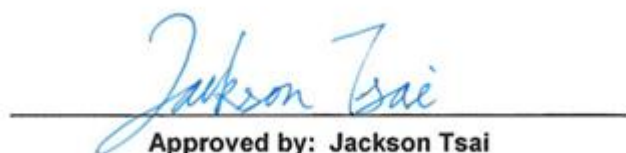


FCC Radio Test Report

FCC ID : 2A8MT-S8POE
Equipment : 8 Port Managed Network Switch with PoE
Brand Name : ALTA LABS 
Model Name : S8-POE
Applicant : SoundVision Technologies, dba Alta Lab
192 N Old Hwy 91, Unit 1 Hurricane,Utah,United States 84737
Manufacturer : SoundVision Technologies, dba Alta Labs
192 N Old Hwy 91, Unit 1 Hurricane,Utah,United States 84737
Standard : 47 CFR FCC Part 15.247

The product was received on May 15, 2023, and testing was started from Jun. 16, 2023 and completed on Jul. 13, 2023. 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.



Approved by: Jackson Tsai

SPORTON INTERNATIONAL INC. Hsinhua Laboratory

No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.)



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	12
3.1 AC Power-line Conducted Emissions	12
3.2 DTS Bandwidth.....	14
3.3 Maximum Conducted Output Power	15
3.4 Power Spectral Density	17
3.5 Emissions in Non-restricted Frequency Bands	18
3.6 Emissions in Restricted Frequency Bands.....	19
4 TEST EQUIPMENT AND CALIBRATION DATA.....	23
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

[illegible]

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: Ryan Hsiao

Report Producer: Amber Chiu

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	Gain (dBi)
1	LITEON	3010001450YD	PIFA	IPEX-1	3.3

Note 1: The EUT has one antenna.

For Bluetooth function:

For Bluetooth mode (1TX/1RX)

Ant. 1 could transmit/receive.

1.1.3 EUT Information

Operational Condition	
EUT Power Type	From AC Adapter
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) $\geq 1/T$
BT-LE(1Mbps)	1	0	n/a (DC $\geq$ 0.98)	n/a (DC $\geq$ 0.98)
BT-LE(2Mbps)	1	0	n/a (DC $\geq$ 0.98)	n/a (DC $\geq$ 0.98)

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

1.1.5 Table for Multiple Listing

Table for Explanation 2nd Source

Object/part or Description (location)	Location	main source (SKU 1)	2nd source (SKU 2)
LAN transformer	T3, T4	Brand: BOTHHAND Model: GS5014M LF	Brand: FPE Model: LY48220SN
LAN transformer	T1, T2	Brand: BOTHHAND Model: GS6014M LF	Brand: FPE Model: LY48209SN
Power transformer	PT1	Brand: TNK Model: TSA1032	Brand: SEMITEL Model: EP13-875

From the above SKU, all of SKUs were verified and Main source (SKU 1) was selected as representative SKU for the test and its data was recorded in this report.

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. TW3785 with FCC.				
Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
AC Conduction	CO04-HY	Simon Cheng	24.1~24.6°C / 50~53%	12/Jul/2023~13/Jul/2023
RF Conducted	TH07-HY	Edward Wang	23.2~23.9°C / 50~54%	29/Jun/2023
☐ 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	Lego Lin	22.1~23.4°C / 51~53%	16/Jun/2023~13/Jul/2023

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
AC Power-line Conducted Emissions	4.53 dB	Confidence levels of 95%
Bandwidth	3 MHz	Confidence levels of 95%
Maximum Conducted Output Power	2 dB	Confidence levels of 95%
Power Spectral Density	2 dB	Confidence levels of 95%
Emissions in Non-restricted Frequency Bands	0.14 dB	Confidence levels of 95%
Emissions in Restricted Frequency Bands	4.8 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	PuTTY Release 0.62
-----------------------	--------------------

Mode	Power Setting
BT-LE(1Mbps)	-
2402MHz	4
2440MHz	3
2480MHz	3
BT-LE(2Mbps)	-
2402MHz	4
2440MHz	4
2480MHz	4

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
Operating Mode	CTX
1	Switching Power supply 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	Adapter mode		
Operating Mode > 1GHz	CTX		
Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			
Worst Planes of EUT	V		

2.3 Accessories

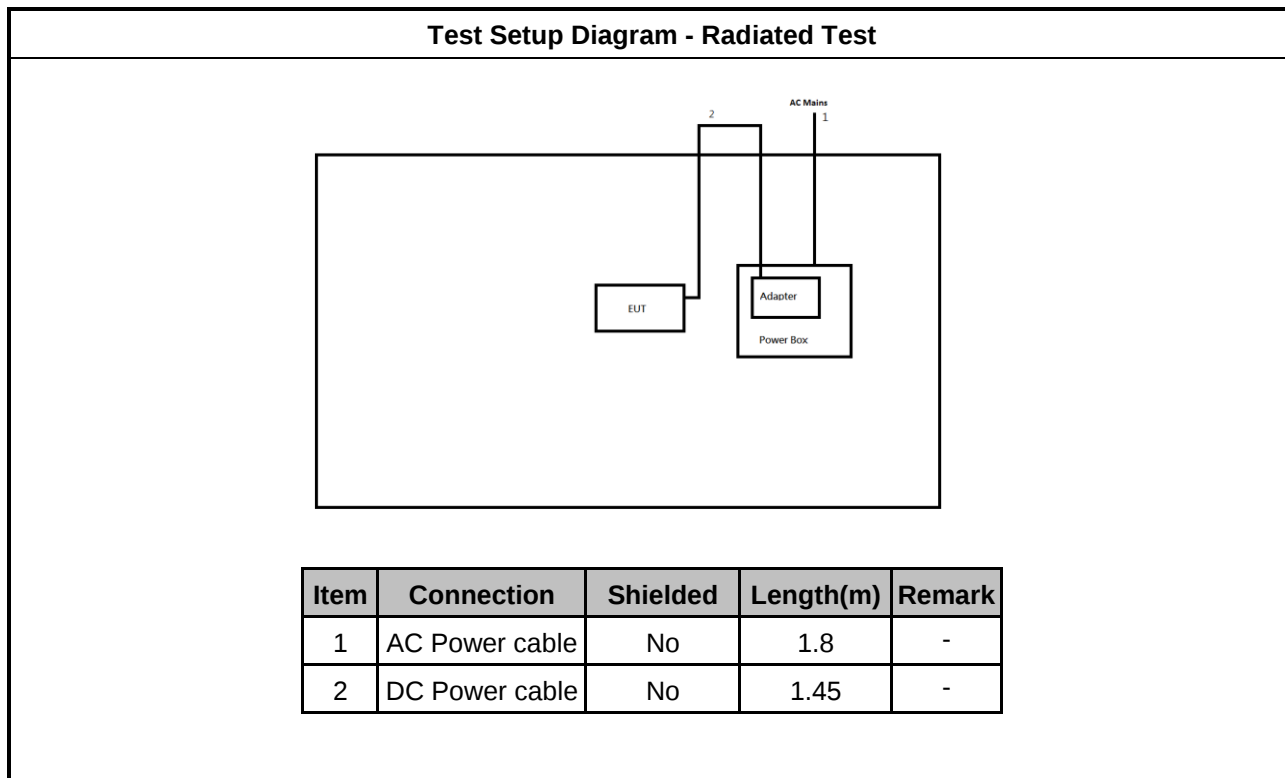
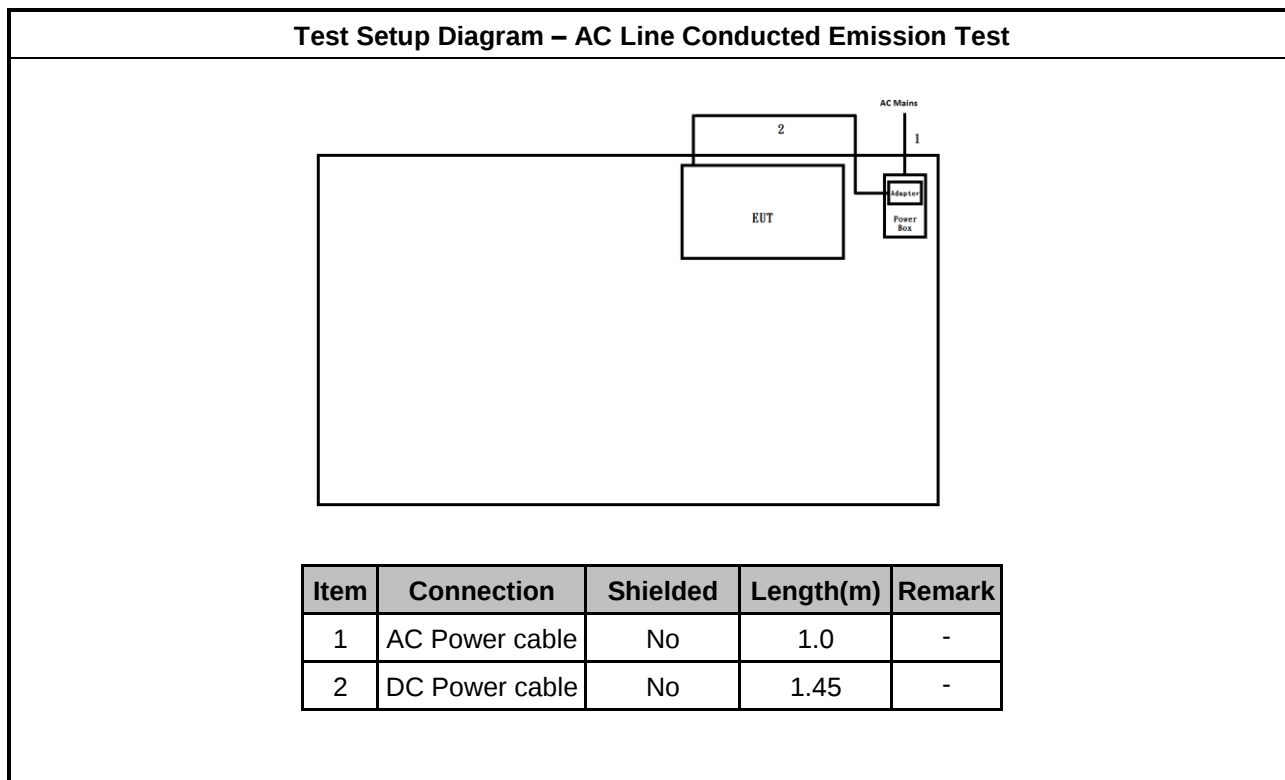
Accessories				
AC Adapter	Brand Name	APD	Model Name	WA-70A54FU
	Power Rating	I/P: 100 – 240 Vac, 1.6 A, O/P: 54.0 Vdc, 1.3 A		
	Power Cord	1.45 meter, non-shielded cable, w/o ferrite core		
AC Adapter	Brand Name	APD	Model Name	WA-70A54R
	Power Rating	I/P: 100 – 240 Vac, 1.6 A, O/P: 54.0 Vdc, 1.3 A		
	Power Cord	1.45 meter, non-shielded cable, w/o ferrite core		
Wallmount	Brand Name	NA	Model Name	NA

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

2.4 Support Equipment

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

2.5 Test Setup Diagram



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

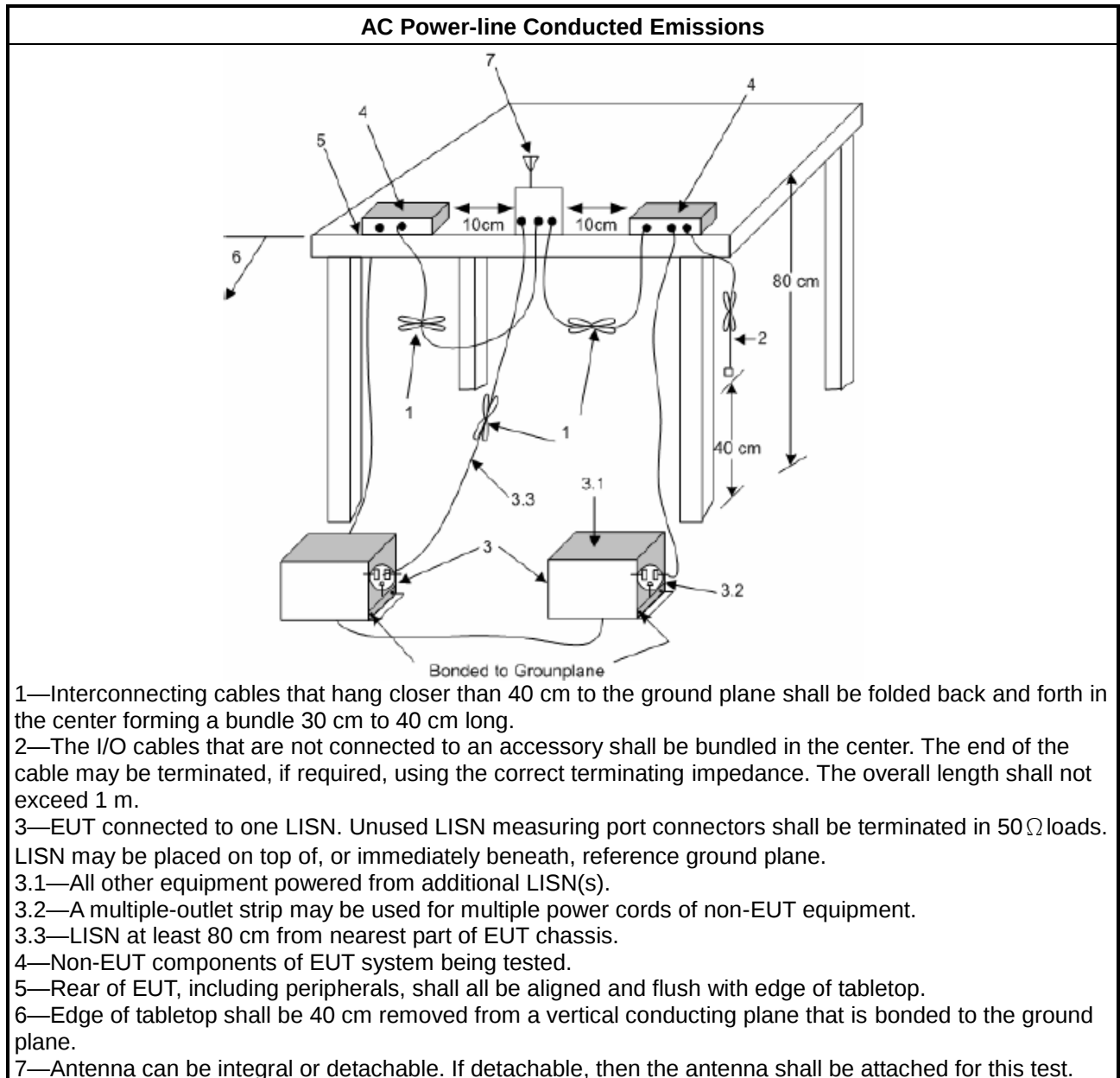
Test Method
▪ Refer as ANSI C63.10-2013, clause 6.2 foray power-line conducted emissions.

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



3.1.6 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

3.2 DTS Bandwidth

3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit	
Systems using digital modulation techniques:	
▪	6 dB bandwidth $\geq$ 500 kHz.

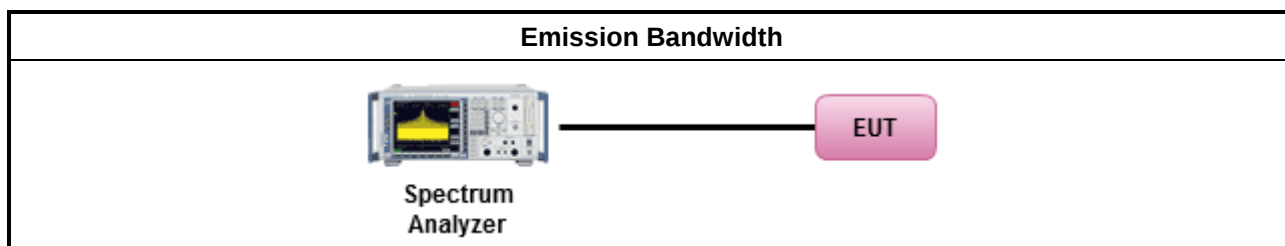
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Test Method	
▪	For the emission bandwidth shall be measured using one of the options below:
☒	Refer as KDB 558074, clause 8.2 (11.8 of ANSI C63.10) DTS bandwidth measurement.
☐	Refer as RSS-Gen, clause 6.7 for occupied bandwidth testing.
☐	Refer as ANSI C63.10, clause 6.9.3 for occupied bandwidth testing.

3.2.4 Test Setup



3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

3.3 Maximum Conducted Output Power

3.3.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit	
	If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)
	Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm
	Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	Smart antenna system (SAS):
	- Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	- Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	- Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3 + 8$ dB dBm
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): $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX}])$ dBm
	Smart antenna system (SAS)
	- Single beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	- Overlap beam: $P_{eirp} \leq \text{MAX}(36, P_{Out} + G_{TX})$ dBm
	- Aggregate power on all beams: $P_{eirp} \leq \text{MAX}(36, [P_{Out} + G_{TX} + 8])$ 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.	

