



# FCC RADIO TEST REPORT

**FCC ID** : W59MN10  
**Equipment** : Epic Mesh Node  
**Brand Name** : Luxul  
**Model Name** : MN-10  
**Applicant** : Luxul Wireless  
12884 S Frontrunner Blvd Suite 201 Draper Utah  
United States 84020  
**Standard** : 47 CFR FCC Part 15.247

The product was received on Dec. 25, 2019, and testing was started from Dec. 25, 2019 and completed on Jan. 20, 2020. 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 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: Cliff Chang

**SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory**

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



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TEL : 886-3-656-9065  
FAX : 886-3-656-9085  
Report Template No.: CB-A10\_5 Ver1.0



## 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)       | 20dB Bandwidth                                      | PASS               | -      |
| 3.2           | 15.247(a)       | Carrier Frequency Separation                        | PASS               | -      |
| 3.3           | 15.247(b)       | Maximum Conducted Output Power                      | PASS               | -      |
| 3.4           | 15.247(a)       | Number of Hopping Frequencies and Hopping Band edge | PASS               | -      |
| 3.5           | 15.247(a)       | Time of Occupancy (Dwell Time)                      | PASS               | -      |
| 3.6           | 15.247(d)       | Emissions in Non-restricted Frequency Bands         | PASS               | -      |
| 3.7           | 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:**

1. The test configuration, test mode and test software were written in this test report are declared by the manufacturer.
2. 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: Sandy Chuang**

# 1 General Description

## 1.1 Information

### 1.1.1 RF General Information

| Frequency Range (MHz) | Bluetooth Version | Ch. Frequency (MHz) | Channel Number |
|-----------------------|-------------------|---------------------|----------------|
| 2400-2483.5           | BR / EDR          | 2402-2480           | 0-78 [79]      |

| Band          | Mode          | BWch (MHz) | Nant |
|---------------|---------------|------------|------|
| 2.4-2.4835GHz | BT-BR(1Mbps)  | 1          | 1TX  |
| 2.4-2.4835GHz | BT-EDR(2Mbps) | 1          | 1TX  |
| 2.4-2.4835GHz | BT-EDR(3Mbps) | 1          | 1TX  |

Note:

- Bluetooth BR uses a GFSK (1Mbps).
- Bluetooth EDR uses a combination of  $\pi/4$ -DQPSK (2Mbps) and 8DPSK (3Mbps).
- Bluetooth BR/EDR uses as a system using FHSS 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. | Port        |                    |                    |           | Brand  | Model Name | Antenna Type | Connector | Gain (dBi) |
|------|-------------|--------------------|--------------------|-----------|--------|------------|--------------|-----------|------------|
|      | WLAN 2.4GHz | WLAN 5GHz (Band 1) | WLAN 5GHz (Band 4) | Bluetooth |        |            |              |           |            |
| 1    | 1           | 2                  | -                  | -         | HONGBO | WRG-AC87   | PIFA         | I-PEX     | Note 1     |
| 2    | 2           | 1                  | -                  | -         | HONGBO | WRG-AC87   | PIFA         | I-PEX     |            |
| 3    | -           | -                  | 1                  | -         | HONGBO | WRG-AC87   | PIFA         | I-PEX     |            |
| 4    | -           | -                  | 2                  | -         | HONGBO | WRG-AC87   | PIFA         | I-PEX     |            |
| 5    | -           | -                  | 3                  | -         | HONGBO | WRG-AC87   | PIFA         | I-PEX     |            |
| 6    | -           | -                  | 4                  | -         | HONGBO | WRG-AC87   | PIFA         | I-PEX     |            |
| 7    | -           | -                  | -                  | 1         | ALPHA  | WRG-AC87   | PCB          | N/A       |            |

Note 1

| Ant. | Gain (dBi)  |                    |                    |           | Directional Gain (dBi) |                    |                    |
|------|-------------|--------------------|--------------------|-----------|------------------------|--------------------|--------------------|
|      | WLAN 2.4GHz | WLAN 5GHz (Band 1) | WLAN 5GHz (Band 4) | Bluetooth | WLAN 2.4GHz            | WLAN 5GHz (Band 1) | WLAN 5GHz (Band 4) |
| 1    | 2.61        | 3.34               | -                  | -         | 4.37                   | 5.40               | -                  |
| 2    | 2.61        | 3.34               | -                  | -         |                        |                    | -                  |
| 3    | -           | -                  | 5.45               | -         | -                      | -                  | 8.51               |
| 4    | -           | -                  | 5.45               | -         | -                      | -                  |                    |
| 5    | -           | -                  | 5.45               | -         | -                      | -                  |                    |
| 6    | -           | -                  | 5.45               | -         | -                      | -                  |                    |
| 7    | -           | -                  | -                  | 2.80      | -                      | -                  | -                  |

Note 2: The above information was declared by manufacturer.

**For IEEE 802.11b/g/n/VHT (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:****Band 1****For IEEE 802.11a/n/ac (2TX/2RX):**

Port 1 and Port 2 can be used as transmitting/receiving antenna.

Port 1 and Port 2 could transmit/receive simultaneously.

**Band 4****For IEEE 802.11a/n/ac (4TX/4RX):**

Port 1, Port 2, Port 3 and Port 4 can be used as transmitting/receiving antenna.

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

**For Bluetooth function:**

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) $\geq 1/T$ |
|---------------|-------|---------|--------|--------------------|
| BT-BR(1Mbps)  | 0.787 | 1.04    | 2.898m | 1k                 |
| BT-EDR(2Mbps) | 0.772 | 1.12    | 2.911m | 1k                 |
| BT-EDR(3Mbps) | 0.749 | 1.26    | 2.912m | 1k                 |

Note:

- ♦ DC is Duty Cycle.
- ♦ DCF is Duty Cycle Factor.

**1.1.4 EUT Operational Condition**

|                              |                    |
|------------------------------|--------------------|
| <b>EUT Power Type</b>        | From Power Adapter |
| <b>Test Software Version</b> | telnet             |

**1.1.5 Table for EUT Operation Mode**

| Operation Mode | WLAN 2.4GHz | WLAN 5GHz<br>Band 1 | WLAN 5GHz<br>Band 4                   | Bluetooth |
|----------------|-------------|---------------------|---------------------------------------|-----------|
| AP Router      | V           | V                   | V<br>(AP Router and<br>Mesh function) | V         |
| Repeater       | V           | V                   | V<br>(Repeater and<br>Mesh function)  | V         |

Note: The applicant designated the AP Router mode to perform all test and its test result was written in the report.



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

## 1.3 Testing Location Information

| Testing Location                    |        |  |                      |                      |
|-------------------------------------|--------|--|----------------------|----------------------|
| <input type="checkbox"/>            | 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 |
| <input checked="" type="checkbox"/> | 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             | TH03-CB       | Lucas Huang   | 21.7-24.3°C / 54-64% | Jan. 13, 2020~<br>Jan. 20, 2020 |
| Radiated<br>(Below 1GHz) | 03CH06CB      | KJ Chang      | 23-24.3°C / 56-60%   | Jan. 18, 2020                   |
| Radiated<br>(Above 1GHz) | 03CH06CB      | KJ Chang      | 14.8-15.4°C / 54-56% | Dec. 25, 2019~<br>Jan. 17, 2020 |
| AC Conduction            | CO01-CB       | Max Lin       | 21~22°C / 58~59%     | Jan. 20, 2020                   |

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                   |
|--------------------------------------|-------------|--------------------------|
| Conducted Emission (150kHz ~ 30MHz)  | 2.0 dB      | Confidence levels of 95% |
| 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% |
| Bandwidth Measurement                | 2%          | Confidence levels of 95% |





## 2 Test Configuration of EUT

### 2.1 Test Channel Mode

| Mode          | Power Setting |
|---------------|---------------|
| BT-BR(1Mbps)  | -             |
| 2402MHz       | 0x08          |
| 2440MHz       | 0x08          |
| 2480MHz       | 0x08          |
| BT-EDR(2Mbps) | -             |
| 2402MHz       | 0x08          |
| 2440MHz       | 0x08          |
| 2480MHz       | 0x08          |
| BT-EDR(3Mbps) | -             |
| 2402MHz       | 0x08          |
| 2440MHz       | 0x08          |
| 2480MHz       | 0x08          |

## 2.2 The Worst Case Measurement Configuration

| The Worst Case Mode for Following Conformance Tests |  |
|---|--|
| <b>Tests Item</b>                                   | AC power-line conducted emissions                        |
| <b>Condition</b>                                    | AC power-line conducted measurement for line and neutral |
| <b>Operating Mode</b>                               | Normal Link  |
| 1   | EUT_ AP Router   |

| The Worst Case Mode for Following Conformance Tests |  |
|---|--|
| <b>Tests Item</b>                                   | 20dB Bandwidth<br>Carrier Frequency Separation<br>Maximum Conducted Output Power<br>Number of Hopping Frequencies<br>Hopping Bandedge<br>Time of Occupancy (Dwell Time)<br>Emissions in Non-restricted Frequency Bands |
| <b>Test Condition</b>                               | Conducted measurement at transmit chains   |

| The Worst Case Mode for Following Conformance Tests |   |
|---|---|
| <b>Tests Item</b>                                   | Emissions in Restricted Frequency Bands   |
| <b>Test Condition</b>                               | 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. |
| <b>Operating Mode &lt; 1GHz</b>                     | Normal Link   |
| 1   | EUT_ AP Router  |
| <b>Operating Mode &gt; 1GHz</b>                     | CTX   |

| The Worst Case Mode for Following Conformance Tests                                |   |
|--|---|
| <b>Tests Item</b>  | Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation |
| <b>Operating Mode</b>  |   |
| 1  | WLAN 2.4GHz + WLAN 5GHz Band 1 + WLAN 5GHz Band 4 + Bluetooth           |
| Refer to Sporton Test Report No.: FA9D2627 for Co-location RF Exposure Evaluation. |   |

Note: The EUT can only be used in Z-axis position.

## 2.3 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.



## 2.4 Accessories

| Accessories                       |            |            |   |
|-----------------------------------|------------|------------|---|
| Equipment Name                    | Brand Name | Model Name | Rating  |
| Adapter                           | APD        | WA-30P12FU | Input: 100-240V~, 50-60Hz, 0.9A Max.<br>Output: 12V, 2.5A |
| Other                             |            |            |   |
| RJ-45 cable*1: Non-Shielded, 1.0m |            |            |   |



## 2.5 Support Equipment

### For AC Conduction:

| Support Equipment |             |            |            |        |
|-------------------|-------------|------------|------------|--------|
| No.               | Equipment   | Brand Name | Model Name | FCC ID |
| A                 | WAN NB      | DELL       | E6430      | N/A    |
| B                 | LAN NB      | DELL       | E6430      | N/A    |
| C                 | 2.4G NB     | DELL       | E6430      | N/A    |
| D                 | 5G NB       | DELL       | E6430      | N/A    |
| E                 | AP-1        | Luxul      | MN-10      | N/A    |
| F                 | AP-2        | Luxul      | MN-10      | N/A    |
| G                 | Smart phone | Samsung    | Galaxy J2  | N/A    |
| H                 | AP-1 NB     | DELL       | E6430      | N/A    |
| I                 | AP-2 NB     | DELL       | E6430      | N/A    |

### For Radiated (below 1GHz):

| Support Equipment |           |            |            |        |
|-------------------|-----------|------------|------------|--------|
| No.               | Equipment | Brand Name | Model Name | FCC ID |
| A                 | NB        | DELL       | E4300      | N/A    |
| B                 | NB        | DELL       | E4300      | N/A    |
| C                 | AP-1      | Luxul      | MN-10      | N/A    |
| D                 | PHONE     | HTC        | One X9     | N/A    |
| E                 | NB        | DELL       | E4300      | N/A    |
| F                 | NB        | DELL       | E4300      | N/A    |
| G                 | AP-2      | Luxul      | MN-10      | N/A    |
| H                 | NB        | DELL       | E4300      | N/A    |
| I                 | NB        | DELL       | E4300      | N/A    |

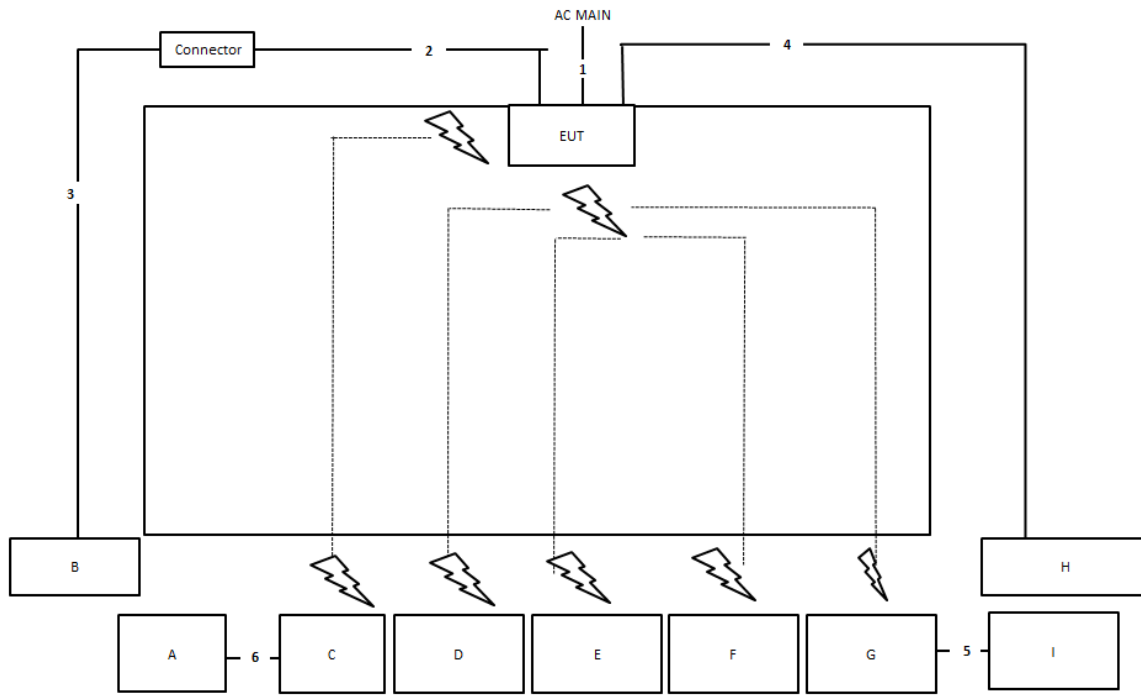
### For Radiated (above 1GHz):

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

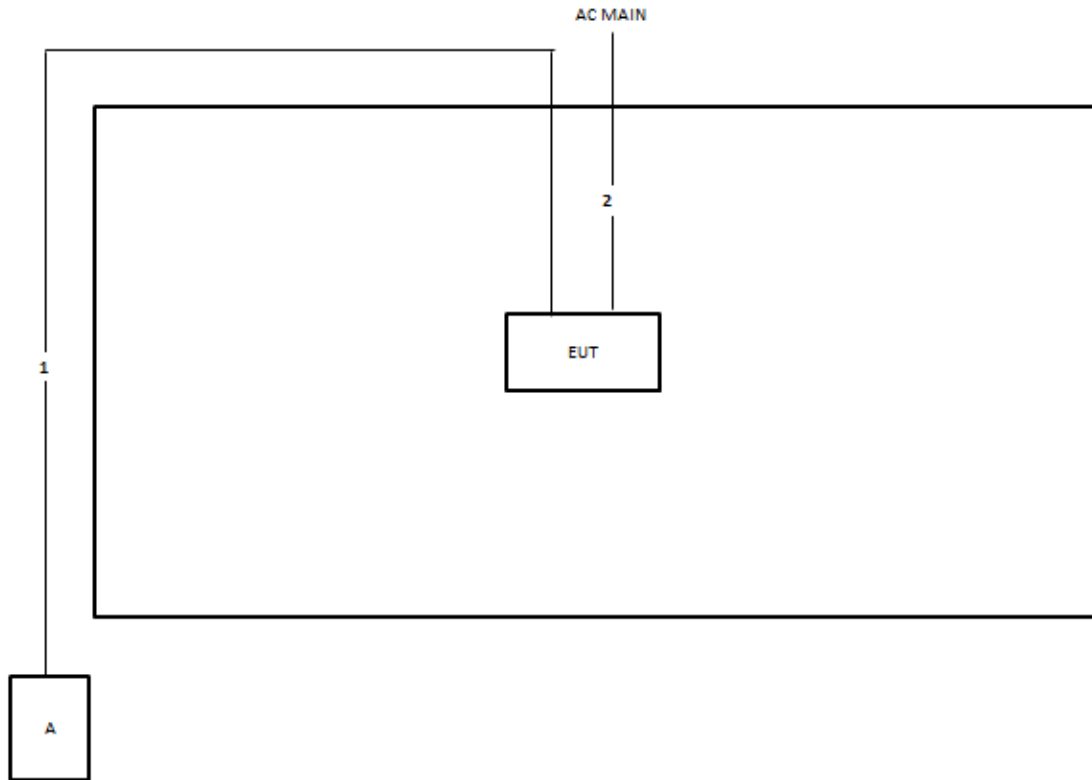
### For RF Conducted:

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



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


| Item | Connection  | Shielded | Length |
|------|-------------|----------|--------|
| 1    | Power cable | No       | 1.2m   |
| 2    | RJ-45 cable | No       | 1m     |
| 3    | RJ-45 cable | No       | 10m    |
| 4    | RJ-45 cable | No       | 10m    |
| 5    | RJ-45 cable | No       | 1.5m   |
| 6    | RJ-45 cable | No       | 1.5m   |

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


| Item | Connection  | Shielded | Length |
|------|-------------|----------|--------|
| 1    | RJ-45 cable | No       | 10m    |
| 2    | Power cable | No       | 1.2m   |



### 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

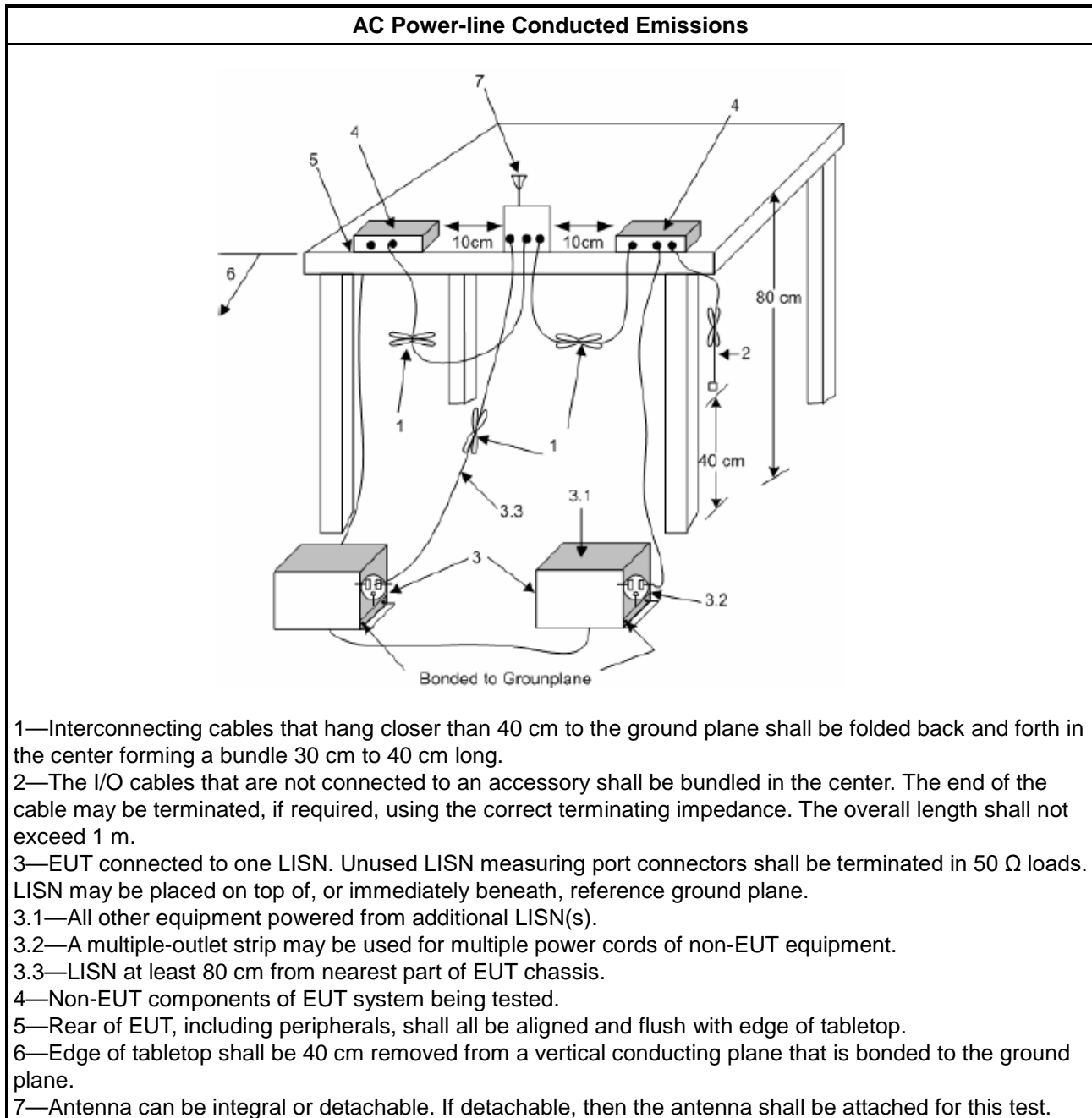
Refer a test equipment and calibration data table in this test report.

##### 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



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

Refer as Appendix A

## 3.2 20dB Bandwidth and Carrier Frequency Separation

### 3.2.1 20dB Bandwidth and Carrier Frequency Separation Limit

| 20dB Bandwidth and Carrier Frequency Separation Limit for Frequency Hopping Systems |  |
|---|--|
| ▪ 902-928 MHz Band:   |  |
|   | ▪ $N \geq 50$ and $ChS \geq \text{MAX}$ (20 dB bandwidth, 25 kHz); 20 dB bandwidth $\leq$ 250 kHz.   |
|   | ▪ $50 > N \geq 25$ and $ChS \geq \text{MAX}$ (20 dB bandwidth, 25 kHz); 20 dB bandwidth $>$ 250 kHz. |
| ▪ 2400-2483.5 MHz Band:   |  |
|   | ▪ $N \geq 75$ and $ChS \geq \text{MAX}$ (20 dB bandwidth, 25 kHz).                                   |
|   | ▪ $75 > N \geq 15$ and $ChS \geq \text{MAX}$ (20 dB bandwidth 2/3, 25 kHz).                          |
| ▪ 5725-5850 MHz Band:   |  |
|   | ▪ $N \geq 75$ and $ChS \geq \text{MAX}$ (20 dB bandwidth, 25 kHz); 20 dB bandwidth $\leq$ 1 MHz.     |
| N: Number of Hopping Frequencies; ChS: Hopping Channel Separation                   |  |

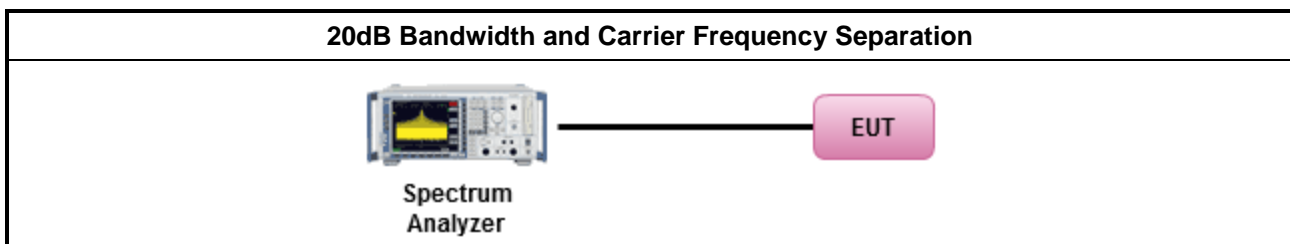
### 3.2.2 Measuring Instruments

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

### 3.2.3 Test Procedures

| Test Method   |
|---|
| ▪ Refer as ANSI C63.10-2013, clause 6.9.1 for 20 dB bandwidth measurement.              |
| ▪ Refer as ANSI C63.10-2013, clause 7.8.2 for carrier frequency separation measurement. |

### 3.2.4 Test Setup



### 3.2.5 Test Result of 20dB Bandwidth

Refer as Appendix B

### 3.2.6 Test Result of Carrier Frequency Separation

Refer as Appendix B

### 3.3 Maximum Conducted Output Power

#### 3.3.1 Maximum Conducted Output Power Limit

| Maximum Conducted Output Power Limit |  |
|--------------------------------------|--|
| ▪ 902-928 MHz Band:                  |  |
|                                      | ▪ $N \geq 50$ ; Power 30dBm; EIRP 36dBm      |
|                                      | ▪ $50 > N \geq 25$ ; Power 24dBm; EIRP 30dBm |
| ▪ 2400-2483.5 MHz Band:              |  |
|                                      | ▪ $N \geq 75$ ; Power 30dBm; EIRP 36dBm      |
|                                      | ▪ $75 > N \geq 15$ ; Power 21dBm; EIRP 27dBm |
| ▪ 5725-5850 MHz Band:                |  |
|                                      | ▪ $N \geq 75$ ; Power 30dBm; EIRP 36dBm      |
| N: Number of Hopping Frequencies     |  |

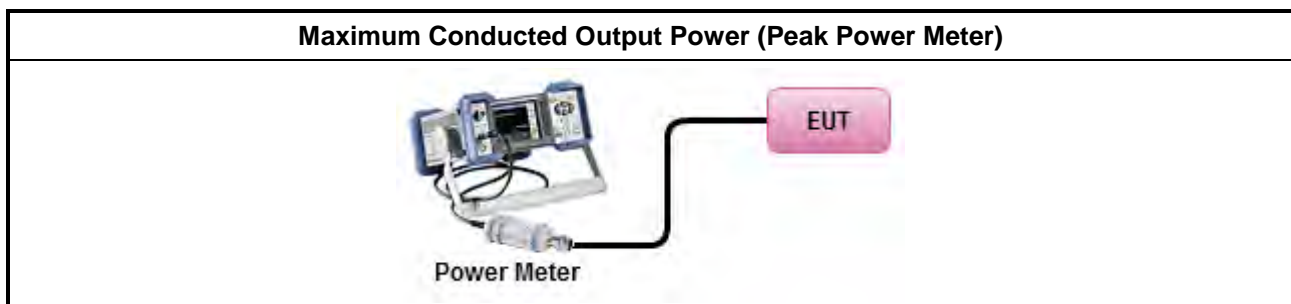
#### 3.3.2 Measuring Instruments

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

#### 3.3.3 Test Procedures

| Test Method   |
|---|
| ▪ Refer as ANSI C63.10-2013, clause 7.8.5 for output power measurement. |

#### 3.3.4 Test Setup



#### 3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

### 3.4 Number of Hopping Frequencies and Hopping Bandedge

#### 3.4.1 Number of Hopping Frequencies Limit

| Number of Hopping Frequencies Limit                                |   |
|--|---|
| ▪ 902-928 MHz Band:  |   |
|  | ▪ $N \geq 50$ and $ChS \geq MAX$ (20 dB bandwidth, 25 kHz); 20 dB bandwidth $\leq$ 250 kHz.   |
|  | ▪ $50 > N \geq 25$ and $ChS \geq MAX$ (20 dB bandwidth, 25 kHz); 20 dB bandwidth $>$ 250 kHz. |
| ▪ 2400-2483.5 MHz Band:  |   |
|  | ▪ $N \geq 75$ and $ChS \geq MAX$ (20 dB bandwidth, 25 kHz).                                   |
|  | ▪ $75 > N \geq 15$ and $ChS \geq MAX$ (20 dB bandwidth 2/3, 25 kHz).                          |
| ▪ 5725-5850 MHz Band:  |   |
|  | ▪ $N \geq 75$ and $ChS \geq MAX$ (20 dB bandwidth, 25 kHz); 20 dB bandwidth $\leq$ 1 MHz.     |
| N: Number of Hopping Frequencies; ChS : Hopping Channel Separation |   |

