



FCC RADIO TEST REPORT

FCC ID : 2AWNEKDE20101
Equipment : Home Entertainment Hub
Brand Name : E1 by Ericsson
Model Name : KDE20101
Applicant : Ericsson AB
21-23 Torshamnsgatan Stockholm, 16480 Sweden
Manufacturer : CyberTAN Technology Inc.
No. 99, Park Avenue III Science-based Industrial
Park Hsinchu Taiwan 308
Standard : 47 CFR FCC Part 15.247

The product was received on Mar. 30, 2020, and testing was started from Mar. 30, 2020 and completed on May 04, 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 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: Sam Chen

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



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TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB-A10_9 Ver1.0



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:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Sam Chen

Report Producer: Wendy Pan



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	2405-2475	11-25 [15]

Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	Zigbee	2	1TX

Note:

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

1.1.2 Antenna Information

Ant.	Port	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	
						WLAN 2.4GHz	Zigbee
1	1	Airgain	N2415GM	PCB Antenna	I-PEX	2.6	-
2	1	Airgain	N2420ZC	PCB Antenna	I-PEX	-	2.4

Note: The above information was declared by manufacturer.
Only Port 1 can be used as transmitting/receiving antenna.

1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) $\geq 1/T$
Zigbee	1	0	n/a (DC $\geq$ 0.98)	n/a (DC $\geq$ 0.98)

Note:

- ♦ DC is Duty Cycle.
- ♦ DCF is Duty Cycle Factor.

**1.1.4 EUT Operational Condition**

EUT Power Type	From Power Adapter		
Beamforming Function	☐ With beamforming	☒ Without beamforming	
Function	☒ Point-to-multipoint	☐ Point-to-point	
Test Software Version	SmartRF Studio 2.11.0		

Note: The above information was declared by manufacturer.

1.1.5 The EUT Support Function Information

Module	Function	Camera
AX (Contain module FCC ID: PD9AX200NG)	WLAN 2.4GHz, WLAN 5GHz and Bluetooth	Support
AI	WLAN 2.4GHz, Zigbee	Does not support



1.2 Applicable 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.

- ♦ FCC KDB 558074 D01 v05r02
- ♦ FCC 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
☒	JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. TEL : 886-3-656-9065 FAX : 886-3-656-9085

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH02-CB	Justin Lin	23-24.4°C / 53-56 %	Mar. 30, 2020 ~ Apr. 30, 2020
Radiated<1GHz	03CH05-CB	Justin Lin	22.2-23.4°C / 55-60%	Mar. 30, 2020 ~ May 04, 2020
Radiated>1GHz	03CH01-CB	Justin Lin	23-24°C / 52-55%	Mar. 30, 2020 ~ May 04, 2020
AC Conduction	CO01-CB	Wei Li	23-24°C / 71-72%	Apr. 01, 2020

Test site Designation No. TW0006 with FCC.

Test site registered number IC 4086D with Industry Canada.

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)	2.0 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	4.3 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	4.3 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	5.1 dB	Confidence levels of 95%
Conducted Emission	2.4 dB	Confidence levels of 95%
Output Power Measurement	1.5 dB	Confidence levels of 95%
Power Density Measurement	2.4 dB	Confidence levels of 95%
Bandwidth Measurement	2%	Confidence levels of 95%



2 Test Configuration of EUT

2.1 Test Channel Mode

Mode	Power Setting
Zigbee	-
2405MHz	21.1
2440MHz	21.1
2475MHz	21.1

2.2 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	Normal Link				
Test Mode	SD R/W	Camera	AX Module	AI Module	Adapter
1	●	●	● WLAN 5GHz + Bluetooth	-	Adapter 1 + US cable
2	●	●	● WLAN 2.4GHz + Bluetooth	-	Adapter 1 + US cable
Mode 1 has been evaluated to be the worst case between Mode 1~2, thus measurement for Mode 3 will follow this same test mode.					
3	●	-	● WLAN 5GHz + Bluetooth	● WLAN 2.4GHz + Zigbee	Adapter 1 + US cable
Mode 3 has been evaluated to be the worst case among Mode 1~3, thus measurement for Mode 4 ~ Mode 5 will follow this same test mode.					
4	●	-	● WLAN 5GHz + Bluetooth	● WLAN 2.4GHz + Zigbee	Adapter 2 + US cable
5	●	-	● WLAN 5GHz + Bluetooth	● WLAN 2.4GHz + Zigbee	Adapter 3 + US cable
For operating mode 3 is the worst case and it was record in this test report.					



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	EUT - Zigbee (AI module) + Adapter 1
2	EUT - Zigbee (AI module) + Adapter 2
3	EUT - Zigbee (AI module) + Adapter 3
Mode 2 has been evaluated to be the worst case among Mode 1~3, thus measurement for Mode 4 will follow this same test mode.	
4	EUT - WLAN 2.4GHz (AI module) + Adapter 2
For operating mode 2 is the worst case and it was record in this test report.	
Operating Mode > 1GHz	CTX

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation
Operating Mode	
1	AX module (WLAN 2.4GHz + Bluetooth) + AI module (WLAN 2.4GHz + Zigbee)
2	AX module (WLAN 5GHz + Bluetooth) + AI module (WLAN 2.4GHz + Zigbee)
Refer to Sporton Test Report No.: FA031633 for Co-location RF Exposure Evaluation.	

Note: The EUT can only be used at Z axis.



2.3 EUT Operation during Test

For CTX Mode:

The EUT was programmed to be in continuously transmitting mode.

For Normal Link:

During the test, the EUT operation to normal function.

2.4 Accessories

Power	Brand	Model	Rating	DC Power cable length
Adapter 1	FSP	FSP100-A1AR3	Input: 100-240V ~ 50-60Hz, 1.4A Output: 5V, 3A / 9V, 3A 12V, 3A / 15V, 3A 20V, 5.0A 100W MAX.	Non-Shielded 1.6m
Adapter 2	DELTA	ADH-100CR B	Input: 100-240V ~ 1.8A , 50-60Hz Output: 5.0V, 3.0A 15.0W or 9.0V, 3.0A 15.0V, 3.0A or 20.0V, 5.0A, 100.0W	Non-Shielded 1.6m
Adapter 3	LEI	NUA0-B200500VI1	Input: 100-240V ~ 50/60Hz, 1.5A Output: 20V, 5A or 15V, 3A or 9V, 3A or 5V, 3A	Non-Shielded 1.6m
Others				
HDMI cable*1: Shielded, 1.5m				
USB-C to USB-A cable*1: Shielded, 0.1m				
Power cable*1: Non-Shielded, 1m				



2.5 Support Equipment

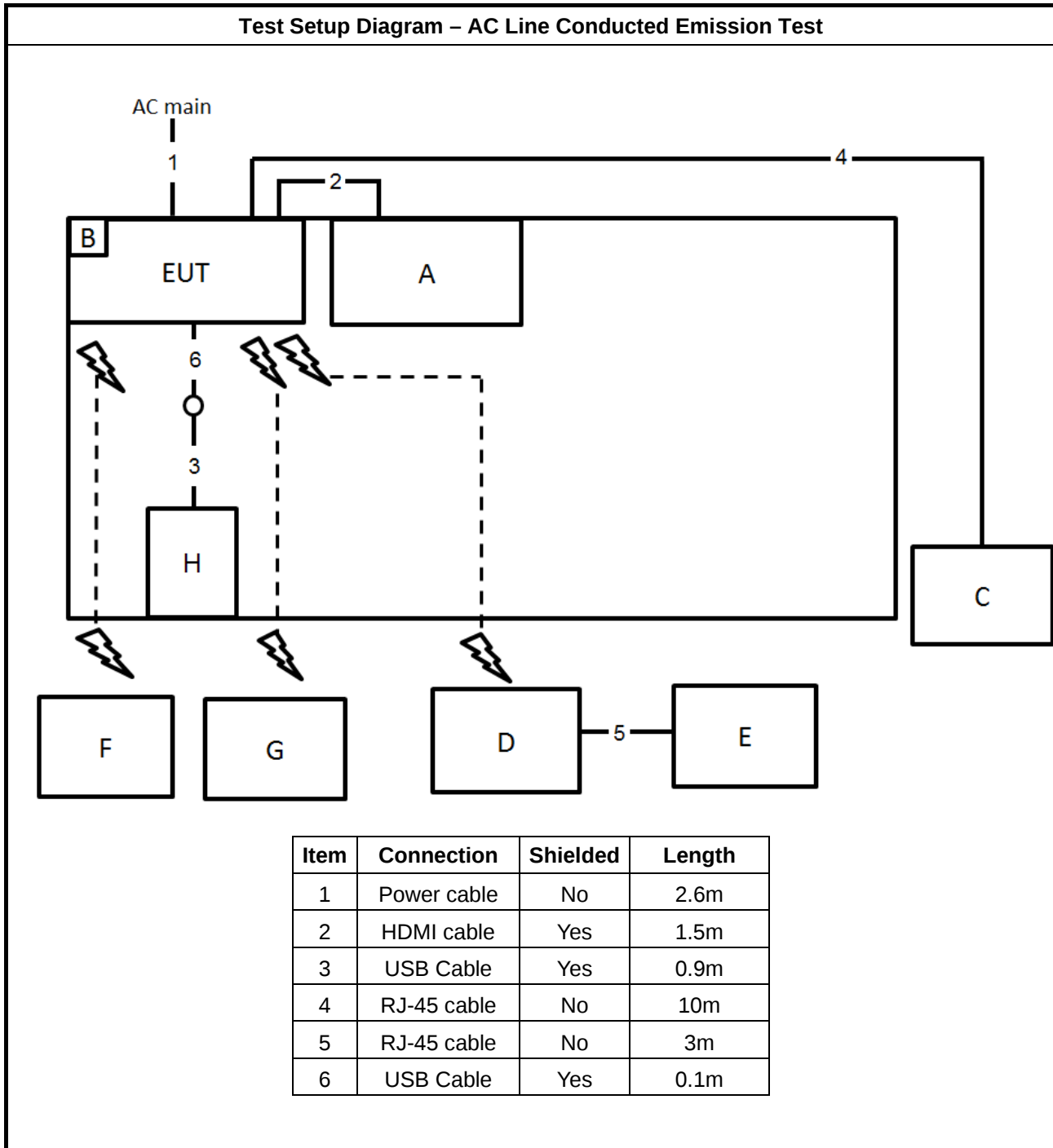
For AC Conduction:

