



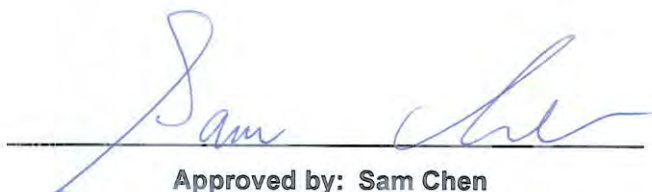
# FCC RADIO TEST REPORT

**FCC ID** : NKR-LVSK-M1  
**Equipment** : Wi-Fi Extender  
**Brand Name** : verizon  
**Model Name** : LVM1  
**Applicant** : Wistron NeWeb Corporation  
20 Park Ave. II, Hsinchu Science Park, Hsinchu  
308, Taiwan  
**Manufacturer** : Wistron NeWeb Corporation  
20 Park Ave. II, Hsinchu Science Park, Hsinchu  
308, Taiwan  
**Standard** : 47 CFR FCC Part 15.247

The product was received on Jun. 01, 2019, and testing was started from Jun. 01, 2019 and completed on Jul. 02, 2019. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

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



Approved by: Sam Chen

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



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**Appendix H. Test Photos**

**Photographs of EUT v01**



TEL : 886-3-656-9065  
FAX : 886-3-656-9085  
Report Template No.: CB 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: Viola Huang**



# 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)
1	1	WNC	95XKAC15.GCOVZ	Dipole	I-PEX MHF	Note1
2	2	WNC	95XKAC15.GCEVZ	Dipole	I-PEX MHF	
3	1	WNC	95XKAC15.GCKVZ	Dipole	I-PEX MHF	
4	2	WNC	95XKAC15.GCJVZ	Dipole	I-PEX MHF	
5	3	WNC	95XKAC15.GCIVZ	Dipole	I-PEX MHF	
6	4	WNC	95XKAC15.GCLVZ	Dipole	I-PEX MHF	
7	1	WNC	95XKAC15.GCNVZ	Patch	I-PEX MHF	
8		WNC	95XKAC15.GCMVZ	Patch	I-PEX MHF	

Note1:

Directional Gain (dBi)				
Ant.	Port	2.4GHz	5G Bnad 1	5G Bnad 4
1	1	4.17	-	2.96
2	2	4.17	-	2.96
3	1	-	5.76	-
4	2	-	5.76	-
5	3	-	5.76	-
6	4	-	5.76	-

Antenna Gain (dBi)		
Ant.	Port	Bluetooth
7	1	2.66
8		2.66

Note2:The above information was declared by manufacturer.

**For 2.4GHz and 5GHz band 4 function (2TX/2RX):**

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

Port 1 and Port 2 can could transmit/receive simultaneously.

**For 5GHz band 1 function (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 can could transmit/receive simultaneously.

**For bluetooth function (1TX/1RX):**

Only Port 1 can be used as receiving/receiving antenna.

**1.1.3 Mode Test Duty Cycle**

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
BT-BR(1Mbps)	0.788	1.03	2.9m	1k
BT-EDR(3Mbps)	0.782	1.07	2.908m	1k
BT-EDR(2Mbps)	0.786	1.05	2.901m	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>	ttermpro.exe

**1.1.5 EUT supports function**

Function
Mesh
Bridge

Note: The EUT supports Mesh and Bridge mode, only Mesh mode was tested and recorded in this test report for manufacturer's request.





## 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

## 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	TH01-CB	Benson Su	22~24°C / 50~60%	Jun. 05, 2019 ~ Jul. 02, 2019
Radiated	03CH03-CB for below 1GHz	RJ Huang	22~24°C / 55~60%	Jun. 28, 2019
Radiated	03CH01-CB for above 1GHz	Stim Sung	22~24°C / 50~60%	Jun. 01, 2019 ~ Jun. 29, 2019
AC Conduction	CO01-CB	Peter Wu	24.6~24.8°C / 60~61%	Jun. 28, 2019

Test site Designation No. TW0006 with FCC.

Test site registered number IC 4086B 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	PowerSetting
BT-BR(1Mbps)	-
2402MHz	8
2440MHz	8
2480MHz	8
BT-EDR(2Mbps)	-
2402MHz	8
2440MHz	8
2480MHz	8
BT-EDR(3Mbps)	-
2402MHz	8
2440MHz	8
2480MHz	8

## 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

The Worst Case Mode for Following Conformance Tests	
<b>Tests Item</b>	20dB Bandwidth Carrier Frequency Separation Maximum Conducted Output Power Number of Hopping Frequencies Hopping Bandedge Time of Occupancy (Dwell Time) 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 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
<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.: FA953007 for Co-location RF Exposure Evaluation.	

Note: The EUT only use in Z axis.

## 2.3 EUT Operation during Test

For CTX Mode:

The EUT was programmed to be in continuously transmitting mode.

For Normal Link:

During the test, the EUT operation to normal function.



## 2.4 Accessories

Accessories			
Equipment Name	Brand Name	Model Name	Rating
Adapter	LUCENT TRANS	1A95-US1223	INPUT: 100-240V, 1A, 50-60Hz OUTPUT: 19V, 2.37A

## 2.5 Support Equipment

**For AC Conduction:**

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	LAN1 NB	DELL	E6430	N/A
B	LAN2 NB	DELL	E6430	N/A
C	Device	verizon	LVM1	NKR-LVSK-M1
D	Smart phone	Samsung	Galaxy J2	N/A
E	2.4G NB	DELL	E6430	N/A
F	5G NB	DELL	E6430	N/A

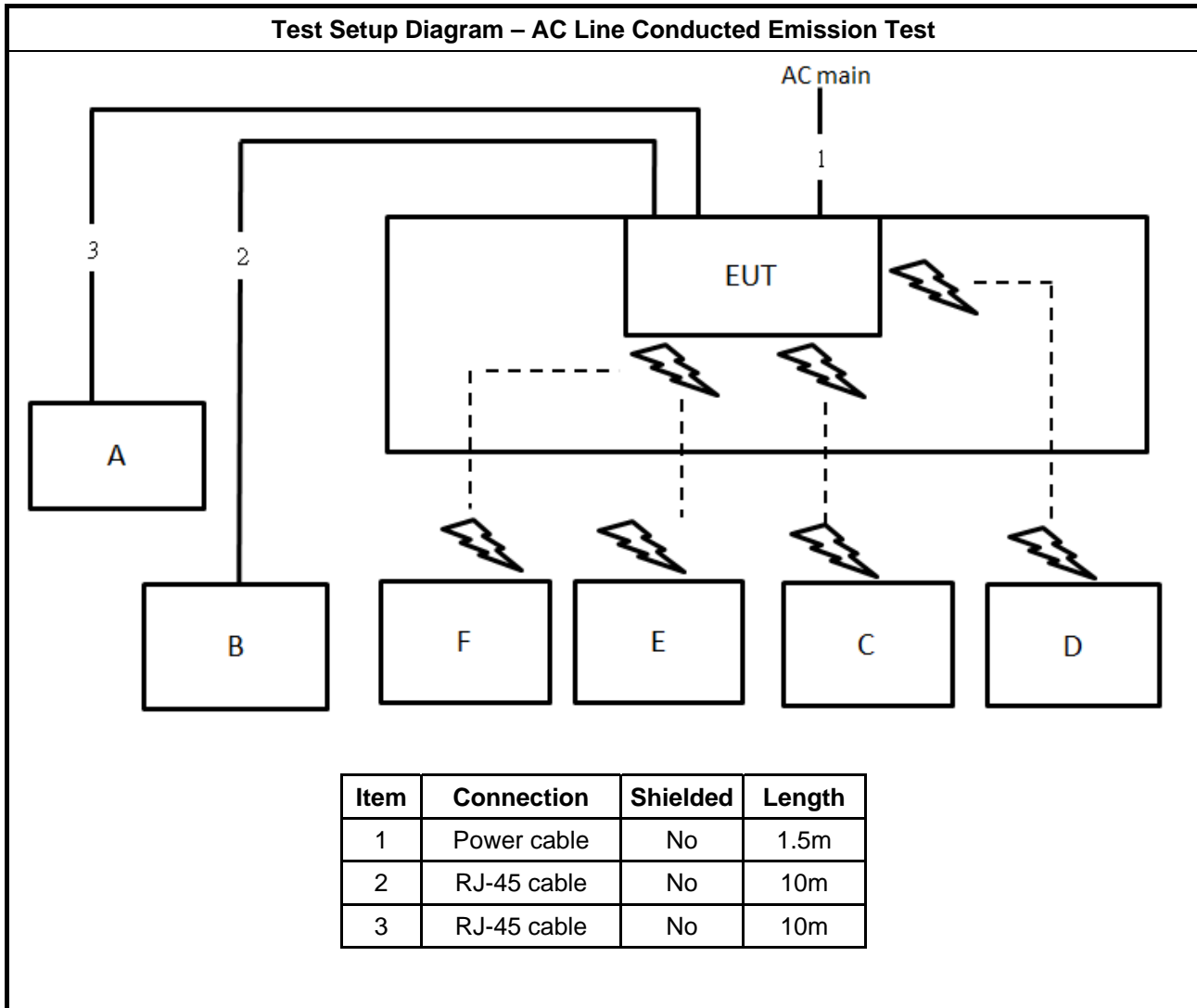
**For Radiated (below 1GHz):**

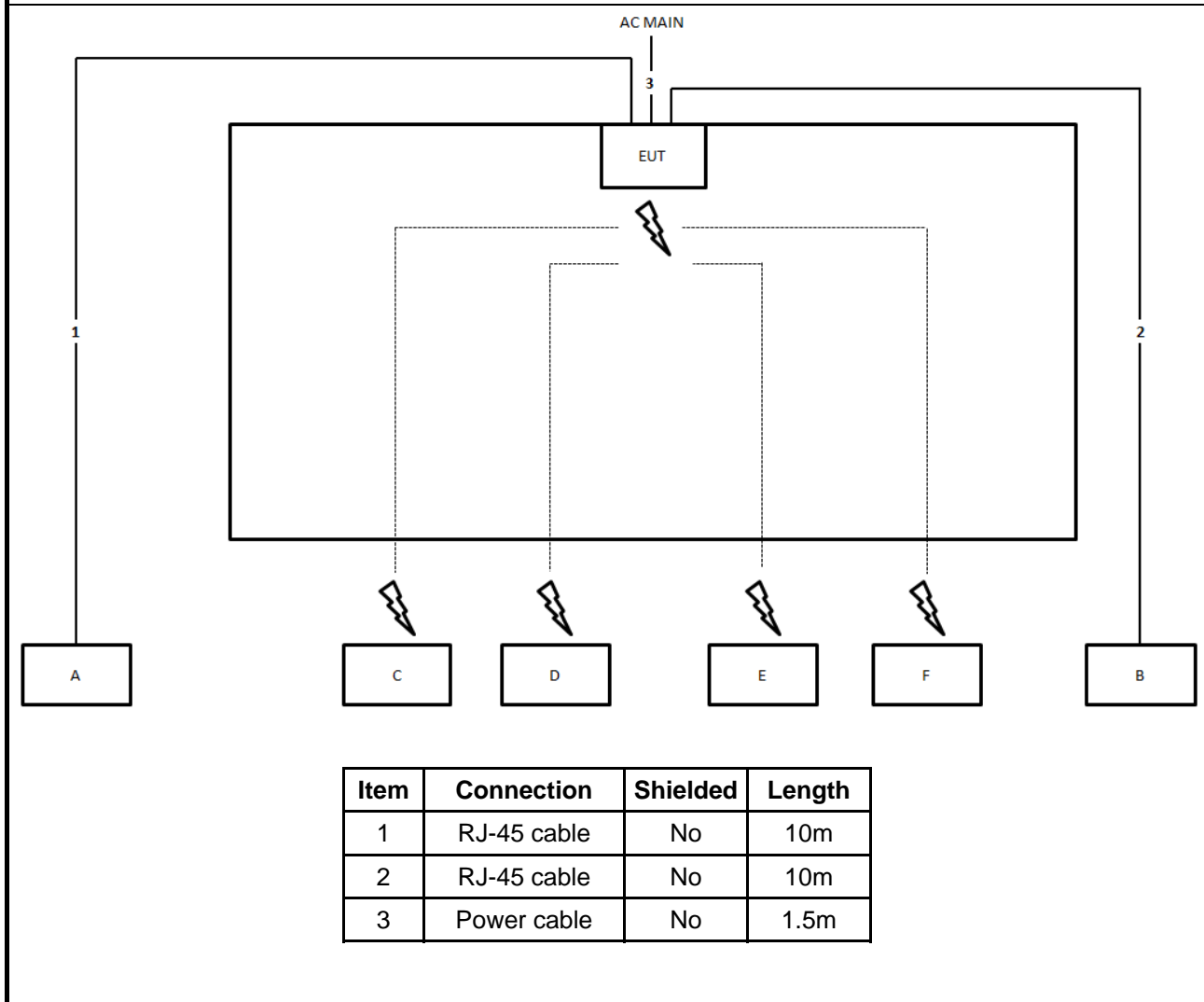
Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	NB	DELL	E4300	N/A
B	NB	DELL	E4300	N/A
C	Device	verizon	LVM1	NKR-LVSK-M1
D	Phone	Samsung	SM-J200Y	N/A
E	NB	Apple	Mac Book	N/A
F	NB	Apple	Mac Book	N/A

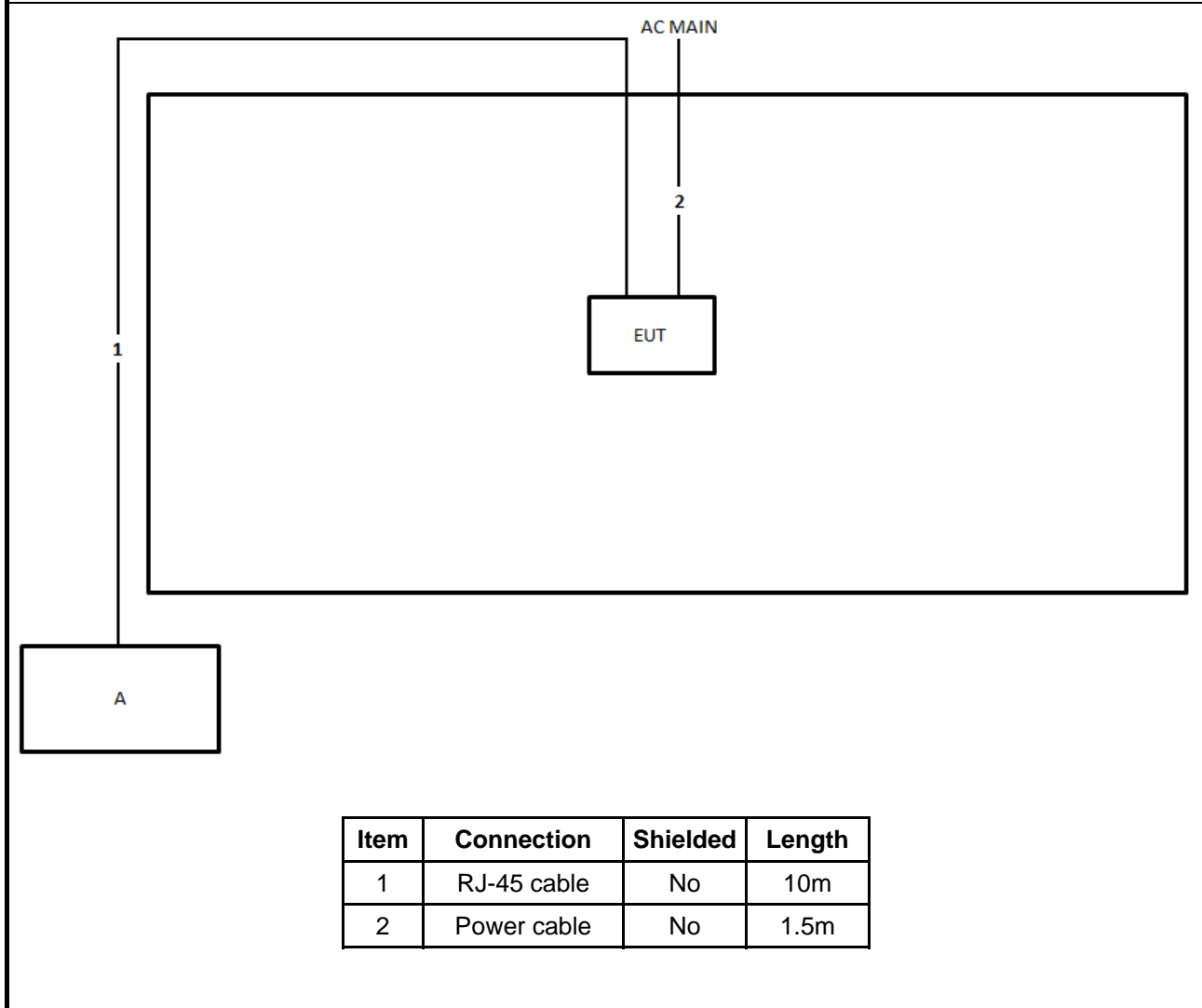
**For Radiated (above 1GHz) & RF Conducted:**

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

## 2.6 Test Setup Diagram



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


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




### 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

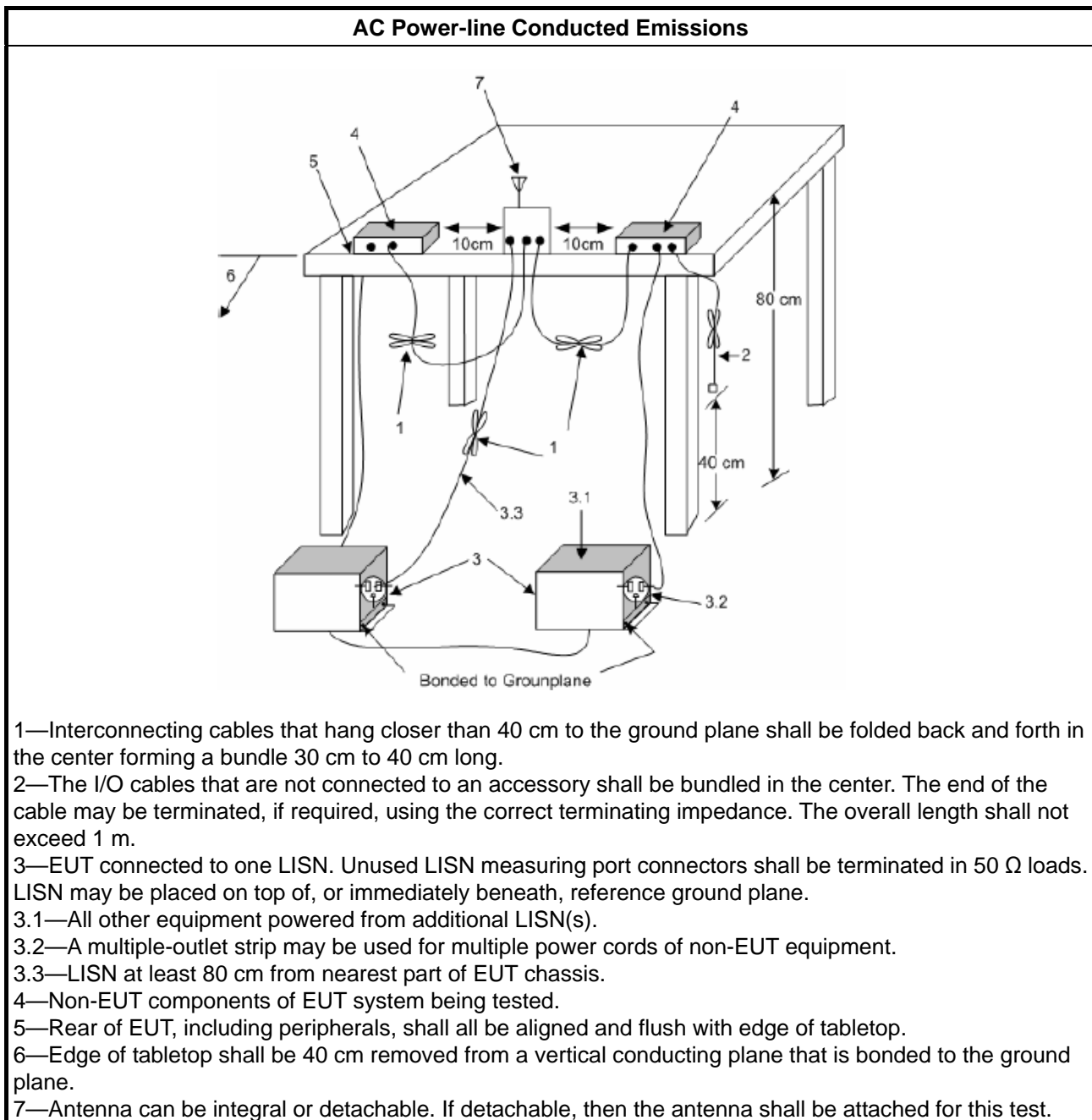
Refer a test equipment and calibration data table in this test report.

##### 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	

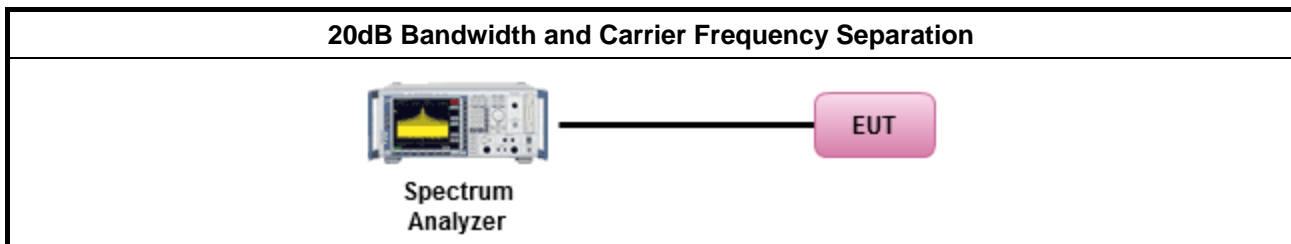
### 3.2.2 Measuring Instruments

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	

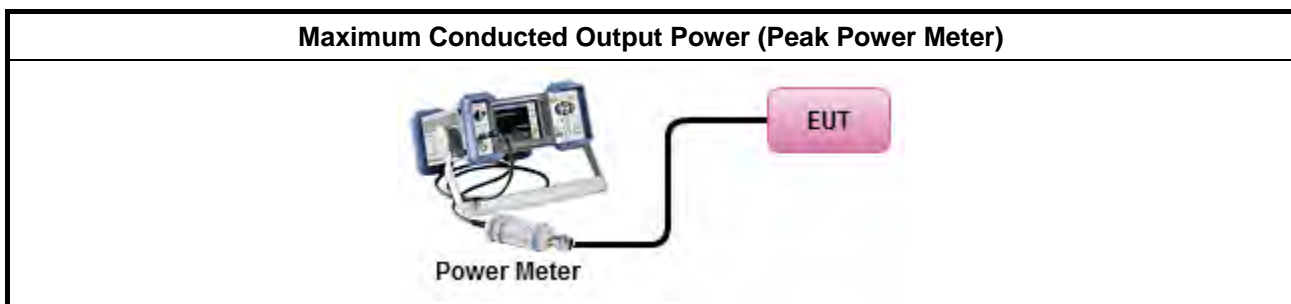
#### 3.3.2 Measuring Instruments

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

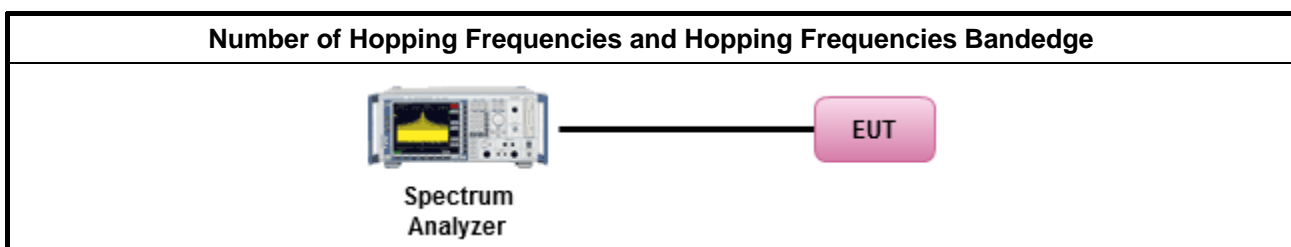
#### 3.4.3 Measuring Instruments

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	

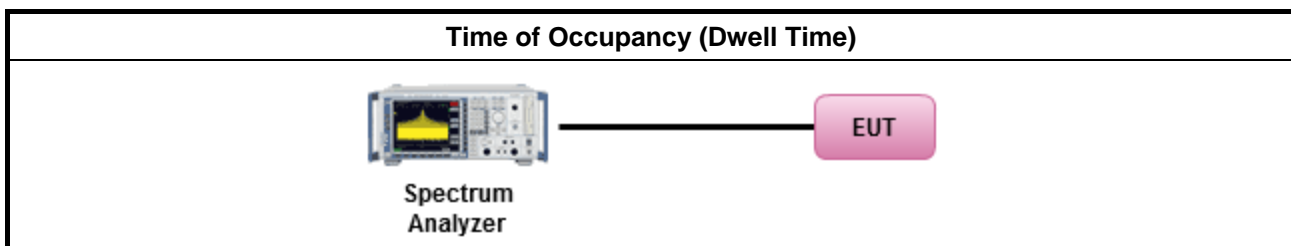
#### 3.5.2 Measuring Instruments

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.	

