

# FCC Test Report

**FCC ID** : TTUBEOPLAYHX  
**Equipment** : Bluetooth Headphone  
**Brand Name** : Bang & Olufsen  
**Model Name** : Beoplay HX  
**Applicant** : Bang & Olufsen A/S  
Bang og Olufsen Allé 1, 7600 Struer, Denmark  
**Manufacturer** : Bang & Olufsen A/S  
Bang og Olufsen Allé 1, 7600 Struer, Denmark  
**Standard** : 47 CFR FCC Part 15.247

The product was received on Sep. 02, 2020, and testing was started from Sep. 16, 2020 and completed on Sep. 30, 2020. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The 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: Allen Lin

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

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



# Table of Contents

**HISTORY OF THIS TEST REPORT .....3**

**SUMMARY OF TEST RESULT .....4**

**1 GENERAL DESCRIPTION .....5**

1.1 Information.....5

1.2 Testing Applied Standards .....7

1.3 Testing Location Information .....7

1.4 Measurement Uncertainty .....8

**2 TEST CONFIGURATION OF EUT.....9**

2.1 Test Condition .....9

2.2 Test Channel Mode .....9

2.3 The Worst Case Measurement Configuration .....10

2.4 Accessories .....11

2.5 Support Equipment.....11

2.6 Test Setup Diagram .....12

**3 TRANSMITTER TEST RESULT .....13**

3.1 AC Power-line Conducted Emissions .....13

3.2 DTS Bandwidth.....15

3.3 Maximum Conducted Output Power .....16

3.4 Power Spectral Density .....18

3.5 Emissions in Non-restricted Frequency Bands .....19

3.6 Emissions in Restricted Frequency Bands.....20

**4 TEST EQUIPMENT AND CALIBRATION DATA.....24**

**APPENDIX A. TEST RESULTS OF AC POWER-LINE CONDUCTED EMISSIONS**

**APPENDIX B. TEST RESULTS OF DTS BANDWIDTH**

**APPENDIX C. TEST RESULTS OF MAXIMUM CONDUCTED OUTPUT POWER**

**APPENDIX D. TEST RESULTS OF POWER SPECTRAL DENSITY**

**APPENDIX E. TEST RESULTS OF EMISSIONS IN NON-RESTRICTED FREQUENCY BANDS**

**APPENDIX F. TEST RESULTS OF EMISSIONS IN RESTRICTED FREQUENCY BANDS**

**APPENDIX G. TEST PHOTOS**

**PHOTOGRAPHS OF EUT V01**



### History of this test report

Report No.	Version	Description	Issued Date
FR082805AL	01	Initial issue of report	Dec. 25, 2020



### Summary of Test Result

Report Clause	Ref.Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
3.1	15.207	AC Power-line Conducted Emissions	PASS	-
3.2	15.247(a)	DTS Bandwidth	PASS	-
3.3	15.247(b)	Maximum Conducted Output Power	PASS	-
3.4	15.247(e)	Power Spectral Density	PASS	-
3.5	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	-
3.6	15.247(d)	Emissions in Restricted Frequency Bands	PASS	-

<b>Declaration of Conformity:</b>
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
<b>Comments and explanations:</b>
None

Reviewed by: Sam Tsai

Report Producer: Amber Chiu

# 1 General Description

## 1.1 Information

### 1.1.1 RF General Information

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

Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	BT-LE(1Mbps)	1.0	1TX
2.4-2.4835GHz	BT-LE(2Mbps)	2.0	1TX

Note:

- ◆ Bluetooth LE uses a GFSK (1Mbps/2Mbps) modulation.
- ◆ BWch is the nominal channel bandwidth.

### 1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	Sage Elephant Tech co., Ltd.	S306300001000-A	Chip Antenna	N/A	0.81

**For Bluetooth function:**

For Bluetooth mode (1TX/1RX)

Only Ant. 1 (port 1) can be used as transmitting/receiving antenna.

1.1.3 EUT Information

Operational Condition	
EUT Power Type	From Host System / Battery
EUT Function	<input checked="" type="checkbox"/> Point-to-multipoint <input type="checkbox"/> Point-to-point
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) ≥ 1/T
BT-LE(1Mbps)	0.639	1.94	399.063u	3k
BT-LE(2Mbps)	0.343	4.65	214.375u	10k

Note. If DC < 0.98, the DCF was added while measuring Output power and PSD.

1.1.5 Table for Multiple Listing

The EUT in the following table are all refer to the identical product.

EUT	Color	Description
Sample 1	Black	All the Samples are identical, The Bluetooth chip and Antenna layout are the same. The only difference is different color.
Sample 2	Brown	
Sample 3	Gray	

Note : The Sample 1 was chosen and measured during the test. The information from manufacturer.

## 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

The following reference test guidance is not within the scope of accreditation of TAF:

- ◆ KDB 558074 D01 v05r02
- ◆ KDB 414788 D01 v01r01

## 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.		
<input checked="" type="checkbox"/>	Wen Shan	ADD : No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL : 886-3-318-0787      FAX : 886-3-318-0287
Test site Designation No. TW1097 with FCC.		

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
AC Conduction	CO04-HY	Edward Wang	22.8~23.6°C / 56~60%	30/Sep/2020
RF Conducted	TH06-HY	Alan Chien	20.1~26.9°C / 50~60%	16/Sep/2020~ 29/Sep/2020
Radiated	03CH09-HY	Lego Lin	22.3~24.8°C / 50~60%	18/Sep/2020~ 28/Sep/2020

## 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)	0.9 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	2.4 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.0 dB	Confidence levels of 95%
Temperature	0.41 °C	Confidence levels of 95%
Humidity	3.4 %	Confidence levels of 95%





## 2 Test Configuration of EUT

### 2.1 Test Condition

RF Conducted	Abbreviation	Remark
TnomVnom	Tnom	20°C
-	Vnom	120V

### 2.2 Test Channel Mode




Test Software Version	BlueTest3
-----------------------	-----------

Mode	Power Setting
BT-LE(1Mbps)	-
2402MHz	Default
2440MHz	Default
2480MHz	Default
BT-LE(2Mbps)	-
2402MHz	Default
2440MHz	Default
2480MHz	Default

### 2.3 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>	CTX
1	USB Mode ; CTX
2	Adapter Mode ; Charging

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	USB Mode ; CTX		
2	Adapter Mode ; Charging		
<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				
Battery	Brand Name	Synergy	Model Name	AHB723938PCT
	Power Rating	3.7 Vdc, 1110 mAh	Type	Lithium-ion Polymer Battery Pack
USB Cable	Brand Name	Bang & Olufsen	Model Name	4021HW01810JAU
	Signal Line	1.25 meter, D-shielded cable, w/o ferrite core		
Audio Cable	Brand Name	Bang & Olufsen	Model Name	4021XW01611JAS
	Signal Line	1.25 meter, non-shielded cable, w/o ferrite core		

Reminder: Regarding to more detail and other information, please refer to user manual.

## 2.5 Support Equipment

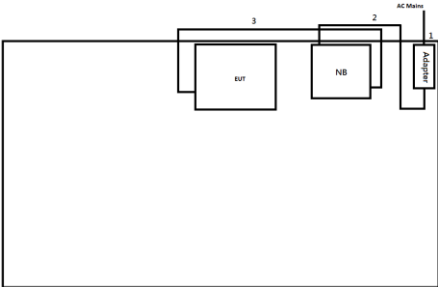
Support Equipment – AC Conduction					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Notebook	Acer	ZQS	-	-
2	AC Adapter for NB	Chicony	A10-090P3A	-	-
3	Mouse(USB)	lenovo	MOGOUO	-	-
4	iPod	Apple	A1199	-	-
5	AC Adapter	Apple	A1385	-	-
6	30-pin to USB Original Cable	Apple	MA591GC	-	-

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

Support Equipment – Radiated					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Notebook	Acer	ZQS	-	-
2	AC Adapter for NB	Chicony	A10-090P3A	-	-
3	Mouse(USB)	lenovo	MOGOUO	-	-
4	iPod	Apple	A1199	-	-
5	AC Adapter	Apple	A1385	-	-
6	30-pin to USB Original Cable	Apple	MA591GC	-	-

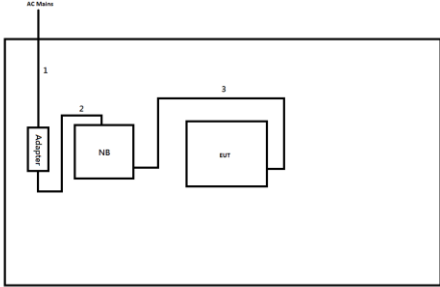
## 2.6 Test Setup Diagram

**Test Setup Diagram – AC Line Conducted Emission Test**



Item	Connection	Shielded	Length(m)	Remark
1	AC Power cable	No	1.8	-
2	DC Power cable	No	1.0	-
3	USB cable	Yes	1.25	-

**Test Setup Diagram - Radiated Test**



Item	Connection	Shielded	Length(m)	Remark
1	AC Power cable	No	1.8	-
2	DC Power cable	No	1.0	-
3	USB cable	Yes	1.25	-

### 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

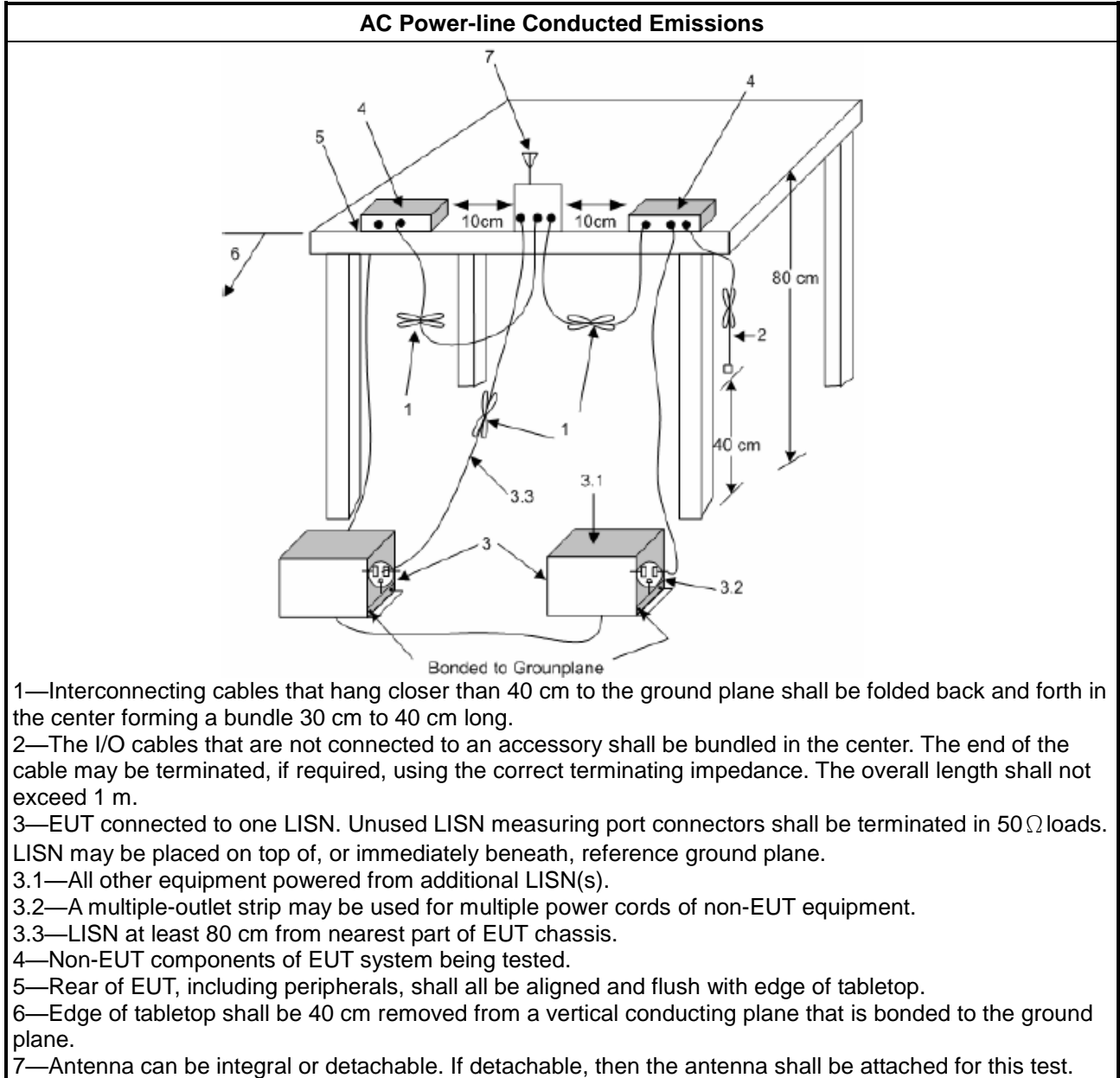
Test Method
<ul style="list-style-type: none"> <li>Refer as ANSI C63.10-2013, clause 6.2 foray power-line conducted emissions.</li> </ul>

##### 3.1.4 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Raw(Read Level) + LISN(LISN Factor) + CL(Cable Loss) + AT(Attenuator).

### 3.1.5 Test Setup



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

Refer as Appendix A

### 3.2 DTS Bandwidth

#### 3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit
<b>Systems using digital modulation techniques:</b>
<ul style="list-style-type: none"> <li>▪ 6 dB bandwidth <math>\geq</math> 500 kHz.</li> </ul>

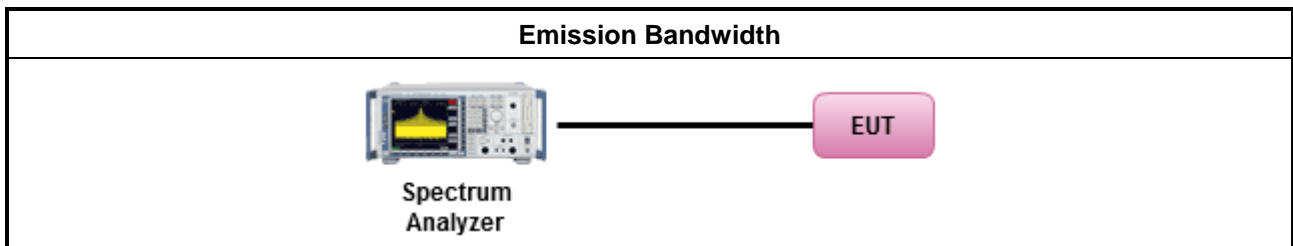
#### 3.2.2 Measuring Instruments

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

#### 3.2.3 Test Procedures

Test Method
<ul style="list-style-type: none"> <li>▪ For the emission bandwidth shall be measured using one of the options below:</li> </ul>
<input checked="" type="checkbox"/> Refer as KDB 558074, clause 8.2 (11.8 of ANSI C63.10) DTS bandwidth measurement.
<input type="checkbox"/> Refer as RSS-Gen, clause 6.7 for for occupied bandwidth testing.
<input type="checkbox"/> Refer as ANSI C63.10, clause 6.9.3 for occupied bandwidth testing.

#### 3.2.4 Test Setup



#### 3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

### 3.3 Maximum Conducted Output Power

#### 3.3.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit	
	<ul style="list-style-type: none"> <li>▪ If <math>G_{TX} \leq 6</math> dBi, then <math>P_{Out} \leq 30</math> dBm (1 W)</li> </ul>
	<ul style="list-style-type: none"> <li>▪ Point-to-multipoint systems (P2M): If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 30 - (G_{TX} - 6)</math> dBm</li> </ul>
	<ul style="list-style-type: none"> <li>▪ Point-to-point systems (P2P): If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 30 - (G_{TX} - 6)/3</math> dBm</li> </ul>
	<ul style="list-style-type: none"> <li>▪ Smart antenna system (SAS):</li> </ul>
	<ul style="list-style-type: none"> <li>- Single beam: If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 30 - (G_{TX} - 6)/3</math> dBm</li> </ul>
	<ul style="list-style-type: none"> <li>- Overlap beam: If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 30 - (G_{TX} - 6)/3</math> dBm</li> </ul>
	<ul style="list-style-type: none"> <li>- Aggregate power on all beams: If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 30 - (G_{TX} - 6)/3 + 8</math> dB dBm</li> </ul>
<b>e.i.r.p. Power Limit:</b>	
	<ul style="list-style-type: none"> <li>▪ 2400-2483.5 MHz Band</li> </ul>
	<ul style="list-style-type: none"> <li>▪ Point-to-multipoint systems (P2M): <math>P_{eirp} \leq 36</math> dBm (4 W)</li> </ul>
	<ul style="list-style-type: none"> <li>▪ Point-to-point systems (P2P): <math>P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX}])</math> dBm</li> </ul>
	<ul style="list-style-type: none"> <li>▪ Smart antenna system (SAS)</li> </ul>
	<ul style="list-style-type: none"> <li>- Single beam: <math>P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})</math> dBm</li> </ul>
	<ul style="list-style-type: none"> <li>- Overlap beam: <math>P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})</math> dBm</li> </ul>
	<ul style="list-style-type: none"> <li>- Aggregate power on all beams: <math>P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX} + 8])</math> dBm</li> </ul>
$P_{Out}$ = 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

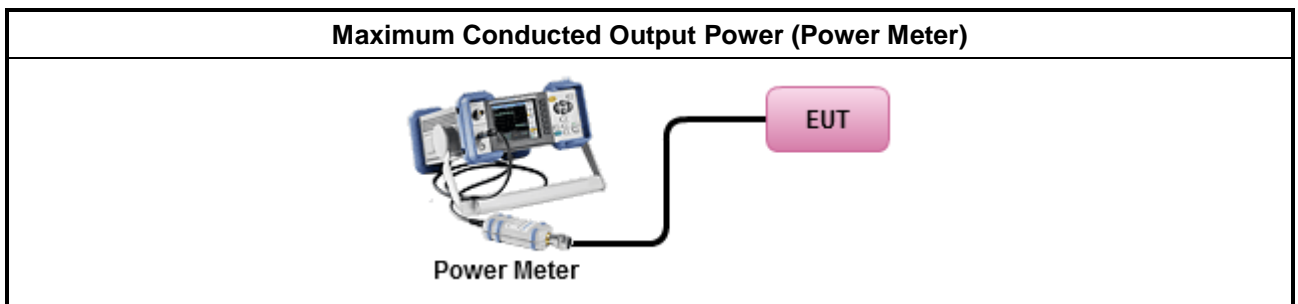
Refer a test equipment and calibration data table in this test report.



### 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 8.3.1.1 (11.9.1.1 of ANSI C63.10) RBW ≥ EBW method.
<input type="checkbox"/>	Refer as KDB 558074, clause 8.3.1.2 (11.9.1.2 of ANSI C63.10) integrated band power method.
<input type="checkbox"/>	Refer as KDB 558074, clause 8.3.1.3 (11.9.1.3 of ANSI C63.10) peak power meter.
<ul style="list-style-type: none"> <li>▪ Maximum Average Conducted Output Power</li> </ul>	
<input type="checkbox"/>	Refer as KDB 558074, clause 8.3.2.2 (11.9.2.2 of ANSI C63.10) using a spectrum analyzer.
<input checked="" type="checkbox"/>	Refer as KDB 558074, clause 8.3.2.3 (11.9.2.3 of ANSI C63.10) using a 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 C

### 3.4 Power Spectral Density

#### 3.4.1 Power Spectral Density Limit

Power Spectral Density Limit
<ul style="list-style-type: none"> <li>▪ Power Spectral Density (PSD) ≤ 8 dBm/3kHz</li> </ul>

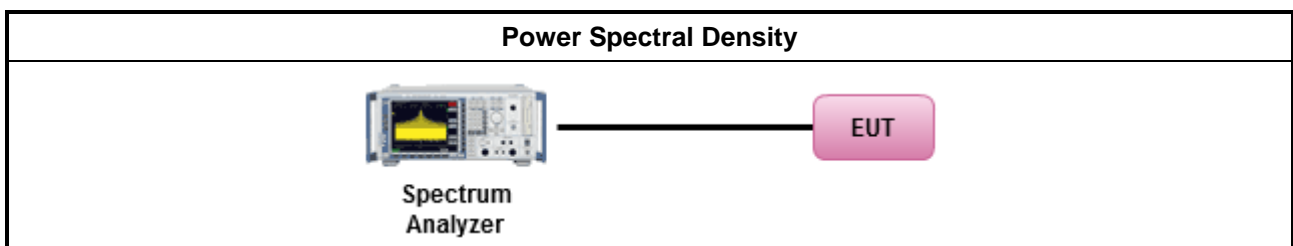
#### 3.4.2 Measuring Instruments

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

#### 3.4.3 Test Procedures

Test Method	
	<ul style="list-style-type: none"> <li>▪ 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).</li> </ul>
<input checked="" type="checkbox"/>	Refer as KDB 558074, clause 8.4 (11.10 of ANSI C63.10) Max. PSD.
	<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:</li> </ul>
	<ul style="list-style-type: none"> <li>▪ 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.</li> </ul>

#### 3.4.4 Test Setup



#### 3.4.5 Test Result of Power Spectral Density

Refer as Appendix D

### 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

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 level.

Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average level.

