FCC RADIO TEST REPORT

FCC ID	:	MSQ-RTAXJE00
Equipment	:	AX1800 Dual Band WiFi Router
Brand Name	:	ASUS
Model Name	:	XD4R, ZenWiFi AX Mini (XD4R), ZenWiFi AX Mini, ASUS ZenWiFi, ASUS ZenWiFi AX Mini
Applicant	:	ASUSTeK COMPUTER INC. 1F., No. 15, Lide Rd., Beitou, Taipei 112, Taiwan
Manufacturer (1)	:	Datamax Electronics (DongGuan) Co., Ltd. Niu Shan Foreign Economic Industrial Park, Dong Cheng District, Dong Guan City, Guang Dong, China
Manufacturer (2)	:	Lukisen Electronic Corp. 3F.,No.236,Boai St., Shulin Dist.,New Taipei City 23845, Taiwan
Manufacturer (3)	:	Kentec Inc. No. 5, Tzu-Chiang 1st Rd. Chungli Industrial Zone, Taoyuan City, Taiwan
Standard	:	47 CFR FCC Part 15.247

The product was received on Dec. 24, 2019, and testing was started from Dec. 25, 2019 and completed on Mar. 20, 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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Appendix G. Test Photos

Photographs of EUT v01

History of this test report

Report No.	Version	Description	Issued Date
FR9N1802AC	01	Initial issue of report	Apr. 09, 2020

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: Cindy Peng

1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	Bluetooth Mode	Ch. Frequency (MHz)	Channel Number
2400-2483.5	LE	2402-2480	0-39 [40]

Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	BT-LE(1Mbps)	1.0	1TX

Note:
- Bluetooth LE uses a GFSK modulation.
- BWch is the nominal channel bandwidth.
- Nss-Min is the minimum number of spatial streams.
- Nant is the number of outputs. e.g., 2(2, 3) means have 2 outputs for port 2 and port 3. 2 means have 2 outputs for port 1 and port 2.

1.1.2 Antenna Information

For WLAN Function:

Set	Ant.	Port	Brand	Part number	Type	Connector	Uncorrelated Gain (dBi)			Correlated Gain (dBi)		
							2.4GHz	5GHz B1	5GHz B4	2.4GHz	5GHz B1	5GHz B4
1	1	1	WHA YU	C660-510493-A (SRF20191786)	Dipole	I-PEX	0.69	0.88	1.22	3.68	3.85	4.08
	2	2	WHA YU	C660-510494-A (SRF20191787)	Dipole	I-PEX	0.69	0.88	1.22	3.68	3.85	4.08
Set	Ant.	Port	Brand	Part number	Type	Connector	Uncorrelated Gain (dBi)			Correlated Gain (dBi)		
							2.4GHz	5GHz B1	5GHz B4	2.4GHz	5GHz B1	5GHz B4
2	1	1	WALSIN	RFDPA210608IMLB902	Dipole	I-PEX	0.65	0.65	0.71	3.57	3.39	3.05
	2	2	WALSIN	RFDPA210606IMLB902	Dipole	I-PEX	0.65	0.65	0.71	3.57	3.39	3.05

For Bluetooth Function:

Ant.	Port	Brand	Part number	Type	Connector	Antenna Gain (dBi)
1	1	YAGEO	ANT3216A063R2400A	CHIP	N/A	1.69

Note1: The above information was declared by manufacturer.
Note2: For WLAN Function (2TX/2RX):
The WLAN 2.4GHz supports the b, g, n, VHT, ax, and the WLAN 5GHz supports the a, n, VHT, ax.
There are two set antenna for WLAN Function use, and each set contains two antennas.
Because Set 1 antenna & Set 2 antenna are the same type antennas, only the higher gain antenna "Set 1 antenna" was tested.
Port 1 and Port 2 could transmit/receive simultaneously.
Note3: For Bluetooth Function (1TX/1RX):
There is one antenna for Bluetooth Function use.
Only Port 1 can be used as transmitting/receiving.

1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
BT-LE(1Mbps)	0.653	1.85	408.125u	3k

Note:
- DC is Duty Cycle.
- DCF is Duty Cycle Factor.

1.1.4 EUT Operational Condition

EUT Power Type	From power adapter			
Function	☒	Point-to-multipoint	☐	Point-to-point
Test Software Version	Telnet			
Support Mode	☒	LE 1M PHY: 1 Mb/s		
	☐	LE Coded PHY (S=2): 500 Kb/s		
	☐	LE Coded PHY (S=8): 125 Kb/s		
	☐	LE 2M PHY: 2 Mb/s		

Note: The above information was declared by manufacturer.

1.1.5 Table for EUT Supports Functions

Function	Support Type
AP Router	Master
Bridge	Client without radar detection
Repeater	Master
Mesh	Master

1.1.6 Table for Multiple Listing

1. There are two EUTs, the difference as following:

EUT	2.4G PA	
	Brand Name	Model Name
1	Qorvo	QPF4206B
2	Skyworks	SKY85337

2. The EUT has five model names which are identical to each other in all aspects except for the following table:

Model Name	Description
XD4R	There is nothing different for two model names, just for different marketing use.
ZenWiFi AX Mini (XD4R)	
ZenWiFi AX Mini	
ASUS ZenWiFi	
ASUS ZenWiFi AX Mini	

From the above models, model: XD4R was selected as representative model for the test and its data was recorded in this report.

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
- 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	TH01-CB	Owen Hsu	17.4~18.4°C / 57~62%	Jan. 07, 2020~Feb. 04, 2020
Radiated	03CH05-CB	Cola Fan	21.8~23.3°C / 51~55%	Dec. 25, 2019~Mar. 20, 2020
AC Conduction	CO01-CB	Max Lin	21~22°C / 58~59%	Jan. 21, 2020~Mar. 11, 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
BT-LE(1Mbps)	-
2402MHz	Default
2440MHz	Default
2480MHz	Default

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	CTX
1	WLAN 2.4GHz - EUT 1 + Adapter 1
2	WLAN 2.4GHz - EUT 1 + Adapter 2
Mode 2 has been evaluated to be the worst case among Mode 1~2, thus measurement for Mode 3~4 will follow this same test mode.	
3	WLAN 5GHz - EUT 1 + Adapter 2
4	Bluetooth - EUT 1 + Adapter 2
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
Operating Mode	
1	EUT 1

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	WLAN 2.4GHz - EUT 1 + Adapter 1
2	WLAN 2.4GHz - EUT 1 + Adapter 2
Mode 2 has been evaluated to be the worst case among Mode 1~2, thus measurement for Mode 3~4 will follow this same test mode.	
3	WLAN 5GHz - EUT 1 + Adapter 2
4	Bluetooth - EUT 1 + Adapter 2
Mode 2 has been evaluated to be the worst case among Mode 1~4, thus measurement for Mode 5 will follow this same test mode.	
5	WLAN 2.4GHz - EUT 2 + Adapter 2
For operating mode 2 is the worst case and it was record in this test report.	
Operating Mode > 1GHz	CTX
1	EUT 1

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation
Operating Mode	
1	WLAN 2.4GHz + WLAN 5GHz + Bluetooth - EUT 1
2	WLAN 2.4GHz + WLAN 5GHz + Bluetooth - EUT 2
Refer to Sporton Test Report No.: FA9N1802 for Co-location RF Exposure Evaluation.	

Note: The EUT can only be used at Y axis position.

2.3 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

2.4 Accessories

Accessories				
No.	**Power**	**Brand**	**Model**	**Rating**
1	Adapter 1	LEI	MU18B1120150-A1	INPUT: 100-240V ~ 50/60Hz, 0.6A OUTPUT: 12V, 1.5A
2	Adapter 2	DVE	DSA-18PFR-12 FUS 120150	INPUT: 100-240V ~ 50/60Hz, 0.6A OUTPUT: 12V, 1.5A, 18.0W
No.	**Other**			
3	RJ-45 cable*1: Non-shielded, 2m			

2.5 Support Equipment

For AC Conduction:

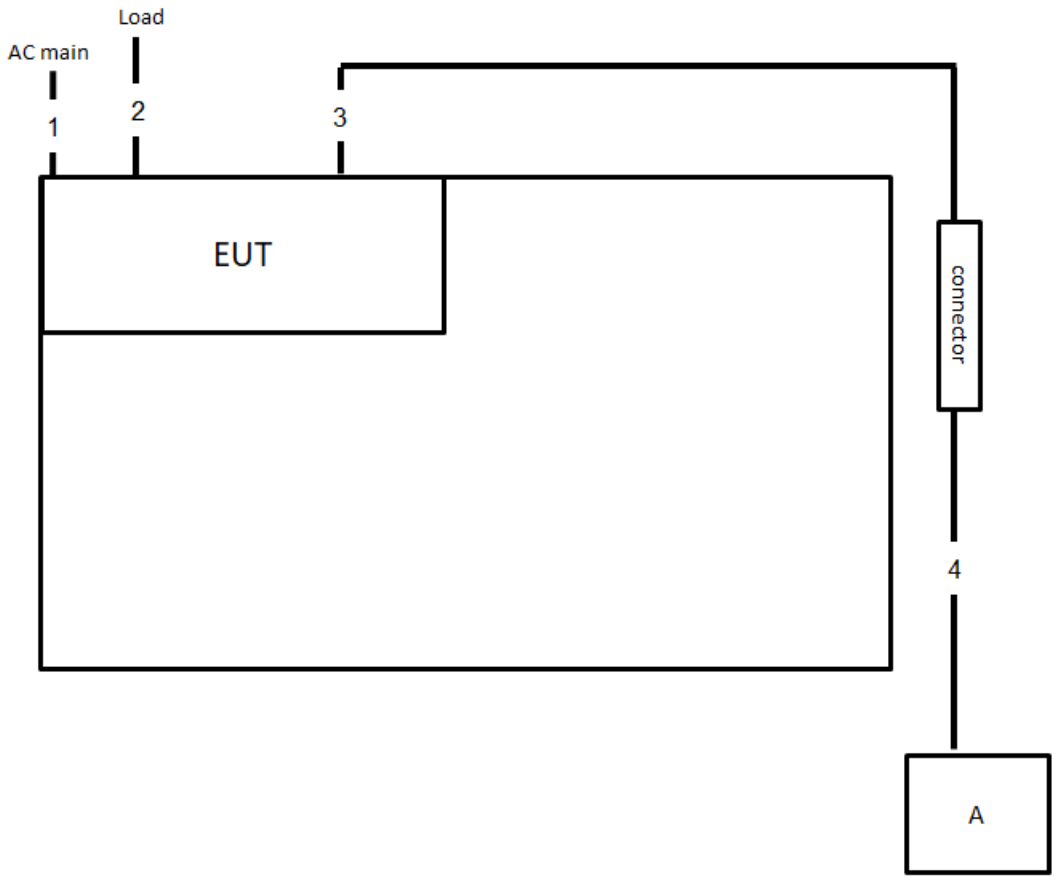
Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
A	LAN NB	DELL	E6430	N/A