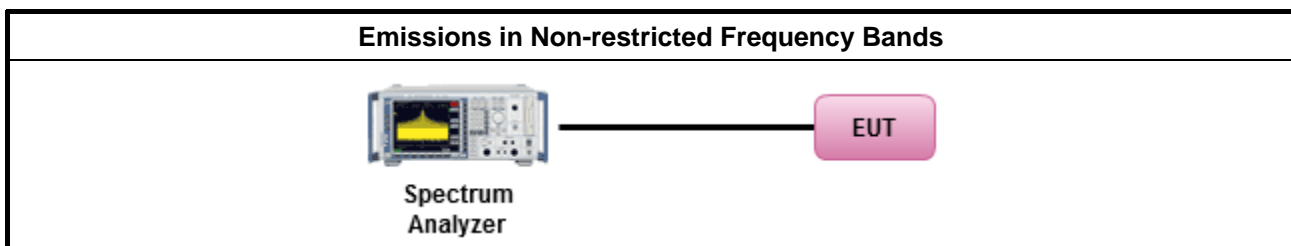
#### 3.6.2 Measuring Instruments

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.

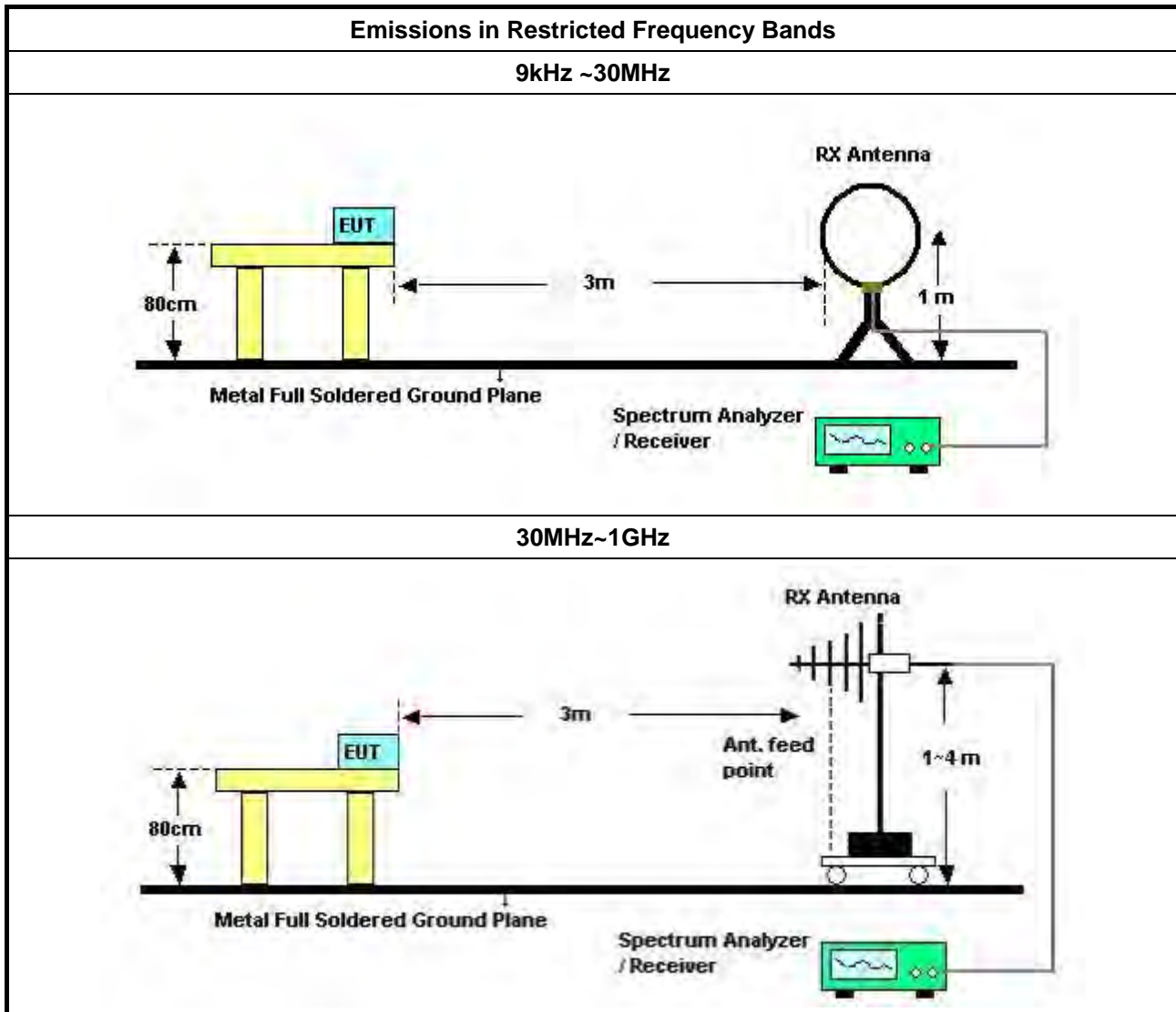
#### 3.7.2 Measuring Instruments

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

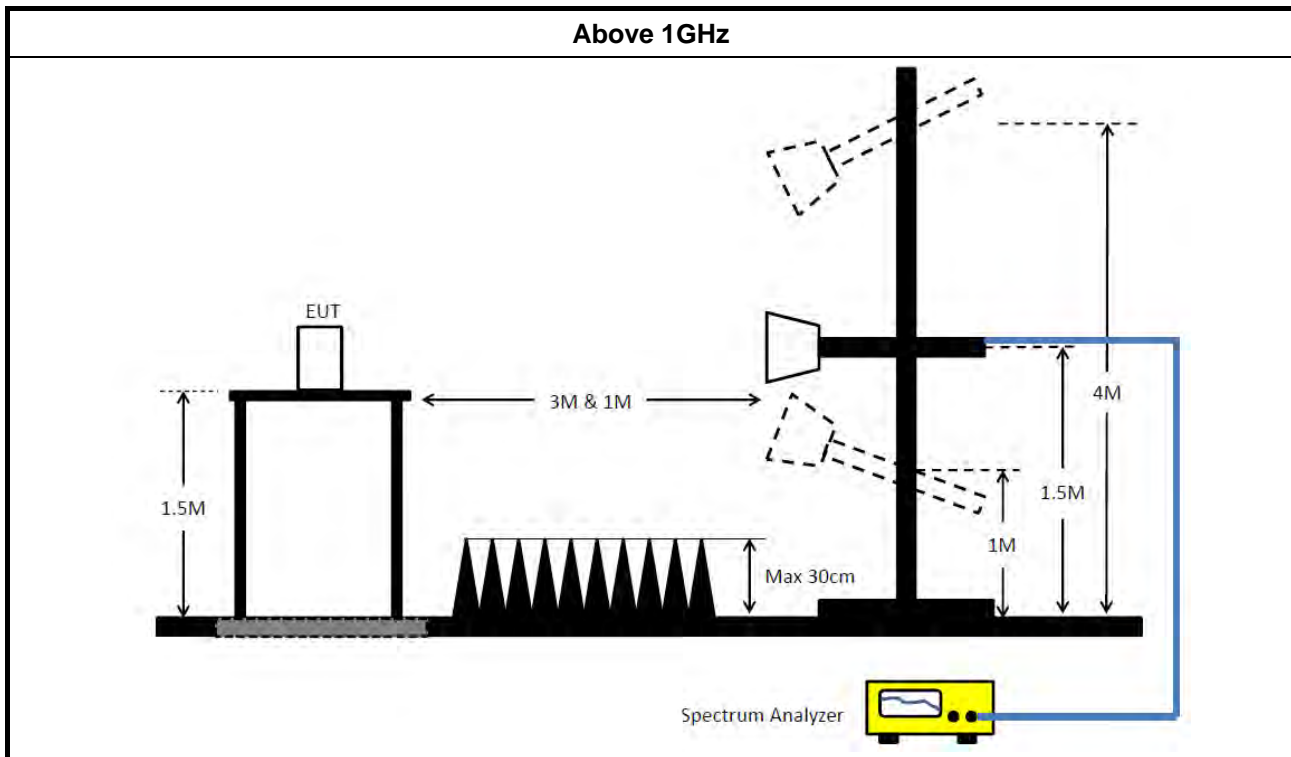
#### 3.7.3 Test Procedures

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)

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

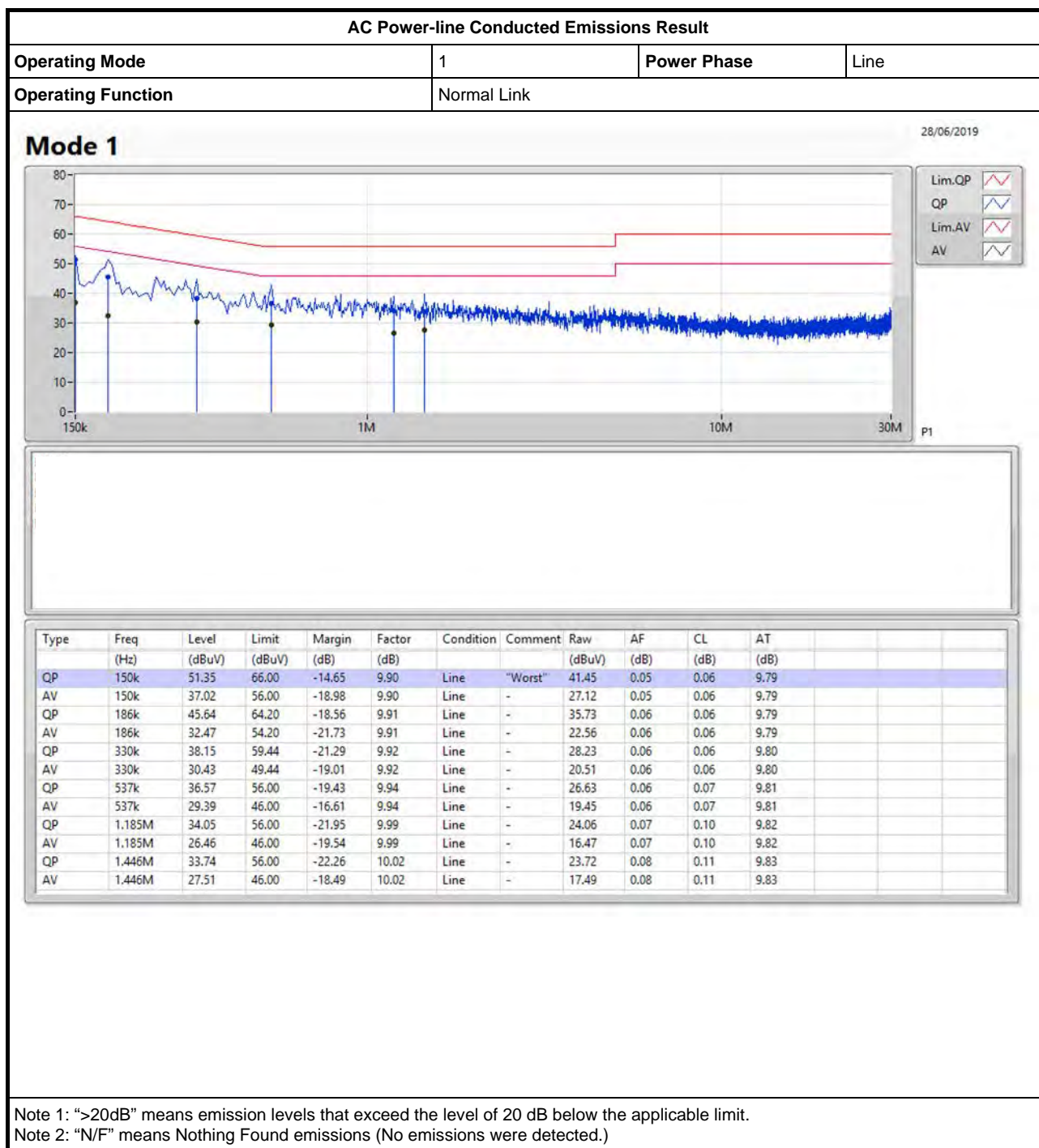
Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.45GHz	Jan. 28, 2019	Jan. 29, 2020	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-1 6-2	04083	150kHz~100MHz	Dec. 24, 2018	Dec. 23, 2019	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Jan. 11, 2019	Jan. 10, 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	Schaffner	CBL6112B & N-6-06	2928 & AT-N0607	20MHz ~ 2GHz	Jan. 02, 2019	Jan. 01, 2020	Radiation (03CH03-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 29, 2019	Mar. 28, 2020	Radiation (03CH03-CB)
Pre-Amplifier	Agilent	8447D	2944A10259	9kHz ~ 1.3GHz	Jan. 16, 2019	Jan. 15, 2020	Radiation (03CH03-CB)
Spectrum Analyzer	R&S	FSP-40	100019	9kHz ~ 40GHz	Jun. 19, 2019	Jun. 18, 2020	Radiation (03CH03-CB)
EMI Test Receiver	R&S	ESCS	100359	9kHz ~ 2.75GHz	Jun. 26, 2019	Jun. 25, 2020	Radiation (03CH03-CB)
RF Cable-low	Woken	RG402	Low Cable-02+27	25MHz ~ 1GHz	Oct. 08, 2018	Oct. 07, 2019	Radiation (03CH03-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Nov. 13, 2018	Nov. 12, 2019	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jun. 28, 2018	Jun. 27, 2019	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jun. 27, 2019	Jun. 26, 2020	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 08, 2019	Jan. 07, 2020	Radiation (03CH01-CB)
Pre-Amplifier	MITEQ	TTA1840-35-HG	1864479	18GHz ~ 40GHz	Jul. 04, 2018	Jul. 03, 2019	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Jan. 31, 2019	Jan. 30, 2020	Radiation (03CH01-CB)
RF Cable-high	Woken	RG402	High Cable-16	1 GHz ~ 18 GHz	Oct. 08, 2018	Oct. 07, 2019	Radiation (03CH01-CB)
RF Cable-high	Woken	RG402	High Cable-16+17	1 GHz ~ 18 GHz	Oct. 08, 2018	Oct. 07, 2019	Radiation (03CH01-CB)
RF Cable-high	Woken	RG402	High Cable-40G#1	18GHz ~ 40 GHz	Jul. 27, 2018	Jul. 26, 2019	Radiation (03CH01-CB)
RF Cable-high	Woken	RG402	High Cable-40G#2	18GHz ~ 40 GHz	Jul. 27, 2018	Jul. 26, 2019	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Feb. 25, 2019	Feb. 24, 2020	Conducted (TH01-CB)

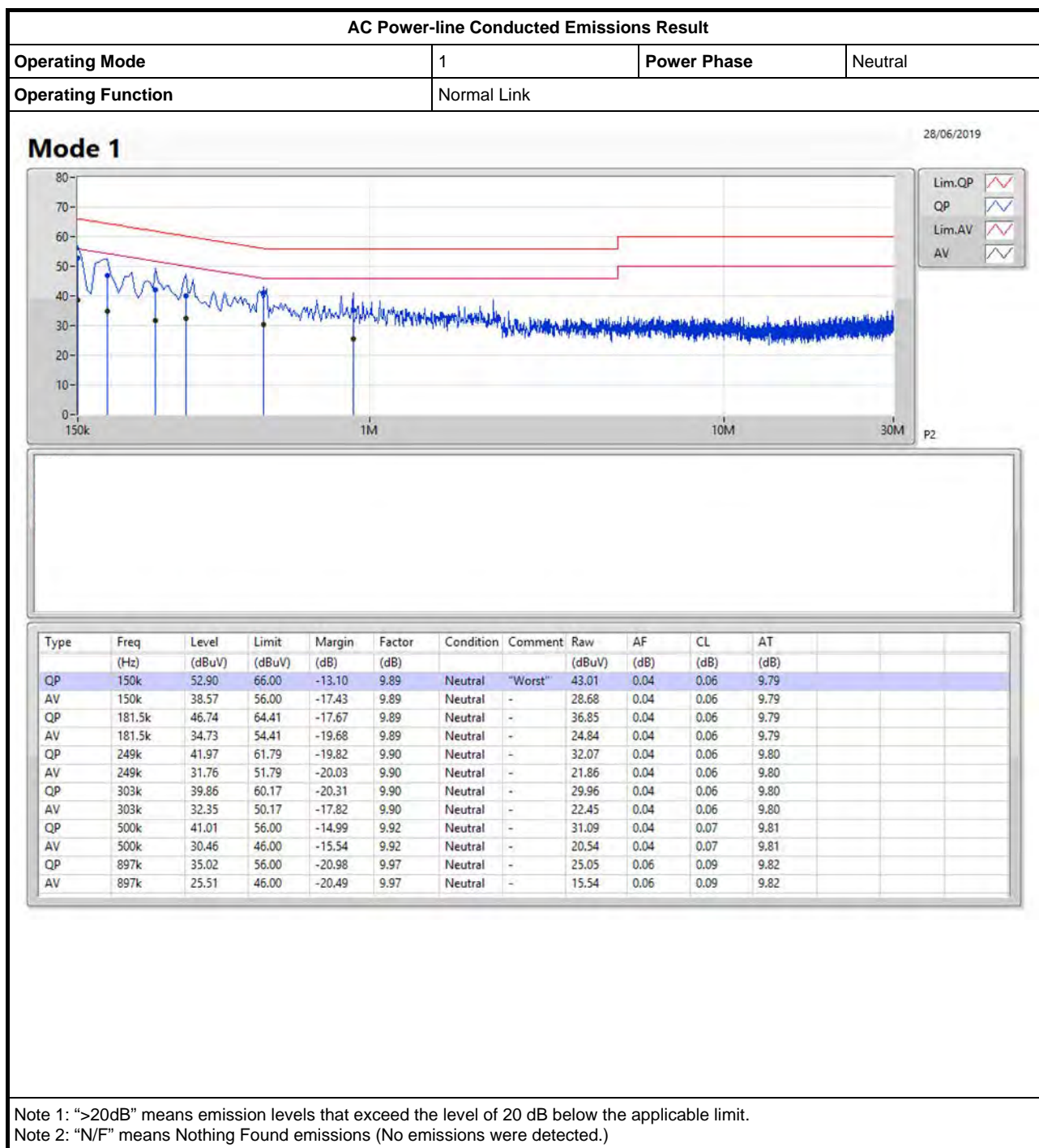


Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
RF Cable-high	Woken	RG402	High Cable-06	1 GHz – 26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz –26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-08	1 GHz –26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz –26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz –26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-28	1 GHz –26.5 GHz	Nov. 19, 2018	Nov. 18, 2019	Conducted (TH01-CB)
Power Sensor	Agilent	E9327A	US40442088	50MHz~18GHz	Jan. 15, 2019	Jan. 14, 2020	Conducted (TH01-CB)
Power Meter	Agilent	E4416A	GB41291199	50MHz~18GHz	Jan. 15, 2019	Jan. 14, 2020	Conducted (TH01-CB)

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

N.C.R. means Non-Calibration required.