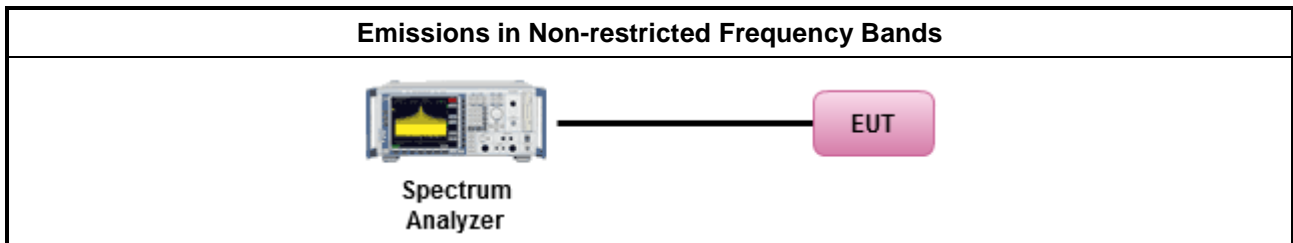
#### 3.5.2 Measuring Instruments

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 8.5 (11.11 of ANSI C63.10) for non-restricted frequency bands.</li> </ul>

#### 3.5.4 Test Setup



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

Refer as Appendix E

### 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

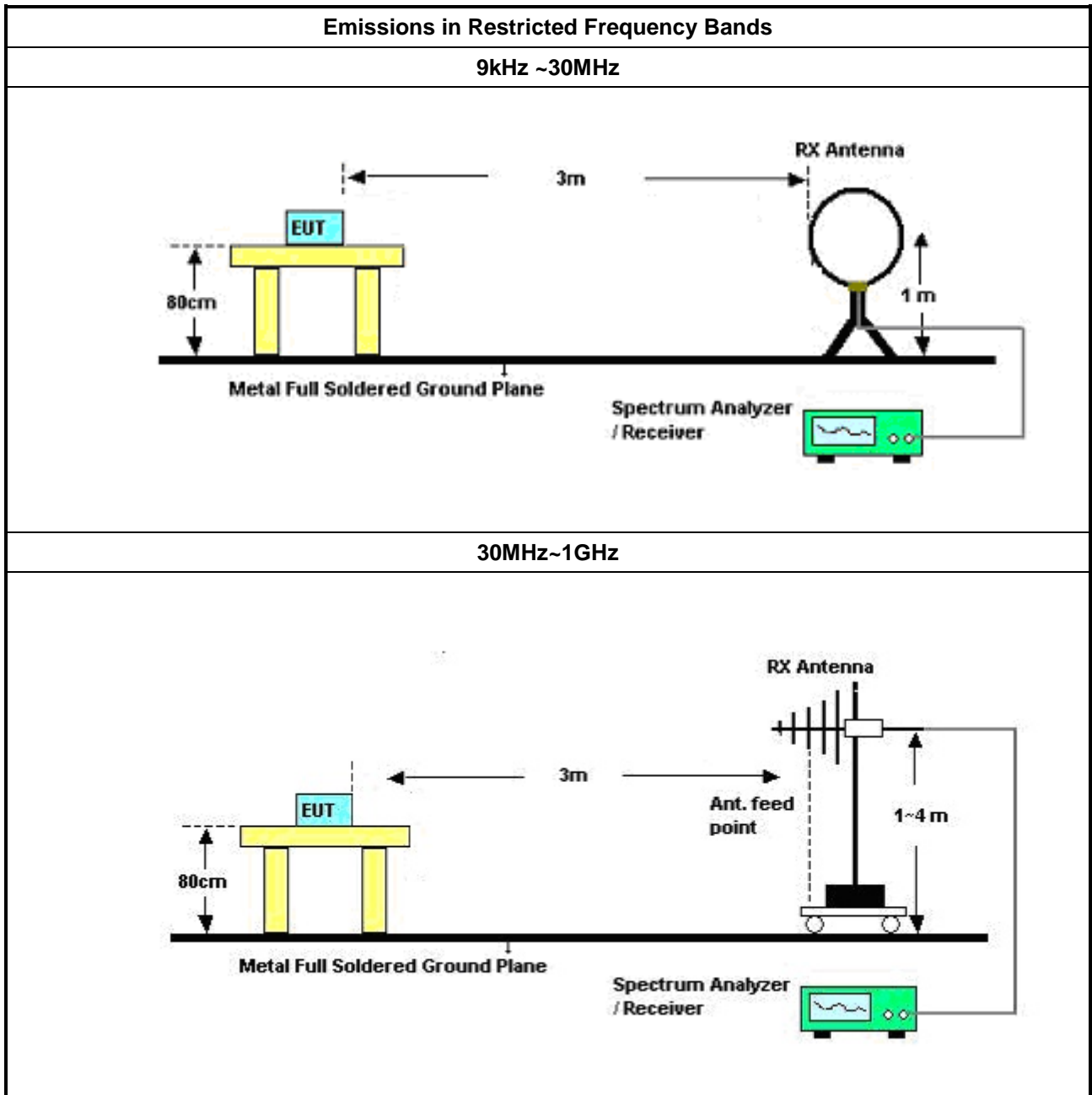
Test Method	
	<ul style="list-style-type: none"> <li>▪ The average emission levels shall be measured in [duty cycle <math>\geq</math> 98 or duty factor].</li> </ul>
	<ul style="list-style-type: none"> <li>▪ Refer as ANSI C63.10, clause 6.10.3 band-edge testing shall be performed at the lowest frequency 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:               <ul style="list-style-type: none"> <li>▪ Refer as KDB 558074, clause 8.6 (11.12 of ANSI C63.10) for restricted frequency bands.</li> </ul> </li> </ul>
	<ul style="list-style-type: none"> <li>▪ For the transmitter band-edge emissions shall be measured using following options below:               <ul style="list-style-type: none"> <li>▪ Refer as KDB 558074 clause 8.7.1, 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> <li>▪ Refer as KDB 558074, clause 8.7.2 (6.10.6 of ANSI C63.10) for marker-delta method for band-edge measurements.</li> <li>▪ Refer as KDB 558074, clause 8.7.3 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels.</li> </ul> </li> </ul>
	<ul style="list-style-type: none"> <li>▪ Use the following spectrum analyzer settings:               <ul style="list-style-type: none"> <li>▪ Set RBW=100 kHz for <math>f &lt; 1</math> GHz; VBW=3 * RBW; Sweep = auto; Detector function = peak; Trace = max hold.</li> <li>▪ Set RBW = 1 MHz, VBW= 3MHz for <math>f \geq 1</math> GHz for peak measurement. For average measurement, refer as 1.1.4.</li> </ul> </li> </ul>
	<ul style="list-style-type: none"> <li>▪ KDB 414788 Open-Field Test Sites and Chamber Correlation Justification.               <ul style="list-style-type: none"> <li>▪ Based on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in regulations; however, an attempt should be made to avoid making measurements in the near field.</li> <li>▪ Open-field site and chamber correlation testing had been performed and chamber measured test result is the worst case test result.</li> </ul> </li> </ul>

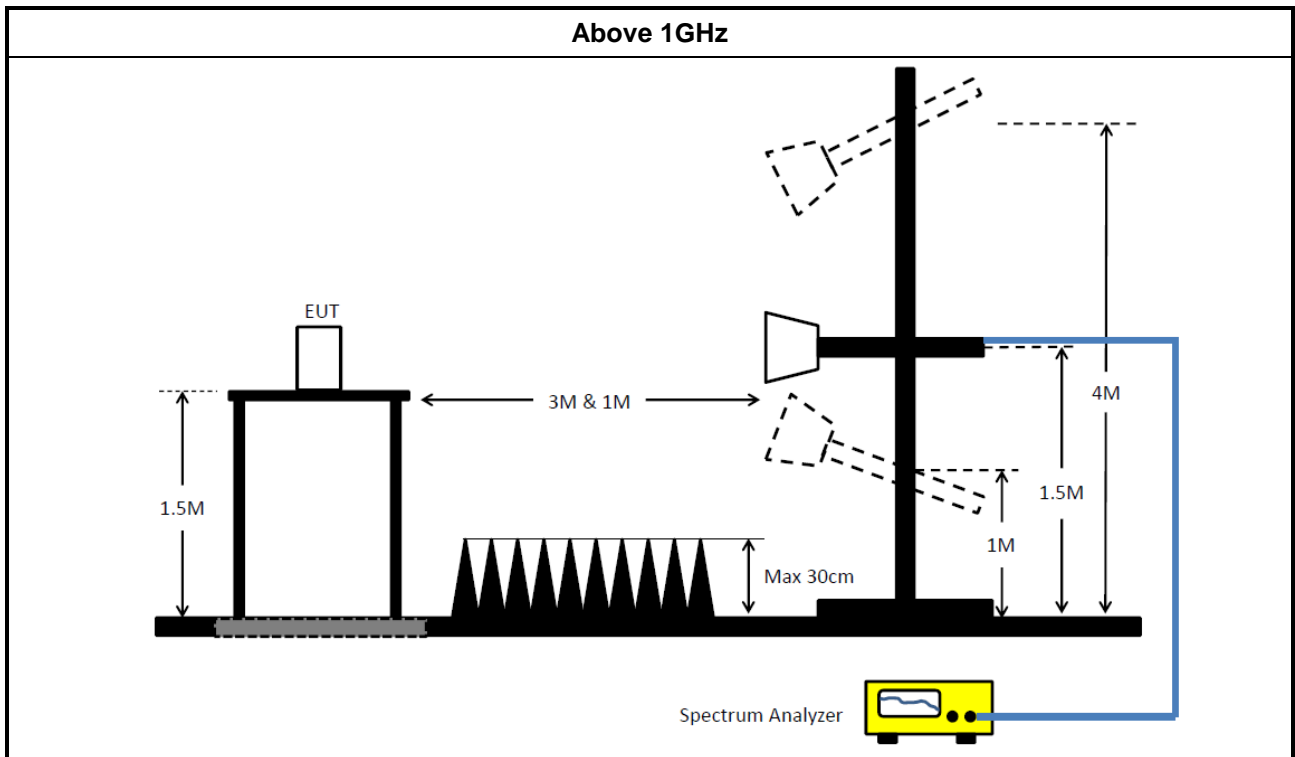
### 3.6.4 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

### 3.6.5 Test Setup





### 3.6.6 Test Result of Emissions in Restricted Frequency Bands (Below 30MHz)

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

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

Refer as Appendix F

## 4 Test Equipment and Calibration Data

### Instrument for AC Conduction

Instrument	Manufacturer/Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
EMI Test Receiver	R&S	ESR3	102051	9kHz ~ 3.6GHz	29/May/2020	28/May/2021
LISN	R&S	ENV216	101295	9kHz ~ 30MHz	05/Nov/2019	04/Nov/2020
RF Cable-CON	MTJ	RG142	CB002-CO	9kHz ~ 200MHz	31/Aug/2020	30/Aug/2021
Impuls Begrenzer Pulse Limiter	SCHWARZBECK	VTSD 9561-F	9561-F041	9kHz ~ 30MHz	21/Sep/2020	20/Sep/2021

### Instrument for Conducted Test

Instrument	Manufacturer/Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Signal Analyzer	R&S	FSV 40	101029	10KHz ~ 40GHz	01/Oct/2019	30/Sep/2020
SMB100A Signal Generator	R&S	SMB100A03	181147	100kHz~40GHz	12/Nov/2018	11/Nov/2020
Pulse Sensor	Anritsu	MA2411B	1027452	300MHz~40GHz	18/Mar/2020	17/Mar/2021
Power Meter	Anritsu	ML2495A	1124009	300MHz~40GHz	18/Mar/2020	17/Mar/2021

### Instrument for Radiated Test

Instrument	Manufacturer/Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	30MHz~1GHz 3m	27/Mar/2020	26/Mar/2021
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	1GHz~18GHz 3m	19/Mar/2020	18/Mar/2021
EXA Signal Analyzer	KEYSIGHT	N9010A	MY54200885	10Hz~44GHz	17/Aug/2020	16/Aug/2021
Amplifier	EMC	EMC9135	980232	9kHz~1GHz	14/Apr/2020	13/Apr/2021
Microwave Preamplifier	Agilent	8449B	3008A02096	1GHz~26.5GHz	24/Jun/2020	23/Jun/2021
Bilog Antenna & 5dB Attenuator	TESEQ & MTJ	CBL6111D&MT J6102-05	35418 & 3	30MHz~1GHz	30/Sep/2019	29/Sep/2020
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA9120 D 1534	1GHz~18GHz	28/May/2020	27/May/2021
RF Cable-low	Jye Bao	RG142	CB031+324530/4	9kHz~30MHz	03/Sep/2020	02/Sep/2021
RF Cable-low	Jye Bao	RG142	CB031+324530/4	30MHz~1GHz	12/Feb/2020	11/Feb/2021
RF Cable-R03m	HUBER+SUHNER	SUCOFLEX104	324530/4+17173/4	1GHz~40GHz	12/Feb/2020	11/Feb/2021
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170221	18GHz~40GHz	13/Mar/2020	12/Mar/2021
Loop Antenna	TESEQ	HLA 6120	31244	9kHz~30MHz	16/Mar/2020	15/Mar/2021
EMI Test Receiver	R&S	ESR3	102051	9kHz~3.6GHz	29/May/2020	28/May/2021





Summary

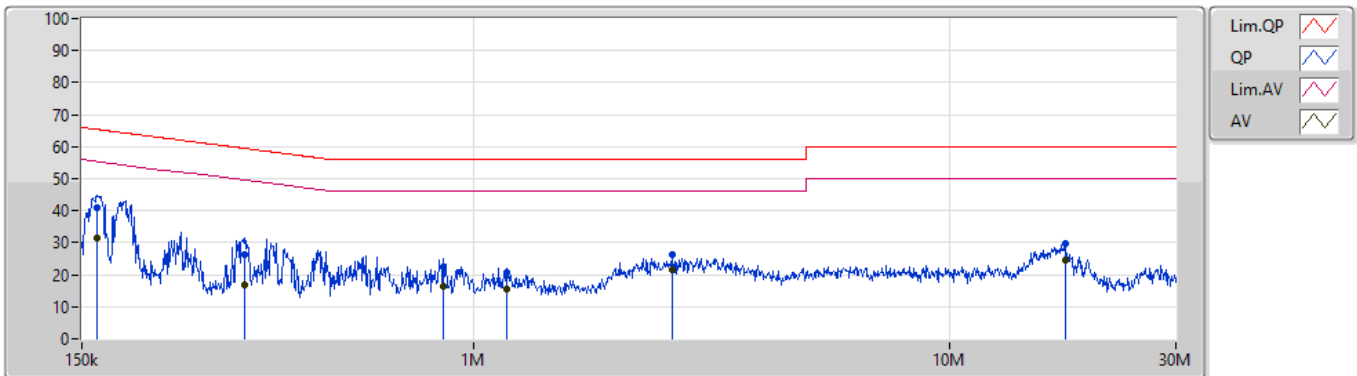
Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	AV	197.568k	37.78	53.71	-15.93	Neutral

Mode Configure

Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition	Comments
Mode 1	Pass	QP	161.175k	41.01	65.41	-24.40	Line	-
Mode 1	Pass	AV	161.175k	31.54	55.41	-23.87	Line	"Worst"
Mode 1	Pass	QP	330.648k	26.50	59.44	-32.94	Line	-
Mode 1	Pass	AV	330.648k	16.97	49.44	-32.47	Line	-
Mode 1	Pass	QP	865.349k	22.34	56.00	-33.66	Line	-
Mode 1	Pass	AV	865.349k	16.57	46.00	-29.43	Line	-
Mode 1	Pass	QP	1.172M	20.63	56.00	-35.37	Line	-
Mode 1	Pass	AV	1.172M	15.68	46.00	-30.32	Line	-
Mode 1	Pass	QP	2.615M	26.11	56.00	-29.89	Line	-
Mode 1	Pass	AV	2.615M	21.51	46.00	-24.49	Line	-
Mode 1	Pass	QP	17.555M	29.79	60.00	-30.21	Line	-
Mode 1	Pass	AV	17.555M	24.56	50.00	-25.44	Line	-
Mode 1	Pass	QP	167.071k	28.88	65.10	-36.22	Neutral	-
Mode 1	Pass	AV	167.071k	18.79	55.10	-36.31	Neutral	-
Mode 1	Pass	QP	197.568k	42.03	63.71	-21.68	Neutral	-
Mode 1	Pass	AV	197.568k	37.78	53.71	-15.93	Neutral	"Worst"
Mode 1	Pass	QP	428.605k	20.94	57.28	-36.34	Neutral	-
Mode 1	Pass	AV	428.605k	16.90	47.28	-30.38	Neutral	-
Mode 1	Pass	QP	1.117M	24.25	56.00	-31.75	Neutral	-
Mode 1	Pass	AV	1.117M	19.30	46.00	-26.70	Neutral	-
Mode 1	Pass	QP	2.983M	26.83	56.00	-29.17	Neutral	-
Mode 1	Pass	AV	2.983M	22.00	46.00	-24.00	Neutral	-
Mode 1	Pass	QP	17.004M	27.63	60.00	-32.37	Neutral	-
Mode 1	Pass	AV	17.004M	22.83	50.00	-27.17	Neutral	-

### Conducted Emissions at Powerline\_Mode 1

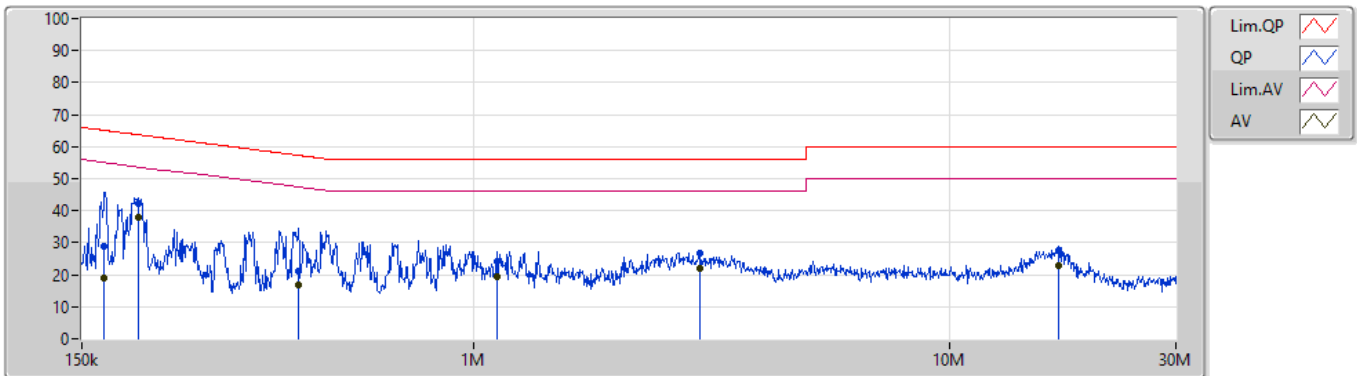
30/09/2020



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	161.175k	41.01	65.41	-24.40	19.57	Line	-	21.44	9.66	0.01	9.90
AV	161.175k	31.54	55.41	-23.87	19.57	Line	"Worst"	11.97	9.66	0.01	9.90
QP	330.648k	26.50	59.44	-32.94	19.56	Line	-	6.94	9.64	0.02	9.90
AV	330.648k	16.97	49.44	-32.47	19.56	Line	-	-2.59	9.64	0.02	9.90
QP	865.349k	22.34	56.00	-33.66	19.51	Line	-	2.83	9.64	0.05	9.82
AV	865.349k	16.57	46.00	-29.43	19.51	Line	-	-2.94	9.64	0.05	9.82
QP	1.172M	20.63	56.00	-35.37	19.50	Line	-	1.13	9.64	0.06	9.80
AV	1.172M	15.68	46.00	-30.32	19.50	Line	-	-3.82	9.64	0.06	9.80
QP	2.615M	26.11	56.00	-29.89	19.59	Line	-	6.52	9.65	0.10	9.84
AV	2.615M	21.51	46.00	-24.49	19.59	Line	-	1.92	9.65	0.10	9.84
QP	17.555M	29.79	60.00	-30.21	19.82	Line	-	9.97	9.65	0.27	9.90
AV	17.555M	24.56	50.00	-25.44	19.82	Line	-	4.74	9.65	0.27	9.90

### Conducted Emissions at Powerline\_Mode 1

30/09/2020



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	167.071k	28.88	65.10	-36.22	19.56	Neutral	-	9.32	9.65	0.01	9.90
AV	167.071k	18.79	55.10	-36.31	19.56	Neutral	-	-0.77	9.65	0.01	9.90
QP	197.568k	42.03	63.71	-21.68	19.55	Neutral	-	22.48	9.64	0.01	9.90
AV	197.568k	37.78	53.71	-15.93	19.55	Neutral	"Worst"	18.23	9.64	0.01	9.90
QP	428.605k	20.94	57.28	-36.34	19.54	Neutral	-	1.40	9.63	0.02	9.89
AV	428.605k	16.90	47.28	-30.38	19.54	Neutral	-	-2.64	9.63	0.02	9.89
QP	1.117M	24.25	56.00	-31.75	19.48	Neutral	-	4.77	9.63	0.05	9.80
AV	1.117M	19.30	46.00	-26.70	19.48	Neutral	-	-0.18	9.63	0.05	9.80
QP	2.983M	26.83	56.00	-29.17	19.62	Neutral	-	7.21	9.66	0.10	9.86
AV	2.983M	22.00	46.00	-24.00	19.62	Neutral	-	2.38	9.66	0.10	9.86
QP	17.004M	27.63	60.00	-32.37	19.89	Neutral	-	7.74	9.72	0.27	9.90
AV	17.004M	22.83	50.00	-27.17	19.89	Neutral	-	2.94	9.72	0.27	9.90



Summary

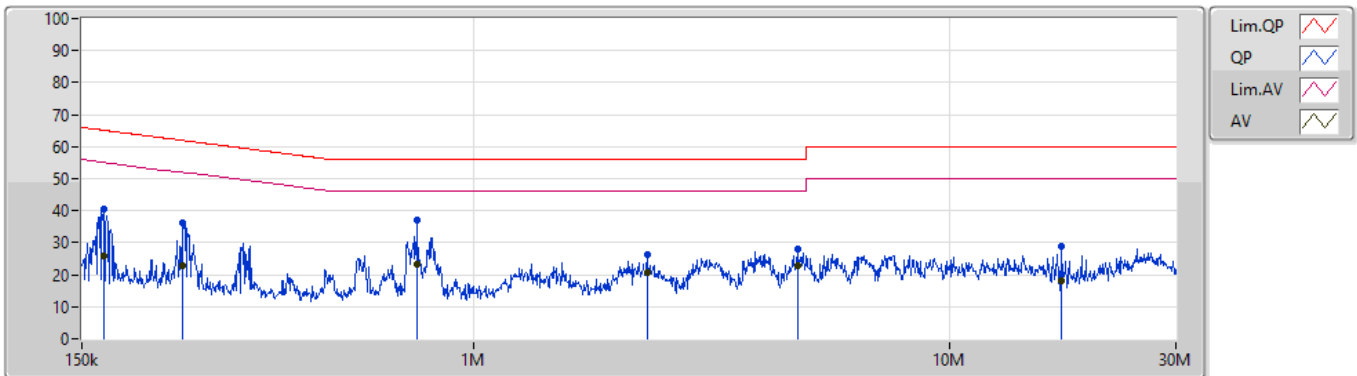
Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 2	Pass	AV	746.524k	27.68	46.00	-18.32	Neutral

Mode Configure

Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition	Comments
Mode 2	Pass	QP	167.071k	40.54	65.10	-24.56	Line	-
Mode 2	Pass	AV	167.071k	25.69	55.10	-29.41	Line	-
Mode 2	Pass	QP	245.097k	36.13	61.93	-25.80	Line	-
Mode 2	Pass	AV	245.097k	22.63	51.93	-29.30	Line	-
Mode 2	Pass	QP	758.54k	37.01	56.00	-18.99	Line	"Worst"
Mode 2	Pass	AV	758.54k	23.43	46.00	-22.57	Line	-
Mode 2	Pass	QP	2.32M	26.41	56.00	-29.59	Line	-
Mode 2	Pass	AV	2.32M	20.67	46.00	-25.33	Line	-
Mode 2	Pass	QP	4.797M	28.06	56.00	-27.94	Line	-
Mode 2	Pass	AV	4.797M	22.82	46.00	-23.18	Line	-
Mode 2	Pass	QP	17.277M	28.72	60.00	-31.28	Line	-
Mode 2	Pass	AV	17.277M	18.10	50.00	-31.90	Line	-
Mode 2	Pass	QP	165.743k	40.28	65.18	-24.90	Neutral	-
Mode 2	Pass	AV	165.743k	26.65	55.18	-28.53	Neutral	-
Mode 2	Pass	QP	247.062k	35.60	61.85	-26.25	Neutral	-
Mode 2	Pass	AV	247.062k	25.25	51.85	-26.60	Neutral	-
Mode 2	Pass	QP	746.524k	37.09	56.00	-18.91	Neutral	-
Mode 2	Pass	AV	746.524k	27.68	46.00	-18.32	Neutral	"Worst"
Mode 2	Pass	QP	2.099M	28.17	56.00	-27.83	Neutral	-
Mode 2	Pass	AV	2.099M	21.34	46.00	-24.66	Neutral	-
Mode 2	Pass	QP	3.898M	29.59	56.00	-26.41	Neutral	-
Mode 2	Pass	AV	3.898M	23.09	46.00	-22.91	Neutral	-
Mode 2	Pass	QP	22.485M	27.33	60.00	-32.67	Neutral	-
Mode 2	Pass	AV	22.485M	21.83	50.00	-28.17	Neutral	-

