FCC Test Report

FCC ID	:	**2AEUPBHAFL011**
Equipment	:	**Floodlight Cam**
Brand Name	:	**RING**
Model Name	:	**5L4C4T**
Applicant	:	**Ring LLC** **1523 26th St, Santa Monica, CA 90404, USA**
Manufacturer	:	**Chicony Electronics (Dong Guan) Co.,Ltd.** **San Zhong Guan Li Qu, Qingxi Town,** **Dongguan City Guangdong 523651 China**
Standard	:	**47 CFR FCC Part 15.247**

The product was received on Apr. 03, 2019, and testing was started from Apr. 11, 2019 and completed on May 01, 2019. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

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

Approved by: Allen Lin

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

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PHOTOGRAPHS OF EUT V01

History of this test report

Report No.	Version	Description	Issued Date
FR940231AL	01	Initial issue of report	Jun. 12, 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: >30 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: Sam Tsai

Report Producer: Ann Hou

1 General Description

1.1 Information

1.1.1 RF General Information

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

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

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

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector
1	WGT	Ant 1	PIFA	I-PEX
2	WGT	Ant 2	PIFA	I-PEX
3	Aristotle	Lora Ant	PIFA	I-PEX

Ant.	Port	Gain (dBi)		
		2.4G	BT	LoRa
1	1	0.89	-0.19	-
2	2	0.89	-	-
3	3	-	-	-1.19

Note 1: The EUT has three antennas.

For 2.4GHz function:

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

Support diversity function and tested on each single chain.

For IEEE 802.11 n (HT20) mode (2TX/2RX)

Ant. 1 (port 1) and Ant. 2 (port 2) could transmit/receive simultaneously.

For BT function:

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

Ant. 2 (port 2) could transmit/receive simultaneously.

For LoRa function:

For LoRa mode (1TX/1RX)

Ant. 3 (port 3) could transmit/receive simultaneously.

1.1.3 EUT Information

Operational Condition				
EUT Power Type	From AC mains			
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)	0.647	1.891	405u	3k

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

1.2 Testing Applied Standards

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

- 47 CFR FCC Part 15
- ANSI C63.10-2013
- KDB 558074 D01 v05r02

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
AC Conduction	CO01-HY	Jeff	24.2~24.9°C / 53.2~55.1%	01/May/2019
RF Conducted	TH06-HY	Clara	22.5~24.6°C / 57.8~61.5%	12/Apr/2019~ 15/Apr/2019
Radiated	03CH09-HY	Lego	22.7~23.8°C / 59.2~62.9%	11/Apr/2019~ 30/Apr/2019

1.4 Measurement Uncertainty

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

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

2 Test Configuration of EUT

2.1 Test Condition

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

2.2 Test Channel Mode

Test Software	DoS

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

2.3 The Worst Case Measurement Configuration

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

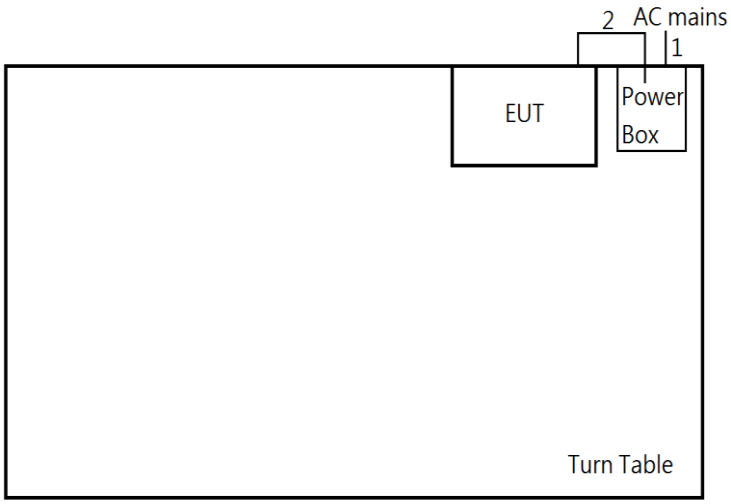
The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis
Operating Mode	CTX
1	LoRa + WLAN 2.4GHz
2	LoRa + Bluetooth
Refer to Sporton Test Report No.: FA940231 for Co-location RF Exposure Evaluation.	

2.4 Support Equipment

Support Equipment – RF Conducted				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
1	Notebook	DELL	E5410	DoC
2	Adapter for Notebook	DELL	HA65NM130	DoC

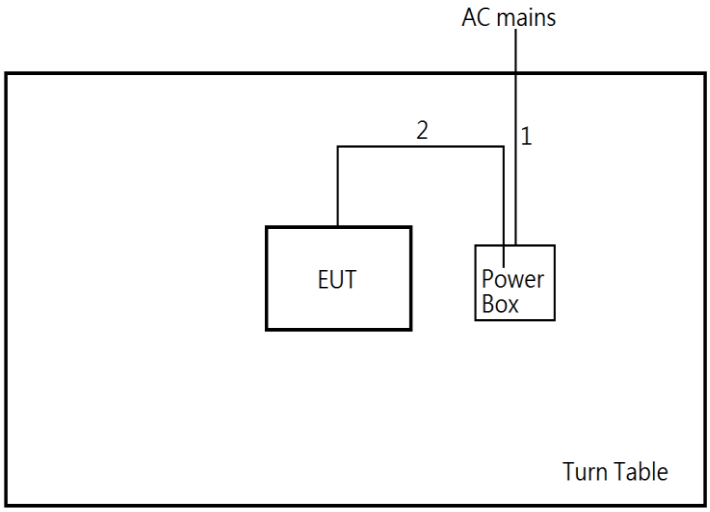
2.5 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



Item	Connection	Shielded	Length
1	AC Power line	No	1.5 m
2	AC Power line	No	1.0 m

Test Setup Diagram - Radiated Test



Item	Connection	Shielded	Length
1	AC Power line	No	2.0 m
2	AC Power line	No	1.0 m

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

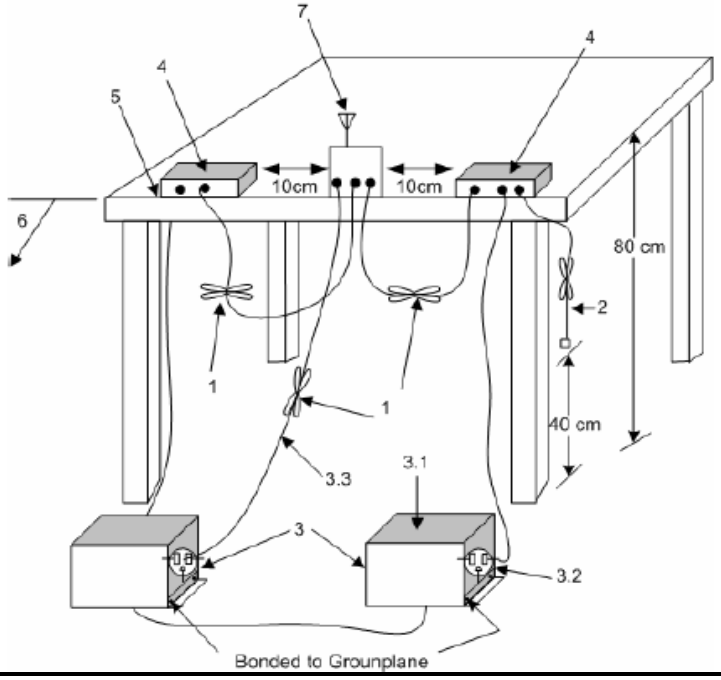
Refer a test equipment and calibration data table in this test report.

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.

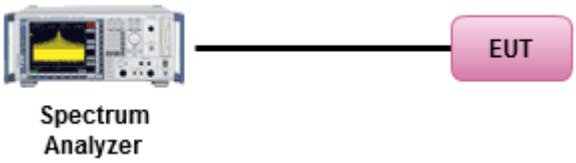
3.2.2 Measuring Instruments

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 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 $G_{TX} \leq 6$ 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
e.i.r.p. Power Limit:		
▪ 2400-2483.5 MHz Band		
	▪ Point-to-multipoint systems (P2M): $P_{eirp} \leq 36$ dBm (4 W)	
	▪ Point-to-point systems (P2P): $P_{eirp} \leq MAX(36, [P_{Out} + G_{TX}])$ dBm	
	▪ Smart antenna system (SAS)	
		- Single beam: $P_{eirp} \leq MAX(36, P_{Out} + G_{TX})$ dBm
		- Overlap beam: $P_{eirp} \leq MAX(36, P_{Out} + G_{TX})$ dBm
		- Aggregate power on all beams: $P_{eirp} \leq MAX(36, [P_{Out} + G_{TX} + 8])$ 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

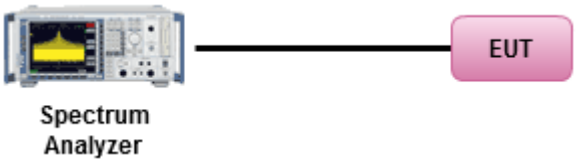
3.4.2 Measuring Instruments

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.	

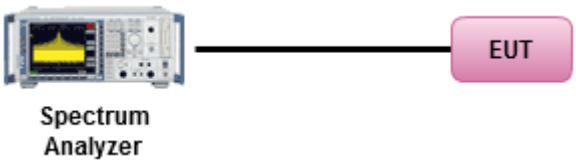
3.5.2 Measuring Instruments

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.

