



FCC Test Report

FCC ID : 2AEUPBHARC011
Equipment : Spotlight cam wired
Brand Name : RING
Model Name : 5L5C4T
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 May 31, 2019, and testing was started from Jun. 10, 2019 and completed on Jun. 20, 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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History of this test report

[illegible]

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: Jackson 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	2	1.06	-	-
2	1	1.27	1.06	-
3	1	-	-	0.73

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

For BT function:

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

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

For LoRa function:

For LoRa mode (1TX/1RX)

Ant. 3 (port 1) could transmit/receive simultaneously.

1.1.3 EUT Information

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

1.1.4 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) $\geq 1/T$
BT-LE(1Mbps)	0.647	1.89	404.375u	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			
<input checked="" type="checkbox"/>	HWA YA	ADD : No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)	
		TEL : 886-3-327-3456	FAX : 886-3-327-0973
Test site Designation No. TW1190 with FCC.			
<input type="checkbox"/>	JHUBEI	ADD : No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County, Taiwan (R.O.C.)	
		TEL : 886-3-656-9065	FAX : 886-3-656-9085
Test site Designation No. TW0006 with FCC.			

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
AC Conduction	CO04-HY	Jeff	23.5~24.2°C / 53.5~55.3%	14/Jun/2019
RF Conducted	TH06-HY	Gary	23.2~24.6°C / 62~68.5%	10/Jun/2019
Radiated	03CH02-HY	Andy	22.5~23.7°C / 51.7~52.8%	12/Jun/2019~ 20/Jun/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

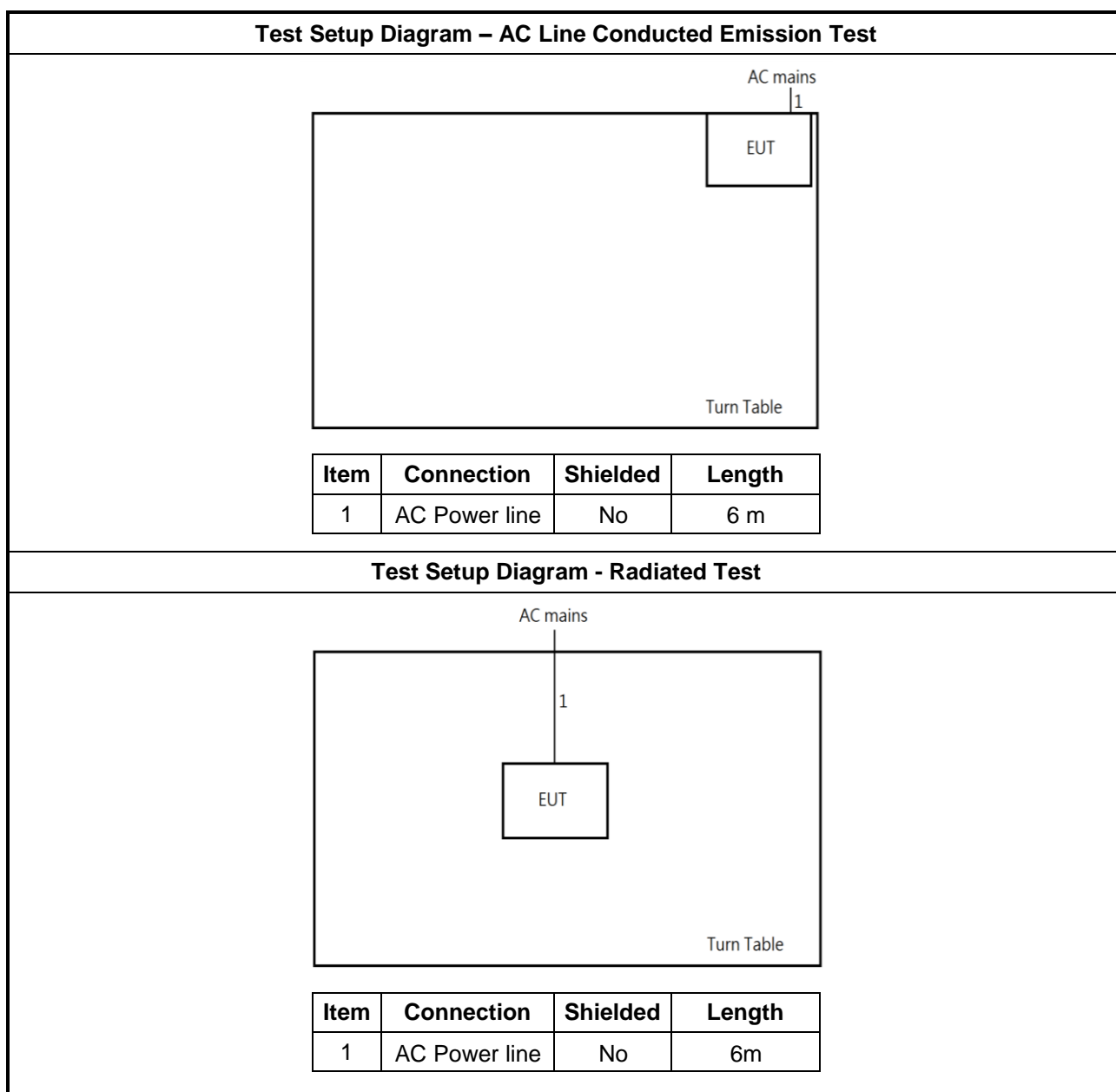
The Worst Case Mode for Following Conformance Tests	
Tests Item	Emissions in Restricted Frequency Bands
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be 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.: FA953031 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



3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

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

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

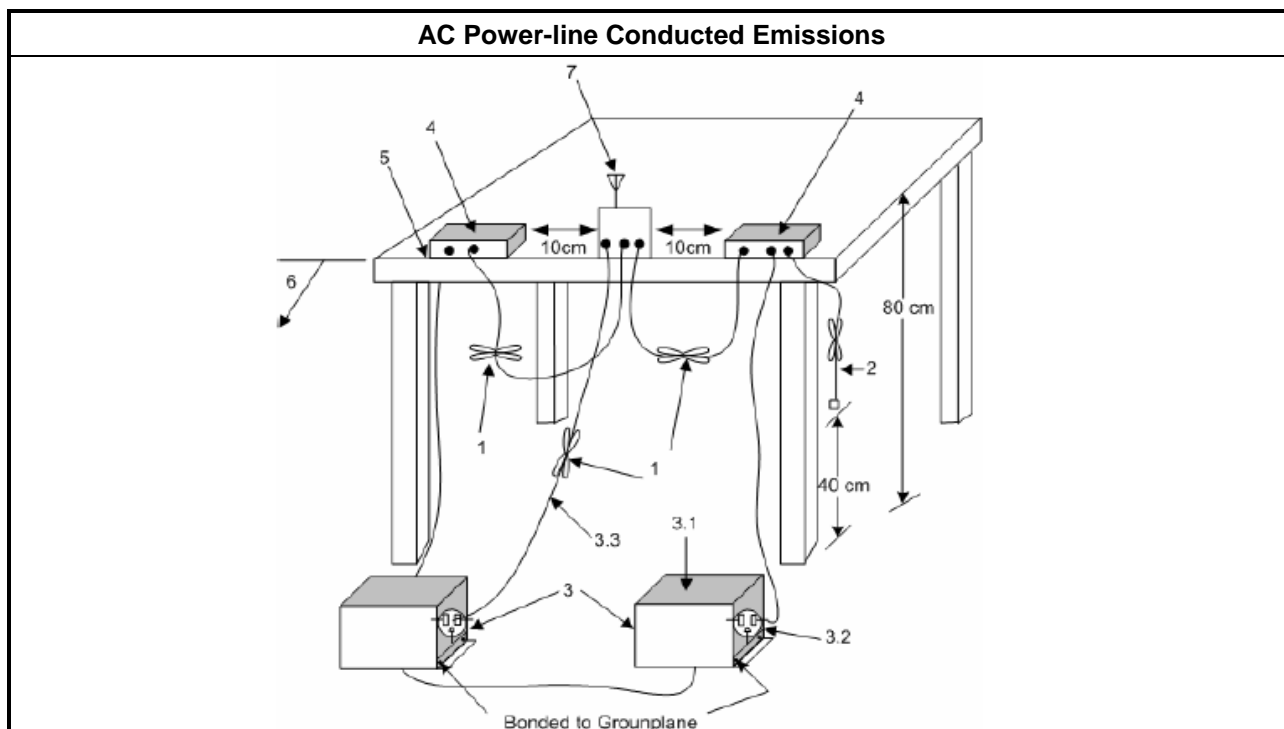
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

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

3.1.4 Test Setup



3.1.5 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

3.2 DTS Bandwidth

3.2.1 6dB Bandwidth Limit

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

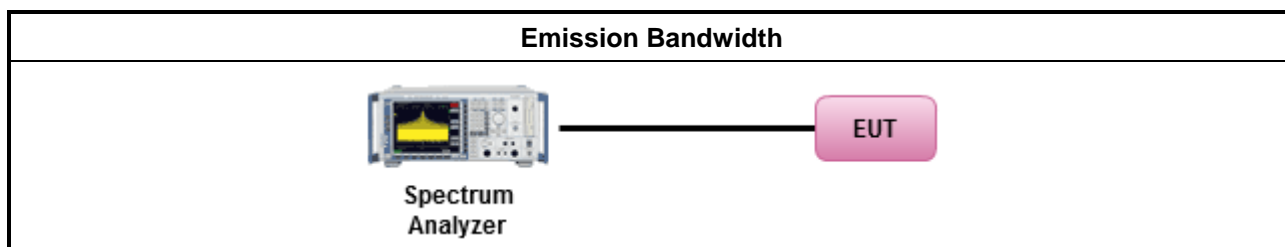
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Test Method	
▪	For the emission bandwidth shall be measured using one of the options below:
<input checked="" type="checkbox"/>	Refer as KDB 558074, clause 8.2 (11.8 of ANSI C63.10) DTS bandwidth measurement.
<input type="checkbox"/>	Refer as RSS-Gen, clause 6.7 for occupied bandwidth testing.
<input type="checkbox"/>	Refer as ANSI C63.10, clause 6.9.3 for occupied bandwidth testing.