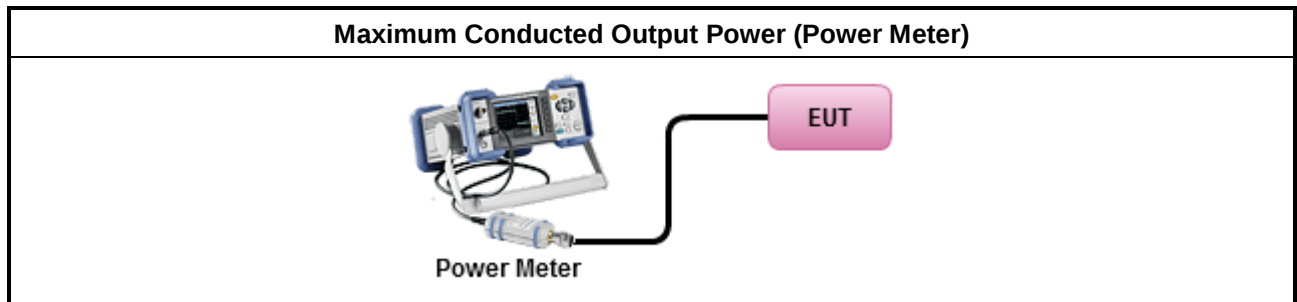
3.3.2 Measuring Instruments

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

3.3.4 Test Setup



3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

3.4 Power Spectral Density

3.4.1 Power Spectral Density Limit

Power Spectral Density Limit
Power Spectral Density (PSD) ≤ 8 dBm/3kHz

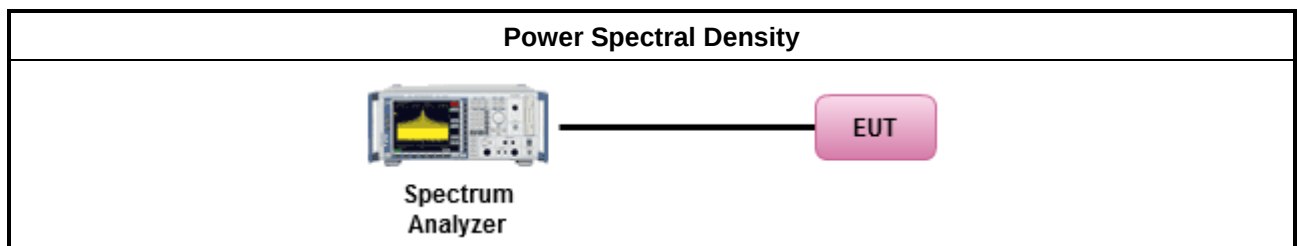
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

Test Method
Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option).
☒ Refer as 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



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.	

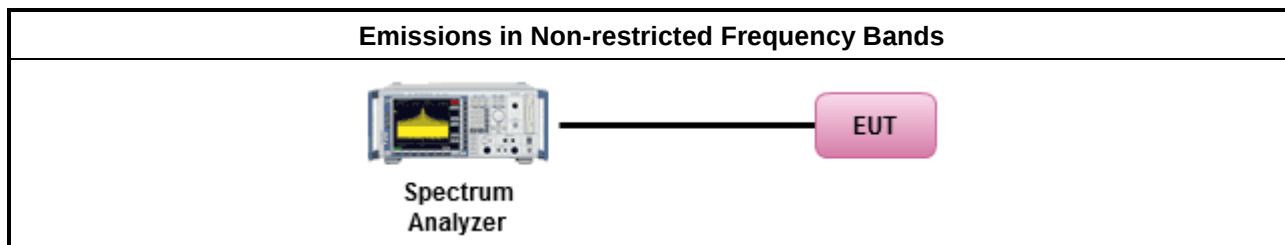
3.5.2 Measuring Instruments

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



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

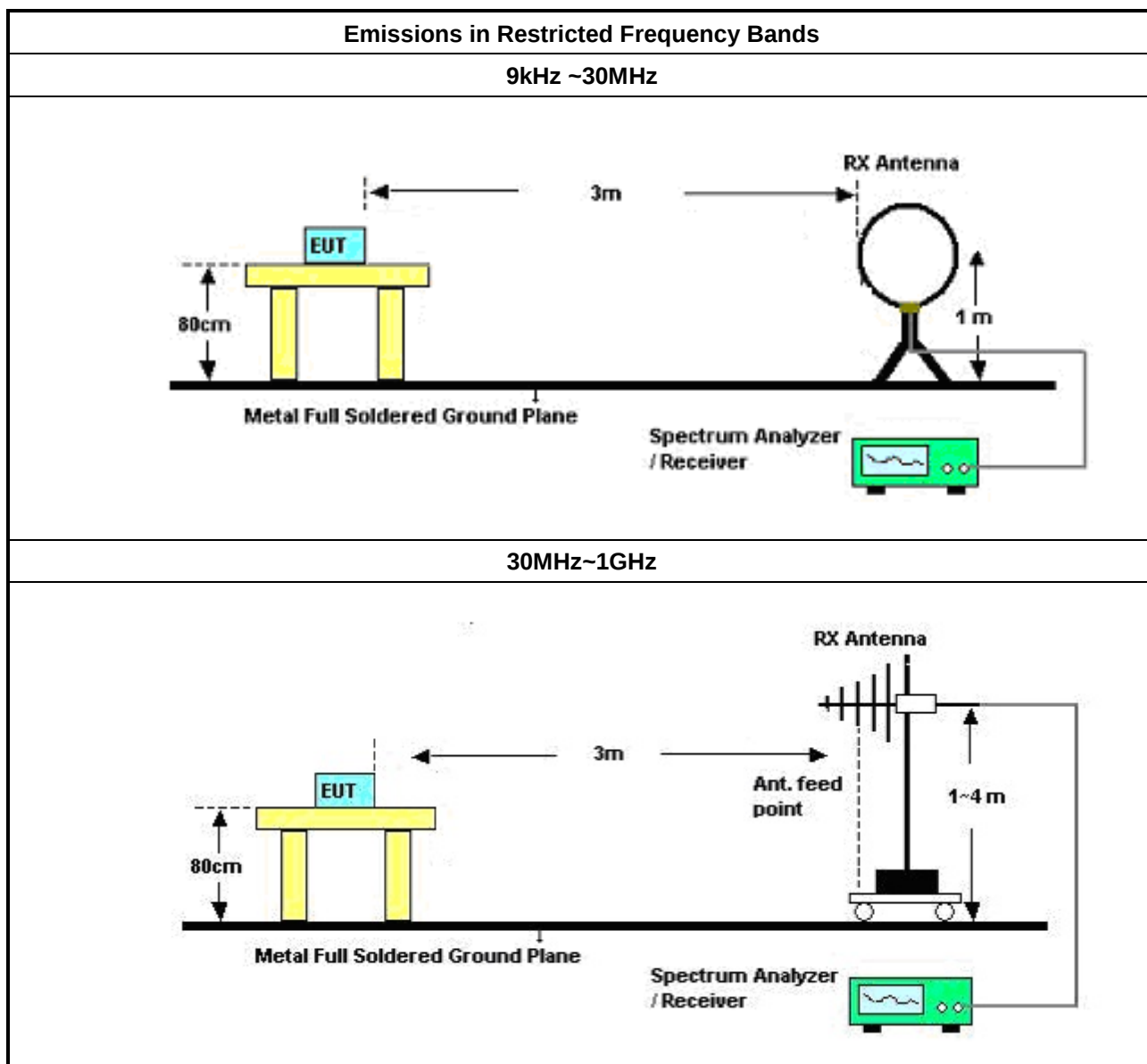
Test Method	
	The average emission levels shall be measured in [duty cycle $\geq$ 98 or duty factor].
	Refer as ANSI C63.10, clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.
	For the transmitter unwanted 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 $f \geq 1$ 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.

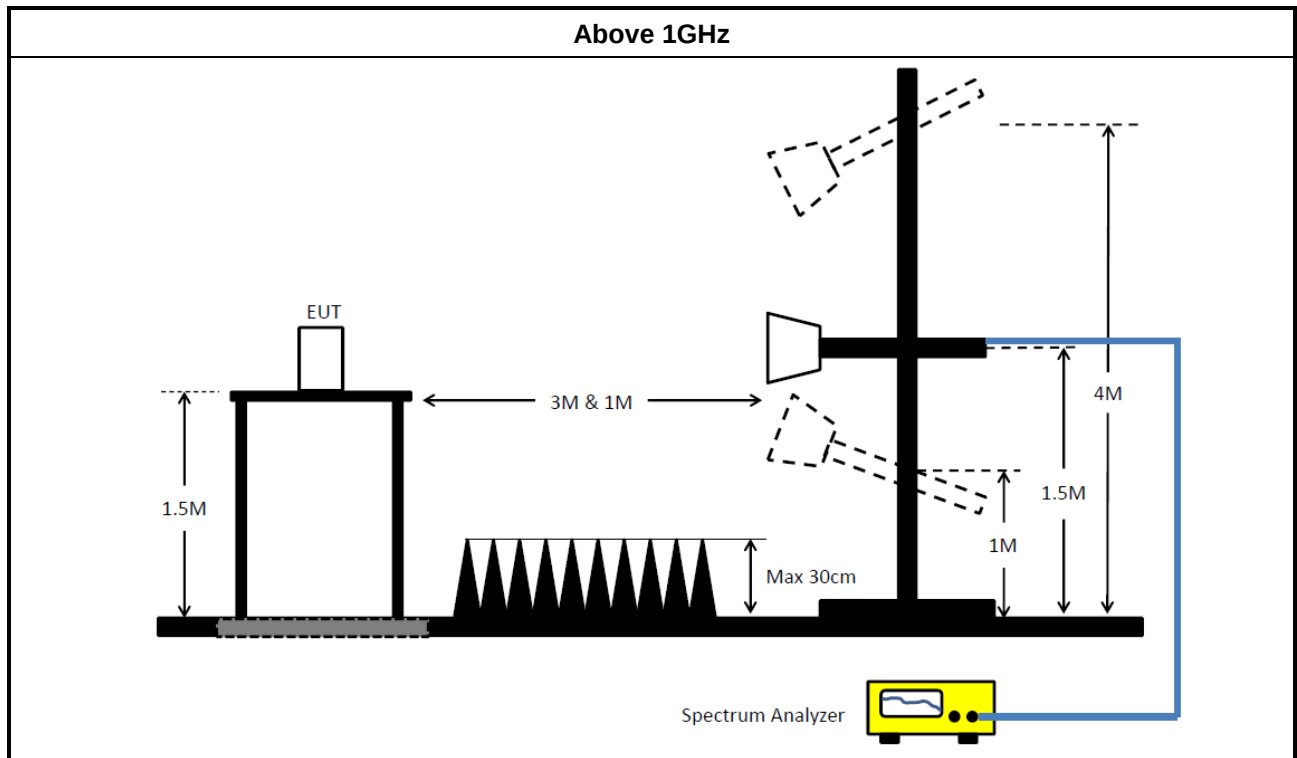
3.6.4 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Raw(Read Level) + AF(Antenna Factor) + CL(Cable Loss) - PA(Preamplifier Factor)

3.6.5 Test Setup





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	ESR	102051	9kHz ~ 3.6GHz	16/May/2023	15/May/2024
Two-Line V-Network	R&S	ENV 216	100003	9kHz ~ 30MHz	16/Feb/2023	15/Feb/2024
RF Cable 5m	TITAN	TITAN	CO04-cable-01	9 kHz~200MHz	28/Feb/2023	27/Feb/2024
Impuls Begrenzer Pulse Limiter	SCHWARZBECK	VTSD 9561-F	9561-F041	9kHz ~ 30MHz	25/Oct/2022	24/Oct/2023
Software	Sporton	SENSE-EMI	V5.11.3.0	-	NCR	NCR

NCR: No Calibration Required

Instrument for Conducted Test

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Signal Analyzer	R&S	FSV 40	101515	10Hz~40GHz	14/Feb/2023	13/Feb/2024
SMB100A Signal Generator	R&S	SMB100A	181147	100kHz~40GHz	21/Oct/2022	20/Oct/2023
Pulse Sensor	Anritsu	MA2411B	1339407	300MHz~40GHz	14/Dec/2022	13/Dec/2023
Power Meter	Anritsu	ML2495A	1517010	300MHz~40GHz	14/Dec/2022	13/Dec/2023
SENSE-15247_FS	Sporton	V5.11.2	N/A	N/A	N/A	N/A

**Instrument for Radiated Test**

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Site V.S.W.R	TDK	SAC-3M	03CH09-HY	1GHz~18GHz 3m	14/Mar/2023	13/Mar/2024
N.S.A. Measurement	TDK	SAC-3M	03CH09-HY	30 MHz ~ 1 GHz 3m	15/Mar/2023	14/Mar/2024
EXA Signal Analyzer	KEYSIGHT	N9010A	MY54200885	10Hz~44GHz	11/Aug/2022	10/Aug/2023
Microwave Preamplifier	Agilent	8449B	3008A02096	1GHz~26.5GHz	22/Jul/2022	21/Jul/2023
Preamplifier	EMCI	EMC9135	980232	9kHz~1GHz	07/Apr/2023	06/Apr/2024
Bilog Antenna & 5dB Attenuator	TESEQ & MTJ	CBL6111D&MT J6102-05	35418 & 3	30MHz~1GHz	28/Aug/2022	27/Aug/2023
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1531	1GHz~18GHz	30/Dec/2022	29/Dec/2023
RF Cable-low	HUBER+SUHNER	SUCOFLEX104	03CH09-cable-01	9kHz~1GHz	21/Feb/2023	20/Feb/2024
RF CABLE 5m+3m+1m	HUBER+SUHNER	SUCOFLEX104	03CH09-cable-02	1GHz~40GHz	21/Feb/2023	20/Feb/2024
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170221	18GHz~40GHz	25/Mar/2023	24/Mar/2024
Microwave Premplifier	EMC INSTRUMENTS	EM18G40G	060604	18GHz ~ 40GHz	16/Mar/2023	15/Mar/2024
Loop Antenna	TESEQ	HLA 6120	31244	9kHz~30MHz	23/Mar/2023	22/Mar/2024
EMI Test Receiver	R&S	ESR3	102052	9kHz~3.6GHz	26/May/2023	25/May/2024
SENSE-15247_FS	Sporton	Sporton	V5.10.8.9	NA	NA	NA



Conducted Emissions at Powerline

Appendix A

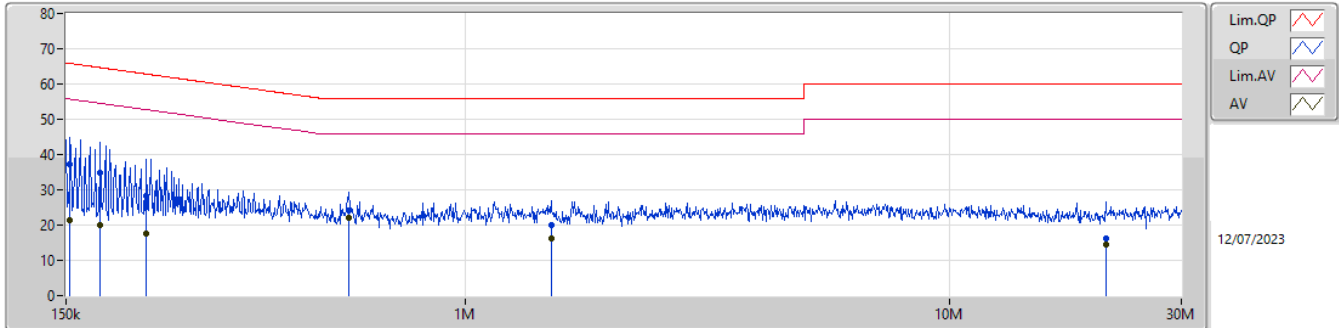
Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	AV	573.613k	22.07	46.00	-23.93	Line

Result

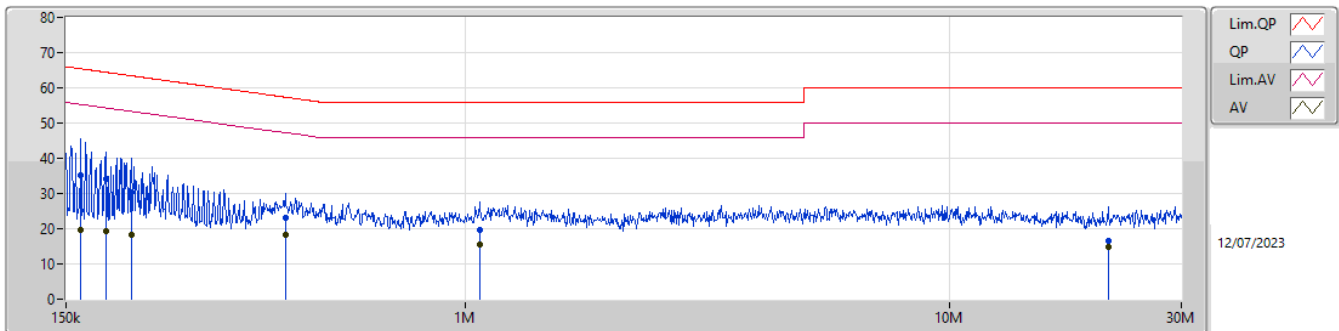
Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	QP	153.024k	37.15	65.83	-28.68	Line
Mode 1	Pass	AV	153.024k	21.50	55.83	-34.33	Line
Mode 1	Pass	QP	176.674k	34.85	64.64	-29.79	Line
Mode 1	Pass	AV	176.674k	19.93	54.64	-34.71	Line
Mode 1	Pass	QP	220.053k	28.23	62.81	-34.58	Line
Mode 1	Pass	AV	220.053k	17.43	52.81	-35.38	Line
Mode 1	Pass	QP	573.613k	24.08	56.00	-31.92	Line
Mode 1	Pass	AV	573.613k	22.07	46.00	-23.93	Line
Mode 1	Pass	QP	1.501M	19.87	56.00	-36.13	Line
Mode 1	Pass	AV	1.501M	16.09	46.00	-29.91	Line
Mode 1	Pass	QP	20.926M	16.13	60.00	-43.87	Line
Mode 1	Pass	AV	20.926M	14.53	50.00	-35.47	Line
Mode 1	Pass	QP	161.175k	35.08	65.41	-30.33	Neutral
Mode 1	Pass	AV	161.175k	19.64	55.41	-35.77	Neutral
Mode 1	Pass	QP	180.957k	34.29	64.43	-30.14	Neutral
Mode 1	Pass	AV	180.957k	19.38	54.43	-35.05	Neutral
Mode 1	Pass	QP	204.796k	30.19	63.42	-33.23	Neutral
Mode 1	Pass	AV	204.796k	18.17	53.42	-35.25	Neutral
Mode 1	Pass	QP	425.197k	22.94	57.34	-34.40	Neutral
Mode 1	Pass	AV	425.197k	18.19	47.34	-29.15	Neutral
Mode 1	Pass	QP	1.069M	19.75	56.00	-36.25	Neutral
Mode 1	Pass	AV	1.069M	15.49	46.00	-30.51	Neutral
Mode 1	Pass	QP	21.178M	16.56	60.00	-43.44	Neutral
Mode 1	Pass	AV	21.178M	14.86	50.00	-35.14	Neutral