For RF Conducted and Radiated:

Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
A	Notebook	DELL	E4300	N/A

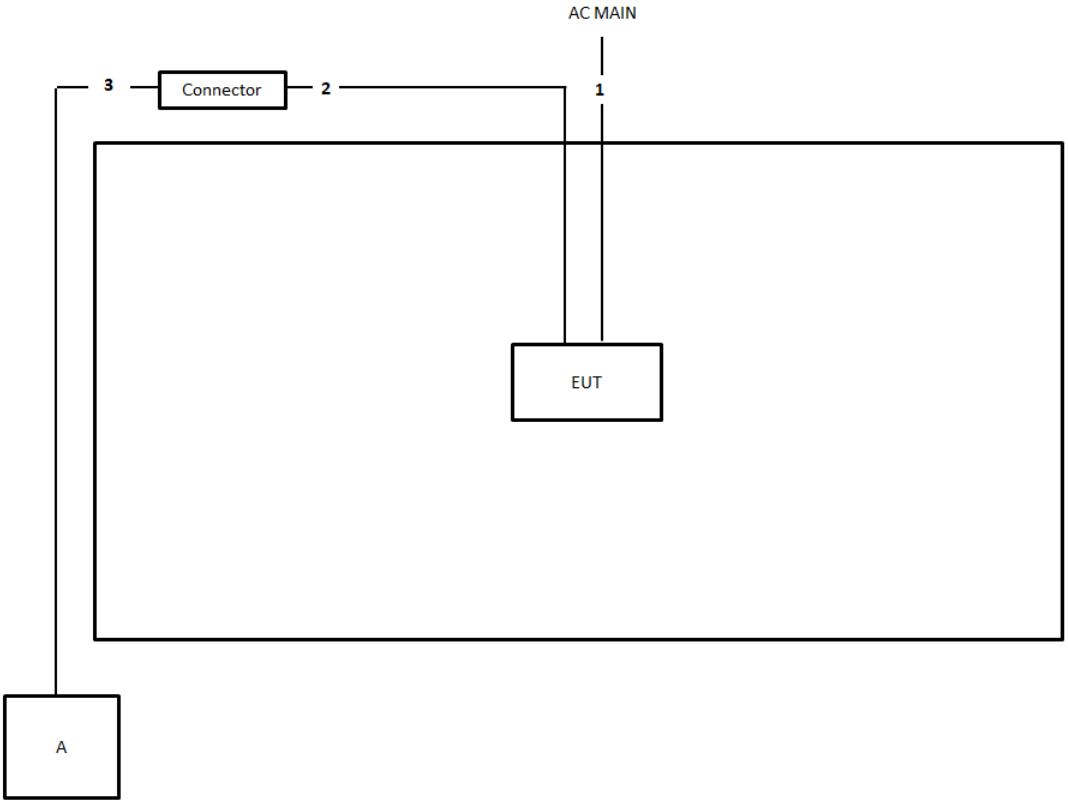
2.6 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



Item	Connection	Shielded	Length
1	Power cable	No	1.8m
2	RJ-45 cable	No	1.5m
3	RJ-45 cable	No	2m
4	RJ-45 cable	No	10m

Test Setup Diagram - Radiated Test



Item	Connection	Shielded	Length
1	Power cable	No	1.8m
2	RJ-45 cable	No	2m
3	RJ-45 cable	No	10m

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

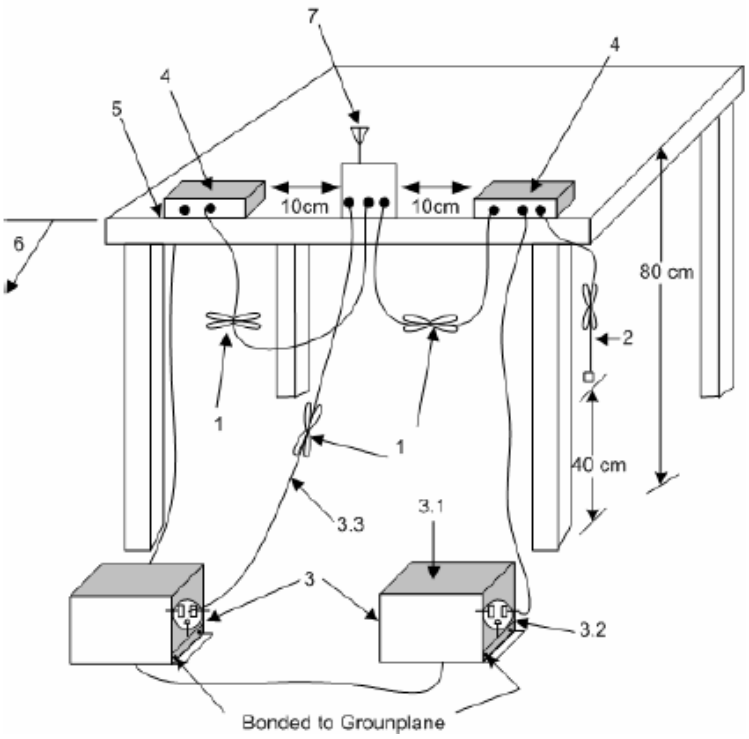
Refer a test equipment and calibration data table in this test report.

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

AC Power-line Conducted Emissions



1—Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long.
2—The I/O cables that are not connected to an accessory shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
3—EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω loads. LISN may be placed on top of, or immediately beneath, reference ground plane.
3.1—All other equipment powered from additional LISN(s).
3.2—A multiple-outlet strip may be used for multiple power cords of non-EUT equipment.
3.3—LISN at least 80 cm from nearest part of EUT chassis.
4—Non-EUT components of EUT system being tested.
5—Rear of EUT, including peripherals, shall all be aligned and flush with edge of tabletop.
6—Edge of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.
7—Antenna can be integral or detachable. If detachable, then the antenna shall be attached for this test.

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 ≥ 500 kHz.

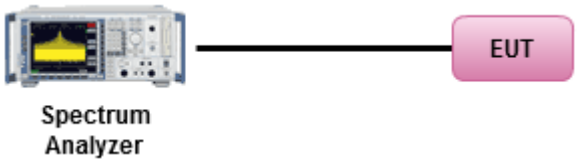
3.2.2 Measuring Instruments

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

Emission Bandwidth


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: $P_{total} = P_1 + P_2 + \ldots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$

3.3.4 Test Setup

Maximum Conducted Output Power (Power Meter)

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

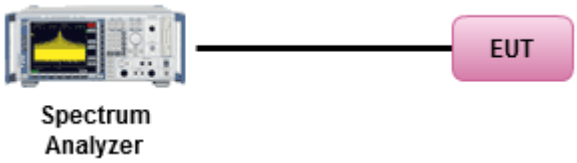
Refer a test equipment and calibration data table in this test report.

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.	
	[duty cycle ≥ 98% or external video / power trigger]	
▪ 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

Power Spectral Density



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

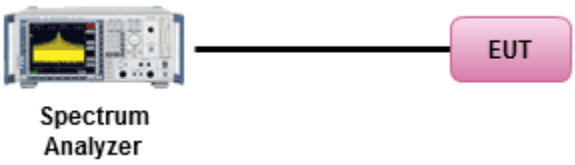
Refer a test equipment and calibration data table in this test report.

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

Emissions in Non-restricted Frequency Bands



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 below30 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.

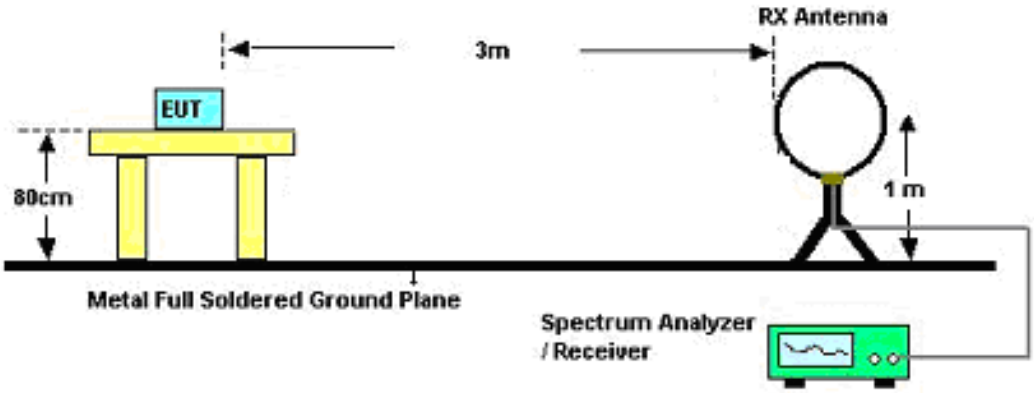
3.6.3 Test Procedures

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 ≥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≥1/T).
		☐	Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). VBW ≥ 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.		

