

FCC Test Report

FCC ID : Q9DAPEX0565567
Equipment : Wireless Access Point
Brand Name : aruba 、 Hewlett Packard Enterprise
Model Name : APEX0565,APEX0567
Applicant : Hewlett Packard Enterprise Company
3333 Scott Blvd Santa Clara, CA. 95054
Manufacturer : Hewlett Packard Enterprise Company
3333 Scott Blvd Santa Clara, CA. 95054
Standard : 47 CFR FCC Part 15.247

The product was received on Apr. 30, 2020, and testing was started from May 15, 2020 and completed on Jul. 08, 2020. 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 test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.



Approved by: Allen Lin

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

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

Table of Contents

HISTORY OF THIS TEST REPORT	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Information.....	5
1.2 Testing Applied Standards	8
1.3 Testing Location Information	8
1.4 Measurement Uncertainty	9
2 TEST CONFIGURATION OF EUT.....	10
2.1 Test Condition	10
2.2 Test Channel Mode	10
2.3 The Worst Case Measurement Configuration.....	11
2.4 Support Equipment.....	12
2.5 Test Setup Diagram	13
3 TRANSMITTER TEST RESULT	15
3.1 AC Power-line Conducted Emissions	15
3.2 DTS Bandwidth.....	17
3.3 Maximum Conducted Output Power	18
3.4 Power Spectral Density	20
3.5 Emissions in Non-restricted Frequency Bands	21
3.6 Emissions in Restricted Frequency Bands.....	22
4 TEST EQUIPMENT AND CALIBRATION DATA.....	26
APPENDIX A. TEST RESULTS OF AC POWER-LINE CONDUCTED EMISSIONS	
APPENDIX B. TEST RESULTS OF DTS BANDWIDTH	
APPENDIX C. TEST RESULTS OF MAXIMUM CONDUCTED OUTPUT POWER	
APPENDIX D. TEST RESULTS OF POWER SPECTRAL DENSITY	
APPENDIX E. TEST RESULTS OF EMISSIONS IN NON-RESTRICTED FREQUENCY BANDS	
APPENDIX F. TEST RESULTS OF EMISSIONS IN RESTRICTED FREQUENCY BANDS	
APPENDIX G. TEST PHOTOS	
PHOTOGRAPHS OF EUT V02	



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: Sam Tsai

Report Producer: Jenny Yang

1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	IEEE Std.	Ch. Frequency (MHz)	Channel Number
2400-2483.5	802.15.4	2405-2480	11-26 [16]

Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	Zigbee	5	1TX

Note:.

- ♦ Zigbee uses a O-QPSK (250kbps) modulation for DSSS.
- ♦ BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Sample 1

Ant.	Brand	Model Name	Antenna Type	Connector
1	HL Technologies	N/A	Dipole (omnidirectional)	MMCX
2	HL Technologies	N/A	Dipole (omnidirectional)	MMCX
3	HL Technologies	N/A	PIFA	Mini Murata

Ant.	Gain (dBi)					BT	Zigbee
	2.4G		5G				
	Vertical polarized	Horizontal polarized	Vertical polarized	Horizontal polarized			
1	-	3.2 dBi	-	5.4 dBi	-	-	
2	3.2 dBi	-	5.4 dBi	-	-	-	
3	-	-	-	-	3.3 dBi	3.3 dBi	

Sample 2

Ant.	Brand	Model Name	Antenna Type	Connector
4	Shanghai Amphenol Airwave Communication Electronics Co., Ltd.	N/A	Dipole (directivity)	MMCX
5	Shanghai Amphenol Airwave Communication Electronics Co., Ltd.	N/A	Dipole (directivity)	MMCX
6	Shanghai Amphenol Airwave Communication Electronics Co., Ltd.	N/A	monopole	Mini Murata

Ant.	Gain (dBi)					
	2.4G		5G		BT	Zigbee
	+45 degree	-45 degree	+45 degree	-45 degree		
4	-	6.8 dBi	-	7.1 dBi	-	-
5	6.8 dBi	-	7.1 dBi	-	-	-
6	-	-	-	-	3 dBi	3 dBi

Ant.	Elevation angle above 30 degrees Gain (dBi)	
	5G	
1~2	3.3	
4~5	7.1	

Note 1: The EUT has six antennas.

Note 2: The antenna for each mode is cross polarized.

For 2.4GHz function:

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

Ant. 1 (Ant. 4) and Ant. 2 (Ant. 5) could transmit/receive simultaneously.

Cross-polarized antenna combination is Ant. 1 (Ant. 4) and Ant. 2 (Ant. 5).

For BT function:

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

Only Ant. 3 (Ant. 6) can be used as transmitting/receiving antenna.

For 5GHz function:

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

Ant. 1 (Ant. 4) and Ant. 2 (Ant. 5) could transmit/receive simultaneously.

Cross-polarized antenna combination is Ant. 1 (Ant. 4) and Ant. 2 (Ant. 5).

For Zigbee function:

Only Ant. 3 (Ant. 6) can be used as transmitting/receiving antenna.

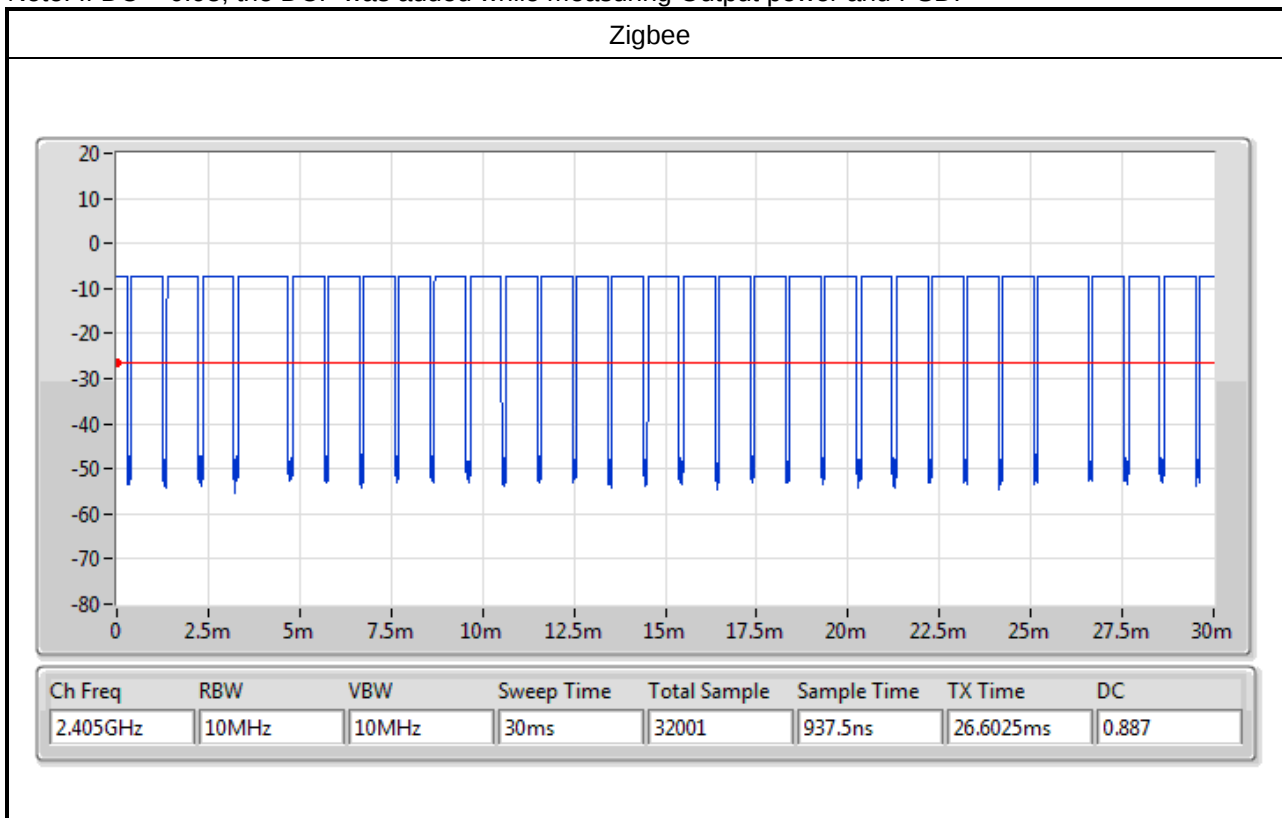
1.1.3 EUT Information

Identify EUT			
FW Version	nRF5_for_Thread_and_Zigbee_v4.0.0		
Operational Condition			
EUT Power Type	From PoE		
EUT Function	☒ Point-to-multipoint	☐ Point-to-point	
Type of EUT			
☒ Stand-alone			
☐ Combined (EUT where the radio part is fully integrated within another device)			
	Combined Equipment - Brand Name / Model No.: ...		
☐ Plug-in radio (EUT intended for a variety of host systems)			
	Host System - Brand Name / Model No.: ...		
☐ Other:			

1.1.4 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) $\geq \frac{1}{T}$
Zigbee	0.887	0.52	1.38m	1k

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



1.1.5 Table for Multiple Listing

Sample Number	Model Name	Description
1	APEX0565	There are two Samples for EUT. The only difference between Sample 1 and Sample 2 is the Antenna. For detailed specifications, please refer to section 1.1.2.
2	APEX0567	

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

The following reference test guidance is not within the scope of accreditation of TAF:

- ♦ 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.			
☐	Wen Shan	ADD : No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)	
		TEL : 886-3-318-0787	FAX : 886-3-318-0287
Test site Designation No. TW1097 with FCC.			

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
AC Conduction	CO04-HY	Edward Wang	21.4~23.2°C / 52~ 57%	03/Jun/2020~ 04/Jun/2020
RF Conducted	TH01-HY	Barry Hsiao	22.1~25.9°C / 54~60%	15/May/2020~ 30/Jun/2020
Radiated	03CH02-HY	Daniel Lin	20.9~27.2°C / 52~ 61%	19/Jun/2020~ 08/Jul/2020

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)	0.9 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	2.4 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.0 dB	Confidence levels of 95%
Temperature	0.41 °C	Confidence levels of 95%
Humidity	3.4 %	Confidence levels of 95%

2 Test Configuration of EUT

2.1 Test Condition

RF Conducted	Abbreviation	Remark
TnomVnom	Tnom	20°C
-	Vnom	120V

2.2 Test Channel Mode

Test Software	Dos
---------------	-----

Mode	Power Setting
Zigbee	-
2405MHz	8
2440MHz	8
2480MHz	8

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	PoE Mode; Sample 1
2	PoE Mode; Sample 2

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
Note: The test result of sample 2 was copied from sample 1, only the value of the antenna gain was changed.	

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	PoE Mode; Sample 1		
2	PoE Mode; Sample 2		
Operating Mode > 1GHz	CTX		
Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			
Worst Planes of EUT		V	

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis
Operating Mode	CTX
1	WLAN 2.4GHz + WLAN 5GHz + Bluetooth
Refer to Sporton Test Report No.: FA042903 for Co-location RF Exposure Evaluation.	

2.4 Support Equipment

Support Equipment – AC Conduction					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	PoE	Microsemi	PD-9001GO/AC-INTL	-	Note 1
2	Ground Cable	SPORTON	SPORTON	-	-
3	RJ-45 Cable	Power Sync	CAT-6E-10	-	-

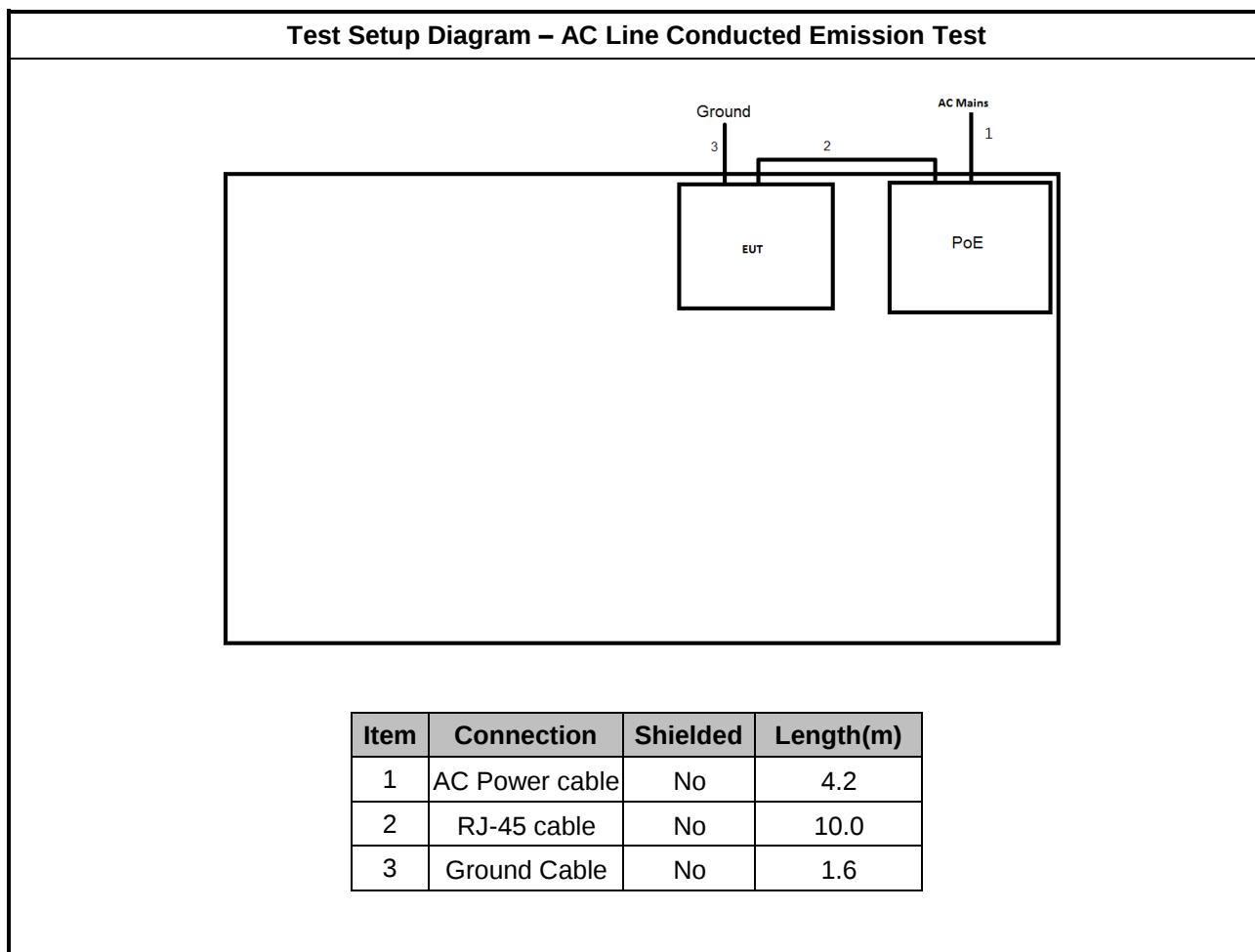
Note 1: Support equipment No.1 was provided by customer.

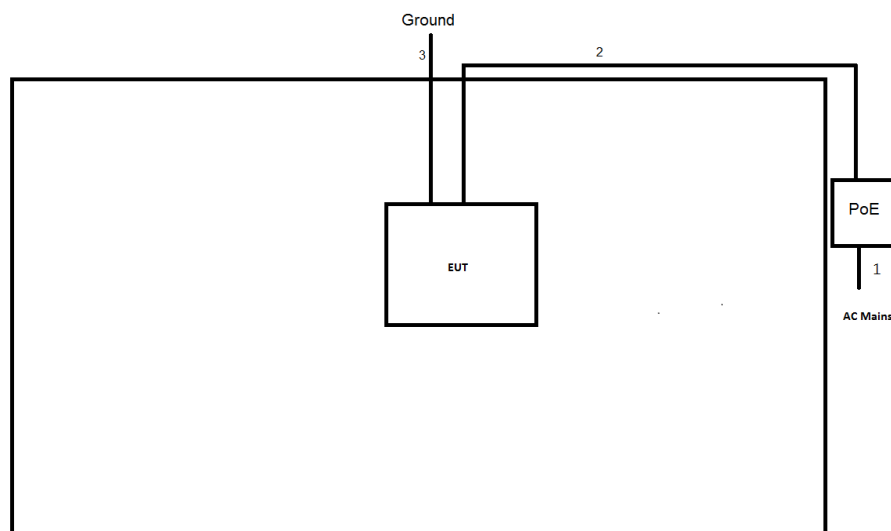
Support Equipment –Conducted					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Notebook	DELL	E5410	-	-
2	Adapter for NB	DELL	HA65NM130	-	-

Support Equipment –Radiated					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Ground Cable	SPORTON	SPORTON	-	-
2	RJ-45 Cable	Power Sync	CAT-6E-10	-	-
3	PoE	Microsemi	PD-9001GO/AC-INTL	-	Note 1 / Remote

Note 1: Support equipment No.3 was provided by customer.

2.5 Test Setup Diagram



Test Setup Diagram - Radiated Test


Item	Connection	Shielded	Length(m)
1	AC Power cable	No	4.2
2	RJ-45 cable	No	10.0
3	Ground Cable	No	1.6

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.		

