Testing Laboratory
1190

FCC RADIO TEST REPORT

FCC ID	:	TVE-121101A
Equipment	:	Wireless Network Extender
Brand Name	:	FORTINET
Model Name	:	FortiExtender 211Exxxxxx, FORTIEXTENDER-211Exxxxxx, FEX-211Exxxxxx (Please refer to section 1.1.5 for detail information.)
Applicant	:	Fortinet, Inc. 899 Kifer Road, Sunnyvale, CA 94086 USA
Manufacturer	:	Fortinet, Inc. 899 Kifer Road, Sunnyvale, CA 94086 USA
Standard	:	47 CFR FCC Part 15.247

The product was received on Apr. 09, 2019, and testing was started from Sep. 03, 2019 and completed on May 25, 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: Sam Chen

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

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History of this test report

Report No.	Version	Description	Issued Date
FR9O3129AB	01	Initial issue of report	Jun. 12, 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	-
Note: Reference to Sporton Project No.: 8D2027 (After evaluating, related test items have been verified, and the original test data is replaced.)				

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:
1. The test configuration, test mode and test software were written in this test report are declared by the manufacturer. 2. The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Sam Chen
Report Producer: Vicky Huang

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	1
2.4-2.4835GHz	BT-LE(2Mbps)	2.0	1

Note:
- Bluetooth LE uses a GFSK modulation.
- BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Ant.	Port	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	1	-	RF11C02360S	Printing Antenna	N/A	4

Note1: The above information was declared by manufacturer.

Note2: The EUT has one antenna.

For BT function:

For IEEE 802.15.1 Bluetooth mode (1TX/1RX)

Port 1 can be used as transmitting/receiving antenna.

1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
BT-LE(1Mbps)	0.61	2.15	381.25u	3k
BT-LE(2Mbps)	0.315	5.02	197.5u	10k

Note:
- DC is Duty Cycle.
- DCF is Duty Cycle Factor.

1.1.4 EUT Operational Condition

EUT Power Type	From AC Adapter or PoE			
Function	☒	Point-to-multipoint	☐	Point-to-point
Test Software Version	WCN Combo tool			
Support Mode	☒	LE 1M PHY: 1 Mb/s		
	☐	LE Coded PHY (S=2): 500 Kb/s		
	☐	LE Coded PHY (S=8): 125 Kb/s		
	☒	LE 2M PHY: 2 Mb/s		

Note: The above information was declared by manufacturer.

1.1.5 Table for Multiple Listing

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

Model Name	LTE Module	BT	PCBA	Description
FortiExtender 211Exxxxxx	LTE module chip: EM7565*1	BT*1	Same PCBA	All the models are identical, the difference model for difference brand served as marketing strategy.
FORTIEXTENDER-211Exxxxxx	LTE module chip: EM7565*1	BT*1	Same PCBA	
FEX-211Exxxxxx	LTE module chip: EM7565*1	BT*1	Same PCBA	
(where “x” can be “0-9”, or “A-Z”, or “-“, or blank for marketing purposes or software changes only and no HW related changes.)				

From the above models, model: FEX-211E was selected as representative model for the test and its data was recorded in this report.

1.2 Applicable Standards

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

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

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

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

1.3 Testing Location Information

Testing Location			
☐	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
☒	JHUBEI	ADD :	No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C.
		TEL :	886-3-656-9065 FAX : 886-3-656-9085

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH01-HY	Barry Hsiao	24~26°C / 51~56%	Sep. 03, 2019~ Sep. 05, 2019
Radiated (Below 1GHz)	03CH04-CB	Stim Sung	23.9~24.7°C / 65~67%	May 21, 2020
Radiated (Above 1GHz)	03CH09-HY	Daniel Hsu	22.1~23.3°C / 57.5~59.4%	Sep. 05, 2019
AC Conduction	CO01-CB	Ryo Fan	22~24°C / 59~60%	May 25, 2020

Test site Designation No. TW0006 with FCC.
Test site registered number IC 4086D with Industry Canada.

1.4 Measurement Uncertainty

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

For AC Conduction and Radiated(Below 1GHz) tests:

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	2.0 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	4.3 dB	Confidence levels of 95%

For RF Conducted and Radiated(Above 1GHz) tests:

Test Items	Uncertainty	Remark
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 Channel Mode

Mode	Power Setting
BT-LE(1Mbps)	-
2402MHz	7
2440MHz	6
2480MHz	7
BT-LE(2Mbps)	-
2402MHz	7
2440MHz	6
2480MHz	7

2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral
Operating Mode	Normal Link
1	EUT + GPS + Bluetooth + LTE Band 2(SIM Slot 1) + Adapter
2	EUT + GPS + Bluetooth + WCDMA Band 2(SIM Slot 1) + Adapter
Mode 1 has been evaluated to be the worst case between Mode 1~2, thus measurement for Mode 3 will follow this same test mode.	
3	EUT + GPS + Bluetooth + LTE Band 2(SIM Slot 2) + PoE
For operating mode 1 is the worst case and it was record in this test report.	

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

The Worst Case Mode for Following Conformance Tests	
Tests Item	Emissions in Restricted Frequency Bands
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.
Operating Mode < 1GHz	Normal Link
1	EUT at Z-axis + GPS + Bluetooth + LTE Band 2(SIM Slot 1) + Adapter
2	EUT at Y-axis + GPS + Bluetooth + LTE Band 2(SIM Slot 1) + Adapter
Mode 1 has been evaluated to be the worst case between Mode 1~2, thus measurement for Mode 3 will follow this same test mode.	
3	EUT at Z-axis + GPS + Bluetooth + WCDMA Band 2(SIM Slot 1) + Adapter
Mode 1 has been evaluated to be the worst case among Mode 1~3, thus measurement for Mode 4 will follow this same test mode.	
4	EUT at Z-axis + GPS + Bluetooth + LTE Band 2(SIM Slot 2) + PoE
For operating mode 4 is the worst case and it was record in this test report.	

Operating Mode > 1GHz	CTX
The EUT was performed at Z axis and Y axis position. The worst case was found at Z axis, so it was selected to perform test and its test result was written in the report.	
1	EUT at Z-axis

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation
Test Condition	Radiated measurement
Operating Mode	Normal Link
1	Bluetooth+WWAN(LTE)
2	Bluetooth+WWAN(WCDMA)
Refer to Sporton Test Report No.: FA9O3129 for Co-location RF Exposure Evaluation.	

Note:
1. The EUT contains a certified WWAN module (FCC ID: N7NEM75)
2. The EUT was powered by Adapter or PoE, and the Adapter and PoE was for measurement only, would not be marketed.
   The Adapter and PoE information as below:

Support Unit	Brand Name	Model Name
Adapter	APD	WA-30J12R
Adapter	HOLOTO	ADS-25SGP-12
PoE	Fortinet	Fortiswitch 224E

2.3 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

2.4 Accessories

N/A

2.5 Support Equipment

For AC Conduction:

Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
A	SIM Card	N/A	N/A	N/A
B	LAN1 NB	DELL	E6430	N/A
C	LAN4 NB	DELL	E6430	N/A
D	Flash disk3.0	Transcend	JetFlash-700	N/A
E	iPad	Apple	A1430	N/A
F	LTE Base station	Anritsu	MT8820C	N/A
G	GPS Simulator	WELNAVIGATE	GS-100	N/A
H	WAN NB	DELL	E6430	N/A
I	Adapter	APD	WA-30J12R	N/A

For Radiated (below 1GHz):

Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
A	PoE	Fortinet	Fortiswitch 224E	N/A
B	iPad	Apple	A1430	N/A
C	LTE base station	Anritsu	MT8820C	N/A
D	WAN NB	DELL	E4300	N/A
E	GPS Simulator	WELNAVIGATE	GS-100	N/A
F	LAN NB	DELL	E4300	N/A
G	Flash disk3.0	Silicon Power	B06	N/A
H	SIM Card	N/A	N/A	N/A

For Radiated (above 1GHz):

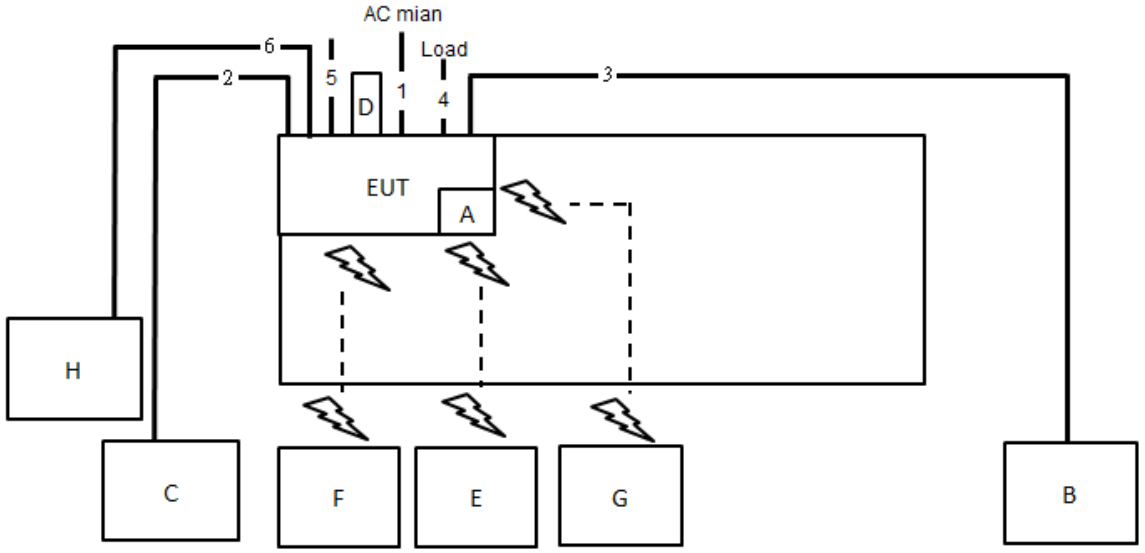
Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
A	Adapter	HOLOTO	ADS-25SGP-12	N/A

For RF Conducted:

Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
A	Notebook	DELL	E5410	DoC
B	Adapter for NB	DELL	HA65NM130	DoC

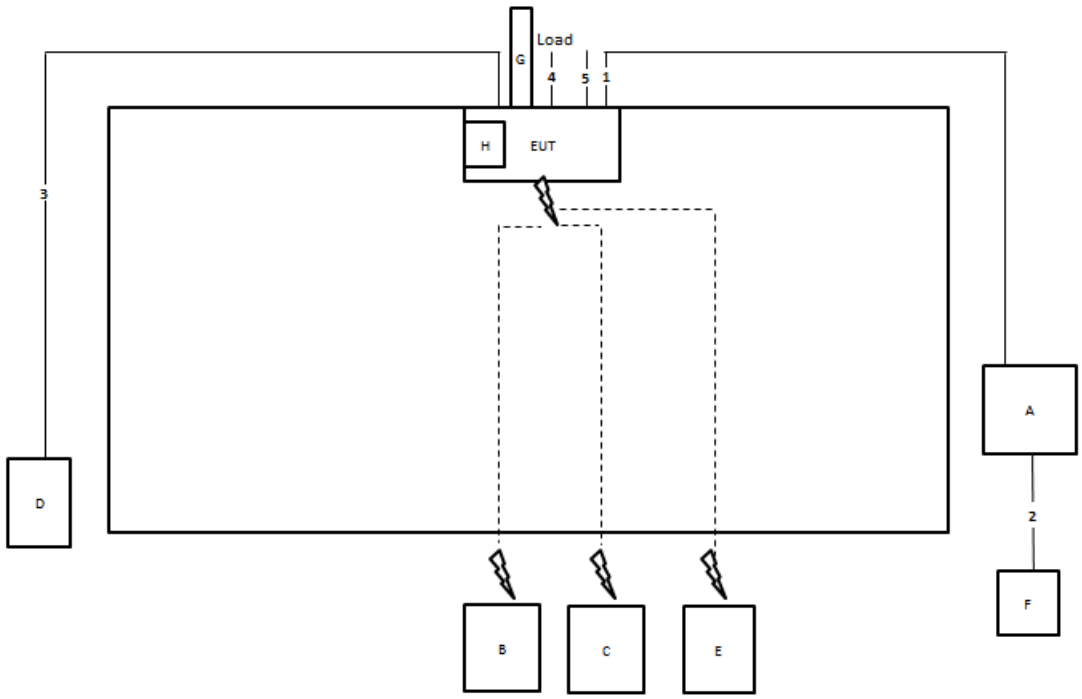
2.6 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



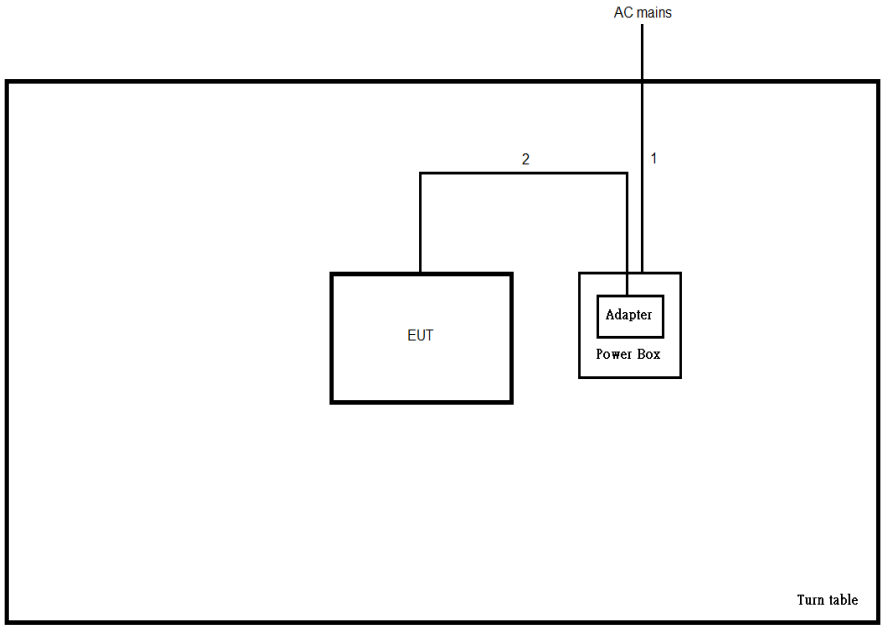
Item	Connection	Shielded	Length
1	Power cable	No	1.4m
2	RJ-45 cable	No	10m
3	RJ-45 cable	No	10m
4	RJ-45 cable*2	No	1.5m
5	Console cable	No	1.8m
6	RJ-45 cable	No	10m

Test Setup Diagram - Radiated Test < 1GHz



Item	Connection	Shielded	Length
1	RJ-45 cable	No	10m
2	RJ-45 cable	No	1.5m
3	RJ-45 cable	No	10m
4	RJ-45 cable*3	No	1.5m
5	Console cable	No	1.8m

Test Setup Diagram - Radiated Test > 1GHz



Item	Connection	Shielded	Length
1	AC Power line	No	1.8m
2	DC Power line	No	1.45m

3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit		
Frequency Emission (MHz)	**Quasi-Peak**	**Average**
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50
Note 1: * Decreases with the logarithm of the frequency.		

3.1.2 Measuring Instruments

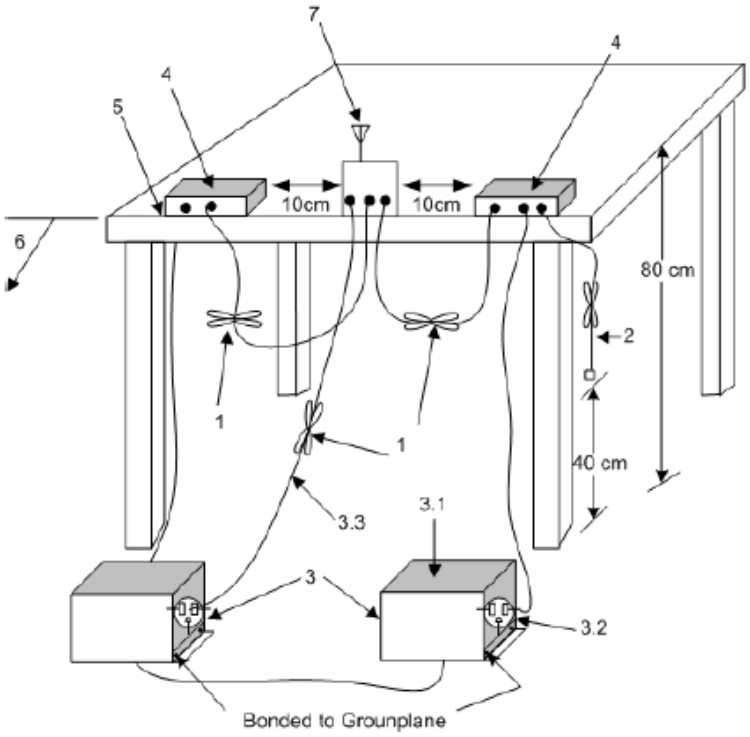
Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

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

3.1.4 Test Setup

AC Power-line Conducted Emissions



1—Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long.
2—The I/O cables that are not connected to an accessory shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
3—EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω loads. LISN may be placed on top of, or immediately beneath, reference ground plane.
3.1—All other equipment powered from additional LISN(s).
3.2—A multiple-outlet strip may be used for multiple power cords of non-EUT equipment.
3.3—LISN at least 80 cm from nearest part of EUT chassis.
4—Non-EUT components of EUT system being tested.
5—Rear of EUT, including peripherals, shall all be aligned and flush with edge of tabletop.
6—Edge of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.
7—Antenna can be integral or detachable. If detachable, then the antenna shall be attached for this test.

3.1.5 Measurement Results Calculation

The measured Level is calculated using:

a. Corrected Reading (dBuV) = LISN Factor + Cable Loss + Read Level = Level

b. Margin = - Limit + (Read Level + LISN Factor + Cable Loss)

3.1.6 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

3.2 DTS Bandwidth

3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit
Systems using digital modulation techniques:
▪ 6 dB bandwidth ≥ 500 kHz.

