FCC Radio Test Report

FCC ID	:	**2AFZZ16SG**
Equipment	:	**Mobile Phone**
Brand Name	:	**Redmi**
Model Name	:	**2201116SG**
Applicant	:	**Xiaomi Communications Co., Ltd. #019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085**
Manufacturer	:	**Xiaomi Communications Co., Ltd. #019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085**
Standard	:	**47 CFR FCC Part 15.247**

The product was received on Nov. 14, 2021, and testing was started from Dec. 06, 2021 and completed on Dec. 20, 2021. We, SPORTON INTERNATIONAL INC. Hsinhua 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. Hsinhua Laboratory, the test report shall not be reproduced except in full.

Allen Lin

Approved by: Allen Lin

SPORTON INTERNATIONAL INC. Hsinhua Laboratory

No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan

Table of Contents

HISTORY OF THIS TEST REPORT **3**

SUMMARY OF TEST RESULT **4**

1 GENERAL DESCRIPTION **5**

1.1 Information 5
1.2 Testing Applied Standards 7
1.3 Testing Location Information 7
1.4 Measurement Uncertainty 7

2 TEST CONFIGURATION OF EUT **8**

2.1 Test Channel Mode 8
2.2 The Worst Case Measurement Configuration 9
2.3 Accessories 10
2.4 Support Equipment 10
2.5 Test Setup Diagram 11

3 TRANSMITTER TEST RESULT **13**

3.1 AC Power-line Conducted Emissions 13
3.2 DTS Bandwidth 15
3.3 Maximum Conducted Output Power 16
3.4 Power Spectral Density 18
3.5 Emissions in Non-restricted Frequency Bands 19
3.6 Emissions in Restricted Frequency Bands 20

4 TEST EQUIPMENT AND CALIBRATION DATA **25**

APPENDIX A. TEST RESULTS OF AC POWER-LINE CONDUCTED EMISSIONS

APPENDIX B. TEST RESULTS OF DTS BANDWIDTH

APPENDIX C. TEST RESULTS OF MAXIMUM CONDUCTED OUTPUT POWER

APPENDIX D. TEST RESULTS OF POWER SPECTRAL DENSITY

APPENDIX E. TEST RESULTS OF EMISSIONS IN NON-RESTRICTED FREQUENCY BANDS

APPENDIX F. TEST RESULTS OF EMISSIONS IN RESTRICTED FREQUENCY BANDS

APPENDIX G. TEST PHOTOS

PHOTOGRAPHS OF EUT V01

History of this test report

Report No.	Version	Description	Issued Date
FR1N2204AL	01	Initial issue of report	Jan. 03, 2022

Summary of Test Result

Report Clause	Ref.Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
3.1	15.207	AC Power-line Conducted Emissions	PASS	-
3.2	15.247(a)	DTS Bandwidth	PASS	-
3.3	15.247(b)	Maximum Conducted Output Power	PASS	-
3.4	15.247(e)	Power Spectral Density	PASS	-
3.5	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	-
3.6	15.247(d)	Emissions in Restricted Frequency Bands	PASS	-

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and explanations:
None

Reviewed by: Ben Tseng

Report Producer: Michelle Tsai

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
2.4-2.4835GHz	BT-LE(2Mbps)	2.0	1TX

Note:
- Bluetooth LE uses a GFSK (1Mbps/2Mbps) modulation.
- BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector
1	MI	K6S	PIFA	I-pex

Ant.	Gain (dBi)					
	2.4G	Bluetooth	5G			
			UNII-1	UNII-2A	UNII-2C	UNII-3
1	-3.7	-3.7	-3.6	-3.9	-3.8	-4.3

For 2.4GHz function:
For IEEE 802.11 b/g/n mode (1TX/1RX)
Ant. 1 could transmit/receive simultaneously.
For BT function:
For IEEE 802.15.1 Bluetooth mode (1TX/1RX)
Ant. 1 and could transmit/receive simultaneously.
For 5GHz function:
For IEEE 802.11 a/n/ac mode (1TX/1RX)
Ant. 1 could transmit/receive simultaneously.

1.1.3 EUT Information

Operational Condition				
EUT Power Type	From AC Adapter / Host system / Battery			
EUT Function	☒	Point-to-multipoint	☐	Point-to-point

Type of EUT		
☒	Stand-alone	
☐	Combined (EUT where the radio part is fully integrated within another device)	
	Combined Equipment - Brand Name / Model No.:	…
☐	Plug-in radio (EUT intended for a variety of host systems)	
	Host System - Brand Name / Model No.:	…
☐	Other:	

1.1.4 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
BT-LE(1Mbps)	0.628	2.02	392.813u	3k
BT-LE(2Mbps)	0.332	4.79	207.5u	10k

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

1.2 Testing Applied Standards

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

- 47 CFR FCC Part 15
- ANSI C63.10-2013

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

- KDB 558074 D01 v05r02
- KDB 414788 D01 v01r01

1.3 Testing Location Information

Test Lab.：Sporton International Inc. Hsinhua Laboratory				
☒ Hsinhua (**TAF:** 3785)	**ADD:** No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan			
	TEL: 886-3-327-3456		**FAX:** 886-3-327-0973	
Test site Designation No. TW3785 with FCC.				
Test Condition	**Test Site No.**	**Test Engineer**	**Test Environment**	**Test Date**
AC Conduction	CO04-HY	Edward Wang	21.5~22.0°C / 50~54%	15/Dec/2021
RF Conducted	TH01-HY	Barry Hsiao	23.2~26.9°C / 50~60%	16/Dec/2021~20/Dec/2021
Radiated	03CH03-HY	Edward Wang	19.6~22.6°C / 47~58%	06/Dec/2021~09/Dec/2021
☐ Wen 33rd.St. (**TAF:** 3785)	**ADD:** No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333010, Taiwan			
	TEL: 886-3-318-0787		**FAX:** 886-3-318-0287	
Test site Designation No. TW0008 with FCC.				

1.4 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Test Items	**Uncertainty**	**Remark**
Conducted Emission (150kHz ~ 30MHz)	0.9 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	2.4 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.0 dB	Confidence levels of 95%
Temperature	0.41 °C	Confidence levels of 95%
Humidity	3.4 %	Confidence levels of 95%

2 Test Configuration of EUT

2.1 Test Channel Mode

Test Software Version	QRCT4

Mode	Power Setting
BT-LE(1Mbps)	-
2402MHz	default
2440MHz	default
2480MHz	default
BT-LE(2Mbps)	-
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 Test Voltage: 120Vac / 60Hz
1	USB Mode ; CTX
2	Adapter Mode ; Charging

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.		
1	USB Mode ; CTX		
2	Adapter Mode ; Charging		
Orthogonal Planes of EUT	**X Plane**	**Y Plane**	**Z Plane**
Worst Planes of EUT			V

2.3 Accessories

AC Adapter	Brand Name	MI	Model Name	MDY-12-EJ
	Manufacturer	Salcomp		
	Power Rating	I/P: 100 - 240 Vac, 50/60Hz, 1.7A, Normal O/P:5.0Vdc, 3.0A, 15W, fast O/P: 5.0 - 20 Vdc, 6.2 - 3.25A, 67W		
Battery 1	Brand Name	MI	Model Name	BN5E
	Manufacturer	Dongguan Amperex Technology Limited		
	Power Rating	3.87 Vdc, 4900 mAh	Type	Li-ion
Battery 2	Brand Name	MI	Model Name	BN5E
	Manufacturer	Zhejiang sunwoda electronic Co., Ltd		
	Power Rating	3.87 Vdc, 4900 mAh	Type	Li-ion
USB Cable 1	Brand Name	MI	Model Name	H26250
	Manufacturer	Dehong		
	Signal Line	1.0 meter, non-shielded cable, without ferrite core		
USB Cable 2	Brand Name	MI	Model Name	L26250
	Manufacturer	Lux		
	Signal Line	1.0 meter, non-shielded cable, without ferrite core		

Reminder: Regarding to more detail and other information, please refer to user manual.

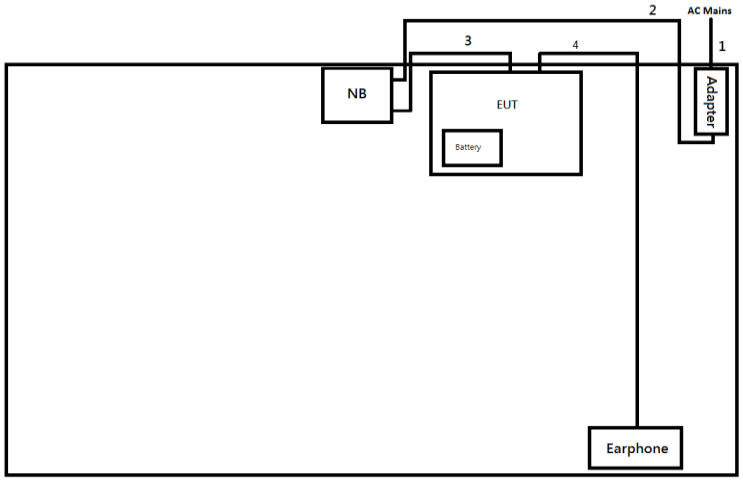
2.4 Support Equipment

Support Equipment – AC Conduction and Radiated					
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**	**Remark**
1	Notebook	HP	HSTNN-142C	-	-
2	AC Power Cable	Power sync	AC Power Cable	-	-
3	Adapter (For NB)	HP	HSTNN-CA40	-	-
4	Earphone	MI	EM023	-	Provided by Customer

Support Equipment – Conducted					
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**	**Remark**
1	Notebook	HP	HSTNN-142C	-	-
2	Adapter (For NB)	HP	HSTNN-CA40	-	-

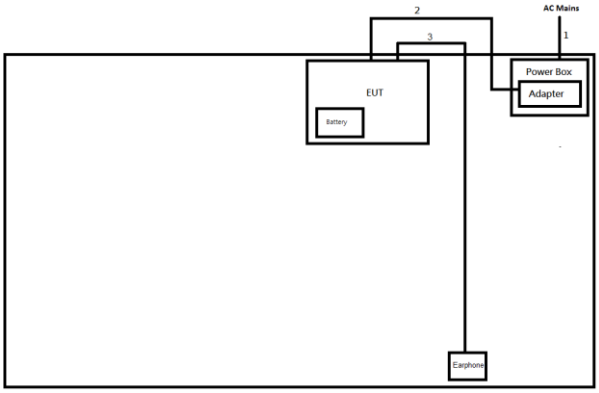
2.5 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test - USB Mode



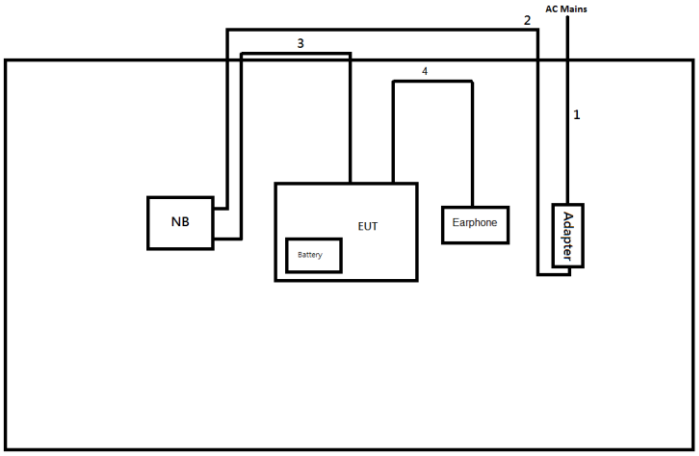
Item	Connection	Shielded	Length(m)	Remark
1	AC Power cable	No	1.8	-
2	DC Power cable	No	1.5	-
3	USB cable	No	1.0	-
4	Audio cable	No	1.25	-

Test Setup Diagram – AC Line Conducted Emission Test - Adapter Mode



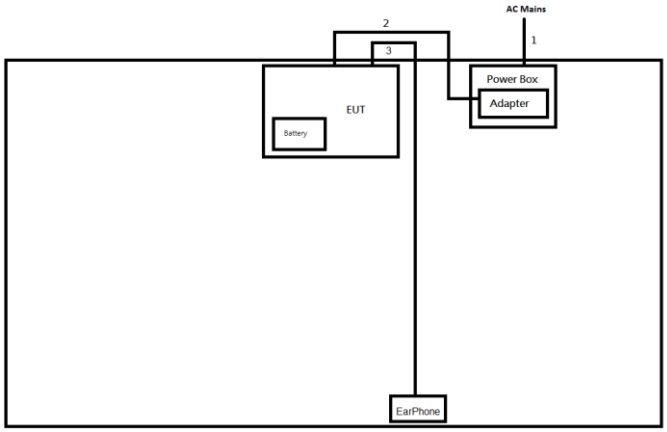
Item	Connection	Shielded	Length(m)	Remark
1	AC Power cable	No	1.8	-
2	USB cable	No	1.0	-
3	Audio cable	No	1.25	-

Test Setup Diagram - Radiated Test - USB Mode



Item	Connection	Shielded	Length(m)	Remark
1	AC Power cable	No	1.8	-
2	DC Power cable	No	1.5	-
3	USB cable	No	1.0	-
4	Audio cable	No	1.25	-

Test Setup Diagram - Radiated Test - Adapter Mode



Item	Connection	Shielded	Length(m)	Remark
1	AC Power cable	No	1.8	-
2	USB cable	No	1.0	-
3	Audio cable	No	1.25	-

3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

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

3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

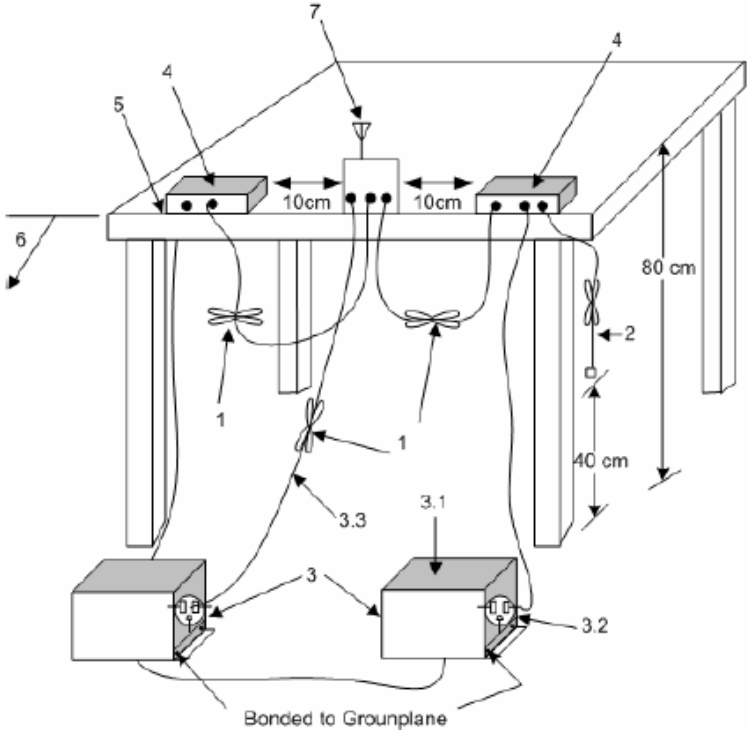
Test Method
▪ Refer as ANSI C63.10-2013, clause 6.2 foray power-line conducted emissions.

3.1.4 Measurement Results Calculation

The measured Level is calculated using:
Corrected Reading: Raw(Read Level) +LISN(LISN Factor) + CL(Cable Loss) + AT(Attenuator).

3.1.5 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 50Ωloads. 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.

3.1.6 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

3.2 DTS Bandwidth

3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit
Systems using digital modulation techniques:
▪ 6 dB bandwidth ≥ 500 kHz.

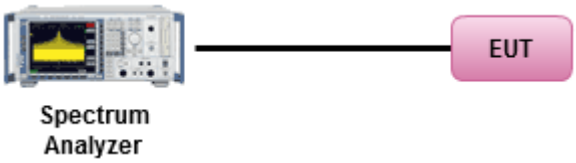
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Test Method	
▪ For the emission bandwidth shall be measured using one of the options below:	
	☒ Refer as KDB 558074, clause 8.2 (11.8 of ANSI C63.10) DTS bandwidth measurement.
	☐ Refer as RSS-Gen, clause 6.7 for for occupied bandwidth testing.
	☐ Refer as ANSI C63.10, clause 6.9.3 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	
e.i.r.p. Power Limit:			
▪ 2400-2483.5 MHz Band			
	▪ Point-to-multipoint systems (P2M): $P_{eirp} \leq 36$ dBm (4 W)		
	▪ Point-to-point systems (P2P): $P_{eirp} \leq MAX(36, [P_{Out} + G_{TX}])$ dBm		
	▪ Smart antenna system (SAS)		
		- Single beam: $P_{eirp} \leq MAX(36, P_{Out} + G_{TX})$ dBm	
		- Overlap beam: $P_{eirp} \leq MAX(36, P_{Out} + G_{TX})$ dBm	
		- Aggregate power on all beams: $P_{eirp} \leq MAX(36, [P_{Out} + G_{TX} + 8])$ dBm	
P_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, **G_{TX}** = the maximum transmitting antenna directional gain in dBi.			

3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method	
▪ Maximum Peak Conducted Output Power	
	☐ Refer as KDB 558074, clause 8.3.1.1 (11.9.1.1 of ANSI C63.10) RBW ≥ EBW method.
	☐ Refer as KDB 558074, clause 8.3.1.2 (11.9.1.2 of ANSI C63.10) integrated band power method.
	☐ Refer as KDB 558074, clause 8.3.1.3 (11.9.1.3 of ANSI C63.10) peak power meter.
▪ Maximum Average Conducted Output Power	
	☐ Refer as KDB 558074, clause 8.3.2.2 (11.9.2.2 of ANSI C63.10) using a spectrum analyzer.
	☒ Refer as KDB 558074, clause 8.3.2.3 (11.9.2.3 of ANSI C63.10) using a power meter.
▪ For conducted measurement.	
	▪ If the EUT supports multiple transmit chains using options given below: Refer as KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.
	▪ If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + \ldots + P_n$ (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

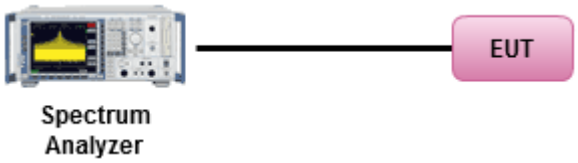
3.4.2 Measuring Instruments

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 KDB 558074, clause 8.4 (11.10 of ANSI C63.10) Max. PSD.	
▪ For conducted measurement.		
	▪ If The EUT supports multiple transmit chains using options given below:	
		▪ Measure and sum the spectra across the outputs. Refer as KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the NTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.

3.4.4 Test Setup

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

3.5.2 Measuring Instruments

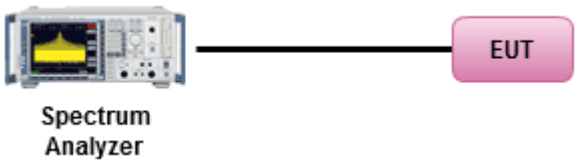
Refer a test equipment and calibration data table in this test report.

3.5.3 Test Procedures

Test Method
▪ Refer as KDB 558074, clause 8.5 (11.11 of ANSI C63.10) for non-restricted frequency bands.