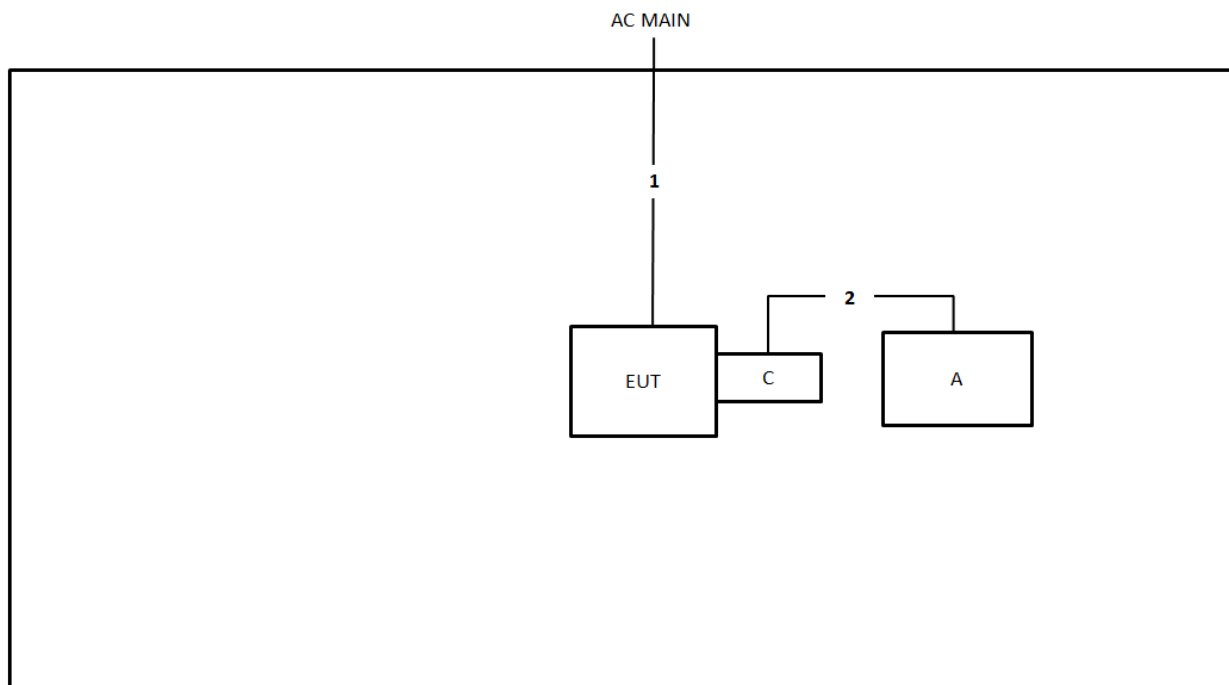
Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	TV	ASUS	VP28U	N/A
B	Micro SD Card	Transcend	TS16GUSDHC10	N/A
C	LAN NB	DELL	E6430	N/A
D	AP Router	ASUS	RT-AX88U	MSQ-RTAXHP00
E	AP NB	DELL	E6430	N/A
F	Zigbee Device	Climax	PSM-29-ZBSR	N/A
G	Bluetooth Speaker	Wei Xuan	S06B	N/A
H	Air mouse	HENGCHUANGYU	HCY-57B	2AOBUHCY-57B

For Radiated and RF Conducted:

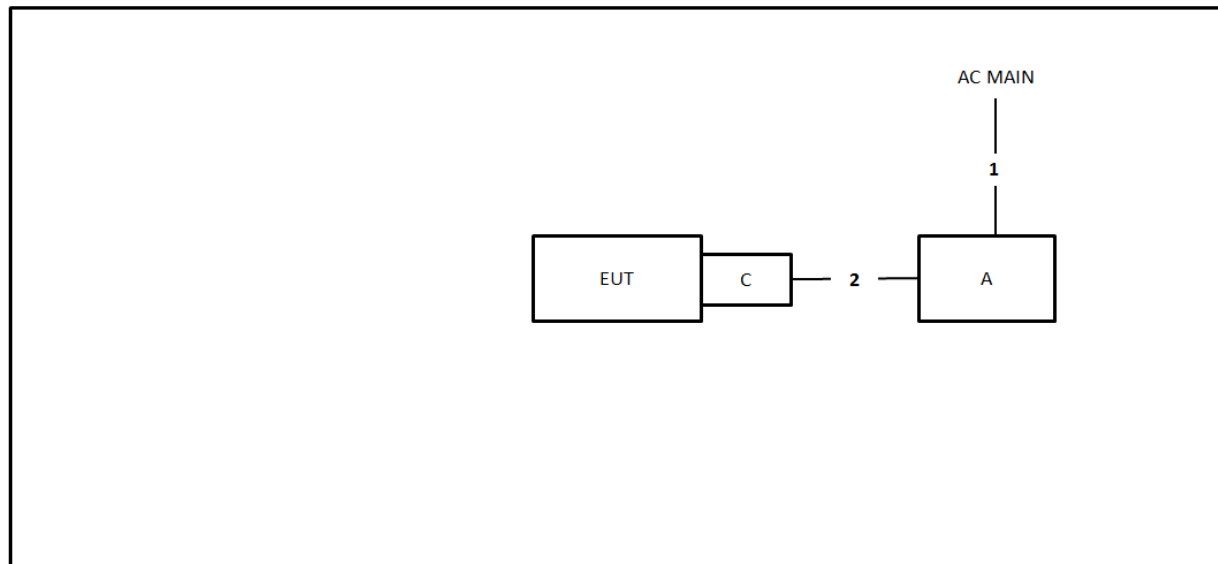
Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	Notebook	DELL	E4300	N/A
C	Test Fixture	Cybertan	0X1894	N/A

2.6 Test Setup Diagram



Test Setup Diagram - Radiated Test < 1GHz


Item	Connection	Shielded	Length
1	Power cable	No	2.6m
2	USB cable	Yes	1.6m

Test Setup Diagram - Radiated Test > 1GHz


Item	Connection	Shielded	Length
1	Power cable	No	2.6m
2	USB cable	Yes	1.6m



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.

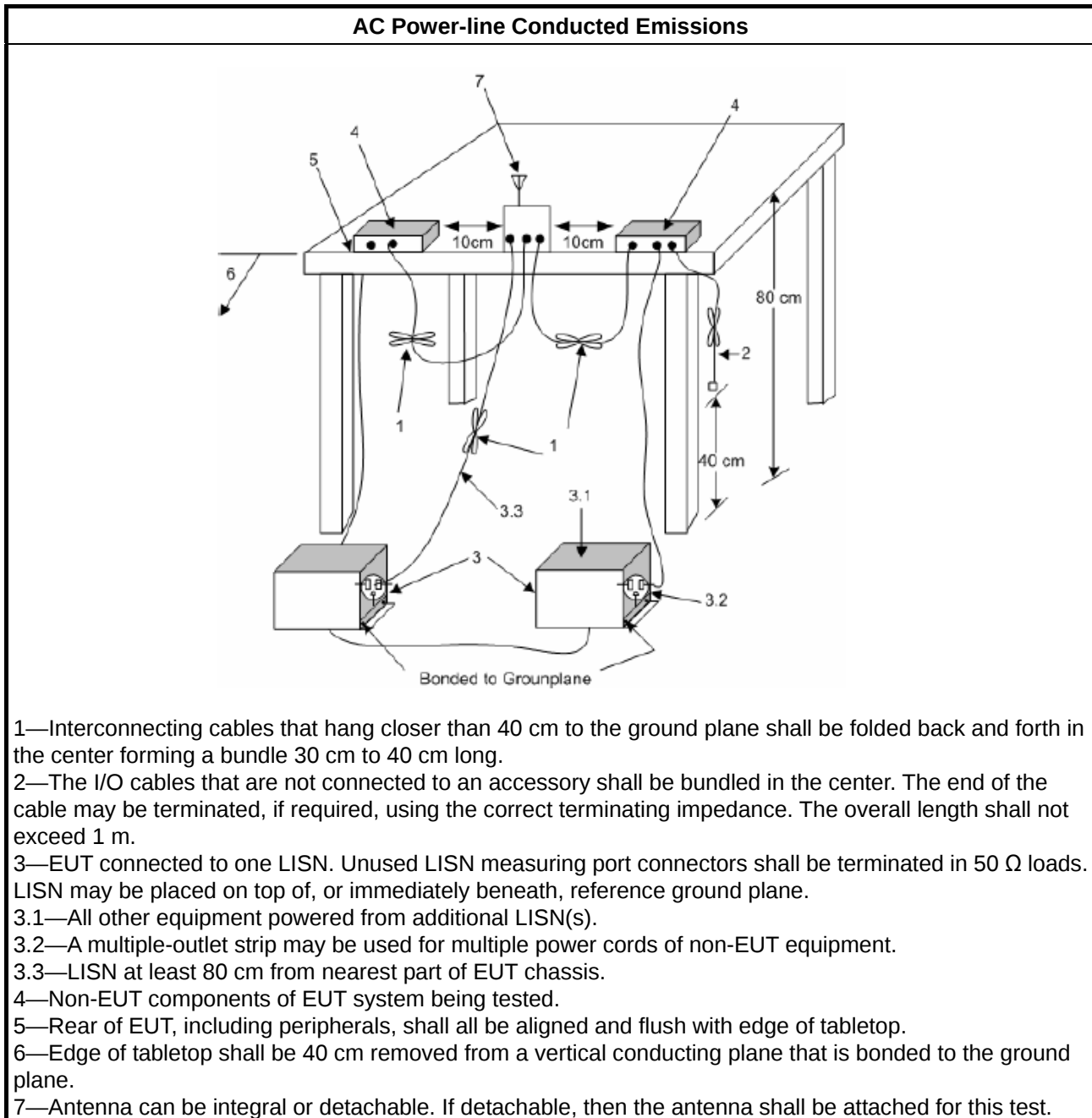
3.1.2 Measuring Instruments

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 Measurement Results Calculation

The measured Level is calculated using:

- Corrected Reading (dBuV) = LISN Factor + Cable Loss + Read Level = Level
- Margin = - Limit + (Read Level + LISN Factor + Cable Loss)

3.1.6 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.

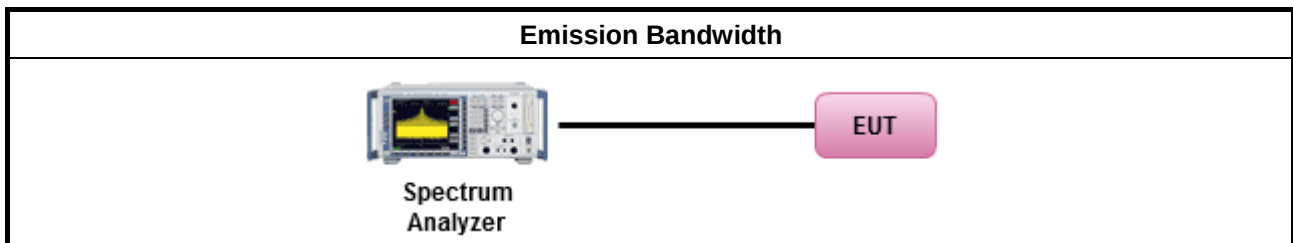
3.2.2 Measuring Instruments

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 FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.1 Option 1 for 6 dB bandwidth measurement.
☐	Refer as FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.2 Option 2 for 6 dB bandwidth measurement.
☐	Refer as ANSI C63.10, clause 6.9.1 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
P_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, G_{TX} = the maximum transmitting antenna directional gain in dBi.	

