

FCC Test Report

FCC ID : SWX-UVCG4DB
Equipment : UniFi PROTECT
Brand Name : UBIQUITI
Model Name : UVC-G4-Doorbell
Applicant : Ubiquiti Inc.
685 Third Avenue, New York, New York
10017 USA
Manufacturer : Ubiquiti Inc.
685 Third Avenue, New York, New York
10017 USA
Standard : 47 CFR FCC Part 15.247

The product was received on Nov. 02, 2018, and testing was started from Nov. 07, 2018 and completed on Dec. 29, 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: Allen Lin

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

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

Table of Contents

HISTORY OF THIS TEST REPORT	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Information.....	5
1.2 Testing Applied Standards	7
1.3 Testing Location Information	7
1.4 Measurement Uncertainty	7
2 TEST CONFIGURATION OF EUT.....	8
2.1 Test Condition	8
2.2 Test Channel Mode	8
2.3 The Worst Case Measurement Configuration.....	9
2.4 Support Equipment.....	10
2.5 Test Setup Diagram	11
3 TRANSMITTER TEST RESULT	12
3.1 AC Power-line Conducted Emissions	12
3.2 DTS Bandwidth.....	13
3.3 Maximum Conducted Output Power	14
3.4 Power Spectral Density	16
3.5 Emissions in Non-restricted Frequency Bands	17
3.6 Emissions in Restricted Frequency Bands.....	18
4 TEST EQUIPMENT AND CALIBRATION DATA.....	21
APPENDIX A. TEST RESULTS OF AC POWER-LINE CONDUCTED EMISSIONS	
APPENDIX B. TEST RESULTS OF DTS BANDWIDTH	
APPENDIX C. TEST RESULTS OF MAXIMUM CONDUCTED OUTPUT POWER	
APPENDIX D. TEST RESULTS OF POWER SPECTRAL DENSITY	
APPENDIX E. TEST RESULTS OF EMISSIONS IN NON-RESTRICTED FREQUENCY BANDS	
APPENDIX F. TEST RESULTS OF EMISSIONS IN RESTRICTED FREQUENCY BANDS	
APPENDIX G. TEST RESULTS OF RADIATED EMISSION CO-LOCATION	
APPENDIX H. TEST PHOTOS	
PHOTOGRAPHS OF EUT V01	



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: Amber Chiu

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	-	-	Internal antenna	I-Pex

Ant.	Port	Gain (dBi)		
		2.4G	5G	BT
1	1	0.5	2.5	0.5

For 2.4GHz function:

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

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

For 5GHz function:

For IEEE 802.11 a/n/ac mode (1TX/1RX)

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

For BT function:

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

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

1.1.3 EUT Information

Operational Condition			
EUT Power Type	From AC Adapter		
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) $\geq 1/T$
BT-LE(1Mbps)	0.627	2.027	391.875u	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
RF Conducted	TH01-HY	Dexter	25~26.8°C / 61~63%	08/Nov/2018
Radiated	03CH09-HY	Jeremy	20.5~22.5°C / 63~65%	07/Nov/2018~ 29/Dec/2018
AC Conduction	CO04-HY	Andy	21.4~23.6°C / 63~65%	08/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	Dos
---------------	-----

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 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 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
Test Condition	Radiated measurement
Operating Mode	Normal Link
1	Bluetooth+WLAN 2.4GHz
2	Bluetooth+WLAN 5GHz
Refer to Sporton Test Report No.: FA741250-05for Co-location RF Exposure Evaluation and Appendix G for Radiated Emission Co-location.	

2.4 Support Equipment

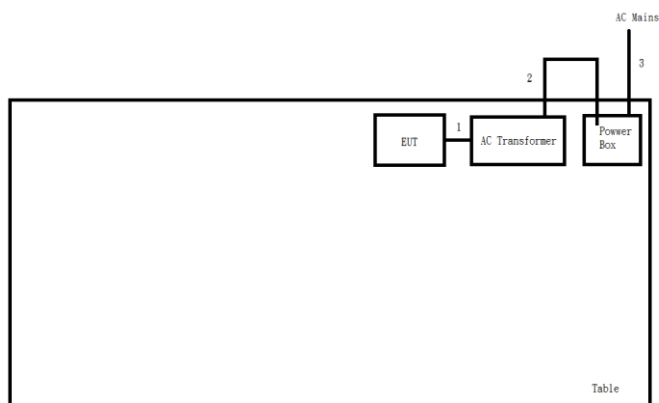
Support Equipment – AC Conduction				
No.	Equipment	Brand Name	Model Name	FCC ID
1	AC Transformer	TRIAD	VPL24-1100	N/A

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	N/A

Support Equipment – Radiated Emission				
No.	Equipment	Brand Name	Model Name	FCC ID
1	AC Transformer	TRIAD	VPL24-1100	N/A

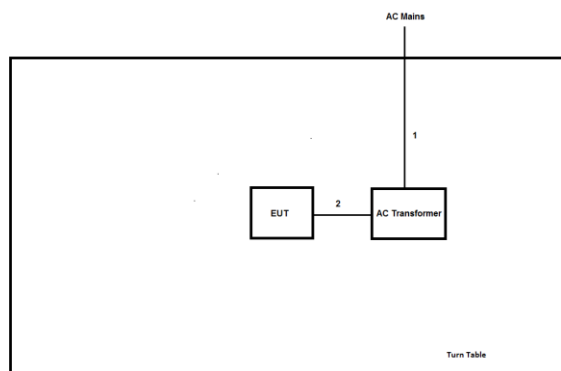
2.5 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



Item	Connection	Shielded	Length(m)	Remark
1	DC Power line	No	0.2	-
2	AC Power line	No	1.5	-
3	AC Power line	No	1.5	-

Test Setup Diagram - Radiated Test



Item	Connection	Shielded	Length(m)	Remark
1	AC Power line	No	1.5	-
2	DC Power line	No	0.2	-

3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

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

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

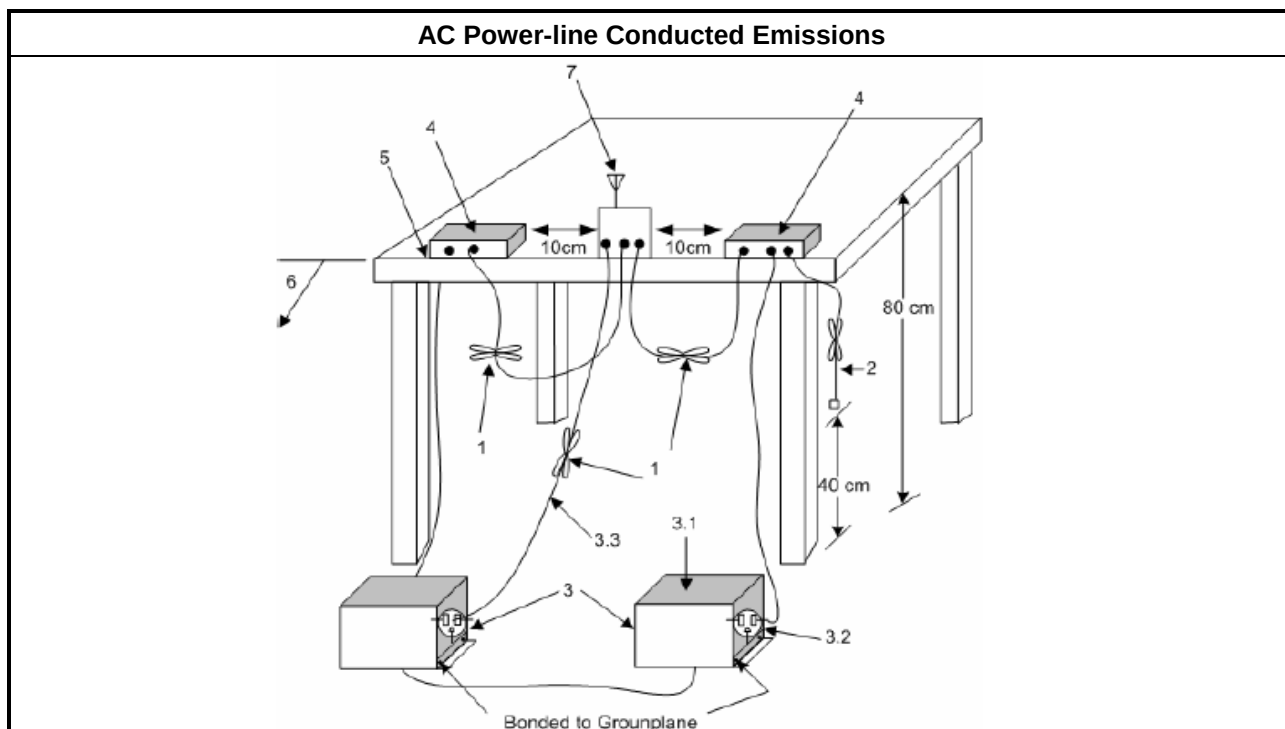
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

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

3.1.4 Test Setup



3.1.5 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

3.2 DTS Bandwidth

3.2.1 6dB Bandwidth Limit

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

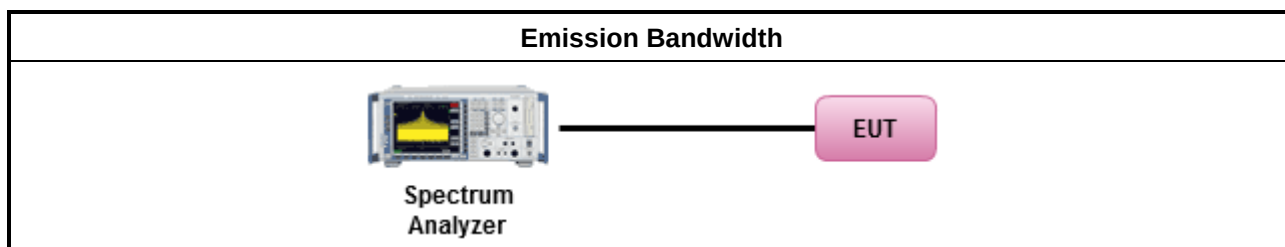
3.2.2 Measuring Instruments

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:	
☒	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



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): $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX}])$ dBm
	Smart antenna system (SAS)
	- Single beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	- Overlap beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	- 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.	