Conducted Emissions at Powerline_Mode 1



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	153.024k	37.15	65.83	-28.68	19.61	Line	-	17.54	9.65	0.03	9.93
AV	153.024k	21.50	55.83	-34.33	19.61	Line	-	1.89	9.65	0.03	9.93
QP	176.674k	34.85	64.64	-29.79	19.61	Line	-	15.24	9.65	0.03	9.93
AV	176.674k	19.93	54.64	-34.71	19.61	Line	-	0.32	9.65	0.03	9.93
QP	220.053k	28.23	62.81	-34.58	19.61	Line	-	8.62	9.65	0.03	9.93
AV	220.053k	17.43	52.81	-35.38	19.61	Line	-	-2.18	9.65	0.03	9.93
QP	573.613k	24.08	56.00	-31.92	19.63	Line	-	4.45	9.64	0.04	9.95
AV	573.613k	22.07	46.00	-23.93	19.63	Line	-	2.44	9.64	0.04	9.95
QP	1.501M	19.87	56.00	-36.13	19.68	Line	-	0.19	9.67	0.07	9.94
AV	1.501M	16.09	46.00	-29.91	19.68	Line	-	-3.59	9.67	0.07	9.94
QP	20.926M	16.13	60.00	-43.87	20.04	Line	-	-3.91	9.79	0.28	9.97
AV	20.926M	14.53	50.00	-35.47	20.04	Line	-	-5.51	9.79	0.28	9.97

Conducted Emissions at Powerline_Mode 1



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	161.175k	35.08	65.41	-30.33	19.59	Neutral	-	15.49	9.63	0.03	9.93
AV	161.175k	19.64	55.41	-35.77	19.59	Neutral	-	0.05	9.63	0.03	9.93
QP	180.957k	34.29	64.43	-30.14	19.58	Neutral	-	14.71	9.62	0.03	9.93
AV	180.957k	19.38	54.43	-35.05	19.58	Neutral	-	-0.20	9.62	0.03	9.93
QP	204.796k	30.19	63.42	-33.23	19.58	Neutral	-	10.61	9.62	0.03	9.93
AV	204.796k	18.17	53.42	-35.25	19.58	Neutral	-	-1.41	9.62	0.03	9.93
QP	425.197k	22.94	57.34	-34.40	19.63	Neutral	-	3.31	9.63	0.04	9.96
AV	425.197k	18.19	47.34	-29.15	19.63	Neutral	-	-1.44	9.63	0.04	9.96
QP	1.069M	19.75	56.00	-36.25	19.64	Neutral	-	0.11	9.65	0.05	9.94
AV	1.069M	15.49	46.00	-30.51	19.64	Neutral	-	-4.15	9.65	0.05	9.94
QP	21.178M	16.56	60.00	-43.44	20.22	Neutral	-	-3.66	9.97	0.28	9.97
AV	21.178M	14.86	50.00	-35.14	20.22	Neutral	-	-5.36	9.97	0.28	9.97

**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)	730k	1.083M	1M08F1D	711.25k	1.068M
BT-LE(2Mbps)	1.348M	2.122M	2M12F1D	1.295M	2.108M

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

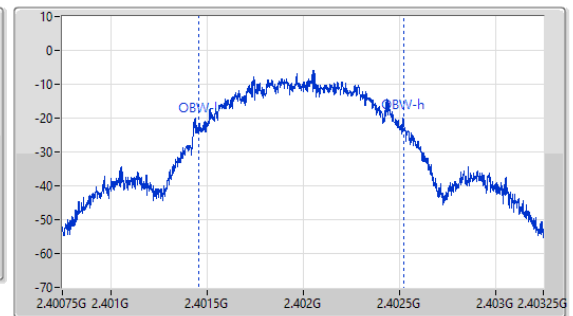
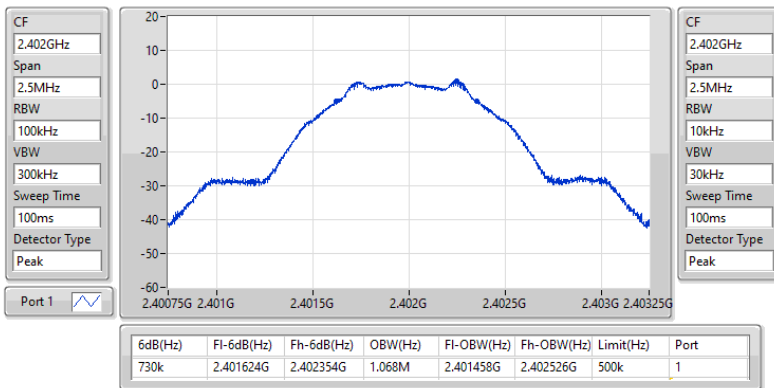
Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	730k	1.068M
2440MHz	Pass	500k	711.25k	1.083M
2480MHz	Pass	500k	720k	1.08M
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	500k	1.348M	2.111M
2440MHz	Pass	500k	1.295M	2.108M
2480MHz	Pass	500k	1.325M	2.122M

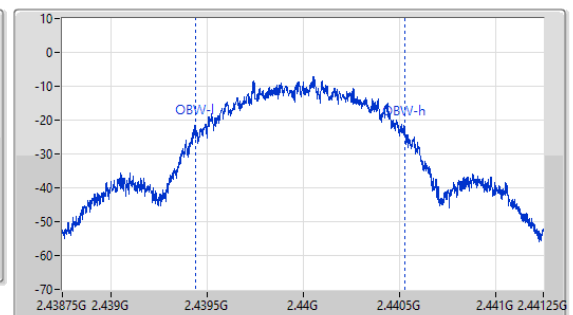
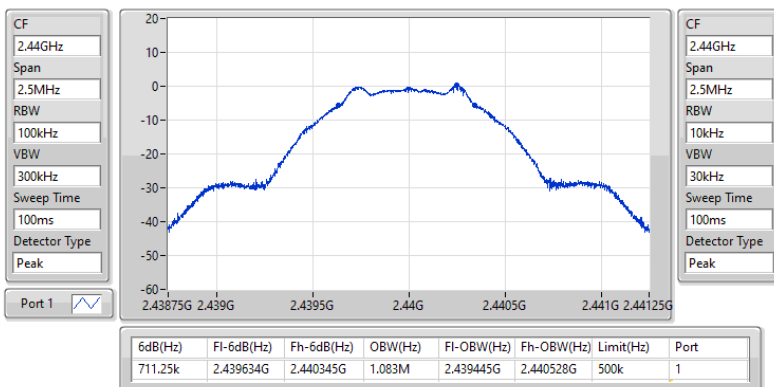
Port X-N dB = Port X 6dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

2.4-2.4835GHz_BT-LE(1Mbps)
EBW-DTS
2402MHz

29/06/2023


2.4-2.4835GHz_BT-LE(1Mbps)
EBW-DTS
2440MHz

29/06/2023

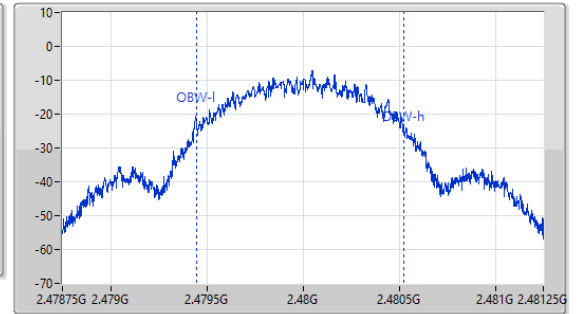
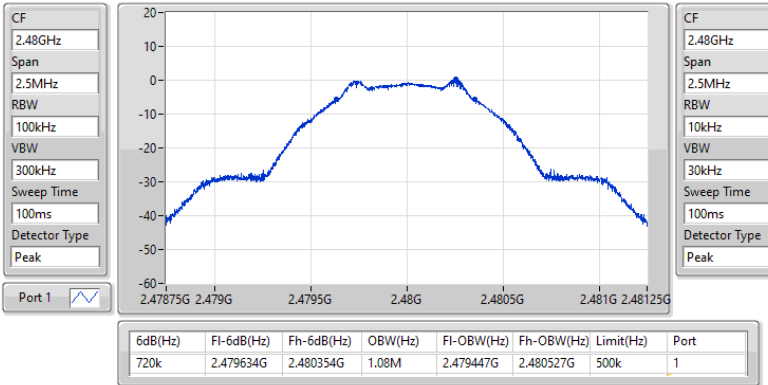


2.4-2.4835GHz_BT-LE(1Mbps)

EBW-DTS

2480MHz

29/06/2023

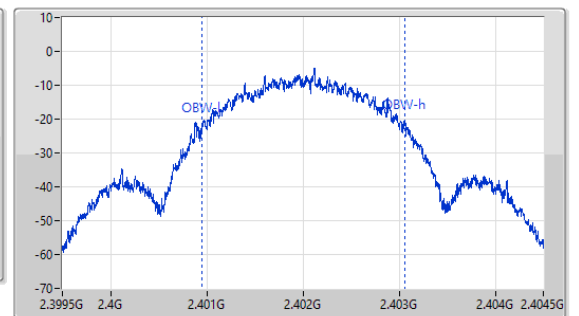
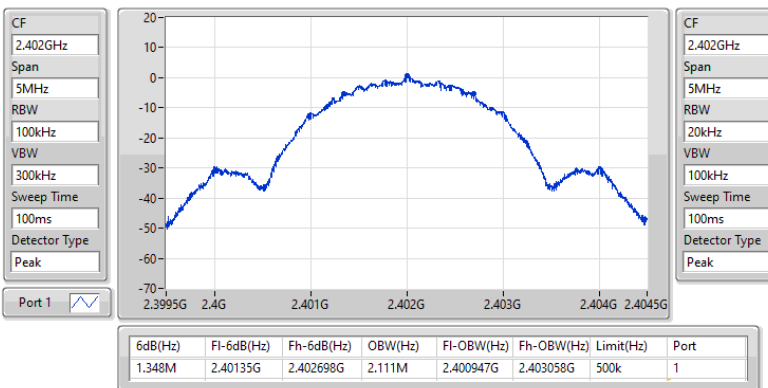


2.4-2.4835GHz_BT-LE(2Mbps)

EBW-DTS

2402MHz

29/06/2023

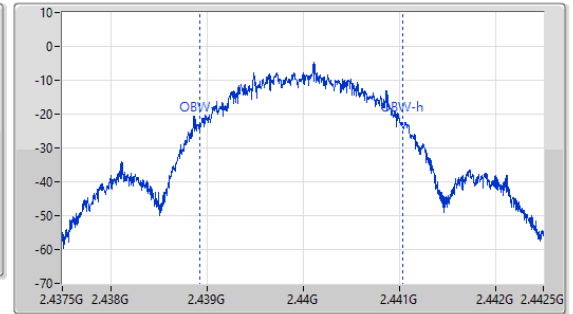
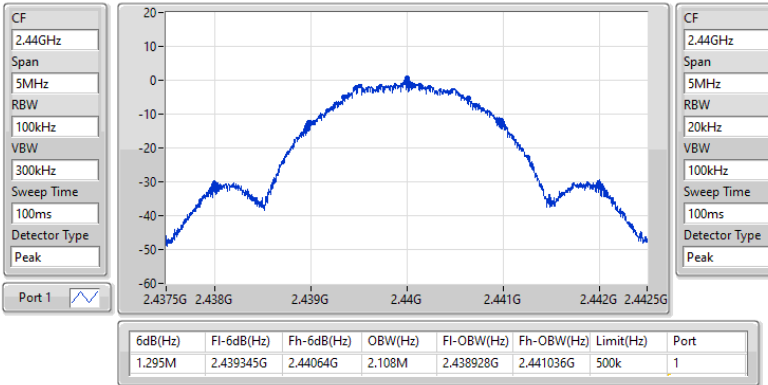


2.4-2.4835GHz_BT-LE(2Mbps)

EBW-DTS

2440MHz

29/06/2023

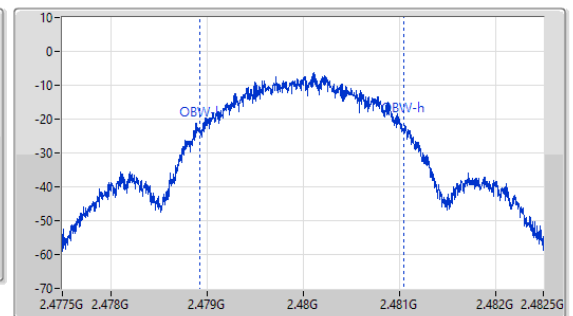
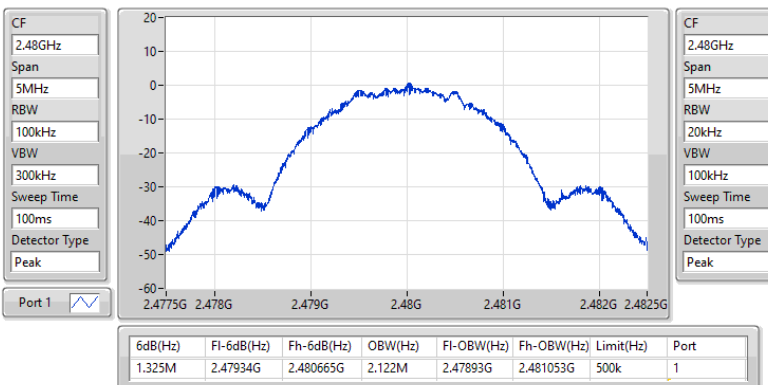


2.4-2.4835GHz_BT-LE(2Mbps)

EBW-DTS

2480MHz

29/06/2023





Summary

Mode	Total Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	1.93	0.00156
BT-LE(2Mbps)	2.12	0.00163



Result

Mode	Result	DG (dBi)	Total Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	3.30	1.93	30.00
2440MHz	Pass	3.30	0.82	30.00
2480MHz	Pass	3.30	0.71	30.00
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	3.30	2.10	30.00
2440MHz	Pass	3.30	2.12	30.00
2480MHz	Pass	3.30	2.00	30.00

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



Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-11.98
BT-LE(2Mbps)	-14.34

RBW = 3kHz;



Result

Mode	Result	DG (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	3.30	-11.98	8.00
2440MHz	Pass	3.30	-12.82	8.00
2480MHz	Pass	3.30	-12.57	8.00
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	3.30	-14.91	8.00
2440MHz	Pass	3.30	-14.34	8.00
2480MHz	Pass	3.30	-14.62	8.00

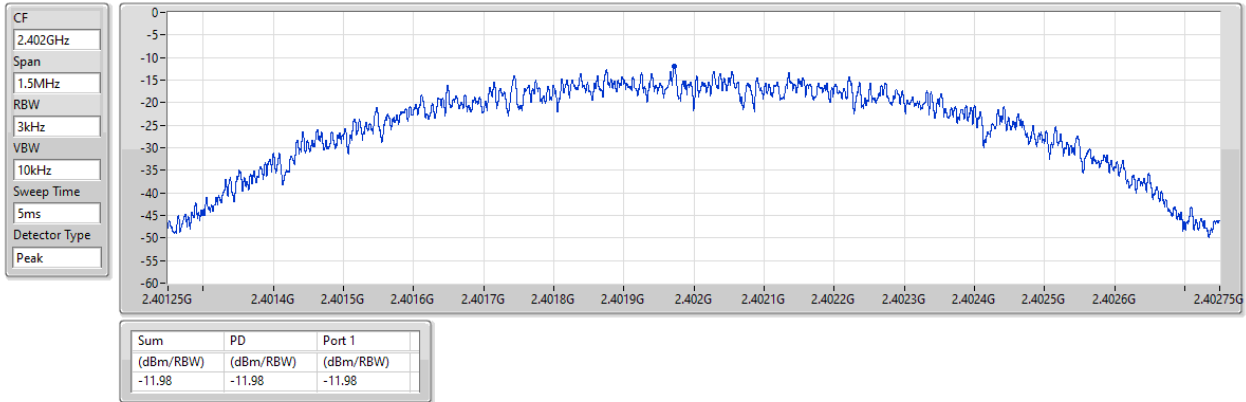
DG = Directional Gain; RBW = 3kHz;
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X Power Density;

2.4-2.4835GHz_BT-LE(1Mbps)

