

# FCC Test Report

Equipment : PLAYR  
Brand Name : Catapult  
Model No. : PR001  
FCC ID : 2AELY-PR001  
Standard : 47 CFR FCC Part 15.247  
Operating Band : 2400 MHz – 2483.5 MHz  
Function : ☐ Point-to-multipoint; ☒ Point-to-point  
Applicant : KODAPLAY LIMITED  
Unit 1, Block 1, Quayside Business Park, Mill Street  
Dundalk, Co Louth Ireland  
Manufacturer : XAVi Technologies Corporation  
22F., No.69, Sec. 2, Guangfu Rd., Sanchong Dist.,  
New Taipei City 241, Taiwan

The product sample received on Nov. 30, 2017 and completely tested on Jan. 05, 2018. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

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

  
Phoenix Chen / Assistant Manager

## Table of Contents

<b>1</b>	<b>GENERAL DESCRIPTION .....</b>	<b>5</b>
1.1	Information.....	5
1.2	Testing Applied Standards .....	6
1.3	Testing Location Information .....	6
1.4	Measurement Uncertainty .....	6
<b>2</b>	<b>TEST CONFIGURATION OF EUT.....</b>	<b>7</b>
2.1	Test Condition .....	7
2.2	Test Channel Mode .....	7
2.3	The Worst Case Measurement Configuration.....	8
2.4	Accessories .....	8
2.5	Support Equipment.....	8
2.6	Test Setup Diagram .....	9
<b>3</b>	<b>TRANSMITTER TEST RESULT .....</b>	<b>10</b>
3.1	AC Power-line Conducted Emissions .....	10
3.2	DTS Bandwidth.....	12
3.3	Maximum Conducted Output Power .....	13
3.4	Power Spectral Density .....	15
3.5	Emissions in Non-restricted Frequency Bands .....	16
3.6	Emissions in Restricted Frequency Bands.....	17
<b>4</b>	<b>TEST EQUIPMENT AND CALIBRATION DATA .....</b>	<b>21</b>
<b>APPENDIX A. TEST RESULTS OF DTS BANDWIDTH</b>		
<b>APPENDIX B. TEST RESULTS OF MAXIMUM CONDUCTED OUTPUT POWER</b>		
<b>APPENDIX C. TEST RESULTS OF POWER SPECTRAL DENSITY</b>		
<b>APPENDIX D. TEST RESULTS OF EMISSIONS IN NON-RESTRICTED FREQUENCY BANDS</b>		
<b>APPENDIX E. TEST RESULTS OF EMISSIONS IN RESTRICTED FREQUENCY BANDS</b>		
<b>APPENDIX F. TEST PHOTOS</b>		
<b>PHOTOGRAPHS OF EUT V02</b>		

## Summary of Test Result

Conformance Test Specifications				
Report Clause	Ref. Std. Clause	Description	Limit	Result
1.1.2	15.203	Antenna Requirement	FCC 15.203	Complied
3.1	15.207	AC Power-line Conducted Emissions	FCC 15.207	N/A
3.2	15.247(a)	DTS Bandwidth	≥500kHz	Complied
3.3	15.247(b)	Maximum Conducted Output Power	Power [dBm]:30	Complied
3.4	15.247(e)	Power Spectral Density	PSD [dBm/3kHz]:8	Complied
3.5	15.247(d)	Emissions in Non-restricted Frequency Bands	Non-Restricted Bands: >30 dBc	Complied
3.6	15.247(d)	Emissions in Restricted Frequency Bands	Restricted Bands: FCC 15.209	Complied



SPORTON INTERNATIONAL INC.  
TEL : 886-3-3273456  
FAX : 886-3-3270973  
FCC ID: 2AELY-PR001

# 1 General Description

## 1.1 Information

### 1.1.1 RF General Information

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

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

Note:

- ♦ Bluetooth LE uses a GFSK (1Mbps) modulation for DSSS.
- ♦ BWch is the nominal channel bandwidth.

### 1.1.2 Antenna Information

Ant.	Port	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	1	Hsien jinn industry	KO-EM-24-CL-003	Chip Antenna	fixed on board	2

### 1.1.3 EUT Information

Operational Condition	
<b>EUT Power Type</b>	From Battery
Type of EUT	
<input checked="" type="checkbox"/>	Stand-alone
<input type="checkbox"/>	Combined (EUT where the radio part is fully integrated within another device)
	Combined Equipment - Brand Name / Model No.: ...
<input type="checkbox"/>	Plug-in radio (EUT intended for a variety of host systems)
	Host System - Brand Name / Model No.: ...
<input type="checkbox"/>	Other:

### 1.1.4 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) $\geq 1/T$
BT-LE(1Mbps)	0.632	1.993	395.625u	3k

## 1.2 Testing Applied Standards

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

- ♦ 47 CFR FCC Part 15
- ♦ ANSI C63.10-2013
- ♦ KDB 558074 D01 v04

## 1.3 Testing Location Information

Testing Location			
<input checked="" 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
Test site Designation No. TW1190 with FCC.			
<input type="checkbox"/>	JHUBEI	ADD : No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County, Taiwan (R.O.C.)	
		TEL : 886-3-656-9065	FAX : 886-3-656-9085
Test site Designation No. TW0006 with FCC.			

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH07-HY	Ryan	25.5°C / 65%	12/Dec/2017
Radiated	03CH02-HY	Jeff	23.5°C / 65%	05/Jan/2018

## 1.4 Measurement Uncertainty

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

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	3.0 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	4.3 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.9 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.3 dB	Confidence levels of 95%

## 2 Test Configuration of EUT

### 2.1 Test Condition

RF Conducted	Abbreviation	Remark
TnomVnom	Tnom	20°C
-	Vnom	5V




### 2.2 Test Channel Mode

Test Software Version	BlueNRG GUI 2.2.2
-----------------------	-------------------

Mode	Power Setting
BT-LE(1Mbps)	-
2402MHz	7
2440MHz	7
2480MHz	7

## 2.3 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
<b>Tests Item</b>	DTS Bandwidth Maximum Conducted Output Power Power Spectral Density 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		
1	Battery mode		
<b>Operating Mode &gt; 1GHz</b>	CTX		
<b>Orthogonal Planes of EUT</b>	<b>X Plane</b>	<b>Y Plane</b>	<b>Z Plane</b>
			
<b>Worst Planes of EUT</b>	V		

## 2.4 Accessories

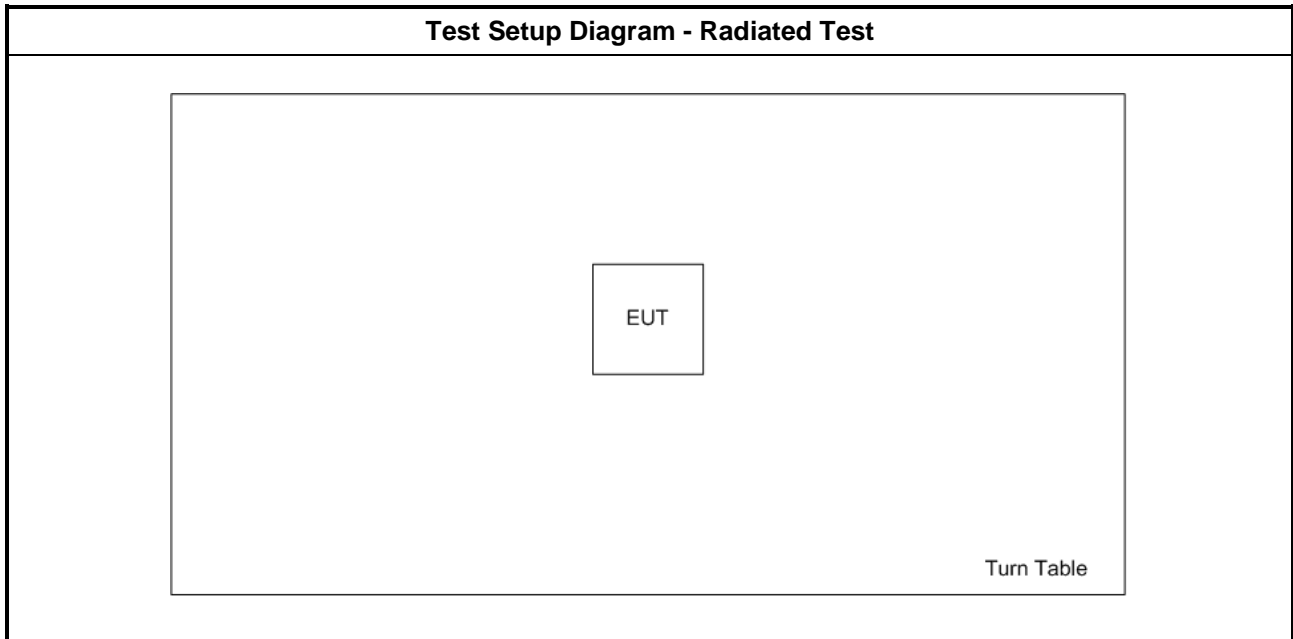
Accessories				
USB Cable	Brand Name	-	Model Name	-
	Signal Line	0.36 meter, shielded cable, w/o ferrite core		
PLAYR (WPC Charger)	Brand Name	Catapult	Model Name	PD001
	Power Rating	-		
	FCC ID	2AELY-PD001		
Battery	Brand Name	-	Model Name	FT36324OP
	Manufacturer	-	SN	BUGEHO4L
	Power Rating	3.8 Vdc, 450 mAh		

## 2.5 Support Equipment

Support Equipment - RF Conducted				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E5410	DOC
2	Adapter for NB	DELL	HA65NM130	DOC



## 2.6 Test Setup Diagram



### 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.

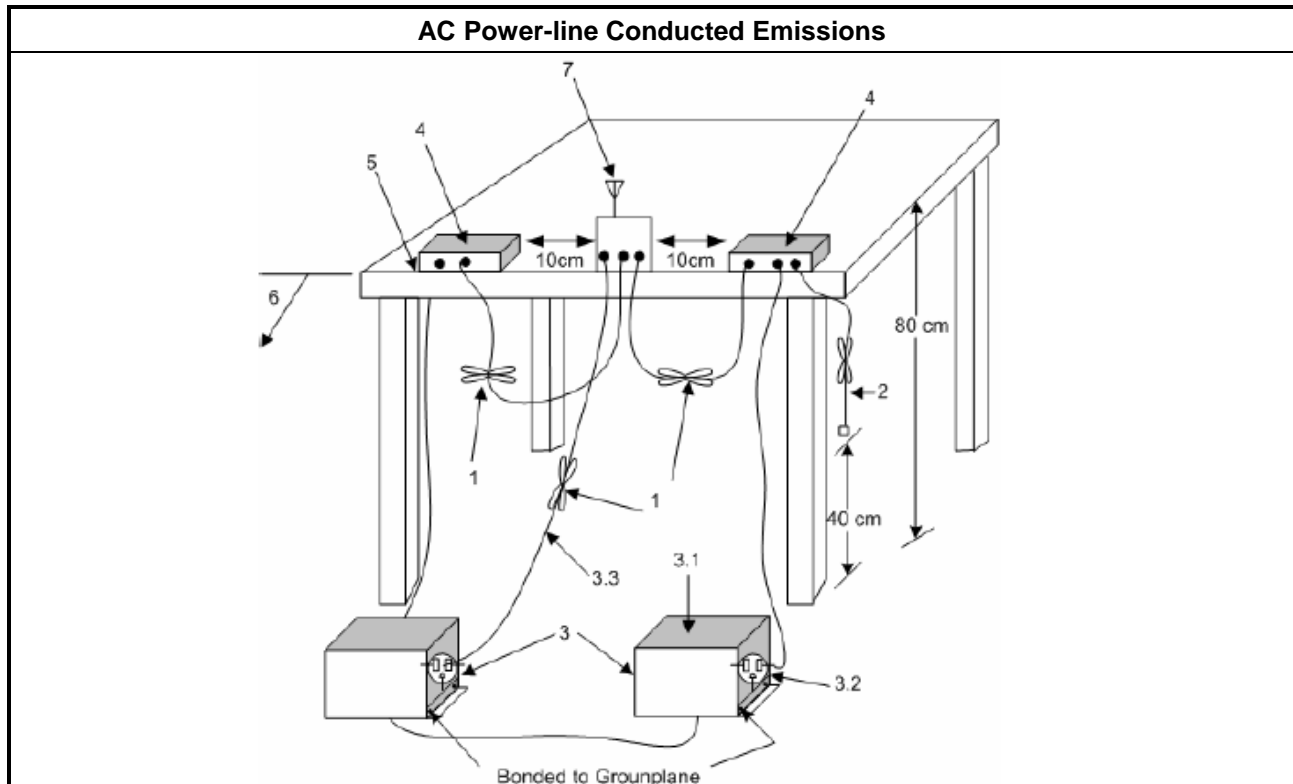
##### 3.1.2 Measuring Instruments

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 foray power-line conducted emissions.

