



FCC Test Report

FCC ID : 2AG0Z-F8MZ
Equipment : VR Headset
Brand Name : **Oculus**
Model Name : MH-B
Applicant : Facebook Technologies, LLC
1 Hacker Way, Menlo Park, CA 94025, USA
Manufacturer : Facebook Technologies, LLC
1 Hacker Way, Menlo Park, CA 94025, USA
Standard : 47 CFR FCC Part 15.247

The product was received on Jul. 25, 2018, and testing was started from Oct. 11, 2018 and completed on Nov. 07, 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.)

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TEL : 886-3-3273456
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Report Template No.: HE1-C10 Ver3.1
FCC ID: 2AG0Z-F8MZ

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 judgment of conformity in the report is based on the measurement results excluding the measurement uncertainty.

Comments and explanations:

None

Reviewed by: Sam Chen

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

Note:

- Bluetooth LE uses a GFSK (1/2Mbps) modulation for DSSS.
- BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Ant.	Port	Brand	Model Name	Antenna Type	Connector
1	1	-	-	PIFA	I-PEX
2	2	-	-	PIFA	I-PEX
3	-	-	-	Monopole	I-PEX

Ant.	Gain (dBi) - Maximum Peak Gain								BT	GFSK
	2.4G			5G						
	2412MHz	2437MHz	2462MHz	U-NII-1	U-NII-2A	U-NII-2C	U-NII-3			
1	2.92	3.24	3.30	4.28	4.28	3.34	2.21	3.3	-	
2	2.56	2.52	2.56	4.04	4.04	4.56	4.93	-	-	
3	-	-	-	-	-	-	-	-	3.8	

2TX Stream	DG Gain (dBi) - Correlated Gain						
	2.4G			5G			
	2412MHz	2437MHz	2462MHz	U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
1	5.56	5.77	5.95	6.93	6.93	6.53	6.07
2	2.56	2.77	2.95	3.92	3.92	3.52	3.16

Note 1: The EUT has three antennas.

Note 2: Ant. 1 = port 1 = Chain 0 = Right ; Ant. 2 = port 2 = Chain 1 = Left.

For 2.4GHz function:

For IEEE 802.11 b/g/n mode (2TX/2RX)

Only supports 2X2 MIMO configuration.

For 5GHz function:

For IEEE 802.11 a/n/ac mode (2TX/2RX)

Only supports 2X2 MIMO configuration.

For BT function:

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

Only Ant. 1 could transmit/receive simultaneously.

For GFSK function:

For GFSK mode (1TX/1RX)

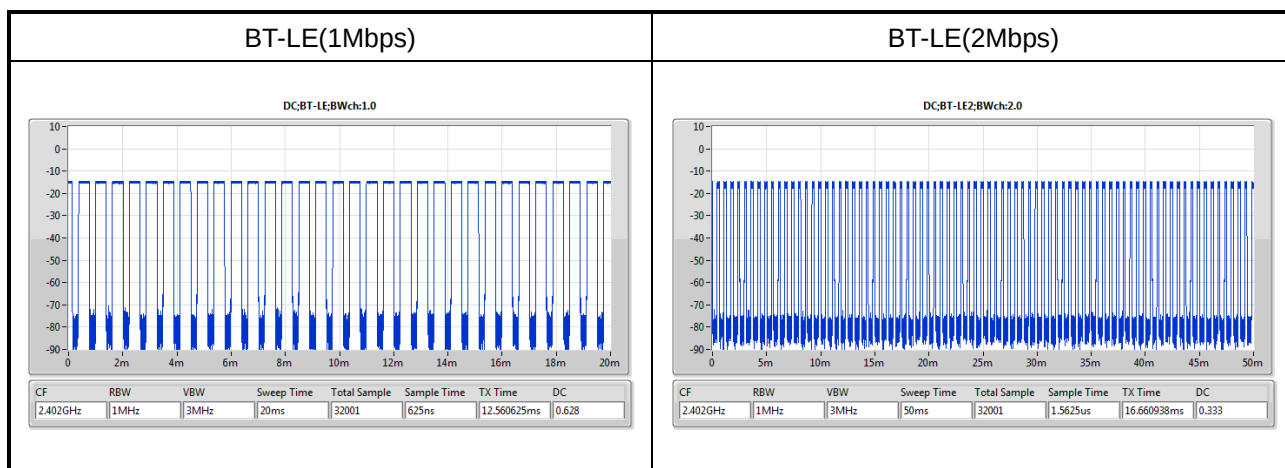
Only Ant. 3 could transmit/receive simultaneously.

1.1.3 EUT Information

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

1.1.4 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) $\geq 1/T$
BT-LE(1Mbps)	0.628	2.02	392.5u	3k
BT-LE(2Mbps)	0.333	4.776	209.375u	10k



1.2 Testing Applied Standards

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

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

1.3 Testing Location Information

Testing Location			
☒	HWA YA	ADD : No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)	
		TEL : 886-3-327-3456	FAX : 886-3-327-0973
Test site Designation No. TW1190 with FCC.			
☐	JHUBEI	ADD : No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County, Taiwan (R.O.C.)	
		TEL : 886-3-656-9065	FAX : 886-3-656-9085
Test site Designation No. TW0006 with FCC.			

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
AC Conduction	CO04-HY	Andy	24.8°C / 59%	17/Oct/2018
RF Conducted	TH01-HY	Andy	24.5°C / 63.5%	12/Oct/2018
Radiated	03CH09-HY	Kevin	21°C / 59%	11/Oct/2018
Radiated (co-location)	03CH09-HY	Kevin	22.3°C / 58%	09/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)	3.6 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	3.0 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	3.82V

2.2 Test Channel Mode

Test Software Version	QRCT 3.0.297.0
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2.3 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral
Operating Mode	CTX
1	USB mode

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

The Worst Case Mode for Following Conformance Tests			
Tests Item	Emissions in Restricted Frequency Bands		
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.		
Operating Mode < 1GHz	CTX		
1	USB mode		
Operating Mode > 1GHz	CTX		
Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			
Worst Planes of EUT			V

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis
Test Condition	Radiated measurement
Operating Mode	Normal
1	Bluetooth+WLAN 5GHz
Refer to Sporton Test Report No.: Appendix G for Radiated Emission Co-location.	

2.4 Accessories

Accessories				
AC Adapter (US Plug)	Brand Name	oculus	Model Name	AQ15A-050A
	Manufacturer	PHIHONG		
	Power Rating	I/P: 100 - 240Vac, 0.5A, O/P: 5Vdc, 3A		
Type-C USB Cable	In/Out door	In door		
	Cable	2.95 meter, Shielded cable, w/o ferrite core		

Reminder: Regarding to more detail and other information, please refer to user manual.

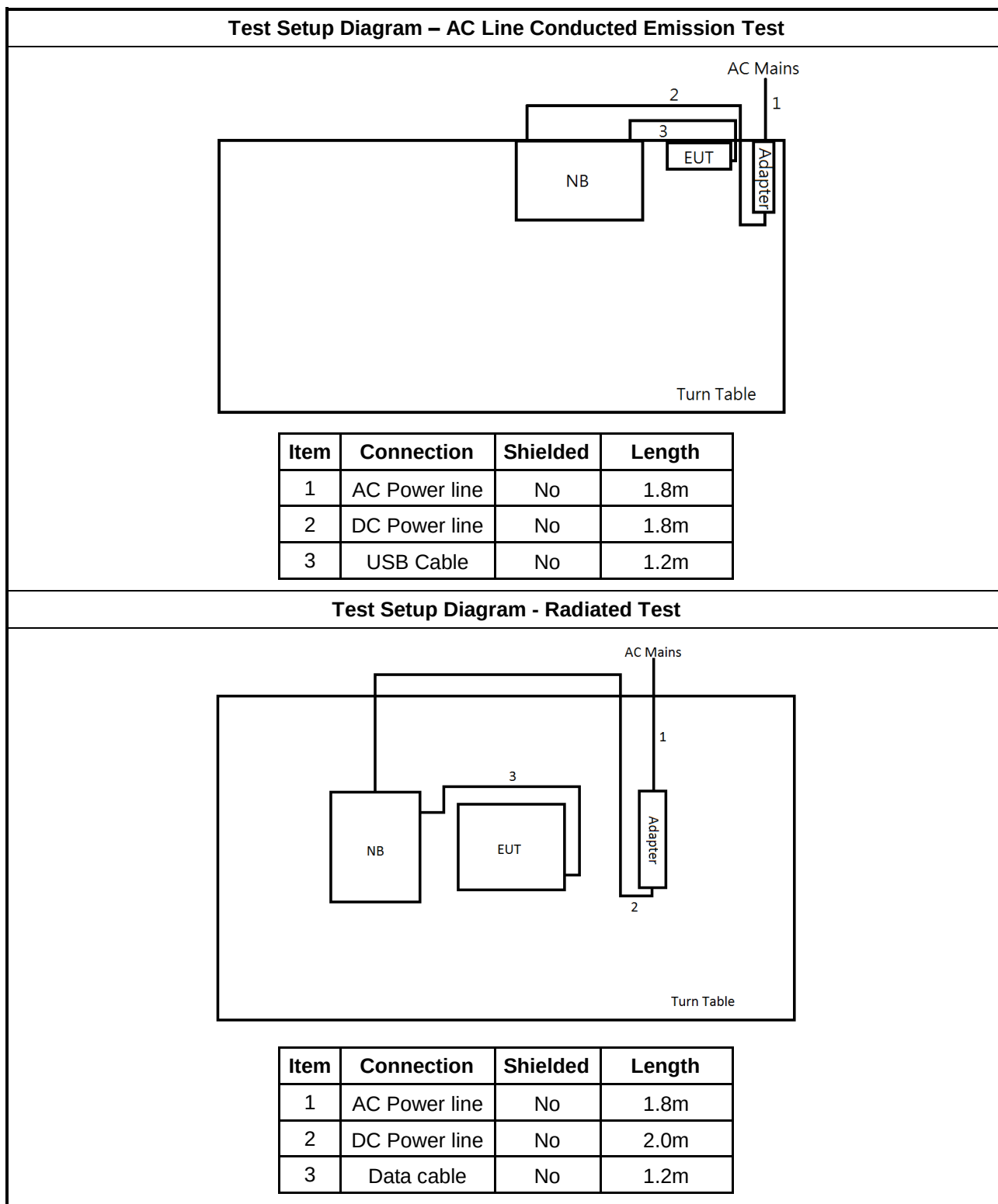
2.5 Support Equipment

Support Equipment – AC Conduction				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	HP	ProBook5220m	-
2	Mouse(USB)	DELL	MS111-L	-
3	IPod	APPLE	YM719D8YVQ5	-
4	AC adapter	HP	608425-003	-
5	USB Cable	-	-	-

Support Equipment – RF Conducted				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E5410	DoC
2	Adapter for notebook	DELL	HA65NM130	DoC
3	DC Power Supply	GW	GPS-3030DD	-

Support Equipment – Radiated Emission				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	HP	ProBook5220m	-
2	Adapter for notebook	HP	Series PPP012H-S	-

2.6 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.

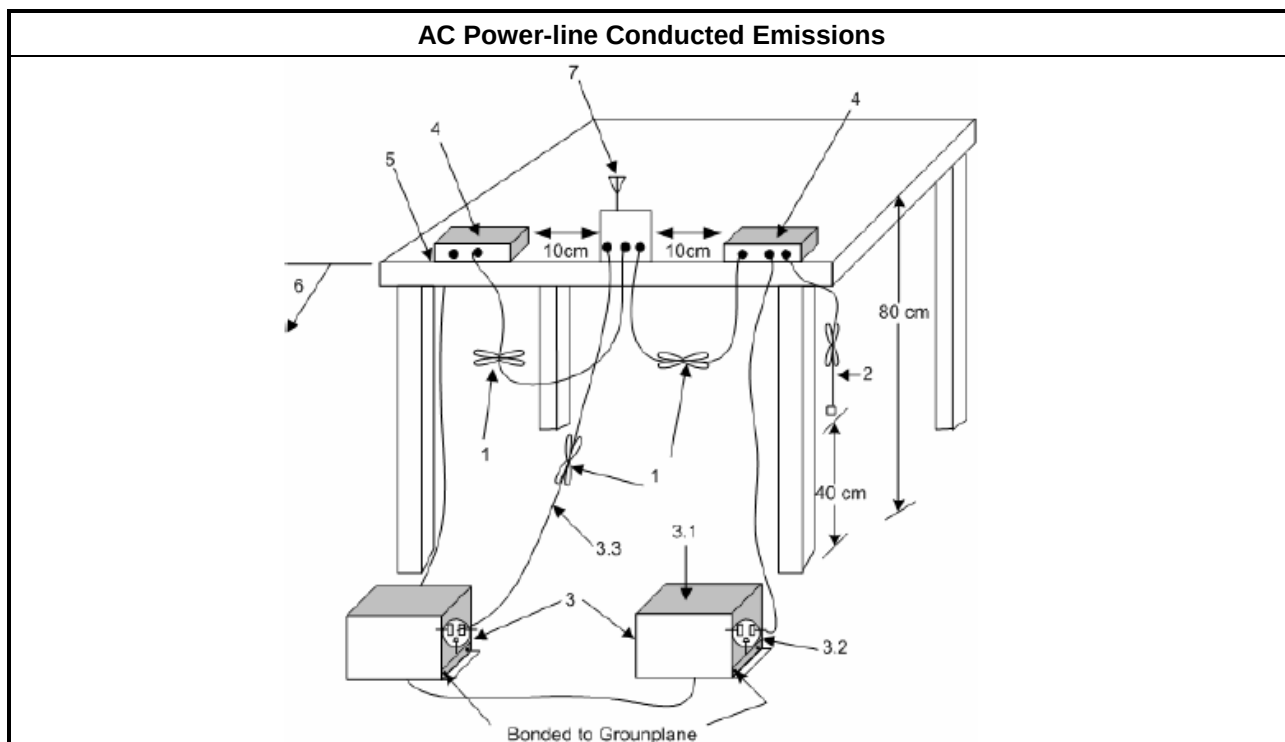
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

Test Method
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.

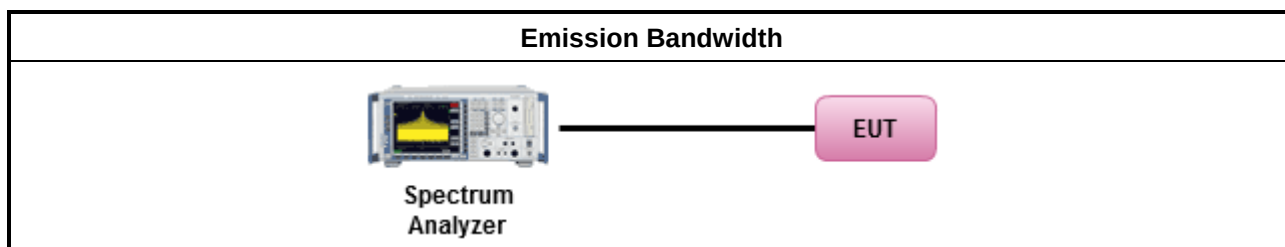
3.2.2 Measuring Instruments

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 (11.9.2.2 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.	

