

FCC Radio Test Report

FCC ID : TLZ-XB644NF

Equipment : IEEE 802.11 1X1 a/b/g/n/ac/ax Wireless LAN + Bluetooth 5.4
+ 802.15.4 Tri-radio M.2 2230 Module

Brand Name : AzureWave

Model Name : AW-XB644NF

Applicant : AzureWave Technologies, Inc.
8F., No.94, Baozhong Rd. , Xindian Dist., New Taipei City ,
Taiwan 231

Manufacturer : AzureWave Technologies, Inc.
8F., No.94, Baozhong Rd. , Xindian Dist., New Taipei City ,
Taiwan 231

Standard : 47 CFR FCC Part 15.247

The product was received on Aug. 01, 2024, and testing was started from Aug. 13, 2024 and completed on Aug. 22, 2024. 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.)



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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: Ben Tseng

Report Producer: Julie Tseng

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	Nant
2.4-2.4835GHz	BT-LE(125kbps)	1.0	1TX
2.4-2.4835GHz	BT-LE(500kbps)	1.0	1TX
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 (125kbps/500kbps/1Mbps/2Mbps) modulation.
- ♦ BWch is the nominal channel bandwidth.
- ♦ Bluetooth LE 125k/500k/1Mbps uses the same modulation, and 1Mbps was found to be the worst case scenario which was performed full test and recorded in this test report.

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector	Support
1	TE Connectivity	2195501-2	PCB	I-PEX	2.4G+5G+BT+Thread
2	TE Connectivity	2195505-2	PCB	I-PEX	2.4G+5G+BT+Thread
3	Inpaq	WA-P-LB-02-587	PCB	I-PEX	2.4G+5G+BT+Thread
4	Inpaq	WA-P-LB-03-129	PCB	I-PEX	2.4G+5G+BT+Thread
5	Inpaq	WA-P-LB-03-130	PCB	I-PEX	2.4G+5G+BT+Thread
6	Inpaq	WA-F-LB-03-110	PCB	I-PEX	2.4G+5G+BT+Thread
7	Inpaq	WA-F-LB-02-187	PCB	I-PEX	2.4G+5G+BT+Thread
8	Inpaq	WA-F-LA-01-015	PCB	I-PEX	2.4G+BT+Thread

Ant.	Gain (dBi)	
	2.4G	5G
1	0.47	1.88
2	0.77	0.96
3	4.43	7.52
4	6.51	3.2
5	4.91	5.84
6	-0.27	2.74
7	0.07	2.39
8	5.66	-

Note 1: The EUT has eight sets of antennas.

Note 2: EUT can match with above antennas for using. The highest gain in each set of antenna was used to perform the worst configuration and result of that was recorded as the final test result.

For 2.4GHz function:

For IEEE 802.11 b/g/n/VHT/ax mode (1TX/1RX)

Ant. 1 ~ Ant. 8 could transmit/receive.

For 5GHz function:

For IEEE 802.11 a/n/ac/ax mode (1TX/1RX)

Ant. 1 ~ Ant. 7 could transmit/receive.

For BT function:

For IEEE 802.15.1 Bluetooth mode (1TX/1RX)

Ant. 1 ~ Ant. 8 could transmit/receive.

For Thread function:

For IEEE 802.15.4 Thread mode (1TX/1RX)

Ant. 1 ~ Ant. 8 could transmit/receive.

1.1.3 EUT Information

Operational Condition			
EUT Power Type	From DC Power supply		
EUT Function	☒ Point-to-multipoint	☐ Point-to-point	
Type of EUT			
☒	Stand-alone		
☐	Combined (EUT where the radio part is fully integrated within another device)		
	Combined Equipment - Brand Name / Model No.:		...
☐	Plug-in radio (EUT intended for a variety of host systems)		
	Host System - Brand Name / Model No.:		...
☐	Other:		

1.1.4 Mode Test Duty Cycle

Mode	DC	DCF (dB)	T (s)	VBW (Hz) 1/T
BT-LE(1Mbps)	0.854	0.69	2.135m	1k
BT-LE(2Mbps)	0.432	3.65	1.079m	1k

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. TW3785 with FCC.				
Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
AC Conduction	CO04-HY	Wayne Chiu	21.6~22.2°C / 55~58%	22/Aug/2024
Radiated (Above 1G)	03CH02-HY	Vasari Huang	21.5~24.3°C / 56~61%	13/Aug/2024~15/Aug/2024
☒ Wenhua 3rd. (TAF: 3785)	ADD: No. 58, Aly. 75, Ln. 564, Wenhua 3rd Rd., Guishan Dist. Taoyuan City 333, Taiwan (R.O.C.)			
	TEL: 886-3-327-0868			
Test site Designation No. TW0036 with FCC.				
Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH06-HY	Yuna Lin	23.5~23.7°C / 58~64%	20/Aug/2024
Radiated (Below 1G)	03CH24-HY	Andy Wang	23.1~24.6°C / 52~56%	16/Aug/2024

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	Dos V6.1
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Mode	Power Setting
BT-LE(1Mbps)	-
2402MHz	13.5
2440MHz	13.5
2480MHz	13.5
BT-LE(2Mbps)	-
2402MHz	13.5
2440MHz	13.5
2480MHz	13.5

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	Fixture 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	Fixture mode		
Operating Mode > 1GHz	CTX		
Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			
Worst Planes of EUT			V

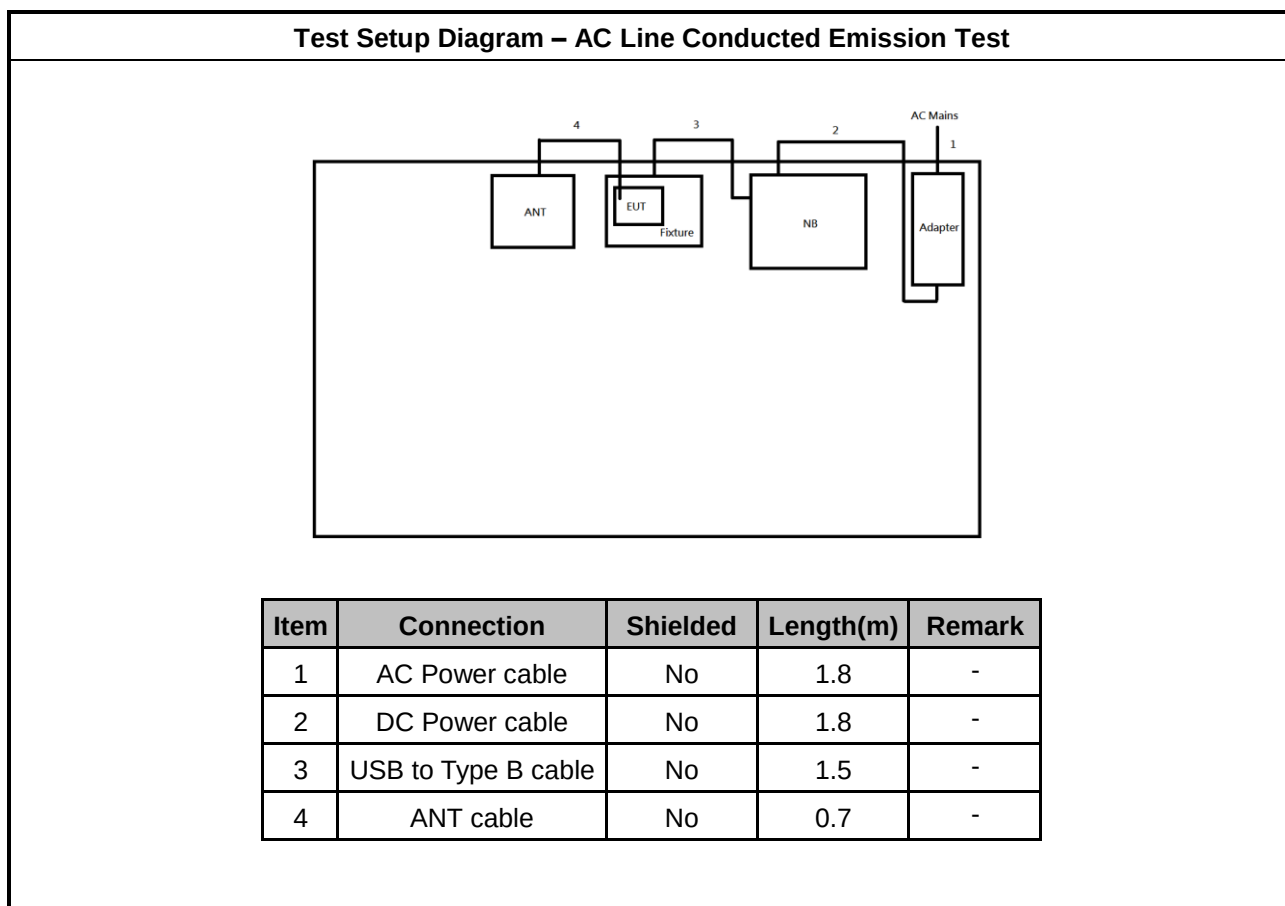
2.3 Support Equipment

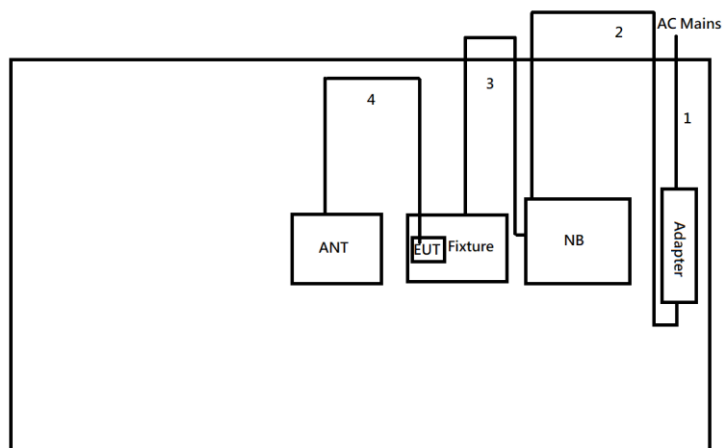
Support Equipment – AC Conduction					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Fixture	Azurewave	AW-NB136NF	-	Provided by Customer
2	Adapter	Apple	A1385	-	-
3	USB to Type-B cable	Sporton	Sporton	-	-
4	NB	DELL	PP13S	-	-
5	Adapter (for NB)	DELL	LA90PM111	-	-
6	AC Power Cable	Power Sync	TPCMRN0018	-	-
7	USB Cable	Sony	1-009-486-12	-	-

