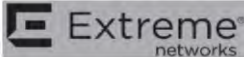


FCC Test Report

FCC ID : QXO-AP310
Equipment : Wireless Access Point
Brand Name :  Extreme networks or Extreme Networks
Model Name : AP310i, AP310e
Applicant : Extreme Networks, Inc.
6480 Via Del Oro, San Jose, CA 95119, United States
Manufacturer : Extreme Networks, Inc.
6480 Via Del Oro, San Jose, CA 95119, United States
Standard : 47 CFR FCC Part 15.247

The product was received on Oct. 18, 2019, and testing was started from Nov. 01, 2019 and completed on Jan. 02, 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 report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

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



Approved by: Allen Lin

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
FR992608AL	01	Initial issue of report	Feb. 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	-

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

Reviewed by: Sam Tsai

Report Producer: Debby Hung

1 General Description

1.1 Information

1.1.1 RF General Information

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

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

Note:

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

1.1.2 Antenna Information

(AP310i) Internal Antenna

Ant.	Brand	Model Number (P/N)	Antenna Type	Connector	Antenna Gain (dBi)			Remark
					2.4GHz	5GHz	BLE/Thread	
1	SENAO	5718A0485300	PIFA	IPEX	4.5	5.17	-	Radio 1
2	SENAO	5718A0487300	PIFA	IPEX	4.53	5.07	-	Radio 1
3	SENAO	5718A0486300	PIFA	IPEX	-	4.81	-	Radio 2
4	SENAO	5718A0488300	PIFA	IPEX	-	4.75	-	Radio 2
5	SENAO	5718A0489300	PIFA	IPEX	-	-	4.74	Radio 3

(AP310e) External Antenna

Group	Brand	Model Number (P/N)	Antenna Type	Connector	Antenna Gain (dBi)		
					2.4GHz	5GHz	BLE/Thread
1	Extreme	ML-2452-APA2-01	Omni	Reverse SMA	3.17	4.85	-
2	Extreme	ML-2452-HPA5-036	Omni	Reverse SMA	3.9	5.7	-
3	Extreme	ML-2452-HPAG4A6-01	Omni	N-type	4	7.3	-
4	Extreme	ML-2452-PTA4M4-036	Omni	Reverse SMA	5	6.6	-
5	Extreme	ML-2452-HPAG5A8-01	Omni	N-type	5	8	-
6	Extreme	30724 WS-AO-DQ04360N	Omni	N-type	5.5	6	-
7	Extreme	AI-DQ04360S	Omni	Reverse SMA	5.5	6	-
8	Extreme	ML-2452-PNA5-01R	Panel	N-type	4.5	5	-



9	Extreme	ML-2452-SEC6M4-036, WS-AI-DQ05120 (30702)	Panel	Reverse SMA	6.92	7.23	-
10	Extreme	30705 WS-AI-DE07025	Panel	Reverse SMA	7.5	6.5	-
11	Extreme	ML-2452-PNA7-01R	Panel	N-type	7.8	10.7	7.8
12	Extreme	30707 WS-AI-DE10055	Panel	Reverse SMA	10.5	7.5	-
13	Extreme	ML-2452-APA2-02	Omni	Reverse SMA	3.17	4.85	-
14	Extreme	ML-2499-HPA8-01	Dipole	N-type	-	-	8

Note 1: Group 5, 11,12 were measured during the test for WLAN 2.4G Mode.
Note 2: Group 11,14 were measured during the test for Bluetooth/Thread Mode.
Note 3: Group 5,11 were measured during the test for WLAN 5G Mode.

For 2.4GHz function:

For IEEE 802.11 b/g/n/ax mode (1TX/1RX)
Only port 1 can be used as transmitting/receiving antenna.
For IEEE 802.11 b/g/n/ax mode (2TX/2RX)
Port 1 and port 2 could transmit/receive simultaneously.

For BT function:

For IEEE 802.15.1 Bluetooth mode (1TX/1RX)
Only port 1 can be used as transmitting/receiving antenna.

For Thread function:

For IEEE 802.15.4 Thread mode (1TX/1RX)
Only port 1 can be used as transmitting/receiving antenna.

For 5GHz function:

For IEEE 802.11 a/n/ac/ax mode (1TX/1RX)
Only port 1 can be used as transmitting/receiving antenna.
For IEEE 802.11 a/n/ac/ax mode (2TX/2RX)
Port 1 and port 2 could transmit/receive simultaneously.



1.1.3 EUT Information

Operational Condition	
EUT Power Type	From PoE
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 Table for Multiple Listing

Sample Number	Model Name	Description
1	AP310i	The "i" in AP310i indicates that it comes with internal antennas and the "e" in AP310e indicates that the access point comes with external antenna connectors.
2	AP310e	

1.1.5 Mode Test Duty Cycle

Sample 1

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
BT-LE(1Mbps)	0.643	1.92	401.875u	3k

Sample 2

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
BT-LE(1Mbps)	0.642	1.92	401.25u	3k

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

1.2 Testing Applied Standards

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

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

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
AC Conduction	CO04-HY	Edward Wang	20.3~23.1°C / 55.6~67.2%	26/Dec/2019~ 27/Dec/2019
RF Conducted	TH01-HY	Alan	23.1~25°C / 61~67%	01/Nov/2019~ 02/Jan/2020
Radiated	03CH02-HY	Dexter	22.3~24.6°C / 52~56%	06/Nov/2019~ 26/Dec/2019

1.4 Measurement Uncertainty

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

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.54 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	1.6 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	4.3 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.9 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.3 dB	Confidence levels of 95%
Temperature	0.7 °C	Confidence levels of 95%
Humidity	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	CMD
---------------	-----

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

2.3 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	CTX
1	PoE mode (Sample 1)
2	PoE mode (Sample 2)

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	CTX		
1	PoE mode (Sample 1)		
2	PoE mode (Sample 2_Dipole Antenna)		
3	PoE mode (Sample 2_Panel 1 Antenna)		
Operating Mode > 1GHz	CTX		
Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			
Worst Planes of EUT		V	V



The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis
Operating Mode	CTX
1	Radio 1 WLAN 2.4G+ Radio 2 WLAN 5G+Bluetooth
2	Radio 1 WLAN 5G + Radio 2 WLAN 5G + Bluetooth
Refer to Sporton Test Report No.: FA992608 for Co-location RF Exposure Evaluation.	

2.4 Support Equipment

Support Equipment – AC Conduction				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Load	Sporton	-	-
2	USB 2.0 Flash	Transcend	D24425 2101	-
3	LAN Cable	Power Sync	UTP5-01	-
4	LAN Cable	Power Sync	CAT-6E-10	-
5	PoE	EnGenius	EPA5006GP	-
6	AC Power Cable	-	-	-
7	PoE for Beamforming	EnGenius	EPA5006GP	Remote
8	AC Power Cable	-	-	Remote
9	Notebook	DELL	PP13S	Remote
10	LAN Cable	Power Sync	CAT-6E-01	Remote
11	Adapter for NB	DELL	AA90PM111	Remote
12	AC Power Cable for NB	Power sync	PW-GPC180-3	Remote

Note: Support equipment No.5,6,7,8 were provided by customer.

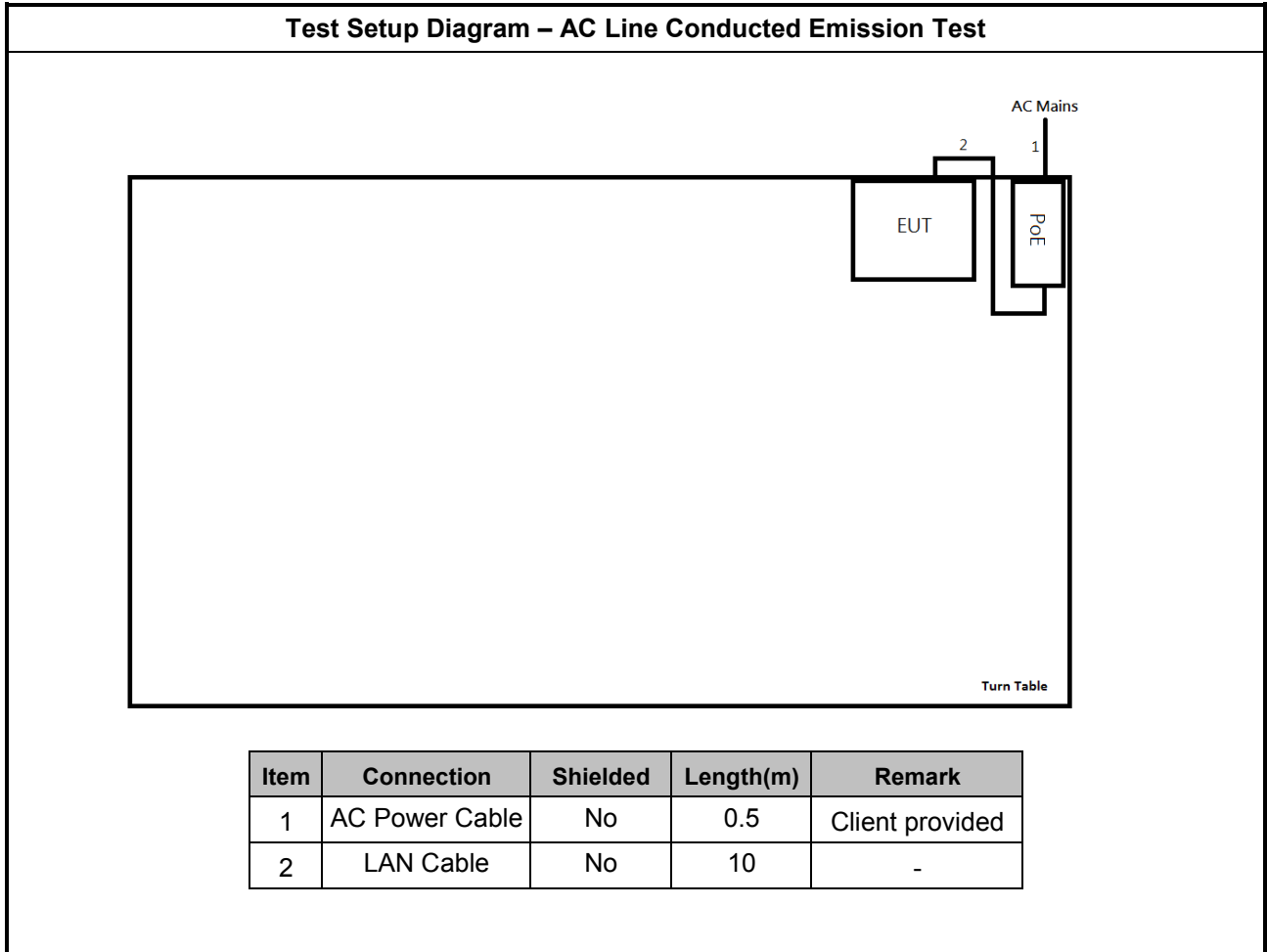
Support Equipment – RF Conducted				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	PP13S	R33002 / DOC
2	Adapter for NB	DELL	AA90PM111	R35737 / DOC
3	Notebook	DELL	PP13S	R33002 / DOC
4	Adapter for NB	DELL	AA90PM111	R35737 / DOC
5	PoE	EnGenius	EPA5006GP	-

Note: Support equipment No.5 was provided by customer.

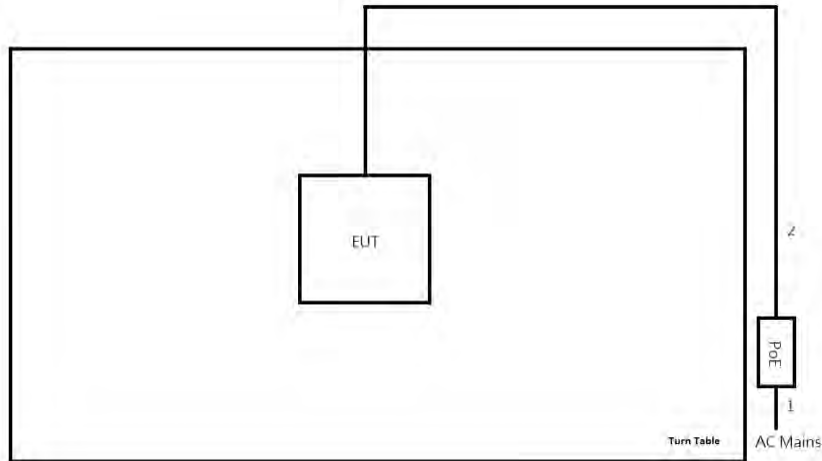
Support Equipment – Radiated Emission				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Load	Sporton	-	-
2	LAN Cable	Power Sync	CAT-6E-01	-
3	LAN Cable	Power Sync	CAT-6E-10	-
4	PoE	EnGenius	EPA5006GP	Remote
5	AC Power Cable	-	-	Remote
6	Notebook	DELL	M-S69	Remote
7	LAN Cable	Power Sync	CAT-6E-01	Remote
8	Adapter for Notebook	DELL	M-S69	Remote

Note: Support equipment No.4, 5 were provided by customer.

2.5 Test Setup Diagram

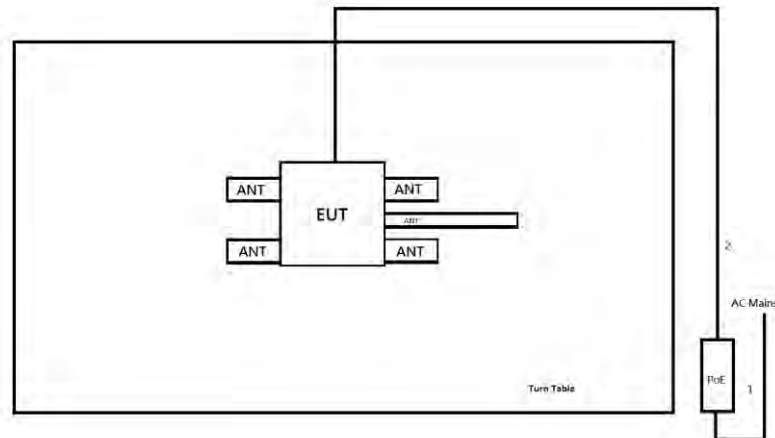


Test Setup Diagram - Radiated Test (Sample 1)



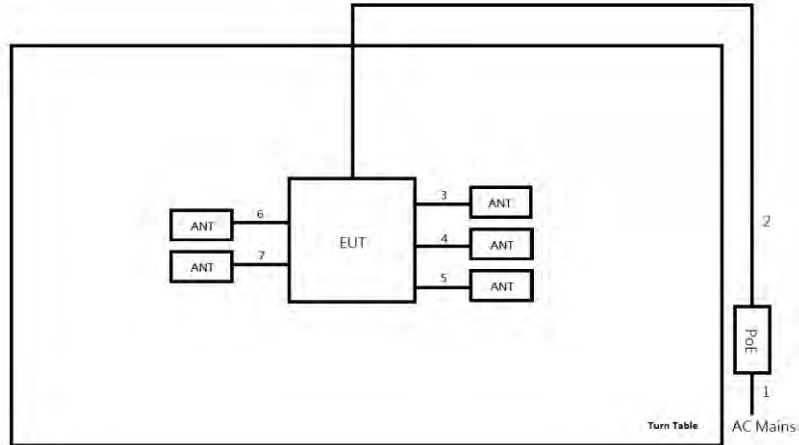
Item	Connection	Shielded	Length(m)	Remark
1	AC Power Cable	No	0.5	Client provided
2	LAN Cable	No	10	-

Test Setup Diagram - Radiated Test (Sample 2_Dipole Antenna)



Item	Connection	Shielded	Length(m)	Remark
1	AC Power Cable	No	0.5	Client provided
2	LAN Cable	No	10	-

Test Setup Diagram - Radiated Test (Sample 2_Panel 1 Antenna)



Item	Connection	Shielded	Length(m)	Remark
1	AC Power Cable	No	0.5m	Client provided
2	LAN Cable	No	10.0 m	
3	Antenna Cable	No	0.3m	
4	Antenna Cable	No	0.3m	
5	Antenna Cable	No	0.3m	
6	Antenna Cable	No	0.3m	
7	Antenna Cable	No	0.3m	

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.

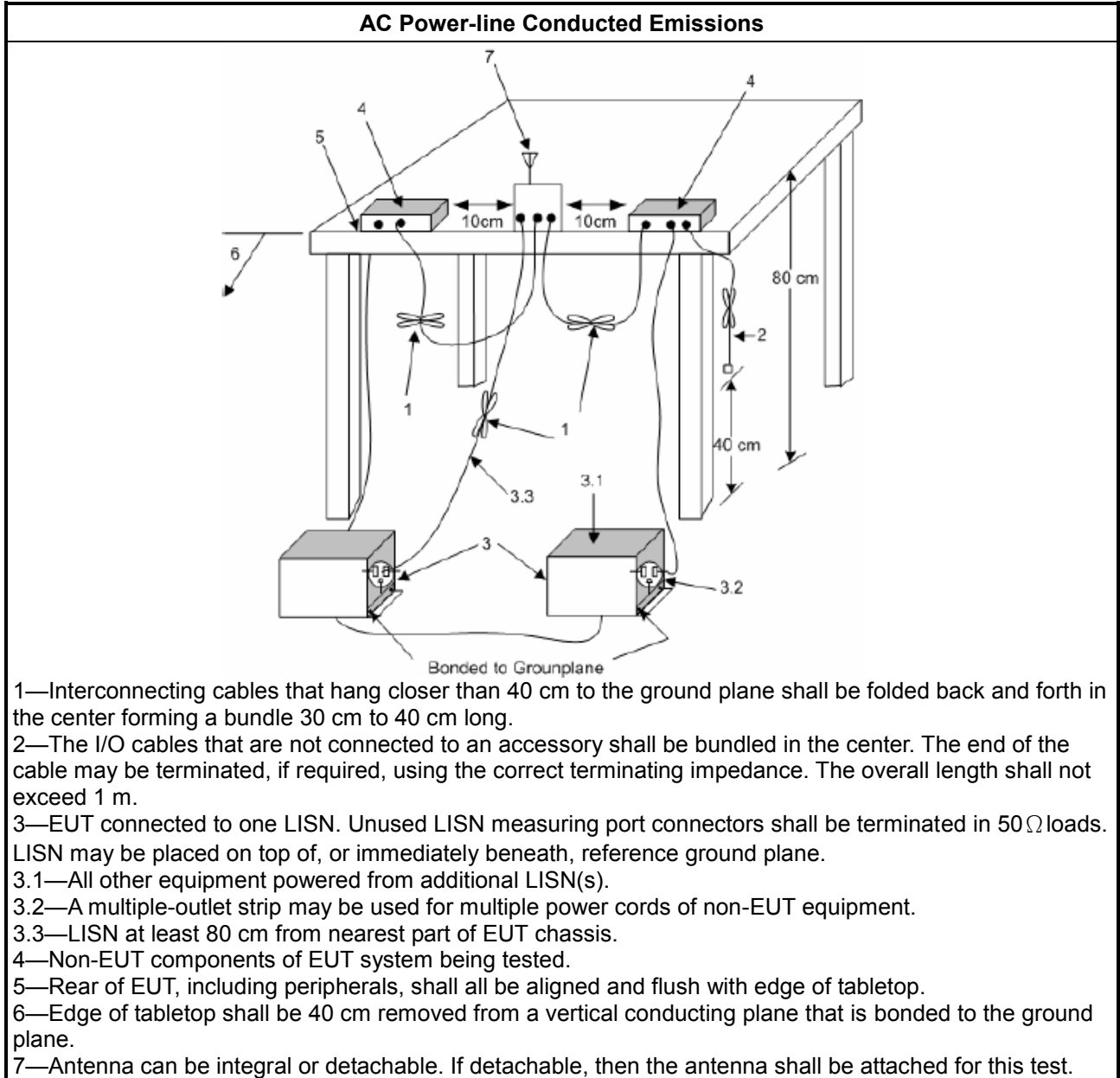
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

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

3.1.4 Test Setup



3.1.5 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

3.2 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.

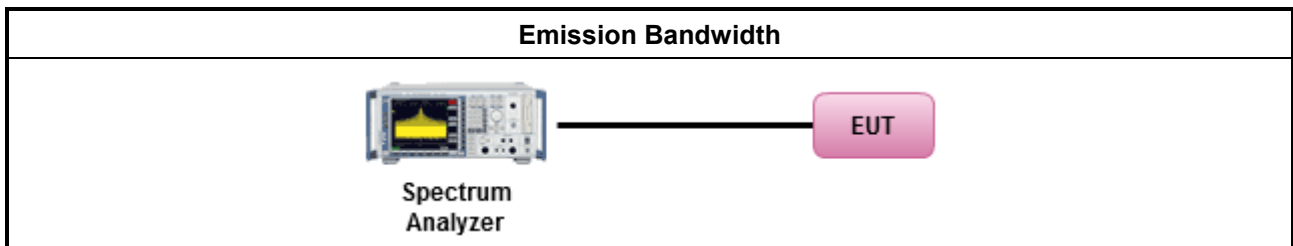
3.2.2 Measuring Instruments

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 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 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"> ▪ 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
e.i.r.p. Power Limit:	
	<ul style="list-style-type: none"> ▪ 2400-2483.5 MHz Band
	<ul style="list-style-type: none"> ▪ Point-to-multipoint systems (P2M): $P_{eirp} \leq 36$ dBm (4 W)
	<ul style="list-style-type: none"> ▪ Point-to-point systems (P2P): $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX}])$ dBm
	<ul style="list-style-type: none"> ▪ Smart antenna system (SAS)
	<ul style="list-style-type: none"> - Single beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	<ul style="list-style-type: none"> - Overlap beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	<ul style="list-style-type: none"> - Aggregate power on all beams: $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX} + 8])$ dBm
P_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, G_{TX} = the maximum transmitting antenna directional gain in dBi.	

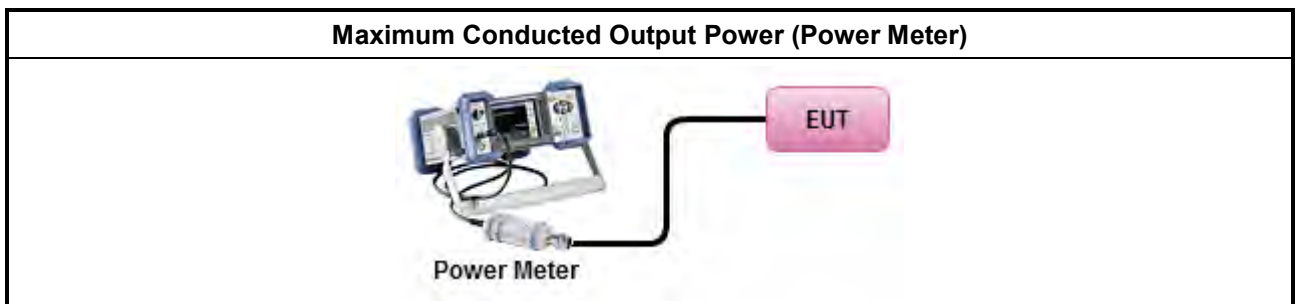
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> ▪ Maximum Peak Conducted Output Power 	
<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"> ▪ Maximum Average Conducted Output Power 	
<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"> ▪ For conducted measurement. 	
<ul style="list-style-type: none"> ▪ 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. 	
<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

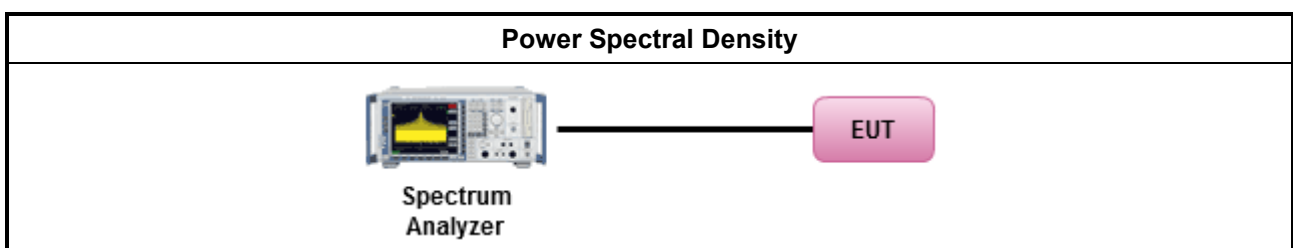
3.4.2 Measuring Instruments

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 KDB 558074, clause 8.4 (11.10 of ANSI C63.10) Method PKPSD.
<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"> Measure and sum the spectra across the outputs. Refer as KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the NTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.

3.4.4 Test Setup



3.4.5 Test Result of Power Spectral Density

Refer as Appendix 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.

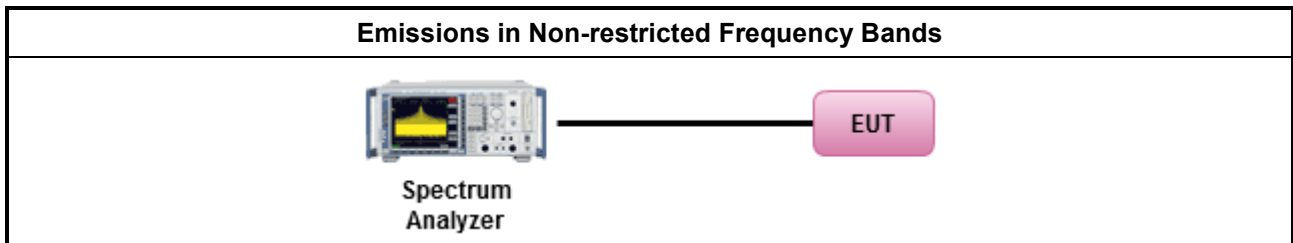
3.5.2 Measuring Instruments

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"> Refer as KDB 558074, clause 8.5 (11.11 of ANSI C63.10) for non-restricted frequency 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.