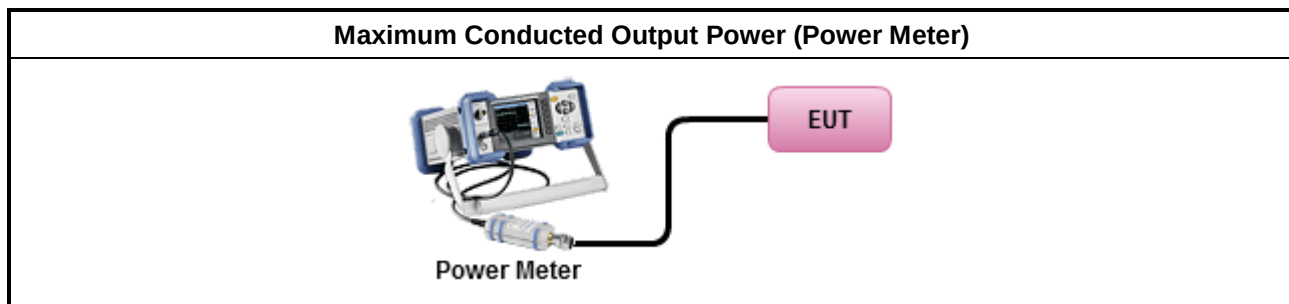
3.3.2 Measuring Instruments

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

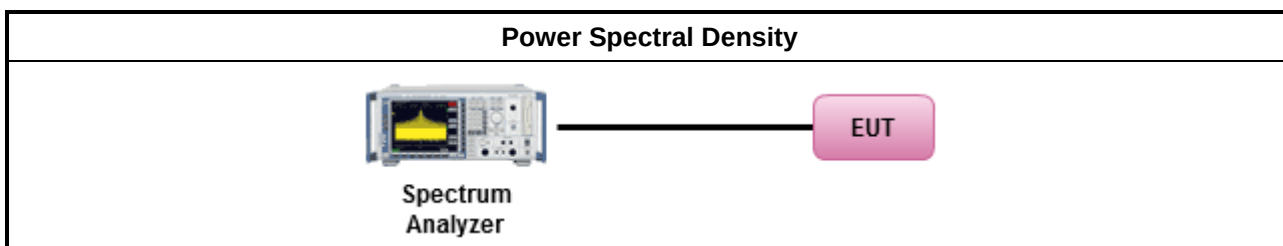
3.4.2 Measuring Instruments

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.	

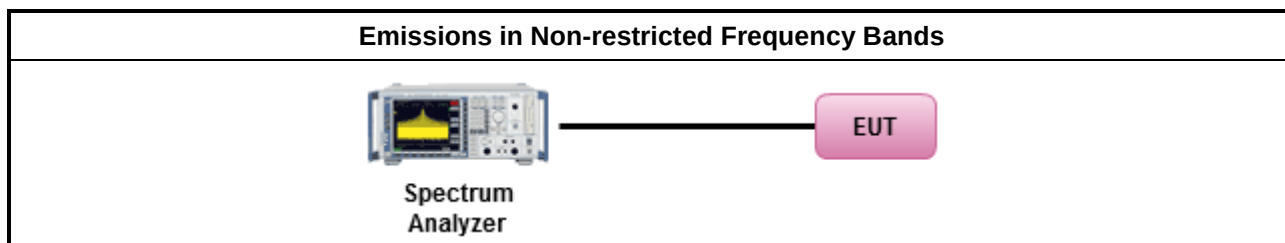
3.5.2 Measuring Instruments

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.

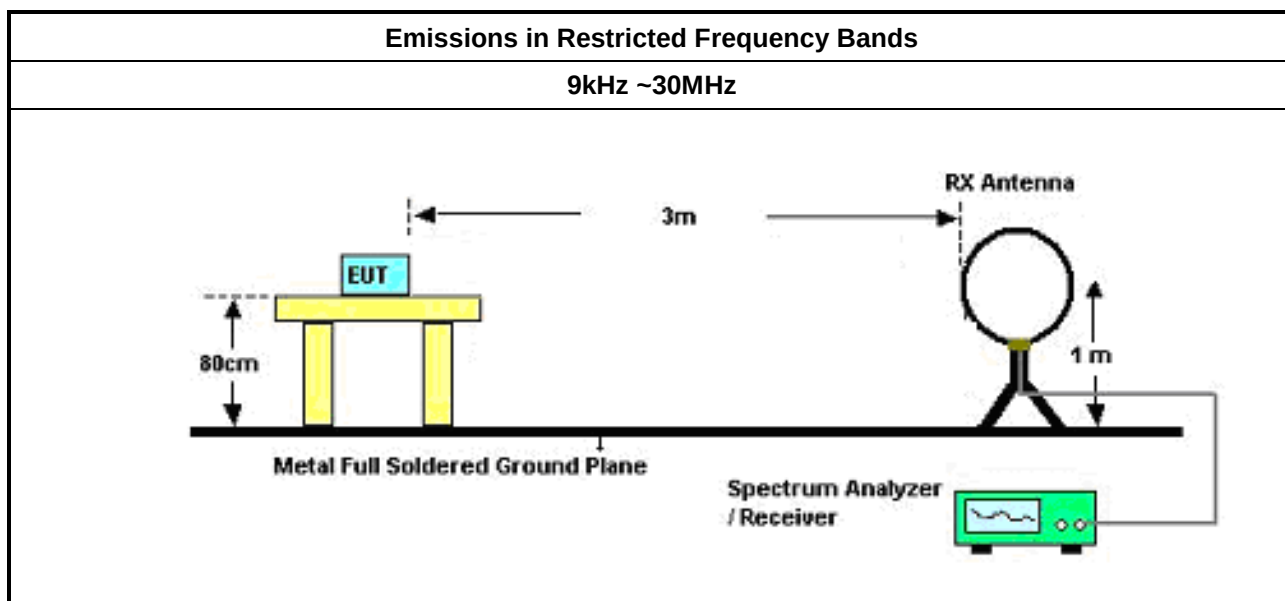
3.6.2 Measuring Instruments

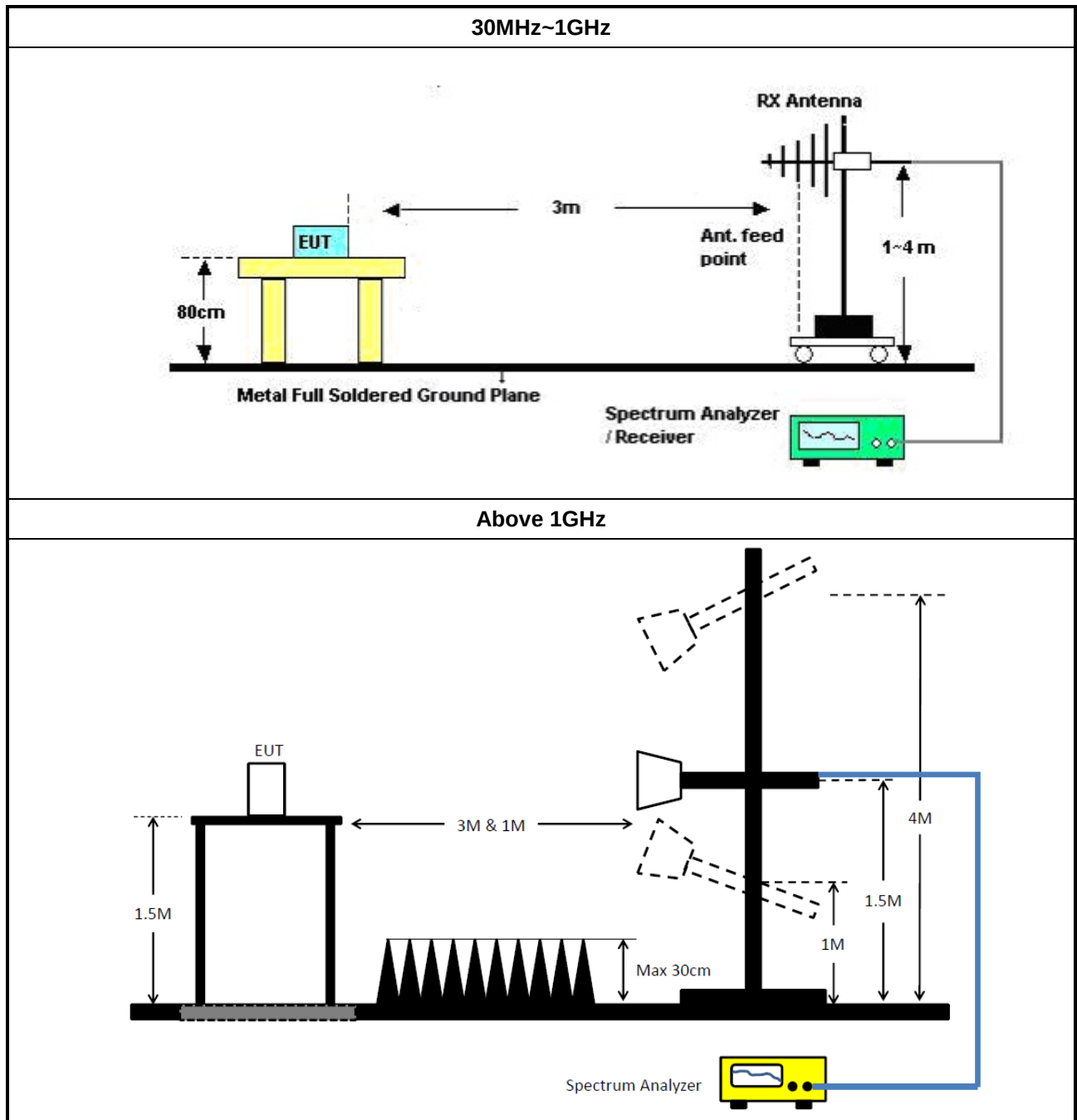
Refer a test equipment and calibration data table in this test report.

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 (i.e., 1 MHz).

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
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	1/Feb/2018	31/Jan/2019
RF Cable-high	HUBER+SUHNER	SUCOFLEX104	SN 556626/4 + 556627	1GHz ~ 40GHz	14/Mar/2018	13/Mar/2019
EMC Receiver	R&S	ESR	102051	9KHz ~ 3.6GHz	03/May/2018	02/May/2019

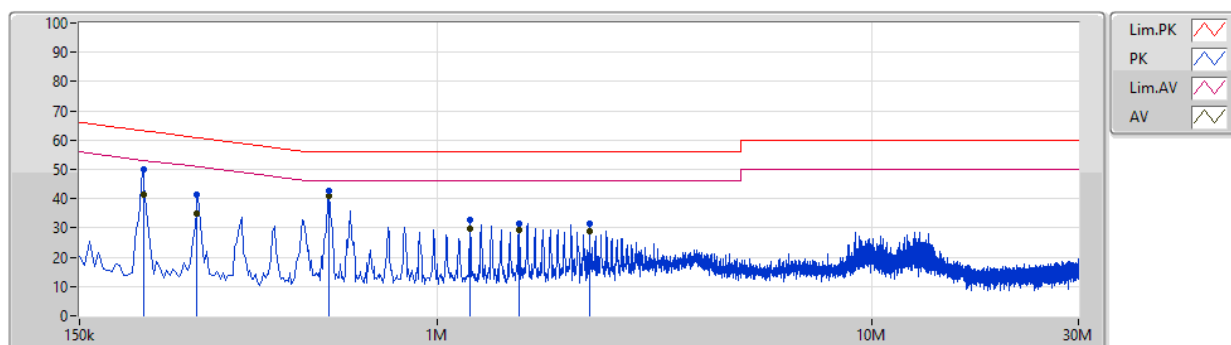
Instrument for Conducted Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Signal Analyzer	R&S	FSV40	101500	10Hz~40GHz	18/Jul/2018	17/Jul/2019
Power Sensor	Anritsu	MA2411B	1339407	300MHz~40GHz	06/Nov/2017	05/Nov/2018
Power Meter	Anritsu	ML2495A	1517010	300MHz~40GHz	06/Nov/2017	05/Nov/2018
RF Cable-1m	HUBER+SUHNER	MY37332/4	RF Cable - 44	30MHz~1GHz	26/Jan/2018	25/Jan/2019
RF Cable-1m	HUBER+SUHNER	MY37332/4	RF Cable - 44	1GHz~18GHz	26/Jan/2018	25/Jan/2019
RF Cable-0.2m	HUBER+SUHNER	SUCOFLEX_104	MY10710/4	30MHz~26.5GHz	26/Jan/2018	25/Jan/2019
RF Cable-0.2m	HUBER+SUHNER	SUCOFLEX_104	MY10709/4	30MHz~26.5GHz	26/Jan/2018	25/Jan/2019
Signal Generator	R&S	SMB100A	175727	100kHz~40GHz	26/Oct/2017	25/Oct/2018

AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Neutral
Operating Function	USB mode		

17/10/2018

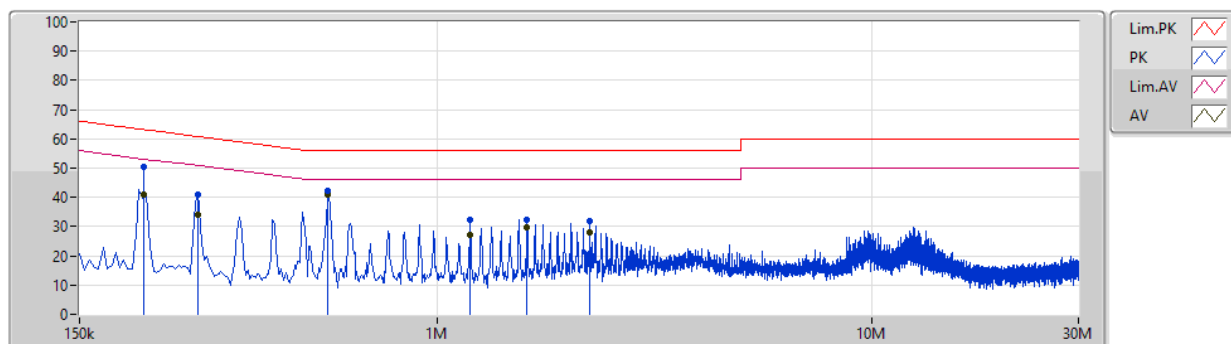


Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)			
QP	210.579k	49.96	63.19	-13.23	19.50	Neutral	-	30.46	9.62	0.01	9.87			
AV	210.579k	41.33	53.19	-11.86	19.50	Neutral	-	21.83	9.62	0.01	9.87			
QP	279.54k	41.44	60.84	-19.40	19.54	Neutral	-	21.90	9.62	0.05	9.87			
AV	279.54k	34.75	50.84	-16.09	19.54	Neutral	-	15.21	9.62	0.05	9.87			
QP	561.349k	42.47	56.00	-13.53	19.55	Neutral	-	22.92	9.61	0.06	9.88			
AV	561.349k	41.00	46.00	-5.00	19.55	Neutral	"Worst"	21.45	9.61	0.06	9.88			
QP	1.192M	32.66	56.00	-23.34	19.51	Neutral	-	13.15	9.62	0.01	9.88			
AV	1.192M	29.88	46.00	-16.12	19.51	Neutral	-	10.37	9.62	0.01	9.88			
QP	1.545M	31.37	56.00	-24.63	19.52	Neutral	-	11.85	9.63	0.01	9.88			
AV	1.545M	29.47	46.00	-16.53	19.52	Neutral	-	9.95	9.63	0.01	9.88			
QP	2.242M	31.61	56.00	-24.39	19.52	Neutral	-	12.09	9.63	0.01	9.88			
AV	2.242M	28.87	46.00	-17.13	19.52	Neutral	-	9.35	9.63	0.01	9.88			

AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Line
Operating Function	USB mode		

17/10/2018



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)			
QP	210.486k	50.28	63.19	-12.91	19.50	Line	-	30.78	9.62	0.01	9.87			
AV	210.486k	41.16	53.19	-12.03	19.50	Line	-	21.66	9.62	0.01	9.87			
QP	281.711k	40.85	60.76	-19.91	19.54	Line	-	21.31	9.62	0.05	9.87			
AV	281.711k	34.08	50.76	-16.68	19.54	Line	-	14.54	9.62	0.05	9.87			
QP	560.48k	42.40	56.00	-13.60	19.55	Line	-	22.85	9.61	0.06	9.88			
AV	560.48k	40.98	46.00	-5.02	19.55	Line	"Worst"	21.43	9.61	0.06	9.88			
QP	1.192M	32.15	56.00	-23.85	19.50	Line	-	12.65	9.61	0.01	9.88			
AV	1.192M	27.28	46.00	-18.72	19.50	Line	-	7.78	9.61	0.01	9.88			
QP	1.613M	32.50	56.00	-23.50	19.51	Line	-	12.99	9.62	0.01	9.88			
AV	1.613M	29.87	46.00	-16.13	19.51	Line	-	10.36	9.62	0.01	9.88			
QP	2.245M	31.99	56.00	-24.01	19.51	Line	-	12.48	9.62	0.01	9.88			
AV	2.245M	27.82	46.00	-18.18	19.51	Line	-	8.31	9.62	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)	670k	1.031M	1M03F1D	663.75k	1.028M
BT-LE(2Mbps)	1.153M	2.039M	2M04F1D	1.138M	2.031M

Max-N dB = Maximum 6dB down bandwidth; **Max-OBW** = Maximum 99% occupied bandwidth;

Min-N dB = Minimum 6dB down bandwidth; **Min-OBW** = Minimum 99% occupied bandwidth;

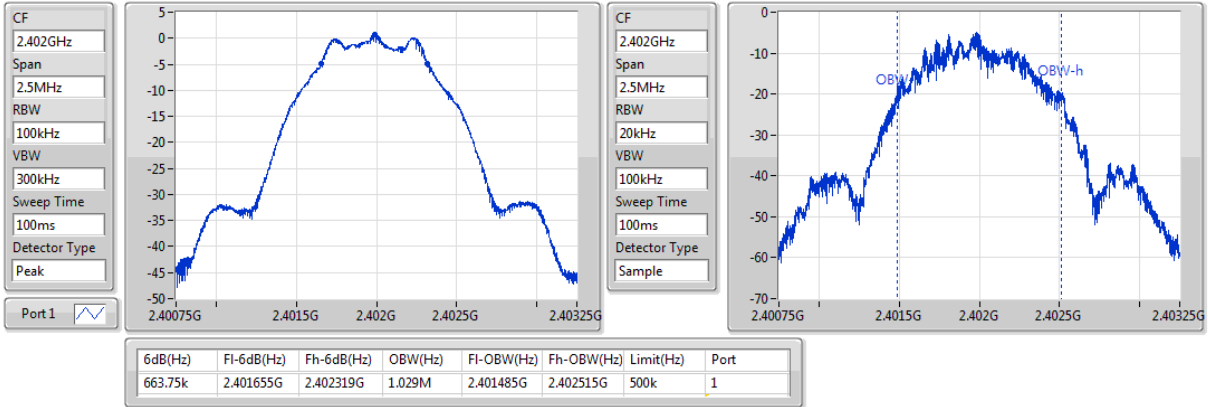
Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	500k	663.75k	1.029M
2440MHz_TnomVnom	Pass	500k	670k	1.028M
2480MHz_TnomVnom	Pass	500k	670k	1.031M
BT-LE(2Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	500k	1.143M	2.036M
2440MHz_TnomVnom	Pass	500k	1.138M	2.031M
2480MHz_TnomVnom	Pass	500k	1.153M	2.039M

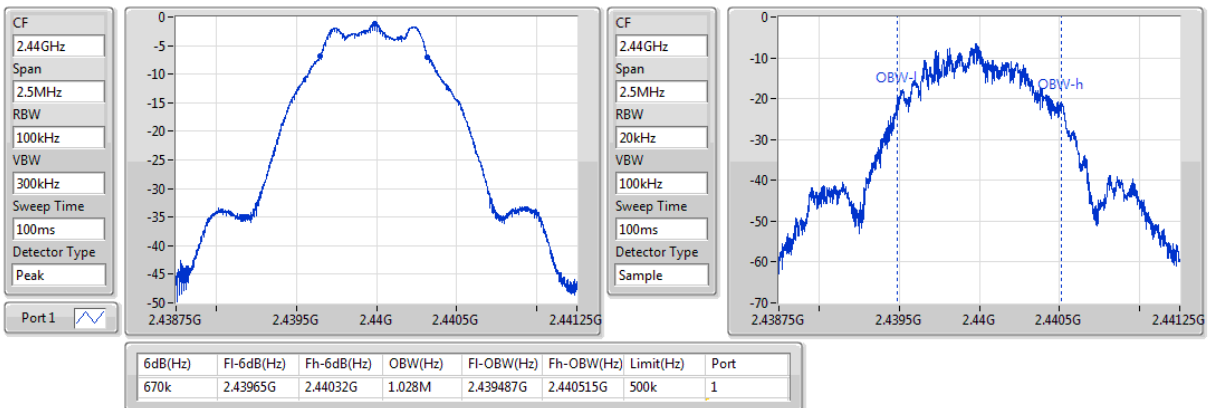
Port X-N dB = Port X 6dB down bandwidth; **Port X-OBW** = Port X 99% occupied bandwidth;

BT-LE(1Mbps)
EBW
2402MHz

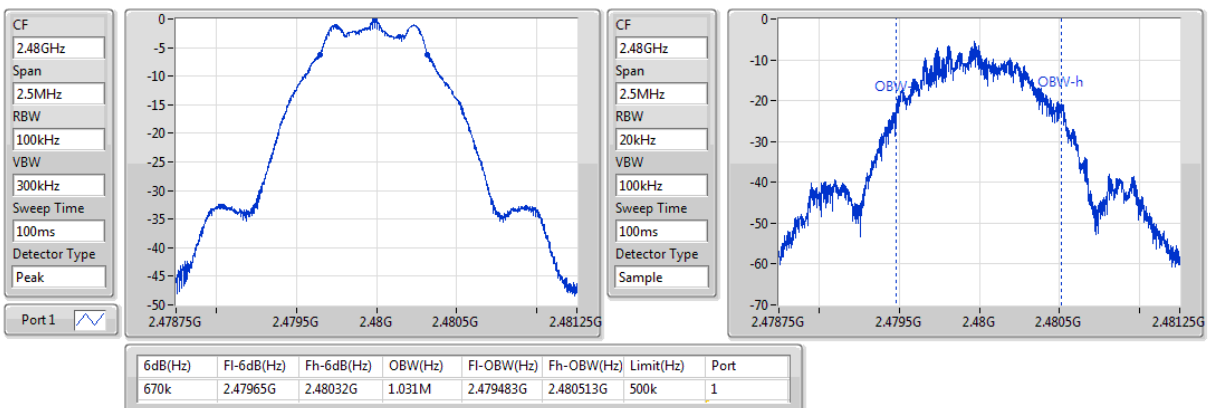
12/10/2018


BT-LE(1Mbps)
EBW
2440MHz

12/10/2018

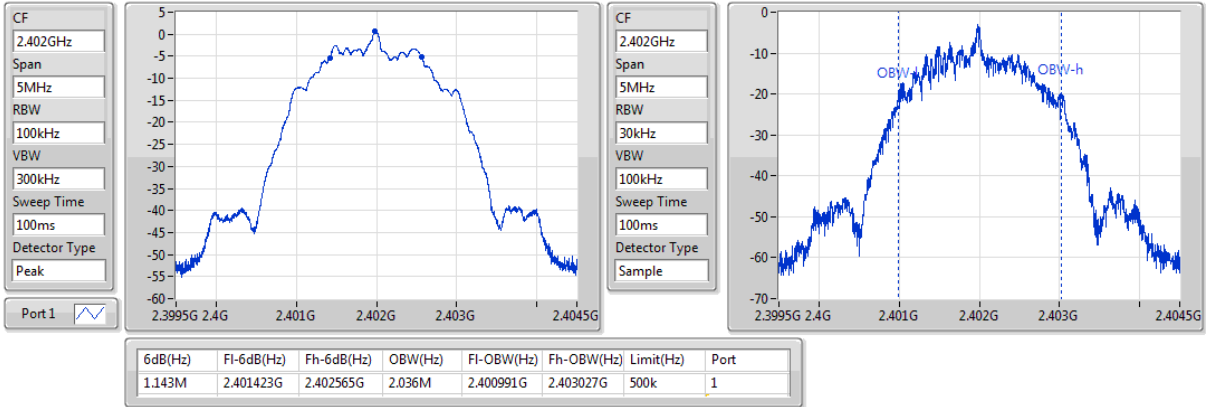

BT-LE(1Mbps)
EBW
2480MHz

12/10/2018

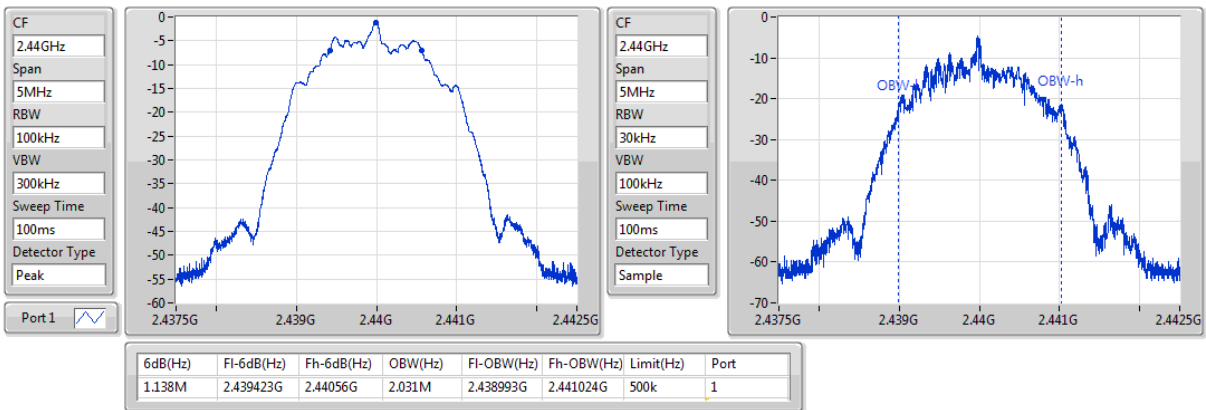


BT-LE(2Mbps)
EBW
2402MHz

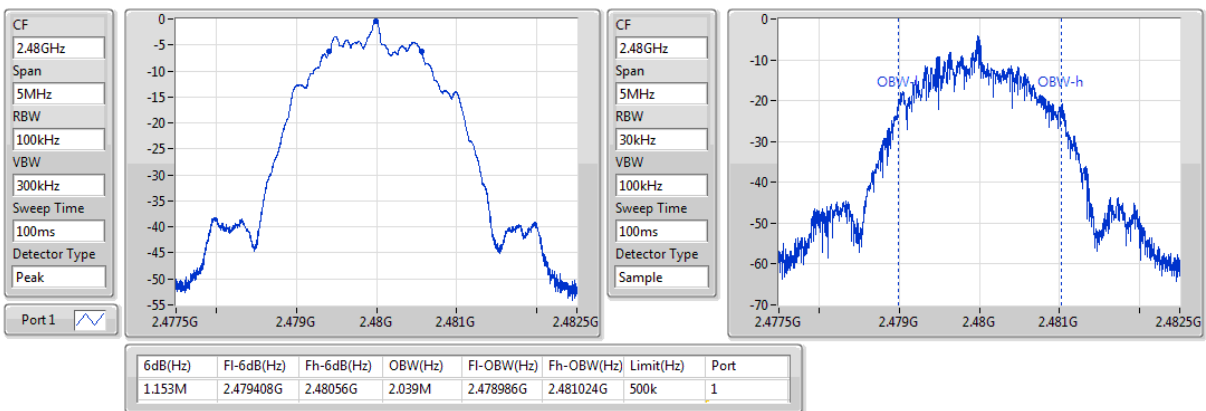
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BT-LE(2Mbps)
EBW
2440MHz

12/10/2018


BT-LE(2Mbps)
EBW
2480MHz

12/10/2018



Summary

Mode	Power	Power
	(dBm)	(W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	0.21	0.00105
BT-LE(2Mbps)	-0.22	0.00095

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	3.30	0.21	30.00
2440MHz_TnomVnom	Pass	3.30	-1.56	30.00
2480MHz_TnomVnom	Pass	3.30	-0.71	30.00
BT-LE(2Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	3.30	-0.22	30.00
2440MHz_TnomVnom	Pass	3.30	-1.96	30.00
2480MHz_TnomVnom	Pass	3.30	-1.30	30.00

**Summary**

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-14.26
BT-LE(2Mbps)	-17.82

RBW=3kHz.

Result

Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	3.30	-14.26	8.00
2440MHz_TnomVnom	Pass	3.30	-16.78	8.00
2480MHz_TnomVnom	Pass	3.30	-14.94	8.00
BT-LE(2Mbps)	-	-	-	-
2402MHz_TnomVnom	Pass	3.30	-17.82	8.00
2440MHz_TnomVnom	Pass	3.30	-19.65	8.00
2480MHz_TnomVnom	Pass	3.30	-18.48	8.00

RBW=3kHz.