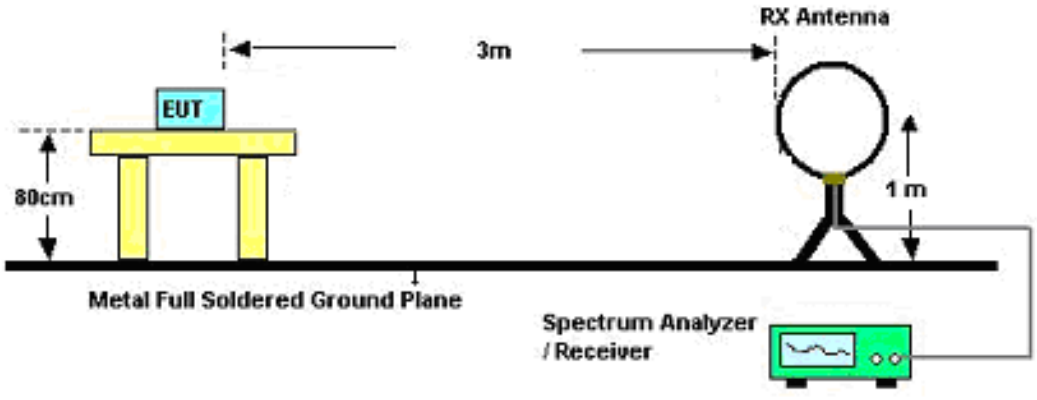
3.6.2 Measuring Instruments

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

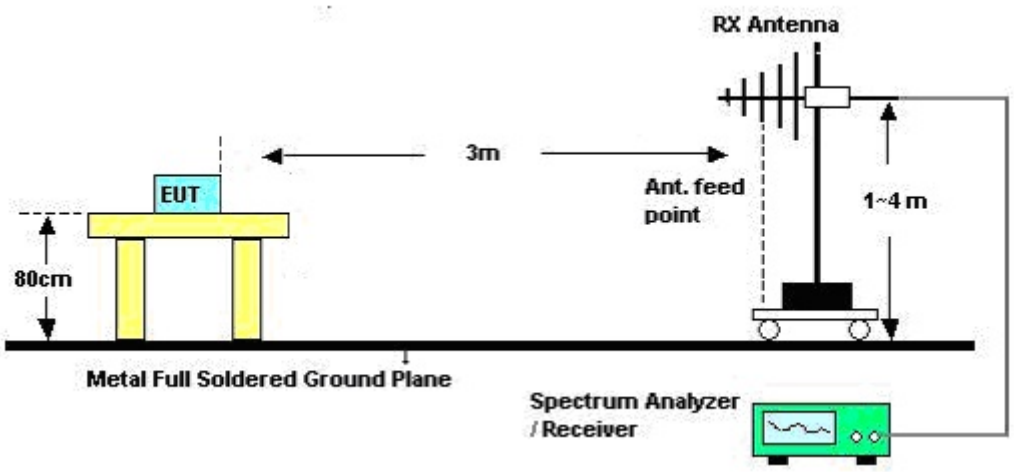
3.6.3 Test Procedures

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).
▪ Use the following spectrum analyzer settings:	
	▪ Set RBW=100 kHz for f < 1 GHz; VBW=3 * RBW; Sweep = auto; Detector function = peak; Trace = max hold.
	▪ Set RBW = 1 MHz, VBW= 3MHz for f ≥ 1 GHz for peak measurement. For average measurement, refer as 1.1.4.

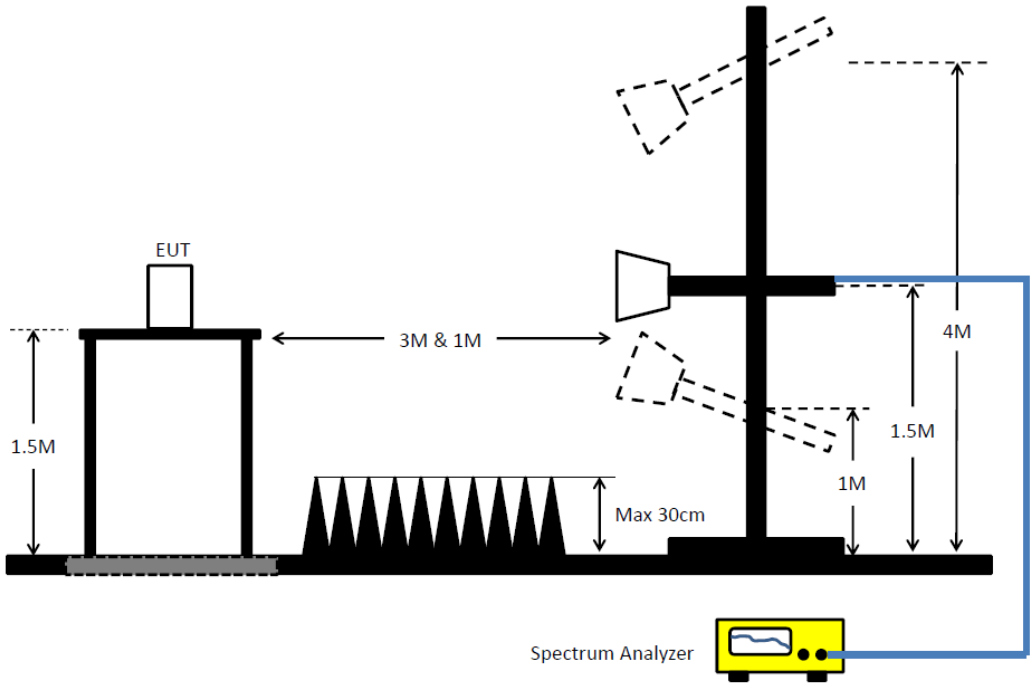
3.6.4 Test Setup

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	ESR3	102052	9kHz ~ 3.6GHz	09/Apr/2019	08/Apr/2020
LISN	R&S	ENV 216	101274	9kHz ~ 30MHz	12/Jun/2018	11/Jun/2019
RF Cable-CON	MTJ	RG142	CB001-CO	9kHz ~ 30MHz	17/Sep/2018	16/Sep/2019
AC POWER	APC	AFC-11003G	F308010045	47Hz~63Hz 5~300V	NCR	NCR
Impuls Begrenzer Pulse Limiter	SCHWARZBECK	VTSD 9561F	9495	9kHz ~ 30MHz	11/Oct/2018	10/Oct/2019

NCR : Non-Calibration Require

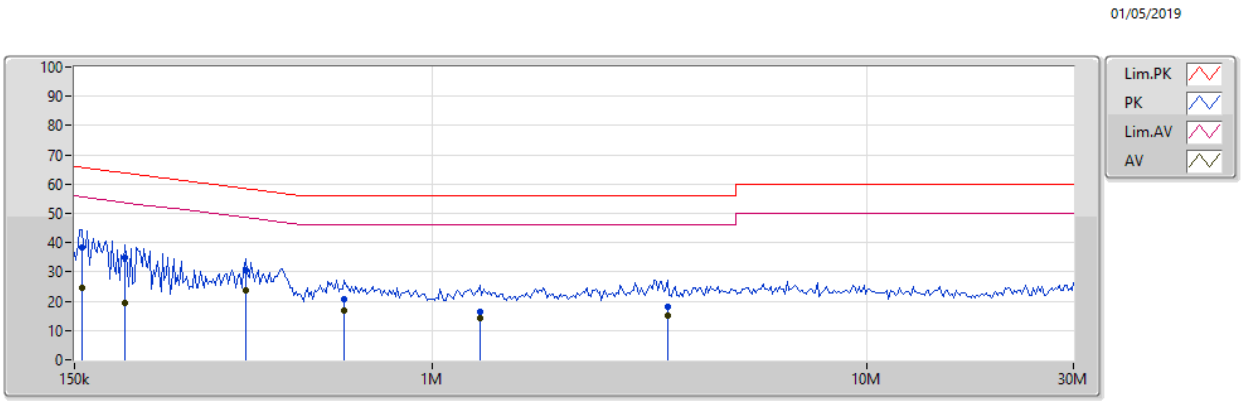
Instrument for Conducted Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	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
Cable 0.2m	HUBER	MY10710/4	RF Cable - 01	30MHz ~18G	10/Jan/2019	09/Jan/2020
Cable 0.2m	HUBER	MY10711/4	RF Cable - 02	30MHz ~18G	10/Jan/2019	09/Jan/2020
Cable 0.5m	HUBER	MY39470/4	RF Cable - 29	30MHz ~18G	10/Jan/2019	09/Jan/2020
SMB100A Signal Generator	R&S	SMB100A03	181147	100kHz~40GHz	12/Nov/2018	10/Nov/2020

Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	30MHz ~ 1GHz	23/Apr/2018	22/Apr/2019
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	30MHz ~ 1GHz	30/Mar/2019	29/Mar/2020
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	1GHz ~ 18GHz	14/Jun/2018	13/Jun/2019
Microwave Preamplifier	Agilent	8449B	3008A02326	1GHz ~ 26.5GHz	03/Jul/2018	02/Jul/2019
Amplifier	EMC	EMC9135	980232	9KHz~1GHz	27/Apr/2018	26/Apr/2019
Amplifier	EMC	EMC9135	980232	9KHz~1GHz	22/Apr/2019	21/Apr/2020
EMI Test Receiver	R&S	ESR3	102052	9kHz ~ 3.6GHz	09/Apr/2019	08/Apr/2020
EXA Signal Analyzer	KEYSIGHT	N9010A	MY54200885	10Hz ~ 44GHz	31/Jul/2018	30/Jul/2019
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	09/Mar/2019	08/Mar/2020
Loop Antenna	TESEQ	HLA 6120	31244	9k-30MHz	29/Mar/2018	28/Mar/2019
Loop Antenna	TESEQ	HLA 6120	31244	9k-30MHz	15/Mar/2019	14/Mar/2020
LF-CABLE-20190218	Jye Bao	RG142	CB028	9kHz ~ 1GHz	18/Feb/2019	17/Feb/2020
RF Cable-high	HUBER+SUHNER	SUCOFLEX104	SN 556626/4 + 556627	1GHz ~ 40GHz	03/Mar/2019	02/Mar/2020