3.5.4 Test Setup

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

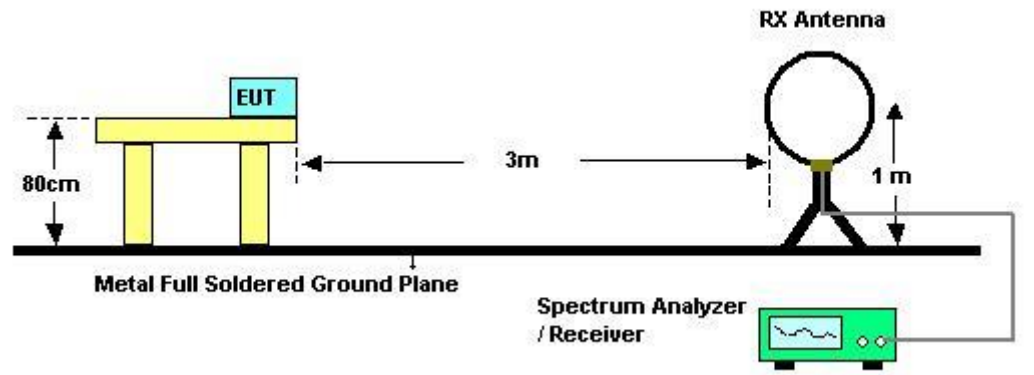
Test Method	
▪ The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].	
▪ Refer as ANSI C63.10, clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.	
▪ For the transmitter unwanted emissions shall be measured using following options below:	
	▪ Refer as KDB 558074, clause 8.6 (11.12 of ANSI C63.10) for restricted frequency bands.
▪ For the transmitter band-edge emissions shall be measured using following options below:	
	▪ Refer as KDB 558074 clause 8.7.1, When the performing peak or average radiated measurements, emissions within 2 MHz of the authorized band edge may be measured using the marker-delta method described below.
	▪ Refer as KDB 558074, clause 8.7.2 (6.10.6 of ANSI C63.10) for marker-delta method for band-edge measurements.
	▪ Refer as KDB 558074, clause 8.7.3 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels.
▪ Use the following spectrum analyzer settings:	
	▪ Set RBW=100 kHz for f < 1 GHz; VBW=3 * RBW; Sweep = auto; Detector function = peak; Trace = max hold.
	▪ Set RBW = 1 MHz, VBW= 3MHz for f ≥ 1 GHz for peak measurement. For average measurement, refer as 1.1.4.
▪ KDB 414788 Open-Field Test Sites and Chamber Correlation Justification.	
	▪ Based on FCC 15.31(f)(2): measurements may be performed at a distance closer than that specified in regulations; however, an attempt should be made to avoid making measurements in the near field.
	▪ Open-field site and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

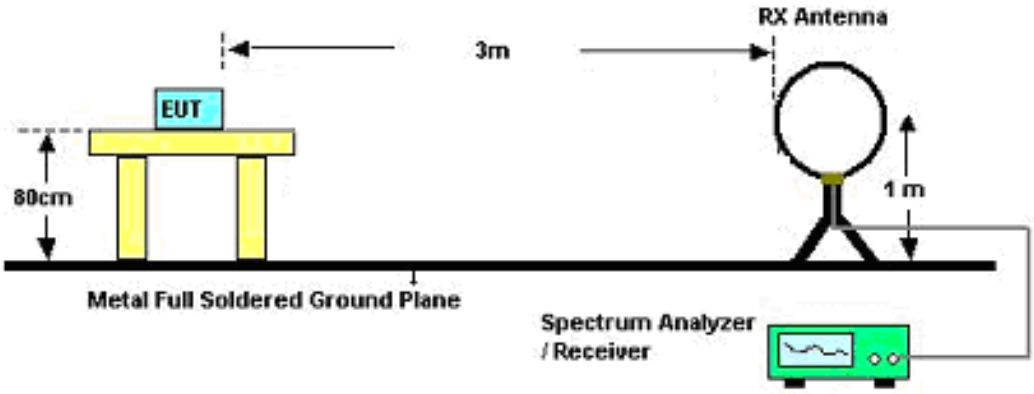
3.6.4 Measurement Results Calculation

The measured Level is calculated using:
Corrected Reading: Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamp Factor)

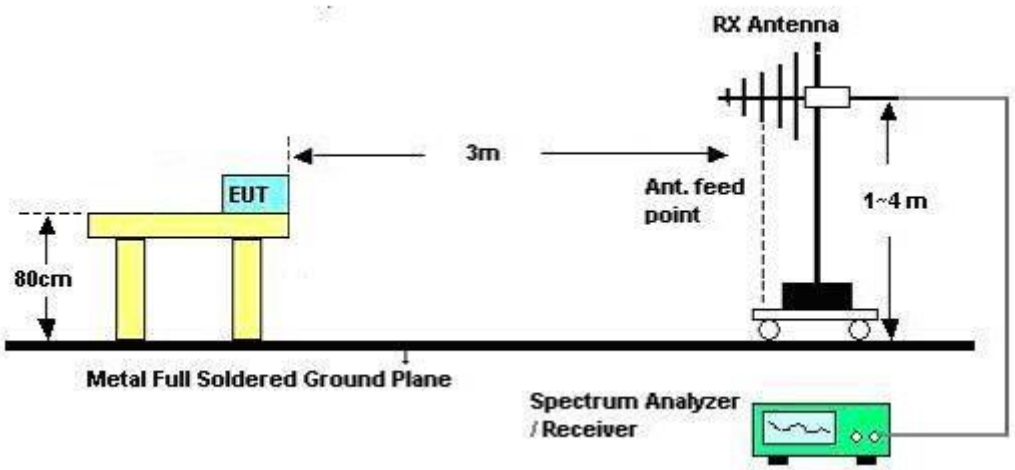
3.6.5 Test Setup

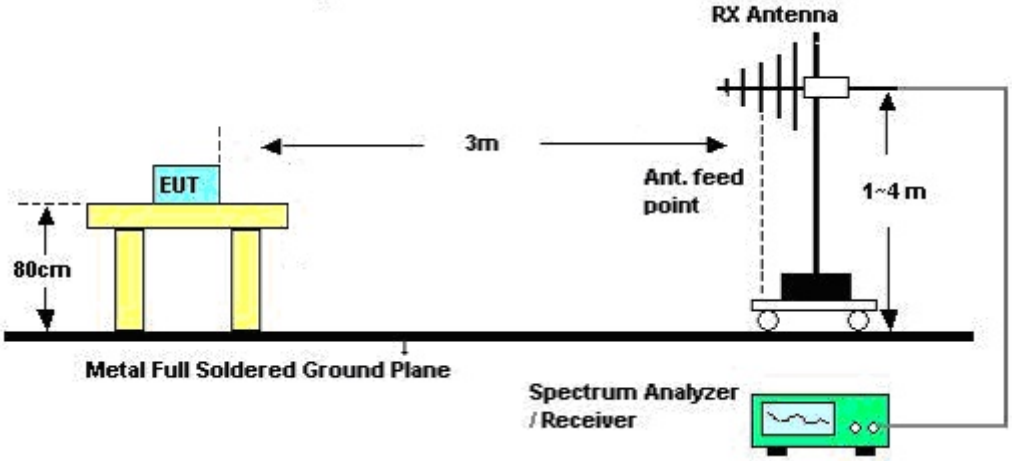
Emissions in Restricted Frequency Bands
9kHz ~30MHz



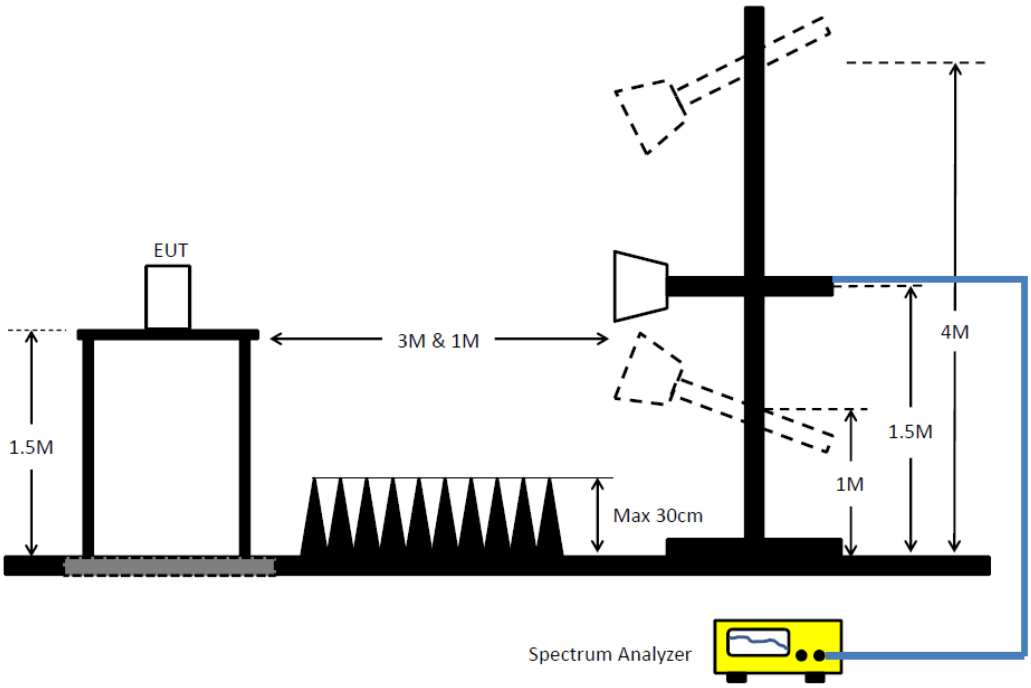


30MHz~1GHz


RX Antenna
3m
EUT
Ant. feed point
1~4 m
80cm
Metal Full Soldered Ground Plane
Spectrum Analyzer / Receiver


RX Antenna
3m
EUT
Ant. feed point
1~4 m
80cm
Metal Full Soldered Ground Plane
Spectrum Analyzer / Receiver

Above 1GHz



3.6.6 Test Result of Emissions in Restricted Frequency Bands (Below 30MHz)

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

3.6.7 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix F

4 Test Equipment and Calibration Data

Instrument for AC Conduction

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
EMI Test Receiver	R&S	ESR3	102051	9kHz ~ 3.6GHz	21/May/2021	20/May/2022
LISN	R&S	ENV216	101274	9kHz ~ 30MHz	13/May/2021	12/May/2022
LISN (Support Unit)	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	8127477	9kHz ~ 30MHz	25/Feb/2021	24/Feb/2022
RF Cable 5m	TITAN	TITAN	CO04-cable-01	0.1MHz~200MHz	03/Mar/2021	02/Mar/2022
Impuls Begrenzer Pulse Limiter	SCHWARZBECK	VTSD 9561-F	9561-F041	9kHz ~ 30MHz	26/Oct/2021	25/Oct/2022

Instrument for Radiated Test

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz~1GHz 3m	03/Aug/2021	02/Aug/2022
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	1GHz~18GHz 3m	03/Aug/2021	02/Aug/2022
Signal Analyzer	R&S	FSV40	101500	10Hz~40GHz	12/Oct/2021	11/Oct/2022
Amplifier	HP	8447D	2944A08033	10kHz~1.3GHz	13/Apr/2021	12/Apr/2022
Microwave Preamplifier	Agilent	8449B	3008A02326	1GHz~26.5GHz	15/Jul/2021	14/Jul/2022
Bilog Antenna & 6dB Attenuator	SCHAFFNER / EMCI	CBL6112B / N-6-05	22237 / AT-N-0603	30MHz~1GHz	17/Oct/2021	16/Oct/2022
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	2267	1GHz~18GHz	14/Sep/2021	13/Sep/2022
RF Cable-R03m	Jye Bao	RG142	CB021	9kHz~30MHz	16/Jun/2021	15/Jun/2022
RF Cable-R03m	Jye Bao	RG142	MY37335/4+CB021-1+CB021-2	30MHz~1GHz	17/Mar/2021	16/Mar/2022
RF CABLE 5+6m	HUBER+SUHNER	SUOFLEX 104	SN MY38596/4+SN 804300/4	1GHz~40GHz	28/Jul/2021	27/Jul/2022
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170221	15GHz~40GHz	11/Mar/2021	10/Mar/2022
Microwave Premplifier	EMC INSTRUMENTS	EM18G40G	060604	18GHz ~ 40GHz	09/Mar/2021	08/Mar/2022
Loop Antenna	TESEQ	HLA 6120	31244	9kHz~30MHz	16/Mar/2021	15/Mar/2022
EMI Test Receiver	R&S	ESR3	102052	9kHz~3.6GHz	19/Apr/2021	18/Apr/2022

Instrument for Conducted Test

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Signal Analyzer	R&S	FSV 40	101013	10Hz~40GHz	30/Mar/2021	29/Mar/2022
Programmable Temp. & Humi. Chamber	Giant Force	GTH-225-20-SP -SD	MAA1112-007	-20~100℃	21/May/2021	20/May/2022
SMB100A Signal Generator	R&S	SMB100A03	181147	100kHz~40GHz	21/Oct/2021	20/Oct/2022
Pulse Sensor	Anritsu	MA2411B	0917017	300MHz~40GHz	23/Feb/2021	22/Feb/2022
Power Meter	Anritsu	ML2495A	0949003	300MHz~40GHz	23/Feb/2021	22/Feb/2022

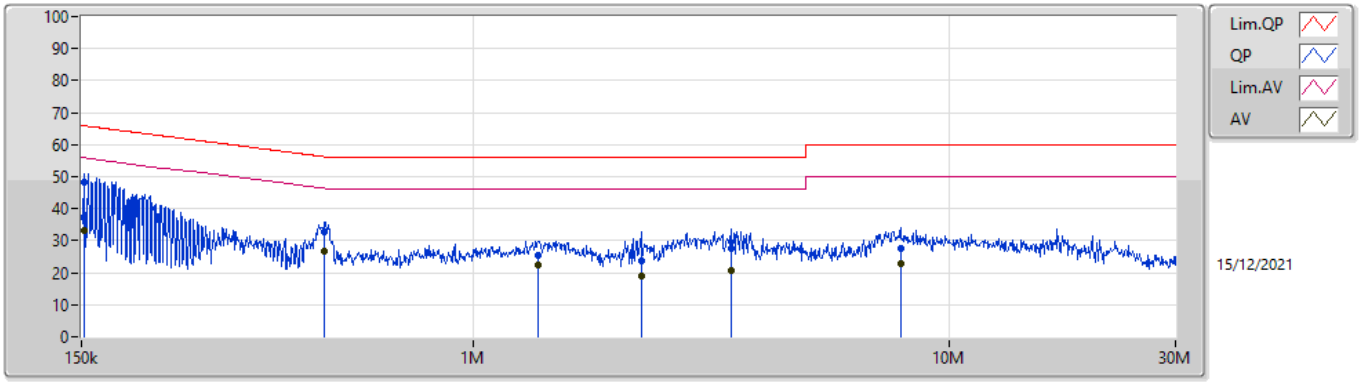
Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	QP	151.807k	48.33	65.90	-17.57	Line
Mode 2	Pass	AV	6.981M	27.56	50.00	-22.44	Line

Mode Configure

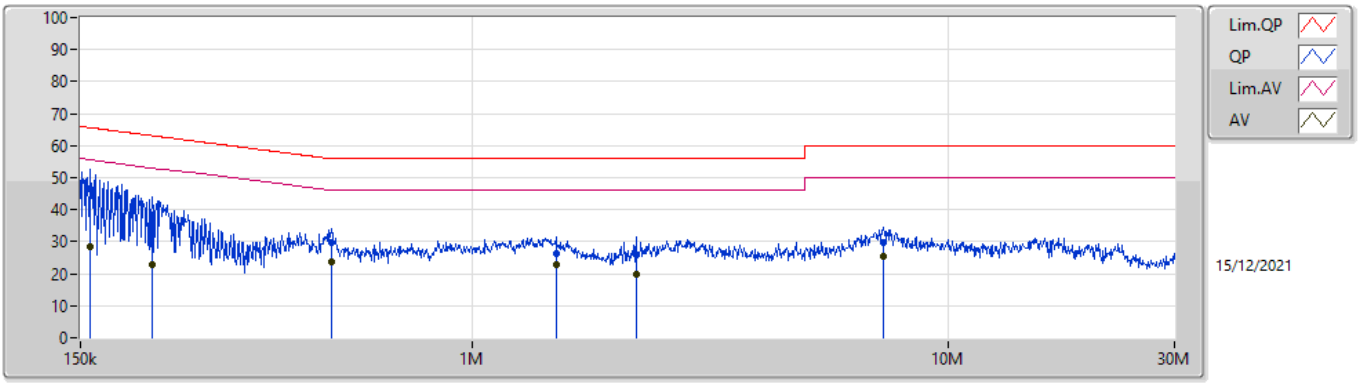
Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition	Comments
Mode 1	Pass	QP	151.807k	48.33	65.90	-17.57	Line	-
Mode 1	Pass	AV	151.807k	33.26	55.90	-22.64	Line	-
Mode 1	Pass	QP	487.008k	32.68	56.21	-23.53	Line	-
Mode 1	Pass	AV	487.008k	26.69	46.21	-19.52	Line	-
Mode 1	Pass	QP	1.37M	25.56	56.00	-30.44	Line	-
Mode 1	Pass	AV	1.37M	22.30	46.00	-23.70	Line	-
Mode 1	Pass	QP	2.256M	23.91	56.00	-32.09	Line	-
Mode 1	Pass	AV	2.256M	18.85	46.00	-27.15	Line	-
Mode 1	Pass	QP	3.485M	27.39	56.00	-28.61	Line	-
Mode 1	Pass	AV	3.485M	20.60	46.00	-25.40	Line	-
Mode 1	Pass	QP	7.932M	27.54	60.00	-32.46	Line	-
Mode 1	Pass	AV	7.932M	23.00	50.00	-27.00	Line	-
Mode 1	Pass	QP	157.361k	46.70	65.60	-18.90	Neutral	-
Mode 1	Pass	AV	157.361k	28.25	55.60	-27.35	Neutral	-
Mode 1	Pass	QP	212.287k	38.16	63.11	-24.95	Neutral	-
Mode 1	Pass	AV	212.287k	22.79	53.11	-30.32	Neutral	-
Mode 1	Pass	QP	504.824k	29.88	56.00	-26.12	Neutral	-
Mode 1	Pass	AV	504.824k	23.82	46.00	-22.18	Neutral	-
Mode 1	Pass	QP	1.501M	26.27	56.00	-29.73	Neutral	-
Mode 1	Pass	AV	1.501M	22.90	46.00	-23.10	Neutral	-
Mode 1	Pass	QP	2.211M	25.72	56.00	-30.28	Neutral	-
Mode 1	Pass	AV	2.211M	19.80	46.00	-26.20	Neutral	-
Mode 1	Pass	QP	7.324M	29.62	60.00	-30.38	Neutral	-
Mode 1	Pass	AV	7.324M	25.24	50.00	-24.76	Neutral	-
Mode 2	Pass	QP	151.807k	36.10	65.90	-29.80	Line	-
Mode 2	Pass	AV	151.807k	25.92	55.90	-29.98	Line	-
Mode 2	Pass	QP	397.299k	28.58	57.91	-29.33	Line	-
Mode 2	Pass	AV	397.299k	18.39	47.91	-29.52	Line	-
Mode 2	Pass	QP	922.424k	17.88	56.00	-38.12	Line	-
Mode 2	Pass	AV	922.424k	15.21	46.00	-30.79	Line	-
Mode 2	Pass	QP	2.15M	28.46	56.00	-27.54	Line	-
Mode 2	Pass	AV	2.15M	21.53	46.00	-24.47	Line	-
Mode 2	Pass	QP	6.981M	32.26	60.00	-27.74	Line	-
Mode 2	Pass	AV	6.981M	27.56	50.00	-22.44	Line	-
Mode 2	Pass	QP	21.953M	22.10	60.00	-37.90	Line	-
Mode 2	Pass	AV	21.953M	19.24	50.00	-30.76	Line	-
Mode 2	Pass	QP	151.202k	35.53	65.92	-30.39	Neutral	-
Mode 2	Pass	AV	151.202k	24.01	55.92	-31.91	Neutral	-
Mode 2	Pass	QP	194.439k	30.77	63.84	-33.07	Neutral	-
Mode 2	Pass	AV	194.439k	19.92	53.84	-33.92	Neutral	-
Mode 2	Pass	QP	415.134k	24.56	57.55	-32.99	Neutral	-
Mode 2	Pass	AV	415.134k	18.96	47.55	-28.59	Neutral	-
Mode 2	Pass	QP	2.211M	27.48	56.00	-28.52	Neutral	-
Mode 2	Pass	AV	2.211M	19.88	46.00	-26.12	Neutral	-
Mode 2	Pass	QP	7.265M	31.07	60.00	-28.93	Neutral	-
Mode 2	Pass	AV	7.265M	26.98	50.00	-23.02	Neutral	-
Mode 2	Pass	QP	23.778M	20.53	60.00	-39.47	Neutral	-
Mode 2	Pass	AV	23.778M	18.09	50.00	-31.91	Neutral	-

