Testing Laboratory 1190

FCC RADIO TEST REPORT

FCC ID	:	UXX-S5A052A
Equipment	:	R1900-5GB
Brand Name	:	Cradlepoint
Model Name	:	S5A052A
Applicant	:	Cradlepoint, Inc. 1111 West Jefferson Street ,Boise ,Idaho,United States 83702
Manufacturer	:	Cradlepoint, Inc. 1111 West Jefferson Street ,Boise ,Idaho,United States 83702
Standard	:	47 CFR FCC Part 15.247

The product was received on Nov. 05, 2020, and testing was started from Nov. 06, 2020 and completed on Dec. 16, 2020. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

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

Approved by: 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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History of this test report

Report No.	Version	Description	Issued Date
FR0N0310AC	01	Initial issue of report	Feb. 09, 2021

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: Vicky Huang

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	1
2.4-2.4835GHz	BT-LE(500Kb/s)	1	1
2.4-2.4835GHz	BT-LE(125Kb/s)	1	1
2.4-2.4835GHz	BT-LE(2Mbps)	2	1

Note:
- Bluetooth LE uses a GFSK modulation.
- BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Set	Port	Function	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	1	WLAN	PANORAMA	LG-IN2445	Combination	RP-SMA	Note 1
	2						
	-	GPS					
	-	WWAN					
	-						
	-						
	-						
2	1	WLAN	Cradlepoint	Test antenna 1	Monopole	RP-SMA	Note 1
	2						
3	1	Bluetooth	Master Wave	98242MRSX011	Dipole	RP-SMA	Note 1

Note 1:

Set	Port	Gain (dBi)			Cable loss (dB)		True Gain (dBi)		
		2.4 GHz	5GHz B1	5GHz B4	2.4 GHz	5GHz	2.4 GHz	5GHz B1	5GHz B4
1	1	2.1	2.4	2	0.7	1.1	1.4	1.3	0.9
	2								
2	1	5.5069	5.8125	5.9957	0.7	1.1	4.8069	4.7125	4.8957
	2								

Set	GPS Gain (dB)
1	26

Set	Port	Gain (dBi)	Cable loss (dB)	True Gain (dBi)
		Bluetooth	Bluetooth	Bluetooth
3	1	2.16	0.7	1.46

Set	Band	Frequency (GHz)	Gain (dBi)	Cable loss (dB)	True Gain (dBi)
1	2	1850-1920	0.25	0.42	-0.17
	4	1710-1785	0.05	0.42	-0.37
	5	807-862	0.80	0.28	0.52
	7	2496-2690	2.00	0.42	1.58
	12	699-714	0.15	0.25	-0.10
	13	777-787	0.85	0.25	0.60
	17	699-714	0.15	0.25	-0.10
	25	1850-1920	0.25	0.42	-0.17
	26	807-862	0.80	0.28	0.52
	30	2300-2400	1.50	0.42	1.08
	38	2496-2690	2.00	0.42	1.58
	41	2496-2690	2	0.42	1.58
	42	3300-3800	2.9	0.81	2.09
	48	3300-3800	2.9	0.81	2.09
	66	1710-1785	0.05	0.42	-0.37
	71	617-698	0.05	0.25	-0.20

Note: The above information was declared by manufacturer.

For 2.4GHz function:

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

Port 1 and Port 2 can be used as transmitting/receiving antenna.

Port 1 and Port 2 could transmit/receive simultaneously.

For 5GHz function:

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

Port 1 and Port 2 can be used as transmitting/receiving antenna.

Port 1 and Port 2 could transmit/receive simultaneously.

For Bluetooth Function:

For Bluetooth mode (1TX/1RX)

Only Port 1 can be use as transmit and receive antenna.

1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
BT-LE(1Mbps)	0.701	1.54	448.718u	3k
BT-LE(2Mbps)	0.4	3.98	256.41u	10k

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

1.1.4 EUT Operational Condition

EUT Power Type	From Adapter or DC PSE switch 6 pin or DC power 4 pin or DC power 8 pin			
Function	☒	Point-to-multipoint	☐	Point-to-point
Test Software Version	DOS [ver 6.1.7601]			
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		

Note1: The above information was declared by manufacturer.

Note2: This device contains WWAN module FCC ID: N7NEM91

1.1.5 Table of WWAN Module Function

Brand Name	Model Name	FCC ID	IC	Function
Sierra	EM9190	N7NEM91	2417C-EM91	3G Band:2,4,5 4G Band:2,4,5,7,12,13,14,17,25,26,30,38,41,42,48,66,71 5G Band:n2,n5,n41,n66,n71 5G EN-DC Band: EN-DC_5A_n2A,EN-DC_12A_n2A,EN-DC_2A_n5A,EN-DC_7A_n5A,EN-DC_30A_n5A,EN-DC_66A_n5A,EN-DC_2A_n41A,EN-DC_66A_n41A,EN-DC_5A_n66A,EN-DC_12A_n66A,EN-DC_13A_n66A,EN-DC_2A_n71A,EN-DC_7A_n71A,EN-DC_66A_n71A

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, Ln. 724, Bo'ai St., Zhubei 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	Brian Sun	23.6-24.9°C / 55-59%	Nov. 06, 2020~ Nov. 28, 2020
Radiated (below 1GHz)	03CH04-CB	JN Tu	24.3-25.1°C / 56-58%	Nov. 11, 2020~ Dec. 15, 2020
	03CH05-CB	JN Tu	24.5-25.4°C / 55-57%	Nov. 11, 2020~ Dec. 15, 2020
Radiated (above 1GHz)	03CH06-CB	KJ Chang	24.6-25.2°C / 55-57%	Nov. 06, 2020~ Nov. 14, 2020
AC Conduction	CO01-CB	Ryo Fan	23~24°C / 59~60%	Nov. 18, 2020~ Dec. 16, 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 (9kHz ~ 30MHz)	3.8 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	5.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	5.0 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.9 dB	Confidence levels of 95%
Conducted Emission	2.8 dB	Confidence levels of 95%
Output Power Measurement	1.4 dB	Confidence levels of 95%
Power Density Measurement	2.8 dB	Confidence levels of 95%
Bandwidth Measurement	0.4%	Confidence levels of 95%

2 Test Configuration of EUT

2.1 Test Channel Mode

Mode	Power Setting
BT-LE(1Mbps)	-
2402MHz	200
2440MHz	200
2478MHz	200
2480MHz	160
BT-LE(2Mbps)	-
2402MHz	200
2440MHz	200
2478MHz	200
2480MHz	110

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

Mode	WLAN	Bluetooth	GPS	WWAN	SIM Slot	Power
1	● Set 1	●	●	● Set 1 3G Band 2	● 1	● DC PSE switch 6 pin
2	● Set 1	●	●	● Set 1 3G Band 2	● 2	● DC PSE switch 6 pin
3 (Note1)	● Set 2	●	●	● Set 1 3G Band 2	● 1	● DC PSE switch 6 pin
4 (Note2)	● Set 1	●	●	● Set 1 3G Band 2	● 1	● Adapter 1
5 (Note2)	● Set 1	●	●	● Set 1 3G Band 2	● 1	● DC power 4 pin
6 (Note2)	● Set 1	●	●	● Set 1 3G Band 2	● 1	● DC power 8 pin
7 (Note2)	● Set 1	●	●	● Set 1 3G Band 2	● 1	● Adapter 2
8 (Note3)	● Set 1	●	●	● Set 1 4G Band 2	● 1	● DC PSE switch 6 pin
9 (Note3)	● Set 1	●	●	● Set 1 5G EN-DC Band DC_5A_n2A	● 1	● DC PSE switch 6 pin

Note 1: 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.
Note 2: Mode 1 has been evaluated to be the worst case among Mode 1~3, thus measurement for Mode 4~7 will follow this same test mode
Note 3: Mode 1 has been evaluated to be the worst case among Mode 1~7, thus measurement for Mode 8~9 will follow this same test mode
Mode 1 generated the worst test result, so it was recorded in this 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	Normal Link

Mode	EUT	WLAN	Bluetooth	GPS	WWAN	SIM Slot	Power
1	Z axis	● Set 1 (Z axis)	●	● Set 1 (Z axis)	● Set 1 (Z axis) 3G Band 2	● 1	● DC PSE switch 6 pin
2	Y axis	● Set 1 (Z axis)	●	● Set 1 (Z axis)	● Set 1 (Z axis) 3G Band 2	● 1	● DC PSE switch 6 pin
3 (Note1)	Z axis	● Set 1 (Y axis)	●	● Set 1 (Y axis)	● Set 1 (Y axis) 3G Band 2	● 1	● DC PSE switch 6 pin
4 (Note2)	Z axis	● Set 1 (Z axis)	●	● Set 1 (Z axis)	● Set 1 (Z axis) 3G Band 2	● 2	● DC PSE switch 6 pin
5 (Note3) (Note6)	Z axis	● Set 2 (Y axis)	●	● Set 1 (Z axis)	● Set 1 (Z axis) 3G Band 2	● 2	● DC PSE switch 6 pin
6 (Note3) (Note6)	Z axis	● Set 2 (Z axis)	●	● Set 1 (Z axis)	● Set 1 (Z axis) 3G Band 2	● 2	● DC PSE switch 6 pin

7 (Note4)	Z axis	● Set 1 (Z axis)	●	● Set 1 (Z axis)	● Set 1 (Z axis) 3G Band 2	● 2	● Adapter 1
8 (Note4)	Z axis	● Set 1 (Z axis)	●	● Set 1 (Z axis)	● Set 1 (Z axis) 3G Band 2	● 2	● DC power 4 pin
9 (Note4)	Z axis	● Set 1 (Z axis)	●	● Set 1 (Z axis)	● Set 1 (Z axis) 3G Band 2	● 2	● DC power 8 pin
10 (Note4)	Z axis	● Set 1 (Z axis)	●	● Set 1 (Z axis)	● Set 1 (Z axis) 3G Band 2	● 2	● Adapter 2
11 (Note5)	Z axis	● Set 1 (Z axis)	●	● Set 1 (Z axis)	● Set 1 (Z axis) 4G Band 2	● 2	● Adapter 2
12 (Note5)	Z axis	● Set 1 (Z axis)	●	● Set 1 (Z axis)	● Set 1 (Z axis) 5G EN-DC Band DC_5A_n2A	● 2	● Adapter 2

Note 1: 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.
Note 2: Mode 1 has been evaluated to be the worst case among Mode 1~3, thus measurement for Mode 4 will follow this same test mode
Note 3: Mode 4 has been evaluated to be the worst case among Mode 1~4, thus measurement for Mode 5~6 will follow this same test mod
Note 4: Mode 4 has been evaluated to be the worst case among Mode 1~6, thus measurement for Mode 7~10 will follow this same test mod
Note 5: Mode 10 has been evaluated to be the worst case among Mode 1~10, thus measurement for Mode 11~12 will follow this same test mod
Note 6: The antenna Set 1 antenna was performed at Y axis and Z axis position for Radiated emission below 1GHz test, and the worst case was found at Z axis. So the measurement will follow this same test configuration.
Mode 10 generated the worst test result, so it was recorded in this report.

Operating Mode > 1GHz	CTX
The EUT was performed at X axis, Y axis and Z axis position for Radiated emission above 1GHz test, and the worst case was found at X axis. So the measurement will follow this same test configuration.	
1	EUT at X axis

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+WWAN(WCDMA)
2	WLAN 2.4GHz+WLAN 5GHz+Bluetooth+WWAN(LTE)
3	WLAN 2.4GHz+WLAN 5GHz+Bluetooth+WWAN(5G)
Refer to Sporton Test Report No.: FA0N0310 for Co-location RF Exposure Evaluation.	

Note:The following support unit for measurement only, would not be marketed.

Support Unit	Brand Name	Model Name
Adapter 1	APD	WA-36N12R
Adapter 2	Ktec	KSA-36W-120300D5
DC PSE switch	CradlePoint	SAQF-D2
DC power 6 pin (For DC PSE switch use)	NIEN-YI	NYS4652
DC power 8 pin	NIEN-YI	NYS4726

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

DC power cable 4 pin*1, non-shielded, 3m

2.5 Support Equipment

For AC Conduction:

Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
A	Flash disk3.0	Transcend	JetFlash-700	N/A
B	WAN NB	DELL	E6430	N/A
C	LAN NB	DELL	E6430	N/A
D	2.4G NB	DELL	E6430	N/A
E	5G NB	DELL	E6430	N/A
F	Base station	Anritsu	MT8820C	N/A
H	SIM Card	N/A	N/A	N/A
I	PoE Load	TEXAS	TPS2373-4EVM-758	N/A
J	PoE Load NB	DELL	E6430	N/A
K	DC PSE switch	CradlePoint	SAQF-D2	N/A
L	Power Supply	Advanced	LPS-305	N/A
M	GPS Simulator	WELNAVIGATE	GS-100	N/A

For Radiated (below 1GHz):

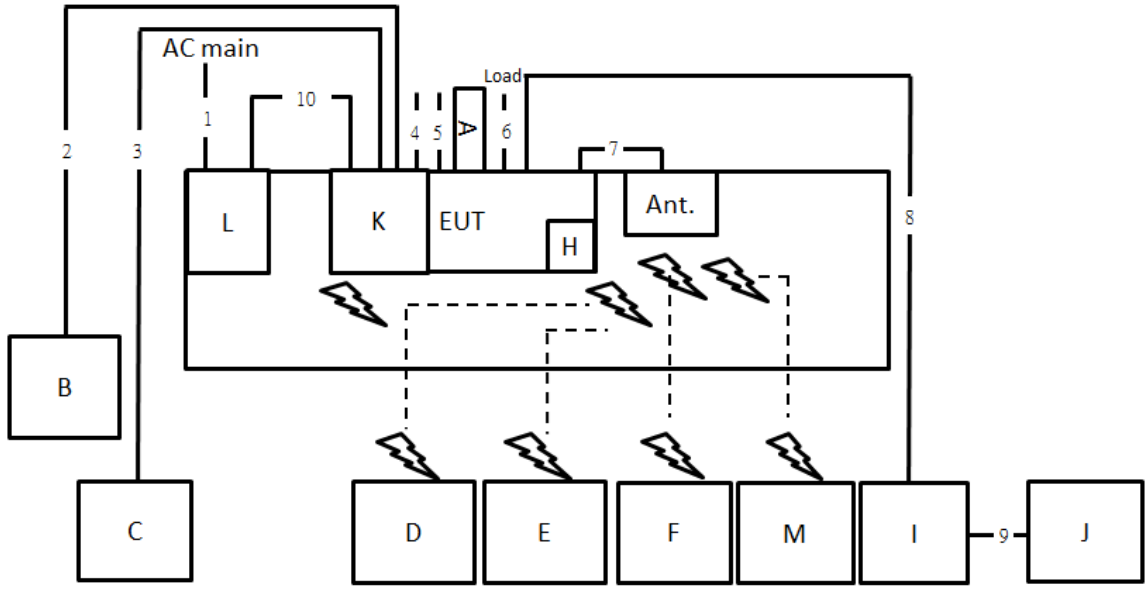
Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
A	LAN NB	DELL	E4300	N/A
B	Base station	Anritsu	MT8820C	N/A
C	WAN NB	DELL	E4300	N/A
D	2.4G NB	DELL	E4300	N/A
E	Flash disk3.0	Transcend	JetFlash-700	N/A
F	5G NB	DELL	E4300	N/A
G	GPS Simulator	WELNAVIGATE	GS-100	N/A
H	SIM Card	Anritsu	N/A	N/A
I	Adapter 2	Ktec	KSA-36W-120300D5	N/A

For Radiated (above 1GHz) and RF Conducted:

Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
A	NB	DELL	E4300	N/A
B	Adapter 1	APD	WA-36N12R	N/A

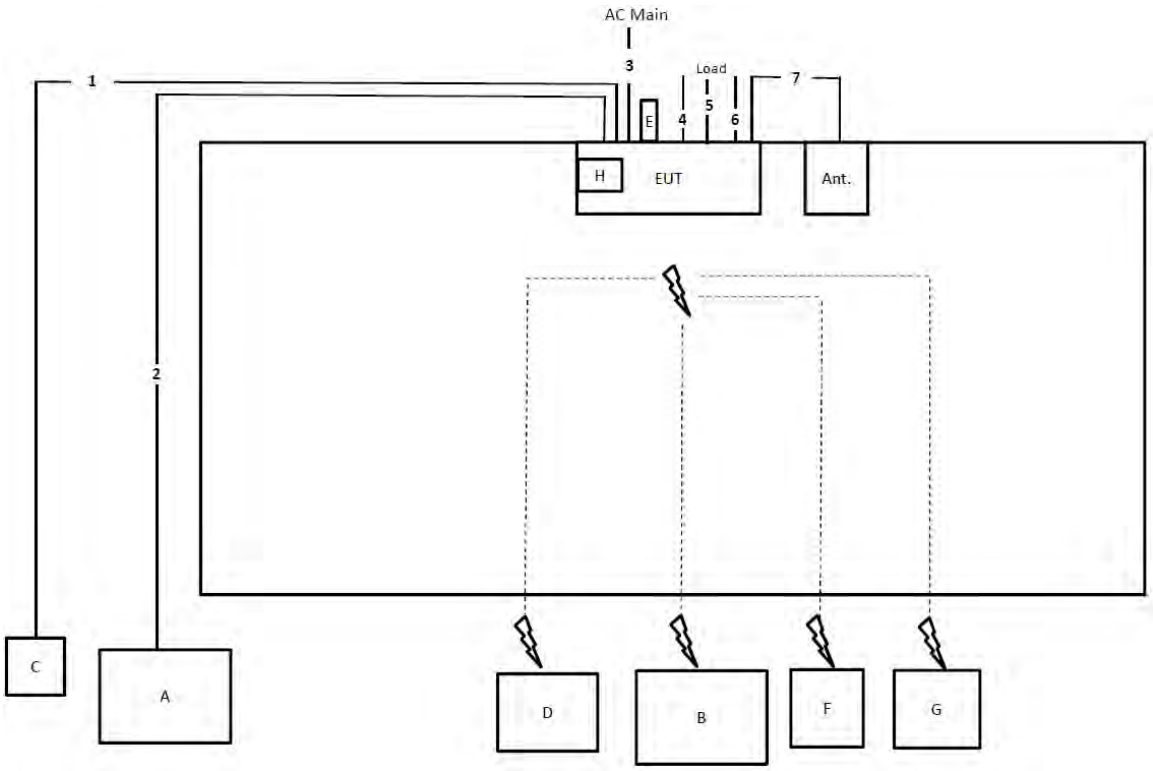
2.6 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