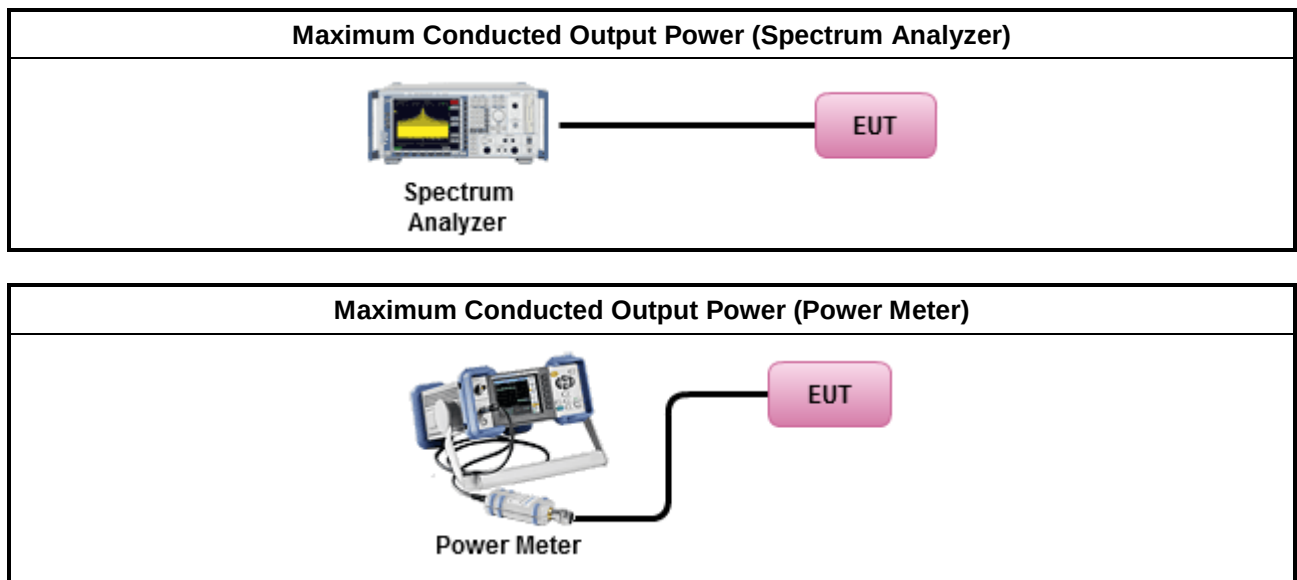
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method	
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: $P_{total} = P_1 + P_2 + \dots + P_n$ (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

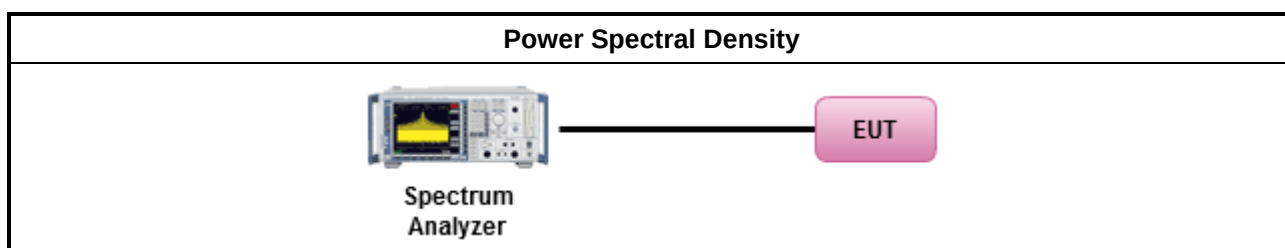
3.4.2 Measuring Instruments

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).
☒	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
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.	

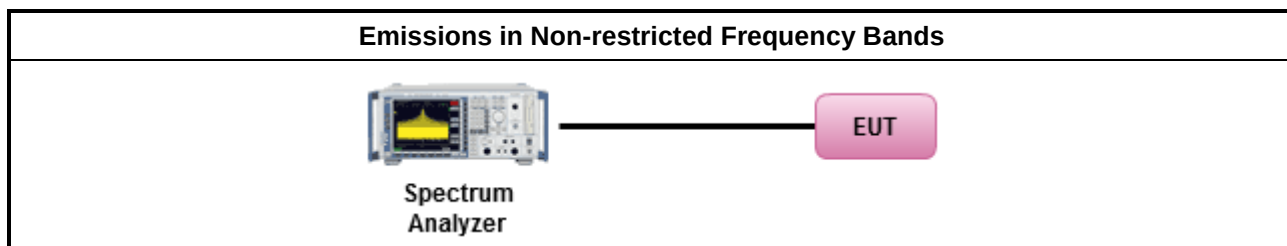
3.5.2 Measuring Instruments

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



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.

