

FCC Test Report

FCC ID : 2ATD8-PT-01
Equipment : Personnel Tag
Brand Name : Scandinavian Reach Technologies AS
Model Name : SRT PT-01
Applicant : Scandinavian Reach Technologies AS
Skjenet 11, 5354 Straume, Norway
Manufacturer : Topro Industri AS
Rambekkevegen 1, 2816 Gjøvik, Norway
Standard : 47 CFR FCC Part 15.247

The product was received on Sep. 05, 2019, and testing was started from Sep. 14, 2019 and completed on Sep. 24, 2019. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

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

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



Approved by: Allen Lin

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

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

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History of this test report

[illegible]

Summary of Test Result

Report Clause	Ref.Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
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: Kate Lo

1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	Bluetooth Mode	Channel 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 (1Mbps/2Mbps) modulation for DSSS.
- ♦ BWch is the nominal channel bandwidth.
- ♦ Nant is the number of outputs.

1.1.2 Antenna Information

Antenna	Port	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	1	-	-	PCB	N/A	1.5

For BT function:

For IEEE 802.15.1 Bluetooth mode (1TX)

Ant. 1 (Port 1) could transmit only.

1.1.3 EUT Information

Operational Condition			
EUT Power Type	From Battery		
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	Duty Cycle	Duty Cycle Factor (dB)	T(s)	VBW(Hz) $\geq 1/T$
BT-LE(1Mbps)	1	0	n/a (Duty Cycle ≥ 0.98)	n/a (Duty Cycle ≥ 0.98)
BT-LE(2Mbps)	1	0	n/a (Duty Cycle ≥ 0.98)	n/a (Duty Cycle ≥ 0.98)

Note. If Duty Cycle < 0.98, the Duty Cycle Factor was added while measuring Output power and PSD.

1.2 Testing Applied Standards

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

- ♦ 47 CFR FCC Part 15
- ♦ ANSI C63.10-2013
- ♦ KDB 558074 D01 v05r02
- ♦ 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
RF Conducted	TH01-HY	Gray Wang	23.5~25.6°C / 65~67%	24/Sep/2019
Radiated	03CH02-HY	Edward Wang	22.3~25.1°C / 64.1~69.1%	14/Sep/2019~ 15/Sep/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	N/A
---------------	-----

Mode	Power Setting
BT-LE(1Mbps)	-
2402MHz	default
2441MHz	default
2480MHz	default
BT-LE(2Mbps)	-
2402MHz	default
2441MHz	default
2480MHz	default

2.3 The Worst Case Measurement Configuration

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

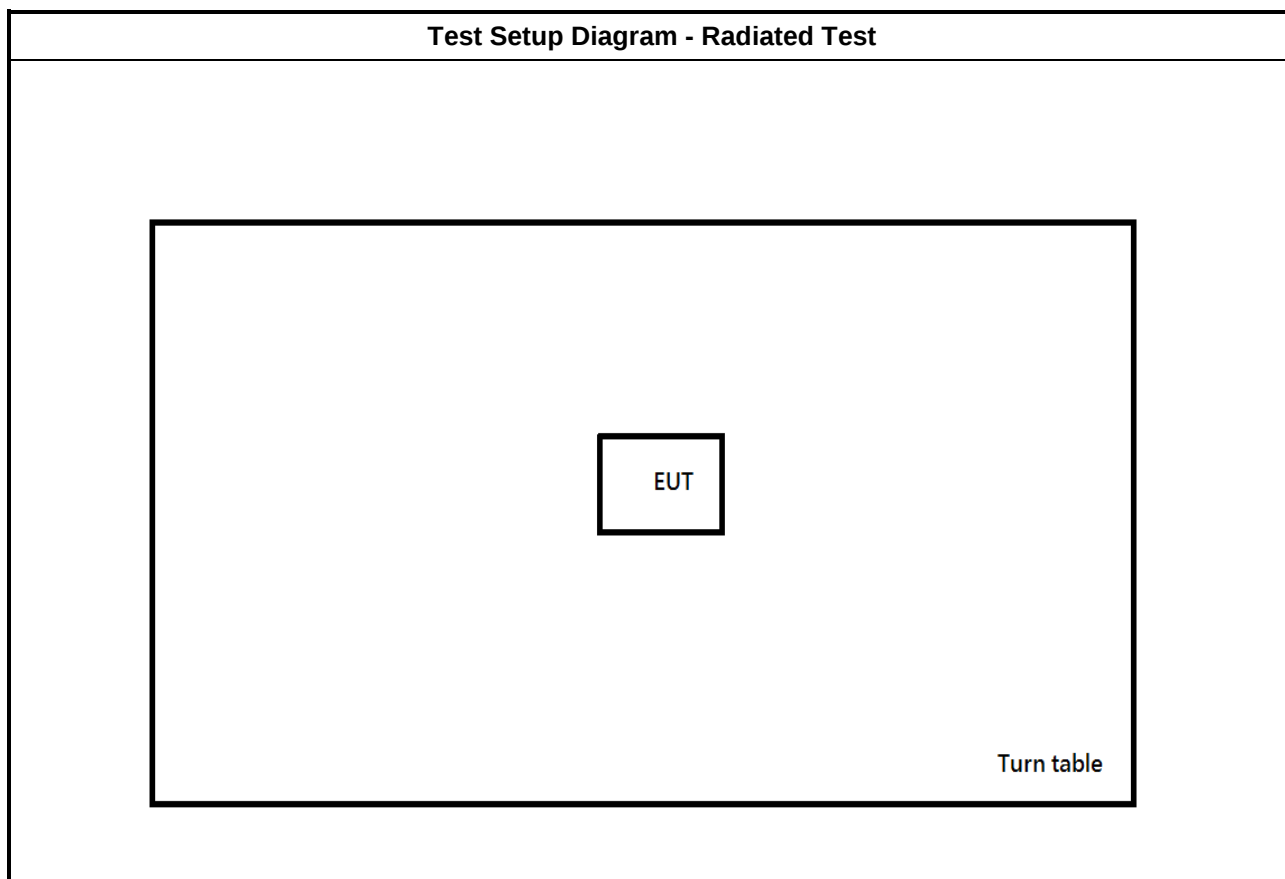
2.4 Accessories and Support Equipment

Accessories				
Battery	Brand Name	Panasonic	Model Name	CR 2032
	Power Rating	3Vdc, 220mAh	Type	Li-ion, Y

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	DC Power Supply	GW	GPS-3030DD	-

2.5 Test Setup Diagram



3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50
Note 1: * Decreases with the logarithm of the frequency.		

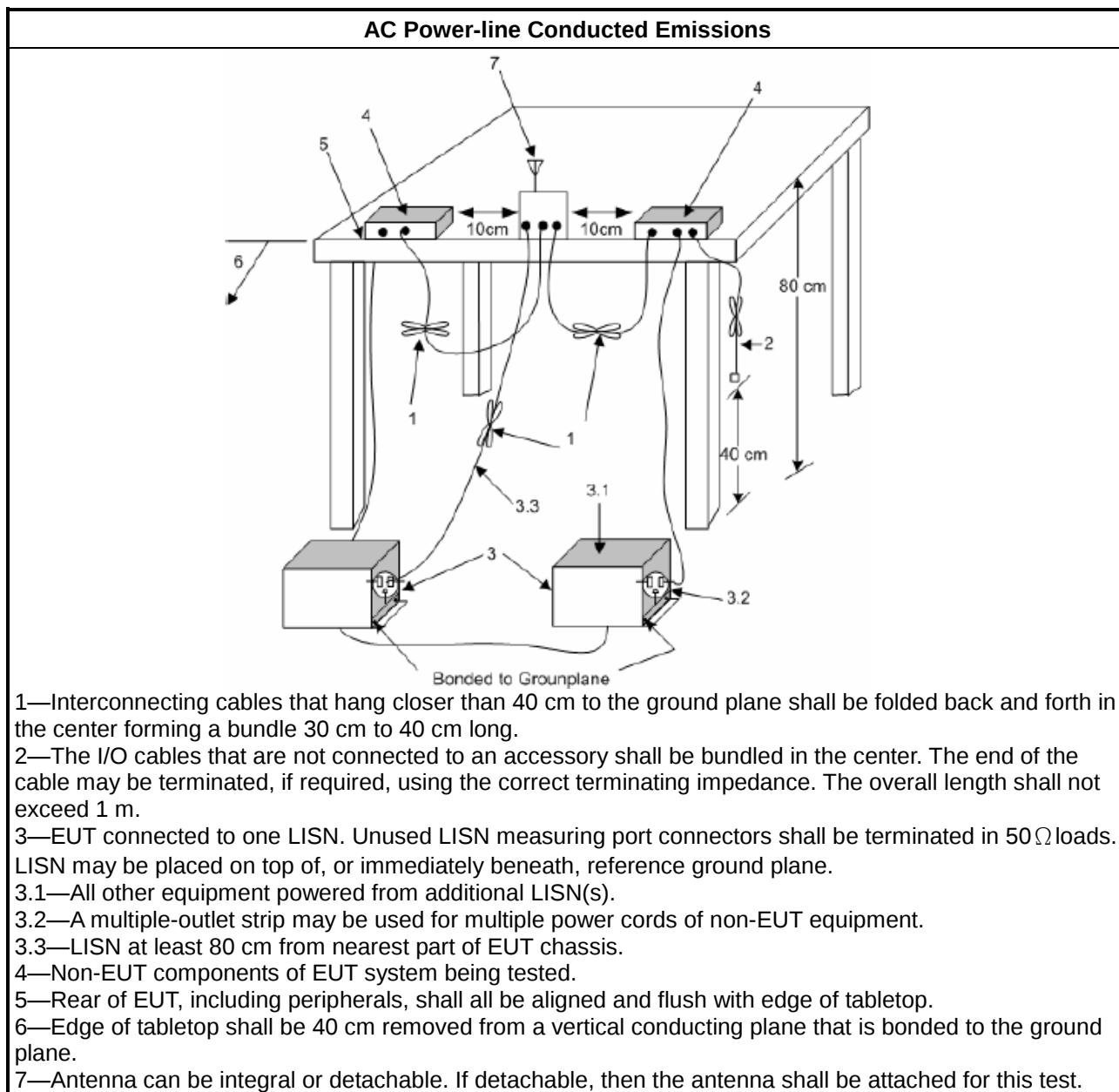
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

Test Method
▪ 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

Please refer to FCC 15.207 which states, "Measurements to demonstrate compliance with the conducted limits are not required for devices employ Battery for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines".

Therefore, for this device, AC Power Line Conducted Emissions investigation is not required.

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 A

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.	

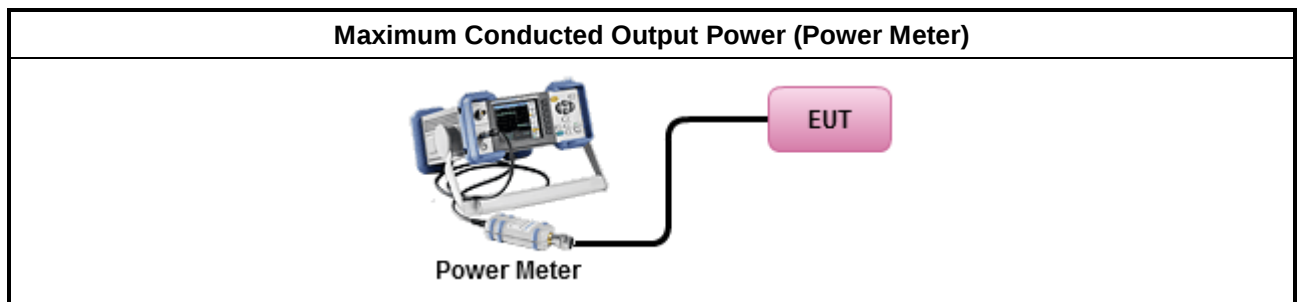
3.3.2 Measuring Instruments

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 B

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 C

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.	

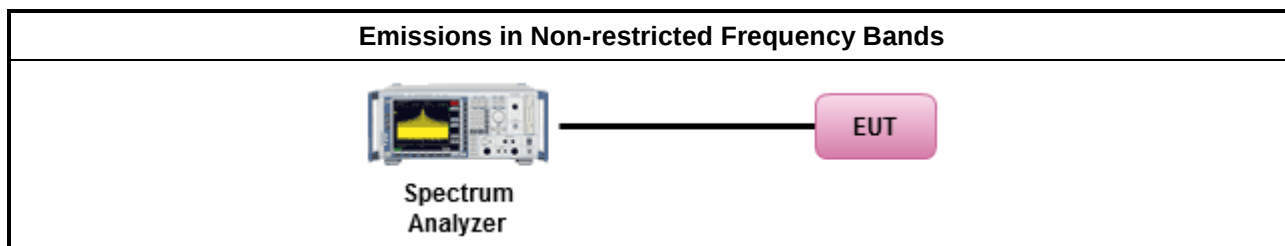
3.5.2 Measuring Instruments

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 D

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.