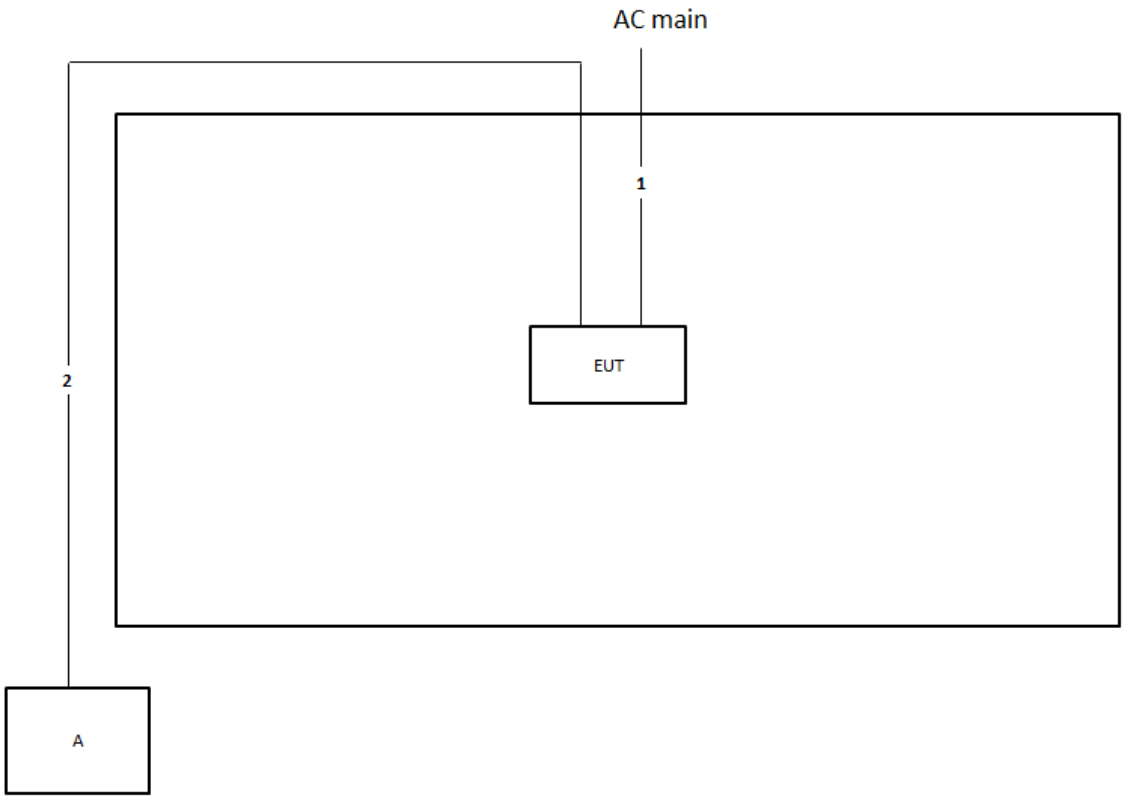
Item	Connection	Shielded	Length
1	AC Power cable	No	1.8m
2	RJ-45 cable	No	10m
3	RJ-45 cable	No	10m
4	RS-232 cable	Yes	1.5m
5	Ground cable	No	2m
6	RJ-45 cable*5	No	1.5m
7	RF cable*7	Yes	6m
8	RJ-45 cable	No	10m
9	RJ-45 cable	No	1m
10	DC Power cable	No	3m

Test Setup Diagram - Radiated Test < 1GHz



Item	Connection	Shielded	Length
1	RJ-45 cable	No	10m
2	RJ-45 cable	No	10m
3	Power cable	No	1.5m
4	RS-232 cable	Yes	1.7m
5	RJ-45 cable*2	No	1.5m
6	Ground cable	No	1.5m
7	RF cable*7	Yes	1.5m

Test Setup Diagram - Radiated Test > 1GHz



Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	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

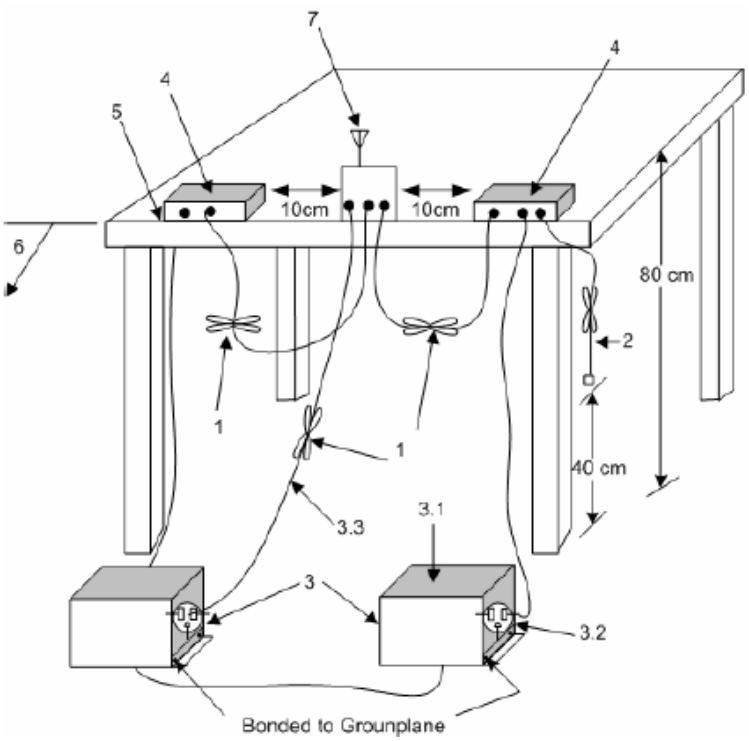
Refer a test equipment and calibration data table in this test report.

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.

1.1.1. Measurement Results Calculation

The measured Level is calculated using:

a. Corrected Reading: LISN Factor (LISN) + Attenuator (AT/AUX) + Cable Loss (CL) + Read Level (Raw) = Level

b. Margin = -Limit + Level

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.

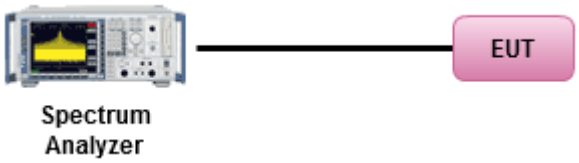
3.2.2 Measuring Instruments

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

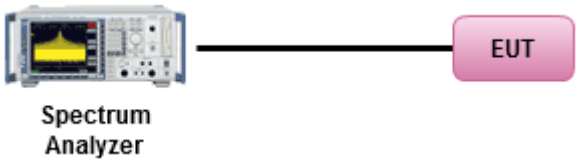
3.4.2 Measuring Instruments

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.	

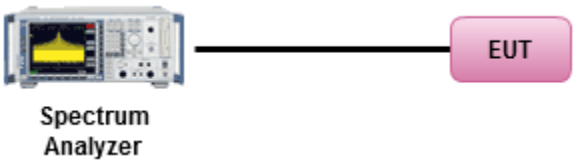
3.5.2 Measuring Instruments

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.

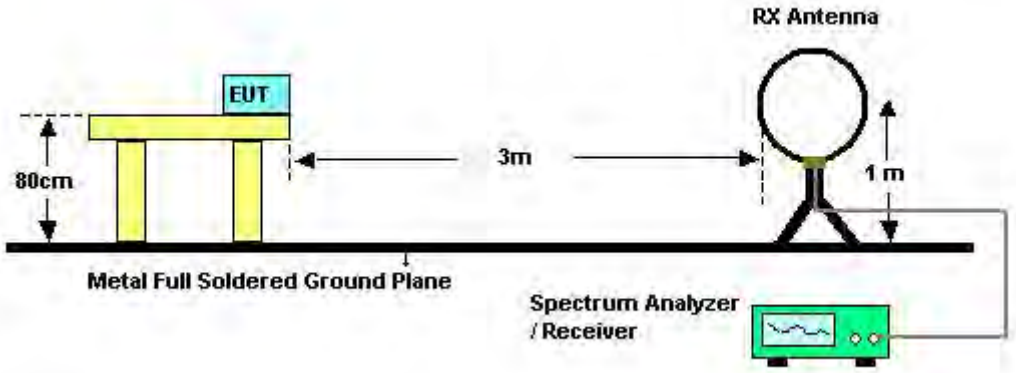
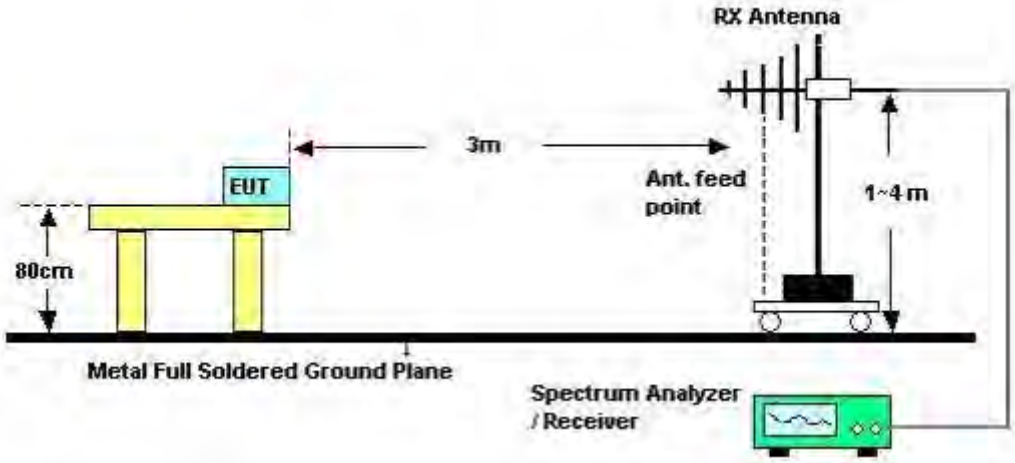
3.6.2 Measuring Instruments

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

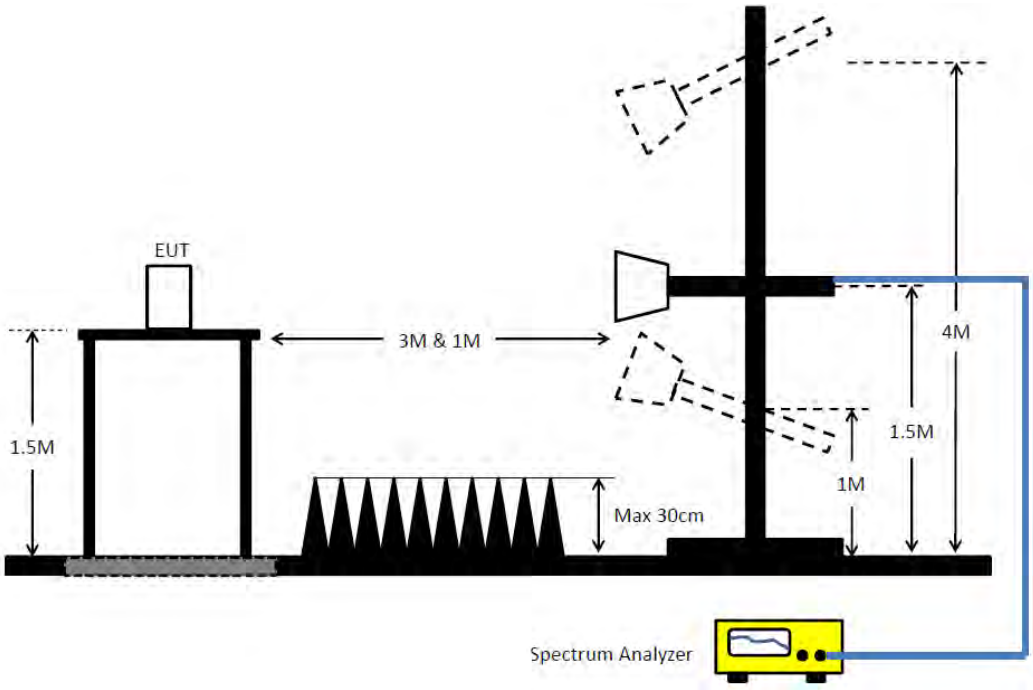
3.6.3 Test Procedures

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 (AF) + Cable loss (CL) + Read level (Raw) - Preamp factor (PA)(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 10th 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

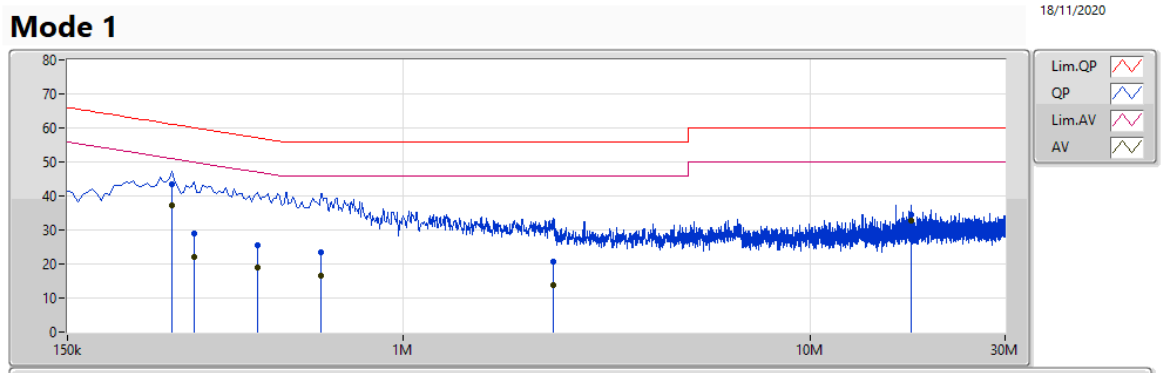
Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.4GHz	Feb. 26, 2020	Feb. 25, 2021	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 25, 2019	Dec. 24, 2020	Conduction (CO01-CB)
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 20, 2020	May 19, 2021	Conduction (CO01-CB)
Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conduction (CO01-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH04-CB	30 MHz ~ 1 GHz	Aug. 08, 2020	Aug. 07, 2021	Radiation (03CH04-CB)
BILOG ANTENNA with 6 dB attenuator	Schaffner & EMCI	CBL6112B & N-6-06	22021&AT-N0607	30MHz ~ 1GHz	Oct. 11, 2020	Oct. 10, 2021	Radiation (03CH04-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Apr. 13, 2020	Apr. 12, 2021	Radiation (03CH04-CB)
Pre-Amplifier	Agilent	310N	187291	0.1MHz ~ 1GHz	Mar. 19, 2020	Mar. 18, 2021	Radiation (03CH04-CB)
Spectrum Analyzer	R&S	FSP40	100142	9kHz~40GHz	Dec. 18, 2019	Dec. 17, 2020	Radiation (03CH04-CB
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	May 13, 2020	May 12, 2021	Radiation (03CH04-CB)
RF Cable-low	Woken	RG402	Low Cable-03+67	30MHz – 1GHz	Nov. 05, 2020	Nov. 04, 2021	Radiation (03CH04-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH04-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH05-CB	30 MHz ~ 1 GHz	Aug. 10, 2020	Aug. 09, 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)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Apr. 13, 2020	Apr. 12, 2021	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC330N	980331	20MHz ~ 3GHz	Apr. 28, 2020	Apr. 27, 2021	Radiation (03CH05-CB)
Signal Analyzer	R&S	FSV40	101904	9kHz ~ 40GHz	May 12, 2020	May 11, 2021	Radiation (03CH05-CB)
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	May 13, 2020	May 12, 2021	Radiation (03CH05-CB)
RF Cable-low	Woken	RG402	Low Cable-04+23	30MHz~1GHz	Oct. 05, 2020	Oct. 04, 2021	Radiation (03CH05-CB)

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH05-CB)
3m Semi Anechoic Chamber VSWR	TDK	SAC-3M	03CH06-CB	1GHz ~18GHz 3m	Oct. 02, 2020	Oct. 01, 2021	Radiation (03CH06-CB)
Horn Antenna	SCHWARZBECK	BBHA9120D	BBHA 9120D-1292	1GHz~18GHz	Jul. 22, 2020	Jul. 21, 2021	Radiation (03CH06-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2020	Jul. 20, 2021	Radiation (03CH06-CB)
Pre-Amplifier	Agilent	83017A	MY53270064	0.5GHz ~ 26.5GHz	May 07, 2020	May 06, 2021	Radiation (03CH06-CB)
Pre-Amplifier	MITEQ	TTA1840-35-HG	1864479	18GHz ~ 40GHz	Jul. 08, 2020	Jul. 07, 2021	Radiation (03CH06-CB)
Signal Analyzer	R&S	FSV40	101904	9kHz ~ 40GHz	May 12, 2020	May 11, 2021	Radiation (03CH06-CB)
RF Cable-high	Woken	RG402	High Cable-05	1GHz~18GHz	Oct. 05, 2020	Oct. 04, 2021	Radiation (03CH06-CB)
RF Cable-high	Woken	RG402	High Cable-05+24	1GHz~18GHz	Oct. 05, 2020	Oct. 04, 2021	Radiation (03CH06-CB)
RF Cable-high	Woken	RG402	High Cable-40G#1	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH06-CB)
RF Cable-high	Woken	RG402	High Cable-40G#2	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH06-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH06-CB)
Spectrum analyzer	R&S	FSV40	101027	9kHz~40GHz	Jul. 27, 2020	Jul. 26, 2021	Conducted (TH02-CB)
Power Sensor	Anritsu	MA2411B	1126203	300MHz~40GHz	Sep. 17, 2020	Sep. 16, 2021	Conducted (TH02-CB)
Power Meter	Anritsu	ML2495A	1210004	300MHz~40GHz	Sep. 17, 2020	Sep. 16, 2021	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-01	1 GHz – 18 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-02	1 GHz – 18 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-03	1 GHz – 18 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-04	1 GHz – 18 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-05	1 GHz – 18 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH02-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conducted (TH02-CB)

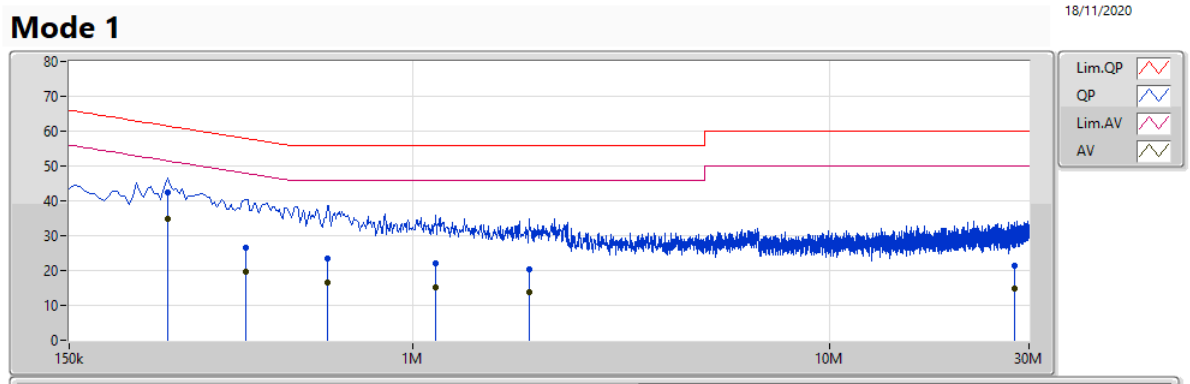
Note: Calibration Interval of instruments listed above is one year.
NCR means Non-Calibration required.

Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition
Mode 1	Pass	AV	271.5k	37.25	51.07	-13.82	9.89	Line



Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	LISN	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	271.5k	43.37	61.07	-17.70	9.89	Line	-	33.48	0.04	0.03	9.82
AV	271.5k	37.25	51.07	-13.82	9.89	Line	"Worst"	27.36	0.04	0.03	9.82
QP	307.5k	28.95	60.03	-31.08	9.90	Line	-	19.05	0.04	0.03	9.83
AV	307.5k	22.00	50.03	-28.03	9.90	Line	-	12.10	0.04	0.03	9.83
QP	438k	25.61	57.11	-31.50	9.90	Line	-	15.71	0.04	0.03	9.83
AV	438k	18.89	47.11	-28.22	9.90	Line	-	8.99	0.04	0.03	9.83
QP	627k	23.47	56.00	-32.53	9.90	Line	-	13.57	0.04	0.03	9.83
AV	627k	16.53	46.00	-29.47	9.90	Line	-	6.63	0.04	0.03	9.83
QP	2.342M	20.57	56.00	-35.43	10.01	Line	-	10.56	0.07	0.08	9.86
AV	2.342M	13.75	46.00	-32.25	10.01	Line	-	3.74	0.07	0.08	9.86
QP	17.696M	34.50	60.00	-25.50	10.48	Line	-	24.02	0.23	0.29	9.96
AV	17.696M	32.86	50.00	-17.14	10.48	Line	-	22.38	0.23	0.29	9.96



Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	LISN	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	258k	42.38	61.49	-19.11	9.89	Neutral	-	32.49	0.04	0.03	9.82
AV	258k	34.97	51.49	-16.52	9.89	Neutral	"Worst"	25.08	0.04	0.03	9.82
QP	397.5k	26.50	57.91	-31.41	9.90	Neutral	-	16.60	0.04	0.03	9.83
AV	397.5k	19.69	47.91	-28.22	9.90	Neutral	-	9.79	0.04	0.03	9.83
QP	622.5k	23.43	56.00	-32.57	9.91	Neutral	-	13.52	0.05	0.03	9.83
AV	622.5k	16.64	46.00	-29.36	9.91	Neutral	-	6.73	0.05	0.03	9.83
QP	1.136M	22.17	56.00	-33.83	9.95	Neutral	-	12.22	0.06	0.05	9.84
AV	1.136M	15.31	46.00	-30.69	9.95	Neutral	-	5.36	0.06	0.05	9.84
QP	1.896M	20.45	56.00	-35.55	10.00	Neutral	-	10.45	0.07	0.07	9.86
AV	1.896M	13.67	46.00	-32.33	10.00	Neutral	-	3.67	0.07	0.07	9.86
QP	27.654M	21.34	60.00	-38.66	10.65	Neutral	-	10.69	0.31	0.31	10.03
AV	27.654M	15.00	50.00	-35.00	10.65	Neutral	-	4.35	0.31	0.31	10.03

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)	635k	1.027M	1M03F1D	632.5k	1.023M
BT-LE(2Mbps)	1.09M	2.02M	2M02F1D	1.083M	2.013M

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

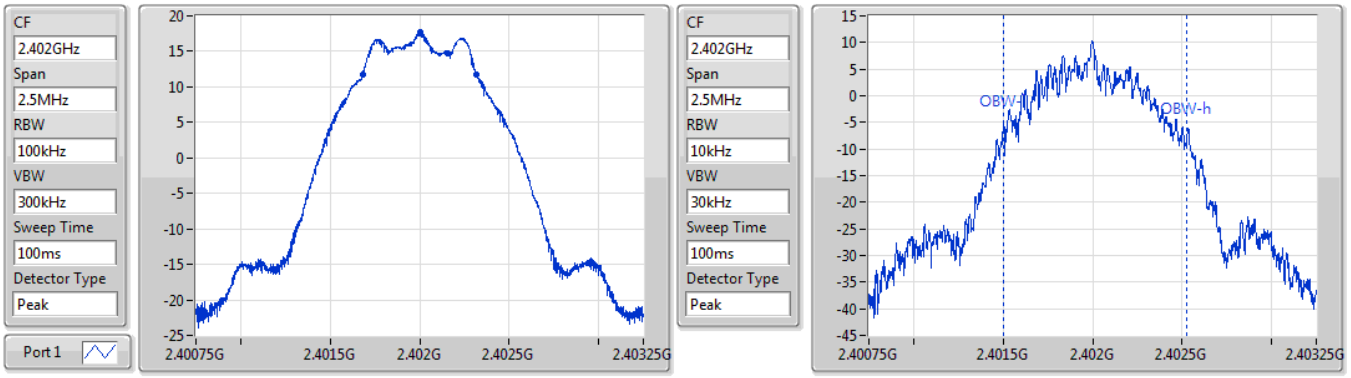
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	635k	1.027M
2440MHz	Pass	500k	633.75k	1.026M
2480MHz	Pass	500k	632.5k	1.023M
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	500k	1.09M	2.019M
2440MHz	Pass	500k	1.088M	2.02M
2480MHz	Pass	500k	1.083M	2.013M

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

BT-LE(1Mbps) EBW

2402MHz

06/11/2020

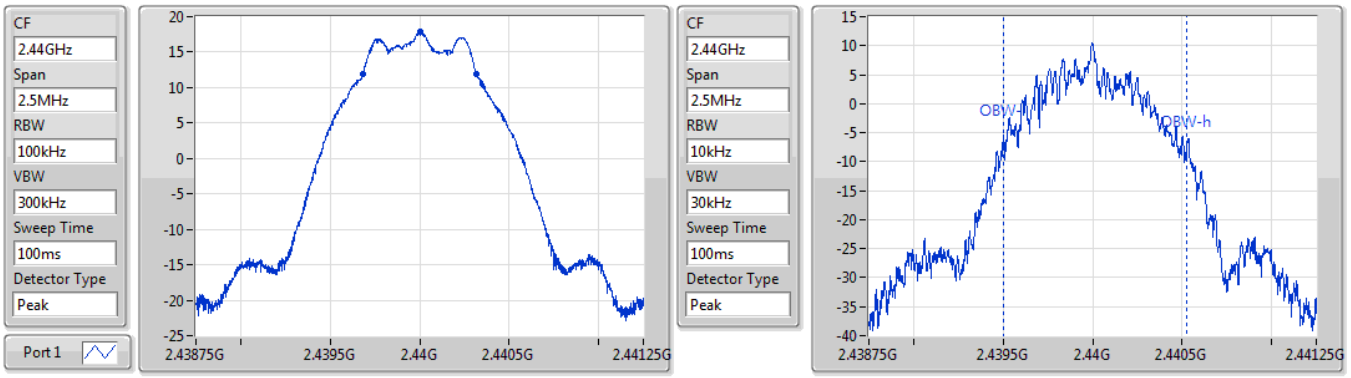


6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
635k	2.401681G	2.402316G	1.027M	2.4015G	2.402527G	500k	1

BT-LE(1Mbps) EBW

2440MHz

06/11/2020



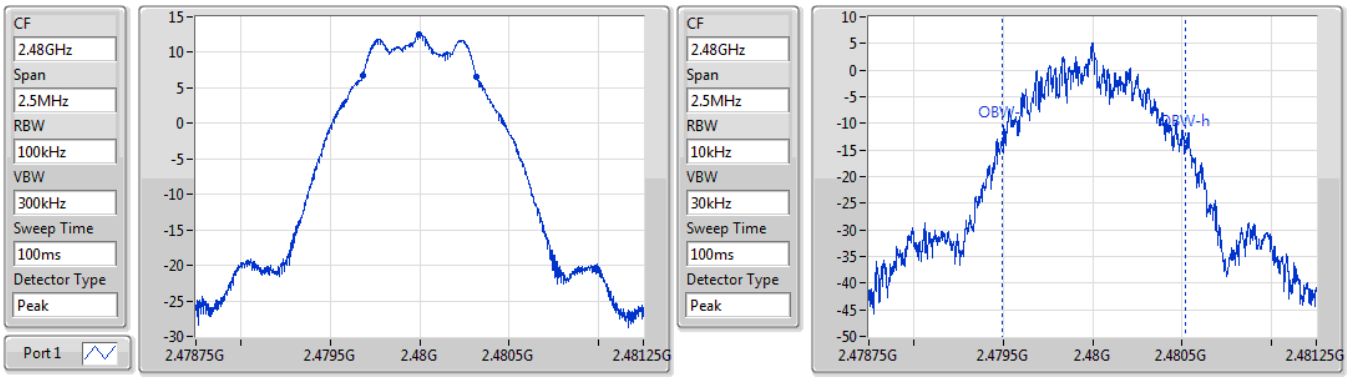
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
633.75k	2.439683G	2.440316G	1.026M	2.439501G	2.440527G	500k	1

BT-LE(1Mbps)

EBW

2480MHz

07/11/2020



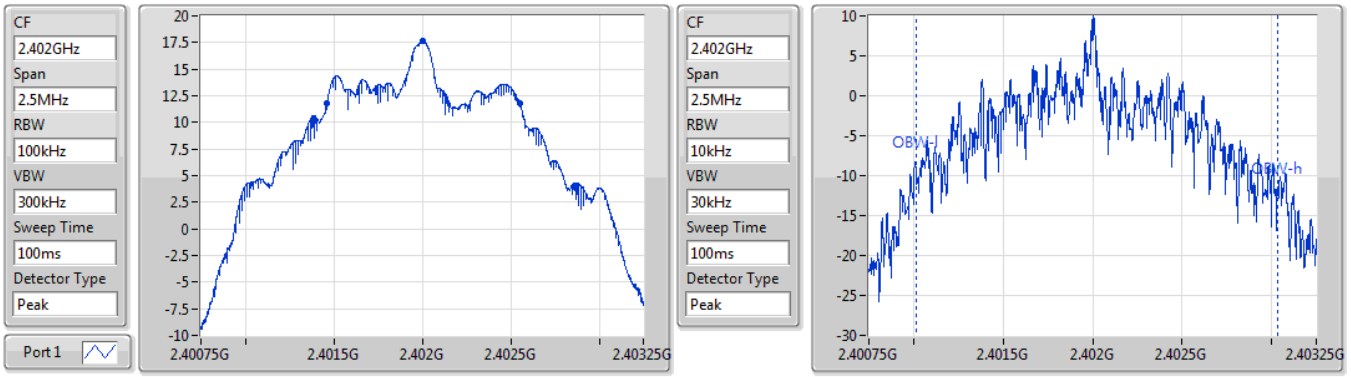
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
632.5k	2.479681G	2.480314G	1.023M	2.479498G	2.480521G	500k	1

BT-LE(2Mbps)

EBW

2402MHz

07/11/2020

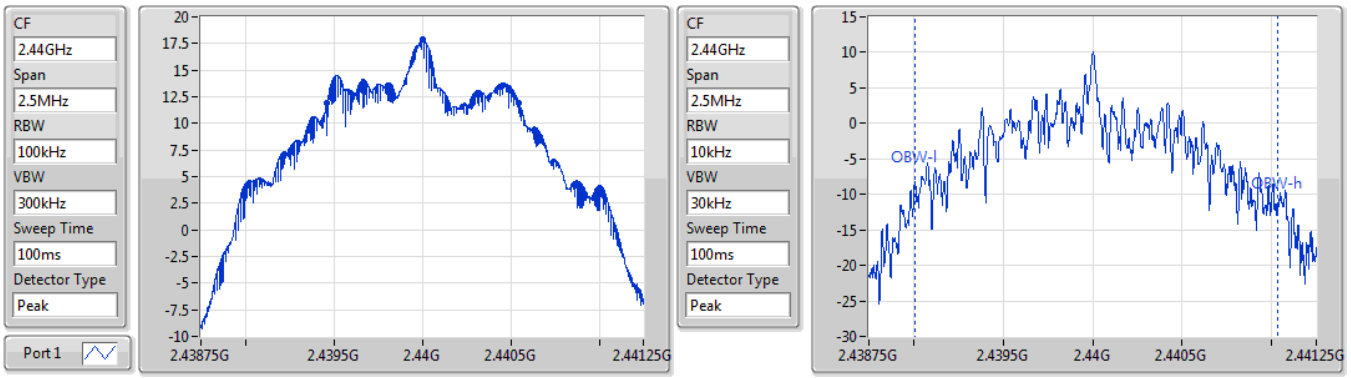


6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.09M	2.40146G	2.40255G	2.019M	2.401012G	2.403031G	500k	1

BT-LE(2Mbps) EBW

2440MHz

07/11/2020

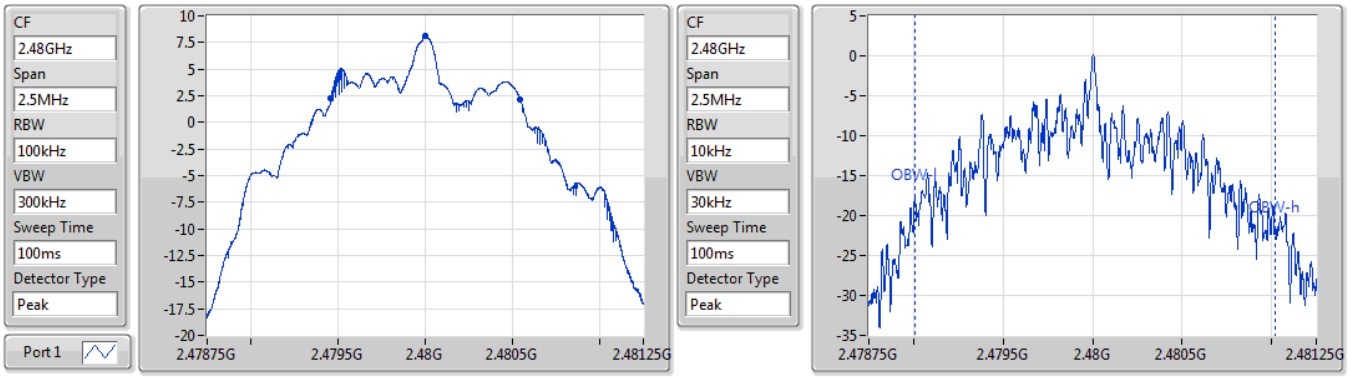


6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.088M	2.439461G	2.440549G	2.02M	2.43901G	2.441031G	500k	1

BT-LE(2Mbps) EBW

2480MHz

07/11/2020



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.083M	2.47946G	2.480543G	2.013M	2.479005G	2.481018G	500k	1

Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	17.75	0.05957
BT-LE(2Mbps)	17.70	0.05888

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	1.46	17.69	30.00
2440MHz	Pass	1.46	17.75	30.00
2478MHz	Pass	1.46	17.40	30.00
2480MHz	Pass	1.46	12.63	30.00
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	1.46	17.57	30.00
2440MHz	Pass	1.46	17.70	30.00
2478MHz	Pass	1.46	5.70	30.00
2480MHz	Pass	1.46	8.04	30.00

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

Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	2.73
BT-LE(2Mbps)	2.42

RBW=3 kHz.

