



FCC Test Report

FCC ID : TOR-C230
Equipment : 802.11 a/n/ac/ax + b/g/n/ax Access Point
Brand Name : Arista
Model Name : C-230, C-230E, O-235, O-235E
Applicant : Arista Networks, Inc.
5453 Great America Parkway, Santa Clara, CA 95054
Manufacturer : Arista Networks, Inc.
5453 Great America Parkway, Santa Clara, CA 95054
Standard : 47 CFR FCC Part 15.247

The product was received on Feb. 26, 2020, and testing was started from Mar. 05, 2020 and completed on May 27, 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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PHOTOGRAPHS OF EUT V01



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: Ben Tseng

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.
- ◆ BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

(C-230, O-235) Internal Antenna

Ant.	Brand	Model Number	Antenna Type	Connector	Antenna Gain (dBi)			Cable Loss	Remark	
					2.4GHz	5GHz	BLE		2.4GHz	5GHz
1	Senao	5718A0507300	PIFA	I-Pex	3.80	5.98	-	N/A	Radio 2	Radio 1
2	Senao	5718A0508300	PIFA	I-Pex	5.23	5.54	-		Radio 2	Radio 1
3	Senao	5718A0509300	PIFA	I-Pex	4.44	5.97	-		Radio 3	
4	Senao	5718A0510300	PIFA	I-Pex	4.41	5.78	-		Radio 3	
5	Senao	5718A0511300	PIFA	I-Pex	-	5.54	-		-	Radio 1
6	Senao	5718A0512300	PIFA	I-Pex	-	5.53	-		-	Radio 1
7	Senao	5718A0513300	PIFA	I-Pex	-	-	3.87		-	-

(C-230E) External Antenna

Ant.	Brand	Model Number	Antenna Type	Connector	Antenna Gain (dBi)			Cable Loss		Remark	
					2.4GHz	5GHz	BLE	2.4GHz	5GHz	2.4GHz	5GHz
1	Master Wave	98619PRSX020	Dipole	Reverse SMA	2.70	5.23	-	0.46	0.88	Radio 2	Radio 1
2	Master Wave	98619PRSX020	Dipole	Reverse SMA	2.70	5.23	-	0.30	0.57	Radio 2	Radio 1
3	Master Wave	98619PRSX020	Dipole	Reverse SMA	2.70	5.23	-	0.33	0.60	Radio 3	
4	Master Wave	98619PRSX020	Dipole	Reverse SMA	2.70	5.23	-	0.57	0.95	Radio 3	
5	Master Wave	98619URSX002	Dipole	Reverse SMA	-	5.32	-	-	1.13	-	Radio 1
6	Master Wave	98619URSX002	Dipole	Reverse SMA	-	5.32	-	-	0.69	-	Radio 1
7	Senao	5718A0513300	PIFA	I-Pex	-	-	3.87	N/A		-	-

(O-235E) External Antenna

Ant.	Brand	Model Number	Antenna Type	Connector	Antenna Gain (dBi)			Cable Loss		Remark	
					2.4GHz	5GHz	BLE	2.4GHz	5GHz	2.4GHz	5GHz
1	Senao	5718A0394300	Dipole	N-type	5.5	7.2	-	0.5	1.13	Radio 2	Radio 1
2	Senao	5718A0394300	Dipole	N-type	5.5	7.2	-	0.6	1.11	Radio 2	Radio 1
3	Senao	5718A0394300	Dipole	N-type	5.5	7.2	-	0.61	1.28	Radio 3	
4	Senao	5718A0394300	Dipole	N-type	5.5	7.2	-	0.67	1.21	Radio 3	
5	Senao	5718A0137300	Dipole	N-type	-	6.3	-	-	1.7	-	Radio 1
6	Senao	5718A0137300	Dipole	N-type	-	6.3	-	-	1.11	-	Radio 1
7	Senao	5718A0513300	PIFA	I-Pex	-	-	3.87	N/A		-	-

For 2.4GHz function:

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 5GHz function:

For IEEE 802.11 a/n/ac/ax mode (2TX/2RX)
 Port 1 and port 2 could transmit/receive simultaneously.
 For IEEE 802.11 a/n/ac/ax mode (4TX/4RX)
 Port 1, port 2, port 3 and port 4 could transmit/receive simultaneously.

1.1.3 EUT Information

Operational Condition	
EUT Power Type	AC Adapter/PoE for C-230, C-230E PoE for O-235, O-235E
EUT Function	<input checked="" type="checkbox"/> Point-to-multipoint <input type="checkbox"/> Point-to-point
Type of EUT	
<input checked="" type="checkbox"/> Stand-alone	
<input type="checkbox"/> Combined (EUT where the radio part is fully integrated within another device)	
	Combined Equipment - Brand Name / Model No.: ...
<input type="checkbox"/> Plug-in radio (EUT intended for a variety of host systems)	
	Host System - Brand Name / Model No.: ...
<input type="checkbox"/> Other:	

1.1.4 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
BT-LE(1Mbps)	0.616	2.1	405u	3k

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

1.1.5 Table for Multiple Listing

Sample Number	Model Name	Indoor/Outdoor	Description
1	C-230	Indoor	The model C-230 and O-235 indicate that it comes with internal antennas and the model C-230E and O-235E indicates that the access point comes with external antenna connectors.
2	C-230E		
3	O-235	Outdoor	
4	O-235E		

1.2 Testing Applied Standards

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

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

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

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

1.3 Testing Location Information

Testing Location		
<input checked="" type="checkbox"/>	HWA YA	ADD : No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL : 886-3-327-3456 FAX : 886-3-327-0973
Test site Designation No. TW1190 with FCC.		
<input type="checkbox"/>	JHUBEI	ADD : No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County, Taiwan (R.O.C.) TEL : 886-3-656-9065 FAX : 886-3-656-9085
Test site Designation No. TW0006 with FCC.		
<input type="checkbox"/>	Wen Shan	ADD : No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL : 886-3-318-0787 FAX : 886-3-318-0287
Test site Designation No. TW1097 with FCC.		

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
AC Conduction	CO04-HY	Edward Wang	20.1~21.9°C / 68~71%	18/Mar/2020~06/Apr/2020
RF Conducted	TH06-HY	Gary Wang	20.1~26.9°C / 50~60%	08/Mar/2020~08/May/2020
Radiated	03CH02-HY	Daniel Lin	23.5~26.8°C / 43~50%	05/Mar/2020~27/May/2020



1.4 Measurement Uncertainty

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

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	0.9 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	2.4 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.0 dB	Confidence levels of 95%
Temperature	0.41 °C	Confidence levels of 95%
Humidity	3.4 %	Confidence levels of 95%



2 Test Configuration of EUT

2.1 Test Condition

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

2.2 Test Channel Mode




Test Software	QSPR
---------------	------

Mode	Power Setting
BT-LE(1Mbps)	-
2402MHz	8
2440MHz	8
2480MHz	8

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	Sample 1 ; Adapter Mode
2	Sample 3 ; PoE Mode

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	Sample 1 ; Adapter Mode		
2	Sample 3 ; PoE Mode		
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	2.4G(Radio 2) + 2.4G(Radio 3) + 5G(Radio 1) + Bluetooth
2	2.4G(Radio 2) + 5G(Radio 1) + 5G(Radio 3) + Bluetooth
Refer to Sporton Test Report No.: FA9D1735 for Co-location RF Exposure Evaluation.	

2.4 Accessories

Accessories				
Bracket ceiling mount (C-230,C-230E)	Brand Name	CEN JEY	Model Name	6301A4653010
Bracket wall mount (O-235,O-235E)	Brand Name	Xiertek Industrial.Inc,	Model Name	6301A4093000

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

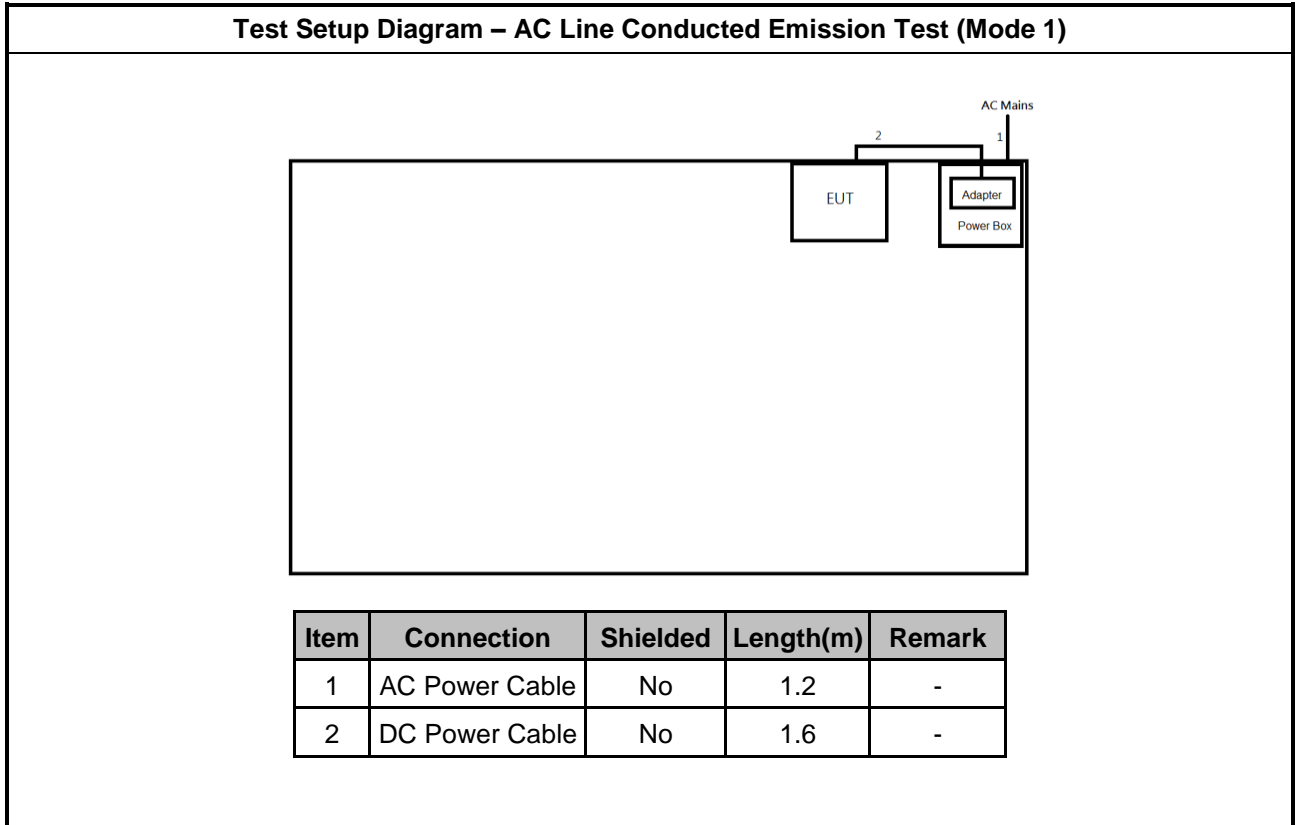
2.5 Support Equipment

Support Equipment – AC Conduction and Radiated					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	AC Power Cable	MAGIC	PS-018	-	Note 1
2	PoE	EnGenius	EPA5006GP	-	
3	USB 2.0 Flash	Transcend	D24425 2101	-	-
4	RJ-45 Cable	Power Sync	CAT-6E-10	-	-
5	Ground Cable	SPORTON	-	-	-
6	AC Adapter	Powertron Electronics Corp.	PA1045-12HIB330	-	Note 1

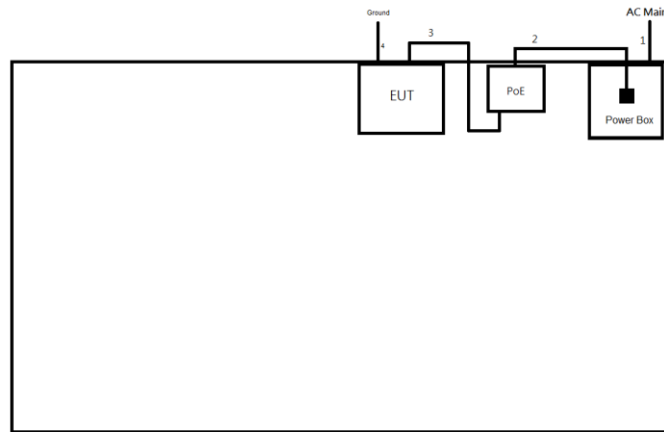
Note 1: Support equipment was provided by customer.