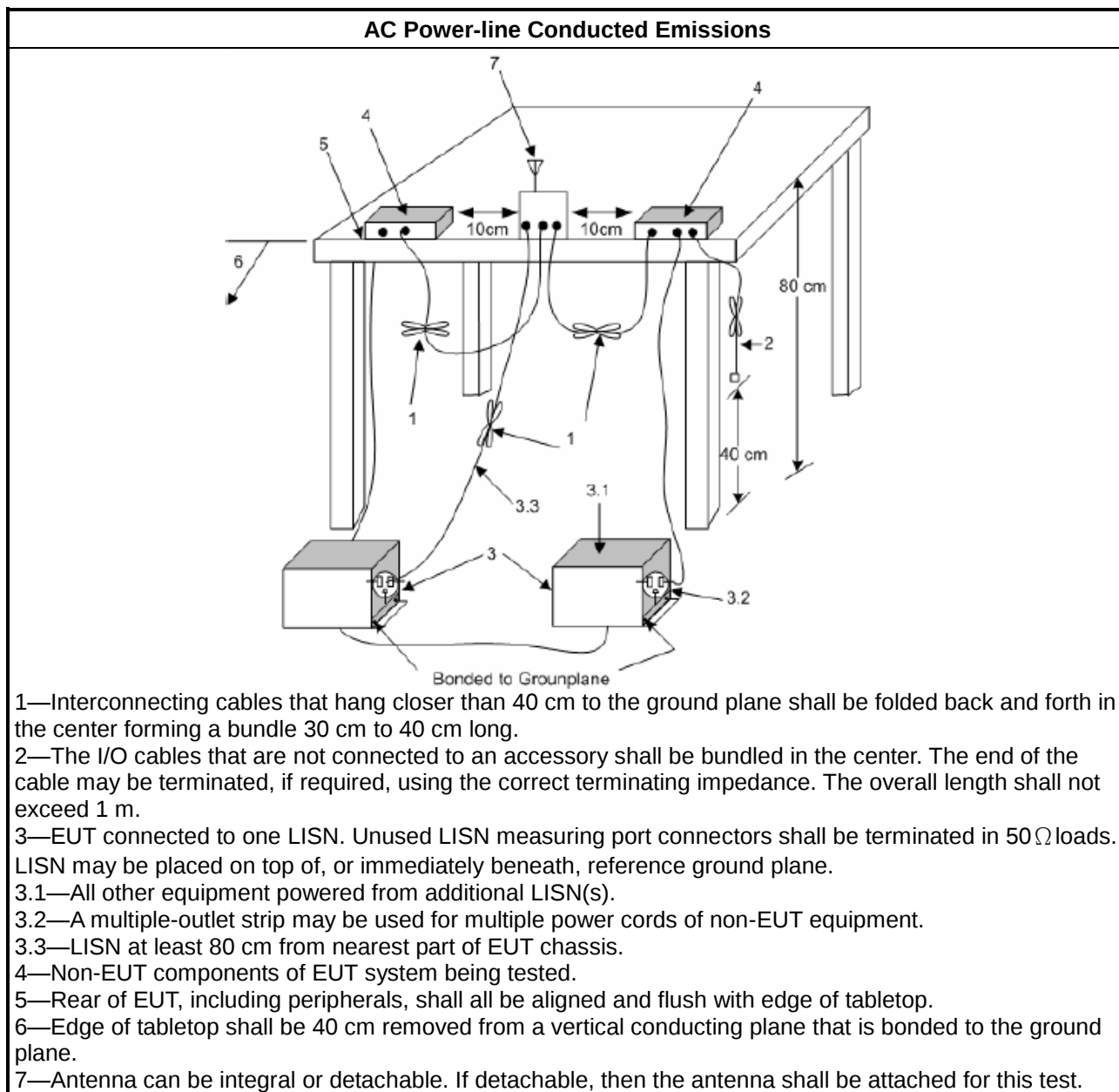
3.1.2 Measuring Instruments

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 for AC 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.

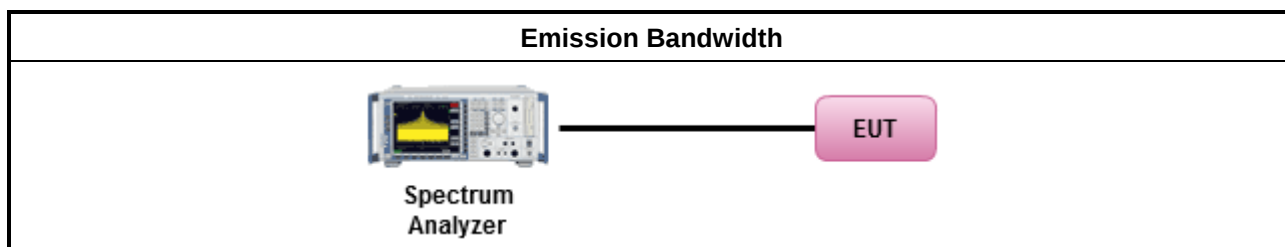
3.2.2 Measuring Instruments

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.	

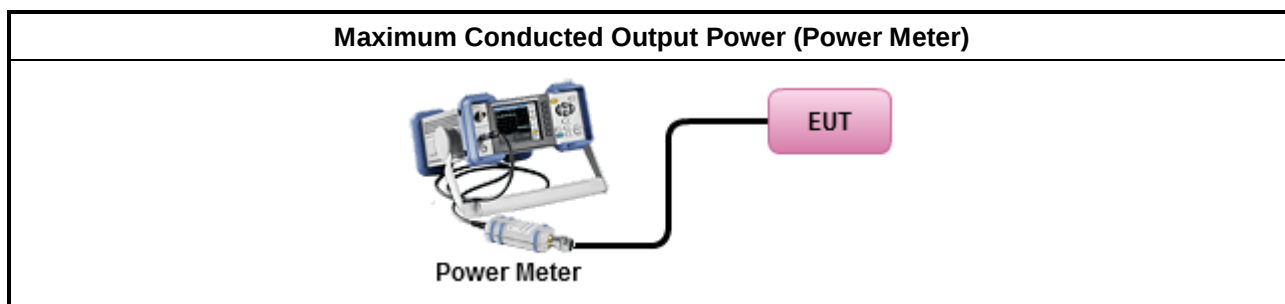
3.3.2 Measuring Instruments

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

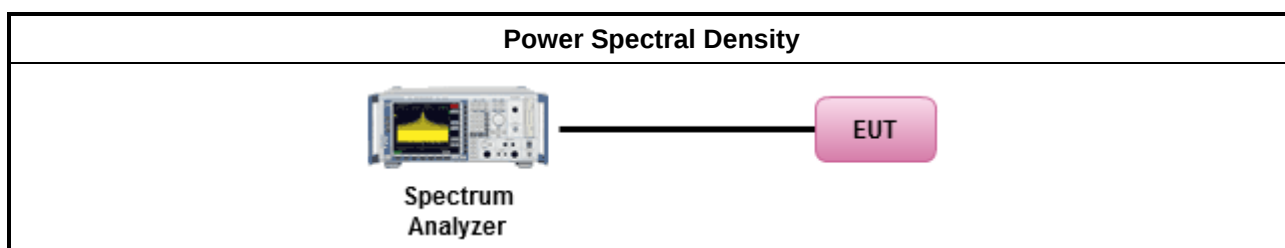
3.4.2 Measuring Instruments

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) Max. PSD.
▪	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.	

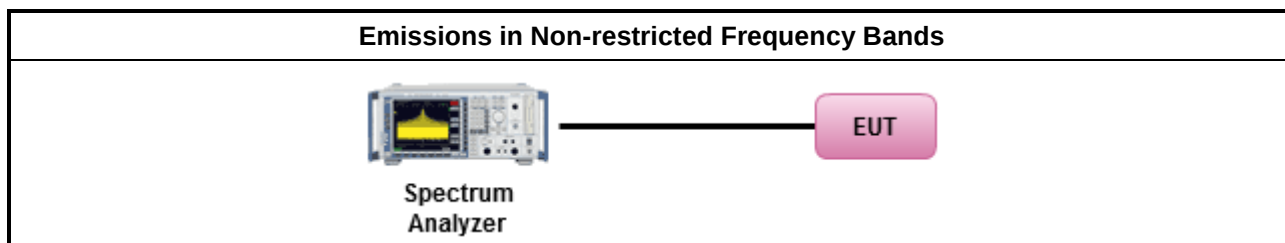
3.5.2 Measuring Instruments

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.

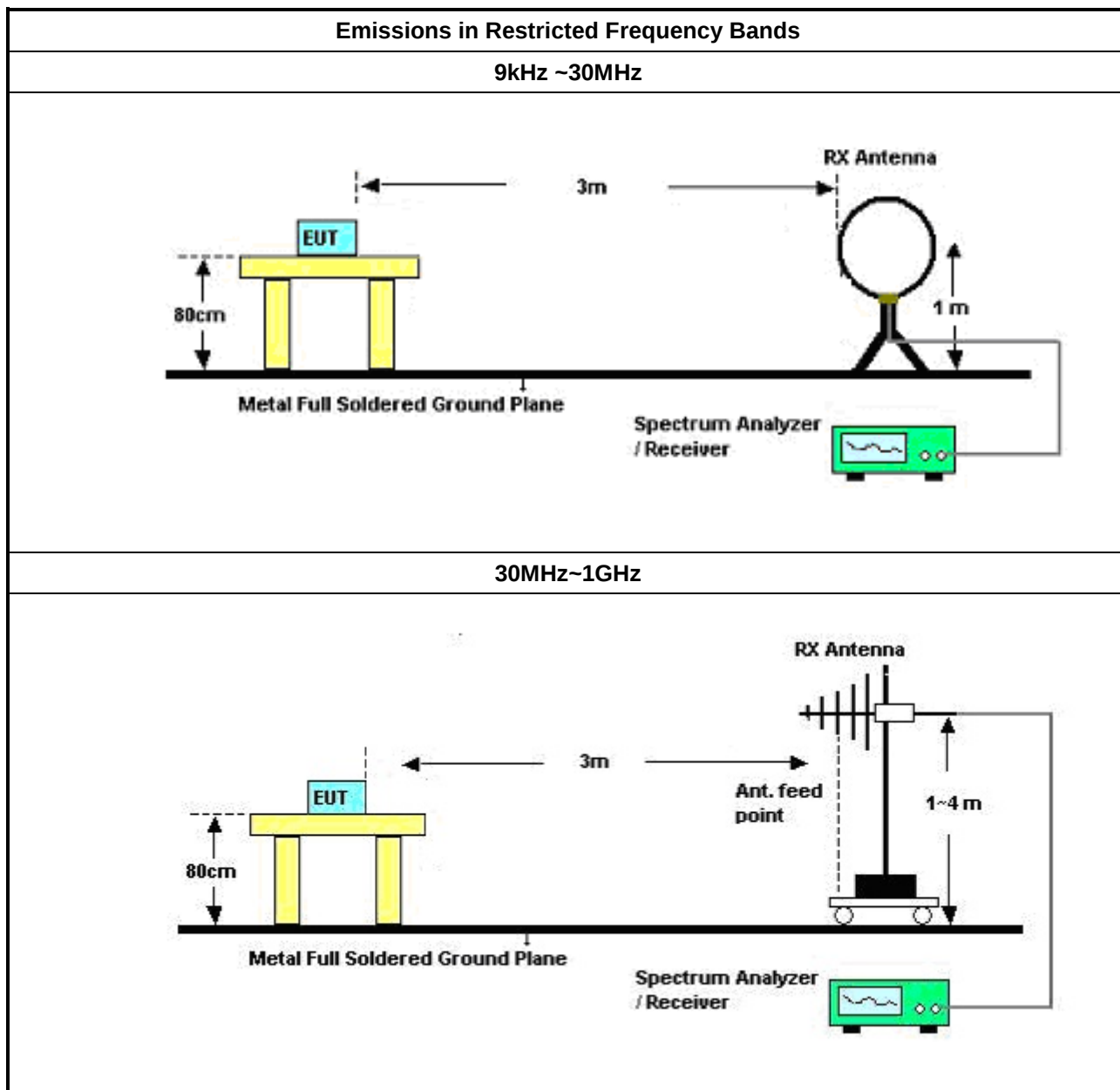
3.6.2 Measuring Instruments

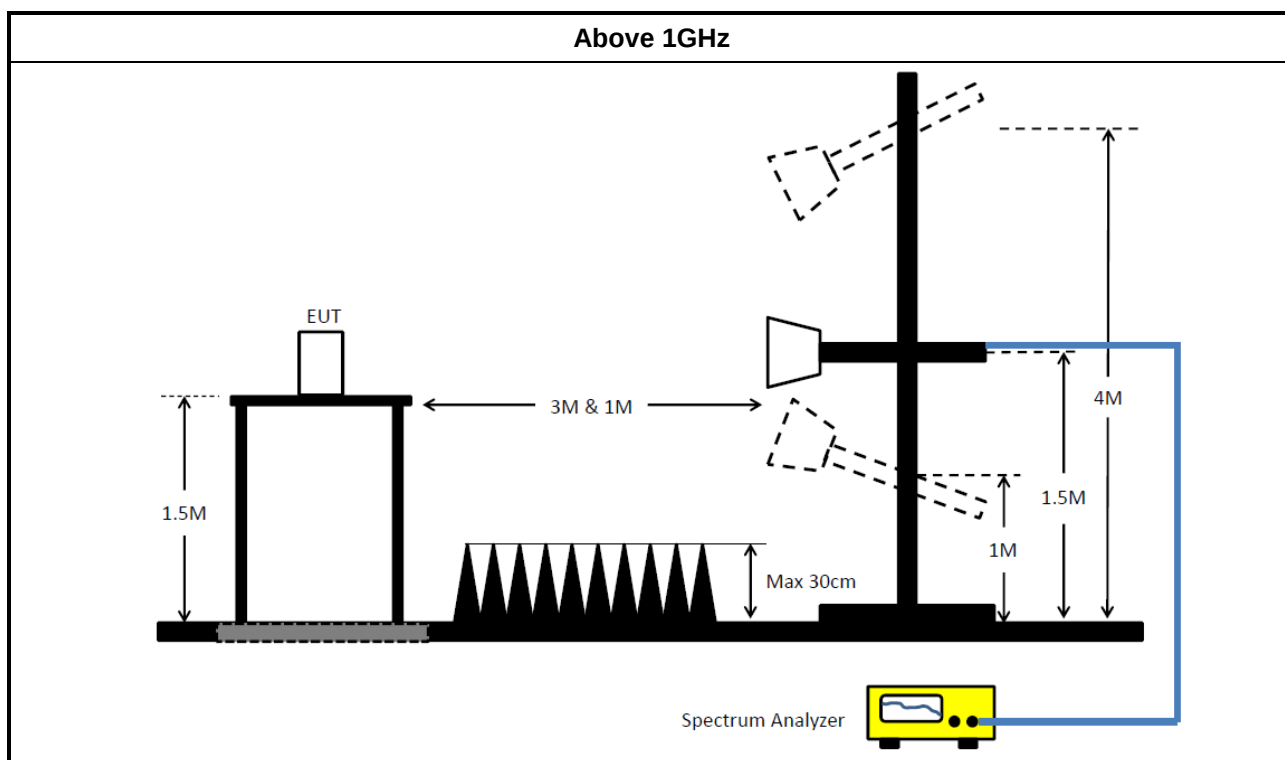
Refer a test equipment and calibration data table in this test report.

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 (i.e., 1 MHz).
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 F

4 Test Equipment and Calibration Data

Instrument for AC Conduction

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
EMC Receiver	R&S	ESR	102051	9kHz ~ 3.6GHz	29/May/2020	28/May/2021
LISN	R&S	ENV216	101295	9kHz ~ 30MHz	04/Nov/2019	05/Nov/2020
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	19/Mar/2020	18/Mar/2021
SMB100A Signal Generator	R&S	SMB100A03	181147	100kHz~40GHz	12/Nov/2018	10/Nov/2020
Power Sensor	Anritsu	MA2411B	0917017	300MHz ~ 40GHz	17/Feb/2020	16/Feb/2021
Power Meter	Anritsu	ML2495A	0949003	300MHz ~ 40GHz	17/Feb/2020	16/Feb/2021

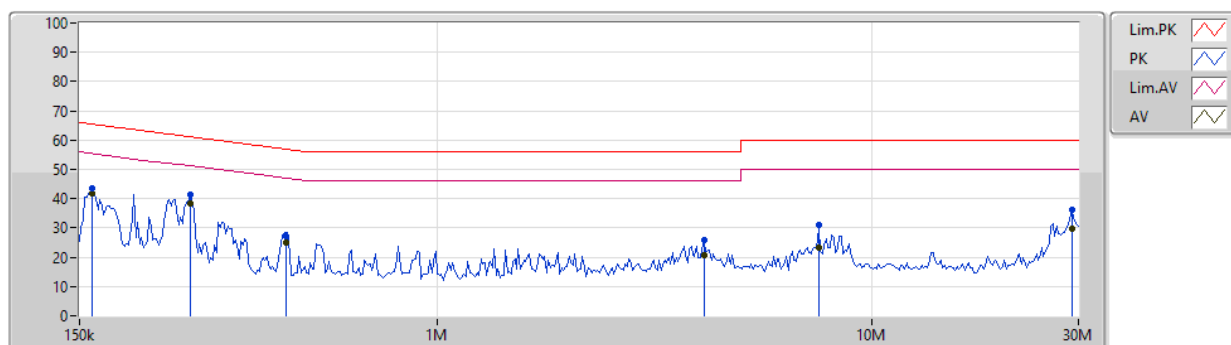
Instrument for Radiated Test

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	02/Jul/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/Feb/2020	26/Feb/2021
EMI Test Receiver	R&S	ESR	102052	9kHz ~ 3.6GHz	29/Apr/2020	28/Apr/2021
RF Cable-R03m	Jye Bao	RG142	CB017	9kHz ~ 1GHz	25/Mar/2020	24/Mar/2021
RF Cable-R03m	HUBER+SUHNER	SUCOFLEX104	805193/4+805192/4	1GHz~40GHz	08/Apr/2020	07/Apr/2021
Bilog Antenna & 5dB Attenuator	SCHAFFNER / MTJ	CBL 6112B / MTJ6102-05	2723 / 2	30MHz ~ 1GHz	28/Feb/2020	27/Feb/2021
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170339	18GHz ~ 40GHz	14/Apr/2020	13/Apr/2021
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	01543	1GHz ~ 18GHz	09/Jun/2020	08/Jun/2021
Preamplifier	MITEQ	TTA1840-35-HG	1864481	18GHz ~ 40GHz	05/Aug/2019	04/Aug/2020
Loop Antenna	TESEQ	HLA 6120	31244	9k-30MHz	16/Mar/2020	15/Mar/2021

AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Neutral
Operating Function	PoE mode; Sample 1		

04/06/2020

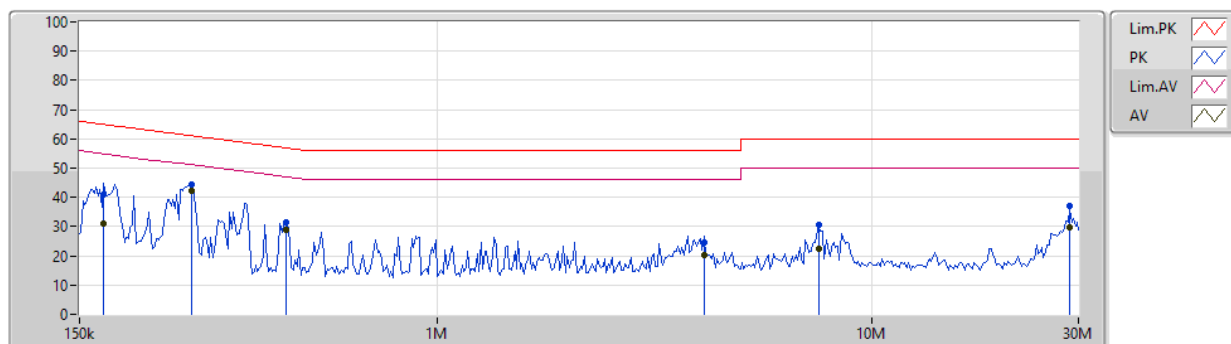


Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)			
QP	160.82k	43.37	65.43	-22.06	19.63	Neutral	-	23.74	9.65	0.11	9.87			
AV	160.82k	41.88	55.43	-13.55	19.63	Neutral	-	22.25	9.65	0.11	9.87			
QP	269.806k	41.46	61.12	-19.66	19.63	Neutral	-	21.83	9.64	0.12	9.87			
AV	269.806k	38.15	51.12	-12.97	19.63	Neutral	"Worst"	18.52	9.64	0.12	9.87			
QP	448.17k	27.20	56.92	-29.72	19.63	Neutral	-	7.57	9.63	0.13	9.87			
AV	448.17k	24.93	46.92	-21.99	19.63	Neutral	-	5.30	9.63	0.13	9.87			
QP	4.122M	25.87	56.00	-30.13	19.73	Neutral	-	6.14	9.66	0.19	9.88			
AV	4.122M	20.51	46.00	-25.49	19.73	Neutral	-	0.78	9.66	0.19	9.88			
QP	7.563M	31.15	60.00	-28.85	19.81	Neutral	-	11.34	9.69	0.24	9.88			
AV	7.563M	23.32	50.00	-26.68	19.81	Neutral	-	3.51	9.69	0.24	9.88			
QP	28.98M	36.23	60.00	-23.77	19.99	Neutral	-	16.24	9.67	0.44	9.88			
AV	28.98M	29.70	50.00	-20.30	19.99	Neutral	-	9.71	9.67	0.44	9.88			

AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Line
Operating Function	PoE mode; Sample 1		

04/06/2020

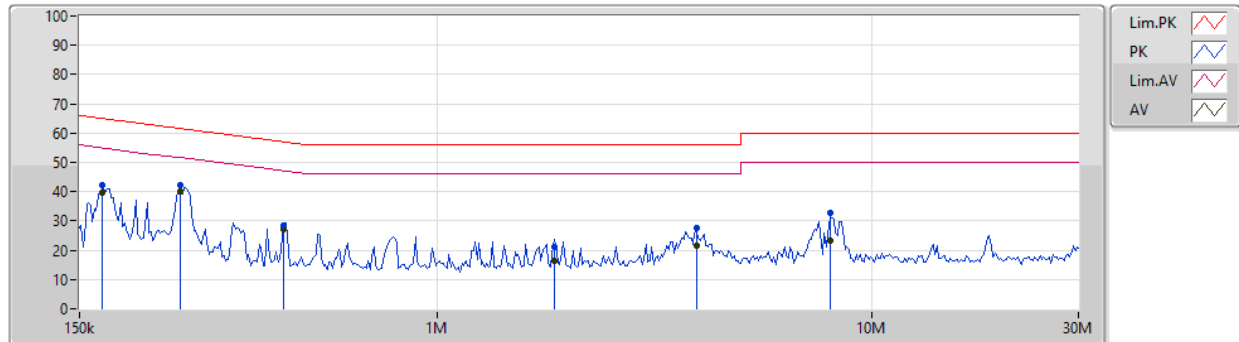


Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)			
QP	170.714k	40.84	64.93	-24.09	19.64	Line	-	21.20	9.66	0.11	9.87			
AV	170.714k	30.82	54.93	-24.11	19.64	Line	-	11.18	9.66	0.11	9.87			
QP	272.505k	44.58	61.05	-16.47	19.64	Line	-	24.94	9.65	0.12	9.87			
AV	272.505k	42.09	51.05	-8.96	19.64	Line	"Worst"	22.45	9.65	0.12	9.87			
QP	448.17k	31.36	56.92	-25.56	19.64	Line	-	11.72	9.64	0.13	9.87			
AV	448.17k	29.06	46.92	-17.86	19.64	Line	-	9.42	9.64	0.13	9.87			
QP	4.122M	24.57	56.00	-31.43	19.73	Line	-	4.84	9.66	0.19	9.88			
AV	4.122M	20.12	46.00	-25.88	19.73	Line	-	0.39	9.66	0.19	9.88			
QP	7.563M	30.53	60.00	-29.47	19.80	Line	-	10.73	9.68	0.24	9.88			
AV	7.563M	22.37	50.00	-27.63	19.80	Line	-	2.57	9.68	0.24	9.88			
QP	28.693M	37.25	60.00	-22.75	19.84	Line	-	17.41	9.52	0.44	9.88			
AV	28.693M	29.83	50.00	-20.17	19.84	Line	-	9.99	9.52	0.44	9.88			

AC Power-line Conducted Emissions Result

Operating Mode	2	Power Phase	Neutral
Operating Function	PoE mode; Sample 2		

04/06/2020

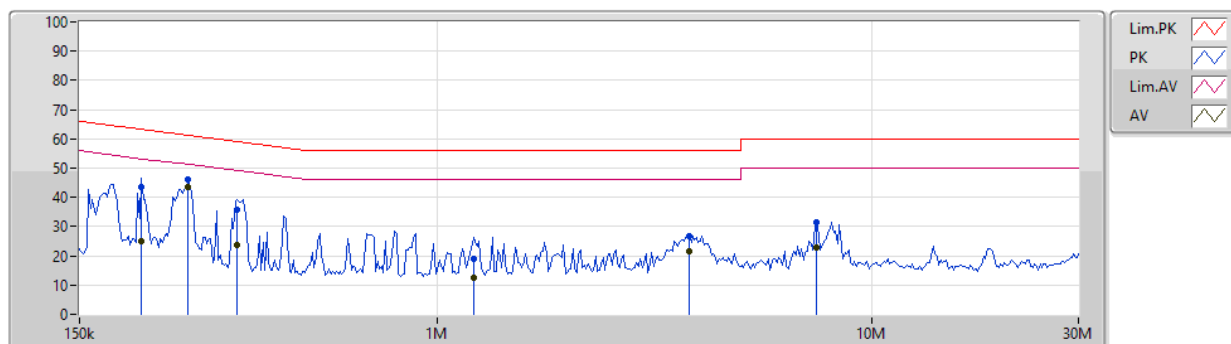


Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)			
QP	169.024k	42.15	65.01	-22.86	19.63	Neutral	-	22.52	9.65	0.11	9.87			
AV	169.024k	39.64	55.01	-15.37	19.63	Neutral	-	20.01	9.65	0.11	9.87			
QP	256.712k	42.39	61.54	-19.15	19.63	Neutral	-	22.76	9.64	0.12	9.87			
AV	256.712k	39.94	51.54	-11.60	19.63	Neutral	"Worst"	20.31	9.64	0.12	9.87			
QP	443.732k	28.60	56.99	-28.39	19.63	Neutral	-	8.97	9.63	0.13	9.87			
AV	443.732k	27.31	46.99	-19.68	19.63	Neutral	-	7.68	9.63	0.13	9.87			
QP	1.86M	21.00	56.00	-35.00	19.66	Neutral	-	1.34	9.65	0.14	9.87			
AV	1.86M	16.44	46.00	-29.56	19.66	Neutral	-	-3.22	9.65	0.14	9.87			
QP	3.961M	27.40	56.00	-28.60	19.73	Neutral	-	7.67	9.66	0.19	9.88			
AV	3.961M	21.46	46.00	-24.54	19.73	Neutral	-	1.73	9.66	0.19	9.88			
QP	8.029M	32.63	60.00	-27.37	19.82	Neutral	-	12.81	9.69	0.25	9.88			
AV	8.029M	23.43	50.00	-26.57	19.82	Neutral	-	3.61	9.69	0.25	9.88			

AC Power-line Conducted Emissions Result

Operating Mode	2	Power Phase	Line
Operating Function	PoE mode; Sample 2		

04/06/2020



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)			
QP	208.304k	43.32	63.27	-19.95	19.63	Line	-	23.69	9.65	0.11	9.87			
AV	208.304k	24.94	53.27	-28.33	19.63	Line	-	5.31	9.65	0.11	9.87			
QP	267.135k	46.13	61.20	-15.07	19.64	Line	-	26.49	9.65	0.12	9.87			
AV	267.135k	43.47	51.20	-7.73	19.64	Line	"Worst"	23.83	9.65	0.12	9.87			
QP	346.008k	35.83	59.06	-23.23	19.63	Line	-	16.20	9.64	0.12	9.87			
AV	346.008k	23.72	49.06	-25.34	19.63	Line	-	4.09	9.64	0.12	9.87			
QP	1.212M	19.15	56.00	-36.85	19.64	Line	-	-0.49	9.64	0.12	9.88			
AV	1.212M	12.67	46.00	-33.33	19.64	Line	-	-6.97	9.64	0.12	9.88			
QP	3.807M	26.89	56.00	-29.11	19.72	Line	-	7.17	9.66	0.18	9.88			
AV	3.807M	21.42	46.00	-24.58	19.72	Line	-	1.70	9.66	0.18	9.88			
QP	7.488M	31.65	60.00	-28.35	19.80	Line	-	11.85	9.68	0.24	9.88			
AV	7.488M	22.81	50.00	-27.19	19.80	Line	-	3.01	9.68	0.24	9.88			

Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
Zigbee	1.175M	2.244M	2M24G1D	1.131M	2.214M

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;

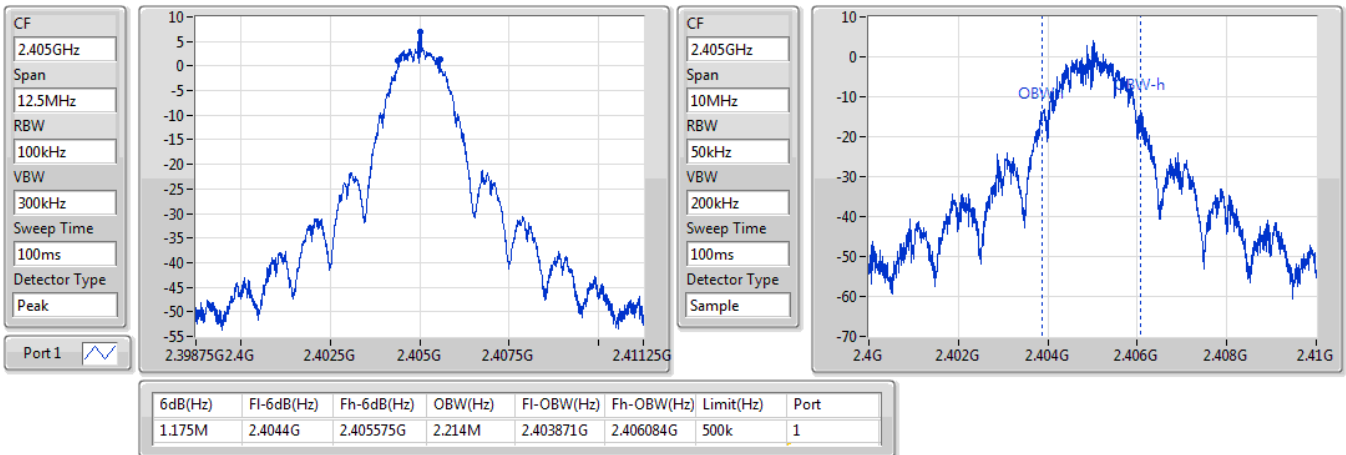
Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
Zigbee	-	-	-	-
2405MHz_TnomVnom	Pass	500k	1.175M	2.214M
2440MHz_TnomVnom	Pass	500k	1.15M	2.224M
2475MHz_TnomVnom	Pass	500k	1.175M	2.244M
2480MHz_TnomVnom	Pass	500k	1.131M	2.239M

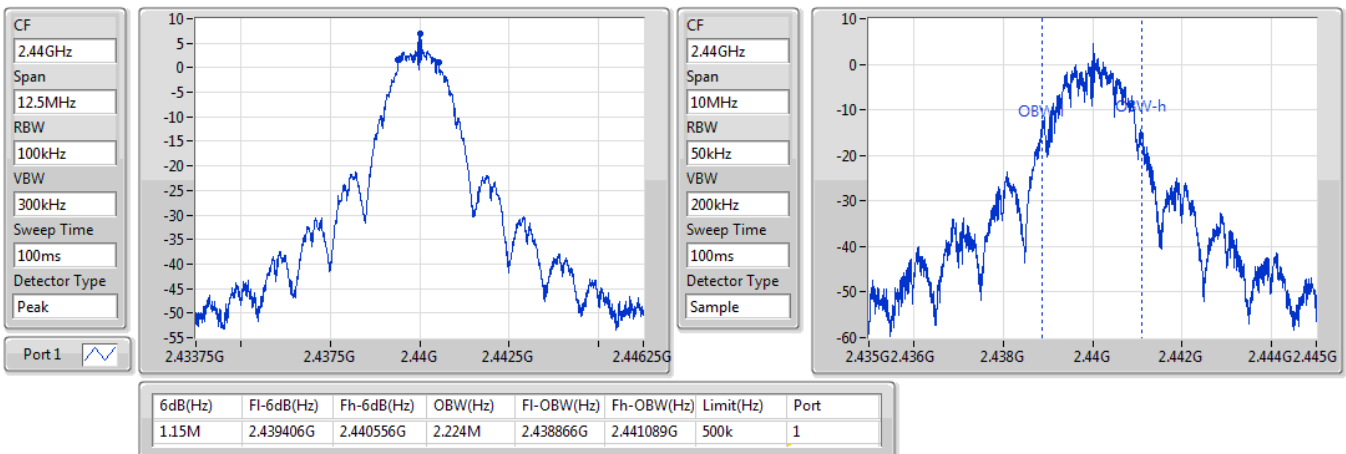
Port X-N dB = Port X 6dB down bandwidth; **Port X-OBW** = Port X 99% occupied bandwidth;

Zigbee
2405MHz
EBW

19/06/2020

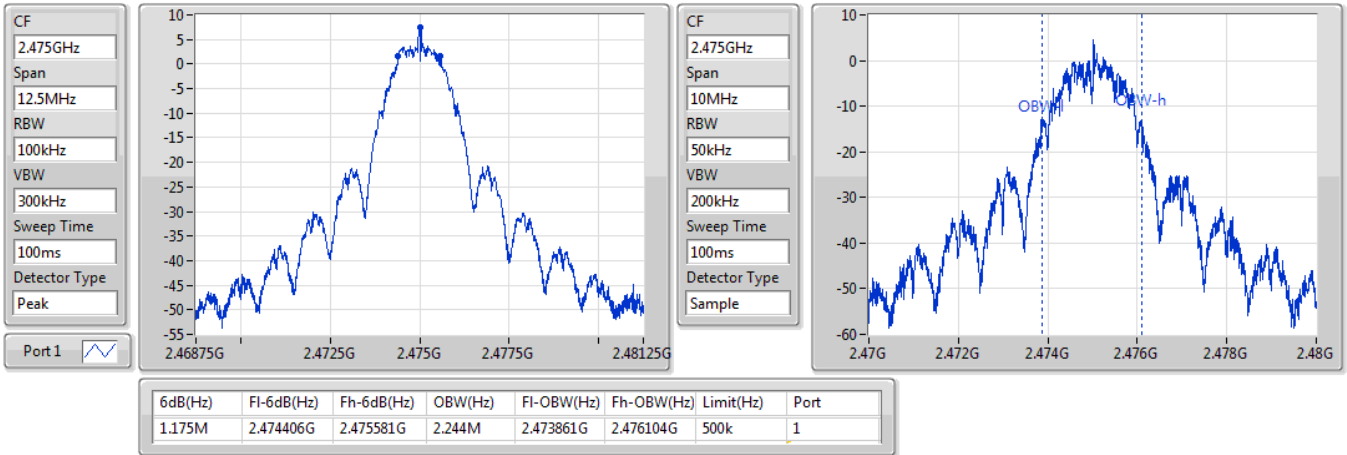

Zigbee
2440MHz
EBW

19/06/2020

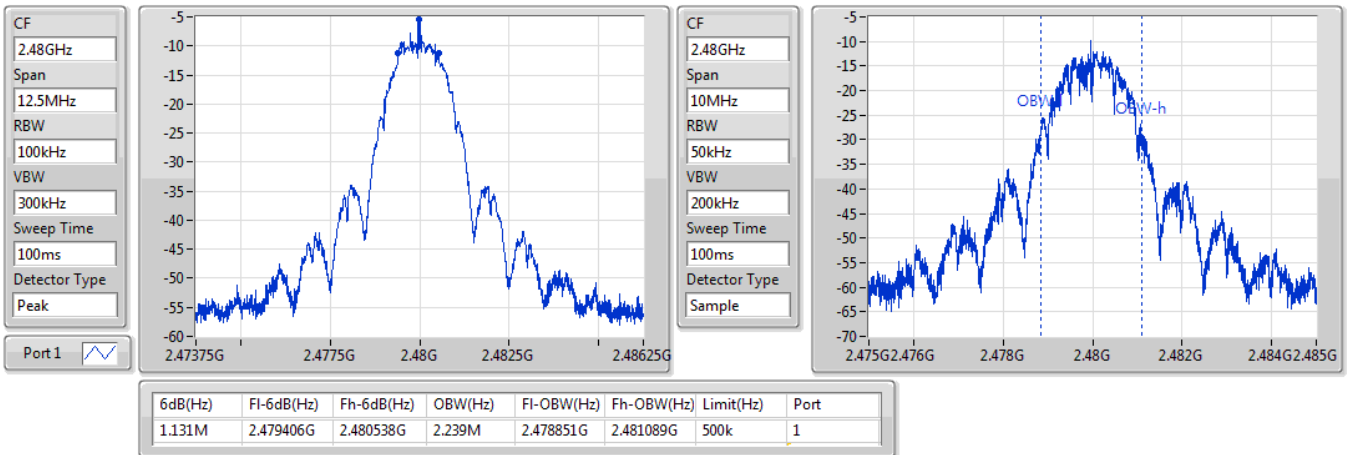


Zigbee
2475MHz

30/06/2020


Zigbee
2480MHz

19/06/2020





Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
Zigbee	7.71	0.00590

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Total Power (dBm)	Power Limit (dBm)
Zigbee	-	-	-	-	-
2405MHz	Pass	3.01	7.63	7.63	30.00
2440MHz	Pass	3.01	7.71	7.71	30.00
2480MHz	Pass	3.01	7.39	7.39	30.00