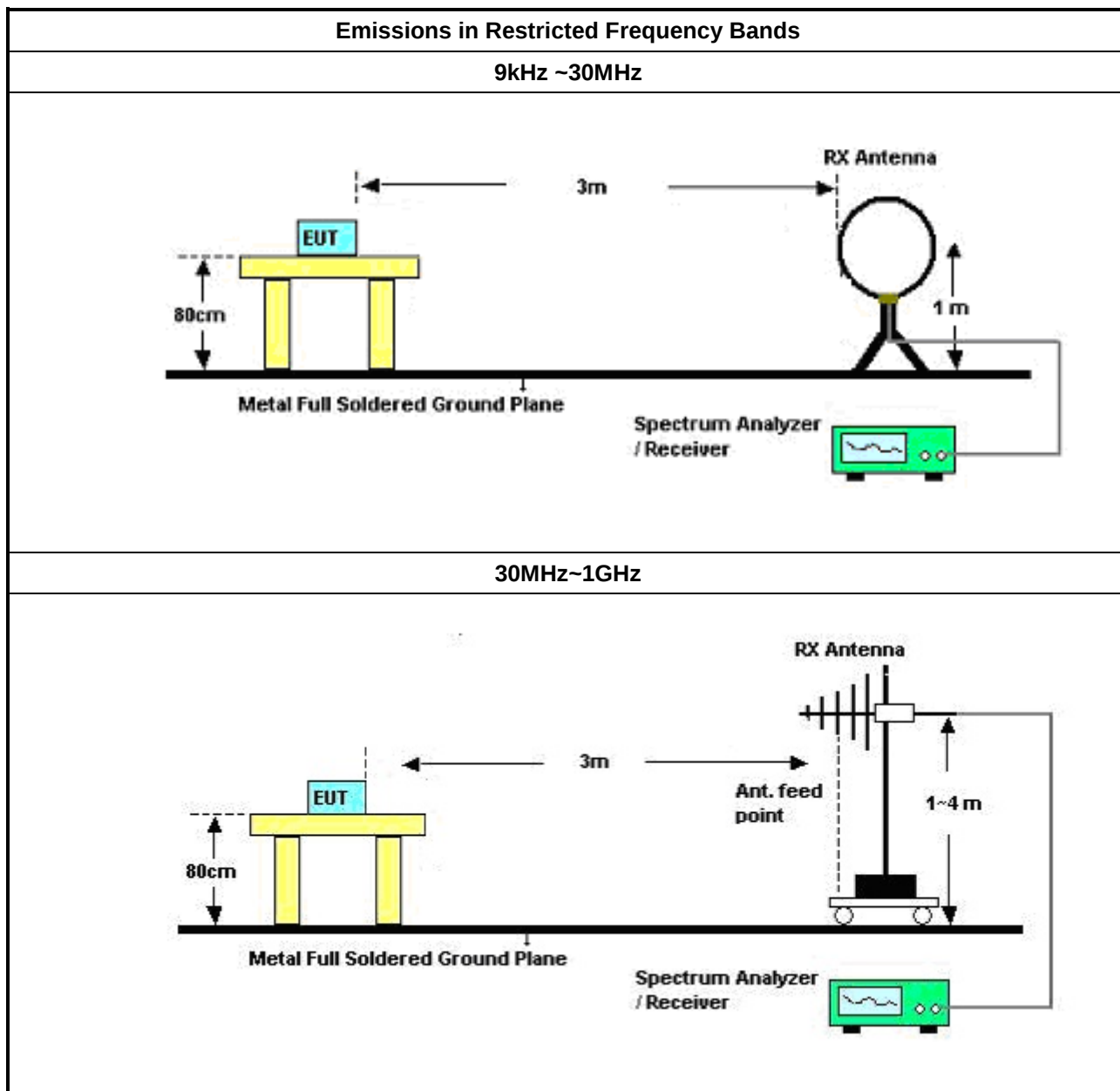
3.6.2 Measuring Instruments

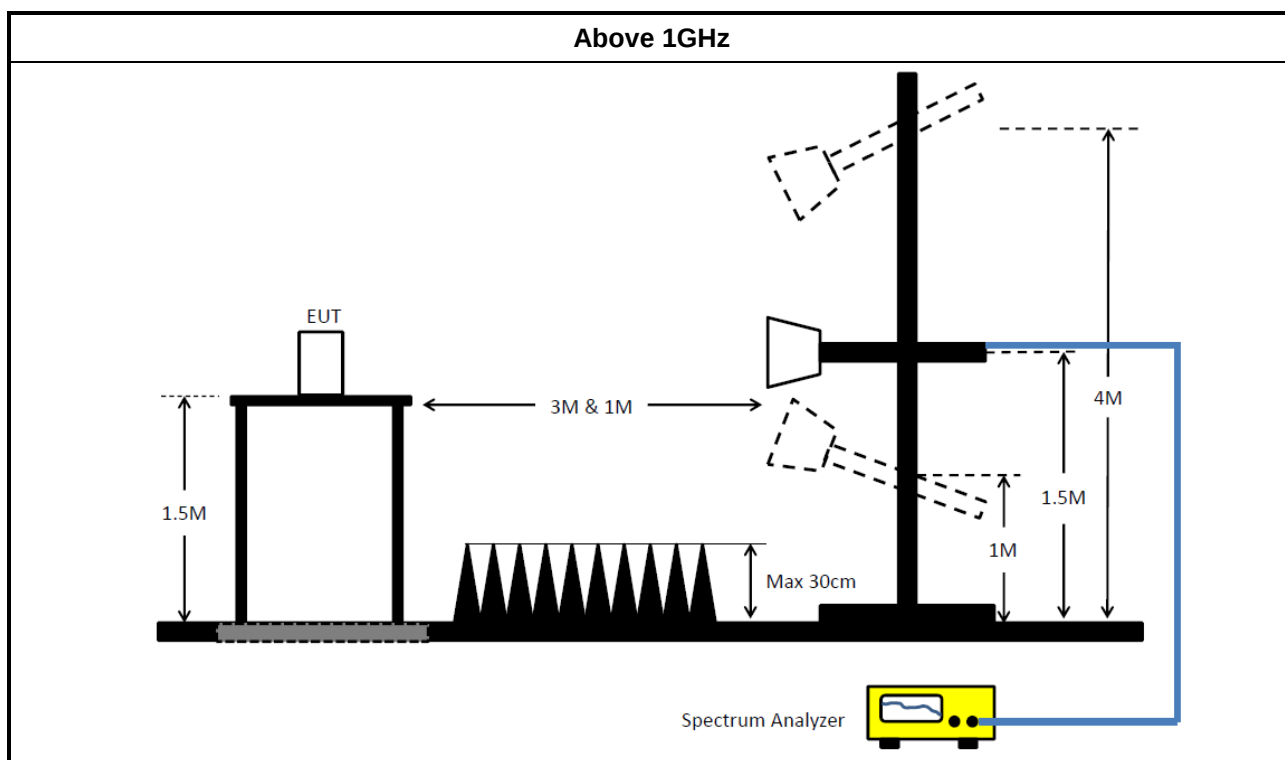
Refer a test equipment and calibration data table in this test report.

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





3.6.5 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 E

4 Test Equipment and Calibration Data

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	19/Oct/2018	18/Oct/2019
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	1GHz~18GHz 3m	17/Oct/2018	16/Oct/2019
Amplifier	Agilent	8447D	2944A11149	100kHz~1.3GHz	02Jul/2019	01/Jul/2020
Microwave Preamplifier	Agilent	8449B	3008A02373	1GHz~26.5GHz	23/Oct/2018	22/Oct/2019
Spectrum Analyzer	Rohde & Schwarz	FSP40	100593	9KHz~40GHz	27/Dec/2018	26/Dec/2019
EMI Test Receiver	R&S	ESR3	102052	9kHz~3.6GHz	09/Apr/2019	08/Apr/2020
RF Cable-R03m	Jye Bao	RG142	CB017	9kHz~1GHz	26/Mar/2019	25/Mar/2020
RF Cable-high 6m	SUHNER	SUCOFLEX104	10567868 / SN805193/4	1GHz~40GHz	09/Apr/2019	08/Apr/2020
RF Cable-high 7m	SUHNER	SUCOFLEX104	10567868 / SN805192/4	1GHz~40GHz	09/Apr/2019	08/Apr/2020
Bilog Antenna & 5dB Attenuator	SCHAFFNER / MTJ	CBL 6112B / MTJ6102-05	2723 / 2	30MHz~1GHz	08/Sep/2019	07/Sep/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



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)	746.25k	1.062M	1M06F1D	726.25k	1.062M
BT-LE(2Mbps)	1.383M	2.091M	2M09F1D	1.235M	2.081M

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;

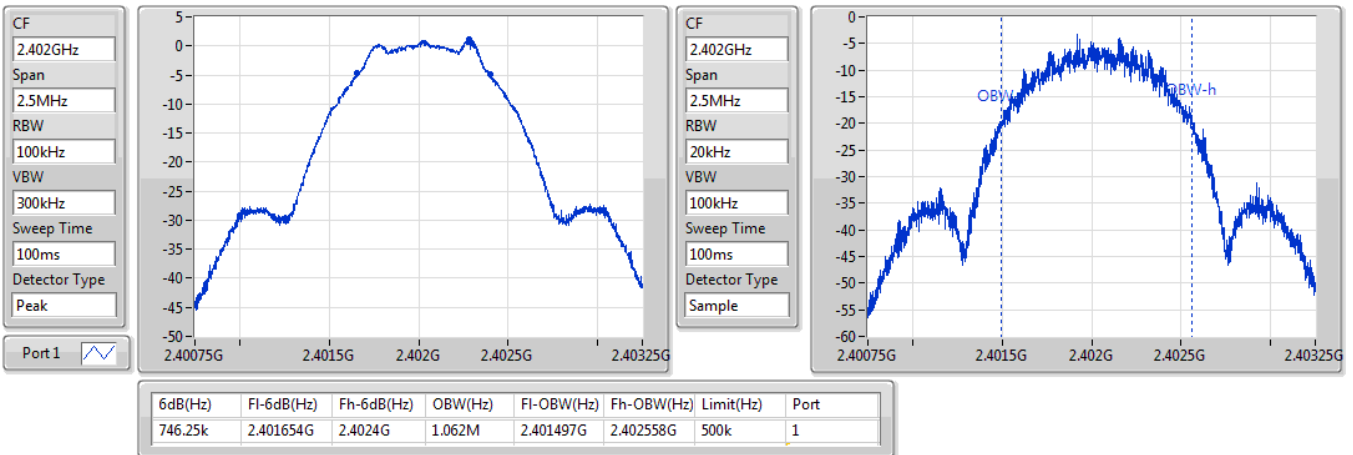
**Result**

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	746.25k	1.062M
2441MHz	Pass	500k	726.25k	1.062M
2480MHz	Pass	500k	741.25k	1.062M
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	500k	1.235M	2.081M
2441MHz	Pass	500k	1.383M	2.091M
2480MHz	Pass	500k	1.313M	2.089M

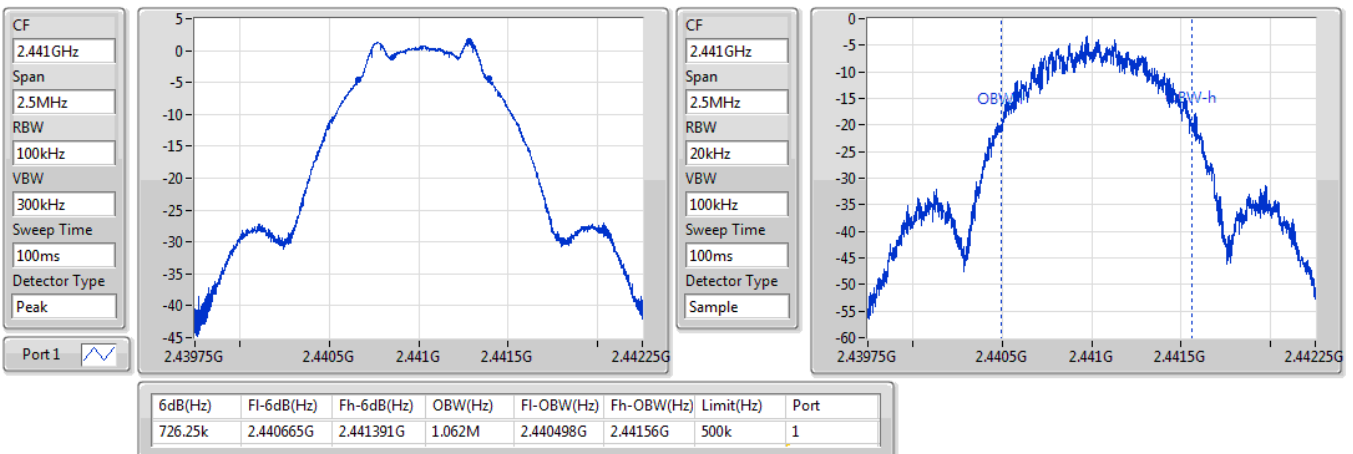
Port X-N dB = Port X 6dB down bandwidth; **Port X-OBW** = Port X 99% occupied bandwidth;

