

FCC Radio Test Report

FCC ID : HDC-649A
Equipment : WiFi6 module
Brand Name : 
Model Name : W649aYYYYYY(Y can be 0-9, a-z, A-Z, blank, "+" or "-" or "#")
Applicant : Adtran
901 Explorer Blvd., Huntsville, AL 35806, USA
Manufacturer : XAVi Technologies Corporation
22F., No.69, Sec. 2, Guangfu Rd., Sanchong Dist.,
New Taipei City 241, Taiwan (R.O.C.)
Standard : 47 CFR FCC Part 15.247

The product was received on Aug. 26, 2021, and testing was started from Sep. 09, 2021 and completed on Sep. 24, 2021. We, SPORTON INTERNATIONAL INC. Hsinhua Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

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



Approved by: Allen Lin

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 Support Equipment.....	10
2.4 Test Setup Diagram	11
3 TRANSMITTER TEST RESULT	13
3.1 AC Power-line Conducted Emissions	13
3.2 DTS Bandwidth.....	15
3.3 Maximum Conducted Output Power	16
3.4 Power Spectral Density	18
3.5 Emissions in Non-restricted Frequency Bands	19
3.6 Emissions in Restricted Frequency Bands.....	20
4 TEST EQUIPMENT AND CALIBRATION DATA.....	24
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

TEL : 886-3-3273456
FAX : 886-3-3270973
Report Template No.: HE1-C10 Ver.4.2
FCC ID: HDC-649A

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: 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

Note:

- ♦ Bluetooth LE uses a GFSK (1Mbps) modulation.
- ♦ BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector	Support
1	GALTRONICS	60-3523-03-2	PCB antenna	U.FL	5G
2	GALTRONICS	60-2888-03-2	PCB antenna	U.FL	5G
3	GALTRONICS	60-2961-03-5	PCB antenna	U.FL	BT
4	GALTRONICS	60-2791-03	PCB antenna	U.FL	5G
5	GALTRONICS	60-2808-03	PCB antenna	U.FL	5G
6	GALTRONICS	60-2783-03	PCB antenna	U.FL	DFS RX

Ant.	Port	Gain (dBi)	
		5G	BT
1	1	3.99	-
2	2	3.99	-
3	3	-	2.56
4	4	2.12	-
5	5	2.12	-
6	6	3.99	-

Note 1: The EUT has six antennas.

For BT function:

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

Ant. 3 (port 3) can be used as transmitting/receiving antenna.

For 5GHz function:

For IEEE 802.11 a/n/ac/ax mode (4TX/4RX)

Ant. 1 (port 1), Ant. 2 (port 2), Ant. 4 (port 4) and Ant. 5 (port 5) could transmit/receive simultaneously.

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) ≥ 1/T
BT-LE(1Mbps)	0.85	0.71	2.125m	1k

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

1.1.5 Table for Multiple Listing

The model names in the following table are all refer to the identical product.

Model Name	Description
W649aYYYYYY(Y can be 0-9, a-z, A-Z, blank, "+" or "-" or "#")	All the models are identical, the different model served as marketing strategy.

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	Billy Wang	23.2~24.1°C / 58~60%	24/Sep/2021
RF Conducted	TH01-HY	Barry Hsiao	24.3~25.3°C / 53~60%	17/Sep/2021~24/Sep/2021
☒ Wen 33rd.St. (TAF: 3785)	ADD: No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)			
	TEL: 886-3-318-0787		FAX: 886-3-318-0287	
Test site Designation No. TW0008 with FCC.				
Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
Radiated	03CH09-HY	Ryan Hsiao	22.2~24.3°C / 41~57%	09/Sep/2021~18/Sep/2021

1.4 Measurement Uncertainty

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

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



2 Test Configuration of EUT

2.1 Test Channel Mode

Test Software Version	WCN Combo Tool [2.1942.00]
------------------------------	----------------------------

Mode	Power Setting
BT-LE(1Mbps)	-
2402MHz	Default
2440MHz	Default
2480MHz	Default

2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz
Operating Mode	CTX
1	Test 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	Test Fixture Mode		
Operating Mode > 1GHz	CTX		
Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			
Worst Planes of EUT			V

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis
Operating Mode	CTX
1	Bluetooth+WLAN 5GHz
Refer to Sporton Test Report No.: FA182006 for Co-location RF Exposure Evaluation.	

2.3 Support Equipment

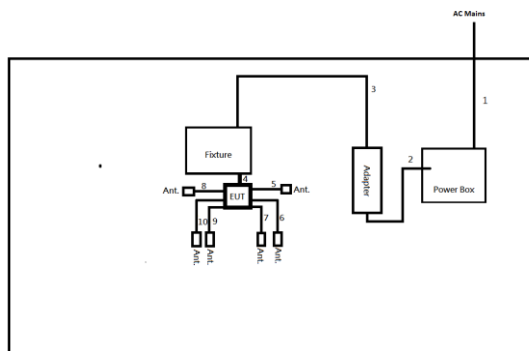
Support Equipment – AC Conduction					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Test fixture	ADTRAN	854v6 GigoWAN HGU	-	Provided by Customer
2	Adapter for Test fixture	MASS POWER	S050-1A120400B3	-	-
3	Client (Remote)	ADTRAN	854-v6	-	Provided by Customer
4	Adapter (Remote)	MASS POWER	S050-1A120400B3	-	Provided by Customer

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

Support Equipment – Radiated					
No.	Equipment	Brand Name	Model Name	FCC ID	Remark
1	Test fixture	ADTRAN	854v6 GigoWAN HGU	-	Provided by Customer
2	Adapter for Test fixture	MASS POWER	S050-1A120400B3	-	-
3	Client (Remote)	ADTRAN	854-v6	-	Provided by Customer
4	Adapter (Remote)	MASS POWER	S050-1A120400B3	-	Provided by Customer

[illegible]

Item	Connection	Shielded	Length(m)	Remark
1	AC Power cable	No	1.8	-
2	AC Power cable	No	0.5	-
3	DC Power cable	No	1.0	-
4	Fixture cable	No	0.2	-
5	Ant. cable	No	0.1	-
6	Ant. cable	No	0.22	-
7	Ant. cable	No	0.20	-
8	Ant. cable	No	0.22	-
9	Ant. cable	No	0.20	-
10	Ant. cable	No	0.15	-

Test Setup Diagram - Radiated Test


Item	Connection	Shielded	Length(m)	Remark
1	AC Power cable	No	1.8	-
2	AC Power cable	No	0.5	-
3	DC Power cable	No	1.0	-
4	Fixture cable	No	0.2	-
5	Ant. cable	No	0.1	-
6	Ant. cable	No	0.22	-
7	Ant. cable	No	0.20	-
8	Ant. cable	No	0.22	-
9	Ant. cable	No	0.20	-
10	Ant. cable	No	0.15	-

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

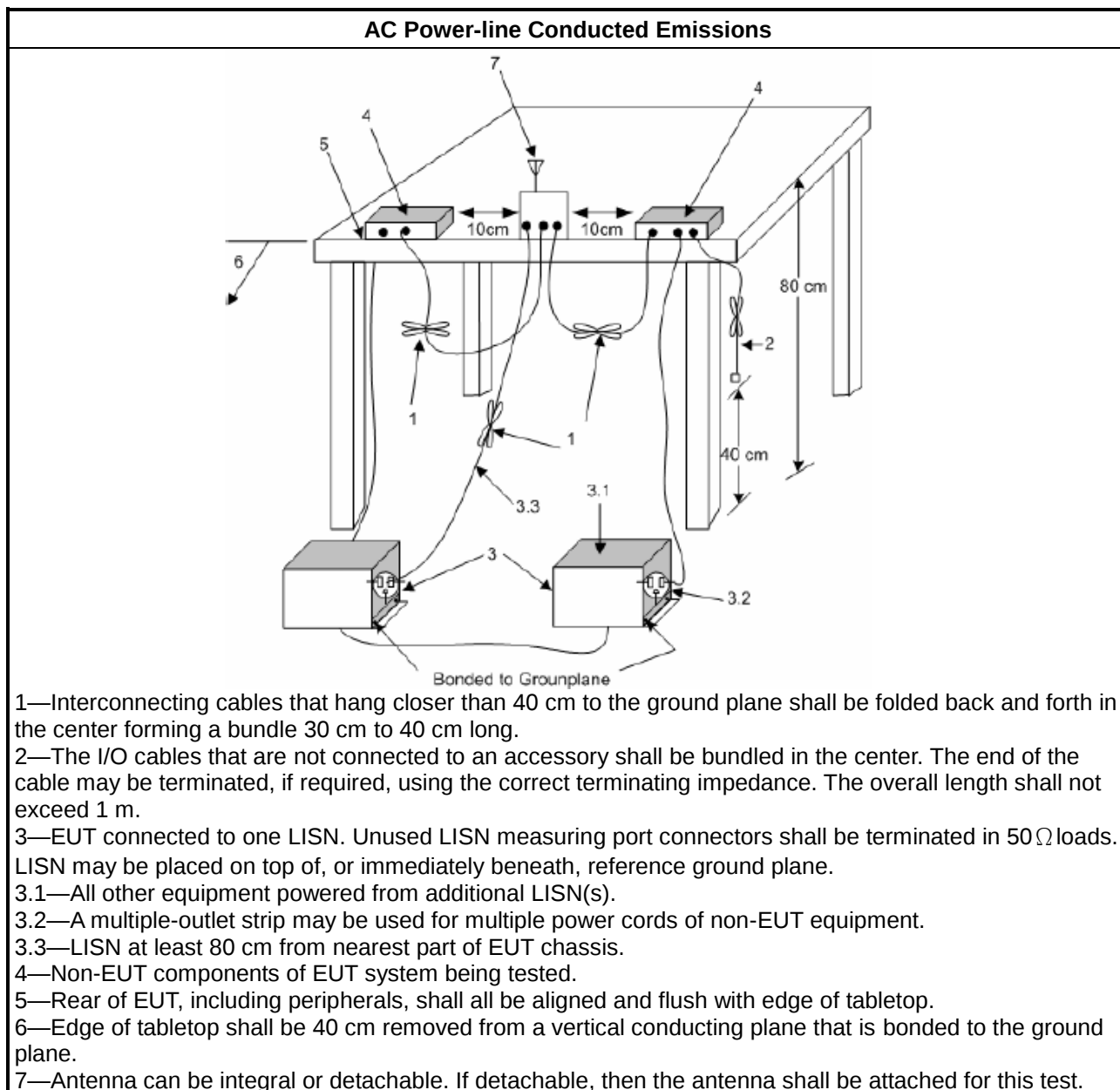
Test Method
▪ Refer as ANSI C63.10-2013, clause 6.2 foray power-line conducted emissions.

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.

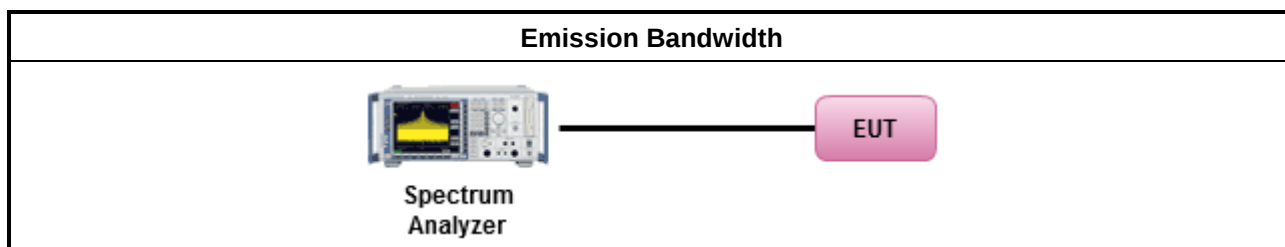
3.2.2 Measuring Instruments

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.	