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

2.6 Test Setup Diagram

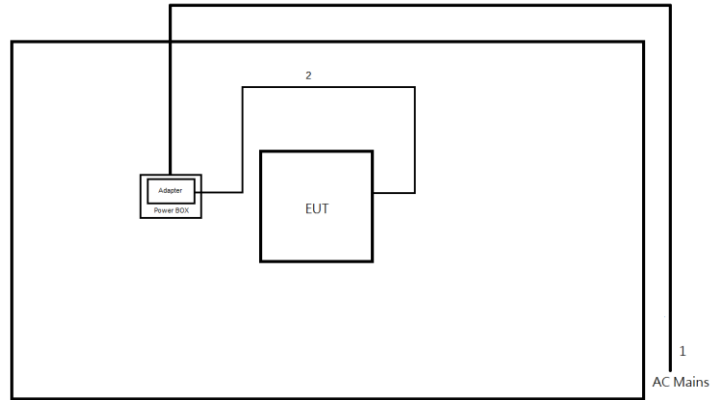


Test Setup Diagram – AC Line Conducted Emission Test (Mode 2)



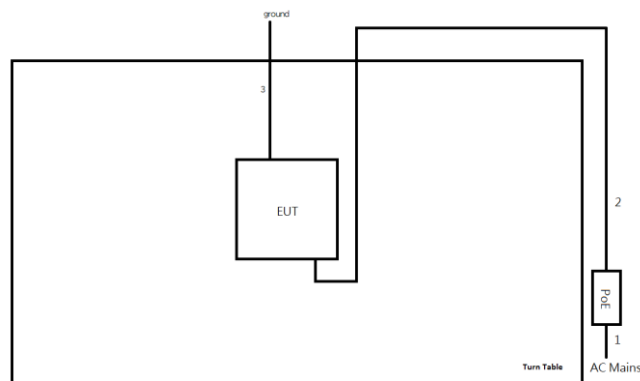
Item	Connection	Shielded	Length(m)	Remark
1	AC Power cable	No	1.2	-
2	AC Power cable	No	0.5	-
3	RJ-45 Cable	No	10	-
4	Ground Cable	No	2.0	-

Test Setup Diagram - Radiated Test (Mode 1)



Item	Connection	Shielded	Length(m)	Remark
1	AC Power Cable	No	1.8	-
2	DC Power Cable	No	1.6	-

Test Setup Diagram - Radiated Test (Mode 2)



Item	Connection	Shielded	Length(m)	Remark
1	AC Power Cable	No	0.5	-
2	RJ45 Cable	No	10.0	-
3	Ground Cable	No	2.0	-

3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

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

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

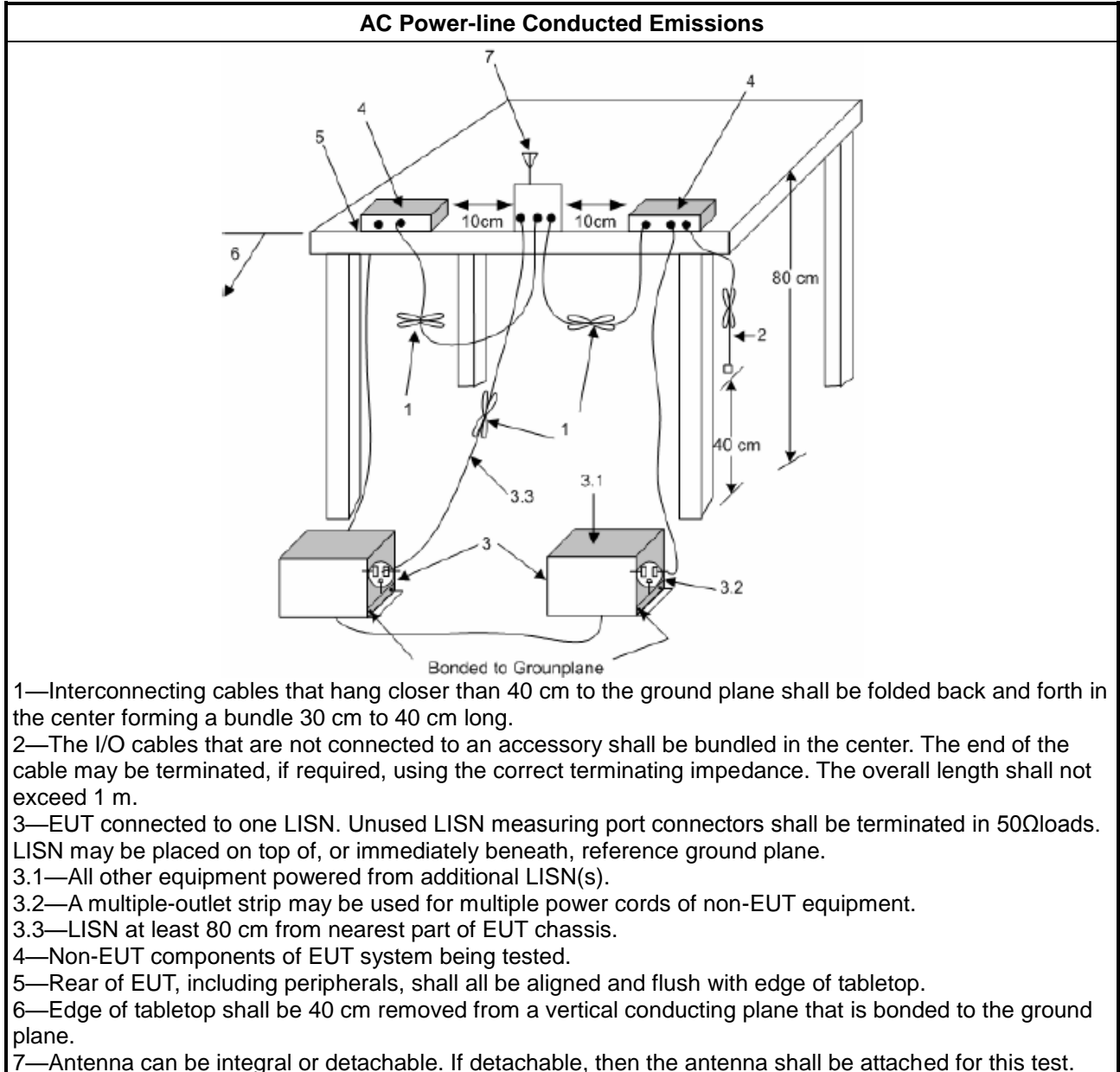
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

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

3.1.4 Test Setup



3.1.5 Test Result of AC Power-line Conducted Emissions

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.

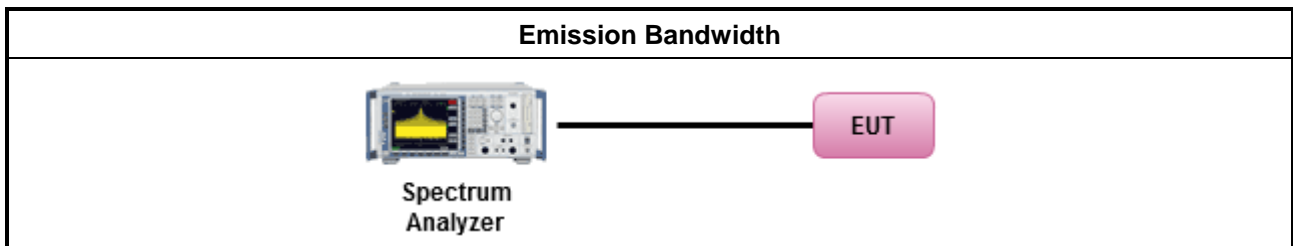
3.2.2 Measuring Instruments

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 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.	

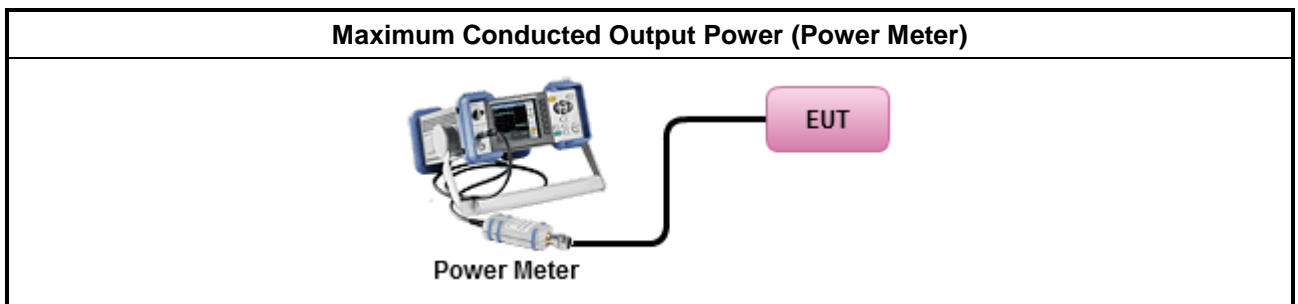
3.3.2 Measuring Instruments

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

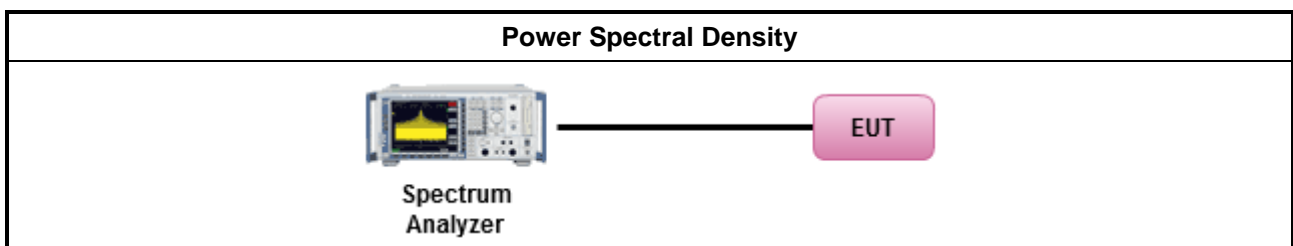
3.4.2 Measuring Instruments

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) Max. PSD.
<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.

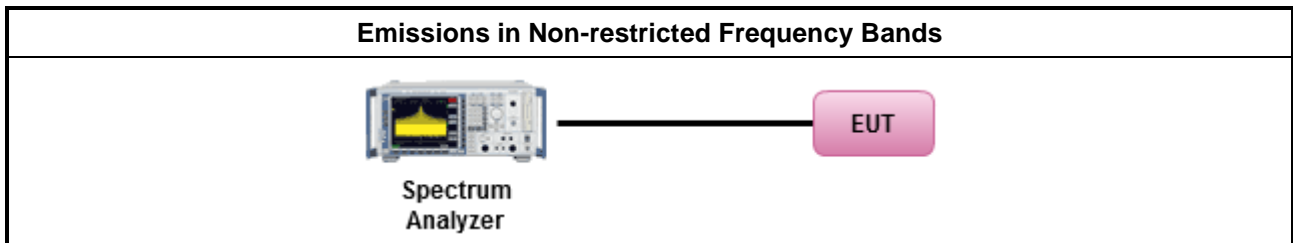
3.5.2 Measuring Instruments

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.

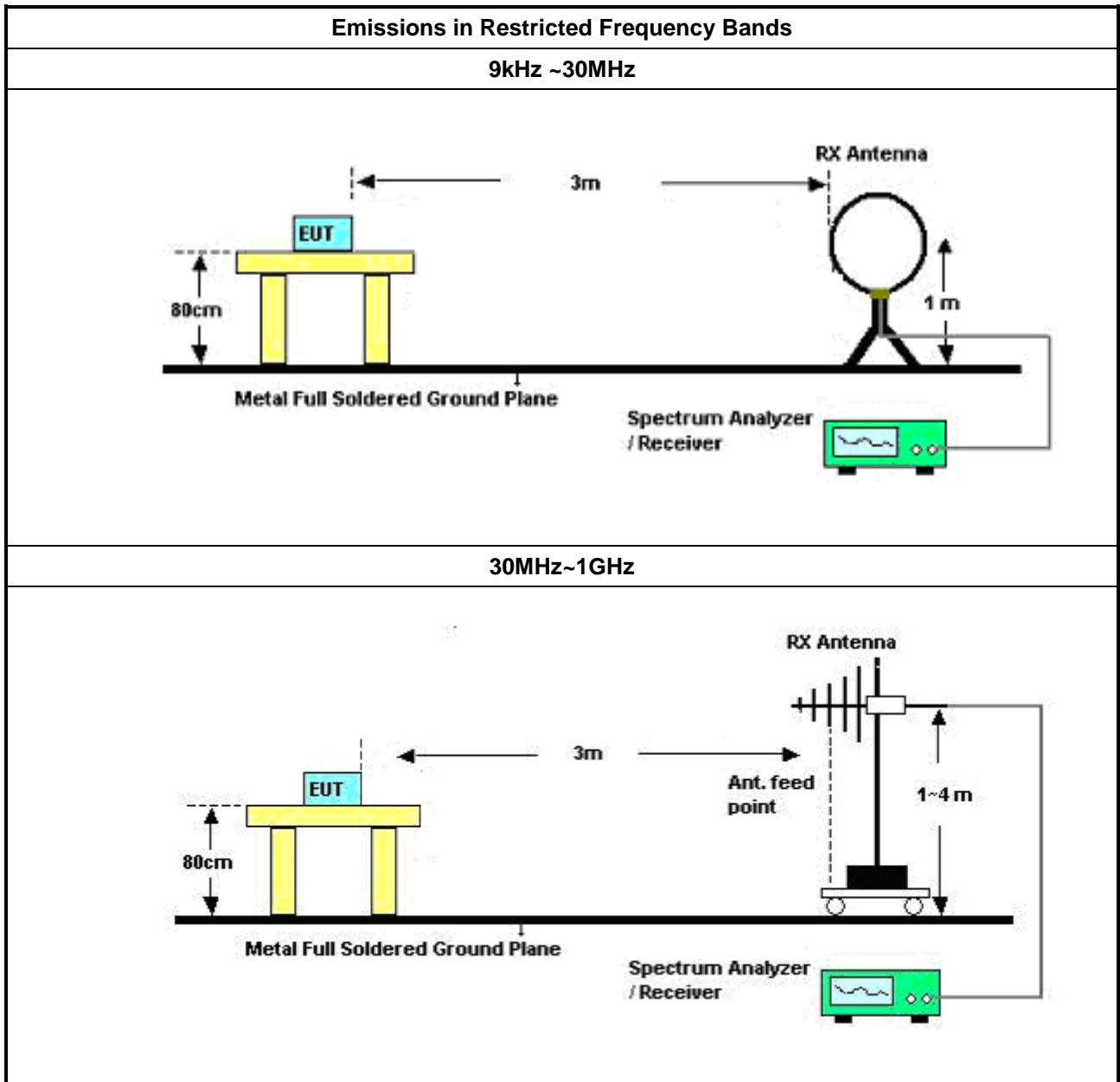
3.6.2 Measuring Instruments

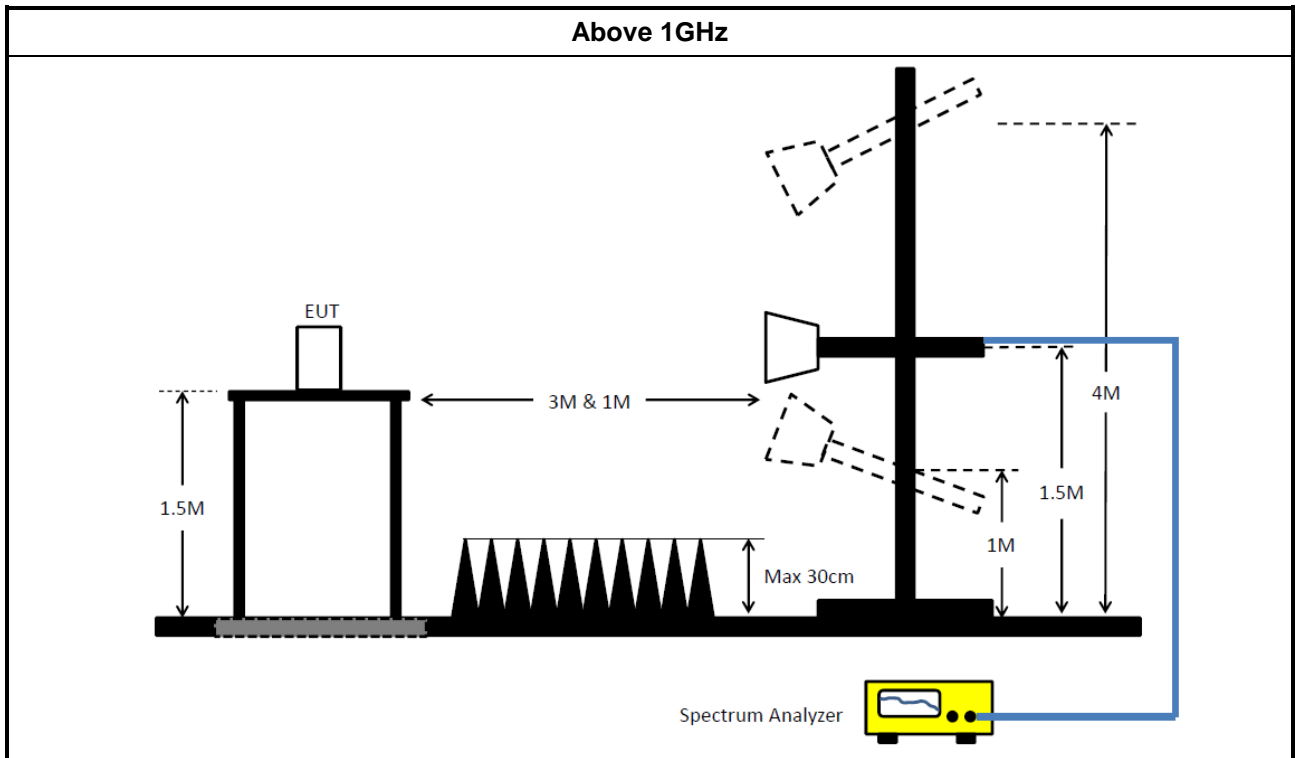
Refer a test equipment and calibration data table in this test report.

