



FCC Test Report

FCC ID : 2AU2L-165253
Equipment : Aerobit SpiroLite, Aerobit PeakFlow⁺
Brand Name : Aerobit SpiroLite, Aerobit PeakFlow⁺
Model Name : 165221,165253
Applicant/
Manufacturer : Aerobit Labs Pvt Ltd
3rd Floor, Office No 303, Nyati Emporium, Baner,
Pune 411045, Maharashtra, India
Standard : 47 CFR FCC Part 15.247

The product was received on Oct. 14, 2019, and testing was started from Oct. 23, 2019 and completed on Nov. 07, 2019. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

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

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

Approved by: Allen Lin

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

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

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History of this test report

TEL : 886-3-3273456
FAX : 886-3-3270973
Report Template No.: HE1-C10 Ver3.6
FCC ID: 2AU2L-165253

Summary of Test Result

Report Clause	Ref.Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
3.1	15.207	AC Power-line Conducted Emissions	PASS	-
3.2	15.247(a)	DTS Bandwidth	PASS	-
3.3	15.247(b)	Maximum Conducted Output Power	PASS	-
3.4	15.247(e)	Power Spectral Density	PASS	-
3.5	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	-
3.6	15.247(d)	Emissions in Restricted Frequency Bands	PASS	-

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: Ben Tseng

Report Producer: Yunha Liou

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.	Port	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	1	PulseLARSEN Antnnas	CC2640S1	Chip	N/A	1.1

Note 1: The EUT has one antenna.

For BT function:

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

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

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	T(s)	VBW(Hz) $\geq 1/T$
BT-LE(1Mbps)	1	0	n/a (DC $\geq$ 0.98)

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

1.1.5 Table for Multiple Listing

The brand/model names in the following table are all refer to the identical product.

Equipment Name	Brand Name	Model Name	Description
Aerobit SpiroLite	Aerobit SpiroLite	165221	All the models are identical, the difference model for different brand served and color as marketing strategy.
Aerobit PeakFlow ⁺	Aerobit PeakFlow ⁺	165253	

Specifications	Difference Between Peak Flow+ and Spirolite.	
	PeakFlow ⁺	SpiroLite
Model No	165253	165221
PCB	Same	Same
Bill of Materials	Same	Same
Schematics	Same	Same
Circuit Diagram	Same	Same
Shape	Same	Same
Color	White and green combination	White and blue combination
Bluetooth technology	Same (BLE 4.2)	Same (BLE 4.2)
Turbine used	Same (Aerobit Turbine)	Same (Aerobit Turbine)
Mobile App	Same (Aerobit App)	Same (Aerobit App)
Type of metallic enclosure	No metallic enclosure	No metallic enclosure
Battery Voltage condition	Same (3V DC)	Same (3V DC)
Pictures		
Type of Output	Same (Bluetooth frequencies)	Specify (Bluetooth frequencies)
Usage Condition	Same (Home and Clinic use)	Same (Home and clinic use)
Environmental condition	Same (Ambient conditions)	Same (Ambient conditions)

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
- ♦ KDB 414788 D01 v01r01

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	Edward	22.5~23.9°C / 60.4~61.2%	Oct/26/2019
RF Conducted	TH01-HY	Raven	23.1~26.6°C / 61~69%	Oct/23/2019~ Oct/24/2019
Radiated	03CH02-HY	Dexter	25.3~25.8°C / 55.4~56.3%	Oct/30/2019~ Nov/07/2019

1.4 Measurement Uncertainty

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

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

2 Test Configuration of EUT

2.1 Test Condition

RF Conducted	Abbreviation	Remark
TnomVnom	Tnom	20°C
-	Vnom	3V

2.2 Test Channel Mode

Test Software Version	Setup_SmartRF_Studio_7
-----------------------	------------------------

Mode	Power Setting
BT-LE(1Mbps)	-
2402MHz	1
2440MHz	-3
2480MHz	-3

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	From Host System

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	From Host System		
Operating Mode > 1GHz	CTX		
Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			
Worst Planes of EUT			V

2.4 Accessories and Support Equipment

Accessories				
Turbine	Brand Name	Aerobit	Model Name	53000

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

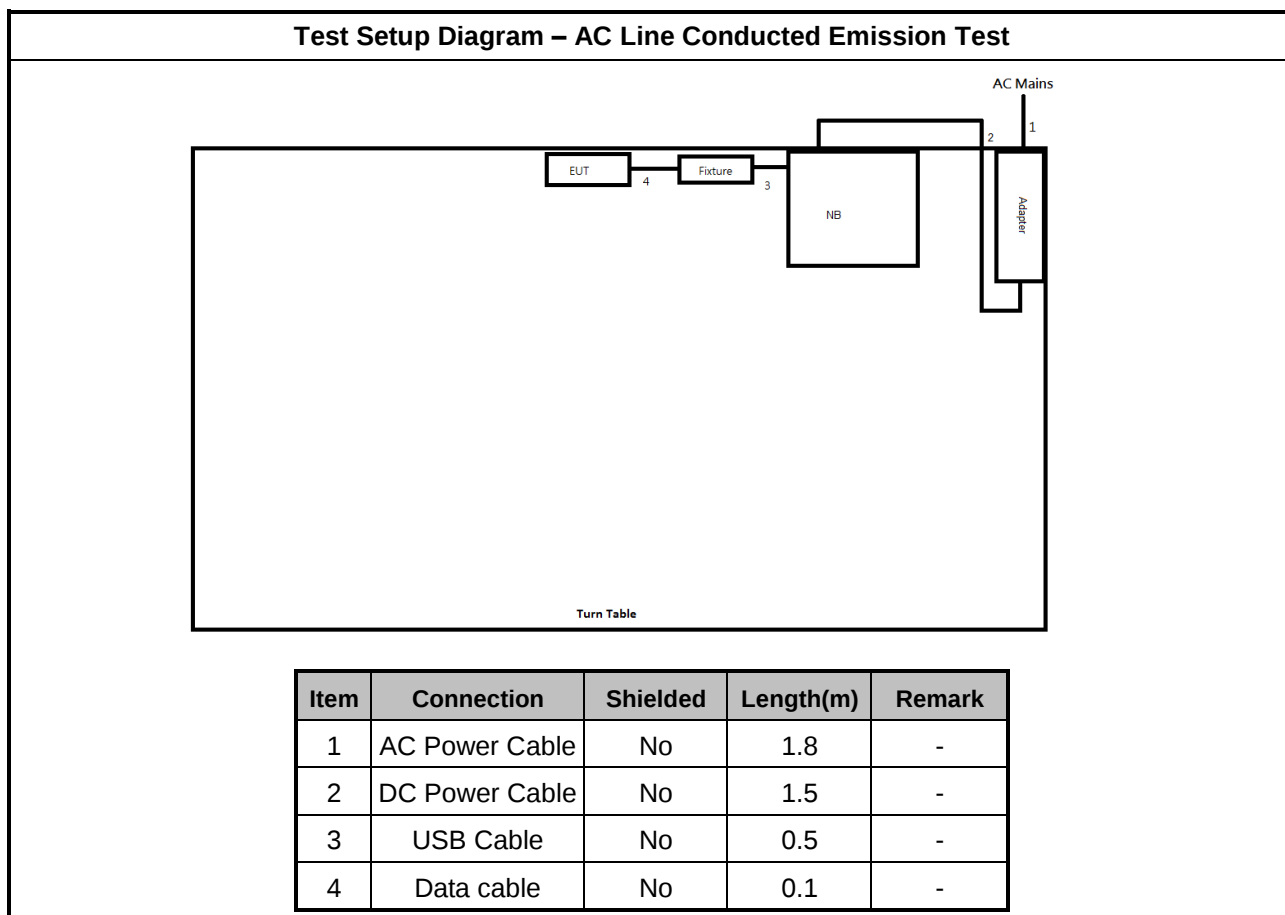
Support Equipment – RF Conducted				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E5410	DoC
2	Adapter for NB	DELL	HA65NM130	DoC
3	Fixture	-	-	-

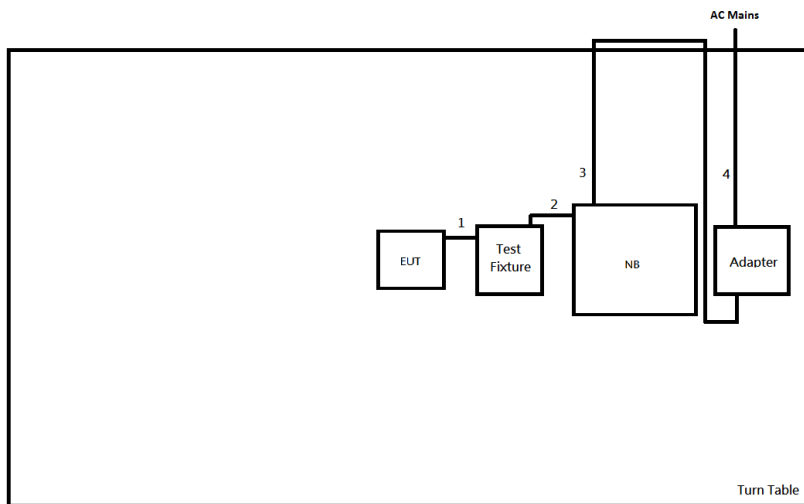
Note: Support equipment No.3 was provided by customer.

Support Equipment –AC Conduction and Radiated Emission				
No.	Equipment	Brand Name	Model Name	FCC ID
1	AC Power cable	Power sync	PW-GPC180-3	-
2	AC Adapter (for NB)	DELL	LA90PM111	-
3	Notebook	DELL	E4300	-
4	Fixture	-	-	-
5	USB Cable	-	-	-

Note: Support equipment No.4 and No.5 were provided by customer.

2.5 Test Setup Diagram



Test Setup Diagram - Radiated Test


Item	Connection	Shielded	Length(m)	Remark
1	RF Cable	No	0.12	-
2	USB cable	No	0.5	-
3	DC Power line	No	1.8	-
4	AC Power Cable	No	1.8	-

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.		