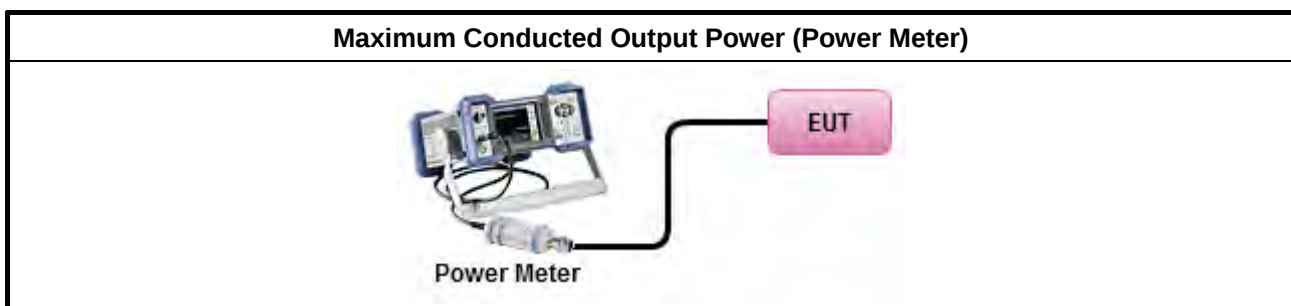
3.3.2 Measuring Instruments

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 FCC KDB 558074, clause 8.3.1.1 & C63.10 clause 11.9.1.1 (RBW ≥ EBW method).
☐	Refer as FCC KDB 558074, clause 8.3.1.3 & C63.10 clause 11.9.1.3 (peak power meter).
Maximum Conducted Output Power	
[duty cycle ≥ 98% or external video / power trigger]	
☐	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.2 Method AVGSA-1.
☐	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.3 Method AVGSA-1A. (alternative)
duty cycle < 98% and average over on/off periods with duty factor	
☐	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.4 Method AVGSA-2.
☐	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.5 Method AVGSA-2A (alternative)
☐	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.6 Method AVGSA-3
☐	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.7 Method AVGSA-3A (alternative)
Measurement using a power meter (PM)	
☐	Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.1 Method AVGPM (using an RF average power meter).
☒	Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.2 Method AVGPM-G (using an gate RF average power meter).
For conducted measurement.	
If the EUT supports multiple transmit chains using options given below: Refer as FCC 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

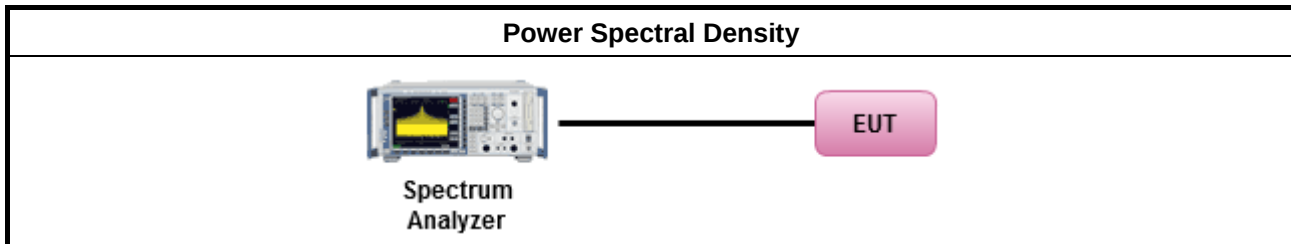
3.4.2 Measuring Instruments

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 FCC KDB 558074, clause 8.4 & C63.10 clause 11.10 Method Max. PSD.
▪ For conducted measurement.	
▪ If The EUT supports multiple transmit chains using options given below:	
☐	Option 1: Measure and sum the spectra across the outputs. Refer as FCC 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.
☐	Option 2: Measure and sum spectral maxima across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs. These operations shall be performed separately over frequency spans that have different out-of-band or spurious emission limits,
☐	Option 3: Measure and add 10 log(N) dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with the limit.

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 (dBc)
Peak output power procedure	20
Average output power procedure	30
Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level. Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.	

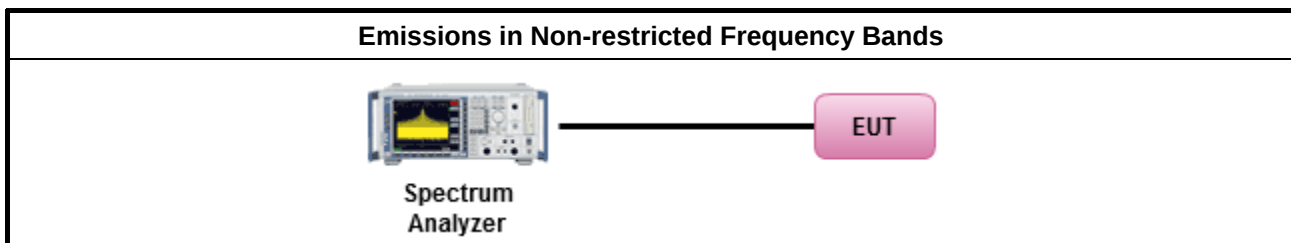
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

Test Method
Refer as FCC KDB 558074, clause 8.5 for unwanted emissions into non-restricted bands.

3.5.4 Test Setup



3.5.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix E



3.6 Emissions in Restricted Frequency Bands

3.6.1 Emissions in Restricted Frequency Bands Limit

Restricted Band Emissions Limit			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

Note 3: Using the distance of 1m during the test for above 18 GHz, and the test value to correct for the distance factor at 3m.

3.6.2 Measuring Instruments

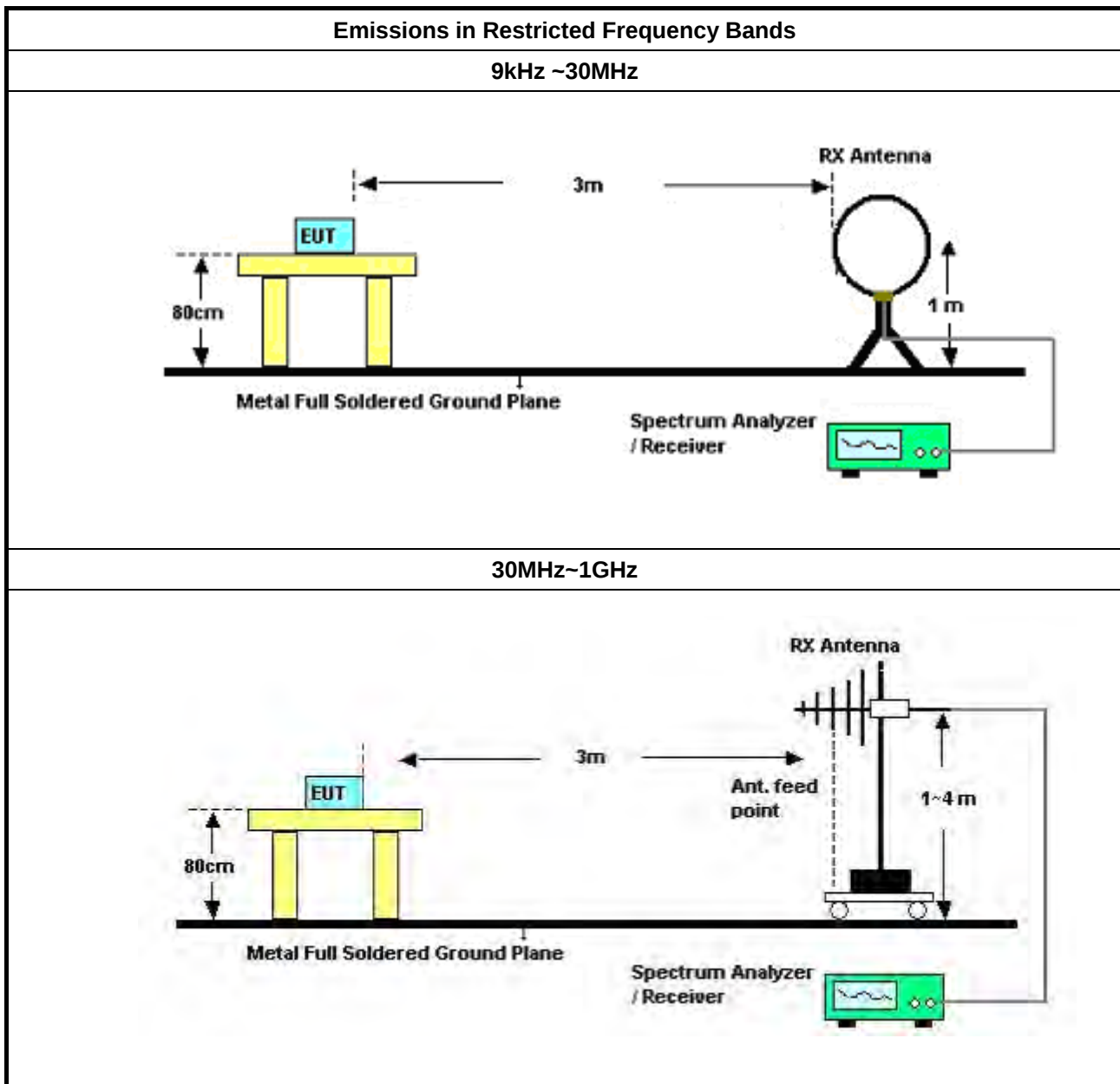
Refer a test equipment and calibration data table in this test report.

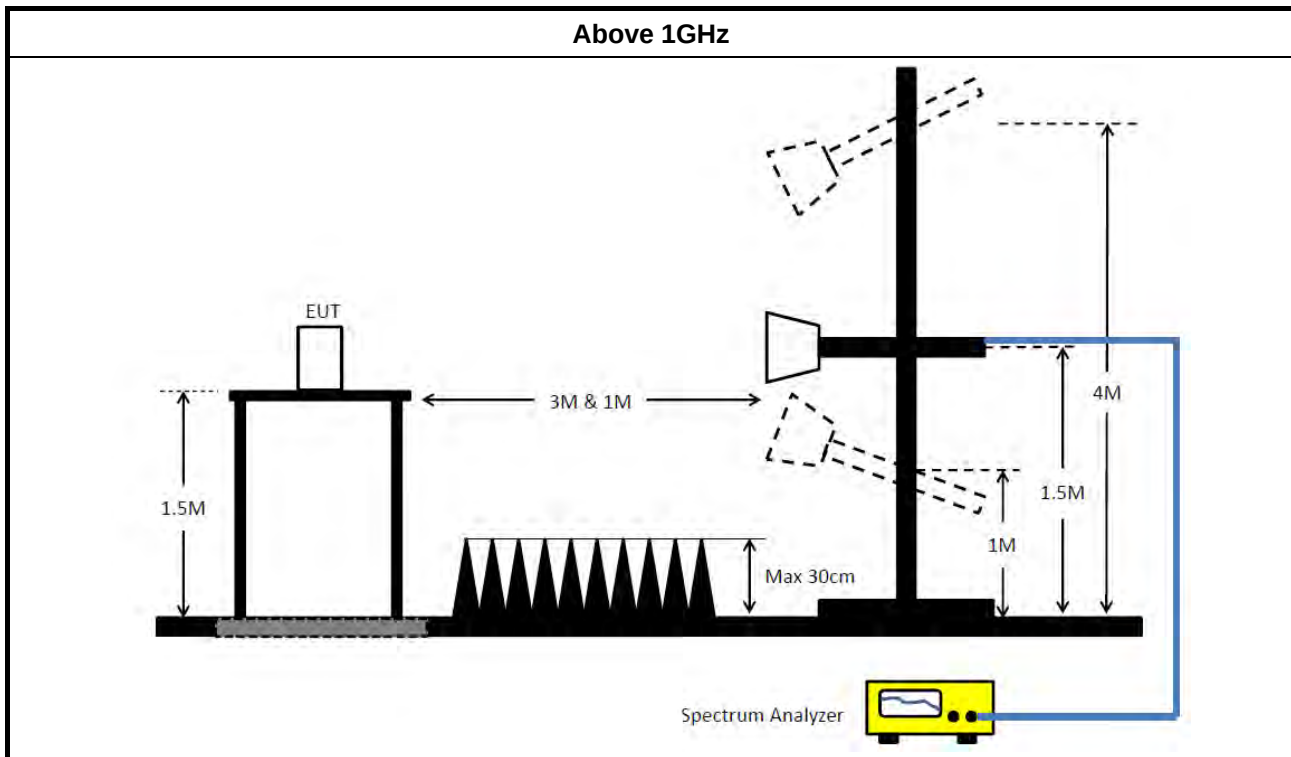


3.6.3 Test Procedures

Test Method	
The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].	
Refer as ANSI C63.10, clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.	
For the transmitter unwanted emissions shall be measured using following options below:	
	Refer as FCC KDB 558074, clause 8.6 for unwanted emissions into restricted bands.
☐	Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.1(trace averaging for duty cycle $\geq 98\%$).
☐	Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.2(trace averaging + duty factor).
☒	Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.3(Reduced VBW $\geq 1/T$).
☐	Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). VBW $\geq 1/T$, where T is pulse time.
☐	Refer as ANSI C63.10, clause 7.5 average value of pulsed emissions.
☒	Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.4 measurement procedure peak limit.
For the transmitter band-edge emissions shall be measured using following options below:	
	Refer as FCC KDB 558074 clause 8.7 & c63.10 clause 11.13.1, 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 FCC KDB 558074, clause 8.7 (ANSI C63.10, clause 6.10.6) for marker-delta method for band-edge measurements.
	Refer as FCC KDB 558074, clause 8.7 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).
	For conducted unwanted emissions into restricted bands (absolute emission limits). Devices with multiple transmit chains using options given below: (1) Measure and sum the spectra across the outputs or (2) Measure and add 10 log(N) dB
	For FCC KDB 662911 The methodology described here may overestimate array gain, thereby resulting in apparent failures to satisfy the out-of-band limits even if the device is actually compliant. In such cases, compliance may be demonstrated by performing radiated tests around the frequencies at which the apparent failures occurred.

