



FCC RADIO TEST REPORT

FCC ID : TLZ-CU484
Equipment : IEEE 802.15.4 and Bluetooth LE 5.0 wireless microcontroller Stamp LGA Module
Brand Name : AzureWave
Model Name : AW-CU484 , AW-CU480 , AW-CU485
Applicant : AzureWave Technologies, Inc.
8F., No.94, Baozhong Rd. , Xindian Dist., New Taipei City , Taiwan 231
Standard : 47 CFR FCC Part 15.247

The product was received on Oct. 14, 2020, and testing was started from Oct. 20, 2020 and completed on Nov. 20, 2020. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

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

Approved by: Cliff Chang

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



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Appendix G. Test Photos

Photographs of EUT v01



History of this test report

Report No.	Version	Description	Issued Date
FR091130AA	01	Initial issue of report	Dec. 04, 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	-

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: **Sam Chen**

Report Producer: **Wendy Pan**



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 modulation.
- ♦ BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Ant.	Port	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	1	LYNwave	ALX20M-052AA1	PIFA Antenna	N/A	2.8

Note: The above information was declared by manufacturer.

For Bluetooth and Zigbee(1TX/1RX):

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

1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
BT-LE(1Mbps)	0.648	1.88	405u	3k
BT-LE(2Mbps)	0.354	4.51	221.563u	10k

Note:

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



1.1.4 EUT Operational Condition

EUT Power Type	From host system		
Function	<input checked="" type="checkbox"/> Point-to-multipoint	<input type="checkbox"/> Point-to-point	
Test Software Version	Tera Term(Version 4.63)		
Support Mode	<input checked="" type="checkbox"/> LE 1M PHY: 1 Mb/s		
	<input type="checkbox"/> LE Coded PHY (S=2): 500 Kb/s		
	<input type="checkbox"/> LE Coded PHY (S=8): 125 Kb/s		
	<input checked="" type="checkbox"/> LE 2M PHY: 2 Mb/s		

Note: The above information was declared by manufacturer.

1.1.5 Table for Multiple Listing

The EUT has three model names which are identical to each other in all aspects except for the following table:

Brand Name	Model Name	Chipset Nuber	Description
AzureWave	AW-CU484	K32W061/41	The EUT has three model names which are identical to each other in all aspect except for the chipset solutions. These chipset solutions have the same circuitry, electrical, mechanical, and physical construction.
	AW-CU480	QN9090/30	
	AW-CU485	JN5189/88	

Note 1: From the above models, model: AW-CU484 was selected as representative model for the test and its data was recorded in this report.

Note 2: The above information was declared by manufacturer.



1.2 Applicable Standards

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

- ◆ 47 CFR FCC Part 15
- ◆ ANSI C63.10-2013

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

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

1.3 Testing Location Information

Testing Location		
<input type="checkbox"/>	HWA YA	ADD : No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL : 886-3-327-3456 FAX : 886-3-327-0973
<input checked="" type="checkbox"/>	JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. TEL : 886-3-656-9065 FAX : 886-3-656-9085

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH01-CB	Serway Li	23.3-24.5°C / 55-57%	Oct. 20, 2020 ~ Oct. 22, 2020
Radiated<1GHz	03CH04-CB	Eason Chen	23.9-25.1°C / 56-60%	Nov. 20, 2020
Radiated>1GHz	03CH02-CB	Nyle Chang	24.2-25.7°C / 54-56%	Oct. 21, 2020
AC Conduction	CO01-CB	Wei Li	22~23°C / 56~59%	Oct. 23, 2020

Test site Designation No. TW0006 with FCC.

Test site registered number IC 4086D with Industry Canada.

1.4 Measurement Uncertainty

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

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	2.0 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	5.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	4.9 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.6 dB	Confidence levels of 95%
Conducted Emission	2.8 dB	Confidence levels of 95%
Output Power Measurement	1.4 dB	Confidence levels of 95%
Power Density Measurement	2.8 dB	Confidence levels of 95%
Bandwidth Measurement	0.39%	Confidence levels of 95%



2 Test Configuration of EUT

2.1 Test Channel Mode

Mode	Power Setting
BT-LE(1Mbps)	-
2402MHz	10
2440MHz	10
2478MHz	10
2480MHz	7
BT-LE(2Mbps)	-
2402MHz	10
2440MHz	10
2478MHz	10
2480MHz	7



2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral
Operating Mode	Normal Link
1	EUT Zigbee
2	EUT Bluetooth
For operating mode 2 is the worst case and it was record in this test report.	

The Worst Case Mode for Following Conformance Tests	
Tests Item	DTS Bandwidth Maximum Conducted Output Power Power Spectral Density Emissions in Non-restricted Frequency Bands
Test Condition	Conducted measurement at transmit chains

The Worst Case Mode for Following Conformance Tests	
Tests Item	Emissions in Restricted Frequency Bands
Test Condition	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.
Operating Mode < 1GHz	Normal Link
1	EUT in Z axis_Zigbee
2	EUT in Z axis_Bluetooth
For operating mode 2 is the worst case and it was record in this test report.	
Operating Mode > 1GHz	CTX
The EUT was performed at X axis, Y axis and Z axis position and the worst case was found at X axis. So the measurement will follow this same test configuration.	
1	EUT in X axis

2.3 EUT Operation during Test

For CTX Mode:

The EUT was programmed to be in continuously transmitting mode.

For Normal Link:

During the test, the EUT operation to normal function.



2.4 Accessories

N/A

2.5 Support Equipment

For AC Conduction:

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	NB	DELL	E6430	N/A
B	Fixture	NXP	OM15076-3 / JN5189 Carrier Main Board DK6 V3	N/A
C	iPhone 4	Apple	A1332	BCG-E2380A
D	Earphone	SHYARO CHI	MIC-04	N/A
E	Mouse	HP	FM100	N/A

For Radiated (below 1GHz):

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	Fixture	NXP	OM15076-3 / JN5189 Carrier Main Board DK6 V3	N/A
B	iPhone 4	Apple	A1332	BCG-E2380A
C	Notebook	DELL	E4300	N/A
D	Mouse	Logitech	M-U0026	N/A
E	Earphone	SHYARO CHI	MIC-04	N/A



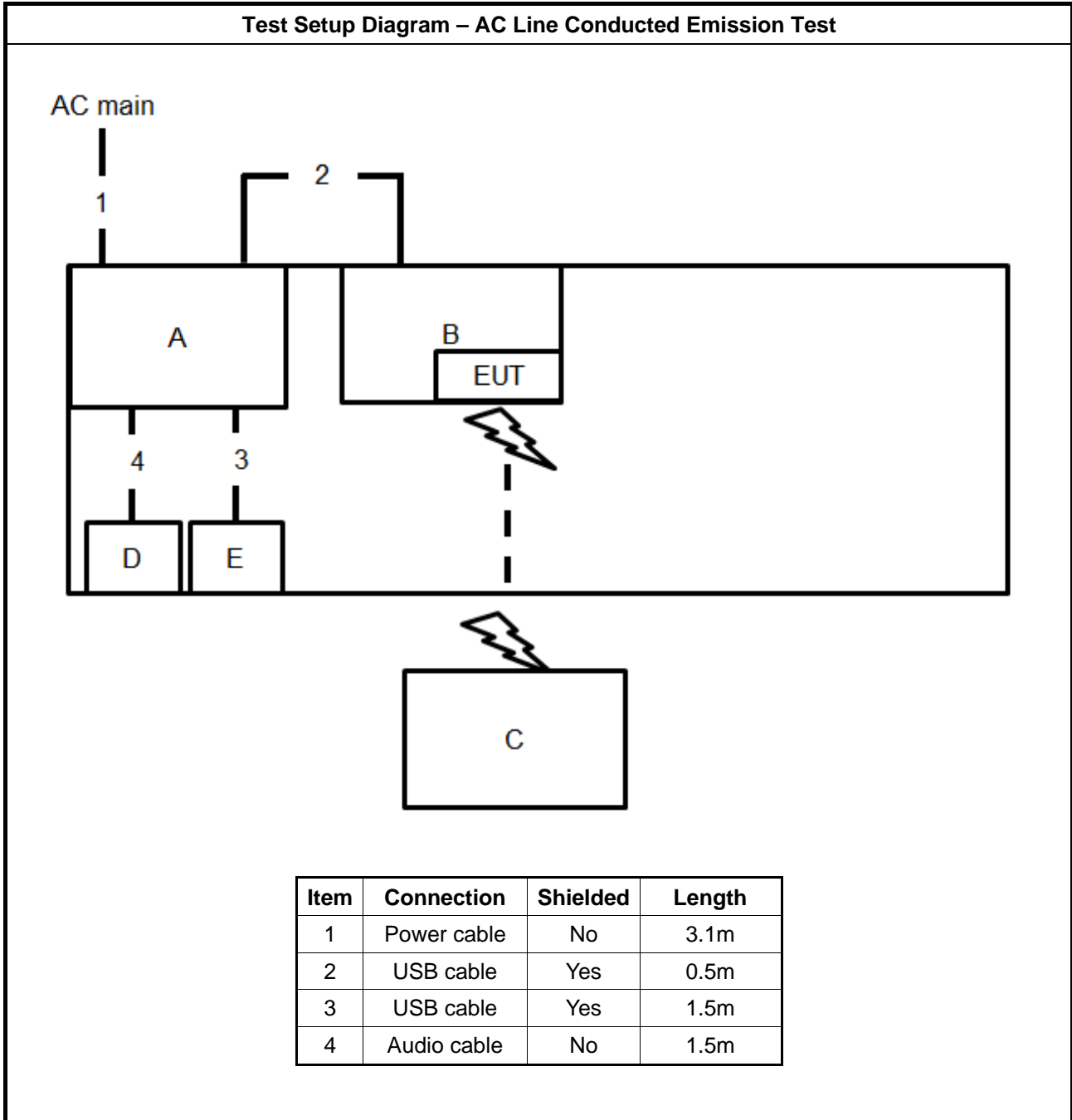
For Radiated (above 1GHz):

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	Fixture	NXP	OM15076-3 / JN5189 Carrier Main Board DK6 V3	N/A
B	Notebook	DELL	E4300	N/A

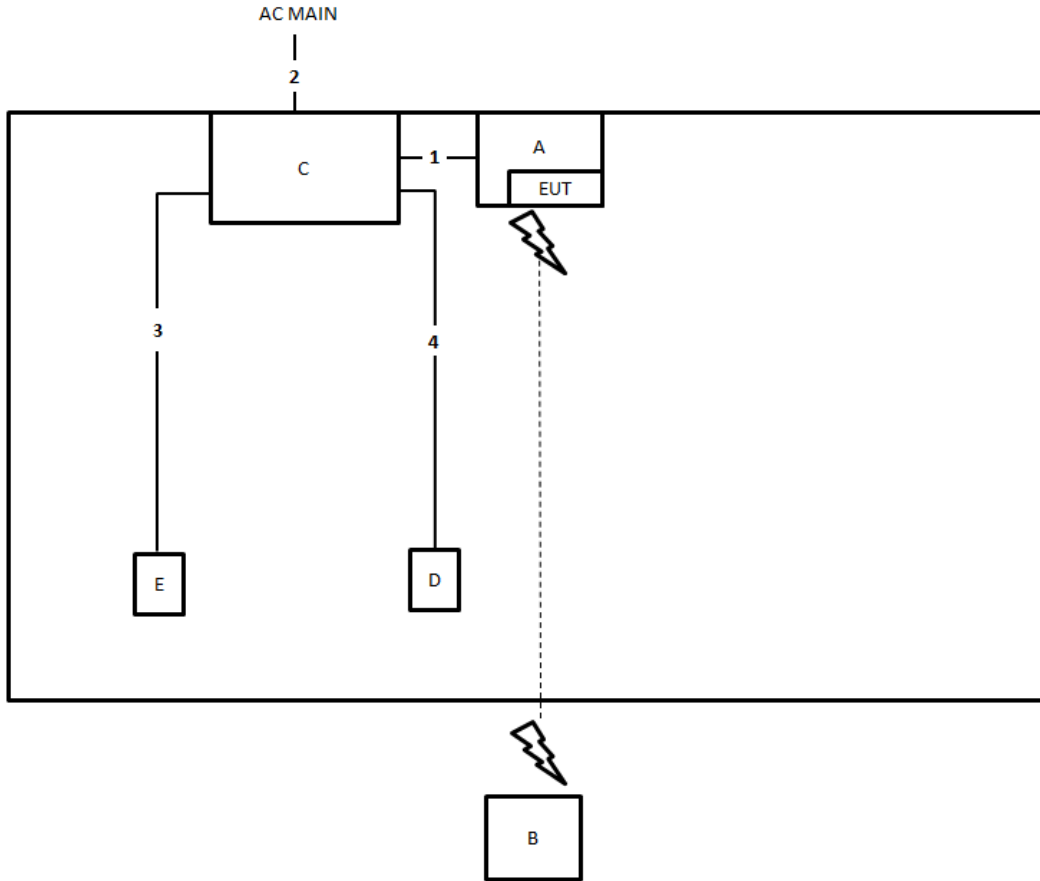
For RF Conducted:

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	Notebook	DELL	E4300	N/A
B	Fixture	NXP	OM15076-3 / JN5189 Carrier Main Board DK6 V3	N/A

2.6 Test Setup Diagram



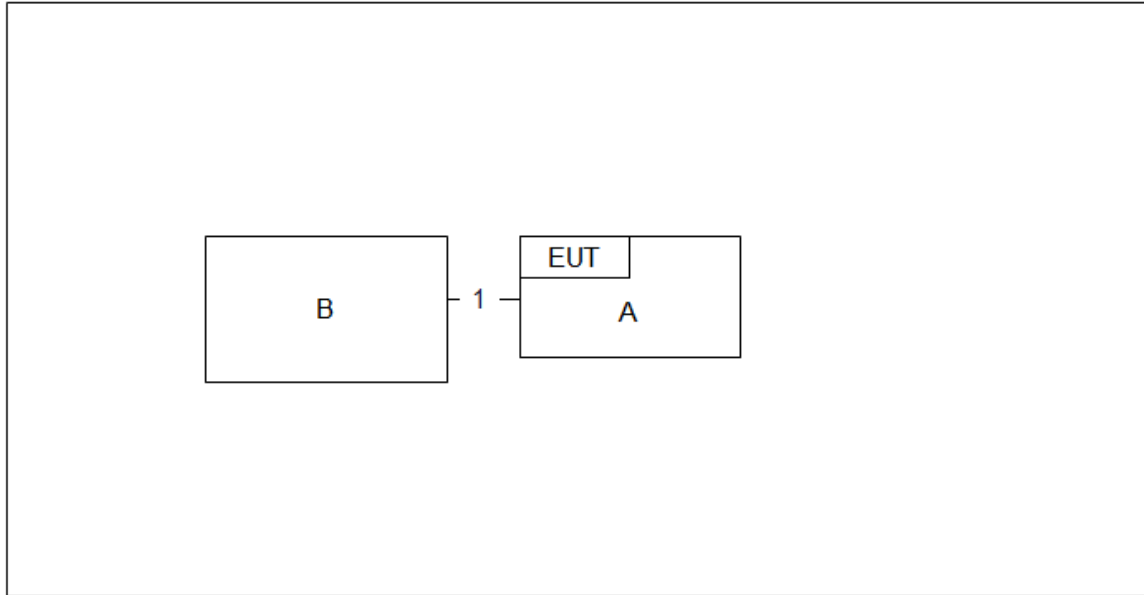
Test Setup Diagram - Radiated Test < 1GHz



Item	Connection	Shielded	Length
1	USB cable	Yes	0.5m
2	Power cable	No	2.6m
3	Audio cable	No	1.1m
4	USB cable	Yes	1.8m



Test Setup Diagram - Radiated Test > 1GHz



Item	Connection	Shielded	Length
1	USB cable	Yes	1.3m



3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

Note 1: * Decreases with the logarithm of the frequency.

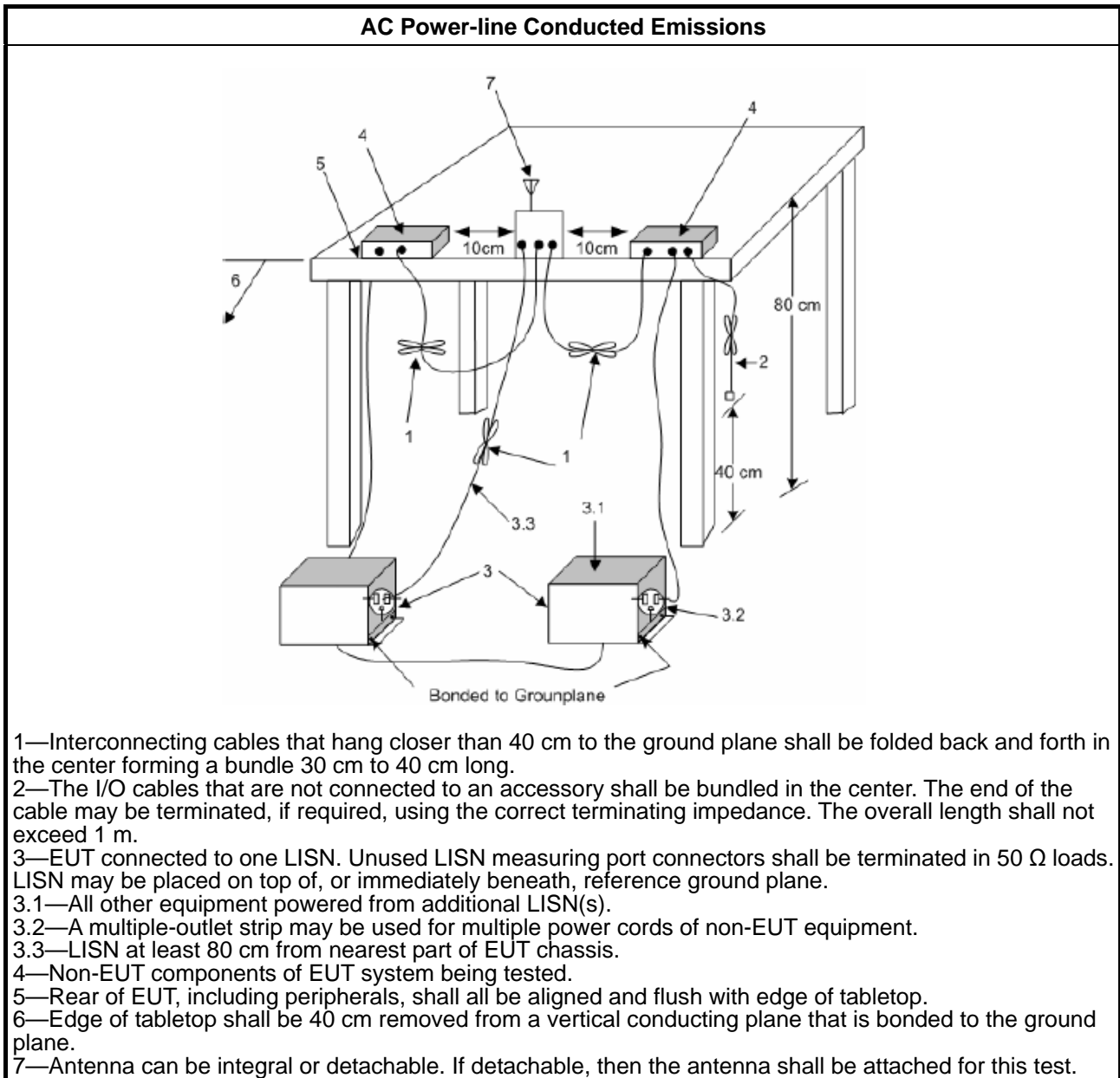
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

Test Method
▪ Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

3.1.4 Test Setup



1.1.1. Measurement Results Calculation

The measured Level is calculated using:

- a. Corrected Reading: LISN Factor (LISN) + Attenuator (AT/AUX) + Cable Loss (CL) + Read Level (Raw) = Level
- b. Margin = -Limit + Level

3.1.5 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
Systems using digital modulation techniques:
<ul style="list-style-type: none"> ▪ 6 dB bandwidth \geq 500 kHz.

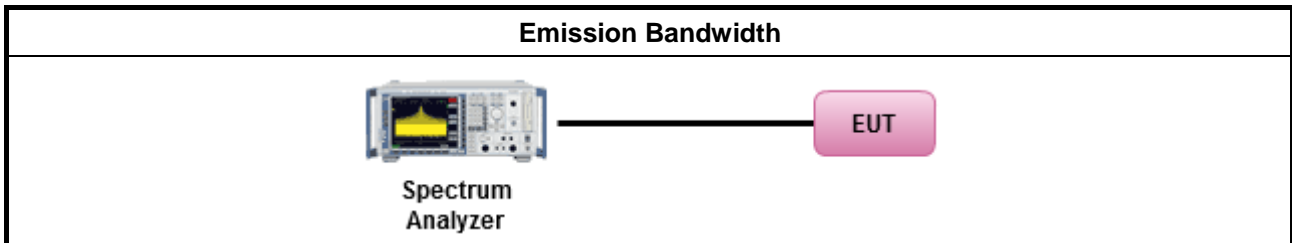
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Test Method
<ul style="list-style-type: none"> ▪ For the emission bandwidth shall be measured using one of the options below:
<input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.1 Option 1 for 6 dB bandwidth measurement.
<input type="checkbox"/> Refer as FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.2 Option 2 for 6 dB bandwidth measurement.
<input type="checkbox"/> Refer as ANSI C63.10, clause 6.9.1 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"> ▪ If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)
	<ul style="list-style-type: none"> ▪ Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm
	<ul style="list-style-type: none"> ▪ Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	<ul style="list-style-type: none"> ▪ Smart antenna system (SAS):
	<ul style="list-style-type: none"> - Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	<ul style="list-style-type: none"> - Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	<ul style="list-style-type: none"> - Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3 + 8$ dB dBm
<p>P_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, G_{TX} = the maximum transmitting antenna directional gain in dBi.</p>	

3.3.2 Measuring Instruments

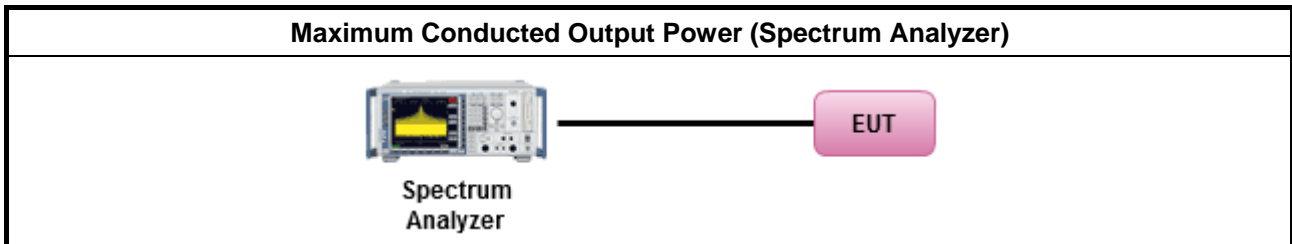
Refer a test equipment and calibration data table in this test report.