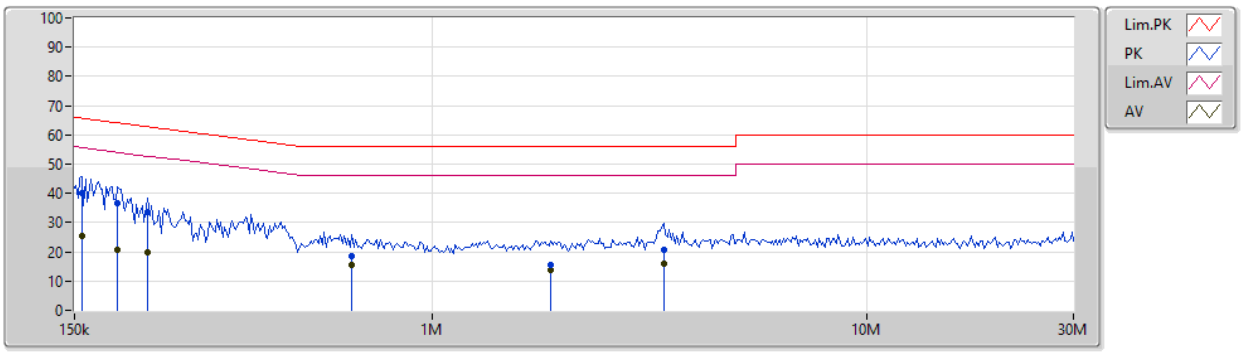
AC Power-line Conducted Emissions Result			
Operating Mode	1	**Power Phase**	Neutral
Operating Function	AC mains mode		



Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	LISN	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	156.091k	38.28	65.67	-27.39	19.52	Neutral	-	18.76	9.65	0.01	9.86
AV	156.091k	24.61	55.67	-31.06	19.52	Neutral	-	5.09	9.65	0.01	9.86
QP	196.231k	34.76	63.76	-29.00	19.51	Neutral	-	15.25	9.64	0.01	9.86
AV	196.231k	19.33	53.76	-34.43	19.51	Neutral	-	-0.18	9.64	0.01	9.86
QP	370.968k	30.70	58.49	-27.79	19.51	Neutral	-	11.19	9.64	0.01	9.86
AV	370.968k	23.69	48.49	-24.80	19.51	Neutral	"Worst"	4.18	9.64	0.01	9.86
QP	628.592k	20.56	56.00	-35.44	19.51	Neutral	-	1.05	9.64	0.01	9.86
AV	628.592k	17.00	46.00	-29.00	19.51	Neutral	-	-2.51	9.64	0.01	9.86
QP	1.287M	16.41	56.00	-39.59	19.52	Neutral	-	-3.11	9.64	0.02	9.86
AV	1.287M	14.14	46.00	-31.86	19.52	Neutral	-	-5.38	9.64	0.02	9.86
QP	3.481M	18.13	56.00	-37.87	19.58	Neutral	-	-1.45	9.66	0.04	9.88
AV	3.481M	14.89	46.00	-31.11	19.58	Neutral	-	-4.69	9.66	0.04	9.88

AC Power-line Conducted Emissions Result			
Operating Mode	1	**Power Phase**	Line
Operating Function	AC mains mode		

01/05/2019



Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	LISN	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	156.091k	40.10	65.67	-25.57	19.48	Line	"Worst"	20.62	9.61	0.01	9.86
AV	156.091k	25.52	55.67	-30.15	19.48	Line	-	6.04	9.61	0.01	9.86
QP	188.574k	36.83	64.11	-27.28	19.48	Line	-	17.35	9.61	0.01	9.86
AV	188.574k	20.60	54.11	-33.51	19.48	Line	-	1.12	9.61	0.01	9.86
QP	221.118k	33.55	62.77	-29.22	19.48	Line	-	14.07	9.61	0.01	9.86
AV	221.118k	19.72	52.77	-33.05	19.48	Line	-	0.24	9.61	0.01	9.86
QP	654.116k	18.53	56.00	-37.47	19.48	Line	-	-0.95	9.61	0.01	9.86
AV	654.116k	15.42	46.00	-30.58	19.48	Line	-	-4.06	9.61	0.01	9.86
QP	1.878M	15.63	56.00	-40.37	19.52	Line	-	-3.89	9.62	0.03	9.87
AV	1.878M	13.97	46.00	-32.03	19.52	Line	-	-5.55	9.62	0.03	9.87
QP	3.412M	20.59	56.00	-35.41	19.55	Line	-	1.04	9.63	0.04	9.88
AV	3.412M	16.04	46.00	-29.96	19.55	Line	-	-3.51	9.63	0.04	9.88

Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
BT-LE(1Mbps)	657.5k	1.026M	1M03F1D	656.25k	1.017M

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

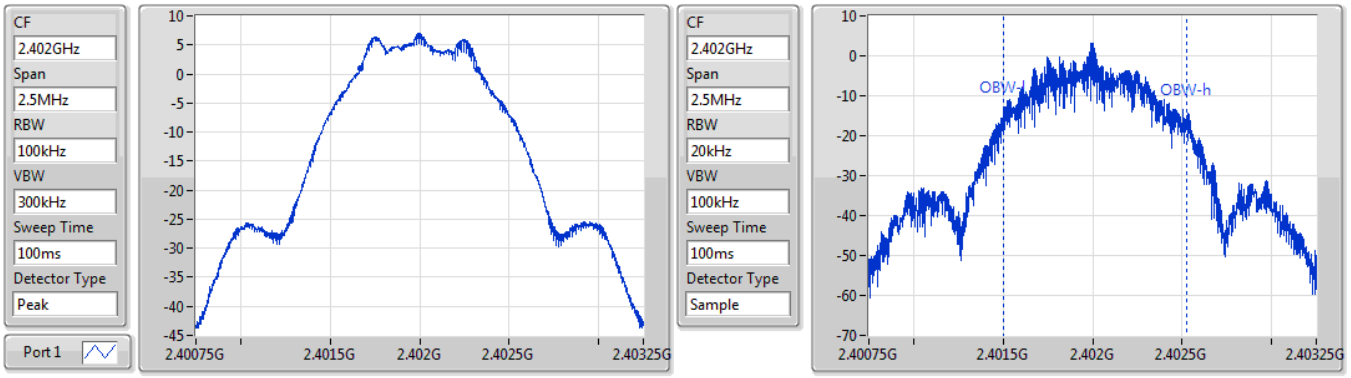
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	657.5k	1.026M
2440MHz	Pass	500k	656.25k	1.017M
2480MHz	Pass	500k	656.25k	1.018M

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

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

2402MHz

12/04/2019

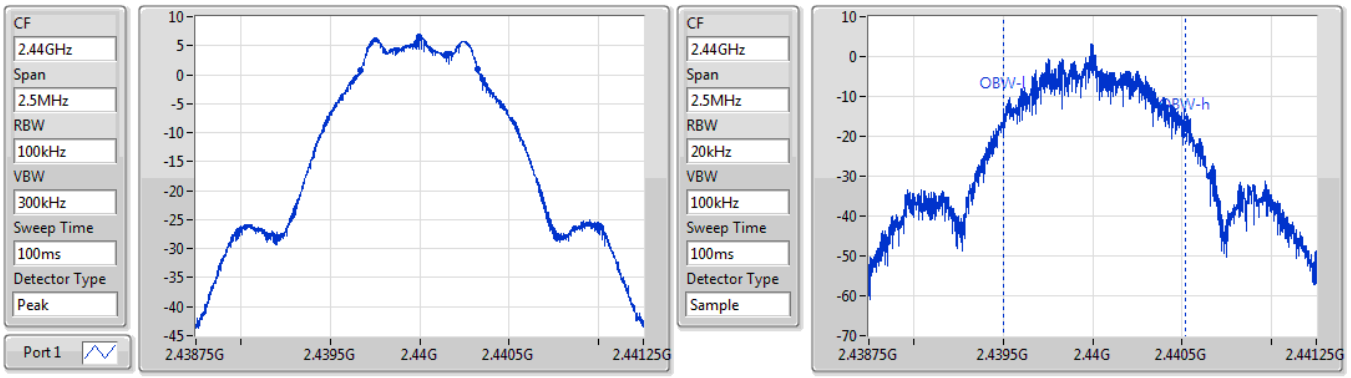


6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
657.5k	2.401669G	2.402326G	1.026M	2.4015G	2.402526G	500k	1

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

2440MHz

12/04/2019

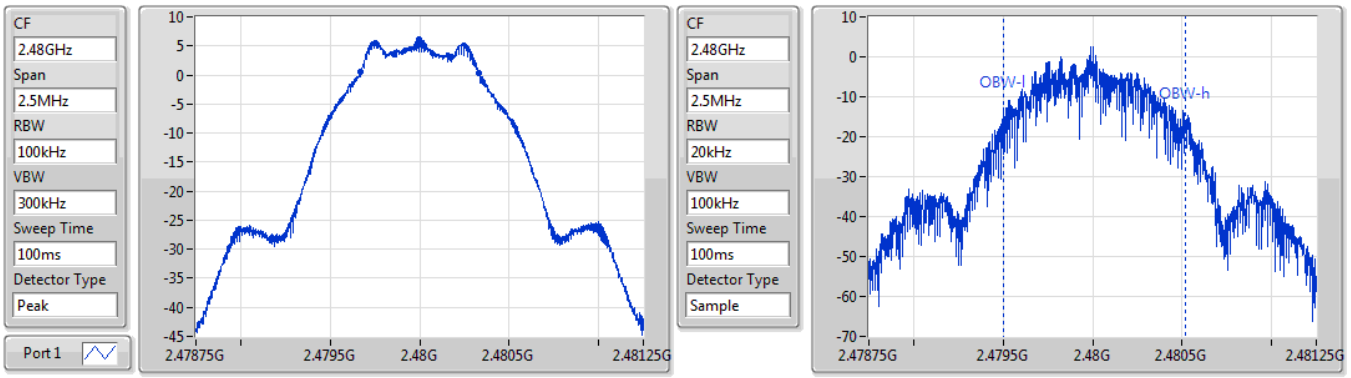


6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
656.25k	2.439669G	2.440325G	1.017M	2.439503G	2.44052G	500k	1

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

2480MHz

12/04/2019



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
656.25k	2.479671G	2.480328G	1.018M	2.479504G	2.480522G	500k	1

Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	6.35	0.00432

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	-0.19	6.35	30.00
2440MHz	Pass	-0.19	6.18	30.00
2480MHz	Pass	-0.19	5.83	30.00

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

Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-8.45

RBW=3 kHz.