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. ▪ Refer as KDB 558074, clause 8.7.2 (6.10.6 of ANSI C63.10) for marker-delta method for band-edge measurements. ▪ 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. ▪ 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. ▪ 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	04/Nov/2019	05/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 Puls e 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	101015	10Hz~40GHz	15/Feb/2020	14/Feb/2021
Spectrum Analyzer	R&S	FSV 40	101013	10Hz~40GHz	19/Mar/2020	18/Mar/2021
Pulse Power Sensor	Anritsu	MA2411B	0917017	300MHz ~ 40GHz	17/Feb/2020	16/Feb/2021
Power Meter	Anritsu	ML2495A	0949003	300MHz ~ 40GHz	17/Feb/2020	16/Feb/2021
SMB100A Signal Generator	R&S	SMB100A03	181147	100kHz~40GHz	12/Nov/2018	10/Nov/2020



Instrument for Radiated Test

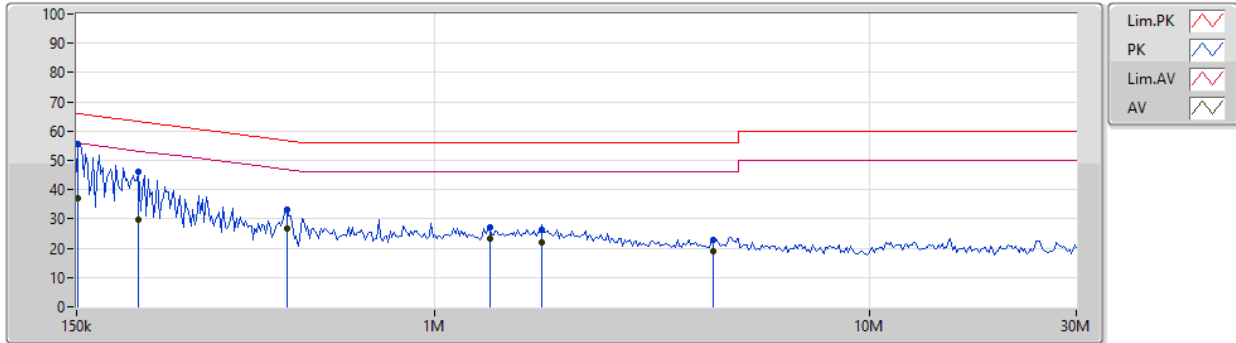
Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30MHz ~ 1GHz 3m	29/Aug/2019	28/Aug/2020
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	1GHz ~ 18GHz 3m	29/Aug/2019	28/Aug/2020
Amplifier	Agilent	8447D	2944A11149	100kHz ~ 1.3GHz	02/Jul/2019	01/Jul/2020
Microwave Preamplifier	Agilent	8449B	3008A02373	1GHz ~ 26.5GHz	16/Oct/2019	15/Oct/2020
Microwave Preamplifier	EMC INSTRUMENT	EMC051845BE	980241	1 GHz ~ 18 GHz	21/May/2019	20/May/2020
Spectrum Analyzer	Rohde & Schwarz	FSP40	100593	9kHz - 40GHz	27/Feb/2020	26/Feb/2021
EMI Test Receiver	R&S	ESR3	102051	9kHz ~ 3.6GHz	28/May/2019	27/May/2020
RF Cable-R03m	Jye Bao	RG142	CB017	9kHz ~ 1GHz	26/Mar/2019	25/Mar/2020
RF Cable-R03m	Jye Bao	RG142	CB017	9kHz ~ 1GHz	21/Mar/2020	20/Mar/2021
RF Cable-high 6m	SUHNER	SUCOFLEX104	10567868 / SN805193/4	1GHz~40GHz	09/Apr/2019	08/Apr/2020
RF Cable-high 7m	SUHNER	SUCOFLEX104	10567868 / SN805192/4	1GHz~40GHz	09/Apr/2019	08/Apr/2020
RF Cable-high 6m	SUHNER	SUCOFLEX104	10567868 / SN805193/4	1GHz~40GHz	03/Apr/2020	02/Apr/2021
RF Cable-high 7m	SUHNER	SUCOFLEX104	10567868 / SN805192/4	1GHz~40GHz	03/Apr/2020	02/Apr/2021
Bilog Antenna & 5dB Attenuator	SCHAFFNER / MTJ	CBL 6112B / MTJ6102-05	2723 / 2	30MHz ~ 1GHz	28/Feb/2020	27/Feb/2021
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170339	18GHz ~ 40GHz	19/Apr/2019	18/Apr/2020
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 01543	1GHz ~ 18GHz	03/Jun/2019	02/Jun/2020
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170221	18GHz~40GHz	13/Mar/2020	12/Mar/2021
Preamplifier	MITEQ	TTA1840-35-HG	1864481	18GHz~40GHz	10/Mar/2020	09/Mar/2021
Preamplifier	MITEQ	TTA1840-35-HG	1864481	18GHz ~ 40GHz	05/Aug/2019	04/Aug/2020
Loop Antenna	TESEQ	HLA 6120	31244	9k-30MHz	16/Mar/2020	15/Mar/2021
Loop Antenna	TESEQ	HLA 6120	24155	9k-30MHz	29/Mar/2019	28/Mar/2020



AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Neutral
Operating Function	Sample 1 ; Adapter Mode ; BTLE		

18/03/2020



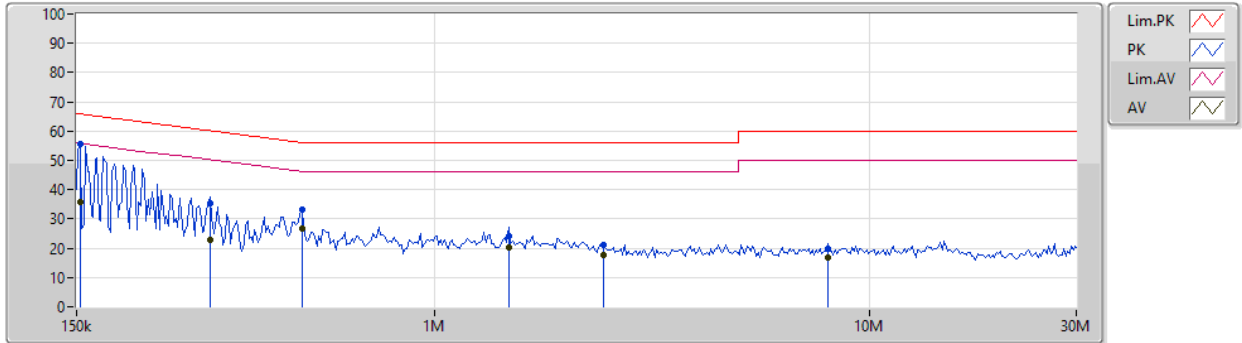
Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	151.5k	55.66	65.92	-10.26	19.63	Neutral	"Worst"	36.03	9.65	0.11	9.87
AV	151.5k	37.08	55.92	-18.84	19.63	Neutral	-	17.45	9.65	0.11	9.87
QP	208.304k	46.06	63.27	-17.21	19.62	Neutral	-	26.44	9.64	0.11	9.87
AV	208.304k	29.92	53.27	-23.35	19.62	Neutral	-	10.30	9.64	0.11	9.87
QP	457.178k	33.17	56.75	-23.58	19.63	Neutral	-	13.54	9.63	0.13	9.87
AV	457.178k	26.74	46.75	-20.01	19.63	Neutral	-	7.11	9.63	0.13	9.87
QP	1.339M	27.18	56.00	-28.82	19.65	Neutral	-	7.53	9.64	0.13	9.88
AV	1.339M	23.11	46.00	-22.89	19.65	Neutral	-	3.46	9.64	0.13	9.88
QP	1.769M	26.25	56.00	-29.75	19.66	Neutral	-	6.59	9.65	0.14	9.87
AV	1.769M	22.17	46.00	-23.83	19.66	Neutral	-	2.51	9.65	0.14	9.87
QP	4.376M	22.80	56.00	-33.20	19.73	Neutral	-	3.07	9.66	0.19	9.88
AV	4.376M	18.77	46.00	-27.23	19.73	Neutral	-	-0.96	9.66	0.19	9.88



AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Line
Operating Function	Sample 1 ; Adapter Mode ; BTLE		

18/03/2020



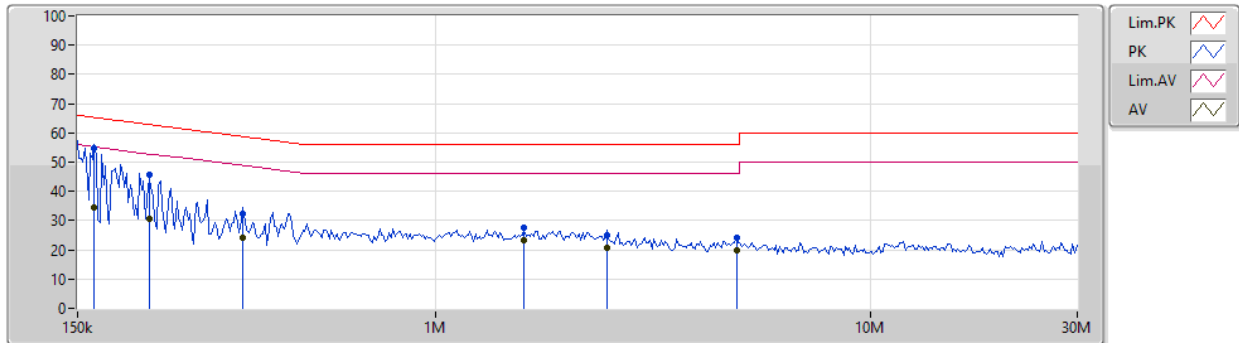
Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	153.015k	55.48	65.83	-10.35	19.64	Line	"Worst"	35.84	9.66	0.11	9.87
AV	153.015k	35.87	55.83	-19.96	19.64	Line	-	16.23	9.66	0.11	9.87
QP	304.025k	35.34	60.13	-24.79	19.63	Line	-	15.71	9.64	0.12	9.87
AV	304.025k	22.76	50.13	-27.37	19.63	Line	-	3.13	9.64	0.12	9.87
QP	495.058k	33.22	56.08	-22.86	19.64	Line	-	13.58	9.64	0.13	9.87
AV	495.058k	26.72	46.08	-19.36	19.64	Line	-	7.08	9.64	0.13	9.87
QP	1.479M	23.93	56.00	-32.07	19.65	Line	-	4.28	9.65	0.13	9.87
AV	1.479M	20.34	46.00	-25.66	19.65	Line	-	0.69	9.65	0.13	9.87
QP	2.457M	21.32	56.00	-34.68	19.68	Line	-	1.64	9.65	0.16	9.87
AV	2.457M	17.60	46.00	-28.40	19.68	Line	-	-2.08	9.65	0.16	9.87
QP	8.029M	19.76	60.00	-40.24	19.81	Line	-	-0.05	9.68	0.25	9.88
AV	8.029M	16.67	50.00	-33.33	19.81	Line	-	-3.14	9.68	0.25	9.88



AC Power-line Conducted Emissions Result

Operating Mode	2	Power Phase	Neutral
Operating Function	Sample 3 ; PoE Mode ; BTLE		

18/03/2020



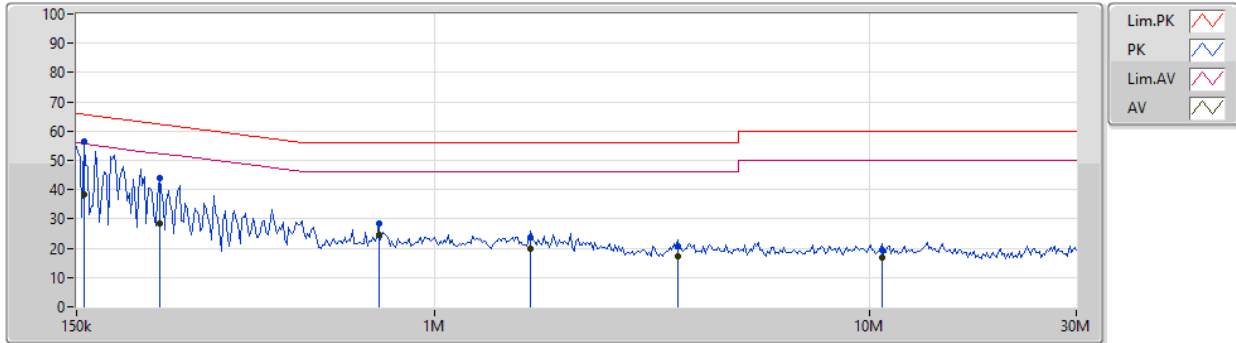
Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	164.053k	54.56	65.25	-10.69	19.63	Neutral	"Worst"	34.93	9.65	0.11	9.87
AV	164.053k	34.43	55.25	-20.82	19.63	Neutral	-	14.80	9.65	0.11	9.87
QP	218.929k	45.79	62.86	-17.07	19.62	Neutral	-	26.17	9.64	0.11	9.87
AV	218.929k	30.40	52.86	-22.46	19.62	Neutral	-	10.78	9.64	0.11	9.87
QP	360.058k	32.44	58.73	-26.29	19.62	Neutral	-	12.82	9.63	0.12	9.87
AV	360.058k	24.06	48.73	-24.67	19.62	Neutral	-	4.44	9.63	0.12	9.87
QP	1.602M	27.41	56.00	-28.59	19.65	Neutral	-	7.76	9.64	0.14	9.87
AV	1.602M	23.40	46.00	-22.60	19.65	Neutral	-	3.75	9.64	0.14	9.87
QP	2.482M	24.85	56.00	-31.15	19.68	Neutral	-	5.17	9.65	0.16	9.87
AV	2.482M	20.66	46.00	-25.34	19.68	Neutral	-	0.98	9.65	0.16	9.87
QP	4.931M	24.09	56.00	-31.91	19.75	Neutral	-	4.34	9.67	0.20	9.88
AV	4.931M	19.69	46.00	-26.31	19.75	Neutral	-	-0.06	9.67	0.20	9.88



