



# FCC RADIO TEST REPORT

**FCC ID** : 2ADZR4G05A  
**Equipment** : FastMile 4G Receiver  
**Brand Name** : NOKIA  
**Model Name** : 4G05-A  
**Applicant** : Nokia Shanghai Bell Co., Ltd.  
388#, Ningqiao Road, China (Shanghai) Pilot Free  
Trade Zone, Shanghai 201206, China  
**Manufacturer** : Nokia Shanghai Bell Co., Ltd.  
388#, Ningqiao Road, China (Shanghai) Pilot Free  
Trade Zone, Shanghai 201206, China  
**Standard** : 47 CFR FCC Part 15.247

The product was received on May 17, 2019, and testing was started from May 17, 2019 and completed on Jun. 25, 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: Cliff Chang

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



## Table of Contents

<b>History of this test report.....</b>	<b>3</b>
<b>Summary of Test Result.....</b>	<b>4</b>
<b>1 General Description .....</b>	<b>5</b>
1.1 Information.....	5
1.2 Applicable Standards .....	6
1.3 Testing Location Information .....	6
1.4 Measurement Uncertainty .....	6
<b>2 Test Configuration of EUT.....</b>	<b>7</b>
2.1 Test Channel Mode .....	7
2.2 The Worst Case Measurement Configuration.....	8
2.3 EUT Operation during Test .....	8
2.4 Accessories .....	9
2.5 Support Equipment.....	9
2.6 Test Setup Diagram .....	10
<b>3 Transmitter Test Result .....</b>	<b>13</b>
3.1 AC Power-line Conducted Emissions .....	13
3.2 20dB Bandwidth and Carrier Frequency Separation.....	15
3.3 Maximum Conducted Output Power .....	16
3.4 Number of Hopping Frequencies and Hopping Bandedge .....	17
3.5 Time of Occupancy (Dwell Time) .....	18
3.6 Emissions in Non-restricted Frequency Bands .....	19
3.7 Emissions in Restricted Frequency Bands.....	20
<b>4 Test Equipment and Calibration Data .....</b>	<b>23</b>
<b>Appendix A. Test Results of AC Power-line Conducted Emissions</b>	
<b>Appendix B. Test Results of 20dB Bandwidth and Carrier Frequency Separation</b>	
<b>Appendix C. Test Results of Maximum Conducted Output Power</b>	
<b>Appendix D. Test Results of Number of Hopping Frequencies and Hopping Bandedge</b>	
<b>Appendix E. Test Results of Time of Occupancy (Dwell Time)</b>	
<b>Appendix F. Test Results of Emissions in Non-restricted Frequency Bands</b>	
<b>Appendix G. Test Results of Emissions in Restricted Frequency Bands</b>	
<b>Appendix H. Test Photos</b>	
<b>Photographs of EUT v01</b>	



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:**

None

**Reviewed by: Cliff Chang**  
**Report Producer: Cindy Peng**

# 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 Holder	Model Name	Antenna Type	Connector	Gain (dBi)
1	1	Signal Plus Technology Co., Ltd.	6011F00107	PCB Antenna	I-PEX	5

Note 1: The above information was declared by manufacturer.

Note 2: The EUT has one antenna for Bluetooth use.

### 1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) $\geq 1/T$
BT-BR(1Mbps)	0.437	3.6	421.5u	3k
BT-EDR(2Mbps)	0.372	4.29	2.908m	1k
BT-EDR(3Mbps)	0.362	4.41	1.663m	1k

Note:

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

### 1.1.4 EUT Operational Condition

EUT Power Type	From PoE
Test Software Version	putty



## 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	TH02-CB	Eddie Weng	22~24°C / 50~60%	Jun. 11, 2019~Jun. 25, 2019
Radiated (below 1GHz)	03CH05-CB	Stim Sung	23~25°C / 55~60%	Jun. 13, 2019
Radiated (above 1GHz)	03CH03-CB	Stim Sung	22~24°C / 50~55%	Jun. 13, 2019
AC Conduction	CO01-CB	Deven Huang	22~23°C / 55~58%	May 17, 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)	3.3 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	10.0 x10 <sup>-5</sup>	Confidence levels of 95%



## **2 Test Configuration of EUT**

### **2.1 Test Channel Mode**

<b>Mode</b>	<b>Power Setting</b>
BT-BR(1Mbps)	-
2402MHz	0x0f
2440MHz	0x0f
2480MHz	0x0e
BT-EDR(2Mbps)	-
2402MHz	0x0f
2440MHz	0x0f
2480MHz	0x0f
BT-EDR(3Mbps)	-
2402MHz	0x0f
2440MHz	0x0f
2480MHz	0x0f



## 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 with LTE Band 1

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>	CTX
<b>Operating Mode &gt; 1GHz</b>	CTX

Note 1: The EUT can only be used at Y axis position.

Note 2: The PoE is for measurement only, would not be marketed.

<b>Equipment</b>	<b>Brand Name</b>	<b>Model Name</b>	<b>FCC ID</b>
SIM card	N/A	N/A	N/A
PoE	NOKIA	G0545-530-060-PSE1000	N/A

## 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	
No.	Description
1	Sealing collar*1
2	RJ-45 cable*1: Shielded, 3m

## 2.5 Support Equipment

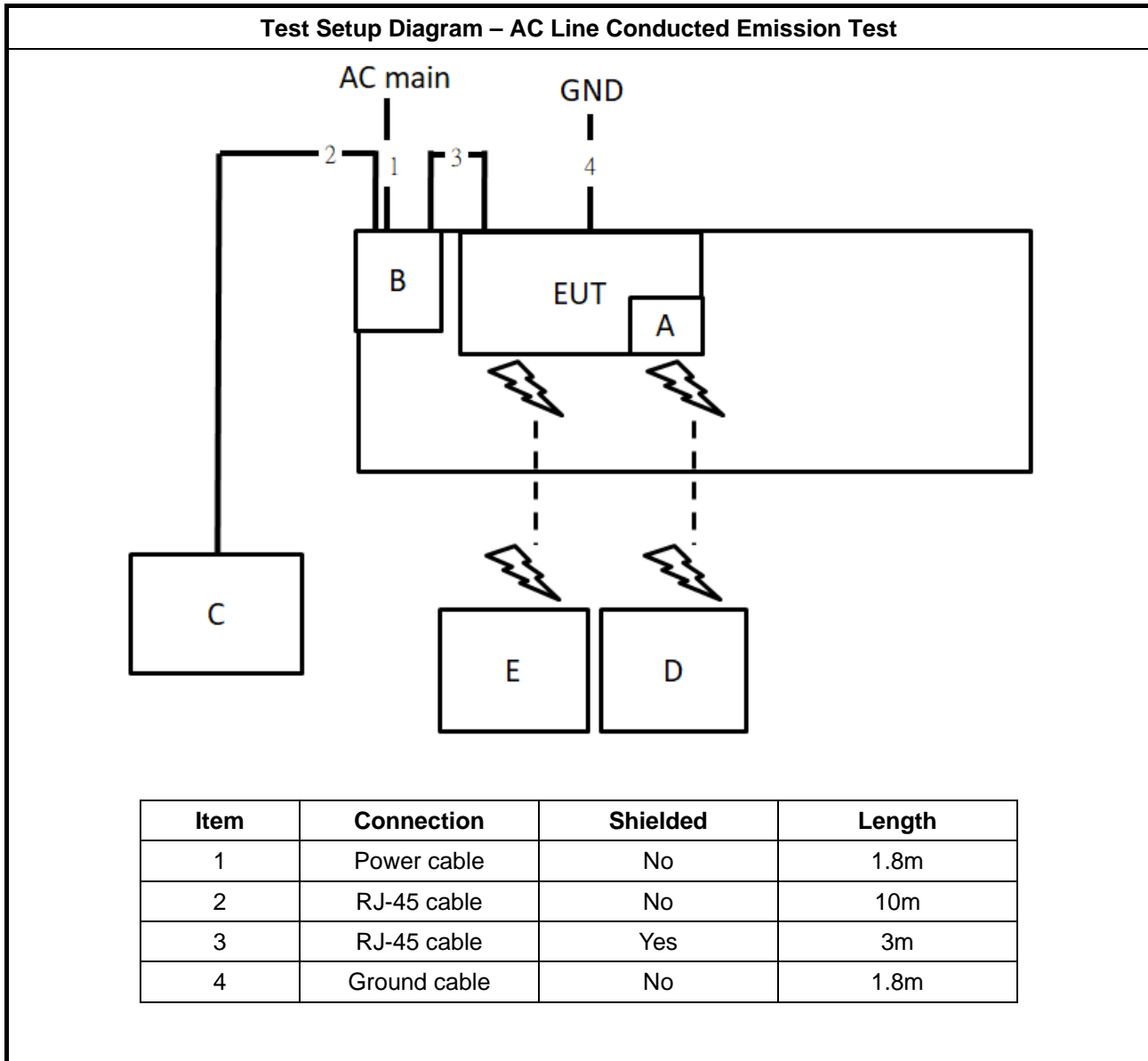
### For AC Conduction:

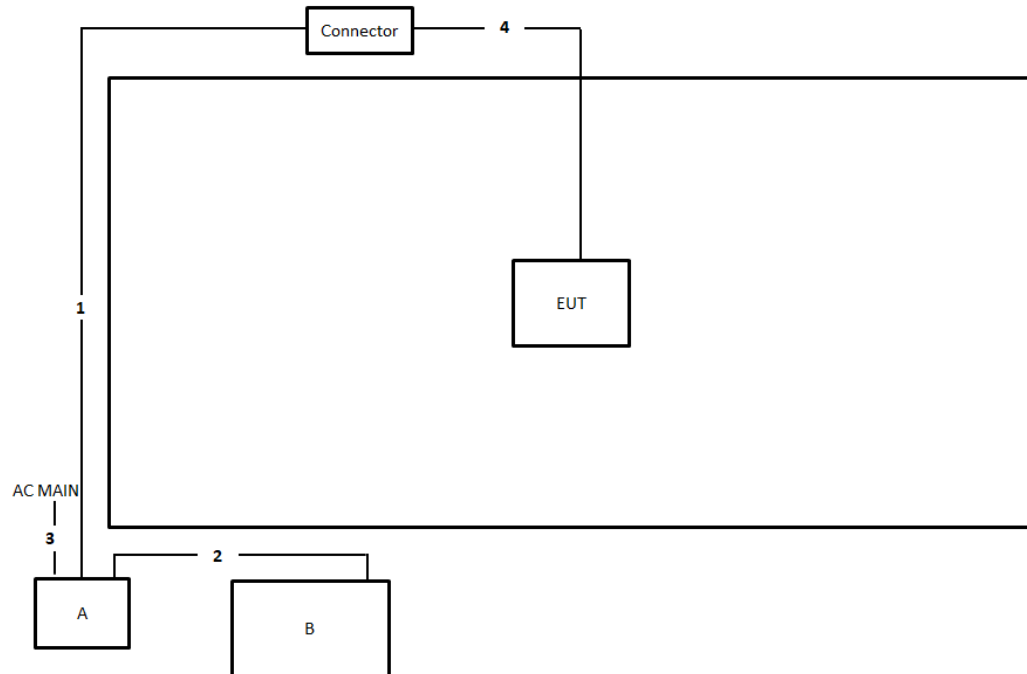
Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	SIM card	N/A	N/A	N/A
B	PoE	NOKIA	G0545-530-060-PSE1000	N/A
C	LAN NB	DELL	T3400	N/A
D	LTE base station	Anritsu	MT8820C	N/A
E	Smart phone	Samsung	Galaxy J2	N/A

### For Radiated and RF Conducted:

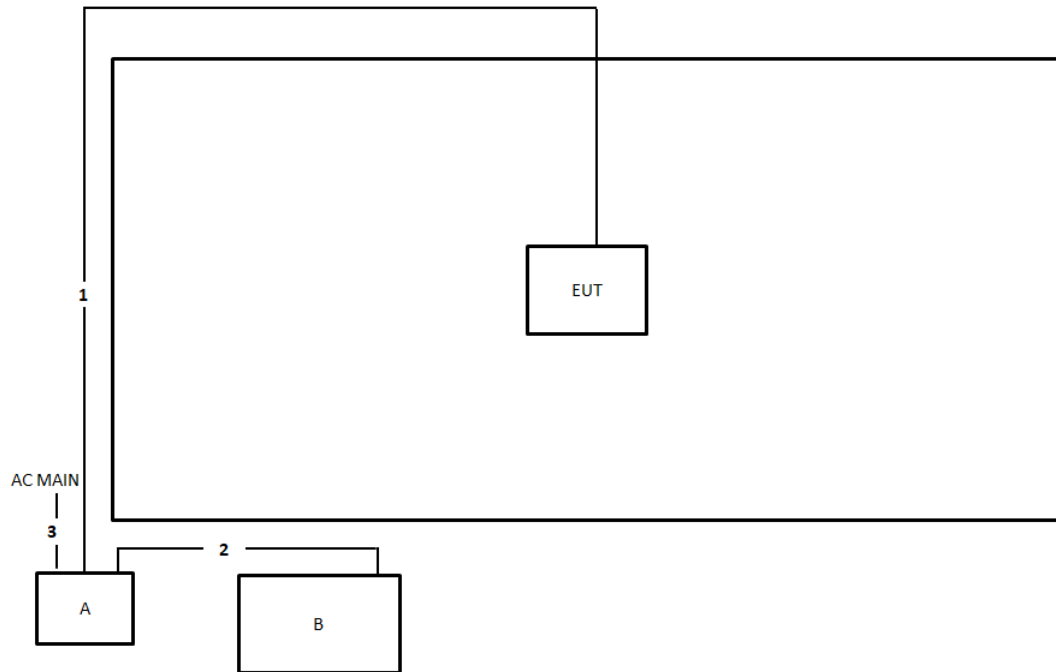
Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	PoE	NOKIA	G0545-530-060-PSE1000	N/A
B	NB	DELL	E4300	N/A

## 2.6 Test Setup Diagram



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


Item	Connection	Shielded	Length
1	RJ-45 cable	No	10m
2	RJ-45 cable	No	1.5m
3	Power cable	No	1.8m
4	RJ-45 cable	Yes	3m

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


Item	Connection	Shielded	Length
1	RJ-45 cable	No	10m
2	RJ-45 cable	No	1.5m
3	Power cable	No	1.8m



### 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.

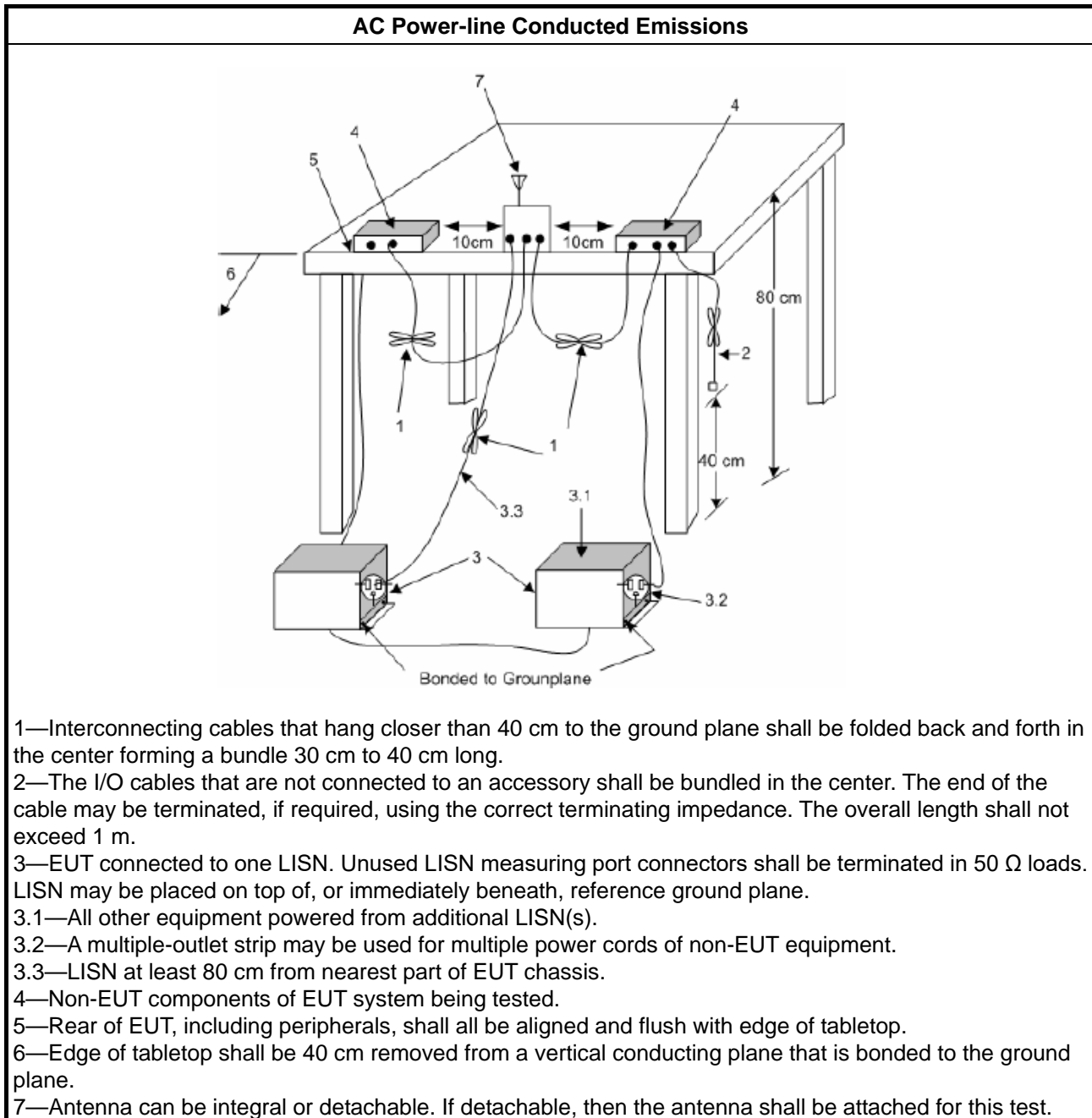
##### 3.1.2 Measuring Instruments

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	

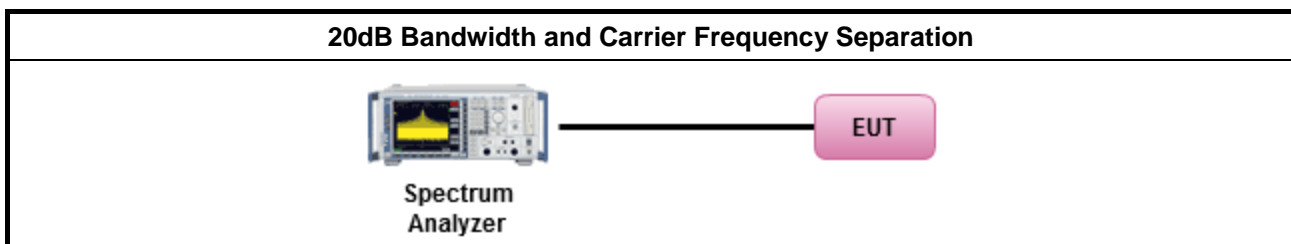
### 3.2.2 Measuring Instruments

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	

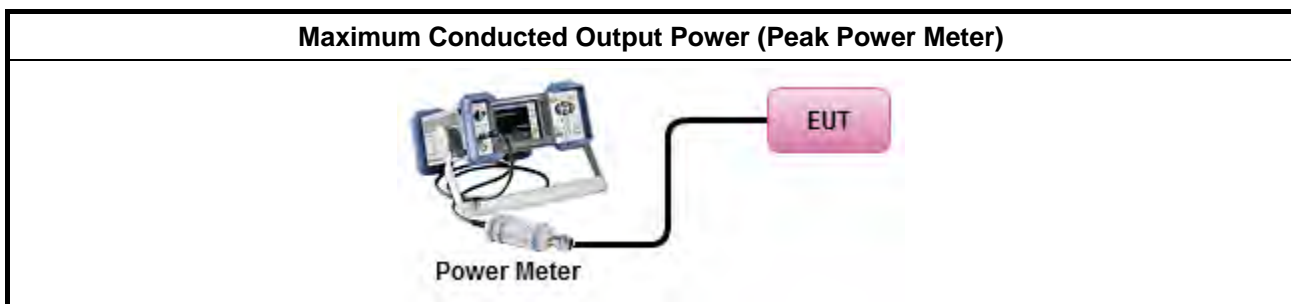
#### 3.3.2 Measuring Instruments

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

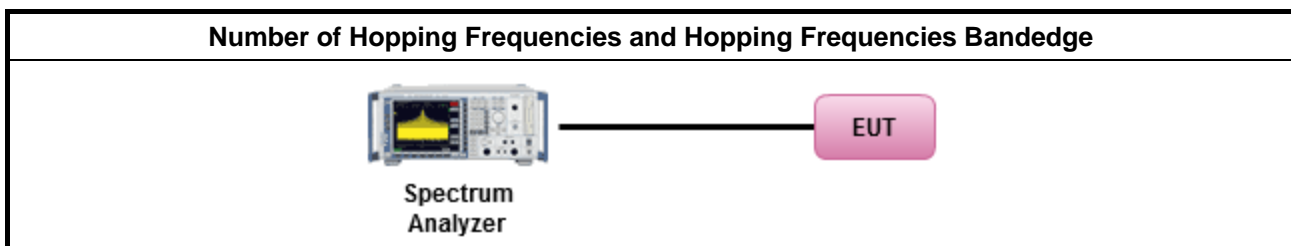
#### 3.4.3 Measuring Instruments

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	

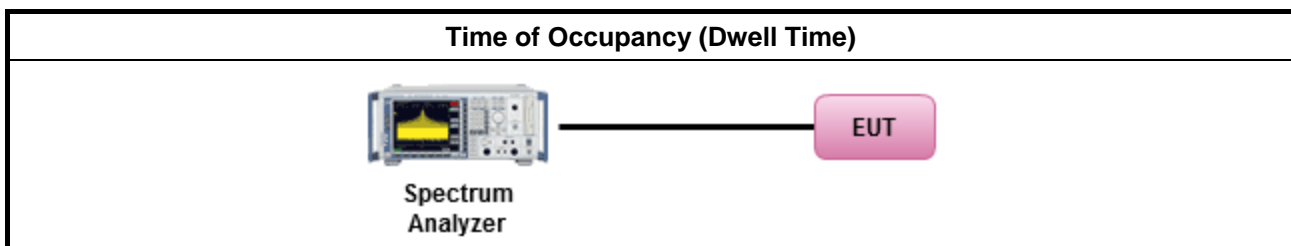
#### 3.5.2 Measuring Instruments

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.	