##### 3.1.4 Test Setup





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

Please refer to FCC 15.207 which states, "Measurements to demonstrate compliance with the conducted limits are not required for devices employ battery for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines".  
Therefore, for this device, AC Power Line Conducted Emissions investigation is not required.

## 3.2 DTS Bandwidth

### 3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit	
<b>Systems using digital modulation techniques:</b>	
▪	6 dB bandwidth $\geq$ 500 kHz.

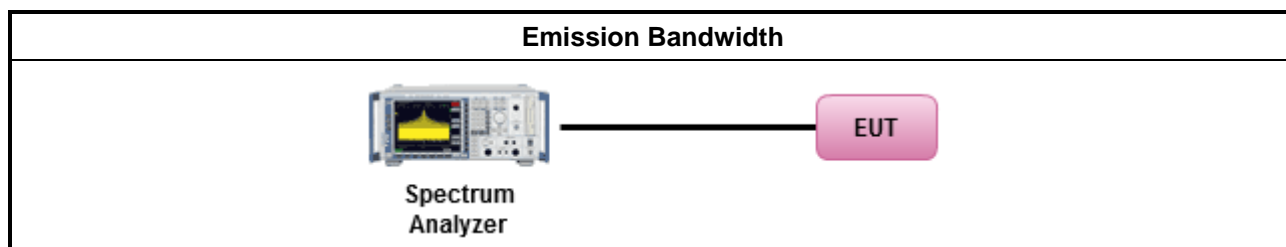
### 3.2.2 Measuring Instruments

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

### 3.2.3 Test Procedures

Test Method	
▪	For the emission bandwidth shall be measured using one of the options below:
<input checked="" type="checkbox"/>	Refer as KDB 558074, clause 8.1 Option 1 for 6 dB bandwidth measurement.
<input type="checkbox"/>	Refer as KDB 558074, clause 8.2 Option 2 for 6 dB bandwidth measurement.
<input type="checkbox"/>	Refer as ANSI C63.10, clause 6.9.3 for occupied bandwidth testing.
<input type="checkbox"/>	Refer as RSS-Gen, clause 6.6 for occupied bandwidth testing.

### 3.2.4 Test Setup



### 3.2.5 Test Result of Emission Bandwidth

Refer as Appendix A

### 3.3 Maximum Conducted Output Power

#### 3.3.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit		
	▪	If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)
	▪	Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm
	▪	Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	▪	Smart antenna system (SAS):
	-	Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	-	Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	-	Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3 + 8$ dB dBm
e.i.r.p. Power Limit:		
	▪	2400-2483.5 MHz Band
	▪	Point-to-multipoint systems (P2M): $P_{eirp} \leq 36$ dBm (4 W)
	▪	Point-to-point systems (P2P): $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX}])$ dBm
	▪	Smart antenna system (SAS)
	-	Single beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	-	Overlap beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	-	Aggregate power on all beams: $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX} + 8])$ dBm
$P_{Out}$ = maximum peak conducted output power or maximum conducted output power in dBm, $G_{TX}$ = the maximum transmitting antenna directional gain in dBi.		

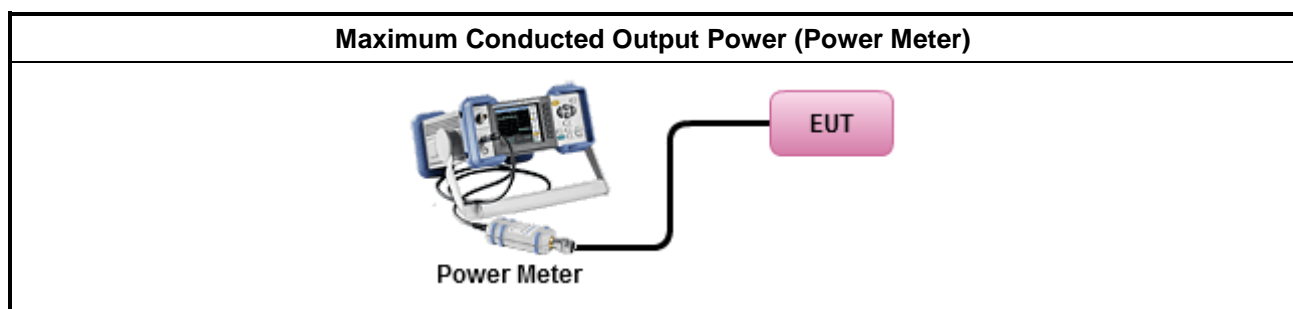
#### 3.3.2 Measuring Instruments

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

### 3.3.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> <li>Maximum Peak Conducted Output Power</li> </ul>	
<input type="checkbox"/>	Refer as KDB 558074, clause 9.1.1 Option 1 (RBW ≥ EBW method).
<input type="checkbox"/>	Refer as KDB 558074, clause 9.1.2 Option 2 (integrated band power method)
<input type="checkbox"/>	Refer as KDB 558074, clause 9.1.3 Option 3 (peak power meter for VBW ≥ DTS BW)
<ul style="list-style-type: none"> <li>Maximum Average Conducted Output Power</li> </ul>	
Duty cycle ≥ 98%	
<input type="checkbox"/>	Refer as KDB 558074, clause 9.2.2.4 Method AVGSA-2 (spectral trace averaging).
Duty cycle < 98%	
<input type="checkbox"/>	Refer as KDB 558074, clause 9.2.2.5 Method AVGSA-2 Alt. (slow sweep speed)
RF power meter and average over on/off periods with duty factor or gated trigger	
<input checked="" type="checkbox"/>	Refer as KDB 558074, clause 9.2.3.1 Method AVGPM (using an RF average power meter).
<ul style="list-style-type: none"> <li>For conducted measurement.</li> </ul>	
<ul style="list-style-type: none"> <li>If the EUT supports multiple transmit chains using options given below: Refer as KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.</li> </ul>	
<ul style="list-style-type: none"> <li>If multiple transmit chains, EIRP calculation could be following as methods:  <math display="block">P_{total} = P_1 + P_2 + \dots + P_n</math> (calculated in linear unit [mW] and transfer to log unit [dBm])  <math display="block">EIRP_{total} = P_{total} + DG</math> </li> </ul>	

### 3.3.4 Test Setup



### 3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix B

### 3.4 Power Spectral Density

#### 3.4.1 Power Spectral Density Limit

Power Spectral Density Limit	
▪	Power Spectral Density (PSD) $\leq 8$ dBm/3kHz

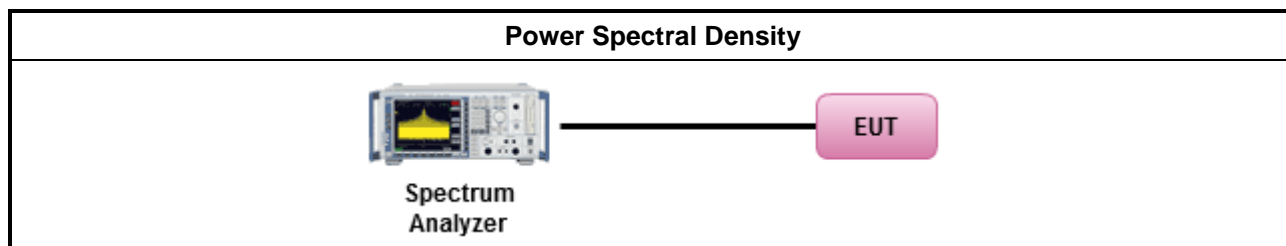
#### 3.4.2 Measuring Instruments

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

#### 3.4.3 Test Procedures

Test Method	
▪	Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option).
<input checked="" type="checkbox"/>	Refer as KDB 558074, clause 10.2 Method PKPSD (RBW=3-100kHz; Detector=peak).
▪	For conducted measurement.
▪	If The EUT supports multiple transmit chains using options given below:
▪	Measure and sum the spectra across the outputs. Refer as KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the NTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.

#### 3.4.4 Test Setup



#### 3.4.5 Test Result of Power Spectral Density

Refer as Appendix C

### 3.5 Emissions in Non-restricted Frequency Bands

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

Un-restricted Band Emissions Limit	
RF output power procedure	Limit (dB)
Peak output power procedure	20
Average output power procedure	30
<p>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.</p> <p>Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.</p>	

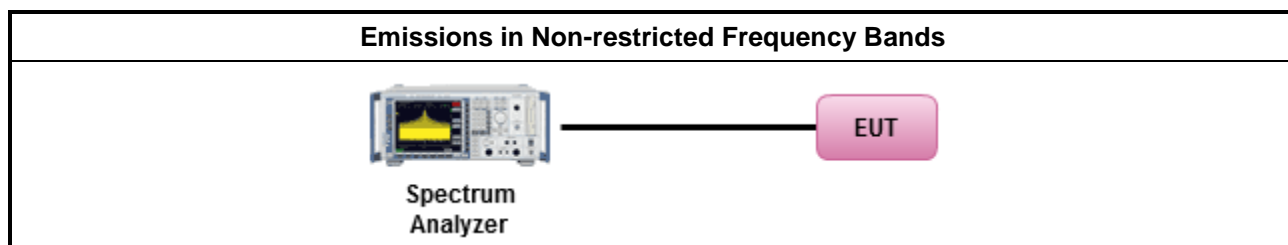
#### 3.5.2 Measuring Instruments

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

#### 3.5.3 Test Procedures

Test Method
<ul style="list-style-type: none"> <li>Refer as KDB 558074, clause 11 for unwanted emissions into non-restricted bands.</li> </ul>

#### 3.5.4 Test Setup



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

Refer as Appendix D



### 3.6 Emissions in Restricted Frequency Bands

#### 3.6.1 Emissions in Restricted Frequency Bands Limit

Restricted Band Emissions Limit			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements 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.