#### 3.4.2 Hopping Bandedge Limit

Refer clause 3.6.1 and clause 3.7.1

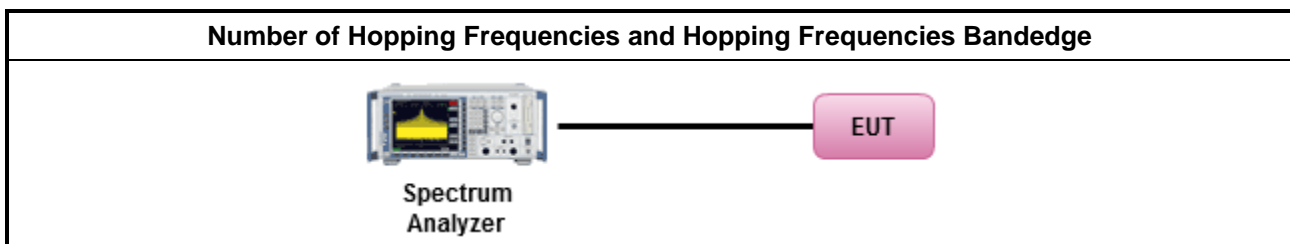
#### 3.4.3 Measuring Instruments

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

#### 3.4.4 Test Procedures

| Test Method  |
|--|
| ▪ Refer as ANSI C63.10-2013, clause 7.8.3 for number of hopping frequencies measurement. |
| ▪ Refer as ANSI C63.10-2013, clause 7.8.6 for hopping frequencies Bandedge measurement.  |

#### 3.4.5 Test Setup



#### 3.4.6 Test Result of Number of Hopping Frequencies

Refer as Appendix D

#### 3.4.7 Test Result of Number of Hopping Frequencies Bandedge

Refer as Appendix D

### 3.5 Time of Occupancy (Dwell Time)

#### 3.5.1 Time of Occupancy (Dwell Time) Limit

| 20dB Bandwidth and Carrier Frequency Separation Limit for Frequency Hopping Systems |  |
|---|--|
| ▪ 902-928 MHz Band:   |  |
|   | ▪ $N \geq 50$ ; 0.4s in 20s period                 |
|   | ▪ $50 > N \geq 25$ ; 0.4s in 10s period            |
| ▪ 2400-2483.5 MHz Band:   |  |
|   | ▪ $N \geq 75$ ; 0.4s in $N \times 0.4$ period      |
|   | ▪ $75 > N \geq 15$ ; 0.4s in $N \times 0.4$ period |
| ▪ 5725-5850 MHz Band:   |  |
|   | ▪ $N \geq 75$ ; 0.4s in 30s period                 |
| N: Number of Hopping Frequencies  |  |

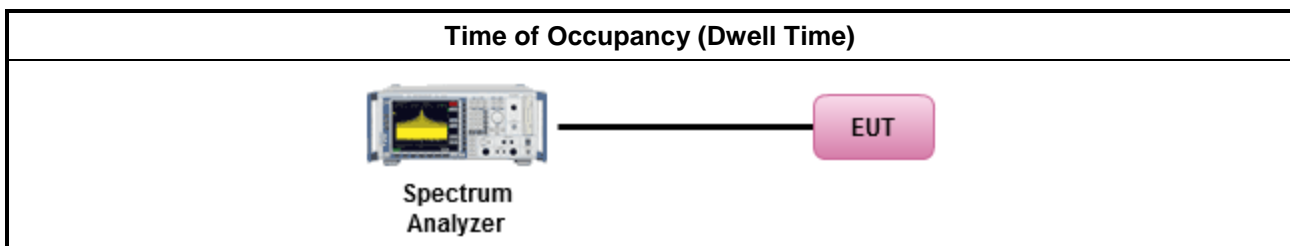
#### 3.5.2 Measuring Instruments

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

#### 3.5.3 Test Procedures

| Test Method  |  |
|--|--|
| ▪ Refer as ANSI C63.10-2013, clause 7.8.4 for dwell time measurement.  |  |
| ▪ Bluetooth ACL packets can be 1, 3, or 5 time slots. Following as dwell time. Operate DH5 at maximum dwell time and maximum duty cycle. |  |
|  | ▪ The DH5 packet can cover up to 5 time slots. Operate DH5 at maximum dwell time and maximum duty cycle. A maximum length packet has duration of 5 time slots. The hopping rate is 1600 hops/second so the maximum dwell time is $5/1600$ seconds, or 3.125ms. DH5 Packet permit maximum $1600/79/6 = 3.37$ hops per second in each channel. |

#### 3.5.4 Test Setup



#### 3.5.5 Test Result of Time of Occupancy (Dwell Time)

Refer as Appendix E

### 3.6 Emissions in Non-restricted Frequency Bands

#### 3.6.1 Emissions in Non-restricted Frequency Bands Limit

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

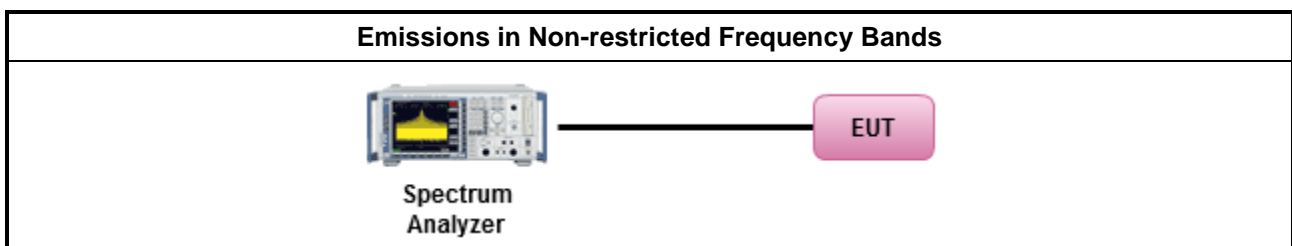
#### 3.6.2 Measuring Instruments

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

#### 3.6.3 Test Procedures

| Test Method   |
|---|
| <ul style="list-style-type: none"> <li>Refer as ANSI C63.10-2013, clause 7.8.8 for unwanted emissions into non-restricted bands.</li> </ul> |

#### 3.6.4 Test Setup



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

Refer as Appendix F



### 3.7 Emissions in Restricted Frequency Bands

#### 3.7.1 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 below 30 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.

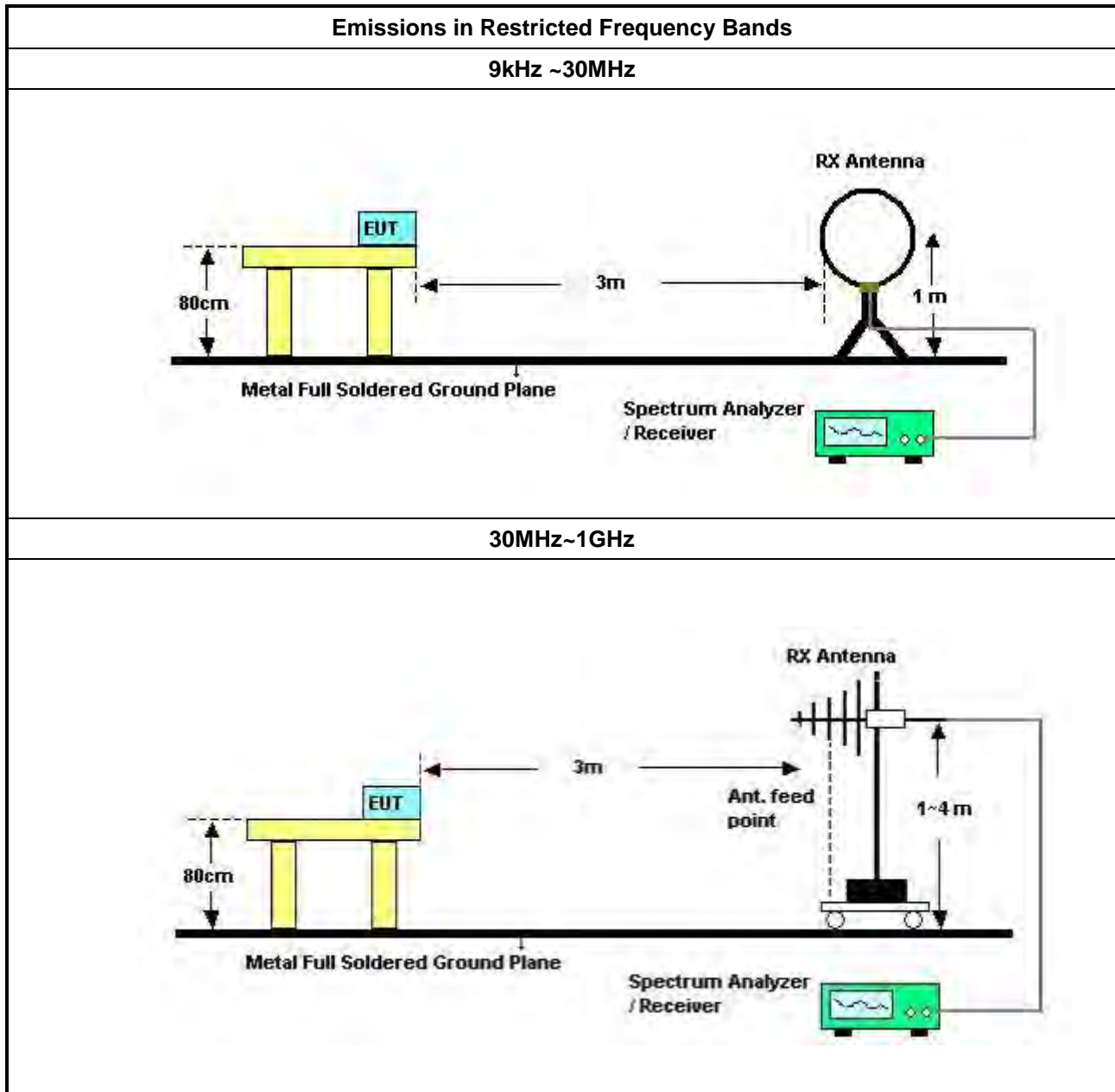
#### 3.7.2 Measuring Instruments

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

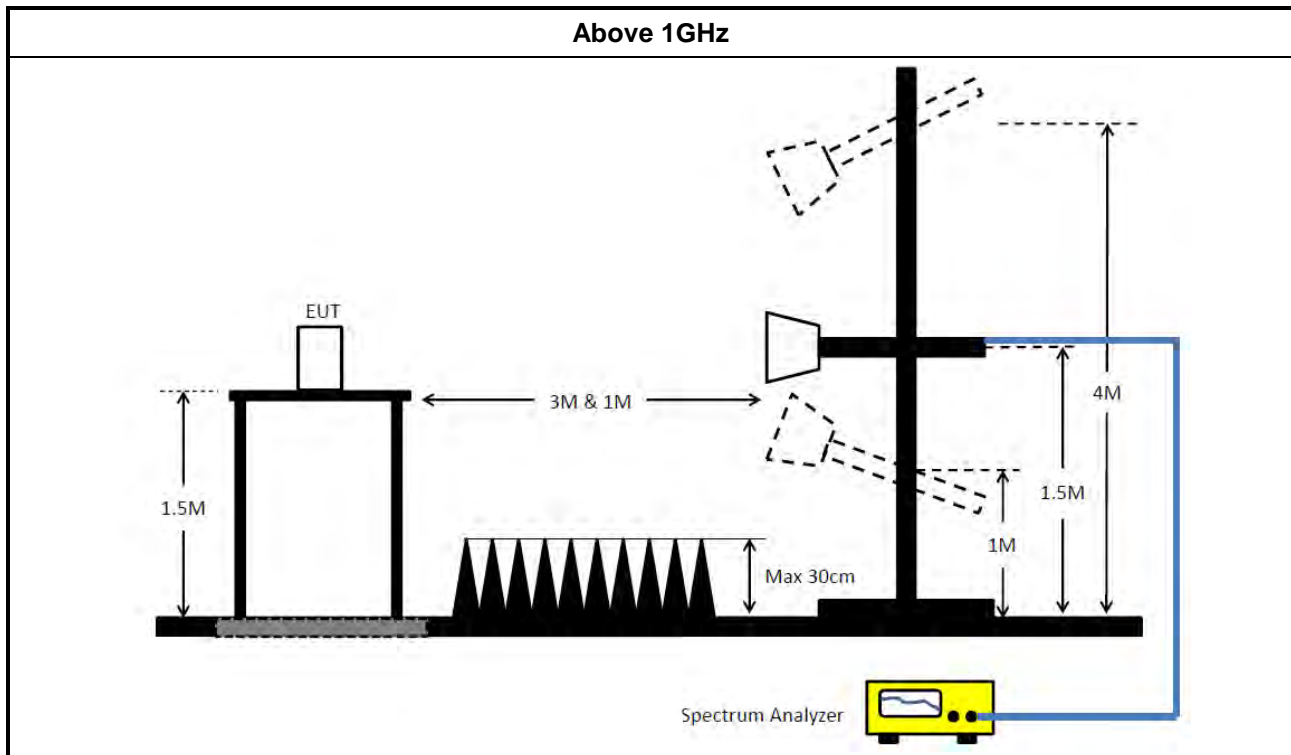
#### 3.7.3 Test Procedures

| Test Method   |   |
|---|---|
| ▪ The average emission levels shall be measured in [hopping 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 ANSI C63.10, clause 4.1.4.2.1 QP value.                                  |
|   | ▪ Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak.                |
|   | ▪ Refer as ANSI C63.10, clause 4.1.4.2.4 average value of hopping pulsed emissions. |

### 3.7.4 Test Setup







### 3.7.5 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

### 3.7.6 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.

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

Refer as Appendix G



## 4 Test Equipment and Calibration Data

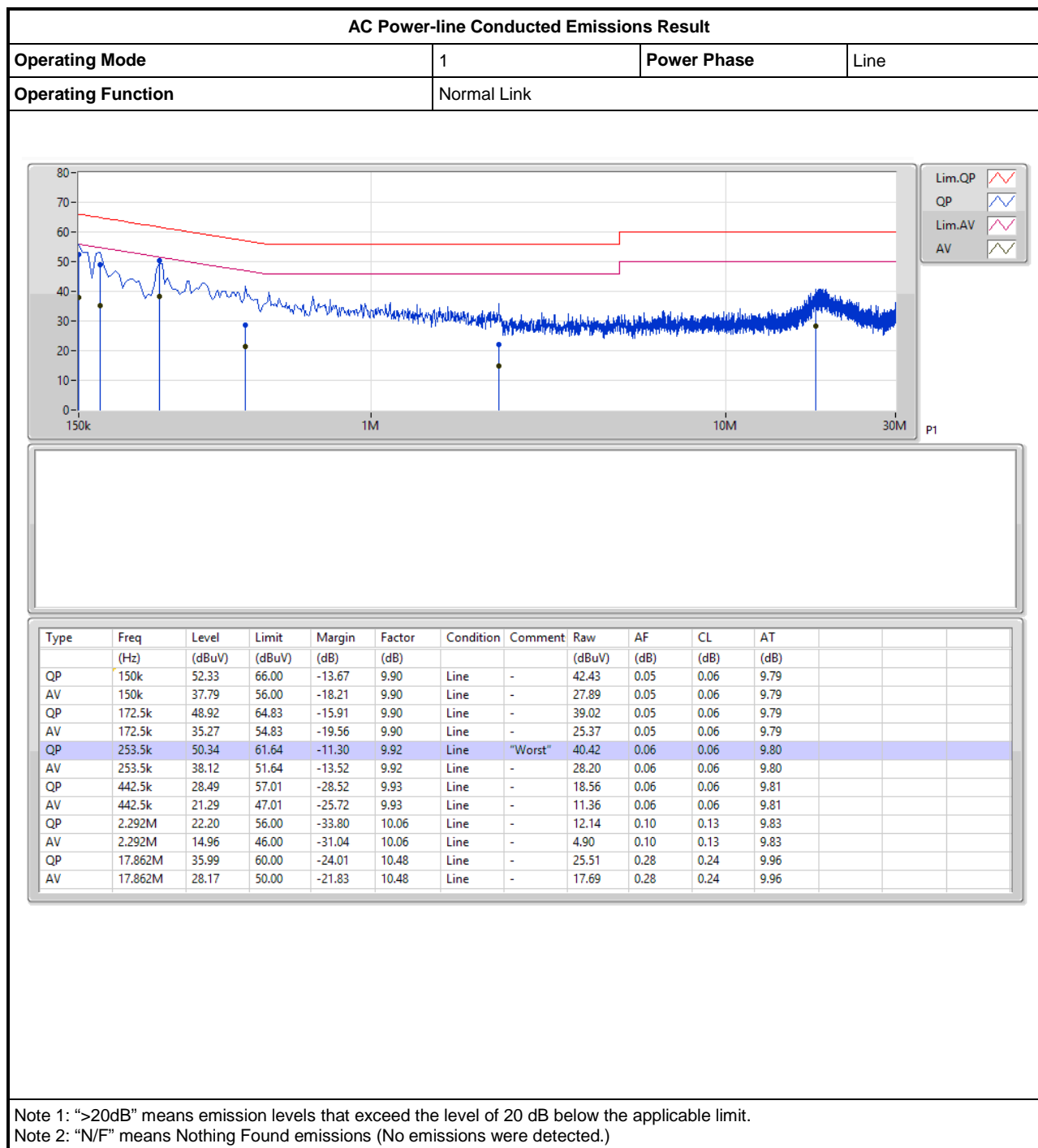
| Instrument                         | Manufacturer | Model No.         | Serial No.       | Characteristics  | Calibration Date | Calibration Due Date | Remark                |
|------------------------------------|--------------|-------------------|------------------|------------------|------------------|----------------------|-----------------------|
| EMI Receiver                       | Agilent      | N9038A            | My52260123       | 9kHz ~ 8.45GHz   | Jan. 28, 2019    | Jan. 29, 2020        | Conduction (CO01-CB)  |
| LISN                               | F.C.C.       | FCC-LISN-50-16-2  | 04083            | 150kHz ~ 100MHz  | Dec. 25, 2019    | Dec. 24, 2020        | Conduction (CO01-CB)  |
| LISN                               | Schwarzbeck  | NSLK 8127         | 8127478          | 9kHz ~ 30MHz     | Oct. 30, 2019    | Oct. 29, 2020        | Conduction (CO01-CB)  |
| COND Cable                         | Woken        | Cable             | Low cable-CO01   | 9kHz ~ 30MHz     | May 21, 2019     | May 20, 2020         | Conduction (CO01-CB)  |
| Software                           | Audix        | E3                | 6.120210n        | -                | N.C.R.           | N.C.R.               | Conduction (CO01-CB)  |
| Bilog Antenna with 6 dB attenuator | TESEQ & EMCI | CBL6112D & N-6-06 | 37878 & AT-N0606 | 20MHz ~ 2GHz     | Aug. 03, 2019    | Aug. 02, 2020        | Radiation (03CH06-CB) |
| Loop Antenna                       | Teseq        | HLA 6120          | 24155            | 9kHz - 30 MHz    | Mar. 29, 2019    | Mar. 28, 2020        | Radiation (03CH06-CB) |
| Horn Antenna                       | SCHWARZBECK  | BBHA9120D         | 9120D-1292       | 1GHz~18GHz       | Jul. 17, 2019    | Jul. 16, 2020        | Radiation (03CH06-CB) |
| Horn Antenna                       | SCHWARZBECK  | BBHA 9170         | BBHA9170507      | 15GHz ~ 40GHz    | Jun. 12, 2019    | Jun. 11, 2020        | Radiation (03CH06-CB) |
| Pre-Amplifier                      | Agilent      | 310N              | 187290           | 0.1MHz ~ 1GHz    | May 07, 2019     | May 06, 2020         | Radiation (03CH06-CB) |
| Pre-Amplifier                      | Agilent      | 83017A            | MY53270064       | 0.5GHz ~ 26.5GHz | May 08, 2019     | May 07, 2020         | Radiation (03CH06-CB) |
| Pre-Amplifier                      | MITEQ        | TTA1840-35-HG     | 1864479          | 18GHz ~ 40GHz    | Jul. 03, 2019    | Jul. 02, 2020        | Radiation (03CH06-CB) |
| Spectrum analyzer                  | R&S          | FSP40             | 100080           | 9kHz~40GHz       | Oct. 21, 2019    | Oct. 20, 2020        | Radiation (03CH06-CB) |
| EMI Test Receiver                  | R&S          | ESCS              | 826547/017       | 9kHz ~ 2.75GHz   | May 15, 2019     | May 14, 2020         | Radiation (03CH06-CB) |
| RF Cable-low                       | HUBER+SUHNER | RG402             | Low Cable-05+24  | 30MHz~1GHz       | Oct. 07, 2019    | Oct. 06, 2020        | Radiation (03CH06-CB) |
| RF Cable-high                      | HUBER+SUHNER | RG402             | High Cable-05    | 1GHz~18GHz       | Oct. 07, 2019    | Oct. 06, 2020        | Radiation (03CH06-CB) |
| RF Cable-high                      | HUBER+SUHNER | RG402             | High Cable-05+24 | 1GHz~18GHz       | Oct. 07, 2019    | Oct. 06, 2020        | Radiation (03CH06-CB) |
| RF Cable-high                      | Woken        | RG402             | High Cable-40G#1 | 18GHz ~ 40 GHz   | Jul. 24, 2019    | Jul. 23, 2020        | Radiation (03CH06-CB) |

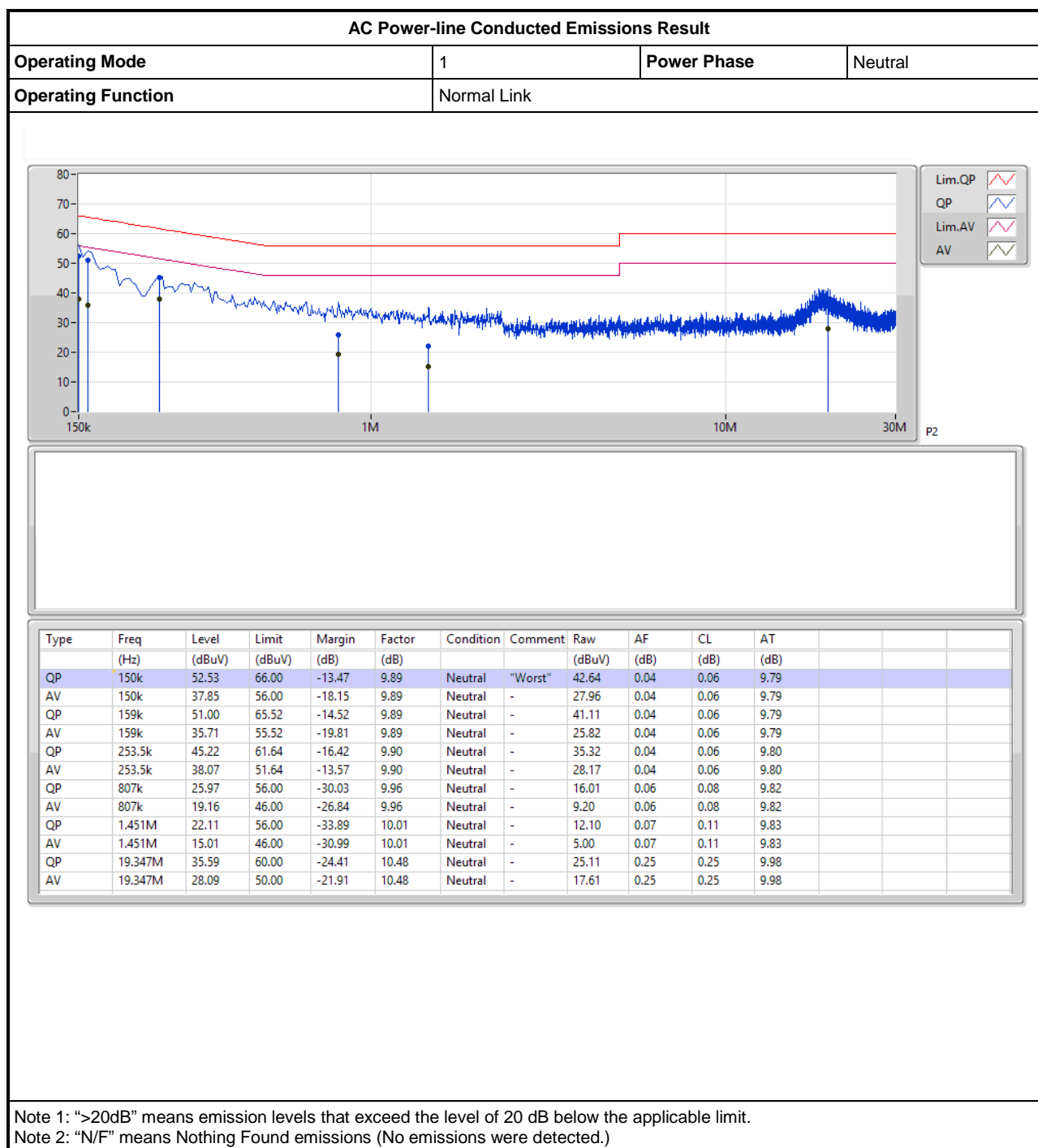


| Instrument        | Manufacturer | Model No. | Serial No.    | Characteristics  | Calibration Date | Calibration Due Date | Remark              |
|-------------------|--------------|-----------|---------------|------------------|------------------|----------------------|---------------------|
| Spectrum analyzer | R&S          | FSV40     | 101028        | 9kHz~40GHz       | Nov. 01, 2019    | Oct. 31, 2020        | Conducted (TH03-CB) |
| Power Sensor      | Anritsu      | MA2411B   | 1726195       | 300MHz~40GHz     | Aug. 13, 2019    | Aug. 12, 2020        | Conducted (TH03-CB) |
| Power Meter       | Anritsu      | ML2495A   | 1035008       | 300MHz~40GHz     | Aug. 13, 2019    | Aug. 12, 2020        | Conducted (TH03-CB) |
| RF Cable-high     | Woken        | RG402     | High Cable-11 | 1 GHz – 26.5 GHz | Oct. 07, 2019    | Oct. 06, 2020        | Conducted (TH03-CB) |
| RF Cable-high     | Woken        | RG402     | High Cable-12 | 1 GHz – 26.5 GHz | Oct. 07, 2019    | Oct. 06, 2020        | Conducted (TH03-CB) |
| RF Cable-high     | Woken        | RG402     | High Cable-13 | 1 GHz – 26.5 GHz | Oct. 07, 2019    | Oct. 06, 2020        | Conducted (TH03-CB) |
| RF Cable-high     | Woken        | RG402     | High Cable-14 | 1 GHz – 26.5 GHz | Oct. 07, 2019    | Oct. 06, 2020        | Conducted (TH03-CB) |
| RF Cable-high     | Woken        | RG402     | High Cable-15 | 1 GHz – 26.5 GHz | Oct. 07, 2019    | Oct. 06, 2020        | Conducted (TH03-CB) |

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

NCR means Non-Calibration required.