3.6.4 Test Setup





3.6.5 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamplifier Factor (if applicable) = Level.

3.6.6 Emissions in Restricted Frequency Bands (Below 30MHz)

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to KDB414788 Radiated Test Site, and the result came out very similar.

All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

The radiated emissions were investigated from 9 kHz or the lowest frequency generated within the device, up to the 10 harmonic or 40 GHz, whichever is appropriate.

3.6.7 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix F



4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.45GHz	Feb. 26, 2020	Feb. 25, 2021	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 25, 2019	Dec. 24, 2020	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Feb. 25, 2020	Feb. 24, 2021	Conduction (CO01-CB)
Pulse Limiter	Rohde&Schwarz	ESH3-Z2	100430	9kHz ~ 30MHz	Jan. 31, 2020	Jan. 30, 2021	Conduction (CO01-CB)
COND Cable	Woken	Cable	Low cable-CO01	9kHz ~ 30MHz	May 21, 2019	May 20, 2020	Conduction (CO01-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	N.C.R.	Conduction (CO01-CB)
Loop Antenna	Teseq	HLA 6120	31244	9kHz - 30 MHz	Mar. 16, 2020	Mar. 15, 2021	Radiation (03CH05-CB)
Bilog Antenna with 6dB Attenuator	TESEQ & EMCI	CBL 6112D & N-6-06	35236 & AT-N0610	30MHz ~ 2GHz	Mar. 27, 2020	Mar. 26, 2021	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC330N	980331	20MHz ~ 3GHz	May 01, 2019	Apr. 30, 2020	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC330N	980332	20MHz ~ 3GHz	Apr. 28, 2020	Apr. 27, 2021	Radiation (03CH05-CB)
Spectrum Analyzer	R&S	FSP40	100304	9kHz ~ 40GHz	Aug. 15, 2019	Aug. 14, 2020	Radiation (03CH05-CB)
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	May 15, 2019	May 14, 2020	Radiation (03CH05-CB)
RF Cable-low	Woken	RG402	LOW Cable-04+23	30MHz~1GHz	Oct. 07, 2019	Oct. 06, 2020	Radiation (03CH05-CB)
Horn Antenna	ETS-LINDGREEN	3115	00075790	750MHz ~ 18GHz	Nov. 04, 2019	Nov. 03, 2020	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jun. 27, 2019	Jun. 26, 2020	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 08, 2020	Jan. 07, 2021	Radiation (03CH01-CB)
Pre-Amplifier	MITEQ	TTA1840-35-HG	1864479	18GHz ~ 40GHz	Jul. 03, 2019	Jul. 02, 2020	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100019	9kHz ~ 40GHz	Jun. 19, 2019	Jun. 18, 2020	Radiation (03CH01-CB)
RF Cable-high	Woken	RG402	High Cable-16	1 GHz ~ 18 GHz	Oct. 07, 2019	Oct. 06, 2020	Radiation (03CH01-CB)
RF Cable-high	Woken	RG402	High Cable-16+17	1 GHz ~ 18 GHz	Oct. 07, 2019	Oct. 06, 2020	Radiation (03CH01-CB)
RF Cable-high	Woken	RG402	High Cable-40G#1	18GHz ~ 40 GHz	Jul. 24, 2019	Jul. 23, 2020	Radiation (03CH01-CB)



Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
RF Cable-high	Woken	RG402	High Cable-40G#2	18GHz ~ 40 GHz	Jul. 24, 2019	Jul. 23, 2020	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV40	101027	9kHz~40GHz	Jul. 02, 2019	Jul. 01, 2020	Conducted (TH02-CB)
Power Sensor	Anritsu	MA2411B	1126203	300MHz~40GHz	Sep. 11, 2019	Sep. 10, 2020	Conducted (TH02-CB)
Power Meter	Anritsu	ML2495A	1210004	300MHz~40GHz	Sep. 11, 2019	Sep. 10, 2020	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-01	1 GHz – 26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-02	1 GHz – 26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-3	1 GHz – 26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-04	1 GHz – 26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-05	1 GHz – 26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH02-CB)

Note: Calibration Interval of instruments listed above is one year.

N.C.R. means Non-Calibration required.

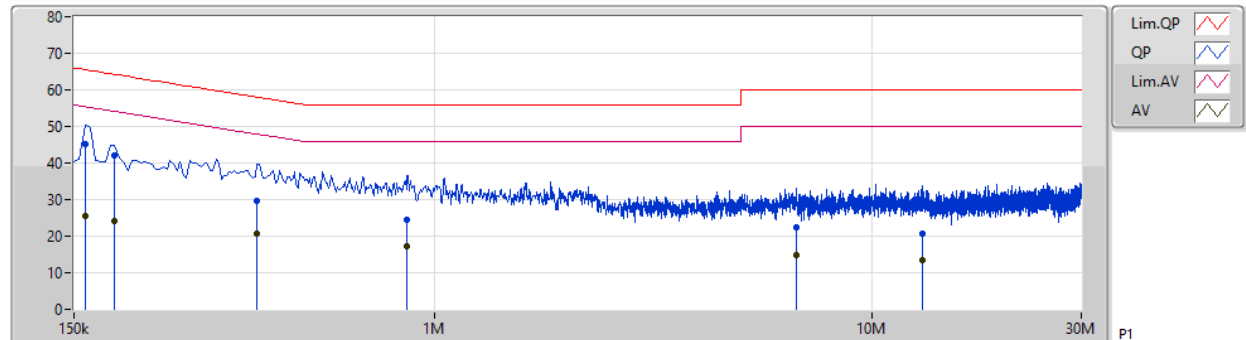


Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition
Mode 3	Pass	QP	217.5k	48.34	62.92	-14.58	9.89	Neutral

Mode 3

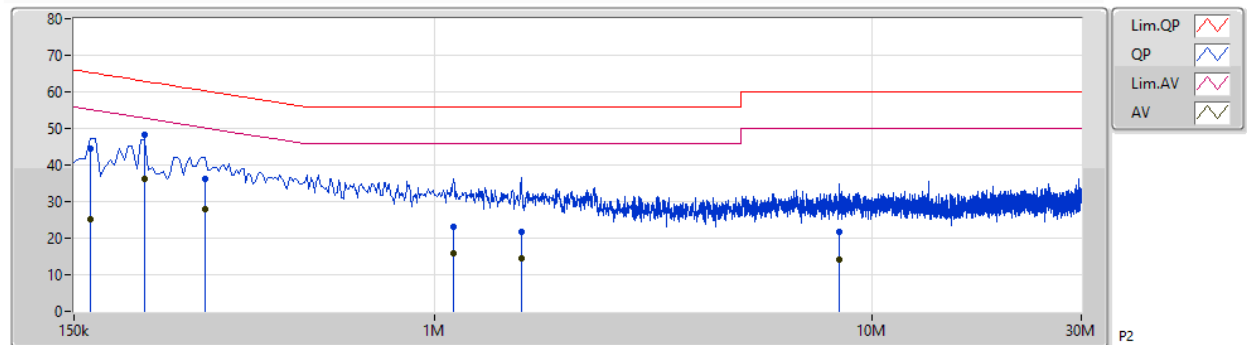
01/04/2020



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	AF (dB)	CL (dB)	AT (dB)			
QP	159k	45.03	65.52	-20.49	9.90	Line	"Worst"	35.13	0.05	0.06	9.79			
AV	159k	25.50	55.52	-30.02	9.90	Line	-	15.60	0.05	0.06	9.79			
QP	186k	42.13	64.20	-22.07	9.89	Line	-	32.24	0.04	0.06	9.79			
AV	186k	24.04	54.20	-30.16	9.89	Line	-	14.15	0.04	0.06	9.79			
QP	393k	29.57	58.01	-28.44	9.91	Line	-	19.66	0.04	0.06	9.81			
AV	393k	20.60	48.01	-27.41	9.91	Line	-	10.69	0.04	0.06	9.81			
QP	865.5k	24.43	56.00	-31.57	9.96	Line	-	14.47	0.05	0.09	9.82			
AV	865.5k	17.07	46.00	-28.93	9.96	Line	-	7.11	0.05	0.09	9.82			
QP	6.716M	22.48	60.00	-37.52	10.21	Line	-	12.27	0.14	0.20	9.87			
AV	6.716M	14.76	50.00	-35.24	10.21	Line	-	4.55	0.14	0.20	9.87			
QP	13.002M	20.58	60.00	-39.42	10.34	Line	-	10.24	0.20	0.22	9.92			
AV	13.002M	13.61	50.00	-36.39	10.34	Line	-	3.27	0.20	0.22	9.92			

Mode 3

01/04/2020



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	AF (dB)	CL (dB)	AT (dB)			
QP	163.5k	44.35	65.27	-20.92	9.89	Neutral	-	34.46	0.04	0.06	9.79			
AV	163.5k	25.18	55.27	-30.09	9.89	Neutral	-	15.29	0.04	0.06	9.79			
QP	217.5k	48.34	62.92	-14.58	9.89	Neutral	"Worst"	38.45	0.04	0.06	9.79			
AV	217.5k	36.13	52.92	-16.79	9.89	Neutral	-	26.24	0.04	0.06	9.79			
QP	298.5k	36.26	60.28	-24.02	9.90	Neutral	-	26.36	0.04	0.06	9.80			
AV	298.5k	27.78	50.28	-22.50	9.90	Neutral	-	17.88	0.04	0.06	9.80			
QP	1.104M	23.14	56.00	-32.86	9.97	Neutral	-	13.17	0.06	0.09	9.82			
AV	1.104M	16.01	46.00	-29.99	9.97	Neutral	-	6.04	0.06	0.09	9.82			
QP	1.577M	21.58	56.00	-34.42	10.01	Neutral	-	11.57	0.07	0.11	9.83			
AV	1.577M	14.65	46.00	-31.35	10.01	Neutral	-	4.64	0.07	0.11	9.83			
QP	8.426M	21.66	60.00	-38.34	10.28	Neutral	-	11.38	0.16	0.22	9.90			
AV	8.426M	14.29	50.00	-35.71	10.28	Neutral	-	4.01	0.16	0.22	9.90			

Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
Zigbee	1.656M	3.455M	3M46G1D	1.613M	3.236M

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;

