# FCC RADIO TEST REPORT

| | | |
|---|---|---|
| FCC ID | : | UIDW31 |
| Equipment | : | Wireless Router |
| Brand Name | : | ARRIS |
| Model Name | : | W31, W30 |
| Applicant | : | ARRIS<br>3871 Lakefield Drive Suite 300,Suwanee, Georgia, 30024 United States |
| Manufacturer | : | ARRIS<br>3871 Lakefield Drive Suite 300,Suwanee, Georgia, 30024 United States |
| Standard | : | 47 CFR FCC Part 15.247 |

The product was received on Sep. 03, 2019, and testing was started from Sep. 26, 2019 and completed on Nov. 09, 2019. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications 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 report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

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

Approved by: Sam Chen

*SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory*
*No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)*

# Table of Contents

**History of this test report** ..... **3**

**Summary of Test Result** ..... **4**

**1 General Description** ..... **5**

1.1 Information ..... 5
1.2 Applicable Standards ..... 9
1.3 Testing Location Information ..... 9
1.4 Measurement Uncertainty ..... 9

**2 Test Configuration of EUT** ..... **10**

2.1 Test Channel Mode ..... 10
2.2 The Worst Case Measurement Configuration ..... 11
2.3 EUT Operation during Test ..... 11
2.4 Accessories ..... 12
2.5 Support Equipment ..... 12
2.6 Test Setup Diagram ..... 13

**3 Transmitter Test Result** ..... **14**

3.1 DTS Bandwidth ..... 14
3.2 Maximum Conducted Output Power ..... 15
3.3 Power Spectral Density ..... 18
3.4 Emissions in Non-restricted Frequency Bands ..... 20
3.5 Emissions in Restricted Frequency Bands ..... 21

**4 Test Equipment and Calibration Data** ..... **25**

**Appendix A. Test Results of DTS Bandwidth**

**Appendix B. Test Results of Maximum Conducted Output Power**

**Appendix C. Test Results of Power Spectral Density**

**Appendix D. Test Results of Emissions in Non-restricted Frequency Bands**

**Appendix E. Test Results of Emissions in Restricted Frequency Bands**

**Appendix F. Test Photos**

**Photographs of EUT v01**

# History of this test report

| Report No. | Version | Description | Issued Date |
|---|---|---|---|
| FR842742-05AD | 01 | Initial issue of report | May 29, 2020 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

# 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 | 15.247(a) | DTS Bandwidth | PASS | - |
| 3.2 | 15.247(b) | Maximum Conducted Output Power | PASS | - |
| 3.3 | 15.247(e) | Power Spectral Density | PASS | - |
| 3.4 | 15.247(d) | Emissions in Non-restricted Frequency Bands | PASS | - |
| 3.5 | 15.247(d) | Emissions in Restricted Frequency Bands | 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. |

**Reviewed by: Sam Chen**
**Report Producer: Emily Chen**

# 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.
- Nss-Min is the minimum number of spatial streams.
- Nant is the number of outputs. e.g., 2(2, 3) means have 2 outputs for port 2 and port 3. 2 means have 2 outputs for port 1 and port 2.

### 1.1.2 Antenna Information

| Ant. | Brand | Model Name | Antenna Type | Connector | Gain (dBi) |
|---|---|---|---|---|---|
| 1 | PEGATRON | 1415-07GT000 | Dual band PCB dipole antenna | I-PEX | Note |
| 2 | PEGATRON | 1415-07GS000 | Dual band PCB dipole antenna | I-PEX | |
| 3 | PEGATRON | 1415-06WH000 | Dual band PCB dipole antenna | I-PEX | |
| 4 | PEGATRON | 1415-07GW000 | Dual band PCB dipole antenna | I-PEX | |
| 5 | PEGATRON | 1415-07GU000 | PCB dipole antenna | I-PEX | |
| 6 | PEGATRON | 1415-07JP000 | PCB dipole antenna | I-PEX | |
| 7 | PEGATRON | 1415-07JN000 | PCB dipole antenna | I-PEX | |
| 8 | PEGATRON | 1415-07GX000 | PCB dipole antenna | I-PEX | |
| 9 | PEGATRON | 1415-07JQ000 | PCB antenna | I-PEX | |
| 10 | PEGATRON | 1415-06MM000 | PCB dipole antenna | I-PEX | |

Note:

| Ant. | Port | Uncorrelated (dBi) | | | Correlated (dBi) | | | (dBi) |
|---|---|---|---|---|---|---|---|---|
| | | 2.4GHz | 5GHz Band 1~2 | 5GHz Band 3~4 | 2.4GHz | 5GHz Band 1~2 | 5GHz Band 3~4 | Bluetooth |
| 1 | 1 | 4.73 | 4.35 | - | 6.55 | 6.83 | | - |
| 2 | 2 | 4.73 | 4.35 | - | 6.55 | 6.83 | | - |
| 3 | 3 | 4.73 | 4.35 | - | 6.55 | 6.83 | | - |

| Ant. | Port | Uncorrelated (dBi) | | | Correlated (dBi) | | | (dBi) |
|---|---|---|---|---|---|---|---|---|
| | | 2.4GHz | 5GHz Band 1~2 | 5GHz Band 3~4 | 2.4GHz | 5GHz Band 1~2 | 5GHz Band 3~4 | Bluetooth |
| 1 | 1 | 4.73 | 4.35 | - | 6.55 | 6.83 | | - |
| 4 | 4 | 4.73 | 4.35 | - | 6.55 | 6.83 | | - |
| 5 | 1 | - | - | 5.11 | - | - | 7.15 | - |
| 6 | 2 | - | - | 5.11 | - | - | 7.15 | - |
| 7 | 3 | - | - | 5.11 | - | - | 7.15 | - |
| 8 | 4 | - | - | 5.11 | - | - | 7.15 | - |
| 9 | 1 | - | - | - | - | - | - | 4.03 |
| 10 | - | - | 5.00 | 5.00 | - | - | - | - |

Note 1: The above information was declared by manufacturer.
Note 2: The EUT has ten antennas.

**For Radio 1**

**WLAN 2.4GHz Functions**

**For IEEE 802.11b/g/n/ac/ax mode (4TX, 4RX):**

Port 1, Port 2, Port 3 and Port 4 could transmit/receive simultaneously.

**WLAN 5GHz Functions (1RX):**

Ant. 10 only supports the antenna receive function.

**For Radio 3**

**WLAN 5GHz Band 1~2 Functions**

**For IEEE 802.11a/n/ac/ax mode (4TX, 4RX):**

Port 1, Port 2, Port 3 and Port 4 could transmit/receive simultaneously.

**For Radio 2**

**WLAN 5GHz Band 3~4 Functions**

**For IEEE 802.11a/n/ac/ax mode (4TX, 4RX):**

Port 1, Port 2, Port 3 and Port 4 could transmit/receive simultaneously.

**For Radio 4**

**Bluetooth Functions (1TX, 1RX):**

Only Port 1 could transmit/receive simultaneously.

### 1.1.3 Table for Radio Type

| Radio No. | 2.4GHz | 5GHz Band 1~2 | 5GHz Band 3~4 | Bluetooth |
|---|---|---|---|---|
| Radio 1 | V | Only RX function | Only RX function | - |
| Radio 2 | - | - | V | - |
| Radio 3 | - | V | - | - |
| Radio 4 | - | - | - | V |

### 1.1.4 Mode Test Duty Cycle

| Mode | DC | DCF(dB) | T(s) | VBW(Hz) ≥ 1/T |
|---|---|---|---|---|
| BT-LE(1Mbps) | 0.632 | 1.993 | 395.625u | 3k |
| BT-LE(2Mbps) | 0.351 | 4.547 | 219.375u | 10k |

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

### 1.1.5 EUT Operational Condition

| | | | | |
|---|---|---|---|---|
| **EUT Power Type** | From Power Adapter | | | |
| **Function** | ☒ | Point-to-multipoint | ☐ | Point-to-point |
| **Test Software Version** | Telnet v1.27.2 | | | |
| **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.

### 1.1.6 Table for EUT Functions

| Type of Function | 2.4GHz | 5GHz Band 1~2 | 5GHz Band 3~4 |
|---|---|---|---|
| Master (AP Router) | V | V | V |
| Master (Extender) | - | - | V |
| Bridge (Client without radar detection) | - | - | V |
| Client without radar detection | - | - | V |

### 1.1.7 Table for Multiple Listing

The brand/model names in the following table are all refer to the identical product.

| Model Name | Color of Device's Bottom |
|---|---|
| W31 | Matte Black |
| W30 | Silver |

From the above models, model name "W30" was selected as representative model for the test and its data was recorded in this report.

### 1.1.8 Table for Class II Change

This product is an extension of original one reported under Sporton project number: FR842742-01AD

Below is the table for the change of the product with respect to the original one.

| Modifications | Performance Checking |
|---|---|
| 1. Change the antenna and antenna models (all internal).<br>2. Changing the antenna location: antenna 2/5/6/7/8/9/10.<br><br>For the detail antenna information please refer to the section 1.1.2. | 1. DTS Bandwidth<br>2. Maximum Conducted Output Power<br>3. Power Spectral Density<br>4. Emissions in Non-restricted Frequency Bands<br>5. Emissions in Restricted Frequency Bands |

## 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
- 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 | | | | | | | |
|---|---|---|---|---|---|---|---|
| ☐ | HWA YA | ADD | : | No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) | | | |
| | | TEL | : | 886-3-327-3456 | FAX | : | 886-3-327-0973 |
| ☒ | JHUBEI | ADD | : | No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. | | | |
| | | TEL | : | 886-3-656-9065 | FAX | : | 886-3-656-9085 |

| Test Condition | Test Site No. | Test Engineer | Test Environment | Test Date |
|---|---|---|---|---|
| RF Conducted | TH02-CB | Owen Hsu | 24.7~25.9°C / 59~64% | Sep. 26, 2019~ Nov. 09, 2019 |
| Radiated below 1GHz | 03CH05-CB | KJ Chang | 23.9~24.7°C / 57~59% | Oct. 17, 2019~ Oct. 29, 2019 |
| Radiated Above 1GHz | 03CH05-CB | KJ Chang | 23.8~25.7°C / 55~58% | Oct. 17, 2019~ Oct. 29, 2019 |

Test site Designation No. TW0006 with FCC.
Test site registered number IC 4086D with Industry Canada.

## 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 |
|---|---|---|
| Radiated Emission (30MHz ~ 1,000MHz) | 4.3 dB | Confidence levels of 95% |
| Radiated Emission (1GHz ~ 18GHz) | 4.3 dB | Confidence levels of 95% |
| Radiated Emission (18GHz ~ 40GHz) | 5.1 dB | Confidence levels of 95% |
| Conducted Emission | 2.4 dB | Confidence levels of 95% |
| Output Power Measurement | 1.5 dB | Confidence levels of 95% |
| Power Density Measurement | 2.4 dB | Confidence levels of 95% |
| Bandwidth Measurement | 2% | Confidence levels of 95% |

# 2 Test Configuration of EUT

## 2.1 Test Channel Mode

| Mode | Power Setting |
|---|---|
| BT-LE(1Mbps) | - |
| 2402MHz | default |
| 2440MHz | default |
| 2480MHz | default |

| Mode | Power Setting |
|---|---|
| BT-LE(2Mbps) | - |
| 2402MHz | default |
| 2440MHz | default |
| 2480MHz | default |

## 2.2 The Worst Case Measurement Configuration

| 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** | CTX |
| | There are two adapters (adapter 1 and adapter 2)<br>The worst case was found as Adapter 1 from testing result of previously. So the measurement will follow this same test configuration. |
| 1 | EUT - Radio 1 (WLAN 2.4GHz) + Adapter 1 |
| 2 | EUT - Radio 3 (WLAN 5GHz Band 1~2) + Adapter 1 |
| 3 | EUT - Radio 2 (WLAN 5GHz Band 3~4) + Adapter 1 |
| 4 | EUT - Radio 4 (Bluetooth) + Adapter 1 |
| For operating mode 2 is the worst case and it was record in this test report. | |
| **Operating Mode > 1GHz** | CTX |

| The Worst Case Mode for Following Conformance Tests | |
|---|---|
| **Tests Item** | Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation |
| **Operating Mode** | |
| 1 | Radio 1 (WLAN 2.4GHz) + Radio 3 (WLAN 5GHz Band 1~2) + Radio 2 (WLAN 5GHz Band 3~4) + Radio 4 (Bluetooth) |
| Refer to Sporton Test Report No.: FA842742-05 for Co-location RF Exposure Evaluation. | |

Note: The EUT can only be use in Y axis position

## 2.3 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

## 2.4 Accessories

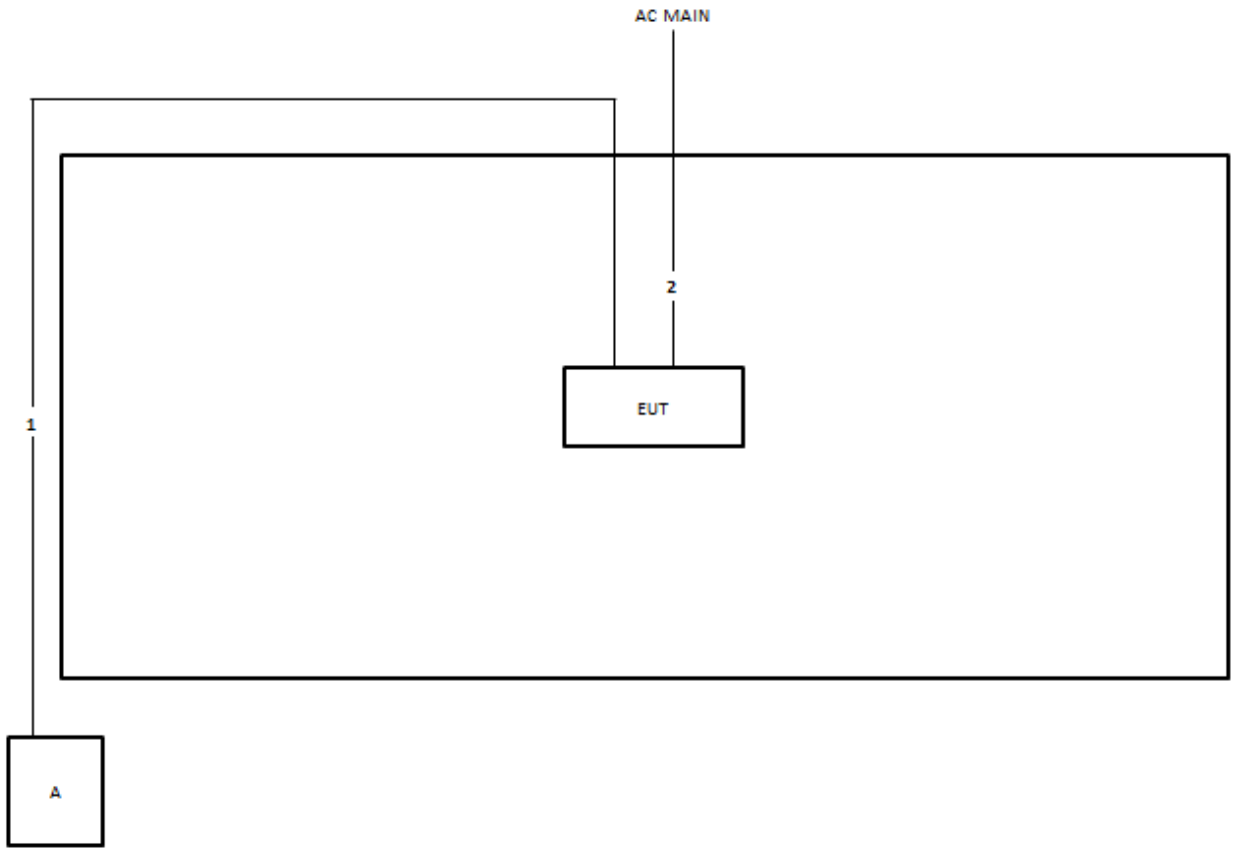
| Accessories | | | | | |
|---|---|---|---|---|---|
| **No.** | **Equipment Name** | **Brand Name** | **Model Name** | **P/N** | **Rating** |
| 1 | Adapter 1 | APD | WA-36L12FU | AREP05681 | INPUT: 100-120V ~, 60Hz, 0.9A Max<br>OUTPUT: 12V, 3A |
| 2 | Adapter 2 | NetBit | NBS42D120 350VU | AREP05751 | INPUT: 100-120V ~, 50/60Hz, 1.0A<br>OUTPUT: 12.0V, 3.5A |

## 2.5 Support Equipment

| Support Equipment | | | | |
|---|---|---|---|---|
| **No.** | **Equipment** | **Brand Name** | **Model Name** | **FCC ID** |
| A | NB | DELL | E4300 | N/A |

## 2.6 Test Setup Diagram

**Test Setup Diagram - Radiated Test**




| Item | Connection | Shielded | Length |
|---|---|---|---|
| 1 | RJ-45 cable | No | 10m |
| 2 | Power cable | No | 1.8m |