**Summary**

| Mode          | Max-N dB<br>(Hz) | Max-OBW<br>(Hz) | ITU-Code | Min-N dB<br>(Hz) | Min-OBW<br>(Hz) |
|---------------|------------------|-----------------|----------|------------------|-----------------|
| 2.4-2.4835GHz | -                | -               | -        | -                | -               |
| BT-BR(1Mbps)  | 921.25k          | 877.061k        | 877KF1D  | 921.25k          | 869.565k        |
| BT-EDR(2Mbps) | 1.316M           | 1.206M          | 1M21G1D  | 1.304M           | 1.191M          |
| BT-EDR(3Mbps) | 1.268M           | 1.213M          | 1M21G1D  | 1.263M           | 1.203M          |

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

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

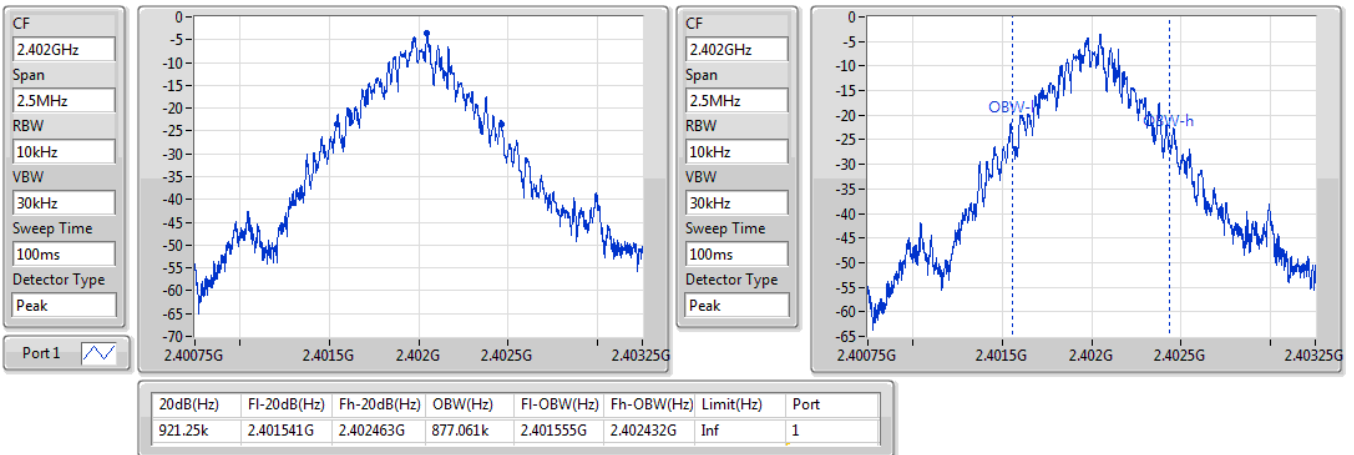
**Result**

| Mode          | Result | Limit<br>(Hz) | Port 1-N dB<br>(Hz) | Port 1-OBW<br>(Hz) |
|---------------|--------|---------------|---------------------|--------------------|
| BT-BR(1Mbps)  | -      | -             | -                   | -                  |
| 2402MHz       | Pass   | Inf           | 921.25k             | 877.061k           |
| 2440MHz       | Pass   | Inf           | 921.25k             | 869.565k           |
| 2480MHz       | Pass   | Inf           | 921.25k             | 869.565k           |
| BT-EDR(2Mbps) | -      | -             | -                   | -                  |
| 2402MHz       | Pass   | Inf           | 1.304M              | 1.191M             |
| 2440MHz       | Pass   | Inf           | 1.31M               | 1.196M             |
| 2480MHz       | Pass   | Inf           | 1.316M              | 1.206M             |
| BT-EDR(3Mbps) | -      | -             | -                   | -                  |
| 2402MHz       | Pass   | Inf           | 1.263M              | 1.203M             |
| 2440MHz       | Pass   | Inf           | 1.264M              | 1.211M             |
| 2480MHz       | Pass   | Inf           | 1.268M              | 1.213M             |

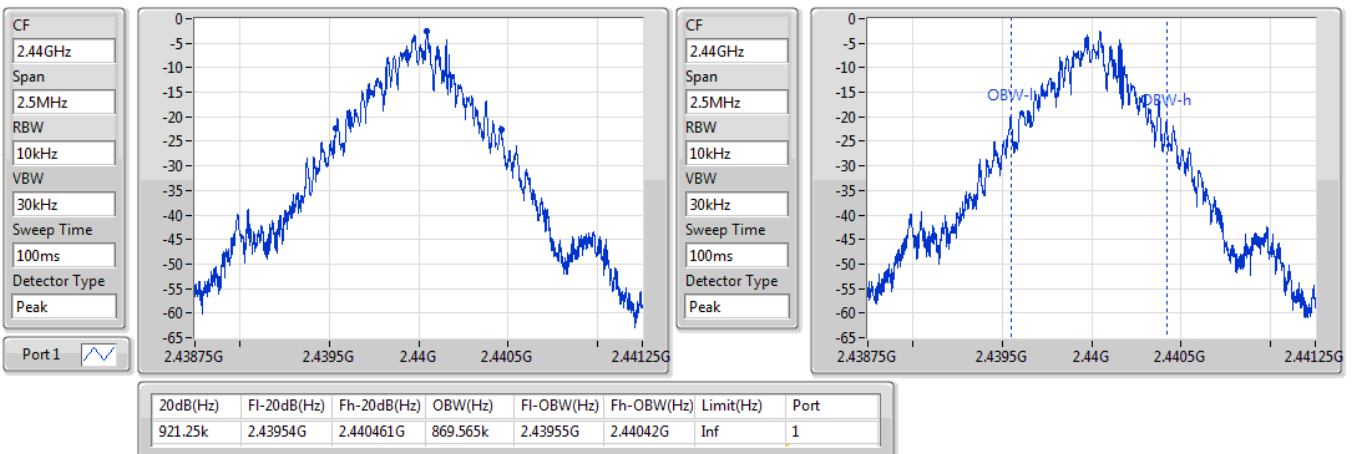
**Port X-N dB** = Port X 20dB down bandwidth; **Port X-OBW** = Port X 99% occupied bandwidth;

**BT-BR(1Mbps)**
**2402MHz**
**EBW**

14/01/2020


**BT-BR(1Mbps)**
**2440MHz**
**EBW**

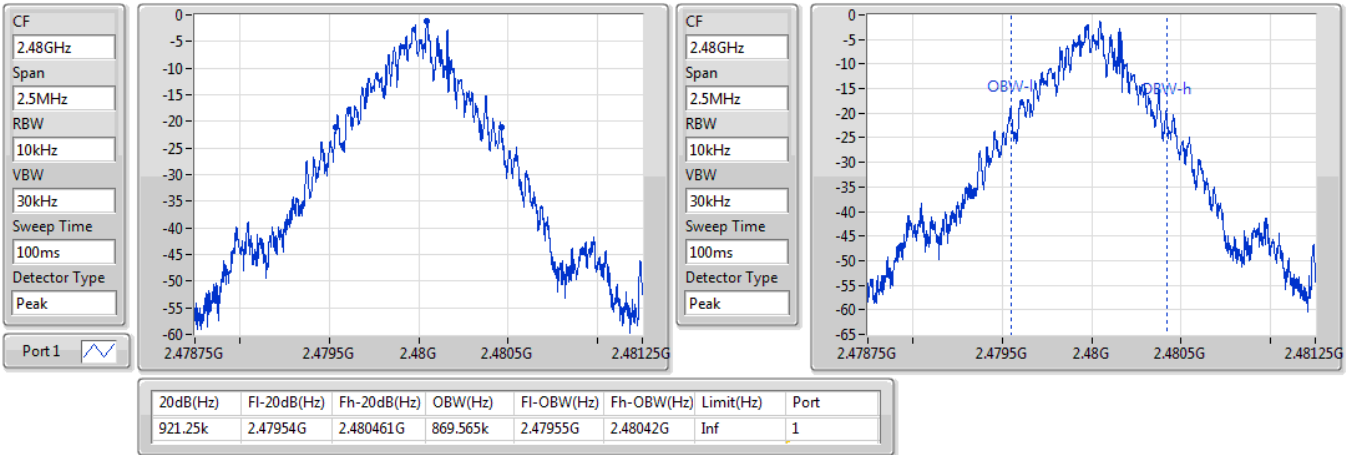
14/01/2020



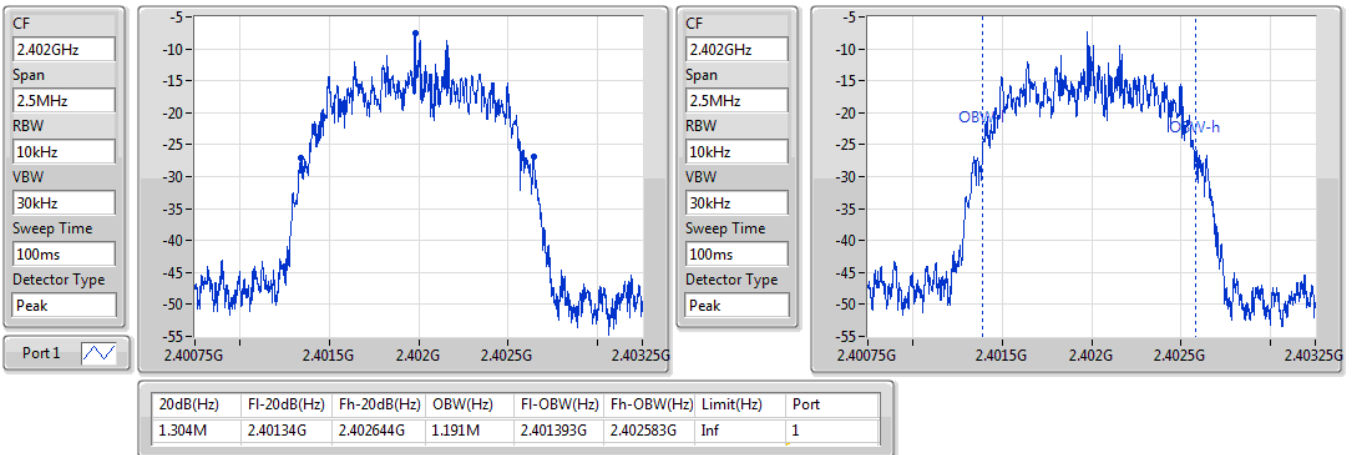


**BT-BR(1Mbps)**
**EBW**
**2480MHz**

14/01/2020

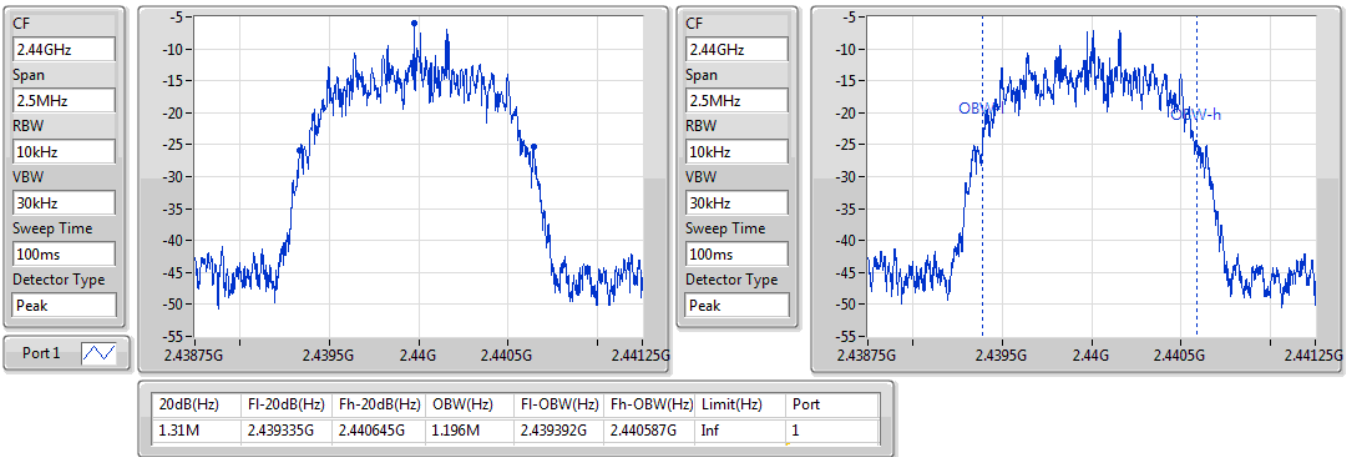

**BT-EDR(2Mbps)**
**EBW**
**2402MHz**

14/01/2020

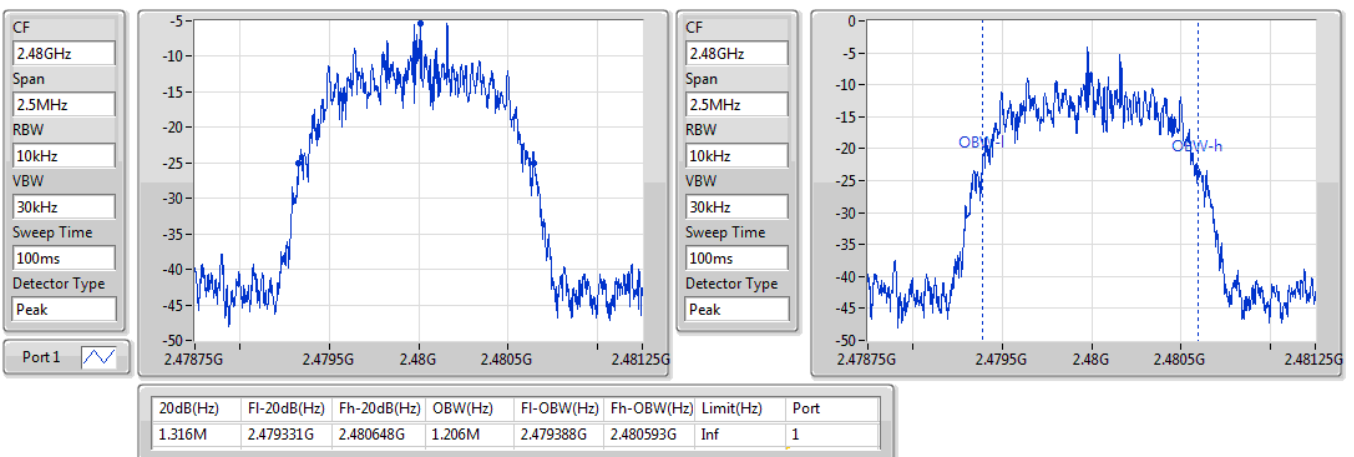


**BT-EDR(2Mbps)**
**EBW**
**2440MHz**

14/01/2020

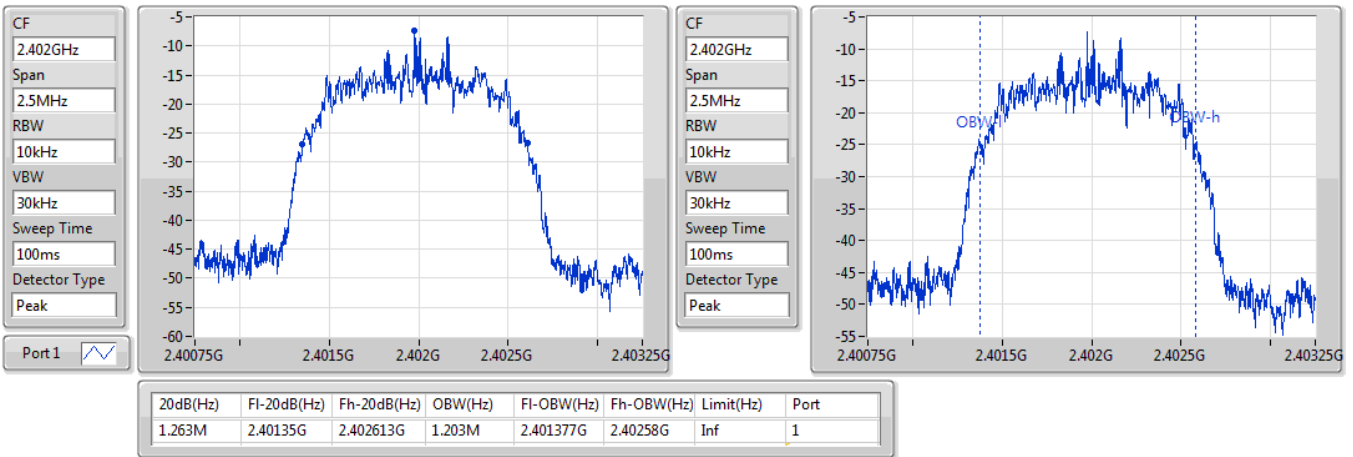

**BT-EDR(2Mbps)**
**EBW**
**2480MHz**

14/01/2020

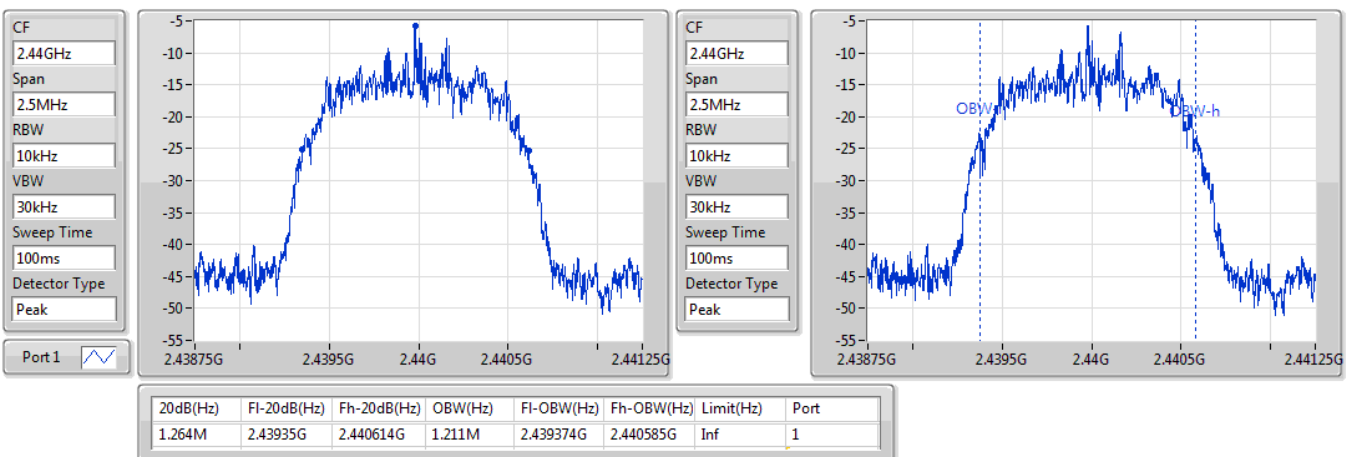


**BT-EDR(3Mbps)**
**EBW**
**2402MHz**

14/01/2020


**BT-EDR(3Mbps)**
**EBW**
**2440MHz**

14/01/2020

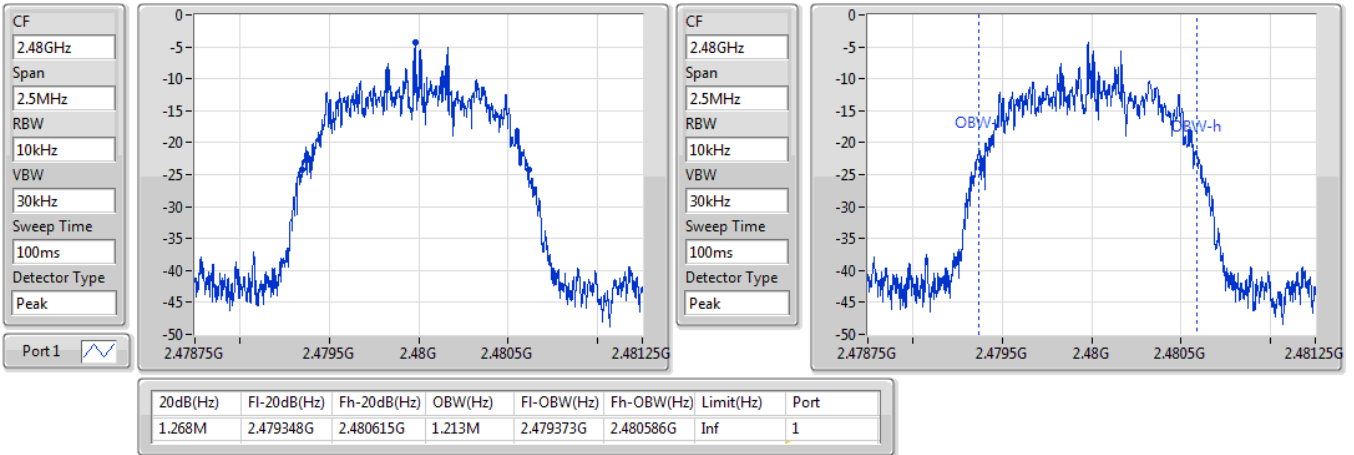


## BT-EDR(3Mbps)

2480MHz

EBW

14/01/2020





**Summary**

| Mode          | Max-Space<br>(Hz) | Min-Space<br>(Hz) |
|---------------|-------------------|-------------------|
| 2.4-2.4835GHz | -                 | -                 |
| BT-BR(1Mbps)  | 1.002M            | 670.5k            |
| BT-EDR(2Mbps) | 1.0035M           | 997.5k            |
| BT-EDR(3Mbps) | 1.002M            | 1.0005M           |

## Result

| Mode          | Result | Fl<br>(Hz) | Fh<br>(Hz) | Ch.Space<br>(Hz) | Limit<br>(Hz) |
|---------------|--------|------------|------------|------------------|---------------|
| BT-BR(1Mbps)  | -      | -          | -          | -                | -             |
| 2402MHz       | Pass   | 2.402155G  | 2.403156G  | 1.0005M          | 613.5525k     |
| 2440MHz       | Pass   | 2.440155G  | 2.440826G  | 670.5k           | 613.5525k     |
| 2480MHz       | Pass   | 2.479155G  | 2.480157G  | 1.002M           | 613.5525k     |
| BT-EDR(2Mbps) | -      | -          | -          | -                | -             |
| 2402MHz       | Pass   | 2.401995G  | 2.402998G  | 1.0035M          | 868.464k      |
| 2440MHz       | Pass   | 2.439996G  | 2.440994G  | 997.5k           | 872.46k       |
| 2480MHz       | Pass   | 2.478996G  | 2.479995G  | 999k             | 876.456k      |
| BT-EDR(3Mbps) | -      | -          | -          | -                | -             |
| 2402MHz       | Pass   | 2.402155G  | 2.403156G  | 1.0005M          | 841.158k      |
| 2440MHz       | Pass   | 2.440154G  | 2.441156G  | 1.002M           | 841.824k      |
| 2480MHz       | Pass   | 2.479155G  | 2.480157G  | 1.002M           | 844.488k      |

## BT-BR(1Mbps)

## Channel Separation

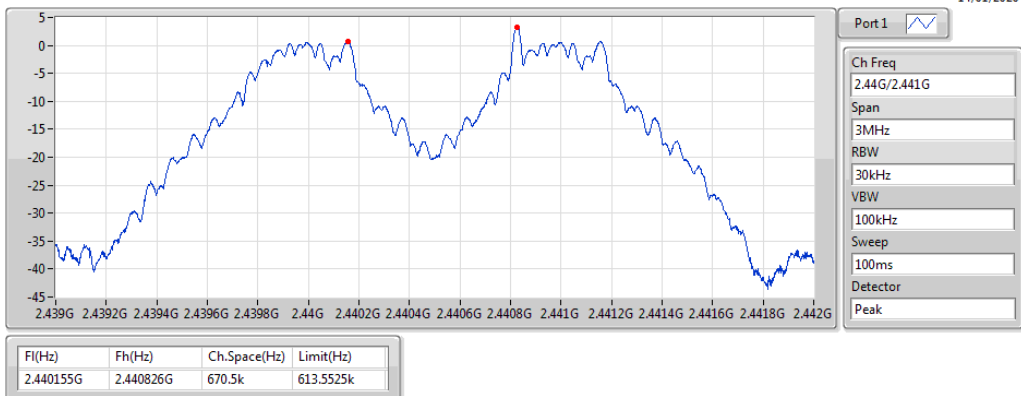
2.402G/2.403GHz



## BT-BR(1Mbps)

## Channel Separation

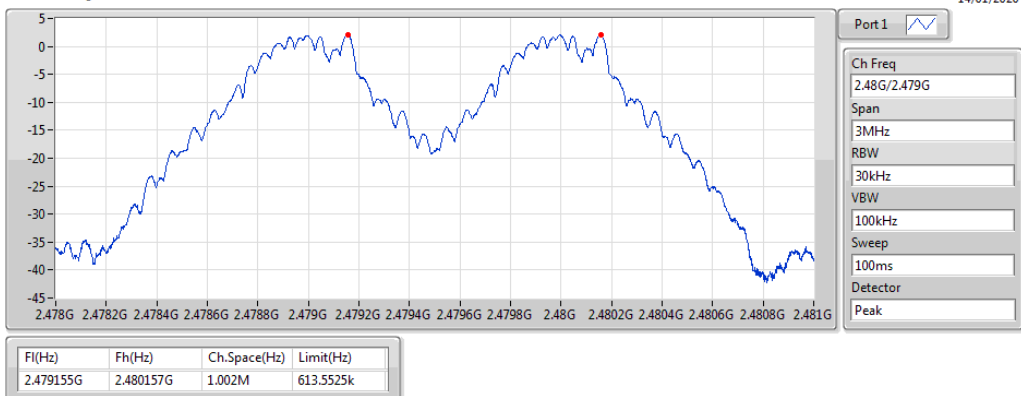
2.44G/2.441GHz



## BT-BR(1Mbps)

## Channel Separation

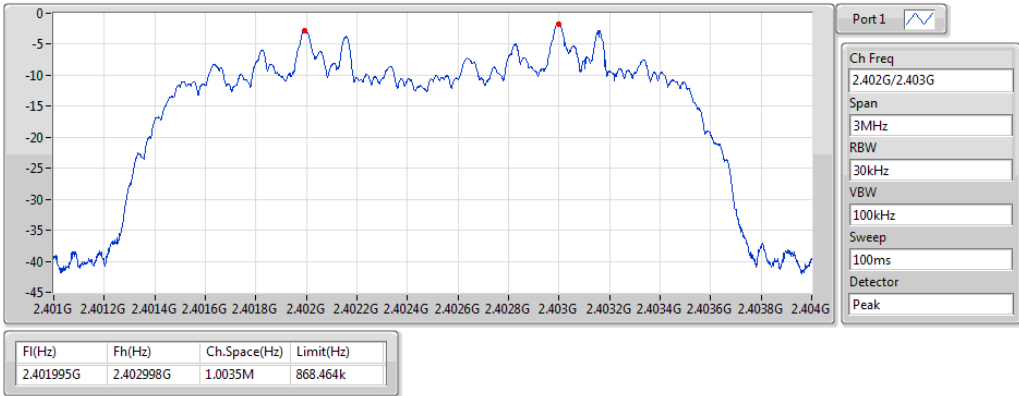
2.48G/2.479GHz



## BT-EDR(2Mbps)

2.402G/2.403GHz

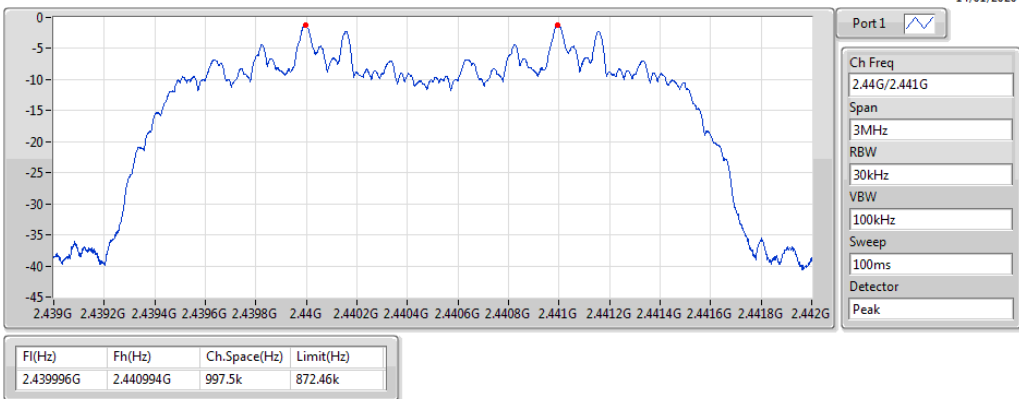
## Channel Separation



## BT-EDR(2Mbps)

2.44G/2.441GHz

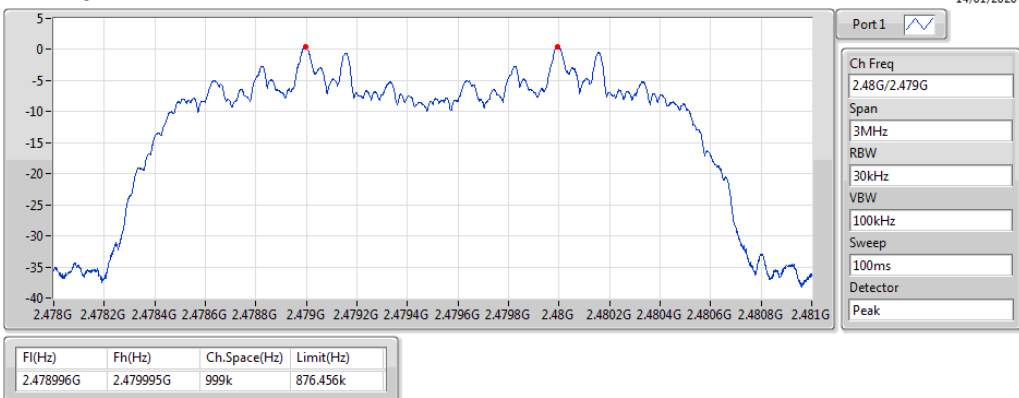
## Channel Separation



## BT-EDR(2Mbps)

2.48G/2.479GHz

## Channel Separation

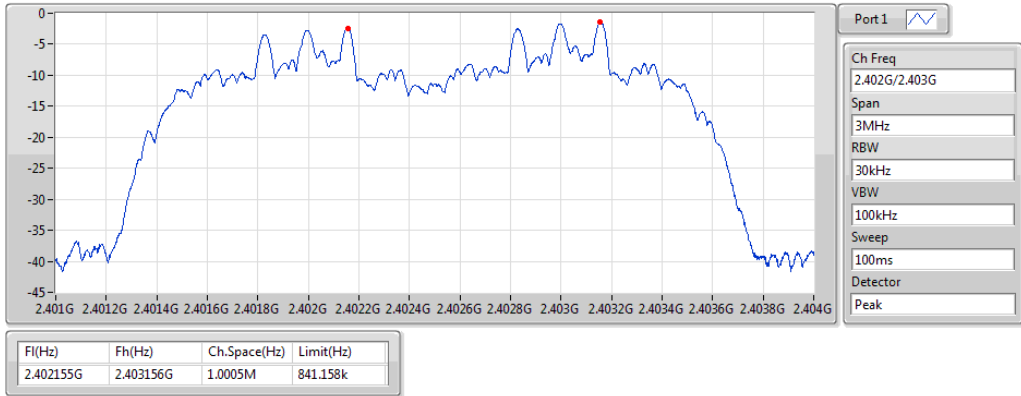




## BT-EDR(3Mbps)

2.402G/2.403GHz

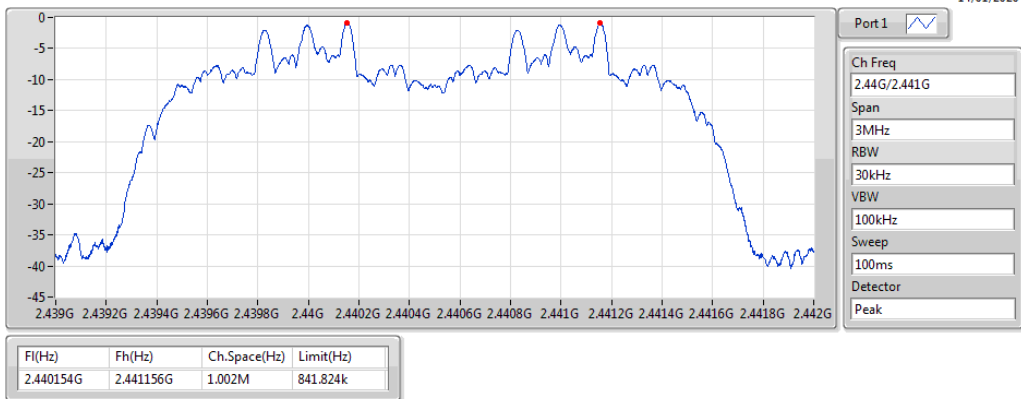
## Channel Separation



## BT-EDR(3Mbps)

2.44G/2.441GHz

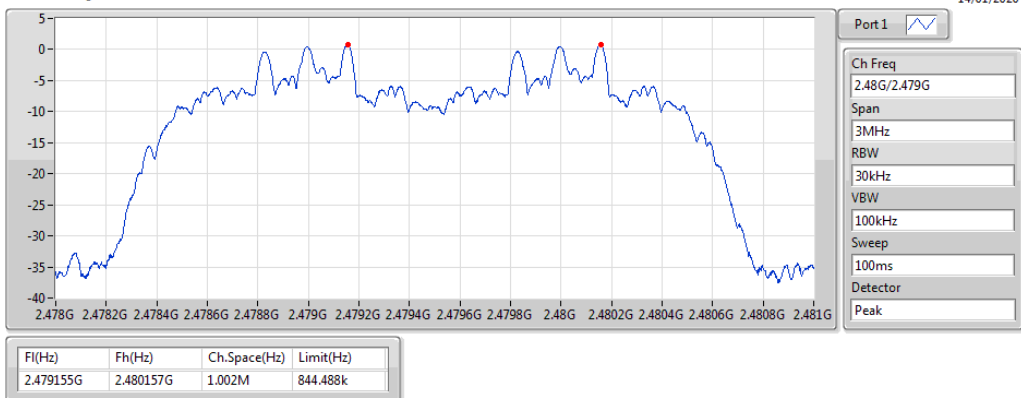
## Channel Separation



## BT-EDR(3Mbps)

2.48G/2.479GHz

## Channel Separation





**Summary**

| Mode          | Power<br>(dBm) | Power<br>(W) |
|---------------|----------------|--------------|
| 2.4-2.4835GHz | -              | -            |
| BT-BR(1Mbps)  | 4.71           | 0.00296      |
| BT-EDR(2Mbps) | 1.97           | 0.00157      |
| BT-EDR(3Mbps) | 1.92           | 0.00156      |

