FCC Radio Test Report

FCC ID	:	**2AXXJMG-MAM1-1**
Equipment	:	**Makalu Wireless Dongle**
Brand Name	:	**Makalu**
Model Name	:	**MG-MAM1-1-DONGLE**
Applicant	:	**360 Service Agency GmbH Rosastrasse 4, 79098 Freiburg, Germany**
Manufacturer	:	**360 Service Agency GmbH Rosastrasse 4, 79098 Freiburg, Germany**
Standard	:	**47 CFR FCC Part 15.247**

The product was received on Mar. 16, 2021, and testing was started from Mar. 16, 2021 and completed on Mar. 24, 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 (R.O.C.)

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PHOTOGRAPHS OF EUT V01

History of this test report

Report No.	Version	Description	Issued Date
FR122668AC	01	Initial issue of report	Apr. 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:
None

Reviewed by: Sam Tsai

Report Producer: Ann Hou

1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	Modulation	Ch. Frequency (MHz)	Channel Number
2400-2483.5	GFSK	2406-2478	1-5 [5]

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

Channel	Freq.(MHz)	Channel	Freq.(MHz)
1	2406	4	2462
2	2414	5	2478
3	2435		

Note:.
- BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	Makalu	MG-MAM1-1-DONGLE	PCB	N/A	-1.8788

Note 1: The EUT has one antenna.

For SRD 2.4GHz function:

For SRD 2.4G mode (1TX/1RX)

Ant. 1 (port 1) could transmit/receive.

1.1.3 EUT Information

Operational Condition				
EUT Power Type	From Host system			
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
SRD	1	0	n/a (DC>=0.98)	n/a (DC>=0.98)

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 (R.O.C.)			
	TEL: 886-3-327-3456		FAX: 886-3-327-0973	
Test site Designation No. TW1190 with FCC.				
Test Condition	**Test Site No.**	**Test Engineer**	**Test Environment**	**Test Date**
AC Conduction	CO04-HY	Daniel	22.5~23.4°C / 52~57%	24/Mar/2021
RF Conducted	TH01-HY	Alan	20.1~26.9°C / 50~60%	17/Mar/2021~24/Mar/2021
☒ Wen 33rd.St. (TAF: 3785)	ADD: No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)			
	TEL: 886-3-318-0787		FAX: 886-3-318-0287	
Test site Designation No. TW0008 with FCC.				
Test Condition	**Test Site No.**	**Test Engineer**	**Test Environment**	**Test Date**
Radiated	03CH09-HY	Daniel	23.1~23.8°C / 53~54%	16/Mar/2021~23/Mar/2021

1.4 Measurement Uncertainty

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

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

2 Test Configuration of EUT

2.1 Test Condition

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

2.2 Test Channel Mode

Test Software Version	SmartRF_Studio_7

Mode	Power Setting
SRD_Nss1_1TX	-
2406MHz	4
2435MHz	4
2478MHz	4

2.3 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral
Operating Mode	CTX
1	USB mode

The Worst Case Mode for Following Conformance Tests	
Tests Item	DTS Bandwidth Maximum Conducted Output Power Power Spectral Density Emissions in Non-restricted Frequency Bands
Test Condition	Conducted measurement at transmit chains

The Worst Case Mode for Following Conformance Tests			
Tests Item	Emissions in Restricted Frequency Bands		
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.		
Operating Mode < 1GHz	CTX		
1	USB mode		
Operating Mode > 1GHz	CTX		
Orthogonal Planes of EUT	**X Plane**	**Y Plane**	**Z Plane**
Worst Planes of EUT			V

2.4 Support Equipment

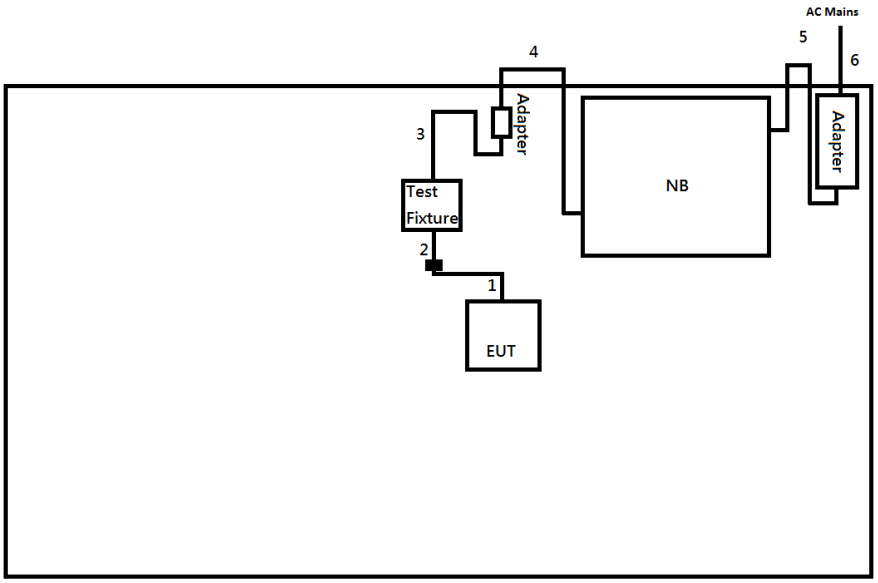
Support Equipment – AC Conduction					
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**	**Remark**
1	Test Fixture	N/A	N/A	-	Customer provide
2	USB cable	N/A	N/A	-	Customer provide
3	Test fixture cable	N/A	N/A	-	Customer provide
4	Flexible flat cable	N/A	N/A	-	Customer provide
5	Notebook	HP	HSTNN-Q85C	-	-
6	AC adapter for NB	HP	PPP012L-E	-	-
7	USB type A to type C Adapter	DEXIN	DP-457	-	Customer provide
8	USB cable	DEXIN	AB-457	-	Customer provide

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

Support Equipment – Radiated					
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**	**Remark**
1	Test Fixture	N/A	N/A	-	Customer provide
2	USB cable	N/A	N/A	-	Customer provide
3	Test fixture cable	N/A	N/A	-	Customer provide
4	Flexible flat cable	N/A	N/A	-	Customer provide
5	Notebook	HP	HSTNN-Q85C	-	-
6	AC adapter for NB	HP	PPP012L-E	-	-
7	USB type A to type C Adapter	DEXIN	DP-457	-	Customer provide
8	USB cable	DEXIN	AB-457	-	Customer provide

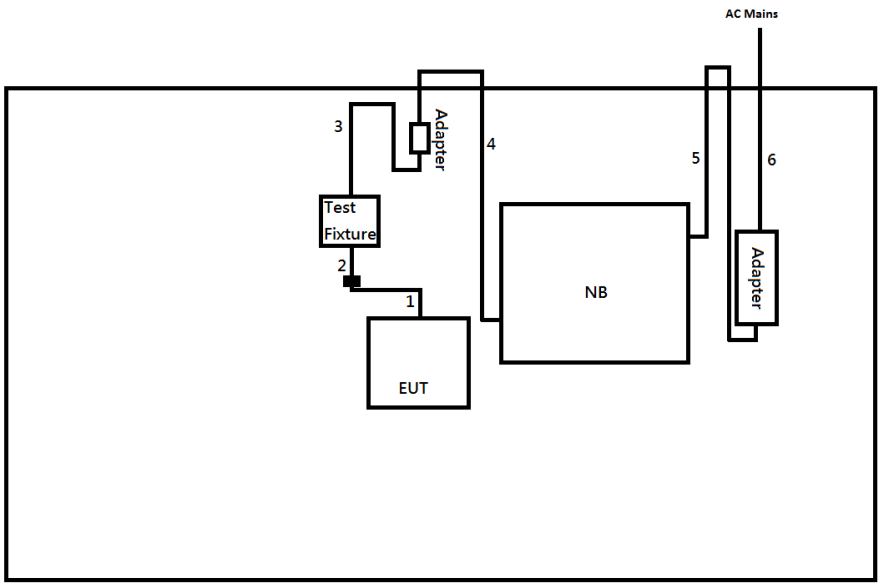
2.5 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



Item	Connection	Shielded	Length (m)
1	Test fixture cable	No	0.11
2	Flexible flat cable	No	0.14
3	USB cable	Yes	1.83
4	USB cable	No	0.69
5	DC Power cable	No	1.8
6	AC Power cable	No	1.8

Test Setup Diagram - Radiated Test



Item	Connection	Shielded	Length (m)
1	Test fixture cable	No	0.11
2	Flexible flat cable	No	0.14
3	USB cable	No	1.83
4	USB cable	No	0.69
5	DC Power cable	No	1.5
6	AC Power cable	No	1.8

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

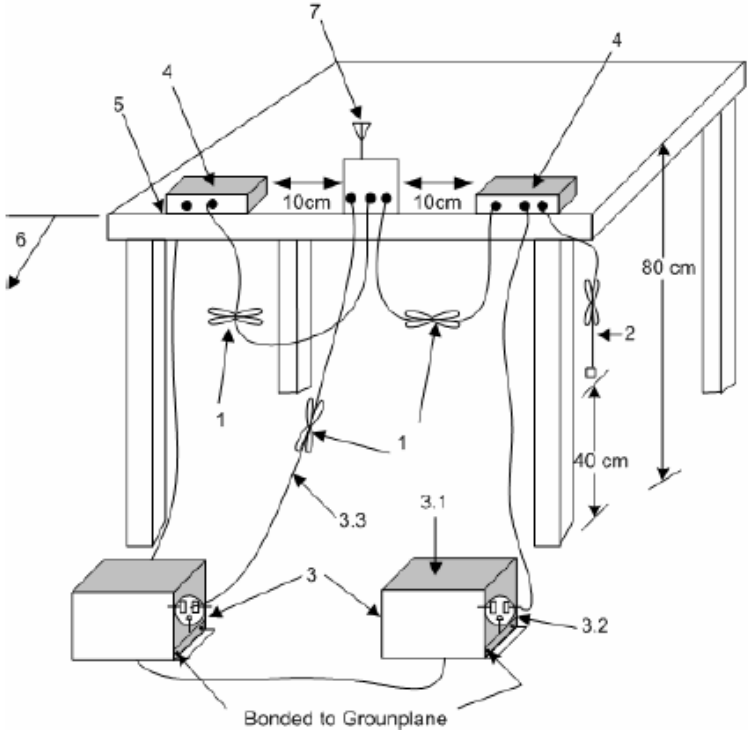
Test Method
☒ Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

3.1.4 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 50Ω loads. LISN may be placed on top of, or immediately beneath, reference ground plane.
3.1—All other equipment powered from additional LISN(s).
3.2—A multiple-outlet strip may be used for multiple power cords of non-EUT equipment.
3.3—LISN at least 80 cm from nearest part of EUT chassis.
4—Non-EUT components of EUT system being tested.
5—Rear of EUT, including peripherals, shall all be aligned and flush with edge of tabletop.
6—Edge of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.
7—Antenna can be integral or detachable. If detachable, then the antenna shall be attached for this test.

3.1.6 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.