### Conducted Emissions at Powerline

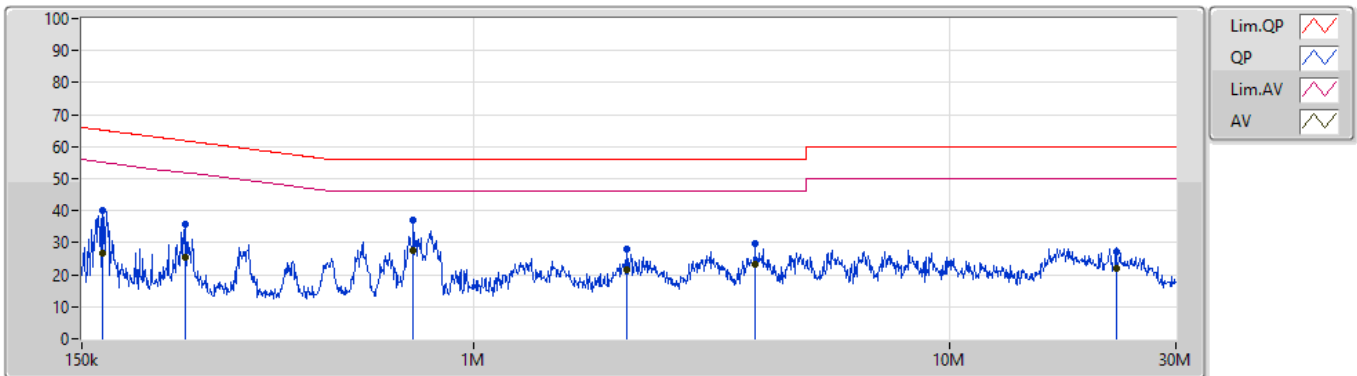
30/09/2020



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	167.071k	40.54	65.10	-24.56	19.57	Line	-	20.97	9.66	0.01	9.90
AV	167.071k	25.69	55.10	-29.41	19.57	Line	-	6.12	9.66	0.01	9.90
QP	245.097k	36.13	61.93	-25.80	19.56	Line	-	16.57	9.65	0.01	9.90
AV	245.097k	22.63	51.93	-29.30	19.56	Line	-	3.07	9.65	0.01	9.90
QP	758.54k	37.01	56.00	-18.99	19.51	Line	"Worst"	17.50	9.64	0.04	9.83
AV	758.54k	23.43	46.00	-22.57	19.51	Line	-	3.92	9.64	0.04	9.83
QP	2.32M	26.41	56.00	-29.59	19.56	Line	-	6.85	9.65	0.09	9.82
AV	2.32M	20.67	46.00	-25.33	19.56	Line	-	1.11	9.65	0.09	9.82
QP	4.797M	28.06	56.00	-27.94	19.71	Line	-	8.35	9.67	0.14	9.90
AV	4.797M	22.82	46.00	-23.18	19.71	Line	-	3.11	9.67	0.14	9.90
QP	17.277M	28.72	60.00	-31.28	19.82	Line	-	8.90	9.65	0.27	9.90
AV	17.277M	18.10	50.00	-31.90	19.82	Line	-	-1.72	9.65	0.27	9.90

### Conducted Emissions at Powerline

30/09/2020



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	165.743k	40.28	65.18	-24.90	19.56	Neutral	-	20.72	9.65	0.01	9.90
AV	165.743k	26.65	55.18	-28.53	19.56	Neutral	-	7.09	9.65	0.01	9.90
QP	247.062k	35.60	61.85	-26.25	19.55	Neutral	-	16.05	9.64	0.01	9.90
AV	247.062k	25.25	51.85	-26.60	19.55	Neutral	-	5.70	9.64	0.01	9.90
QP	746.524k	37.09	56.00	-18.91	19.50	Neutral	-	17.59	9.63	0.04	9.83
AV	746.524k	27.68	46.00	-18.32	19.50	Neutral	"Worst"	8.18	9.63	0.04	9.83
QP	2.099M	28.17	56.00	-27.83	19.54	Neutral	-	8.63	9.65	0.08	9.81
AV	2.099M	21.34	46.00	-24.66	19.54	Neutral	-	1.80	9.65	0.08	9.81
QP	3.898M	29.59	56.00	-26.41	19.68	Neutral	-	9.91	9.66	0.12	9.90
AV	3.898M	23.09	46.00	-22.91	19.68	Neutral	-	3.41	9.66	0.12	9.90
QP	22.485M	27.33	60.00	-32.67	19.92	Neutral	-	7.41	9.70	0.32	9.90
AV	22.485M	21.83	50.00	-28.17	19.92	Neutral	-	1.91	9.70	0.32	9.90



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)	721.25k	1.034M	1M03F1D	706.25k	1.027M
BT-LE(2Mbps)	1.26M	2.049M	2M05F1D	1.253M	2.043M

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

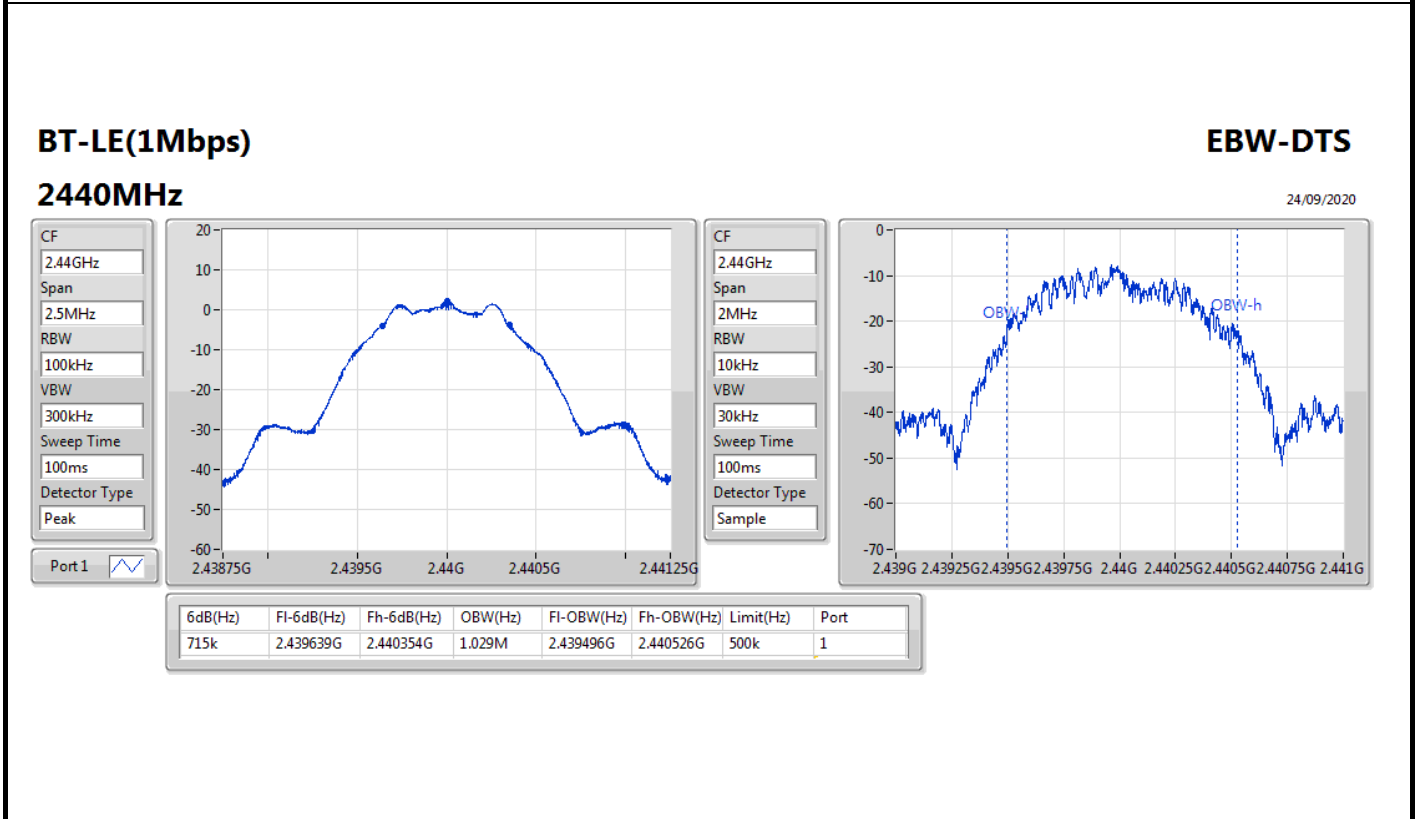
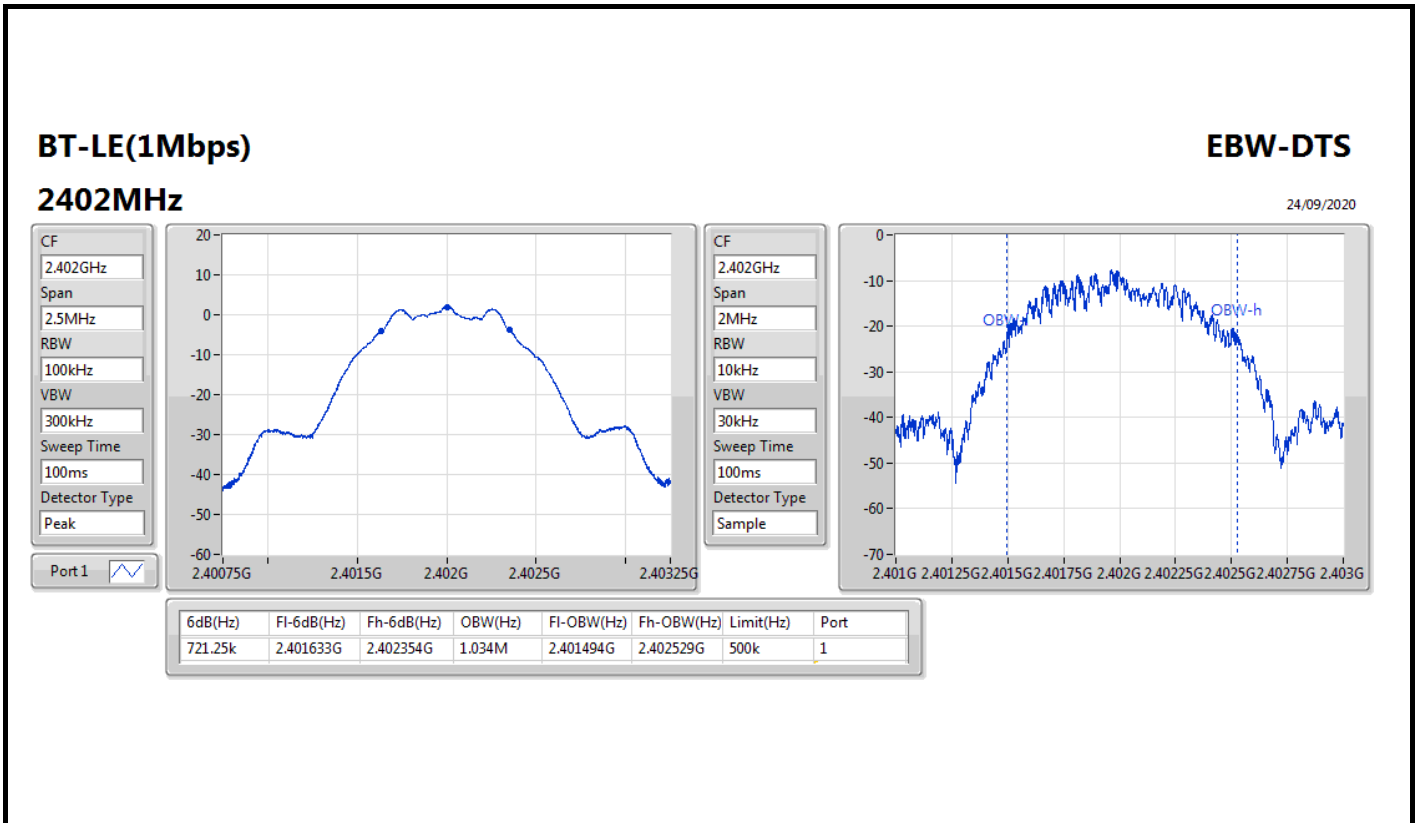


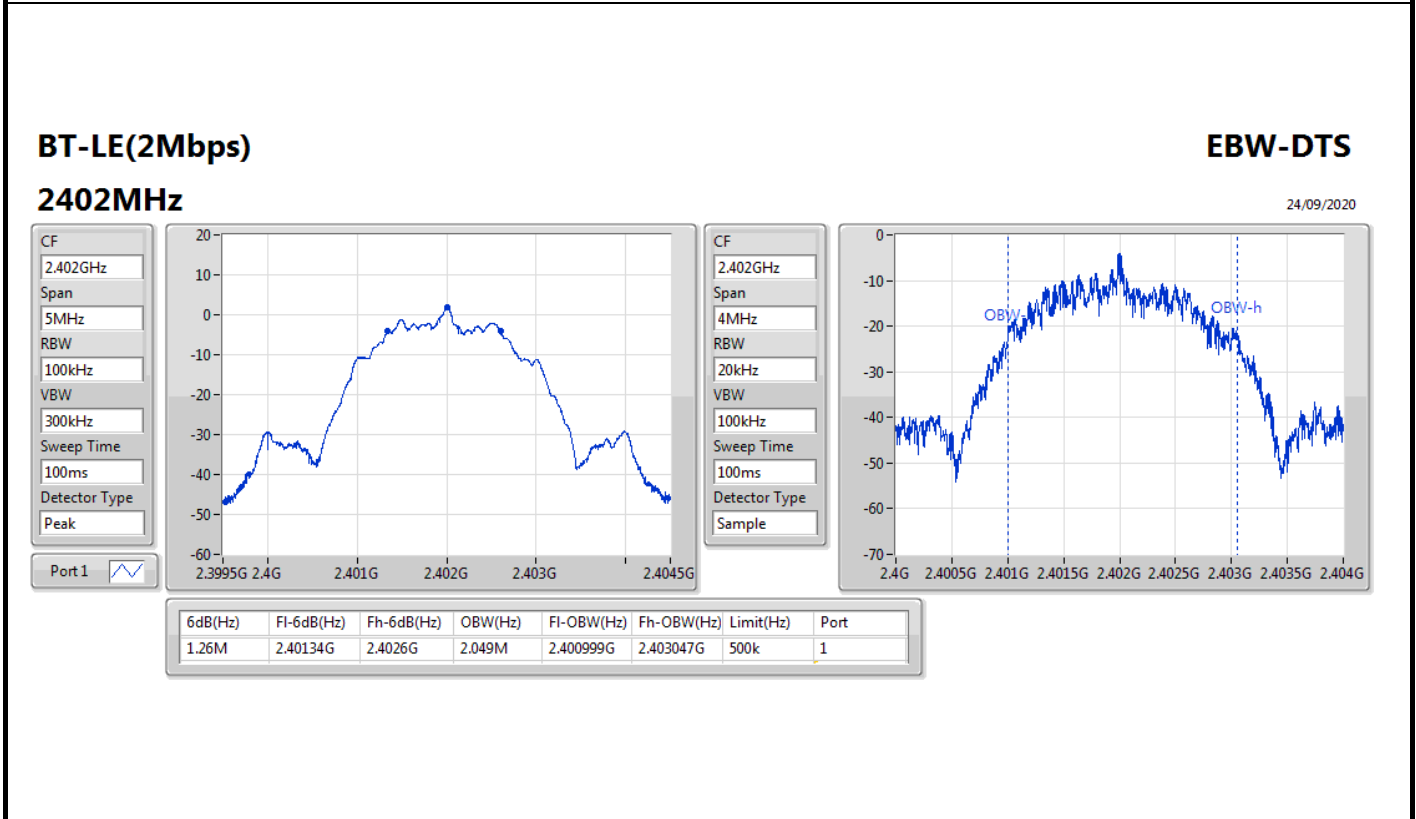
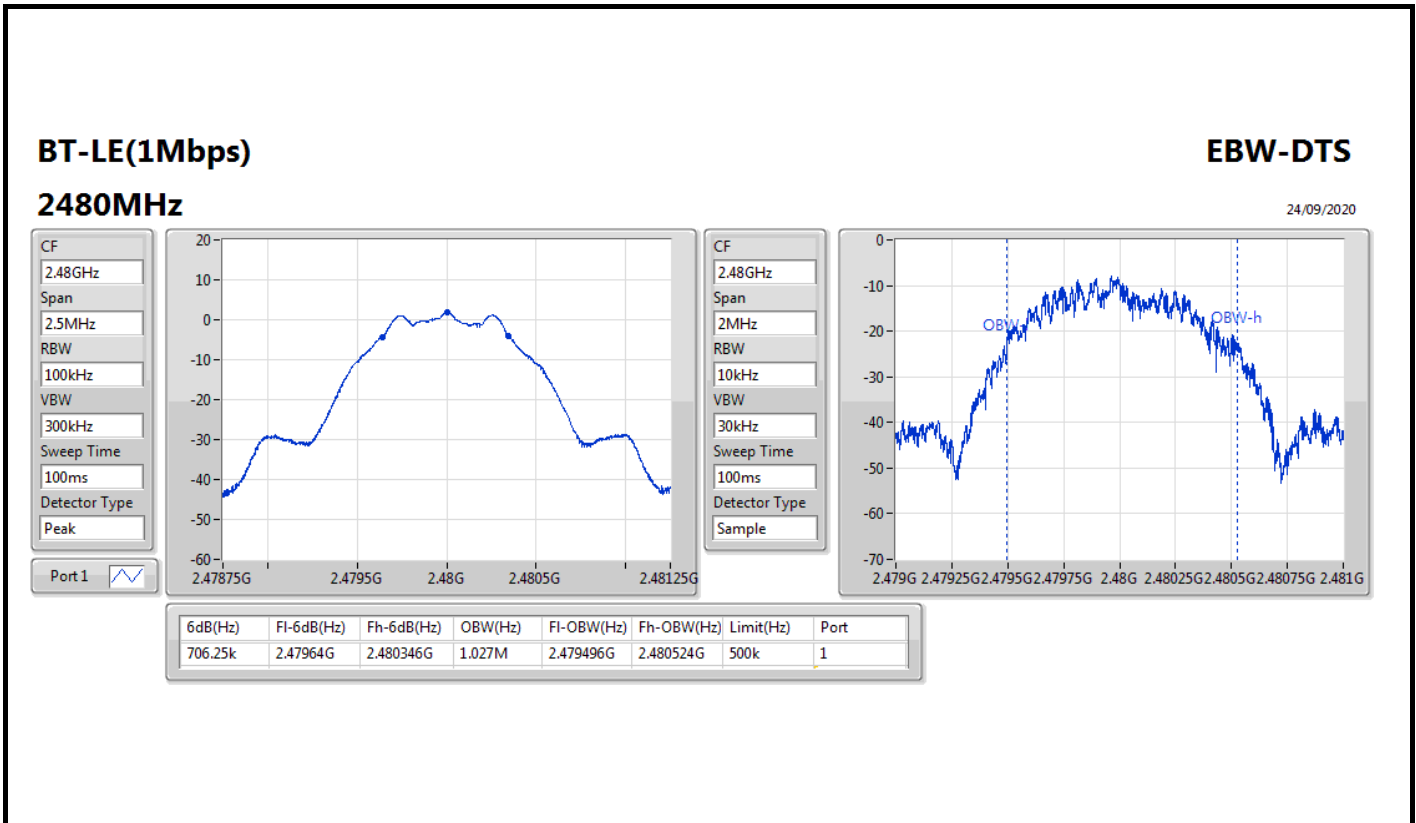
Result

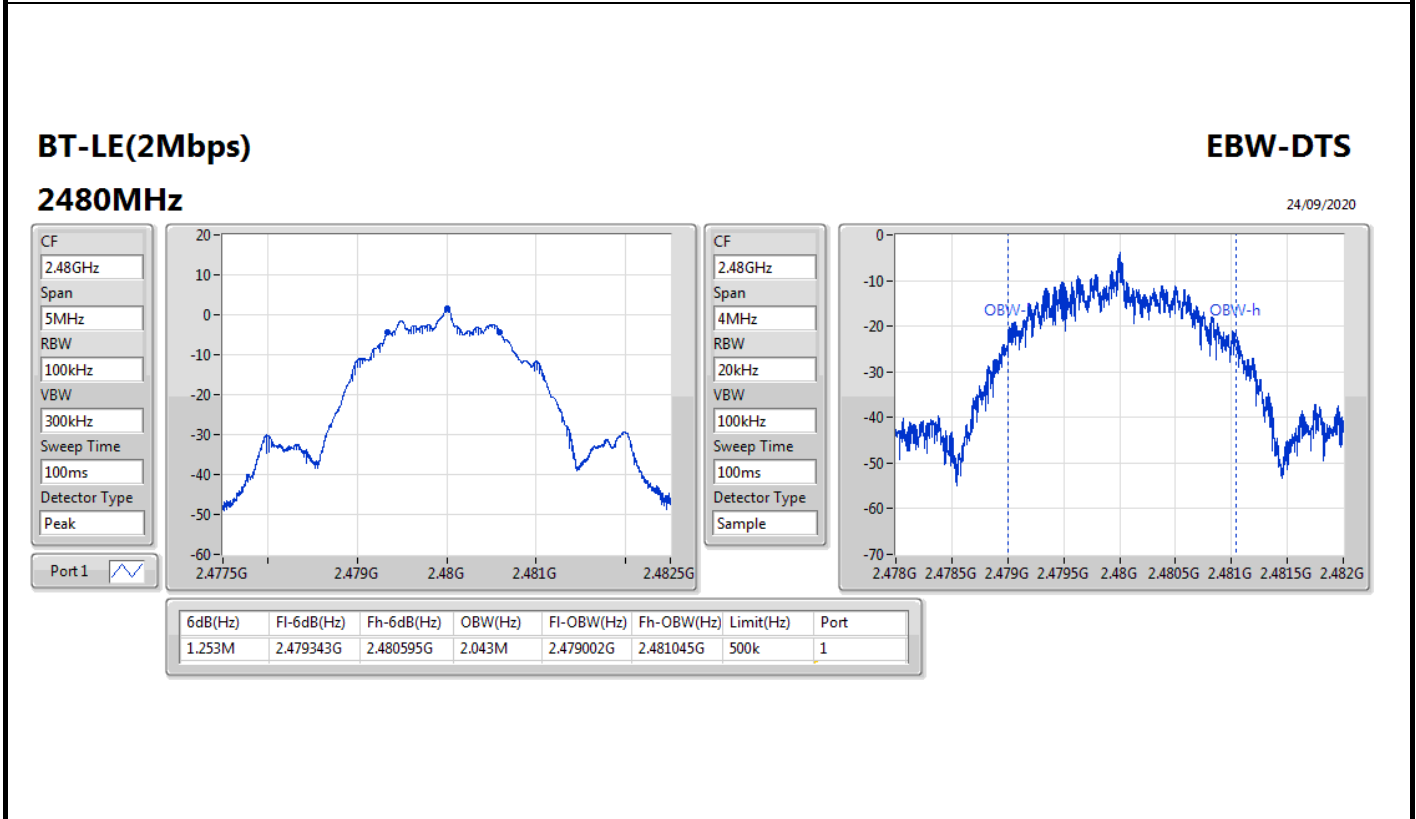
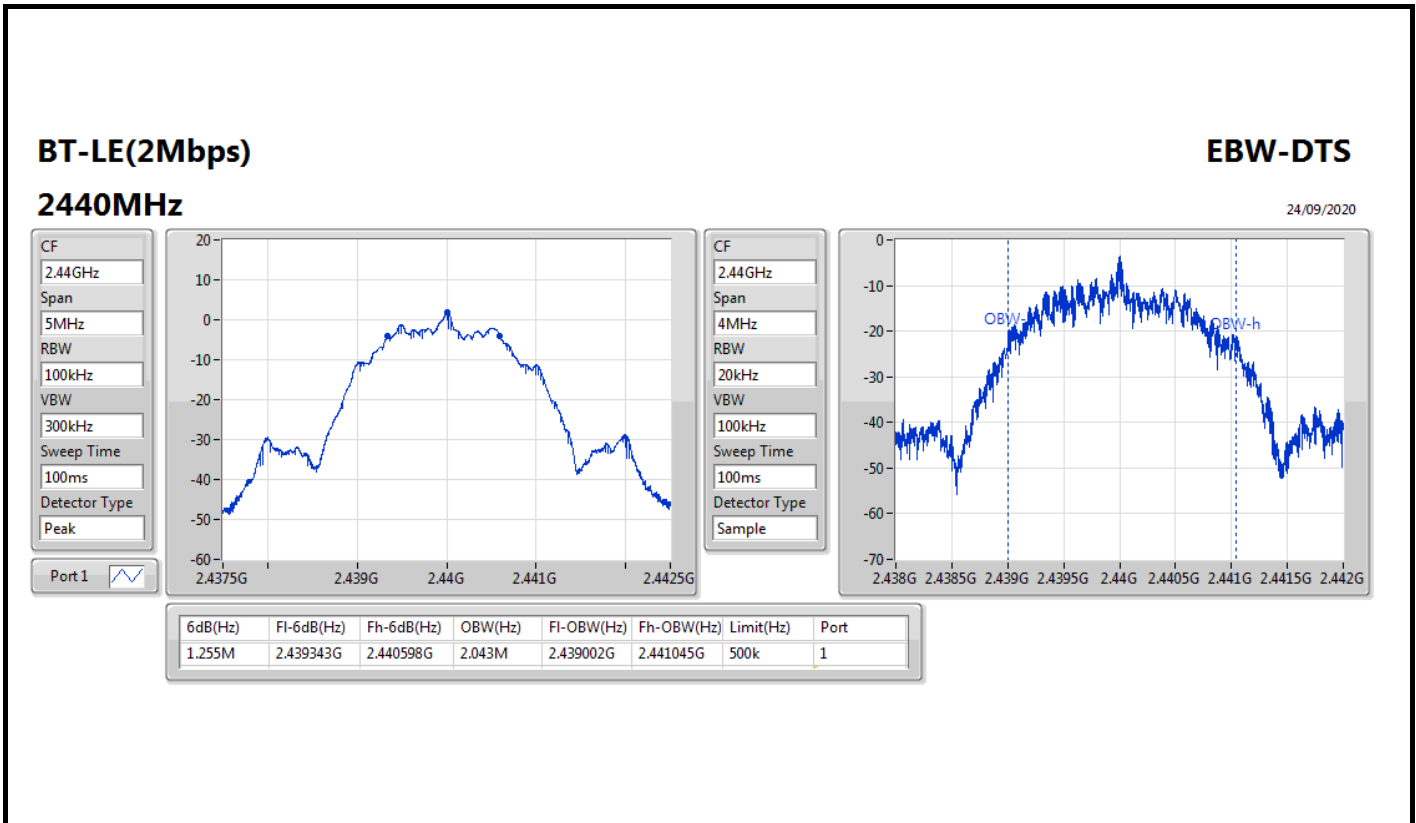
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	721.25k	1.034M
2440MHz	Pass	500k	715k	1.029M
2480MHz	Pass	500k	706.25k	1.027M
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	500k	1.26M	2.049M
2440MHz	Pass	500k	1.255M	2.043M
2480MHz	Pass	500k	1.253M	2.043M