3.2.4 Test Setup



3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

3.3 Maximum Conducted Output Power

3.3.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit	
	<ul style="list-style-type: none"> If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)
	<ul style="list-style-type: none"> Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm
	<ul style="list-style-type: none"> Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	<ul style="list-style-type: none"> Smart antenna system (SAS):
	<ul style="list-style-type: none"> - Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	<ul style="list-style-type: none"> - Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	<ul style="list-style-type: none"> - Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3 + 8$ dB dBm
e.i.r.p. Power Limit:	
	<ul style="list-style-type: none"> 2400-2483.5 MHz Band
	<ul style="list-style-type: none"> Point-to-multipoint systems (P2M): $P_{eirp} \leq 36$ dBm (4 W)
	<ul style="list-style-type: none"> Point-to-point systems (P2P): $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX}])$ dBm
	<ul style="list-style-type: none"> Smart antenna system (SAS)
	<ul style="list-style-type: none"> - Single beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	<ul style="list-style-type: none"> - Overlap beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	<ul style="list-style-type: none"> - Aggregate power on all beams: $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX} + 8])$ dBm
P_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, G_{TX} = the maximum transmitting antenna directional gain in dBi.	

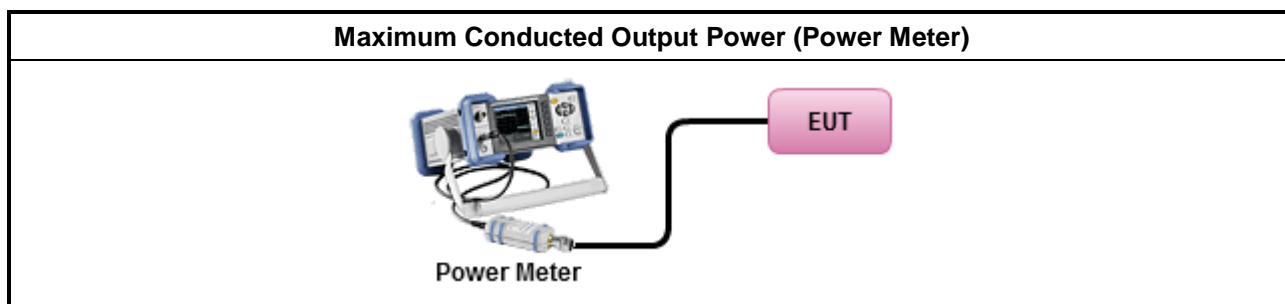
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> Maximum Peak Conducted Output Power 	
<input type="checkbox"/>	Refer as KDB 558074, clause 8.3.1.1 (11.9.1.1 of ANSI C63.10) RBW ≥ EBW method.
<input type="checkbox"/>	Refer as KDB 558074, clause 8.3.1.2 (11.9.1.2 of ANSI C63.10) integrated band power method.
<input type="checkbox"/>	Refer as KDB 558074, clause 8.3.1.3 (11.9.1.3 of ANSI C63.10) peak power meter.
<ul style="list-style-type: none"> Maximum Average Conducted Output Power 	
<input type="checkbox"/>	Refer as KDB 558074, clause 8.3.2.2 (11.9.2.2 of ANSI C63.10) using a spectrum analyzer.
<input checked="" type="checkbox"/>	Refer as KDB 558074, clause 8.3.2.3 (11.9.2.3 of ANSI C63.10) using a power meter.
<ul style="list-style-type: none"> For conducted measurement. 	
<ul style="list-style-type: none"> If the EUT supports multiple transmit chains using options given below: Refer as KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them. 	
<ul style="list-style-type: none"> If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + \dots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$ 	

3.3.4 Test Setup



3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

3.4 Power Spectral Density

3.4.1 Power Spectral Density Limit

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

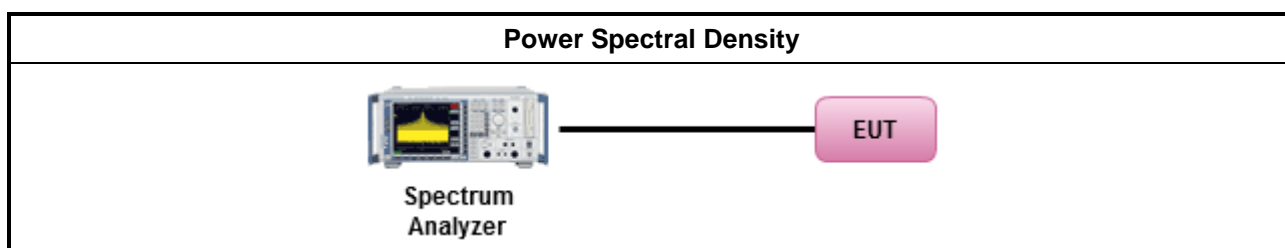
3.4.2 Measuring Instruments

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).
<input checked="" type="checkbox"/>	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



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
<p>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.</p> <p>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.</p>	

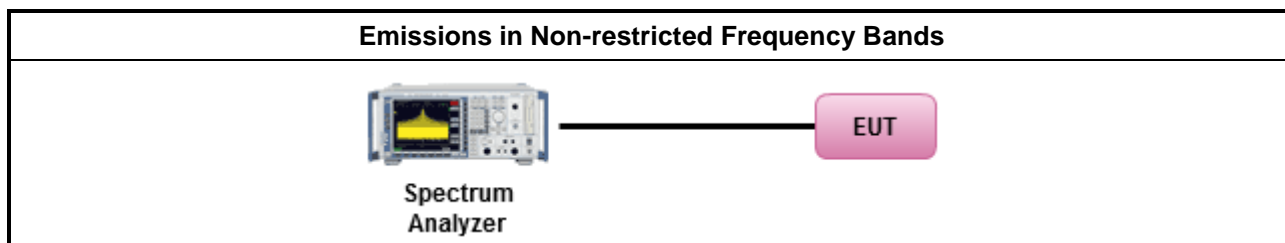
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

Test Method
<ul style="list-style-type: none"> Refer as KDB 558074, clause 8.5 (11.11 of ANSI C63.10) for non-restricted frequency bands.

3.5.4 Test Setup



3.5.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix E

3.6 Emissions in Restricted Frequency Bands

3.6.1 Emissions in Restricted Frequency Bands Limit

Restricted Band Emissions Limit			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB / decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

Note 3: Using the distance of 1m during the test for above 18 GHz, and the test value to correct for the distance factor at 3m.

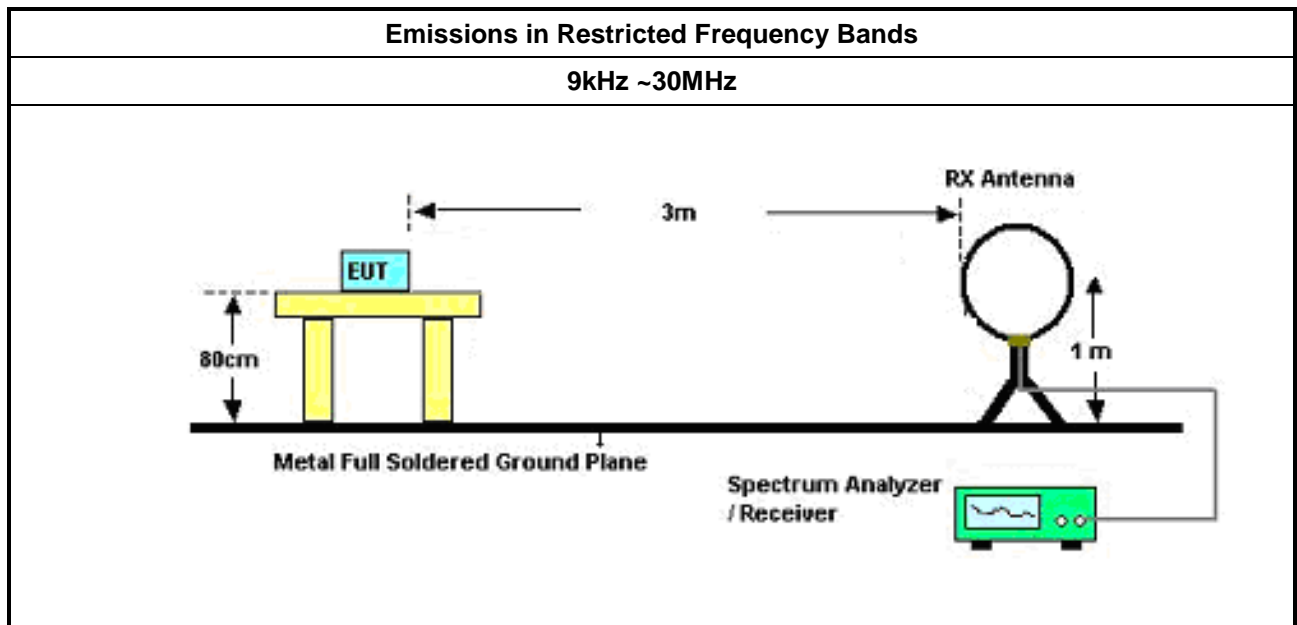
3.6.2 Measuring Instruments

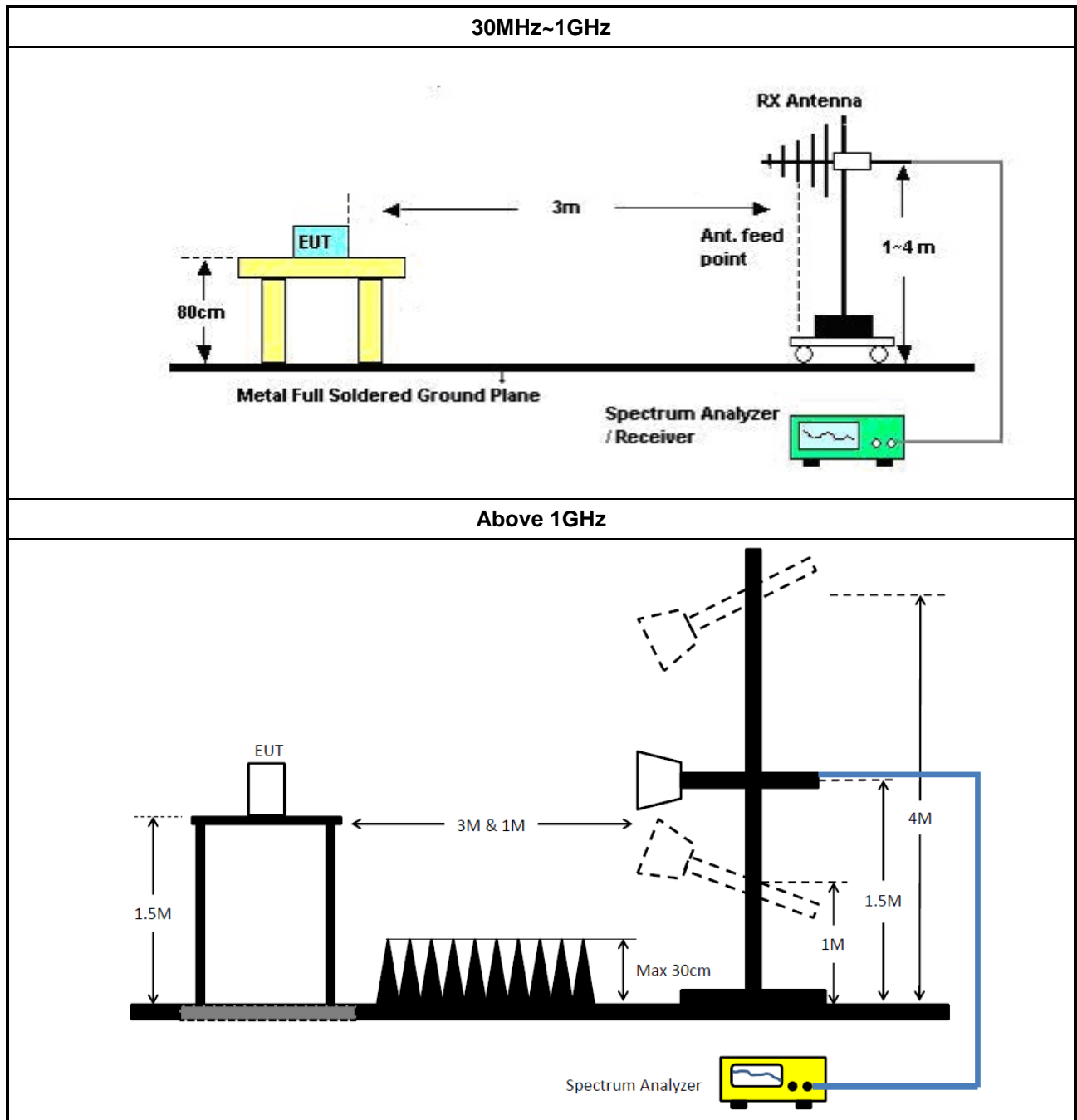
Refer a test equipment and calibration data table in this test report.