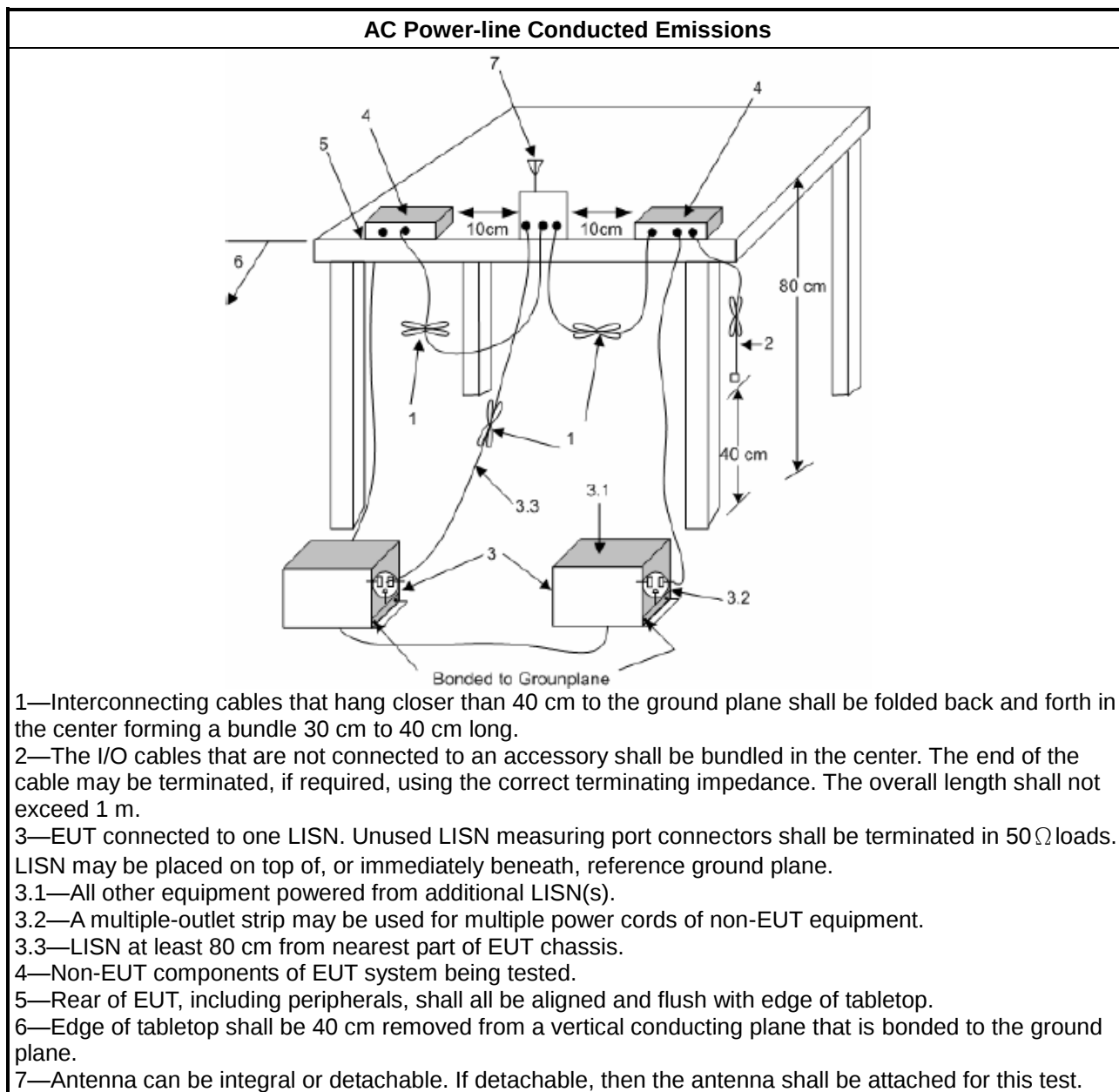
3.1.2 Measuring Instruments

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.

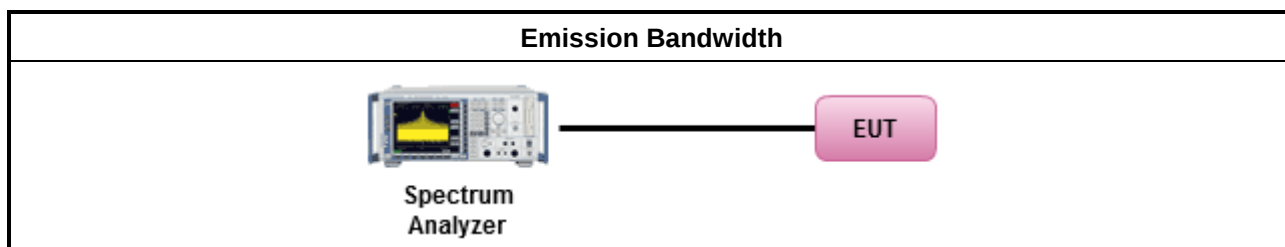
3.2.2 Measuring Instruments

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.	

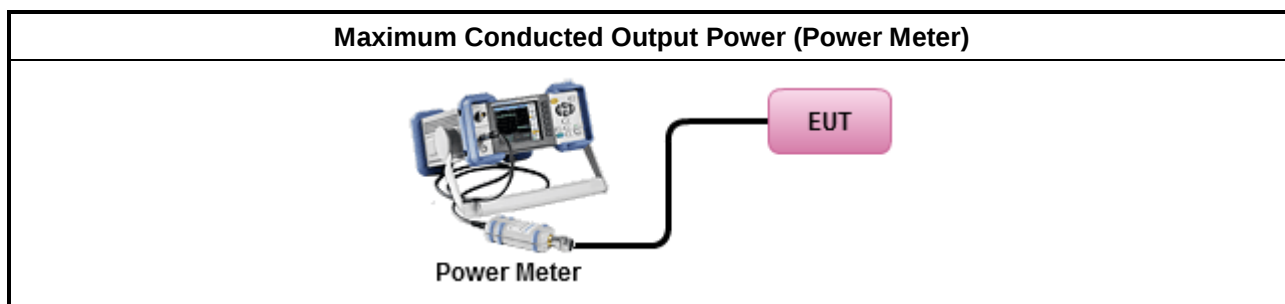
3.3.2 Measuring Instruments

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

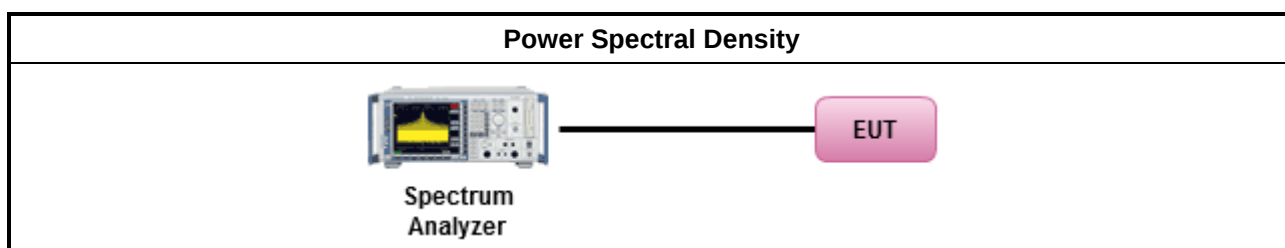
3.4.2 Measuring Instruments

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 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 level.	

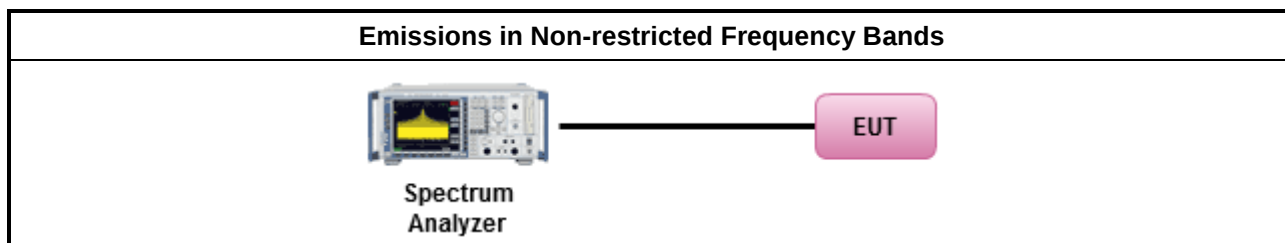
3.5.2 Measuring Instruments

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.

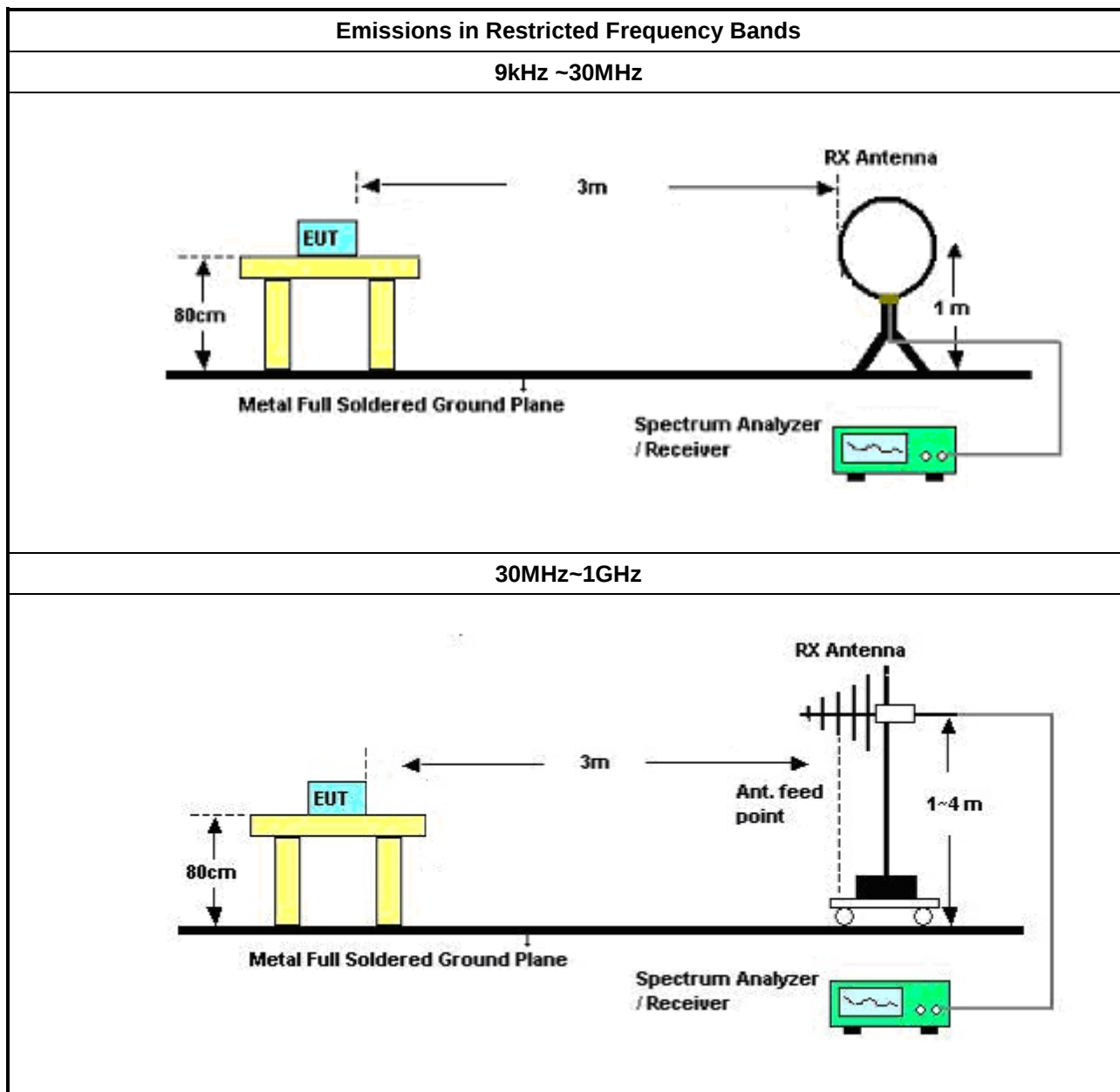
3.6.2 Measuring Instruments

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 $\geq$ 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.
KDB 414788 Open-Field Test Sites and Chamber Correlation Justification.	
	Based on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in regulations; however, an attempt should be made to avoid making measurements in the near field.
	Open-field site and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