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











**Summary**

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	1.80	0.00151
BT-LE(2Mbps)	1.67	0.00147



Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	0.81	1.80	30.00
2440MHz	Pass	0.81	1.80	30.00
2480MHz	Pass	0.81	1.60	30.00
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	0.81	1.63	30.00
2440MHz	Pass	0.81	1.67	30.00
2480MHz	Pass	0.81	1.33	30.00

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



**Summary**

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-12.96
BT-LE(2Mbps)	-15.98

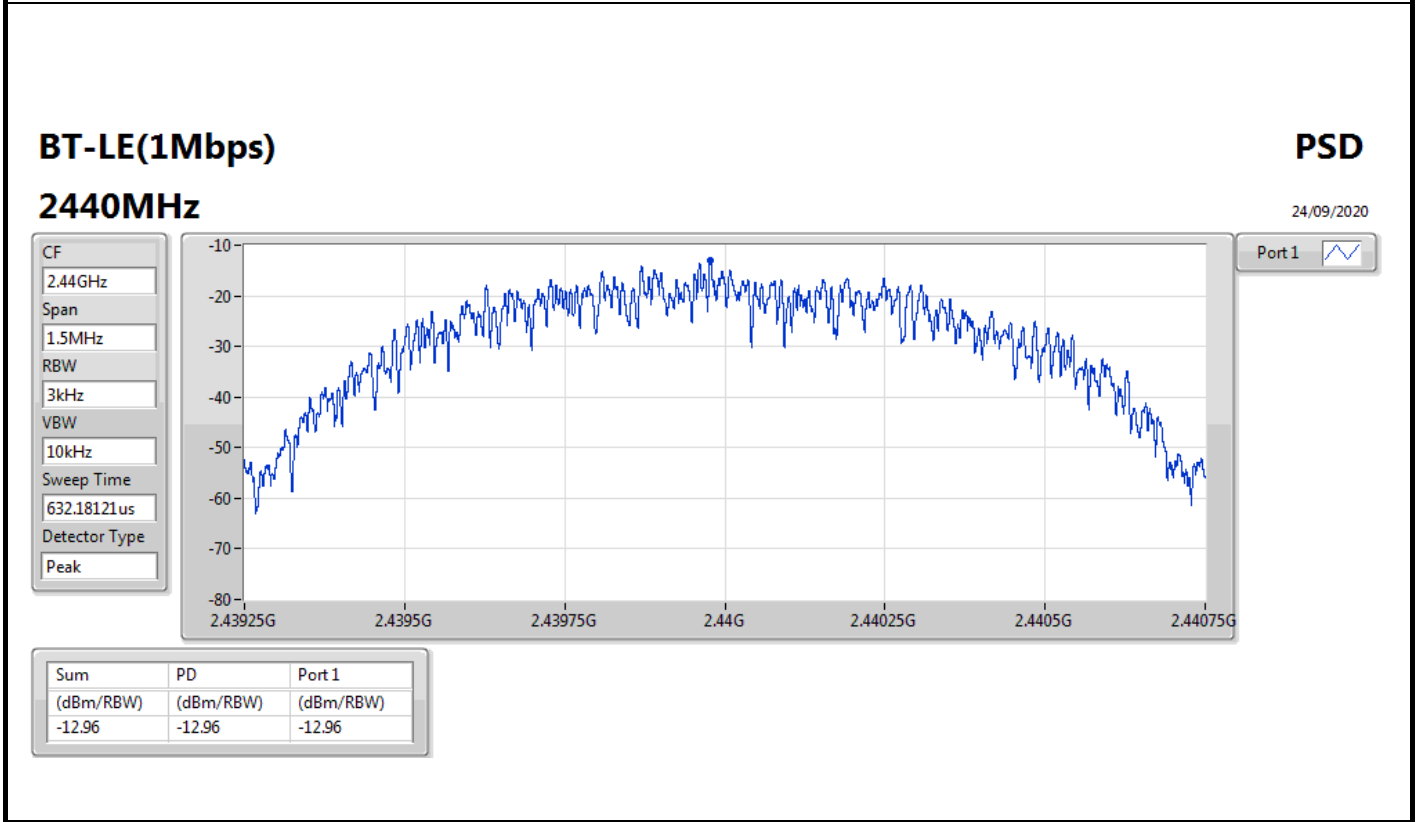
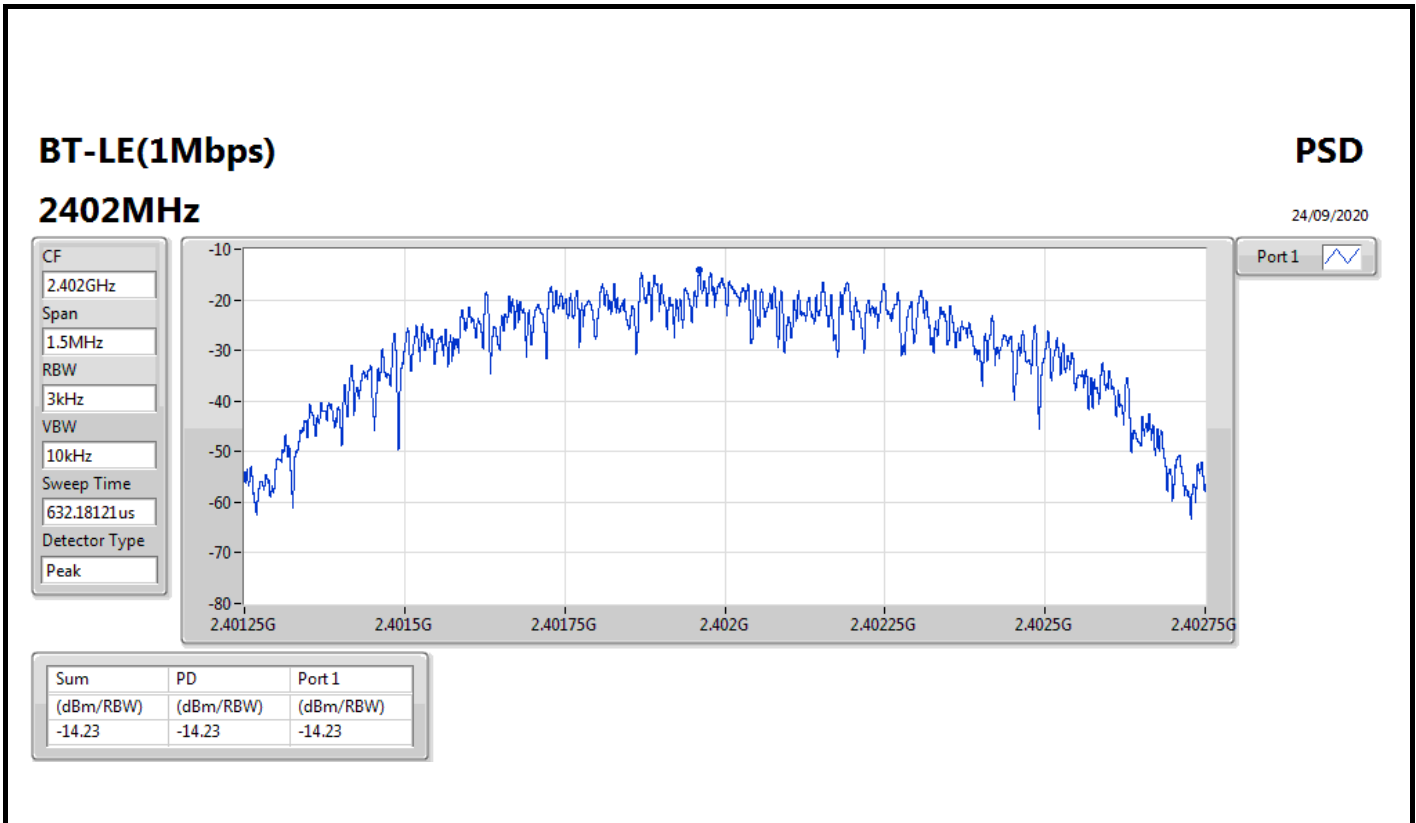
RBW = 3kHz;



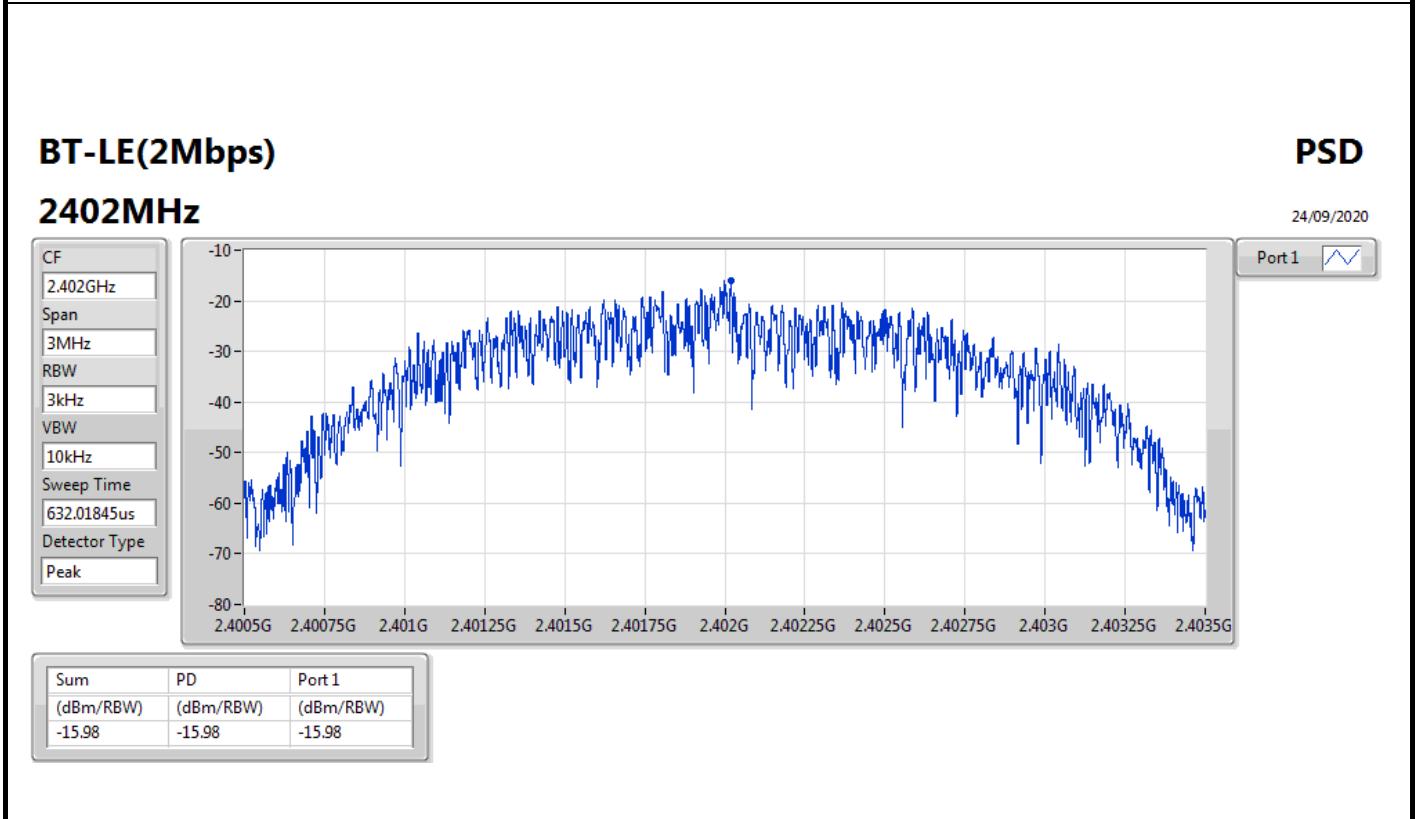
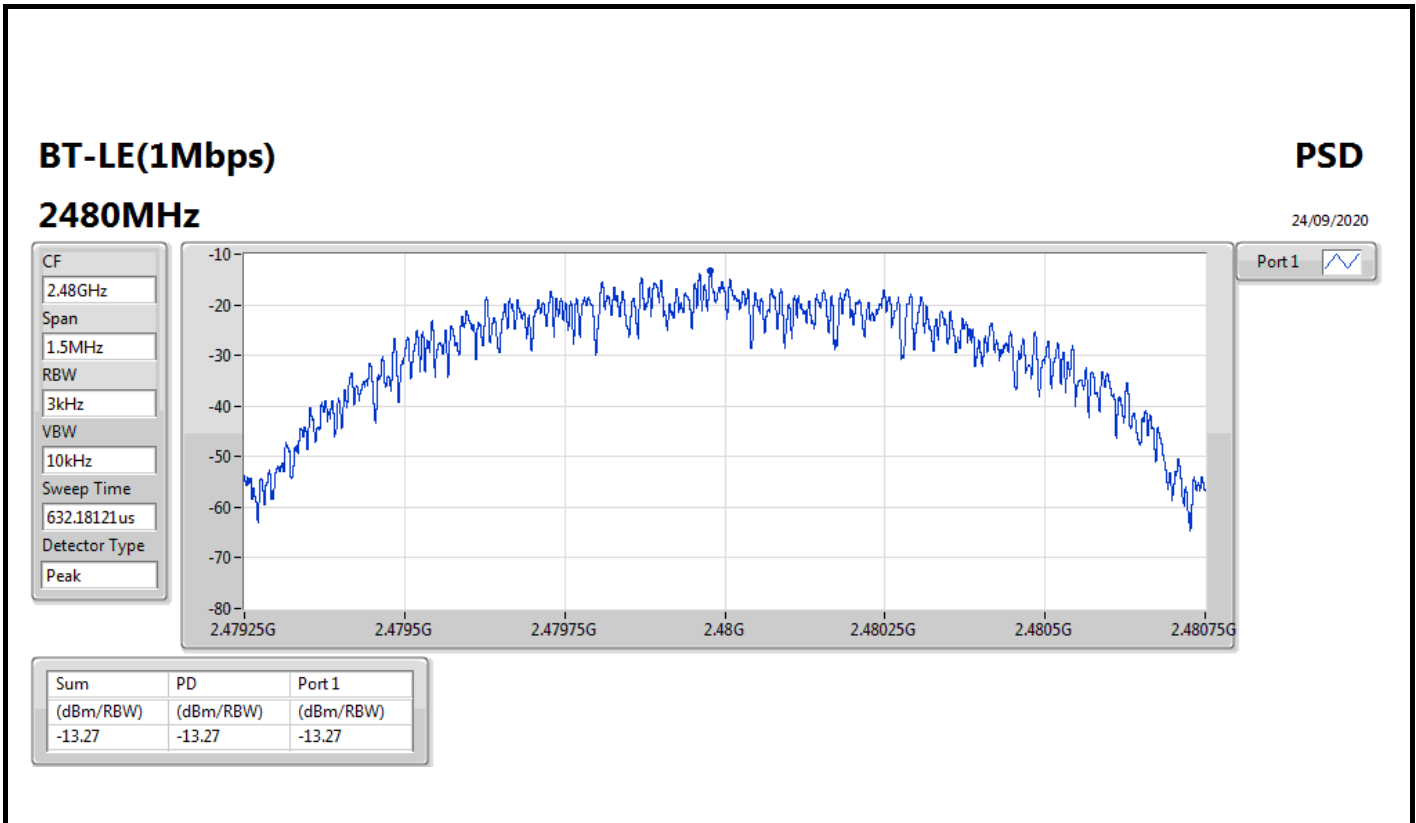
Result

Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	0.81	-14.23	8.00
2440MHz	Pass	0.81	-12.96	8.00
2480MHz	Pass	0.81	-13.27	8.00
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	0.81	-15.98	8.00
2440MHz	Pass	0.81	-16.74	8.00
2480MHz	Pass	0.81	-16.25	8.00