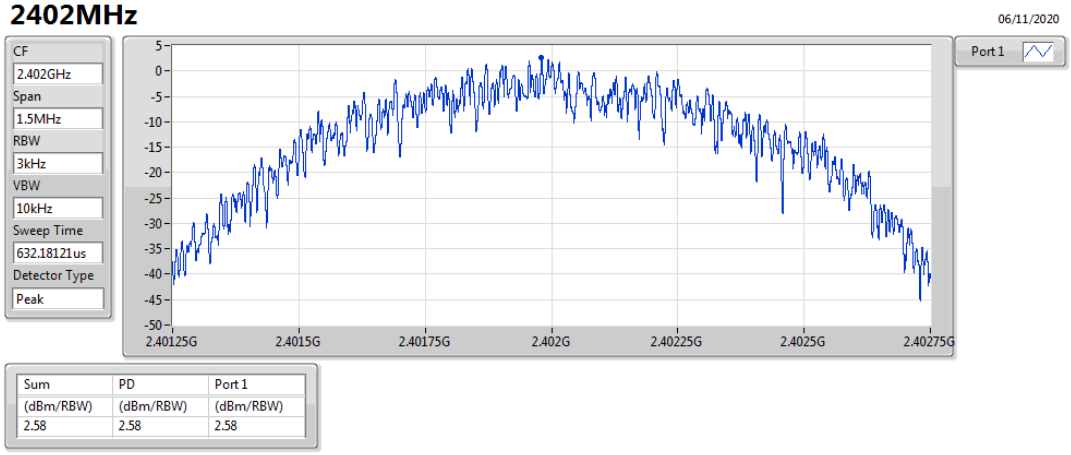
Result

Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	1.46	2.58	8.00
2440MHz	Pass	1.46	2.73	8.00
2480MHz	Pass	1.46	-2.57	8.00
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	1.46	2.22	8.00
2440MHz	Pass	1.46	2.42	8.00
2480MHz	Pass	1.46	-7.71	8.00

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

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

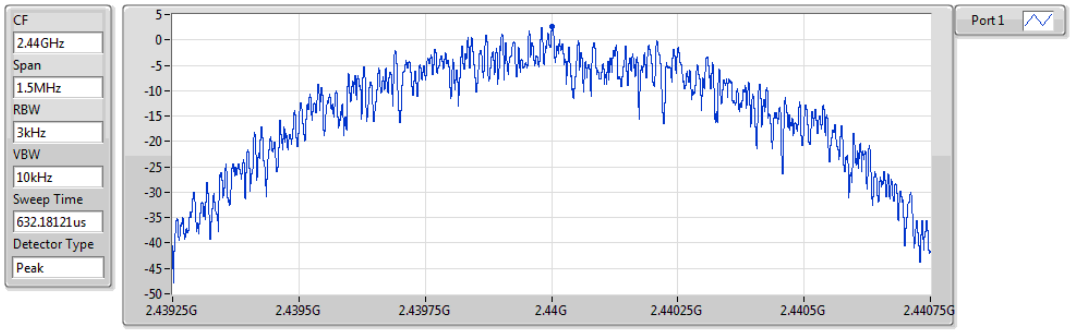
2402MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
2.58	2.58	2.58

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

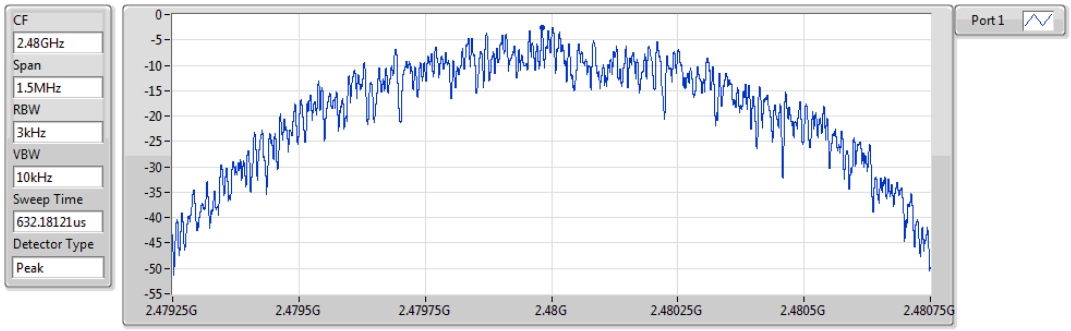
2440MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
2.73	2.73	2.73

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

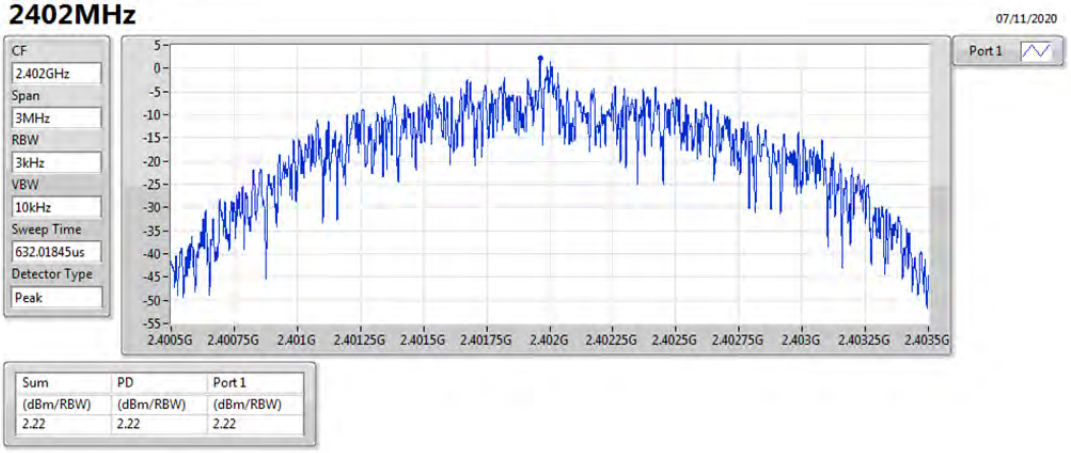
2480MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-2.57	-2.57	-2.57

BT-LE(2Mbps) **PSD**

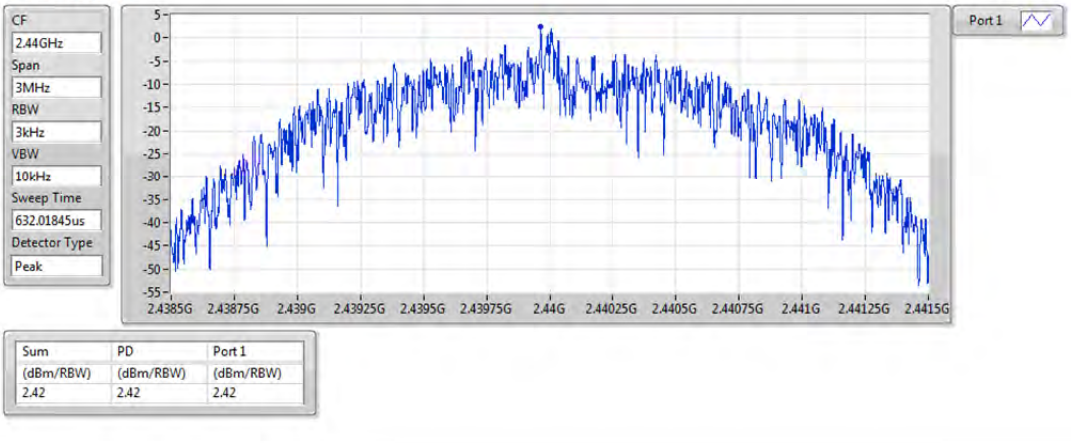
2402MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
2.22	2.22	2.22

BT-LE(2Mbps) **PSD**

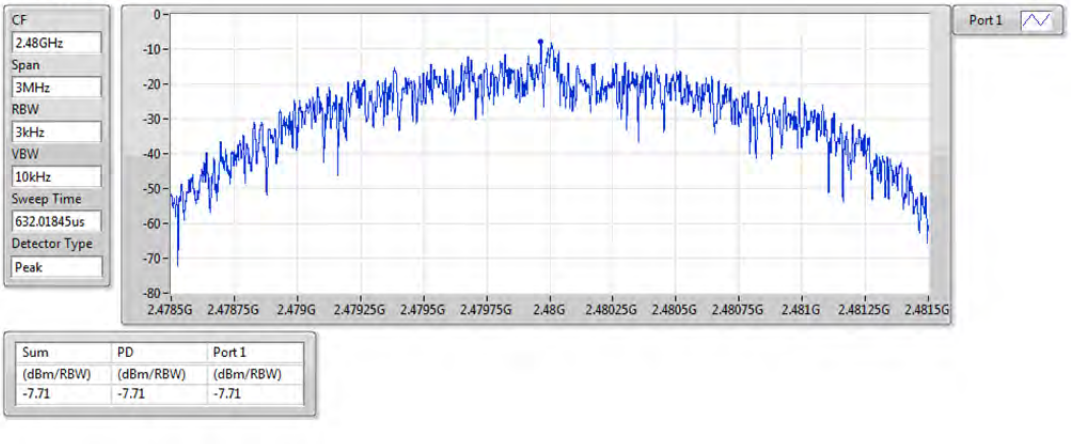
2440MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
2.42	2.42	2.42

BT-LE(2Mbps) **PSD**

2480MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-7.71	-7.71	-7.71

Summary

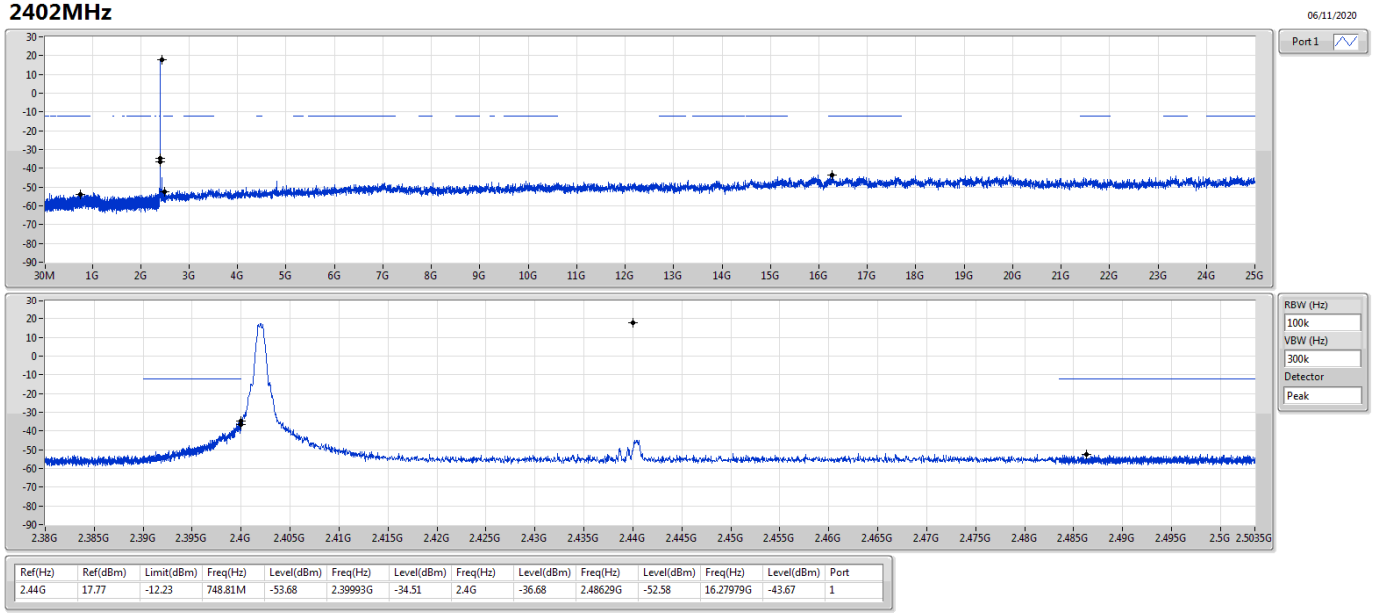
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	2.44G	17.77	-12.23	748.81M	-53.68	2.39993G	-34.51	2.4G	-36.68	2.48629G	-52.58	16.27979G	-43.67	1
BT-LE(2Mbps)	Pass	2.44G	17.87	-12.13	2.07714G	-53.19	2.4G	-14.66	2.4G	-16.20	2.48829G	-52.17	17.65208G	-43.91	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	2.44G	17.77	-12.23	748.81M	-53.68	2.39993G	-34.51	2.4G	-36.68	2.48629G	-52.58	16.27979G	-43.67	1
2440MHz	Pass	2.44G	17.77	-12.23	159.84M	-52.26	2.39611G	-52.87	2.4835G	-54.63	2.48946G	-52.10	23.56304G	-43.93	1
2480MHz	Pass	2.44G	17.77	-12.23	799.63M	-53.39	2.39919G	-52.67	2.4835G	-48.28	2.48408G	-46.99	17.69426G	-43.84	1
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.44G	17.87	-12.13	2.07714G	-53.19	2.4G	-14.66	2.4G	-16.20	2.48829G	-52.17	17.65208G	-43.91	1
2440MHz	Pass	2.44G	17.87	-12.13	912.13M	-53.36	2.39521G	-51.61	2.4835G	-54.80	2.48381G	-51.58	24.67942G	-43.59	1
2480MHz	Pass	2.44G	17.87	-12.13	159.84M	-52.68	2.39508G	-52.41	2.4835G	-48.95	2.4836G	-49.00	23.55741G	-43.94	1

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

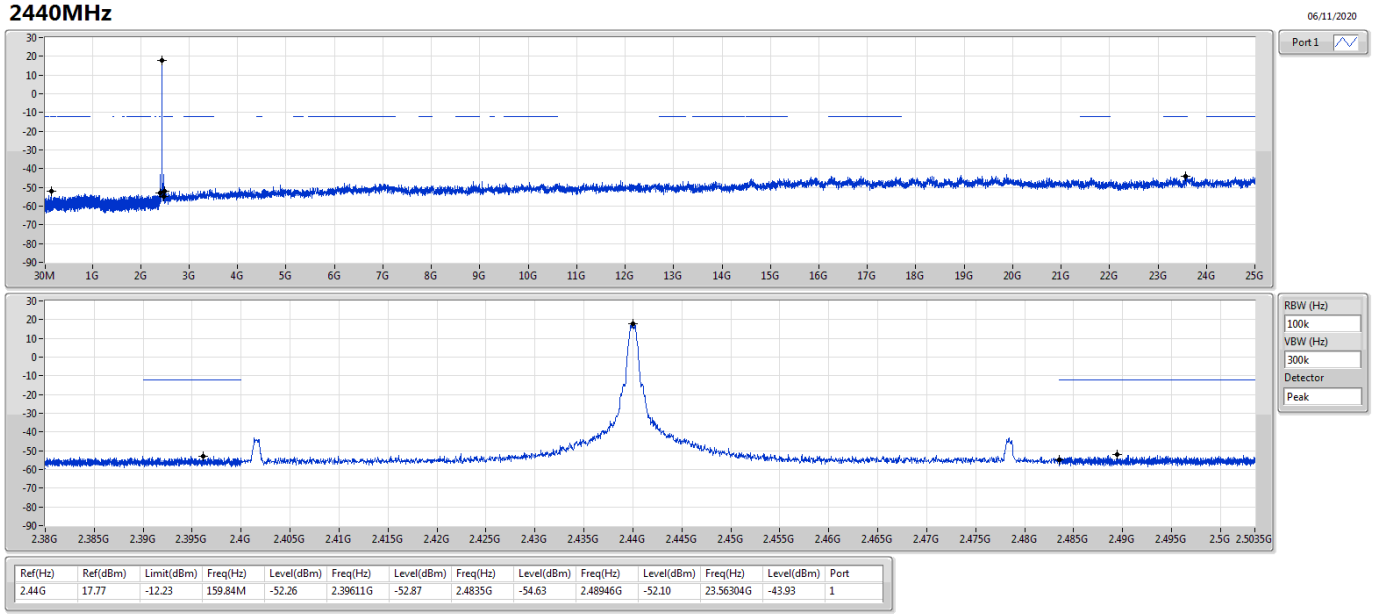
2402MHz



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
2.44G	17.77	-12.23	748.81M	-53.68	2.39993G	-34.51	2.4G	-36.68	2.48629G	-52.58	16.27979G	-43.67	1

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

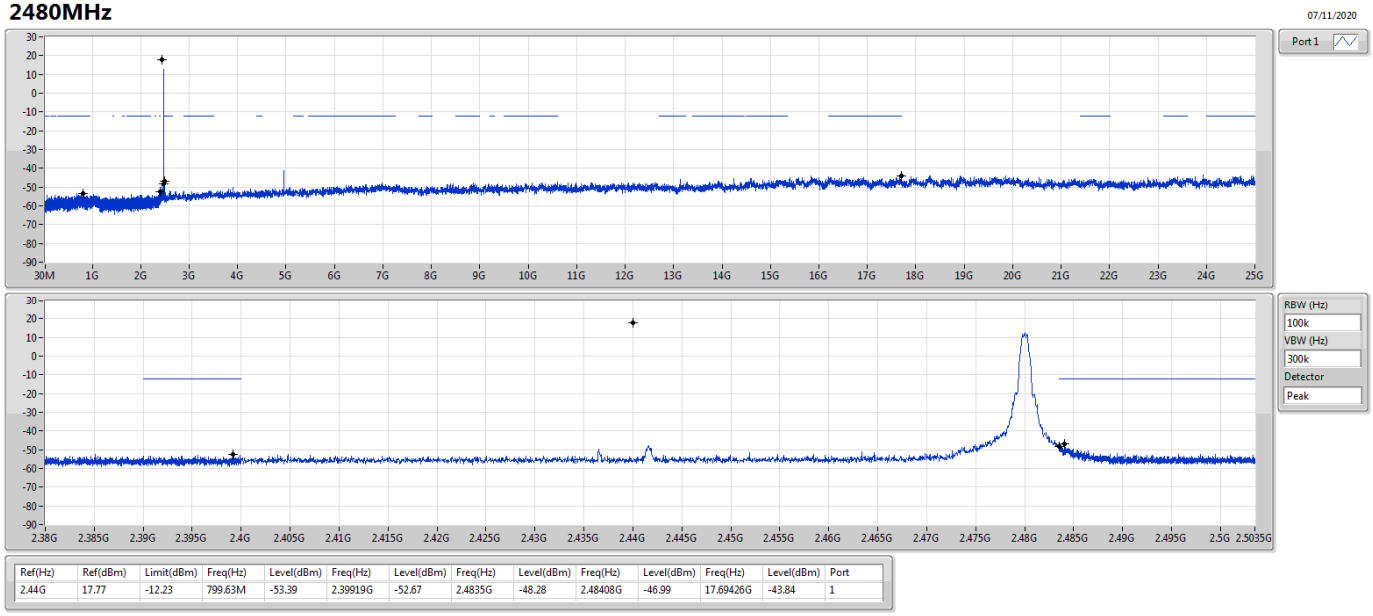
2440MHz



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
2.44G	17.77	-12.23	159.84M	-52.26	2.39611G	-52.87	2.4835G	-54.63	2.48946G	-52.10	23.56304G	-43.93	1