BT-LE(1Mbps)
2402MHz
EBW

24/09/2019

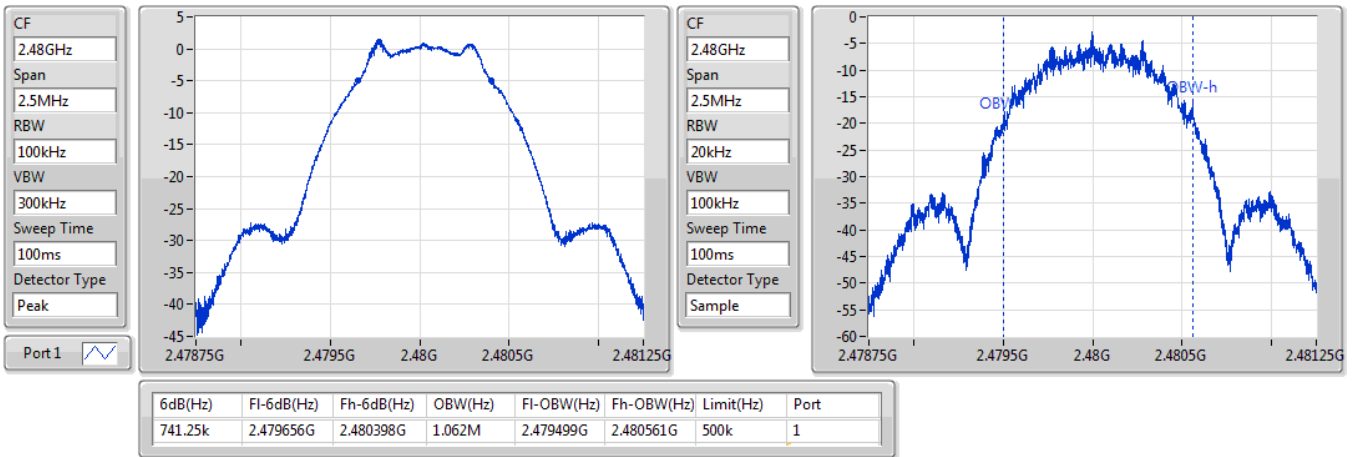

BT-LE(1Mbps)
2441MHz
EBW

24/09/2019

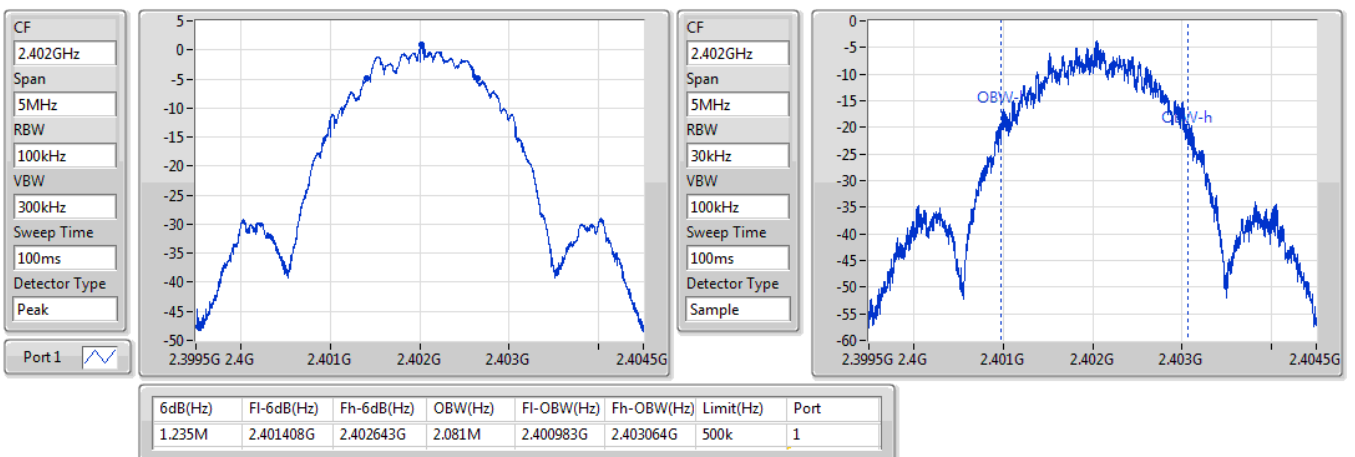


BT-LE(1Mbps)
EBW
2480MHz

24/09/2019

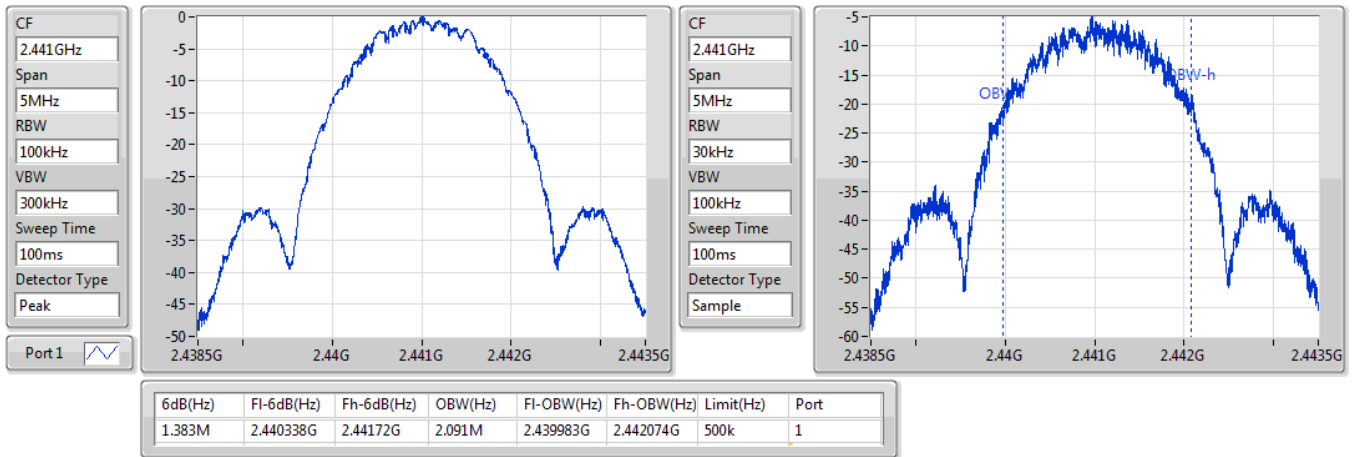

BT-LE(2Mbps)
EBW
2402MHz

24/09/2019

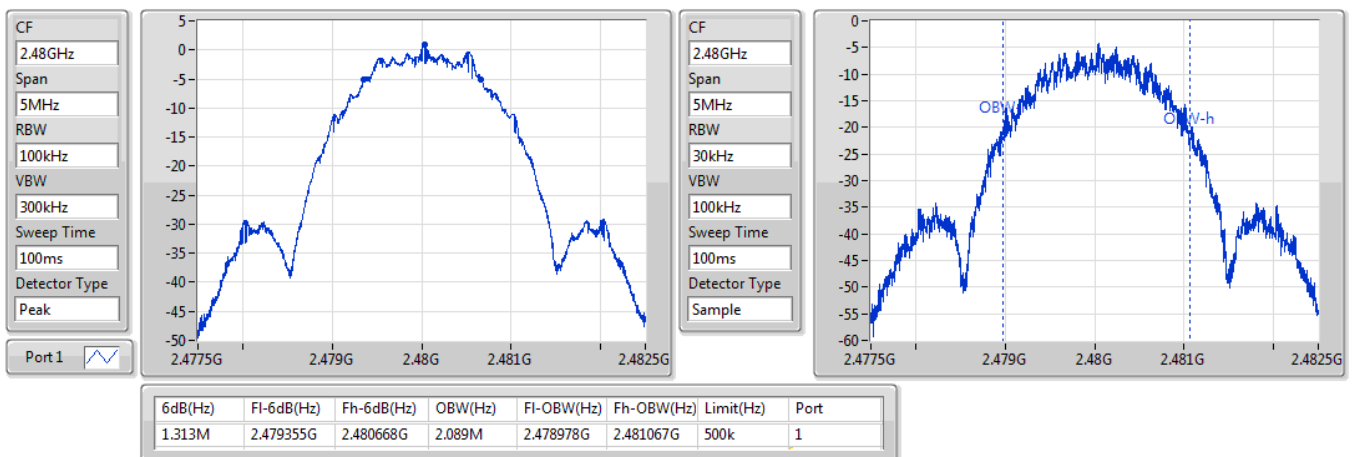


BT-LE(2Mbps)
EBW
2441MHz

24/09/2019


BT-LE(2Mbps)
EBW
2480MHz

24/09/2019





MAXIMUM CONDUCTED OUTPUT POWER

Appendix B

Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	2.33	0.00171
BT-LE(2Mbps)	2.32	0.00171



MAXIMUM CONDUCTED OUTPUT POWER

Appendix B

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	1.50	2.12	30.00
2441MHz	Pass	1.50	2.30	30.00
2480MHz	Pass	1.50	2.33	30.00
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	1.50	2.10	30.00
2441MHz	Pass	1.50	2.30	30.00
2480MHz	Pass	1.50	2.32	30.00

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



Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-11.12
BT-LE(2Mbps)	-14.27

RBW=3 kHz.



Result

Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	1.50	-12.57	8.00
2441MHz	Pass	1.50	-11.63	8.00
2480MHz	Pass	1.50	-11.12	8.00
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	1.50	-14.27	8.00
2441MHz	Pass	1.50	-14.39	8.00
2480MHz	Pass	1.50	-15.11	8.00

DG = Directional Gain; RBW=3 kHz;

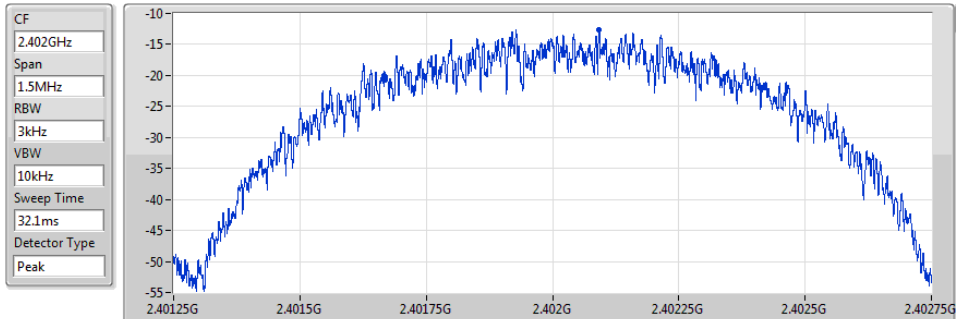
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; **Port X** = Port X power density;

BT-LE(1Mbps)

PSD

2402MHz

24/09/2019



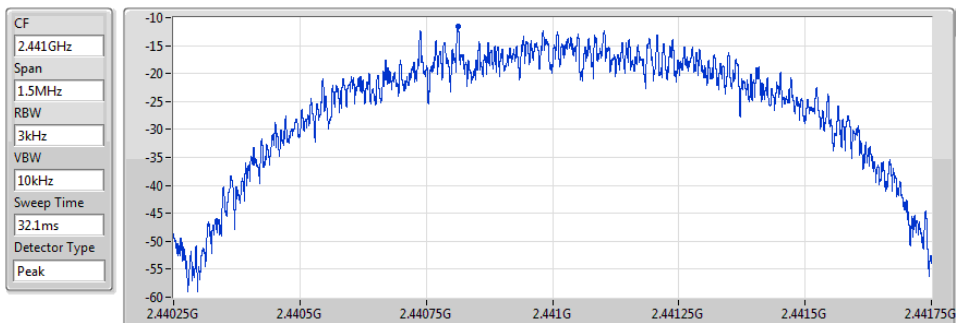
Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-12.57	-12.57	-12.57

BT-LE(1Mbps)

PSD

2441MHz

24/09/2019



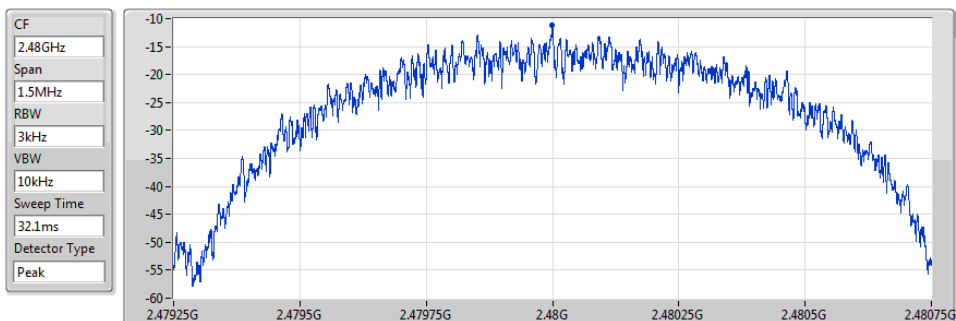
Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-11.63	-11.63	-11.63

BT-LE(1Mbps)

PSD

2480MHz

24/09/2019



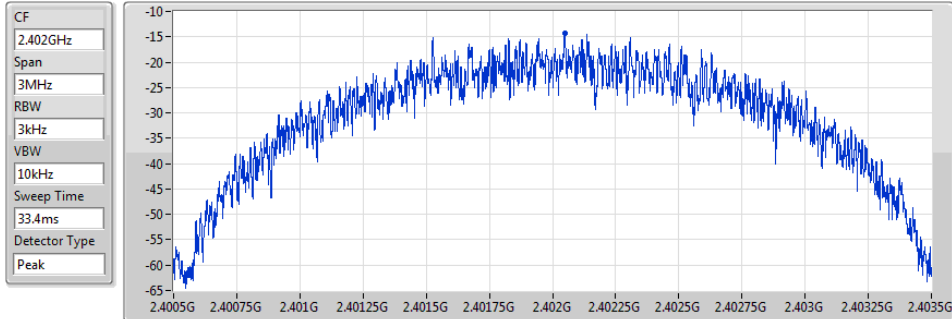
Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-11.12	-11.12	-11.12

BT-LE(2Mbps)

PSD

2402MHz

24/09/2019



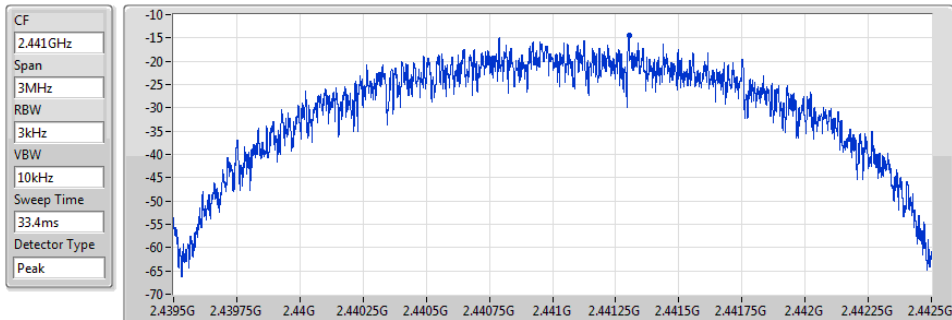
Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-14.27	-14.27	-14.27

BT-LE(2Mbps)

PSD

2441MHz

24/09/2019



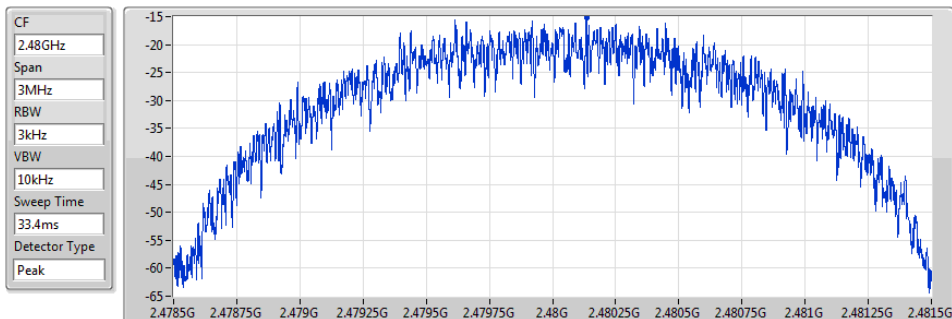
Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-14.39	-14.39	-14.39

BT-LE(2Mbps)

PSD

2480MHz

24/09/2019



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-15.11	-15.11	-15.11

**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	2.48003G	0.91	-29.09	2.398G	-64.00	2.39999G	-52.29	2.4854G	-64.13	24.49905G	-52.52	1
BT-LE(2Mbps)	Pass	2.48008G	0.83	-29.17	2.39334G	-62.39	2.39999G	-31.06	2.48643G	-64.34	23.46071G	-53.65	1

Result

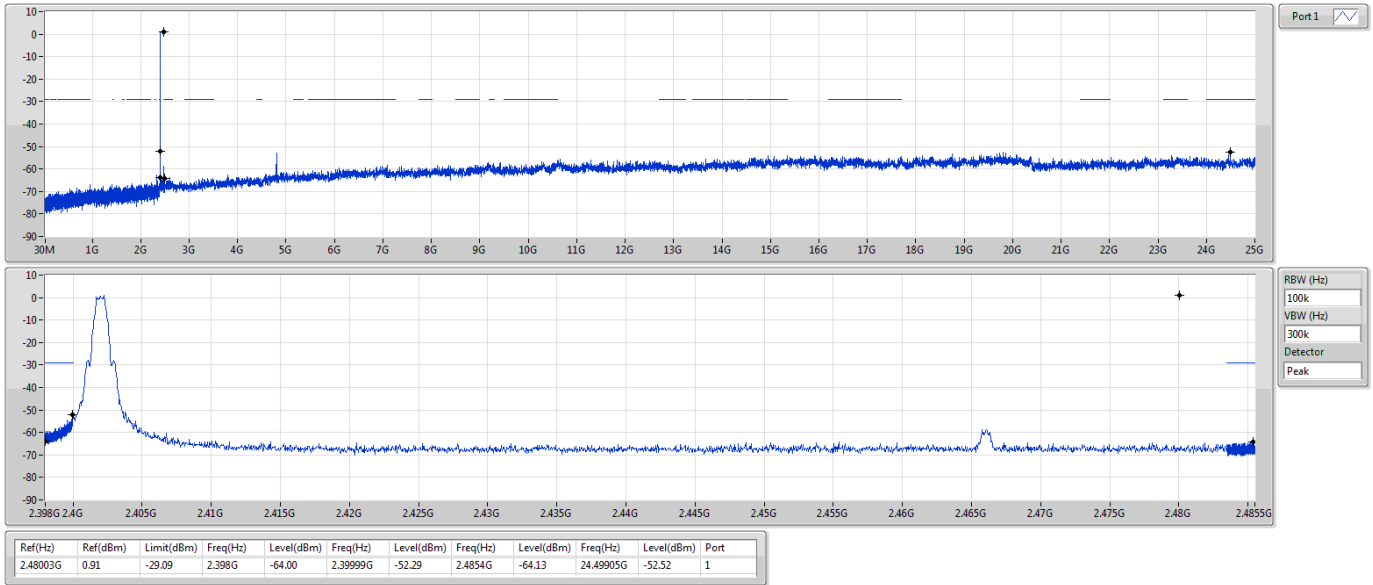
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.48003G	0.91	-29.09	2.398G	-64.00	2.39999G	-52.29	2.4854G	-64.13	24.49905G	-52.52	1
2441MHz	Pass	2.48003G	0.91	-29.09	2.1609G	-66.55	2.3988G	-64.50	2.48472G	-63.72	14.6771G	-52.59	1
2480MHz	Pass	2.48003G	0.91	-29.09	2.06826G	-65.46	2.39997G	-64.56	2.48356G	-58.88	16.24749G	-52.63	1
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.48008G	0.83	-29.17	2.39334G	-62.39	2.39999G	-31.06	2.48643G	-64.34	23.46071G	-53.65	1
2441MHz	Pass	2.48008G	0.83	-29.17	1.76635G	-66.08	2.39814G	-64.70	2.48586G	-63.79	24.78895G	-52.24	1
2480MHz	Pass	2.48008G	0.83	-29.17	1.93759G	-66.31	2.39715G	-64.17	2.48355G	-53.31	15.29148G	-53.42	1

BT-LE(1Mbps)