3.6.4 Test Setup





3.6.6 Test Result of Emissions in Restricted Frequency Bands

TEL : 886-3-3273456
FAX : 886-3-3270973
Report Template No.: HE1-C10 Ver3.6
FCC ID: 2AU2L-165253

4 Test Equipment and Calibration Data

Instrument for AC Conduction

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
EMC Receiver	R&S	ESR3	102052	9kHz ~ 3.6GHz	09/Apr/2019	08/Apr/2020
LISN	R&S	ENV216	101295	9kHz ~ 30MHz	08/Nov/2018	07/Nov/2019
RF Cable-CON	MTJ	RG142	CB002-CO	9kHz ~ 200MHz	12/Sep/2019	11/Sep/2020
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	24/Sep/2019	23/Sep/2020

NCR : Non-Calibration Require

Instrument for Conducted Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101013	10Hz~40GHz	13/Mar/2019	12/Mar/2020
Power Sensor	Anritsu	MA2411B	0917017	300MHz ~ 40GHz	19/Feb/2019	18/Feb/2020
Power Meter	Anritsu	ML2495A	0949003	300MHz ~ 40GHz	19/Feb/2019	18/Feb/2020
Cable 0.2m	HUBER	MY10710/4	RF Cable - 01	30MHz ~18G	10/Jan/2019	09/Jan/2020
Cable 0.2m	HUBER	MY10711/4	RF Cable - 02	30MHz ~18G	10/Jan/2019	09/Jan/2020
Cable 0.5m	HUBER	MY39470/4	RF Cable - 29	30MHz ~18G	10/Jan/2019	09/Jan/2020
SMB100A Signal Generator	R&S	SMB100A03	181147	100kHz~40GHz	12/Nov/2018	10/Nov/2020

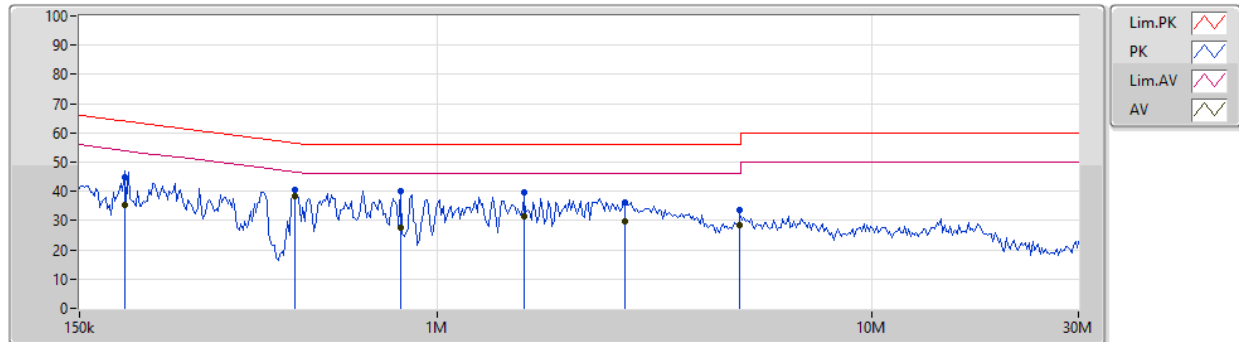
Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30MHz ~ 1GHz 3m	29/Aug/2019	28/Aug/2020
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	1GHz ~ 18GHz 3m	29/Aug/2019	28/Aug/2020
Amplifier	Agilent	8447D	2944A11149	100kHz ~ 1.3GHz	02Jul/2019	01/Jul/2020
Microwave Preamplifier	Agilent	8449B	3008A02373	1GHz ~ 26.5GHz	16/Oct/2019	15/Oct/2020
Spectrum Analyzer	Rohde & Schwarz	FSP40	100593	9KHz - 40GHz	27/Dec/2018	26/Dec/2019
EMI Test Receiver	R&S	ESR3	102052	9kHz ~ 3.6GHz	09/Apr/2019	08/Apr/2020
RF Cable-R03m	Jye Bao	RG142	CB017	9kHz ~ 1GHz	26/Mar/2019	25/Mar/2020
RF Cable-high 6m	SUHNER	SUCOFLEX104	10567868 / SN805193/4	1GHz~40GHz	9/Apr/2019	8/Apr/2020
RF Cable-high 7m	SUHNER	SUCOFLEX104	10567868 / SN805192/4	1GHz~40GHz	9/Apr/2019	8/Apr/2020
Bilog Antenna & 5dB Attenuator	SCHAFFNER / MTJ	CBL 6112D / MTJ6102-05	2678 / 001	30MHz ~ 2GHz	06/Jul/2019	05/Jul/2020
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170221	15GHz ~ 40GHz	22/Mar/2019	21/Mar/2020
Preamplifier	MITEQ	TTA1840-35-HG	1864481	18GHz ~ 40GHz	05/Aug/2019	04/Aug/2020
Loop Antenna	TESEQ	HLA 6120	31244	9k-30MHz	15/Mar/2019	14/Mar/2020
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 01543	1GHz ~ 18GHz	03/Jun/2019	02/Jun/2020
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30MHz ~ 1GHz 3m	29/Aug/2019	28/Aug/2020

AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Neutral
Operating Function	USB Mode		

26/10/2019

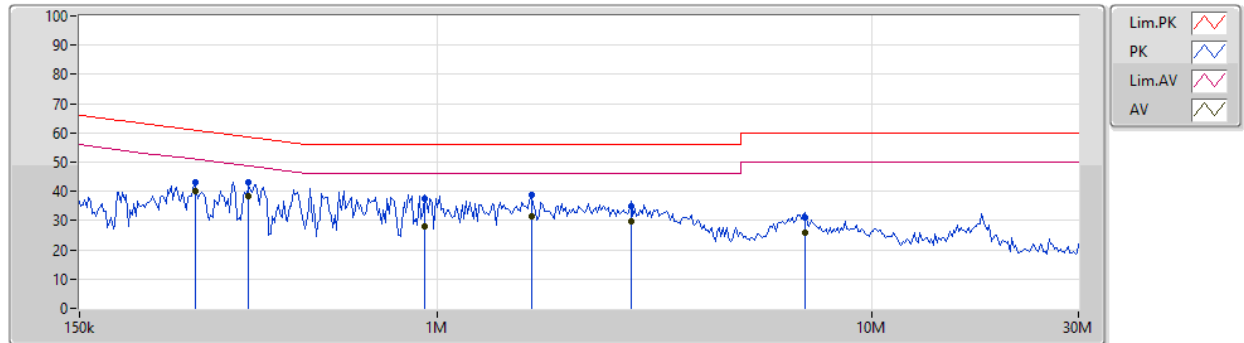


Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)			
QP	190.46k	45.02	64.01	-18.99	19.57	Neutral	-	25.45	9.59	0.11	9.87			
AV	190.46k	35.24	54.01	-18.77	19.57	Neutral	-	15.67	9.59	0.11	9.87			
QP	471.031k	40.70	56.50	-15.80	19.60	Neutral	-	21.10	9.59	0.13	9.88			
AV	471.031k	38.15	46.50	-8.35	19.60	Neutral	-	18.55	9.59	0.13	9.88			
QP	822.33k	40.04	56.00	-15.96	19.59	Neutral	-	20.45	9.59	0.12	9.88			
AV	822.33k	27.62	46.00	-18.38	19.59	Neutral	-	8.03	9.59	0.12	9.88			
QP	1.586M	39.55	56.00	-16.45	19.63	Neutral	-	19.92	9.60	0.14	9.89			
AV	1.586M	31.66	46.00	-14.34	19.63	Neutral	-	12.03	9.60	0.14	9.89			
QP	2.714M	36.33	56.00	-19.67	19.67	Neutral	-	16.66	9.61	0.17	9.89			
AV	2.714M	29.74	46.00	-16.26	19.67	Neutral	-	10.07	9.61	0.17	9.89			
QP	4.98M	33.70	56.00	-22.30	19.71	Neutral	-	13.99	9.62	0.20	9.89			
AV	4.98M	28.56	46.00	-17.44	19.71	Neutral	-	8.85	9.62	0.20	9.89			

AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Line
Operating Function	USB Mode		

26/10/2019



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)			
QP	277.982k	43.27	60.88	-17.61	19.59	Line	-	23.68	9.60	0.12	9.87			
AV	277.982k	39.89	50.88	-10.99	19.59	Line	-	20.30	9.60	0.12	9.87			
QP	367.295k	42.92	58.56	-15.64	19.59	Line	-	23.33	9.59	0.12	9.88			
AV	367.295k	38.48	48.56	-10.08	19.59	Line	"Worst"	18.89	9.59	0.12	9.88			
QP	935.888k	37.54	56.00	-18.46	19.59	Line	-	17.95	9.60	0.11	9.88			
AV	935.888k	27.92	46.00	-18.08	19.59	Line	-	8.33	9.60	0.11	9.88			
QP	1.65M	38.96	56.00	-17.04	19.64	Line	-	19.32	9.61	0.14	9.89			
AV	1.65M	31.42	46.00	-14.58	19.64	Line	-	11.78	9.61	0.14	9.89			
QP	2.796M	34.71	56.00	-21.29	19.68	Line	-	15.03	9.62	0.17	9.89			
AV	2.796M	29.56	46.00	-16.44	19.68	Line	-	9.88	9.62	0.17	9.89			
QP	7.054M	31.00	60.00	-29.00	19.77	Line	-	11.23	9.65	0.23	9.89			
AV	7.054M	25.68	50.00	-24.32	19.77	Line	-	5.91	9.65	0.23	9.89			

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)	741.25k	1.079M	1M08F1D	710k	1.058M