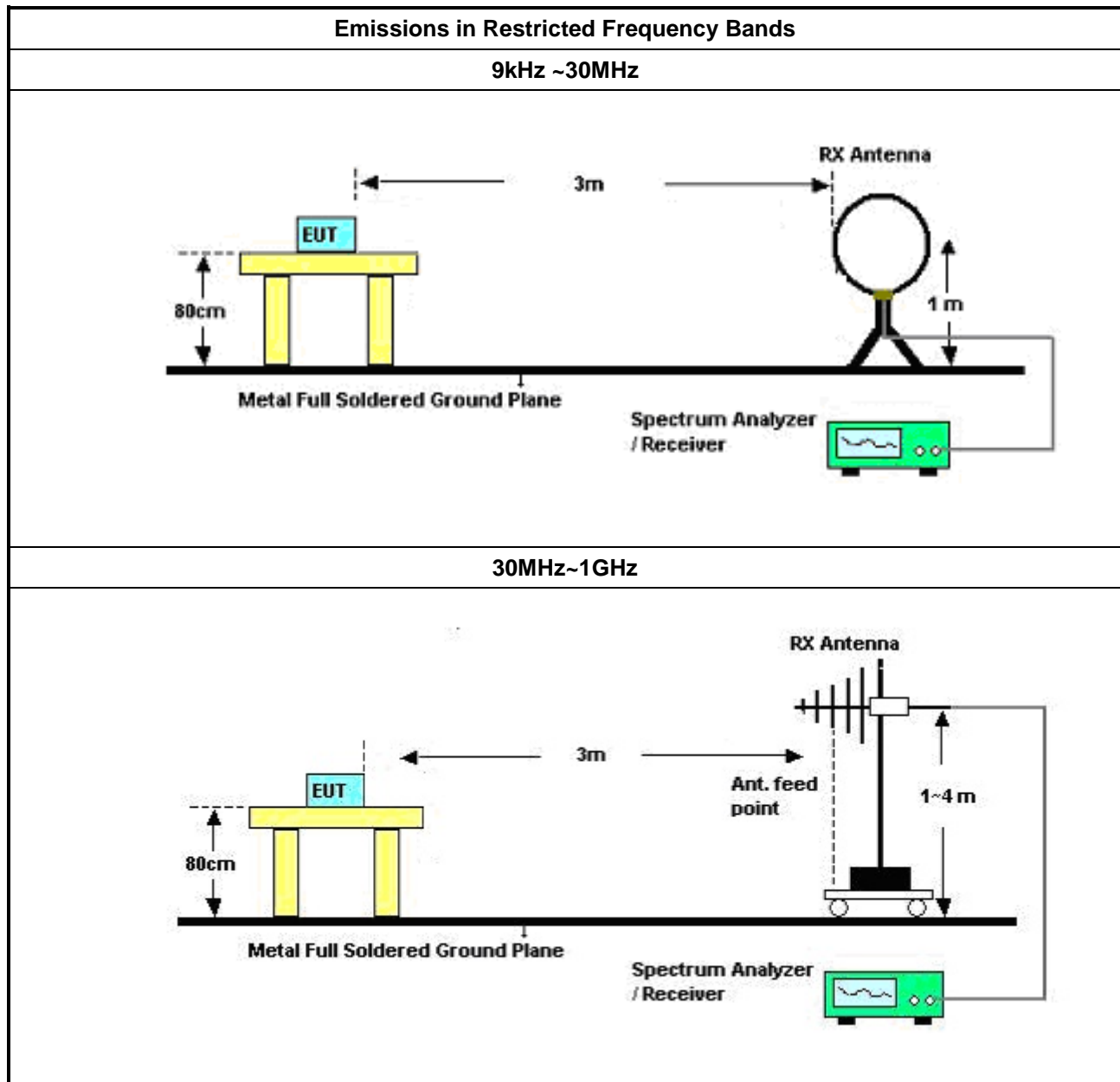
#### 3.6.2 Measuring Instruments

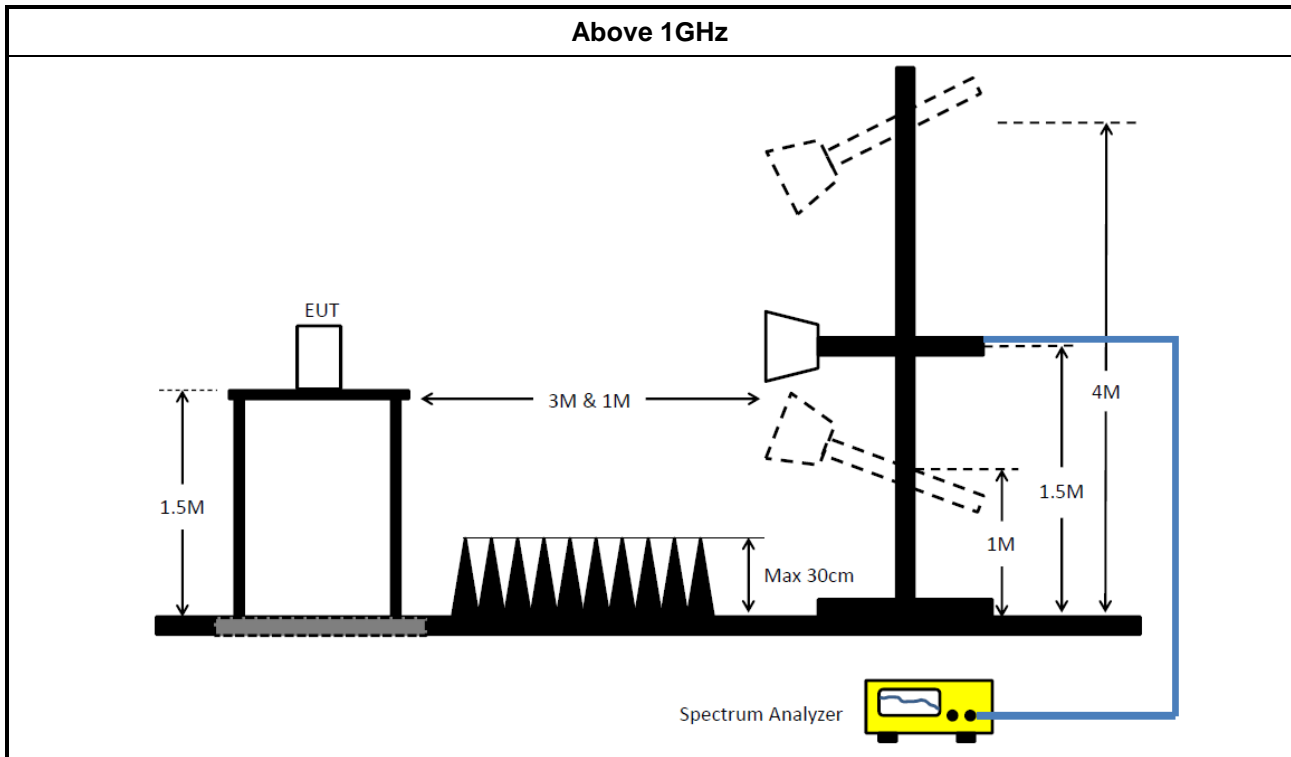
Refer a test equipment and calibration data table in this test report.

### 3.6.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> <li>The average emission levels shall be measured in [duty cycle <math>\geq 98</math> or duty factor].</li> </ul>	
<ul style="list-style-type: none"> <li>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.</li> </ul>	
<ul style="list-style-type: none"> <li>For the transmitter unwanted emissions shall be measured using following options below:</li> </ul>	
	<ul style="list-style-type: none"> <li>Refer as KDB 558074, clause 12 for unwanted emissions into restricted bands.</li> </ul>
	<input checked="" type="checkbox"/> Refer as KDB 558074, clause 12.2.5.3 (ANSI C63.10, clause 4.1.4.2.3), Reduced VBW $\geq 1/T$ .
	<input checked="" type="checkbox"/> Refer as KDB 558074, clause 12.2.4 measurement procedure peak limit.
<ul style="list-style-type: none"> <li>For the transmitter band-edge emissions shall be measured using following options below:</li> </ul>	
	<ul style="list-style-type: none"> <li>Refer as KDB 558074 clause 13.1, When the performing peak or average radiated measurements, emissions within 2 MHz of the authorized band edge may be measured using the marker-delta method described below.</li> </ul>
	<ul style="list-style-type: none"> <li>Refer as KDB 558074, clause 13.2 (ANSI C63.10, clause 6.10.6) for marker-delta method for band-edge measurements.</li> </ul>
	<ul style="list-style-type: none"> <li>Refer as KDB 558074, clause 13.3 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).</li> </ul>
<ul style="list-style-type: none"> <li>For conducted and cabinet radiation measurement, refer as KDB 558074, clause 12.2.2.</li> </ul>	
	<ul style="list-style-type: none"> <li>For conducted unwanted emissions into restricted bands (absolute emission limits). Devices with multiple transmit chains using options given below: (1) Measure and sum the spectra across the outputs or (2) Measure and add 10 log(N) dB</li> </ul>
	<ul style="list-style-type: none"> <li>For KDB 662911 The methodology described here may overestimate array gain, thereby resulting in apparent failures to satisfy the out-of-band limits even if the device is actually compliant. In such cases, compliance may be demonstrated by performing radiated tests around the frequencies at which the apparent failures occurred.</li> </ul>

### 3.6.4 Test Setup





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

Refer as Appendix E

## 4 Test Equipment and Calibration Data

### Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSP40	100305	9KHz ~ 40GHz	12/Dec/2017	11/Dec/2018
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30MHz ~ 1GHz 3m	20/Oct/2017	19/Oct/2018
3m Semi Anechoic	SIDT FRANKONIA	SAC-3M	03CH02-HY	1GHz ~ 18GHz	27/Oct/2017	26/Oct/2018
Amplifier	Agilent	8447D	2944A11149	100kHz ~ 1.3GHz	29/Jun/2017	28/Jun/2018
RF Cable-R03m	Jye Bao	RG142	CB017	9kHz ~ 1GHz	26/Jan/2017	25/Jan/2018
RF Cable-high	SUHNER	SUCOFLEX104	MY34918/4	1GHz ~ 40GHz	26/Jan/2017	25/Jan/2018
Amplifier	Agilent	8449B	3008A02602	1GHz ~ 26.5GHz	19/Sep/2017	18/Sep/2018
Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 01543	1GHz ~ 18GHz	11/May/2017	10/May/2018
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170221	18GHz ~ 40GHz	06/Feb/2017	05/Feb/2018
Bilog Antenna	SCHAFFNER	CBL 6112B	2723	30MHz ~ 1GHz	09/Sep/2017	8/Sep/2018
Receiver	R&S	ESU3	102052	9kHz ~ 3.6GHz	29/Apr/2017	28/Apr/2018
Loop Antenna	TESEQ	HLA 6120	24155	9 kHz~30 MHz	03/Feb/2017	02/Feb/2018

### Instrument for Conducted Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101515	9kHz~40GHz	08/Dec/2017	07/Dec/2018
Power Sensor	Anritsu	MA2411B	1339407	300MHz ~ 40GHz	10/May/2017	09/May/2018
Power Meter	Anritsu	ML2495A	1517010	300MHz ~ 40GHz	06/Nov/2017	05/Nov/2018
RF Cable-0.2m	HUBER+SUHNER	SUCOFLEX_104	MY10709/4	30MHz ~ 26.5GHz	25/Aug/2017	24/Aug/2018
RF Cable-0.2m	HUBER+SUHNER	SUCOFLEX_104	MY10712/4	30MHz ~ 26.5GHz	25/Aug/2017	24/Aug/2018
RF Cable-0.5m	HUBER+SUHNER	SUCOFLEX_104	MY10713/4	30MHz ~ 26.5GHz	25/Aug/2017	24/Aug/2018
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	27/Jul/2017	26/Jul/2018