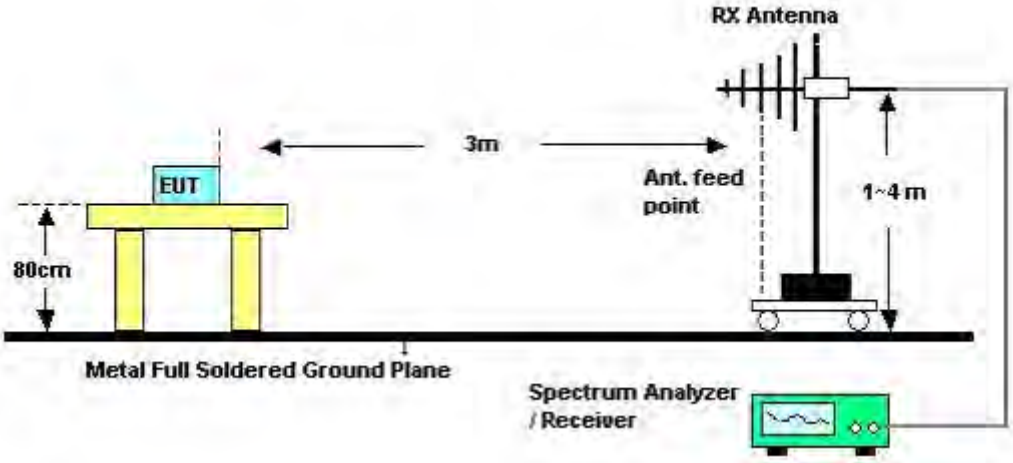
3.6.4 Test Setup

Emissions in Restricted Frequency Bands

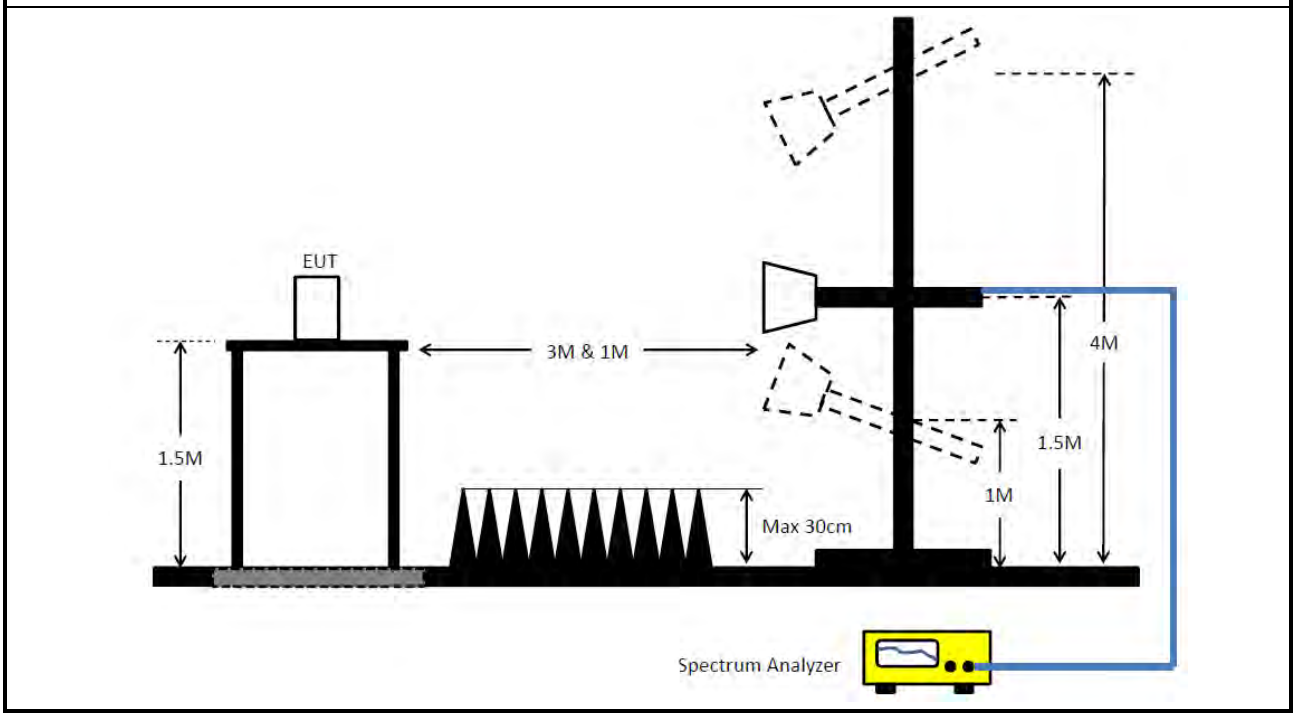
9kHz ~30MHz



30MHz~1GHz



Above 1GHz



3.6.5 Measurement Results Calculation

The measured Level is calculated using:
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = 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	MY54130031	9kHz ~ 8.45GHz	Nov. 08, 2019	Nov. 07, 2020	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	8127650	9kHz ~ 30MHz	Nov. 21, 2019	Nov. 20, 2020	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	24155	9kHz - 30 MHz	Mar. 29, 2019	Mar. 28, 2020	Radiation (03CH05-CB)
Bilog Antenna with 6dB Attenuator	TESEQ & EMCI	CBL 6112D & N-6-06	35236 & AT-N0610	30MHz ~ 2GHz	Mar. 28, 2019	Mar. 27, 2020	Radiation (03CH05-CB)
Horn Antenna	SCHWARZBECK	BBHA9120D	BBHA 9120D-1291	1GHz~18GHz	Oct. 05, 2019	Oct. 04, 2020	Radiation (03CH05-CB)
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170507	15GHz ~ 40GHz	Jun. 12, 2019	Jun. 11, 2020	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC330N	980331	20MHz ~ 3GHz	May 01, 2019	Apr. 30, 2020	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC12630SE	980287	1GHz – 26.5GHz	Apr. 16, 2019	Apr. 15, 2020	Radiation (03CH05-CB)
Pre-Amplifier	MITEQ	TTA1840-35-HG	1864479	18GHz ~ 40GHz	Jul. 03, 2019	Jul. 02, 2020	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)
RF Cable-high	Woken	RG402	High Cable-28	1GHz~18GHz	Oct. 07, 2019	Oct. 06, 2020	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-04+28	1GHz~18GHz	Oct. 07, 2019	Oct. 06, 2020	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-40G#1	18GHz ~ 40 GHz	Jul. 24, 2019	Jul. 23, 2020	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-40G#2	18GHz ~ 40 GHz	Jul. 24, 2019	Jul. 23, 2020	Radiation (03CH05-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Feb. 25, 2019	Feb. 24, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-06	1 GHz – 26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz –26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)

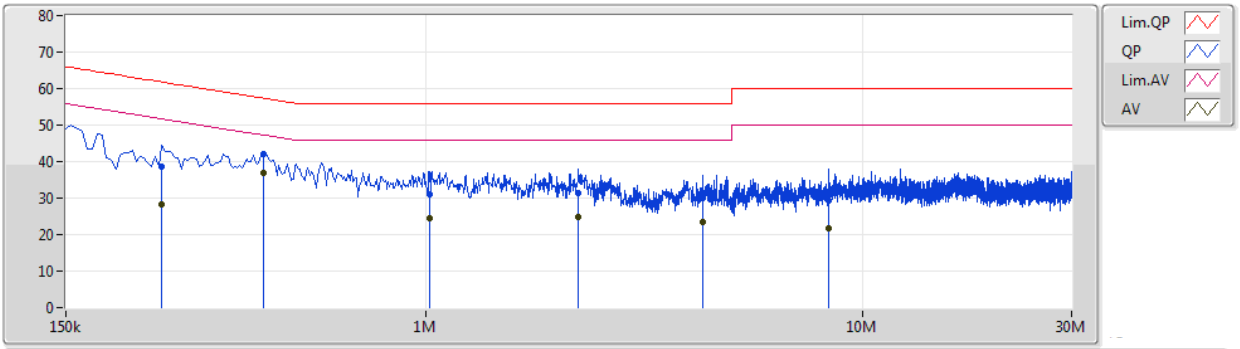
Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
RF Cable-high	Woken	RG402	High Cable-08	1 GHz –26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz –26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz –26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-28	1 GHz –26.5 GHz	Nov. 18, 2019	Nov. 17, 2020	Conducted (TH01-CB)
Power Sensor	Anritsu	MA2411B	1126203	300MHz~40GHz	Sep. 11, 2019	Sep. 10, 2020	Conducted (TH01-CB)
Power Meter	Anritsu	ML2495A	1210004	300MHz~40GHz	Sep. 11, 2019	Sep. 10, 2020	Conducted (TH01-CB)

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

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

AC Power-line Conducted Emissions Result			
Operating Mode	3	**Power Phase**	Line
Operating Function	CTX		

22/01/2020

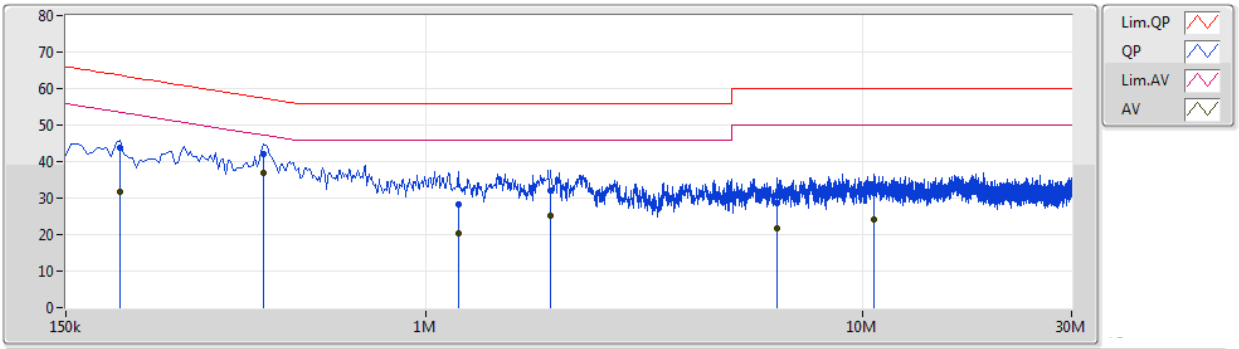


Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	AF	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	249k	38.65	61.79	-23.14	10.22	Line	-	28.43	0.05	0.07	10.10
AV	249k	28.27	51.79	-23.52	10.22	Line	-	18.05	0.05	0.07	10.10
QP	424.5k	42.18	57.36	-15.18	10.23	Line	-	31.95	0.05	0.08	10.10
AV	424.5k	36.84	47.36	-10.52	10.23	Line	"Worst"	26.61	0.05	0.08	10.10
QP	1.019M	31.20	56.00	-24.80	10.28	Line	-	20.92	0.06	0.12	10.10
AV	1.019M	24.37	46.00	-21.63	10.28	Line	-	14.09	0.06	0.12	10.10
QP	2.229M	31.51	56.00	-24.49	10.35	Line	-	21.16	0.09	0.16	10.10
AV	2.229M	24.94	46.00	-21.06	10.35	Line	-	14.59	0.09	0.16	10.10
QP	4.304M	30.04	56.00	-25.96	10.38	Line	-	19.66	0.13	0.15	10.10
AV	4.304M	23.60	46.00	-22.40	10.38	Line	-	13.22	0.13	0.15	10.10
QP	8.363M	29.23	60.00	-30.77	10.48	Line	-	18.75	0.21	0.16	10.11
AV	8.363M	21.60	50.00	-28.40	10.48	Line	-	11.12	0.21	0.16	10.11

Note 1: “>20dB” means emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found emissions (No emissions were detected.)