**Result**

| Mode          | Result | Gain<br>(dBi) | Power<br>(dBm) | Power Limit<br>(dBm) |
|---------------|--------|---------------|----------------|----------------------|
| BT-BR(1Mbps)  | -      | -             | -              | -                    |
| 2402MHz       | Pass   | 2.80          | 2.21           | 21.00                |
| 2440MHz       | Pass   | 2.80          | 3.25           | 21.00                |
| 2480MHz       | Pass   | 2.80          | 4.71           | 21.00                |
| BT-EDR(2Mbps) | -      | -             | -              | -                    |
| 2402MHz       | Pass   | 2.80          | -1.88          | 21.00                |
| 2440MHz       | Pass   | 2.80          | 0.13           | 21.00                |
| 2480MHz       | Pass   | 2.80          | 1.97           | 21.00                |
| BT-EDR(3Mbps) | -      | -             | -              | -                    |
| 2402MHz       | Pass   | 2.80          | -1.45          | 21.00                |
| 2440MHz       | Pass   | 2.80          | 0.10           | 21.00                |
| 2480MHz       | Pass   | 2.80          | 1.92           | 21.00                |

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



**Summary**

| Mode          | Power<br>(dBm) | Power<br>(W) |
|---------------|----------------|--------------|
| 2.4-2.4835GHz | -              | -            |
| BT-BR(1Mbps)  | 4.78           | 0.00301      |
| BT-EDR(2Mbps) | 3.74           | 0.00237      |
| BT-EDR(3Mbps) | 4.07           | 0.00255      |

**Result**

| Mode          | Result | Gain<br>(dBi) | Power<br>(dBm) | Power Limit<br>(dBm) |
|---------------|--------|---------------|----------------|----------------------|
| BT-BR(1Mbps)  | -      | -             | -              | -                    |
| 2402MHz       | Pass   | 2.80          | 2.36           | 21.00                |
| 2440MHz       | Pass   | 2.80          | 3.44           | 21.00                |
| 2480MHz       | Pass   | 2.80          | 4.78           | 21.00                |
| BT-EDR(2Mbps) | -      | -             | -              | -                    |
| 2402MHz       | Pass   | 2.80          | 0.72           | 21.00                |
| 2440MHz       | Pass   | 2.80          | 2.14           | 21.00                |
| 2480MHz       | Pass   | 2.80          | 3.74           | 21.00                |
| BT-EDR(3Mbps) | -      | -             | -              | -                    |
| 2402MHz       | Pass   | 2.80          | 1.19           | 21.00                |
| 2440MHz       | Pass   | 2.80          | 2.47           | 21.00                |
| 2480MHz       | Pass   | 2.80          | 4.07           | 21.00                |

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

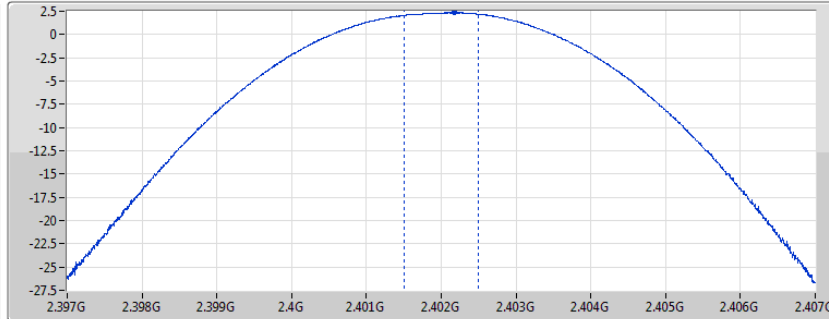
## BT-BR(1Mbps)

## PK Power

2402MHz

14/01/2020

CF  
2.402GHz  
Span  
10MHz  
RBW  
3MHz  
VBW  
10MHz  
Sweep Time  
20ms  
Detector Type  
Peak  
CP BW  
NaNHz



Port1

Sum=Total Power  
PX=Port X

| Sum(dBm) | P1(dBm) |
|----------|---------|
| 2.36     | 2.36    |

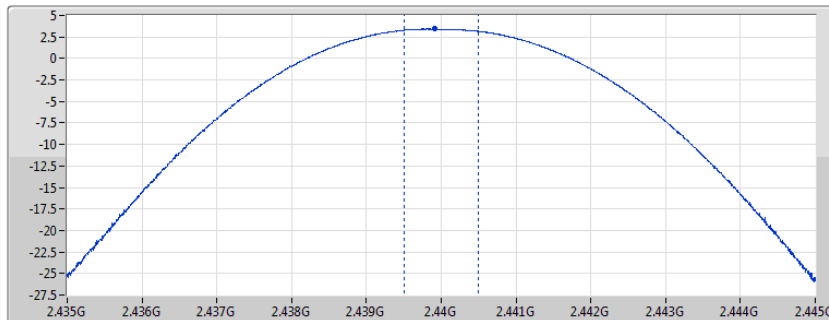
## BT-BR(1Mbps)

## PK Power

2440MHz

14/01/2020

CF  
2.44GHz  
Span  
10MHz  
RBW  
3MHz  
VBW  
10MHz  
Sweep Time  
20ms  
Detector Type  
Peak  
CP BW  
NaNHz



Port1

Sum=Total Power  
PX=Port X

| Sum(dBm) | P1(dBm) |
|----------|---------|
| 3.44     | 3.44    |

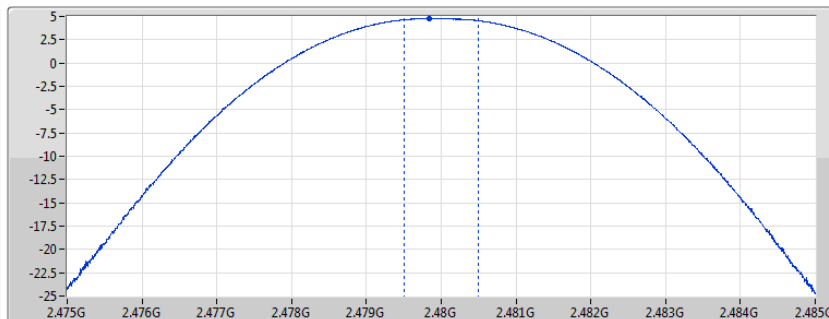
## BT-BR(1Mbps)

## PK Power

2480MHz

14/01/2020

CF  
2.48GHz  
Span  
10MHz  
RBW  
3MHz  
VBW  
10MHz  
Sweep Time  
20ms  
Detector Type  
Peak  
CP BW  
NaNHz



Port1

Sum=Total Power  
PX=Port X

| Sum(dBm) | P1(dBm) |
|----------|---------|
| 4.78     | 4.78    |

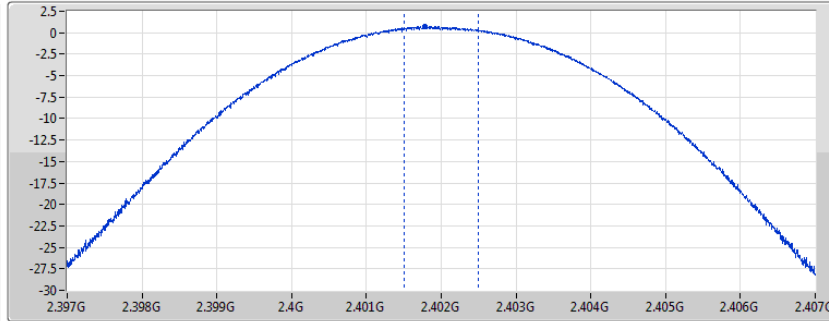
## BT-EDR(2Mbps)

## PK Power

2402MHz

14/01/2020

CF  
2.402GHz  
Span  
10MHz  
RBW  
3MHz  
VBW  
10MHz  
Sweep Time  
20ms  
Detector Type  
Peak  
CP BW  
NaNHz



Port1

Sum=Total Power  
PX=Port X

| Sum(dBm) | P1(dBm) |
|----------|---------|
| 0.72     | 0.72    |

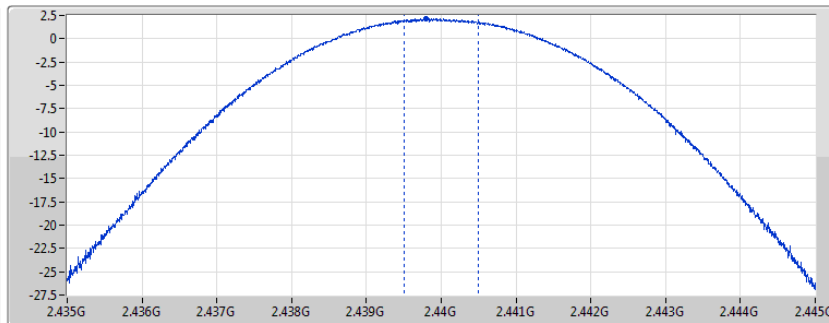
## BT-EDR(2Mbps)

## PK Power

2440MHz

14/01/2020

CF  
2.44GHz  
Span  
10MHz  
RBW  
3MHz  
VBW  
10MHz  
Sweep Time  
20ms  
Detector Type  
Peak  
CP BW  
NaNHz



Port1

Sum=Total Power  
PX=Port X

| Sum(dBm) | P1(dBm) |
|----------|---------|
| 2.14     | 2.14    |

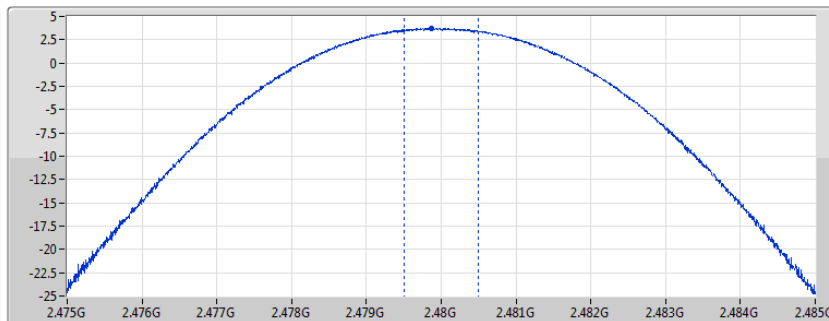
## BT-EDR(2Mbps)

## PK Power

2480MHz

14/01/2020

CF  
2.48GHz  
Span  
10MHz  
RBW  
3MHz  
VBW  
10MHz  
Sweep Time  
20ms  
Detector Type  
Peak  
CP BW  
NaNHz



Port1

Sum=Total Power  
PX=Port X

| Sum(dBm) | P1(dBm) |
|----------|---------|
| 3.74     | 3.74    |

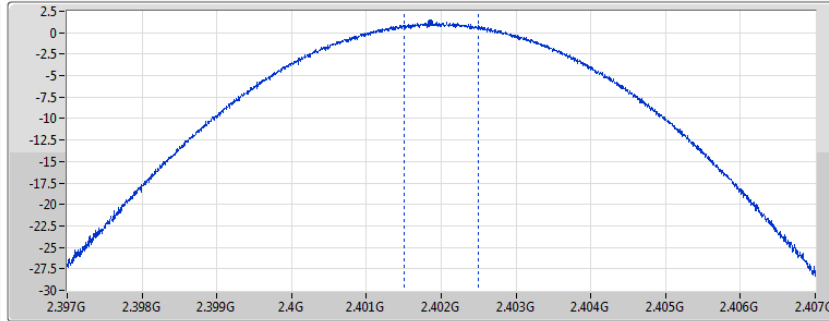
## BT-EDR(3Mbps)

## PK Power

2402MHz

14/01/2020

CF  
2.402GHz  
Span  
10MHz  
RBW  
3MHz  
VBW  
10MHz  
Sweep Time  
20ms  
Detector Type  
Peak  
CP BW  
NaNHz



Port1

Sum=Total Power  
PX=Port X

| Sum(dBm) | P1(dBm) |
|----------|---------|
| 1.19     | 1.19    |

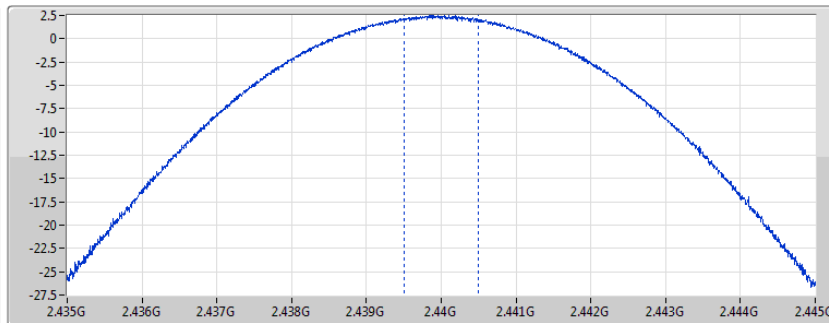
## BT-EDR(3Mbps)

## PK Power

2440MHz

14/01/2020

CF  
2.44GHz  
Span  
10MHz  
RBW  
3MHz  
VBW  
10MHz  
Sweep Time  
20ms  
Detector Type  
Peak  
CP BW  
NaNHz



Port1

Sum=Total Power  
PX=Port X

| Sum(dBm) | P1(dBm) |
|----------|---------|
| 2.47     | 2.47    |

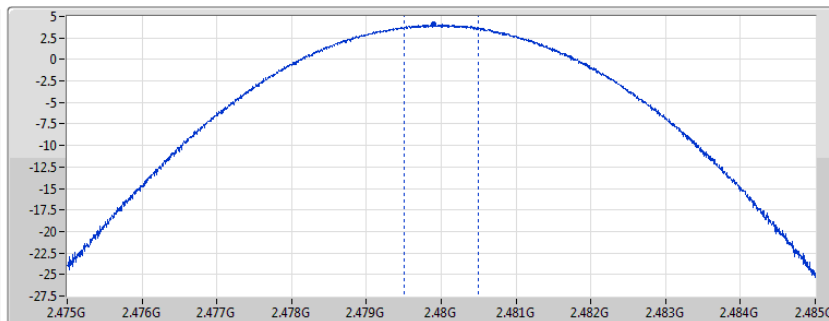
## BT-EDR(3Mbps)

## PK Power

2480MHz

14/01/2020

CF  
2.48GHz  
Span  
10MHz  
RBW  
3MHz  
VBW  
10MHz  
Sweep Time  
20ms  
Detector Type  
Peak  
CP BW  
NaNHz



Port1

Sum=Total Power  
PX=Port X

| Sum(dBm) | P1(dBm) |
|----------|---------|
| 4.07     | 4.07    |





**Summary**

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

**Result**

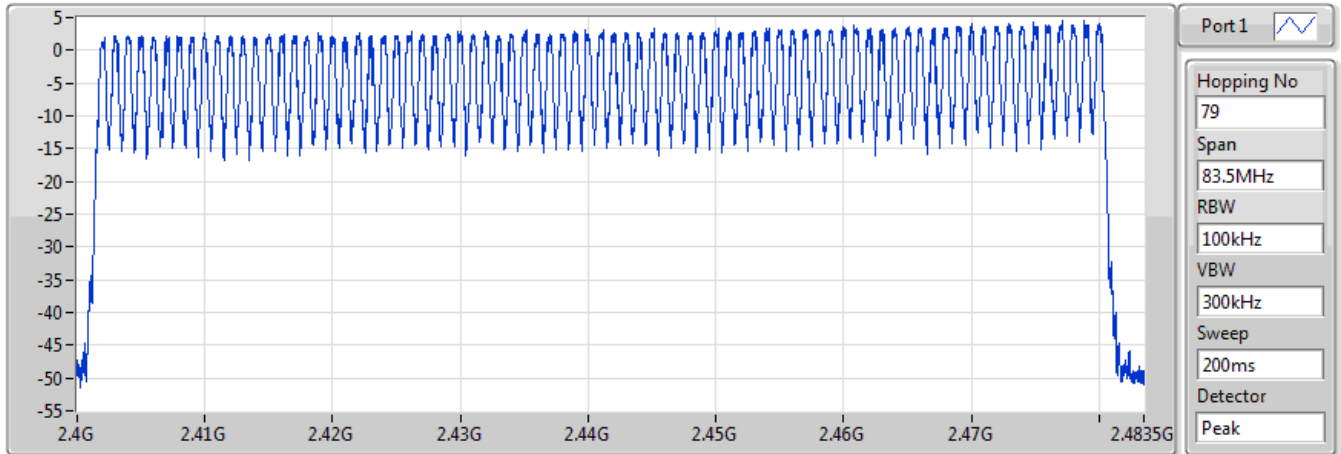
| Mode          | Result | Hopping No | Limit |
|---------------|--------|------------|-------|
| BT-BR(1Mbps)  | -      | -          | -     |
| 2440MHz       | Pass   | 79         | 15    |
| BT-EDR(2Mbps) | -      | -          | -     |
| 2440MHz       | Pass   | 79         | 15    |
| BT-EDR(3Mbps) | -      | -          | -     |
| 2440MHz       | Pass   | 79         | 15    |

**BT-BR(1Mbps)**

**2440MHz**

**Hopping Ch**

14/01/2020



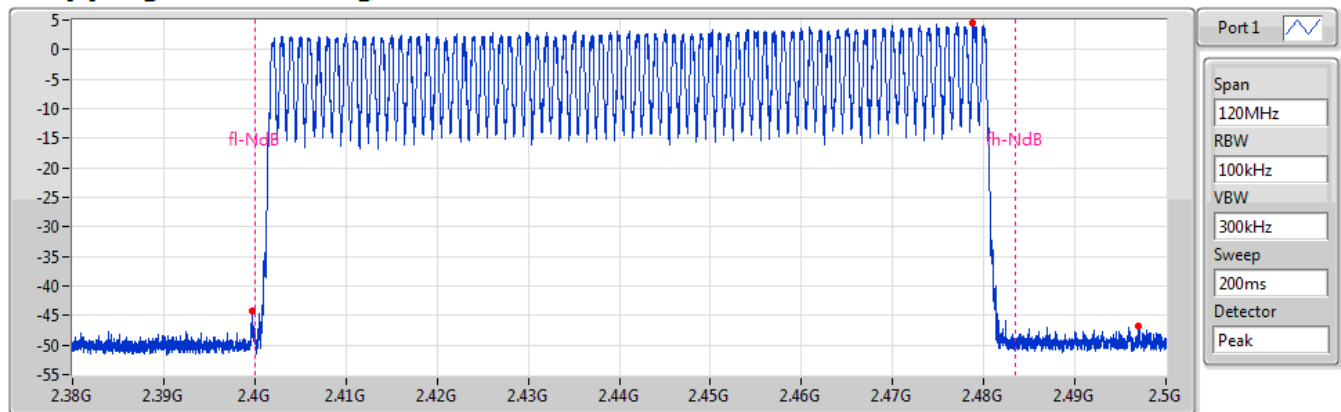
| Hopping No | Limit |
|------------|-------|
| 79         | 15    |

**BT-BR(1Mbps)**

**2440MHz**

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

14/01/2020



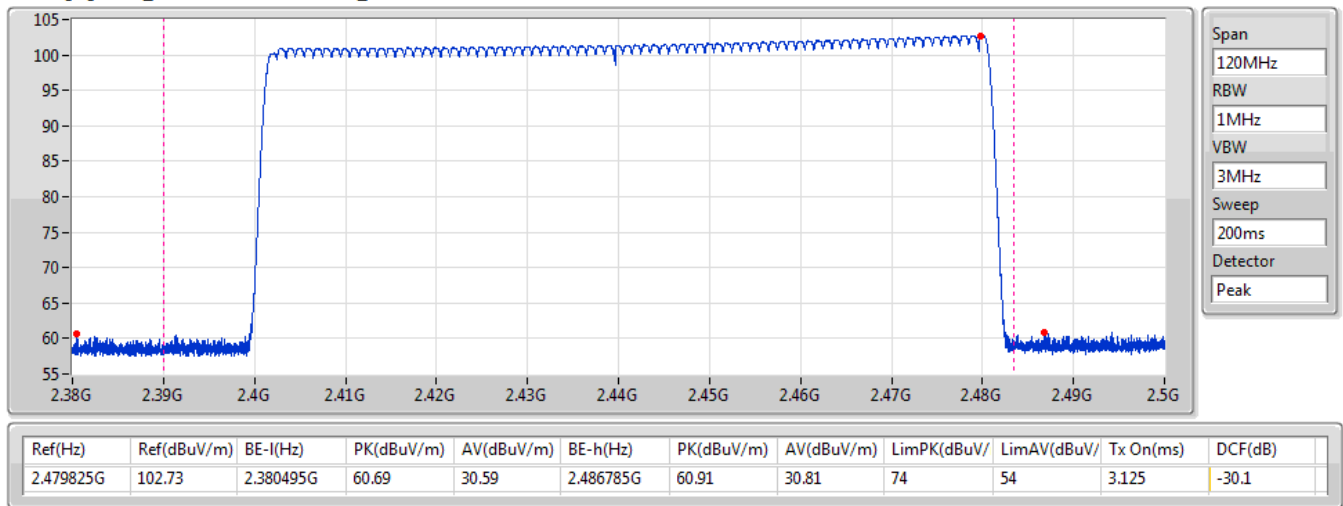
| Limit(dBm) | Ref(Hz)   | Ref(dBm) | BE-l(Hz) | BE-l(dBm) | BE-h(Hz)  | BE-h(dBm) |
|------------|-----------|----------|----------|-----------|-----------|-----------|
| -15.43     | 2.478835G | 4.57     | 2.39968G | -44.12    | 2.496955G | -46.77    |