# 3 Transmitter Test Result

## 3.1 DTS Bandwidth

### 3.1.1 6dB Bandwidth Limit

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

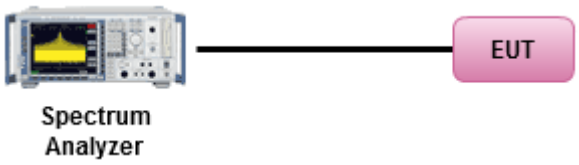
### 3.1.2 Measuring Instruments

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

### 3.1.3 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. |

### 3.1.4 Test Setup

| Emission Bandwidth |
|---|
|   |

### 3.1.5 Test Result of Emission Bandwidth

Refer as Appendix A

## 3.2 Maximum Conducted Output Power

### 3.2.1 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. | | |

### 3.2.2 Measuring Instruments

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

### 3.2.3 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>$EIRP_{total} = P_{total} + DG$ |

### 3.2.4 Test Setup

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

### 3.2.5 Test Result of Maximum Conducted Output Power

Refer as Appendix B

# 3.3 Power Spectral Density

## 3.3.1 Power Spectral Density Limit

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

## 3.3.2 Measuring Instruments

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

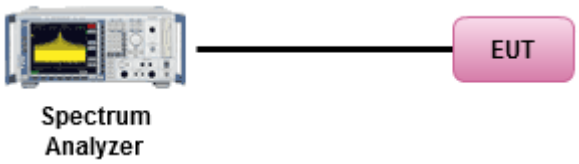
## 3.3.3 Test Procedures

| 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 11.10.2 Method PKPSD. |
| | [duty cycle ≥ 98% or external video / power trigger] |
| | ☐ Refer as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10.3 Method AVGPSD-1. |
| | ☐ Refer as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10.5 Method AVGPSD-2. |
| | ☐ Refer as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10.7 Method AVGPSD-3. |
| | duty cycle < 98% and average over on/off periods with duty factor |
| | ☐ Refer as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10.4 Method AVGPSD-1A. (alternative). |
| | ☐ Refer as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10.6 Method AVGPSD-2A. (alternative) |
| | ☐ Refer as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10.8 Method AVGPSD-3A. (alternative) |

| | | |
|---|---|---|
| ▪ 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. |

### 3.3.4 Test Setup

**Power Spectral Density**




### 3.3.5 Test Result of Power Spectral Density

Refer as Appendix C

## 3.4 Emissions in Non-restricted Frequency Bands

### 3.4.1 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.

### 3.4.2 Measuring Instruments

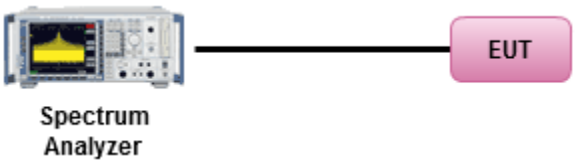
Refer a test equipment and calibration data table in this test report.

### 3.4.3 Test Procedures

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

### 3.4.4 Test Setup

**Emissions in Non-restricted Frequency Bands**




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

Refer as Appendix D

## 3.5 Emissions in Restricted Frequency Bands

### 3.5.1 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.

### 3.5.2 Measuring Instruments

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

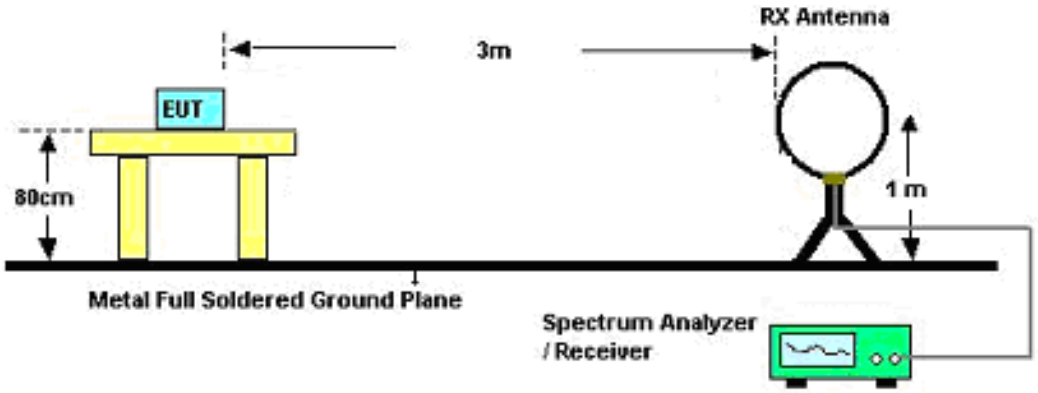
### 3.5.3 Test Procedures

| 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. | | |

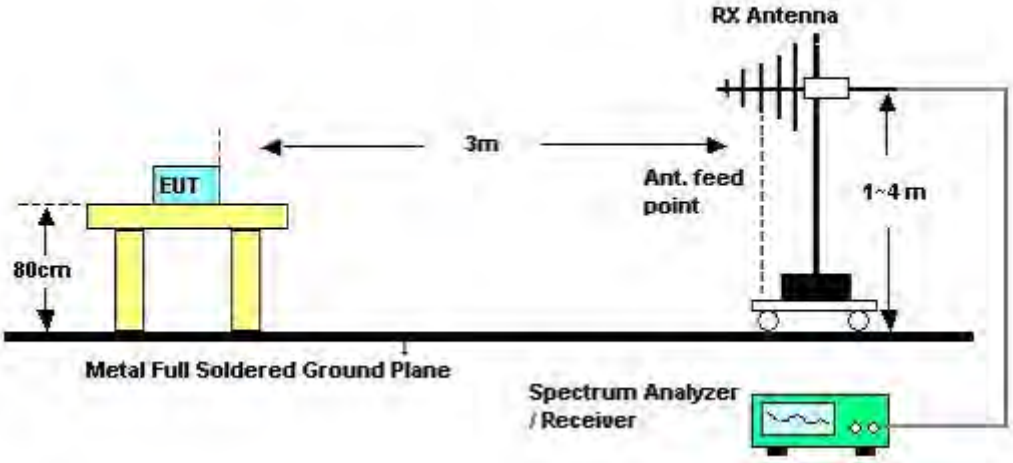
### 3.5.4 Test Setup

**Emissions in Restricted Frequency Bands**

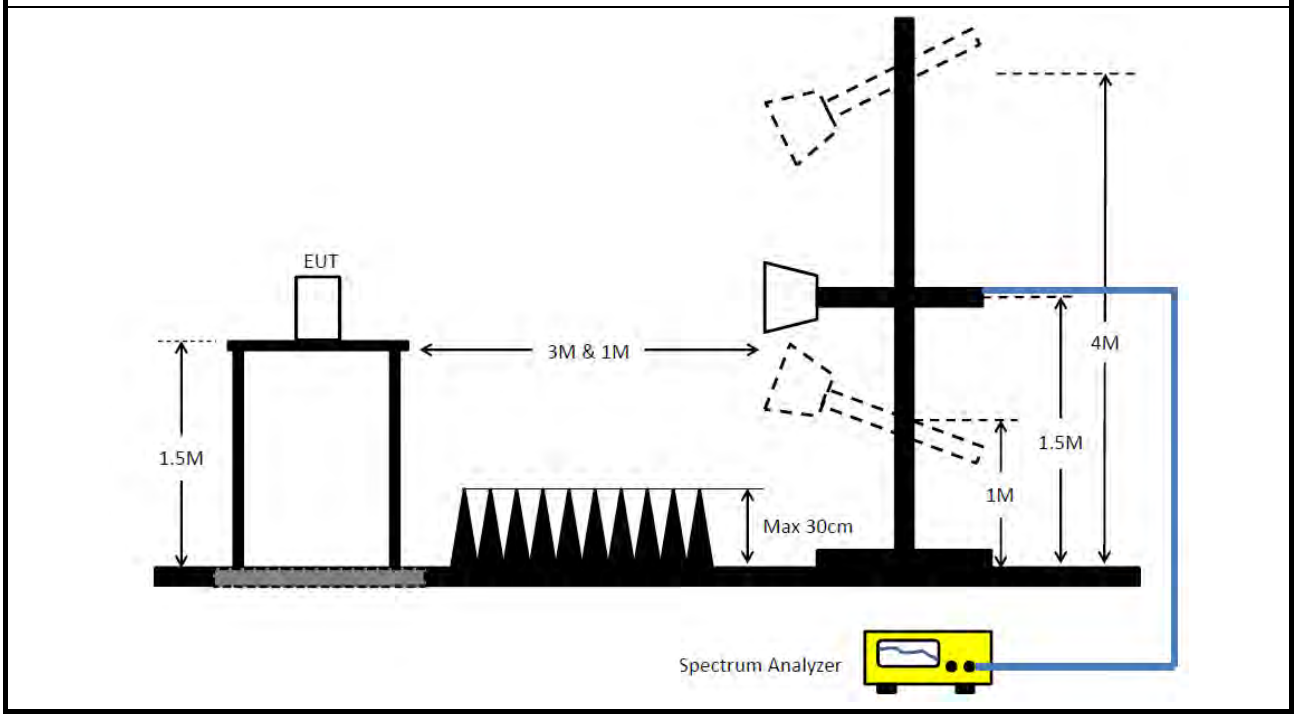
**9kHz ~30MHz**




**30MHz~1GHz**



**Above 1GHz**




### 3.5.5 Measurement Results Calculation

The measured Level is calculated using:
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

### 3.5.6 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 10 harmonic or 40 GHz, whichever is appropriate.

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

Refer as Appendix E

# 4 Test Equipment and Calibration Data

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Calibration Due Date | Remark |
|---|---|---|---|---|---|---|---|
| Bilog Antenna with 6dB Attenuator | TESE & EMCI | CBL 6112D & N-6-06 | 35236 & AT-N0610 | 30MHz ~ 2GHz | Mar. 28, 2019 | Mar. 27, 2020 | Radiation (03CH05-CB) |
| Loop Antenna | Teseq | HLA 6120 | 24155 | 9kHz - 30 MHz | Mar. 29, 2019 | Mar. 28, 2020 | Radiation (03CH05-CB) |
| Horn Antenna | SCHWARZBECK | BBHA9120D | BBHA 9120D-1291 | 1GHz~18GHz | Oct. 05, 2019 | Oct. 04, 2020 | Radiation (03CH05-CB) |
| Horn Antenna | SCHWARZBECK | BBHA 9170 | BBHA9170507 | 15GHz ~ 40GHz | Jun. 12, 2019 | Jun. 11, 2020 | Radiation (03CH05-CB) |
| Pre-Amplifier | EMCI | EMC330N | 980331 | 20MHz ~ 3GHz | May 01, 2019 | Apr. 30, 2020 | Radiation (03CH05-CB) |
| Pre-Amplifier | EMCI | EMC12630SE | 980287 | 1GHz – 26.5GHz | Apr. 16, 2019 | Apr. 15, 2020 | Radiation (03CH05-CB) |
| Pre-Amplifier | MITEQ | TTA1840-35-HG | 1864479 | 18GHz ~ 40GHz | Jul. 03, 2019 | Jul. 02, 2020 | Radiation (03CH05-CB) |
| Spectrum Analyzer | R&S | FSP40 | 100304 | 9kHz ~ 40GHz | Aug. 15, 2019 | Aug. 14, 2020 | Radiation (03CH05-CB) |
| EMI Test Receiver | R&S | ESCS | 826547/017 | 9kHz ~ 2.75GHz | May 15, 2019 | May 14, 2020 | Radiation (03CH05-CB) |
| RF Cable-low | Woken | RG402 | LOW Cable-04+23 | 30MHz~1GHz | Oct. 07, 2019 | Oct. 06, 2020 | Radiation (03CH05-CB) |
| RF Cable-high | Woken | RG402 | High Cable-28 | 1GHz~18GHz | Oct. 07, 2019 | Oct. 06, 2020 | Radiation (03CH05-CB) |
| RF Cable-high | Woken | RG402 | High Cable-04+28 | 1GHz~18GHz | Oct. 07, 2019 | Oct. 06, 2020 | Radiation (03CH05-CB) |
| RF Cable-high | Woken | RG402 | High Cable-40G#1 | 18GHz ~ 40 GHz | Jul. 24, 2019 | Jul. 23, 2020 | Radiation (03CH05-CB) |
| RF Cable-high | Woken | RG402 | High Cable-40G#2 | 18GHz ~ 40 GHz | Jul. 24, 2019 | Jul. 23, 2020 | Radiation (03CH05-CB) |
| Spectrum analyzer | R&S | FSV40 | 101027 | 9kHz~40GHz | Jul. 02, 2019 | Jul. 01, 2020 | Conducted (TH02-CB) |
| Power Sensor | Anritsu | MA2411B | 1126203 | 300MHz~40GHz | Sep. 11, 2019 | Sep. 10, 2020 | Conducted (TH02-CB) |
| Power Meter | Anritsu | ML2495A | 1210004 | 300MHz~40GHz | Sep. 11, 2019 | Sep. 10, 2020 | Conducted (TH02-CB) |
| RF Cable-high | Woken | RG402 | High Cable-01 | 1 GHz – 26.5 GHz | Oct. 08, 2018 | Oct. 07, 2019 | Conducted (TH02-CB) |
| RF Cable-high | Woken | RG402 | High Cable-01 | 1 GHz – 26.5 GHz | Oct. 07, 2019 | Oct. 06, 2020 | Conducted (TH02-CB) |
| RF Cable-high | Woken | RG402 | High Cable-02 | 1 GHz – 26.5 GHz | Oct. 08, 2018 | Oct. 07, 2019 | Conducted (TH02-CB) |
| RF Cable-high | Woken | RG402 | High Cable-02 | 1 GHz – 26.5 GHz | Oct. 07, 2019 | Oct. 06, 2020 | Conducted (TH02-CB) |
| RF Cable-high | Woken | RG402 | High Cable-3 | 1 GHz – 26.5 GHz | Oct. 24, 2018 | Oct. 23, 2019 | Conducted (TH02-CB) |

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Calibration Due Date | Remark |
|---|---|---|---|---|---|---|---|
| RF Cable-high | Woken | RG402 | High Cable-3 | 1 GHz – 26.5 GHz | Oct. 07, 2019 | Oct. 06, 2020 | Conducted (TH02-CB) |
| RF Cable-high | Woken | RG402 | High Cable-04 | 1 GHz – 26.5 GHz | Oct. 08, 2018 | Oct. 07, 2019 | Conducted (TH02-CB) |
| RF Cable-high | Woken | RG402 | High Cable-04 | 1 GHz – 26.5 GHz | Oct. 07, 2019 | Oct. 06, 2020 | Conducted (TH02-CB) |
| RF Cable-high | Woken | RG402 | High Cable-05 | 1 GHz – 26.5 GHz | Oct. 08, 2018 | Oct. 07, 2019 | Conducted (TH02-CB) |
| RF Cable-high | Woken | RG402 | High Cable-05 | 1 GHz – 26.5 GHz | Oct. 07, 2019 | Oct. 06, 2020 | Conducted (TH02-CB) |

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

## 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) | 782.5k | 1.107M | 1M11F1D | 772.5k | 1.094M |
| BT-LE(2Mbps) | 1.103M | 2.074M | 2M07F1D | 1.098M | 2.066M |

**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

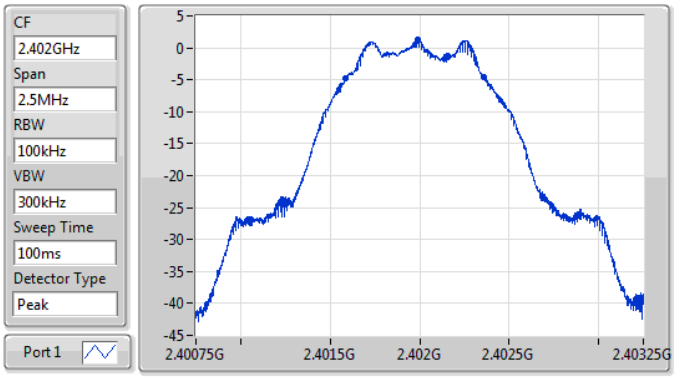
| Mode | Result | Limit (Hz) | Port 1-N dB (Hz) | Port 1-OBW (Hz) |
|---|---|---|---|---|
| BT-LE(1Mbps) | - | - | - | - |
| 2402MHz | Pass | 500k | 772.5k | 1.094M |
| 2440MHz | Pass | 500k | 782.5k | 1.107M |
| 2480MHz | Pass | 500k | 782.5k | 1.103M |
| BT-LE(2Mbps) | - | - | - | - |
| 2402MHz | Pass | 500k | 1.103M | 2.066M |
| 2440MHz | Pass | 500k | 1.103M | 2.074M |
| 2480MHz | Pass | 500k | 1.098M | 2.069M |

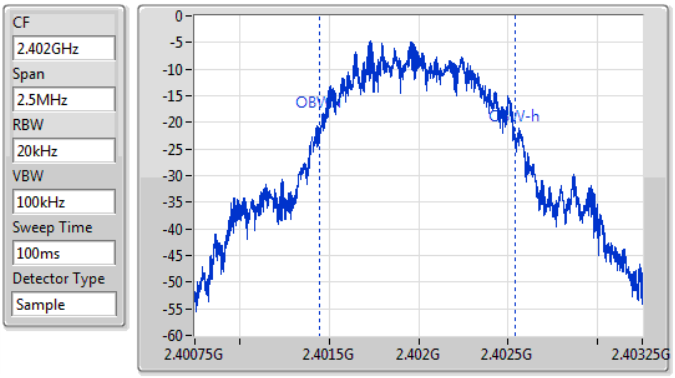
**Port X-N dB** = Port **X** 6dB down bandwidth; **Port X-OBW** = Port **X** 99% occupied bandwidth;