3.6.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> The average emission levels shall be measured in [duty cycle ≥ 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. 	<ul style="list-style-type: none"> For the transmitter unwanted emissions shall be measured using following options below:
	<ul style="list-style-type: none"> Refer as KDB 558074, clause 8.6 (11.12 of ANSI C63.10) for restricted frequency bands.
<ul style="list-style-type: none"> For the transmitter band-edge emissions shall be measured using following options below: 	<ul style="list-style-type: none"> Refer as KDB 558074 clause 8.7.1, When the performing peak or average radiated measurements, emissions within 2 MHz of the authorized band edge may be measured using the marker-delta method described below.
	<ul style="list-style-type: none"> Refer as KDB 558074, clause 8.7.2 (6.10.6 of ANSI C63.10) for marker-delta method for band-edge measurements.
	<ul style="list-style-type: none"> Refer as KDB 558074, clause 8.7.3 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).
	<ul style="list-style-type: none"> Use the following spectrum analyzer settings:
	<ul style="list-style-type: none"> Set RBW=100 kHz for $f < 1$ GHz; VBW=3 * RBW; Sweep = auto; Detector function = peak; Trace = max hold.
	<ul style="list-style-type: none"> Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement. For average measurement, refer as 1.1.4.

3.6.4 Test Setup





3.6.5 Test Result of Emissions in Restricted Frequency Bands (Below 30MHz)

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

3.6.6 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix F

4 Test Equipment and Calibration Data

Instrument for AC Conduction

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
EMC Receiver	R&S	ESR3	102052	9kHz ~ 3.6GHz	09/Apr/2019	08/Apr/2020
LISN	R&S	ENV216	101295	9kHz ~ 30MHz	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 Conducted Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101013	10Hz~40GHz	13/Mar/2019	12/Mar/2020
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	21/Mar/2019	20/Mar/2020
Cable 0.2m	HUBER	MY10711/4	RF Cable - 02	30MHz ~18G	21/Mar/2019	20/Mar/2020
Cable 0.5m	HUBER	MY39470/4	RF Cable - 29	30MHz ~18G	21/Mar/2019	20/Mar/2020
SMB100A Signal Generator	R&S	SMB100A03	181147	100kHz~40GHz	12/Nov/2018	10/Nov/2020

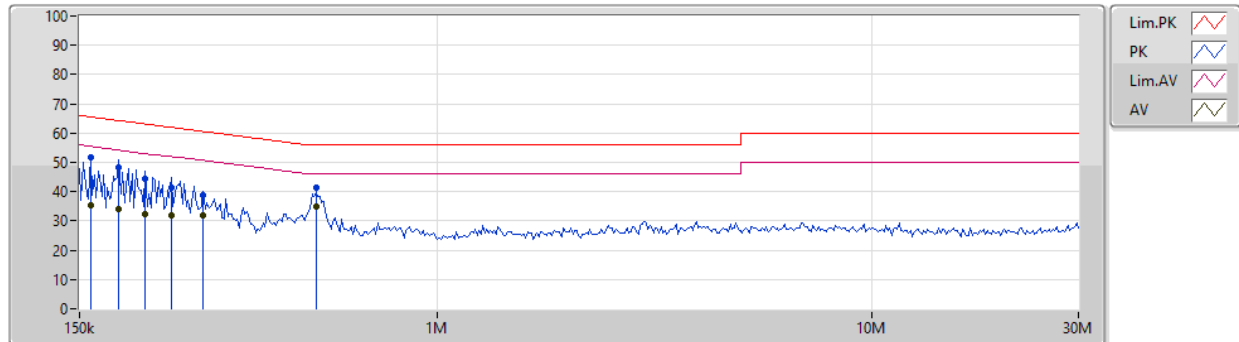
Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30MHz ~ 1GHz 3m	19/Oct/2018	18/Oct/2019
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	1GHz ~ 18GHz 3m	17/Oct/2018	16/Oct/2019
Amplifier	Agilent	8447D	2944A11149	100kHz ~ 1.3GHz	27Jul/2018	02/Jul/2019
Amplifier	KEYSIGHT	83017A	MY53270197	1GHz ~ 26.5GHz	30/Nov/2018	29/Nov/2019
Spectrum Analyzer	Rohde & Schwarz	FSP40	100593	9KHz - 40GHz	27/Dec/2018	26/Dec/2019
EMI Test Receiver	R&S	ESR3	102052	9kHz ~ 3.6GHz	09/Apr/2019	08/Apr/2020
RF Cable-R03m	Jye Bao	RG142	CB017	9kHz ~ 1GHz	26/Mar/2019	25/Mar/2020
RF Cable-high 6m	SUHNER	SUCOFLEX104	10567868 / SN805193/4	1GHz~40GHz	09/Apr/2019	08/Apr/2020
RF Cable-high 7m	SUHNER	SUCOFLEX104	10567868 / SN805192/4	1GHz~40GHz	09/Apr/2019	08/Apr/2020
Bilog Antenna & 5dB Attenuator	SCHAFFNER / MTJ	CBL 6112B / MTJ6102-05	2723 / 2	30MHz ~ 1GHz	08/Sep/2018	07/Sep/2019
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170221	15GHz ~ 40GHz	22/Mar/2019	21/Mar/2020
Loop Antenna	TESEQ	HLA 6120	31244	9k-30MHz	15/Mar/2019	14/Mar/2020
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 01543	1GHz ~ 18GHz	03/Jun/2019	02/Jun/2020

AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Neutral
Operating Function	AC mains mode		

14/06/2019

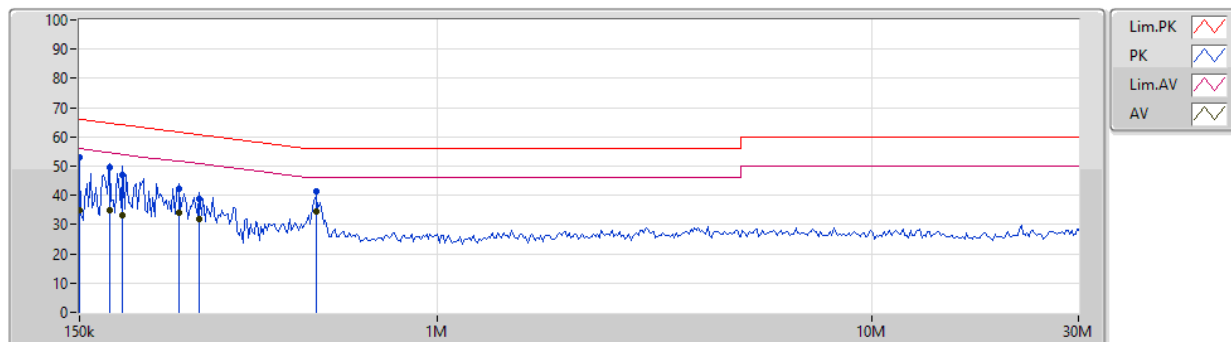


Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)			
QP	159.228k	51.87	65.50	-13.63	19.48	Neutral	-	32.39	9.60	0.01	9.87			
AV	159.228k	35.20	55.50	-20.30	19.48	Neutral	-	15.72	9.60	0.01	9.87			
QP	184.859k	48.10	64.26	-16.16	19.47	Neutral	-	28.63	9.59	0.01	9.87			
AV	184.859k	34.22	54.26	-20.04	19.47	Neutral	-	14.75	9.59	0.01	9.87			
QP	212.49k	44.36	63.11	-18.75	19.47	Neutral	-	24.89	9.59	0.01	9.87			
AV	212.49k	32.16	53.11	-20.95	19.47	Neutral	-	12.69	9.59	0.01	9.87			
QP	244.252k	41.57	61.95	-20.38	19.47	Neutral	-	22.10	9.59	0.01	9.87			
AV	244.252k	31.77	51.95	-20.18	19.47	Neutral	-	12.30	9.59	0.01	9.87			
QP	289.269k	38.83	60.55	-21.72	19.48	Neutral	-	19.35	9.59	0.01	9.88			
AV	289.269k	31.87	50.55	-18.68	19.48	Neutral	-	12.39	9.59	0.01	9.88			
QP	525.514k	41.35	56.00	-14.65	19.48	Neutral	-	21.87	9.59	0.01	9.88			
AV	525.514k	34.80	46.00	-11.20	19.48	Neutral	"Worst"	15.32	9.59	0.01	9.88			

AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Line
Operating Function	AC mains mode		