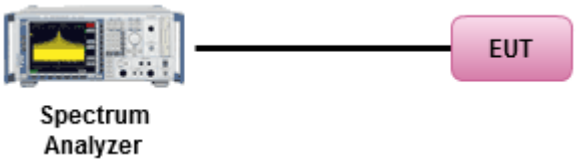
3.2.2 Measuring Instruments

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

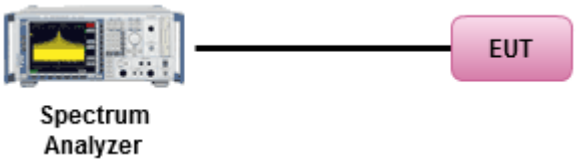
3.4.2 Measuring Instruments

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

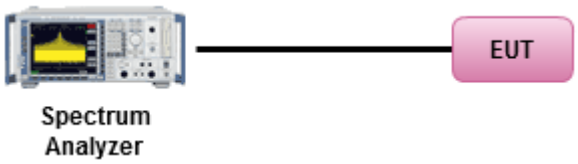
Refer a test equipment and calibration data table in this test report.

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 below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

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

3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

Test Method	
▪ The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].	
▪ Refer as ANSI C63.10, clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.	
▪ For the transmitter unwanted emissions shall be measured using following options below:	
	▪ Refer as KDB 558074, clause 8.6 (11.12 of ANSI C63.10) for restricted frequency bands.
▪ For the transmitter band-edge emissions shall be measured using following options below:	
	▪ Refer as KDB 558074 clause 8.7.1, When the performing peak or average radiated measurements, emissions within 2 MHz of the authorized band edge may be measured using the marker-delta method described below.
	▪ Refer as KDB 558074, clause 8.7.2 (6.10.6 of ANSI C63.10) for marker-delta method for band-edge measurements.
	▪ Refer as KDB 558074, clause 8.7.3 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).
▪ Use the following spectrum analyzer settings:	
	▪ Set RBW=100 kHz for f < 1 GHz; VBW=3 * RBW; Sweep = auto; Detector function = peak; Trace = max hold.
	▪ Set RBW = 1 MHz, VBW= 3MHz for f ≥ 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.

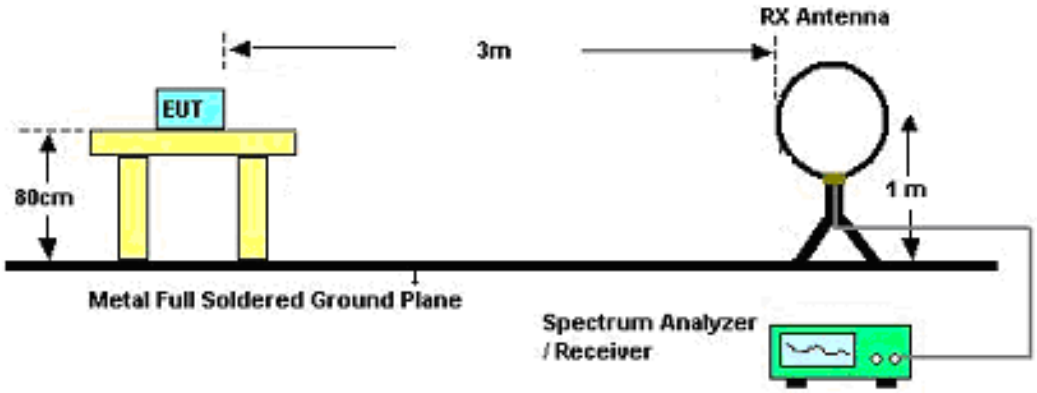
3.6.4 Measurement Results Calculation

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

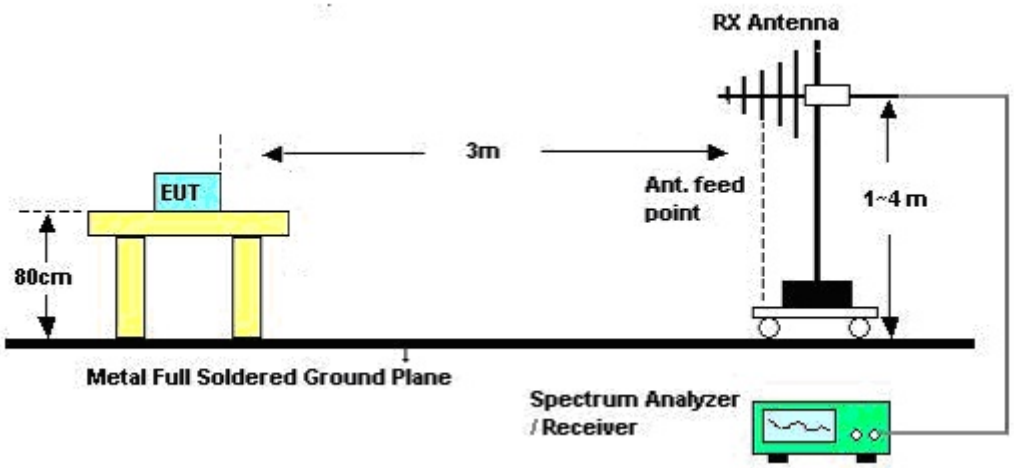
3.6.5 Test Setup

Emissions in Restricted Frequency Bands

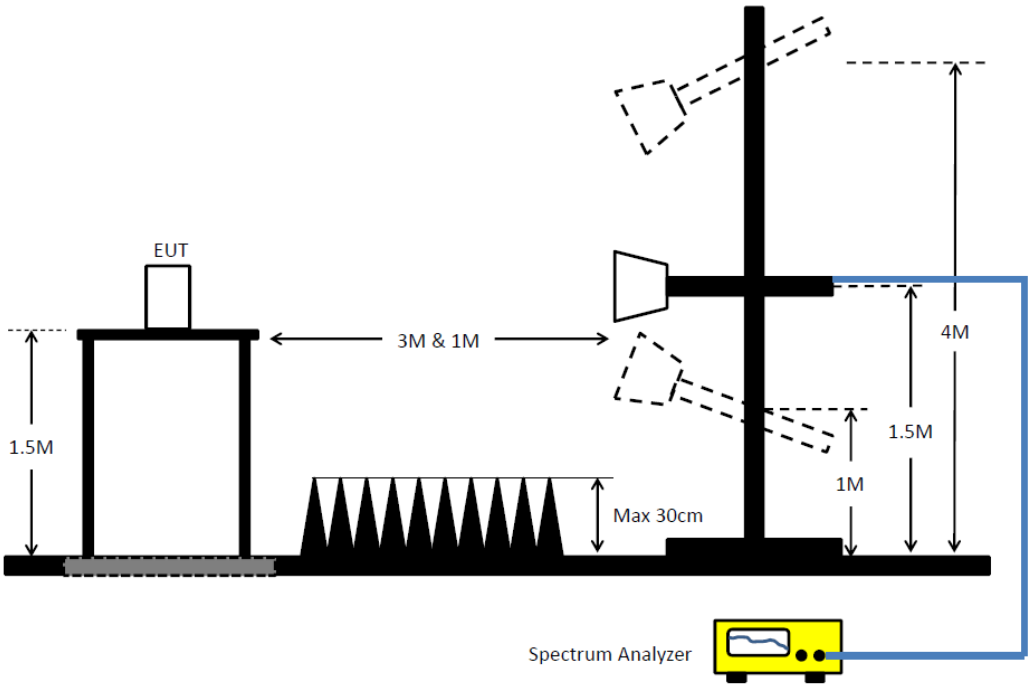
9kHz ~30MHz



30MHz~1GHz



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	29/May/2020	28/May/2021
LISN	R&S	ENV216	101295	9kHz ~ 30MHz	11/Nov/2020	10/Nov/2021
RF Cable-CON	MTJ	RG142	CB002-CO	9kHz ~ 200MHz	31/Aug/2020	30/Aug/2021
Impuls Begrenzer Pulse Limiter	SCHWARZBECK	VTSD 9561-F	9561-F041	9kHz ~ 30MHz	21/Sep/2020	20/Sep/2021

Instrument for Conducted Test

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Signal Analyzer	R&S	FSV 40	101029	10Hz~40GHz	19/Oct/2020	18/Oct/2021
SMB100A Signal Generator	R&S	SMB100A03	181147	100kHz~40GHz	20/Oct/2020	19/Oct/2021
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

Instrument for Radiated Test

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	30MHz~1GHz 3m	27/Mar/2020	26/Mar/2021
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	1GHz~18GHz 3m	19/Mar/2020	18/Mar/2021
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	1GHz~18GHz 3m	18/Mar/2021	17/Mar/2022
EXA Signal Analyzer	KEYSIGHT	N9010A	MY54200885	10Hz~44GHz	11/Aug/2020	10/Aug/2021
Amplifier	EMC	EMC9135	980232	9kHz~1GHz	14/Apr/2020	13/Apr/2021
Microwave Preamplifier	Agilent	8449B	3008A02096	1GHz~26.5GHz	24/Jul/2020	23/Jul/2021
Bilog Antenna & 5dB Attenuator	TESEQ & MTJ	CBL6111D&MTJ6102-05	35418 & 3	30MHz~1GHz	06/Sep/2020	05/Sep/2021
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA9120 D 1534	1GHz~18GHz	28/May/2020	27/May/2021
RF Cable-low	Jye Bao	RG142	CB031+324530/4	9kHz~30MHz	03/Sep/2020	02/Sep/2021
RF Cable-low	Jye Bao	RG142	CB031+324530/4	30MHz~1GHz	09/Feb/2021	08/Feb/2022
RF CABLE 5m+3m+1m	HUBER+SUHNER	SUCOFLEX104	SN MY25918/4+ SN MY39478/4 + SN 324530/4	1GHz~40GHz	15/Aug/2020	14/Aug/2021
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

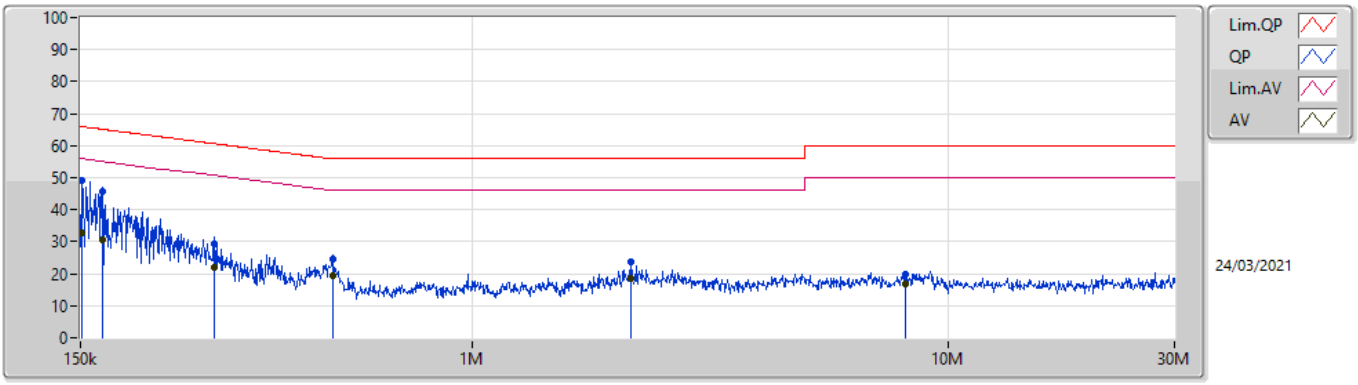
Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	QP	150.6k	49.21	65.96	-16.75	Line