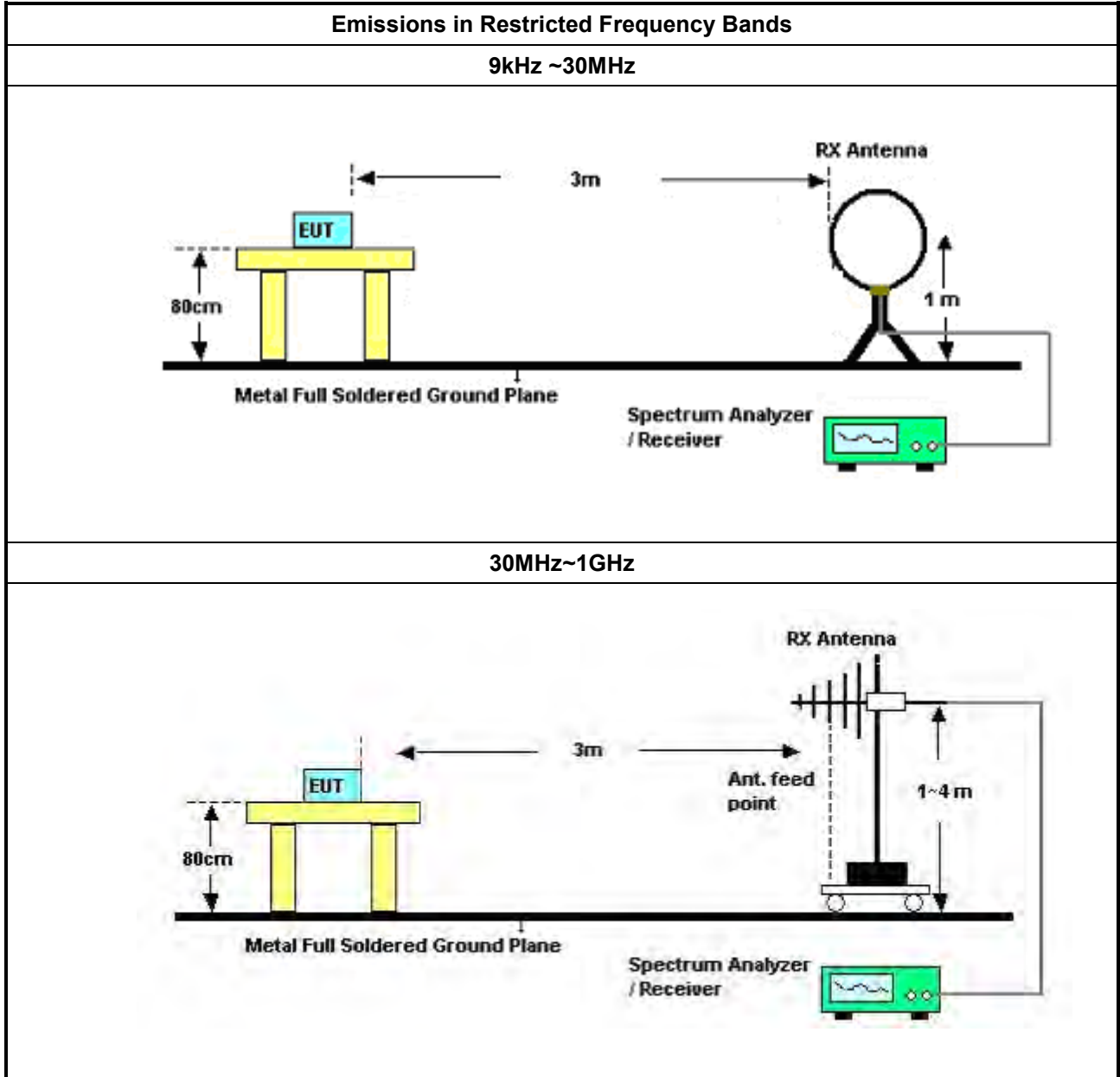
3.6.2 Measuring Instruments

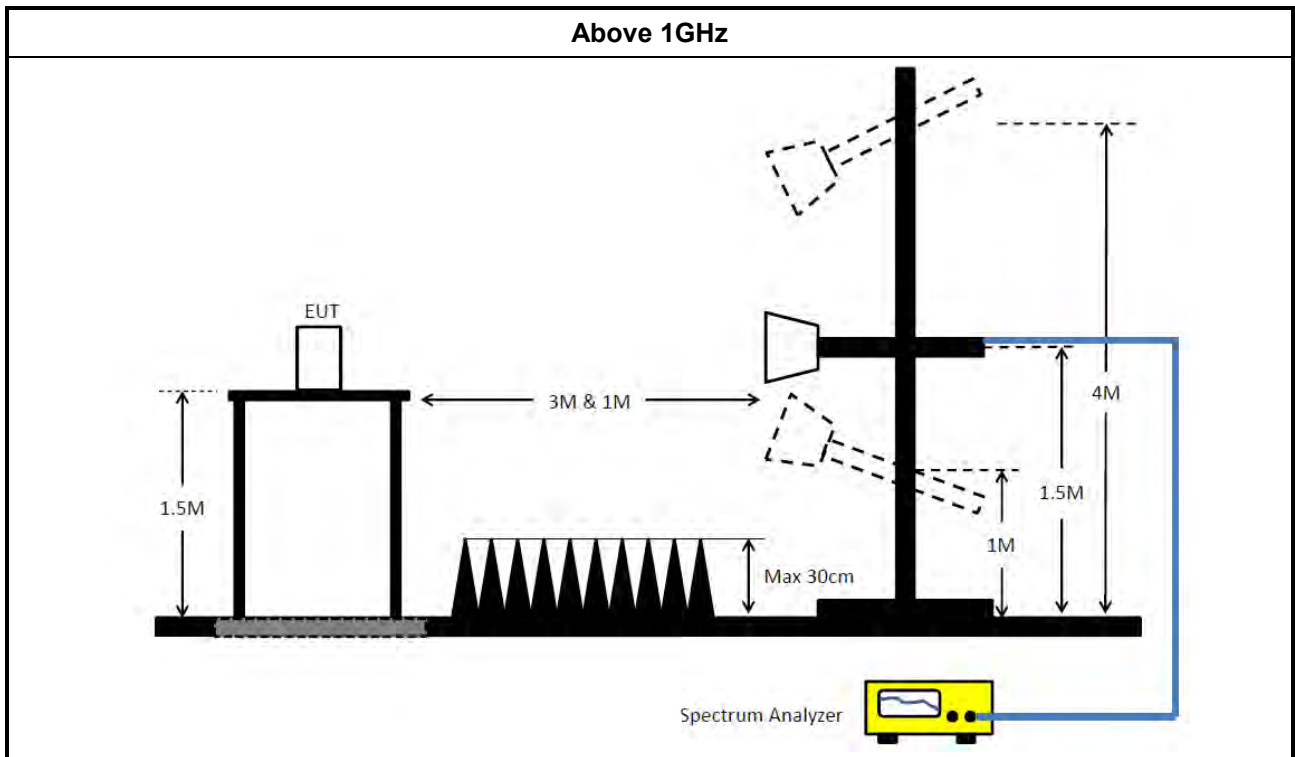
Refer a test equipment and calibration data table in this test report.

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 KDB 558074, clause 8.6 (11.12 of ANSI C63.10) for restricted frequency bands.
	<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 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.
	<ul style="list-style-type: none"> ▪ Refer as KDB 558074, clause 8.7.2 (6.10.6 of ANSI C63.10) for marker-delta method for band-edge measurements.
	<ul style="list-style-type: none"> ▪ Refer as KDB 558074, clause 8.7.3 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels.
	<ul style="list-style-type: none"> ▪ Use the following spectrum analyzer settings:
	<ul style="list-style-type: none"> ▪ Set RBW=100 kHz for $f < 1$ GHz; VBW=3 * RBW; Sweep = auto; Detector function = peak; Trace = max hold.
	<ul style="list-style-type: none"> ▪ Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement. For average measurement, refer as 1.1.4.
	<ul style="list-style-type: none"> ▪ KDB 414788 Open-Field Test Sites and Chamber Correlation Justification.
	<ul style="list-style-type: none"> ▪ 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.
	<ul style="list-style-type: none"> ▪ Open-field site and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

3.6.4 Test Setup





3.6.5 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.

3.6.6 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix F

4 Test Equipment and Calibration Data

Instrument for AC Conduction

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
EMC Receiver	R&S	ESR3	102052	9kHz ~ 3.6GHz	09/Apr/2019	08/Apr/2020
LISN	R&S	ENV216	101295	9kHz ~ 30MHz	05/Nov/2019	04/Nov/2020
RF Cable-CON	MTJ	RG142	CB002-CO	9kHz ~ 200MHz	12/Sep/2019	11/Sep/2020
AC POWER	APC	AFC-11005G	F310050055	47Hz~63Hz 5~300V	NCR	NCR
Impuls Begrenzer Pulse Limiter	SCHWARZBECK	VTSD 9561-F	9561-F041	9 kHz ~ 30 MHz	24/Sep/2019	23/Sep/2020

NCR : Non-Calibration Require

Instrument for Conducted Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101013	10Hz~40GHz	13/Mar/2019	12/Mar/2020
SMB100A Signal Generator	R&S	SMB100A03	181147	100kHz~40GHz	12/Nov/2018	10/Nov/2020
Power Sensor	Anritsu	MA2411B	0917017	300MHz ~ 40GHz	19/Feb/2019	18/Feb/2020
Power Meter	Anritsu	ML2495A	0949003	300MHz ~ 40GHz	19/Feb/2019	18/Feb/2020
Cable 0.2m	HUBER	MY10710/4	RF Cable - 01	30MHz~18G	11/Jan/2019	10/Jan/2020
Cable 0.2m	HUBER	MY10711/4	RF Cable - 02	30MHz~18G	11/Jan/2019	10/Jan/2020
Cable 0.5m	HUBER	MY10714/4	RF Cable - 05	30MHz~1G	11/Jan/2019	10/Jan/2020



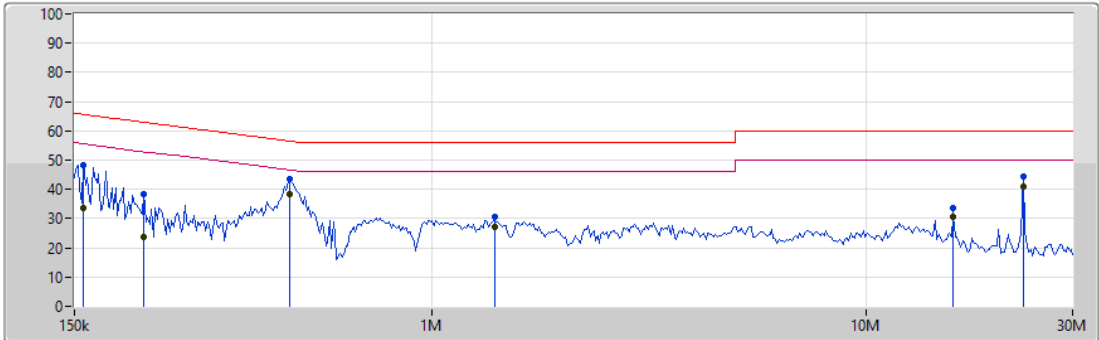
Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz ~ 1GHz 3m	30/Aug/2019	29/Aug/2020
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	1GHz ~ 18GHz 3m	30/Aug/2019	29/Aug/2020
Amplifier	HP	8447D	2944A08033	10kHz ~ 1.3GHz	22/Apr/2019	21/Apr/2020
EMI Test Receiver	R&S	ESR3	102052	9kHz ~ 3.6GHz	09/Apr/2019	08/Apr/2020
Bilog Antenna & 5db Attenuator	SCHAFFNER/MTJ	CBL6112D / MTJ6102-05	2678 / 001	30MHz ~ 2GHz	06/Jul/2019	05/Jul/2020
Bilog Antenna & 5dB Attenuator	SCHAFFNER / MTJ	CBL 6112B / MTJ6102-05	2723 / 2	30MHz ~ 2GHz	11/Oct/2019	10/Oct/2020
Microwave Preamplifier	Agilent	8449B	3008A02373	1GHz ~ 26.5GHz	23/Oct/2018	22/Oct/2019
Microwave System Preamplifier	KEYSIGHT	83017A	MY53270196	1GHz ~ 26.5GHz	09/Sep/2019	08/Sep/2020
Signal Analyzer	R&S	FSP40	100305	9 kHz ~ 40 GHz;-140+30dBm	10/Jun/2019	09/Jun/2020
RF Cable-R03m	Jye Bao	RG142	CB021	9kHz ~ 1GHz	22/Mar/2019	21/Mar/2020
RF CABLE 6m	HUBER+SUHNER	SUOFLEX 104	SN 805801/4	1GHz ~ 40GHz	21/Mar/2019	20/Mar/2020
RF CABLE	HUBER+SUHNER	SUOFLEX 104	802378/4	1 GHz ~ 18 GHz	04/Jul/2019	03/Jul/2020
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170221	15GHz ~ 40GHz	22/Mar/2019	21/Mar/2020
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1531	1GHz ~ 18GHz	09/Mar/2019	08/Mar/2020
Loop Antenna	TESEQ	HLA 6120	31244	9k-30MHz	15/Mar/2019	14/Mar/2020

AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Neutral
Operating Function	BTLE TX		

26/12/2019



Legend for the graph:

- Lim.PK (Red line)
- PK (Blue line)
- Lim.AV (Pink line)
- AV (Green line)

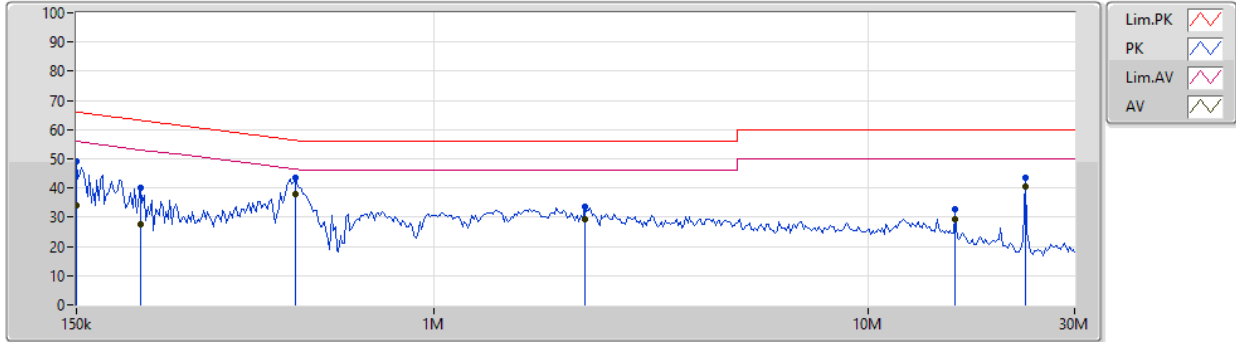
Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	157.652k	48.44	65.58	-17.14	19.63	Neutral	-	28.81	9.65	0.11	9.87
AV	157.652k	33.56	55.58	-22.02	19.63	Neutral	-	13.93	9.65	0.11	9.87
QP	216.761k	38.34	62.94	-24.60	19.62	Neutral	-	18.72	9.64	0.11	9.87
AV	216.761k	23.88	52.94	-29.06	19.62	Neutral	-	4.26	9.64	0.11	9.87
QP	471.031k	43.68	56.50	-12.82	19.63	Neutral	-	24.05	9.63	0.13	9.87
AV	471.031k	38.48	46.50	-8.02	19.63	Neutral	"Worst"	18.85	9.63	0.13	9.87
QP	1.393M	30.60	56.00	-25.40	19.65	Neutral	-	10.95	9.64	0.13	9.88
AV	1.393M	27.28	46.00	-18.72	19.65	Neutral	-	7.63	9.64	0.13	9.88
QP	15.952M	33.57	60.00	-26.43	19.91	Neutral	-	13.66	9.71	0.32	9.88
AV	15.952M	30.64	50.00	-19.36	19.91	Neutral	-	10.73	9.71	0.32	9.88
QP	23.052M	44.36	60.00	-15.64	19.97	Neutral	-	24.39	9.70	0.39	9.88
AV	23.052M	40.96	50.00	-9.04	19.97	Neutral	-	20.99	9.70	0.39	9.88



AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Line
Operating Function	BTLE TX		

26/12/2019



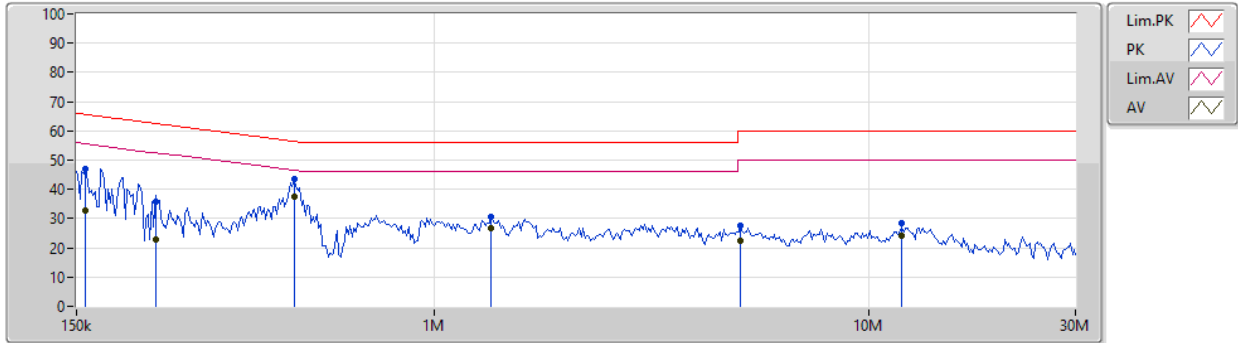
Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	150k	49.05	66.00	-16.95	19.64	Line	-	29.41	9.66	0.11	9.87
AV	150k	33.93	56.00	-22.07	19.64	Line	-	14.29	9.66	0.11	9.87
QP	210.387k	40.17	63.19	-23.02	19.63	Line	-	20.54	9.65	0.11	9.87
AV	210.387k	27.77	53.19	-25.42	19.63	Line	-	8.14	9.65	0.11	9.87
QP	480.498k	43.74	56.33	-12.59	19.64	Line	-	24.10	9.64	0.13	9.87
AV	480.498k	37.94	46.33	-8.39	19.64	Line	"Worst"	18.30	9.64	0.13	9.87
QP	2.224M	33.44	56.00	-22.56	19.67	Line	-	13.77	9.65	0.15	9.87
AV	2.224M	29.42	46.00	-16.58	19.67	Line	-	9.75	9.65	0.15	9.87
QP	15.952M	32.90	60.00	-27.10	19.86	Line	-	13.04	9.66	0.32	9.88
AV	15.952M	29.14	50.00	-20.86	19.86	Line	-	9.28	9.66	0.32	9.88
QP	23.052M	43.70	60.00	-16.30	19.86	Line	-	23.84	9.59	0.39	9.88
AV	23.052M	40.44	50.00	-9.56	19.86	Line	-	20.58	9.59	0.39	9.88



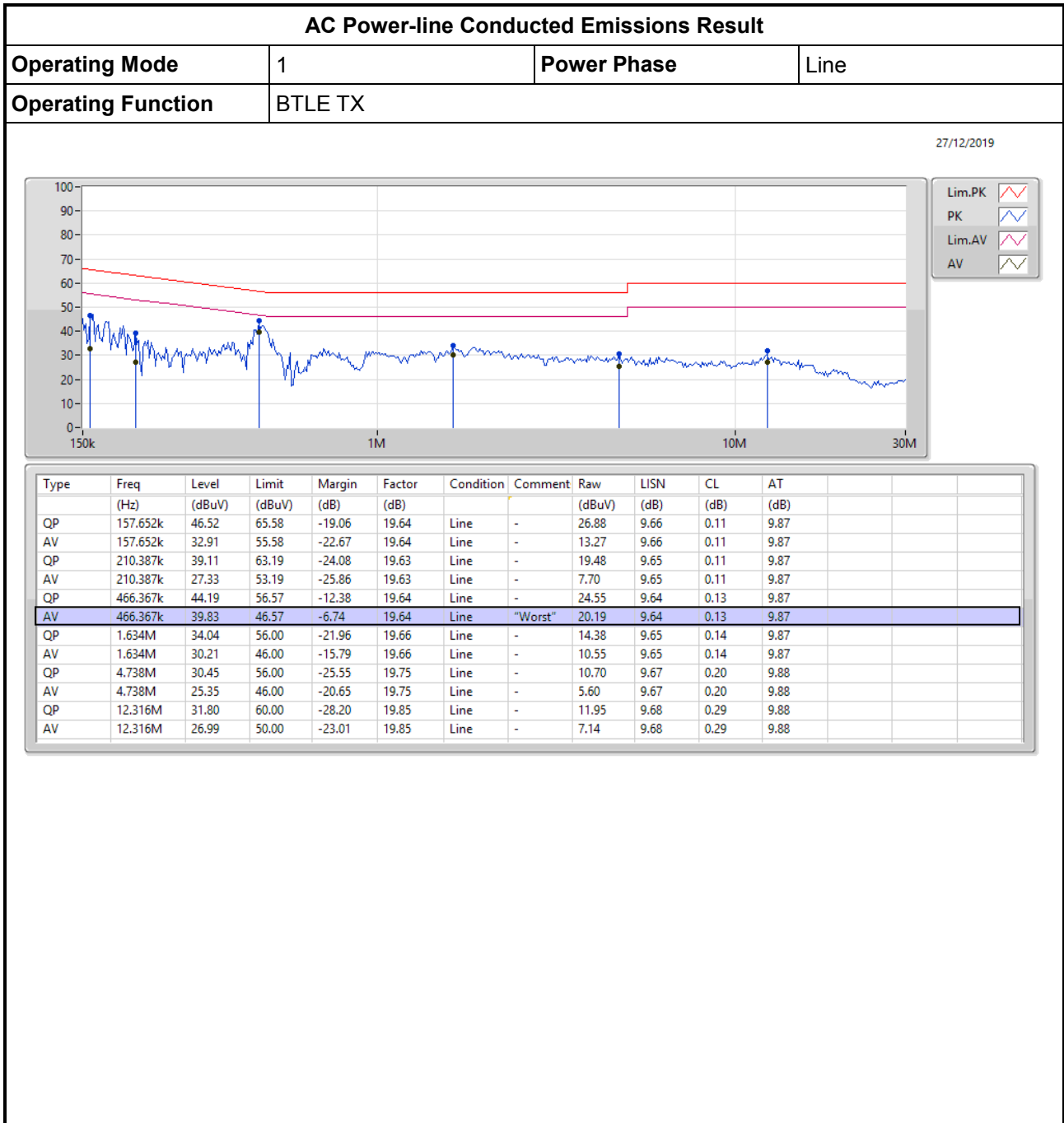
AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Neutral
Operating Function	BTLE TX		

27/12/2019



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	157.652k	46.84	65.58	-18.74	19.63	Neutral	-	27.21	9.65	0.11	9.87
AV	157.652k	32.81	55.58	-22.77	19.63	Neutral	-	13.18	9.65	0.11	9.87
QP	227.818k	35.92	62.52	-26.60	19.63	Neutral	-	16.29	9.64	0.12	9.87
AV	227.818k	23.05	52.52	-29.47	19.63	Neutral	-	3.42	9.64	0.12	9.87
QP	475.741k	43.72	56.42	-12.70	19.63	Neutral	-	24.09	9.63	0.13	9.87
AV	475.741k	37.68	46.42	-8.74	19.63	Neutral	"Worst"	18.05	9.63	0.13	9.87
QP	1.352M	30.48	56.00	-25.52	19.65	Neutral	-	10.83	9.64	0.13	9.88
AV	1.352M	26.86	46.00	-19.14	19.65	Neutral	-	7.21	9.64	0.13	9.88
QP	5.08M	27.56	60.00	-32.44	19.75	Neutral	-	7.81	9.67	0.20	9.88
AV	5.08M	22.25	50.00	-27.75	19.75	Neutral	-	2.50	9.67	0.20	9.88
QP	11.954M	28.53	60.00	-31.47	19.88	Neutral	-	8.65	9.71	0.29	9.88
AV	11.954M	24.02	50.00	-25.98	19.88	Neutral	-	4.14	9.71	0.29	9.88





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)	703.75k	1.028M	1M03F1D	690k	1.027M