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







**BT-LE(2Mbps)**

**PSD**

**2440MHz**

24/09/2020

CF  
2.44GHz

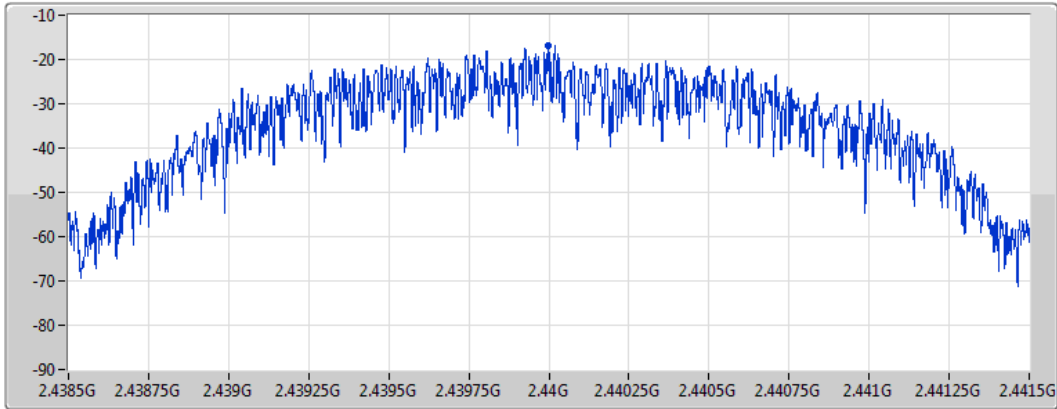
Span  
3MHz


RBW  
3kHz

VBW  
10kHz

Sweep Time  
632.01845us

Detector Type  
Peak



Port 1 

Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-16.74	-16.74	-16.74

**BT-LE(2Mbps)**

**PSD**

**2480MHz**

24/09/2020

CF  
2.48GHz

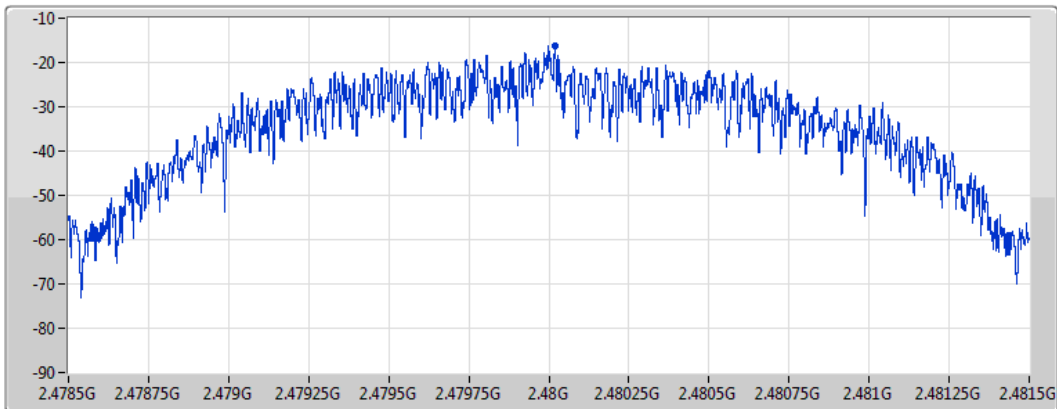
Span  
3MHz


RBW  
3kHz

VBW  
10kHz

Sweep Time  
632.01845us

Detector Type  
Peak



Port 1 

Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-16.25	-16.25	-16.25



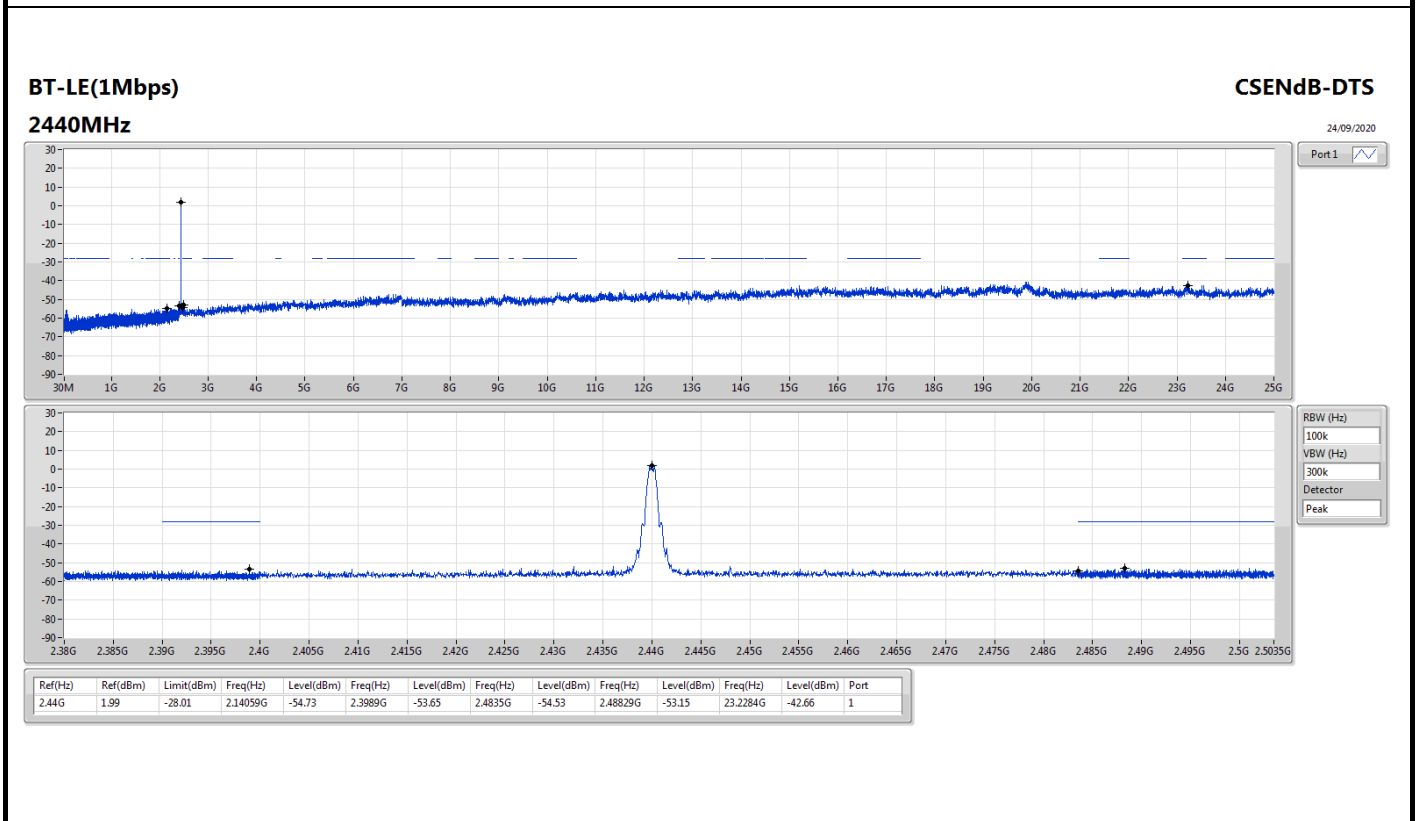
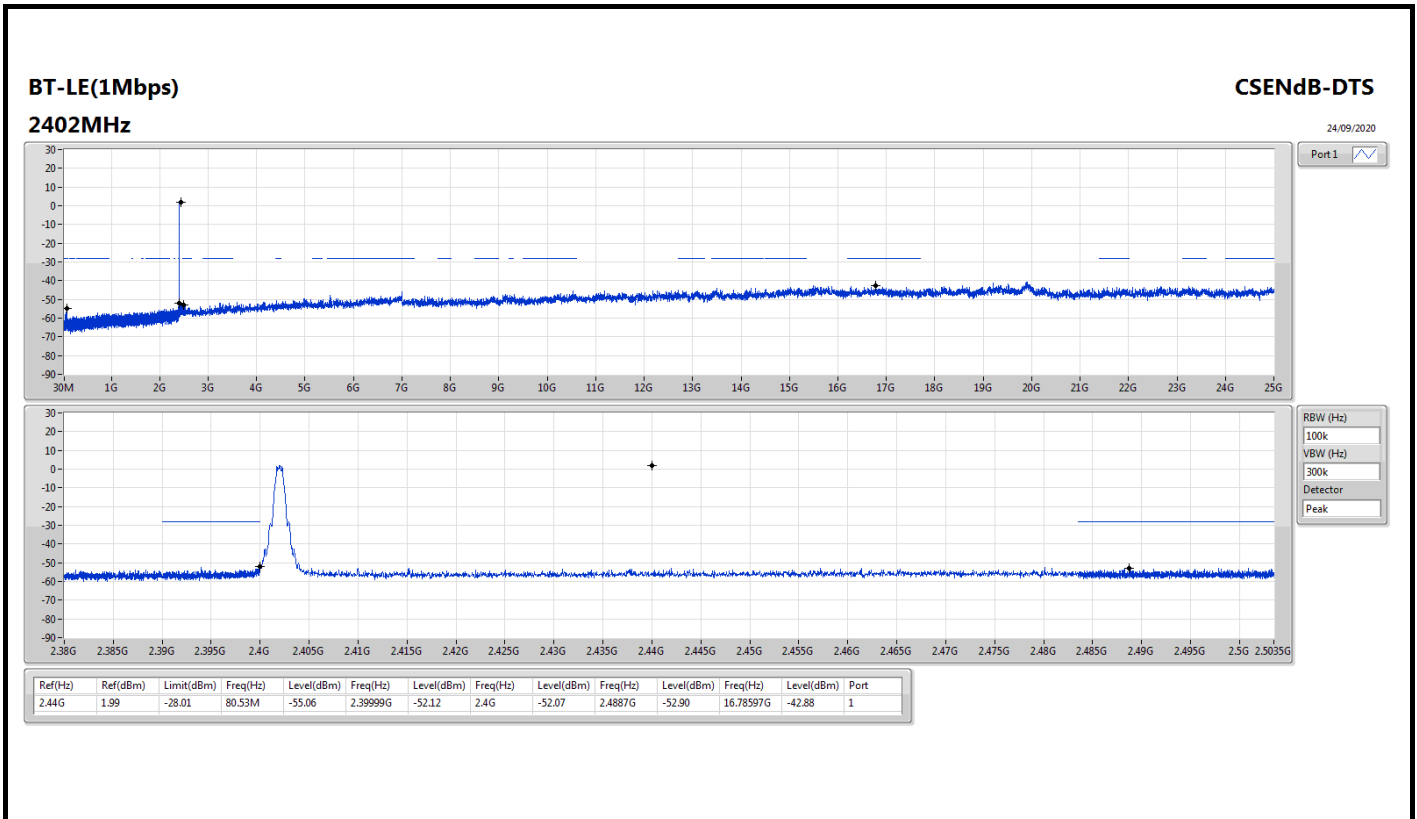
Summary

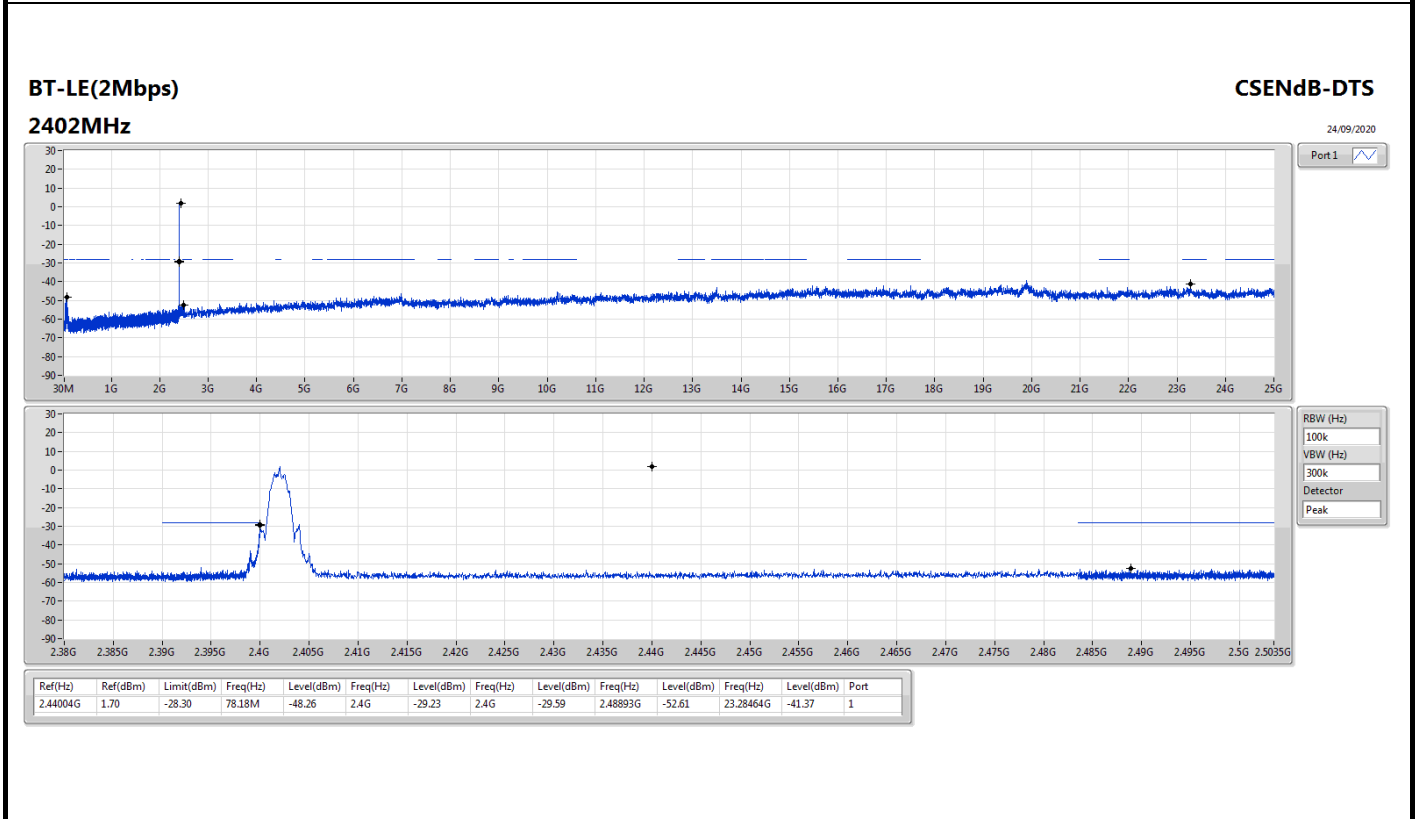
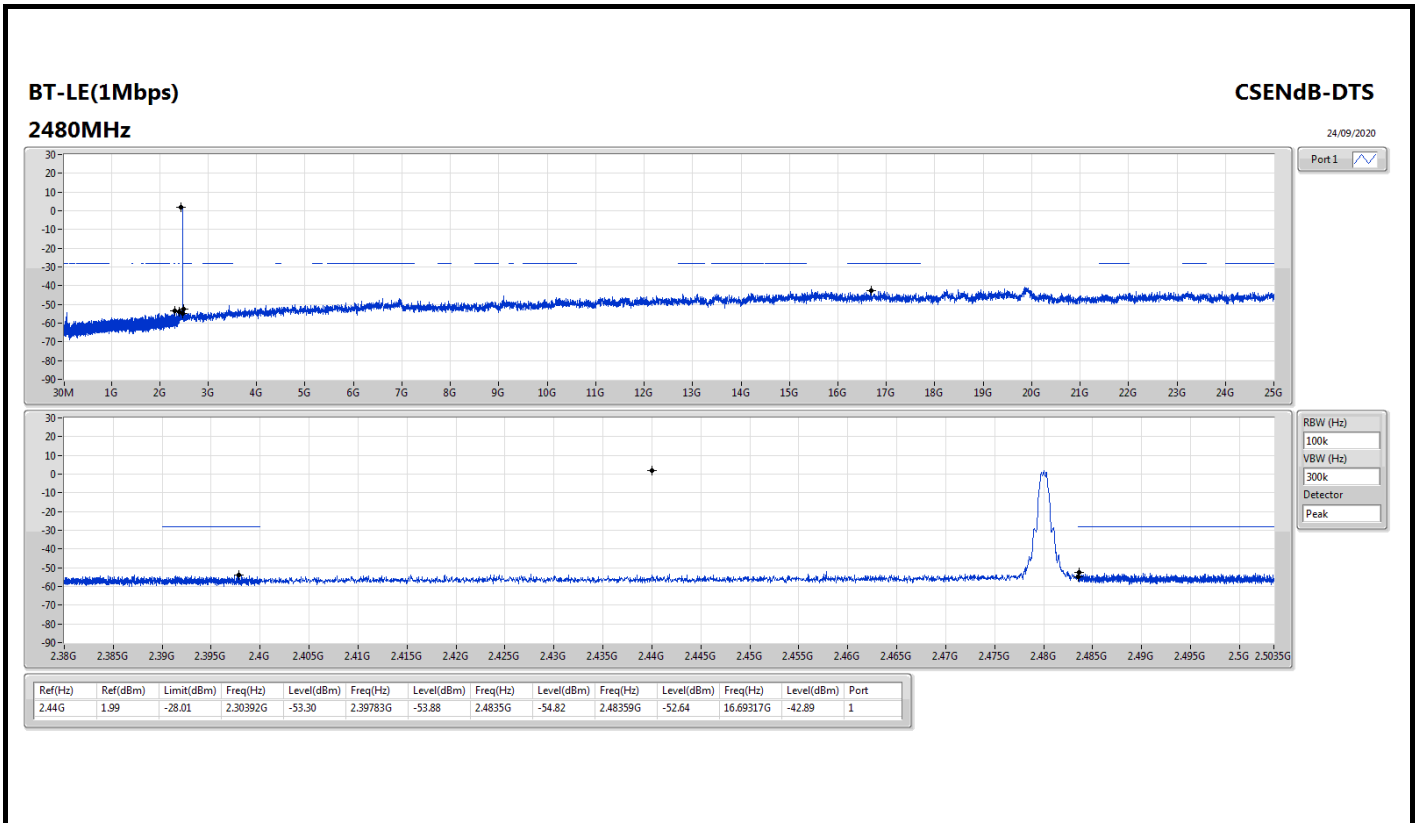
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	2.44G	1.99	-28.01	80.53M	-55.06	2.39999G	-52.12	2.4G	-52.07	2.4887G	-52.90	16.78597G	-42.88	1
BT-LE(2Mbps)	Pass	2.44004G	1.70	-28.30	78.18M	-48.26	2.4G	-29.23	2.4G	-29.59	2.48893G	-52.61	23.28464G	-41.37	1

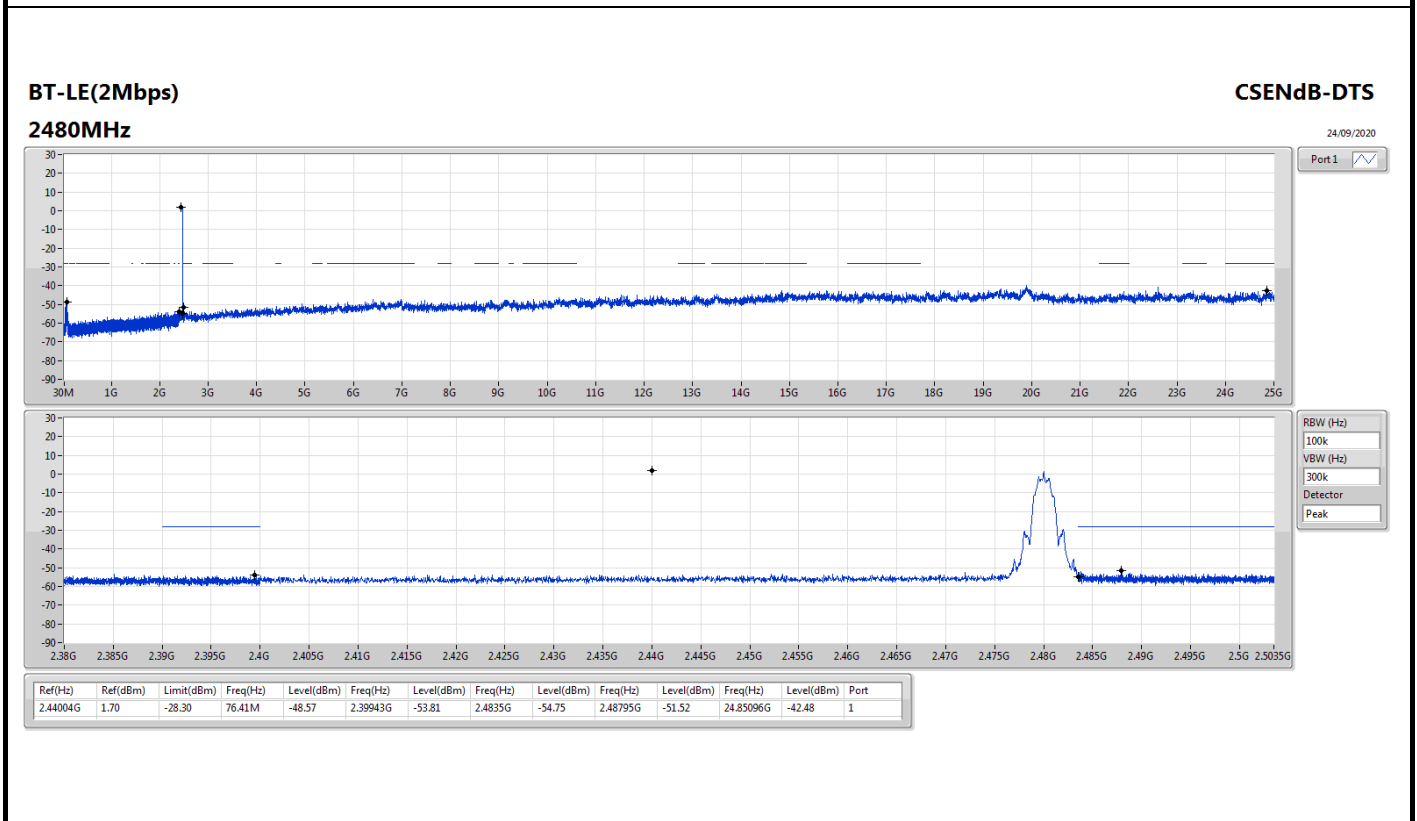
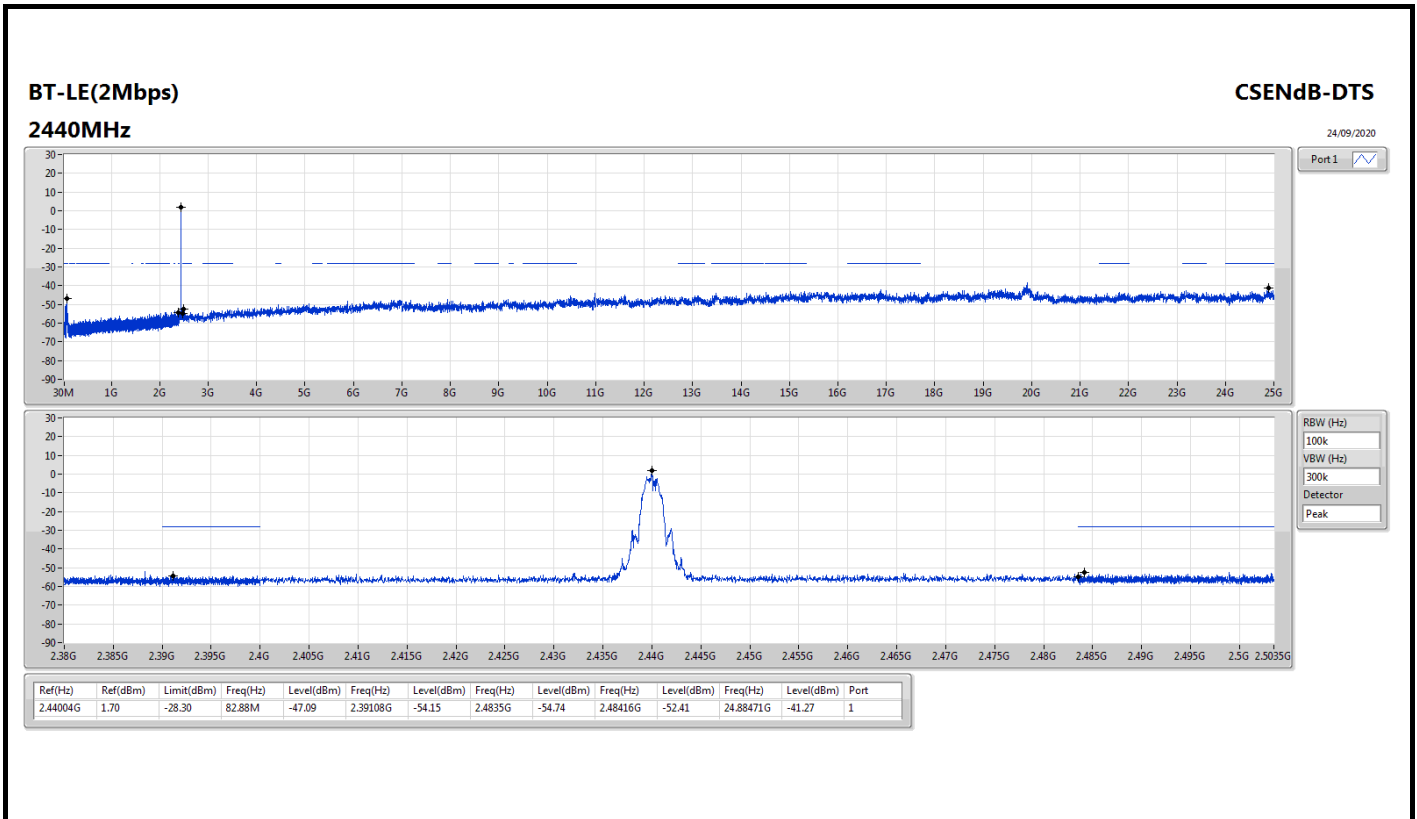


Result

Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.44G	1.99	-28.01	80.53M	-55.06	2.39999G	-52.12	2.4G	-52.07	2.4887G	-52.90	16.78597G	-42.88	1
2440MHz	Pass	2.44G	1.99	-28.01	2.14059G	-54.73	2.3989G	-53.65	2.4835G	-54.53	2.48829G	-53.15	23.2284G	-42.66	1
2480MHz	Pass	2.44G	1.99	-28.01	2.30392G	-53.30	2.39783G	-53.88	2.4835G	-54.82	2.48359G	-52.64	16.69317G	-42.89	1
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.44004G	1.70	-28.30	78.18M	-48.26	2.4G	-29.23	2.4G	-29.59	2.48893G	-52.61	23.28464G	-41.37	1
2440MHz	Pass	2.44004G	1.70	-28.30	82.88M	-47.09	2.39108G	-54.15	2.4835G	-54.74	2.48416G	-52.41	24.88471G	-41.27	1
2480MHz	Pass	2.44004G	1.70	-28.30	76.41M	-48.57	2.39943G	-53.81	2.4835G	-54.75	2.48795G	-51.52	24.85096G	-42.48	1









Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
BT-LE(2Mbps)	Pass	PK	74.62M	33.75	40.00	-6.25	3	Vertical	0	1.00	-



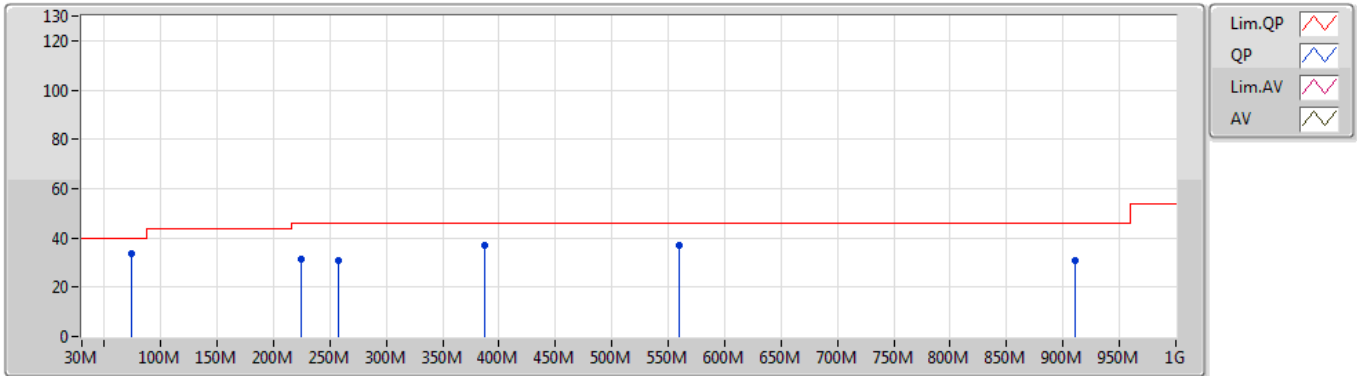


Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-	-
2440MHz	Pass	PK	74.62M	33.75	40.00	-6.25	3	Vertical	0	1.00	-
2440MHz	Pass	PK	224M	31.31	46.00	-14.69	3	Vertical	0	1.00	-
2440MHz	Pass	PK	256.98M	30.59	46.00	-15.41	3	Vertical	0	1.00	-
2440MHz	Pass	PK	386.96M	36.81	46.00	-9.19	3	Vertical	0	1.00	-
2440MHz	Pass	PK	559.62M	36.78	46.00	-9.22	3	Vertical	0	1.00	-
2440MHz	Pass	PK	910.76M	30.64	46.00	-15.36	3	Vertical	0	1.00	-
2440MHz	Pass	PK	119.24M	29.44	43.50	-14.06	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	289.96M	38.73	46.00	-7.27	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	559.62M	31.64	46.00	-14.36	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	699.3M	36.91	46.00	-9.09	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	769.14M	33.41	46.00	-12.59	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	910.76M	33.49	46.00	-12.51	3	Horizontal	360	1.00	-