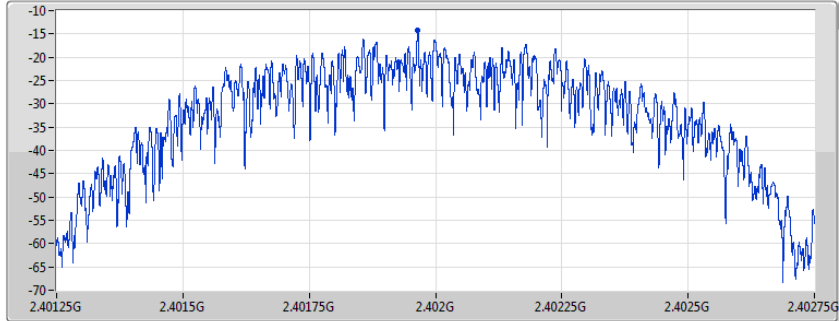
BT-LE(1Mbps)

PSD

2402MHz

12/10/2018

CF
2.402GHz
Span
1.5MHz
RBW
3kHz
VBW
10kHz
Sweep Time
32.1ms
Detector Type
Peak



Port 1

Sum	PD	Port 1
(dBm/Hz)	(dBm/Hz)	(dBm/Hz)
-14.26	-14.26	-14.26

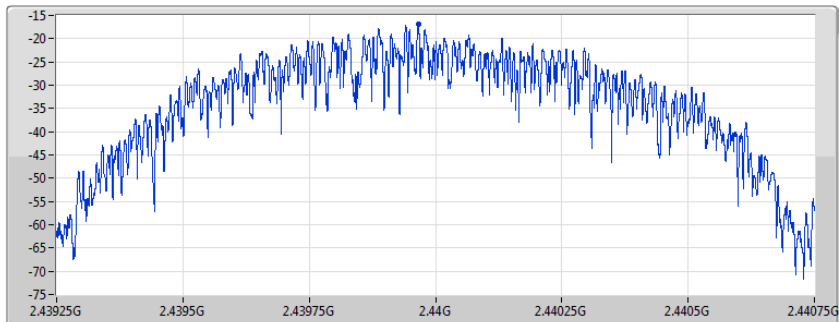
BT-LE(1Mbps)

PSD

2440MHz

12/10/2018

CF
2.44GHz
Span
1.5MHz
RBW
3kHz
VBW
10kHz
Sweep Time
32.1ms
Detector Type
Peak



Port 1

Sum	PD	Port 1
(dBm/Hz)	(dBm/Hz)	(dBm/Hz)
-16.78	-16.78	-16.78

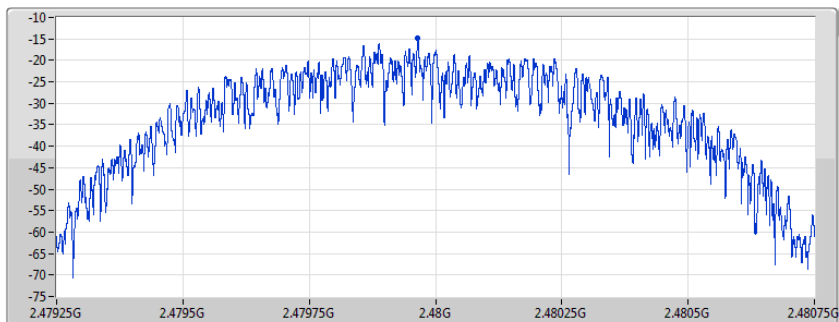
BT-LE(1Mbps)

PSD

2480MHz

12/10/2018

CF
2.48GHz
Span
1.5MHz
RBW
3kHz
VBW
10kHz
Sweep Time
32.1ms
Detector Type
Peak



Port 1

Sum	PD	Port 1
(dBm/Hz)	(dBm/Hz)	(dBm/Hz)
-14.94	-14.94	-14.94

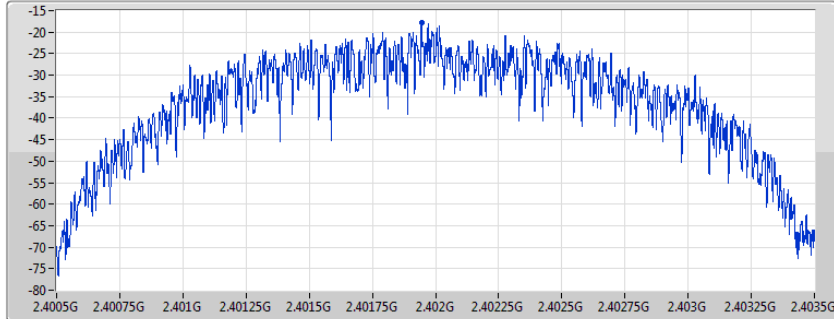
BT-LE(2Mbps)

PSD

2402MHz

12/10/2018

CF
2.402GHz
Span
3MHz
RBW
3kHz
VBW
10kHz
Sweep Time
33.4ms
Detector Type
Peak



Port 1

Sum (dBm/RBW)	PD (dBm/RBW)	Port 1 (dBm/RBW)
-17.82	-17.82	-17.82

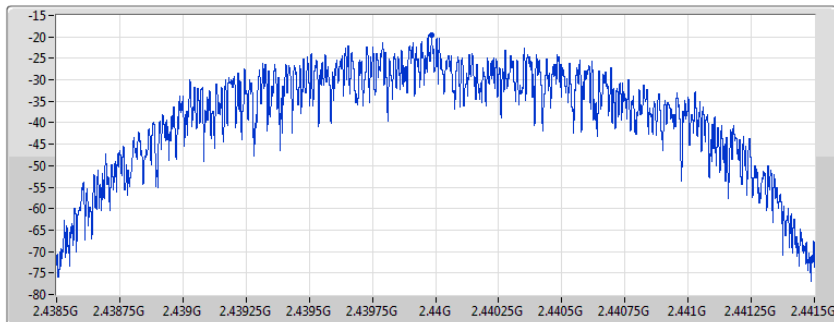
BT-LE(2Mbps)

PSD

2440MHz

12/10/2018

CF
2.44GHz
Span
3MHz
RBW
3kHz
VBW
10kHz
Sweep Time
33.4ms
Detector Type
Peak



Port 1

Sum (dBm/RBW)	PD (dBm/RBW)	Port 1 (dBm/RBW)
-19.65	-19.65	-19.65

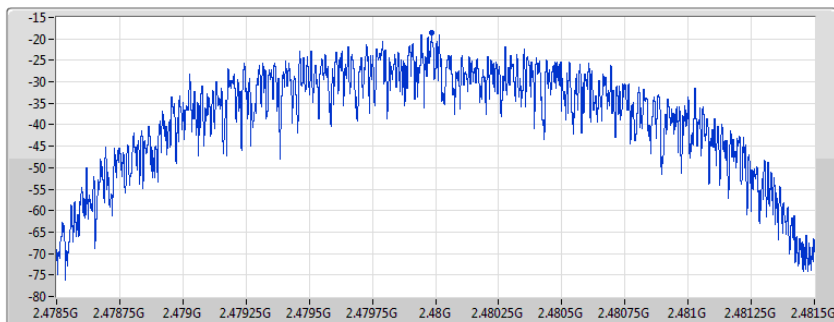
BT-LE(2Mbps)

PSD

2480MHz

12/10/2018

CF
2.48GHz
Span
3MHz
RBW
3kHz
VBW
10kHz
Sweep Time
33.4ms
Detector Type
Peak



Port 1

Sum (dBm/RBW)	PD (dBm/RBW)	Port 1 (dBm/RBW)
-18.48	-18.48	-18.48

Summary

Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	2.40196G	0.68	-29.32	2.11236G	-45.60	2.3989G	-43.90	2.4855G	-42.73	16.25875G	-33.98	1
BT-LE(2Mbps)	Pass	2.40192G	-0.52	-30.52	2.30047G	-44.10	2.39839G	-42.62	2.48443G	-42.87	17.58213G	-33.22	1

Result

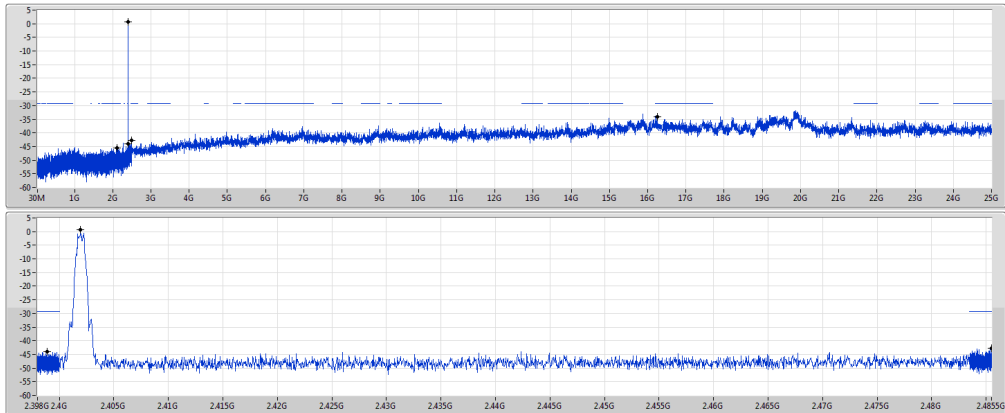
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz_TnomVnom	Pass	2.40196G	0.68	-29.32	2.11236G	-45.60	2.3989G	-43.90	2.4855G	-42.73	16.25875G	-33.98	1
2440MHz_TnomVnom	Pass	2.40196G	0.68	-29.32	941.68M	-45.70	2.39878G	-43.74	2.48531G	-43.11	21.99994G	-34.48	1
2480MHz_TnomVnom	Pass	2.40196G	0.68	-29.32	883.37M	-45.19	2.39985G	-43.65	2.48448G	-43.30	16.87227G	-34.50	1
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz_TnomVnom	Pass	2.40192G	-0.52	-30.52	804.57M	-43.71	2.39996G	-39.49	2.48688G	-41.78	17.60464G	-33.96	1
2440MHz_TnomVnom	Pass	2.40192G	-0.52	-30.52	2.12628G	-45.19	2.398G	-43.08	2.48367G	-43.89	16.21731G	-33.72	1
2480MHz_TnomVnom	Pass	2.40192G	-0.52	-30.52	2.30047G	-44.10	2.39839G	-42.62	2.48443G	-42.87	17.58213G	-33.22	1

BT-LE(1Mbps)

2402MHz

CSE NdB

12/10/2018

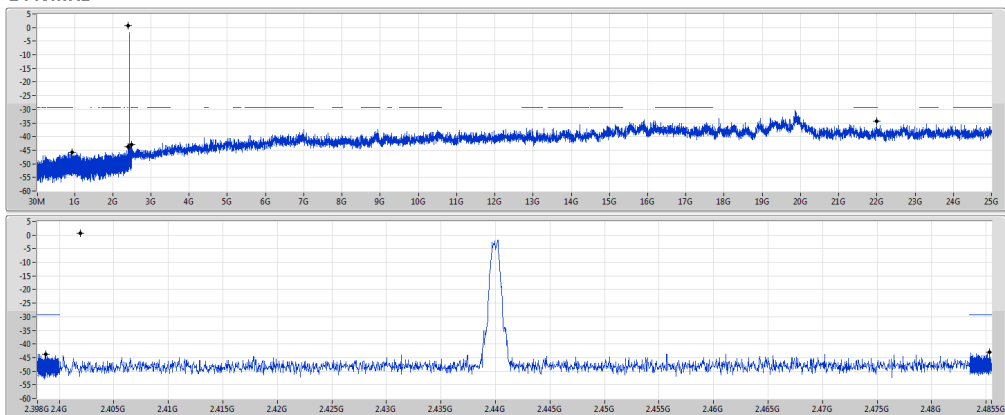


BT-LE(1Mbps)

2440MHz

CSE NdB

12/10/2018

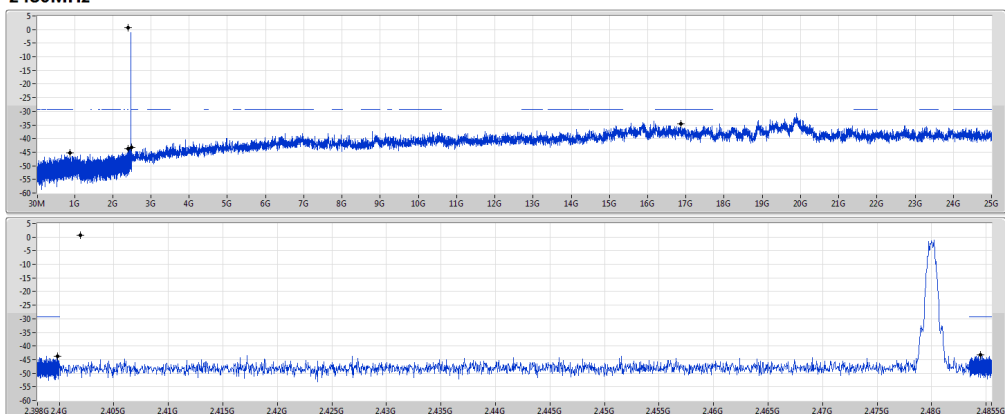


BT-LE(1Mbps)

2480MHz

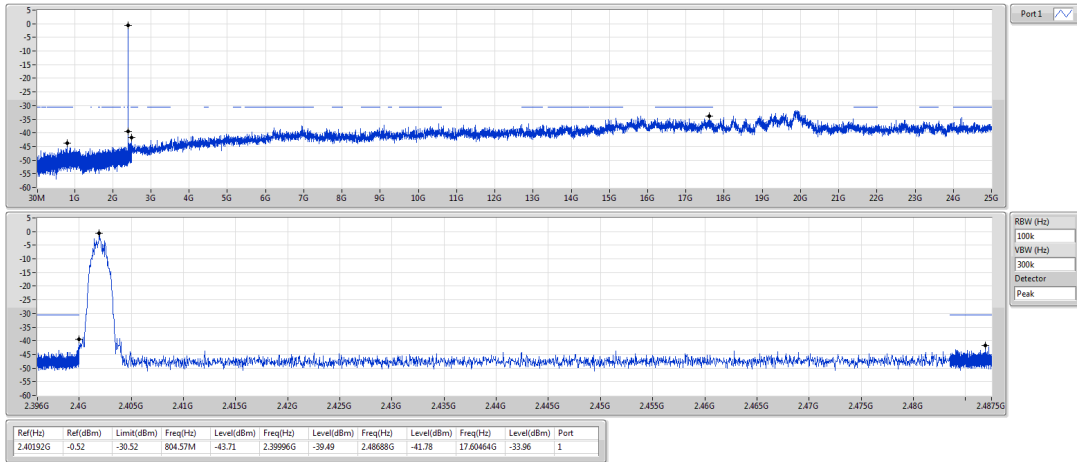
CSE NdB

12/10/2018



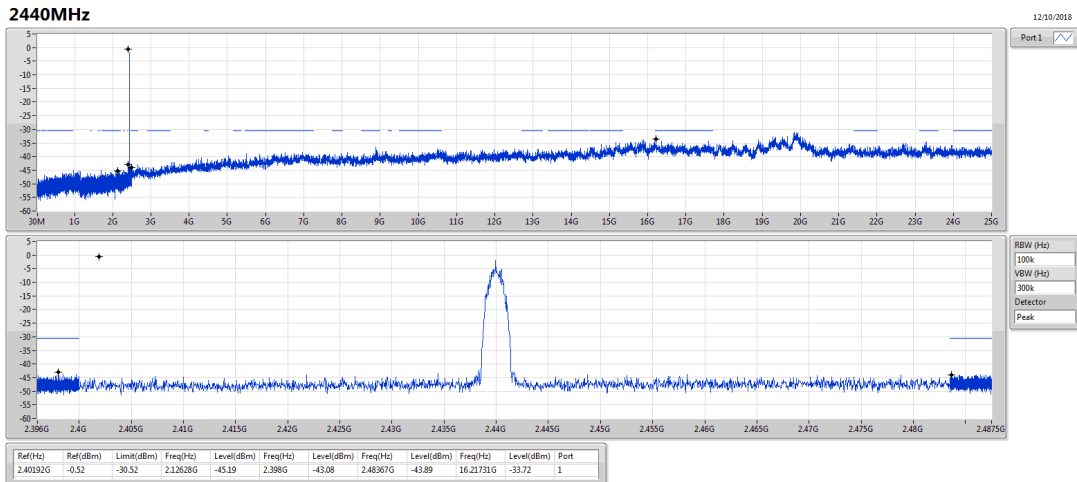
BT-LE(2Mbps)
2402MHz

CSE NdB



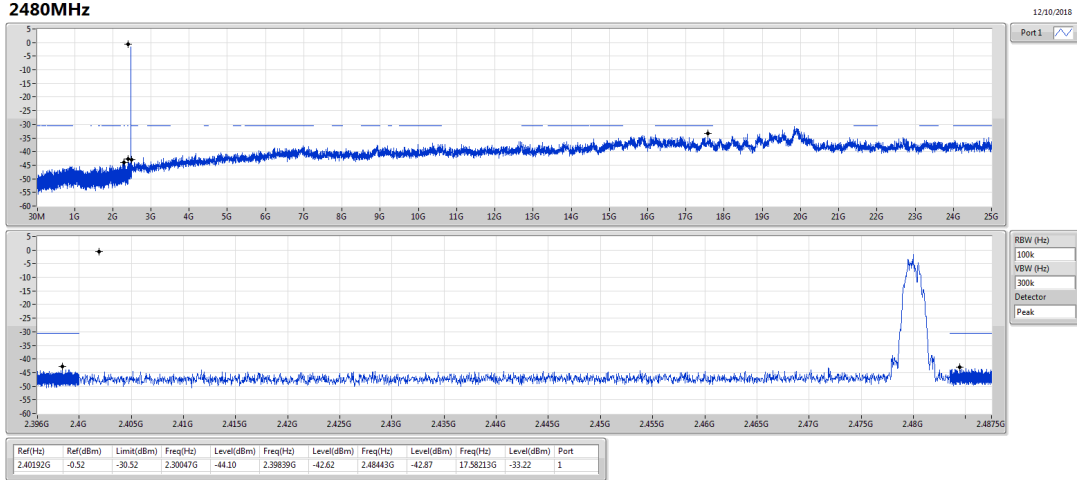
BT-LE(2Mbps)
2440MHz

CSE NdB



BT-LE(2Mbps)
2480MHz

CSE NdB





Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-
BT-LE(2Mbps)	Pass	PK	30M	25.54	40.00	-14.46	-13.40	3	Horizontal	0	2.00	-