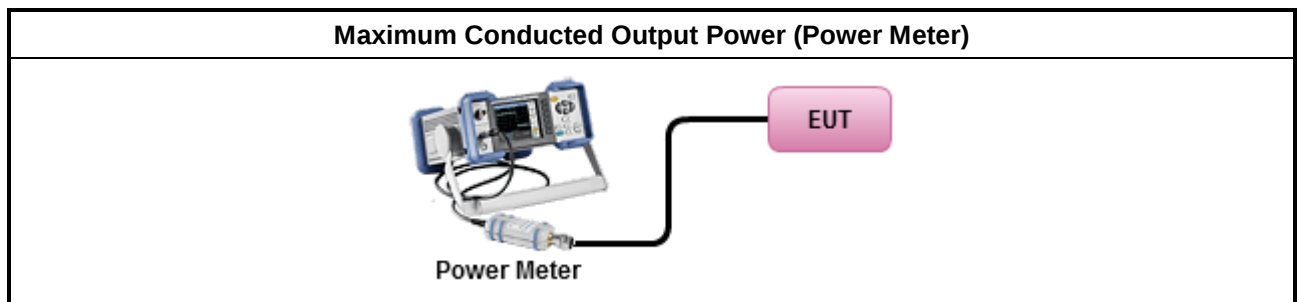
3.3.2 Measuring Instruments

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

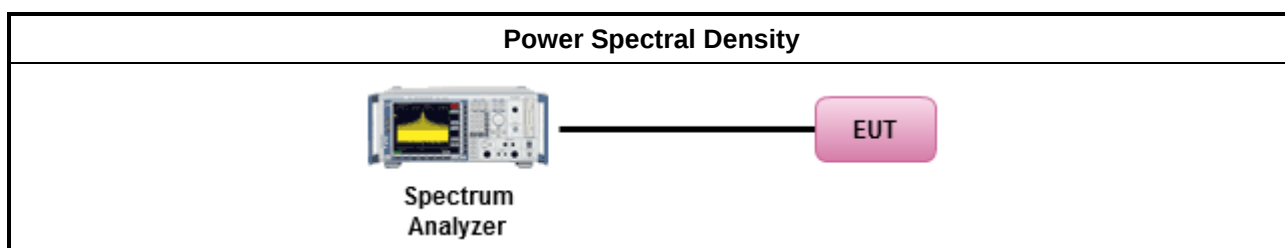
3.4.2 Measuring Instruments

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.	

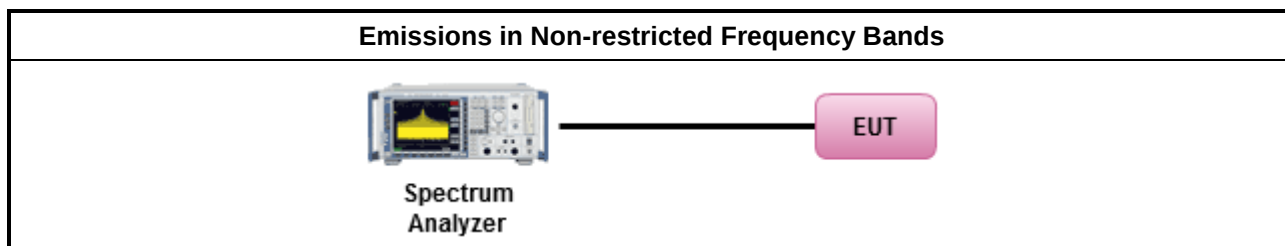
3.5.2 Measuring Instruments

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

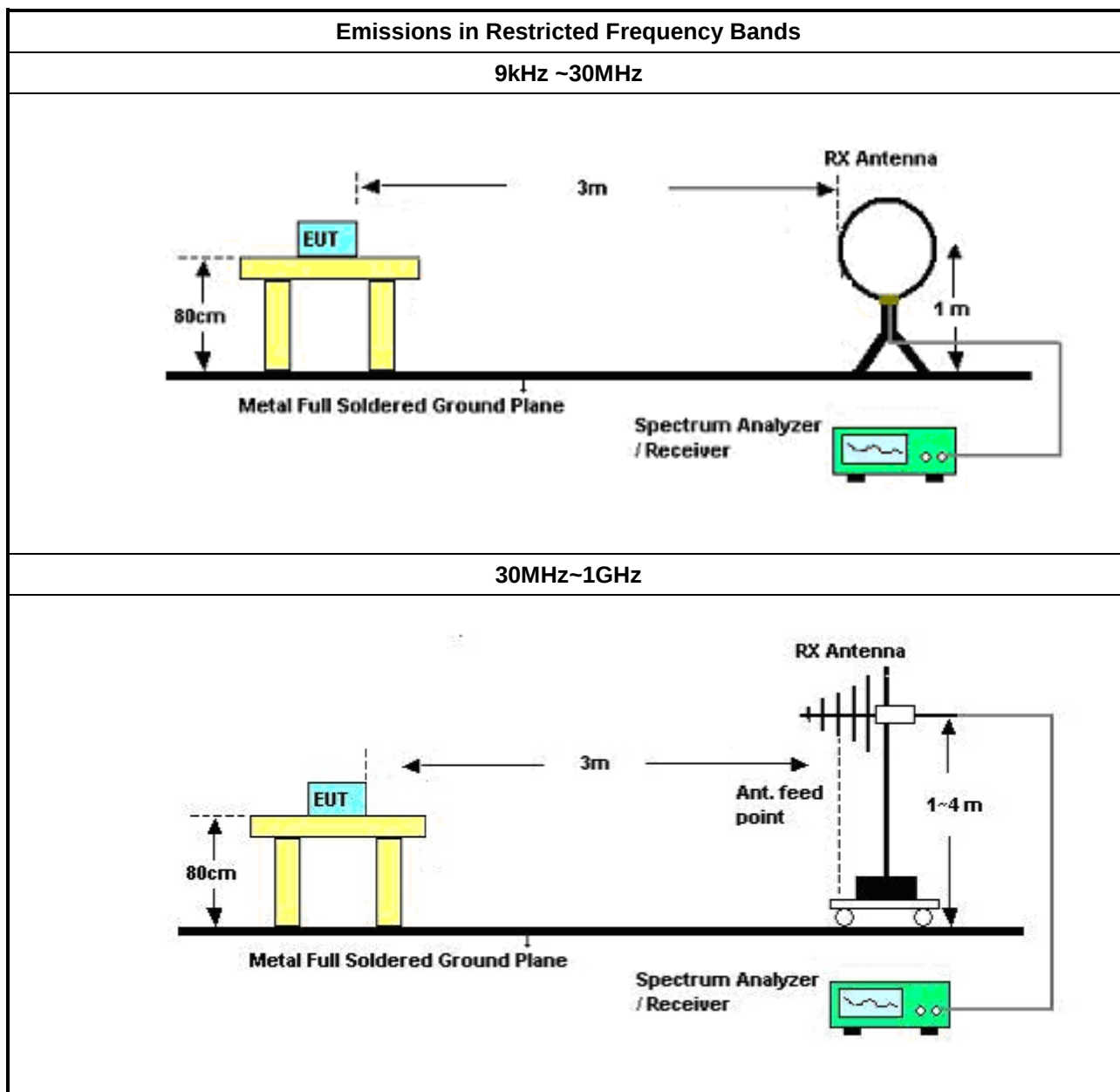
Test Method	
The average emission levels shall be measured in [duty cycle $\geq$ 98 or duty factor].	
Refer as ANSI C63.10, clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.	
For the transmitter unwanted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

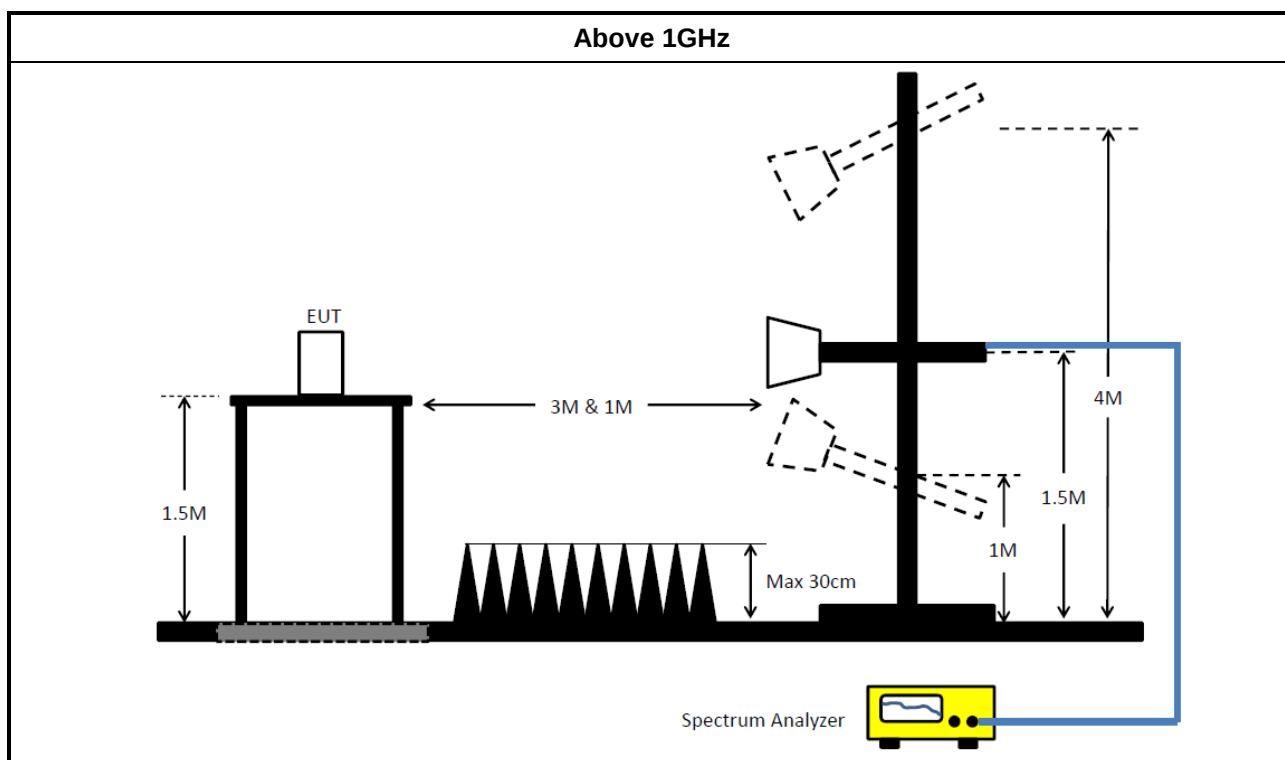
3.6.4 Measurement Results Calculation

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	102052	9kHz ~ 3.6GHz	19/Apr/2021	18/Apr/2022
LISN	R&S	ENV216	101295	9kHz ~ 30MHz	11/Nov/2020	10/Nov/2021
RF Cable 5m	TITAN	TITAN	CO04-cable-01	0.1MHz~200MHz	03/Mar/2021	02/Mar/2022
Impuls Begrenzer Pulse Limiter	SCHWARZBECK	VTSD 9561-F	9561-F041	9kHz ~ 30MHz	15/Sep/2021	14/Sep/2022

Instrument for Conducted Test

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Signal Analyzer	R&S	FSV 40	101013	10Hz~40GHz	30/Mar/2021	29/Mar/2022
SMB100A Signal Generator	R&S	SMB100A03	181147	100kHz~40GHz	20/Oct/2020	19/Oct/2021
Pulse Sensor	Anritsu	MA2411B	0917017	300MHz~40GHz	23/Feb/2021	22/Feb/2022
Power Meter	Anritsu	ML2495A	0949003	300MHz~40GHz	23/Feb/2021	22/Feb/2022