**BT-LE(2Mbps)**  
**2440MHz\_USB**

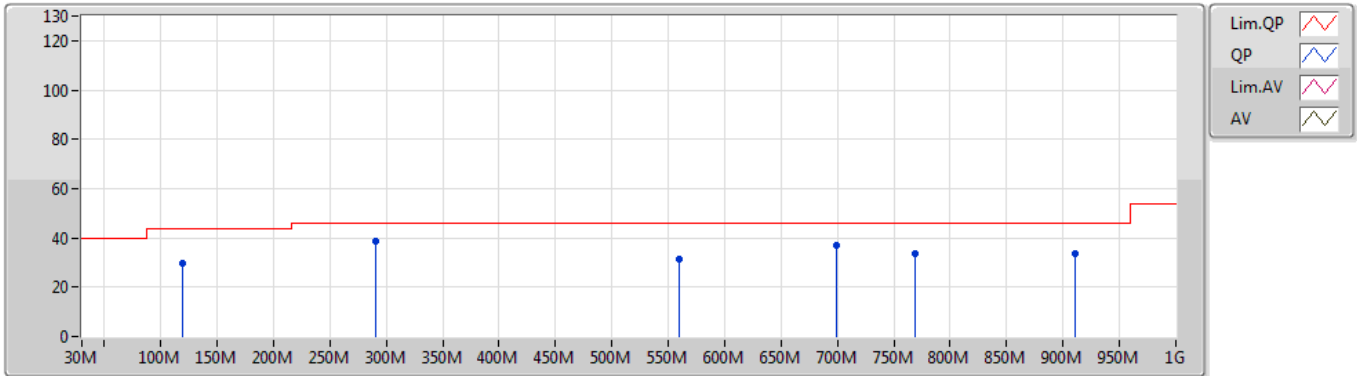
28/09/2020



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	74.62M	33.75	40.00	-6.25	-24.38	3	Vertical	0	1.00	-	58.13	11.73	0.69	36.80
PK	224M	31.31	46.00	-14.69	-20.40	3	Vertical	0	1.00	-	51.71	14.70	1.20	36.30
PK	256.98M	30.59	46.00	-15.41	-16.42	3	Vertical	0	1.00	-	47.01	18.69	1.31	36.42
PK	386.96M	36.81	46.00	-9.19	-14.17	3	Vertical	0	1.00	-	50.98	20.62	1.65	36.44
PK	559.62M	36.78	46.00	-9.22	-9.68	3	Vertical	0	1.00	-	46.46	25.38	2.04	37.10
PK	910.76M	30.64	46.00	-15.36	-6.27	3	Vertical	0	1.00	-	36.91	28.40	2.82	37.49

**BT-LE(2Mbps)**  
**2440MHz\_USB**

28/09/2020



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	119.24M	29.44	43.50	-14.06	-19.00	3	Horizontal	360	1.00	-	48.44	16.69	0.80	36.49
PK	289.96M	38.73	46.00	-7.27	-16.84	3	Horizontal	360	1.00	-	55.57	18.15	1.38	36.37
PK	559.62M	31.64	46.00	-14.36	-9.68	3	Horizontal	360	1.00	-	41.32	25.38	2.04	37.10
PK	699.3M	36.91	46.00	-9.09	-9.12	3	Horizontal	360	1.00	-	46.03	25.75	2.40	37.27
PK	769.14M	33.41	46.00	-12.59	-7.47	3	Horizontal	360	1.00	-	40.88	27.31	2.54	37.32
PK	910.76M	33.49	46.00	-12.51	-6.27	3	Horizontal	360	1.00	-	39.76	28.40	2.82	37.49

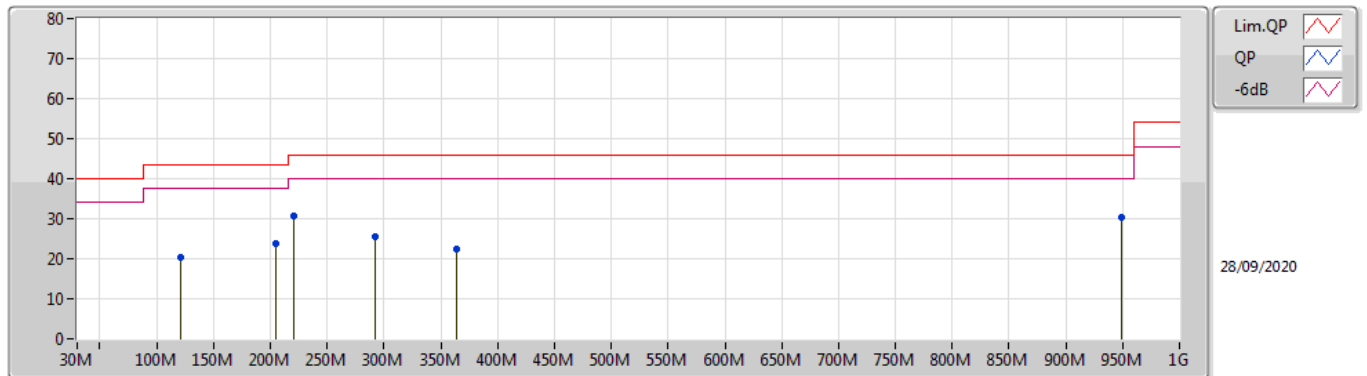


Summary

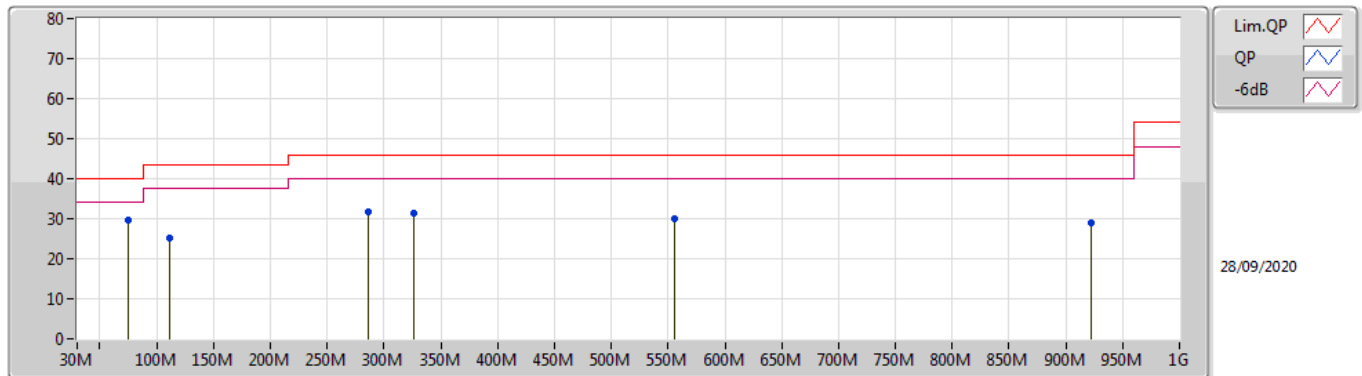
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 2	Pass	PK	315.18M	41.62	46.00	-4.38	Horizontal

Mode Configure

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
Mode 2	Pass	PK	101.78M	20.18	43.50	-23.32	3	Vertical	360	1.00	-
Mode 2	Pass	PK	231.76M	36.87	46.00	-9.13	3	Vertical	360	1.00	-
Mode 2	Pass	PK	272.5M	33.10	46.00	-12.90	3	Vertical	360	1.00	-
Mode 2	Pass	PK	288.02M	37.42	46.00	-8.58	3	Vertical	360	1.00	"Worst"
Mode 2	Pass	PK	398.6M	31.16	46.00	-14.84	3	Vertical	360	1.00	-
Mode 2	Pass	PK	559.62M	30.47	46.00	-15.53	3	Vertical	360	1.00	-
Mode 2	Pass	PK	59.1M	32.98	40.00	-7.02	3	Horizontal	0	1.00	-
Mode 2	Pass	PK	74.62M	32.38	40.00	-7.62	3	Horizontal	0	1.00	-
Mode 2	Pass	PK	315.18M	41.62	46.00	-4.38	3	Horizontal	0	1.00	"Worst"
Mode 2	Pass	PK	346.22M	37.36	46.00	-8.64	3	Horizontal	0	1.00	-
Mode 2	Pass	PK	509.18M	33.62	46.00	-12.38	3	Horizontal	0	1.00	-
Mode 2	Pass	PK	747.8M	39.25	46.00	-6.75	3	Horizontal	0	1.00	-



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	121.18M	20.23	43.50	-23.27	-18.97	3	Vertical	360	1.00	-	39.20	16.70	0.81	36.48
PK	204.6M	23.82	43.50	-19.68	-20.81	3	Vertical	360	1.00	-	44.63	14.27	1.12	36.20
PK	220.12M	30.71	46.00	-15.29	-20.88	3	Vertical	360	1.00	"Worst"	51.59	14.22	1.18	36.28
PK	291.9M	25.45	46.00	-20.55	-16.80	3	Vertical	360	1.00	-	42.25	18.18	1.38	36.36
PK	363.68M	22.55	46.00	-23.45	-15.18	3	Vertical	360	1.00	-	37.73	19.75	1.55	36.48
PK	949.56M	30.29	46.00	-15.71	-4.79	3	Vertical	360	1.00	-	35.08	29.67	2.90	37.36



Type	Freq (Hz)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBUV)	AF (dB)	CL (dB)	PA (dB)
PK	74.62M	29.60	40.00	-10.40	-24.39	3	Horizontal	0	1.00	"Worst"	53.99	11.72	0.69	36.80
PK	111.48M	25.11	43.50	-18.39	-19.71	3	Horizontal	0	1.00	-	44.82	16.01	0.80	36.52
PK	286.08M	31.77	46.00	-14.23	-16.97	3	Horizontal	0	1.00	-	48.74	18.03	1.37	36.37
PK	326.82M	31.39	46.00	-14.61	-16.32	3	Horizontal	0	1.00	-	47.71	18.66	1.45	36.43
PK	555.74M	29.85	46.00	-16.15	-10.25	3	Horizontal	0	1.00	-	40.10	24.83	2.02	37.10
PK	922.4M	28.93	46.00	-17.07	-6.18	3	Horizontal	0	1.00	-	35.11	28.43	2.84	37.45



Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	AV	2.4882G	45.32	54.00	-8.68	3	Vertical	346	1.53	-
BT-LE(2Mbps)	Pass	AV	2.4838G	47.53	54.00	-6.47	3	Horizontal	260	2.84	-



Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.3582G	44.82	54.00	-9.18	3	Vertical	163	2.14	-
2402MHz	Pass	AV	2.402G	93.80	Inf	-Inf	3	Vertical	163	2.14	-
2402MHz	Pass	PK	2.3818G	56.30	74.00	-17.70	3	Vertical	163	2.14	-
2402MHz	Pass	PK	2.4022G	94.78	Inf	-Inf	3	Vertical	163	2.14	-
2402MHz	Pass	AV	2.3678G	45.20	54.00	-8.80	3	Horizontal	82	1.13	-
2402MHz	Pass	AV	2.402G	90.31	Inf	-Inf	3	Horizontal	82	1.13	-
2402MHz	Pass	PK	2.358G	56.26	74.00	-17.74	3	Horizontal	82	1.13	-
2402MHz	Pass	PK	2.4022G	91.32	Inf	-Inf	3	Horizontal	82	1.13	-
2402MHz	Pass	AV	4.80397G	38.18	54.00	-15.82	3	Vertical	136	1.43	-
2402MHz	Pass	PK	4.80336G	47.47	74.00	-26.53	3	Vertical	136	1.43	-
2402MHz	Pass	AV	4.80399G	38.54	54.00	-15.46	3	Horizontal	49	1.03	-
2402MHz	Pass	PK	4.80346G	47.99	74.00	-26.01	3	Horizontal	49	1.03	-
2440MHz	Pass	AV	2.344G	45.26	54.00	-8.74	3	Vertical	350	1.49	-
2440MHz	Pass	AV	2.44G	92.84	Inf	-Inf	3	Vertical	350	1.49	-
2440MHz	Pass	AV	2.4964G	45.00	54.00	-9.00	3	Vertical	350	1.49	-
2440MHz	Pass	PK	2.3876G	56.71	74.00	-17.29	3	Vertical	350	1.49	-
2440MHz	Pass	PK	2.4396G	93.89	Inf	-Inf	3	Vertical	350	1.49	-
2440MHz	Pass	PK	2.4944G	57.03	74.00	-16.97	3	Vertical	350	1.49	-
2440MHz	Pass	AV	2.3612G	45.02	54.00	-8.98	3	Horizontal	87	1.13	-
2440MHz	Pass	AV	2.44G	90.50	Inf	-Inf	3	Horizontal	87	1.13	-
2440MHz	Pass	AV	2.4912G	45.25	54.00	-8.75	3	Horizontal	87	1.13	-
2440MHz	Pass	PK	2.3516G	56.50	74.00	-17.50	3	Horizontal	87	1.13	-
2440MHz	Pass	PK	2.4396G	91.55	Inf	-Inf	3	Horizontal	87	1.13	-
2440MHz	Pass	PK	2.486G	56.48	74.00	-17.52	3	Horizontal	87	1.13	-
2440MHz	Pass	AV	4.87992G	38.51	54.00	-15.49	3	Vertical	304	2.07	-
2440MHz	Pass	PK	4.87955G	47.88	74.00	-26.12	3	Vertical	304	2.07	-
2440MHz	Pass	AV	4.87996G	37.41	54.00	-16.59	3	Horizontal	139	2.24	-
2440MHz	Pass	PK	4.87944G	46.87	74.00	-27.13	3	Horizontal	139	2.24	-
2480MHz	Pass	AV	2.48G	93.64	Inf	-Inf	3	Vertical	346	1.53	-
2480MHz	Pass	AV	2.4882G	45.32	54.00	-8.68	3	Vertical	346	1.53	-
2480MHz	Pass	PK	2.4802G	94.59	Inf	-Inf	3	Vertical	346	1.53	-
2480MHz	Pass	PK	2.498G	56.18	74.00	-17.82	3	Vertical	346	1.53	-
2480MHz	Pass	AV	2.48G	93.27	Inf	-Inf	3	Horizontal	86	1.08	-
2480MHz	Pass	AV	2.4936G	45.12	54.00	-8.88	3	Horizontal	86	1.08	-
2480MHz	Pass	PK	2.4798G	94.23	Inf	-Inf	3	Horizontal	86	1.08	-
2480MHz	Pass	PK	2.4936G	56.36	74.00	-17.64	3	Horizontal	86	1.08	-
2480MHz	Pass	AV	4.96006G	38.32	54.00	-15.68	3	Vertical	303	1.98	-
2480MHz	Pass	PK	4.95945G	47.33	74.00	-26.67	3	Vertical	303	1.98	-
2480MHz	Pass	AV	4.96002G	37.43	54.00	-16.57	3	Horizontal	130	2.67	-
2480MHz	Pass	PK	4.96044G	46.96	74.00	-27.04	3	Horizontal	130	2.67	-
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.3532G	46.75	54.00	-7.25	3	Vertical	0	1.50	-
2402MHz	Pass	AV	2.402G	89.19	Inf	-Inf	3	Vertical	0	1.50	-
2402MHz	Pass	PK	2.3522G	56.60	74.00	-17.40	3	Vertical	0	1.50	-
2402MHz	Pass	PK	2.4026G	91.69	Inf	-Inf	3	Vertical	0	1.50	-
2402MHz	Pass	AV	2.3898G	46.51	54.00	-7.49	3	Horizontal	261	3.00	-
2402MHz	Pass	AV	2.402G	93.54	Inf	-Inf	3	Horizontal	261	3.00	-
2402MHz	Pass	PK	2.3596G	56.42	74.00	-17.58	3	Horizontal	261	3.00	-
2402MHz	Pass	PK	2.4014G	95.88	Inf	-Inf	3	Horizontal	261	3.00	-
2402MHz	Pass	AV	4.80316G	38.41	54.00	-15.59	3	Vertical	359	2.66	-
2402MHz	Pass	PK	4.803G	47.74	74.00	-26.26	3	Vertical	359	2.66	-
2402MHz	Pass	AV	4.80289G	38.61	54.00	-15.39	3	Horizontal	304	2.31	-
2402MHz	Pass	PK	4.804G	47.07	74.00	-26.93	3	Horizontal	304	2.31	-
2440MHz	Pass	AV	2.3596G	46.41	54.00	-7.59	3	Vertical	360	2.49	-
2440MHz	Pass	AV	2.44G	90.68	Inf	-Inf	3	Vertical	360	2.49	-
2440MHz	Pass	AV	2.4988G	46.70	54.00	-7.30	3	Vertical	360	2.49	-
2440MHz	Pass	PK	2.3668G	57.08	74.00	-16.92	3	Vertical	360	2.49	-
2440MHz	Pass	PK	2.4396G	93.05	Inf	-Inf	3	Vertical	360	2.49	-
2440MHz	Pass	PK	2.4944G	56.30	74.00	-17.70	3	Vertical	360	2.49	-
2440MHz	Pass	AV	2.352G	46.57	54.00	-7.43	3	Horizontal	262	2.92	-





**RSE TX above 1GHz\_USB Mode**

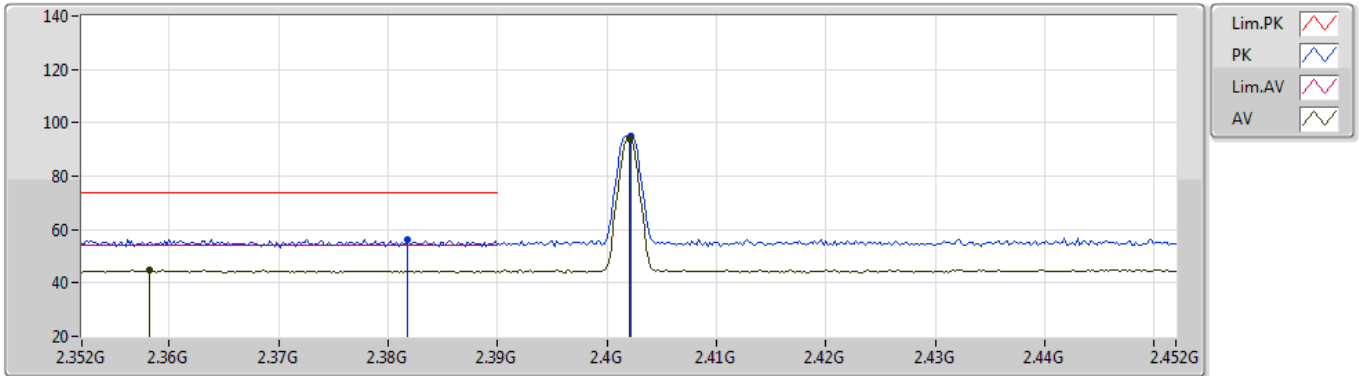
**Appendix F.3**

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2440MHz	Pass	AV	2.44G	94.01	Inf	-Inf	3	Horizontal	262	2.92	-
2440MHz	Pass	AV	2.4908G	46.77	54.00	-7.23	3	Horizontal	262	2.92	-
2440MHz	Pass	PK	2.3684G	56.53	74.00	-17.47	3	Horizontal	262	2.92	-
2440MHz	Pass	PK	2.4404G	96.45	Inf	-Inf	3	Horizontal	262	2.92	-
2440MHz	Pass	PK	2.4848G	56.36	74.00	-17.64	3	Horizontal	262	2.92	-
2440MHz	Pass	AV	4.87892G	39.59	54.00	-14.41	3	Vertical	337	3.00	-
2440MHz	Pass	PK	4.87883G	47.78	74.00	-26.22	3	Vertical	337	3.00	-
2440MHz	Pass	AV	4.87892G	36.01	54.00	-17.99	3	Horizontal	144	1.26	-
2440MHz	Pass	PK	4.87889G	45.40	74.00	-28.60	3	Horizontal	144	1.26	-
2480MHz	Pass	AV	2.48G	91.13	Inf	-Inf	3	Vertical	20	1.72	-
2480MHz	Pass	AV	2.4835G	46.95	54.00	-7.05	3	Vertical	20	1.72	-
2480MHz	Pass	PK	2.4794G	93.56	Inf	-Inf	3	Vertical	20	1.72	-
2480MHz	Pass	PK	2.4918G	56.67	74.00	-17.33	3	Vertical	20	1.72	-
2480MHz	Pass	AV	2.48G	95.76	Inf	-Inf	3	Horizontal	260	2.84	-
2480MHz	Pass	AV	2.4838G	47.53	54.00	-6.47	3	Horizontal	260	2.84	-
2480MHz	Pass	PK	2.4804G	98.09	Inf	-Inf	3	Horizontal	260	2.84	-
2480MHz	Pass	PK	2.4835G	58.17	74.00	-15.83	3	Horizontal	260	2.84	-
2480MHz	Pass	AV	4.95895G	37.09	54.00	-16.91	3	Vertical	168	1.50	-
2480MHz	Pass	PK	4.96112G	46.35	74.00	-27.65	3	Vertical	168	1.50	-
2480MHz	Pass	AV	4.96002G	33.64	54.00	-20.36	3	Horizontal	24	2.43	-
2480MHz	Pass	PK	4.95978G	44.09	74.00	-29.91	3	Horizontal	24	2.43	-

**BT-LE(1Mbps)**

25/09/2020

**2402MHz\_TX**

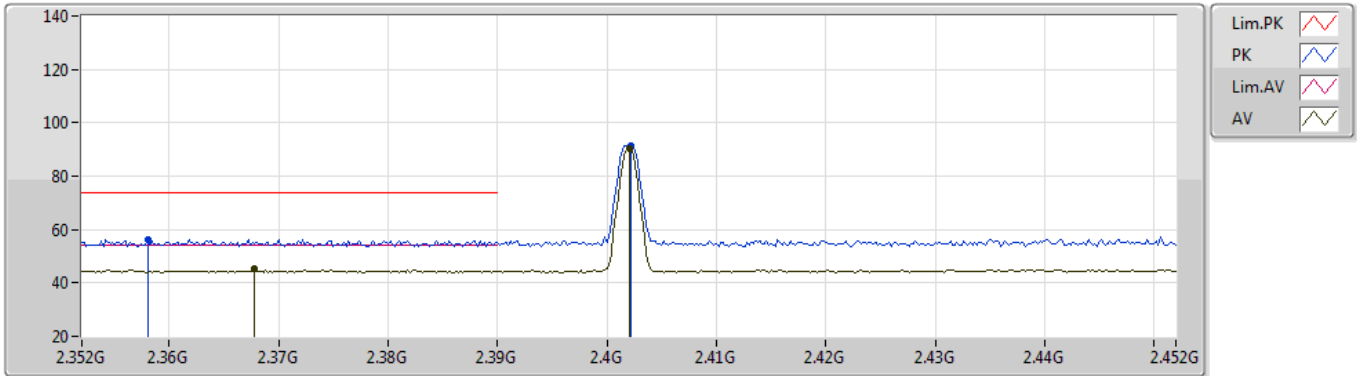


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3582G	44.82	54.00	-9.18	31.61	3	Vertical	163	2.14	-	13.21	27.77	3.84	-
AV	2.402G	93.80	Inf	-Inf	31.50	3	Vertical	163	2.14	-	62.30	27.60	3.90	-
PK	2.3818G	56.30	74.00	-17.70	31.54	3	Vertical	163	2.14	-	24.76	27.67	3.87	-
PK	2.4022G	94.78	Inf	-Inf	31.50	3	Vertical	163	2.14	-	63.28	27.60	3.90	-