Conducted Emissions at Powerline_Mode 1



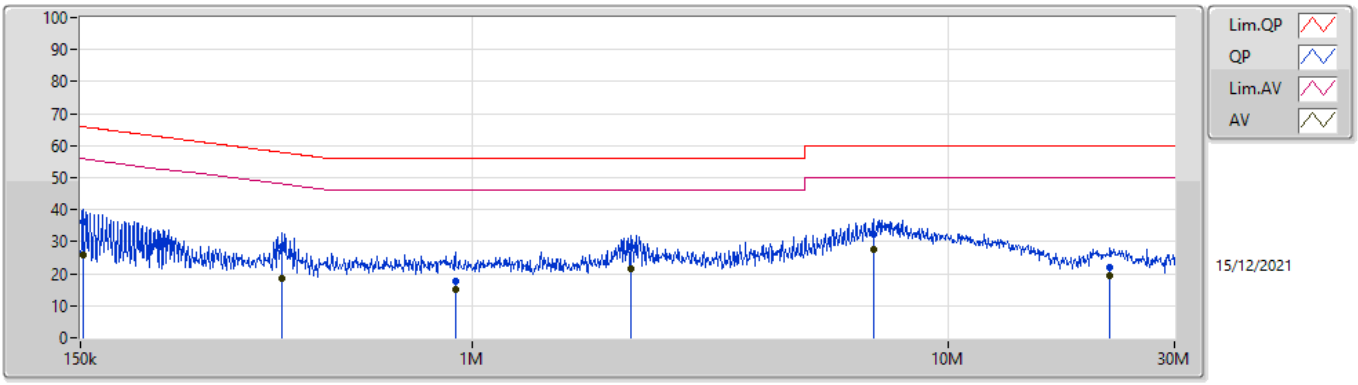
Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	LISN	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	151.807k	48.33	65.90	-17.57	19.64	Line	-	28.69	9.69	0.04	9.91
AV	151.807k	33.26	55.90	-22.64	19.64	Line	-	13.62	9.69	0.04	9.91
QP	487.008k	32.68	56.21	-23.53	19.65	Line	-	13.03	9.68	0.06	9.91
AV	487.008k	26.69	46.21	-19.52	19.65	Line	-	7.04	9.68	0.06	9.91
QP	1.37M	25.56	56.00	-30.44	19.69	Line	-	5.87	9.68	0.09	9.92
AV	1.37M	22.30	46.00	-23.70	19.69	Line	-	2.61	9.68	0.09	9.92
QP	2.256M	23.91	56.00	-32.09	19.72	Line	-	4.19	9.69	0.11	9.92
AV	2.256M	18.85	46.00	-27.15	19.72	Line	-	-0.87	9.69	0.11	9.92
QP	3.485M	27.39	56.00	-28.61	19.75	Line	-	7.64	9.70	0.13	9.92
AV	3.485M	20.60	46.00	-25.40	19.75	Line	-	0.85	9.70	0.13	9.92
QP	7.932M	27.54	60.00	-32.46	19.83	Line	-	7.71	9.72	0.18	9.93
AV	7.932M	23.00	50.00	-27.00	19.83	Line	-	3.17	9.72	0.18	9.93

Conducted Emissions at Powerline_Mode 1



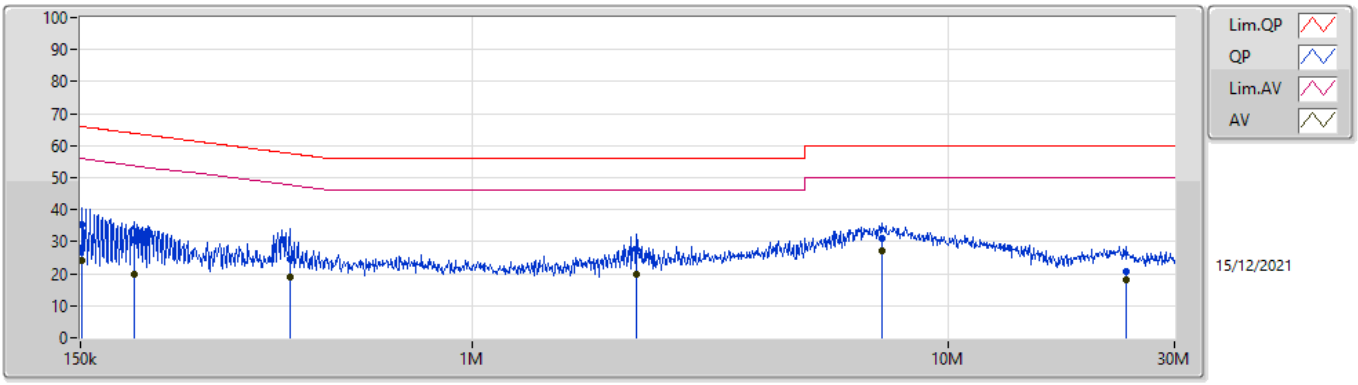
Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	LISN	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	157.361k	46.70	65.60	-18.90	19.64	Neutral	-	27.06	9.69	0.04	9.91
AV	157.361k	28.25	55.60	-27.35	19.64	Neutral	-	8.61	9.69	0.04	9.91
QP	212.287k	38.16	63.11	-24.95	19.62	Neutral	-	18.54	9.67	0.04	9.91
AV	212.287k	22.79	53.11	-30.32	19.62	Neutral	-	3.17	9.67	0.04	9.91
QP	504.824k	29.88	56.00	-26.12	19.65	Neutral	-	10.23	9.67	0.07	9.91
AV	504.824k	23.82	46.00	-22.18	19.65	Neutral	-	4.17	9.67	0.07	9.91
QP	1.501M	26.27	56.00	-29.73	19.69	Neutral	-	6.58	9.68	0.09	9.92
AV	1.501M	22.90	46.00	-23.10	19.69	Neutral	-	3.21	9.68	0.09	9.92
QP	2.211M	25.72	56.00	-30.28	19.71	Neutral	-	6.01	9.68	0.11	9.92
AV	2.211M	19.80	46.00	-26.20	19.71	Neutral	-	0.09	9.68	0.11	9.92
QP	7.324M	29.62	60.00	-30.38	19.83	Neutral	-	9.79	9.72	0.18	9.93
AV	7.324M	25.24	50.00	-24.76	19.83	Neutral	-	5.41	9.72	0.18	9.93

Conducted Emissions at Powerline_Mode 2



Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	LISN	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	151.807k	36.10	65.90	-29.80	19.64	Line	-	16.46	9.69	0.04	9.91
AV	151.807k	25.92	55.90	-29.98	19.64	Line	-	6.28	9.69	0.04	9.91
QP	397.299k	28.58	57.91	-29.33	19.65	Line	-	8.93	9.68	0.06	9.91
AV	397.299k	18.39	47.91	-29.52	19.65	Line	-	-1.26	9.68	0.06	9.91
QP	922.424k	17.88	56.00	-38.12	19.68	Line	-	-1.80	9.68	0.08	9.92
AV	922.424k	15.21	46.00	-30.79	19.68	Line	-	-4.47	9.68	0.08	9.92
QP	2.15M	28.46	56.00	-27.54	19.71	Line	-	8.75	9.69	0.10	9.92
AV	2.15M	21.53	46.00	-24.47	19.71	Line	-	1.82	9.69	0.10	9.92
QP	6.981M	32.26	60.00	-27.74	19.83	Line	-	12.43	9.72	0.18	9.93
AV	6.981M	27.56	50.00	-22.44	19.83	Line	-	7.73	9.72	0.18	9.93
QP	21.953M	22.10	60.00	-37.90	19.90	Line	-	2.20	9.66	0.31	9.93
AV	21.953M	19.24	50.00	-30.76	19.90	Line	-	-0.66	9.66	0.31	9.93

Conducted Emissions at Powerline_Mode 2



Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	LISN	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	151.202k	35.53	65.92	-30.39	19.64	Neutral	-	15.89	9.69	0.04	9.91
AV	151.202k	24.01	55.92	-31.91	19.64	Neutral	-	4.37	9.69	0.04	9.91
QP	194.439k	30.77	63.84	-33.07	19.62	Neutral	-	11.15	9.67	0.04	9.91
AV	194.439k	19.92	53.84	-33.92	19.62	Neutral	-	0.30	9.67	0.04	9.91
QP	415.134k	24.56	57.55	-32.99	19.64	Neutral	-	4.92	9.67	0.06	9.91
AV	415.134k	18.96	47.55	-28.59	19.64	Neutral	-	-0.68	9.67	0.06	9.91
QP	2.211M	27.48	56.00	-28.52	19.71	Neutral	-	7.77	9.68	0.11	9.92
AV	2.211M	19.88	46.00	-26.12	19.71	Neutral	-	0.17	9.68	0.11	9.92
QP	7.265M	31.07	60.00	-28.93	19.83	Neutral	-	11.24	9.72	0.18	9.93
AV	7.265M	26.98	50.00	-23.02	19.83	Neutral	-	7.15	9.72	0.18	9.93
QP	23.778M	20.53	60.00	-39.47	19.98	Neutral	-	0.55	9.73	0.32	9.93
AV	23.778M	18.09	50.00	-31.91	19.98	Neutral	-	-1.89	9.73	0.32	9.93

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)	666.25k	1.032M	1M03F1D	658.75k	1.021M
BT-LE(2Mbps)	1.135M	2.044M	2M04F1D	1.133M	2.034M

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

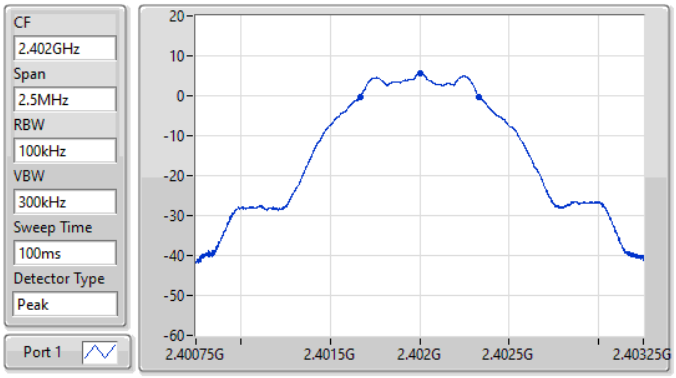
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	666.25k	1.032M
2440MHz	Pass	500k	662.5k	1.021M
2480MHz	Pass	500k	658.75k	1.024M
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	500k	1.133M	2.044M
2440MHz	Pass	500k	1.135M	2.034M
2480MHz	Pass	500k	1.135M	2.034M

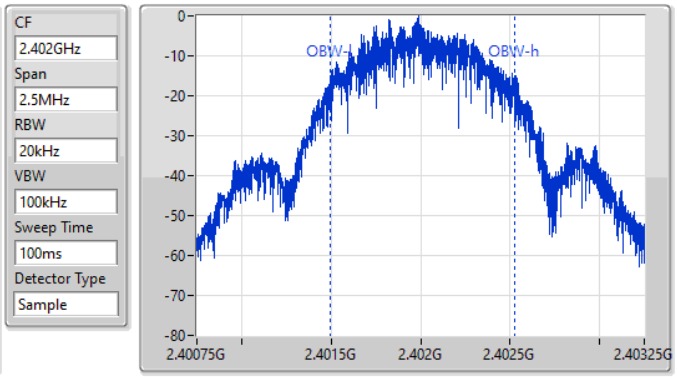
Port X-N dB = Port X 6dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

BT-LE(1Mbps) EBW-DTS

2402MHz

16/12/2021



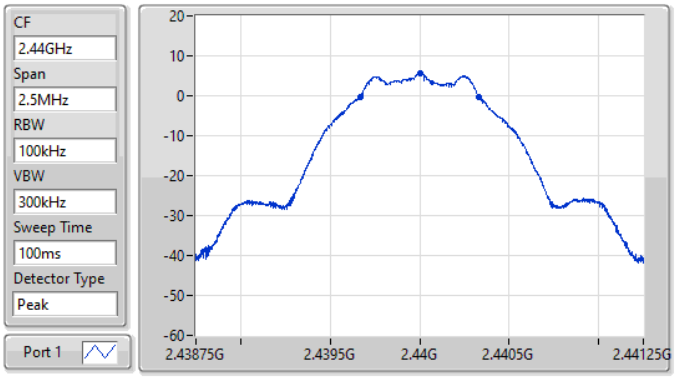


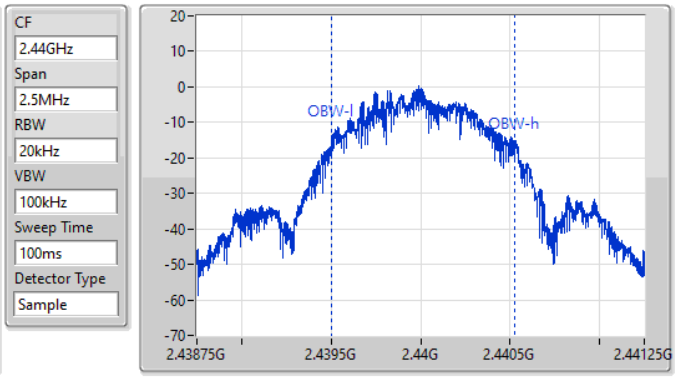
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
666.25k	2.401668G	2.402334G	1.032M	2.401497G	2.402528G	500k	1

BT-LE(1Mbps) EBW-DTS

2440MHz

16/12/2021



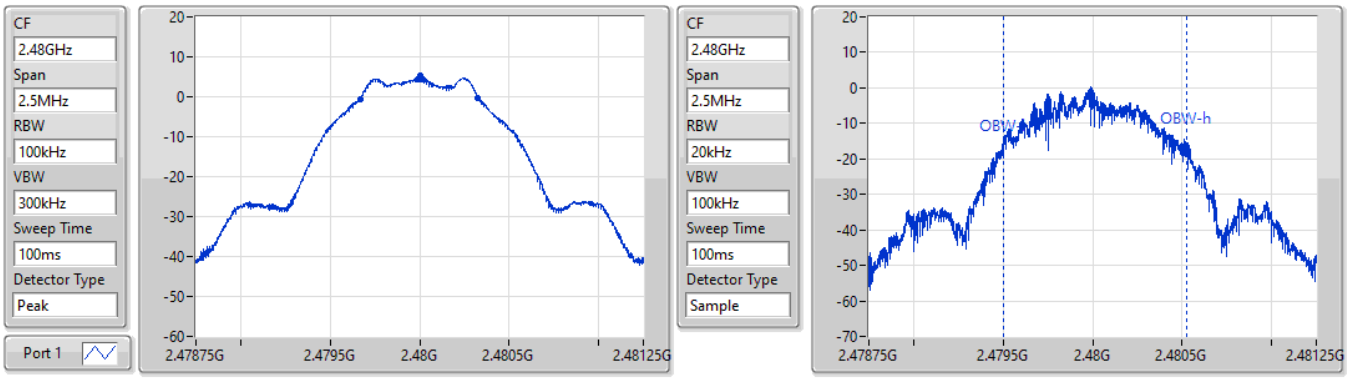


6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
662.5k	2.439666G	2.440329G	1.021M	2.439504G	2.440525G	500k	1

BT-LE(1Mbps) EBW-DTS

2480MHz

16/12/2021

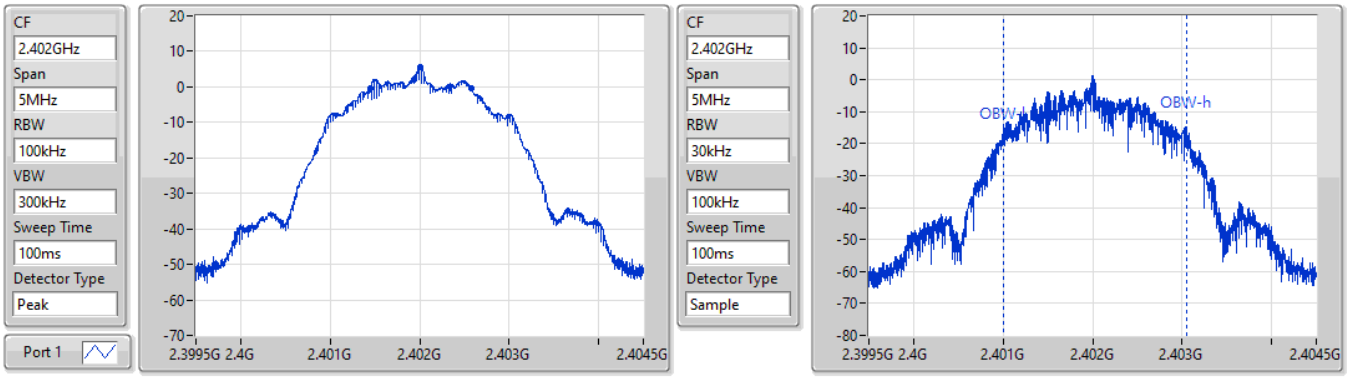


6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
658.75k	2.479668G	2.480326G	1.024M	2.479499G	2.480523G	500k	1

BT-LE(2Mbps) EBW-DTS

2402MHz

16/12/2021

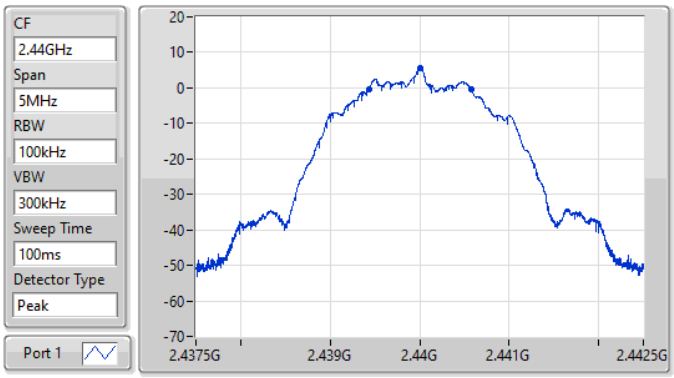


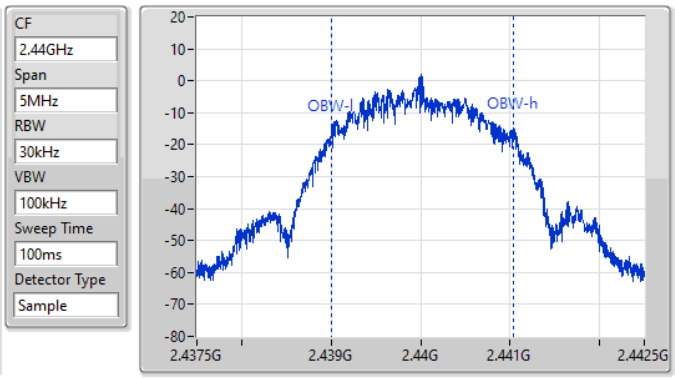
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.133M	2.401445G	2.402578G	2.044M	2.401003G	2.403047G	500k	1

BT-LE(2Mbps) EBW-DTS

2440MHz

16/12/2021



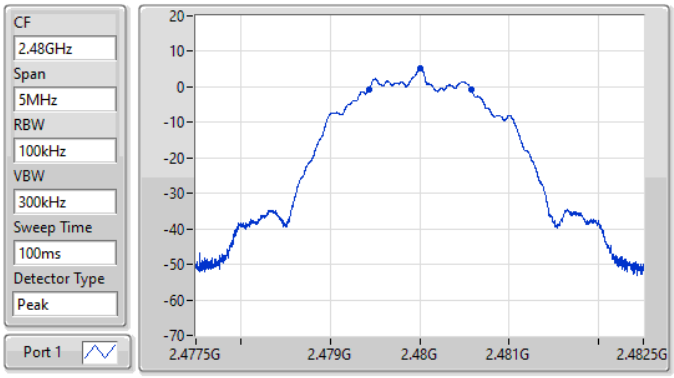


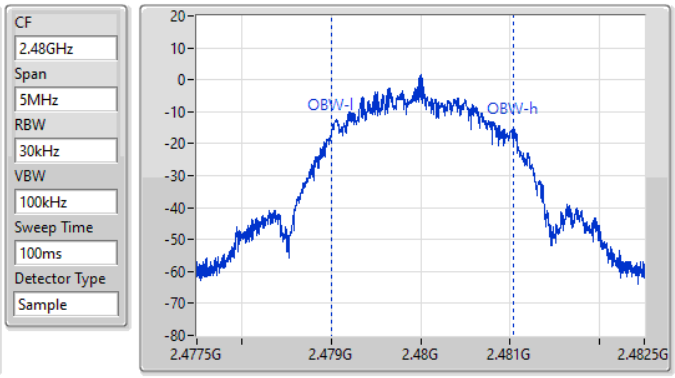
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.135M	2.43944G	2.440575G	2.034M	2.439003G	2.441037G	500k	1

BT-LE(2Mbps) EBW-DTS

2480MHz

16/12/2021





6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.135M	2.47944G	2.480575G	2.034M	2.479003G	2.481037G	500k	1

Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	5.88	0.00387
BT-LE(2Mbps)	5.61	0.00364

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	-3.70	5.74	30.00
2440MHz	Pass	-3.70	5.88	30.00
2480MHz	Pass	-3.70	5.68	30.00
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	-3.70	5.50	30.00
2440MHz	Pass	-3.70	5.61	30.00
2480MHz	Pass	-3.70	5.42	30.00

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

Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-9.11
BT-LE(2Mbps)	-12.69

RBW = 3kHz;