**Summary**

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
BT-LE(1Mbps)	708.75k	1.031M	1M03F1D	691.25k	1.024M

**Max-N dB** = Maximum 6dB down bandwidth; **Max-OBW** = Maximum 99% occupied bandwidth;

**Min-N dB** = Minimum 6dB down bandwidth; **Min-OBW** = Minimum 99% occupied bandwidth;

**Result**

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	691.25k	1.031M
2440MHz	Pass	500k	692.5k	1.024M
2480MHz	Pass	500k	708.75k	1.031M

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

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

12/12/2017

Ch Freq  
2.402GHz


Span  
2.5MHz

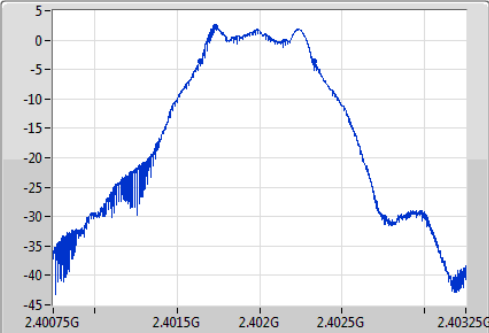
RBW  
100kHz

VBW  
300kHz

Sweep Time  
100ms

Detector Type  
Peak

Port1 



Ch Freq  
2.402GHz

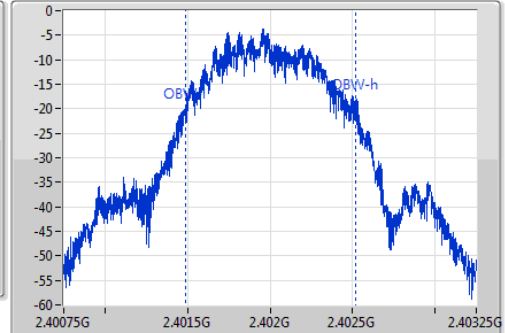
Span  
2.5MHz

RBW  
20kHz

VBW  
100kHz

Sweep Time  
100ms

Detector Type  
Sample



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
691.25k	2.401639G	2.40233G	1.031M	2.401487G	2.402517G	500k	1

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

12/12/2017

Ch Freq  
2.44GHz

Span  
2.5MHz

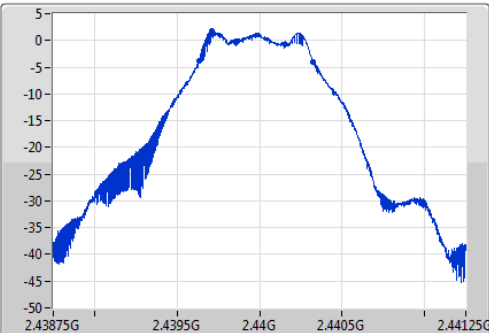
RBW  
100kHz

VBW  
300kHz

Sweep Time  
100ms

Detector Type  
Peak

Port1 



Ch Freq  
2.44GHz

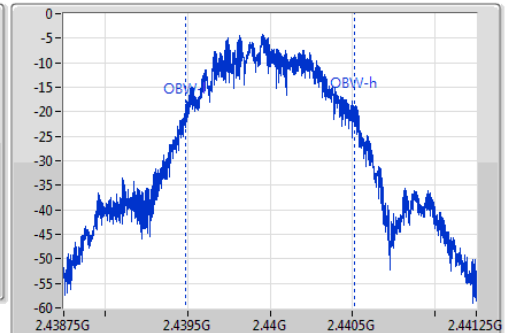
Span  
2.5MHz

RBW  
20kHz

VBW  
100kHz

Sweep Time  
100ms

Detector Type  
Sample



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
692.5k	2.439633G	2.440325G	1.024M	2.439489G	2.440513G	500k	1

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

12/12/2017

Ch Freq  
2.48GHz


Span  
2.5MHz

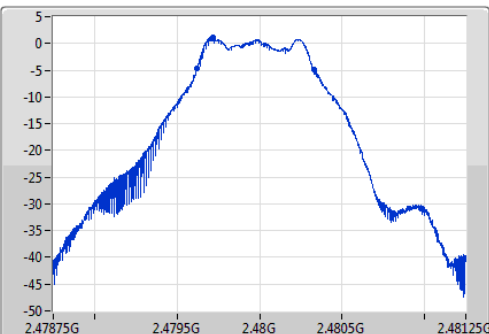
RBW  
100kHz

VBW  
300kHz

Sweep Time  
100ms

Detector Type  
Peak

Port1 



Ch Freq  
2.48GHz

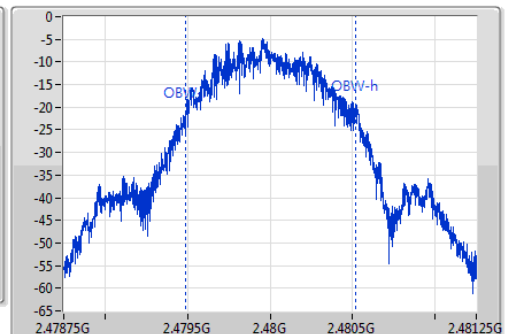
Span  
2.5MHz

RBW  
20kHz

VBW  
100kHz

Sweep Time  
100ms

Detector Type  
Sample



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
708.75k	2.47962G	2.480329G	1.031M	2.479489G	2.48052G	500k	1

**Summary**

Mode	Power	Power
	(dBm)	(W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	2.16	0.00164

**Result**

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	2.00	2.16	30.00
2440MHz	Pass	2.00	1.64	30.00
2480MHz	Pass	2.00	1.16	30.00



**Summary**

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-13.19

RBW=3kHz.

**Result**

Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	2.00	-14.31	8.00
2440MHz	Pass	2.00	-13.19	8.00
2480MHz	Pass	2.00	-14.24	8.00

RBW=3kHz.

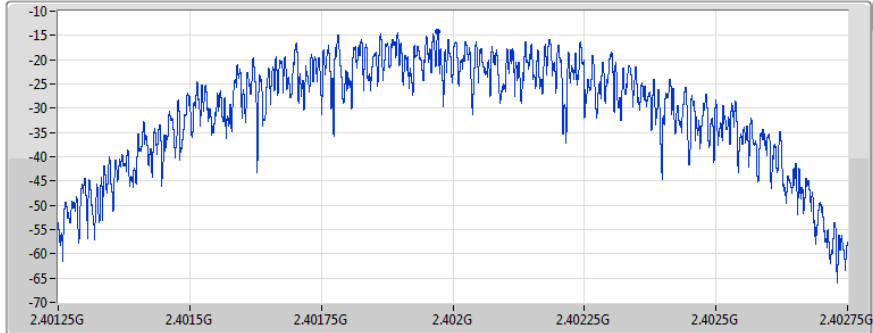
### BT-LE(1Mbps)

2402MHz

PSD

12/12/2017

Ch Freq  
2.402GHz  
Span  
1.5MHz  
RBW  
3kHz  
VBW  
10kHz  
Sweep Time  
32.1ms  
Detector Type  
Peak



Port 1

Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-14.31	-14.31	-14.31

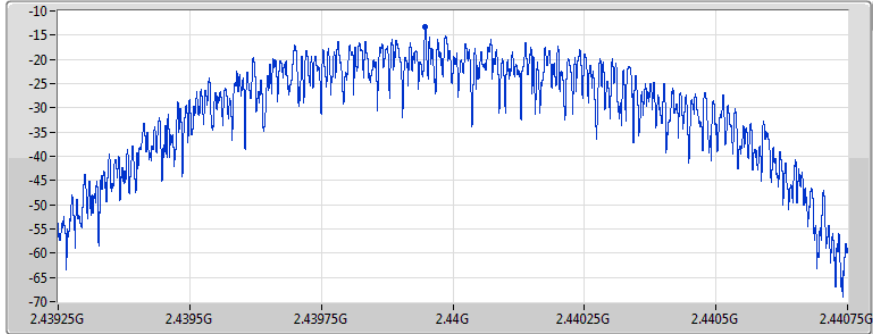
### BT-LE(1Mbps)

2440MHz

PSD

12/12/2017

Ch Freq  
2.44GHz  
Span  
1.5MHz  
RBW  
3kHz  
VBW  
10kHz  
Sweep Time  
32.1ms  
Detector Type  
Peak



Port 1

Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-13.19	-13.19	-13.19

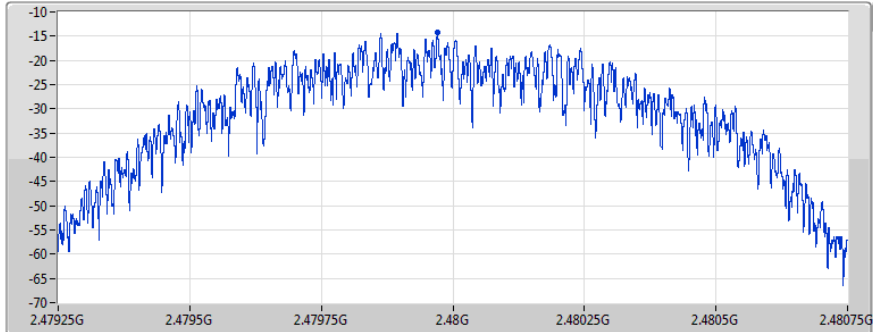
### BT-LE(1Mbps)

2480MHz

PSD

12/12/2017

Ch Freq  
2.48GHz  
Span  
1.5MHz  
RBW  
3kHz  
VBW  
10kHz  
Sweep Time  
32.1ms  
Detector Type  
Peak



Port 1

Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-14.24	-14.24	-14.24

**Summary**

Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	2.40167G	2.29	-27.71	2.398G	-52.20	2.399736G	-38.22	2.484248G	-58.64	24.496238G	-53.25	1

**Result**

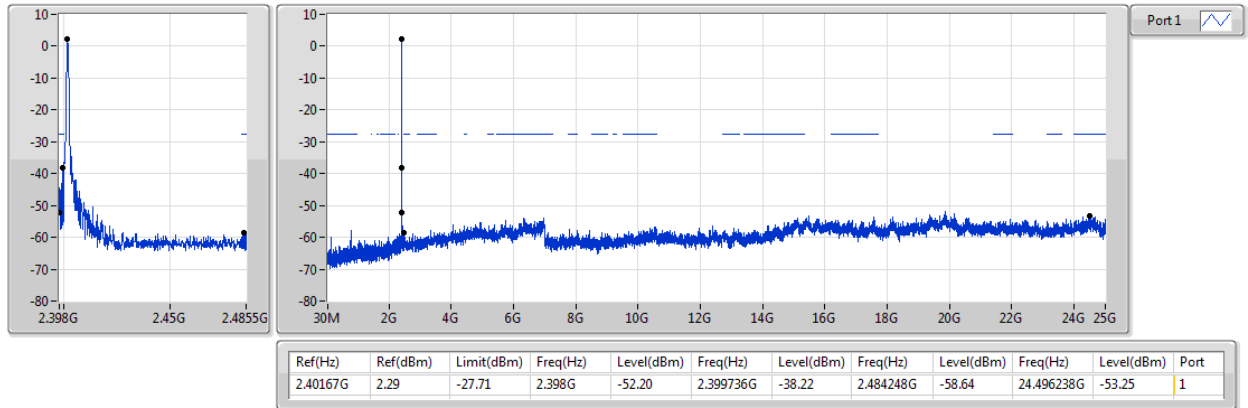
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.40167G	2.29	-27.71	2.398G	-52.20	2.399736G	-38.22	2.484248G	-58.64	24.496238G	-53.25	1
2440MHz	Pass	2.40167G	2.29	-27.71	2.088976G	-59.74	2.399544G	-59.41	2.485452G	-58.27	24.563782G	-53.04	1
2480MHz	Pass	2.40167G	2.29	-27.71	775.92M	-58.36	2.398056G	-58.69	2.483756G	-41.83	2.4855G	-51.11	1