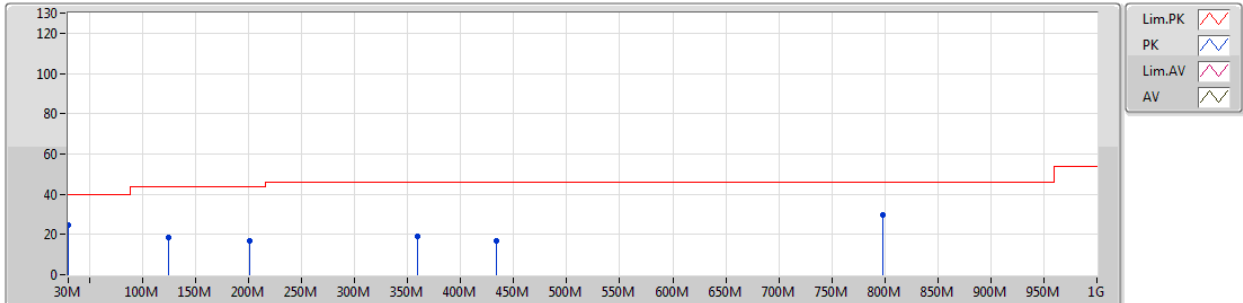
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-
2440MHz	Pass	PK	30M	24.47	40.00	-15.53	-13.40	3	Vertical	360	1.00	-
2440MHz	Pass	PK	125.06M	18.30	43.50	-25.20	-19.21	3	Vertical	360	1.00	-
2440MHz	Pass	PK	200.72M	17.02	43.50	-26.48	-21.04	3	Vertical	360	1.00	-
2440MHz	Pass	PK	359.8M	19.23	46.00	-26.77	-15.24	3	Vertical	360	1.00	-
2440MHz	Pass	PK	433.52M	16.92	46.00	-29.08	-13.09	3	Vertical	360	1.00	-
2440MHz	Pass	PK	798.24M	29.82	46.00	-16.18	-8.13	3	Vertical	360	1.00	-
2440MHz	Pass	PK	30M	25.54	40.00	-14.46	-13.40	3	Horizontal	0	2.00	-
2440MHz	Pass	PK	125.06M	18.96	43.50	-24.54	-19.21	3	Horizontal	0	2.00	-
2440MHz	Pass	PK	200.72M	19.03	43.50	-24.47	-21.04	3	Horizontal	0	2.00	-
2440MHz	Pass	PK	359.8M	20.14	46.00	-25.86	-15.24	3	Horizontal	0	2.00	-
2440MHz	Pass	PK	493.66M	21.65	46.00	-24.35	-12.19	3	Horizontal	0	2.00	-
2440MHz	Pass	PK	745.86M	30.90	46.00	-15.10	-8.42	3	Horizontal	0	2.00	-

BT-LE(2Mbps)

2440MHz_USB

11/10/2018

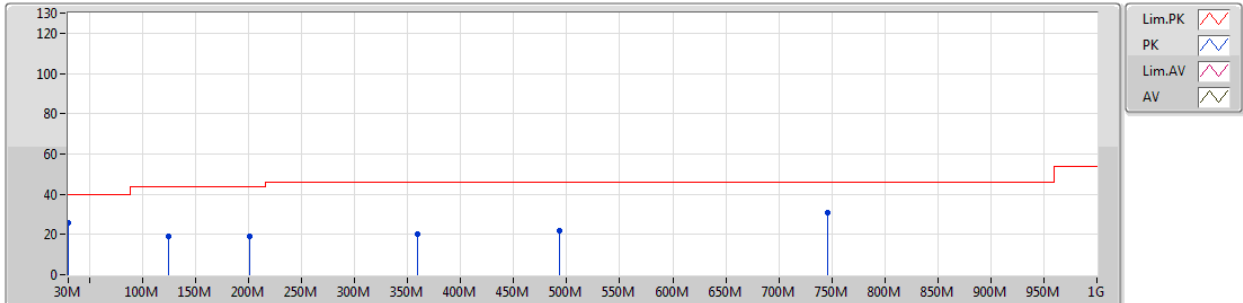


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
PK	30M	24.47	40.00	-15.53	-13.40	3	Vertical	360	1.00	-
PK	125.06M	18.30	43.50	-25.20	-19.21	3	Vertical	360	1.00	-
PK	200.72M	17.02	43.50	-26.48	-21.04	3	Vertical	360	1.00	-
PK	359.8M	19.23	46.00	-26.77	-15.24	3	Vertical	360	1.00	-
PK	433.52M	16.92	46.00	-29.08	-13.09	3	Vertical	360	1.00	-
PK	798.24M	29.82	46.00	-16.18	-8.13	3	Vertical	360	1.00	-

BT-LE(2Mbps)

2440MHz_USB

11/10/2018



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
PK	30M	25.54	40.00	-14.46	-13.40	3	Horizontal	0	2.00	-
PK	125.06M	18.96	43.50	-24.54	-19.21	3	Horizontal	0	2.00	-
PK	200.72M	19.03	43.50	-24.47	-21.04	3	Horizontal	0	2.00	-
PK	359.8M	20.14	46.00	-25.86	-15.24	3	Horizontal	0	2.00	-
PK	493.66M	21.65	46.00	-24.35	-12.19	3	Horizontal	0	2.00	-
PK	745.86M	30.90	46.00	-15.10	-8.42	3	Horizontal	0	2.00	-

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	2.4835G	45.48	54.00	-8.52	30.97	3	Vertical	14	1.57	-
BT-LE(2Mbps)	Pass	AV	2.4988G	45.44	54.00	-8.56	31.17	3	Horizontal	74	1.12	-

Result

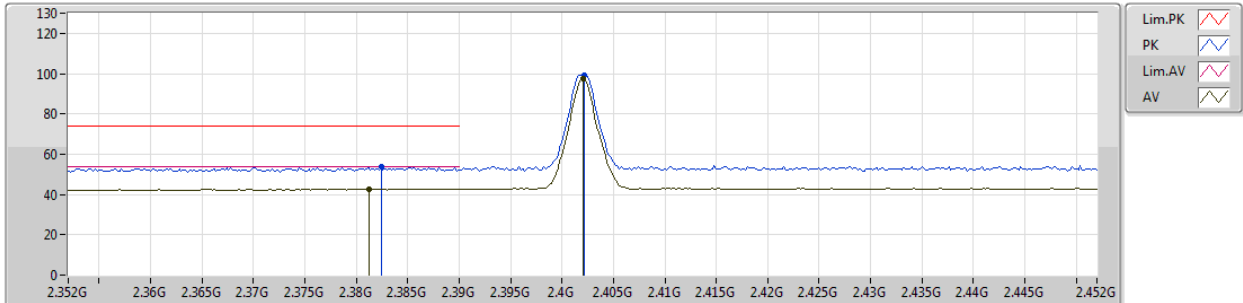
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.3812G	42.73	54.00	-11.27	30.66	3	Vertical	14	1.44	-
2402MHz	Pass	AV	2.402G	97.72	Inf	-Inf	30.72	3	Vertical	14	1.44	-
2402MHz	Pass	PK	2.3824G	53.69	74.00	-20.31	30.67	3	Vertical	14	1.44	-
2402MHz	Pass	PK	2.4022G	99.13	Inf	-Inf	30.73	3	Vertical	14	1.44	-
2402MHz	Pass	AV	2.3878G	42.76	54.00	-11.24	30.68	3	Horizontal	67	1.01	-
2402MHz	Pass	AV	2.402G	89.52	Inf	-Inf	30.72	3	Horizontal	67	1.01	-
2402MHz	Pass	PK	2.3802G	54.07	74.00	-19.93	30.66	3	Horizontal	67	1.01	-
2402MHz	Pass	PK	2.4022G	91.01	Inf	-Inf	30.73	3	Horizontal	67	1.01	-
2402MHz	Pass	AV	4.80378G	32.31	54.00	-21.69	6.49	3	Vertical	346	1.33	-
2402MHz	Pass	PK	4.80886G	44.19	74.00	-29.81	6.50	3	Vertical	346	1.33	-
2402MHz	Pass	AV	4.80698G	32.40	54.00	-21.60	6.50	3	Horizontal	351	2.34	-
2402MHz	Pass	PK	4.80768G	44.73	74.00	-29.27	6.50	3	Horizontal	351	2.34	-
2440MHz	Pass	AV	2.3832G	42.67	54.00	-11.33	30.67	3	Vertical	5	1.34	-
2440MHz	Pass	AV	2.44G	96.63	Inf	-Inf	30.84	3	Vertical	5	1.34	-
2440MHz	Pass	AV	2.494G	43.34	54.00	-10.66	31.00	3	Vertical	5	1.34	-
2440MHz	Pass	PK	2.3804G	54.18	74.00	-19.82	30.66	3	Vertical	5	1.34	-
2440MHz	Pass	PK	2.4396G	98.08	Inf	-Inf	30.84	3	Vertical	5	1.34	-
2440MHz	Pass	PK	2.4888G	54.03	74.00	-19.97	30.98	3	Vertical	5	1.34	-
2440MHz	Pass	AV	2.382G	42.70	54.00	-11.30	30.67	3	Horizontal	66	1.04	-
2440MHz	Pass	AV	2.44G	88.09	Inf	-Inf	30.84	3	Horizontal	66	1.04	-
2440MHz	Pass	AV	2.4956G	43.46	54.00	-10.54	31.00	3	Horizontal	66	1.04	-
2440MHz	Pass	PK	2.3764G	53.40	74.00	-20.60	30.64	3	Horizontal	66	1.04	-
2440MHz	Pass	PK	2.4404G	89.59	Inf	-Inf	30.84	3	Horizontal	66	1.04	-
2440MHz	Pass	PK	2.488G	54.35	74.00	-19.65	30.98	3	Horizontal	66	1.04	-
2440MHz	Pass	AV	4.87988G	32.33	54.00	-21.67	6.67	3	Vertical	246	1.37	-
2440MHz	Pass	PK	4.87828G	44.91	74.00	-29.09	6.67	3	Vertical	246	1.37	-
2440MHz	Pass	AV	4.8791G	32.37	54.00	-21.63	6.67	3	Horizontal	181	2.18	-
2440MHz	Pass	PK	4.87946G	44.89	74.00	-29.11	6.67	3	Horizontal	181	2.18	-
2480MHz	Pass	AV	2.48G	97.30	Inf	-Inf	30.95	3	Vertical	14	1.57	-
2480MHz	Pass	AV	2.4835G	45.48	54.00	-8.52	30.97	3	Vertical	14	1.57	-
2480MHz	Pass	PK	2.48G	98.72	Inf	-Inf	30.95	3	Vertical	14	1.57	-
2480MHz	Pass	PK	2.4835G	54.93	74.00	-19.07	30.97	3	Vertical	14	1.57	-
2480MHz	Pass	AV	2.48G	88.78	Inf	-Inf	30.95	3	Horizontal	68	1.01	-
2480MHz	Pass	AV	2.4966G	43.50	54.00	-10.50	31.00	3	Horizontal	68	1.01	-
2480MHz	Pass	PK	2.48G	90.23	Inf	-Inf	30.95	3	Horizontal	68	1.01	-
2480MHz	Pass	PK	2.4942G	54.48	74.00	-19.52	31.00	3	Horizontal	68	1.01	-
2480MHz	Pass	AV	4.95508G	32.78	54.00	-21.22	6.85	3	Vertical	356	1.18	-
2480MHz	Pass	PK	4.95534G	45.05	74.00	-28.95	6.85	3	Vertical	356	1.18	-
2480MHz	Pass	AV	4.95562G	32.56	54.00	-21.44	6.85	3	Horizontal	233	2.34	-
2480MHz	Pass	PK	4.9589G	45.32	74.00	-28.68	6.86	3	Horizontal	233	2.34	-
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.3894G	44.63	54.00	-9.37	30.77	3	Vertical	9	1.87	-
2402MHz	Pass	AV	2.402G	91.22	Inf	-Inf	30.82	3	Vertical	9	1.87	-
2402MHz	Pass	PK	2.375G	56.37	74.00	-17.63	30.72	3	Vertical	9	1.87	-
2402MHz	Pass	PK	2.4026G	98.17	Inf	-Inf	30.82	3	Vertical	9	1.87	-
2402MHz	Pass	AV	2.3876G	44.60	54.00	-9.40	30.77	3	Horizontal	71	1.00	-
2402MHz	Pass	AV	2.402G	81.32	Inf	-Inf	30.82	3	Horizontal	71	1.00	-