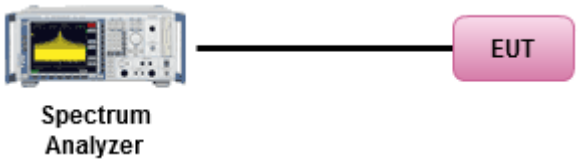
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Test Method	
▪ For the emission bandwidth shall be measured using one of the options below:	
	☒ Refer as FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.1 Option 1 for 6 dB bandwidth measurement.
	☐ Refer as FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.2 Option 2 for 6 dB bandwidth measurement.
	☐ Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.

3.2.4 Test Setup

Emission Bandwidth


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		
	▪ If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)	
	▪ Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)$ dBm	
	▪ Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)/3$ dBm	
	▪ Smart antenna system (SAS):	
		- Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)/3$ dBm
		- Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)/3$ dBm
		- Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)/3 + 8$dB dBm
P_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, **G_{TX}** = the maximum transmitting antenna directional gain in dBi.		

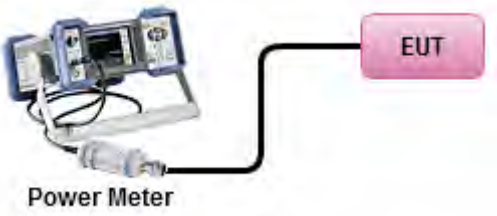
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method	
▪ Maximum Peak Conducted Output Power	
	☐ Refer as FCC KDB 558074, clause 8.3.1.1 & C63.10 clause 11.9.1.1 (RBW ≥ EBW method).
	☐ Refer as FCC KDB 558074, clause 8.3.1.3 & C63.10 clause 11.9.1.3 (peak power meter).
▪ Maximum Conducted Output Power	
	[duty cycle ≥ 98% or external video / power trigger]
	☐ Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.2 Method AVGSA-1.
	☐ Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.3 Method AVGSA-1A. (alternative)
	duty cycle < 98% and average over on/off periods with duty factor
	☐ Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.4 Method AVGSA-2.
	☐ Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.5 Method AVGSA-2A (alternative)
	☐ Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.6 Method AVGSA-3
	☐ Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.7 Method AVGSA-3A (alternative)
	Measurement using a power meter (PM)
	☐ Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.1 Method AVGPM (using an RF average power meter).
	☒ Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.2 Method AVGPM-G (using an gate RF average power meter).
▪ For conducted measurement.	
	▪ If the EUT supports multiple transmit chains using options given below: Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.
	▪ If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + \ldots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$

3.3.4 Test Setup

Maximum Conducted Output Power (Power Meter)


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

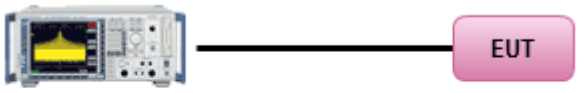
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

Test Method			
▪ 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).			
	☒ Refer as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10 Method Max. PSD.		
	[duty cycle ≥ 98% or external video / power trigger]		
▪ For conducted measurement.			
	▪ If The EUT supports multiple transmit chains using options given below:		
		☐	Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the NTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.
		☐	Option 2: Measure and sum spectral maxima across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs. These operations shall be performed separately over frequency spans that have different out-of-band or spurious emission limits,
		☐	Option 3: Measure and add 10 log(N) dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with the limit.

3.4.4 Test Setup

Power Spectral Density
 Spectrum Analyzer

3.4.5 Test Result of Power Spectral Density

Refer as Appendix D

3.5 Emissions in Non-restricted Frequency Bands

3.5.1 Emissions in Non-restricted Frequency Bands Limit

Un-restricted Band Emissions Limit	
RF output power procedure	**Limit (dBc)**
Peak output power procedure	20
Average output power procedure	30
Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level. Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.	

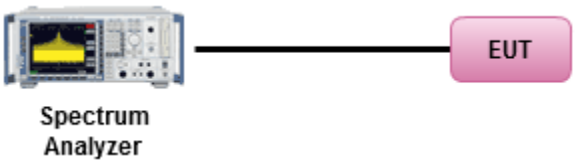
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

Test Method
▪ Refer as FCC KDB 558074, clause 8.5 for unwanted emissions into non-restricted bands.

3.5.4 Test Setup

Emissions in Non-restricted Frequency Bands


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 below30 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.

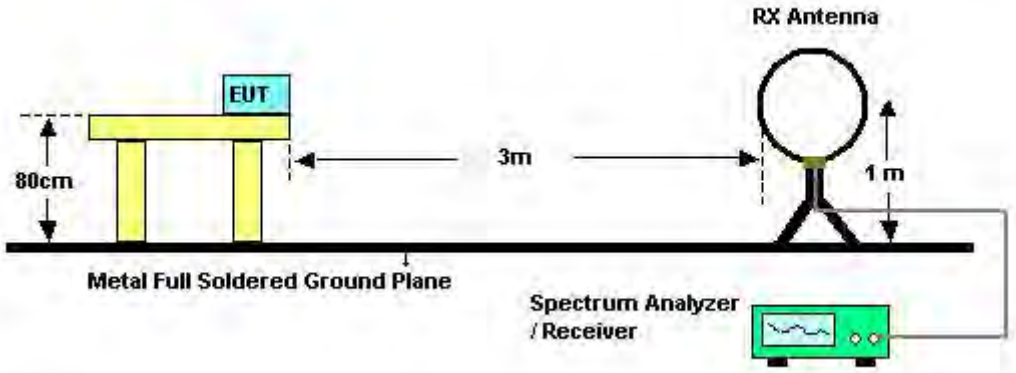
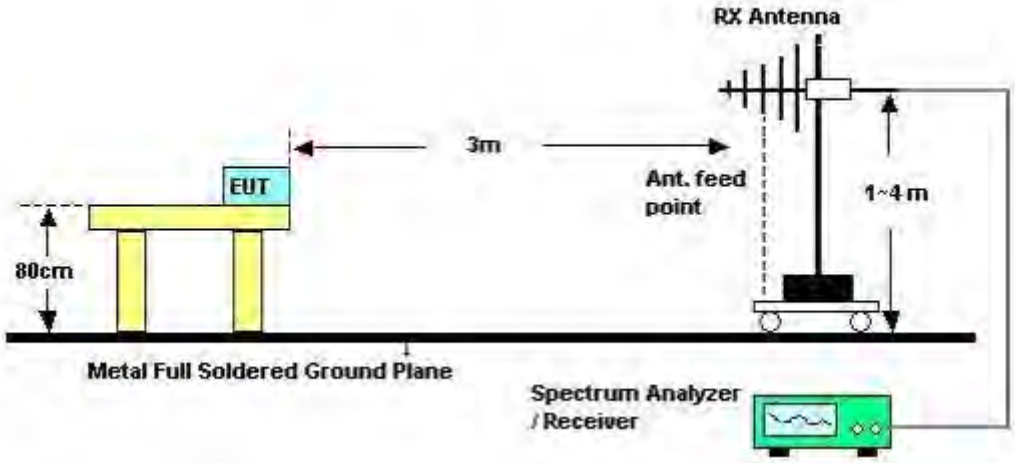
3.6.2 Measuring Instruments

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

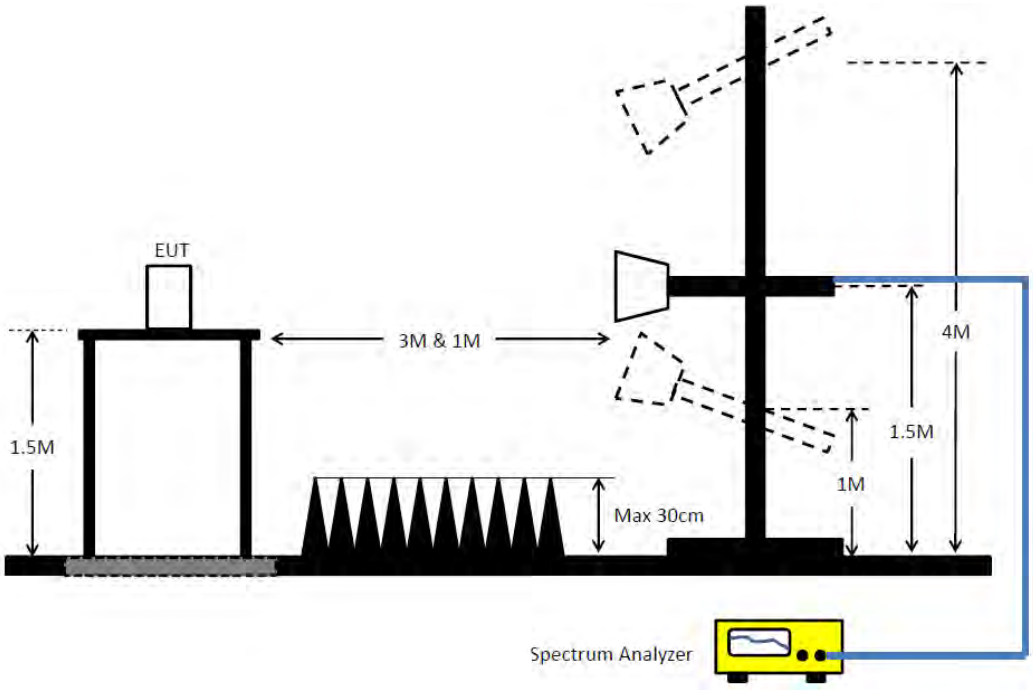
3.6.3 Test Procedures

Test Method			
▪ The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].			
▪ 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.			
▪ For the transmitter unwanted emissions shall be measured using following options below:			
	▪ Refer as FCC KDB 558074, clause 8.6 for unwanted emissions into restricted bands.		
		☐	Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.1(trace averaging for duty cycle ≥98%).
		☐	Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.2(trace averaging + duty factor).
		☒	Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.3(Reduced VBW≥1/T).
		☐	Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). VBW ≥ 1/T, where T is pulse time.
		☐	Refer as ANSI C63.10, clause 7.5 average value of pulsed emissions.
		☒	Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.4 measurement procedure peak limit.
▪ For the transmitter band-edge emissions shall be measured using following options below:			
	▪ Refer as FCC KDB 558074 clause 8.7 & c63.10 clause 11.13.1, When the performing peak or average radiated measurements, emissions within 2 MHz of the authorized band edge may be measured using the marker-delta method described below.		
	▪ Refer as FCC KDB 558074, clause 8.7 (ANSI C63.10, clause 6.10.6) for marker-delta method for band-edge measurements.		
	▪ Refer as FCC KDB 558074, clause 8.7 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).		
	▪ For conducted unwanted emissions into restricted bands (absolute emission limits). Devices with multiple transmit chains using options given below: (1) Measure and sum the spectra across the outputs or (2) Measure and add 10 log(N) dB		
	▪ For FCC KDB 662911 The methodology described here may overestimate array gain, thereby resulting in apparent failures to satisfy the out-of-band limits even if the device is actually compliant. In such cases, compliance may be demonstrated by performing radiated tests around the frequencies at which the apparent failures occurred.		

3.6.4 Test Setup

Emissions in Restricted Frequency Bands
9kHz ~30MHz

30MHz~1GHz


Above 1GHz



3.6.5 Measurement Results Calculation

The measured Level is calculated using:
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor (if applicable) = Level.

3.6.6 Emissions in Restricted Frequency Bands (Below 30MHz)

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to KDB414788 Radiated Test Site, and the result came out very similar.
All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.
The radiated emissions were investigated from 9 kHz or the lowest frequency generated within the device, up to the 10 harmonic or 40 GHz, whichever is appropriate.

3.6.7 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix F

4 Test Equipment and Calibration Data

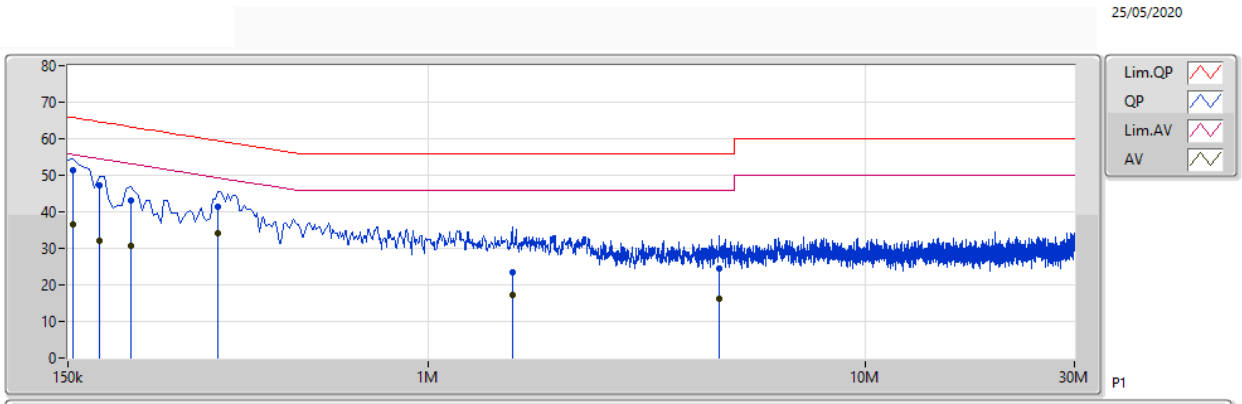
Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.45GHz	Feb. 26, 2020	Feb. 25, 2021	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 25, 2019	Dec. 24, 2020	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Feb. 25, 2020	Feb. 24, 2021	Conduction (CO01-CB)
COND Cable	Woken	Cable	Low cable-CO01	9kHz ~ 30MHz	May 20, 2020	May 19, 2021	Conduction (CO01-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA with 6 dB attenuator	Schaffner & EMCI	CBL6112B & N-6-06	22021&AT-N0607	30MHz ~ 1GHz	Oct. 12, 2019	Oct. 11, 2020	Radiation (03CH04-CB)
Pre-Amplifier	Agilent	310N	187291	0.1MHz ~ 1GHz	Mar. 19, 2020	Mar. 18, 2021	Radiation (03CH04-CB)
Spectrum Analyzer	R&S	FSP40	100142	9kHz~40GHz	Dec. 18, 2019	Dec. 17, 2020	Radiation (03CH04-CB
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	May 13, 2020	May 12, 2021	Radiation (03CH04-CB)
RF Cable-low	Woken	RG402	Low Cable-03+22	30MHz – 1GHz	Oct. 07, 2019	Oct. 06, 2020	Radiation (03CH04-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Apr. 13, 2020	Apr. 12, 2021	Radiation (03CH04-CB)
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	1GHz ~ 18GHz	Jun. 13, 2019	Jun. 12, 2020	Radiation (03CH09-HY)
Microwave System Premplifier	Agilent	8449B	3008A02326	1GHz ~ 26.5GHz	Jul. 15, 2019	Jul. 14, 2020	Radiation (03CH09-HY)
Amplifier	EMC	EMC9135	980232	9KHz~1GHz	Apr. 22, 2019	Apr. 21, 2020	Radiation (03CH09-HY)
EMI Test Receiver	R&S	ESR3	102052	9kHz ~ 3.6GHz	Apr. 09, 2019	Apr. 08, 2020	Radiation (03CH09-HY)
EXA Signal Analyzer	KEYSIGHT	N9010A	MY54200885	10Hz~44GHz	Aug. 07, 2019	Aug. 08, 2020	Radiation (03CH09-HY)
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA9120 D 1534	1GHz~18GHz	May 22, 2019	May 21, 2020	Radiation (03CH09-HY)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170614	18GHz~40GHz	May 22, 2019	May 21, 2020	Radiation (03CH09-HY)
Preamplifier	MITEQ	TTA1840-35-HG	1864481	18GHz ~ 40GHz	Aug. 05, 2019	Aug. 04, 2020	Radiation (03CH09-HY)
RF Cable-high	HUBER+SUHNER	SUCOFLEX104	SN 556626/4 + 556627	1GHz ~ 40GHz	Mar. 13, 2019	Mar. 12, 2020	Radiation (03CH09-HY)
Spectrum Analyzer	R&S	FSV 40	101013	10Hz~40GHz	Mar. 13, 2019	Mar. 12, 2020	Conducted (TH01-HY)
Power Sensor	Anritsu	MA2411B	1339407	300MHz ~ 40GHz	Nov. 17, 2018	Nov. 16, 2019	Conducted (TH01-HY)
Power Meter	Anritsu	ML2495A	1517010	300MHz ~ 40GHz	Nov. 17, 2018	Nov. 16, 2019	Conducted (TH01-HY)
Cable 0.2m	HUBER	MY10710/4	RF Cable - 01	30MHz ~18G	Mar. 21, 2019	Mar. 20, 2020	Conducted (TH01-HY)
Cable 0.2m	HUBER	MY10711/4	RF Cable - 02	30MHz ~18G	Mar. 21, 2019	Mar. 20, 2020	Conducted (TH01-HY)
Cable 0.5m	HUBER	MY39470/4	RF Cable - 29	30MHz ~18G	Mar. 21, 2019	Mar. 20, 2020	Conducted (TH01-HY)
SMB100A Signal Generator	R&S	SMB100A03	181147	100kHz~40GHz	Nov. 12, 2018	Nov. 11, 2020	Conducted (TH01-HY)

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

NCR means Non-Calibration required.