AC Power-line Conducted Emissions Result

Operating Mode	2	Power Phase	Line
Operating Function	Sample 3 ; PoE Mode ; BTLE		

18/03/2020



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	156.091k	56.28	65.67	-9.39	19.64	Line	"Worst"	36.64	9.66	0.11	9.87
AV	156.091k	38.23	55.67	-17.44	19.64	Line	-	18.59	9.66	0.11	9.87
QP	232.398k	43.88	62.37	-18.49	19.64	Line	-	24.24	9.65	0.12	9.87
AV	232.398k	28.37	52.37	-24.00	19.64	Line	-	8.73	9.65	0.12	9.87
QP	744.445k	28.48	56.00	-27.52	19.63	Line	-	8.85	9.64	0.12	9.87
AV	744.445k	24.43	46.00	-21.57	19.63	Line	-	4.80	9.64	0.12	9.87
QP	1.667M	23.69	56.00	-32.31	19.66	Line	-	4.03	9.65	0.14	9.87
AV	1.667M	19.87	46.00	-26.13	19.66	Line	-	0.21	9.65	0.14	9.87
QP	3.622M	20.51	56.00	-35.49	19.72	Line	-	0.79	9.66	0.18	9.88
AV	3.622M	17.06	46.00	-28.94	19.72	Line	-	-2.66	9.66	0.18	9.88
QP	10.714M	19.46	60.00	-40.54	19.85	Line	-	-0.39	9.69	0.28	9.88
AV	10.714M	16.61	50.00	-33.39	19.85	Line	-	-3.24	9.69	0.28	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)	707.5k	1.027M	1M03F1D	695k	1.022M

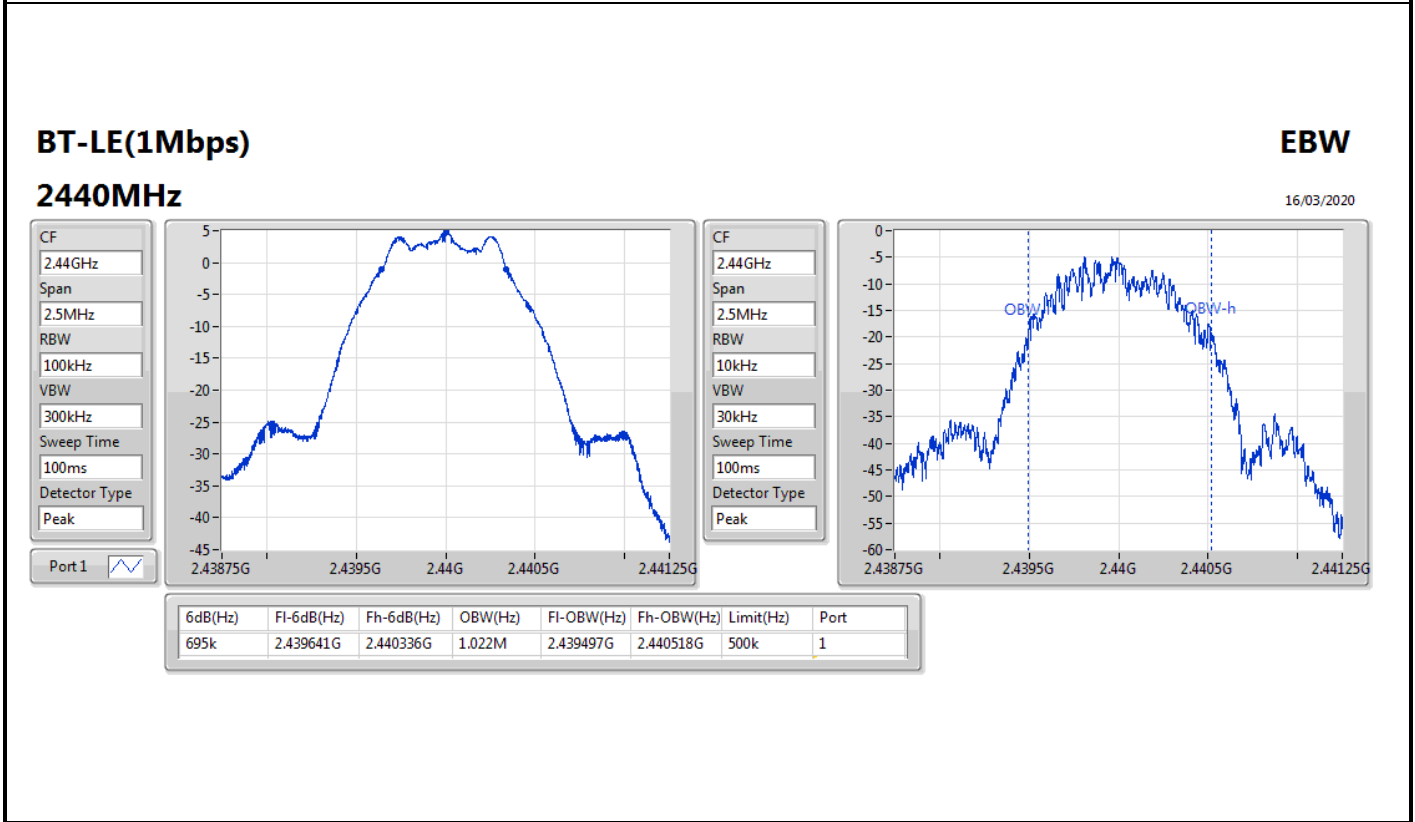
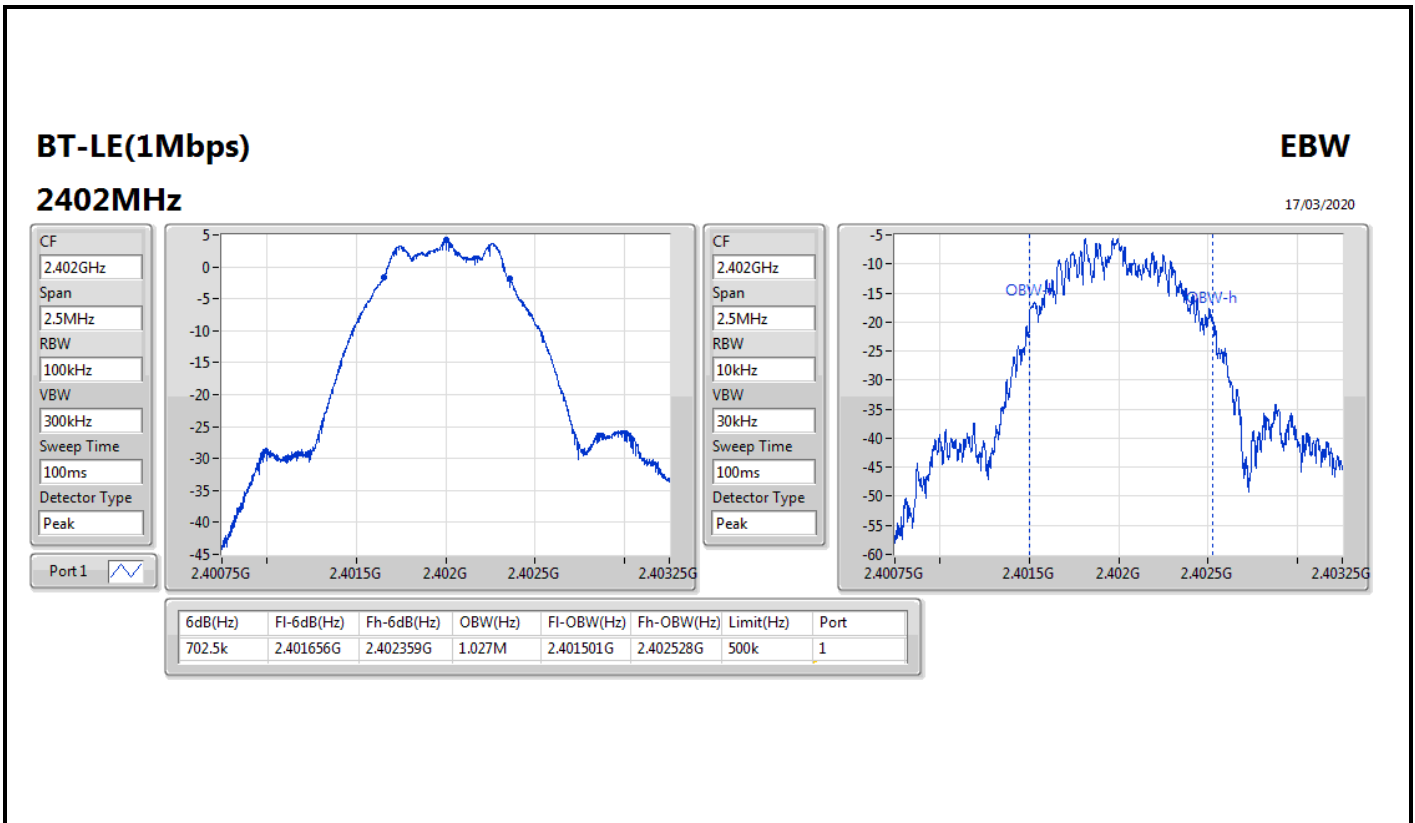
Max-N dB = Maximum 6dB down bandwidth; **Max-OBW** = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 6dB down bandwidth; **Min-OBW** = Minimum 99% occupied bandwidth;



Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	702.5k	1.027M
2440MHz	Pass	500k	695k	1.022M
2480MHz	Pass	500k	707.5k	1.026M

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



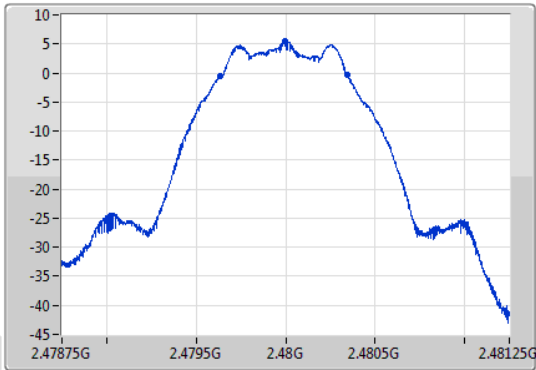
BT-LE(1Mbps)

EBW

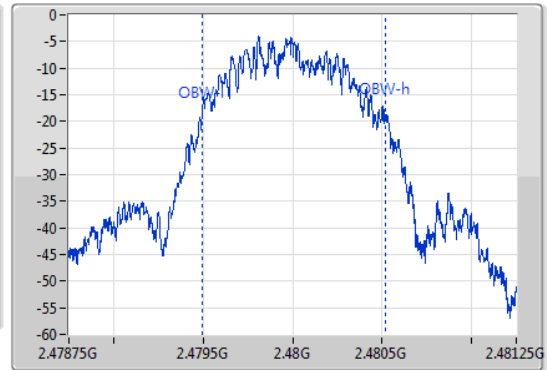
2480MHz

16/03/2020

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



CF
2.48GHz
Span
2.5MHz
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
707.5k	2.479634G	2.480341G	1.026M	2.479494G	2.48052G	500k	1



Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	6.96	0.00497



Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	3.87	4.17	30.00
2440MHz	Pass	3.87	6.07	30.00
2480MHz	Pass	3.87	6.96	30.00

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



Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-10.28

RBW=3 kHz.