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2402MHz	Pass	PK	2.3808G	56.11	74.00	-17.89	30.75	3	Horizontal	71	1.00	-
2402MHz	Pass	PK	2.4026G	88.35	Inf	-Inf	30.82	3	Horizontal	71	1.00	-
2402MHz	Pass	PK	4.80736G	43.01	74.00	-30.99	2.08	3	Vertical	335	2.57	-
2402MHz	Pass	AV	4.80664G	32.32	54.00	-21.68	2.08	3	Vertical	335	2.57	-
2402MHz	Pass	AV	4.80592G	32.64	54.00	-21.36	2.08	3	Horizontal	359	1.50	-
2402MHz	Pass	PK	4.8148G	43.24	74.00	-30.76	2.10	3	Horizontal	359	1.50	-
2440MHz	Pass	AV	2.3888G	44.63	54.00	-9.37	30.77	3	Vertical	25	1.14	-
2440MHz	Pass	AV	2.44G	91.13	Inf	-Inf	30.95	3	Vertical	25	1.14	-
2440MHz	Pass	AV	2.4996G	45.42	54.00	-8.58	31.17	3	Vertical	25	1.14	-
2440MHz	Pass	PK	2.3756G	55.86	74.00	-18.14	30.72	3	Vertical	25	1.14	-
2440MHz	Pass	PK	2.4404G	98.07	Inf	-Inf	30.95	3	Vertical	25	1.14	-
2440MHz	Pass	PK	2.4948G	56.23	74.00	-17.77	31.16	3	Vertical	25	1.14	-
2440MHz	Pass	AV	2.384G	44.63	54.00	-9.37	30.76	3	Horizontal	74	1.12	-
2440MHz	Pass	AV	2.44G	80.02	Inf	-Inf	30.95	3	Horizontal	74	1.12	-
2440MHz	Pass	AV	2.4988G	45.44	54.00	-8.56	31.17	3	Horizontal	74	1.12	-
2440MHz	Pass	PK	2.348G	55.54	74.00	-18.46	30.62	3	Horizontal	74	1.12	-
2440MHz	Pass	PK	2.44G	87.00	Inf	-Inf	30.95	3	Horizontal	74	1.12	-
2440MHz	Pass	PK	2.4988G	55.80	74.00	-18.20	31.17	3	Horizontal	74	1.12	-
2440MHz	Pass	AV	4.88726G	32.94	54.00	-21.06	2.29	3	Vertical	16	1.45	-
2440MHz	Pass	PK	4.8884G	43.98	74.00	-30.02	2.29	3	Vertical	16	1.45	-
2440MHz	Pass	AV	4.88642G	32.54	54.00	-21.46	2.29	3	Horizontal	348	1.59	-
2440MHz	Pass	PK	4.8806G	43.41	74.00	-30.59	2.27	3	Horizontal	348	1.59	-
2480MHz	Pass	AV	2.48G	91.07	Inf	-Inf	31.09	3	Vertical	16	2.54	-
2480MHz	Pass	AV	2.4835G	45.44	54.00	-8.56	31.11	3	Vertical	16	2.54	-
2480MHz	Pass	PK	2.48G	97.97	Inf	-Inf	31.09	3	Vertical	16	2.54	-
2480MHz	Pass	PK	2.4835G	56.58	74.00	-17.42	31.11	3	Vertical	16	2.54	-
2480MHz	Pass	AV	2.48G	80.25	Inf	-Inf	31.09	3	Horizontal	74	1.00	-
2480MHz	Pass	AV	2.497G	45.43	54.00	-8.57	31.16	3	Horizontal	74	1.00	-
2480MHz	Pass	PK	2.4796G	87.21	Inf	-Inf	31.09	3	Horizontal	74	1.00	-
2480MHz	Pass	PK	2.4884G	56.58	74.00	-17.42	31.13	3	Horizontal	74	1.00	-
2480MHz	Pass	AV	4.88384G	32.86	54.00	-21.14	2.28	3	Vertical	7	1.50	-
2480MHz	Pass	PK	4.8899G	43.45	74.00	-30.55	2.29	3	Vertical	7	1.50	-
2480MHz	Pass	AV	4.88798G	32.53	54.00	-21.47	2.29	3	Horizontal	360	1.50	-
2480MHz	Pass	PK	4.88012G	43.74	74.00	-30.26	2.27	3	Horizontal	360	1.50	-

BT-LE(1Mbps)

2402MHz_TX

10/10/2018

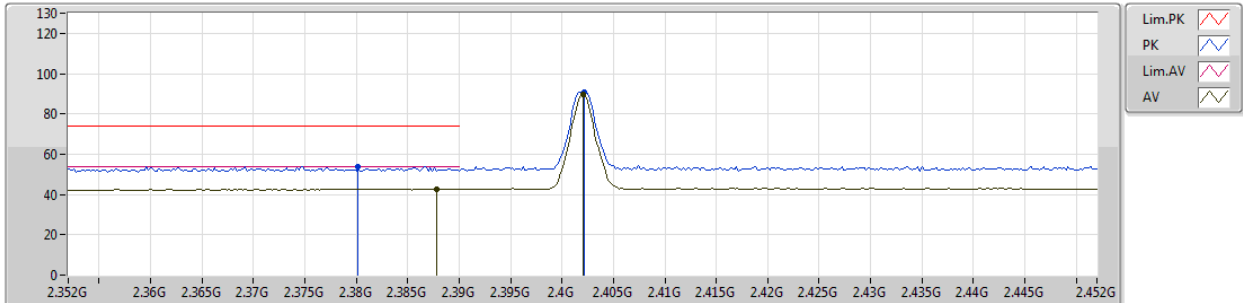


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments								
AV	2.3812G	42.73	54.00	-11.27	30.66	3	Vertical	14	1.44	-								
AV	2.402G	97.72	Inf	-Inf	30.72	3	Vertical	14	1.44	-								
PK	2.3824G	53.69	74.00	-20.31	30.67	3	Vertical	14	1.44	-								
PK	2.4022G	99.13	Inf	-Inf	30.73	3	Vertical	14	1.44	-								

BT-LE(1Mbps)

2402MHz_TX

10/10/2018

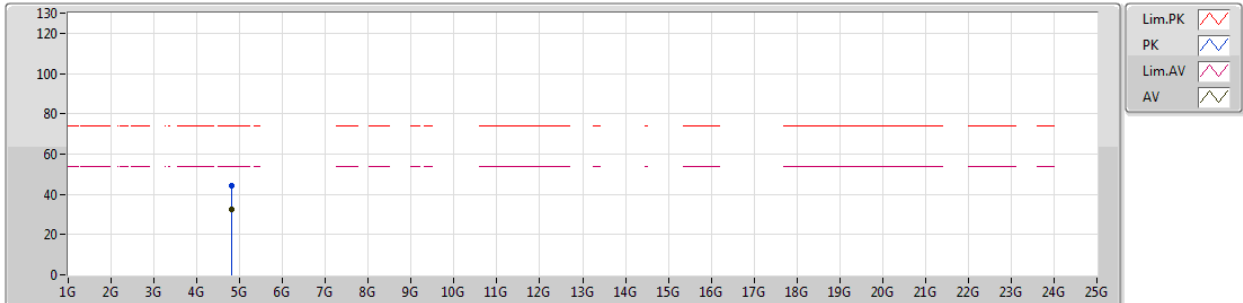


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.3878G	42.76	54.00	-11.24	30.68	3	Horizontal	67	1.01	-
AV	2.402G	89.52	Inf	-Inf	30.72	3	Horizontal	67	1.01	-
PK	2.3802G	54.07	74.00	-19.93	30.66	3	Horizontal	67	1.01	-
PK	2.4022G	91.01	Inf	-Inf	30.73	3	Horizontal	67	1.01	-

BT-LE(1Mbps)

2402MHz_TX

10/10/2018

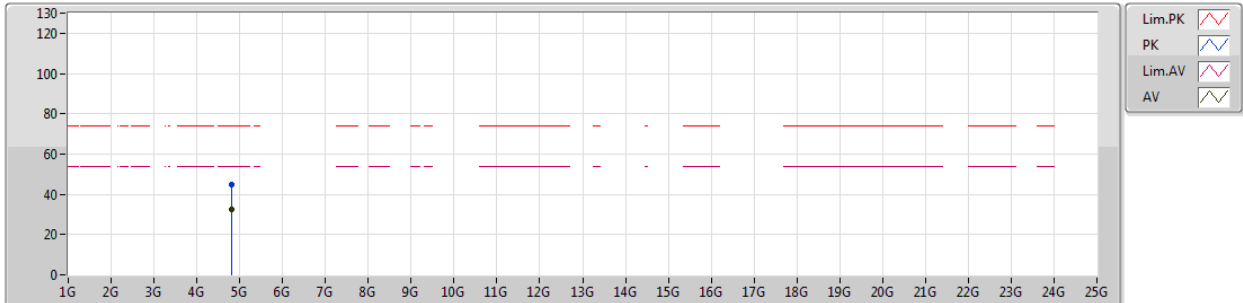


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments								
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)									
AV	4.80378G	32.31	54.00	-21.69	6.49	3	Vertical	346	1.33	-								
PK	4.80886G	44.19	74.00	-29.81	6.50	3	Vertical	346	1.33	-								

BT-LE(1Mbps)

2402MHz_TX

10/10/2018

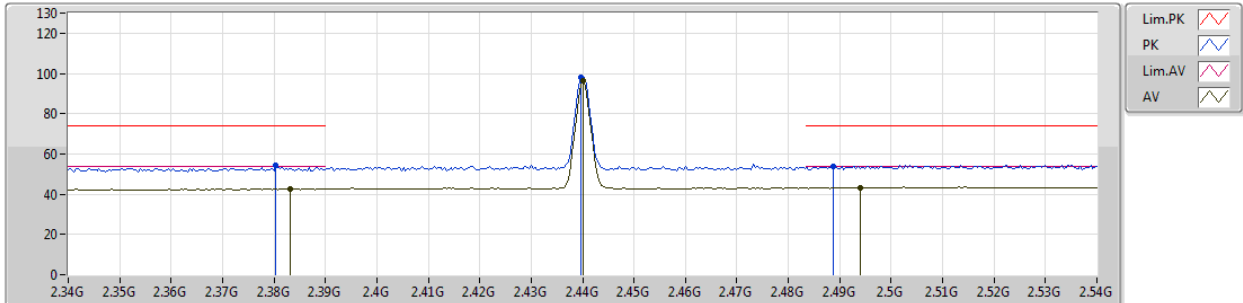


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.80698G	32.40	54.00	-21.60	6.50	3	Horizontal	351	2.34	-
PK	4.80768G	44.73	74.00	-29.27	6.50	3	Horizontal	351	2.34	-

BT-LE(1Mbps)

2440MHz_TX

10/10/2018

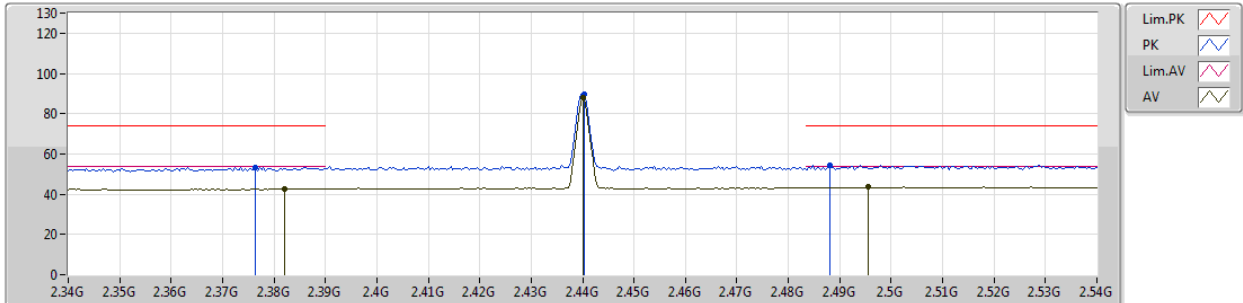


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.3832G	42.67	54.00	-11.33	30.67	3	Vertical	5	1.34	-
AV	2.44G	96.63	Inf	-Inf	30.84	3	Vertical	5	1.34	-
AV	2.494G	43.34	54.00	-10.66	31.00	3	Vertical	5	1.34	-
PK	2.3804G	54.18	74.00	-19.82	30.66	3	Vertical	5	1.34	-
PK	2.4396G	98.08	Inf	-Inf	30.84	3	Vertical	5	1.34	-
PK	2.4888G	54.03	74.00	-19.97	30.98	3	Vertical	5	1.34	-

BT-LE(1Mbps)

2440MHz_TX

10/10/2018

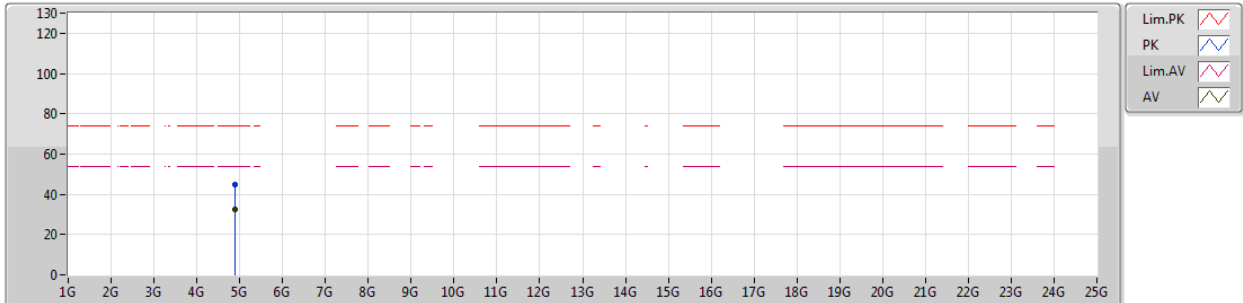


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.382G	42.70	54.00	-11.30	30.67	3	Horizontal	66	1.04	-
AV	2.44G	88.09	Inf	-Inf	30.84	3	Horizontal	66	1.04	-
AV	2.4956G	43.46	54.00	-10.54	31.00	3	Horizontal	66	1.04	-
PK	2.3764G	53.40	74.00	-20.60	30.64	3	Horizontal	66	1.04	-
PK	2.4404G	89.59	Inf	-Inf	30.84	3	Horizontal	66	1.04	-
PK	2.488G	54.35	74.00	-19.65	30.98	3	Horizontal	66	1.04	-

BT-LE(1Mbps)

2440MHz_TX

10/10/2018

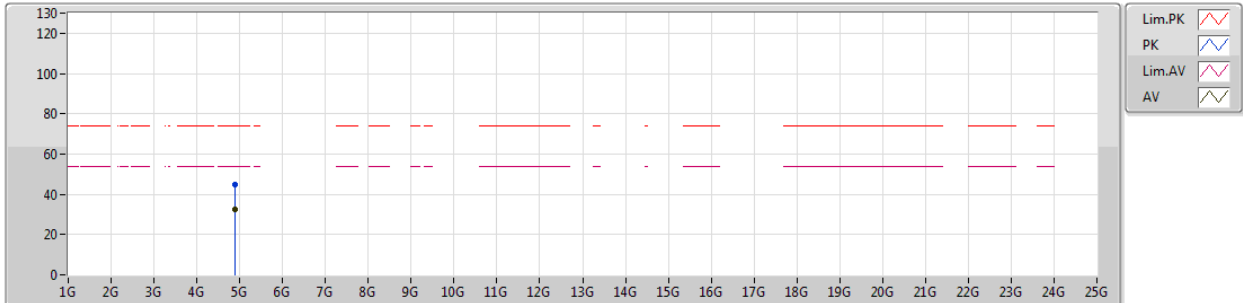


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.87988G	32.33	54.00	-21.67	6.67	3	Vertical	246	1.37	-
PK	4.87828G	44.91	74.00	-29.09	6.67	3	Vertical	246	1.37	-

BT-LE(1Mbps)

2440MHz_TX

10/10/2018

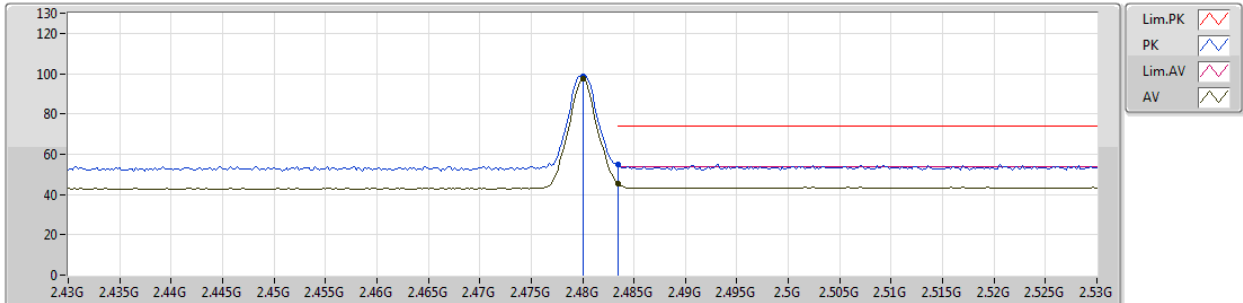


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments							
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)								
AV	4.8791G	32.37	54.00	-21.63	6.67	3	Horizontal	181	2.18	-							
PK	4.87946G	44.89	74.00	-29.11	6.67	3	Horizontal	181	2.18	-							