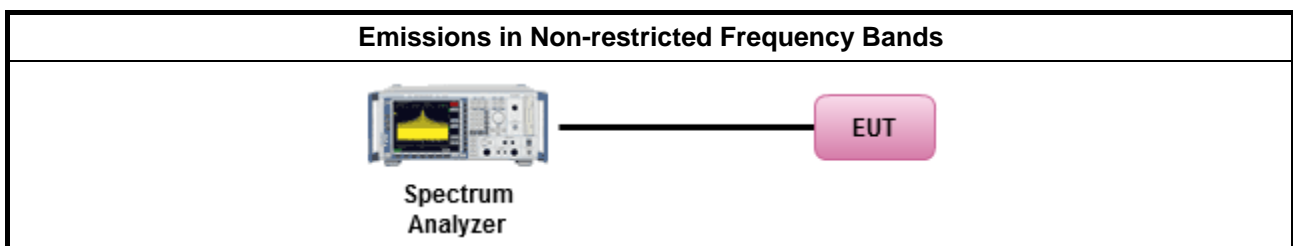
#### 3.6.2 Measuring Instruments

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.

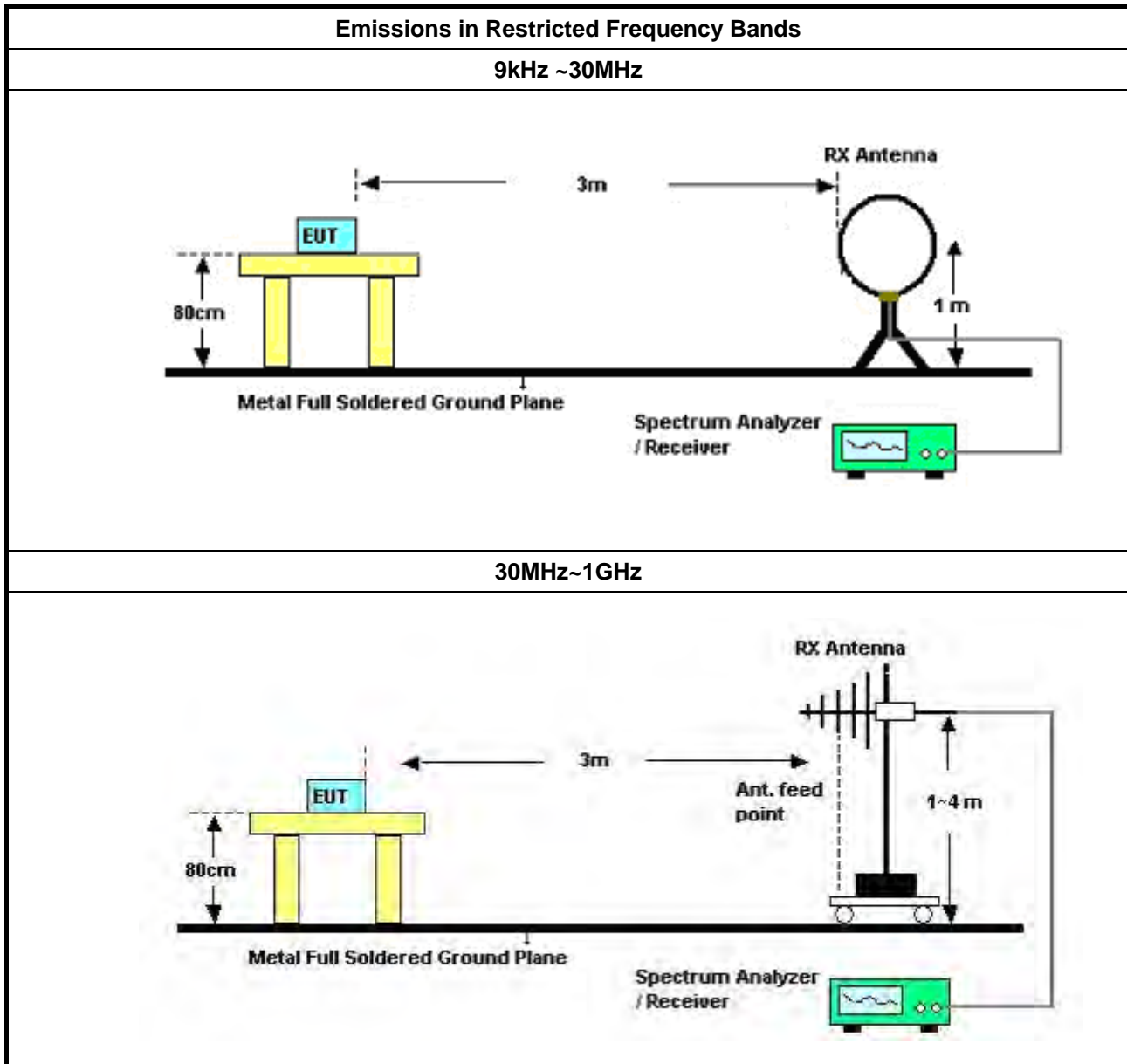
#### 3.7.2 Measuring Instruments

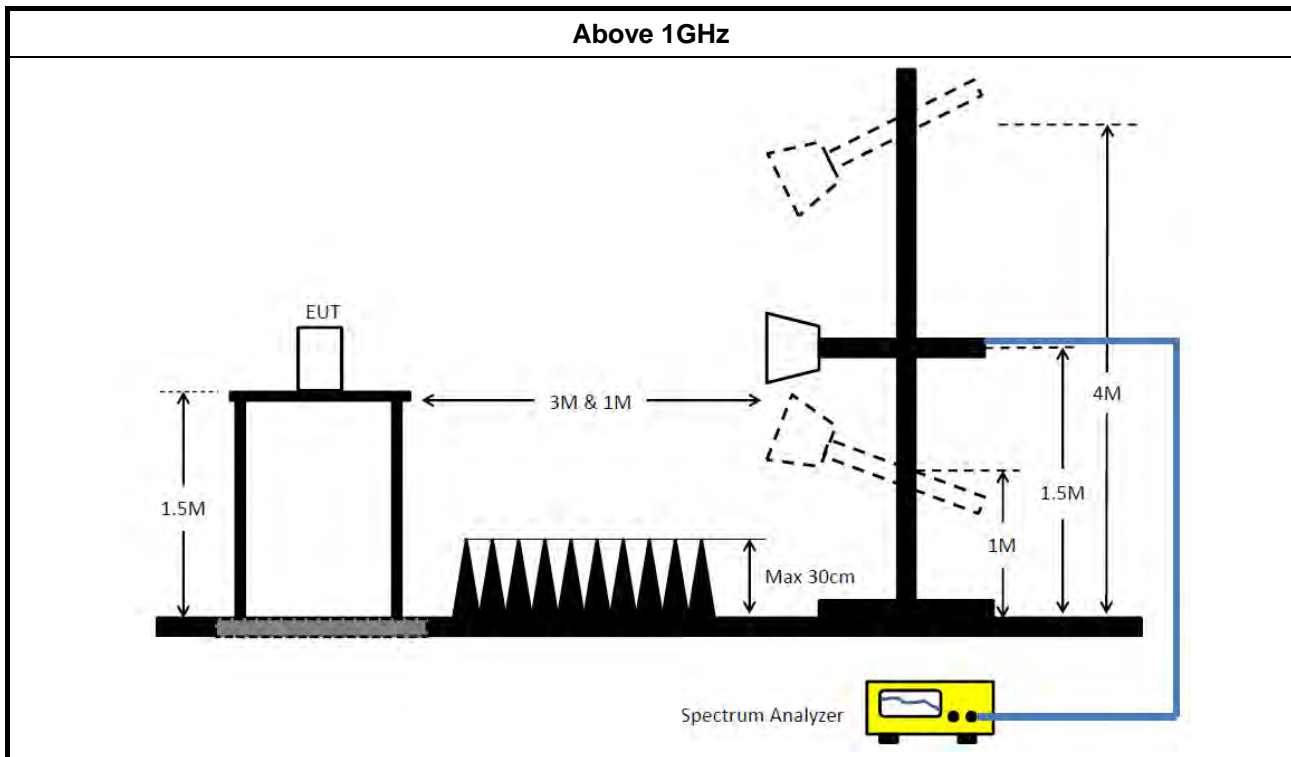
Refer a test equipment and calibration data table in this test report.

#### 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-50-16-2	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 22, 2018	May 21, 2019	Conduction (CO01-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	N.C.R.	Conduction (CO01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 29, 2019	Mar. 28, 2020	Radiation (03CH05-CB)
Bilog Antenna with 6dB Attenuator	TESE & EMC	CBL 6112D & N-6-06	35236 & AT-N0610	30MHz ~ 2GHz	Mar. 28, 2019	Mar. 27, 2020	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC330N	980332	20MHz ~ 3GHz	May 01, 2019	Apr. 30, 2020	Radiation (03CH05-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Jan. 31, 2019	Jan. 30, 2020	Radiation (03CH05-CB)
EMI Test Receiver	R&S	ESCS	100359	9kHz ~ 2.75GHz	Jul. 03, 2018	Jul. 02, 2019	Radiation (03CH05-CB)
RF Cable-low	Woken	RG402	LOW Cable-04+23	30MHz~1GHz	Oct. 08, 2018	Oct. 07, 2019	Radiation (03CH05-CB)
Horn Antenna	ETS • Lindgren	3115	6821	750MHz~18GHz	Jan. 24, 2019	Jan. 23, 2020	Radiation (03CH03-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jun. 28, 2018	Jun. 27, 2019	Radiation (03CH03-CB)
Pre-Amplifier	Agilent	8449B	3008A02097	1GHz ~ 26.5GHz	Dec. 20, 2018	Dec. 19, 2019	Radiation (03CH03-CB)
Pre-Amplifier	MITEQ	TTA1840-35-H G	1864479	18GHz ~ 40GHz	Jul. 04, 2018	Jul. 03, 2019	Radiation (03CH03-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Jan. 31, 2019	Jan. 30, 2020	Radiation (03CH03-CB)
RF Cable-high	Woken	RG402	High Cable-20+27	1GHz ~ 18GHz	Oct. 08, 2018	Oct. 07, 2019	Radiation (03CH03-CB)
RF Cable-high	Woken	RG402	High Cable-27	1GHz ~ 18GHz	Oct. 08, 2018	Oct. 07, 2019	Radiation (03CH03-CB)
RF Cable-high	Woken	RG402	High Cable-40G#1	18GHz ~ 40 GHz	Jul. 27, 2018	Jul. 26, 2019	Radiation (03CH03-CB)
RF Cable-high	Woken	RG402	High Cable-40G#2	18GHz ~ 40 GHz	Jul. 27, 2018	Jul. 26, 2019	Radiation (03CH03-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Feb. 25, 2019	Feb. 24, 2020	Conducted (TH02-CB)
Power Sensor	Anritsu	MA2411B	1126203	300MHz~40GHz	Sep. 03, 2018	Sep. 02, 2019	Conducted (TH02-CB)

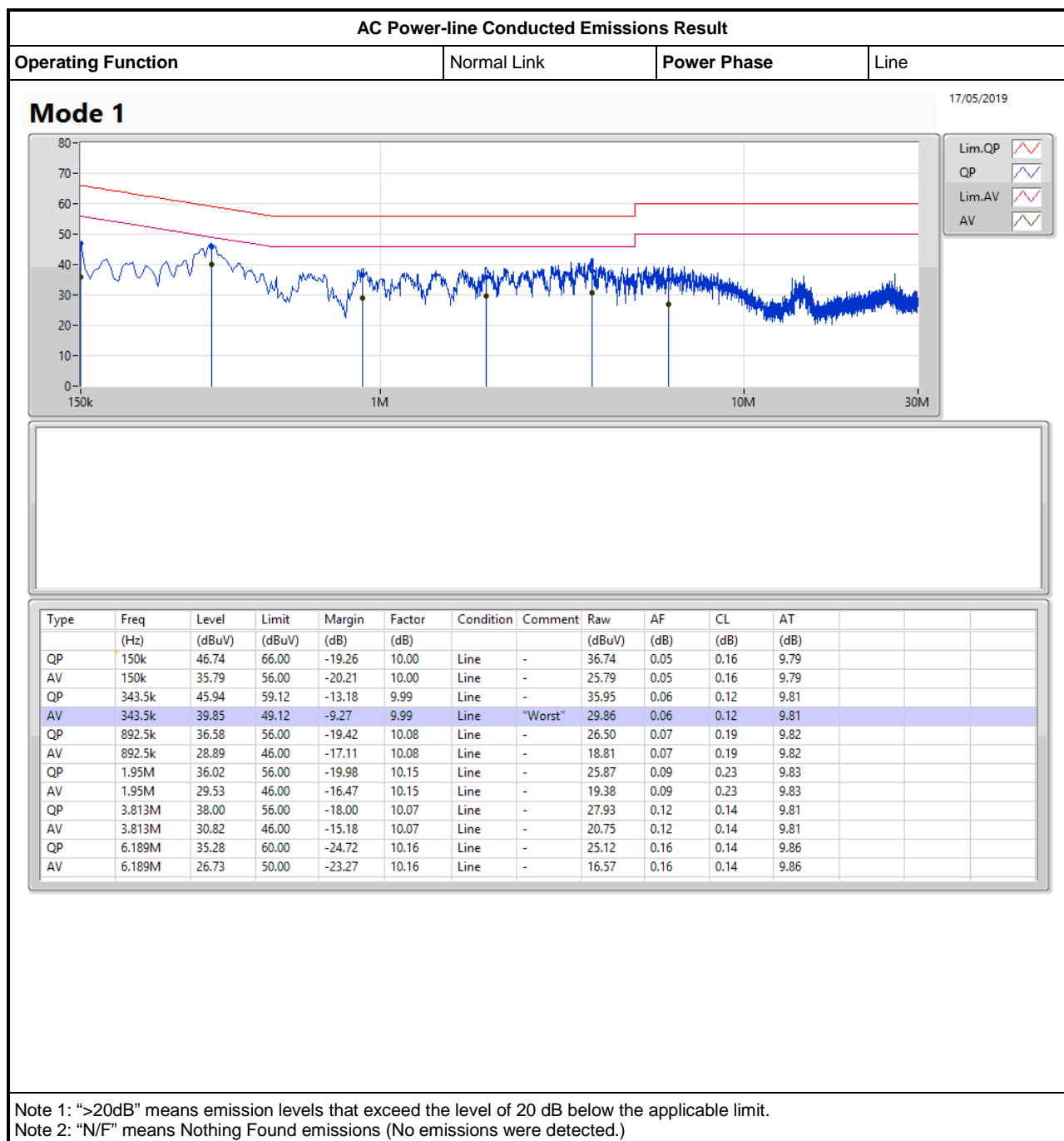


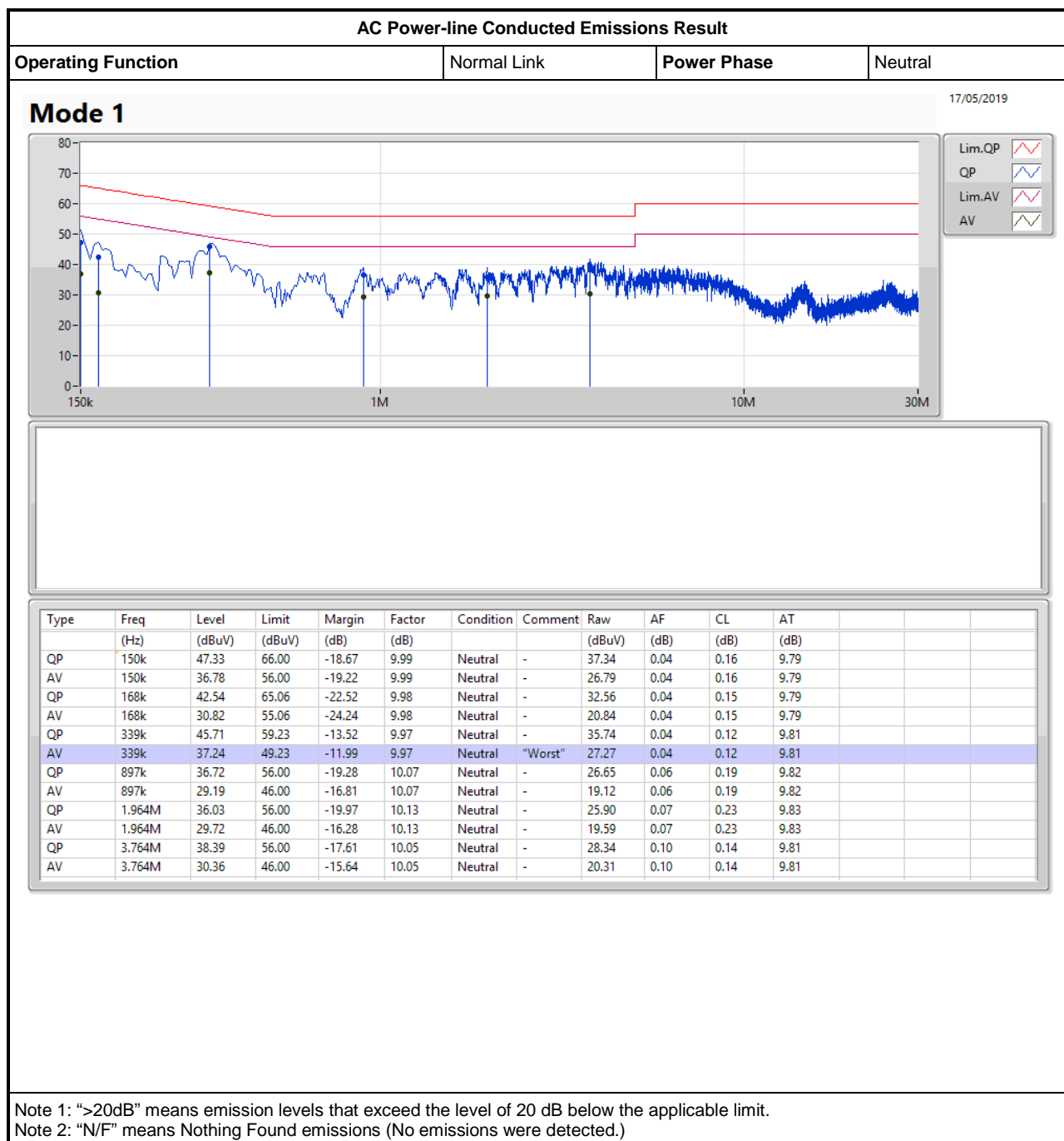
Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
Power Meter	Anritsu	ML2495A	1210004	300MHz~40GHz	Sep. 03, 2018	Sep. 02, 2019	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-01	1 GHz – 26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-02	1 GHz – 26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-3	1 GHz – 26.5 GHz	Oct. 24, 2018	Oct. 23, 2019	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-04	1 GHz – 26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-05	1 GHz – 26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH02-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)	877.5k	864.568k	865KF1D	736.25k	840.83k
BT-EDR(2Mbps)	1.321M	1.203M	1M20G1D	1.238M	1.194M
BT-EDR(3Mbps)	1.231M	1.161M	1M16G1D	1.186M	1.157M

**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;

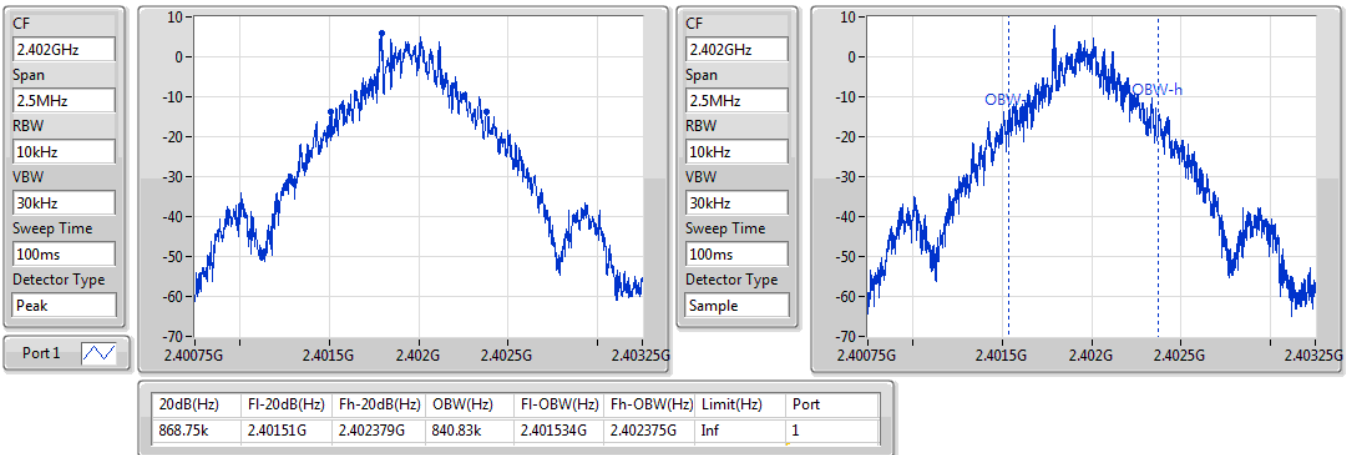
**Result**

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-BR(1Mbps)	-	-	-	-
2402MHz	Pass	Inf	868.75k	840.83k
2440MHz	Pass	Inf	877.5k	843.328k
2480MHz	Pass	Inf	736.25k	864.568k
BT-EDR(2Mbps)	-	-	-	-
2402MHz	Pass	Inf	1.238M	1.203M
2440MHz	Pass	Inf	1.321M	1.194M
2480MHz	Pass	Inf	1.285M	1.203M
BT-EDR(3Mbps)	-	-	-	-
2402MHz	Pass	Inf	1.231M	1.161M
2440MHz	Pass	Inf	1.215M	1.159M
2480MHz	Pass	Inf	1.186M	1.157M

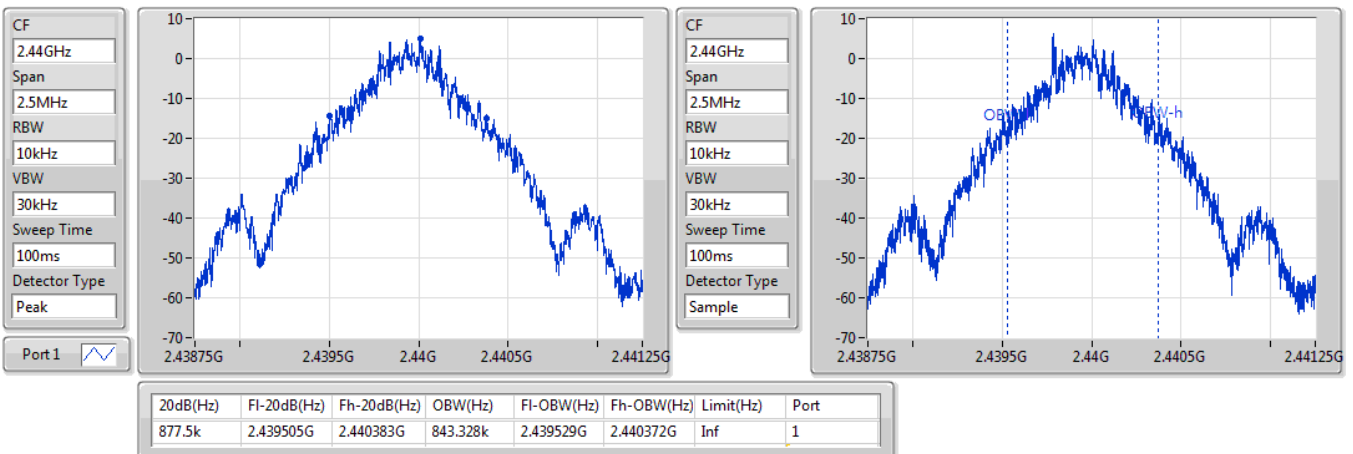
**Port X-N dB** = Port X 20dB down bandwidth; **Port X-OBW** = Port X 99% occupied bandwidth;