AC Power-line Conducted Emissions Result			
Operating Mode	3	**Power Phase**	Neutral
Operating Function	CTX		

22/01/2020



Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	AF	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	199.5k	43.86	63.63	-19.77	10.22	Neutral	-	33.64	0.05	0.07	10.10
AV	199.5k	31.83	53.63	-21.80	10.22	Neutral	-	21.61	0.05	0.07	10.10
QP	424.5k	42.13	57.36	-15.23	10.23	Neutral	-	31.90	0.05	0.08	10.10
AV	424.5k	36.85	47.36	-10.51	10.23	Neutral	"Worst"	26.62	0.05	0.08	10.10
QP	1.185M	28.27	56.00	-27.73	10.29	Neutral	-	17.98	0.06	0.13	10.10
AV	1.185M	20.41	46.00	-25.59	10.29	Neutral	-	10.12	0.06	0.13	10.10
QP	1.928M	31.96	56.00	-24.04	10.34	Neutral	-	21.62	0.08	0.16	10.10
AV	1.928M	25.22	46.00	-20.78	10.34	Neutral	-	14.88	0.08	0.16	10.10
QP	6.365M	28.72	60.00	-31.28	10.42	Neutral	-	18.30	0.15	0.16	10.11
AV	6.365M	21.86	50.00	-28.14	10.42	Neutral	-	11.44	0.15	0.16	10.11
QP	10.608M	31.47	60.00	-28.53	10.48	Neutral	-	20.99	0.20	0.17	10.11
AV	10.608M	24.23	50.00	-25.77	10.48	Neutral	-	13.75	0.20	0.17	10.11

Note 1: “>20dB” means emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found emissions (No emissions were detected.)

Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
BT-LE(1Mbps)	648.75k	1.03M	1M03F1D	646.25k	1.029M

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

Result

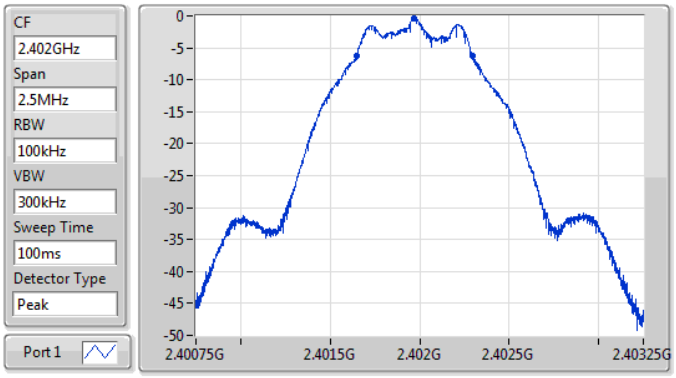
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	647.5k	1.03M
2440MHz	Pass	500k	648.75k	1.029M
2480MHz	Pass	500k	646.25k	1.029M

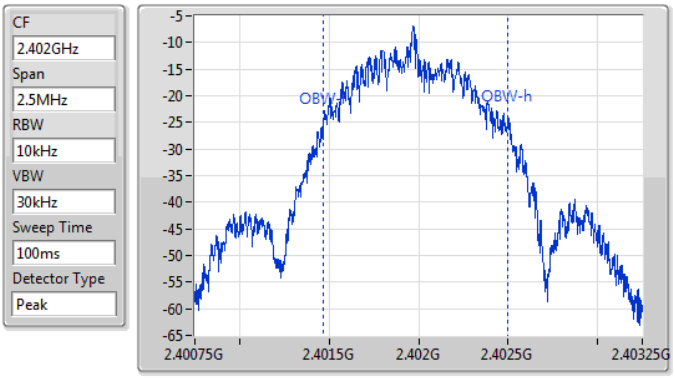
Port X-N dB = Port **X** 6dB down bandwidth; **Port X-OBW** = Port **X** 99% occupied bandwidth;

BT-LE(1Mbps) EBW

2402MHz

04/02/2020



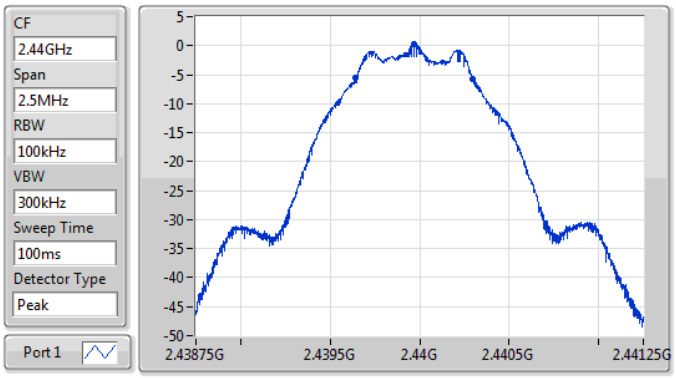


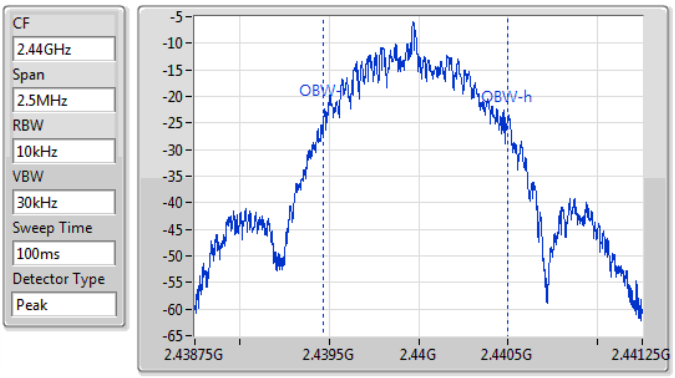
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
647.5k	2.401645G	2.402293G	1.03M	2.401469G	2.402499G	500k	1

BT-LE(1Mbps) EBW

2440MHz

04/02/2020



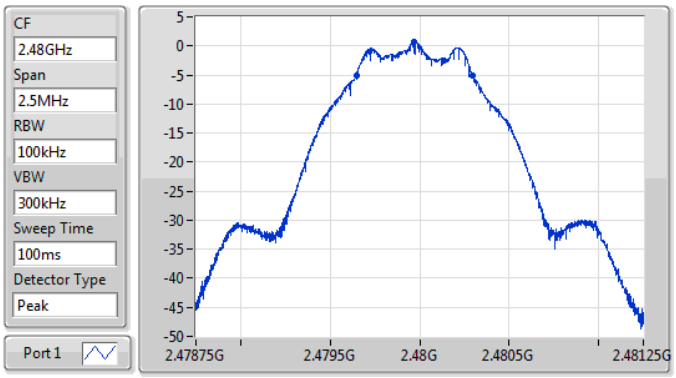


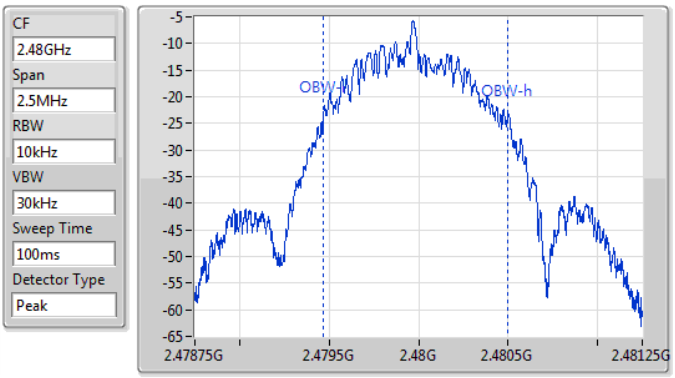
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
648.75k	2.439644G	2.440293G	1.029M	2.43947G	2.440499G	500k	1

BT-LE(1Mbps) **EBW**

2480MHz

04/02/2020





6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
646.25k	2.479646G	2.480293G	1.029M	2.47947G	2.480499G	500k	1

Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	0.87	0.00122

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	1.69	-0.29	30.00
2440MHz	Pass	1.69	0.29	30.00
2480MHz	Pass	1.69	0.87	30.00

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

Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-13.88

RBW=3 kHz.