**Summary**

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
BT-BR(1Mbps)	920k	869.565k	870KF1D	918.75k	868.316k
BT-EDR(2Mbps)	1.33M	1.212M	1M21G1D	1.318M	1.192M
BT-EDR(3Mbps)	1.298M	1.217M	1M22G1D	1.27M	1.206M

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

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

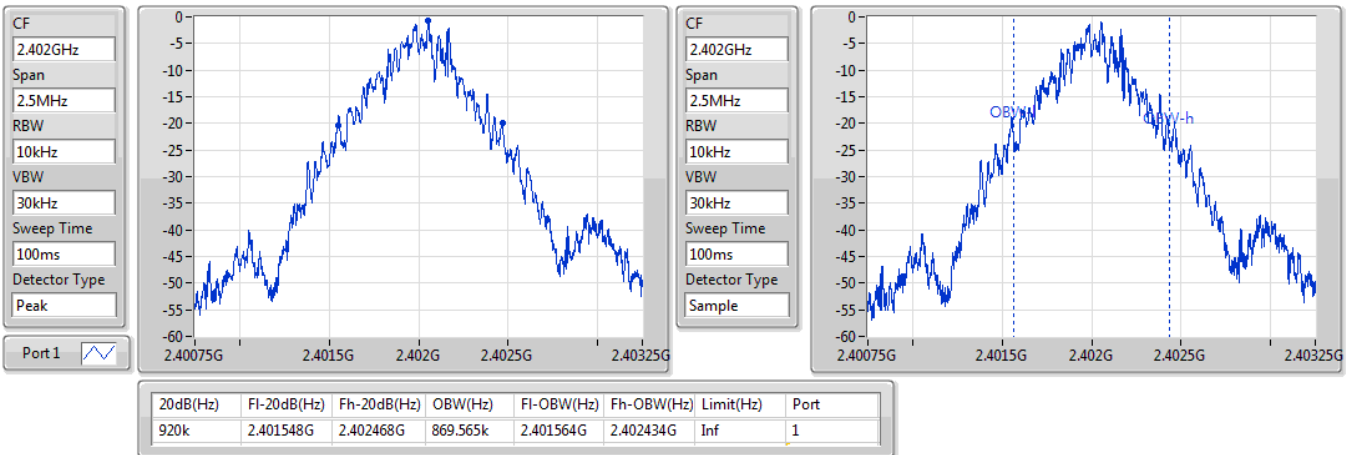
**Result**

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-BR(1Mbps)	-	-	-	-
2402MHz	Pass	Inf	920k	869.565k
2440MHz	Pass	Inf	920k	869.565k
2480MHz	Pass	Inf	918.75k	868.316k
BT-EDR(2Mbps)	-	-	-	-
2402MHz	Pass	Inf	1.318M	1.192M
2440MHz	Pass	Inf	1.33M	1.208M
2480MHz	Pass	Inf	1.33M	1.212M
BT-EDR(3Mbps)	-	-	-	-
2402MHz	Pass	Inf	1.27M	1.206M
2440MHz	Pass	Inf	1.298M	1.214M
2480MHz	Pass	Inf	1.295M	1.217M

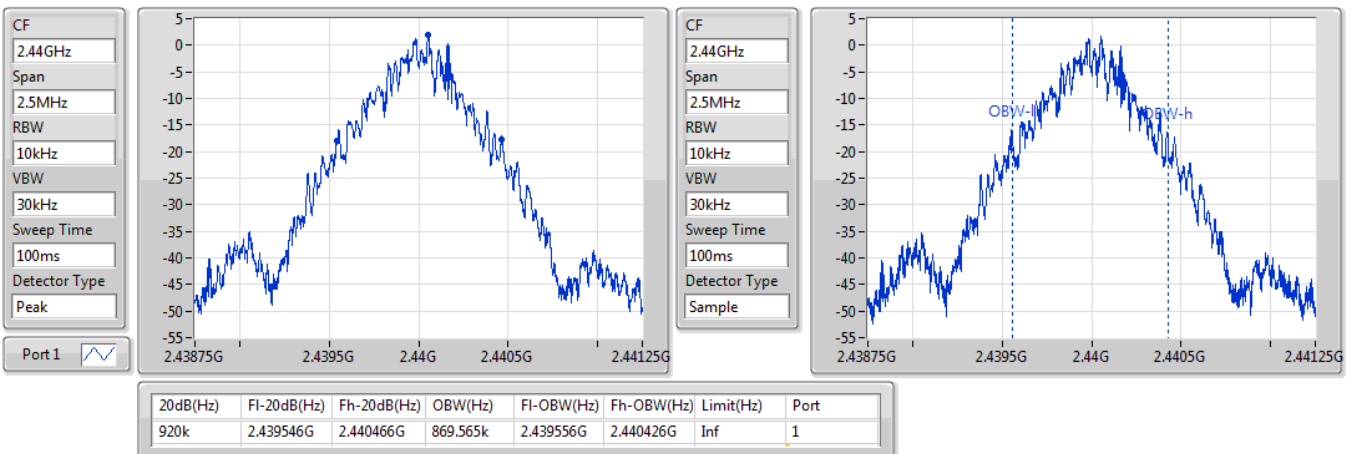
**Port X-N dB** = Port X 20dB down bandwidth; **Port X-OBW** = Port X 99% occupied bandwidth;

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

05/06/2019


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

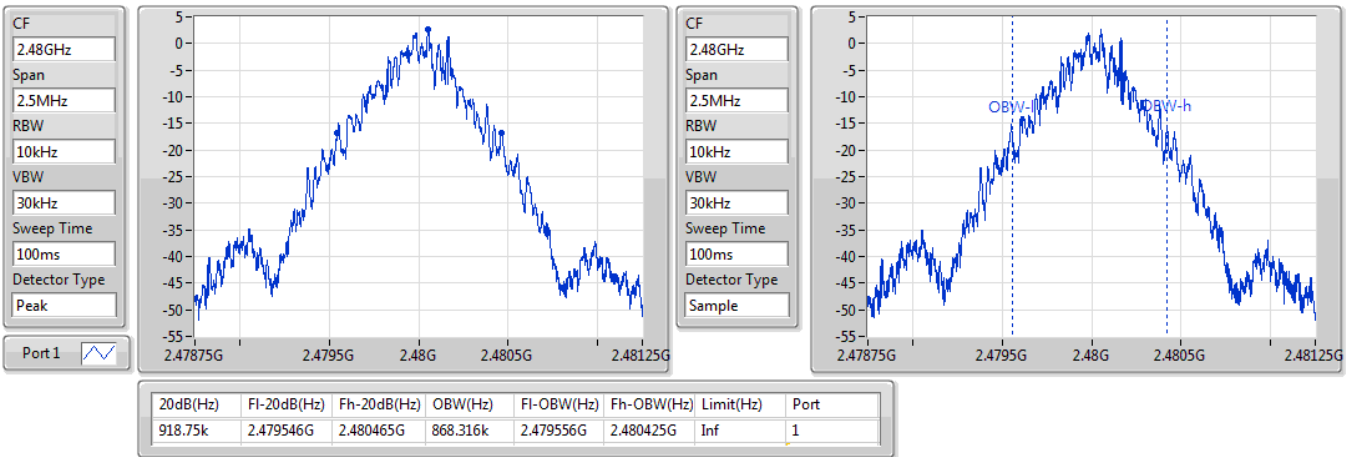
05/06/2019



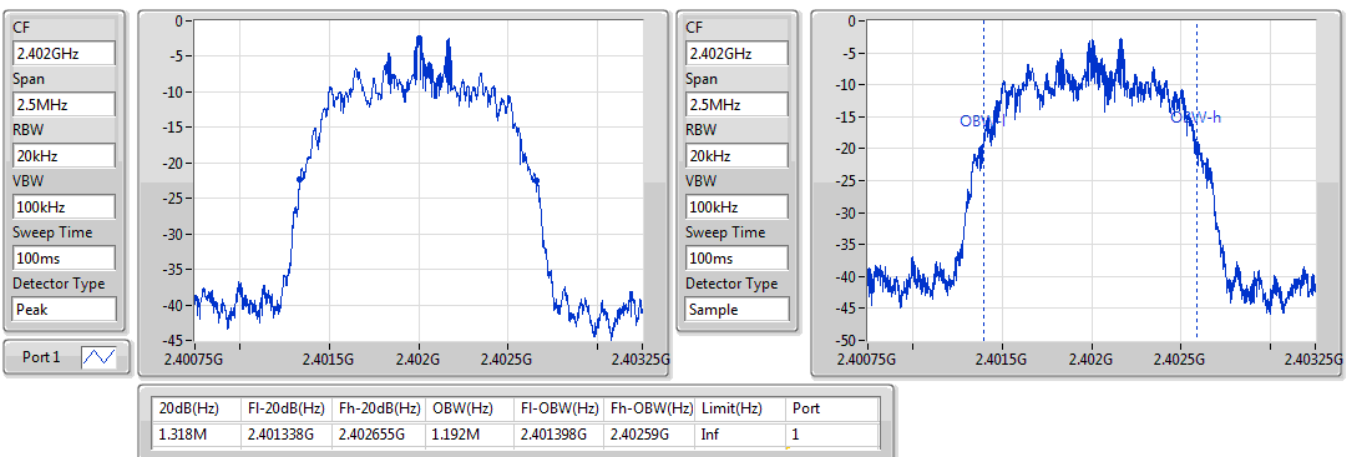


**BT-BR(1Mbps)**
**EBW**
**2480MHz**

05/06/2019

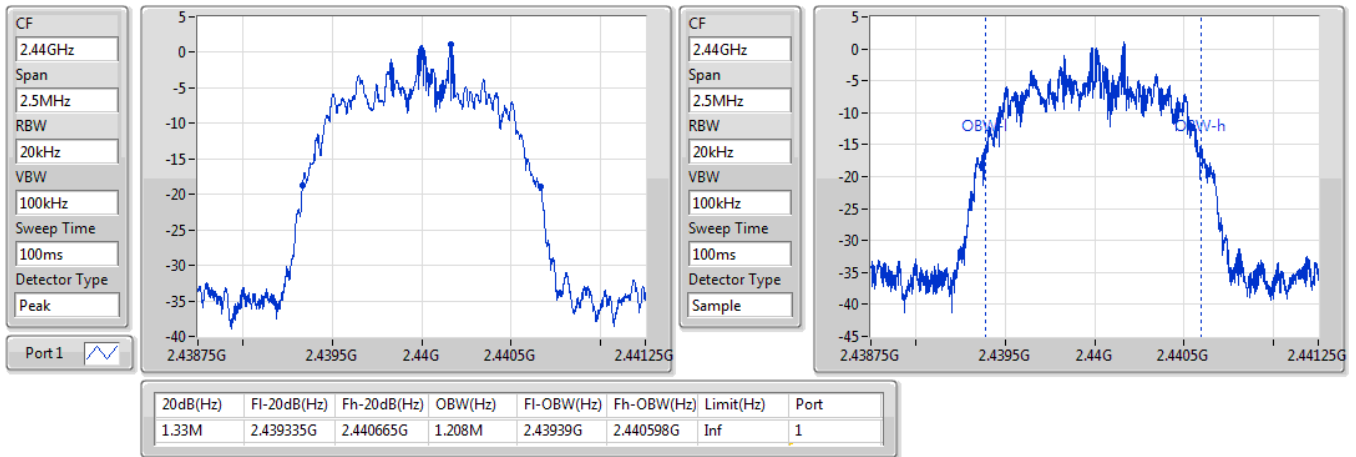

**BT-EDR(2Mbps)**
**EBW**
**2402MHz**

05/06/2019

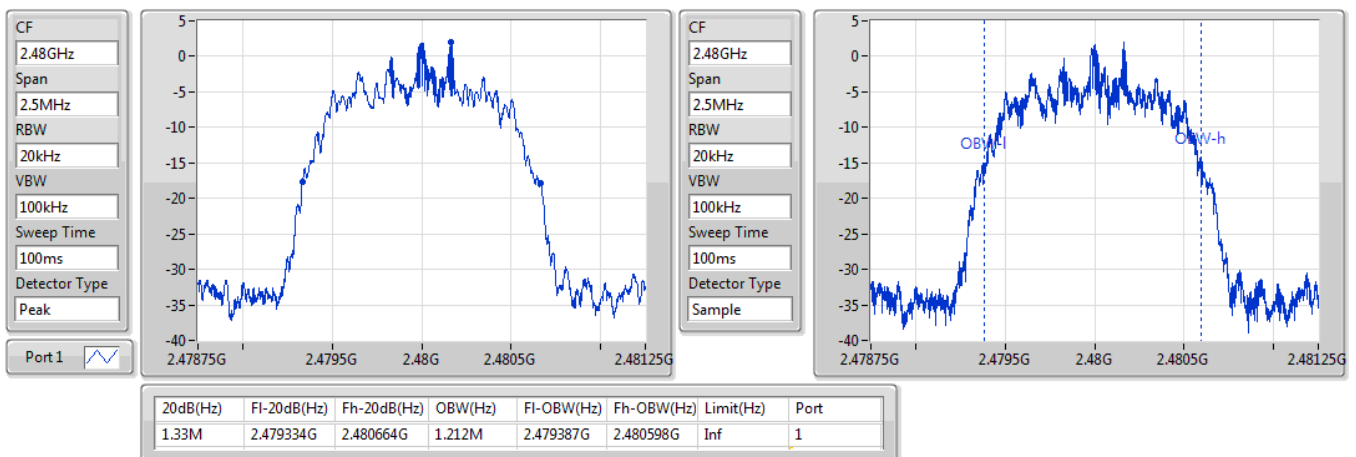


**BT-EDR(2Mbps)**
**EBW**
**2440MHz**

05/06/2019

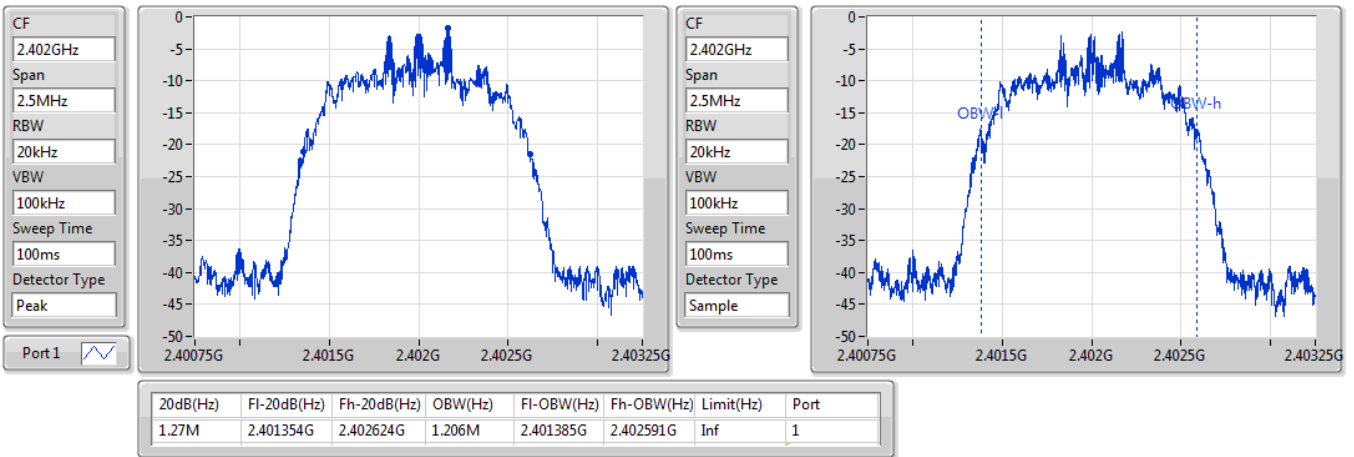

**BT-EDR(2Mbps)**
**EBW**
**2480MHz**

05/06/2019

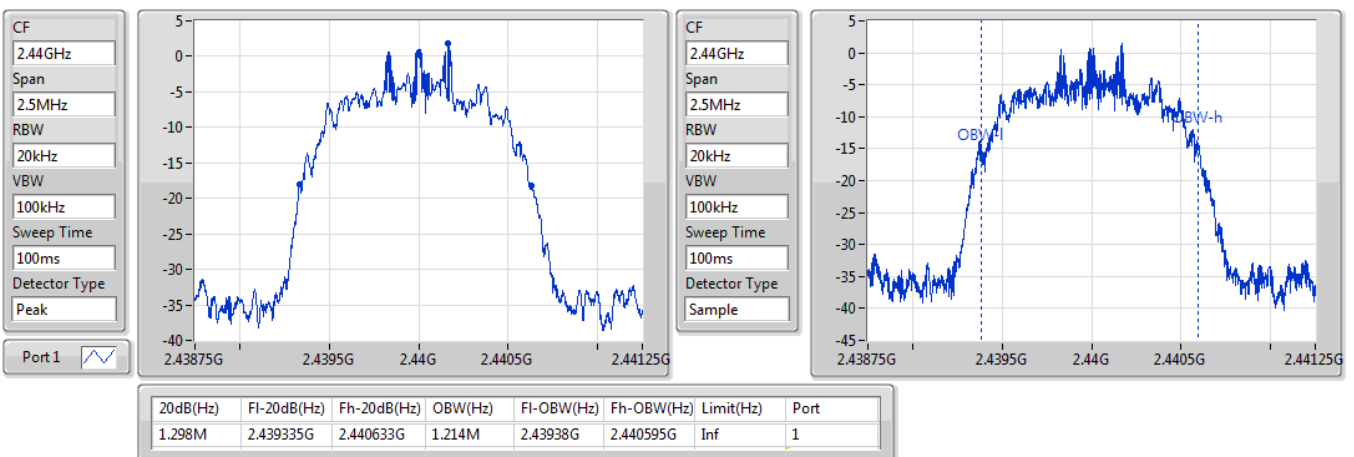


**BT-EDR(3Mbps)**
**EBW**
**2402MHz**

05/06/2019


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

05/06/2019

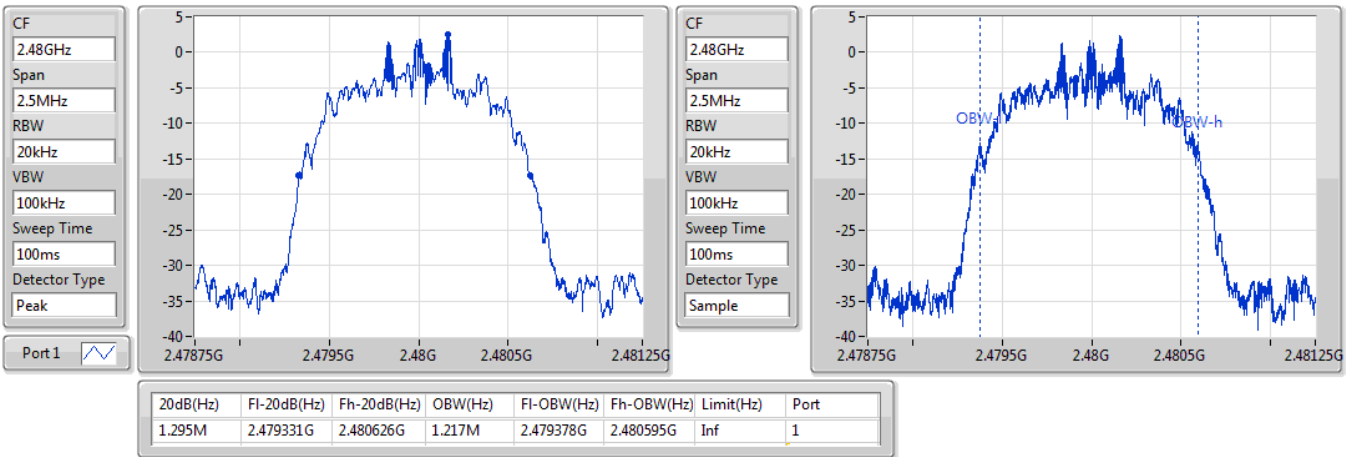


## BT-EDR(3Mbps)

2480MHz

EBW

05/06/2019



### Summary

Mode	Max-Space (Hz)	Min-Space (Hz)
2.4-2.4835GHz	-	-
BT-BR(1Mbps)	1.002M	999k
BT-EDR(2Mbps)	1.002M	997.5k
BT-EDR(3Mbps)	999k	997.5k

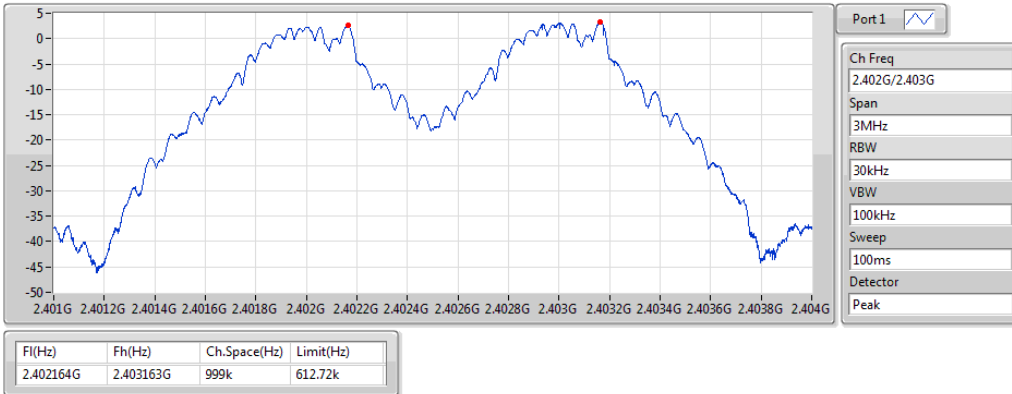
### Result

Mode	Result	Fl (Hz)	Fh (Hz)	Ch.Space (Hz)	Limit (Hz)
BT-BR(1Mbps)	-	-	-	-	-
2402MHz	Pass	2.402164G	2.403163G	999k	612.72k
2440MHz	Pass	2.44016G	2.441162G	1.002M	612.72k
2480MHz	Pass	2.479161G	2.480162G	1.0005M	611.8875k
BT-EDR(2Mbps)	-	-	-	-	-
2402MHz	Pass	2.402001G	2.403003G	1.002M	877.788k
2440MHz	Pass	2.440001G	2.441001G	1.0005M	885.78k
2480MHz	Pass	2.479002G	2.48G	997.5k	885.78k
BT-EDR(3Mbps)	-	-	-	-	-
2402MHz	Pass	2.402163G	2.403162G	999k	845.82k
2440MHz	Pass	2.440163G	2.44116G	997.5k	864.468k
2480MHz	Pass	2.479163G	2.480162G	999k	862.47k