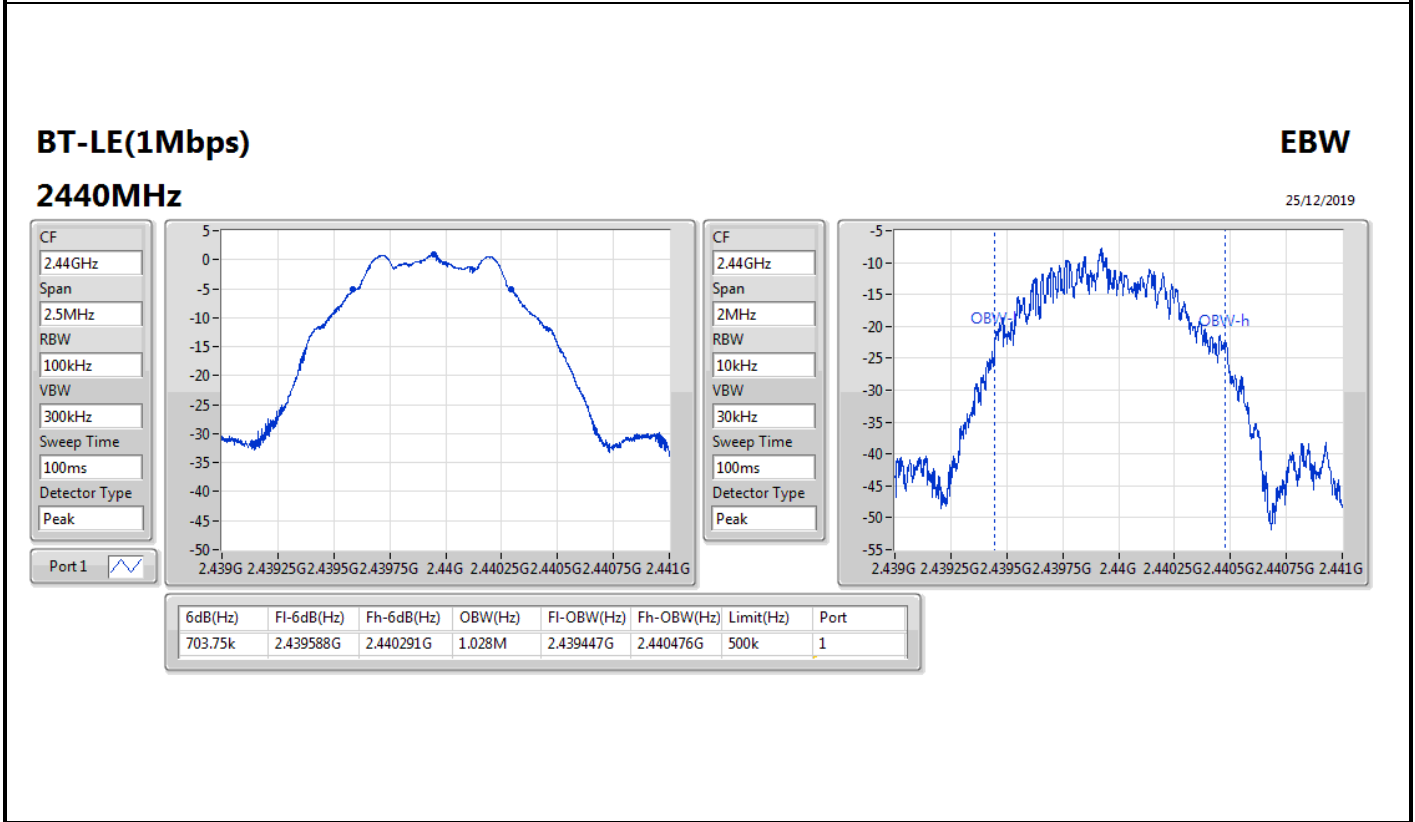
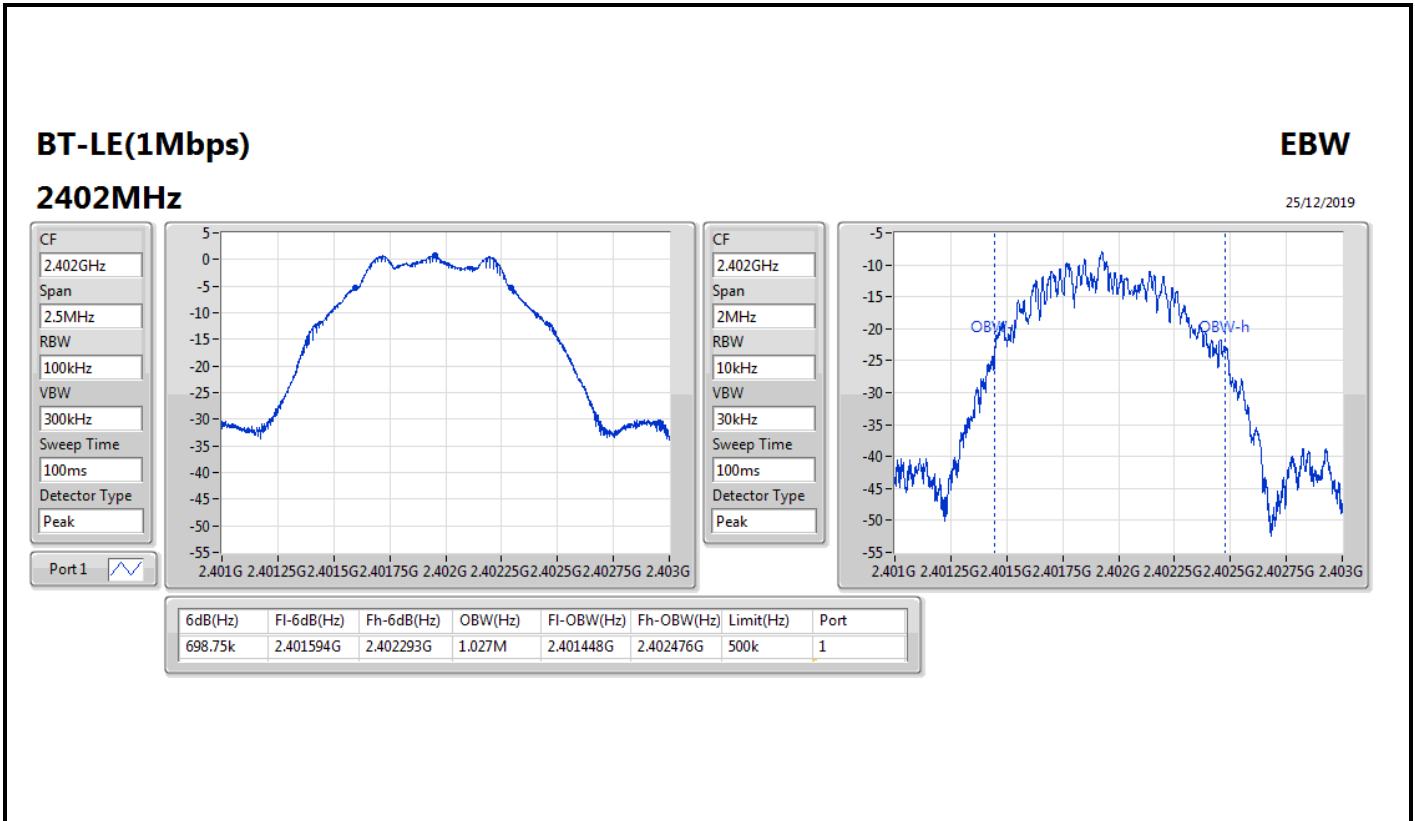
Max-N dB = Maximum 6dB down bandwidth; **Max-OBW** = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 6dB down bandwidth; **Min-OBW** = Minimum 99% occupied bandwidth;

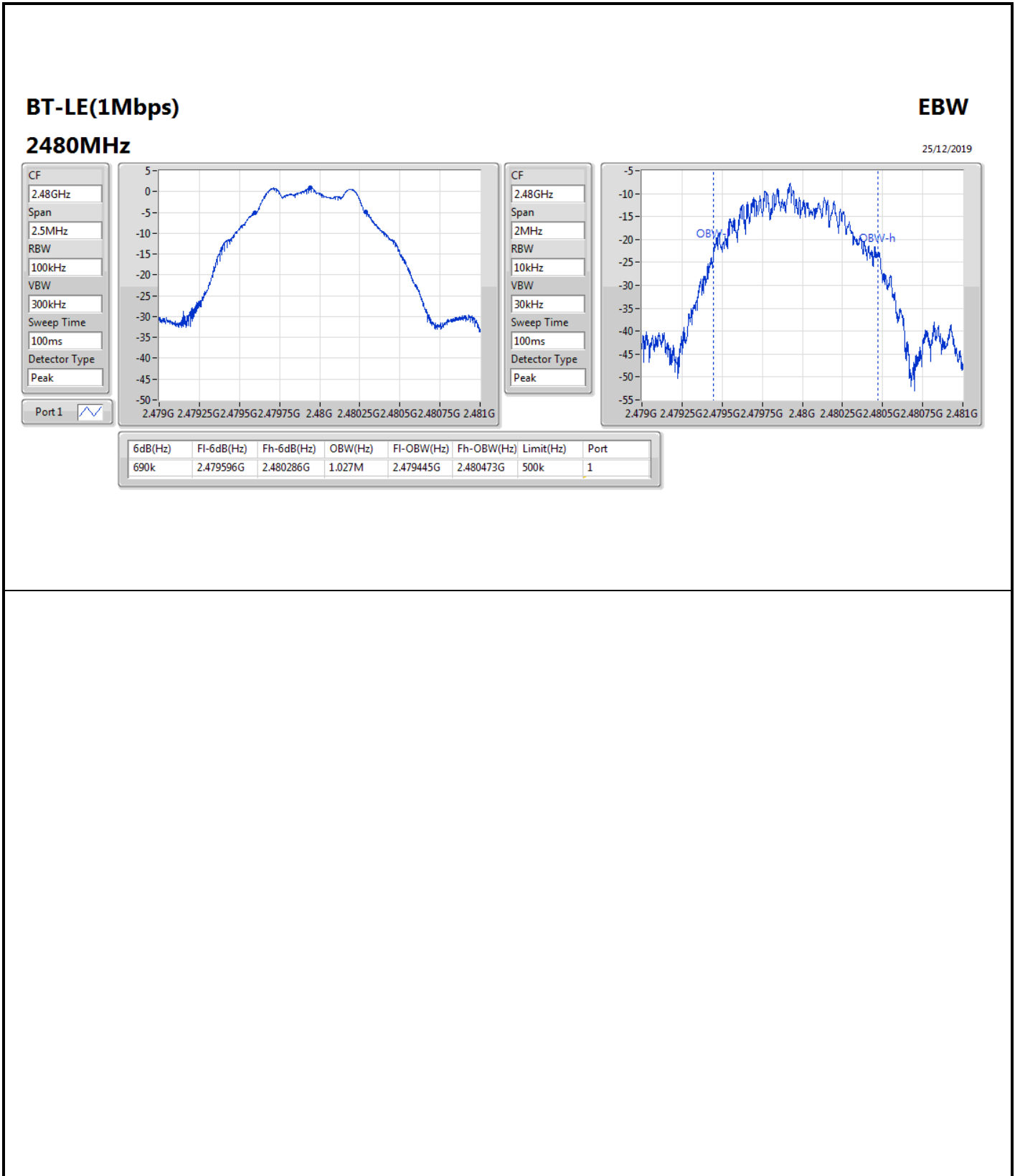


Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	698.75k	1.027M
2440MHz	Pass	500k	703.75k	1.028M
2480MHz	Pass	500k	690k	1.027M

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







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)	701.25k	1.029M	1M03F1D	697.5k	1.026M

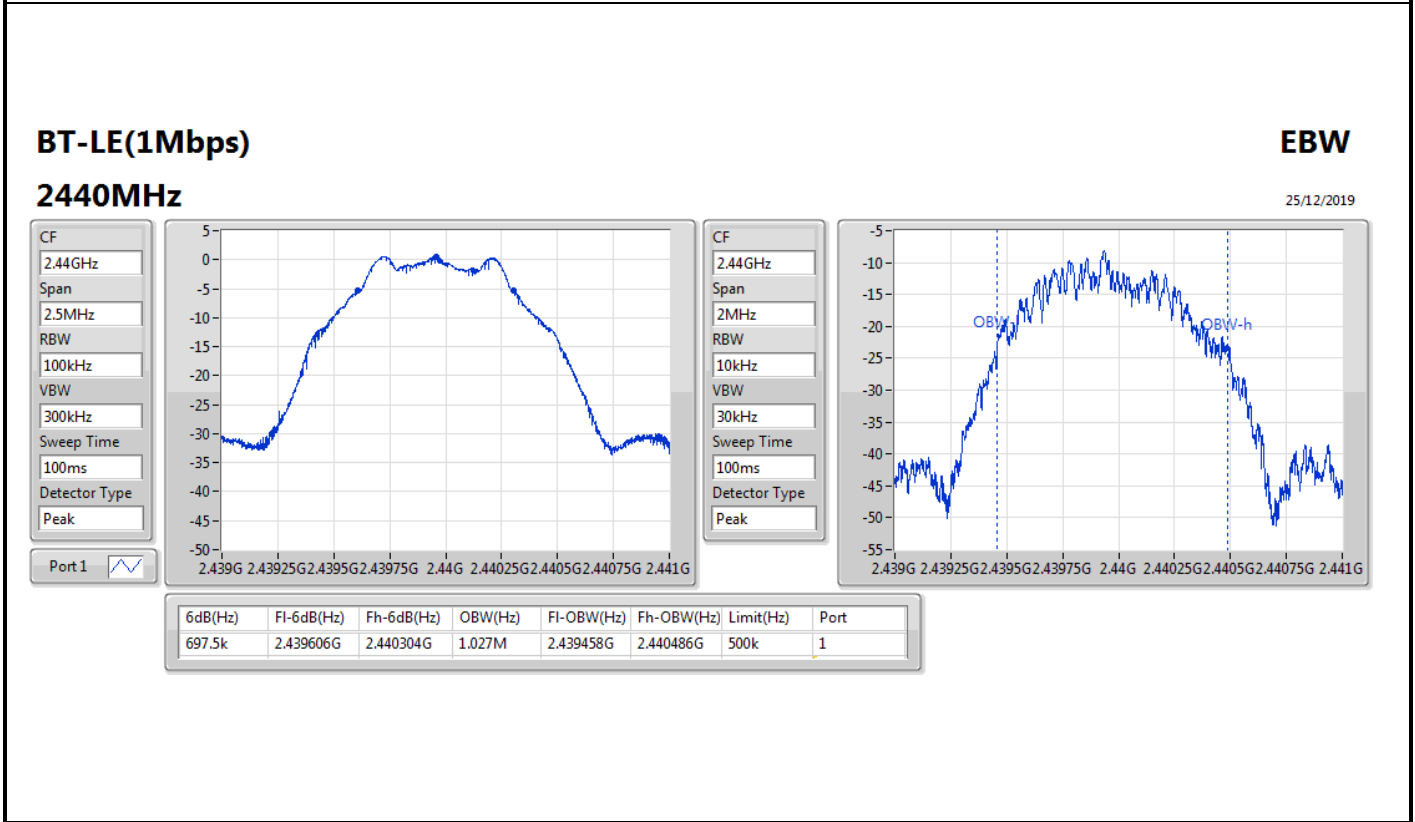
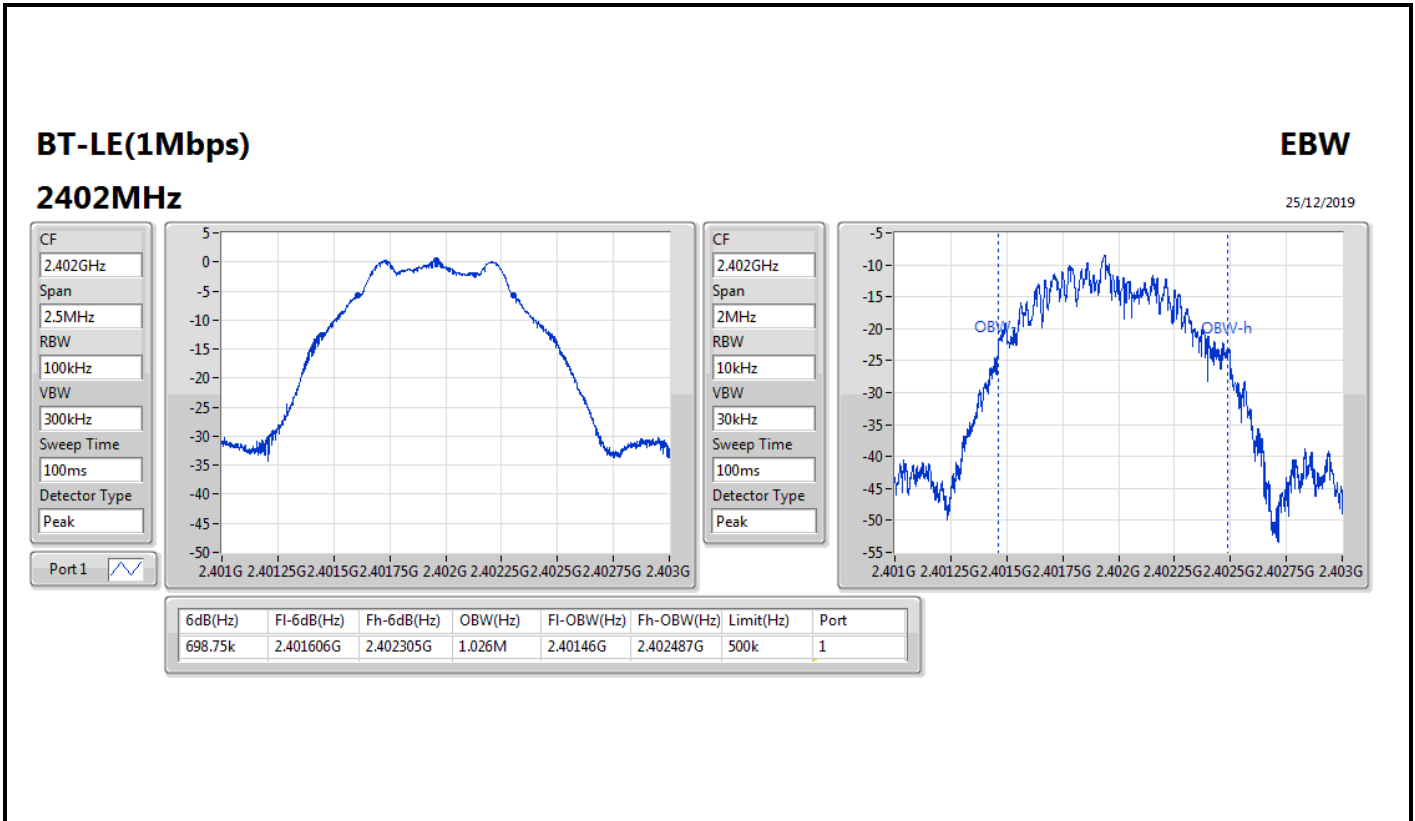
Max-N dB = Maximum 6dB down bandwidth; **Max-OBW** = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 6dB down bandwidth; **Min-OBW** = Minimum 99% occupied bandwidth;



Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	698.75k	1.026M
2440MHz	Pass	500k	697.5k	1.027M
2480MHz	Pass	500k	701.25k	1.029M

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



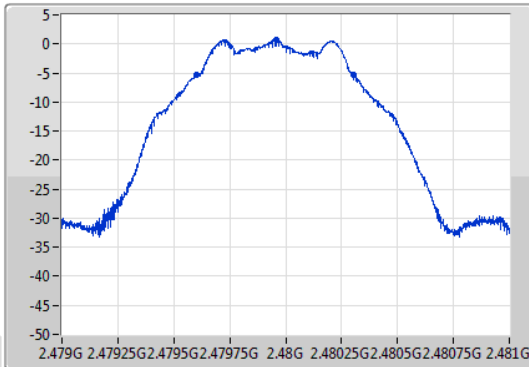
BT-LE(1Mbps)

EBW

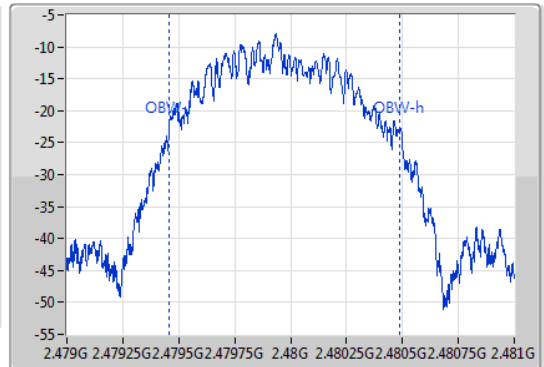
2480MHz

25/12/2019

CF
2.48GHz
Span
2.5MHz
RBW
100kHz
VBW
300kHz
Sweep Time
100ms
Detector Type
Peak



CF
2.48GHz
Span
2MHz
RBW
10kHz
VBW
30kHz
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
701.25k	2.479603G	2.480304G	1.029M	2.479456G	2.480486G	500k	1



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)	701.25k	1.029M	1M03F1D	697.5k	1.026M

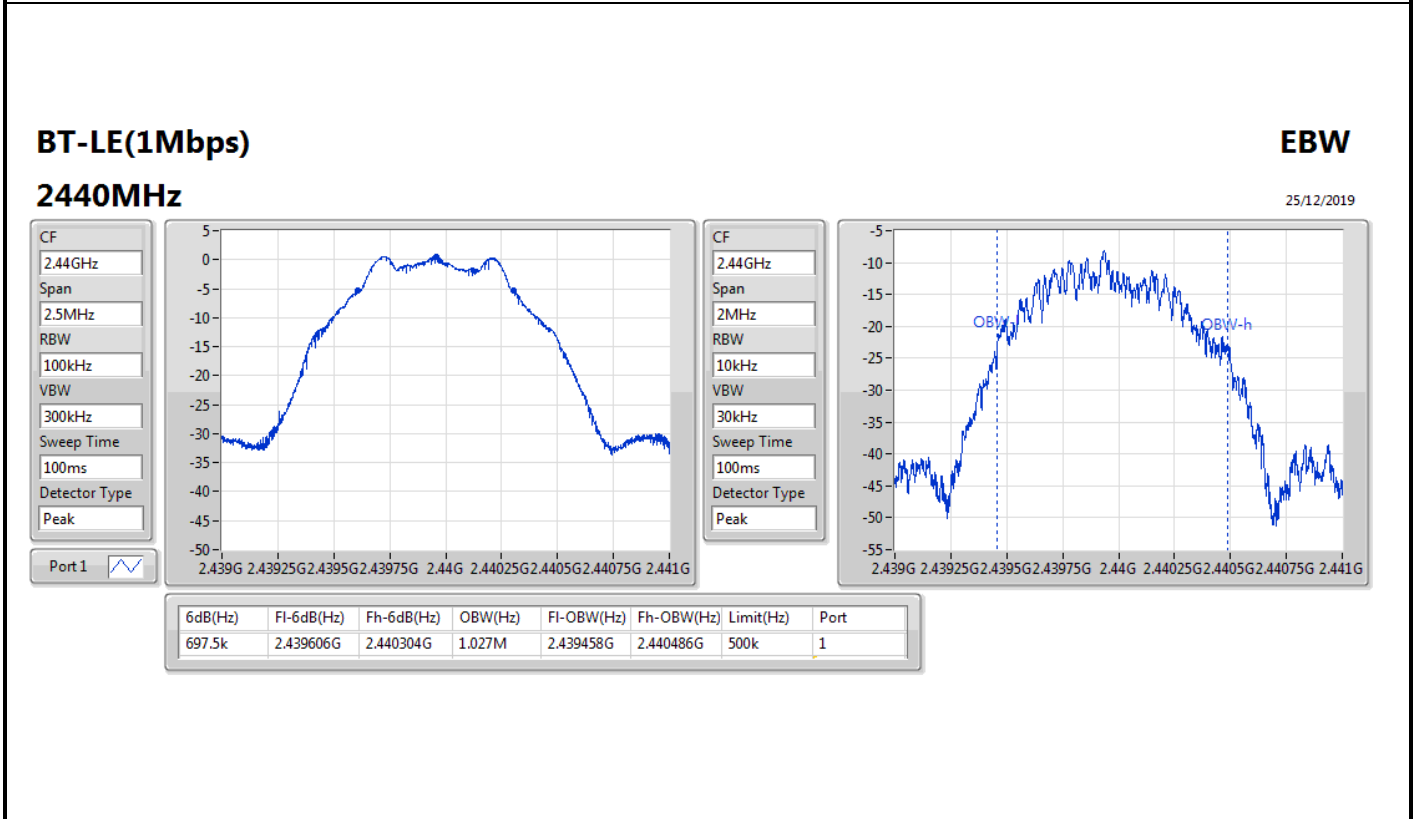
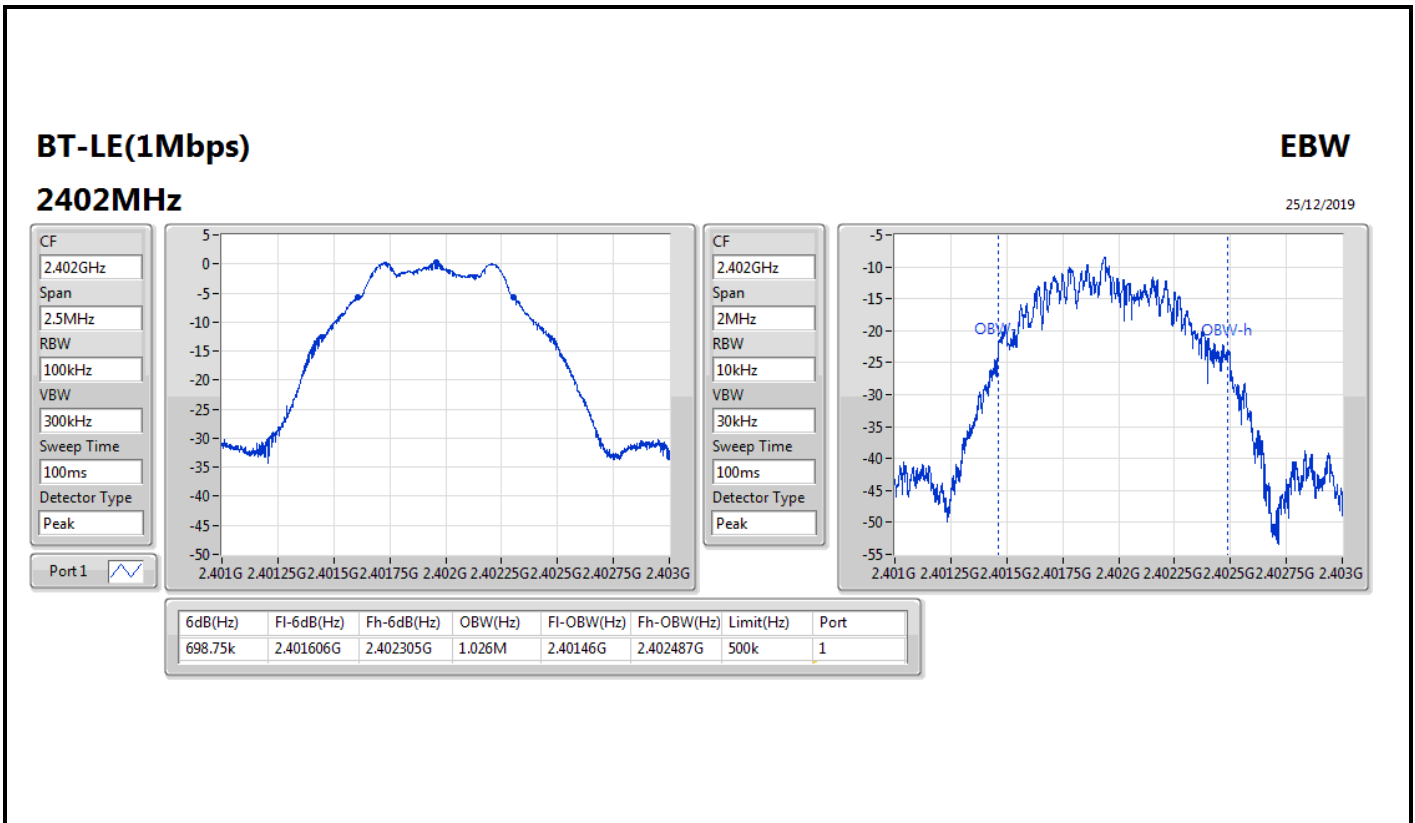
Max-N dB = Maximum 6dB down bandwidth; **Max-OBW** = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 6dB down bandwidth; **Min-OBW** = Minimum 99% occupied bandwidth;



Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	698.75k	1.026M
2440MHz	Pass	500k	697.5k	1.027M
2480MHz	Pass	500k	701.25k	1.029M

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



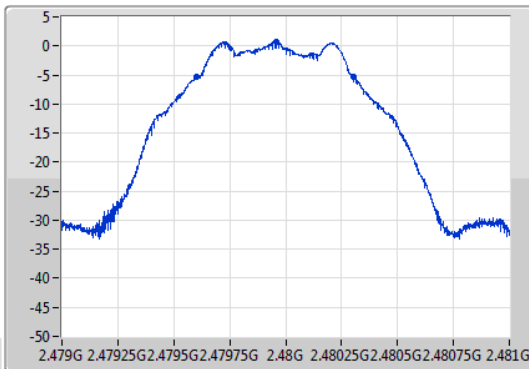
BT-LE(1Mbps)

EBW

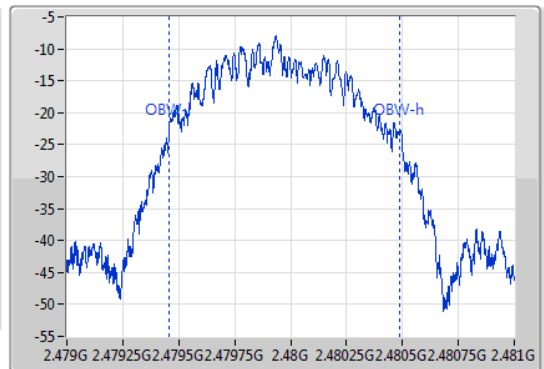
2480MHz

25/12/2019

CF
2.48GHz
Span
2.5MHz
RBW
100kHz
VBW
300kHz
Sweep Time
100ms
Detector Type
Peak



CF
2.48GHz
Span
2MHz
RBW
10kHz
VBW
30kHz
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
701.25k	2.479603G	2.480304G	1.029M	2.479456G	2.480486G	500k	1



Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	1.22	0.00132



Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	4.74	1.04	30.00
2440MHz	Pass	4.74	1.16	30.00
2480MHz	Pass	4.74	1.22	30.00

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



Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	1.08	0.00128



Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	8.00	0.66	28.00
2440MHz	Pass	8.00	0.86	28.00
2480MHz	Pass	8.00	1.08	28.00

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



Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	1.08	0.00128



Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	7.80	0.66	28.20
2440MHz	Pass	7.80	0.86	28.20
2480MHz	Pass	7.80	1.08	28.20

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



Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-13.15

RBW=3 kHz.