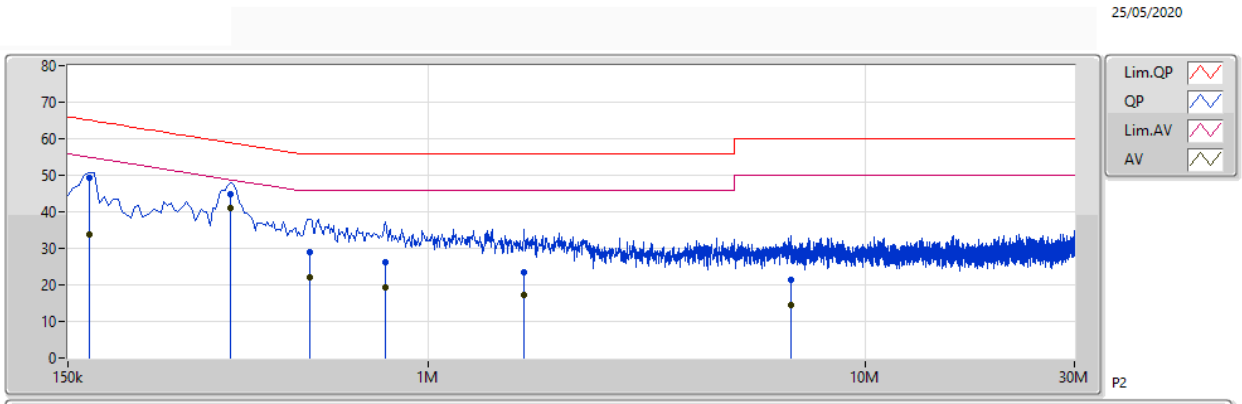
AC Power-line Conducted Emissions Result			
Operating Mode	1	**Power Phase**	Line
Operating Function	Normal Link		



Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	AF	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	154.5k	51.52	65.75	-14.23	9.87	Line	"Worst"	41.65	0.05	0.03	9.79
AV	154.5k	36.63	55.75	-19.12	9.87	Line	-	26.76	0.05	0.03	9.79
QP	177k	47.40	64.62	-17.22	9.86	Line	-	37.54	0.04	0.03	9.79
AV	177k	32.08	54.62	-22.54	9.86	Line	-	22.22	0.04	0.03	9.79
QP	208.5k	43.02	63.27	-20.25	9.86	Line	-	33.16	0.04	0.03	9.79
AV	208.5k	30.61	53.27	-22.66	9.86	Line	-	20.75	0.04	0.03	9.79
QP	330k	41.45	59.44	-17.99	9.87	Line	-	31.58	0.04	0.03	9.80
AV	330k	34.00	49.44	-15.44	9.87	Line	-	24.13	0.04	0.03	9.80
QP	1.554M	23.57	56.00	-32.43	9.95	Line	-	13.62	0.06	0.06	9.83
AV	1.554M	17.14	46.00	-28.86	9.95	Line	-	7.19	0.06	0.06	9.83
QP	4.628M	24.53	56.00	-31.47	10.06	Line	-	14.47	0.10	0.13	9.83
AV	4.628M	16.20	46.00	-29.80	10.06	Line	-	6.14	0.10	0.13	9.83

Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

AC Power-line Conducted Emissions Result			
Operating Mode	1	**Power Phase**	Neutral
Operating Function	Normal Link		



Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	AF	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	168k	49.27	65.06	-15.79	9.86	Neutral	-	39.41	0.04	0.03	9.79
AV	168k	33.86	55.06	-21.20	9.86	Neutral	-	24.00	0.04	0.03	9.79
QP	352.5k	44.72	58.91	-14.19	9.88	Neutral	-	34.84	0.04	0.03	9.81
AV	352.5k	40.99	48.91	-7.92	9.88	Neutral	"Worst"	31.11	0.04	0.03	9.81
QP	537k	29.03	56.00	-26.97	9.89	Neutral	-	19.14	0.05	0.03	9.81
AV	537k	21.95	46.00	-24.05	9.89	Neutral	-	12.06	0.05	0.03	9.81
QP	798k	26.09	56.00	-29.91	9.92	Neutral	-	16.17	0.06	0.04	9.82
AV	798k	19.28	46.00	-26.72	9.92	Neutral	-	9.36	0.06	0.04	9.82
QP	1.658M	23.53	56.00	-32.47	9.96	Neutral	-	13.57	0.07	0.06	9.83
AV	1.658M	17.33	46.00	-28.67	9.96	Neutral	-	7.37	0.07	0.06	9.83
QP	6.729M	21.40	60.00	-38.60	10.15	Neutral	-	11.25	0.14	0.14	9.87
AV	6.729M	14.41	50.00	-35.59	10.15	Neutral	-	4.26	0.14	0.14	9.87

Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

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	1.032M	1M03F1D	702.5k	1.022M
BT-LE(2Mbps)	1.235M	2.049M	2M05F1D	1.18M	2.039M

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

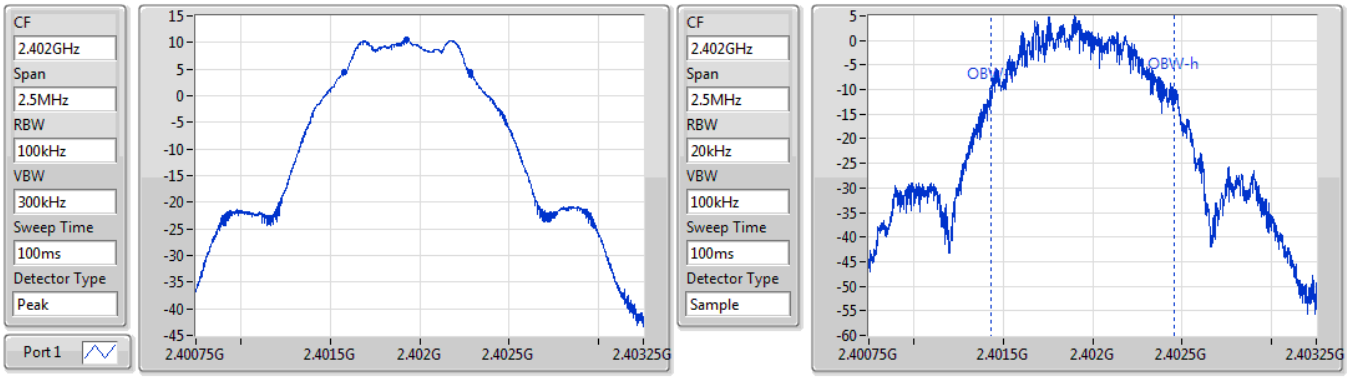
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	702.5k	1.026M
2440MHz	Pass	500k	703.75k	1.022M
2480MHz	Pass	500k	707.5k	1.032M
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	500k	1.228M	2.039M
2440MHz	Pass	500k	1.18M	2.041M
2480MHz	Pass	500k	1.235M	2.049M

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

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

2402MHz

03/09/2019

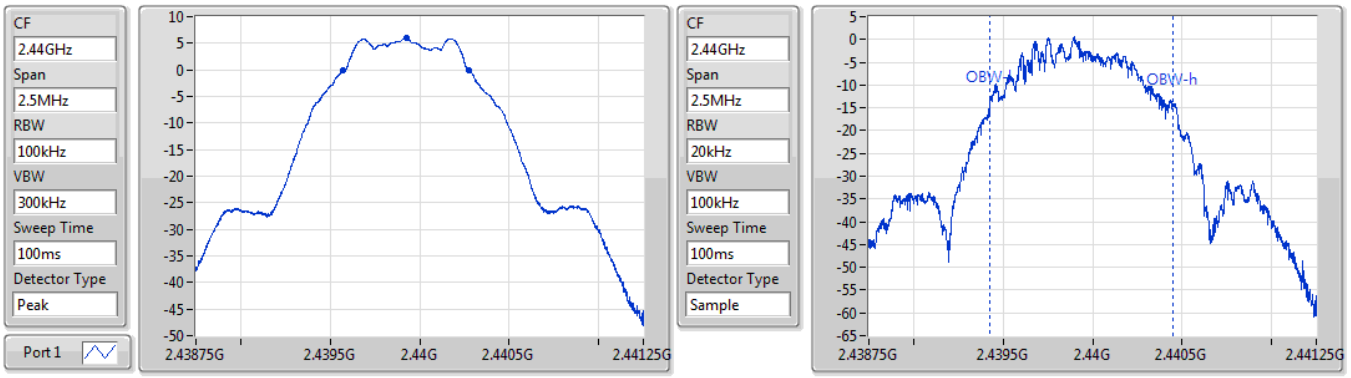


6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
702.5k	2.401579G	2.402281G	1.026M	2.401432G	2.402457G	500k	1

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

2440MHz

05/09/2019



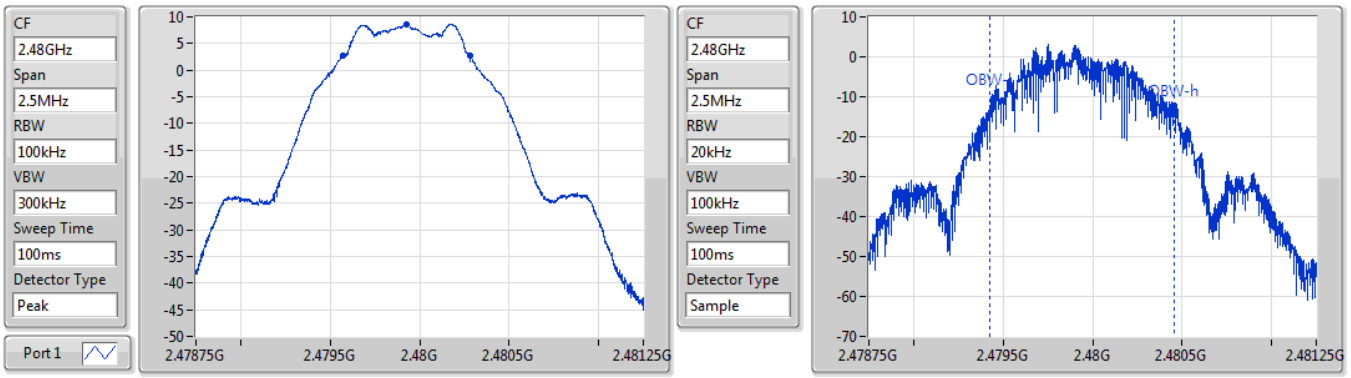
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
703.75k	2.439574G	2.440278G	1.022M	2.439428G	2.44045G	500k	1

BT-LE(1Mbps)

EBW

2480MHz

03/09/2019



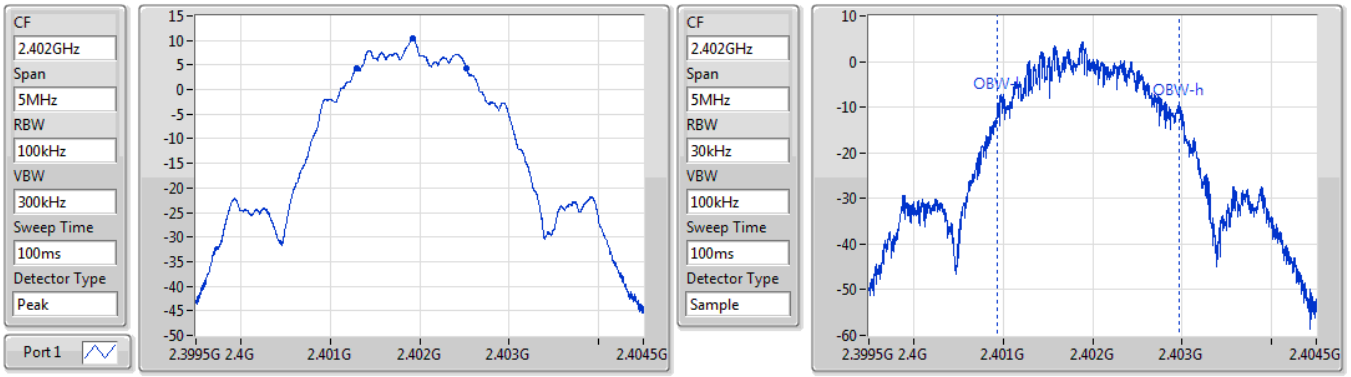
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
707.5k	2.479571G	2.480279G	1.032M	2.479425G	2.480457G	500k	1

BT-LE(2Mbps)

EBW

2402MHz

03/09/2019

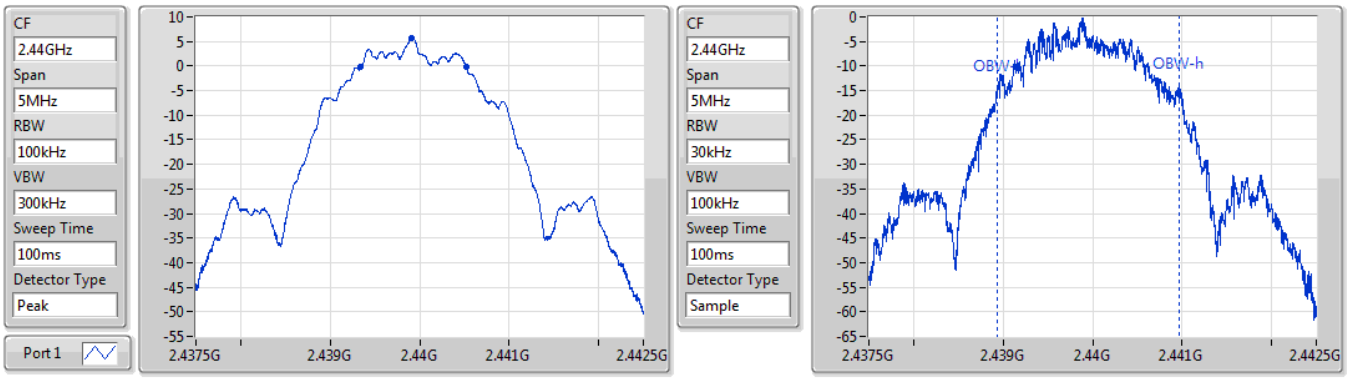


6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.228M	2.401295G	2.402523G	2.039M	2.400936G	2.402975G	500k	1

BT-LE(2Mbps) EBW

2440MHz

05/09/2019

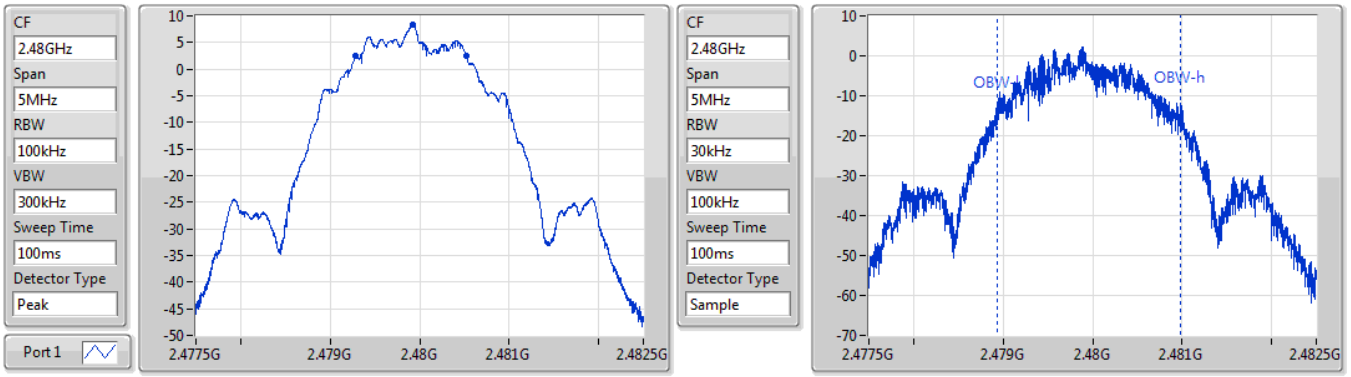


6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.18M	2.439338G	2.440518G	2.041M	2.438928G	2.44097G	500k	1

BT-LE(2Mbps) EBW

2480MHz

03/09/2019



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.235M	2.479285G	2.48052G	2.049M	2.478928G	2.480977G	500k	1

Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	11.23	0.01327
BT-LE(2Mbps)	11.30	0.01349

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	4.00	11.23	30.00
2440MHz	Pass	4.00	6.64	30.00
2480MHz	Pass	4.00	9.43	30.00
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	4.00	11.30	30.00
2440MHz	Pass	4.00	6.66	30.00
2480MHz	Pass	4.00	9.47	30.00

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

Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	10.86	0.01219
BT-LE(2Mbps)	10.87	0.01222

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	4.00	10.86	30.00
2440MHz	Pass	4.00	5.92	30.00
2480MHz	Pass	4.00	9.07	30.00
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	4.00	10.87	30.00
2440MHz	Pass	4.00	5.56	30.00
2480MHz	Pass	4.00	9.05	30.00

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

Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-4.55
BT-LE(2Mbps)	-6.59

RBW=3 kHz.