3.3.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> ▪ Maximum Peak Conducted Output Power 	
	<input type="checkbox"/> Refer as FCC KDB 558074, clause 8.3.1.1 & C63.10 clause 11.9.1.1 (RBW ≥ EBW method).
	<input type="checkbox"/> Refer as FCC KDB 558074, clause 8.3.1.3 & C63.10 clause 11.9.1.3 (peak power meter).
<ul style="list-style-type: none"> ▪ Maximum Conducted Output Power 	
[duty cycle ≥ 98% or external video / power trigger]	
	<input type="checkbox"/> Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.2 Method AVGSA-1.
	<input type="checkbox"/> Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.3 Method AVGSA-1A. (alternative)
duty cycle < 98% and average over on/off periods with duty factor	
	<input type="checkbox"/> Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.4 Method AVGSA-2.
	<input type="checkbox"/> Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.5 Method AVGSA-2A (alternative)
	<input type="checkbox"/> Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.6 Method AVGSA-3
	<input type="checkbox"/> Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.7 Method AVGSA-3A (alternative)
Measurement using a power meter (PM)	
	<input type="checkbox"/> Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.1 Method AVGPM (using an RF average power meter).
	<input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.2 Method AVGPM-G (using an gate RF average power meter).
<ul style="list-style-type: none"> ▪ For conducted measurement. 	
	<ul style="list-style-type: none"> ▪ If the EUT supports multiple transmit chains using options given below: Refer as FCC 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.
	<ul style="list-style-type: none"> ▪ If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + \dots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$

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"> Power Spectral Density (PSD) ≤ 8 dBm/3kHz

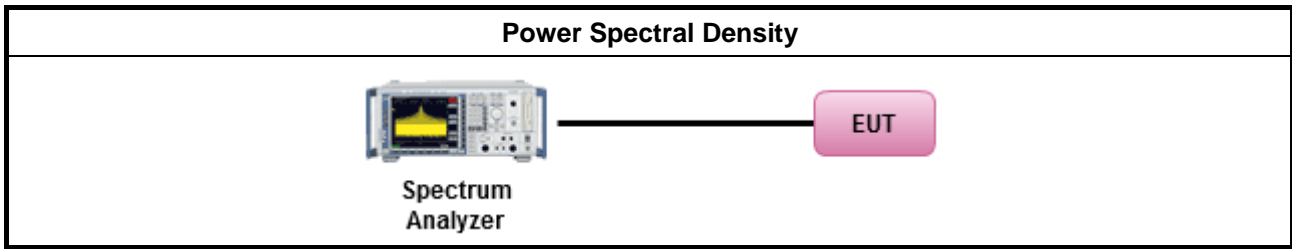
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

Test Method
<ul style="list-style-type: none"> 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 FCC KDB 558074, clause 8.4 & C63.10 clause 11.10 Method Max. PSD. [duty cycle ≥ 98% or external video / power trigger]
<ul style="list-style-type: none"> For conducted measurement.
<ul style="list-style-type: none"> If The EUT supports multiple transmit chains using options given below: <ul style="list-style-type: none"> <input type="checkbox"/> Option 1: Measure and sum the spectra across the outputs. Refer as FCC 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. <input type="checkbox"/> Option 2: Measure and sum spectral maxima across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs. These operations shall be performed separately over frequency spans that have different out-of-band or spurious emission limits, <input type="checkbox"/> Option 3: Measure and add 10 log(N) dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with the limit.

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 (dBc)
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 PSD 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 PSD level.

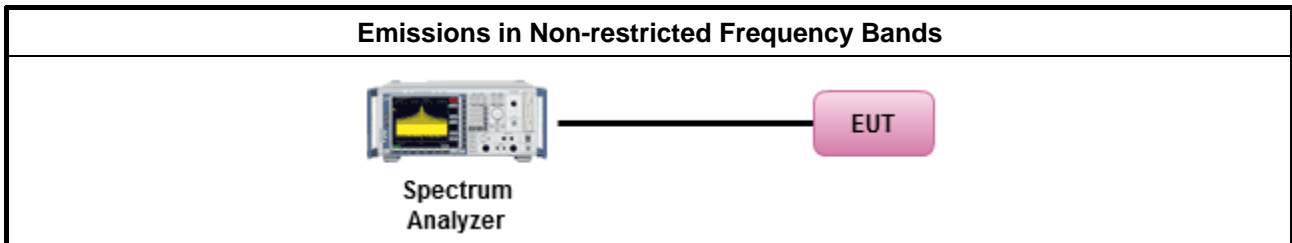
3.5.2 Measuring Instruments

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"> Refer as FCC KDB 558074, clause 8.5 for unwanted emissions into non-restricted bands.

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

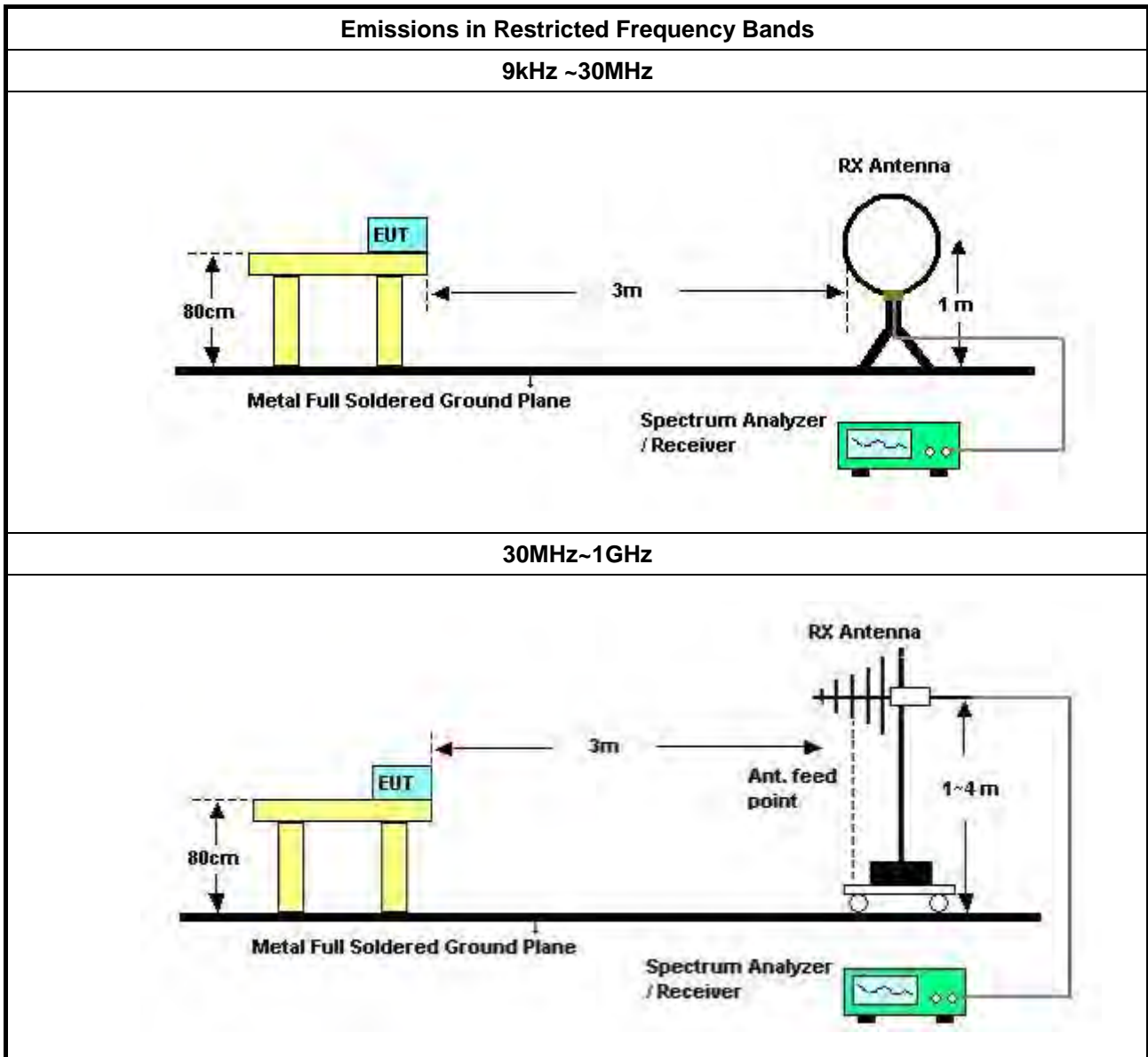
Refer a test equipment and calibration data table in this test report.

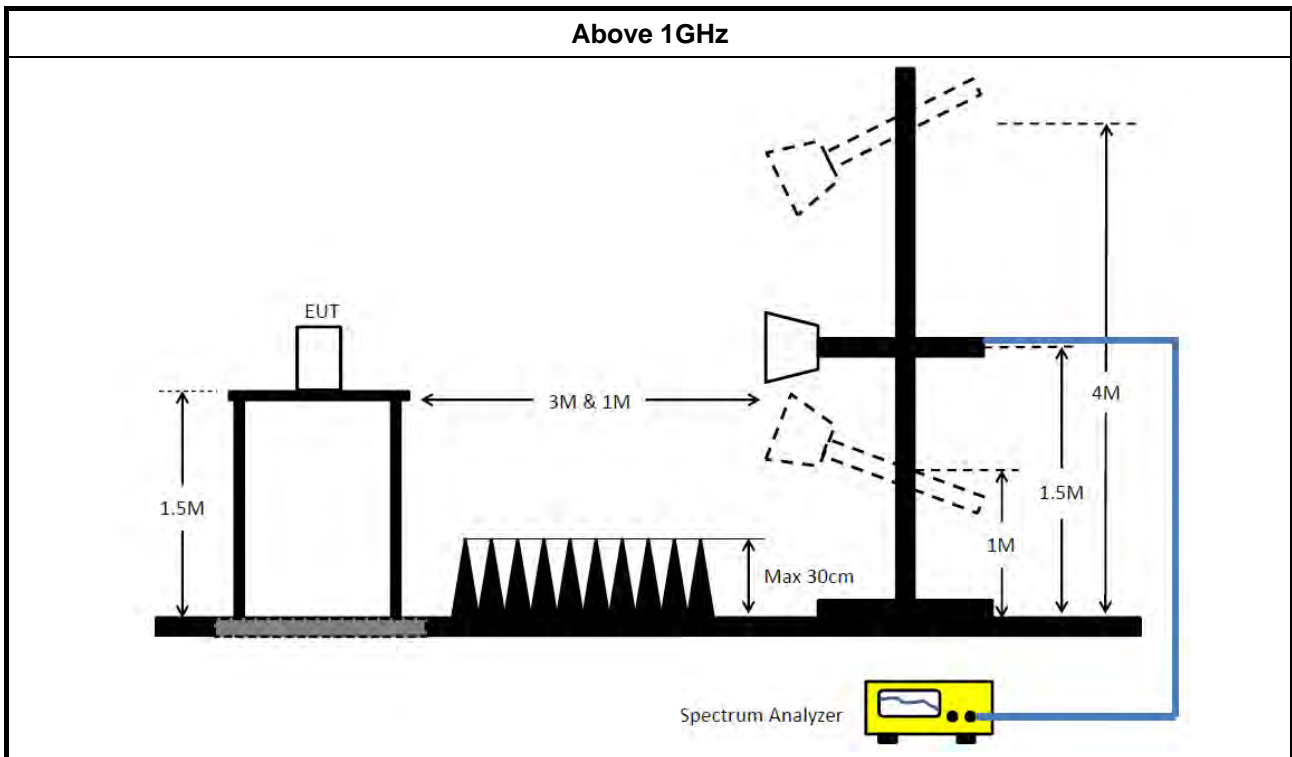


3.6.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> ▪ The average emission levels shall be measured in [duty cycle \geq 98 or duty factor]. 	
<ul style="list-style-type: none"> ▪ 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. 	
<ul style="list-style-type: none"> ▪ For the transmitter unwanted emissions shall be measured using following options below: 	
	<ul style="list-style-type: none"> ▪ Refer as FCC KDB 558074, clause 8.6 for unwanted emissions into restricted bands.
	<input type="checkbox"/> Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.1(trace averaging for duty cycle \geq 98%).
	<input type="checkbox"/> Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.2(trace averaging + duty factor).
	<input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.3(Reduced VBW \geq 1/T).
	<input type="checkbox"/> Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). VBW \geq 1/T, where T is pulse time.
	<input type="checkbox"/> Refer as ANSI C63.10, clause 7.5 average value of pulsed emissions.
	<input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.4 measurement procedure peak limit.
<ul style="list-style-type: none"> ▪ For the transmitter band-edge emissions shall be measured using following options below: 	
	<ul style="list-style-type: none"> ▪ Refer as FCC KDB 558074 clause 8.7 & c63.10 clause 11.13.1, 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.
	<ul style="list-style-type: none"> ▪ Refer as FCC KDB 558074, clause 8.7 (ANSI C63.10, clause 6.10.6) for marker-delta method for band-edge measurements.
	<ul style="list-style-type: none"> ▪ Refer as FCC KDB 558074, clause 8.7 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).
	<ul style="list-style-type: none"> ▪ 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
	<ul style="list-style-type: none"> ▪ For FCC 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.

3.6.4 Test Setup





3.6.5 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Antenna factor (AF) + Cable loss (CL) + Read level (Raw) - Preamp factor (PA)(if applicable) = Level.

3.6.6 Emissions in Restricted Frequency Bands (Below 30MHz)

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to KDB414788 Radiated Test Site, and the result came out very similar.

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

The radiated emissions were investigated from 9 kHz or the lowest frequency generated within the device, up to the 10th harmonic or 40 GHz, whichever is appropriate.

3.6.7 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix F



4 Test Equipment and Calibration Data

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.4GHz	Feb. 26, 2020	Feb. 25, 2021	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 25, 2019	Dec. 24, 2020	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Feb. 25, 2020	Feb. 24, 2021	Conduction (CO01-CB)
Pulse Limiter	Rohde&Schwarz	ESH3-Z2	100430	9kHz ~ 30MHz	Jan. 31, 2020	Jan. 30, 2021	Conduction (CO01-CB)
COND Cable	Woken	Cable	Low cable-CO01	9kHz ~ 30MHz	May 20, 2020	May 19, 2021	Conduction (CO01-CB)
Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conduction (CO01-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH04-CB	30 MHz ~ 1 GHz	Aug. 08, 2020	Aug. 07, 2021	Radiation (03CH04-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Apr. 13, 2020	Apr. 12, 2021	Radiation (03CH04-CB)
BILOG ANTENNA with 6 dB attenuator	Schaffner & EMCI	CBL6112B & N-6-06	22021&AT-N0607	30MHz ~ 1GHz	Oct. 11, 2020	Oct. 10, 2021	Radiation (03CH04-CB)
Pre-Amplifier	Agilent	310N	187290	0.1MHz ~ 1GHz	Apr. 28, 2020	Apr. 27, 2021	Radiation (03CH04-CB)
Spectrum Analyzer	R&S	FSP40	100142	9kHz~40GHz	Dec. 18, 2019	Dec. 17, 2020	Radiation (03CH04-CB)
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	May 13, 2020	May 12, 2021	Radiation (03CH04-CB)
RF Cable-low	Woken	RG402	Low Cable-03+67	30MHz ~ 1GHz	Nov. 05, 2020	Nov. 04, 2021	Radiation (03CH04-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH04-CB)
3m Semi Anechoic Chamber VSWR	RIKEN	SAC-3M	03CH02-CB	1GHz ~18GHz 3m	Mar. 28, 2020	Mar. 27, 2021	Radiation (03CH02-CB)
Horn Antenna	EMCO	3115	9610-4976	1GHz ~ 18GHz	Apr. 21, 2020	Apr. 20, 2021	Radiation (03CH02-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2020	Jul. 20, 2021	Radiation (03CH02-CB)
Pre-Amplifier	Agilent	83017A	MY39501305	1GHz ~ 26.5GHz	Jul. 13, 2020	Jul. 12, 2021	Radiation (03CH02-CB)
Pre-Amplifier	MITEQ	TTA1840-35-HG	1864479	18GHz ~ 40GHz	Jul. 08, 2020	Jul. 07, 2021	Radiation (03CH02-CB)
Spectrum analyzer	R&S	FSU	100015	9kHz~26GHz	Oct. 15, 2020	Oct. 14, 2021	Radiation (03CH02-CB)
RF Cable-high	Woken	RG402	High Cable-18	1GHz ~ 18GHz	Oct. 05, 2020	Oct. 04, 2021	Radiation (03CH02-CB)



Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
RF Cable-high	Woken	RG402	High Cable-18+19	1GHz ~ 18GHz	Oct. 05, 2020	Oct. 04, 2021	Radiation (03CH02-CB)
RF Cable-high	Woken	RG402	High Cable-40G#1	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH02-CB)
RF Cable-high	Woken	RG402	High Cable-40G#2	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH02-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH02-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	May 05, 2020	May 04, 2021	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-06	1 GHz – 26.5 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz –26.5 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-08	1 GHz –26.5 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz –26.5 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz –26.5 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-28	1 GHz –26.5 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH01-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conducted (TH01-CB)

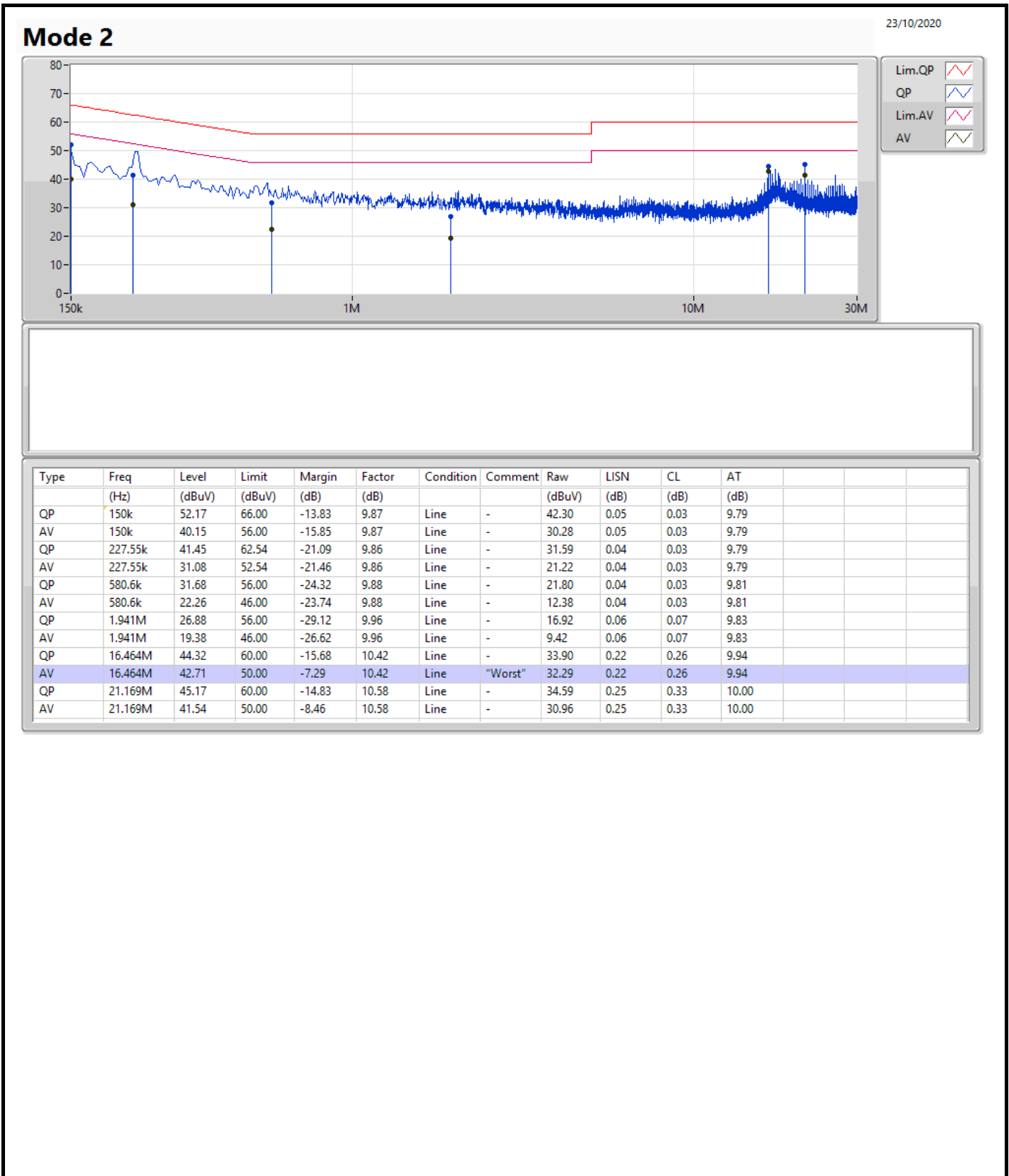
Note: Calibration Interval of instruments listed above is one year.