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

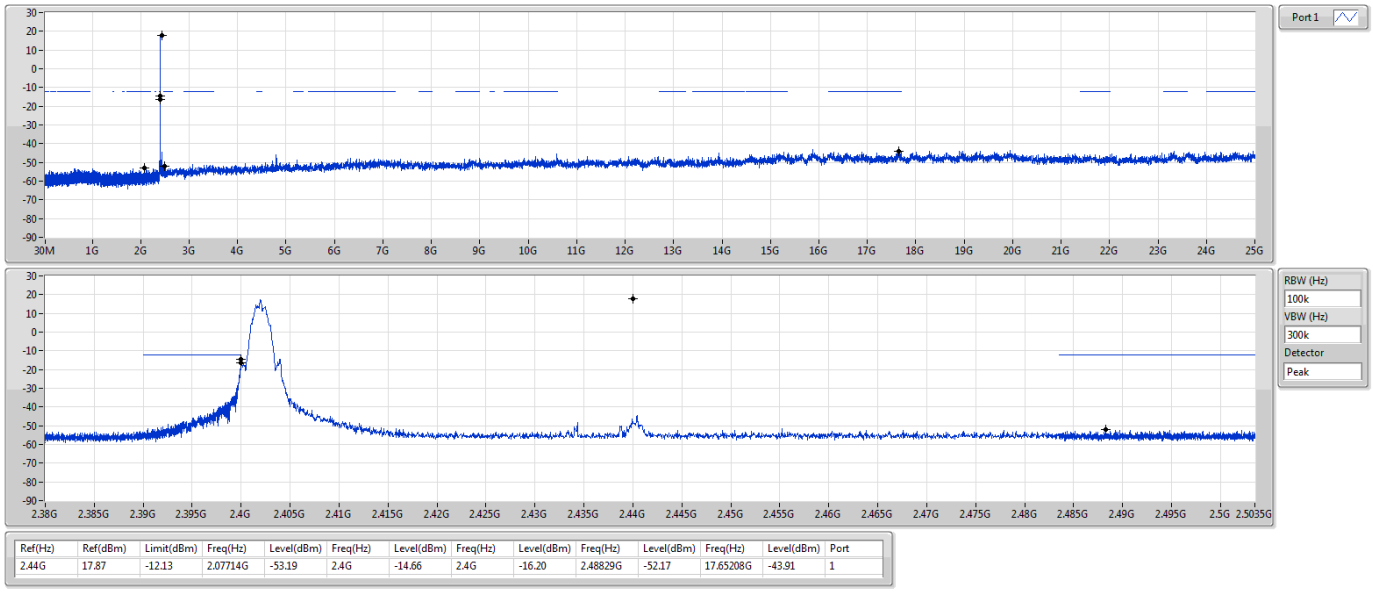
2480MHz



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
2.44G	17.77	-12.23	799.63M	-53.39	2.39919G	-52.67	2.4835G	-48.28	2.48408G	-46.99	17.69426G	-43.84	1

BT-LE(2Mbps) **CSE NdB**

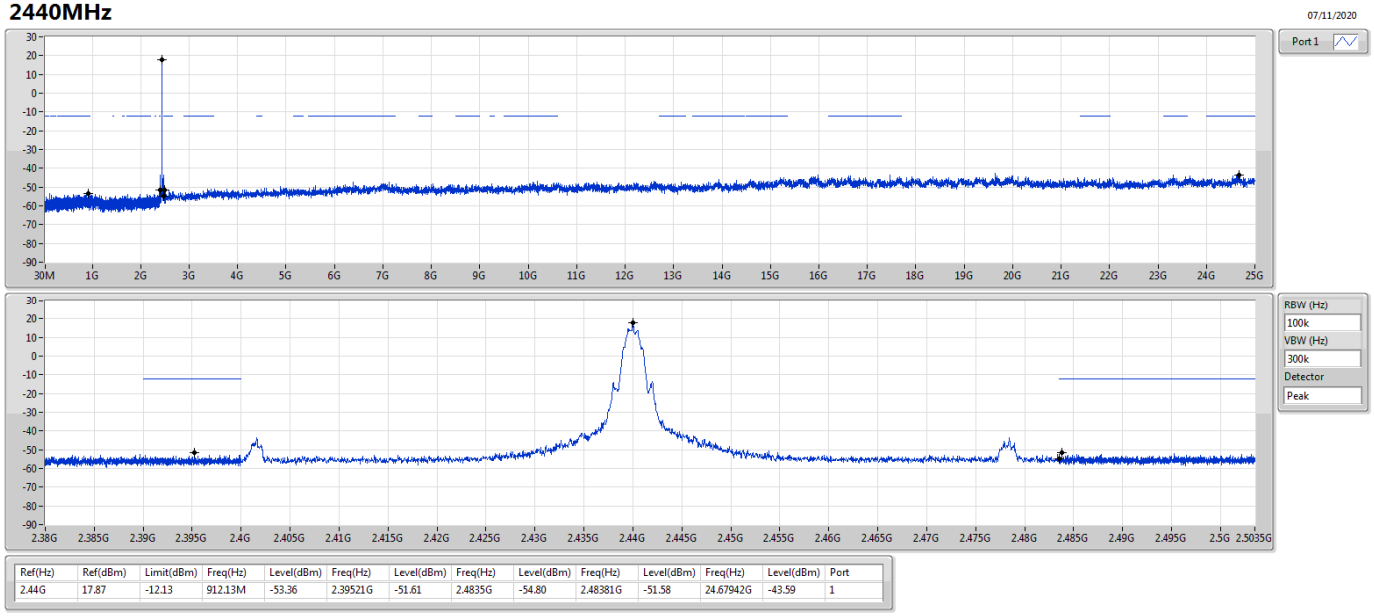
2402MHz



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
2.44G	17.87	-12.13	2.07714G	-53.19	2.4G	-14.66	2.4G	-16.20	2.48829G	-52.17	17.65208G	-43.91	1

BT-LE(2Mbps) **CSE NdB**

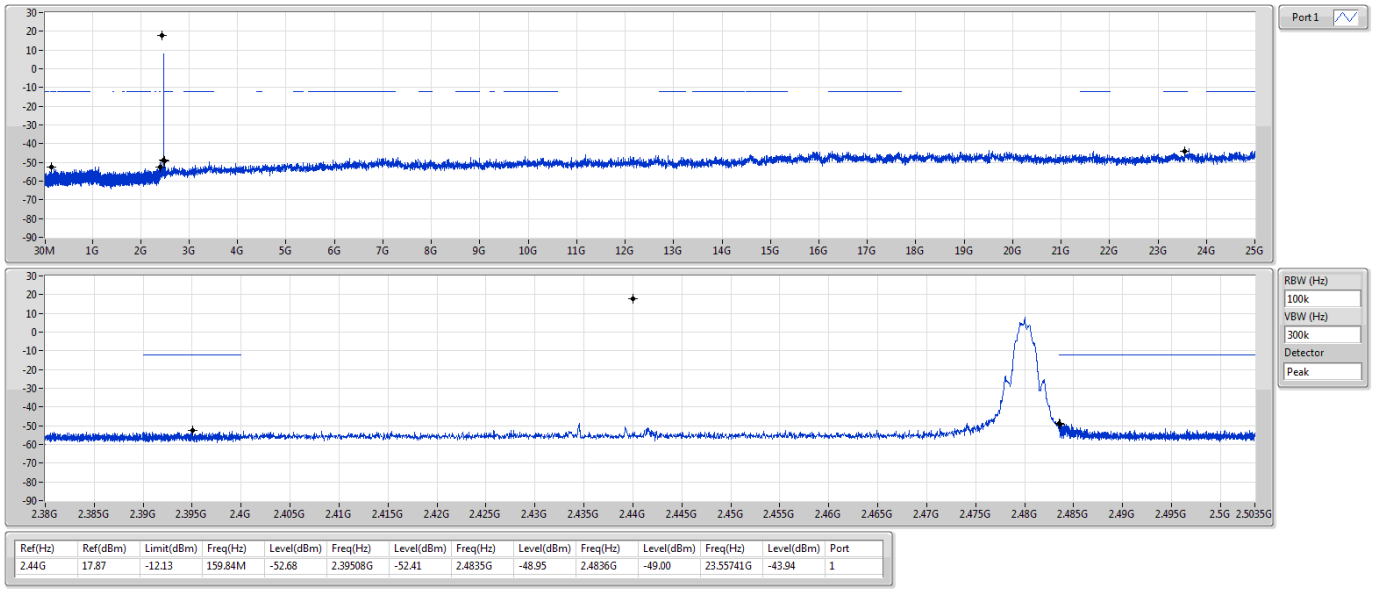
2440MHz



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
2.44G	17.87	-12.13	912.13M	-53.36	2.39521G	-51.61	2.4835G	-54.80	2.48381G	-51.58	24.67942G	-43.59	1

BT-LE(2Mbps) **CSE NdB**

2480MHz

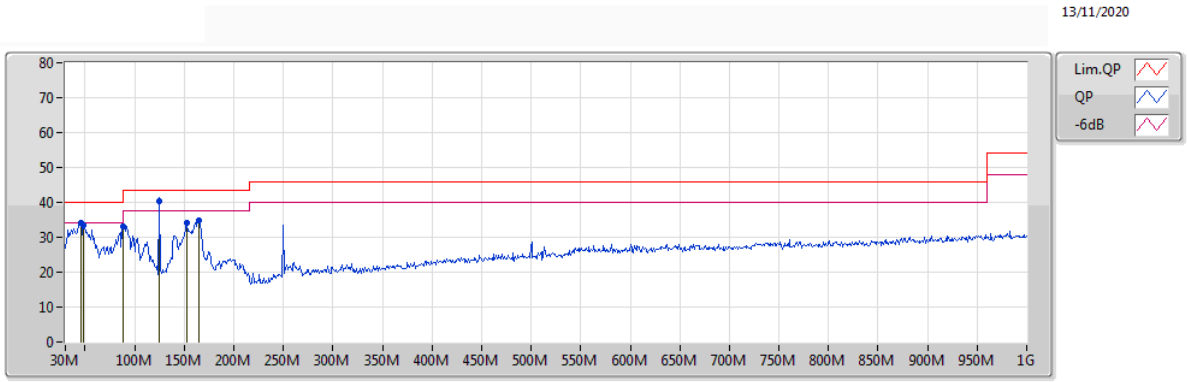


Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.44G	17.87	-12.13	159.84M	-52.68	2.39508G	-52.41	2.4835G	-48.95	2.4836G	-49.00	23.55741G	-43.94	1

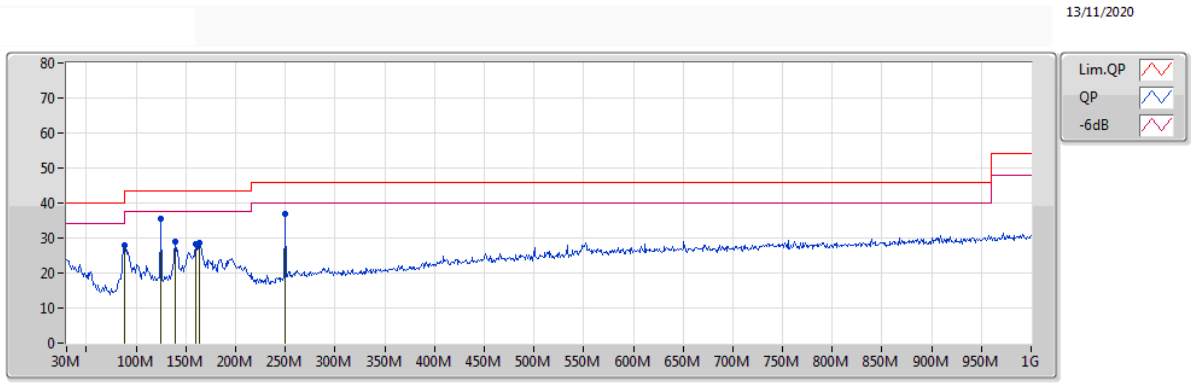
Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 10	Pass	QP	125.06M	40.37	43.50	-3.13	Vertical

Test Mode: Mode 10



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	45.52M	34.04	40.00	-5.96	-14.46	3	Vertical	182	1.00	-	48.50	16.42	0.60	31.48
PK	48.43M	33.53	40.00	-6.47	-15.82	3	Vertical	235	1.25	-	49.35	15.15	0.60	31.57
PK	88M	33.11	43.50	-10.39	-16.55	3	Vertical	177	1.50	-	49.66	14.27	1.00	31.82
QP	125.06M	40.37	43.50	-3.13	-12.41	3	Vertical	253	1.00	"Worst"	52.78	18.06	1.30	31.77
PK	164.83M	34.88	43.50	-8.62	-14.61	3	Vertical	195	1.00	-	49.49	15.72	1.42	31.75
PK	152.22M	34.24	43.50	-9.26	-14.15	3	Vertical	122	1.00	-	48.39	16.30	1.36	31.81



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	88M	27.95	43.50	-15.55	-16.55	3	Horizontal	185	2.00	-	44.50	14.27	1.00	31.82
PK	125.06M	35.37	43.50	-8.13	-12.41	3	Horizontal	147	3.00	"Worst"	47.78	18.06	1.30	31.77
PK	139.61M	28.85	43.50	-14.65	-13.55	3	Horizontal	133	2.00	-	42.40	17.16	1.30	32.01
PK	159.98M	28.18	43.50	-15.32	-14.34	3	Horizontal	106	3.00	-	42.52	15.94	1.40	31.68
PK	163.86M	28.75	43.50	-14.75	-14.46	3	Horizontal	92	2.00	-	43.21	15.86	1.42	31.74
PK	250.19M	36.96	46.00	-9.04	-12.28	3	Horizontal	70	1.50	-	49.24	17.77	1.90	31.95

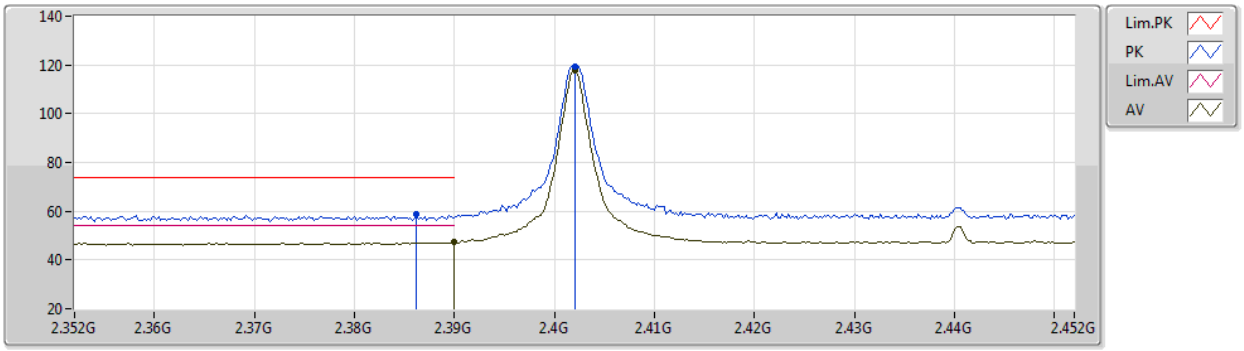
Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	AV	2.4835G	53.88	54.00	-0.12	3	Vertical	271	1.73	-

BT-LE(1Mbps)

2402MHz_TX

06/11/2020



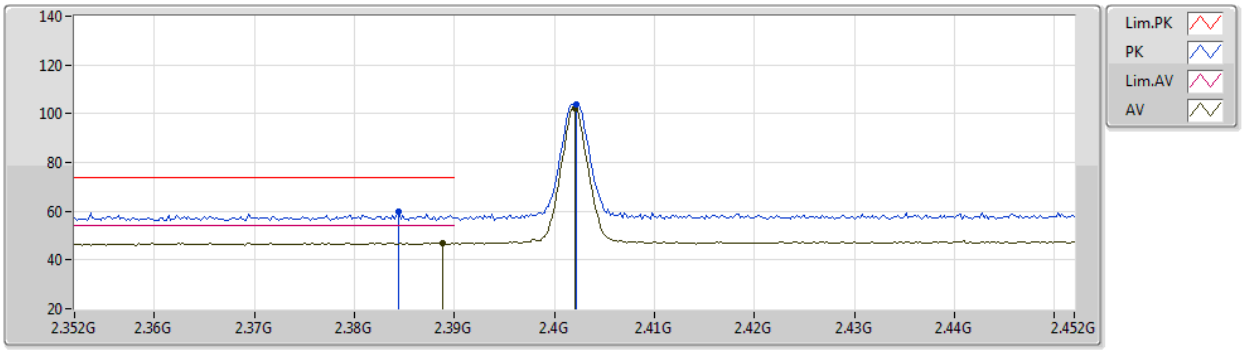
EUT X_1TX
Setting 200
02-B-K-4

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	2.3862G	58.62	74.00	-15.38	27.95	3	Vertical	261	1.63	-	28.26	2.41	-
AV	2.39G	47.16	54.00	-6.84	16.48	3	Vertical	261	1.63	-	28.27	2.41	-
PK	2.402G	119.16	Inf	-Inf	88.45	3	Vertical	261	1.63	-	28.31	2.40	-
AV	2.402G	117.86	Inf	-Inf	87.15	3	Vertical	261	1.63	-	28.31	2.40	-