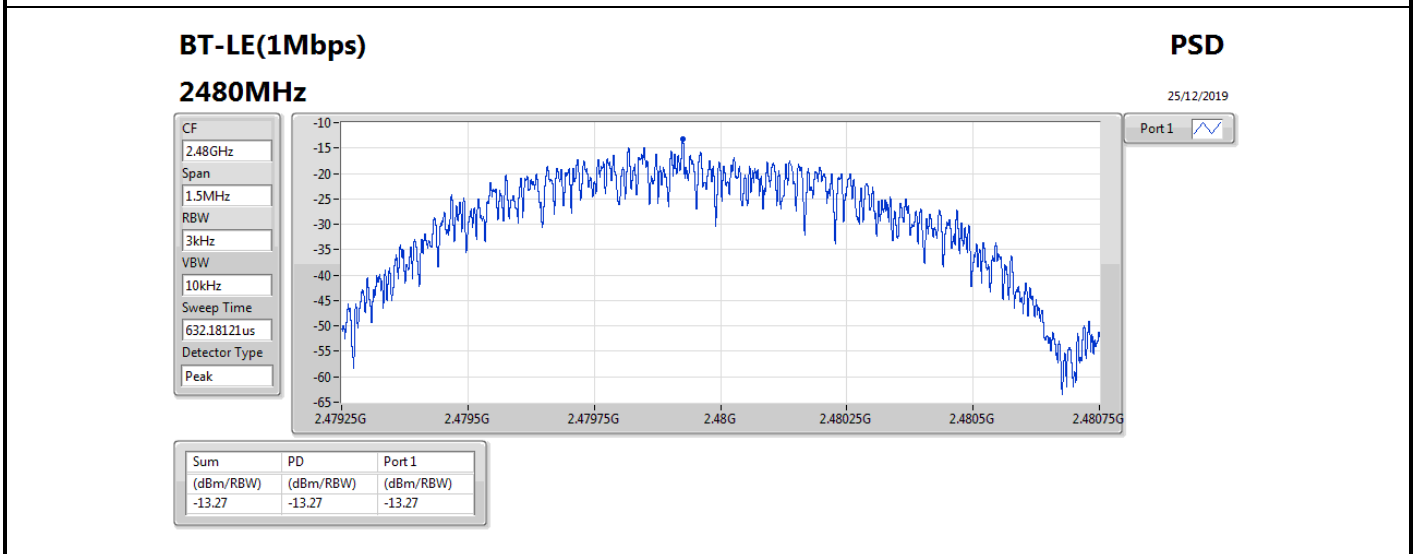
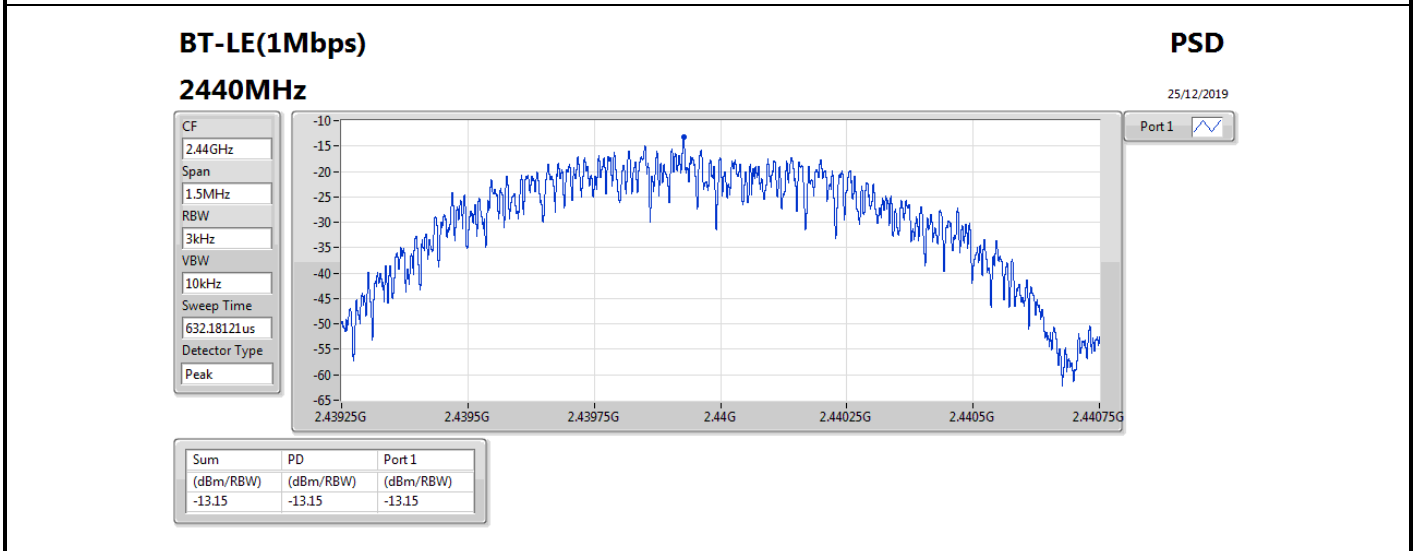
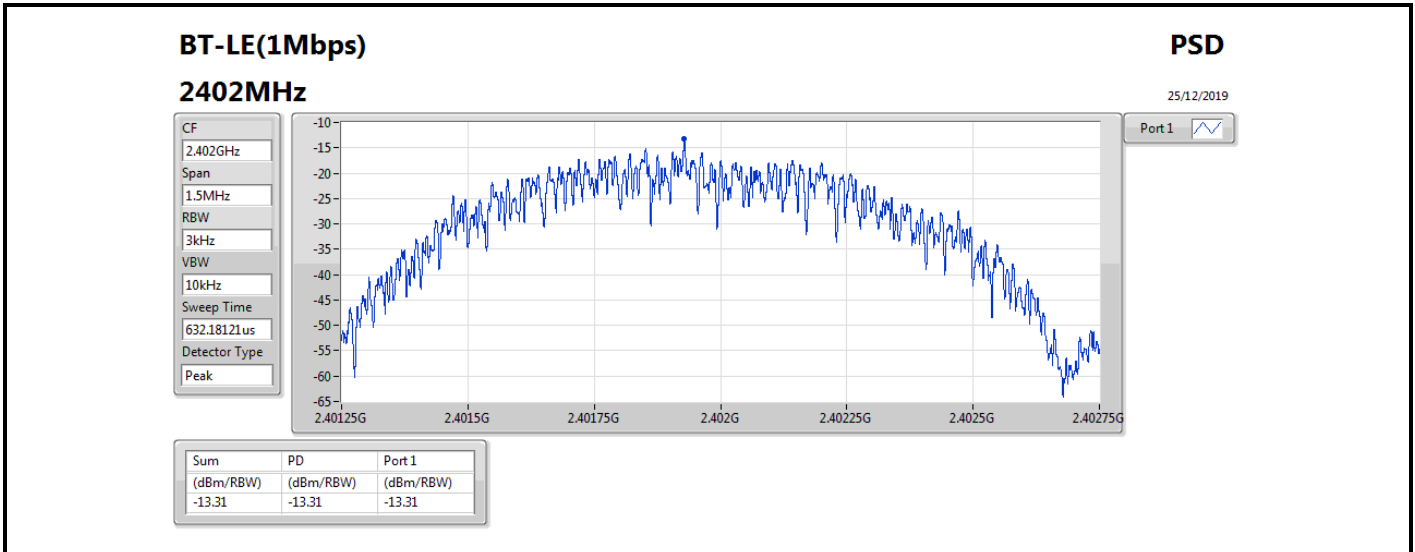


Result

Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	4.74	-13.31	8.00
2440MHz	Pass	4.74	-13.15	8.00
2480MHz	Pass	4.74	-13.27	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	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-13.78

RBW=3 kHz.

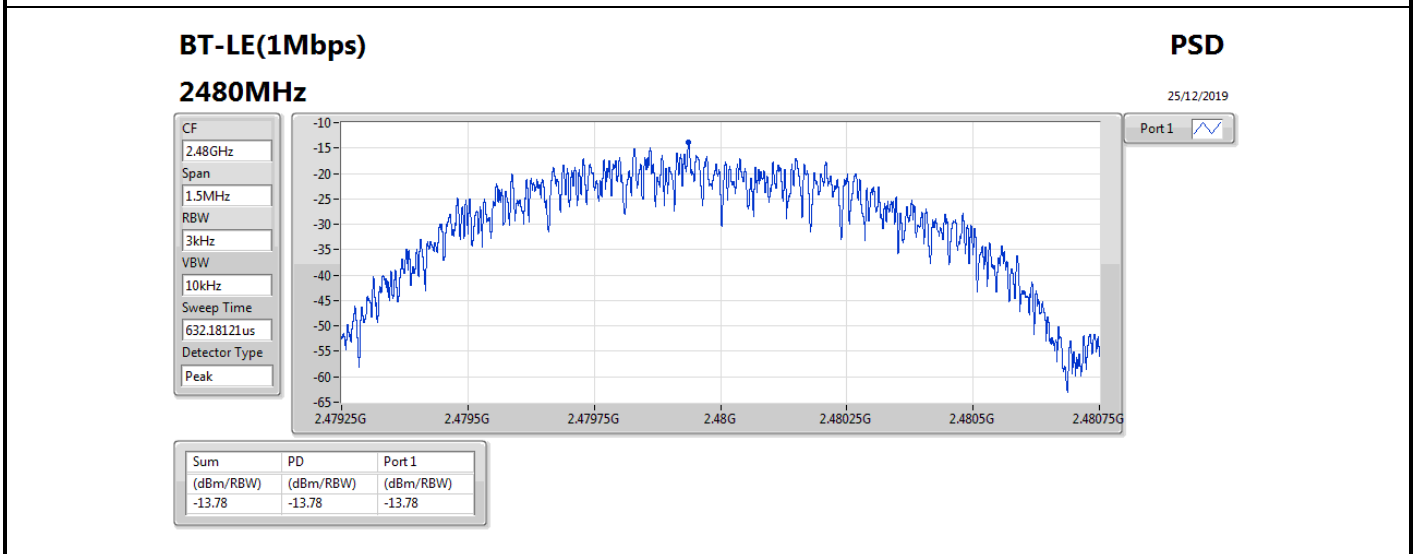
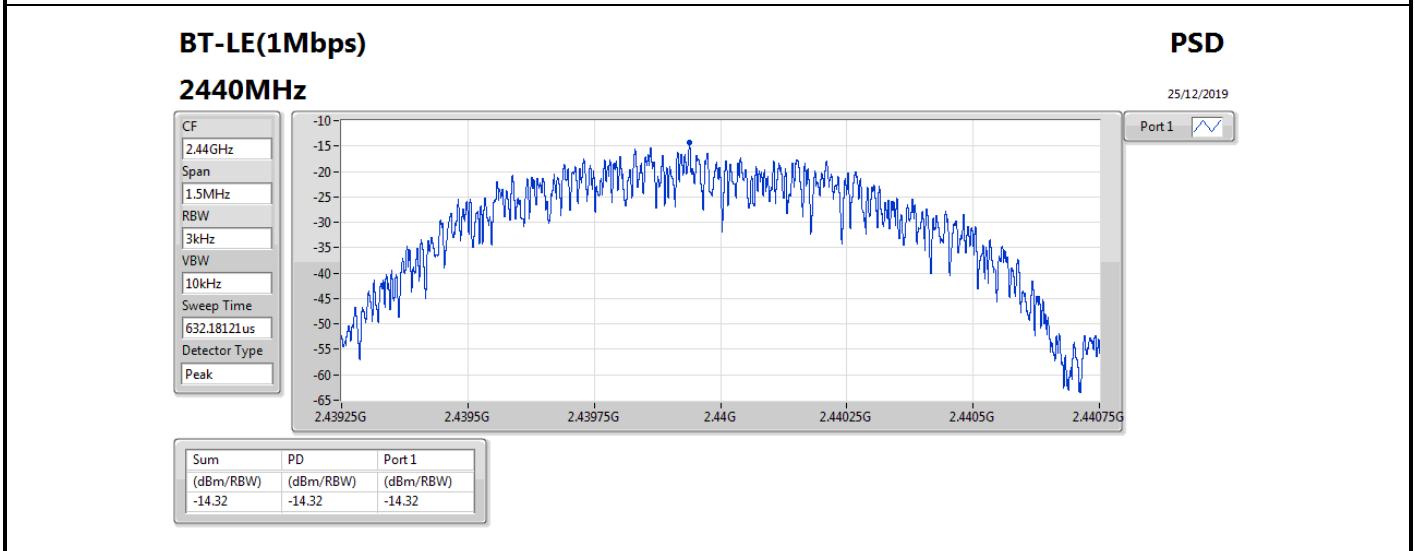
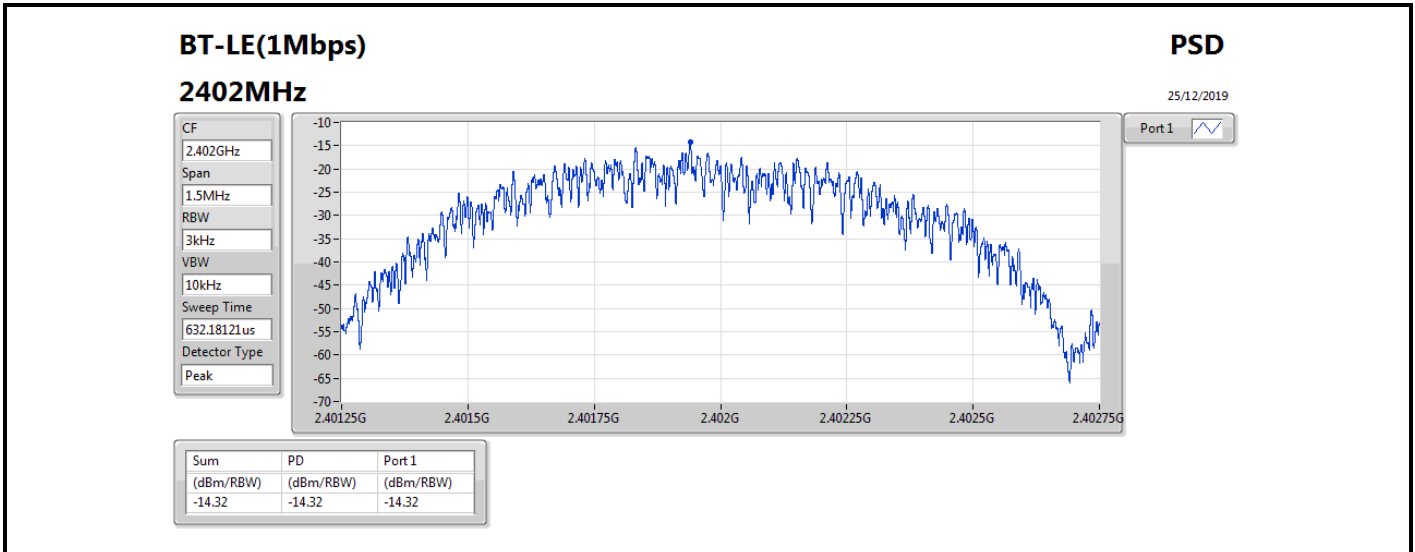


Result

Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	8.00	-14.32	6.00
2440MHz	Pass	8.00	-14.32	6.00
2480MHz	Pass	8.00	-13.78	6.00

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	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-13.78

RBW=3 kHz.

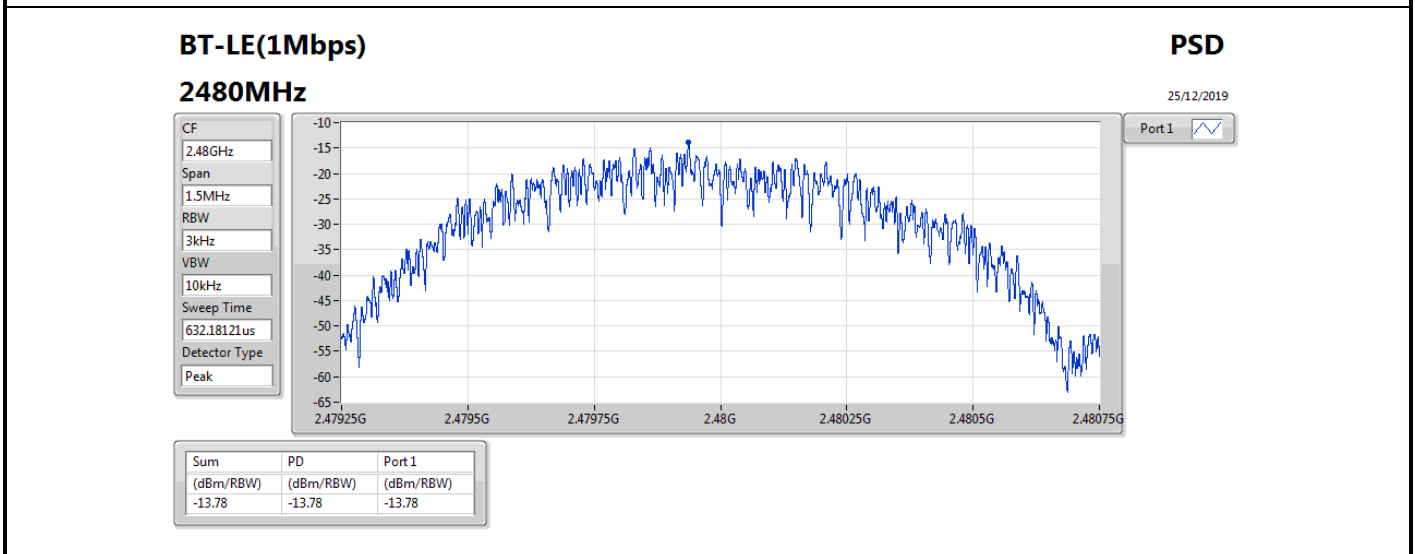
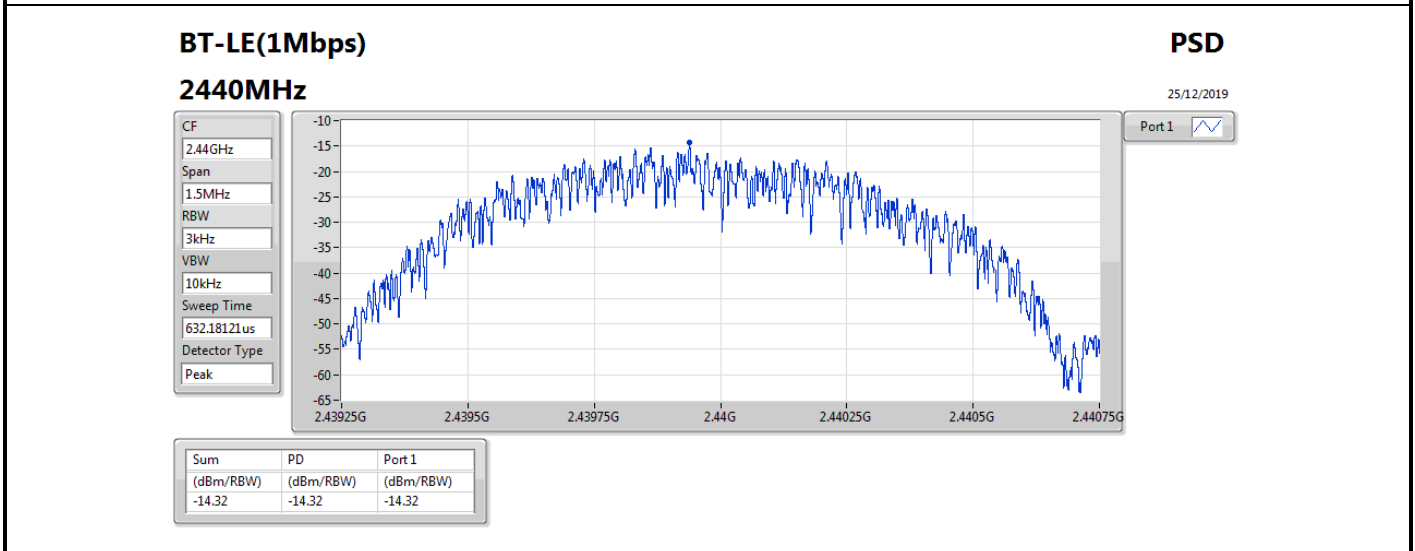
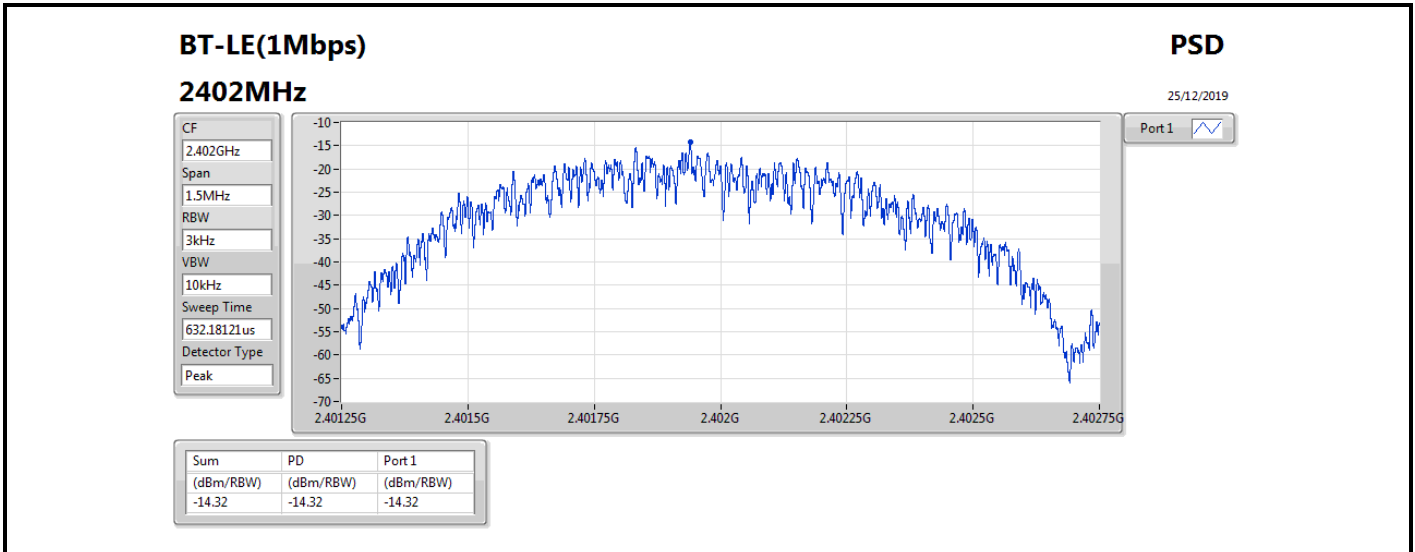


Result

Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	7.80	-14.32	6.20
2440MHz	Pass	7.80	-14.32	6.20
2480MHz	Pass	7.80	-13.78	6.20

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;