## BT-LE(1Mbps) EBW

## 2402MHz

28/10/2019



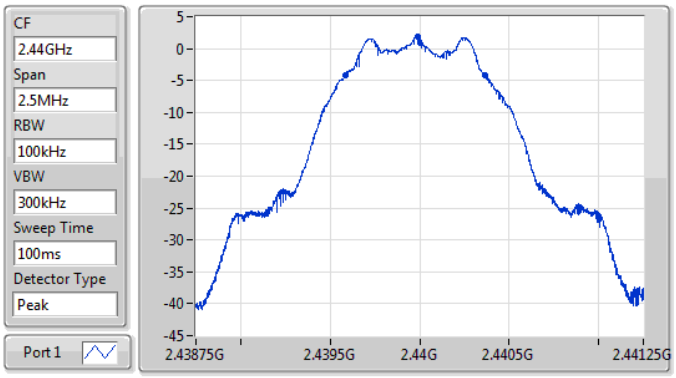



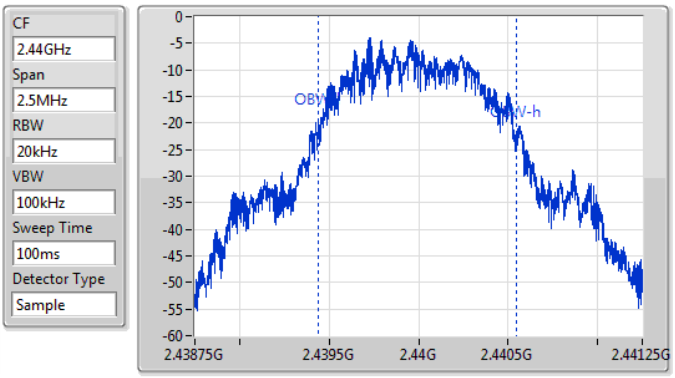

| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 772.5k | 2.401589G | 2.402361G | 1.094M | 2.401444G | 2.402538G | 500k | 1 |

## BT-LE(1Mbps) EBW

## 2440MHz

28/10/2019



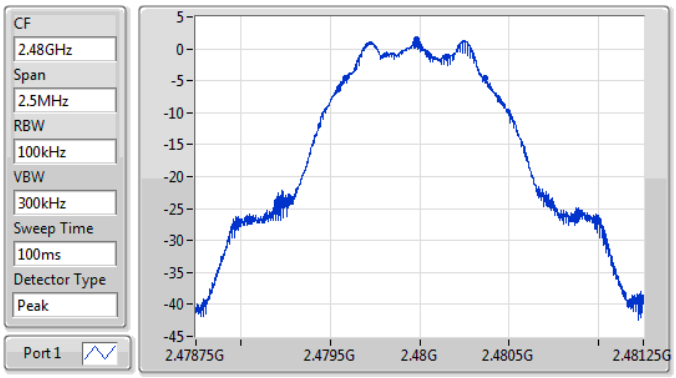



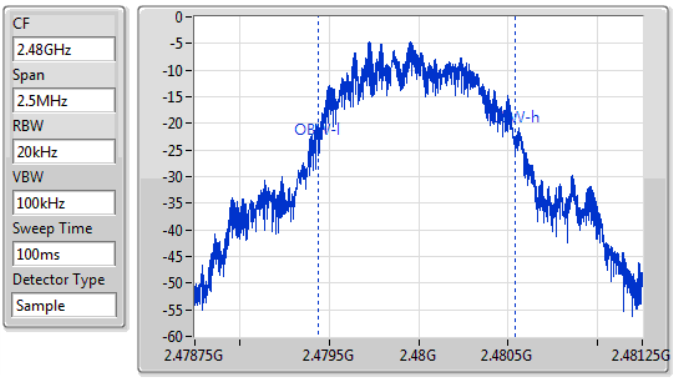

| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 782.5k | 2.439584G | 2.440366G | 1.107M | 2.439438G | 2.440545G | 500k | 1 |

## BT-LE(1Mbps) EBW

### 2480MHz

28/10/2019



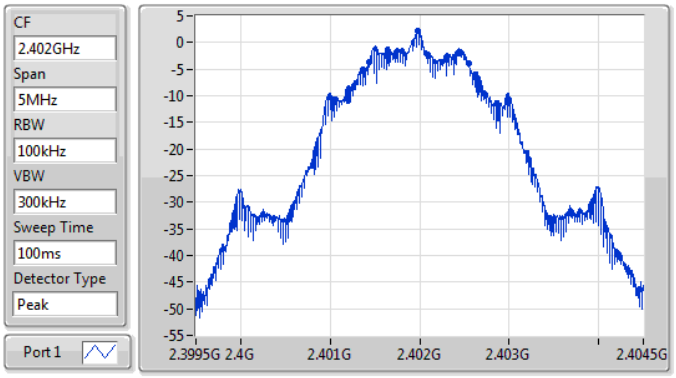



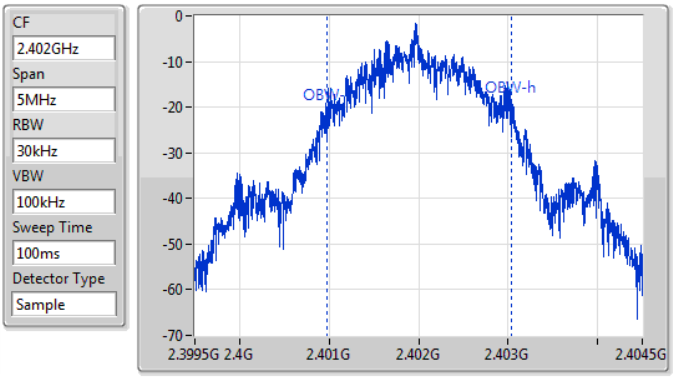

| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 782.5k | 2.479583G | 2.480365G | 1.103M | 2.479438G | 2.480541G | 500k | 1 |

## BT-LE(2Mbps) EBW

### 2402MHz

28/10/2019



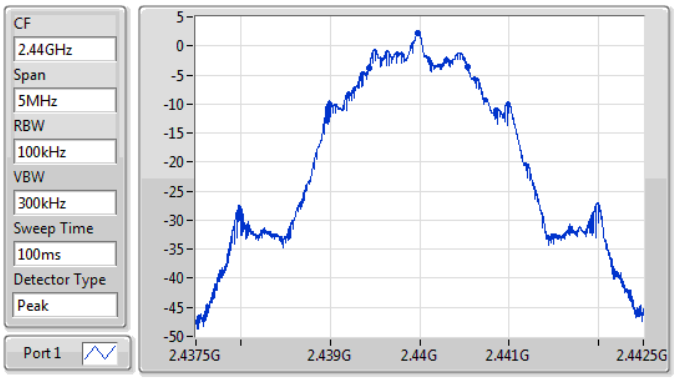



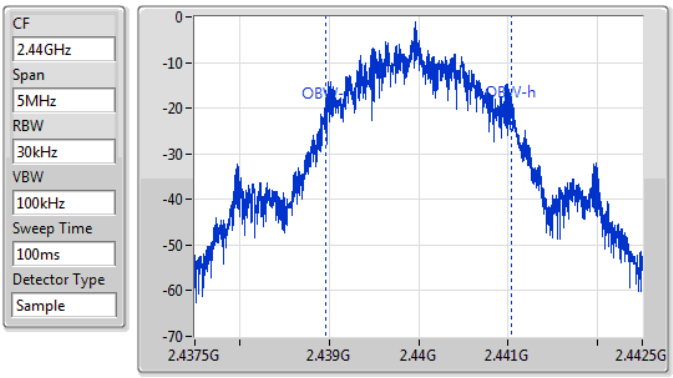

| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 1.103M | 2.401443G | 2.402545G | 2.066M | 2.400973G | 2.403039G | 500k | 1 |

## BT-LE(2Mbps) EBW

## 2440MHz

28/10/2019



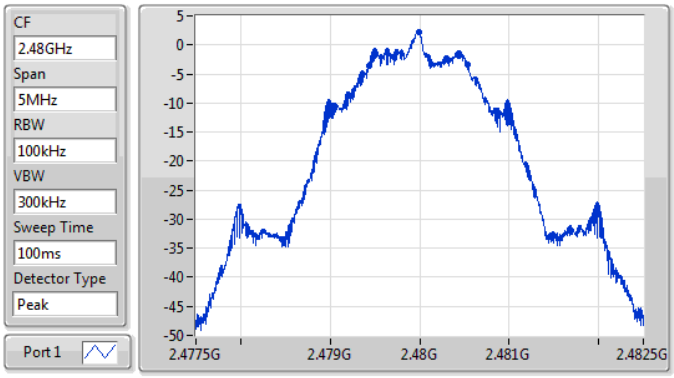



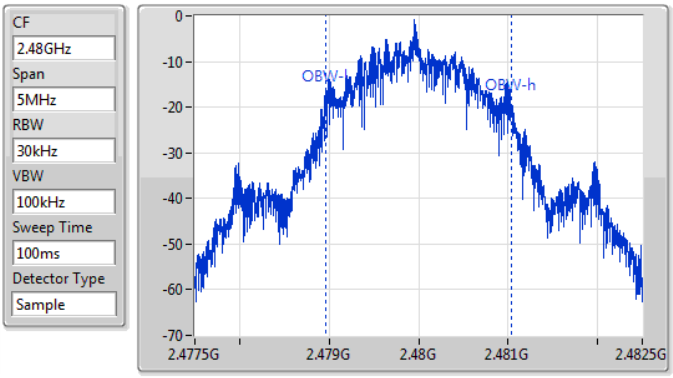

| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 1.103M | 2.439438G | 2.44054G | 2.074M | 2.438963G | 2.441037G | 500k | 1 |

## BT-LE(2Mbps) EBW

## 2480MHz

28/10/2019




| 6dB(Hz) | Fl-6dB(Hz) | Fh-6dB(Hz) | OBW(Hz) | Fl-OBW(Hz) | Fh-OBW(Hz) | Limit(Hz) | Port |
|---|---|---|---|---|---|---|---|
| 1.098M | 2.479435G | 2.480533G | 2.069M | 2.478963G | 2.481032G | 500k | 1 |

## Summary

| Mode | Power (dBm) | Power (W) |
|---|---|---|
| 2.4-2.4835GHz | - | - |
| BT-LE(1Mbps) | 1.85 | 0.00153 |
| BT-LE(2Mbps) | 1.65 | 0.00146 |

## Result

| Mode | Result | Gain (dBi) | Power (dBm) | Power Limit (dBm) |
|---|---|---|---|---|
| BT-LE(1Mbps) | - | - | - | - |
| 2402MHz | Pass | 4.03 | 1.35 | 30.00 |
| 2440MHz | Pass | 4.03 | 1.85 | 30.00 |
| 2480MHz | Pass | 4.03 | 1.39 | 30.00 |
| BT-LE(2Mbps) | - | - | - | - |
| 2402MHz | Pass | 4.03 | 1.57 | 30.00 |
| 2440MHz | Pass | 4.03 | 1.48 | 30.00 |
| 2480MHz | Pass | 4.03 | 1.65 | 30.00 |

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

## Summary

| Mode | PD (dBm/RBW) |
|---|---|
| 2.4-2.4835GHz | - |
| BT-LE(1Mbps) | -12.55 |
| BT-LE(2Mbps) | -14.90 |

RBW=3 kHz.

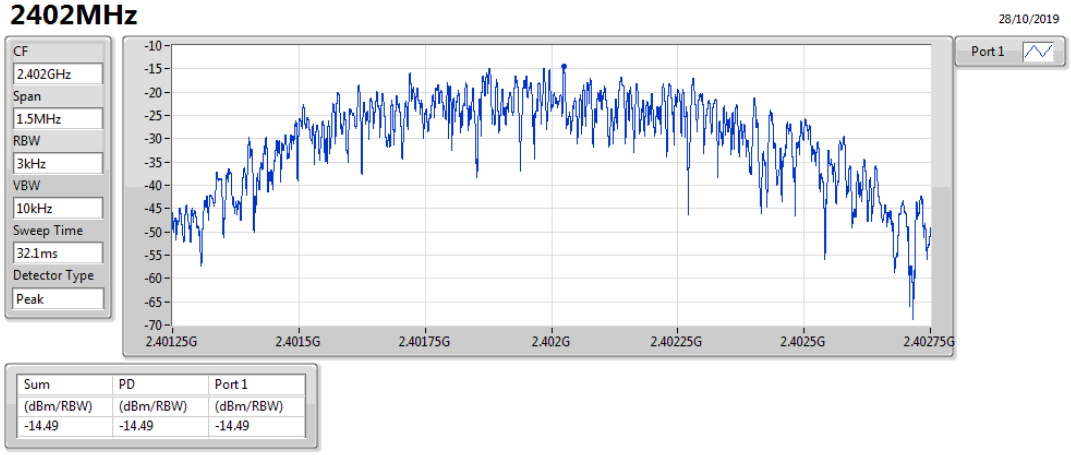
## Result

| Mode | Result | Gain (dBi) | PD (dBm/RBW) | PD Limit (dBm/RBW) |
|---|---|---|---|---|
| BT-LE(1Mbps) | - | - | - | - |
| 2402MHz | Pass | 4.03 | -14.49 | 8.00 |
| 2440MHz | Pass | 4.03 | -12.55 | 8.00 |
| 2480MHz | Pass | 4.03 | -13.20 | 8.00 |
| BT-LE(2Mbps) | - | - | - | - |
| 2402MHz | Pass | 4.03 | -14.90 | 8.00 |
| 2440MHz | Pass | 4.03 | -16.34 | 8.00 |
| 2480MHz | Pass | 4.03 | -16.56 | 8.00 |

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

**BT-LE(1Mbps)** **PSD**

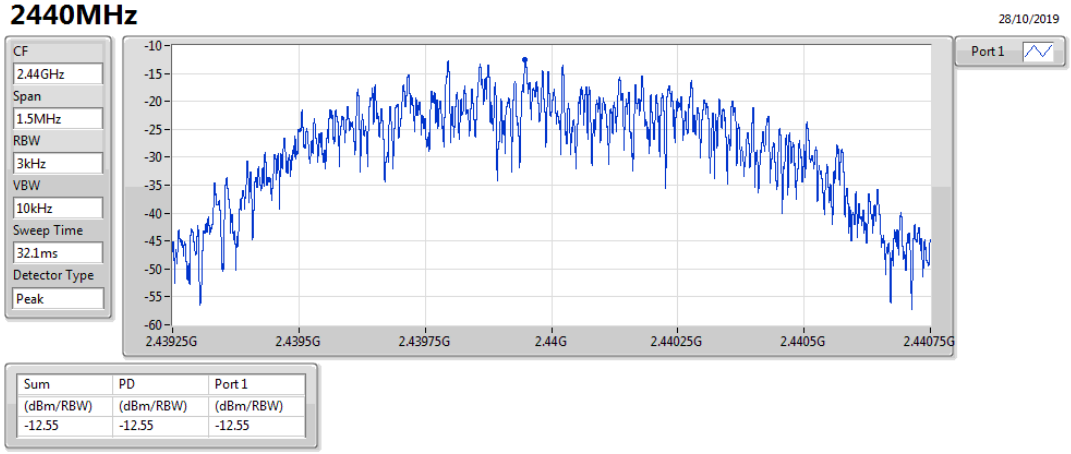
**2402MHz**




| Sum | PD | Port 1 |
|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -14.49 | -14.49 | -14.49 |

**BT-LE(1Mbps)** **PSD**

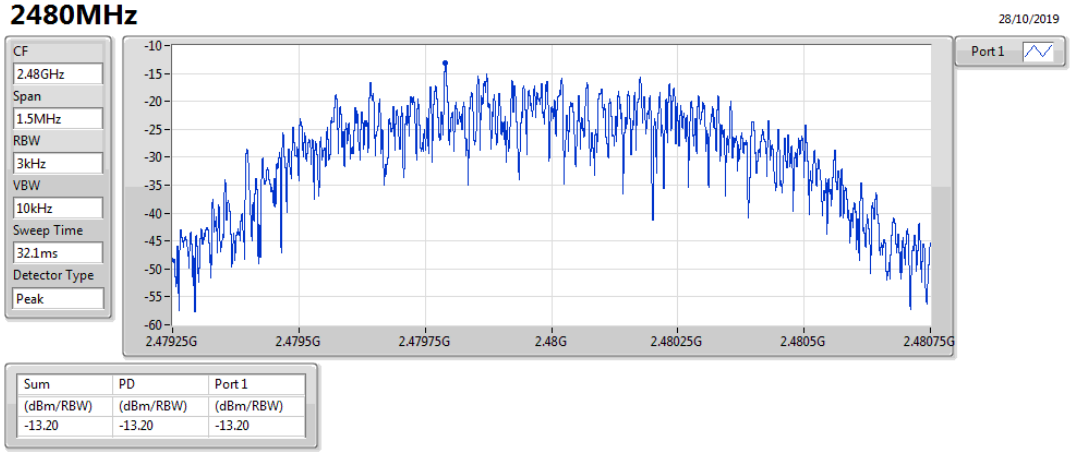
**2440MHz**




| Sum | PD | Port 1 |
|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -12.55 | -12.55 | -12.55 |