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

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

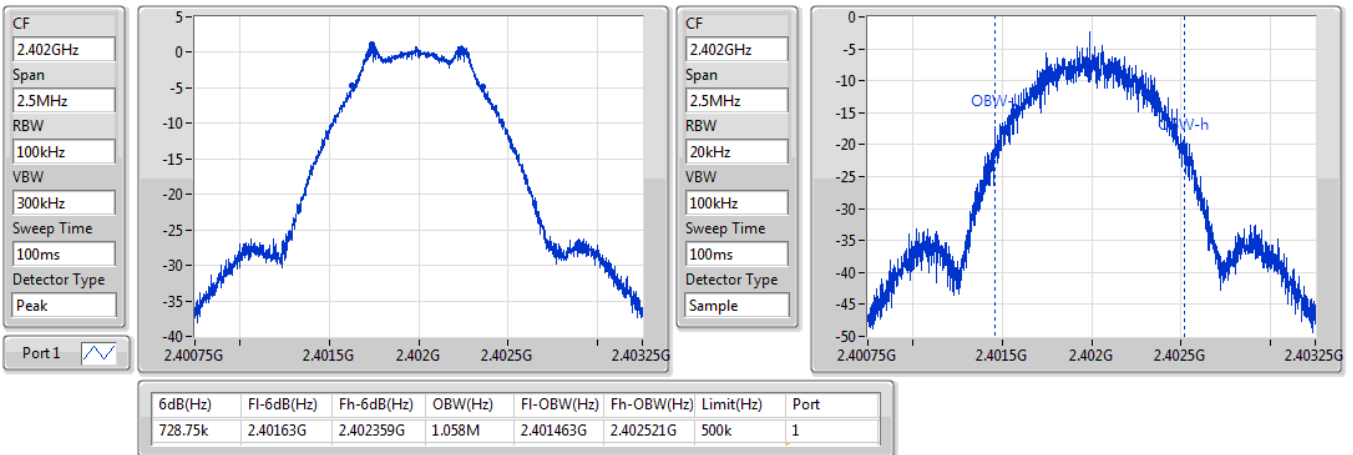
Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	728.75k	1.058M
2440MHz	Pass	500k	710k	1.058M
2480MHz	Pass	500k	741.25k	1.079M

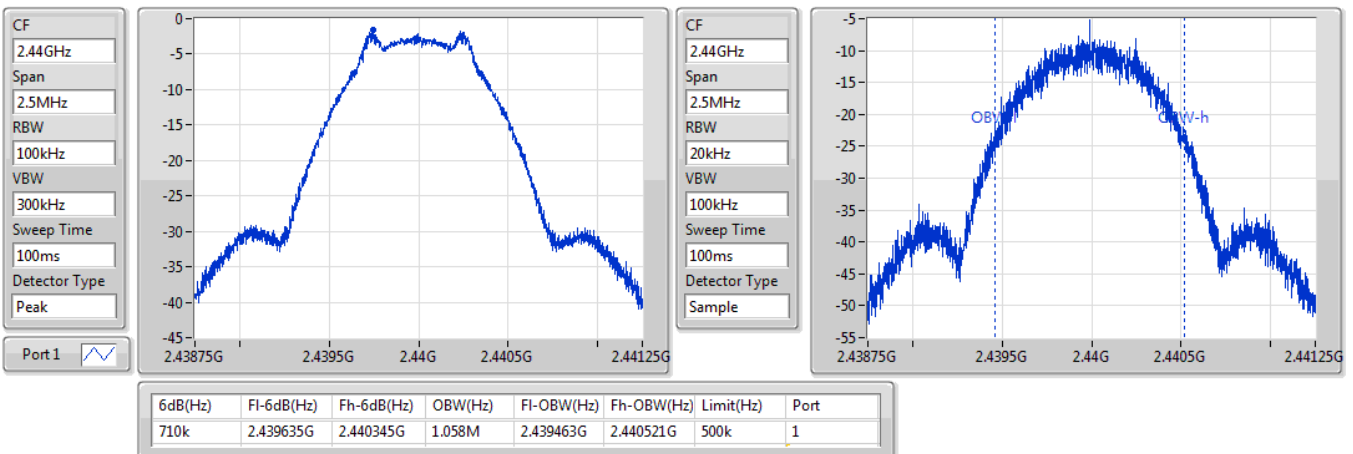
Port X-N dB = Port X 6dB down bandwidth; **Port X-OBW** = Port X 99% occupied bandwidth;

BT-LE(1Mbps)
2402MHz
EBW

23/10/2019


BT-LE(1Mbps)
2440MHz
EBW

23/10/2019

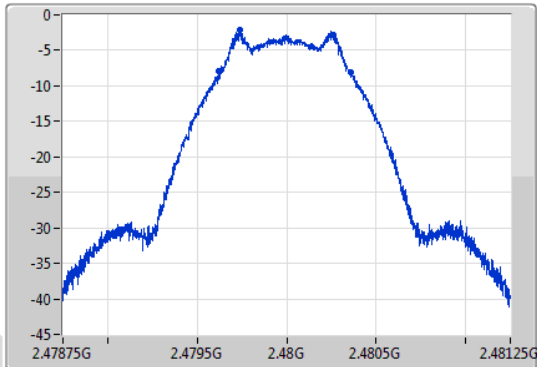


BT-LE(1Mbps)

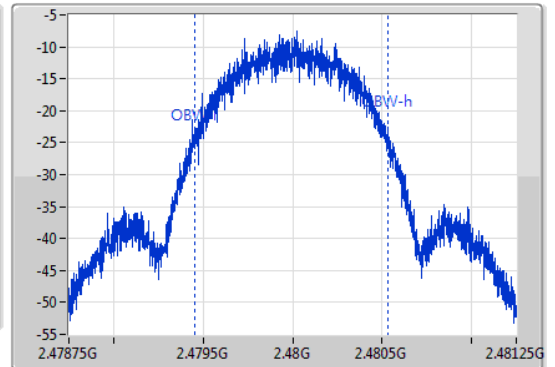
2480MHz

23/10/2019

CF
2.48GHz
Span
2.5MHz
RBW
100kHz
VBW
300kHz
Sweep Time
100ms
Detector Type
Peak
Port 1



CF
2.48GHz
Span
2.5MHz
RBW
20kHz
VBW
100kHz
Sweep Time
100ms
Detector Type
Sample



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
741.25k	2.47962G	2.480361G	1.079M	2.479452G	2.480531G	500k	1



Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	2.62	0.00183



Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	1.10	2.62	30.00
2440MHz	Pass	1.10	0.06	30.00
2480MHz	Pass	1.10	-0.19	30.00

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



Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-10.15

RBW=3 kHz.



Result

Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	1.10	-10.15	8.00
2440MHz	Pass	1.10	-16.36	8.00
2480MHz	Pass	1.10	-16.71	8.00

DG = Directional Gain; RBW=3 kHz;

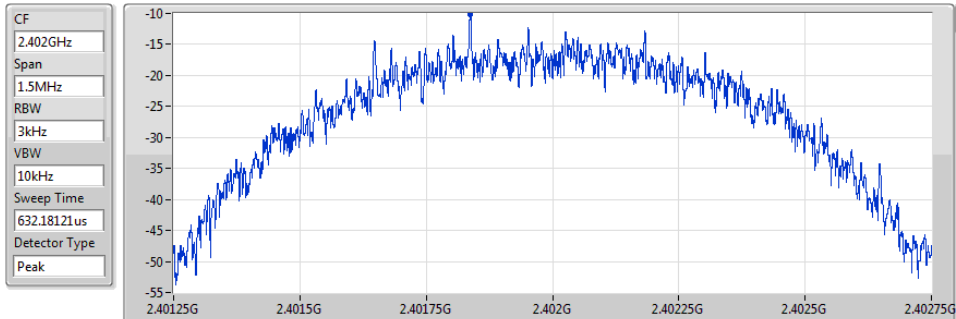
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; **Port X** = Port X power density;

BT-LE(1Mbps)

PSD

2402MHz

23/10/2019



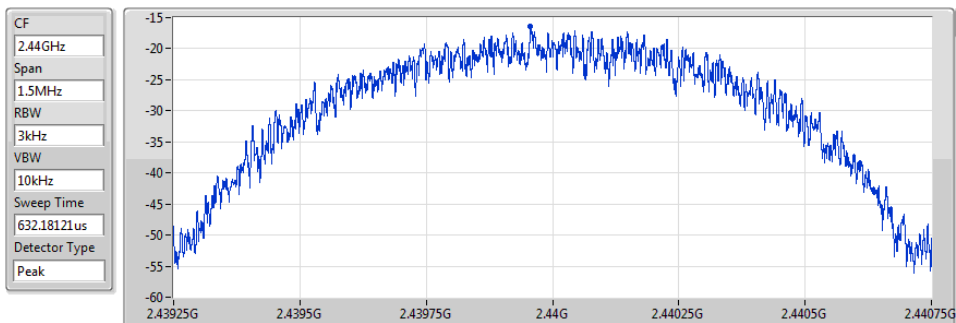
Sum	PD	Port 1
(dBm/Hz)	(dBm/Hz)	(dBm/Hz)
-10.15	-10.15	-10.15

BT-LE(1Mbps)

PSD

2440MHz

23/10/2019



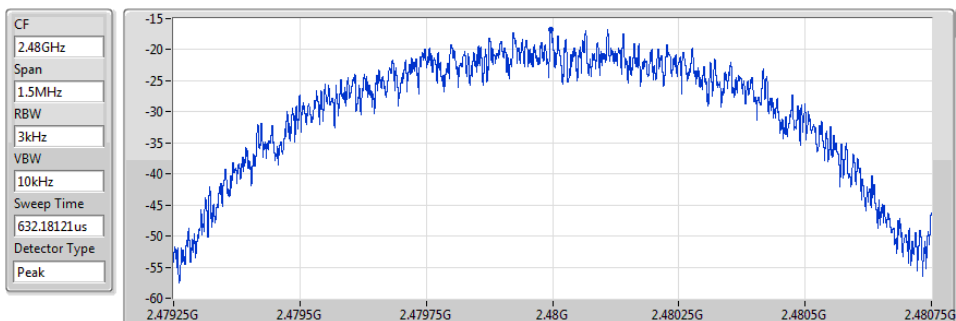
Sum	PD	Port 1
(dBm/Hz)	(dBm/Hz)	(dBm/Hz)
-16.36	-16.36	-16.36

BT-LE(1Mbps)

PSD

2480MHz

23/10/2019



Sum	PD	Port 1
(dBm/Hz)	(dBm/Hz)	(dBm/Hz)
-16.71	-16.71	-16.71



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)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	2.40221G	0.73	-19.27	45.86M	-52.44	2.39747G	-38.79	2.4G	-41.79	2.48945G	-51.16	15.00312G	-42.76	1