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

12/06/2019

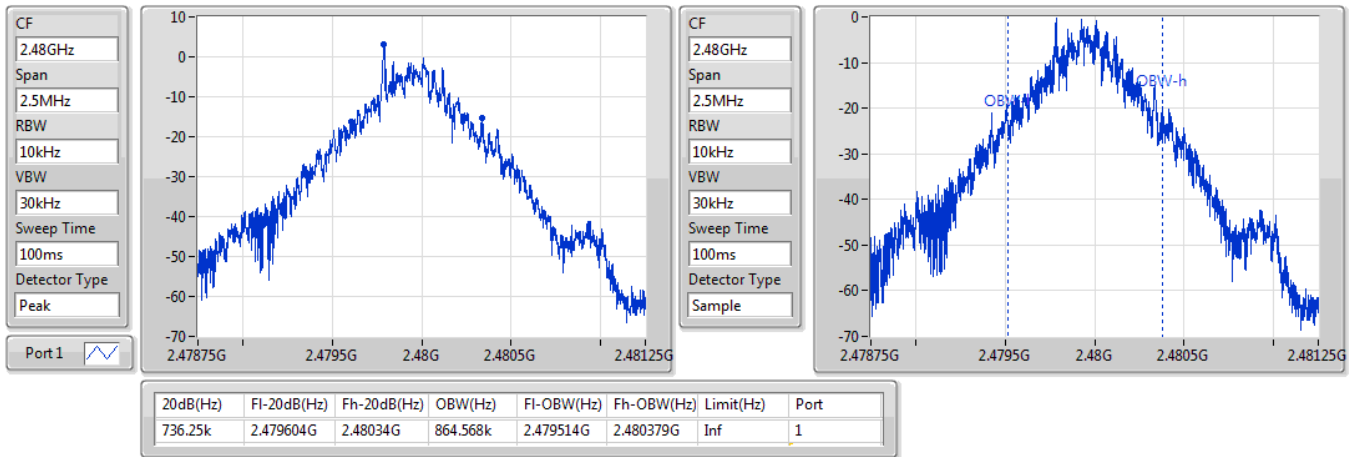

**BT-BR(1Mbps)**
**2440MHz**
**EBW**

12/06/2019

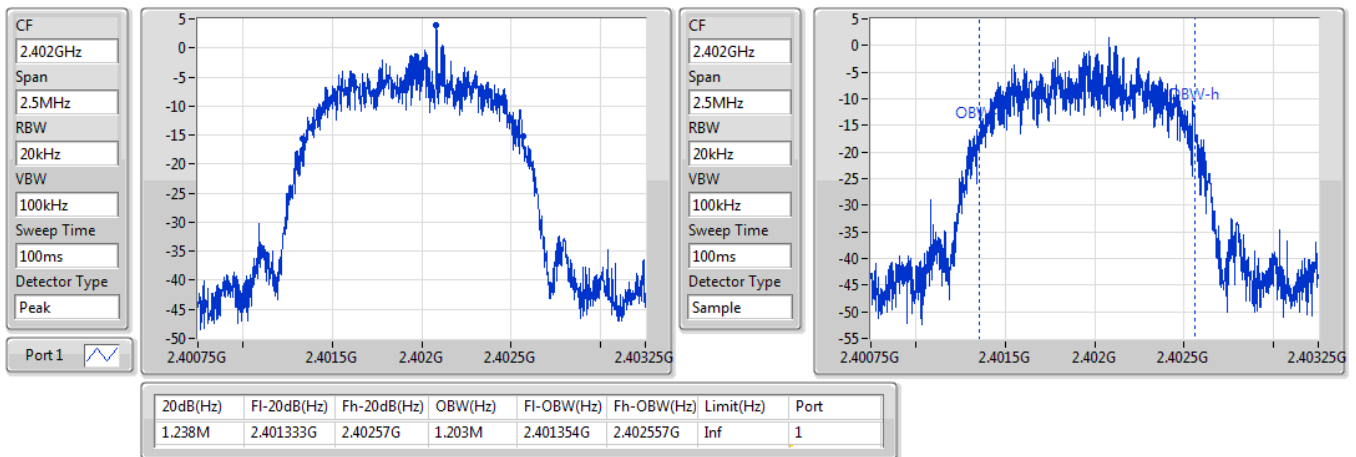


**BT-BR(1Mbps)**
**EBW**
**2480MHz**

12/06/2019

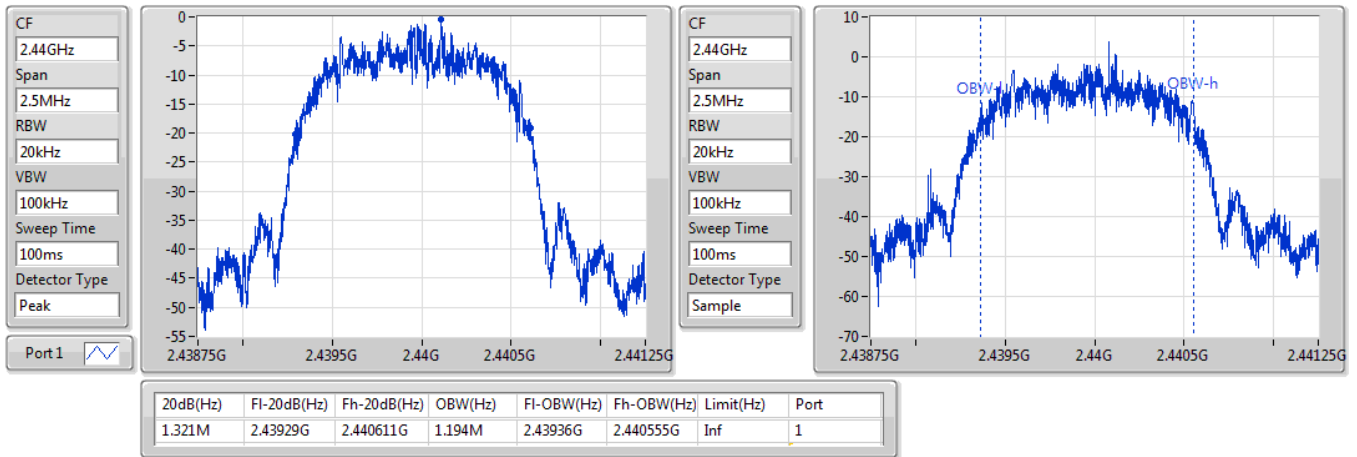

**BT-EDR(2Mbps)**
**EBW**
**2402MHz**

12/06/2019

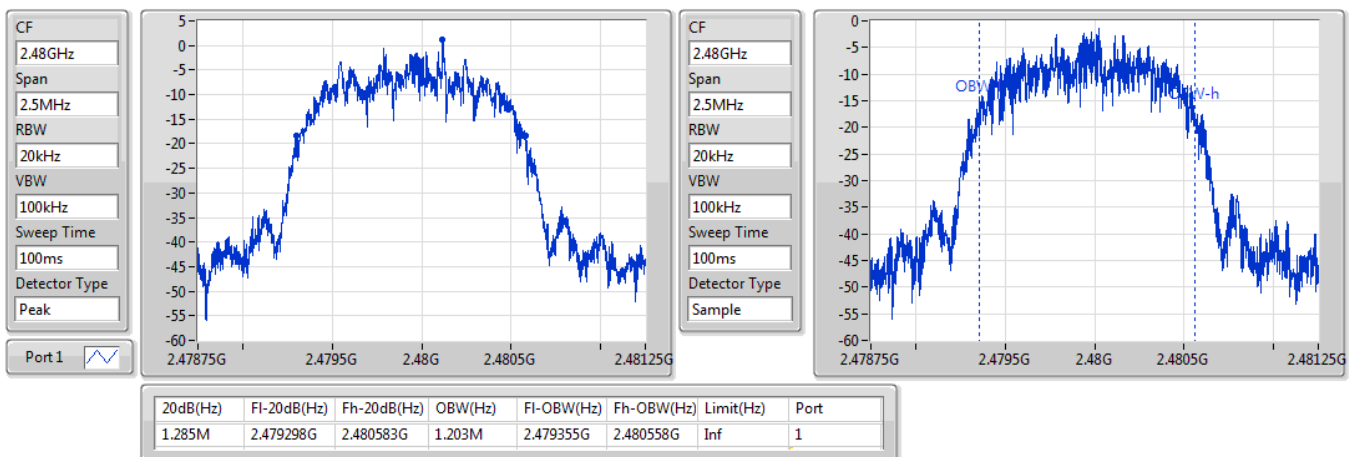


**BT-EDR(2Mbps)**
**EBW**
**2440MHz**

12/06/2019

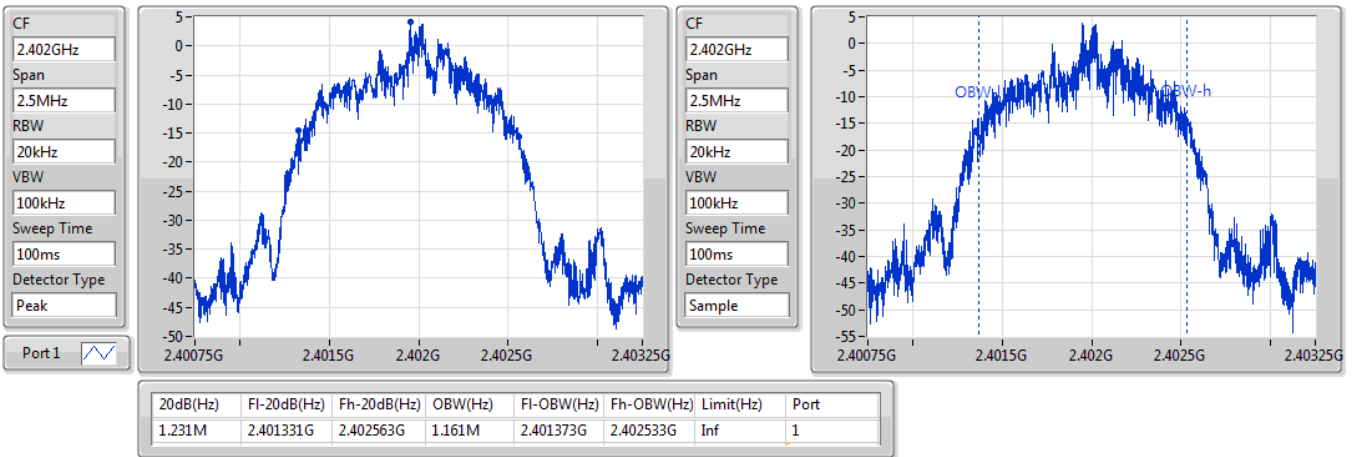

**BT-EDR(2Mbps)**
**EBW**
**2480MHz**

12/06/2019

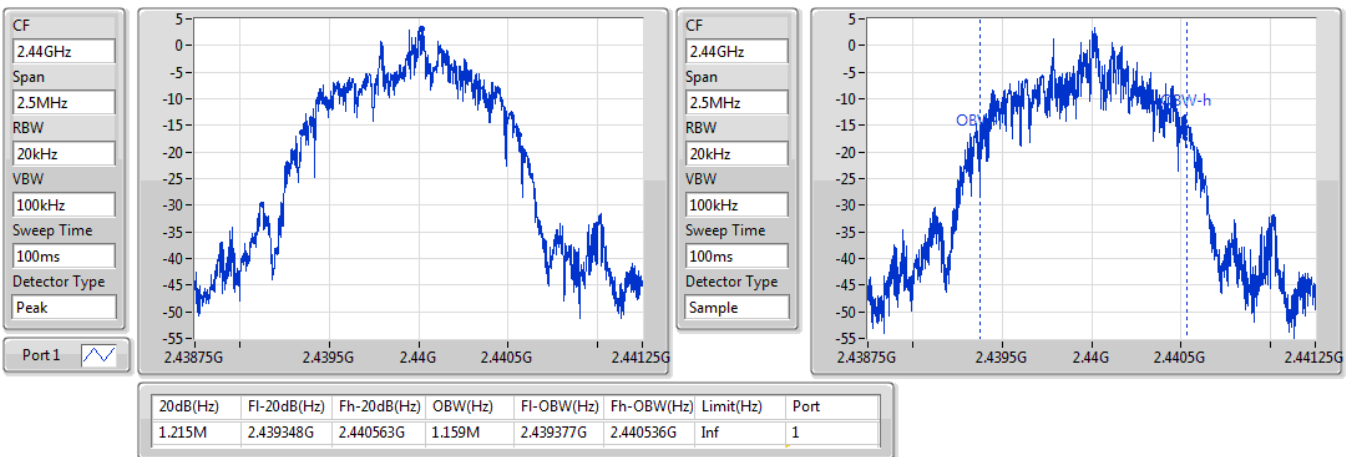


**BT-EDR(3Mbps)**
**2402MHz**
**EBW**

12/06/2019


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

12/06/2019



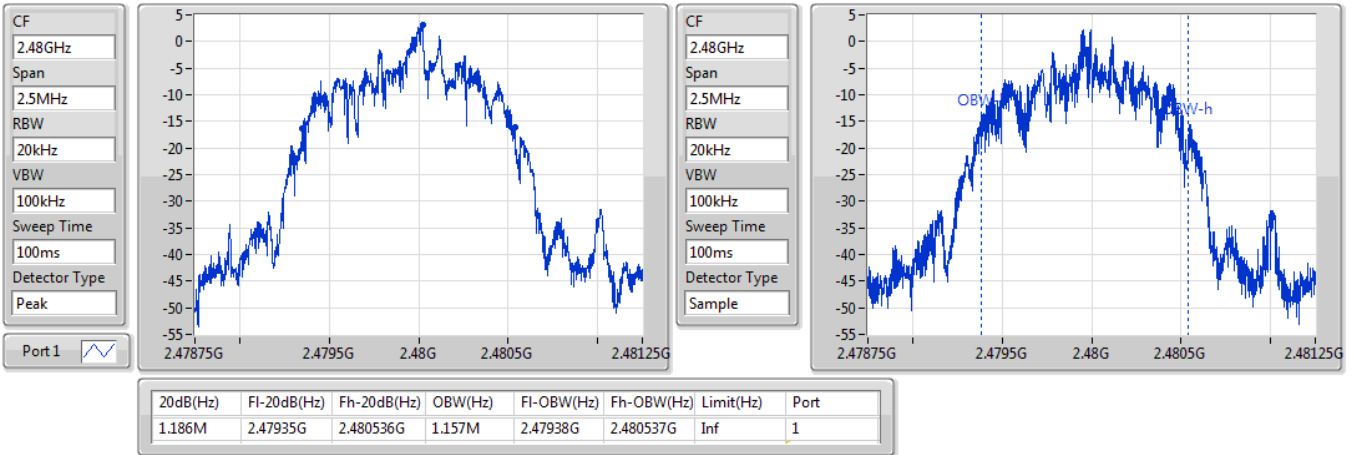


**BT-EDR(3Mbps)**

**2480MHz**

**EBW**

12/06/2019





## Channel Separation -FHSS Result

Appendix B.2

### Summary

Mode	Max-Space (Hz)	Min-Space (Hz)
2.4-2.4835GHz	-	-
BT-BR(1Mbps)	1.002M	999k
BT-EDR(2Mbps)	1.0005M	999k
BT-EDR(3Mbps)	1.002M	1.0005M

## Result

Mode	Result	Fl (Hz)	Fh (Hz)	Ch.Space (Hz)	Limit (Hz)
BT-BR(1Mbps)	-	-	-	-	-
2402MHz	Pass	2.401792G	2.402791G	999k	578.5875k
2440MHz	Pass	2.439792G	2.440793G	1.0005M	584.415k
2480MHz	Pass	2.478791G	2.479793G	1.002M	490.3425k
BT-EDR(2Mbps)	-	-	-	-	-
2402MHz	Pass	2.402079G	2.403079G	1.0005M	824.508k
2440MHz	Pass	2.440077G	2.441078G	1.0005M	879.786k
2480MHz	Pass	2.479077G	2.480076G	999k	855.81k
BT-EDR(3Mbps)	-	-	-	-	-
2402MHz	Pass	2.401954G	2.402955G	1.0005M	819.846k
2440MHz	Pass	2.439953G	2.440953G	1.0005M	809.19k
2480MHz	Pass	2.478951G	2.479953G	1.002M	789.876k

## BT-BR(1Mbps)

2.402G/2.403GHz

## Channel Separation

12/06/2019



## BT-BR(1Mbps)

2.44G/2.441GHz

## Channel Separation

12/06/2019

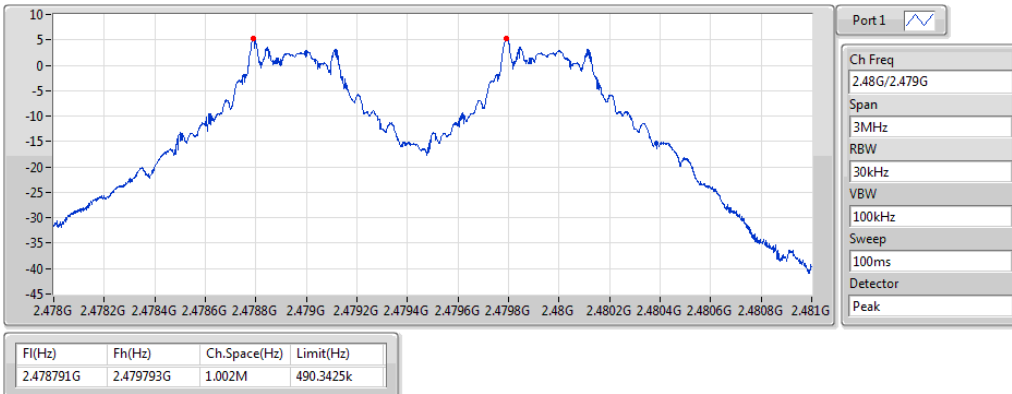


## BT-BR(1Mbps)

2.48G/2.479GHz

## Channel Separation

12/06/2019




## BT-EDR(2Mbps)

2.402G/2.403GHz

## Channel Separation

12/06/2019



Port1 

Ch Freq  
2.402G/2.403G

Span  
3MHz

RBW  
30kHz

VBW  
100kHz

Sweep  
100ms

Detector  
Peak

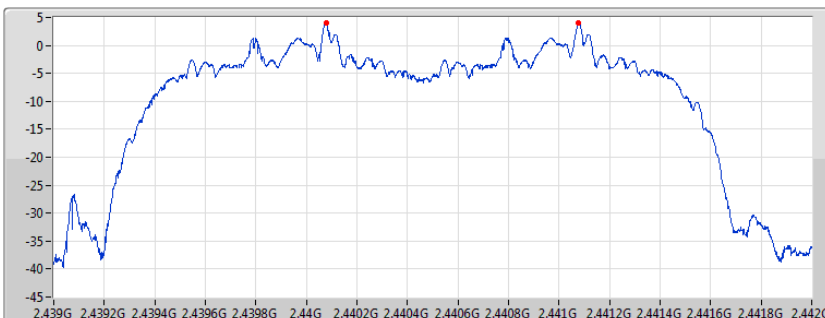
F(Hz)	Fh(Hz)	Ch.Space(Hz)	Limit(Hz)
2.402079G	2.403079G	1.0005M	824.508k


## BT-EDR(2Mbps)

2.44G/2.441GHz

## Channel Separation

12/06/2019



Port1 

Ch Freq  
2.44G/2.441G

Span  
3MHz

RBW  
30kHz

VBW  
100kHz

Sweep  
100ms

Detector  
Peak

F(Hz)	Fh(Hz)	Ch.Space(Hz)	Limit(Hz)
2.440077G	2.441078G	1.0005M	879.786k


## BT-EDR(2Mbps)

2.48G/2.479GHz

## Channel Separation

12/06/2019



Port1 

Ch Freq  
2.48G/2.479G

Span  
3MHz

RBW  
30kHz

VBW  
100kHz

Sweep  
100ms

Detector  
Peak

F(Hz)	Fh(Hz)	Ch.Space(Hz)	Limit(Hz)
2.479077G	2.480076G	999k	855.81k

## BT-EDR(3Mbps)

2.402G/2.403GHz

## Channel Separation

12/06/2019



## BT-EDR(3Mbps)

2.44G/2.441GHz

## Channel Separation

12/06/2019



## BT-EDR(3Mbps)

2.48G/2.479GHz

## Channel Separation

12/06/2019





## **Average Power-FHSS Result**

Appendix C.1

### **Summary**

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-BR(1Mbps)	10.82	0.01208
BT-EDR(2Mbps)	4.62	0.00290
BT-EDR(3Mbps)	4.57	0.00286



## Average Power-FHSS Result

Appendix C.1

### Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-BR(1Mbps)	-	-	-	-
2402MHz	Pass	5.00	10.54	21.00
2440MHz	Pass	5.00	10.82	21.00
2480MHz	Pass	5.00	5.42	21.00
BT-EDR(2Mbps)	-	-	-	-
2402MHz	Pass	5.00	4.62	21.00
2440MHz	Pass	5.00	4.29	21.00
2480MHz	Pass	5.00	4.09	21.00
BT-EDR(3Mbps)	-	-	-	-
2402MHz	Pass	5.00	4.57	21.00
2440MHz	Pass	5.00	4.29	21.00
2480MHz	Pass	5.00	4.04	21.00

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





**Summary**

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-BR(1Mbps)	10.93	0.01239
BT-EDR(2Mbps)	6.81	0.00480
BT-EDR(3Mbps)	7.45	0.00556

**Result**

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-BR(1Mbps)	-	-	-	-
2402MHz	Pass	5.00	10.65	21.00
2440MHz	Pass	5.00	10.93	21.00
2480MHz	Pass	5.00	5.54	21.00
BT-EDR(2Mbps)	-	-	-	-
2402MHz	Pass	5.00	6.81	21.00
2440MHz	Pass	5.00	6.47	21.00
2480MHz	Pass	5.00	6.37	21.00
BT-EDR(3Mbps)	-	-	-	-
2402MHz	Pass	5.00	7.45	21.00
2440MHz	Pass	5.00	7.19	21.00
2480MHz	Pass	5.00	7.09	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**