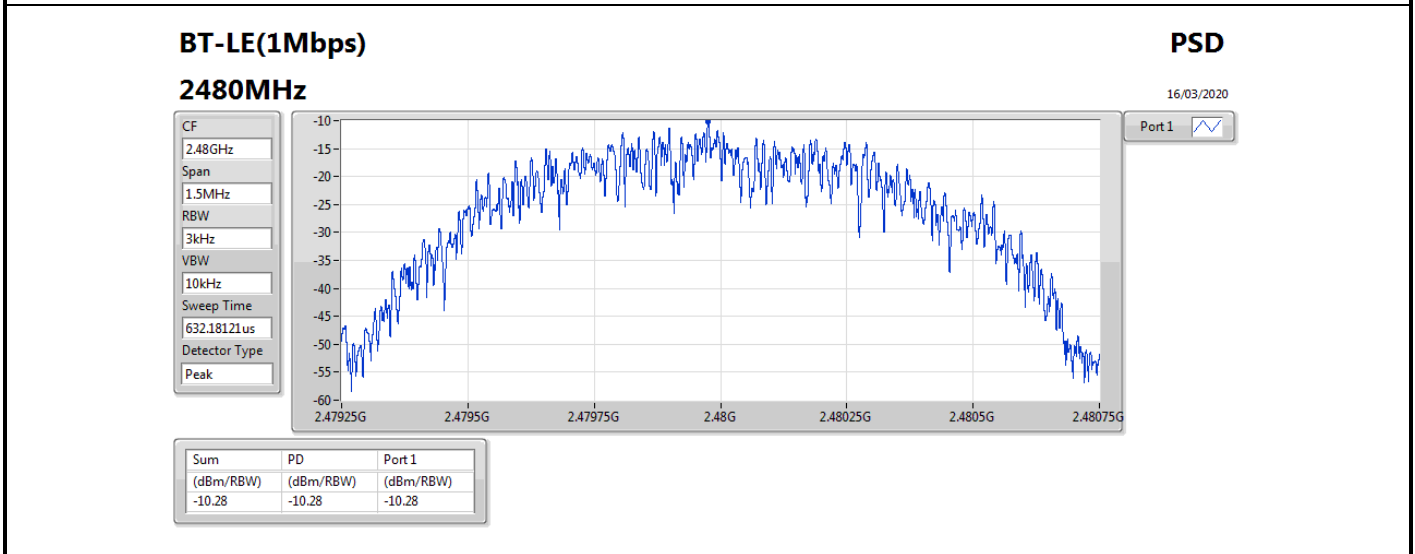
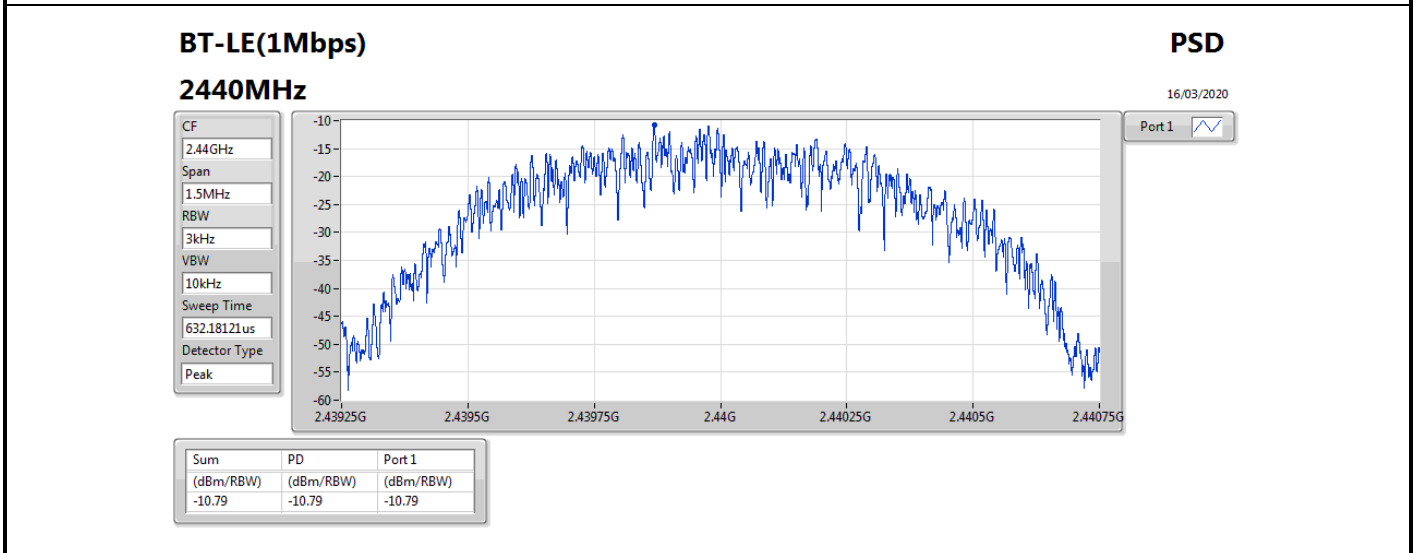
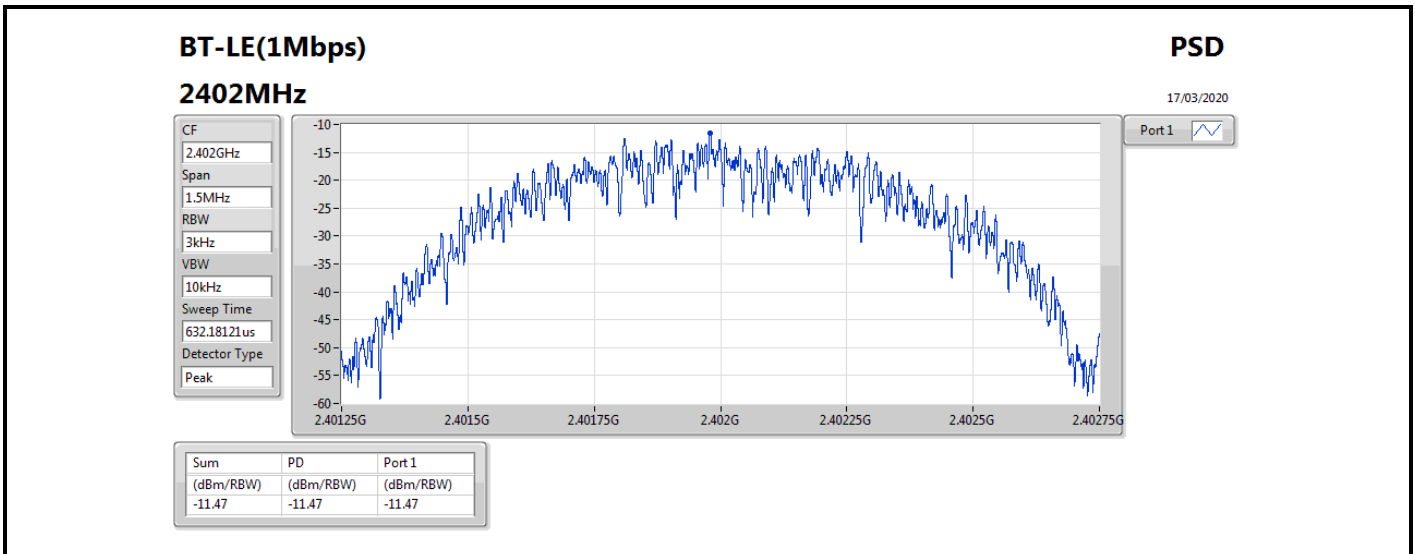


Result

Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	3.87	-11.47	8.00
2440MHz	Pass	3.87	-10.79	8.00
2480MHz	Pass	3.87	-10.28	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;





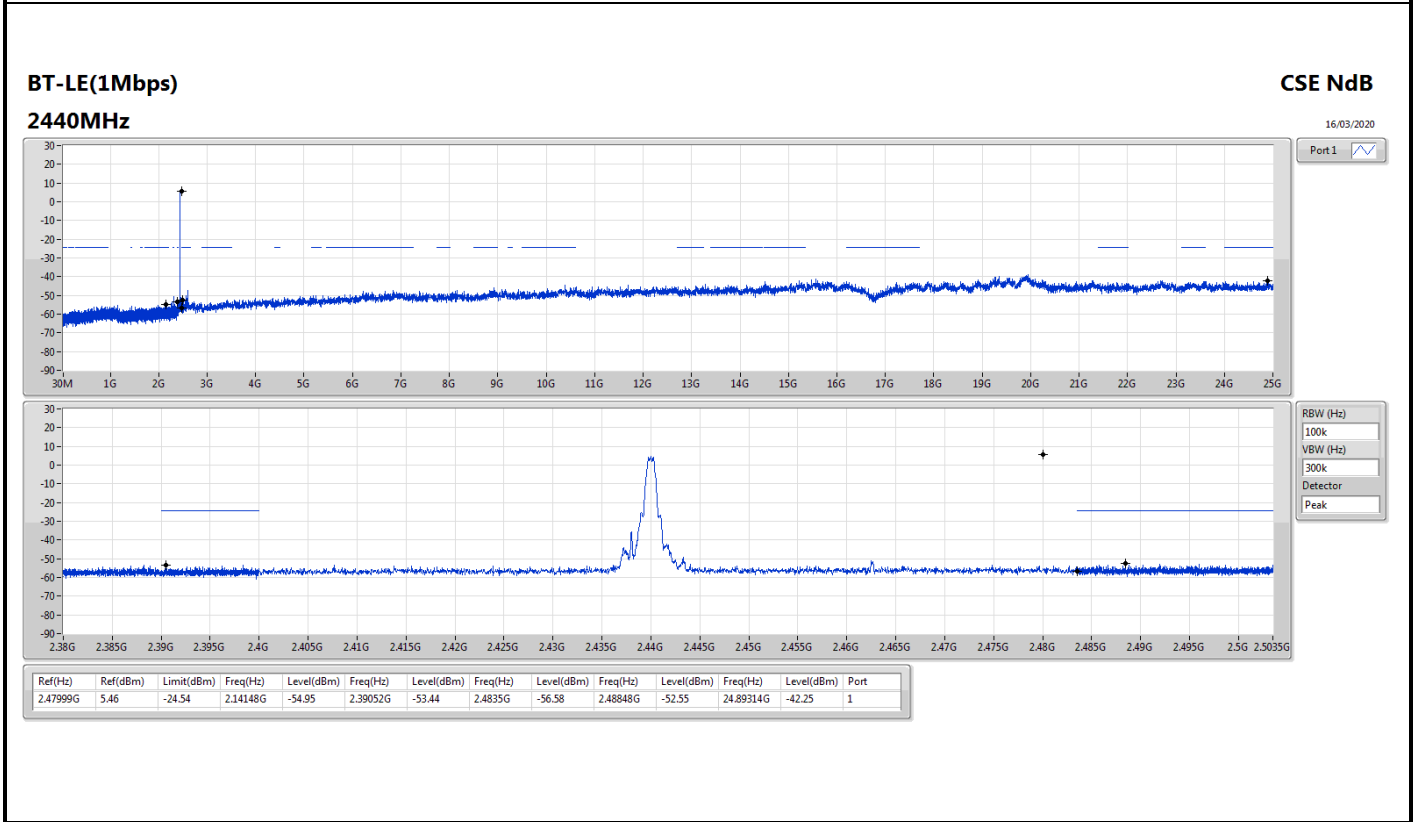
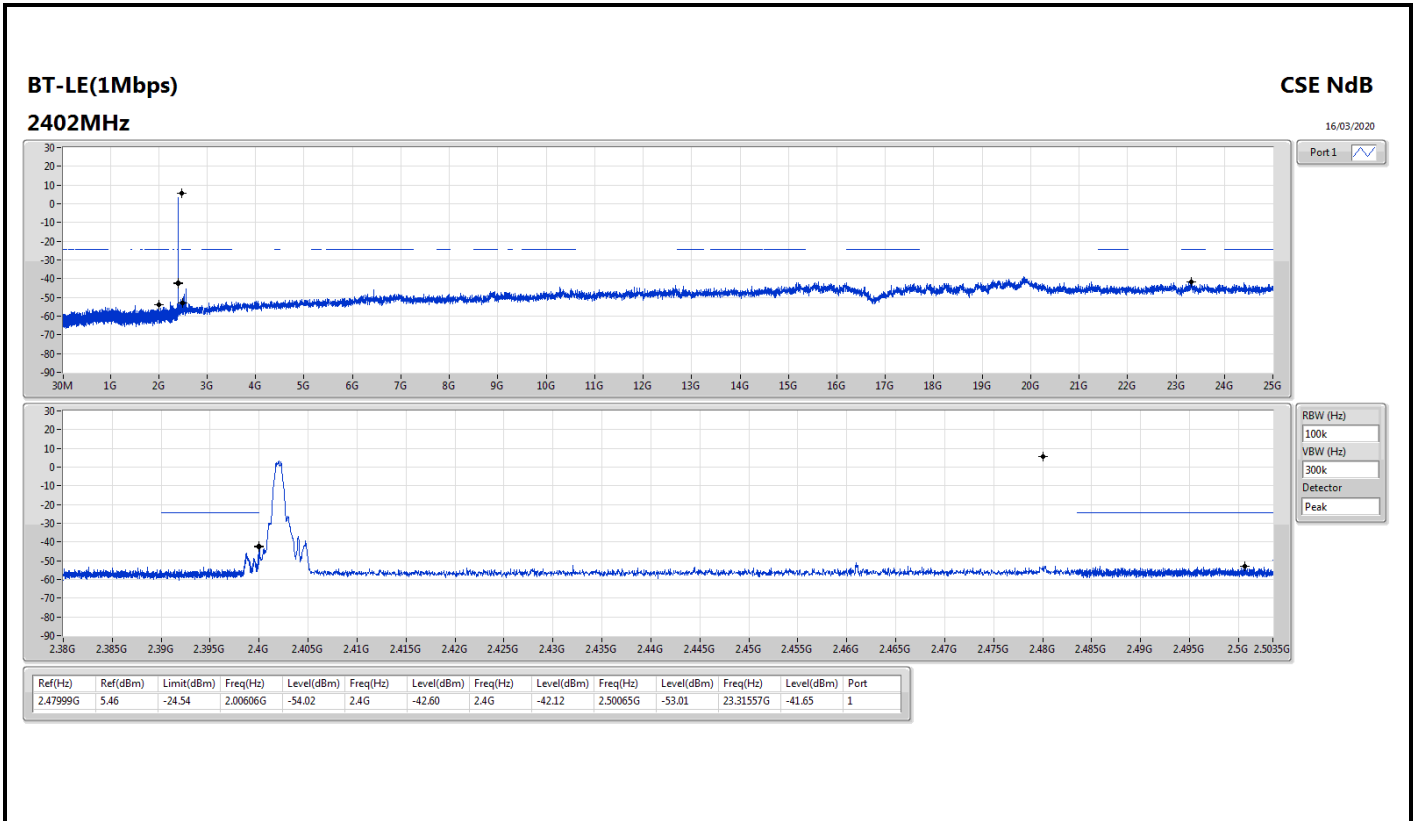
Summary

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	2.47999G	5.46	-24.54	2.00606G	-54.02	2.4G	-42.60	2.4G	-42.12	2.50065G	-53.01	23.31557G	-41.65	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	2.47999G	5.46	-24.54	2.00606G	-54.02	2.4G	-42.60	2.4G	-42.12	2.50065G	-53.01	23.31557G	-41.65	1
2440MHz	Pass	2.47999G	5.46	-24.54	2.14148G	-54.95	2.39052G	-53.44	2.4835G	-56.58	2.48848G	-52.55	24.89314G	-42.25	1
2480MHz	Pass	2.47999G	5.46	-24.54	2.13296G	-54.69	2.39602G	-53.91	2.4835G	-55.02	2.48399G	-50.61	15.17465G	-41.57	1

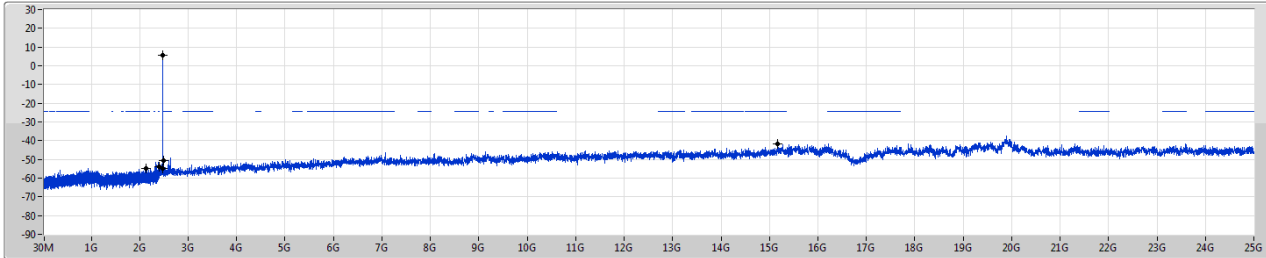


BT-LE(1Mbps)