## BT-BR(1Mbps)

2.402G/2.403GHz

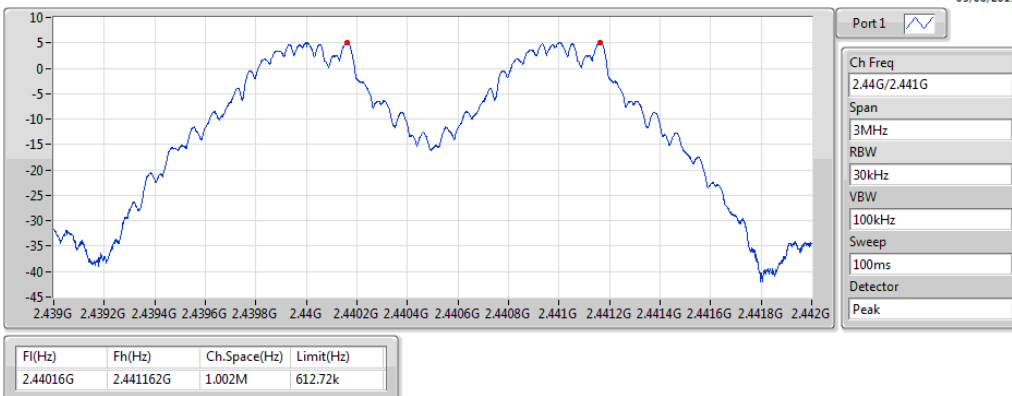
## Channel Separation



## BT-BR(1Mbps)

2.44G/2.441GHz

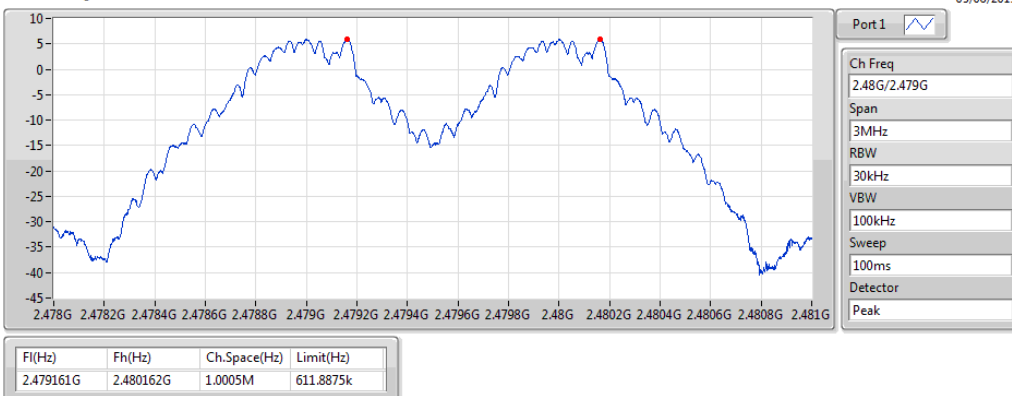
## Channel Separation



## BT-BR(1Mbps)

2.48G/2.479GHz

## Channel Separation

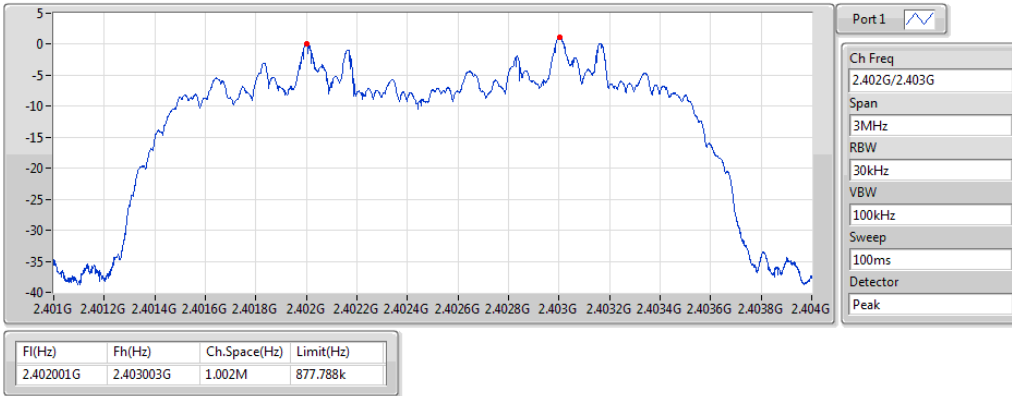


## BT-EDR(2Mbps)

2.402G/2.403GHz

## Channel Separation

05/06/2019

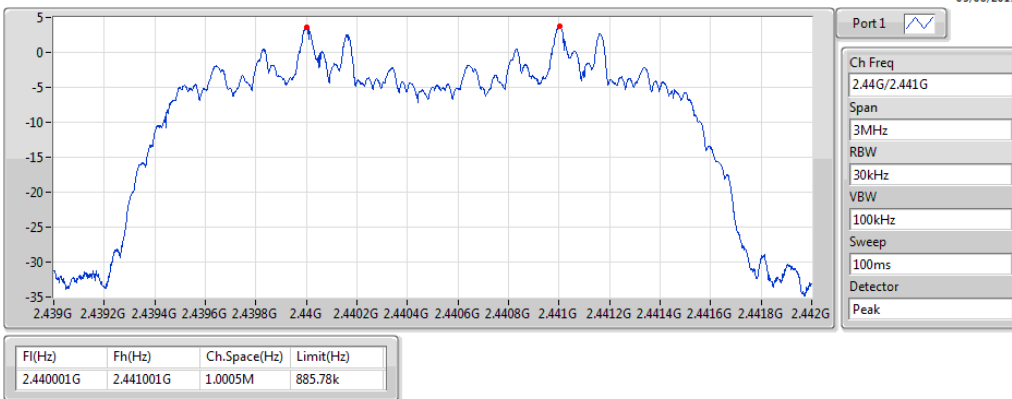


## BT-EDR(2Mbps)

2.44G/2.441GHz

## Channel Separation

05/06/2019



## BT-EDR(2Mbps)

2.48G/2.479GHz

## Channel Separation

05/06/2019

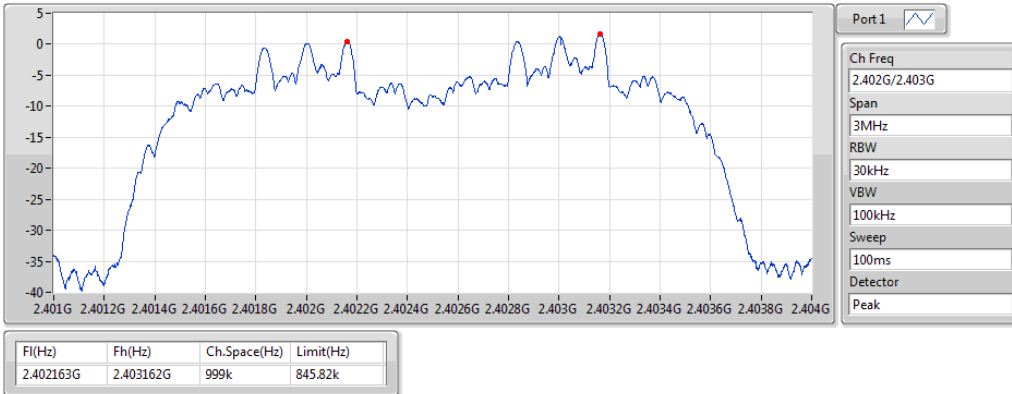


## BT-EDR(3Mbps)

2.402G/2.403GHz

## Channel Separation

05/06/2019

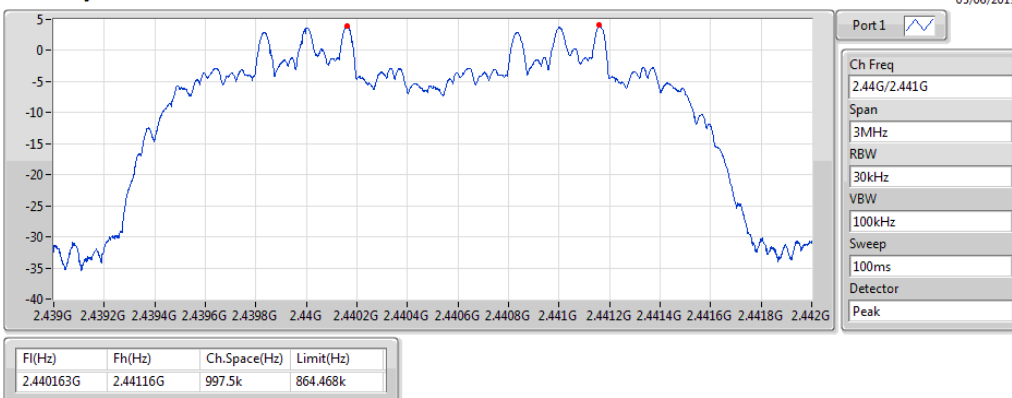


## BT-EDR(3Mbps)

2.44G/2.441GHz

## Channel Separation

05/06/2019

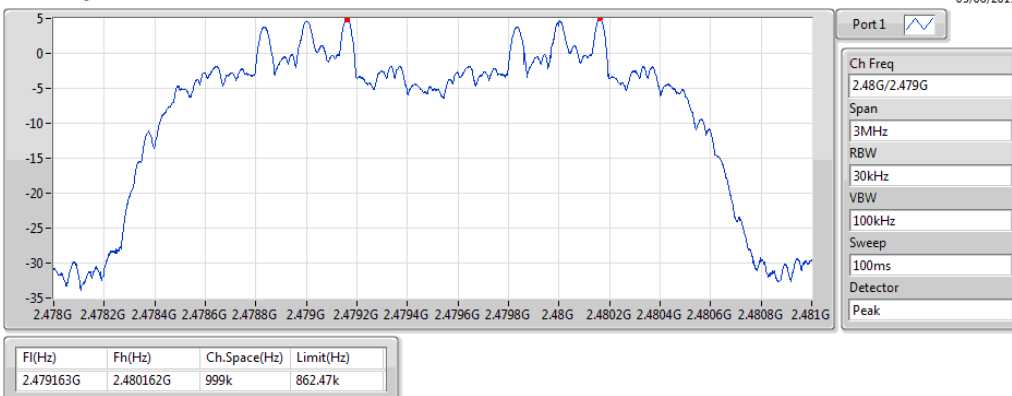


## BT-EDR(3Mbps)

2.48G/2.479GHz

## Channel Separation

05/06/2019







## Average Power-FHSS Result

Appendix C.1

### Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-BR(1Mbps)	8.67	0.00736
BT-EDR(2Mbps)	6.22	0.00419
BT-EDR(3Mbps)	6.12	0.00409

### Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-BR(1Mbps)	-	-	-	-
2402MHz	Pass	2.66	5.23	21.00
2440MHz	Pass	2.66	7.86	21.00
2480MHz	Pass	2.66	8.67	21.00
BT-EDR(2Mbps)	-	-	-	-
2402MHz	Pass	2.66	1.72	21.00
2440MHz	Pass	2.66	5.16	21.00
2480MHz	Pass	2.66	6.22	21.00
BT-EDR(3Mbps)	-	-	-	-
2402MHz	Pass	2.66	1.75	21.00
2440MHz	Pass	2.66	5.21	21.00
2480MHz	Pass	2.66	6.12	21.00

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



## Peak Power-FHSS Result

## Appendix C.2

### Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-BR(1Mbps)	8.82	0.00762
BT-EDR(2Mbps)	7.89	0.00615
BT-EDR(3Mbps)	7.91	0.00618

### Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-BR(1Mbps)	-	-	-	-
2402MHz	Pass	2.66	5.52	21.00
2440MHz	Pass	2.66	8.01	21.00
2480MHz	Pass	2.66	8.82	21.00
BT-EDR(2Mbps)	-	-	-	-
2402MHz	Pass	2.66	3.34	21.00
2440MHz	Pass	2.66	7.03	21.00
2480MHz	Pass	2.66	7.89	21.00
BT-EDR(3Mbps)	-	-	-	-
2402MHz	Pass	2.66	3.54	21.00
2440MHz	Pass	2.66	6.87	21.00
2480MHz	Pass	2.66	7.91	21.00

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

### Summary

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

### Result

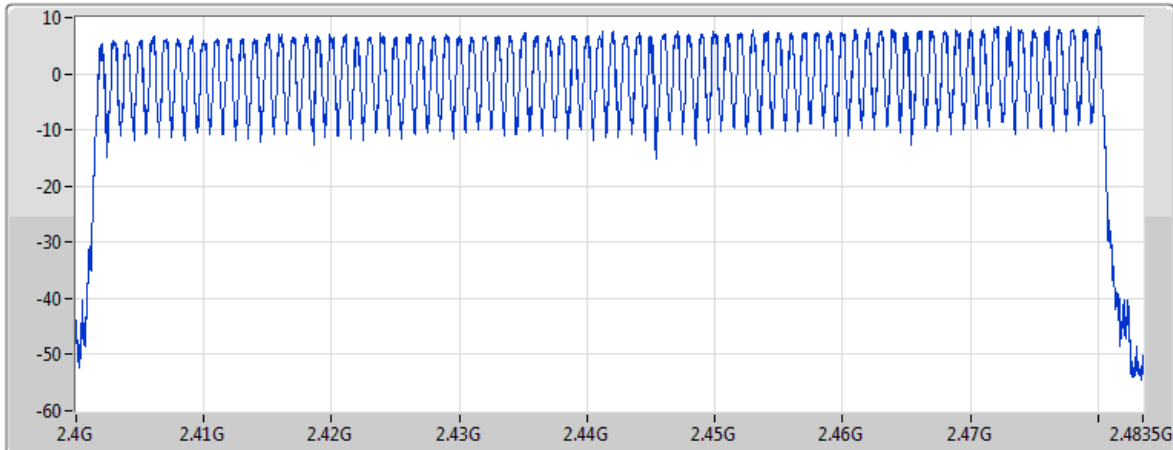
Mode	Result	Hopping No	Limit
BT-BR(1Mbps)	-	-	-
2440MHz	Pass	79	15
BT-EDR(2Mbps)	-	-	-
2440MHz	Pass	79	15
BT-EDR(3Mbps)	-	-	-
2440MHz	Pass	79	15


BT-BR(1Mbps)

Hopping Ch

2440MHz

13/06/2019



Port 1 

Hopping No  
79

Span  
83.5MHz

RBW  
100kHz

VBW  
300kHz

Sweep  
200ms

Detector  
Peak

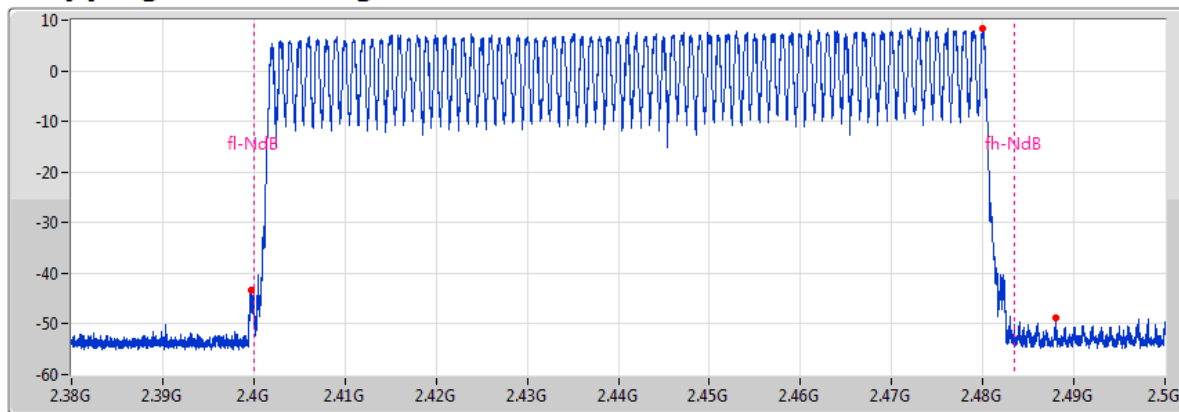
Hopping No	Limit
79	15


BT-BR(1Mbps)

2440MHz

Hopping Ch Bandedge (Non-restricted Band)

13/06/2019



Port 1 

Span  
120MHz

RBW  
100kHz

VBW  
300kHz

Sweep  
200ms

Detector  
Peak

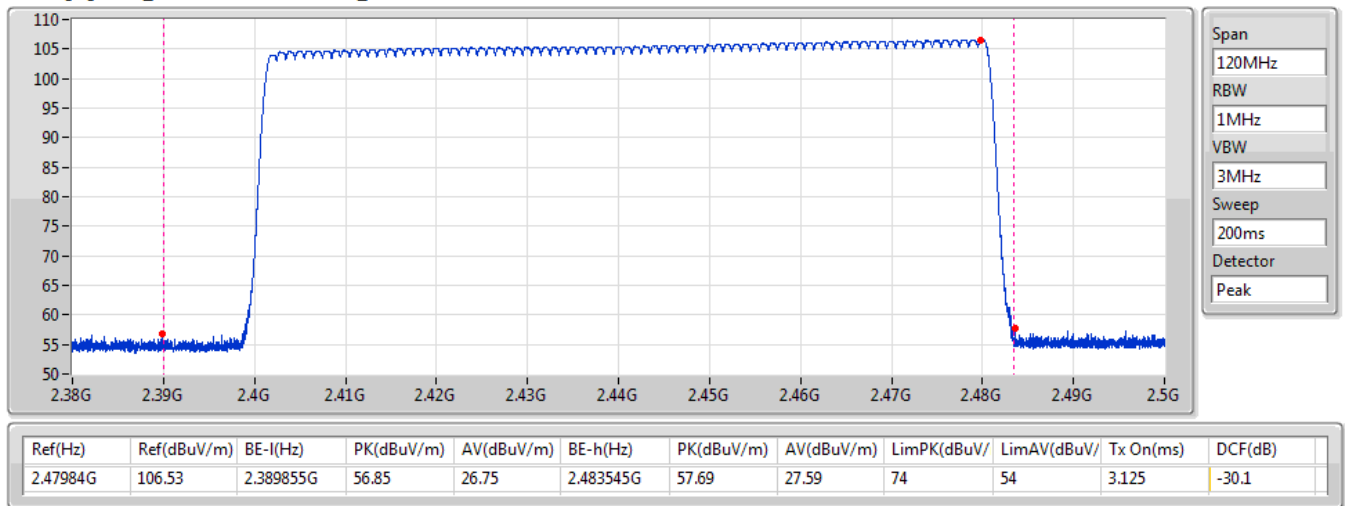
Limit(dBm)	Ref(Hz)	Ref(dBm)	BE-l(Hz)	BE-l(dBm)	BE-h(Hz)	BE-h(dBm)
-11.54	2.47999G	8.46	2.399695G	-43.31	2.488015G	-48.9

### BT-BR(1Mbps)

2440MHz

### Hopping Ch Bandedge (Restricted Band)

13/06/2019

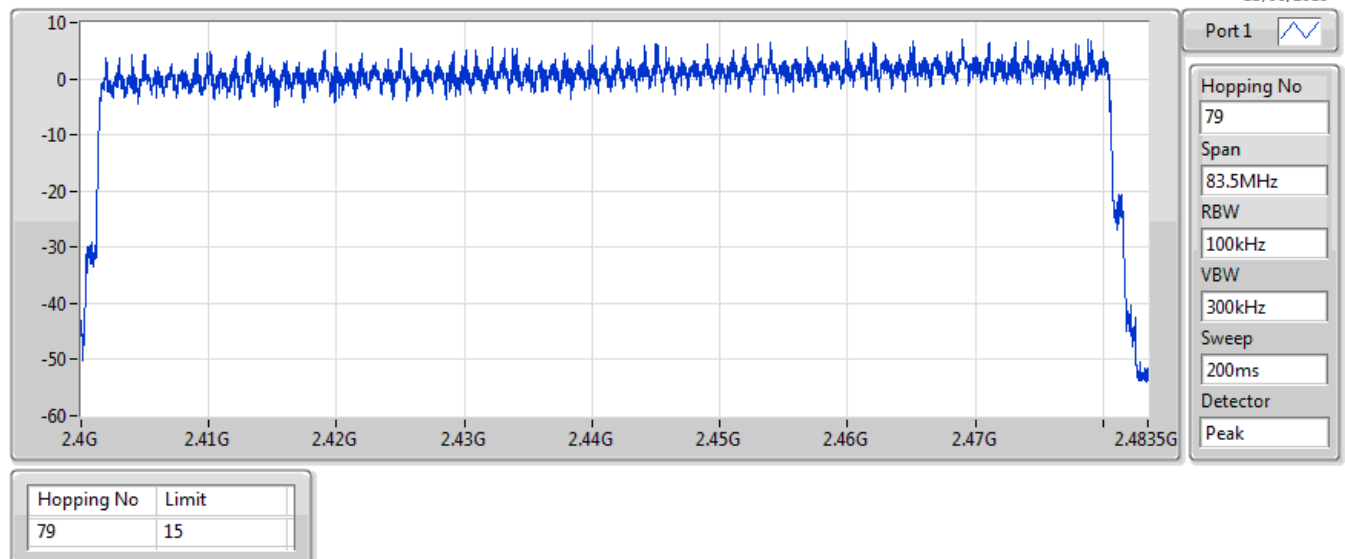


### BT-EDR(2Mbps)

2440MHz

### Hopping Ch

13/06/2019

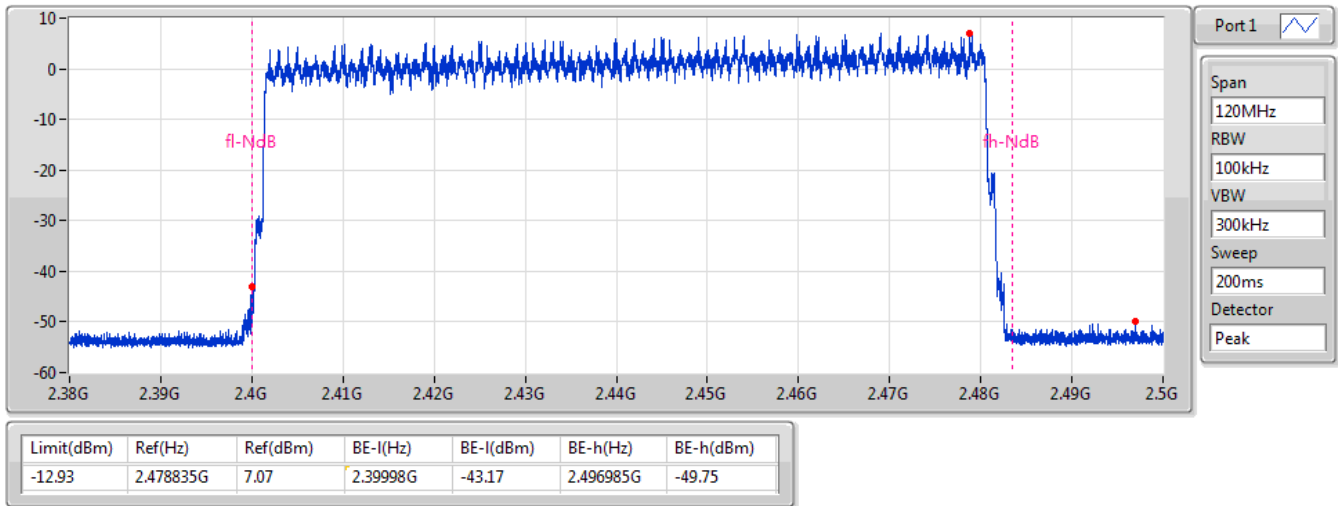


BT-EDR(2Mbps)

2440MHz

Hopping Ch Bandedge (Non-restricted Band)

13/06/2019

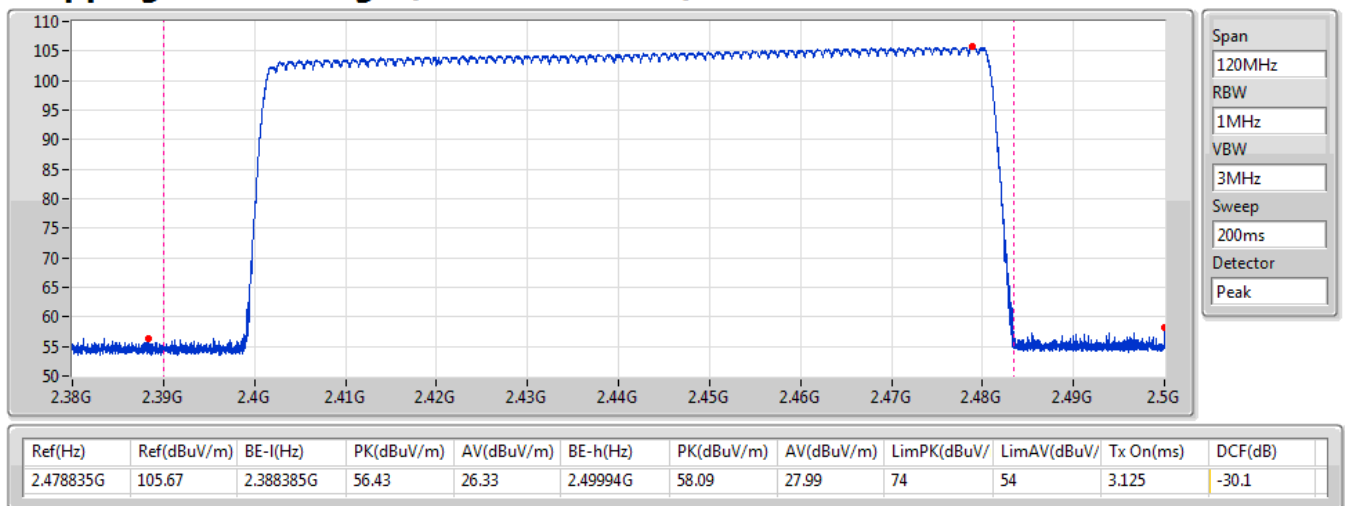


BT-EDR(2Mbps)

2440MHz

Hopping Ch Bandedge (Restricted Band)