Result

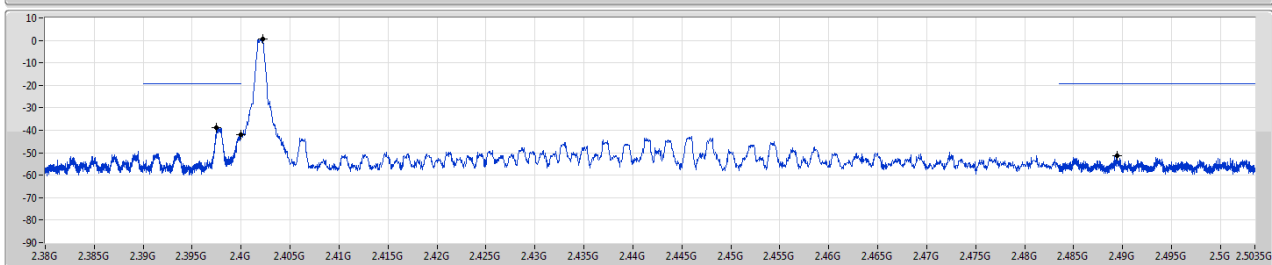
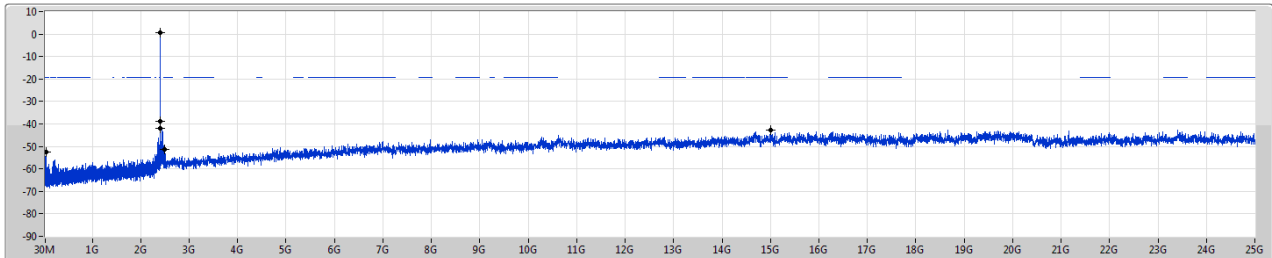
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.40221G	0.73	-19.27	45.86M	-52.44	2.39747G	-38.79	2.4G	-41.79	2.48945G	-51.16	15.00312G	-42.76	1
2440MHz	Pass	2.43975G	-2.22	-22.22	43.51M	-52.45	2.3965G	-46.06	2.4835G	-46.09	2.48371G	-45.38	17.66895G	-42.73	1
2480MHz	Pass	2.48024G	-2.80	-22.80	43.51M	-52.83	2.39297G	-53.12	2.4G	-55.32	2.48398G	-45.32	14.63474G	-43.59	1

BT-LE(1Mbps)

2402MHz

CSE NdB

24/10/2019



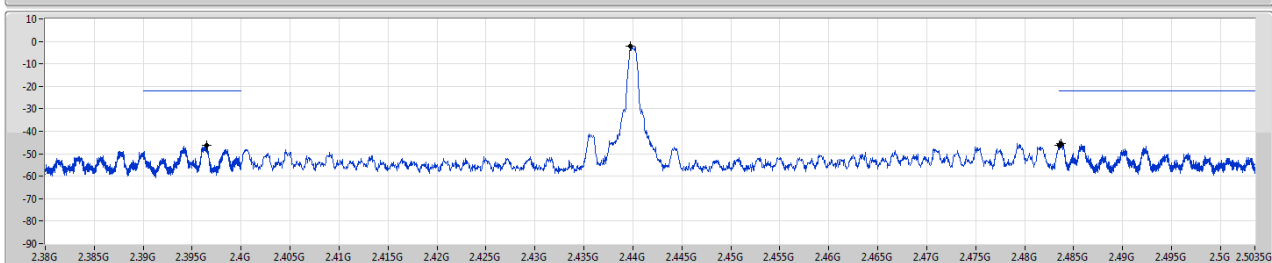
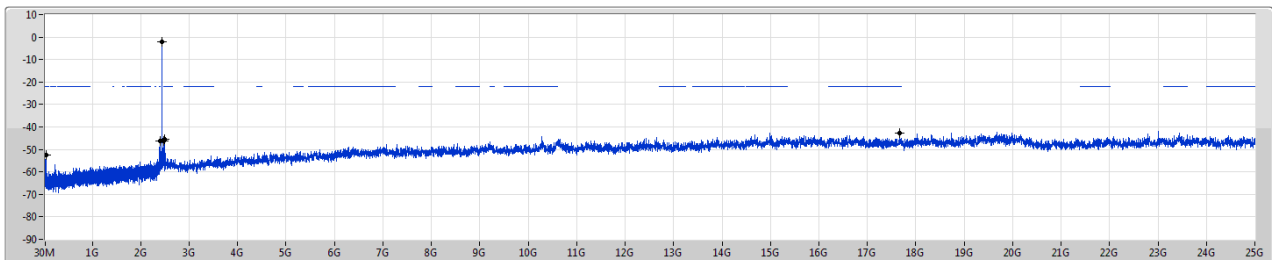
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40221G	0.73	-19.27	45.86M	-52.44	2.39747G	-38.79	2.4G	-41.79	2.48945G	-51.16	15.00312G	-42.76	1

BT-LE(1Mbps)

2440MHz

CSE NdB

24/10/2019



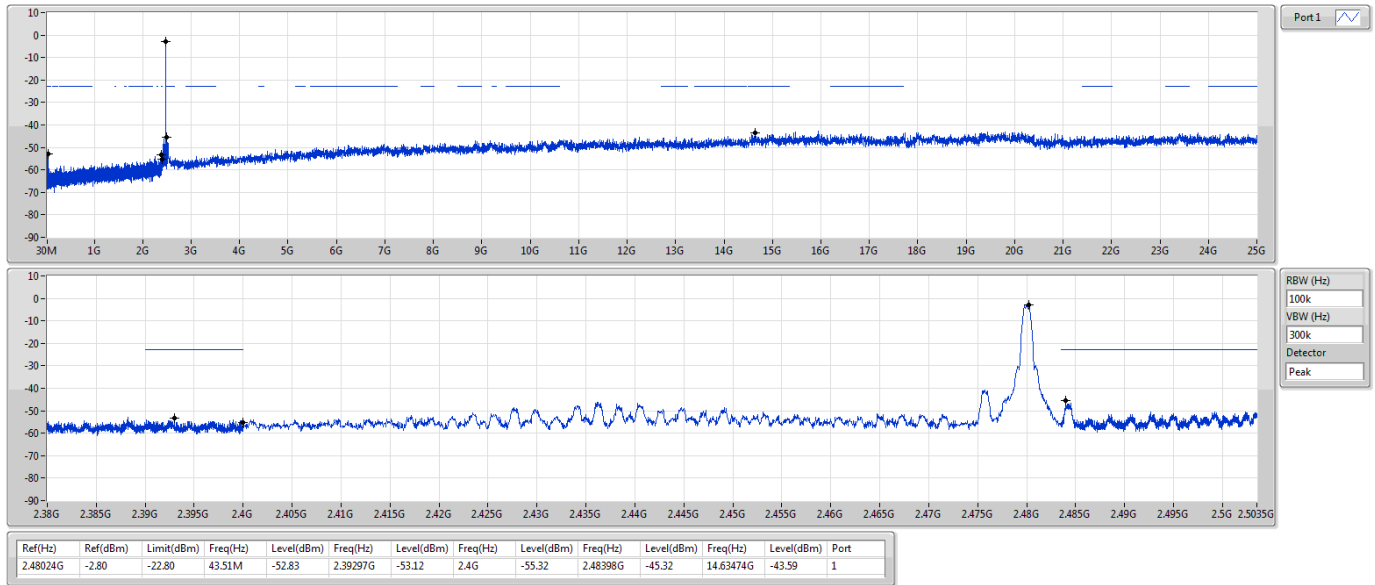
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.43975G	-2.22	-22.22	43.51M	-52.45	2.3965G	-46.06	2.4835G	-46.09	2.48371G	-45.38	17.66895G	-42.73	1

BT-LE(1Mbps)

2480MHz

CSE NdB

24/10/2019





Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	PK	90.14M	37.91	43.50	-5.59	3	Vertical	0	1.00	-

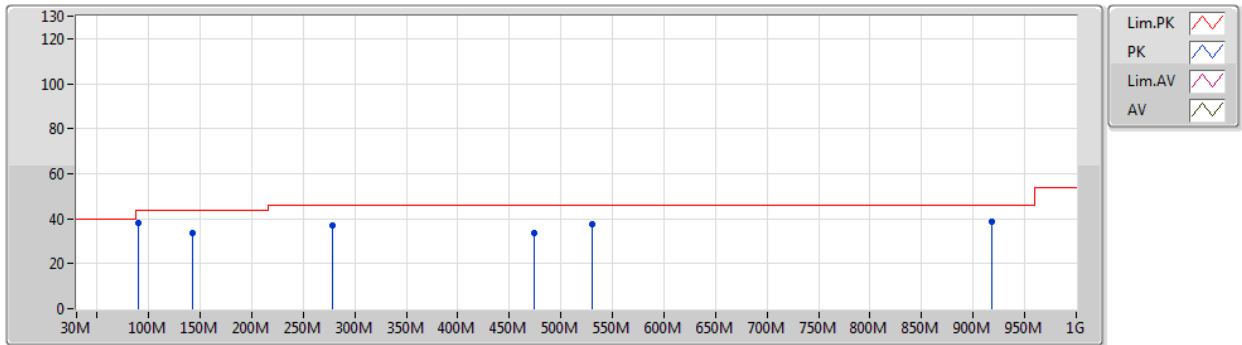
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-
2440MHz_USB	Pass	PK	90.14M	37.91	43.50	-5.59	3	Vertical	0	1.00	-
2440MHz_USB	Pass	PK	142.52M	33.68	43.50	-9.82	3	Vertical	0	1.00	-
2440MHz_USB	Pass	PK	278.32M	36.87	46.00	-9.13	3	Vertical	0	1.00	-
2440MHz_USB	Pass	PK	474.26M	33.70	46.00	-12.30	3	Vertical	0	1.00	-
2440MHz_USB	Pass	PK	530.52M	37.60	46.00	-8.40	3	Vertical	0	1.00	-
2440MHz_USB	Pass	PK	918.52M	38.58	46.00	-7.42	3	Vertical	0	1.00	-
2440MHz_USB	Pass	PK	95.96M	34.53	43.50	-8.97	3	Horizontal	360	1.00	-
2440MHz_USB	Pass	PK	146.4M	32.97	43.50	-10.53	3	Horizontal	360	1.00	-
2440MHz_USB	Pass	PK	530.52M	38.32	46.00	-7.68	3	Horizontal	360	1.00	-
2440MHz_USB	Pass	PK	800.18M	34.51	46.00	-11.49	3	Horizontal	360	1.00	-
2440MHz_USB	Pass	PK	910.76M	40.07	46.00	-5.93	3	Horizontal	360	1.00	-
2440MHz_USB	Pass	QP	268.62M	38.32	46.00	-7.68	3	Horizontal	122	1.00	-

BT-LE(1Mbps)