CSE NdB

2402MHz

24/09/2019

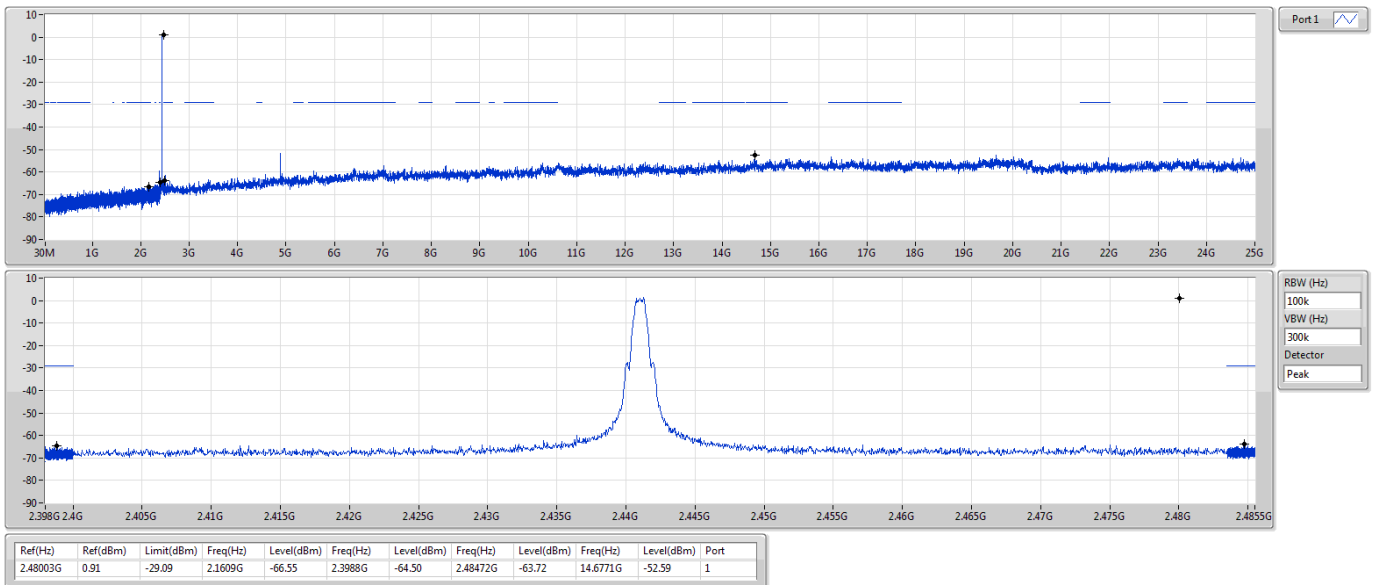


BT-LE(1Mbps)

CSE NdB

2441MHz

24/09/2019



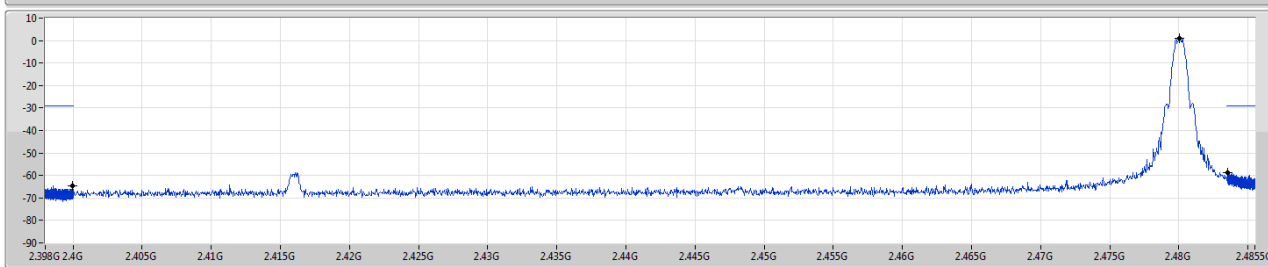
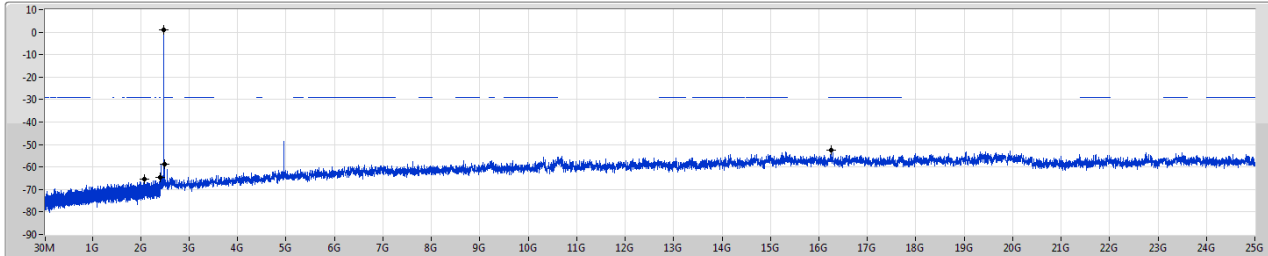
BT-LE(1Mbps)

2480MHz

CSE NdB

24/09/2019

Port1



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

Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.48003G	0.91	-29.09	2.06826G	-65.46	2.39997G	-64.56	2.48356G	-58.88	16.24749G	-52.63	1

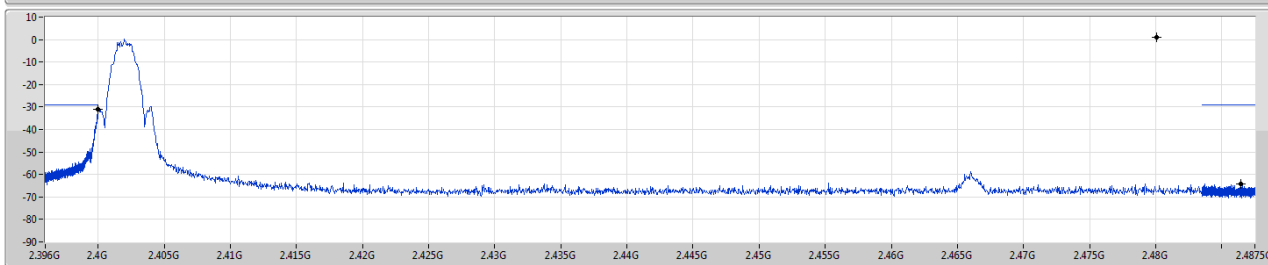
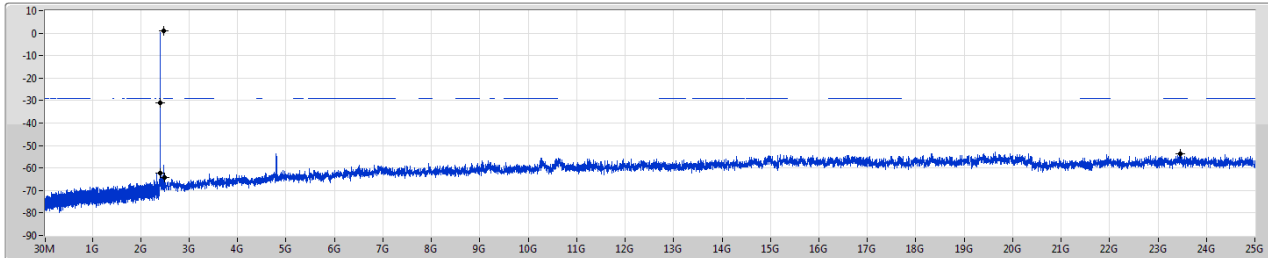
BT-LE(2Mbps)

2402MHz

CSE NdB

24/09/2019

Port1



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

Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.48008G	0.83	-29.17	2.39334G	-62.39	2.39999G	-31.06	2.48643G	-64.34	23.46071G	-53.65	1

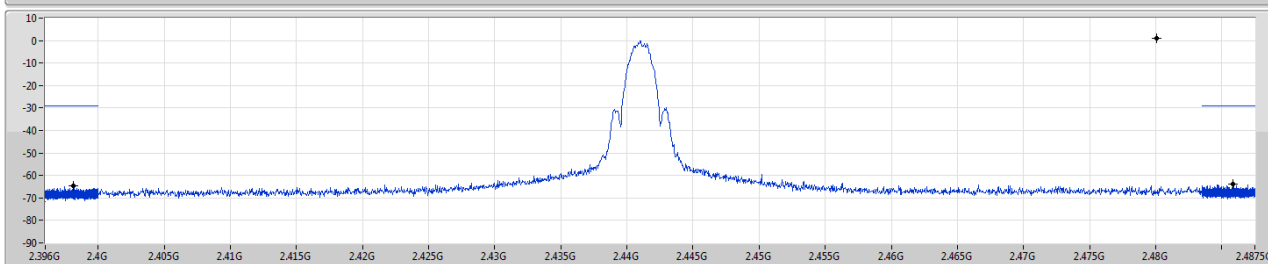
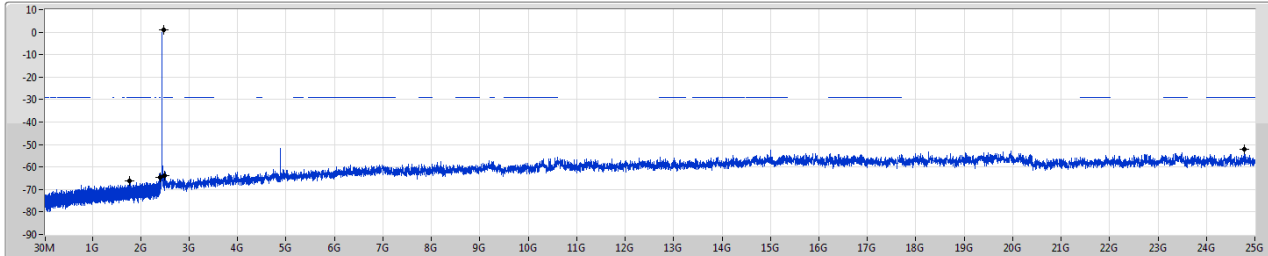
BT-LE(2Mbps)

2441MHz

CSE NdB

24/09/2019

Port1



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

Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.48008G	0.83	-29.17	1.76635G	-66.08	2.39814G	-64.70	2.48356G	-63.79	2.478895G	-52.24	1

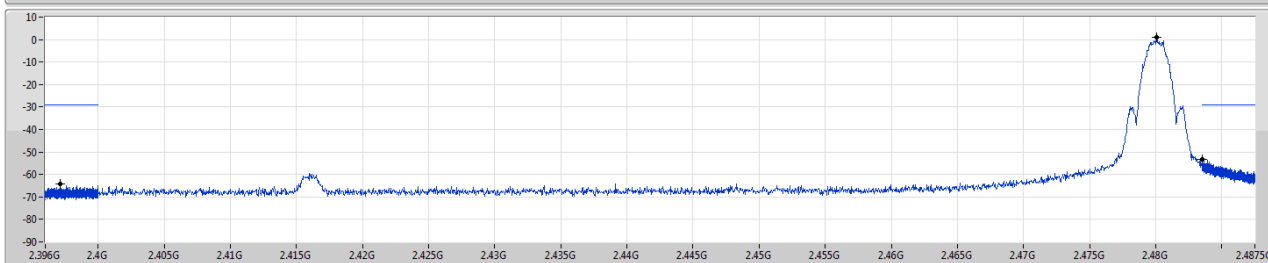
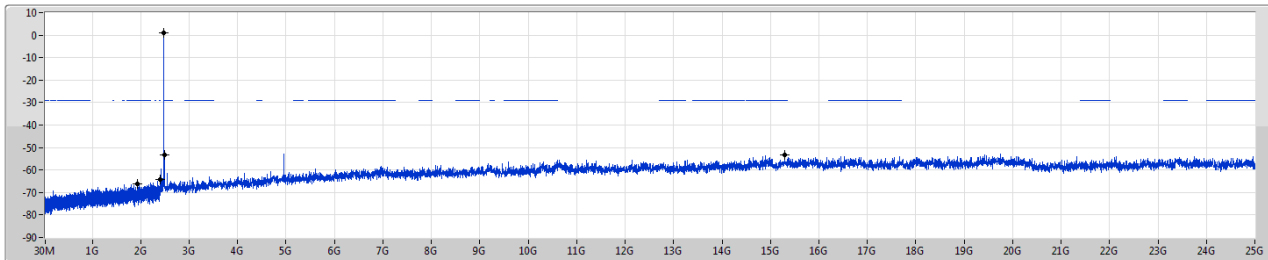
BT-LE(2Mbps)

2480MHz

CSE NdB

24/09/2019

Port1



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

Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.48008G	0.83	-29.17	1.93759G	-66.31	2.39715G	-64.17	2.48355G	-53.31	15.29148G	-53.42	1



EMISSIONS IN RESTRICTED FREQUENCY BANDS (below 1GHz)

Appendix E.1

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(2Mbps)	Pass	PK	30M	22.68	40.00	-17.32	3	Vertical	360	1.00	-

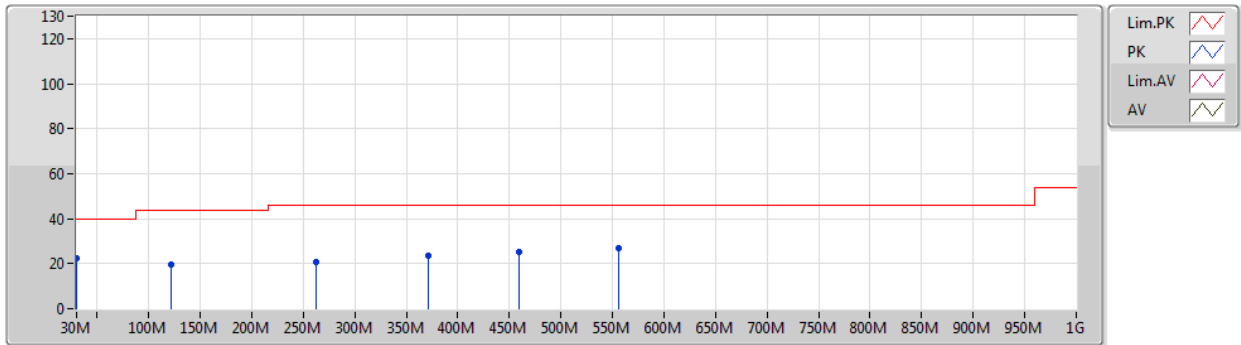
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-	-
2441MHz_Battery	Pass	PK	30M	22.68	40.00	-17.32	3	Vertical	360	1.00	-
2441MHz_Battery	Pass	PK	121.18M	19.72	43.50	-23.78	3	Vertical	360	1.00	-
2441MHz_Battery	Pass	PK	262.8M	20.51	46.00	-25.49	3	Vertical	360	1.00	-
2441MHz_Battery	Pass	PK	371.44M	23.33	46.00	-22.67	3	Vertical	360	1.00	-
2441MHz_Battery	Pass	PK	458.74M	25.45	46.00	-20.55	3	Vertical	360	1.00	-
2441MHz_Battery	Pass	PK	555.74M	27.01	46.00	-18.99	3	Vertical	360	1.00	-
2441MHz_Battery	Pass	PK	33.88M	20.62	40.00	-19.38	3	Horizontal	0	1.00	-
2441MHz_Battery	Pass	PK	121.18M	19.72	43.50	-23.78	3	Horizontal	0	1.00	-
2441MHz_Battery	Pass	PK	266.68M	21.12	46.00	-24.88	3	Horizontal	0	1.00	-
2441MHz_Battery	Pass	PK	371.44M	23.33	46.00	-22.67	3	Horizontal	0	1.00	-
2441MHz_Battery	Pass	PK	501.42M	26.16	46.00	-19.84	3	Horizontal	0	1.00	-
2441MHz_Battery	Pass	PK	612M	28.20	46.00	-17.80	3	Horizontal	0	1.00	-

BT-LE(2Mbps)

2441MHz_Battery

15/09/2019

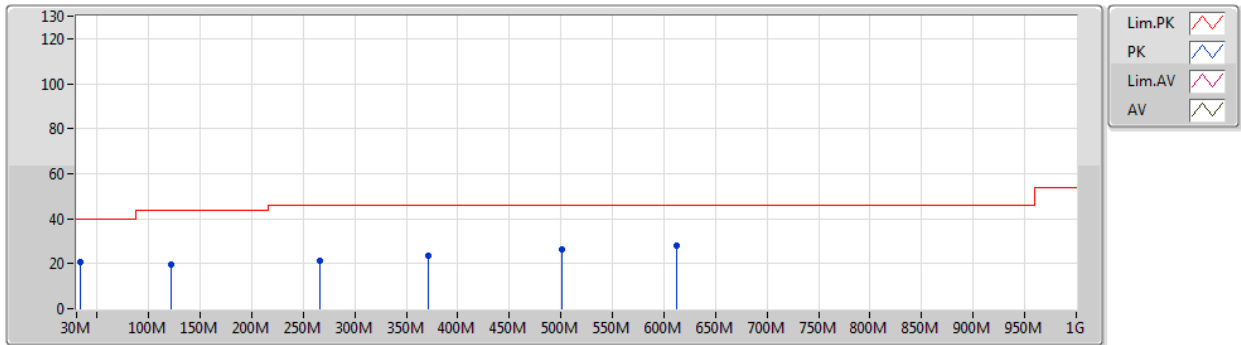


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	30M	22.68	40.00	-17.32	-4.40	3	Vertical	360	1.00	-	27.08	23.01	0.29	27.70
PK	121.18M	19.72	43.50	-23.78	-8.88	3	Vertical	360	1.00	-	28.60	17.19	1.66	27.73
PK	262.8M	20.51	46.00	-25.49	-5.82	3	Vertical	360	1.00	-	26.33	18.59	2.77	27.18
PK	371.44M	23.33	46.00	-22.67	-4.52	3	Vertical	360	1.00	-	27.85	19.99	3.14	27.65
PK	458.74M	25.45	46.00	-20.55	-2.96	3	Vertical	360	1.00	-	28.41	22.12	3.25	28.33
PK	555.74M	27.01	46.00	-18.99	-1.19	3	Vertical	360	1.00	-	28.20	23.83	3.60	28.62