Instrument for Radiated Test

Instrument	Manufacturer /Brand	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	30MHz~1GHz 3m	26/Mar/2021	25/Mar/2022
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	1GHz~18GHz 3m	18/Mar/2021	17/Mar/2022
EXA Signal Analyzer	KEYSIGHT	N9010A	MY54200885	10Hz~44GHz	13/Aug/2021	12/Aug/2022
Amplifier	EMC	EMC9135	980232	9kHz~1GHz	12/Apr/2021	11/Apr/2022
Bilog Antenna & 5dB Attenuator	TESEQ & MTJ	CBL6111D&MT J6102-05	35418 & 3	30MHz~1GHz	05/Sep/2021	04/Sep/2022
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA9120 D 1534	1GHz~18GHz	18/May/2021	17/May/2022
RF Cable-low	Jye Bao	RG142	CB031+324530/4	9kHz~30MHz	30/Aug/2021	29/Aug/2022
RF Cable-low	Jye Bao	RG142	CB031+324530/4	30MHz~1GHz	09/Feb/2021	08/Feb/2022
RF CABLE 5m+3m+1m	HUBER+SUHNER	SUCOFLEX104	CB009	1GHz~40GHz	13/Aug/2021	12/Aug/2022
Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170221	18GHz~40GHz	11/Mar/2021	10/Mar/2022
Microwave Premplifier	EMC INSTRUMENTS	EM18G40G	060604	18GHz ~ 40GHz	09/Mar/2021	08/Mar/2022
Loop Antenna	TESEQ	HLA 6120	31244	9kHz~30MHz	16/Mar/2021	15/Mar/2022
EMI Test Receiver	R&S	ESR3	102052	9kHz~3.6GHz	19/Apr/2021	18/Apr/2022
Microwave Preamplifier	Agilent	8449B	3008A02096	1GHz~26.5GHz	23/Jul/2021	22/Jul/2022



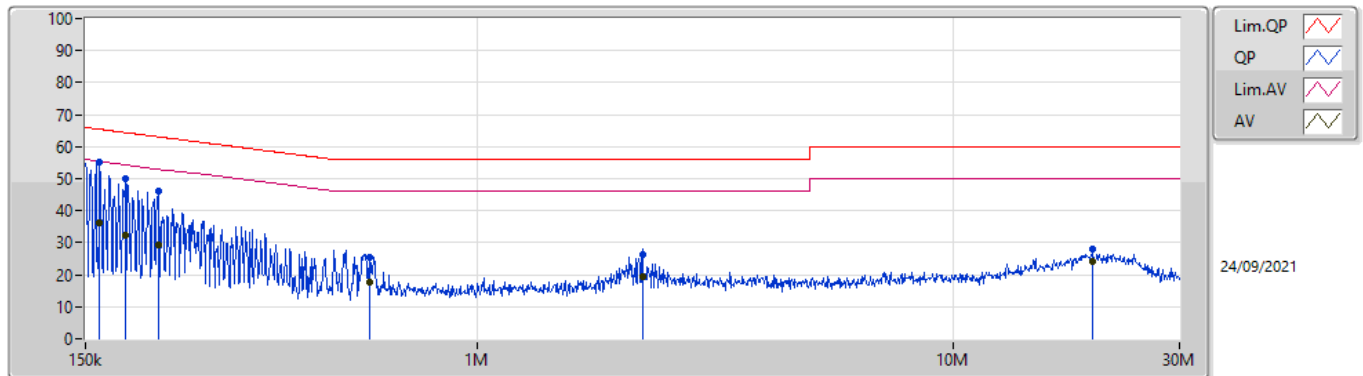
Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	QP	160.533k	55.06	65.43	-10.37	Line

Mode Configure

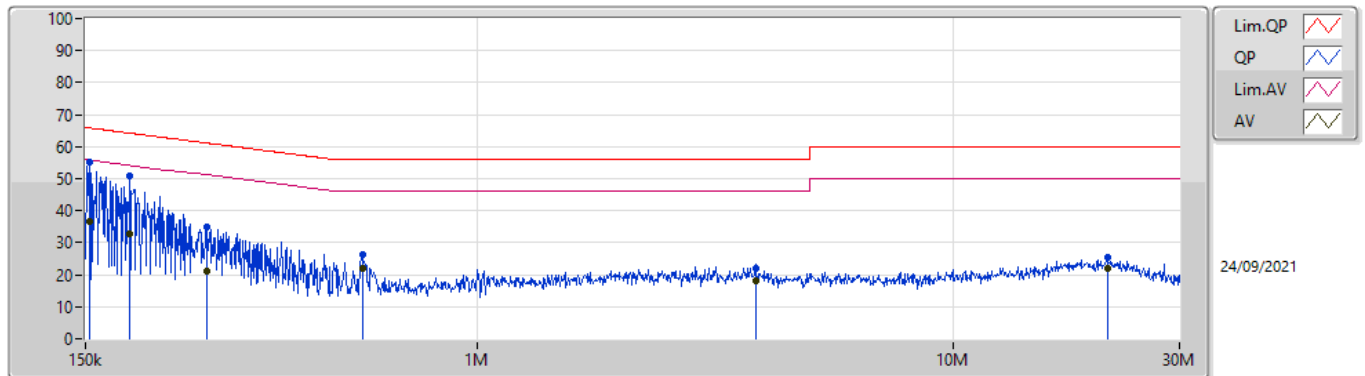
Mode	Result	Type	Freq (Hz)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Condition	Comments
Mode 1	Pass	QP	160.533k	55.06	65.43	-10.37	Line	-
Mode 1	Pass	AV	160.533k	36.32	55.43	-19.11	Line	-
Mode 1	Pass	QP	181.681k	50.11	64.41	-14.30	Line	-
Mode 1	Pass	AV	181.681k	32.45	54.41	-21.96	Line	-
Mode 1	Pass	QP	213.137k	46.28	63.07	-16.79	Line	-
Mode 1	Pass	AV	213.137k	29.51	53.07	-23.56	Line	-
Mode 1	Pass	QP	592.227k	25.43	56.00	-30.57	Line	-
Mode 1	Pass	AV	592.227k	17.88	46.00	-28.12	Line	-
Mode 1	Pass	QP	2.229M	26.33	56.00	-29.67	Line	-
Mode 1	Pass	AV	2.229M	19.37	46.00	-26.63	Line	-
Mode 1	Pass	QP	19.71M	27.88	60.00	-32.12	Line	-
Mode 1	Pass	AV	19.71M	24.03	50.00	-25.97	Line	-
Mode 1	Pass	QP	153.024k	55.32	65.83	-10.51	Neutral	-
Mode 1	Pass	AV	153.024k	36.51	55.83	-19.32	Neutral	-
Mode 1	Pass	QP	186.085k	50.69	64.20	-13.51	Neutral	-
Mode 1	Pass	AV	186.085k	32.78	54.20	-21.42	Neutral	-
Mode 1	Pass	QP	269.741k	35.00	61.12	-26.12	Neutral	-
Mode 1	Pass	AV	269.741k	21.21	51.12	-29.91	Neutral	-
Mode 1	Pass	QP	575.907k	26.29	56.00	-29.71	Neutral	-
Mode 1	Pass	AV	575.907k	21.92	46.00	-24.08	Neutral	-
Mode 1	Pass	QP	3.851M	21.85	56.00	-34.15	Neutral	-
Mode 1	Pass	AV	3.851M	18.26	46.00	-27.74	Neutral	-
Mode 1	Pass	QP	21.178M	25.33	60.00	-34.67	Neutral	-
Mode 1	Pass	AV	21.178M	21.97	50.00	-28.03	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	160.533k	55.06	65.43	-10.37	19.62	Line	-	35.44	9.69	0.04	9.89			
AV	160.533k	36.32	55.43	-19.11	19.62	Line	-	16.70	9.69	0.04	9.89			
QP	181.681k	50.11	64.41	-14.30	19.61	Line	-	30.50	9.68	0.04	9.89			
AV	181.681k	32.45	54.41	-21.96	19.61	Line	-	12.84	9.68	0.04	9.89			
QP	213.137k	46.28	63.07	-16.79	19.61	Line	-	26.67	9.68	0.04	9.89			
AV	213.137k	29.51	53.07	-23.56	19.61	Line	-	9.90	9.68	0.04	9.89			
QP	592.227k	25.43	56.00	-30.57	19.63	Line	-	5.80	9.67	0.07	9.89			
AV	592.227k	17.88	46.00	-28.12	19.63	Line	-	-1.75	9.67	0.07	9.89			
QP	2.229M	26.33	56.00	-29.67	19.67	Line	-	6.66	9.68	0.11	9.88			
AV	2.229M	19.37	46.00	-26.63	19.67	Line	-	-0.30	9.68	0.11	9.88			
QP	19.71M	27.88	60.00	-32.12	19.86	Line	-	8.02	9.67	0.30	9.89			
AV	19.71M	24.03	50.00	-25.97	19.86	Line	-	4.17	9.67	0.30	9.89			

Conducted Emissions at Powerline_Mode 1



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)			
QP	153.024k	55.32	65.83	-10.51	19.62	Neutral	-	35.70	9.69	0.04	9.89			
AV	153.024k	36.51	55.83	-19.32	19.62	Neutral	-	16.89	9.69	0.04	9.89			
QP	186.085k	50.69	64.20	-13.51	19.61	Neutral	-	31.08	9.68	0.04	9.89			
AV	186.085k	32.78	54.20	-21.42	19.61	Neutral	-	13.17	9.68	0.04	9.89			
QP	269.741k	35.00	61.12	-26.12	19.62	Neutral	-	15.38	9.68	0.05	9.89			
AV	269.741k	21.21	51.12	-29.91	19.62	Neutral	-	1.59	9.68	0.05	9.89			
QP	575.907k	26.29	56.00	-29.71	19.63	Neutral	-	6.66	9.67	0.07	9.89			
AV	575.907k	21.92	46.00	-24.08	19.63	Neutral	-	2.29	9.67	0.07	9.89			
QP	3.851M	21.85	56.00	-34.15	19.72	Neutral	-	2.13	9.69	0.14	9.89			
AV	3.851M	18.26	46.00	-27.74	19.72	Neutral	-	-1.46	9.69	0.14	9.89			
QP	21.178M	25.33	60.00	-34.67	19.94	Neutral	-	5.39	9.74	0.31	9.89			
AV	21.178M	21.97	50.00	-28.03	19.94	Neutral	-	2.03	9.74	0.31	9.89			



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)	663.75k	1.043M	1M04F1D	661.25k	1.042M

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

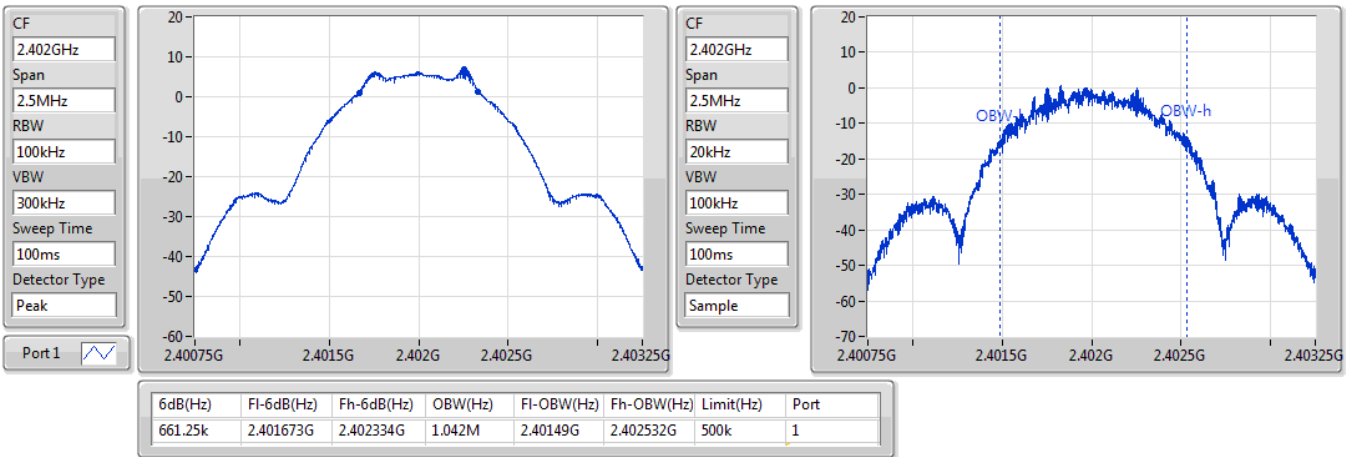
Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
BT-LE(1Mbps)	-	-	-	-
2402MHz_TnomVnom-DTS	Pass	500k	661.25k	1.042M
2440MHz_TnomVnom-DTS	Pass	500k	663.75k	1.042M
2480MHz_TnomVnom-DTS	Pass	500k	661.25k	1.043M