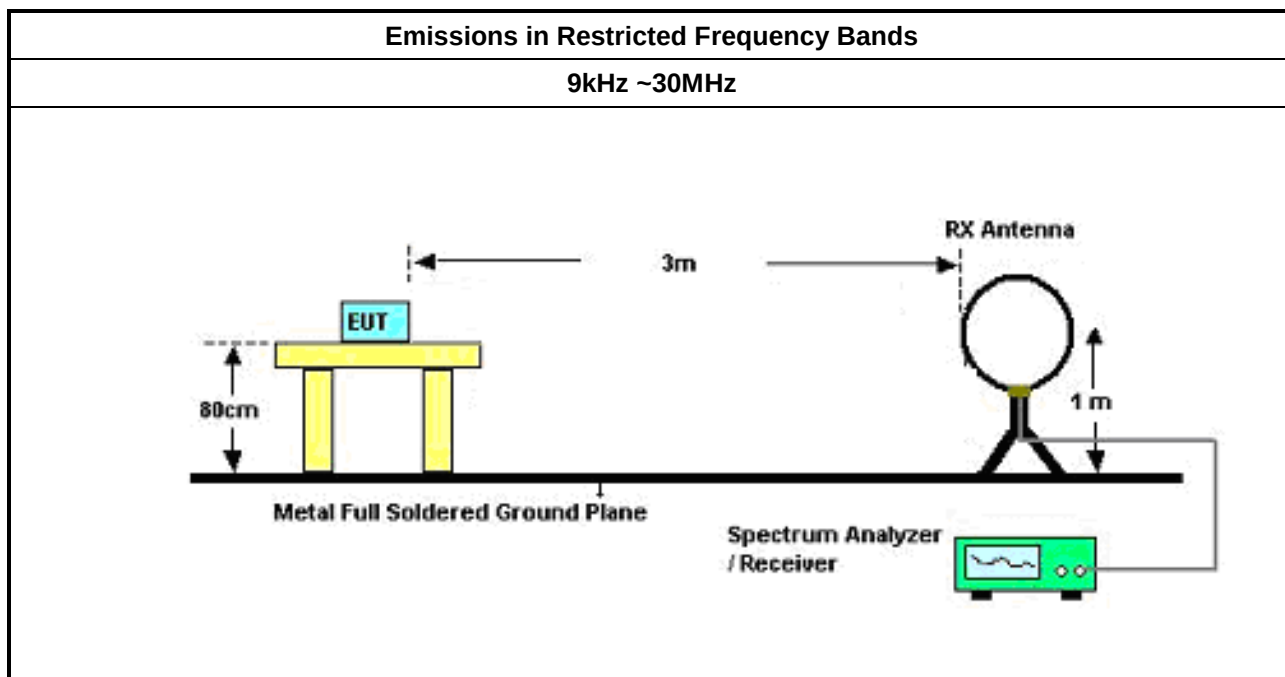
3.6.2 Measuring Instruments

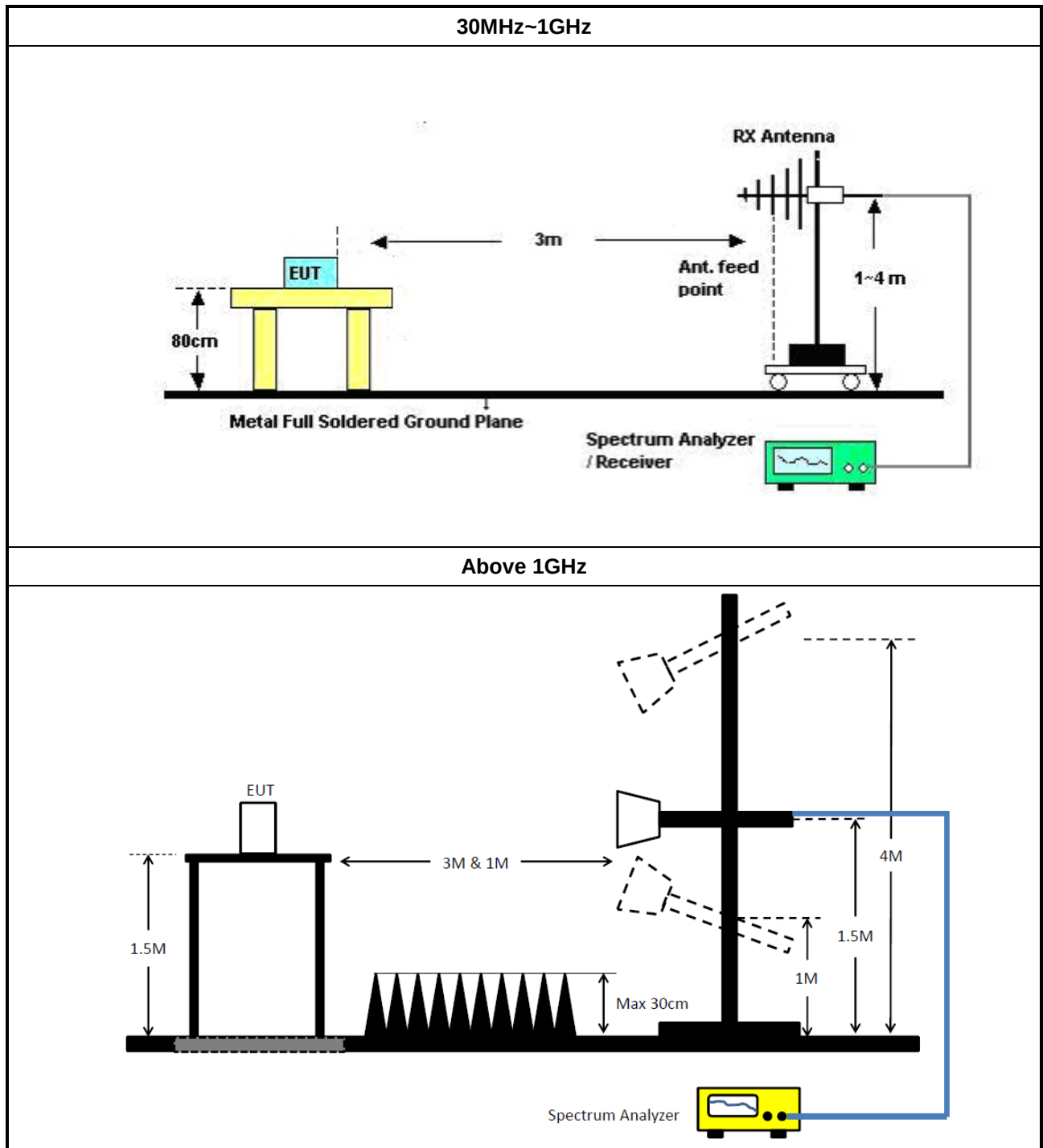
Refer a test equipment and calibration data table in this test report.

3.6.3 Test Procedures

Test Method	
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
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 $f \geq 1$ 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	ESR	102051	9KHz ~ 3.6GHz	03/May/2018	02/May/2019
LISN	R&S	ENV216	101295	9kHz ~ 30MHz	17/Nov/2017	16/Nov/2018
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	R&S	ESR3	102052	9kHz ~ 3.6GHz	10/Apr/2018	09/Apr/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	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

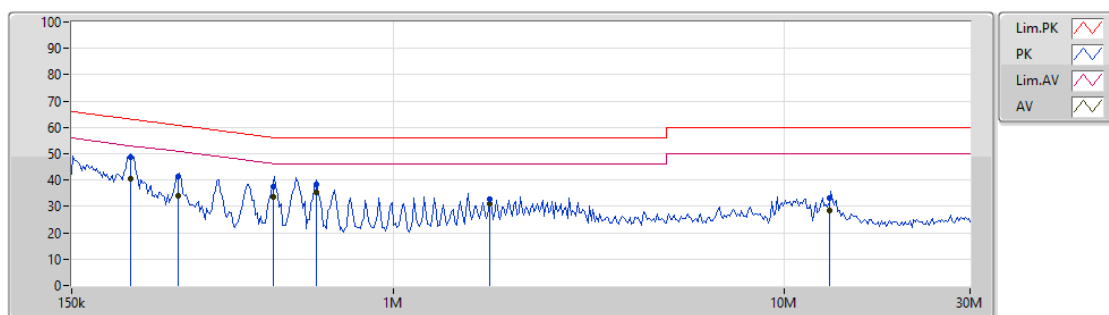
Instrument for Conducted Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101013	10Hz~40GHz	05/Feb/2018	04/Feb/2019
Signal Generator	Anritsu	MG3694C	163401	10MHz~40GHz	15/Jan/2018	14/Jan/2019
Power Sensor	Anritsu	MA2411B	0917017	300MHz ~ 40GHz	05/Feb/2018	04/Feb/2019
Power Meter	Anritsu	ML2495A	0949003	300MHz ~ 40GHz	05/Feb/2018	04/Feb/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

AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Neutral
Operating Function	AC mode		

08/11/2018

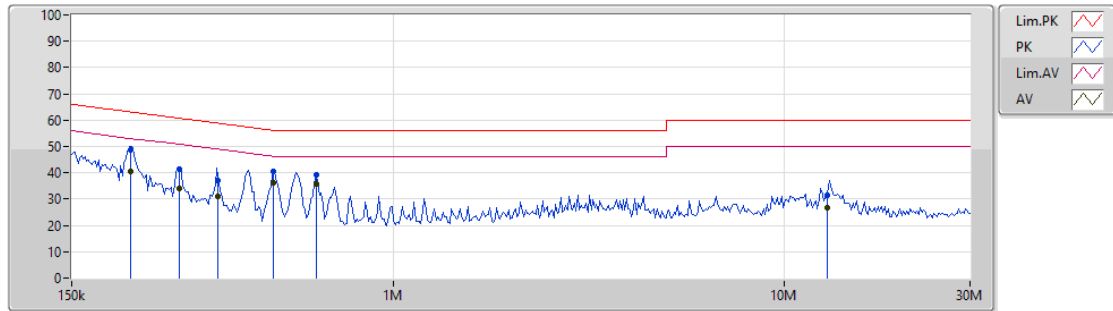


Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)			
QP	212.562k	48.67	63.11	-14.44	19.63	Neutral	-	29.04	9.62	0.01	10.00			
AV	212.562k	40.38	53.11	-12.73	19.63	Neutral	-	20.75	9.62	0.01	10.00			
QP	281.977k	41.28	60.76	-19.48	19.67	Neutral	-	21.61	9.62	0.05	10.00			
AV	281.977k	33.87	50.76	-16.89	19.67	Neutral	-	14.20	9.62	0.05	10.00			
QP	494.334k	37.69	56.10	-18.41	19.69	Neutral	-	18.00	9.61	0.08	10.00			
AV	494.334k	33.71	46.10	-12.39	19.69	Neutral	-	14.02	9.61	0.08	10.00			
QP	634.516k	38.16	56.00	-17.84	19.66	Neutral	-	18.50	9.61	0.05	10.00			
AV	634.516k	35.56	46.00	-10.44	19.66	Neutral	"Worst"	15.90	9.61	0.05	10.00			
QP	1.765M	32.61	56.00	-23.39	19.64	Neutral	-	12.97	9.63	0.01	10.00			
AV	1.765M	31.21	46.00	-14.79	19.64	Neutral	-	11.57	9.63	0.01	10.00			
QP	13.061M	33.17	60.00	-26.83	19.77	Neutral	-	13.40	9.70	0.07	10.00			
AV	13.061M	28.51	50.00	-21.49	19.77	Neutral	-	8.74	9.70	0.07	10.00			

AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Line
Operating Function	AC mode		

08/11/2018



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)			
QP	212.702k	48.54	63.09	-14.55	19.63	Line	-	28.91	9.62	0.01	10.00			
AV	212.702k	40.57	53.09	-12.52	19.63	Line	-	20.94	9.62	0.01	10.00			
QP	282.845k	41.29	60.72	-19.43	19.67	Line	-	21.62	9.62	0.05	10.00			
AV	282.845k	33.95	50.72	-16.77	19.67	Line	-	14.28	9.62	0.05	10.00			
QP	354.41k	37.05	58.85	-21.80	19.69	Line	-	17.36	9.61	0.08	10.00			
AV	354.41k	31.11	48.85	-17.74	19.69	Line	-	11.42	9.61	0.08	10.00			
QP	493.9k	40.36	56.10	-15.74	19.69	Line	-	20.67	9.61	0.08	10.00			
AV	493.9k	36.12	46.10	-9.98	19.69	Line	"Worst"	16.43	9.61	0.08	10.00			
QP	635.891k	39.03	56.00	-16.97	19.66	Line	-	19.37	9.61	0.05	10.00			
AV	635.891k	35.76	46.00	-10.24	19.66	Line	-	16.10	9.61	0.05	10.00			
QP	12.929M	31.58	60.00	-28.42	19.71	Line	-	11.87	9.64	0.07	10.00			
AV	12.929M	26.84	50.00	-23.16	19.71	Line	-	7.13	9.64	0.07	10.00			

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)	726.25k	1.056M	1M06F1D	725k	1.051M

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;