Support Equipment – Conducted					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Notebook	DELL	E5410	-	-
2	Adapter for NB	DELL	HA65NM130	-	-
3	Fixture	Azurewave	AW-NB136NF	-	Provided by Customer

Support Equipment – Radiated					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Fixture	Azurewave	AW-NB136NF	-	Provided by Customer
2	USB to Type-B cable	Sporton	Sporton	-	-
3	Adapter	Apple	A1385	-	-
4	NB	DELL	PP13S	-	-
5	Adapter (for NB)	DELL	LA90PM111	-	-
6	AC Power Cable	Power Sync	TPCMRN0018	-	-
7	USB Cable	Sony	1-009-486-12	-	-

2.4 Test Setup Diagram



Test Setup Diagram - Radiated Test


Item	Connection	Shielded	Length(m)	Remark
1	AC Power cable	No	1.8	-
2	DC Power cable	No	1.8	-
3	USB to Type B cable	No	1.5	-
4	ANT cable	No	0.7	-

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

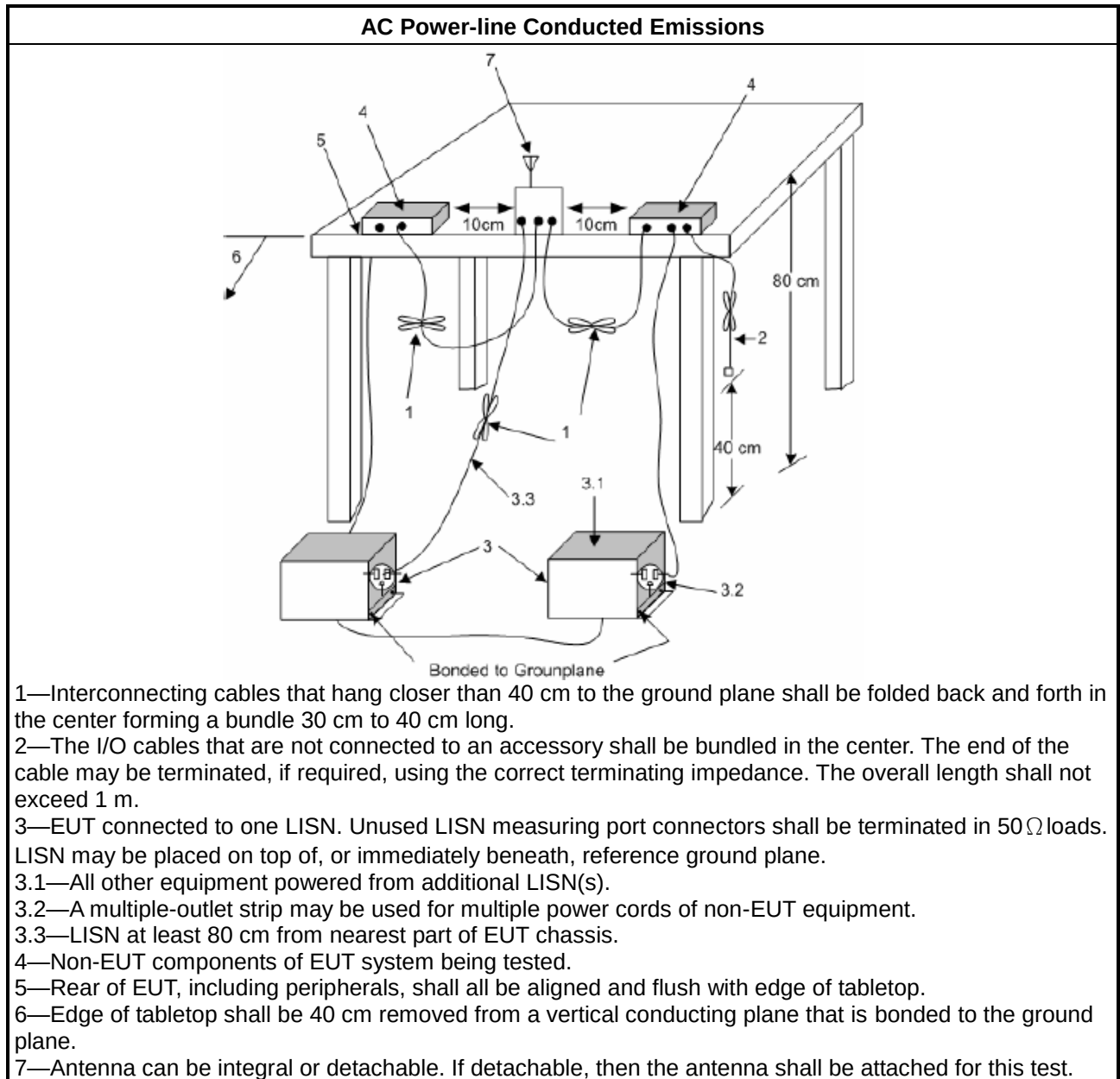
Test Method
▪ Refer as ANSI C63.10-2013, clause 6.2 foray power-line conducted emissions.

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.

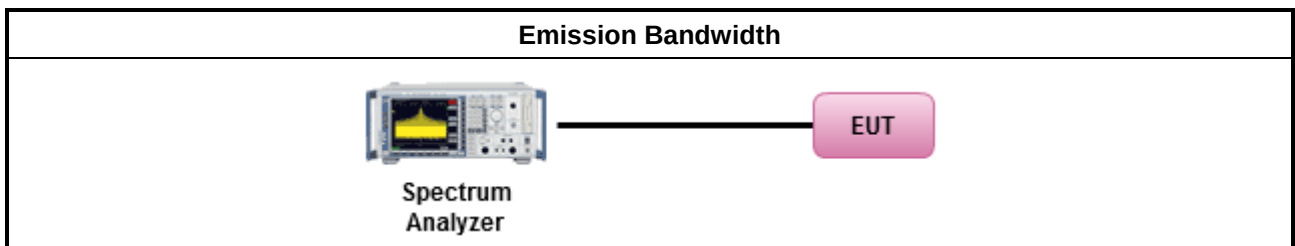
3.2.2 Measuring Instruments

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.	

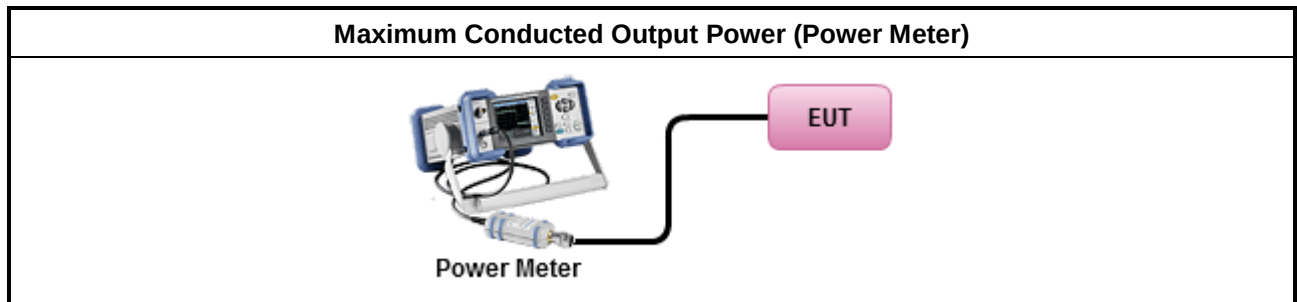
3.3.2 Measuring Instruments

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

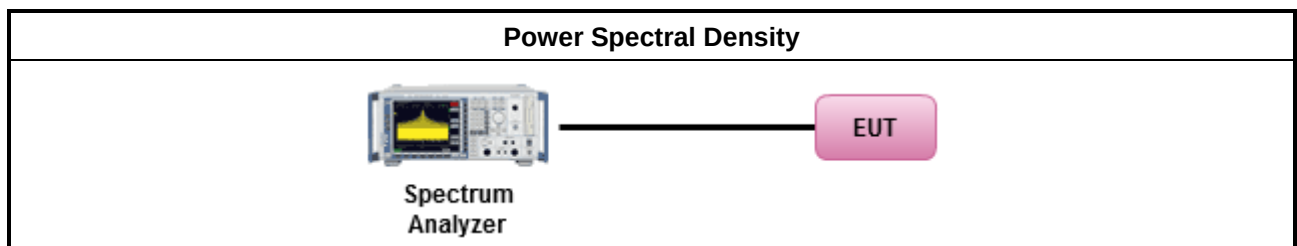
3.4.2 Measuring Instruments

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.	