### BT-LE(1Mbps)

CSE NdB

2402MHz

12/12/2017

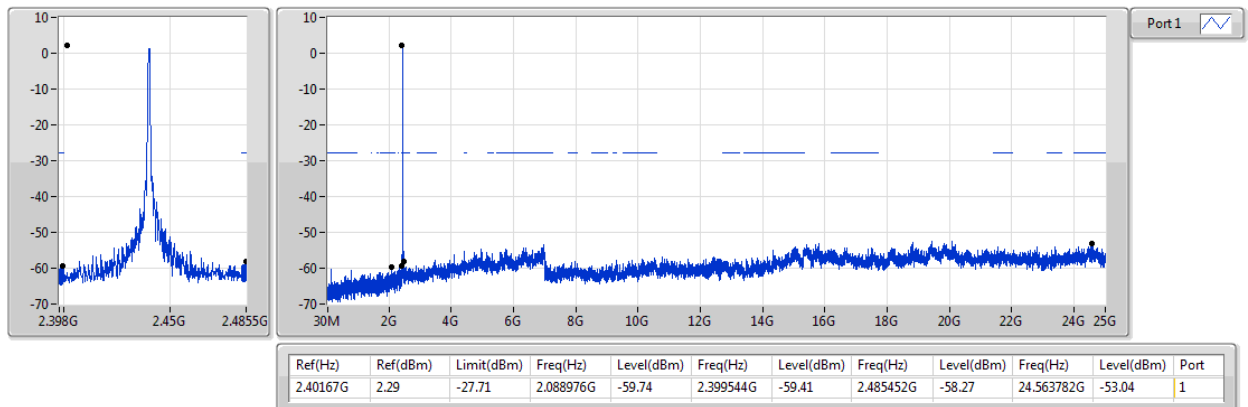


### BT-LE(1Mbps)

CSE NdB

2440MHz

12/12/2017

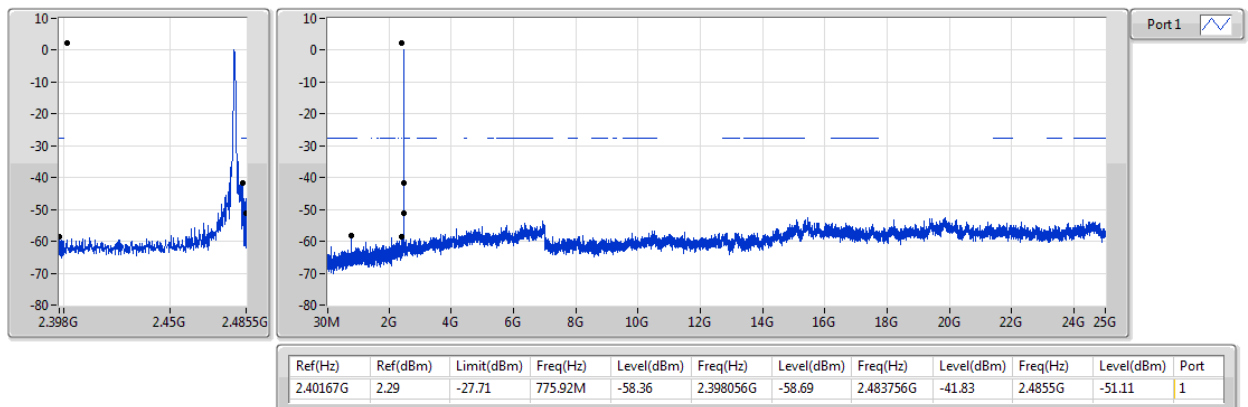


### BT-LE(1Mbps)

CSE NdB

2480MHz

12/12/2017



**Summary**

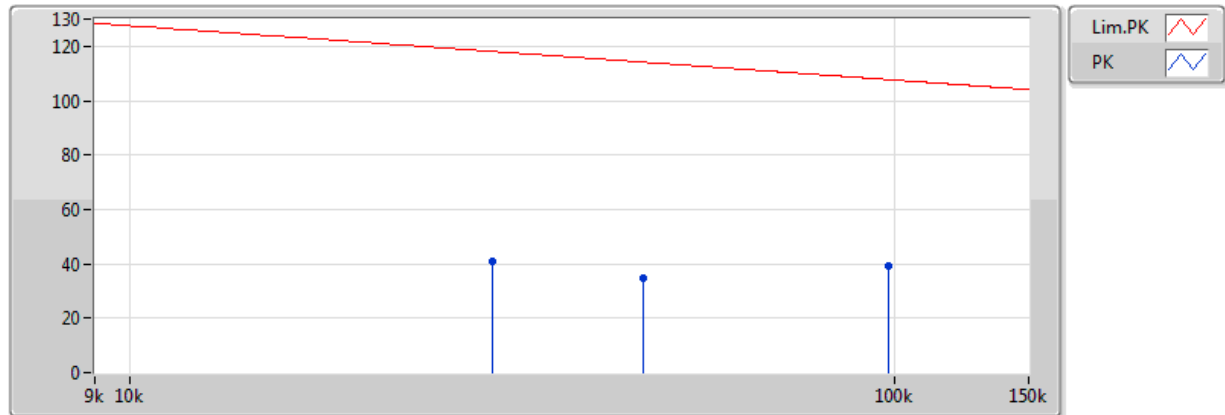
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	PK	34.217391M	34.78	40.00	-5.22	-6.11	3	Horizontal	360	1.00	-

**Result**

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-
2440MHz	Pass	PK	34.217391M	34.78	40.00	-5.22	-6.11	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	143.869565M	34.29	43.50	-9.21	-9.94	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	256.333333M	33.47	46.00	-12.53	-6.64	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	455.956522M	33.33	46.00	-12.67	-2.81	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	479.855072M	33.70	46.00	-12.30	-2.26	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	800.376812M	32.28	46.00	-13.72	1.46	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	29.868k	40.76	118.09	-77.33	22.07	3	Vertical	0	1.00	-
2440MHz	Pass	PK	47.07k	34.89	114.13	-79.24	21.29	3	Vertical	0	1.00	-
2440MHz	Pass	PK	98.112k	39.43	107.75	-68.32	20.79	3	Vertical	0	1.00	-
2440MHz	Pass	PK	1.344M	37.01	65.07	-28.06	21.00	3	Vertical	360	1.00	-
2440MHz	Pass	PK	2.5977M	32.56	69.50	-36.94	20.83	3	Vertical	360	1.00	-
2440MHz	Pass	PK	9.0453M	34.03	69.50	-35.47	21.91	3	Vertical	360	1.00	-
2440MHz	Pass	PK	39.84058M	34.51	40.00	-5.49	-9.18	3	Vertical	0	1.00	-
2440MHz	Pass	PK	177.608696M	29.04	43.50	-14.46	-11.03	3	Vertical	0	1.00	-
2440MHz	Pass	PK	242.275362M	29.43	46.00	-16.57	-8.32	3	Vertical	0	1.00	-
2440MHz	Pass	PK	302.724638M	28.47	46.00	-17.53	-6.17	3	Vertical	0	1.00	-
2440MHz	Pass	PK	533.275362M	28.25	46.00	-17.75	-1.80	3	Vertical	0	1.00	-
2440MHz	Pass	PK	575.449275M	28.70	46.00	-17.30	-1.12	3	Vertical	0	1.00	-

**BT-LE(1Mbps)**
**2440MHz\_USB**

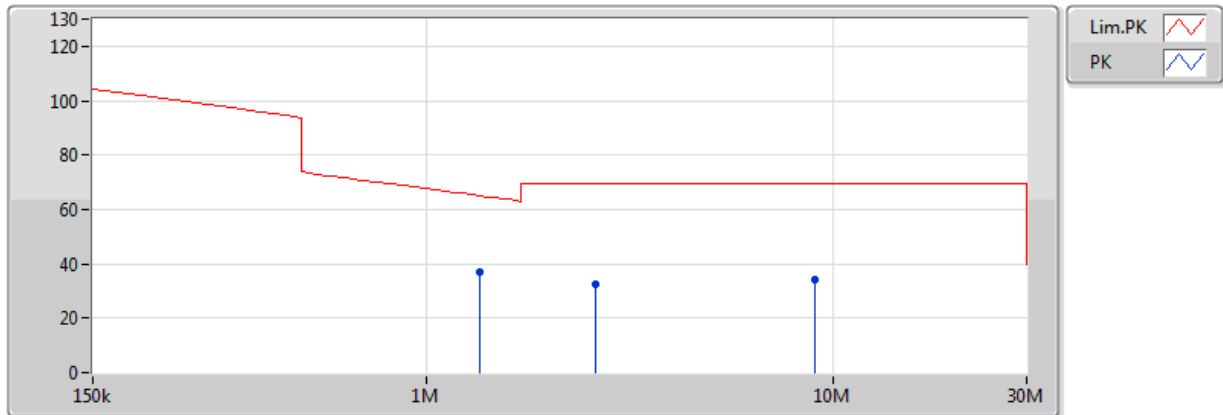
05/01/2018



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	29.868k	40.76	118.09	-77.33	22.07	3	Vertical	0	1.00	-	18.69	22.00	0.07	-
PK	47.07k	34.89	114.13	-79.24	21.29	3	Vertical	0	1.00	-	13.60	21.22	0.07	-
PK	98.112k	39.43	107.75	-68.32	20.79	3	Vertical	0	1.00	-	18.64	20.71	0.08	-

**BT-LE(1Mbps)**
**2440MHz\_USB**

05/01/2018



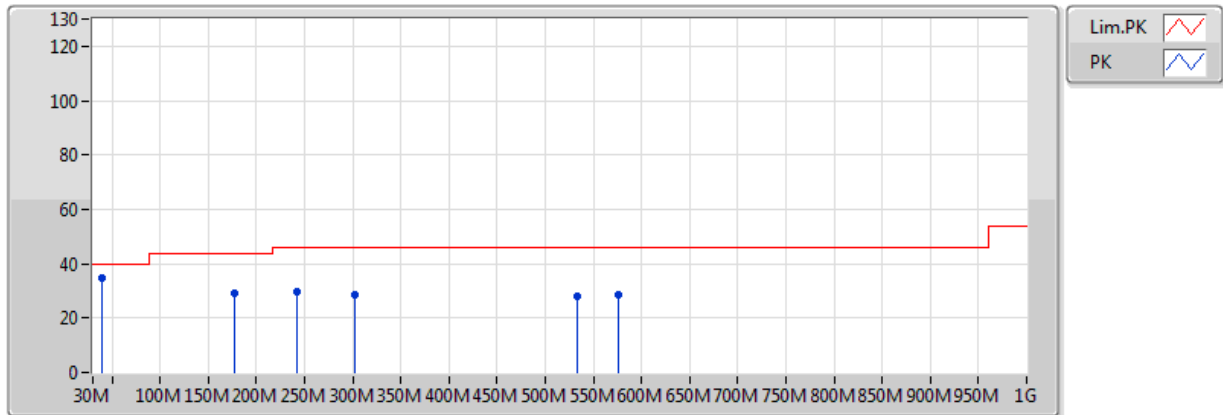
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	1.344M	37.01	65.07	-28.06	21.00	3	Vertical	360	1.00	-	16.01	20.65	0.35	-
PK	2.5977M	32.56	69.50	-36.94	20.83	3	Vertical	360	1.00	-	11.73	20.46	0.37	-
PK	9.0453M	34.03	69.50	-35.47	21.91	3	Vertical	360	1.00	-	12.12	21.35	0.56	-



