

RF TEST REPORT

FCC ID: 2AMKE-BRB02

Product Name: Black Shark Supercharged Laptop Cooler Pro

Brand Name: BLACK SHARK

Model Name: BRB02

Report No.: N25121005415E

Prepared for

Shenzhen MYGT Co., Ltd

D3. Tongfuyu Industrial Area, Street Community of Shajing Town, Bao'an, Shenzhen, China

Prepared by

Shenzhen NTEK Testing Technology Co., Ltd.

Building 1/2/11/12, No. 24 Xinfu East Road, Xiangshan Community, Xinqiao Street, Bao'an District,
Shenzhen, Guangdong, China.

Tel. 0755-23200050

Website: <http://www.ntek.org.cn>

Table of Contents

1	REVISION HISTORY	4
2	TEST SUMMARY	5
3	TEST RESULT CERTIFICATION	7
4	FACILITIES AND ACCREDITATIONS.....	8
	4.1 FACILITIES.....	8
	4.2 LABORATORY ACCREDITATIONS AND LISTINGS	8
	4.3 MEASUREMENT UNCERTAINTY	8
5	GENERAL DESCRIPTION OF EUT	9
	5.1 DETAILS OF E.U.T.....	9
	5.2 EUT FEATURE AND SPECIFICATION	9
	5.3 ANTENNA SPECIFICATIONS	9
	5.4 DEVIATION FROM STANDARDS	9
	5.5 ABNORMALITIES FROM STANDARD CONDITION	9
6	DESCRIPTION OF TEST MODES AND OPERATION CONFIGURATION OF EUT	10
	6.1 DESCRIPTION OF TEST MODES	10
	6.2 OPERATION CONFIGURATION OF EUT	10
7	SETUP OF EQUIPMENT UNDER TEST	11
	7.1 BLOCK DIAGRAM CONFIGURATION OF TEST SYSTEM	11
	7.2 SUPPORT EQUIPMENT	12
8	EQUIPMENT LIST	13
9	ANTENNA REQUIREMENT	15
	Conclusion:.....	15
10	RADIO SPECTRUM MATTER TEST RESULTS (RF)	16
	10.1 CONDUCTED EMISSION AT AC POWER LINE	16
	10.1.1 Test Setup Diagram:	17
	10.1.2 E.U.T. Operation:	17
	10.1.3 Test Data:	18
	10.2 DUTY CYCLE.....	20
	10.2.1 Test Setup Diagram:	20
	10.2.2 E.U.T. Operation:	20
	10.2.3 Test Data:	20
	10.3 99% BANDWIDTH.....	21
	10.3.1 Test Setup Diagram:	21
	10.3.2 E.U.T. Operation:	21
	10.3.3 Test Data:	21
	10.4 6DB BANDWIDTH.....	22
	10.4.1 Test Setup Diagram:	22
	10.4.2 E.U.T. Operation:	23
	10.4.3 Test Data:	23
	10.5 MAXIMUM CONDUCTED OUTPUT POWER.....	24
	10.5.1 Test Setup Diagram:	24
	10.5.2 E.U.T. Operation:	24
	10.5.3 Test Data:	25
	10.6 POWER SPECTRAL DENSITY	26
	10.6.1 Test Setup Diagram:	26
	10.6.2 E.U.T. Operation:	26
	10.6.3 Test Data:	26
	10.7 EMISSIONS IN NON-RESTRICTED FREQUENCY BANDS	27
	10.7.1 Test Setup Diagram:	28
	10.7.2 E.U.T. Operation:	28
	10.7.3 Test Data:	28
	10.8 BAND EDGE EMISSIONS (RADIATED)	29