PSD

2402MHz

29/06/2023

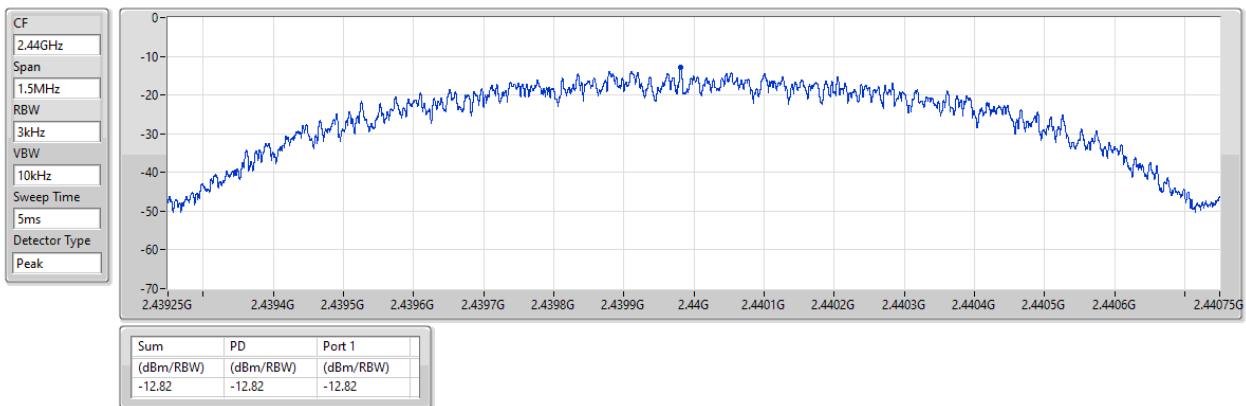


2.4-2.4835GHz_BT-LE(1Mbps)

PSD

2440MHz

29/06/2023



2.4-2.4835GHz_BT-LE(1Mbps)

PSD

2480MHz

29/06/2023

CF
2.48GHz

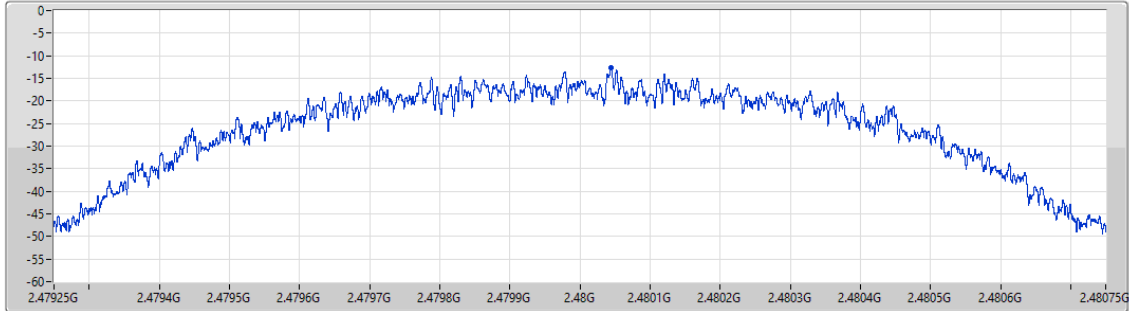
Span
1.5MHz

RBW
3kHz

VBW
10kHz

Sweep Time
5ms

Detector Type
Peak



Port 1

Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-12.57	-12.57	-12.57

2.4-2.4835GHz_BT-LE(2Mbps)

PSD

2402MHz

29/06/2023

CF
2.402GHz

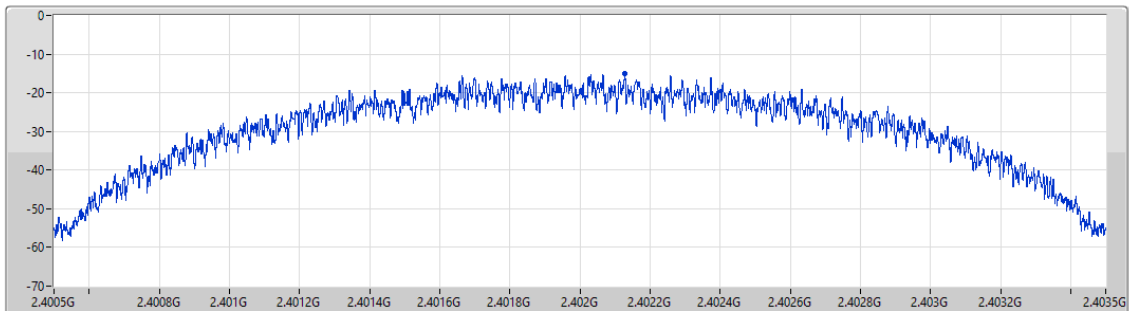
Span
3MHz

RBW
3kHz

VBW
10kHz

Sweep Time
5ms

Detector Type
Peak



Port 1

Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-14.91	-14.91	-14.91

2.4-2.4835GHz_BT-LE(2Mbps)

PSD

2440MHz

29/06/2023

CF
2.44GHz

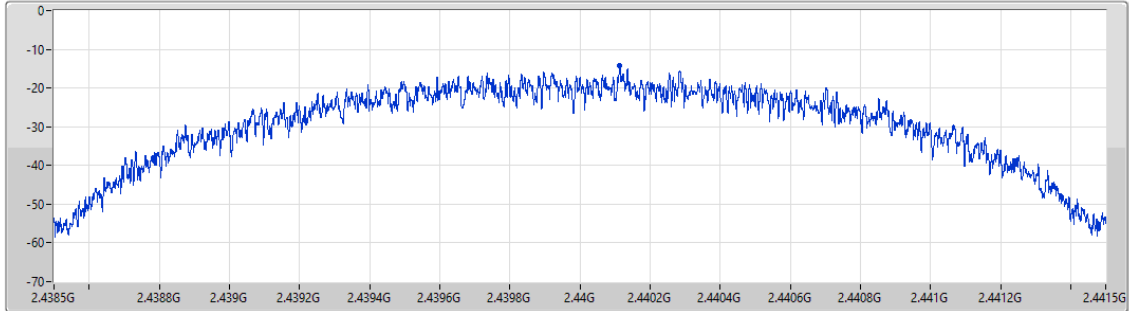
Span
3MHz

RBW
3kHz

VBW
10kHz

Sweep Time
5ms

Detector Type
Peak



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-14.34	-14.34	-14.34

2.4-2.4835GHz_BT-LE(2Mbps)

PSD

2480MHz

29/06/2023

CF
2.48GHz

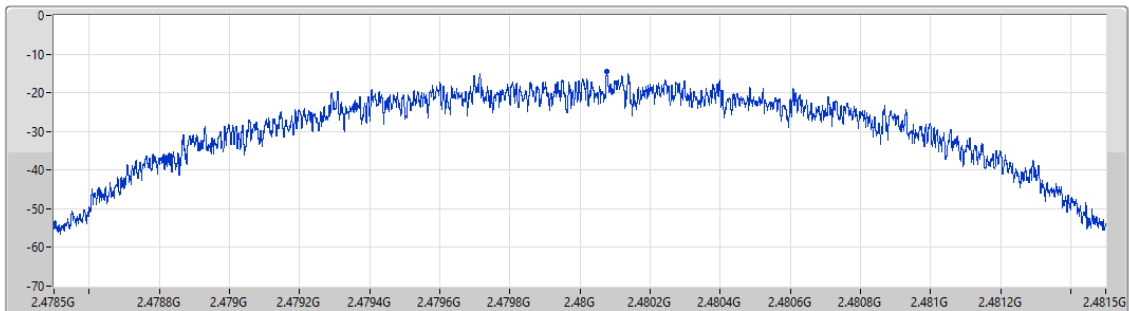
Span
3MHz

RBW
3kHz

VBW
10kHz

Sweep Time
5ms

Detector Type
Peak



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-14.62	-14.62	-14.62



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	2.40217G	0.92	-29.08	2.004G	-53.91	2.39208G	-47.58	2.4G	-56.65	2.50014G	-51.45	21.60303G	-45.01	1
BT-LE(2Mbps)	Pass	2.43991G	-0.32	-30.32	2.18143G	-54.41	2.4G	-30.47	2.4G	-30.40	2.50278G	-52.98	21.67333G	-43.95	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	2.40217G	0.92	-29.08	1.71848G	-55.07	2.4G	-48.03	2.4G	-48.86	2.50038G	-53.30	21.84205G	-44.67	1
2440MHz	Pass	2.40217G	0.92	-29.08	2.004G	-53.91	2.39208G	-47.58	2.4G	-56.65	2.50014G	-51.45	21.60303G	-45.01	1
2480MHz	Pass	2.40217G	0.92	-29.08	2.1262G	-54.14	2.4G	-50.10	2.4G	-53.42	2.50326G	-51.54	21.64521G	-43.99	1
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.43991G	-0.32	-30.32	2.18143G	-54.41	2.4G	-30.47	2.4G	-30.40	2.50278G	-52.98	21.67333G	-43.95	1
2440MHz	Pass	2.43991G	-0.32	-30.32	2.19318G	-54.98	2.39204G	-44.73	2.4G	-55.35	2.50058G	-52.26	21.66771G	-44.83	1
2480MHz	Pass	2.43991G	-0.32	-30.32	2.16733G	-54.93	2.39996G	-51.51	2.4G	-49.15	2.50326G	-51.95	21.59459G	-44.33	1

2.4-2.4835GHz_BT-LE(1Mbps)

CSEndB-DTS

2402MHz

29/06/2023

RBW (Hz)
100k
VBW (Hz)
300k
Detector
Peak



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40217G	0.92	-29.08	1.71848G	-55.07	2.4G	-48.03	2.4G	-48.86	2.50038G	-53.30	21.84205G	-44.67	1

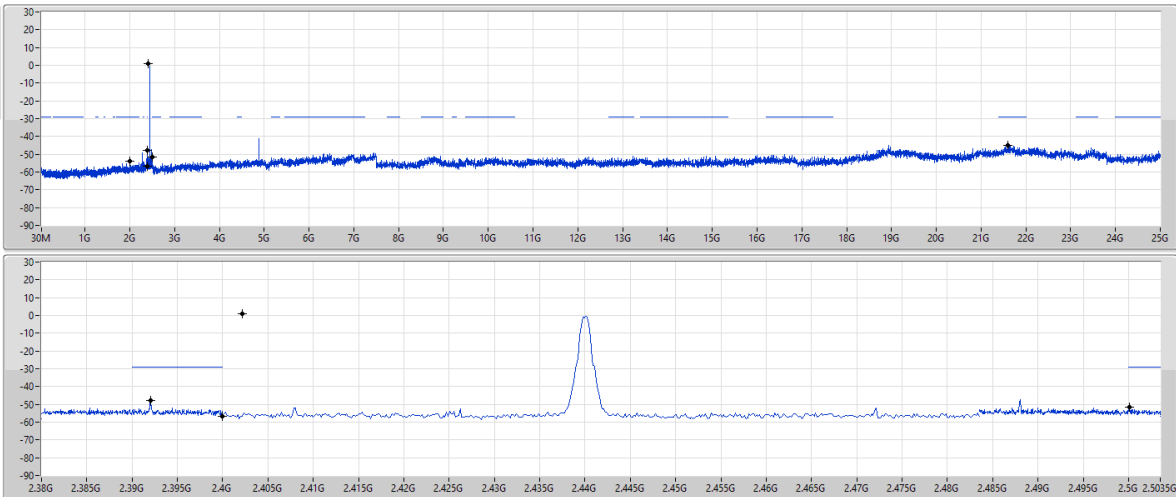
2.4-2.4835GHz_BT-LE(1Mbps)

CSEndB-DTS

2440MHz

29/06/2023

RBW (Hz)
100k
VBW (Hz)
300k
Detector
Peak

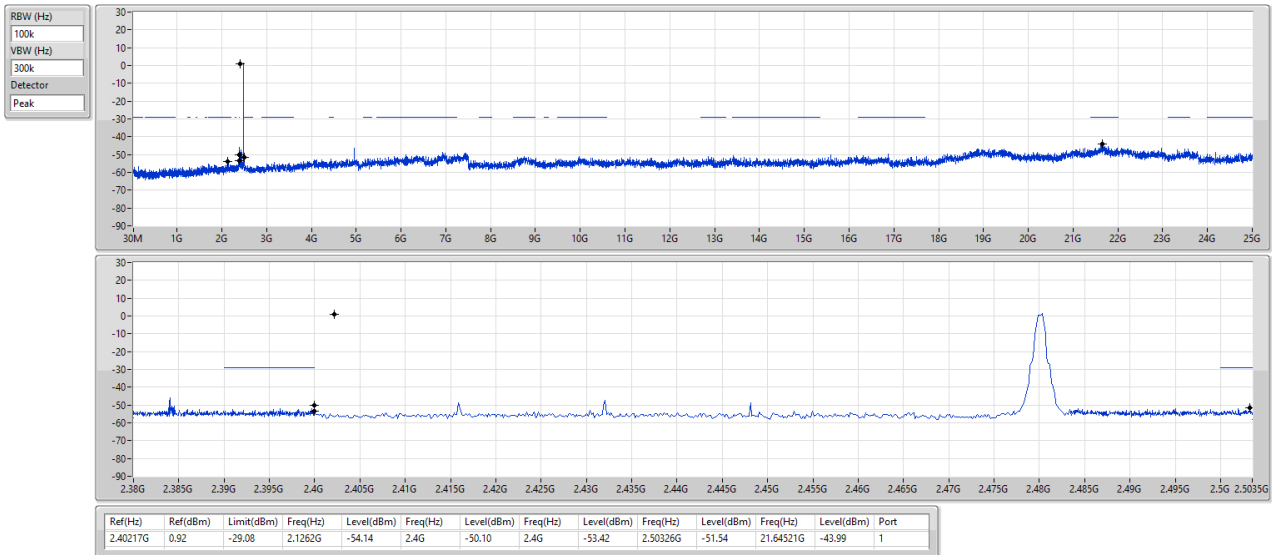


Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40217G	0.92	-29.08	2.004G	-53.91	2.39208G	-47.38	2.4G	-56.65	2.50014G	-51.45	21.60303G	-45.01	1

2.4-2.4835GHz_BT-LE(1Mbps)

CSEndB-DTS

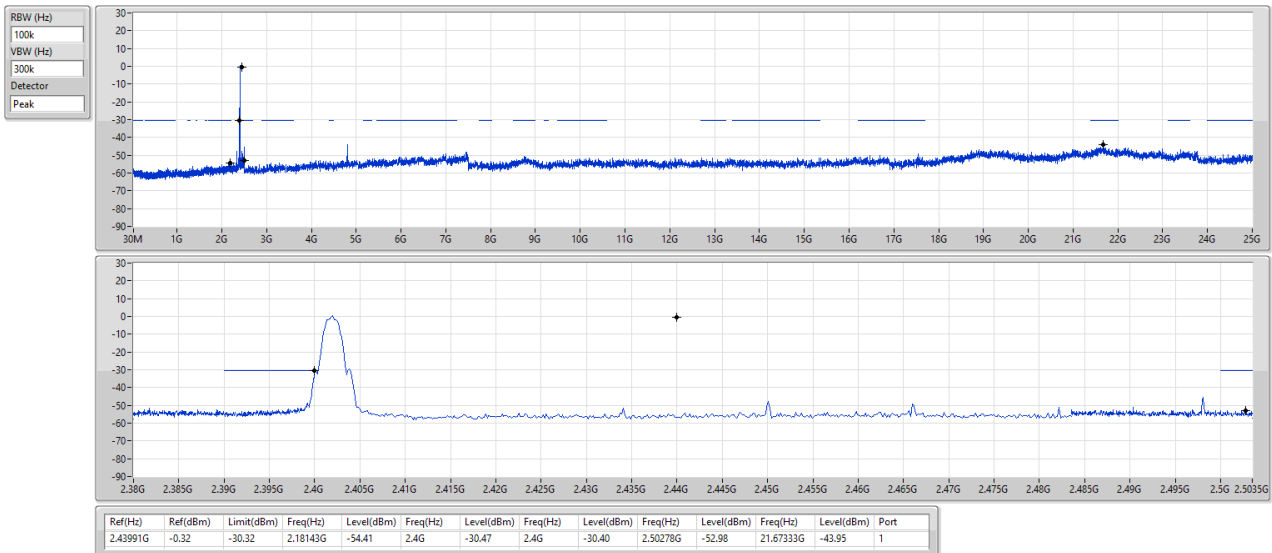
2480MHz



2.4-2.4835GHz_BT-LE(2Mbps)

CSEndB-DTS

2402MHz



2.4-2.4835GHz_BT-LE(2Mbps)

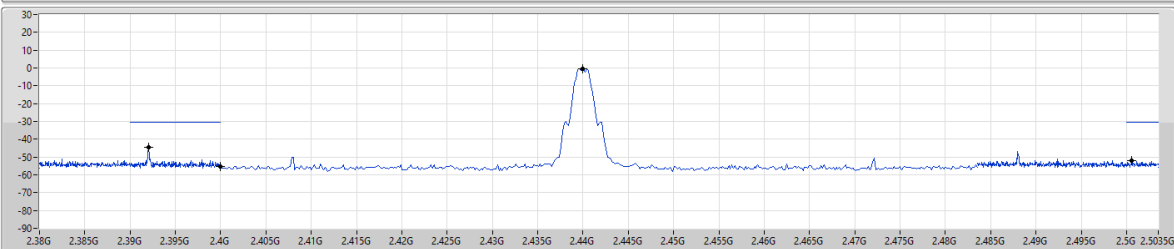
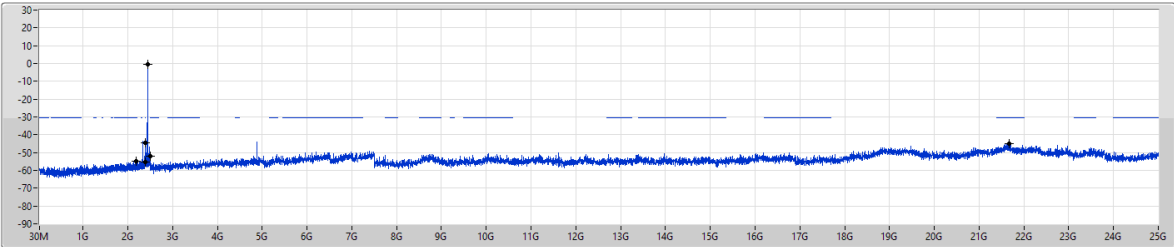
CSEndB-DTS