Result

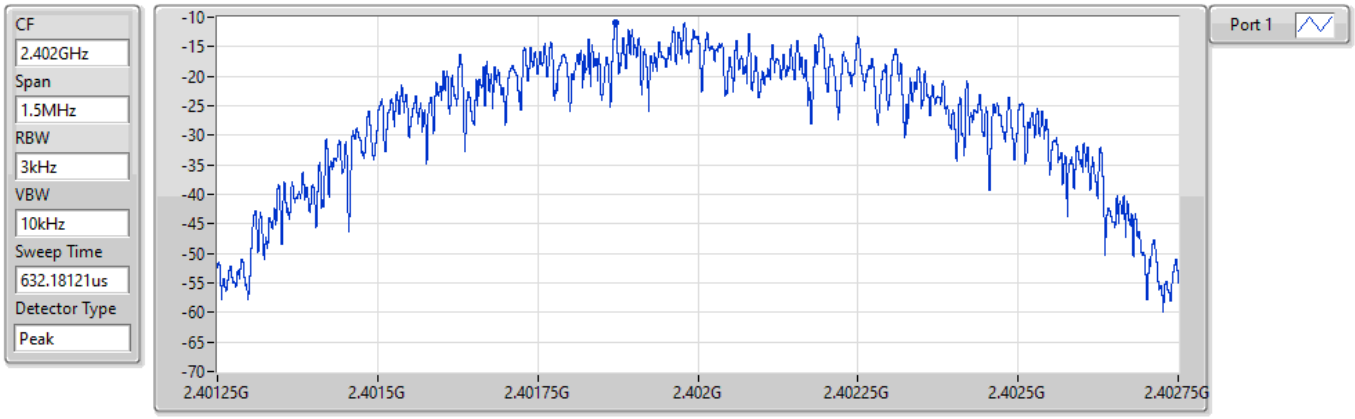
Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	-3.70	-10.88	8.00
2440MHz	Pass	-3.70	-9.11	8.00
2480MHz	Pass	-3.70	-9.35	8.00
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	-3.70	-12.78	8.00
2440MHz	Pass	-3.70	-12.69	8.00
2480MHz	Pass	-3.70	-13.09	8.00

DG = Directional Gain; RBW = 3kHz;
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

16/12/2021

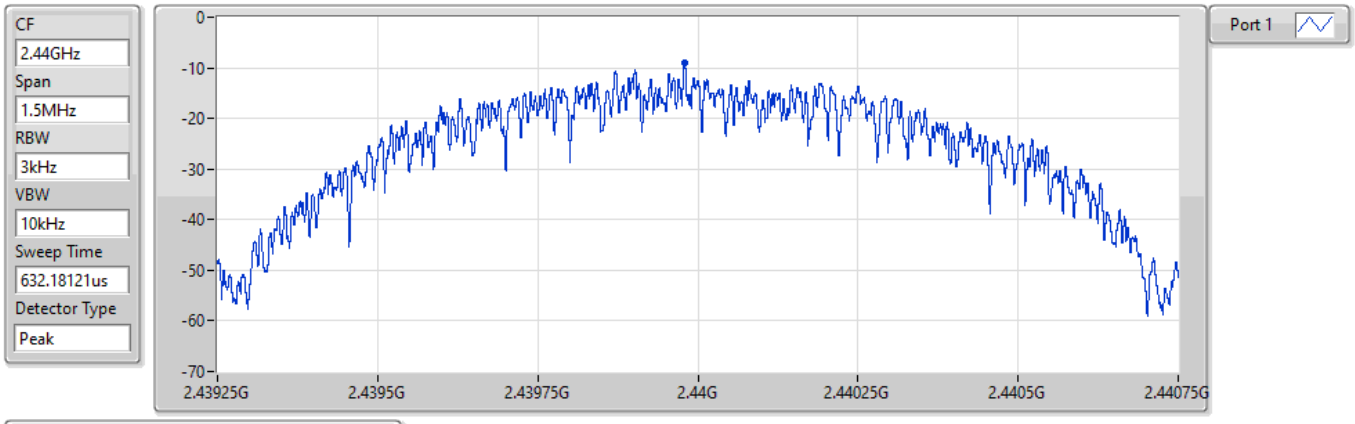


Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-10.88	-10.88	-10.88

BT-LE(1Mbps) PSD

2440MHz

16/12/2021

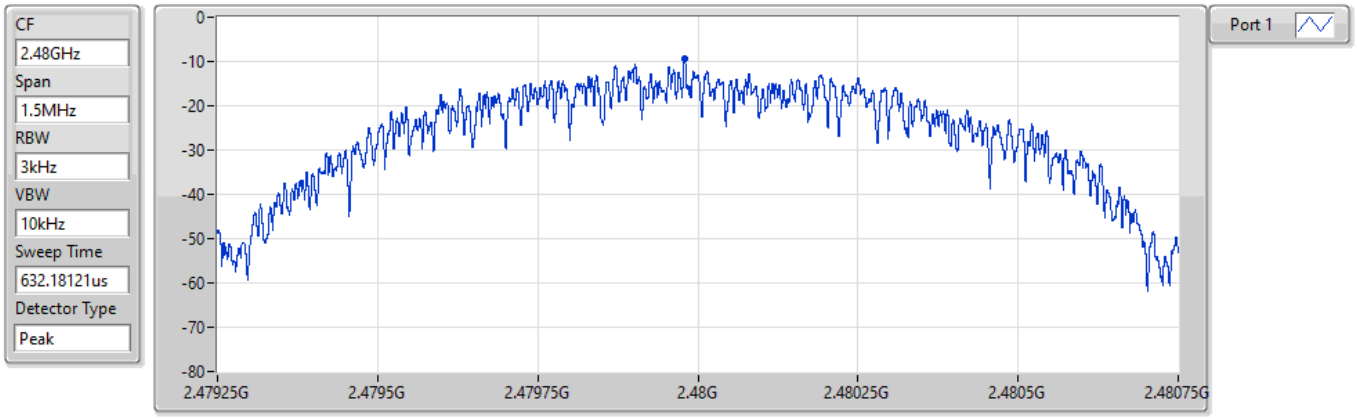


Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-9.11	-9.11	-9.11

BT-LE(1Mbps) PSD

2480MHz

16/12/2021

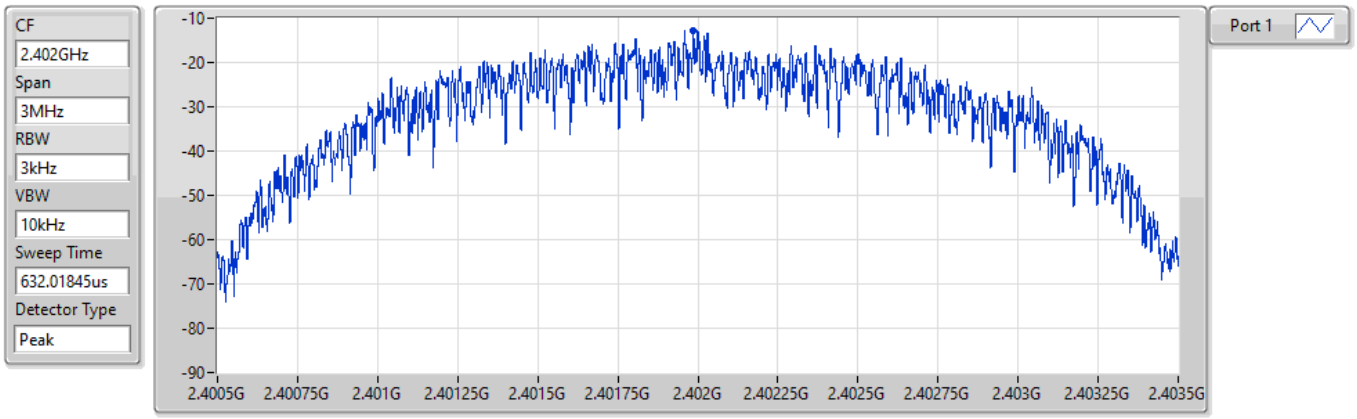


Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-9.35	-9.35	-9.35

BT-LE(2Mbps) PSD

2402MHz

16/12/2021

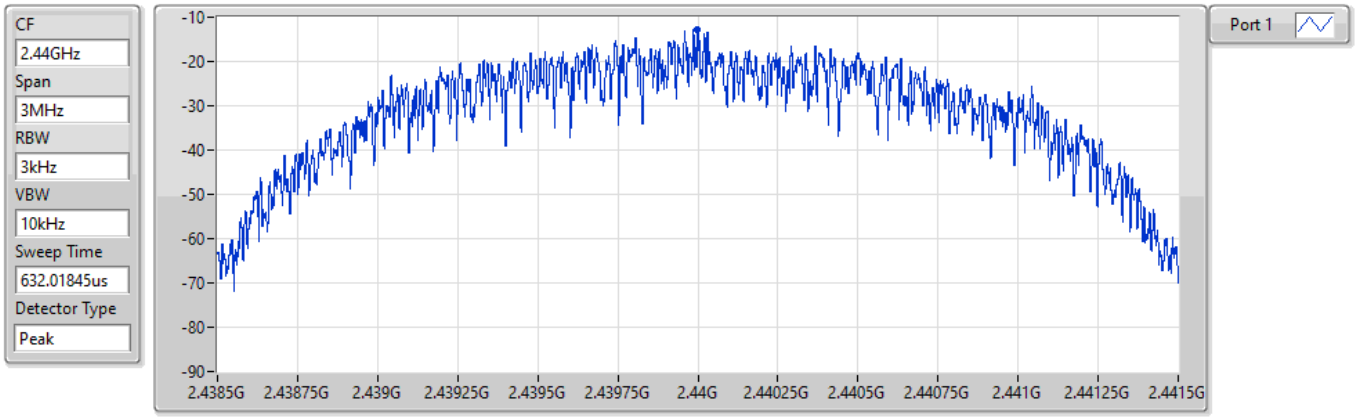


Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-12.78	-12.78	-12.78

BT-LE(2Mbps) PSD

2440MHz

16/12/2021

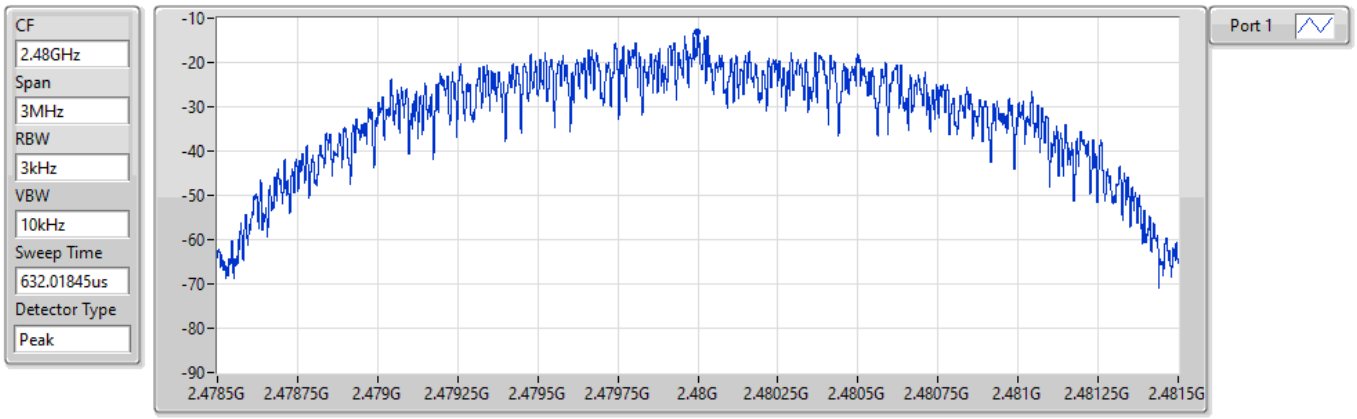


Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-12.69	-12.69	-12.69

BT-LE(2Mbps) PSD

2480MHz

16/12/2021



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-13.09	-13.09	-13.09

Summary

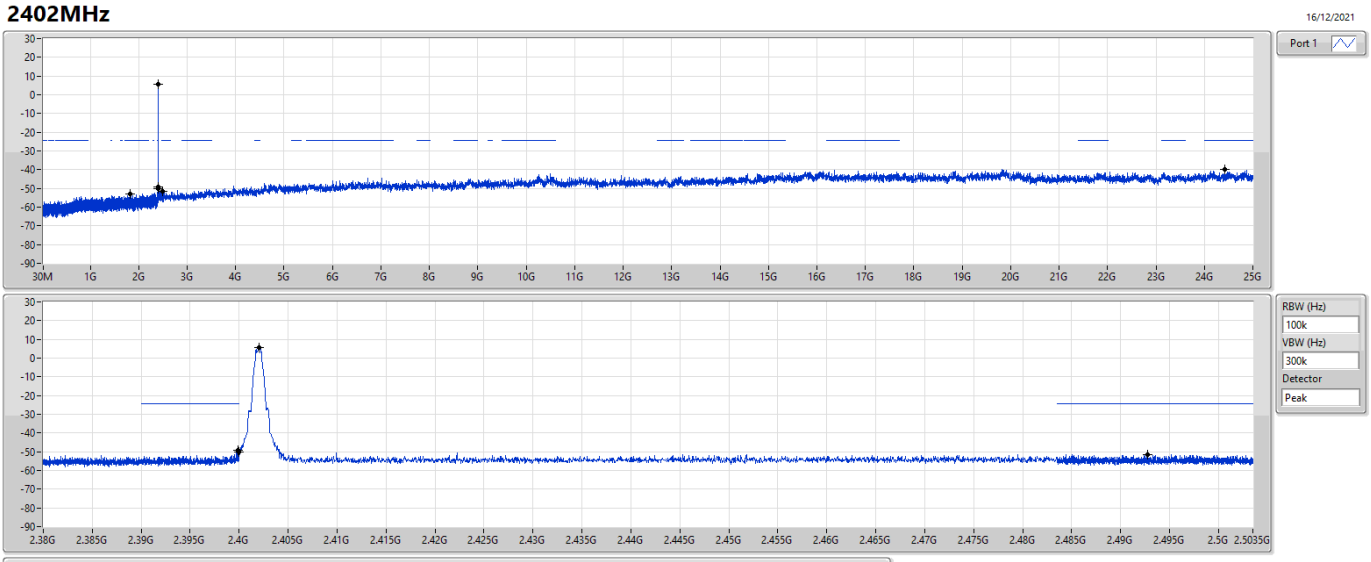
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	2.402G	5.53	-24.47	1.816G	-52.74	2.39986G	-49.43	2.4G	-50.36	2.49273G	-51.38	24.41228G	-39.65	1
BT-LE(2Mbps)	Pass	2.402G	5.50	-24.50	2.12649G	-53.15	2.39999G	-39.28	2.4G	-39.44	2.49151G	-50.61	24.85658G	-40.49	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	2.402G	5.53	-24.47	1.816G	-52.74	2.39986G	-49.43	2.4G	-50.36	2.49273G	-51.38	24.41228G	-39.65	1
2440MHz	Pass	2.402G	5.53	-24.47	2.13854G	-52.11	2.39285G	-52.11	2.4835G	-54.49	2.49323G	-50.91	24.22949G	-40.53	1
2480MHz	Pass	2.402G	5.53	-24.47	2.08508G	-52.55	2.39375G	-51.92	2.4835G	-53.43	2.50008G	-50.78	16.87033G	-40.32	1
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.402G	5.50	-24.50	2.12649G	-53.15	2.39999G	-39.28	2.4G	-39.44	2.49151G	-50.61	24.85658G	-40.49	1
2440MHz	Pass	2.402G	5.50	-24.50	1.75314G	-53.00	2.39632G	-52.18	2.4G	-54.46	2.48451G	-50.89	24.58381G	-40.16	1
2480MHz	Pass	2.402G	5.50	-24.50	2.30539G	-52.59	2.39723G	-51.91	2.4835G	-53.45	2.48573G	-50.92	14.88501G	-40.01	1

BT-LE(1Mbps) **CSENdB-DTS**

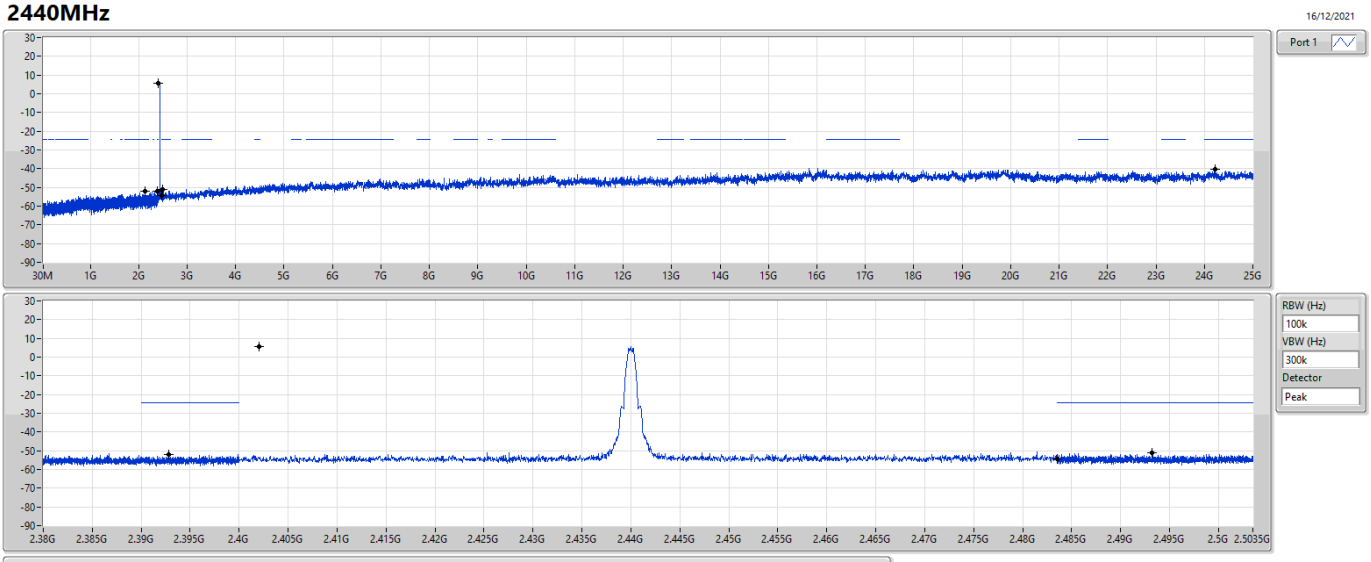
2402MHz



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
2.402G	5.53	-24.47	1.816G	-52.74	2.39986G	-49.43	2.4G	-50.36	2.49273G	-51.38	24.41228G	-39.65	1

BT-LE(1Mbps) **CSENdB-DTS**

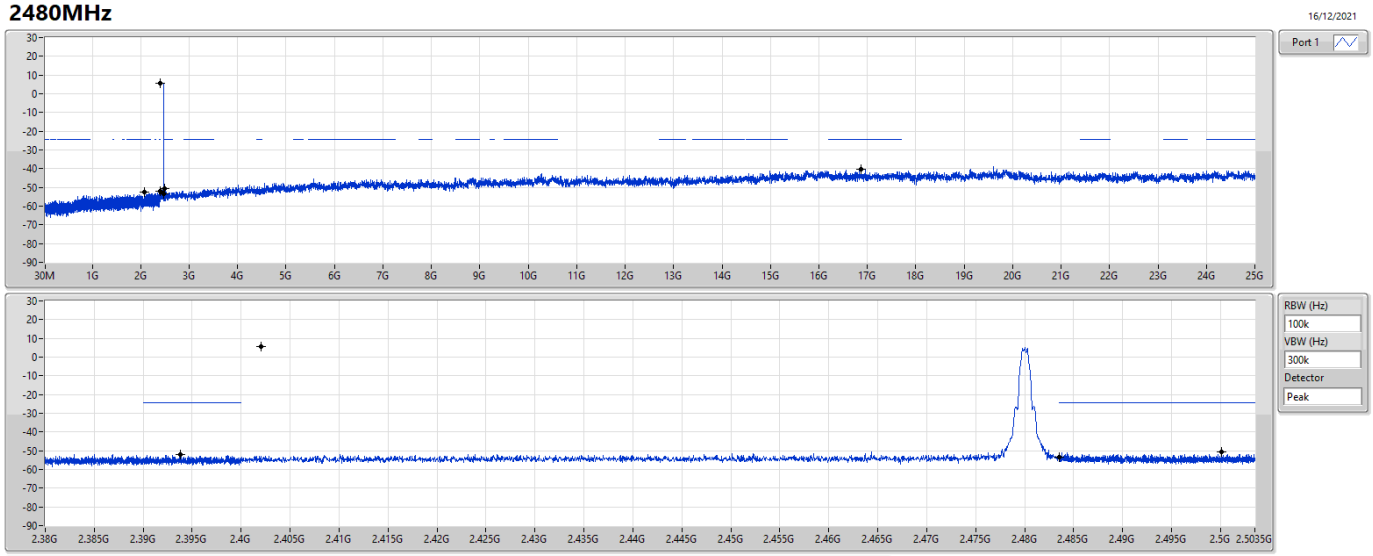
2440MHz



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
2.402G	5.53	-24.47	2.13854G	-52.11	2.39285G	-52.11	2.4835G	-54.49	2.49323G	-50.91	24.22949G	-40.53	1