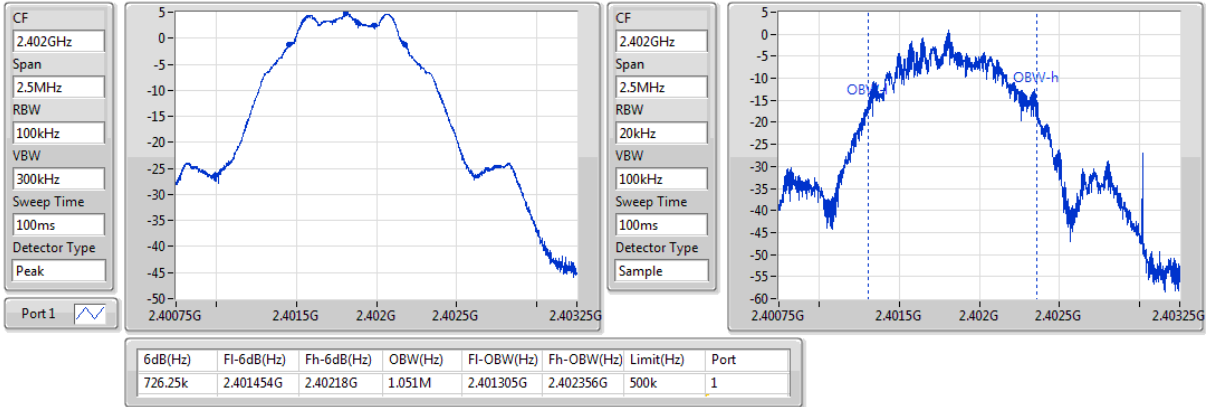
Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	500k	726.25k	1.051M
2440MHz_TnomVnom	Pass	500k	725k	1.054M
2480MHz_TnomVnom	Pass	500k	725k	1.056M

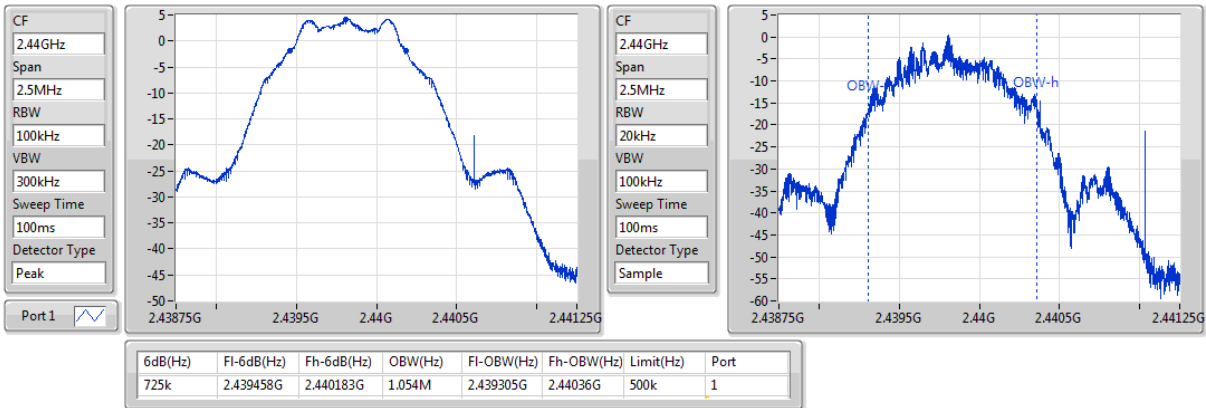
Port X-N dB = Port X 6dB down bandwidth; **Port X-OBW** = Port X 99% occupied bandwidth;

BT-LE(1Mbps)
EBW
2402MHz

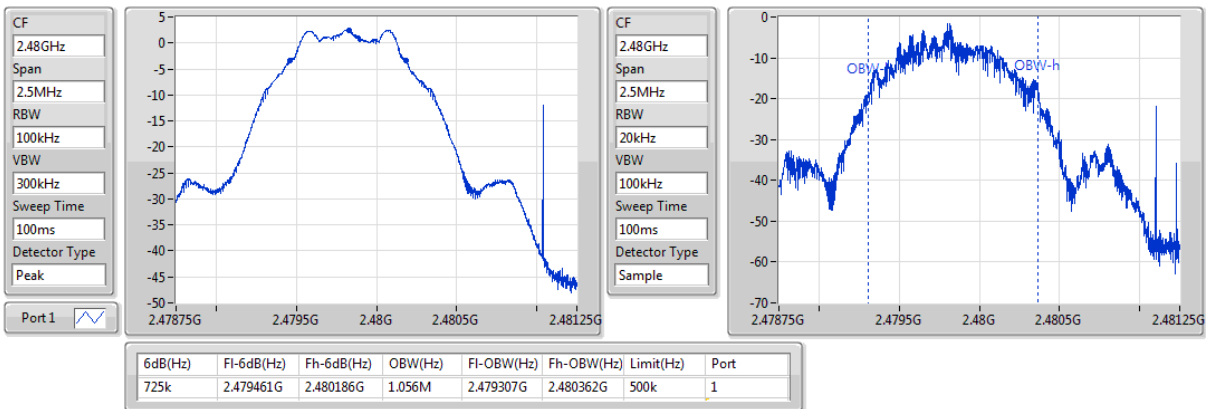
08/11/2018


BT-LE(1Mbps)
EBW
2440MHz

08/11/2018


BT-LE(1Mbps)
EBW
2480MHz

08/11/2018



Summary

Mode	Power	Power
	(dBm)	(W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	4.62	0.00290

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	0.50	4.62	30.00
2440MHz_TnomVnom	Pass	0.50	4.11	30.00
2480MHz_TnomVnom	Pass	0.50	2.46	30.00

**Summary**

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-8.85

RBW=3kHz.

Result

Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	0.50	-8.85	8.00
2440MHz_TnomVnom	Pass	0.50	-9.64	8.00
2480MHz_TnomVnom	Pass	0.50	-11.28	8.00

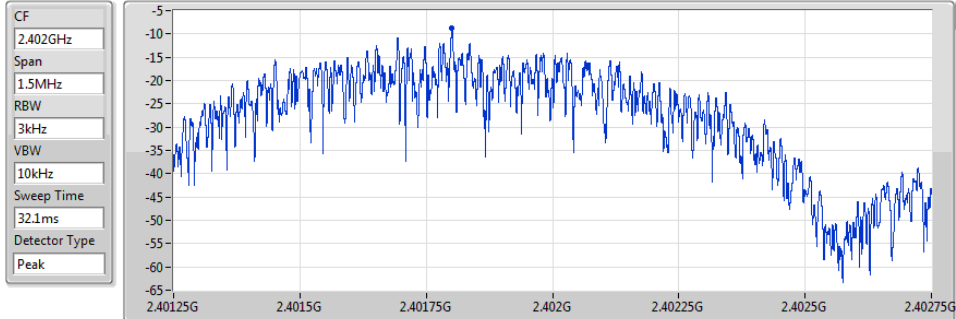
RBW=3kHz.

BT-LE(1Mbps)

PSD

2402MHz

08/11/2018



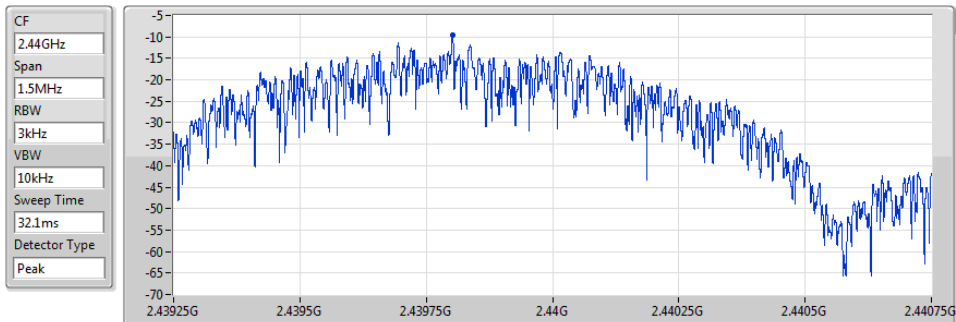
Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-8.85	-8.85	-8.85

BT-LE(1Mbps)

PSD

2440MHz

08/11/2018



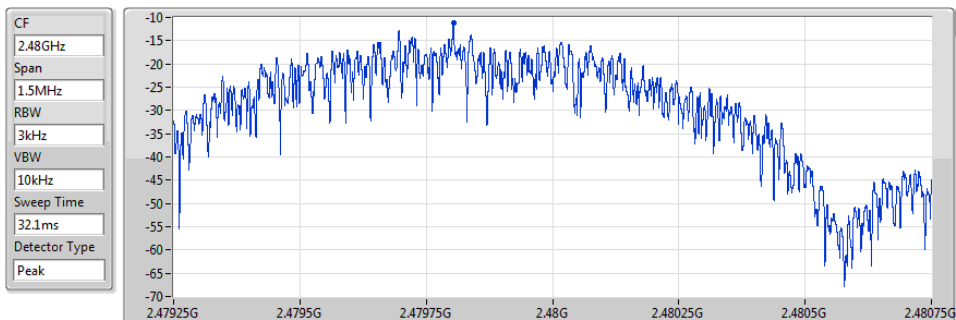
Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-9.64	-9.64	-9.64

BT-LE(1Mbps)

PSD

2480MHz

08/11/2018



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-11.28	-11.28	-11.28

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	2.4018G	4.51	-25.49	2.30002G	-45.52	2.39913G	-44.17	2.48404G	-43.09	16.50922G	-32.83	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_TnomVnom	Pass	2.4018G	4.51	-25.49	2.00343G	-44.54	2.39976G	-43.51	2.48528G	-43.61	15.31595G	-33.11	1
2440MHz_TnomVnom	Pass	2.4018G	4.51	-25.49	2.15498G	-44.08	2.39997G	-44.02	2.48512G	-43.43	16.467G	-32.89	1
2480MHz_TnomVnom	Pass	2.4018G	4.51	-25.49	2.30002G	-45.52	2.39913G	-44.17	2.48404G	-43.09	16.50922G	-32.83	1