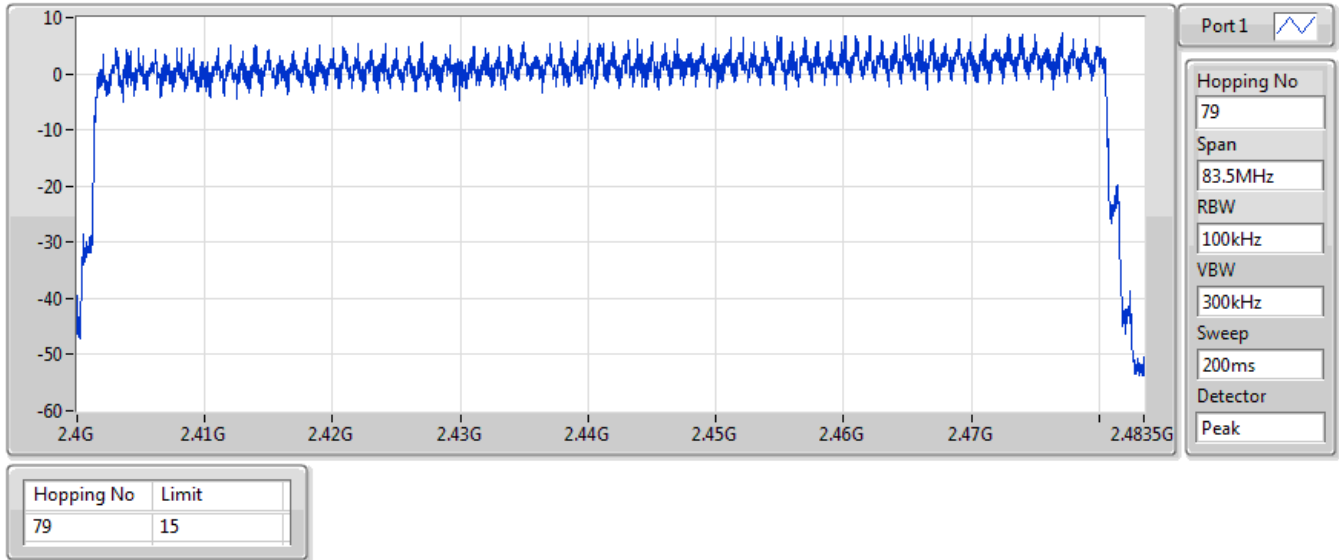
13/06/2019



## BT-EDR(3Mbps) 2440MHz

## Hopping Ch

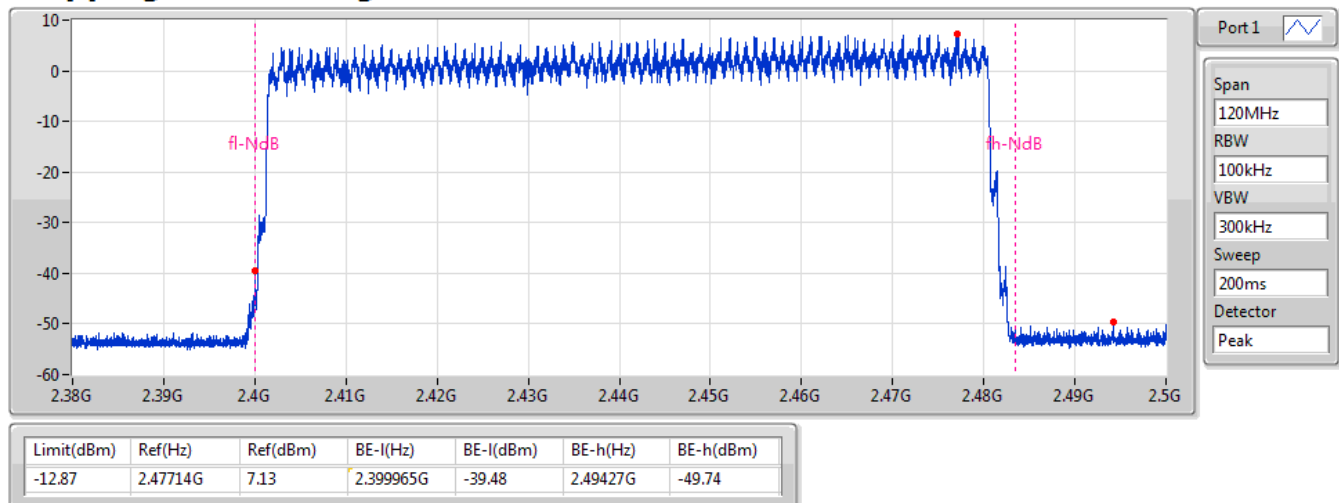
13/06/2019



## BT-EDR(3Mbps) 2440MHz

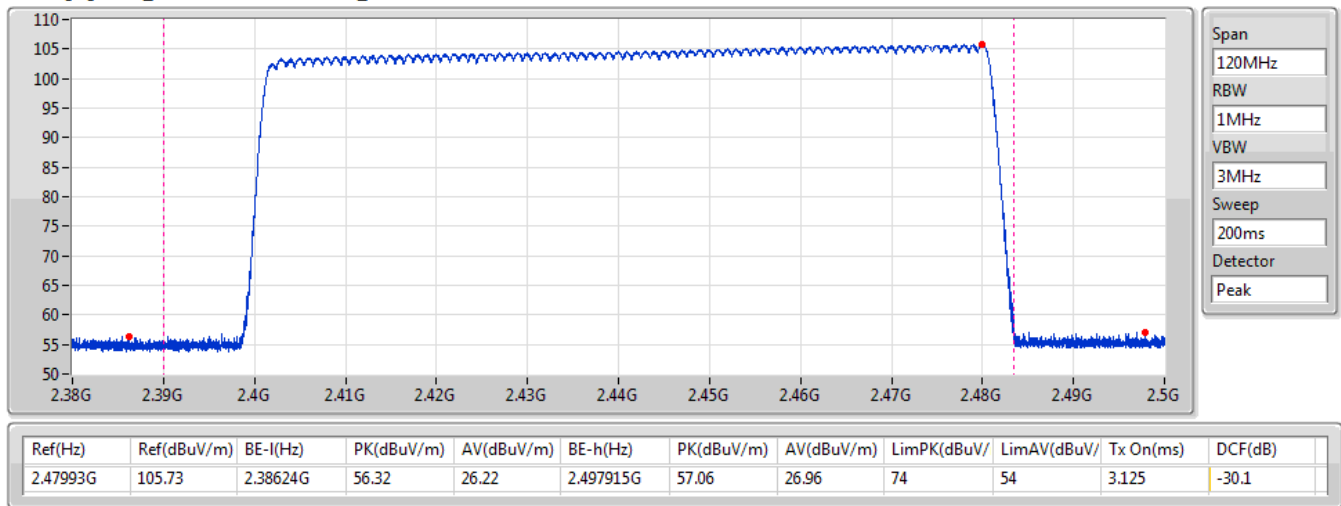
## Hopping Ch Bandedge (Non-restricted Band)

13/06/2019



**BT-EDR(3Mbps)****2440MHz****Hopping Ch Bandedge (Restricted Band)**

13/06/2019





**Summary**

Mode	Max-Dwell (s)
2.4-2.4835GHz	-
BT-BR(1Mbps)	309.0334m
BT-EDR(2Mbps)	309.14m
BT-EDR(3Mbps)	309.14m


**Result**

Mode	Result	Period (s)	Dwell (s)	Limit (s)	Tx On (s)
BT-BR(1Mbps)	-	-	-	-	-
2440MHz	Pass	31.6	309.0334m	400m	2.899m
BT-EDR(2Mbps)	-	-	-	-	-
2440MHz	Pass	31.6	309.14m	400m	2.9m
BT-EDR(3Mbps)	-	-	-	-	-
2440MHz	Pass	31.6	309.14m	400m	2.9m

## BT-BR(1Mbps)

2440MHz

02/07/2019

Port1 

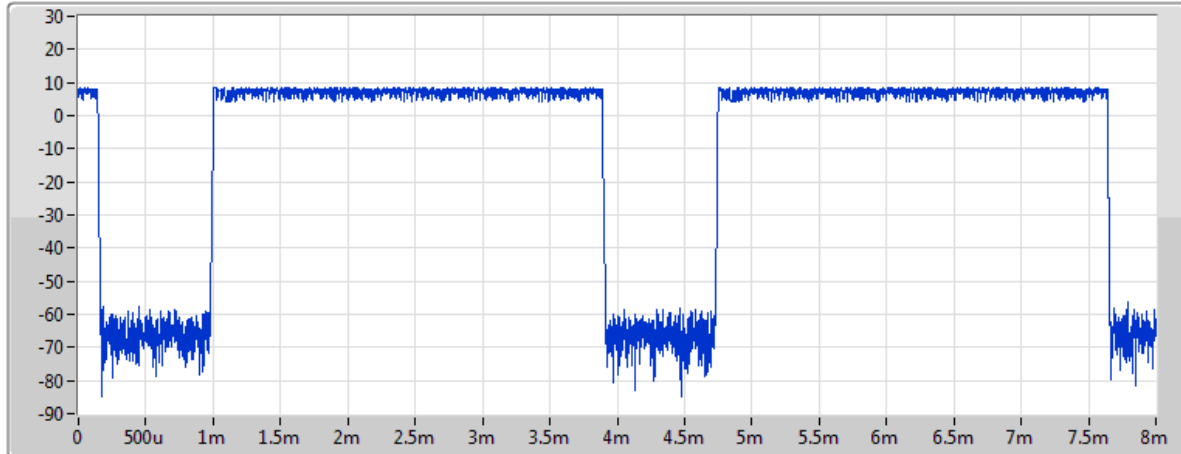
Ch Freq  
2.44GHz

RBW  
300kHz

VBW  
1MHz

Sweep Time  
8ms

TX Time  
2.899ms



non AFH Mode

Period(s)	Dwell(s)	Limit(s)	Tx On(s)
31.6	309.0334m	400m	2.899m

AFH Mode

Period(s)	Dwell(s)	Limit(s)	Tx On(s)
0	154.5167m	400m	2.899m

## BT-EDR(2Mbps)

2440MHz

02/07/2019

Port1 

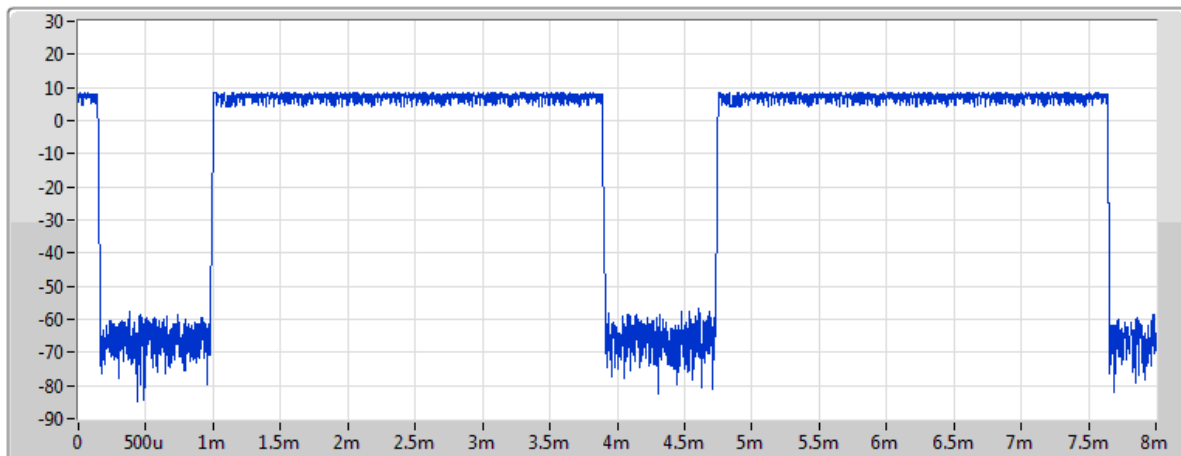
Ch Freq  
2.44GHz

RBW  
300kHz

VBW  
1MHz

Sweep Time  
8ms

TX Time  
2.9ms



non AFH Mode

Period(s)	Dwell(s)	Limit(s)	Tx On(s)
31.6	309.14m	400m	2.9m

AFH Mode

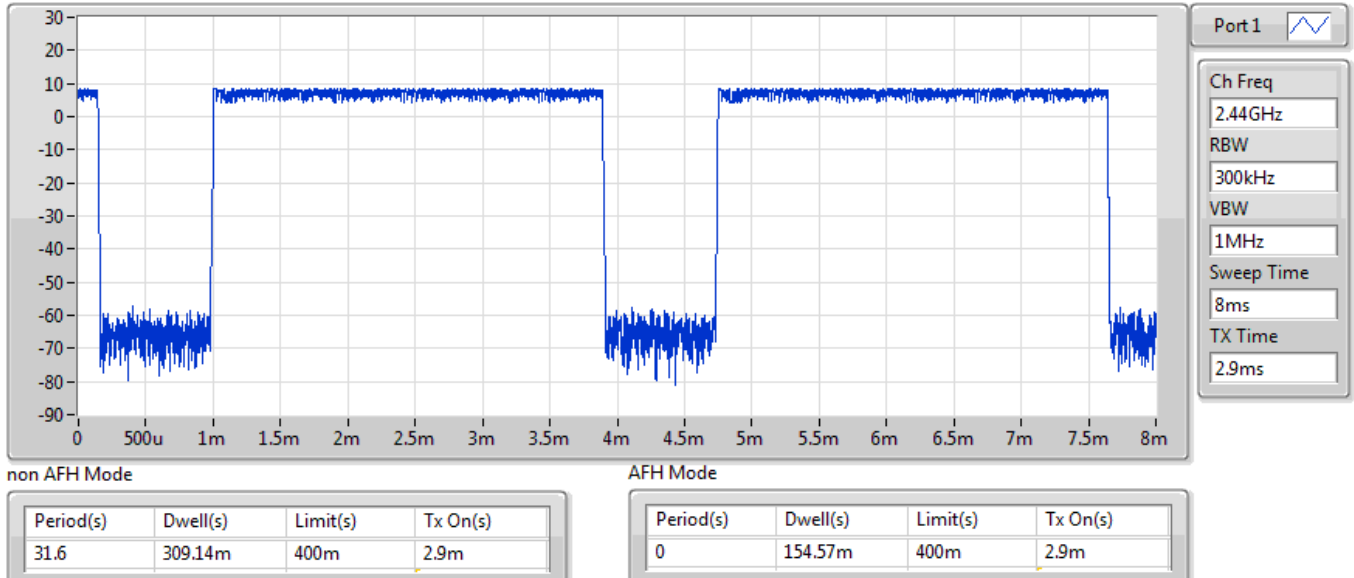
Period(s)	Dwell(s)	Limit(s)	Tx On(s)
0	154.57m	400m	2.9m

## BT-EDR(3Mbps)

**2440MHz**

## Dwell

02/07/2019





## CSE-FHSS(Non-restricted Band) Result

## Appendix F

### Summary

Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-
BT-BR(1Mbps)	Pass	2.40184G	4.61	-15.39	709.32M	-52.57	2.4G	-41.43	2.48365G	-51.86	17.47734G	-44.07	1
BT-EDR(2Mbps)	Pass	2.40196G	2.10	-17.90	812.62M	-52.29	2.39999G	-38.02	2.48517G	-51.08	24.54127G	-44.92	1
BT-EDR(3Mbps)	Pass	2.40184G	2.48	-17.52	895.8M	-52.73	2.4G	-38.20	2.48404G	-51.14	24.63695G	-44.53	1

### Result

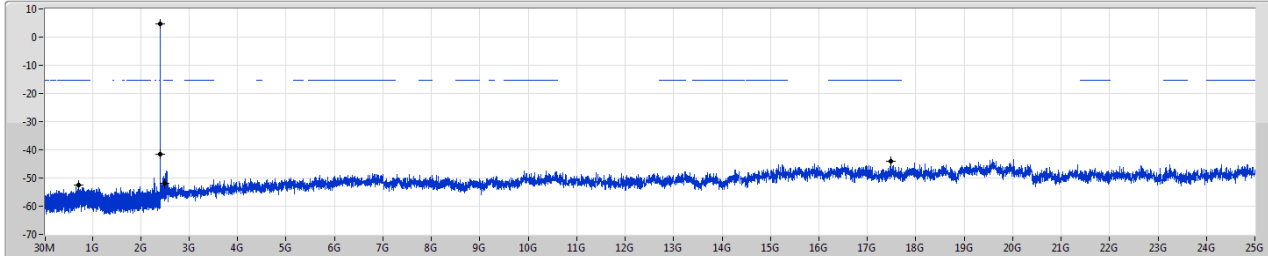
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
BT-BR(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.40184G	4.61	-15.39	709.32M	-52.57	2.4G	-41.43	2.48365G	-51.86	17.47734G	-44.07	1
2440MHz	Pass	2.44004G	6.91	-13.09	2.18488G	-53.07	2.39877G	-52.50	2.48353G	-50.77	15.23996G	-44.18	1
2480MHz	Pass	2.48016G	8.38	-11.62	621.7M	-52.51	2.39846G	-51.69	2.48353G	-49.61	24.7439G	-44.29	1
BT-EDR(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.40196G	2.10	-17.90	812.62M	-52.29	2.39999G	-38.02	2.48517G	-51.08	24.54127G	-44.92	1
2440MHz	Pass	2.43983G	5.22	-14.78	766.74M	-51.69	2.39844G	-52.19	2.48475G	-51.57	24.65103G	-44.45	1
2480MHz	Pass	2.4802G	6.47	-13.53	857.02M	-52.95	2.39885G	-52.50	2.4845G	-50.44	17.45764G	-44.67	1
BT-EDR(3Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.40184G	2.48	-17.52	895.8M	-52.73	2.4G	-38.20	2.48404G	-51.14	24.63695G	-44.53	1
2440MHz	Pass	2.43983G	5.97	-14.03	957.37M	-51.73	2.39822G	-51.66	2.48363G	-50.84	24.87898G	-44.73	1
2480MHz	Pass	2.48003G	5.97	-14.03	917.11M	-53.06	2.39847G	-51.76	2.48351G	-50.33	24.33582G	-44.07	1

BT-BR(1Mbps)

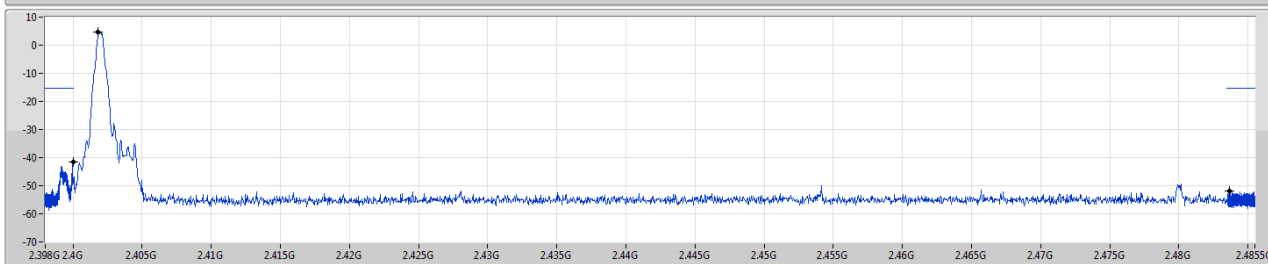
CSE NdB

2402MHz

05/06/2019



Port1



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

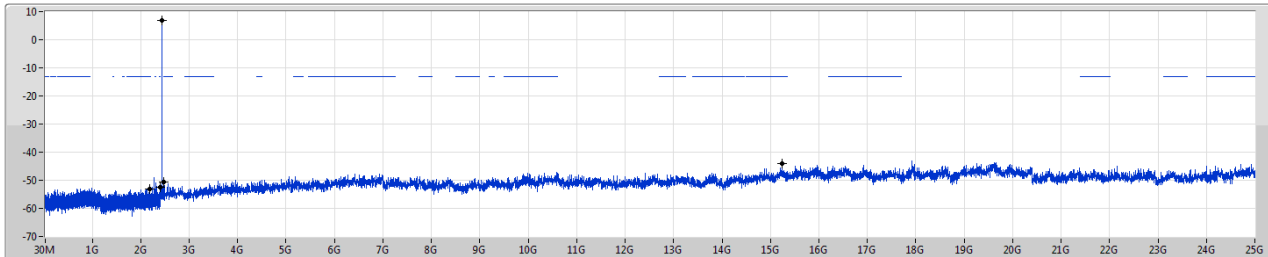
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40184G	4.61	-15.39	709.32M	-52.57	2.4G	-41.43	2.48365G	-51.86	17.47734G	-44.07	1

BT-BR(1Mbps)

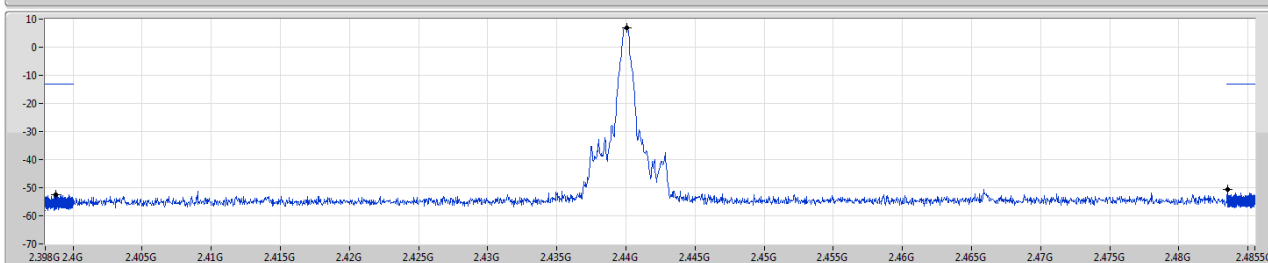
CSE NdB

2440MHz

05/06/2019



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)	Port
2.44004G	6.91	-13.09	2.18488G	-53.07	2.39877G	-52.50	2.48359G	-50.77	15.23996G	-44.18	1

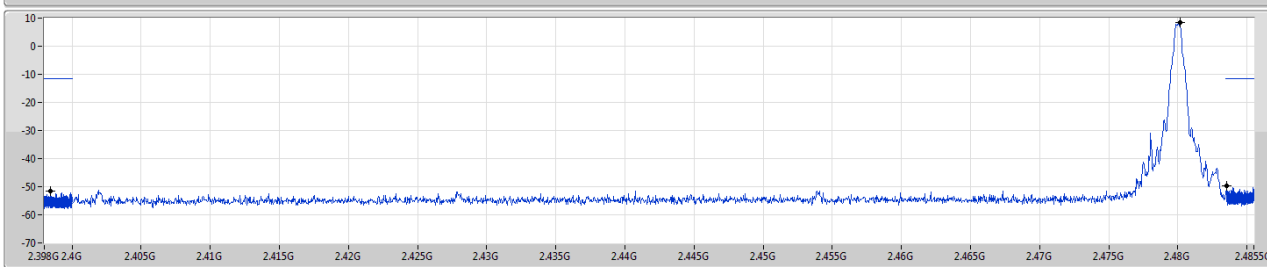
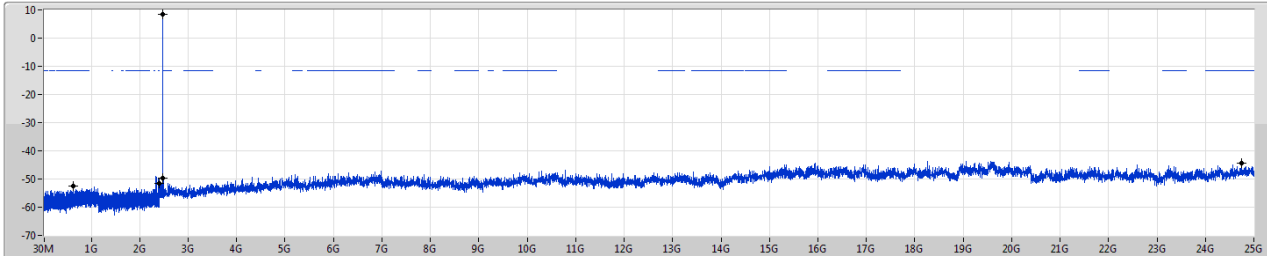
### BT-BR(1Mbps)