BT-LE(1Mbps)

2402MHz_TX

06/11/2020



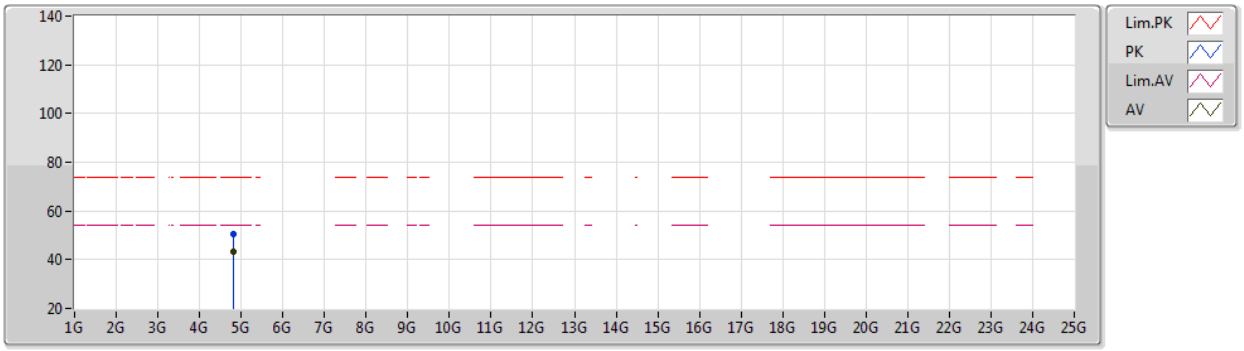
EUT X_1TX
Setting 200
02-B-K-4

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	2.3844G	59.75	74.00	-14.25	29.09	3	Horizontal	131	1.23	-	28.25	2.41	-
AV	2.3888G	47.01	54.00	-6.99	16.33	3	Horizontal	131	1.23	-	28.27	2.41	-
PK	2.4022G	103.69	Inf	-Inf	72.98	3	Horizontal	131	1.23	-	28.31	2.40	-
AV	2.402G	102.45	Inf	-Inf	71.74	3	Horizontal	131	1.23	-	28.31	2.40	-

BT-LE(1Mbps)

2402MHz_TX

06/11/2020



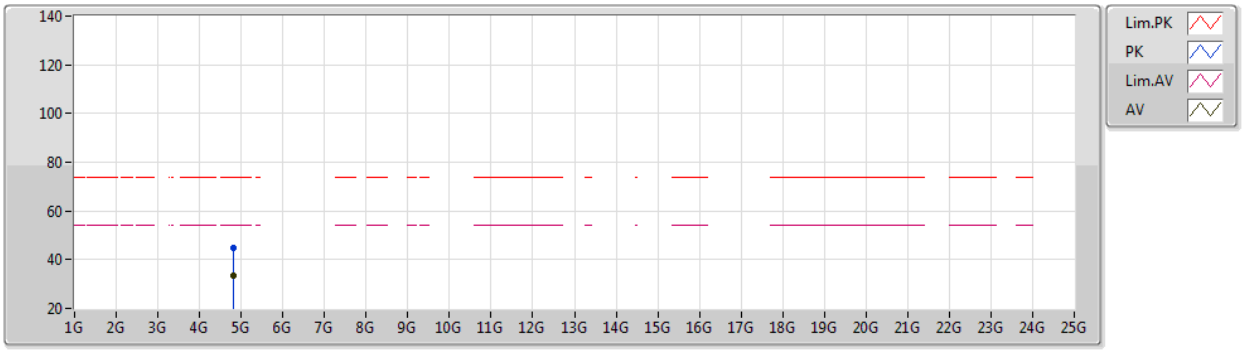
EUT X_1TX
Setting 200
02-B-K-4

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	4.80358G	50.69	74.00	-23.31	44.95	3	Vertical	222	2.22	-	32.81	4.70	31.77
AV	4.80388G	43.06	54.00	-10.94	37.31	3	Vertical	222	2.22	-	32.82	4.70	31.77

BT-LE(1Mbps)

2402MHz_TX

06/11/2020



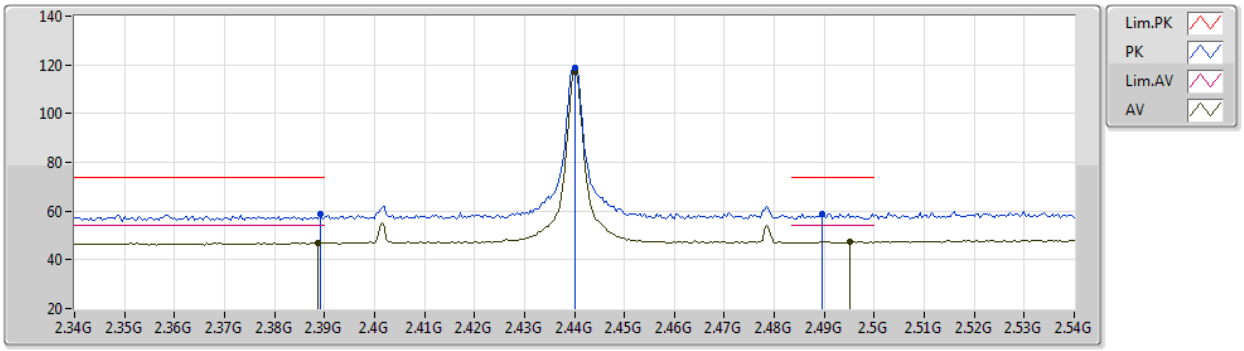
EUT X_1TX
Setting 200
02-B-K-4

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	4.80394G	44.86	74.00	-29.14	39.11	3	Horizontal	176	1.09	-	32.82	4.70	31.77
AV	4.80346G	33.41	54.00	-20.59	27.67	3	Horizontal	176	1.09	-	32.81	4.70	31.77

BT-LE(1Mbps)

2440MHz_TX

06/11/2020



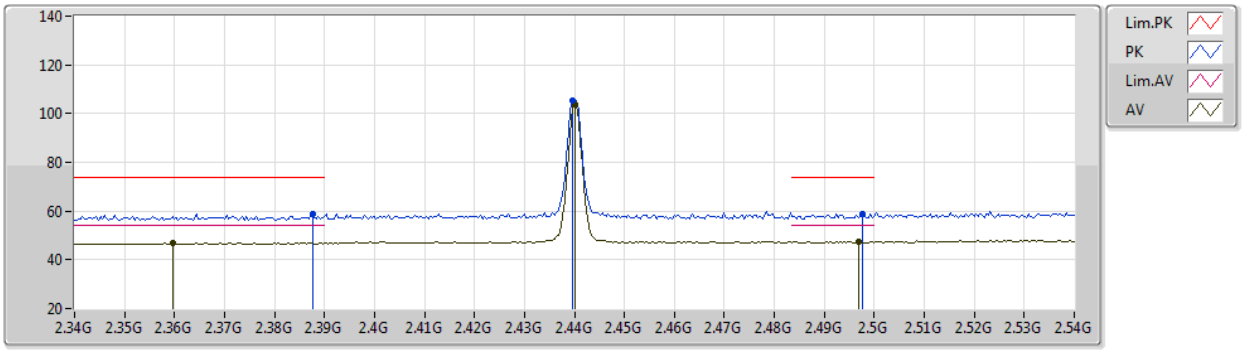
EUT X_1TX
Setting 200
02-B-K-4

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	2.3892G	58.71	74.00	-15.29	28.03	3	Vertical	253	2.16	-	28.27	2.41	-
AV	2.3888G	47.03	54.00	-6.97	16.35	3	Vertical	253	2.16	-	28.27	2.41	-
PK	2.44G	118.77	Inf	-Inf	87.93	3	Vertical	253	2.16	-	28.42	2.42	-
AV	2.44G	117.43	Inf	-Inf	86.59	3	Vertical	253	2.16	-	28.42	2.42	-
PK	2.4896G	59.05	74.00	-14.95	28.04	3	Vertical	253	2.16	-	28.57	2.44	-
AV	2.4952G	47.50	54.00	-6.50	16.46	3	Vertical	253	2.16	-	28.59	2.45	-

BT-LE(1Mbps)

2440MHz_TX

06/11/2020



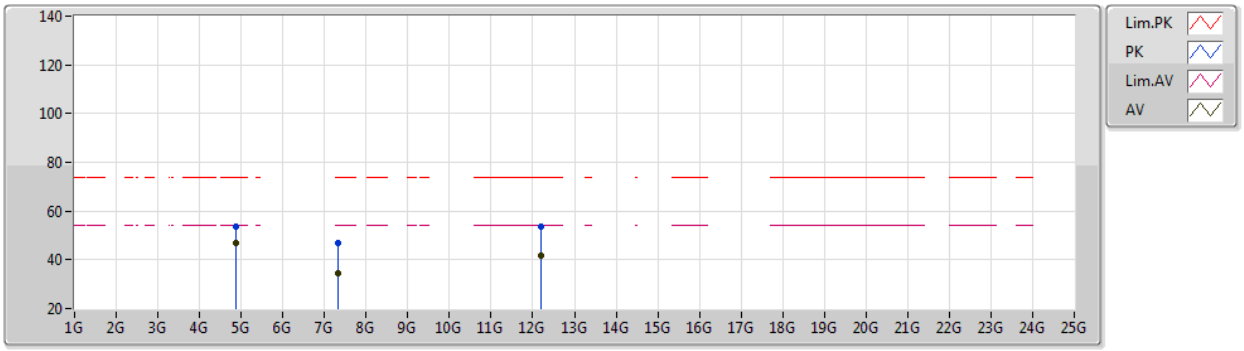
EUT X_1TX
Setting 200
02-B-K-4

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	2.3876G	58.80	74.00	-15.20	28.13	3	Horizontal	59	1.97	-	28.26	2.41	-
AV	2.3596G	47.04	54.00	-6.96	16.44	3	Horizontal	59	1.97	-	28.18	2.42	-
PK	2.4396G	105.24	Inf	-Inf	74.40	3	Horizontal	59	1.97	-	28.42	2.42	-
AV	2.44G	103.91	Inf	-Inf	73.07	3	Horizontal	59	1.97	-	28.42	2.42	-
PK	2.4976G	58.98	74.00	-15.02	27.94	3	Horizontal	59	1.97	-	28.59	2.45	-
AV	2.4968G	47.56	54.00	-6.44	16.52	3	Horizontal	59	1.97	-	28.59	2.45	-

BT-LE(1Mbps)

2440MHz_TX

06/11/2020



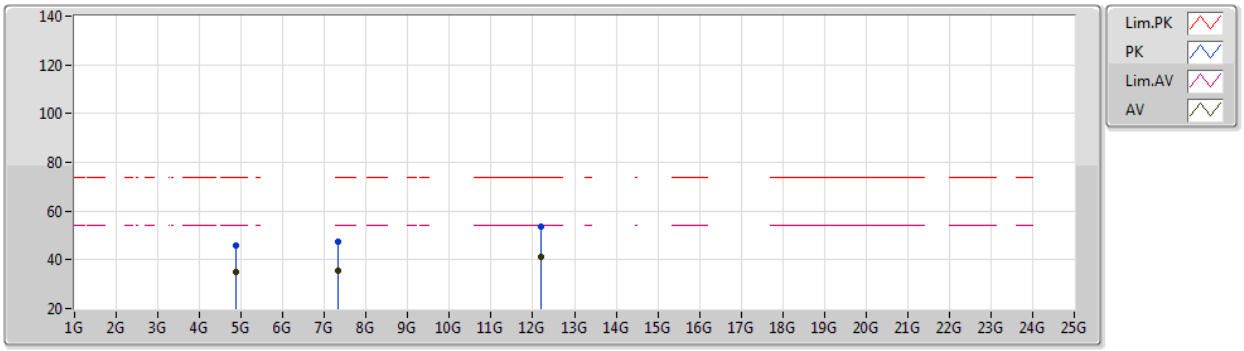
EUT X_1TX
Setting 200
02-B-K-4

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	4.87969G	53.80	74.00	-20.20	47.78	3	Vertical	302	2.29	-	33.12	4.70	31.80
AV	4.8799G	47.08	54.00	-6.92	41.06	3	Vertical	302	2.29	-	33.12	4.70	31.80
PK	7.31903G	46.96	74.00	-27.04	37.24	3	Vertical	264	1.10	-	36.40	5.76	32.44
AV	7.31999G	34.32	54.00	-19.68	24.60	3	Vertical	264	1.10	-	36.40	5.76	32.44
PK	12.20227G	53.77	74.00	-20.23	39.50	3	Vertical	89	1.48	-	39.26	7.87	32.86
AV	12.1975G	41.55	54.00	-12.45	27.28	3	Vertical	89	1.48	-	39.26	7.87	32.86

BT-LE(1Mbps)

2440MHz_TX

06/11/2020



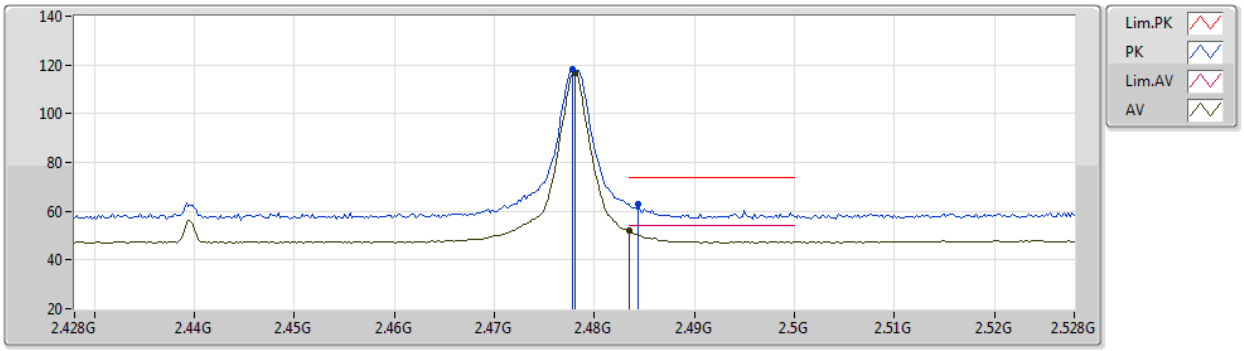
EUT X_1TX
Setting 200
02-B-K-4

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	4.8797G	45.90	74.00	-28.10	39.88	3	Horizontal	179	2.45	-	33.12	4.70	31.80
AV	4.87974G	34.77	54.00	-19.23	28.75	3	Horizontal	179	2.45	-	33.12	4.70	31.80
PK	7.31971G	47.42	74.00	-26.58	37.70	3	Horizontal	138	1.78	-	36.40	5.76	32.44
AV	7.31949G	35.50	54.00	-18.50	25.78	3	Horizontal	138	1.78	-	36.40	5.76	32.44
PK	12.1997G	53.53	74.00	-20.47	39.26	3	Horizontal	64	1.13	-	39.26	7.87	32.86
AV	12.19753G	41.32	54.00	-12.68	27.05	3	Horizontal	64	1.13	-	39.26	7.87	32.86

BT-LE(1Mbps)

2478MHz_TX

06/11/2020



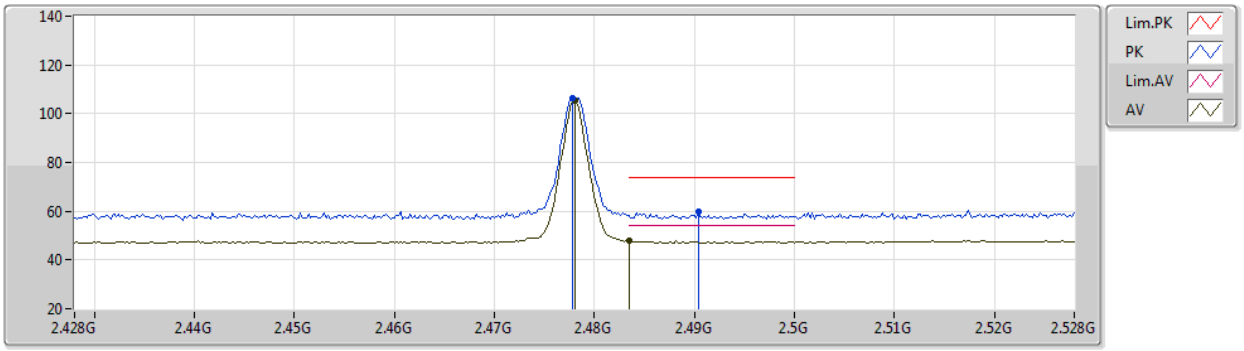
EUT X_1TX
Setting 200
02-B-K-4

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	2.4778G	118.11	Inf	-Inf	87.14	3	Vertical	271	2.15	-	28.53	2.44	-
AV	2.478G	116.72	Inf	-Inf	85.75	3	Vertical	271	2.15	-	28.53	2.44	-
PK	2.4844G	63.07	74.00	-10.93	32.08	3	Vertical	271	2.15	-	28.55	2.44	-
AV	2.4835G	51.96	54.00	-2.04	20.97	3	Vertical	271	2.15	-	28.55	2.44	-

BT-LE(1Mbps)