Mode Configure

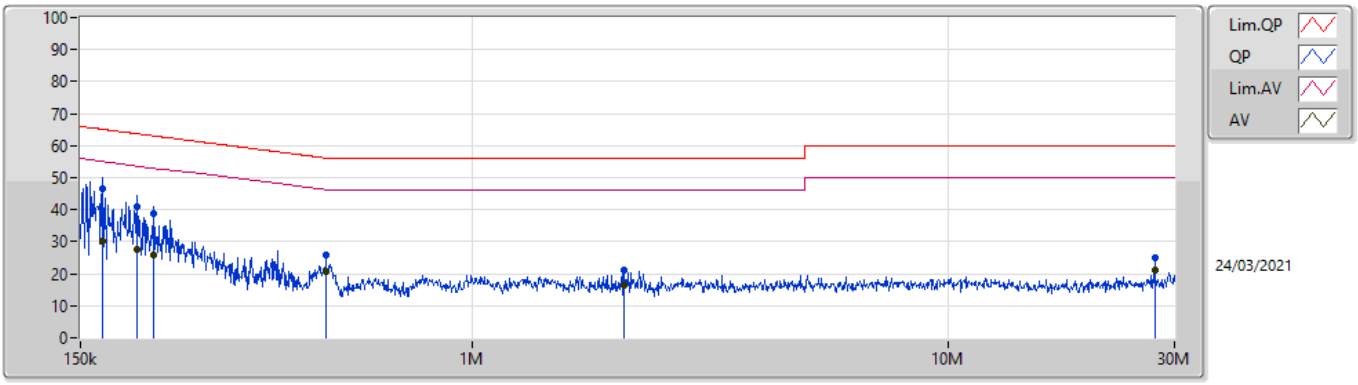
Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition	Comments
Mode 1	Pass	QP	150.6k	49.21	65.96	-16.75	Line	-
Mode 1	Pass	AV	150.6k	32.61	55.96	-23.35	Line	-
Mode 1	Pass	QP	166.406k	45.76	65.14	-19.38	Line	-
Mode 1	Pass	AV	166.406k	30.54	55.14	-24.60	Line	-
Mode 1	Pass	QP	287.532k	29.18	60.59	-31.41	Line	-
Mode 1	Pass	AV	287.532k	21.96	50.59	-28.63	Line	-
Mode 1	Pass	QP	508.871k	24.46	56.00	-31.54	Line	-
Mode 1	Pass	AV	508.871k	19.57	46.00	-26.43	Line	-
Mode 1	Pass	QP	2.15M	23.69	56.00	-32.31	Line	-
Mode 1	Pass	AV	2.15M	18.47	46.00	-27.53	Line	-
Mode 1	Pass	QP	8.157M	19.94	60.00	-40.06	Line	-
Mode 1	Pass	AV	8.157M	16.80	50.00	-33.20	Line	-
Mode 1	Pass	QP	166.406k	46.76	65.14	-18.38	Neutral	-
Mode 1	Pass	AV	166.406k	30.06	55.14	-25.08	Neutral	-
Mode 1	Pass	QP	197.568k	41.03	63.71	-22.68	Neutral	-
Mode 1	Pass	AV	197.568k	27.73	53.71	-25.98	Neutral	-
Mode 1	Pass	QP	213.989k	39.00	63.06	-24.06	Neutral	-
Mode 1	Pass	AV	213.989k	25.90	53.06	-27.16	Neutral	-
Mode 1	Pass	QP	492.876k	26.06	56.11	-30.05	Neutral	-
Mode 1	Pass	AV	492.876k	20.52	46.11	-25.59	Neutral	-
Mode 1	Pass	QP	2.091M	21.18	56.00	-34.82	Neutral	-
Mode 1	Pass	AV	2.091M	16.47	46.00	-29.53	Neutral	-
Mode 1	Pass	QP	27.234M	25.05	60.00	-34.95	Neutral	-
Mode 1	Pass	AV	27.234M	21.09	50.00	-28.91	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	150.6k	49.21	65.96	-16.75	19.60	Line	-	29.61	9.69	0.01	9.90
AV	150.6k	32.61	55.96	-23.35	19.60	Line	-	13.01	9.69	0.01	9.90
QP	166.406k	45.76	65.14	-19.38	19.60	Line	-	26.16	9.69	0.01	9.90
AV	166.406k	30.54	55.14	-24.60	19.60	Line	-	10.94	9.69	0.01	9.90
QP	287.532k	29.18	60.59	-31.41	19.59	Line	-	9.59	9.67	0.02	9.90
AV	287.532k	21.96	50.59	-28.63	19.59	Line	-	2.37	9.67	0.02	9.90
QP	508.871k	24.46	56.00	-31.54	19.57	Line	-	4.89	9.67	0.03	9.87
AV	508.871k	19.57	46.00	-26.43	19.57	Line	-	-0.00	9.67	0.03	9.87
QP	2.15M	23.69	56.00	-32.31	19.57	Line	-	4.12	9.68	0.08	9.81
AV	2.15M	18.47	46.00	-27.53	19.57	Line	-	-1.10	9.68	0.08	9.81
QP	8.157M	19.94	60.00	-40.06	19.80	Line	-	0.14	9.71	0.19	9.90
AV	8.157M	16.80	50.00	-33.20	19.80	Line	-	-3.00	9.71	0.19	9.90

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	166.406k	46.76	65.14	-18.38	19.60	Neutral	-	27.16	9.69	0.01	9.90
AV	166.406k	30.06	55.14	-25.08	19.60	Neutral	-	10.46	9.69	0.01	9.90
QP	197.568k	41.03	63.71	-22.68	19.59	Neutral	-	21.44	9.68	0.01	9.90
AV	197.568k	27.73	53.71	-25.98	19.59	Neutral	-	8.14	9.68	0.01	9.90
QP	213.989k	39.00	63.06	-24.06	19.59	Neutral	-	19.41	9.68	0.01	9.90
AV	213.989k	25.90	53.06	-27.16	19.59	Neutral	-	6.31	9.68	0.01	9.90
QP	492.876k	26.06	56.11	-30.05	19.58	Neutral	-	6.48	9.67	0.03	9.88
AV	492.876k	20.52	46.11	-25.59	19.58	Neutral	-	0.94	9.67	0.03	9.88
QP	2.091M	21.18	56.00	-34.82	19.57	Neutral	-	1.61	9.68	0.08	9.81
AV	2.091M	16.47	46.00	-29.53	19.57	Neutral	-	-3.10	9.68	0.08	9.81
QP	27.234M	25.05	60.00	-34.95	19.97	Neutral	-	5.08	9.71	0.36	9.90
AV	27.234M	21.09	50.00	-28.91	19.97	Neutral	-	1.12	9.71	0.36	9.90

Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
SRD_Nss1_1TX	850k	1.825M	1M83D1D	850k	1.788M

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

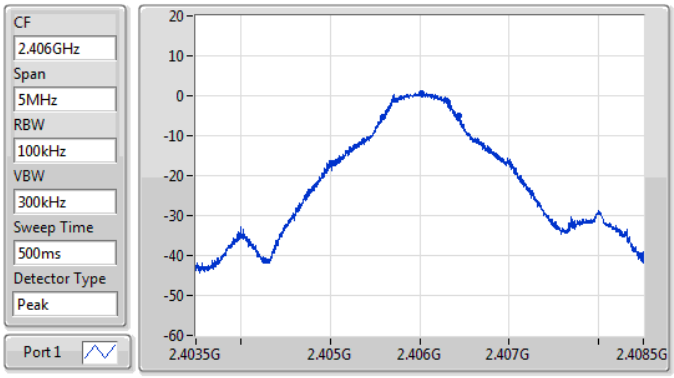
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
SRD_Nss1_1TX	-	-	-	-
2406MHz_TnomVnom	Pass	500k	850k	1.825M
2435MHz_TnomVnom	Pass	500k	850k	1.788M
2478MHz_TnomVnom	Pass	500k	850k	1.794M

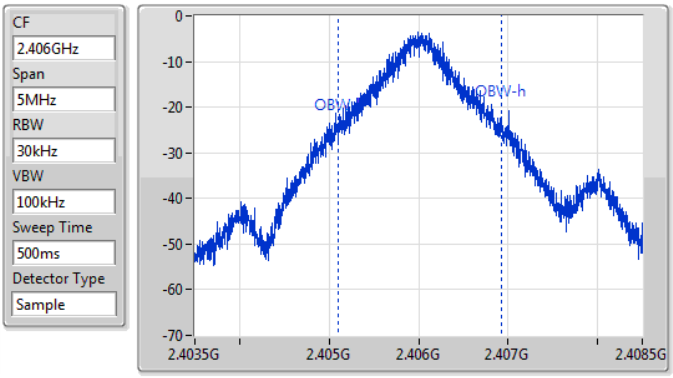
Port X-N dB = Port X 6dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

SRD_Nss1_1TX EBW

2406MHz

17/03/2021



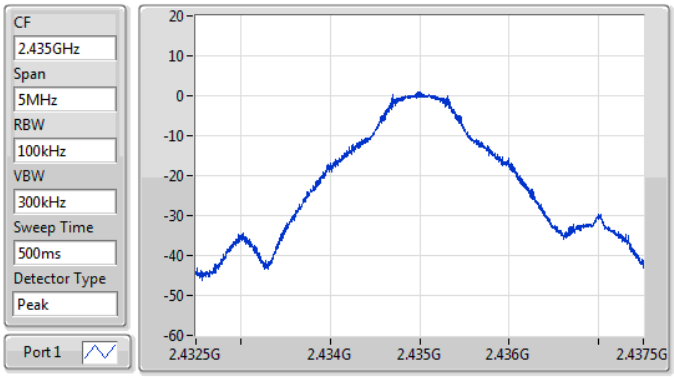


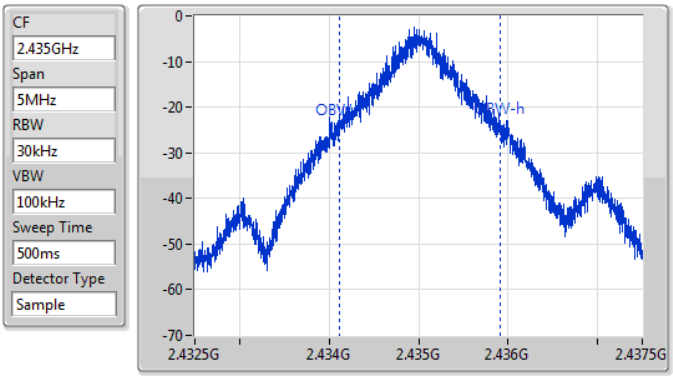
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
850k	2.405583G	2.406433G	1.825M	2.405107G	2.406931G	500k	1

SRD_Nss1_1TX EBW

2435MHz

17/03/2021



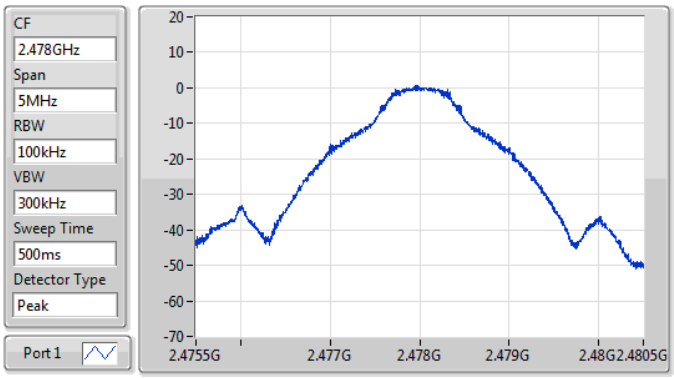


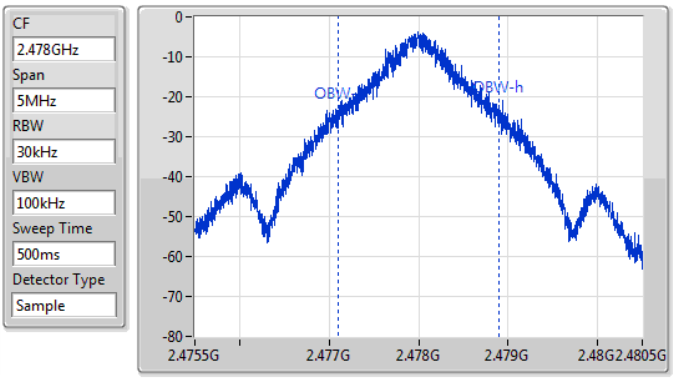
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
850k	2.434583G	2.435433G	1.788M	2.43412G	2.435908G	500k	1