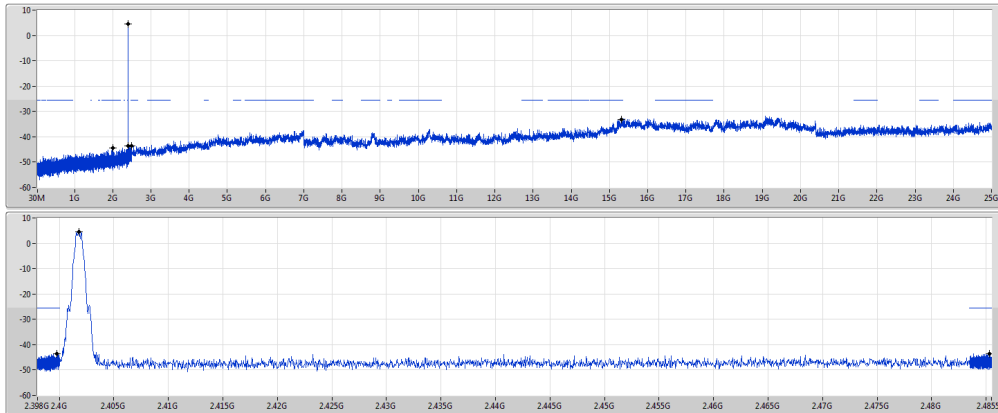
BT-LE(1Mbps)

2402MHz

CSE NdB

08/11/2018

Port 1



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
24018G	4.51	-25.49	240343G	-44.54	239976G	-43.51	248528G	-43.61	15.3159G	-33.11	1

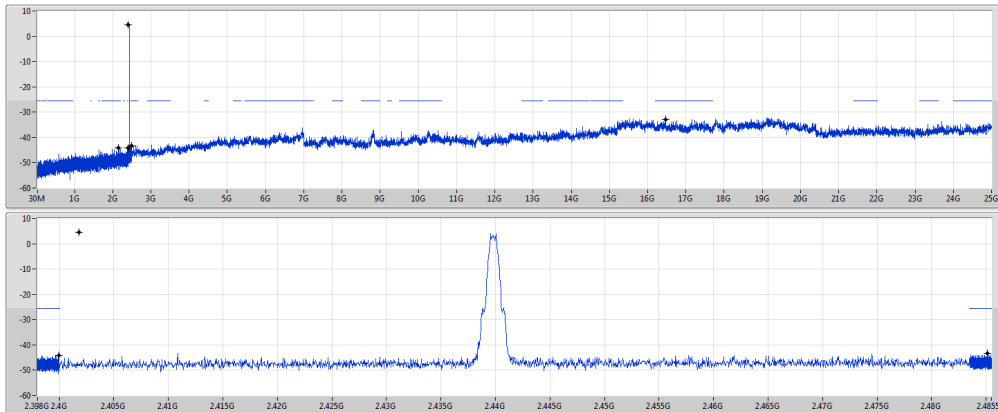
BT-LE(1Mbps)

2440MHz

CSE NdB

08/11/2018

Port 1



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
24018G	4.51	-25.49	215498G	-44.08	239997G	-44.02	248512G	-43.43	16.467G	-32.89	1

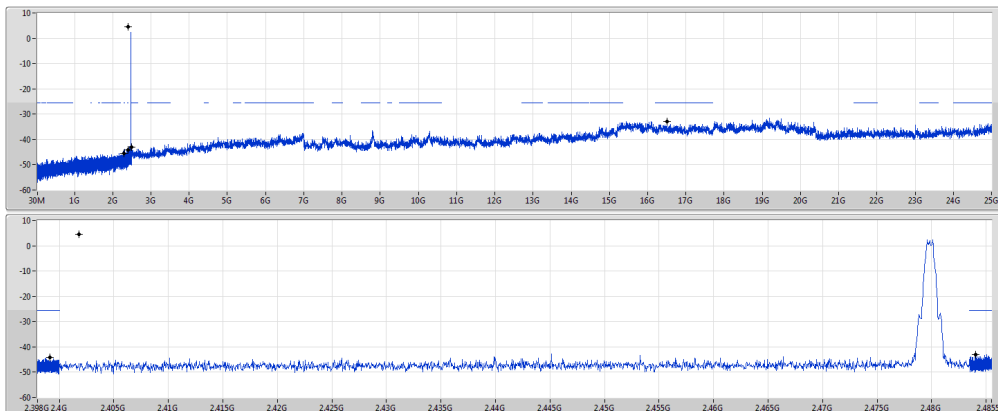
BT-LE(1Mbps)

2480MHz

CSE NdB

08/11/2018

Port 1



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
24018G	4.51	-25.49	230002G	-45.52	239913G	-44.17	248404G	-43.09	16.50922G	-32.83	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	324.88M	42.03	46.00	-3.97	-16.25	3	Horizontal	360	1.00	-

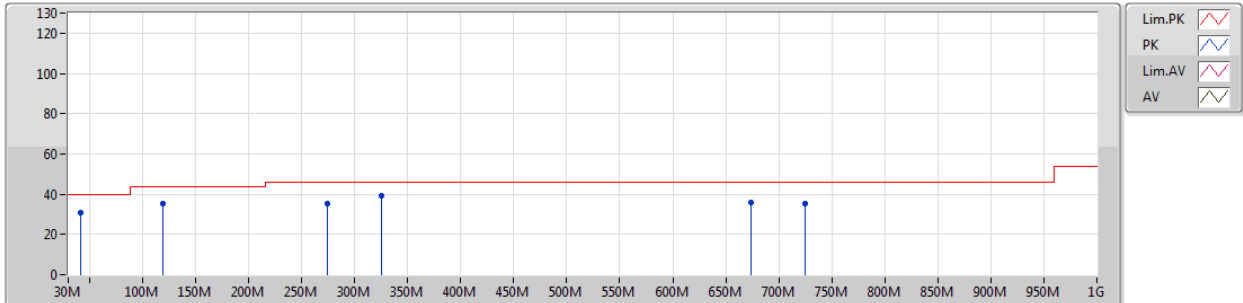
Result

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	Pass	PK	41.64M	30.61	40.00	-9.39	-19.21	3	Vertical	0	1.00	-
2440MHz	Pass	PK	119.24M	35.41	43.50	-8.09	-19.33	3	Vertical	0	1.00	-
2440MHz	Pass	PK	274.44M	35.45	46.00	-10.55	-16.69	3	Vertical	0	1.00	-
2440MHz	Pass	PK	324.88M	38.99	46.00	-7.01	-16.25	3	Vertical	0	1.00	-
2440MHz	Pass	PK	674.08M	35.79	46.00	-10.21	-9.99	3	Vertical	0	1.00	-
2440MHz	Pass	PK	724.52M	35.11	46.00	-10.89	-9.09	3	Vertical	0	1.00	-
2440MHz	Pass	PK	61.04M	35.14	40.00	-4.86	-25.64	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	125.06M	34.60	43.50	-8.90	-19.21	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	274.44M	41.22	46.00	-4.78	-16.69	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	324.88M	42.03	46.00	-3.97	-16.25	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	625.58M	38.10	46.00	-7.90	-10.19	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	724.52M	37.22	46.00	-8.78	-9.09	3	Horizontal	360	1.00	-

BT-LE(1Mbps)

2440MHz_AC

11/12/2018

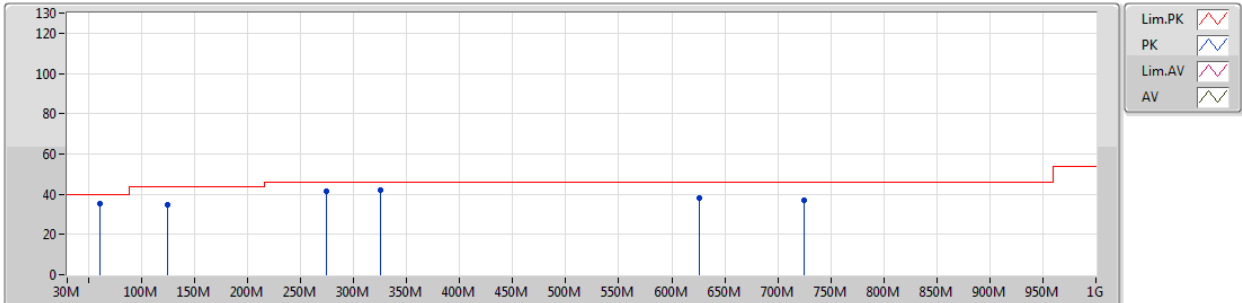


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
PK	41.64M	30.61	40.00	-9.39	-19.21	3	Vertical	0	1.00	-
PK	119.24M	35.41	43.50	-8.09	-19.33	3	Vertical	0	1.00	-
PK	274.44M	35.45	46.00	-10.55	-16.69	3	Vertical	0	1.00	-
PK	324.88M	38.99	46.00	-7.01	-16.25	3	Vertical	0	1.00	-
PK	674.08M	35.79	46.00	-10.21	-9.99	3	Vertical	0	1.00	-
PK	724.52M	35.11	46.00	-10.89	-9.09	3	Vertical	0	1.00	-

BT-LE(1Mbps)