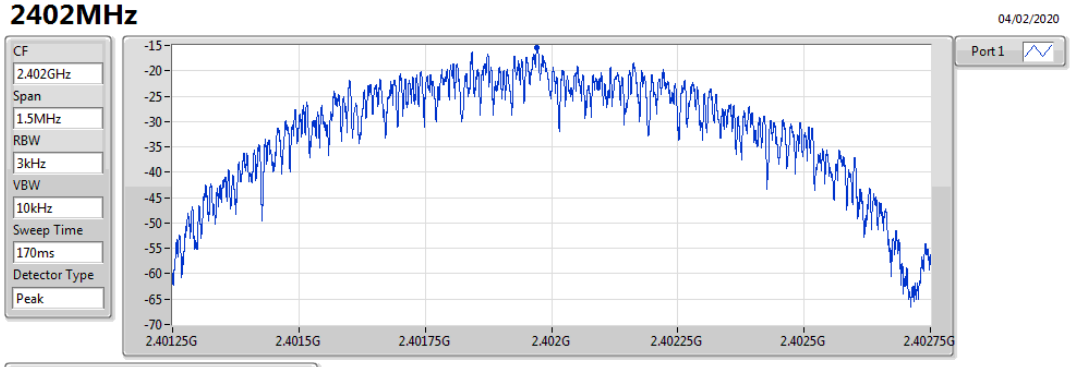
Result

Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	1.69	-15.35	8.00
2440MHz	Pass	1.69	-14.43	8.00
2480MHz	Pass	1.69	-13.88	8.00

DG = Directional Gain; RBW=3 kHz;
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; **Port X** = Port X power density;

BT-LE(1Mbps) **PSD**

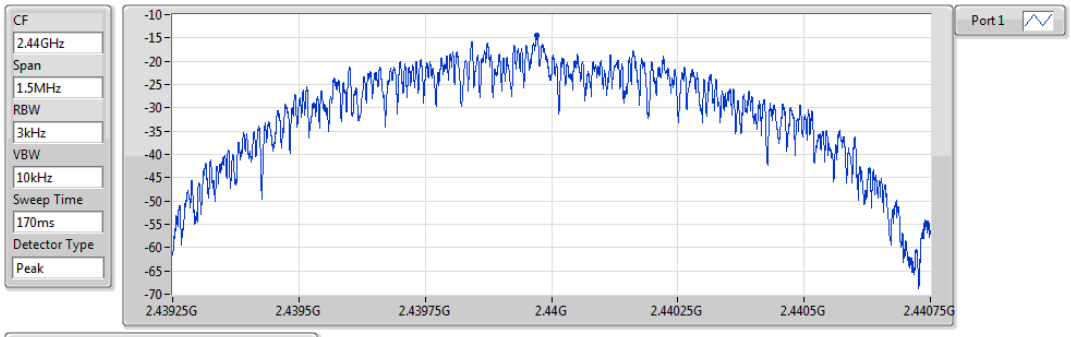
2402MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-15.35	-15.35	-15.35

BT-LE(1Mbps) **PSD**

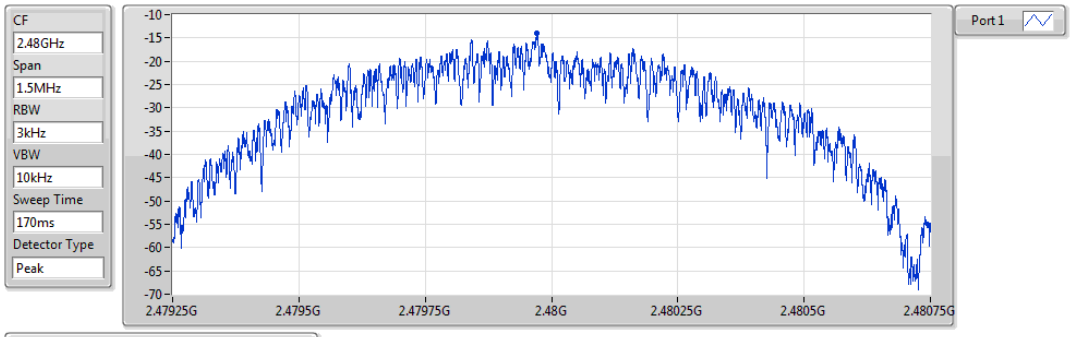
2440MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-14.43	-14.43	-14.43

BT-LE(1Mbps) **PSD**

2480MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-13.88	-13.88	-13.88

Summary

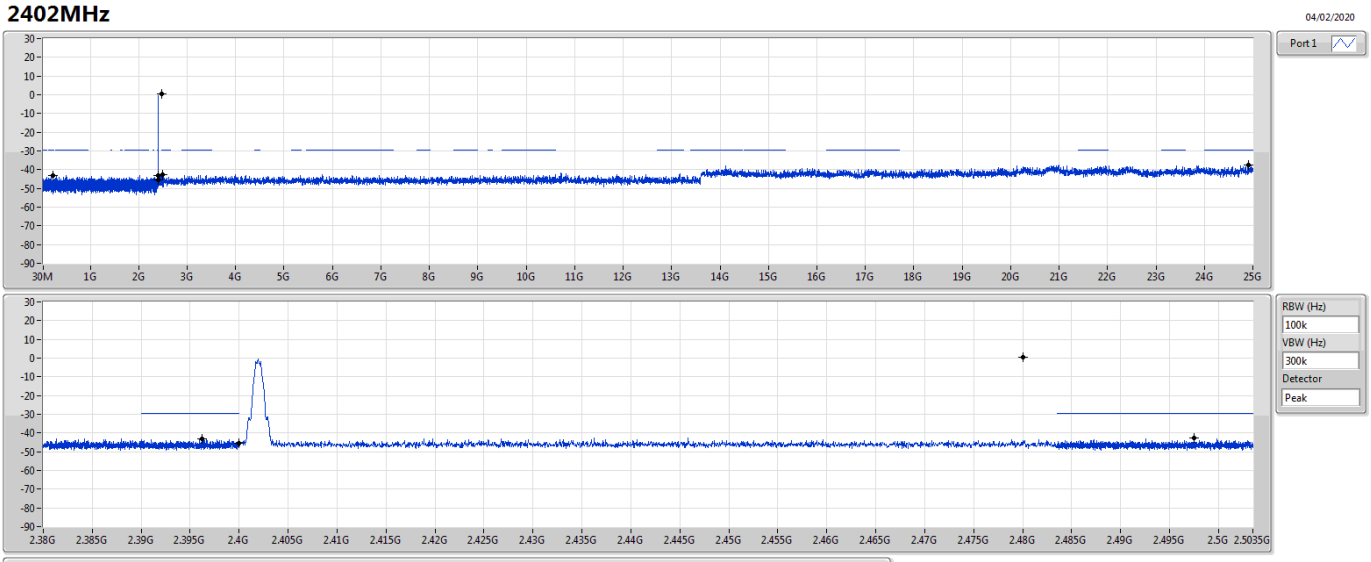
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	2.47999G	0.63	-29.37	176.29M	-43.86	2.39166G	-43.19	2.4835G	-45.60	2.49573G	-41.72	24.2998G	-37.51	1

Result

Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.47999G	0.63	-29.37	234.74M	-43.04	2.3962G	-43.18	2.4G	-45.63	2.49752G	-42.87	24.91564G	-37.38	1
2440MHz	Pass	2.47999G	0.63	-29.37	1.98726G	-43.62	2.39575G	-43.23	2.4G	-46.13	2.48878G	-42.52	24.94095G	-37.09	1
2480MHz	Pass	2.47999G	0.63	-29.37	176.29M	-43.86	2.39166G	-43.19	2.4835G	-45.60	2.49573G	-41.72	24.2998G	-37.51	1

BT-LE(1Mbps) **CSE NdB**

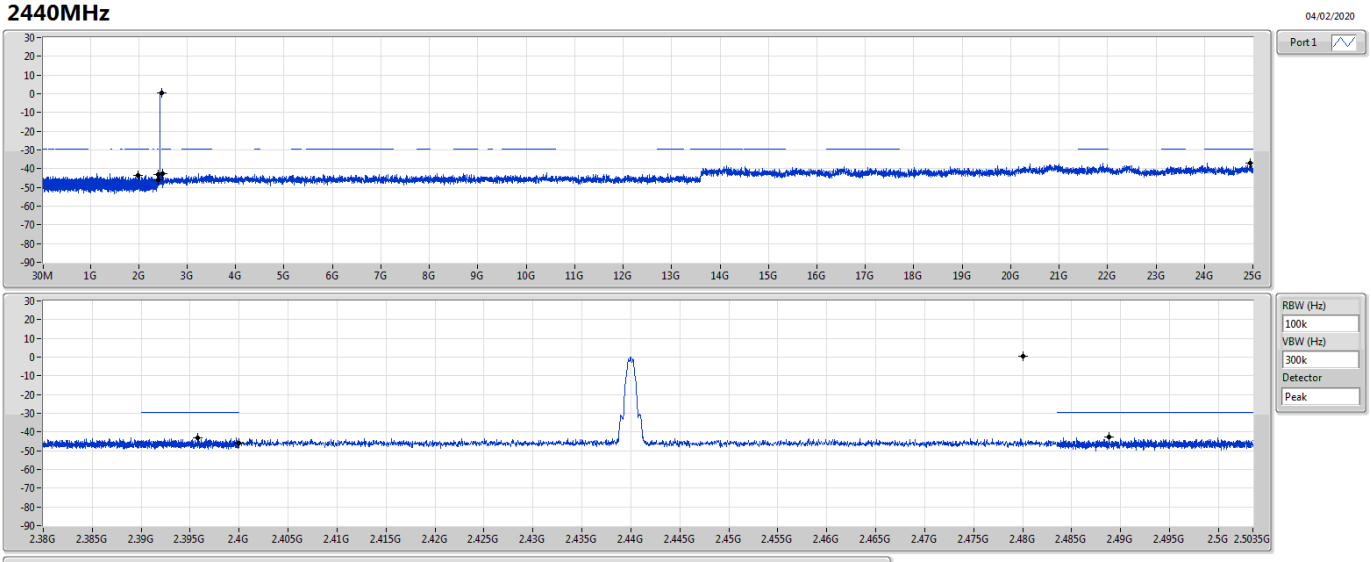
2402MHz



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
2.47999G	0.63	-29.37	234.74M	-43.04	2.3962G	-43.18	2.4G	-45.63	2.49752G	-42.87	24.91564G	-37.38	1