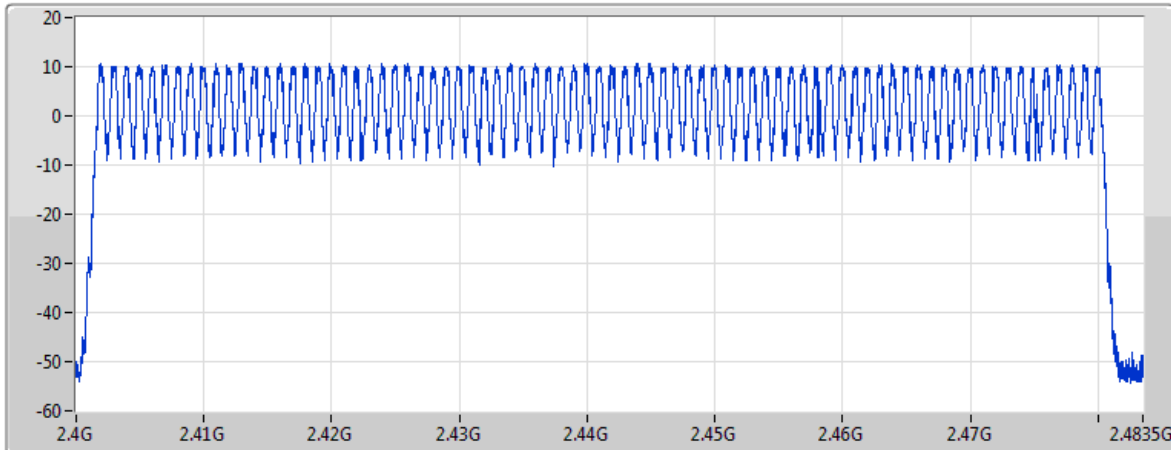
Mode	Result	Hopping No	Limit
BT-BR(1Mbps)	-	-	-
2440MHz	Pass	79	15
BT-EDR(2Mbps)	-	-	-
2440MHz	Pass	79	15
BT-EDR(3Mbps)	-	-	-
2440MHz	Pass	79	15


BT-BR(1Mbps)

2440MHz

Hopping Ch

12/06/2019



Port 1 

Hopping No  
79

Span  
83.5MHz

RBW  
100kHz

VBW  
300kHz

Sweep  
200ms

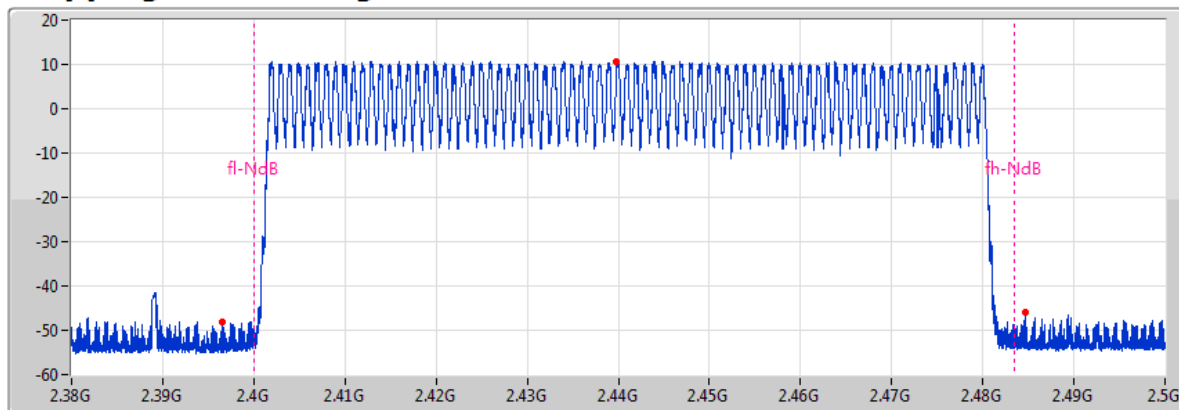
Detector  
Peak


BT-BR(1Mbps)

2440MHz

Hopping Ch Bandedge (Non-restricted Band)

12/06/2019



Port 1 

Span  
120MHz

RBW  
100kHz

VBW  
300kHz

Sweep  
200ms

Detector  
Peak

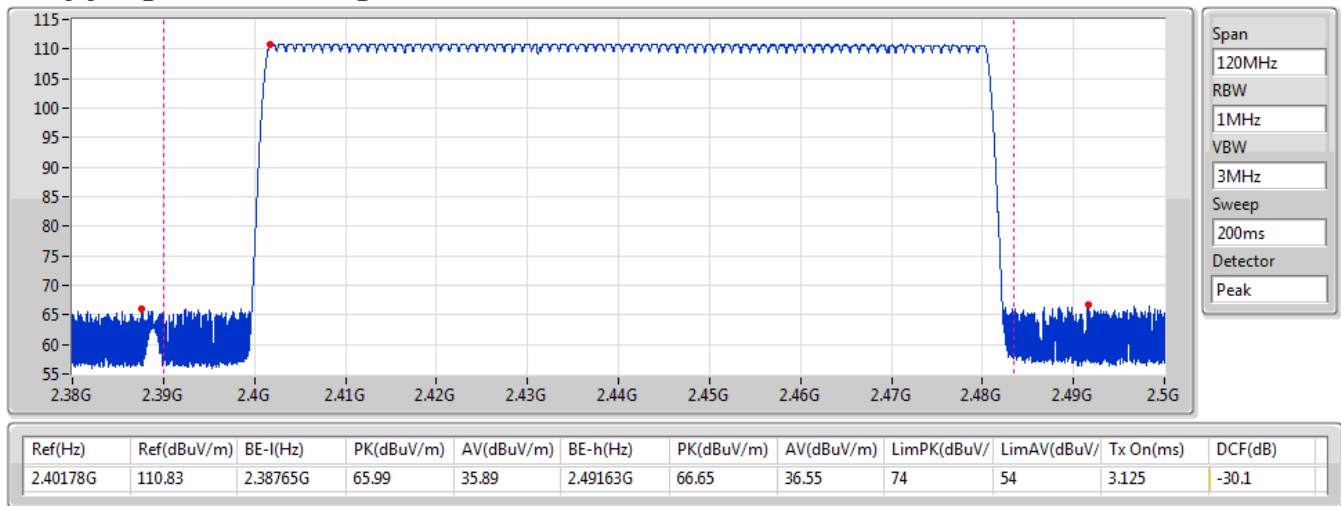
Limit(dBm)	Ref(Hz)	Ref(dBm)	BE-l(Hz)	BE-l(dBm)	BE-h(Hz)	BE-h(dBm)
-9.4	2.43979G	10.6	2.3965G	-48.13	2.48467G	-45.98

### BT-BR(1Mbps)

2440MHz

### Hopping Ch Bandedge (Restricted Band)

12/06/2019

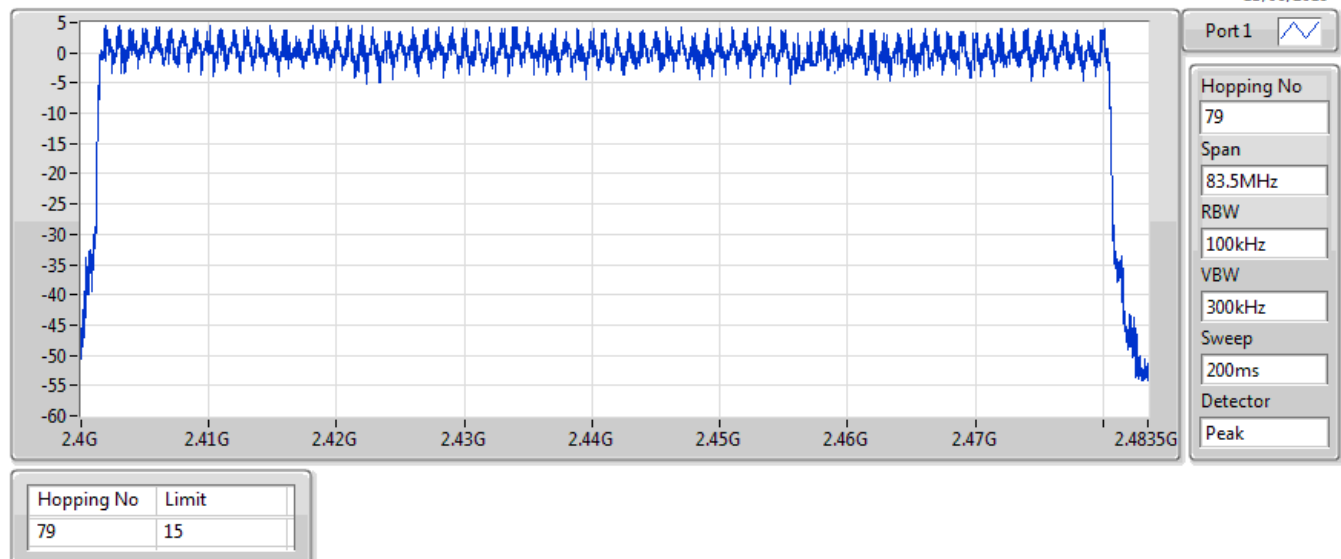


### BT-EDR(2Mbps)

2440MHz

### Hopping Ch

13/06/2019

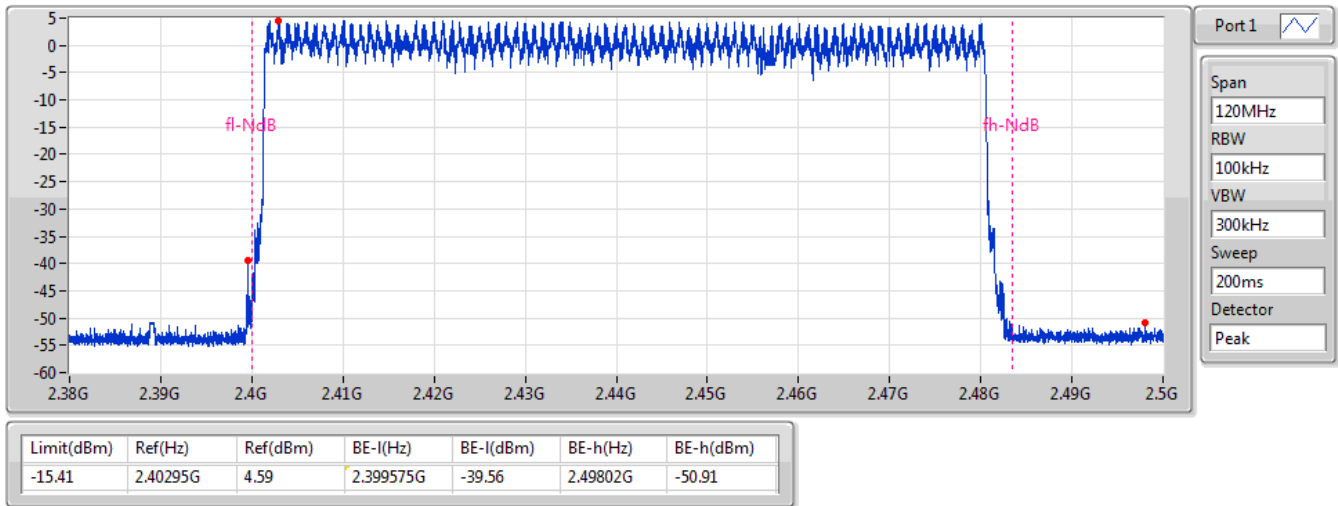


**BT-EDR(2Mbps)**

**2440MHz**

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

13/06/2019

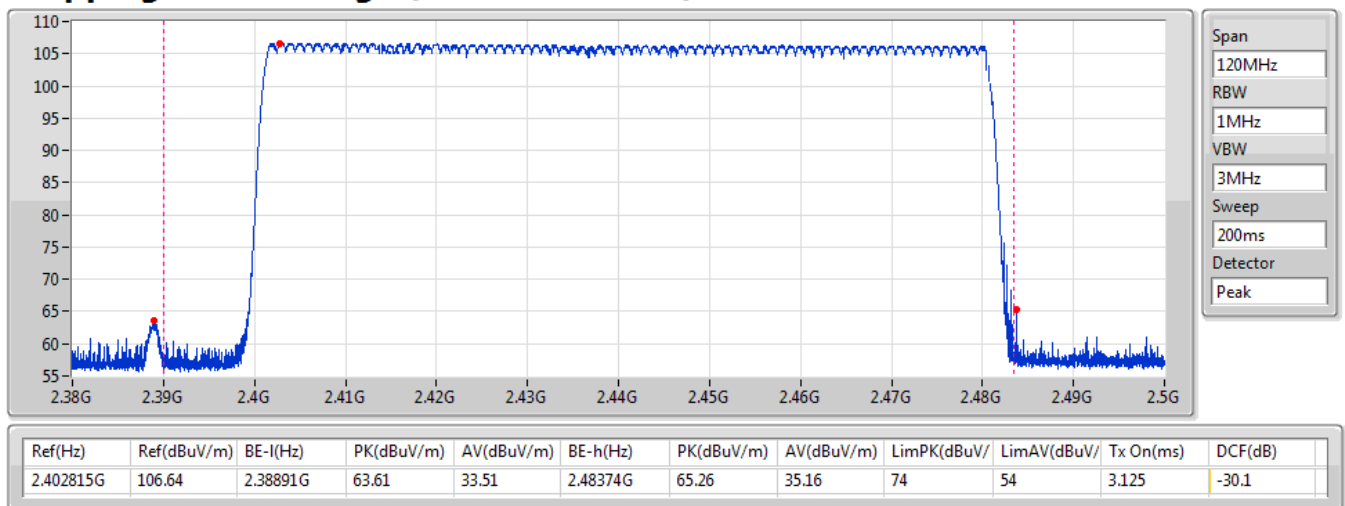


**BT-EDR(2Mbps)**

**2440MHz**

**Hopping Ch Bandedge (Restricted Band)**

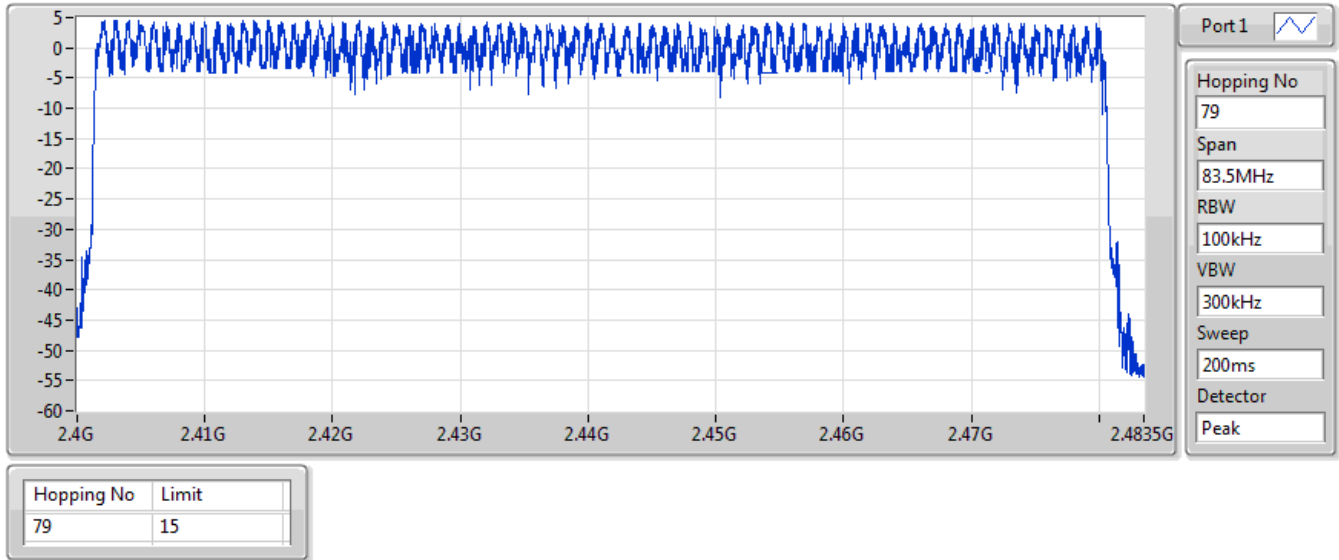
13/06/2019



## BT-EDR(3Mbps) 2440MHz

## Hopping Ch

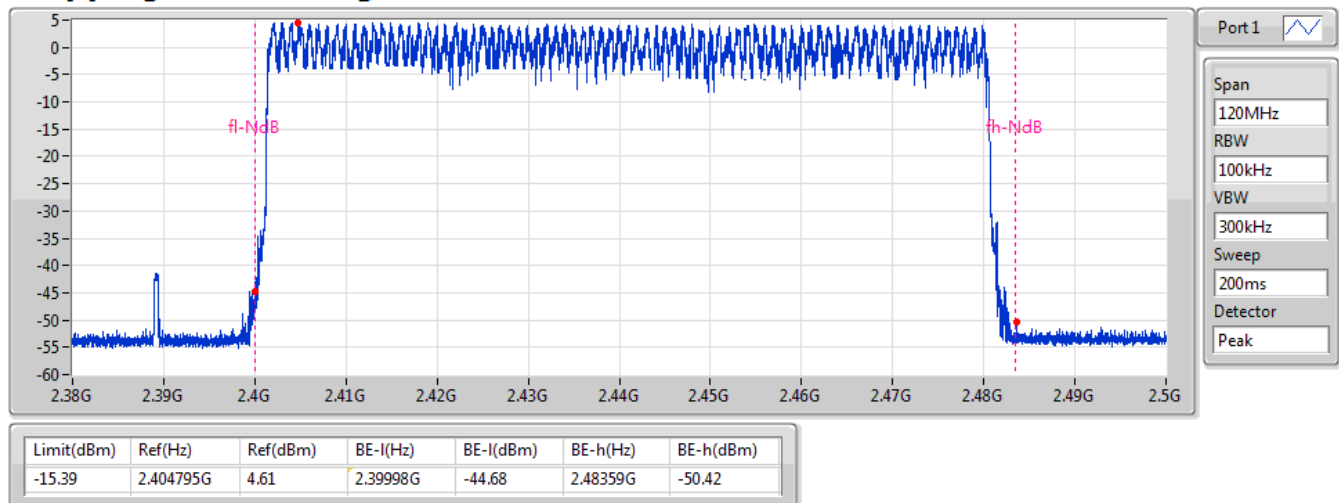
13/06/2019



## BT-EDR(3Mbps) 2440MHz

## Hopping Ch Bandedge (Non-restricted Band)

13/06/2019



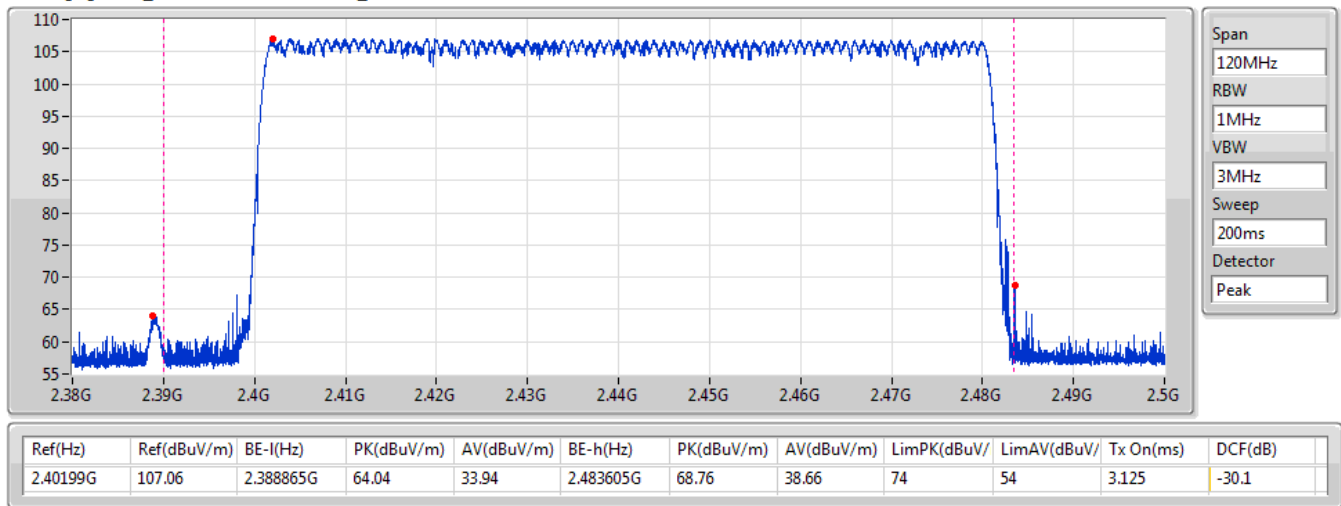


BT-EDR(3Mbps)

2440MHz

Hopping Ch Bandedge (Restricted Band)

13/06/2019





**Summary**

Mode	Max-Dwell (s)
2.4-2.4835GHz	-
BT-BR(1Mbps)	308.5004m
BT-EDR(2Mbps)	308.3938m
BT-EDR(3Mbps)	308.3938m

**Result**

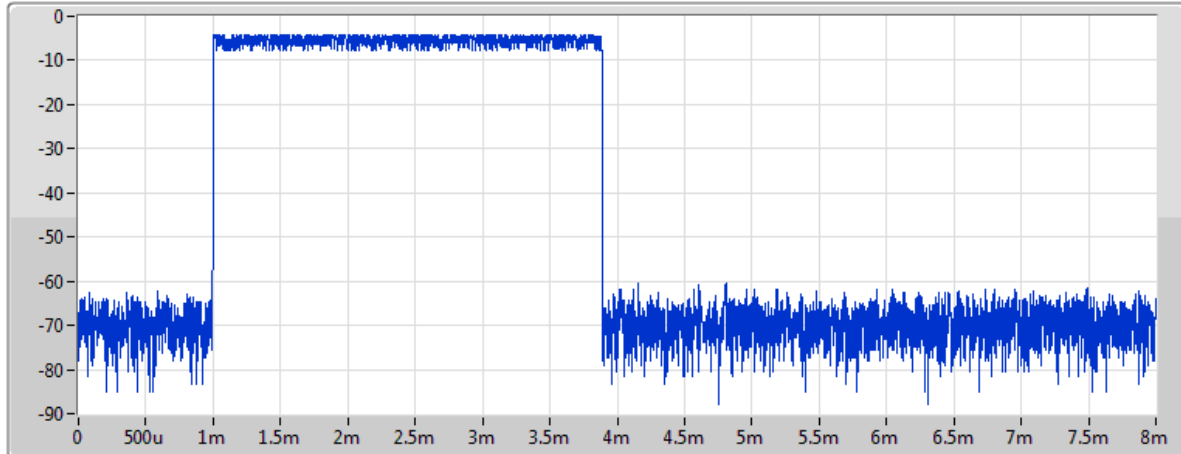
Mode	Result	Period (s)	Dwell (s)	Limit (s)	Tx On (s)
BT-BR(1Mbps)	-	-	-	-	-
2440MHz	Pass	31.6	308.5004m	400m	2.894m
BT-EDR(2Mbps)	-	-	-	-	-
2440MHz	Pass	31.6	308.3938m	400m	2.893m
BT-EDR(3Mbps)	-	-	-	-	-
2440MHz	Pass	31.6	308.3938m	400m	2.893m