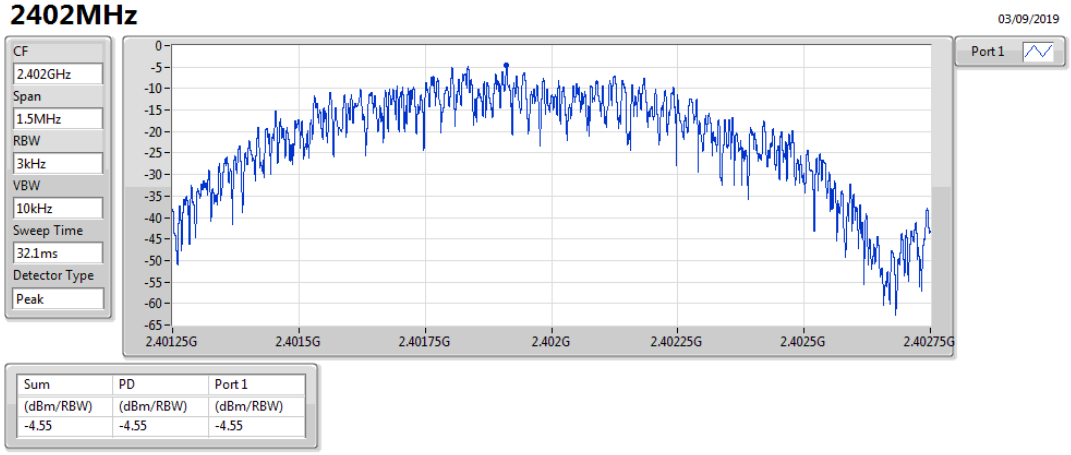
Result

Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	4.00	-4.55	8.00
2440MHz	Pass	4.00	-9.07	8.00
2480MHz	Pass	4.00	-6.55	8.00
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	4.00	-6.59	8.00
2440MHz	Pass	4.00	-11.04	8.00
2480MHz	Pass	4.00	-10.12	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;

BT-LE(1Mbps) **PSD**

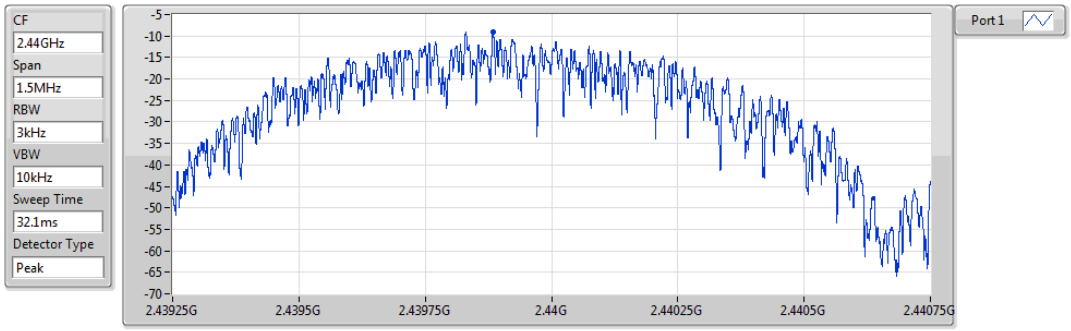
2402MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-4.55	-4.55	-4.55

BT-LE(1Mbps) **PSD**

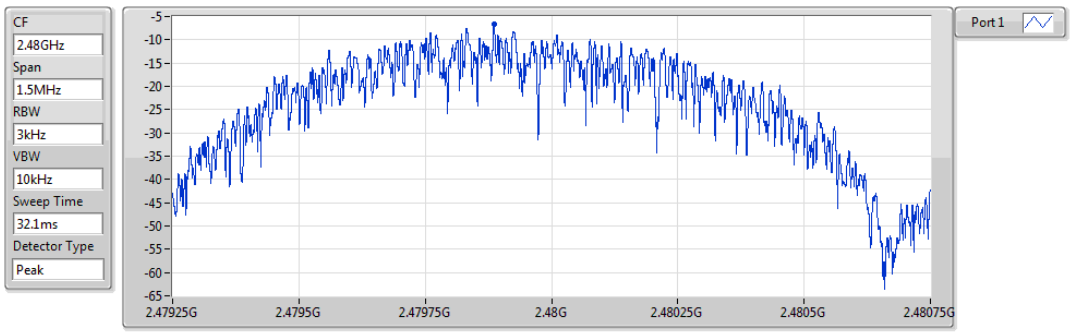
2440MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-9.07	-9.07	-9.07

BT-LE(1Mbps) **PSD**

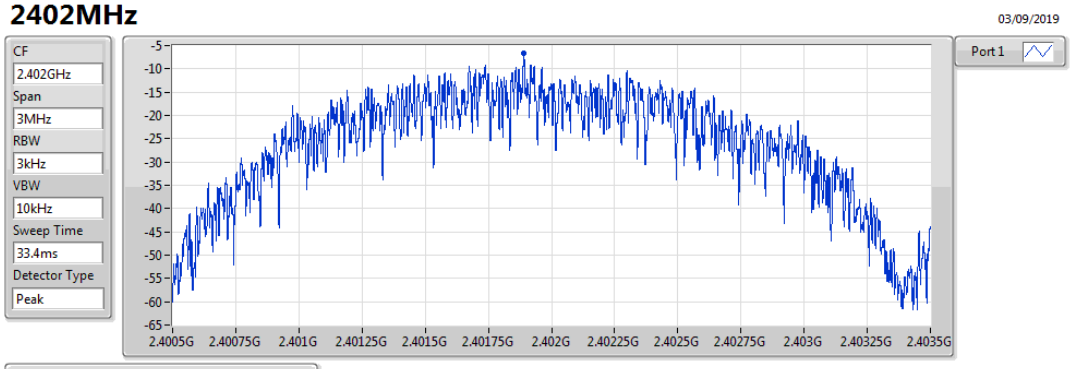
2480MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-6.55	-6.55	-6.55

BT-LE(2Mbps) **PSD**

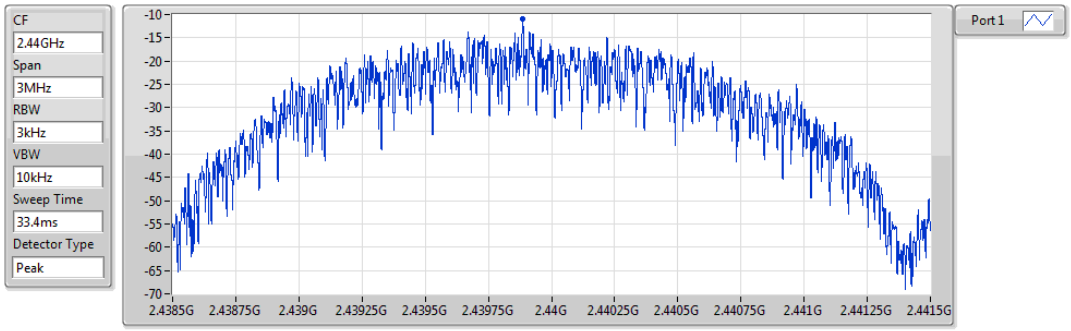
2402MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-6.59	-6.59	-6.59

BT-LE(2Mbps) **PSD**

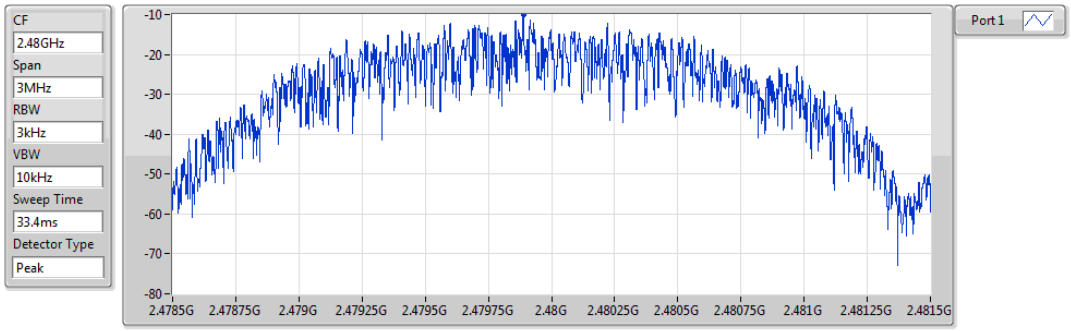
2440MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-11.04	-11.04	-11.04

BT-LE(2Mbps) **PSD**

2480MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-10.12	-10.12	-10.12

Summary

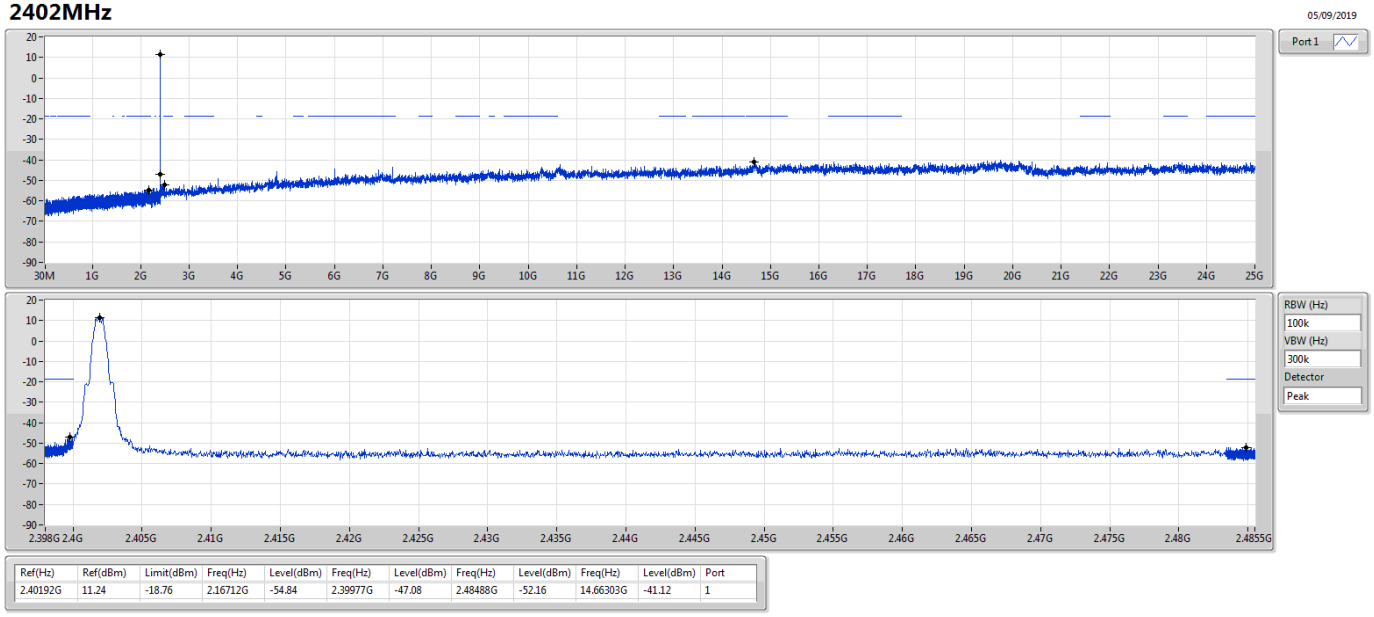
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	2.40192G	11.24	-18.76	2.08365G	-54.36	2.39944G	-52.62	2.48356G	-51.99	16.41353G	-40.78	1
BT-LE(2Mbps)	Pass	2.40188G	10.90	-19.10	2.00709G	-54.17	2.39993G	-21.44	2.48434G	-52.40	23.4185G	-40.88	1

Result

Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.40192G	11.24	-18.76	2.16712G	-54.84	2.39977G	-47.08	2.48488G	-52.16	14.66303G	-41.12	1
2440MHz	Pass	2.40192G	11.24	-18.76	2.08365G	-54.36	2.39944G	-52.62	2.48356G	-51.99	16.41353G	-40.78	1
2480MHz	Pass	2.40192G	11.24	-18.76	1.75953G	-53.93	2.39975G	-53.03	2.48375G	-50.49	24.45965G	-40.86	1
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.40188G	10.90	-19.10	2.00709G	-54.17	2.39993G	-21.44	2.48434G	-52.40	23.4185G	-40.88	1
2440MHz	Pass	2.40188G	10.90	-19.10	2.11859G	-53.97	2.3991G	-52.11	2.48499G	-51.95	14.6949G	-40.35	1
2480MHz	Pass	2.40188G	10.90	-19.10	1.99644G	-52.94	2.3999G	-52.62	2.48352G	-49.50	21.77508G	-39.90	1

BT-LE(1Mbps) **CSE NdB**

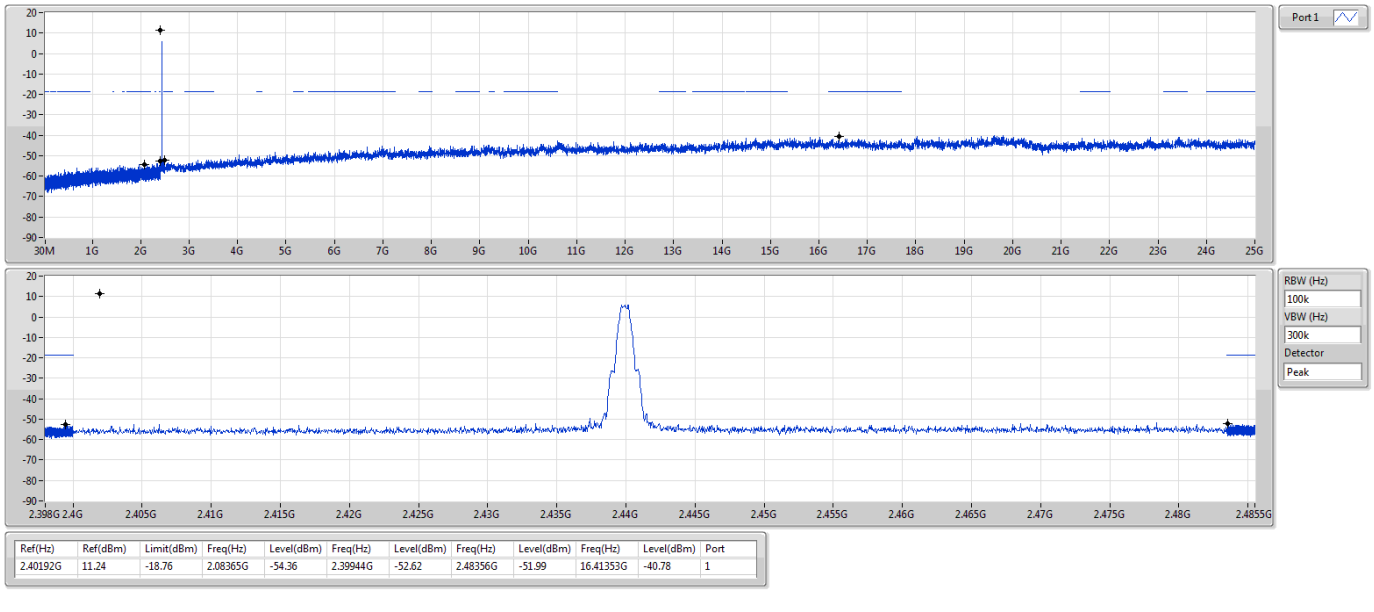
2402MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40192G	11.24	-18.76	2.16712G	-54.84	2.39977G	-47.08	2.48488G	-52.16	14.66303G	-41.12	1

BT-LE(1Mbps) **CSE NdB**

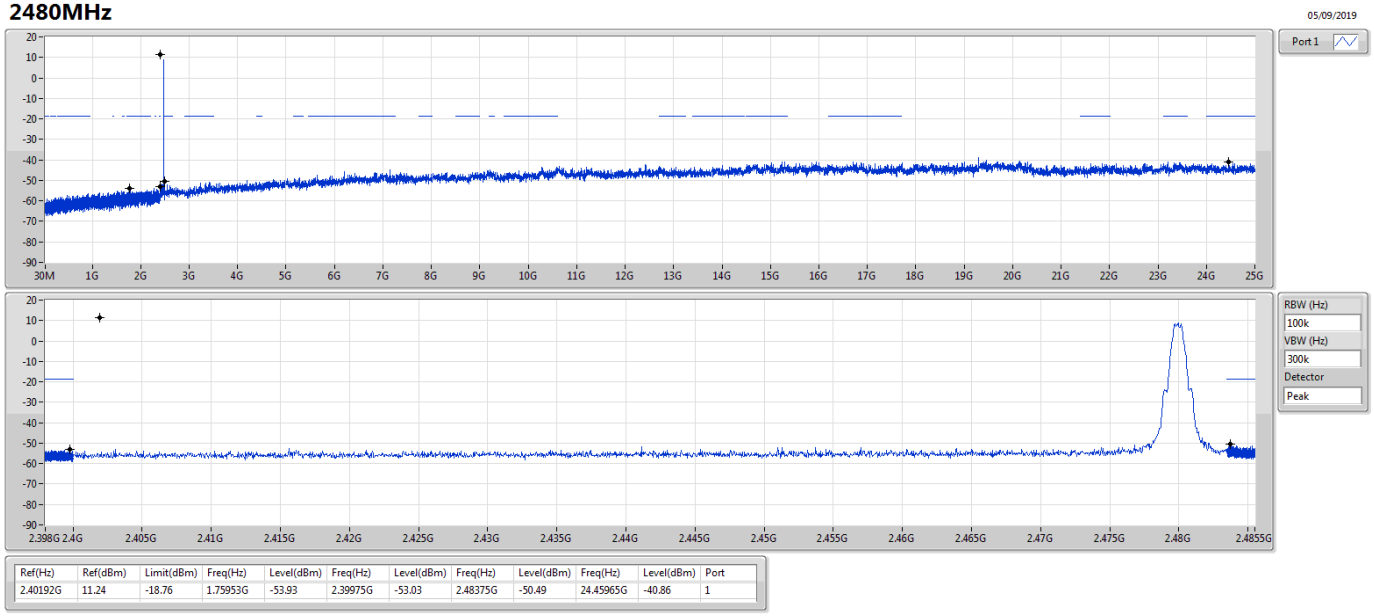
2440MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40192G	11.24	-18.76	2.08365G	-54.36	2.39944G	-52.62	2.48356G	-51.99	16.41353G	-40.78	1

BT-LE(1Mbps) **CSE NdB**

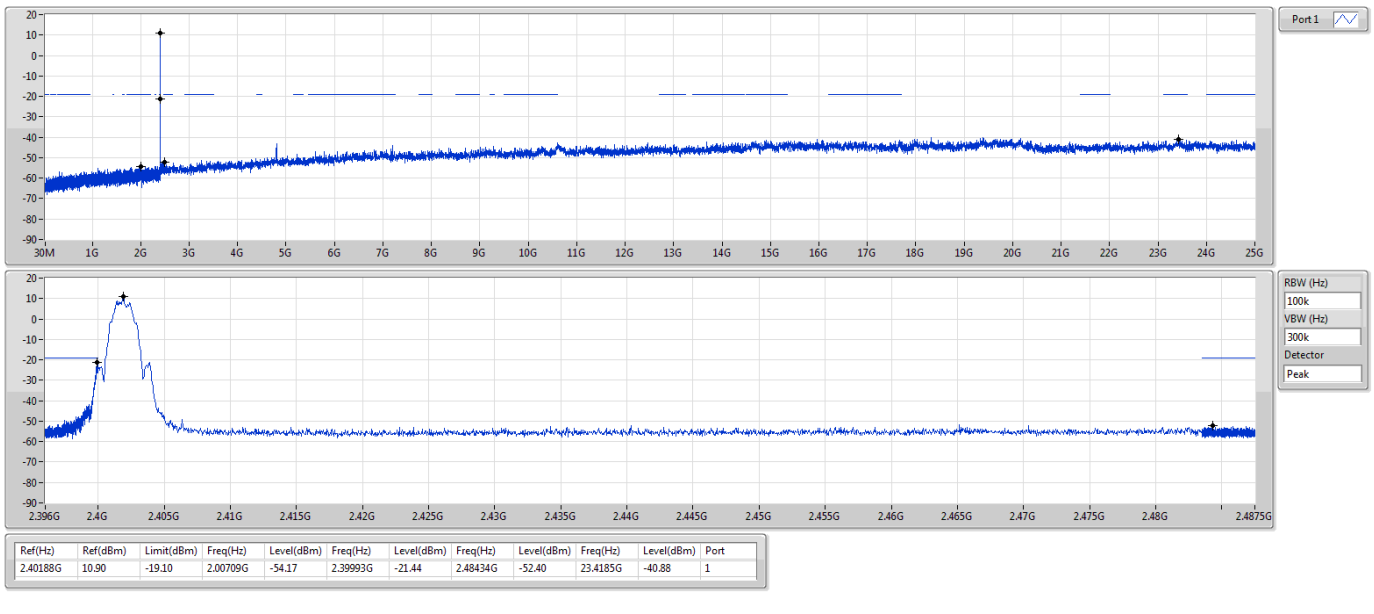
2480MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40192G	11.24	-18.76	1.75953G	-53.93	2.39975G	-53.03	2.48375G	-50.49	24.45965G	-40.86	1