2440MHz

29/06/2023

RBW (Hz)
100k
VBW (Hz)
300k
Detector
Peak

Port 1



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
2.43991G	-0.32	-30.32	2.19318G	-54.98	2.39204G	-44.73	2.4G	-55.35	2.50058G	-52.26	2.166771G	-44.83	1

2.4-2.4835GHz_BT-LE(2Mbps)

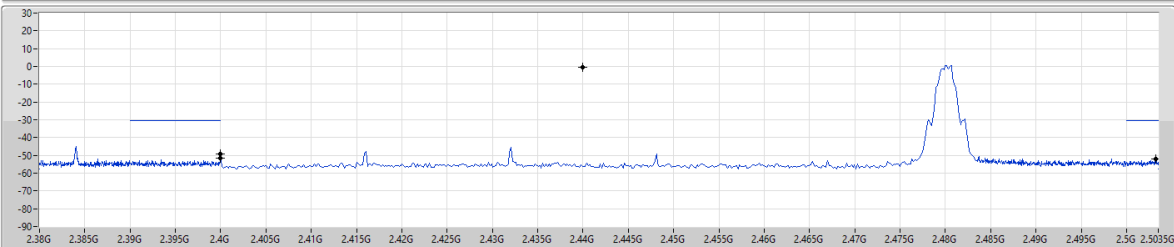
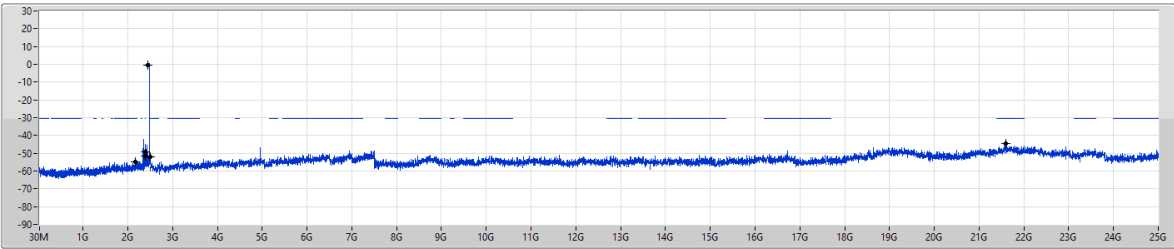
CSEndB-DTS

2480MHz

29/06/2023

RBW (Hz)
100k
VBW (Hz)
300k
Detector
Peak

Port 1



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
2.43991G	-0.32	-30.32	2.16733G	-54.93	2.39996G	-51.51	2.4G	-49.15	2.50326G	-51.95	2.159459G	-44.33	1



Summary

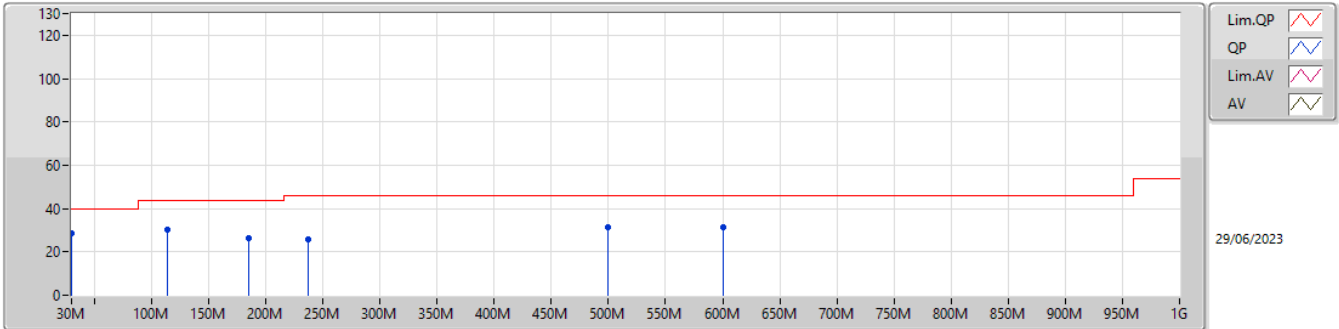
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-
BT-LE(2Mbps)	Pass	PK	31.94M	29.71	40.00	-10.29	3	Horizontal	360	1.00

Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	PK	30M	28.34	40.00	-11.66	3	Vertical	0	1.00
2402MHz	Pass	PK	113.42M	30.36	43.50	-13.14	3	Vertical	0	1.00
2402MHz	Pass	PK	185.2M	26.06	43.50	-17.44	3	Vertical	0	1.00
2402MHz	Pass	PK	237.58M	26.05	46.00	-19.95	3	Vertical	0	1.00
2402MHz	Pass	PK	499.48M	31.62	46.00	-14.38	3	Vertical	0	1.00
2402MHz	Pass	PK	600.36M	31.44	46.00	-14.56	3	Vertical	0	1.00
2402MHz	Pass	PK	31.94M	29.71	40.00	-10.29	3	Horizontal	360	1.00
2402MHz	Pass	PK	97.9M	27.87	43.50	-15.63	3	Horizontal	360	1.00
2402MHz	Pass	PK	134.76M	31.08	43.50	-12.42	3	Horizontal	360	1.00
2402MHz	Pass	PK	235.64M	29.59	46.00	-16.41	3	Horizontal	360	1.00
2402MHz	Pass	PK	499.48M	28.46	46.00	-17.54	3	Horizontal	360	1.00
2402MHz	Pass	PK	716.76M	33.03	46.00	-12.97	3	Horizontal	360	1.00

2.4-2.4835GHz_BT-LE(2Mbps)

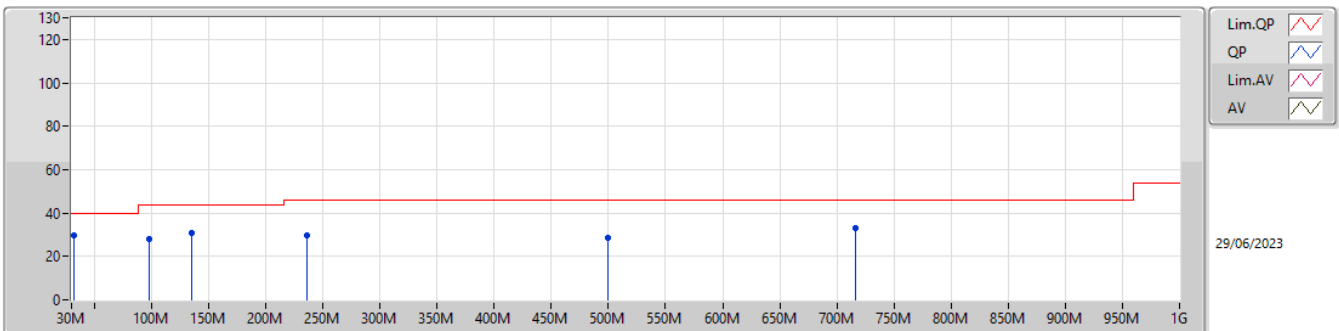
2402MHz_TX



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Raw	AF	CL	PA				
(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(dB)	(m)		(°)	(m)	(dBuV)	(dB)	(dB)	(dB)				
PK	30M	28.34	40.00	-11.66	-12.84	3	Vertical	0	1.00	41.18	23.71	0.57	37.12				
PK	113.42M	30.36	43.50	-13.14	-19.08	3	Vertical	0	1.00	49.44	16.30	1.17	36.55				
PK	185.2M	26.06	43.50	-17.44	-20.77	3	Vertical	0	1.00	46.83	14.06	1.54	36.37				
PK	237.58M	26.05	46.00	-19.95	-18.46	3	Vertical	0	1.00	44.51	16.13	1.78	36.37				
PK	499.48M	31.62	46.00	-14.38	-11.10	3	Vertical	0	1.00	42.72	23.06	2.73	36.89				
PK	600.36M	31.44	46.00	-14.56	-9.32	3	Vertical	0	1.00	40.76	24.73	3.03	37.08				

2.4-2.4835GHz_BT-LE(2Mbps)

2402MHz_TX



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Raw	AF	CL	PA				
(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(dB)	(m)		(°)	(m)	(dBuV)	(dB)	(dB)	(dB)				
PK	31.94M	29.71	40.00	-10.29	-13.83	3	Horizontal	360	1.00	43.54	22.68	0.59	37.10				
PK	97.9M	27.87	43.50	-15.63	-20.50	3	Horizontal	360	1.00	48.37	15.01	1.10	36.61				
PK	134.76M	31.08	43.50	-12.42	-18.39	3	Horizontal	360	1.00	49.47	16.73	1.28	36.40				
PK	235.64M	29.59	46.00	-16.41	-18.68	3	Horizontal	360	1.00	48.27	15.91	1.77	36.36				
PK	499.48M	28.46	46.00	-17.54	-11.10	3	Horizontal	360	1.00	39.56	23.06	2.73	36.89				
PK	716.76M	33.03	46.00	-12.97	-7.90	3	Horizontal	360	1.00	40.93	26.10	3.35	37.35				



Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	AV	4.80399G	53.89	54.00	-0.11	3	Horizontal	13	2.62
BT-LE(2Mbps)	Pass	AV	7.31874G	52.85	54.00	-1.15	3	Horizontal	170	2.13

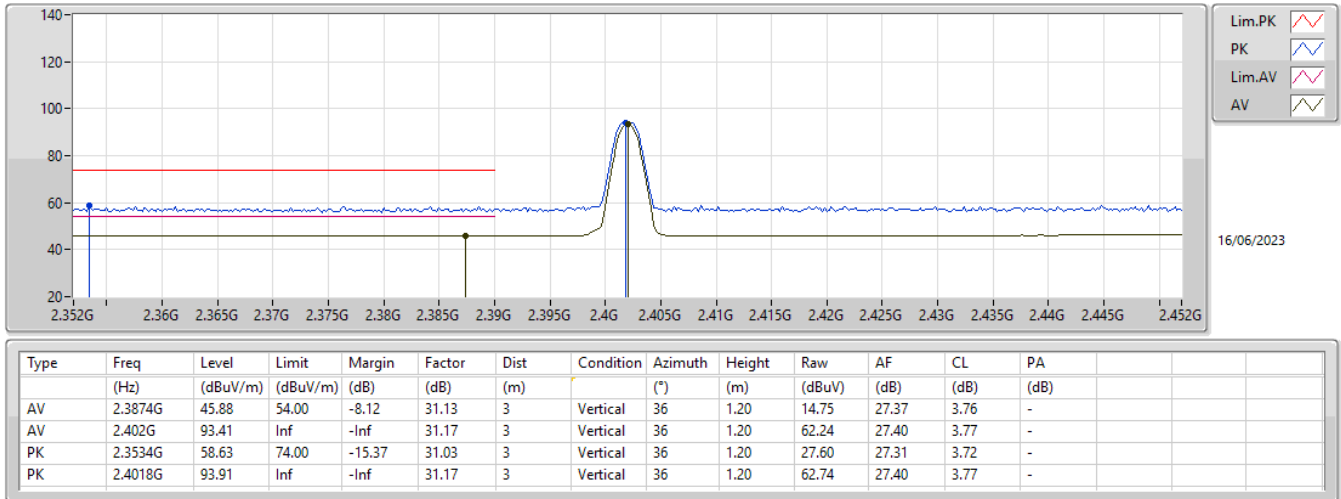
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.3874G	45.88	54.00	-8.12	3	Vertical	36	1.20
2402MHz	Pass	AV	2.402G	93.41	Inf	-Inf	3	Vertical	36	1.20
2402MHz	Pass	PK	2.3534G	58.63	74.00	-15.37	3	Vertical	36	1.20
2402MHz	Pass	PK	2.4018G	93.91	Inf	-Inf	3	Vertical	36	1.20
2402MHz	Pass	AV	2.354G	46.85	54.00	-7.15	3	Horizontal	10	1.46
2402MHz	Pass	AV	2.402G	101.19	Inf	-Inf	3	Horizontal	10	1.46
2402MHz	Pass	PK	2.3542G	60.50	74.00	-13.50	3	Horizontal	10	1.46
2402MHz	Pass	PK	2.4018G	101.61	Inf	-Inf	3	Horizontal	10	1.46
2402MHz	Pass	AV	4.804G	49.16	54.00	-4.84	3	Vertical	266	1.28
2402MHz	Pass	PK	4.80338G	54.60	74.00	-19.40	3	Vertical	266	1.28
2402MHz	Pass	AV	4.80399G	53.89	54.00	-0.11	3	Horizontal	13	2.62
2402MHz	Pass	PK	4.80355G	57.87	74.00	-16.13	3	Horizontal	13	2.62
2440MHz	Pass	AV	2.376G	46.22	54.00	-7.78	3	Vertical	58	1.11
2440MHz	Pass	AV	2.44G	93.11	Inf	-Inf	3	Vertical	58	1.11
2440MHz	Pass	AV	2.4996G	47.06	54.00	-6.94	3	Vertical	58	1.11
2440MHz	Pass	PK	2.3764G	58.61	74.00	-15.39	3	Vertical	58	1.11
2440MHz	Pass	PK	2.4404G	93.59	Inf	-Inf	3	Vertical	58	1.11
2440MHz	Pass	PK	2.4956G	59.20	74.00	-14.80	3	Vertical	58	1.11
2440MHz	Pass	AV	2.3884G	46.77	54.00	-7.23	3	Horizontal	16	2.21
2440MHz	Pass	AV	2.44G	100.15	Inf	-Inf	3	Horizontal	16	2.21
2440MHz	Pass	AV	2.5G	47.46	54.00	-6.54	3	Horizontal	16	2.21
2440MHz	Pass	PK	2.354G	58.74	74.00	-15.26	3	Horizontal	16	2.21
2440MHz	Pass	PK	2.4396G	100.59	Inf	-Inf	3	Horizontal	16	2.21
2440MHz	Pass	PK	2.494G	59.45	74.00	-14.55	3	Horizontal	16	2.21
2440MHz	Pass	AV	4.87998G	50.34	54.00	-3.66	3	Vertical	339	2.58
2440MHz	Pass	AV	7.31977G	48.74	54.00	-5.26	3	Vertical	94	1.34
2440MHz	Pass	PK	4.88059G	55.28	74.00	-18.72	3	Vertical	339	2.58
2440MHz	Pass	PK	7.31935G	57.27	74.00	-16.73	3	Vertical	94	1.34
2440MHz	Pass	AV	4.87996G	52.46	54.00	-1.54	3	Horizontal	17	2.55
2440MHz	Pass	AV	7.31992G	50.58	54.00	-3.42	3	Horizontal	44	1.07
2440MHz	Pass	PK	4.87945G	56.95	74.00	-17.05	3	Horizontal	17	2.55
2440MHz	Pass	PK	7.31907G	58.58	74.00	-15.42	3	Horizontal	44	1.07
2480MHz	Pass	AV	2.48G	90.26	Inf	-Inf	3	Vertical	58	1.29
2480MHz	Pass	AV	2.4998G	47.04	54.00	-6.96	3	Vertical	58	1.29
2480MHz	Pass	PK	2.4796G	90.81	Inf	-Inf	3	Vertical	58	1.29
2480MHz	Pass	PK	2.49G	59.11	74.00	-14.89	3	Vertical	58	1.29
2480MHz	Pass	AV	2.48G	98.98	Inf	-Inf	3	Horizontal	18	2.42
2480MHz	Pass	AV	2.4835G	47.50	54.00	-6.50	3	Horizontal	18	2.42
2480MHz	Pass	PK	2.4796G	99.48	Inf	-Inf	3	Horizontal	18	2.42
2480MHz	Pass	PK	2.4846G	58.93	74.00	-15.07	3	Horizontal	18	2.42
2480MHz	Pass	AV	4.95997G	51.52	54.00	-2.48	3	Vertical	338	2.83
2480MHz	Pass	AV	7.43977G	50.57	54.00	-3.43	3	Vertical	297	1.08
2480MHz	Pass	PK	4.95976G	56.23	74.00	-17.77	3	Vertical	338	2.83
2480MHz	Pass	PK	7.43955G	58.25	74.00	-15.75	3	Vertical	297	1.08
2480MHz	Pass	AV	4.95996G	53.65	54.00	-0.35	3	Horizontal	5	2.88
2480MHz	Pass	AV	7.43984G	50.67	54.00	-3.33	3	Horizontal	41	1.04
2480MHz	Pass	PK	4.96054G	57.95	74.00	-16.05	3	Horizontal	5	2.88
2480MHz	Pass	PK	7.44076G	58.48	74.00	-15.52	3	Horizontal	41	1.04
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.387G	46.18	54.00	-7.82	3	Vertical	353	2.27
2402MHz	Pass	AV	2.402G	91.90	Inf	-Inf	3	Vertical	353	2.27
2402MHz	Pass	PK	2.3802G	58.39	74.00	-15.61	3	Vertical	353	2.27
2402MHz	Pass	PK	2.4016G	93.43	Inf	-Inf	3	Vertical	353	2.27
2402MHz	Pass	AV	2.3542G	47.15	54.00	-6.85	3	Horizontal	13	1.07
2402MHz	Pass	AV	2.402G	100.74	Inf	-Inf	3	Horizontal	13	1.07
2402MHz	Pass	PK	2.3538G	61.26	74.00	-12.74	3	Horizontal	13	1.07
2402MHz	Pass	PK	2.4026G	102.14	Inf	-Inf	3	Horizontal	13	1.07
2402MHz	Pass	AV	4.80329G	45.66	54.00	-8.34	3	Vertical	245	1.07
2402MHz	Pass	PK	4.80306G	54.77	74.00	-19.23	3	Vertical	245	1.07
2402MHz	Pass	AV	4.80339G	50.24	54.00	-3.76	3	Horizontal	2	2.62