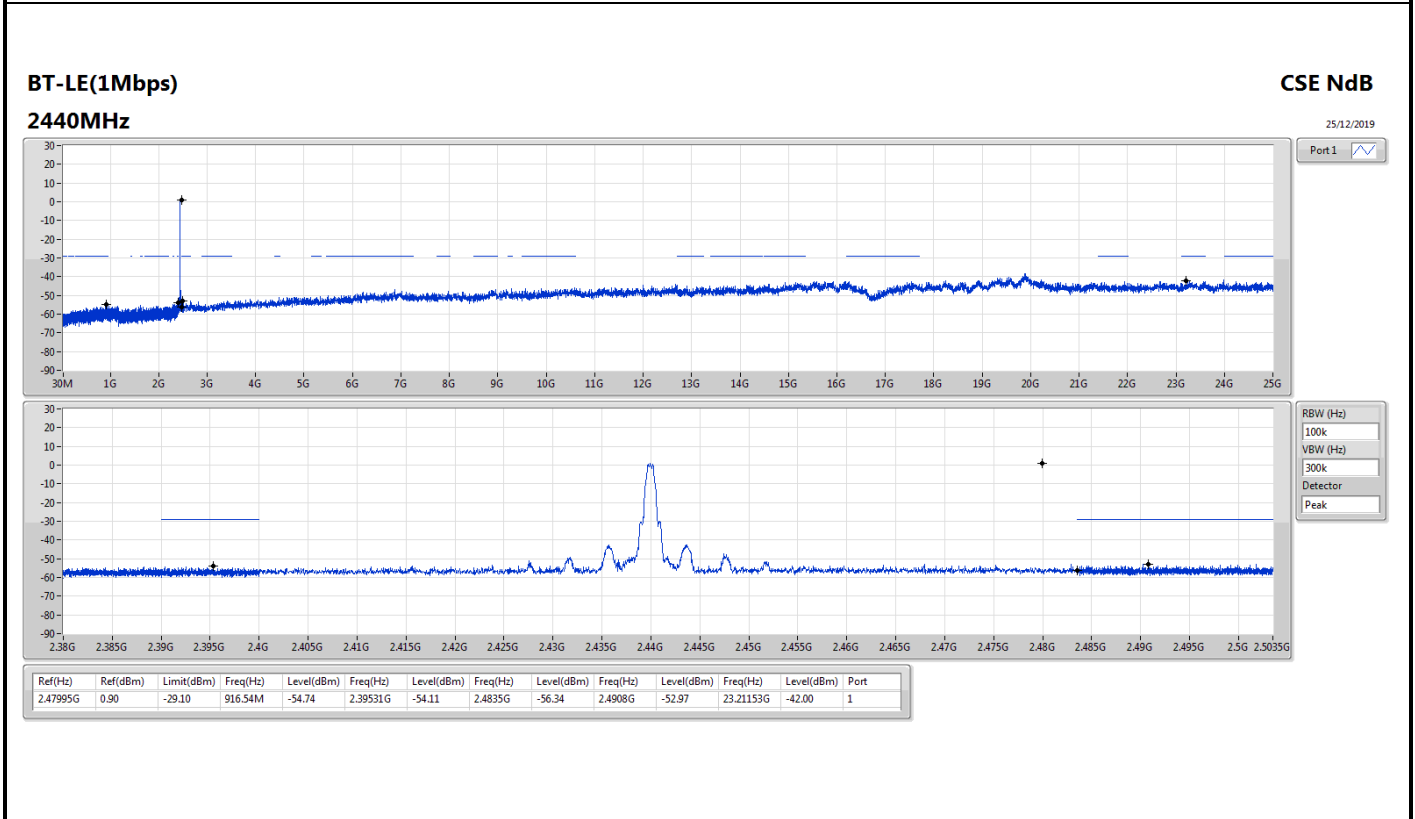
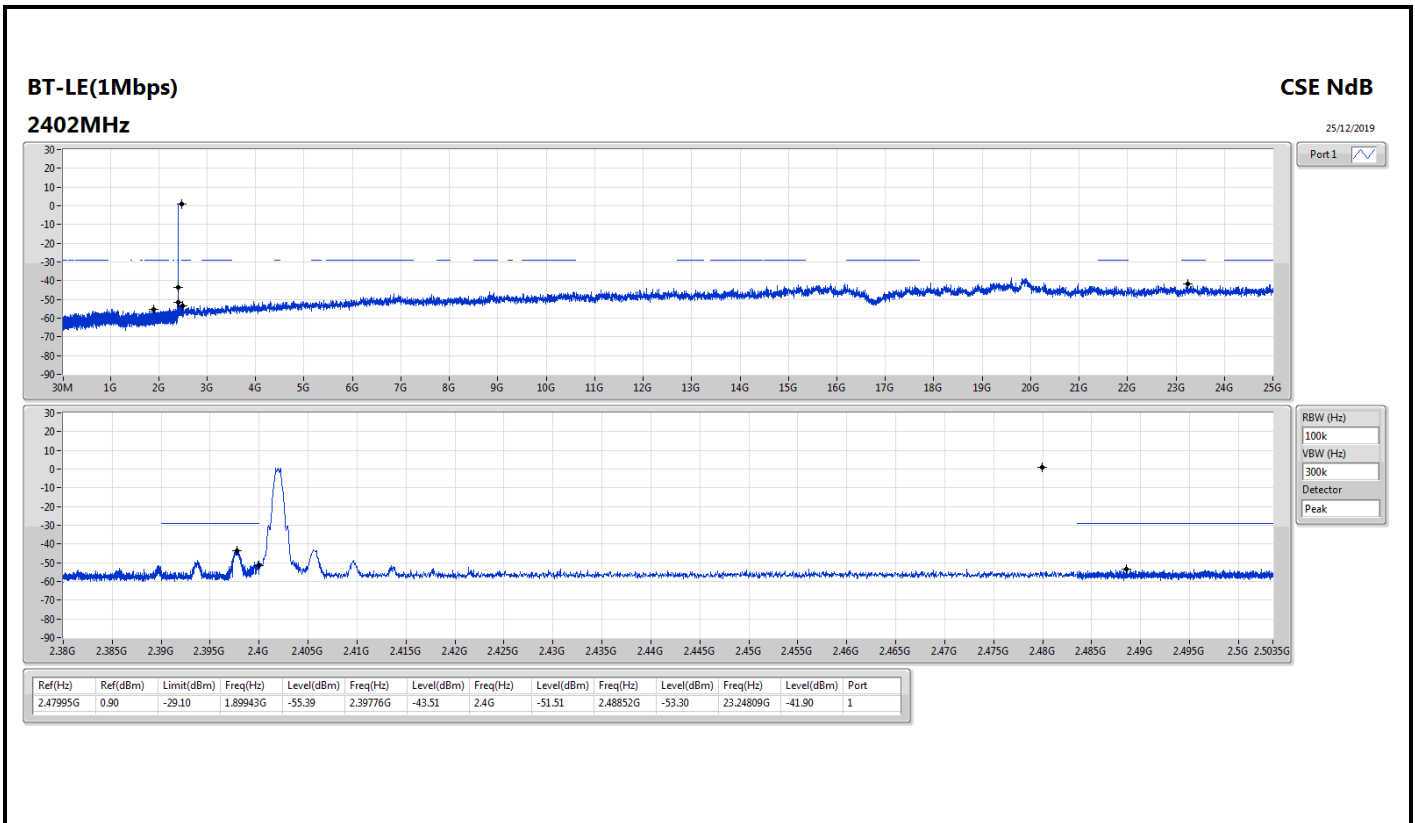
Summary

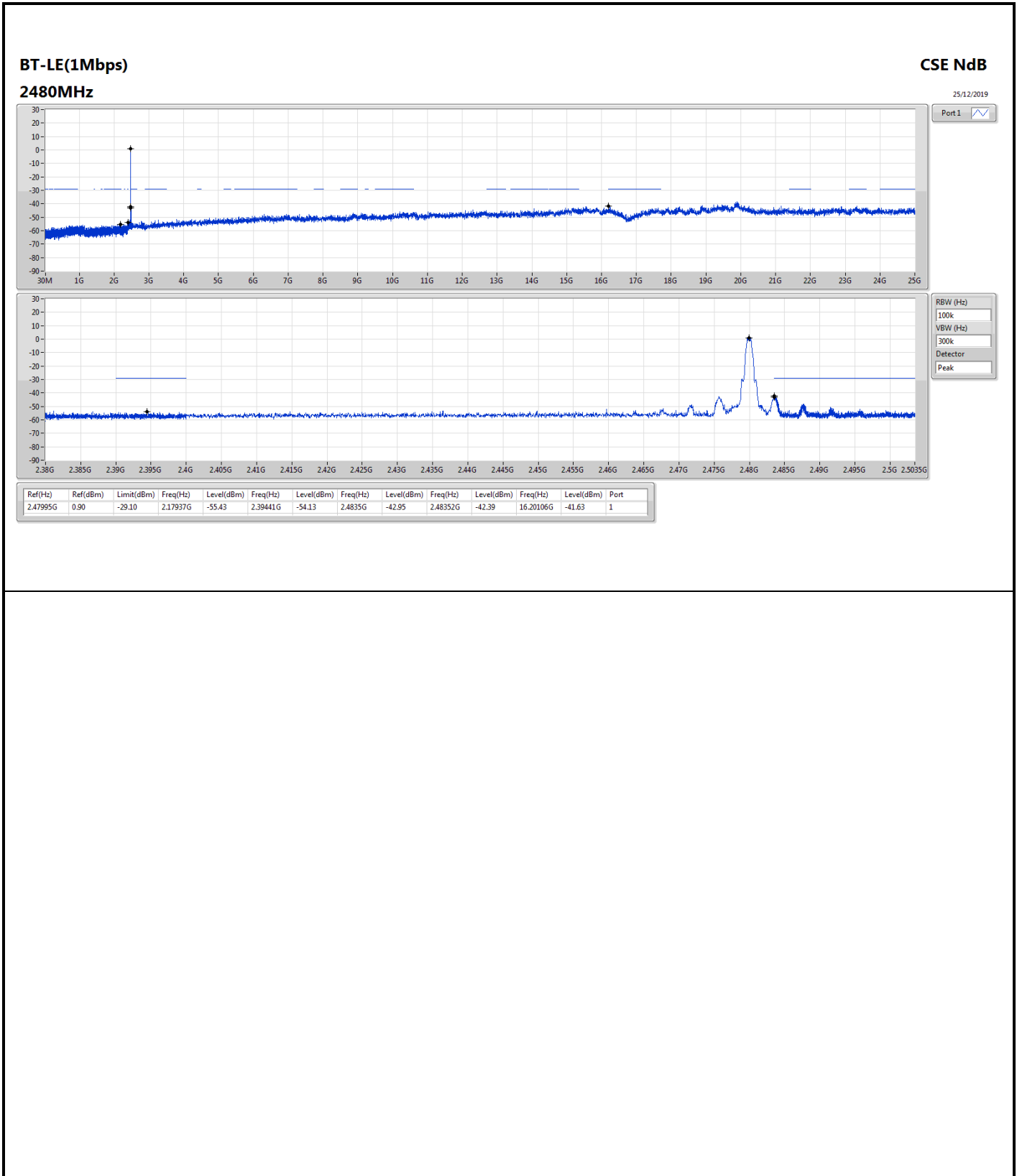
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	2.47995G	0.90	-29.10	2.17937G	-55.43	2.39441G	-54.13	2.4835G	-42.95	2.48352G	-42.39	16.20106G	-41.63	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	2.47995G	0.90	-29.10	1.89943G	-55.39	2.39776G	-43.51	2.4G	-51.51	2.48852G	-53.30	23.24809G	-41.90	1
2440MHz	Pass	2.47995G	0.90	-29.10	916.54M	-54.74	2.39531G	-54.11	2.4835G	-56.34	2.4908G	-52.97	23.21153G	-42.00	1
2480MHz	Pass	2.47995G	0.90	-29.10	2.17937G	-55.43	2.39441G	-54.13	2.4835G	-42.95	2.48352G	-42.39	16.20106G	-41.63	1







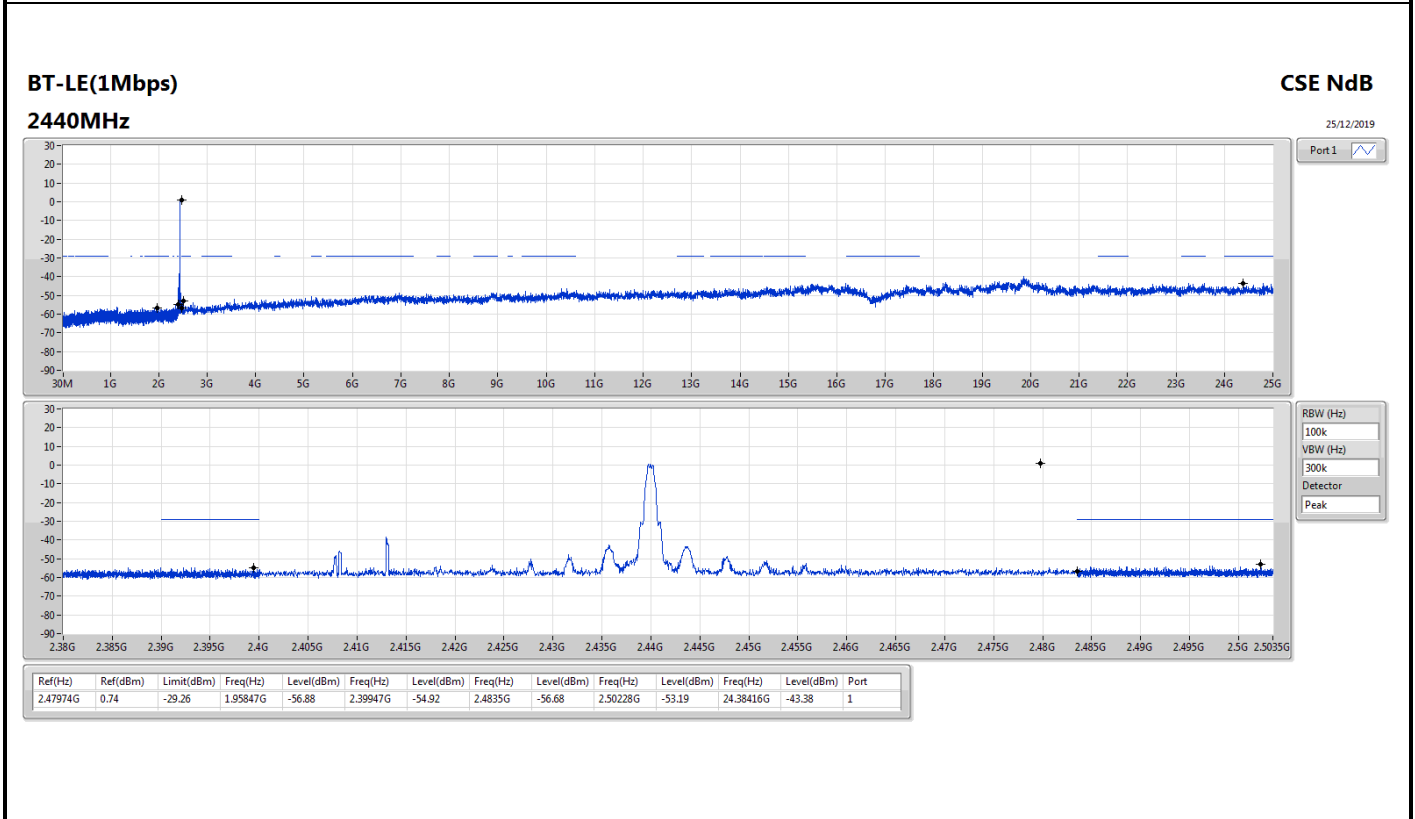
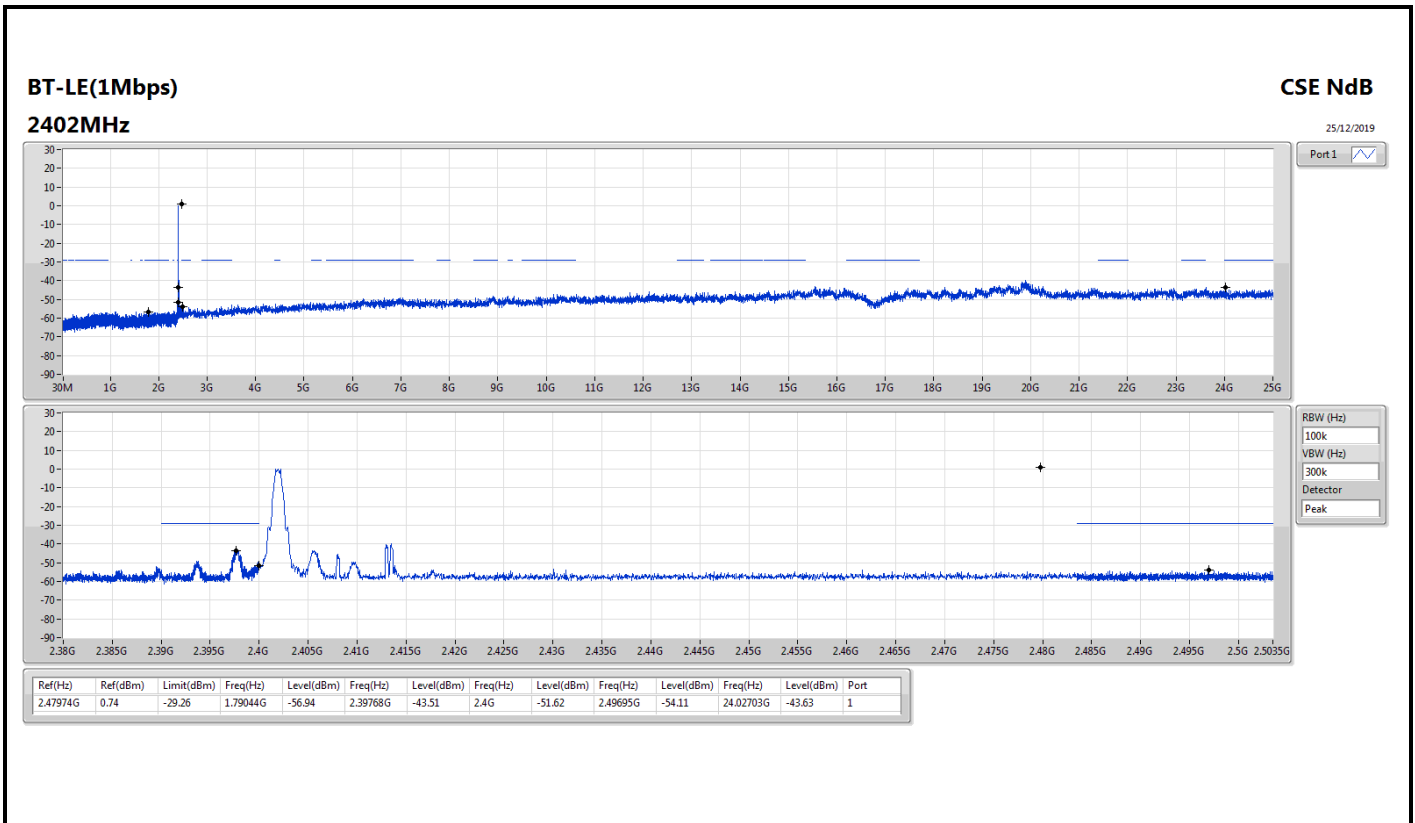
Summary

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	2.47974G	0.74	-29.26	2.19171G	-56.19	2.39271G	-54.56	2.4835G	-44.10	2.48376G	-43.24	16.22074G	-43.33	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	2.47974G	0.74	-29.26	1.79044G	-56.94	2.39768G	-43.51	2.4G	-51.62	2.49695G	-54.11	24.02703G	-43.63	1
2440MHz	Pass	2.47974G	0.74	-29.26	1.95847G	-56.88	2.39947G	-54.92	2.4835G	-56.68	2.50228G	-53.19	24.38416G	-43.38	1
2480MHz	Pass	2.47974G	0.74	-29.26	2.19171G	-56.19	2.39271G	-54.56	2.4835G	-44.10	2.48376G	-43.24	16.22074G	-43.33	1



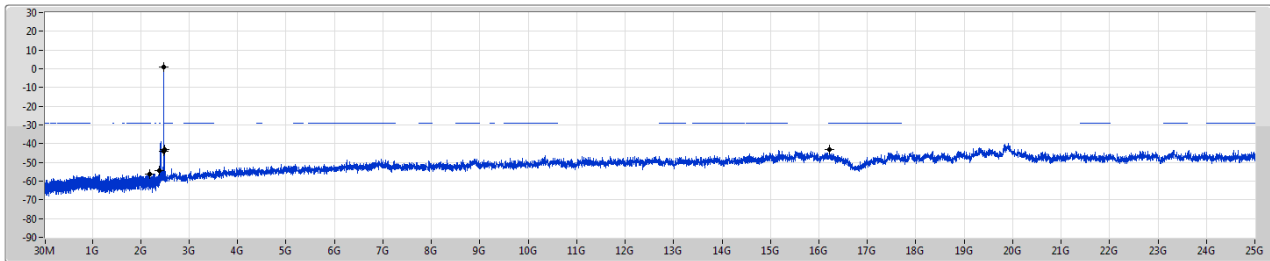


BT-LE(1Mbps)

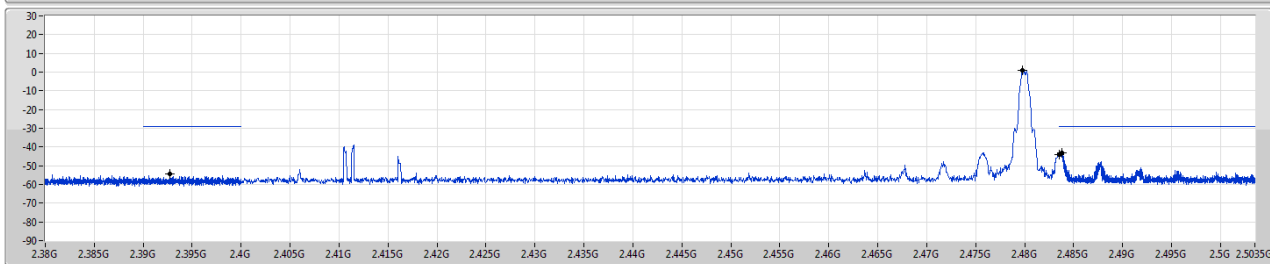
CSE NdB

2480MHz

25/12/2019



Port 1



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

Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.47974G	0.74	-29.26	2.19171G	-56.19	2.39271G	-54.56	2.4835G	-44.10	2.48376G	-43.24	16.22074G	-43.33	1



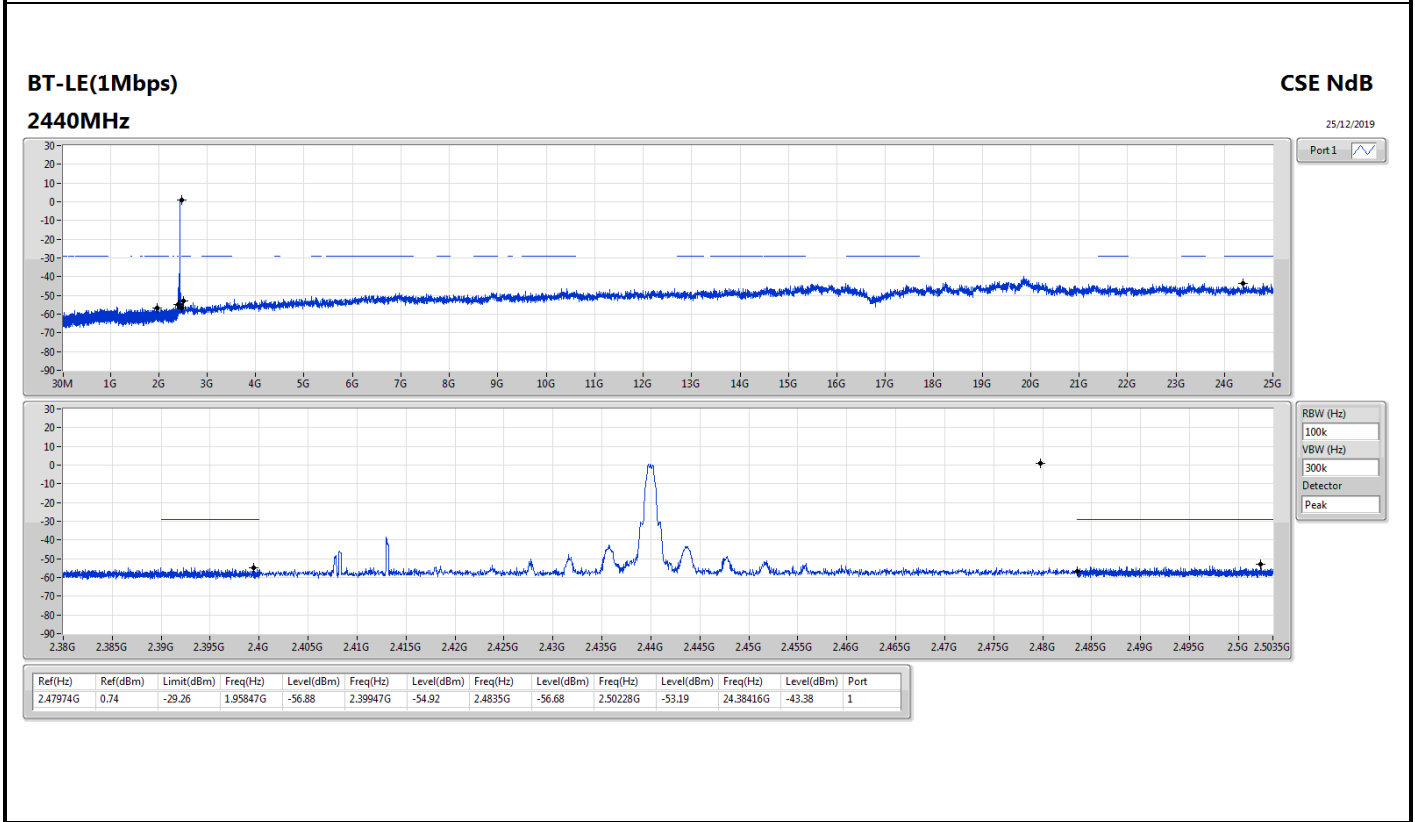
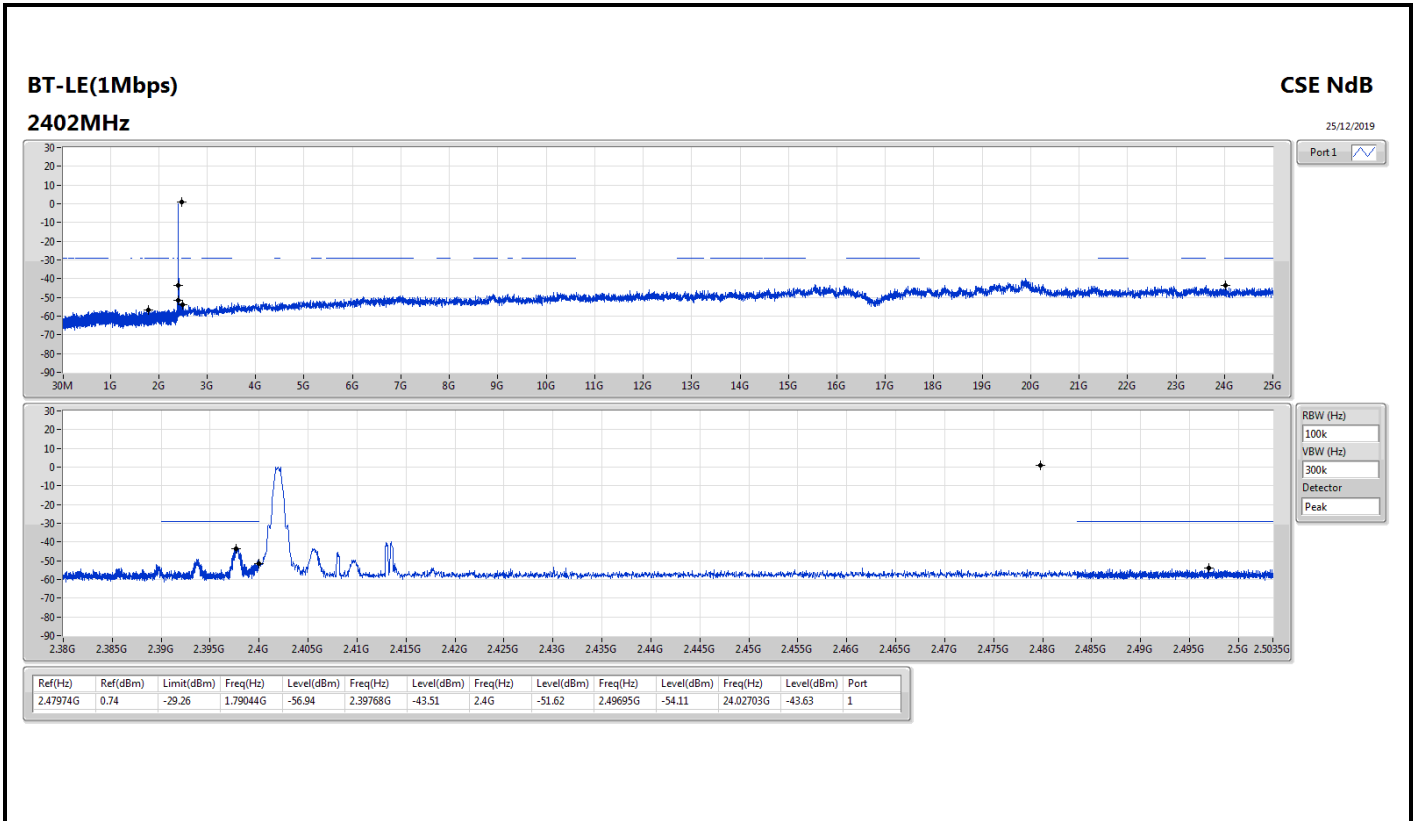
Summary