BT-LE(2Mbps) **CSE NdB**

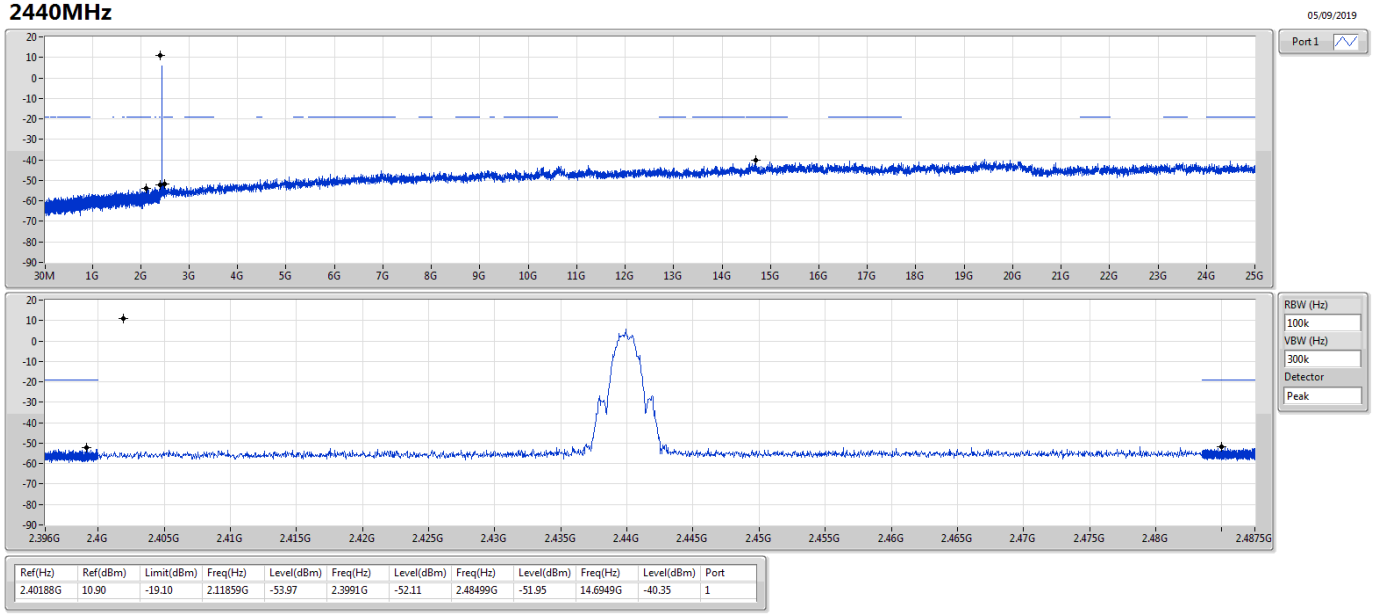
2402MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40188G	10.90	-19.10	2.00709G	-54.17	2.39993G	-21.44	2.48434G	-52.40	23.4185G	-40.88	1

BT-LE(2Mbps) **CSE NdB**

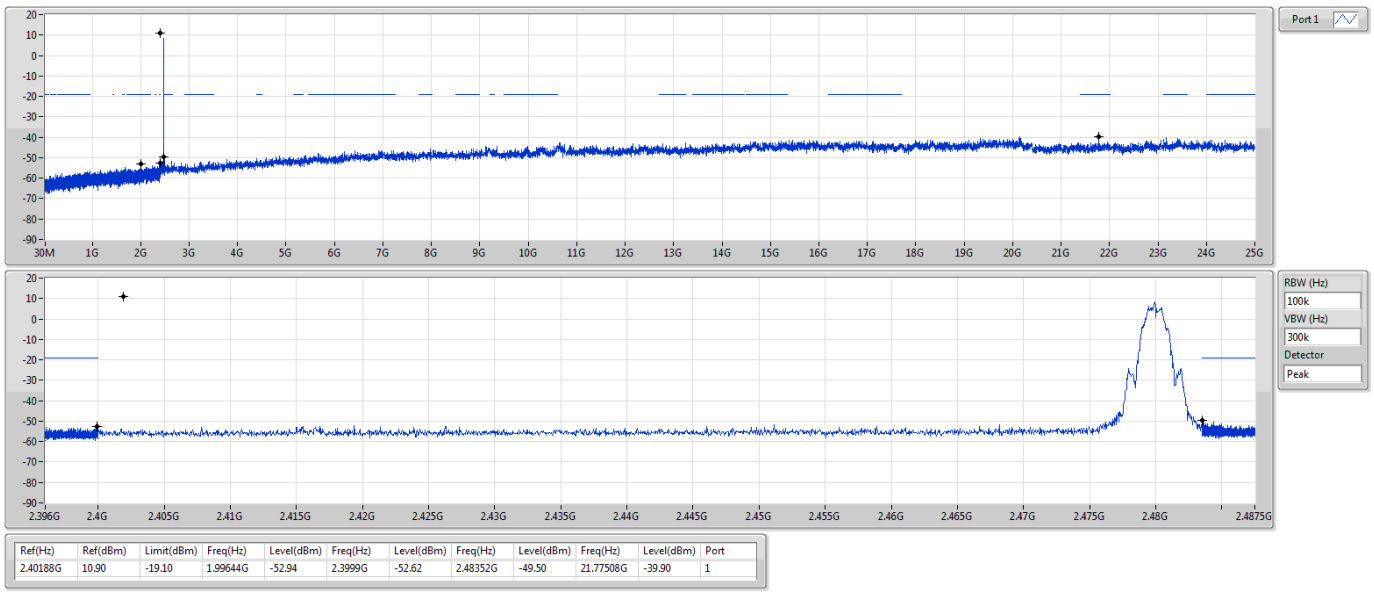
2440MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40188G	10.90	-19.10	2.11859G	-53.97	2.3991G	-52.11	2.48499G	-51.95	14.6949G	-40.35	1

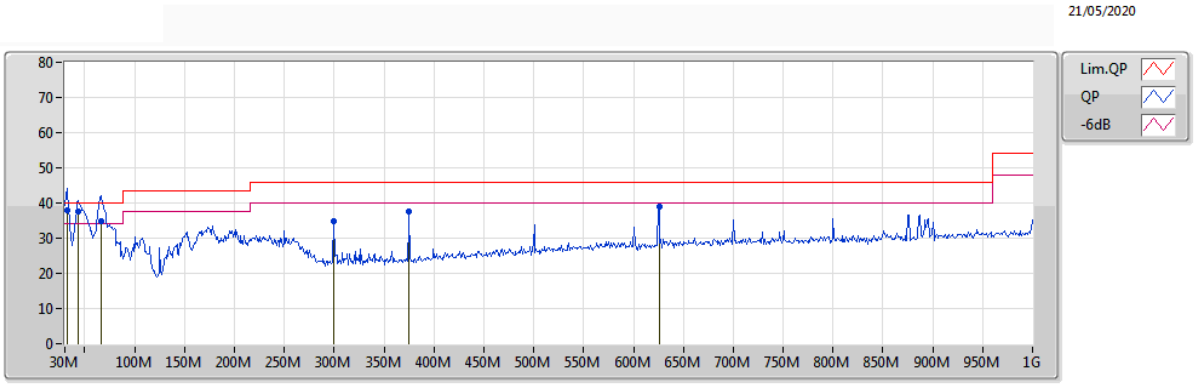
BT-LE(2Mbps) **CSE NdB**

2480MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40188G	10.90	-19.10	1.99644G	-52.94	2.3999G	-52.62	2.48352G	-49.50	21.77508G	-39.90	1

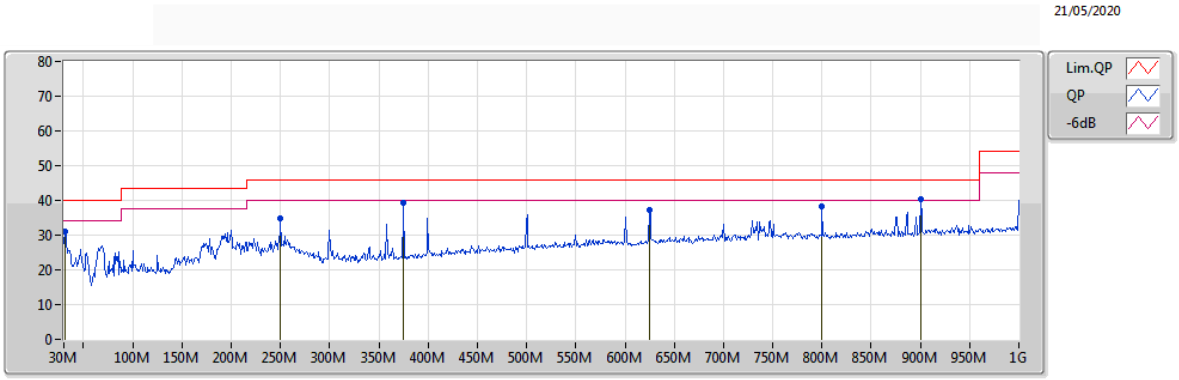
RSE below 1GHz Result			
Operating Mode	4	**Polarization**	Vertical
Operating Function	Normal Link		



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV/m)	(dB/m)	(dB)	(dB)
QP	31.94M	37.76	40.00	-2.24	-8.64	3	Vertical	93	1.00	"Worst"	46.40	23.03	0.70	32.37
QP	43.58M	37.51	40.00	-2.49	-15.20	3	Vertical	360	1.00	-	52.71	16.50	0.80	32.50
QP	65.89M	34.67	40.00	-5.33	-19.23	3	Vertical	322	2.00	-	53.90	12.25	0.92	32.40
PK	299.66M	34.93	46.00	-11.07	-11.01	3	Vertical	176	1.50	-	45.94	19.07	2.10	32.18
PK	375.32M	37.45	46.00	-8.55	-8.95	3	Vertical	342	2.00	-	46.40	21.04	2.30	32.29
PK	625.58M	39.07	46.00	-6.93	-4.44	3	Vertical	0	1.25	-	43.51	25.06	2.91	32.41

Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

RSE below 1GHz Result			
Operating Mode	4	**Polarization**	Horizontal
Operating Function	Normal Link		



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV/m)	(dB/m)	(dB)	(dB)
PK	30.97M	31.04	40.00	-8.96	-8.09	3	Horizontal	171	3.00	-	39.13	23.57	0.70	32.36
PK	250.19M	34.92	46.00	-11.08	-12.31	3	Horizontal	290	1.50	-	47.23	18.15	1.90	32.36
PK	375.32M	39.15	46.00	-6.85	-8.95	3	Horizontal	131	2.00	-	48.10	21.04	2.30	32.29
PK	624.61M	37.39	46.00	-8.61	-4.46	3	Horizontal	107	1.00	-	41.85	25.05	2.90	32.41
PK	800.18M	38.21	46.00	-7.79	-2.91	3	Horizontal	67	1.25	-	41.12	25.98	3.30	32.19
PK	900.09M	40.43	46.00	-5.57	-1.44	3	Horizontal	53	1.25	"Worst"	41.87	26.67	3.60	31.71

Note 1: “>20dB” means emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found emissions (No emissions were detected.)

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	4.80387G	53.96	54.00	-0.04	3	Vertical	26	1.05	-
BT-LE(2Mbps)	Pass	AV	4.80284G	52.42	54.00	-1.58	3	Vertical	27	1.20	-

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_TX	Pass	AV	2.3714G	45.20	54.00	-8.80	3	Vertical	183	1.00	-
2402MHz_TX	Pass	AV	2.402G	103.13	Inf	-Inf	3	Vertical	183	1.00	-
2402MHz_TX	Pass	PK	2.3804G	56.39	74.00	-17.61	3	Vertical	183	1.00	-
2402MHz_TX	Pass	PK	2.4018G	104.48	Inf	-Inf	3	Vertical	183	1.00	-
2402MHz_TX	Pass	AV	2.3876G	45.29	54.00	-8.71	3	Horizontal	315	1.00	-
2402MHz_TX	Pass	AV	2.402G	108.57	Inf	-Inf	3	Horizontal	315	1.00	-
2402MHz_TX	Pass	PK	2.356G	56.70	74.00	-17.30	3	Horizontal	315	1.00	-
2402MHz_TX	Pass	PK	2.4018G	109.94	Inf	-Inf	3	Horizontal	315	1.00	-
2402MHz_TX	Pass	AV	4.80387G	53.96	54.00	-0.04	3	Vertical	26	1.05	-
2402MHz_TX	Pass	PK	4.80435G	58.94	74.00	-15.06	3	Vertical	26	1.05	-
2402MHz_TX	Pass	AV	4.80388G	52.60	54.00	-1.40	3	Horizontal	311	1.05	-
2402MHz_TX	Pass	PK	4.8043G	57.70	74.00	-16.30	3	Horizontal	311	1.05	-
2440MHz_TX	Pass	AV	2.3556G	45.02	54.00	-8.98	3	Vertical	182	1.21	-
2440MHz_TX	Pass	AV	2.44G	98.82	Inf	-Inf	3	Vertical	182	1.21	-
2440MHz_TX	Pass	AV	2.494G	45.68	54.00	-8.32	3	Vertical	182	1.21	-
2440MHz_TX	Pass	PK	2.3656G	56.33	74.00	-17.67	3	Vertical	182	1.21	-
2440MHz_TX	Pass	PK	2.44G	100.38	Inf	-Inf	3	Vertical	182	1.21	-
2440MHz_TX	Pass	PK	2.4844G	56.34	74.00	-17.66	3	Vertical	182	1.21	-
2440MHz_TX	Pass	AV	2.3836G	45.19	54.00	-8.81	3	Horizontal	324	1.00	-
2440MHz_TX	Pass	AV	2.44G	105.40	Inf	-Inf	3	Horizontal	324	1.00	-
2440MHz_TX	Pass	AV	2.4932G	45.85	54.00	-8.15	3	Horizontal	324	1.00	-
2440MHz_TX	Pass	PK	2.388G	56.59	74.00	-17.41	3	Horizontal	324	1.00	-
2440MHz_TX	Pass	PK	2.4396G	106.75	Inf	-Inf	3	Horizontal	324	1.00	-
2440MHz_TX	Pass	PK	2.4972G	56.69	74.00	-17.31	3	Horizontal	324	1.00	-
2440MHz_TX	Pass	AV	4.8799G	43.10	54.00	-10.90	3	Vertical	25	1.00	-
2440MHz_TX	Pass	AV	7.3198G	45.96	54.00	-8.04	3	Vertical	328	3.00	-
2440MHz_TX	Pass	PK	4.87942G	50.11	74.00	-23.89	3	Vertical	25	1.00	-
2440MHz_TX	Pass	PK	7.3197G	54.27	74.00	-19.73	3	Vertical	328	3.00	-
2440MHz_TX	Pass	AV	4.87981G	43.36	54.00	-10.64	3	Horizontal	312	1.06	-
2440MHz_TX	Pass	AV	7.31978G	41.84	54.00	-12.16	3	Horizontal	359	1.31	-
2440MHz_TX	Pass	PK	4.87946G	50.17	74.00	-23.83	3	Horizontal	312	1.06	-
2440MHz_TX	Pass	PK	7.31989G	51.36	74.00	-22.64	3	Horizontal	359	1.31	-
2480MHz_TX	Pass	AV	2.48G	99.76	Inf	-Inf	3	Vertical	148	1.01	-
2480MHz_TX	Pass	AV	2.4835G	47.67	54.00	-6.33	3	Vertical	148	1.01	-
2480MHz_TX	Pass	PK	2.4796G	101.20	Inf	-Inf	3	Vertical	148	1.01	-
2480MHz_TX	Pass	PK	2.484G	57.05	74.00	-16.95	3	Vertical	148	1.01	-
2480MHz_TX	Pass	AV	2.48G	104.21	Inf	-Inf	3	Horizontal	322	1.50	-
2480MHz_TX	Pass	AV	2.4835G	50.32	54.00	-3.68	3	Horizontal	322	1.50	-
2480MHz_TX	Pass	PK	2.4796G	105.72	Inf	-Inf	3	Horizontal	322	1.50	-
2480MHz_TX	Pass	PK	2.4835G	57.84	74.00	-16.16	3	Horizontal	322	1.50	-
2480MHz_TX	Pass	AV	4.95972G	39.00	54.00	-15.00	3	Vertical	193	1.50	-
2480MHz_TX	Pass	AV	7.4392G	44.38	54.00	-9.62	3	Vertical	336	1.43	-
2480MHz_TX	Pass	PK	4.96036G	47.57	74.00	-26.43	3	Vertical	193	1.50	-
2480MHz_TX	Pass	PK	7.43924G	53.19	74.00	-20.81	3	Vertical	336	1.43	-
2480MHz_TX	Pass	AV	4.95953G	34.76	54.00	-19.24	3	Horizontal	33	1.06	-
2480MHz_TX	Pass	AV	7.43916G	41.82	54.00	-12.18	3	Horizontal	0	1.47	-
2480MHz_TX	Pass	PK	4.96033G	45.05	74.00	-28.95	3	Horizontal	33	1.06	-