SRD_Nss1_1TX **EBW**

2478MHz

17/03/2021





6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
850k	2.477585G	2.478435G	1.794M	2.477102G	2.478896G	500k	1

Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
SRD_Nss1_1TX	1.00	0.00126

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Total Power (dBm)	Power Limit (dBm)
SRD_Nss1_1TX	-	-	-	-	-
2406MHz_TnomVnom	Pass	-1.8788	1.00	1.00	30.00
2435MHz_TnomVnom	Pass	-1.8788	0.89	0.89	30.00
2478MHz_TnomVnom	Pass	-1.8788	0.67	0.67	30.00

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

Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
SRD_Nss1_1TX	-11.63

RBW = 3kHz;

Result

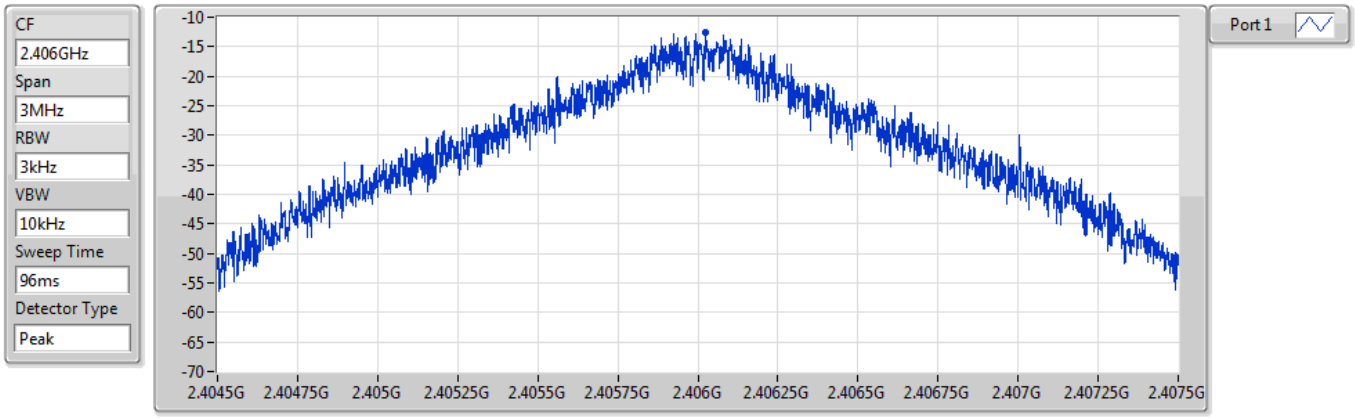
Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)
SRD_Nss1_1TX	-	-	-	-	-
2406MHz_TnomVnom	Pass	-1.8788	-12.68	-12.68	8.00
2435MHz_TnomVnom	Pass	-1.8788	-11.63	-11.63	8.00
2478MHz_TnomVnom	Pass	-1.8788	-12.70	-12.70	8.00

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;

SRD_Nss1_1TX PSD

2406MHz

17/03/2021

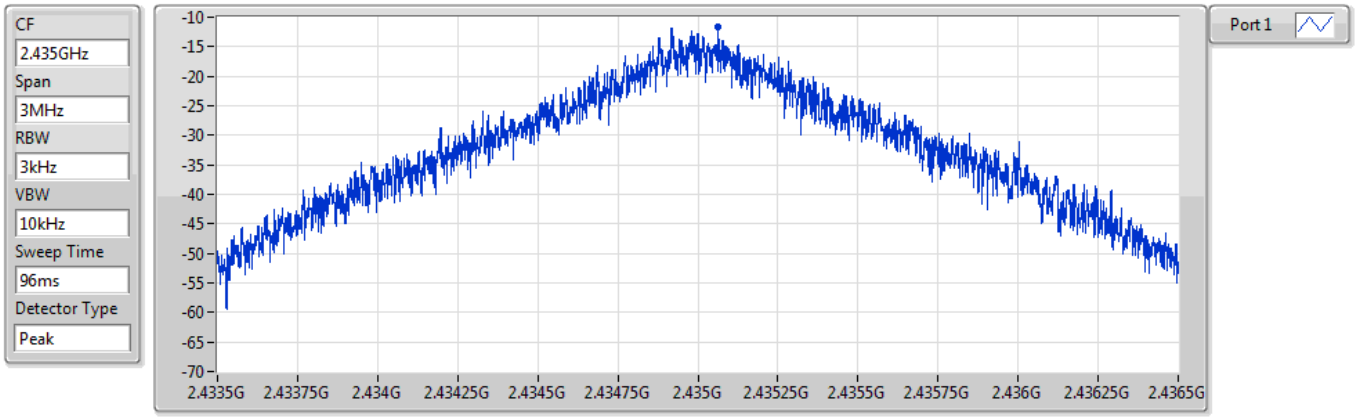


Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-12.68	-12.68	-12.68

SRD_Nss1_1TX PSD

2435MHz

17/03/2021

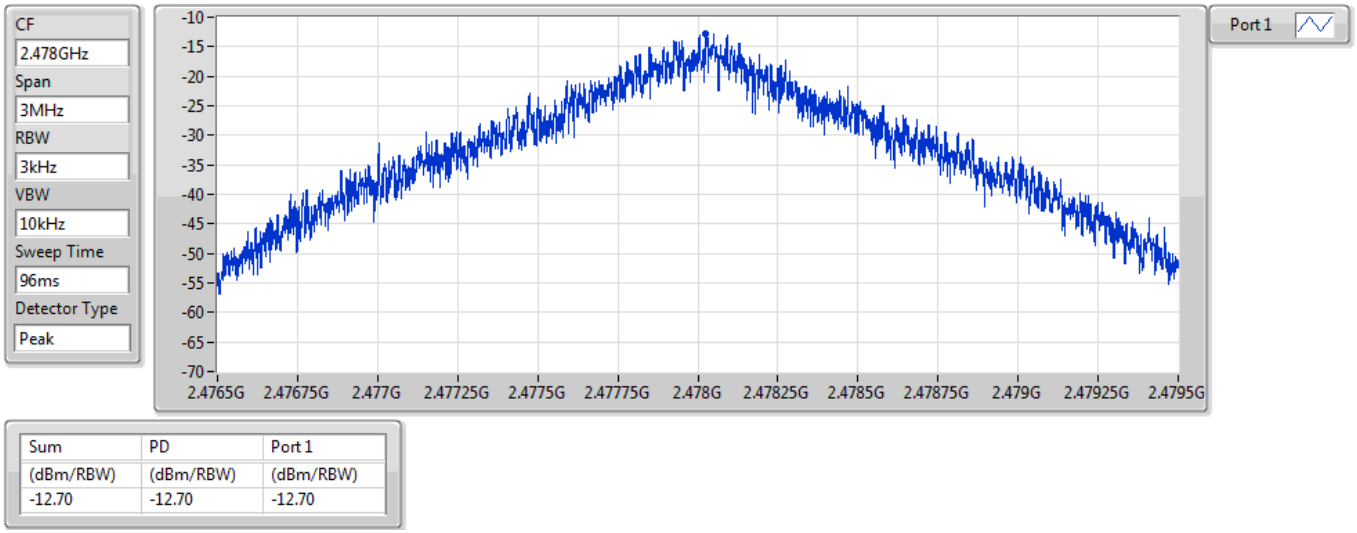


Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-11.63	-11.63	-11.63

SRD_Nss1_1TX **PSD**

2478MHz

17/03/2021



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-12.70	-12.70	-12.70

Summary

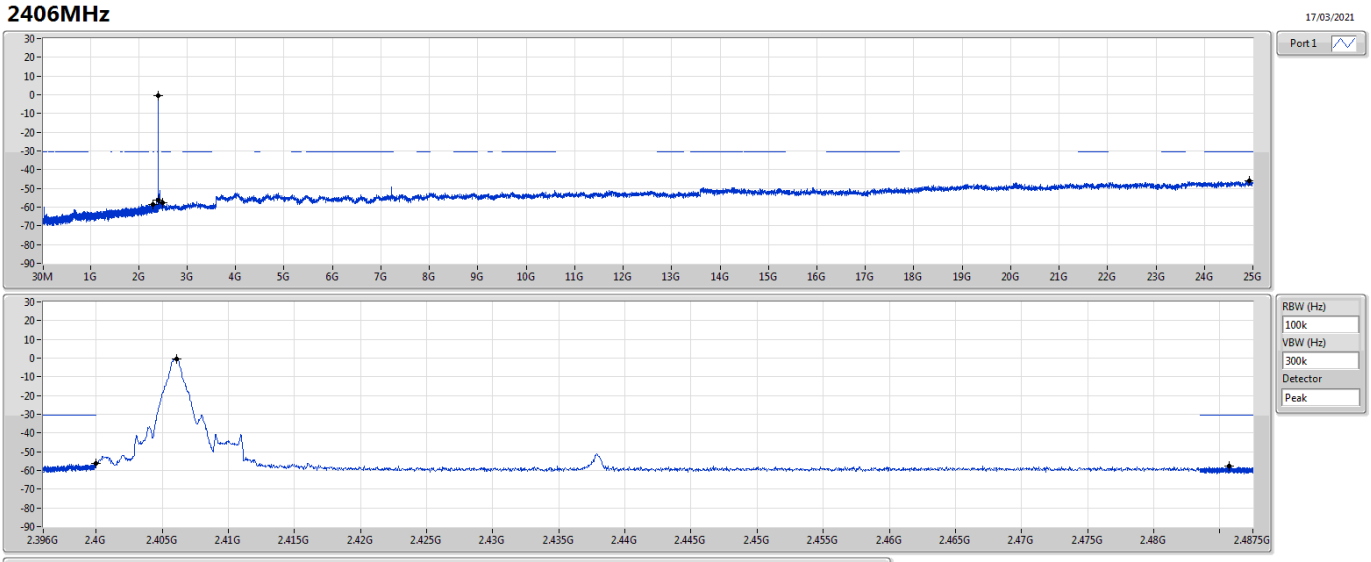
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SRD_Nss1_1TX	Pass	2.4061G	-0.41	-30.41	2.16206G	-58.53	2.39763G	-58.37	2.4835G	-52.84	2.48351G	-52.22	24.94935G	-45.87	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
SRD_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2406MHz_TnomVnom	Pass	2.4061G	-0.41	-30.41	2.30018G	-58.39	2.39999G	-56.15	2.4G	-56.25	2.48568G	-57.54	24.93528G	-46.06	1
2435MHz_TnomVnom	Pass	2.4061G	-0.41	-30.41	2.18513G	-58.48	2.39615G	-58.39	2.4G	-59.47	2.48735G	-58.01	24.9409G	-45.41	1
2478MHz_TnomVnom	Pass	2.4061G	-0.41	-30.41	2.16206G	-58.53	2.39763G	-58.37	2.4835G	-52.84	2.48351G	-52.22	24.94935G	-45.87	1