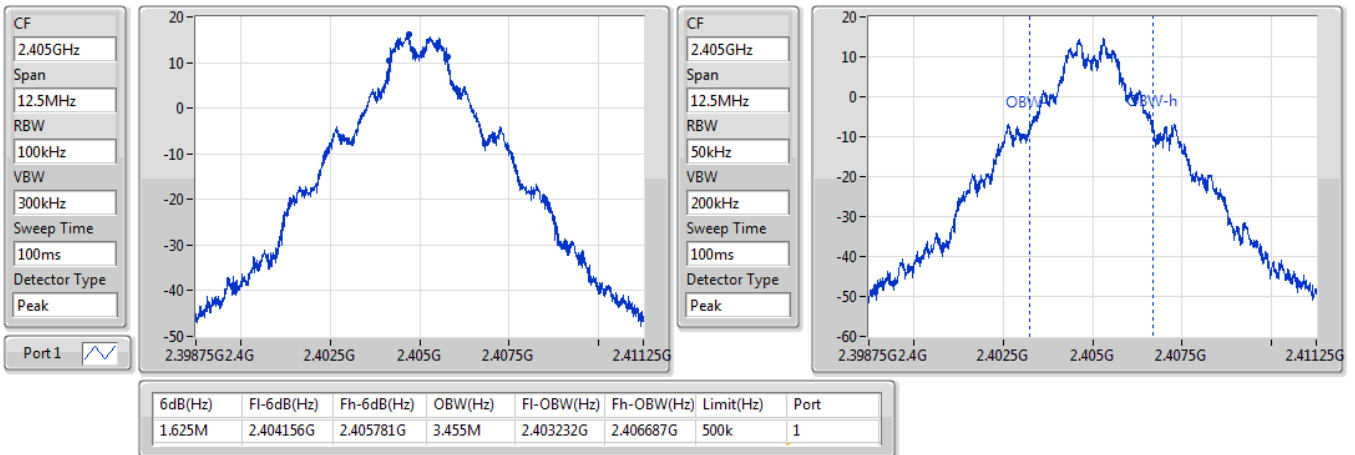
Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
Zigbee	-	-	-	-
2405MHz	Pass	500k	1.625M	3.455M
2440MHz	Pass	500k	1.613M	3.348M
2475MHz	Pass	500k	1.656M	3.236M

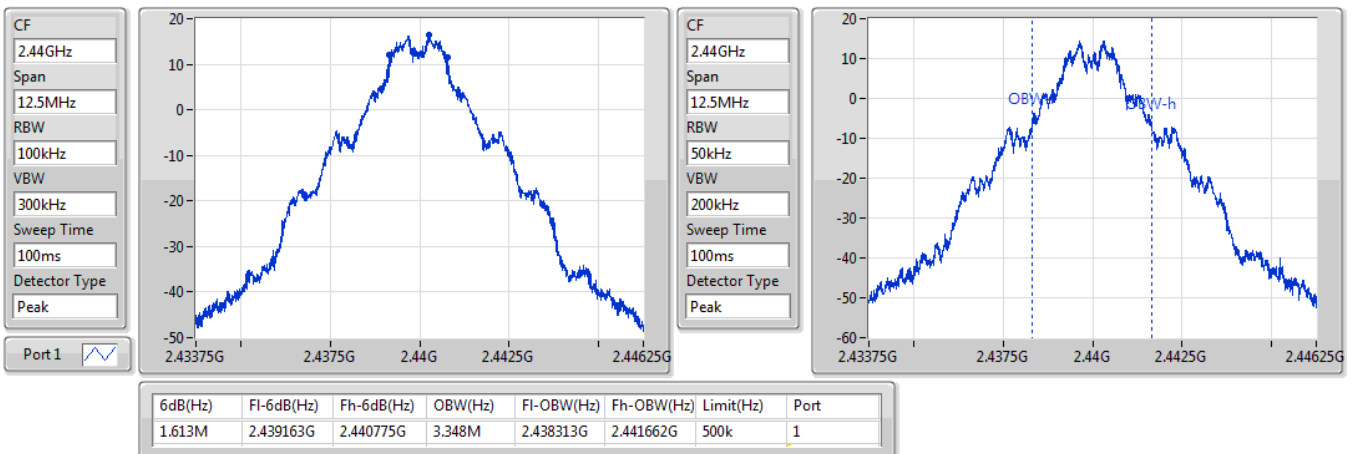
Port X-N dB = Port X 6dB down bandwidth; **Port X-OBW** = Port X 99% occupied bandwidth;

Zigbee
2405MHz
EBW

28/04/2020


Zigbee
2440MHz
EBW

28/04/2020

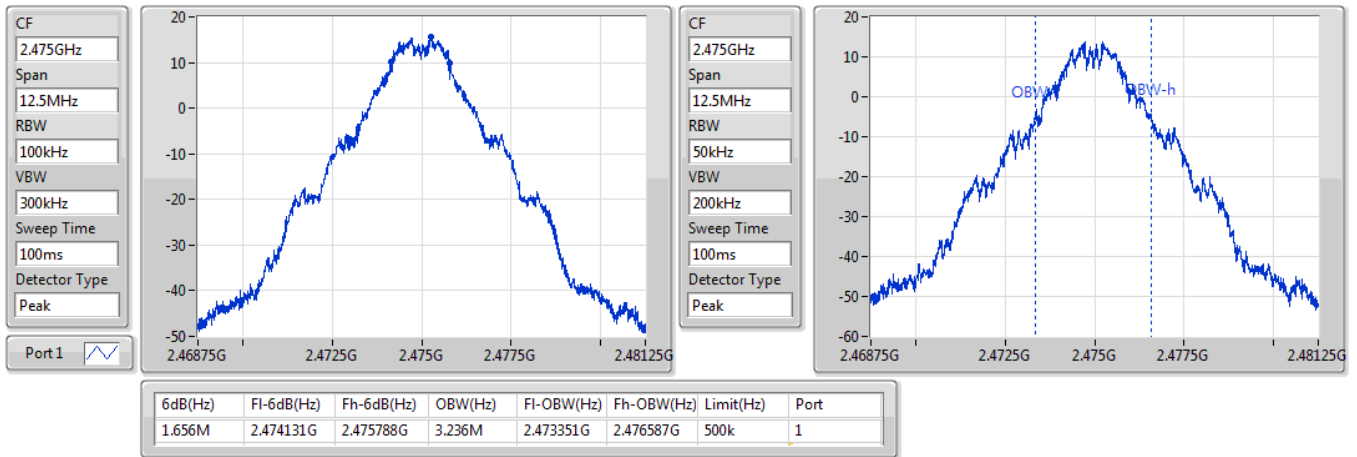


Zigbee

2475MHz

EBW

28/04/2020



**Summary**

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
Zigbee	20.70	0.11749

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Total Power (dBm)	Power Limit (dBm)
Zigbee	-	-	-	-	-
2405MHz	Pass	2.40	20.70	20.70	30.00
2440MHz	Pass	2.40	20.51	20.51	30.00
2475MHz	Pass	2.40	19.91	19.91	30.00

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

Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
Zigbee	4.27

RBW = 500 kHz for 5.725-5.85GHz band / 1MHz for other band;

Result

Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)
Zigbee	-	-	-	-	-
2405MHz	Pass	2.40	4.27	4.27	8.00
2440MHz	Pass	2.40	3.35	3.35	8.00
2475MHz	Pass	2.40	3.72	3.72	8.00

DG = Directional Gain; **RBW** = 500 kHz for 5.725-5.85GHz band / 1MHz for other band;

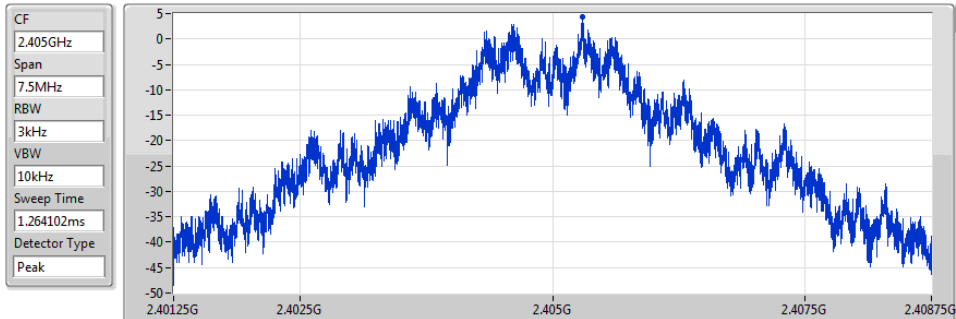
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; **Port X** = Port X power density;

Zigbee

2405MHz

PSD

28/04/2020



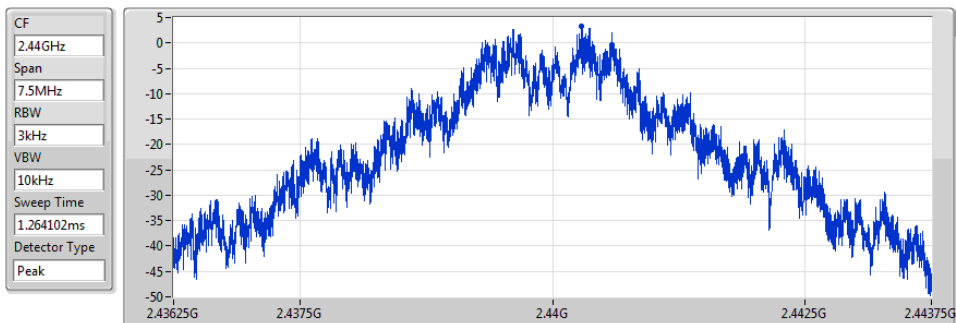
Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
4.27	4.27	4.27

Zigbee

2440MHz

PSD

28/04/2020



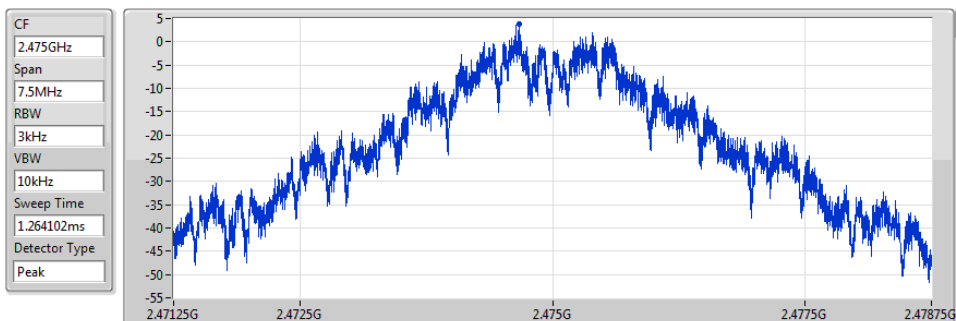
Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
3.35	3.35	3.35

Zigbee

2475MHz

PSD

28/04/2020



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
3.72	3.72	3.72



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	2.40526G	15.49	-14.51	75.73M	-47.37	2.4G	-37.78	2.4G	-35.78	2.49097G	-49.08	16.52349G	-41.38	1

Result

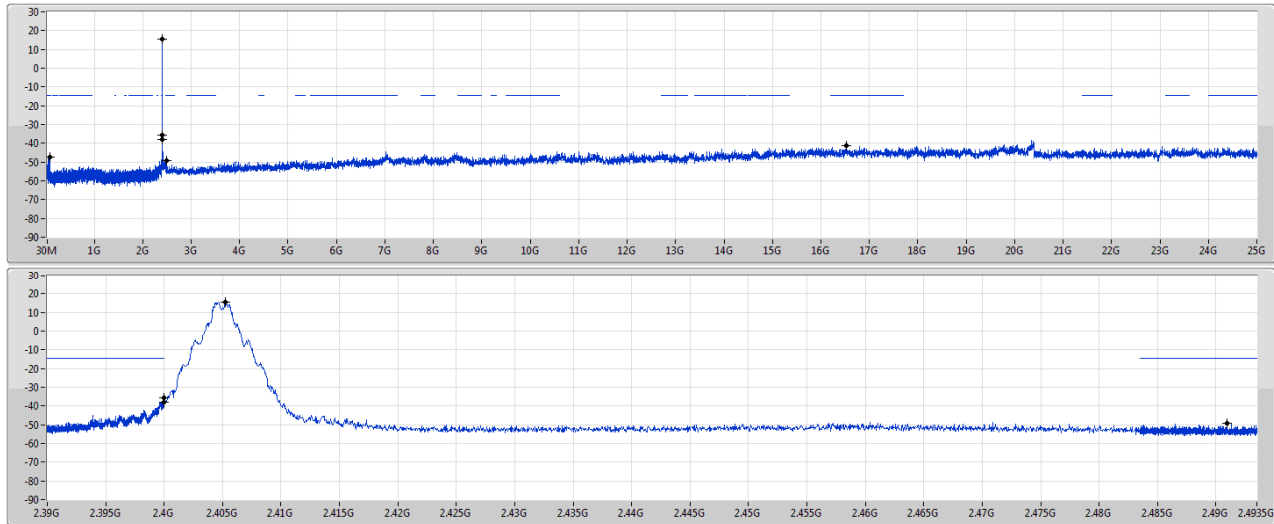
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
Zigbee	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2405MHz	Pass	2.40526G	15.49	-14.51	75.73M	-47.37	2.4G	-37.78	2.4G	-35.78	2.49097G	-49.08	16.52349G	-41.38	1
2440MHz	Pass	2.40526G	15.49	-14.51	49.77M	-45.80	2.3939G	-48.37	2.4G	-51.83	2.48624G	-48.71	16.5882G	-41.53	1
2475MHz	Pass	2.40526G	15.49	-14.51	57.14M	-45.62	2.39264G	-50.80	2.4835G	-45.99	2.48368G	-44.82	16.54881G	-41.34	1