2480MHz

CSE NdB

05/06/2019

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)	Port
2.48016G	8.38	-11.62	621.7M	-52.51	2.39846G	-51.69	2.48353G	-49.61	2.47439G	-44.29	1

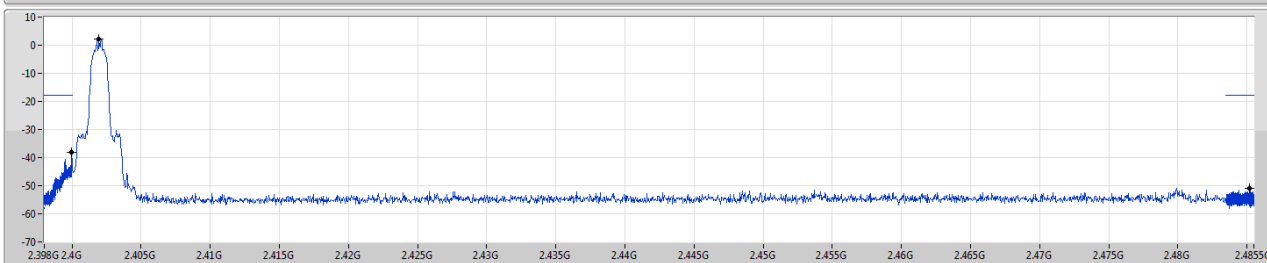
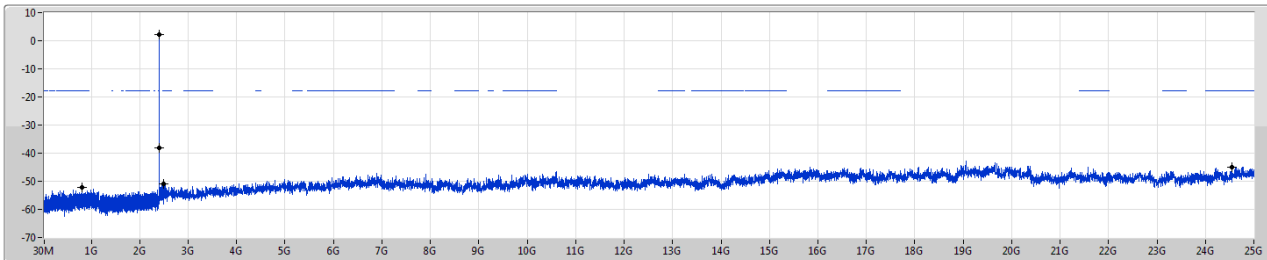
### BT-EDR(2Mbps)

2402MHz

CSE NdB

05/06/2019

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)	Port
2.40196G	2.10	-17.90	812.62M	-52.29	2.39999G	-38.02	2.48517G	-51.08	2.454127G	-44.92	1

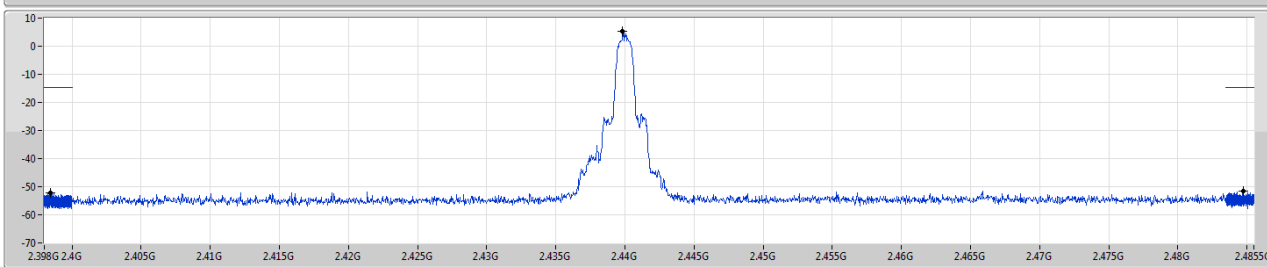
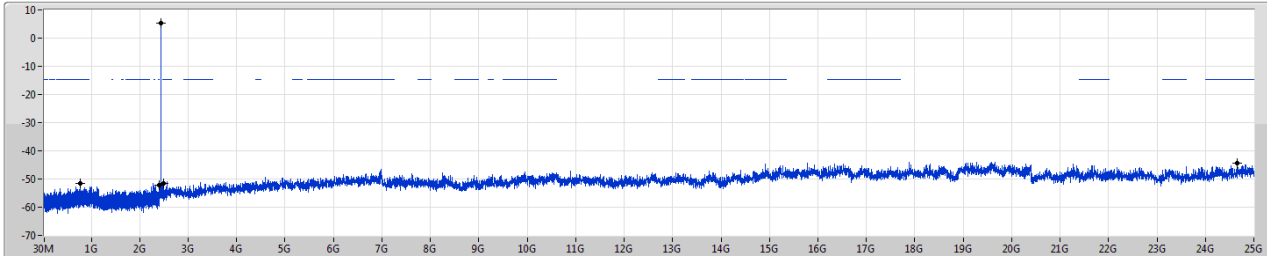
## BT-EDR(2Mbps)

2440MHz

CSE NdB

05/06/2019

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)	Port
2.43983G	5.22	-14.78	766.74M	-51.69	2.39844G	-52.19	2.48475G	-51.57	2.45103G	-44.45	1

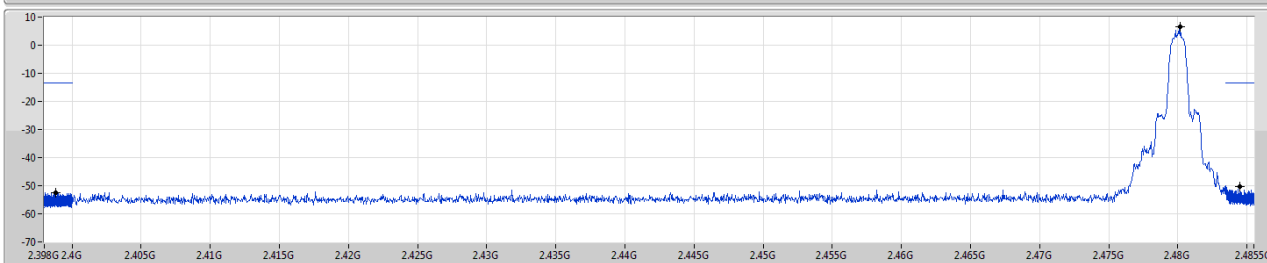
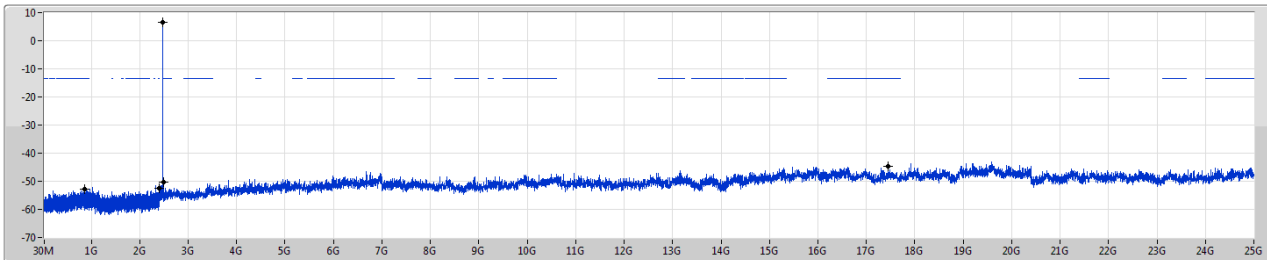
## BT-EDR(2Mbps)

2480MHz

CSE NdB

05/06/2019

Port1



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

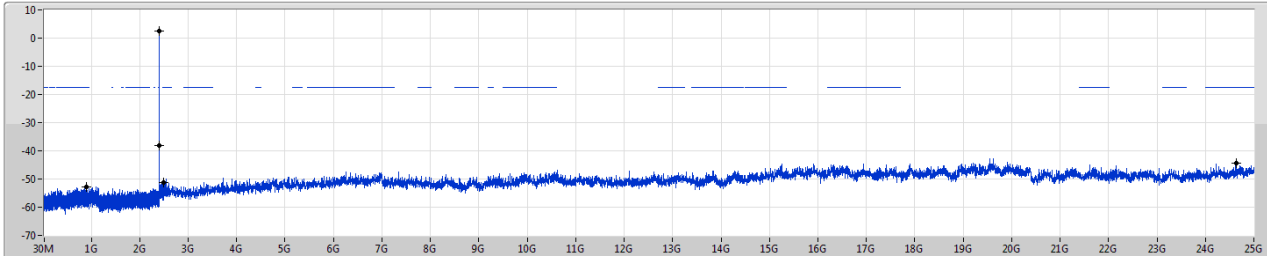
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.4802G	6.47	-13.53	857.02M	-52.95	2.39885G	-52.50	2.4845G	-50.44	17.45764G	-44.67	1

BT-EDR(3Mbps)

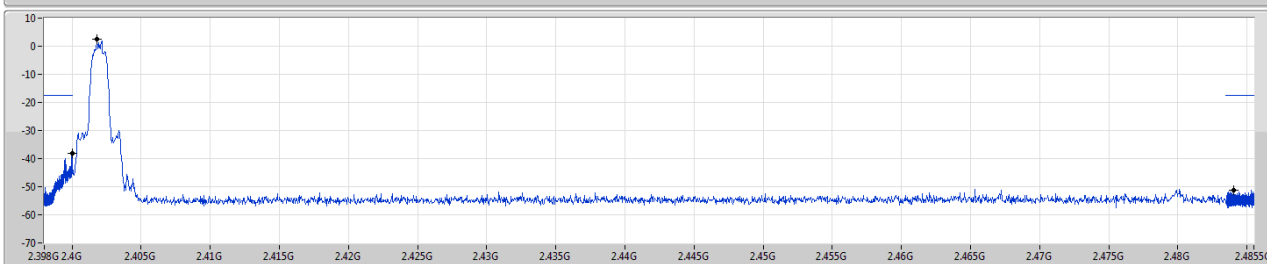
2402MHz

CSE NdB

05/06/2019



Port1



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

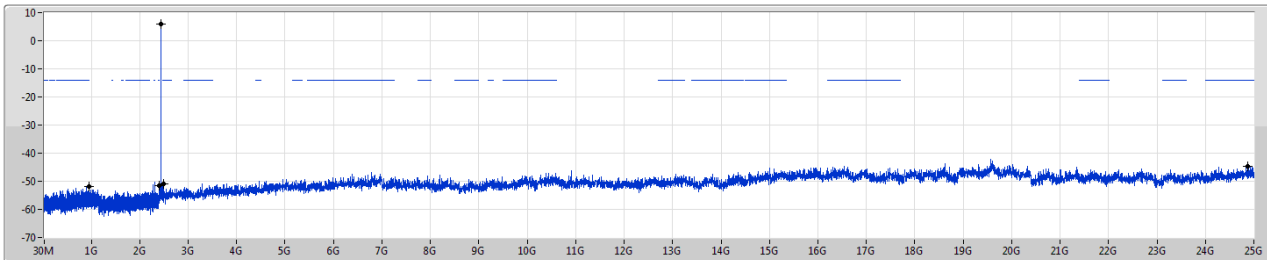
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40184G	2.48	-17.52	895.8M	-52.73	2.4G	-38.20	2.48404G	-51.14	2.43695G	-44.53	1

BT-EDR(3Mbps)

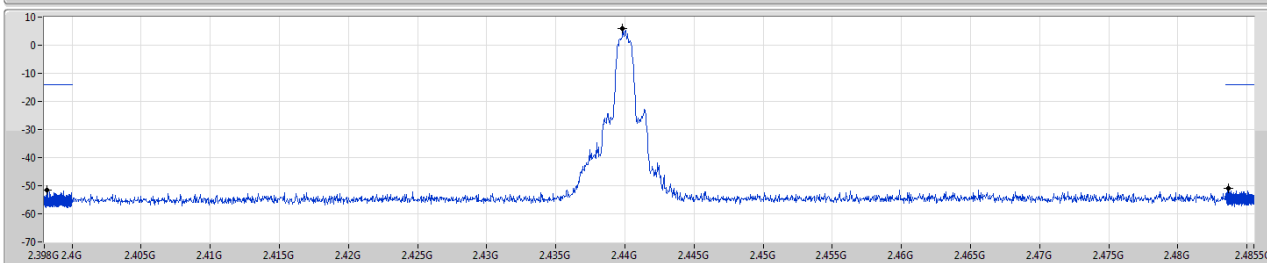
2440MHz

CSE NdB

05/06/2019



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)	Port
2.43983G	5.97	-14.03	957.37M	-51.73	2.39822G	-51.66	2.48363G	-50.84	2.47898G	-44.73	1



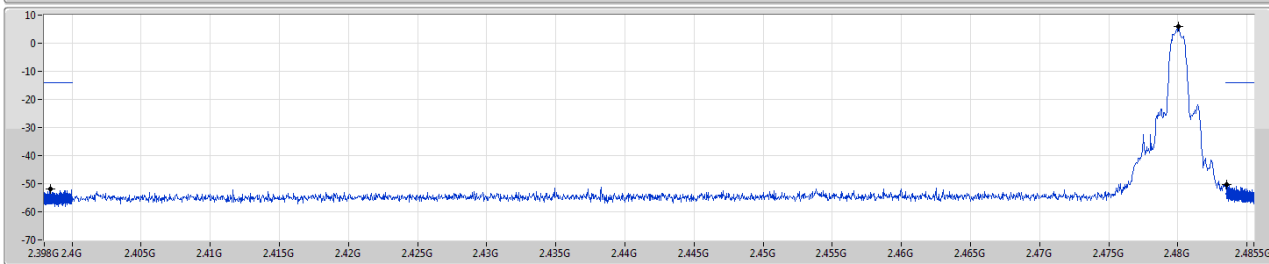
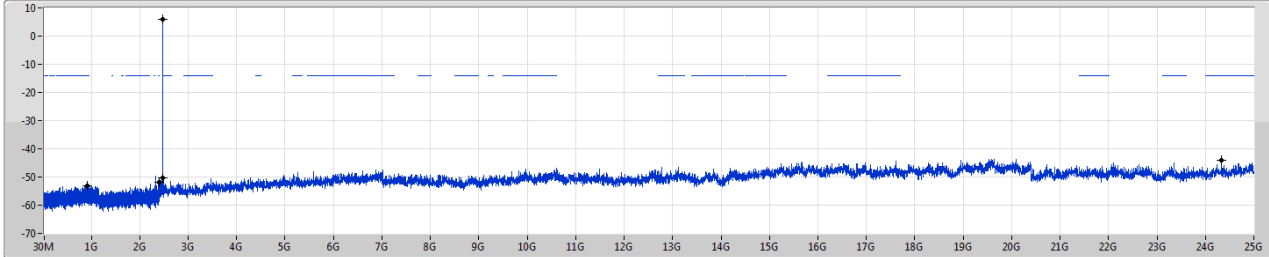
BT-EDR(3Mbps)

2480MHz

CSE NdB

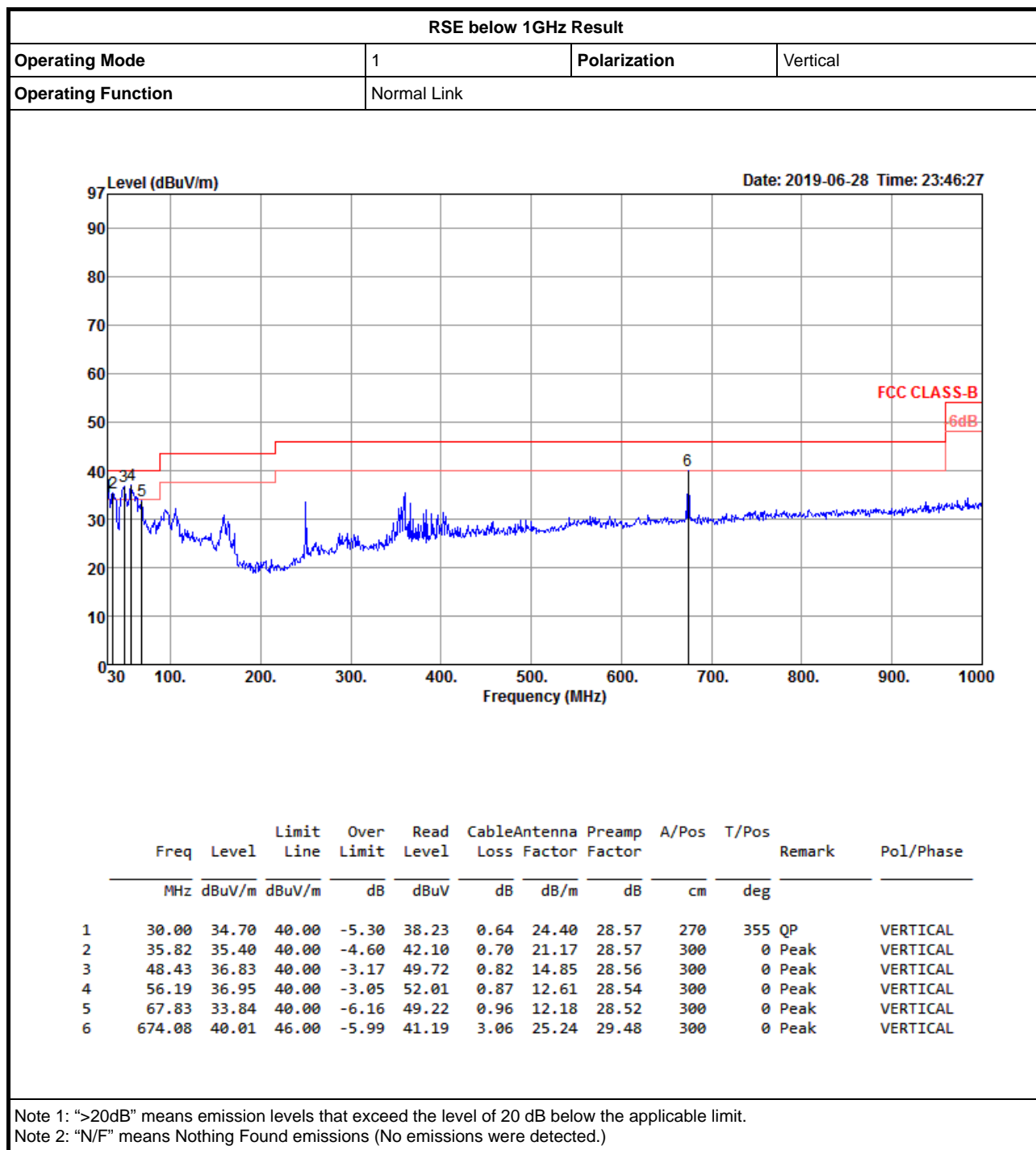
05/06/2019

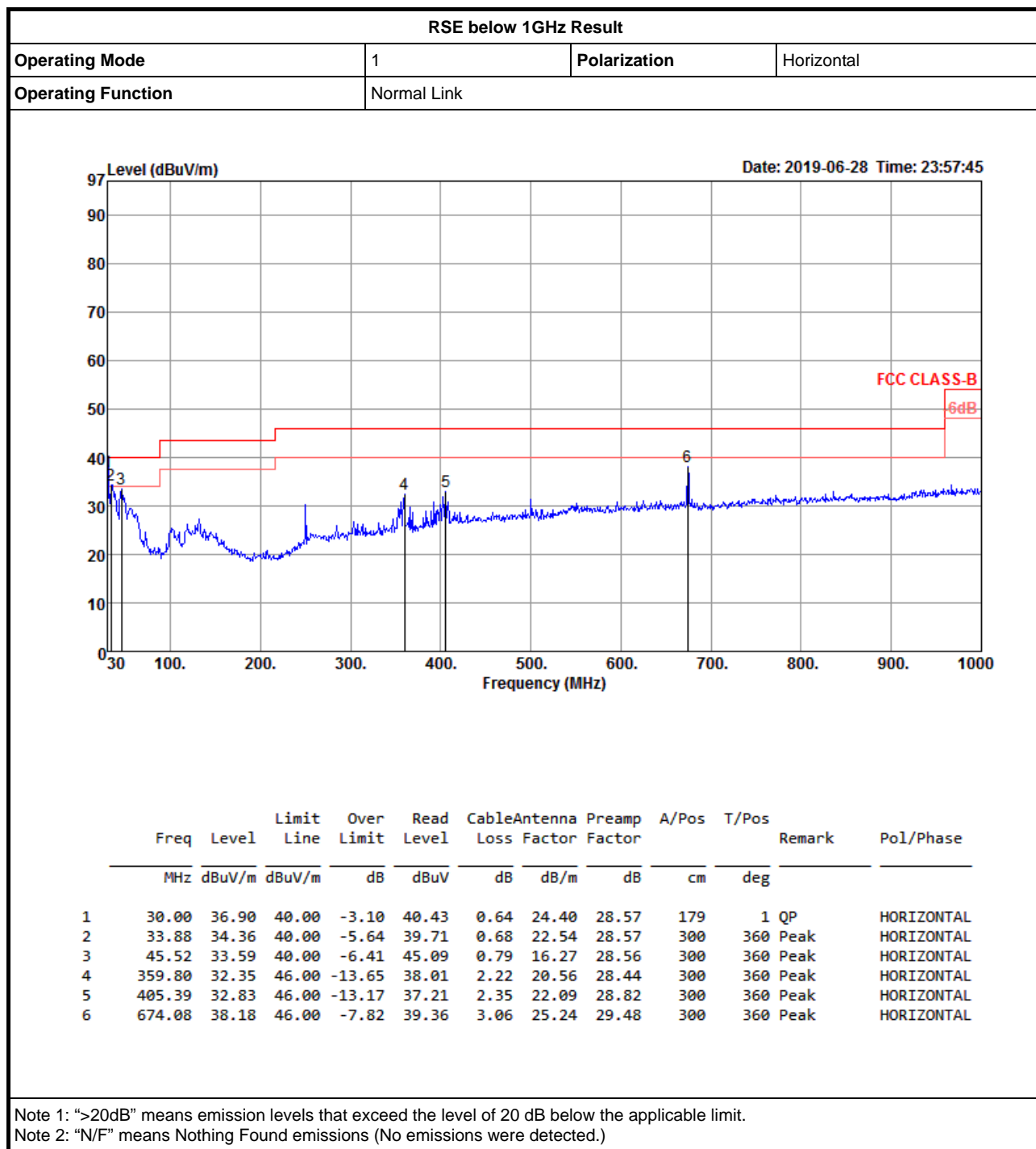
Port1



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)	Port
2.48003G	5.97	-14.03	917.111M	-53.06	2.39847G	-51.76	2.48351G	-50.33	24.33582G	-44.07	1