### BT-BR(1Mbps)

2440MHz

### Hopping Ch Bandedge (Restricted Band)

14/01/2020

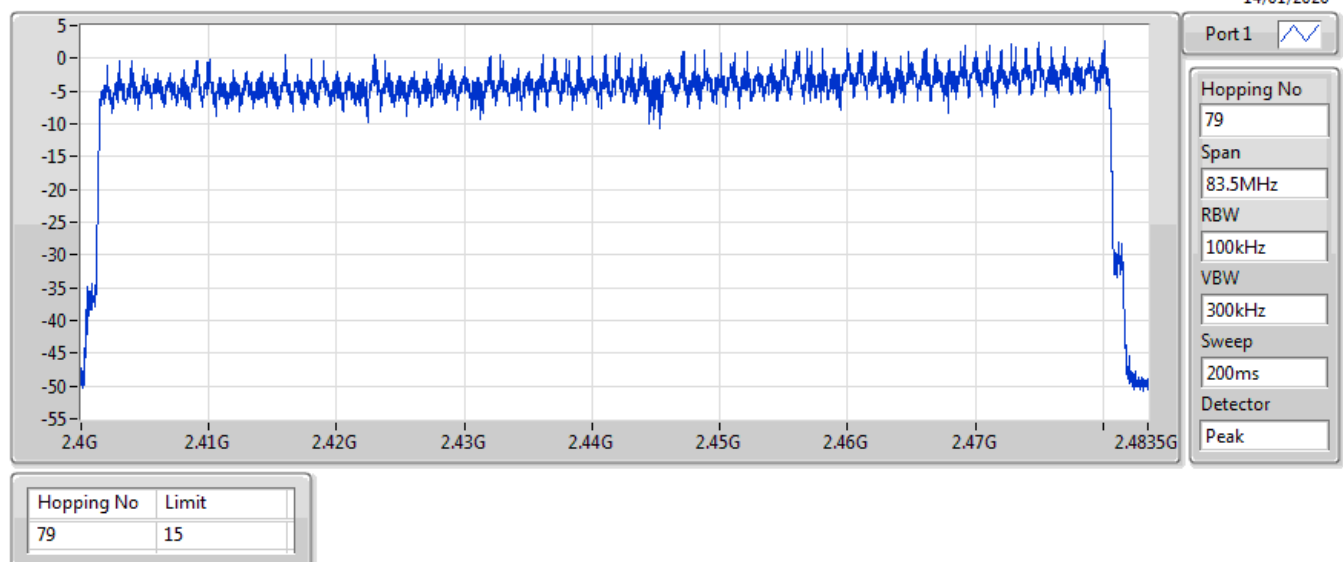


### BT-EDR(2Mbps)

2440MHz

### Hopping Ch

14/01/2020

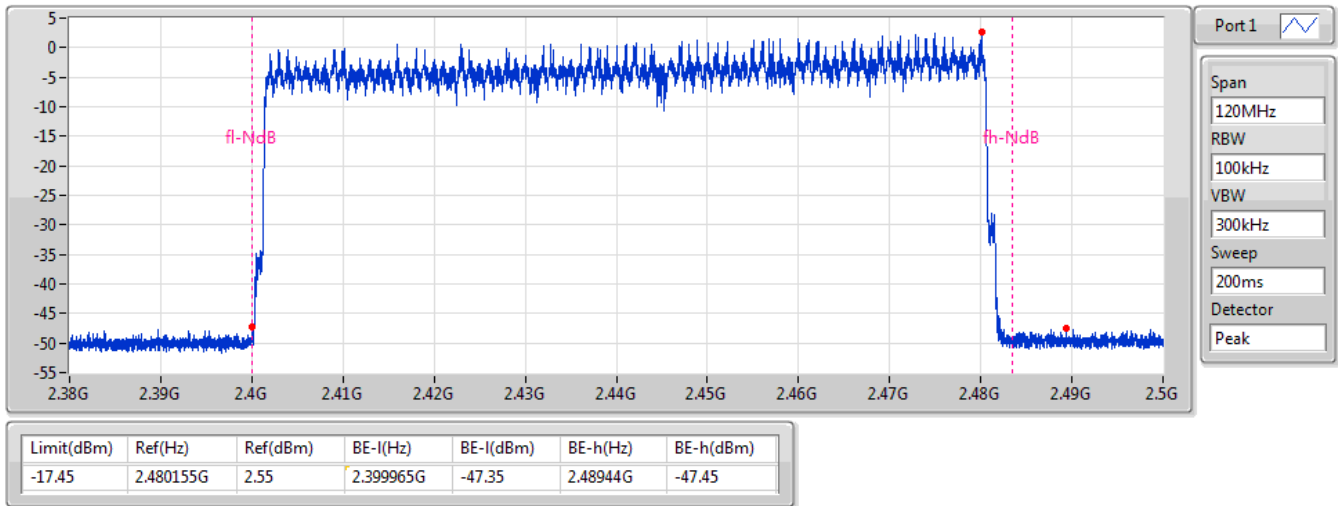


**BT-EDR(2Mbps)**

**2440MHz**

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

14/01/2020

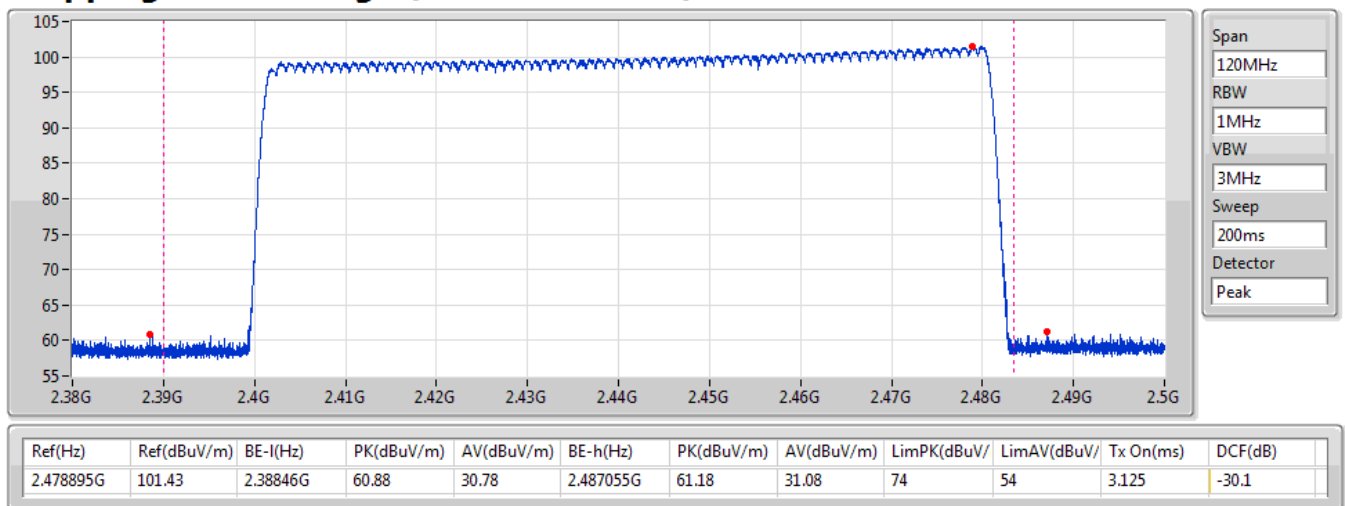


**BT-EDR(2Mbps)**

**2440MHz**

**Hopping Ch Bandedge (Restricted Band)**

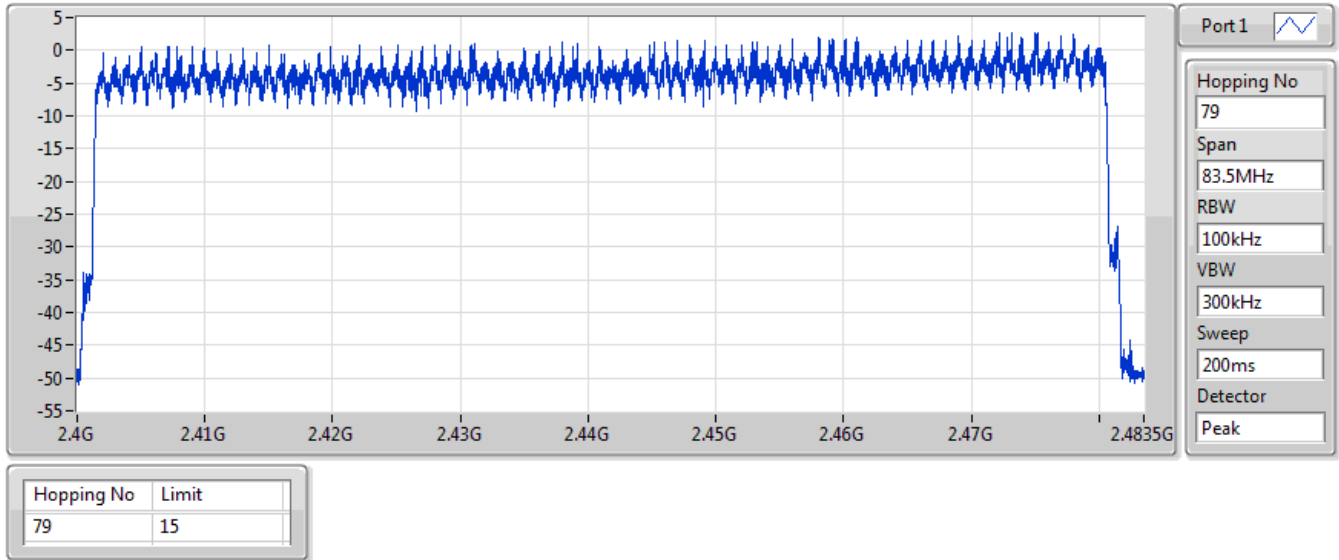
14/01/2020



### BT-EDR(3Mbps) 2440MHz

### Hopping Ch

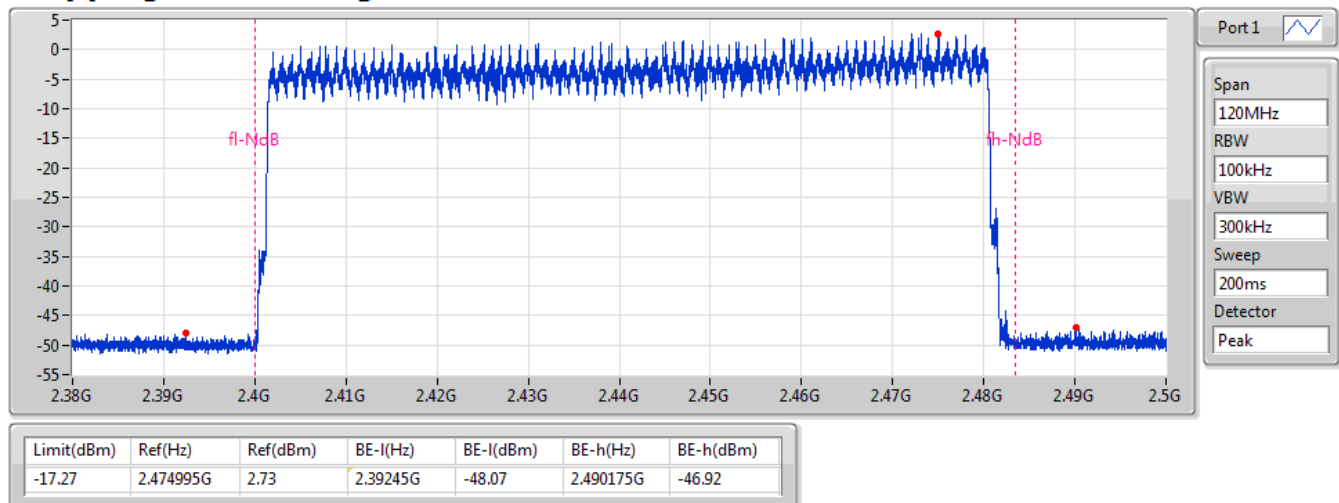
14/01/2020



### BT-EDR(3Mbps) 2440MHz

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

14/01/2020

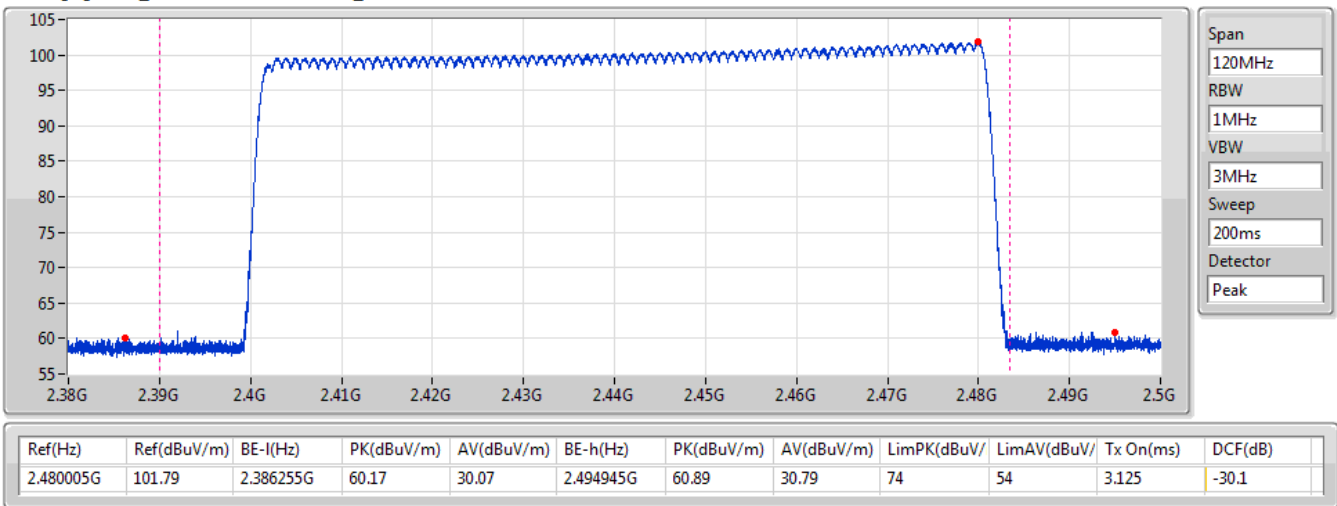


**BT-EDR(3Mbps)**

**2440MHz**

**Hopping Ch Bandedge (Restricted Band)**

14/01/2020





**Summary**

| Mode          | Max-Dwell<br>(s) |
|---------------|------------------|
| 2.4-2.4835GHz | -                |
| BT-BR(1Mbps)  | 309.43315m       |
| BT-EDR(2Mbps) | 310.33925m       |
| BT-EDR(3Mbps) | 162.16525m       |



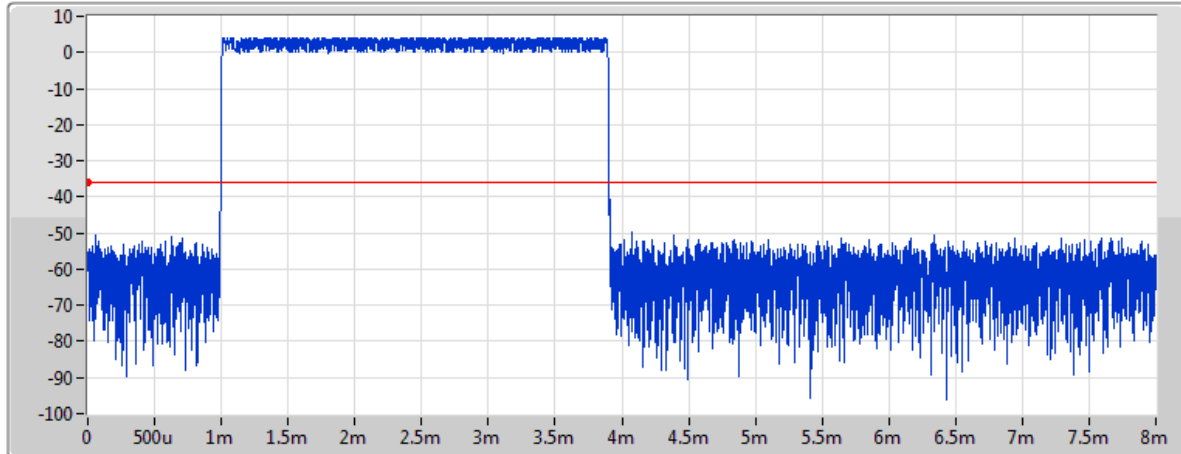
**Result**

| Mode          | Result | Period<br>(s) | Dwell<br>(s) | Limit<br>(s) | Tx On<br>(s) |
|---------------|--------|---------------|--------------|--------------|--------------|
| BT-BR(1Mbps)  | -      | -             | -            | -            | -            |
| 2440MHz       | Pass   | 31.6          | 309.43315m   | 400m         | 2.90275m     |
| BT-EDR(2Mbps) | -      | -             | -            | -            | -            |
| 2440MHz       | Pass   | 31.6          | 310.33925m   | 400m         | 2.91125m     |
| BT-EDR(3Mbps) | -      | -             | -            | -            | -            |
| 2440MHz       | Pass   | 31.6          | 162.16525m   | 400m         | 1.52125m     |

## BT-BR(1Mbps)

2440MHz

14/01/2020



Port1

Ch Freq

2.44GHz

RBW

300kHz

VBW

1MHz

Sweep Time

8ms

TX Time

2.90275ms

non AFH Mode

| Period(s) | Dwell(s)   | Limit(s) | Tx On(s) |
|-----------|------------|----------|----------|
| 31.6      | 309.43315m | 400m     | 2.90275m |

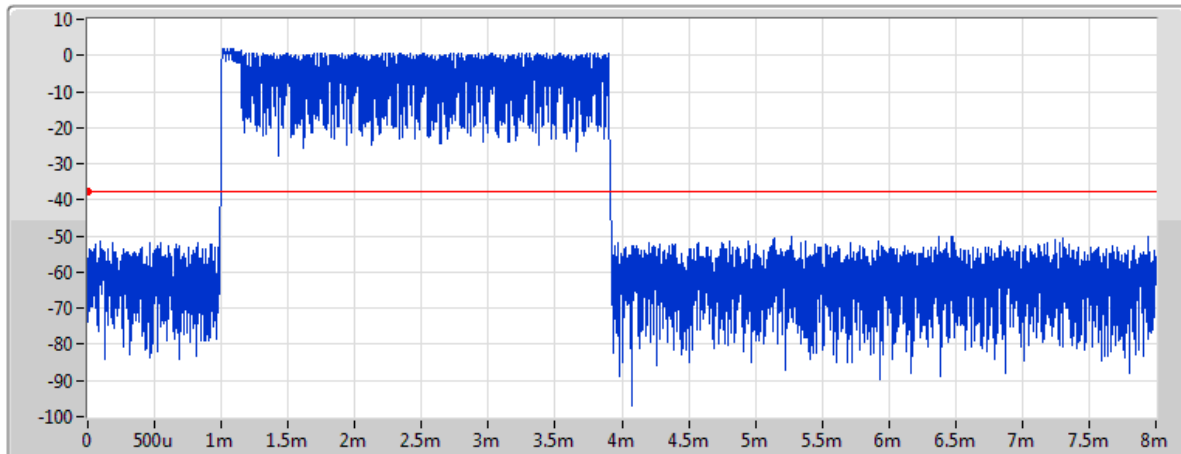
AFH Mode

| Period(s) | Dwell(s)    | Limit(s) | Tx On(s) |
|-----------|-------------|----------|----------|
| 8         | 154.716575m | 400m     | 2.90275m |

## BT-EDR(2Mbps)

2440MHz

14/01/2020



Port1

Ch Freq

2.44GHz

RBW

300kHz

VBW

1MHz

Sweep Time

8ms

TX Time

2.91125ms

non AFH Mode

| Period(s) | Dwell(s)   | Limit(s) | Tx On(s) |
|-----------|------------|----------|----------|
| 31.6      | 310.33925m | 400m     | 2.91125m |

AFH Mode

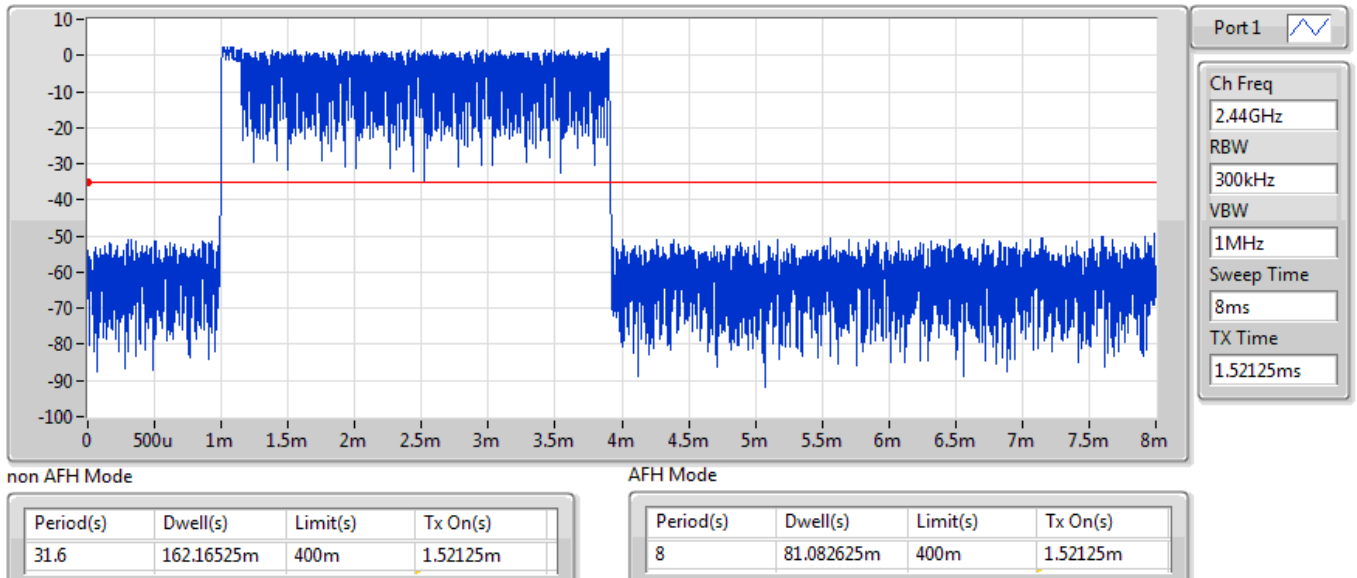
| Period(s) | Dwell(s)    | Limit(s) | Tx On(s) |
|-----------|-------------|----------|----------|
| 8         | 155.169625m | 400m     | 2.91125m |

## BT-EDR(3Mbps)

2440MHz

## Dwell

14/01/2020



**Summary**

| Mode          | Result | Ref<br>(Hz) | Ref<br>(dBm) | Limit<br>(dBm) | Freq<br>(Hz) | Level<br>(dBm) | Freq<br>(Hz) | Level<br>(dBm) | Freq<br>(Hz) | Level<br>(dBm) | Freq<br>(Hz) | Level<br>(dBm) | Freq<br>(Hz) | Level<br>(dBm) | Port |
|---------------|--------|-------------|--------------|----------------|--------------|----------------|--------------|----------------|--------------|----------------|--------------|----------------|--------------|----------------|------|
| 2.4-2.4835GHz | -      | -           | -            | -              | -            | -              | -            | -              | -            | -              | -            | -              | -            | -              | -    |
| BT-BR(1Mbps)  | Pass   | 2.40217G    | 1.92         | -18.08         | 321.99M      | -54.54         | 2.39968G     | -44.02         | 2.4G         | -47.59         | 2.49796G     | -53.00         | 2.55693G     | -47.99         | 1    |
| BT-EDR(2Mbps) | Pass   | 2.40213G    | -0.82        | -20.82         | 49.98M       | -42.75         | 2.4G         | -43.56         | 2.4G         | -47.16         | 2.49786G     | -52.98         | 6.88751G     | -48.63         | 1    |
| BT-EDR(3Mbps) | Pass   | 2.40213G    | -0.54        | -20.54         | 49.98M       | -43.09         | 2.4G         | -43.57         | 2.4G         | -43.40         | 2.49378G     | -53.71         | 16.76347G    | -47.97         | 1    |

**Result**

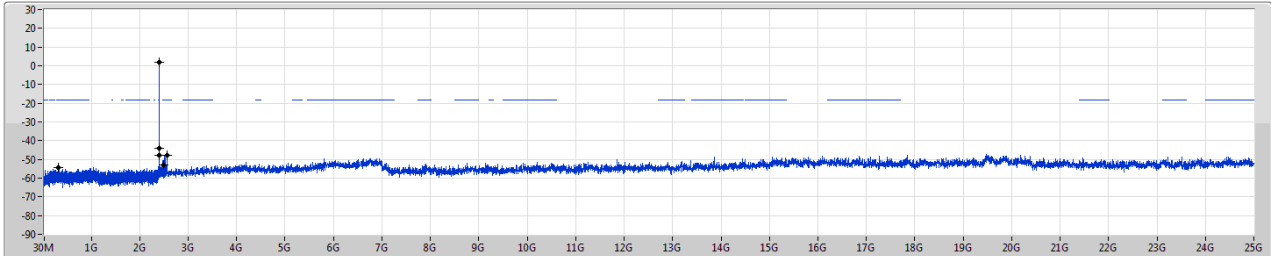
| Mode          | Result | Ref<br>(Hz) | Ref<br>(dBm) | Limit<br>(dBm) | Freq<br>(Hz) | Level<br>(dBm) | Freq<br>(Hz) | Level<br>(dBm) | Freq<br>(Hz) | Level<br>(dBm) | Freq<br>(Hz) | Level<br>(dBm) | Freq<br>(Hz) | Level<br>(dBm) | Port |
|---------------|--------|-------------|--------------|----------------|--------------|----------------|--------------|----------------|--------------|----------------|--------------|----------------|--------------|----------------|------|
| BT-BR(1Mbps)  | -      | -           | -            | -              | -            | -              | -            | -              | -            | -              | -            | -              | -            | -              | -    |
| 2402MHz       | Pass   | 2.40217G    | 1.92         | -18.08         | 321.99M      | -54.54         | 2.39968G     | -44.02         | 2.4G         | -47.59         | 2.49796G     | -53.00         | 2.55693G     | -47.99         | 1    |
| 2440MHz       | Pass   | 2.44G       | 2.44         | -17.56         | 913.89M      | -54.58         | 2.39828G     | -53.97         | 2.4835G      | -56.37         | 2.49218G     | -51.68         | 2.54287G     | -47.94         | 1    |
| 2480MHz       | Pass   | 2.4802G     | 4.25         | -15.75         | 803.15M      | -54.22         | 2.39738G     | -53.83         | 2.4835G      | -55.53         | 2.49776G     | -52.58         | 16.74941G    | -48.06         | 1    |
| BT-EDR(2Mbps) | -      | -           | -            | -              | -            | -              | -            | -              | -            | -              | -            | -              | -            | -              | -    |
| 2402MHz       | Pass   | 2.40213G    | -0.82        | -20.82         | 49.98M       | -42.75         | 2.4G         | -43.56         | 2.4G         | -47.16         | 2.49786G     | -52.98         | 6.88751G     | -48.63         | 1    |
| 2440MHz       | Pass   | 2.44016G    | 0.65         | -19.35         | 49.98M       | -41.67         | 2.39427G     | -54.65         | 2.4G         | -56.93         | 2.49197G     | -53.18         | 16.56662G    | -48.12         | 1    |
| 2480MHz       | Pass   | 2.48016G    | 1.94         | -18.06         | 49.98M       | -43.22         | 2.39624G     | -54.18         | 2.4835G      | -55.55         | 2.50112G     | -53.45         | 16.77191G    | -47.55         | 1    |
| BT-EDR(3Mbps) | -      | -           | -            | -              | -            | -              | -            | -              | -            | -              | -            | -              | -            | -              | -    |
| 2402MHz       | Pass   | 2.40213G    | -0.54        | -20.54         | 49.98M       | -43.09         | 2.4G         | -43.57         | 2.4G         | -43.40         | 2.49378G     | -53.71         | 16.76347G    | -47.97         | 1    |
| 2440MHz       | Pass   | 2.44G       | 0.73         | -19.27         | 49.98M       | -42.53         | 2.39373G     | -54.28         | 2.4835G      | -55.59         | 2.49104G     | -52.53         | 16.73816G    | -48.16         | 1    |
| 2480MHz       | Pass   | 2.47983G    | 2.78         | -17.22         | 49.98M       | -42.75         | 2.39239G     | -54.57         | 2.4835G      | -53.91         | 2.48454G     | -52.54         | 24.84252G    | -48.46         | 1    |

BT-BR(1Mbps)

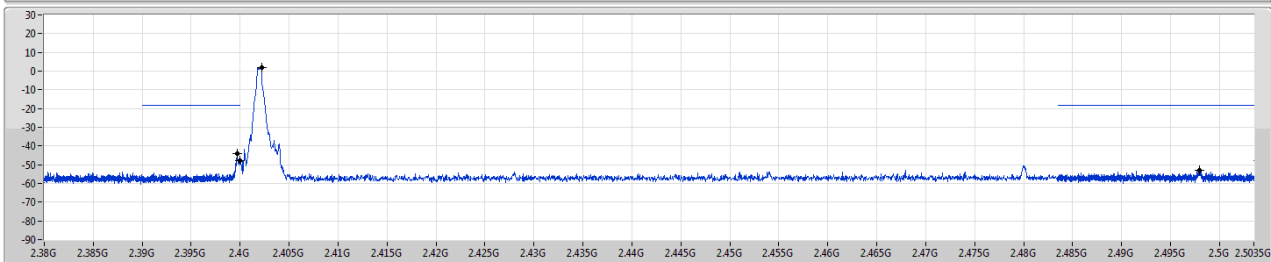
CSE NdB

2402MHz

14/01/2020



Port1



RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

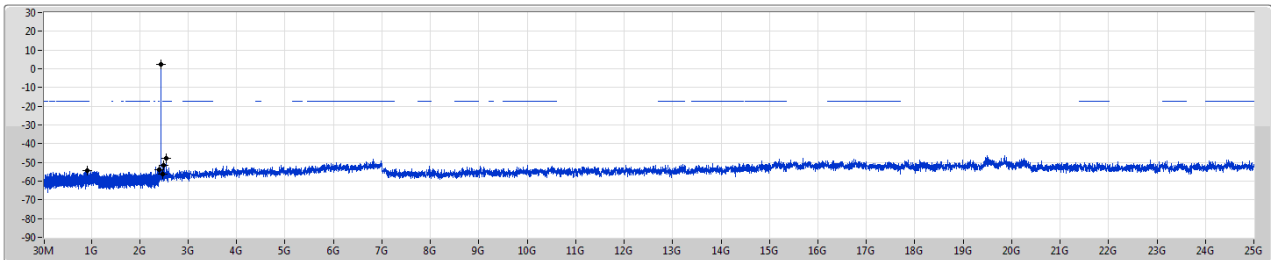
| Ref(Hz)  | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|----------|----------|------------|----------|------------|----------|------------|----------|------------|----------|------------|----------|------------|------|
| 2.40217G | 1.92     | -18.08     | 321.99M  | -54.54     | 2.39968G | -44.02     | 2.4G     | -47.59     | 2.49796G | -53.00     | 2.55693G | -47.99     | 1    |

BT-BR(1Mbps)

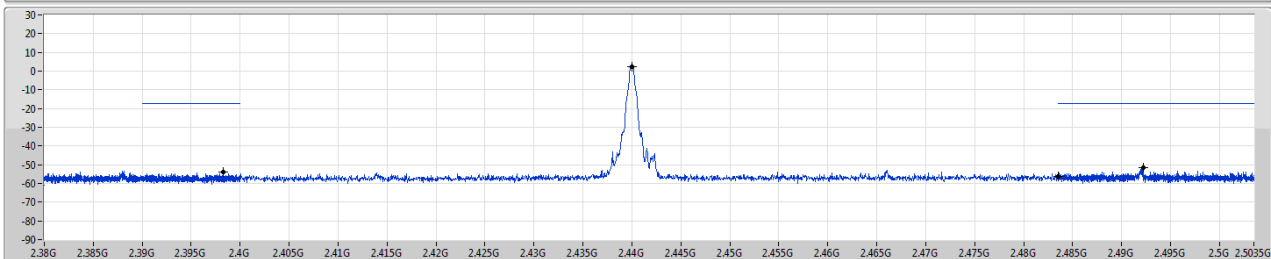
CSE NdB

2440MHz

14/01/2020



Port1



RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

| 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 |
|---------|----------|------------|----------|------------|----------|------------|----------|------------|----------|------------|----------|------------|------|
| 2.44G   | 2.44     | -17.56     | 913.89M  | -54.58     | 2.39828G | -53.97     | 2.4835G  | -56.37     | 2.49218G | -51.68     | 2.54287G | -47.94     | 1    |