10.8.1	Test Setup Diagram:	30
10.8.2	E.U.T. Operation:	30
10.8.3	Test Data:	31
10.9	EMISSIONS IN FREQUENCY BANDS (BELOW 30MHZ)	35
10.9.1	Test Setup Diagram:	36
10.9.2	E.U.T. Operation:	36
10.9.3	Test Data:	36
10.10	EMISSIONS IN FREQUENCY BANDS (30M - 1GHZ).....	37
10.10.1	Test Setup Diagram:	38
10.10.2	E.U.T. Operation:	38
10.10.3	Test Data:	39
10.11	EMISSIONS IN FREQUENCY BANDS (1G - 18GHZ)	41
10.11.1	Test Setup Diagram:	42
10.11.2	E.U.T. Operation:	42
10.11.3	Test Data:	43
10.12	EMISSIONS IN FREQUENCY BANDS (ABOVE 18GHZ)	49
10.12.1	Test Setup Diagram:	50
10.12.2	E.U.T. Operation:	50
10.12.3	Test Data:	51
11	TEST SETUP PHOTOS	57
12	EUT CONSTRUCTIONAL DETAILS (EUT PHOTOS)	58
	CONDUCTED OUTPUT POWER	60
	99% BANDWIDTH	61
	6DB BANDWIDTH	62
	CONDUCTED SPURIOUS & BAND EDGE EMISSION.....	63
	DUTY CYCLE.....	65
	POWER SPECTRAL DENSITY	66

1 Revision History

Revision History			
Report No.	Version	Description	Issued Date
N25121005415E	Rev.01	Initial issue of report	08, Sep. 2026

2 Test Summary

FCC Rule	Test Item	Method	Tested By	Result
47 CFR Part 15.203/15.247 (b)(4)	Antenna requirement	---	Abel Chen	Pass
47 CFR 15.207	Conducted Emission at AC power line	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024, section 6.2 KDB 558074 D01 15.247 Meas Guidance v05r02	Zhiqiang Liao	Pass
47 CFR 15.247(a)(2)	6dB Bandwidth	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024, section 11.8.1 KDB 558074 D01 15.247 Meas Guidance v05r02	Yuqiang Xiao	Pass
47 CFR 15.247(b)(3)	Maximum Conducted Output Power	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024 section 11.9.1.1 KDB 558074 D01 15.247 Meas Guidance v05r02	Yuqiang Xiao	Pass
47 CFR 15.247(e)	Power Spectral Density	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024, section 11.10.2 KDB 558074 D01 15.247 Meas Guidance v05r02	Yuqiang Xiao	Pass
47 CFR 15.247(d)	Emissions in non-restricted frequency bands	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024 section 11.11 KDB 558074 D01 15.247 Meas Guidance v05r02	Yuqiang Xiao	Pass
47 CFR 15.247(d), 15.209, 15.205	Band edge emissions (Radiated)	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024 section 6.10.4 KDB 558074 D01 15.247 Meas Guidance v05r02	Harry Huang	Pass
47 CFR 15.247(d), 15.209, 15.205	Emissions in frequency bands (below 30MHz)	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024 section 6.4 KDB 558074 D01 15.247 Meas Guidance v05r02	Pass Qiu	Pass
47 CFR 15.247(d), 15.209, 15.205	Emissions in frequency bands (30M - 1GHz)	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024 section 6.5.4 KDB 558074 D01 15.247 Meas Guidance v05r02	Pass Qiu	Pass
47 CFR 15.247(d), 15.209, 15.205	Emissions in frequency bands (1G - 18GHz)	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024 section 6.6 KDB 558074 D01 15.247 Meas Guidance v05r02	Harry Huang	Pass
47 CFR 15.247(d), 15.209, 15.205	Emissions in frequency bands (above 18GHz)	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024 section 6.6 KDB 558074 D01 15.247 Meas Guidance v05r02	Harry Huang	Pass

Remark:

1. "N/A" denotes test is not applicable in this Test Report.
2. All test items were verified and recorded according to the standards and without any deviation during the test.
3. The antenna gain provided by customer. NTEK is not responsible for the accuracy of antenna gain parameter.