**BT-LE(1Mbps)**

25/09/2020

**2402MHz\_TX**

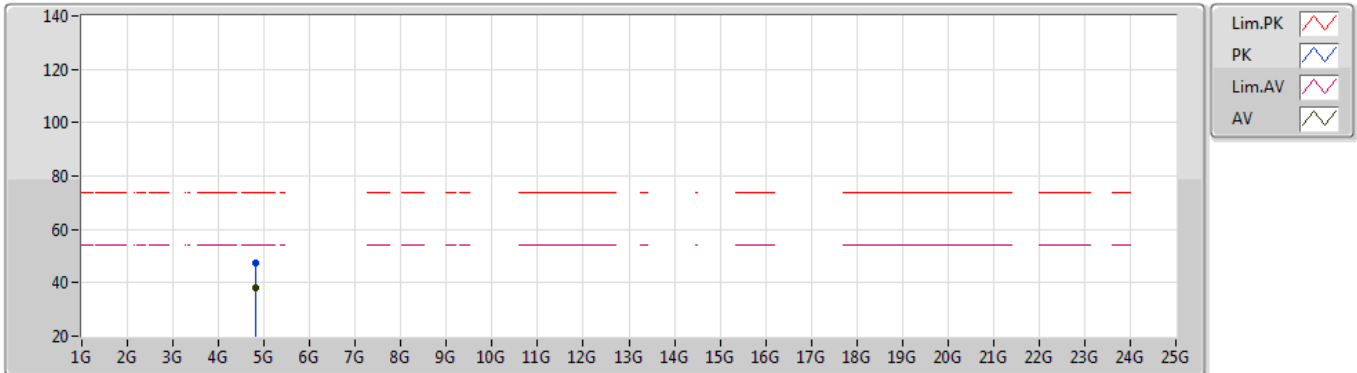


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3678G	45.20	54.00	-8.80	31.58	3	Horizontal	82	1.13	-	13.62	27.73	3.85	-
AV	2.402G	90.31	Inf	-Inf	31.50	3	Horizontal	82	1.13	-	58.81	27.60	3.90	-
PK	2.358G	56.26	74.00	-17.74	31.61	3	Horizontal	82	1.13	-	24.65	27.77	3.84	-
PK	2.4022G	91.32	Inf	-Inf	31.50	3	Horizontal	82	1.13	-	59.82	27.60	3.90	-

### BT-LE(1Mbps)

25/09/2020

### 2402MHz\_TX

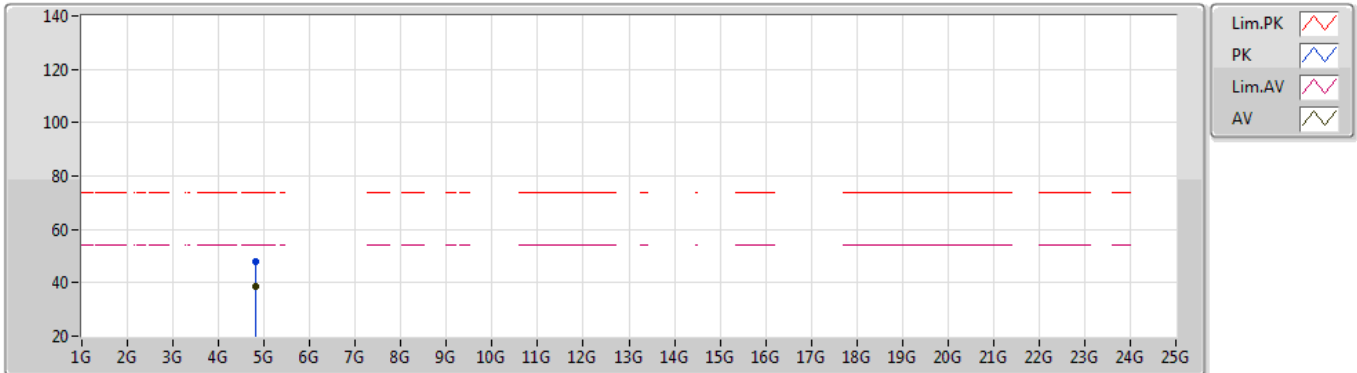


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.80397G	38.18	54.00	-15.82	1.49	3	Vertical	136	1.43	-	36.69	31.12	5.30	34.93
PK	4.80336G	47.47	74.00	-26.53	1.48	3	Vertical	136	1.43	-	45.99	31.11	5.30	34.93

### BT-LE(1Mbps)

25/09/2020

### 2402MHz\_TX

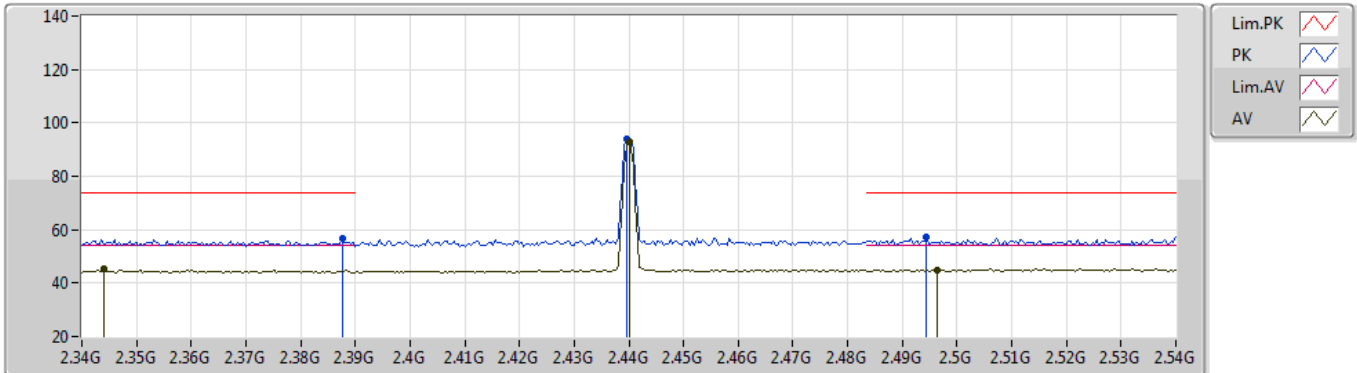


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.80399G	38.54	54.00	-15.46	1.49	3	Horizontal	49	1.03	-	37.05	31.12	5.30	34.93
PK	4.80346G	47.99	74.00	-26.01	1.48	3	Horizontal	49	1.03	-	46.51	31.11	5.30	34.93

**BT-LE(1Mbps)**

25/09/2020

**2440MHz\_TX**

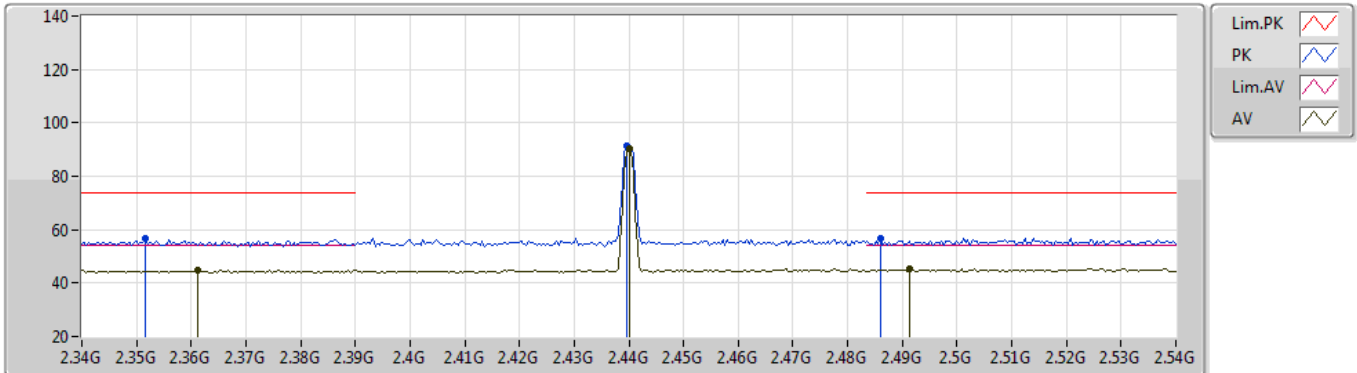


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.344G	45.26	54.00	-8.74	31.63	3	Vertical	350	1.49	-	13.63	27.81	3.82	-
AV	2.44G	92.84	Inf	-Inf	31.56	3	Vertical	350	1.49	-	61.28	27.60	3.96	-
AV	2.4964G	45.00	54.00	-9.00	31.64	3	Vertical	350	1.49	-	13.36	27.60	4.04	-
PK	2.3876G	56.71	74.00	-17.29	31.53	3	Vertical	350	1.49	-	25.18	27.65	3.88	-
PK	2.4396G	93.89	Inf	-Inf	31.56	3	Vertical	350	1.49	-	62.33	27.60	3.96	-
PK	2.4944G	57.03	74.00	-16.97	31.64	3	Vertical	350	1.49	-	25.39	27.60	4.04	-

**BT-LE(1Mbps)**

25/09/2020

**2440MHz\_TX**

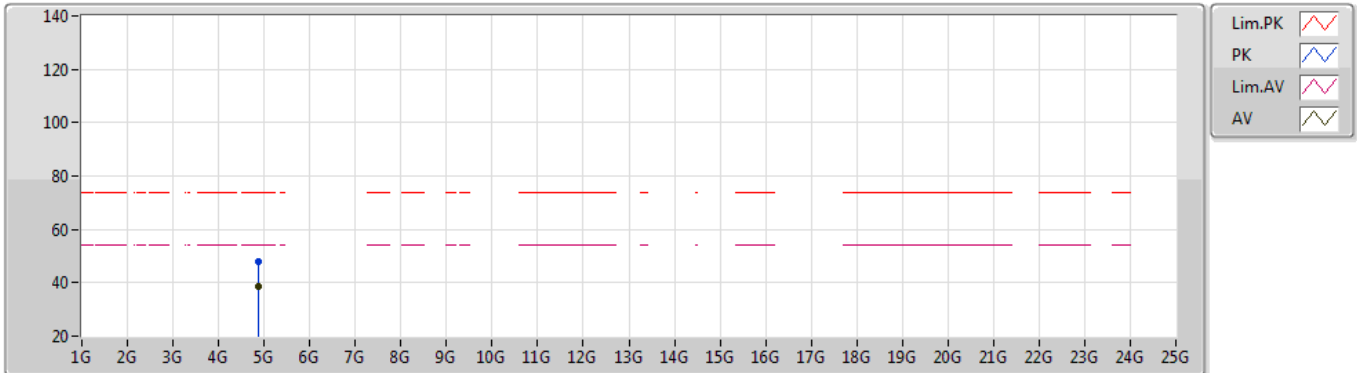


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3612G	45.02	54.00	-8.98	31.60	3	Horizontal	87	1.13	-	13.42	27.76	3.84	-
AV	2.44G	90.50	Inf	-Inf	31.56	3	Horizontal	87	1.13	-	58.94	27.60	3.96	-
AV	2.4912G	45.25	54.00	-8.75	31.64	3	Horizontal	87	1.13	-	13.61	27.60	4.04	-
PK	2.3516G	56.50	74.00	-17.50	31.62	3	Horizontal	87	1.13	-	24.88	27.79	3.83	-
PK	2.4396G	91.55	Inf	-Inf	31.56	3	Horizontal	87	1.13	-	59.99	27.60	3.96	-
PK	2.486G	56.48	74.00	-17.52	31.63	3	Horizontal	87	1.13	-	24.85	27.60	4.03	-

### BT-LE(1Mbps)

25/09/2020

### 2440MHz\_TX



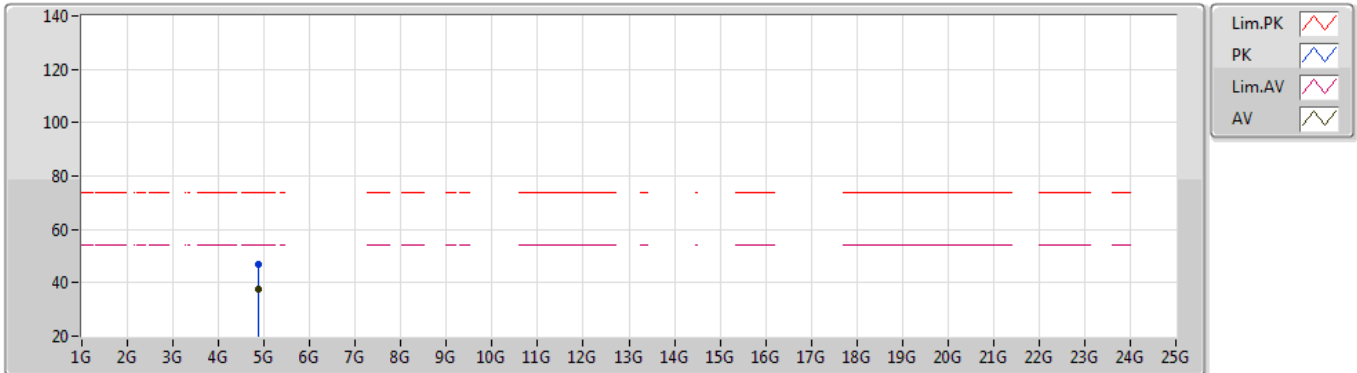
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.87992G	38.51	54.00	-15.49	1.65	3	Vertical	304	2.07	-	36.86	31.24	5.34	34.93
PK	4.87955G	47.88	74.00	-26.12	1.65	3	Vertical	304	2.07	-	46.23	31.24	5.34	34.93



### BT-LE(1Mbps)

25/09/2020

### 2440MHz\_TX

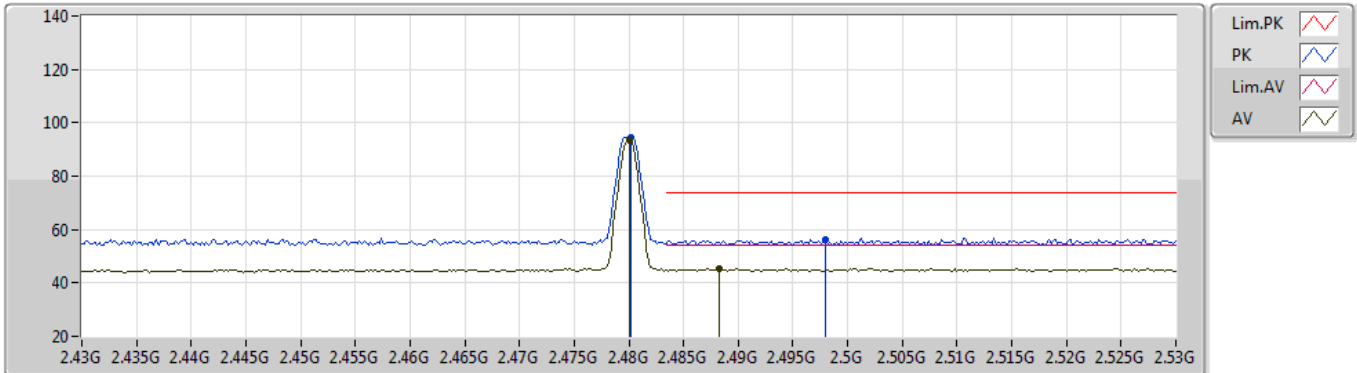


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.87996G	37.41	54.00	-16.59	1.65	3	Horizontal	139	2.24	-	35.76	31.24	5.34	34.93
PK	4.87944G	46.87	74.00	-27.13	1.65	3	Horizontal	139	2.24	-	45.22	31.24	5.34	34.93

**BT-LE(1Mbps)**

25/09/2020

**2480MHz\_TX**

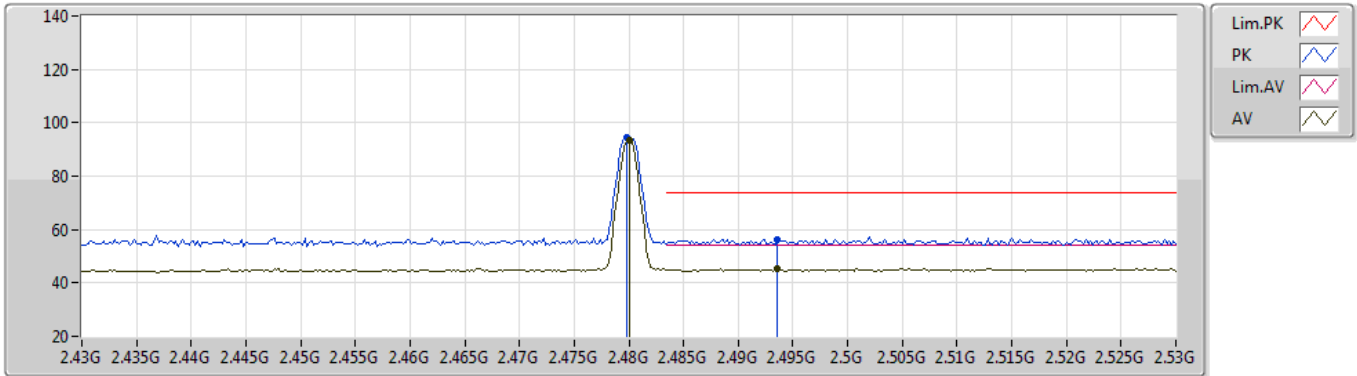


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.48G	93.64	Inf	-Inf	31.62	3	Vertical	346	1.53	-	62.02	27.60	4.02	-
AV	2.4882G	45.32	54.00	-8.68	31.63	3	Vertical	346	1.53	-	13.69	27.60	4.03	-
PK	2.4802G	94.59	Inf	-Inf	31.62	3	Vertical	346	1.53	-	62.97	27.60	4.02	-
PK	2.498G	56.18	74.00	-17.82	31.65	3	Vertical	346	1.53	-	24.53	27.60	4.05	-

**BT-LE(1Mbps)**

25/09/2020

**2480MHz\_TX**

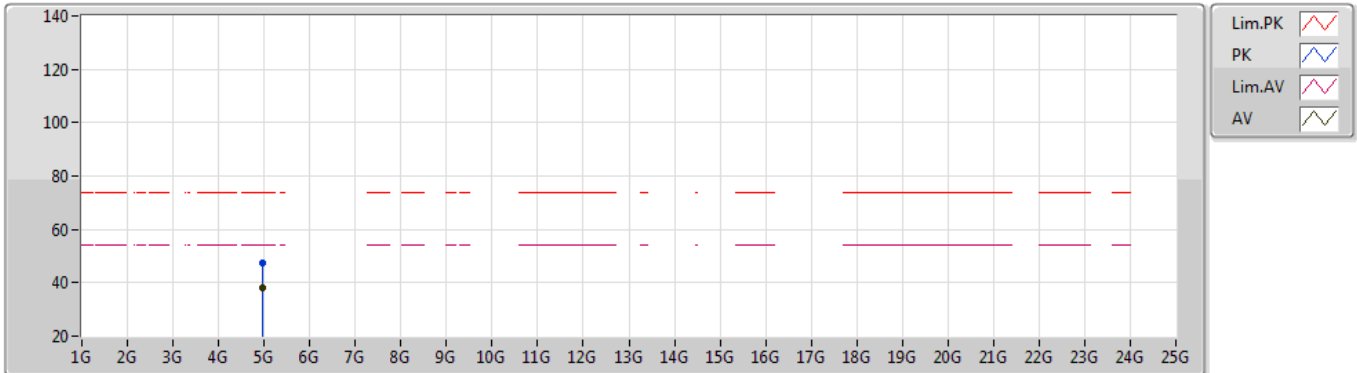


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.48G	93.27	Inf	-Inf	31.62	3	Horizontal	86	1.08	-	61.65	27.60	4.02	-
AV	2.4936G	45.12	54.00	-8.88	31.64	3	Horizontal	86	1.08	-	13.48	27.60	4.04	-
PK	2.4798G	94.23	Inf	-Inf	31.62	3	Horizontal	86	1.08	-	62.61	27.60	4.02	-
PK	2.4936G	56.36	74.00	-17.64	31.64	3	Horizontal	86	1.08	-	24.72	27.60	4.04	-

### BT-LE(1Mbps)

25/09/2020

### 2480MHz\_TX

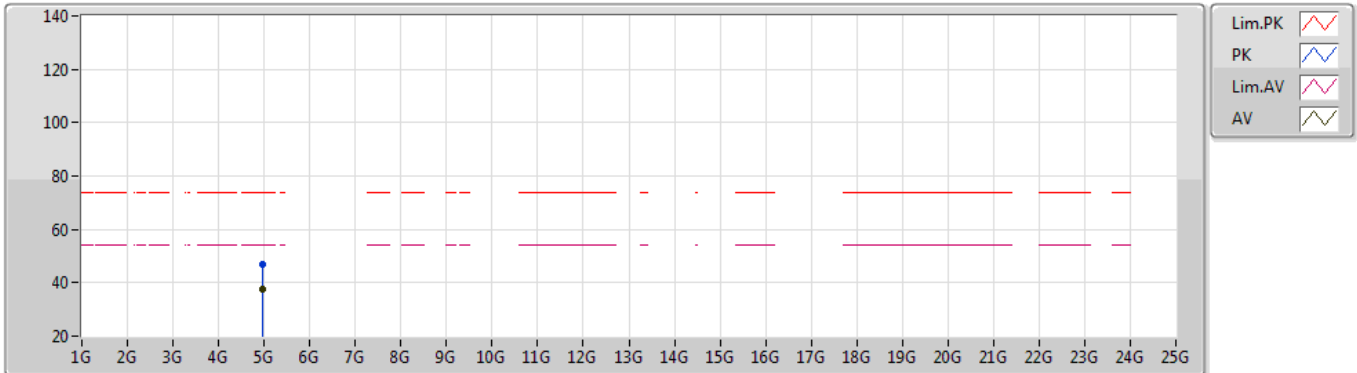


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.96006G	38.32	54.00	-15.68	1.86	3	Vertical	303	1.98	-	36.46	31.42	5.38	34.94
PK	4.95945G	47.33	74.00	-26.67	1.86	3	Vertical	303	1.98	-	45.47	31.42	5.38	34.94

**BT-LE(1Mbps)**

25/09/2020

**2480MHz\_TX**

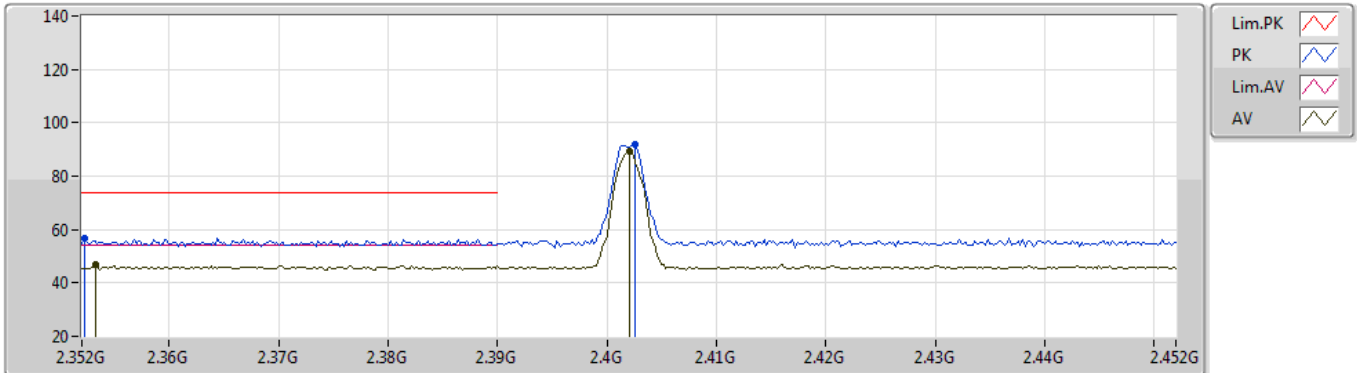


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.96002G	37.43	54.00	-16.57	1.86	3	Horizontal	130	2.67	-	35.57	31.42	5.38	34.94
PK	4.96044G	46.96	74.00	-27.04	1.86	3	Horizontal	130	2.67	-	45.10	31.42	5.38	34.94