Zigbee 2405MHz

CSE NdB

28/04/2020

Port1



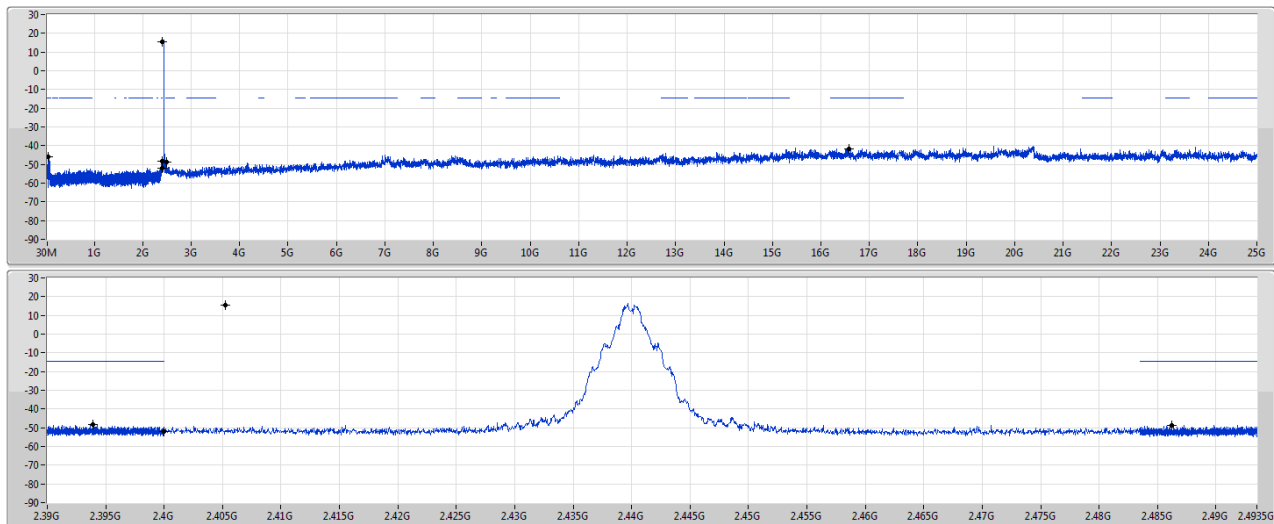
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40526G	15.49	-14.51	75.73M	-47.37	2.4G	-37.78	2.4G	-35.78	2.49097G	-49.08	16.52349G	-41.38	1

Zigbee 2440MHz

CSE NdB

28/04/2020

Port1



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
2.40526G	15.49	-14.51	49.77M	-45.80	2.3939G	-48.37	2.4G	-51.83	2.48624G	-48.71	16.5882G	-41.53	1

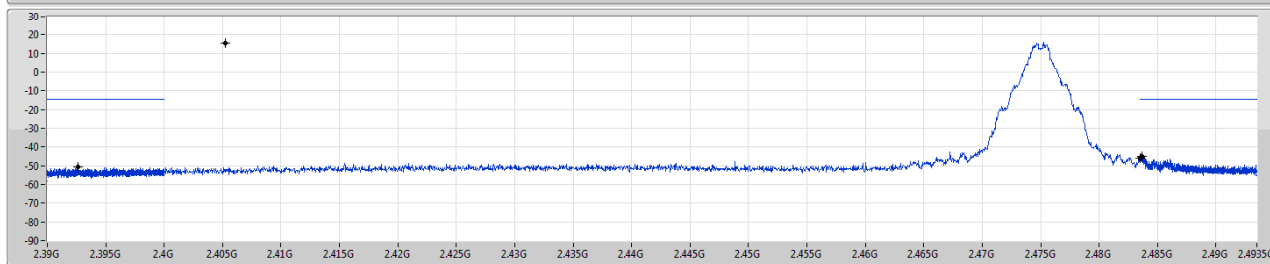
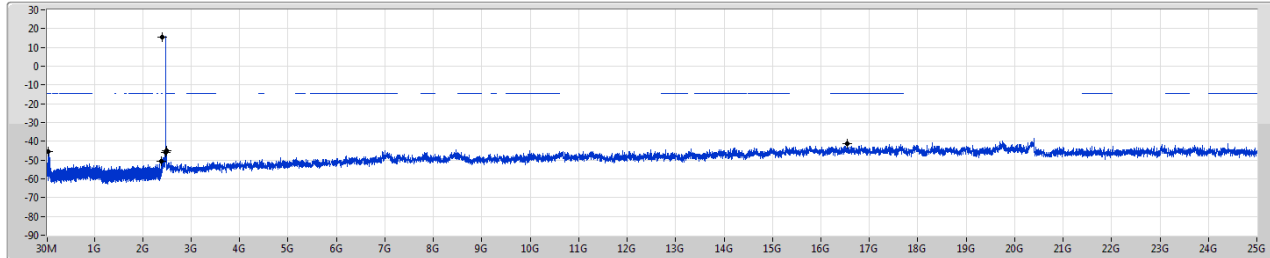
Zigbee

2475MHz

CSE NdB

28/04/2020

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
2.40526G	15.49	-14.51	57.14M	-45.62	2.39264G	-50.80	2.4835G	-45.99	2.48368G	-44.82	16.54881G	-41.34	1



Radiated Emissions below 1GHz

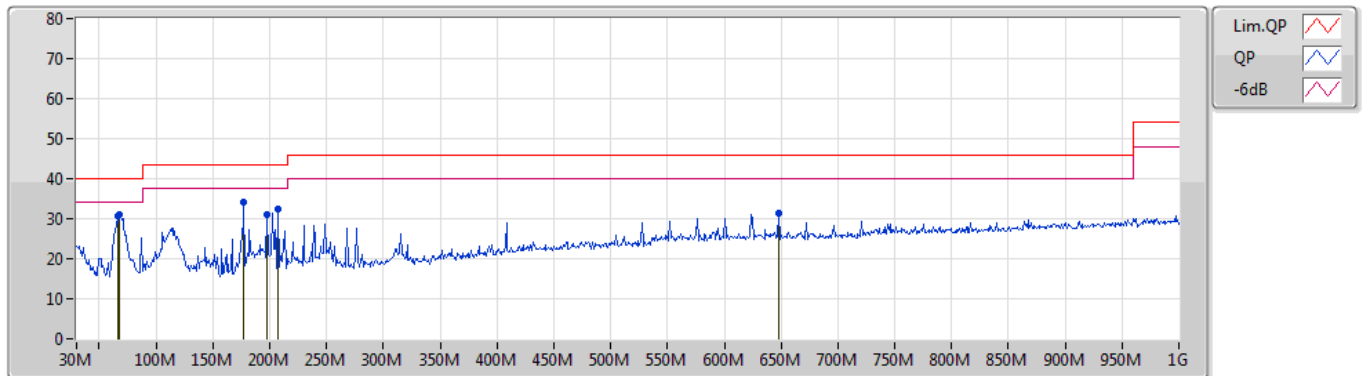
Appendix F.1

Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 2	Pass	PK	408.3M	38.05	46.00	-7.95	Horizontal

Mode 2

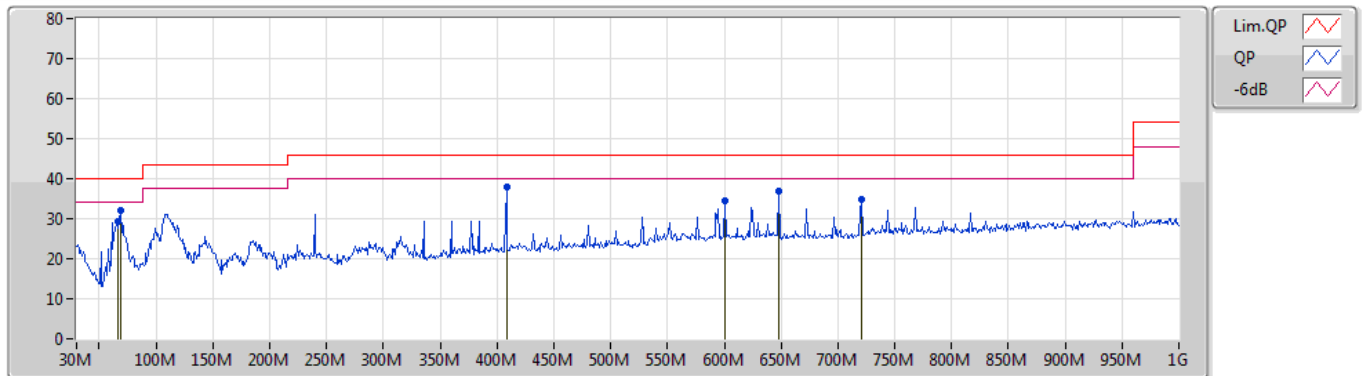
30/04/2020



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV/m)	(dB/m)	(dB)	(dB)
PK	65.89M	30.63	40.00	-9.37	-18.13	3	Vertical	105	3.00	-	48.76	12.52	1.22	31.87
PK	67.83M	31.08	40.00	-8.92	-18.19	3	Vertical	88	3.00	"Worst"	49.27	12.43	1.26	31.88
PK	177.44M	34.23	43.50	-9.27	-14.83	3	Vertical	37	2.00	-	49.06	15.25	1.89	31.97
PK	197.81M	31.01	43.50	-12.49	-14.81	3	Vertical	105	2.00	-	45.82	15.15	1.99	31.95
PK	207.51M	32.27	43.50	-11.23	-15.11	3	Vertical	237	3.00	-	47.38	14.82	2.03	31.96
PK	647.89M	31.39	46.00	-14.61	-4.49	3	Vertical	180	1.50	-	35.88	24.44	3.60	32.53

Mode 2

30/04/2020



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV/m)	(dB/m)	(dB)	(dB)
PK	65.89M	29.17	40.00	-10.83	-18.13	3	Horizontal	46	3.00	-	47.30	12.52	1.22	31.87
PK	68.8M	32.04	40.00	-7.96	-18.16	3	Horizontal	176	1.00	-	50.20	12.44	1.28	31.88
PK	408.3M	38.05	46.00	-7.95	-7.79	3	Horizontal	233	1.00	"Worst"	45.84	21.52	2.90	32.21
PK	600.36M	34.32	46.00	-11.68	-4.69	3	Horizontal	67	1.50	-	39.01	24.11	3.50	32.30
PK	647.89M	36.82	46.00	-9.18	-4.49	3	Horizontal	66	1.50	-	41.31	24.44	3.60	32.53
PK	720.64M	34.99	46.00	-11.01	-3.95	3	Horizontal	94	1.25	-	38.94	24.60	3.88	32.43