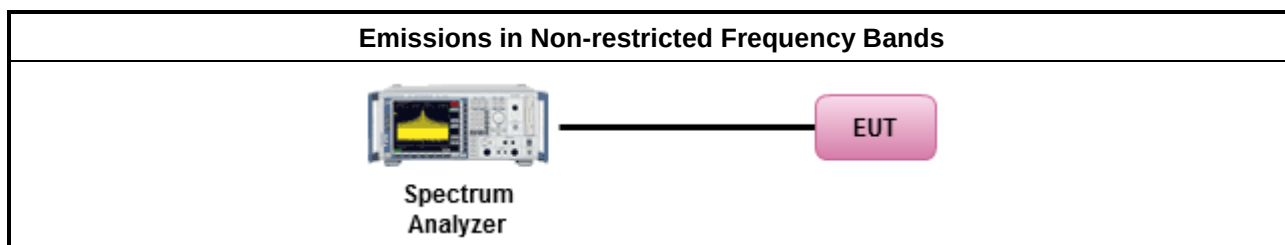
3.5.2 Measuring Instruments

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

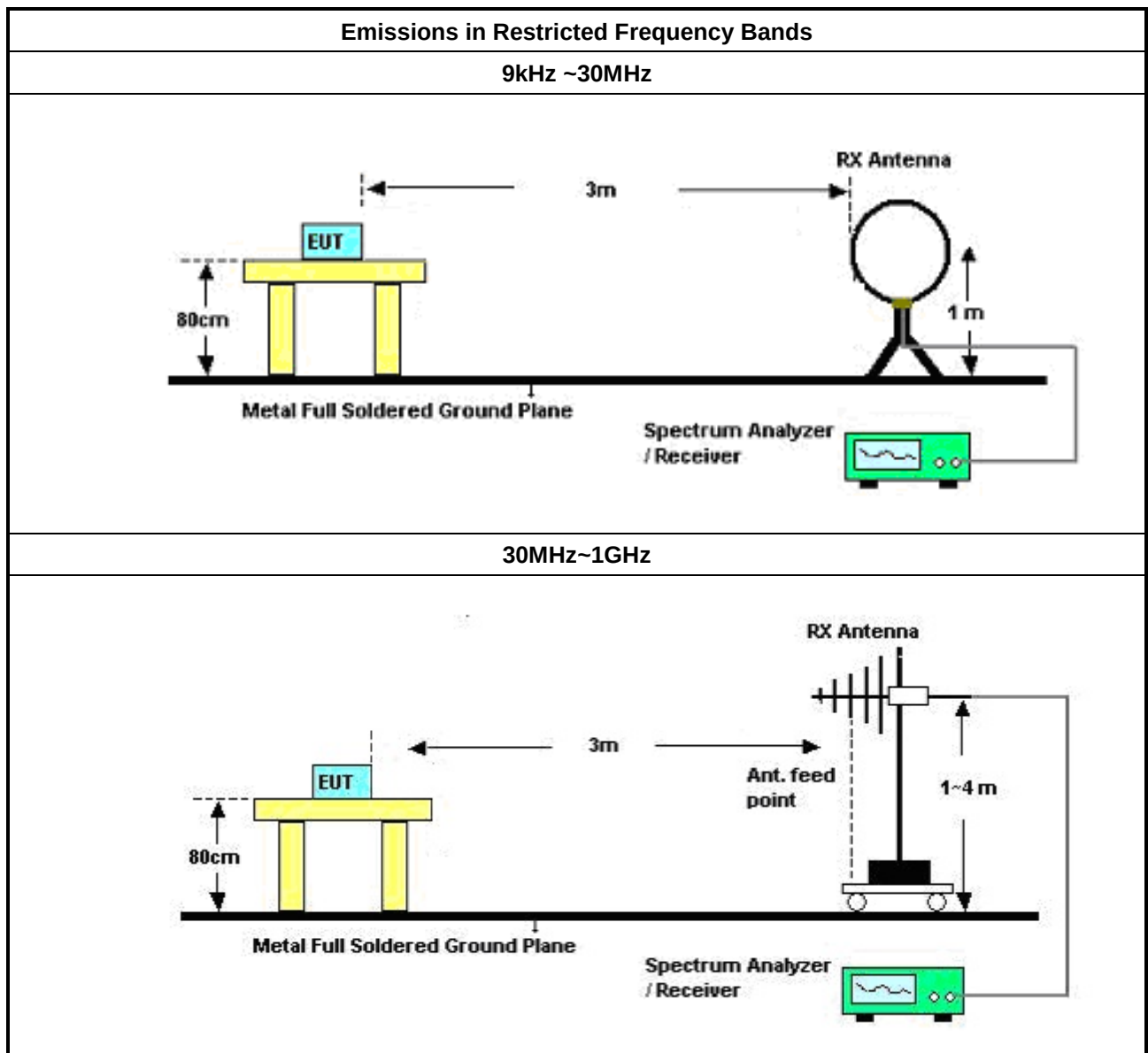
Test Method	
The average emission levels shall be measured in [duty cycle $\geq$ 98 or duty factor].	
Refer as ANSI C63.10, clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.	
For the transmitter unwanted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

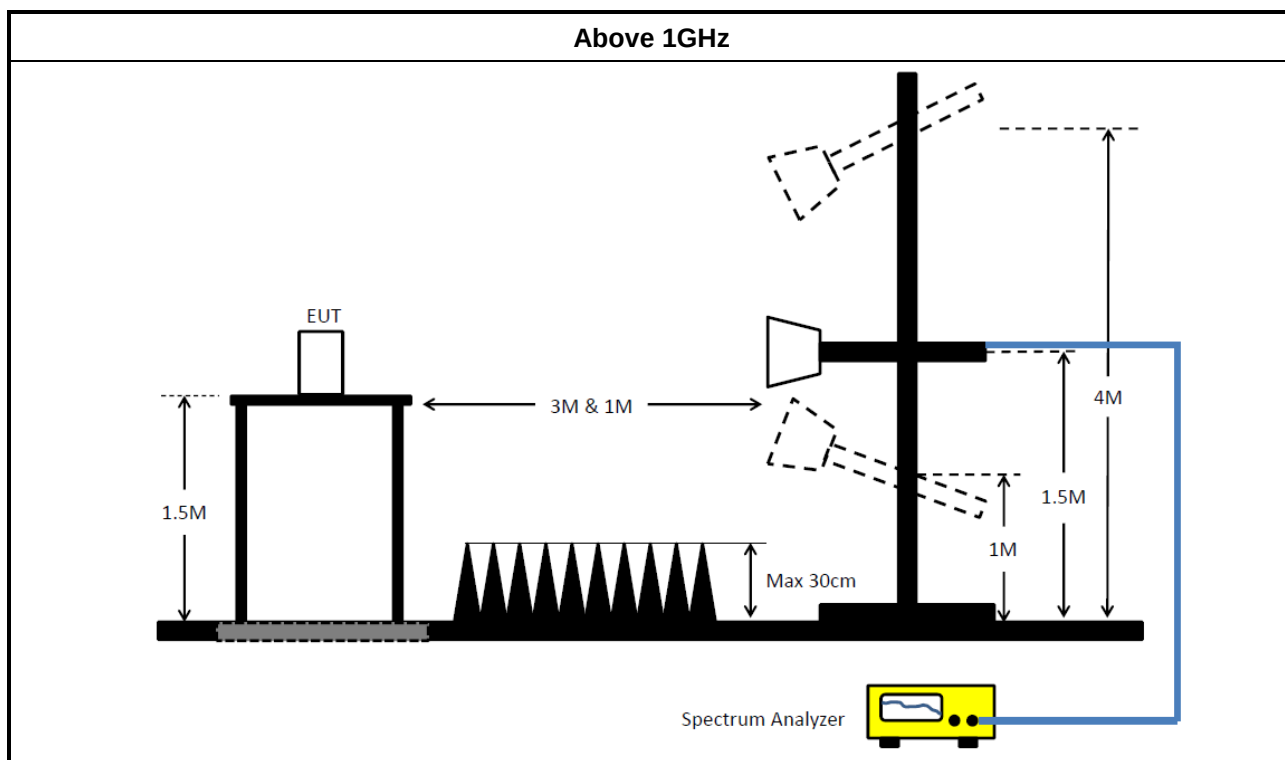
3.6.4 Measurement Results Calculation

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	ROHDE & SCHWARZ	ESR3	102051	9kHz ~ 3.6GHz	17/May/2024	16/May/2025
Two-Line V-Network	ROHDE & SCHWARZ	ENV 216	101274	9kHz ~ 30MHz	18/Jun/2024	17/Jun/2025
RF Cable 5m	TITAN	TITAN	CO04-cable-01	9 kHz~200MHz	27/Feb/2024	26/Feb/2025
Impuls Begrenzer Pulse Limiter	SCHWARZBECK	VTSD 9561-F	9561-F041	9kHz ~ 30MHz	18/Oct/2023	17/Oct/2024
Software	Sporton	SENSE-EMI	V5.11.3	-	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	101029	10Hz~40GHz	30/Oct/2023	29/Oct/2024
SMB100A Signal Generator	R&S	SMB100A	181147	100kHz~40GHz	20/Oct/2023	19/Oct/2024
Power Meter	Anritsu	ML2495A	1124009	300MHz~40GHz	01/Apr/2024	31/Mar/2025
Pulse Sensor	Anritsu	MA2411B	1027452	300MHz~40GHz	02/Apr/2024	01/Apr/2025
SENSE-15247_FS	Sporton	V5.11.18	N/A	N/A	N/A	N/A

Instrument for Radiated Test (03CH24-HY)

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH24-HY	30MHz~1GHz 3m	16/Aug/2024	15/Aug/2025
Signal Analyzer	ROHDE&SCHWARZ	FSV3044	101345	10Hz~44GHz	06/Aug/2024	05/Aug/2025
Bilog Antenna & 6dB Attenuator	TESEQ / Woken	CBL 6112D / 00800N1D01N-06	35376 / 02	30MHz~1GHz	14/Apr/2024	13/Apr/2025
Pre-Amplifier	Aglient	8447D	2944A06292	30MHz~1GHz	18/Apr/2024	17/Apr/2025
RF Cable	HUBER+SUHNER	SUOFLEX 104	CB002	9kHz~1GHz	19/Jun/2024	18/Jun/2025
EMI Test Receiver	ROHDE & SCHWARZ	ESR	102318	9kHz~3.6GHz	27/Dec/2023	26/Dec/2024
Loop Antenna	TESEQ	HLA 6120	31244	9kHz~30MHz	19/Mar/2024	18/Mar/2025
SENSE-15247-FS	Sporton	V5.11.18	NA	NA	NA	NA

**Instrument for Radiated Test (03CH02-HY)**

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	1GHz~18GHz 3m	14/Jul/2024	13/Jul/2025
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	02268	1GHz~18GHz	23/Sep/2023	22/Sep/2024
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170154	18GHz~40GHz	04/Jun/2024	03/Jun/2025
RF Cable-R03m	HUBER+SUHNER	SUCOFLEX 104	03CH02-cable-01	1GHz~40GHz	15/Feb/2024	14/Feb/2025
Microwave Preamplifier	SGH	PRAMP 118-HS	202300913-2	1GHz~26.5GHz	18/Jan/2024	17/Jan/2025
Microwave Preamplifier	EMC INSTRUMENTS	EM18G40G	060604	18GHz ~40GHz	19/Apr/2024	18/Apr/2025
SENSE-15247-FS	Sporton	V5.11.18	NA	NA	19/Apr/2024	18/Apr/2025



Conducted Emissions at Powerline

Appendix A

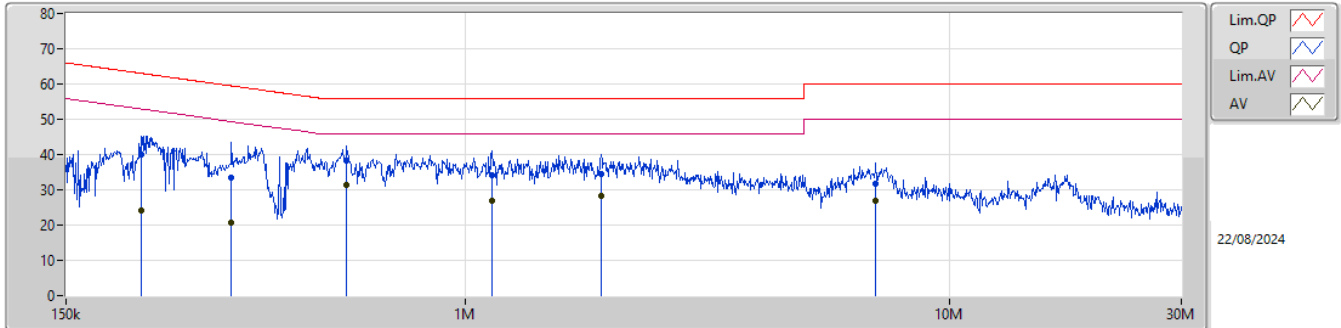
Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	AV	569.051k	31.37	46.00	-14.63	Line