SRD_Nss1_1TX **CSENdB**

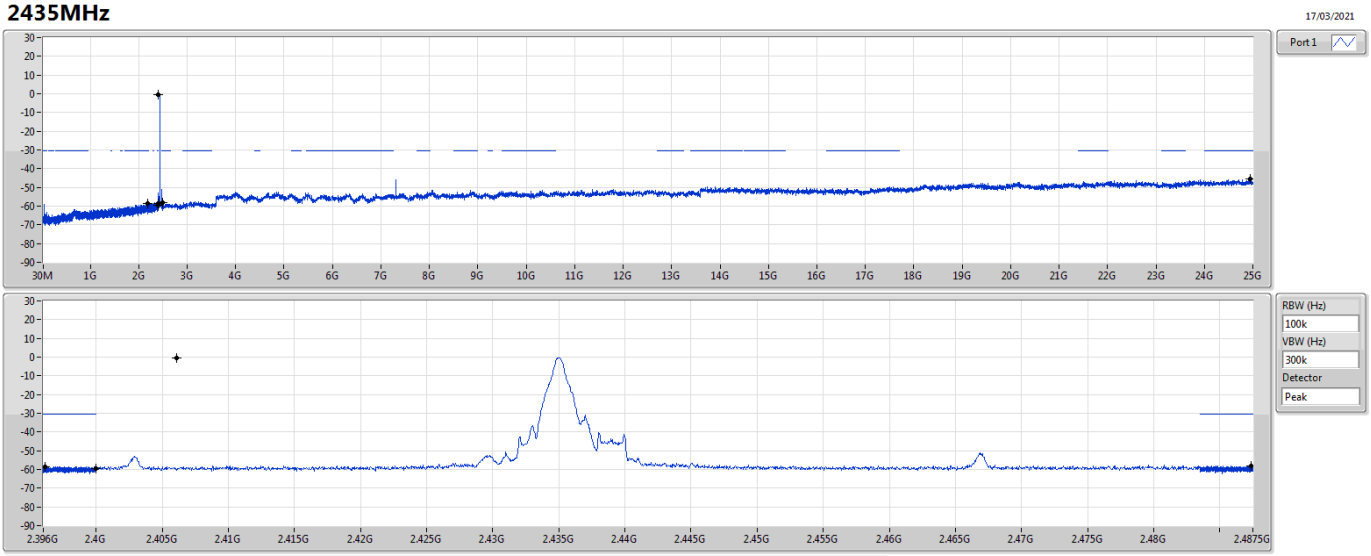
2406MHz



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
2.4061G	-0.41	-30.41	2.30018G	-58.39	2.39999G	-56.15	2.4G	-56.25	2.48568G	-57.54	24.93528G	-46.06	1

SRD_Nss1_1TX **CSENdB**

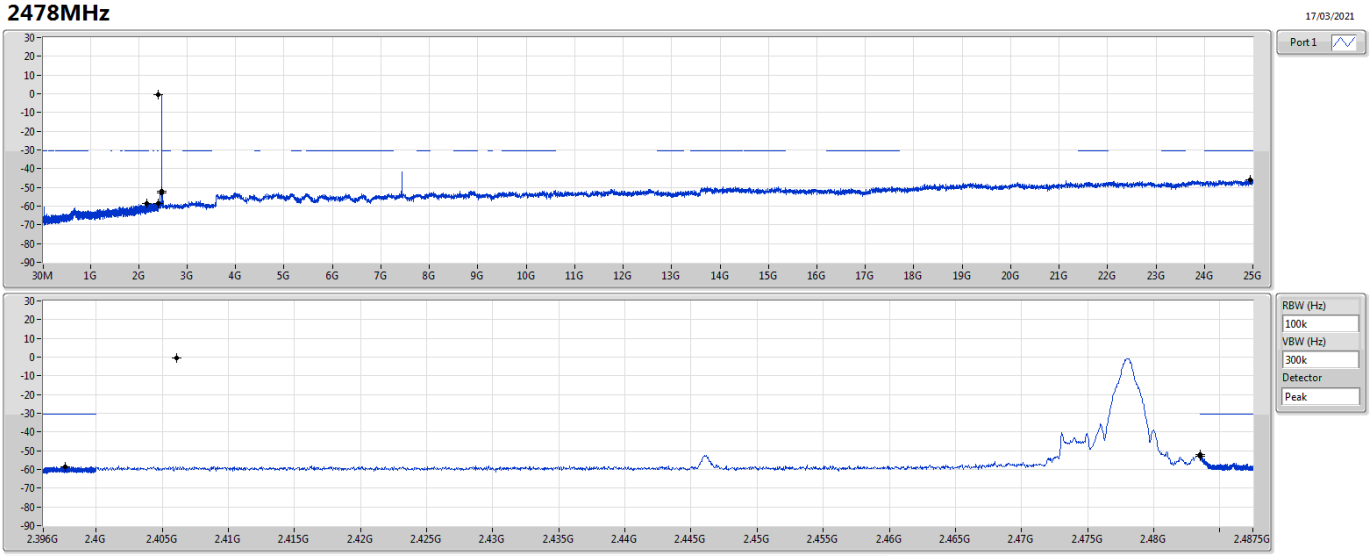
2435MHz



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
2.4061G	-0.41	-30.41	2.18513G	-58.48	2.39615G	-58.39	2.4G	-59.47	2.48735G	-58.01	24.9409G	-45.41	1

SRD_Nss1_1TX **CSENdB**

2478MHz



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
2.4061G	-0.41	-30.41	2.16206G	-58.53	2.39763G	-58.37	2.4835G	-52.84	2.48351G	-52.22	24.94935G	-45.87	1

Summary

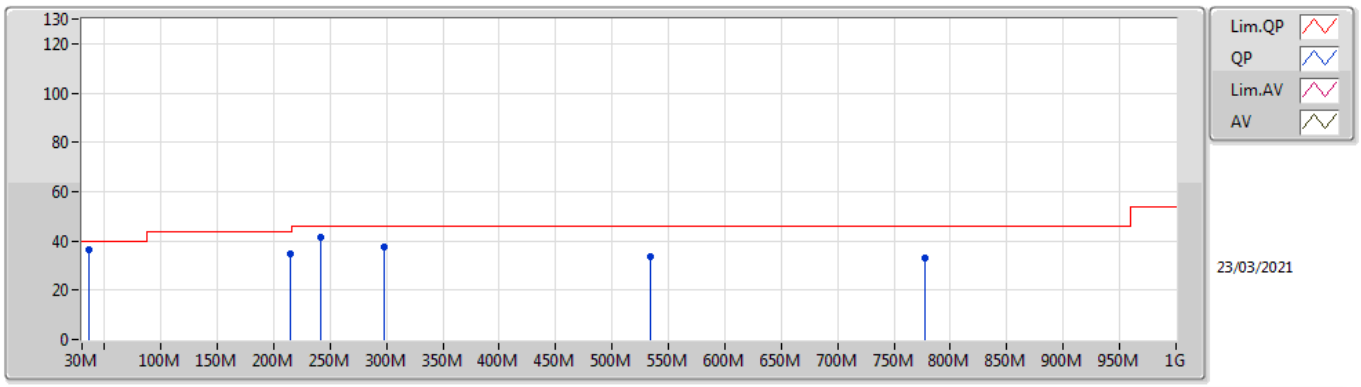
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
SRD_Nss1_1TX	Pass	PK	35.82M	36.41	40.00	-3.59	3	Vertical	360	1.00	-

Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
SRD_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-
2435MHz	Pass	PK	35.82M	36.41	40.00	-3.59	3	Vertical	360	1.00	-
2435MHz	Pass	PK	214.3M	34.84	43.50	-8.66	3	Vertical	360	1.00	-
2435MHz	Pass	PK	241.46M	41.48	46.00	-4.52	3	Vertical	360	1.00	-
2435MHz	Pass	PK	297.72M	37.37	46.00	-8.63	3	Vertical	360	1.00	-
2435MHz	Pass	PK	534.4M	33.84	46.00	-12.16	3	Vertical	360	1.00	-
2435MHz	Pass	PK	776.9M	32.80	46.00	-13.20	3	Vertical	360	1.00	-
2435MHz	Pass	PK	35.82M	29.93	40.00	-10.07	3	Horizontal	0	1.00	-
2435MHz	Pass	PK	119.24M	29.41	43.50	-14.09	3	Horizontal	0	1.00	-
2435MHz	Pass	PK	293.84M	35.51	46.00	-10.49	3	Horizontal	0	1.00	-
2435MHz	Pass	PK	553.8M	31.46	46.00	-14.54	3	Horizontal	0	1.00	-
2435MHz	Pass	PK	590.66M	33.02	46.00	-12.98	3	Horizontal	0	1.00	-
2435MHz	Pass	PK	776.9M	32.21	46.00	-13.79	3	Horizontal	0	1.00	-

SRD_Nss1_1TX

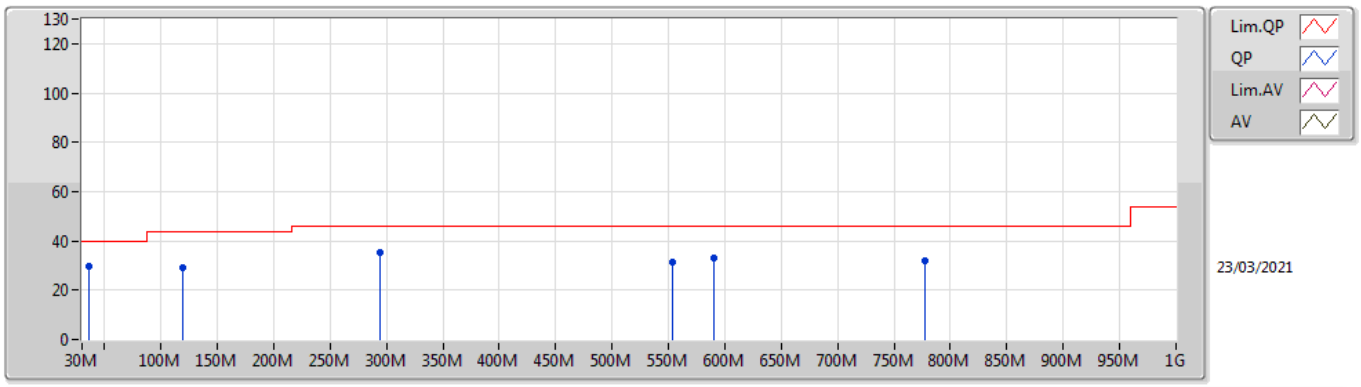
2435MHz_USB



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	35.82M	36.41	40.00	-3.59	-15.76	3	Vertical	360	1.00	-	52.17	20.63	0.67	37.06
PK	214.3M	34.84	43.50	-8.66	-20.75	3	Vertical	360	1.00	-	55.59	14.13	1.37	36.25
PK	241.46M	41.48	46.00	-4.52	-18.33	3	Vertical	360	1.00	-	59.81	16.59	1.47	36.39
PK	297.72M	37.37	46.00	-8.63	-16.40	3	Vertical	360	1.00	-	53.77	18.29	1.66	36.35
PK	534.4M	33.84	46.00	-12.16	-11.47	3	Vertical	360	1.00	-	45.31	23.26	2.33	37.06
PK	776.9M	32.80	46.00	-13.20	-7.24	3	Vertical	360	1.00	-	40.04	27.36	2.77	37.37

