FCC Test Report

FCC ID	:	**2AIBX-NIU5L**
Equipment	:	**NIU5 WiFi / BLE Module**
Brand Name	:	**Electrolux**
Model Name	:	**NIU5-50**
Applicant	:	**ELECTROLUX ITALIA S.p.A. Corso Lino Zanussi 24 / 33080 Porcia (PN), Italy**
Manufacturer	:	**LITE-ON Technology (Changzhou) CO.LTD No.88, Yanghu Road, Wujin Hi-Tech Industrial Development Zone, Jiangsu Province, China Zip Code: 213166**
Standard	:	**47 CFR FCC Part 15.247**

The product was received on Oct. 31, 2018, and testing was started from Nov. 20, 2018 and completed on Nov. 21, 2018. 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: Phoenix 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
FR8O3112AL	01	Initial issue of report	Jan. 10, 2019

Summary of Test Result

Report Clause	Ref. Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	FCC 15.203
3.1	15.207	AC Power-line Conducted Emissions	PASS	FCC 15.207
3.2	15.247(a)	DTS Bandwidth	PASS	≥500kHz
3.3	15.247(b)	Maximum Conducted Output Power	PASS	Power [dBm]:30
3.4	15.247(e)	Power Spectral Density	PASS	PSD [dBm/3kHz]:8
3.5	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	Non-Restricted Bands: >20 dBc
3.6	15.247(d)	Emissions in Restricted Frequency Bands	PASS	Restricted Bands: FCC 15.209

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: Jackson Tsai

Report Producer: Jenny Yang

1 General Description

1.1 Information

1.1.1 RF General Information

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

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

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

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector
1	LITE-ON	-	Printed Antenna	-
2	LITE-ON	-	Printed Antenna	-

Ant.	Port	Gain (dBi)		
		2.4G	5G	BT
1	1	1.7	3.2	-
2	1	-	-	1.5

Note 1: The EUT has two antennas.

For 2.4GHz function:

For IEEE 802.11 b/g/n mode (1TX/1RX)

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

For 5GHz function:

For IEEE 802.11 a/an mode (1TX/1RX)

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

For BT function:

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

Only Ant. 2 (port 1) can be used as transmitting/receiving antenna.

1.1.3 EUT Information

Operational Condition					
EUT Power Type	From host system				
EUT Function	☐	Point-to-multipoint	☒	Point-to-point	
Type of EUT					
☒	Stand-alone				
☐	Combined (EUT where the radio part is fully integrated within another device)				
	Combined Equipment - Brand Name / Model No.:	…			
☐	Plug-in radio (EUT intended for a variety of host systems)				
	Host System - Brand Name / Model No.:	…			
☐	Other:				

1.1.4 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
BT-LE(1Mbps)	0.684	1.649	427.5u	3k
BT-LE(2Mbps)	0.389	4.101	243.125u	10k

1.2 Testing Applied Standards

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

- 47 CFR FCC Part 15
- ANSI C63.10-2013
- KDB 558074 D01 v05

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
Test site Designation No. TW1190 with FCC.			
☐	JHUBEI	ADD : No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County, Taiwan (R.O.C.)	
		TEL : 886-3-656-9065	FAX : 886-3-656-9085
Test site Designation No. TW0006 with FCC.			

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH06-HY	Dexter	25°C / 57%	21/Nov/2018
Radiated	03CH09-HY	Kevin	21.6°C / 64%	20/Nov/2018
AC Conduction	CO04-HY	Andy	23.3°C / 61%	21/Nov/2018

1.4 Measurement Uncertainty

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

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.54 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	1.6 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	4.3 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.9 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.3 dB	Confidence levels of 95%
Temperature	0.7 °C	Confidence levels of 95%
Humidity	4 %	Confidence levels of 95%

2 Test Configuration of EUT

2.1 Test Condition

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

2.2 Test Channel Mode

Test Software Version	QSPR 5.0-00163

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

2.3 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral
Operating Mode	CTX
1	USB 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	USB mode		
Operating Mode > 1GHz	CTX		
Orthogonal Planes of EUT	**X Plane**	**Y Plane**	**Z Plane**
			
Worst Planes of EUT		V	

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis
Operating Mode	CTX
1	Bluetooth+WLAN 2.4GHz
2	Bluetooth+WLAN 5GHz
Refer to Sporton Test Report No.: FA8O3112 for Co-location RF Exposure Evaluation.	

2.4 Support Equipment

Support Equipment – RF Conducted				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
1	Notebook	DELL	E5410	DoC
2	Adapter for NB	DELL	HA65NM130	DoC
3	AC Power Source	GW	APS-9102	-
4	Test Fixture	LITE-ON	WCBN3512A_EVB	-

Note: Support equipment No.4 was provided by customer, and it can be able to wake up the transmit/receive to complete the RF function test.

Support Equipment – Radiated Emission				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
1	Notebook	DELL	E5410	-
2	Adapter	DELL	LA90PS0-00	-
3	Test Fixture	LITE-ON	WCBN3512A_EVB	-
4	USB Cable	-	-	-
5	Mouse(USB)	DELL	MS 111-L	-
6	iPod	APPLE	A1199	-

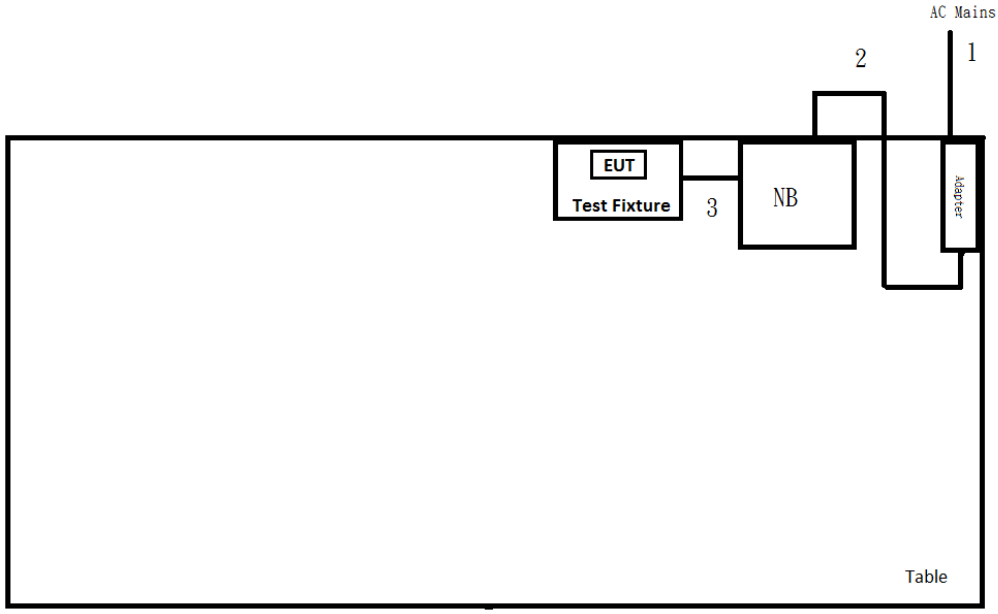
Note: Support equipment No.3 was provided by customer, and it can be able to wake up the transmit/receive to complete the RF function test.

Support Equipment – AC Conduction				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
1	Notebook	DELL	E5410	-
2	Adapter	DELL	AA90PM111	-
3	Test Fixture	LITE-ON	WCBN3512A_EVB	-
4	USB Cable	-	-	-
5	Mouse(USB)	DELL	MS 111-L	-
6	iPod	APPLE	A1199	-

Note: Support equipment No.3 was provided by customer, and it can be able to wake up the transmit/receive to complete the RF function test.

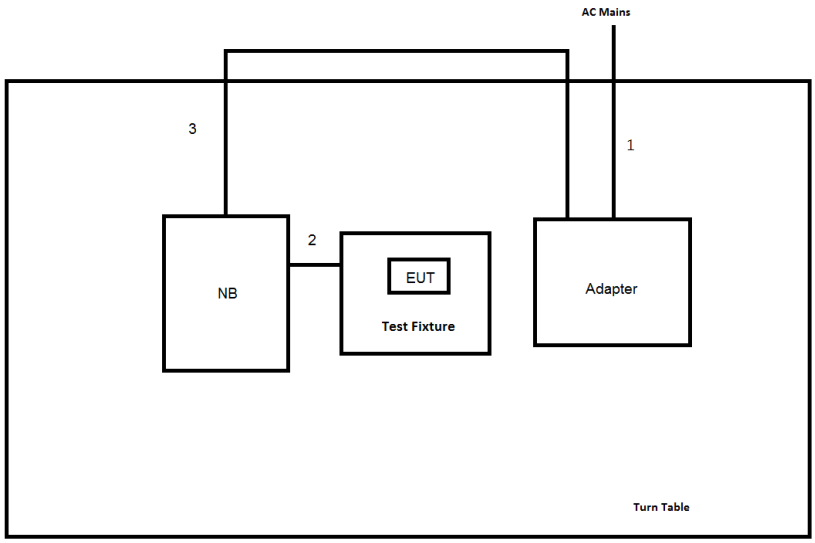
2.5 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



Item	Connection	Shielded	Length(m)	Remark
1	AC Power line	No	1.8m	-
2	DC Power line	No	1.5m	-
3	USB Cable	No	0.3m	-

Test Setup Diagram - Radiated Test



Item	Connection	Shielded	Length(m)	Remark
1	AC Power line	No	1.8m	-
2	USB cable	No	0.3m	-
3	DC Power line	No	1.5m	-

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

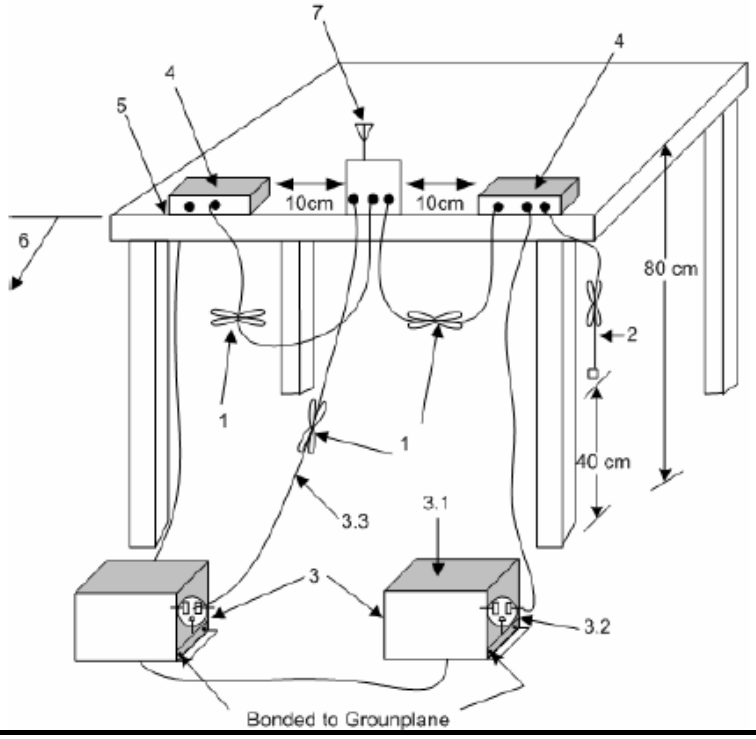
Refer a test equipment and calibration data table in this test report.

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

AC Power-line Conducted Emissions



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:
▪ 6 dB bandwidth ≥ 500 kHz.

3.2.2 Measuring Instruments

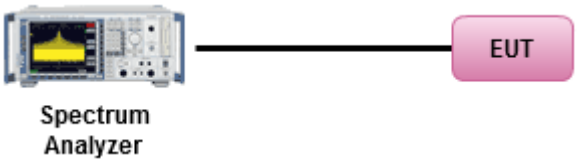
Refer a test equipment and calibration data table in this test report.

3.2.3 Test Procedures

Test Method	
▪ For the emission bandwidth shall be measured using one of the options below:	
	☒ Refer as KDB 558074, clause 8.2 (11.8 of ANSI C63.10) DTS bandwidth measurement.
	☐ Refer as RSS-Gen, clause 6.7 for occupied bandwidth testing.
	☐ Refer as ANSI C63.10, clause 6.9.3 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} ≤ 6 dBi, then P_{Out} ≤ 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 + 8dB dBm	
e.i.r.p. Power Limit:			
▪ 2400-2483.5 MHz Band			
	▪ Point-to-multipoint systems (P2M): P_{eirp} ≤ 36 dBm (4 W)		
	▪ Point-to-point systems (P2P): P_{eirp} ≤ MAX(36, [P_{Out} + G_{TX}]) dBm		
	▪ Smart antenna system (SAS)		
		- Single beam: P_{eirp} ≤ MAX(36, P_{Out} + G_{TX}) dBm	
		- Overlap beam: P_{eirp} ≤ MAX(36, P_{Out} + G_{TX}) dBm	
		- Aggregate power on all beams: P_{eirp} ≤ 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	
▪ Maximum Peak Conducted Output Power	
	☐ Refer as KDB 558074, clause 8.3.1.1 (11.9.1.1 of ANSI C63.10) RBW ≥ EBW method.
	☐ Refer as KDB 558074, clause 8.3.1.2 (11.9.1.2 of ANSI C63.10) integrated band power method.
	☐ Refer as KDB 558074, clause 8.3.1.3 (11.9.1.3 of ANSI C63.10) peak power meter.
▪ Maximum Average Conducted Output Power	
	☐ Refer as KDB 558074, clause 8.3.2.2 (11.9.2.2 of ANSI C63.10) using a spectrum analyzer.
	☒ Refer as KDB 558074, clause 8.3.2.3 (11.9.2.3 of ANSI C63.10) using a power meter.
▪ For conducted measurement.	
	▪ 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.
	▪ 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

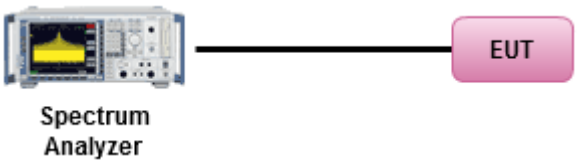
Refer a test equipment and calibration data table in this test report.

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 KDB 558074, clause 8.4 (11.10 of ANSI C63.10) Method PKPSD.	
▪ For conducted measurement.		
	▪ If The EUT supports multiple transmit chains using options given below:	
		▪ 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

Power Spectral Density



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 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.	

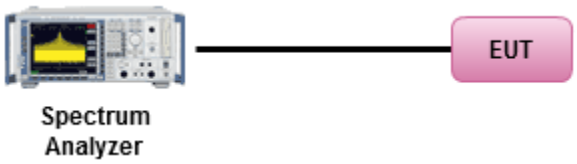
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

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

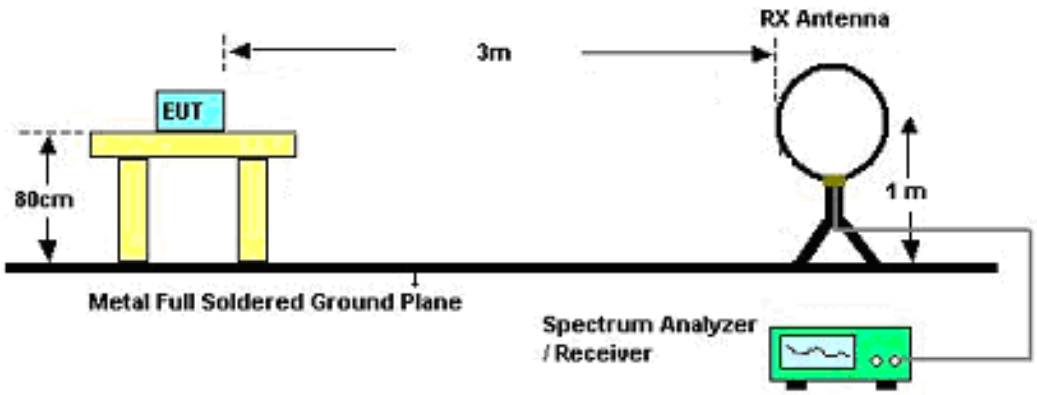
Refer a test equipment and calibration data table in this test report.