3 Test Result Certification

CLIENT INFORMATION

Applicant:	Shenzhen MYGT Co., Ltd
Address of Applicant:	D3. Tongfuyu Industrial Area, Street Community of Shajing Town, Bao'an, Shenzhen, China
Manufacturer:	Shenzhen MYGT Co., Ltd
Address of Manufacturer:	D3. Tongfuyu Industrial Area, Street Community of Shajing Town, Bao'an, Shenzhen, China

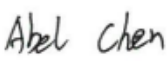
EUT INFORMATION

Product Name:	Black Shark Supercharged Laptop Cooler Pro
Brand Name:	N/A
Model Name:	BRB02
Sample Received Date:	11, Dec. 2025
Sample Number:	S2512110109-1#
Applicable Standards	47 CFR Part 15.247
Measurement Procedures	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024 KDB 558074 D01 15.247 Meas Guidance v05r02

This device described above has been tested by Shenzhen NTEK Testing Technology Co., Ltd., and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full without the written approval of NTEK. This document may be altered or revised only by NTEK personnel, and revisions shall be recorded in the revision history of the document.

Date of Test:	11, Dec. 2025 to 07, Sep. 2026
Issue Date:	08, Sep. 2026

Prepared By:		Reviewed by:		Approved By:	
	Abel Chen (Project Engineer)		Aaron Cheng (Supervisor)		Alex Li (Manager)

4 Facilities and Accreditations

4.1 Facilities

All measurement facilities used to collect the measurement data are located at Building 1/2/11/12, No. 24 Xinfu East Road, Xiangshan Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, China.

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10 and CISPR Publication 16-1-4.

4.2 Laboratory Accreditations And Listings

Site Description	
CNAS-Lab.	: Registration Code L5516
A2LA-Lab.	: Certificate Number 4298.01
FCC-Accredited	: Test Firms Registration Number: 463705 Designation Number: CN1184
ISED Wireless Device Testing Laboratories	: The ISED Company Number is 9270A CAB identifier:CN0074

4.3 Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where the expanded uncertainty U is obtained by multiplying the standard uncertainty by a coverage factor $k=2$, corresponding to a confidence level of approximately 95%.

Item	Uncertainty
Power Spectral Density, conducted	0.91dB
Radiated Spurious Emissions(1GHz ~ 18GHz)	4.9dB
Radiated Spurious Emissions(9kHz ~ 30MHz)	5.26dB
Radiated Spurious Emissions(30MHz ~ 1GHz)	5.1dB
Radiated Spurious Emissions(18GHz ~ 40GHz)	5.76dB
RF power, conducted	1.34dB
Spurious emissions, conducted	2.71dB
Occupied Bandwidth	1.00%
Radio Frequency	0.2ppm
Time	5%
Temperature	1°C
Humidity	5%

5 General Description of EUT

5.1 Details of E.U.T.

Product Name	Black Shark Supercharged Laptop Cooler Pro
Brand Name	BLACK SHARK
Model Name	BRB02
Family Model	N/A

Note 1: The above information was declared by manufacturer.

5.2 EUT Feature And Specification

Operation Frequency	2402MHz to 2480MHz
Modulation	GFSK
Number of Channels	40
Power Supply	☒ DC supply: DC 5V ☒ Adapter supply: N/A
Hardware Version	N/A
Firmware Version	N/A
Software Version	N/A

Frequency and Channel list:

Channel	Frequency(MHz)	Channel	Frequency(MHz)
0	2402	19	2440
1	2404	20	2442
...	...	...	...
17	2436	38	2478
18	2438	39	2480

Note: 1. The above mentioned information was declared by the manufacturer.

2. $F=2402\text{MHz}+k \times 2\text{MHz}$ ($k=0,1,2,\dots,39$)

5.3 Antenna Specifications

Antenna system	SISO
Antenna 1:	
Antenna Manufacturer	N/A
Antenna Model	N/A
Antenna Connector	N/A
Antenna Type	Ceramic ANT
Antenna Gain	1.8 dBi

Note: The above information was declared by manufacturer.