BT-LE(1Mbps) **CSENdB-DTS**

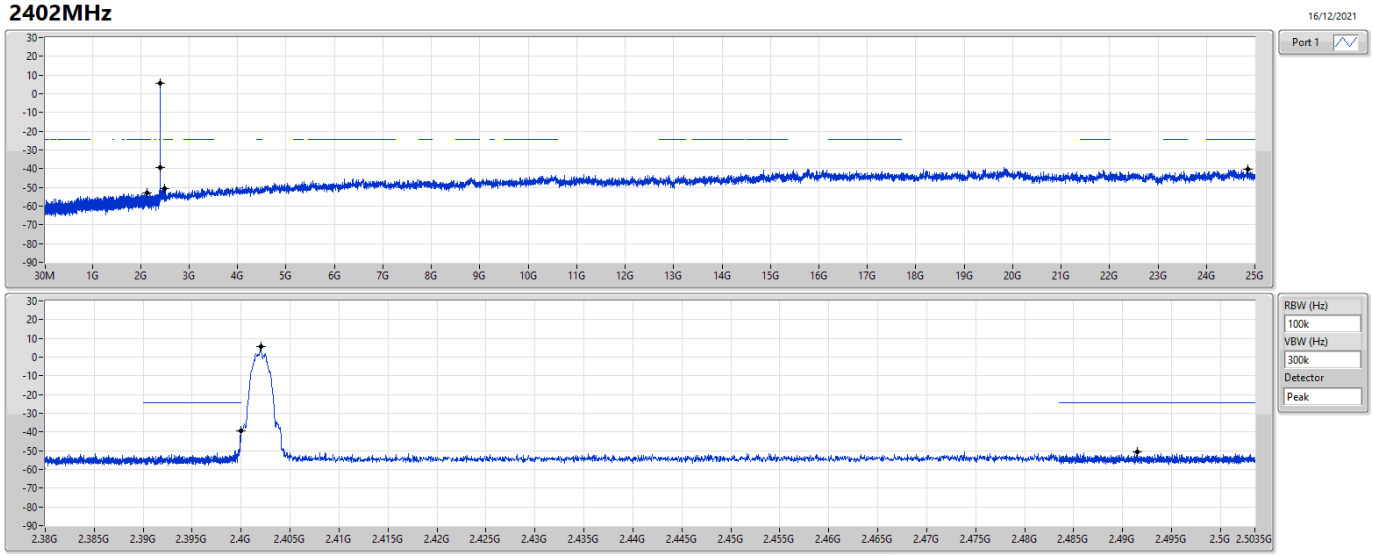
2480MHz



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
2.402G	5.53	-24.47	2.08508G	-52.55	2.39375G	-51.92	2.4835G	-53.43	2.50008G	-50.78	16.87033G	-40.32	1

BT-LE(2Mbps) **CSENdB-DTS**

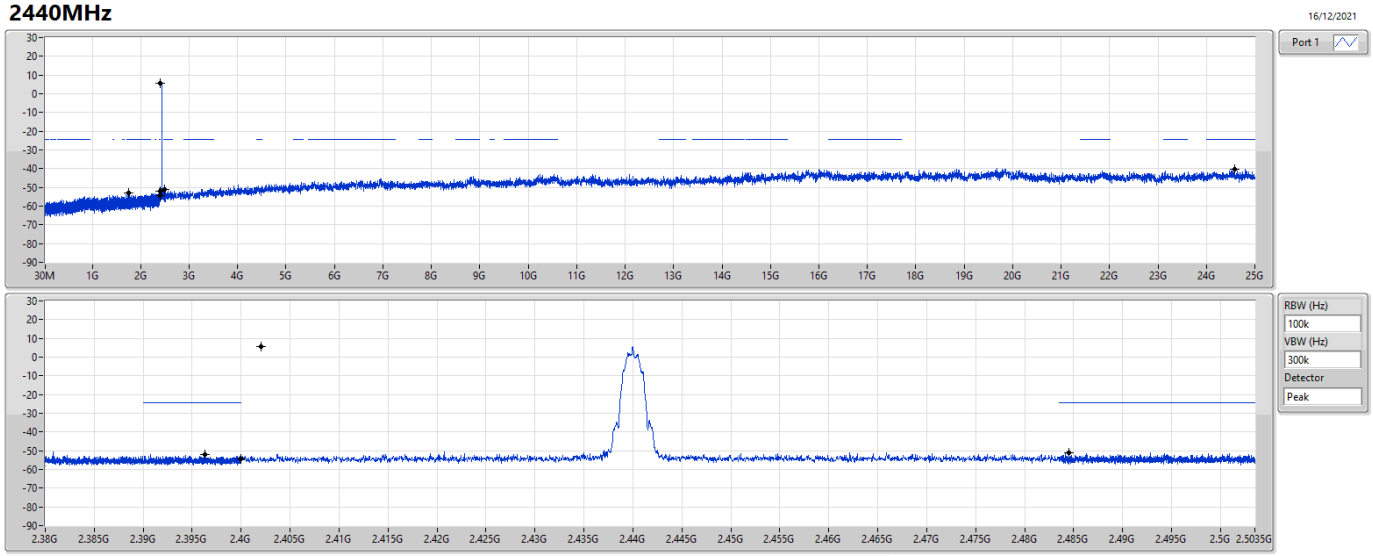
2402MHz



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
2.402G	5.50	-24.50	2.12649G	-53.15	2.39999G	-39.28	2.4G	-39.44	2.49151G	-50.61	24.85658G	-40.49	1

BT-LE(2Mbps) **CSENdB-DTS**

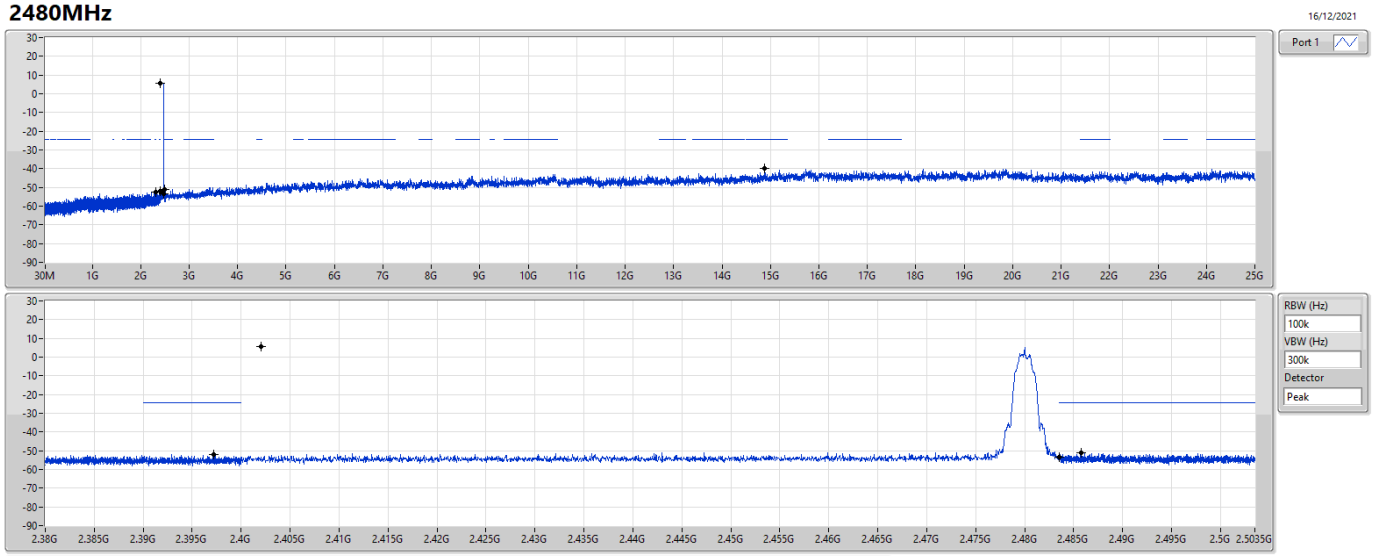
2440MHz



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
2.402G	5.50	-24.50	1.75314G	-53.00	2.39632G	-52.18	2.4G	-54.46	2.48451G	-50.89	24.58381G	-40.16	1

BT-LE(2Mbps) **CSENdB-DTS**

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
2.402G	5.50	-24.50	2.30539G	-52.59	2.39723G	-51.91	2.4835G	-53.45	2.48573G	-50.92	14.88501G	-40.01	1

Summary

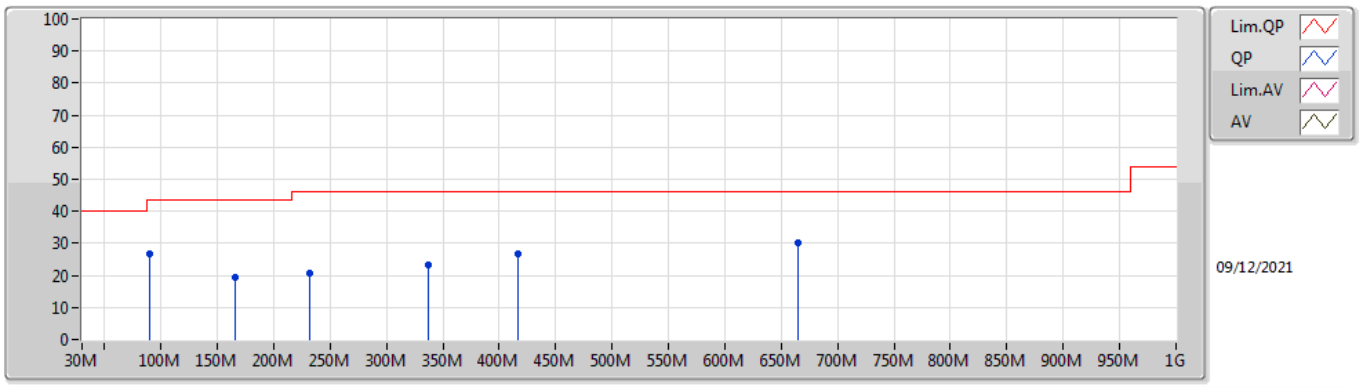
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
BT-LE(2Mbps)	Pass	PK	664.38M	30.27	46.00	-15.73	3	Vertical	360	1.00	-

Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-	-
2440MHz	Pass	PK	90.14M	26.81	43.50	-16.69	3	Vertical	360	1.00	-
2440MHz	Pass	PK	165.8M	19.48	43.50	-24.02	3	Vertical	360	1.00	-
2440MHz	Pass	PK	231.76M	20.82	46.00	-25.18	3	Vertical	360	1.00	-
2440MHz	Pass	PK	336.52M	23.26	46.00	-22.74	3	Vertical	360	1.00	-
2440MHz	Pass	PK	416.06M	26.58	46.00	-19.42	3	Vertical	360	1.00	-
2440MHz	Pass	PK	664.38M	30.27	46.00	-15.73	3	Vertical	360	1.00	-
2440MHz	Pass	PK	90.14M	21.07	43.50	-22.43	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	177.44M	18.50	43.50	-25.00	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	266.68M	22.69	46.00	-23.31	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	332.64M	24.15	46.00	-21.85	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	412.18M	26.34	46.00	-19.66	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	664.38M	30.08	46.00	-15.92	3	Horizontal	0	1.00	-

BT-LE(2Mbps)

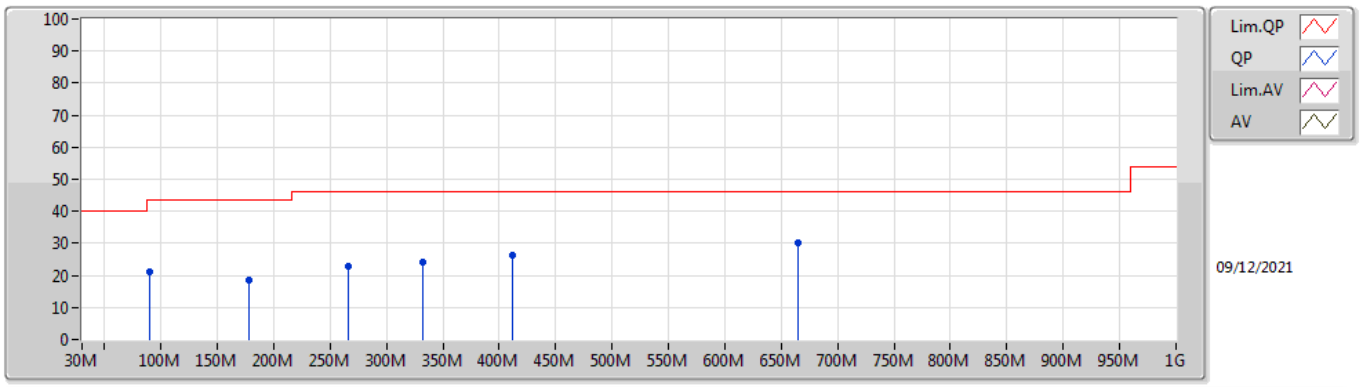
2440MHz_USB



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)	(dB)	(dB)	(dB)
PK	90.14M	26.81	43.50	-16.69	-11.86	3	Vertical	360	1.00	-	38.67	14.03	1.58	27.47
PK	165.8M	19.48	43.50	-24.02	-10.14	3	Vertical	360	1.00	-	29.62	14.88	2.16	27.18
PK	231.76M	20.82	46.00	-25.18	-8.92	3	Vertical	360	1.00	-	29.74	15.35	2.57	26.84
PK	336.52M	23.26	46.00	-22.74	-4.76	3	Vertical	360	1.00	-	28.02	18.99	3.17	26.92
PK	416.06M	26.58	46.00	-19.42	-2.16	3	Vertical	360	1.00	-	28.74	21.73	3.52	27.41
PK	664.38M	30.27	46.00	-15.73	0.45	3	Vertical	360	1.00	-	29.82	24.08	4.49	28.12

BT-LE(2Mbps)

2440MHz_USB



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)	(dB)	(dB)	(dB)
PK	90.14M	21.07	43.50	-22.43	-11.86	3	Horizontal	0	1.00	-	32.93	14.03	1.58	27.47
PK	177.44M	18.50	43.50	-25.00	-10.49	3	Horizontal	0	1.00	-	28.99	14.43	2.23	27.15
PK	266.68M	22.69	46.00	-23.31	-5.88	3	Horizontal	0	1.00	-	28.57	18.11	2.75	26.74
PK	332.64M	24.15	46.00	-21.85	-4.82	3	Horizontal	0	1.00	-	28.97	18.95	3.14	26.91
PK	412.18M	26.34	46.00	-19.66	-2.30	3	Horizontal	0	1.00	-	28.64	21.57	3.51	27.38
PK	664.38M	30.08	46.00	-15.92	0.45	3	Horizontal	0	1.00	-	29.63	24.08	4.49	28.12

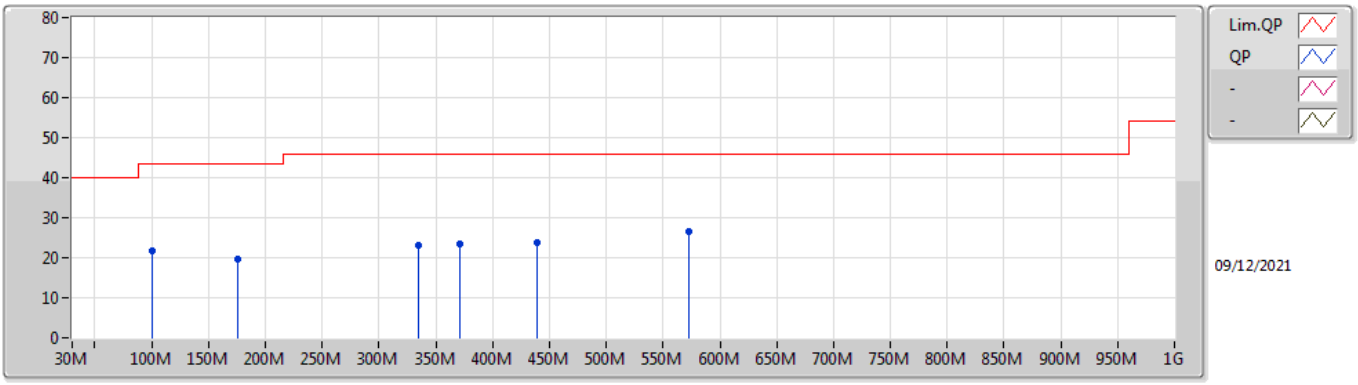
Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 2	Pass	PK	563.5M	26.52	46.00	-19.48	Horizontal

Result

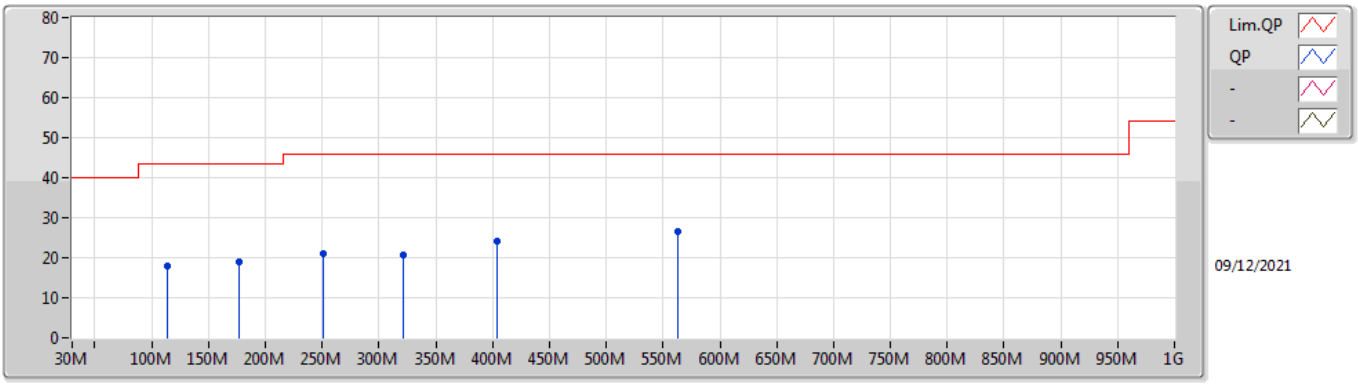
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB/m)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
Mode 2	Pass	PK	99.84M	21.79	43.50	-21.71	-9.84	3	Vertical	0	1.00	-
Mode 2	Pass	PK	175.5M	19.64	43.50	-23.86	-10.43	3	Vertical	0	1.00	-
Mode 2	Pass	PK	334.58M	23.08	46.00	-22.92	-4.78	3	Vertical	0	1.00	-
Mode 2	Pass	PK	371.44M	23.44	46.00	-22.56	-3.80	3	Vertical	0	1.00	-
Mode 2	Pass	PK	439.34M	23.94	46.00	-22.06	-2.06	3	Vertical	0	1.00	-
Mode 2	Pass	PK	573.2M	26.43	46.00	-19.57	0.04	3	Vertical	0	1.00	-
Mode 2	Pass	PK	113.42M	18.02	43.50	-25.48	-8.43	3	Horizontal	360	1.00	-
Mode 2	Pass	PK	177.44M	19.05	43.50	-24.45	-10.49	3	Horizontal	360	1.00	-
Mode 2	Pass	PK	251.16M	20.96	46.00	-25.04	-6.37	3	Horizontal	360	1.00	-
Mode 2	Pass	PK	321M	20.68	46.00	-25.32	-5.04	3	Horizontal	360	1.00	-
Mode 2	Pass	PK	404.42M	24.14	46.00	-21.86	-2.67	3	Horizontal	360	1.00	-
Mode 2	Pass	PK	563.5M	26.52	46.00	-19.48	0.13	3	Horizontal	360	1.00	-

Radiated Emissions below 1GHz_Mode 2



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB/m)	(m)		(°)	(m)		(dBuV/m)	(dB/m)	(dB)	(dB)
PK	99.84M	21.79	43.50	-21.71	-9.84	3	Vertical	0	1.00	-	31.63	15.85	1.70	27.39
PK	175.5M	19.64	43.50	-23.86	-10.43	3	Vertical	0	1.00	-	30.07	14.50	2.22	27.15
PK	334.58M	23.08	46.00	-22.92	-4.78	3	Vertical	0	1.00	-	27.86	18.97	3.16	26.91
PK	371.44M	23.44	46.00	-22.56	-3.80	3	Vertical	0	1.00	-	27.24	19.95	3.34	27.09
PK	439.34M	23.94	46.00	-22.06	-2.06	3	Vertical	0	1.00	-	26.00	21.95	3.63	27.64
PK	573.2M	26.43	46.00	-19.57	0.04	3	Vertical	0	1.00	-	26.39	23.91	4.22	28.09

Radiated Emissions below 1GHz_Mode 2



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB/m)	(m)		(°)	(m)		(dBuV/m)	(dB/m)	(dB)	(dB)
PK	113.42M	18.02	43.50	-25.48	-8.43	3	Horizontal	360	1.00	-	26.45	17.12	1.83	27.38
PK	177.44M	19.05	43.50	-24.45	-10.49	3	Horizontal	360	1.00	-	29.54	14.43	2.23	27.15
PK	251.16M	20.96	46.00	-25.04	-6.37	3	Horizontal	360	1.00	-	27.33	17.67	2.68	26.72
PK	321M	20.68	46.00	-25.32	-5.04	3	Horizontal	360	1.00	-	25.72	18.77	3.06	26.87
PK	404.42M	24.14	46.00	-21.86	-2.67	3	Horizontal	360	1.00	-	26.81	21.16	3.47	27.30
PK	563.5M	26.52	46.00	-19.48	0.13	3	Horizontal	360	1.00	-	26.39	24.08	4.16	28.11