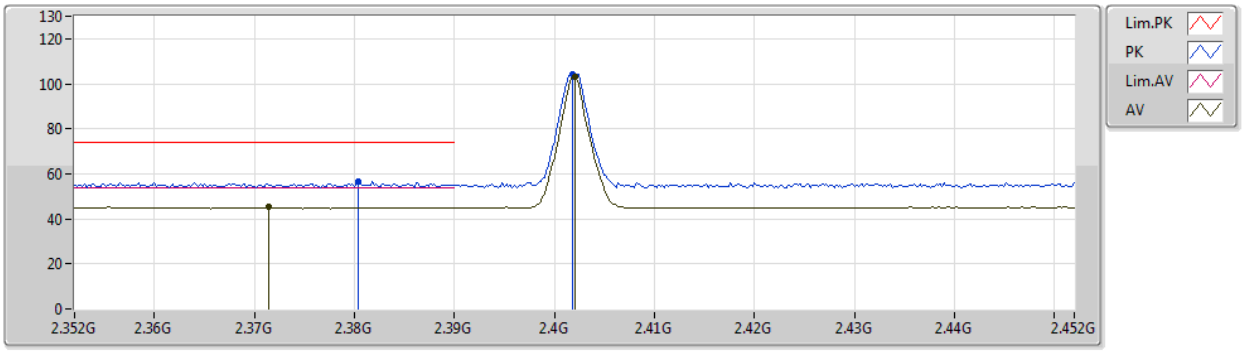
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2480MHz_TX	Pass	PK	7.43942G	51.59	74.00	-22.41	3	Horizontal	0	1.47	-
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-	-
2402MHz_TX	Pass	AV	2.3544G	46.54	54.00	-7.46	3	Vertical	184	1.23	-
2402MHz_TX	Pass	AV	2.402G	101.23	Inf	-Inf	3	Vertical	184	1.23	-
2402MHz_TX	Pass	PK	2.3648G	56.12	74.00	-17.88	3	Vertical	184	1.23	-
2402MHz_TX	Pass	PK	2.4024G	103.93	Inf	-Inf	3	Vertical	184	1.23	-
2402MHz_TX	Pass	AV	2.3708G	46.58	54.00	-7.42	3	Horizontal	317	1.09	-
2402MHz_TX	Pass	AV	2.402G	107.10	Inf	-Inf	3	Horizontal	317	1.09	-
2402MHz_TX	Pass	PK	2.3722G	55.97	74.00	-18.03	3	Horizontal	317	1.09	-
2402MHz_TX	Pass	PK	2.4014G	109.78	Inf	-Inf	3	Horizontal	317	1.09	-
2402MHz_TX	Pass	AV	4.80284G	52.42	54.00	-1.58	3	Vertical	27	1.20	-
2402MHz_TX	Pass	PK	4.80292G	58.35	74.00	-15.65	3	Vertical	27	1.20	-
2402MHz_TX	Pass	AV	4.80289G	50.71	54.00	-3.29	3	Horizontal	312	1.03	-
2402MHz_TX	Pass	PK	4.80284G	56.56	74.00	-17.44	3	Horizontal	312	1.03	-
2440MHz_TX	Pass	AV	2.3788G	47.25	54.00	-6.75	3	Vertical	40	1.25	-
2440MHz_TX	Pass	AV	2.44G	98.17	Inf	-Inf	3	Vertical	40	1.25	-
2440MHz_TX	Pass	AV	2.4976G	47.15	54.00	-6.85	3	Vertical	40	1.25	-
2440MHz_TX	Pass	PK	2.3504G	56.61	74.00	-17.39	3	Vertical	40	1.25	-
2440MHz_TX	Pass	PK	2.4396G	100.96	Inf	-Inf	3	Vertical	40	1.25	-
2440MHz_TX	Pass	PK	2.4916G	56.92	74.00	-17.08	3	Vertical	40	1.25	-
2440MHz_TX	Pass	AV	2.3608G	46.07	54.00	-7.93	3	Horizontal	323	2.99	-
2440MHz_TX	Pass	AV	2.44G	103.95	Inf	-Inf	3	Horizontal	323	2.99	-
2440MHz_TX	Pass	AV	2.4984G	46.37	54.00	-7.63	3	Horizontal	323	2.99	-
2440MHz_TX	Pass	PK	2.3544G	56.01	74.00	-17.99	3	Horizontal	323	2.99	-
2440MHz_TX	Pass	PK	2.4404G	106.67	Inf	-Inf	3	Horizontal	323	2.99	-
2440MHz_TX	Pass	PK	2.4884G	56.88	74.00	-17.12	3	Horizontal	323	2.99	-
2440MHz_TX	Pass	AV	4.87891G	42.96	54.00	-11.04	3	Vertical	26	1.45	-
2440MHz_TX	Pass	AV	7.31975G	44.80	54.00	-9.20	3	Vertical	331	3.00	-
2440MHz_TX	Pass	PK	4.88083G	49.94	74.00	-24.06	3	Vertical	26	1.45	-
2440MHz_TX	Pass	PK	7.32001G	52.66	74.00	-21.34	3	Vertical	331	3.00	-
2440MHz_TX	Pass	AV	4.87888G	42.72	54.00	-11.28	3	Horizontal	315	1.07	-
2440MHz_TX	Pass	AV	7.31977G	42.39	54.00	-11.61	3	Horizontal	360	1.31	-
2440MHz_TX	Pass	PK	4.87881G	49.78	74.00	-24.22	3	Horizontal	315	1.07	-
2440MHz_TX	Pass	PK	7.31987G	50.86	74.00	-23.14	3	Horizontal	360	1.31	-
2480MHz_TX	Pass	AV	2.48G	100.73	Inf	-Inf	3	Vertical	67	2.70	-
2480MHz_TX	Pass	AV	2.4835G	50.86	54.00	-3.14	3	Vertical	67	2.70	-
2480MHz_TX	Pass	PK	2.4794G	103.55	Inf	-Inf	3	Vertical	67	2.70	-
2480MHz_TX	Pass	PK	2.4835G	58.40	74.00	-15.60	3	Vertical	67	2.70	-
2480MHz_TX	Pass	AV	2.48G	102.64	Inf	-Inf	3	Horizontal	320	2.89	-
2480MHz_TX	Pass	AV	2.4835G	52.21	54.00	-1.79	3	Horizontal	320	2.89	-
2480MHz_TX	Pass	PK	2.4794G	105.39	Inf	-Inf	3	Horizontal	320	2.89	-
2480MHz_TX	Pass	PK	2.4835G	60.80	74.00	-13.20	3	Horizontal	320	2.89	-
2480MHz_TX	Pass	AV	4.95881G	39.11	54.00	-14.89	3	Vertical	208	1.31	-
2480MHz_TX	Pass	AV	7.43865G	45.85	54.00	-8.15	3	Vertical	326	3.00	-
2480MHz_TX	Pass	PK	4.95898G	47.42	74.00	-26.58	3	Vertical	208	1.31	-
2480MHz_TX	Pass	PK	7.43822G	54.37	74.00	-19.63	3	Vertical	326	3.00	-
2480MHz_TX	Pass	AV	4.95888G	34.78	54.00	-19.22	3	Horizontal	37	1.05	-
2480MHz_TX	Pass	AV	7.4385G	41.86	54.00	-12.14	3	Horizontal	0	1.32	-
2480MHz_TX	Pass	PK	4.95882G	45.16	74.00	-28.84	3	Horizontal	37	1.05	-

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2480MHz_TX	Pass	PK	7.43919G	51.47	74.00	-22.53	3	Horizontal	0	1.32	-

BT-LE(1Mbps)

2402MHz_TX

05/09/2019

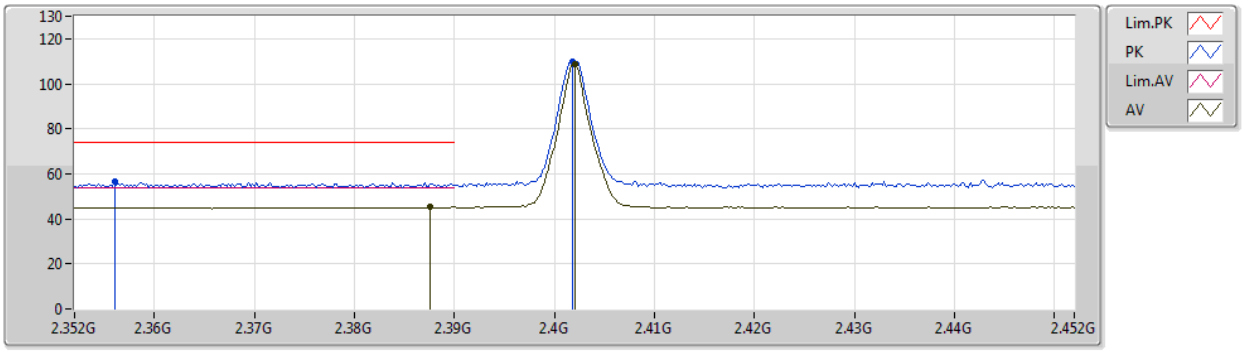


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.3714G	45.20	54.00	-8.80	32.01	3	Vertical	183	1.00	-	13.19	27.31	4.70	-
AV	2.402G	103.13	Inf	-Inf	32.14	3	Vertical	183	1.00	-	70.99	27.41	4.73	-
PK	2.3804G	56.39	74.00	-17.61	32.05	3	Vertical	183	1.00	-	24.34	27.34	4.71	-
PK	2.4018G	104.48	Inf	-Inf	32.14	3	Vertical	183	1.00	-	72.34	27.41	4.73	-

BT-LE(1Mbps)

2402MHz_TX

05/09/2019

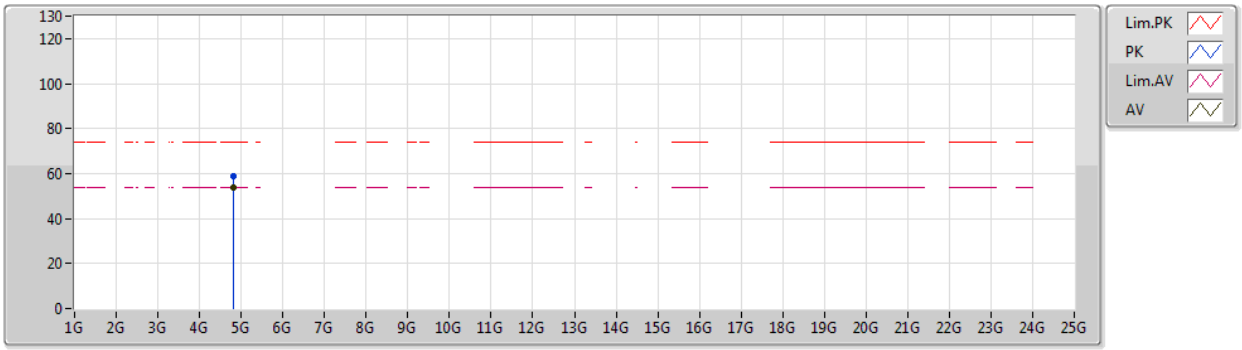


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.3876G	45.29	54.00	-8.71	32.08	3	Horizontal	315	1.00	-	13.21	27.36	4.72	-
AV	2.402G	108.57	Inf	-Inf	32.14	3	Horizontal	315	1.00	-	76.43	27.41	4.73	-
PK	2.356G	56.70	74.00	-17.30	31.95	3	Horizontal	315	1.00	-	24.75	27.27	4.68	-
PK	2.4018G	109.94	Inf	-Inf	32.14	3	Horizontal	315	1.00	-	77.80	27.41	4.73	-

BT-LE(1Mbps)

2402MHz_TX

05/09/2019

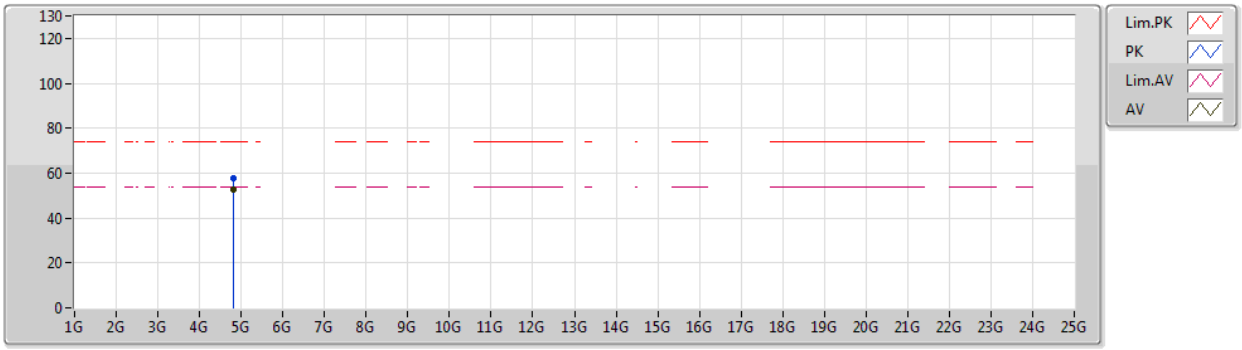


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.80387G	53.96	54.00	-0.04	3.64	3	Vertical	26	1.05	-	50.32	31.35	6.78	34.49
PK	4.80435G	58.94	74.00	-15.06	3.64	3	Vertical	26	1.05	-	55.30	31.35	6.78	34.49

BT-LE(1Mbps)

2402MHz_TX

05/09/2019

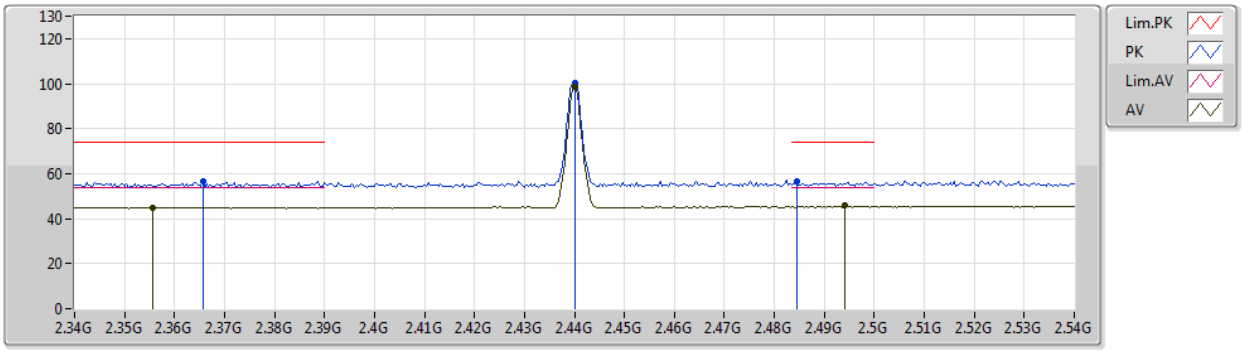


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.80388G	52.60	54.00	-1.40	3.64	3	Horizontal	311	1.05	-	48.96	31.35	6.78	34.49
PK	4.8043G	57.70	74.00	-16.30	3.64	3	Horizontal	311	1.05	-	54.06	31.35	6.78	34.49

BT-LE(1Mbps)

2440MHz_TX

05/09/2019

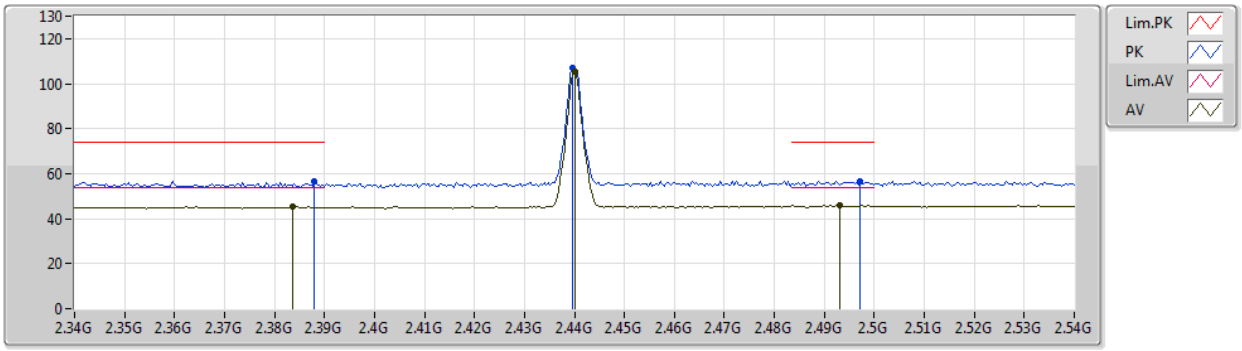


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.3556G	45.02	54.00	-8.98	31.95	3	Vertical	182	1.21	-	13.07	27.27	4.68	-
AV	2.44G	98.82	Inf	-Inf	32.30	3	Vertical	182	1.21	-	66.52	27.52	4.78	-
AV	2.494G	45.68	54.00	-8.32	32.52	3	Vertical	182	1.21	-	13.16	27.68	4.84	-
PK	2.3656G	56.33	74.00	-17.67	31.99	3	Vertical	182	1.21	-	24.34	27.30	4.69	-
PK	2.44G	100.38	Inf	-Inf	32.30	3	Vertical	182	1.21	-	68.08	27.52	4.78	-
PK	2.4844G	56.34	74.00	-17.66	32.48	3	Vertical	182	1.21	-	23.86	27.65	4.83	-

BT-LE(1Mbps)

2440MHz_TX

05/09/2019

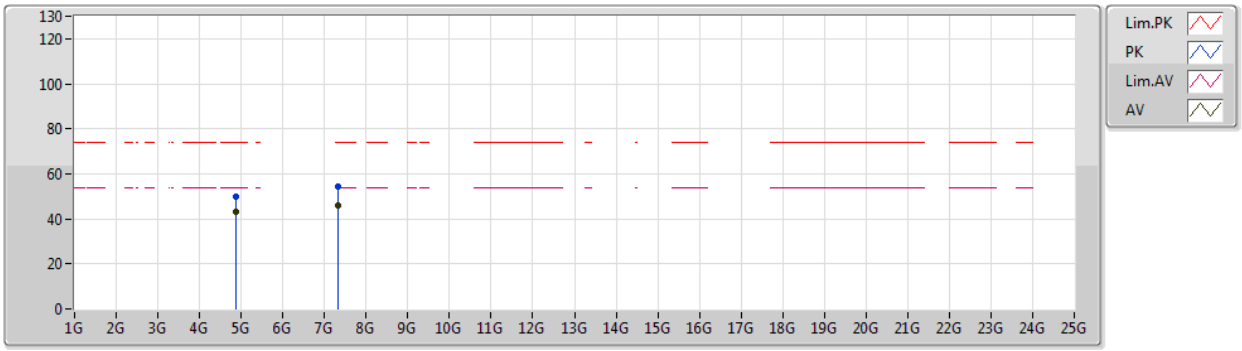


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.3836G	45.19	54.00	-8.81	32.06	3	Horizontal	324	1.00	-	13.13	27.35	4.71	-
AV	2.44G	105.40	Inf	-Inf	32.30	3	Horizontal	324	1.00	-	73.10	27.52	4.78	-
AV	2.4932G	45.85	54.00	-8.15	32.52	3	Horizontal	324	1.00	-	13.33	27.68	4.84	-
PK	2.388G	56.59	74.00	-17.41	32.08	3	Horizontal	324	1.00	-	24.51	27.36	4.72	-
PK	2.4396G	106.75	Inf	-Inf	32.30	3	Horizontal	324	1.00	-	74.45	27.52	4.78	-
PK	2.4972G	56.69	74.00	-17.31	32.53	3	Horizontal	324	1.00	-	24.16	27.69	4.84	-