## BT-LE(1Mbps)

## 2440MHz\_USB

05/01/2018

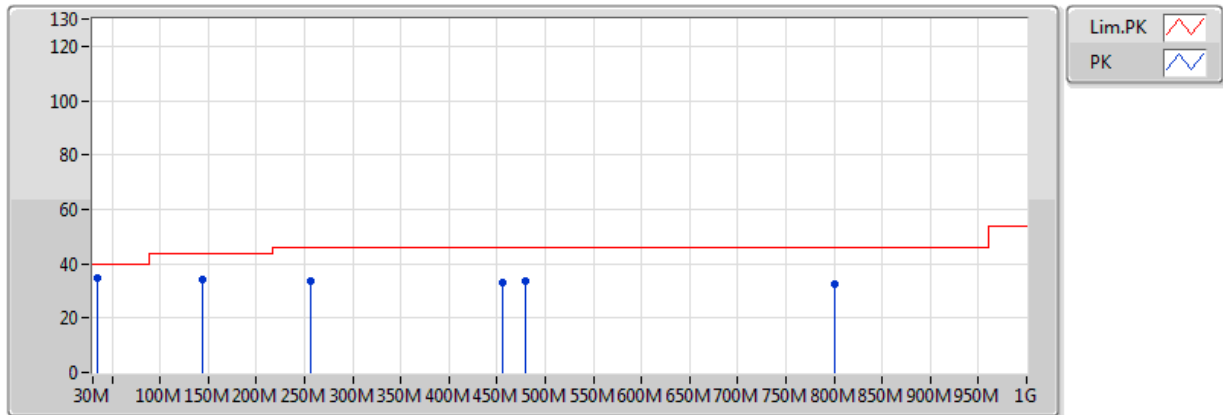


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	39.84058M	34.51	40.00	-5.49	-9.18	3	Vertical	0	1.00	-	43.69	17.63	0.91	27.71
PK	177.608696M	29.04	43.50	-14.46	-11.03	3	Vertical	0	1.00	-	40.07	14.54	1.95	27.52
PK	242.275362M	29.43	46.00	-16.57	-8.32	3	Vertical	0	1.00	-	37.75	16.81	2.21	27.34
PK	302.724638M	28.47	46.00	-17.53	-6.17	3	Vertical	0	1.00	-	34.64	18.52	2.53	27.22
PK	533.275362M	28.25	46.00	-17.75	-1.80	3	Vertical	0	1.00	-	30.05	23.18	3.53	28.51
PK	575.449275M	28.70	46.00	-17.30	-1.12	3	Vertical	0	1.00	-	29.82	23.79	3.63	28.55

## BT-LE(1Mbps)

## 2440MHz\_USB

05/01/2018



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	34.217391M	34.78	40.00	-5.22	-6.11	3	Horizontal	360	1.00	-	40.89	20.94	0.74	27.80
PK	143.869565M	34.29	43.50	-9.21	-9.94	3	Horizontal	360	1.00	-	44.23	15.95	1.76	27.65
PK	256.333333M	33.47	46.00	-12.53	-6.64	3	Horizontal	360	1.00	-	40.11	18.42	2.24	27.31
PK	455.956522M	33.33	46.00	-12.67	-2.81	3	Horizontal	360	1.00	-	36.14	22.18	3.27	28.26
PK	479.855072M	33.70	46.00	-12.30	-2.26	3	Horizontal	360	1.00	-	35.96	22.79	3.33	28.38
PK	800.376812M	32.28	46.00	-13.72	1.46	3	Horizontal	360	1.00	-	30.82	25.15	4.37	28.07

**Summary**

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	AV	2.490435G	47.08	54.00	-6.92	31.30	3	Vertical	136	1.54	-

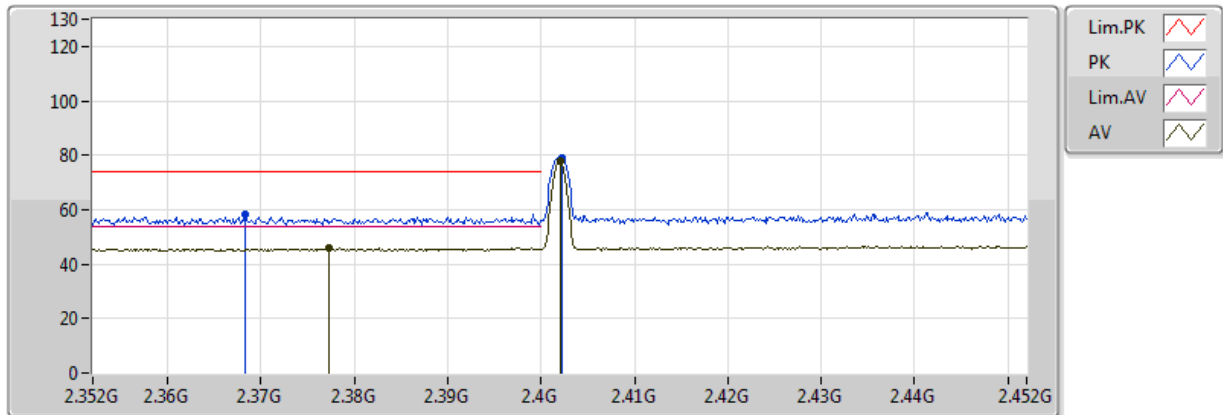
**Result**

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.35287G	45.89	54.00	-8.11	30.81	3	Horizontal	325	1.12	-
2402MHz	Pass	AV	2.402G	78.37	Inf	-Inf	30.98	3	Horizontal	325	1.12	-
2402MHz	Pass	PK	2.38229G	58.21	74.00	-15.79	30.91	3	Horizontal	325	1.12	-
2402MHz	Pass	PK	2.40229G	79.64	Inf	-Inf	30.98	3	Horizontal	325	1.12	-
2402MHz	Pass	AV	2.377362G	45.96	54.00	-8.04	30.89	3	Vertical	49	1.42	-
2402MHz	Pass	AV	2.402G	77.93	Inf	-Inf	30.98	3	Vertical	49	1.42	-
2402MHz	Pass	PK	2.368377G	58.17	74.00	-15.83	30.86	3	Vertical	49	1.42	-
2402MHz	Pass	PK	2.40229G	79.22	Inf	-Inf	30.98	3	Vertical	49	1.42	-
2402MHz	Pass	AV	4.803566G	33.59	54.00	-20.41	2.04	3	Horizontal	343	1.98	-
2402MHz	Pass	PK	4.804043G	45.32	74.00	-28.68	2.04	3	Horizontal	343	1.98	-
2402MHz	Pass	AV	4.803957G	34.62	54.00	-19.38	2.04	3	Vertical	320	1.92	-
2402MHz	Pass	PK	4.803349G	45.29	74.00	-28.71	2.04	3	Vertical	320	1.92	-
2440MHz	Pass	AV	2.34029G	45.64	54.00	-8.36	30.76	3	Horizontal	338	1.26	-
2440MHz	Pass	AV	2.44G	77.22	Inf	-Inf	31.11	3	Horizontal	338	1.26	-
2440MHz	Pass	AV	2.484058G	46.74	54.00	-7.26	31.27	3	Horizontal	338	1.26	-
2440MHz	Pass	PK	2.369565G	58.00	74.00	-16.00	30.86	3	Horizontal	338	1.26	-
2440MHz	Pass	PK	2.44G	78.58	Inf	-Inf	31.11	3	Horizontal	338	1.26	-
2440MHz	Pass	PK	2.489855G	58.02	74.00	-15.98	31.29	3	Horizontal	338	1.26	-
2440MHz	Pass	AV	2.376812G	46.23	54.00	-7.77	30.89	3	Vertical	136	1.54	-
2440MHz	Pass	AV	2.44G	78.34	Inf	-Inf	31.11	3	Vertical	136	1.54	-
2440MHz	Pass	AV	2.490435G	47.08	54.00	-6.92	31.30	3	Vertical	136	1.54	-
2440MHz	Pass	PK	2.368696G	56.91	74.00	-17.09	30.86	3	Vertical	136	1.54	-
2440MHz	Pass	PK	2.44029G	79.53	Inf	-Inf	31.12	3	Vertical	136	1.54	-
2440MHz	Pass	PK	2.487246G	58.17	74.00	-15.83	31.28	3	Vertical	136	1.54	-
2440MHz	Pass	AV	4.879696G	36.53	54.00	-17.47	2.28	3	Horizontal	328	2.13	-
2440MHz	Pass	PK	4.880521G	45.96	74.00	-28.04	2.28	3	Horizontal	328	2.13	-
2440MHz	Pass	AV	4.880043G	36.44	54.00	-17.56	2.28	3	Vertical	197	1.83	-
2440MHz	Pass	PK	4.879479G	45.72	74.00	-28.28	2.28	3	Vertical	197	1.83	-
2480MHz	Pass	AV	2.48G	78.06	Inf	-Inf	31.26	3	Horizontal	337	1.23	-
2480MHz	Pass	AV	2.49058G	46.68	54.00	-7.32	31.30	3	Horizontal	337	1.23	-
2480MHz	Pass	PK	2.48029G	79.43	Inf	-Inf	31.26	3	Horizontal	337	1.23	-
2480MHz	Pass	PK	2.492029G	59.21	74.00	-14.79	31.30	3	Horizontal	337	1.23	-
2480MHz	Pass	AV	2.48G	77.34	Inf	-Inf	31.26	3	Vertical	98	1.14	-
2480MHz	Pass	AV	2.490725G	46.10	54.00	-7.90	31.30	3	Vertical	98	1.14	-
2480MHz	Pass	PK	2.48029G	81.03	Inf	-Inf	31.26	3	Vertical	98	1.14	-
2480MHz	Pass	PK	2.483768G	58.98	74.00	-15.02	31.27	3	Vertical	98	1.14	-
2480MHz	Pass	AV	4.95987G	39.41	54.00	-14.59	2.53	3	Horizontal	10	1.50	-
2480MHz	Pass	PK	4.959479G	47.82	74.00	-26.18	2.52	3	Horizontal	10	1.50	-
2480MHz	Pass	AV	4.960087G	37.71	54.00	-16.29	2.53	3	Vertical	198	2.05	-
2480MHz	Pass	PK	4.959566G	46.51	74.00	-27.49	2.52	3	Vertical	198	2.05	-