## RSE TX above 1GHz Result

## Appendix G.2

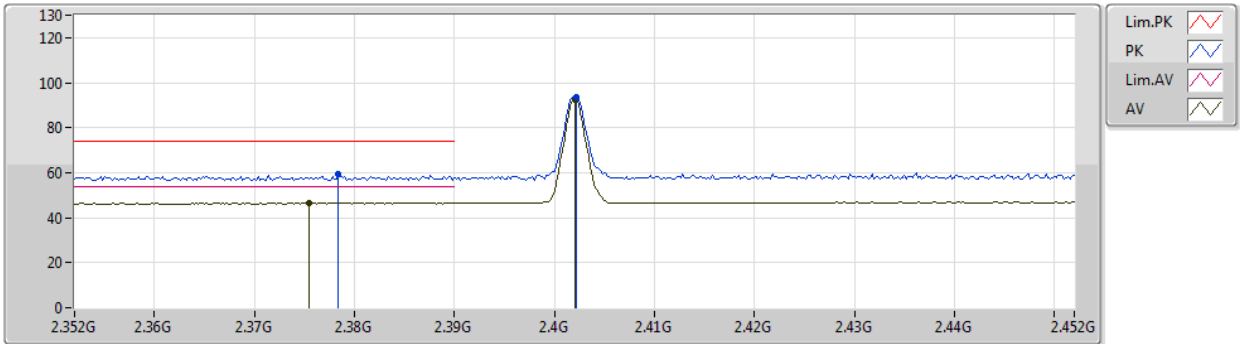
### Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-
BT-EDR(3Mbps)	Pass	AV	2.4835G	50.49	54.00	-3.51	32.41	3	Horizontal	70	1.72	-

## BT-BR(1Mbps)

## 2402MHz\_TX

03/06/2019



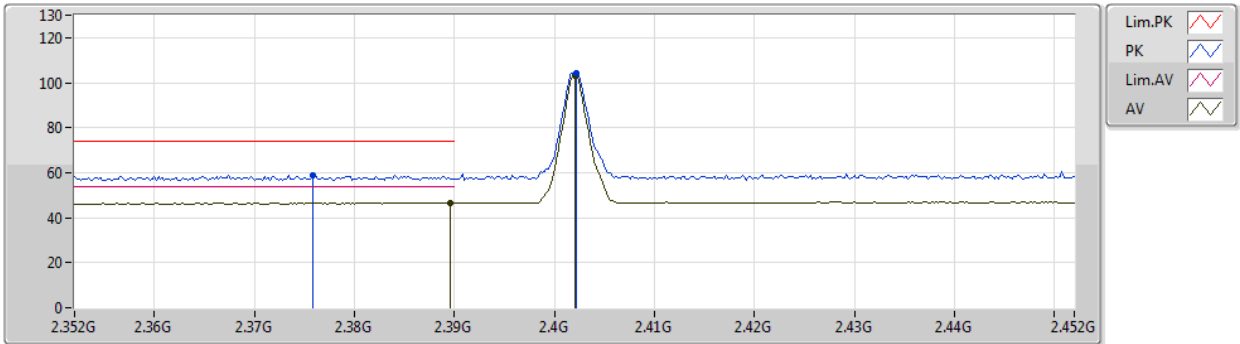
EUT\_Z\_1TX  
Setting 8  
02-J-5  
FSU(100015)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	2.3784G	59.56	74.00	-14.44	31.17	3	Vertical	325	1.15	-				
AV	2.3754G	46.50	54.00	-7.50	31.17	3	Vertical	325	1.15	-				
PK	2.4022G	93.62	Inf	-Inf	31.23	3	Vertical	325	1.15	-				
AV	2.402G	92.64	Inf	-Inf	31.23	3	Vertical	325	1.15	-				

## BT-BR(1Mbps)

## 2402MHz\_TX

03/06/2019



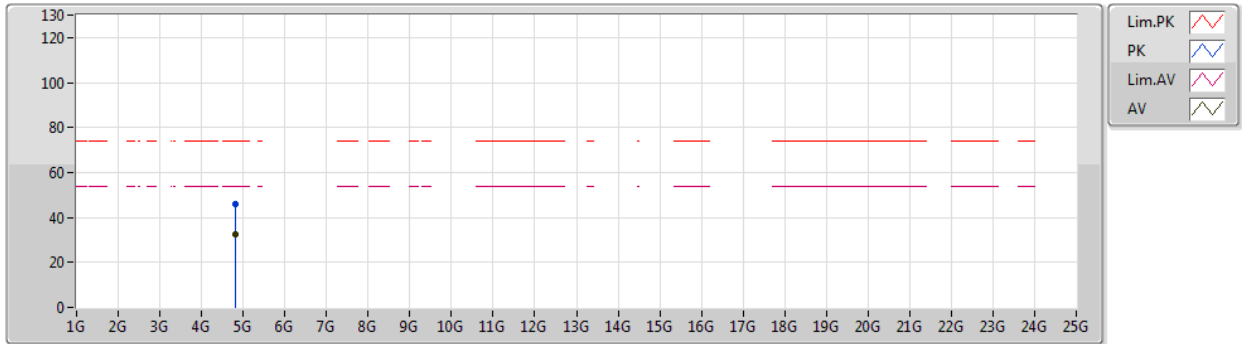
EUT\_Z\_1TX  
Setting 8  
02-J-5  
FSU(100015)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	2.3758G	58.88	74.00	-15.12	31.17	3	Horizontal	86	2.62	-				
AV	2.3896G	46.57	54.00	-7.43	31.20	3	Horizontal	86	2.62	-				
PK	2.4022G	104.28	Inf	-Inf	31.23	3	Horizontal	86	2.62	-				
AV	2.402G	103.36	Inf	-Inf	31.23	3	Horizontal	86	2.62	-				

## BT-BR(1Mbps)

## 2402MHz\_TX

03/06/2019



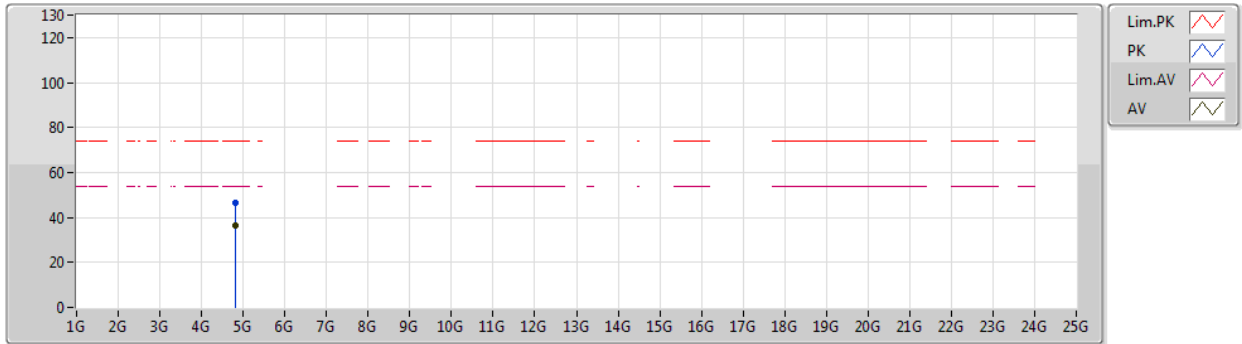
EUT\_Z\_1TX  
Setting 8  
02-J-5  
FSU(100015)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	4.80442G	45.88	74.00	-28.12	7.12	3	Vertical	314	1.50	-				
AV	4.80406G	32.65	54.00	-21.35	7.12	3	Vertical	314	1.50	-				

## BT-BR(1Mbps)

## 2402MHz\_TX

03/06/2019



EUT\_Z\_1TX  
Setting 8  
02-J-5  
FSU(100015)

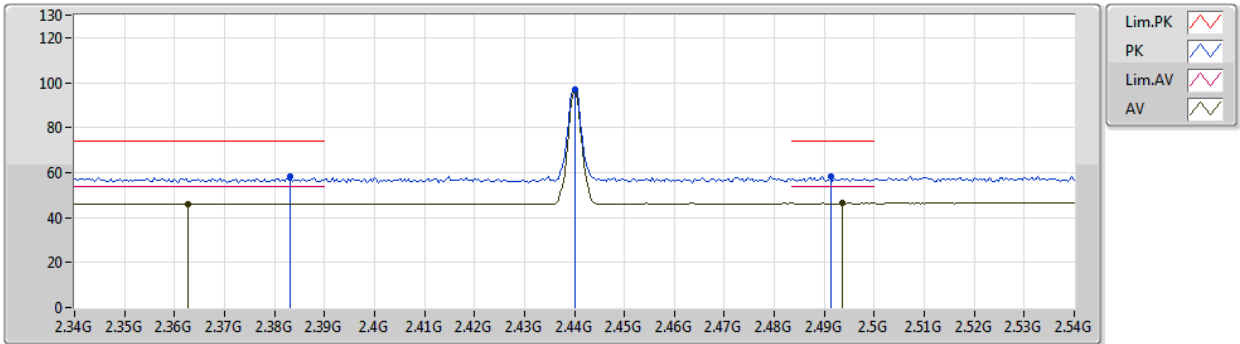
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	4.80404G	46.59	74.00	-27.41	7.12	3	Horizontal	301	1.20	-				
AV	4.80406G	36.54	54.00	-17.46	7.12	3	Horizontal	301	1.20	-				



## BT-BR(1Mbps)

## 2440MHz\_TX

06/06/2019



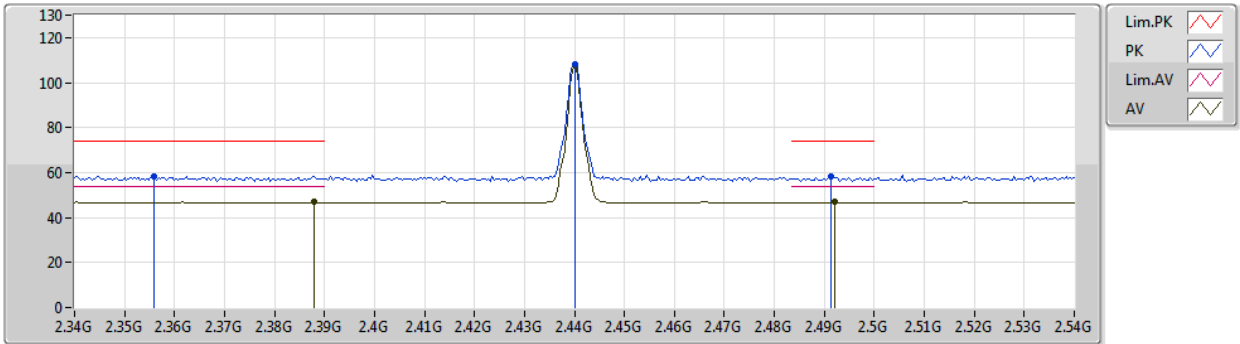
EUT\_Z\_1TX  
Setting 8  
02-R-5  
FSU(100015)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment
PK	2.3832G	58.26	74.00	-15.74	33.08	3	Vertical	316	1.05	-
AV	2.3628G	46.21	54.00	-7.79	33.06	3	Vertical	316	1.05	-
PK	2.44G	97.01	Inf	-Inf	33.22	3	Vertical	316	1.05	-
AV	2.44G	96.13	Inf	-Inf	33.22	3	Vertical	316	1.05	-
PK	2.4912G	58.28	74.00	-15.72	33.38	3	Vertical	316	1.05	-
AV	2.4936G	46.40	54.00	-7.60	33.39	3	Vertical	316	1.05	-

## BT-BR(1Mbps)

## 2440MHz\_TX

06/06/2019



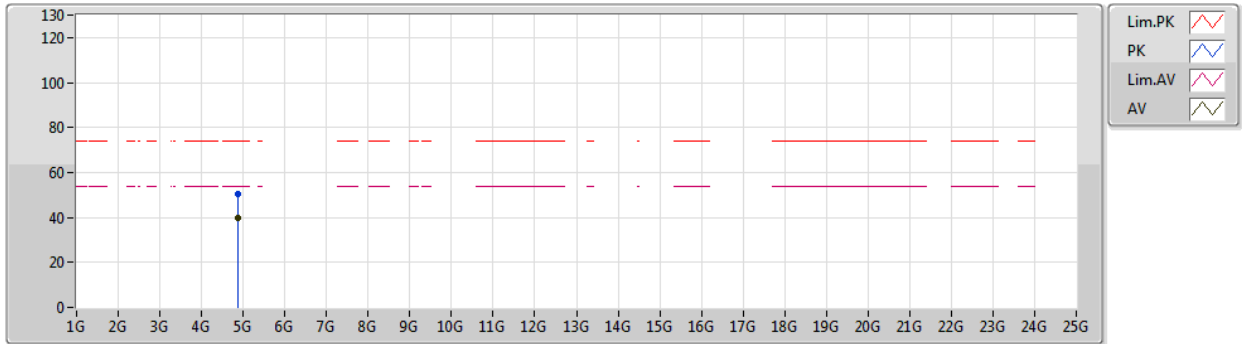
EUT\_Z\_1TX  
Setting 8  
02-R-5  
FSU(100015)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	2.356G	58.47	74.00	-15.53	33.62	3	Horizontal	70	2.20	-				
AV	2.388G	46.84	54.00	-7.16	33.64	3	Horizontal	70	2.20	-				
PK	2.44G	108.34	Inf	-Inf	33.63	3	Horizontal	70	2.20	-				
AV	2.44G	107.43	Inf	-Inf	33.63	3	Horizontal	70	2.20	-				
PK	2.4912G	58.01	74.00	-15.99	33.61	3	Horizontal	70	2.20	-				
AV	2.492G	46.87	54.00	-7.13	33.61	3	Horizontal	70	2.20	-				

## BT-BR(1Mbps)

## 2440MHz\_TX

06/06/2019



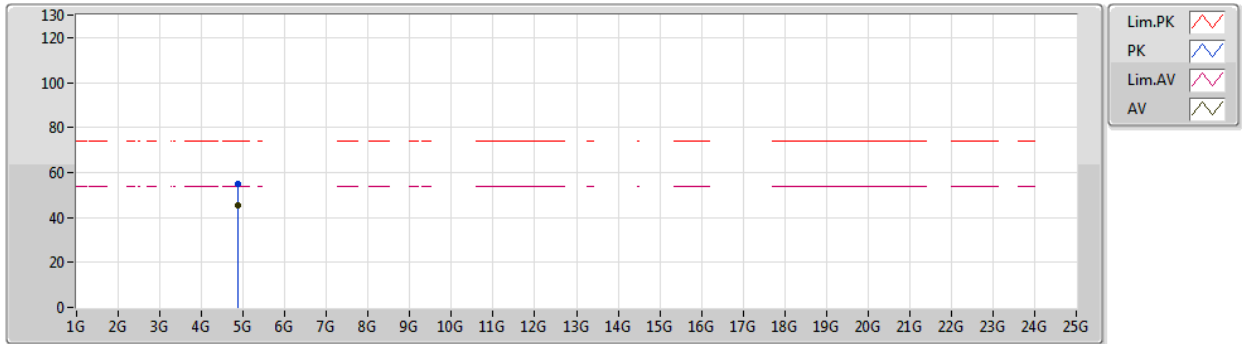
EUT\_Z\_1TX  
Setting 8  
02-R-5  
FSU(100015)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	4.88032G	50.54	74.00	-23.46	6.90	3	Vertical	313	1.38	-				
AV	4.88001G	39.67	54.00	-14.33	6.90	3	Vertical	313	1.38	-				

## BT-BR(1Mbps)

## 2440MHz\_TX

06/06/2019



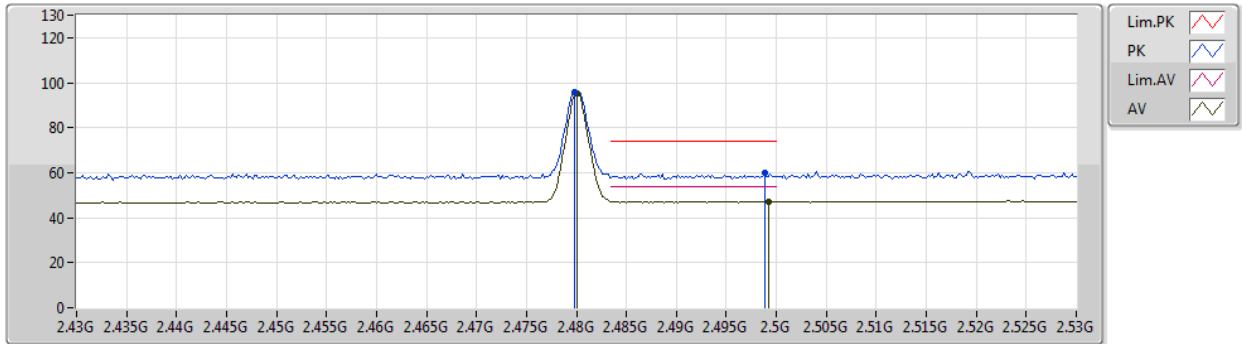
EUT\_Z\_1TX  
Setting 8  
02-R-5  
FSU(100015)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	4.87981G	54.79	74.00	-19.21	6.90	3	Horizontal	294	1.14	-				
AV	4.88G	45.30	54.00	-8.70	6.90	3	Horizontal	294	1.14	-				

## BT-BR(1Mbps)

## 2480MHz\_TX

03/06/2019



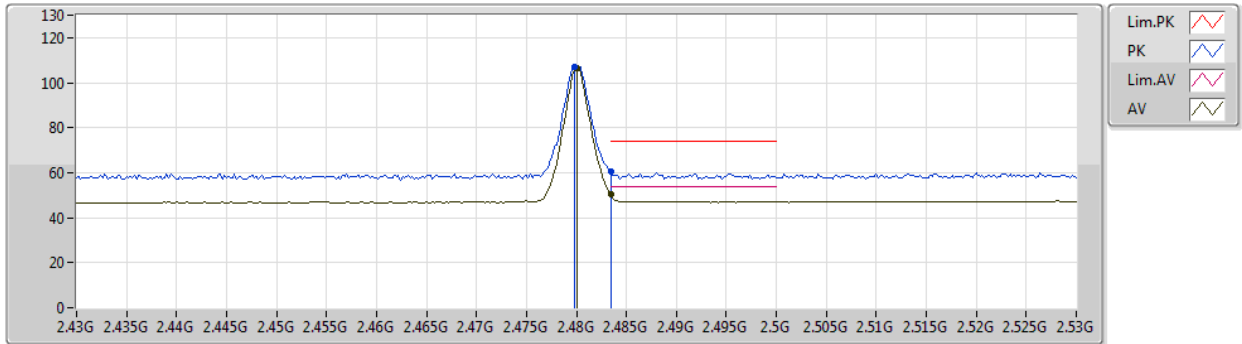
EUT\_Z\_1TX  
Setting 8  
02-J-5  
FSU(100015)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	2.4798G	95.87	Inf	-Inf	31.39	3	Vertical	331	1.43	-				
AV	2.48G	94.99	Inf	-Inf	31.39	3	Vertical	331	1.43	-				
PK	2.4988G	60.15	74.00	-13.85	31.43	3	Vertical	331	1.43	-				
AV	2.4992G	47.13	54.00	-6.87	31.43	3	Vertical	331	1.43	-				

## BT-BR(1Mbps)

## 2480MHz\_TX

03/06/2019



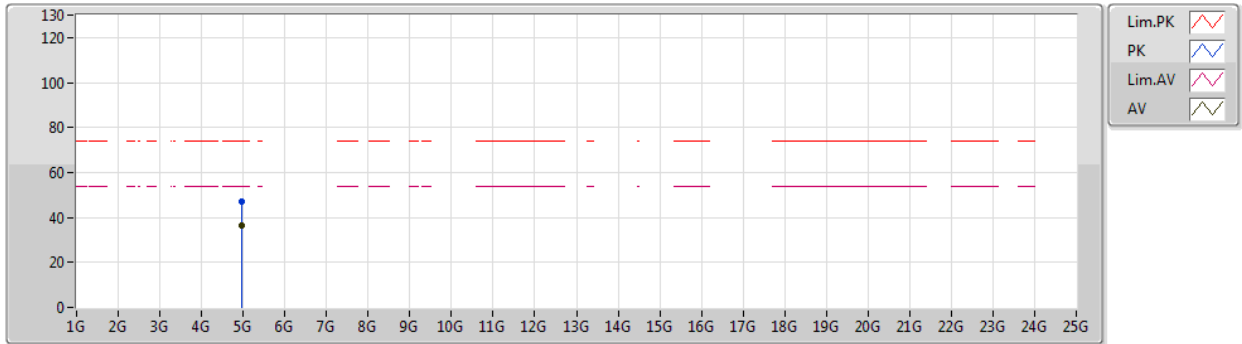
EUT\_Z\_1TX  
Setting 8  
02-J-5  
FSU(100015)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	2.4798G	107.21	Inf	-Inf	31.39	3	Horizontal	66	1.46	-				
AV	2.48G	106.38	Inf	-Inf	31.39	3	Horizontal	66	1.46	-				
PK	2.4835G	60.58	74.00	-13.42	31.39	3	Horizontal	66	1.46	-				
AV	2.4835G	50.24	54.00	-3.76	31.39	3	Horizontal	66	1.46	-				

## BT-BR(1Mbps)

## 2480MHz\_TX

03/06/2019



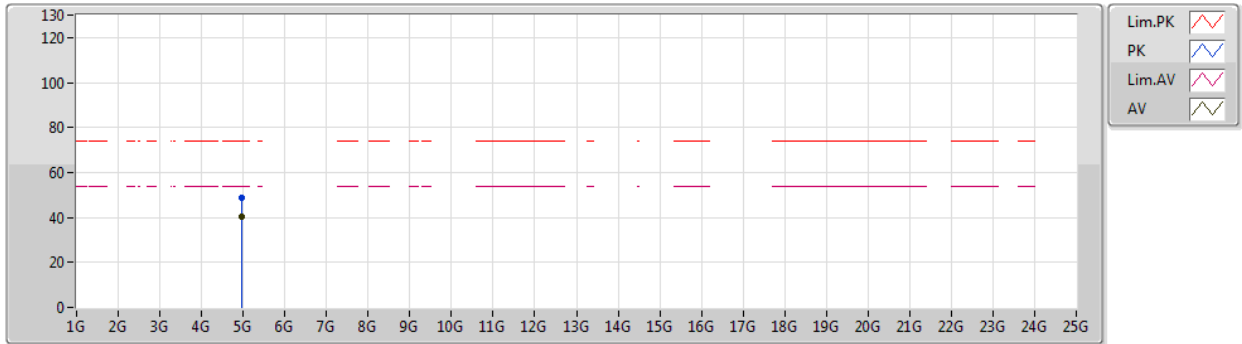
EUT\_Z\_1TX  
Setting 8  
02-J-5  
FSU(100015)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	4.95966G	47.16	74.00	-26.84	7.48	3	Vertical	313	2.93	-				
AV	4.96004G	36.42	54.00	-17.58	7.48	3	Vertical	313	2.93	-				

## BT-BR(1Mbps)

## 2480MHz\_TX

03/06/2019



EUT\_Z\_1TX  
Setting 8  
02-J-5  
FSU(100015)