BT-LE(1Mbps)

2440MHz_TX

05/09/2019

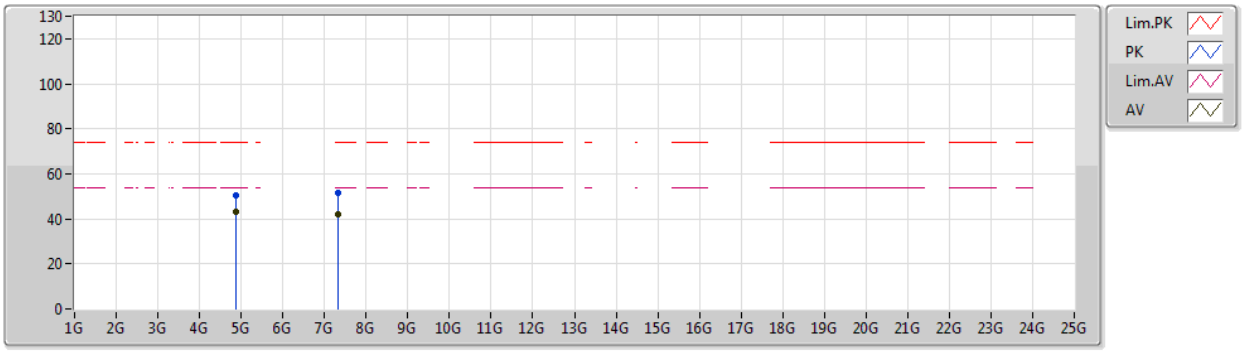


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.8799G	43.10	54.00	-10.90	3.82	3	Vertical	25	1.00	-	39.28	31.48	6.81	34.47
AV	7.3198G	45.96	54.00	-8.04	9.90	3	Vertical	328	3.00	-	36.06	36.03	8.62	34.75
PK	4.87942G	50.11	74.00	-23.89	3.82	3	Vertical	25	1.00	-	46.29	31.48	6.81	34.47
PK	7.3197G	54.27	74.00	-19.73	9.90	3	Vertical	328	3.00	-	44.37	36.03	8.62	34.75

BT-LE(1Mbps)

2440MHz_TX

05/09/2019

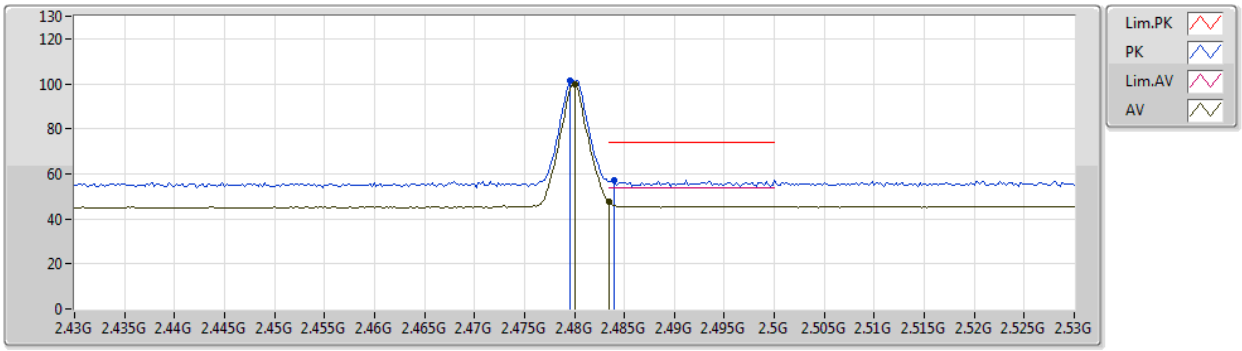


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.87981G	43.36	54.00	-10.64	3.82	3	Horizontal	312	1.06	-	39.54	31.48	6.81	34.47
AV	7.31978G	41.84	54.00	-12.16	9.90	3	Horizontal	359	1.31	-	31.94	36.03	8.62	34.75
PK	4.87946G	50.17	74.00	-23.83	3.82	3	Horizontal	312	1.06	-	46.35	31.48	6.81	34.47
PK	7.31989G	51.36	74.00	-22.64	9.90	3	Horizontal	359	1.31	-	41.46	36.03	8.62	34.75

BT-LE(1Mbps)

2480MHz_TX

05/09/2019

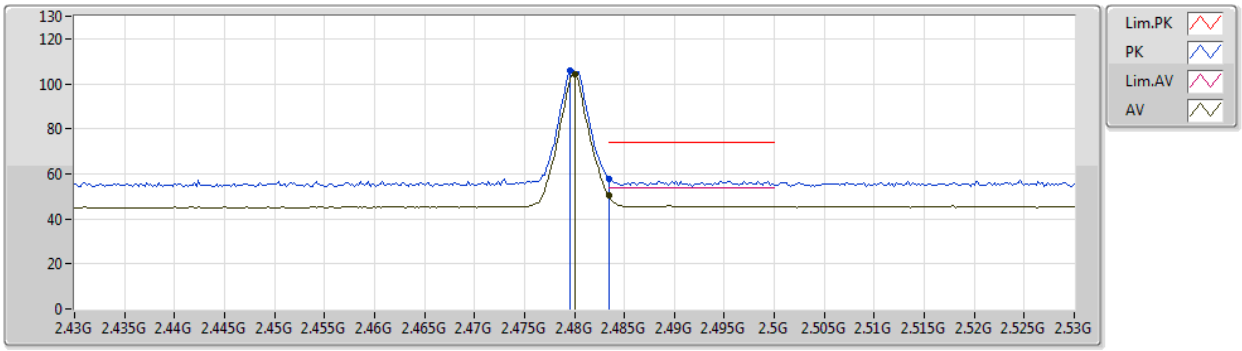


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.48G	99.76	Inf	-Inf	32.46	3	Vertical	148	1.01	-	67.30	27.64	4.82	-
AV	2.4835G	47.67	54.00	-6.33	32.48	3	Vertical	148	1.01	-	15.19	27.65	4.83	-
PK	2.4796G	101.20	Inf	-Inf	32.46	3	Vertical	148	1.01	-	68.74	27.64	4.82	-
PK	2.484G	57.05	74.00	-16.95	32.48	3	Vertical	148	1.01	-	24.57	27.65	4.83	-

BT-LE(1Mbps)

2480MHz_TX

05/09/2019

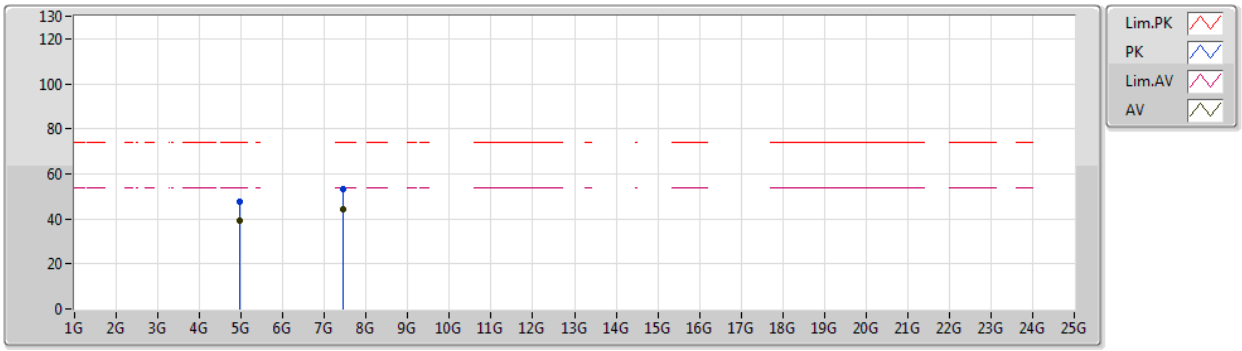


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.48G	104.21	Inf	-Inf	32.46	3	Horizontal	322	1.50	-	71.75	27.64	4.82	-
AV	2.4835G	50.32	54.00	-3.68	32.48	3	Horizontal	322	1.50	-	17.84	27.65	4.83	-
PK	2.4796G	105.72	Inf	-Inf	32.46	3	Horizontal	322	1.50	-	73.26	27.64	4.82	-
PK	2.4835G	57.84	74.00	-16.16	32.48	3	Horizontal	322	1.50	-	25.36	27.65	4.83	-

BT-LE(1Mbps)

2480MHz_TX

05/09/2019

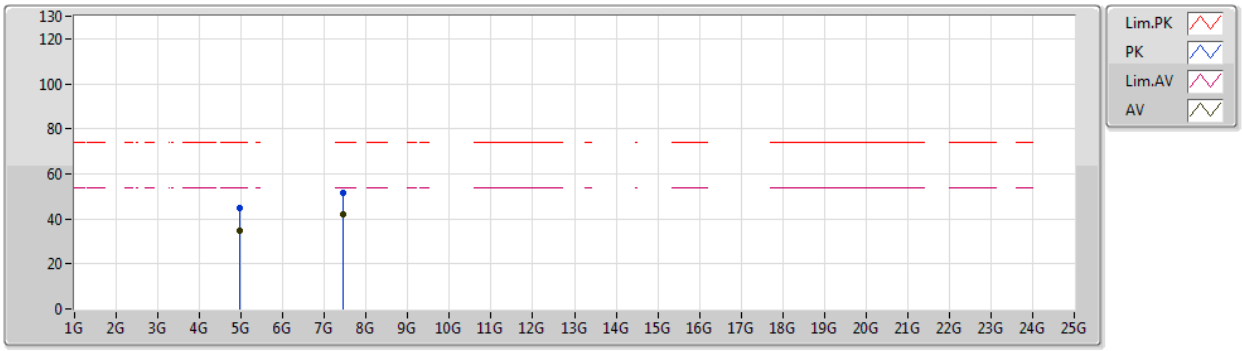


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.95972G	39.00	54.00	-15.00	4.02	3	Vertical	193	1.50	-	34.98	31.63	6.83	34.44
AV	7.4392G	44.38	54.00	-9.62	10.24	3	Vertical	336	1.43	-	34.14	36.34	8.68	34.78
PK	4.96036G	47.57	74.00	-26.43	4.02	3	Vertical	193	1.50	-	43.55	31.63	6.83	34.44
PK	7.43924G	53.19	74.00	-20.81	10.24	3	Vertical	336	1.43	-	42.95	36.34	8.68	34.78

BT-LE(1Mbps)

2480MHz_TX

05/09/2019

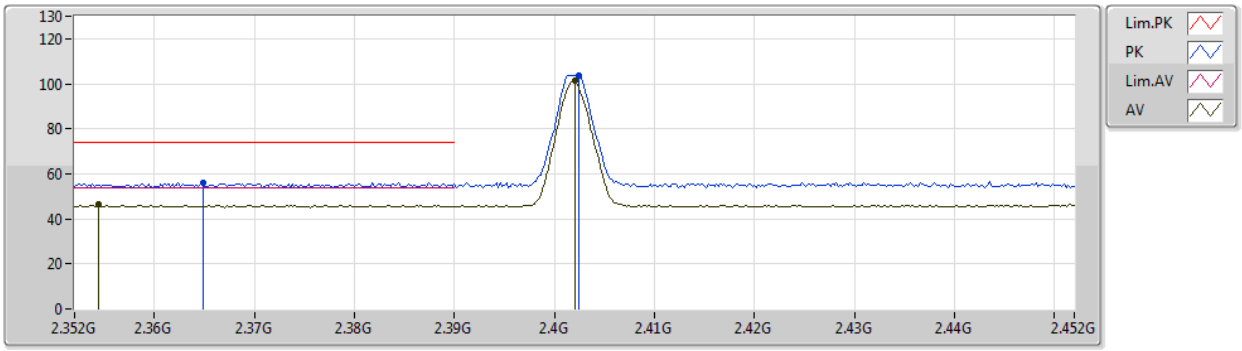


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.95953G	34.76	54.00	-19.24	4.02	3	Horizontal	33	1.06	-	30.74	31.63	6.83	34.44
AV	7.43916G	41.82	54.00	-12.18	10.24	3	Horizontal	0	1.47	-	31.58	36.34	8.68	34.78
PK	4.96033G	45.05	74.00	-28.95	4.02	3	Horizontal	33	1.06	-	41.03	31.63	6.83	34.44
PK	7.43942G	51.59	74.00	-22.41	10.24	3	Horizontal	0	1.47	-	41.35	36.34	8.68	34.78

BT-LE(2Mbps)

2402MHz_TX

05/09/2019

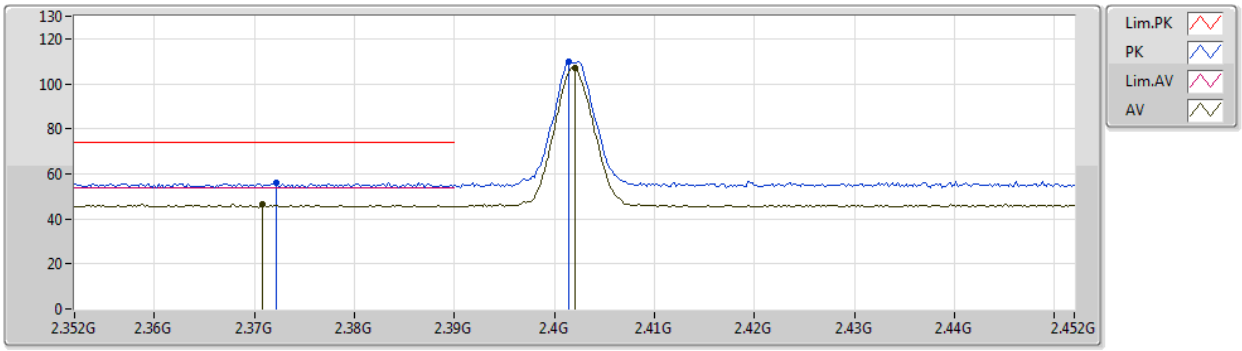


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.3544G	46.54	54.00	-7.46	31.94	3	Vertical	184	1.23	-	14.60	27.26	4.68	-
AV	2.402G	101.23	Inf	-Inf	32.14	3	Vertical	184	1.23	-	69.09	27.41	4.73	-
PK	2.3648G	56.12	74.00	-17.88	31.98	3	Vertical	184	1.23	-	24.14	27.29	4.69	-
PK	2.4024G	103.93	Inf	-Inf	32.14	3	Vertical	184	1.23	-	71.79	27.41	4.73	-

BT-LE(2Mbps)

2402MHz_TX

05/09/2019

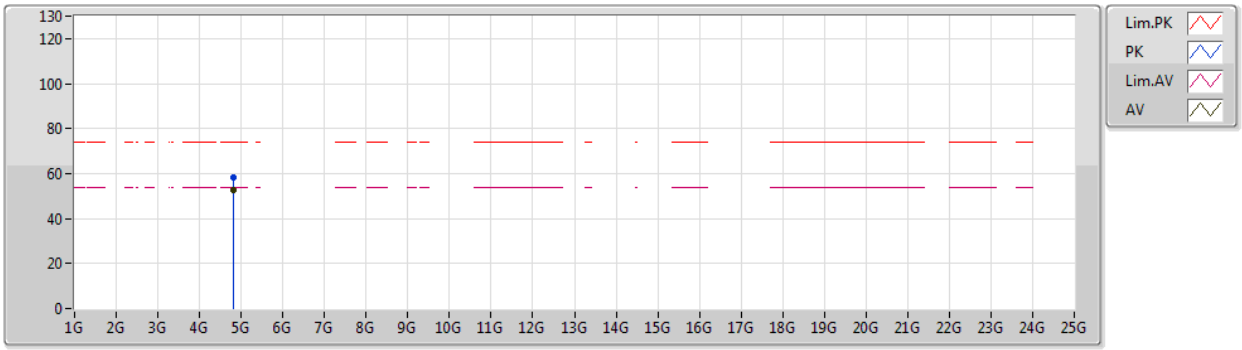


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.3708G	46.58	54.00	-7.42	32.01	3	Horizontal	317	1.09	-	14.57	27.31	4.70	-
AV	2.402G	107.10	Inf	-Inf	32.14	3	Horizontal	317	1.09	-	74.96	27.41	4.73	-
PK	2.3722G	55.97	74.00	-18.03	32.02	3	Horizontal	317	1.09	-	23.95	27.32	4.70	-
PK	2.4014G	109.78	Inf	-Inf	32.13	3	Horizontal	317	1.09	-	77.65	27.40	4.73	-

BT-LE(2Mbps)