3.6.3 Test Procedures

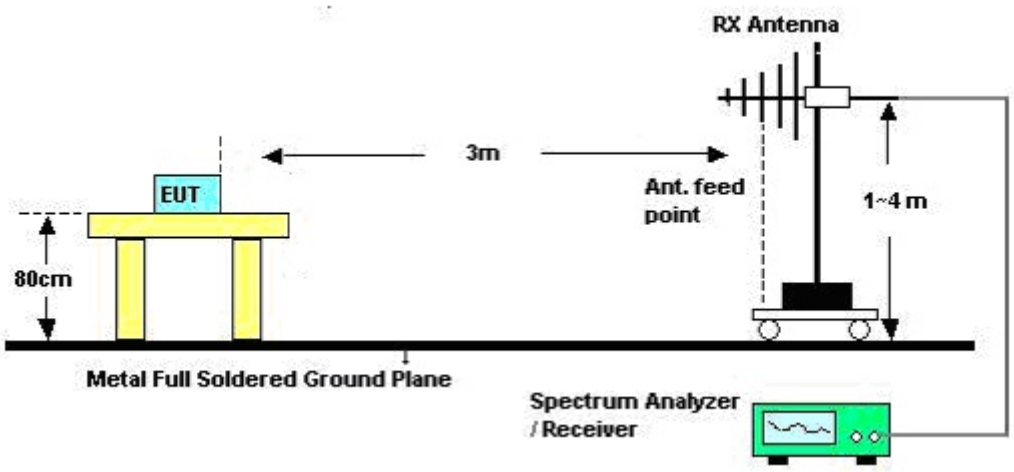
Test Method	
▪ The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].	
▪ Refer as ANSI C63.10, clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.	
▪ For the transmitter unwanted emissions shall be measured using following options below:	
	▪ Refer as KDB 558074, clause 8.6 (11.12 of ANSI C63.10) for restricted frequency bands.
▪ For the transmitter band-edge emissions shall be measured using following options below:	
	▪ 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 (i.e., 1 MHz).

3.6.4 Test Setup

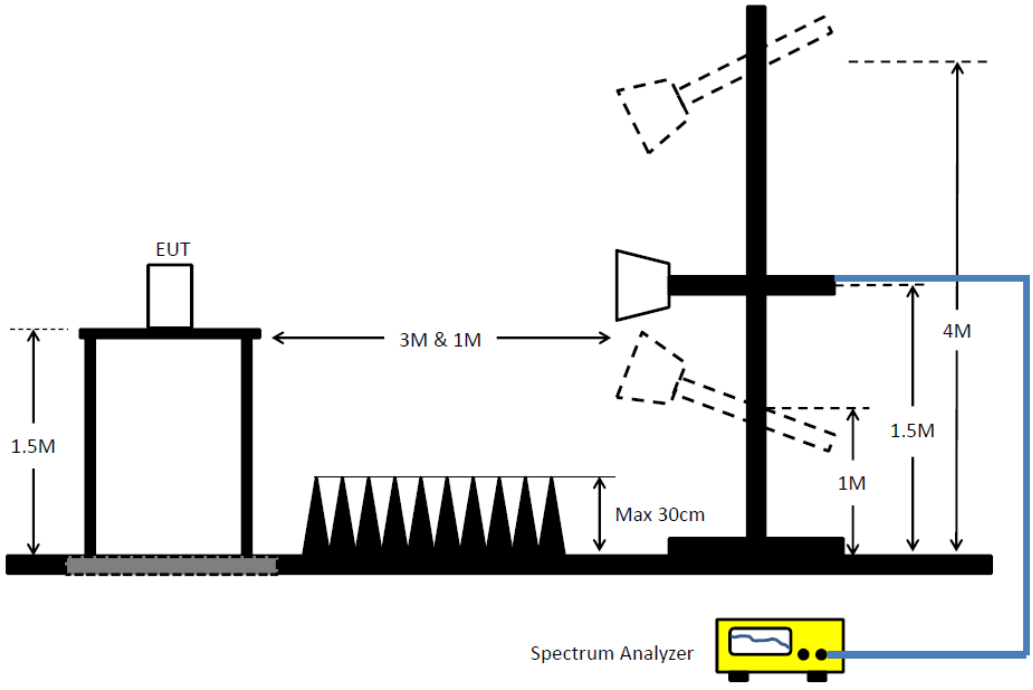
Emissions in Restricted Frequency Bands
9kHz ~30MHz



30MHz~1GHz



Above 1GHz



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	ESR	102051	9KHz ~ 3.6GHz	03/May/2018	02/May/2019
LISN	R&S	ENV216	101295	9kHz ~ 30MHz	08/Nov/2018	07/Nov/2019
RF Cable-CON	MTJ	RG142	CB002-CO	9kHz ~ 200MHz	17/Sep/2018	16/Sep/2019
AC POWER	APC	AFC-11005G	F310050055	47Hz~63Hz 5~300V	NCR	NCR
Impuls Begrenzer Pulse Limiter	SCHWARZBECK	VTSD 9561-F	9561-F041	9 kHz ~ 30 MHz	12/Oct/2018	11/Oct/2019

NCR : Non-Calibration Require

Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	30MHz ~ 1GHz	23/Apr/2018	22/Apr/2019
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	1GHz ~ 18GHz	14/Jun/2018	13/Jun/2019
Microwave Preamplifier	Agilent	8449B	3008A02096	1GHz ~ 26.5GHz	10/May/2018	09/May/2019
Amplifier	EMC	EMC9135	980232	9KHz~1GHz	27/Apr/2018	26/Apr/2019
EXA Signal Analyzer	KEYSIGHT	N9010A	MY54200885	10Hz ~ 44GHz	31/Jul/2018	30/Jul/2019
EMI Test Receiver	Rohde & Schwarz	ESCS 30	100354	9kHz ~ 2.75GHz	08/Dec/2017	07/Dec/2018
Bilog Antenna & 5dB Attenuator	TESEQ & MTJ	CBL6111D & MTJ6102-05	35418 / 3	30MHz~1GHz	02/Oct/2018	03/Oct/2019
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA9120 D 1534	1GHz~18GHz	30/Apr/2018	29/Apr/2019
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170614	18GHz~40GHz	09/Feb/2018	08/Feb/2019
Preamplifier	MITEQ	TTA1840-35-HG	1864481	18GHz ~ 40GHz	24/Aug/2018	23/Aug/2019
Loop Antenna	TESEQ	HLA 6120	31244	9k-30MHz	29/Mar/2018	28/Mar/2019
RF Cable-R03m	Jye Bao	RG142	CB031	9kHz ~ 1GHz	01/Feb/2018	31/Jan/2019
RF Cable-high	HUBER+SUHNER	SUCOFLEX104	SN 556626/4 + 556627	1GHz ~ 40GHz	14/Mar/2018	13/Mar/2019

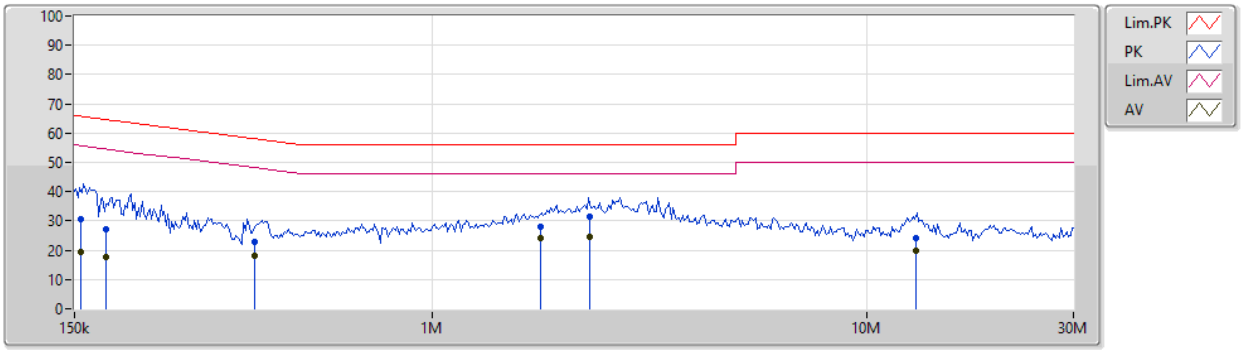
Instrument for Conducted Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Signal Analyzer	R&S	FSV40	101500	10Hz ~ 40GHz	18/Jul/2018	17/Jul/2019
Power Sensor	Anritsu	MA2411B	1339407	300MHz ~ 40GHz	17/Nov/2018	16/Nov/2019
Power Meter	Anritsu	ML2495A	1517010	300MHz ~ 40GHz	17/Nov/2018	16/Nov/2019
RF Cable-1.5m	HUBER+ SUHNER	SUCOFLEX_104	MY12585/4	30MHz ~ 26.5GHz	26/Jan/2018	25/Jan/2019
RF Cable-0.2m	HUBER+ SUHNER	SUCOFLEX_104	MY10710/4	30MHz ~ 26.5GHz	26/Jan/2018	25/Jan/2019
RF Cable-0.2m	HUBER+ SUHNER	SUCOFLEX_104	MY10709/4	30MHz ~ 26.5GHz	26/Jan/2018	25/Jan/2019
Signal Generator	R&S	SMB100A	175727	100kHz~40GHz	26/Oct/2018	25/Oct/2019

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

AC Conduction

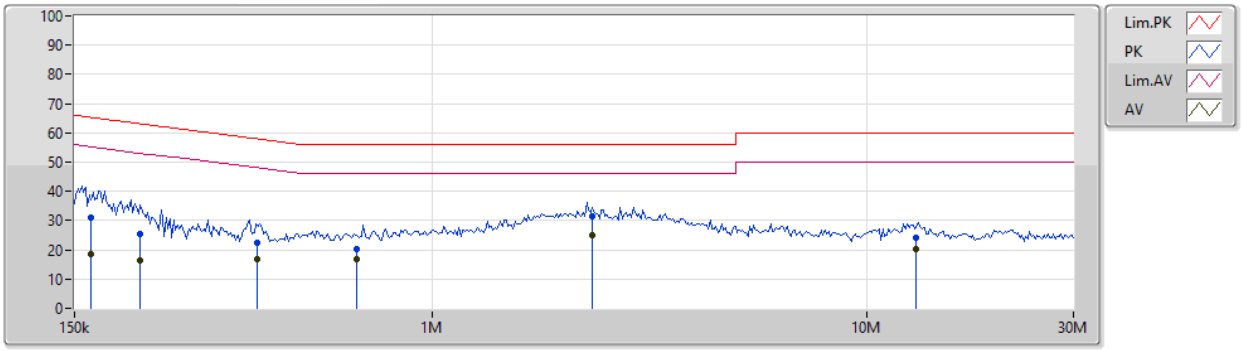
21/11/2018



Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	LISN	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	154.957k	30.51	65.73	-35.22	19.67	Neutral	-	10.84	9.63	0.04	10.00
AV	154.957k	19.19	55.73	-36.54	19.67	Neutral	-	-0.48	9.63	0.04	10.00
QP	177.213k	27.04	64.62	-37.58	19.64	Neutral	-	7.40	9.62	0.02	10.00
AV	177.213k	17.59	54.62	-37.03	19.64	Neutral	-	-2.05	9.62	0.02	10.00
QP	389.439k	23.06	58.08	-35.02	19.71	Neutral	-	3.35	9.61	0.10	10.00
AV	389.439k	18.14	48.08	-29.94	19.71	Neutral	-	-1.57	9.61	0.10	10.00
QP	1.781M	27.98	56.00	-28.02	19.64	Neutral	-	8.34	9.63	0.01	10.00
AV	1.781M	24.35	46.00	-21.65	19.64	Neutral	-	4.71	9.63	0.01	10.00
QP	2.306M	31.62	56.00	-24.38	19.65	Neutral	-	11.97	9.63	0.02	10.00
AV	2.306M	24.61	46.00	-21.39	19.65	Neutral	"Worst"	4.96	9.63	0.02	10.00
QP	12.989M	24.01	60.00	-35.99	19.77	Neutral	-	4.24	9.70	0.07	10.00
AV	12.989M	19.85	50.00	-30.15	19.77	Neutral	-	0.08	9.70	0.07	10.00

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**	Line
Operating Function	USB Mode		



Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	LISN	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	163.495k	31.25	65.27	-34.02	19.65	Line	-	11.60	9.62	0.03	10.00
AV	163.495k	18.72	55.27	-36.55	19.65	Line	-	-0.93	9.62	0.03	10.00
QP	212.105k	25.63	63.11	-37.48	19.63	Line	-	6.00	9.62	0.01	10.00
AV	212.105k	16.27	53.11	-36.84	19.63	Line	-	-3.36	9.62	0.01	10.00
QP	396.514k	22.21	57.93	-35.72	19.71	Line	-	2.50	9.61	0.10	10.00
AV	396.514k	16.99	47.93	-30.94	19.71	Line	-	-2.72	9.61	0.10	10.00
QP	669.393k	20.43	56.00	-35.57	19.65	Line	-	0.78	9.61	0.04	10.00
AV	669.393k	16.84	46.00	-29.16	19.65	Line	-	-2.81	9.61	0.04	10.00
QP	2.337M	31.50	56.00	-24.50	19.64	Line	-	11.86	9.62	0.02	10.00
AV	2.337M	25.01	46.00	-20.99	19.64	Line	"Worst"	5.37	9.62	0.02	10.00
QP	12.984M	24.27	60.00	-35.73	19.71	Line	-	4.56	9.64	0.07	10.00
AV	12.984M	20.19	50.00	-29.81	19.71	Line	-	0.48	9.64	0.07	10.00

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)	712.5k	1.098M	1M10F1D	663.75k	1.073M
BT-LE(2Mbps)	1.17M	2.136M	2M14F1D	1.135M	2.066M

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;

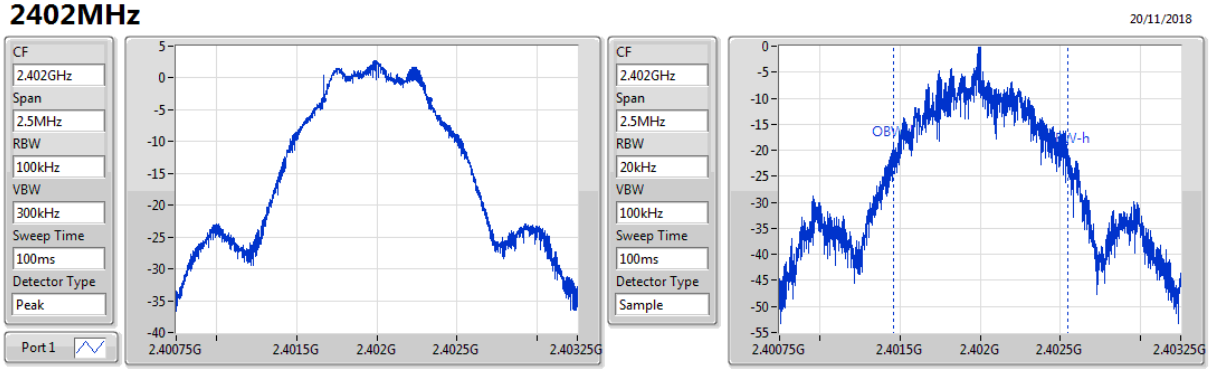
Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	500k	663.75k	1.087M
2440MHz_TnomVnom	Pass	500k	712.5k	1.073M
2480MHz_TnomVnom	Pass	500k	712.5k	1.098M
BT-LE(2Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	500k	1.135M	2.114M
2440MHz_TnomVnom	Pass	500k	1.168M	2.066M
2480MHz_TnomVnom	Pass	500k	1.17M	2.136M