## BT-BR(1Mbps)

2440MHz

25/06/2019

## Dwell



Port1 

Ch Freq  
2.44GHz

RBW  
300kHz

VBW  
1MHz

Sweep Time  
8ms

TX Time  
2.894ms

non AFH Mode

Period(s)	Dwell(s)	Limit(s)	Tx On(s)
31.6	308.5004m	400m	2.894m

AFH Mode

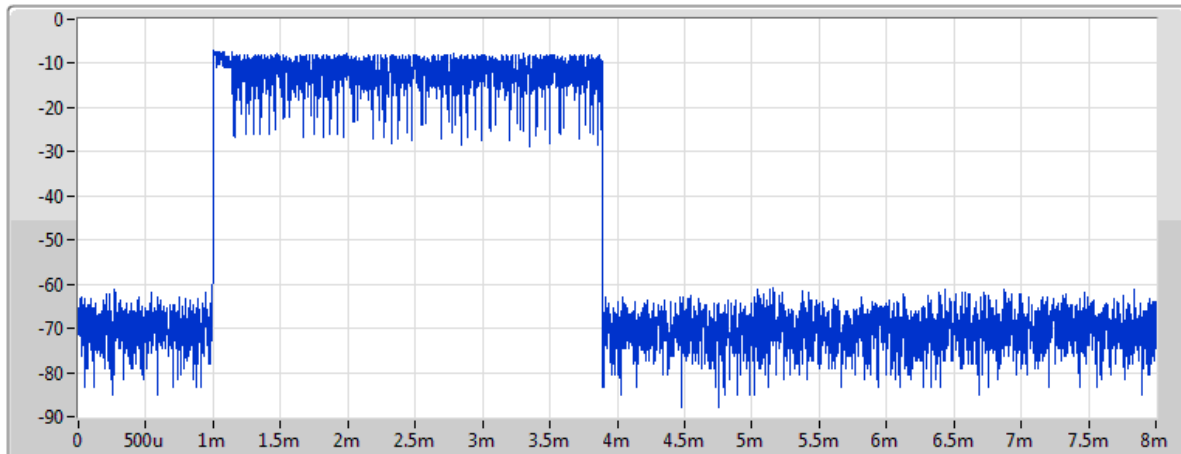
Period(s)	Dwell(s)	Limit(s)	Tx On(s)
0	154.2502m	400m	2.894m


## BT-EDR(2Mbps)

2440MHz

25/06/2019

## Dwell



Port1 

Ch Freq  
2.44GHz

RBW  
300kHz

VBW  
1MHz

Sweep Time  
8ms

TX Time  
2.893ms

non AFH Mode

Period(s)	Dwell(s)	Limit(s)	Tx On(s)
31.6	308.3938m	400m	2.893m

AFH Mode

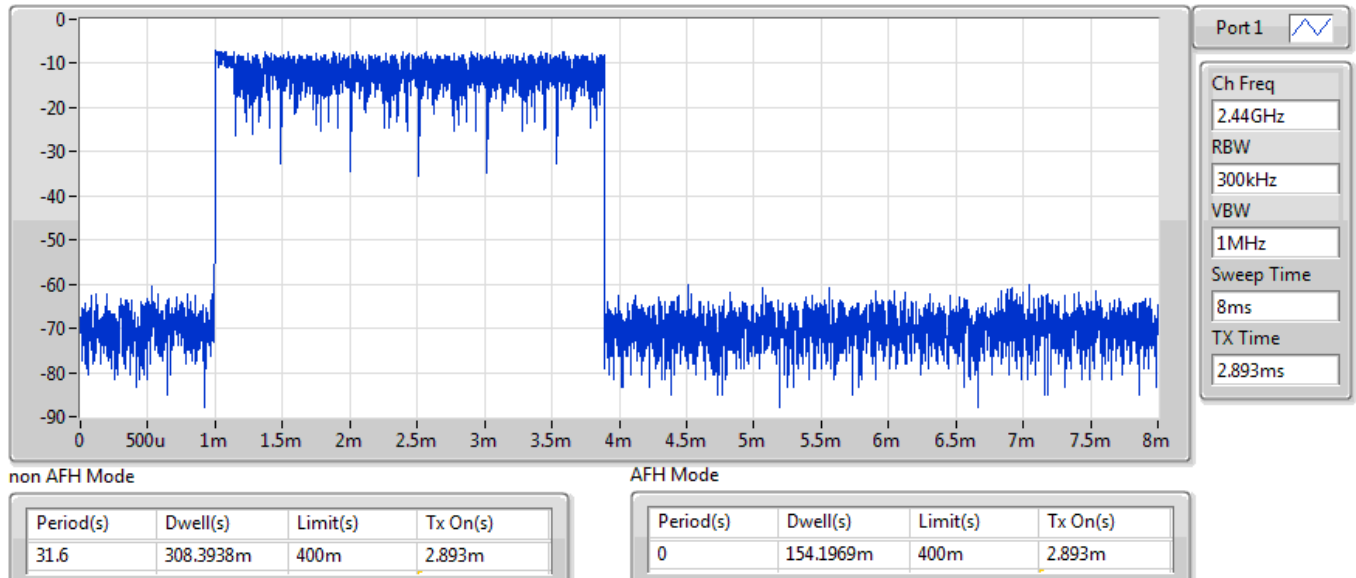
Period(s)	Dwell(s)	Limit(s)	Tx On(s)
0	154.1969m	400m	2.893m

BT-EDR(3Mbps)

2440MHz

Dwell

25/06/2019





## 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	2.47983G	10.33	-9.67	543.86M	-51.09	2.39899G	-52.59	2.48492G	-49.13	17.18747G	-46.17	1
BT-EDR(2Mbps)	Pass	2.40192G	4.42	-15.58	95.71M	-51.83	2.39961G	-39.07	2.4849G	-51.90	16.75406G	-46.24	1
BT-EDR(3Mbps)	Pass	2.40192G	4.43	-15.57	96.01M	-50.05	2.39997G	-39.94	2.48458G	-51.77	6.80828G	-46.26	1

**Result**

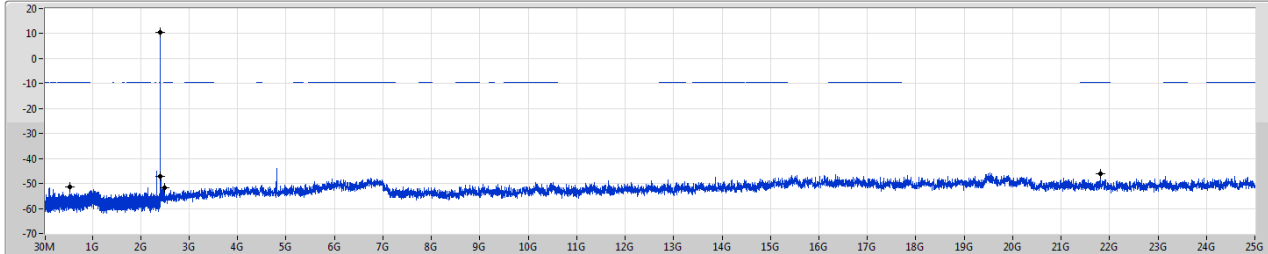
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
BT-BR(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.40209G	10.52	-9.48	543.86M	-51.50	2.39995G	-47.30	2.48362G	-51.76	21.80857G	-46.08	1
2440MHz	Pass	2.43979G	10.46	-9.54	96.01M	-51.00	2.39991G	-51.52	2.48396G	-51.25	16.40509G	-46.40	1
2480MHz	Pass	2.47983G	10.33	-9.67	543.86M	-51.09	2.39899G	-52.59	2.48492G	-49.13	17.18747G	-46.17	1
BT-EDR(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.40192G	4.42	-15.58	95.71M	-51.83	2.39961G	-39.07	2.4849G	-51.90	16.75406G	-46.24	1
2440MHz	Pass	2.44008G	3.74	-16.26	543.86M	-51.77	2.3998G	-51.84	2.48401G	-51.86	16.52892G	-45.95	1
2480MHz	Pass	2.47995G	3.66	-16.34	95.71M	-50.29	2.39868G	-51.58	2.48431G	-49.78	16.81598G	-46.26	1
BT-EDR(3Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.40192G	4.43	-15.57	96.01M	-50.05	2.39997G	-39.94	2.48458G	-51.77	6.80828G	-46.26	1
2440MHz	Pass	2.44004G	3.58	-16.42	159.94M	-50.59	2.39911G	-52.16	2.4849G	-51.67	16.36569G	-46.17	1
2480MHz	Pass	2.47999G	3.58	-16.42	159.94M	-51.21	2.39848G	-51.73	2.48368G	-47.90	16.77376G	-46.07	1

BT-BR(1Mbps)

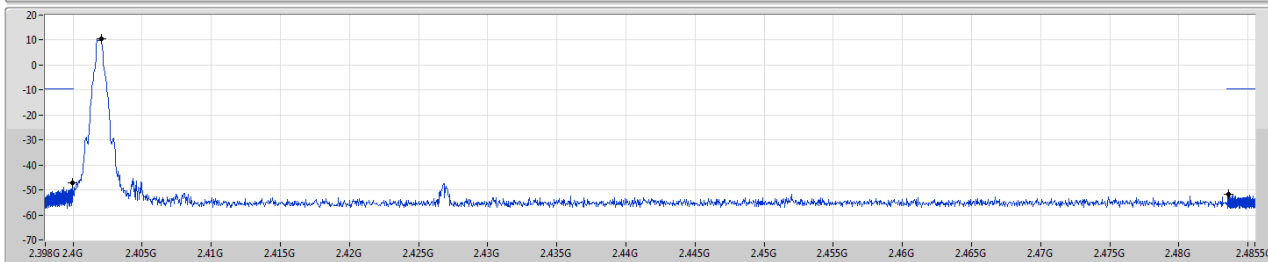
CSE NdB

2402MHz

13/06/2019



Port1



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

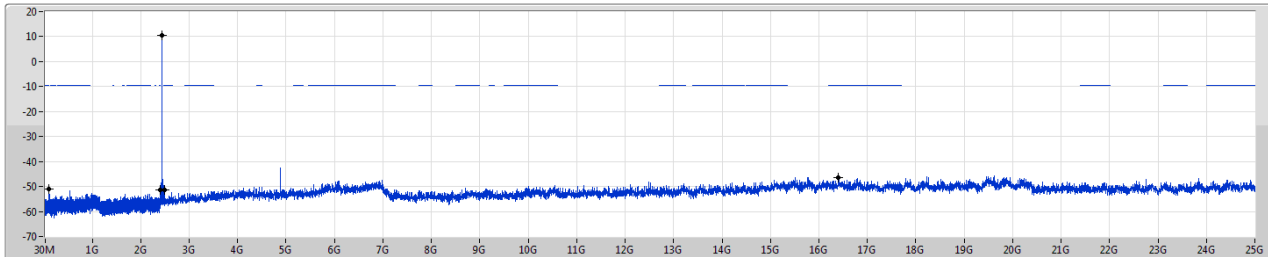
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40209G	10.52	-9.48	543.86M	-51.50	2.39995G	-47.30	2.48362G	-51.76	21.80857G	-46.08	1

BT-BR(1Mbps)

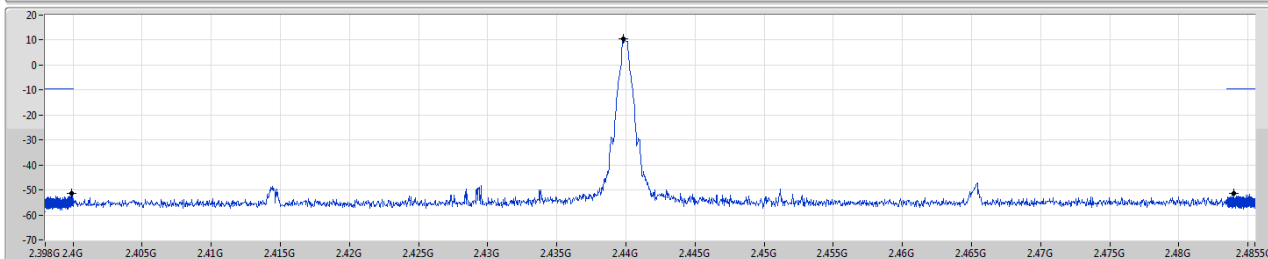
CSE NdB

2440MHz

13/06/2019



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
2.43979G	10.46	-9.54	96.01M	-51.00	2.39991G	-51.52	2.48396G	-51.25	16.40509G	-46.40	1



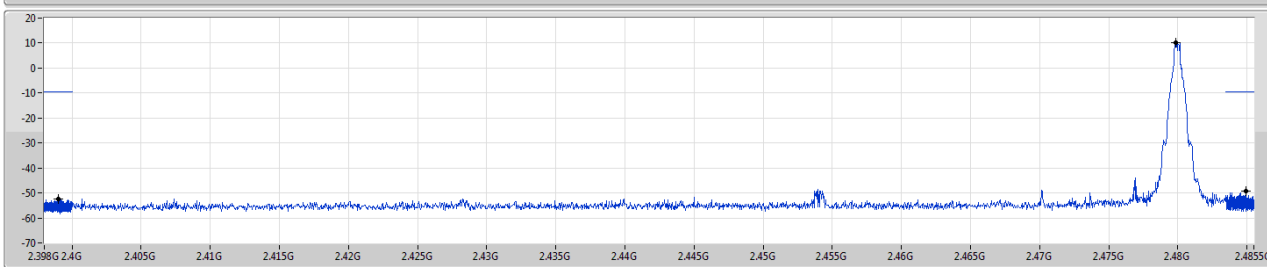
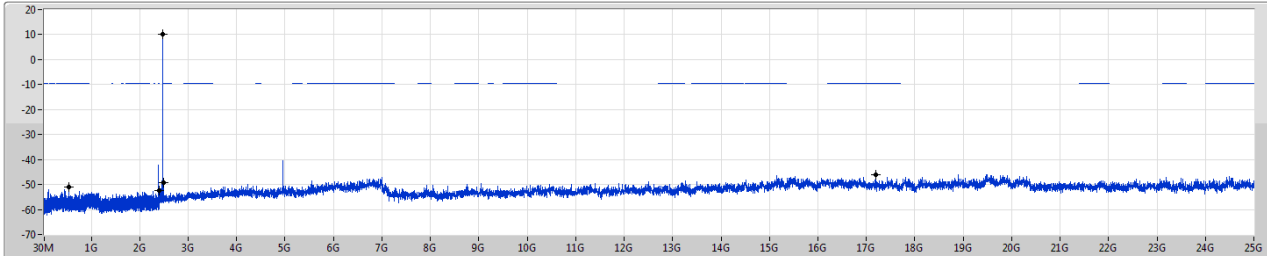
## BT-BR(1Mbps)

2480MHz

CSE NdB

13/06/2019

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
2.47983G	10.33	-9.67	543.86M	-51.09	2.39899G	-52.59	2.48492G	-49.13	17.18747G	-46.17	1

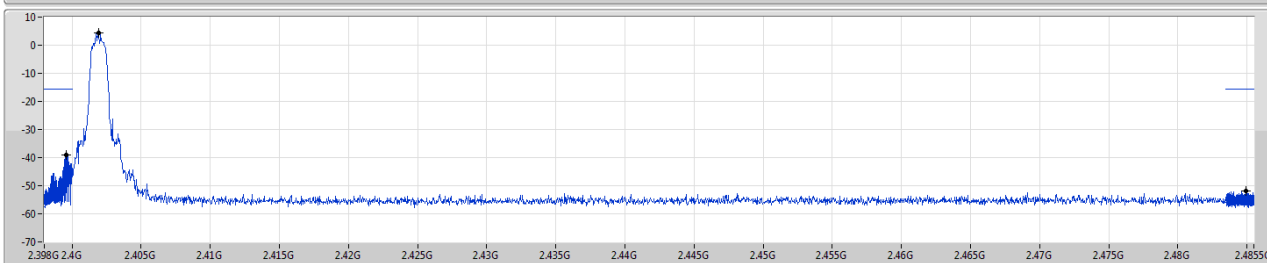
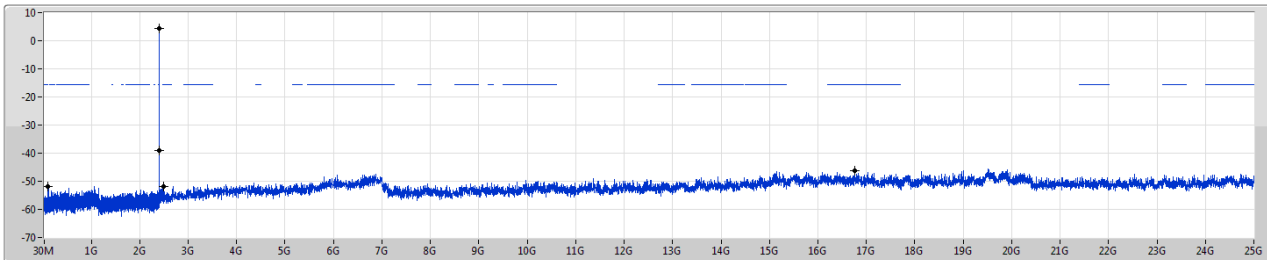
## BT-EDR(2Mbps)

2402MHz

CSE NdB

13/06/2019

Port1



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

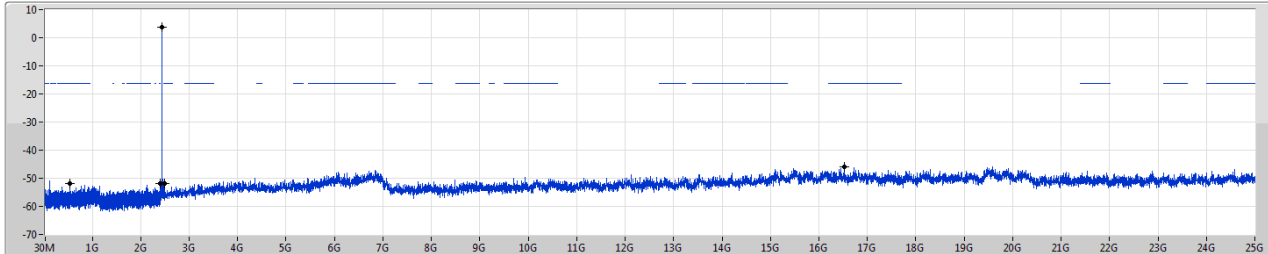
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40192G	4.42	-15.58	95.71M	-51.83	2.39961G	-39.07	2.4849G	-51.90	16.75406G	-46.24	1

BT-EDR(2Mbps)

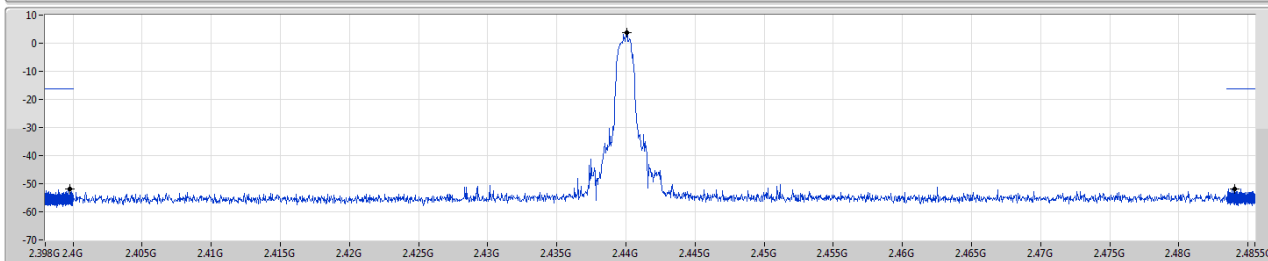
CSE NdB

2440MHz

13/06/2019



Port1



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

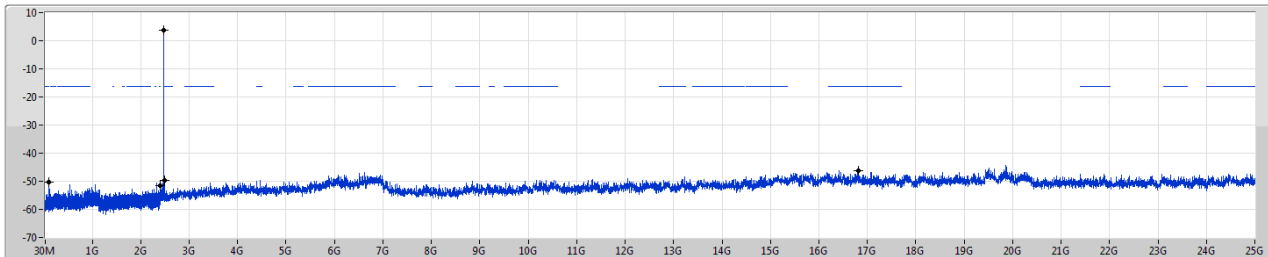
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.44008G	3.74	-16.26	543.86M	-51.77	2.3998G	-51.84	2.48401G	-51.86	16.52892G	-45.95	1

BT-EDR(2Mbps)