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



Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
Zigbee	7.71	0.00590

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Total Power (dBm)	Power Limit (dBm)
Zigbee	-	-	-	-	-
2405MHz	Pass	2.71	7.63	7.63	30.00
2440MHz	Pass	2.71	7.71	7.71	30.00
2480MHz	Pass	2.71	7.39	7.39	30.00

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



Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
Zigbee	-6.55

Result

Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)
Zigbee	-	-	-	-	-
2405MHz	Pass	3.01	-7.27	-7.27	8.00
2440MHz	Pass	3.01	-6.55	-6.55	8.00
2480MHz	Pass	3.01	-8.22	-8.22	8.00

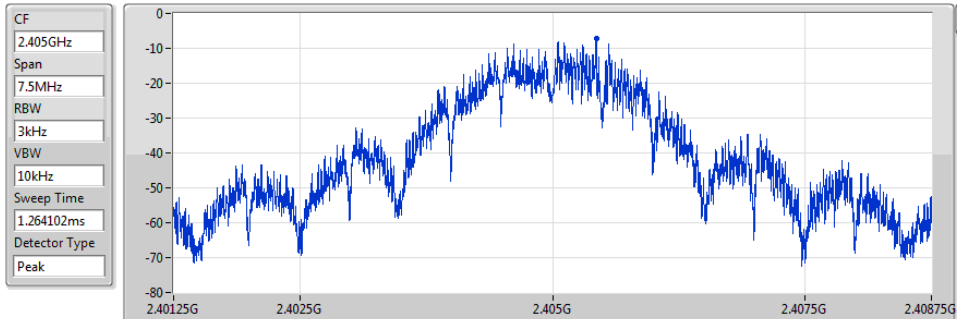
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; **Port X** = Port X power density;

Zigbee

2405MHz

PSD

19/06/2020



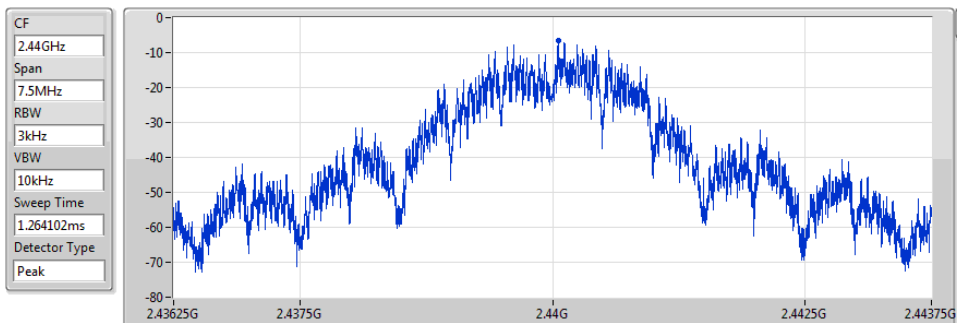
Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-7.27	-7.27	-7.27

Zigbee

2440MHz

PSD

19/06/2020



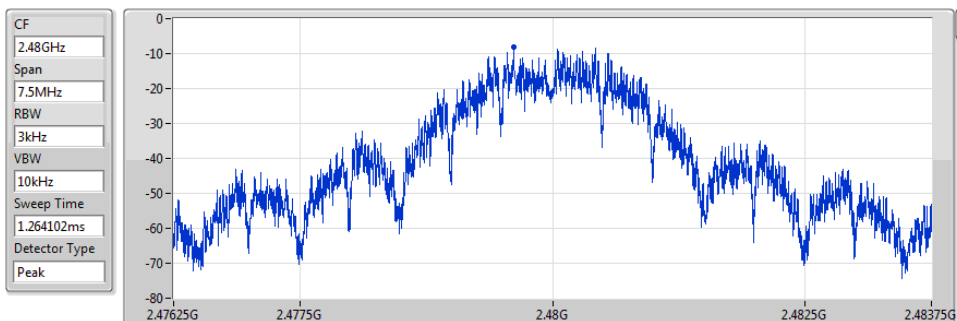
Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-6.55	-6.55	-6.55

Zigbee

2480MHz

PSD

09/07/2020



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-8.22	-8.22	-8.22



Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
Zigbee	-6.55

Result

Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)
Zigbee	-	-	-	-	-
2405MHz	Pass	2.71	-7.27	-7.27	8.00
2440MHz	Pass	2.71	-6.55	-6.55	8.00
2480MHz	Pass	2.71	-8.22	-8.22	8.00

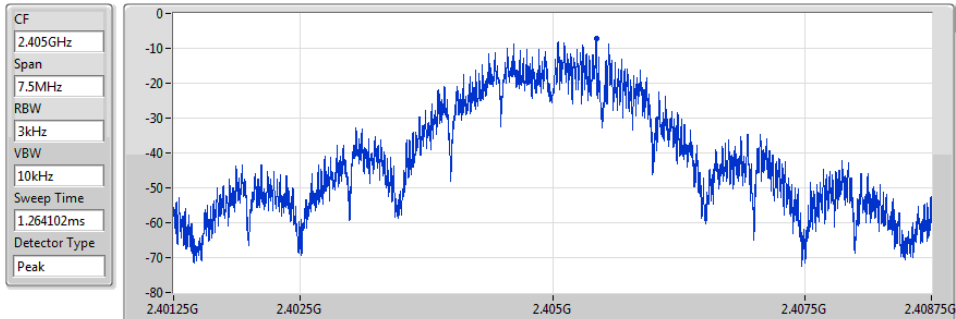
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; **Port X** = Port X power density;

Zigbee

2405MHz

PSD

19/06/2020



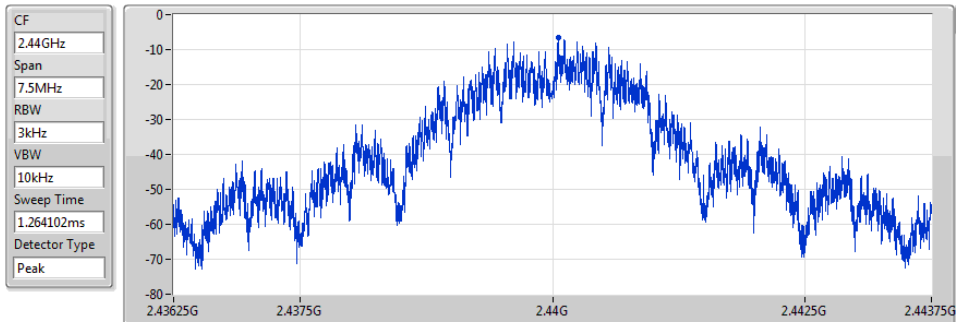
Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-7.27	-7.27	-7.27

Zigbee

2440MHz

PSD

19/06/2020



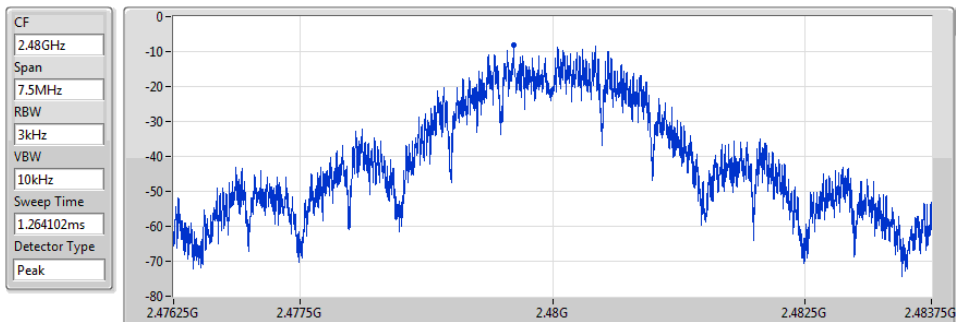
Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-6.55	-6.55	-6.55

Zigbee

2480MHz

PSD

09/07/2020



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-8.22	-8.22	-8.22



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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zigbee	Pass	2.44G	7.47	-22.53	2.30947G	-53.87	2.39989G	-43.66	2.4G	-43.81	2.49006G	-52.59	14.94803G	-39.11	1

Result

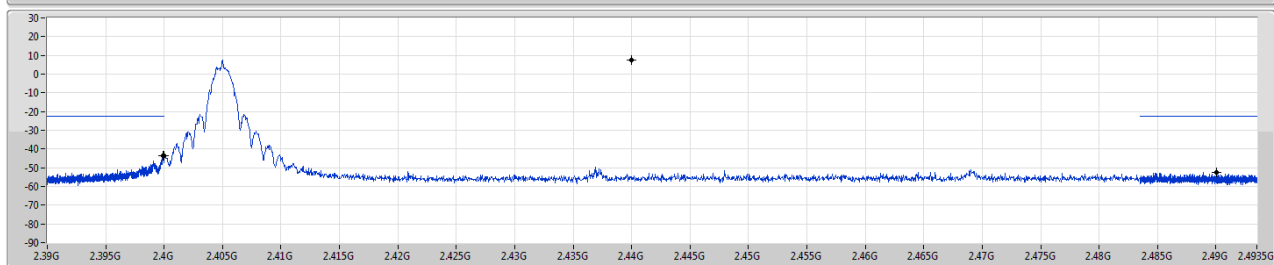
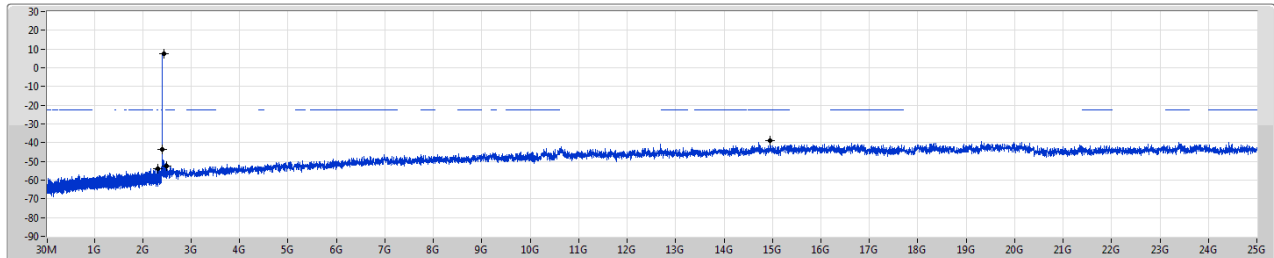
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
Zigbee	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2405MHz_TnomVnom	Pass	2.44G	7.47	-22.53	2.30947G	-53.87	2.39989G	-43.66	2.4G	-43.81	2.49006G	-52.59	14.94803G	-39.11	1
2440MHz_TnomVnom	Pass	2.44G	7.47	-22.53	2.09323G	-54.43	2.39212G	-51.83	2.4835G	-56.01	2.4881G	-51.67	24.78337G	-39.81	1
2475MHz_TnomVnom	Pass	2.44G	7.47	-22.53	2.30209G	-55.02	2.39492G	-52.39	2.4835G	-53.06	2.48357G	-49.85	24.42046G	-40.41	1
2480MHz_TnomVnom	Pass	2.44G	7.47	-22.53	2.13217G	-54.89	2.39219G	-53.94	2.4835G	-53.59	2.48408G	-48.46	23.41892G	-40.36	1

Zigbee 2405MHz

CSENdB

30/06/2020

Port1



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

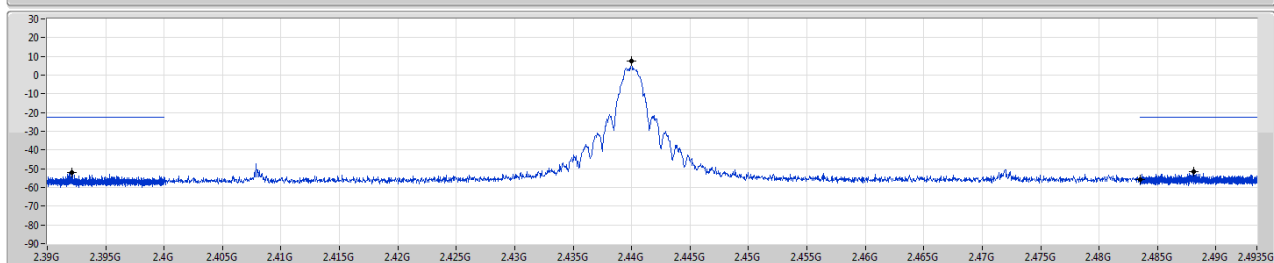
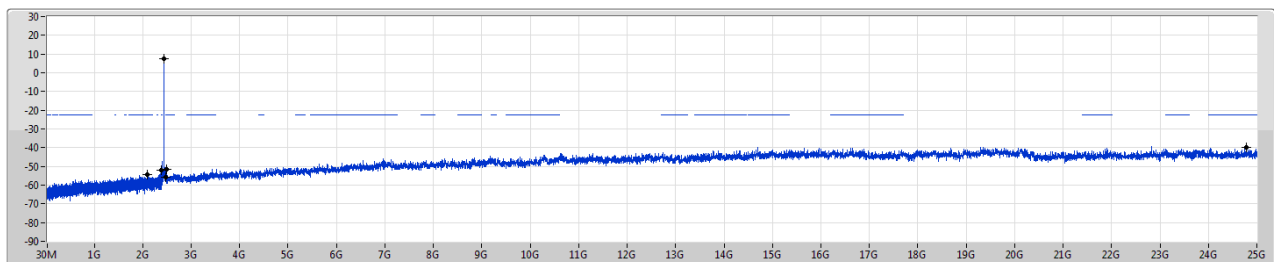
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.44G	7.47	-22.53	2.30947G	-53.87	2.39989G	-43.66	2.4G	-43.81	2.49006G	-52.59	14.94803G	-39.11	1

Zigbee 2440MHz

CSENdB

30/06/2020

Port1



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

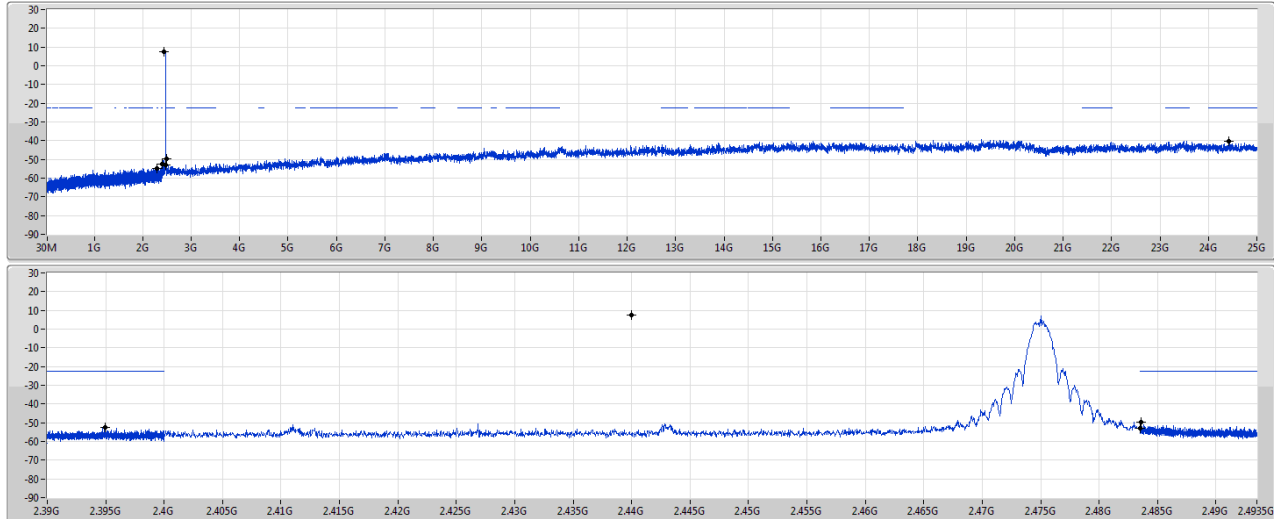
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.44G	7.47	-22.53	2.09323G	-54.43	2.39212G	-51.83	2.4835G	-56.01	2.4881G	-51.67	24.78337G	-39.81	1