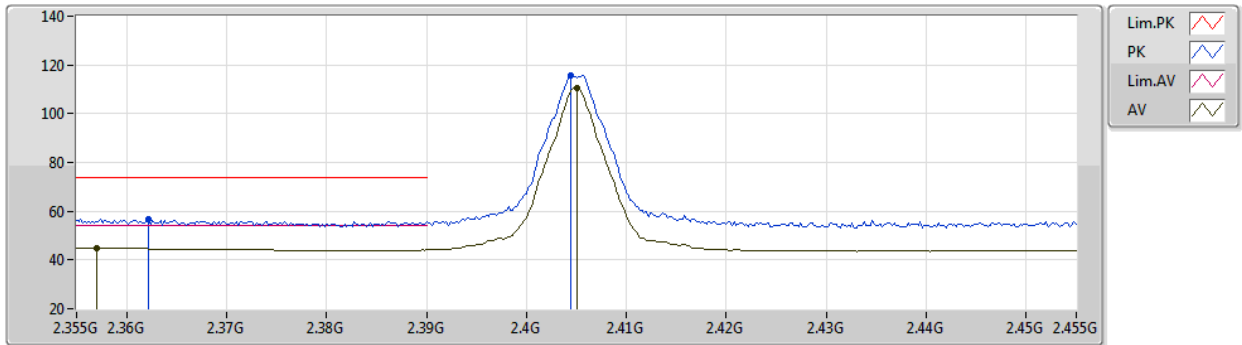
Summary

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	2.4836G	47.79	54.00	-6.21	3	Vertical	72	2.89	-

Zigbee

2405MHz_TX

23/04/2020



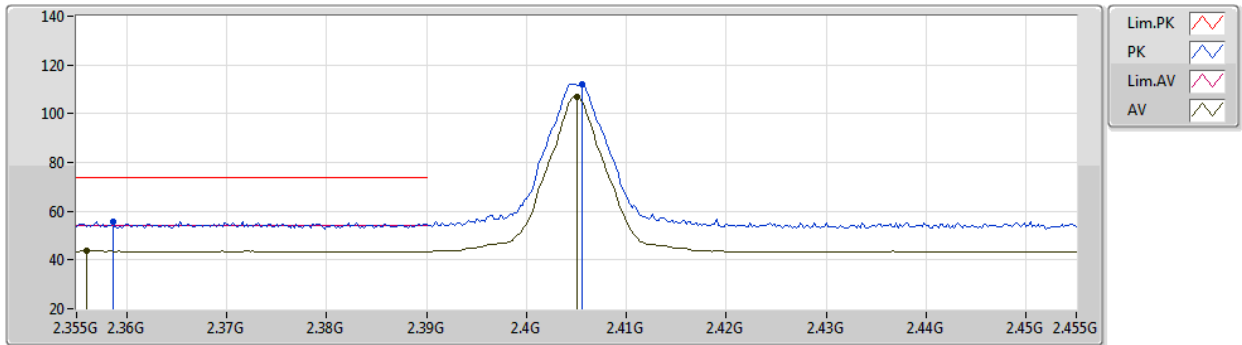
EUT Z_1TX
Setting 21.1
04-F-K-3

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.3622G	56.73	74.00	-17.27	26.35	3	Vertical	103	1.73	-	27.54	2.84	-
AV	2.357G	44.81	54.00	-9.19	14.44	3	Vertical	103	1.73	-	27.54	2.83	-
PK	2.4044G	115.63	Inf	-Inf	85.25	3	Vertical	103	1.73	-	27.52	2.86	-
AV	2.405G	110.58	Inf	-Inf	80.20	3	Vertical	103	1.73	-	27.52	2.86	-

Zigbee

2405MHz_TX

23/04/2020



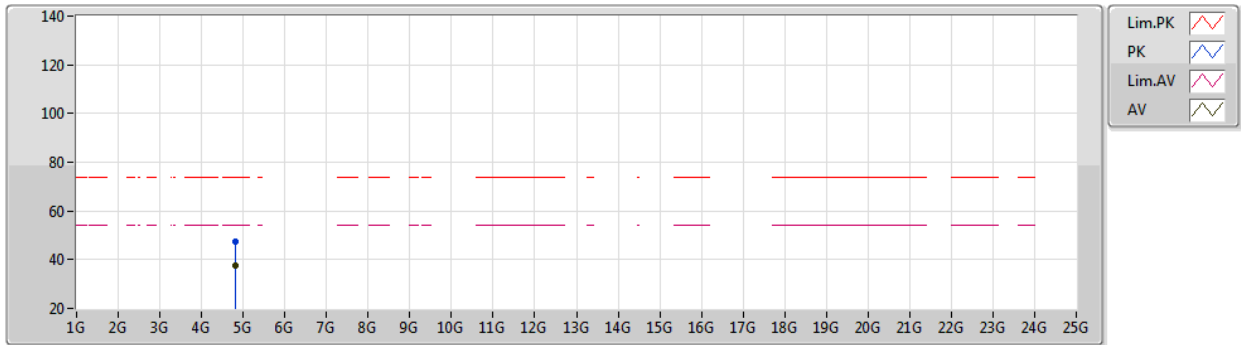
EUT Z_1TX
Setting 21.1
04-F-K-3

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.3586G	55.77	74.00	-18.23	25.39	3	Horizontal	268	2.72	-	27.54	2.84	-
AV	2.356G	43.63	54.00	-10.37	13.26	3	Horizontal	268	2.72	-	27.54	2.83	-
PK	2.4056G	112.18	Inf	-Inf	81.80	3	Horizontal	268	2.72	-	27.52	2.86	-
AV	2.405G	107.10	Inf	-Inf	76.72	3	Horizontal	268	2.72	-	27.52	2.86	-

Zigbee

2405MHz_TX

23/04/2020



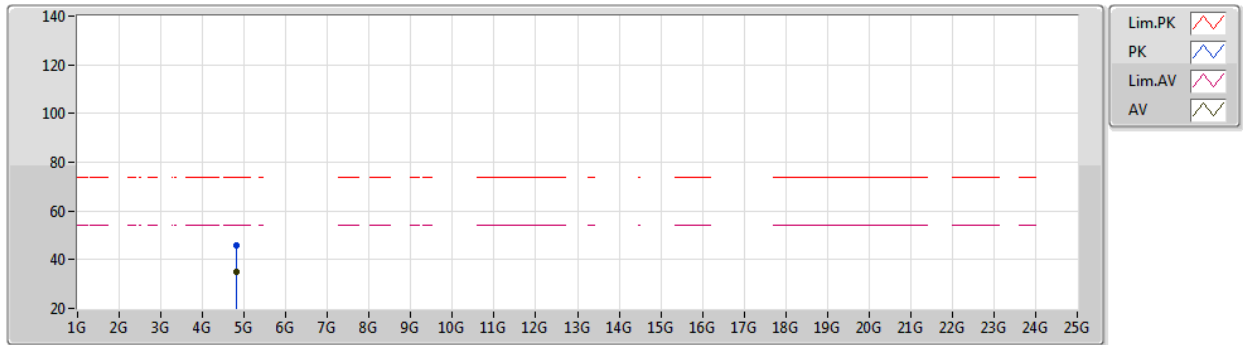
EUT Z_1TX
Setting 21.1
04-F-K-3

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.80988G	47.55	74.00	-26.45	43.58	3	Vertical	41	1.40	-	32.54	4.92	33.49
AV	4.80996G	37.75	54.00	-16.25	33.78	3	Vertical	41	1.40	-	32.54	4.92	33.49

Zigbee

2405MHz_TX

23/04/2020



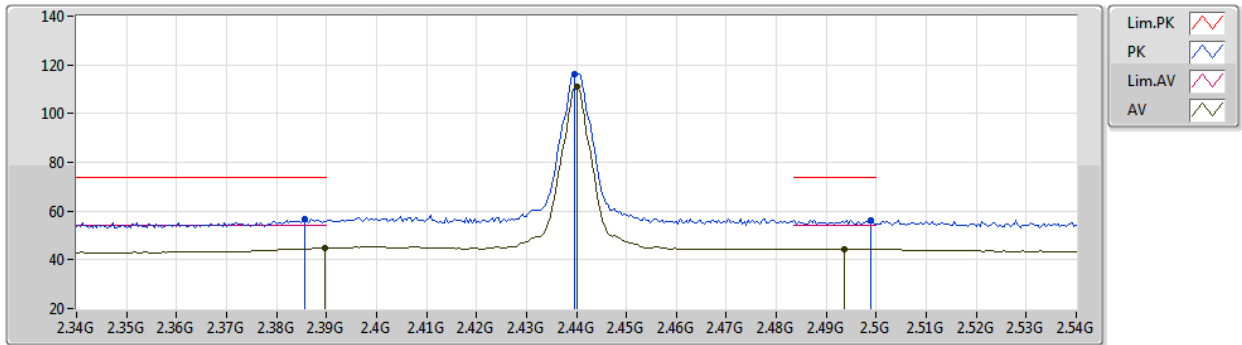
EUT Z_1TX
Setting 21.1
04-F-K-3

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.81G	45.97	74.00	-28.03	42.00	3	Horizontal	310	2.40	-	32.54	4.92	33.49
AV	4.80988G	34.83	54.00	-19.17	30.86	3	Horizontal	310	2.40	-	32.54	4.92	33.49

Zigbee

2440MHz_TX

23/04/2020



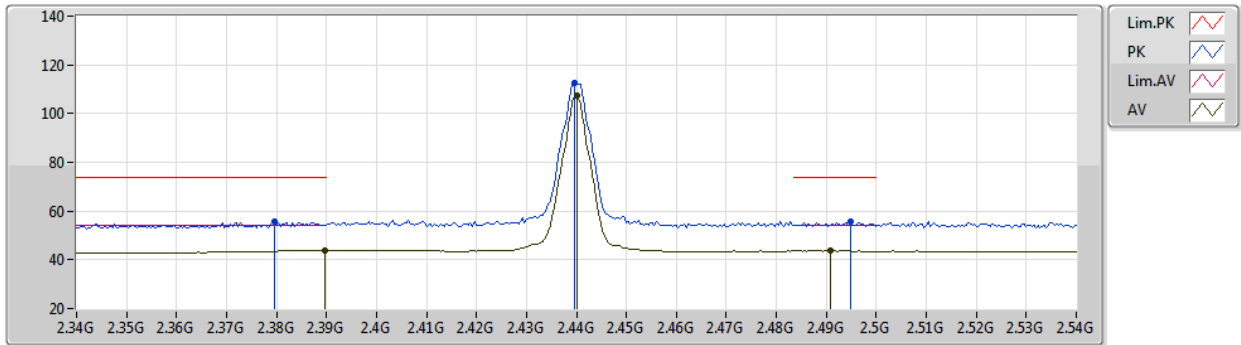
EUT Z_1TX
Setting 21.1
04-F-P-2

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.3856G	56.88	74.00	-17.12	26.52	3	Vertical	78	2.91	-	27.51	2.85	-
AV	2.3896G	44.88	54.00	-9.12	14.52	3	Vertical	78	2.91	-	27.51	2.85	-
PK	2.4396G	116.13	Inf	-Inf	85.59	3	Vertical	78	2.91	-	27.66	2.88	-
AV	2.44G	111.16	Inf	-Inf	80.62	3	Vertical	78	2.91	-	27.66	2.88	-
PK	2.4988G	56.18	74.00	-17.82	25.36	3	Vertical	78	2.91	-	27.90	2.92	-
AV	2.4936G	44.37	54.00	-9.63	13.58	3	Vertical	78	2.91	-	27.87	2.92	-