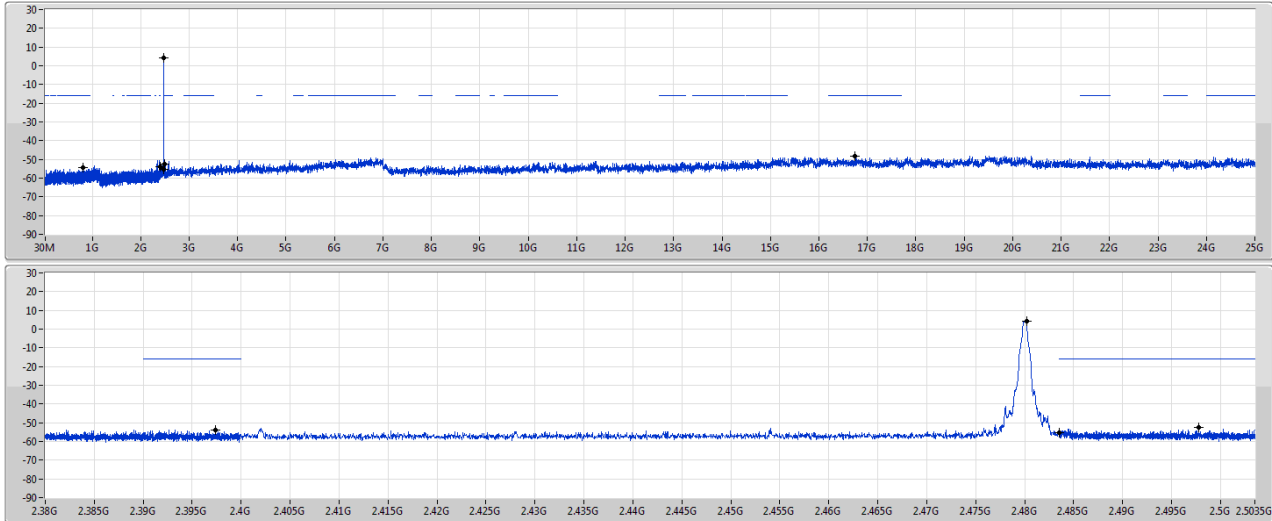
## BT-BR(1Mbps)

2480MHz

CSE NdB

14/01/2020

Port 1



RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

| 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 |
|---------|----------|------------|----------|------------|----------|------------|----------|------------|----------|------------|-----------|------------|------|
| 2.4802G | 4.25     | -15.75     | 803.15M  | -54.22     | 2.39738G | -53.83     | 2.4835G  | -55.53     | 2.49776G | -52.58     | 16.74941G | -48.06     | 1    |

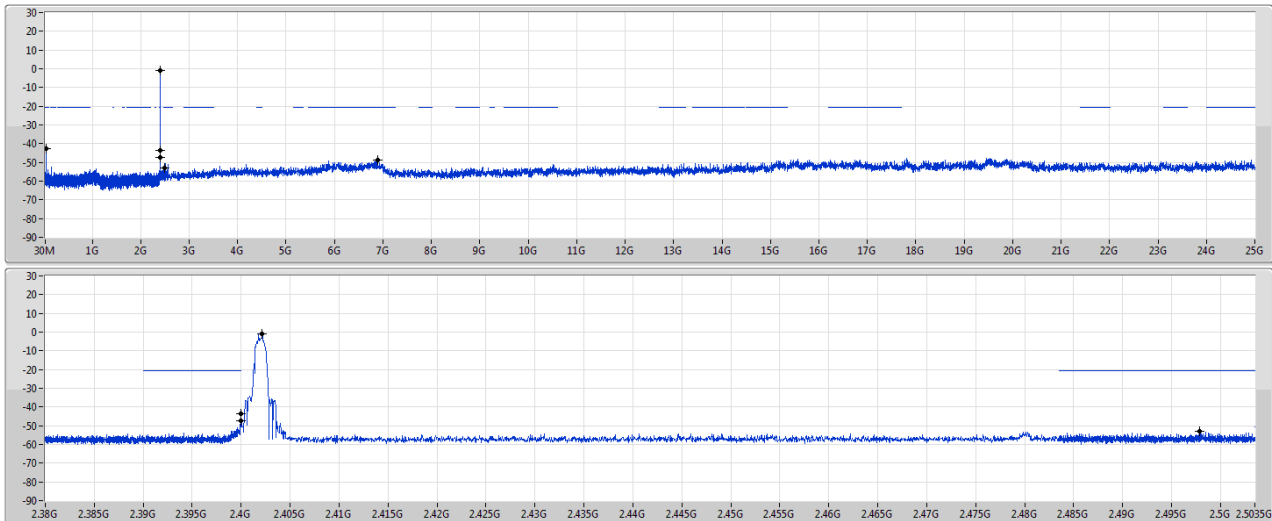
## BT-EDR(2Mbps)

2402MHz

CSE NdB

14/01/2020

Port 1



RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

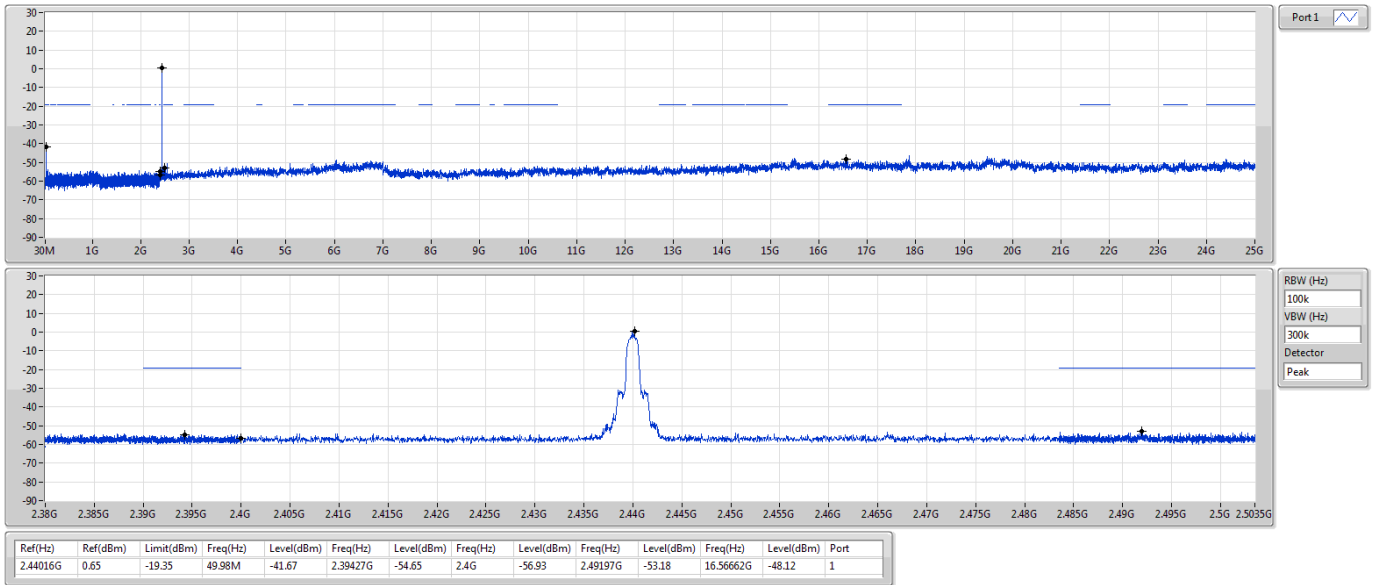
| Ref(Hz)  | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|----------|----------|------------|----------|------------|----------|------------|----------|------------|----------|------------|----------|------------|------|
| 2.40213G | -0.82    | -20.82     | 49.98M   | -42.75     | 2.4G     | -43.56     | 2.4G     | -47.16     | 2.49786G | -52.98     | 6.88751G | -48.63     | 1    |

BT-EDR(2Mbps)

2440MHz

CSE NdB

14/01/2020

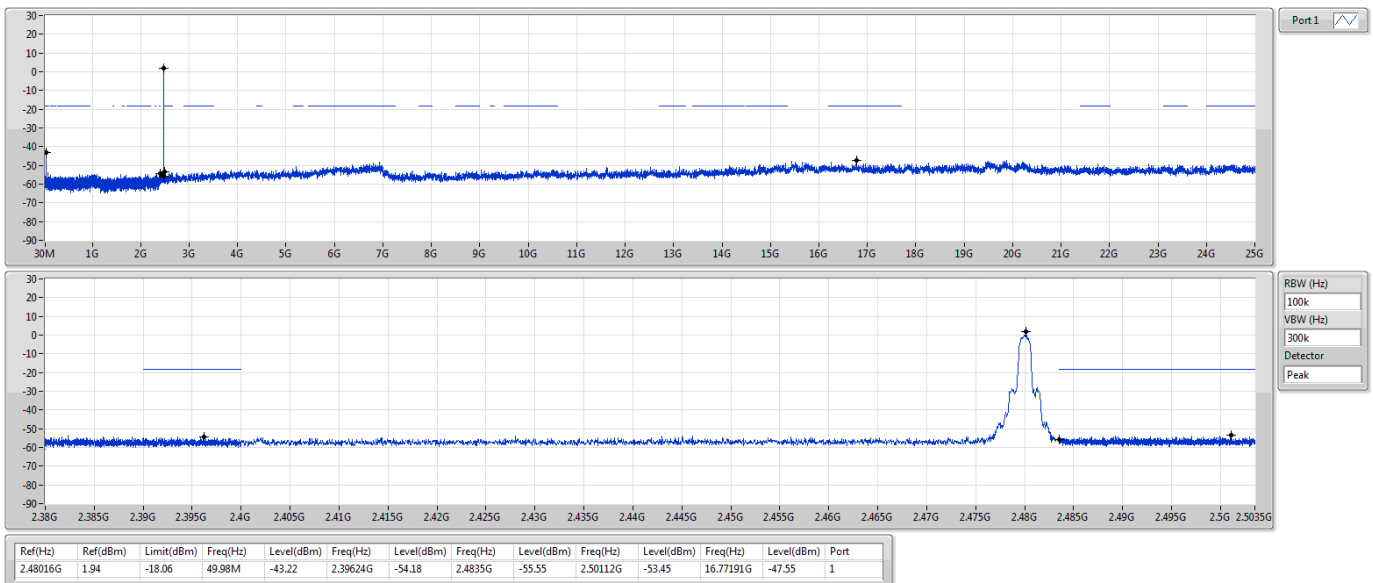


BT-EDR(2Mbps)

2480MHz

CSE NdB

14/01/2020





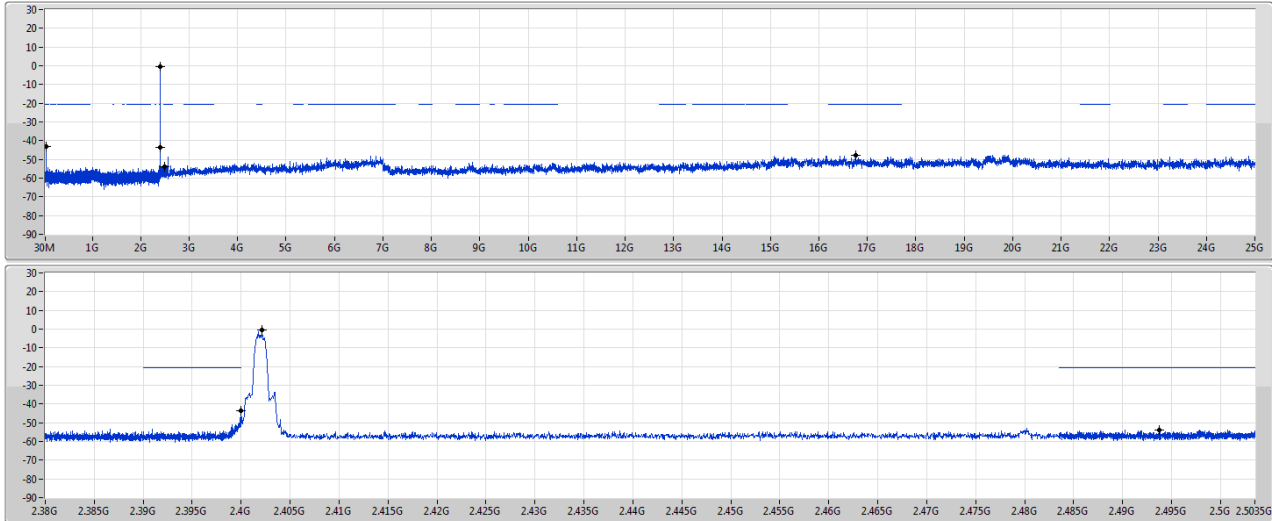
## BT-EDR(3Mbps)

2402MHz

CSE NdB

14/01/2020

Port 1



RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

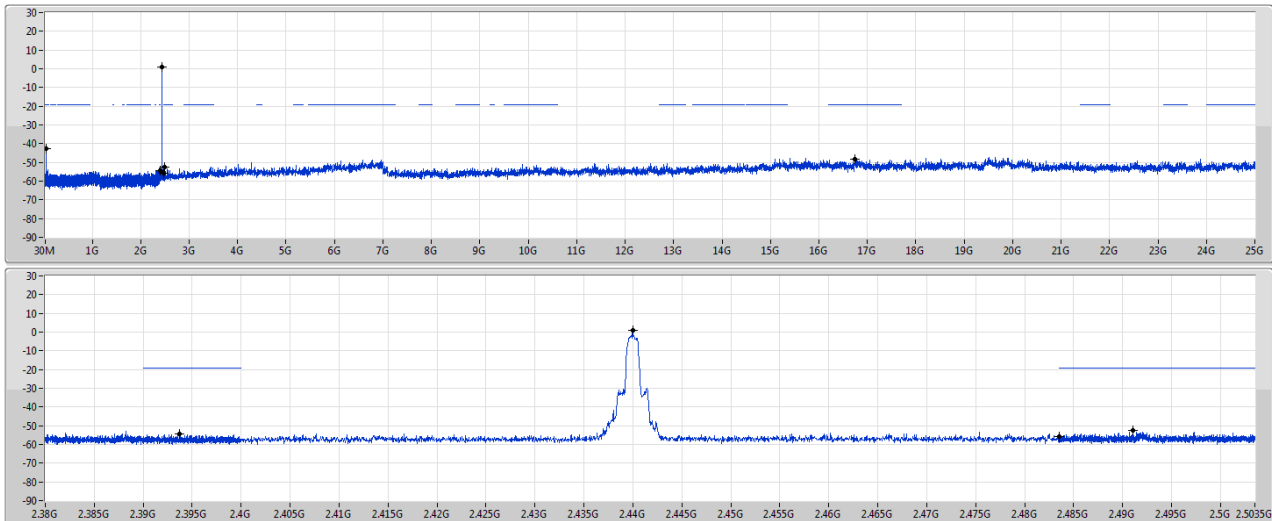
## BT-EDR(3Mbps)

2440MHz

CSE NdB

14/01/2020

Port 1



RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

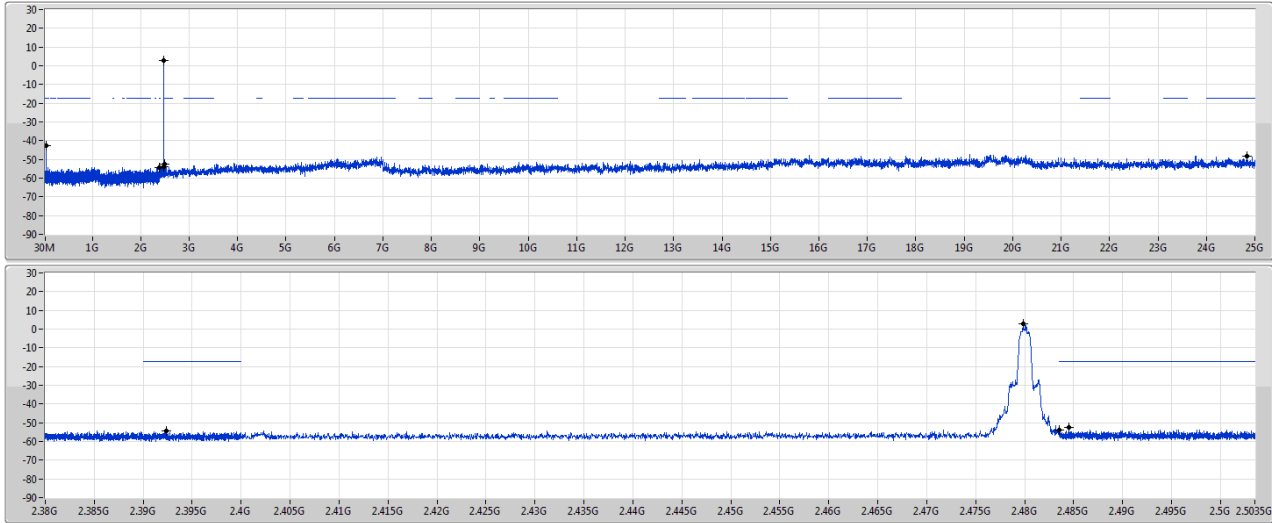
BT-EDR(3Mbps)

2480MHz

CSE NdB

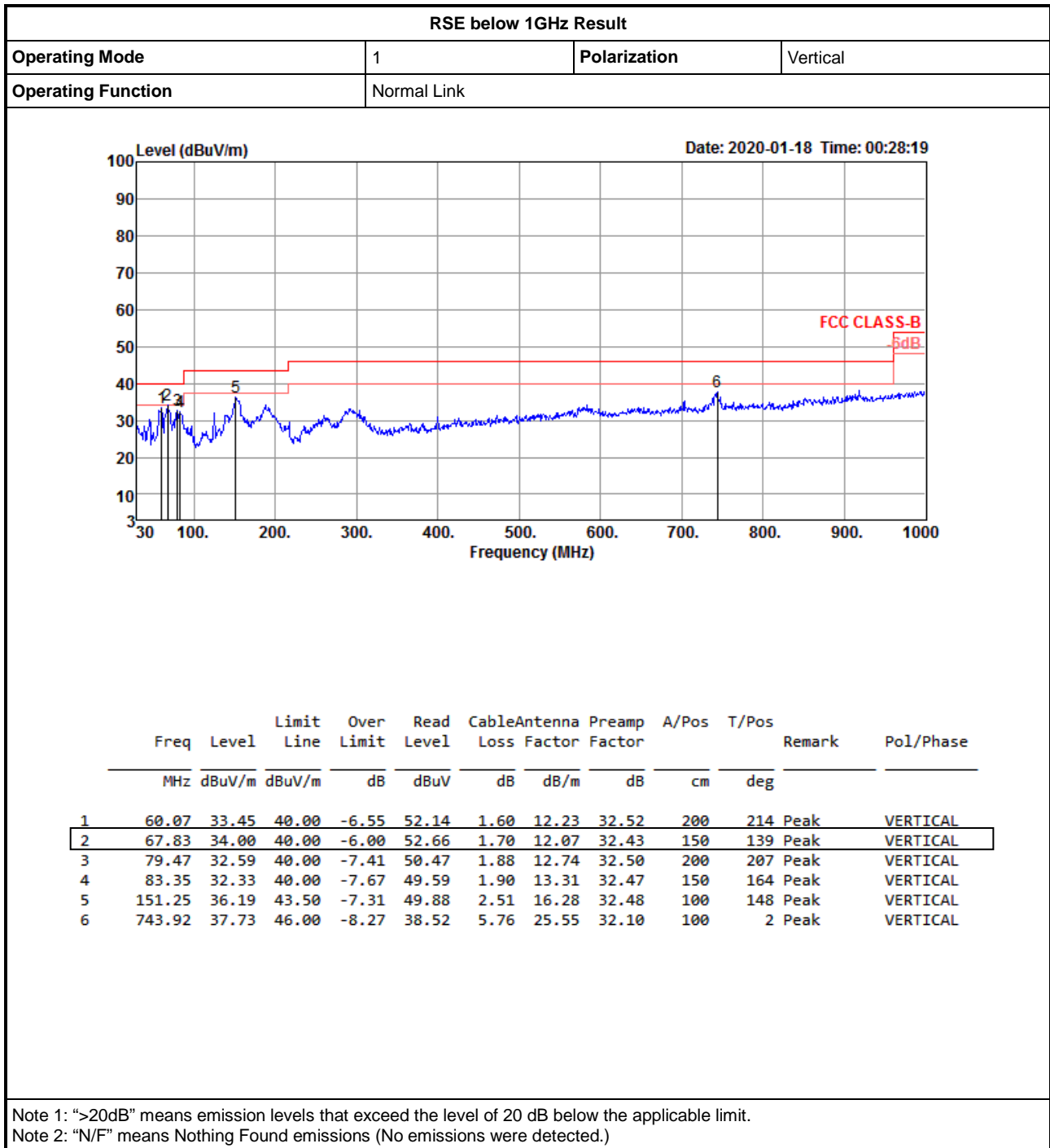
14/01/2020

Port 1



RBW (Hz)  
100k  
VBW (Hz)  
300k  
Detector  
Peak

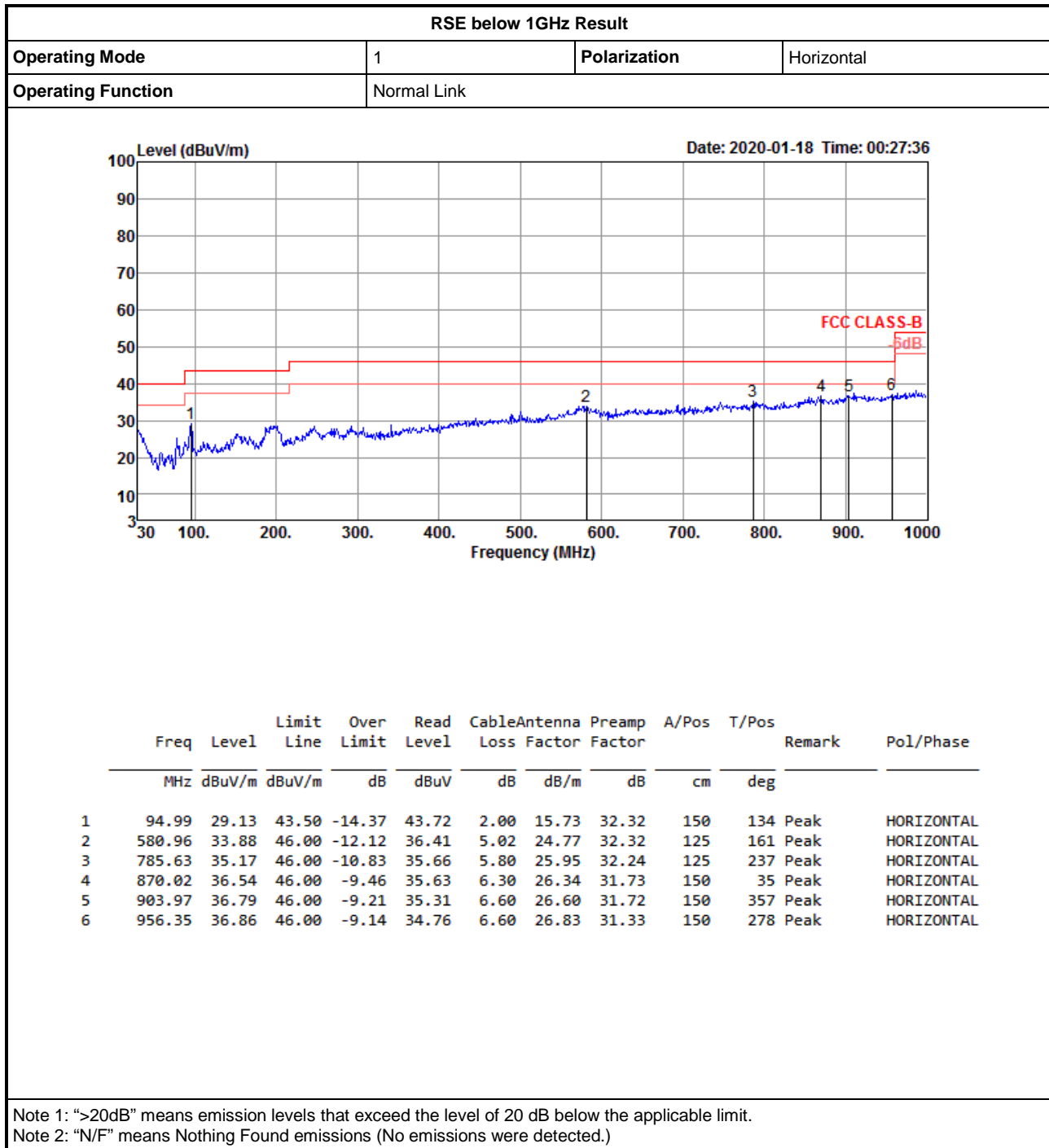
| Ref(Hz)  | Ref(dBm) | Limit(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Freq(Hz) | Level(dBm) | Port |
|----------|----------|------------|----------|------------|----------|------------|----------|------------|----------|------------|----------|------------|------|
| 2.47983G | 2.78     | -17.22     | 49.98M   | -42.75     | 2.39239G | -54.57     | 2.4835G  | -53.91     | 2.48454G | -52.54     | 2.48452G | -48.46     | 1    |





## RSE below 1GHz Result

Appendix G.1





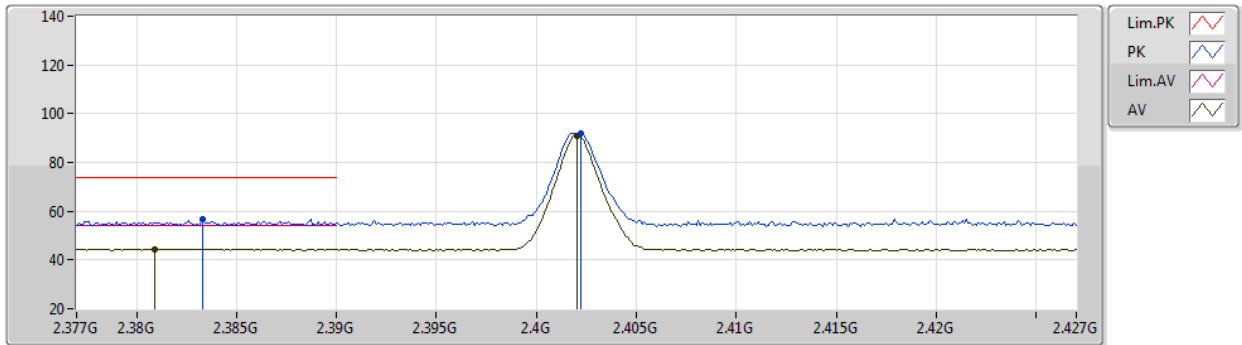
**Summary**

| Mode          | Result | Type | Freq<br>(Hz) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Dist<br>(m) | Condition  | Azimuth<br>(°) | Height<br>(m) | Comments |
|---------------|--------|------|--------------|-------------------|-------------------|----------------|-------------|------------|----------------|---------------|----------|
| 2.4-2.4835GHz | -      | -    | -            | -                 | -                 | -              | -           | -          | -              | -             | -        |
| BT-BR(1Mbps)  | Pass   | AV   | 2.4835G      | 47.26             | 54.00             | -6.74          | 3           | Horizontal | 5              | 2.86          | -        |