2440MHz_AC

11/12/2018



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
PK	61.04M	35.14	40.00	-4.86	-25.64	3	Horizontal	360	1.00	-
PK	125.06M	34.60	43.50	-8.90	-19.21	3	Horizontal	360	1.00	-
PK	274.44M	41.22	46.00	-4.78	-16.69	3	Horizontal	360	1.00	-
PK	324.88M	42.03	46.00	-3.97	-16.25	3	Horizontal	360	1.00	-
PK	625.58M	38.10	46.00	-7.90	-10.19	3	Horizontal	360	1.00	-
PK	724.52M	37.22	46.00	-8.78	-9.09	3	Horizontal	360	1.00	-

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	2.4924G	44.80	54.00	-9.20	31.14	3	Horizontal	47	2.89	-

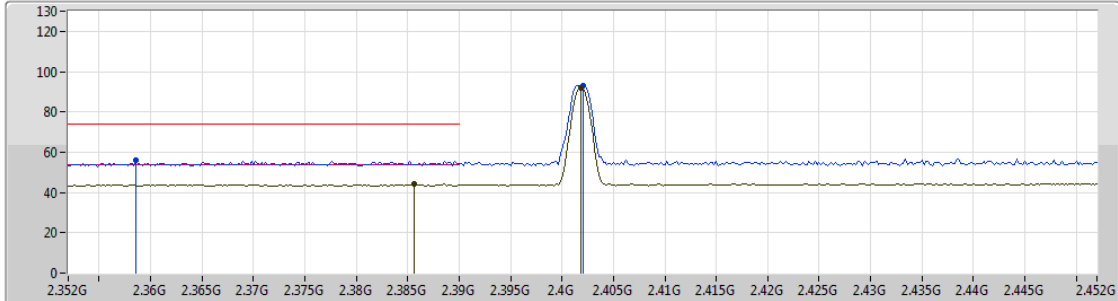
Result

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	2.3856G	44.02	54.00	-9.98	30.76	3	Vertical	177	2.77	-
2402MHz	Pass	AV	2.4018G	92.05	Inf	-Inf	30.82	3	Vertical	177	2.77	-
2402MHz	Pass	PK	2.3586G	56.16	74.00	-17.84	30.66	3	Vertical	177	2.77	-
2402MHz	Pass	PK	2.402G	93.11	Inf	-Inf	30.82	3	Vertical	177	2.77	-
2402MHz	Pass	AV	2.3596G	44.07	54.00	-9.93	30.67	3	Horizontal	40	2.78	-
2402MHz	Pass	AV	2.4018G	98.26	Inf	-Inf	30.82	3	Horizontal	40	2.78	-
2402MHz	Pass	PK	2.3674G	55.79	74.00	-18.21	30.70	3	Horizontal	40	2.78	-
2402MHz	Pass	PK	2.402G	99.30	Inf	-Inf	30.82	3	Horizontal	40	2.78	-
2402MHz	Pass	AV	4.88432G	30.82	54.00	-23.18	2.28	3	Vertical	238	1.50	-
2402MHz	Pass	PK	4.88336G	42.88	74.00	-31.12	2.28	3	Vertical	238	1.50	-
2402MHz	Pass	AV	4.80352G	31.96	54.00	-22.04	2.08	3	Horizontal	21	2.37	-
2402MHz	Pass	PK	4.8079G	43.16	74.00	-30.84	2.08	3	Horizontal	21	2.37	-
2440MHz	Pass	AV	2.3728G	43.91	54.00	-10.09	30.71	3	Vertical	171	2.99	-
2440MHz	Pass	AV	2.44G	93.70	Inf	-Inf	30.95	3	Vertical	171	2.99	-
2440MHz	Pass	AV	2.4904G	44.66	54.00	-9.34	31.13	3	Vertical	171	2.99	-
2440MHz	Pass	PK	2.3516G	55.45	74.00	-18.55	30.64	3	Vertical	171	2.99	-
2440MHz	Pass	PK	2.44G	94.74	Inf	-Inf	30.95	3	Vertical	171	2.99	-
2440MHz	Pass	PK	2.4988G	56.61	74.00	-17.39	31.17	3	Vertical	171	2.99	-
2440MHz	Pass	AV	2.3884G	44.05	54.00	-9.95	30.77	3	Horizontal	44	2.99	-
2440MHz	Pass	AV	2.44G	99.82	Inf	-Inf	30.95	3	Horizontal	44	2.99	-
2440MHz	Pass	AV	2.4976G	44.62	54.00	-9.38	31.16	3	Horizontal	44	2.99	-
2440MHz	Pass	PK	2.362G	55.82	74.00	-18.18	30.67	3	Horizontal	44	2.99	-
2440MHz	Pass	PK	2.44G	100.88	Inf	-Inf	30.95	3	Horizontal	44	2.99	-
2440MHz	Pass	PK	2.4956G	56.74	74.00	-17.26	31.16	3	Horizontal	44	2.99	-
2440MHz	Pass	AV	4.89332G	31.04	54.00	-22.96	2.31	3	Vertical	354	1.50	-
2440MHz	Pass	PK	4.89092G	43.67	74.00	-30.33	2.30	3	Vertical	354	1.50	-
2440MHz	Pass	AV	4.80496G	30.64	54.00	-23.36	2.08	3	Horizontal	297	1.50	-
2440MHz	Pass	PK	4.80544G	43.31	74.00	-30.69	2.08	3	Horizontal	297	1.50	-
2480MHz	Pass	AV	2.4798G	93.33	Inf	-Inf	31.09	3	Vertical	173	2.61	-
2480MHz	Pass	AV	2.4882G	44.76	54.00	-9.24	31.13	3	Vertical	173	2.61	-
2480MHz	Pass	PK	2.4796G	94.40	Inf	-Inf	31.09	3	Vertical	173	2.61	-
2480MHz	Pass	PK	2.4906G	56.33	74.00	-17.67	31.13	3	Vertical	173	2.61	-
2480MHz	Pass	AV	2.4798G	99.75	Inf	-Inf	31.09	3	Horizontal	47	2.89	-
2480MHz	Pass	AV	2.4924G	44.80	54.00	-9.20	31.14	3	Horizontal	47	2.89	-
2480MHz	Pass	PK	2.48G	100.81	Inf	-Inf	31.09	3	Horizontal	47	2.89	-
2480MHz	Pass	PK	2.494G	56.66	74.00	-17.34	31.15	3	Horizontal	47	2.89	-
2480MHz	Pass	AV	4.96018G	30.86	54.00	-23.14	2.47	3	Vertical	300	2.74	-
2480MHz	Pass	PK	4.96126G	42.53	74.00	-31.47	2.47	3	Vertical	300	2.74	-
2480MHz	Pass	AV	4.95946G	30.78	54.00	-23.22	2.47	3	Horizontal	22	2.18	-
2480MHz	Pass	PK	4.97056G	42.91	74.00	-31.09	2.49	3	Horizontal	22	2.18	-

BT-LE(1Mbps)

2402MHz_TX

07/11/2018



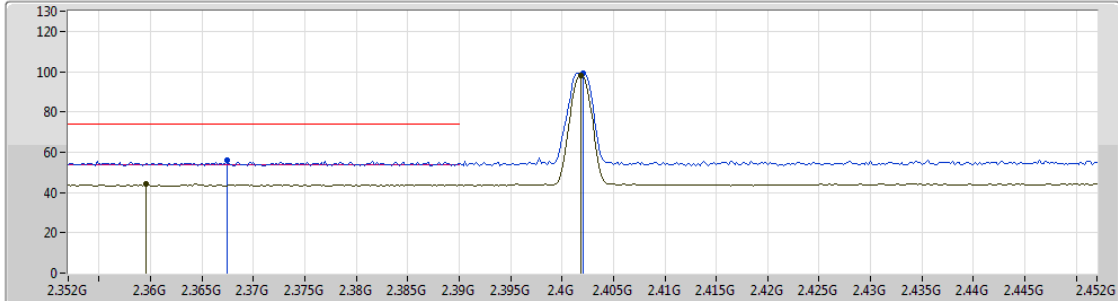
Lim.PK	
PK	
Lim.AV	
AV	

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments								
AV	2.3856G	44.02	54.00	-9.98	30.76	3	Vertical	177	2.77	-								
AV	2.4018G	92.05	Inf	-Inf	30.82	3	Vertical	177	2.77	-								
PK	2.3586G	56.16	74.00	-17.84	30.66	3	Vertical	177	2.77	-								
PK	2.402G	93.11	Inf	-Inf	30.82	3	Vertical	177	2.77	-								

BT-LE(1Mbps)

2402MHz_TX

07/11/2018



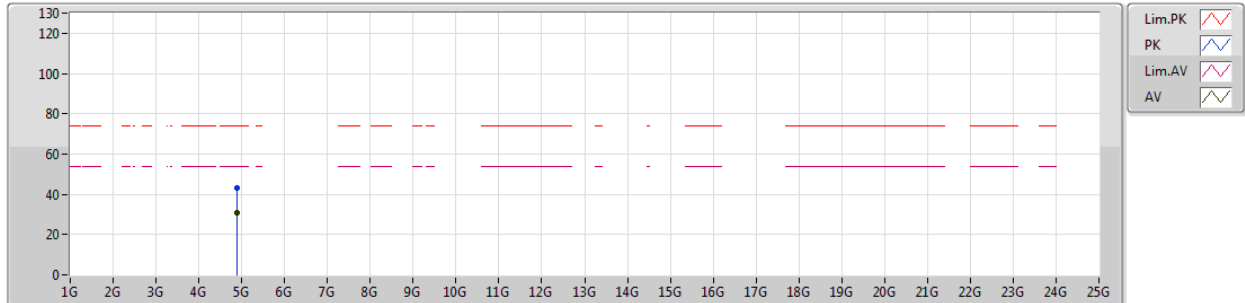
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PK	
Lim.AV	
AV	