BT-LE(2Mbps)

2441MHz_Battery

15/09/2019



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	33.88M	20.62	40.00	-19.38	-6.46	3	Horizontal	0	1.00	-	27.08	20.79	0.43	27.68
PK	121.18M	19.72	43.50	-23.78	-8.88	3	Horizontal	0	1.00	-	28.60	17.19	1.66	27.73
PK	266.68M	21.12	46.00	-24.88	-5.94	3	Horizontal	0	1.00	-	27.06	18.45	2.79	27.18
PK	371.44M	23.33	46.00	-22.67	-4.52	3	Horizontal	0	1.00	-	27.85	19.99	3.14	27.65
PK	501.42M	26.16	46.00	-19.84	-2.42	3	Horizontal	0	1.00	-	28.58	22.68	3.32	28.42
PK	612M	28.20	46.00	-17.80	-0.79	3	Horizontal	0	1.00	-	28.99	24.03	3.70	28.52



EMISSIONS IN RESTRICTED FREQUENCY BANDS (above 1GHz)

Appendix E.2

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	2.4835G	46.17	54.00	-7.83	3	Horizontal	209	2.87	-
BT-LE(2Mbps)	Pass	AV	2.4835G	47.80	54.00	-6.20	3	Horizontal	207	2.87	-

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	2.3538G	44.00	54.00	-10.00	3	Vertical	237	1.29	-
2402MHz_TX	Pass	AV	2.402G	88.76	Inf	-Inf	3	Vertical	237	1.29	-
2402MHz_TX	Pass	PK	2.3852G	56.43	74.00	-17.57	3	Vertical	237	1.29	-
2402MHz_TX	Pass	PK	2.4018G	90.50	Inf	-Inf	3	Vertical	237	1.29	-
2402MHz_TX	Pass	AV	2.3614G	43.99	54.00	-10.01	3	Horizontal	313	1.47	-
2402MHz_TX	Pass	AV	2.402G	94.75	Inf	-Inf	3	Horizontal	313	1.47	-
2402MHz_TX	Pass	PK	2.3692G	55.97	74.00	-18.03	3	Horizontal	313	1.47	-
2402MHz_TX	Pass	PK	2.4018G	96.49	Inf	-Inf	3	Horizontal	313	1.47	-
2402MHz_TX	Pass	AV	4.80421G	33.39	54.00	-20.61	3	Vertical	164	2.89	-
2402MHz_TX	Pass	PK	4.80468G	45.52	74.00	-28.48	3	Vertical	164	2.89	-
2402MHz_TX	Pass	AV	4.80409G	37.64	54.00	-16.36	3	Horizontal	194	2.56	-
2402MHz_TX	Pass	PK	4.80354G	47.38	74.00	-26.62	3	Horizontal	194	2.56	-
2441MHz_TX	Pass	AV	2.377G	43.99	54.00	-10.01	3	Vertical	230	1.83	-
2441MHz_TX	Pass	AV	2.441G	90.30	Inf	-Inf	3	Vertical	230	1.83	-
2441MHz_TX	Pass	AV	2.499G	44.44	54.00	-9.56	3	Vertical	230	1.83	-
2441MHz_TX	Pass	PK	2.3894G	56.06	74.00	-17.94	3	Vertical	230	1.83	-
2441MHz_TX	Pass	PK	2.441G	92.03	Inf	-Inf	3	Vertical	230	1.83	-
2441MHz_TX	Pass	PK	2.4906G	55.93	74.00	-18.07	3	Vertical	230	1.83	-
2441MHz_TX	Pass	AV	2.377G	44.23	54.00	-9.77	3	Horizontal	306	2.51	-
2441MHz_TX	Pass	AV	2.441G	95.14	Inf	-Inf	3	Horizontal	306	2.51	-
2441MHz_TX	Pass	AV	2.4982G	44.43	54.00	-9.57	3	Horizontal	306	2.51	-
2441MHz_TX	Pass	PK	2.3558G	56.07	74.00	-17.93	3	Horizontal	306	2.51	-
2441MHz_TX	Pass	PK	2.441G	96.85	Inf	-Inf	3	Horizontal	306	2.51	-
2441MHz_TX	Pass	PK	2.4966G	56.96	74.00	-17.04	3	Horizontal	306	2.51	-
2441MHz_TX	Pass	AV	4.88202G	34.53	54.00	-19.47	3	Vertical	279	2.25	-
2441MHz_TX	Pass	AV	7.32238G	35.97	54.00	-18.03	3	Vertical	285	2.79	-
2441MHz_TX	Pass	PK	4.88254G	45.83	74.00	-28.17	3	Vertical	279	2.25	-
2441MHz_TX	Pass	PK	7.32256G	49.37	74.00	-24.63	3	Vertical	285	2.79	-
2441MHz_TX	Pass	AV	4.8821G	37.37	54.00	-16.63	3	Horizontal	194	2.25	-
2441MHz_TX	Pass	AV	7.32241G	35.59	54.00	-18.41	3	Horizontal	186	2.09	-
2441MHz_TX	Pass	PK	4.88271G	47.55	74.00	-26.45	3	Horizontal	194	2.25	-
2441MHz_TX	Pass	PK	7.32385G	49.29	74.00	-24.71	3	Horizontal	186	2.09	-
2480MHz_TX	Pass	AV	2.48G	90.72	Inf	-Inf	3	Vertical	207	2.09	-
2480MHz_TX	Pass	AV	2.4835G	45.01	54.00	-8.99	3	Vertical	207	2.09	-
2480MHz_TX	Pass	PK	2.4798G	92.45	Inf	-Inf	3	Vertical	207	2.09	-
2480MHz_TX	Pass	PK	2.4846G	55.95	74.00	-18.05	3	Vertical	207	2.09	-
2480MHz_TX	Pass	AV	2.48G	95.66	Inf	-Inf	3	Horizontal	209	2.87	-
2480MHz_TX	Pass	AV	2.4835G	46.17	54.00	-7.83	3	Horizontal	209	2.87	-
2480MHz_TX	Pass	PK	2.4798G	97.36	Inf	-Inf	3	Horizontal	209	2.87	-
2480MHz_TX	Pass	PK	2.4838G	56.05	74.00	-17.95	3	Horizontal	209	2.87	-
2480MHz_TX	Pass	AV	4.95999G	33.34	54.00	-20.66	3	Vertical	161	2.88	-
2480MHz_TX	Pass	AV	7.43944G	37.33	54.00	-16.67	3	Vertical	274	1.99	-
2480MHz_TX	Pass	PK	4.95972G	46.31	74.00	-27.69	3	Vertical	161	2.88	-
2480MHz_TX	Pass	PK	7.44107G	50.61	74.00	-23.39	3	Vertical	274	1.99	-
2480MHz_TX	Pass	AV	4.9601G	36.87	54.00	-17.13	3	Horizontal	213	2.56	-
2480MHz_TX	Pass	AV	7.43942G	36.27	54.00	-17.73	3	Horizontal	217	3.00	-
2480MHz_TX	Pass	PK	4.95961G	47.84	74.00	-26.16	3	Horizontal	213	2.56	-

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2480MHz_TX	Pass	PK	7.43964G	49.71	74.00	-24.29	3	Horizontal	217	3.00	-
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-	-
2402MHz_TX	Pass	AV	2.3554G	44.01	54.00	-9.99	3	Vertical	239	1.29	-
2402MHz_TX	Pass	AV	2.402G	87.12	Inf	-Inf	3	Vertical	239	1.29	-
2402MHz_TX	Pass	PK	2.3774G	56.01	74.00	-17.99	3	Vertical	239	1.29	-
2402MHz_TX	Pass	PK	2.4016G	90.80	Inf	-Inf	3	Vertical	239	1.29	-
2402MHz_TX	Pass	AV	2.3564G	44.00	54.00	-10.00	3	Horizontal	311	2.13	-
2402MHz_TX	Pass	AV	2.402G	93.26	Inf	-Inf	3	Horizontal	311	2.13	-
2402MHz_TX	Pass	PK	2.3644G	55.98	74.00	-18.02	3	Horizontal	311	2.13	-
2402MHz_TX	Pass	PK	2.4026G	96.95	Inf	-Inf	3	Horizontal	311	2.13	-
2402MHz_TX	Pass	AV	4.80313G	32.02	54.00	-21.98	3	Vertical	163	2.87	-
2402MHz_TX	Pass	PK	4.80499G	44.87	74.00	-29.13	3	Vertical	163	2.87	-
2402MHz_TX	Pass	AV	4.80308G	34.43	54.00	-19.57	3	Horizontal	200	2.29	-
2402MHz_TX	Pass	PK	4.80311G	46.19	74.00	-27.81	3	Horizontal	200	2.29	-
2441MHz_TX	Pass	AV	2.3438G	43.99	54.00	-10.01	3	Vertical	131	1.44	-
2441MHz_TX	Pass	AV	2.441G	81.90	Inf	-Inf	3	Vertical	131	1.44	-
2441MHz_TX	Pass	AV	2.4998G	44.44	54.00	-9.56	3	Vertical	131	1.44	-
2441MHz_TX	Pass	PK	2.381G	56.21	74.00	-17.79	3	Vertical	131	1.44	-
2441MHz_TX	Pass	PK	2.4406G	85.70	Inf	-Inf	3	Vertical	131	1.44	-
2441MHz_TX	Pass	PK	2.4998G	56.27	74.00	-17.73	3	Vertical	131	1.44	-
2441MHz_TX	Pass	AV	2.377G	44.02	54.00	-9.98	3	Horizontal	209	2.63	-
2441MHz_TX	Pass	AV	2.441G	92.77	Inf	-Inf	3	Horizontal	209	2.63	-
2441MHz_TX	Pass	AV	2.4994G	44.44	54.00	-9.56	3	Horizontal	209	2.63	-
2441MHz_TX	Pass	PK	2.3726G	55.89	74.00	-18.11	3	Horizontal	209	2.63	-
2441MHz_TX	Pass	PK	2.4406G	96.50	Inf	-Inf	3	Horizontal	209	2.63	-
2441MHz_TX	Pass	PK	2.4962G	56.50	74.00	-17.50	3	Horizontal	209	2.63	-
2441MHz_TX	Pass	AV	4.88113G	32.80	54.00	-21.20	3	Vertical	273	2.24	-
2441MHz_TX	Pass	AV	7.32186G	35.95	54.00	-18.05	3	Vertical	280	1.90	-
2441MHz_TX	Pass	PK	4.88109G	45.66	74.00	-28.34	3	Vertical	273	2.24	-
2441MHz_TX	Pass	PK	7.32164G	49.09	74.00	-24.91	3	Vertical	280	1.90	-
2441MHz_TX	Pass	AV	4.88111G	35.16	54.00	-18.84	3	Horizontal	193	2.37	-
2441MHz_TX	Pass	AV	7.32176G	35.18	54.00	-18.82	3	Horizontal	185	1.99	-
2441MHz_TX	Pass	PK	4.88303G	47.09	74.00	-26.91	3	Horizontal	193	2.37	-
2441MHz_TX	Pass	PK	7.32436G	48.68	74.00	-25.32	3	Horizontal	185	1.99	-
2480MHz_TX	Pass	AV	2.48G	88.27	Inf	-Inf	3	Vertical	236	1.20	-
2480MHz_TX	Pass	AV	2.4835G	45.68	54.00	-8.32	3	Vertical	236	1.20	-
2480MHz_TX	Pass	PK	2.4796G	91.87	Inf	-Inf	3	Vertical	236	1.20	-
2480MHz_TX	Pass	PK	2.4984G	56.45	74.00	-17.55	3	Vertical	236	1.20	-
2480MHz_TX	Pass	AV	2.48G	93.62	Inf	-Inf	3	Horizontal	207	2.87	-
2480MHz_TX	Pass	AV	2.4835G	47.80	54.00	-6.20	3	Horizontal	207	2.87	-
2480MHz_TX	Pass	PK	2.4796G	97.24	Inf	-Inf	3	Horizontal	207	2.87	-
2480MHz_TX	Pass	PK	2.4835G	58.03	74.00	-15.97	3	Horizontal	207	2.87	-
2480MHz_TX	Pass	AV	4.95911G	32.81	54.00	-21.19	3	Vertical	160	2.86	-
2480MHz_TX	Pass	AV	7.4388G	37.09	54.00	-16.91	3	Vertical	276	2.02	-
2480MHz_TX	Pass	PK	4.96104G	45.87	74.00	-28.13	3	Vertical	160	2.86	-
2480MHz_TX	Pass	PK	7.4387G	50.12	74.00	-23.88	3	Vertical	276	2.02	-
2480MHz_TX	Pass	AV	4.95911G	35.41	54.00	-18.59	3	Horizontal	214	3.00	-
2480MHz_TX	Pass	AV	7.43878G	35.65	54.00	-18.35	3	Horizontal	210	3.00	-
2480MHz_TX	Pass	PK	4.96104G	47.05	74.00	-26.95	3	Horizontal	214	3.00	-



EMISSIONS IN RESTRICTED FREQUENCY BANDS (above 1GHz)

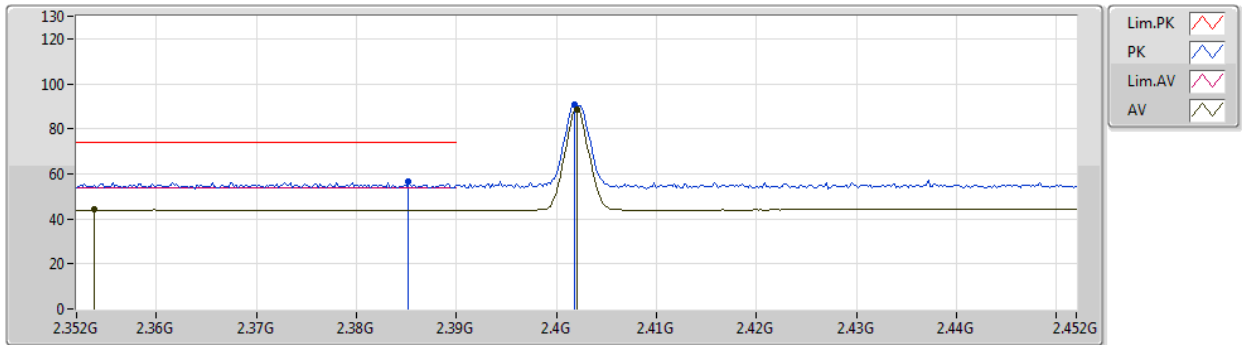
Appendix E.2

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2480MHz_TX	Pass	PK	7.44262G	49.66	74.00	-24.34	3	Horizontal	210	3.00	-

BT-LE(1Mbps)