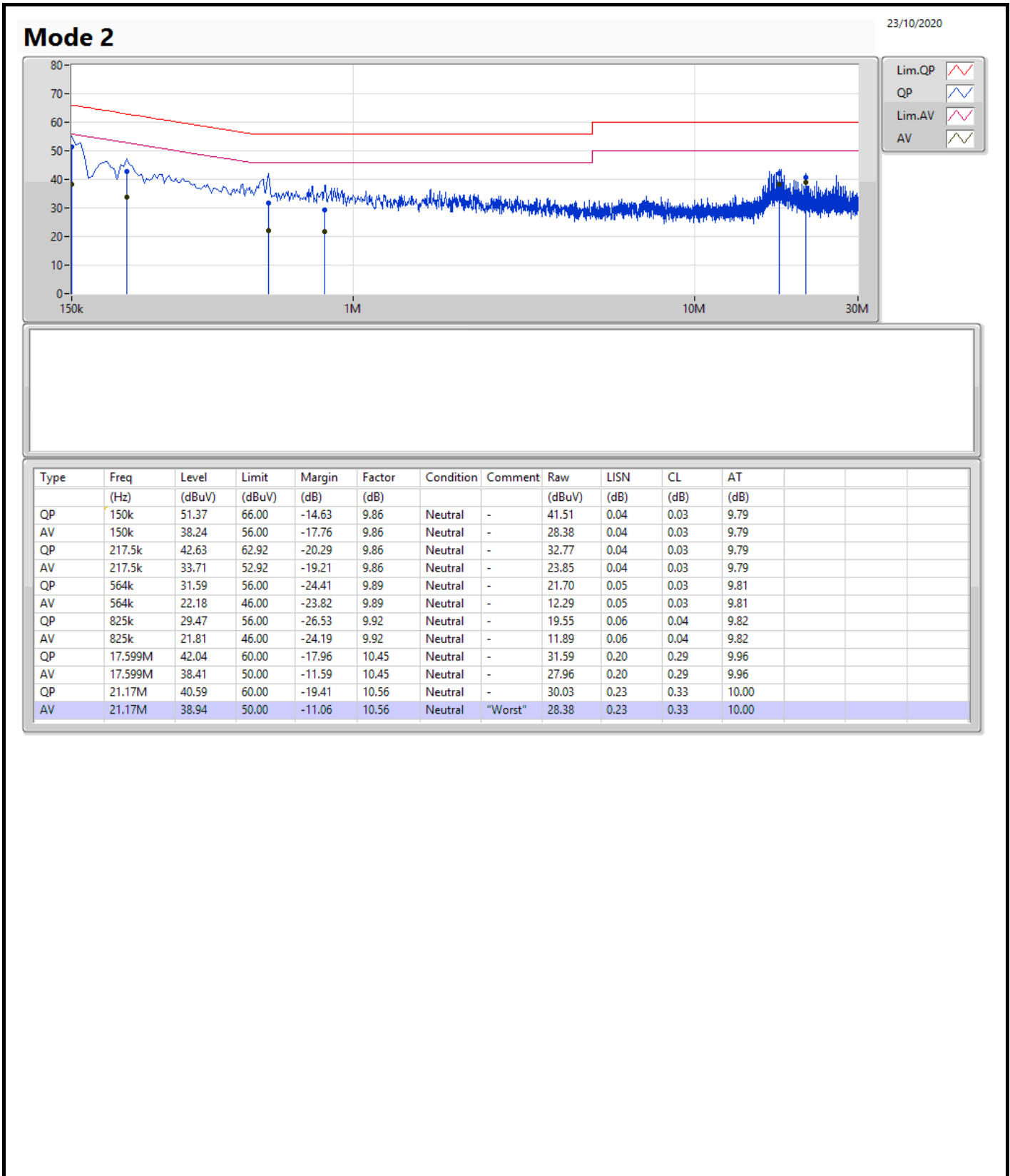
N.C.R. means Non-Calibration required.



Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 2	Pass	AV	16.464M	42.71	50.00	-7.29	Line







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)	667.5k	1.026M	1M03F1D	658.75k	1.022M
BT-LE(2Mbps)	1.123M	2.026M	2M03F1D	1.115M	2.014M

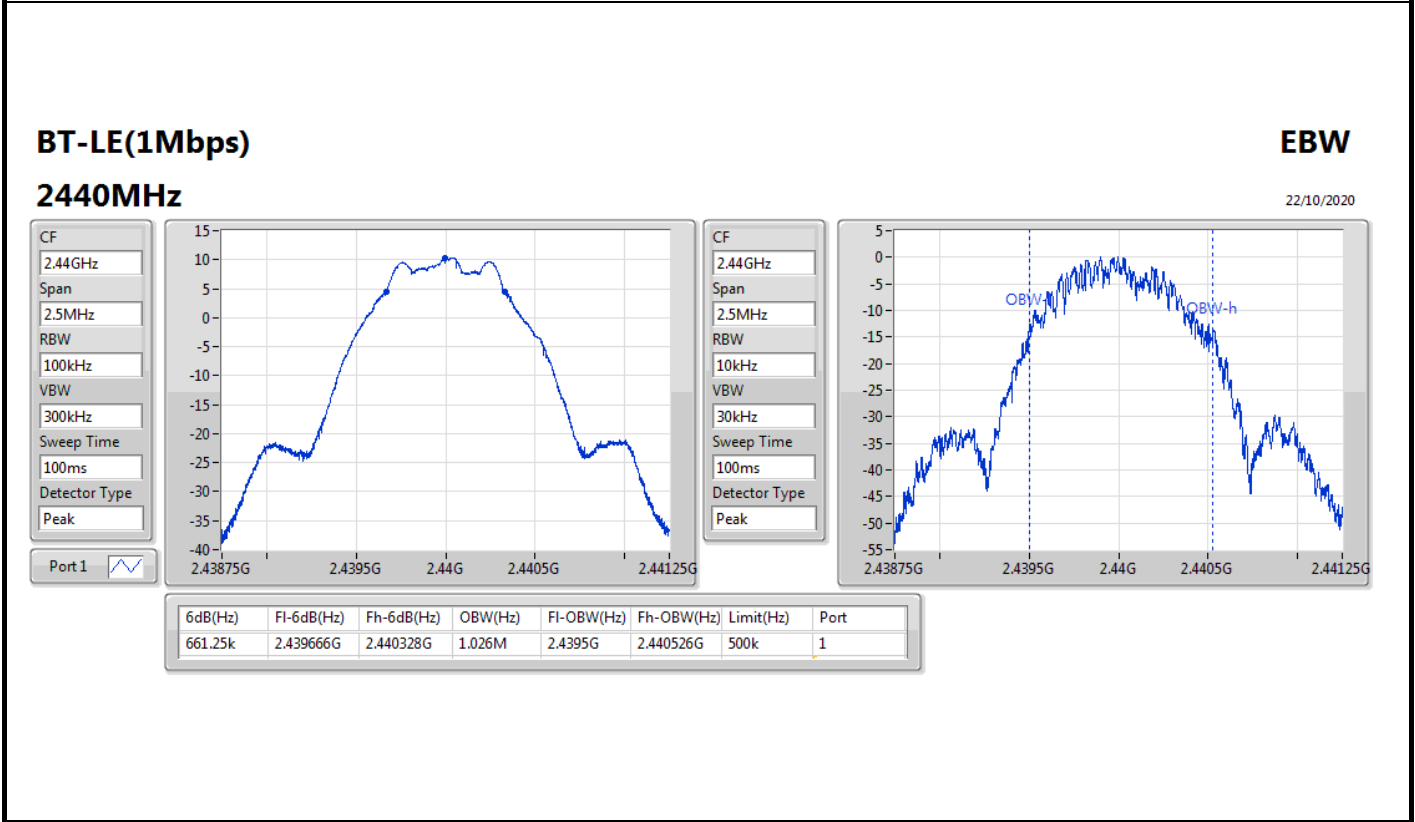
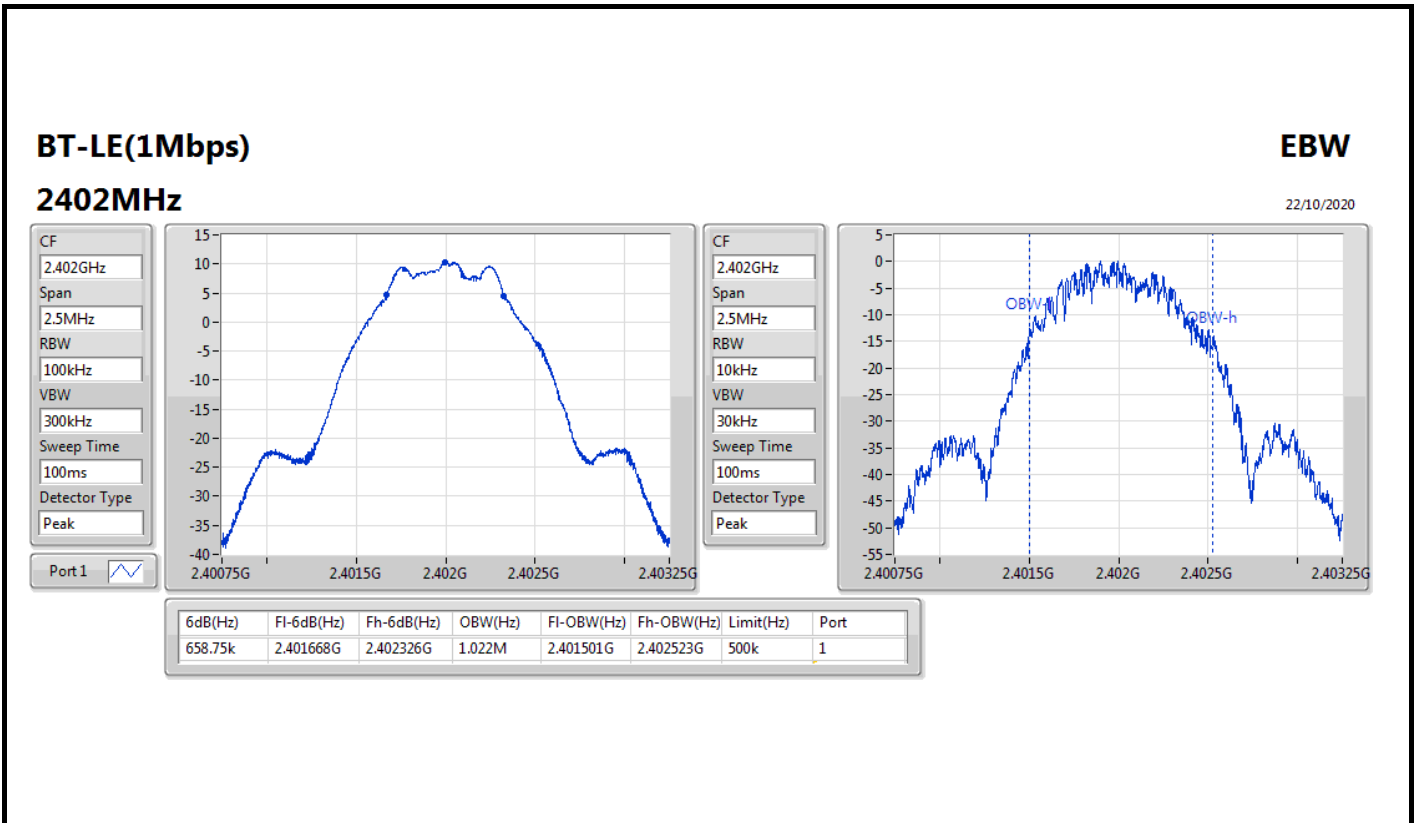
Max-N dB = Maximum 6dB down bandwidth; **Max-OBW** = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 6dB down bandwidth; **Min-OBW** = Minimum 99% occupied bandwidth;

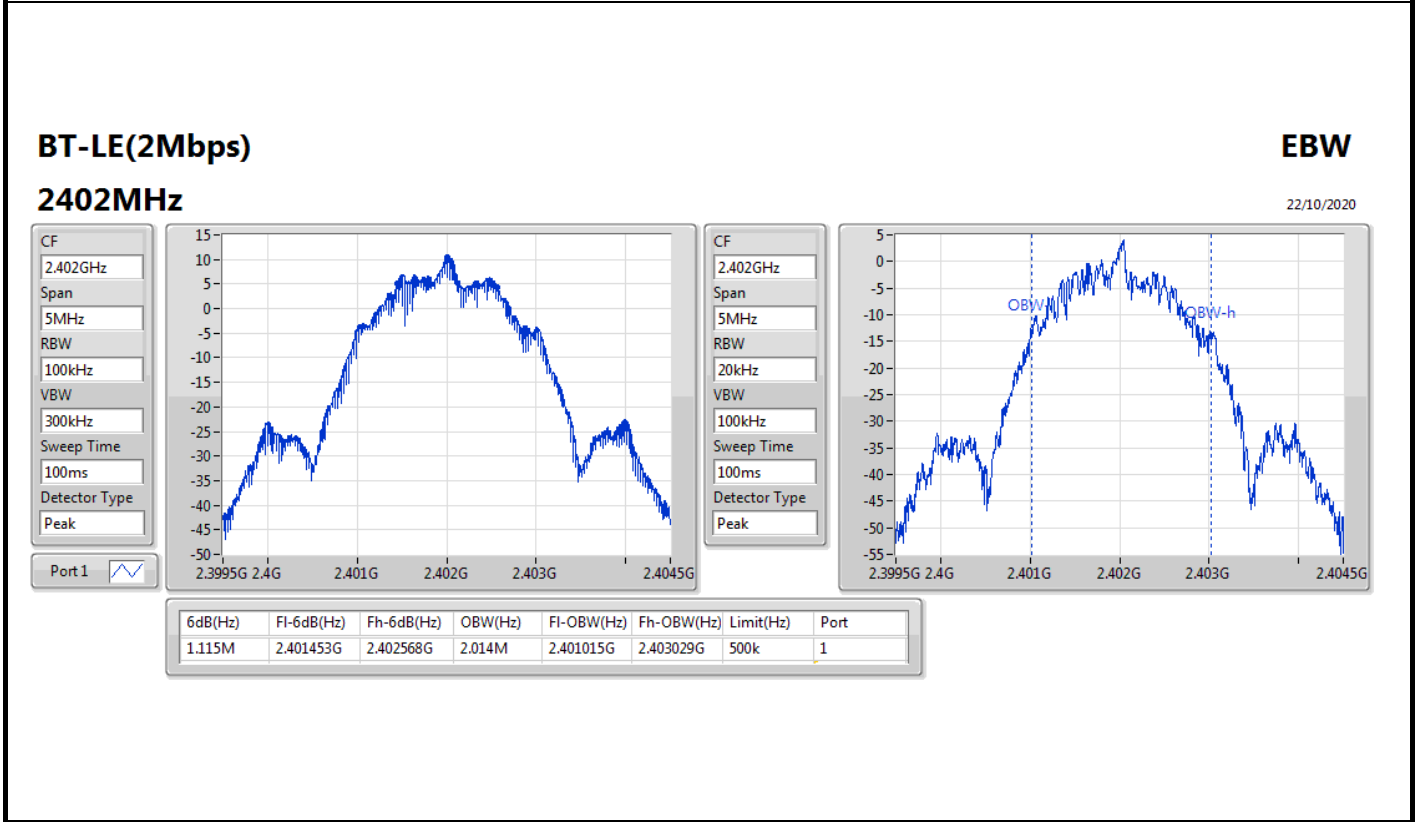
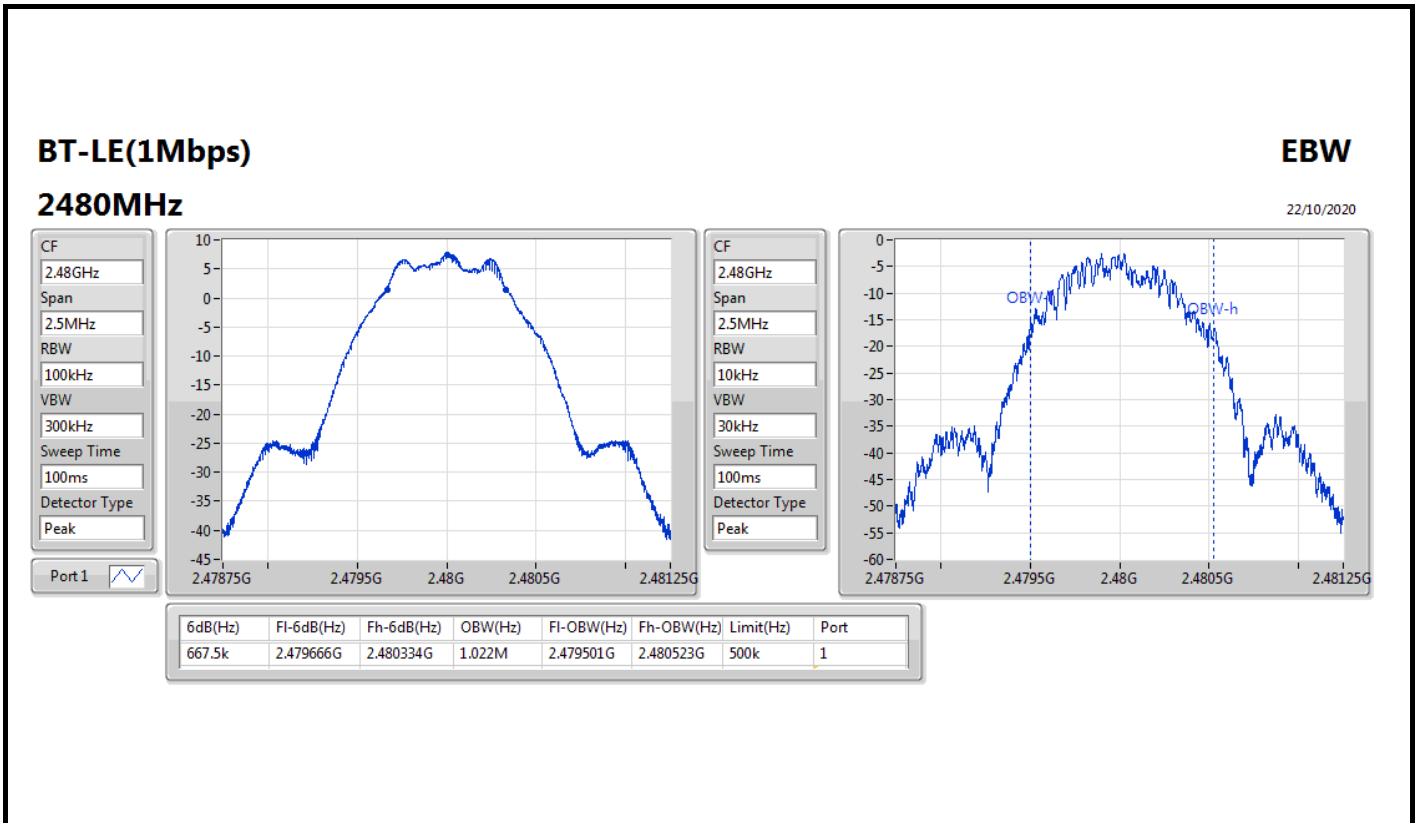


Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	658.75k	1.022M
2440MHz	Pass	500k	661.25k	1.026M
2480MHz	Pass	500k	667.5k	1.022M
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	500k	1.115M	2.014M
2440MHz	Pass	500k	1.123M	2.026M
2480MHz	Pass	500k	1.123M	2.016M

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





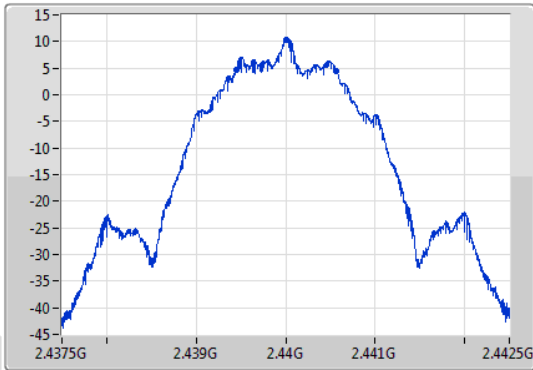
BT-LE(2Mbps)

EBW

2440MHz

22/10/2020

CF
2.44GHz
Span
5MHz
RBW
100kHz
VBW
300kHz
Sweep Time
100ms
Detector Type
Peak
Port 1



CF
2.44GHz
Span
5MHz
RBW
20kHz
VBW
100kHz
Sweep Time
100ms
Detector Type
Peak



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.123M	2.439448G	2.44057G	2.026M	2.43901G	2.441037G	500k	1

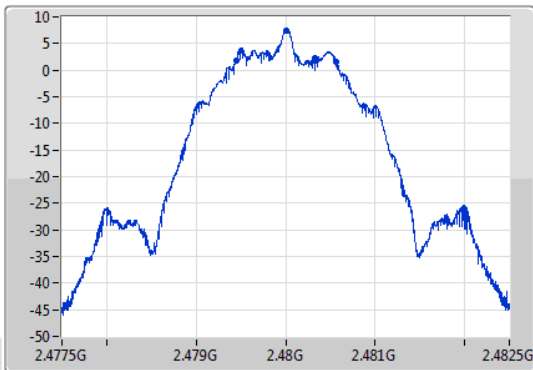
BT-LE(2Mbps)

EBW

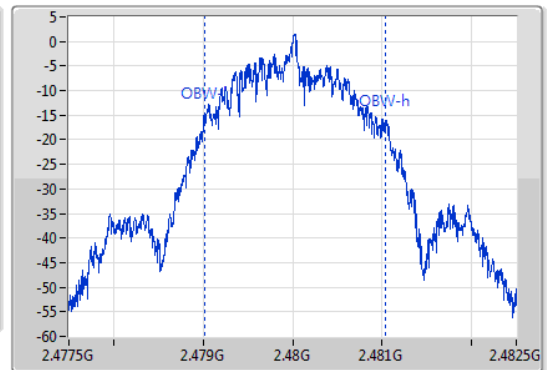
2480MHz

22/10/2020

CF
2.48GHz
Span
5MHz
RBW
100kHz
VBW
300kHz
Sweep Time
100ms
Detector Type
Peak
Port 1



CF
2.48GHz
Span
5MHz
RBW
20kHz
VBW
100kHz
Sweep Time
100ms
Detector Type
Peak



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.123M	2.479448G	2.48057G	2.016M	2.479015G	2.481032G	500k	1



Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	10.18	0.01042
BT-LE(2Mbps)	10.01	0.01002



Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	2.80	10.07	30.00
2440MHz	Pass	2.80	10.18	30.00
2478MHz	Pass	2.80	10.02	30.00
2480MHz	Pass	2.80	7.26	30.00
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	2.80	9.99	30.00
2440MHz	Pass	2.80	10.01	30.00
2478MHz	Pass	2.80	9.86	30.00
2480MHz	Pass	2.80	7.14	30.00

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



Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-5.70
BT-LE(2Mbps)	-6.36

RBW=3 kHz.