5.4 Deviation from Standards

None

5.5 Abnormalities from Standard Condition

None

6 Description of Test Modes and Operation Configuration of EUT

6.1 Description of Test Modes

- The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y plane) were recorded in this report.
- AC power line Conducted Emission was tested under maximum output power.
- The measurements are performed at the highest, middle, lowest available channels.
- The measurements are performed at all Bit Rate of Transmitter, the worst data was reported

The following summary table is showing all test modes to demonstrate in compliance with the standard

No	Title	Description
TM1	TX mode	Keep the EUT connect to AC power line and works in continuously transmitting mode with GFSK modulation at lowest, middle and highest channel.

6.2 Operation Configuration of EUT

RF Power Setting as following:

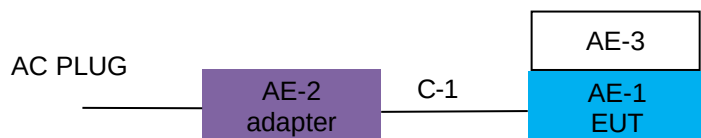
Mode	Occupied Bandwidth	Channel	Frequency(MHz)	Power Setting Value
GFSK	1MHz	0	2402	Default
GFSK	1MHz	19	2440	Default
GFSK	1MHz	39	2480	Default
GFSK	2MHz	0	2402	Default
GFSK	2MHz	19	2440	Default
GFSK	2MHz	39	2480	Default

Note: 1. The above-mentioned information was declared by the manufacturer.

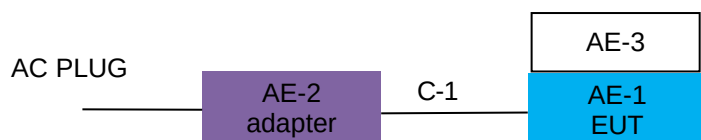
7 Setup Of Equipment Under Test

7.1 Block Diagram Configuration Of Test System

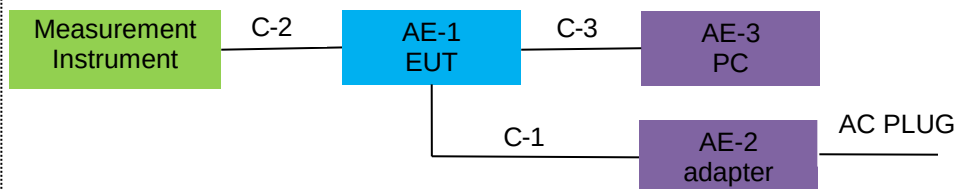
For AC Conducted Test Cases



For Radiated Test Cases



For RF Conducted Test Cases



Note: 1. The temporary antenna connector is soldered on the PCB board in order to perform conducted tests.

7.2 Support Equipment

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Description	Manufacturer	Model No.	Serial No.
/	/	/	/

Item	Equipment	Model/Type No.	Series No.	Note
AE-1	Black Shark Supercharged Laptop Cooler Pro	BRB02	N/A	EUT
AE-2	Adapter	N/A	N/A	AE
AE-3	Laptop	Dell XPS 13	N/A	AE

Item	Cable Type	Shielded Type	Ferrite Core	Length (cm)
C-1	USB cable	YES	NO	100
C-2	RF cable	YES	NO	10
C-3	USB cable	YES	NO	100

8 Equipment List

Radiation& Conducted Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4440A	MY41000130	2025.04.24 2026.04.15	2026.04.23 2027.04.14	1 year
2	Spectrum Analyzer	Agilent	N9020A	MY49100060	2025.04.17 2026.04.08	2026.04.16 2027.04.07	1 year
3	Spectrum Analyzer	R&S	FSV40	101417	2025.04.17 2026.04.08	2026.04.16 2027.04.07	1 year
4	Test Receiver	R&S	ESPI7	101318	2025.04.17 2026.04.08	2026.04.16 2027.04.07	1 year
5	Bilog Antenna	TESEQ	CBL6111D	31216	2025.04.17 2026.04.08	2026.04.16 2027.04.07	1 year
6	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2024.04.26	2027.04.25	3 year
7	Horn Antenna	EM	EM-AH-10180	2011071402	2024.05.12	2027.05.11	3 year
8	Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	803	2024.05.12	2027.05.11	3 year
9	Amplifier	EMC	EMC051835 SE	980246	2025.04.17 2026.04.08	2026.04.16 2027.04.07	1 year
10	Active Loop Antenna	SCHWARZBECK	FMZB 1519 B	055	2024.05.17	2027.05.16	3 year
11	Power Meter	DARE	RPR3006W	15I00041SN O84	2025.04.17 2026.04.08	2026.04.16 2027.04.07	1 year
12	Test Cable (9KHz-30MHz)	N/A	R-01	N/A	2024.05.06	2027.05.05	3 year
13	Test Cable (30MHz-1GHz)	N/A	R-02	N/A	2024.05.06	2027.05.05	3 year
14	High Test Cable(1G-40GHz)	N/A	R-03	N/A	2024.05.06	2027.05.05	3 year
15	Filter	TRILTHIC	2400MHz	29	2024.04.26	2027.04.25	3 year
16	temporary antenna connector (Note)	NTS	R001	N/A	N/A	N/A	N/A