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

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

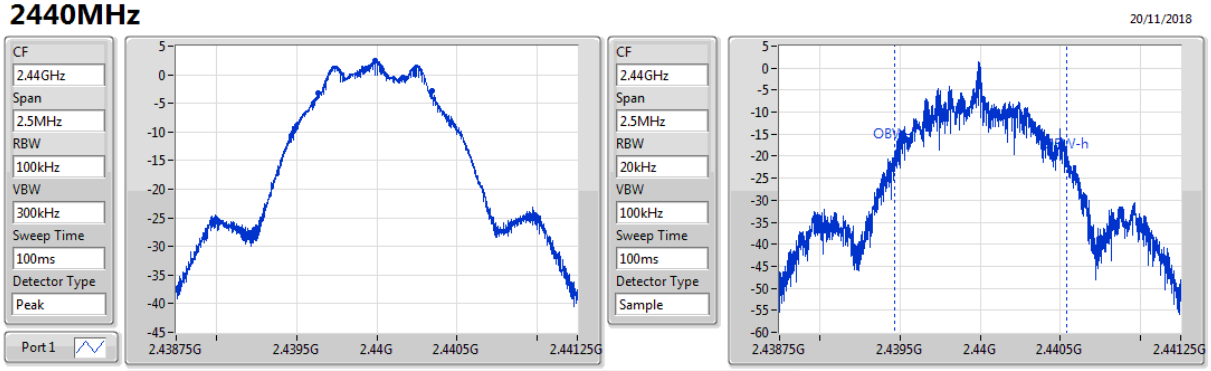
2402MHz



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
663.75k	2.401666G	2.40233G	1.087M	2.401458G	2.402545G	500k	1

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

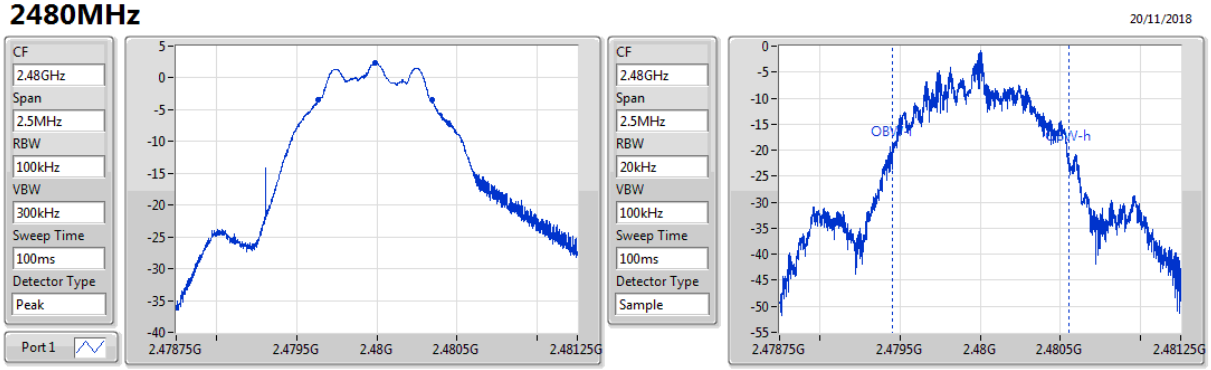
2440MHz



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
712.5k	2.439633G	2.440345G	1.073M	2.439467G	2.44054G	500k	1

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

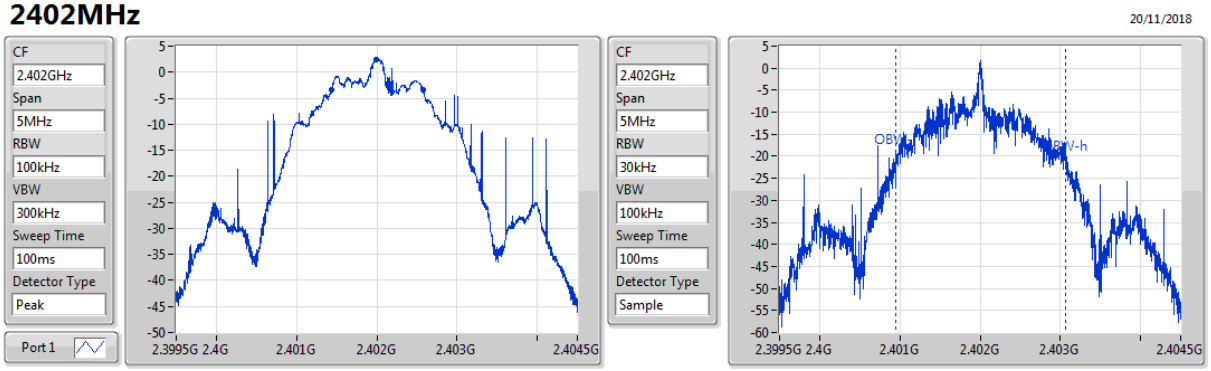
2480MHz



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
712.5k	2.479635G	2.480348G	1.098M	2.479454G	2.480552G	500k	1

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

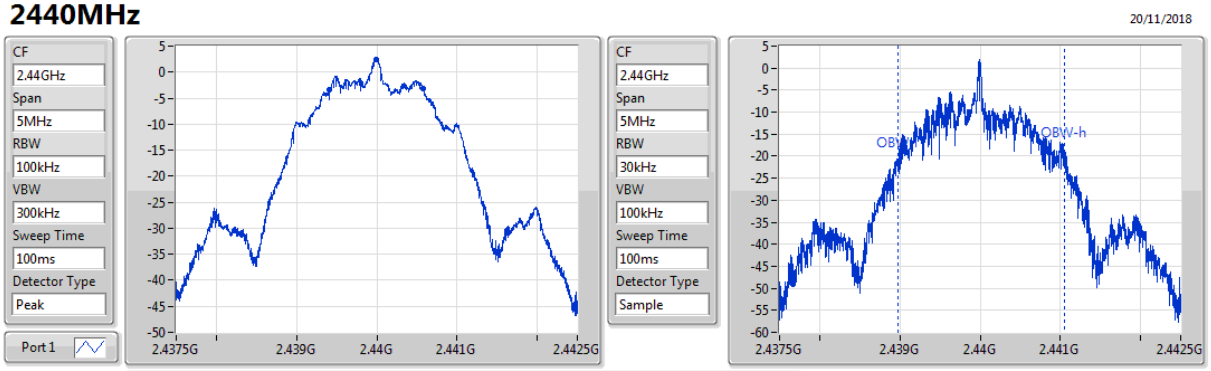
2402MHz



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.135M	2.40144G	2.402575G	2.114M	2.400948G	2.403062G	500k	1

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

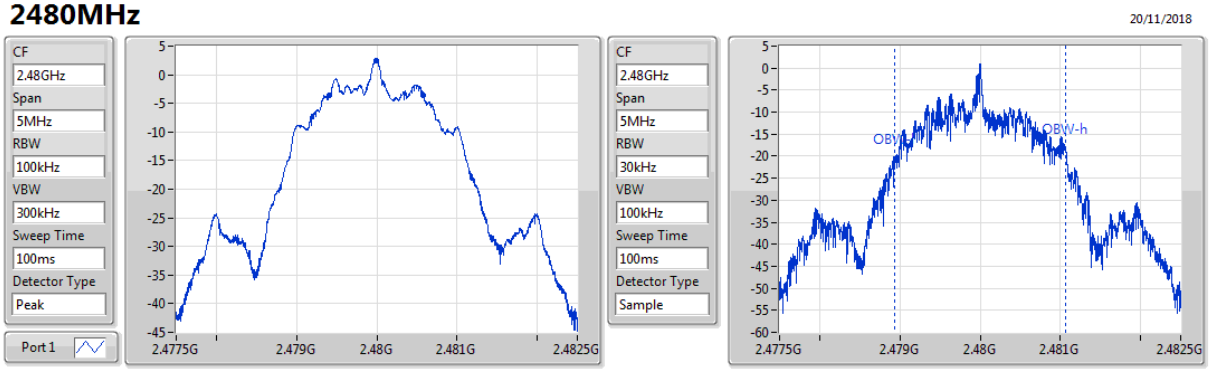
2440MHz



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.168M	2.439413G	2.44058G	2.066M	2.438983G	2.441049G	500k	1

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

2480MHz



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.17M	2.479413G	2.480583G	2.136M	2.478936G	2.481072G	500k	1

Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	3.39	0.00218
BT-LE(2Mbps)	3.40	0.00219

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	1.50	3.25	30.00
2440MHz_TnomVnom	Pass	1.50	3.39	30.00
2480MHz_TnomVnom	Pass	1.50	3.36	30.00
BT-LE(2Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	1.50	3.40	30.00
2440MHz_TnomVnom	Pass	1.50	3.37	30.00
2480MHz_TnomVnom	Pass	1.50	3.34	30.00

Summary

Mode	Power	Power
	(dBm)	(W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	2.57	0.00181
BT-LE(2Mbps)	2.32	0.00171

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	1.50	2.42	30.00
2440MHz_TnomVnom	Pass	1.50	2.57	30.00
2480MHz_TnomVnom	Pass	1.50	2.55	30.00
BT-LE(2Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	1.50	2.32	30.00
2440MHz_TnomVnom	Pass	1.50	2.25	30.00
2480MHz_TnomVnom	Pass	1.50	2.22	30.00

Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-11.83
BT-LE(2Mbps)	-10.30

RBW=3kHz.

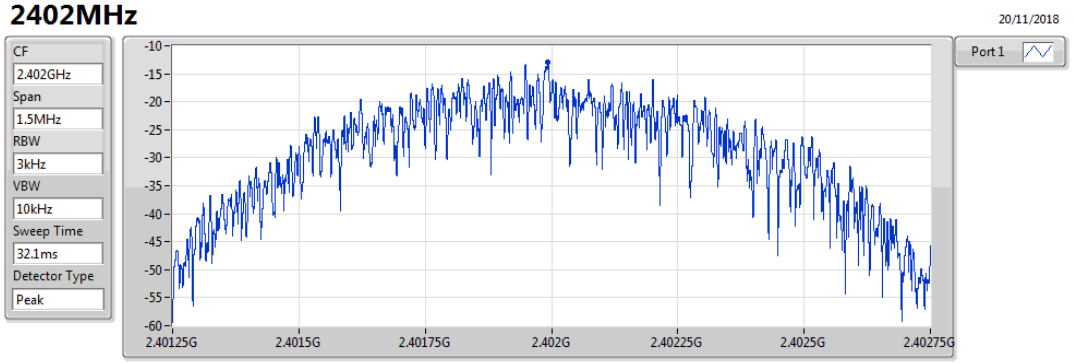
Result

Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	1.50	-13.01	8.00
2440MHz_TnomVnom	Pass	1.50	-11.83	8.00
2480MHz_TnomVnom	Pass	1.50	-12.44	8.00
BT-LE(2Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	1.50	-11.77	8.00
2440MHz_TnomVnom	Pass	1.50	-10.30	8.00
2480MHz_TnomVnom	Pass	1.50	-13.27	8.00

RBW=3kHz.

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

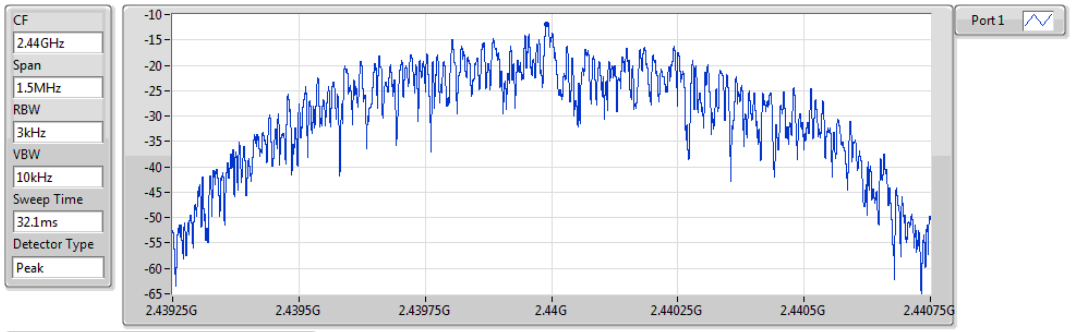
2402MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-13.01	-13.01	-13.01

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

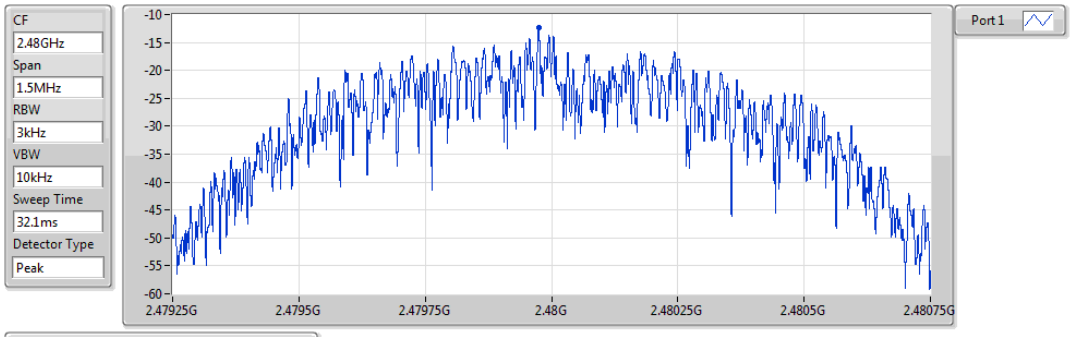
2440MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-11.83	-11.83	-11.83

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

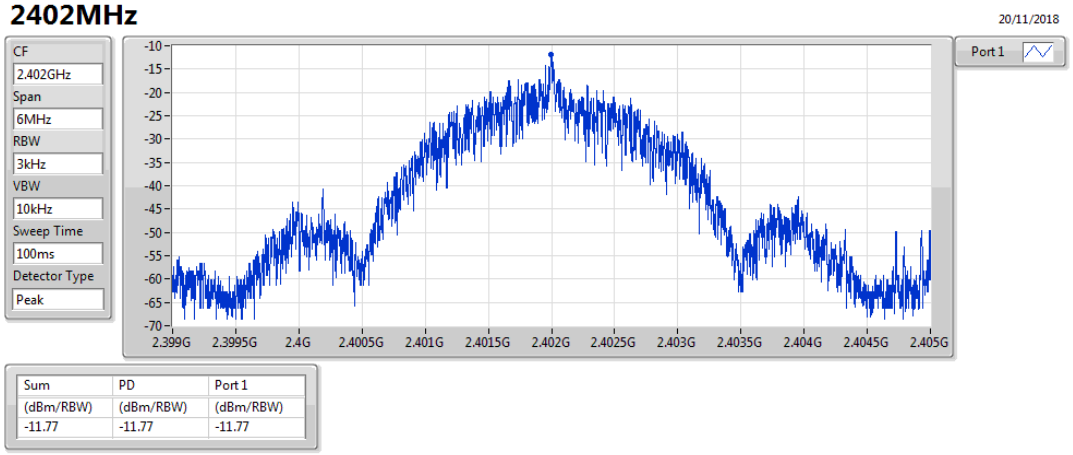
2480MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-12.44	-12.44	-12.44