Result

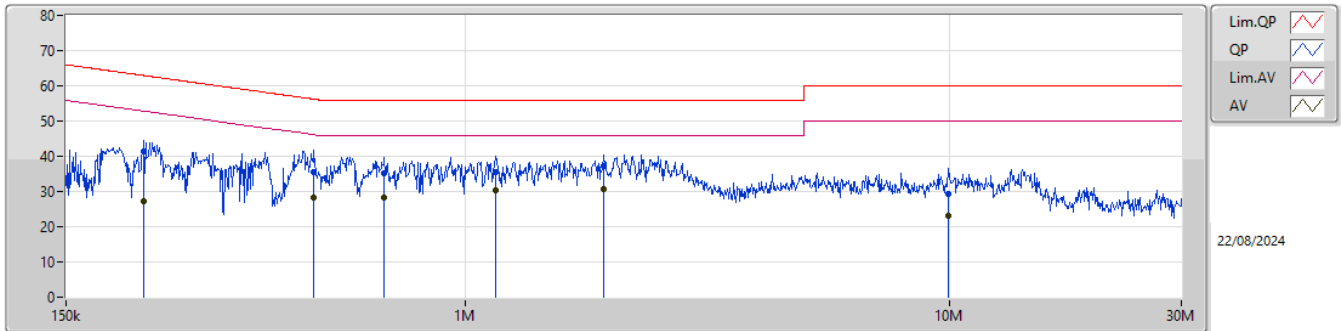
Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition	Comments
Mode 1	Pass	QP	213.989k	40.02	63.06	-23.04	Line	-
Mode 1	Pass	AV	213.989k	24.05	53.06	-29.01	Line	-
Mode 1	Pass	QP	329.331k	33.37	59.46	-26.09	Line	-
Mode 1	Pass	AV	329.331k	20.83	49.46	-28.63	Line	-
Mode 1	Pass	QP	569.051k	38.31	56.00	-17.69	Line	-
Mode 1	Pass	AV	569.051k	31.37	46.00	-14.63	Line	-
Mode 1	Pass	QP	1.135M	34.30	56.00	-21.70	Line	-
Mode 1	Pass	AV	1.135M	27.06	46.00	-18.94	Line	-
Mode 1	Pass	QP	1.908M	34.37	56.00	-21.63	Line	-
Mode 1	Pass	AV	1.908M	28.36	46.00	-17.64	Line	-
Mode 1	Pass	QP	7.037M	31.63	60.00	-28.37	Line	-
Mode 1	Pass	AV	7.037M	26.85	50.00	-23.15	Line	-
Mode 1	Pass	QP	217.434k	41.37	62.92	-21.55	Neutral	-
Mode 1	Pass	AV	217.434k	27.27	52.92	-25.65	Neutral	-
Mode 1	Pass	QP	487.008k	35.38	56.21	-20.83	Neutral	-
Mode 1	Pass	AV	487.008k	28.11	46.21	-18.10	Neutral	-
Mode 1	Pass	QP	681.033k	35.03	56.00	-20.97	Neutral	-
Mode 1	Pass	AV	681.033k	28.27	46.00	-17.73	Neutral	-
Mode 1	Pass	QP	1.154M	35.56	56.00	-20.44	Neutral	-
Mode 1	Pass	AV	1.154M	30.47	46.00	-15.53	Neutral	-
Mode 1	Pass	QP	1.93M	37.10	56.00	-18.90	Neutral	-
Mode 1	Pass	AV	1.93M	30.60	46.00	-15.40	Neutral	-
Mode 1	Pass	QP	9.919M	29.23	60.00	-30.77	Neutral	-
Mode 1	Pass	AV	9.919M	23.03	50.00	-26.97	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	213.989k	40.02	63.06	-23.04	19.43	Line	-	20.59	9.65	0.09	9.69						
AV	213.989k	24.05	53.06	-29.01	19.43	Line	-	4.62	9.65	0.09	9.69						
QP	329.331k	33.37	59.46	-26.09	19.50	Line	-	13.87	9.65	0.11	9.74						
AV	329.331k	20.83	49.46	-28.63	19.50	Line	-	1.33	9.65	0.11	9.74						
QP	569.051k	38.31	56.00	-17.69	19.54	Line	-	18.77	9.65	0.11	9.78						
AV	569.051k	31.37	46.00	-14.63	19.54	Line	-	11.83	9.65	0.11	9.78						
QP	1.135M	34.30	56.00	-21.70	19.55	Line	-	14.75	9.66	0.09	9.80						
AV	1.135M	27.06	46.00	-18.94	19.55	Line	-	7.51	9.66	0.09	9.80						
QP	1.908M	34.37	56.00	-21.63	19.58	Line	-	14.79	9.67	0.11	9.80						
AV	1.908M	28.36	46.00	-17.64	19.58	Line	-	8.78	9.67	0.11	9.80						
QP	7.037M	31.63	60.00	-28.37	19.55	Line	-	12.08	9.70	0.06	9.79						
AV	7.037M	26.85	50.00	-23.15	19.55	Line	-	7.30	9.70	0.06	9.79						

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	217.434k	41.37	62.92	-21.55	19.38	Neutral	-	21.99	9.60	0.09	9.69						
AV	217.434k	27.27	52.92	-25.65	19.38	Neutral	-	7.89	9.60	0.09	9.69						
QP	487.008k	35.38	56.21	-20.83	19.48	Neutral	-	15.90	9.60	0.11	9.77						
AV	487.008k	28.11	46.21	-18.10	19.48	Neutral	-	8.63	9.60	0.11	9.77						
QP	681.033k	35.03	56.00	-20.97	19.49	Neutral	-	15.54	9.61	0.10	9.78						
AV	681.033k	28.27	46.00	-17.73	19.49	Neutral	-	8.78	9.61	0.10	9.78						
QP	1.154M	35.56	56.00	-20.44	19.50	Neutral	-	16.06	9.61	0.09	9.80						
AV	1.154M	30.47	46.00	-15.53	19.50	Neutral	-	10.97	9.61	0.09	9.80						
QP	1.93M	37.10	56.00	-18.90	19.52	Neutral	-	17.58	9.61	0.11	9.80						
AV	1.93M	30.60	46.00	-15.40	19.52	Neutral	-	11.08	9.61	0.11	9.80						
QP	9.919M	29.23	60.00	-30.77	19.50	Neutral	-	9.73	9.66	0.05	9.79						
AV	9.919M	23.03	50.00	-26.97	19.50	Neutral	-	3.53	9.66	0.05	9.79						

**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)	796.25k	1.051M	1M05F1D	713.75k	1.037M
BT-LE(2Mbps)	1.428M	2.084M	2M08F1D	1.31M	2.071M

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

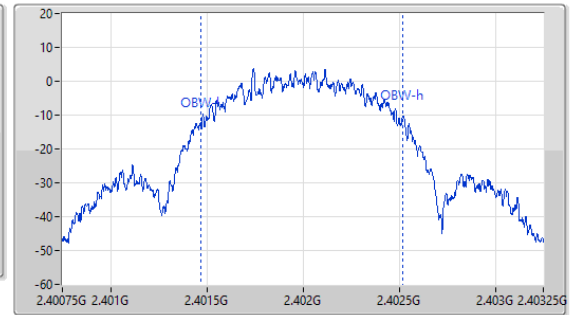
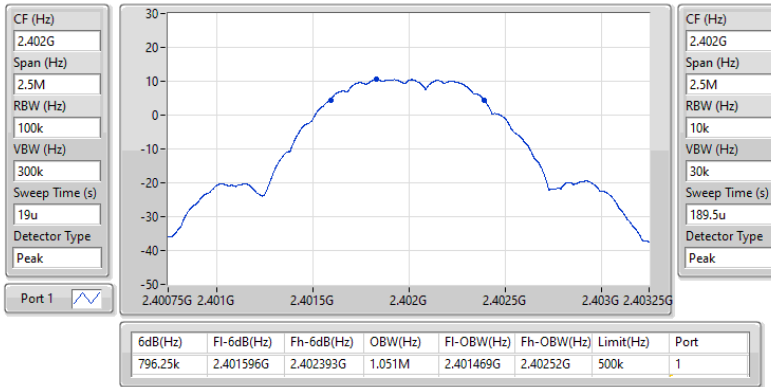
Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	796.25k	1.051M
2440MHz	Pass	500k	718.75k	1.037M
2480MHz	Pass	500k	713.75k	1.037M
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	500k	1.36M	2.071M
2440MHz	Pass	500k	1.31M	2.084M
2480MHz	Pass	500k	1.428M	2.079M

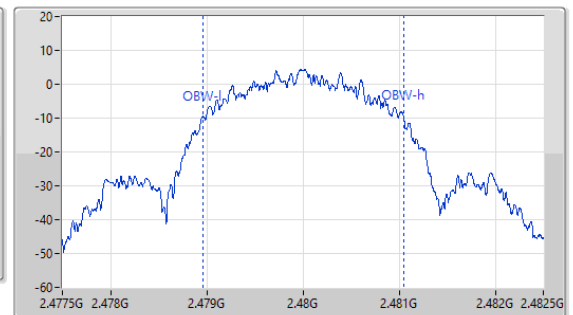
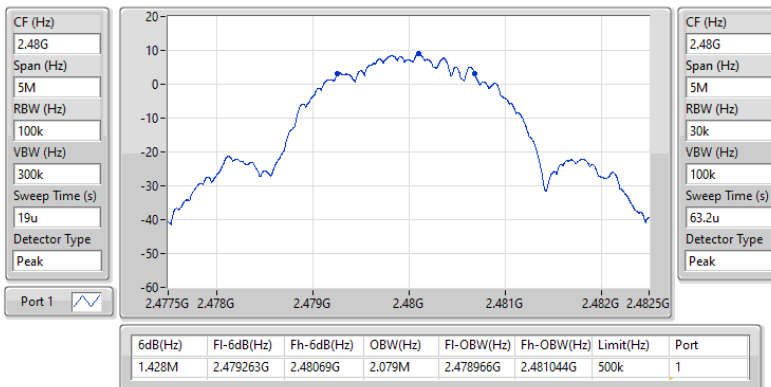
Port X-N dB = Port X 6dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

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

20/08/2024


2.4-2.4835GHz_BT-LE(2Mbps)
EBW-DTS
2480MHz

20/08/2024





Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	13.27	0.02123
BT-LE(2Mbps)	13.25	0.02113

**Result**

Mode	Result	DG (dBi)	Total Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	6.51	13.27	29.49
2440MHz	Pass	6.51	13.24	29.49
2480MHz	Pass	6.51	13.13	29.49
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	6.51	13.25	29.49
2440MHz	Pass	6.51	13.24	29.49
2480MHz	Pass	6.51	13.22	29.49

DG = Directional Gain; Port X = Port X output power;
Inf = There's no restriction for the limit.



Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-1.76
BT-LE(2Mbps)	-3.79

RBW = 3kHz;

Result

Mode	Result	DG (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	6.51	-1.76	7.49
2440MHz	Pass	6.51	-2.07	7.49
2480MHz	Pass	6.51	-2.04	7.49
BT-LE(2Mbps)	-	-	-	-
2402MHz	Pass	6.51	-3.91	7.49
2440MHz	Pass	6.51	-3.79	7.49
2480MHz	Pass	6.51	-4.23	7.49

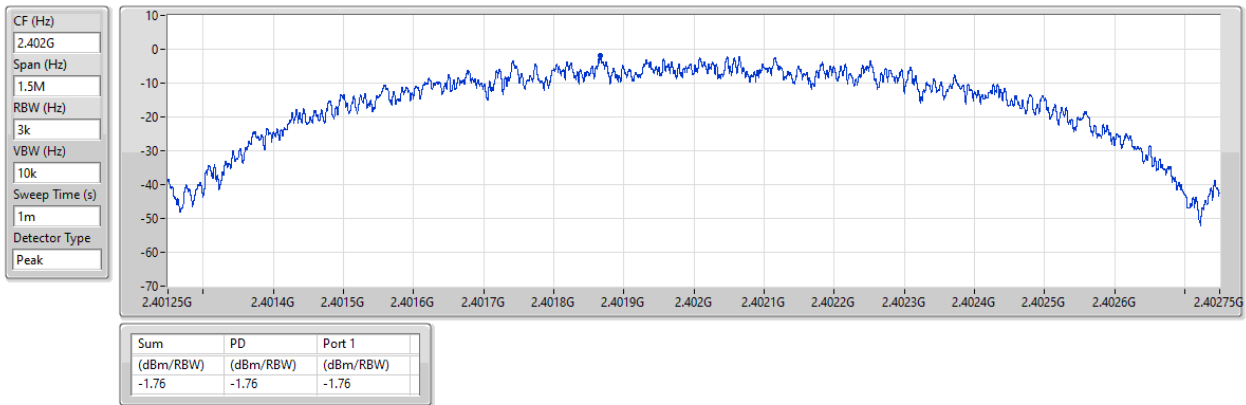
DG = Directional Gain; RBW = 3kHz;
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X Power Density;
Inf = There's no restriction for the limit.

2.4-2.4835GHz_BT-LE(1Mbps)

PSD

2402MHz

20/08/2024

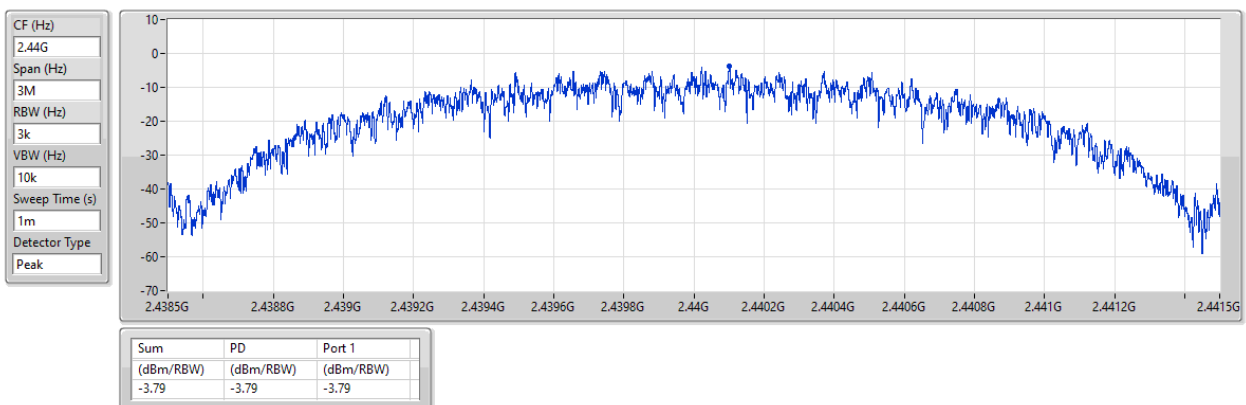


2.4-2.4835GHz_BT-LE(2Mbps)

PSD

2440MHz

20/08/2024





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	12.01	-17.99	2.30833G	-54.81	2.39996G	-45.11	2.4G	-47.31	2.50178G	-53.72	16.6538G	-41.99	1
BT-LE(2Mbps)	Pass	2.40134G	12.07	-17.93	794.93M	-55.32	2.39996G	-22.18	2.4G	-21.38	2.50306G	-53.80	16.24886G	-41.98	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	12.01	-17.99	2.30833G	-54.81	2.39996G	-45.11	2.4G	-47.31	2.50178G	-53.72	16.6538G	-41.99	1
2440MHz	Pass	2.40217G	12.01	-17.99	2.1403G	-55.88	2.3998G	-49.78	2.4G	-51.84	2.50294G	-52.76	17.61552G	-42.29	1
2480MHz	Pass	2.40217G	12.01	-17.99	1.9852G	-55.18	2.39972G	-52.13	2.4G	-56.07	2.5011G	-54.46	16.2573G	-41.56	1
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.40134G	12.07	-17.93	794.93M	-55.32	2.39996G	-22.18	2.4G	-21.38	2.50306G	-53.80	16.24886G	-41.98	1
2440MHz	Pass	2.40134G	12.07	-17.93	1.85125G	-55.30	2.39952G	-50.49	2.4G	-50.15	2.50134G	-53.99	24.91845G	-41.36	1
2480MHz	Pass	2.40134G	12.07	-17.93	957.08M	-55.55	2.39948G	-52.05	2.4G	-55.10	2.50162G	-54.24	15.19153G	-42.25	1

2.4-2.4835GHz_BT-LE(1Mbps)

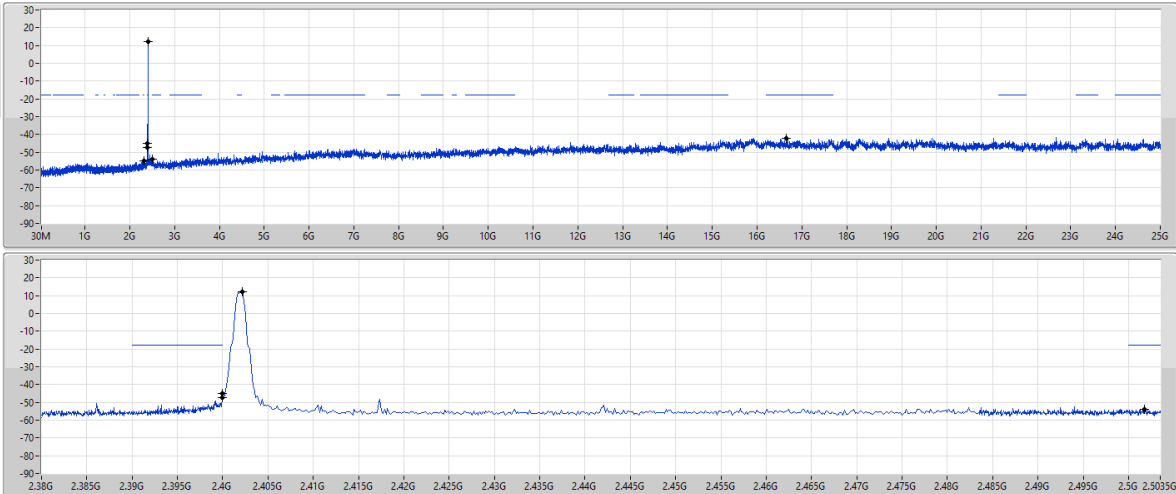
CSEndB-DTS

2402MHz

20/08/2024

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
2.40217G	12.01	-17.99	2.30833G	-54.81	2.39996G	-45.11	2.4G	-47.31	2.50178G	-53.72	16.6538G	-41.99	1

2.4-2.4835GHz_BT-LE(2Mbps)

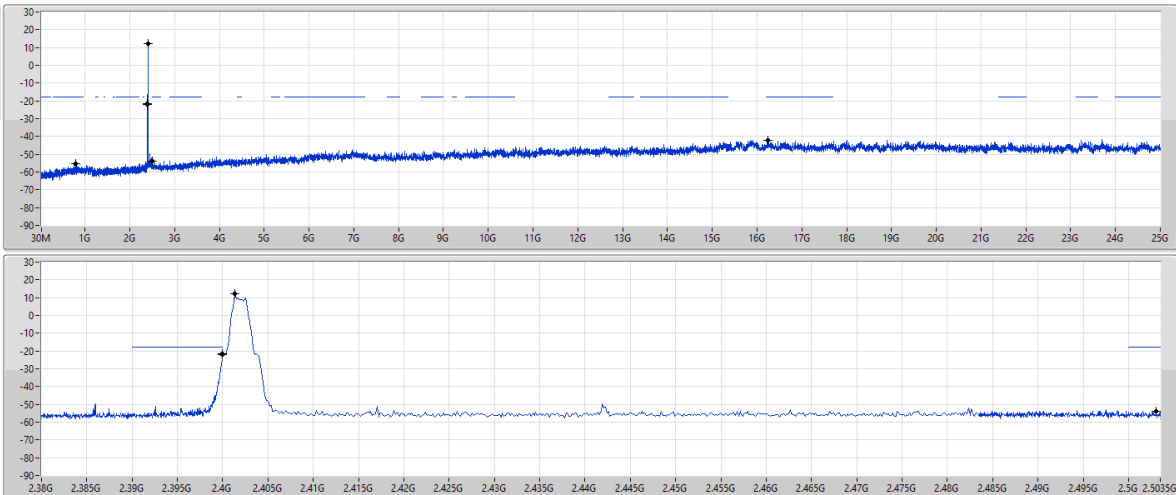
CSEndB-DTS

2402MHz

20/08/2024

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
2.40134G	12.07	-17.93	794.93M	-55.32	2.39996G	-22.18	2.4G	-21.38	2.50306G	-53.80	16.24886G	-41.98	1