**BT-LE(1Mbps)** **PSD**

**2480MHz**

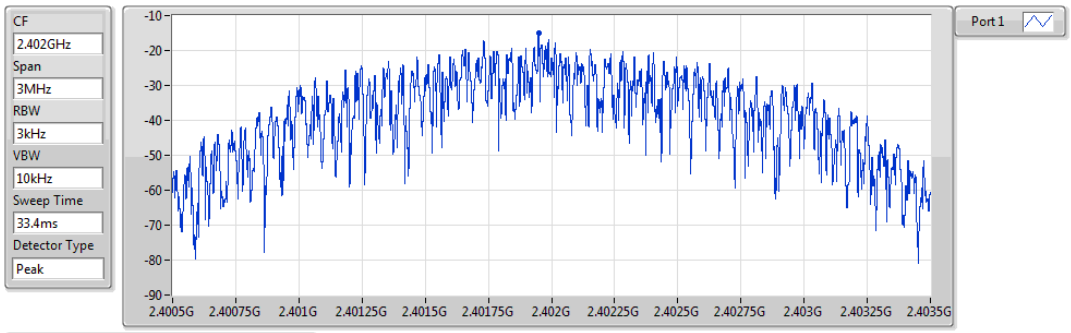



| Sum | PD | Port 1 |
|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -13.20 | -13.20 | -13.20 |

## BT-LE(2Mbps) PSD

### 2402MHz

28/10/2019

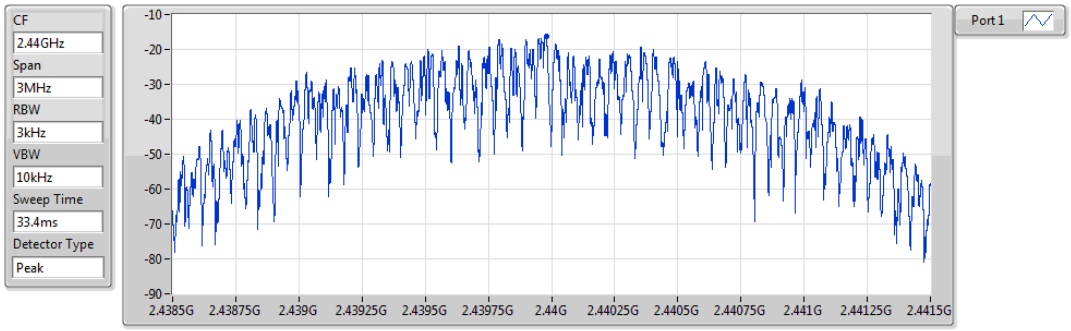



| Sum | PD | Port 1 |
|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -14.90 | -14.90 | -14.90 |

## BT-LE(2Mbps) PSD

### 2440MHz

28/10/2019

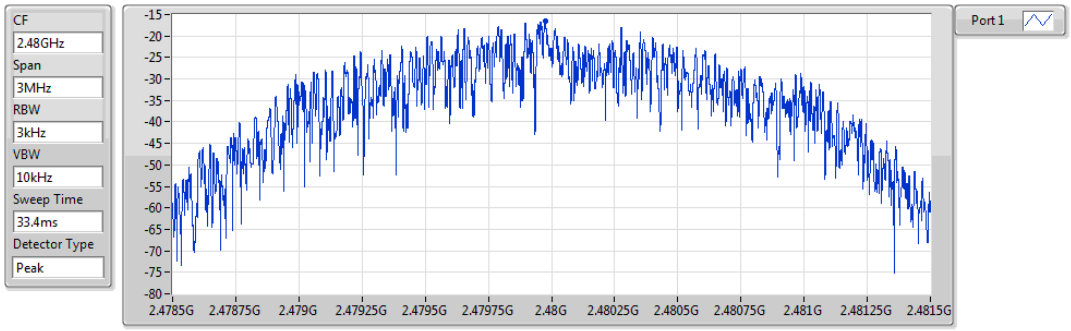



| Sum | PD | Port 1 |
|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -16.34 | -16.34 | -16.34 |

## BT-LE(2Mbps) PSD

### 2480MHz

28/10/2019




| Sum | PD | Port 1 |
|---|---|---|
| (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| -16.56 | -16.56 | -16.56 |

## Summary

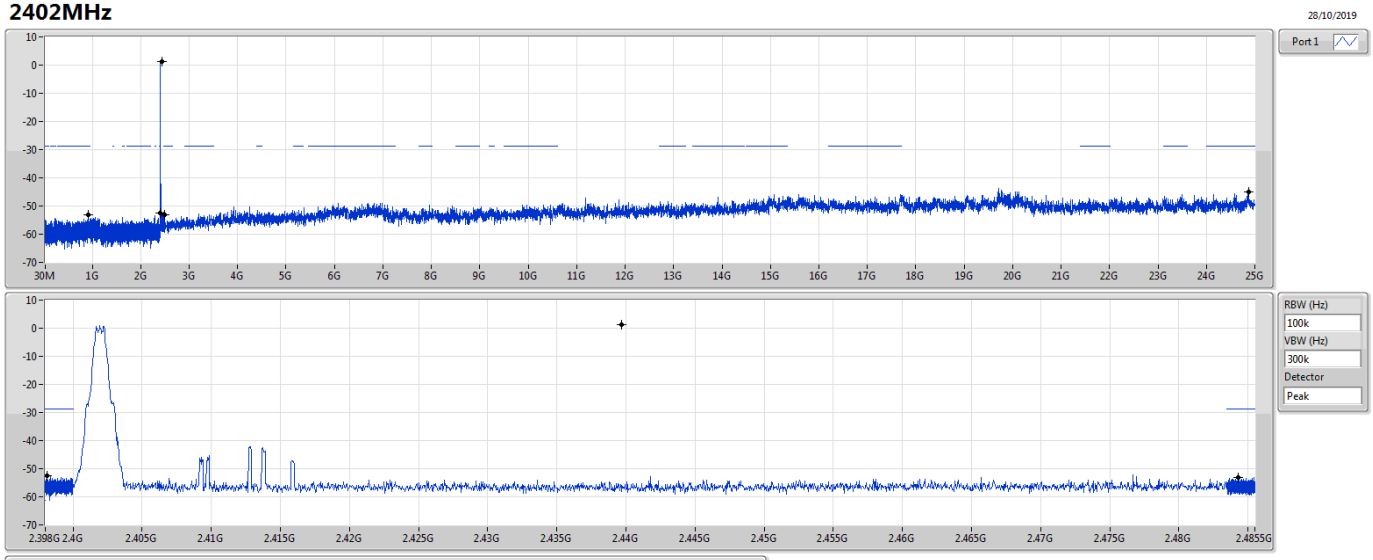
| Mode | Result | Ref (Hz) | Ref (dBm) | Limit (dBm) | Freq (Hz) | Level (dBm) | Freq (Hz) | Level (dBm) | Freq (Hz) | Level (dBm) | Freq (Hz) | Level (dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.4-2.4835GHz | - | - | - | - | - | - | - | - | - | - | - | - | - |
| BT-LE(1Mbps) | Pass | 2.4397G | 1.19 | -28.81 | 2.06322G | -52.59 | 2.39826G | -53.09 | 2.48526G | -53.12 | 5.50526G | -34.55 | 1 |
| BT-LE(2Mbps) | Pass | 2.47999G | 1.95 | -28.05 | 2.11859G | -53.36 | 2.39998G | -28.09 | 2.48458G | -52.59 | 23.54232G | -44.97 | 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) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BT-LE(1Mbps) | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2402MHz | Pass | 2.4397G | 1.19 | -28.81 | 918.59M | -53.01 | 2.39815G | -52.53 | 2.48428G | -53.06 | 24.86491G | -45.13 | 1 |
| 2440MHz | Pass | 2.4397G | 1.19 | -28.81 | 1.80245G | -53.38 | 2.39937G | -53.00 | 2.4838G | -52.84 | 17.4689G | -46.13 | 1 |
| 2480MHz | Pass | 2.4397G | 1.19 | -28.81 | 2.06322G | -52.59 | 2.39826G | -53.09 | 2.48526G | -53.12 | 5.50526G | -34.55 | 1 |
| BT-LE(2Mbps) | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2402MHz | Pass | 2.47999G | 1.95 | -28.05 | 2.11859G | -53.36 | 2.39998G | -28.09 | 2.48458G | -52.59 | 23.54232G | -44.97 | 1 |
| 2440MHz | Pass | 2.47999G | 1.95 | -28.05 | 940.32M | -53.99 | 2.39897G | -53.44 | 2.48567G | -52.61 | 24.13045G | -45.29 | 1 |
| 2480MHz | Pass | 2.47999G | 1.95 | -28.05 | 953.04M | -53.46 | 2.39749G | -52.75 | 2.48594G | -52.80 | 17.69469G | -45.17 | 1 |

**BT-LE(1Mbps)** **CSE NdB**

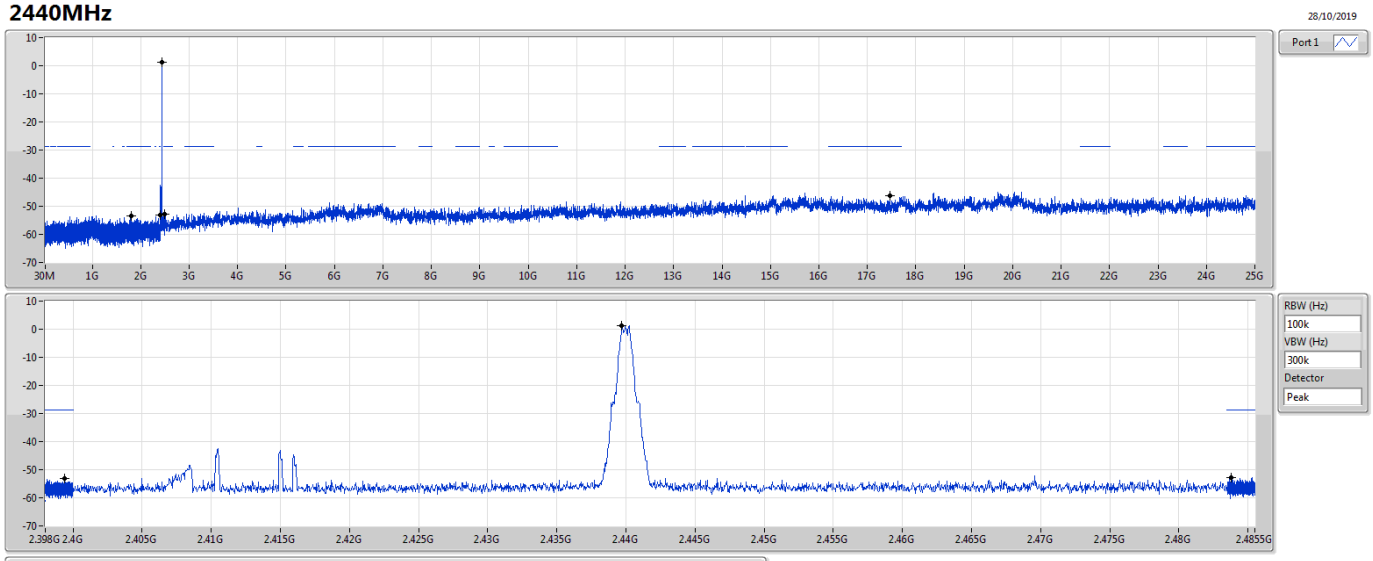
**2402MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.4397G | 1.19 | -28.81 | 918.59M | -53.01 | 2.39815G | -52.53 | 2.48428G | -53.06 | 24.86491G | -45.13 | 1 |

**BT-LE(1Mbps)** **CSE NdB**

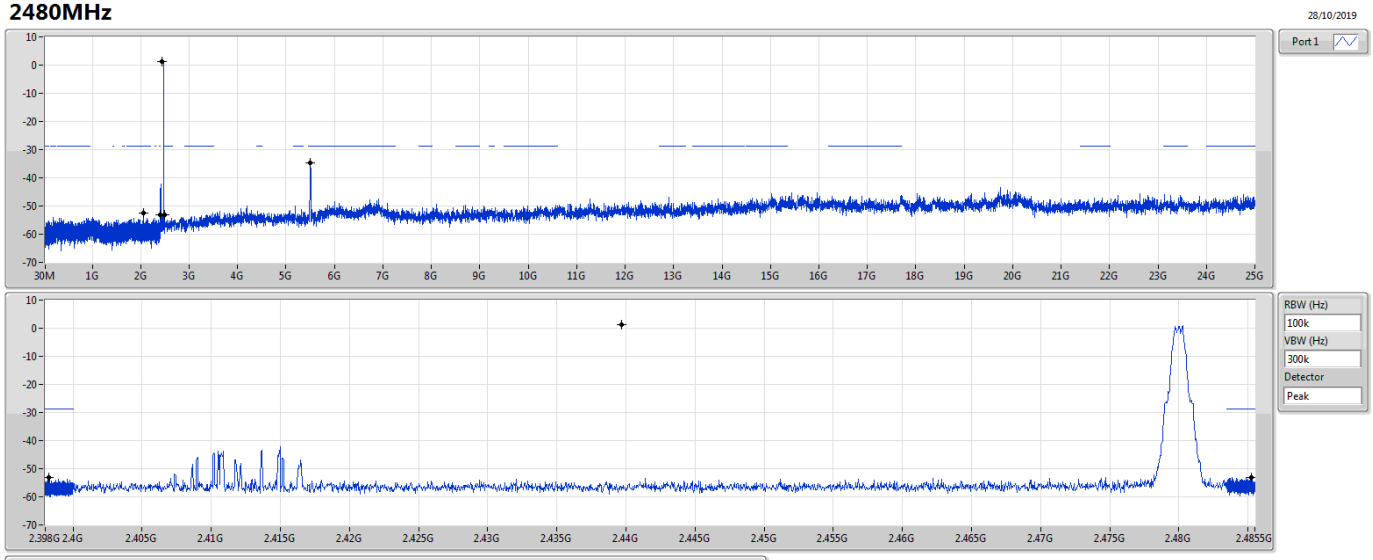
**2440MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.4397G | 1.19 | -28.81 | 1.80245G | -53.38 | 2.39937G | -53.00 | 2.4838G | -52.84 | 17.4689G | -46.13 | 1 |

**BT-LE(1Mbps)** **CSE NdB**

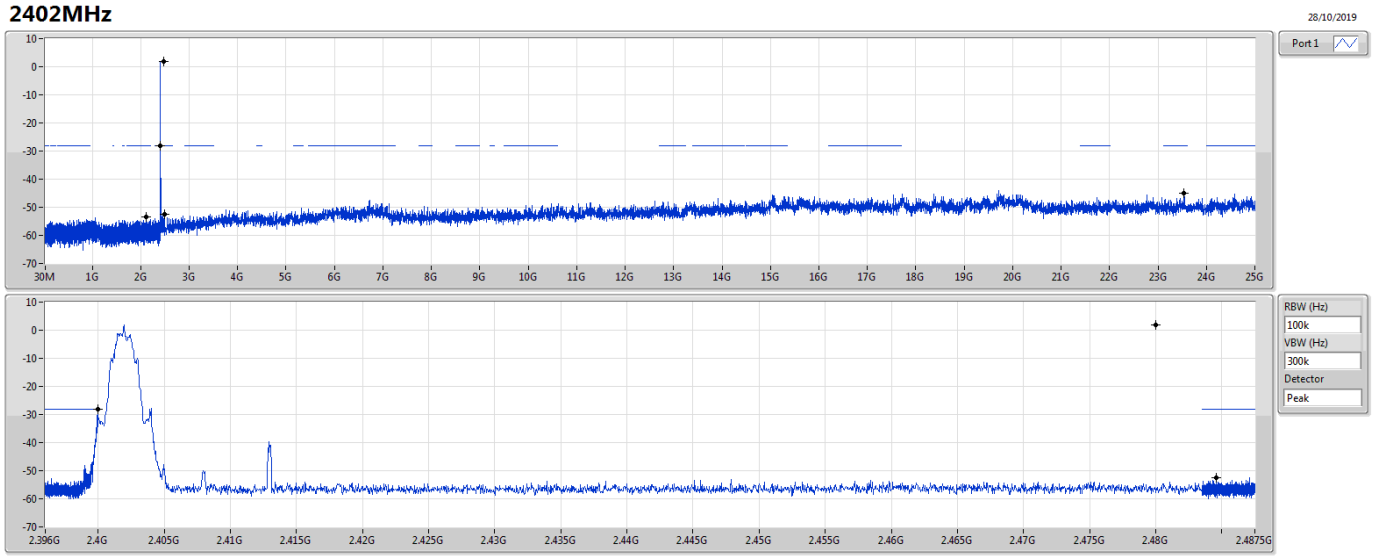
**2480MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.4397G | 1.19 | -28.81 | 2.06322G | -52.59 | 2.39826G | -53.09 | 2.48526G | -53.12 | 5.50526G | -34.55 | 1 |