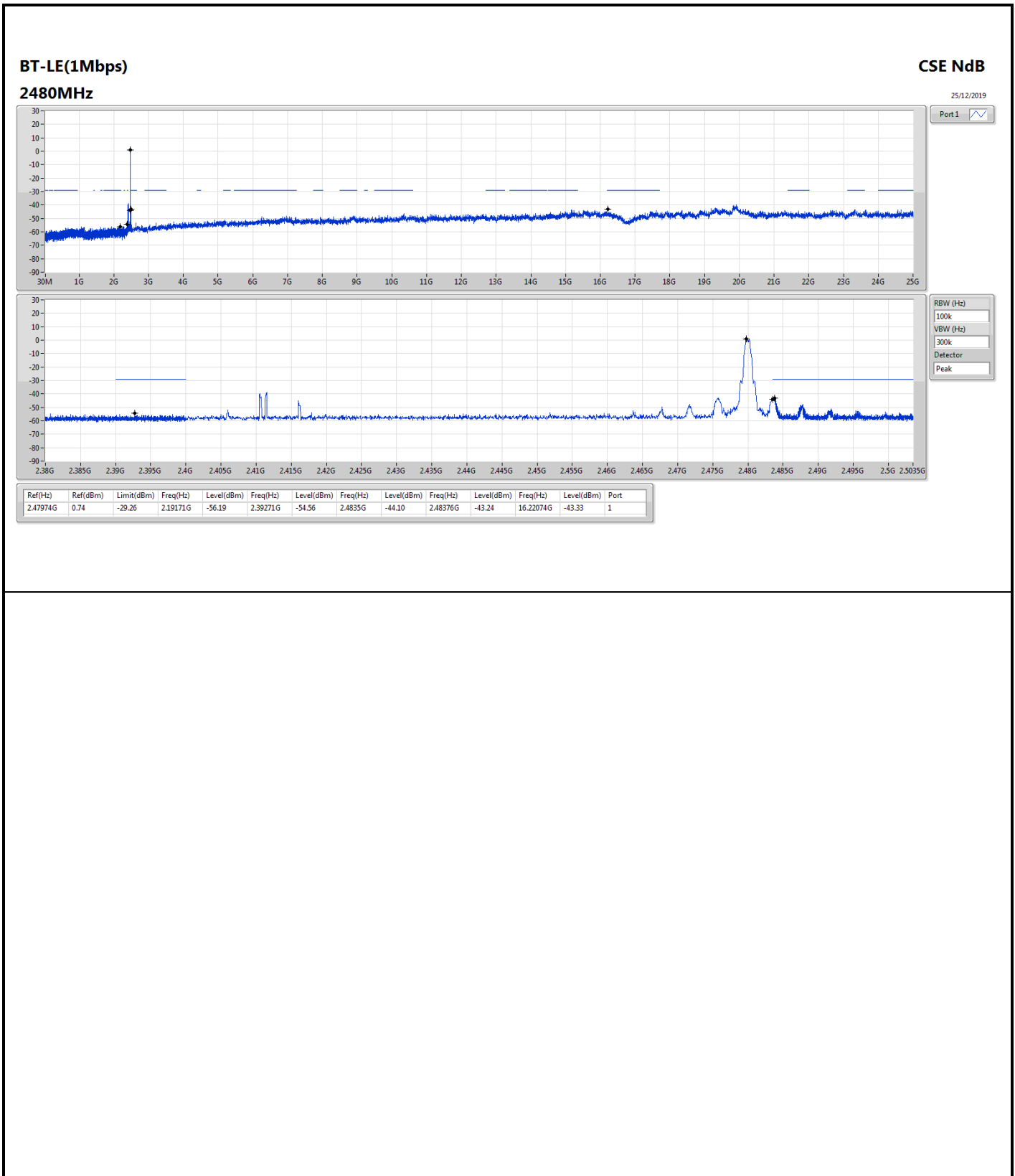
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	2.47974G	0.74	-29.26	2.19171G	-56.19	2.39271G	-54.56	2.4835G	-44.10	2.48376G	-43.24	16.22074G	-43.33	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	2.47974G	0.74	-29.26	1.79044G	-56.94	2.39768G	-43.51	2.4G	-51.62	2.49695G	-54.11	24.02703G	-43.63	1
2440MHz	Pass	2.47974G	0.74	-29.26	1.95847G	-56.88	2.39947G	-54.92	2.4835G	-56.68	2.50228G	-53.19	24.38416G	-43.38	1
2480MHz	Pass	2.47974G	0.74	-29.26	2.19171G	-56.19	2.39271G	-54.56	2.4835G	-44.10	2.48376G	-43.24	16.22074G	-43.33	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(1Mbps)	Pass	PK	375.32M	43.03	46.00	-2.97	3	Horizontal	360	1.00	-



Result

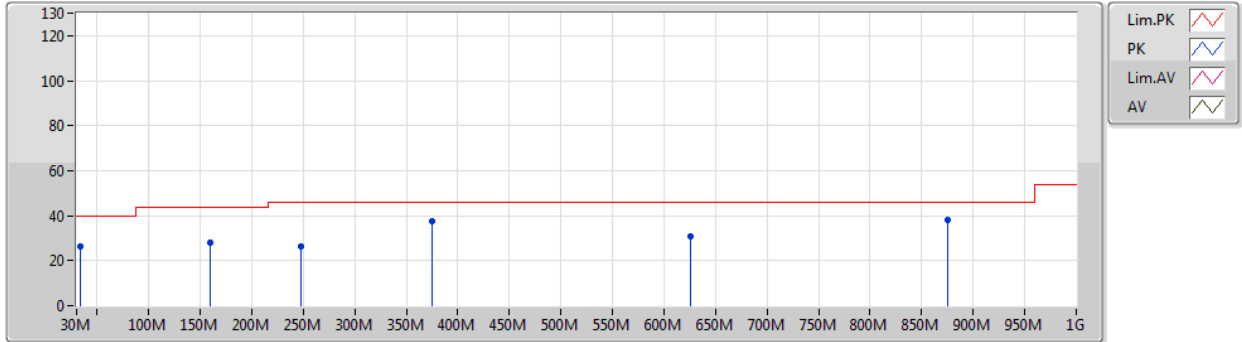
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-
2440MHz	Pass	PK	33.88M	26.21	40.00	-13.79	3	Vertical	0	1.00	-
2440MHz	Pass	PK	159.98M	28.12	43.50	-15.38	3	Vertical	0	1.00	-
2440MHz	Pass	PK	247.28M	26.31	46.00	-19.69	3	Vertical	0	1.00	-
2440MHz	Pass	PK	375.32M	37.60	46.00	-8.40	3	Vertical	0	1.00	-
2440MHz	Pass	PK	625.58M	30.74	46.00	-15.26	3	Vertical	0	1.00	-
2440MHz	Pass	PK	875.84M	38.18	46.00	-7.82	3	Vertical	0	1.00	-
2440MHz	Pass	PK	31.94M	26.39	40.00	-13.61	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	97.9M	25.93	43.50	-17.57	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	243.4M	29.03	46.00	-16.97	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	375.32M	43.03	46.00	-2.97	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	625.58M	32.92	46.00	-13.08	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	875.84M	36.61	46.00	-9.39	3	Horizontal	360	1.00	-



BT-LE(1Mbps)

05/12/2019

2440MHz_PoE



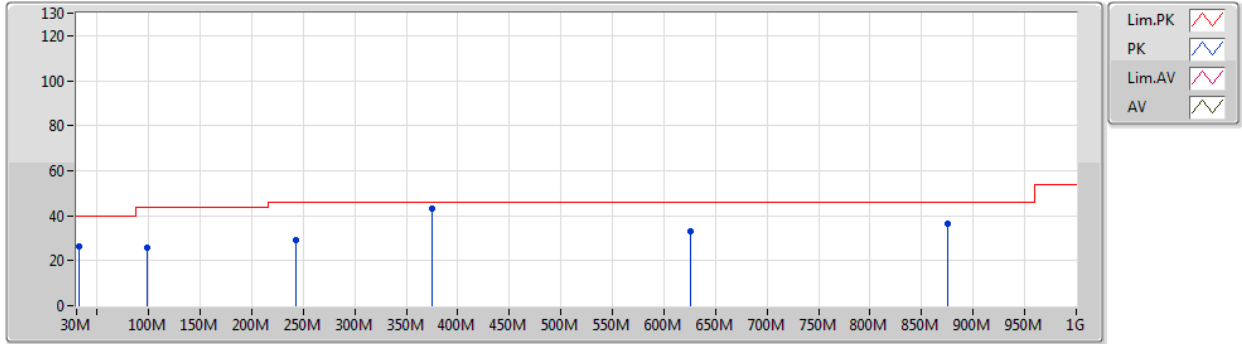
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	33.88M	26.21	40.00	-13.79	-6.72	3	Vertical	0	1.00	-	32.93	19.98	0.86	27.56
PK	159.98M	28.12	43.50	-15.38	-10.07	3	Vertical	0	1.00	-	38.19	15.12	1.95	27.14
PK	247.28M	26.31	46.00	-19.69	-7.08	3	Vertical	0	1.00	-	33.39	17.20	2.47	26.75
PK	375.32M	37.60	46.00	-8.40	-4.11	3	Vertical	0	1.00	-	41.71	19.95	3.08	27.14
PK	625.58M	30.74	46.00	-15.26	0.16	3	Vertical	0	1.00	-	30.58	24.12	4.13	28.09
PK	875.84M	38.18	46.00	-7.82	2.67	3	Vertical	0	1.00	-	35.51	25.36	4.93	27.62



BT-LE(1Mbps)

05/12/2019

2440MHz_PoE



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	31.94M	26.39	40.00	-13.61	-6.38	3	Horizontal	360	1.00	-	32.77	20.36	0.83	27.57
PK	97.9M	25.93	43.50	-17.57	-10.39	3	Horizontal	360	1.00	-	36.32	15.49	1.50	27.38
PK	243.4M	29.03	46.00	-16.97	-7.51	3	Horizontal	360	1.00	-	36.54	16.81	2.45	26.77
PK	375.32M	43.03	46.00	-2.97	-4.11	3	Horizontal	360	1.00	-	47.14	19.95	3.08	27.14
PK	625.58M	32.92	46.00	-13.08	0.16	3	Horizontal	360	1.00	-	32.76	24.12	4.13	28.09
PK	875.84M	36.61	46.00	-9.39	2.67	3	Horizontal	360	1.00	-	33.94	25.36	4.93	27.62



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	1.612G	39.01	54.00	-14.99	3	Vertical	156	1.00	-



Result

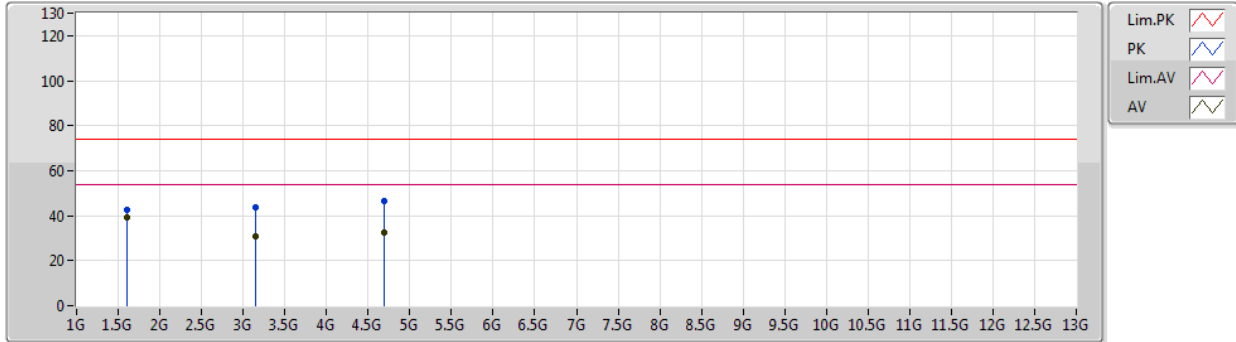
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-
2440MHz_RX	Pass	AV	1.612G	39.01	54.00	-14.99	3	Vertical	156	1.00	-
2440MHz_RX	Pass	AV	3.142G	30.94	54.00	-23.06	3	Vertical	339	1.24	-
2440MHz_RX	Pass	AV	4.69G	32.62	54.00	-21.38	3	Vertical	217	1.00	-
2440MHz_RX	Pass	PK	1.612G	42.63	74.00	-31.37	3	Vertical	156	1.00	-
2440MHz_RX	Pass	PK	3.142G	43.80	74.00	-30.20	3	Vertical	339	1.24	-
2440MHz_RX	Pass	PK	4.69G	46.29	74.00	-27.71	3	Vertical	217	1.00	-
2440MHz_RX	Pass	AV	1.36G	33.82	54.00	-20.18	3	Horizontal	104	1.00	-
2440MHz_RX	Pass	AV	2.116G	27.35	54.00	-26.65	3	Horizontal	161	1.18	-
2440MHz_RX	Pass	AV	3.106G	30.79	54.00	-23.21	3	Horizontal	82	1.24	-
2440MHz_RX	Pass	PK	1.36G	41.04	74.00	-32.96	3	Horizontal	104	1.00	-
2440MHz_RX	Pass	PK	2.116G	42.86	74.00	-31.14	3	Horizontal	161	1.18	-
2440MHz_RX	Pass	PK	3.106G	43.81	74.00	-30.19	3	Horizontal	82	1.24	-



BT-LE(1Mbps)RX

10/12/2019

2440MHz_RX



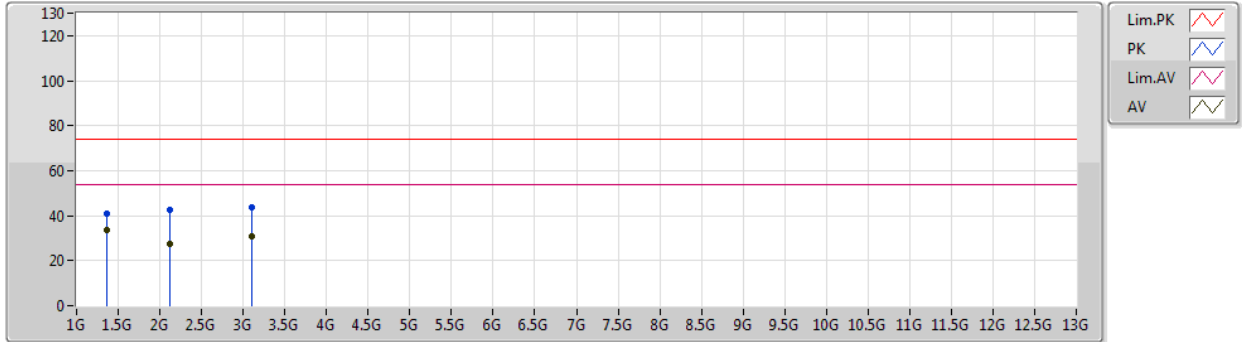
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	1.612G	39.01	54.00	-14.99	-2.69	3	Vertical	156	1.00	-	41.70	25.07	3.20	30.96
AV	3.142G	30.94	54.00	-23.06	3.47	3	Vertical	339	1.24	-	27.47	28.74	4.66	29.93
AV	4.69G	32.62	54.00	-21.38	7.30	3	Vertical	217	1.00	-	25.32	31.06	5.70	29.46
PK	1.612G	42.63	74.00	-31.37	-2.70	3	Vertical	156	1.00	-	45.33	25.09	3.19	30.98
PK	3.142G	43.80	74.00	-30.20	3.47	3	Vertical	339	1.24	-	40.33	28.74	4.66	29.93
PK	4.69G	46.29	74.00	-27.71	7.30	3	Vertical	217	1.00	-	38.99	31.06	5.70	29.46



BT-LE(1Mbps)RX

10/12/2019

2440MHz_RX



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	1.36G	33.82	54.00	-20.18	-2.87	3	Horizontal	104	1.00	-	36.69	25.88	2.93	31.68
AV	2.116G	27.35	54.00	-26.65	0.62	3	Horizontal	161	1.18	-	26.73	27.26	3.74	30.38
AV	3.106G	30.79	54.00	-23.21	3.41	3	Horizontal	82	1.24	-	27.38	28.71	4.64	29.94
PK	1.36G	41.04	74.00	-32.96	-2.98	3	Horizontal	104	1.00	-	44.02	25.86	2.91	31.75
PK	2.116G	42.86	74.00	-31.14	0.60	3	Horizontal	161	1.18	-	42.26	27.24	3.74	30.38
PK	3.106G	43.81	74.00	-30.19	3.41	3	Horizontal	82	1.24	-	40.40	28.71	4.64	29.94



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	PK	375.32M	42.77	46.00	-3.23	3	Horizontal	0	1.00	-



Result

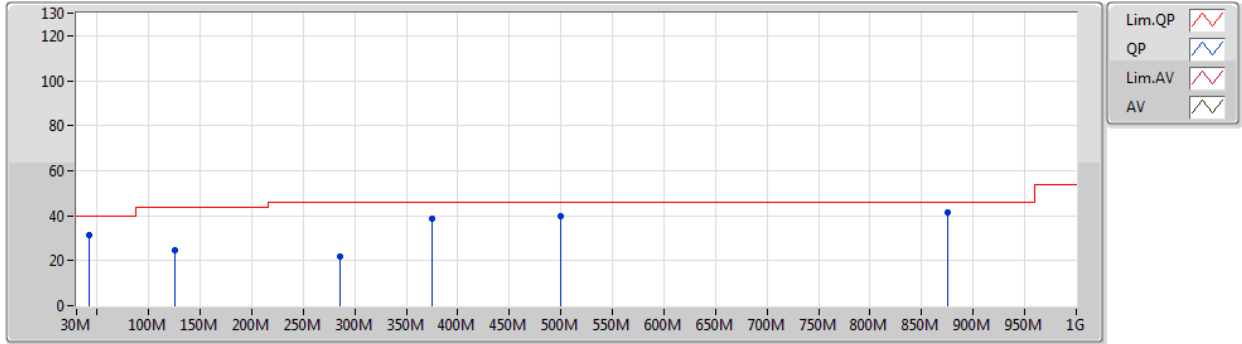
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-
2440MHz_PoE	Pass	PK	41.64M	31.55	40.00	-8.45	3	Vertical	360	1.00	-
2440MHz_PoE	Pass	PK	125.06M	24.64	43.50	-18.86	3	Vertical	360	1.00	-
2440MHz_PoE	Pass	PK	286.08M	22.09	46.00	-23.91	3	Vertical	360	1.00	-
2440MHz_PoE	Pass	PK	375.32M	38.70	46.00	-7.30	3	Vertical	360	1.00	-
2440MHz_PoE	Pass	PK	499.48M	39.75	46.00	-6.25	3	Vertical	360	1.00	-
2440MHz_PoE	Pass	PK	875.84M	41.25	46.00	-4.75	3	Vertical	360	1.00	-
2440MHz_PoE	Pass	PK	39.7M	29.77	40.00	-10.23	3	Horizontal	0	1.00	-
2440MHz_PoE	Pass	PK	125.06M	26.57	43.50	-16.93	3	Horizontal	0	1.00	-
2440MHz_PoE	Pass	PK	297.72M	21.22	46.00	-24.78	3	Horizontal	0	1.00	-
2440MHz_PoE	Pass	PK	375.32M	42.77	46.00	-3.23	3	Horizontal	0	1.00	-
2440MHz_PoE	Pass	PK	499.48M	37.38	46.00	-8.62	3	Horizontal	0	1.00	-
2440MHz_PoE	Pass	PK	734.22M	40.08	46.00	-5.92	3	Horizontal	0	1.00	-



BT-LE(1Mbps)

04/12/2019

2440MHz_PoE



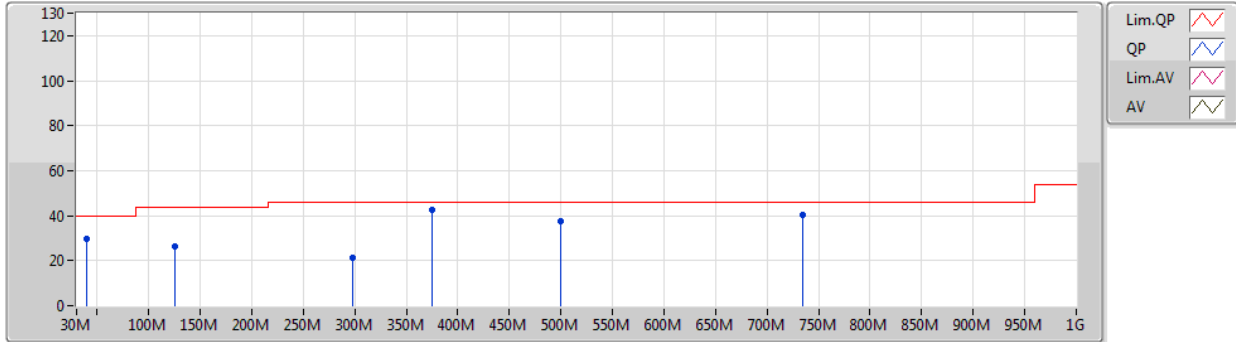
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	41.64M	31.55	40.00	-8.45	41.48	3	Vertical	360	1.00	-	16.65	0.95	27.53
PK	125.06M	24.64	43.50	-18.86	33.10	3	Vertical	360	1.00	-	17.11	1.72	27.29
PK	286.08M	22.09	46.00	-23.91	28.06	3	Vertical	360	1.00	-	18.06	2.68	26.71
PK	375.32M	38.70	46.00	-7.30	42.81	3	Vertical	360	1.00	-	19.95	3.08	27.14
PK	499.48M	39.75	46.00	-6.25	41.25	3	Vertical	360	1.00	-	22.71	3.61	27.82
PK	875.84M	41.25	46.00	-4.75	38.58	3	Vertical	360	1.00	-	25.36	4.93	27.62



BT-LE(1Mbps)

04/12/2019

2440MHz_PoE



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	39.7M	29.77	40.00	-10.23	38.94	3	Horizontal	0	1.00	-	17.44	0.93	27.54
PK	125.06M	26.57	43.50	-16.93	35.03	3	Horizontal	0	1.00	-	17.11	1.72	27.29
PK	297.72M	21.22	46.00	-24.78	26.89	3	Horizontal	0	1.00	-	18.29	2.74	26.70
PK	375.32M	42.77	46.00	-3.23	46.88	3	Horizontal	0	1.00	-	19.95	3.08	27.14
PK	499.48M	37.38	46.00	-8.62	38.88	3	Horizontal	0	1.00	-	22.71	3.61	27.82
PK	734.22M	40.08	46.00	-5.92	38.98	3	Horizontal	0	1.00	-	24.68	4.46	28.04



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	PK	2.4836G	71.89	74.00	-2.11	3	Vertical	222	1.68	-