SRD_Nss1_1TX

2435MHz_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	35.82M	29.93	40.00	-10.07	-15.76	3	Horizontal	0	1.00	-	45.69	20.63	0.67	37.06
PK	119.24M	29.41	43.50	-14.09	-18.72	3	Horizontal	0	1.00	-	48.13	16.69	1.08	36.49
PK	293.84M	35.51	46.00	-10.49	-16.49	3	Horizontal	0	1.00	-	52.00	18.22	1.65	36.36
PK	553.8M	31.46	46.00	-14.54	-9.79	3	Horizontal	0	1.00	-	41.25	24.92	2.39	37.10
PK	590.66M	33.02	46.00	-12.98	-9.97	3	Horizontal	0	1.00	-	42.99	24.73	2.45	37.15
PK	776.9M	32.21	46.00	-13.79	-7.24	3	Horizontal	0	1.00	-	39.45	27.36	2.77	37.37

Summary

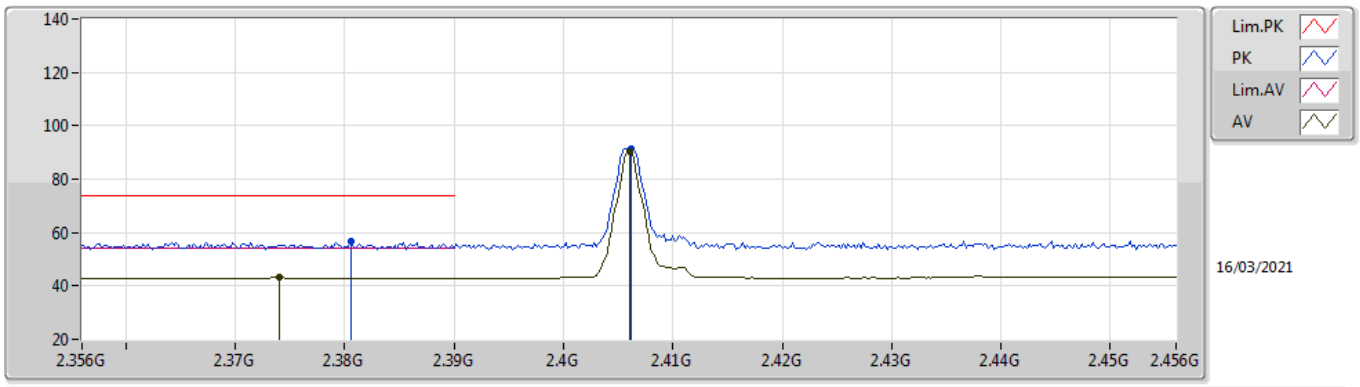
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
SRD_Nss1_1TX	Pass	AV	4.95399G	52.13	54.00	-1.87	3	Horizontal	171	2.96	-

Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
SRD_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-
2406MHz	Pass	AV	2.374G	43.25	54.00	-10.75	3	Vertical	138	1.07	-
2406MHz	Pass	AV	2.406G	90.25	Inf	-Inf	3	Vertical	138	1.07	-
2406MHz	Pass	PK	2.3806G	56.59	74.00	-17.41	3	Vertical	138	1.07	-
2406MHz	Pass	PK	2.4062G	91.52	Inf	-Inf	3	Vertical	138	1.07	-
2406MHz	Pass	AV	2.374G	43.93	54.00	-10.07	3	Horizontal	189	1.02	-
2406MHz	Pass	AV	2.406G	94.37	Inf	-Inf	3	Horizontal	189	1.02	-
2406MHz	Pass	PK	2.3626G	56.32	74.00	-17.68	3	Horizontal	189	1.02	-
2406MHz	Pass	PK	2.4064G	95.60	Inf	-Inf	3	Horizontal	189	1.02	-
2406MHz	Pass	AV	4.81399G	47.77	54.00	-6.23	3	Vertical	183	1.06	-
2406MHz	Pass	PK	4.81402G	51.27	74.00	-22.73	3	Vertical	183	1.06	-
2406MHz	Pass	AV	4.814G	49.13	54.00	-4.87	3	Horizontal	163	2.75	-
2406MHz	Pass	PK	4.81392G	52.01	74.00	-21.99	3	Horizontal	163	2.75	-
2435MHz	Pass	AV	2.3562G	43.27	54.00	-10.73	3	Vertical	139	1.03	-
2435MHz	Pass	AV	2.435G	90.72	Inf	-Inf	3	Vertical	139	1.03	-
2435MHz	Pass	AV	2.4922G	43.63	54.00	-10.37	3	Vertical	139	1.03	-
2435MHz	Pass	PK	2.3726G	56.50	74.00	-17.50	3	Vertical	139	1.03	-
2435MHz	Pass	PK	2.4354G	91.94	Inf	-Inf	3	Vertical	139	1.03	-
2435MHz	Pass	PK	2.4842G	57.26	74.00	-16.74	3	Vertical	139	1.03	-
2435MHz	Pass	AV	2.3526G	43.21	54.00	-10.79	3	Horizontal	67	1.14	-
2435MHz	Pass	AV	2.435G	94.91	Inf	-Inf	3	Horizontal	67	1.14	-
2435MHz	Pass	AV	2.497G	43.70	54.00	-10.30	3	Horizontal	67	1.14	-
2435MHz	Pass	PK	2.3798G	57.46	74.00	-16.54	3	Horizontal	67	1.14	-
2435MHz	Pass	PK	2.4354G	96.10	Inf	-Inf	3	Horizontal	67	1.14	-
2435MHz	Pass	PK	2.4986G	56.96	74.00	-17.04	3	Horizontal	67	1.14	-
2435MHz	Pass	AV	4.87198G	48.75	54.00	-5.25	3	Vertical	182	1.09	-
2435MHz	Pass	AV	7.30578G	38.98	54.00	-15.02	3	Vertical	186	1.11	-
2435MHz	Pass	PK	4.87189G	52.00	74.00	-22.00	3	Vertical	182	1.09	-
2435MHz	Pass	PK	7.30571G	51.44	74.00	-22.56	3	Vertical	186	1.11	-
2435MHz	Pass	AV	4.87199G	50.54	54.00	-3.46	3	Horizontal	166	2.86	-
2435MHz	Pass	AV	7.30573G	42.71	54.00	-11.29	3	Horizontal	188	1.23	-
2435MHz	Pass	PK	4.87205G	53.25	74.00	-20.75	3	Horizontal	166	2.86	-
2435MHz	Pass	PK	7.30403G	54.06	74.00	-19.94	3	Horizontal	188	1.23	-
2478MHz	Pass	AV	2.478G	91.40	Inf	-Inf	3	Vertical	140	1.23	-
2478MHz	Pass	AV	2.4835G	44.60	54.00	-9.40	3	Vertical	140	1.23	-
2478MHz	Pass	PK	2.4782G	92.58	Inf	-Inf	3	Vertical	140	1.23	-
2478MHz	Pass	PK	2.4902G	57.43	74.00	-16.57	3	Vertical	140	1.23	-
2478MHz	Pass	AV	2.478G	95.08	Inf	-Inf	3	Horizontal	186	1.21	-
2478MHz	Pass	AV	2.4835G	45.83	54.00	-8.17	3	Horizontal	186	1.21	-
2478MHz	Pass	PK	2.4782G	96.24	Inf	-Inf	3	Horizontal	186	1.21	-
2478MHz	Pass	PK	2.4836G	56.92	74.00	-17.08	3	Horizontal	186	1.21	-
2478MHz	Pass	AV	4.95398G	48.71	54.00	-5.29	3	Vertical	147	2.73	-
2478MHz	Pass	AV	7.43477G	42.22	54.00	-11.78	3	Vertical	111	2.43	-
2478MHz	Pass	PK	4.95397G	52.03	74.00	-21.97	3	Vertical	147	2.73	-
2478MHz	Pass	PK	7.43485G	54.04	74.00	-19.96	3	Vertical	111	2.43	-
2478MHz	Pass	AV	4.95399G	52.13	54.00	-1.87	3	Horizontal	171	2.96	-
2478MHz	Pass	AV	7.43357G	49.33	54.00	-4.67	3	Horizontal	328	1.00	-
2478MHz	Pass	PK	4.95396G	54.60	74.00	-19.40	3	Horizontal	171	2.96	-
2478MHz	Pass	PK	7.43305G	59.20	74.00	-14.80	3	Horizontal	328	1.00	-

SRD_Nss1_1TX

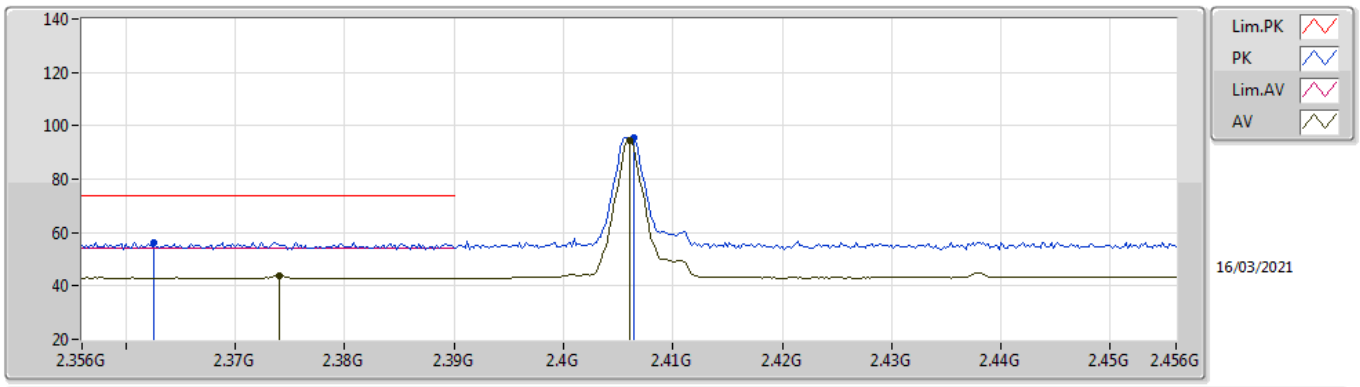
2406MHz_TX



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	2.374G	43.25	54.00	-10.75	31.56	3	Vertical	138	1.07	-	11.69	27.70	3.86	-
AV	2.406G	90.25	Inf	-Inf	31.51	3	Vertical	138	1.07	-	58.74	27.60	3.91	-
PK	2.3806G	56.59	74.00	-17.41	31.55	3	Vertical	138	1.07	-	25.04	27.68	3.87	-
PK	2.4062G	91.52	Inf	-Inf	31.51	3	Vertical	138	1.07	-	60.01	27.60	3.91	-