BT-LE(1Mbps) **CSE NdB**

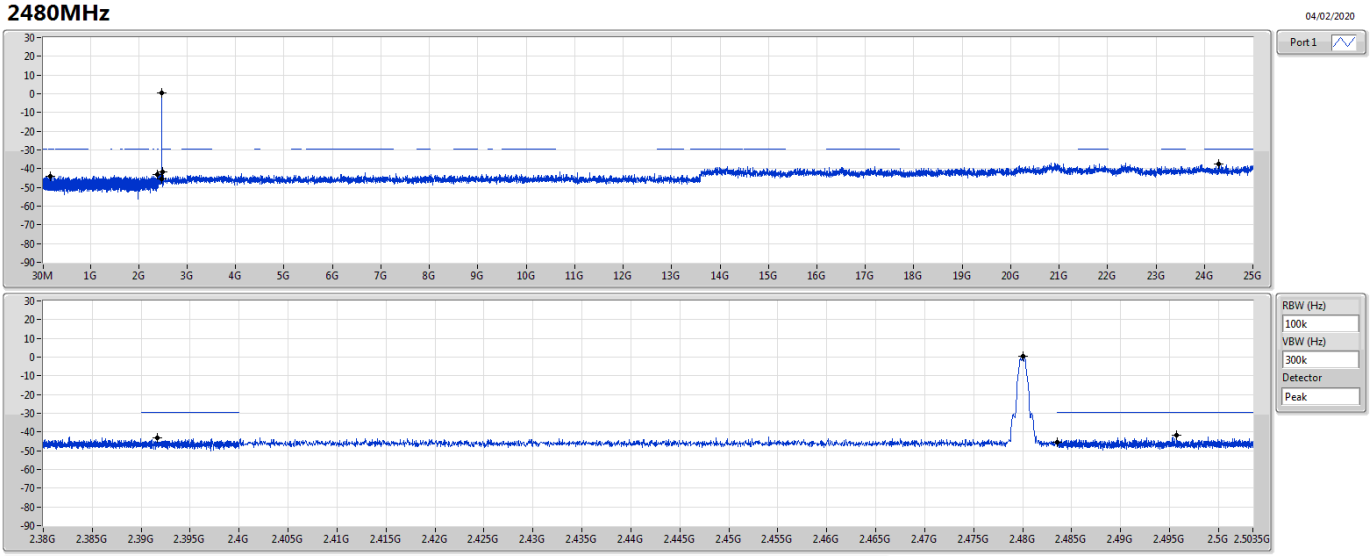
2440MHz



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
2.47999G	0.63	-29.37	1.98726G	-43.62	2.39575G	-43.23	2.4G	-46.13	2.48878G	-42.52	24.94095G	-37.09	1

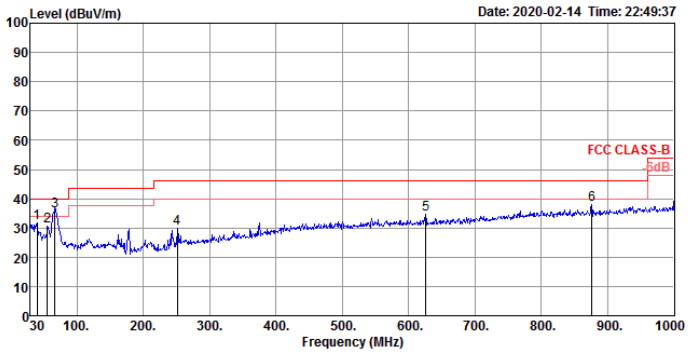
BT-LE(1Mbps) **CSE NdB**

2480MHz



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
2.47999G	0.63	-29.37	176.29M	-43.86	2.39166G	-43.19	2.4835G	-45.60	2.49573G	-41.72	24.2998G	-37.51	1

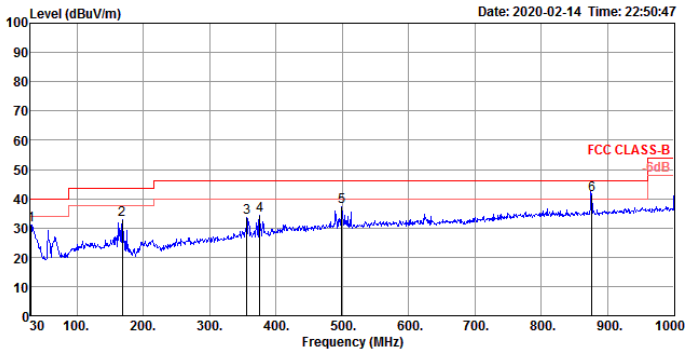
RSE below 1GHz Result			
Operating Mode	2	**Polarization**	Vertical
Operating Function	CTX		



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	39.70	31.73	40.00	-8.27	42.45	0.83	19.96	31.51	100	40	Peak	VERTICAL
2	55.22	30.47	40.00	-9.53	47.73	0.92	13.62	31.80	200	0	Peak	VERTICAL
3	66.86	35.81	40.00	-4.19	54.07	1.01	12.60	31.87	145	155	QP	VERTICAL
4	251.16	29.92	46.00	-16.08	40.92	2.04	18.99	32.03	100	13	Peak	VERTICAL
5	625.58	34.64	46.00	-11.36	38.58	3.28	25.21	32.43	300	163	Peak	VERTICAL
6	875.84	38.12	46.00	-7.88	39.10	3.92	27.50	32.40	125	192	Peak	VERTICAL

Note 1: “>20dB” means emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found emissions (No emissions were detected.)

RSE below 1GHz Result			
Operating Mode	2	**Polarization**	Horizontal
Operating Function	CTX		



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	30.97	30.88	40.00	-9.12	36.64	0.69	25.11	31.56	200	75	Peak	HORIZONTAL
2	168.71	32.70	43.50	-10.80	46.88	1.66	16.06	31.90	200	108	Peak	HORIZONTAL
3	355.92	33.76	46.00	-12.24	42.10	2.47	21.34	32.15	150	133	Peak	HORIZONTAL
4	375.32	34.39	46.00	-11.61	42.17	2.51	21.88	32.17	100	239	Peak	HORIZONTAL
5	499.48	37.18	46.00	-8.82	42.93	2.93	23.80	32.48	150	129	Peak	HORIZONTAL
6	875.84	41.47	46.00	-4.53	42.45	3.92	27.50	32.40	100	203	Peak	HORIZONTAL

Note 1: “>20dB” means emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found emissions (No emissions were detected.)

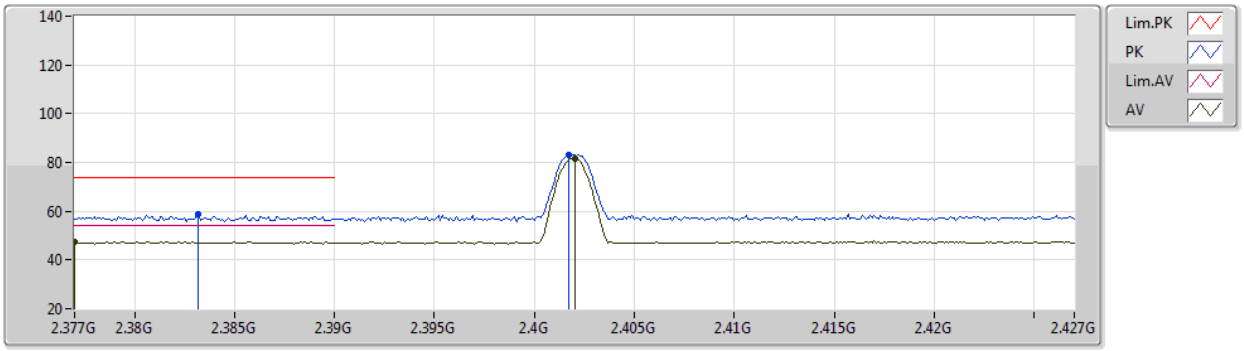
Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	AV	2.4865G	47.89	54.00	-6.11	3	Vertical	63	1.80	-

BT-LE(1Mbps)

2402MHz_TX

30/01/2020



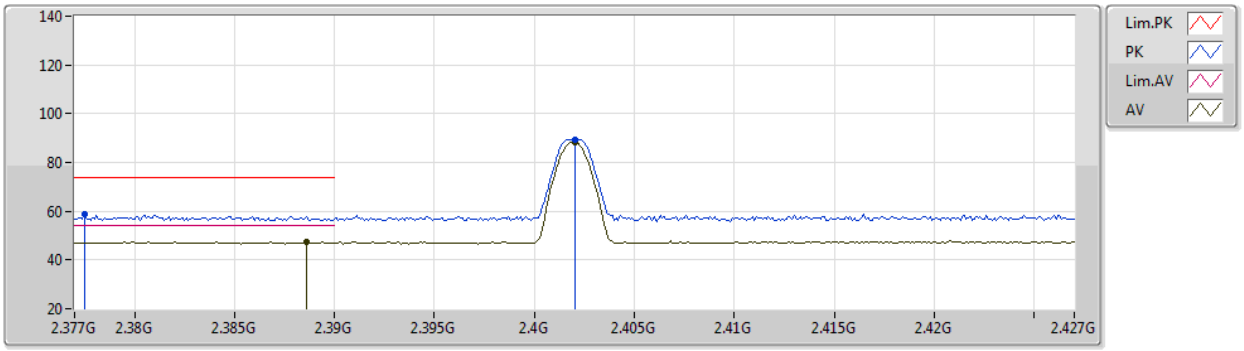
EUT Y_1TX
Setting Default
06-H-S-5

Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
PK	2.3832G	58.88	74.00	-15.12	27.24	3	Vertical	73	1.80	-	27.65	3.99	-
AV	2.377G	47.48	54.00	-6.52	15.82	3	Vertical	73	1.80	-	27.67	3.99	-
PK	2.4017G	83.01	Inf	-Inf	51.42	3	Vertical	73	1.80	-	27.59	4.00	-
AV	2.402G	81.71	Inf	-Inf	50.12	3	Vertical	73	1.80	-	27.59	4.00	-

BT-LE(1Mbps)