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
2402MHz	Pass	PK	4.80284G	57.90	74.00	-16.10	3	Horizontal	2	2.62
2440MHz	Pass	AV	2.3764G	46.01	54.00	-7.99	3	Vertical	42	1.00
2440MHz	Pass	AV	2.44G	91.25	Inf	-Inf	3	Vertical	42	1.00
2440MHz	Pass	AV	2.5G	46.66	54.00	-7.34	3	Vertical	42	1.00
2440MHz	Pass	PK	2.3464G	57.94	74.00	-16.06	3	Vertical	42	1.00
2440MHz	Pass	PK	2.4404G	92.77	Inf	-Inf	3	Vertical	42	1.00
2440MHz	Pass	PK	2.498G	59.31	74.00	-14.69	3	Vertical	42	1.00
2440MHz	Pass	AV	2.376G	46.73	54.00	-7.27	3	Horizontal	10	2.09
2440MHz	Pass	AV	2.44G	99.49	Inf	-Inf	3	Horizontal	10	2.09
2440MHz	Pass	AV	2.4876G	47.10	54.00	-6.90	3	Horizontal	10	2.09
2440MHz	Pass	PK	2.3764G	58.68	74.00	-15.32	3	Horizontal	10	2.09
2440MHz	Pass	PK	2.4396G	100.89	Inf	-Inf	3	Horizontal	10	2.09
2440MHz	Pass	PK	2.4884G	59.89	74.00	-14.11	3	Horizontal	10	2.09
2440MHz	Pass	AV	4.87942G	46.48	54.00	-7.52	3	Vertical	335	2.37
2440MHz	Pass	AV	7.31872G	51.22	54.00	-2.78	3	Vertical	290	1.18
2440MHz	Pass	PK	4.87896G	54.98	74.00	-19.02	3	Vertical	335	2.37
2440MHz	Pass	PK	7.31843G	59.80	74.00	-14.20	3	Vertical	290	1.18
2440MHz	Pass	AV	4.8795G	49.66	54.00	-4.34	3	Horizontal	5	2.94
2440MHz	Pass	AV	7.31874G	52.85	54.00	-1.15	3	Horizontal	170	2.13
2440MHz	Pass	PK	4.87899G	57.05	74.00	-16.95	3	Horizontal	5	2.94
2440MHz	Pass	PK	7.31835G	61.06	74.00	-12.94	3	Horizontal	170	2.13
2480MHz	Pass	AV	2.48G	89.05	Inf	-Inf	3	Vertical	59	1.00
2480MHz	Pass	AV	2.4835G	47.93	54.00	-6.07	3	Vertical	59	1.00
2480MHz	Pass	PK	2.4806G	90.67	Inf	-Inf	3	Vertical	59	1.00
2480MHz	Pass	PK	2.4844G	59.74	74.00	-14.26	3	Vertical	59	1.00
2480MHz	Pass	AV	2.48G	98.28	Inf	-Inf	3	Horizontal	16	2.43
2480MHz	Pass	AV	2.4835G	51.63	54.00	-2.37	3	Horizontal	16	2.43
2480MHz	Pass	PK	2.4804G	99.86	Inf	-Inf	3	Horizontal	16	2.43
2480MHz	Pass	PK	2.4835G	60.86	74.00	-13.14	3	Horizontal	16	2.43
2480MHz	Pass	AV	4.96072G	46.87	54.00	-7.13	3	Vertical	334	2.83
2480MHz	Pass	AV	7.44119G	52.17	54.00	-1.83	3	Vertical	296	1.09
2480MHz	Pass	PK	4.95895G	55.07	74.00	-18.93	3	Vertical	334	2.83
2480MHz	Pass	PK	7.44135G	60.46	74.00	-13.54	3	Vertical	296	1.09
2480MHz	Pass	AV	4.9607G	49.03	54.00	-4.97	3	Horizontal	4	2.76
2480MHz	Pass	AV	7.44122G	52.21	54.00	-1.79	3	Horizontal	44	1.05
2480MHz	Pass	PK	4.96094G	56.68	74.00	-17.32	3	Horizontal	4	2.76
2480MHz	Pass	PK	7.44163G	60.32	74.00	-13.68	3	Horizontal	44	1.05

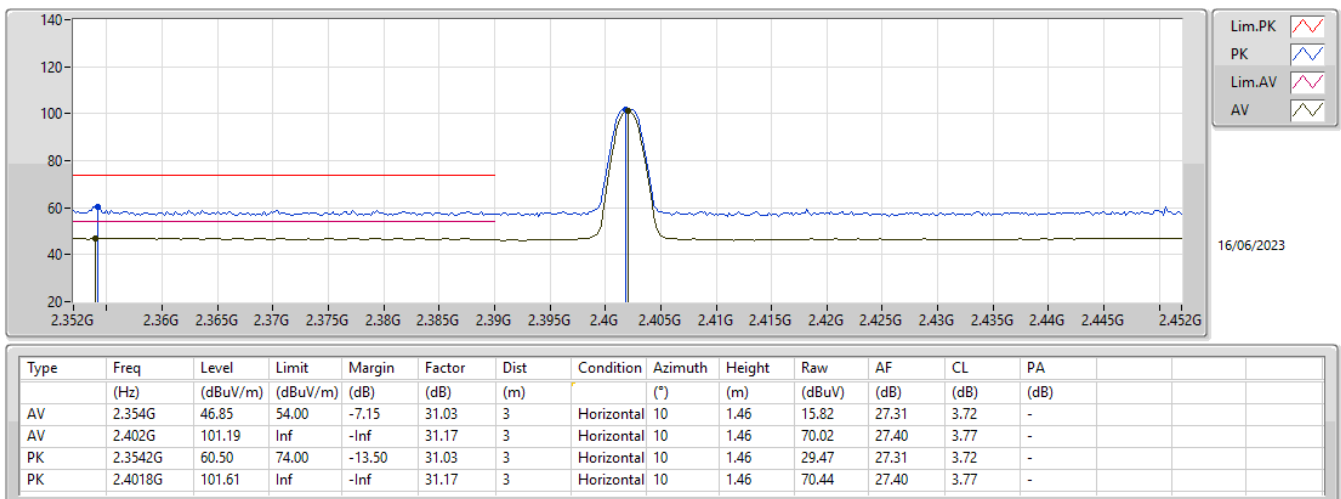
2.4-2.4835GHz_BT-LE(1Mbps)

2402MHz_TX



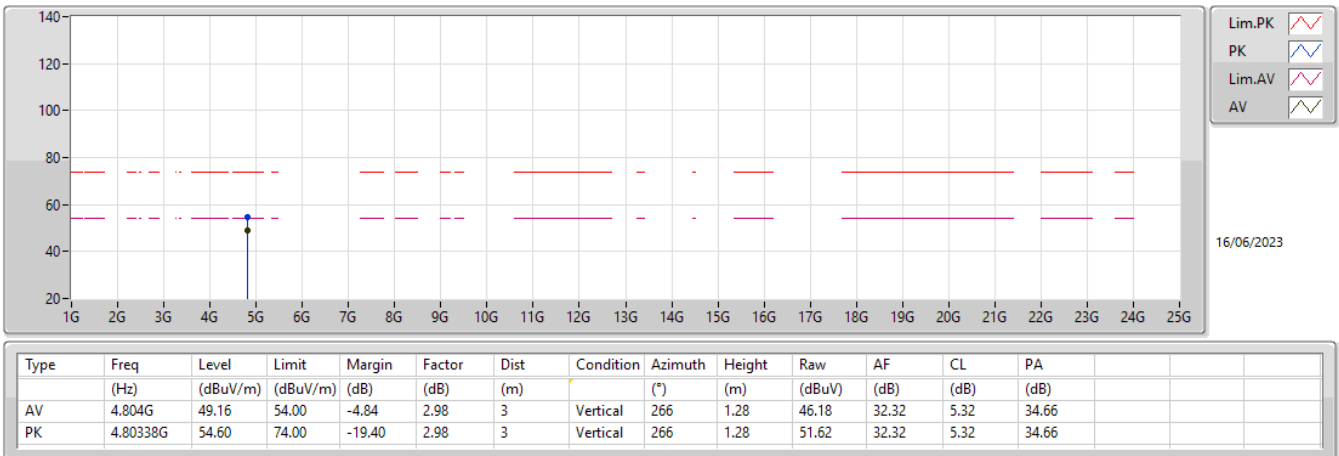
2.4-2.4835GHz_BT-LE(1Mbps)

2402MHz_TX



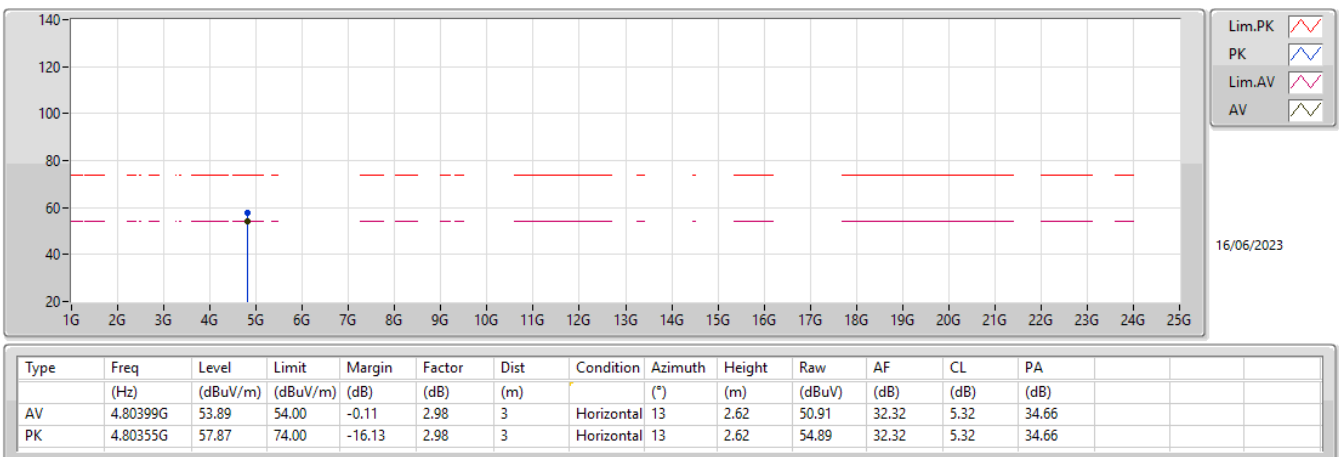
2.4-2.4835GHz_BT-LE(1Mbps)

2402MHz_TX



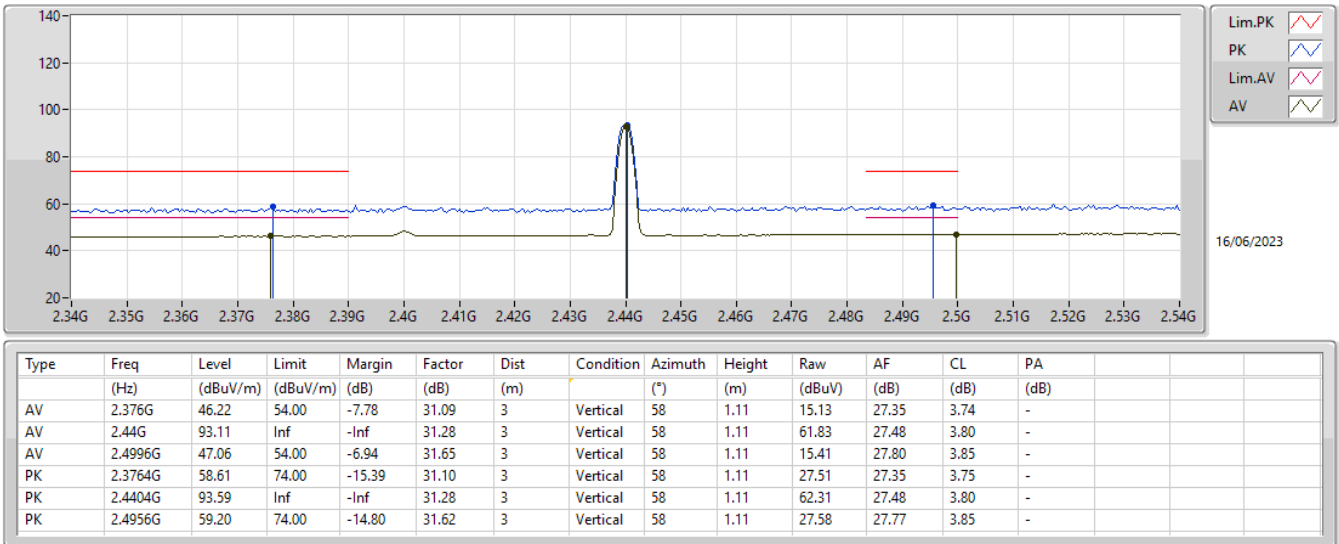
2.4-2.4835GHz_BT-LE(1Mbps)

2402MHz_TX



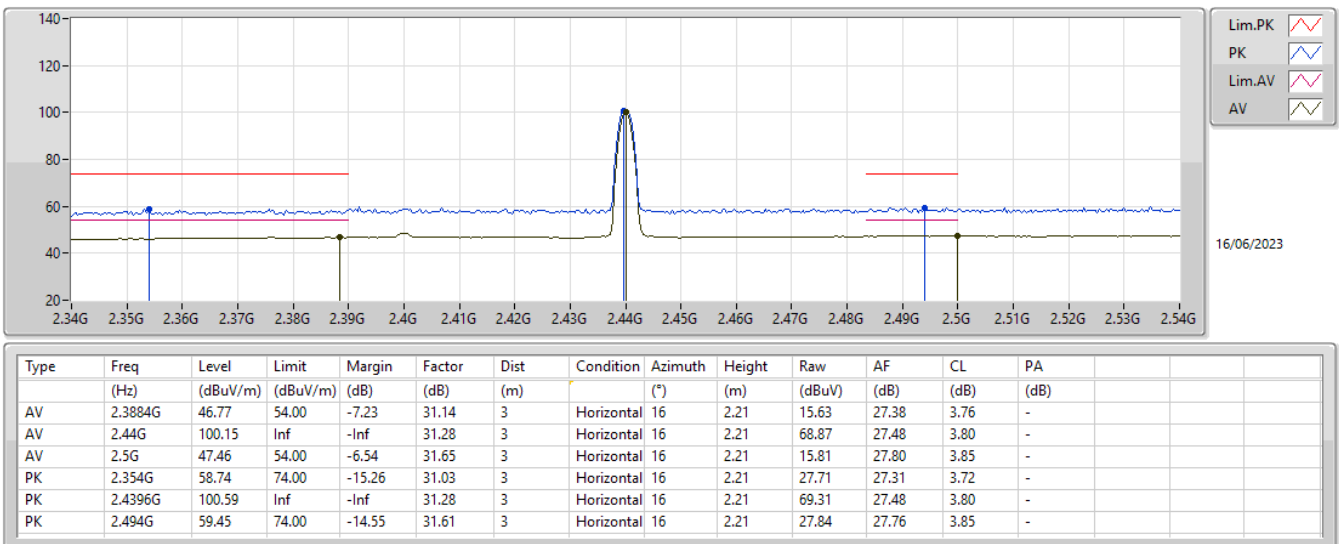
2.4-2.4835GHz_BT-LE(1Mbps)

2440MHz_TX



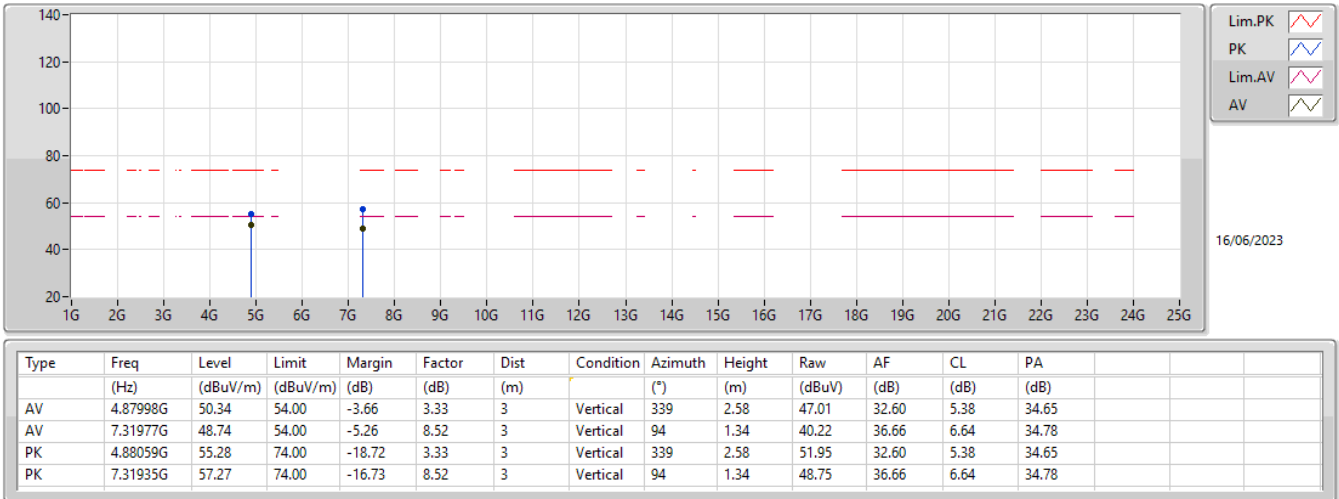
2.4-2.4835GHz_BT-LE(1Mbps)