2478MHz_TX

06/11/2020



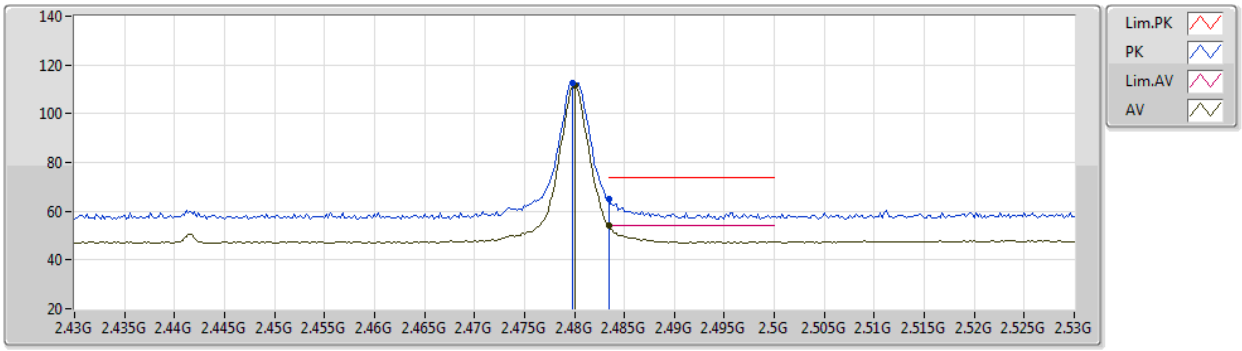
EUT X_1TX
Setting 200
02-B-K-4

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	2.4778G	106.49	Inf	-Inf	75.52	3	Horizontal	138	2.12	-	28.53	2.44	-
AV	2.478G	105.20	Inf	-Inf	74.23	3	Horizontal	138	2.12	-	28.53	2.44	-
PK	2.4904G	60.00	74.00	-14.00	28.98	3	Horizontal	138	2.12	-	28.57	2.45	-
AV	2.4835G	47.81	54.00	-6.19	16.82	3	Horizontal	138	2.12	-	28.55	2.44	-

BT-LE(1Mbps)

2480MHz_TX

06/11/2020



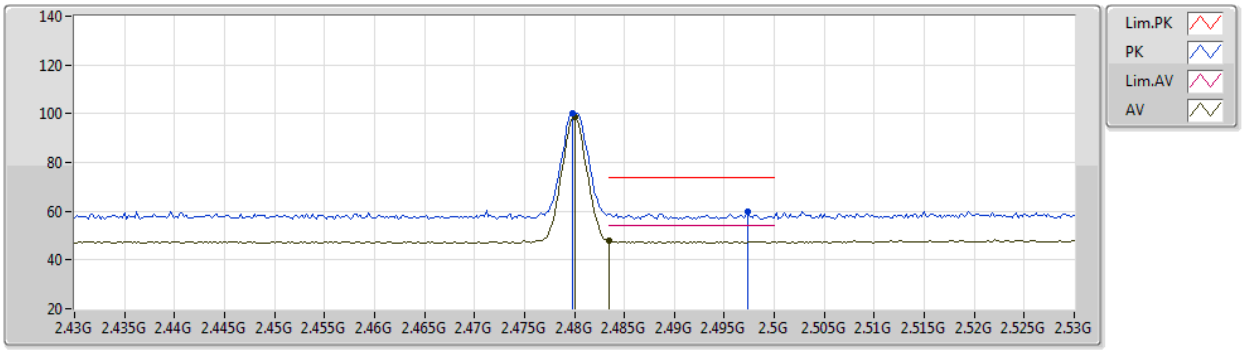
EUT X_1TX
Setting 160
02-B-K-4

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	2.4798G	112.71	Inf	-Inf	81.73	3	Vertical	271	1.73	-	28.54	2.44	-
AV	2.48G	111.35	Inf	-Inf	80.37	3	Vertical	271	1.73	-	28.54	2.44	-
PK	2.4835G	64.89	74.00	-9.11	33.90	3	Vertical	271	1.73	-	28.55	2.44	-
AV	2.4835G	53.88	54.00	-0.12	22.89	3	Vertical	271	1.73	-	28.55	2.44	-

BT-LE(1Mbps)

06/11/2020

2480MHz_TX



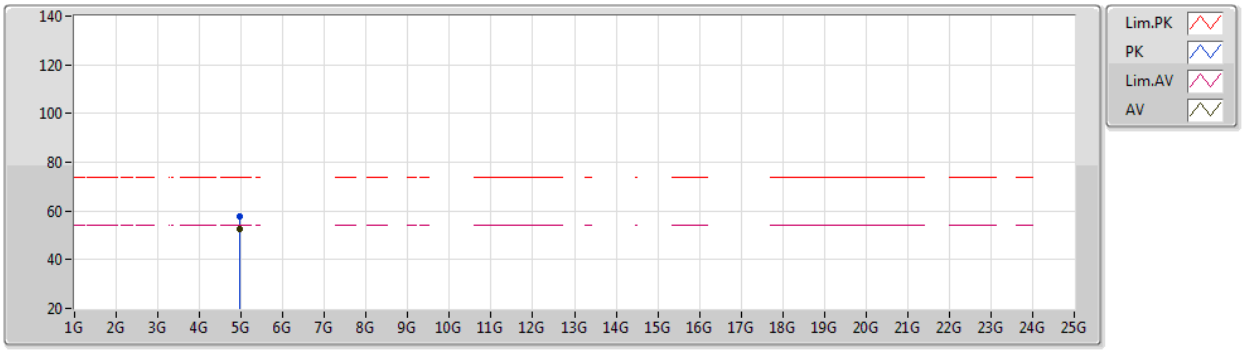
EUT X_1TX
Setting 160
02-B-K-4

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	2.4798G	100.00	Inf	-Inf	69.02	3	Horizontal	54	1.73	-	28.54	2.44	-
AV	2.48G	98.70	Inf	-Inf	67.72	3	Horizontal	54	1.73	-	28.54	2.44	-
PK	2.4974G	59.60	74.00	-14.40	28.56	3	Horizontal	54	1.73	-	28.59	2.45	-
AV	2.4835G	48.15	54.00	-5.85	17.16	3	Horizontal	54	1.73	-	28.55	2.44	-

BT-LE(1Mbps)

2480MHz_TX

06/11/2020



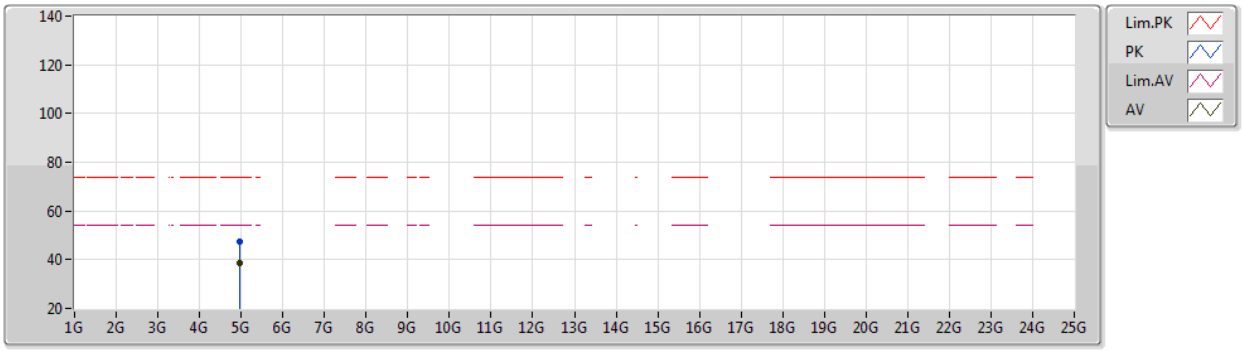
EUT X_1TX
Setting 160
02-B-K-4

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	4.96044G	57.85	74.00	-16.15	51.72	3	Vertical	219	2.57	-	33.26	4.70	31.83
AV	4.95994G	52.64	54.00	-1.36	46.51	3	Vertical	219	2.57	-	33.26	4.70	31.83

BT-LE(1Mbps)

2480MHz_TX

06/11/2020



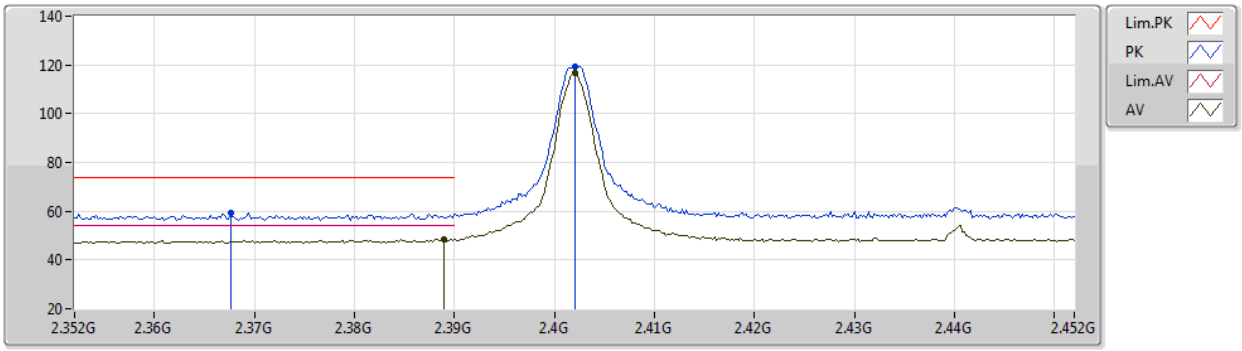
EUT X_1TX
Setting 160
02-B-K-4

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	4.96058G	47.66	74.00	-26.34	41.53	3	Horizontal	141	2.03	-	33.26	4.70	31.83
AV	4.96G	38.44	54.00	-15.56	32.31	3	Horizontal	141	2.03	-	33.26	4.70	31.83

BT-LE(2Mbps)

2402MHz_TX

06/11/2020



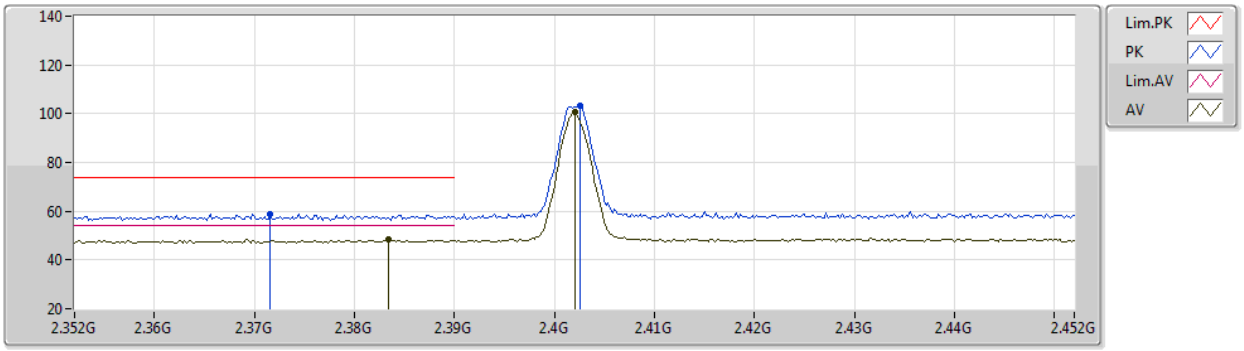
EUT X_1TX
Setting 200
02-B-K-3

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	2.3676G	59.06	74.00	-14.94	28.44	3	Vertical	267	1.66	-	28.20	2.42	-
AV	2.389G	48.58	54.00	-5.42	17.90	3	Vertical	267	1.66	-	28.27	2.41	-
PK	2.402G	119.13	Inf	-Inf	88.42	3	Vertical	267	1.66	-	28.31	2.40	-
AV	2.402G	116.80	Inf	-Inf	86.09	3	Vertical	267	1.66	-	28.31	2.40	-

BT-LE(2Mbps)

2402MHz_TX

06/11/2020



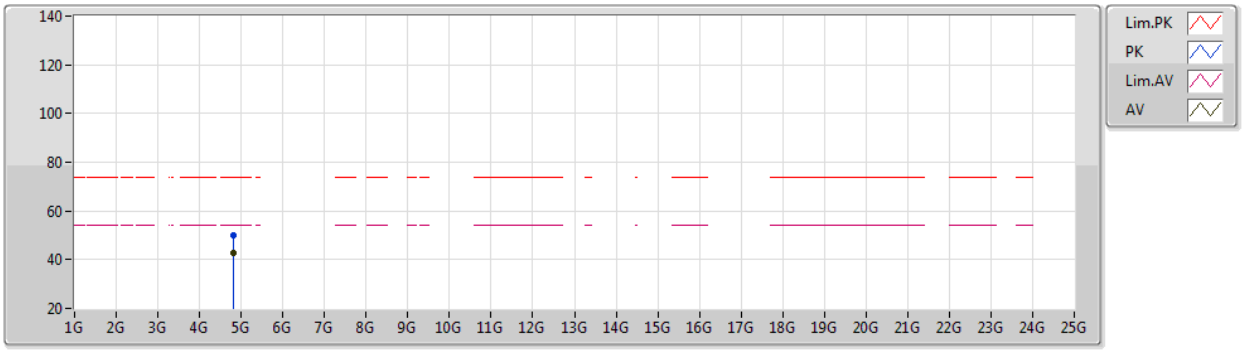
EUT X_1TX
Setting 200
02-B-K-3

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	2.3716G	58.80	74.00	-15.20	28.18	3	Horizontal	136	1.49	-	28.21	2.41	-
AV	2.3834G	48.66	54.00	-5.34	18.00	3	Horizontal	136	1.49	-	28.25	2.41	-
PK	2.4026G	103.09	Inf	-Inf	72.38	3	Horizontal	136	1.49	-	28.31	2.40	-
AV	2.402G	100.66	Inf	-Inf	69.95	3	Horizontal	136	1.49	-	28.31	2.40	-

BT-LE(2Mbps)

2402MHz_TX

06/11/2020



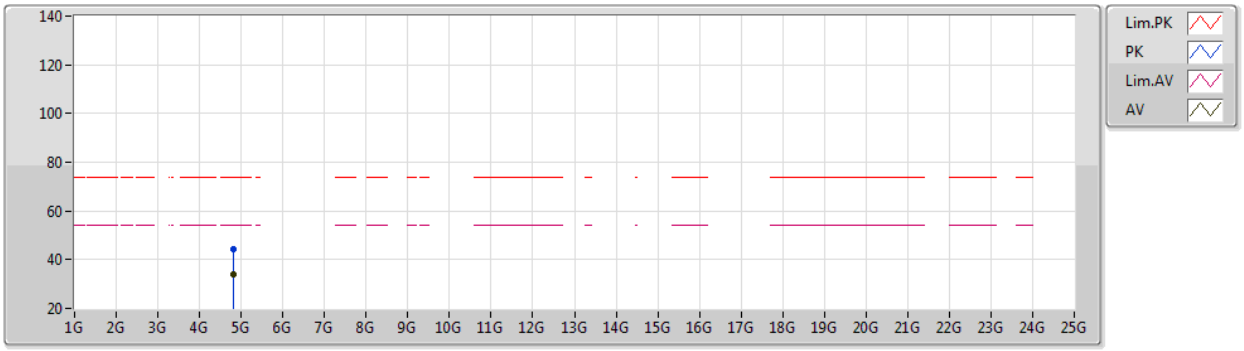
EUT X_1TX
Setting 200
02-B-K-3

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	4.803G	50.04	74.00	-23.96	44.30	3	Vertical	211	1.80	-	32.81	4.70	31.77
AV	4.80397G	42.92	54.00	-11.08	37.17	3	Vertical	211	1.80	-	32.82	4.70	31.77

BT-LE(2Mbps)

2402MHz_TX

06/11/2020



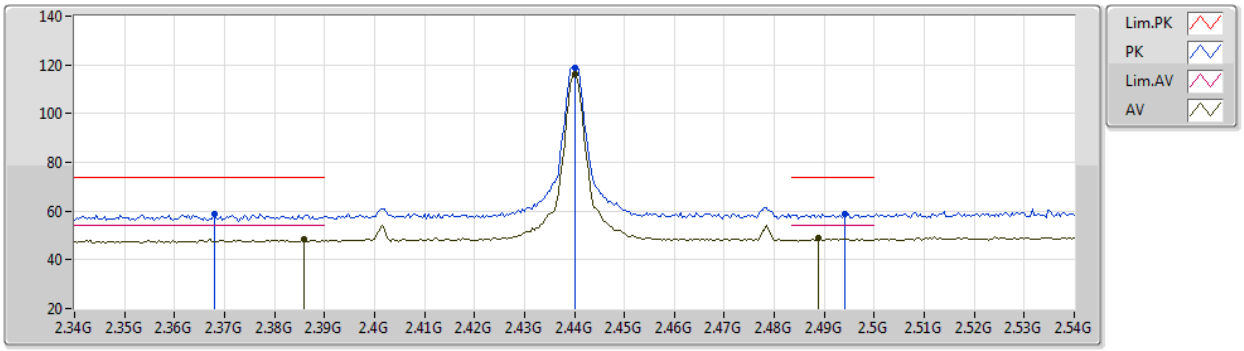
EUT X_1TX
Setting 200
02-B-K-3

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	4.80586G	44.49	74.00	-29.51	38.74	3	Horizontal	99	1.80	-	32.82	4.70	31.77
AV	4.8033G	34.16	54.00	-19.84	28.42	3	Horizontal	99	1.80	-	32.81	4.70	31.77

BT-LE(2Mbps)