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	2.3876G	49.13	54.00	-4.87	3	Horizontal	183	2.06	-
BT-LE(2Mbps)	Pass	AV	2.4988G	50.87	54.00	-3.13	3	Vertical	270	1.50	-

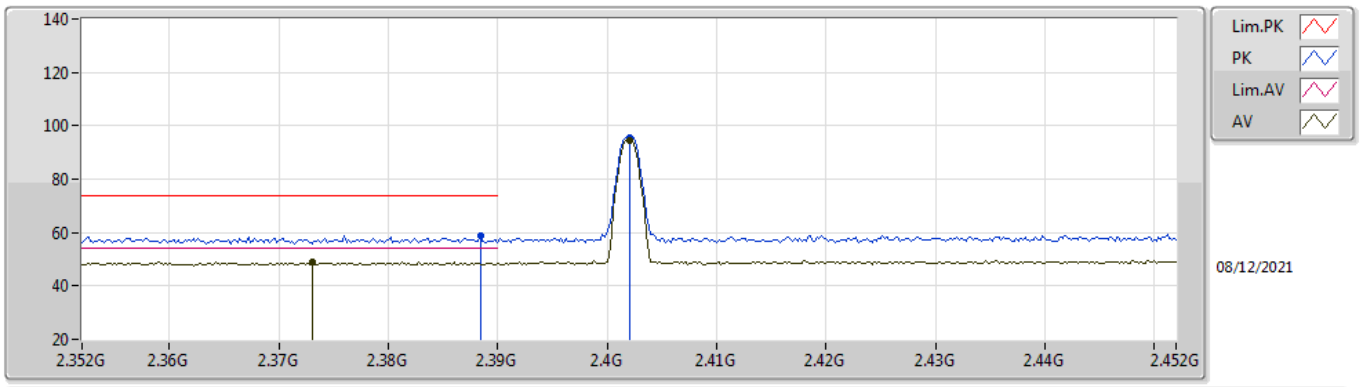
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.373G	49.06	54.00	-4.94	3	Vertical	174	2.03	-
2402MHz	Pass	AV	2.402G	94.66	Inf	-Inf	3	Vertical	174	2.03	-
2402MHz	Pass	PK	2.3884G	59.00	74.00	-15.00	3	Vertical	174	2.03	-
2402MHz	Pass	PK	2.402G	95.49	Inf	-Inf	3	Vertical	174	2.03	-
2402MHz	Pass	AV	2.3876G	49.13	54.00	-4.87	3	Horizontal	183	2.06	-
2402MHz	Pass	AV	2.402G	99.49	Inf	-Inf	3	Horizontal	183	2.06	-
2402MHz	Pass	PK	2.3708G	58.68	74.00	-15.32	3	Horizontal	183	2.06	-
2402MHz	Pass	PK	2.402G	100.37	Inf	-Inf	3	Horizontal	183	2.06	-
2402MHz	Pass	AV	4.80196G	38.50	54.00	-15.50	3	Vertical	207	1.48	-
2402MHz	Pass	PK	4.80341G	50.46	74.00	-23.54	3	Vertical	207	1.48	-
2402MHz	Pass	AV	4.8033G	33.96	54.00	-20.04	3	Horizontal	267	1.35	-
2402MHz	Pass	PK	4.8042G	45.15	74.00	-28.85	3	Horizontal	267	1.35	-
2440MHz	Pass	AV	2.386G	47.92	54.00	-6.08	3	Vertical	168	2.48	-
2440MHz	Pass	AV	2.44G	93.45	Inf	-Inf	3	Vertical	168	2.48	-
2440MHz	Pass	AV	2.4864G	48.50	54.00	-5.50	3	Vertical	168	2.48	-
2440MHz	Pass	PK	2.3676G	58.37	74.00	-15.63	3	Vertical	168	2.48	-
2440MHz	Pass	PK	2.4404G	95.06	Inf	-Inf	3	Vertical	168	2.48	-
2440MHz	Pass	PK	2.4864G	59.44	74.00	-14.56	3	Vertical	168	2.48	-
2440MHz	Pass	AV	2.3448G	47.87	54.00	-6.13	3	Horizontal	192	2.02	-
2440MHz	Pass	AV	2.44G	99.55	Inf	-Inf	3	Horizontal	192	2.02	-
2440MHz	Pass	AV	2.4968G	48.54	54.00	-5.46	3	Horizontal	192	2.02	-
2440MHz	Pass	PK	2.3448G	59.27	74.00	-14.73	3	Horizontal	192	2.02	-
2440MHz	Pass	PK	2.4404G	100.45	Inf	-Inf	3	Horizontal	192	2.02	-
2440MHz	Pass	PK	2.4964G	59.09	74.00	-14.91	3	Horizontal	192	2.02	-
2440MHz	Pass	AV	4.88221G	35.32	54.00	-18.68	3	Vertical	194	2.15	-
2440MHz	Pass	PK	4.87961G	46.30	74.00	-27.70	3	Vertical	194	2.15	-
2440MHz	Pass	AV	4.87919G	33.05	54.00	-20.95	3	Horizontal	187	1.50	-
2440MHz	Pass	PK	4.88226G	44.40	74.00	-29.60	3	Horizontal	187	1.50	-
2480MHz	Pass	AV	2.48G	87.10	Inf	-Inf	3	Vertical	270	1.50	-
2480MHz	Pass	AV	2.4914G	48.74	54.00	-5.26	3	Vertical	270	1.50	-
2480MHz	Pass	PK	2.4798G	88.19	Inf	-Inf	3	Vertical	270	1.50	-
2480MHz	Pass	PK	2.4842G	59.04	74.00	-14.96	3	Vertical	270	1.50	-
2480MHz	Pass	AV	2.48G	98.07	Inf	-Inf	3	Horizontal	189	1.75	-
2480MHz	Pass	AV	2.4904G	48.51	54.00	-5.49	3	Horizontal	189	1.75	-
2480MHz	Pass	PK	2.4798G	99.05	Inf	-Inf	3	Horizontal	189	1.75	-
2480MHz	Pass	PK	2.4962G	60.43	74.00	-13.57	3	Horizontal	189	1.75	-
2480MHz	Pass	AV	4.9607G	35.34	54.00	-18.66	3	Vertical	220	1.80	-
2480MHz	Pass	PK	4.95942G	46.80	74.00	-27.20	3	Vertical	220	1.80	-
2480MHz	Pass	AV	4.96038G	33.76	54.00	-20.24	3	Horizontal	235	1.49	-
2480MHz	Pass	PK	4.96081G	45.07	74.00	-28.93	3	Horizontal	235	1.49	-
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.3864G	49.11	54.00	-4.89	3	Vertical	246	1.94	-
2402MHz	Pass	AV	2.402G	90.08	Inf	-Inf	3	Vertical	246	1.94	-
2402MHz	Pass	PK	2.3542G	58.61	74.00	-15.39	3	Vertical	246	1.94	-
2402MHz	Pass	PK	2.4026G	92.51	Inf	-Inf	3	Vertical	246	1.94	-
2402MHz	Pass	AV	2.383G	49.80	54.00	-4.20	3	Horizontal	184	2.06	-
2402MHz	Pass	AV	2.402G	98.15	Inf	-Inf	3	Horizontal	184	2.06	-
2402MHz	Pass	PK	2.377G	59.23	74.00	-14.77	3	Horizontal	184	2.06	-
2402MHz	Pass	PK	2.402G	100.54	Inf	-Inf	3	Horizontal	184	2.06	-
2402MHz	Pass	AV	4.80192G	40.81	54.00	-13.19	3	Vertical	195	2.30	-
2402MHz	Pass	PK	4.80303G	51.04	74.00	-22.96	3	Vertical	195	2.30	-
2402MHz	Pass	AV	4.80163G	34.65	54.00	-19.35	3	Horizontal	270	1.41	-
2402MHz	Pass	PK	4.80581G	45.40	74.00	-28.60	3	Horizontal	270	1.41	-
2440MHz	Pass	AV	2.3756G	49.43	54.00	-4.57	3	Vertical	164	2.47	-
2440MHz	Pass	AV	2.44G	92.72	Inf	-Inf	3	Vertical	164	2.47	-
2440MHz	Pass	AV	2.494G	49.77	54.00	-4.23	3	Vertical	164	2.47	-
2440MHz	Pass	PK	2.3832G	58.84	74.00	-15.16	3	Vertical	164	2.47	-
2440MHz	Pass	PK	2.4404G	95.27	Inf	-Inf	3	Vertical	164	2.47	-
2440MHz	Pass	PK	2.4884G	59.82	74.00	-14.18	3	Vertical	164	2.47	-
2440MHz	Pass	AV	2.3432G	49.77	54.00	-4.23	3	Horizontal	189	2.03	-

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2440MHz	Pass	AV	2.44G	98.69	Inf	-Inf	3	Horizontal	189	2.03	-
2440MHz	Pass	AV	2.4876G	50.13	54.00	-3.87	3	Horizontal	189	2.03	-
2440MHz	Pass	PK	2.376G	59.05	74.00	-14.95	3	Horizontal	189	2.03	-
2440MHz	Pass	PK	2.4404G	101.02	Inf	-Inf	3	Horizontal	189	2.03	-
2440MHz	Pass	PK	2.4924G	59.58	74.00	-14.42	3	Horizontal	189	2.03	-
2440MHz	Pass	AV	4.87815G	37.09	54.00	-16.91	3	Vertical	206	2.06	-
2440MHz	Pass	PK	4.87804G	46.37	74.00	-27.63	3	Vertical	206	2.06	-
2440MHz	Pass	AV	4.88047G	34.72	54.00	-19.28	3	Horizontal	157	1.50	-
2440MHz	Pass	PK	4.88218G	44.14	74.00	-29.86	3	Horizontal	157	1.50	-
2480MHz	Pass	AV	2.48G	86.63	Inf	-Inf	3	Vertical	270	1.50	-
2480MHz	Pass	AV	2.4988G	50.87	54.00	-3.13	3	Vertical	270	1.50	-
2480MHz	Pass	PK	2.4796G	88.92	Inf	-Inf	3	Vertical	270	1.50	-
2480MHz	Pass	PK	2.4996G	59.24	74.00	-14.76	3	Vertical	270	1.50	-
2480MHz	Pass	AV	2.48G	97.23	Inf	-Inf	3	Horizontal	190	1.76	-
2480MHz	Pass	AV	2.4956G	50.52	54.00	-3.48	3	Horizontal	190	1.76	-
2480MHz	Pass	PK	2.4794G	99.41	Inf	-Inf	3	Horizontal	190	1.76	-
2480MHz	Pass	PK	2.4966G	59.61	74.00	-14.39	3	Horizontal	190	1.76	-
2480MHz	Pass	AV	4.95954G	36.79	54.00	-17.21	3	Vertical	220	2.10	-
2480MHz	Pass	PK	4.96078G	46.57	74.00	-27.43	3	Vertical	220	2.10	-
2480MHz	Pass	AV	4.95847G	35.46	54.00	-18.54	3	Horizontal	213	1.50	-
2480MHz	Pass	PK	4.95801G	44.79	74.00	-29.21	3	Horizontal	213	1.50	-

BT-LE(1Mbps)

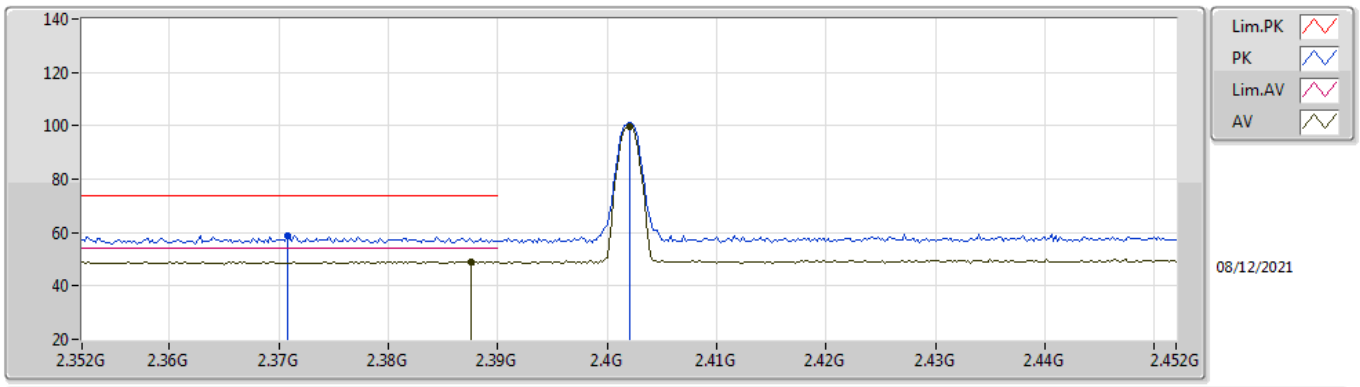
2402MHz_TX



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)	(dB)	(dB)	(dB)
AV	2.373G	49.06	54.00	-4.94	31.70	3	Vertical	174	2.03	-	17.36	27.35	4.35	-
AV	2.402G	94.66	Inf	-Inf	31.79	3	Vertical	174	2.03	-	62.87	27.41	4.38	-
PK	2.3884G	59.00	74.00	-15.00	31.75	3	Vertical	174	2.03	-	27.25	27.38	4.37	-
PK	2.402G	95.49	Inf	-Inf	31.79	3	Vertical	174	2.03	-	63.70	27.41	4.38	-

BT-LE(1Mbps)

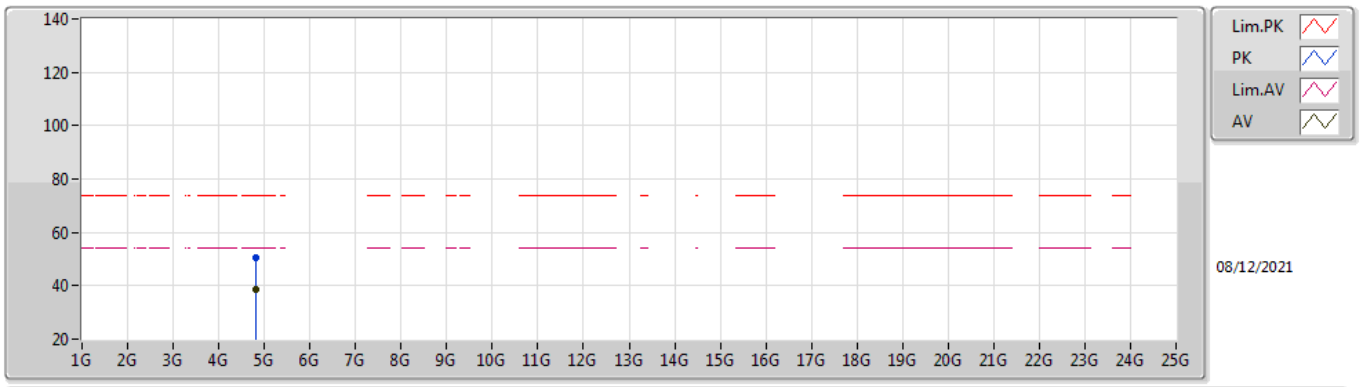
2402MHz_TX



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)	(dB)	(dB)	(dB)
AV	2.3876G	49.13	54.00	-4.87	31.75	3	Horizontal	183	2.06	-	17.38	27.38	4.37	-
AV	2.402G	99.49	Inf	-Inf	31.79	3	Horizontal	183	2.06	-	67.70	27.41	4.38	-
PK	2.3708G	58.68	74.00	-15.32	31.69	3	Horizontal	183	2.06	-	26.99	27.34	4.35	-
PK	2.402G	100.37	Inf	-Inf	31.79	3	Horizontal	183	2.06	-	68.58	27.41	4.38	-

BT-LE(1Mbps)

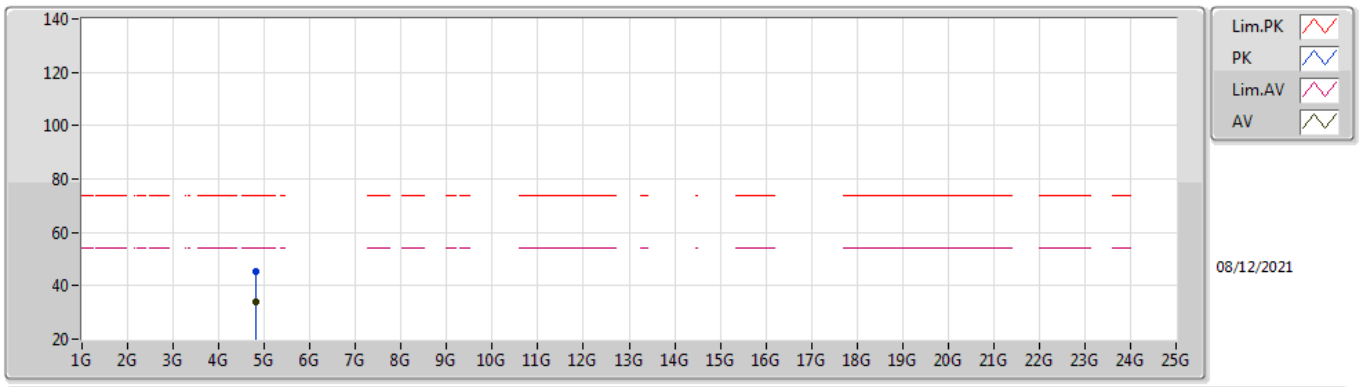
2402MHz_TX



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)	(dB)	(dB)	(dB)
AV	4.80196G	38.50	54.00	-15.50	4.32	3	Vertical	207	1.48	-	34.18	32.51	6.26	34.45
PK	4.80341G	50.46	74.00	-23.54	4.32	3	Vertical	207	1.48	-	46.14	32.51	6.26	34.45

BT-LE(1Mbps)

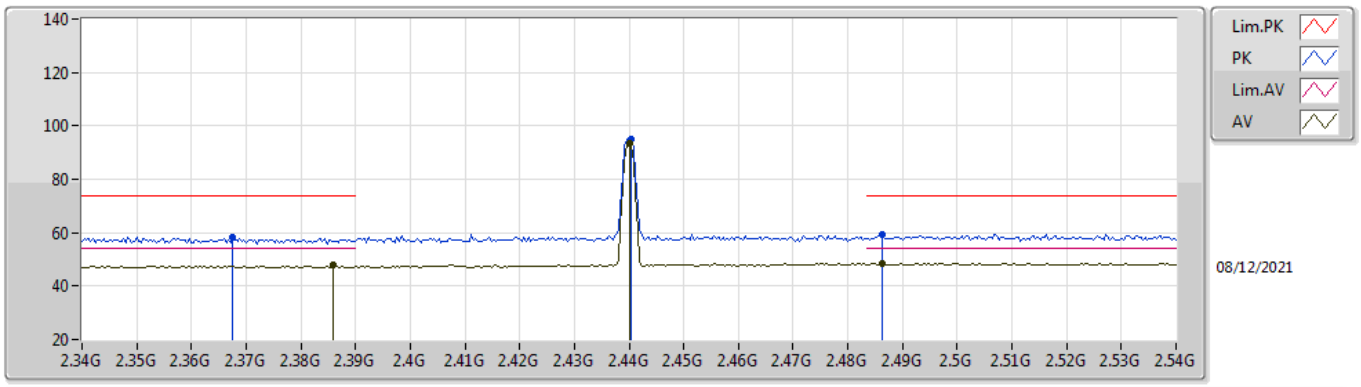
2402MHz_TX



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)	(dB)	(dB)	(dB)
AV	4.8033G	33.96	54.00	-20.04	4.32	3	Horizontal	267	1.35	-	29.64	32.51	6.26	34.45
PK	4.8042G	45.15	74.00	-28.85	4.33	3	Horizontal	267	1.35	-	40.82	32.52	6.26	34.45

BT-LE(1Mbps)