**BT-LE(2Mbps)** **CSE NdB**

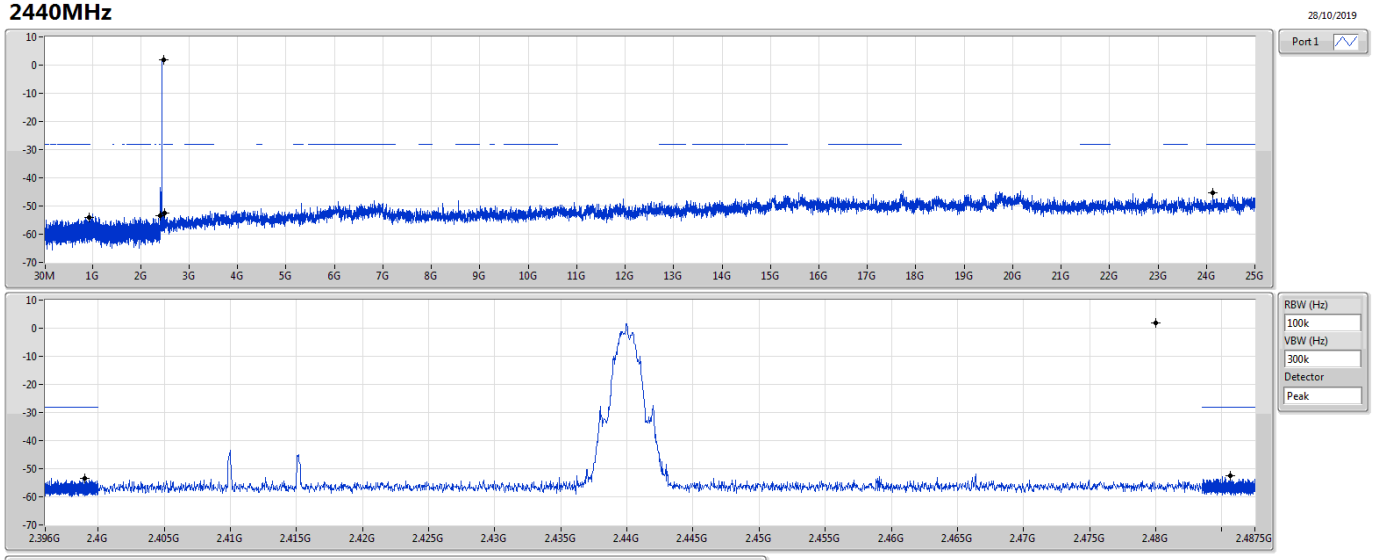
**2402MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.47999G | 1.95 | -28.05 | 2.11859G | -53.36 | 2.39998G | -28.09 | 2.48458G | -52.59 | 23.54232G | -44.97 | 1 |

**BT-LE(2Mbps)** **CSE NdB**

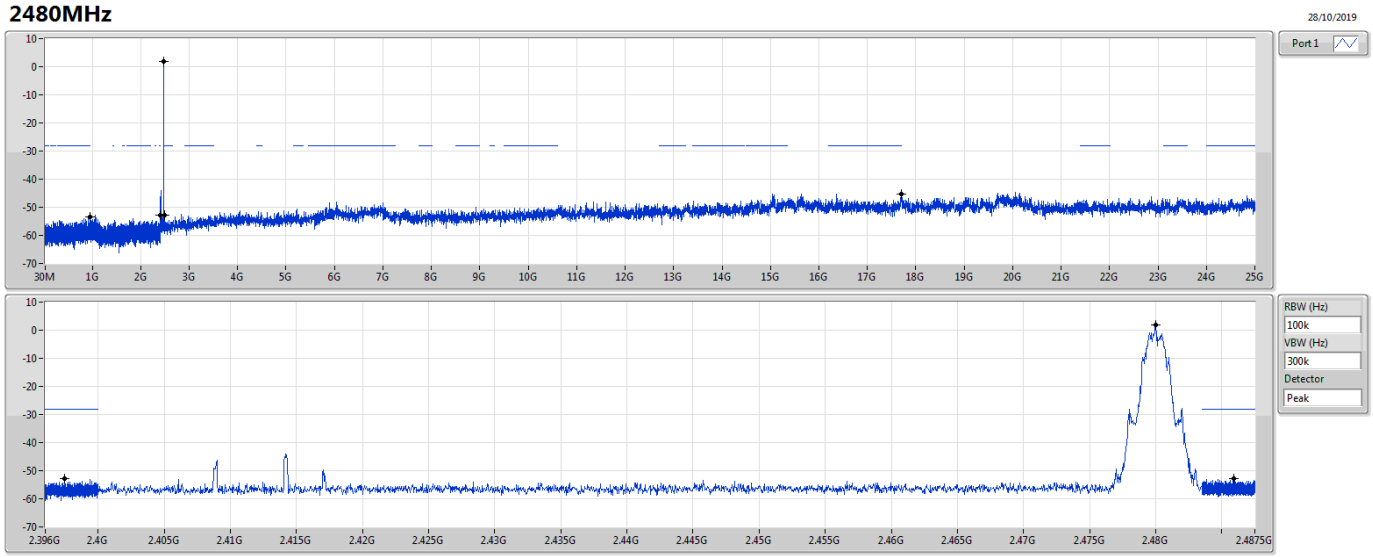
**2440MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.47999G | 1.95 | -28.05 | 940.32M | -53.99 | 2.39897G | -53.44 | 2.48567G | -52.61 | 24.13045G | -45.29 | 1 |

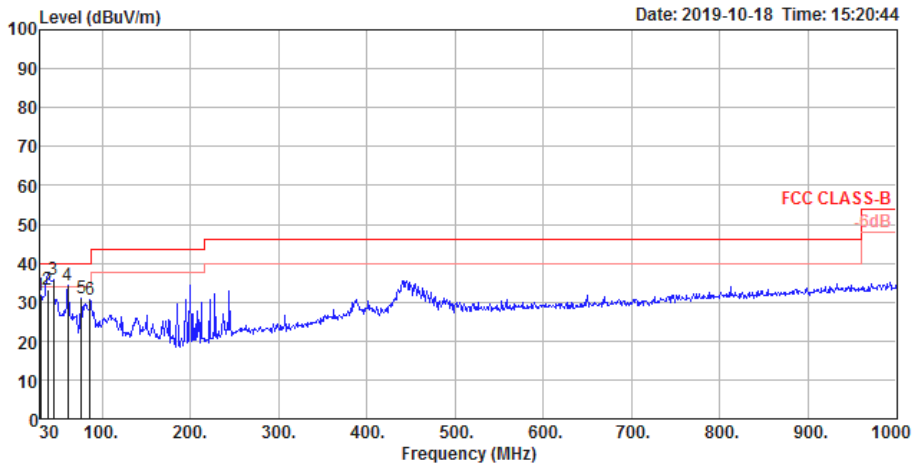
**BT-LE(2Mbps)** **CSE NdB**

**2480MHz**




| Ref(Hz) | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.47999G | 1.95 | -28.05 | 953.04M | -53.46 | 2.39749G | -52.75 | 2.48594G | -52.80 | 17.69469G | -45.17 | 1 |

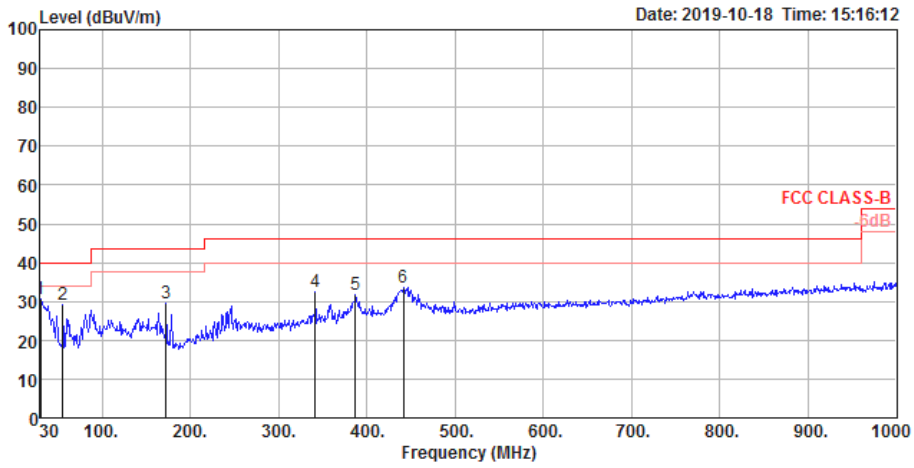
| RSE below 1GHz Result | | | |
|---|---|---|---|
| **Operating Mode** | 2 | **Polarization** | Vertical |
| **Operating Function** | CTX | | |




| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | A/Pos | T/Pos | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | cm | deg | | |
| 1 | 30.00 | 31.63 | 40.00 | -8.37 | 36.84 | 0.67 | 25.70 | 31.58 | 125 | 312 | Peak | VERTICAL |
| 2 | 38.73 | 33.10 | 40.00 | -6.90 | 43.28 | 0.81 | 20.51 | 31.50 | 100 | 124 | QP | VERTICAL |
| 3 | 44.55 | 35.77 | 40.00 | -4.23 | 49.22 | 0.89 | 17.25 | 31.59 | 125 | 265 | Peak | VERTICAL |
| 4 | 61.04 | 34.33 | 40.00 | -5.67 | 52.58 | 1.00 | 12.60 | 31.85 | 100 | 0 | Peak | VERTICAL |
| 5 | 76.56 | 31.06 | 40.00 | -8.94 | 48.73 | 1.14 | 13.06 | 31.87 | 125 | 260 | Peak | VERTICAL |
| 6 | 86.26 | 30.64 | 40.00 | -9.36 | 46.84 | 1.16 | 14.51 | 31.87 | 125 | 265 | Peak | VERTICAL |

Note 1: “>20dB” means emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found emissions (No emissions were detected.)

| RSE below 1GHz Result | | | |
|---|---|---|---|
| **Operating Mode** | 2 | **Polarization** | Horizontal |
| **Operating Function** | CTX | | |




| | Freq | Level | Limit Line | Over Limit | Read Level | Cable Loss | Antenna Factor | Preamp Factor | A/Pos | T/Pos | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | dB/m | dB | cm | deg | | |
| 1 | 30.00 | 30.80 | 40.00 | -9.20 | 36.01 | 0.67 | 25.70 | 31.58 | 125 | 306 | Peak | HORIZONTAL |
| 2 | 55.22 | 29.26 | 40.00 | -10.74 | 46.52 | 0.92 | 13.62 | 31.80 | 100 | 224 | Peak | HORIZONTAL |
| 3 | 172.59 | 29.34 | 43.50 | -14.16 | 43.71 | 1.68 | 15.88 | 31.93 | 100 | 323 | Peak | HORIZONTAL |
| 4 | 341.37 | 32.35 | 46.00 | -13.65 | 41.11 | 2.42 | 20.95 | 32.13 | 300 | 360 | Peak | HORIZONTAL |
| 5 | 386.96 | 31.66 | 46.00 | -14.34 | 39.15 | 2.53 | 22.16 | 32.18 | 100 | 204 | Peak | HORIZONTAL |
| 6 | 441.28 | 33.58 | 46.00 | -12.42 | 40.18 | 2.75 | 22.92 | 32.27 | 200 | 306 | Peak | HORIZONTAL |

Note 1: “>20dB” means emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found emissions (No emissions were detected.)

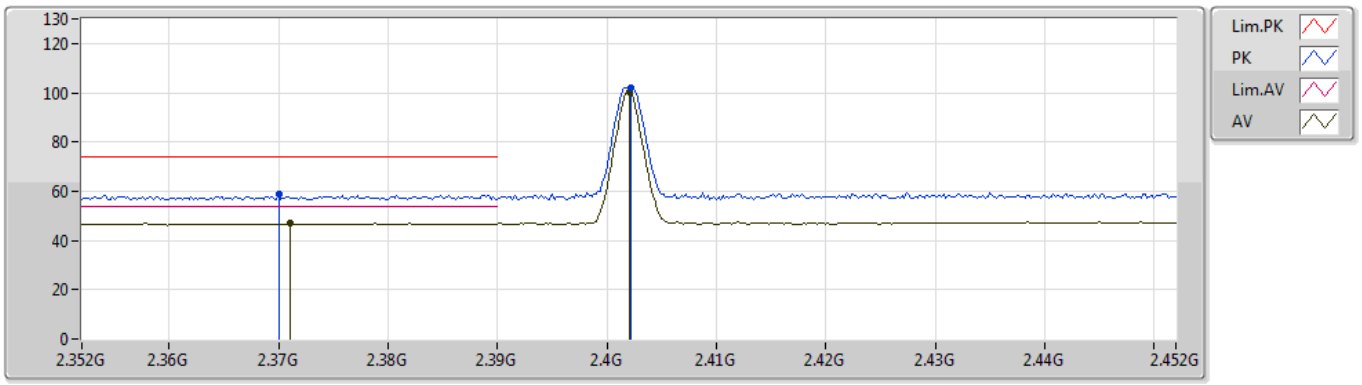
## Summary

| Mode | Result | Type | Freq (Hz) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Factor (dB) | Dist (m) | Condition | Azimuth (°) | Height (m) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.4-2.4835GHz | - | - | - | - | - | - | - | - | - | - | - | - |
| BT-LE(2Mbps) | Pass | AV | 2.4835G | 49.15 | 54.00 | -4.85 | 31.39 | 3 | Vertical | 3 | 1.08 | - |

## BT-LE(1Mbps)

## 2402MHz_TX

18/10/2019



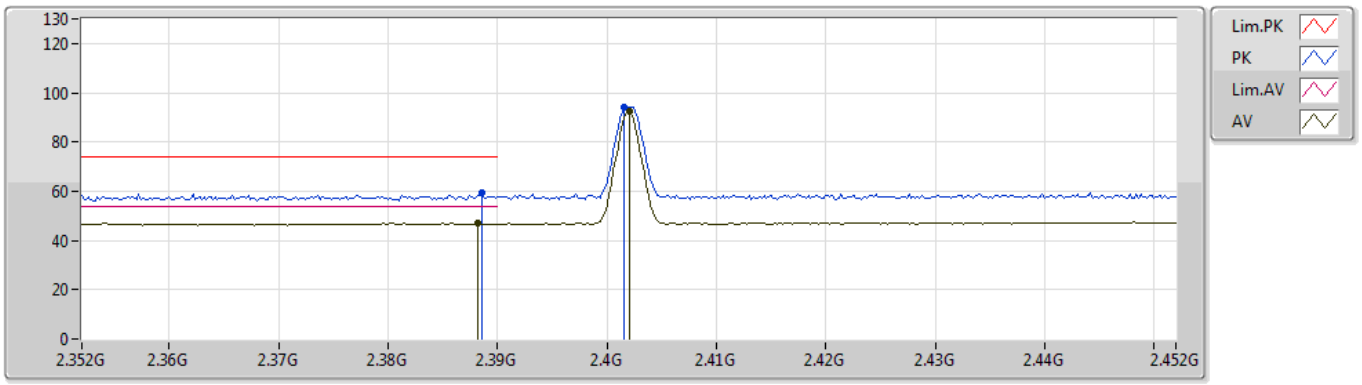

EUT Y_1TX
Setting Default
02-W-3
FSU(100015)

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) |
| PK | 2.37G | 58.69 | 74.00 | -15.31 | 31.16 | 3 | Vertical | 49 | 1.28 | - | 27.53 |
| AV | 2.371G | 46.91 | 54.00 | -7.09 | 31.16 | 3 | Vertical | 49 | 1.28 | - | 15.75 |
| PK | 2.4022G | 102.18 | Inf | -Inf | 31.23 | 3 | Vertical | 49 | 1.28 | - | 70.95 |
| AV | 2.402G | 100.56 | Inf | -Inf | 31.23 | 3 | Vertical | 49 | 1.28 | - | 69.33 |

## BT-LE(1Mbps)

## 2402MHz_TX

18/10/2019



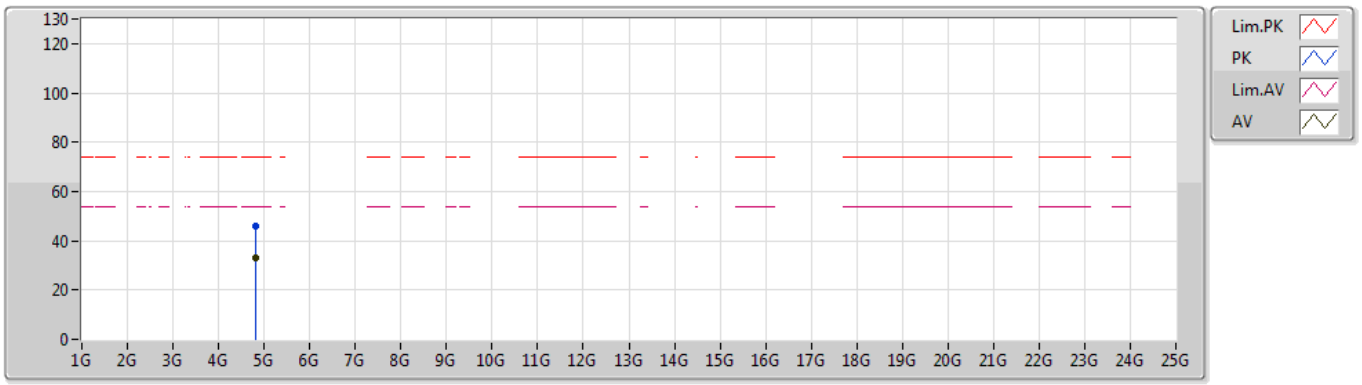

EUT Y_1TX
Setting Default
02-W-3
FSU(100015)