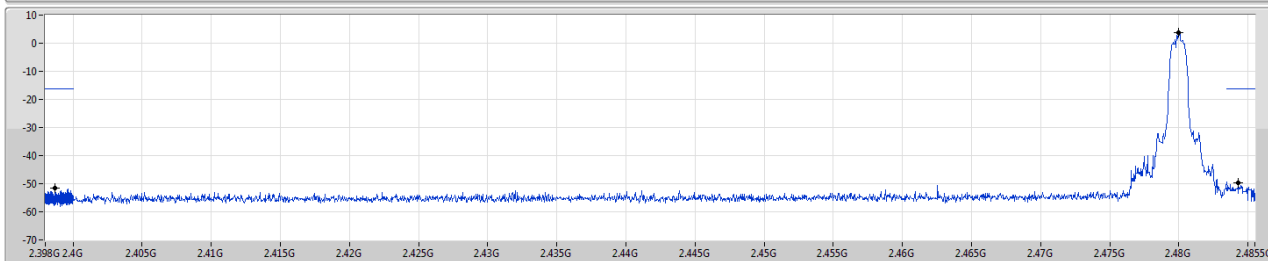
CSE NdB

2480MHz

13/06/2019



Port1



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

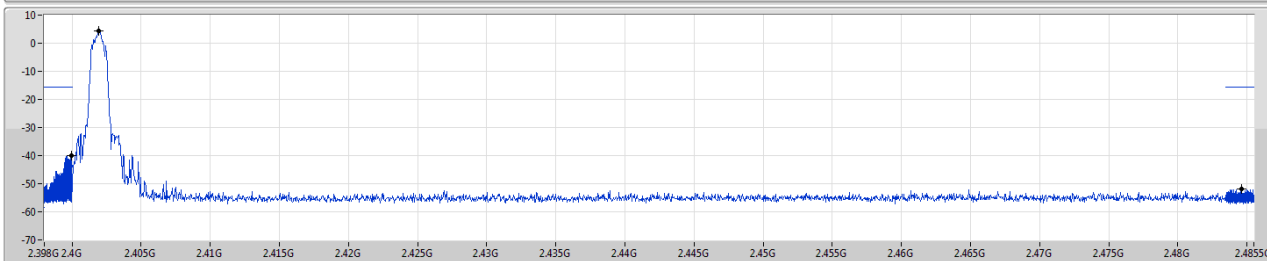
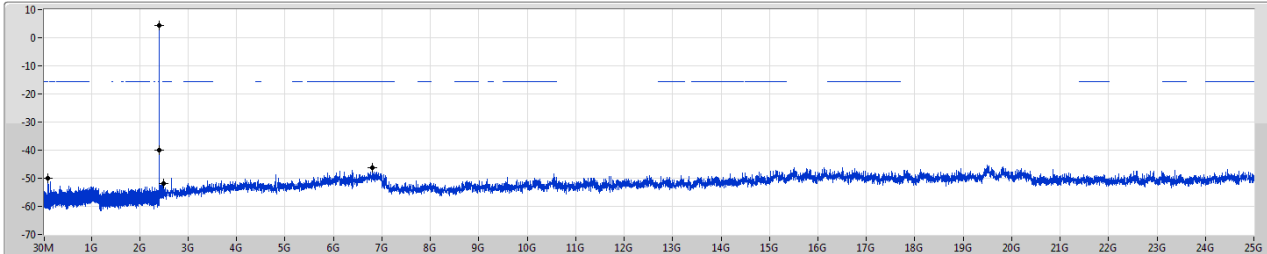
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.47995G	3.66	-16.34	95.71M	-50.29	2.39868G	-51.58	2.48431G	-49.78	16.81598G	-46.26	1

BT-EDR(3Mbps)

CSE NdB

2402MHz

13/06/2019

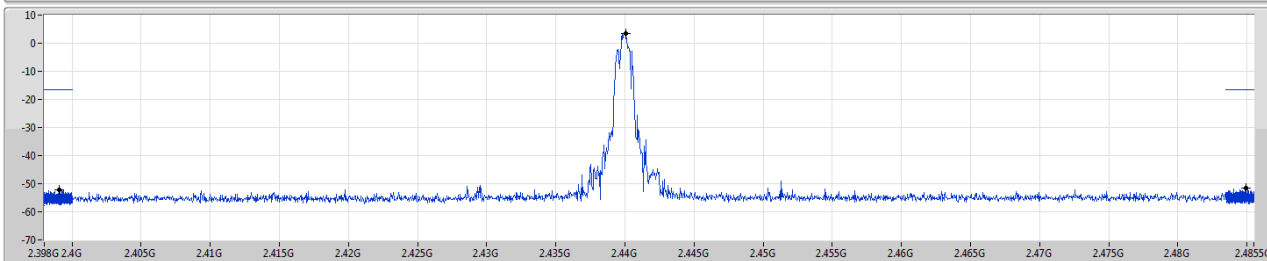
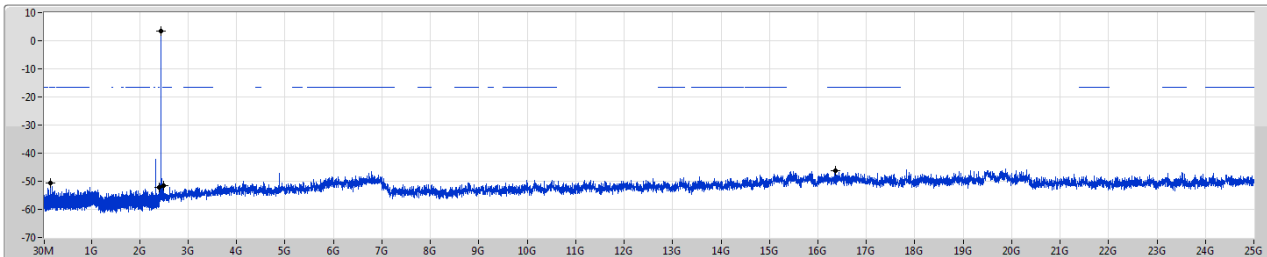


BT-EDR(3Mbps)

CSE NdB

2440MHz

13/06/2019

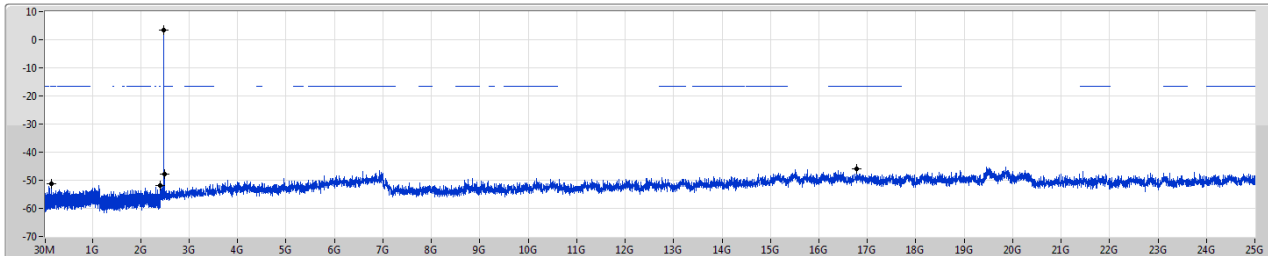


BT-EDR(3Mbps)

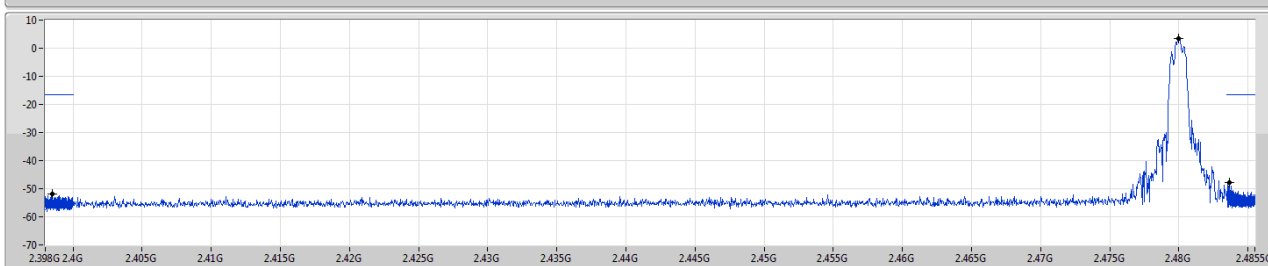
CSE NdB

2480MHz

13/06/2019

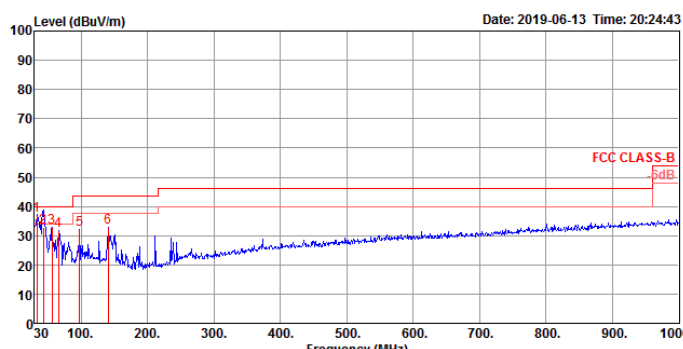


Port1



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

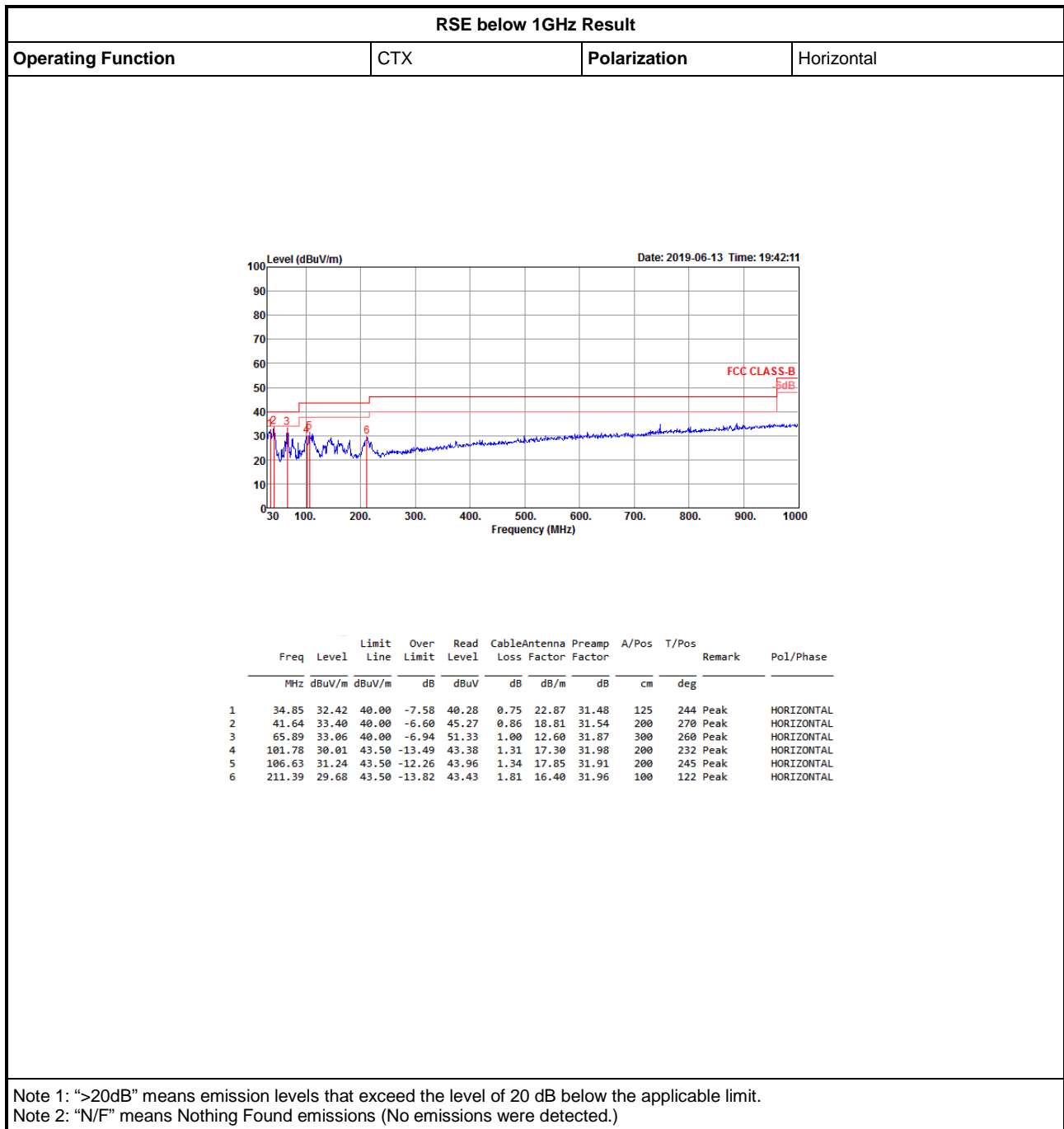
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.47999G	3.58	-16.42	159.94M	-51.21	2.39848G	-51.73	2.48368G	-47.90	16.77376G	-46.07	1

RSE below 1GHz Result																																																																																																											
Operating Function			CTX			Polarization			Vertical																																																																																																		
<div><div><div>Level (dBuV/m)</div><div></div><div><div>Date: 2019-06-13 Time: 20:24:43</div></div></div><div><table><tr><th></th><th>Freq</th><th>Level</th><th>Limit</th><th>Over</th><th>Read</th><th>CableAntenna</th><th>Preamp</th><th>A/Pos</th><th>T/Pos</th><th>Remark</th><th>Pol/Phase</th></tr><tr><th></th><th>MHz</th><th>dBuV/m</th><th>dBuV/m</th><th>dB</th><th>dBuV</th><th>dB</th><th>dB/m</th><th>dB</th><th>cm</th><th>deg</th><th></th></tr><tr><td>1</td><td>33.88</td><td>36.73</td><td>40.00</td><td>-3.27</td><td>44.10</td><td>0.74</td><td>23.39</td><td>31.50</td><td>100</td><td>229 OP</td><td>VERTICAL</td></tr><tr><td>2</td><td>43.58</td><td>32.73</td><td>40.00</td><td>-7.27</td><td>45.60</td><td>0.88</td><td>17.82</td><td>31.57</td><td>100</td><td>187 OP</td><td>VERTICAL</td></tr><tr><td>3</td><td>56.19</td><td>32.72</td><td>40.00</td><td>-7.28</td><td>50.19</td><td>0.94</td><td>13.40</td><td>31.81</td><td>100</td><td>25 Peak</td><td>VERTICAL</td></tr><tr><td>4</td><td>65.89</td><td>31.60</td><td>40.00</td><td>-8.40</td><td>49.87</td><td>1.00</td><td>12.60</td><td>31.87</td><td>200</td><td>250 Peak</td><td>VERTICAL</td></tr><tr><td>5</td><td>97.90</td><td>32.19</td><td>43.50</td><td>-11.31</td><td>46.18</td><td>1.27</td><td>16.72</td><td>31.98</td><td>125</td><td>199 Peak</td><td>VERTICAL</td></tr><tr><td>6</td><td>140.58</td><td>33.00</td><td>43.50</td><td>-10.50</td><td>45.84</td><td>1.51</td><td>17.75</td><td>32.10</td><td>125</td><td>153 Peak</td><td>VERTICAL</td></tr></table></div></div> <div><p>Note 1: "&gt;20dB" means emission levels that exceed the level of 20 dB below the applicable limit.</p><p>Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)</p></div>													Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase		MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		1	33.88	36.73	40.00	-3.27	44.10	0.74	23.39	31.50	100	229 OP	VERTICAL	2	43.58	32.73	40.00	-7.27	45.60	0.88	17.82	31.57	100	187 OP	VERTICAL	3	56.19	32.72	40.00	-7.28	50.19	0.94	13.40	31.81	100	25 Peak	VERTICAL	4	65.89	31.60	40.00	-8.40	49.87	1.00	12.60	31.87	200	250 Peak	VERTICAL	5	97.90	32.19	43.50	-11.31	46.18	1.27	16.72	31.98	125	199 Peak	VERTICAL	6	140.58	33.00	43.50	-10.50	45.84	1.51	17.75	32.10	125	153 Peak	VERTICAL
	Freq	Level	Limit	Over	Read	CableAntenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase																																																																																																
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg																																																																																																	
1	33.88	36.73	40.00	-3.27	44.10	0.74	23.39	31.50	100	229 OP	VERTICAL																																																																																																
2	43.58	32.73	40.00	-7.27	45.60	0.88	17.82	31.57	100	187 OP	VERTICAL																																																																																																
3	56.19	32.72	40.00	-7.28	50.19	0.94	13.40	31.81	100	25 Peak	VERTICAL																																																																																																
4	65.89	31.60	40.00	-8.40	49.87	1.00	12.60	31.87	200	250 Peak	VERTICAL																																																																																																
5	97.90	32.19	43.50	-11.31	46.18	1.27	16.72	31.98	125	199 Peak	VERTICAL																																																																																																
6	140.58	33.00	43.50	-10.50	45.84	1.51	17.75	32.10	125	153 Peak	VERTICAL																																																																																																



## RSE below 1GHz Result

Appendix G.1





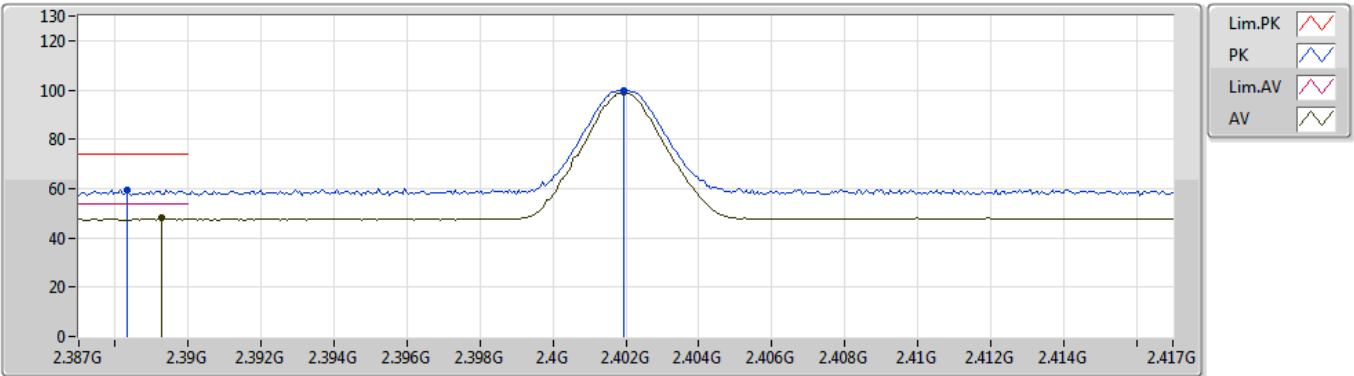
Summary

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-BR(1Mbps)	Pass	AV	4.95993G	49.29	54.00	-4.71	5.44	3	Horizontal	344	2.31	-

### BT-BR(1Mbps)

13/06/2019

### 2402MHz\_TX



EUT Y\_1TX  
Setting 0x0f  
03-S-5  
FSP(100019)

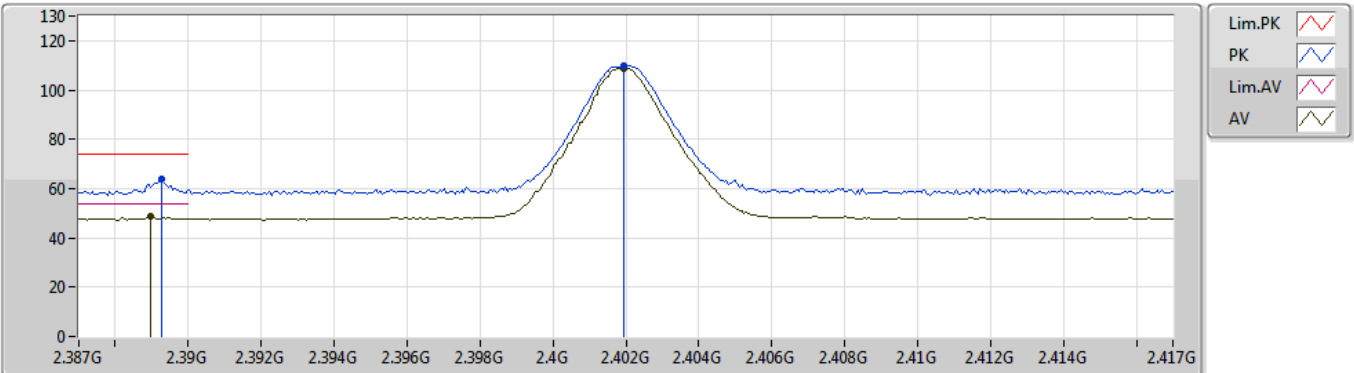
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment			
PK	2.38832G	59.42	74.00	-14.58	32.06	3	Vertical	139	1.03	-			
AV	2.38928G	47.93	54.00	-6.07	32.06	3	Vertical	139	1.03	-			
PK	2.40194G	99.63	Inf	-Inf	32.10	3	Vertical	139	1.03	-			
AV	2.40194G	98.93	Inf	-Inf	32.10	3	Vertical	139	1.03	-			



## BT-BR(1Mbps)

13/06/2019

## 2402MHz\_TX

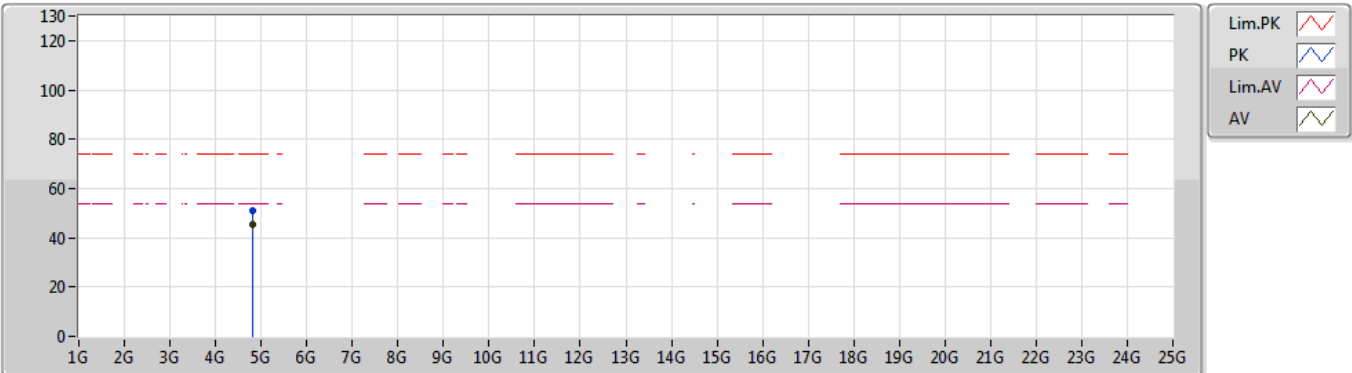


EUT Y\_1TX  
Setting 0x0f  
03-S-5  
FSP(100019)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment			
PK	2.38928G	63.83	74.00	-10.17	32.06	3	Horizontal	21	2.25	-			
AV	2.38898G	48.60	54.00	-5.40	32.06	3	Horizontal	21	2.25	-			
PK	2.40194G	109.73	Inf	-Inf	32.10	3	Horizontal	21	2.25	-			
AV	2.40194G	108.97	Inf	-Inf	32.10	3	Horizontal	21	2.25	-			