14/06/2019



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)			
QP	150k	52.85	66.00	-13.15	19.48	Line	-	33.37	9.60	0.01	9.87			
AV	150k	34.86	56.00	-21.14	19.48	Line	-	15.38	9.60	0.01	9.87			
QP	175.887k	49.73	64.68	-14.95	19.48	Line	-	30.25	9.60	0.01	9.87			
AV	175.887k	34.78	54.68	-19.90	19.48	Line	-	15.30	9.60	0.01	9.87			
QP	188.574k	47.02	64.11	-17.09	19.48	Line	-	27.54	9.60	0.01	9.87			
AV	188.574k	33.31	54.11	-20.80	19.48	Line	-	13.83	9.60	0.01	9.87			
QP	254.17k	42.32	61.62	-19.30	19.48	Line	-	22.84	9.60	0.01	9.87			
AV	254.17k	33.86	51.62	-17.76	19.48	Line	-	14.38	9.60	0.01	9.87			
QP	283.569k	38.99	60.70	-21.71	19.49	Line	-	19.50	9.60	0.01	9.88			
AV	283.569k	32.04	50.70	-18.66	19.49	Line	-	12.55	9.60	0.01	9.88			
QP	525.514k	41.22	56.00	-14.78	19.48	Line	-	21.74	9.59	0.01	9.88			
AV	525.514k	34.56	46.00	-11.44	19.48	Line	"Worst"	15.08	9.59	0.01	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)	662.5k	1.016M	1M02F1D	660k	1.012M

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;

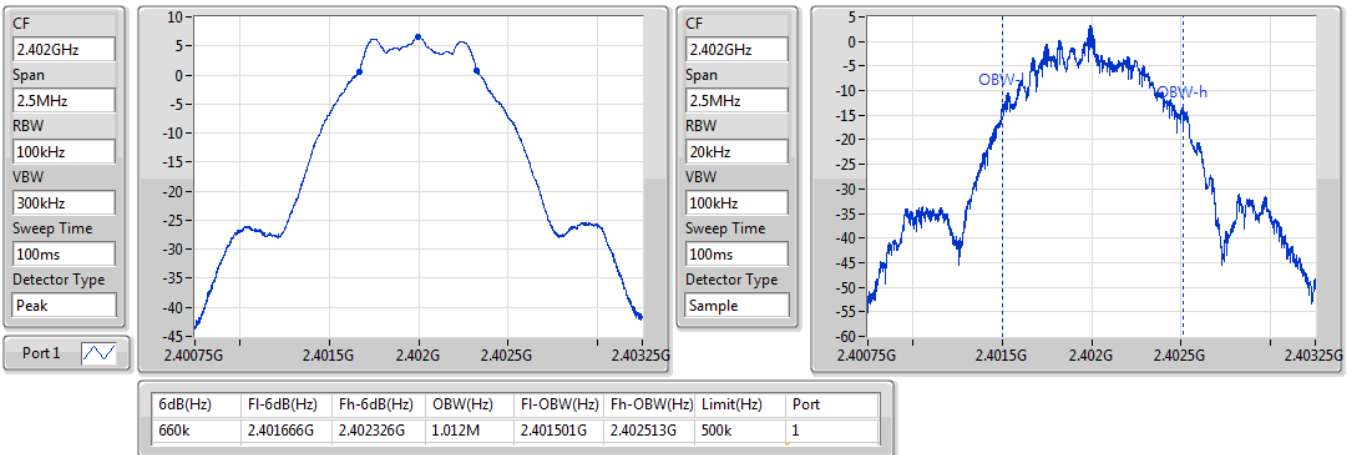
Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	660k	1.012M
2440MHz	Pass	500k	660k	1.013M
2480MHz	Pass	500k	662.5k	1.016M

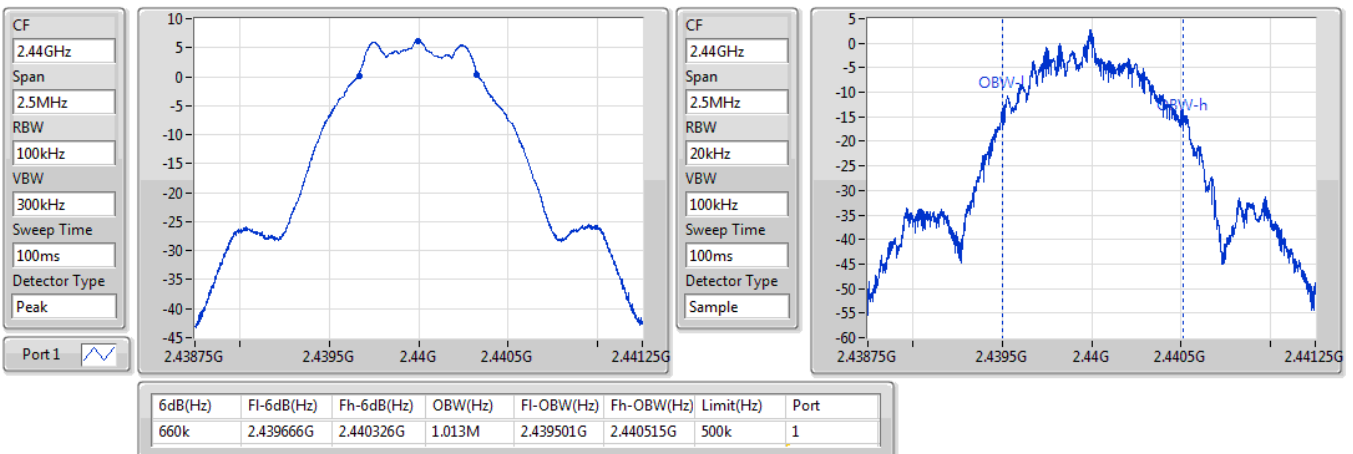
Port X-N dB = Port X 6dB down bandwidth; **Port X-OBW** = Port X 99% occupied bandwidth;

BT-LE(1Mbps)
2402MHz

10/06/2019


BT-LE(1Mbps)
2440MHz

10/06/2019

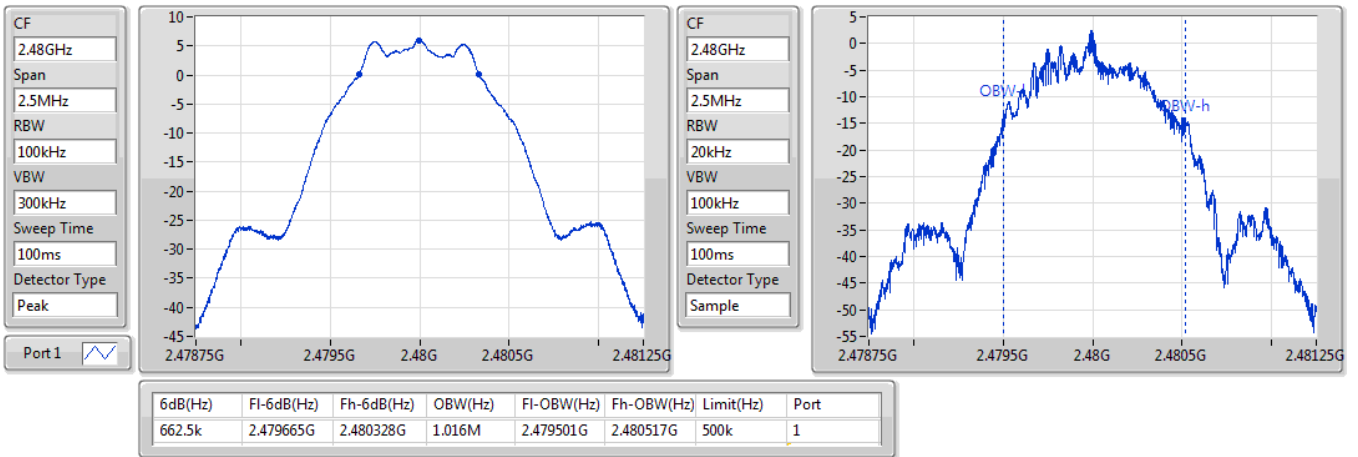


BT-LE(1Mbps)

2480MHz

EBW

10/06/2019





Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	6.23	0.00420



Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	1.06	6.23	30.00
2440MHz	Pass	1.06	5.86	30.00
2480MHz	Pass	1.06	5.65	30.00

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



Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-7.99

RBW=3 kHz.



Result

Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	1.06	-7.99	8.00
2440MHz	Pass	1.06	-8.43	8.00
2480MHz	Pass	1.06	-8.57	8.00

DG = Directional Gain; RBW=3 kHz;

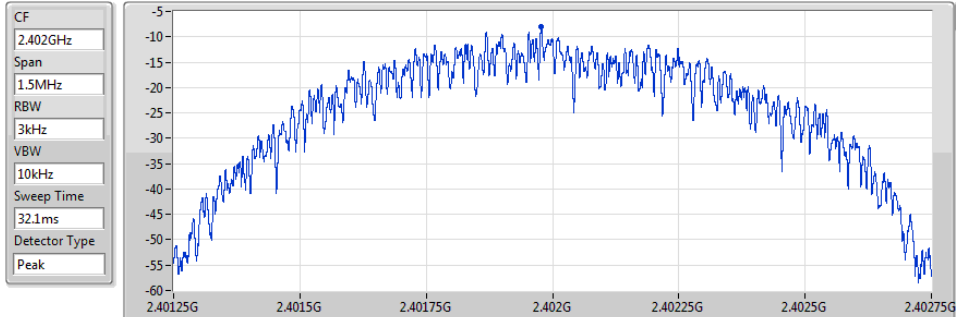
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; **Port X** = Port X power density;

BT-LE(1Mbps)

PSD

2402MHz

10/06/2019



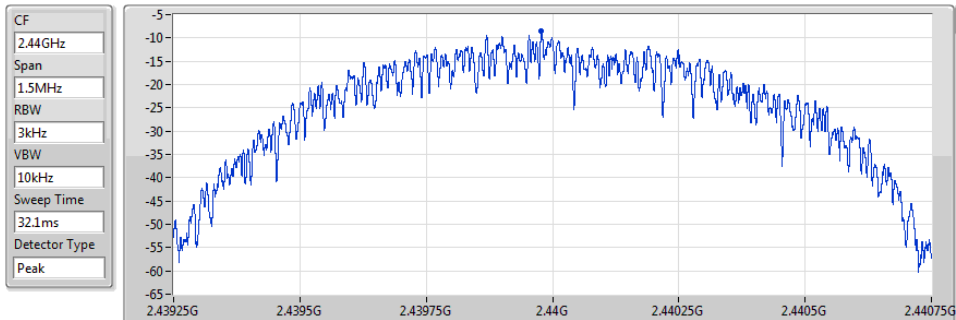
Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-7.99	-7.99	-7.99

BT-LE(1Mbps)

PSD

2440MHz

10/06/2019



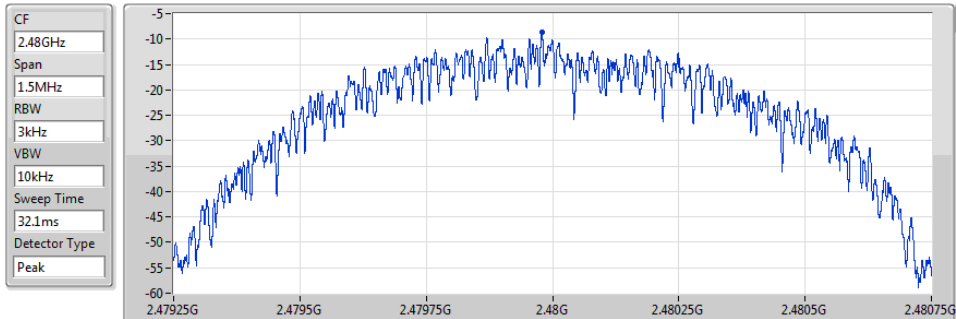
Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-8.43	-8.43	-8.43