Zigbee

2440MHz_TX

23/04/2020



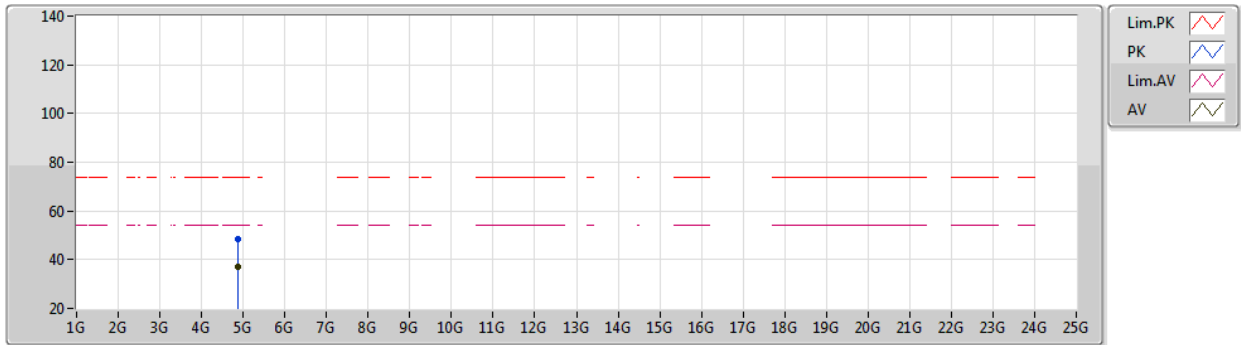
EUT Z_1TX
Setting 21.1
04-F-P-2

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.3796G	55.70	74.00	-18.30	25.33	3	Horizontal	268	2.67	-	27.52	2.85	-
AV	2.3896G	43.85	54.00	-10.15	13.49	3	Horizontal	268	2.67	-	27.51	2.85	-
PK	2.4396G	112.35	Inf	-Inf	81.81	3	Horizontal	268	2.67	-	27.66	2.88	-
AV	2.44G	107.31	Inf	-Inf	76.77	3	Horizontal	268	2.67	-	27.66	2.88	-
PK	2.4948G	55.62	74.00	-18.38	24.82	3	Horizontal	268	2.67	-	27.88	2.92	-
AV	2.4908G	43.61	54.00	-10.39	12.84	3	Horizontal	268	2.67	-	27.86	2.91	-

Zigbee

2440MHz_TX

23/04/2020



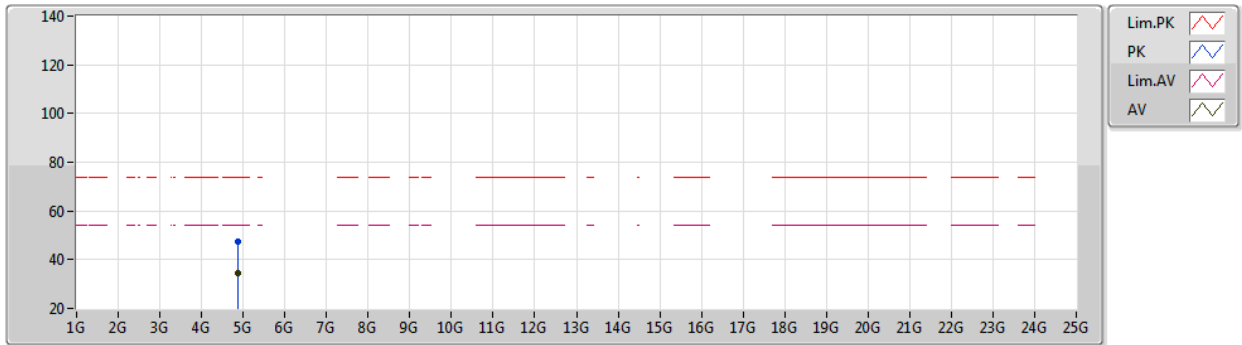
EUT Z_1TX
Setting 21.1
04-F-P-2

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.87888G	48.49	74.00	-25.51	44.15	3	Vertical	138	2.36	-	32.82	4.96	33.44
AV	4.8808G	36.94	54.00	-17.06	32.60	3	Vertical	138	2.36	-	32.82	4.96	33.44

Zigbee

2440MHz_TX

23/04/2020



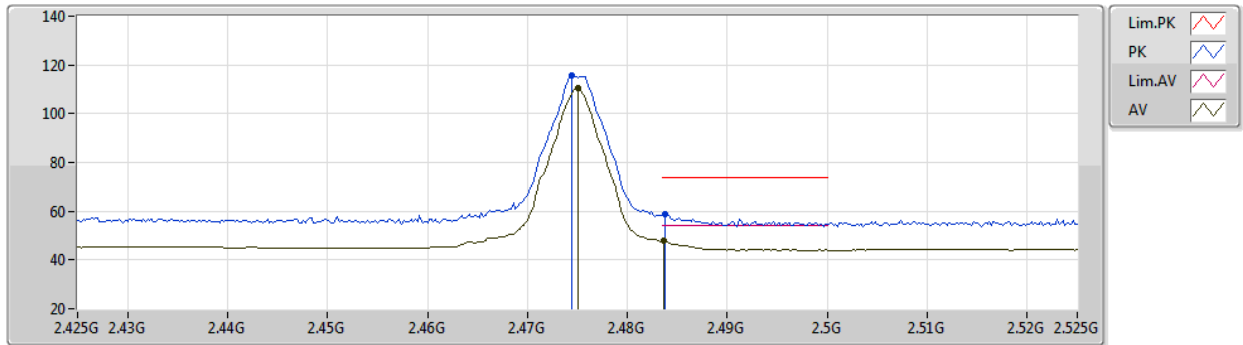
EUT Z_1TX
Setting 21.1
04-F-P-2

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.88066G	47.31	74.00	-26.69	42.97	3	Horizontal	135	2.19	-	32.82	4.96	33.44
AV	4.88084G	34.42	54.00	-19.58	30.08	3	Horizontal	135	2.19	-	32.82	4.96	33.44

Zigbee

2475MHz_TX

23/04/2020



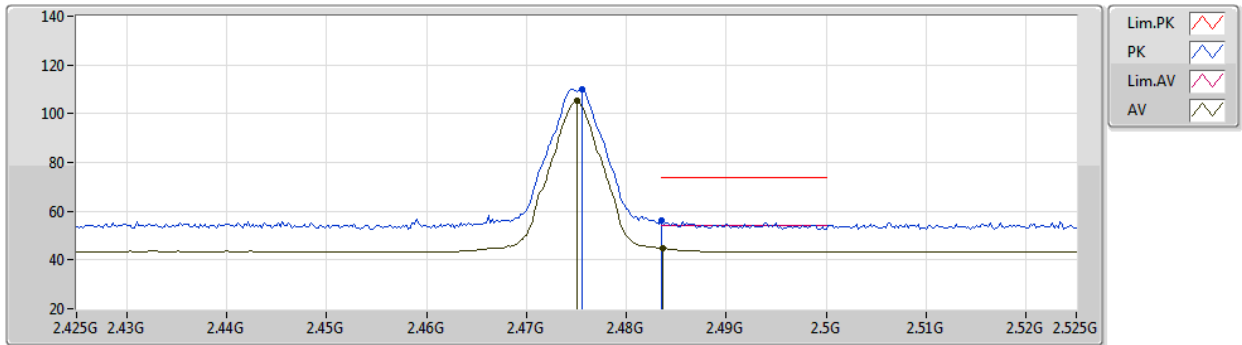
EUT Z_1TX
Setting 21.1
04-F-K-3

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.4744G	115.45	Inf	-Inf	84.75	3	Vertical	72	2.89	-	27.80	2.90	-
AV	2.475G	110.59	Inf	-Inf	79.89	3	Vertical	72	2.89	-	27.80	2.90	-
PK	2.4838G	59.03	74.00	-14.97	28.28	3	Vertical	72	2.89	-	27.84	2.91	-
AV	2.4836G	47.79	54.00	-6.21	17.05	3	Vertical	72	2.89	-	27.83	2.91	-

Zigbee

2475MHz_TX

23/04/2020



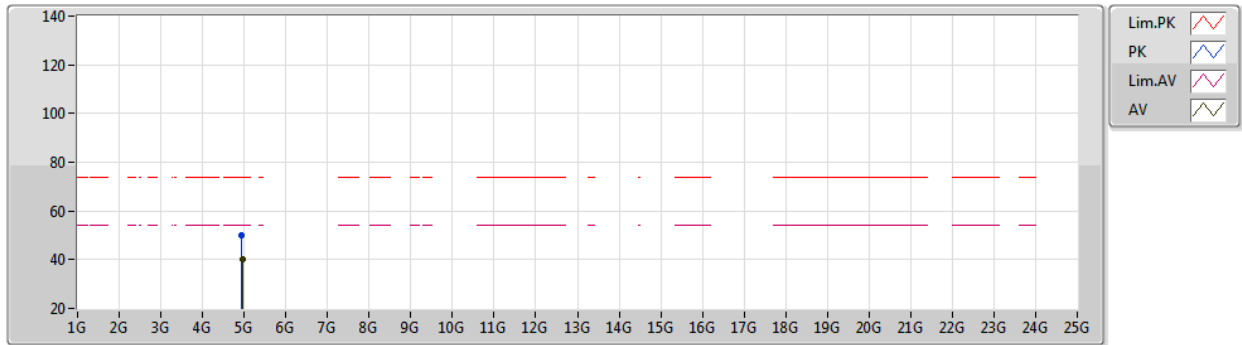
EUT Z_1TX
Setting 21.1
04-F-K-3

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	2.4756G	110.02	Inf	-Inf	79.31	3	Horizontal	233	1.70	-	27.80	2.91	-
AV	2.475G	105.23	Inf	-Inf	74.53	3	Horizontal	233	1.70	-	27.80	2.90	-
PK	2.4835G	55.95	74.00	-18.05	25.21	3	Horizontal	233	1.70	-	27.83	2.91	-
AV	2.4836G	44.98	54.00	-9.02	14.24	3	Horizontal	233	1.70	-	27.83	2.91	-

Zigbee

2475MHz_TX

23/04/2020



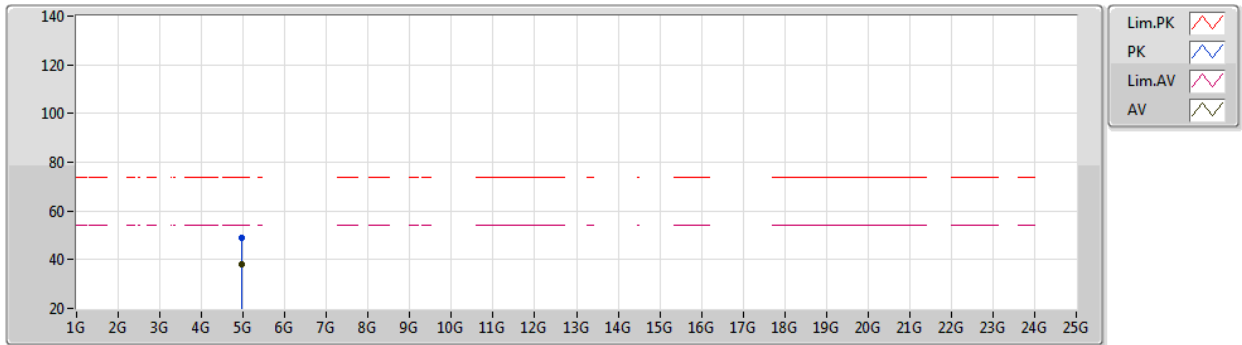
EUT Z_1TX
Setting 21.1
04-F-P-2

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.94896G	50.24	74.00	-23.76	45.65	3	Vertical	133	2.29	-	33.00	4.99	33.40
AV	4.95096G	40.22	54.00	-13.78	35.62	3	Vertical	133	2.29	-	33.00	5.00	33.40

Zigbee

2475MHz_TX

23/04/2020



EUT Z_1TX
Setting 21.1
04-F-P-2

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	4.95114G	48.93	74.00	-25.07	44.33	3	Horizontal	135	2.25	-	33.00	5.00	33.40
AV	4.95088G	38.09	54.00	-15.91	33.49	3	Horizontal	135	2.25	-	33.00	5.00	33.40