SRD_Nss1_1TX

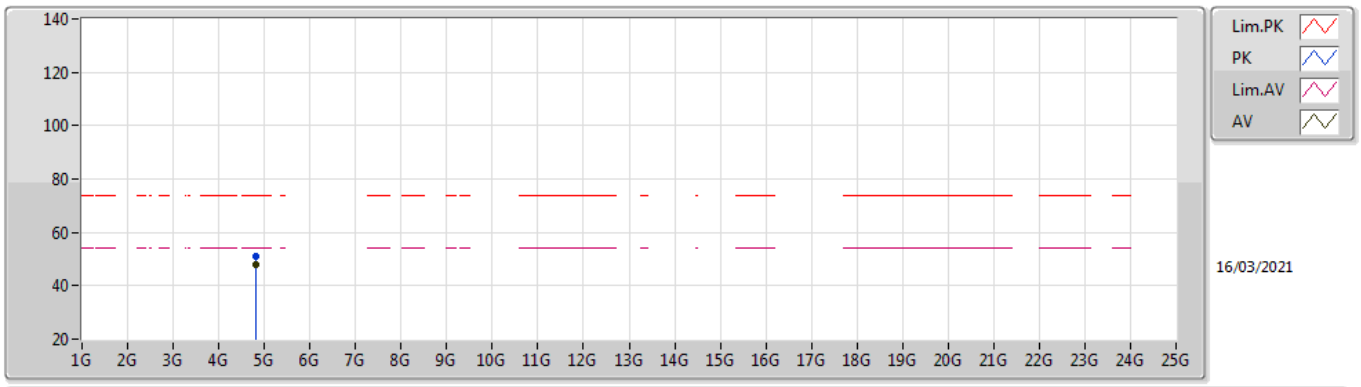
2406MHz_TX



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	2.374G	43.93	54.00	-10.07	31.56	3	Horizontal	189	1.02	-	12.37	27.70	3.86	-
AV	2.406G	94.37	Inf	-Inf	31.51	3	Horizontal	189	1.02	-	62.86	27.60	3.91	-
PK	2.3626G	56.32	74.00	-17.68	31.59	3	Horizontal	189	1.02	-	24.73	27.75	3.84	-
PK	2.4064G	95.60	Inf	-Inf	31.51	3	Horizontal	189	1.02	-	64.09	27.60	3.91	-

SRD_Nss1_1TX

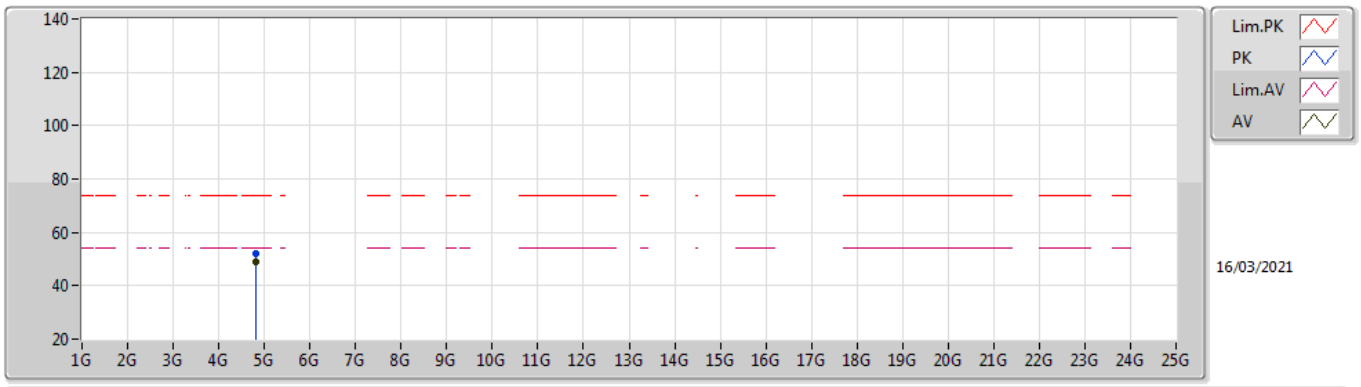
2406MHz_TX



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	4.81399G	47.77	54.00	-6.23	1.54	3	Vertical	183	1.06	-	46.23	31.16	5.31	34.93
PK	4.81402G	51.27	74.00	-22.73	1.54	3	Vertical	183	1.06	-	49.73	31.16	5.31	34.93

SRD_Nss1_1TX

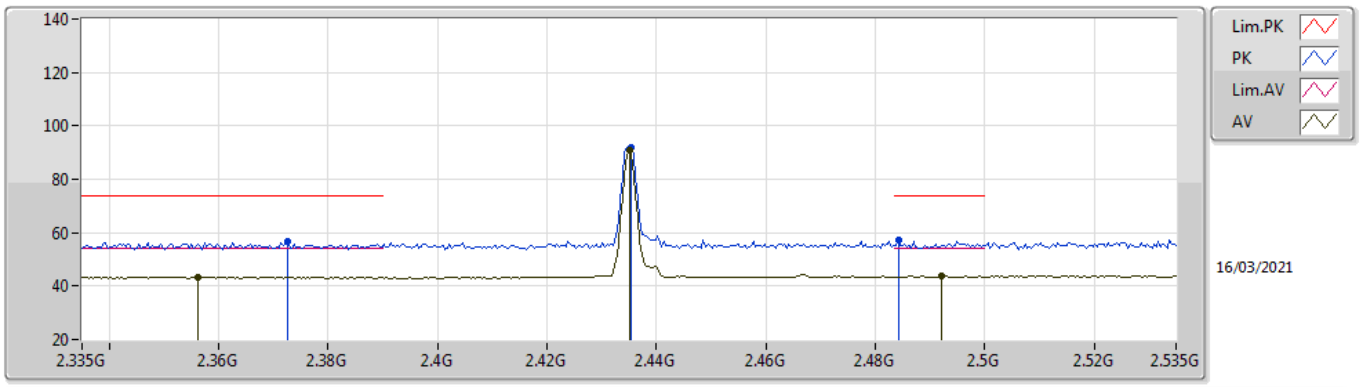
2406MHz_TX



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	4.814G	49.13	54.00	-4.87	1.54	3	Horizontal	163	2.75	-	47.59	31.16	5.31	34.93
PK	4.81392G	52.01	74.00	-21.99	1.54	3	Horizontal	163	2.75	-	50.47	31.16	5.31	34.93

SRD_Nss1_1TX

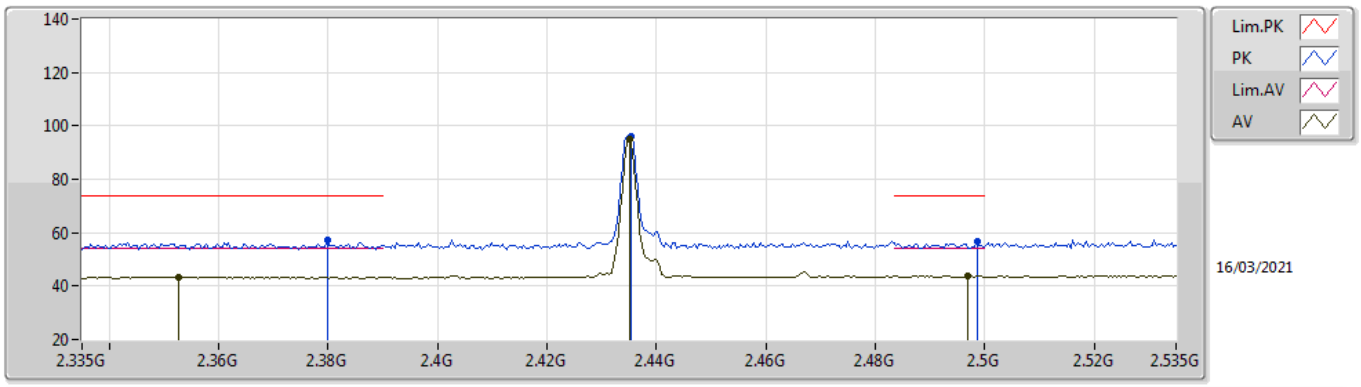
2435MHz_TX



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	2.3562G	43.27	54.00	-10.73	31.61	3	Vertical	139	1.03	-	11.66	27.78	3.83	-
AV	2.435G	90.72	Inf	-Inf	31.55	3	Vertical	139	1.03	-	59.17	27.60	3.95	-
AV	2.4922G	43.63	54.00	-10.37	31.64	3	Vertical	139	1.03	-	11.99	27.60	4.04	-
PK	2.3726G	56.50	74.00	-17.50	31.57	3	Vertical	139	1.03	-	24.93	27.71	3.86	-
PK	2.4354G	91.94	Inf	-Inf	31.55	3	Vertical	139	1.03	-	60.39	27.60	3.95	-
PK	2.4842G	57.26	74.00	-16.74	31.63	3	Vertical	139	1.03	-	25.63	27.60	4.03	-

SRD_Nss1_1TX

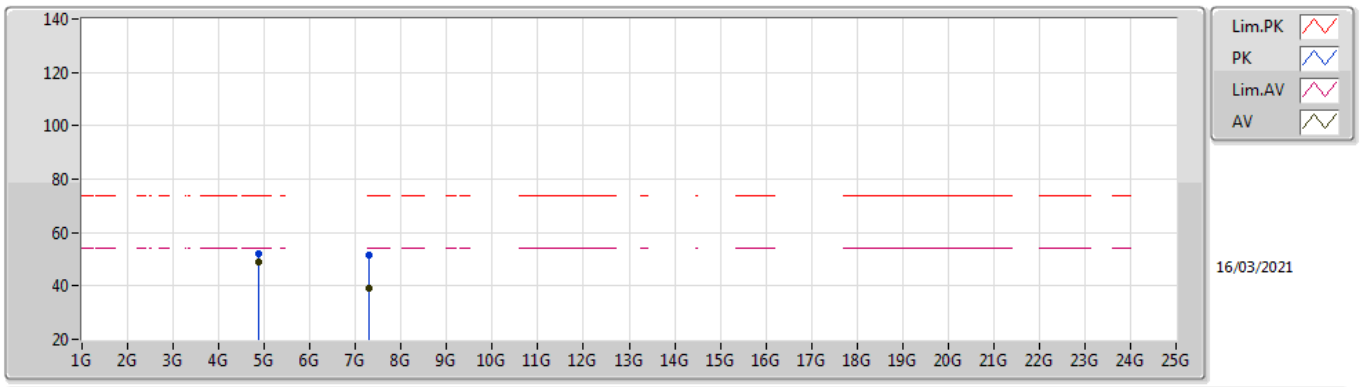
2435MHz_TX



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	2.3526G	43.21	54.00	-10.79	31.62	3	Horizontal	67	1.14	-	11.59	27.79	3.83	-
AV	2.435G	94.91	Inf	-Inf	31.55	3	Horizontal	67	1.14	-	63.36	27.60	3.95	-
AV	2.497G	43.70	54.00	-10.30	31.65	3	Horizontal	67	1.14	-	12.05	27.60	4.05	-
PK	2.3798G	57.46	74.00	-16.54	31.55	3	Horizontal	67	1.14	-	25.91	27.68	3.87	-
PK	2.4354G	96.10	Inf	-Inf	31.55	3	Horizontal	67	1.14	-	64.55	27.60	3.95	-
PK	2.4986G	56.96	74.00	-17.04	31.65	3	Horizontal	67	1.14	-	25.31	27.60	4.05	-