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

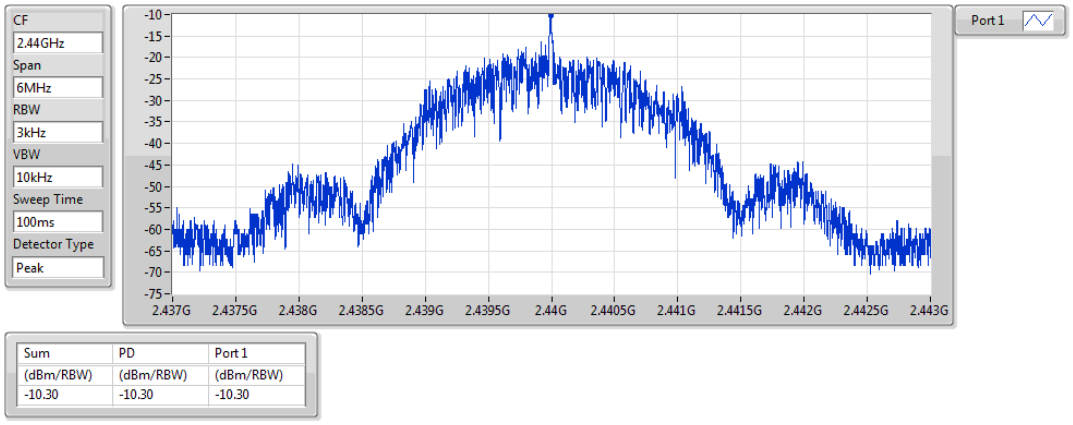
2402MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-11.77	-11.77	-11.77

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

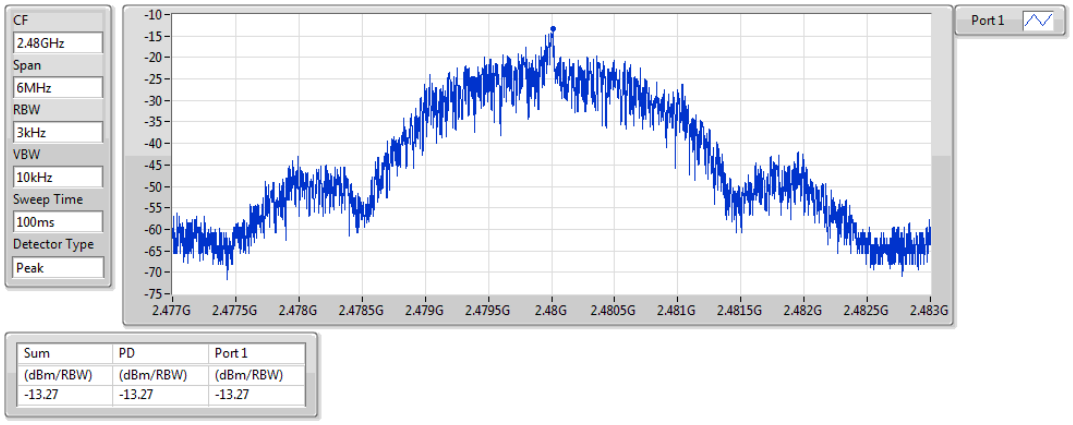
2440MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-10.30	-10.30	-10.30

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

2480MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-13.27	-13.27	-13.27

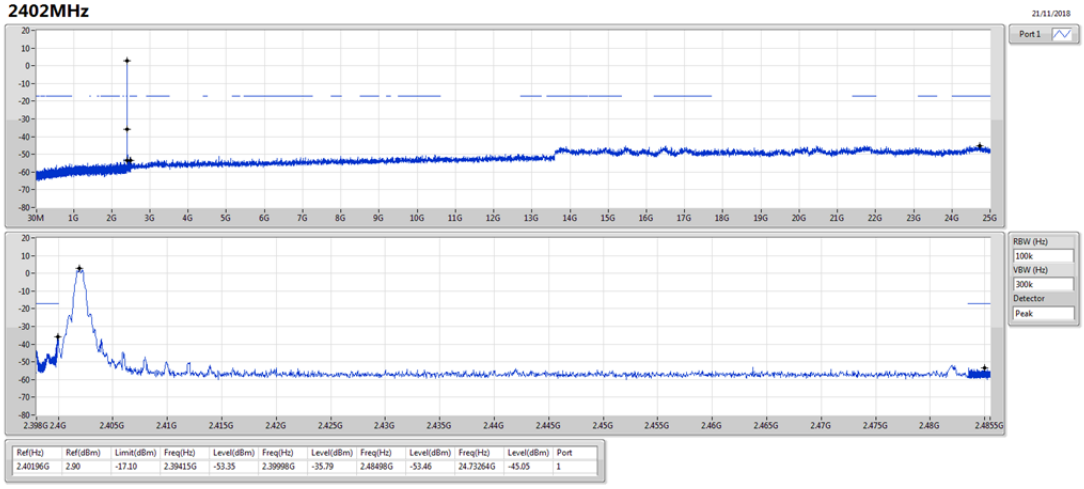
Summary

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	2.40196G	2.90	-17.10	2.39415G	-53.35	2.39998G	-35.79	2.48498G	-53.46	24.73264G	-45.05	1
BT-LE(2Mbps)	Pass	2.402G	2.55	-17.45	2.396G	-51.93	2.39999G	-24.66	2.48463G	-54.23	24.58633G	-44.59	1

Result

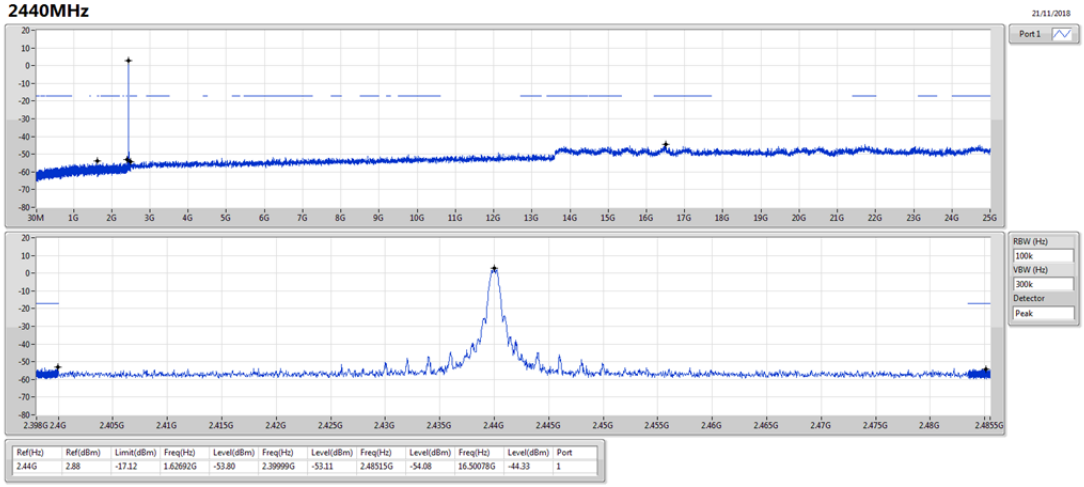
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.40196G	2.90	-17.10	2.39415G	-53.35	2.39998G	-35.79	2.48498G	-53.46	24.73264G	-45.05	1
2440MHz	Pass	2.44G	2.88	-17.12	1.62692G	-53.80	2.39999G	-53.11	2.48515G	-54.08	16.50078G	-44.33	1
2480MHz	Pass	2.48003G	2.44	-17.56	1.65356G	-52.24	2.3999G	-52.15	2.484G	-43.52	16.47826G	-43.72	1
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.402G	2.55	-17.45	2.396G	-51.93	2.39999G	-24.66	2.48463G	-54.23	24.58633G	-44.59	1
2440MHz	Pass	2.44G	2.88	-17.12	866.68M	-55.31	2.3994G	-53.86	2.48384G	-53.21	21.66252G	-44.09	1
2480MHz	Pass	2.48003G	2.63	-17.37	1.96154G	-53.79	2.4G	-52.74	2.48398G	-43.67	24.6792G	-44.23	1

BT-LE(1Mbps)
2402MHz
CSE NdB



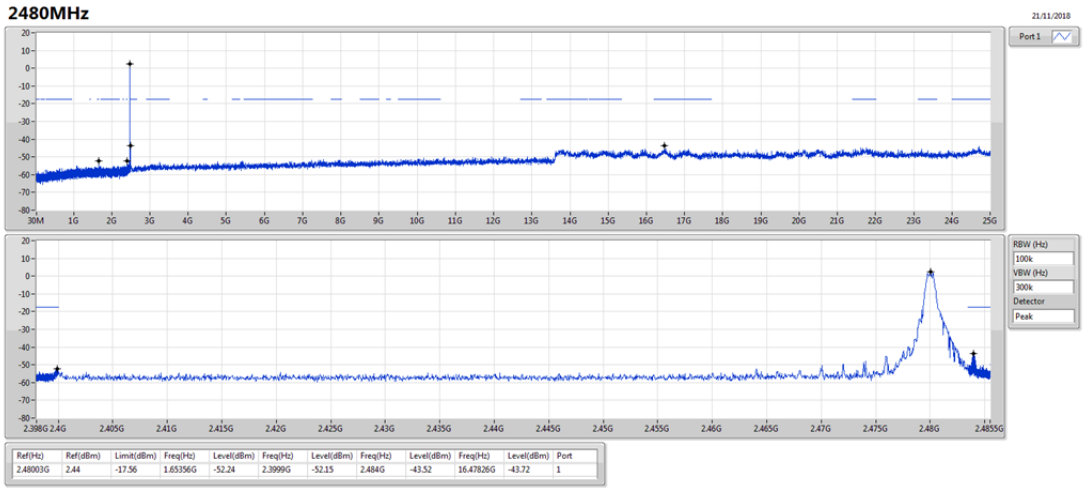
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40196G	2.90	-17.10	2.39415G	-53.35	2.3999BG	-35.79	2.4849BG	-53.46	24.73264G	-45.05	1

BT-LE(1Mbps)
2440MHz
CSE NdB



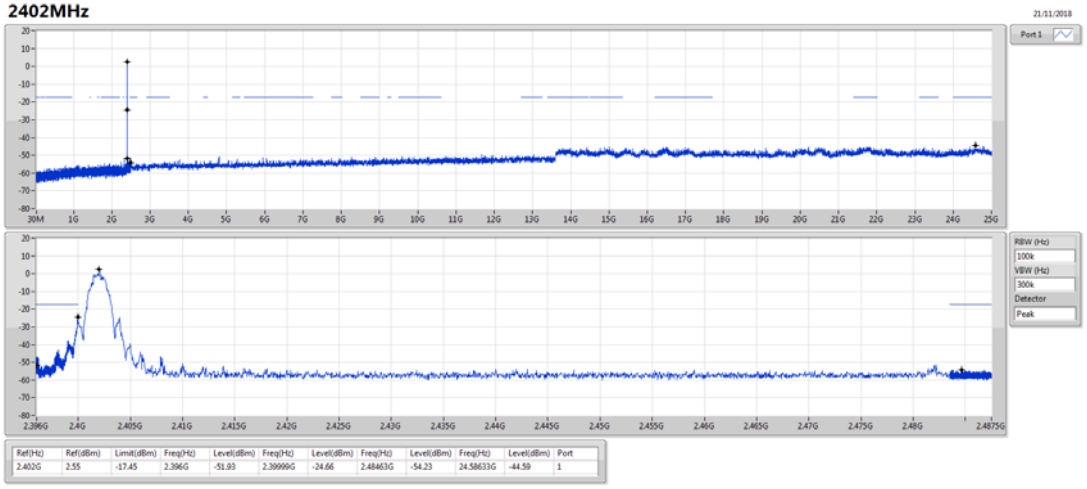
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.44G	2.88	-17.12	1.62692G	-53.80	2.39999G	-53.11	2.48515G	-54.08	16.50078G	-44.33	1

BT-LE(1Mbps)
2480MHz
CSE NdB



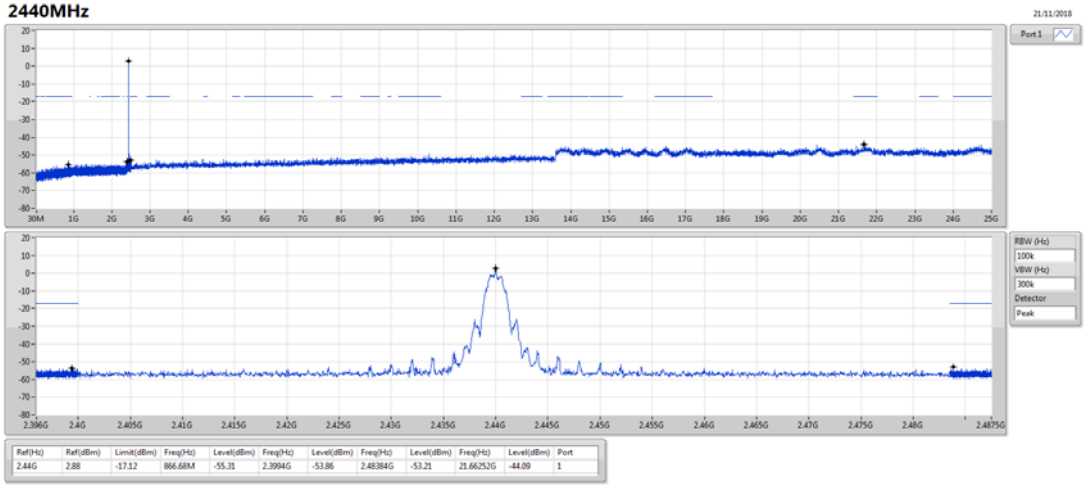
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.48003G	2.44	-17.56	1.65356G	-52.24	2.3999G	-52.15	2.484G	-43.52	16.47826G	-43.72	1

BT-LE(2Mbps)
2402MHz
CSE NdB



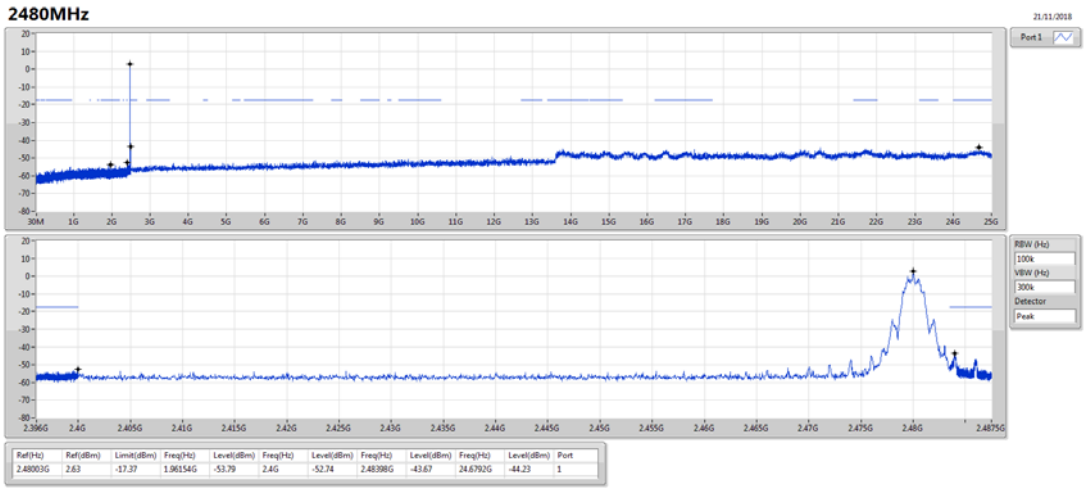
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.402G	2.55	-17.45	2.396G	-51.93	2.39999G	-24.66	2.48463G	-54.23	24.58633G	-44.59	1