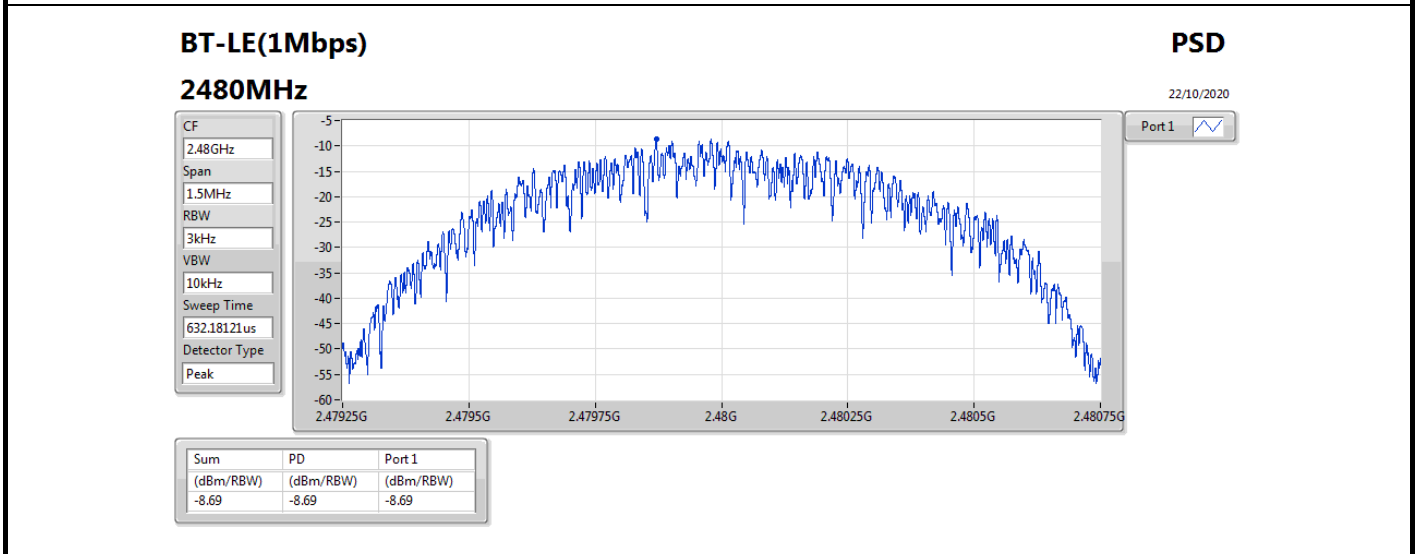
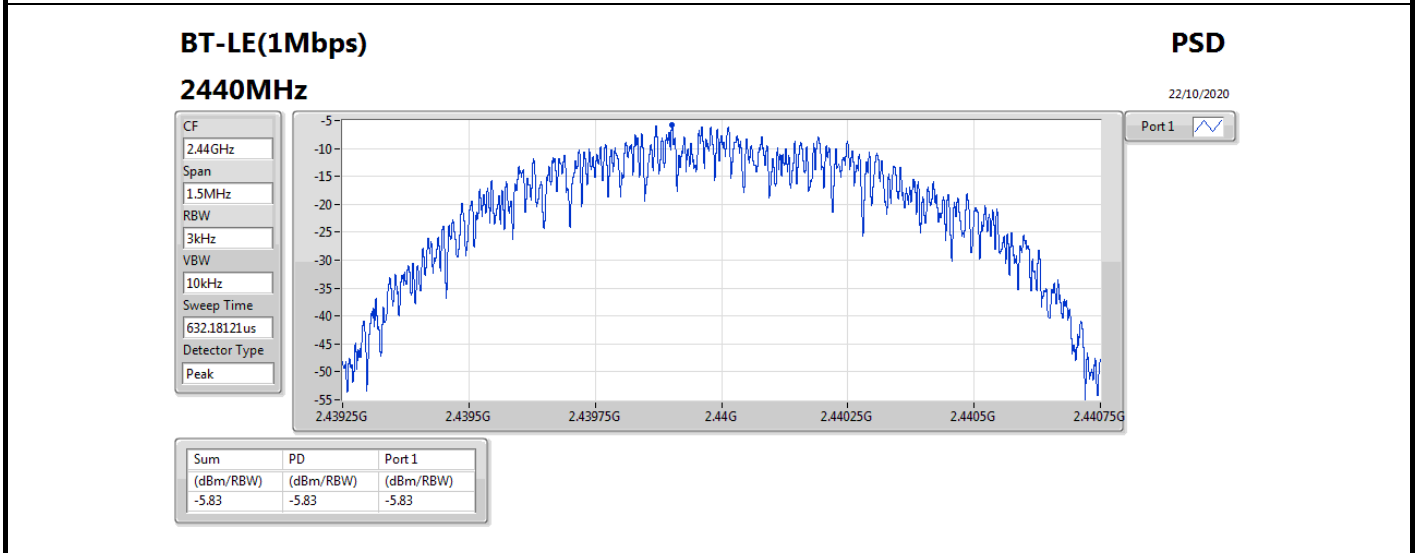
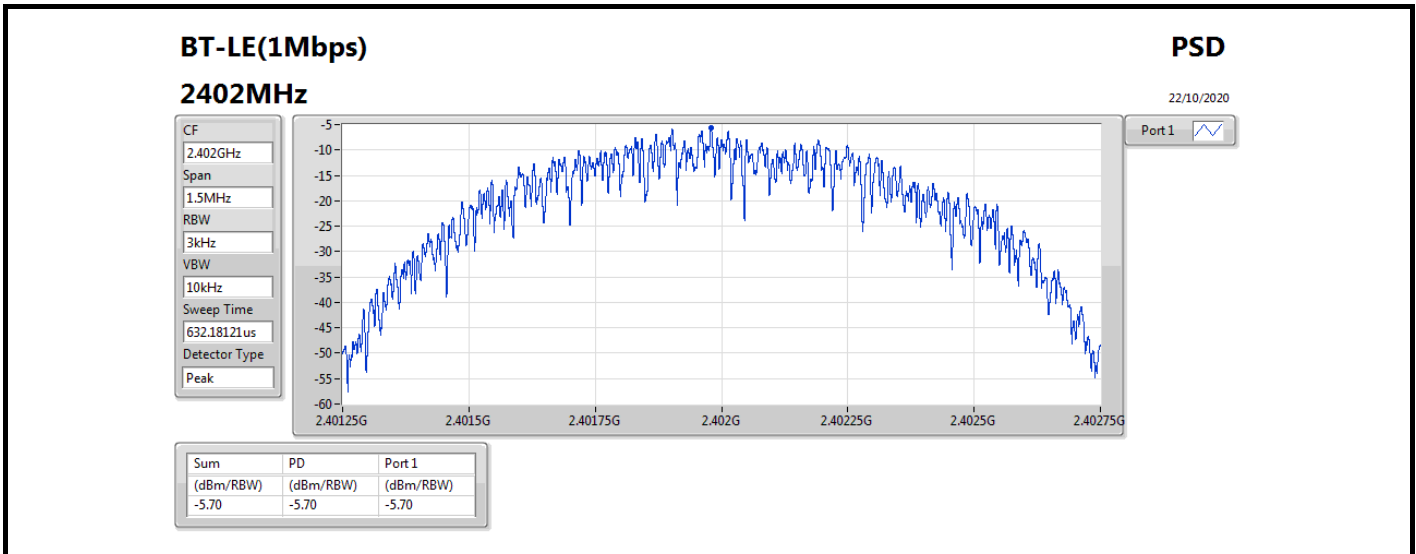


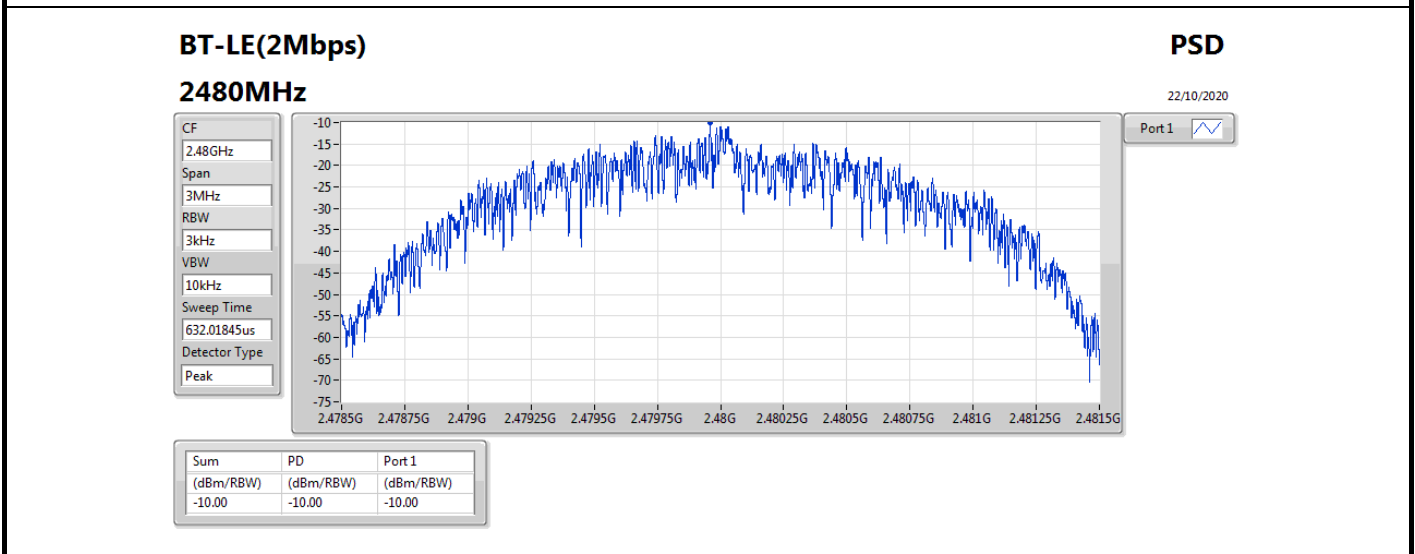
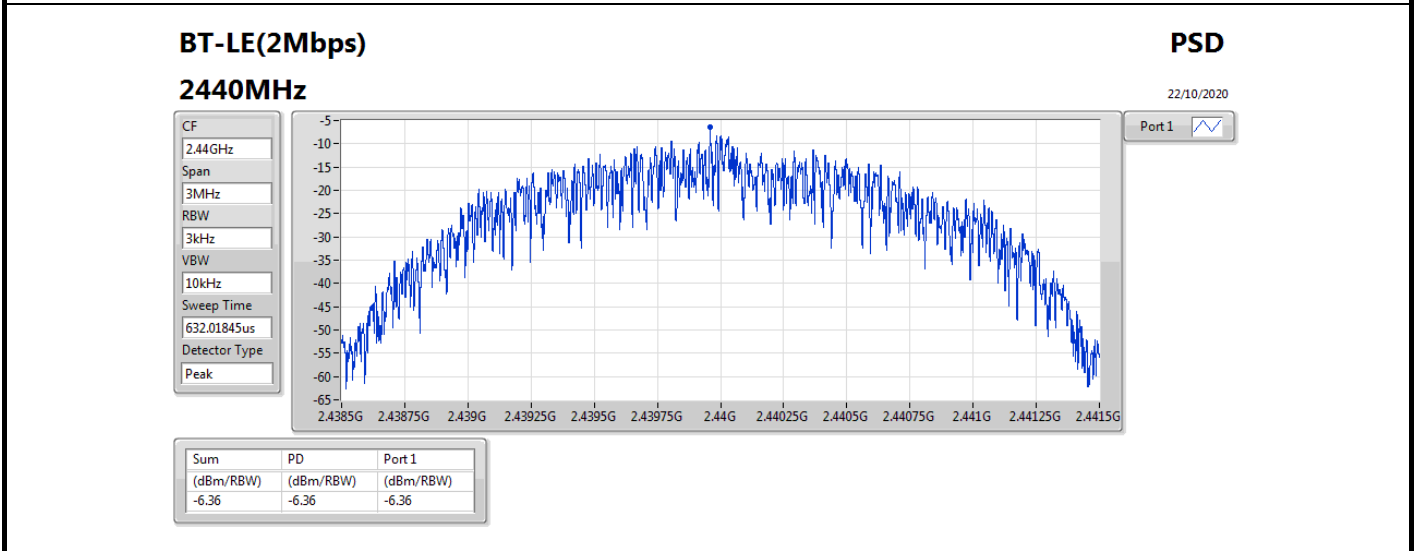
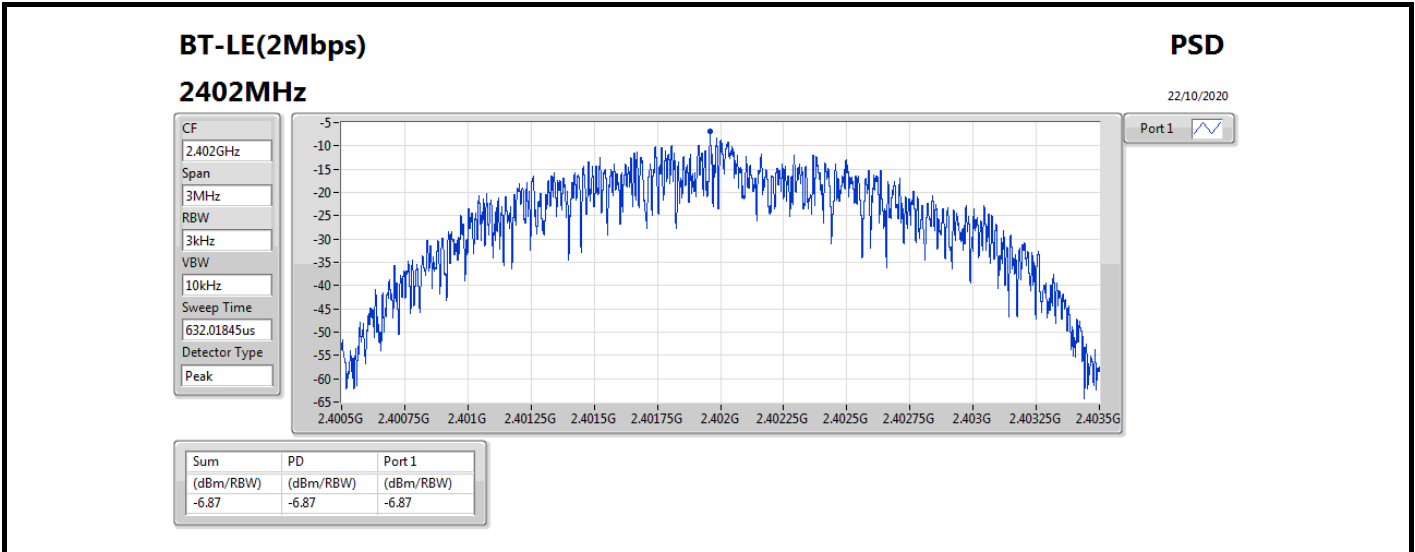
Result

Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	2.80	-5.70	8.00
2440MHz	Pass	2.80	-5.83	8.00
2480MHz	Pass	2.80	-8.69	8.00
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	2.80	-6.87	8.00
2440MHz	Pass	2.80	-6.36	8.00
2480MHz	Pass	2.80	-10.00	8.00

DG = Directional Gain; RBW=3 kHz;

PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X power density;







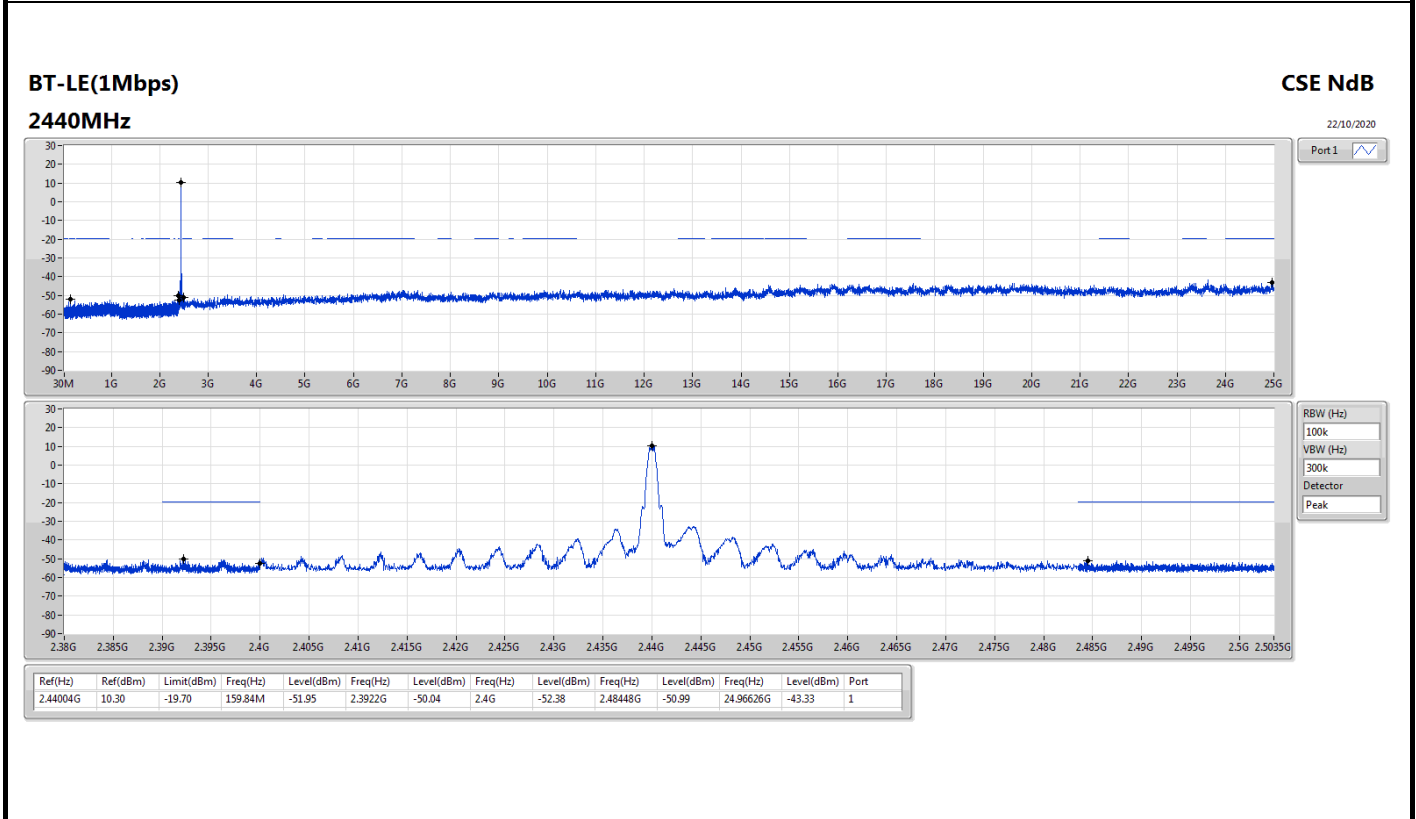
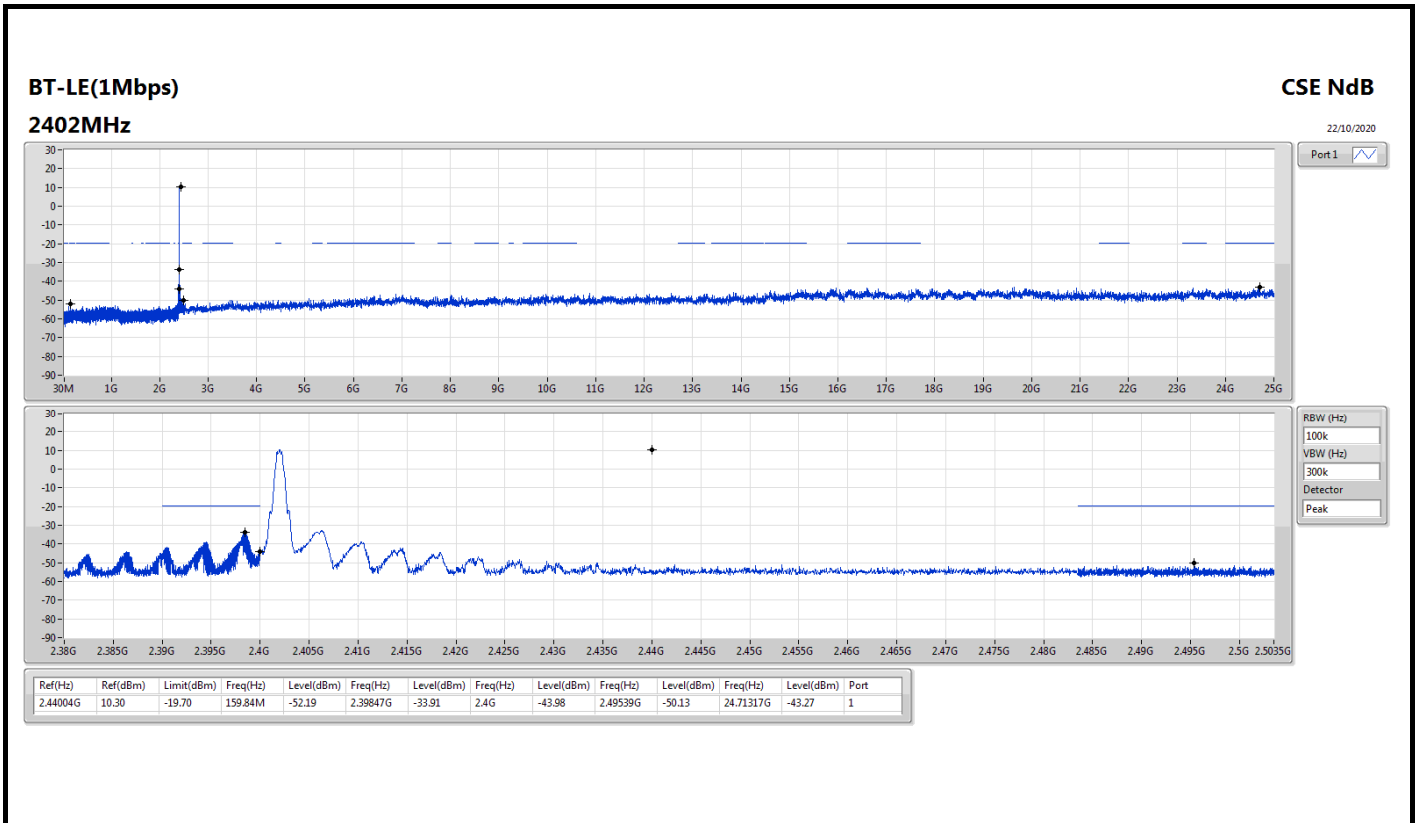
Summary