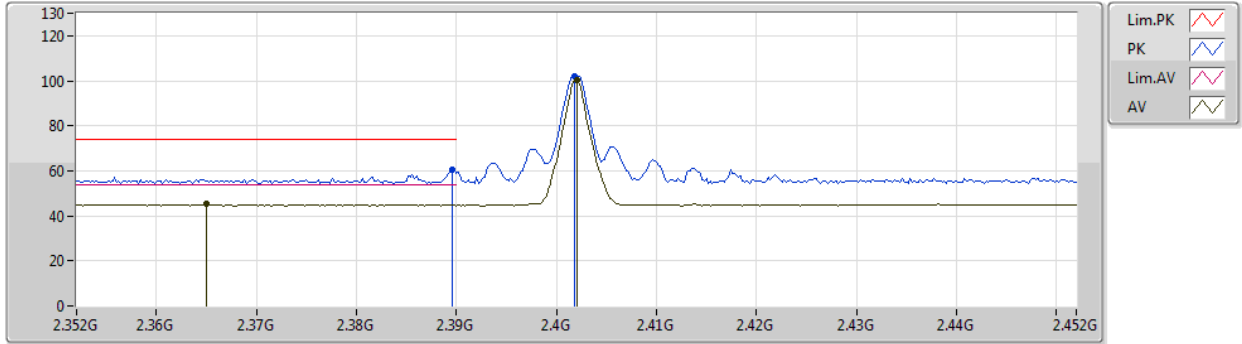
Result

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	2.365G	45.13	54.00	-8.87	3	Vertical	192	1.64	-
2402MHz	Pass	AV	2.402G	100.31	Inf	-Inf	3	Vertical	192	1.64	-
2402MHz	Pass	PK	2.3896G	60.71	74.00	-13.29	3	Vertical	192	1.64	-
2402MHz	Pass	PK	2.4018G	101.73	Inf	-Inf	3	Vertical	192	1.64	-
2402MHz	Pass	AV	4.80342G	31.97	54.00	-22.03	3	Vertical	222	1.49	-
2402MHz	Pass	PK	4.80428G	43.82	74.00	-30.18	3	Vertical	222	1.49	-
2402MHz	Pass	AV	4.80348G	33.27	54.00	-20.73	3	Horizontal	25	1.49	-
2402MHz	Pass	PK	4.80326G	44.66	74.00	-29.34	3	Horizontal	25	1.49	-
2440MHz	Pass	AV	2.372G	45.00	54.00	-9.00	3	Vertical	19	1.67	-
2440MHz	Pass	AV	2.44G	101.43	Inf	-Inf	3	Vertical	19	1.67	-
2440MHz	Pass	AV	2.4864G	45.47	54.00	-8.53	3	Vertical	19	1.67	-
2440MHz	Pass	PK	2.3576G	56.37	74.00	-17.63	3	Vertical	19	1.67	-
2440MHz	Pass	PK	2.4396G	102.85	Inf	-Inf	3	Vertical	19	1.67	-
2440MHz	Pass	PK	2.4884G	56.75	74.00	-17.25	3	Vertical	19	1.67	-
2440MHz	Pass	AV	4.88014G	31.15	54.00	-22.85	3	Vertical	320	2.69	-
2440MHz	Pass	PK	4.87755G	43.54	74.00	-30.46	3	Vertical	320	2.69	-
2440MHz	Pass	AV	4.87947G	34.52	54.00	-19.48	3	Horizontal	22	1.72	-
2440MHz	Pass	PK	4.87918G	44.99	74.00	-29.01	3	Horizontal	22	1.72	-
2480MHz	Pass	AV	2.48G	101.90	Inf	-Inf	3	Vertical	222	1.68	-
2480MHz	Pass	AV	2.4835G	48.90	54.00	-5.10	3	Vertical	222	1.68	-
2480MHz	Pass	PK	2.4796G	103.26	Inf	-Inf	3	Vertical	222	1.68	-
2480MHz	Pass	PK	2.4836G	71.89	74.00	-2.11	3	Vertical	222	1.68	-
2480MHz	Pass	AV	4.96002G	32.08	54.00	-21.92	3	Vertical	319	1.40	-
2480MHz	Pass	PK	4.96017G	44.34	74.00	-29.66	3	Vertical	319	1.40	-
2480MHz	Pass	AV	4.95952G	34.73	54.00	-19.27	3	Horizontal	18	1.80	-
2480MHz	Pass	PK	4.95934G	45.01	74.00	-28.99	3	Horizontal	18	1.80	-

BT-LE(1Mbps)

25/12/2019

2402MHz_TX

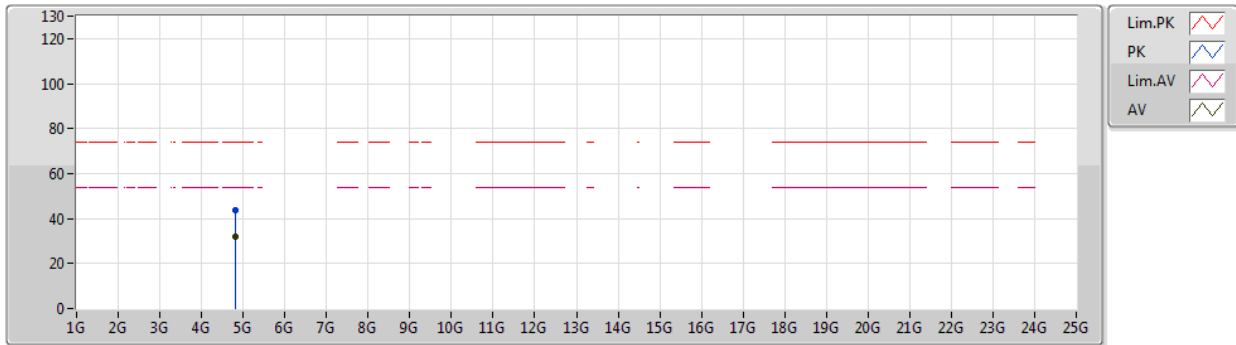


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.365G	45.13	54.00	-8.87	31.98	3	Vertical	192	1.64	-	13.15	27.29	4.69	-
AV	2.402G	100.31	Inf	-Inf	32.14	3	Vertical	192	1.64	-	68.17	27.41	4.73	-
PK	2.3896G	60.71	74.00	-13.29	32.09	3	Vertical	192	1.64	-	28.62	27.37	4.72	-
PK	2.4018G	101.73	Inf	-Inf	32.14	3	Vertical	192	1.64	-	69.59	27.41	4.73	-

BT-LE(1Mbps)

25/12/2019

2402MHz_TX



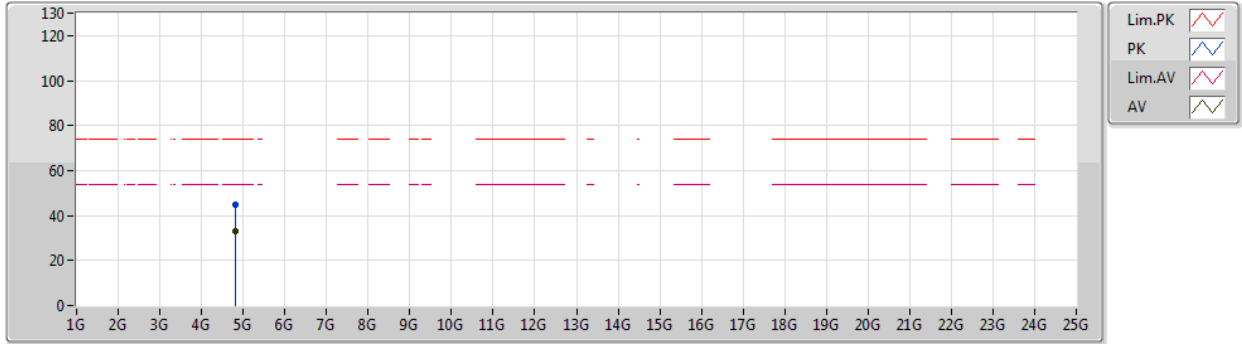
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AV	4.80342G	31.97	54.00	-22.03	4.22	3	Vertical	222	1.49	-	27.75	31.35	6.78	33.91
PK	4.80428G	43.82	74.00	-30.18	4.22	3	Vertical	222	1.49	-	39.60	31.35	6.78	33.91



BT-LE(1Mbps)

25/12/2019

2402MHz_TX

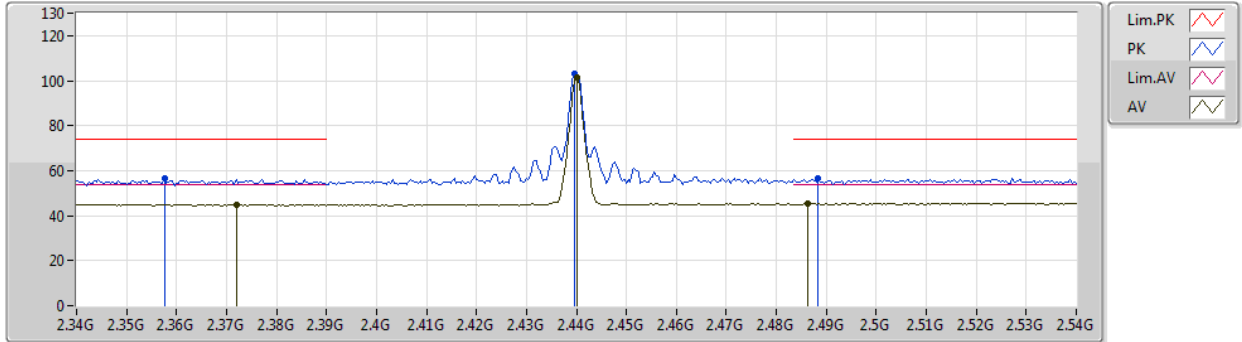


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.80348G	33.27	54.00	-20.73	4.22	3	Horizontal	25	1.49	-	29.05	31.35	6.78	33.91
PK	4.80326G	44.66	74.00	-29.34	4.22	3	Horizontal	25	1.49	-	40.44	31.35	6.78	33.91

BT-LE(1Mbps)

25/12/2019

2440MHz_TX



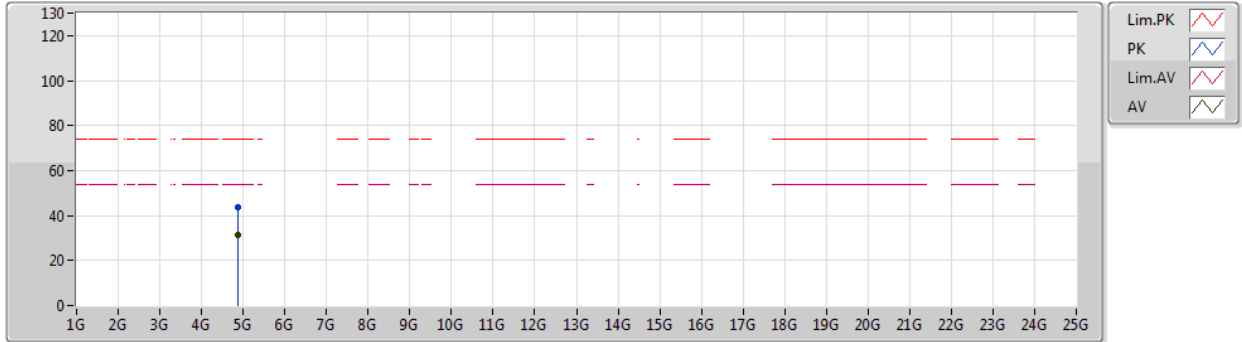
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AV	2.372G	45.00	54.00	-9.00	32.02	3	Vertical	19	1.67	-	12.98	27.32	4.70	-
AV	2.44G	101.43	Inf	-Inf	32.30	3	Vertical	19	1.67	-	69.13	27.52	4.78	-
AV	2.4864G	45.47	54.00	-8.53	32.49	3	Vertical	19	1.67	-	12.98	27.66	4.83	-
PK	2.3576G	56.37	74.00	-17.63	31.95	3	Vertical	19	1.67	-	24.42	27.27	4.68	-
PK	2.4396G	102.85	Inf	-Inf	32.30	3	Vertical	19	1.67	-	70.55	27.52	4.78	-
PK	2.4884G	56.75	74.00	-17.25	32.50	3	Vertical	19	1.67	-	24.25	27.67	4.83	-



BT-LE(1Mbps)

25/12/2019

2440MHz_TX



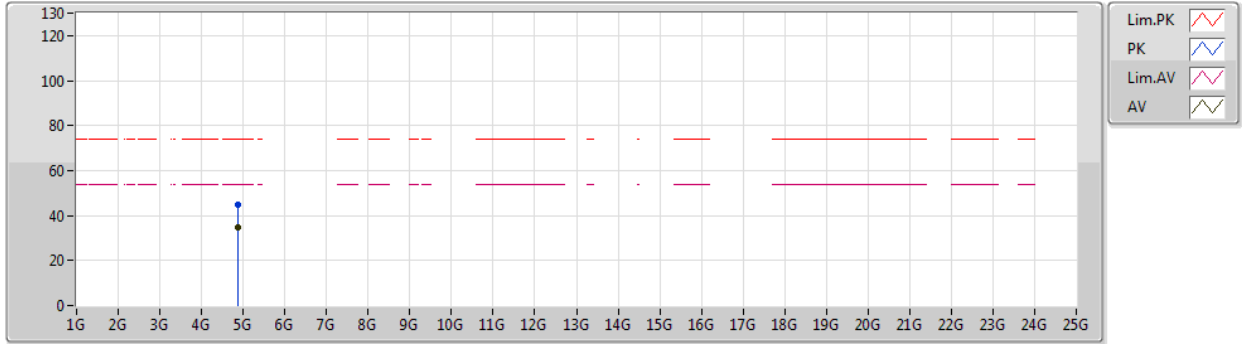
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AV	4.88014G	31.15	54.00	-22.85	4.42	3	Vertical	320	2.69	-	26.73	31.48	6.81	33.87
PK	4.87755G	43.54	74.00	-30.46	4.42	3	Vertical	320	2.69	-	39.12	31.48	6.81	33.87



BT-LE(1Mbps)

25/12/2019

2440MHz_TX

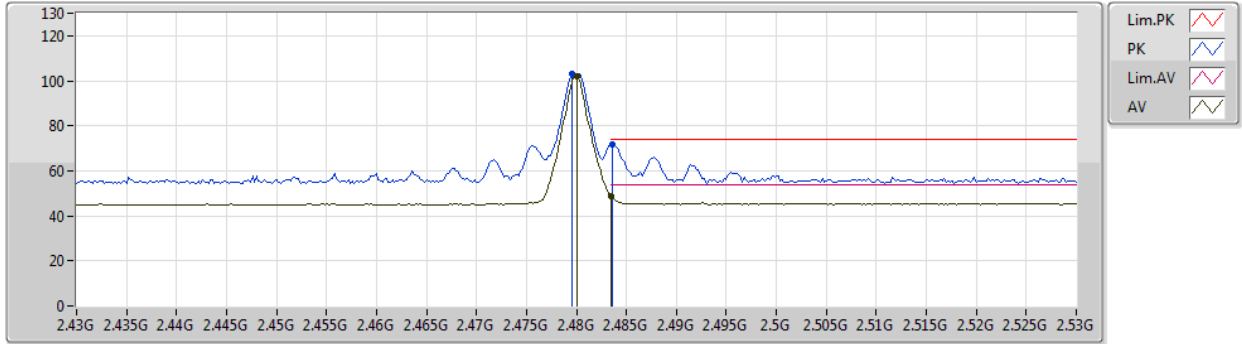


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.87947G	34.52	54.00	-19.48	4.42	3	Horizontal	22	1.72	-	30.10	31.48	6.81	33.87
PK	4.87918G	44.99	74.00	-29.01	4.42	3	Horizontal	22	1.72	-	40.57	31.48	6.81	33.87

BT-LE(1Mbps)

25/12/2019

2480MHz_TX

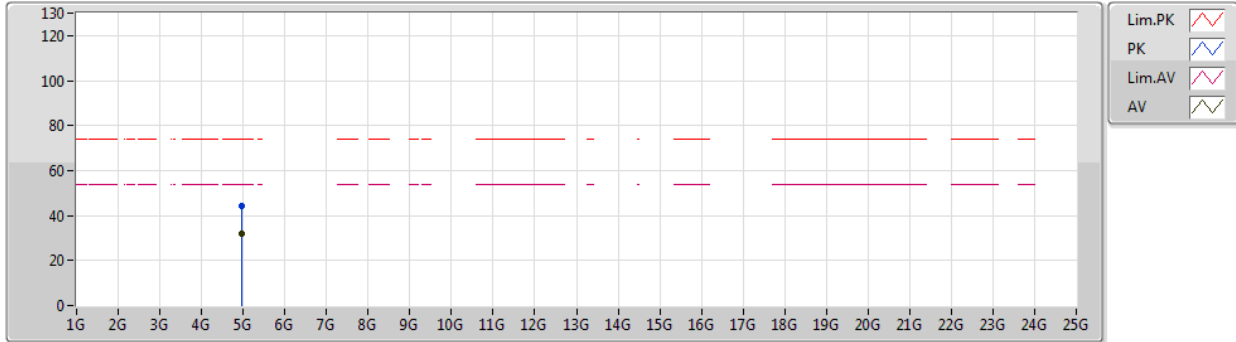


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.48G	101.90	Inf	-Inf	32.46	3	Vertical	222	1.68	-	69.44	27.64	4.82	-
AV	2.4835G	48.90	54.00	-5.10	32.48	3	Vertical	222	1.68	-	16.42	27.65	4.83	-
PK	2.4796G	103.26	Inf	-Inf	32.46	3	Vertical	222	1.68	-	70.80	27.64	4.82	-
PK	2.4836G	71.89	74.00	-2.11	32.48	3	Vertical	222	1.68	-	39.41	27.65	4.83	-

BT-LE(1Mbps)

25/12/2019

2480MHz_TX



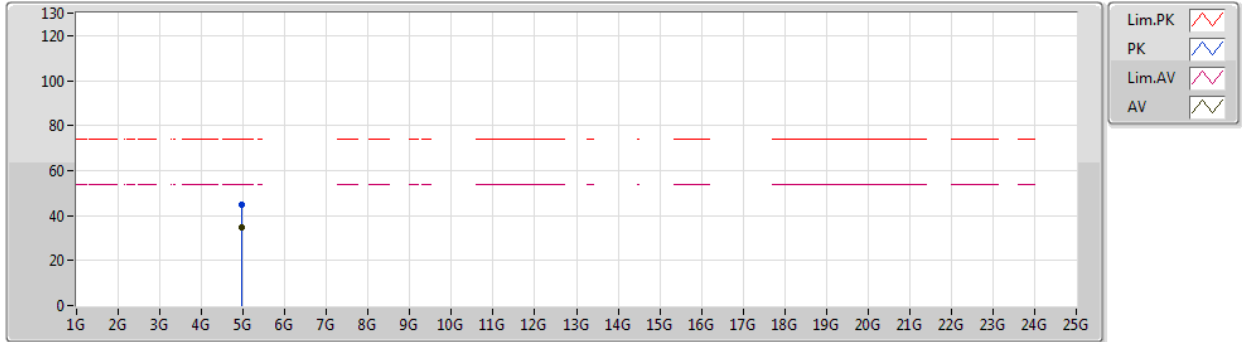
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.96002G	32.08	54.00	-21.92	4.64	3	Vertical	319	1.40	-	27.44	31.63	6.83	33.82
PK	4.96017G	44.34	74.00	-29.66	4.64	3	Vertical	319	1.40	-	39.70	31.63	6.83	33.82



BT-LE(1Mbps)

25/12/2019

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	4.95952G	34.73	54.00	-19.27	4.64	3	Horizontal	18	1.80	-	30.09	31.63	6.83	33.82
PK	4.95934G	45.01	74.00	-28.99	4.64	3	Horizontal	18	1.80	-	40.37	31.63	6.83	33.82



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	PK	375.32M	41.86	46.00	-4.14	3	Horizontal	0	1.00	-



Result

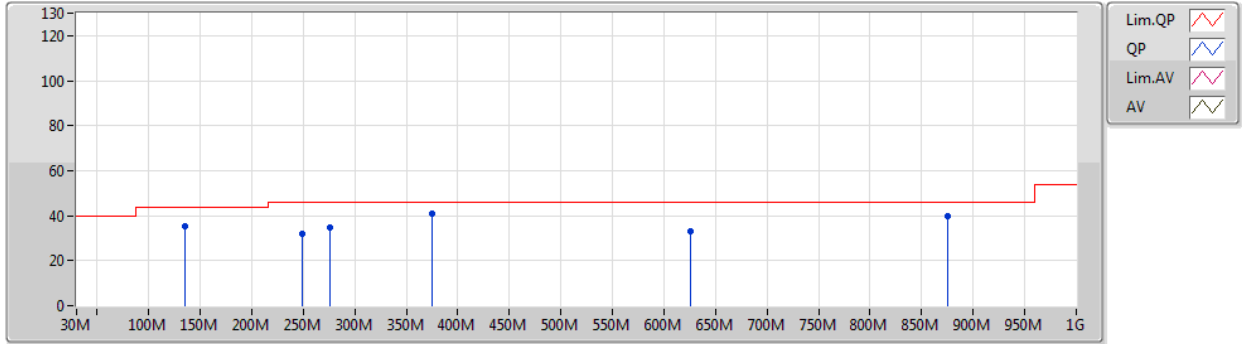
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-
2440MHz_PoE	Pass	PK	134.76M	35.36	43.50	-8.14	3	Vertical	360	1.00	-
2440MHz_PoE	Pass	PK	249.22M	32.00	46.00	-14.00	3	Vertical	360	1.00	-
2440MHz_PoE	Pass	PK	276.38M	34.72	46.00	-11.28	3	Vertical	360	1.00	-
2440MHz_PoE	Pass	PK	375.32M	41.14	46.00	-4.86	3	Vertical	360	1.00	-
2440MHz_PoE	Pass	PK	625.58M	33.34	46.00	-12.66	3	Vertical	360	1.00	-
2440MHz_PoE	Pass	PK	875.84M	39.52	46.00	-6.48	3	Vertical	360	1.00	-
2440MHz_PoE	Pass	PK	99.84M	24.04	43.50	-19.46	3	Horizontal	0	1.00	-
2440MHz_PoE	Pass	PK	136.7M	27.50	43.50	-16.00	3	Horizontal	0	1.00	-
2440MHz_PoE	Pass	PK	278.32M	30.77	46.00	-15.23	3	Horizontal	0	1.00	-
2440MHz_PoE	Pass	PK	375.32M	41.86	46.00	-4.14	3	Horizontal	0	1.00	-
2440MHz_PoE	Pass	PK	619.76M	29.33	46.00	-16.67	3	Horizontal	0	1.00	-
2440MHz_PoE	Pass	PK	726.46M	32.49	46.00	-13.51	3	Horizontal	0	1.00	-



BT-LE(1Mbps)

04/12/2019

2440MHz_PoE



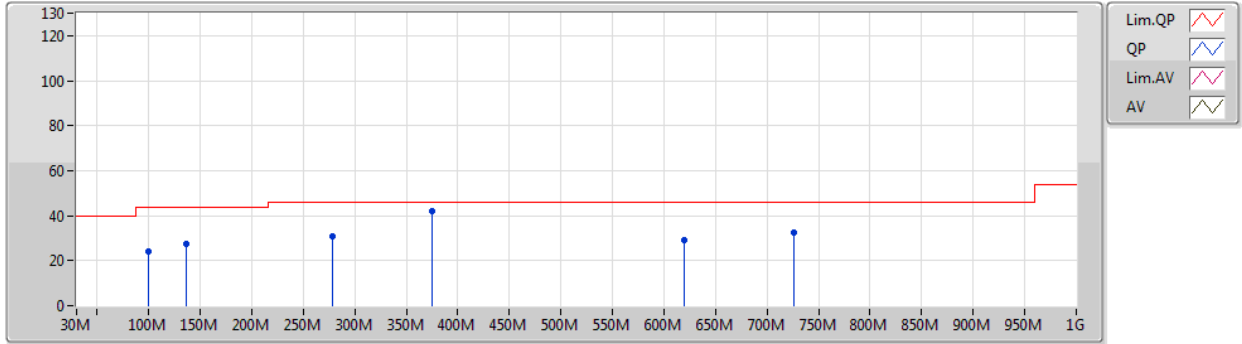
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	134.76M	35.36	43.50	-8.14	-8.91	3	Vertical	360	1.00	-	44.27	16.56	1.78	27.25
PK	249.22M	32.00	46.00	-14.00	-6.86	3	Vertical	360	1.00	-	38.86	17.40	2.48	26.74
PK	276.38M	34.72	46.00	-11.28	-6.11	3	Vertical	360	1.00	-	40.83	17.99	2.62	26.72
PK	375.32M	41.14	46.00	-4.86	-4.11	3	Vertical	360	1.00	-	45.25	19.95	3.08	27.14
PK	625.58M	33.34	46.00	-12.66	0.16	3	Vertical	360	1.00	-	33.18	24.12	4.13	28.09
PK	875.84M	39.52	46.00	-6.48	2.67	3	Vertical	360	1.00	-	36.85	25.36	4.93	27.62



BT-LE(1Mbps)

04/12/2019

2440MHz_PoE



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	99.84M	24.04	43.50	-19.46	-9.92	3	Horizontal	0	1.00	-	33.96	15.94	1.52	27.38
PK	136.7M	27.50	43.50	-16.00	-9.03	3	Horizontal	0	1.00	-	36.53	16.41	1.80	27.24
PK	278.32M	30.77	46.00	-15.23	-6.12	3	Horizontal	0	1.00	-	36.89	17.97	2.63	26.72
PK	375.32M	41.86	46.00	-4.14	-4.11	3	Horizontal	0	1.00	-	45.97	19.95	3.08	27.14
PK	619.76M	29.33	46.00	-16.67	0.09	3	Horizontal	0	1.00	-	29.24	24.05	4.12	28.08
PK	726.46M	32.49	46.00	-13.51	0.88	3	Horizontal	0	1.00	-	31.61	24.48	4.44	28.04



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	PK	2.4835G	67.80	74.00	-6.20	3	Horizontal	309	2.40	-