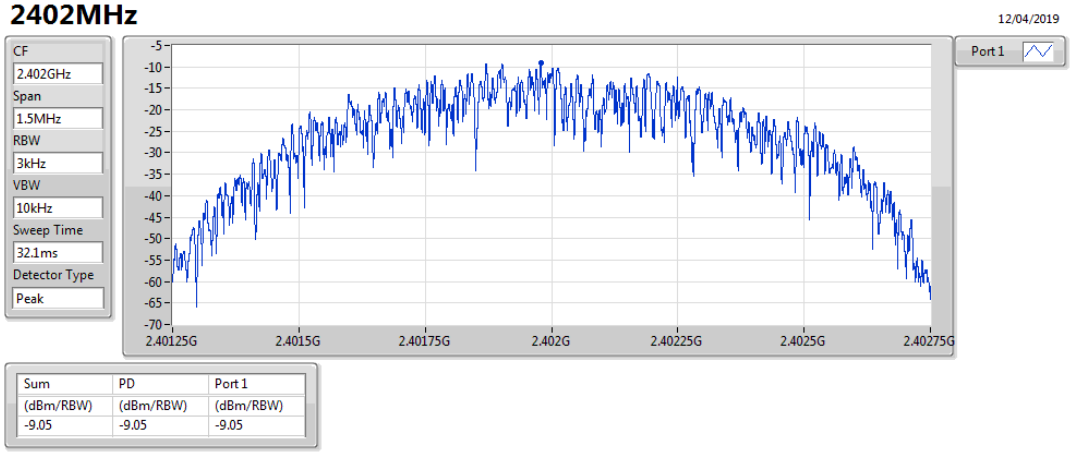
Result

Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	-0.19	-9.05	8.00
2440MHz	Pass	-0.19	-8.45	8.00
2480MHz	Pass	-0.19	-9.92	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**

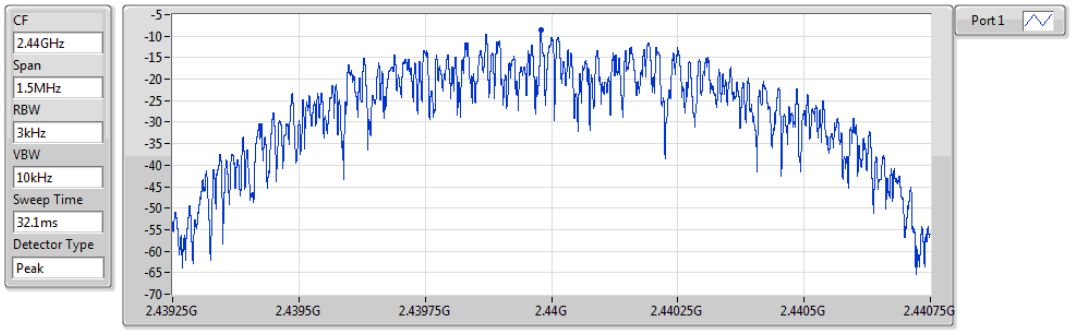
2402MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-9.05	-9.05	-9.05

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

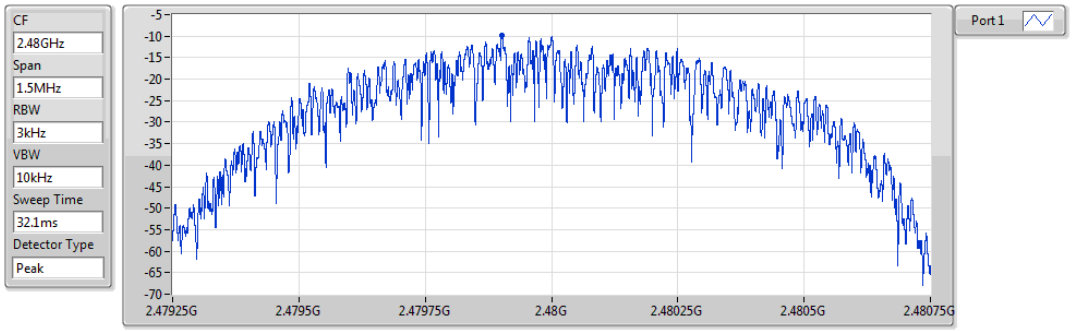
2440MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-8.45	-8.45	-8.45

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

2480MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-9.92	-9.92	-9.92

Summary

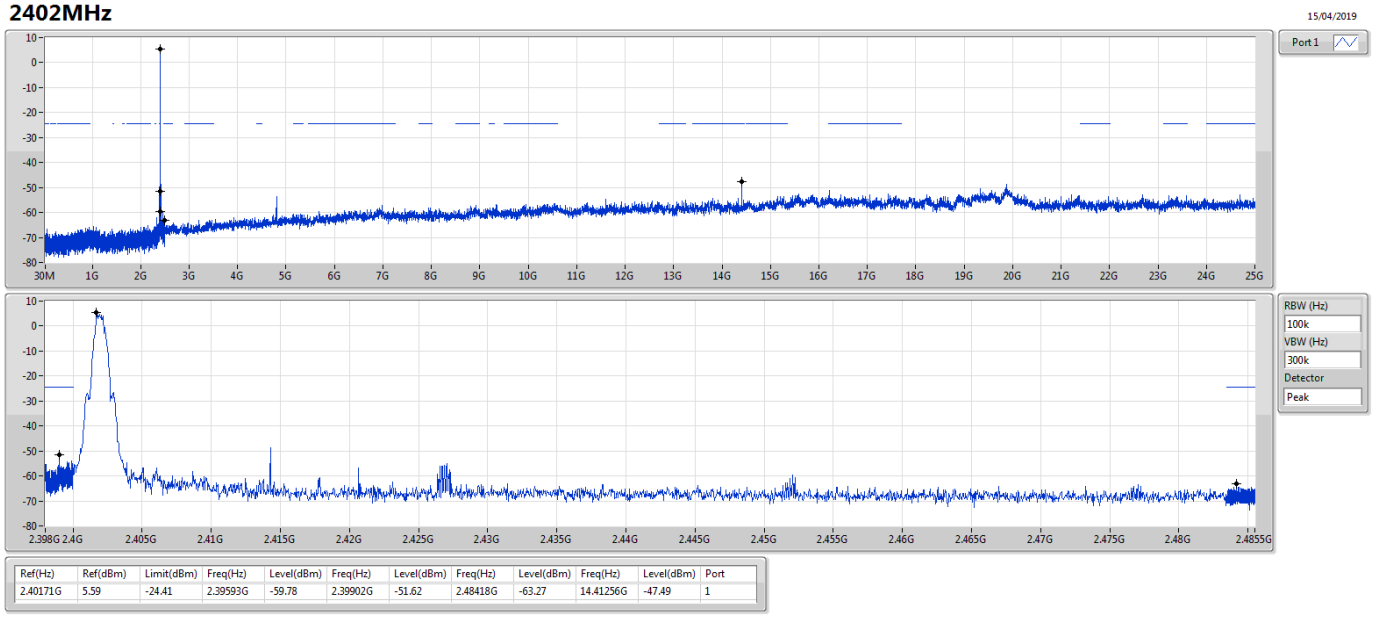
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	2.40171G	5.59	-24.41	2.39593G	-59.78	2.39902G	-51.62	2.48418G	-63.27	14.41256G	-47.49	1

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	2.40171G	5.59	-24.41	2.39593G	-59.78	2.39902G	-51.62	2.48418G	-63.27	14.41256G	-47.49	1
2440MHz	Pass	2.40171G	5.59	-24.41	2.17748G	-64.63	2.39825G	-62.81	2.48356G	-62.99	14.64052G	-49.77	1
2480MHz	Pass	2.40171G	5.59	-24.41	1.95785G	-64.65	2.39852G	-64.53	2.48402G	-54.19	16.21372G	-53.23	1

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

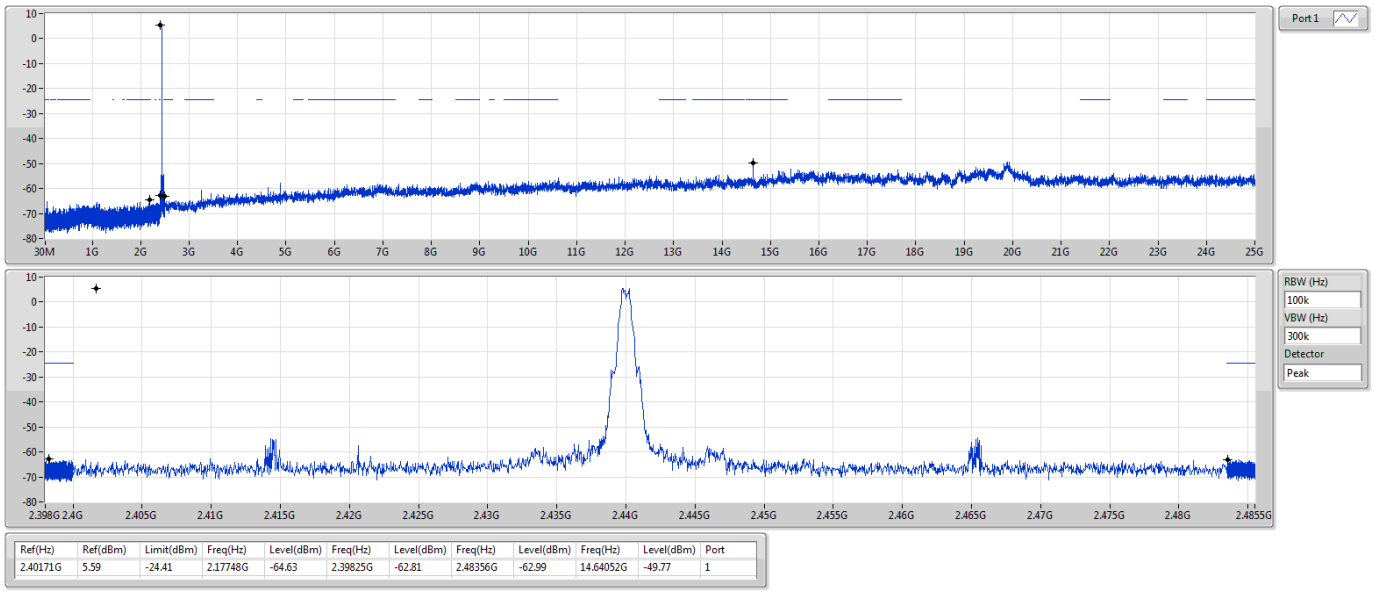
2402MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40171G	5.59	-24.41	2.39593G	-59.78	2.39902G	-51.62	2.48418G	-63.27	14.41256G	-47.49	1