BT-LE(1Mbps)

PSD

2480MHz

10/06/2019



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-8.57	-8.57	-8.57



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	2.402G	6.40	-23.60	1.62662G	-62.96	2.39892G	-61.76	2.48425G	-61.22	14.6377G	-46.47	1

Result

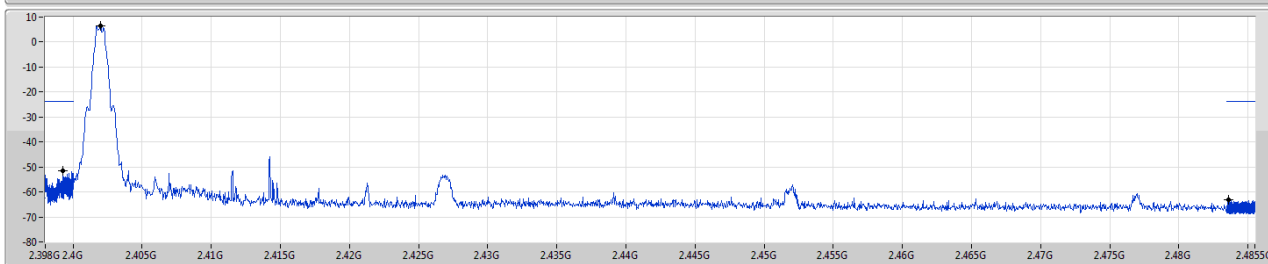
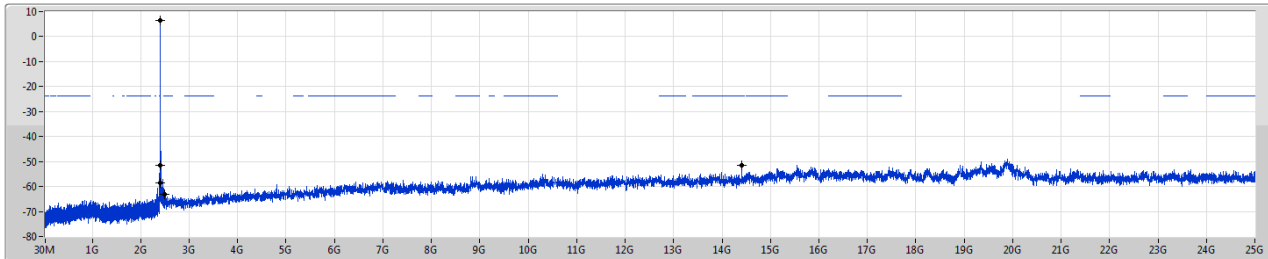
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.402G	6.40	-23.60	2.39326G	-58.59	2.39928G	-51.36	2.48362G	-63.02	14.41256G	-51.41	1
2440MHz	Pass	2.402G	6.40	-23.60	1.62662G	-62.96	2.39892G	-61.76	2.48425G	-61.22	14.6377G	-46.47	1
2480MHz	Pass	2.402G	6.40	-23.60	1.65326G	-64.37	2.39827G	-63.20	2.48391G	-54.94	14.05514G	-50.55	1

BT-LE(1Mbps)

2402MHz

CSE NdB

10/06/2019



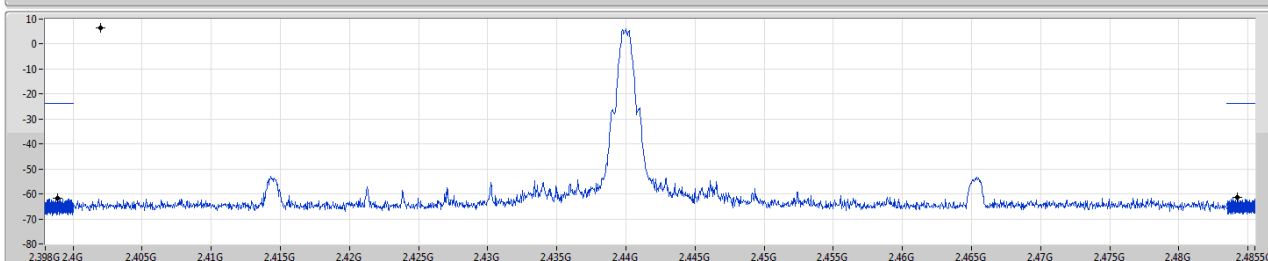
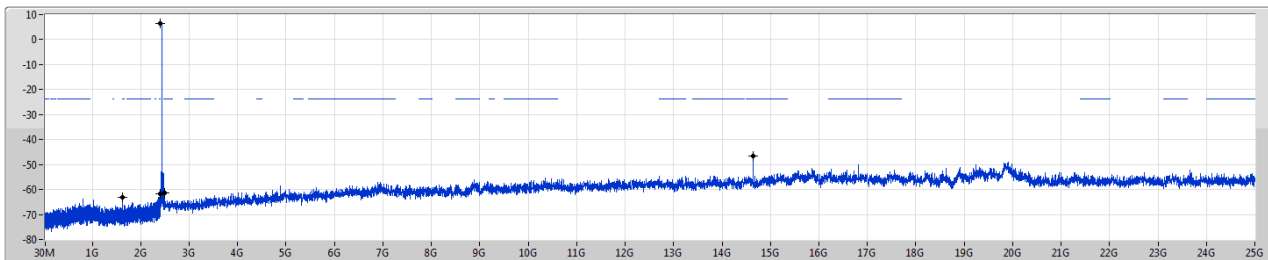
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2402G	6.40	-23.60	2.39326G	-58.59	2.39928G	-51.36	2.48362G	-63.02	2.41256G	-51.41	1

BT-LE(1Mbps)

2440MHz

CSE NdB

10/06/2019



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2402G	6.40	-23.60	1.62862G	-62.96	2.39892G	-61.76	2.48425G	-61.22	2.41377G	-46.47	1

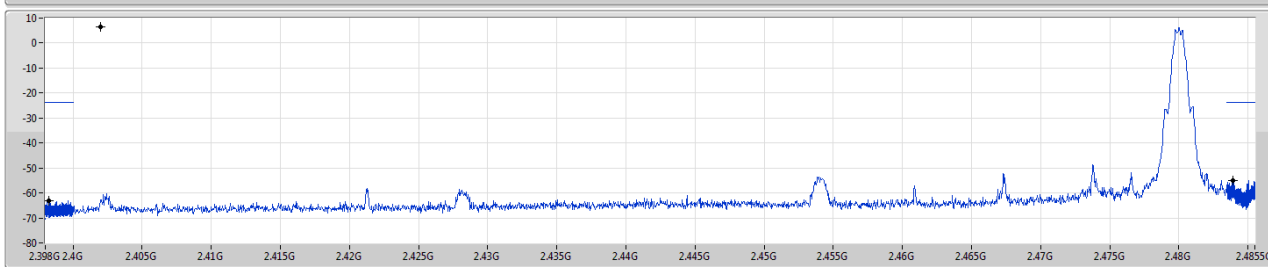
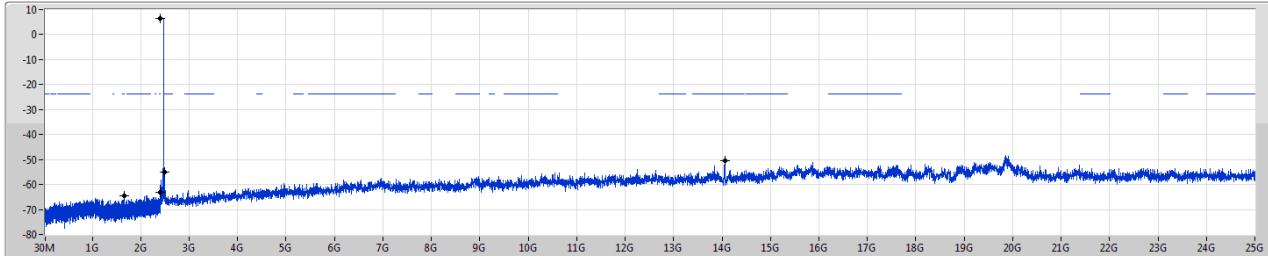
BT-LE(1Mbps)

2480MHz

CSE NdB

10/06/2019

Port1



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

Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.402G	6.40	-23.60	1.65326G	-64.37	2.39827G	-63.20	2.48391G	-54.94	14.05514G	-50.55	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	PK	660.5M	34.41	46.00	-11.59	-4.07	3	Horizontal	0	2.00	-

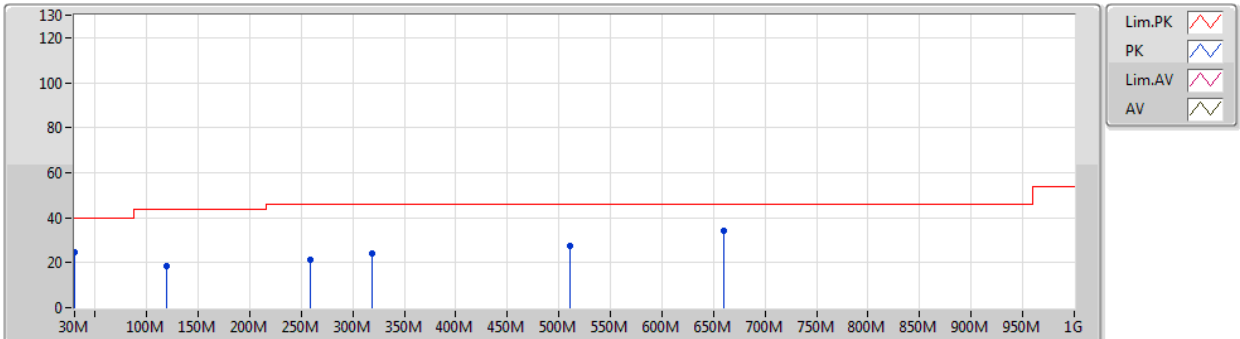
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-
2440MHz_Switching power supply	Pass	PK	30M	24.76	40.00	-15.24	-8.16	3	Vertical	360	2.00	-
2440MHz_Switching power supply	Pass	PK	119.24M	18.77	43.50	-24.73	-13.70	3	Vertical	360	2.00	-
2440MHz_Switching power supply	Pass	PK	258.92M	21.02	46.00	-24.98	-11.25	3	Vertical	360	2.00	-
2440MHz_Switching power supply	Pass	PK	319.06M	24.27	46.00	-21.73	-11.19	3	Vertical	360	2.00	-
2440MHz_Switching power supply	Pass	PK	511.12M	27.69	46.00	-18.31	-6.21	3	Vertical	360	2.00	-
2440MHz_Switching power supply	Pass	PK	660.5M	34.13	46.00	-11.87	-4.07	3	Vertical	360	2.00	-
2440MHz_Switching power supply	Pass	PK	30M	24.98	40.00	-15.02	-8.16	3	Horizontal	0	2.00	-
2440MHz_Switching power supply	Pass	PK	125.06M	21.60	43.50	-21.90	-13.81	3	Horizontal	0	2.00	-
2440MHz_Switching power supply	Pass	PK	256.98M	22.34	46.00	-23.66	-11.52	3	Horizontal	0	2.00	-
2440MHz_Switching power supply	Pass	PK	319.06M	24.54	46.00	-21.46	-11.19	3	Horizontal	0	2.00	-
2440MHz_Switching power supply	Pass	PK	429.64M	25.49	46.00	-20.51	-7.50	3	Horizontal	0	2.00	-
2440MHz_Switching power supply	Pass	PK	660.5M	34.41	46.00	-11.59	-4.07	3	Horizontal	0	2.00	-