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	2.3866G	45.19	54.00	-8.81	3	Vertical	337	3.00	-
2402MHz	Pass	AV	2.402G	92.43	Inf	-Inf	3	Vertical	337	3.00	-
2402MHz	Pass	PK	2.3702G	56.64	74.00	-17.36	3	Vertical	337	3.00	-
2402MHz	Pass	PK	2.4018G	93.82	Inf	-Inf	3	Vertical	337	3.00	-
2402MHz	Pass	AV	2.3898G	45.30	54.00	-8.70	3	Horizontal	321	2.19	-
2402MHz	Pass	AV	2.402G	97.78	Inf	-Inf	3	Horizontal	321	2.19	-
2402MHz	Pass	PK	2.3896G	59.73	74.00	-14.27	3	Horizontal	321	2.19	-
2402MHz	Pass	PK	2.4018G	99.16	Inf	-Inf	3	Horizontal	321	2.19	-
2402MHz	Pass	AV	4.80335G	32.33	54.00	-21.67	3	Vertical	356	1.84	-
2402MHz	Pass	PK	4.80193G	44.83	74.00	-29.17	3	Vertical	356	1.84	-
2402MHz	Pass	AV	4.80352G	32.20	54.00	-21.80	3	Horizontal	6	1.50	-
2402MHz	Pass	PK	4.81204G	43.68	74.00	-30.32	3	Horizontal	6	1.50	-
2440MHz	Pass	AV	2.3408G	45.03	54.00	-8.97	3	Vertical	4	3.00	-
2440MHz	Pass	AV	2.44G	92.05	Inf	-Inf	3	Vertical	4	3.00	-
2440MHz	Pass	AV	2.4968G	45.33	54.00	-8.67	3	Vertical	4	3.00	-
2440MHz	Pass	PK	2.3688G	56.81	74.00	-17.19	3	Vertical	4	3.00	-
2440MHz	Pass	PK	2.4396G	93.42	Inf	-Inf	3	Vertical	4	3.00	-
2440MHz	Pass	PK	2.4996G	56.33	74.00	-17.67	3	Vertical	4	3.00	-
2440MHz	Pass	AV	2.3436G	45.03	54.00	-8.97	3	Horizontal	324	2.06	-
2440MHz	Pass	AV	2.44G	98.38	Inf	-Inf	3	Horizontal	324	2.06	-
2440MHz	Pass	AV	2.4984G	45.59	54.00	-8.41	3	Horizontal	324	2.06	-
2440MHz	Pass	PK	2.3556G	56.04	74.00	-17.96	3	Horizontal	324	2.06	-
2440MHz	Pass	PK	2.4396G	99.74	Inf	-Inf	3	Horizontal	324	2.06	-
2440MHz	Pass	PK	2.484G	56.50	74.00	-17.50	3	Horizontal	324	2.06	-
2440MHz	Pass	AV	4.87984G	33.09	54.00	-20.91	3	Vertical	21	0.99	-
2440MHz	Pass	PK	4.88442G	44.33	74.00	-29.67	3	Vertical	21	0.99	-
2440MHz	Pass	AV	4.87954G	31.57	54.00	-22.43	3	Horizontal	356	1.22	-
2440MHz	Pass	PK	4.8801G	44.26	74.00	-29.74	3	Horizontal	356	1.22	-
2480MHz	Pass	AV	2.48G	92.62	Inf	-Inf	3	Vertical	8	2.95	-
2480MHz	Pass	AV	2.4835G	45.65	54.00	-8.35	3	Vertical	8	2.95	-
2480MHz	Pass	PK	2.4802G	93.99	Inf	-Inf	3	Vertical	8	2.95	-
2480MHz	Pass	PK	2.4836G	63.65	74.00	-10.35	3	Vertical	8	2.95	-
2480MHz	Pass	AV	2.48G	97.49	Inf	-Inf	3	Horizontal	309	2.40	-
2480MHz	Pass	AV	2.4835G	46.56	54.00	-7.44	3	Horizontal	309	2.40	-
2480MHz	Pass	PK	2.4798G	98.87	Inf	-Inf	3	Horizontal	309	2.40	-
2480MHz	Pass	PK	2.4835G	67.80	74.00	-6.20	3	Horizontal	309	2.40	-
2480MHz	Pass	AV	4.95964G	33.29	54.00	-20.71	3	Vertical	0	1.30	-
2480MHz	Pass	PK	4.95862G	43.95	74.00	-30.05	3	Vertical	0	1.30	-
2480MHz	Pass	AV	4.96672G	31.23	54.00	-22.77	3	Horizontal	130	1.50	-
2480MHz	Pass	PK	4.94542G	44.46	74.00	-29.54	3	Horizontal	130	1.50	-

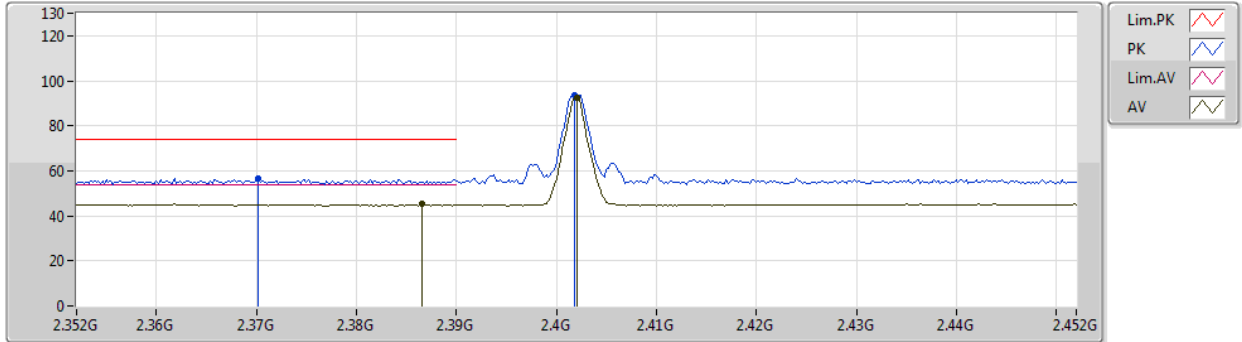
Remark :

Level (dBuV/m) = Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

BT-LE(1Mbps)

25/12/2019

2402MHz_TX



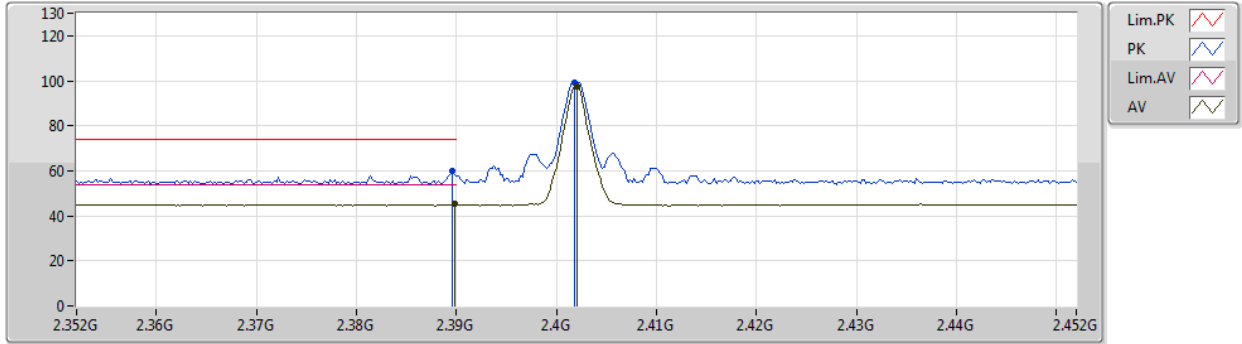
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3866G	45.19	54.00	-8.81	32.07	3	Vertical	337	3.00	-	13.12	27.36	4.71	-
AV	2.402G	92.43	Inf	-Inf	32.14	3	Vertical	337	3.00	-	60.29	27.41	4.73	-
PK	2.3702G	56.64	74.00	-17.36	32.01	3	Vertical	337	3.00	-	24.63	27.31	4.70	-
PK	2.4018G	93.82	Inf	-Inf	32.14	3	Vertical	337	3.00	-	61.68	27.41	4.73	-



BT-LE(1Mbps)

25/12/2019

2402MHz_TX

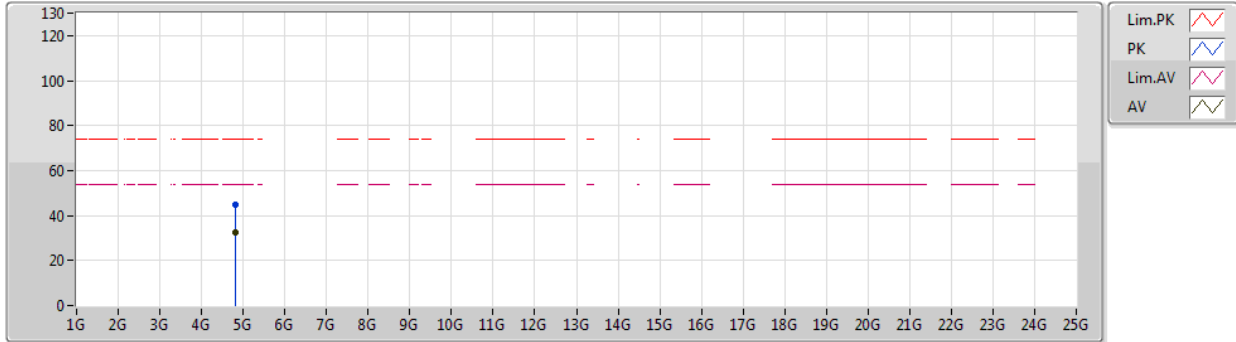


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3898G	45.30	54.00	-8.70	32.09	3	Horizontal	321	2.19	-	13.21	27.37	4.72	-
AV	2.402G	97.78	Inf	-Inf	32.14	3	Horizontal	321	2.19	-	65.64	27.41	4.73	-
PK	2.3896G	59.73	74.00	-14.27	32.09	3	Horizontal	321	2.19	-	27.64	27.37	4.72	-
PK	2.4018G	99.16	Inf	-Inf	32.14	3	Horizontal	321	2.19	-	67.02	27.41	4.73	-

BT-LE(1Mbps)

25/12/2019

2402MHz_TX



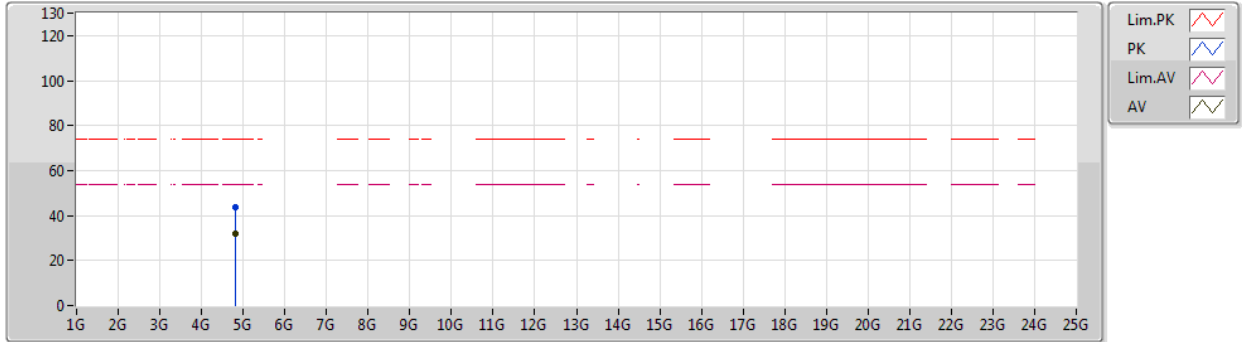
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AV	4.80335G	32.33	54.00	-21.67	4.22	3	Vertical	356	1.84	-	28.11	31.35	6.78	33.91
PK	4.80193G	44.83	74.00	-29.17	4.21	3	Vertical	356	1.84	-	40.62	31.34	6.78	33.91



BT-LE(1Mbps)

25/12/2019

2402MHz_TX

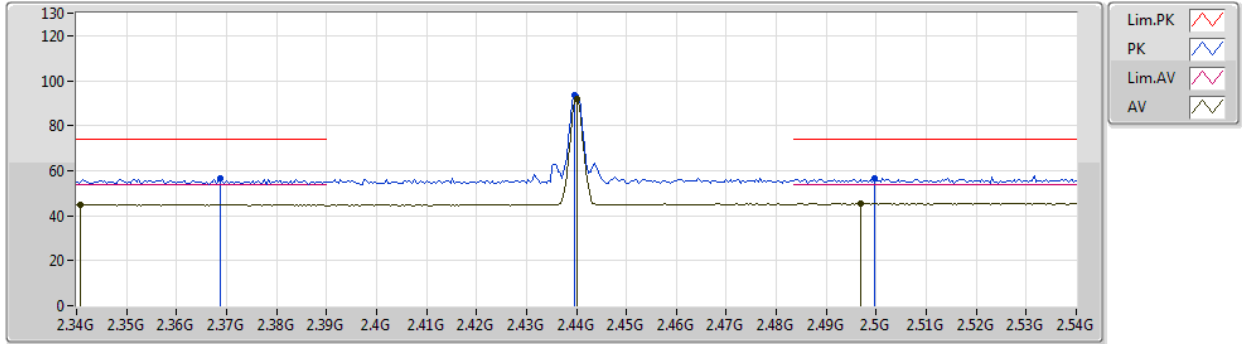


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.80352G	32.20	54.00	-21.80	4.22	3	Horizontal	6	1.50	-	27.98	31.35	6.78	33.91
PK	4.81204G	43.68	74.00	-30.32	4.25	3	Horizontal	6	1.50	-	39.43	31.36	6.79	33.90

BT-LE(1Mbps)

25/12/2019

2440MHz_TX

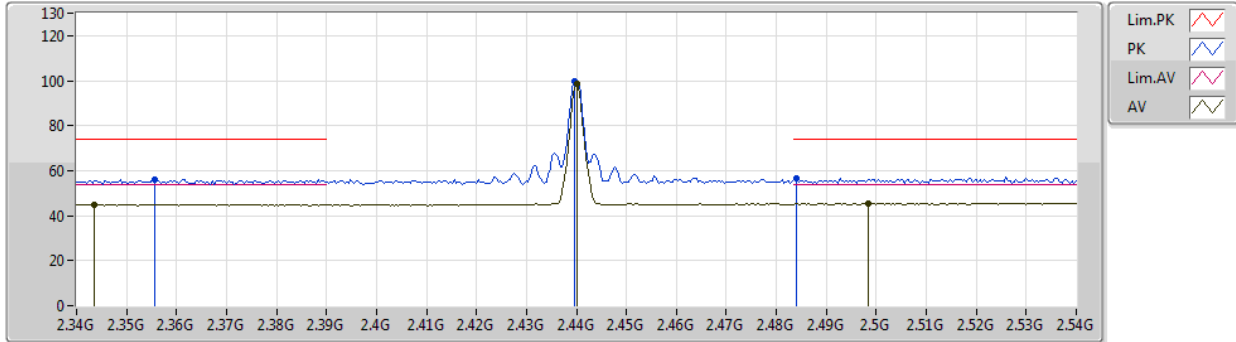


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3408G	45.03	54.00	-8.97	31.88	3	Vertical	4	3.00	-	13.15	27.22	4.66	-
AV	2.44G	92.05	Inf	-Inf	32.30	3	Vertical	4	3.00	-	59.75	27.52	4.78	-
AV	2.4968G	45.33	54.00	-8.67	32.53	3	Vertical	4	3.00	-	12.80	27.69	4.84	-
PK	2.3688G	56.81	74.00	-17.19	32.00	3	Vertical	4	3.00	-	24.81	27.31	4.69	-
PK	2.4396G	93.42	Inf	-Inf	32.30	3	Vertical	4	3.00	-	61.12	27.52	4.78	-
PK	2.4996G	56.33	74.00	-17.67	32.55	3	Vertical	4	3.00	-	23.78	27.70	4.85	-

BT-LE(1Mbps)

25/12/2019

2440MHz_TX



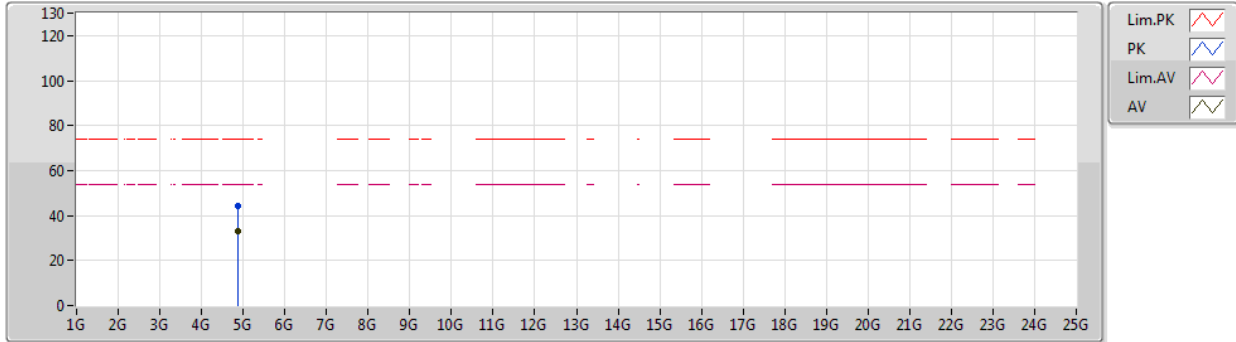
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3436G	45.03	54.00	-8.97	31.89	3	Horizontal	324	2.06	-	13.14	27.23	4.66	-
AV	2.44G	98.38	Inf	-Inf	32.30	3	Horizontal	324	2.06	-	66.08	27.52	4.78	-
AV	2.4984G	45.59	54.00	-8.41	32.55	3	Horizontal	324	2.06	-	13.04	27.70	4.85	-
PK	2.3556G	56.04	74.00	-17.96	31.95	3	Horizontal	324	2.06	-	24.09	27.27	4.68	-
PK	2.4396G	99.74	Inf	-Inf	32.30	3	Horizontal	324	2.06	-	67.44	27.52	4.78	-
PK	2.484G	56.50	74.00	-17.50	32.48	3	Horizontal	324	2.06	-	24.02	27.65	4.83	-



BT-LE(1Mbps)

25/12/2019

2440MHz_TX



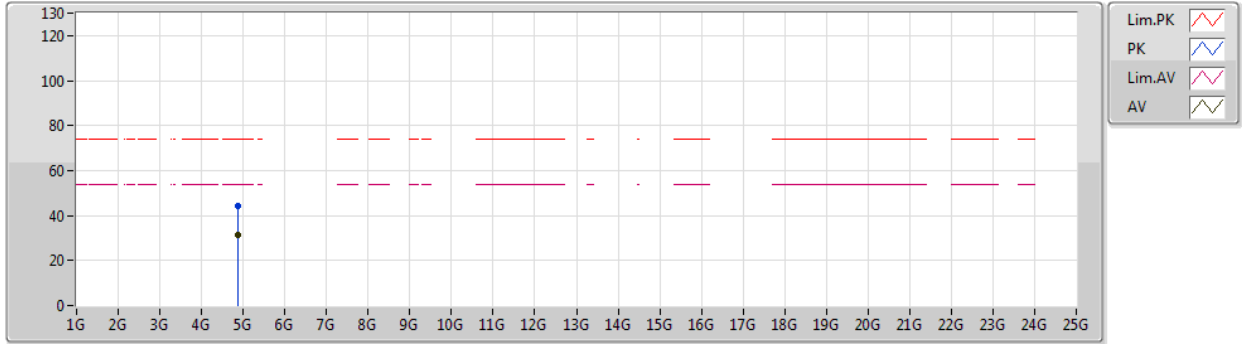
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.87984G	33.09	54.00	-20.91	4.42	3	Vertical	21	0.99	-	28.67	31.48	6.81	33.87
PK	4.88442G	44.33	74.00	-29.67	4.43	3	Vertical	21	0.99	-	39.90	31.49	6.81	33.87



BT-LE(1Mbps)

25/12/2019

2440MHz_TX

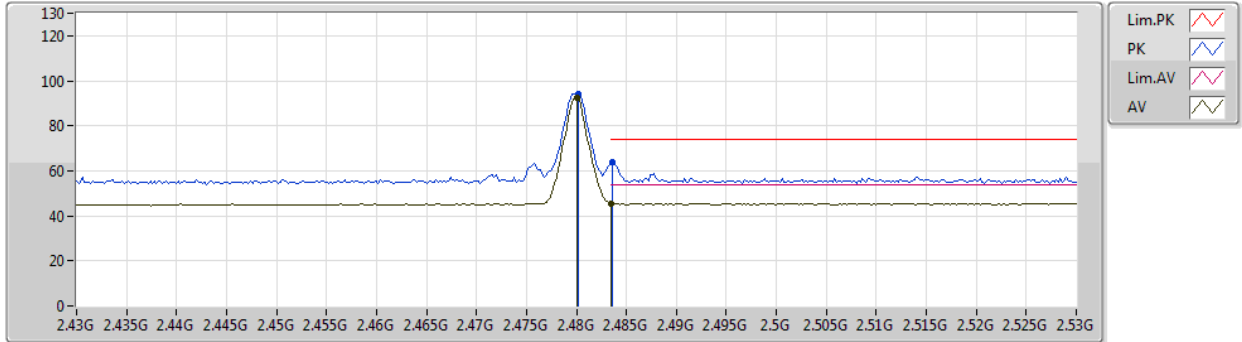


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.87954G	31.57	54.00	-22.43	4.42	3	Horizontal	356	1.22	-	27.15	31.48	6.81	33.87
PK	4.8801G	44.26	74.00	-29.74	4.42	3	Horizontal	356	1.22	-	39.84	31.48	6.81	33.87

BT-LE(1Mbps)

25/12/2019

2480MHz_TX

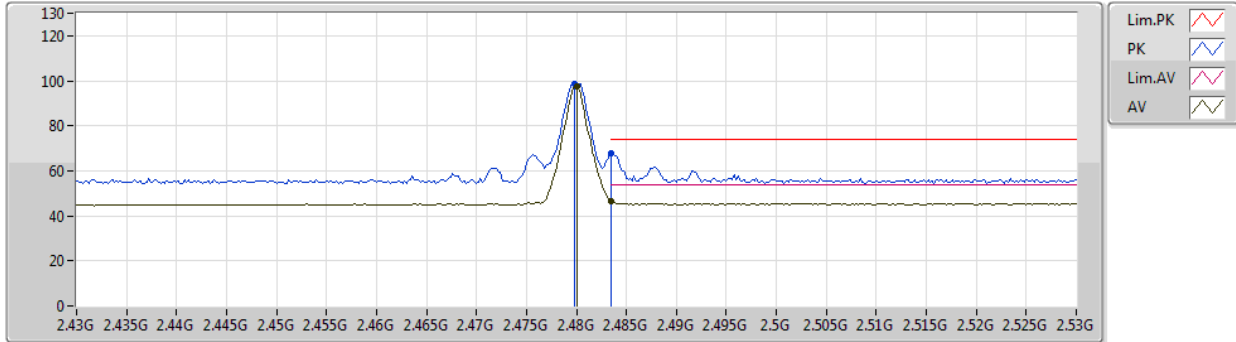


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.48G	92.62	Inf	-Inf	32.46	3	Vertical	8	2.95	-	60.16	27.64	4.82	-
AV	2.4835G	45.65	54.00	-8.35	32.48	3	Vertical	8	2.95	-	13.17	27.65	4.83	-
PK	2.4802G	93.99	Inf	-Inf	32.46	3	Vertical	8	2.95	-	61.53	27.64	4.82	-
PK	2.4836G	63.65	74.00	-10.35	32.48	3	Vertical	8	2.95	-	31.17	27.65	4.83	-

BT-LE(1Mbps)

25/12/2019

2480MHz_TX



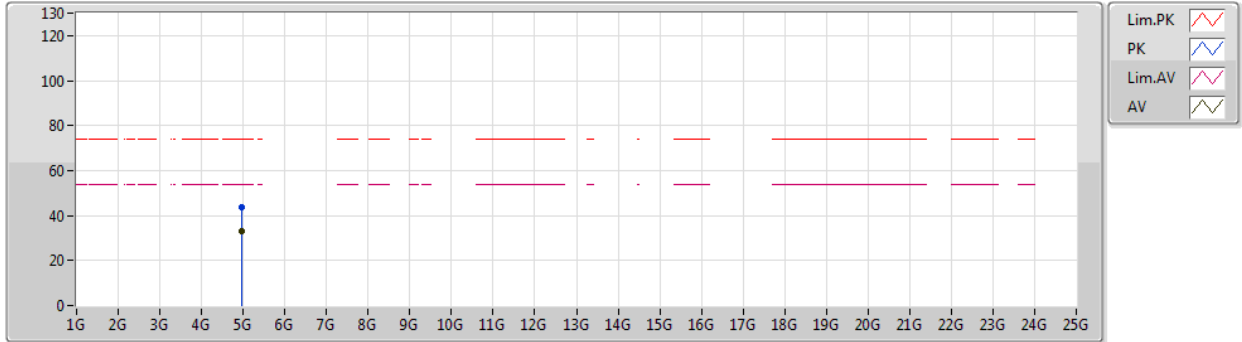
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.48G	97.49	Inf	-Inf	32.46	3	Horizontal	309	2.40	-	65.03	27.64	4.82	-
AV	2.4835G	46.56	54.00	-7.44	32.48	3	Horizontal	309	2.40	-	14.08	27.65	4.83	-
PK	2.4798G	98.87	Inf	-Inf	32.46	3	Horizontal	309	2.40	-	66.41	27.64	4.82	-
PK	2.4835G	67.80	74.00	-6.20	32.48	3	Horizontal	309	2.40	-	35.32	27.65	4.83	-



BT-LE(1Mbps)

25/12/2019

2480MHz_TX



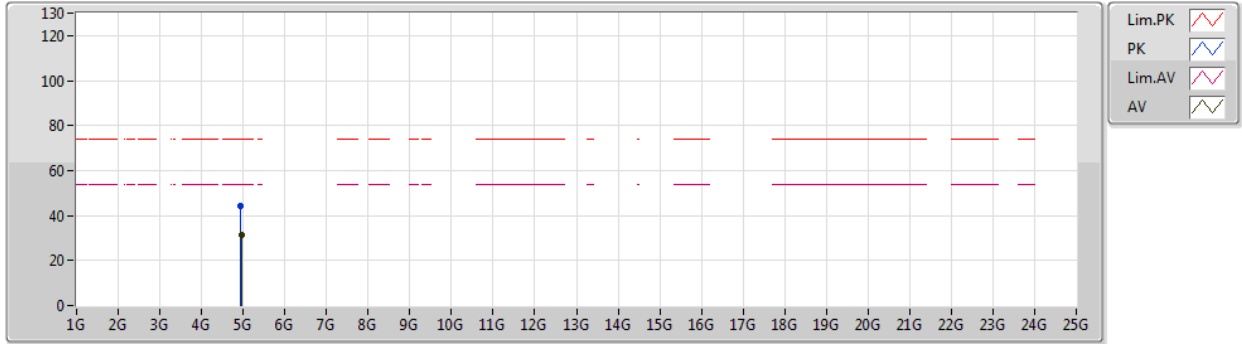
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.95964G	33.29	54.00	-20.71	4.64	3	Vertical	0	1.30	-	28.65	31.63	6.83	33.82
PK	4.95862G	43.95	74.00	-30.05	4.64	3	Vertical	0	1.30	-	39.31	31.63	6.83	33.82



BT-LE(1Mbps)

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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	4.96672G	31.23	54.00	-22.77	4.66	3	Horizontal	130	1.50	-	26.57	31.64	6.84	33.82
PK	4.94542G	44.46	74.00	-29.54	4.60	3	Horizontal	130	1.50	-	39.86	31.60	6.83	33.83