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

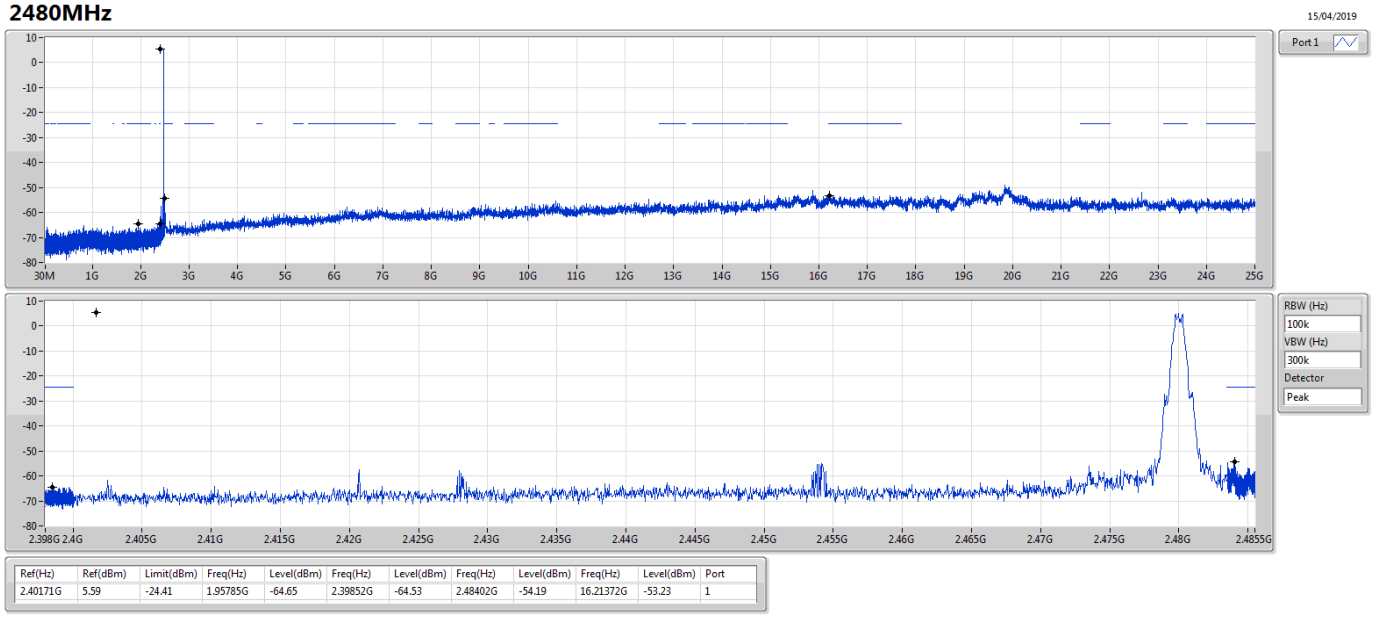
2440MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40171G	5.59	-24.41	2.17748G	-64.63	2.39825G	-62.81	2.48356G	-62.99	14.64052G	-49.77	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
2.40171G	5.59	-24.41	1.95785G	-64.65	2.39852G	-64.53	2.48402G	-54.19	16.21372G	-53.23	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(1Mbps)	Pass	QP	62.98M	36.98	40.00	-3.02	-15.54	3	Horizontal	204	1.73	-

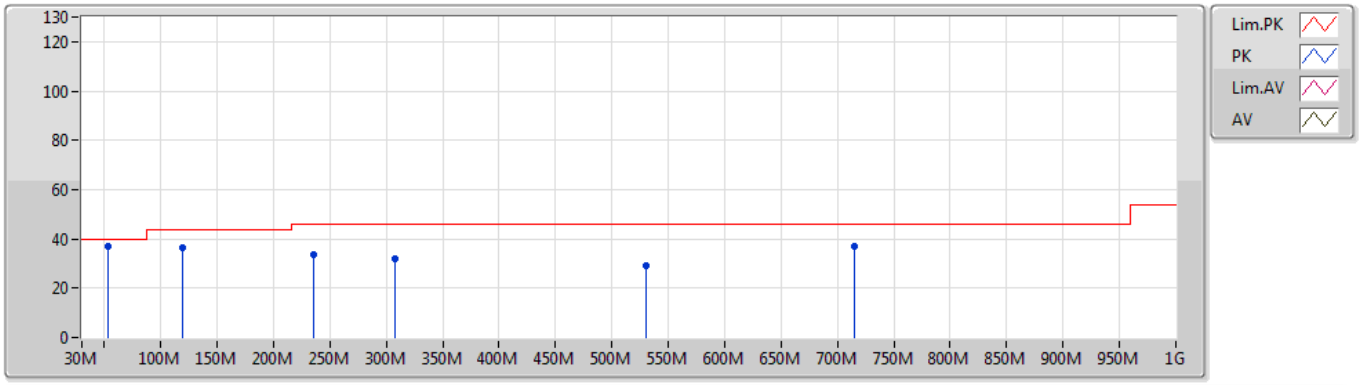
Result

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)	-	-	-	-	-	-	-	-	-	-	-	-
2440MHz	Pass	PK	53.28M	36.75	40.00	-3.25	-14.69	3	Vertical	360	1.00	-
2440MHz	Pass	PK	119.24M	36.25	43.50	-7.25	-8.84	3	Vertical	360	1.00	-
2440MHz	Pass	PK	235.64M	33.52	46.00	-12.48	-8.70	3	Vertical	360	1.00	-
2440MHz	Pass	PK	307.42M	31.96	46.00	-14.04	-5.73	3	Vertical	360	1.00	-
2440MHz	Pass	PK	530.52M	29.35	46.00	-16.65	-1.83	3	Vertical	360	1.00	-
2440MHz	Pass	PK	714.82M	36.83	46.00	-9.17	0.11	3	Vertical	360	1.00	-
2440MHz	Pass	PK	123.12M	39.42	43.50	-4.08	-8.88	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	239.52M	42.42	46.00	-3.58	-8.23	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	355.92M	41.17	46.00	-4.83	-4.75	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	503.36M	32.15	46.00	-13.85	-2.37	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	716.76M	39.05	46.00	-6.95	0.15	3	Horizontal	0	1.00	-
2440MHz	Pass	QP	62.98M	36.98	40.00	-3.02	-15.54	3	Horizontal	204	1.73	-

BT-LE(1Mbps)

2440MHz_USB

22/04/2019

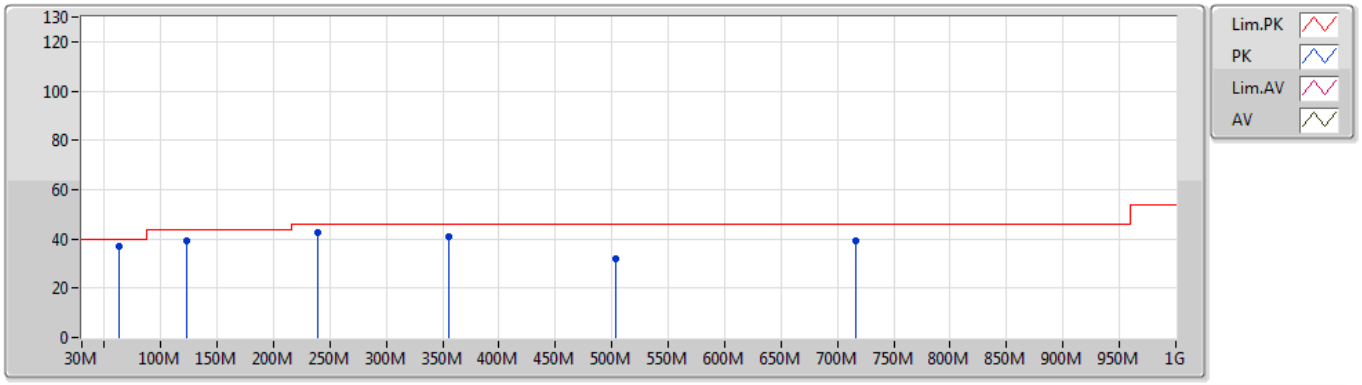


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	53.28M	36.75	40.00	-3.25	-14.69	3	Vertical	360	1.00	-
PK	119.24M	36.25	43.50	-7.25	-8.84	3	Vertical	360	1.00	-
PK	235.64M	33.52	46.00	-12.48	-8.70	3	Vertical	360	1.00	-
PK	307.42M	31.96	46.00	-14.04	-5.73	3	Vertical	360	1.00	-
PK	530.52M	29.35	46.00	-16.65	-1.83	3	Vertical	360	1.00	-
PK	714.82M	36.83	46.00	-9.17	0.11	3	Vertical	360	1.00	-

BT-LE(1Mbps)

2440MHz_USB

22/04/2019



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
PK	123.12M	39.42	43.50	-4.08	-8.88	3	Horizontal	0	1.00	-
PK	239.52M	42.42	46.00	-3.58	-8.23	3	Horizontal	0	1.00	-
PK	355.92M	41.17	46.00	-4.83	-4.75	3	Horizontal	0	1.00	-
PK	503.36M	32.15	46.00	-13.85	-2.37	3	Horizontal	0	1.00	-
PK	716.76M	39.05	46.00	-6.95	0.15	3	Horizontal	0	1.00	-
QP	62.98M	36.98	40.00	-3.02	-15.54	3	Horizontal	204	1.73	-

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	2.4974G	45.07	54.00	-8.93	31.57	3	Vertical	56	1.01	-