**BT-BR(1Mbps)**

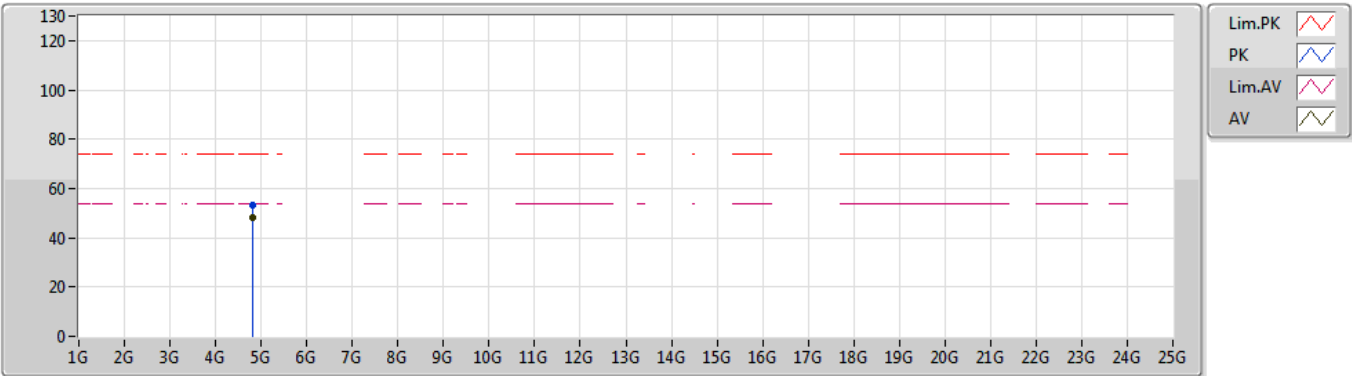
13/06/2019

**2402MHz\_TX**

EUT Y\_1TX  
Setting 0x0f  
03-S-5  
FSP(100019)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	4.80364G	51.16	74.00	-22.84	5.06	3	Vertical	85	1.02	-				
AV	4.80388G	45.31	54.00	-8.69	5.06	3	Vertical	85	1.02	-				

**BT-BR(1Mbps)**

13/06/2019

**2402MHz\_TX**


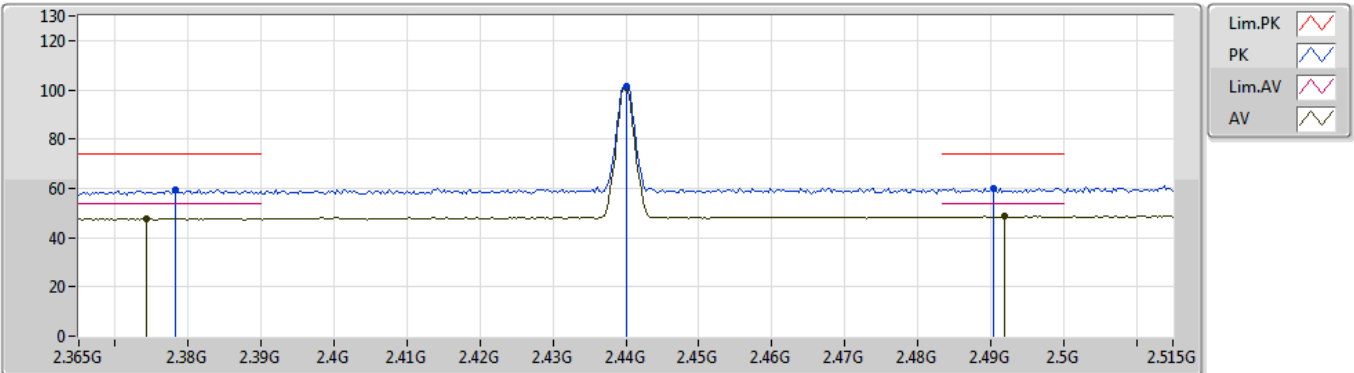
EUT Y\_1TX  
Setting 0x0f  
03-S-5  
FSP(100019)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	4.80416G	53.01	74.00	-20.99	5.06	3	Horizontal	349	2.45	-				
AV	4.80394G	48.16	54.00	-5.84	5.06	3	Horizontal	349	2.45	-				

## BT-BR(1Mbps)

13/06/2019

## 2440MHz\_TX



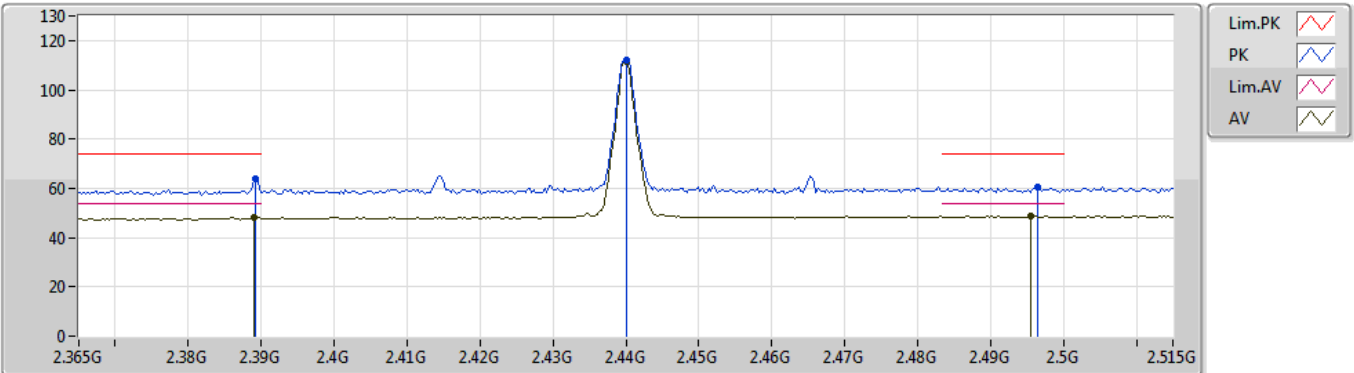
EUT Y\_1TX  
Setting 0x0f  
03-S-5  
FSP(100019)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	2.3782G	59.59	74.00	-14.41	32.03	3	Vertical	212	1.01	-				
AV	2.3743G	47.87	54.00	-6.13	32.02	3	Vertical	212	1.01	-				
PK	2.44G	101.35	Inf	-Inf	32.24	3	Vertical	212	1.01	-				
AV	2.44G	100.62	Inf	-Inf	32.24	3	Vertical	212	1.01	-				
PK	2.4904G	60.21	74.00	-13.79	32.43	3	Vertical	212	1.01	-				
AV	2.4919G	48.61	54.00	-5.39	32.44	3	Vertical	212	1.01	-				

### BT-BR(1Mbps)

13/06/2019

### 2440MHz\_TX



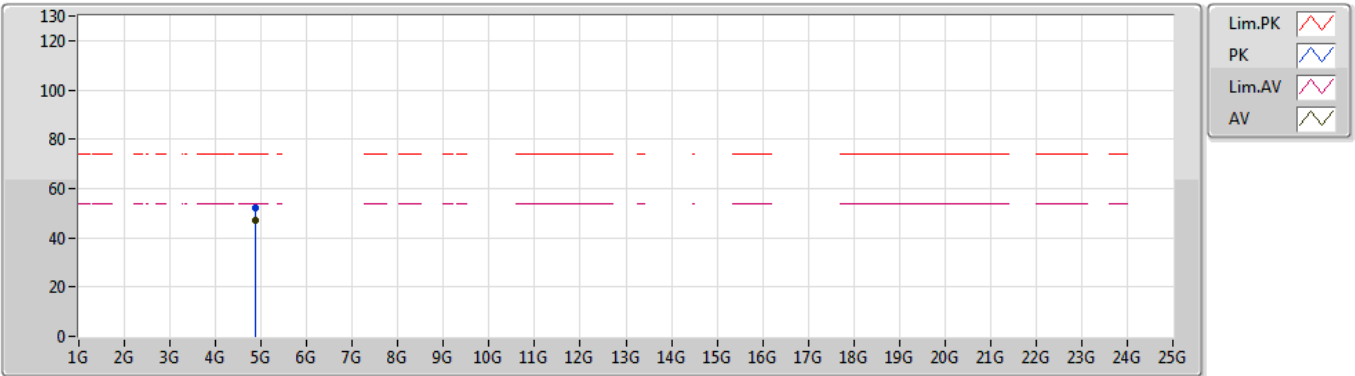
EUT Y\_1TX  
Setting 0x0f  
03-S-5  
FSP(100019)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment
PK	2.3893G	63.94	74.00	-10.06	32.06	3	Horizontal	16	2.72	-
AV	2.389G	48.22	54.00	-5.78	32.06	3	Horizontal	16	2.72	-
PK	2.44G	112.12	Inf	-Inf	32.24	3	Horizontal	16	2.72	-
AV	2.44G	111.25	Inf	-Inf	32.24	3	Horizontal	16	2.72	-
PK	2.4964G	60.44	74.00	-13.56	32.46	3	Horizontal	16	2.72	-
AV	2.4955G	48.68	54.00	-5.32	32.46	3	Horizontal	16	2.72	-

### BT-BR(1Mbps)

13/06/2019

### 2440MHz\_TX



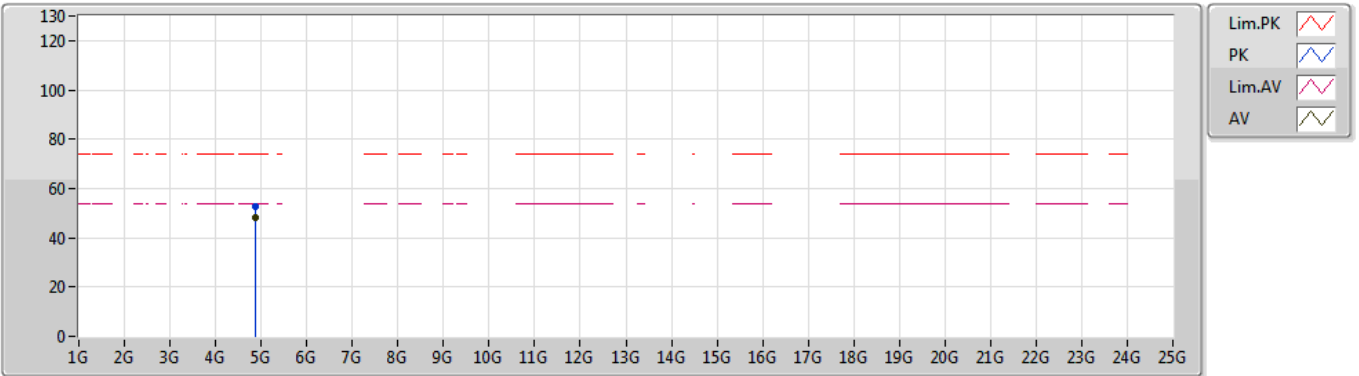
EUT Y\_1TX  
Setting 0x0f  
03-S-5  
FSP(100019)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	4.87957G	52.16	74.00	-21.84	5.25	3	Vertical	131	1.09	-				
AV	4.87966G	46.99	54.00	-7.01	5.25	3	Vertical	131	1.09	-				

### BT-BR(1Mbps)

13/06/2019

### 2440MHz\_TX



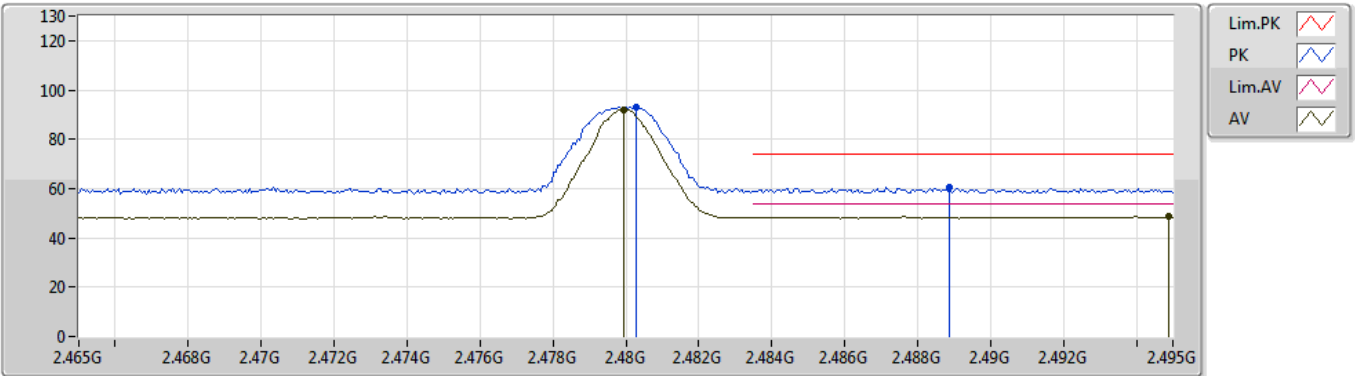
EUT Y\_1TX  
Setting 0x0f  
03-S-5  
FSP(100019)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	4.8801G	52.59	74.00	-21.41	5.25	3	Horizontal	346	2.33	-				
AV	4.87988G	48.03	54.00	-5.97	5.25	3	Horizontal	346	2.33	-				

## BT-BR(1Mbps)

13/06/2019

## 2480MHz\_TX



EUT Y\_1TX  
Setting 0x0e  
03-S-5  
FSP(100019)

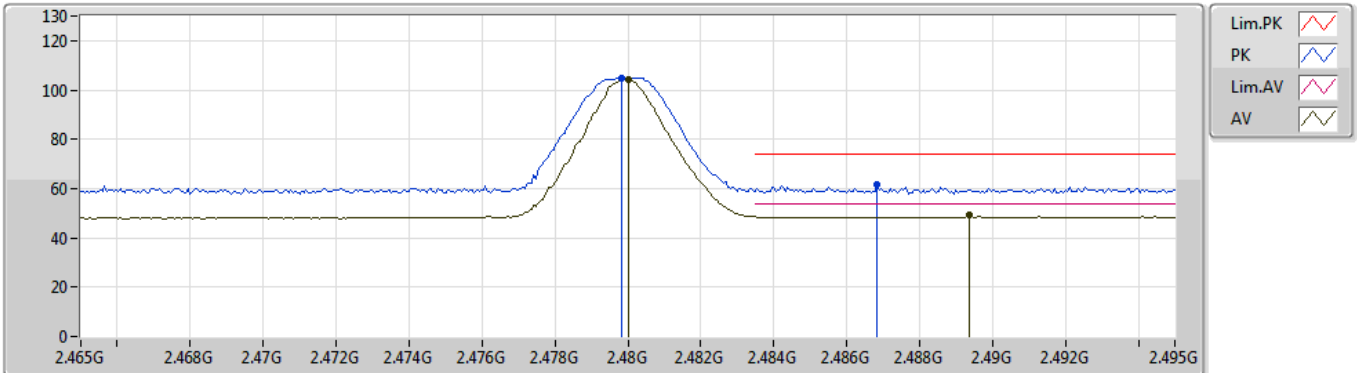
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment			
PK	2.4803G	92.77	Inf	-Inf	32.39	3	Vertical	20	1.50	-			
AV	2.47994G	92.10	Inf	-Inf	32.39	3	Vertical	20	1.50	-			
PK	2.48888G	60.39	74.00	-13.61	32.43	3	Vertical	20	1.50	-			
AV	2.49488G	48.58	54.00	-5.42	32.45	3	Vertical	20	1.50	-			



## BT-BR(1Mbps)

13/06/2019

## 2480MHz\_TX



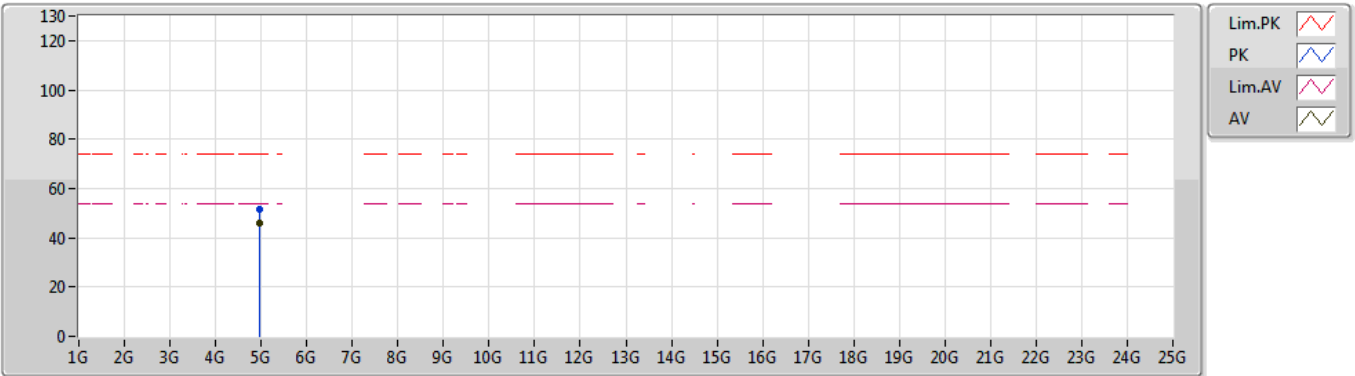
EUT Y\_1TX  
Setting 0x0e  
03-S-5  
FSP(100019)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment			
PK	2.47982G	104.92	Inf	-Inf	32.39	3	Horizontal	9	2.65	-			
AV	2.48G	104.33	Inf	-Inf	32.39	3	Horizontal	9	2.65	-			
PK	2.48684G	61.38	74.00	-12.62	32.42	3	Horizontal	9	2.65	-			
AV	2.48936G	49.14	54.00	-4.86	32.43	3	Horizontal	9	2.65	-			

### BT-BR(1Mbps)

13/06/2019

### 2480MHz\_TX



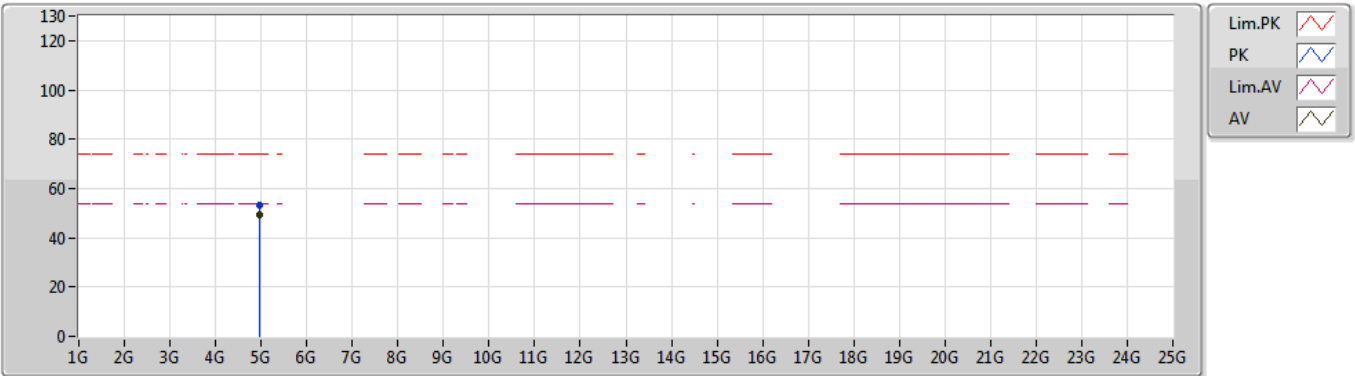
EUT Y\_1TX  
Setting 0x0e  
03-S-5  
FSP(100019)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	4.95991G	51.80	74.00	-22.20	5.44	3	Vertical	54	2.03	-				
AV	4.95988G	46.00	54.00	-8.00	5.44	3	Vertical	54	2.03	-				

## BT-BR(1Mbps)

13/06/2019

## 2480MHz\_TX



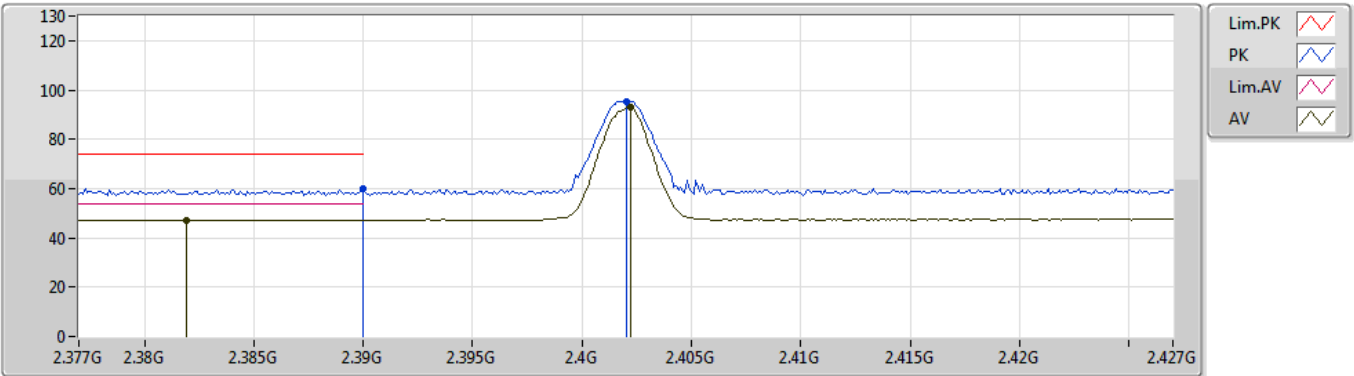
EUT Y\_1TX  
Setting 0x0e  
03-S-5  
FSP(100019)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	4.96008G	53.23	74.00	-20.77	5.44	3	Horizontal	344	2.31	-				
AV	4.95993G	49.29	54.00	-4.71	5.44	3	Horizontal	344	2.31	-				

### BT-EDR(3Mbps)

13/06/2019

### 2402MHz\_TX



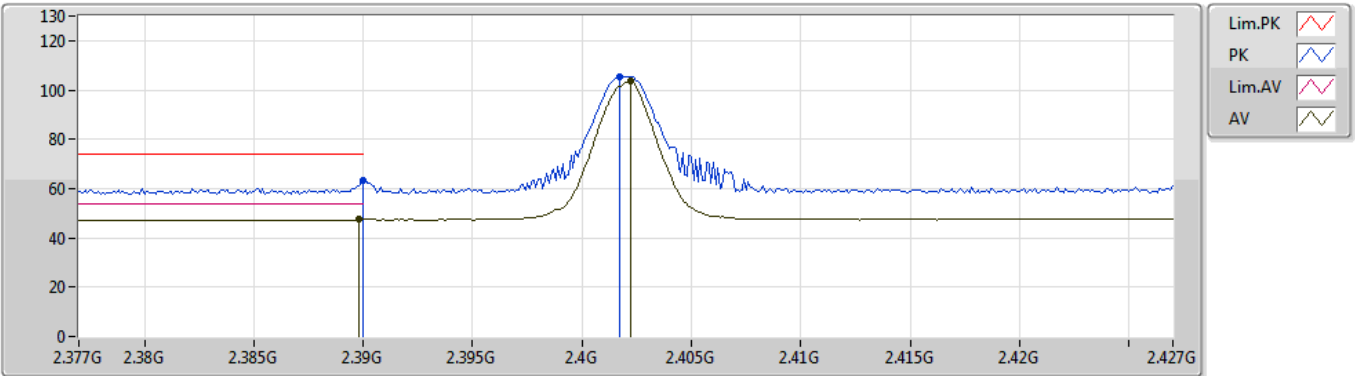
EUT Y\_1TX  
Setting 0x0f  
03-S-5  
FSP(100019)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	2.39G	60.09	74.00	-13.91	32.06	3	Vertical	137	1.01	-				
AV	2.3819G	47.27	54.00	-6.73	32.03	3	Vertical	137	1.01	-				
PK	2.402G	95.33	Inf	-Inf	32.10	3	Vertical	137	1.01	-				
AV	2.4022G	93.21	Inf	-Inf	32.10	3	Vertical	137	1.01	-				