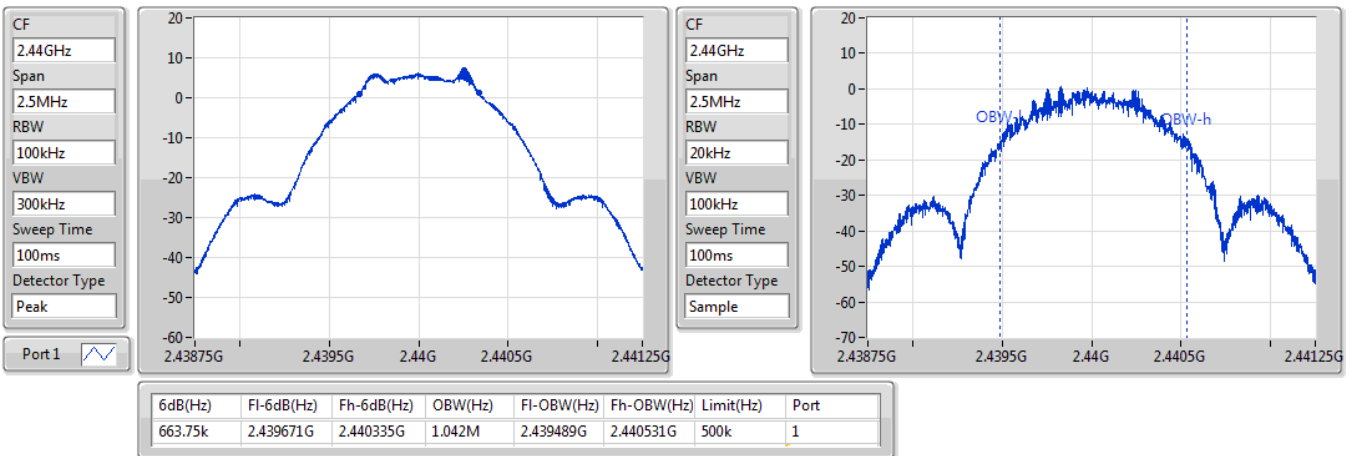
Port X-N dB = Port X 6dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

BT-LE(1Mbps)
2402MHz
EBW-DTS

17/09/2021

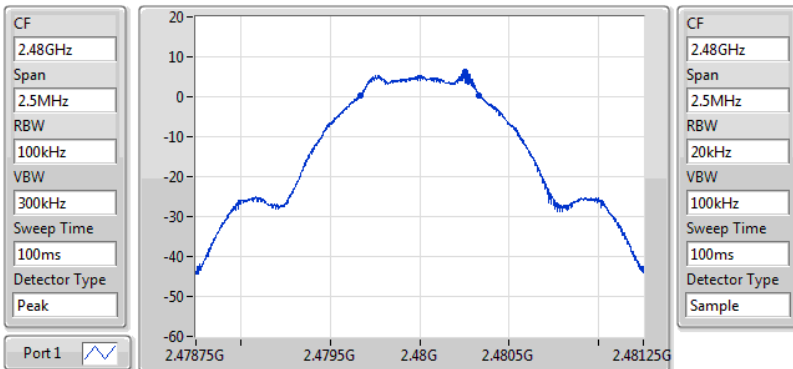

BT-LE(1Mbps)
2440MHz
EBW-DTS

17/09/2021



BT-LE(1Mbps)

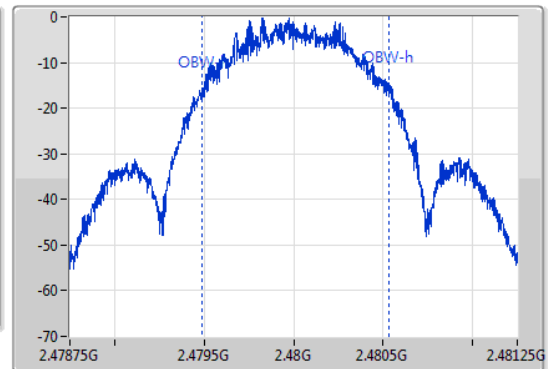
2480MHz



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
661.25k	2.479673G	2.480334G	1.043M	2.479488G	2.480531G	500k	1

EBW-DTS

17/09/2021





Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	7.54	0.00568



Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	2.56	7.54	30.00
2440MHz	Pass	2.56	7.38	30.00
2480MHz	Pass	2.56	6.23	30.00

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



Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-9.89

RBW = 3kHz;



Result

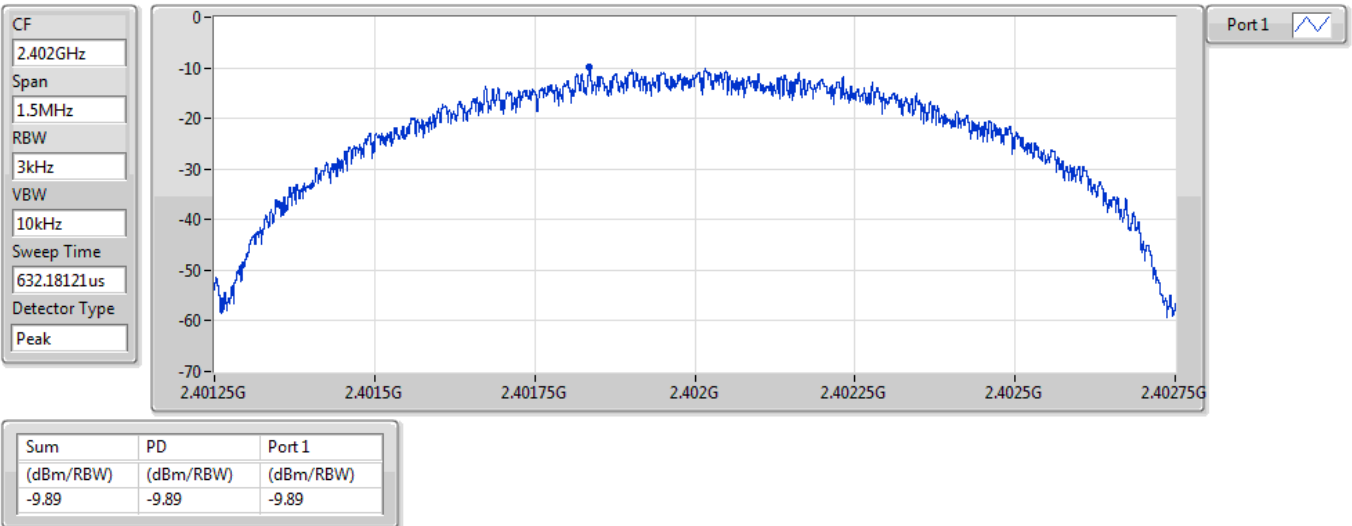
Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	2.56	-9.89	8.00
2440MHz	Pass	2.56	-10.18	8.00
2480MHz	Pass	2.56	-11.54	8.00

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

BT-LE(1Mbps)

2402MHz

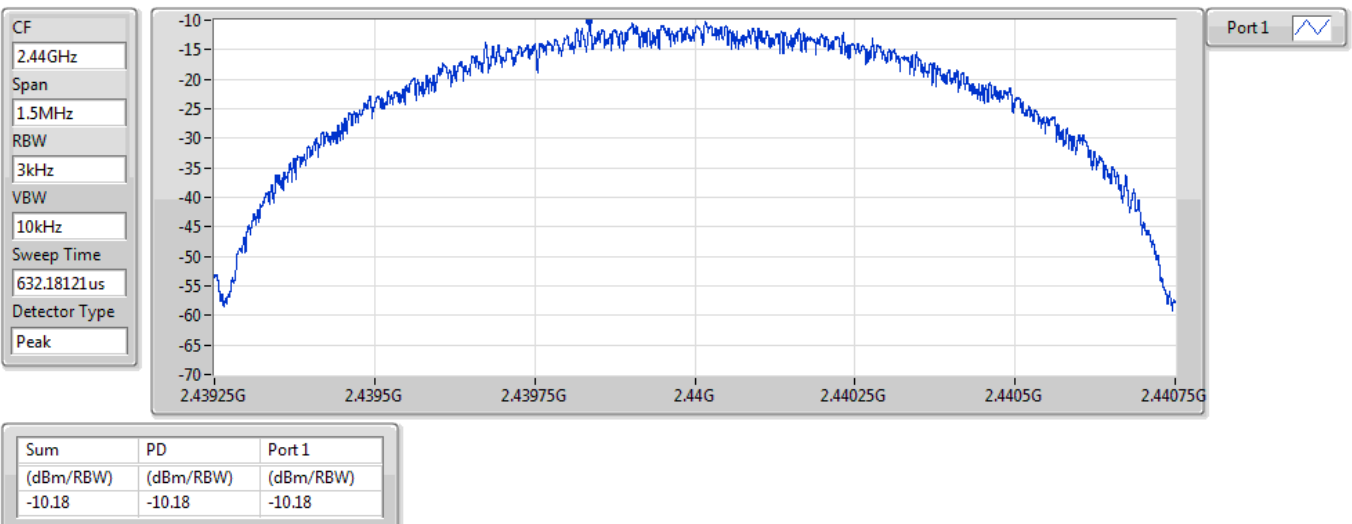
17/09/2021



BT-LE(1Mbps)

2440MHz

17/09/2021

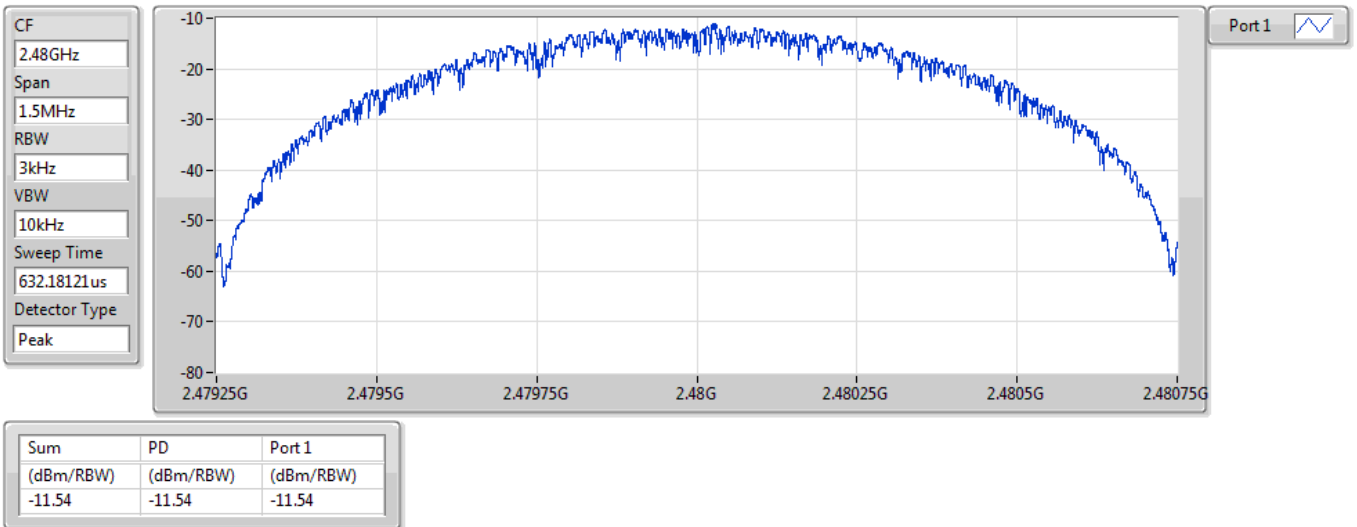


BT-LE(1Mbps)