BT-LE(2Mbps)
2440MHz
CSE NdB



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.44G	2.88	-17.12	866.68M	-55.31	2.3994G	-53.86	2.48384G	-53.21	21.66252G	-44.09	1

BT-LE(2Mbps)
2480MHz
CSE NdB



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.48003G	2.63	-17.37	1.96154G	-53.79	2.4G	-52.74	2.48398G	-43.67	24.6792G	-44.23	1

Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-
BT-LE(2Mbps)	Pass	PK	30M	25.91	40.00	-14.09	-13.40	3	Horizontal	360	3.00	-

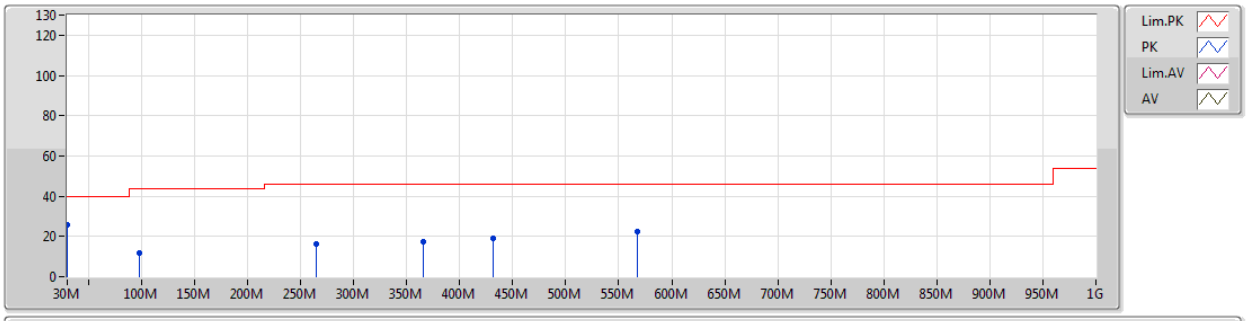
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-
2440MHz	Pass	PK	30M	25.68	40.00	-14.32	-13.40	3	Vertical	0	3.00	-
2440MHz	Pass	PK	97.9M	11.96	43.50	-31.54	-21.37	3	Vertical	0	3.00	-
2440MHz	Pass	PK	264.74M	16.03	46.00	-29.97	-15.98	3	Vertical	0	3.00	-
2440MHz	Pass	PK	365.62M	17.55	46.00	-28.45	-15.08	3	Vertical	0	3.00	-
2440MHz	Pass	PK	431.58M	19.04	46.00	-26.96	-13.10	3	Vertical	0	3.00	-
2440MHz	Pass	PK	567.38M	22.45	46.00	-23.55	-10.54	3	Vertical	0	3.00	-
2440MHz	Pass	PK	30M	25.91	40.00	-14.09	-13.40	3	Horizontal	360	3.00	-
2440MHz	Pass	PK	130.88M	13.32	43.50	-30.18	-19.18	3	Horizontal	360	3.00	-
2440MHz	Pass	PK	264.74M	16.66	46.00	-29.34	-15.98	3	Horizontal	360	3.00	-
2440MHz	Pass	PK	454.86M	19.89	46.00	-26.11	-12.79	3	Horizontal	360	3.00	-
2440MHz	Pass	PK	555.74M	21.90	46.00	-24.10	-10.66	3	Horizontal	360	3.00	-
2440MHz	Pass	PK	631.4M	23.05	46.00	-22.95	-10.06	3	Horizontal	360	3.00	-

BT-LE(2Mbps)

2440MHz_USB

20/11/2018

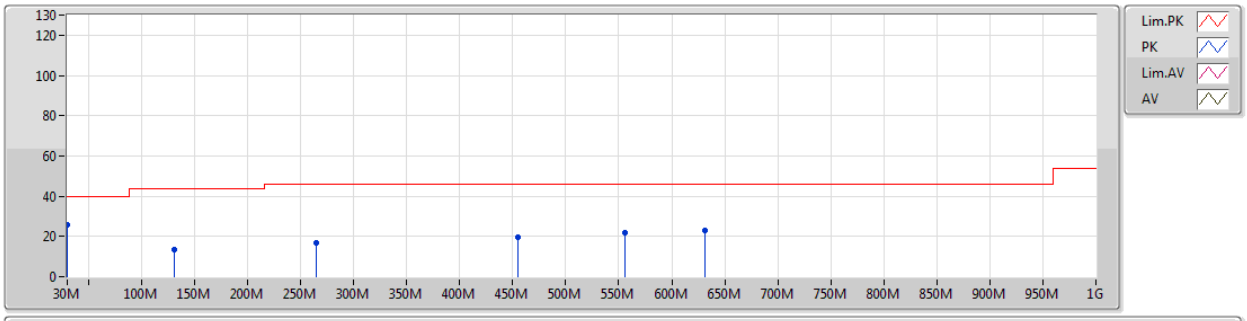


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	30M	25.68	40.00	-14.32	-13.40	3	Vertical	0	3.00	-
PK	97.9M	11.96	43.50	-31.54	-21.37	3	Vertical	0	3.00	-
PK	264.74M	16.03	46.00	-29.97	-15.98	3	Vertical	0	3.00	-
PK	365.62M	17.55	46.00	-28.45	-15.08	3	Vertical	0	3.00	-
PK	431.58M	19.04	46.00	-26.96	-13.10	3	Vertical	0	3.00	-
PK	567.38M	22.45	46.00	-23.55	-10.54	3	Vertical	0	3.00	-

BT-LE(2Mbps)

2440MHz_USB

20/11/2018



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	30M	25.91	40.00	-14.09	-13.40	3	Horizontal	360	3.00	-
PK	130.88M	13.32	43.50	-30.18	-19.18	3	Horizontal	360	3.00	-
PK	264.74M	16.66	46.00	-29.34	-15.98	3	Horizontal	360	3.00	-
PK	454.86M	19.89	46.00	-26.11	-12.79	3	Horizontal	360	3.00	-
PK	555.74M	21.90	46.00	-24.10	-10.66	3	Horizontal	360	3.00	-
PK	631.4M	23.05	46.00	-22.95	-10.06	3	Horizontal	360	3.00	-

Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	AV	2.4838G	45.59	54.00	-8.41	31.11	3	Vertical	58	1.04	-
BT-LE(2Mbps)	Pass	AV	2.4835G	50.24	54.00	-3.76	31.11	3	Vertical	156	1.06	-

Result

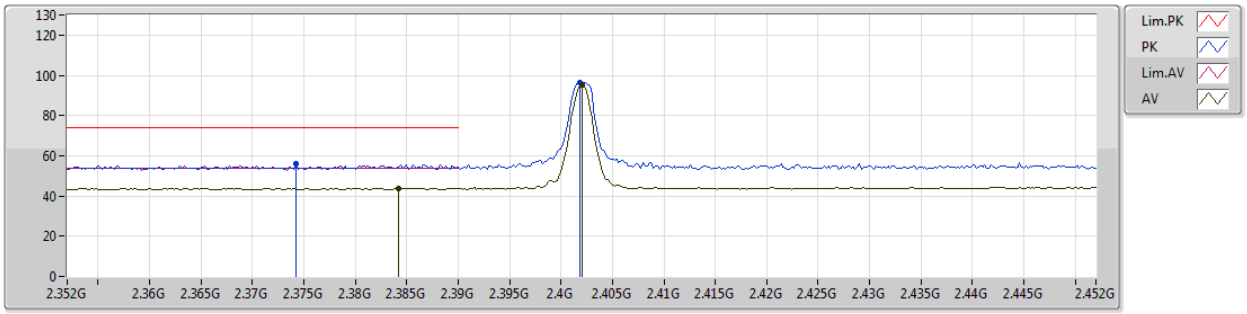
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.3842G	43.90	54.00	-10.10	30.76	3	Vertical	127	1.05	-
2402MHz	Pass	AV	2.402G	95.36	Inf	-Inf	30.82	3	Vertical	127	1.05	-
2402MHz	Pass	PK	2.3742G	55.89	74.00	-18.11	30.72	3	Vertical	127	1.05	-
2402MHz	Pass	PK	2.4018G	96.31	Inf	-Inf	30.82	3	Vertical	127	1.05	-
2402MHz	Pass	AV	2.355G	44.00	54.00	-10.00	30.65	3	Horizontal	138	1.21	-
2402MHz	Pass	AV	2.402G	91.62	Inf	-Inf	30.82	3	Horizontal	138	1.21	-
2402MHz	Pass	PK	2.3676G	56.93	74.00	-17.07	30.70	3	Horizontal	138	1.21	-
2402MHz	Pass	PK	2.4022G	92.59	Inf	-Inf	30.82	3	Horizontal	138	1.21	-
2402MHz	Pass	AV	4.80358G	34.26	54.00	-19.74	2.08	3	Vertical	78	2.09	-
2402MHz	Pass	PK	4.80418G	44.37	74.00	-29.63	2.08	3	Vertical	78	2.09	-
2402MHz	Pass	AV	4.80412G	33.32	54.00	-20.68	2.08	3	Horizontal	166	2.77	-
2402MHz	Pass	PK	4.80442G	43.68	74.00	-30.32	2.08	3	Horizontal	166	2.77	-
2440MHz	Pass	AV	2.3684G	43.86	54.00	-10.14	30.70	3	Vertical	71	1.00	-
2440MHz	Pass	AV	2.44G	96.10	Inf	-Inf	30.95	3	Vertical	71	1.00	-
2440MHz	Pass	AV	2.4992G	44.68	54.00	-9.32	31.17	3	Vertical	71	1.00	-
2440MHz	Pass	PK	2.3564G	55.61	74.00	-18.39	30.66	3	Vertical	71	1.00	-
2440MHz	Pass	PK	2.4404G	97.12	Inf	-Inf	30.95	3	Vertical	71	1.00	-
2440MHz	Pass	PK	2.4884G	55.97	74.00	-18.03	31.13	3	Vertical	71	1.00	-
2440MHz	Pass	AV	2.3724G	43.98	54.00	-10.02	30.71	3	Horizontal	322	2.79	-
2440MHz	Pass	AV	2.44G	92.35	Inf	-Inf	30.95	3	Horizontal	322	2.79	-
2440MHz	Pass	AV	2.498G	44.62	54.00	-9.38	31.16	3	Horizontal	322	2.79	-
2440MHz	Pass	PK	2.384G	55.56	74.00	-18.44	30.76	3	Horizontal	322	2.79	-
2440MHz	Pass	PK	2.4396G	93.36	Inf	-Inf	30.95	3	Horizontal	322	2.79	-
2440MHz	Pass	PK	2.494G	56.33	74.00	-17.67	31.15	3	Horizontal	322	2.79	-
2440MHz	Pass	AV	4.88036G	32.92	54.00	-21.08	2.27	3	Vertical	68	1.94	-
2440MHz	Pass	PK	4.87964G	43.86	74.00	-30.14	2.27	3	Vertical	68	1.94	-
2440MHz	Pass	AV	4.87958G	33.50	54.00	-20.50	2.27	3	Horizontal	174	1.91	-
2440MHz	Pass	PK	4.87958G	44.27	74.00	-29.73	2.27	3	Horizontal	174	1.91	-
2480MHz	Pass	AV	2.48G	96.28	Inf	-Inf	31.09	3	Vertical	58	1.04	-
2480MHz	Pass	AV	2.4838G	45.59	54.00	-8.41	31.11	3	Vertical	58	1.04	-
2480MHz	Pass	PK	2.4802G	97.36	Inf	-Inf	31.09	3	Vertical	58	1.04	-
2480MHz	Pass	PK	2.4836G	59.33	74.00	-14.67	31.11	3	Vertical	58	1.04	-
2480MHz	Pass	AV	2.48G	92.72	Inf	-Inf	31.09	3	Horizontal	141	1.12	-
2480MHz	Pass	AV	2.496G	44.65	54.00	-9.35	31.16	3	Horizontal	141	1.12	-
2480MHz	Pass	PK	2.4802G	93.77	Inf	-Inf	31.09	3	Horizontal	141	1.12	-
2480MHz	Pass	PK	2.484G	56.99	74.00	-17.01	31.12	3	Horizontal	141	1.12	-
2480MHz	Pass	AV	4.96018G	32.29	54.00	-21.71	2.47	3	Vertical	207	1.71	-
2480MHz	Pass	PK	4.96042G	44.79	74.00	-29.21	2.47	3	Vertical	207	1.71	-
2480MHz	Pass	AV	4.96012G	34.03	54.00	-19.97	2.47	3	Horizontal	27	2.74	-
2480MHz	Pass	PK	4.96042G	44.31	74.00	-29.69	2.47	3	Horizontal	27	2.74	-
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.3834G	45.54	54.00	-8.46	30.75	3	Vertical	125	1.07	-
2402MHz	Pass	AV	2.402G	94.15	Inf	-Inf	30.82	3	Vertical	125	1.07	-
2402MHz	Pass	PK	2.3882G	55.66	74.00	-18.34	30.77	3	Vertical	125	1.07	-
2402MHz	Pass	PK	2.4016G	96.47	Inf	-Inf	30.81	3	Vertical	125	1.07	-
2402MHz	Pass	AV	2.3792G	45.57	54.00	-8.43	30.74	3	Horizontal	136	1.17	-
2402MHz	Pass	AV	2.402G	89.41	Inf	-Inf	30.82	3	Horizontal	136	1.17	-