# BT-BR(1Mbps)

## 2402MHz\_TX

13/01/2020



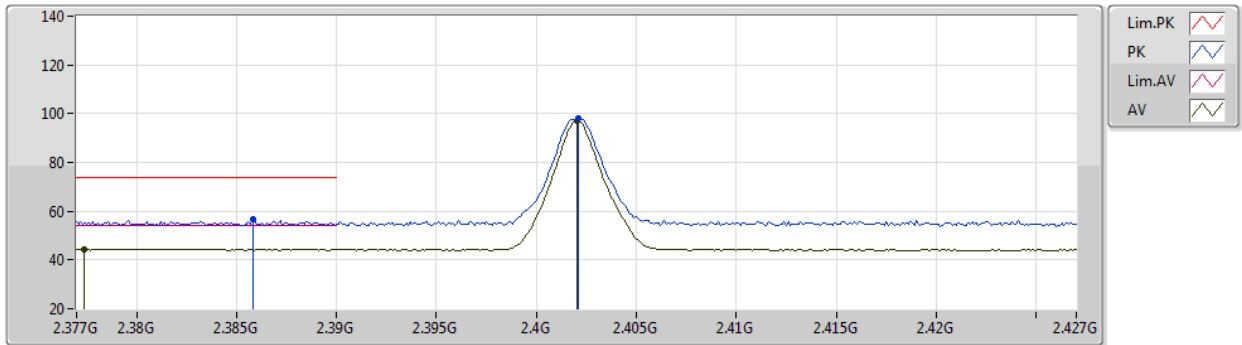
EUT Z\_1TX  
Setting 0x08  
06-E-S-5

| Type | Freq<br>(Hz) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Raw<br>(dBuV) | Dist<br>(m) | Condition | Azimuth<br>(°) | Height<br>(m) | Comment | AF<br>(dB) | CL<br>(dB) | PA<br>(dB) |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|-----------|----------------|---------------|---------|------------|------------|------------|
| PK   | 2.3833G      | 56.73             | 74.00             | -17.27         | 25.09         | 3           | Vertical  | 240            | 1.14          | -       | 27.65      | 3.99       | -          |
| AV   | 2.3809G      | 44.42             | 54.00             | -9.58          | 12.77         | 3           | Vertical  | 240            | 1.14          | -       | 27.66      | 3.99       | -          |
| PK   | 2.4022G      | 92.07             | Inf               | -Inf           | 60.48         | 3           | Vertical  | 240            | 1.14          | -       | 27.59      | 4.00       | -          |
| AV   | 2.402G       | 91.11             | Inf               | -Inf           | 59.52         | 3           | Vertical  | 240            | 1.14          | -       | 27.59      | 4.00       | -          |

# BT-BR(1Mbps)

## 2402MHz\_TX

13/01/2020



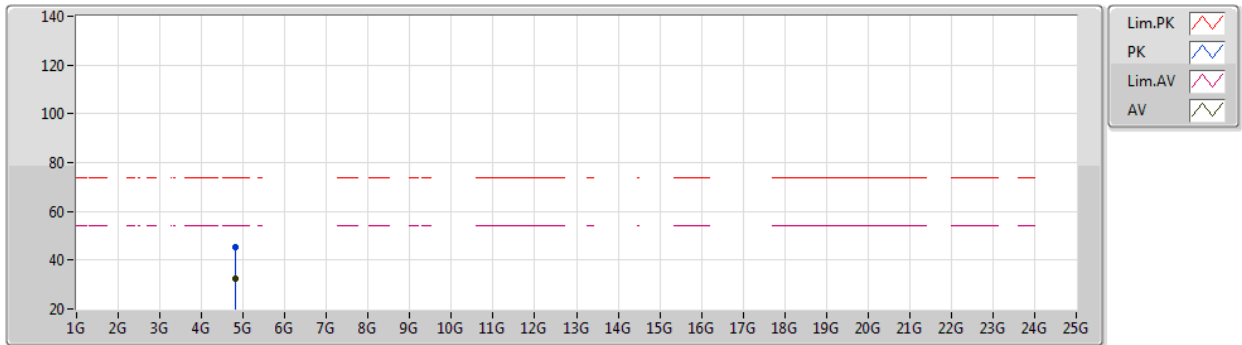
EUT Z\_1TX  
Setting 0x08  
06-E-S-5

| Type | Freq<br>(Hz) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Raw<br>(dBuV) | Dist<br>(m) | Condition  | Azimuth<br>(°) | Height<br>(m) | Comment | AF<br>(dB) | CL<br>(dB) | PA<br>(dB) |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|------------|----------------|---------------|---------|------------|------------|------------|
| PK   | 2.3858G      | 56.83             | 74.00             | -17.17         | 25.20         | 3           | Horizontal | 13             | 1.07          | -       | 27.64      | 3.99       | -          |
| AV   | 2.3774G      | 44.34             | 54.00             | -9.66          | 12.68         | 3           | Horizontal | 13             | 1.07          | -       | 27.67      | 3.99       | -          |
| PK   | 2.4021G      | 97.91             | Inf               | -Inf           | 66.32         | 3           | Horizontal | 13             | 1.07          | -       | 27.59      | 4.00       | -          |
| AV   | 2.402G       | 97.01             | Inf               | -Inf           | 65.42         | 3           | Horizontal | 13             | 1.07          | -       | 27.59      | 4.00       | -          |

# BT-BR(1Mbps)

## 2402MHz\_TX

13/01/2020



EUT\_Z\_1TX  
Setting 0x08  
06-E-S-5

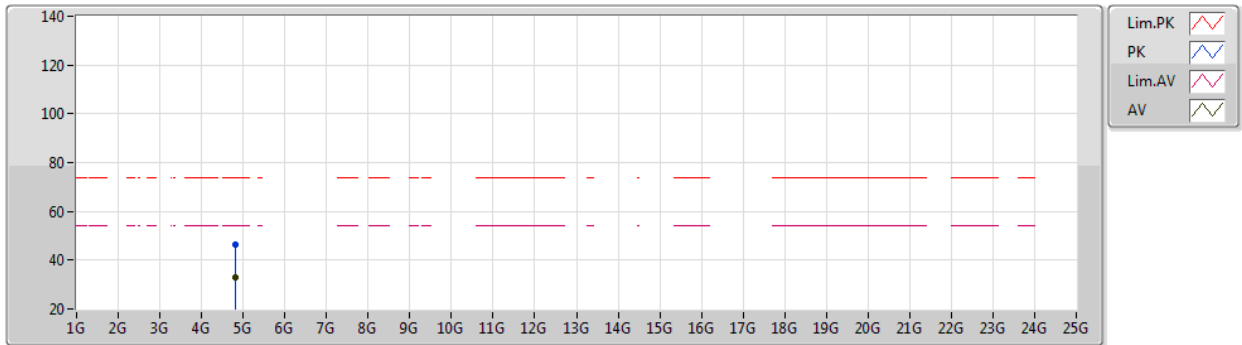
| Type | Freq<br>(Hz) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Raw<br>(dBuV) | Dist<br>(m) | Condition | Azimuth<br>(°) | Height<br>(m) | Comment | AF<br>(dB) | CL<br>(dB) | PA<br>(dB) |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|-----------|----------------|---------------|---------|------------|------------|------------|
| PK   | 4.80483G     | 45.58             | 74.00             | -28.42         | 40.95         | 3           | Vertical  | 287            | 1.07          | -       | 31.00      | 5.31       | 31.68      |
| AV   | 4.80386G     | 32.60             | 54.00             | -21.40         | 27.97         | 3           | Vertical  | 287            | 1.07          | -       | 31.00      | 5.31       | 31.68      |



# BT-BR(1Mbps)

## 2402MHz\_TX

13/01/2020



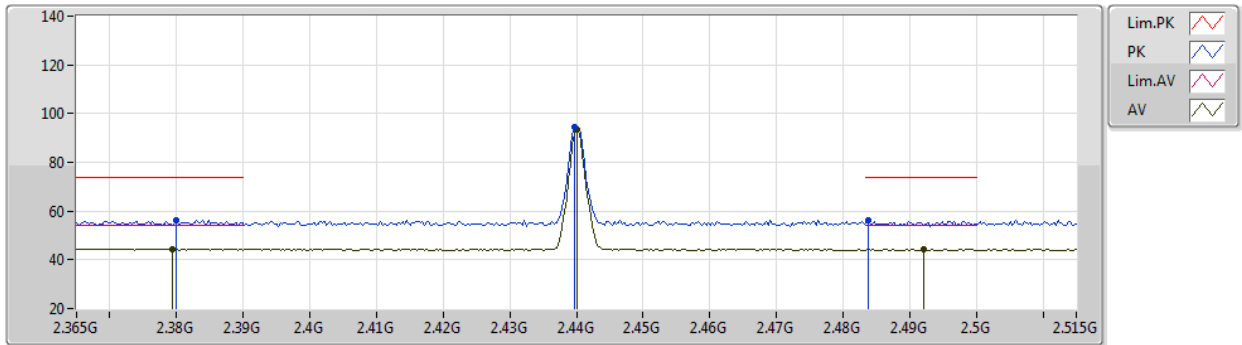
EUT\_Z\_1TX  
Setting 0x08  
06-E-S-5

| Type | Freq<br>(Hz) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Raw<br>(dBuV) | Dist<br>(m) | Condition  | Azimuth<br>(°) | Height<br>(m) | Comment | AF<br>(dB) | CL<br>(dB) | PA<br>(dB) |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|------------|----------------|---------------|---------|------------|------------|------------|
| PK   | 4.80521G     | 46.53             | 74.00             | -27.47         | 41.89         | 3           | Horizontal | 283            | 1.22          | -       | 31.01      | 5.31       | 31.68      |
| AV   | 4.80408G     | 32.76             | 54.00             | -21.24         | 28.13         | 3           | Horizontal | 283            | 1.22          | -       | 31.00      | 5.31       | 31.68      |

# BT-BR(1Mbps)

## 2440MHz\_TX

13/01/2020



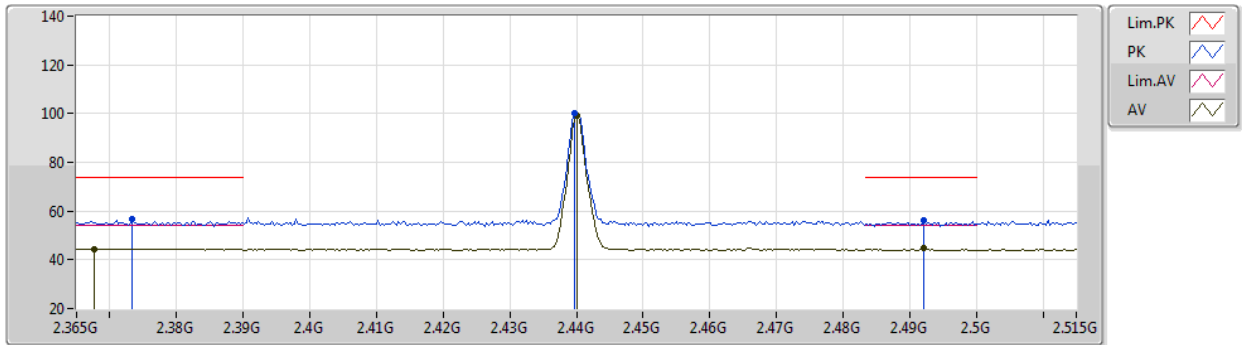
EUT Z\_1TX  
Setting 0x08  
06-E-S-5

| Type | Freq<br>(Hz) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Raw<br>(dBuV) | Dist<br>(m) | Condition | Azimuth<br>(°) | Height<br>(m) | Comment | AF<br>(dB) | CL<br>(dB) | PA<br>(dB) |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|-----------|----------------|---------------|---------|------------|------------|------------|
| PK   | 2.38G        | 56.29             | 74.00             | -17.71         | 24.64         | 3           | Vertical  | 45             | 1.14          | -       | 27.66      | 3.99       | -          |
| AV   | 2.3794G      | 44.37             | 54.00             | -9.63          | 12.72         | 3           | Vertical  | 45             | 1.14          | -       | 27.66      | 3.99       | -          |
| PK   | 2.4397G      | 94.55             | Inf               | -Inf           | 63.05         | 3           | Vertical  | 45             | 1.14          | -       | 27.48      | 4.02       | -          |
| AV   | 2.44G        | 93.62             | Inf               | -Inf           | 62.12         | 3           | Vertical  | 45             | 1.14          | -       | 27.48      | 4.02       | -          |
| PK   | 2.4838G      | 55.96             | 74.00             | -18.04         | 24.57         | 3           | Vertical  | 45             | 1.14          | -       | 27.35      | 4.04       | -          |
| AV   | 2.4922G      | 44.19             | 54.00             | -9.81          | 12.82         | 3           | Vertical  | 45             | 1.14          | -       | 27.32      | 4.05       | -          |

## BT-BR(1Mbps)

## 2440MHz\_TX

13/01/2020



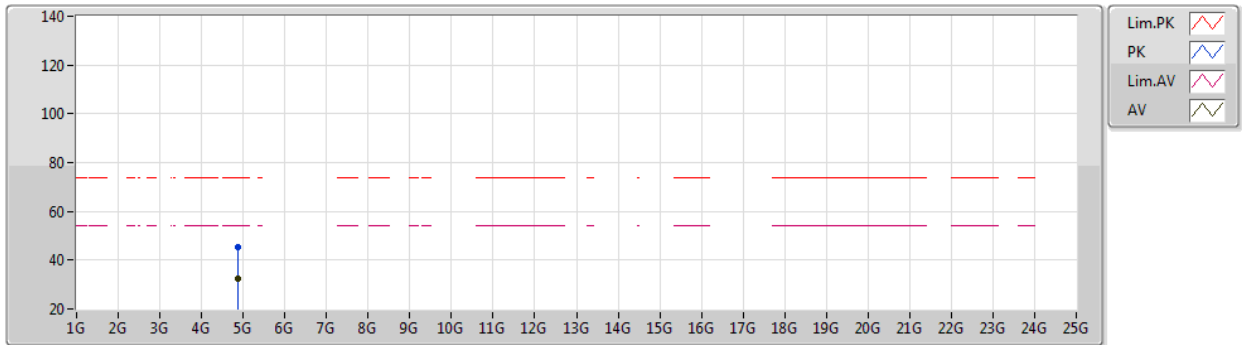
EUT Z\_1TX  
Setting 0x08  
06-E-S-5

| Type | Freq<br>(Hz) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Raw<br>(dBuV) | Dist<br>(m) | Condition  | Azimuth<br>(°) | Height<br>(m) | Comment | AF<br>(dB) | CL<br>(dB) | PA<br>(dB) |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|------------|----------------|---------------|---------|------------|------------|------------|
| PK   | 2.3734G      | 56.82             | 74.00             | -17.18         | 25.15         | 3           | Horizontal | 9              | 1.05          | -       | 27.68      | 3.99       | -          |
| AV   | 2.3677G      | 44.51             | 54.00             | -9.49          | 12.83         | 3           | Horizontal | 9              | 1.05          | -       | 27.70      | 3.98       | -          |
| PK   | 2.4397G      | 100.24            | Inf               | -Inf           | 68.74         | 3           | Horizontal | 9              | 1.05          | -       | 27.48      | 4.02       | -          |
| AV   | 2.44G        | 99.30             | Inf               | -Inf           | 67.80         | 3           | Horizontal | 9              | 1.05          | -       | 27.48      | 4.02       | -          |
| PK   | 2.4922G      | 55.95             | 74.00             | -18.05         | 24.58         | 3           | Horizontal | 9              | 1.05          | -       | 27.32      | 4.05       | -          |
| AV   | 2.4922G      | 44.57             | 54.00             | -9.43          | 13.20         | 3           | Horizontal | 9              | 1.05          | -       | 27.32      | 4.05       | -          |

# BT-BR(1Mbps)

## 2440MHz\_TX

13/01/2020



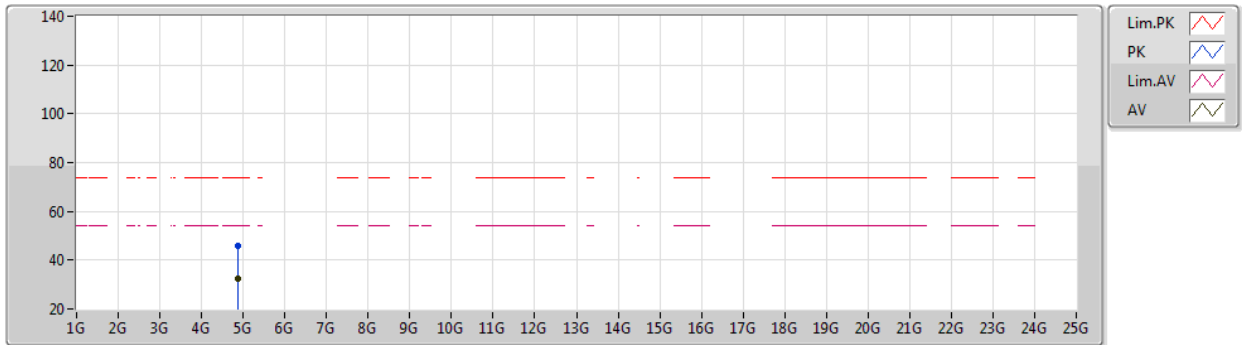
EUT Z\_1TX  
Setting 0x08  
06-E-S-5

| Type | Freq<br>(Hz) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Raw<br>(dBuV) | Dist<br>(m) | Condition | Azimuth<br>(°) | Height<br>(m) | Comment | AF<br>(dB) | CL<br>(dB) | PA<br>(dB) |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|-----------|----------------|---------------|---------|------------|------------|------------|
| PK   | 4.87773G     | 45.37             | 74.00             | -28.63         | 40.51         | 3           | Vertical  | 11             | 2.80          | -       | 31.08      | 5.41       | 31.63      |
| AV   | 4.88043G     | 32.61             | 54.00             | -21.39         | 27.75         | 3           | Vertical  | 11             | 2.80          | -       | 31.08      | 5.41       | 31.63      |

# BT-BR(1Mbps)

## 2440MHz\_TX

13/01/2020



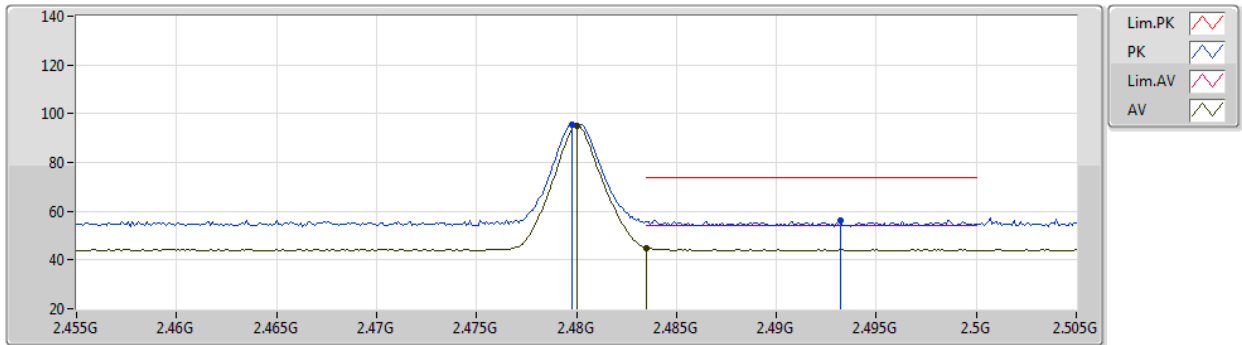
EUT\_Z\_1TX  
Setting 0x08  
06-E-S-5

| Type | Freq<br>(Hz) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Raw<br>(dBuV) | Dist<br>(m) | Condition  | Azimuth<br>(°) | Height<br>(m) | Comment | AF<br>(dB) | CL<br>(dB) | PA<br>(dB) |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|------------|----------------|---------------|---------|------------|------------|------------|
| PK   | 4.88059G     | 46.04             | 74.00             | -27.96         | 41.18         | 3           | Horizontal | 149            | 1.82          | -       | 31.08      | 5.41       | 31.63      |
| AV   | 4.87849G     | 32.63             | 54.00             | -21.37         | 27.77         | 3           | Horizontal | 149            | 1.82          | -       | 31.08      | 5.41       | 31.63      |

# BT-BR(1Mbps)

## 2480MHz\_TX

13/01/2020



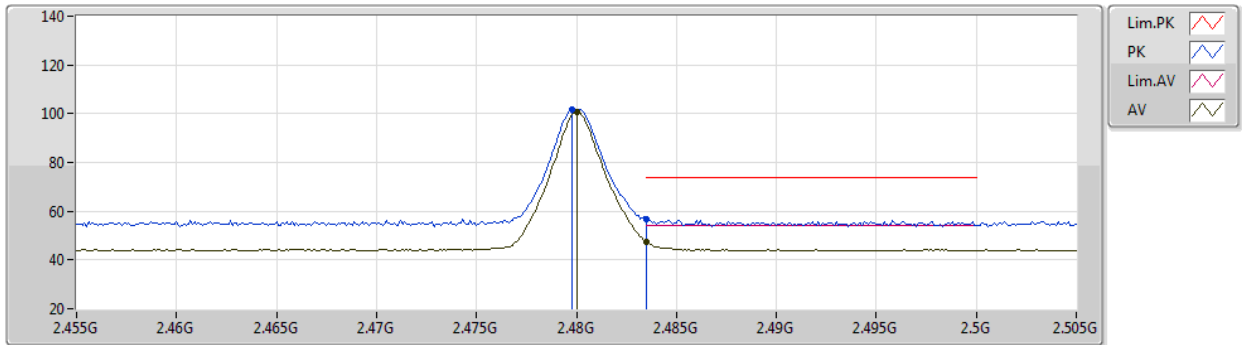
EUT Z\_1TX  
Setting 0x08  
06-E-S-5

| Type | Freq<br>(Hz) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Raw<br>(dBuV) | Dist<br>(m) | Condition | Azimuth<br>(°) | Height<br>(m) | Comment | AF<br>(dB) | CL<br>(dB) | PA<br>(dB) |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|-----------|----------------|---------------|---------|------------|------------|------------|
| PK   | 2.4798G      | 95.70             | Inf               | -Inf           | 64.30         | 3           | Vertical  | 31             | 2.96          | -       | 27.36      | 4.04       | -          |
| AV   | 2.48G        | 94.80             | Inf               | -Inf           | 63.40         | 3           | Vertical  | 31             | 2.96          | -       | 27.36      | 4.04       | -          |
| PK   | 2.4932G      | 56.37             | 74.00             | -17.63         | 25.00         | 3           | Vertical  | 31             | 2.96          | -       | 27.32      | 4.05       | -          |
| AV   | 2.4835G      | 44.92             | 54.00             | -9.08          | 13.53         | 3           | Vertical  | 31             | 2.96          | -       | 27.35      | 4.04       | -          |

# BT-BR(1Mbps)

## 2480MHz\_TX

13/01/2020



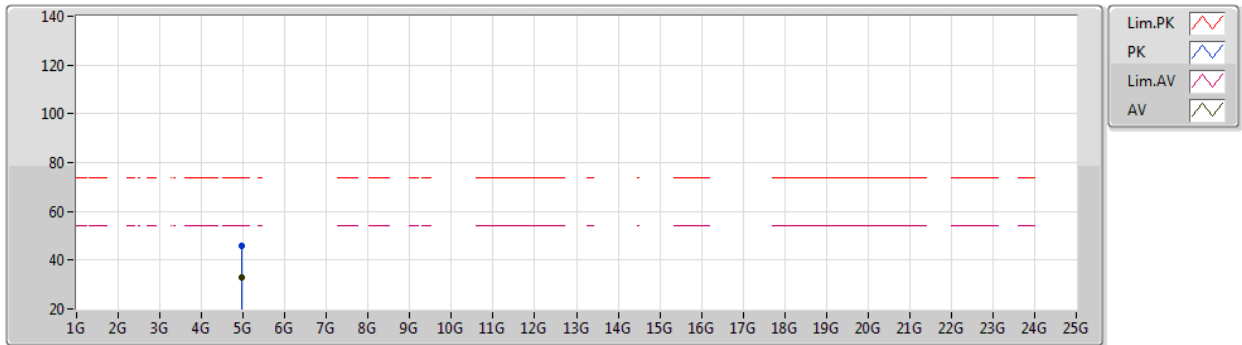
EUT Z\_1TX  
Setting 0x08  
06-E-S-5

| Type | Freq<br>(Hz) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Raw<br>(dBuV) | Dist<br>(m) | Condition  | Azimuth<br>(°) | Height<br>(m) | Comment | AF<br>(dB) | CL<br>(dB) | PA<br>(dB) |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|------------|----------------|---------------|---------|------------|------------|------------|
| PK   | 2.4798G      | 101.67            | Inf               | -Inf           | 70.27         | 3           | Horizontal | 5              | 2.86          | -       | 27.36      | 4.04       | -          |
| AV   | 2.48G        | 100.76            | Inf               | -Inf           | 69.36         | 3           | Horizontal | 5              | 2.86          | -       | 27.36      | 4.04       | -          |
| PK   | 2.4835G      | 56.66             | 74.00             | -17.34         | 25.27         | 3           | Horizontal | 5              | 2.86          | -       | 27.35      | 4.04       | -          |
| AV   | 2.4835G      | 47.26             | 54.00             | -6.74          | 15.87         | 3           | Horizontal | 5              | 2.86          | -       | 27.35      | 4.04       | -          |

# BT-BR(1Mbps)

## 2480MHz\_TX

13/01/2020



EUT Z\_1TX  
Setting 0x08  
06-E-S-5

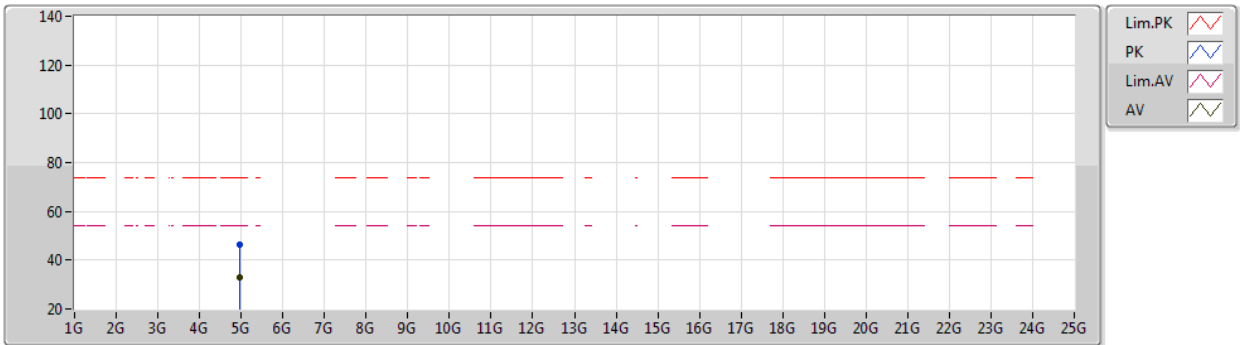
| Type | Freq<br>(Hz) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Raw<br>(dBuV) | Dist<br>(m) | Condition | Azimuth<br>(°) | Height<br>(m) | Comment | AF<br>(dB) | CL<br>(dB) | PA<br>(dB) |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|-----------|----------------|---------------|---------|------------|------------|------------|
| PK   | 4.9614G      | 45.89             | 74.00             | -28.11         | 40.58         | 3           | Vertical  | 231            | 2.57          | -       | 31.35      | 5.54       | 31.58      |
| AV   | 4.9617G      | 32.93             | 54.00             | -21.07         | 27.62         | 3           | Vertical  | 231            | 2.57          | -       | 31.35      | 5.54       | 31.58      |



# BT-BR(1Mbps)

## 2480MHz\_TX

13/01/2020



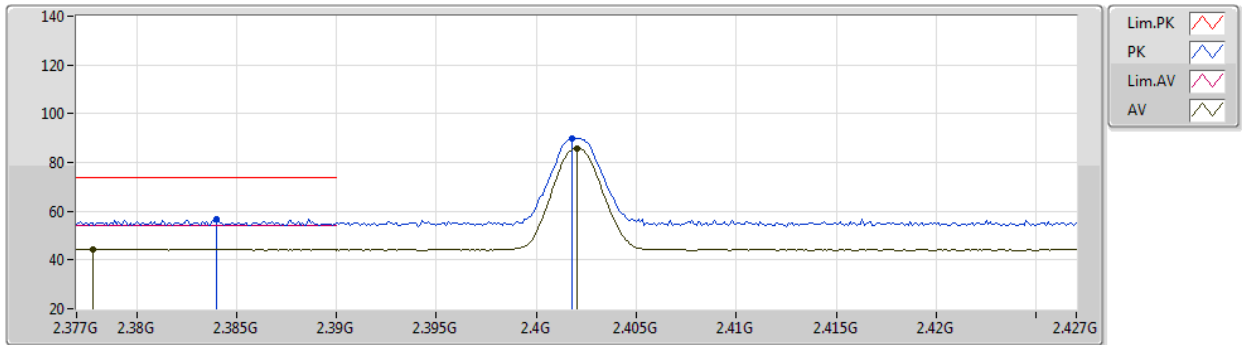
EUT\_Z\_1TX  
Setting 0x08  
06-E-S-5

| Type | Freq<br>(Hz) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Raw<br>(dBuV) | Dist<br>(m) | Condition  | Azimuth<br>(°) | Height<br>(m) | Comment | AF<br>(dB) | CL<br>(dB) | PA<br>(dB) |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|------------|----------------|---------------|---------|------------|------------|------------|
| PK   | 4.95863G     | 46.28             | 74.00             | -27.72         | 41.00         | 3           | Horizontal | 343            | 2.75          | -       | 31.33      | 5.53       | 31.58      |
| AV   | 4.96034G     | 32.99             | 54.00             | -21.01         | 27.69         | 3           | Horizontal | 343            | 2.75          | -       | 31.34      | 5.54       | 31.58      |