Zigbee 2475MHz

CSENdB

30/06/2020

Port 1



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

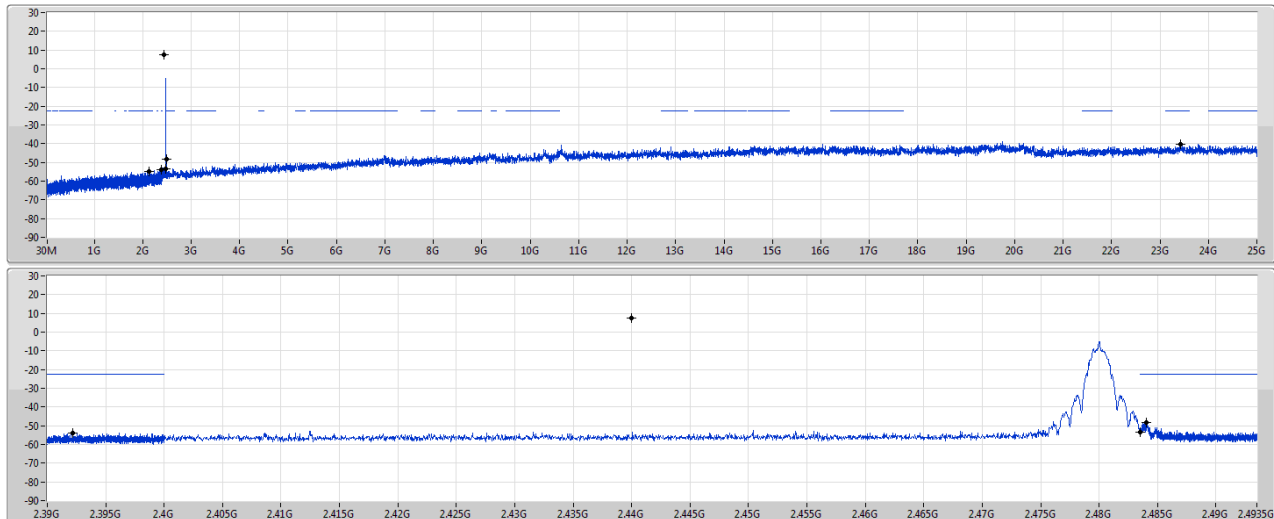
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.44G	7.47	-22.53	2.30209G	-55.02	2.39492G	-52.39	2.4835G	-53.06	2.48357G	-49.85	2.42046G	-40.41	1

Zigbee 2480MHz

CSENdB

30/06/2020

Port 1



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)	Freq(Hz)	Level(dBm)	Port
2.44G	7.47	-22.53	2.13217G	-54.89	2.39219G	-53.94	2.4835G	-53.59	2.48408G	-48.46	2.41892G	-40.36	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	-	-	-	-	-	-	-	-	-	-	-
Zigbee	Pass	PK	30M	35.15	40.00	-4.85	3	Vertical	360	1.00	-

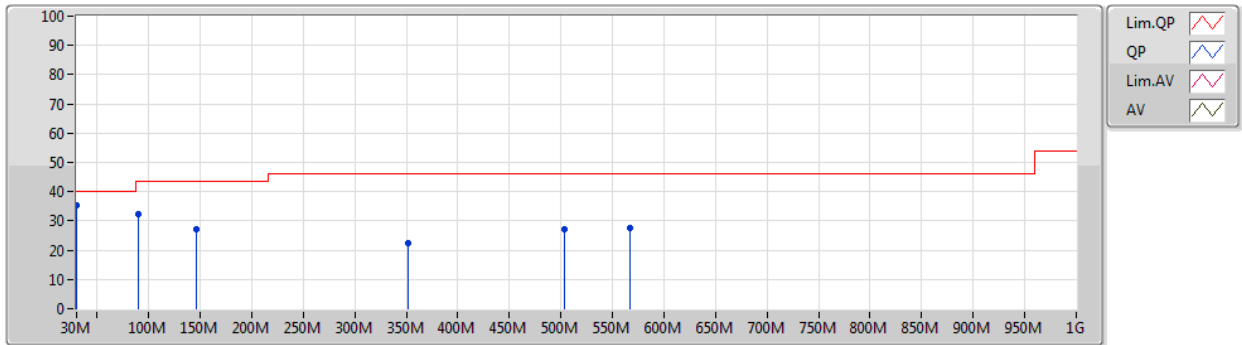
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
Zigbee	-	-	-	-	-	-	-	-	-	-	-
2440MHz	Pass	PK	30M	35.15	40.00	-4.85	3	Vertical	360	1.00	-
2440MHz	Pass	PK	90.14M	32.38	43.50	-11.12	3	Vertical	360	1.00	-
2440MHz	Pass	PK	146.4M	27.01	43.50	-16.49	3	Vertical	360	1.00	-
2440MHz	Pass	PK	352.04M	22.38	46.00	-23.62	3	Vertical	360	1.00	-
2440MHz	Pass	PK	503.36M	27.36	46.00	-18.64	3	Vertical	360	1.00	-
2440MHz	Pass	PK	567.38M	27.45	46.00	-18.55	3	Vertical	360	1.00	-
2440MHz	Pass	PK	30M	22.86	40.00	-17.14	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	140.58M	18.78	43.50	-24.72	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	258.92M	20.64	46.00	-25.36	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	367.56M	23.52	46.00	-22.48	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	480.08M	25.27	46.00	-20.73	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	571.26M	26.89	46.00	-19.11	3	Horizontal	0	1.00	-

Zigbee

2440MHz_PoE

19/06/2020

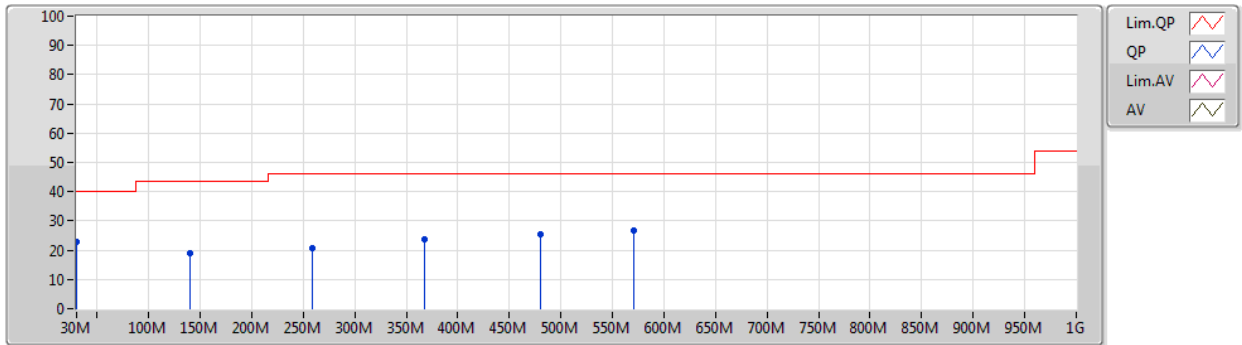


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	30M	35.15	40.00	-4.85	-3.45	3	Vertical	360	1.00	-	38.60	23.48	0.77	27.70
PK	90.14M	32.38	43.50	-11.12	-12.32	3	Vertical	360	1.00	-	44.70	14.02	1.41	27.75
PK	146.4M	27.01	43.50	-16.49	-10.18	3	Vertical	360	1.00	-	37.19	15.67	1.79	27.64
PK	352.04M	22.38	46.00	-23.62	-5.02	3	Vertical	360	1.00	-	27.40	19.61	2.88	27.51
PK	503.36M	27.36	46.00	-18.64	-2.20	3	Vertical	360	1.00	-	29.56	22.70	3.53	28.43
PK	567.38M	27.45	46.00	-18.55	-0.95	3	Vertical	360	1.00	-	28.40	23.92	3.73	28.60

Zigbee

2440MHz_PoE

19/06/2020



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	22.86	40.00	-17.14	-3.45	3	Horizontal	0	1.00	-	26.31	23.48	0.77	27.70
PK	140.58M	18.78	43.50	-24.72	-9.79	3	Horizontal	0	1.00	-	28.57	16.14	1.74	27.67
PK	258.92M	20.64	46.00	-25.36	-6.18	3	Horizontal	0	1.00	-	26.82	18.55	2.45	27.18
PK	367.56M	23.52	46.00	-22.48	-4.66	3	Horizontal	0	1.00	-	28.18	20.02	2.94	27.62
PK	480.08M	25.27	46.00	-20.73	-2.15	3	Horizontal	0	1.00	-	27.42	22.80	3.42	28.37
PK	571.26M	26.89	46.00	-19.11	-0.85	3	Horizontal	0	1.00	-	27.74	23.99	3.75	28.59

**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	-	-	-	-	-	-	-	-	-	-	-
Zigbee	Pass	AV	2.4835G	49.26	54.00	-4.74	3	Horizontal	301	1.00	-



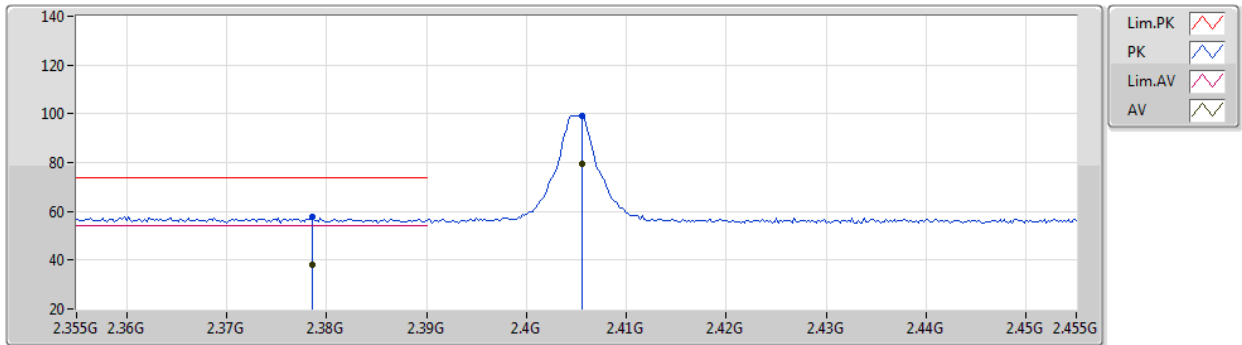
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
Zigbee	-	-	-	-	-	-	-	-	-	-	-
2405MHz	Pass	AV	2.3786G	38.00	54.00	-16.00	3	Vertical	328	1.38	-
2405MHz	Pass	AV	2.4056G	79.33	Inf	-Inf	3	Vertical	328	1.38	-
2405MHz	Pass	PK	2.3786G	58.00	74.00	-16.00	3	Vertical	328	1.38	-
2405MHz	Pass	PK	2.4056G	99.33	Inf	-Inf	3	Vertical	328	1.38	-
2405MHz	Pass	AV	2.39G	38.51	54.00	-15.49	3	Horizontal	83	2.05	-
2405MHz	Pass	AV	2.4056G	81.27	Inf	-Inf	3	Horizontal	83	2.05	-
2405MHz	Pass	PK	2.39G	58.51	74.00	-15.49	3	Horizontal	83	2.05	-
2405MHz	Pass	PK	2.4056G	101.27	Inf	-Inf	3	Horizontal	83	2.05	-
2405MHz	Pass	AV	4.80791G	23.18	54.00	-30.82	3	Vertical	103	2.60	-
2405MHz	Pass	PK	4.80791G	43.18	74.00	-30.82	3	Vertical	103	2.60	-
2405MHz	Pass	AV	4.80843G	23.64	54.00	-30.36	3	Horizontal	219	1.49	-
2405MHz	Pass	PK	4.80843G	43.64	74.00	-30.36	3	Horizontal	219	1.49	-
2440MHz	Pass	AV	2.3592G	38.18	54.00	-15.82	3	Vertical	24	1.50	-
2440MHz	Pass	AV	2.4396G	79.95	Inf	-Inf	3	Vertical	24	1.50	-
2440MHz	Pass	AV	2.4912G	37.23	54.00	-16.77	3	Vertical	24	1.50	-
2440MHz	Pass	PK	2.3592G	58.18	74.00	-15.82	3	Vertical	24	1.50	-
2440MHz	Pass	PK	2.4396G	99.95	Inf	-Inf	3	Vertical	24	1.50	-
2440MHz	Pass	PK	2.4912G	57.23	74.00	-16.77	3	Vertical	24	1.50	-
2440MHz	Pass	AV	2.3656G	37.40	54.00	-16.60	3	Horizontal	304	1.50	-
2440MHz	Pass	AV	2.4396G	80.88	Inf	-Inf	3	Horizontal	304	1.50	-
2440MHz	Pass	AV	2.5G	37.31	54.00	-16.69	3	Horizontal	304	1.50	-
2440MHz	Pass	PK	2.3656G	57.40	74.00	-16.60	3	Horizontal	304	1.50	-
2440MHz	Pass	PK	2.4396G	100.88	Inf	-Inf	3	Horizontal	304	1.50	-
2440MHz	Pass	PK	2.5G	57.31	74.00	-16.69	3	Horizontal	304	1.50	-
2440MHz	Pass	AV	4.87763G	24.26	54.00	-29.74	3	Vertical	154	1.49	-
2440MHz	Pass	PK	4.87763G	44.26	74.00	-29.74	3	Vertical	154	1.49	-
2440MHz	Pass	AV	4.87786G	24.07	54.00	-29.93	3	Horizontal	289	2.75	-
2440MHz	Pass	PK	4.87786G	44.07	74.00	-29.93	3	Horizontal	289	2.75	-
2480MHz	Pass	AV	2.4806G	81.57	Inf	-Inf	3	Vertical	358	1.09	-
2480MHz	Pass	AV	2.4835G	48.04	54.00	-5.96	3	Vertical	358	1.09	-
2480MHz	Pass	PK	2.4806G	101.57	Inf	-Inf	3	Vertical	358	1.09	-
2480MHz	Pass	PK	2.4835G	68.04	74.00	-5.96	3	Vertical	358	1.09	-
2480MHz	Pass	AV	2.4794G	83.35	Inf	-Inf	3	Horizontal	301	1.00	-
2480MHz	Pass	AV	2.4835G	49.26	54.00	-4.74	3	Horizontal	301	1.00	-
2480MHz	Pass	PK	2.4794G	103.35	Inf	-Inf	3	Horizontal	301	1.00	-
2480MHz	Pass	PK	2.4835G	69.26	74.00	-4.74	3	Horizontal	301	1.00	-
2480MHz	Pass	AV	4.95927G	28.67	54.00	-25.33	3	Vertical	83	1.00	-
2480MHz	Pass	PK	4.95927G	48.67	74.00	-25.33	3	Vertical	83	1.00	-
2480MHz	Pass	AV	4.95758G	25.55	54.00	-28.45	3	Horizontal	333	1.00	-
2480MHz	Pass	PK	4.95758G	45.55	74.00	-28.45	3	Horizontal	333	1.00	-

Zigbee

2405MHz_TX

08/07/2020

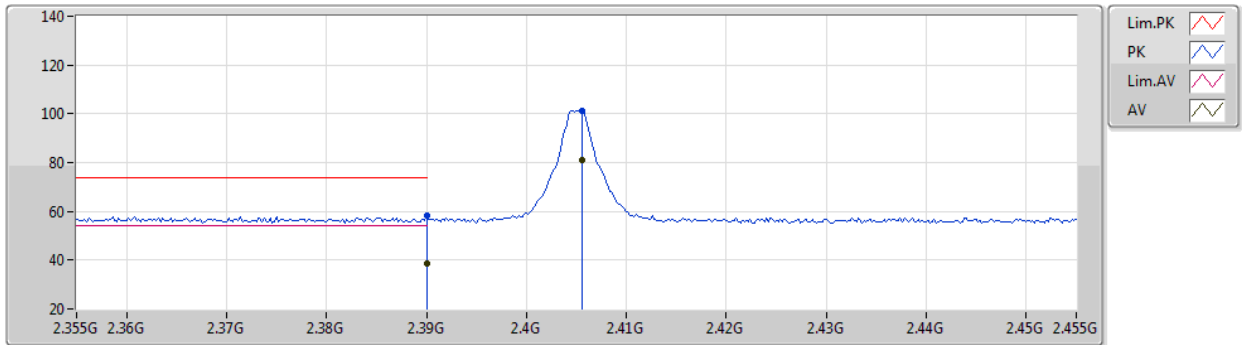


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3786G	38.00	54.00	-16.00	33.58	3	Vertical	328	1.38	-	4.42	27.64	5.94	-
AV	2.4056G	79.33	Inf	-Inf	33.55	3	Vertical	328	1.38	-	45.78	27.58	5.97	-
PK	2.3786G	58.00	74.00	-16.00	33.58	3	Vertical	328	1.38	-	24.42	27.64	5.94	-
PK	2.4056G	99.33	Inf	-Inf	33.55	3	Vertical	328	1.38	-	65.78	27.58	5.97	-