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2402MHz	Pass	PK	2.3804G	55.65	74.00	-18.35	30.75	3	Horizontal	136	1.17	-
2402MHz	Pass	PK	2.4024G	91.68	Inf	-Inf	30.82	3	Horizontal	136	1.17	-
2402MHz	Pass	AV	4.804G	36.20	54.00	-17.80	2.08	3	Vertical	63	2.03	-
2402MHz	Pass	PK	4.80376G	43.72	74.00	-30.28	2.08	3	Vertical	63	2.03	-
2402MHz	Pass	AV	4.80388G	35.66	54.00	-18.34	2.08	3	Horizontal	154	2.94	-
2402MHz	Pass	PK	4.80292G	44.03	74.00	-29.97	2.07	3	Horizontal	154	2.94	-
2440MHz	Pass	AV	2.3784G	46.04	54.00	-7.96	30.73	3	Vertical	160	1.28	-
2440MHz	Pass	AV	2.44G	94.19	Inf	-Inf	30.95	3	Vertical	160	1.28	-
2440MHz	Pass	AV	2.498G	46.86	54.00	-7.14	31.16	3	Vertical	160	1.28	-
2440MHz	Pass	PK	2.3612G	55.53	74.00	-18.47	30.67	3	Vertical	160	1.28	-
2440MHz	Pass	PK	2.44G	96.50	Inf	-Inf	30.95	3	Vertical	160	1.28	-
2440MHz	Pass	PK	2.4852G	55.66	74.00	-18.34	31.12	3	Vertical	160	1.28	-
2440MHz	Pass	AV	2.3408G	45.47	54.00	-8.53	30.60	3	Horizontal	136	1.19	-
2440MHz	Pass	AV	2.44G	90.72	Inf	-Inf	30.95	3	Horizontal	136	1.19	-
2440MHz	Pass	AV	2.4892G	46.70	54.00	-7.30	31.13	3	Horizontal	136	1.19	-
2440MHz	Pass	PK	2.354G	55.44	74.00	-18.56	30.65	3	Horizontal	136	1.19	-
2440MHz	Pass	PK	2.4396G	93.06	Inf	-Inf	30.95	3	Horizontal	136	1.19	-
2440MHz	Pass	PK	2.4944G	56.73	74.00	-17.27	31.15	3	Horizontal	136	1.19	-
2440MHz	Pass	AV	4.88024G	33.40	54.00	-20.60	2.27	3	Vertical	57	1.92	-
2440MHz	Pass	PK	4.88G	44.29	74.00	-29.71	2.27	3	Vertical	57	1.92	-
2440MHz	Pass	AV	4.87994G	35.63	54.00	-18.37	2.27	3	Horizontal	349	2.09	-
2440MHz	Pass	PK	4.87994G	43.13	74.00	-30.87	2.27	3	Horizontal	349	2.09	-
2480MHz	Pass	AV	2.48G	95.02	Inf	-Inf	31.09	3	Vertical	156	1.06	-
2480MHz	Pass	AV	2.4835G	50.24	54.00	-3.76	31.11	3	Vertical	156	1.06	-
2480MHz	Pass	PK	2.4806G	97.58	Inf	-Inf	31.10	3	Vertical	156	1.06	-
2480MHz	Pass	PK	2.4835G	59.74	74.00	-14.26	31.11	3	Vertical	156	1.06	-
2480MHz	Pass	AV	2.48G	89.13	Inf	-Inf	31.09	3	Horizontal	37	1.00	-
2480MHz	Pass	AV	2.4835G	47.78	54.00	-6.22	31.11	3	Horizontal	37	1.00	-
2480MHz	Pass	PK	2.4806G	91.59	Inf	-Inf	31.10	3	Horizontal	37	1.00	-
2480MHz	Pass	PK	2.4928G	57.13	74.00	-16.87	31.14	3	Horizontal	37	1.00	-
2480MHz	Pass	AV	4.95934G	33.37	54.00	-20.63	2.46	3	Vertical	65	1.57	-
2480MHz	Pass	PK	4.95904G	43.12	74.00	-30.88	2.46	3	Vertical	65	1.57	-
2480MHz	Pass	AV	4.96006G	36.55	54.00	-17.45	2.47	3	Horizontal	12	2.24	-
2480MHz	Pass	PK	4.96G	44.32	74.00	-29.68	2.47	3	Horizontal	12	2.24	-

BT-LE(1Mbps)

2402MHz_TX

20/11/2018

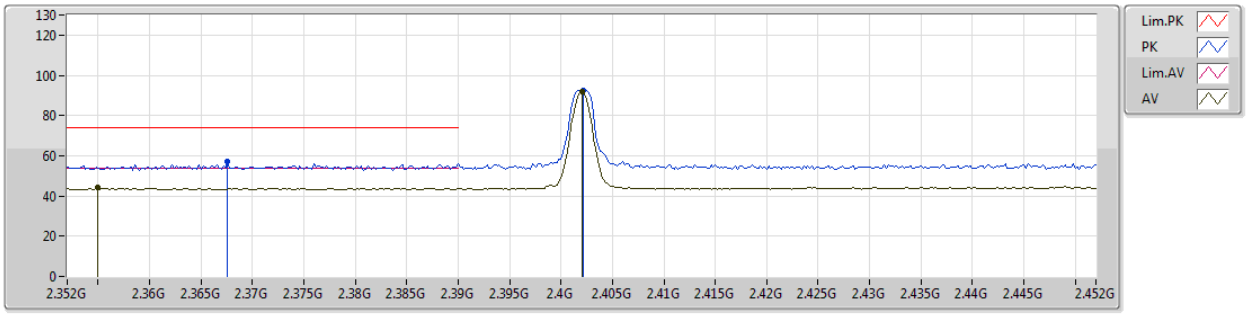


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.3842G	43.90	54.00	-10.10	30.76	3	Vertical	127	1.05	-
AV	2.402G	95.36	Inf	-Inf	30.82	3	Vertical	127	1.05	-
PK	2.3742G	55.89	74.00	-18.11	30.72	3	Vertical	127	1.05	-
PK	2.4018G	96.31	Inf	-Inf	30.82	3	Vertical	127	1.05	-

BT-LE(1Mbps)

2402MHz_TX

20/11/2018

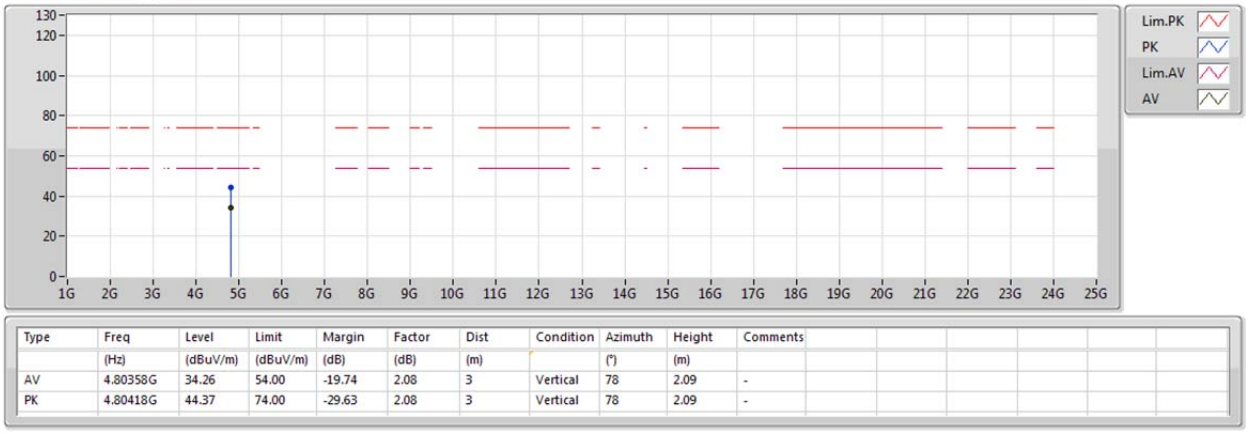


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.355G	44.00	54.00	-10.00	30.65	3	Horizontal	138	1.21	-
AV	2.402G	91.62	Inf	-Inf	30.82	3	Horizontal	138	1.21	-
PK	2.3676G	56.93	74.00	-17.07	30.70	3	Horizontal	138	1.21	-
PK	2.4022G	92.59	Inf	-Inf	30.82	3	Horizontal	138	1.21	-

BT-LE(1Mbps)

2402MHz_TX

20/11/2018

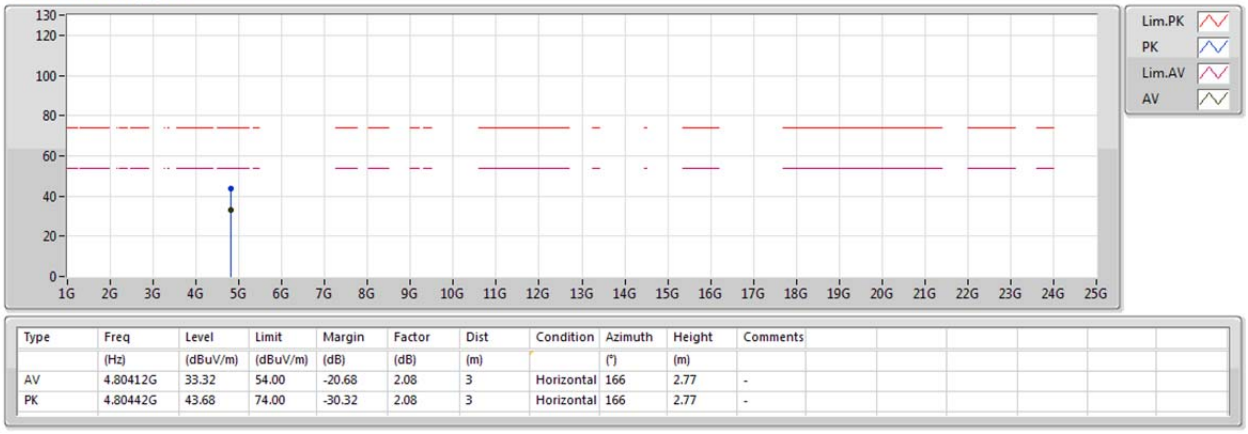


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	4.80358G	34.26	54.00	-19.74	2.08	3	Vertical	78	2.09	-
PK	4.80418G	44.37	74.00	-29.63	2.08	3	Vertical	78	2.09	-

BT-LE(1Mbps)

2402MHz_TX

20/11/2018

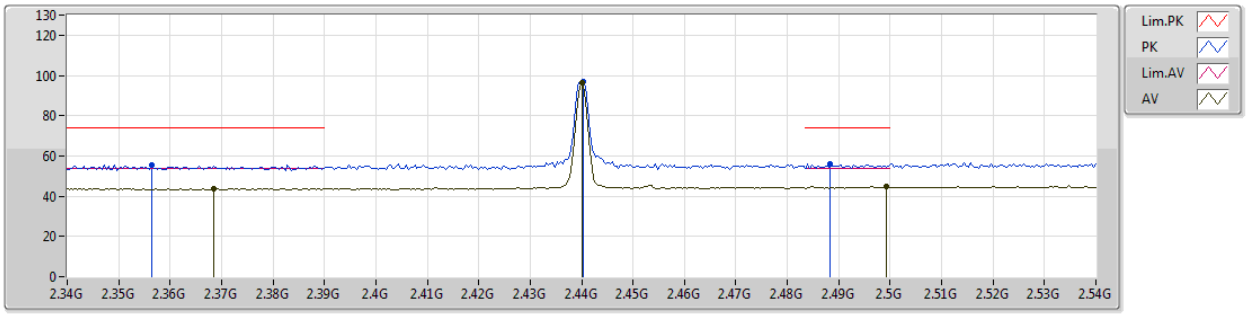


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	4.80412G	33.32	54.00	-20.68	2.08	3	Horizontal	166	2.77	-
PK	4.80442G	43.68	74.00	-30.32	2.08	3	Horizontal	166	2.77	-

BT-LE(1Mbps)

2440MHz_TX

20/11/2018

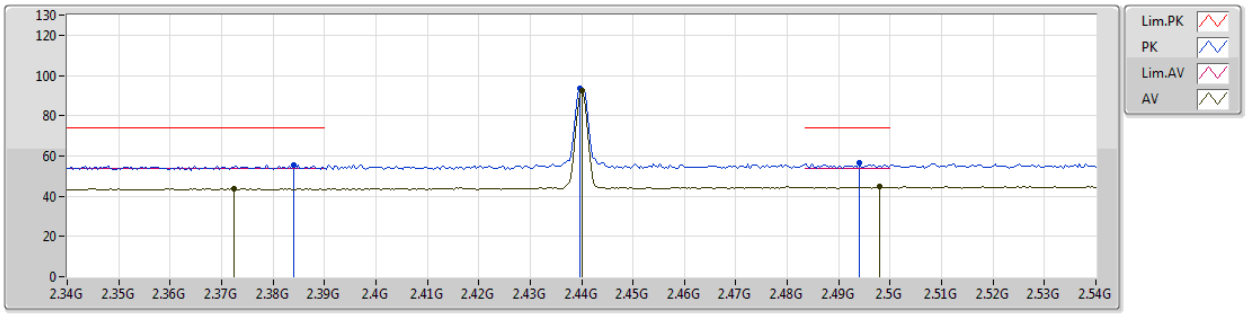


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.3684G	43.86	54.00	-10.14	30.70	3	Vertical	71	1.00	-
AV	2.44G	96.10	Inf	-Inf	30.95	3	Vertical	71	1.00	-
AV	2.4992G	44.68	54.00	-9.32	31.17	3	Vertical	71	1.00	-
PK	2.3564G	55.61	74.00	-18.39	30.66	3	Vertical	71	1.00	-
PK	2.4404G	97.12	Inf	-Inf	30.95	3	Vertical	71	1.00	-
PK	2.4884G	55.97	74.00	-18.03	31.13	3	Vertical	71	1.00	-

BT-LE(1Mbps)

2440MHz_TX

20/11/2018

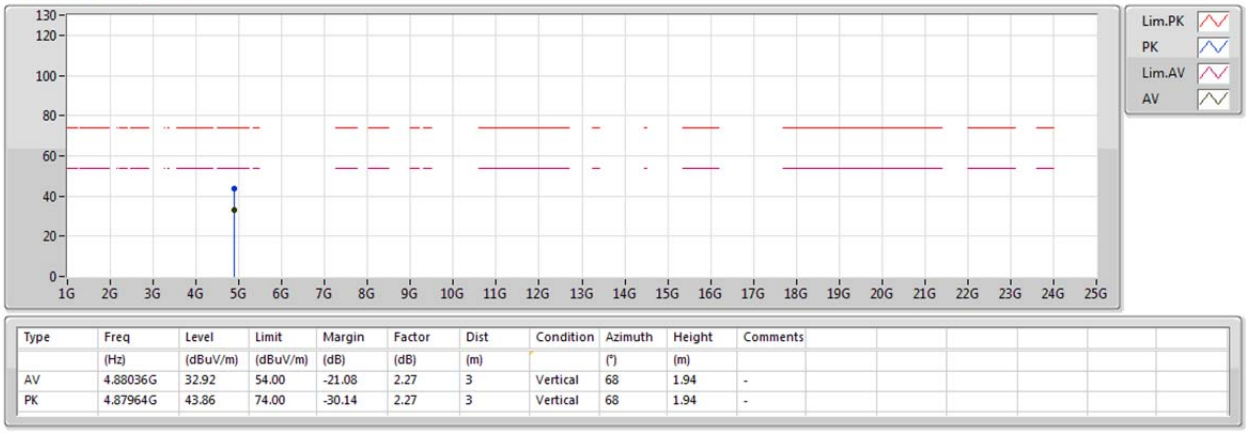


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.3724G	43.98	54.00	-10.02	30.71	3	Horizontal	322	2.79	-
AV	2.44G	92.35	Inf	-Inf	30.95	3	Horizontal	322	2.79	-
AV	2.498G	44.62	54.00	-9.38	31.16	3	Horizontal	322	2.79	-
PK	2.384G	55.56	74.00	-18.44	30.76	3	Horizontal	322	2.79	-
PK	2.4396G	93.36	Inf	-Inf	30.95	3	Horizontal	322	2.79	-
PK	2.494G	56.33	74.00	-17.67	31.15	3	Horizontal	322	2.79	-

BT-LE(1Mbps)