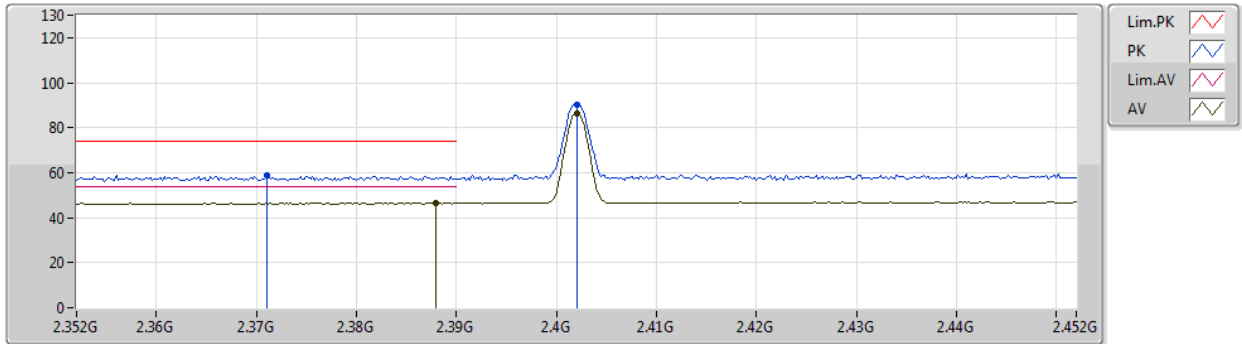
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	4.9603G	48.77	74.00	-25.23	7.48	3	Horizontal	72	1.99	-				
AV	4.95998G	40.14	54.00	-13.86	7.48	3	Horizontal	72	1.99	-				



## BT-EDR(3Mbps)

03/06/2019

## 2402MHz\_TX



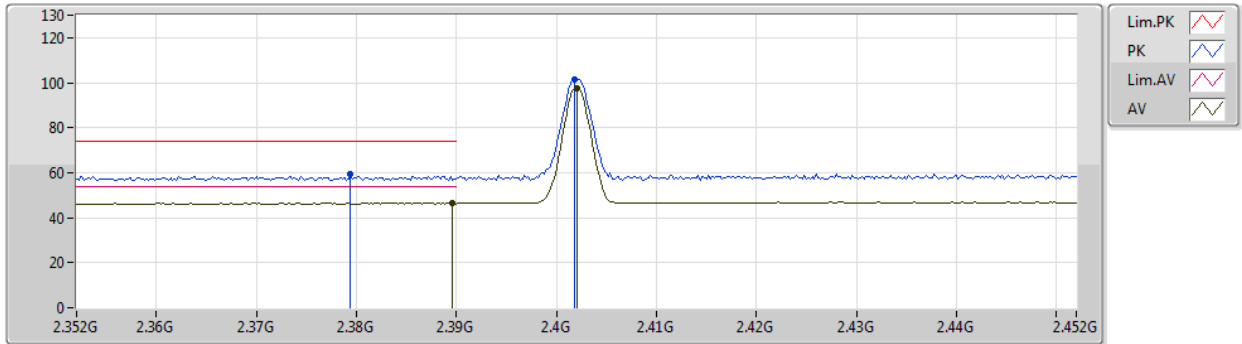
EUT\_Z\_1TX  
Setting 8  
02-J-5  
FSU(100015)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	2.371G	58.80	74.00	-15.20	31.16	3	Vertical	311	1.14	-				
AV	2.388G	46.42	54.00	-7.58	31.20	3	Vertical	311	1.14	-				
PK	2.402G	90.18	Inf	-Inf	31.23	3	Vertical	311	1.14	-				
AV	2.402G	86.06	Inf	-Inf	31.23	3	Vertical	311	1.14	-				

## BT-EDR(3Mbps)

03/06/2019

## 2402MHz\_TX



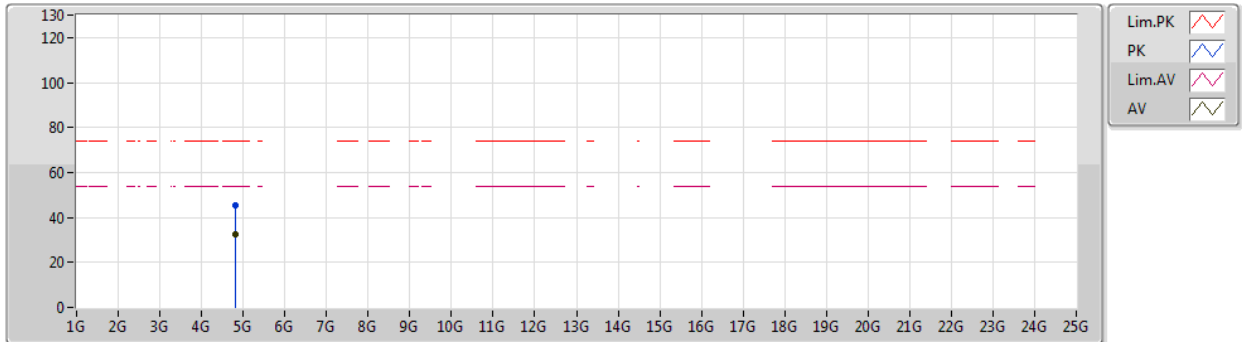
EUT\_Z\_1TX  
Setting 8  
02-J-5  
FSU(100015)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	2.3794G	59.67	74.00	-14.33	31.18	3	Horizontal	103	1.93	-				
AV	2.3896G	46.46	54.00	-7.54	31.20	3	Horizontal	103	1.93	-				
PK	2.4018G	101.49	Inf	-Inf	31.23	3	Horizontal	103	1.93	-				
AV	2.402G	97.47	Inf	-Inf	31.23	3	Horizontal	103	1.93	-				

## BT-EDR(3Mbps)

## 2402MHz\_TX

03/06/2019



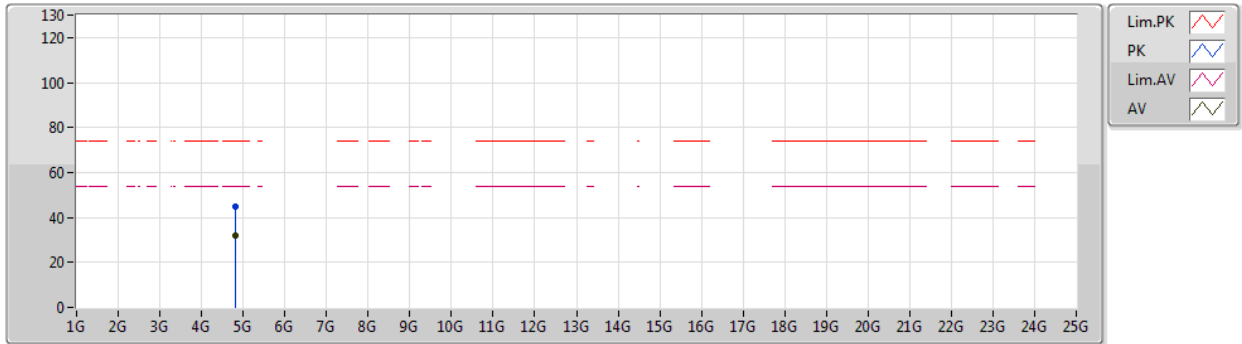
EUT\_Z\_1TX  
Setting 8  
02-J-5  
FSU(100015)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	4.8049G	45.11	74.00	-28.89	7.12	3	Vertical	296	1.13	-				
AV	4.80396G	32.60	54.00	-21.40	7.12	3	Vertical	296	1.13	-				

## BT-EDR(3Mbps)

## 2402MHz\_TX

03/06/2019



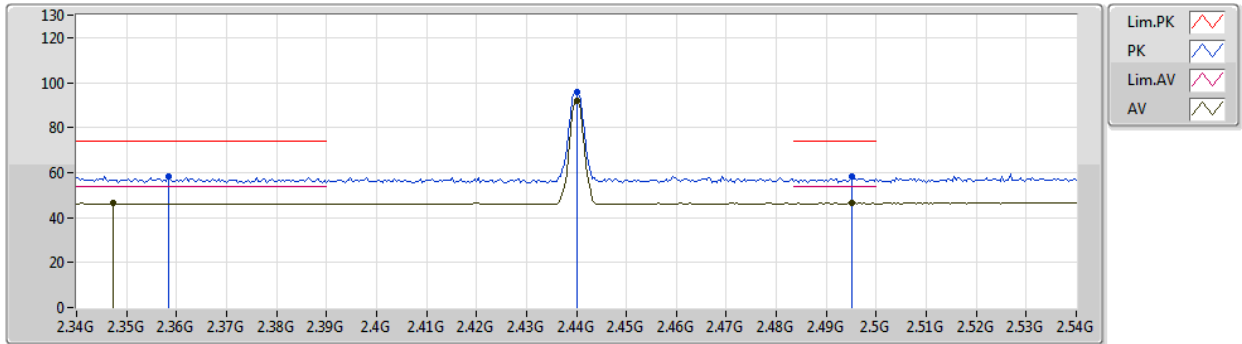
EUT\_Z\_1TX  
Setting 8  
02-J-5  
FSU(100015)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	4.80398G	44.92	74.00	-29.08	7.12	3	Horizontal	329	1.13	-				
AV	4.80376G	32.17	54.00	-21.83	7.12	3	Horizontal	329	1.13	-				

## BT-EDR(3Mbps)

## 2440MHz\_TX

06/06/2019



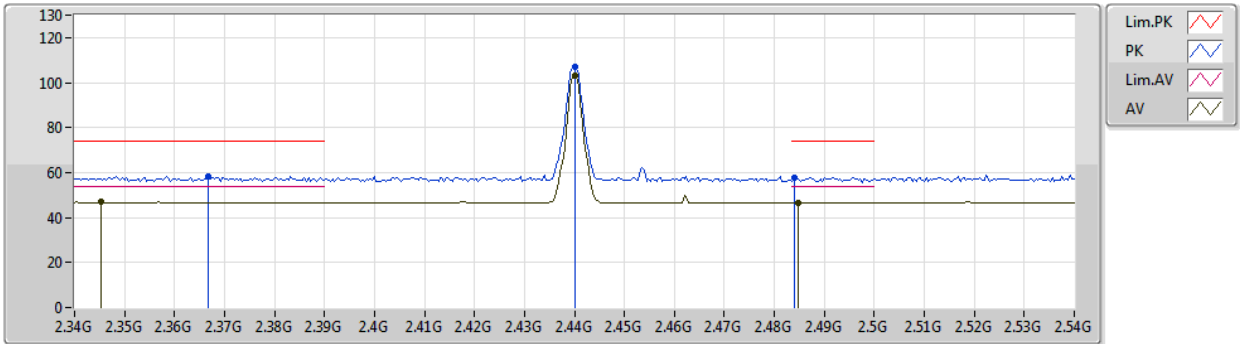
EUT\_Z\_1TX  
Setting 8  
02-R-5  
FSU(100015)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment
PK	2.3584G	58.24	74.00	-15.76	33.05	3	Vertical	316	1.08	-
AV	2.3472G	46.27	54.00	-7.73	33.03	3	Vertical	316	1.08	-
PK	2.44G	95.82	Inf	-Inf	33.22	3	Vertical	316	1.08	-
AV	2.44G	91.79	Inf	-Inf	33.22	3	Vertical	316	1.08	-
PK	2.4952G	58.12	74.00	-15.88	33.39	3	Vertical	316	1.08	-
AV	2.4952G	46.35	54.00	-7.65	33.39	3	Vertical	316	1.08	-

## BT-EDR(3Mbps)

## 2440MHz\_TX

06/06/2019



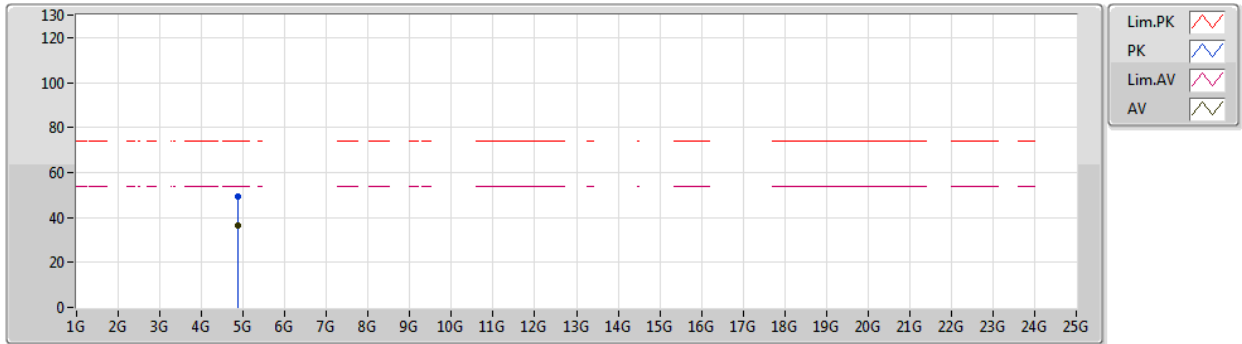
EUT\_Z\_1TX  
Setting 8  
02-R-5  
FSU(100015)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment
PK	2.3668G	58.41	74.00	-15.59	33.62	3	Horizontal	72	2.17	-
AV	2.3454G	46.85	54.00	-7.15	33.61	3	Horizontal	72	2.17	-
PK	2.44G	106.79	Inf	-Inf	33.63	3	Horizontal	72	2.17	-
AV	2.44G	102.92	Inf	-Inf	33.63	3	Horizontal	72	2.17	-
PK	2.484G	57.93	74.00	-16.07	33.61	3	Horizontal	72	2.17	-
AV	2.4848G	46.78	54.00	-7.22	33.61	3	Horizontal	72	2.17	-

## BT-EDR(3Mbps)

## 2440MHz\_TX

06/06/2019



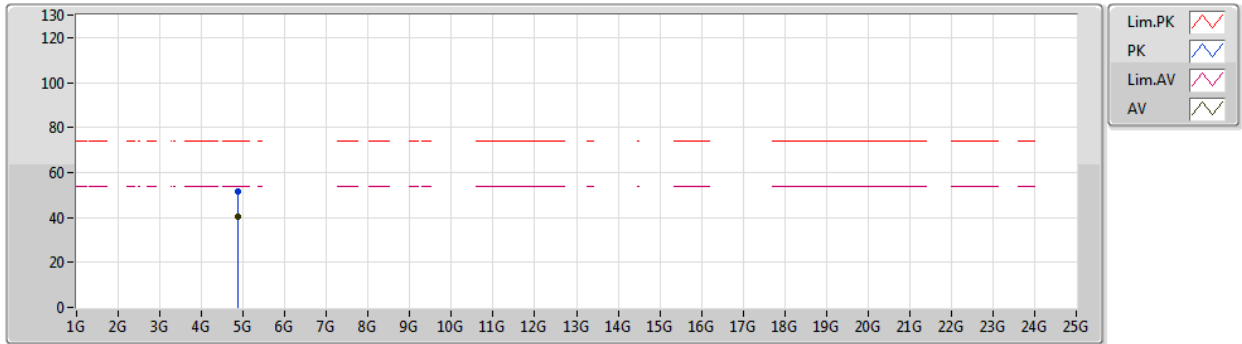
EUT\_Z\_1TX  
Setting 8  
02-R-5  
FSU(100015)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	4.87992G	49.47	74.00	-24.53	6.90	3	Vertical	310	2.90	-				
AV	4.88002G	36.37	54.00	-17.63	6.90	3	Vertical	310	2.90	-				

## BT-EDR(3Mbps)

## 2440MHz\_TX

06/06/2019



EUT\_Z\_1TX  
Setting 8  
02-R-5  
FSU(100015)

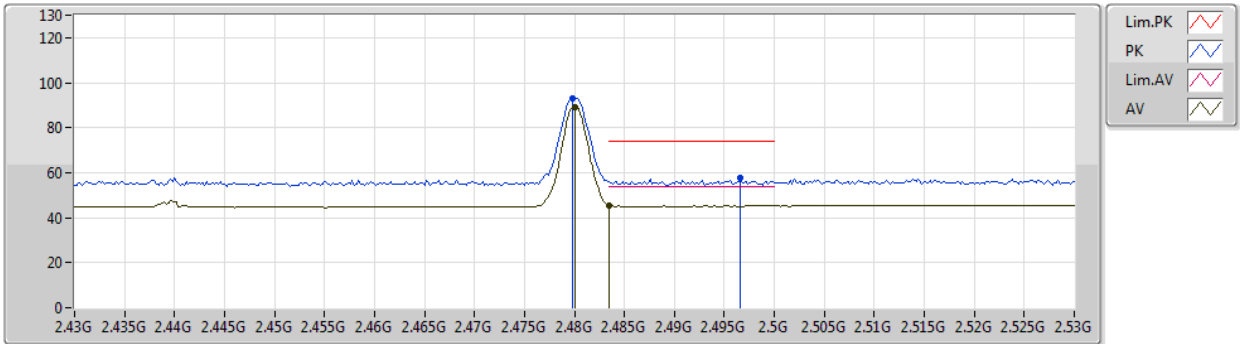
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	4.8801G	51.29	74.00	-22.71	6.90	3	Horizontal	295	1.01	-				
AV	4.87995G	40.11	54.00	-13.89	6.90	3	Horizontal	295	1.01	-				



## BT-EDR(3Mbps)

## 2480MHz\_TX

06/06/2019



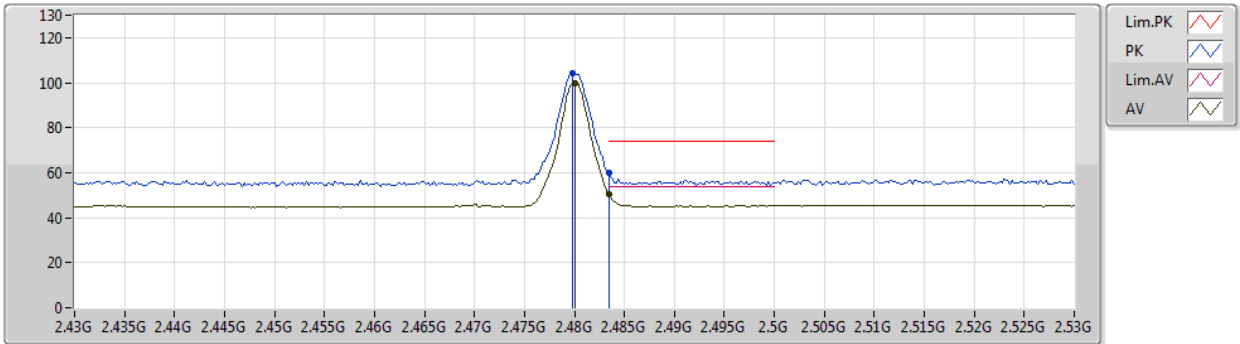
EUT\_Z\_1TX  
Setting 8  
06-R-5  
FSU(100015)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	2.4798G	93.03	Inf	-Inf	32.40	3	Vertical	319	1.82	-				
AV	2.48G	89.16	Inf	-Inf	32.40	3	Vertical	319	1.82	-				
PK	2.4966G	57.44	74.00	-16.56	32.45	3	Vertical	319	1.82	-				
AV	2.4835G	45.66	54.00	-8.34	32.41	3	Vertical	319	1.82	-				

## BT-EDR(3Mbps)

## 2480MHz\_TX

06/06/2019



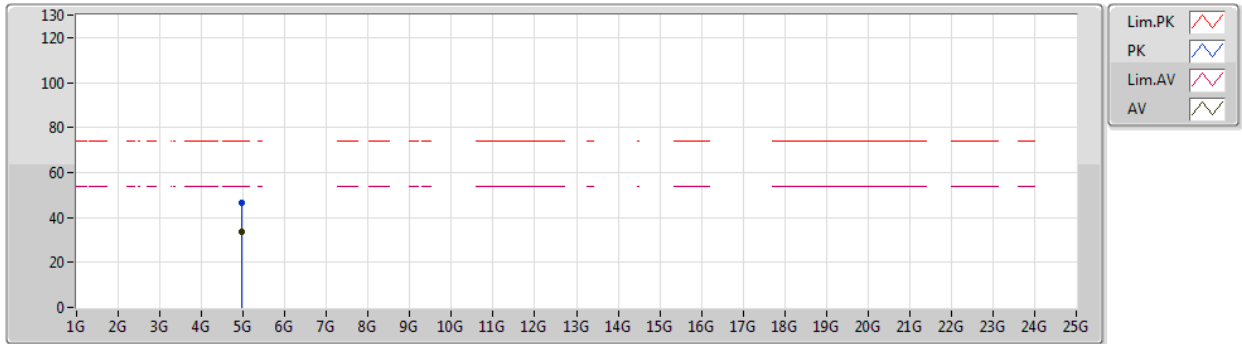
EUT\_Z\_1TX  
Setting 8  
06-R-5  
FSU(100015)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	2.4798G	104.07	Inf	-Inf	32.40	3	Horizontal	70	1.72	-				
AV	2.48G	99.95	Inf	-Inf	32.40	3	Horizontal	70	1.72	-				
PK	2.4835G	59.95	74.00	-14.05	32.41	3	Horizontal	70	1.72	-				
AV	2.4835G	50.49	54.00	-3.51	32.41	3	Horizontal	70	1.72	-				

## BT-EDR(3Mbps)

## 2480MHz\_TX

03/06/2019



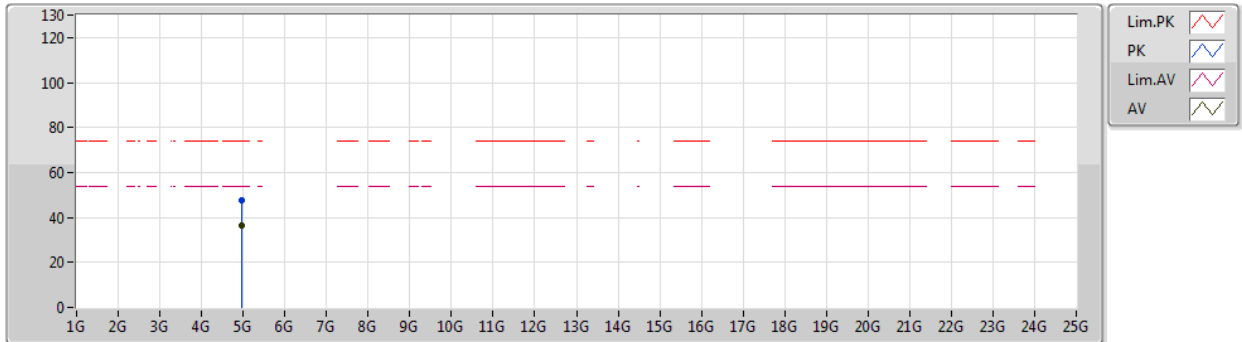
EUT\_Z\_1TX  
Setting 8  
02-J-5  
FSU(100015)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	4.9602G	46.55	74.00	-27.45	7.48	3	Vertical	321	2.91	-				
AV	4.96012G	33.76	54.00	-20.24	7.48	3	Vertical	321	2.91	-				

## BT-EDR(3Mbps)

## 2480MHz\_TX

03/06/2019



EUT\_Z\_1TX  
Setting 8  
02-J-5  
FSU(100015)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	4.95996G	47.69	74.00	-26.31	7.48	3	Horizontal	70	2.85	-				
AV	4.95996G	36.31	54.00	-17.69	7.48	3	Horizontal	70	2.85	-				