Zigbee

2405MHz_TX

08/07/2020

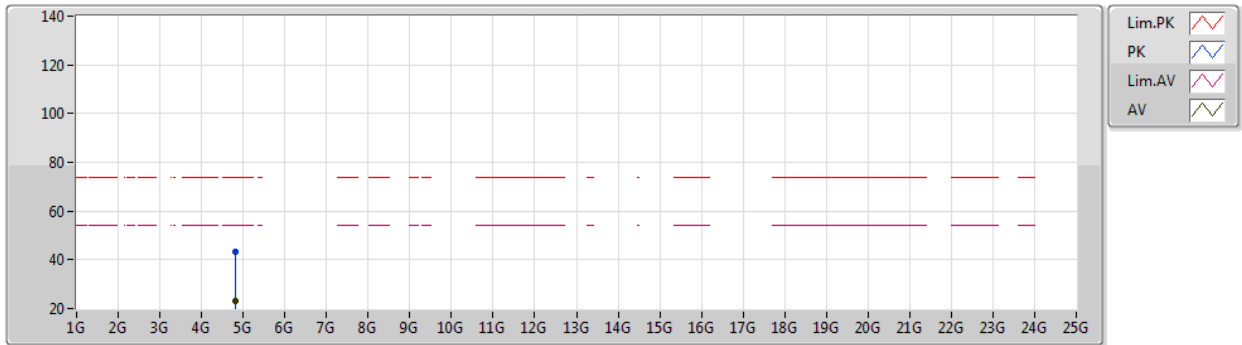


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.39G	38.51	54.00	-15.49	33.57	3	Horizontal	83	2.05	-	4.94	27.62	5.95	-
AV	2.4056G	81.27	Inf	-Inf	33.55	3	Horizontal	83	2.05	-	47.72	27.58	5.97	-
PK	2.39G	58.51	74.00	-15.49	33.57	3	Horizontal	83	2.05	-	24.94	27.62	5.95	-
PK	2.4056G	101.27	Inf	-Inf	33.55	3	Horizontal	83	2.05	-	67.72	27.58	5.97	-

Zigbee

2405MHz_TX

08/07/2020

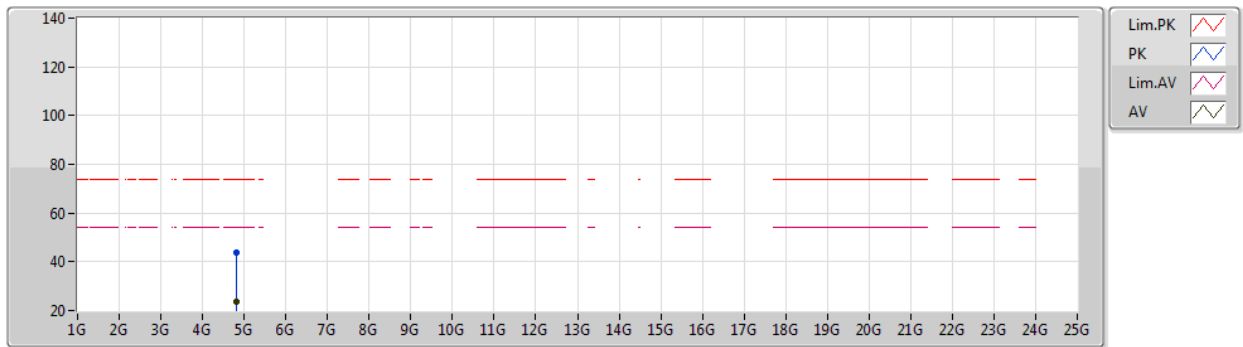


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.80791G	23.18	54.00	-30.82	5.28	3	Vertical	103	2.60	-	17.90	30.93	8.26	33.91
PK	4.80791G	43.18	74.00	-30.82	5.28	3	Vertical	103	2.60	-	37.90	30.93	8.26	33.91

Zigbee

2405MHz_TX

08/07/2020

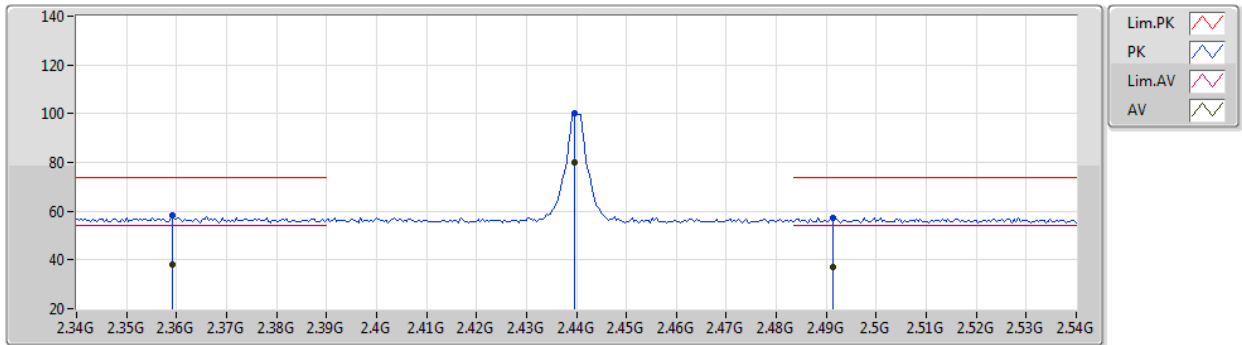


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.80843G	23.64	54.00	-30.36	5.28	3	Horizontal	219	1.49	-	18.36	30.93	8.26	33.91
PK	4.80843G	43.64	74.00	-30.36	5.28	3	Horizontal	219	1.49	-	38.36	30.93	8.26	33.91

Zigbee

2440MHz_TX

08/07/2020

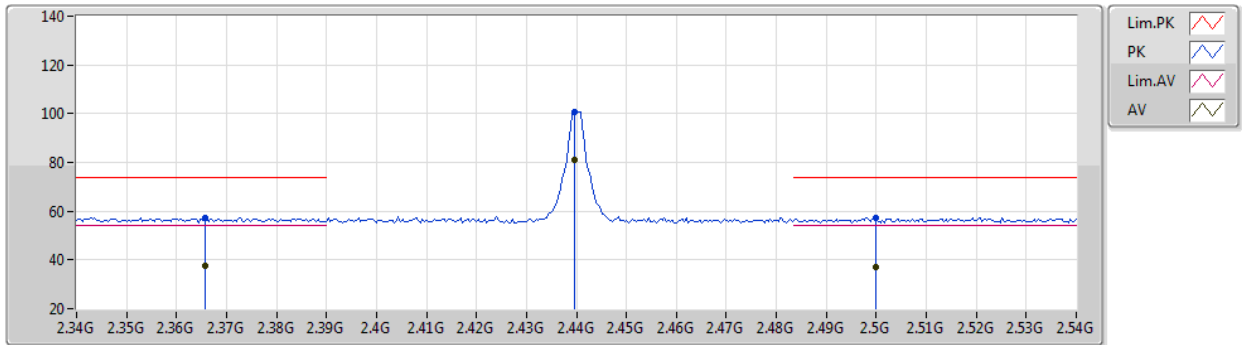


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3592G	38.18	54.00	-15.82	33.61	3	Vertical	24	1.50	-	4.57	27.68	5.93	-
AV	2.4396G	79.95	Inf	-Inf	33.45	3	Vertical	24	1.50	-	46.50	27.44	6.01	-
AV	2.4912G	37.23	54.00	-16.77	33.47	3	Vertical	24	1.50	-	3.76	27.40	6.07	-
PK	2.3592G	58.18	74.00	-15.82	33.61	3	Vertical	24	1.50	-	24.57	27.68	5.93	-
PK	2.4396G	99.95	Inf	-Inf	33.45	3	Vertical	24	1.50	-	66.50	27.44	6.01	-
PK	2.4912G	57.23	74.00	-16.77	33.47	3	Vertical	24	1.50	-	23.76	27.40	6.07	-

Zigbee

2440MHz_TX

08/07/2020

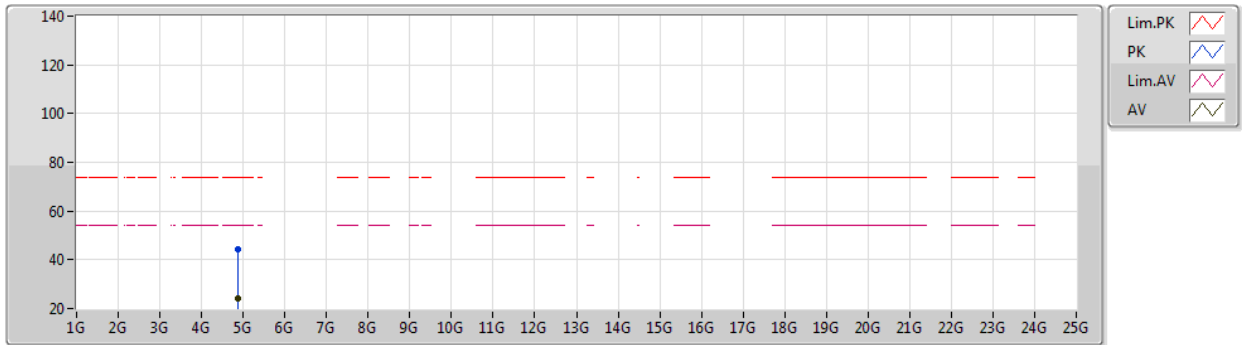


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3656G	37.40	54.00	-16.60	33.60	3	Horizontal	304	1.50	-	3.80	27.67	5.93	-
AV	2.4396G	80.88	Inf	-Inf	33.45	3	Horizontal	304	1.50	-	47.43	27.44	6.01	-
AV	2.5G	37.31	54.00	-16.69	33.48	3	Horizontal	304	1.50	-	3.83	27.40	6.08	-
PK	2.3656G	57.40	74.00	-16.60	33.60	3	Horizontal	304	1.50	-	23.80	27.67	5.93	-
PK	2.4396G	100.88	Inf	-Inf	33.45	3	Horizontal	304	1.50	-	67.43	27.44	6.01	-
PK	2.5G	57.31	74.00	-16.69	33.48	3	Horizontal	304	1.50	-	23.83	27.40	6.08	-

Zigbee

2440MHz_TX

08/07/2020

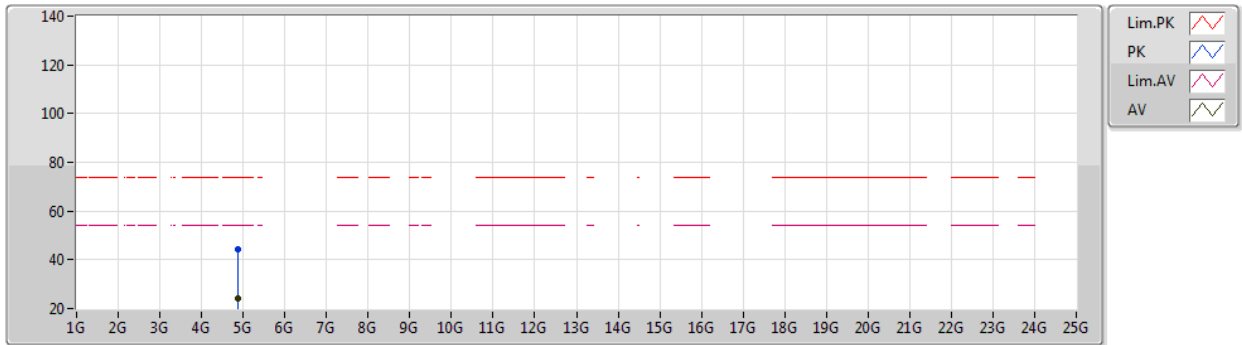


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.87763G	24.26	54.00	-29.74	5.47	3	Vertical	154	1.49	-	18.79	31.04	8.30	33.87
PK	4.87763G	44.26	74.00	-29.74	5.47	3	Vertical	154	1.49	-	38.79	31.04	8.30	33.87

Zigbee

2440MHz_TX

08/07/2020

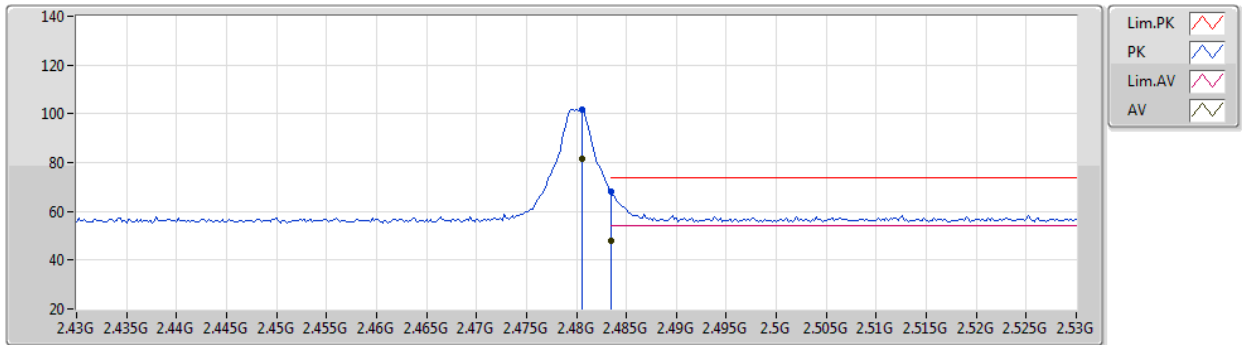


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.87786G	24.07	54.00	-29.93	5.47	3	Horizontal	289	2.75	-	18.60	31.04	8.30	33.87
PK	4.87786G	44.07	74.00	-29.93	5.47	3	Horizontal	289	2.75	-	38.60	31.04	8.30	33.87

Zigbee

2480MHz_TX

08/07/2020

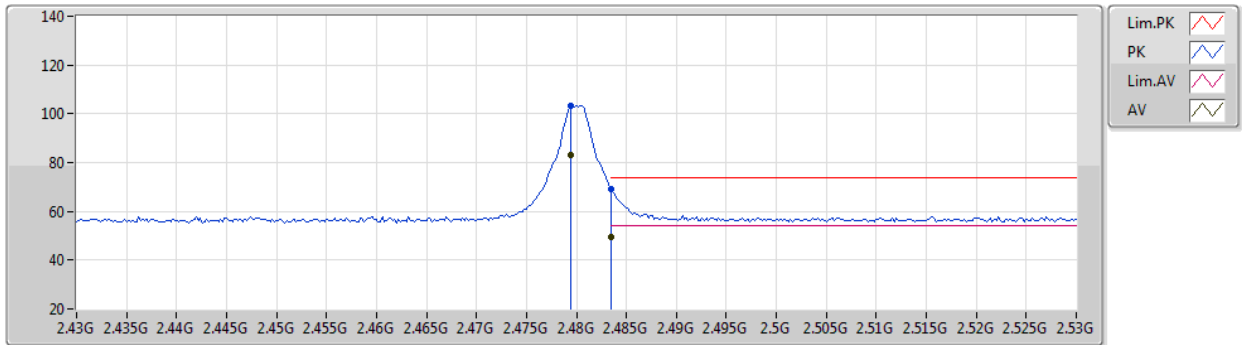


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	24806G	81.57	Inf	-Inf	33.46	3	Vertical	358	1.09	-	48.11	27.40	6.06	-
AV	24835G	48.04	54.00	-5.96	33.46	3	Vertical	358	1.09	-	14.58	27.40	6.06	-
PK	24806G	101.57	Inf	-Inf	33.46	3	Vertical	358	1.09	-	68.11	27.40	6.06	-
PK	24835G	68.04	74.00	-5.96	33.46	3	Vertical	358	1.09	-	34.58	27.40	6.06	-

Zigbee

2480MHz_TX

08/07/2020

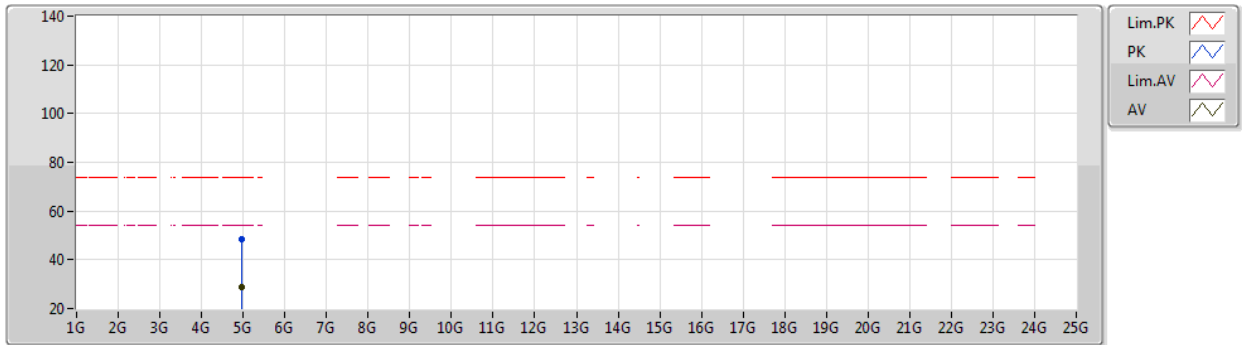


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.4794G	83.35	Inf	-Inf	33.46	3	Horizontal	301	1.00	-	49.89	27.40	6.06	-
AV	2.4835G	49.26	54.00	-4.74	33.46	3	Horizontal	301	1.00	-	15.80	27.40	6.06	-
PK	2.4794G	103.35	Inf	-Inf	33.46	3	Horizontal	301	1.00	-	69.89	27.40	6.06	-
PK	2.4835G	69.26	74.00	-4.74	33.46	3	Horizontal	301	1.00	-	35.80	27.40	6.06	-