# BT-EDR(3Mbps)

13/01/2020

## 2402MHz\_TX



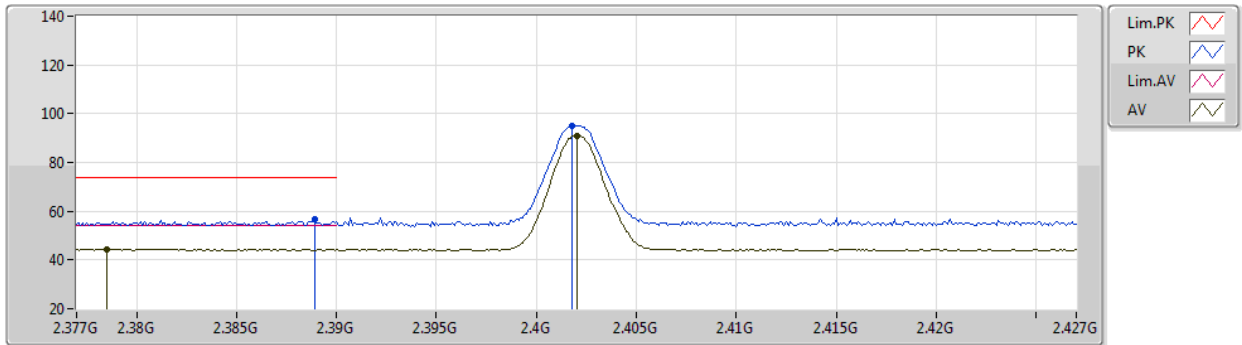
EUT Z\_1TX  
Setting 0x08  
06-E-S-5

| Type | Freq<br>(Hz) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Raw<br>(dBuV) | Dist<br>(m) | Condition | Azimuth<br>(°) | Height<br>(m) | Comment | AF<br>(dB) | CL<br>(dB) | PA<br>(dB) |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|-----------|----------------|---------------|---------|------------|------------|------------|
| PK   | 2.384G       | 56.89             | 74.00             | -17.11         | 25.25         | 3           | Vertical  | 41             | 1.19          | -       | 27.65      | 3.99       | -          |
| AV   | 2.3778G      | 44.40             | 54.00             | -9.60          | 12.74         | 3           | Vertical  | 41             | 1.19          | -       | 27.67      | 3.99       | -          |
| PK   | 2.4018G      | 89.88             | Inf               | -Inf           | 58.29         | 3           | Vertical  | 41             | 1.19          | -       | 27.59      | 4.00       | -          |
| AV   | 2.402G       | 85.69             | Inf               | -Inf           | 54.10         | 3           | Vertical  | 41             | 1.19          | -       | 27.59      | 4.00       | -          |

# BT-EDR(3Mbps)

13/01/2020

## 2402MHz\_TX



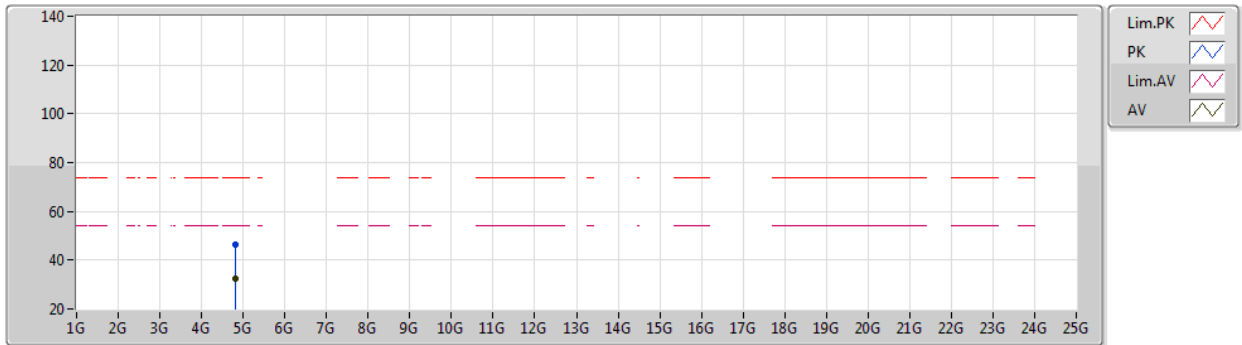
EUT Z\_1TX  
Setting 0x08  
06-E-S-5

| Type | Freq<br>(Hz) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Raw<br>(dBuV) | Dist<br>(m) | Condition  | Azimuth<br>(°) | Height<br>(m) | Comment | AF<br>(dB) | CL<br>(dB) | PA<br>(dB) |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|------------|----------------|---------------|---------|------------|------------|------------|
| PK   | 2.3889G      | 56.55             | 74.00             | -17.45         | 24.93         | 3           | Horizontal | 11             | 1.07          | -       | 27.63      | 3.99       | -          |
| AV   | 2.3785G      | 44.30             | 54.00             | -9.70          | 12.65         | 3           | Horizontal | 11             | 1.07          | -       | 27.66      | 3.99       | -          |
| PK   | 2.4018G      | 95.10             | Inf               | -Inf           | 63.51         | 3           | Horizontal | 11             | 1.07          | -       | 27.59      | 4.00       | -          |
| AV   | 2.402G       | 90.94             | Inf               | -Inf           | 59.35         | 3           | Horizontal | 11             | 1.07          | -       | 27.59      | 4.00       | -          |

# BT-EDR(3Mbps)

## 2402MHz\_TX

13/01/2020



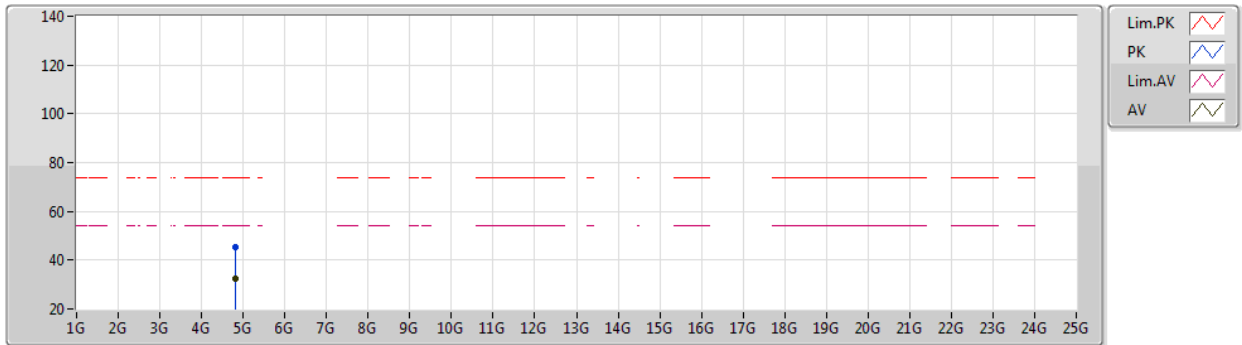
EUT\_Z\_1TX  
Setting 0x08  
06-E-S-5

| Type | Freq<br>(Hz) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Raw<br>(dBuV) | Dist<br>(m) | Condition | Azimuth<br>(°) | Height<br>(m) | Comment | AF<br>(dB) | CL<br>(dB) | PA<br>(dB) |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|-----------|----------------|---------------|---------|------------|------------|------------|
| PK   | 4.80544G     | 46.17             | 74.00             | -27.83         | 41.53         | 3           | Vertical  | 73             | 1.48          | -       | 31.01      | 5.31       | 31.68      |
| AV   | 4.80501G     | 32.64             | 54.00             | -21.36         | 28.00         | 3           | Vertical  | 73             | 1.48          | -       | 31.01      | 5.31       | 31.68      |

# BT-EDR(3Mbps)

13/01/2020

## 2402MHz\_TX



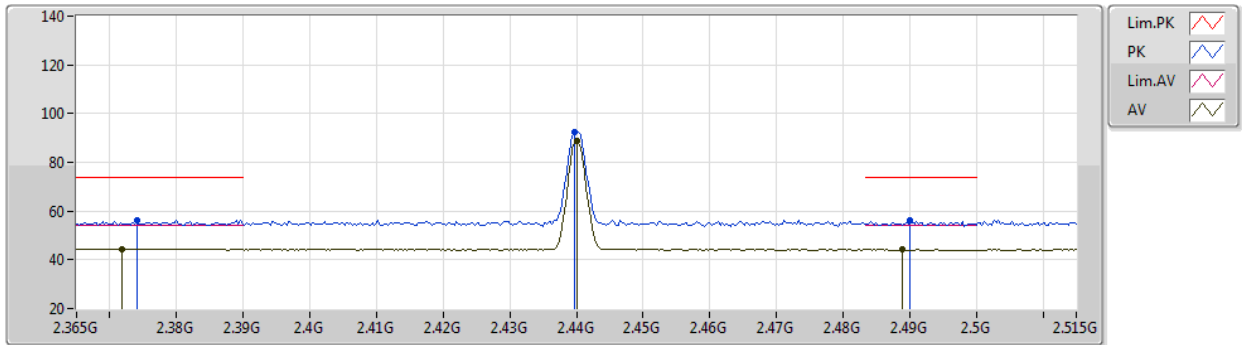
EUT\_Z\_1TX  
Setting 0x08  
06-E-S-5

| Type | Freq<br>(Hz) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Raw<br>(dBuV) | Dist<br>(m) | Condition  | Azimuth<br>(°) | Height<br>(m) | Comment | AF<br>(dB) | CL<br>(dB) | PA<br>(dB) |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|------------|----------------|---------------|---------|------------|------------|------------|
| PK   | 4.80498G     | 45.17             | 74.00             | -28.83         | 40.54         | 3           | Horizontal | 66             | 2.67          | -       | 31.00      | 5.31       | 31.68      |
| AV   | 4.80645G     | 32.49             | 54.00             | -21.51         | 27.85         | 3           | Horizontal | 66             | 2.67          | -       | 31.01      | 5.31       | 31.68      |

# BT-EDR(3Mbps)

## 2440MHz\_TX

13/01/2020



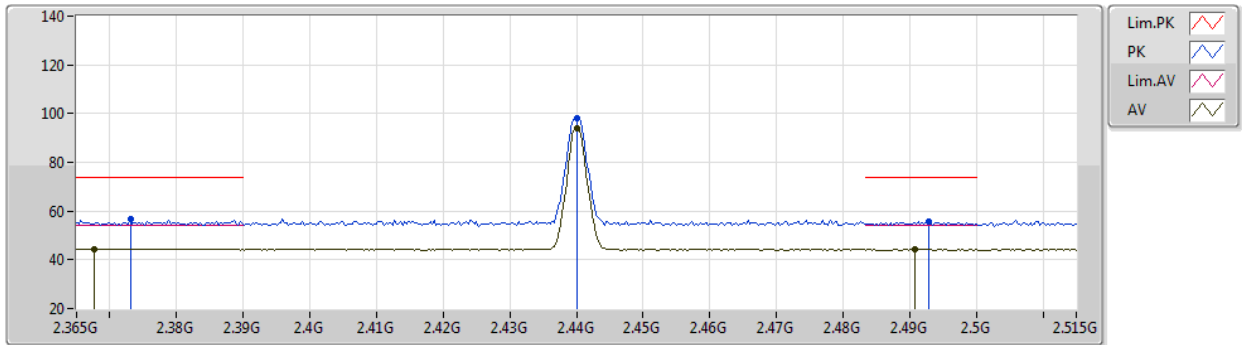
EUT Z\_1TX  
Setting 0x08  
06-E-S-5

| Type | Freq<br>(Hz) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Raw<br>(dBuV) | Dist<br>(m) | Condition | Azimuth<br>(°) | Height<br>(m) | Comment | AF<br>(dB) | CL<br>(dB) | PA<br>(dB) |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|-----------|----------------|---------------|---------|------------|------------|------------|
| PK   | 2.374G       | 56.20             | 74.00             | -17.80         | 24.53         | 3           | Vertical  | 41             | 1.16          | -       | 27.68      | 3.99       | -          |
| AV   | 2.3719G      | 44.41             | 54.00             | -9.59          | 12.74         | 3           | Vertical  | 41             | 1.16          | -       | 27.68      | 3.99       | -          |
| PK   | 2.4397G      | 92.52             | Inf               | -Inf           | 61.02         | 3           | Vertical  | 41             | 1.16          | -       | 27.48      | 4.02       | -          |
| AV   | 2.44G        | 88.54             | Inf               | -Inf           | 57.04         | 3           | Vertical  | 41             | 1.16          | -       | 27.48      | 4.02       | -          |
| PK   | 2.4901G      | 56.09             | 74.00             | -17.91         | 24.71         | 3           | Vertical  | 41             | 1.16          | -       | 27.33      | 4.05       | -          |
| AV   | 2.4889G      | 44.19             | 54.00             | -9.81          | 12.82         | 3           | Vertical  | 41             | 1.16          | -       | 27.33      | 4.04       | -          |

# BT-EDR(3Mbps)

## 2440MHz\_TX

13/01/2020



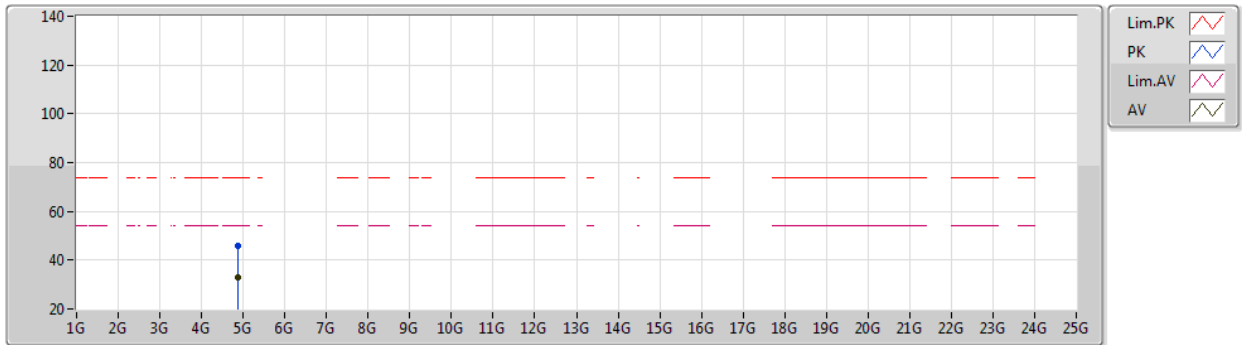
EUT Z\_1TX  
Setting 0x08  
06-E-S-5

| Type | Freq<br>(Hz) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Raw<br>(dBuV) | Dist<br>(m) | Condition  | Azimuth<br>(°) | Height<br>(m) | Comment | AF<br>(dB) | CL<br>(dB) | PA<br>(dB) |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|------------|----------------|---------------|---------|------------|------------|------------|
| PK   | 2.3731G      | 56.70             | 74.00             | -17.30         | 25.03         | 3           | Horizontal | 8              | 1.07          | -       | 27.68      | 3.99       | -          |
| AV   | 2.3677G      | 44.43             | 54.00             | -9.57          | 12.75         | 3           | Horizontal | 8              | 1.07          | -       | 27.70      | 3.98       | -          |
| PK   | 2.44G        | 98.03             | Inf               | -Inf           | 66.53         | 3           | Horizontal | 8              | 1.07          | -       | 27.48      | 4.02       | -          |
| AV   | 2.44G        | 94.06             | Inf               | -Inf           | 62.56         | 3           | Horizontal | 8              | 1.07          | -       | 27.48      | 4.02       | -          |
| PK   | 2.4928G      | 55.93             | 74.00             | -18.07         | 24.56         | 3           | Horizontal | 8              | 1.07          | -       | 27.32      | 4.05       | -          |
| AV   | 2.4907G      | 44.32             | 54.00             | -9.68          | 12.94         | 3           | Horizontal | 8              | 1.07          | -       | 27.33      | 4.05       | -          |

# BT-EDR(3Mbps)

## 2440MHz\_TX

13/01/2020



EUT\_Z\_1TX  
Setting 0x08  
06-E-S-5

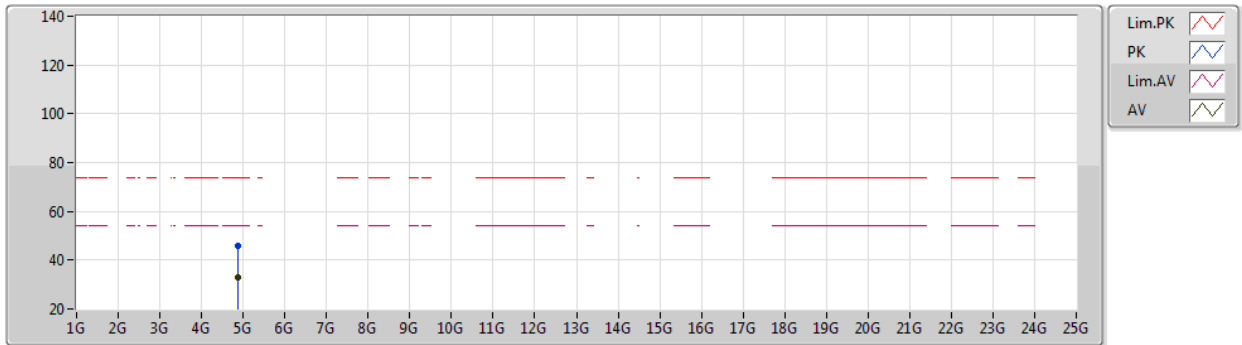
| Type | Freq<br>(Hz) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Raw<br>(dBuV) | Dist<br>(m) | Condition | Azimuth<br>(°) | Height<br>(m) | Comment | AF<br>(dB) | CL<br>(dB) | PA<br>(dB) |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|-----------|----------------|---------------|---------|------------|------------|------------|
| PK   | 4.88113G     | 45.70             | 74.00             | -28.30         | 40.84         | 3           | Vertical  | 325            | 2.10          | -       | 31.08      | 5.41       | 31.63      |
| AV   | 4.88062G     | 32.75             | 54.00             | -21.25         | 27.89         | 3           | Vertical  | 325            | 2.10          | -       | 31.08      | 5.41       | 31.63      |



# BT-EDR(3Mbps)

13/01/2020

## 2440MHz\_TX



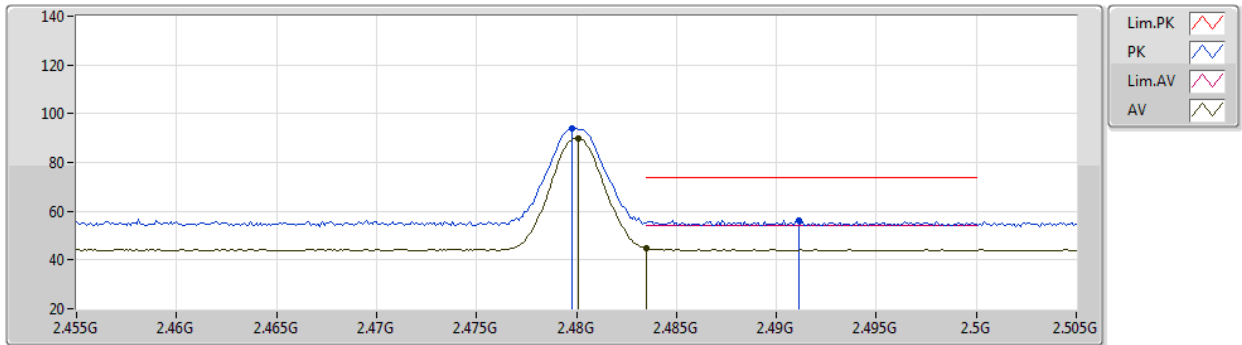
EUT\_Z\_1TX  
Setting 0x08  
06-E-S-5

| Type | Freq<br>(Hz) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Raw<br>(dBuV) | Dist<br>(m) | Condition  | Azimuth<br>(°) | Height<br>(m) | Comment | AF<br>(dB) | CL<br>(dB) | PA<br>(dB) |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|------------|----------------|---------------|---------|------------|------------|------------|
| PK   | 4.87913G     | 46.04             | 74.00             | -27.96         | 41.18         | 3           | Horizontal | 100            | 1.41          | -       | 31.08      | 5.41       | 31.63      |
| AV   | 4.87803G     | 32.80             | 54.00             | -21.20         | 27.94         | 3           | Horizontal | 100            | 1.41          | -       | 31.08      | 5.41       | 31.63      |

# BT-EDR(3Mbps)

## 2480MHz\_TX

13/01/2020



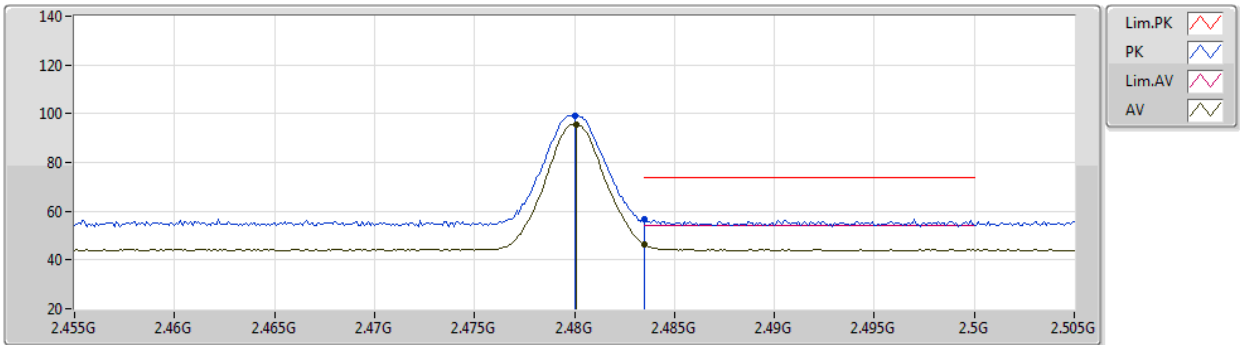
EUT Z\_1TX  
Setting 0x08  
06-E-S-5

| Type | Freq<br>(Hz) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Raw<br>(dBuV) | Dist<br>(m) | Condition | Azimuth<br>(°) | Height<br>(m) | Comment | AF<br>(dB) | CL<br>(dB) | PA<br>(dB) |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|-----------|----------------|---------------|---------|------------|------------|------------|
| PK   | 2.4798G      | 93.74             | Inf               | -Inf           | 62.34         | 3           | Vertical  | 27             | 2.95          | -       | 27.36      | 4.04       | -          |
| AV   | 2.4801G      | 89.75             | Inf               | -Inf           | 58.35         | 3           | Vertical  | 27             | 2.95          | -       | 27.36      | 4.04       | -          |
| PK   | 2.4911G      | 56.19             | 74.00             | -17.81         | 24.81         | 3           | Vertical  | 27             | 2.95          | -       | 27.33      | 4.05       | -          |
| AV   | 2.4835G      | 44.73             | 54.00             | -9.27          | 13.34         | 3           | Vertical  | 27             | 2.95          | -       | 27.35      | 4.04       | -          |

# BT-EDR(3Mbps)

13/01/2020

## 2480MHz\_TX



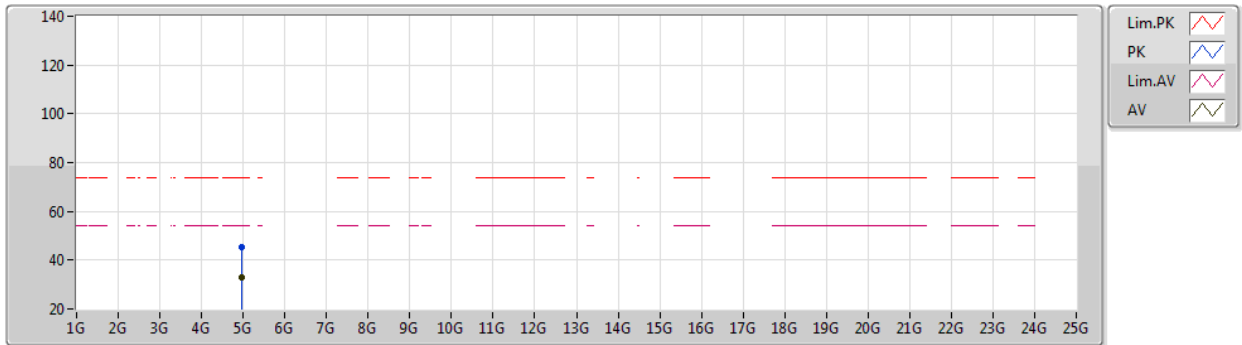
EUT Z\_1TX  
Setting 0x08  
06-E-S-5

| Type | Freq<br>(Hz) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Raw<br>(dBuV) | Dist<br>(m) | Condition  | Azimuth<br>(°) | Height<br>(m) | Comment | AF<br>(dB) | CL<br>(dB) | PA<br>(dB) |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|------------|----------------|---------------|---------|------------|------------|------------|
| PK   | 2.48G        | 99.06             | Inf               | -Inf           | 67.66         | 3           | Horizontal | 5              | 2.86          | -       | 27.36      | 4.04       | -          |
| AV   | 2.4801G      | 95.74             | Inf               | -Inf           | 64.34         | 3           | Horizontal | 5              | 2.86          | -       | 27.36      | 4.04       | -          |
| PK   | 2.4835G      | 56.90             | 74.00             | -17.10         | 25.51         | 3           | Horizontal | 5              | 2.86          | -       | 27.35      | 4.04       | -          |
| AV   | 2.4835G      | 46.39             | 54.00             | -7.61          | 15.00         | 3           | Horizontal | 5              | 2.86          | -       | 27.35      | 4.04       | -          |

# BT-EDR(3Mbps)

## 2480MHz\_TX

13/01/2020



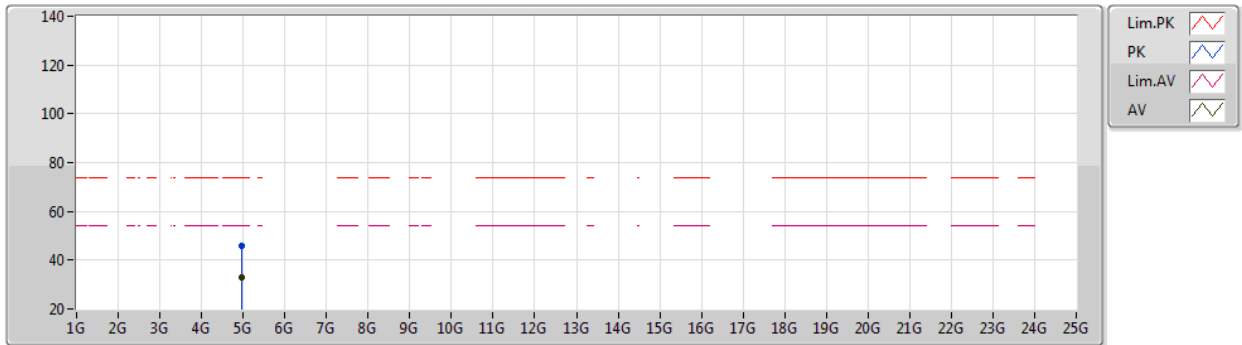
EUT\_Z\_1TX  
Setting 0x08  
06-E-S-5

| Type | Freq<br>(Hz) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Raw<br>(dBuV) | Dist<br>(m) | Condition | Azimuth<br>(°) | Height<br>(m) | Comment | AF<br>(dB) | CL<br>(dB) | PA<br>(dB) |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|-----------|----------------|---------------|---------|------------|------------|------------|
| PK   | 4.95847G     | 45.42             | 74.00             | -28.58         | 40.14         | 3           | Vertical  | 33             | 2.96          | -       | 31.33      | 5.53       | 31.58      |
| AV   | 4.96166G     | 33.04             | 54.00             | -20.96         | 27.73         | 3           | Vertical  | 33             | 2.96          | -       | 31.35      | 5.54       | 31.58      |

# BT-EDR(3Mbps)

## 2480MHz\_TX

13/01/2020



EUT\_Z\_1TX  
Setting 0x08  
06-E-S-5

| Type | Freq<br>(Hz) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Raw<br>(dBuV) | Dist<br>(m) | Condition  | Azimuth<br>(°) | Height<br>(m) | Comment | AF<br>(dB) | CL<br>(dB) | PA<br>(dB) |
|------|--------------|-------------------|-------------------|----------------|---------------|-------------|------------|----------------|---------------|---------|------------|------------|------------|
| PK   | 4.96007G     | 46.00             | 74.00             | -28.00         | 40.70         | 3           | Horizontal | 290            | 2.82          | -       | 31.34      | 5.54       | 31.58      |
| AV   | 4.96247G     | 32.86             | 54.00             | -21.14         | 27.55         | 3           | Horizontal | 290            | 2.82          | -       | 31.35      | 5.54       | 31.58      |