2480MHz

PSD

17/09/2021





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	2.40221G	6.15	-23.85	560.51M	-54.56	2.39977G	-52.45	2.4G	-53.42	2.4893G	-52.65	24.6738G	-39.13	1

**Result**

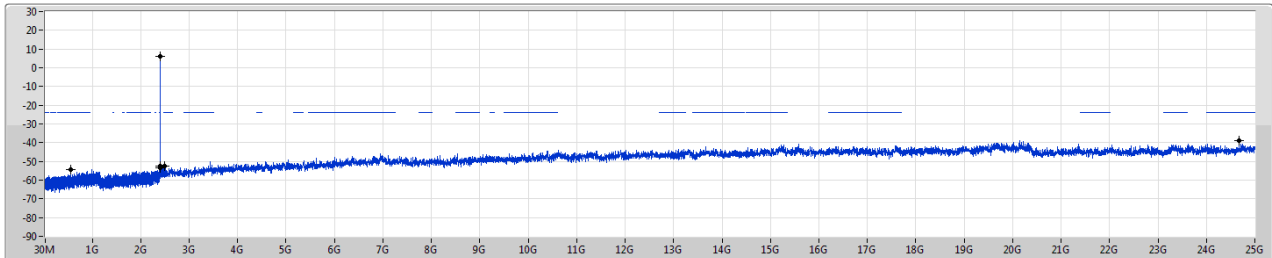
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz_TnomVnom-DTS	Pass	2.40221G	6.15	-23.85	560.51M	-54.56	2.39977G	-52.45	2.4G	-53.42	2.4893G	-52.65	24.6738G	-39.13	1
2440MHz_TnomVnom-DTS	Pass	2.40221G	6.15	-23.85	812.55M	-54.55	2.39752G	-52.72	2.4835G	-55.73	2.50286G	-52.75	24.91564G	-40.21	1
2480MHz_TnomVnom-DTS	Pass	2.40221G	6.15	-23.85	1.91235G	-54.93	2.39268G	-53.38	2.4G	-54.72	2.50045G	-52.86	24.7891G	-39.53	1

BT-LE(1Mbps)

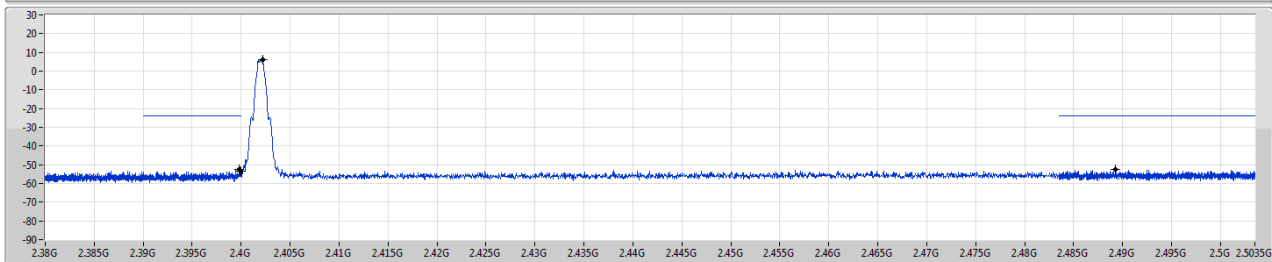
CSEndB-DTS

2402MHz

17/09/2021



Port1



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

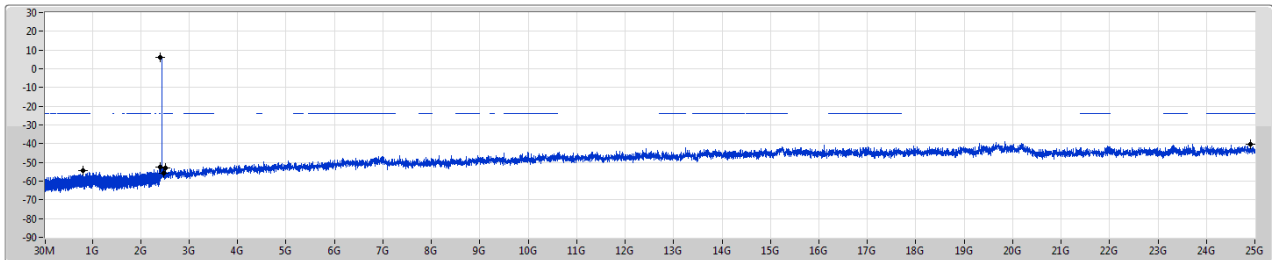
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40221G	6.15	-23.85	560.51M	-54.56	2.39977G	-52.45	2.4G	-53.42	2.4893G	-52.65	2.4738G	-39.13	1

BT-LE(1Mbps)

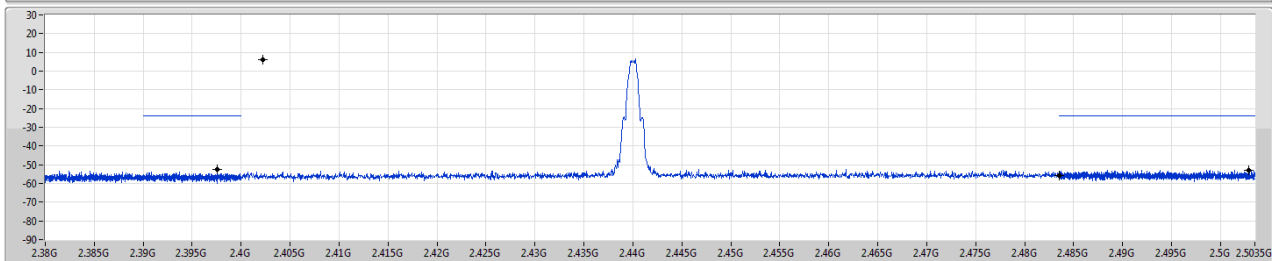
CSEndB-DTS

2440MHz

17/09/2021



Port1



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

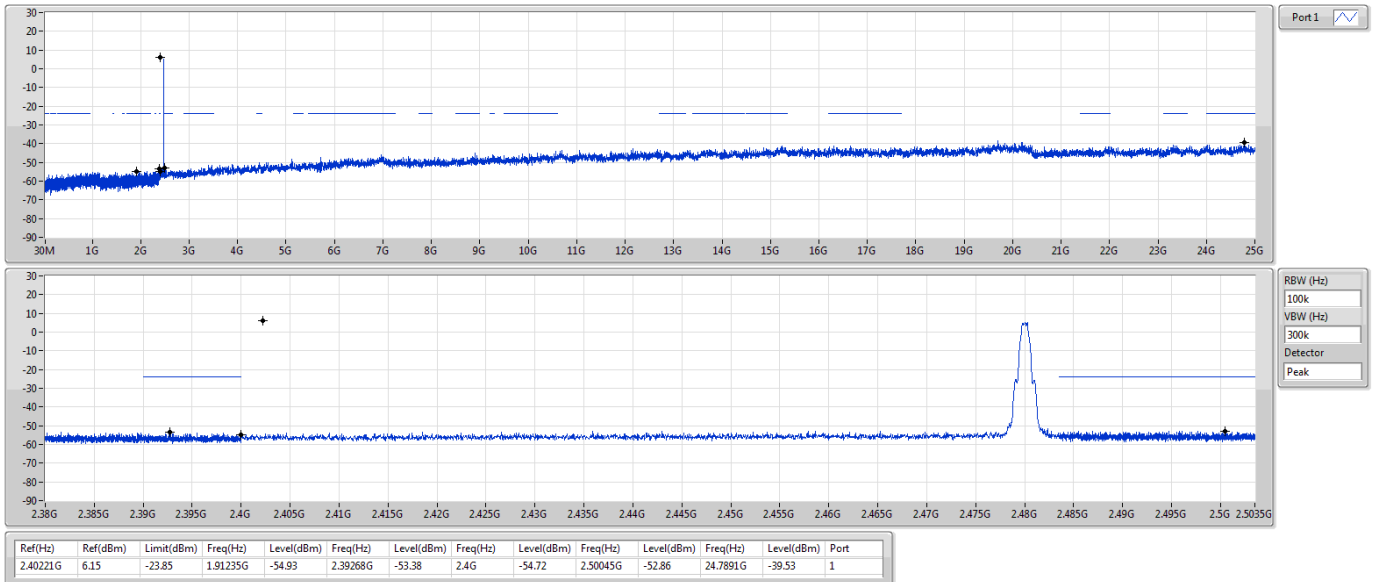
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40221G	6.15	-23.85	812.55M	-54.55	2.39752G	-52.72	2.4835G	-55.73	2.50286G	-52.75	2.491564G	-40.21	1

BT-LE(1Mbps)

CSEndB-DTS

2480MHz

17/09/2021





Summary

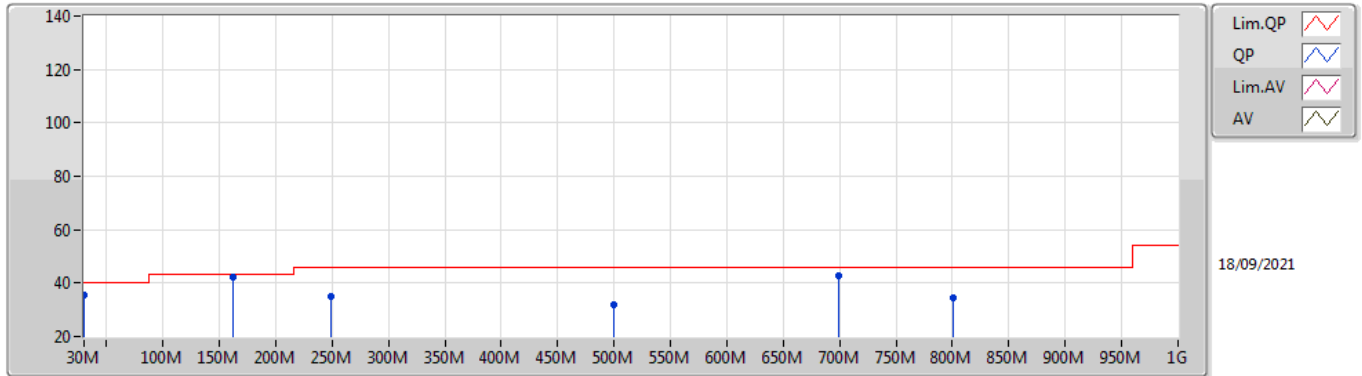
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	QP	161.92M	42.34	43.50	-1.16	3	Vertical	254	1.08	-

Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-
2440MHz	Pass	PK	30M	35.57	40.00	-4.43	3	Vertical	360	1.00	-
2440MHz	Pass	PK	249.22M	35.11	46.00	-10.89	3	Vertical	360	1.00	-
2440MHz	Pass	PK	499.48M	31.79	46.00	-14.21	3	Vertical	360	1.00	-
2440MHz	Pass	PK	699.3M	42.60	46.00	-3.40	3	Vertical	360	1.00	-
2440MHz	Pass	PK	800.18M	34.48	46.00	-11.52	3	Vertical	360	1.00	-
2440MHz	Pass	QP	161.92M	42.34	43.50	-1.16	3	Vertical	254	1.08	-
2440MHz	Pass	PK	78.5M	35.63	40.00	-4.37	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	299.66M	34.25	46.00	-11.75	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	499.48M	31.59	46.00	-14.41	3	Horizontal	0	1.00	-
2440MHz	Pass	PK	800.18M	39.04	46.00	-6.96	3	Horizontal	0	1.00	-
2440MHz	Pass	QP	150.19M	42.25	43.50	-1.25	3	Horizontal	296	1.16	-
2440MHz	Pass	QP	699.3M	42.23	46.00	-3.77	3	Horizontal	194	1.02	-

BT-LE(1Mbps)

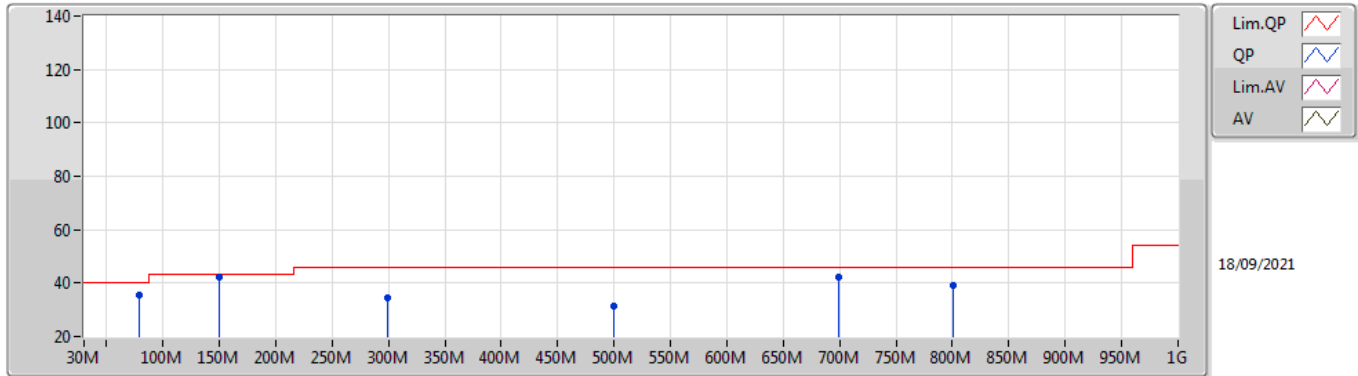
2440MHz_Test fixture



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	30M	35.57	40.00	-4.43	-12.86	3	Vertical	360	1.00	-	48.43	23.73	0.56	37.15
PK	249.22M	35.11	46.00	-10.89	-17.21	3	Vertical	360	1.00	-	52.32	17.68	1.50	36.39
PK	499.48M	31.79	46.00	-14.21	-11.65	3	Vertical	360	1.00	-	43.44	23.11	2.23	36.99
PK	699.3M	42.60	46.00	-3.40	-8.82	3	Vertical	360	1.00	-	51.42	25.79	2.68	37.29
PK	800.18M	34.48	46.00	-11.52	-7.53	3	Vertical	360	1.00	-	42.01	27.20	2.75	37.48
QP	161.92M	42.34	43.50	-1.16	-19.64	3	Vertical	254	1.08	-	61.98	15.51	1.23	36.38

BT-LE(1Mbps)

2440MHz_Test fixture



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
PK	78.5M	35.63	40.00	-4.37	-23.54	3	Horizontal	0	1.00	-	59.17	12.46	0.88	36.88
PK	299.66M	34.25	46.00	-11.75	-16.39	3	Horizontal	0	1.00	-	50.64	18.38	1.67	36.44
PK	499.48M	31.59	46.00	-14.41	-11.65	3	Horizontal	0	1.00	-	43.24	23.11	2.23	36.99
PK	800.18M	39.04	46.00	-6.96	-7.53	3	Horizontal	0	1.00	-	46.57	27.20	2.75	37.48
QP	150.19M	42.25	43.50	-1.25	-18.84	3	Horizontal	296	1.16	-	61.09	16.35	1.20	36.39
QP	699.3M	42.23	46.00	-3.77	-8.82	3	Horizontal	194	1.02	-	51.05	25.79	2.68	37.29



Summary

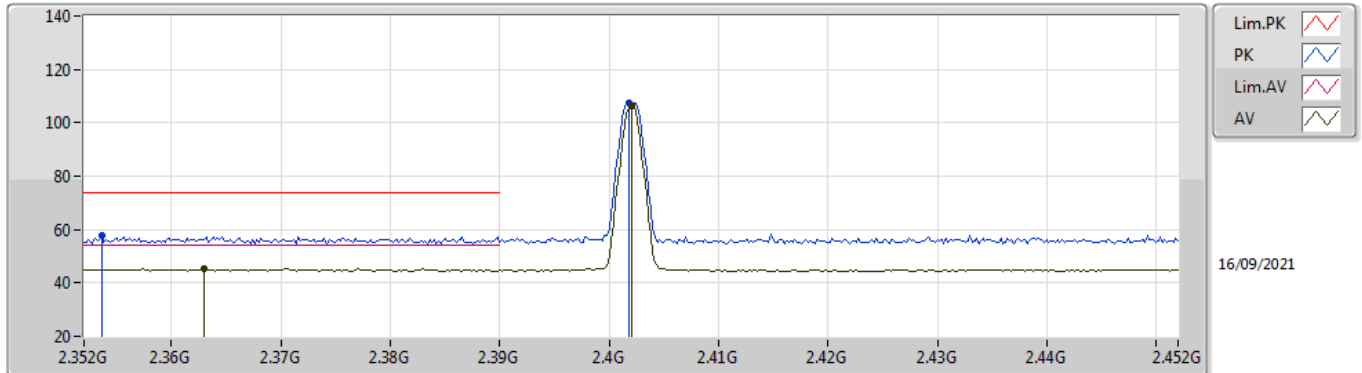
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	AV	2.4904G	45.38	54.00	-8.62	3	Horizontal	318	1.03	-

Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	AV	2.363G	45.21	54.00	-8.79	3	Vertical	196	1.30	-
2402MHz	Pass	AV	2.402G	106.50	Inf	-Inf	3	Vertical	196	1.30	-
2402MHz	Pass	PK	2.3536G	57.77	74.00	-16.23	3	Vertical	196	1.30	-
2402MHz	Pass	PK	2.4018G	107.40	Inf	-Inf	3	Vertical	196	1.30	-
2402MHz	Pass	AV	2.3612G	44.97	54.00	-9.03	3	Horizontal	63	1.87	-
2402MHz	Pass	AV	2.402G	100.26	Inf	-Inf	3	Horizontal	63	1.87	-
2402MHz	Pass	PK	2.3624G	57.21	74.00	-16.79	3	Horizontal	63	1.87	-
2402MHz	Pass	PK	2.4018G	101.14	Inf	-Inf	3	Horizontal	63	1.87	-
2402MHz	Pass	AV	4.80406G	42.40	54.00	-11.60	3	Vertical	96	1.00	-
2402MHz	Pass	PK	4.80396G	51.26	74.00	-22.74	3	Vertical	96	1.00	-
2402MHz	Pass	AV	4.80413G	38.85	54.00	-15.15	3	Horizontal	315	2.72	-
2402MHz	Pass	PK	4.80403G	49.13	74.00	-24.87	3	Horizontal	315	2.72	-
2440MHz	Pass	AV	2.3632G	45.29	54.00	-8.71	3	Vertical	198	1.43	-
2440MHz	Pass	AV	2.44G	105.00	Inf	-Inf	3	Vertical	198	1.43	-
2440MHz	Pass	AV	2.4968G	44.94	54.00	-9.06	3	Vertical	198	1.43	-
2440MHz	Pass	PK	2.3896G	57.36	74.00	-16.64	3	Vertical	198	1.43	-
2440MHz	Pass	PK	2.4404G	105.90	Inf	-Inf	3	Vertical	198	1.43	-
2440MHz	Pass	PK	2.494G	57.37	74.00	-16.63	3	Vertical	198	1.43	-
2440MHz	Pass	AV	2.3504G	44.98	54.00	-9.02	3	Horizontal	66	2.66	-
2440MHz	Pass	AV	2.44G	98.89	Inf	-Inf	3	Horizontal	66	2.66	-
2440MHz	Pass	AV	2.496G	45.13	54.00	-8.87	3	Horizontal	66	2.66	-
2440MHz	Pass	PK	2.346G	57.54	74.00	-16.46	3	Horizontal	66	2.66	-
2440MHz	Pass	PK	2.4396G	99.83	Inf	-Inf	3	Horizontal	66	2.66	-
2440MHz	Pass	PK	2.4872G	57.65	74.00	-16.35	3	Horizontal	66	2.66	-
2440MHz	Pass	AV	4.88009G	37.33	54.00	-16.67	3	Vertical	92	1.00	-
2440MHz	Pass	PK	4.88003G	48.58	74.00	-25.42	3	Vertical	92	1.00	-
2440MHz	Pass	AV	4.88014G	35.16	54.00	-18.84	3	Horizontal	307	3.00	-
2440MHz	Pass	PK	4.88007G	46.81	74.00	-27.19	3	Horizontal	307	3.00	-
2480MHz	Pass	AV	2.48G	104.55	Inf	-Inf	3	Vertical	319	2.13	-
2480MHz	Pass	AV	2.4854G	45.25	54.00	-8.75	3	Vertical	319	2.13	-
2480MHz	Pass	PK	2.4802G	105.48	Inf	-Inf	3	Vertical	319	2.13	-
2480MHz	Pass	PK	2.4882G	57.04	74.00	-16.96	3	Vertical	319	2.13	-
2480MHz	Pass	AV	2.48G	94.15	Inf	-Inf	3	Horizontal	318	1.03	-
2480MHz	Pass	AV	2.4904G	45.38	54.00	-8.62	3	Horizontal	318	1.03	-
2480MHz	Pass	PK	2.4798G	95.22	Inf	-Inf	3	Horizontal	318	1.03	-
2480MHz	Pass	PK	2.4876G	58.42	74.00	-15.58	3	Horizontal	318	1.03	-
2480MHz	Pass	AV	4.96019G	34.81	54.00	-19.19	3	Vertical	128	1.14	-
2480MHz	Pass	PK	4.96002G	46.45	74.00	-27.55	3	Vertical	128	1.14	-
2480MHz	Pass	AV	4.96001G	33.62	54.00	-20.38	3	Horizontal	311	2.87	-
2480MHz	Pass	PK	4.96057G	45.36	74.00	-28.64	3	Horizontal	311	2.87	-

BT-LE(1Mbps)