2440MHz_TX

06/11/2020



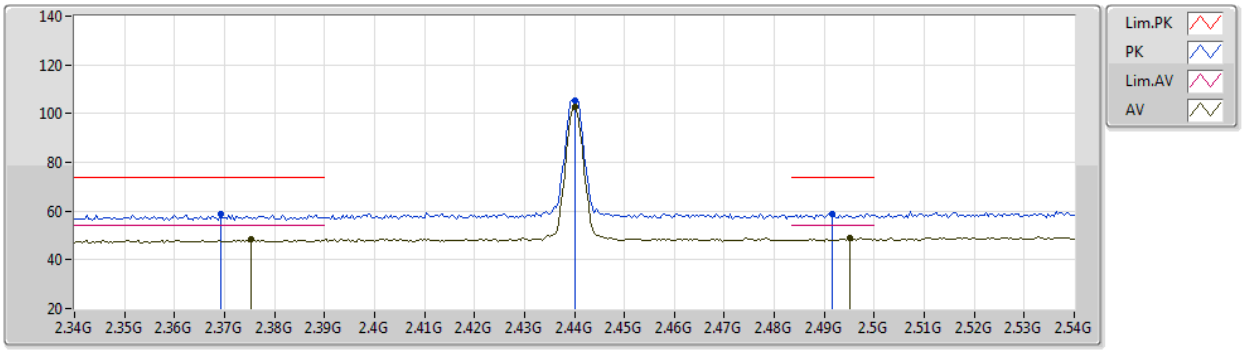
EUT X_1TX
Setting 200
02-B-K-3

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	2.368G	58.64	74.00	-15.36	28.02	3	Vertical	254	2.11	-	28.20	2.42	-
AV	2.386G	48.69	54.00	-5.31	18.02	3	Vertical	254	2.11	-	28.26	2.41	-
PK	2.44G	118.86	Inf	-Inf	88.02	3	Vertical	254	2.11	-	28.42	2.42	-
AV	2.44G	116.33	Inf	-Inf	85.49	3	Vertical	254	2.11	-	28.42	2.42	-
PK	2.494G	58.92	74.00	-15.08	27.89	3	Vertical	254	2.11	-	28.58	2.45	-
AV	2.4888G	48.71	54.00	-5.29	17.70	3	Vertical	254	2.11	-	28.57	2.44	-

BT-LE(2Mbps)

06/11/2020

2440MHz_TX



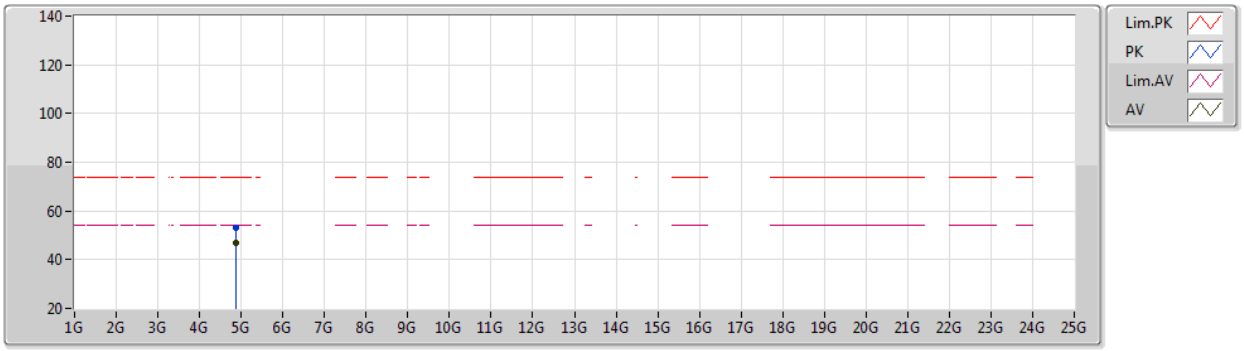
EUT X_1TX
Setting 200
02-B-K-3

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	2.3692G	59.05	74.00	-14.95	28.42	3	Horizontal	55	1.96	-	28.21	2.42	-
AV	2.3752G	48.32	54.00	-5.68	17.68	3	Horizontal	55	1.96	-	28.23	2.41	-
PK	2.44G	105.19	Inf	-Inf	74.35	3	Horizontal	55	1.96	-	28.42	2.42	-
AV	2.44G	102.84	Inf	-Inf	72.00	3	Horizontal	55	1.96	-	28.42	2.42	-
PK	2.4916G	58.97	74.00	-15.03	27.95	3	Horizontal	55	1.96	-	28.57	2.45	-
AV	2.4952G	49.17	54.00	-4.83	18.13	3	Horizontal	55	1.96	-	28.59	2.45	-

BT-LE(2Mbps)

2440MHz_TX

06/11/2020



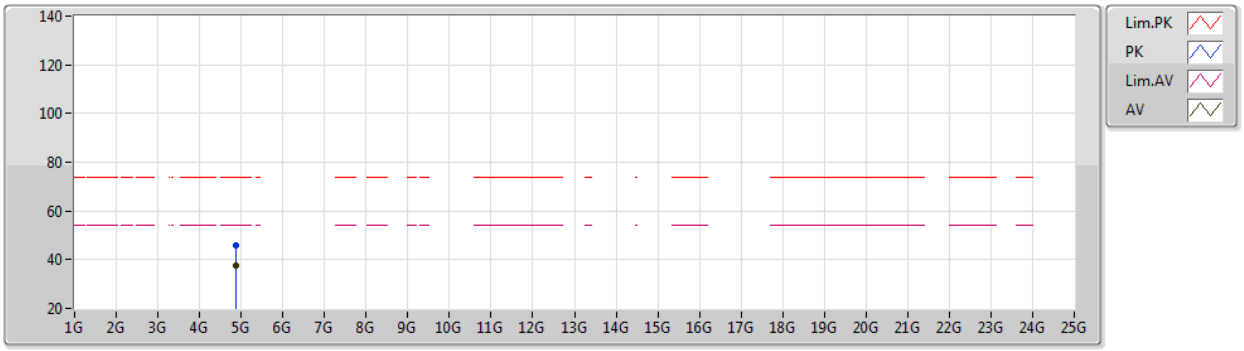
EUT X_1TX
Setting 200
02-B-K-3

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	4.87903G	53.28	74.00	-20.72	47.26	3	Vertical	213	2.53	-	33.12	4.70	31.80
AV	4.87997G	46.67	54.00	-7.33	40.65	3	Vertical	213	2.53	-	33.12	4.70	31.80

BT-LE(2Mbps)

2440MHz_TX

06/11/2020



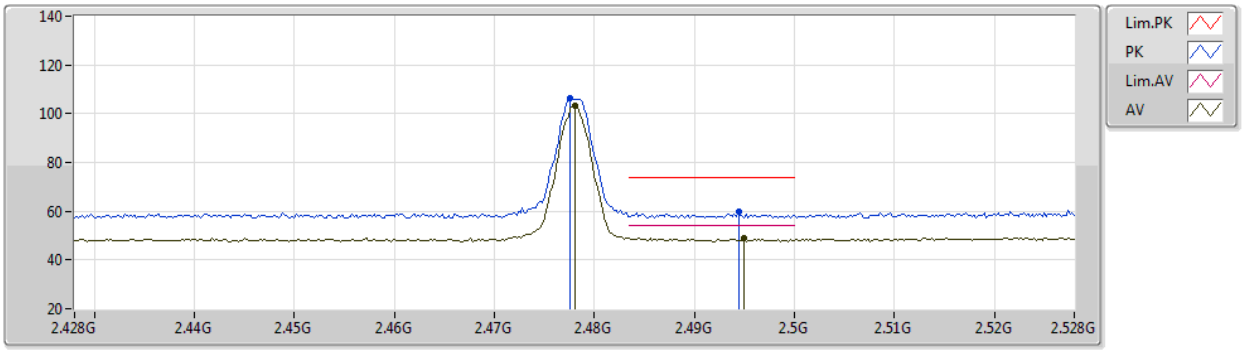
EUT X_1TX
Setting 200
02-B-K-3

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	4.88079G	45.61	74.00	-28.39	39.59	3	Horizontal	141	2.21	-	33.12	4.70	31.80
AV	4.87996G	37.51	54.00	-16.49	31.49	3	Horizontal	141	2.21	-	33.12	4.70	31.80

BT-LE(2Mbps)

2478MHz_TX

06/11/2020



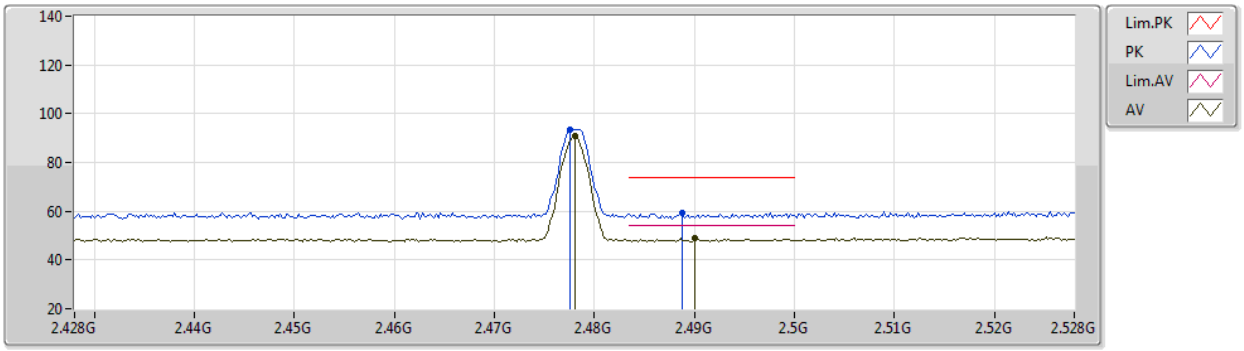
EUT X_1TX
Setting 200
02-B-K-3

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	2.4776G	106.25	Inf	-Inf	75.28	3	Vertical	253	1.15	-	28.53	2.44	-
AV	2.478G	103.34	Inf	-Inf	72.37	3	Vertical	253	1.15	-	28.53	2.44	-
PK	2.4944G	59.58	74.00	-14.42	28.55	3	Vertical	253	1.15	-	28.58	2.45	-
AV	2.495G	49.00	54.00	-5.00	17.96	3	Vertical	253	1.15	-	28.59	2.45	-

BT-LE(2Mbps)

06/11/2020

2478MHz_TX



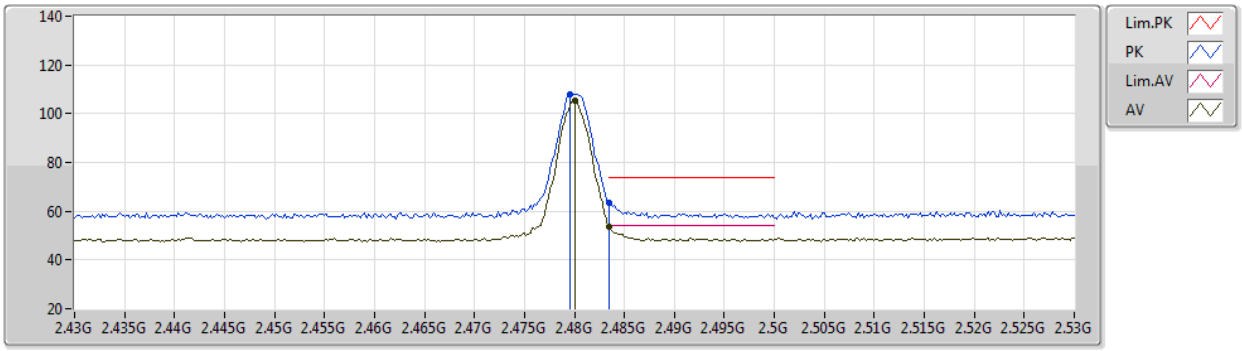
EUT X_1TX
Setting 200
02-B-K-3

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	2.4776G	93.68	Inf	-Inf	62.71	3	Horizontal	130	2.10	-	28.53	2.44	-
AV	2.478G	90.76	Inf	-Inf	59.79	3	Horizontal	130	2.10	-	28.53	2.44	-
PK	2.4888G	59.41	74.00	-14.59	28.40	3	Horizontal	130	2.10	-	28.57	2.44	-
AV	2.49G	49.00	54.00	-5.00	17.99	3	Horizontal	130	2.10	-	28.57	2.44	-

BT-LE(2Mbps)

2480MHz_TX

06/11/2020



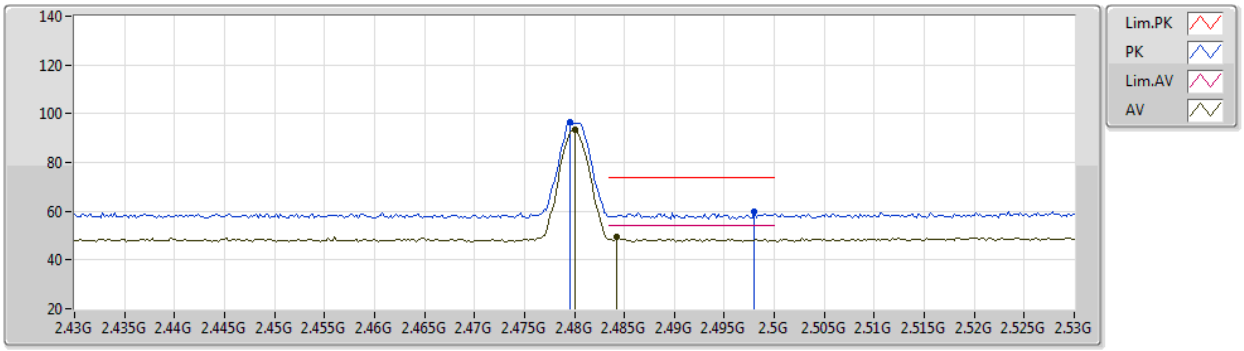
EUT X_1TX
Setting 110
02-B-K-3

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	2.4796G	107.99	Inf	-Inf	77.01	3	Vertical	265	1.73	-	28.54	2.44	-
AV	2.48G	105.27	Inf	-Inf	74.29	3	Vertical	265	1.73	-	28.54	2.44	-
PK	2.4835G	63.60	74.00	-10.40	32.61	3	Vertical	265	1.73	-	28.55	2.44	-
AV	2.4835G	53.86	54.00	-0.14	22.87	3	Vertical	265	1.73	-	28.55	2.44	-

BT-LE(2Mbps)

06/11/2020

2480MHz_TX



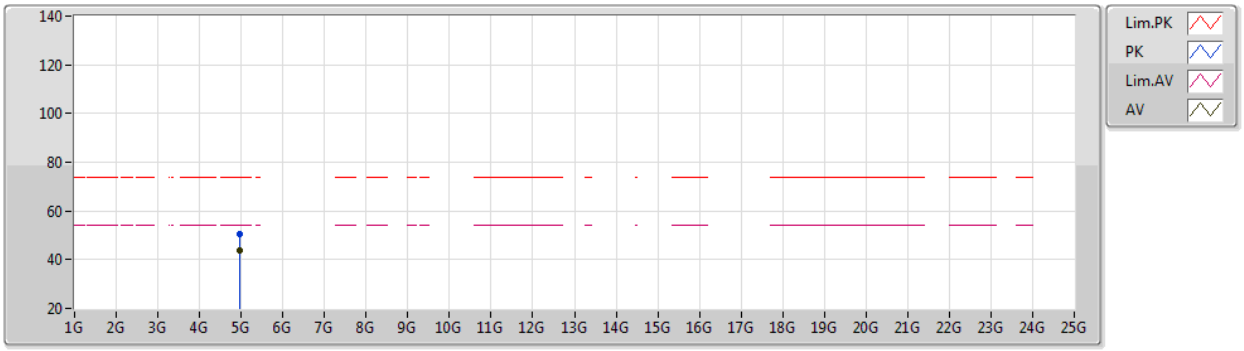
EUT X_1TX
Setting 110
02-B-K-3

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	2.4796G	96.31	Inf	-Inf	65.33	3	Horizontal	132	1.50	-	28.54	2.44	-
AV	2.48G	93.67	Inf	-Inf	62.69	3	Horizontal	132	1.50	-	28.54	2.44	-
PK	2.498G	59.59	74.00	-14.41	28.55	3	Horizontal	132	1.50	-	28.59	2.45	-
AV	2.4842G	49.52	54.00	-4.48	18.53	3	Horizontal	132	1.50	-	28.55	2.44	-

BT-LE(2Mbps)

2480MHz_TX

06/11/2020



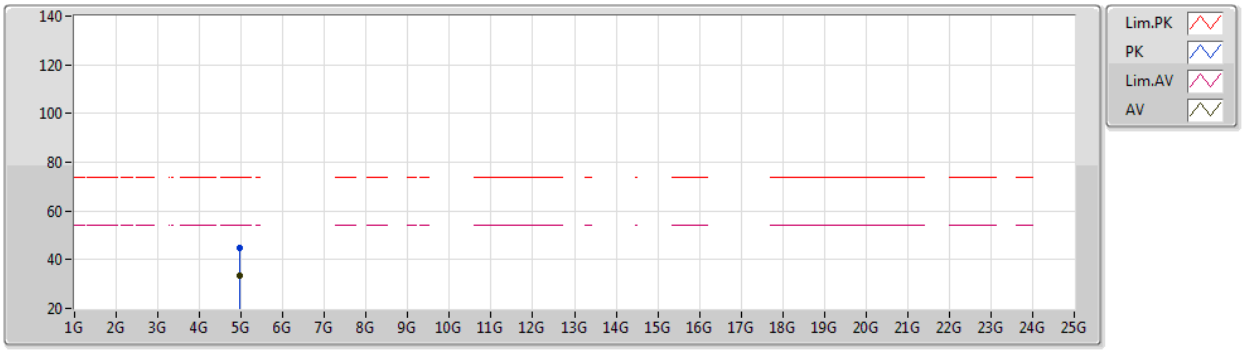
EUT X_1TX
Setting 110
02-B-K-3

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	4.95902G	50.48	74.00	-23.52	44.35	3	Vertical	220	2.58	-	33.26	4.70	31.83
AV	4.96005G	43.91	54.00	-10.09	37.78	3	Vertical	220	2.58	-	33.26	4.70	31.83

BT-LE(2Mbps)

2480MHz_TX

06/11/2020



EUT X_1TX
Setting 110
02-B-K-3

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	4.96215G	44.84	74.00	-29.16	38.71	3	Horizontal	200	1.80	-	33.26	4.70	31.83
AV	4.95999G	33.55	54.00	-20.45	27.42	3	Horizontal	200	1.80	-	33.26	4.70	31.83