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) |
| PK | 2.3886G | 59.39 | 74.00 | -14.61 | 31.20 | 3 | Horizontal | 54 | 3.00 | - | 28.19 |
| AV | 2.3882G | 47.00 | 54.00 | -7.00 | 31.20 | 3 | Horizontal | 54 | 3.00 | - | 15.80 |
| PK | 2.4016G | 94.03 | Inf | -Inf | 31.23 | 3 | Horizontal | 54 | 3.00 | - | 62.80 |
| AV | 2.402G | 92.35 | Inf | -Inf | 31.23 | 3 | Horizontal | 54 | 3.00 | - | 61.12 |

## BT-LE(1Mbps)

## 2402MHz_TX

18/10/2019



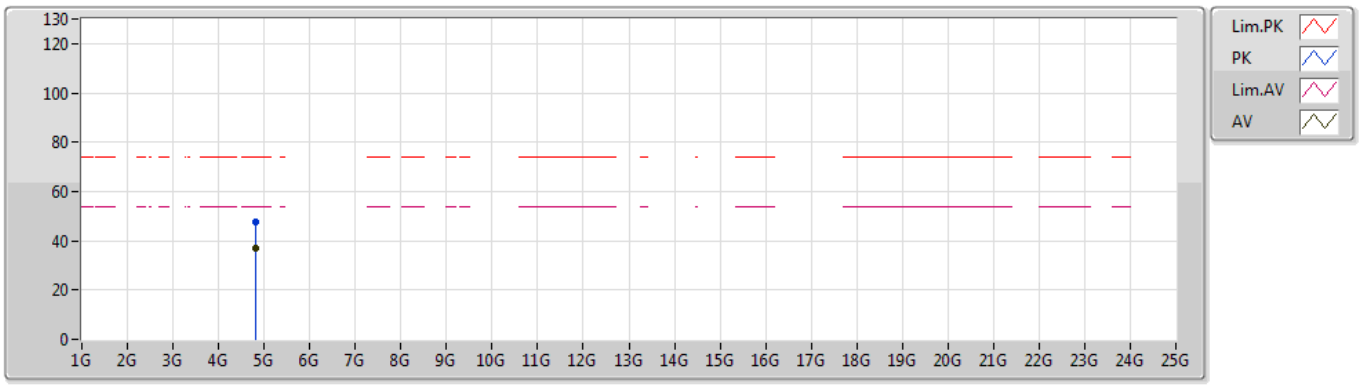

EUT Y_1TX
Setting Default
02-W-3
FSU(100015)

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) |
| PK | 4.8033G | 45.76 | 74.00 | -28.24 | 7.12 | 3 | Vertical | 52 | 1.52 | - | 38.64 |
| AV | 4.80453G | 33.34 | 54.00 | -20.66 | 7.12 | 3 | Vertical | 52 | 1.52 | - | 26.22 |

## BT-LE(1Mbps)

## 2402MHz_TX

18/10/2019



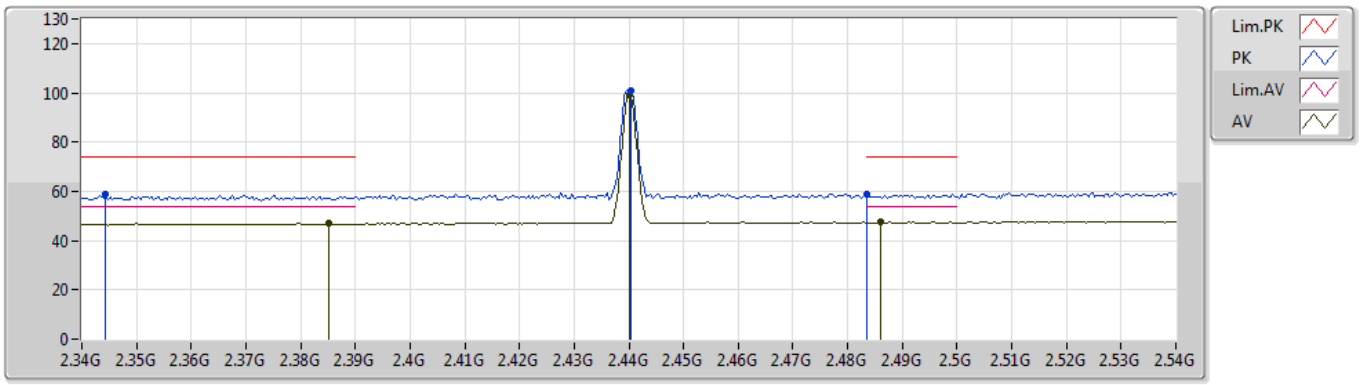

EUT Y_1TX
Setting Default
02-W-3
FSU(100015)

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) |
| PK | 4.80457G | 47.81 | 74.00 | -26.19 | 7.12 | 3 | Horizontal | 342 | 1.64 | - | 40.69 |
| AV | 4.80357G | 37.13 | 54.00 | -16.87 | 7.12 | 3 | Horizontal | 342 | 1.64 | - | 30.01 |

## BT-LE(1Mbps)

## 2440MHz_TX

18/10/2019



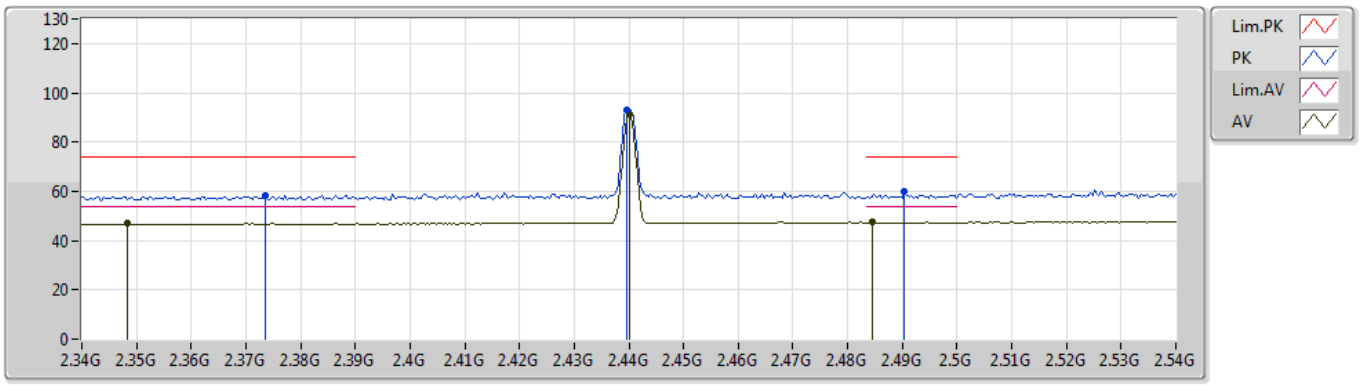

EUT Y_1TX
Setting Default
02-W-3
FSU(100015)

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) |
| PK | 2.3444G | 58.87 | 74.00 | -15.13 | 31.09 | 3 | Vertical | 38 | 1.13 | - | 27.78 |
| AV | 2.3852G | 46.92 | 54.00 | -7.08 | 31.19 | 3 | Vertical | 38 | 1.13 | - | 15.73 |
| PK | 2.4404G | 101.08 | Inf | -Inf | 31.31 | 3 | Vertical | 38 | 1.13 | - | 69.77 |
| AV | 2.44G | 99.44 | Inf | -Inf | 31.31 | 3 | Vertical | 38 | 1.13 | - | 68.13 |
| PK | 2.4835G | 58.69 | 74.00 | -15.31 | 31.39 | 3 | Vertical | 38 | 1.13 | - | 27.30 |
| AV | 2.486G | 47.63 | 54.00 | -6.37 | 31.40 | 3 | Vertical | 38 | 1.13 | - | 16.23 |

## BT-LE(1Mbps)

## 2440MHz_TX

18/10/2019



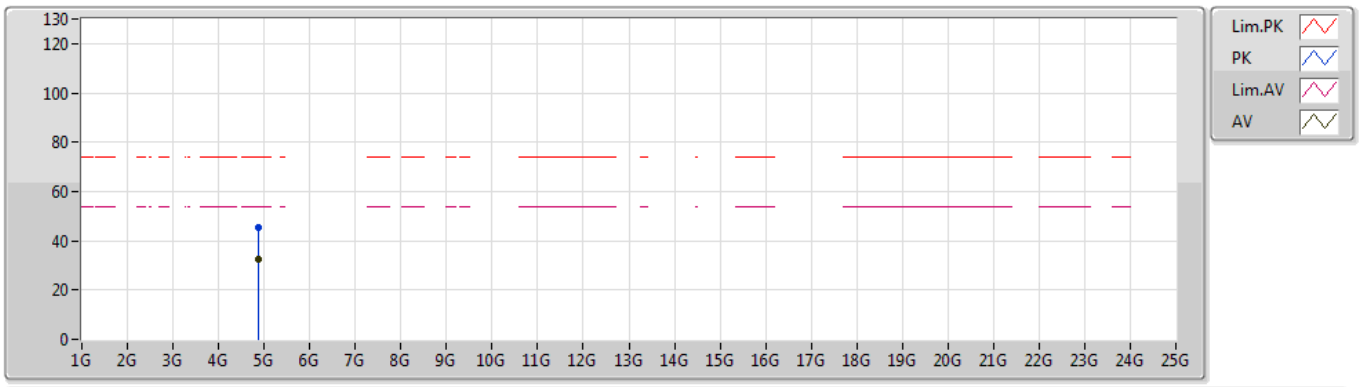

EUT Y_1TX
Setting Default
02-W-3
FSU(100015)

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) |
| PK | 2.3736G | 58.22 | 74.00 | -15.78 | 31.16 | 3 | Horizontal | 30 | 2.97 | - | 27.06 |
| AV | 2.3484G | 46.92 | 54.00 | -7.08 | 31.10 | 3 | Horizontal | 30 | 2.97 | - | 15.82 |
| PK | 2.4396G | 92.88 | Inf | -Inf | 31.31 | 3 | Horizontal | 30 | 2.97 | - | 61.57 |
| AV | 2.44G | 91.16 | Inf | -Inf | 31.31 | 3 | Horizontal | 30 | 2.97 | - | 59.85 |
| PK | 2.4904G | 59.72 | 74.00 | -14.28 | 31.41 | 3 | Horizontal | 30 | 2.97 | - | 28.31 |
| AV | 2.4844G | 47.43 | 54.00 | -6.57 | 31.40 | 3 | Horizontal | 30 | 2.97 | - | 16.03 |

## BT-LE(1Mbps)

## 2440MHz_TX

18/10/2019



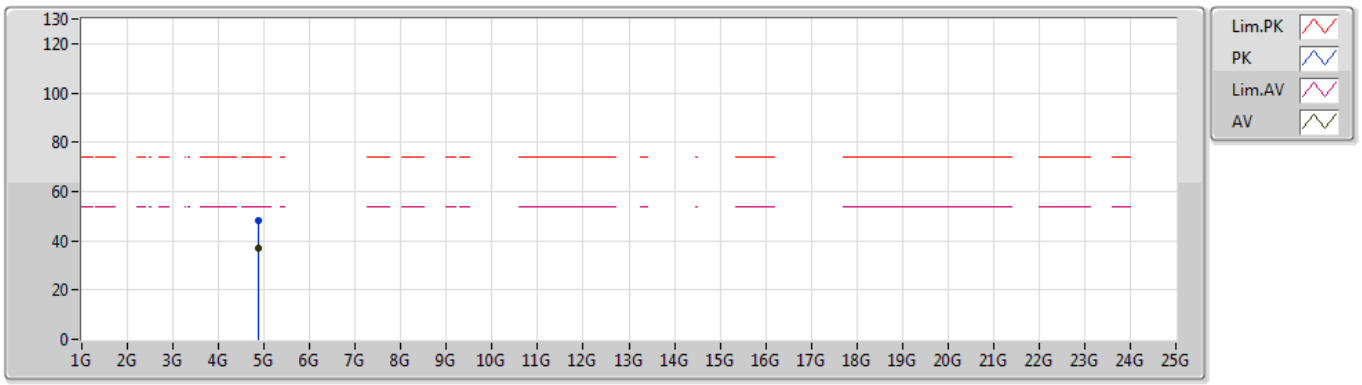

EUT Y_1TX
Setting Default
02-W-3
FSU(100015)

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) |
| PK | 4.88047G | 45.58 | 74.00 | -28.42 | 7.30 | 3 | Vertical | 72 | 1.00 | - | 38.28 |
| AV | 4.87894G | 32.66 | 54.00 | -21.34 | 7.30 | 3 | Vertical | 72 | 1.00 | - | 25.36 |

## BT-LE(1Mbps)

## 2440MHz_TX

18/10/2019



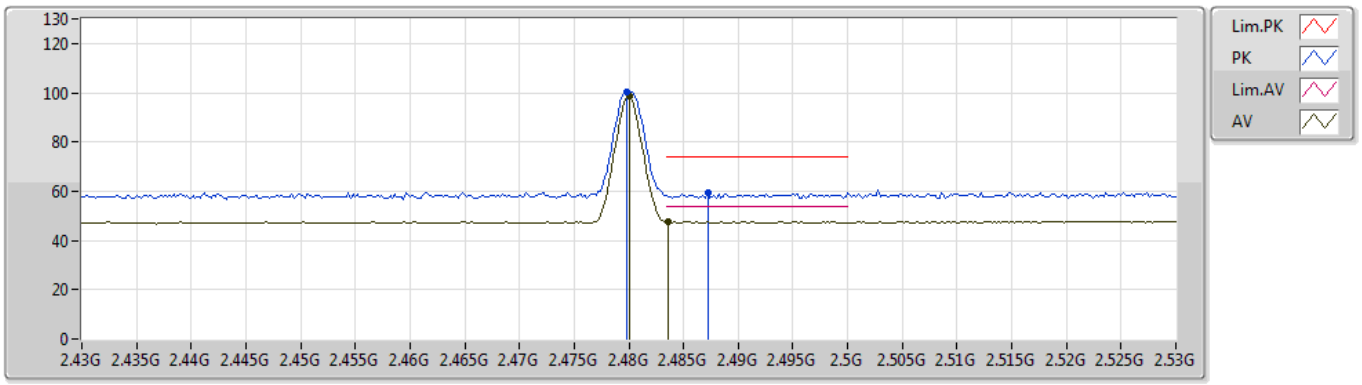

EUT Y_1TX
Setting Default
02-W-3
FSU(100015)

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) |
| PK | 4.88021G | 48.20 | 74.00 | -25.80 | 7.30 | 3 | Horizontal | 4 | 1.58 | - | 40.90 |
| AV | 4.87956G | 37.05 | 54.00 | -16.95 | 7.30 | 3 | Horizontal | 4 | 1.58 | - | 29.75 |

## BT-LE(1Mbps)

## 2480MHz_TX

18/10/2019



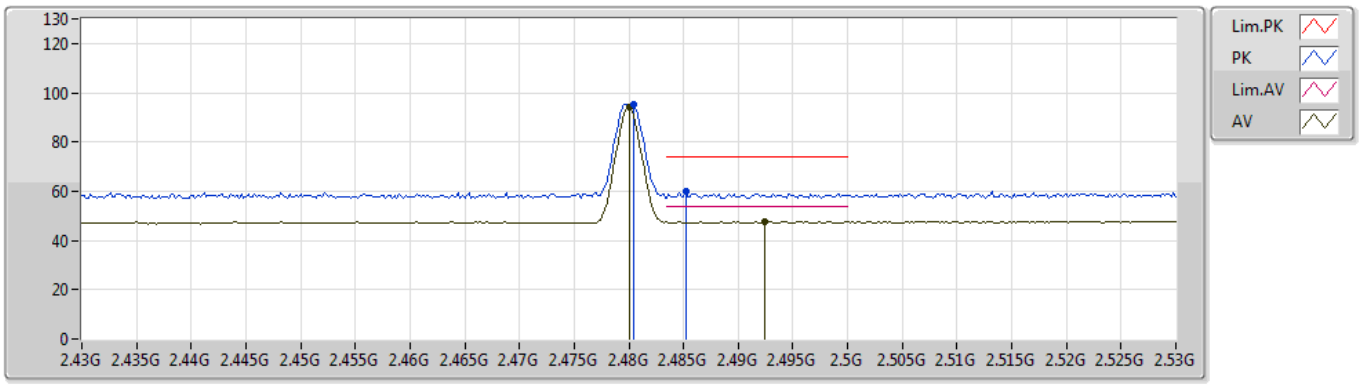

EUT Y_1TX
Setting Default
02-W-3
FSU(100015)