2440MHz_TX



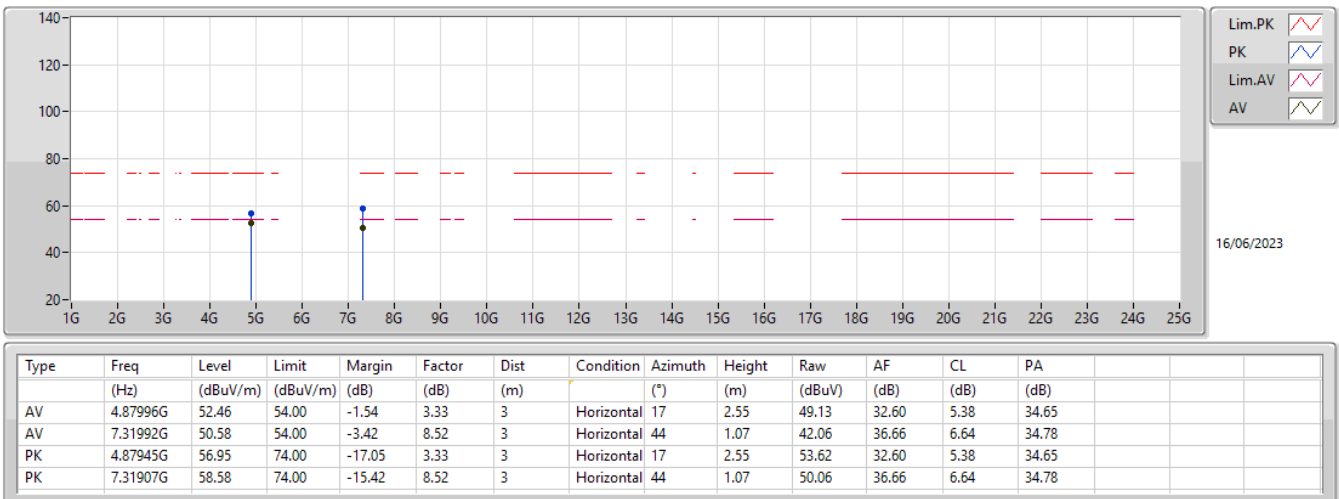
2.4-2.4835GHz_BT-LE(1Mbps)

2440MHz_TX



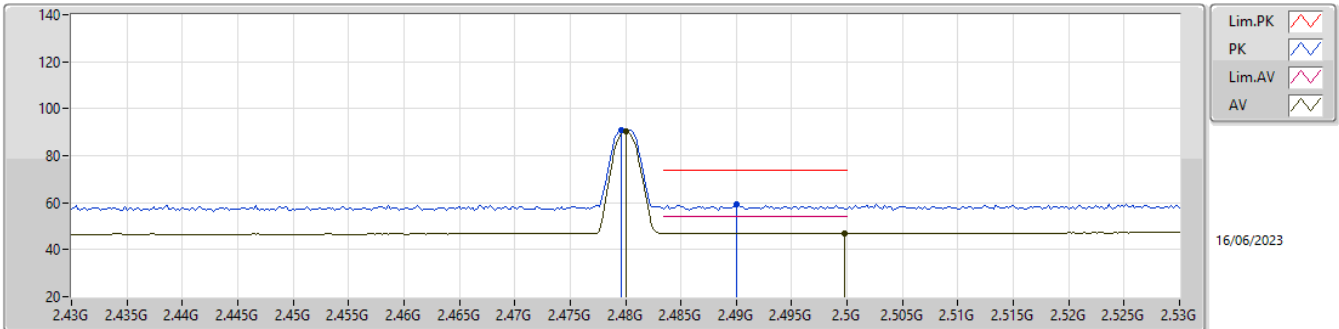
2.4-2.4835GHz_BT-LE(1Mbps)

2440MHz_TX



2.4-2.4835GHz_BT-LE(1Mbps)

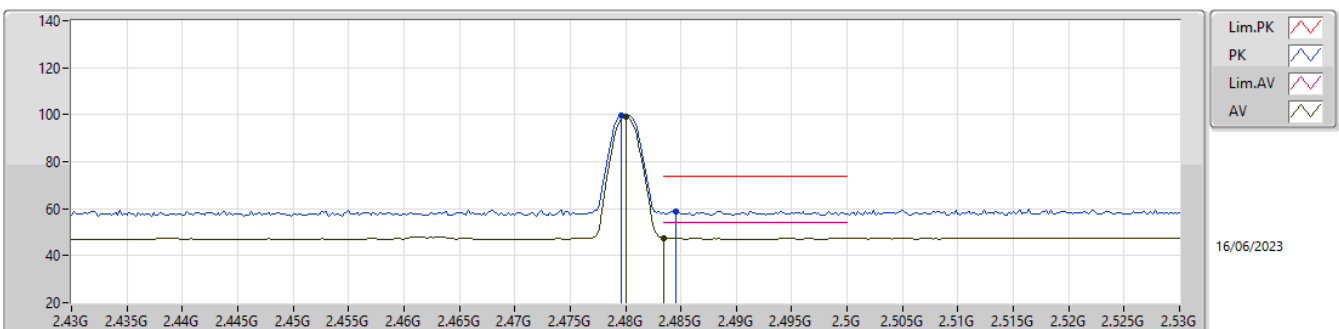
2480MHz_TX



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Raw	AF	CL	PA
(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(dB)	(m)		(°)	(m)	(dBuV)	(dB)	(dB)	(dB)
AV	2.48G	90.26	Inf	-Inf	31.52	3	Vertical	58	1.29	58.74	27.68	3.84	-
AV	2.4998G	47.04	54.00	-6.96	31.65	3	Vertical	58	1.29	15.39	27.80	3.85	-
PK	2.4796G	90.81	Inf	-Inf	31.52	3	Vertical	58	1.29	59.29	27.68	3.84	-
PK	2.49G	59.11	74.00	-14.89	31.59	3	Vertical	58	1.29	27.52	27.74	3.85	-

2.4-2.4835GHz_BT-LE(1Mbps)

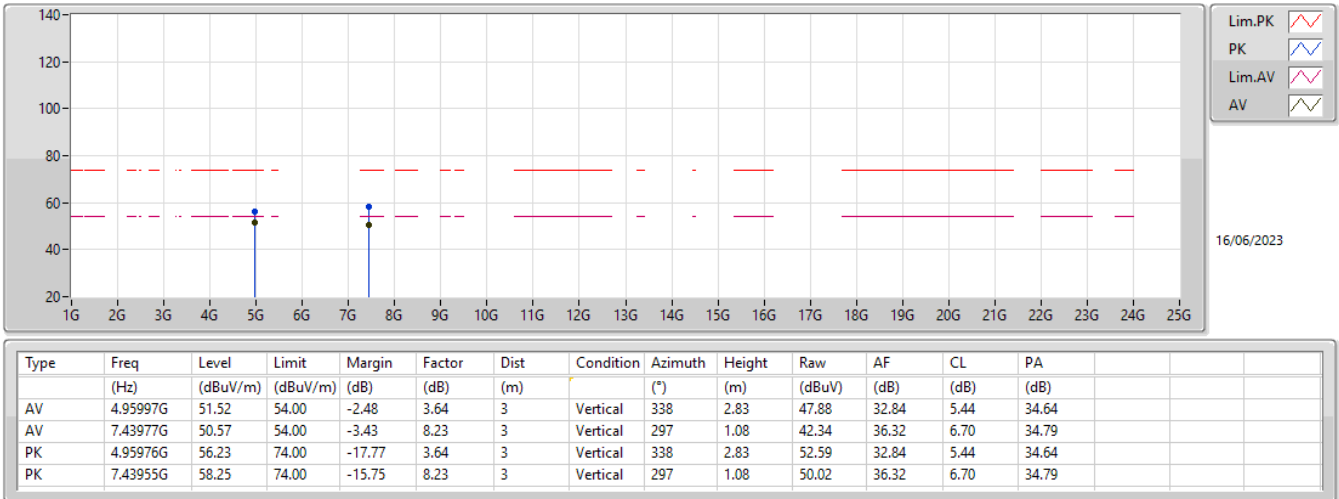
2480MHz_TX



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Raw	AF	CL	PA
(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(dB)	(m)		(°)	(m)	(dBuV)	(dB)	(dB)	(dB)
AV	2.48G	98.98	Inf	-Inf	31.52	3	Horizontal	18	2.42	67.46	27.68	3.84	-
AV	2.4835G	47.50	54.00	-6.50	31.54	3	Horizontal	18	2.42	15.96	27.70	3.84	-
PK	2.4796G	99.48	Inf	-Inf	31.52	3	Horizontal	18	2.42	67.96	27.68	3.84	-
PK	2.4846G	58.93	74.00	-15.07	31.55	3	Horizontal	18	2.42	27.38	27.71	3.84	-

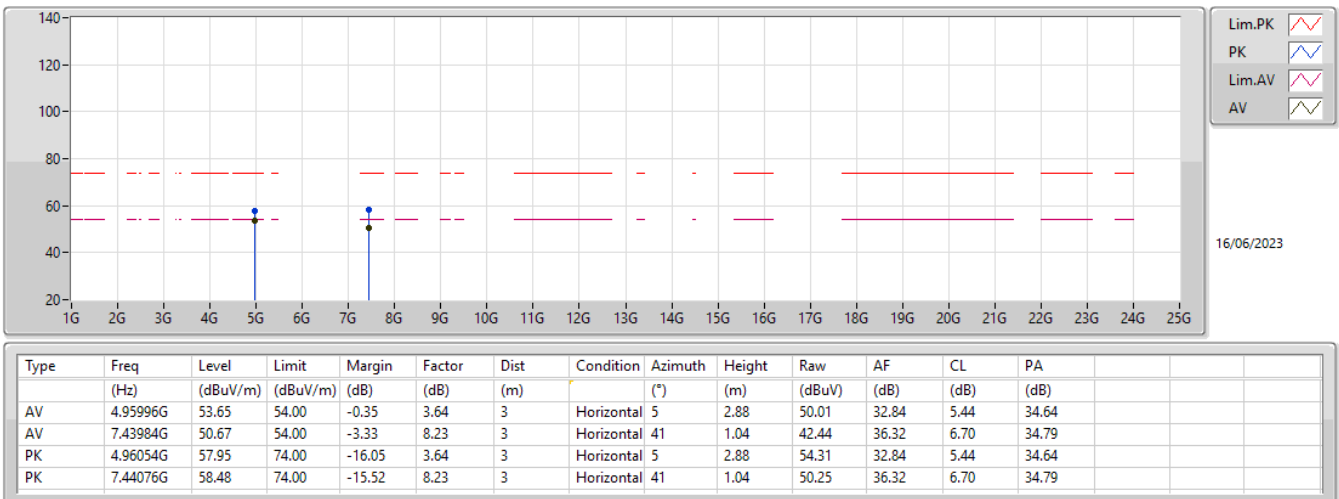
2.4-2.4835GHz_BT-LE(1Mbps)

2480MHz_TX



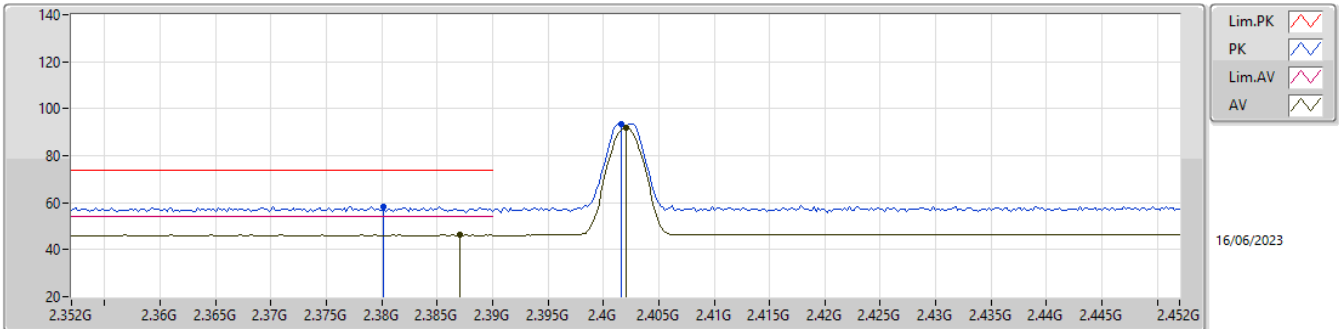
2.4-2.4835GHz_BT-LE(1Mbps)

2480MHz_TX



2.4-2.4835GHz_BT-LE(2Mbps)

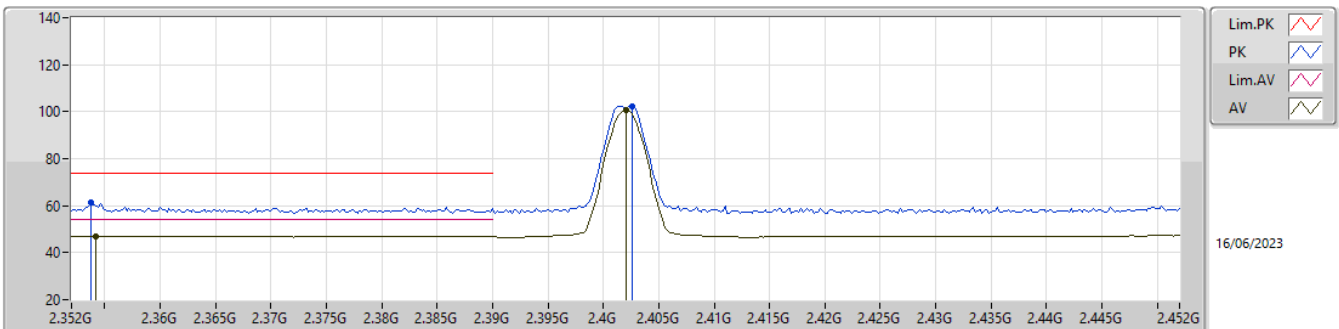
2402MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.387G	46.18	54.00	-7.82	31.13	3	Vertical	353	2.27	15.05	27.37	3.76	-
AV	2.402G	91.90	Inf	-Inf	31.17	3	Vertical	353	2.27	60.73	27.40	3.77	-
PK	2.3802G	58.39	74.00	-15.61	31.11	3	Vertical	353	2.27	27.28	27.36	3.75	-
PK	2.4016G	93.43	Inf	-Inf	31.17	3	Vertical	353	2.27	62.26	27.40	3.77	-

2.4-2.4835GHz_BT-LE(2Mbps)

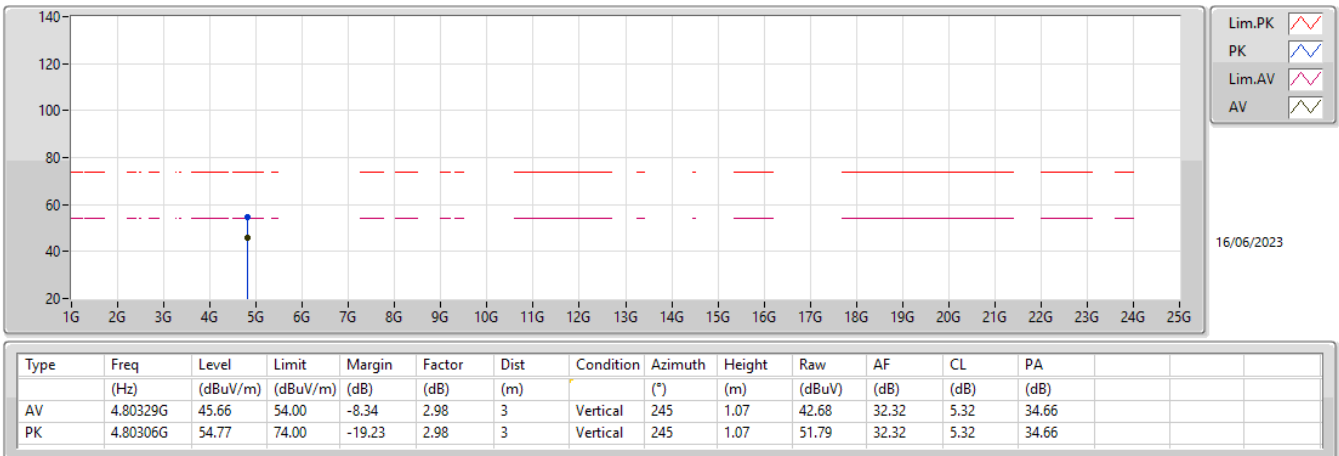
2402MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3542G	47.15	54.00	-6.85	31.03	3	Horizontal	13	1.07	16.12	27.31	3.72	-
AV	2.402G	100.74	Inf	-Inf	31.17	3	Horizontal	13	1.07	69.57	27.40	3.77	-
PK	2.3538G	61.26	74.00	-12.74	31.03	3	Horizontal	13	1.07	30.23	27.31	3.72	-
PK	2.4026G	102.14	Inf	-Inf	31.18	3	Horizontal	13	1.07	70.96	27.41	3.77	-