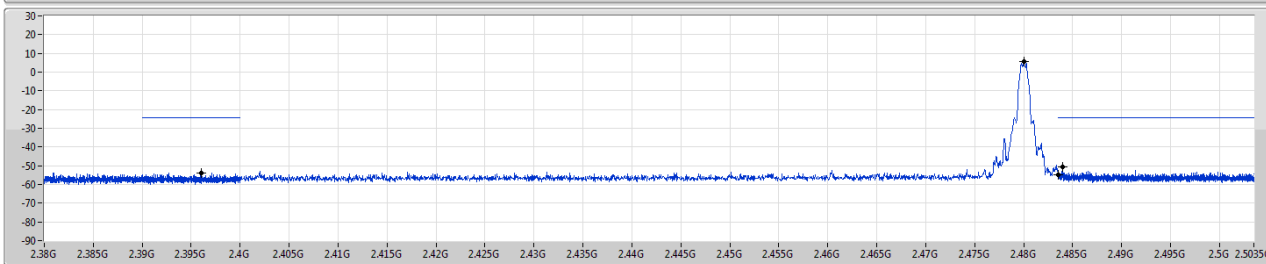
CSE NdB

2480MHz

16/03/2020



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
2.47999G	5.46	-24.54	2.13296G	-54.69	2.39602G	-53.91	2.4835G	-55.02	2.48399G	-50.61	15.17465G	-41.57	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	QP	39.7M	34.05	40.00	-5.95	3	Vertical	123	1.05	-



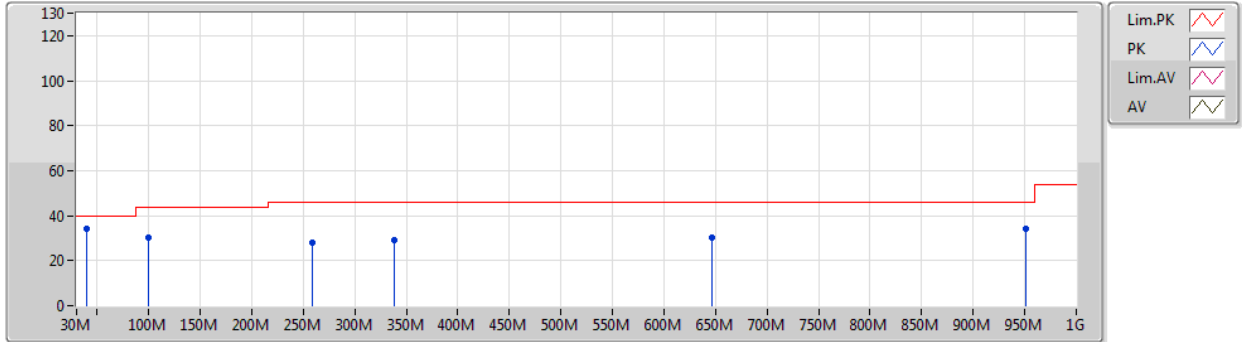
Result

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	99.84M	30.31	43.50	-13.19	3	Vertical	360	1.00	-
2440MHz	Pass	PK	258.92M	27.91	46.00	-18.09	3	Vertical	360	1.00	-
2440MHz	Pass	PK	338.46M	29.01	46.00	-16.99	3	Vertical	360	1.00	-
2440MHz	Pass	PK	646.92M	30.09	46.00	-15.91	3	Vertical	360	1.00	-
2440MHz	Pass	PK	951.5M	33.96	46.00	-12.04	3	Vertical	360	1.00	-
2440MHz	Pass	QP	39.7M	34.05	40.00	-5.95	3	Vertical	123	1.05	-
2440MHz	Pass	PK	41.64M	26.61	40.00	-13.39	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	99.84M	23.51	43.50	-19.99	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	266.68M	27.61	46.00	-18.39	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	445.16M	28.67	46.00	-17.33	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	532.46M	29.69	46.00	-16.31	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	984.48M	34.22	54.00	-19.78	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	36.7M	33.73	40.00	-6.27	3	Vertical	360	1.00	-
2440MHz	Pass	PK	89.35M	35.64	43.50	-7.86	3	Vertical	360	1.00	-
2440MHz	Pass	PK	101.05M	33.78	43.50	-9.72	3	Vertical	360	1.00	-
2440MHz	Pass	PK	463.75M	29.21	46.00	-16.79	3	Vertical	360	1.00	-
2440MHz	Pass	PK	643.15M	31.79	46.00	-14.21	3	Vertical	360	1.00	-
2440MHz	Pass	PK	805M	32.81	46.00	-13.19	3	Vertical	360	1.00	-
2440MHz	Pass	PK	44.5M	26.20	40.00	-13.80	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	91.3M	31.48	43.50	-12.02	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	106.9M	30.17	43.50	-13.33	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	487.15M	29.71	46.00	-16.29	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	680.2M	31.62	46.00	-14.38	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	853.75M	32.87	46.00	-13.13	3	Horizontal	0	1.00	-

BT-LE(1Mbps)

18/03/2020

2440MHz_Adapter

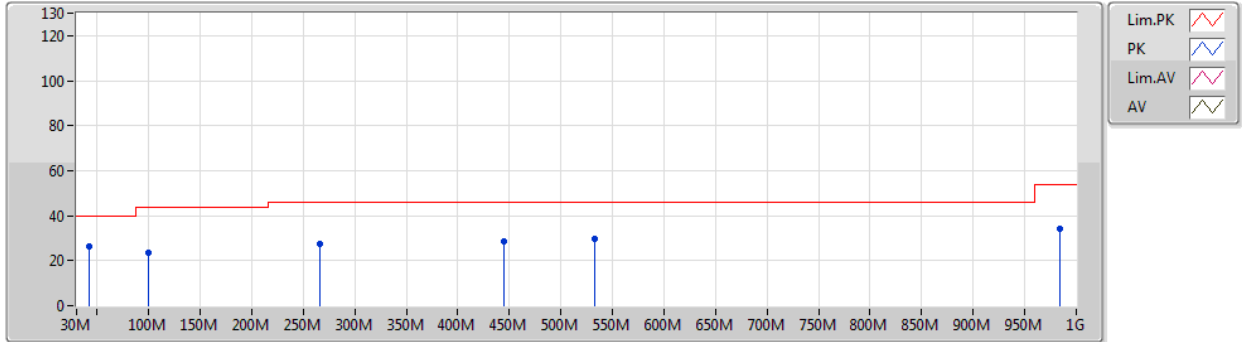


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	99.84M	30.31	43.50	-13.19	-10.44	3	Vertical	360	1.00	-	40.75	15.85	1.47	27.76
PK	258.92M	27.91	46.00	-18.09	-5.87	3	Vertical	360	1.00	-	33.78	18.55	2.76	27.18
PK	338.46M	29.01	46.00	-16.99	-5.30	3	Vertical	360	1.00	-	34.31	19.04	3.08	27.42
PK	646.92M	30.09	46.00	-15.91	-0.59	3	Vertical	360	1.00	-	30.68	24.16	3.79	28.54
PK	951.5M	33.96	46.00	-12.04	3.23	3	Vertical	360	1.00	-	30.73	25.95	4.87	27.59
QP	39.7M	34.05	40.00	-5.95	-9.03	3	Vertical	123	1.05	-	43.08	18.01	0.64	27.68

BT-LE(1Mbps)

18/03/2020

2440MHz_Adapter

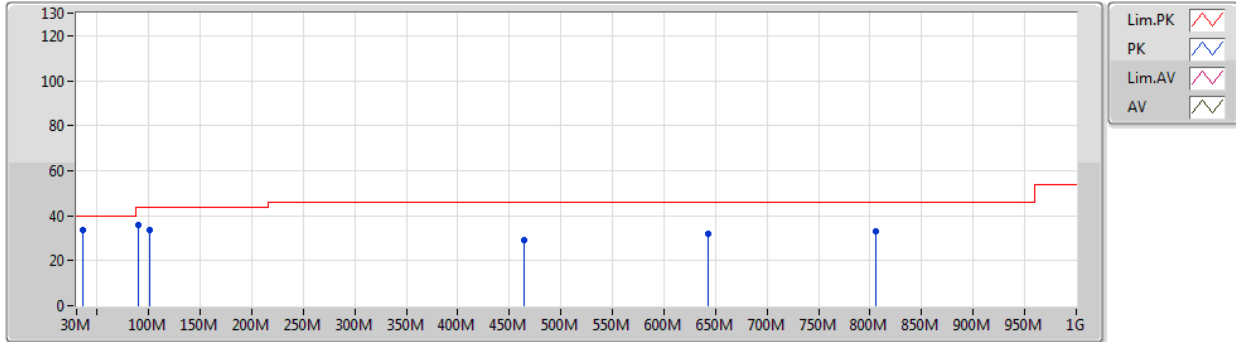


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	41.64M	26.61	40.00	-13.39	-10.01	3	Horizontal	0	1.00	-	36.62	16.99	0.68	27.68
PK	99.84M	23.51	43.50	-19.99	-10.44	3	Horizontal	0	1.00	-	33.95	15.85	1.47	27.76
PK	266.68M	27.61	46.00	-18.39	-5.95	3	Horizontal	0	1.00	-	33.56	18.44	2.79	27.18
PK	445.16M	28.67	46.00	-17.33	-3.27	3	Horizontal	0	1.00	-	31.94	21.77	3.23	28.27
PK	532.46M	29.69	46.00	-16.31	-2.05	3	Horizontal	0	1.00	-	31.74	23.02	3.49	28.56
PK	984.48M	34.22	54.00	-19.78	3.89	3	Horizontal	0	1.00	-	30.33	26.17	4.99	27.27

BT-LE(1Mbps)

18/03/2020

2440MHz_PoE

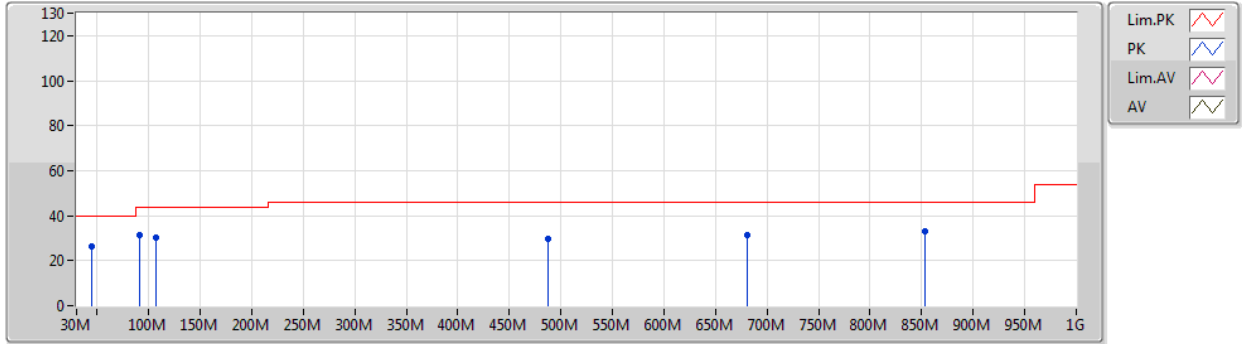


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	36.7M	33.73	40.00	-6.27	-7.47	3	Vertical	360	1.00	-	41.20	19.68	0.53	27.68
PK	89.35M	35.64	43.50	-7.86	-12.63	3	Vertical	360	1.00	-	48.27	13.74	1.38	27.75
PK	101.05M	33.78	43.50	-9.72	-10.23	3	Vertical	360	1.00	-	44.01	16.05	1.48	27.76
PK	463.75M	29.21	46.00	-16.79	-2.79	3	Vertical	360	1.00	-	32.00	22.30	3.25	28.34
PK	643.15M	31.79	46.00	-14.21	-0.58	3	Vertical	360	1.00	-	32.37	24.17	3.78	28.53
PK	805M	32.81	46.00	-13.19	0.93	3	Vertical	360	1.00	-	31.88	24.89	4.18	28.14

BT-LE(1Mbps)

18/03/2020

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	44.5M	26.20	40.00	-13.80	-11.36	3	Horizontal	0	1.00	-	37.56	15.59	0.73	27.68
PK	91.3M	31.48	43.50	-12.02	-12.00	3	Horizontal	0	1.00	-	43.48	14.35	1.40	27.75
PK	106.9M	30.17	43.50	-13.33	-9.36	3	Horizontal	0	1.00	-	39.53	16.84	1.55	27.75
PK	487.15M	29.71	46.00	-16.29	-2.25	3	Horizontal	0	1.00	-	31.96	22.84	3.29	28.38
PK	680.2M	31.62	46.00	-14.38	-0.40	3	Horizontal	0	1.00	-	32.02	24.09	3.95	28.44
PK	853.75M	32.87	46.00	-13.13	1.70	3	Horizontal	0	1.00	-	31.17	25.47	4.26	28.03



Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	AV	2.4835G	52.05	54.00	-1.95	3	Horizontal	345	2.29	-