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) |
| PK | 2.4798G | 100.05 | Inf | -Inf | 31.39 | 3 | Vertical | 49 | 1.24 | - | 68.66 |
| AV | 2.48G | 98.39 | Inf | -Inf | 31.39 | 3 | Vertical | 49 | 1.24 | - | 67.00 |
| PK | 2.4872G | 59.26 | 74.00 | -14.74 | 31.40 | 3 | Vertical | 49 | 1.24 | - | 27.86 |
| AV | 2.4836G | 47.77 | 54.00 | -6.23 | 31.39 | 3 | Vertical | 49 | 1.24 | - | 16.38 |

## BT-LE(1Mbps)

## 2480MHz_TX

18/10/2019



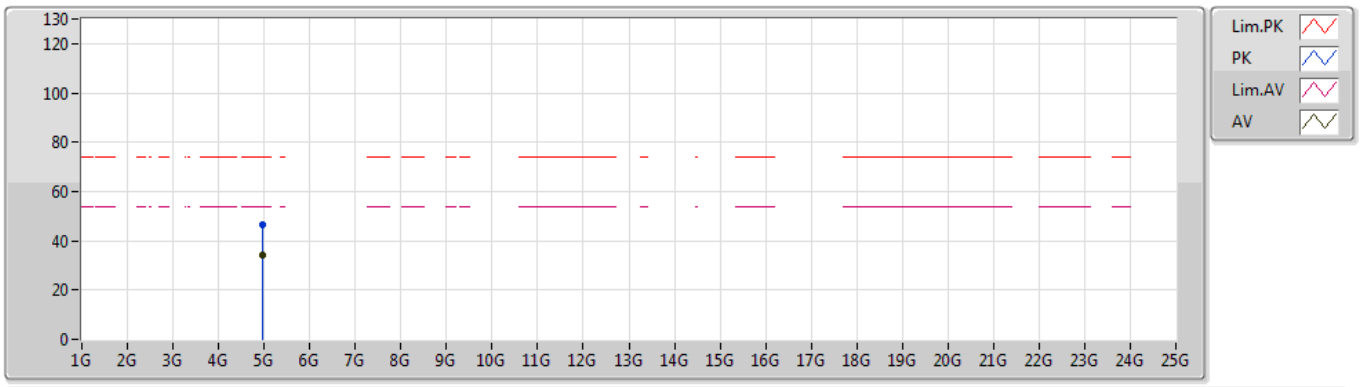

EUT Y_1TX
Setting Default
02-W-3
FSU(100015)

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) |
| PK | 2.4804G | 95.49 | Inf | -Inf | 31.39 | 3 | Horizontal | 57 | 2.07 | - | 64.10 |
| AV | 2.48G | 93.86 | Inf | -Inf | 31.39 | 3 | Horizontal | 57 | 2.07 | - | 62.47 |
| PK | 2.4852G | 59.80 | 74.00 | -14.20 | 31.40 | 3 | Horizontal | 57 | 2.07 | - | 28.40 |
| AV | 2.4924G | 47.70 | 54.00 | -6.30 | 31.42 | 3 | Horizontal | 57 | 2.07 | - | 16.28 |

## BT-LE(1Mbps)

## 2480MHz_TX

18/10/2019



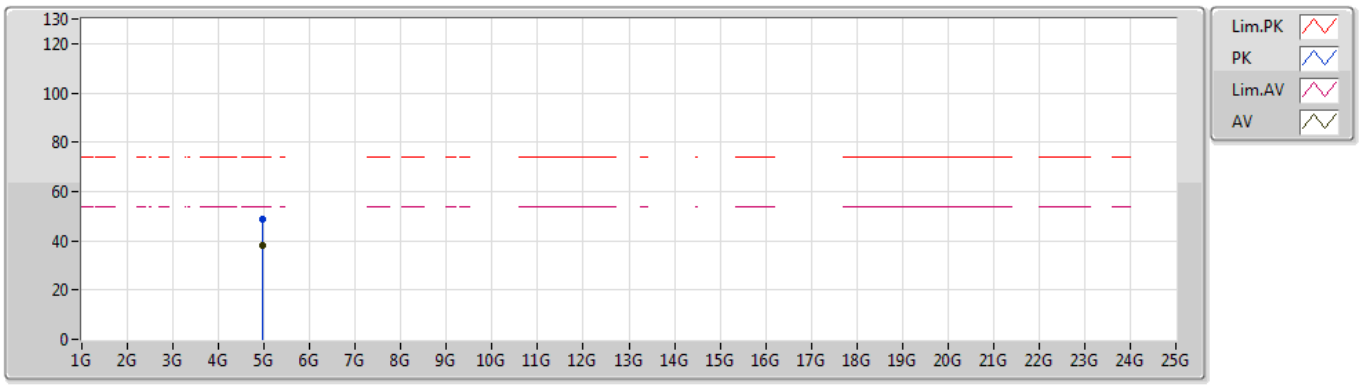

EUT Y_1TX
Setting Default
02-W-3
FSU(100015)

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) |
| PK | 4.96047G | 46.40 | 74.00 | -27.60 | 7.48 | 3 | Vertical | 329 | 2.65 | - | 38.92 |
| AV | 4.9604G | 33.95 | 54.00 | -20.05 | 7.48 | 3 | Vertical | 329 | 2.65 | - | 26.47 |

## BT-LE(1Mbps)

## 2480MHz_TX

18/10/2019



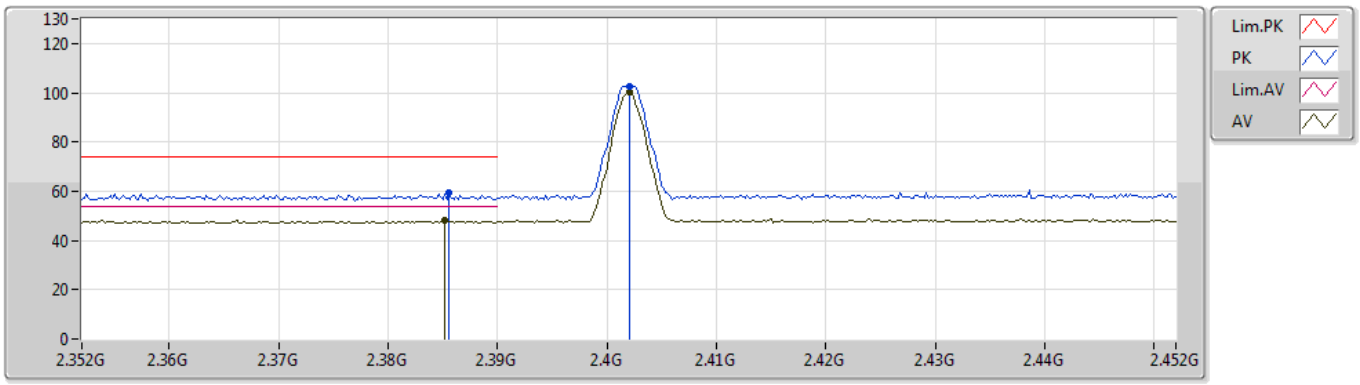

EUT Y_1TX
Setting Default
02-W-3
FSU(100015)

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) |
| PK | 4.95945G | 48.79 | 74.00 | -25.21 | 7.48 | 3 | Horizontal | 6 | 1.95 | - | 41.31 |
| AV | 4.95958G | 38.08 | 54.00 | -15.92 | 7.48 | 3 | Horizontal | 6 | 1.95 | - | 30.60 |

## BT-LE(2Mbps)

## 2402MHz_TX

18/10/2019



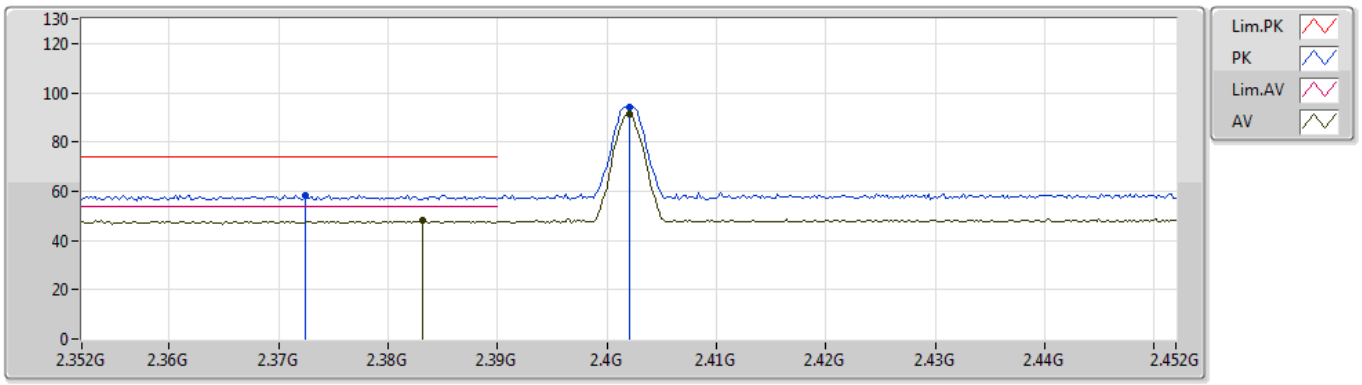

EUT Y_1TX
Setting Default
02-B-2
FSU(100015)

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) |
| PK | 2.3856G | 59.18 | 74.00 | -14.82 | 31.19 | 3 | Vertical | 36 | 1.24 | - | 27.99 |
| AV | 2.3852G | 47.98 | 54.00 | -6.02 | 31.19 | 3 | Vertical | 36 | 1.24 | - | 16.79 |
| PK | 2.402G | 102.66 | Inf | -Inf | 31.23 | 3 | Vertical | 36 | 1.24 | - | 71.43 |
| AV | 2.402G | 100.14 | Inf | -Inf | 31.23 | 3 | Vertical | 36 | 1.24 | - | 68.91 |

## BT-LE(2Mbps)

## 2402MHz_TX

18/10/2019



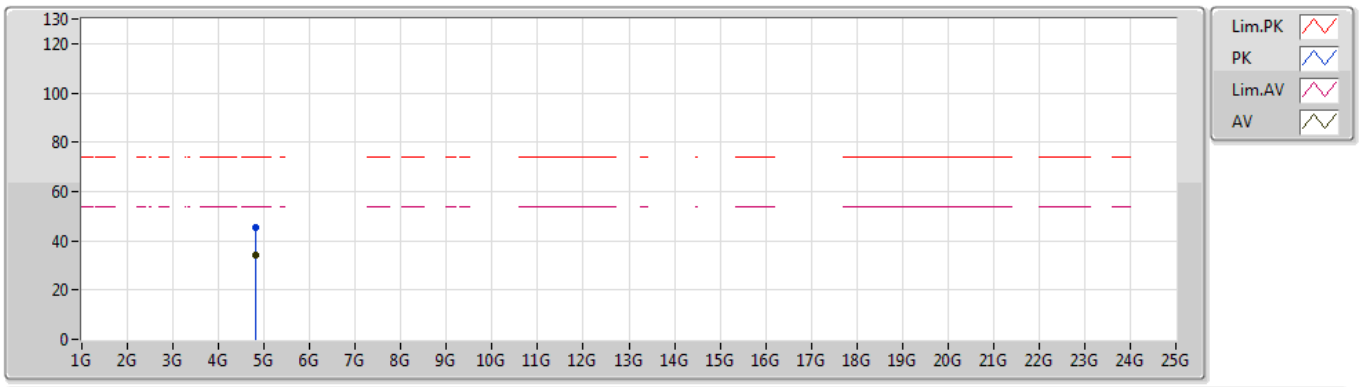

EUT Y_1TX
Setting Default
02-B-2
FSU(100015)

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) |
| PK | 2.3724G | 58.42 | 74.00 | -15.58 | 31.16 | 3 | Horizontal | 37 | 3.00 | - | 27.26 |
| AV | 2.3832G | 48.11 | 54.00 | -5.89 | 31.19 | 3 | Horizontal | 37 | 3.00 | - | 16.92 |
| PK | 2.402G | 93.98 | Inf | -Inf | 31.23 | 3 | Horizontal | 37 | 3.00 | - | 62.75 |
| AV | 2.402G | 91.49 | Inf | -Inf | 31.23 | 3 | Horizontal | 37 | 3.00 | - | 60.26 |

## BT-LE(2Mbps)

## 2402MHz_TX

18/10/2019



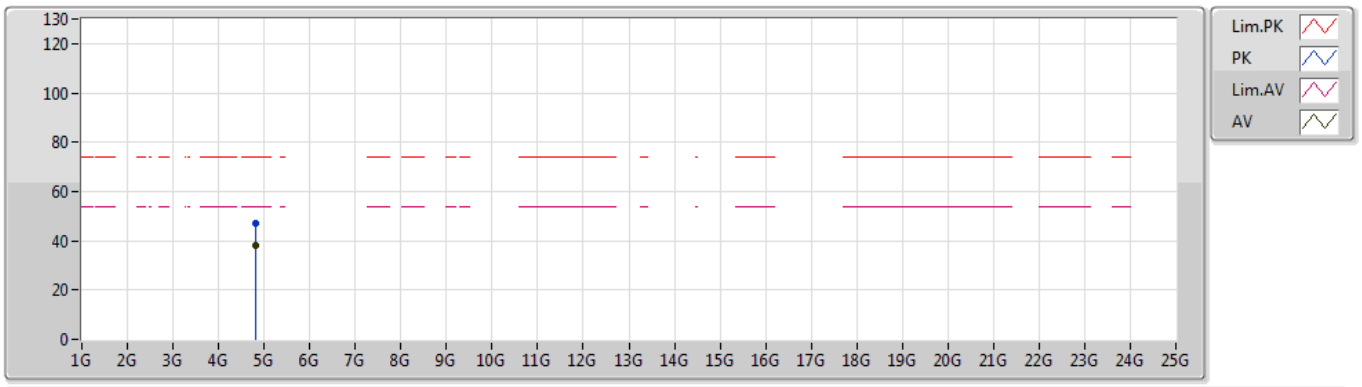

EUT Y_1TX
Setting Default
02-B-2
FSU(100015)

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) |
| PK | 4.80379G | 45.17 | 74.00 | -28.83 | 7.12 | 3 | Vertical | 260 | 1.55 | - | 38.05 |
| AV | 4.80499G | 34.27 | 54.00 | -19.73 | 7.12 | 3 | Vertical | 260 | 1.55 | - | 27.15 |

## BT-LE(2Mbps)

## 2402MHz_TX

18/10/2019



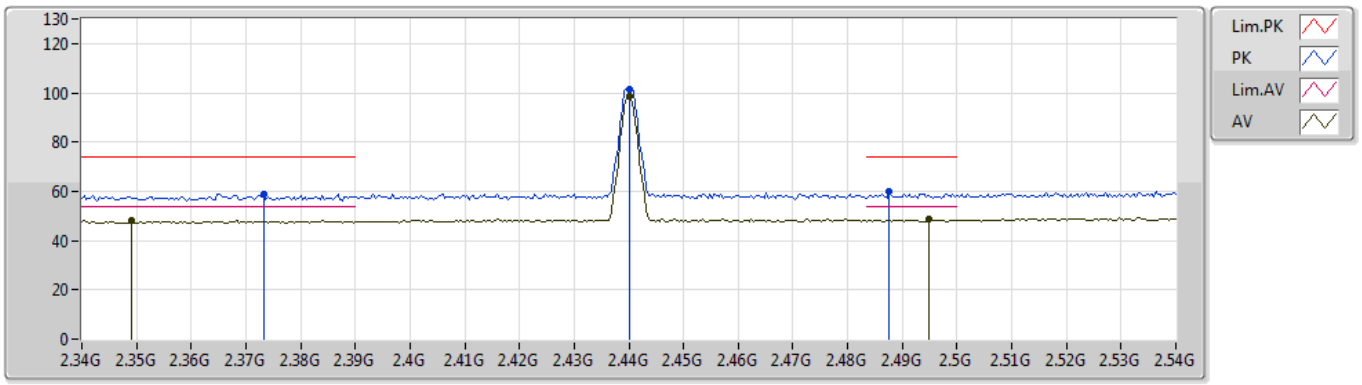

EUT Y_1TX
Setting Default
02-B-2
FSU(100015)

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) |
| PK | 4.80485G | 47.15 | 74.00 | -26.85 | 7.12 | 3 | Horizontal | 262 | 2.01 | - | 40.03 |
| AV | 4.80298G | 38.20 | 54.00 | -15.80 | 7.12 | 3 | Horizontal | 262 | 2.01 | - | 31.08 |