2402MHz_TX

14/09/2019

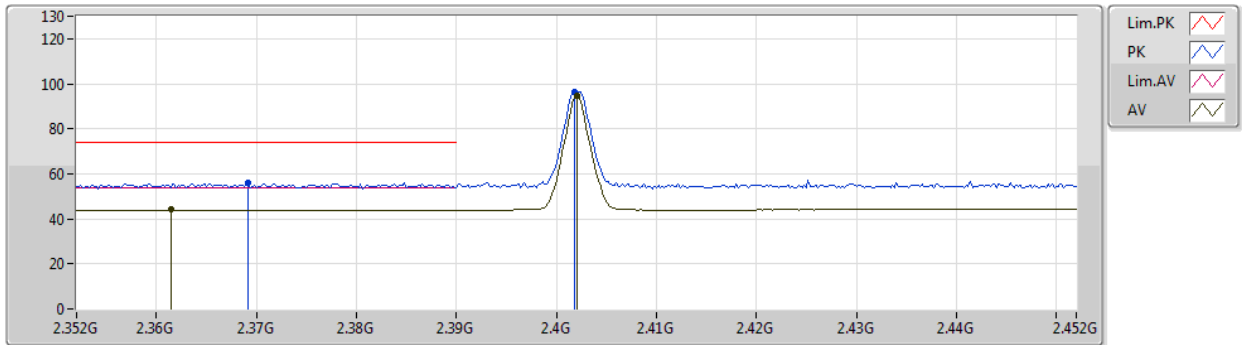


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3538G	44.00	54.00	-10.00	31.94	3	Vertical	237	1.29	-	12.06	27.26	4.68	-
AV	2.402G	88.76	Inf	-Inf	32.14	3	Vertical	237	1.29	-	56.62	27.41	4.73	-
PK	2.3852G	56.43	74.00	-17.57	32.07	3	Vertical	237	1.29	-	24.36	27.36	4.71	-
PK	2.4018G	90.50	Inf	-Inf	32.14	3	Vertical	237	1.29	-	58.36	27.41	4.73	-

BT-LE(1Mbps)

2402MHz_TX

14/09/2019

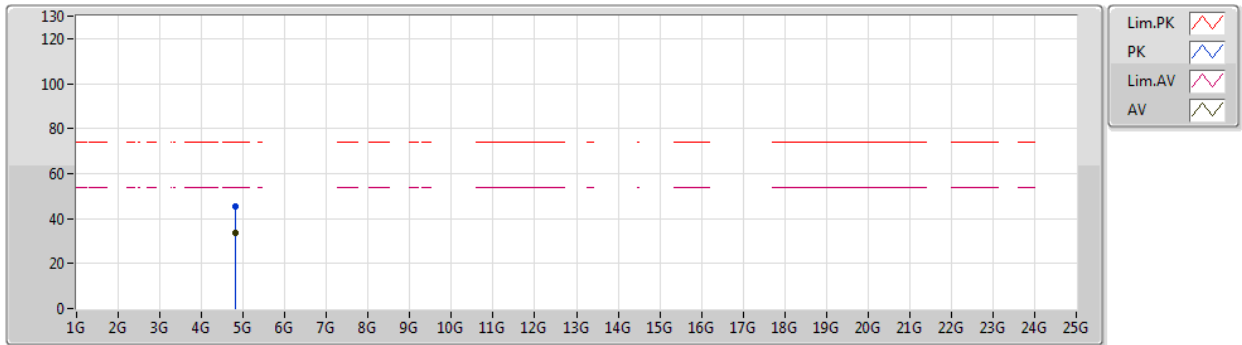


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3614G	43.99	54.00	-10.01	31.96	3	Horizontal	313	1.47	-	12.03	27.28	4.68	-
AV	2.402G	94.75	Inf	-Inf	32.14	3	Horizontal	313	1.47	-	62.61	27.41	4.73	-
PK	2.3692G	55.97	74.00	-18.03	32.00	3	Horizontal	313	1.47	-	23.97	27.31	4.69	-
PK	2.4018G	96.49	Inf	-Inf	32.14	3	Horizontal	313	1.47	-	64.35	27.41	4.73	-

BT-LE(1Mbps)

14/09/2019

2402MHz_TX

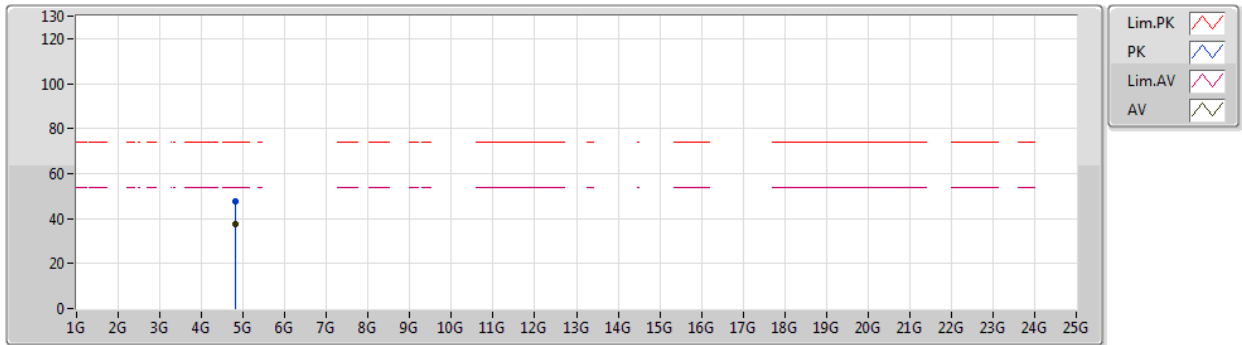


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.80421G	33.39	54.00	-20.61	3.64	3	Vertical	164	2.89	-	29.75	31.35	6.78	34.49
PK	4.80468G	45.52	74.00	-28.48	3.64	3	Vertical	164	2.89	-	41.88	31.35	6.78	34.49

BT-LE(1Mbps)

14/09/2019

2402MHz_TX

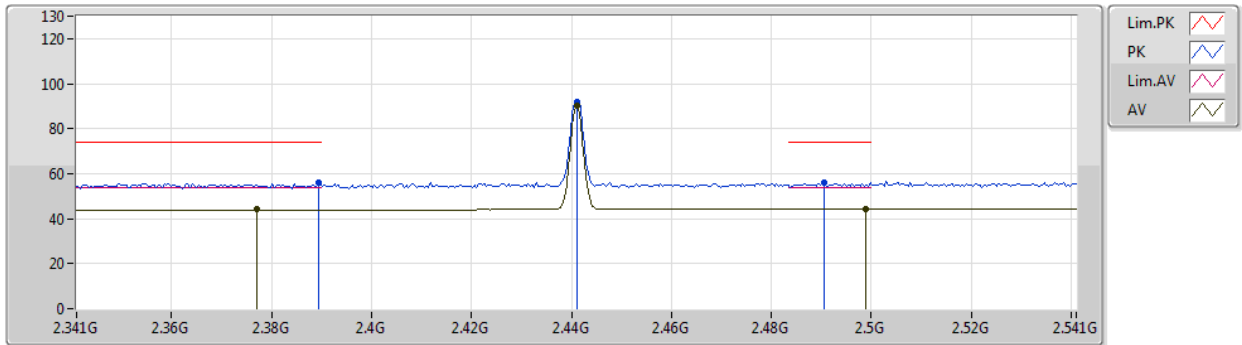


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.80409G	37.64	54.00	-16.36	3.64	3	Horizontal	194	2.56	-	34.00	31.35	6.78	34.49
PK	4.80354G	47.38	74.00	-26.62	3.64	3	Horizontal	194	2.56	-	43.74	31.35	6.78	34.49

BT-LE(1Mbps)

2441MHz_TX

14/09/2019

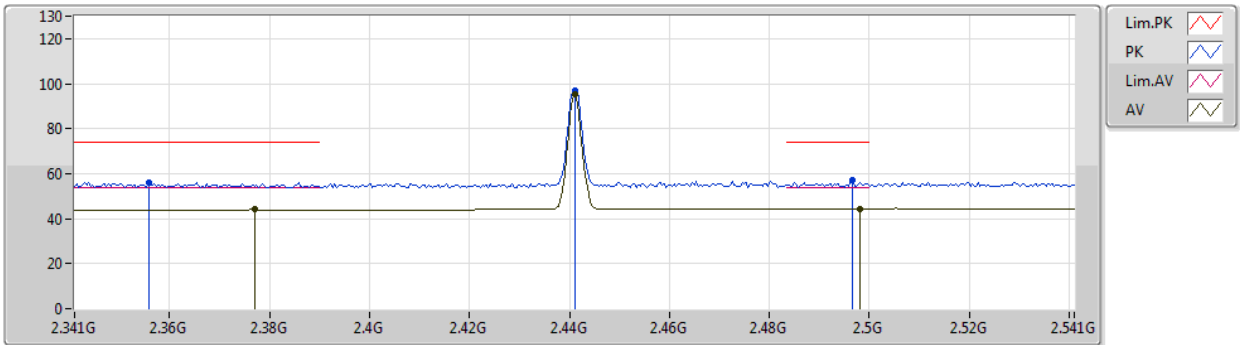


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.377G	43.99	54.00	-10.01	32.03	3	Vertical	230	1.83	-	11.96	27.33	4.70	-
AV	2.441G	90.30	Inf	-Inf	32.30	3	Vertical	230	1.83	-	58.00	27.52	4.78	-
AV	2.499G	44.44	54.00	-9.56	32.55	3	Vertical	230	1.83	-	11.89	27.70	4.85	-
PK	2.3894G	56.06	74.00	-17.94	32.09	3	Vertical	230	1.83	-	23.97	27.37	4.72	-
PK	2.441G	92.03	Inf	-Inf	32.30	3	Vertical	230	1.83	-	59.73	27.52	4.78	-
PK	2.4906G	55.93	74.00	-18.07	32.51	3	Vertical	230	1.83	-	23.42	27.67	4.84	-

BT-LE(1Mbps)

2441MHz_TX

14/09/2019

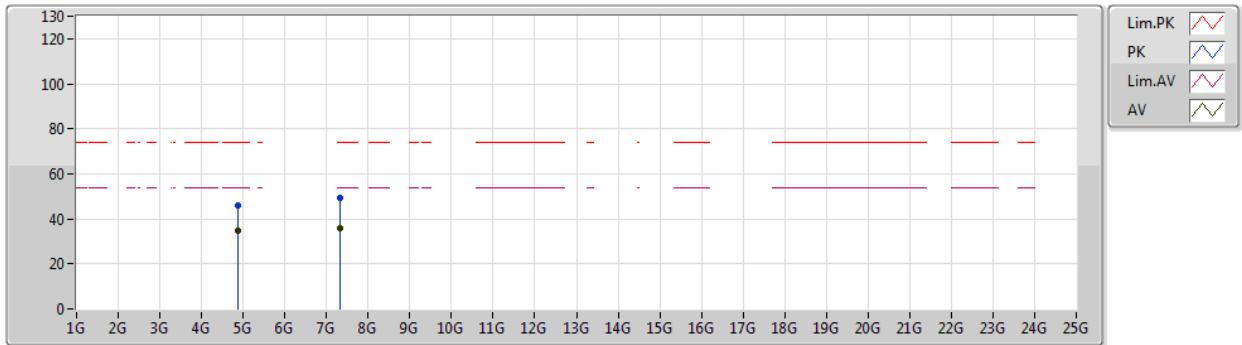


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.377G	44.23	54.00	-9.77	32.03	3	Horizontal	306	2.51	-	12.20	27.33	4.70	-
AV	2.441G	95.14	Inf	-Inf	32.30	3	Horizontal	306	2.51	-	62.84	27.52	4.78	-
AV	2.4982G	44.43	54.00	-9.57	32.53	3	Horizontal	306	2.51	-	11.90	27.69	4.84	-
PK	2.3558G	56.07	74.00	-17.93	31.95	3	Horizontal	306	2.51	-	24.12	27.27	4.68	-
PK	2.441G	96.85	Inf	-Inf	32.30	3	Horizontal	306	2.51	-	64.55	27.52	4.78	-
PK	2.4966G	56.96	74.00	-17.04	32.53	3	Horizontal	306	2.51	-	24.43	27.69	4.84	-

BT-LE(1Mbps)

2441MHz_TX

14/09/2019

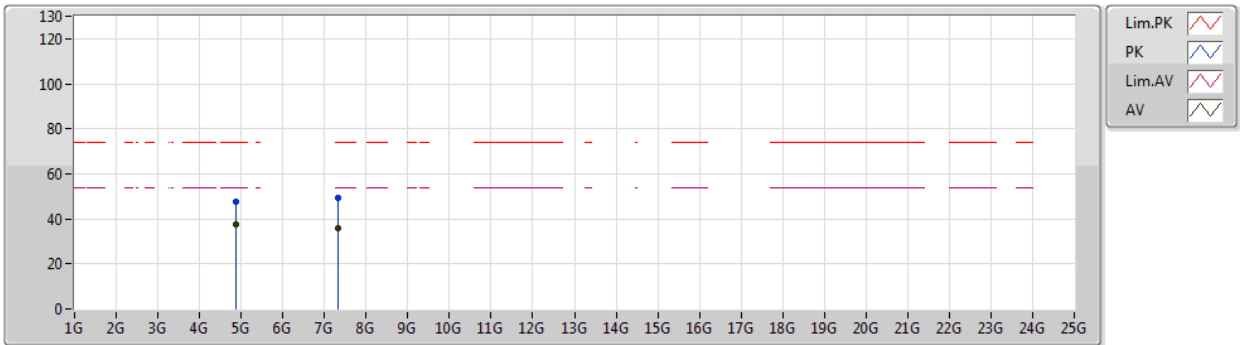


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.88202G	34.53	54.00	-19.47	3.83	3	Vertical	279	2.25	-	30.70	31.49	6.81	34.47
AV	7.32238G	35.97	54.00	-18.03	9.91	3	Vertical	285	2.79	-	26.06	36.04	8.62	34.75
PK	4.88254G	45.83	74.00	-28.17	3.83	3	Vertical	279	2.25	-	42.00	31.49	6.81	34.47
PK	7.32256G	49.37	74.00	-24.63	9.91	3	Vertical	285	2.79	-	39.46	36.04	8.62	34.75

BT-LE(1Mbps)

2441MHz_TX

14/09/2019

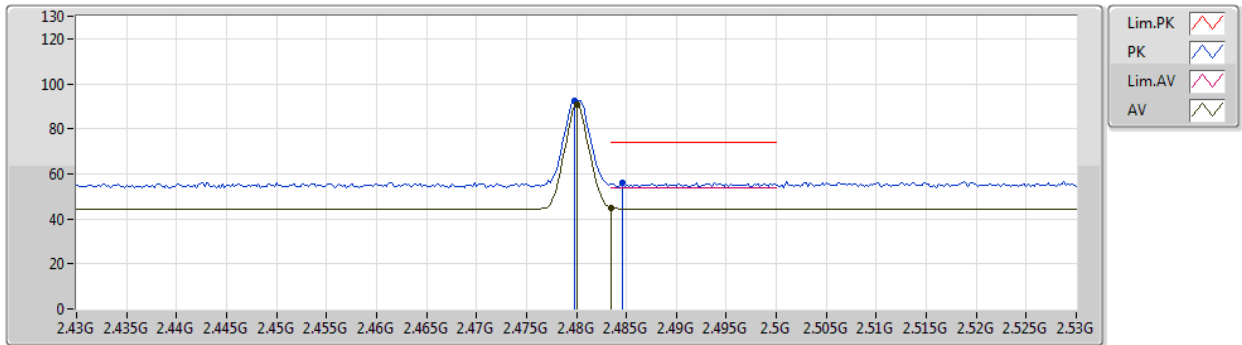


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.8821G	37.37	54.00	-16.63	3.83	3	Horizontal	194	2.25	-	33.54	31.49	6.81	34.47
AV	7.32241G	35.59	54.00	-18.41	9.91	3	Horizontal	186	2.09	-	25.68	36.04	8.62	34.75
PK	4.88271G	47.55	74.00	-26.45	3.83	3	Horizontal	194	2.25	-	43.72	31.49	6.81	34.47
PK	7.32385G	49.29	74.00	-24.71	9.91	3	Horizontal	186	2.09	-	39.38	36.04	8.62	34.75