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	2.3558G	44.65	54.00	-9.35	3	Vertical	25	1.36	-
2402MHz	Pass	AV	2.402G	96.52	Inf	-Inf	3	Vertical	25	1.36	-
2402MHz	Pass	PK	2.385G	56.09	74.00	-17.91	3	Vertical	25	1.36	-
2402MHz	Pass	PK	2.4022G	97.98	Inf	-Inf	3	Vertical	25	1.36	-
2402MHz	Pass	AV	2.3578G	44.70	54.00	-9.30	3	Horizontal	338	2.65	-
2402MHz	Pass	AV	2.402G	100.02	Inf	-Inf	3	Horizontal	338	2.65	-
2402MHz	Pass	PK	2.379G	55.84	74.00	-18.16	3	Horizontal	338	2.65	-
2402MHz	Pass	PK	2.4024G	101.52	Inf	-Inf	3	Horizontal	338	2.65	-
2402MHz	Pass	AV	4.80403G	44.45	54.00	-9.55	3	Vertical	10	1.48	-
2402MHz	Pass	PK	4.80352G	51.87	74.00	-22.13	3	Vertical	10	1.48	-
2402MHz	Pass	AV	4.80409G	43.04	54.00	-10.96	3	Horizontal	301	1.90	-
2402MHz	Pass	PK	4.80443G	51.32	74.00	-22.68	3	Horizontal	301	1.90	-
2440MHz	Pass	AV	2.3456G	44.77	54.00	-9.23	3	Vertical	20	1.34	-
2440MHz	Pass	AV	2.44G	100.33	Inf	-Inf	3	Vertical	20	1.34	-
2440MHz	Pass	AV	2.492G	44.10	54.00	-9.90	3	Vertical	20	1.34	-
2440MHz	Pass	PK	2.3644G	56.25	74.00	-17.75	3	Vertical	20	1.34	-
2440MHz	Pass	PK	2.4396G	101.80	Inf	-Inf	3	Vertical	20	1.34	-
2440MHz	Pass	PK	2.4868G	54.80	74.00	-19.20	3	Vertical	20	1.34	-
2440MHz	Pass	AV	2.3492G	44.72	54.00	-9.28	3	Horizontal	338	2.61	-
2440MHz	Pass	AV	2.44G	102.10	Inf	-Inf	3	Horizontal	338	2.61	-
2440MHz	Pass	AV	2.4924G	44.43	54.00	-9.57	3	Horizontal	338	2.61	-
2440MHz	Pass	PK	2.3488G	55.62	74.00	-18.38	3	Horizontal	338	2.61	-
2440MHz	Pass	PK	2.4396G	103.69	Inf	-Inf	3	Horizontal	338	2.61	-
2440MHz	Pass	PK	2.4888G	55.05	74.00	-18.95	3	Horizontal	338	2.61	-
2440MHz	Pass	AV	4.87976G	40.44	54.00	-13.56	3	Vertical	320	1.61	-
2440MHz	Pass	AV	7.3228G	38.98	54.00	-15.02	3	Vertical	218	1.50	-
2440MHz	Pass	PK	4.87944G	49.90	74.00	-24.10	3	Vertical	320	1.61	-
2440MHz	Pass	PK	7.324G	51.15	74.00	-22.85	3	Vertical	218	1.50	-
2440MHz	Pass	AV	4.87968G	39.64	54.00	-14.36	3	Horizontal	318	1.50	-
2440MHz	Pass	AV	7.31936G	41.49	54.00	-12.51	3	Horizontal	55	3.00	-
2440MHz	Pass	PK	4.87998G	49.61	74.00	-24.39	3	Horizontal	318	1.50	-
2440MHz	Pass	PK	7.31894G	52.51	74.00	-21.49	3	Horizontal	55	3.00	-
2480MHz	Pass	AV	2.48G	101.32	Inf	-Inf	3	Vertical	15	1.33	-
2480MHz	Pass	AV	2.4835G	49.80	54.00	-4.20	3	Vertical	15	1.33	-
2480MHz	Pass	PK	2.4798G	102.87	Inf	-Inf	3	Vertical	15	1.33	-
2480MHz	Pass	PK	2.4835G	59.47	74.00	-14.53	3	Vertical	15	1.33	-
2480MHz	Pass	AV	2.48G	103.89	Inf	-Inf	3	Horizontal	345	2.29	-
2480MHz	Pass	AV	2.4835G	52.05	54.00	-1.95	3	Horizontal	345	2.29	-
2480MHz	Pass	PK	2.4798G	105.40	Inf	-Inf	3	Horizontal	345	2.29	-
2480MHz	Pass	PK	2.4835G	60.89	74.00	-13.11	3	Horizontal	345	2.29	-
2480MHz	Pass	AV	4.9598G	39.12	54.00	-14.88	3	Vertical	325	1.23	-
2480MHz	Pass	AV	7.43929G	40.24	54.00	-13.76	3	Vertical	75	1.85	-
2480MHz	Pass	PK	4.96025G	48.56	74.00	-25.44	3	Vertical	325	1.23	-
2480MHz	Pass	PK	7.43947G	52.02	74.00	-21.98	3	Vertical	75	1.85	-
2480MHz	Pass	AV	4.95971G	38.34	54.00	-15.66	3	Horizontal	347	1.61	-
2480MHz	Pass	AV	7.4395G	41.35	54.00	-12.65	3	Horizontal	53	2.96	-
2480MHz	Pass	PK	4.96051G	48.34	74.00	-25.66	3	Horizontal	347	1.61	-

Remark :

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

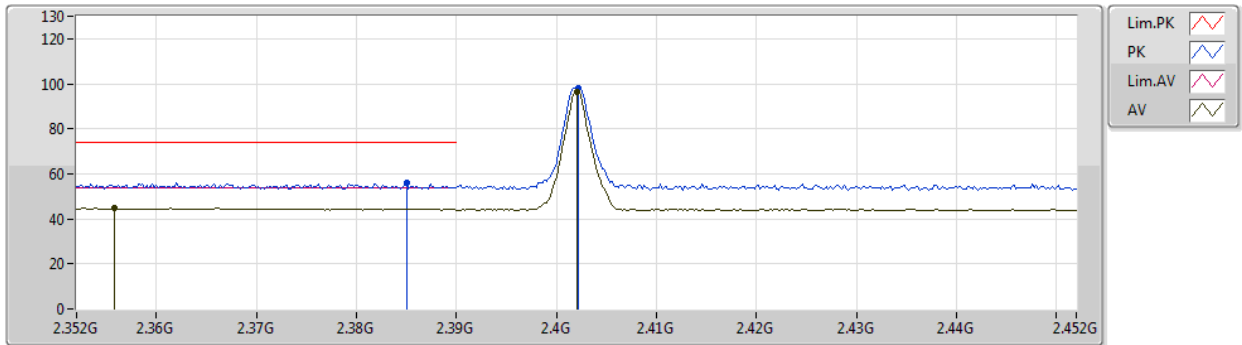


Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2480MHz	Pass	PK	7.43919G	53.03	74.00	-20.97	3	Horizontal	53	2.96	-

BT-LE(1Mbps)

15/03/2020

2402MHz_TX

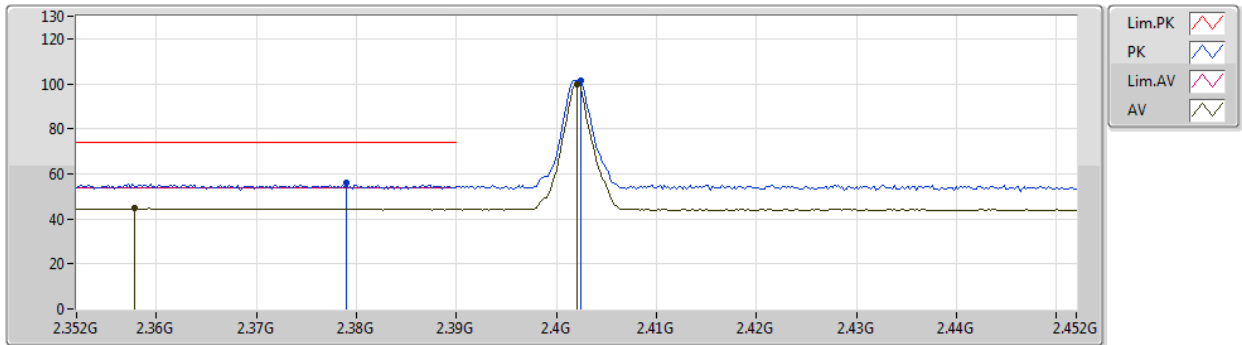


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3558G	44.65	54.00	-9.35	31.64	3	Vertical	25	1.36	-	13.01	27.68	3.96	-
AV	2.402G	96.52	Inf	-Inf	31.51	3	Vertical	25	1.36	-	65.01	27.50	4.01	-
PK	2.385G	56.09	74.00	-17.91	31.55	3	Vertical	25	1.36	-	24.54	27.56	3.99	-
PK	2.402G	97.98	Inf	-Inf	31.51	3	Vertical	25	1.36	-	66.47	27.50	4.01	-

BT-LE(1Mbps)

15/03/2020

2402MHz_TX



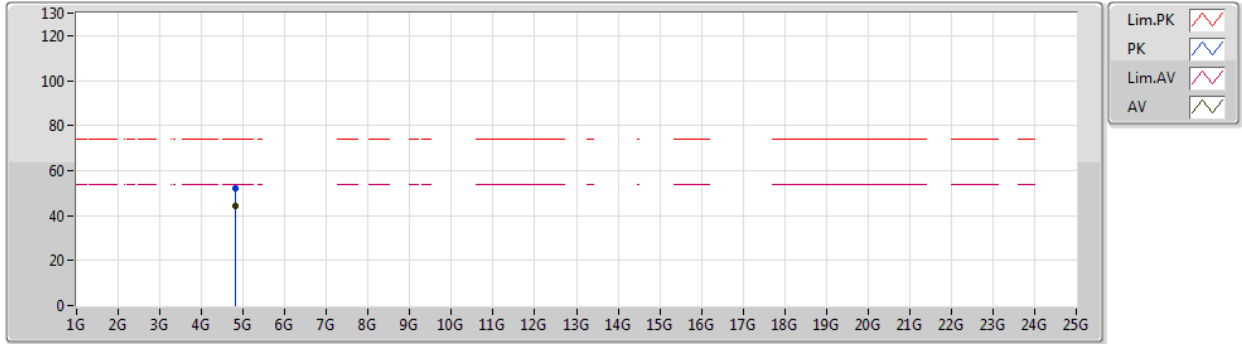
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3578G	44.70	54.00	-9.30	31.64	3	Horizontal	338	2.65	-	13.06	27.67	3.97	-
AV	2.402G	100.02	Inf	-Inf	31.51	3	Horizontal	338	2.65	-	68.51	27.50	4.01	-
PK	2.379G	55.84	74.00	-18.16	31.57	3	Horizontal	338	2.65	-	24.27	27.58	3.99	-
PK	2.4024G	101.52	Inf	-Inf	31.51	3	Horizontal	338	2.65	-	70.01	27.50	4.01	-



BT-LE(1Mbps)

15/03/2020

2402MHz_TX

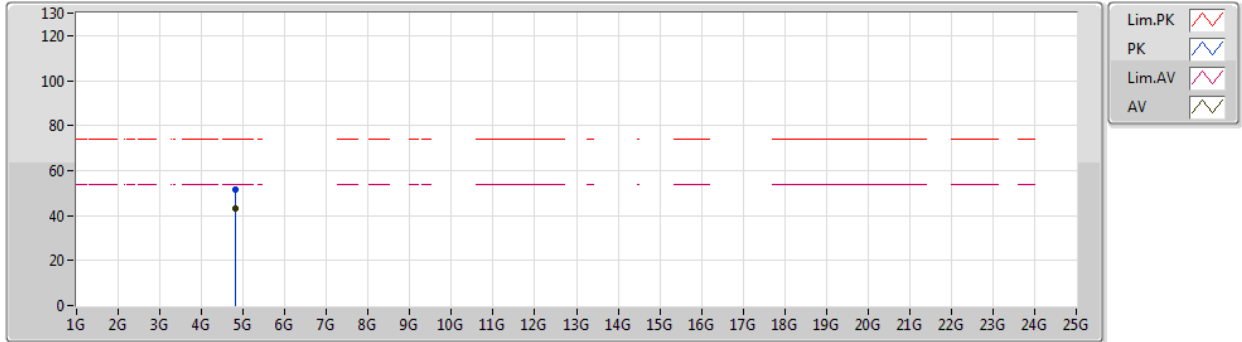


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.80403G	44.45	54.00	-9.55	7.47	3	Vertical	10	1.48	-	36.98	31.10	5.78	29.41
PK	4.80352G	51.87	74.00	-22.13	7.47	3	Vertical	10	1.48	-	44.40	31.10	5.78	29.41

BT-LE(1Mbps)

15/03/2020

2402MHz_TX

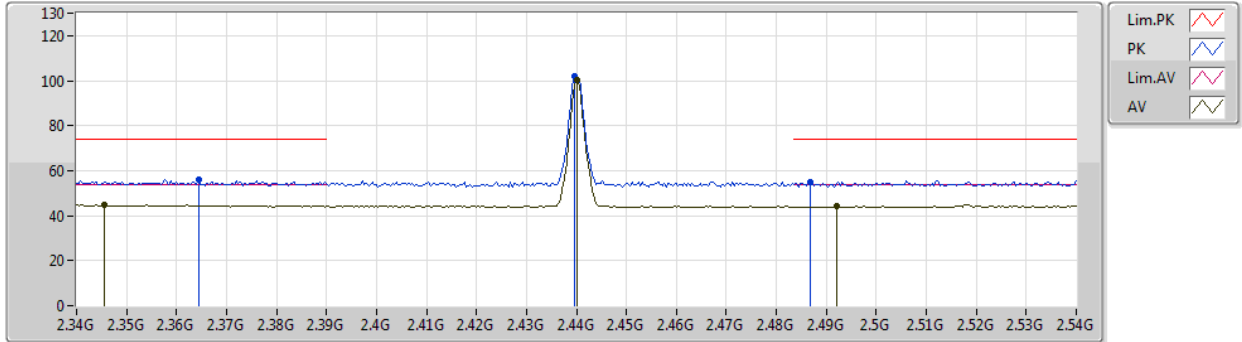


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.80409G	43.04	54.00	-10.96	7.47	3	Horizontal	301	1.90	-	35.57	31.10	5.78	29.41
PK	4.80443G	51.32	74.00	-22.68	7.47	3	Horizontal	301	1.90	-	43.85	31.10	5.78	29.41

BT-LE(1Mbps)