Summary

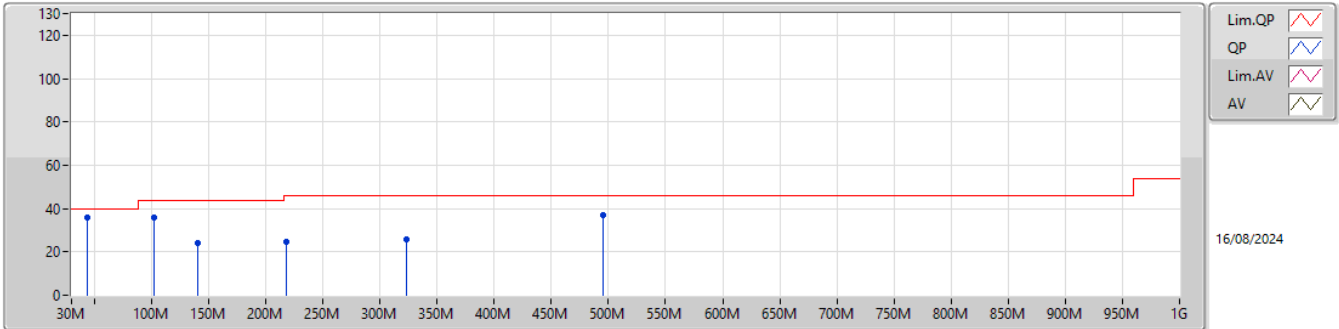
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-
BT-LE(2Mbps)	Pass	PK	43.58M	35.96	40.00	-4.04	3	Vertical	360	1.00

Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-
2440MHz_Fixture	Pass	PK	43.58M	35.96	40.00	-4.04	3	Vertical	360	1.00
2440MHz_Fixture	Pass	PK	101.78M	36.07	43.50	-7.43	3	Vertical	360	1.00
2440MHz_Fixture	Pass	PK	140.58M	23.89	43.50	-19.61	3	Vertical	360	1.00
2440MHz_Fixture	Pass	PK	218.18M	24.83	46.00	-21.17	3	Vertical	360	1.00
2440MHz_Fixture	Pass	PK	322.94M	25.52	46.00	-20.48	3	Vertical	360	1.00
2440MHz_Fixture	Pass	PK	495.6M	37.23	46.00	-8.77	3	Vertical	360	1.00
2440MHz_Fixture	Pass	PK	45.52M	29.40	40.00	-10.60	3	Horizontal	0	1.00
2440MHz_Fixture	Pass	PK	101.78M	33.17	43.50	-10.33	3	Horizontal	0	1.00
2440MHz_Fixture	Pass	PK	138.64M	28.12	43.50	-15.38	3	Horizontal	0	1.00
2440MHz_Fixture	Pass	PK	218.18M	26.11	46.00	-19.89	3	Horizontal	0	1.00
2440MHz_Fixture	Pass	PK	322.94M	29.27	46.00	-16.73	3	Horizontal	0	1.00
2440MHz_Fixture	Pass	PK	516.94M	31.03	46.00	-14.97	3	Horizontal	0	1.00

2.4-2.4835GHz_BT-LE(2Mbps)

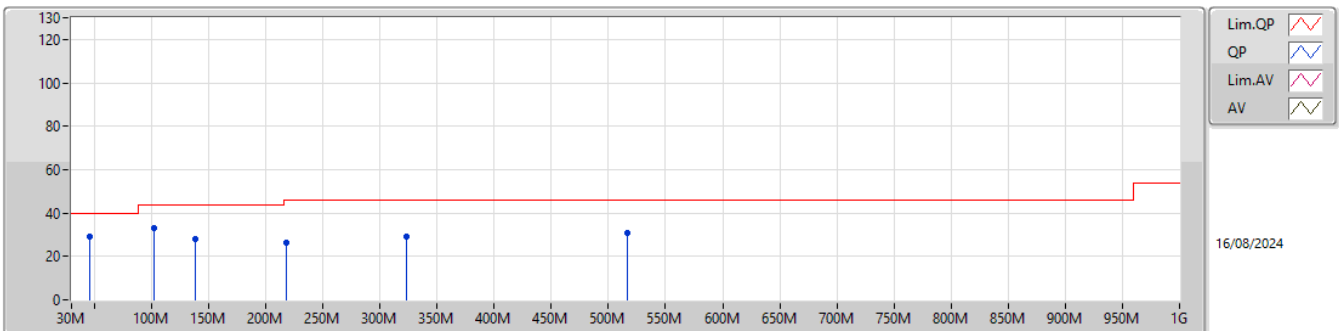
2440MHz_Fixture



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)
PK	43.58M	35.96	40.00	-4.04	-10.38	3	Vertical	360	1.00	46.34	16.25	0.74	27.37
PK	101.78M	36.07	43.50	-7.43	-10.19	3	Vertical	360	1.00	46.26	15.93	1.12	27.24
PK	140.58M	23.89	43.50	-19.61	-9.66	3	Vertical	360	1.00	33.55	16.08	1.36	27.10
PK	218.18M	24.83	46.00	-21.17	-11.00	3	Vertical	360	1.00	35.83	14.08	1.68	26.76
PK	322.94M	25.52	46.00	-20.48	-6.09	3	Vertical	360	1.00	31.61	18.75	2.00	26.84
PK	495.6M	37.23	46.00	-8.77	-3.08	3	Vertical	360	1.00	40.31	22.50	2.46	28.04

2.4-2.4835GHz_BT-LE(2Mbps)

2440MHz_Fixture



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)
PK	45.52M	29.40	40.00	-10.60	-11.31	3	Horizontal	0	1.00	40.71	15.33	0.73	27.37
PK	101.78M	33.17	43.50	-10.33	-10.19	3	Horizontal	0	1.00	43.36	15.93	1.12	27.24
PK	138.64M	28.12	43.50	-15.38	-9.49	3	Horizontal	0	1.00	37.61	16.26	1.36	27.11
PK	218.18M	26.11	46.00	-19.89	-11.00	3	Horizontal	0	1.00	37.11	14.08	1.68	26.76
PK	322.94M	29.27	46.00	-16.73	-6.09	3	Horizontal	0	1.00	35.36	18.75	2.00	26.84
PK	516.94M	31.03	46.00	-14.97	-3.01	3	Horizontal	0	1.00	34.04	22.67	2.49	28.17



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	2.487G	49.44	54.00	-4.56	3	Horizontal	304	2.56
BT-LE(2Mbps)	Pass	AV	2.4835G	50.30	54.00	-3.70	3	Horizontal	305	2.56