2440MHz_TX

20/11/2018

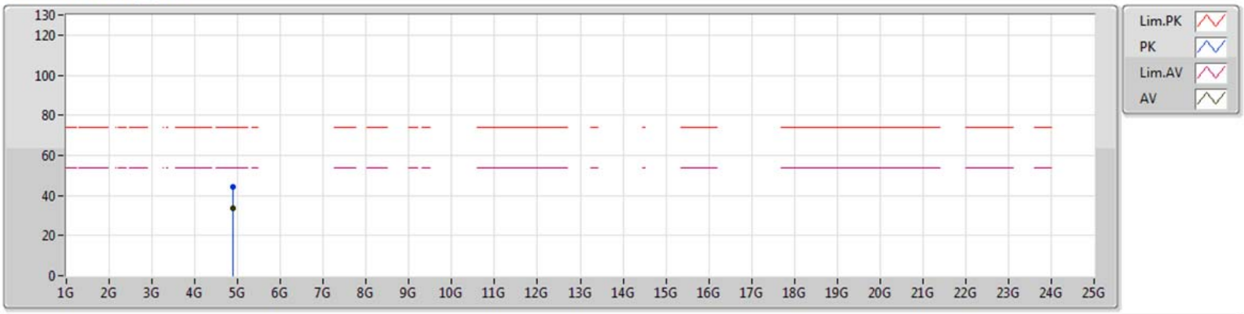


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	4.88036G	32.92	54.00	-21.08	2.27	3	Vertical	68	1.94	-
PK	4.87964G	43.86	74.00	-30.14	2.27	3	Vertical	68	1.94	-

BT-LE(1Mbps)

2440MHz_TX

20/11/2018

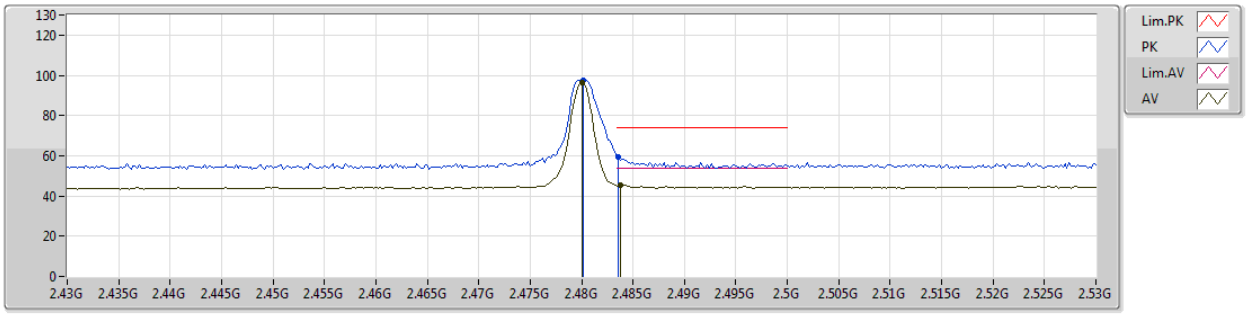


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	4.87958G	33.50	54.00	-20.50	2.27	3	Horizontal	174	1.91	-
PK	4.87958G	44.27	74.00	-29.73	2.27	3	Horizontal	174	1.91	-

BT-LE(1Mbps)

2480MHz_TX

20/11/2018

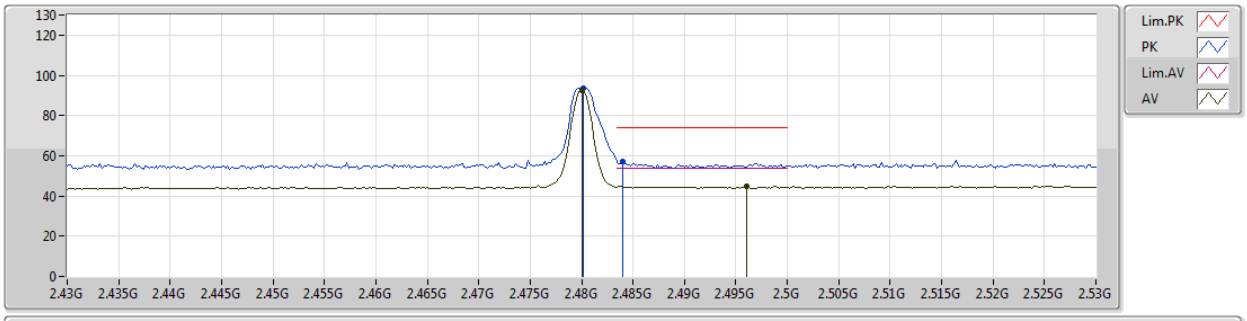


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.48G	96.28	Inf	-Inf	31.09	3	Vertical	58	1.04	-
AV	2.4838G	45.59	54.00	-8.41	31.11	3	Vertical	58	1.04	-
PK	2.4802G	97.36	Inf	-Inf	31.09	3	Vertical	58	1.04	-
PK	2.4836G	59.33	74.00	-14.67	31.11	3	Vertical	58	1.04	-

BT-LE(1Mbps)

2480MHz_TX

20/11/2018

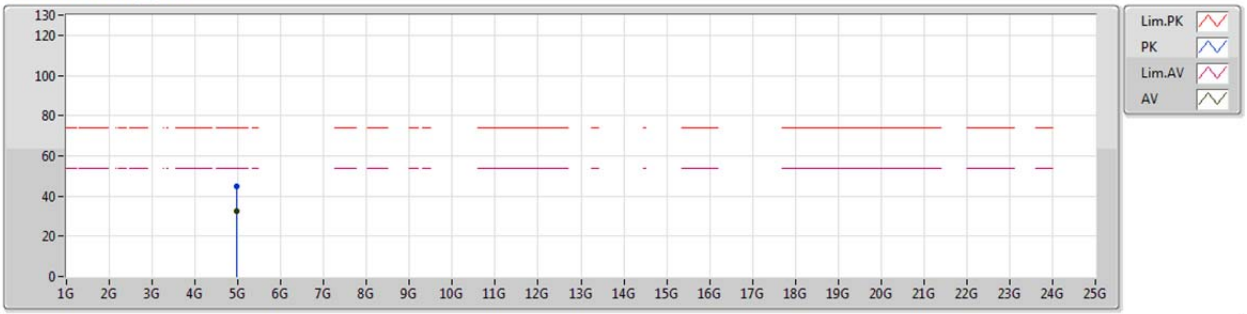


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.48G	92.72	Inf	-Inf	31.09	3	Horizontal	141	1.12	-
AV	2.496G	44.65	54.00	-9.35	31.16	3	Horizontal	141	1.12	-
PK	2.4802G	93.77	Inf	-Inf	31.09	3	Horizontal	141	1.12	-
PK	2.484G	56.99	74.00	-17.01	31.12	3	Horizontal	141	1.12	-

BT-LE(1Mbps)

2480MHz_TX

20/11/2018

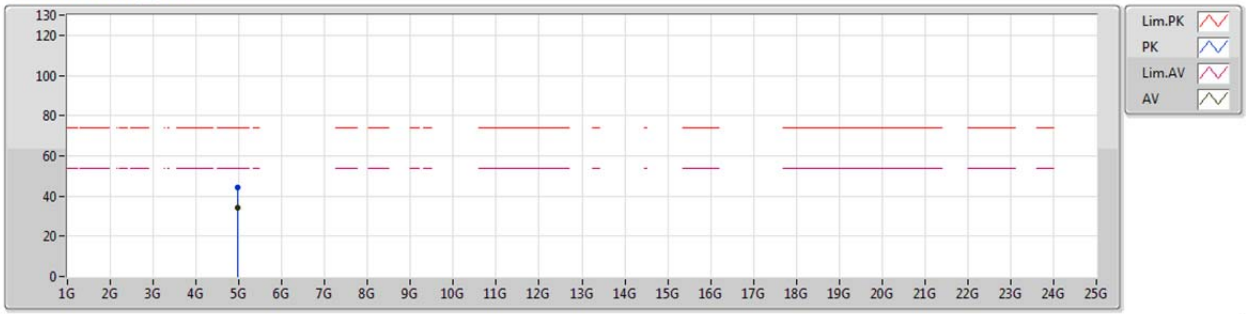


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	4.96018G	32.29	54.00	-21.71	2.47	3	Vertical	207	1.71	-
PK	4.96042G	44.79	74.00	-29.21	2.47	3	Vertical	207	1.71	-

BT-LE(1Mbps)

2480MHz_TX

20/11/2018

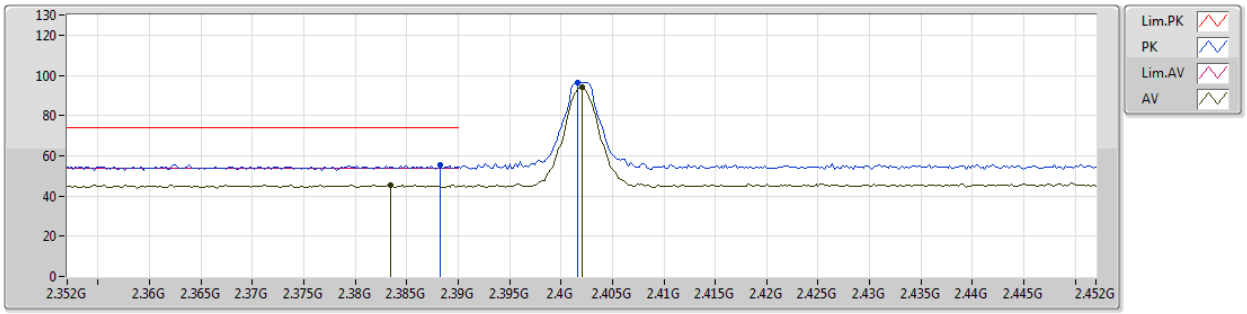


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	4.96012G	34.03	54.00	-19.97	2.47	3	Horizontal	27	2.74	-
PK	4.96042G	44.31	74.00	-29.69	2.47	3	Horizontal	27	2.74	-

BT-LE(2Mbps)

2402MHz_TX

20/11/2018

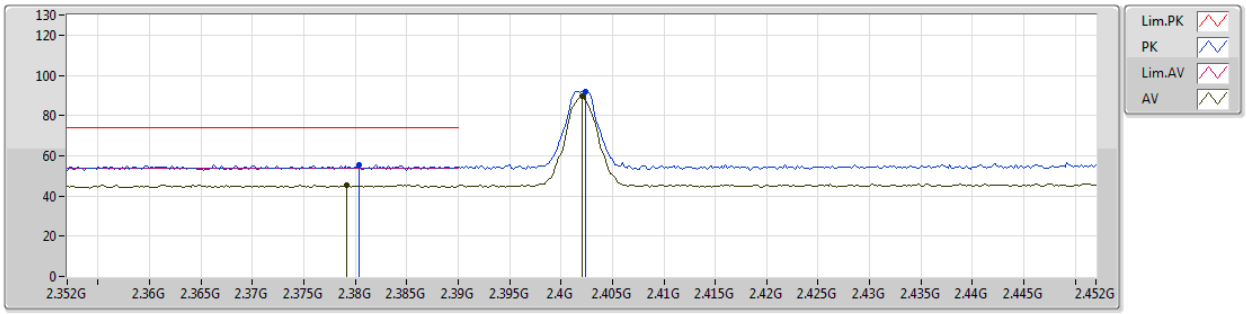


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.3834G	45.54	54.00	-8.46	30.75	3	Vertical	125	1.07	-
AV	2.402G	94.15	Inf	-Inf	30.82	3	Vertical	125	1.07	-
PK	2.3882G	55.66	74.00	-18.34	30.77	3	Vertical	125	1.07	-
PK	2.4016G	96.47	Inf	-Inf	30.81	3	Vertical	125	1.07	-

BT-LE(2Mbps)

2402MHz_TX

20/11/2018

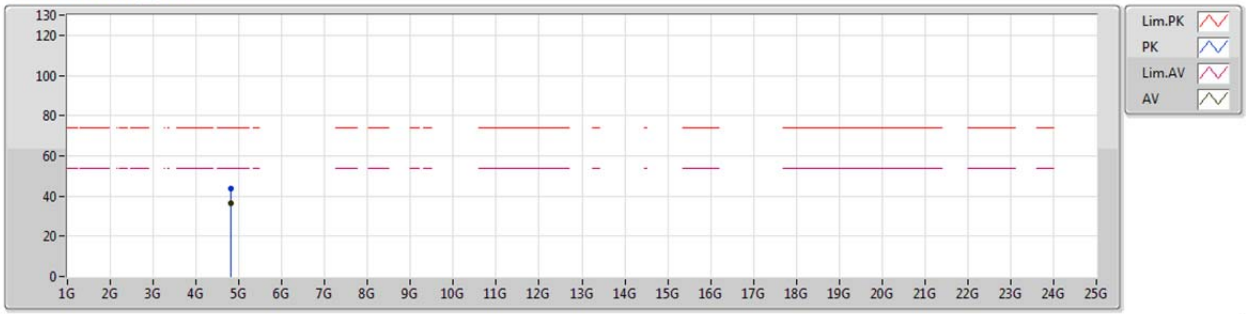


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.3792G	45.57	54.00	-8.43	30.74	3	Horizontal	136	1.17	-
AV	2.402G	89.41	Inf	-Inf	30.82	3	Horizontal	136	1.17	-
PK	2.3804G	55.65	74.00	-18.35	30.75	3	Horizontal	136	1.17	-
PK	2.4024G	91.68	Inf	-Inf	30.82	3	Horizontal	136	1.17	-

BT-LE(2Mbps)

2402MHz_TX

20/11/2018

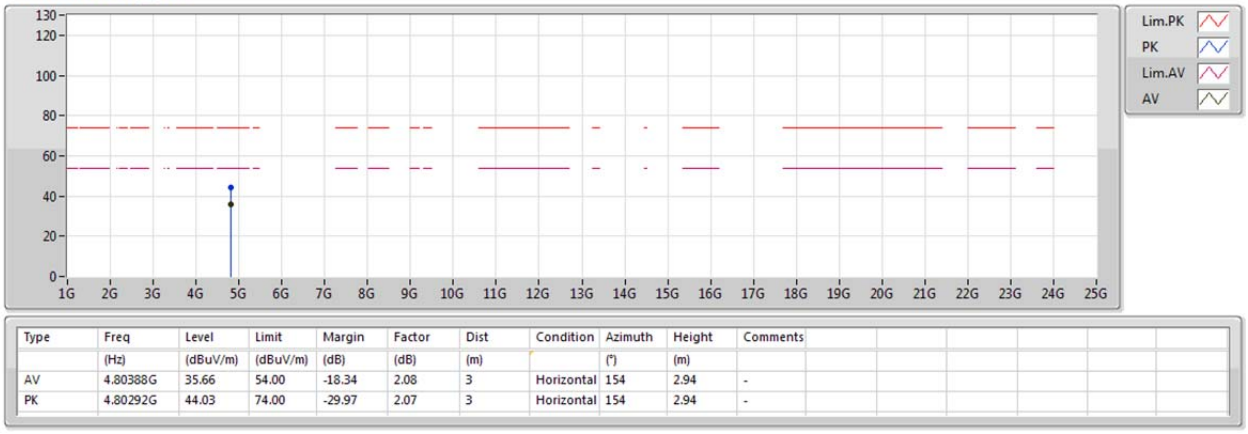


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	4.804G	36.20	54.00	-17.80	2.08	3	Vertical	63	2.03	-
PK	4.80376G	43.72	74.00	-30.28	2.08	3	Vertical	63	2.03	-

BT-LE(2Mbps)