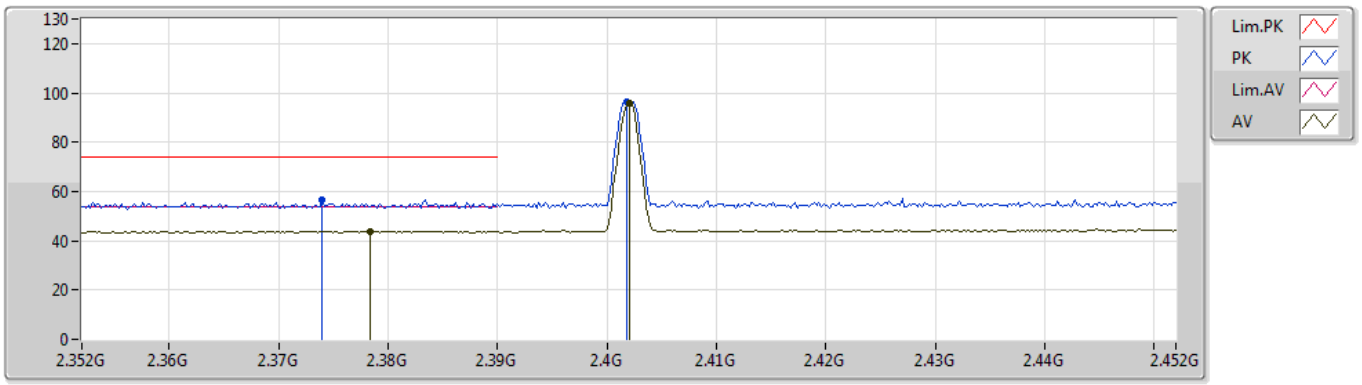
Result

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	2.3784G	43.98	54.00	-10.02	31.06	3	Vertical	53	1.32	-
2402MHz	Pass	AV	2.402G	95.74	Inf	-Inf	31.17	3	Vertical	53	1.32	-
2402MHz	Pass	PK	2.374G	56.55	74.00	-17.45	31.05	3	Vertical	53	1.32	-
2402MHz	Pass	PK	2.4018G	96.60	Inf	-Inf	31.17	3	Vertical	53	1.32	-
2402MHz	Pass	AV	2.357G	44.31	54.00	-9.69	30.97	3	Horizontal	324	2.41	-
2402MHz	Pass	AV	2.402G	95.57	Inf	-Inf	31.17	3	Horizontal	324	2.41	-
2402MHz	Pass	PK	2.3888G	56.00	74.00	-18.00	31.11	3	Horizontal	324	2.41	-
2402MHz	Pass	PK	2.402G	96.51	Inf	-Inf	31.17	3	Horizontal	324	2.41	-
2402MHz	Pass	AV	4.80379G	33.11	54.00	-20.89	3.44	3	Vertical	315	1.50	-
2402MHz	Pass	PK	4.80441G	43.70	74.00	-30.30	3.44	3	Vertical	315	1.50	-
2402MHz	Pass	AV	4.80414G	30.42	54.00	-23.58	3.44	3	Horizontal	182	1.78	-
2402MHz	Pass	PK	4.80433G	42.05	74.00	-31.95	3.44	3	Horizontal	182	1.78	-
2440MHz	Pass	AV	2.3744G	44.06	54.00	-9.94	31.05	3	Vertical	57	1.12	-
2440MHz	Pass	AV	2.44G	95.08	Inf	-Inf	31.32	3	Vertical	57	1.12	-
2440MHz	Pass	AV	2.4876G	45.01	54.00	-8.99	31.53	3	Vertical	57	1.12	-
2440MHz	Pass	PK	2.3716G	55.64	74.00	-18.36	31.03	3	Vertical	57	1.12	-
2440MHz	Pass	PK	2.4404G	95.94	Inf	-Inf	31.32	3	Vertical	57	1.12	-
2440MHz	Pass	PK	2.4908G	56.27	74.00	-17.73	31.54	3	Vertical	57	1.12	-
2440MHz	Pass	AV	2.3768G	44.10	54.00	-9.90	31.06	3	Horizontal	324	1.82	-
2440MHz	Pass	AV	2.44G	94.35	Inf	-Inf	31.32	3	Horizontal	324	1.82	-
2440MHz	Pass	AV	2.4904G	45.02	54.00	-8.98	31.54	3	Horizontal	324	1.82	-
2440MHz	Pass	PK	2.3436G	55.82	74.00	-18.18	30.91	3	Horizontal	324	1.82	-
2440MHz	Pass	PK	2.44G	95.22	Inf	-Inf	31.32	3	Horizontal	324	1.82	-
2440MHz	Pass	PK	2.4856G	56.93	74.00	-17.07	31.52	3	Horizontal	324	1.82	-
2440MHz	Pass	AV	4.88G	33.44	54.00	-20.56	3.62	3	Vertical	313	1.50	-
2440MHz	Pass	PK	4.87964G	43.53	74.00	-30.47	3.62	3	Vertical	313	1.50	-
2440MHz	Pass	AV	4.87958G	30.57	54.00	-23.43	3.62	3	Horizontal	318	1.79	-
2440MHz	Pass	PK	4.87982G	42.40	74.00	-31.60	3.62	3	Horizontal	318	1.79	-
2480MHz	Pass	AV	2.48G	95.23	Inf	-Inf	31.49	3	Vertical	56	1.01	-
2480MHz	Pass	AV	2.4974G	45.07	54.00	-8.93	31.57	3	Vertical	56	1.01	-
2480MHz	Pass	PK	2.4802G	96.12	Inf	-Inf	31.49	3	Vertical	56	1.01	-
2480MHz	Pass	PK	2.4994G	57.05	74.00	-16.95	31.58	3	Vertical	56	1.01	-
2480MHz	Pass	AV	2.48G	94.91	Inf	-Inf	31.49	3	Horizontal	321	2.25	-
2480MHz	Pass	AV	2.4998G	44.93	54.00	-9.07	31.58	3	Horizontal	321	2.25	-
2480MHz	Pass	PK	2.48G	95.81	Inf	-Inf	31.49	3	Horizontal	321	2.25	-
2480MHz	Pass	PK	2.4902G	57.03	74.00	-16.97	31.54	3	Horizontal	321	2.25	-
2480MHz	Pass	AV	4.96G	36.94	54.00	-17.06	3.82	3	Vertical	320	1.50	-
2480MHz	Pass	PK	4.95964G	45.84	74.00	-28.16	3.82	3	Vertical	320	1.50	-
2480MHz	Pass	AV	4.95988G	33.07	54.00	-20.93	3.82	3	Horizontal	301	1.15	-
2480MHz	Pass	PK	4.95928G	44.41	74.00	-29.59	3.82	3	Horizontal	301	1.15	-

BT-LE(1Mbps)

22/04/2019

2402MHz_TX

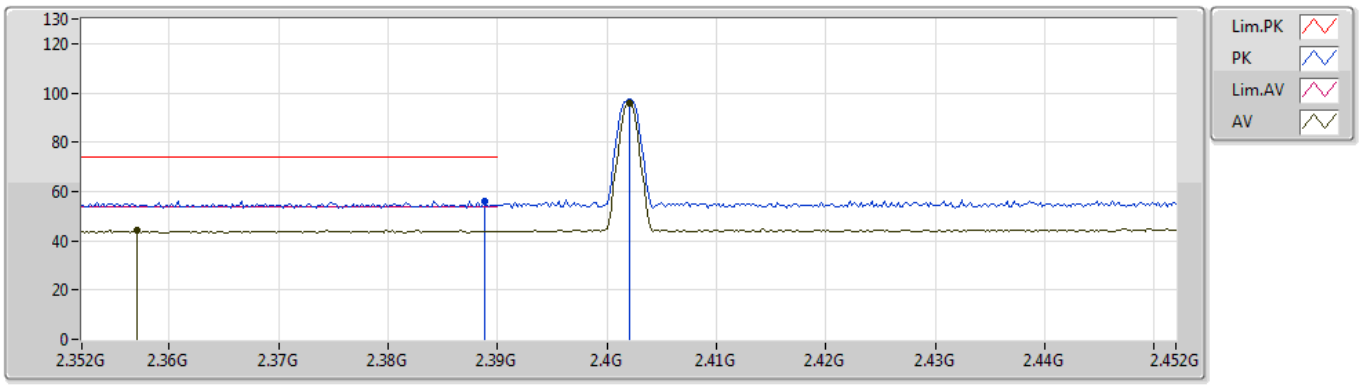


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.3784G	43.98	54.00	-10.02	31.06	3	Vertical	53	1.32	-
AV	2.402G	95.74	Inf	-Inf	31.17	3	Vertical	53	1.32	-
PK	2.374G	56.55	74.00	-17.45	31.05	3	Vertical	53	1.32	-
PK	2.4018G	96.60	Inf	-Inf	31.17	3	Vertical	53	1.32	-

BT-LE(1Mbps)

2402MHz_TX

22/04/2019

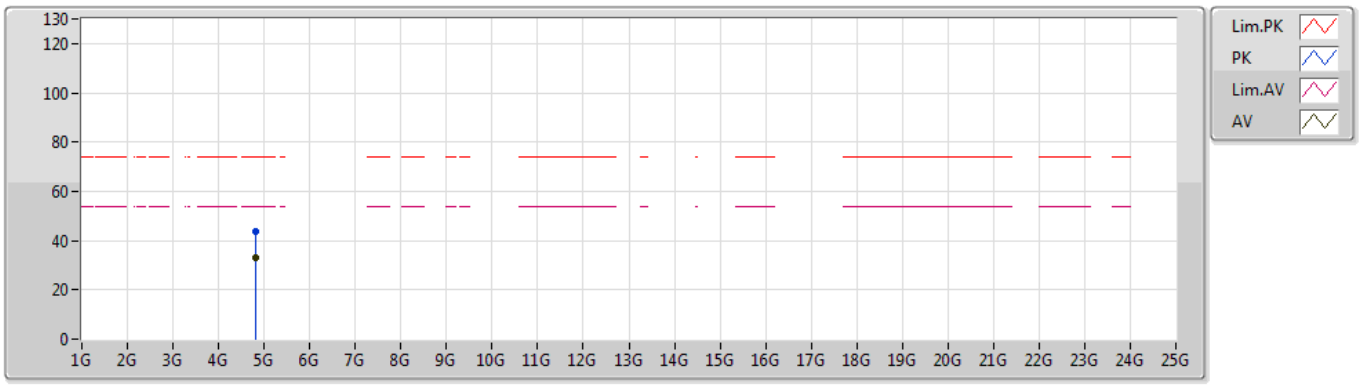


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.357G	44.31	54.00	-9.69	30.97	3	Horizontal	324	2.41	-
AV	2.402G	95.57	Inf	-Inf	31.17	3	Horizontal	324	2.41	-
PK	2.3888G	56.00	74.00	-18.00	31.11	3	Horizontal	324	2.41	-
PK	2.402G	96.51	Inf	-Inf	31.17	3	Horizontal	324	2.41	-