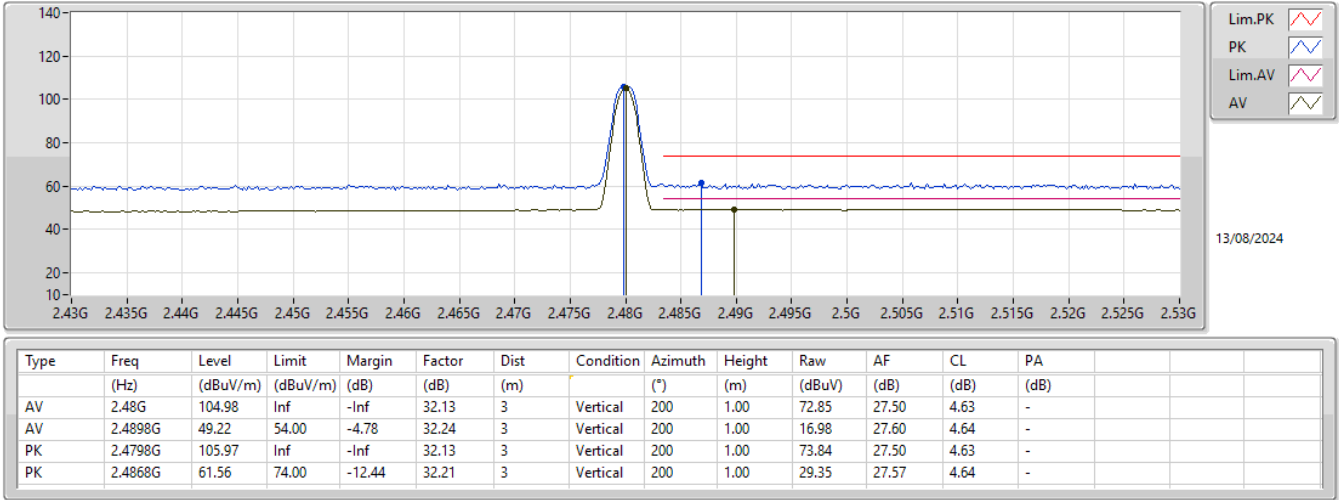
Result

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	2.3586G	47.53	54.00	-6.47	3	Vertical	197	1.00
2402MHz	Pass	AV	2.402G	104.96	Inf	-Inf	3	Vertical	197	1.00
2402MHz	Pass	PK	2.3534G	60.52	74.00	-13.48	3	Vertical	197	1.00
2402MHz	Pass	PK	2.4022G	106.61	Inf	-Inf	3	Vertical	197	1.00
2402MHz	Pass	AV	2.3586G	47.53	54.00	-6.47	3	Horizontal	306	3.00
2402MHz	Pass	AV	2.402G	106.74	Inf	-Inf	3	Horizontal	306	3.00
2402MHz	Pass	PK	2.3578G	60.20	74.00	-13.80	3	Horizontal	306	3.00
2402MHz	Pass	PK	2.4022G	108.37	Inf	-Inf	3	Horizontal	306	3.00
2402MHz	Pass	AV	4.80385G	28.32	54.00	-25.68	3	Vertical	197	1.50
2402MHz	Pass	PK	4.80359G	40.25	74.00	-33.75	3	Vertical	197	1.50
2402MHz	Pass	AV	4.80189G	27.08	54.00	-26.92	3	Horizontal	40	1.11
2402MHz	Pass	PK	4.80582G	38.96	74.00	-35.04	3	Horizontal	40	1.11
2402MHz	Pass	AV	2.3592G	48.25	54.00	-5.75	3	Vertical	198	1.00
2440MHz	Pass	AV	2.44G	105.16	Inf	-Inf	3	Vertical	198	1.00
2440MHz	Pass	AV	2.4904G	49.22	54.00	-4.78	3	Vertical	198	1.00
2440MHz	Pass	PK	2.3648G	60.06	74.00	-13.94	3	Vertical	198	1.00
2440MHz	Pass	PK	2.4404G	106.12	Inf	-Inf	3	Vertical	198	1.00
2440MHz	Pass	PK	2.4892G	60.72	74.00	-13.28	3	Vertical	198	1.00
2440MHz	Pass	AV	2.3872G	48.20	54.00	-5.80	3	Horizontal	305	2.92
2440MHz	Pass	AV	2.44G	107.54	Inf	-Inf	3	Horizontal	305	2.92
2440MHz	Pass	AV	2.4916G	49.22	54.00	-4.78	3	Horizontal	305	2.92
2440MHz	Pass	PK	2.352G	59.87	74.00	-14.13	3	Horizontal	305	2.92
2440MHz	Pass	PK	2.4396G	108.50	Inf	-Inf	3	Horizontal	305	2.92
2440MHz	Pass	PK	2.4944G	60.39	74.00	-13.61	3	Horizontal	305	2.92
2440MHz	Pass	AV	4.88014G	28.05	54.00	-25.95	3	Vertical	196	1.96
2440MHz	Pass	AV	7.32064G	42.31	54.00	-11.69	3	Vertical	147	3.00
2440MHz	Pass	PK	4.88013G	39.96	74.00	-34.04	3	Vertical	196	1.96
2440MHz	Pass	PK	7.31915G	50.30	74.00	-23.70	3	Vertical	147	3.00
2440MHz	Pass	AV	4.8824G	26.99	54.00	-27.01	3	Horizontal	70	1.49
2440MHz	Pass	AV	7.32059G	39.00	54.00	-15.00	3	Horizontal	122	1.00
2440MHz	Pass	PK	4.87881G	39.07	74.00	-34.93	3	Horizontal	70	1.49
2440MHz	Pass	PK	7.31935G	48.08	74.00	-25.92	3	Horizontal	122	1.00
2480MHz	Pass	AV	2.48G	104.98	Inf	-Inf	3	Vertical	200	1.00
2480MHz	Pass	AV	2.4898G	49.22	54.00	-4.78	3	Vertical	200	1.00
2480MHz	Pass	PK	2.4798G	105.97	Inf	-Inf	3	Vertical	200	1.00
2480MHz	Pass	PK	2.4868G	61.56	74.00	-12.44	3	Vertical	200	1.00
2480MHz	Pass	AV	2.48G	107.35	Inf	-Inf	3	Horizontal	304	2.56
2480MHz	Pass	AV	2.487G	49.44	54.00	-4.56	3	Horizontal	304	2.56
2480MHz	Pass	PK	2.4798G	108.32	Inf	-Inf	3	Horizontal	304	2.56
2480MHz	Pass	PK	2.4926G	61.52	74.00	-12.48	3	Horizontal	304	2.56
2480MHz	Pass	AV	4.95983G	31.14	54.00	-22.86	3	Vertical	330	2.36
2480MHz	Pass	AV	7.4406G	40.08	54.00	-13.92	3	Vertical	158	3.00
2480MHz	Pass	PK	4.95929G	41.40	74.00	-32.60	3	Vertical	330	2.36
2480MHz	Pass	PK	7.43914G	48.64	74.00	-25.36	3	Vertical	158	3.00
2480MHz	Pass	AV	4.96008G	28.42	54.00	-25.58	3	Horizontal	230	1.50
2480MHz	Pass	AV	7.43937G	39.13	54.00	-14.87	3	Horizontal	122	1.14
2480MHz	Pass	PK	4.95955G	40.34	74.00	-33.66	3	Horizontal	230	1.50
2480MHz	Pass	PK	7.43931G	47.71	74.00	-26.29	3	Horizontal	122	1.14
BT-LE(2Mbps)	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.362G	48.23	54.00	-5.77	3	Vertical	197	1.00
2402MHz	Pass	AV	2.402G	102.34	Inf	-Inf	3	Vertical	197	1.00
2402MHz	Pass	PK	2.3648G	60.41	74.00	-13.59	3	Vertical	197	1.00
2402MHz	Pass	PK	2.4024G	105.01	Inf	-Inf	3	Vertical	197	1.00
2402MHz	Pass	AV	2.3546G	48.24	54.00	-5.76	3	Horizontal	306	3.00
2402MHz	Pass	AV	2.402G	104.17	Inf	-Inf	3	Horizontal	306	3.00
2402MHz	Pass	PK	2.3896G	60.18	74.00	-13.82	3	Horizontal	306	3.00
2402MHz	Pass	PK	2.4026G	106.76	Inf	-Inf	3	Horizontal	306	3.00
2402MHz	Pass	AV	4.80504G	27.47	54.00	-26.53	3	Vertical	197	3.00
2402MHz	Pass	PK	4.80518G	39.74	74.00	-34.26	3	Vertical	197	3.00
2402MHz	Pass	AV	4.80211G	27.07	54.00	-26.93	3	Horizontal	214	1.49

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)
2402MHz	Pass	PK	4.80467G	39.31	74.00	-34.69	3	Horizontal	214	1.49
2440MHz	Pass	AV	2.358G	48.25	54.00	-5.75	3	Vertical	198	1.00
2440MHz	Pass	AV	2.44G	101.89	Inf	-Inf	3	Vertical	198	1.00
2440MHz	Pass	AV	2.49G	49.22	54.00	-4.78	3	Vertical	198	1.00
2440MHz	Pass	PK	2.3484G	59.73	74.00	-14.27	3	Vertical	198	1.00
2440MHz	Pass	PK	2.4404G	104.52	Inf	-Inf	3	Vertical	198	1.00
2440MHz	Pass	PK	2.4856G	60.70	74.00	-13.30	3	Vertical	198	1.00
2440MHz	Pass	AV	2.3544G	48.23	54.00	-5.77	3	Horizontal	305	2.92
2440MHz	Pass	AV	2.44G	104.29	Inf	-Inf	3	Horizontal	305	2.92
2440MHz	Pass	AV	2.4912G	49.21	54.00	-4.79	3	Horizontal	305	2.92
2440MHz	Pass	PK	2.3688G	59.76	74.00	-14.24	3	Horizontal	305	2.92
2440MHz	Pass	PK	2.4396G	106.93	Inf	-Inf	3	Horizontal	305	2.92
2440MHz	Pass	PK	2.498G	60.64	74.00	-13.36	3	Horizontal	305	2.92
2440MHz	Pass	AV	4.88366G	27.98	54.00	-26.02	3	Vertical	148	2.38
2440MHz	Pass	AV	7.31866G	42.55	54.00	-11.45	3	Vertical	165	2.97
2440MHz	Pass	PK	4.88104G	39.62	74.00	-34.38	3	Vertical	148	2.38
2440MHz	Pass	PK	7.31838G	50.87	74.00	-23.13	3	Vertical	165	2.97
2440MHz	Pass	AV	4.88154G	26.77	54.00	-27.23	3	Horizontal	216	2.20
2440MHz	Pass	AV	7.3187G	38.63	54.00	-15.37	3	Horizontal	195	1.04
2440MHz	Pass	PK	4.88376G	39.04	74.00	-34.96	3	Horizontal	216	2.20
2440MHz	Pass	PK	7.32152G	48.07	74.00	-25.93	3	Horizontal	195	1.04
2480MHz	Pass	AV	2.48G	101.94	Inf	-Inf	3	Vertical	200	1.00
2480MHz	Pass	AV	2.4835G	49.86	54.00	-4.14	3	Vertical	200	1.00
2480MHz	Pass	PK	2.4794G	104.61	Inf	-Inf	3	Vertical	200	1.00
2480MHz	Pass	PK	2.4866G	61.62	74.00	-12.38	3	Vertical	200	1.00
2480MHz	Pass	AV	2.48G	104.12	Inf	-Inf	3	Horizontal	305	2.56
2480MHz	Pass	AV	2.4835G	50.30	54.00	-3.70	3	Horizontal	305	2.56
2480MHz	Pass	PK	2.4796G	106.78	Inf	-Inf	3	Horizontal	305	2.56
2480MHz	Pass	PK	2.488G	61.33	74.00	-12.67	3	Horizontal	305	2.56
2480MHz	Pass	AV	4.95896G	29.77	54.00	-24.23	3	Vertical	332	2.35
2480MHz	Pass	AV	7.43876G	40.59	54.00	-13.41	3	Vertical	162	3.00
2480MHz	Pass	PK	4.96108G	41.33	74.00	-32.67	3	Vertical	332	2.35
2480MHz	Pass	PK	7.43832G	49.71	74.00	-24.29	3	Vertical	162	3.00
2480MHz	Pass	AV	4.95894G	27.84	54.00	-26.16	3	Horizontal	188	1.50
2480MHz	Pass	AV	7.43874G	37.05	54.00	-16.95	3	Horizontal	191	1.38
2480MHz	Pass	PK	4.96029G	39.96	74.00	-34.04	3	Horizontal	188	1.50
2480MHz	Pass	PK	7.43838G	46.95	74.00	-27.05	3	Horizontal	191	1.38

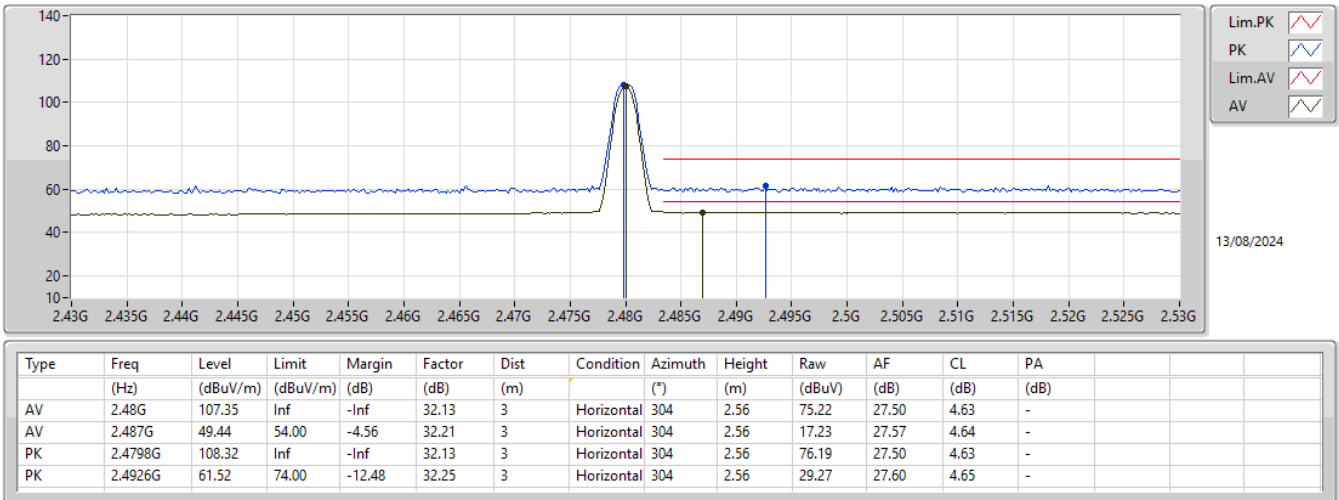
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2480MHz_TX