15/03/2020

2440MHz_TX

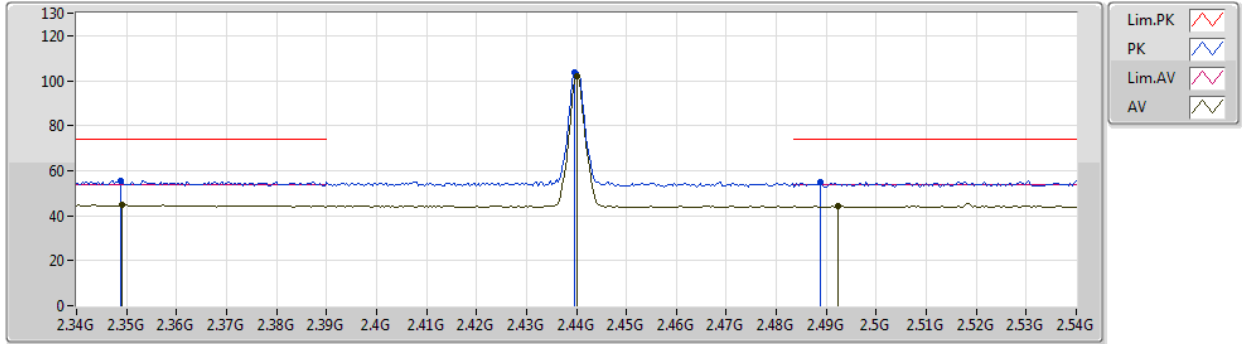


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3456G	44.77	54.00	-9.23	31.67	3	Vertical	20	1.34	-	13.10	27.72	3.95	-
AV	2.44G	100.33	Inf	-Inf	31.46	3	Vertical	20	1.34	-	68.87	27.42	4.04	-
AV	2.492G	44.10	54.00	-9.90	31.41	3	Vertical	20	1.34	-	12.69	27.32	4.09	-
PK	2.3644G	56.25	74.00	-17.75	31.61	3	Vertical	20	1.34	-	24.64	27.64	3.97	-
PK	2.4396G	101.80	Inf	-Inf	31.46	3	Vertical	20	1.34	-	70.34	27.42	4.04	-
PK	2.4868G	54.80	74.00	-19.20	31.42	3	Vertical	20	1.34	-	23.38	27.33	4.09	-

BT-LE(1Mbps)

15/03/2020

2440MHz_TX

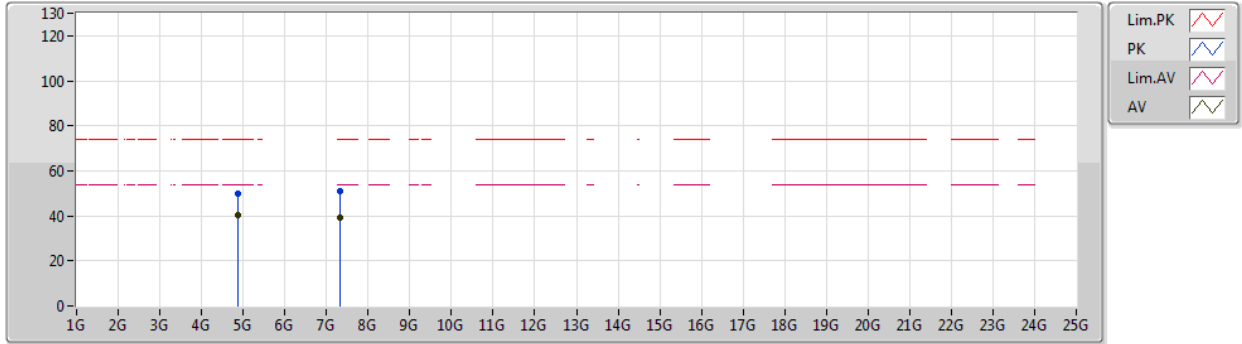


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3492G	44.72	54.00	-9.28	31.66	3	Horizontal	338	2.61	-	13.06	27.70	3.96	-
AV	2.44G	102.10	Inf	-Inf	31.46	3	Horizontal	338	2.61	-	70.64	27.42	4.04	-
AV	2.4924G	44.43	54.00	-9.57	31.41	3	Horizontal	338	2.61	-	13.02	27.32	4.09	-
PK	2.3488G	55.62	74.00	-18.38	31.66	3	Horizontal	338	2.61	-	23.96	27.70	3.96	-
PK	2.4396G	103.69	Inf	-Inf	31.46	3	Horizontal	338	2.61	-	72.23	27.42	4.04	-
PK	2.4888G	55.05	74.00	-18.95	31.41	3	Horizontal	338	2.61	-	23.64	27.32	4.09	-

BT-LE(1Mbps)

15/03/2020

2440MHz_TX

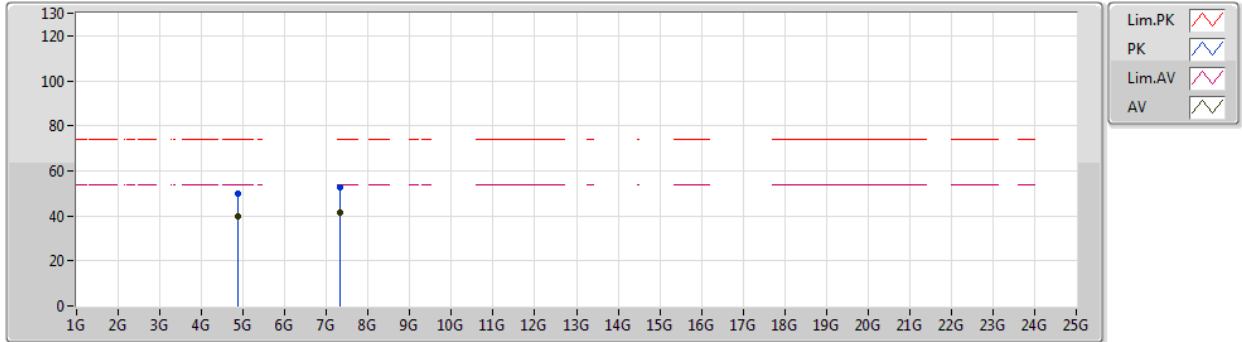


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.87976G	40.44	54.00	-13.56	7.63	3	Vertical	320	1.61	-	32.81	31.18	5.83	29.38
AV	7.3228G	38.98	54.00	-15.02	13.37	3	Vertical	218	1.50	-	25.61	36.28	7.46	30.37
PK	4.87944G	49.90	74.00	-24.10	7.63	3	Vertical	320	1.61	-	42.27	31.18	5.83	29.38
PK	7.324G	51.15	74.00	-22.85	13.36	3	Vertical	218	1.50	-	37.79	36.28	7.45	30.37

BT-LE(1Mbps)

15/03/2020

2440MHz_TX

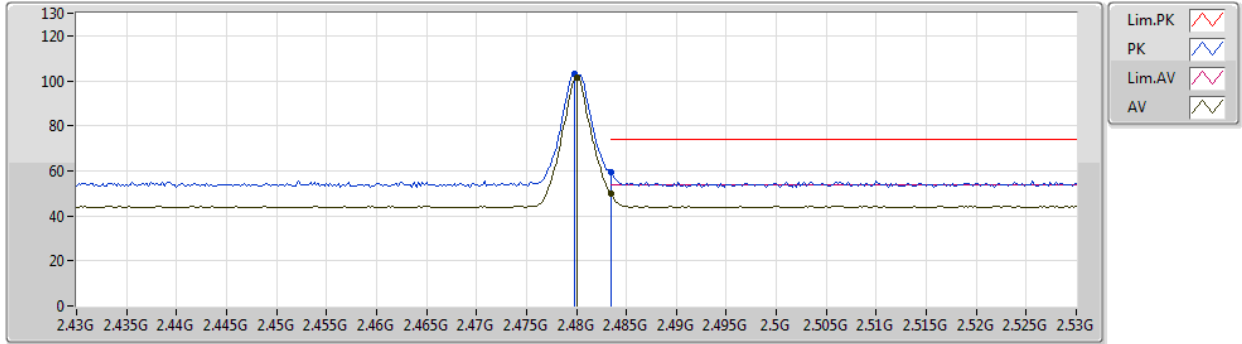


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.87968G	39.64	54.00	-14.36	7.63	3	Horizontal	318	1.50	-	32.01	31.18	5.83	29.38
AV	7.31936G	41.49	54.00	-12.51	13.38	3	Horizontal	55	3.00	-	28.11	36.28	7.46	30.36
PK	4.87998G	49.61	74.00	-24.39	7.63	3	Horizontal	318	1.50	-	41.98	31.18	5.83	29.38
PK	7.31894G	52.51	74.00	-21.49	13.38	3	Horizontal	55	3.00	-	39.13	36.28	7.46	30.36

BT-LE(1Mbps)

15/03/2020

2480MHz_TX

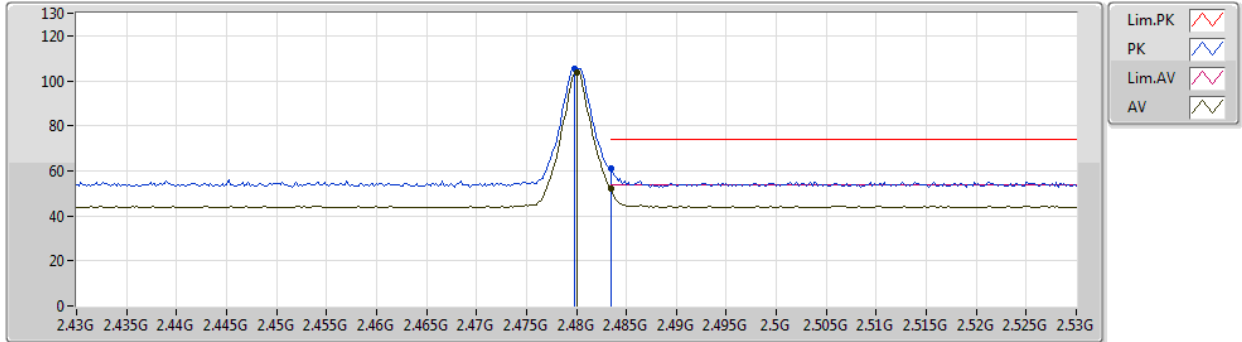


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.48G	101.32	Inf	-Inf	31.42	3	Vertical	15	1.33	-	69.90	27.34	4.08	-
AV	2.4835G	49.80	54.00	-4.20	31.41	3	Vertical	15	1.33	-	18.39	27.33	4.08	-
PK	2.4798G	102.87	Inf	-Inf	31.42	3	Vertical	15	1.33	-	71.45	27.34	4.08	-
PK	2.4835G	59.47	74.00	-14.53	31.41	3	Vertical	15	1.33	-	28.06	27.33	4.08	-

BT-LE(1Mbps)

15/03/2020

2480MHz_TX

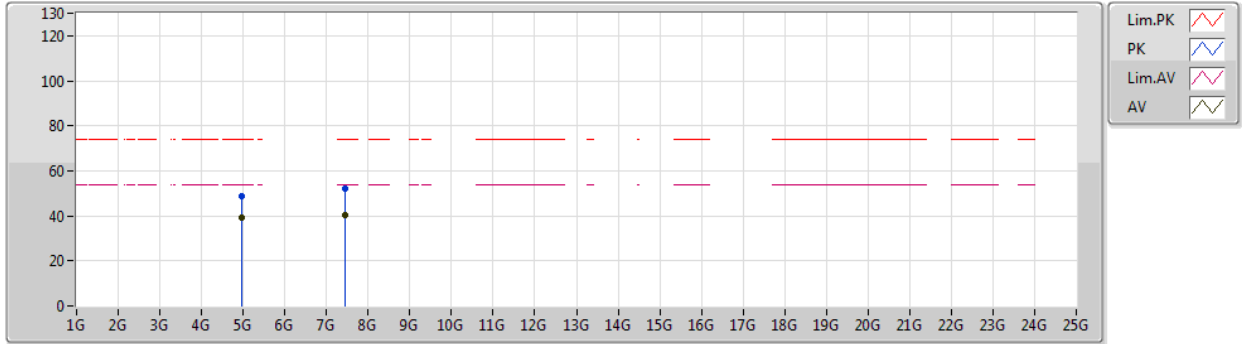


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.48G	103.89	Inf	-Inf	31.42	3	Horizontal	345	2.29	-	72.47	27.34	4.08	-
AV	2.4835G	52.05	54.00	-1.95	31.41	3	Horizontal	345	2.29	-	20.64	27.33	4.08	-
PK	2.4798G	105.40	Inf	-Inf	31.42	3	Horizontal	345	2.29	-	73.98	27.34	4.08	-
PK	2.4835G	60.89	74.00	-13.11	31.41	3	Horizontal	345	2.29	-	29.48	27.33	4.08	-

BT-LE(1Mbps)

15/03/2020

2480MHz_TX

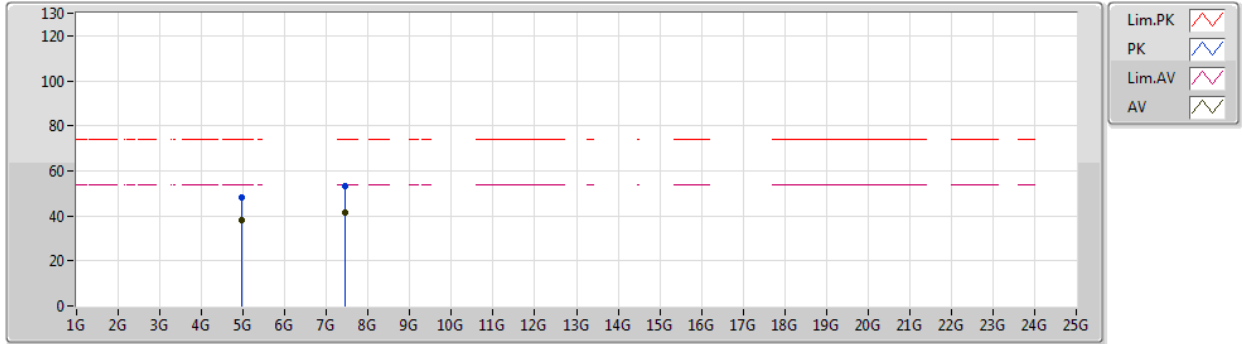


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.9598G	39.12	54.00	-14.88	7.93	3	Vertical	325	1.23	-	31.19	31.38	5.89	29.34
AV	7.43929G	40.24	54.00	-13.76	13.01	3	Vertical	75	1.85	-	27.23	36.24	7.24	30.47
PK	4.96025G	48.56	74.00	-25.44	7.93	3	Vertical	325	1.23	-	40.63	31.38	5.89	29.34
PK	7.43947G	52.02	74.00	-21.98	13.01	3	Vertical	75	1.85	-	39.01	36.24	7.24	30.47

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	4.95971G	38.34	54.00	-15.66	7.93	3	Horizontal	347	1.61	-	30.41	31.38	5.89	29.34
AV	7.4395G	41.35	54.00	-12.65	13.01	3	Horizontal	53	2.96	-	28.34	36.24	7.24	30.47
PK	4.96051G	48.34	74.00	-25.66	7.93	3	Horizontal	347	1.61	-	40.41	31.38	5.89	29.34
PK	7.43919G	53.03	74.00	-20.97	13.01	3	Horizontal	53	2.96	-	40.02	36.24	7.24	30.47