BT-LE(1Mbps)

2480MHz_TX

10/10/2018

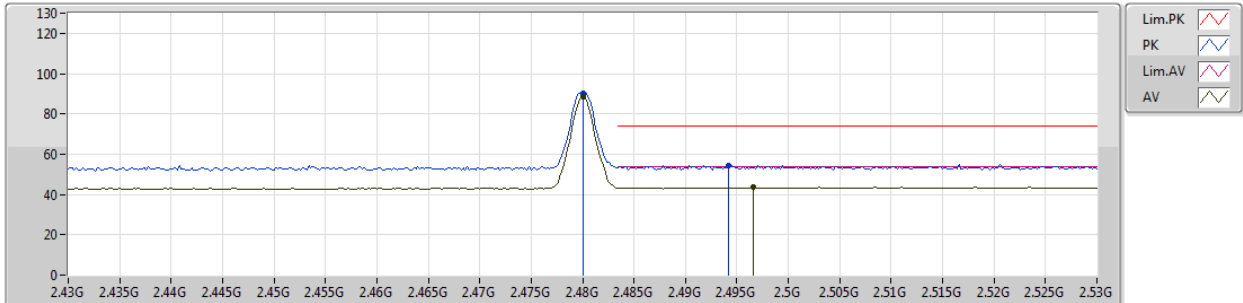


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.48G	97.30	Inf	-Inf	30.95	3	Vertical	14	1.57	-
AV	2.4835G	45.48	54.00	-8.52	30.97	3	Vertical	14	1.57	-
PK	2.48G	98.72	Inf	-Inf	30.95	3	Vertical	14	1.57	-
PK	2.4835G	54.93	74.00	-19.07	30.97	3	Vertical	14	1.57	-

BT-LE(1Mbps)

2480MHz_TX

10/10/2018

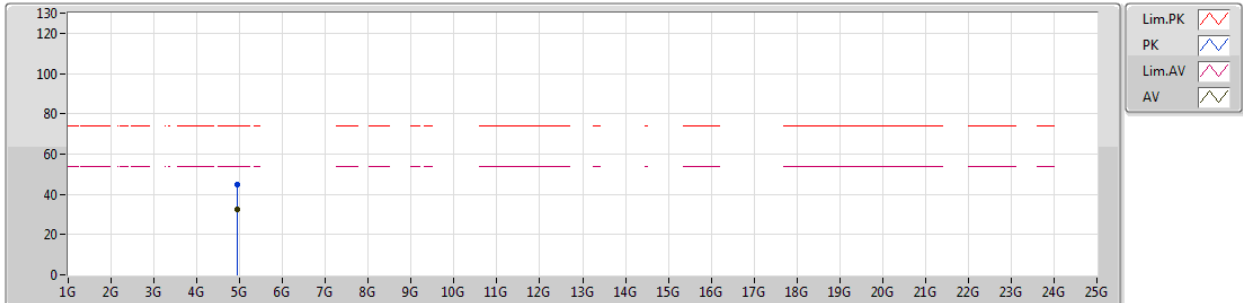


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.48G	88.78	Inf	-Inf	30.95	3	Horizontal	68	1.01	-
AV	2.4966G	43.50	54.00	-10.50	31.00	3	Horizontal	68	1.01	-
PK	2.48G	90.23	Inf	-Inf	30.95	3	Horizontal	68	1.01	-
PK	2.4942G	54.48	74.00	-19.52	31.00	3	Horizontal	68	1.01	-

BT-LE(1Mbps)

2480MHz_TX

10/10/2018

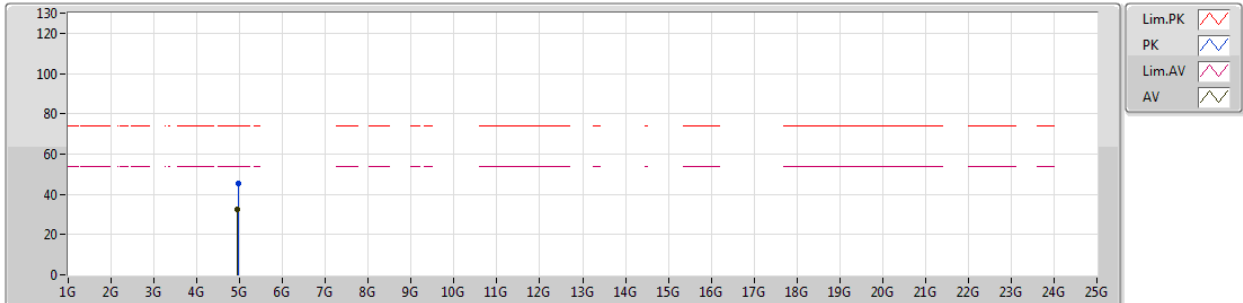


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.95508G	32.78	54.00	-21.22	6.85	3	Vertical	356	1.18	-
PK	4.95534G	45.05	74.00	-28.95	6.85	3	Vertical	356	1.18	-

BT-LE(1Mbps)

2480MHz_TX

10/10/2018

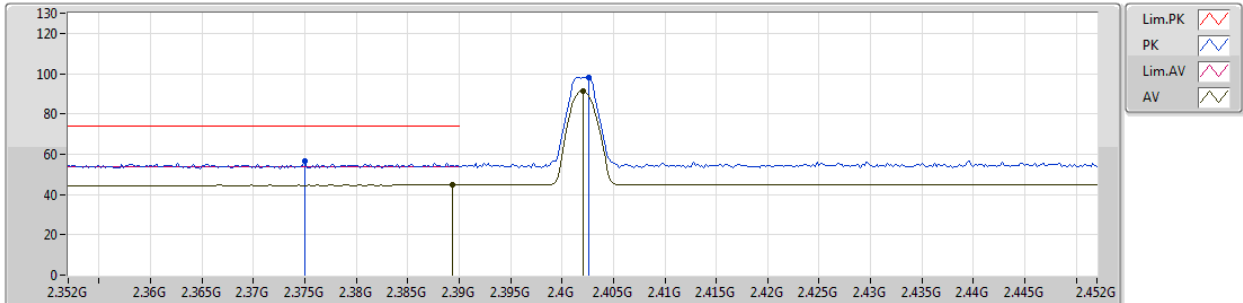


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.95562G	32.56	54.00	-21.44	6.85	3	Horizontal	233	2.34	-
PK	4.9589G	45.32	74.00	-28.68	6.86	3	Horizontal	233	2.34	-

BT-LE(2Mbps)

2402MHz_TX

11/10/2018

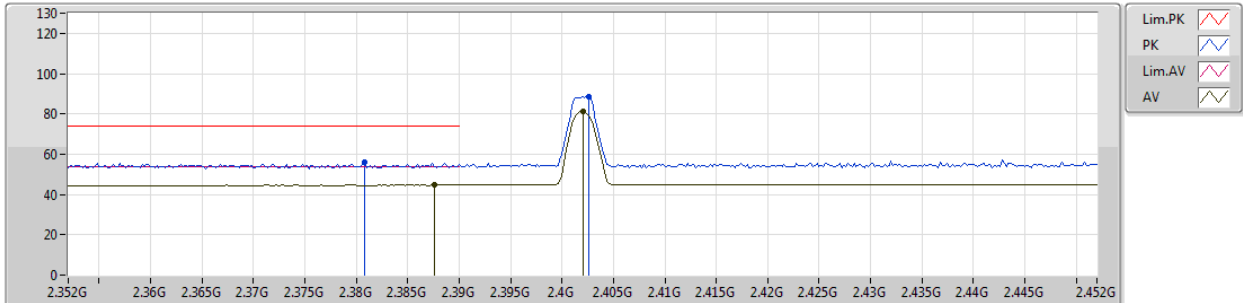


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.3894G	44.63	54.00	-9.37	30.77	3	Vertical	9	1.87	-
AV	2.402G	91.22	Inf	-Inf	30.82	3	Vertical	9	1.87	-
PK	2.375G	56.37	74.00	-17.63	30.72	3	Vertical	9	1.87	-
PK	2.4026G	98.17	Inf	-Inf	30.82	3	Vertical	9	1.87	-

BT-LE(2Mbps)

2402MHz_TX

11/10/2018

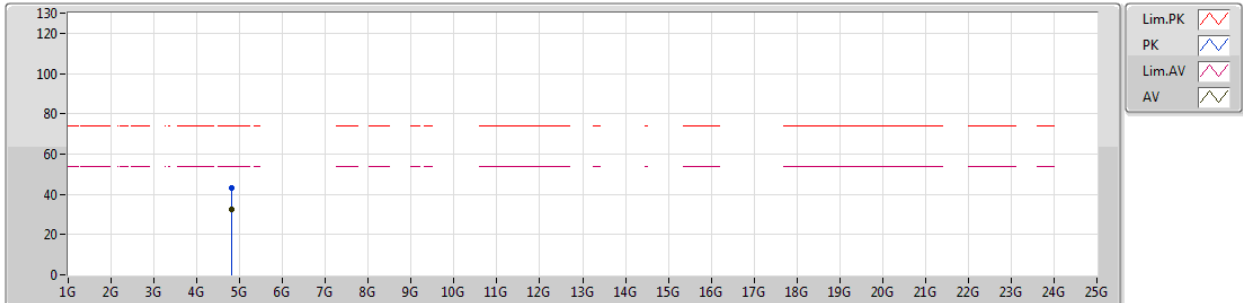


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.3876G	44.60	54.00	-9.40	30.77	3	Horizontal	71	1.00	-
AV	2.402G	81.32	Inf	-Inf	30.82	3	Horizontal	71	1.00	-
PK	2.3808G	56.11	74.00	-17.89	30.75	3	Horizontal	71	1.00	-
PK	2.4026G	88.35	Inf	-Inf	30.82	3	Horizontal	71	1.00	-

BT-LE(2Mbps)

2402MHz_TX

11/10/2018

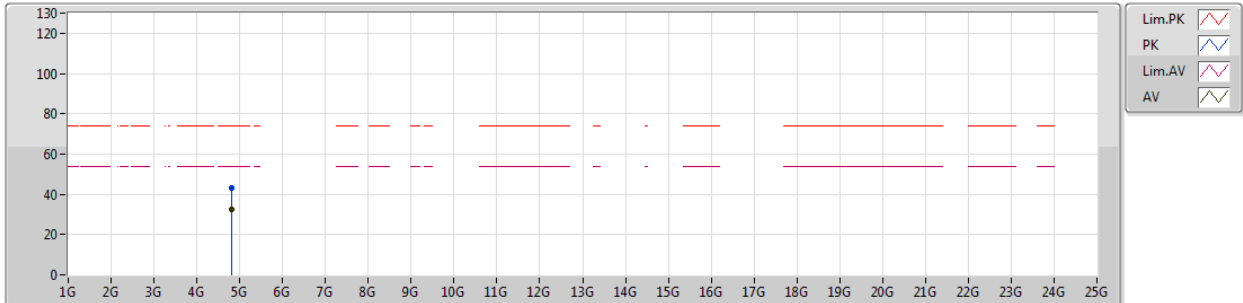


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
PK	4.80736G	43.01	74.00	-30.99	2.08	3	Vertical	335	2.57	-
AV	4.80664G	32.32	54.00	-21.68	2.08	3	Vertical	335	2.57	-

BT-LE(2Mbps)

2402MHz_TX

11/10/2018

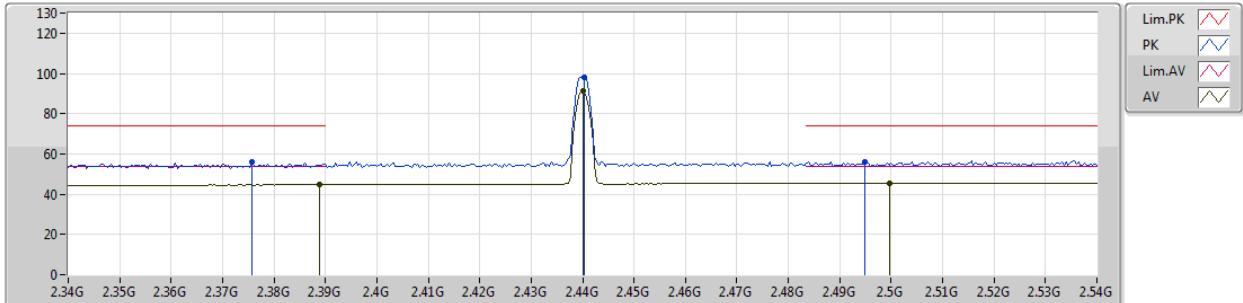


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.80592G	32.64	54.00	-21.36	2.08	3	Horizontal	359	1.50	-
PK	4.8148G	43.24	74.00	-30.76	2.10	3	Horizontal	359	1.50	-

BT-LE(2Mbps)

2440MHz_TX

11/10/2018

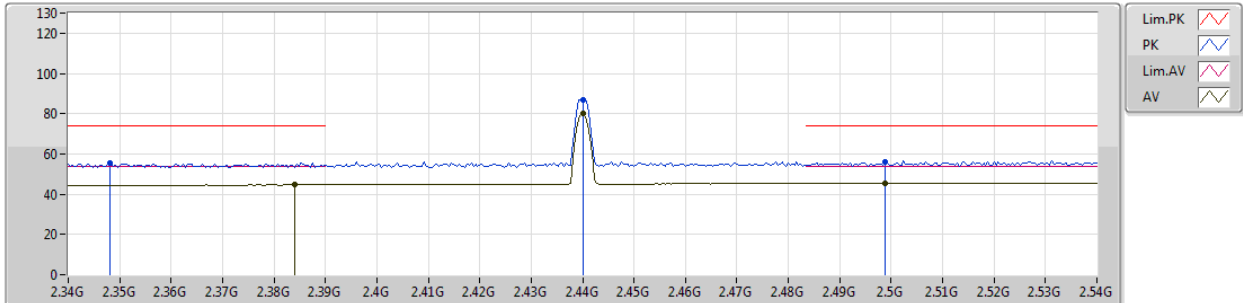


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.3888G	44.63	54.00	-9.37	30.77	3	Vertical	25	1.14	-
AV	2.44G	91.13	Inf	-Inf	30.95	3	Vertical	25	1.14	-
AV	2.4996G	45.42	54.00	-8.58	31.17	3	Vertical	25	1.14	-
PK	2.3756G	55.86	74.00	-18.14	30.72	3	Vertical	25	1.14	-
PK	2.4404G	98.07	Inf	-Inf	30.95	3	Vertical	25	1.14	-
PK	2.4948G	56.23	74.00	-17.77	31.16	3	Vertical	25	1.14	-

BT-LE(2Mbps)