BT-LE(1Mbps)

2440MHz_Switching power supply

20/06/2019

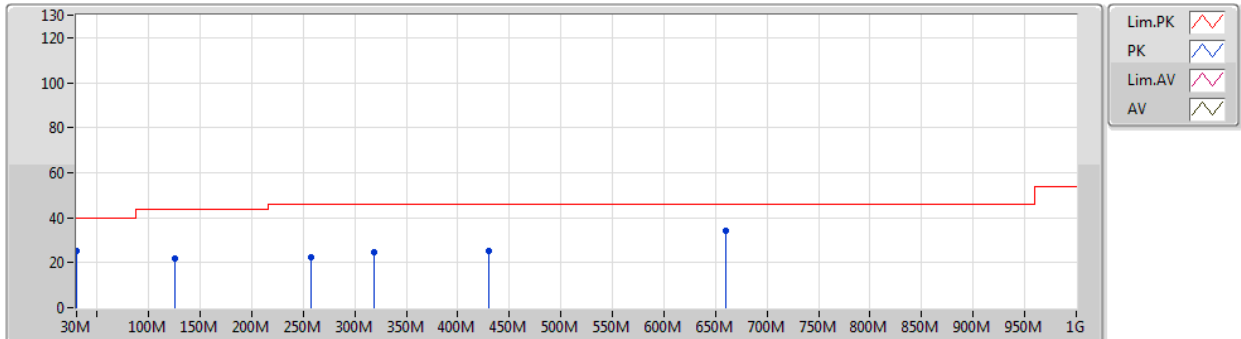


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
PK	30M	24.76	40.00	-15.24	-8.16	3	Vertical	360	2.00	-				
PK	119.24M	18.77	43.50	-24.73	-13.70	3	Vertical	360	2.00	-				
PK	258.92M	21.02	46.00	-24.98	-11.25	3	Vertical	360	2.00	-				
PK	319.06M	24.27	46.00	-21.73	-11.19	3	Vertical	360	2.00	-				
PK	511.12M	27.69	46.00	-18.31	-6.21	3	Vertical	360	2.00	-				
PK	660.5M	34.13	46.00	-11.87	-4.07	3	Vertical	360	2.00	-				

BT-LE(1Mbps)

2440MHz_Switching power supply

20/06/2019



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment
PK	30M	24.98	40.00	-15.02	-8.16	3	Horizontal	0	2.00	-
PK	125.06M	21.60	43.50	-21.90	-13.81	3	Horizontal	0	2.00	-
PK	256.98M	22.34	46.00	-23.66	-11.52	3	Horizontal	0	2.00	-
PK	319.06M	24.54	46.00	-21.46	-11.19	3	Horizontal	0	2.00	-
PK	429.64M	25.49	46.00	-20.51	-7.50	3	Horizontal	0	2.00	-
PK	660.5M	34.41	46.00	-11.59	-4.07	3	Horizontal	0	2.00	-



RSE TX above 1GHz Result

Appendix F.2

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	2.4882G	49.66	54.00	-4.34	32.09	3	Horizontal	158	2.29	-

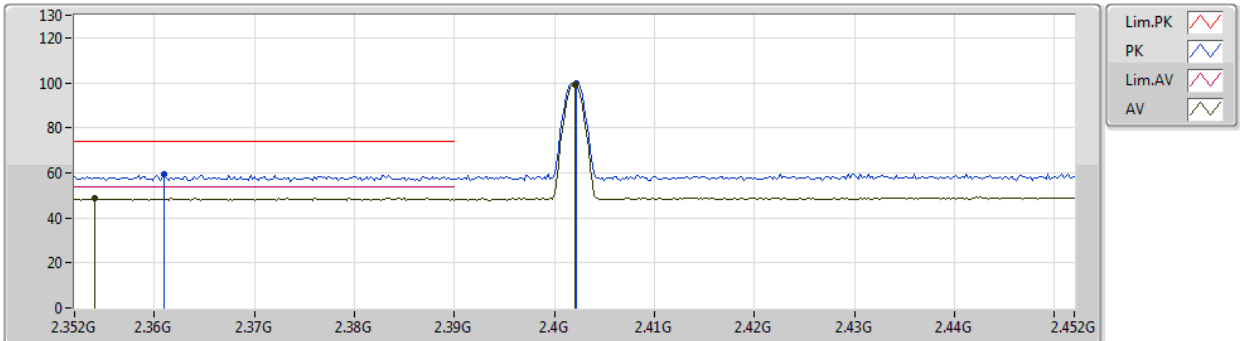
Result

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_TX	Pass	AV	2.354G	48.65	54.00	-5.35	32.32	3	Vertical	271	2.42	-
2402MHz_TX	Pass	AV	2.402G	99.09	Inf	-Inf	32.20	3	Vertical	271	2.42	-
2402MHz_TX	Pass	PK	2.361G	59.48	74.00	-14.52	32.31	3	Vertical	271	2.42	-
2402MHz_TX	Pass	PK	2.4022G	99.58	Inf	-Inf	32.20	3	Vertical	271	2.42	-
2402MHz_TX	Pass	AV	2.3536G	48.66	54.00	-5.34	32.33	3	Horizontal	172	2.08	-
2402MHz_TX	Pass	AV	2.402G	100.06	Inf	-Inf	32.20	3	Horizontal	172	2.08	-
2402MHz_TX	Pass	PK	2.3682G	59.03	74.00	-14.97	32.29	3	Horizontal	172	2.08	-
2402MHz_TX	Pass	PK	2.4022G	100.51	Inf	-Inf	32.20	3	Horizontal	172	2.08	-
2402MHz_TX	Pass	AV	4.79272G	34.74	54.00	-19.26	8.11	3	Vertical	105	2.49	-
2402MHz_TX	Pass	PK	4.81294G	45.61	74.00	-28.39	8.14	3	Vertical	105	2.49	-
2402MHz_TX	Pass	AV	4.79392G	34.51	54.00	-19.49	8.12	3	Horizontal	339	2.45	-
2402MHz_TX	Pass	PK	4.79584G	45.25	74.00	-28.75	8.12	3	Horizontal	339	2.45	-
2440MHz_TX	Pass	AV	2.39G	48.04	54.00	-5.96	32.23	3	Vertical	276	2.41	-
2440MHz_TX	Pass	AV	2.44G	99.13	Inf	-Inf	32.15	3	Vertical	276	2.41	-
2440MHz_TX	Pass	AV	2.4835G	49.17	54.00	-4.83	32.10	3	Vertical	276	2.41	-
2440MHz_TX	Pass	PK	2.39G	57.17	74.00	-16.83	32.23	3	Vertical	276	2.41	-
2440MHz_TX	Pass	PK	2.4398G	99.58	Inf	-Inf	32.15	3	Vertical	276	2.41	-
2440MHz_TX	Pass	PK	2.4898G	59.10	74.00	-14.90	32.09	3	Vertical	276	2.41	-
2440MHz_TX	Pass	AV	2.39G	48.31	54.00	-5.69	32.23	3	Horizontal	171	2.20	-
2440MHz_TX	Pass	AV	2.44G	99.39	Inf	-Inf	32.15	3	Horizontal	171	2.20	-
2440MHz_TX	Pass	AV	2.4896G	48.91	54.00	-5.09	32.09	3	Horizontal	171	2.20	-
2440MHz_TX	Pass	PK	2.39G	56.89	74.00	-17.11	32.23	3	Horizontal	171	2.20	-
2440MHz_TX	Pass	PK	2.44G	99.85	Inf	-Inf	32.15	3	Horizontal	171	2.20	-
2440MHz_TX	Pass	PK	2.4838G	59.71	74.00	-14.29	32.10	3	Horizontal	171	2.20	-
2440MHz_TX	Pass	AV	4.88498G	34.55	54.00	-19.45	8.27	3	Vertical	59	1.87	-
2440MHz_TX	Pass	PK	4.89236G	45.61	74.00	-28.39	8.28	3	Vertical	59	1.87	-
2440MHz_TX	Pass	AV	4.87994G	34.76	54.00	-19.24	8.27	3	Horizontal	255	1.90	-
2440MHz_TX	Pass	PK	4.89398G	45.85	74.00	-28.15	8.29	3	Horizontal	255	1.90	-
2480MHz_TX	Pass	AV	2.48G	97.63	Inf	-Inf	32.10	3	Vertical	282	2.20	-
2480MHz_TX	Pass	AV	2.4912G	49.17	54.00	-4.83	32.09	3	Vertical	282	2.20	-
2480MHz_TX	Pass	PK	2.4798G	98.07	Inf	-Inf	32.10	3	Vertical	282	2.20	-
2480MHz_TX	Pass	PK	2.494G	59.85	74.00	-14.15	32.09	3	Vertical	282	2.20	-
2480MHz_TX	Pass	AV	2.48G	99.60	Inf	-Inf	32.10	3	Horizontal	158	2.29	-
2480MHz_TX	Pass	AV	2.4882G	49.66	54.00	-4.34	32.09	3	Horizontal	158	2.29	-
2480MHz_TX	Pass	PK	2.4798G	100.09	Inf	-Inf	32.10	3	Horizontal	158	2.29	-
2480MHz_TX	Pass	PK	2.497G	59.70	74.00	-14.30	32.09	3	Horizontal	158	2.29	-
2480MHz_TX	Pass	AV	4.95022G	35.11	54.00	-18.89	8.50	3	Vertical	237	2.47	-
2480MHz_TX	Pass	PK	4.96612G	46.11	74.00	-27.89	8.56	3	Vertical	237	2.47	-
2480MHz_TX	Pass	AV	4.96466G	35.38	54.00	-18.62	8.55	3	Horizontal	360	1.50	-
2480MHz_TX	Pass	PK	4.9632G	46.59	74.00	-27.41	8.54	3	Horizontal	360	1.50	-