BT-LE(1Mbps)

22/04/2019

2402MHz_TX

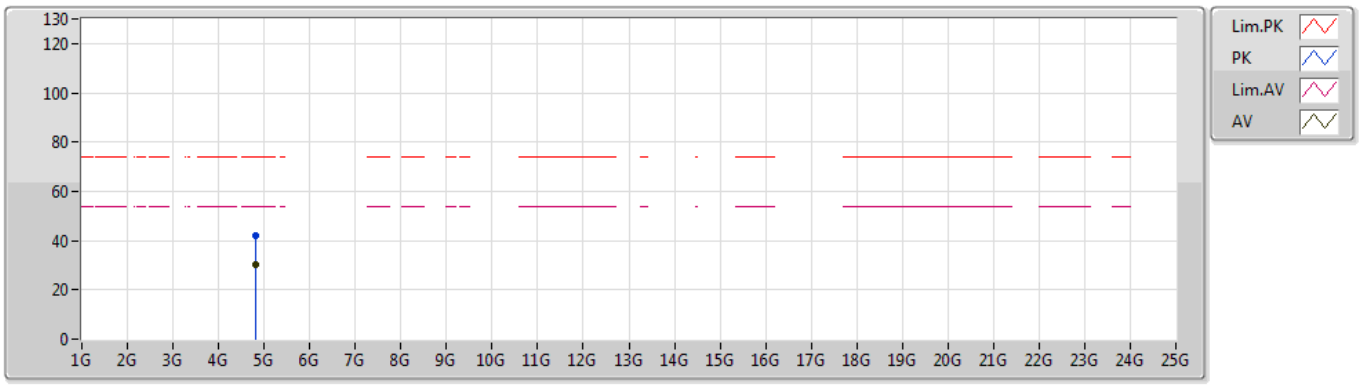


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	4.80379G	33.11	54.00	-20.89	3.44	3	Vertical	315	1.50	-
PK	4.80441G	43.70	74.00	-30.30	3.44	3	Vertical	315	1.50	-

BT-LE(1Mbps)

22/04/2019

2402MHz_TX

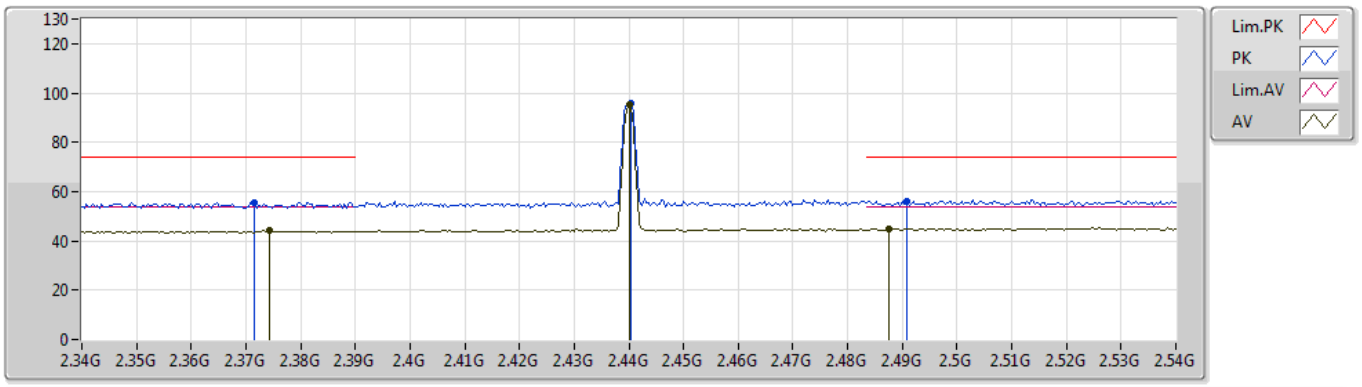


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	4.80414G	30.42	54.00	-23.58	3.44	3	Horizontal	182	1.78	-
PK	4.80433G	42.05	74.00	-31.95	3.44	3	Horizontal	182	1.78	-

BT-LE(1Mbps)

2440MHz_TX

22/04/2019

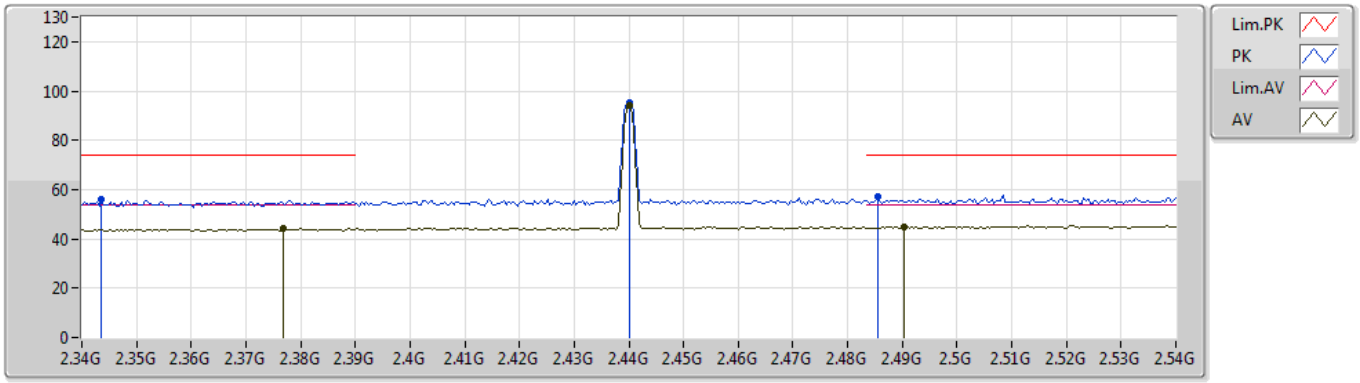


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.3744G	44.06	54.00	-9.94	31.05	3	Vertical	57	1.12	-
AV	2.44G	95.08	Inf	-Inf	31.32	3	Vertical	57	1.12	-
AV	2.4876G	45.01	54.00	-8.99	31.53	3	Vertical	57	1.12	-
PK	2.3716G	55.64	74.00	-18.36	31.03	3	Vertical	57	1.12	-
PK	2.4404G	95.94	Inf	-Inf	31.32	3	Vertical	57	1.12	-
PK	2.4908G	56.27	74.00	-17.73	31.54	3	Vertical	57	1.12	-

BT-LE(1Mbps)

2440MHz_TX

22/04/2019

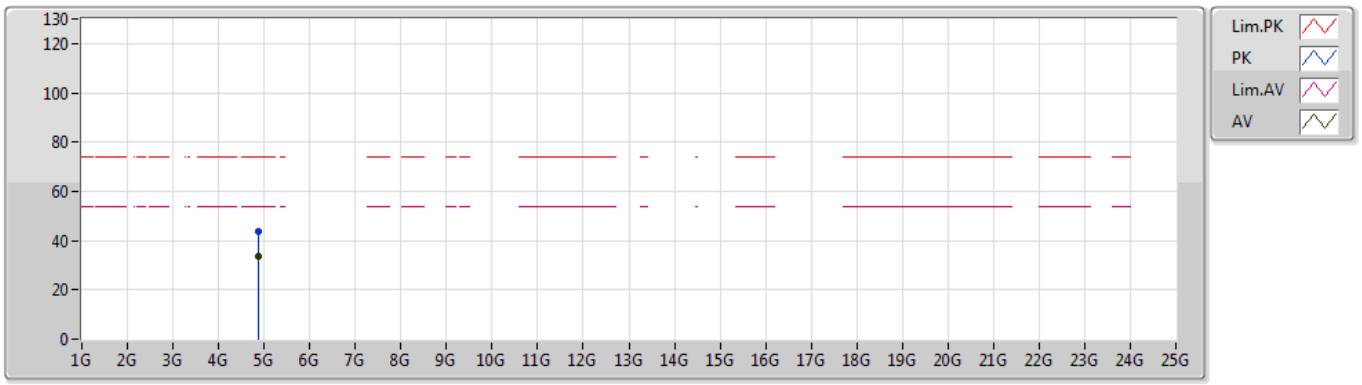


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.3768G	44.10	54.00	-9.90	31.06	3	Horizontal	324	1.82	-
AV	2.44G	94.35	Inf	-Inf	31.32	3	Horizontal	324	1.82	-
AV	2.4904G	45.02	54.00	-8.98	31.54	3	Horizontal	324	1.82	-
PK	2.3436G	55.82	74.00	-18.18	30.91	3	Horizontal	324	1.82	-
PK	2.44G	95.22	Inf	-Inf	31.32	3	Horizontal	324	1.82	-
PK	2.4856G	56.93	74.00	-17.07	31.52	3	Horizontal	324	1.82	-

BT-LE(1Mbps)

