz | 28.34 | 4.43 | - |
| AV | 2.47998G | 95.18 | Inf | -Inf | 62.45 | 3 | Vertical | 75 | 1.77 | - | 28.30 | 4.43 | - |

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

**2480MHz_TX**

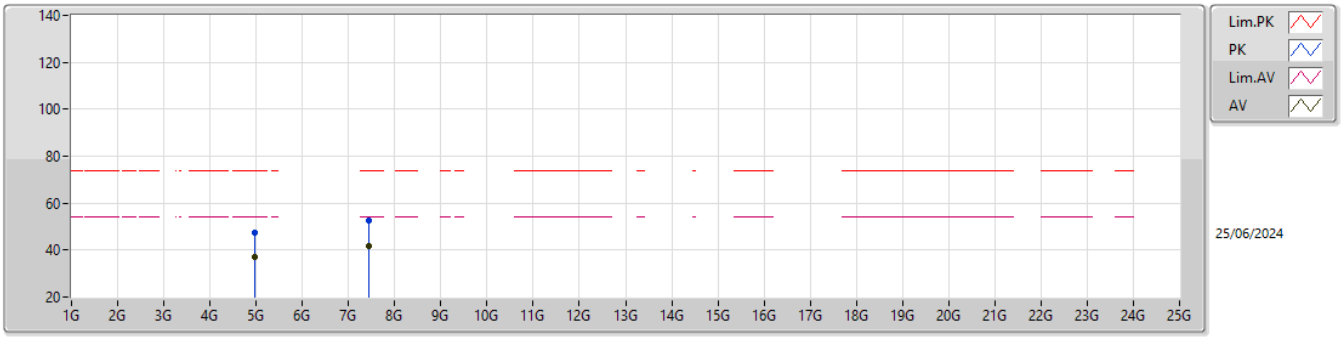



EUT Y_1TX
Setting Default
03-C-P-5

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.95892G | 48.50 | 74.00 | -25.50 | 43.22 | 3 | Vertical | 82 | 1.69 | - | 33.60 | 6.48 | 34.80 |
| AV | 4.96078G | 38.29 | 54.00 | -15.71 | 33.00 | 3 | Vertical | 82 | 1.69 | - | 33.60 | 6.49 | 34.80 |
| PK | 7.43698G | 53.71 | 74.00 | -20.29 | 43.66 | 3 | Vertical | 152 | 1.80 | - | 36.83 | 8.53 | 35.31 |
| AV | 7.43664G | 41.59 | 54.00 | -12.41 | 31.54 | 3 | Vertical | 152 | 1.80 | - | 36.83 | 8.53 | 35.31 |

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

**2480MHz_TX**




EUT Y_1TX
Setting Default
03-C-P-5

| Type | Freq | Level | Limit | Margin | Raw | Dist | Condition | Azimuth | Height | Comment | AF | CL | PA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dBuV) | (m) | | (°) | (m) | | (dB) | (dB) | (dB) |
| PK | 4.95986G | 47.20 | 74.00 | -26.80 | 41.92 | 3 | Horizontal | 311 | 2.73 | - | 33.60 | 6.48 | 34.80 |
| AV | 4.95976G | 36.84 | 54.00 | -17.16 | 31.56 | 3 | Horizontal | 311 | 2.73 | - | 33.60 | 6.48 | 34.80 |
| PK | 7.43606G | 52.82 | 74.00 | -21.18 | 42.77 | 3 | Horizontal | 238 | 1.99 | - | 36.83 | 8.53 | 35.31 |
| AV | 7.43732G | 41.53 | 54.00 | -12.47 | 31.48 | 3 | Horizontal | 238 | 1.99 | - | 36.83 | 8.53 | 35.31 |