2402MHz_TX

05/09/2019

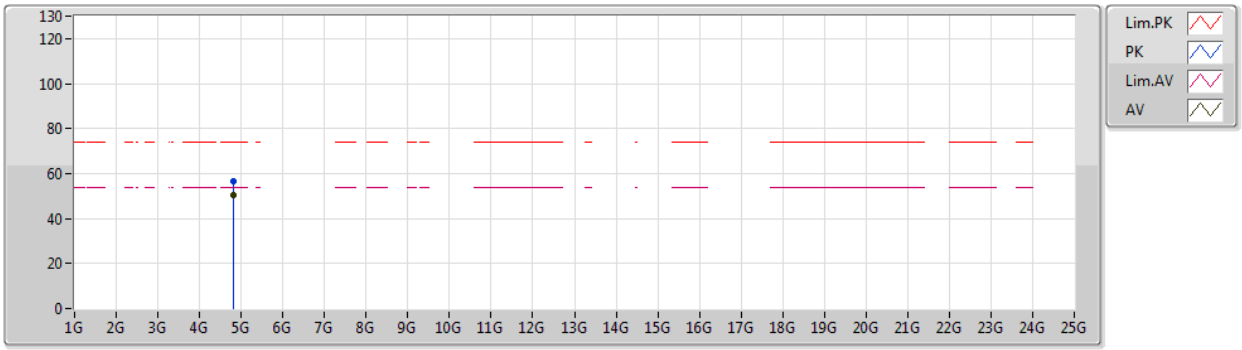


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.80284G	52.42	54.00	-1.58	3.64	3	Vertical	27	1.20	-	48.78	31.35	6.78	34.49
PK	4.80292G	58.35	74.00	-15.65	3.64	3	Vertical	27	1.20	-	54.71	31.35	6.78	34.49

BT-LE(2Mbps)

2402MHz_TX

05/09/2019

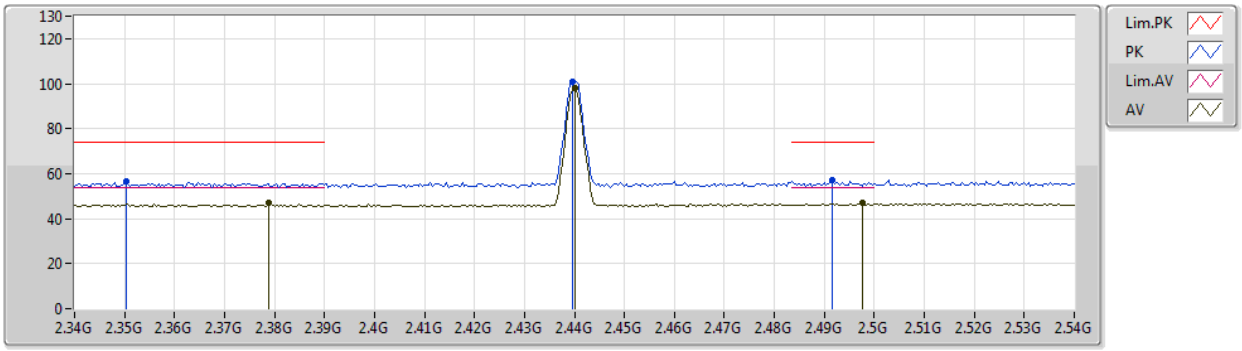


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.80289G	50.71	54.00	-3.29	3.64	3	Horizontal	312	1.03	-	47.07	31.35	6.78	34.49
PK	4.80284G	56.56	74.00	-17.44	3.64	3	Horizontal	312	1.03	-	52.92	31.35	6.78	34.49

BT-LE(2Mbps)

2440MHz_TX

05/09/2019

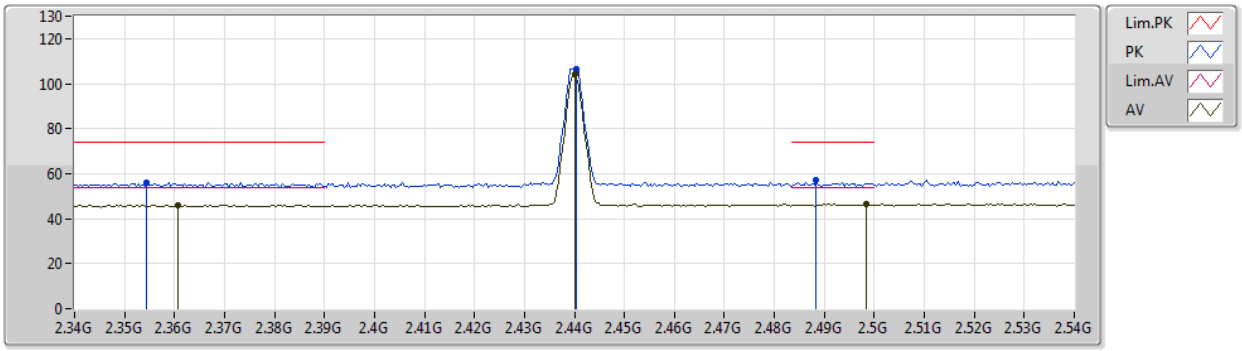


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.3788G	47.25	54.00	-6.75	32.05	3	Vertical	40	1.25	-	15.20	27.34	4.71	-
AV	2.44G	98.17	Inf	-Inf	32.30	3	Vertical	40	1.25	-	65.87	27.52	4.78	-
AV	2.4976G	47.15	54.00	-6.85	32.53	3	Vertical	40	1.25	-	14.62	27.69	4.84	-
PK	2.3504G	56.61	74.00	-17.39	31.92	3	Vertical	40	1.25	-	24.69	27.25	4.67	-
PK	2.4396G	100.96	Inf	-Inf	32.30	3	Vertical	40	1.25	-	68.66	27.52	4.78	-
PK	2.4916G	56.92	74.00	-17.08	32.51	3	Vertical	40	1.25	-	24.41	27.67	4.84	-

BT-LE(2Mbps)

2440MHz_TX

05/09/2019

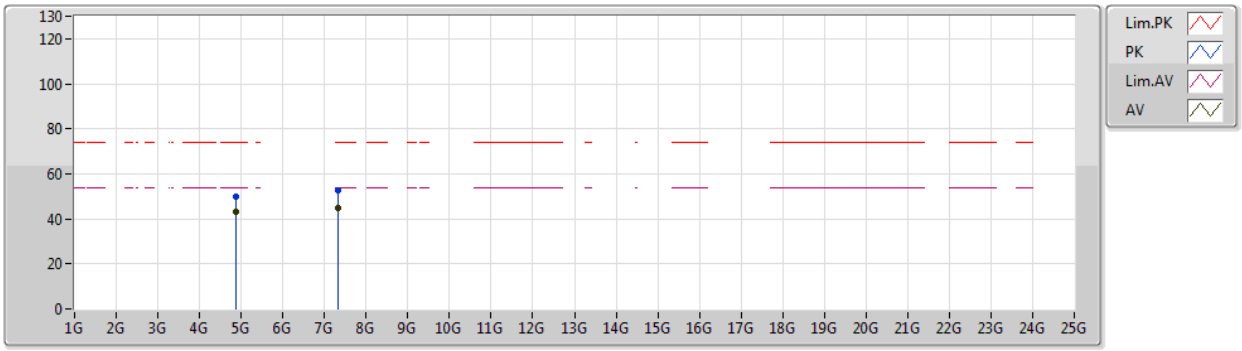


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.3608G	46.07	54.00	-7.93	31.96	3	Horizontal	323	2.99	-	14.11	27.28	4.68	-
AV	2.44G	103.95	Inf	-Inf	32.30	3	Horizontal	323	2.99	-	71.65	27.52	4.78	-
AV	2.4984G	46.37	54.00	-7.63	32.55	3	Horizontal	323	2.99	-	13.82	27.70	4.85	-
PK	2.3544G	56.01	74.00	-17.99	31.94	3	Horizontal	323	2.99	-	24.07	27.26	4.68	-
PK	2.4404G	106.67	Inf	-Inf	32.30	3	Horizontal	323	2.99	-	74.37	27.52	4.78	-
PK	2.4884G	56.88	74.00	-17.12	32.50	3	Horizontal	323	2.99	-	24.38	27.67	4.83	-

BT-LE(2Mbps)

2440MHz_TX

05/09/2019

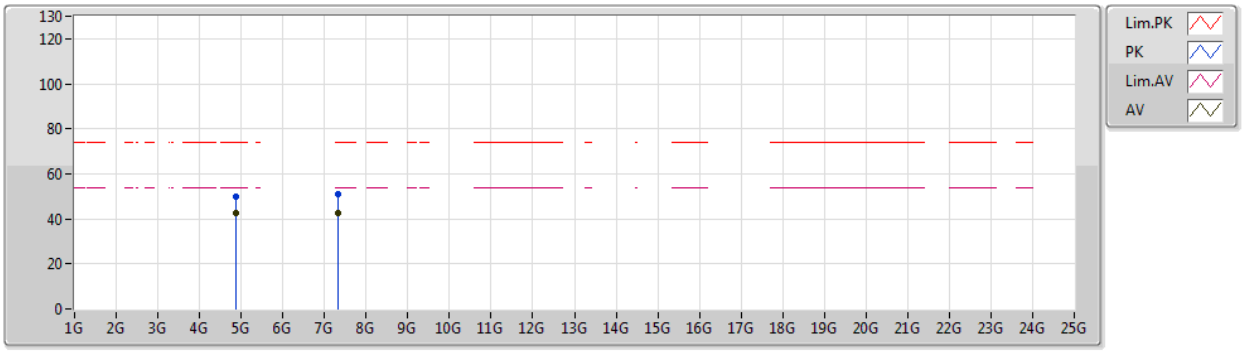


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.87891G	42.96	54.00	-11.04	3.82	3	Vertical	26	1.45	-	39.14	31.48	6.81	34.47
AV	7.31975G	44.80	54.00	-9.20	9.90	3	Vertical	331	3.00	-	34.90	36.03	8.62	34.75
PK	4.88083G	49.94	74.00	-24.06	3.83	3	Vertical	26	1.45	-	46.11	31.49	6.81	34.47
PK	7.32001G	52.66	74.00	-21.34	9.90	3	Vertical	331	3.00	-	42.76	36.03	8.62	34.75

BT-LE(2Mbps)

2440MHz_TX

05/09/2019

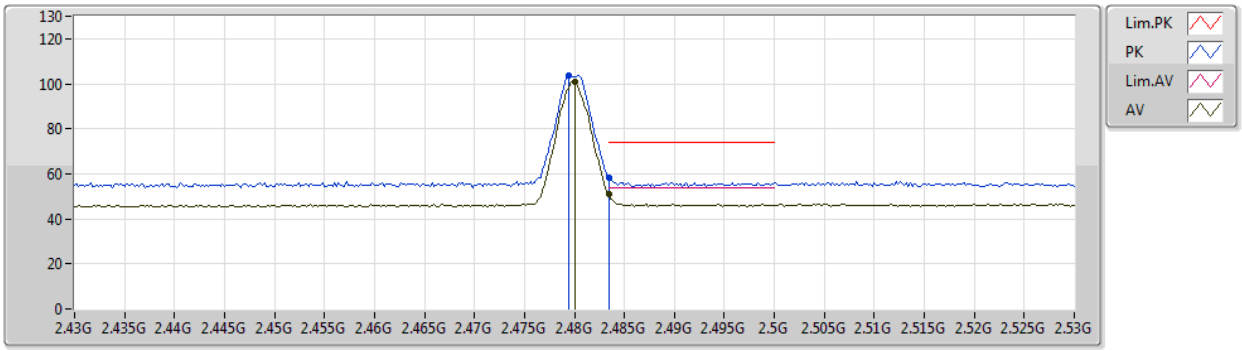


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.87888G	42.72	54.00	-11.28	3.82	3	Horizontal	315	1.07	-	38.90	31.48	6.81	34.47
AV	7.31977G	42.39	54.00	-11.61	9.90	3	Horizontal	360	1.31	-	32.49	36.03	8.62	34.75
PK	4.87881G	49.78	74.00	-24.22	3.82	3	Horizontal	315	1.07	-	45.96	31.48	6.81	34.47
PK	7.31987G	50.86	74.00	-23.14	9.90	3	Horizontal	360	1.31	-	40.96	36.03	8.62	34.75

BT-LE(2Mbps)

2480MHz_TX

05/09/2019

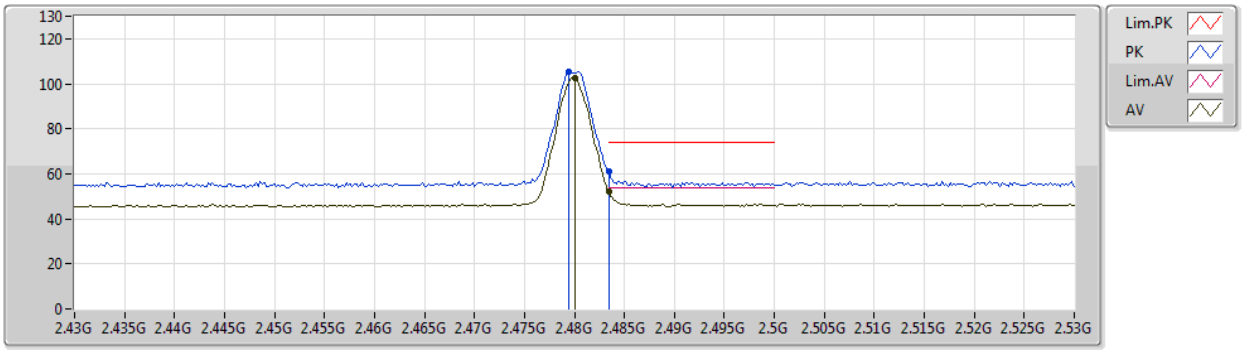


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.48G	100.73	Inf	-Inf	32.46	3	Vertical	67	2.70	-	68.27	27.64	4.82	-
AV	2.4835G	50.86	54.00	-3.14	32.48	3	Vertical	67	2.70	-	18.38	27.65	4.83	-
PK	2.4794G	103.55	Inf	-Inf	32.46	3	Vertical	67	2.70	-	71.09	27.64	4.82	-
PK	2.4835G	58.40	74.00	-15.60	32.48	3	Vertical	67	2.70	-	25.92	27.65	4.83	-

BT-LE(2Mbps)

2480MHz_TX

05/09/2019

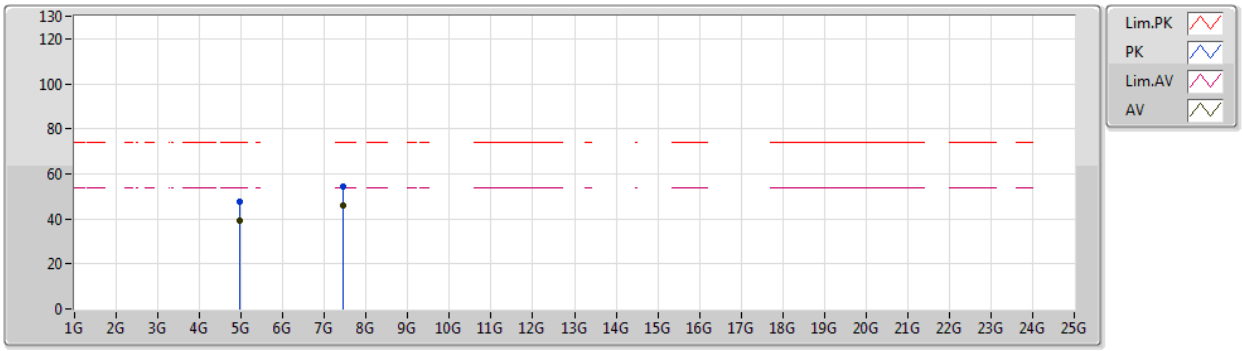


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.48G	102.64	Inf	-Inf	32.46	3	Horizontal	320	2.89	-	70.18	27.64	4.82	-
AV	2.4835G	52.21	54.00	-1.79	32.48	3	Horizontal	320	2.89	-	19.73	27.65	4.83	-
PK	2.4794G	105.39	Inf	-Inf	32.46	3	Horizontal	320	2.89	-	72.93	27.64	4.82	-
PK	2.4835G	60.80	74.00	-13.20	32.48	3	Horizontal	320	2.89	-	28.32	27.65	4.83	-

BT-LE(2Mbps)

2480MHz_TX

05/09/2019

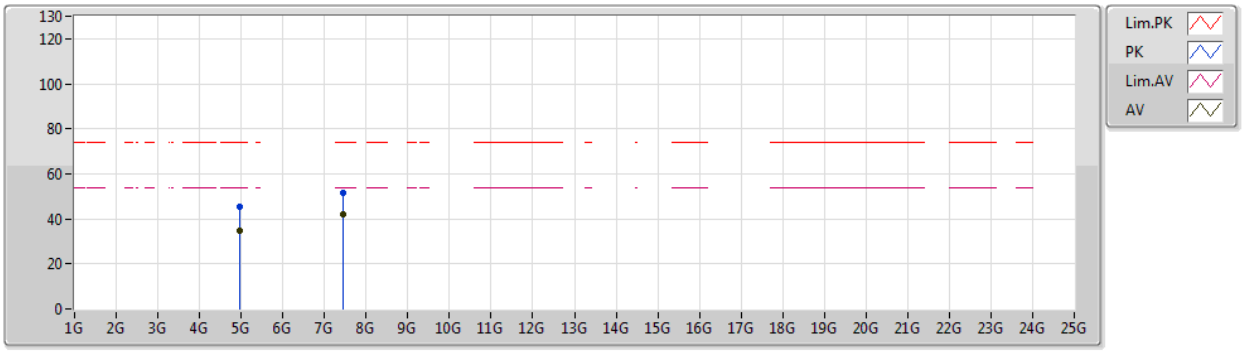


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.95881G	39.11	54.00	-14.89	4.02	3	Vertical	208	1.31	-	35.09	31.63	6.83	34.44
AV	7.43865G	45.85	54.00	-8.15	10.24	3	Vertical	326	3.00	-	35.61	36.34	8.68	34.78
PK	4.95898G	47.42	74.00	-26.58	4.02	3	Vertical	208	1.31	-	43.40	31.63	6.83	34.44
PK	7.43822G	54.37	74.00	-19.63	10.24	3	Vertical	326	3.00	-	44.13	36.34	8.68	34.78

BT-LE(2Mbps)

2480MHz_TX

05/09/2019



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.95888G	34.78	54.00	-19.22	4.02	3	Horizontal	37	1.05	-	30.76	31.63	6.83	34.44
AV	7.4385G	41.86	54.00	-12.14	10.24	3	Horizontal	0	1.32	-	31.62	36.34	8.68	34.78
PK	4.95882G	45.16	74.00	-28.84	4.02	3	Horizontal	37	1.05	-	41.14	31.63	6.83	34.44
PK	7.43919G	51.47	74.00	-22.53	10.24	3	Horizontal	0	1.32	-	41.23	36.34	8.68	34.78