### BT-LE(1Mbps)

### 2402MHz\_TX

11/12/2017

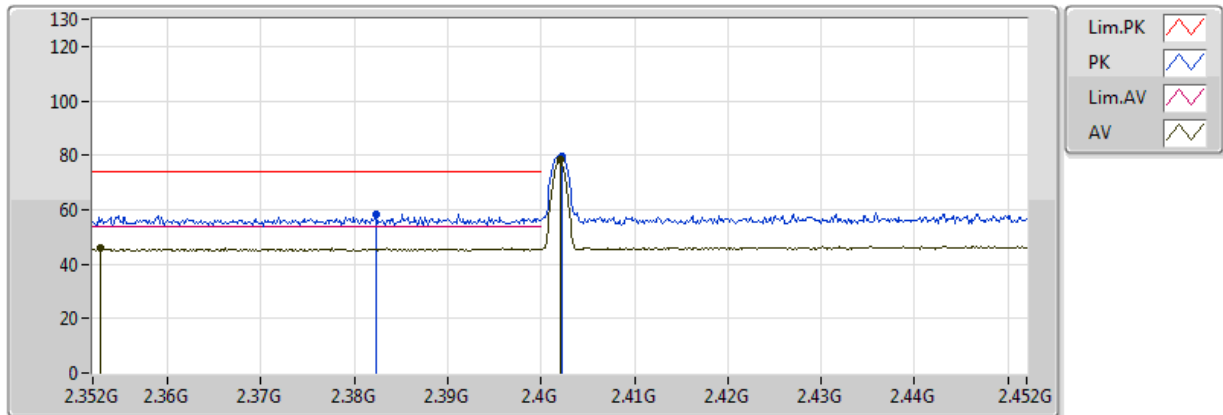


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.377362G	45.96	54.00	-8.04	30.89	3	Vertical	49	1.42	-
AV	2.402G	77.93	Inf	-Inf	30.98	3	Vertical	49	1.42	-
PK	2.368377G	58.17	74.00	-15.83	30.86	3	Vertical	49	1.42	-
PK	2.40229G	79.22	Inf	-Inf	30.98	3	Vertical	49	1.42	-

### BT-LE(1Mbps)

### 2402MHz\_TX

11/12/2017

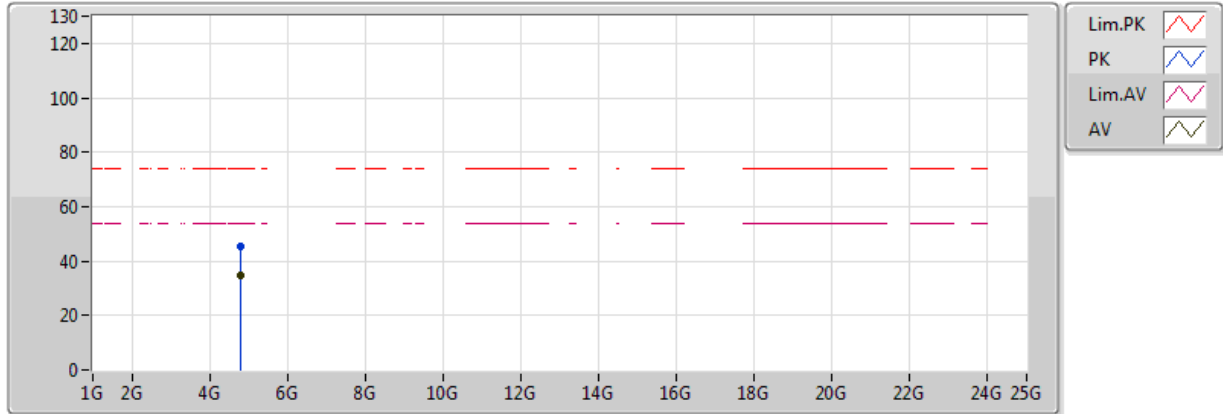


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments				
AV	2.35287G	45.89	54.00	-8.11	30.81	3	Horizontal	325	1.12	-				
AV	2.402G	78.37	Inf	-Inf	30.98	3	Horizontal	325	1.12	-				
PK	2.38229G	58.21	74.00	-15.79	30.91	3	Horizontal	325	1.12	-				
PK	2.40229G	79.64	Inf	-Inf	30.98	3	Horizontal	325	1.12	-				

### BT-LE(1Mbps)

### 2402MHz\_TX

11/12/2017

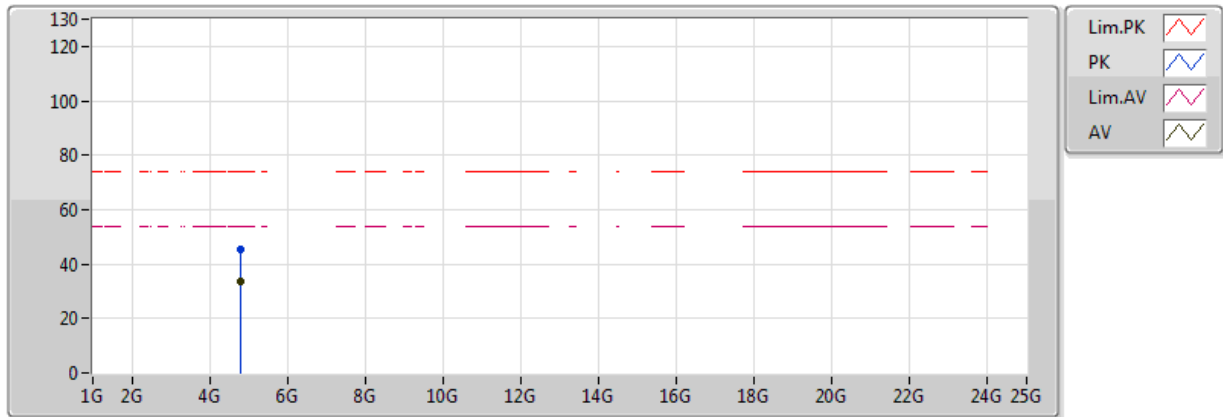


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	4.803957G	34.62	54.00	-19.38	2.04	3	Vertical	320	1.92	-
PK	4.803349G	45.29	74.00	-28.71	2.04	3	Vertical	320	1.92	-

### BT-LE(1Mbps)

### 2402MHz\_TX

11/12/2017



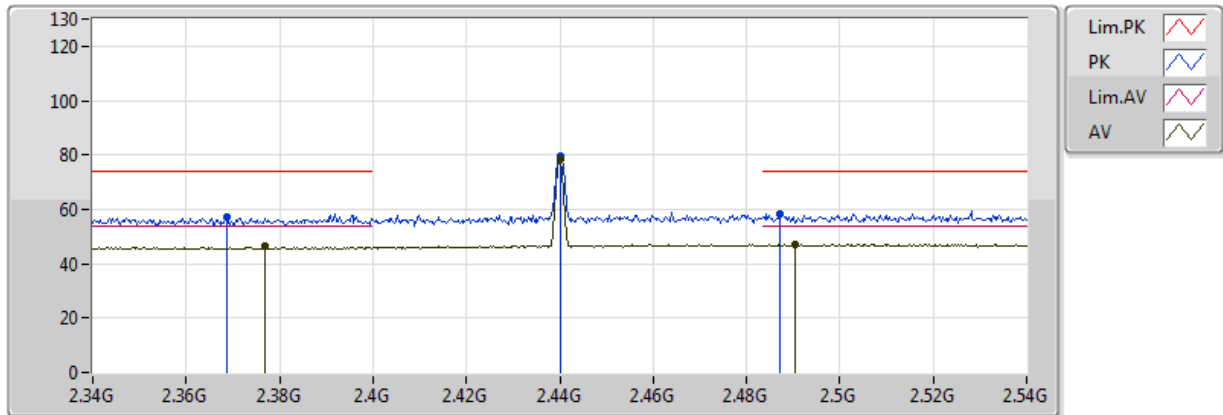
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.803566G	33.59	54.00	-20.41	2.04	3	Horizontal	343	1.98	-
PK	4.804043G	45.32	74.00	-28.68	2.04	3	Horizontal	343	1.98	-



### BT-LE(1Mbps)

### 2440MHz\_TX

11/12/2017

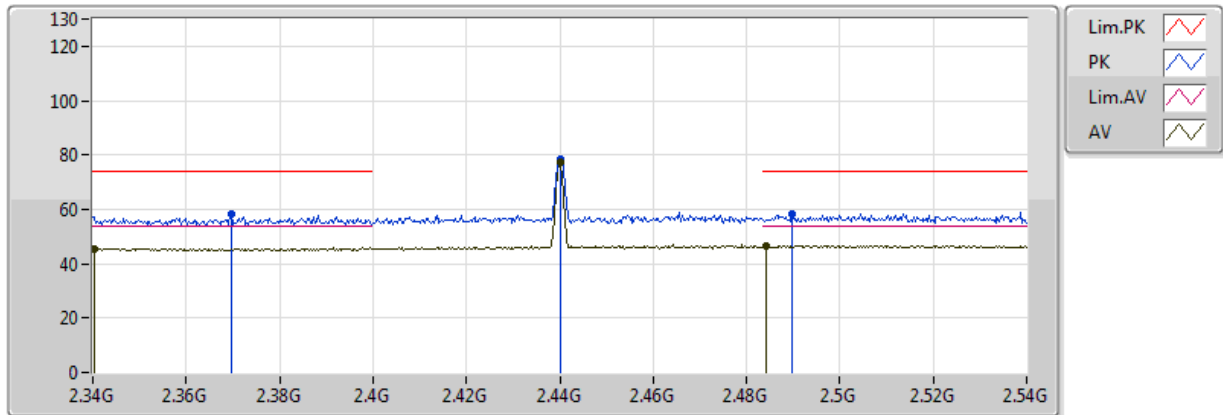


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.376812G	46.23	54.00	-7.77	30.89	3	Vertical	136	1.54	-
AV	2.44G	78.34	Inf	-Inf	31.11	3	Vertical	136	1.54	-
AV	2.490435G	47.08	54.00	-6.92	31.30	3	Vertical	136	1.54	-
PK	2.368696G	56.91	74.00	-17.09	30.86	3	Vertical	136	1.54	-
PK	2.44029G	79.53	Inf	-Inf	31.12	3	Vertical	136	1.54	-
PK	2.487246G	58.17	74.00	-15.83	31.28	3	Vertical	136	1.54	-

### BT-LE(1Mbps)

### 2440MHz\_TX

11/12/2017

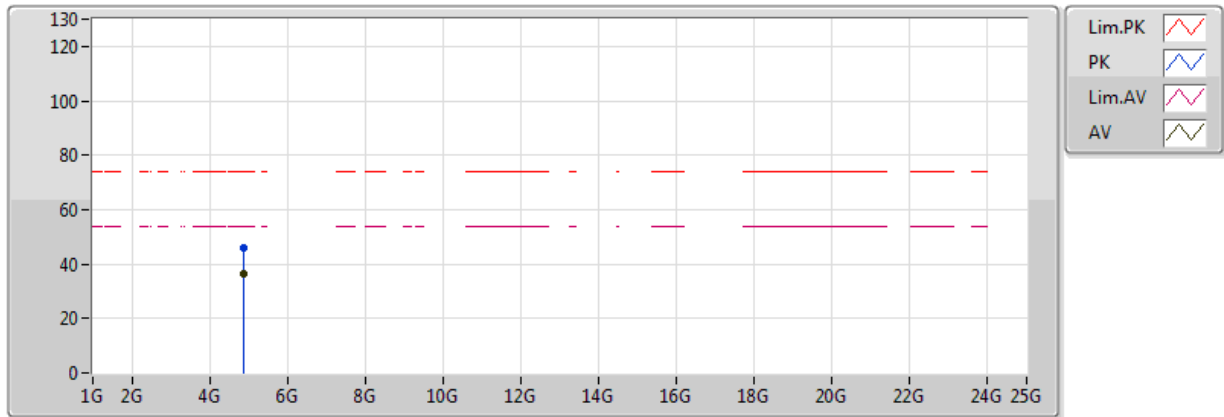


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.34029G	45.64	54.00	-8.36	30.76	3	Horizontal	338	1.26	-
AV	2.44G	77.22	Inf	-Inf	31.11	3	Horizontal	338	1.26	-
AV	2.484058G	46.74	54.00	-7.26	31.27	3	Horizontal	338	1.26	-
PK	2.369565G	58.00	74.00	-16.00	30.86	3	Horizontal	338	1.26	-
PK	2.44G	78.58	Inf	-Inf	31.11	3	Horizontal	338	1.26	-
PK	2.489855G	58.02	74.00	-15.98	31.29	3	Horizontal	338	1.26	-