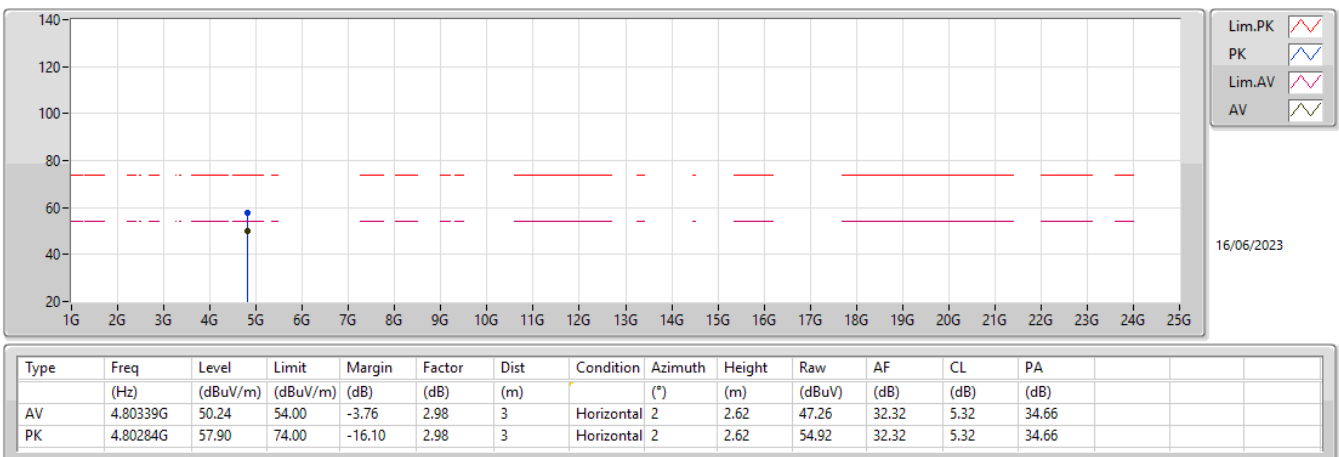
2.4-2.4835GHz_BT-LE(2Mbps)

2402MHz_TX



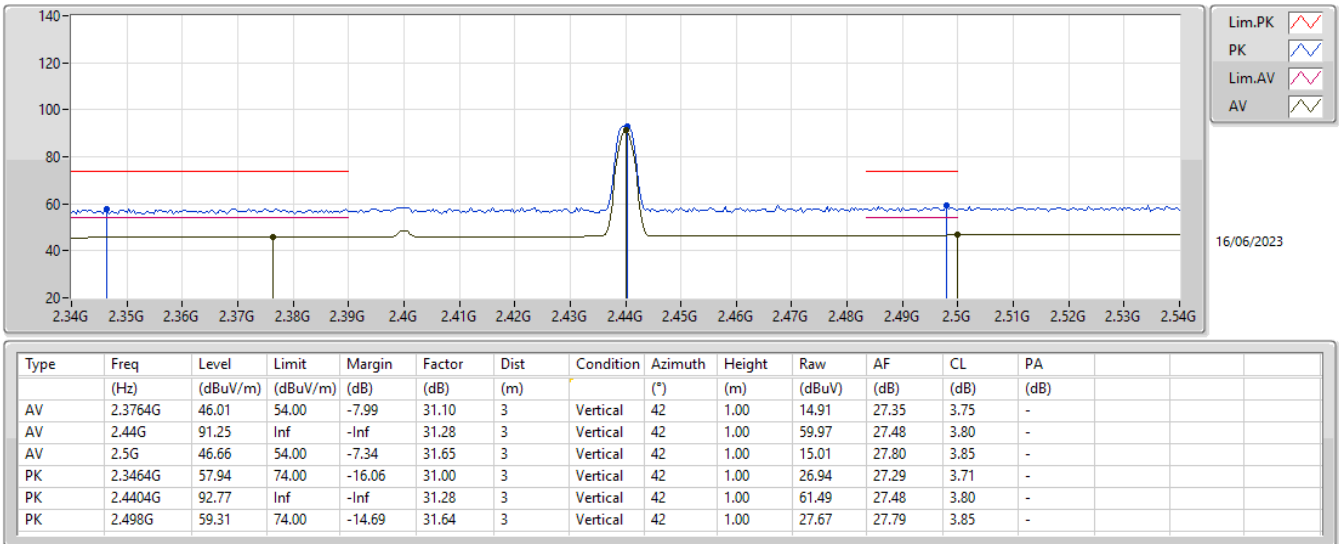
2.4-2.4835GHz_BT-LE(2Mbps)

2402MHz_TX



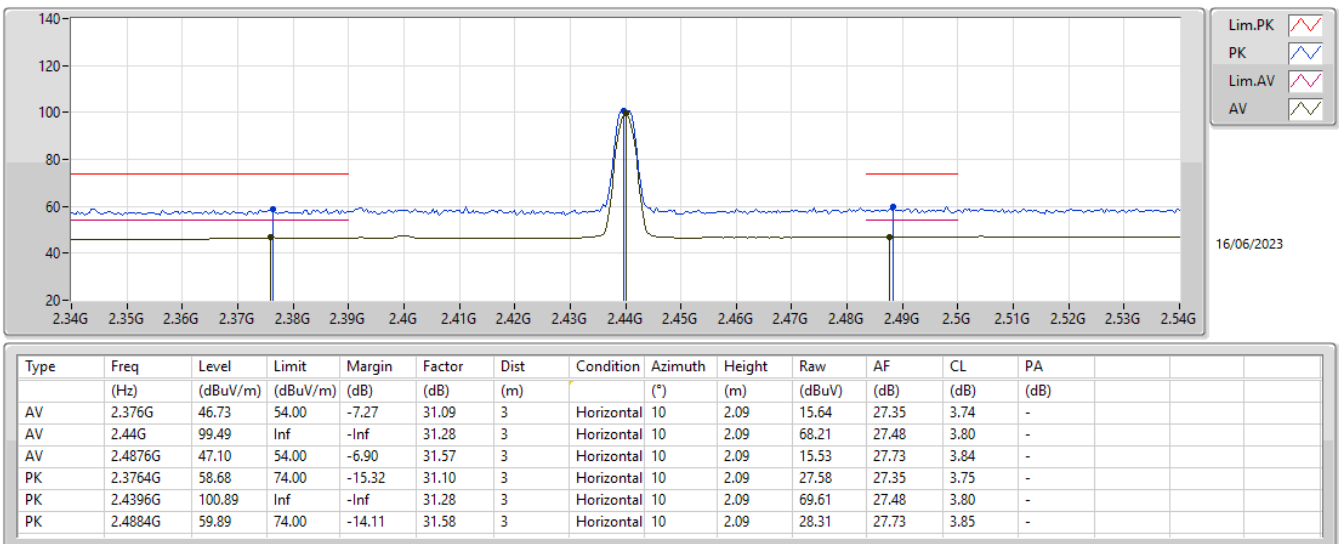
2.4-2.4835GHz_BT-LE(2Mbps)

2440MHz_TX



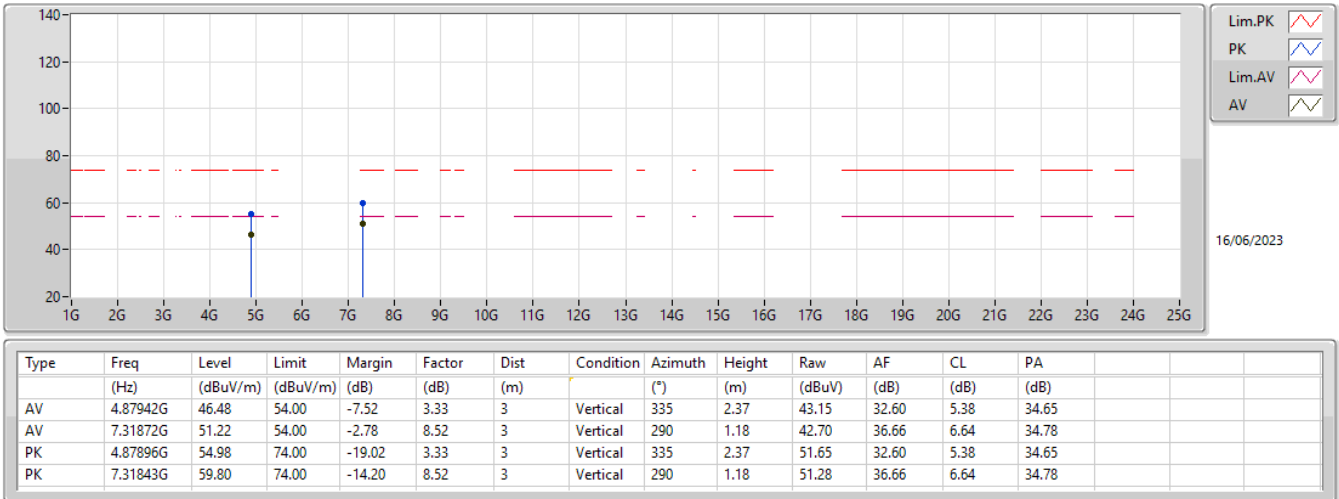
2.4-2.4835GHz_BT-LE(2Mbps)

2440MHz_TX



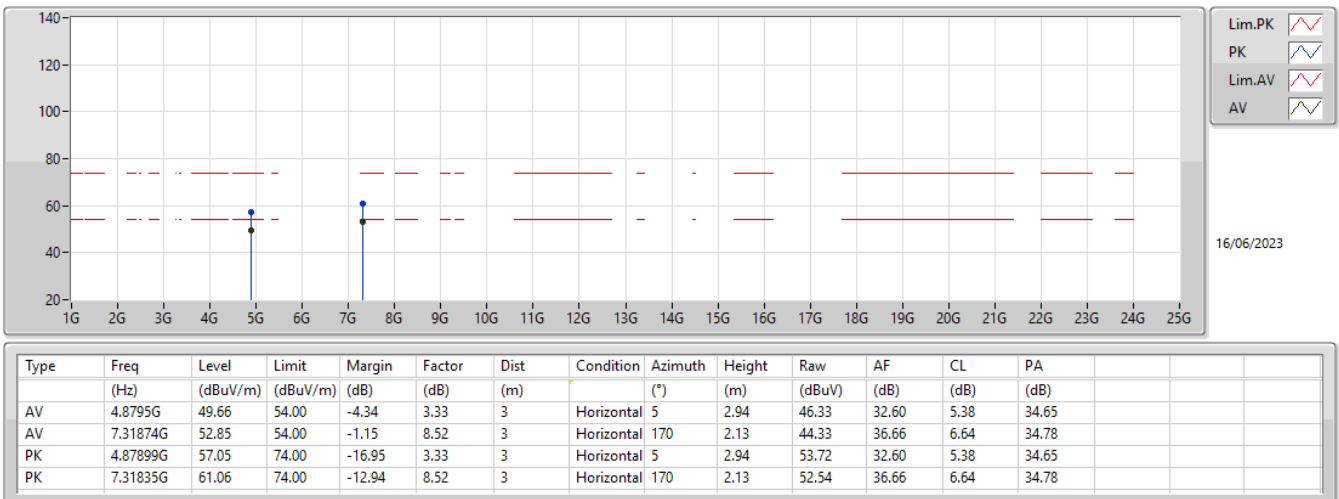
2.4-2.4835GHz_BT-LE(2Mbps)

2440MHz_TX



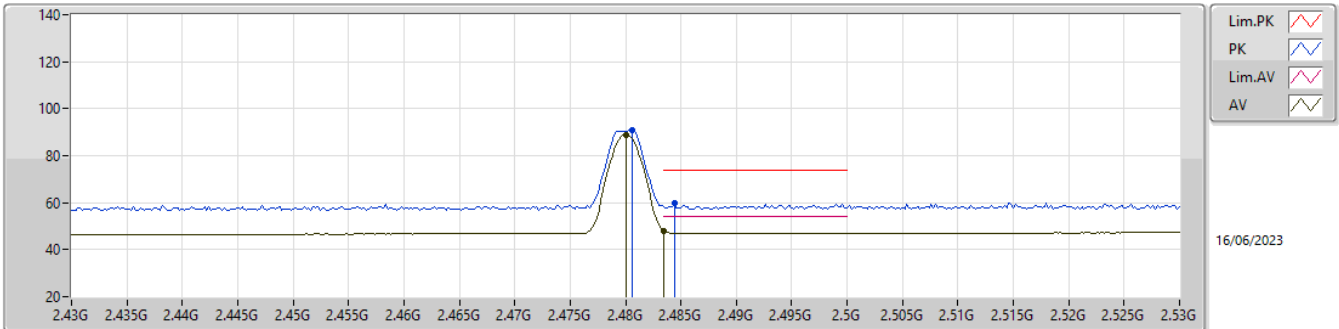
2.4-2.4835GHz_BT-LE(2Mbps)

2440MHz_TX



2.4-2.4835GHz_BT-LE(2Mbps)

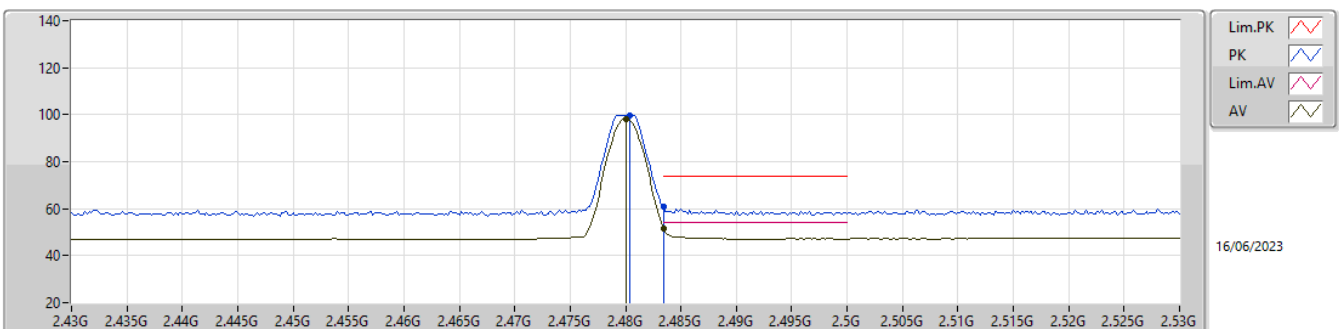
2480MHz_TX



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	(dBuV)	(dB)	(dB)	(dB)
AV	2.48G	89.05	Inf	-Inf	31.52	3	Vertical	59	1.00	57.53	27.68	3.84	-
AV	2.4835G	47.93	54.00	-6.07	31.54	3	Vertical	59	1.00	16.39	27.70	3.84	-
PK	2.4806G	90.67	Inf	-Inf	31.52	3	Vertical	59	1.00	59.15	27.68	3.84	-
PK	2.4844G	59.74	74.00	-14.26	31.55	3	Vertical	59	1.00	28.19	27.71	3.84	-

2.4-2.4835GHz_BT-LE(2Mbps)

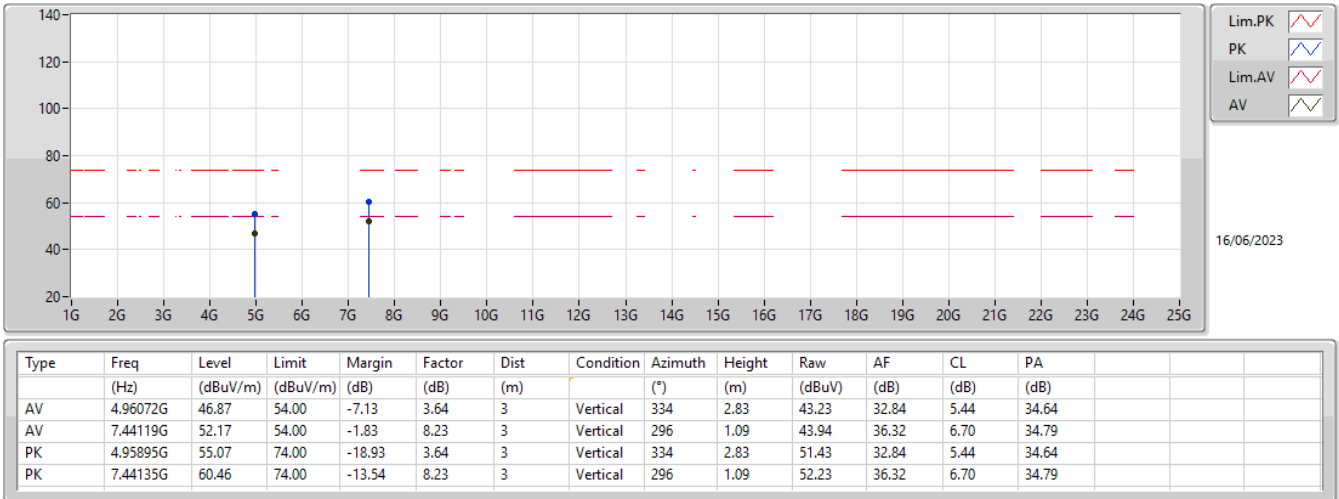
2480MHz_TX



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	(dBuV)	(dB)	(dB)	(dB)
AV	2.48G	98.28	Inf	-Inf	31.52	3	Horizontal	16	2.43	66.76	27.68	3.84	-
AV	2.4835G	51.63	54.00	-2.37	31.54	3	Horizontal	16	2.43	20.09	27.70	3.84	-
PK	2.4804G	99.86	Inf	-Inf	31.52	3	Horizontal	16	2.43	68.34	27.68	3.84	-
PK	2.4835G	60.86	74.00	-13.14	31.54	3	Horizontal	16	2.43	29.32	27.70	3.84	-

2.4-2.4835GHz_BT-LE(2Mbps)

2480MHz_TX



2.4-2.4835GHz_BT-LE(2Mbps)

2480MHz_TX