Note:

We will use the temporary antenna connector (soldered on the PCB board) When conducted test
And this temporary antenna connector is listed within the instrument list

AC Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Test Receiver	R&S	ESCI	101160	2025.04.17 2026.04.08	2026.04.16 2027.04.07	1 year
2	LISN	R&S	ENV216	101313	2025.04.16 2026.04.08	2026.04.15 2027.04.07	1 year
3	LISN	SCHWARZBECK	NNLK 8129	8129245	2025.04.16 2026.04.08	2026.04.15 2027.04.07	1 year
4	50Ω Coaxial Switch	ANRITSU CORP	MP59B	6200983704	2024.04.26	2027.04.25	3 year
5	Test Cable (9KHz-30MHz)	N/A	C01	N/A	2024.05.06	2027.05.05	3 year
6	Test Cable (9KHz-30MHz)	N/A	C02	N/A	2024.05.06	2027.05.05	3 year
7	Test Cable (9KHz-30MHz)	N/A	C03	N/A	2024.05.06	2027.05.05	3 year

Note: Each piece of equipment is scheduled for calibration once a year except the Test Cable& Aux Equipment which is scheduled for calibration every 3 years.

Measurement Software

Item	Manufacturer	Software Name	Software Version	Description
1	MWRFTtest	MTS 8310 2.4GHz/5GHz	2.0	RF Conducted Test
2	Farad	EZ-EMC_RE	AIT-03A	RadiatedTest
3	Farad	EZ-EMC_CE	AIT-03A	AC Conducted Test

9 Antenna requirement

Test Requirement:	Refer to 47 CFR Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.
Test Method:	---

Conclusion:

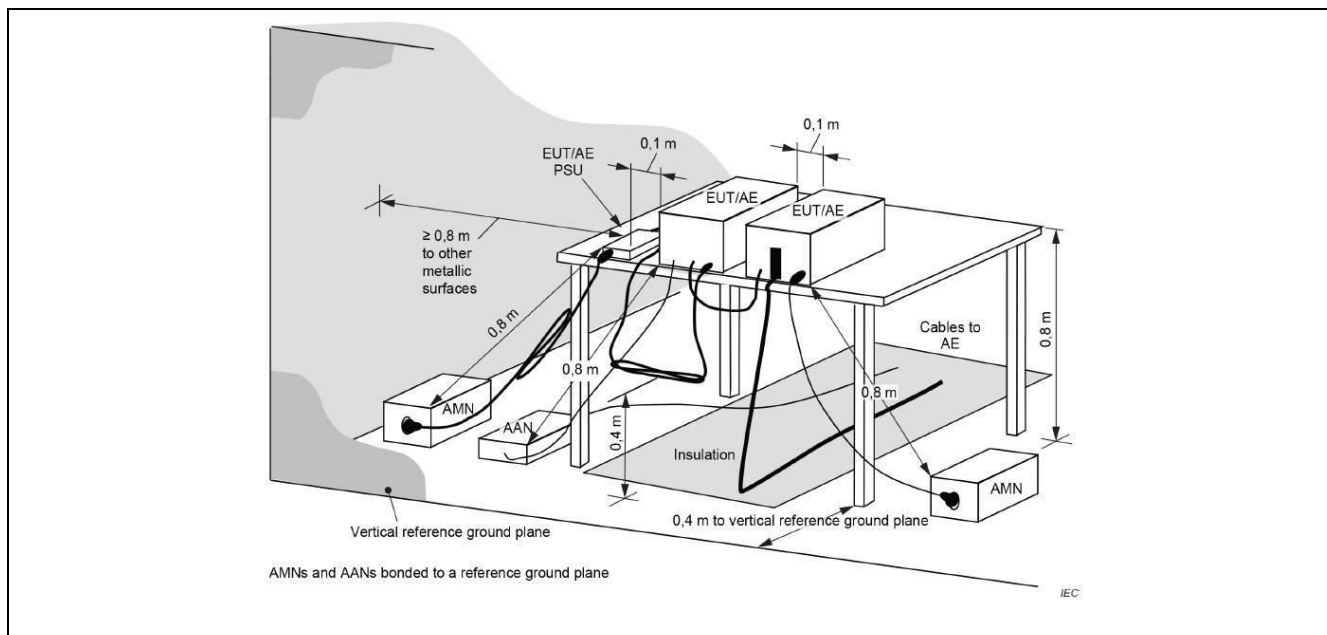
The EUT uses a Ceramic antenna, the max antenna gain is 1.8 dBi, which is deemed to comply with the antenna requirement.