### BT-LE(1Mbps)

### 2440MHz\_TX

11/12/2017

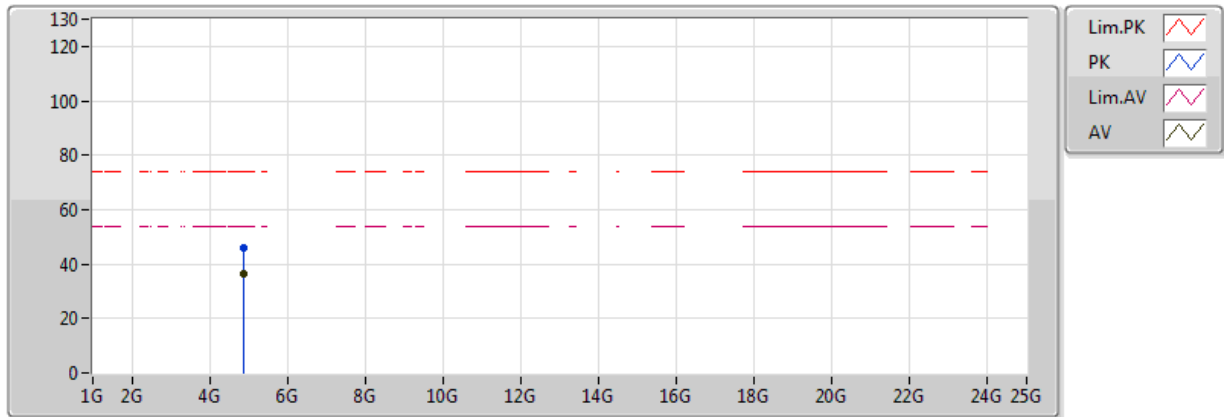


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments				
AV	4.880043G	36.44	54.00	-17.56	2.28	3	Vertical	197	1.83	-				
PK	4.879479G	45.72	74.00	-28.28	2.28	3	Vertical	197	1.83	-				

### BT-LE(1Mbps)

### 2440MHz\_TX

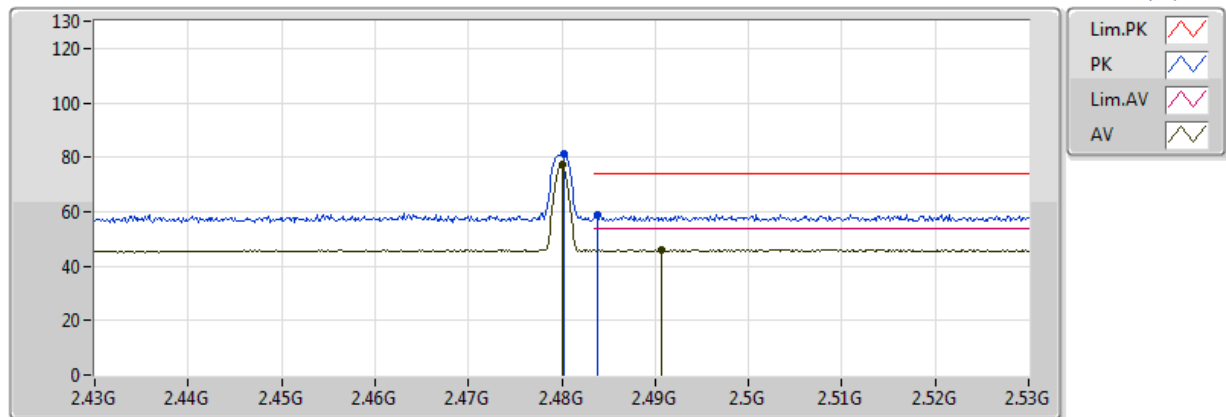
11/12/2017



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments				
AV	4.879696G	36.53	54.00	-17.47	2.28	3	Horizontal	328	2.13	-				
PK	4.880521G	45.96	74.00	-28.04	2.28	3	Horizontal	328	2.13	-				

## BT-LE(1Mbps)

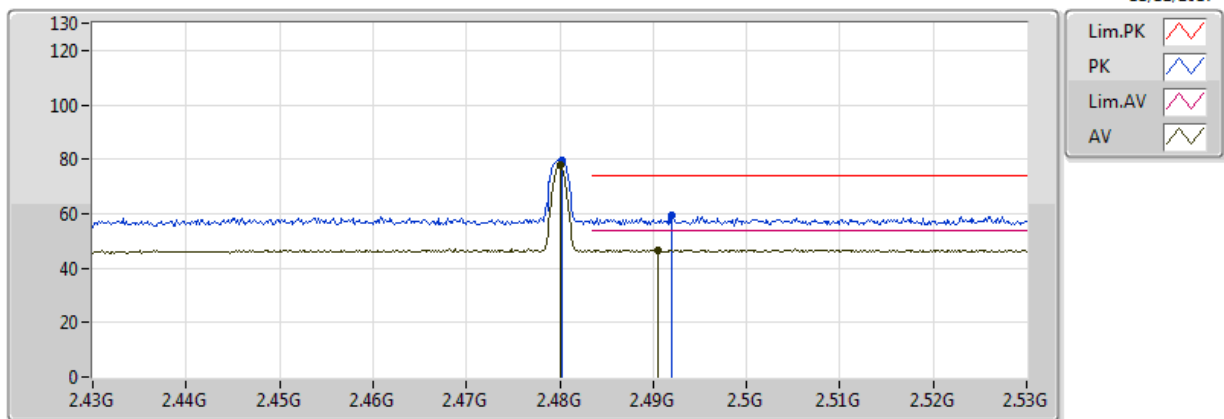
## 2480MHz\_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments				
AV	2.48G	77.34	Inf	-Inf	31.26	3	Vertical	98	1.14	-				
AV	2.490725G	46.10	54.00	-7.90	31.30	3	Vertical	98	1.14	-				
PK	2.48029G	81.03	Inf	-Inf	31.26	3	Vertical	98	1.14	-				
PK	2.483768G	58.98	74.00	-15.02	31.27	3	Vertical	98	1.14	-				

### BT-LE(1Mbps)

### 2480MHz\_TX

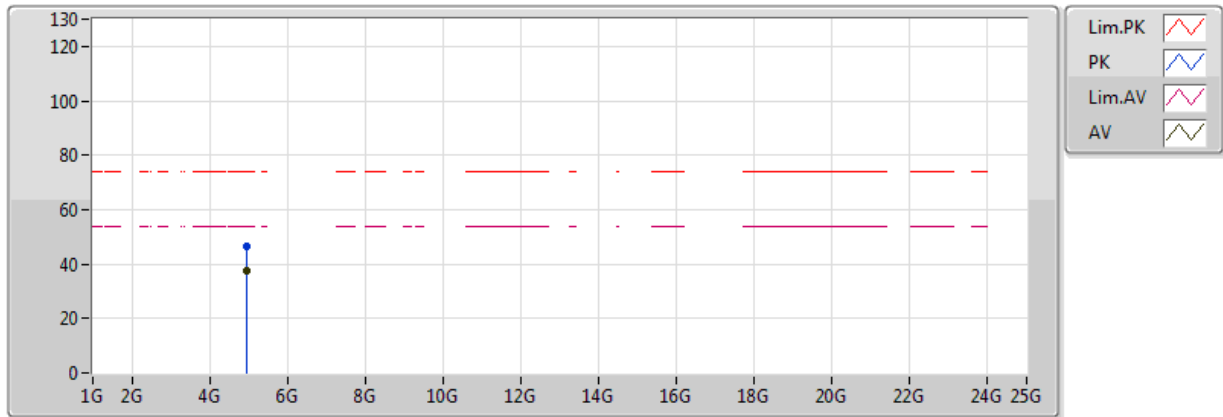


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments				
AV	2.48G	78.06	Inf	-Inf	31.26	3	Horizontal	337	1.23	-				
AV	2.49058G	46.68	54.00	-7.32	31.30	3	Horizontal	337	1.23	-				
PK	2.48029G	79.43	Inf	-Inf	31.26	3	Horizontal	337	1.23	-				
PK	2.492029G	59.21	74.00	-14.79	31.30	3	Horizontal	337	1.23	-				

### BT-LE(1Mbps)

### 2480MHz\_TX

11/12/2017

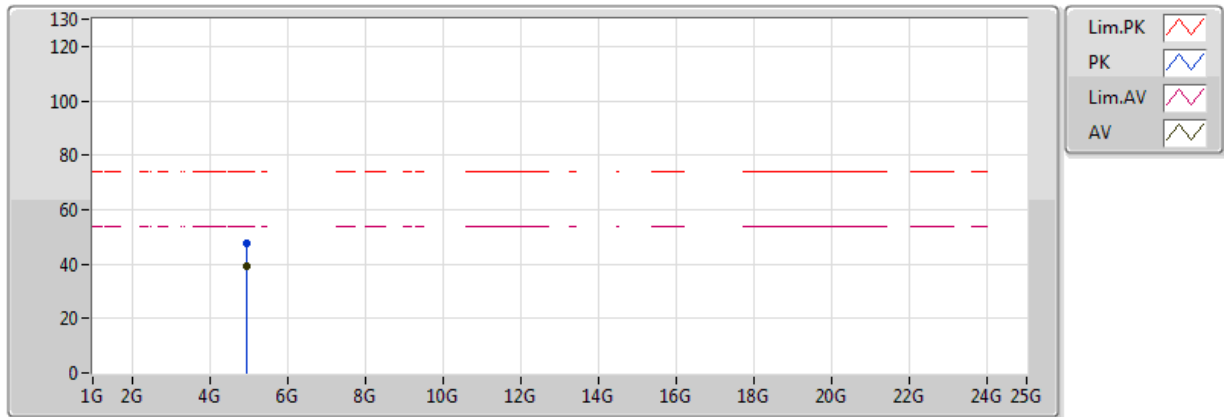


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments				
AV	4.960087G	37.71	54.00	-16.29	2.53	3	Vertical	198	2.05	-				
PK	4.959566G	46.51	74.00	-27.49	2.52	3	Vertical	198	2.05	-				

### BT-LE(1Mbps)

### 2480MHz\_TX

18/12/2017



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.95987G	39.41	54.00	-14.59	2.53	3	Horizontal	10	1.50	-
PK	4.959479G	47.82	74.00	-26.18	2.52	3	Horizontal	10	1.50	-