2440MHz_TX

11/10/2018

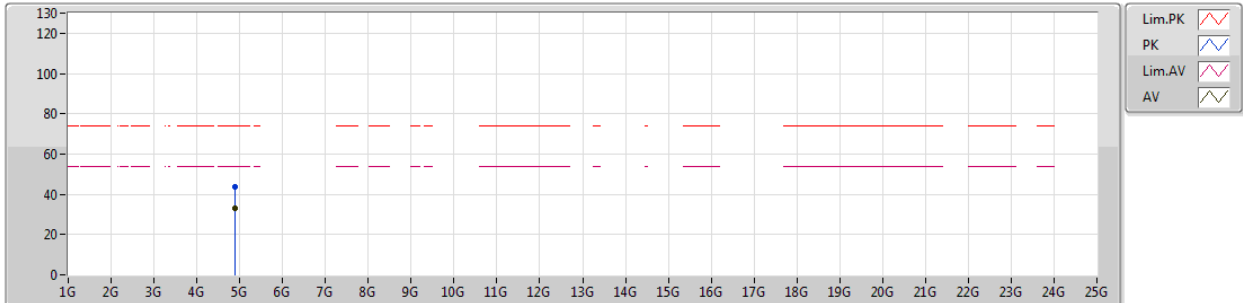


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.384G	44.63	54.00	-9.37	30.76	3	Horizontal	74	1.12	-
AV	2.44G	80.02	Inf	-Inf	30.95	3	Horizontal	74	1.12	-
AV	2.4988G	45.44	54.00	-8.56	31.17	3	Horizontal	74	1.12	-
PK	2.348G	55.54	74.00	-18.46	30.62	3	Horizontal	74	1.12	-
PK	2.44G	87.00	Inf	-Inf	30.95	3	Horizontal	74	1.12	-
PK	2.4988G	55.80	74.00	-18.20	31.17	3	Horizontal	74	1.12	-

BT-LE(2Mbps)

2440MHz_TX

11/10/2018

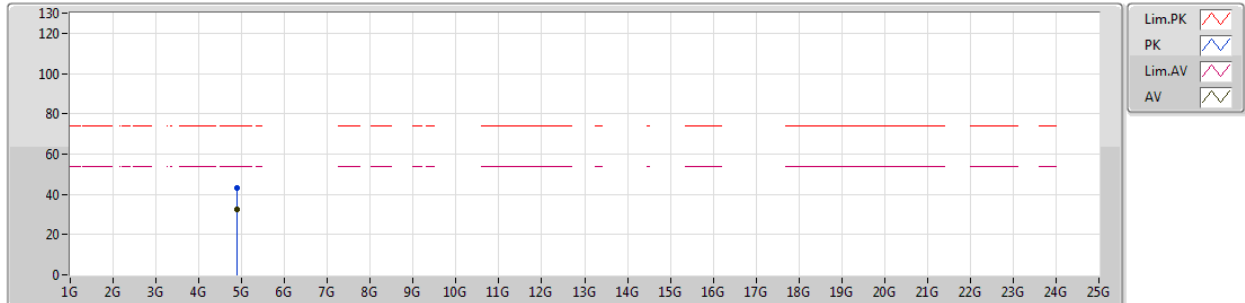


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	4.88726G	32.94	54.00	-21.06	2.29	3	Vertical	16	1.45	-
PK	4.8884G	43.98	74.00	-30.02	2.29	3	Vertical	16	1.45	-

BT-LE(2Mbps)

2440MHz_TX

11/10/2018

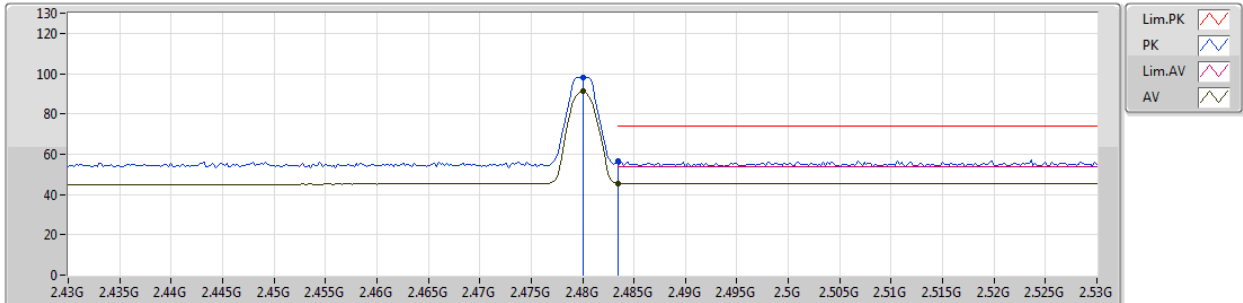


Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments							
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)								
AV	4.88642G	32.54	54.00	-21.46	2.29	3	Horizontal	348	1.59	-							
PK	4.8806G	43.41	74.00	-30.59	2.27	3	Horizontal	348	1.59	-							

BT-LE(2Mbps)

2480MHz_TX

11/10/2018

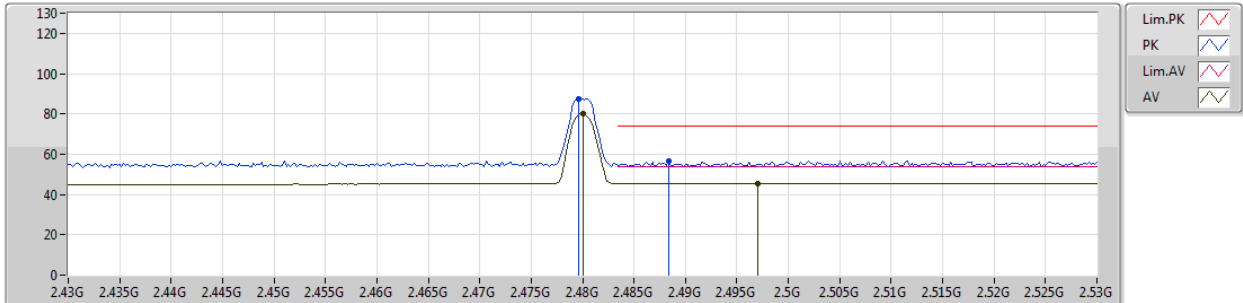


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.48G	91.07	Inf	-Inf	31.09	3	Vertical	16	2.54	-
AV	2.4835G	45.44	54.00	-8.56	31.11	3	Vertical	16	2.54	-
PK	2.48G	97.97	Inf	-Inf	31.09	3	Vertical	16	2.54	-
PK	2.4835G	56.58	74.00	-17.42	31.11	3	Vertical	16	2.54	-

BT-LE(2Mbps)

2480MHz_TX

11/10/2018

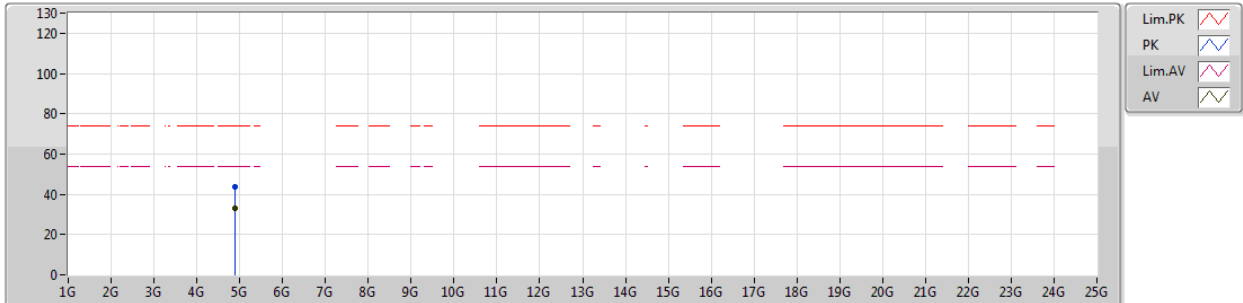


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
AV	2.48G	80.25	Inf	-Inf	31.09	3	Horizontal	74	1.00	-
AV	2.497G	45.43	54.00	-8.57	31.16	3	Horizontal	74	1.00	-
PK	2.4796G	87.21	Inf	-Inf	31.09	3	Horizontal	74	1.00	-
PK	2.4884G	56.58	74.00	-17.42	31.13	3	Horizontal	74	1.00	-

BT-LE(2Mbps)

2480MHz_TX

11/10/2018

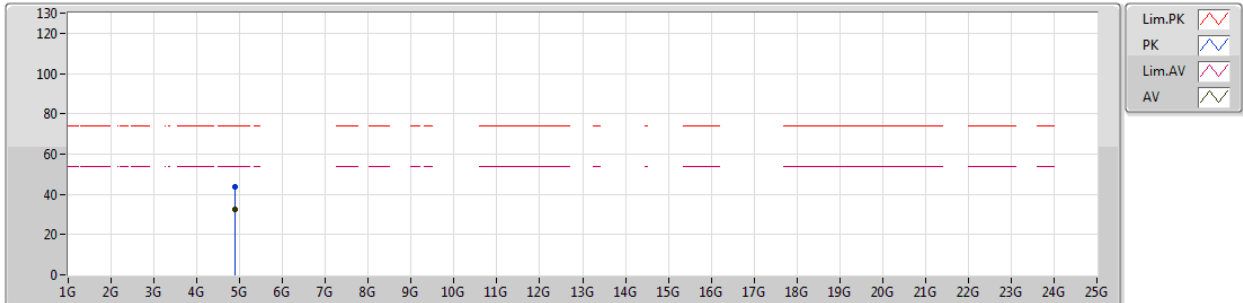


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments								
AV	4.88384G	32.86	54.00	-21.14	2.28	3	Vertical	7	1.50	-								
PK	4.8899G	43.45	74.00	-30.55	2.29	3	Vertical	7	1.50	-								

BT-LE(2Mbps)

2480MHz_TX

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Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments								
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)									
AV	4.88798G	32.53	54.00	-21.47	2.29	3	Horizontal	360	1.50	-								
PK	4.88012G	43.74	74.00	-30.26	2.27	3	Horizontal	360	1.50	-								

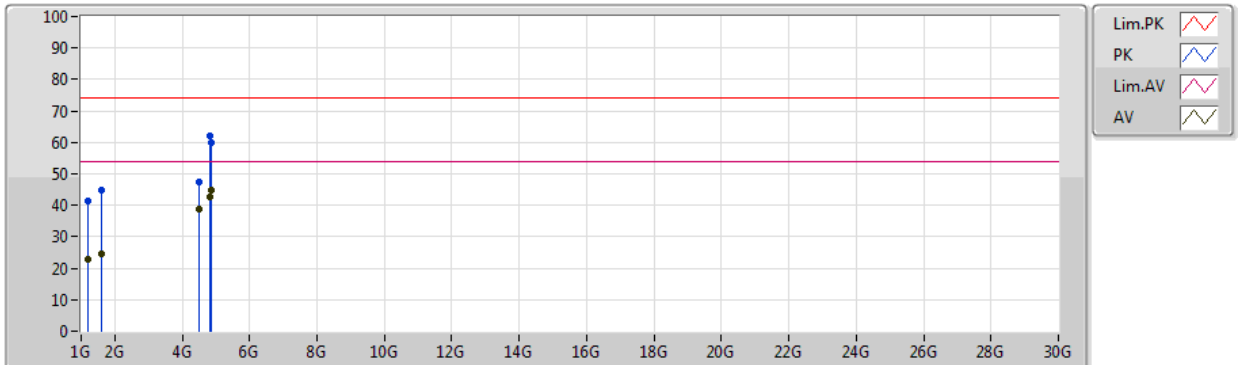


Summary

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	4.8745G	44.65	54.00	-9.35	6.65	3	Vertical	174	1.50	-

Radiation-above 1GHz_Mode 1

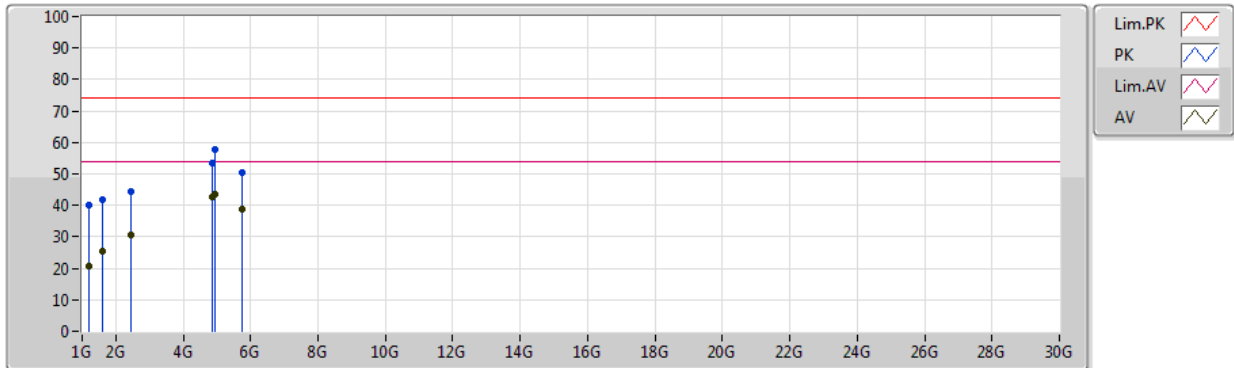
13/11/2018



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height										
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)										
AV	1.19913G	22.76	54.00	-31.24	-5.24	3	Vertical	146	1.50										
AV	1.59513G	24.37	54.00	-29.63	-2.63	3	Vertical	83	1.50										
AV	4.49088G	38.88	54.00	-15.12	5.88	3	Vertical	253	1.50										
AV	4.8295G	42.55	54.00	-11.45	6.55	3	Vertical	93	1.50										
AV	4.8745G	44.65	54.00	-9.35	6.65	3	Vertical	174	1.50										
PK	1.19913G	41.20	74.00	-32.80	-5.24	3	Vertical	146	1.50										
PK	1.59513G	44.69	74.00	-29.31	-2.63	3	Vertical	83	1.50										
PK	4.49088G	47.23	74.00	-26.77	5.88	3	Vertical	253	1.50										
PK	4.8295G	62.18	74.00	-11.82	6.55	3	Vertical	93	1.50										
PK	4.8745G	59.98	74.00	-14.02	6.65	3	Vertical	174	1.50										

Radiation-above 1GHz_Mode 1

13/11/2018



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
AV	1.19913G	20.76	54.00	-33.24	-5.24	3	Horizontal	357	1.50
AV	1.59513G	25.37	54.00	-28.63	-2.63	3	Horizontal	274	1.50
AV	2.44113G	30.42	54.00	-23.58	0.42	3	Horizontal	126	1.50
AV	4.84975G	42.59	54.00	-11.41	6.59	3	Horizontal	153	1.50
AV	4.94988G	43.43	54.00	-10.57	6.83	3	Horizontal	244	1.50
AV	5.75088G	38.64	54.00	-15.36	8.04	3	Horizontal	88	1.50
PK	1.19913G	40.10	74.00	-33.90	-5.24	3	Horizontal	357	1.50
PK	1.59513G	42.01	74.00	-31.99	-2.63	3	Horizontal	274	1.50
PK	2.44113G	44.25	74.00	-29.75	0.42	3	Horizontal	126	1.50
PK	4.84975G	53.51	74.00	-20.49	6.59	3	Horizontal	153	1.50
PK	4.94988G	57.64	74.00	-16.36	6.83	3	Horizontal	244	1.50
PK	5.75088G	50.55	74.00	-23.45	8.04	3	Horizontal	88	1.50