BT-LE(1Mbps)

2402MHz_TX

12/06/2019

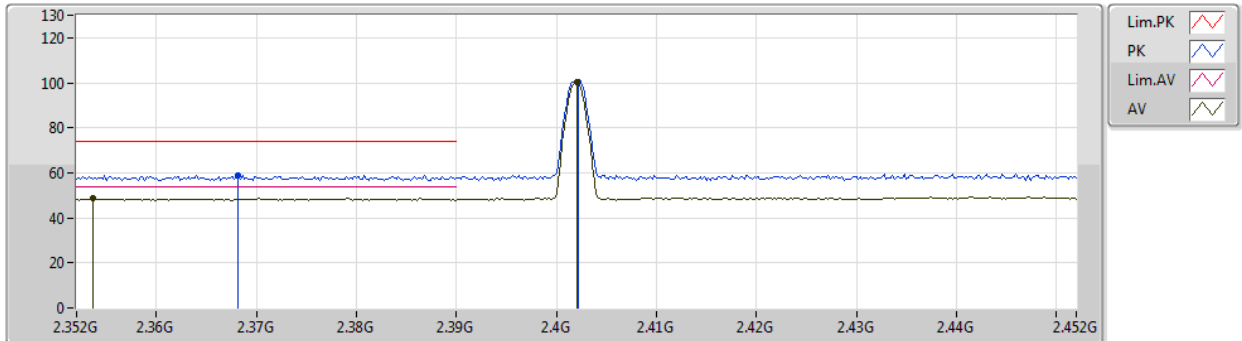


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
AV	2.354G	48.65	54.00	-5.35	32.32	3	Vertical	271	2.42	-				
AV	2.402G	99.09	Inf	-Inf	32.20	3	Vertical	271	2.42	-				
PK	2.361G	59.48	74.00	-14.52	32.31	3	Vertical	271	2.42	-				
PK	2.402G	99.58	Inf	-Inf	32.20	3	Vertical	271	2.42	-				

BT-LE(1Mbps)

2402MHz_TX

12/06/2019

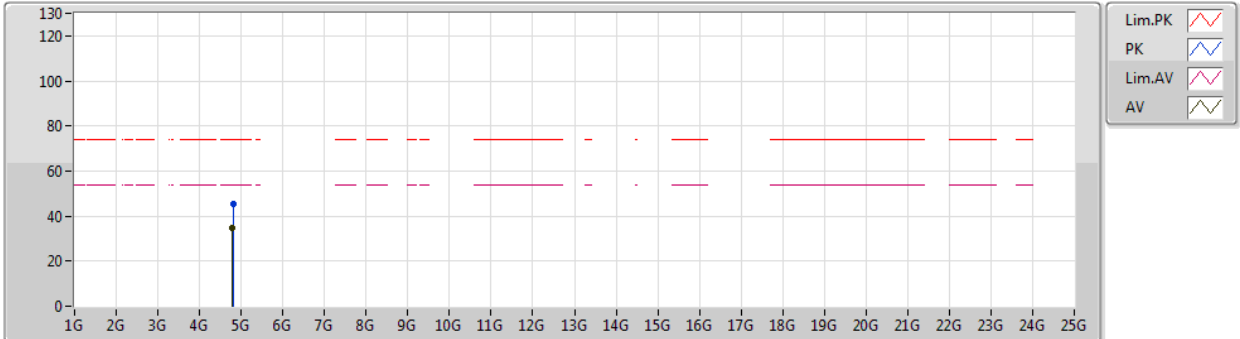


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
AV	2.3536G	48.66	54.00	-5.34	32.33	3	Horizontal	172	2.08	-				
AV	2.402G	100.06	Inf	-Inf	32.20	3	Horizontal	172	2.08	-				
PK	2.3682G	59.03	74.00	-14.97	32.29	3	Horizontal	172	2.08	-				
PK	2.4022G	100.51	Inf	-Inf	32.20	3	Horizontal	172	2.08	-				

BT-LE(1Mbps)

2402MHz_TX

12/06/2019

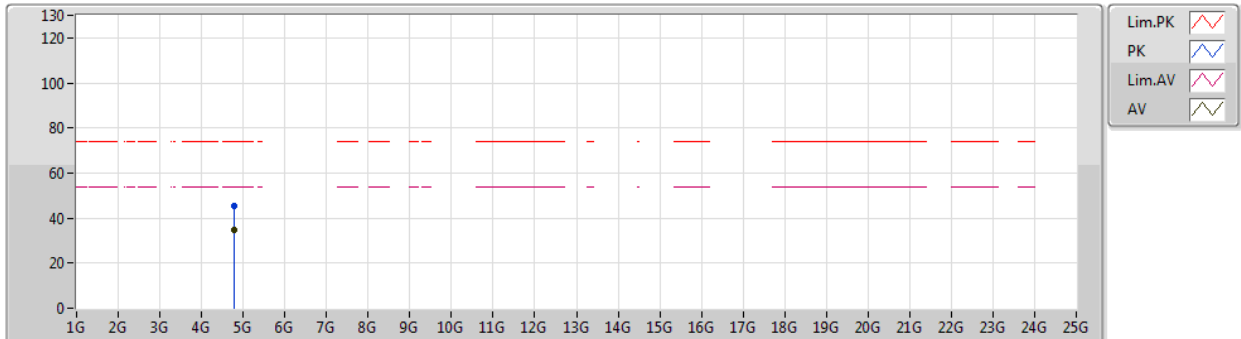


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment
AV	4.79272G	34.74	54.00	-19.26	8.11	3	Vertical	105	2.49	-
PK	4.81294G	45.61	74.00	-28.39	8.14	3	Vertical	105	2.49	-

BT-LE(1Mbps)

2402MHz_TX

12/06/2019

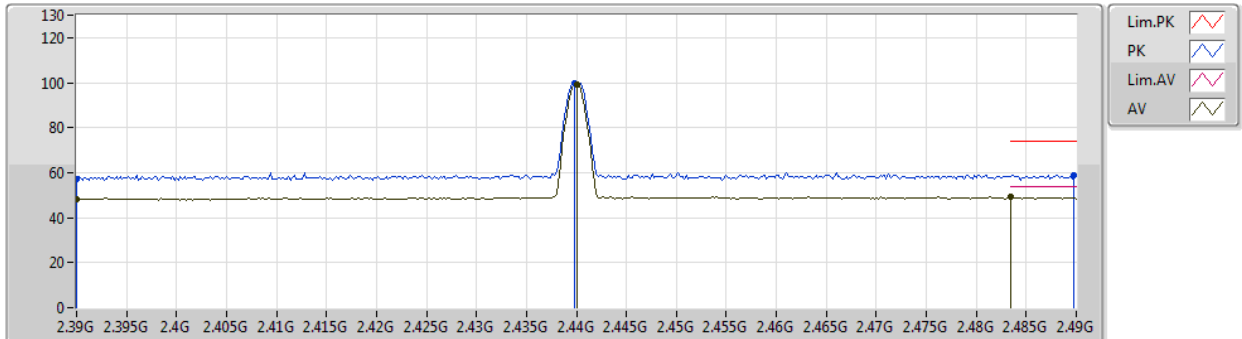


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment
AV	4.79392G	34.51	54.00	-19.49	8.12	3	Horizontal	339	2.45	-
PK	4.79584G	45.25	74.00	-28.75	8.12	3	Horizontal	339	2.45	-

BT-LE(1Mbps)

2440MHz_TX

12/06/2019

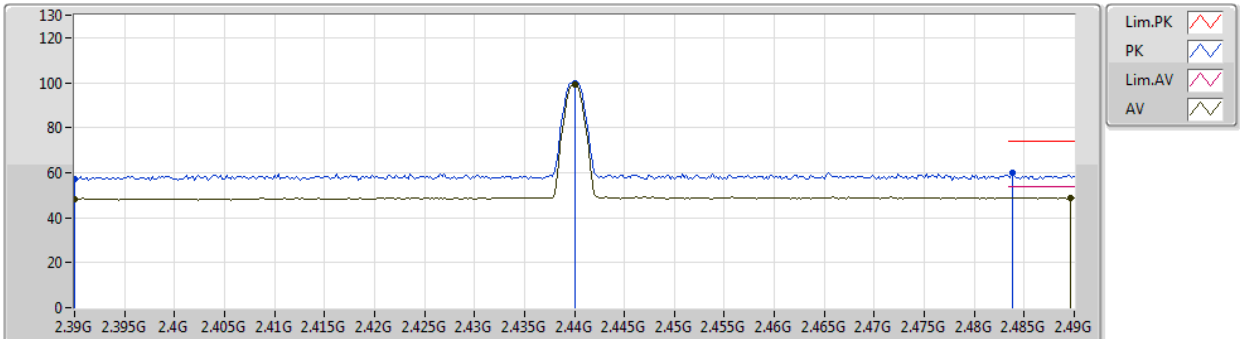


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
AV	2.39G	48.04	54.00	-5.96	32.23	3	Vertical	276	2.41	-				
AV	2.44G	99.13	Inf	-Inf	32.15	3	Vertical	276	2.41	-				
AV	2.4835G	49.17	54.00	-4.83	32.10	3	Vertical	276	2.41	-				
PK	2.39G	57.17	74.00	-16.83	32.23	3	Vertical	276	2.41	-				
PK	2.4398G	99.58	Inf	-Inf	32.15	3	Vertical	276	2.41	-				
PK	2.4898G	59.10	74.00	-14.90	32.09	3	Vertical	276	2.41	-				

BT-LE(1Mbps)