2402MHz_TX

30/01/2020



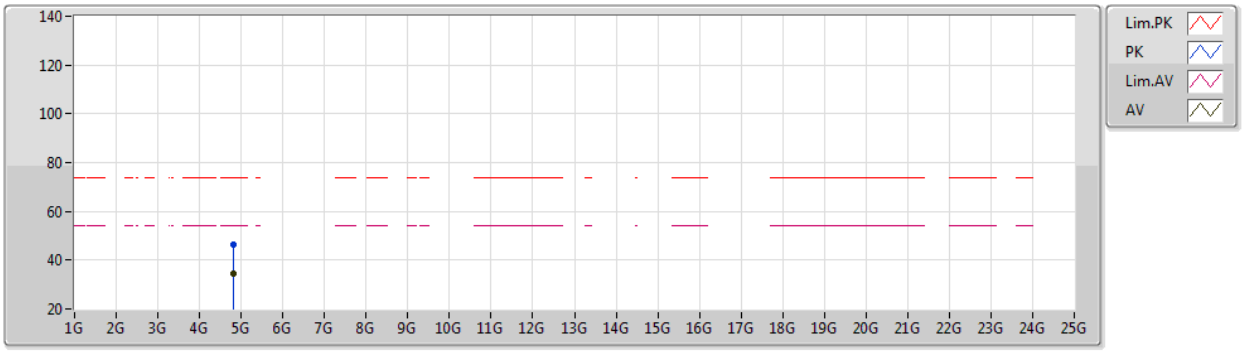
EUT Y_1TX
Setting Default
06-H-S-5

Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
PK	2.3775G	58.73	74.00	-15.27	27.07	3	Horizontal	283	1.00	-	27.67	3.99	-
AV	2.3886G	47.46	54.00	-6.54	15.84	3	Horizontal	283	1.00	-	27.63	3.99	-
PK	2.402G	89.45	Inf	-Inf	57.86	3	Horizontal	283	1.00	-	27.59	4.00	-
AV	2.402G	88.33	Inf	-Inf	56.74	3	Horizontal	283	1.00	-	27.59	4.00	-

BT-LE(1Mbps)

2402MHz_TX

30/01/2020



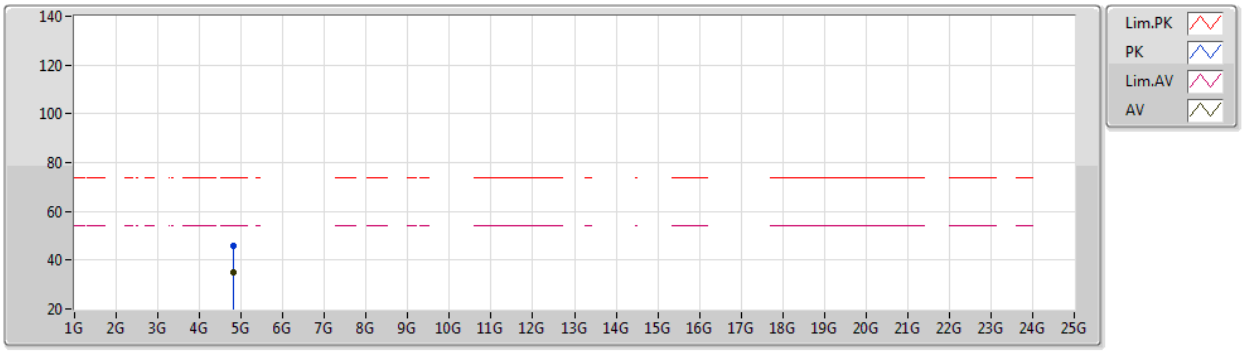
EUT Y_1TX
Setting Default
06-H-S-5

Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
PK	4.79914G	46.35	74.00	-27.65	41.73	3	Vertical	317	2.61	-	31.00	5.30	31.68
AV	4.80028G	34.59	54.00	-19.41	29.97	3	Vertical	317	2.61	-	31.00	5.30	31.68

BT-LE(1Mbps)

2402MHz_TX

30/01/2020



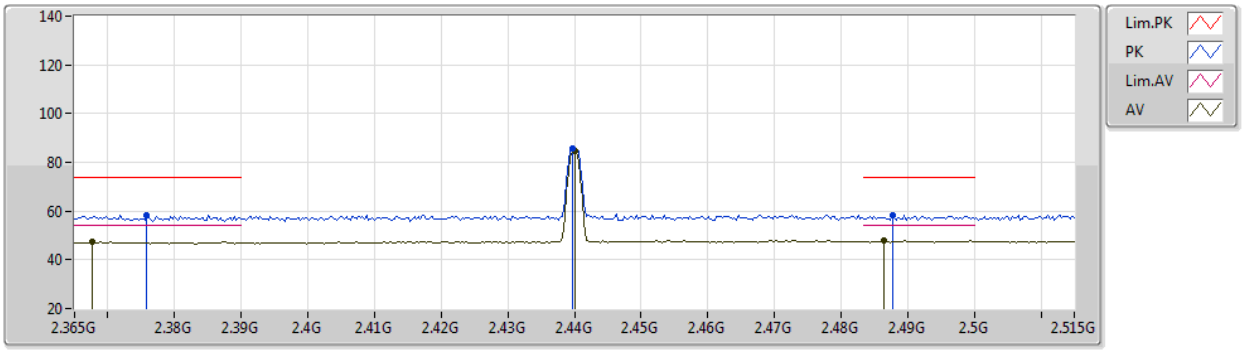
EUT Y_1TX
Setting Default
06-H-S-5

Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
PK	4.80522G	45.88	74.00	-28.12	41.24	3	Horizontal	248	1.96	-	31.01	5.31	31.68
AV	4.80296G	34.78	54.00	-19.22	30.16	3	Horizontal	248	1.96	-	31.00	5.30	31.68

BT-LE(1Mbps)

2440MHz_TX

30/01/2020



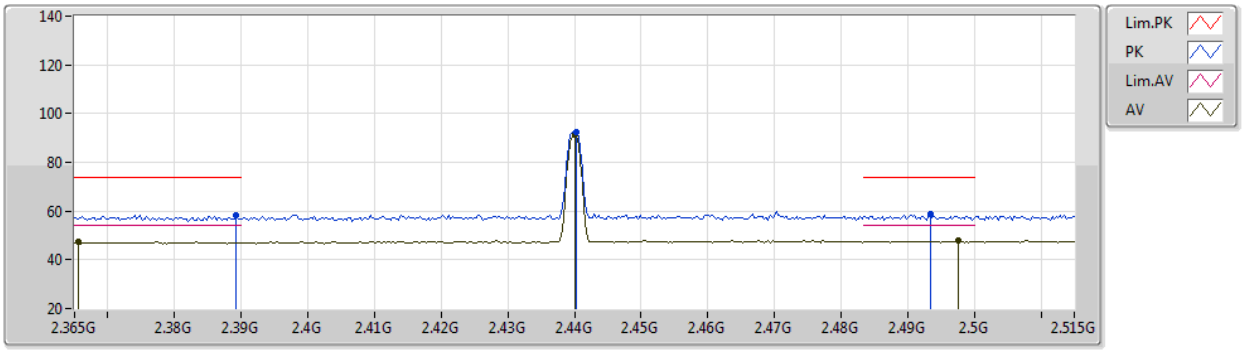
EUT Y_1TX
Setting Default
06-H-S-5

Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
PK	2.3758G	58.48	74.00	-15.52	26.82	3	Vertical	63	1.80	-	27.67	3.99	-
AV	2.3677G	47.29	54.00	-6.71	15.61	3	Vertical	63	1.80	-	27.70	3.98	-
PK	2.4397G	85.91	Inf	-Inf	54.41	3	Vertical	63	1.80	-	27.48	4.02	-
AV	2.44G	84.79	Inf	-Inf	53.29	3	Vertical	63	1.80	-	27.48	4.02	-
PK	2.4877G	58.51	74.00	-15.49	27.13	3	Vertical	63	1.80	-	27.34	4.04	-
AV	2.4865G	47.89	54.00	-6.11	16.51	3	Vertical	63	1.80	-	27.34	4.04	-

BT-LE(1Mbps)

2440MHz_TX

30/01/2020



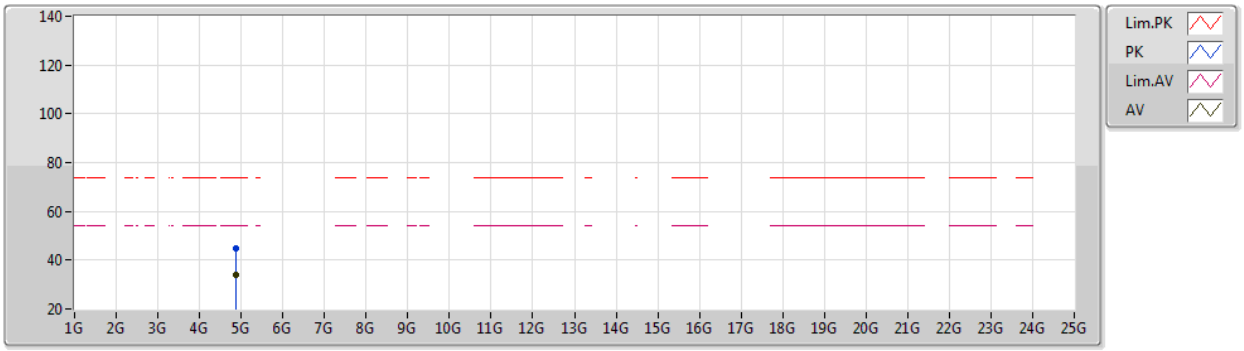
EUT Y_1TX
Setting Default
06-H-S-5

Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
PK	2.3893G	58.22	74.00	-15.78	26.60	3	Horizontal	307	1.07	-	27.63	3.99	-
AV	2.3656G	47.29	54.00	-6.71	15.61	3	Horizontal	307	1.07	-	27.70	3.98	-
PK	2.4403G	92.43	Inf	-Inf	60.93	3	Horizontal	307	1.07	-	27.48	4.02	-
AV	2.44G	91.37	Inf	-Inf	59.87	3	Horizontal	307	1.07	-	27.48	4.02	-
PK	2.4934G	58.94	74.00	-15.06	27.57	3	Horizontal	307	1.07	-	27.32	4.05	-
AV	2.4976G	47.86	54.00	-6.14	16.50	3	Horizontal	307	1.07	-	27.31	4.05	-

BT-LE(1Mbps)