2440MHz_TX

22/04/2019

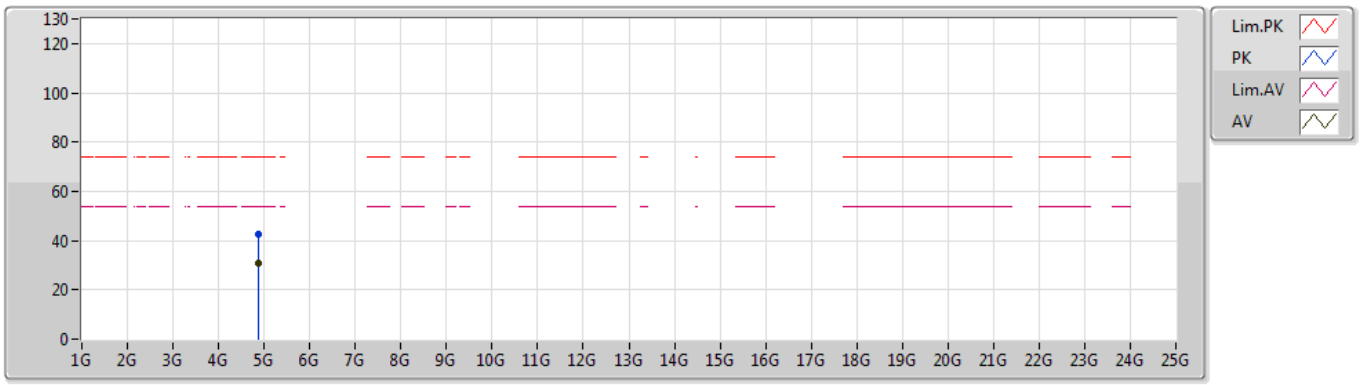


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	4.88G	33.44	54.00	-20.56	3.62	3	Vertical	313	1.50	-
PK	4.87964G	43.53	74.00	-30.47	3.62	3	Vertical	313	1.50	-

BT-LE(1Mbps)

2440MHz_TX

22/04/2019

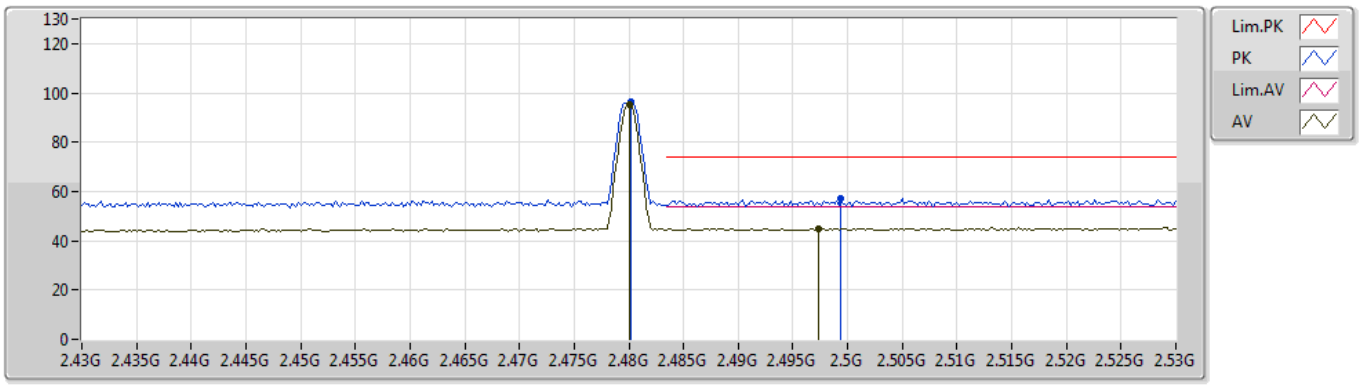


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	4.87958G	30.57	54.00	-23.43	3.62	3	Horizontal	318	1.79	-
PK	4.87982G	42.40	74.00	-31.60	3.62	3	Horizontal	318	1.79	-

BT-LE(1Mbps)

22/04/2019

2480MHz_TX

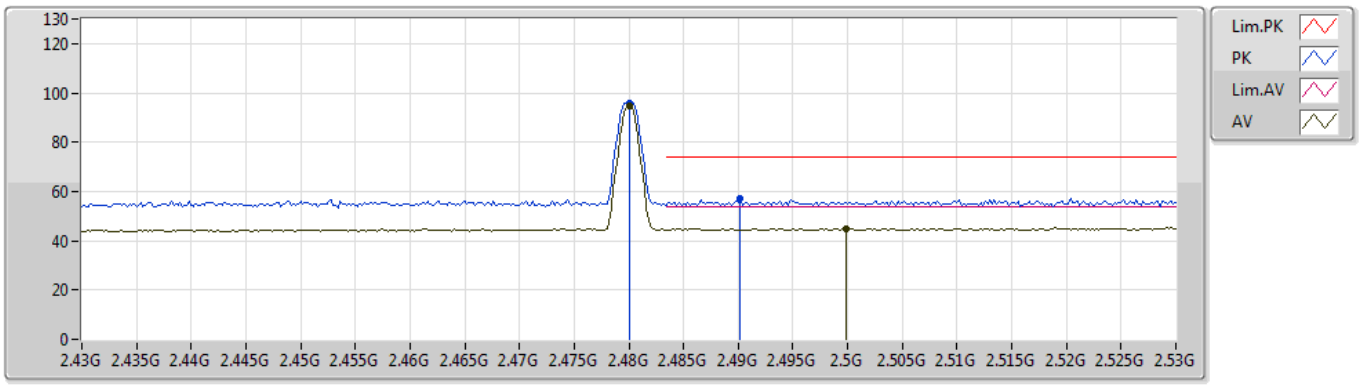


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.48G	95.23	Inf	-Inf	31.49	3	Vertical	56	1.01	-
AV	2.4974G	45.07	54.00	-8.93	31.57	3	Vertical	56	1.01	-
PK	2.4802G	96.12	Inf	-Inf	31.49	3	Vertical	56	1.01	-
PK	2.4994G	57.05	74.00	-16.95	31.58	3	Vertical	56	1.01	-

BT-LE(1Mbps)

22/04/2019

2480MHz_TX

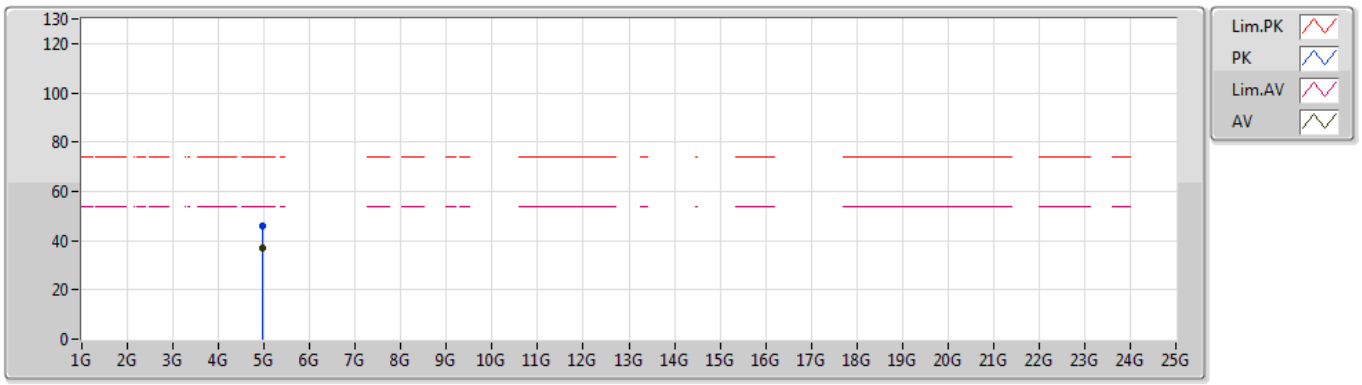


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	2.48G	94.91	Inf	-Inf	31.49	3	Horizontal	321	2.25	-
AV	2.4998G	44.93	54.00	-9.07	31.58	3	Horizontal	321	2.25	-
PK	2.48G	95.81	Inf	-Inf	31.49	3	Horizontal	321	2.25	-
PK	2.4902G	57.03	74.00	-16.97	31.54	3	Horizontal	321	2.25	-

BT-LE(1Mbps)

22/04/2019

2480MHz_TX

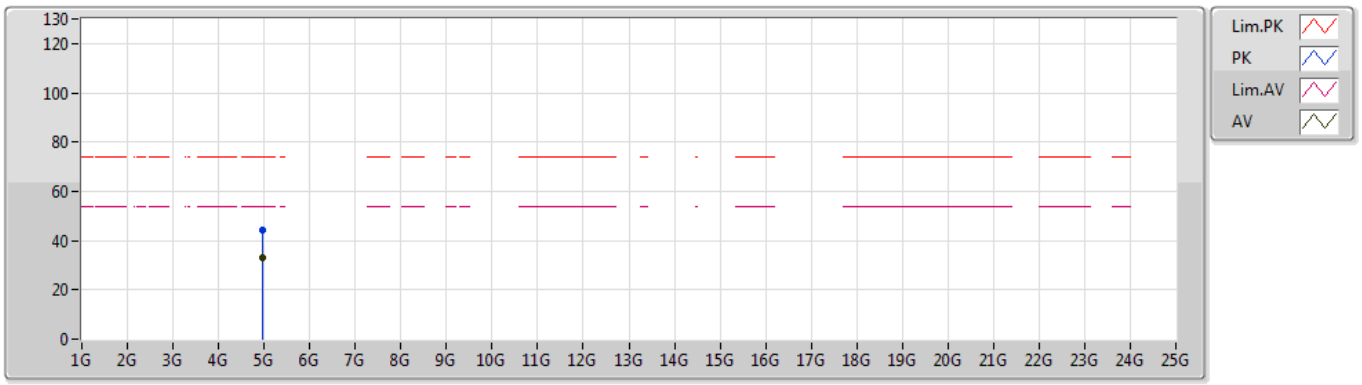


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	4.96G	36.94	54.00	-17.06	3.82	3	Vertical	320	1.50	-
PK	4.95964G	45.84	74.00	-28.16	3.82	3	Vertical	320	1.50	-

BT-LE(1Mbps)

2480MHz_TX

22/04/2019



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
AV	4.95988G	33.07	54.00	-20.93	3.82	3	Horizontal	301	1.15	-
PK	4.95928G	44.41	74.00	-29.59	3.82	3	Horizontal	301	1.15	-