2440MHz_TX

12/06/2019

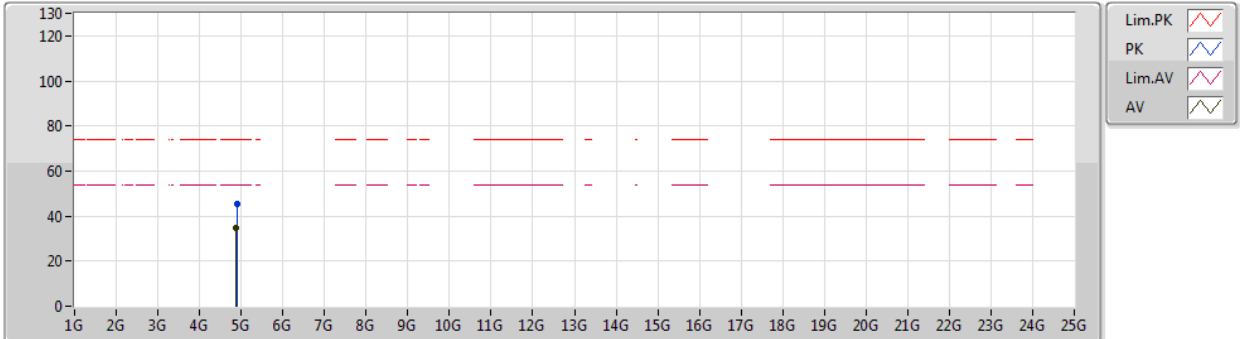


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
AV	2.39G	48.31	54.00	-5.69	32.23	3	Horizontal	171	2.20	-				
AV	2.44G	99.39	Inf	-Inf	32.15	3	Horizontal	171	2.20	-				
AV	2.4896G	48.91	54.00	-5.09	32.09	3	Horizontal	171	2.20	-				
PK	2.39G	56.89	74.00	-17.11	32.23	3	Horizontal	171	2.20	-				
PK	2.44G	99.85	Inf	-Inf	32.15	3	Horizontal	171	2.20	-				
PK	2.4838G	59.71	74.00	-14.29	32.10	3	Horizontal	171	2.20	-				

BT-LE(1Mbps)

2440MHz_TX

12/06/2019

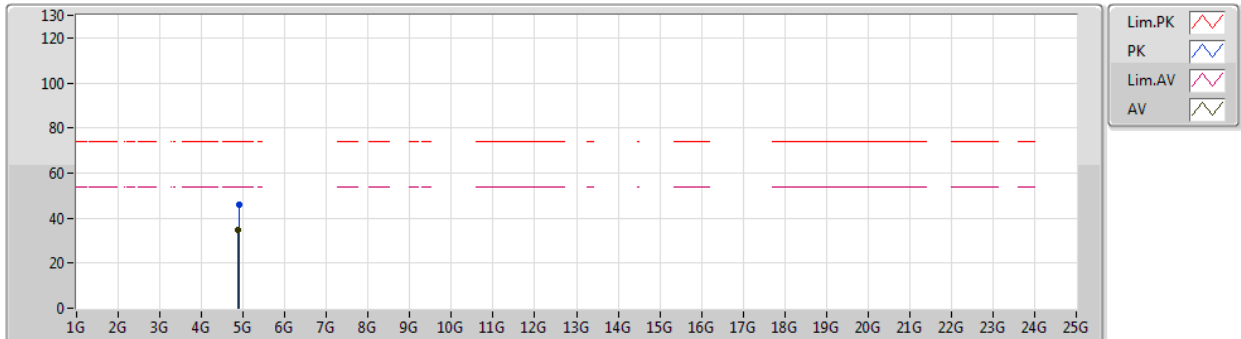


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment
AV	4.88498G	34.55	54.00	-19.45	8.27	3	Vertical	59	1.87	-
PK	4.89236G	45.61	74.00	-28.39	8.28	3	Vertical	59	1.87	-

BT-LE(1Mbps)

2440MHz_TX

12/06/2019

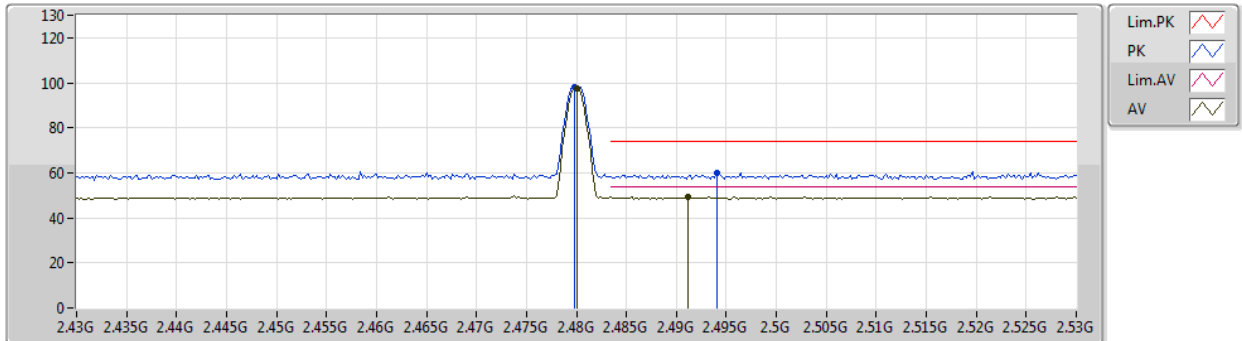


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment
AV	4.87994G	34.76	54.00	-19.24	8.27	3	Horizontal	255	1.90	-
PK	4.89398G	45.85	74.00	-28.15	8.29	3	Horizontal	255	1.90	-

BT-LE(1Mbps)

2480MHz_TX

12/06/2019

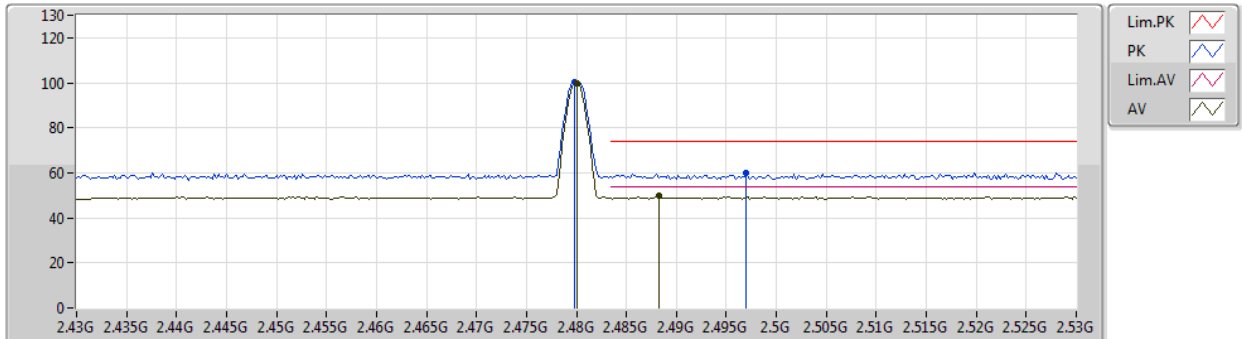


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
AV	2.48G	97.63	Inf	-Inf	32.10	3	Vertical	282	2.20	-				
AV	2.4912G	49.17	54.00	-4.83	32.09	3	Vertical	282	2.20	-				
PK	2.4798G	98.07	Inf	-Inf	32.10	3	Vertical	282	2.20	-				
PK	2.494G	59.85	74.00	-14.15	32.09	3	Vertical	282	2.20	-				

BT-LE(1Mbps)

2480MHz_TX

12/06/2019

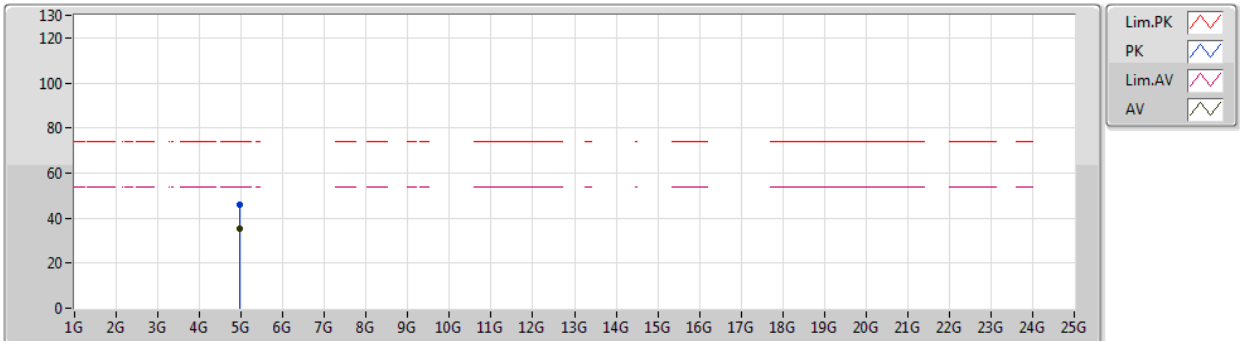


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment				
AV	2.48G	99.60	Inf	-Inf	32.10	3	Horizontal	158	2.29	-				
AV	2.4882G	49.66	54.00	-4.34	32.09	3	Horizontal	158	2.29	-				
PK	2.4798G	100.09	Inf	-Inf	32.10	3	Horizontal	158	2.29	-				
PK	2.497G	59.70	74.00	-14.30	32.09	3	Horizontal	158	2.29	-				

BT-LE(1Mbps)

2480MHz_TX

12/06/2019

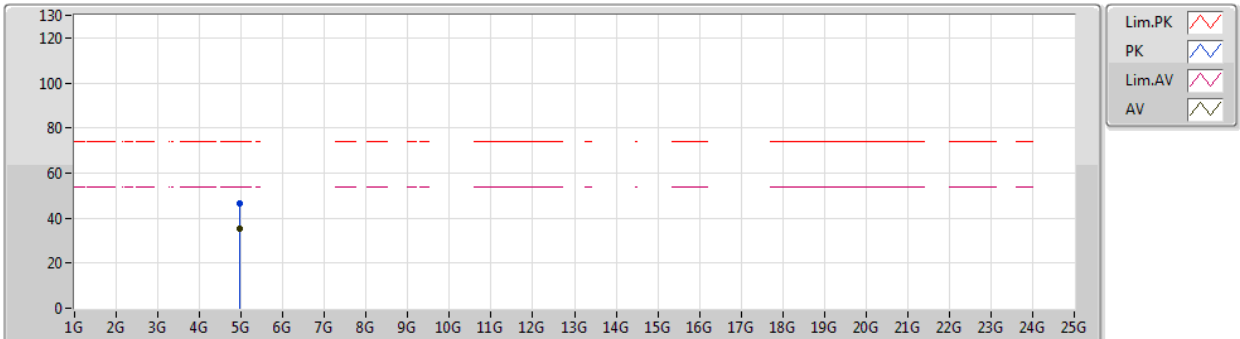


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment
AV	4.95022G	35.11	54.00	-18.89	8.50	3	Vertical	237	2.47	-
PK	4.96612G	46.11	74.00	-27.89	8.56	3	Vertical	237	2.47	-

BT-LE(1Mbps)

2480MHz_TX

12/06/2019



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment
AV	4.96466G	35.38	54.00	-18.62	8.55	3	Horizontal	360	1.50	-
PK	4.9632G	46.59	74.00	-27.41	8.54	3	Horizontal	360	1.50	-