2440MHz_TX

30/01/2020



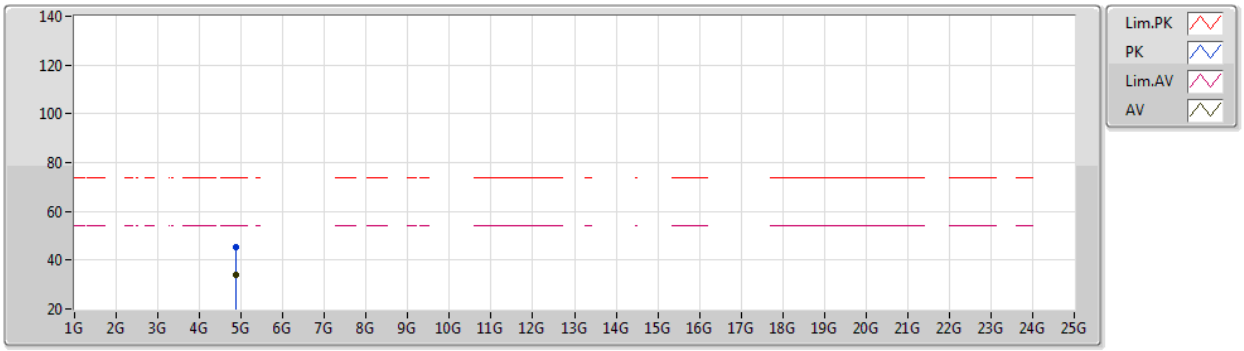
EUT Y_1TX
Setting Default
06-H-S-5

Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
PK	4.87748G	44.97	74.00	-29.03	40.11	3	Vertical	320	2.89	-	31.08	5.41	31.63
AV	4.88228G	34.10	54.00	-19.90	29.23	3	Vertical	320	2.89	-	31.08	5.42	31.63

BT-LE(1Mbps)

2440MHz_TX

30/01/2020



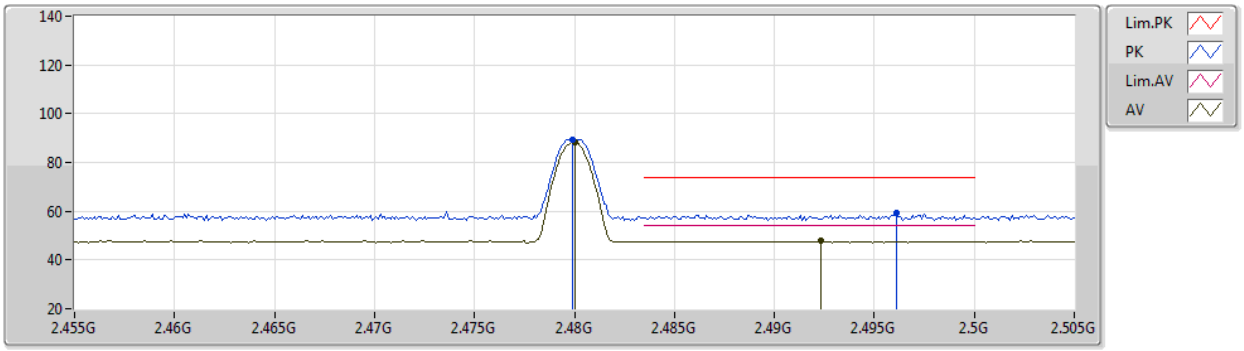
EUT Y_1TX
Setting Default
06-H-S-5

Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
PK	4.87988G	45.17	74.00	-28.83	40.31	3	Horizontal	142	1.97	-	31.08	5.41	31.63
AV	4.88016G	34.08	54.00	-19.92	29.22	3	Horizontal	142	1.97	-	31.08	5.41	31.63

BT-LE(1Mbps)

2480MHz_TX

30/01/2020



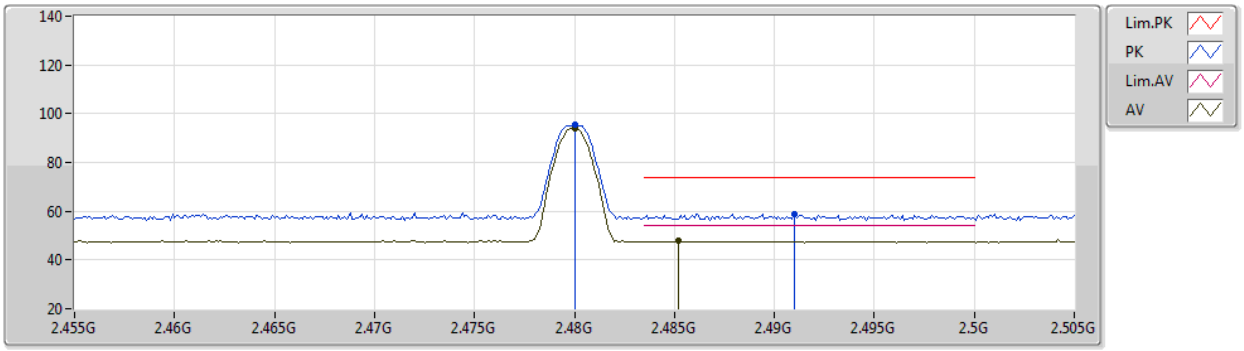
EUT Y_1TX
Setting Default
06-H-S-5

Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
PK	2.4799G	89.38	Inf	-Inf	57.98	3	Vertical	314	2.55	-	27.36	4.04	-
AV	2.48G	88.25	Inf	-Inf	56.85	3	Vertical	314	2.55	-	27.36	4.04	-
PK	2.4961G	59.23	74.00	-14.77	27.87	3	Vertical	314	2.55	-	27.31	4.05	-
AV	2.4923G	47.88	54.00	-6.12	16.51	3	Vertical	314	2.55	-	27.32	4.05	-

BT-LE(1Mbps)

2480MHz_TX

30/01/2020



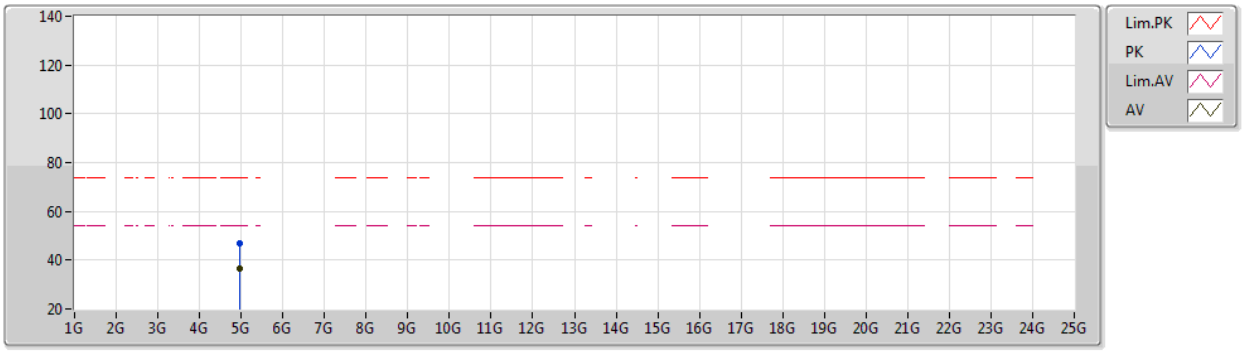
EUT Y_1TX
Setting Default
06-H-S-5

Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
PK	2.48G	95.27	Inf	-Inf	63.87	3	Horizontal	320	1.02	-	27.36	4.04	-
AV	2.48G	94.21	Inf	-Inf	62.81	3	Horizontal	320	1.02	-	27.36	4.04	-
PK	2.491G	58.70	74.00	-15.30	27.32	3	Horizontal	320	1.02	-	27.33	4.05	-
AV	2.4852G	47.89	54.00	-6.11	16.51	3	Horizontal	320	1.02	-	27.34	4.04	-

BT-LE(1Mbps)

2480MHz_TX

30/01/2020



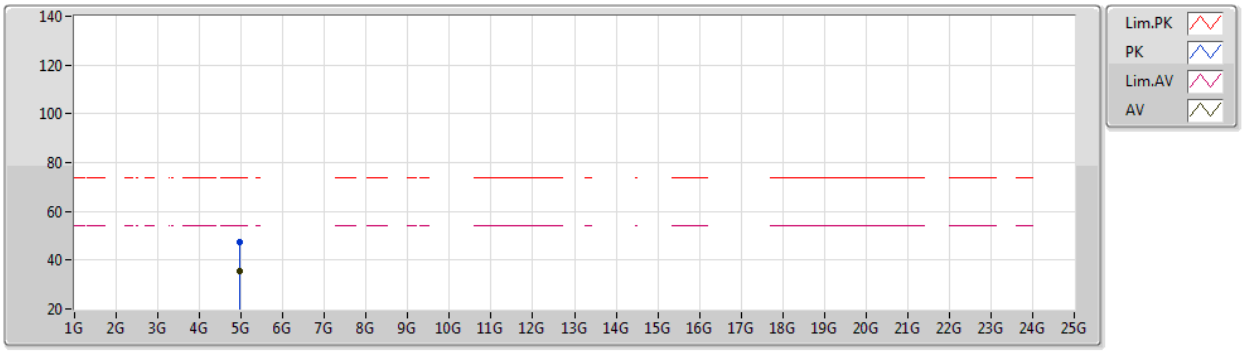
EUT Y_1TX
Setting Default
06-H-S-5

Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
PK	4.96034G	46.90	74.00	-27.10	41.60	3	Vertical	101	1.03	-	31.34	5.54	31.58
AV	4.95928G	36.64	54.00	-17.36	31.35	3	Vertical	101	1.03	-	31.34	5.53	31.58

BT-LE(1Mbps)

2480MHz_TX

30/01/2020



EUT Y_1TX
Setting Default
06-H-S-5

Type	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
PK	4.9637G	47.20	74.00	-26.80	41.89	3	Horizontal	244	1.39	-	31.35	5.54	31.58
AV	4.95952G	35.46	54.00	-18.54	30.16	3	Horizontal	244	1.39	-	31.34	5.54	31.58