Zigbee

2480MHz_TX

08/07/2020

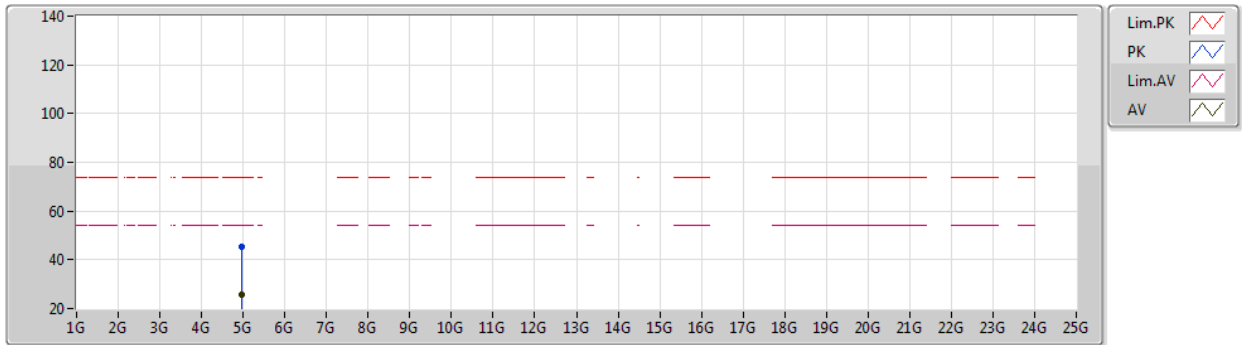


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.95927G	28.67	54.00	-25.33	5.75	3	Vertical	83	1.00	-	22.92	31.22	8.35	33.82
PK	4.95927G	48.67	74.00	-25.33	5.75	3	Vertical	83	1.00	-	42.92	31.22	8.35	33.82

Zigbee

2480MHz_TX

08/07/2020



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	4.95758G	25.55	54.00	-28.45	5.74	3	Horizontal	333	1.00	-	19.81	31.22	8.35	33.83
PK	4.95758G	45.55	74.00	-28.45	5.74	3	Horizontal	333	1.00	-	39.81	31.22	8.35	33.83



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	-	-	-	-	-	-	-	-	-	-	-
Zigbee	Pass	PK	30M	34.92	40.00	-5.08	3	Vertical	0	1.00	-

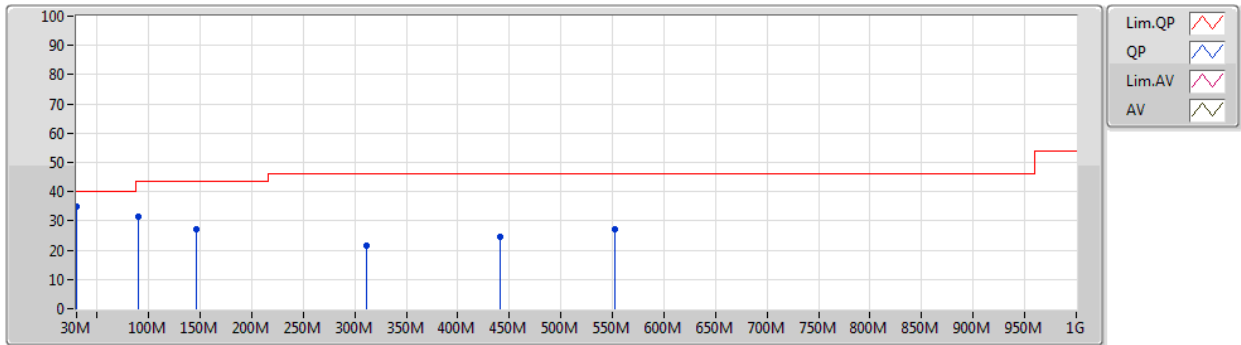
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
Zigbee	-	-	-	-	-	-	-	-	-	-	-
2440MHz	Pass	PK	30M	34.92	40.00	-5.08	3	Vertical	0	1.00	-
2440MHz	Pass	PK	90.14M	31.47	43.50	-12.03	3	Vertical	0	1.00	-
2440MHz	Pass	PK	146.4M	27.34	43.50	-16.16	3	Vertical	0	1.00	-
2440MHz	Pass	PK	311.3M	21.69	46.00	-24.31	3	Vertical	0	1.00	-
2440MHz	Pass	PK	441.28M	24.56	46.00	-21.44	3	Vertical	0	1.00	-
2440MHz	Pass	PK	551.86M	27.28	46.00	-18.72	3	Vertical	0	1.00	-
2440MHz	Pass	PK	31.94M	27.40	40.00	-12.60	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	123.12M	21.11	43.50	-22.39	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	262.8M	21.79	46.00	-24.21	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	344.28M	22.85	46.00	-23.15	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	480.08M	26.29	46.00	-19.71	3	Horizontal	360	1.00	-
2440MHz	Pass	PK	590.66M	27.40	46.00	-18.60	3	Horizontal	360	1.00	-

Zigbee

2440MHz_PoE

19/06/2020

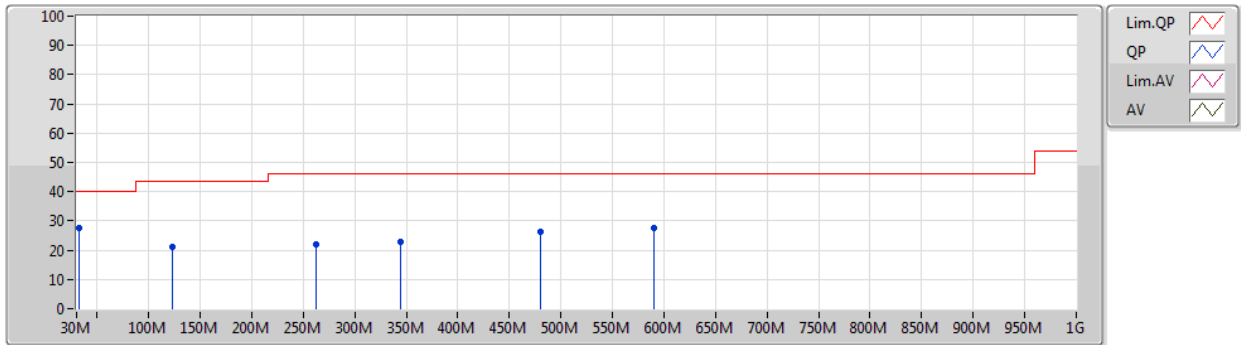


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	30M	34.92	40.00	-5.08	-3.45	3	Vertical	0	1.00	-	38.37	23.48	0.77	27.70
PK	90.14M	31.47	43.50	-12.03	-12.32	3	Vertical	0	1.00	-	43.79	14.02	1.41	27.75
PK	146.4M	27.34	43.50	-16.16	-10.18	3	Vertical	0	1.00	-	37.52	15.67	1.79	27.64
PK	311.3M	21.69	46.00	-24.31	-5.84	3	Vertical	0	1.00	-	27.53	18.69	2.71	27.24
PK	441.28M	24.56	46.00	-21.44	-3.25	3	Vertical	0	1.00	-	27.81	21.73	3.25	28.23
PK	551.86M	27.28	46.00	-18.72	-0.94	3	Vertical	0	1.00	-	28.22	24.04	3.65	28.63

Zigbee

2440MHz_PoE

19/06/2020



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	31.94M	27.40	40.00	-12.60	-4.66	3	Horizontal	360	1.00	-	32.06	22.23	0.80	27.69
PK	123.12M	21.11	43.50	-22.39	-8.91	3	Horizontal	360	1.00	-	30.02	17.16	1.65	27.72
PK	262.8M	21.79	46.00	-24.21	-6.11	3	Horizontal	360	1.00	-	27.90	18.60	2.47	27.18
PK	344.28M	22.85	46.00	-23.15	-5.33	3	Horizontal	360	1.00	-	28.18	19.28	2.85	27.46
PK	480.08M	26.29	46.00	-19.71	-2.15	3	Horizontal	360	1.00	-	28.44	22.80	3.42	28.37
PK	590.66M	27.40	46.00	-18.60	-0.80	3	Horizontal	360	1.00	-	28.20	23.90	3.84	28.54



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	-	-	-	-	-	-	-	-	-	-	-
Zigbee	Pass	AV	2.4835G	49.25	54.00	-4.75	3	Horizontal	70	2.78	-

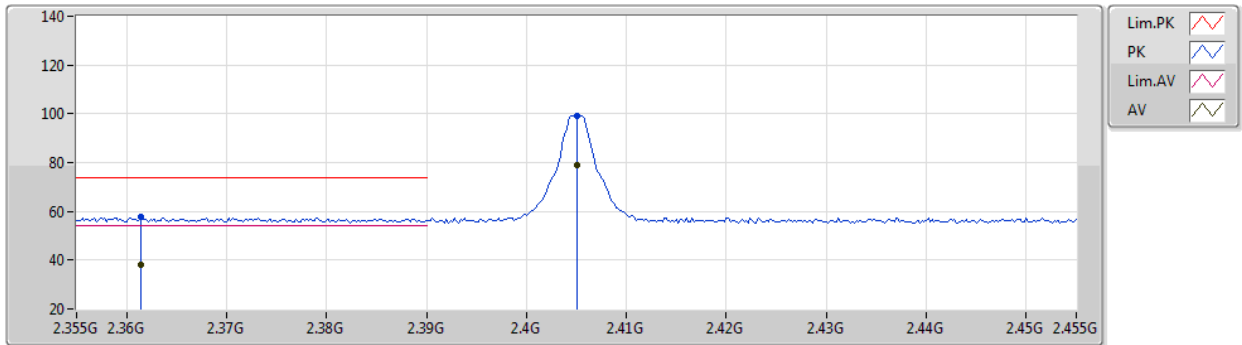
**Result**

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
Zigbee	-	-	-	-	-	-	-	-	-	-	-
2405MHz	Pass	AV	2.3598G	46.09	54.00	-7.91	3	Vertical	187	1.64	-
2405MHz	Pass	AV	2.405G	95.06	Inf	-Inf	3	Vertical	187	1.64	-
2405MHz	Pass	PK	2.3614G	57.91	74.00	-16.09	3	Vertical	187	1.64	-
2405MHz	Pass	PK	2.405G	99.07	Inf	-Inf	3	Vertical	187	1.64	-
2405MHz	Pass	AV	2.373G	46.25	54.00	-7.75	3	Horizontal	71	1.49	-
2405MHz	Pass	AV	2.405G	100.04	Inf	-Inf	3	Horizontal	71	1.49	-
2405MHz	Pass	PK	2.3726G	58.11	74.00	-15.89	3	Horizontal	71	1.49	-
2405MHz	Pass	PK	2.4056G	104.11	Inf	-Inf	3	Horizontal	71	1.49	-
2405MHz	Pass	AV	4.81088G	29.74	54.00	-24.26	3	Vertical	315	1.48	-
2405MHz	Pass	PK	4.81081G	43.94	74.00	-30.06	3	Vertical	315	1.48	-
2405MHz	Pass	AV	4.81065G	29.72	54.00	-24.28	3	Horizontal	292	1.48	-
2405MHz	Pass	PK	4.8089G	43.28	74.00	-30.72	3	Horizontal	292	1.48	-
2440MHz	Pass	AV	2.3408G	46.17	54.00	-7.83	3	Vertical	277	1.53	-
2440MHz	Pass	AV	2.44G	93.65	Inf	-Inf	3	Vertical	277	1.53	-
2440MHz	Pass	AV	2.4884G	45.86	54.00	-8.14	3	Vertical	277	1.53	-
2440MHz	Pass	PK	2.3764G	58.77	74.00	-15.23	3	Vertical	277	1.53	-
2440MHz	Pass	PK	2.44G	97.37	Inf	-Inf	3	Vertical	277	1.53	-
2440MHz	Pass	PK	2.492G	58.20	74.00	-15.80	3	Vertical	277	1.53	-
2440MHz	Pass	AV	2.3432G	46.15	54.00	-7.85	3	Horizontal	310	1.10	-
2440MHz	Pass	AV	2.44G	100.81	Inf	-Inf	3	Horizontal	310	1.10	-
2440MHz	Pass	AV	2.4864G	45.89	54.00	-8.11	3	Horizontal	310	1.10	-
2440MHz	Pass	PK	2.3568G	57.99	74.00	-16.01	3	Horizontal	310	1.10	-
2440MHz	Pass	PK	2.4404G	104.55	Inf	-Inf	3	Horizontal	310	1.10	-
2440MHz	Pass	PK	2.4892G	57.39	74.00	-16.61	3	Horizontal	310	1.10	-
2440MHz	Pass	AV	4.88232G	30.07	54.00	-23.93	3	Vertical	258	1.80	-
2440MHz	Pass	PK	4.87979G	43.59	74.00	-30.41	3	Vertical	258	1.80	-
2440MHz	Pass	AV	4.87831G	30.01	54.00	-23.99	3	Horizontal	142	1.49	-
2440MHz	Pass	PK	4.87968G	43.44	74.00	-30.56	3	Horizontal	142	1.49	-
2480MHz	Pass	AV	2.4804G	78.23	Inf	-Inf	3	Vertical	190	1.99	-
2480MHz	Pass	AV	2.4835G	45.45	54.00	-8.55	3	Vertical	190	1.99	-
2480MHz	Pass	PK	2.4804G	98.23	Inf	-Inf	3	Vertical	190	1.99	-
2480MHz	Pass	PK	2.4835G	65.45	74.00	-8.55	3	Vertical	190	1.99	-
2480MHz	Pass	AV	2.4806G	82.33	Inf	-Inf	3	Horizontal	70	2.78	-
2480MHz	Pass	AV	2.4835G	49.25	54.00	-4.75	3	Horizontal	70	2.78	-
2480MHz	Pass	PK	2.4806G	102.33	Inf	-Inf	3	Horizontal	70	2.78	-
2480MHz	Pass	PK	2.4835G	69.25	74.00	-4.75	3	Horizontal	70	2.78	-
2480MHz	Pass	AV	4.9594G	29.43	54.00	-24.57	3	Vertical	43	1.87	-
2480MHz	Pass	PK	4.9594G	49.43	74.00	-24.57	3	Vertical	43	1.87	-
2480MHz	Pass	AV	4.95758G	29.51	54.00	-24.49	3	Horizontal	42	1.49	-
2480MHz	Pass	PK	4.95758G	49.51	74.00	-24.49	3	Horizontal	42	1.49	-

Zigbee

2405MHz_TX

08/07/2020

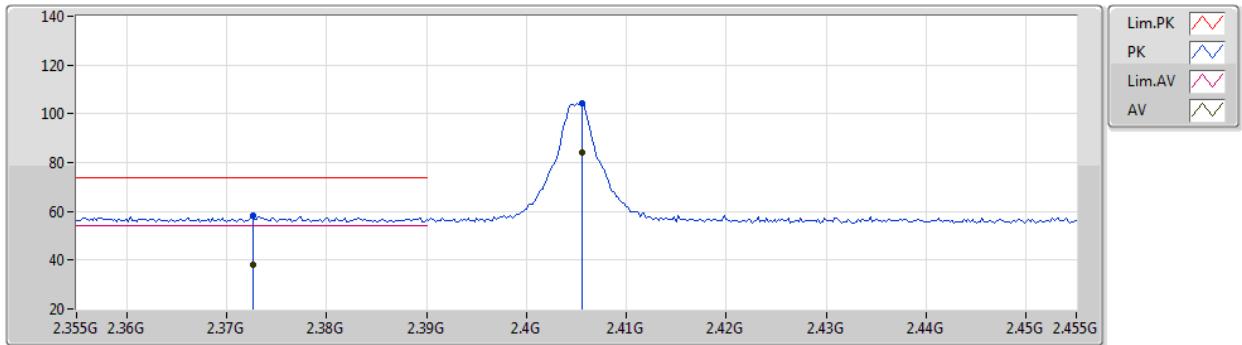


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3614G	37.91	54.00	-16.09	33.61	3	Vertical	187	1.64	-	4.30	27.68	5.93	-
AV	2.405G	79.07	Inf	-Inf	33.55	3	Vertical	187	1.64	-	45.52	27.58	5.97	-
PK	2.3614G	57.91	74.00	-16.09	33.61	3	Vertical	187	1.64	-	24.30	27.68	5.93	-
PK	2.405G	99.07	Inf	-Inf	33.55	3	Vertical	187	1.64	-	65.52	27.58	5.97	-

Zigbee

2405MHz_TX

08/07/2020

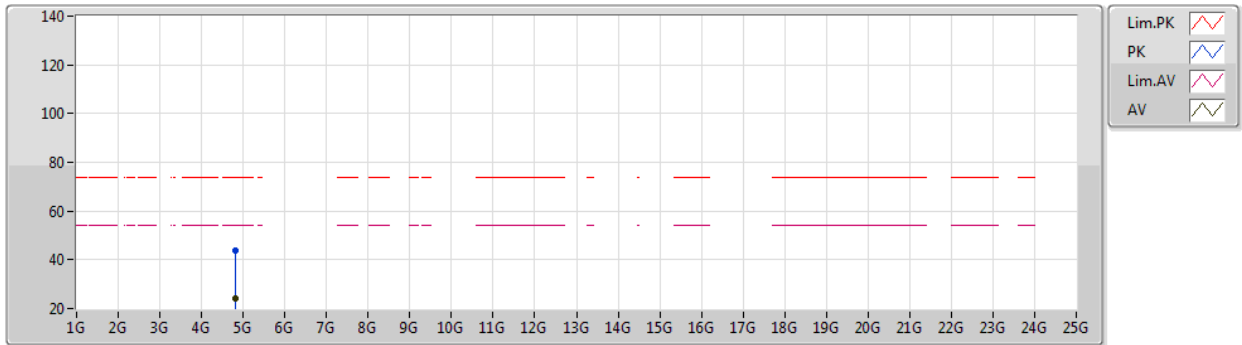


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3726G	38.11	54.00	-15.89	33.59	3	Horizontal	71	1.49	-	4.52	27.65	5.94	-
AV	2.4056G	84.11	Inf	-Inf	33.55	3	Horizontal	71	1.49	-	50.56	27.58	5.97	-
PK	2.3726G	58.11	74.00	-15.89	33.59	3	Horizontal	71	1.49	-	24.52	27.65	5.94	-
PK	2.4056G	104.11	Inf	-Inf	33.55	3	Horizontal	71	1.49	-	70.56	27.58	5.97	-