BT-LE(1Mbps)

2480MHz_TX

14/09/2019

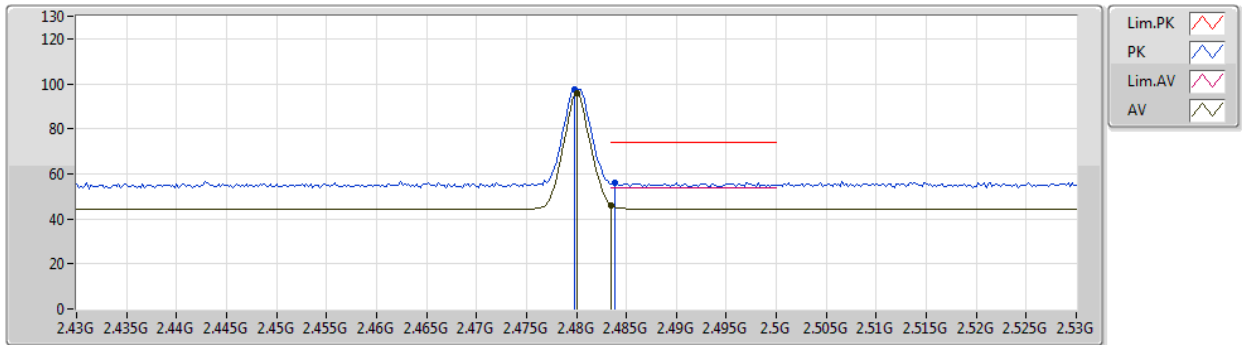


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.48G	90.72	Inf	-Inf	32.46	3	Vertical	207	2.09	-	58.26	27.64	4.82	-
AV	2.4835G	45.01	54.00	-8.99	32.48	3	Vertical	207	2.09	-	12.53	27.65	4.83	-
PK	2.4798G	92.45	Inf	-Inf	32.46	3	Vertical	207	2.09	-	59.99	27.64	4.82	-
PK	2.4846G	55.95	74.00	-18.05	32.48	3	Vertical	207	2.09	-	23.47	27.65	4.83	-

BT-LE(1Mbps)

2480MHz_TX

14/09/2019

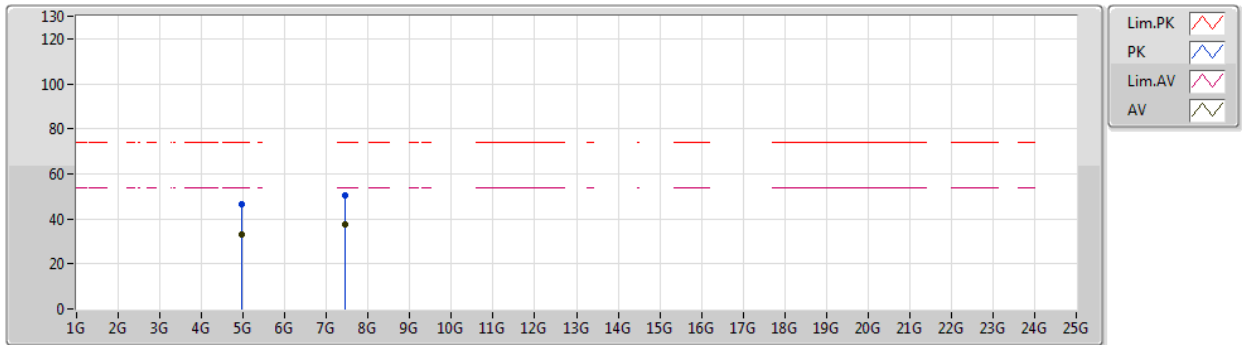


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.48G	95.66	Inf	-Inf	32.46	3	Horizontal	209	2.87	-	63.20	27.64	4.82	-
AV	2.4835G	46.17	54.00	-7.83	32.48	3	Horizontal	209	2.87	-	13.69	27.65	4.83	-
PK	2.4798G	97.36	Inf	-Inf	32.46	3	Horizontal	209	2.87	-	64.90	27.64	4.82	-
PK	2.4838G	56.05	74.00	-17.95	32.48	3	Horizontal	209	2.87	-	23.57	27.65	4.83	-

BT-LE(1Mbps)

2480MHz_TX

14/09/2019

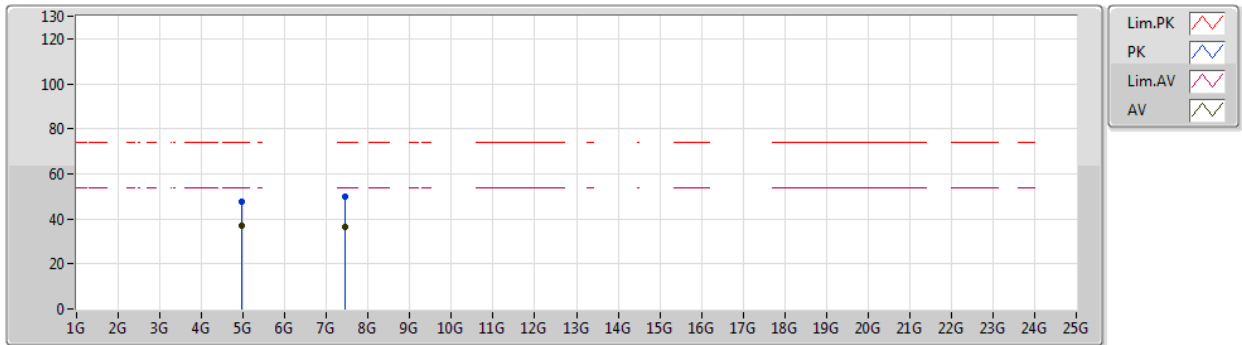


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.95999G	33.34	54.00	-20.66	4.02	3	Vertical	161	2.88	-	29.32	31.63	6.83	34.44
AV	7.43944G	37.33	54.00	-16.67	10.24	3	Vertical	274	1.99	-	27.09	36.34	8.68	34.78
PK	4.95972G	46.31	74.00	-27.69	4.02	3	Vertical	161	2.88	-	42.29	31.63	6.83	34.44
PK	7.44107G	50.61	74.00	-23.39	10.25	3	Vertical	274	1.99	-	40.36	36.35	8.68	34.78

BT-LE(1Mbps)

2480MHz_TX

14/09/2019

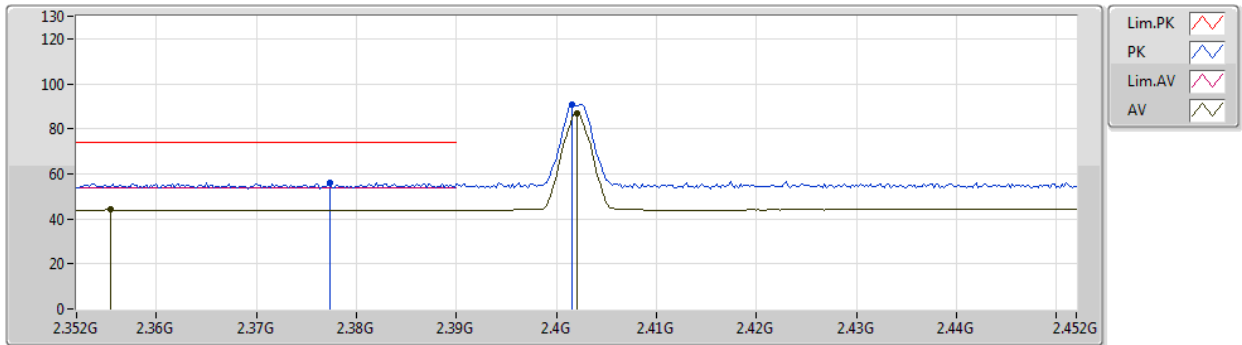


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.9601G	36.87	54.00	-17.13	4.02	3	Horizontal	213	2.56	-	32.85	31.63	6.83	34.44
AV	7.43942G	36.27	54.00	-17.73	10.24	3	Horizontal	217	3.00	-	26.03	36.34	8.68	34.78
PK	4.95961G	47.84	74.00	-26.16	4.02	3	Horizontal	213	2.56	-	43.82	31.63	6.83	34.44
PK	7.43964G	49.71	74.00	-24.29	10.24	3	Horizontal	217	3.00	-	39.47	36.34	8.68	34.78

BT-LE(2Mbps)

2402MHz_TX

14/09/2019

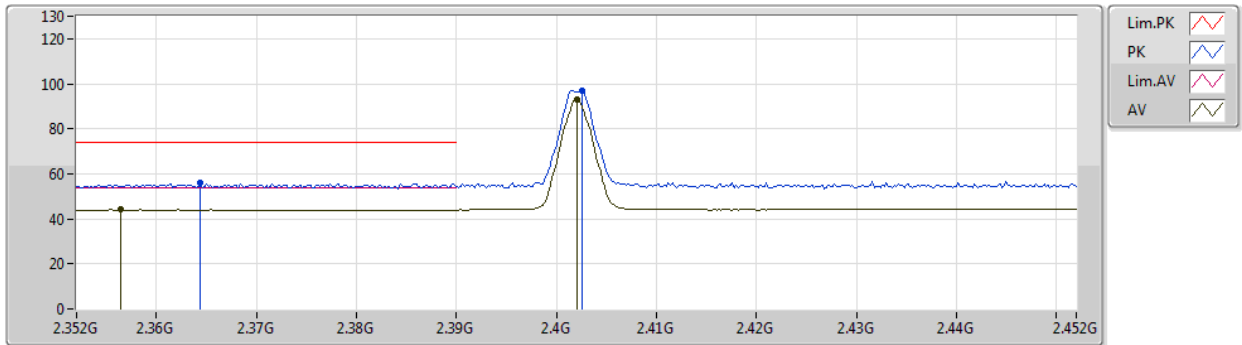


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3554G	44.01	54.00	-9.99	31.95	3	Vertical	239	1.29	-	12.06	27.27	4.68	-
AV	2.402G	87.12	Inf	-Inf	32.14	3	Vertical	239	1.29	-	54.98	27.41	4.73	-
PK	2.3774G	56.01	74.00	-17.99	32.03	3	Vertical	239	1.29	-	23.98	27.33	4.70	-
PK	2.4016G	90.80	Inf	-Inf	32.13	3	Vertical	239	1.29	-	58.67	27.40	4.73	-

BT-LE(2Mbps)

2402MHz_TX

14/09/2019

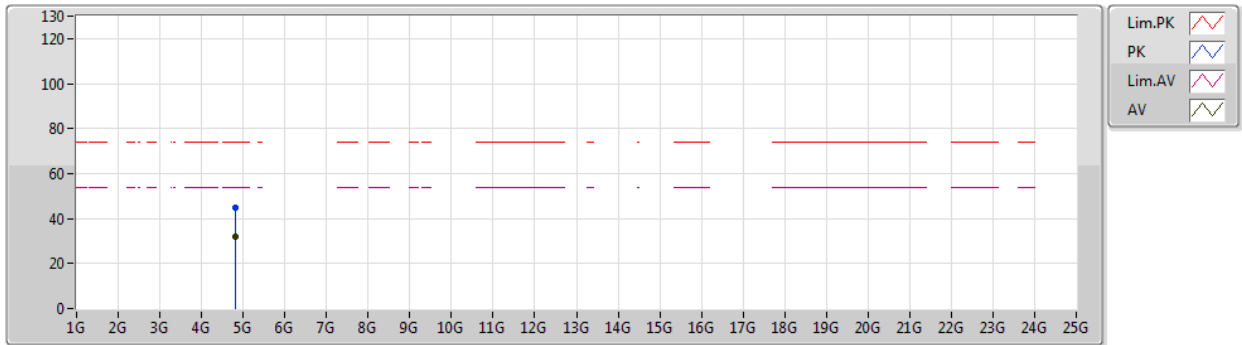


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3564G	44.00	54.00	-10.00	31.95	3	Horizontal	311	2.13	-	12.05	27.27	4.68	-
AV	2.402G	93.26	Inf	-Inf	32.14	3	Horizontal	311	2.13	-	61.12	27.41	4.73	-
PK	2.3644G	55.98	74.00	-18.02	31.98	3	Horizontal	311	2.13	-	24.00	27.29	4.69	-
PK	2.4026G	96.95	Inf	-Inf	32.14	3	Horizontal	311	2.13	-	64.81	27.41	4.73	-

BT-LE(2Mbps)

14/09/2019

2402MHz_TX

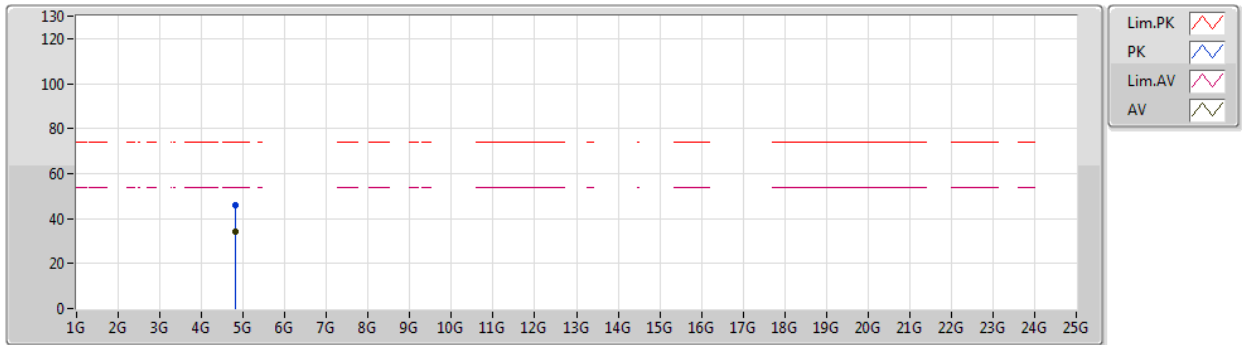


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.80313G	32.02	54.00	-21.98	3.64	3	Vertical	163	2.87	-	28.38	31.35	6.78	34.49
PK	4.80499G	44.87	74.00	-29.13	3.64	3	Vertical	163	2.87	-	41.23	31.35	6.78	34.49

BT-LE(2Mbps)

2402MHz_TX

14/09/2019

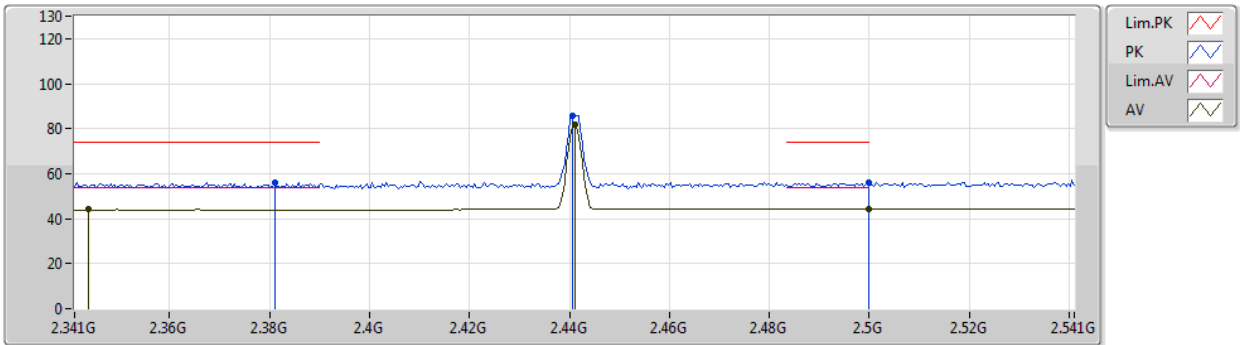


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.80308G	34.43	54.00	-19.57	3.64	3	Horizontal	200	2.29	-	30.79	31.35	6.78	34.49
PK	4.80311G	46.19	74.00	-27.81	3.64	3	Horizontal	200	2.29	-	42.55	31.35	6.78	34.49