### BT-EDR(3Mbps)

13/06/2019

### 2402MHz\_TX



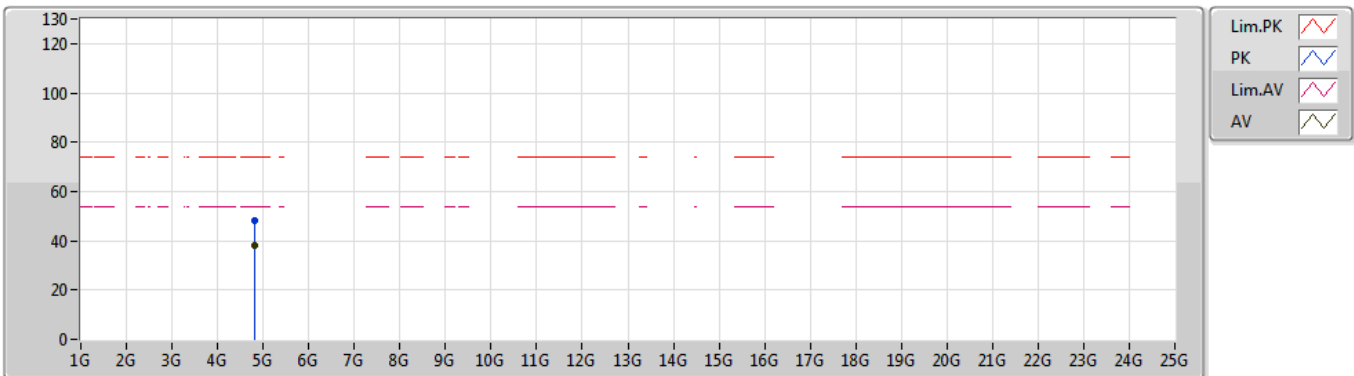
EUT Y\_1TX  
Setting 0x0f  
03-S-5  
FSP(100019)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment			
PK	2.39G	63.15	74.00	-10.85	32.06	3	Horizontal	3	2.23	-			
AV	2.3898G	47.60	54.00	-6.40	32.06	3	Horizontal	3	2.23	-			
PK	2.4017G	105.57	Inf	-Inf	32.10	3	Horizontal	3	2.23	-			
AV	2.4022G	103.51	Inf	-Inf	32.10	3	Horizontal	3	2.23	-			

## BT-EDR(3Mbps)

13/06/2019

## 2402MHz\_TX



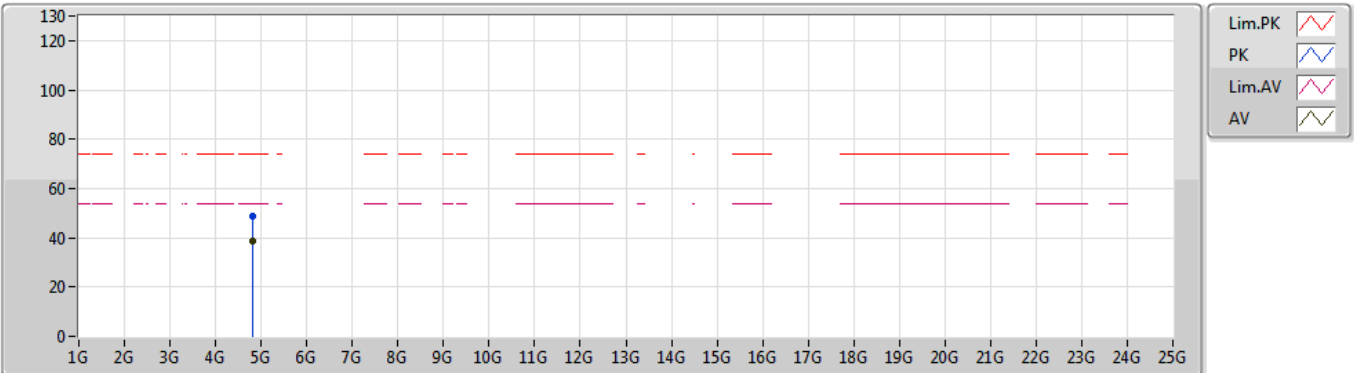
EUT Y\_1TX  
Setting 0x0f  
03-S-5  
FSP(100019)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	4.8041G	48.18	74.00	-25.82	5.06	3	Vertical	117	1.07	-				
AV	4.80392G	37.93	54.00	-16.07	5.06	3	Vertical	117	1.07	-				

## BT-EDR(3Mbps)

13/06/2019

## 2402MHz\_TX



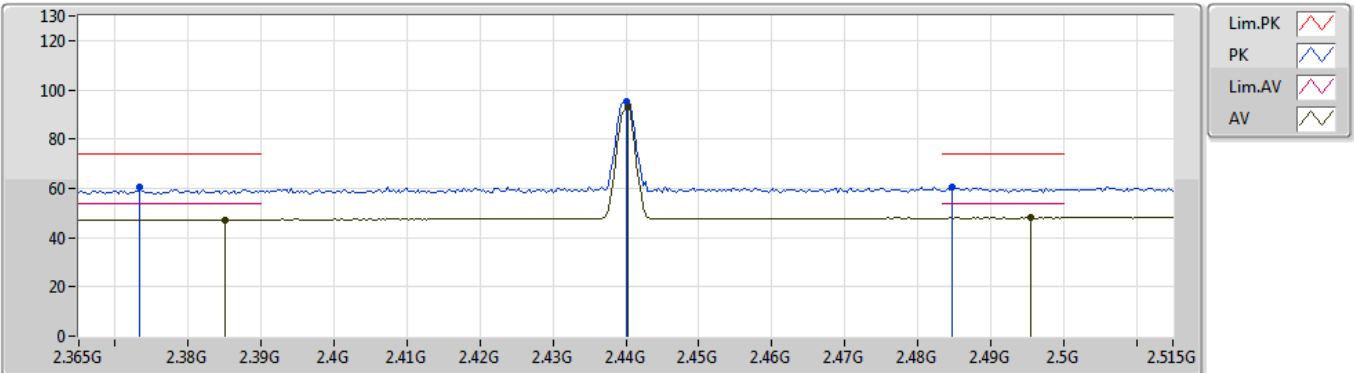
EUT Y\_1TX  
Setting 0x0f  
03-S-5  
FSP(100019)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	4.80334G	48.80	74.00	-25.20	5.06	3	Horizontal	348	2.87	-				
AV	4.80388G	38.77	54.00	-15.23	5.06	3	Horizontal	348	2.87	-				

### BT-EDR(3Mbps)

13/06/2019

### 2440MHz\_TX



EUT Y\_1TX  
Setting 0x0f  
03-S-5  
FSP(100019)

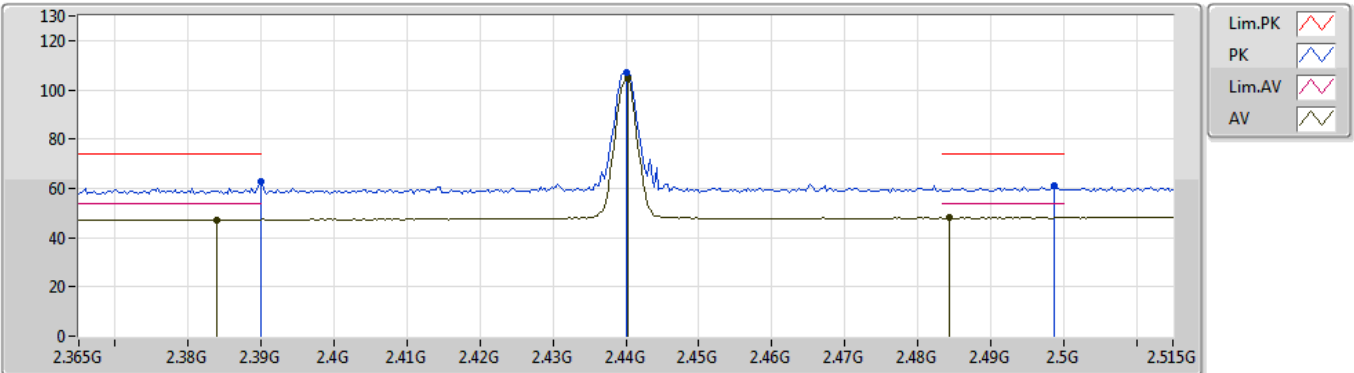
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	2.3734G	60.45	74.00	-13.55	32.02	3	Vertical	215	1.01	-				
AV	2.3851G	47.29	54.00	-6.71	32.05	3	Vertical	215	1.01	-				
PK	2.44G	95.28	Inf	-Inf	32.24	3	Vertical	215	1.01	-				
AV	2.4403G	93.34	Inf	-Inf	32.24	3	Vertical	215	1.01	-				
PK	2.4847G	60.27	74.00	-13.73	32.41	3	Vertical	215	1.01	-				
AV	2.4955G	48.08	54.00	-5.92	32.46	3	Vertical	215	1.01	-				



### BT-EDR(3Mbps)

13/06/2019

### 2440MHz\_TX



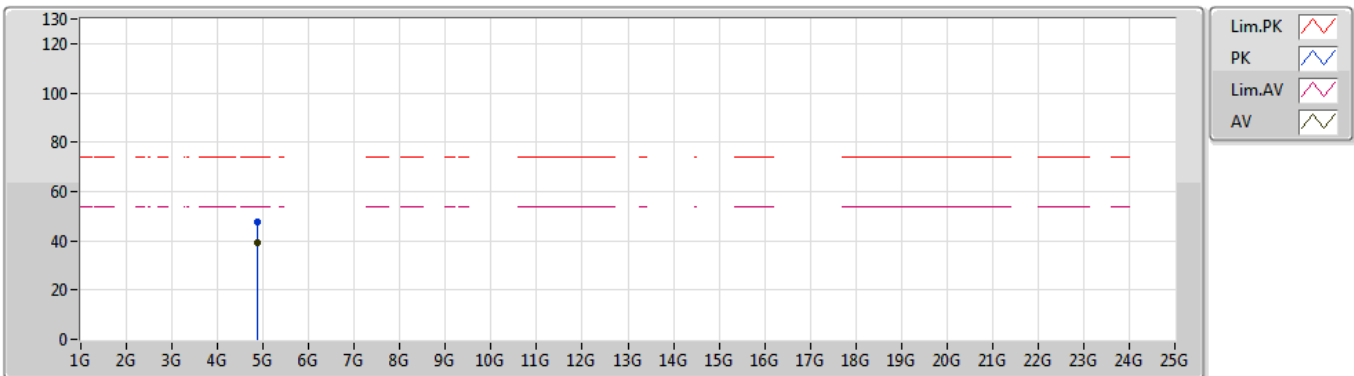
EUT Y\_1TX  
Setting 0x0f  
03-S-5  
FSP(100019)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment
PK	2.3899G	62.63	74.00	-11.37	32.06	3	Horizontal	13	2.99	-
AV	2.3839G	47.32	54.00	-6.68	32.05	3	Horizontal	13	2.99	-
PK	2.44G	106.96	Inf	-Inf	32.24	3	Horizontal	13	2.99	-
AV	2.4403G	104.97	Inf	-Inf	32.24	3	Horizontal	13	2.99	-
PK	2.4988G	61.08	74.00	-12.92	32.47	3	Horizontal	13	2.99	-
AV	2.4844G	48.06	54.00	-5.94	32.41	3	Horizontal	13	2.99	-

## BT-EDR(3Mbps)

13/06/2019

## 2440MHz\_TX



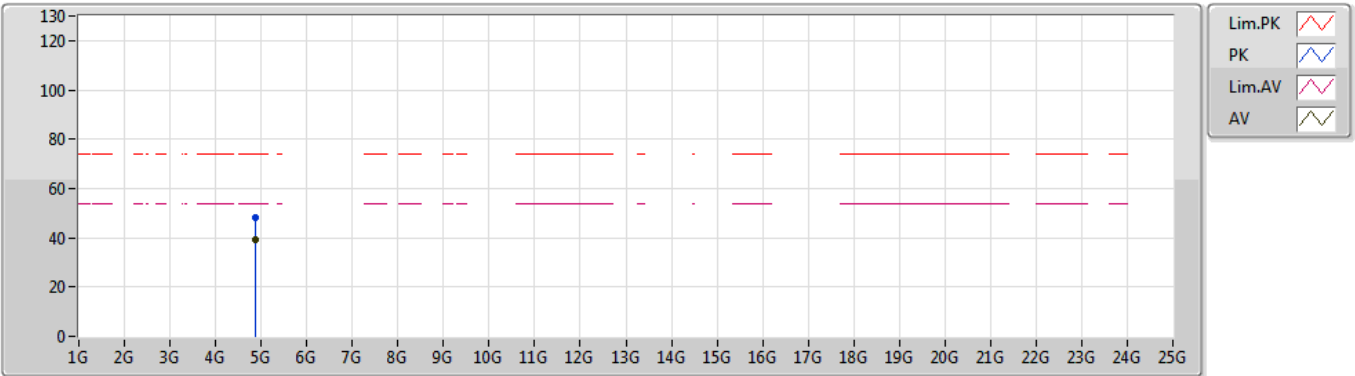
EUT Y\_1TX  
Setting 0x0f  
03-S-5  
FSP(100019)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	4.87996G	47.77	74.00	-26.23	5.25	3	Vertical	132	1.07	-				
AV	4.87996G	38.99	54.00	-15.01	5.25	3	Vertical	132	1.07	-				

### BT-EDR(3Mbps)

13/06/2019

### 2440MHz\_TX



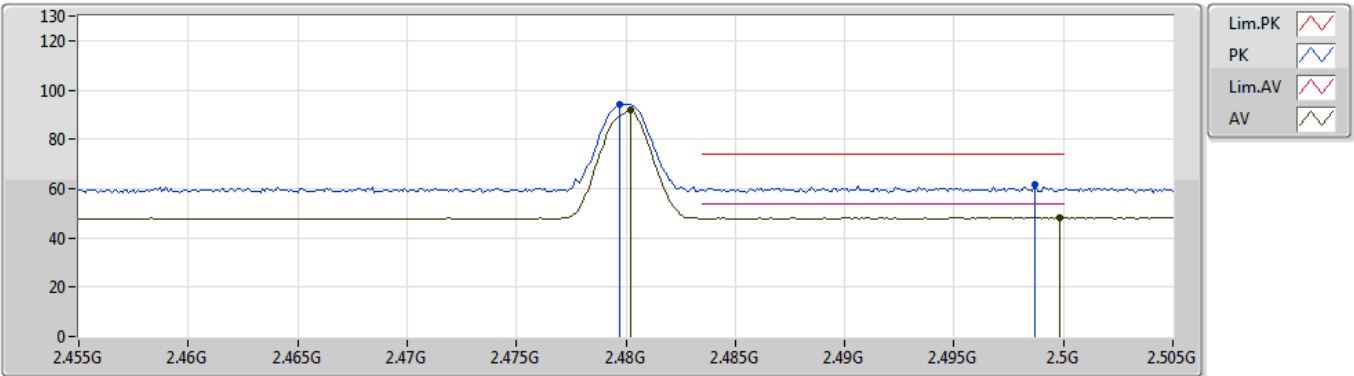
EUT Y\_1TX  
Setting 0x0f  
03-S-5  
FSP(100019)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	4.87942G	48.37	74.00	-25.63	5.25	3	Horizontal	7	2.38	-				
AV	4.87988G	39.30	54.00	-14.70	5.25	3	Horizontal	7	2.38	-				

## BT-EDR(3Mbps)

13/06/2019

## 2480MHz\_TX



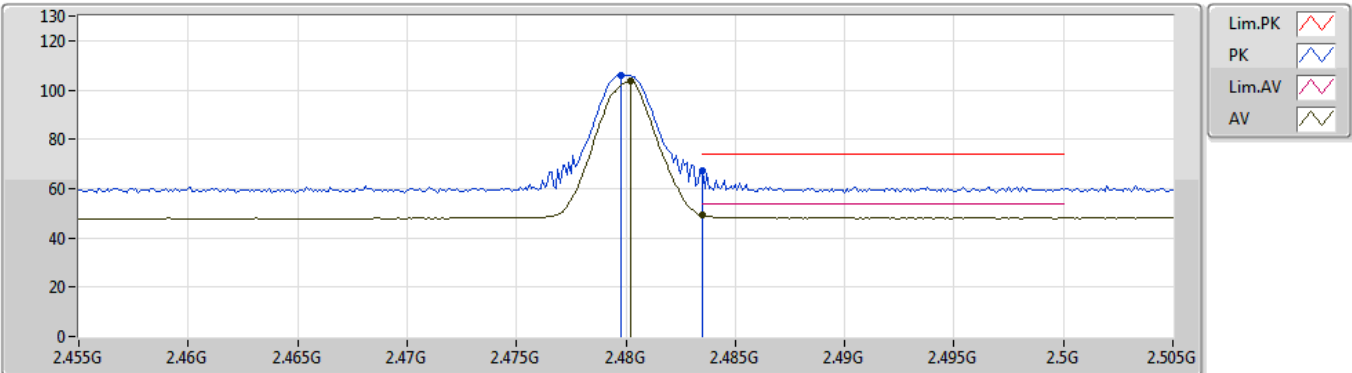
EUT Y\_1TX  
Setting 0x0f  
03-S-5  
FSP(100019)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment			
PK	2.4797G	94.00	Inf	-Inf	32.39	3	Vertical	16	1.49	-			
AV	2.4802G	91.72	Inf	-Inf	32.39	3	Vertical	16	1.49	-			
PK	2.4987G	61.44	74.00	-12.56	32.47	3	Vertical	16	1.49	-			
AV	2.4998G	48.21	54.00	-5.79	32.47	3	Vertical	16	1.49	-			

## BT-EDR(3Mbps)

13/06/2019

## 2480MHz\_TX



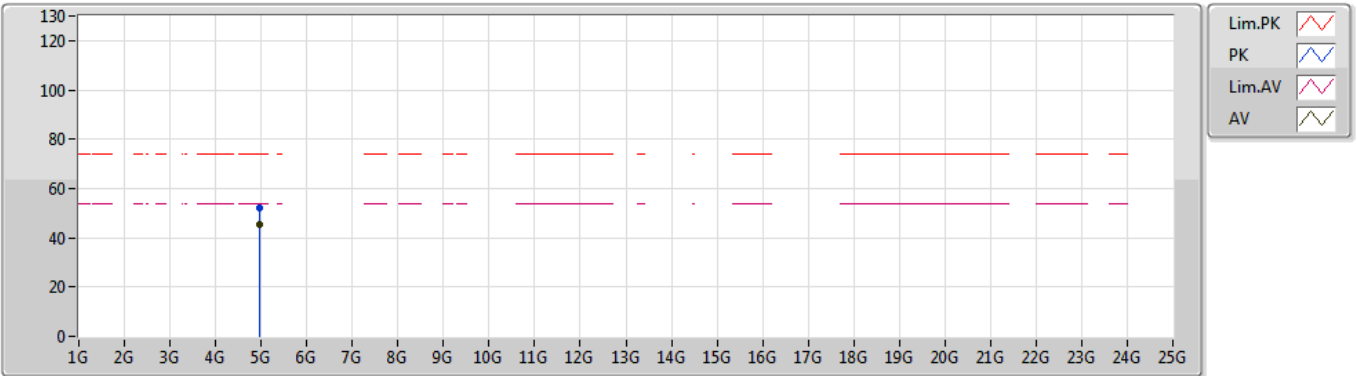
EUT Y\_1TX  
Setting 0x0f  
03-S-5  
FSP(100019)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	2.4798G	106.05	Inf	-Inf	32.39	3	Horizontal	4	2.63	-				
AV	2.4802G	103.80	Inf	-Inf	32.39	3	Horizontal	4	2.63	-				
PK	2.4835G	67.30	74.00	-6.70	32.41	3	Horizontal	4	2.63	-				
AV	2.4835G	49.06	54.00	-4.94	32.41	3	Horizontal	4	2.63	-				

### BT-EDR(3Mbps)

13/06/2019

### 2480MHz\_TX



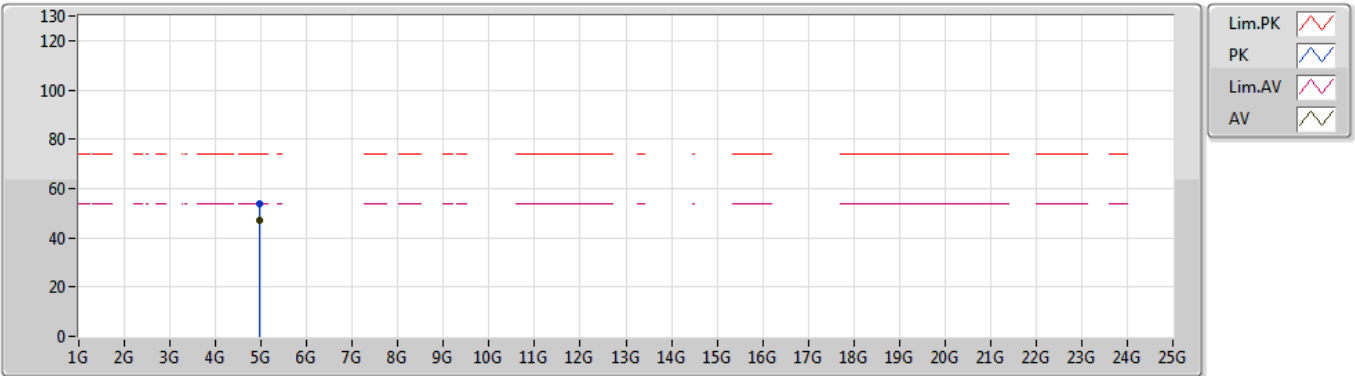
EUT Y\_1TX  
Setting 0x0f  
03-S-5  
FSP(100019)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	4.95977G	52.04	74.00	-21.96	5.44	3	Vertical	134	1.01	-				
AV	4.95999G	45.34	54.00	-8.66	5.44	3	Vertical	134	1.01	-				

### BT-EDR(3Mbps)

13/06/2019

### 2480MHz\_TX



EUT Y\_1TX  
Setting 0x0f  
03-S-5  
FSP(100019)

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	4.96019G	53.71	74.00	-20.29	5.44	3	Horizontal	347	2.36	-				
AV	4.95997G	47.22	54.00	-6.78	5.44	3	Horizontal	347	2.36	-				