Zigbee

2405MHz_TX

08/07/2020

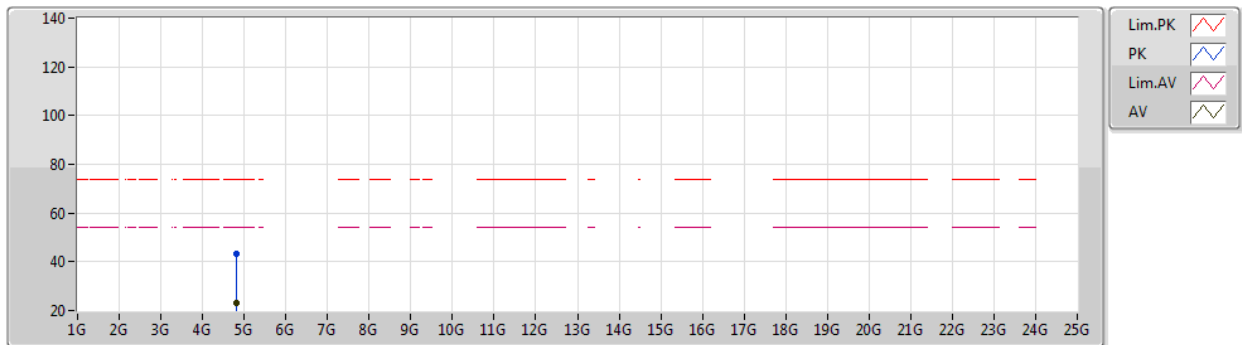


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.81081G	23.94	54.00	-30.06	5.30	3	Vertical	315	1.48	-	18.64	30.94	8.26	33.90
PK	4.81081G	43.94	74.00	-30.06	5.30	3	Vertical	315	1.48	-	38.64	30.94	8.26	33.90

Zigbee

2405MHz_TX

08/07/2020

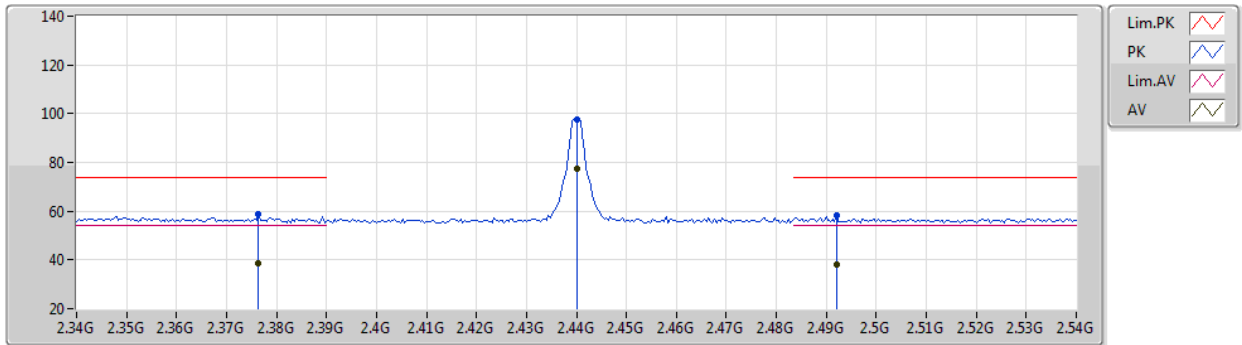


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.8089G	23.28	54.00	-30.72	5.29	3	Horizontal	292	1.48	-	17.99	30.94	8.26	33.91
PK	4.8089G	43.28	74.00	-30.72	5.29	3	Horizontal	292	1.48	-	37.99	30.94	8.26	33.91

Zigbee

2440MHz_TX

08/07/2020

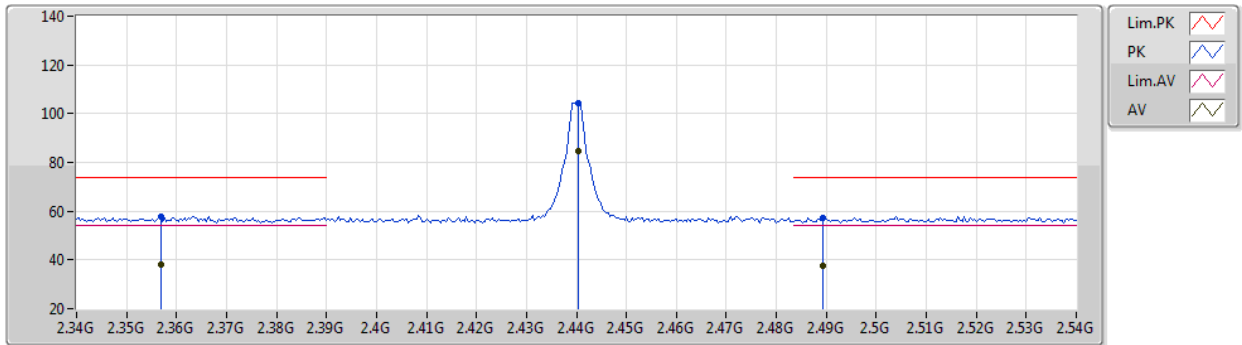


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3764G	38.77	54.00	-15.23	33.59	3	Vertical	277	1.53	-	5.18	27.65	5.94	-
AV	2.44G	77.37	Inf	-Inf	33.45	3	Vertical	277	1.53	-	43.92	27.44	6.01	-
AV	2.492G	38.20	54.00	-15.80	33.47	3	Vertical	277	1.53	-	4.73	27.40	6.07	-
PK	2.3764G	58.77	74.00	-15.23	33.59	3	Vertical	277	1.53	-	25.18	27.65	5.94	-
PK	2.44G	97.37	Inf	-Inf	33.45	3	Vertical	277	1.53	-	63.92	27.44	6.01	-
PK	2.492G	58.20	74.00	-15.80	33.47	3	Vertical	277	1.53	-	24.73	27.40	6.07	-

Zigbee

2440MHz_TX

08/07/2020

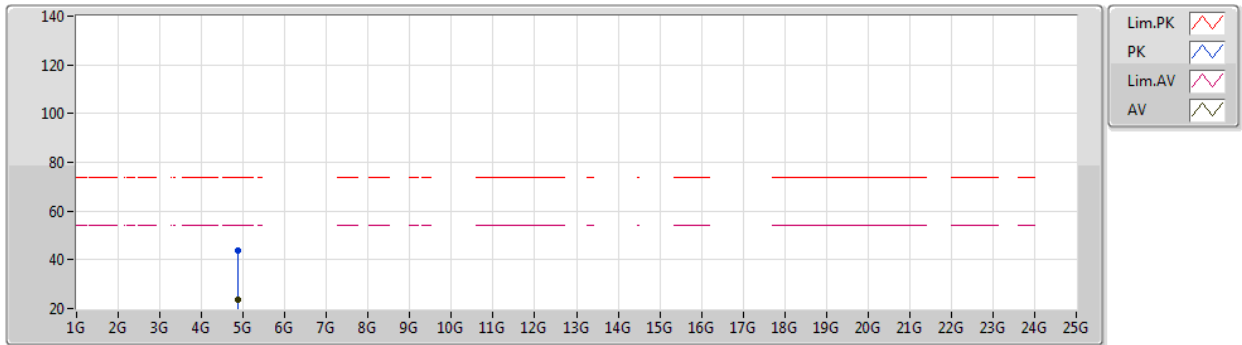


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3568G	37.99	54.00	-16.01	33.62	3	Horizontal	310	1.10	-	4.37	27.69	5.93	-
AV	2.4404G	84.55	Inf	-Inf	33.45	3	Horizontal	310	1.10	-	51.10	27.44	6.01	-
AV	2.4892G	37.39	54.00	-16.61	33.47	3	Horizontal	310	1.10	-	3.92	27.40	6.07	-
PK	2.3568G	57.99	74.00	-16.01	33.62	3	Horizontal	310	1.10	-	24.37	27.69	5.93	-
PK	2.4404G	104.55	Inf	-Inf	33.45	3	Horizontal	310	1.10	-	71.10	27.44	6.01	-
PK	2.4892G	57.39	74.00	-16.61	33.47	3	Horizontal	310	1.10	-	23.92	27.40	6.07	-

Zigbee

2440MHz_TX

08/07/2020

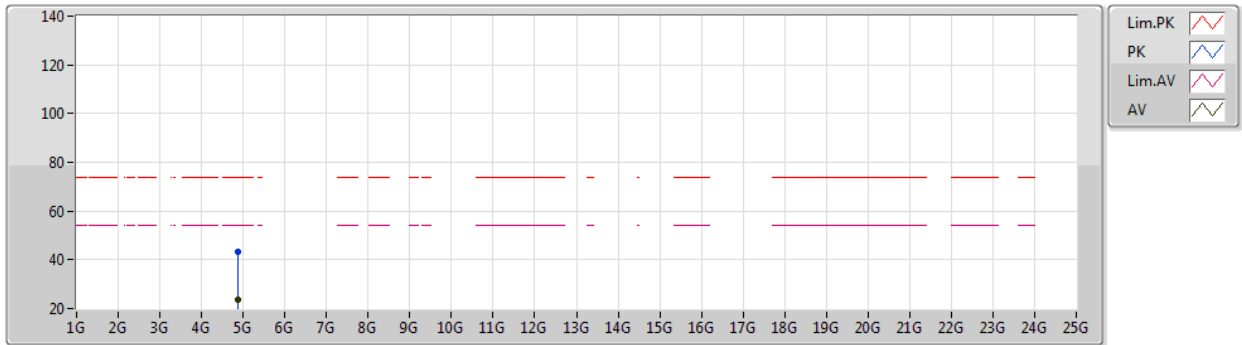


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.87979G	23.59	54.00	-30.41	5.47	3	Vertical	258	1.80	-	18.12	31.04	8.30	33.87
PK	4.87979G	43.59	74.00	-30.41	5.47	3	Vertical	258	1.80	-	38.12	31.04	8.30	33.87

Zigbee

2440MHz_TX

08/07/2020

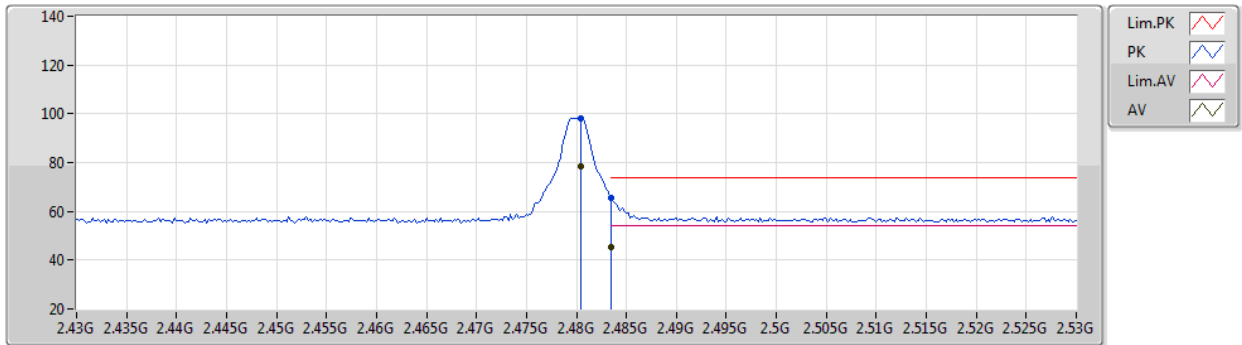


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.87968G	23.44	54.00	-30.56	5.47	3	Horizontal	142	1.49	-	17.97	31.04	8.30	33.87
PK	4.87968G	43.44	74.00	-30.56	5.47	3	Horizontal	142	1.49	-	37.97	31.04	8.30	33.87

Zigbee

2480MHz_TX

08/07/2020

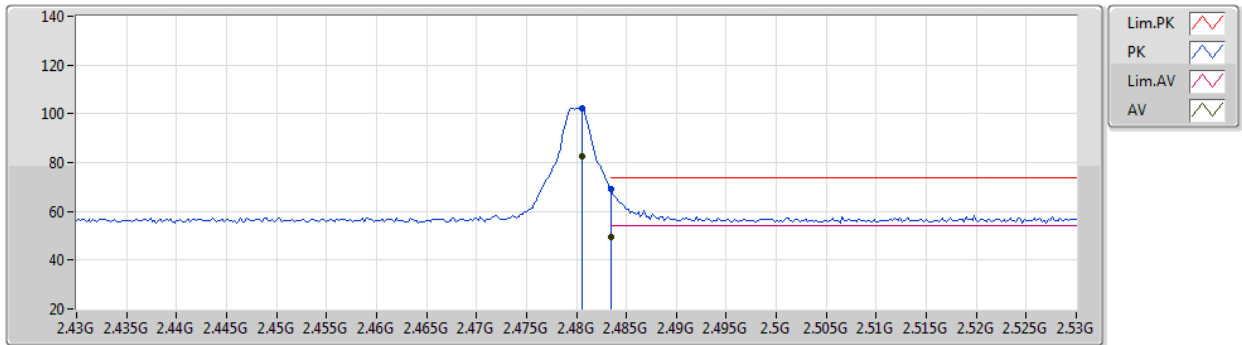


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.4804G	78.23	Inf	-Inf	33.46	3	Vertical	190	1.99	-	44.77	27.40	6.06	-
AV	2.4835G	45.45	54.00	-8.55	33.46	3	Vertical	190	1.99	-	11.99	27.40	6.06	-
PK	2.4804G	98.23	Inf	-Inf	33.46	3	Vertical	190	1.99	-	64.77	27.40	6.06	-
PK	2.4835G	65.45	74.00	-8.55	33.46	3	Vertical	190	1.99	-	31.99	27.40	6.06	-

Zigbee

2480MHz_TX

08/07/2020

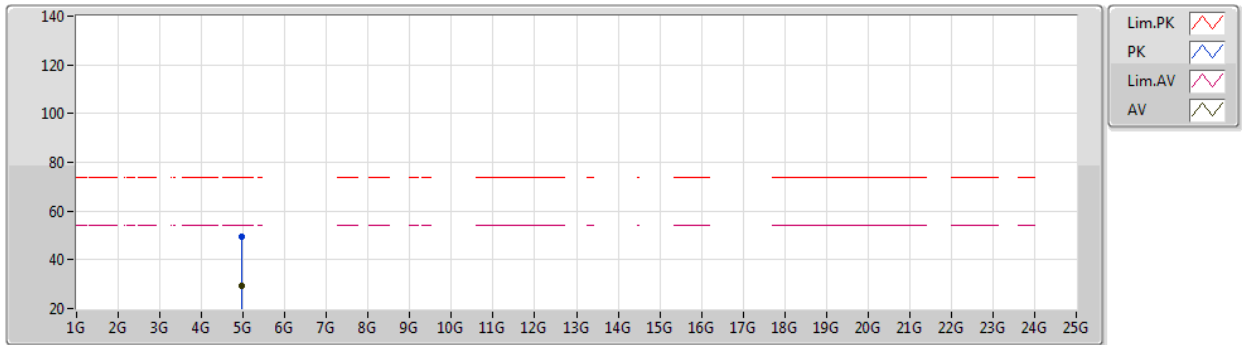


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.4806G	82.33	Inf	-Inf	33.46	3	Horizontal	70	2.78	-	48.87	27.40	6.06	-
AV	2.4835G	49.25	54.00	-4.75	33.46	3	Horizontal	70	2.78	-	15.79	27.40	6.06	-
PK	2.4806G	102.33	Inf	-Inf	33.46	3	Horizontal	70	2.78	-	68.87	27.40	6.06	-
PK	2.4835G	69.25	74.00	-4.75	33.46	3	Horizontal	70	2.78	-	35.79	27.40	6.06	-

Zigbee

2480MHz_TX

08/07/2020

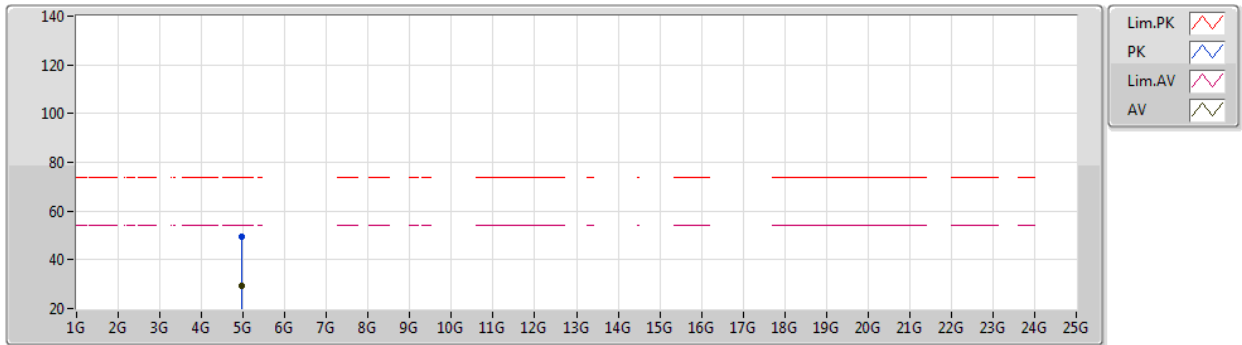


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.9594G	29.43	54.00	-24.57	5.75	3	Vertical	43	1.87	-	23.68	31.22	8.35	33.82
PK	4.9594G	49.43	74.00	-24.57	5.75	3	Vertical	43	1.87	-	43.68	31.22	8.35	33.82

Zigbee

2480MHz_TX

08/07/2020



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	4.95758G	29.51	54.00	-24.49	5.74	3	Horizontal	42	1.49	-	23.77	31.22	8.35	33.83
PK	4.95758G	49.51	74.00	-24.49	5.74	3	Horizontal	42	1.49	-	43.77	31.22	8.35	33.83