## BT-LE(2Mbps)

## 2440MHz_TX

18/10/2019



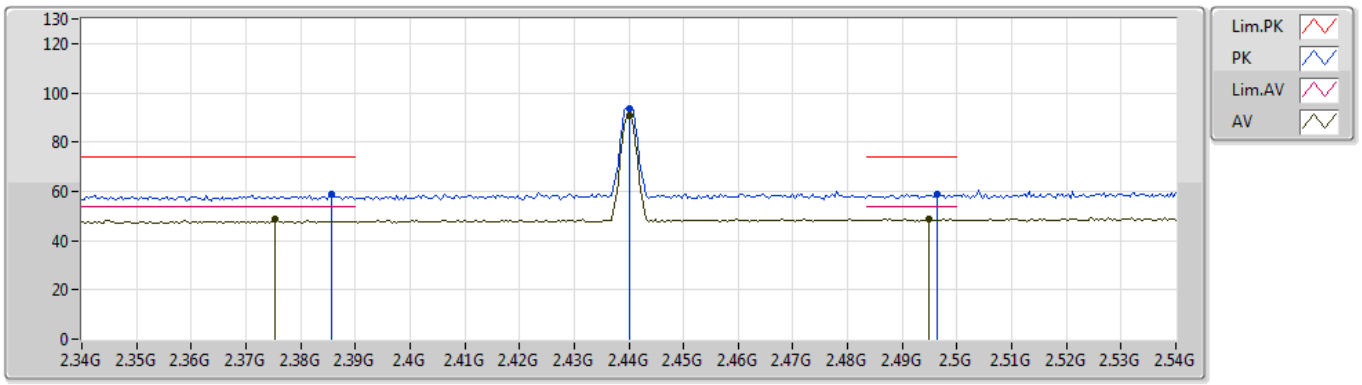

EUT Y_1TX
Setting Default
02-B-2
FSU(100015)

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) |
| PK | 2.3732G | 58.87 | 74.00 | -15.13 | 31.16 | 3 | Vertical | 8 | 1.19 | - | 27.71 |
| AV | 2.3492G | 48.28 | 54.00 | -5.72 | 31.10 | 3 | Vertical | 8 | 1.19 | - | 17.18 |
| PK | 2.44G | 101.49 | Inf | -Inf | 31.31 | 3 | Vertical | 8 | 1.19 | - | 70.18 |
| AV | 2.44G | 98.82 | Inf | -Inf | 31.31 | 3 | Vertical | 8 | 1.19 | - | 67.51 |
| PK | 2.4876G | 59.78 | 74.00 | -14.22 | 31.41 | 3 | Vertical | 8 | 1.19 | - | 28.37 |
| AV | 2.4948G | 48.52 | 54.00 | -5.48 | 31.42 | 3 | Vertical | 8 | 1.19 | - | 17.10 |

## BT-LE(2Mbps)

## 2440MHz_TX

18/10/2019



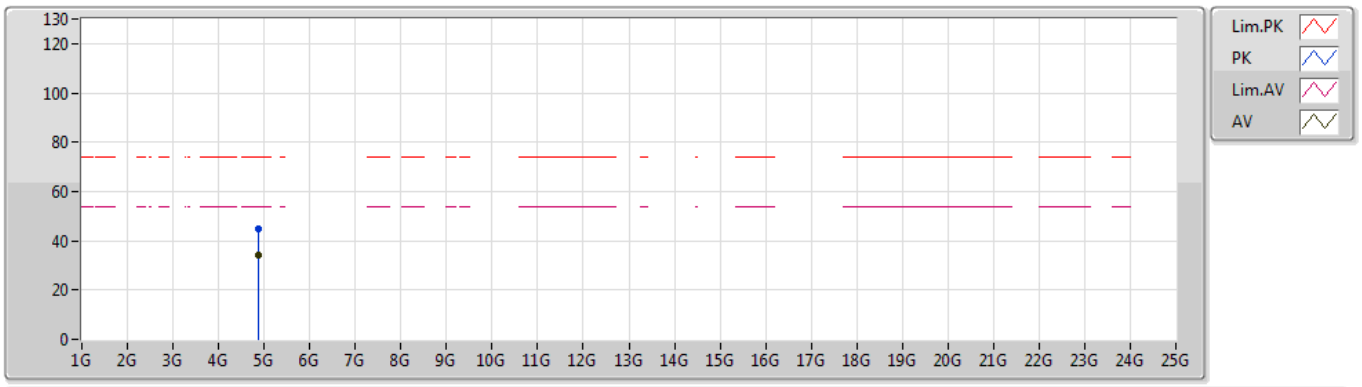

EUT Y_1TX
Setting Default
02-B-2
FSU(100015)

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) |
| PK | 2.3856G | 58.60 | 74.00 | -15.40 | 31.19 | 3 | Horizontal | 27 | 2.67 | - | 27.41 |
| AV | 2.3752G | 48.53 | 54.00 | -5.47 | 31.17 | 3 | Horizontal | 27 | 2.67 | - | 17.36 |
| PK | 2.44G | 93.72 | Inf | -Inf | 31.31 | 3 | Horizontal | 27 | 2.67 | - | 62.41 |
| AV | 2.44G | 91.03 | Inf | -Inf | 31.31 | 3 | Horizontal | 27 | 2.67 | - | 59.72 |
| PK | 2.4964G | 59.04 | 74.00 | -14.96 | 31.42 | 3 | Horizontal | 27 | 2.67 | - | 27.62 |
| AV | 2.4948G | 48.69 | 54.00 | -5.31 | 31.42 | 3 | Horizontal | 27 | 2.67 | - | 17.27 |

## BT-LE(2Mbps)

## 2440MHz_TX

18/10/2019



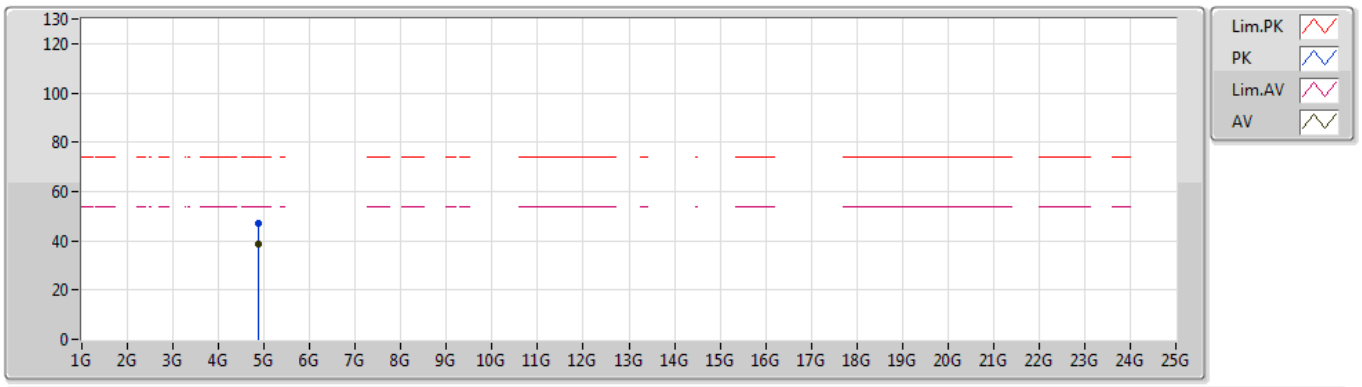

EUT Y_1TX
Setting Default
02-B-2
FSU(100015)

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) |
| PK | 4.86578G | 44.78 | 74.00 | -29.22 | 7.26 | 3 | Vertical | 113 | 2.57 | - | 37.52 |
| AV | 4.86524G | 34.06 | 54.00 | -19.94 | 7.26 | 3 | Vertical | 113 | 2.57 | - | 26.80 |

## BT-LE(2Mbps)

## 2440MHz_TX

18/10/2019



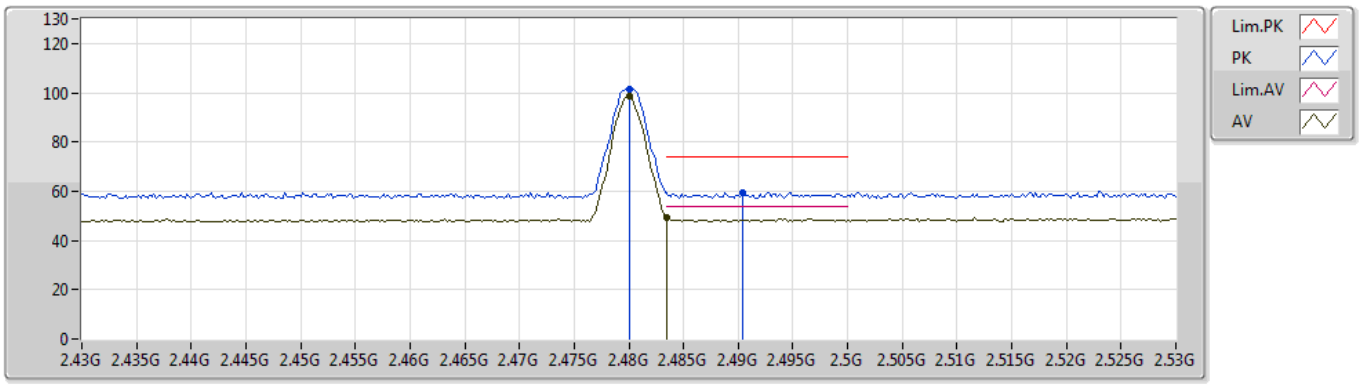

EUT Y_1TX
Setting Default
02-B-2
FSU(100015)

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) |
| PK | 4.88068G | 47.25 | 74.00 | -26.75 | 7.30 | 3 | Horizontal | 269 | 1.69 | - | 39.95 |
| AV | 4.87894G | 38.53 | 54.00 | -15.47 | 7.30 | 3 | Horizontal | 269 | 1.69 | - | 31.23 |

## BT-LE(2Mbps)

## 2480MHz_TX

18/10/2019



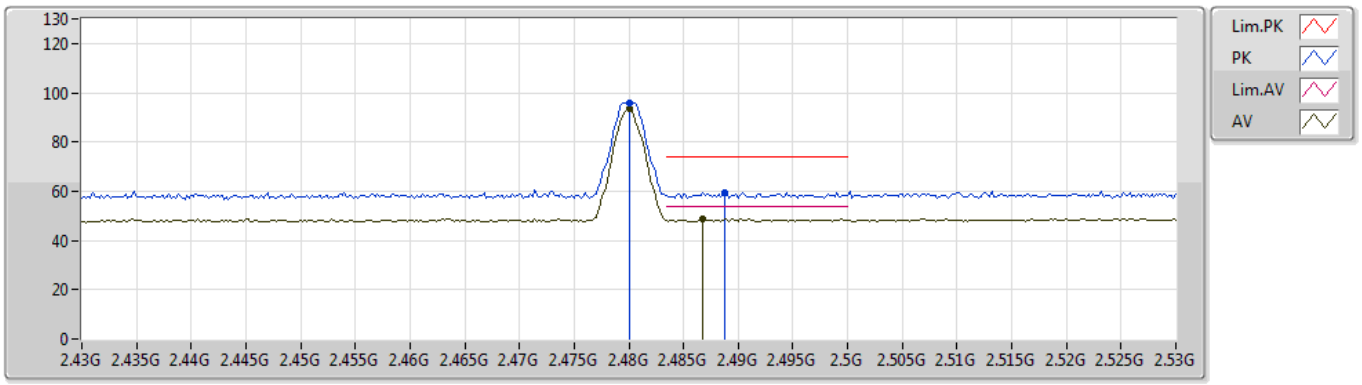

EUT Y_1TX
Setting Default
02-B-2
FSU(100015)

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) |
| PK | 2.48G | 101.35 | Inf | -Inf | 31.39 | 3 | Vertical | 3 | 1.08 | - | 69.96 |
| AV | 2.48G | 98.69 | Inf | -Inf | 31.39 | 3 | Vertical | 3 | 1.08 | - | 67.30 |
| PK | 2.4904G | 59.49 | 74.00 | -14.51 | 31.41 | 3 | Vertical | 3 | 1.08 | - | 28.08 |
| AV | 2.4835G | 49.15 | 54.00 | -4.85 | 31.39 | 3 | Vertical | 3 | 1.08 | - | 17.76 |

## BT-LE(2Mbps)

## 2480MHz_TX

18/10/2019



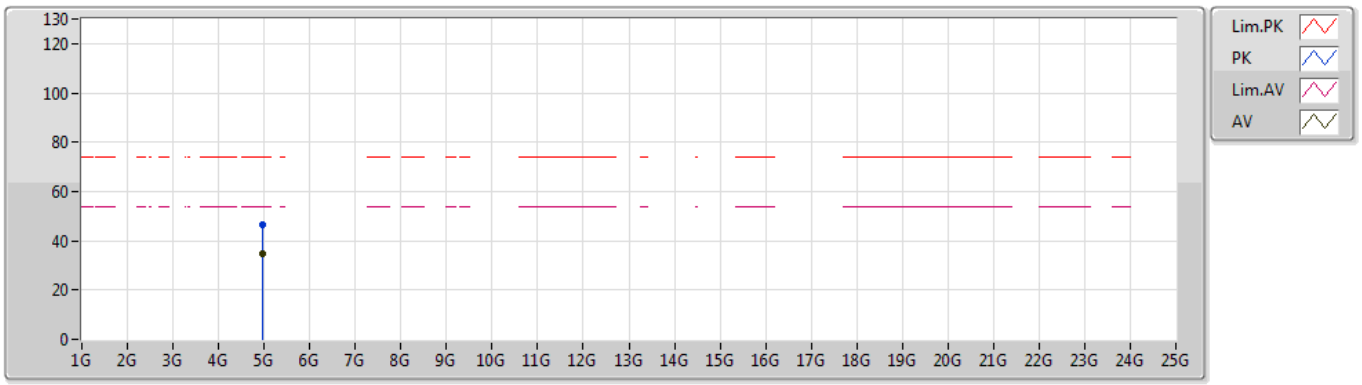

EUT Y_1TX
Setting Default
02-B-2
FSU(100015)

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) |
| PK | 2.48G | 95.93 | Inf | -Inf | 31.39 | 3 | Horizontal | 8 | 2.05 | - | 64.54 |
| AV | 2.48G | 93.30 | Inf | -Inf | 31.39 | 3 | Horizontal | 8 | 2.05 | - | 61.91 |
| PK | 2.4888G | 59.41 | 74.00 | -14.59 | 31.41 | 3 | Horizontal | 8 | 2.05 | - | 28.00 |
| AV | 2.4868G | 48.63 | 54.00 | -5.37 | 31.40 | 3 | Horizontal | 8 | 2.05 | - | 17.23 |

## BT-LE(2Mbps)

## 2480MHz_TX

18/10/2019



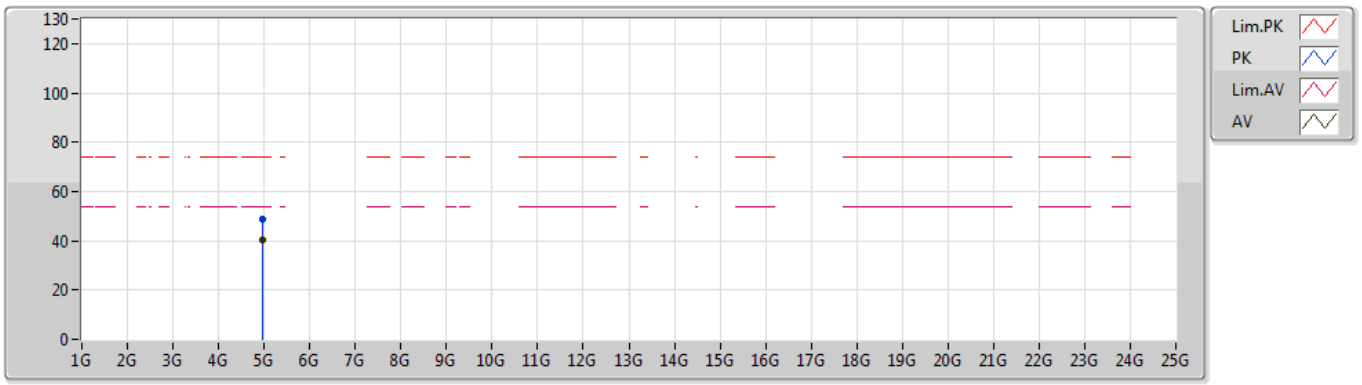

EUT Y_1TX
Setting Default
02-B-2
FSU(100015)

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) |
| PK | 4.96046G | 46.72 | 74.00 | -27.28 | 7.48 | 3 | Vertical | 58 | 1.36 | - | 39.24 |
| AV | 4.95938G | 34.69 | 54.00 | -19.31 | 7.48 | 3 | Vertical | 58 | 1.36 | - | 27.21 |

## BT-LE(2Mbps)

## 2480MHz_TX

18/10/2019




EUT Y_1TX
Setting Default
02-B-2
FSU(100015)

| Type | Freq | Level | Limit | Margin | Factor | Dist | Condition | Azimuth | Height | Comment | Raw |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Hz) | (dBuV/m) | (dBuV/m) | (dB) | (dB) | (m) | | (°) | (m) | | (dBuV) |
| PK | 4.95989G | 48.64 | 74.00 | -25.36 | 7.48 | 3 | Horizontal | 313 | 2.04 | - | 41.16 |
| AV | 4.95901G | 40.14 | 54.00 | -13.86 | 7.48 | 3 | Horizontal | 313 | 2.04 | - | 32.66 |