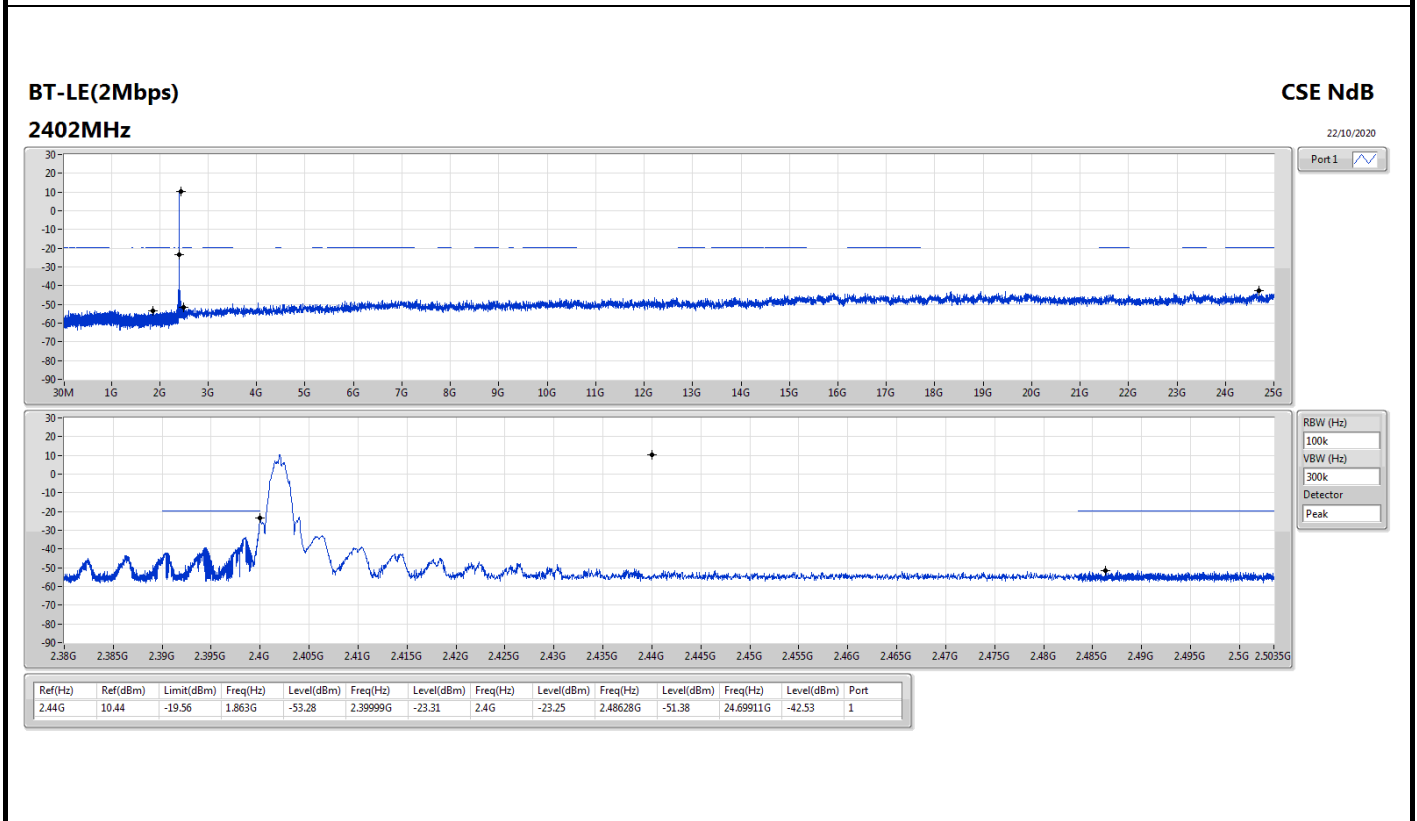
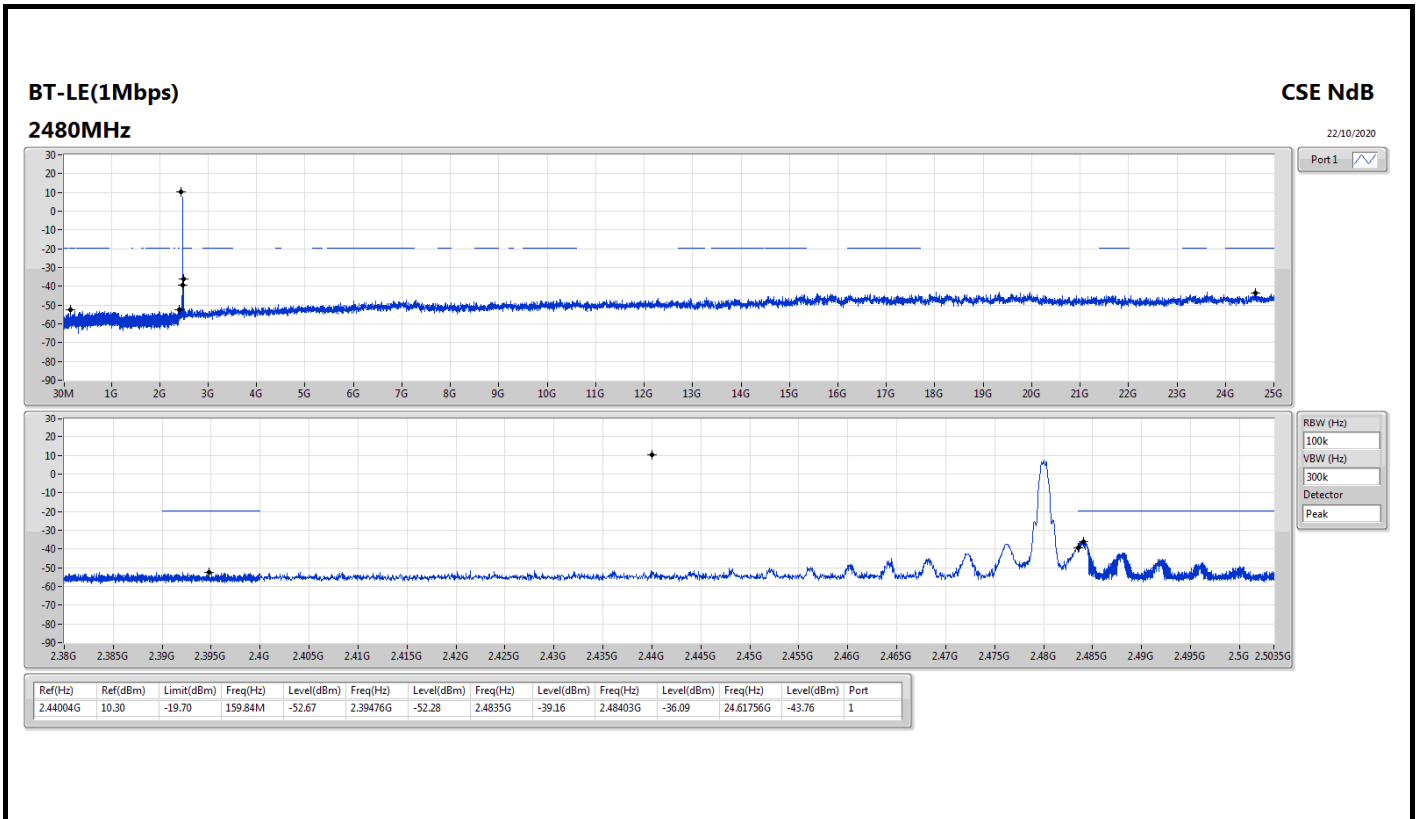
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	2.44004G	10.30	-19.70	159.84M	-52.19	2.39847G	-33.91	2.4G	-43.98	2.49539G	-50.13	24.71317G	-43.27	1
BT-LE(2Mbps)	Pass	2.44G	10.44	-19.56	1.863G	-53.28	2.39999G	-23.31	2.4G	-23.25	2.48628G	-51.38	24.69911G	-42.53	1

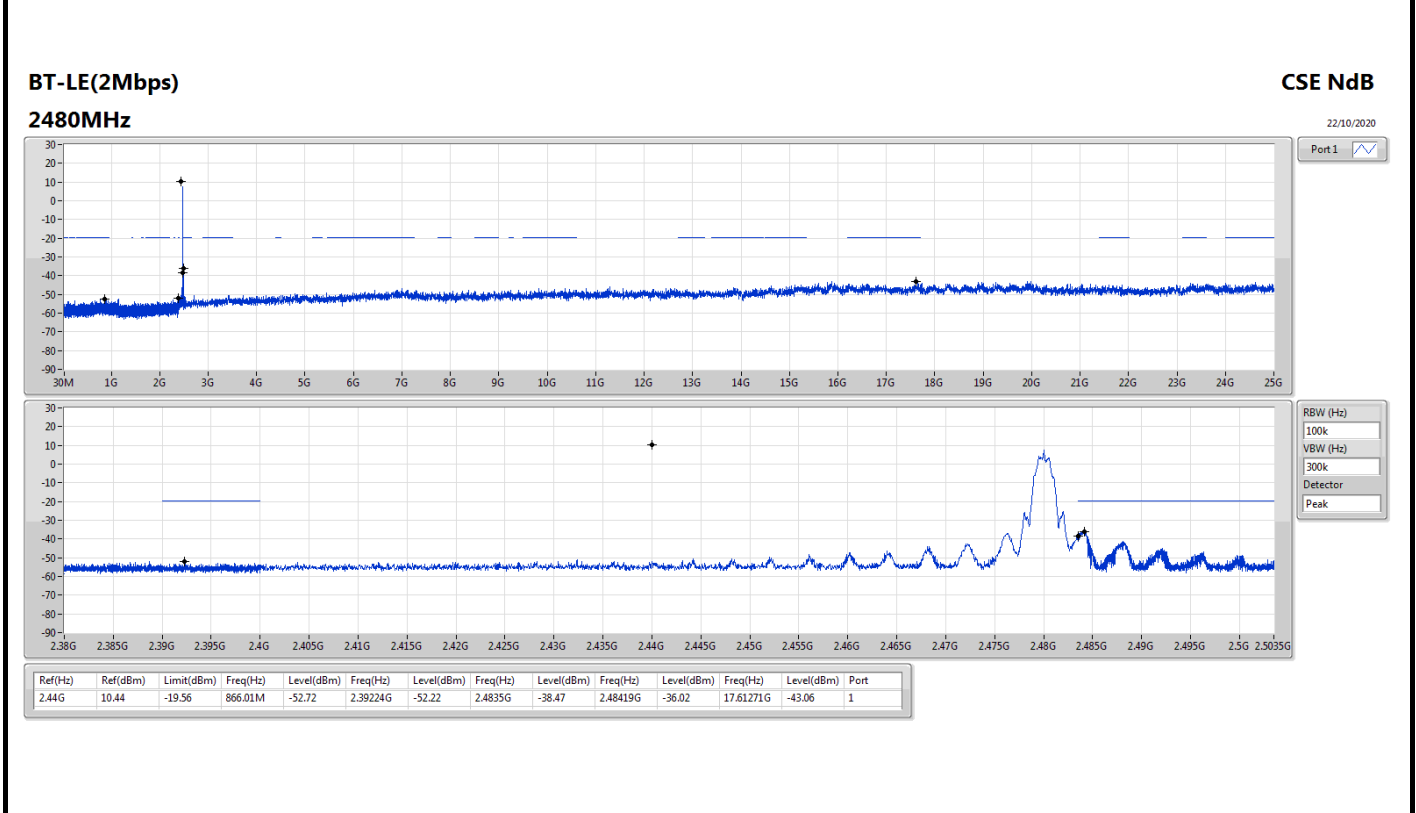
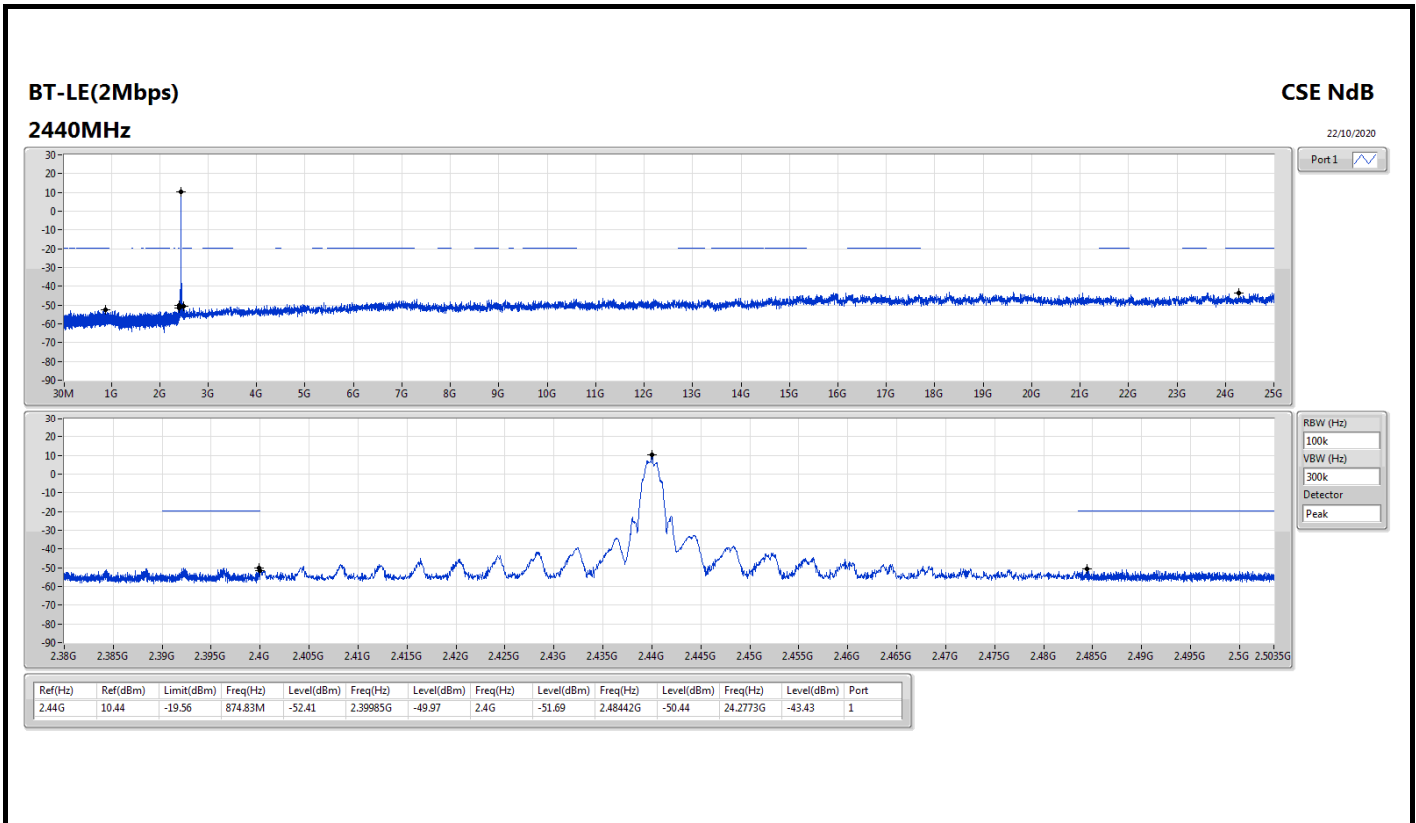


Result

Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.44004G	10.30	-19.70	159.84M	-52.19	2.39847G	-33.91	2.4G	-43.98	2.49539G	-50.13	24.71317G	-43.27	1
2440MHz	Pass	2.44004G	10.30	-19.70	159.84M	-51.95	2.3922G	-50.04	2.4G	-52.38	2.48448G	-50.99	24.96626G	-43.33	1
2480MHz	Pass	2.44004G	10.30	-19.70	159.84M	-52.67	2.39476G	-52.28	2.4835G	-39.16	2.48403G	-36.09	24.61756G	-43.76	1
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.44G	10.44	-19.56	1.863G	-53.28	2.39999G	-23.31	2.4G	-23.25	2.48628G	-51.38	24.69911G	-42.53	1
2440MHz	Pass	2.44G	10.44	-19.56	874.83M	-52.41	2.39985G	-49.97	2.4G	-51.69	2.48442G	-50.44	24.2773G	-43.43	1
2480MHz	Pass	2.44G	10.44	-19.56	866.01M	-52.72	2.39224G	-52.22	2.4835G	-38.47	2.48419G	-36.02	17.61271G	-43.06	1