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments								
AV	2.3596G	44.07	54.00	-9.93	30.67	3	Horizontal	40	2.78	-								
AV	2.4018G	98.26	Inf	-Inf	30.82	3	Horizontal	40	2.78	-								
PK	2.3674G	55.79	74.00	-18.21	30.70	3	Horizontal	40	2.78	-								
PK	2.402G	99.30	Inf	-Inf	30.82	3	Horizontal	40	2.78	-								

BT-LE(1Mbps)

2402MHz_TX

07/11/2018

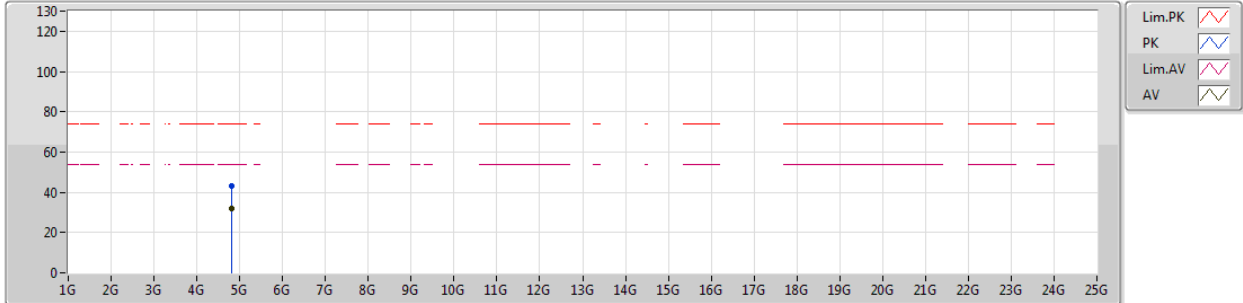


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.88432G	30.82	54.00	-23.18	2.28	3	Vertical	238	1.50	-
PK	4.88336G	42.88	74.00	-31.12	2.28	3	Vertical	238	1.50	-

BT-LE(1Mbps)

2402MHz_TX

07/11/2018

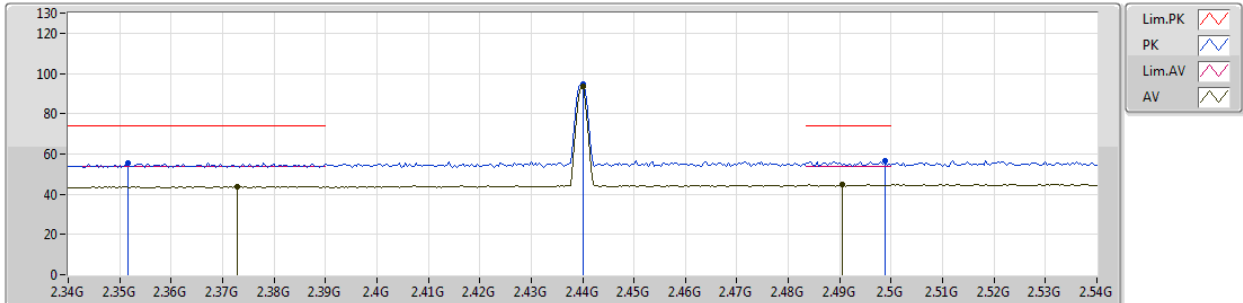


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.80352G	31.96	54.00	-22.04	2.08	3	Horizontal	21	2.37	-
PK	4.8079G	43.16	74.00	-30.84	2.08	3	Horizontal	21	2.37	-

BT-LE(1Mbps)

2440MHz_TX

07/11/2018

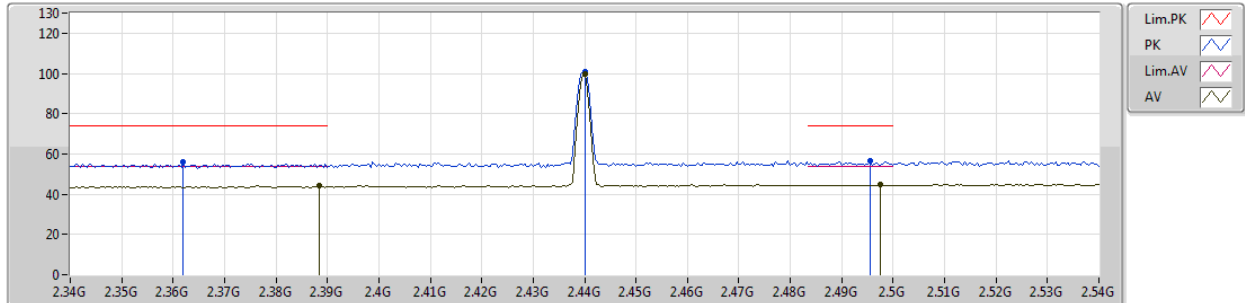


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.3728G	43.91	54.00	-10.09	30.71	3	Vertical	171	2.99	-
AV	2.44G	93.70	Inf	-Inf	30.95	3	Vertical	171	2.99	-
AV	2.4904G	44.66	54.00	-9.34	31.13	3	Vertical	171	2.99	-
PK	2.3516G	55.45	74.00	-18.55	30.64	3	Vertical	171	2.99	-
PK	2.44G	94.74	Inf	-Inf	30.95	3	Vertical	171	2.99	-
PK	2.4988G	56.61	74.00	-17.39	31.17	3	Vertical	171	2.99	-

BT-LE(1Mbps)

2440MHz_TX

07/11/2018

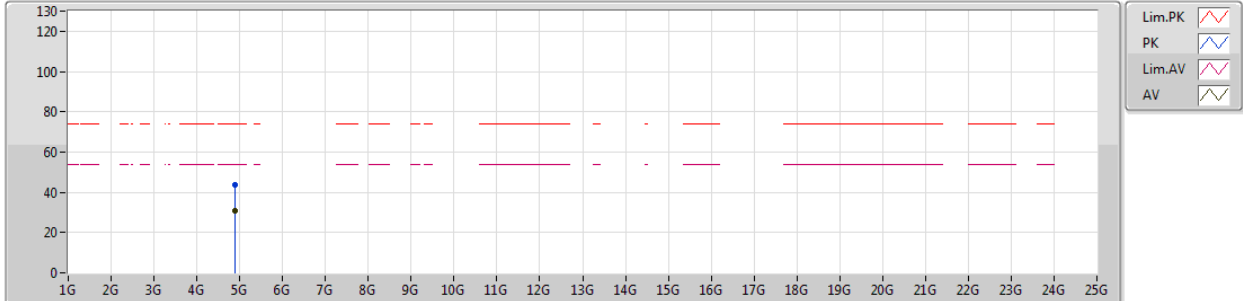


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.3884G	44.05	54.00	-9.95	30.77	3	Horizontal	44	2.99	-
AV	2.44G	99.82	Inf	-Inf	30.95	3	Horizontal	44	2.99	-
AV	2.4976G	44.62	54.00	-9.38	31.16	3	Horizontal	44	2.99	-
PK	2.362G	55.82	74.00	-18.18	30.67	3	Horizontal	44	2.99	-
PK	2.44G	100.88	Inf	-Inf	30.95	3	Horizontal	44	2.99	-
PK	2.4956G	56.74	74.00	-17.26	31.16	3	Horizontal	44	2.99	-

BT-LE(1Mbps)

2440MHz_TX

07/11/2018

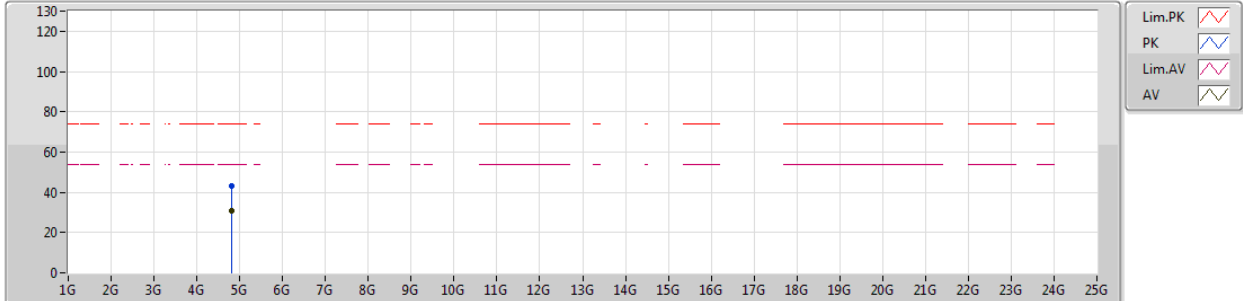


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.89332G	31.04	54.00	-22.96	2.31	3	Vertical	354	1.50	-
PK	4.89092G	43.67	74.00	-30.33	2.30	3	Vertical	354	1.50	-

BT-LE(1Mbps)

2440MHz_TX

07/11/2018

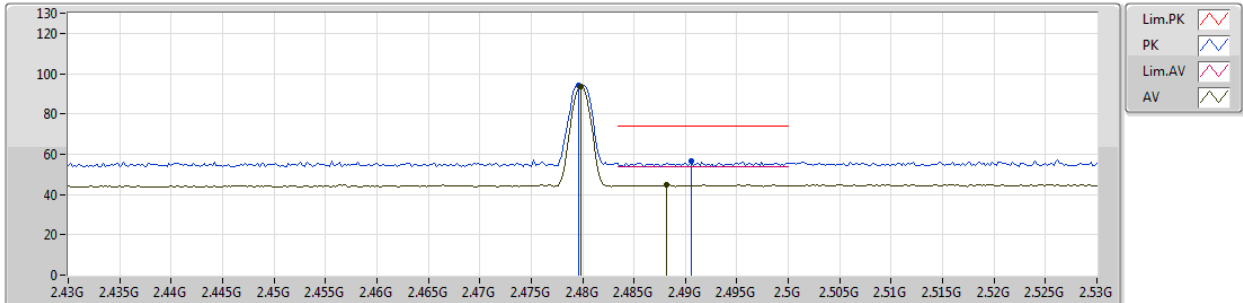


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.80496G	30.64	54.00	-23.36	2.08	3	Horizontal	297	1.50	-
PK	4.80544G	43.31	74.00	-30.69	2.08	3	Horizontal	297	1.50	-