2440MHz_USB

23/10/2019

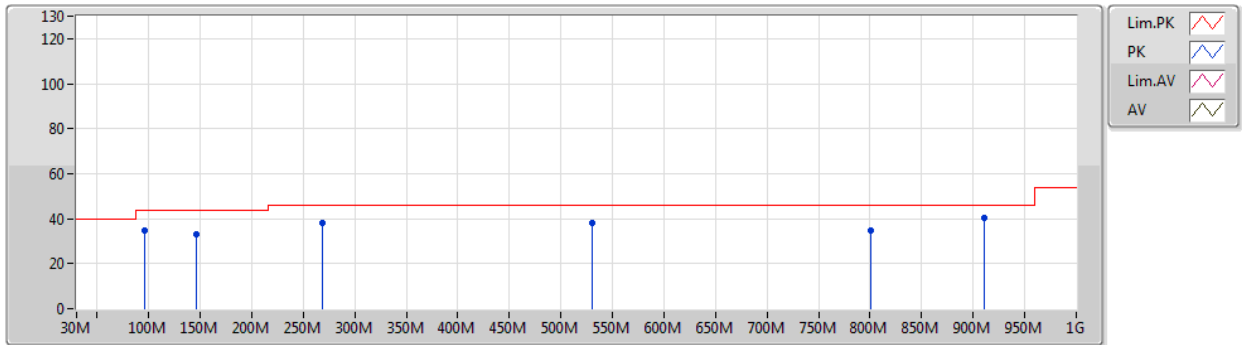


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	90.14M	37.91	43.50	-5.59	-12.52	3	Vertical	0	1.00	-	50.43	13.84	1.39	27.75
PK	142.52M	33.68	43.50	-9.82	-9.85	3	Vertical	0	1.00	-	43.53	16.02	1.79	27.66
PK	278.32M	36.87	46.00	-9.13	-6.27	3	Vertical	0	1.00	-	43.14	18.03	2.87	27.17
PK	474.26M	33.70	46.00	-12.30	-2.59	3	Vertical	0	1.00	-	36.29	22.50	3.27	28.36
PK	530.52M	37.60	46.00	-8.40	-1.98	3	Vertical	0	1.00	-	39.58	23.09	3.48	28.55
PK	918.52M	38.58	46.00	-7.42	2.67	3	Vertical	0	1.00	-	35.91	25.79	4.54	27.66

BT-LE(1Mbps)

2440MHz_USB

23/10/2019



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	95.96M	34.53	43.50	-8.97	-11.06	3	Horizontal	360	1.00	-	45.59	15.27	1.44	27.77
PK	146.4M	32.97	43.50	-10.53	-10.06	3	Horizontal	360	1.00	-	43.03	15.77	1.81	27.64
PK	530.52M	38.32	46.00	-7.68	-1.98	3	Horizontal	360	1.00	-	40.30	23.09	3.48	28.55
PK	800.18M	34.51	46.00	-11.49	1.03	3	Horizontal	360	1.00	-	33.48	25.01	4.17	28.15
PK	910.76M	40.07	46.00	-5.93	2.50	3	Horizontal	360	1.00	-	37.57	25.71	4.46	27.67
QP	268.62M	38.32	46.00	-7.68	-6.01	3	Horizontal	122	1.00	-	44.33	18.38	2.79	27.18



Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	AV	4.80406G	53.06	54.00	-0.94	3	Vertical	303	0.99	-

Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-
2402MHz_TX	Pass	AV	2.3582G	48.28	54.00	-5.72	3	Vertical	11	1.16	-
2402MHz_TX	Pass	AV	2.402G	89.97	Inf	-Inf	3	Vertical	11	1.16	-
2402MHz_TX	Pass	PK	2.352G	57.66	74.00	-16.34	3	Vertical	11	1.16	-
2402MHz_TX	Pass	PK	2.4018G	91.66	Inf	-Inf	3	Vertical	11	1.16	-
2402MHz_TX	Pass	AV	2.3582G	47.22	54.00	-6.78	3	Horizontal	335	2.47	-
2402MHz_TX	Pass	AV	2.402G	89.98	Inf	-Inf	3	Horizontal	335	2.47	-
2402MHz_TX	Pass	PK	2.3666G	57.83	74.00	-16.17	3	Horizontal	335	2.47	-
2402MHz_TX	Pass	PK	2.4018G	91.65	Inf	-Inf	3	Horizontal	335	2.47	-
2402MHz_TX	Pass	AV	4.80406G	53.06	54.00	-0.94	3	Vertical	303	0.99	-
2402MHz_TX	Pass	PK	4.80454G	58.55	74.00	-15.45	3	Vertical	303	0.99	-
2402MHz_TX	Pass	AV	4.80406G	50.21	54.00	-3.79	3	Horizontal	19	2.41	-
2402MHz_TX	Pass	PK	4.80454G	56.22	74.00	-17.78	3	Horizontal	19	2.41	-
2440MHz_TX	Pass	AV	2.3876G	44.48	54.00	-9.52	3	Vertical	17	1.17	-
2440MHz_TX	Pass	AV	2.44G	86.82	Inf	-Inf	3	Vertical	17	1.17	-
2440MHz_TX	Pass	AV	2.484G	45.41	54.00	-8.59	3	Vertical	17	1.17	-
2440MHz_TX	Pass	PK	2.3768G	56.19	74.00	-17.81	3	Vertical	17	1.17	-
2440MHz_TX	Pass	PK	2.4396G	88.58	Inf	-Inf	3	Vertical	17	1.17	-
2440MHz_TX	Pass	PK	2.486G	56.32	74.00	-17.68	3	Vertical	17	1.17	-
2440MHz_TX	Pass	AV	2.388G	44.03	54.00	-9.97	3	Horizontal	335	2.99	-
2440MHz_TX	Pass	AV	2.44G	86.14	Inf	-Inf	3	Horizontal	335	2.99	-
2440MHz_TX	Pass	AV	2.484G	45.12	54.00	-8.88	3	Horizontal	335	2.99	-
2440MHz_TX	Pass	PK	2.3688G	55.52	74.00	-18.48	3	Horizontal	335	2.99	-
2440MHz_TX	Pass	PK	2.4404G	87.78	Inf	-Inf	3	Horizontal	335	2.99	-
2440MHz_TX	Pass	PK	2.4952G	56.16	74.00	-17.84	3	Horizontal	335	2.99	-
2440MHz_TX	Pass	AV	4.88006G	48.96	54.00	-5.04	3	Vertical	298	1.00	-
2440MHz_TX	Pass	AV	7.31934G	43.39	54.00	-10.61	3	Vertical	168	1.20	-
2440MHz_TX	Pass	PK	4.8806G	54.76	74.00	-19.24	3	Vertical	298	1.00	-
2440MHz_TX	Pass	PK	7.3194G	53.81	74.00	-20.19	3	Vertical	168	1.20	-
2440MHz_TX	Pass	AV	4.88012G	52.11	54.00	-1.89	3	Horizontal	26	2.65	-
2440MHz_TX	Pass	AV	7.32048G	41.49	54.00	-12.51	3	Horizontal	276	2.01	-
2440MHz_TX	Pass	PK	4.87946G	57.55	74.00	-16.45	3	Horizontal	26	2.65	-
2440MHz_TX	Pass	PK	7.32084G	51.77	74.00	-22.23	3	Horizontal	276	2.01	-
2480MHz_TX	Pass	AV	2.48G	85.30	Inf	-Inf	3	Vertical	15	1.19	-
2480MHz_TX	Pass	AV	2.4842G	45.21	54.00	-8.79	3	Vertical	15	1.19	-
2480MHz_TX	Pass	PK	2.4798G	87.12	Inf	-Inf	3	Vertical	15	1.19	-
2480MHz_TX	Pass	PK	2.4846G	56.57	74.00	-17.43	3	Vertical	15	1.19	-
2480MHz_TX	Pass	AV	2.48G	85.52	Inf	-Inf	3	Horizontal	338	2.65	-
2480MHz_TX	Pass	AV	2.4842G	45.00	54.00	-9.00	3	Horizontal	338	2.65	-
2480MHz_TX	Pass	PK	2.4798G	87.30	Inf	-Inf	3	Horizontal	338	2.65	-
2480MHz_TX	Pass	PK	2.4842G	56.01	74.00	-17.99	3	Horizontal	338	2.65	-
2480MHz_TX	Pass	AV	4.96G	46.50	54.00	-7.50	3	Vertical	59	2.27	-
2480MHz_TX	Pass	AV	7.44054G	42.26	54.00	-11.74	3	Vertical	167	1.17	-
2480MHz_TX	Pass	PK	4.95946G	53.20	74.00	-20.80	3	Vertical	59	2.27	-
2480MHz_TX	Pass	PK	7.44072G	53.10	74.00	-20.90	3	Vertical	167	1.17	-
2480MHz_TX	Pass	AV	4.96G	51.02	54.00	-2.98	3	Horizontal	20	2.56	-
2480MHz_TX	Pass	AV	7.44066G	42.85	54.00	-11.15	3	Horizontal	273	1.01	-
2480MHz_TX	Pass	PK	4.96054G	56.99	74.00	-17.01	3	Horizontal	20	2.56	-



RSE TX above 1GHz

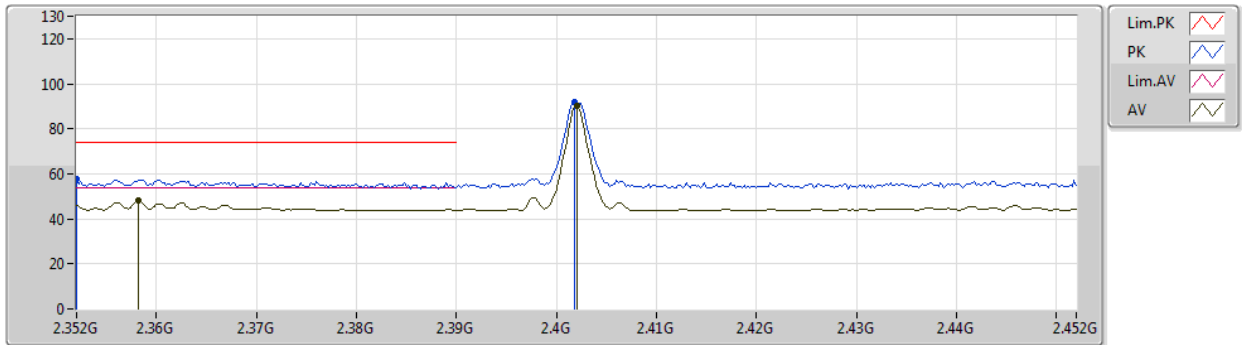
Appendix F.2

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2480MHz_TX	Pass	PK	7.43934G	53.56	74.00	-20.44	3	Horizontal	273	1.01	-

BT-LE(1Mbps)

2402MHz_TX

23/10/2019

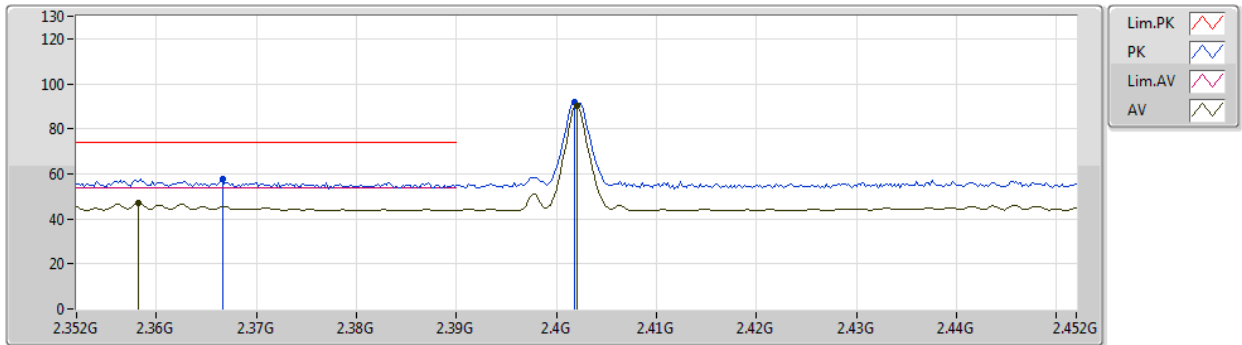


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3582G	48.28	54.00	-5.72	31.95	3	Vertical	11	1.16	-	16.33	27.27	4.68	-
AV	2.402G	89.97	Inf	-Inf	32.14	3	Vertical	11	1.16	-	57.83	27.41	4.73	-
PK	2.352G	57.66	74.00	-16.34	31.93	3	Vertical	11	1.16	-	25.73	27.26	4.67	-
PK	2.4018G	91.66	Inf	-Inf	32.14	3	Vertical	11	1.16	-	59.52	27.41	4.73	-