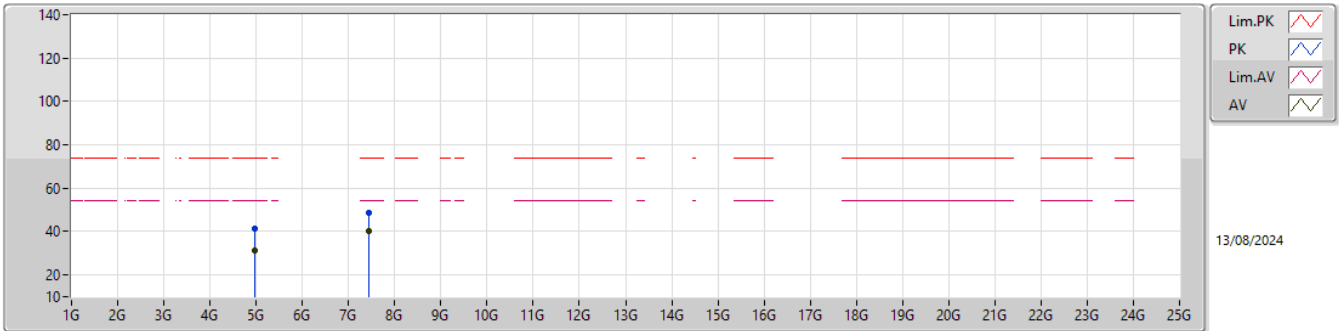
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2480MHz_TX



2.4-2.4835GHz_BT-LE(1Mbps)

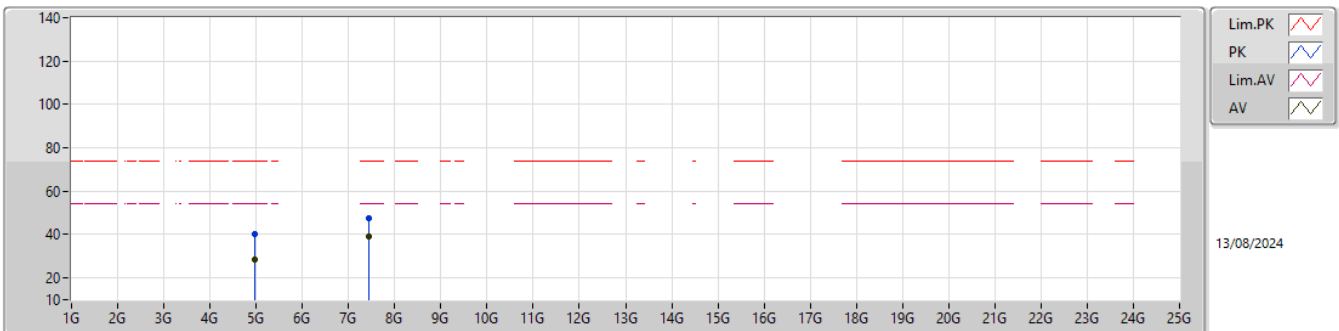
2480MHz_TX



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	4.95983G	31.14	54.00	-22.86	-4.97	3	Vertical	330	2.36	36.11	32.94	6.68	44.59
AV	7.4406G	40.08	54.00	-13.92	-0.23	3	Vertical	158	3.00	40.31	36.12	8.37	44.72
PK	4.95929G	41.40	74.00	-32.60	-4.97	3	Vertical	330	2.36	46.37	32.94	6.68	44.59
PK	7.43914G	48.64	74.00	-25.36	-0.23	3	Vertical	158	3.00	48.87	36.12	8.37	44.72

2.4-2.4835GHz_BT-LE(1Mbps)

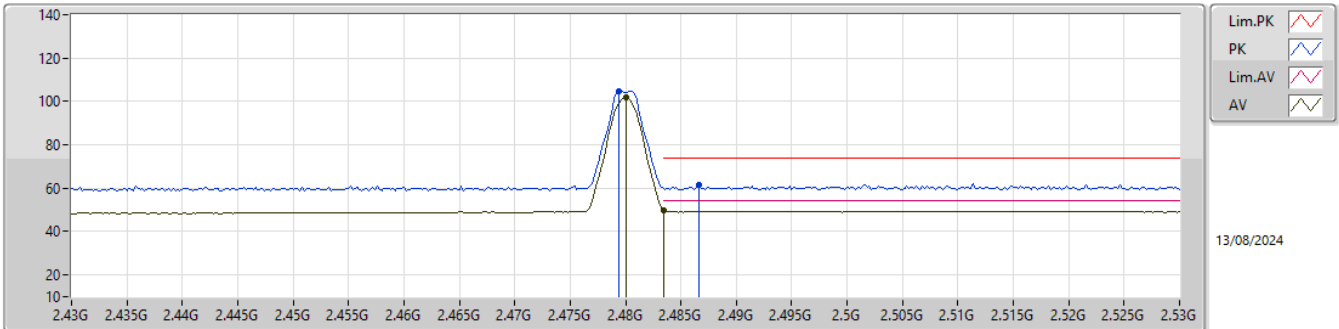
2480MHz_TX



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	4.96008G	28.42	54.00	-25.58	-4.97	3	Horizontal	230	1.50	33.39	32.94	6.68	44.59
AV	7.43937G	39.13	54.00	-14.87	-0.23	3	Horizontal	122	1.14	39.36	36.12	8.37	44.72
PK	4.95955G	40.34	74.00	-33.66	-4.97	3	Horizontal	230	1.50	45.31	32.94	6.68	44.59
PK	7.43931G	47.71	74.00	-26.29	-0.23	3	Horizontal	122	1.14	47.94	36.12	8.37	44.72

2.4-2.4835GHz_BT-LE(2Mbps)

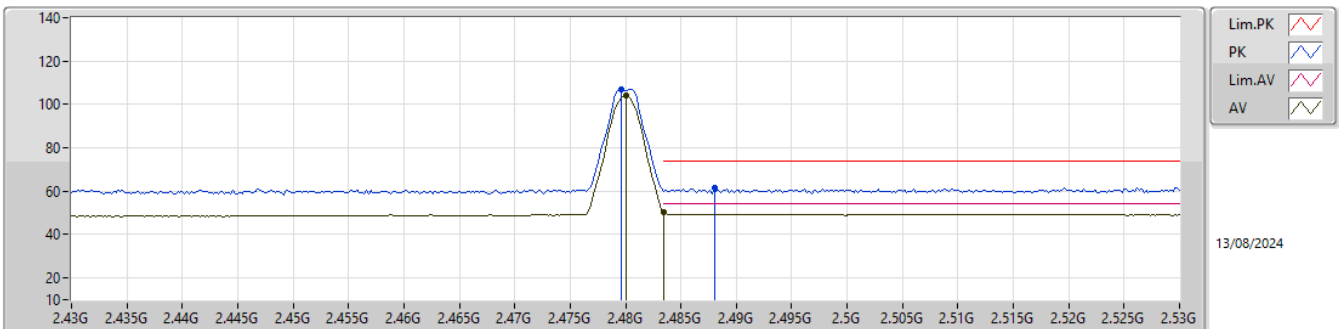
2480MHz_TX



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	2.48G	101.94	Inf	-Inf	32.13	3	Vertical	200	1.00	69.81	27.50	4.63	-
AV	2.4835G	49.86	54.00	-4.14	32.18	3	Vertical	200	1.00	17.68	27.54	4.64	-
PK	2.4794G	104.61	Inf	-Inf	32.12	3	Vertical	200	1.00	72.49	27.49	4.63	-
PK	2.4866G	61.62	74.00	-12.38	32.21	3	Vertical	200	1.00	29.41	27.57	4.64	-

2.4-2.4835GHz_BT-LE(2Mbps)

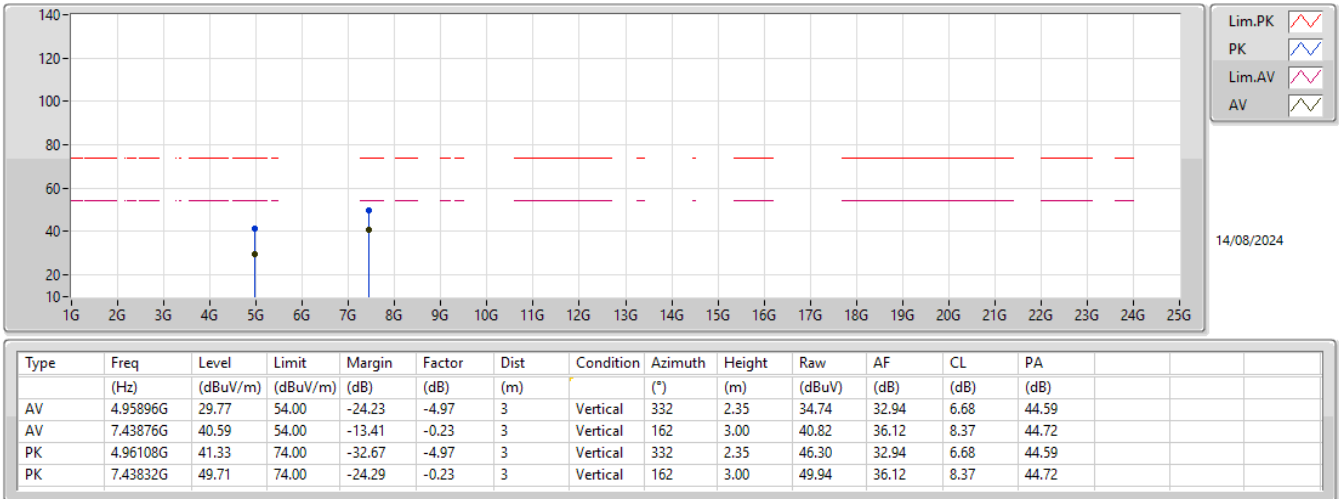
2480MHz_TX



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	2.48G	104.12	Inf	-Inf	32.13	3	Horizontal	305	2.56	71.99	27.50	4.63	-
AV	2.4835G	50.30	54.00	-3.70	32.18	3	Horizontal	305	2.56	18.12	27.54	4.64	-
PK	2.4796G	106.78	Inf	-Inf	32.13	3	Horizontal	305	2.56	74.65	27.50	4.63	-
PK	2.488G	61.33	74.00	-12.67	32.22	3	Horizontal	305	2.56	29.11	27.58	4.64	-

2.4-2.4835GHz_BT-LE(2Mbps)

2480MHz_TX



2.4-2.4835GHz_BT-LE(2Mbps)

2480MHz_TX