BT-LE(2Mbps)

2441MHz_TX

14/09/2019

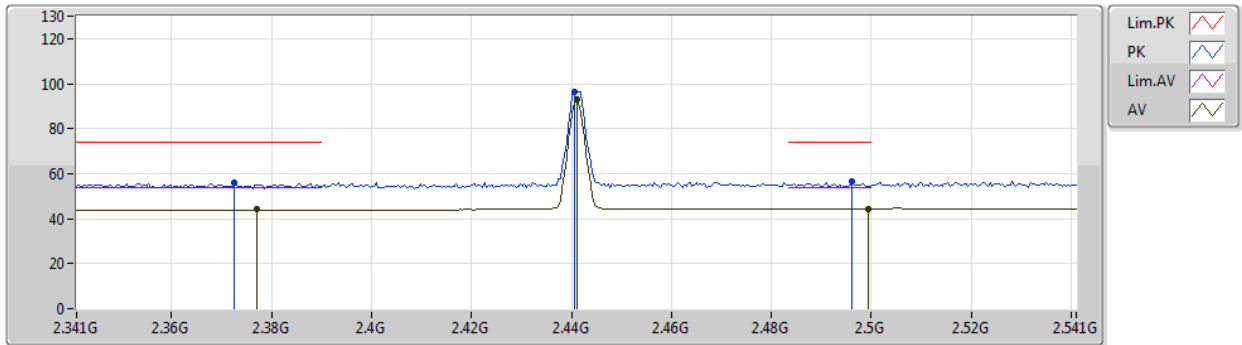


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3438G	43.99	54.00	-10.01	31.89	3	Vertical	131	1.44	-	12.10	27.23	4.66	-
AV	2.441G	81.90	Inf	-Inf	32.30	3	Vertical	131	1.44	-	49.60	27.52	4.78	-
AV	2.4998G	44.44	54.00	-9.56	32.55	3	Vertical	131	1.44	-	11.89	27.70	4.85	-
PK	2.381G	56.21	74.00	-17.79	32.05	3	Vertical	131	1.44	-	24.16	27.34	4.71	-
PK	2.4406G	85.70	Inf	-Inf	32.30	3	Vertical	131	1.44	-	53.40	27.52	4.78	-
PK	2.4998G	56.27	74.00	-17.73	32.55	3	Vertical	131	1.44	-	23.72	27.70	4.85	-

BT-LE(2Mbps)

2441MHz_TX

14/09/2019

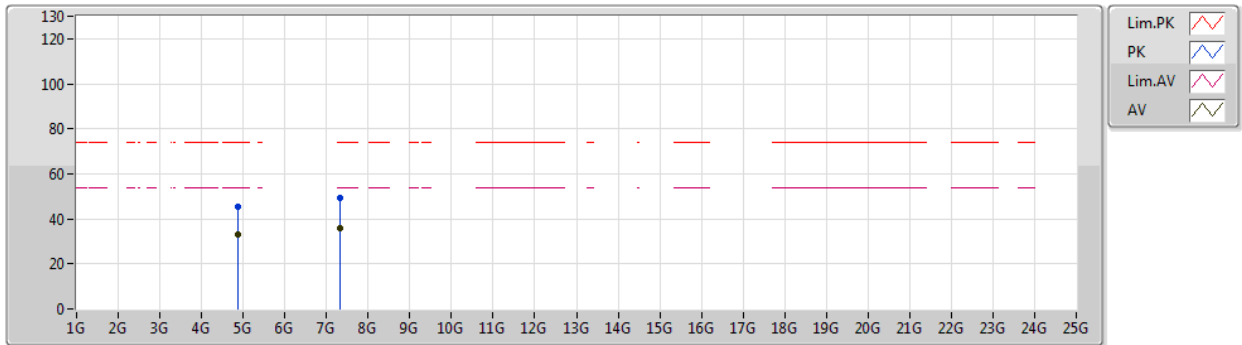


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.377G	44.02	54.00	-9.98	32.03	3	Horizontal	209	2.63	-	11.99	27.33	4.70	-
AV	2.441G	92.77	Inf	-Inf	32.30	3	Horizontal	209	2.63	-	60.47	27.52	4.78	-
AV	2.4994G	44.44	54.00	-9.56	32.55	3	Horizontal	209	2.63	-	11.89	27.70	4.85	-
PK	2.3726G	55.89	74.00	-18.11	32.02	3	Horizontal	209	2.63	-	23.87	27.32	4.70	-
PK	2.4406G	96.50	Inf	-Inf	32.30	3	Horizontal	209	2.63	-	64.20	27.52	4.78	-
PK	2.4962G	56.50	74.00	-17.50	32.53	3	Horizontal	209	2.63	-	23.97	27.69	4.84	-

BT-LE(2Mbps)

14/09/2019

2441MHz_TX

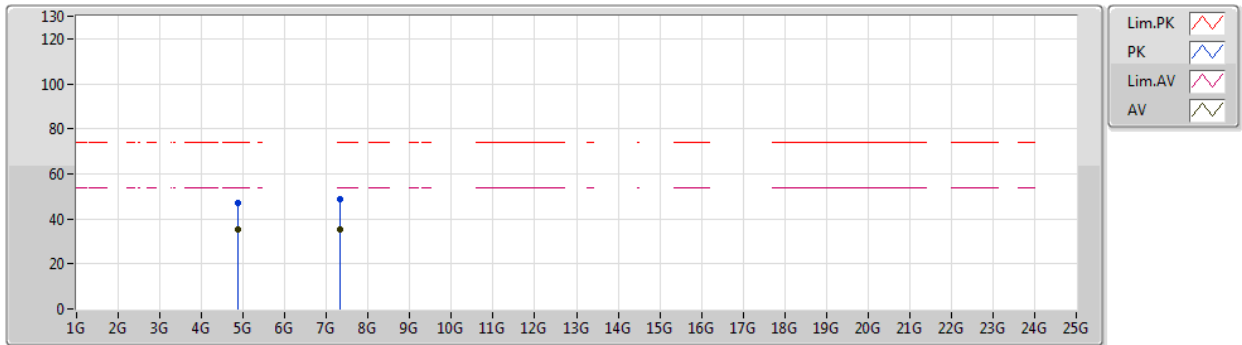


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.88113G	32.80	54.00	-21.20	3.83	3	Vertical	273	2.24	-	28.97	31.49	6.81	34.47
AV	7.32186G	35.95	54.00	-18.05	9.91	3	Vertical	280	1.90	-	26.04	36.04	8.62	34.75
PK	4.88109G	45.66	74.00	-28.34	3.83	3	Vertical	273	2.24	-	41.83	31.49	6.81	34.47
PK	7.32164G	49.09	74.00	-24.91	9.91	3	Vertical	280	1.90	-	39.18	36.04	8.62	34.75

BT-LE(2Mbps)

2441MHz_TX

14/09/2019

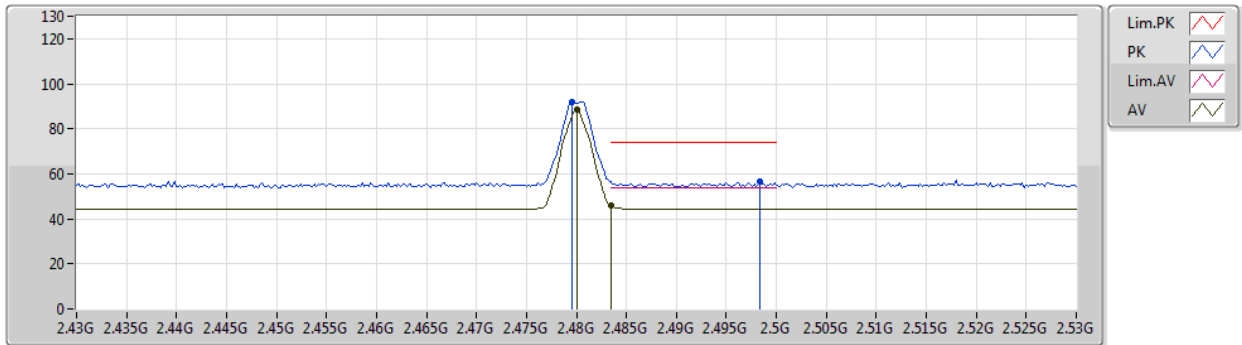


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.88111G	35.16	54.00	-18.84	3.83	3	Horizontal	193	2.37	-	31.33	31.49	6.81	34.47
AV	7.32176G	35.18	54.00	-18.82	9.91	3	Horizontal	185	1.99	-	25.27	36.04	8.62	34.75
PK	4.88303G	47.09	74.00	-26.91	3.83	3	Horizontal	193	2.37	-	43.26	31.49	6.81	34.47
PK	7.32436G	48.68	74.00	-25.32	9.91	3	Horizontal	185	1.99	-	38.77	36.04	8.62	34.75

BT-LE(2Mbps)

2480MHz_TX

14/09/2019

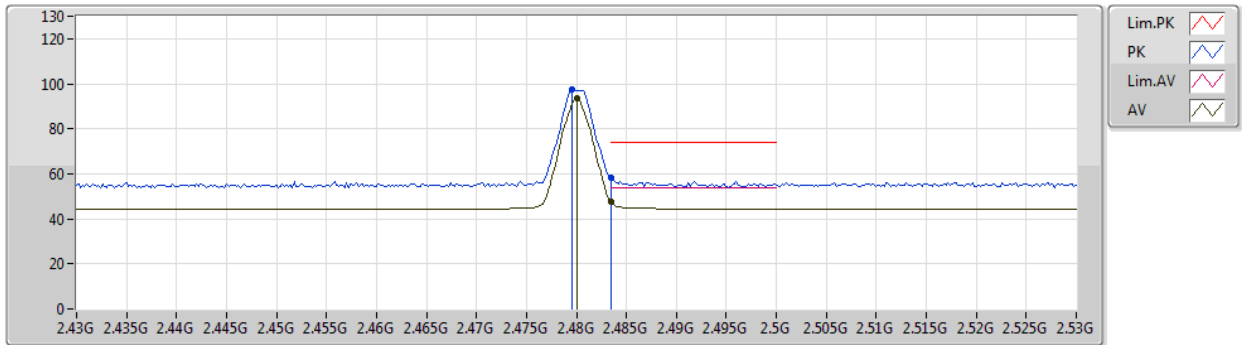


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.48G	88.27	Inf	-Inf	32.46	3	Vertical	236	1.20	-	55.81	27.64	4.82	-
AV	2.4835G	45.68	54.00	-8.32	32.48	3	Vertical	236	1.20	-	13.20	27.65	4.83	-
PK	2.4796G	91.87	Inf	-Inf	32.46	3	Vertical	236	1.20	-	59.41	27.64	4.82	-
PK	2.4984G	56.45	74.00	-17.55	32.55	3	Vertical	236	1.20	-	23.90	27.70	4.85	-

BT-LE(2Mbps)

2480MHz_TX

14/09/2019

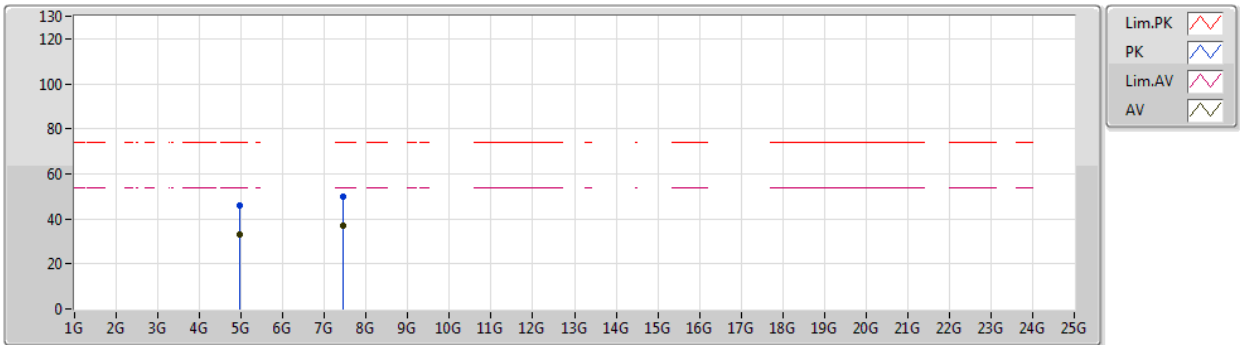


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.48G	93.62	Inf	-Inf	32.46	3	Horizontal	207	2.87	-	61.16	27.64	4.82	-
AV	2.4835G	47.80	54.00	-6.20	32.48	3	Horizontal	207	2.87	-	15.32	27.65	4.83	-
PK	2.4796G	97.24	Inf	-Inf	32.46	3	Horizontal	207	2.87	-	64.78	27.64	4.82	-
PK	2.4835G	58.03	74.00	-15.97	32.48	3	Horizontal	207	2.87	-	25.55	27.65	4.83	-

BT-LE(2Mbps)

2480MHz_TX

14/09/2019

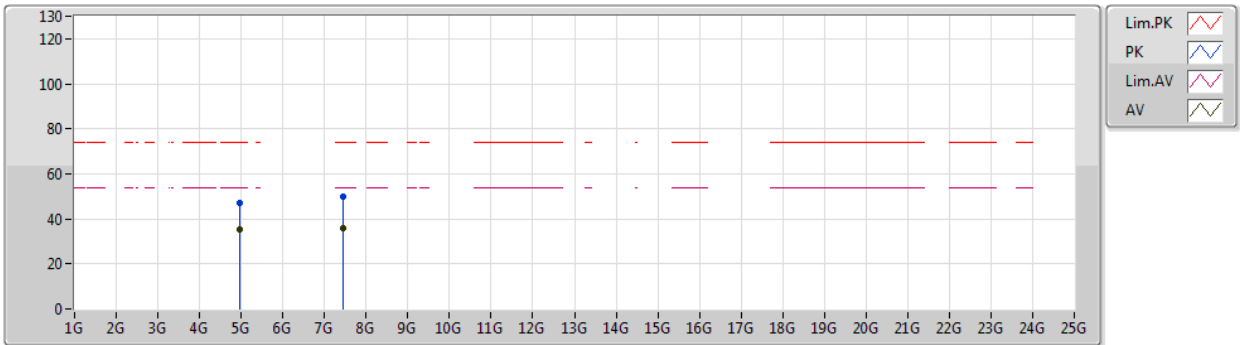


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.95911G	32.81	54.00	-21.19	4.02	3	Vertical	160	2.86	-	28.79	31.63	6.83	34.44
AV	7.4388G	37.09	54.00	-16.91	10.24	3	Vertical	276	2.02	-	26.85	36.34	8.68	34.78
PK	4.96104G	45.87	74.00	-28.13	4.03	3	Vertical	160	2.86	-	41.84	31.63	6.84	34.44
PK	7.4387G	50.12	74.00	-23.88	10.24	3	Vertical	276	2.02	-	39.88	36.34	8.68	34.78

BT-LE(2Mbps)

2480MHz_TX

14/09/2019



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	4.95911G	35.41	54.00	-18.59	4.02	3	Horizontal	214	3.00	-	31.39	31.63	6.83	34.44
AV	7.43878G	35.65	54.00	-18.35	10.24	3	Horizontal	210	3.00	-	25.41	36.34	8.68	34.78
PK	4.96104G	47.05	74.00	-26.95	4.03	3	Horizontal	214	3.00	-	43.02	31.63	6.84	34.44
PK	7.44262G	49.66	74.00	-24.34	10.25	3	Horizontal	210	3.00	-	39.41	36.35	8.68	34.78