BT-LE(1Mbps)

2402MHz_TX

23/10/2019

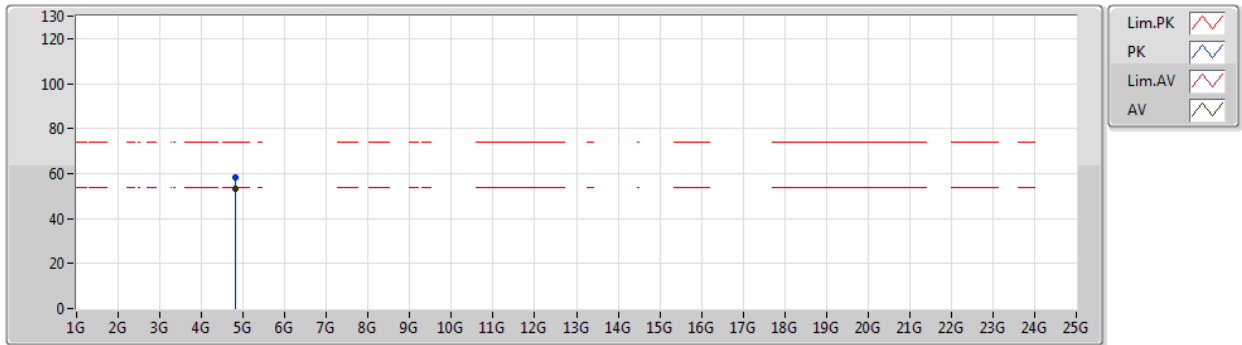


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3582G	47.22	54.00	-6.78	31.95	3	Horizontal	335	2.47	-	15.27	27.27	4.68	-
AV	2.402G	89.98	Inf	-Inf	32.14	3	Horizontal	335	2.47	-	57.84	27.41	4.73	-
PK	2.3666G	57.83	74.00	-16.17	31.99	3	Horizontal	335	2.47	-	25.84	27.30	4.69	-
PK	2.4018G	91.65	Inf	-Inf	32.14	3	Horizontal	335	2.47	-	59.51	27.41	4.73	-

BT-LE(1Mbps)

23/10/2019

2402MHz_TX

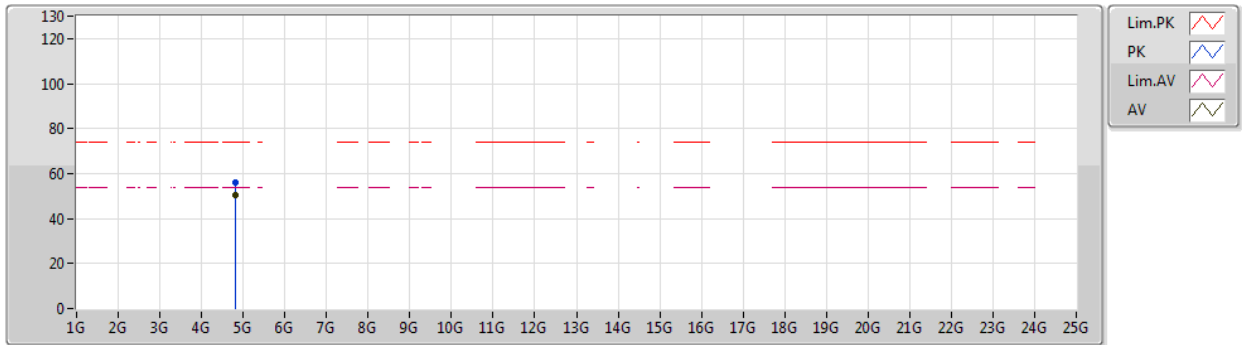


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.80406G	53.06	54.00	-0.94	3.64	3	Vertical	303	0.99	-	49.42	31.35	6.78	34.49
PK	4.80454G	58.55	74.00	-15.45	3.64	3	Vertical	303	0.99	-	54.91	31.35	6.78	34.49

BT-LE(1Mbps)

23/10/2019

2402MHz_TX

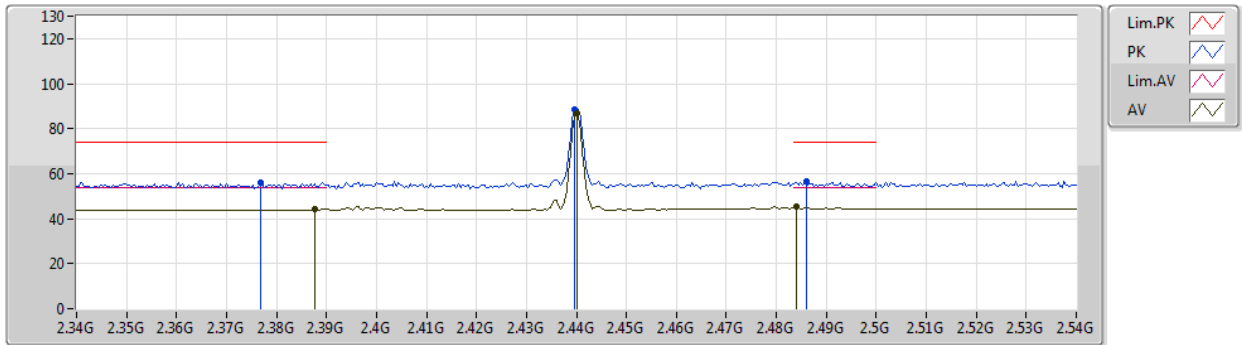


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.80406G	50.21	54.00	-3.79	3.64	3	Horizontal	19	2.41	-	46.57	31.35	6.78	34.49
PK	4.80454G	56.22	74.00	-17.78	3.64	3	Horizontal	19	2.41	-	52.58	31.35	6.78	34.49

BT-LE(1Mbps)

2440MHz_TX

23/10/2019

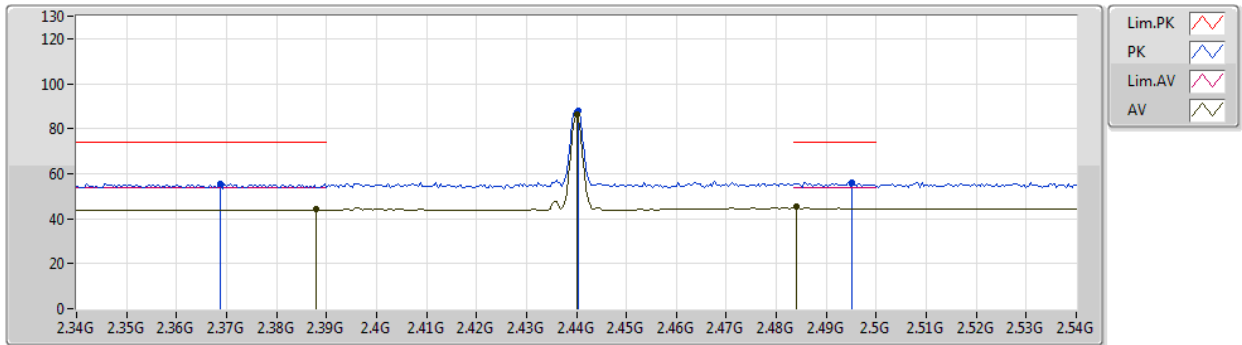


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3876G	44.48	54.00	-9.52	32.08	3	Vertical	17	1.17	-	12.40	27.36	4.72	-
AV	2.44G	86.82	Inf	-Inf	32.30	3	Vertical	17	1.17	-	54.52	27.52	4.78	-
AV	2.484G	45.41	54.00	-8.59	32.48	3	Vertical	17	1.17	-	12.93	27.65	4.83	-
PK	2.3768G	56.19	74.00	-17.81	32.03	3	Vertical	17	1.17	-	24.16	27.33	4.70	-
PK	2.4396G	88.58	Inf	-Inf	32.30	3	Vertical	17	1.17	-	56.28	27.52	4.78	-
PK	2.486G	56.32	74.00	-17.68	32.49	3	Vertical	17	1.17	-	23.83	27.66	4.83	-

BT-LE(1Mbps)

2440MHz_TX

23/10/2019

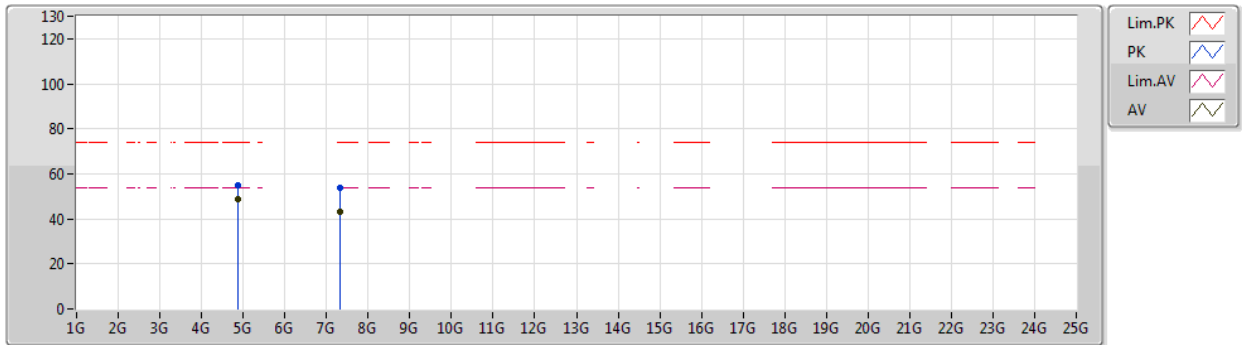


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.388G	44.03	54.00	-9.97	32.08	3	Horizontal	335	2.99	-	11.95	27.36	4.72	-
AV	2.44G	86.14	Inf	-Inf	32.30	3	Horizontal	335	2.99	-	53.84	27.52	4.78	-
AV	2.484G	45.12	54.00	-8.88	32.48	3	Horizontal	335	2.99	-	12.64	27.65	4.83	-
PK	2.3688G	55.52	74.00	-18.48	32.00	3	Horizontal	335	2.99	-	23.52	27.31	4.69	-
PK	2.4404G	87.78	Inf	-Inf	32.30	3	Horizontal	335	2.99	-	55.48	27.52	4.78	-
PK	2.4952G	56.16	74.00	-17.84	32.53	3	Horizontal	335	2.99	-	23.63	27.69	4.84	-