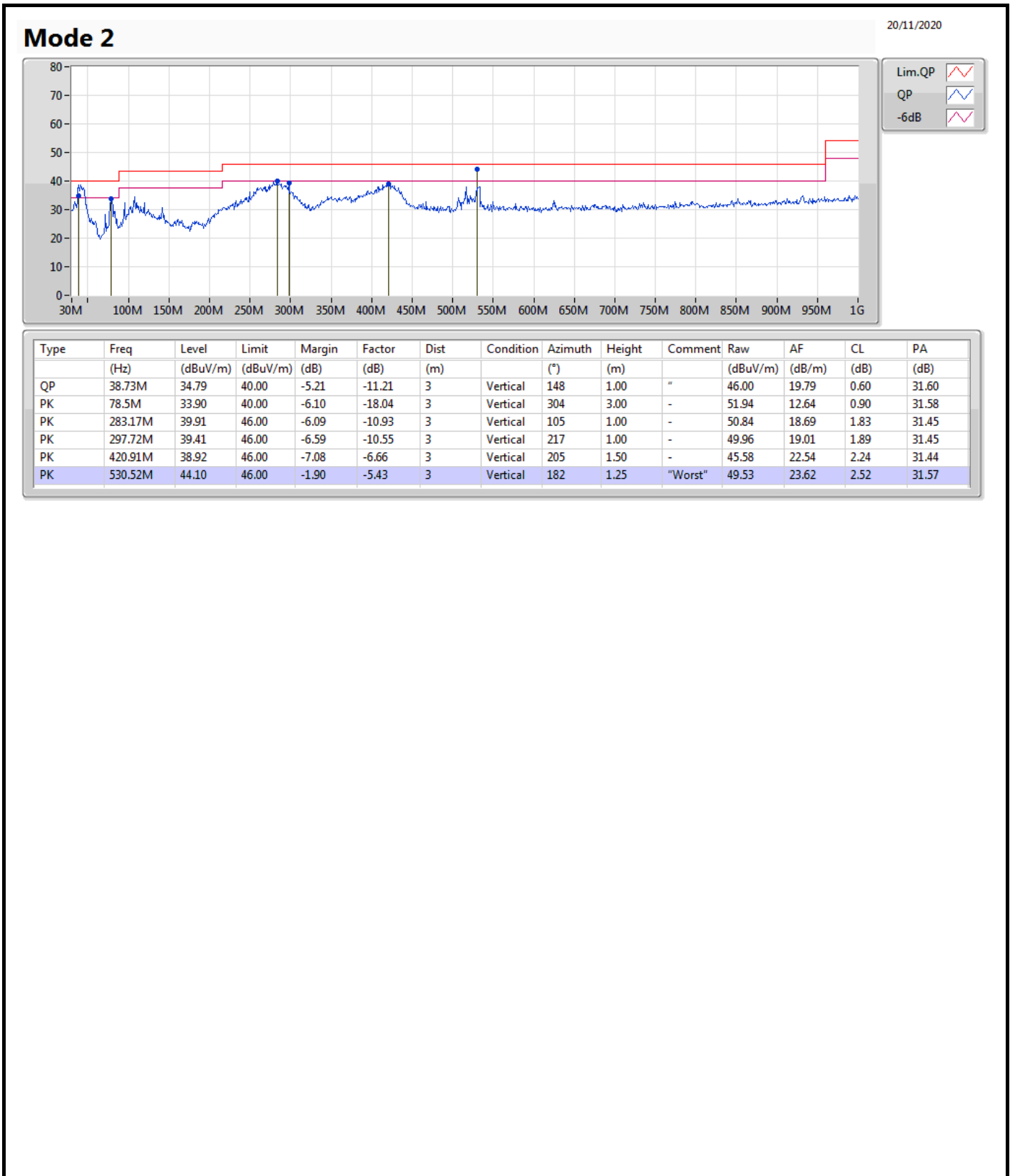


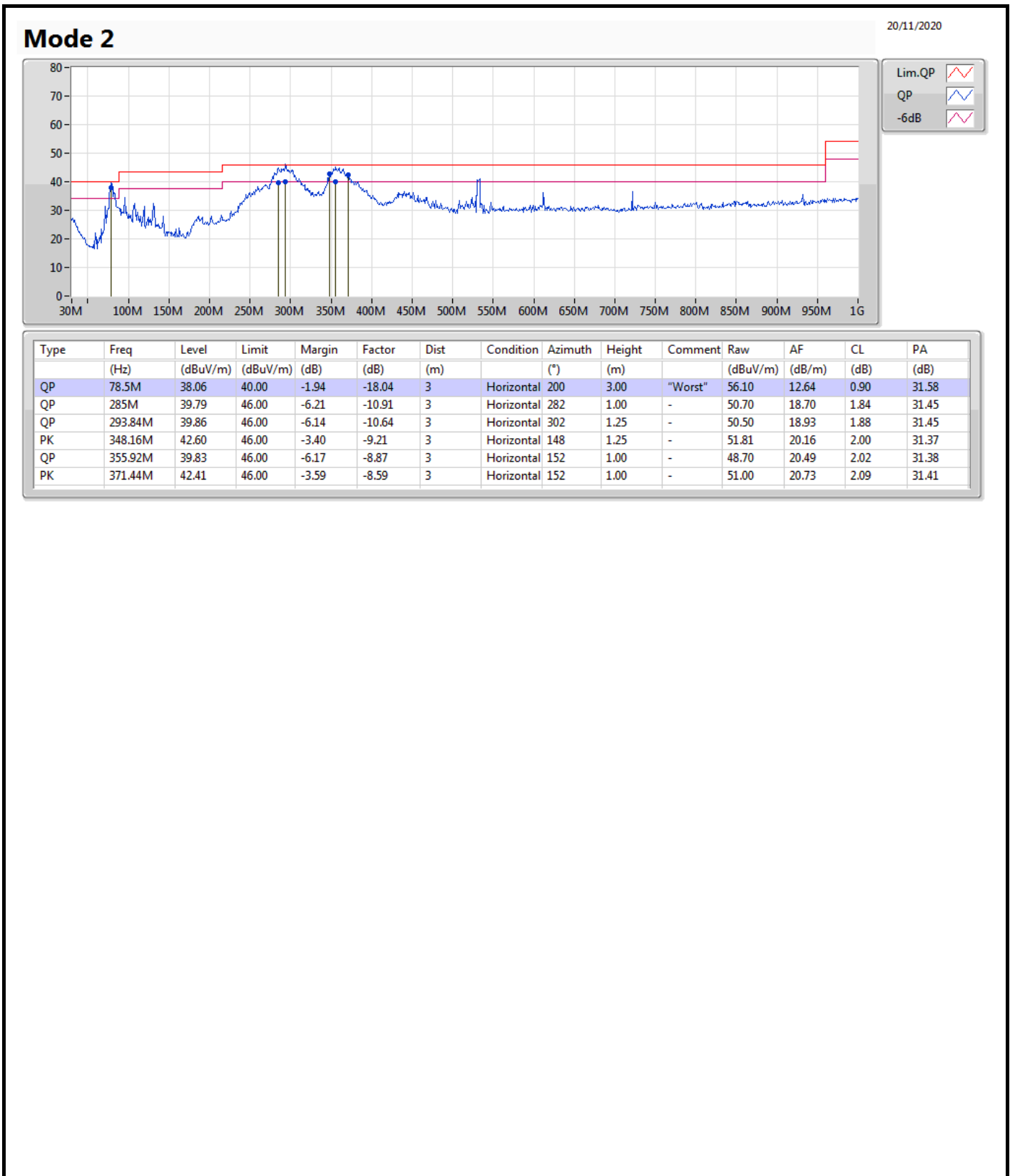




Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 2	Pass	PK	530.52M	44.10	46.00	-1.90	Vertical







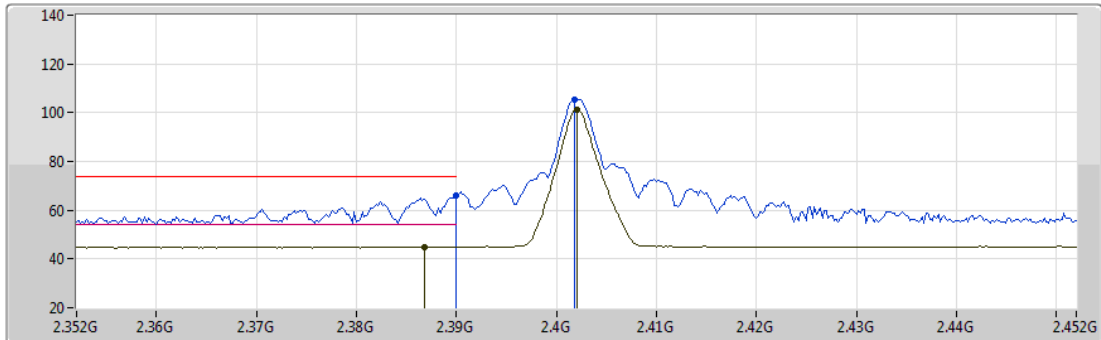
Summary

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	2.4838G	73.94	74.00	-0.06	3	Vertical	75	1.85	-

BT-LE(1Mbps)

21/10/2020

2402MHz_TX



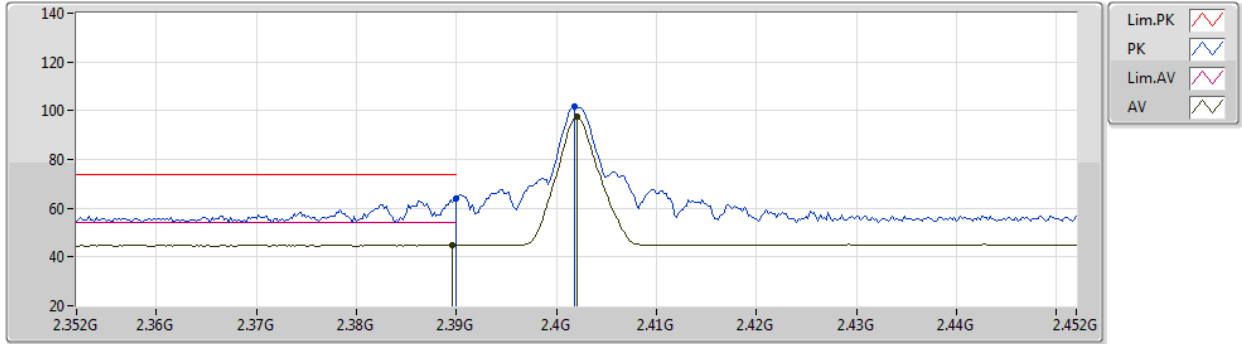
EUT X_1TX
Setting 10
02-E-K-4

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.39G	66.27	74.00	-7.73	35.59	3	Vertical	90	1.35	-	28.27	2.41	-
AV	2.3868G	44.98	54.00	-9.02	14.31	3	Vertical	90	1.35	-	28.26	2.41	-
PK	2.4018G	105.23	Inf	-Inf	74.52	3	Vertical	90	1.35	-	28.31	2.40	-
AV	2.402G	101.30	Inf	-Inf	70.59	3	Vertical	90	1.35	-	28.31	2.40	-

BT-LE(1Mbps)

21/10/2020

2402MHz_TX



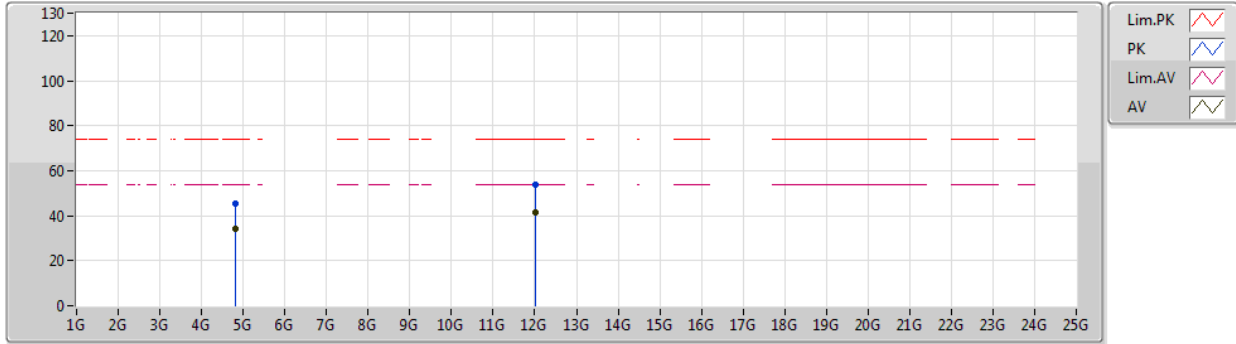
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Setting 10
02-E-K-4

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.39G	64.21	74.00	-9.79	33.54	3	Horizontal	193	2.62	-	28.27	2.40	-
AV	2.3896G	44.87	54.00	-9.13	14.19	3	Horizontal	193	2.62	-	28.27	2.41	-
PK	2.4018G	101.47	Inf	-Inf	70.76	3	Horizontal	193	2.62	-	28.31	2.40	-
AV	2.402G	97.45	Inf	-Inf	66.74	3	Horizontal	193	2.62	-	28.31	2.40	-

BT-LE(1Mbps)

21/10/2020

2402MHz_TX



EUT X_1TX
Setting 10
02-E-J-7

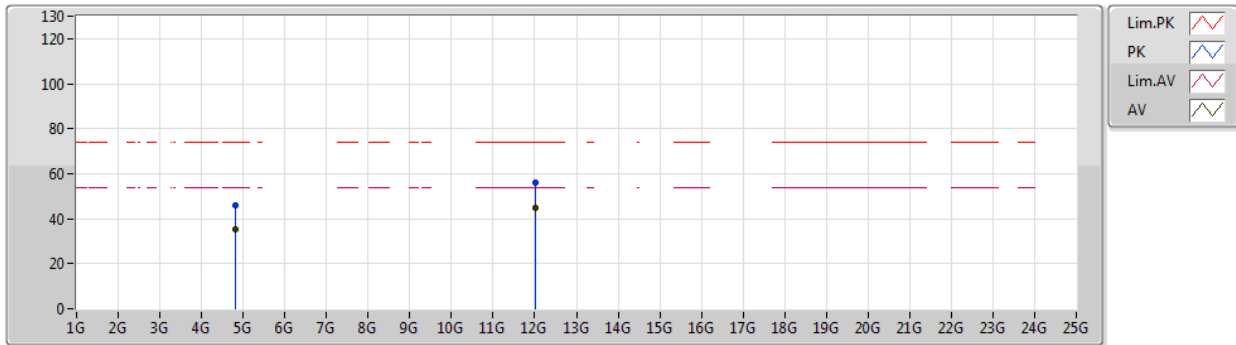
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.80355G	45.13	74.00	-28.87	39.39	3	Vertical	211	1.05	-	32.81	4.70	31.77
AV	4.80419G	34.05	54.00	-19.95	28.30	3	Vertical	211	1.05	-	32.82	4.70	31.77
PK	12.00841G	54.01	74.00	-19.99	39.85	3	Vertical	356	1.67	-	39.30	7.80	32.94
AV	12.01031G	41.35	54.00	-12.65	27.19	3	Vertical	356	1.67	-	39.30	7.80	32.94



BT-LE(1Mbps)

21/10/2020

2402MHz_TX



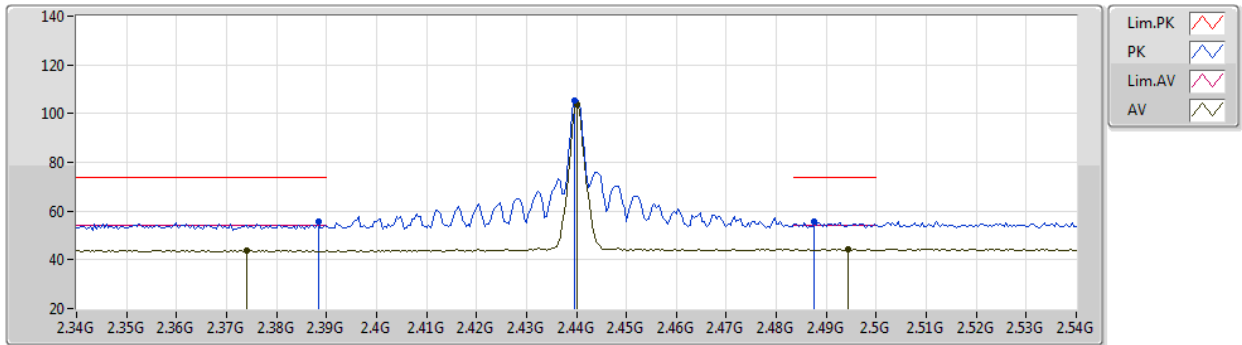
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Setting 10
02-E-J-7

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.80406G	45.83	74.00	-28.17	40.08	3	Horizontal	193	2.34	-	32.82	4.70	31.77
AV	4.80403G	35.50	54.00	-18.50	29.75	3	Horizontal	193	2.34	-	32.82	4.70	31.77
PK	12.00881G	55.90	74.00	-18.10	41.74	3	Horizontal	204	1.80	-	39.30	7.80	32.94
AV	12.00884G	45.04	54.00	-8.96	30.88	3	Horizontal	204	1.80	-	39.30	7.80	32.94

BT-LE(1Mbps)

21/10/2020

2440MHz_TX



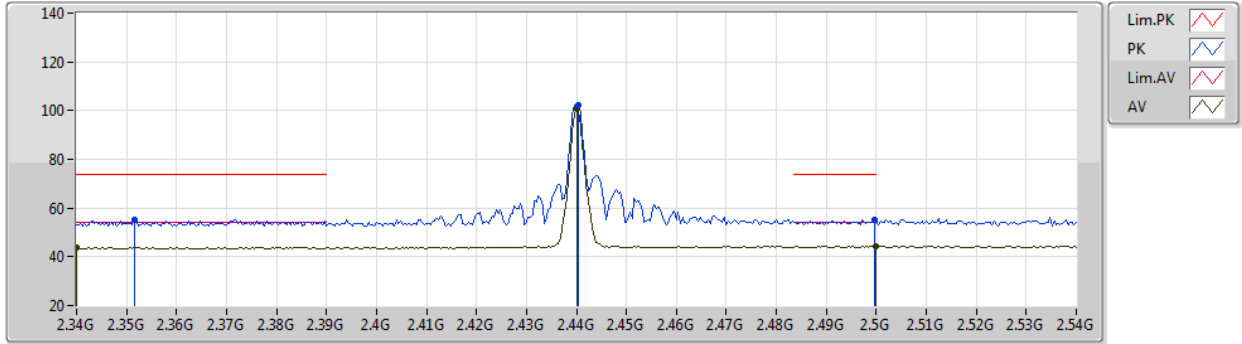
EUT X_1TX
Setting 10
02-E-K-4

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.3884G	55.50	74.00	-18.50	24.82	3	Vertical	73	1.85	-	28.27	2.41	-
AV	2.374G	43.87	54.00	-10.13	13.24	3	Vertical	73	1.85	-	28.22	2.41	-
PK	2.4396G	105.21	Inf	-Inf	74.37	3	Vertical	73	1.85	-	28.42	2.42	-
AV	2.44G	103.91	Inf	-Inf	73.07	3	Vertical	73	1.85	-	28.42	2.42	-
PK	2.4876G	55.54	74.00	-18.46	24.54	3	Vertical	73	1.85	-	28.56	2.44	-
AV	2.4944G	44.28	54.00	-9.72	13.25	3	Vertical	73	1.85	-	28.58	2.45	-

BT-LE(1Mbps)

21/10/2020

2440MHz_TX



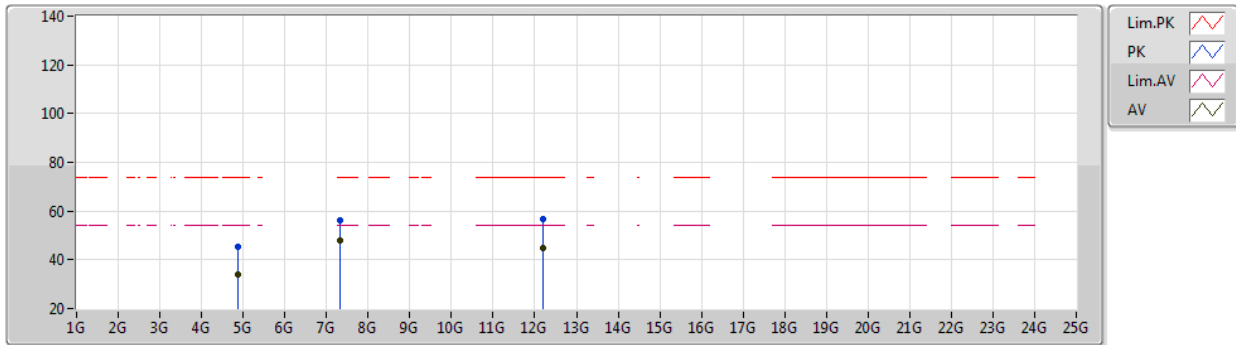
EUT X_1TX
Setting 10
02-E-K-4

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.3516G	55.27	74.00	-18.73	24.70	3	Horizontal	64	2.30	-	28.15	2.42	-
AV	2.34G	43.84	54.00	-10.16	13.29	3	Horizontal	64	2.30	-	28.12	2.43	-
PK	2.4404G	102.25	Inf	-Inf	71.41	3	Horizontal	64	2.30	-	28.42	2.42	-
AV	2.44G	100.90	Inf	-Inf	70.06	3	Horizontal	64	2.30	-	28.42	2.42	-
PK	2.4996G	55.22	74.00	-18.78	24.17	3	Horizontal	64	2.30	-	28.60	2.45	-
AV	2.5G	44.31	54.00	-9.69	13.26	3	Horizontal	64	2.30	-	28.60	2.45	-

BT-LE(1Mbps)

21/10/2020

2440MHz_TX



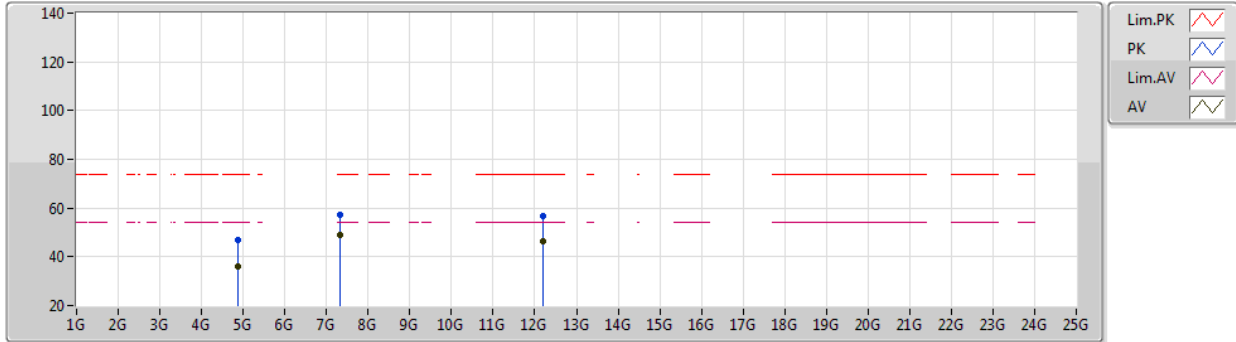
EUT X_1TX
Setting 10
02-E-K-4

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.87914G	45.09	74.00	-28.91	39.07	3	Vertical	177	1.59	-	33.12	4.70	31.80
AV	4.87989G	33.93	54.00	-20.07	27.91	3	Vertical	177	1.59	-	33.12	4.70	31.80
PK	7.32072G	56.45	74.00	-17.55	46.73	3	Vertical	21	2.09	-	36.40	5.76	32.44
AV	7.31941G	48.03	54.00	-5.97	38.31	3	Vertical	21	2.09	-	36.40	5.76	32.44
PK	12.19863G	56.59	74.00	-17.41	42.32	3	Vertical	330	2.00	-	39.26	7.87	32.86
AV	12.19893G	44.90	54.00	-9.10	30.63	3	Vertical	330	2.00	-	39.26	7.87	32.86

BT-LE(1Mbps)