BT-LE(1Mbps)

2480MHz_TX

07/11/2018

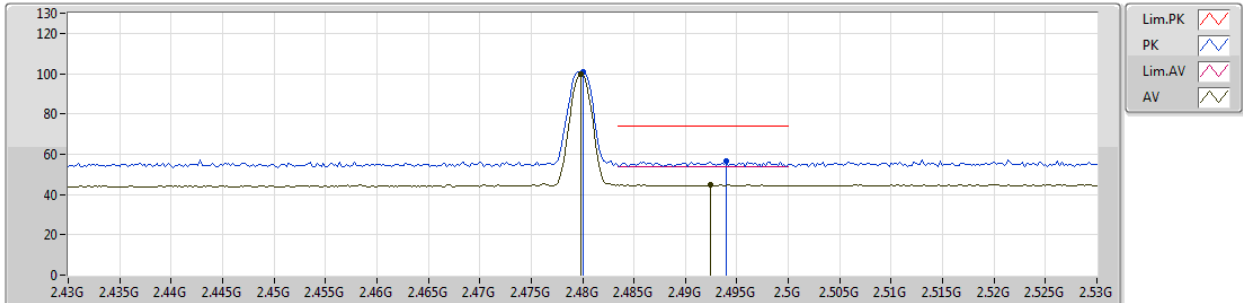


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.4798G	93.33	Inf	-Inf	31.09	3	Vertical	173	2.61	-
AV	2.4882G	44.76	54.00	-9.24	31.13	3	Vertical	173	2.61	-
PK	2.4796G	94.40	Inf	-Inf	31.09	3	Vertical	173	2.61	-
PK	2.4906G	56.33	74.00	-17.67	31.13	3	Vertical	173	2.61	-

BT-LE(1Mbps)

2480MHz_TX

07/11/2018

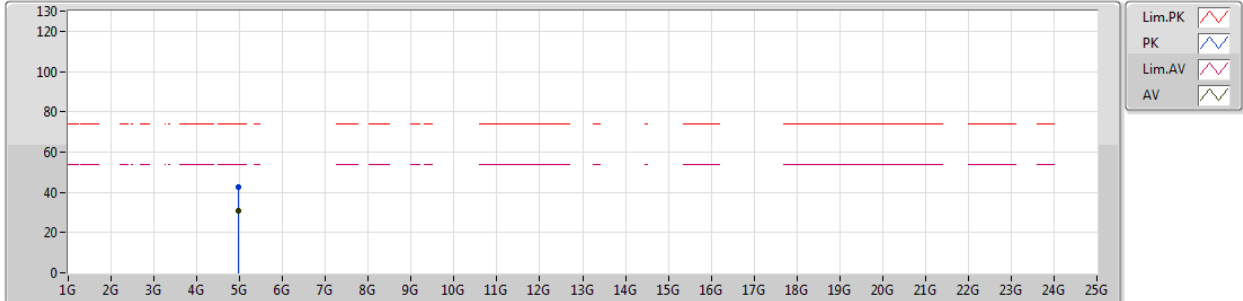


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.4798G	99.75	Inf	-Inf	31.09	3	Horizontal	47	2.89	-
AV	2.4924G	44.80	54.00	-9.20	31.14	3	Horizontal	47	2.89	-
PK	2.48G	100.81	Inf	-Inf	31.09	3	Horizontal	47	2.89	-
PK	2.494G	56.66	74.00	-17.34	31.15	3	Horizontal	47	2.89	-

BT-LE(1Mbps)

2480MHz_TX

07/11/2018

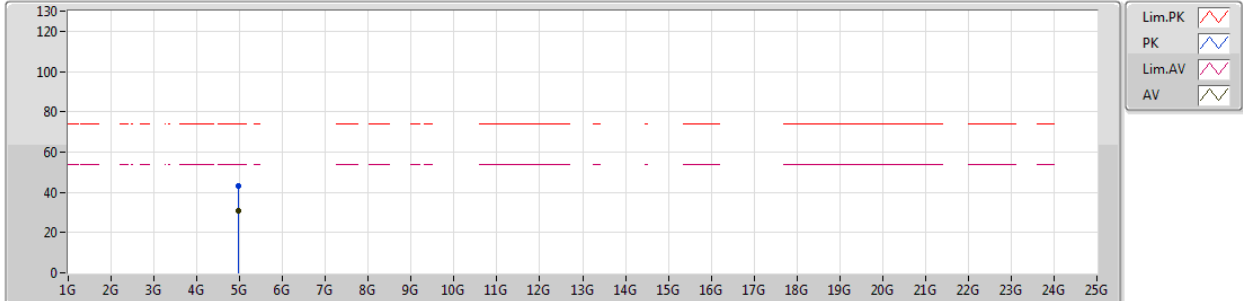


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.96018G	30.86	54.00	-23.14	2.47	3	Vertical	300	2.74	-
PK	4.96126G	42.53	74.00	-31.47	2.47	3	Vertical	300	2.74	-

BT-LE(1Mbps)

2480MHz_TX

07/11/2018



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments								
AV	4.95946G	30.78	54.00	-23.22	2.47	3	Horizontal	22	2.18	-								
PK	4.97056G	42.91	74.00	-31.09	2.49	3	Horizontal	22	2.18	-								

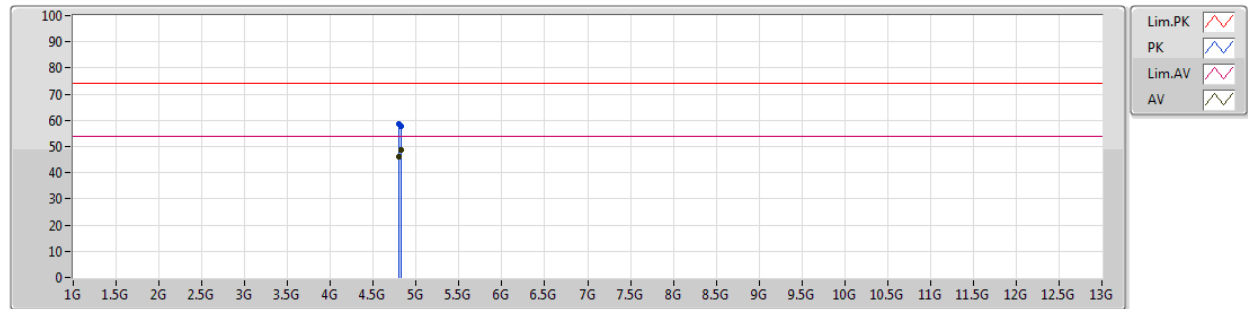


Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
Mode 1	Pass	AV	4.82405G	51.25	54.00	-2.75	2.13	3	Horizontal	341	2.55	-

Mode 1

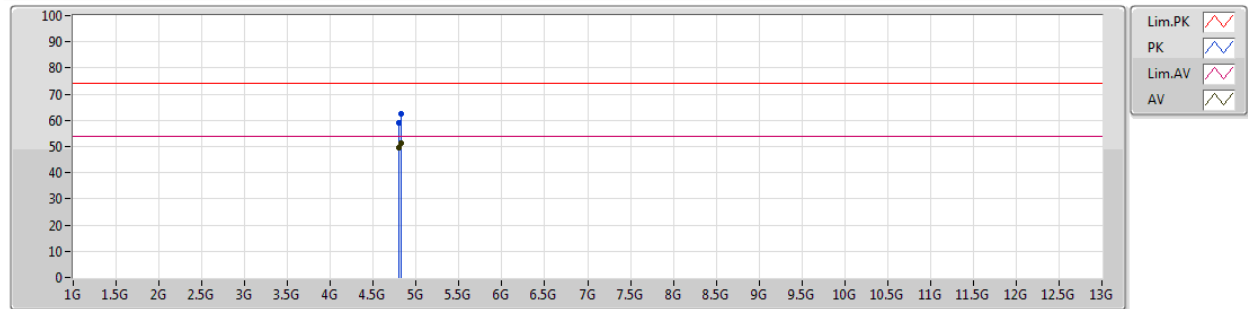
29/12/2018



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.80432G	46.27	54.00	-7.73	2.08	3	Vertical	12	2.51	-
AV	4.82379G	48.65	54.00	-5.35	2.13	3	Vertical	159	2.19	-
PK	4.80416G	58.43	74.00	-15.57	2.08	3	Vertical	12	2.51	-
PK	4.82379G	57.57	74.00	-16.43	2.13	3	Vertical	159	2.19	-

Mode 1

29/12/2018



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.80401G	49.67	54.00	-4.33	2.08	3	Horizontal	38	2.12	-
AV	4.82405G	51.25	54.00	-2.75	2.13	3	Horizontal	341	2.55	-
PK	4.80421G	59.24	74.00	-14.76	2.08	3	Horizontal	38	2.12	-
PK	4.82405G	62.57	74.00	-11.43	2.13	3	Horizontal	341	2.55	-