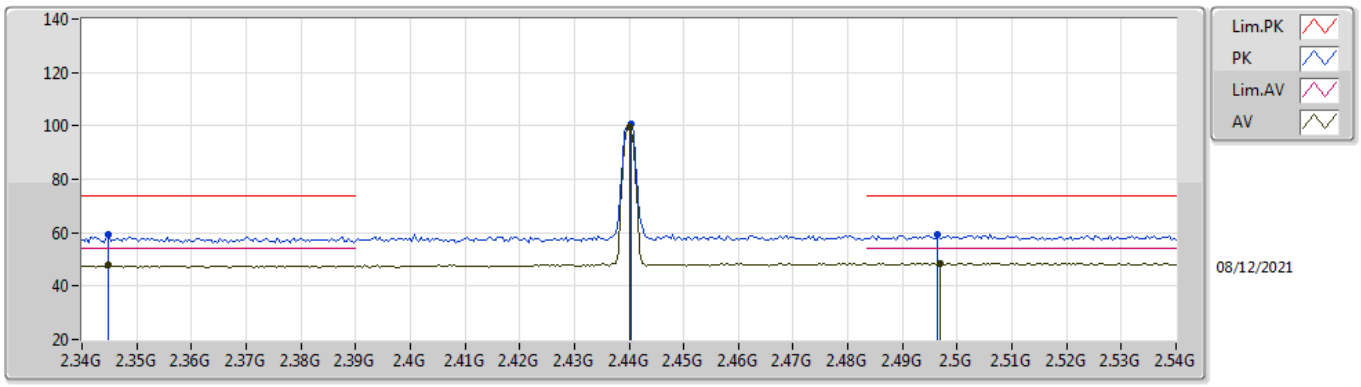
2440MHz_TX



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)	(dB)	(dB)	(dB)
AV	2.386G	47.92	54.00	-6.08	31.74	3	Vertical	168	2.48	-	16.18	27.37	4.37	-
AV	2.44G	93.45	Inf	-Inf	32.00	3	Vertical	168	2.48	-	61.45	27.56	4.44	-
AV	2.4864G	48.50	54.00	-5.50	32.33	3	Vertical	168	2.48	-	16.17	27.82	4.51	-
PK	2.3676G	58.37	74.00	-15.63	31.69	3	Vertical	168	2.48	-	26.68	27.34	4.35	-
PK	2.4404G	95.06	Inf	-Inf	32.00	3	Vertical	168	2.48	-	63.06	27.56	4.44	-
PK	2.4864G	59.44	74.00	-14.56	32.33	3	Vertical	168	2.48	-	27.11	27.82	4.51	-

BT-LE(1Mbps)

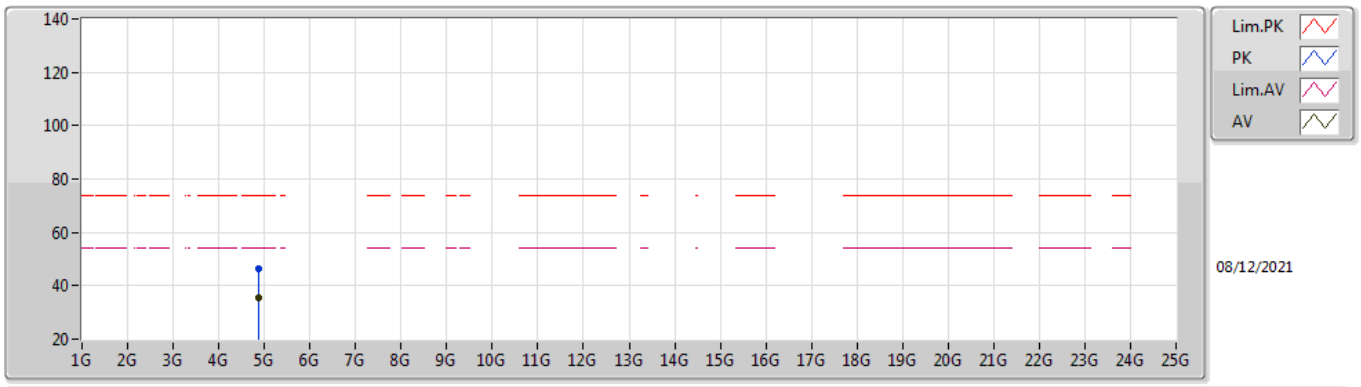
2440MHz_TX



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)	(dB)	(dB)	(dB)
AV	2.3448G	47.87	54.00	-6.13	31.60	3	Horizontal	192	2.02	-	16.27	27.28	4.32	-
AV	2.44G	99.55	Inf	-Inf	32.00	3	Horizontal	192	2.02	-	67.55	27.56	4.44	-
AV	2.4968G	48.54	54.00	-5.46	32.40	3	Horizontal	192	2.02	-	16.14	27.88	4.52	-
PK	2.3448G	59.27	74.00	-14.73	31.60	3	Horizontal	192	2.02	-	27.67	27.28	4.32	-
PK	2.4404G	100.45	Inf	-Inf	32.00	3	Horizontal	192	2.02	-	68.45	27.56	4.44	-
PK	2.4964G	59.09	74.00	-14.91	32.40	3	Horizontal	192	2.02	-	26.69	27.88	4.52	-

BT-LE(1Mbps)

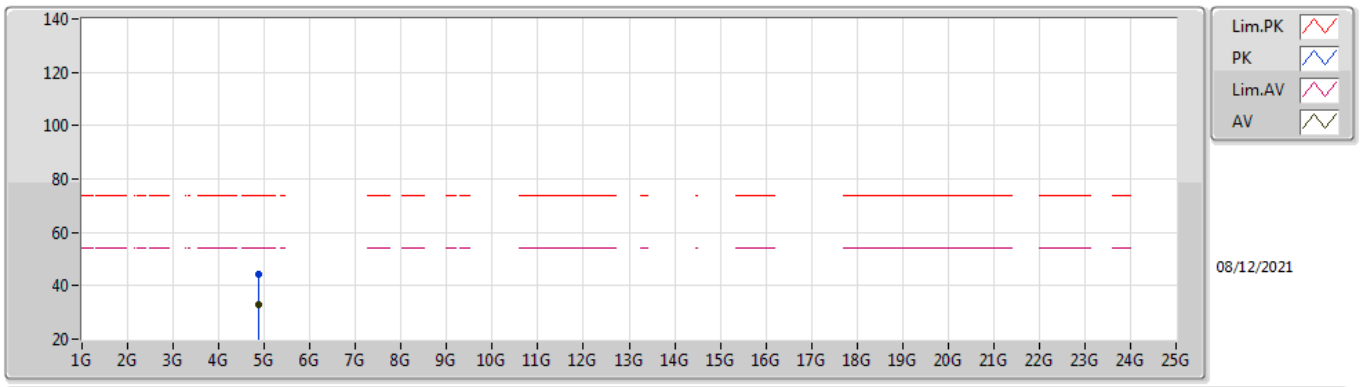
2440MHz_TX



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)	(dB)	(dB)	(dB)
AV	4.88221G	35.32	54.00	-18.68	4.63	3	Vertical	194	2.15	-	30.69	32.76	6.31	34.44
PK	4.87961G	46.30	74.00	-27.70	4.63	3	Vertical	194	2.15	-	41.67	32.76	6.31	34.44

BT-LE(1Mbps)

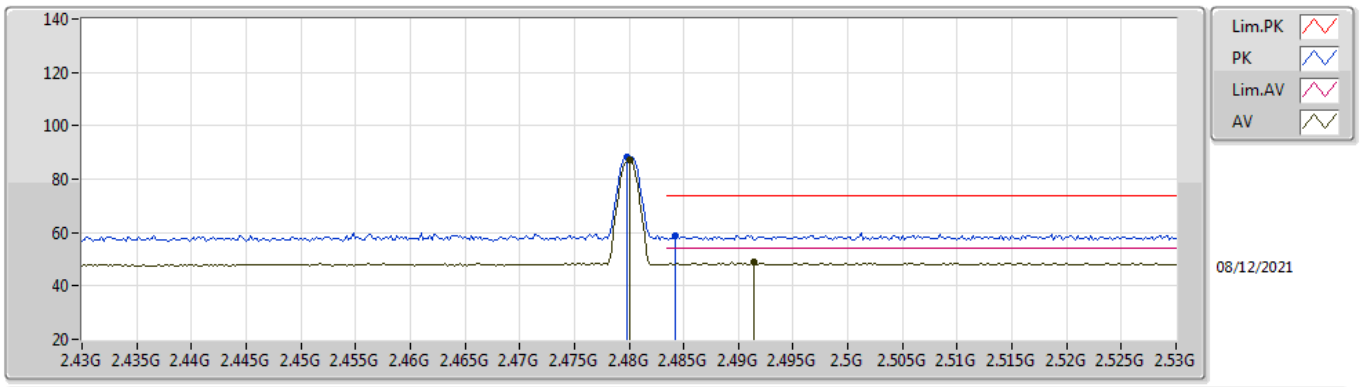
2440MHz_TX



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)	(dB)	(dB)	(dB)
AV	4.87919G	33.05	54.00	-20.95	4.63	3	Horizontal	187	1.50	-	28.42	32.76	6.31	34.44
PK	4.88226G	44.40	74.00	-29.60	4.63	3	Horizontal	187	1.50	-	39.77	32.76	6.31	34.44

BT-LE(1Mbps)

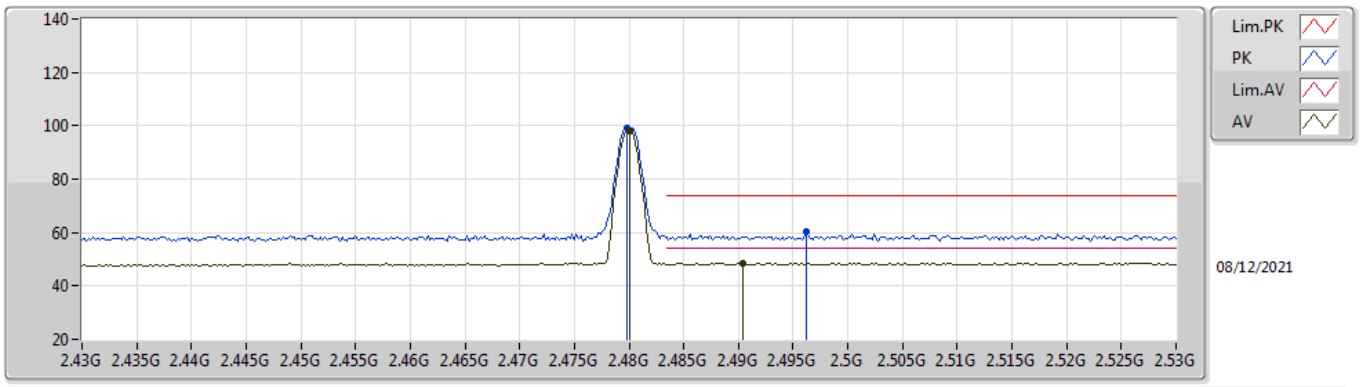
2480MHz_TX



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)	(dB)	(dB)	(dB)
AV	2.48G	87.10	Inf	-Inf	32.28	3	Vertical	270	1.50	-	54.82	27.78	4.50	-
AV	2.4914G	48.74	54.00	-5.26	32.36	3	Vertical	270	1.50	-	16.38	27.85	4.51	-
PK	2.4798G	88.19	Inf	-Inf	32.28	3	Vertical	270	1.50	-	55.91	27.78	4.50	-
PK	2.4842G	59.04	74.00	-14.96	32.31	3	Vertical	270	1.50	-	26.73	27.81	4.50	-

BT-LE(1Mbps)

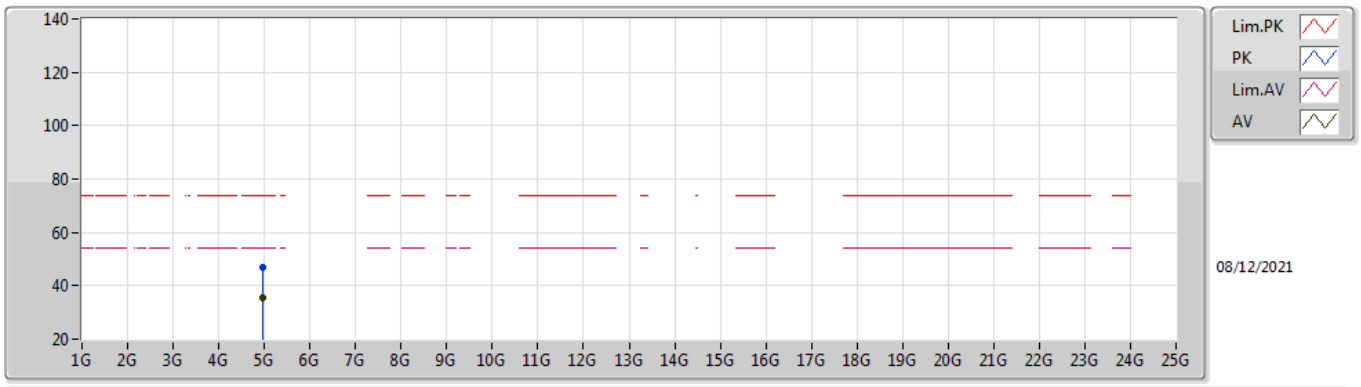
2480MHz_TX



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)	(dB)	(dB)	(dB)
AV	2.48G	98.07	Inf	-Inf	32.28	3	Horizontal	189	1.75	-	65.79	27.78	4.50	-
AV	2.4904G	48.51	54.00	-5.49	32.35	3	Horizontal	189	1.75	-	16.16	27.84	4.51	-
PK	2.4798G	99.05	Inf	-Inf	32.28	3	Horizontal	189	1.75	-	66.77	27.78	4.50	-
PK	2.4962G	60.43	74.00	-13.57	32.40	3	Horizontal	189	1.75	-	28.03	27.88	4.52	-

BT-LE(1Mbps)

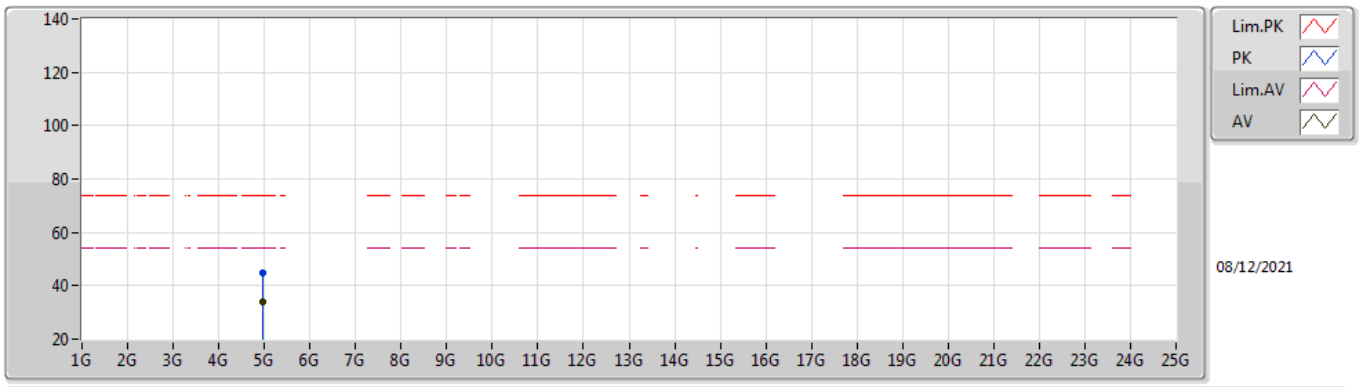
2480MHz_TX



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)	(dB)	(dB)	(dB)
AV	4.9607G	35.34	54.00	-18.66	5.07	3	Vertical	220	1.80	-	30.27	33.14	6.36	34.43
PK	4.95942G	46.80	74.00	-27.20	5.07	3	Vertical	220	1.80	-	41.73	33.14	6.36	34.43

BT-LE(1Mbps)

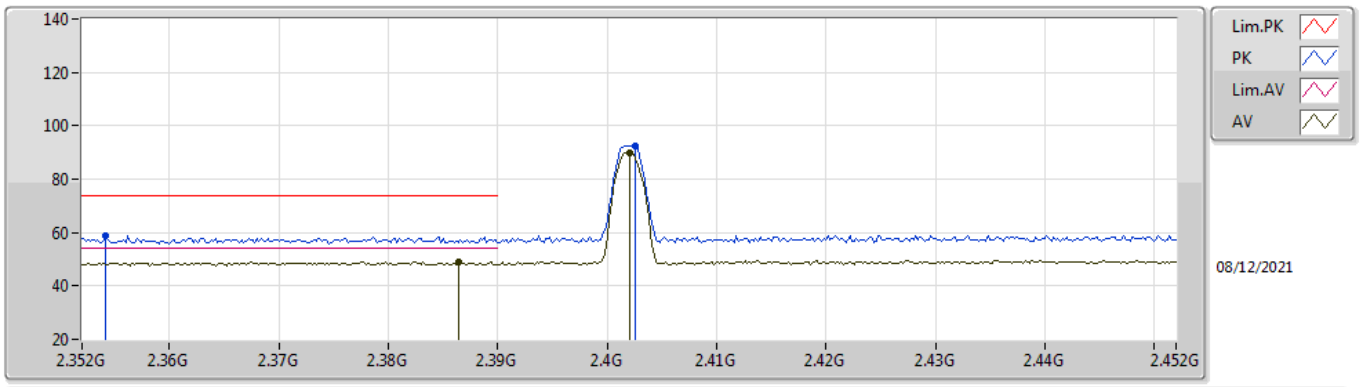
2480MHz_TX



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)	(dB)	(dB)	(dB)
AV	4.96038G	33.76	54.00	-20.24	5.07	3	Horizontal	235	1.49	-	28.69	33.14	6.36	34.43
PK	4.96081G	45.07	74.00	-28.93	5.07	3	Horizontal	235	1.49	-	40.00	33.14	6.36	34.43

BT-LE(2Mbps)

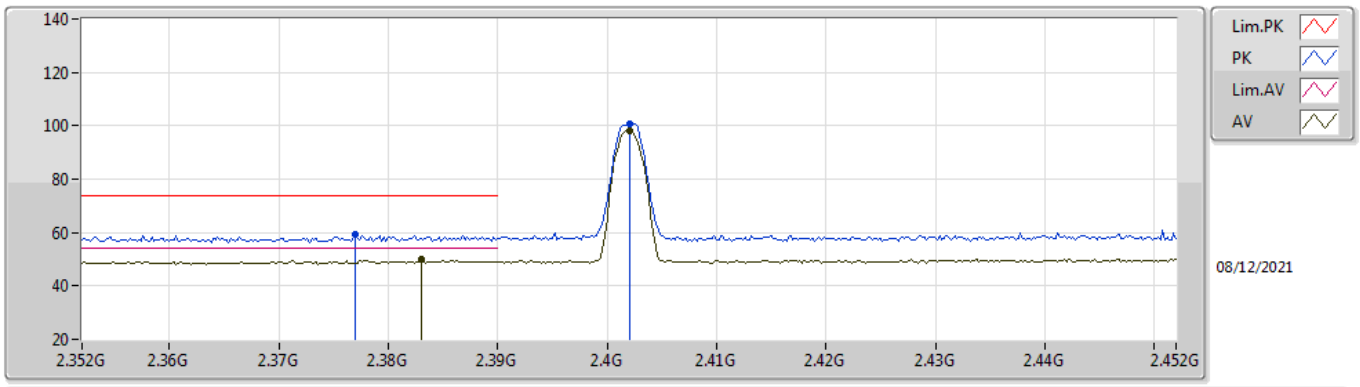
2402MHz_TX



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)	(dB)	(dB)	(dB)
AV	2.3864G	49.11	54.00	-4.89	31.74	3	Vertical	246	1.94	-	17.37	27.37	4.37	-
AV	2.402G	90.08	Inf	-Inf	31.79	3	Vertical	246	1.94	-	58.29	27.41	4.38	-
PK	2.3542G	58.61	74.00	-15.39	31.64	3	Vertical	246	1.94	-	26.97	27.31	4.33	-
PK	2.4026G	92.51	Inf	-Inf	31.79	3	Vertical	246	1.94	-	60.72	27.41	4.38	-

BT-LE(2Mbps)

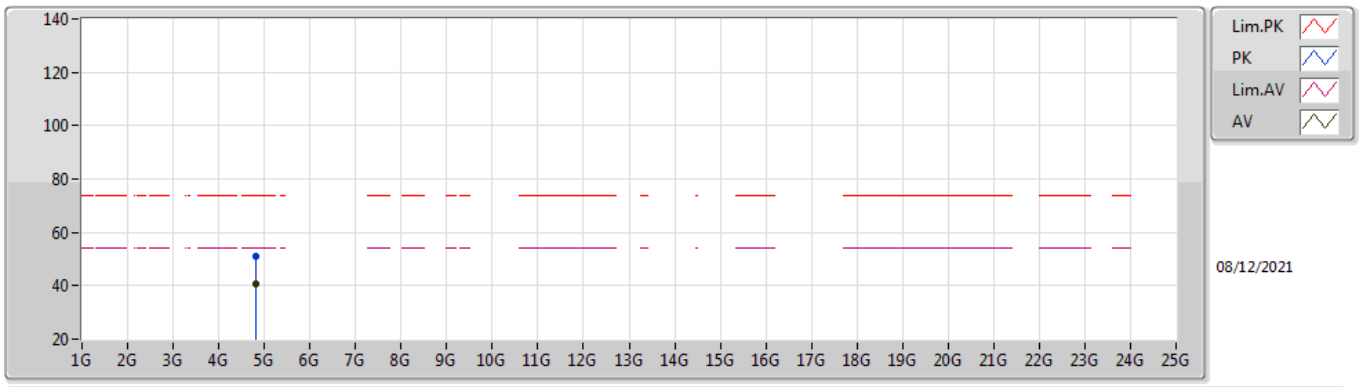
2402MHz_TX



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)	(dB)	(dB)	(dB)
AV	2.383G	49.80	54.00	-4.20	31.73	3	Horizontal	184	2.06	-	18.07	27.37	4.36	-
AV	2.402G	98.15	Inf	-Inf	31.79	3	Horizontal	184	2.06	-	66.36	27.41	4.38	-
PK	2.377G	59.23	74.00	-14.77	31.71	3	Horizontal	184	2.06	-	27.52	27.35	4.36	-
PK	2.402G	100.54	Inf	-Inf	31.79	3	Horizontal	184	2.06	-	68.75	27.41	4.38	-