21/10/2020

2440MHz_TX



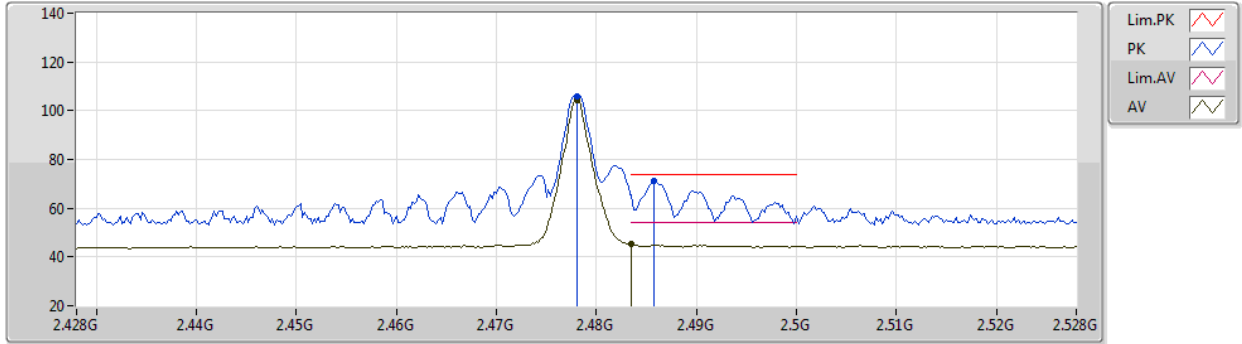
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Setting 10
02-E-K-4

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.87964G	46.93	74.00	-27.07	40.91	3	Horizontal	195	2.14	-	33.12	4.70	31.80
AV	4.87994G	36.20	54.00	-17.80	30.18	3	Horizontal	195	2.14	-	33.12	4.70	31.80
PK	7.32072G	57.36	74.00	-16.64	47.64	3	Horizontal	37	2.19	-	36.40	5.76	32.44
AV	7.31937G	49.10	54.00	-4.90	39.38	3	Horizontal	37	2.19	-	36.40	5.76	32.44
PK	12.20119G	56.93	74.00	-17.07	42.66	3	Horizontal	264	2.78	-	39.26	7.87	32.86
AV	12.19879G	46.62	54.00	-7.38	32.35	3	Horizontal	264	2.78	-	39.26	7.87	32.86

BT-LE(1Mbps)

21/10/2020

2478MHz_TX



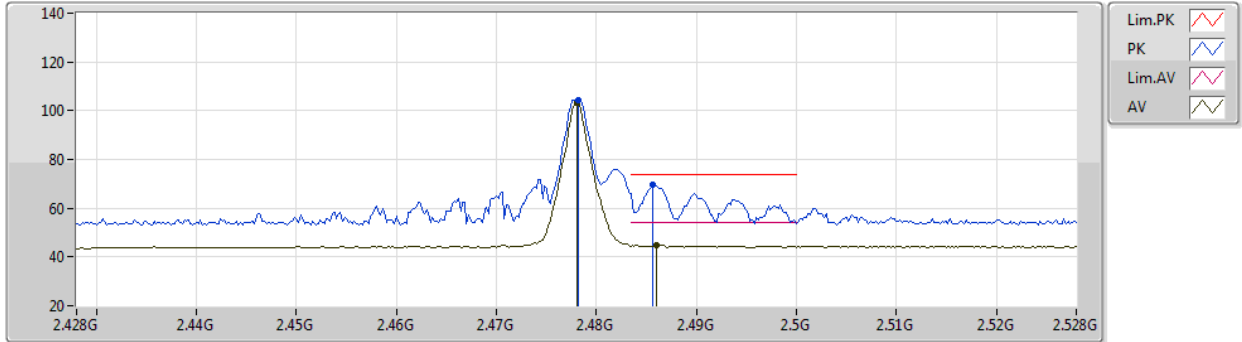
EUT X_1TX
Setting 10
02-E-K-4

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.478G	105.87	Inf	-Inf	74.90	3	Vertical	75	1.84	-	28.53	2.44	-
AV	2.478G	104.54	Inf	-Inf	73.57	3	Vertical	75	1.84	-	28.53	2.44	-
PK	2.4858G	71.19	74.00	-2.81	40.19	3	Vertical	75	1.84	-	28.56	2.44	-
AV	2.4835G	45.17	54.00	-8.83	14.18	3	Vertical	75	1.84	-	28.55	2.44	-

BT-LE(1Mbps)

21/10/2020

2478MHz_TX



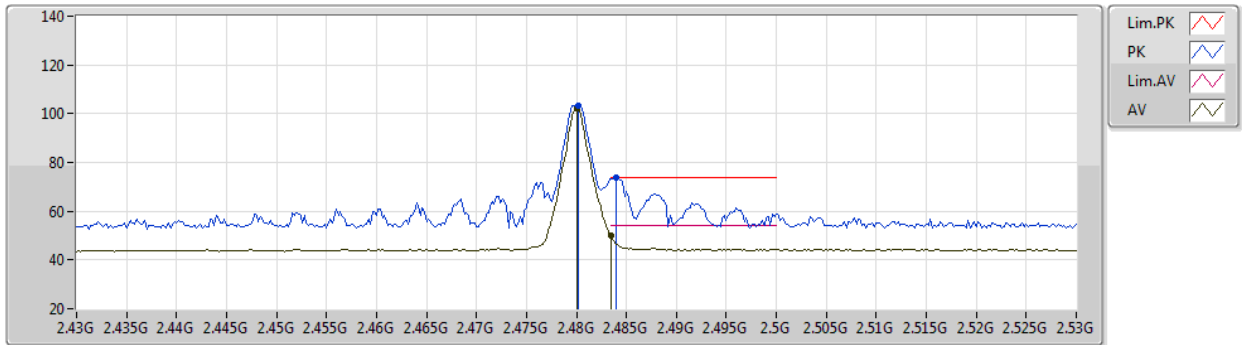
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Setting 10
02-E-K-4

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.4782G	104.37	Inf	-Inf	73.40	3	Horizontal	62	2.73	-	28.53	2.44	-
AV	2.478G	103.04	Inf	-Inf	72.07	3	Horizontal	62	2.73	-	28.53	2.44	-
PK	2.4856G	69.59	74.00	-4.41	38.59	3	Horizontal	62	2.73	-	28.56	2.44	-
AV	2.486G	44.85	54.00	-9.15	13.85	3	Horizontal	62	2.73	-	28.56	2.44	-

BT-LE(1Mbps)

21/10/2020

2480MHz_TX



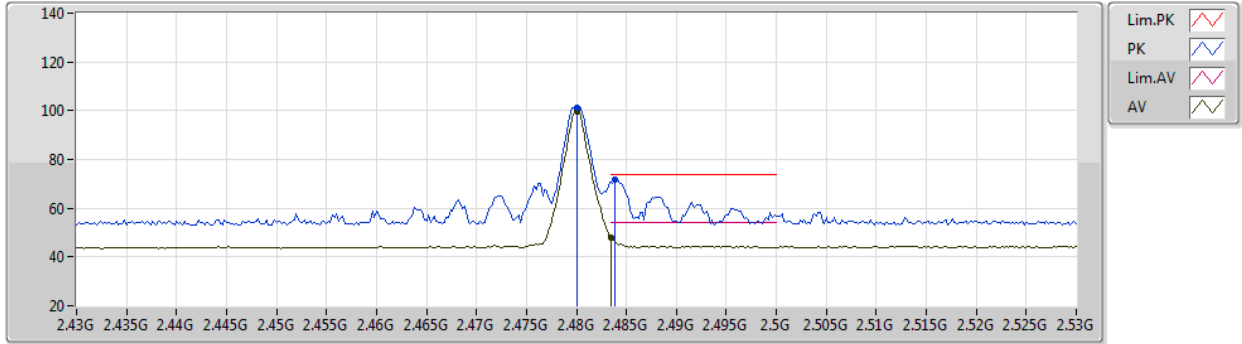
EUT X_1TX
Setting 7
02-E-K-4

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.4802G	103.48	Inf	-Inf	72.50	3	Vertical	74	1.63	-	28.54	2.44	-
AV	2.48G	102.12	Inf	-Inf	71.14	3	Vertical	74	1.63	-	28.54	2.44	-
PK	2.484G	73.80	74.00	-0.20	42.81	3	Vertical	74	1.63	-	28.55	2.44	-
AV	2.4835G	49.79	54.00	-4.21	18.80	3	Vertical	74	1.63	-	28.55	2.44	-

BT-LE(1Mbps)

21/10/2020

2480MHz_TX



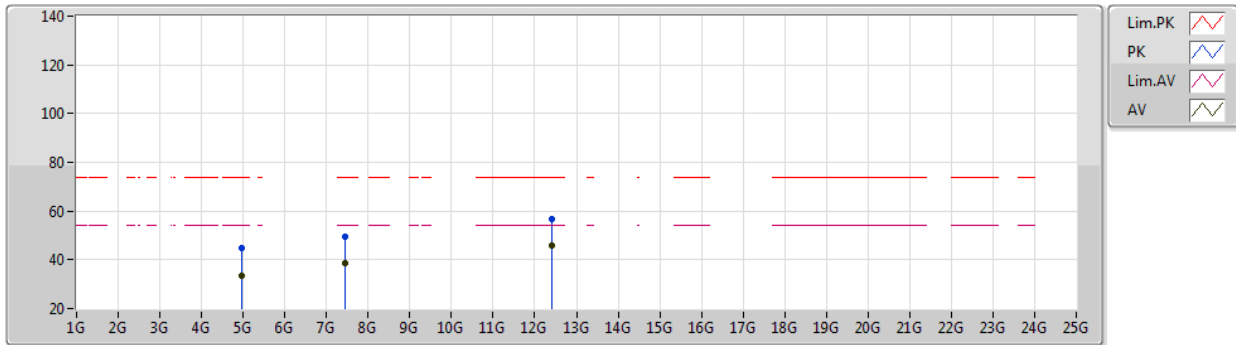
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Setting 7
02-E-K-4

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.48G	101.35	Inf	-Inf	70.37	3	Horizontal	54	2.75	-	28.54	2.44	-
AV	2.48G	99.90	Inf	-Inf	68.92	3	Horizontal	54	2.75	-	28.54	2.44	-
PK	2.4838G	71.66	74.00	-2.34	40.67	3	Horizontal	54	2.75	-	28.55	2.44	-
AV	2.4835G	47.98	54.00	-6.02	16.99	3	Horizontal	54	2.75	-	28.55	2.44	-

BT-LE(1Mbps)

21/10/2020

2480MHz_TX



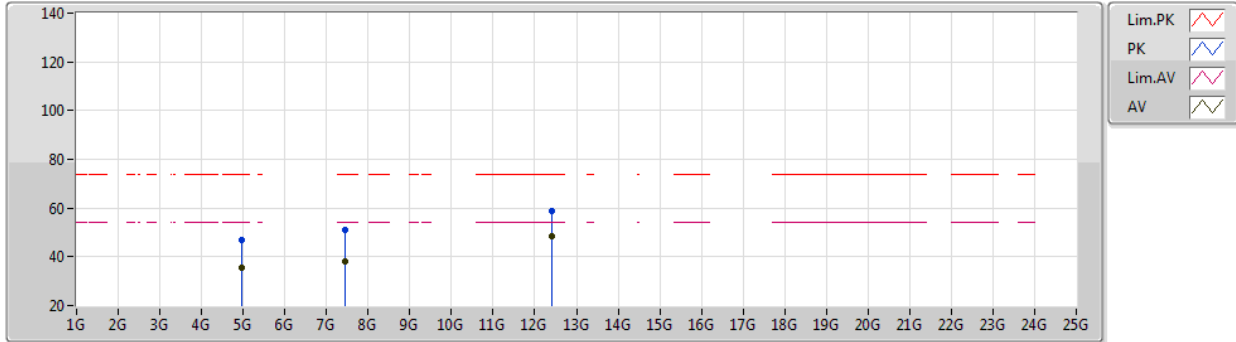
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Setting 7
02-E-J-7

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.96035G	44.90	74.00	-29.10	38.77	3	Vertical	304	1.94	-	33.26	4.70	31.83
AV	4.95962G	33.50	54.00	-20.50	27.37	3	Vertical	304	1.94	-	33.26	4.70	31.83
PK	7.43911G	49.47	74.00	-24.53	39.71	3	Vertical	346	1.53	-	36.40	5.84	32.48
AV	7.43928G	38.58	54.00	-15.42	28.82	3	Vertical	346	1.53	-	36.40	5.84	32.48
PK	12.39877G	56.72	74.00	-17.28	42.34	3	Vertical	335	1.99	-	39.22	7.94	32.78
AV	12.3989G	45.64	54.00	-8.36	31.26	3	Vertical	335	1.99	-	39.22	7.94	32.78

BT-LE(1Mbps)

21/10/2020

2480MHz_TX



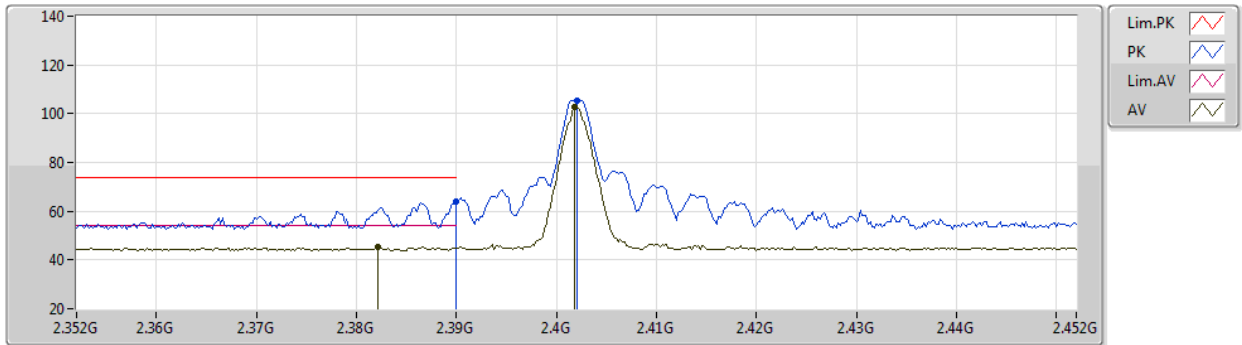
EUT X_1TX
Setting 7
02-E-J-7

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.96016G	47.01	74.00	-26.99	40.88	3	Horizontal	185	1.93	-	33.26	4.70	31.83
AV	4.95991G	35.36	54.00	-18.64	29.23	3	Horizontal	185	1.93	-	33.26	4.70	31.83
PK	7.43997G	50.82	74.00	-23.18	41.06	3	Horizontal	322	2.94	-	36.40	5.84	32.48
AV	7.43937G	38.19	54.00	-15.81	28.43	3	Horizontal	322	2.94	-	36.40	5.84	32.48
PK	12.39863G	58.76	74.00	-15.24	44.38	3	Horizontal	24	1.68	-	39.22	7.94	32.78
AV	12.39882G	48.64	54.00	-5.36	34.26	3	Horizontal	24	1.68	-	39.22	7.94	32.78

BT-LE(2Mbps)

21/10/2020

2402MHz_TX



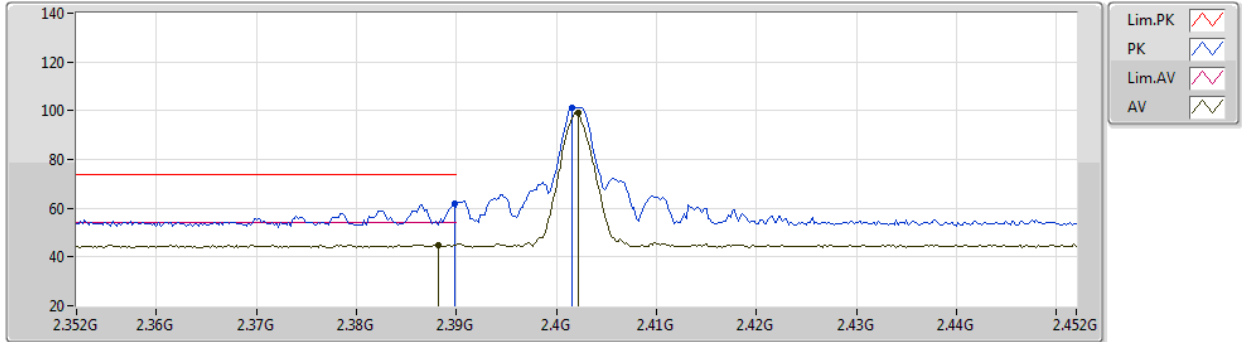
EUT X_1TX
Setting 10
02-E-K-4

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.39G	63.88	74.00	-10.12	33.20	3	Vertical	90	1.35	-	28.27	2.41	-
AV	2.3822G	45.40	54.00	-8.60	14.74	3	Vertical	90	1.35	-	28.25	2.41	-
PK	2.402G	105.25	Inf	-Inf	74.54	3	Vertical	90	1.35	-	28.31	2.40	-
AV	2.4018G	102.94	Inf	-Inf	72.23	3	Vertical	90	1.35	-	28.31	2.40	-

BT-LE(2Mbps)

21/10/2020

2402MHz_TX



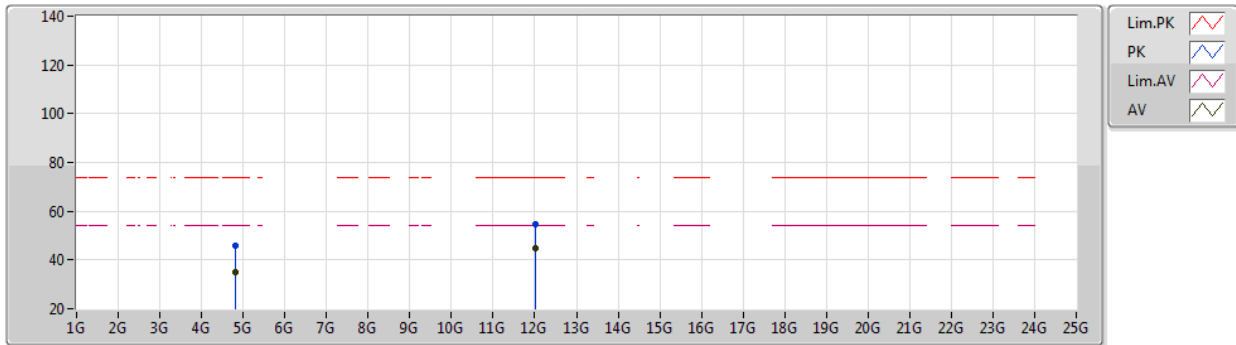
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Setting 10
02-E-K-4

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.3898G	62.00	74.00	-12.00	31.32	3	Horizontal	195	2.63	-	28.27	2.41	-
AV	2.3882G	45.08	54.00	-8.92	14.41	3	Horizontal	195	2.63	-	28.26	2.41	-
PK	2.4016G	101.35	Inf	-Inf	70.65	3	Horizontal	195	2.63	-	28.30	2.40	-
AV	2.4022G	99.34	Inf	-Inf	68.63	3	Horizontal	195	2.63	-	28.31	2.40	-

BT-LE(2Mbps)

21/10/2020

2402MHz_TX



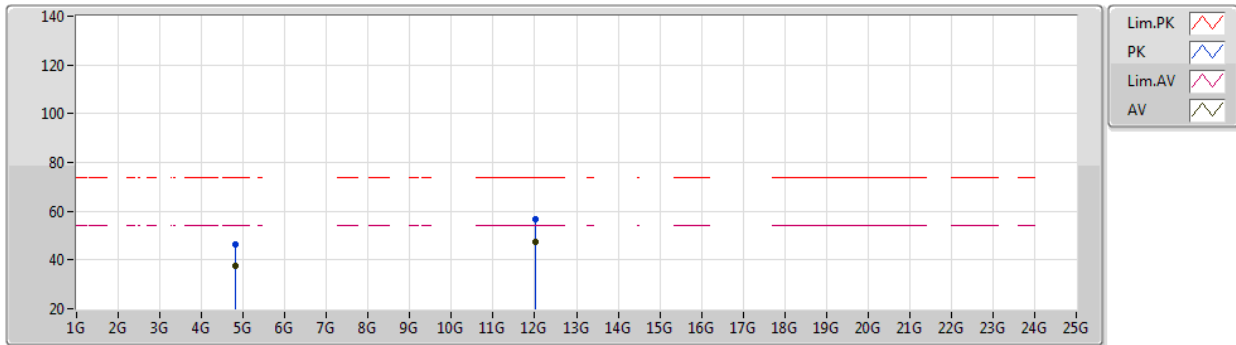
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Setting 10
02-E-J-7

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.8052G	45.89	74.00	-28.11	40.14	3	Vertical	205	1.21	-	32.82	4.70	31.77
AV	4.804G	35.16	54.00	-18.84	29.41	3	Vertical	205	1.21	-	32.82	4.70	31.77
PK	12.00752G	54.69	74.00	-19.31	40.53	3	Vertical	329	1.78	-	39.30	7.80	32.94
AV	12.01012G	44.73	54.00	-9.27	30.57	3	Vertical	329	1.78	-	39.30	7.80	32.94

BT-LE(2Mbps)

21/10/2020

2402MHz_TX



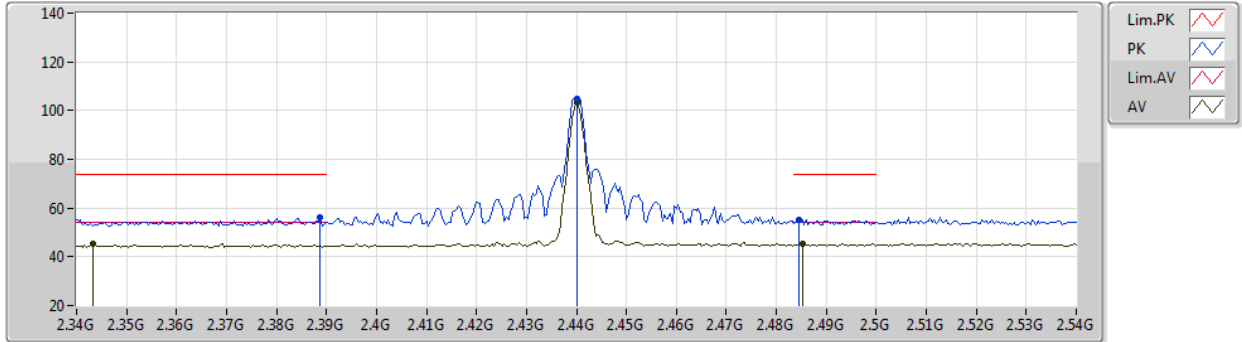
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Setting 10
02-E-J-7