2402MHz_TX

20/11/2018

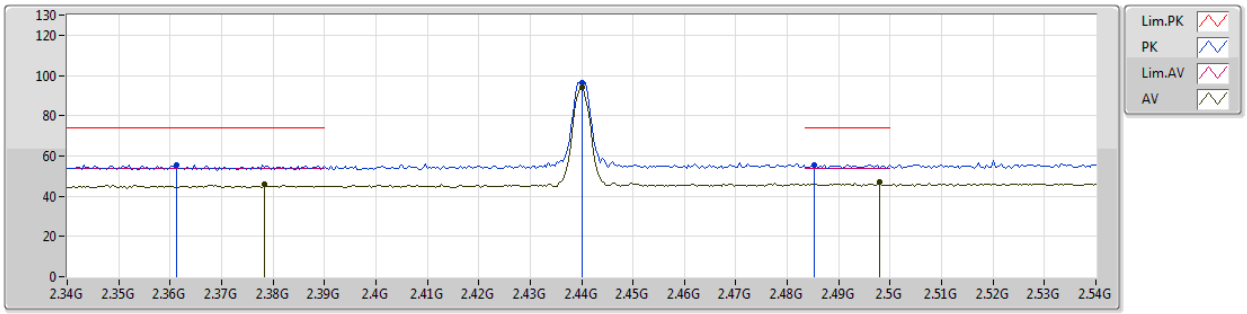


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	4.80388G	35.66	54.00	-18.34	2.08	3	Horizontal	154	2.94	-
PK	4.80292G	44.03	74.00	-29.97	2.07	3	Horizontal	154	2.94	-

BT-LE(2Mbps)

2440MHz_TX

20/11/2018

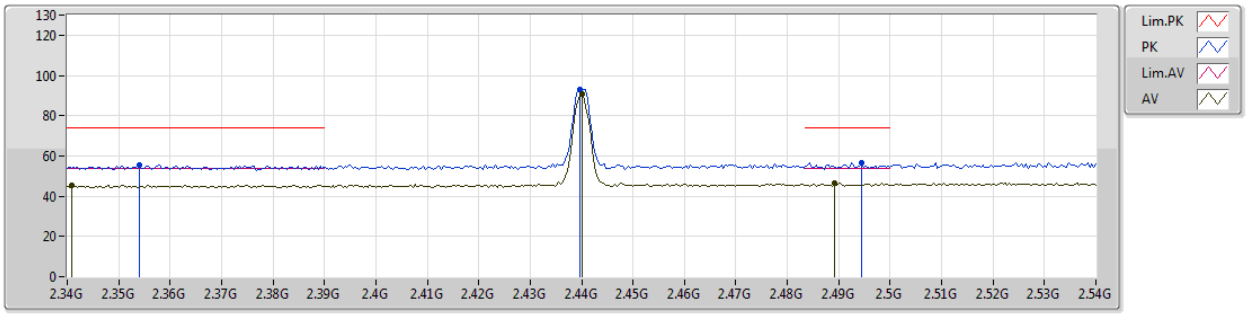


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.3784G	46.04	54.00	-7.96	30.73	3	Vertical	160	1.28	-
AV	2.44G	94.19	Inf	-Inf	30.95	3	Vertical	160	1.28	-
AV	2.498G	46.86	54.00	-7.14	31.16	3	Vertical	160	1.28	-
PK	2.3612G	55.53	74.00	-18.47	30.67	3	Vertical	160	1.28	-
PK	2.44G	96.50	Inf	-Inf	30.95	3	Vertical	160	1.28	-
PK	2.4852G	55.66	74.00	-18.34	31.12	3	Vertical	160	1.28	-

BT-LE(2Mbps)

2440MHz_TX

20/11/2018

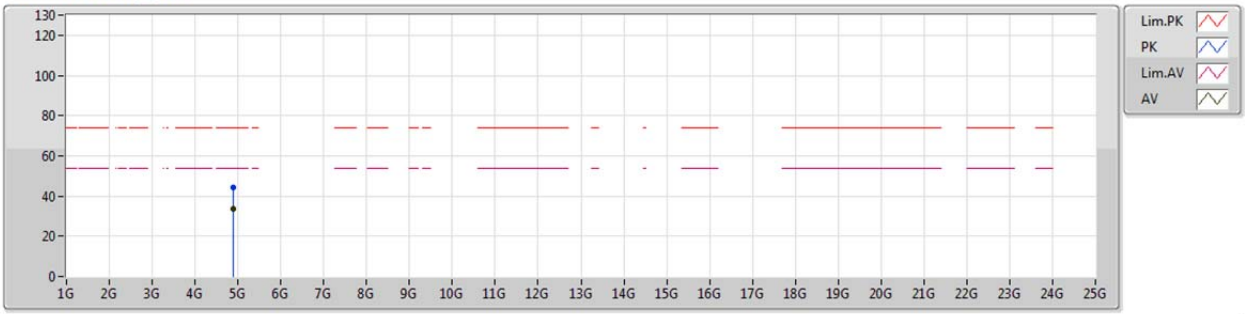


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.3408G	45.47	54.00	-8.53	30.60	3	Horizontal	136	1.19	-
AV	2.44G	90.72	Inf	-Inf	30.95	3	Horizontal	136	1.19	-
AV	2.4892G	46.70	54.00	-7.30	31.13	3	Horizontal	136	1.19	-
PK	2.354G	55.44	74.00	-18.56	30.65	3	Horizontal	136	1.19	-
PK	2.4396G	93.06	Inf	-Inf	30.95	3	Horizontal	136	1.19	-
PK	2.4944G	56.73	74.00	-17.27	31.15	3	Horizontal	136	1.19	-

BT-LE(2Mbps)

2440MHz_TX

20/11/2018

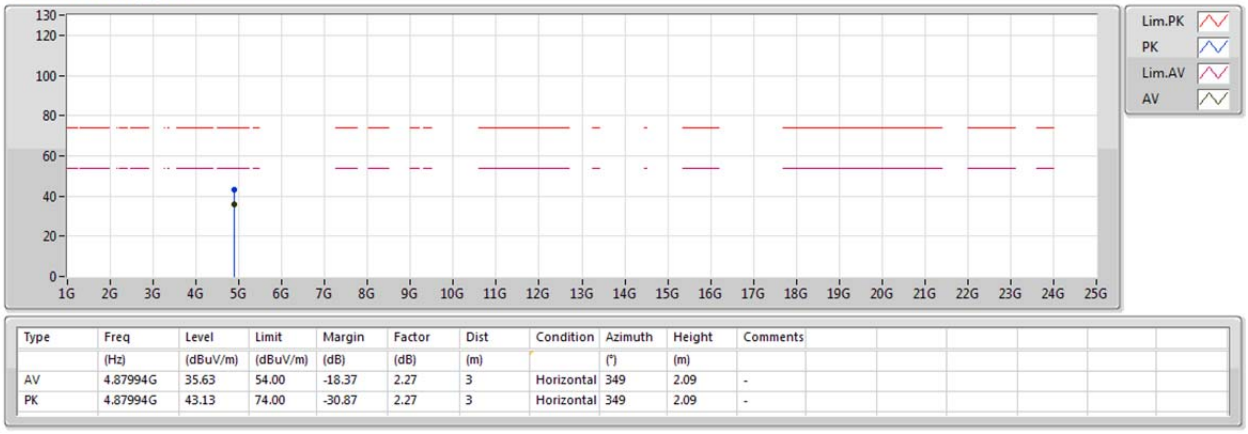


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	4.88024G	33.40	54.00	-20.60	2.27	3	Vertical	57	1.92	-
PK	4.88G	44.29	74.00	-29.71	2.27	3	Vertical	57	1.92	-

BT-LE(2Mbps)

2440MHz_TX

20/11/2018

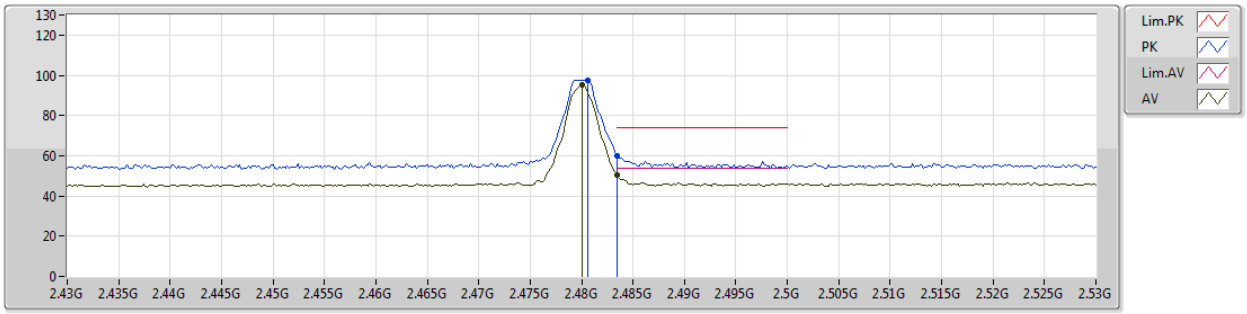


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	4.87994G	35.63	54.00	-18.37	2.27	3	Horizontal	349	2.09	-
PK	4.87994G	43.13	74.00	-30.87	2.27	3	Horizontal	349	2.09	-

BT-LE(2Mbps)

2480MHz_TX

20/11/2018

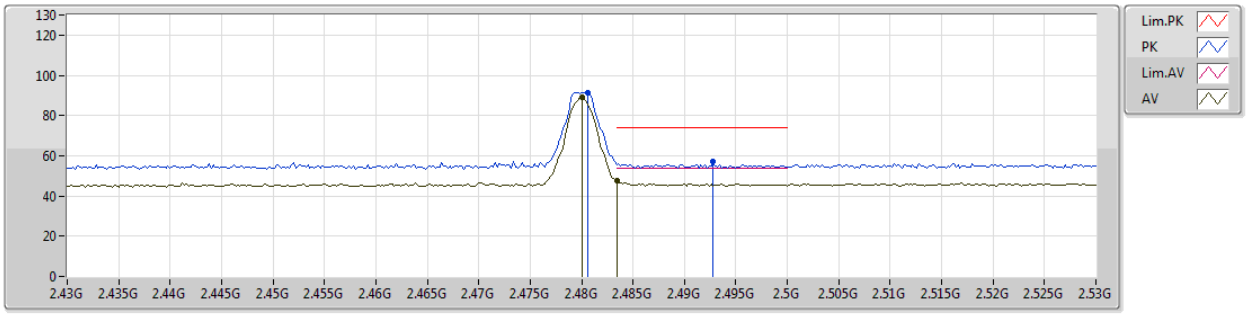


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.48G	95.02	Inf	-Inf	31.09	3	Vertical	156	1.06	-
AV	2.4835G	50.24	54.00	-3.76	31.11	3	Vertical	156	1.06	-
PK	2.4806G	97.58	Inf	-Inf	31.10	3	Vertical	156	1.06	-
PK	2.4835G	59.74	74.00	-14.26	31.11	3	Vertical	156	1.06	-

BT-LE(2Mbps)

2480MHz_TX

20/11/2018

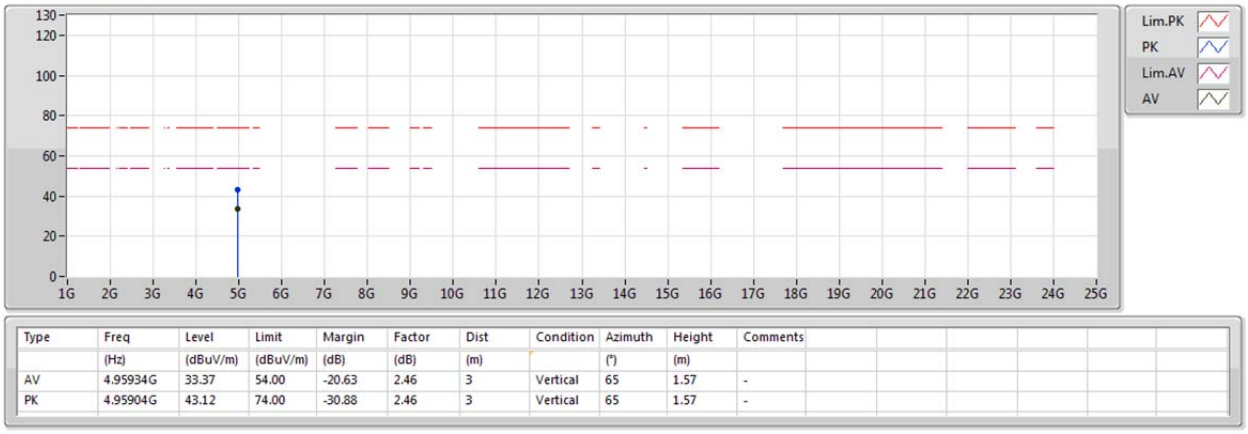


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.48G	89.13	Inf	-Inf	31.09	3	Horizontal	37	1.00	-
AV	2.4835G	47.78	54.00	-6.22	31.11	3	Horizontal	37	1.00	-
PK	2.4806G	91.59	Inf	-Inf	31.10	3	Horizontal	37	1.00	-
PK	2.4928G	57.13	74.00	-16.87	31.14	3	Horizontal	37	1.00	-

BT-LE(2Mbps)

2480MHz_TX

20/11/2018

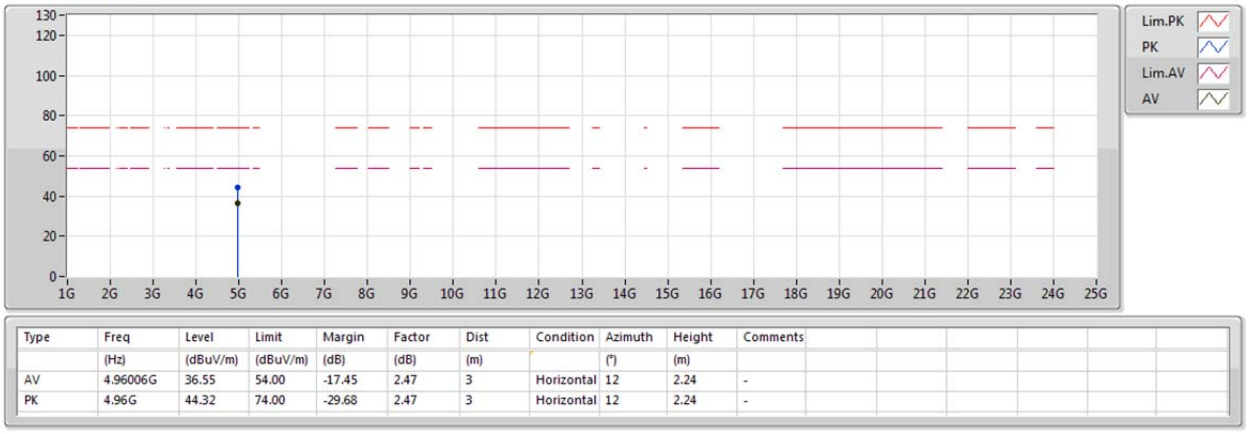


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	4.95934G	33.37	54.00	-20.63	2.46	3	Vertical	65	1.57	-
PK	4.95904G	43.12	74.00	-30.88	2.46	3	Vertical	65	1.57	-

BT-LE(2Mbps)

2480MHz_TX

20/11/2018



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	4.96006G	36.55	54.00	-17.45	2.47	3	Horizontal	12	2.24	-
PK	4.96G	44.32	74.00	-29.68	2.47	3	Horizontal	12	2.24	-