BT-LE(2Mbps)

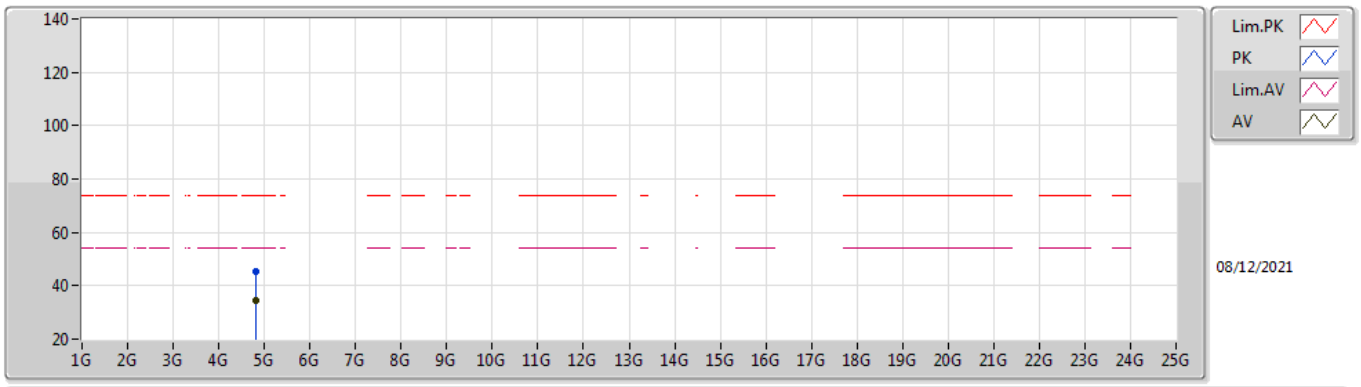
2402MHz_TX



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)	(dB)	(dB)	(dB)
AV	4.80192G	40.81	54.00	-13.19	4.32	3	Vertical	195	2.30	-	36.49	32.51	6.26	34.45
PK	4.80303G	51.04	74.00	-22.96	4.32	3	Vertical	195	2.30	-	46.72	32.51	6.26	34.45

BT-LE(2Mbps)

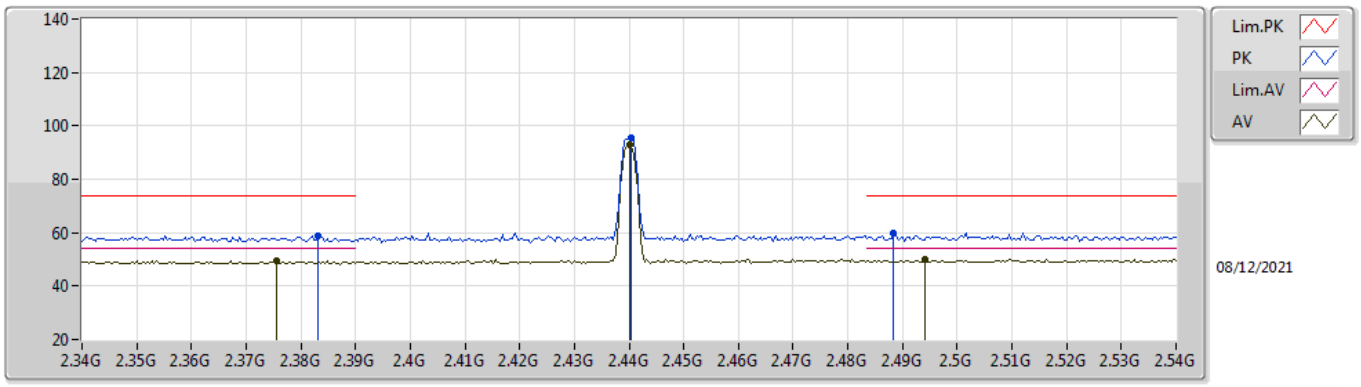
2402MHz_TX



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)	(dB)	(dB)	(dB)
AV	4.80163G	34.65	54.00	-19.35	4.32	3	Horizontal	270	1.41	-	30.33	32.51	6.26	34.45
PK	4.80581G	45.40	74.00	-28.60	4.33	3	Horizontal	270	1.41	-	41.07	32.52	6.26	34.45

BT-LE(2Mbps)

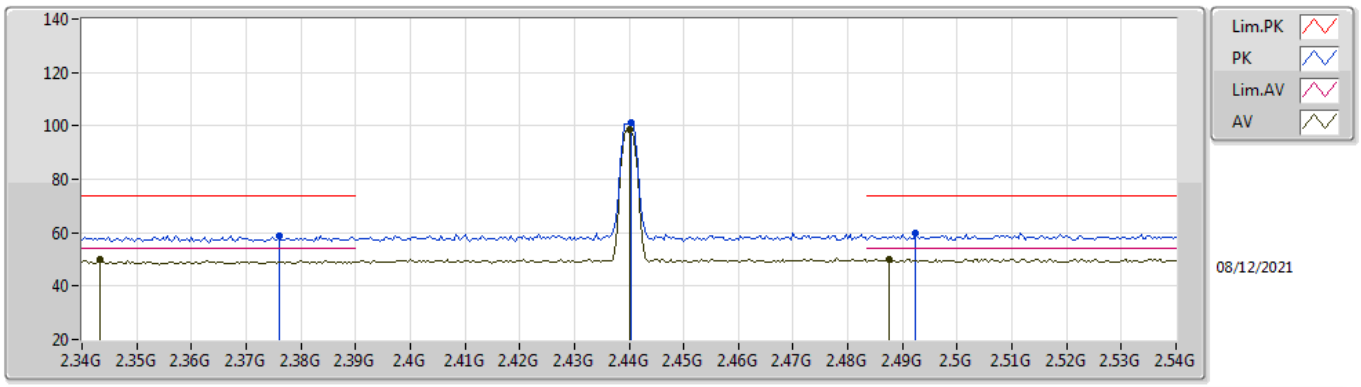
2440MHz_TX



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)	(dB)	(dB)	(dB)
AV	2.3756G	49.43	54.00	-4.57	31.70	3	Vertical	164	2.47	-	17.73	27.35	4.35	-
AV	2.44G	92.72	Inf	-Inf	32.00	3	Vertical	164	2.47	-	60.72	27.56	4.44	-
AV	2.494G	49.77	54.00	-4.23	32.38	3	Vertical	164	2.47	-	17.39	27.86	4.52	-
PK	2.3832G	58.84	74.00	-15.16	31.73	3	Vertical	164	2.47	-	27.11	27.37	4.36	-
PK	2.4404G	95.27	Inf	-Inf	32.00	3	Vertical	164	2.47	-	63.27	27.56	4.44	-
PK	2.4884G	59.82	74.00	-14.18	32.34	3	Vertical	164	2.47	-	27.48	27.83	4.51	-

BT-LE(2Mbps)

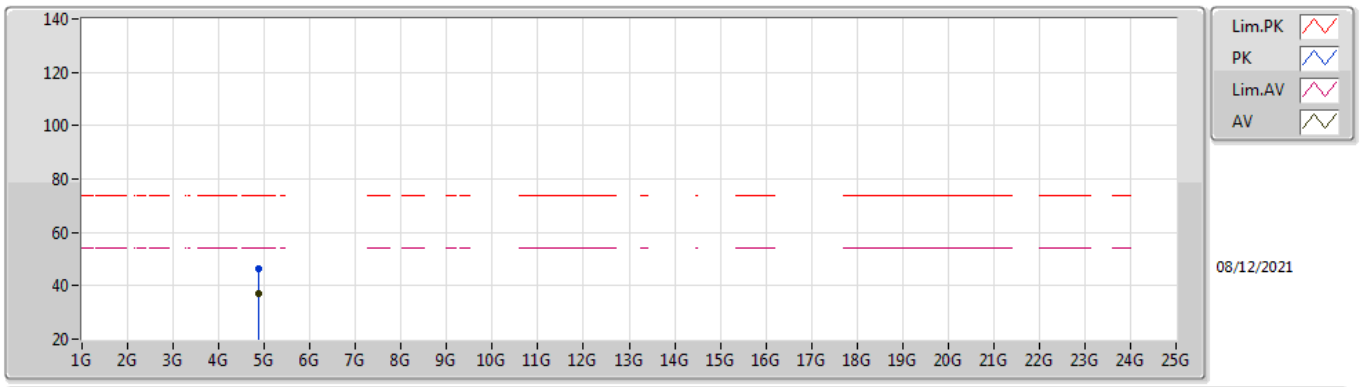
2440MHz_TX



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)	(dB)	(dB)	(dB)
AV	2.3432G	49.77	54.00	-4.23	31.59	3	Horizontal	189	2.03	-	18.18	27.27	4.32	-
AV	2.44G	98.69	Inf	-Inf	32.00	3	Horizontal	189	2.03	-	66.69	27.56	4.44	-
AV	2.4876G	50.13	54.00	-3.87	32.34	3	Horizontal	189	2.03	-	17.79	27.83	4.51	-
PK	2.376G	59.05	74.00	-14.95	31.70	3	Horizontal	189	2.03	-	27.35	27.35	4.35	-
PK	2.4404G	101.02	Inf	-Inf	32.00	3	Horizontal	189	2.03	-	69.02	27.56	4.44	-
PK	2.4924G	59.58	74.00	-14.42	32.36	3	Horizontal	189	2.03	-	27.22	27.85	4.51	-

BT-LE(2Mbps)

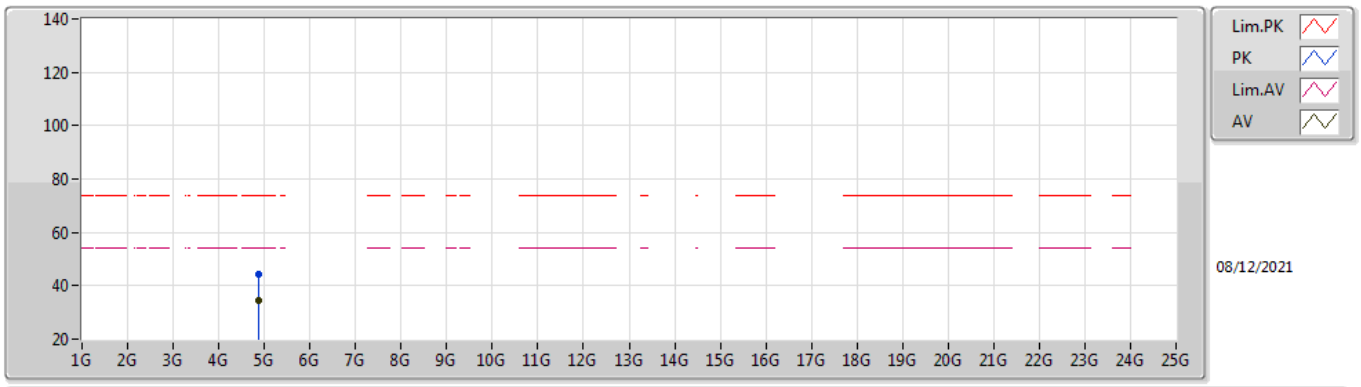
2440MHz_TX



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)	(dB)	(dB)	(dB)
AV	4.87815G	37.09	54.00	-16.91	4.63	3	Vertical	206	2.06	-	32.46	32.76	6.31	34.44
PK	4.87804G	46.37	74.00	-27.63	4.63	3	Vertical	206	2.06	-	41.74	32.76	6.31	34.44

BT-LE(2Mbps)

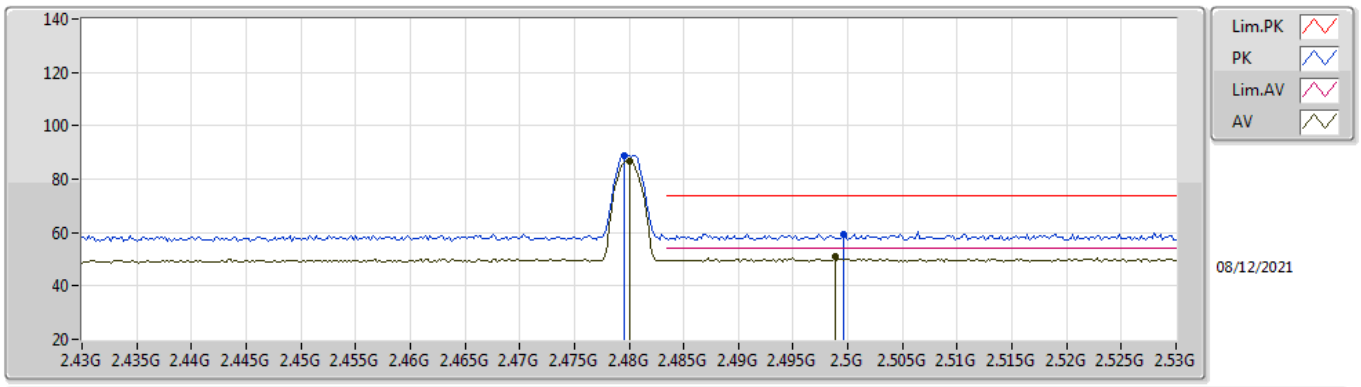
2440MHz_TX



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)	(dB)	(dB)	(dB)
AV	4.88047G	34.72	54.00	-19.28	4.63	3	Horizontal	157	1.50	-	30.09	32.76	6.31	34.44
PK	4.88218G	44.14	74.00	-29.86	4.63	3	Horizontal	157	1.50	-	39.51	32.76	6.31	34.44

BT-LE(2Mbps)

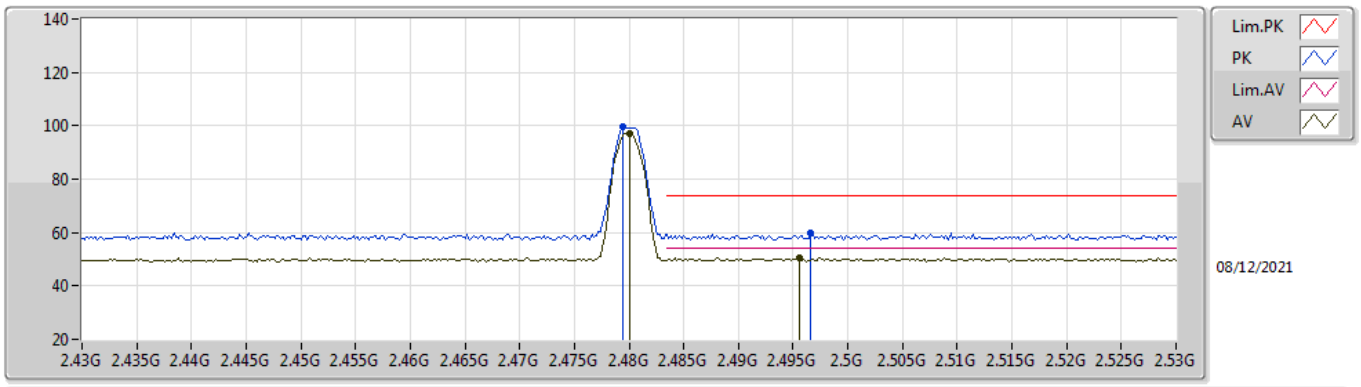
2480MHz_TX



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)	(dB)	(dB)	(dB)
AV	2.48G	86.63	Inf	-Inf	32.28	3	Vertical	270	1.50	-	54.35	27.78	4.50	-
AV	2.4988G	50.87	54.00	-3.13	32.41	3	Vertical	270	1.50	-	18.46	27.89	4.52	-
PK	2.4796G	88.92	Inf	-Inf	32.28	3	Vertical	270	1.50	-	56.64	27.78	4.50	-
PK	2.4996G	59.24	74.00	-14.76	32.42	3	Vertical	270	1.50	-	26.82	27.90	4.52	-

BT-LE(2Mbps)

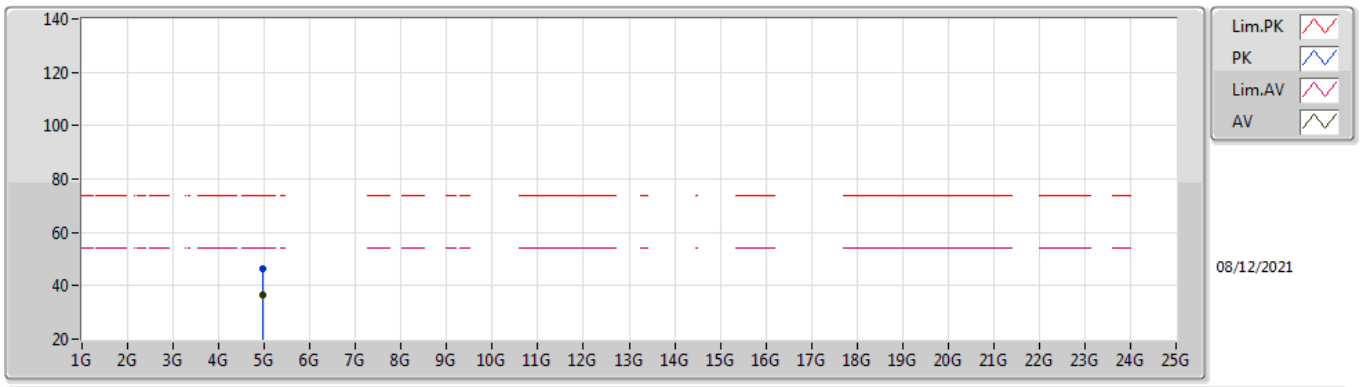
2480MHz_TX



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)	(dB)	(dB)	(dB)
AV	2.48G	97.23	Inf	-Inf	32.28	3	Horizontal	190	1.76	-	64.95	27.78	4.50	-
AV	2.4956G	50.52	54.00	-3.48	32.39	3	Horizontal	190	1.76	-	18.13	27.87	4.52	-
PK	2.4794G	99.41	Inf	-Inf	32.28	3	Horizontal	190	1.76	-	67.13	27.78	4.50	-
PK	2.4966G	59.61	74.00	-14.39	32.40	3	Horizontal	190	1.76	-	27.21	27.88	4.52	-

BT-LE(2Mbps)

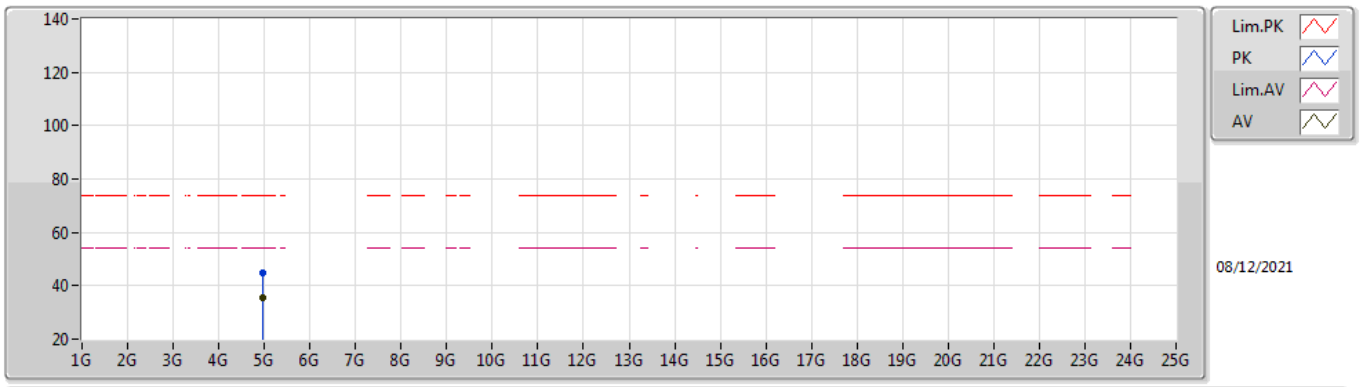
2480MHz_TX



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)	(dB)	(dB)	(dB)
AV	4.95954G	36.79	54.00	-17.21	5.07	3	Vertical	220	2.10	-	31.72	33.14	6.36	34.43
PK	4.96078G	46.57	74.00	-27.43	5.07	3	Vertical	220	2.10	-	41.50	33.14	6.36	34.43

BT-LE(2Mbps)

2480MHz_TX



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)	(dB)	(dB)	(dB)
AV	4.95847G	35.46	54.00	-18.54	5.06	3	Horizontal	213	1.50	-	30.40	33.13	6.36	34.43
PK	4.95801G	44.79	74.00	-29.21	5.05	3	Horizontal	213	1.50	-	39.74	33.13	6.35	34.43