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.80492G	46.44	74.00	-27.56	40.69	3	Horizontal	193	2.59	-	32.82	4.70	31.77
AV	4.80394G	37.54	54.00	-16.46	31.79	3	Horizontal	193	2.59	-	32.82	4.70	31.77
PK	12.00766G	56.71	74.00	-17.29	42.55	3	Horizontal	26	2.70	-	39.30	7.80	32.94
AV	12.00992G	47.23	54.00	-6.77	33.07	3	Horizontal	26	2.70	-	39.30	7.80	32.94

BT-LE(2Mbps)

21/10/2020

2440MHz_TX



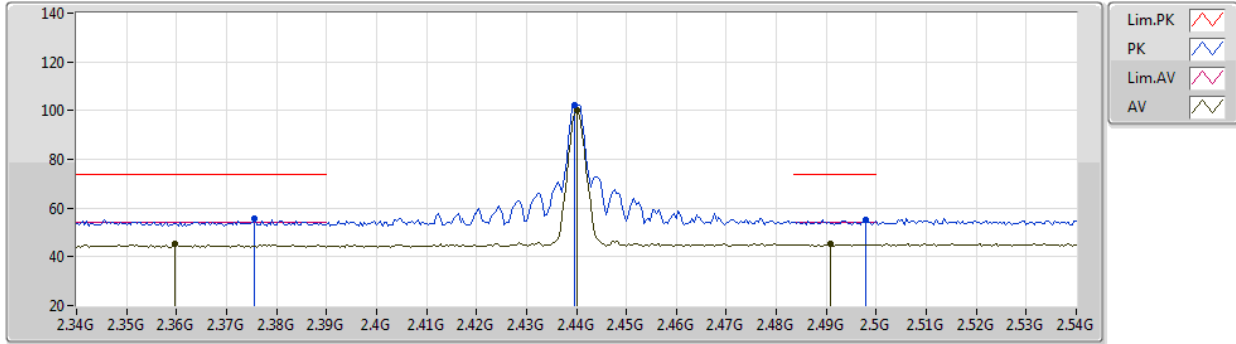
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Setting 10
02-E-K-4

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.3888G	56.35	74.00	-17.65	25.67	3	Vertical	72	1.70	-	28.27	2.41	-
AV	2.3432G	45.26	54.00	-8.74	14.70	3	Vertical	72	1.70	-	28.13	2.43	-
PK	2.44G	104.96	Inf	-Inf	74.12	3	Vertical	72	1.70	-	28.42	2.42	-
AV	2.44G	103.19	Inf	-Inf	72.35	3	Vertical	72	1.70	-	28.42	2.42	-
PK	2.4844G	55.38	74.00	-18.62	24.39	3	Vertical	72	1.70	-	28.55	2.44	-
AV	2.4852G	45.19	54.00	-8.81	14.19	3	Vertical	72	1.70	-	28.56	2.44	-

BT-LE(2Mbps)

21/10/2020

2440MHz_TX



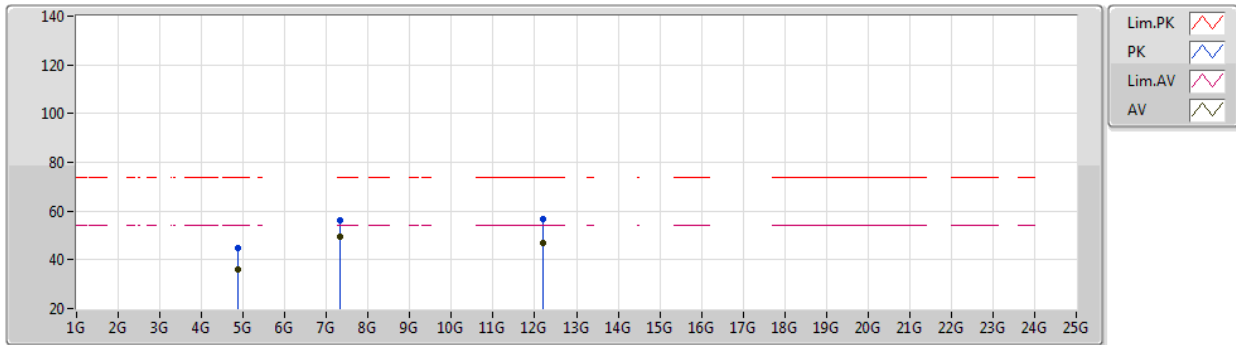
EUT X_1TX
Setting 10
02-E-K-4

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.3756G	55.59	74.00	-18.41	24.95	3	Horizontal	64	2.54	-	28.23	2.41	-
AV	2.3596G	45.09	54.00	-8.91	14.49	3	Horizontal	64	2.54	-	28.18	2.42	-
PK	2.4396G	102.18	Inf	-Inf	71.34	3	Horizontal	64	2.54	-	28.42	2.42	-
AV	2.44G	100.19	Inf	-Inf	69.35	3	Horizontal	64	2.54	-	28.42	2.42	-
PK	2.498G	55.14	74.00	-18.86	24.10	3	Horizontal	64	2.54	-	28.59	2.45	-
AV	2.4908G	45.21	54.00	-8.79	14.19	3	Horizontal	64	2.54	-	28.57	2.45	-

BT-LE(2Mbps)

21/10/2020

2440MHz_TX



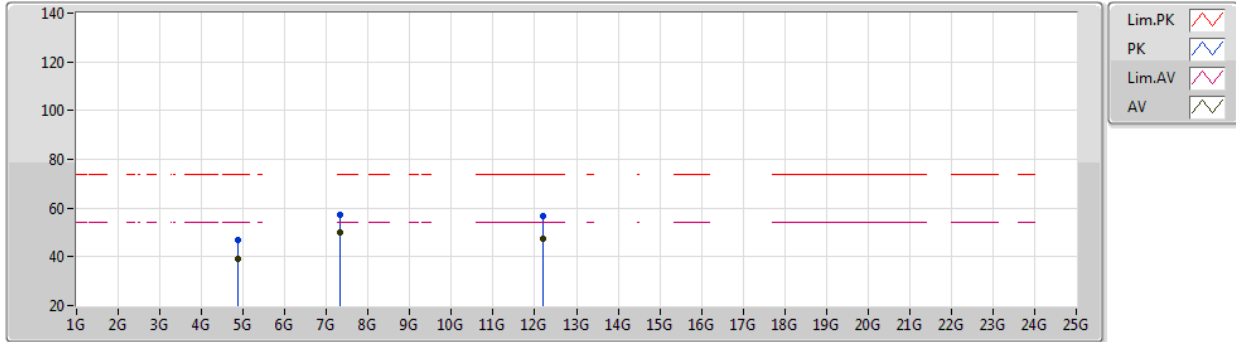
EUT X_1TX
Setting 10
02-E-J-7

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.8846G	44.97	74.00	-29.03	38.93	3	Vertical	183	1.80	-	33.14	4.70	31.80
AV	4.88G	35.98	54.00	-18.02	29.96	3	Vertical	183	1.80	-	33.12	4.70	31.80
PK	7.3214G	56.14	74.00	-17.86	46.42	3	Vertical	22	2.16	-	36.40	5.76	32.44
AV	7.31998G	49.31	54.00	-4.69	39.59	3	Vertical	22	2.16	-	36.40	5.76	32.44
PK	12.20106G	56.72	74.00	-17.28	42.45	3	Vertical	295	2.23	-	39.26	7.87	32.86
AV	12.2034G	46.85	54.00	-7.15	32.58	3	Vertical	295	2.23	-	39.26	7.87	32.86

BT-LE(2Mbps)

21/10/2020

2440MHz_TX



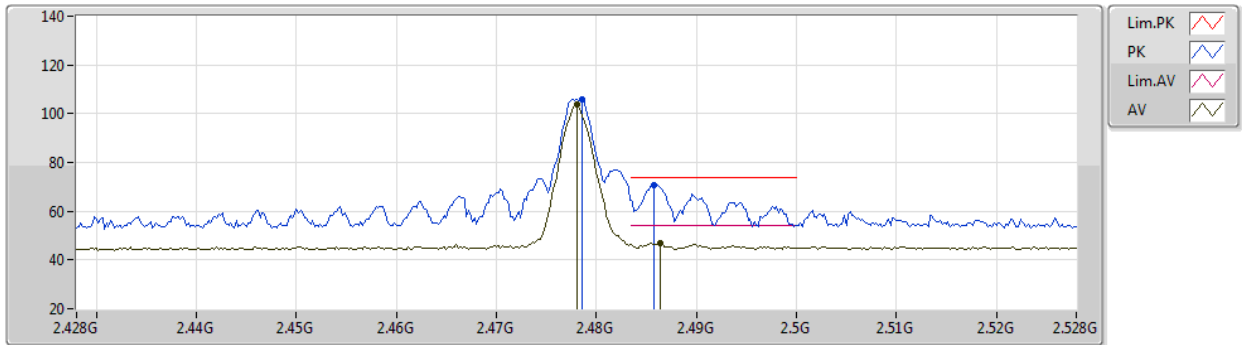
EUT X_1TX
Setting 10
02-E-J-7

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.87978G	46.92	74.00	-27.08	40.90	3	Horizontal	197	2.18	-	33.12	4.70	31.80
AV	4.87998G	39.31	54.00	-14.69	33.29	3	Horizontal	197	2.18	-	33.12	4.70	31.80
PK	7.32158G	57.09	74.00	-16.91	47.37	3	Horizontal	31	2.59	-	36.40	5.76	32.44
AV	7.3201G	49.86	54.00	-4.14	40.14	3	Horizontal	31	2.59	-	36.40	5.76	32.44
PK	12.19758G	56.77	74.00	-17.23	42.50	3	Horizontal	229	1.76	-	39.26	7.87	32.86
AV	12.19992G	47.49	54.00	-6.51	33.22	3	Horizontal	229	1.76	-	39.26	7.87	32.86

BT-LE(2Mbps)

21/10/2020

2478MHz_TX



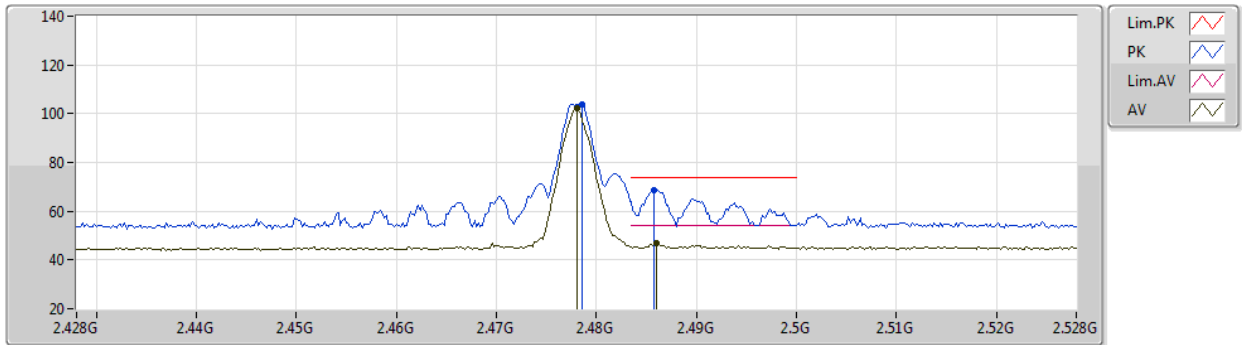
EUT X_1TX
Setting 10
02-E-J-7

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.4786G	105.80	Inf	-Inf	74.82	3	Vertical	74	1.59	-	28.54	2.44	-
AV	2.478G	103.94	Inf	-Inf	72.97	3	Vertical	74	1.59	-	28.53	2.44	-
PK	2.4858G	70.86	74.00	-3.14	39.86	3	Vertical	74	1.59	-	28.56	2.44	-
AV	2.4864G	46.89	54.00	-7.11	15.89	3	Vertical	74	1.59	-	28.56	2.44	-

BT-LE(2Mbps)

21/10/2020

2478MHz_TX



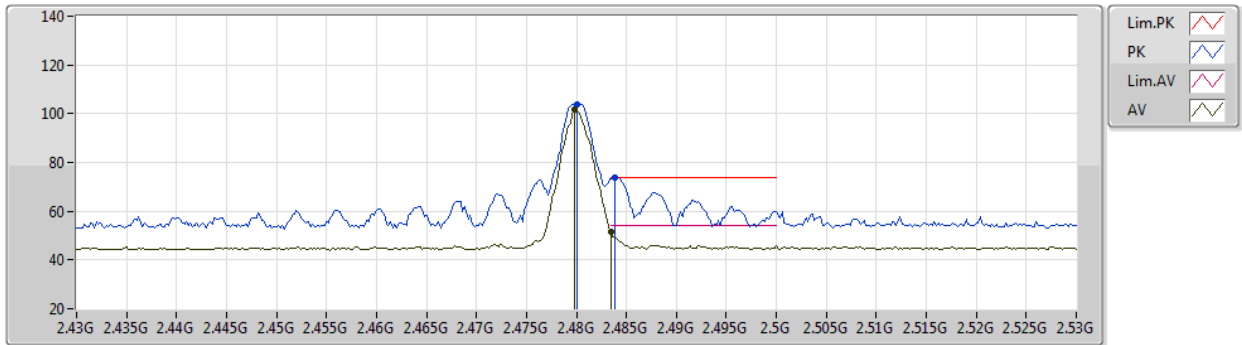
EUT X_1TX
Setting 10
02-E-J-7

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.4786G	103.86	Inf	-Inf	72.88	3	Horizontal	61	2.73	-	28.54	2.44	-
AV	2.478G	102.12	Inf	-Inf	71.15	3	Horizontal	61	2.73	-	28.53	2.44	-
PK	2.4858G	68.64	74.00	-5.36	37.64	3	Horizontal	61	2.73	-	28.56	2.44	-
AV	2.486G	46.91	54.00	-7.09	15.91	3	Horizontal	61	2.73	-	28.56	2.44	-

BT-LE(2Mbps)

21/10/2020

2480MHz_TX



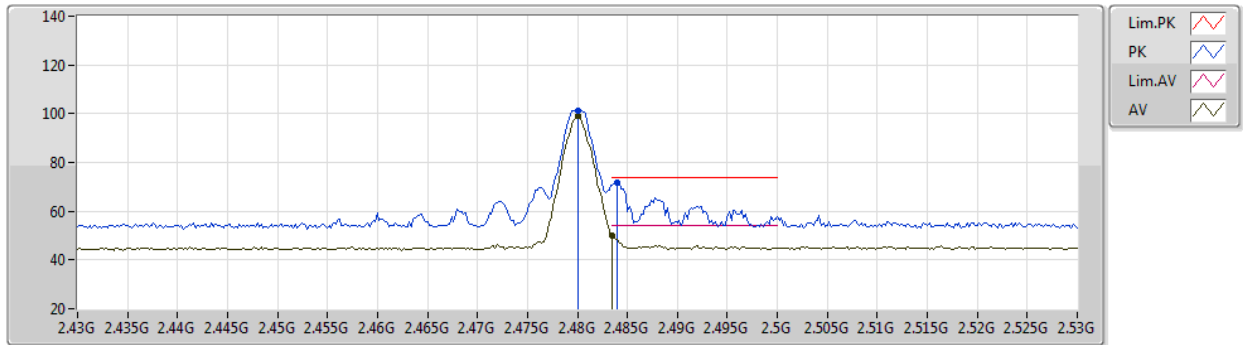
EUT X_1TX
Setting 7
02-E-J-7

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.48G	103.62	Inf	-Inf	72.64	3	Vertical	75	1.85	-	28.54	2.44	-
AV	2.4798G	101.55	Inf	-Inf	70.57	3	Vertical	75	1.85	-	28.54	2.44	-
PK	2.4838G	73.94	74.00	-0.06	42.95	3	Vertical	75	1.85	-	28.55	2.44	-
AV	2.4835G	51.54	54.00	-2.46	20.55	3	Vertical	75	1.85	-	28.55	2.44	-

BT-LE(2Mbps)

21/10/2020

2480MHz_TX



EUT X_1TX
Setting 7
02-E-J-7

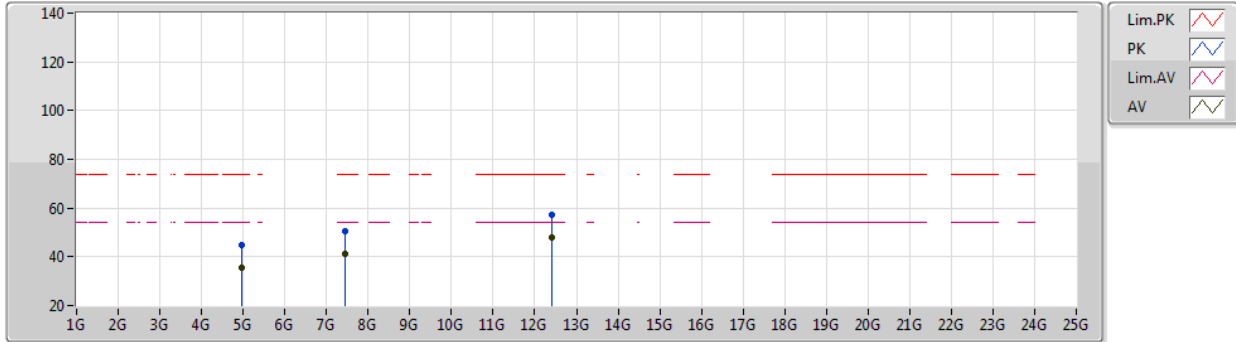
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.48G	101.15	Inf	-Inf	70.17	3	Horizontal	65	2.72	-	28.54	2.44	-
AV	2.48G	99.25	Inf	-Inf	68.27	3	Horizontal	65	2.72	-	28.54	2.44	-
PK	2.484G	71.58	74.00	-2.42	40.59	3	Horizontal	65	2.72	-	28.55	2.44	-
AV	2.4835G	49.95	54.00	-4.05	18.96	3	Horizontal	65	2.72	-	28.55	2.44	-



BT-LE(2Mbps)

21/10/2020

2480MHz_TX



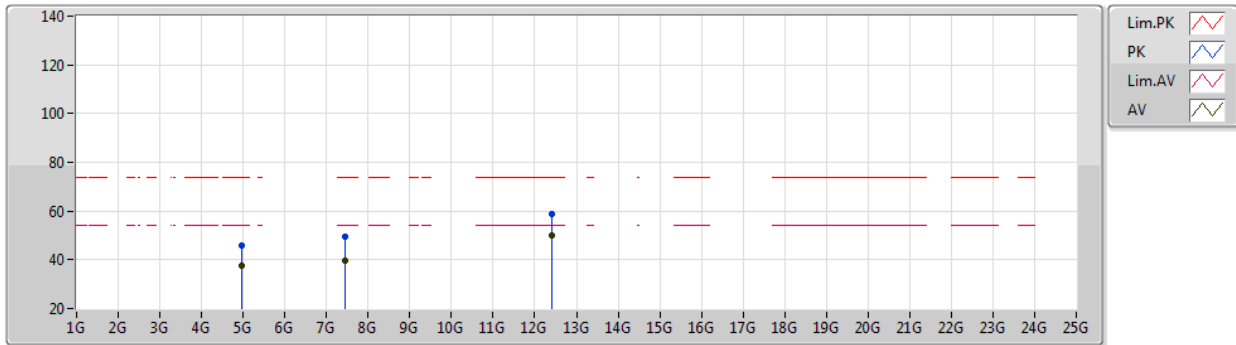
EUT X_1TX
Setting 7
02-E-J-7

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.95932G	45.08	74.00	-28.92	38.95	3	Vertical	311	2.06	-	33.26	4.70	31.83
AV	4.96004G	35.33	54.00	-18.67	29.20	3	Vertical	311	2.06	-	33.26	4.70	31.83
PK	7.44015G	50.28	74.00	-23.72	40.52	3	Vertical	291	1.89	-	36.40	5.84	32.48
AV	7.44009G	41.30	54.00	-12.70	31.54	3	Vertical	291	1.89	-	36.40	5.84	32.48
PK	12.40006G	57.29	74.00	-16.71	42.91	3	Vertical	331	1.74	-	39.22	7.94	32.78
AV	12.39998G	47.75	54.00	-6.25	33.37	3	Vertical	331	1.74	-	39.22	7.94	32.78

BT-LE(2Mbps)

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EUT X_1TX
Setting 7
02-E-J-7

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.95976G	46.07	74.00	-27.93	39.94	3	Horizontal	184	2.04	-	33.26	4.70	31.83
AV	4.9601G	37.45	54.00	-16.55	31.32	3	Horizontal	184	2.04	-	33.26	4.70	31.83
PK	7.44172G	49.33	74.00	-24.67	39.57	3	Horizontal	326	1.05	-	36.40	5.84	32.48
AV	7.4401G	39.73	54.00	-14.27	29.97	3	Horizontal	326	1.05	-	36.40	5.84	32.48
PK	12.4G	58.90	74.00	-15.10	44.52	3	Horizontal	18	1.69	-	39.22	7.94	32.78
AV	12.39772G	50.19	54.00	-3.81	35.81	3	Horizontal	18	1.69	-	39.22	7.94	32.78