SRD_Nss1_1TX

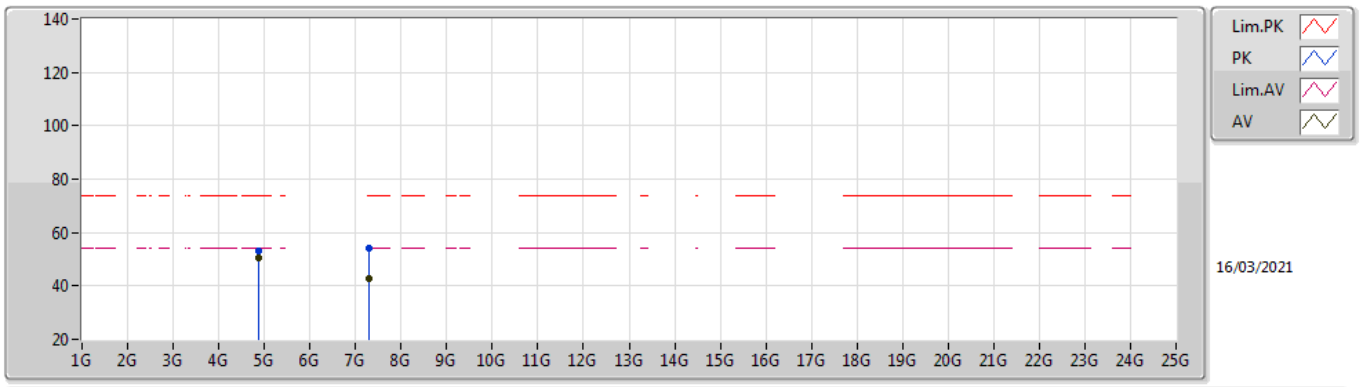
2435MHz_TX



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	4.87198G	48.75	54.00	-5.25	1.67	3	Vertical	182	1.09	-	47.08	31.26	5.34	34.93
AV	7.30578G	38.98	54.00	-15.02	8.21	3	Vertical	186	1.11	-	30.77	36.59	6.80	35.18
PK	4.87189G	52.00	74.00	-22.00	1.67	3	Vertical	182	1.09	-	50.33	31.26	5.34	34.93
PK	7.30571G	51.44	74.00	-22.56	8.21	3	Vertical	186	1.11	-	43.23	36.59	6.80	35.18

SRD_Nss1_1TX

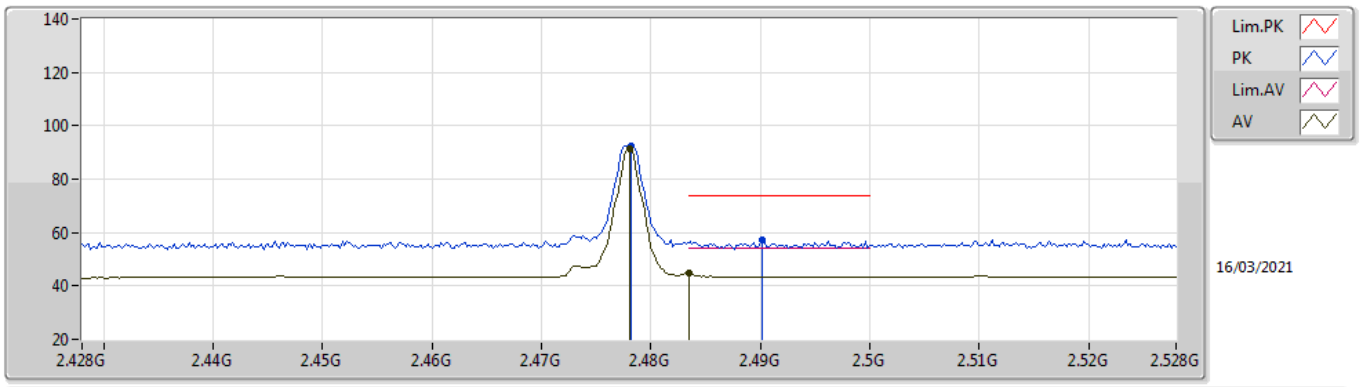
2435MHz_TX



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	4.87199G	50.54	54.00	-3.46	1.67	3	Horizontal	166	2.86	-	48.87	31.26	5.34	34.93
AV	7.30573G	42.71	54.00	-11.29	8.21	3	Horizontal	188	1.23	-	34.50	36.59	6.80	35.18
PK	4.87205G	53.25	74.00	-20.75	1.67	3	Horizontal	166	2.86	-	51.58	31.26	5.34	34.93
PK	7.30403G	54.06	74.00	-19.94	8.21	3	Horizontal	188	1.23	-	45.85	36.59	6.80	35.18

SRD_Nss1_1TX

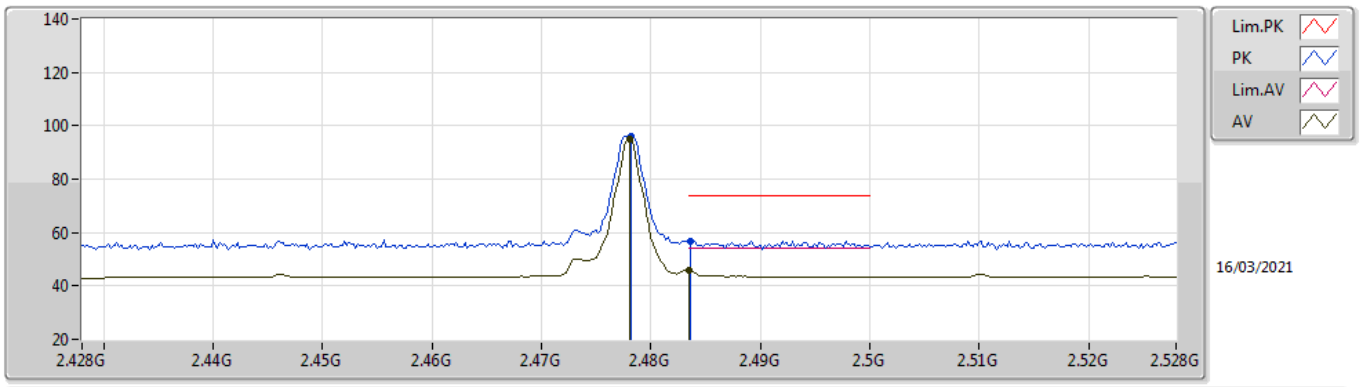
2478MHz_TX



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	2.478G	91.40	Inf	-Inf	31.62	3	Vertical	140	1.23	-	59.78	27.60	4.02	-
AV	2.4835G	44.60	54.00	-9.40	31.63	3	Vertical	140	1.23	-	12.97	27.60	4.03	-
PK	2.4782G	92.58	Inf	-Inf	31.62	3	Vertical	140	1.23	-	60.96	27.60	4.02	-
PK	2.4902G	57.43	74.00	-16.57	31.64	3	Vertical	140	1.23	-	25.79	27.60	4.04	-

SRD_Nss1_1TX

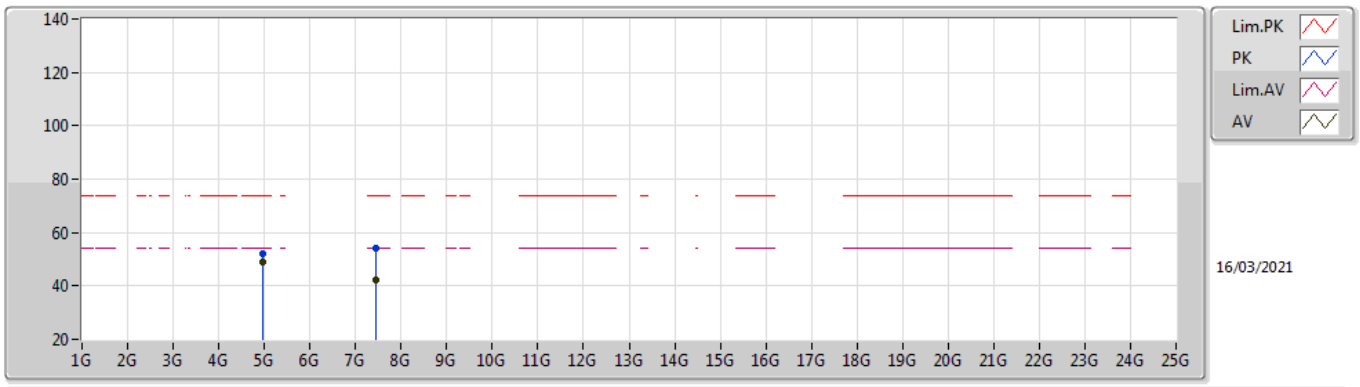
2478MHz_TX



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	2.478G	95.08	Inf	-Inf	31.62	3	Horizontal	186	1.21	-	63.46	27.60	4.02	-
AV	2.4835G	45.83	54.00	-8.17	31.63	3	Horizontal	186	1.21	-	14.20	27.60	4.03	-
PK	2.4782G	96.24	Inf	-Inf	31.62	3	Horizontal	186	1.21	-	64.62	27.60	4.02	-
PK	2.4836G	56.92	74.00	-17.08	31.63	3	Horizontal	186	1.21	-	25.29	27.60	4.03	-

SRD_Nss1_1TX

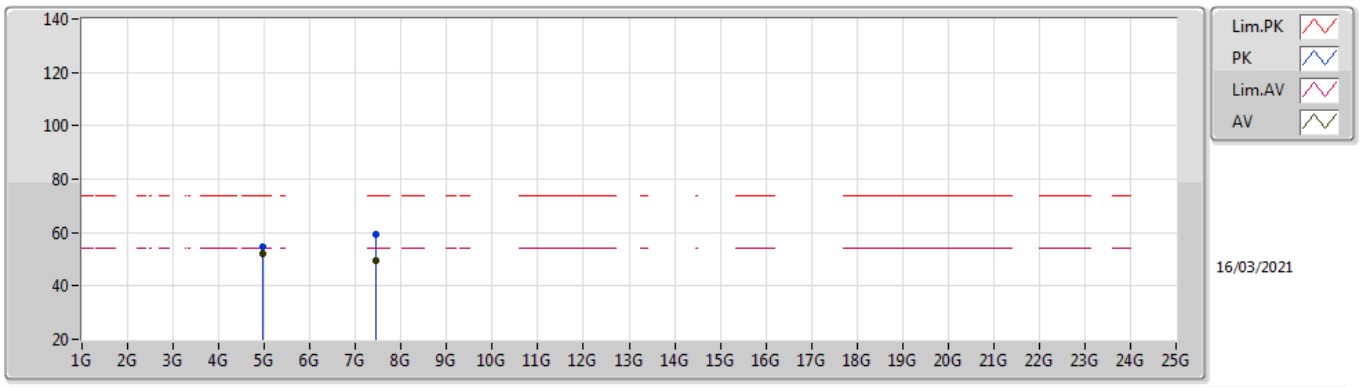
2478MHz_TX



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	4.95398G	48.71	54.00	-5.29	1.85	3	Vertical	147	2.73	-	46.86	31.41	5.38	34.94
AV	7.43477G	42.22	54.00	-11.78	8.19	3	Vertical	111	2.43	-	34.03	36.54	6.82	35.17
PK	4.95397G	52.03	74.00	-21.97	1.85	3	Vertical	147	2.73	-	50.18	31.41	5.38	34.94
PK	7.43485G	54.04	74.00	-19.96	8.19	3	Vertical	111	2.43	-	45.85	36.54	6.82	35.17

SRD_Nss1_1TX

2478MHz_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	4.95399G	52.13	54.00	-1.87	1.85	3	Horizontal	171	2.96	-	50.28	31.41	5.38	34.94
AV	7.43357G	49.33	54.00	-4.67	8.18	3	Horizontal	328	1.00	-	41.15	36.53	6.82	35.17
PK	4.95396G	54.60	74.00	-19.40	1.85	3	Horizontal	171	2.96	-	52.75	31.41	5.38	34.94
PK	7.43305G	59.20	74.00	-14.80	8.18	3	Horizontal	328	1.00	-	51.02	36.53	6.82	35.17