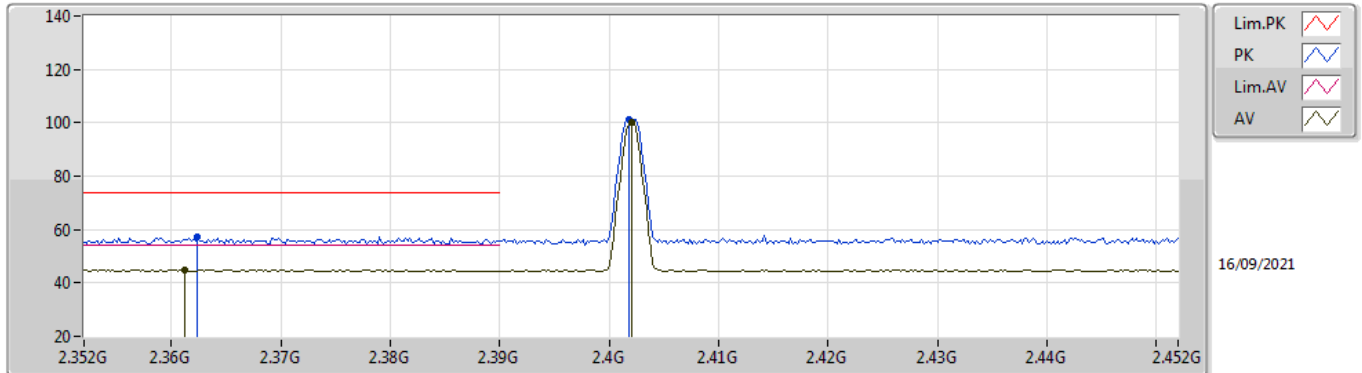
2402MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.363G	45.21	54.00	-8.79	32.29	3	Vertical	196	1.30	-	12.92	27.75	4.54	-
AV	2.402G	106.50	Inf	-Inf	32.18	3	Vertical	196	1.30	-	74.32	27.60	4.58	-
PK	2.3536G	57.77	74.00	-16.23	32.33	3	Vertical	196	1.30	-	25.44	27.79	4.54	-
PK	2.4018G	107.40	Inf	-Inf	32.18	3	Vertical	196	1.30	-	75.22	27.60	4.58	-

BT-LE(1Mbps)

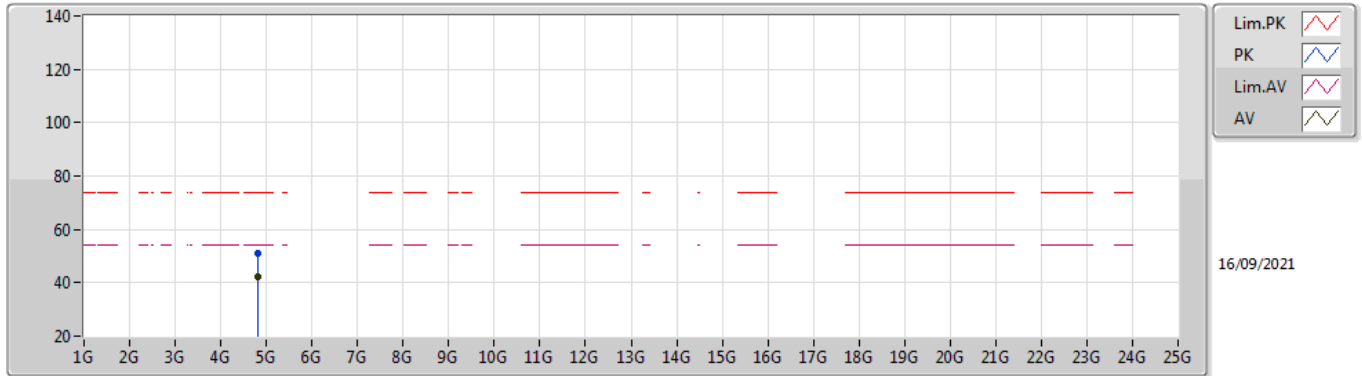
2402MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3612G	44.97	54.00	-9.03	32.30	3	Horizontal	63	1.87	-	12.67	27.76	4.54	-
AV	2.402G	100.26	Inf	-Inf	32.18	3	Horizontal	63	1.87	-	68.08	27.60	4.58	-
PK	2.3624G	57.21	74.00	-16.79	32.29	3	Horizontal	63	1.87	-	24.92	27.75	4.54	-
PK	2.4018G	101.14	Inf	-Inf	32.18	3	Horizontal	63	1.87	-	68.96	27.60	4.58	-

BT-LE(1Mbps)

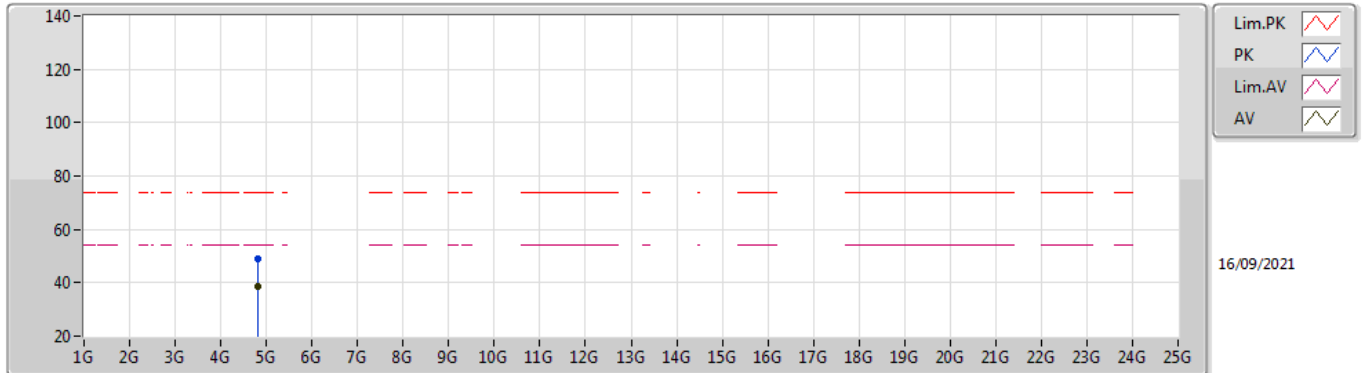
2402MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.80406G	42.40	54.00	-11.60	2.95	3	Vertical	96	1.00	-	39.45	31.10	6.66	34.81
PK	4.80396G	51.26	74.00	-22.74	2.95	3	Vertical	96	1.00	-	48.31	31.10	6.66	34.81

BT-LE(1Mbps)

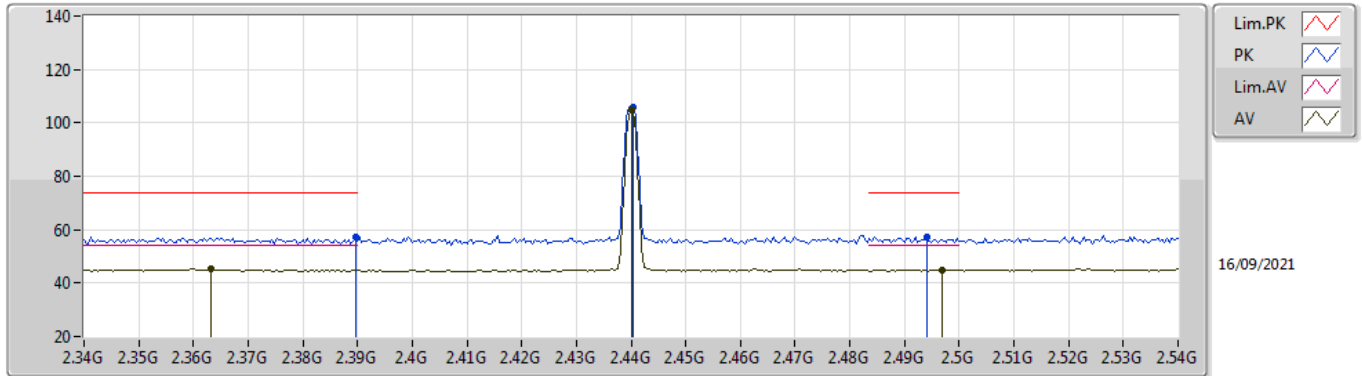
2402MHz_TX



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.80413G	38.85	54.00	-15.15	2.95	3	Horizontal	315	2.72	-	35.90	31.10	6.66	34.81
PK	4.80403G	49.13	74.00	-24.87	2.95	3	Horizontal	315	2.72	-	46.18	31.10	6.66	34.81

BT-LE(1Mbps)

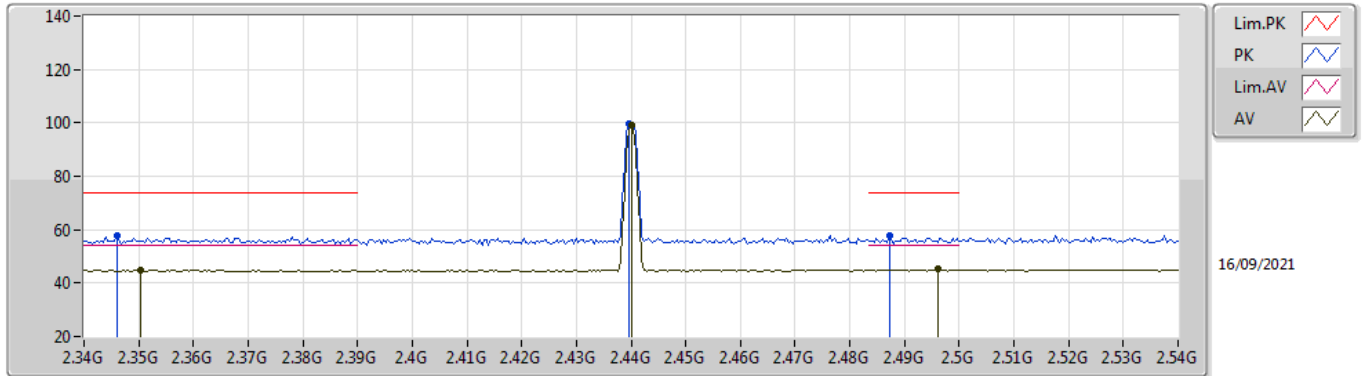
2440MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.3632G	45.29	54.00	-8.71	32.30	3	Vertical	198	1.43	-	12.99	27.75	4.55	-
AV	2.44G	105.00	Inf	-Inf	32.12	3	Vertical	198	1.43	-	72.88	27.52	4.60	-
AV	2.4968G	44.94	54.00	-9.06	32.12	3	Vertical	198	1.43	-	12.82	27.50	4.62	-
PK	2.3896G	57.36	74.00	-16.64	32.21	3	Vertical	198	1.43	-	25.15	27.64	4.57	-
PK	2.4404G	105.90	Inf	-Inf	32.12	3	Vertical	198	1.43	-	73.78	27.52	4.60	-
PK	2.494G	57.37	74.00	-16.63	32.12	3	Vertical	198	1.43	-	25.25	27.50	4.62	-

BT-LE(1Mbps)

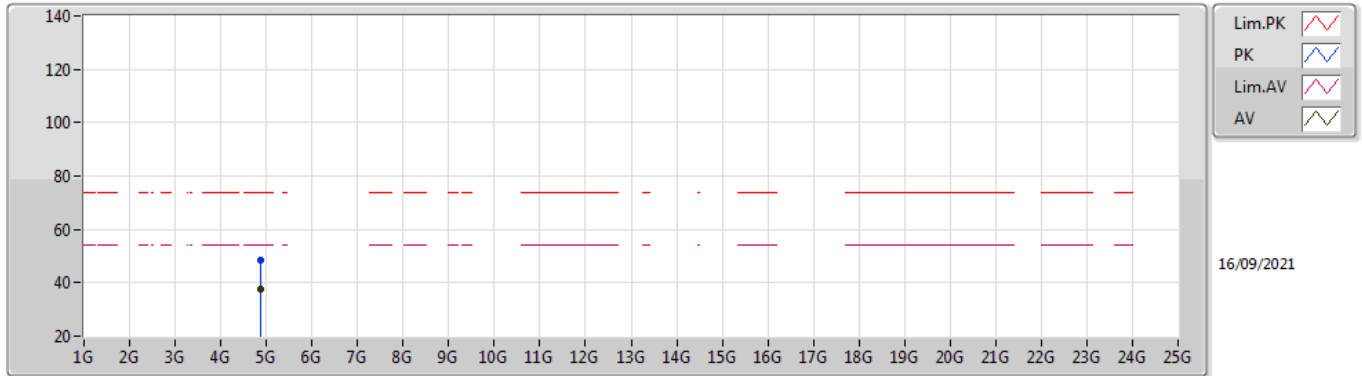
2440MHz_TX



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	2.3504G	44.98	54.00	-9.02	32.33	3	Horizontal	66	2.66	-	12.65	27.80	4.53	-
AV	2.44G	98.89	Inf	-Inf	32.12	3	Horizontal	66	2.66	-	66.77	27.52	4.60	-
AV	2.496G	45.13	54.00	-8.87	32.12	3	Horizontal	66	2.66	-	13.01	27.50	4.62	-
PK	2.346G	57.54	74.00	-16.46	32.33	3	Horizontal	66	2.66	-	25.21	27.80	4.53	-
PK	2.4396G	99.83	Inf	-Inf	32.12	3	Horizontal	66	2.66	-	67.71	27.52	4.60	-
PK	2.4872G	57.65	74.00	-16.35	32.11	3	Horizontal	66	2.66	-	25.54	27.50	4.61	-