**BT-LE(2Mbps)**

17/09/2020

**2402MHz\_TX**

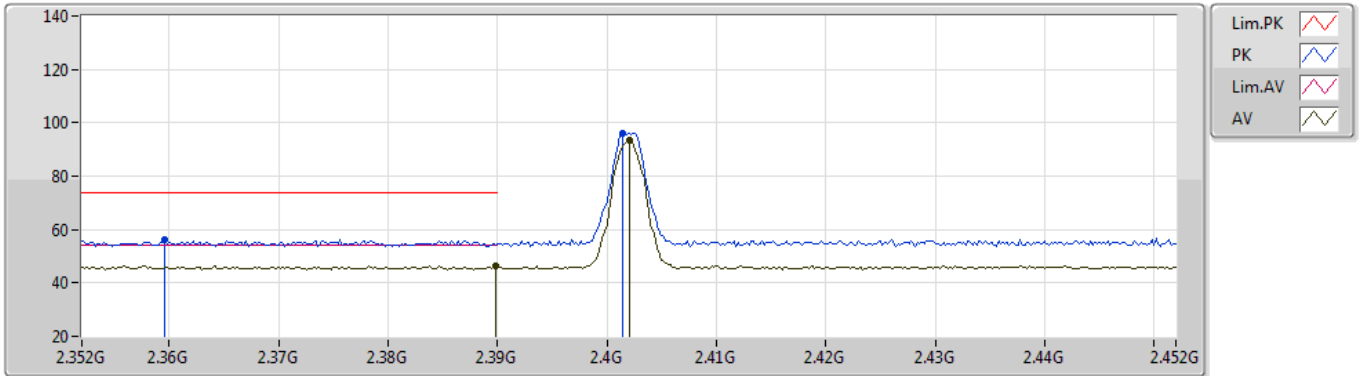


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3532G	46.75	54.00	-7.25	31.62	3	Vertical	0	1.50	-	15.13	27.79	3.83	-
AV	2.402G	89.19	Inf	-Inf	31.50	3	Vertical	0	1.50	-	57.69	27.60	3.90	-
PK	2.3522G	56.60	74.00	-17.40	31.62	3	Vertical	0	1.50	-	24.98	27.79	3.83	-
PK	2.4026G	91.69	Inf	-Inf	31.50	3	Vertical	0	1.50	-	60.19	27.60	3.90	-

**BT-LE(2Mbps)**

17/09/2020

**2402MHz\_TX**

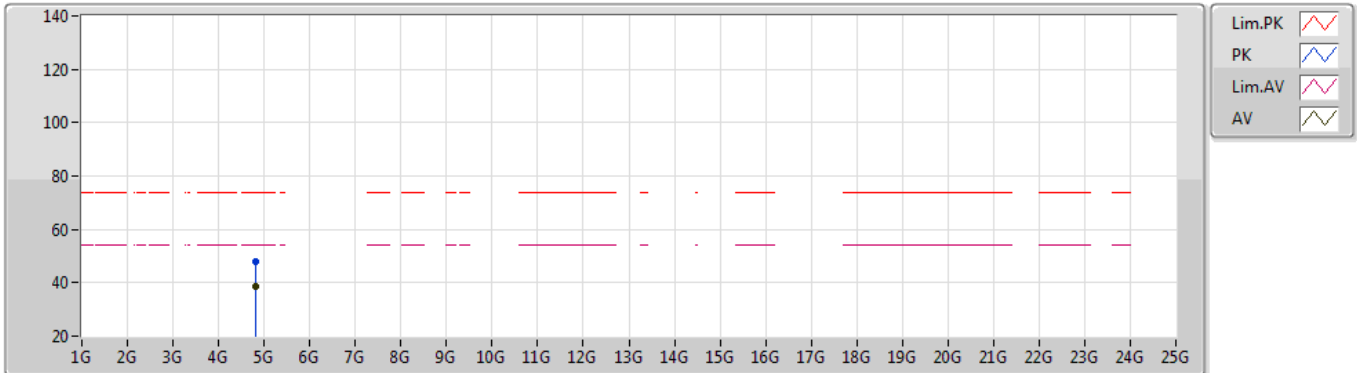


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3898G	46.51	54.00	-7.49	31.52	3	Horizontal	261	3.00	-	14.99	27.64	3.88	-
AV	2.402G	93.54	Inf	-Inf	31.50	3	Horizontal	261	3.00	-	62.04	27.60	3.90	-
PK	2.3596G	56.42	74.00	-17.58	31.60	3	Horizontal	261	3.00	-	24.82	27.76	3.84	-
PK	2.4014G	95.88	Inf	-Inf	31.50	3	Horizontal	261	3.00	-	64.38	27.60	3.90	-

**BT-LE(2Mbps)**

18/09/2020

**2402MHz\_TX**



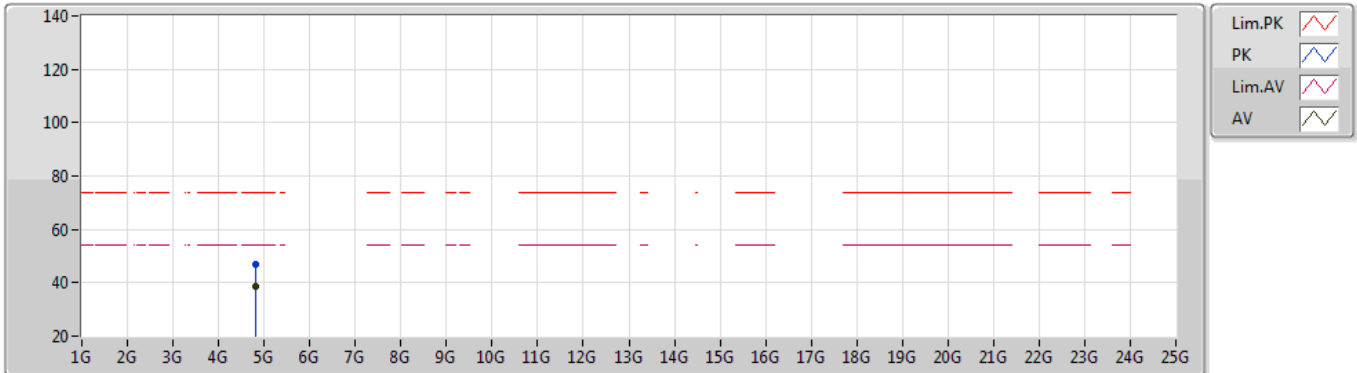
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.80316G	38.41	54.00	-15.59	1.48	3	Vertical	359	2.66	-	36.93	31.11	5.30	34.93
PK	4.803G	47.74	74.00	-26.26	1.48	3	Vertical	359	2.66	-	46.26	31.11	5.30	34.93



**BT-LE(2Mbps)**

18/09/2020

**2402MHz\_TX**

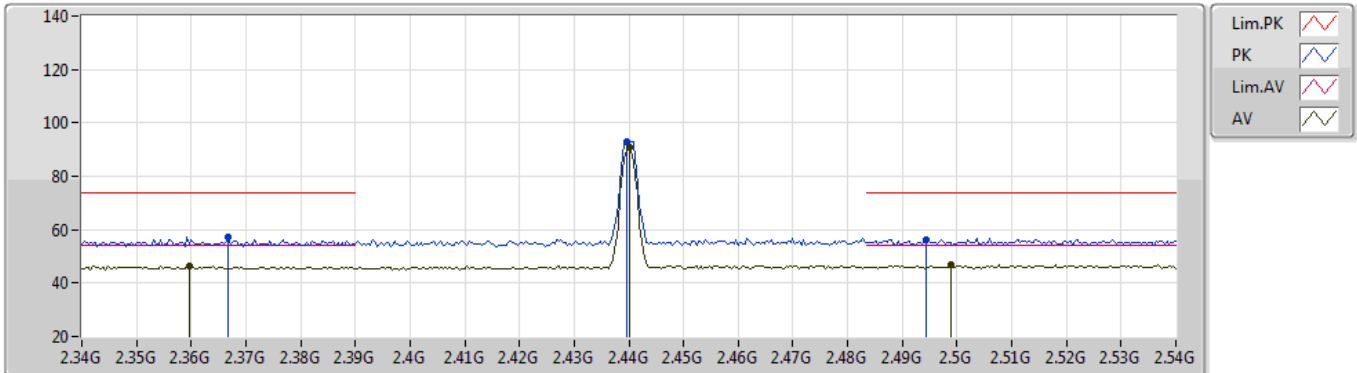


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.80289G	38.61	54.00	-15.39	1.48	3	Horizontal	304	2.31	-	37.13	31.11	5.30	34.93
PK	4.804G	47.07	74.00	-26.93	1.49	3	Horizontal	304	2.31	-	45.58	31.12	5.30	34.93

### BT-LE(2Mbps)

18/09/2020

### 2440MHz\_TX

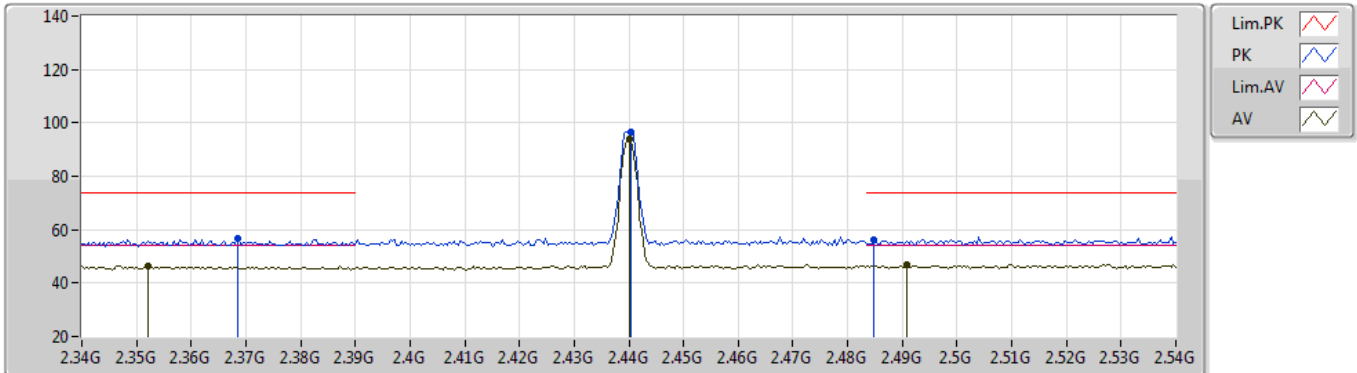


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3596G	46.41	54.00	-7.59	31.60	3	Vertical	360	2.49	-	14.81	27.76	3.84	-
AV	2.44G	90.68	Inf	-Inf	31.56	3	Vertical	360	2.49	-	59.12	27.60	3.96	-
AV	2.4988G	46.70	54.00	-7.30	31.65	3	Vertical	360	2.49	-	15.05	27.60	4.05	-
PK	2.3668G	57.08	74.00	-16.92	31.58	3	Vertical	360	2.49	-	25.50	27.73	3.85	-
PK	2.4396G	93.05	Inf	-Inf	31.56	3	Vertical	360	2.49	-	61.49	27.60	3.96	-
PK	2.4944G	56.30	74.00	-17.70	31.64	3	Vertical	360	2.49	-	24.66	27.60	4.04	-

**BT-LE(2Mbps)**

18/09/2020

**2440MHz\_TX**

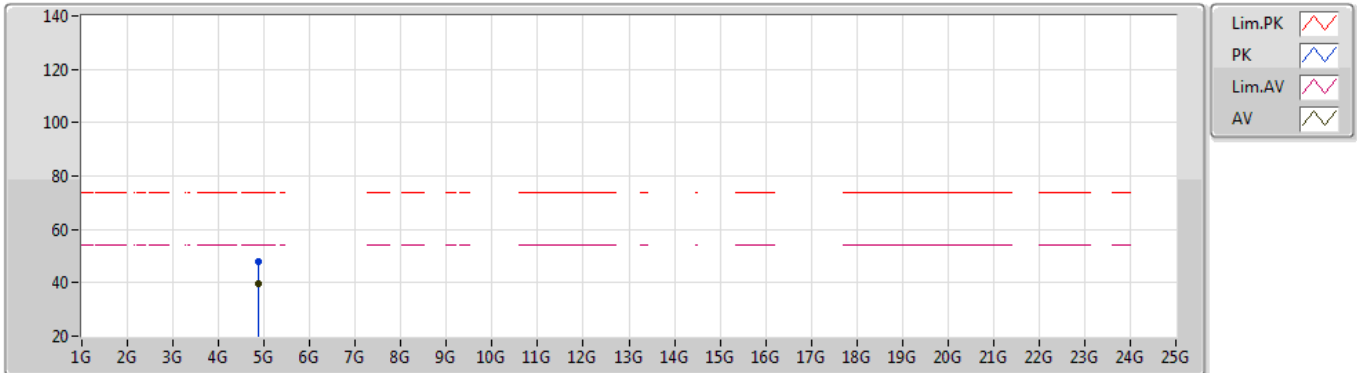


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.352G	46.57	54.00	-7.43	31.62	3	Horizontal	262	2.92	-	14.95	27.79	3.83	-
AV	2.44G	94.01	Inf	-Inf	31.56	3	Horizontal	262	2.92	-	62.45	27.60	3.96	-
AV	2.4908G	46.77	54.00	-7.23	31.64	3	Horizontal	262	2.92	-	15.13	27.60	4.04	-
PK	2.3684G	56.53	74.00	-17.47	31.58	3	Horizontal	262	2.92	-	24.95	27.73	3.85	-
PK	2.4404G	96.45	Inf	-Inf	31.56	3	Horizontal	262	2.92	-	64.89	27.60	3.96	-
PK	2.4848G	56.36	74.00	-17.64	31.63	3	Horizontal	262	2.92	-	24.73	27.60	4.03	-

**BT-LE(2Mbps)**

18/09/2020

**2440MHz\_TX**

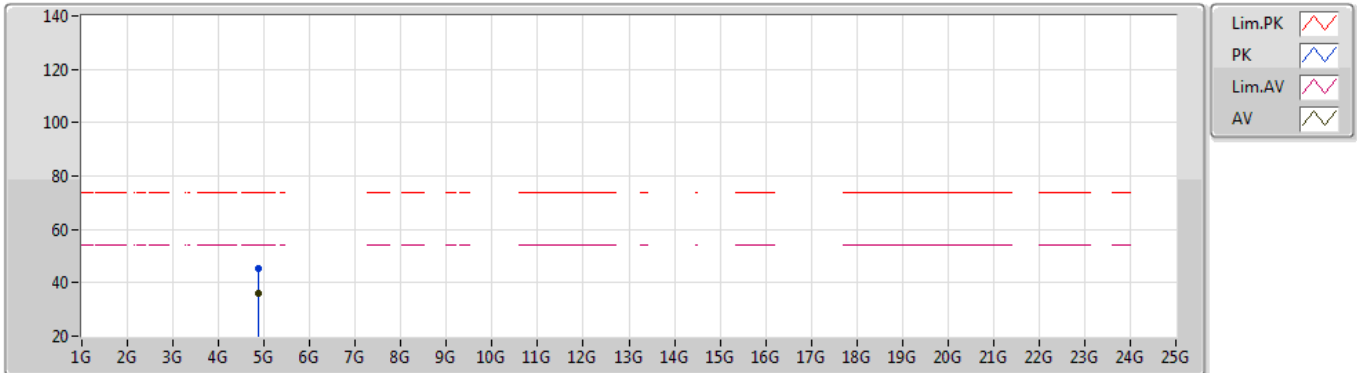


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.87892G	39.59	54.00	-14.41	1.65	3	Vertical	337	3.00	-	37.94	31.24	5.34	34.93
PK	4.87883G	47.78	74.00	-26.22	1.65	3	Vertical	337	3.00	-	46.13	31.24	5.34	34.93

**BT-LE(2Mbps)**

18/09/2020

**2440MHz\_TX**

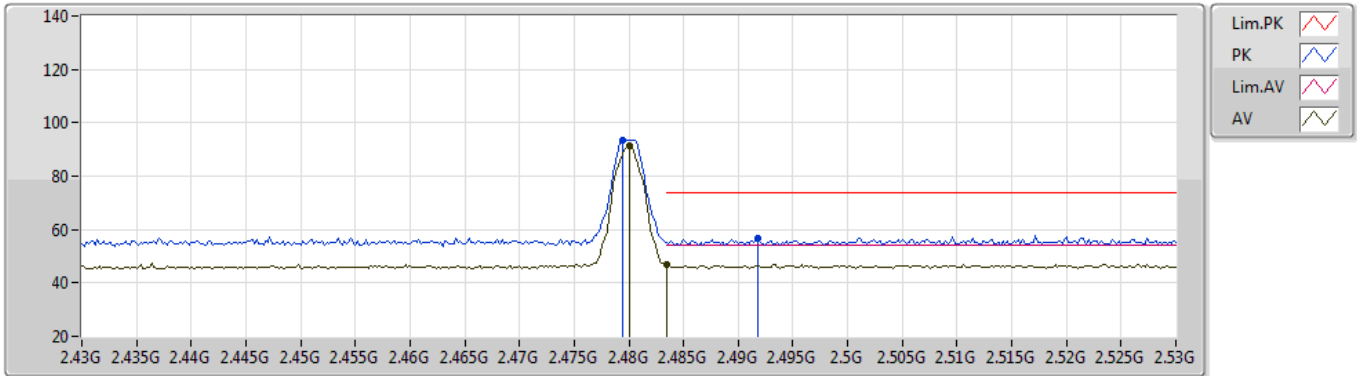


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.87892G	36.01	54.00	-17.99	1.65	3	Horizontal	144	1.26	-	34.36	31.24	5.34	34.93
PK	4.87889G	45.40	74.00	-28.60	1.65	3	Horizontal	144	1.26	-	43.75	31.24	5.34	34.93

**BT-LE(2Mbps)**

18/09/2020

**2480MHz\_TX**

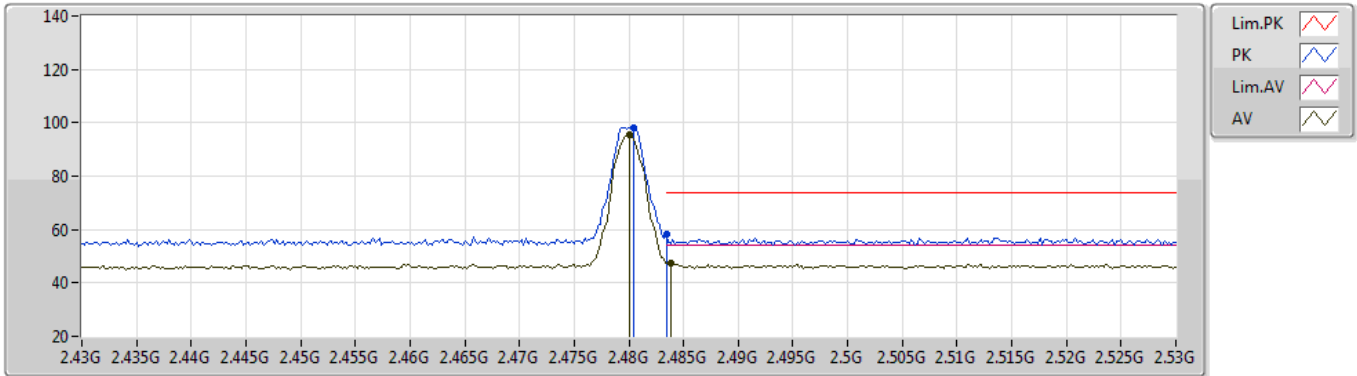


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.48G	91.13	Inf	-Inf	31.62	3	Vertical	20	1.72	-	59.51	27.60	4.02	-
AV	2.4835G	46.95	54.00	-7.05	31.63	3	Vertical	20	1.72	-	15.32	27.60	4.03	-
PK	2.4794G	93.56	Inf	-Inf	31.62	3	Vertical	20	1.72	-	61.94	27.60	4.02	-
PK	2.4918G	56.67	74.00	-17.33	31.64	3	Vertical	20	1.72	-	25.03	27.60	4.04	-

**BT-LE(2Mbps)**

18/09/2020

**2480MHz\_TX**

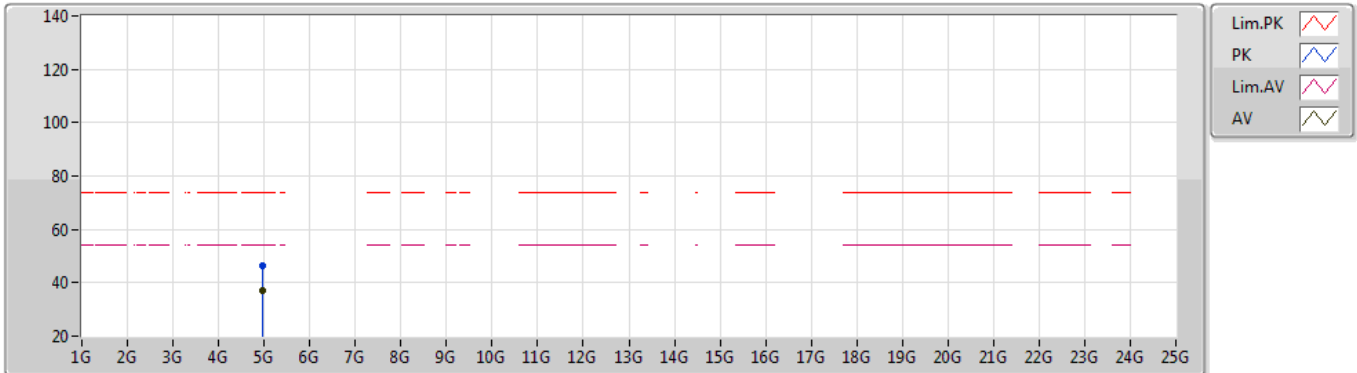


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.48G	95.76	Inf	-Inf	31.62	3	Horizontal	260	2.84	-	64.14	27.60	4.02	-
AV	2.4838G	47.53	54.00	-6.47	31.63	3	Horizontal	260	2.84	-	15.90	27.60	4.03	-
PK	2.4804G	98.09	Inf	-Inf	31.62	3	Horizontal	260	2.84	-	66.47	27.60	4.02	-
PK	2.4835G	58.17	74.00	-15.83	31.63	3	Horizontal	260	2.84	-	26.54	27.60	4.03	-

**BT-LE(2Mbps)**

18/09/2020

**2480MHz\_TX**



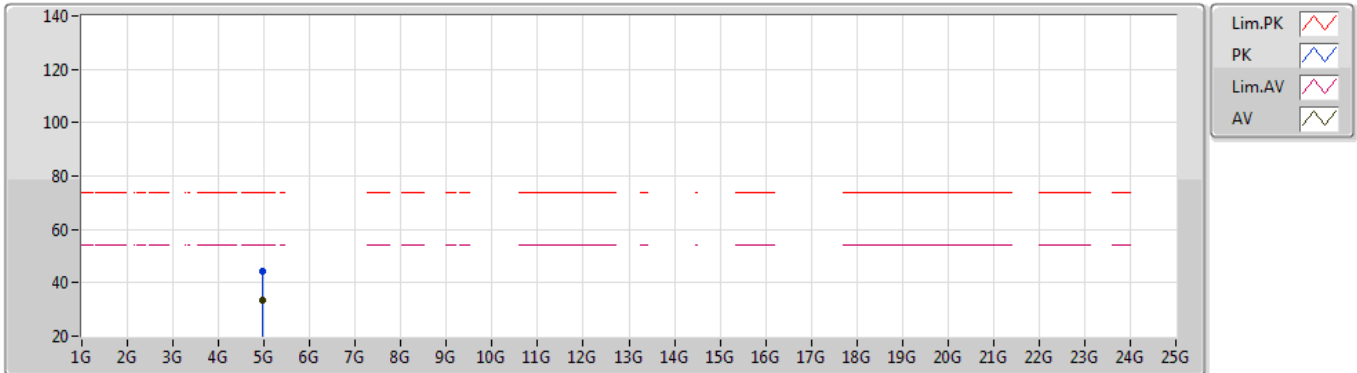
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.95895G	37.09	54.00	-16.91	1.86	3	Vertical	168	1.50	-	35.23	31.42	5.38	34.94
PK	4.96112G	46.35	74.00	-27.65	1.86	3	Vertical	168	1.50	-	44.49	31.42	5.38	34.94



**BT-LE(2Mbps)**

18/09/2020

**2480MHz\_TX**



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.96002G	33.64	54.00	-20.36	1.86	3	Horizontal	24	2.43	-	31.78	31.42	5.38	34.94
PK	4.95978G	44.09	74.00	-29.91	1.86	3	Horizontal	24	2.43	-	42.23	31.42	5.38	34.94