BT-LE(1Mbps)

2440MHz_TX

23/10/2019

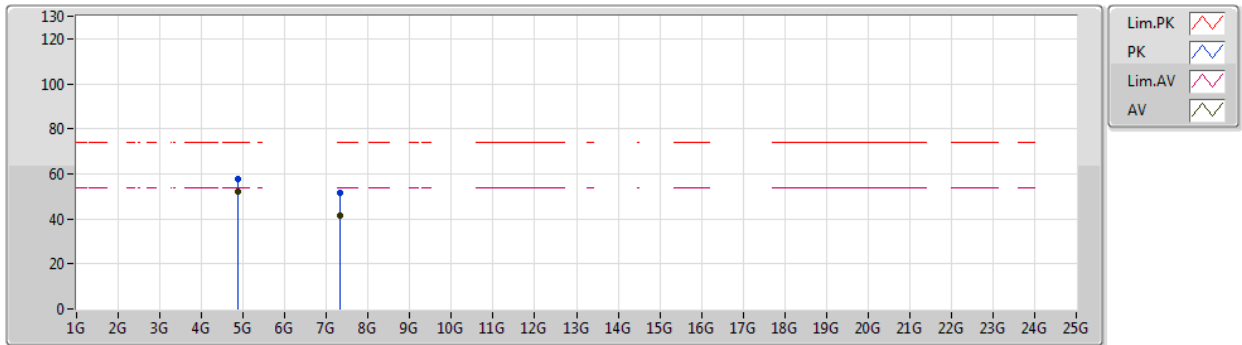


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.88006G	48.96	54.00	-5.04	3.82	3	Vertical	298	1.00	-	45.14	31.48	6.81	34.47
AV	7.31934G	43.39	54.00	-10.61	9.90	3	Vertical	168	1.20	-	33.49	36.03	8.62	34.75
PK	4.8806G	54.76	74.00	-19.24	3.83	3	Vertical	298	1.00	-	50.93	31.49	6.81	34.47
PK	7.3194G	53.81	74.00	-20.19	9.90	3	Vertical	168	1.20	-	43.91	36.03	8.62	34.75

BT-LE(1Mbps)

2440MHz_TX

23/10/2019

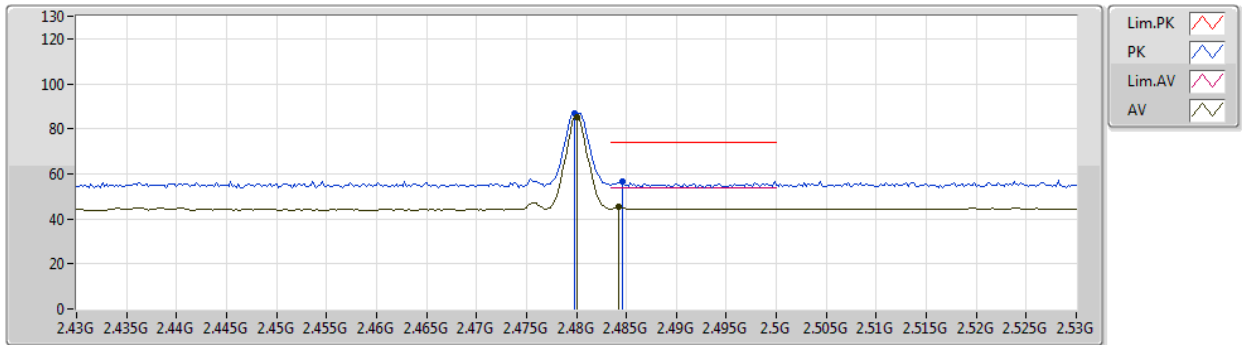


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.88012G	52.11	54.00	-1.89	3.82	3	Horizontal	26	2.65	-	48.29	31.48	6.81	34.47
AV	7.32048G	41.49	54.00	-12.51	9.90	3	Horizontal	276	2.01	-	31.59	36.03	8.62	34.75
PK	4.87946G	57.55	74.00	-16.45	3.82	3	Horizontal	26	2.65	-	53.73	31.48	6.81	34.47
PK	7.32084G	51.77	74.00	-22.23	9.90	3	Horizontal	276	2.01	-	41.87	36.03	8.62	34.75

BT-LE(1Mbps)

2480MHz_TX

23/10/2019

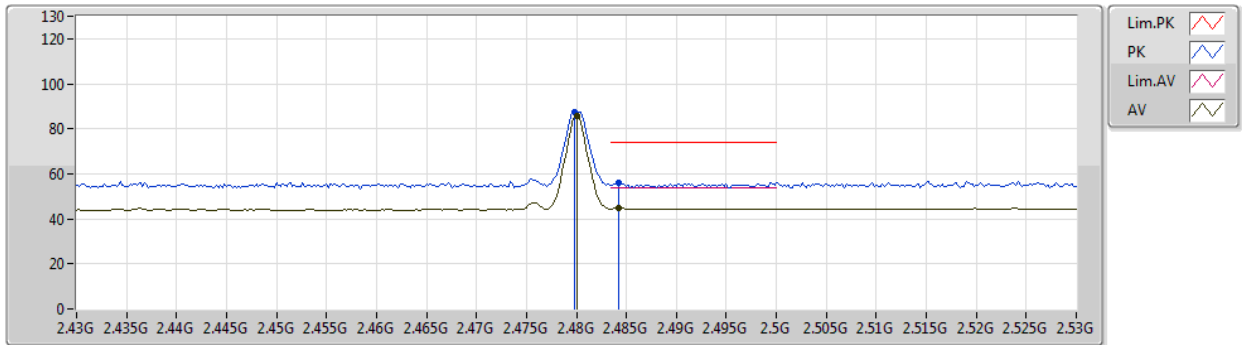


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.48G	85.30	Inf	-Inf	32.46	3	Vertical	15	1.19	-	52.84	27.64	4.82	-
AV	2.4842G	45.21	54.00	-8.79	32.48	3	Vertical	15	1.19	-	12.73	27.65	4.83	-
PK	2.4798G	87.12	Inf	-Inf	32.46	3	Vertical	15	1.19	-	54.66	27.64	4.82	-
PK	2.4846G	56.57	74.00	-17.43	32.48	3	Vertical	15	1.19	-	24.09	27.65	4.83	-

BT-LE(1Mbps)

2480MHz_TX

23/10/2019

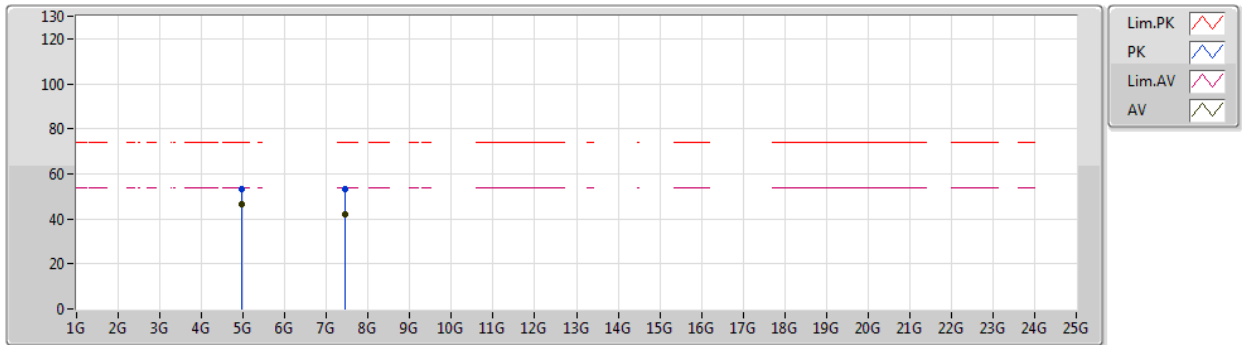


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.48G	85.52	Inf	-Inf	32.46	3	Horizontal	338	2.65	-	53.06	27.64	4.82	-
AV	2.4842G	45.00	54.00	-9.00	32.48	3	Horizontal	338	2.65	-	12.52	27.65	4.83	-
PK	2.4798G	87.30	Inf	-Inf	32.46	3	Horizontal	338	2.65	-	54.84	27.64	4.82	-
PK	2.4842G	56.01	74.00	-17.99	32.48	3	Horizontal	338	2.65	-	23.53	27.65	4.83	-

BT-LE(1Mbps)

2480MHz_TX

23/10/2019

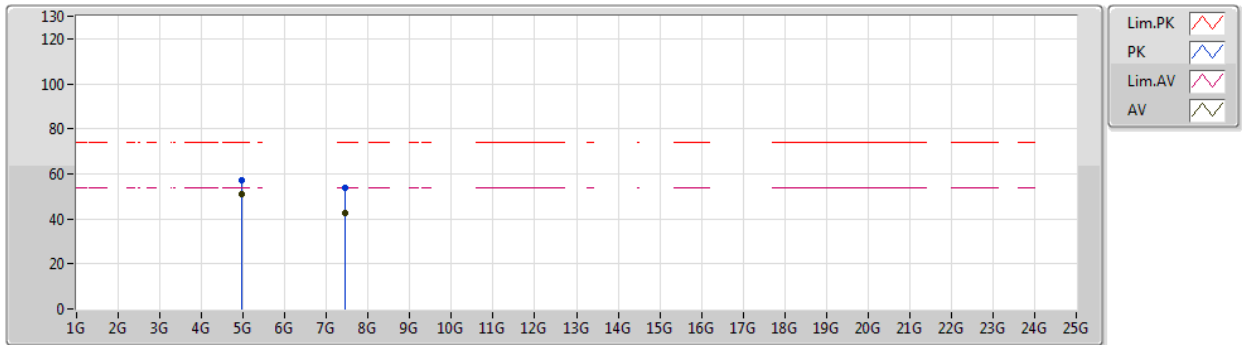


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.96G	46.50	54.00	-7.50	4.02	3	Vertical	59	2.27	-	42.48	31.63	6.83	34.44
AV	7.44054G	42.26	54.00	-11.74	10.25	3	Vertical	167	1.17	-	32.01	36.35	8.68	34.78
PK	4.95946G	53.20	74.00	-20.80	4.02	3	Vertical	59	2.27	-	49.18	31.63	6.83	34.44
PK	7.44072G	53.10	74.00	-20.90	10.25	3	Vertical	167	1.17	-	42.85	36.35	8.68	34.78

BT-LE(1Mbps)

2480MHz_TX

23/10/2019



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.96G	51.02	54.00	-2.98	4.02	3	Horizontal	20	2.56	-	47.00	31.63	6.83	34.44
AV	7.44066G	42.85	54.00	-11.15	10.25	3	Horizontal	273	1.01	-	32.60	36.35	8.68	34.78
PK	4.96054G	56.99	74.00	-17.01	4.03	3	Horizontal	20	2.56	-	52.96	31.63	6.84	34.44
PK	7.43934G	53.56	74.00	-20.44	10.24	3	Horizontal	273	1.01	-	43.32	36.34	8.68	34.78