BT-LE(1Mbps)

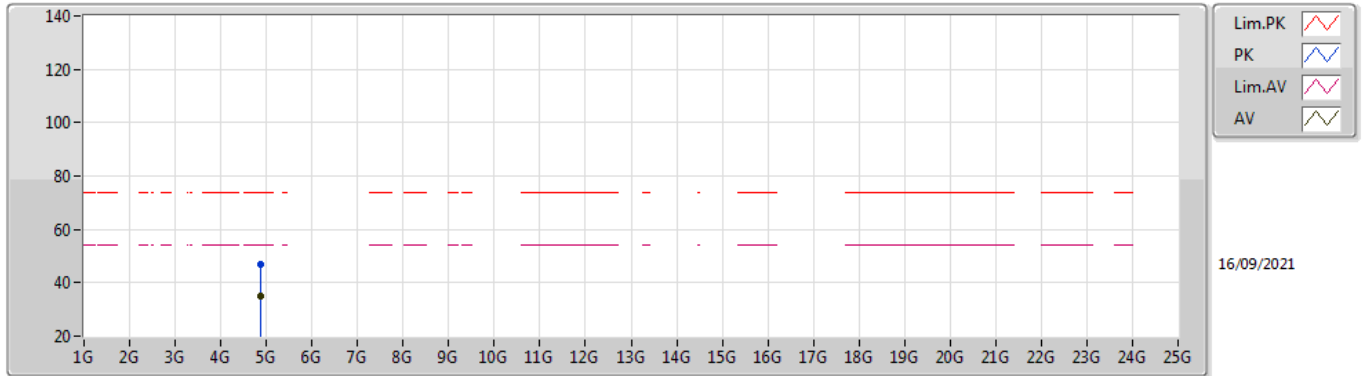
2440MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	4.88009G	37.33	54.00	-16.67	3.03	3	Vertical	92	1.00	-	34.30	31.10	6.72	34.79
PK	4.88003G	48.58	74.00	-25.42	3.03	3	Vertical	92	1.00	-	45.55	31.10	6.72	34.79

BT-LE(1Mbps)

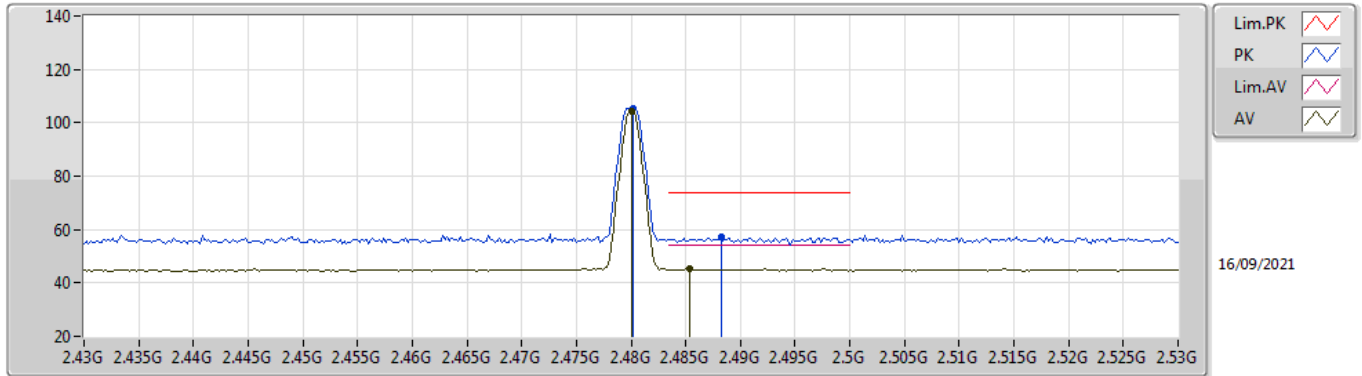
2440MHz_TX



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.88014G	35.16	54.00	-18.84	3.03	3	Horizontal	307	3.00	-	32.13	31.10	6.72	34.79
PK	4.88007G	46.81	74.00	-27.19	3.03	3	Horizontal	307	3.00	-	43.78	31.10	6.72	34.79

BT-LE(1Mbps)

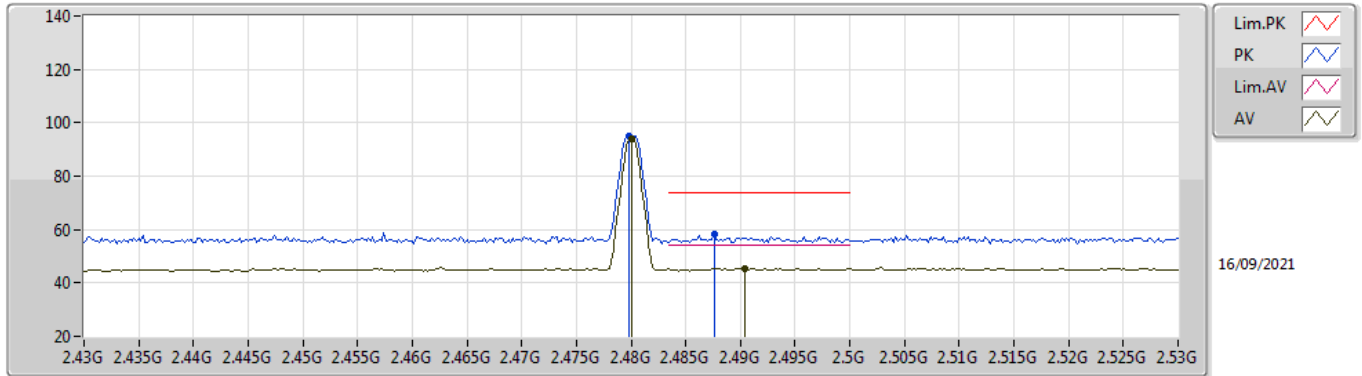
2480MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.48G	104.55	Inf	-Inf	32.11	3	Vertical	319	2.13	-	72.44	27.50	4.61	-
AV	2.4854G	45.25	54.00	-8.75	32.11	3	Vertical	319	2.13	-	13.14	27.50	4.61	-
PK	2.4802G	105.48	Inf	-Inf	32.11	3	Vertical	319	2.13	-	73.37	27.50	4.61	-
PK	2.4882G	57.04	74.00	-16.96	32.12	3	Vertical	319	2.13	-	24.92	27.50	4.62	-

BT-LE(1Mbps)

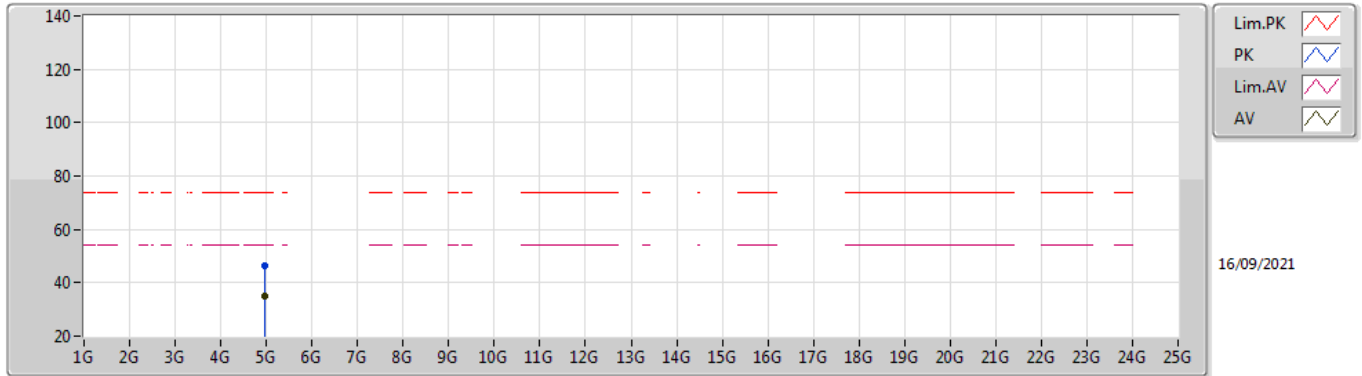
2480MHz_TX



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB)	CL (dB)	PA (dB)
AV	2.48G	94.15	Inf	-Inf	32.11	3	Horizontal	318	1.03	-	62.04	27.50	4.61	-
AV	2.4904G	45.38	54.00	-8.62	32.12	3	Horizontal	318	1.03	-	13.26	27.50	4.62	-
PK	2.4798G	95.22	Inf	-Inf	32.11	3	Horizontal	318	1.03	-	63.11	27.50	4.61	-
PK	2.4876G	58.42	74.00	-15.58	32.12	3	Horizontal	318	1.03	-	26.30	27.50	4.62	-

BT-LE(1Mbps)

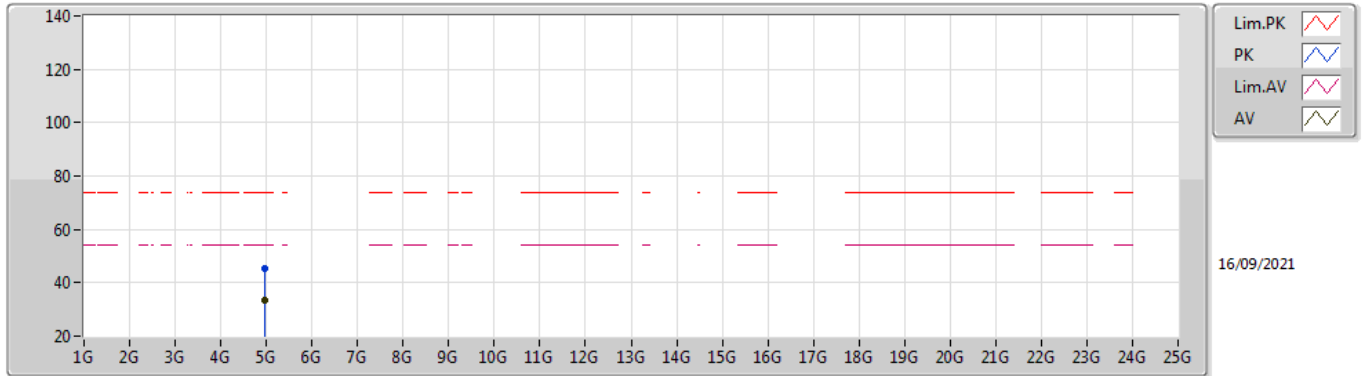
2480MHz_TX



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.96019G	34.81	54.00	-19.19	3.35	3	Vertical	128	1.14	-	31.46	31.34	6.78	34.77
PK	4.96002G	46.45	74.00	-27.55	3.35	3	Vertical	128	1.14	-	43.10	31.34	6.78	34.77

BT-LE(1Mbps)

2480MHz_TX



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)		(dBuV)	(dB)	(dB)	(dB)
AV	4.96001G	33.62	54.00	-20.38	3.35	3	Horizontal	311	2.87	-	30.27	31.34	6.78	34.77
PK	4.96057G	45.36	74.00	-28.64	3.35	3	Horizontal	311	2.87	-	42.01	31.34	6.78	34.77