10 Radio Spectrum Matter Test Results (RF)

10.1 Conducted Emission at AC power line

Test Requirement:	Refer to 47 CFR 15.207(a), Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN).		
Test Limit:	Frequency of emission (MHz)	Conducted limit (dB μ V)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
	*Decreases with the logarithm of the frequency.		
Test Method:	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024, section 6.2 KDB 558074 D01 15.247 Meas Guidance v05r02		
Procedure:	a) The mains terminal disturbance voltage test was conducted in a shielded room. b) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded. c) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, d) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2. e) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement. f) The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band. g) For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.		

10.1.1 Test Setup Diagram:



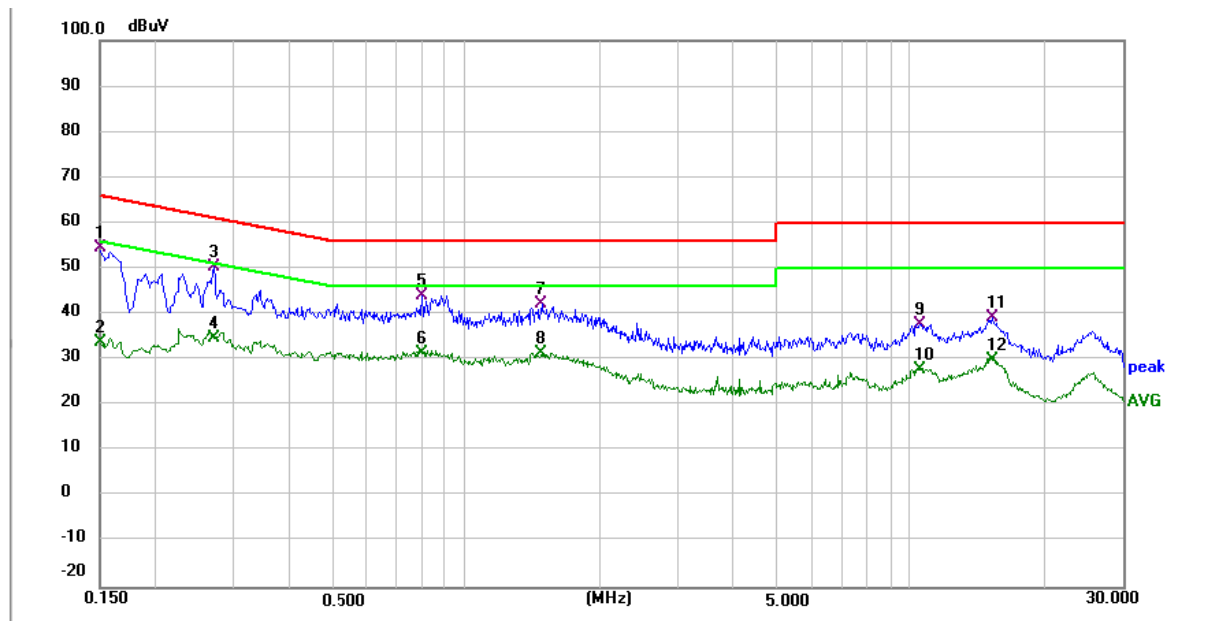
10.1.2 E.U.T. Operation:

Operating Environment:					
Temperature:	23.5 °C	Humidity:	55 %	Atmospheric Pressure:	100.2 mbar
Per-test mode:	TM1				
Final test mode:	TM1				

Note: All the modulation modes have been tested, and the worst case result was reported.

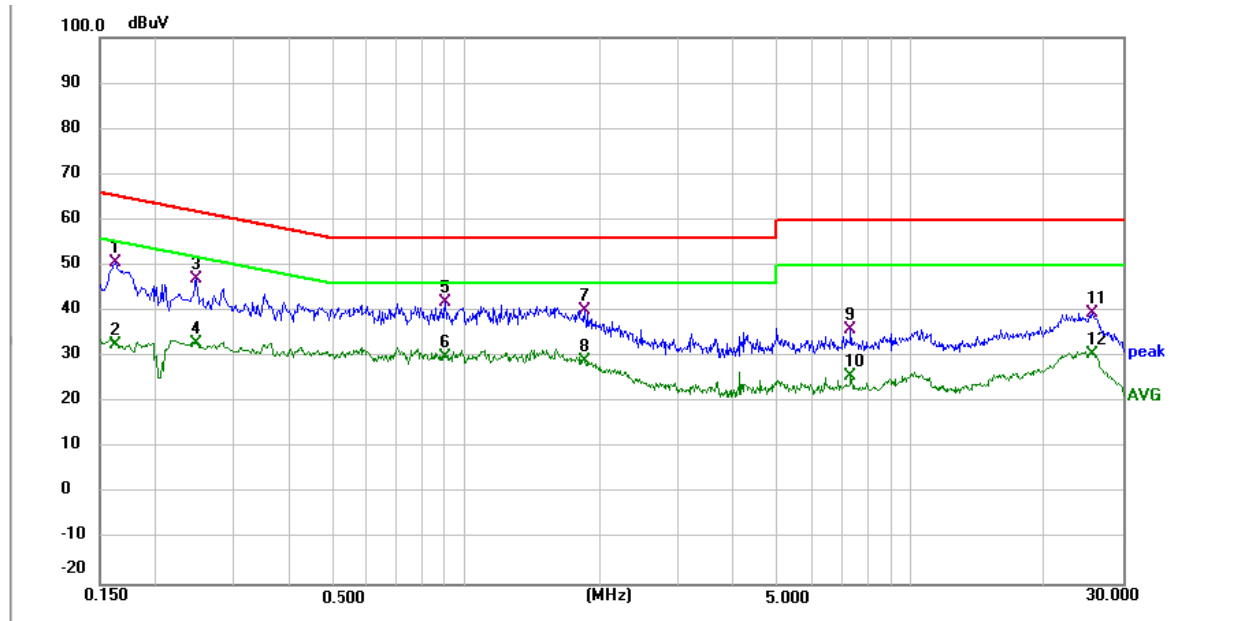
10.1.3 Test Data:

TM1 / Line: Neutral / Band: 2400-2483.5 MHz / BW: 2 / CH: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1500	34.30	20.28	54.58	66.00	-11.42	QP	P	
2	0.1500	13.51	20.28	33.79	56.00	-22.21	AVG	P	
3 *	0.2700	29.91	20.38	50.29	61.12	-10.83	QP	P	
4	0.2700	14.50	20.38	34.88	51.12	-16.24	AVG	P	
5	0.7980	23.54	20.44	43.98	56.00	-12.02	QP	P	
6	0.7980	11.04	20.44	31.48	46.00	-14.52	AVG	P	
7	1.4819	21.87	20.35	42.22	56.00	-13.78	QP	P	
8	1.4819	11.00	20.35	31.35	46.00	-14.65	AVG	P	
9	10.5300	17.39	20.43	37.82	60.00	-22.18	QP	P	
10	10.5300	7.48	20.43	27.91	50.00	-22.09	AVG	P	
11	15.2380	16.68	22.53	39.21	60.00	-20.79	QP	P	
12	15.2380	7.36	22.53	29.89	50.00	-20.11	AVG	P	

TM1 / Line: Line / Band: 2400-2483.5 MHz / BW: 2 / CH: H

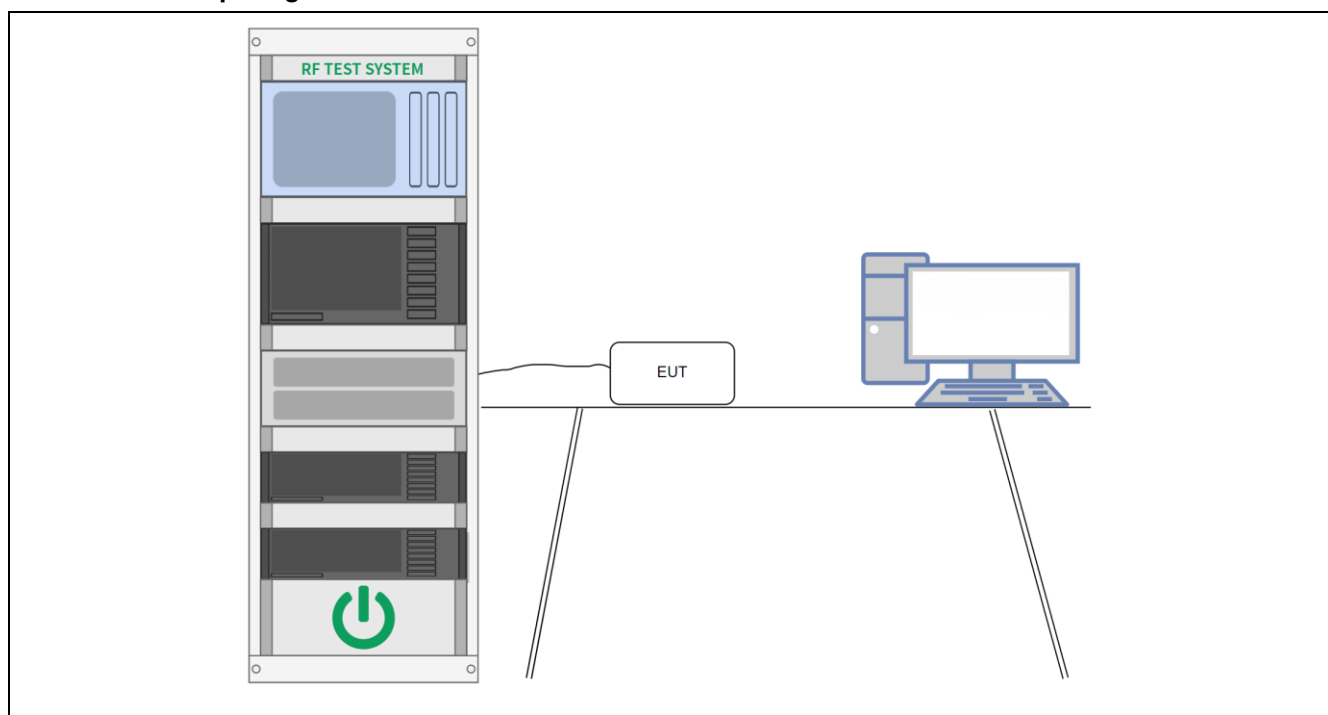


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1620	30.22	20.31	50.53	65.36	-14.83	QP	P	
2	0.1620	12.45	20.31	32.76	55.36	-22.60	AVG	P	
3	0.2460	26.64	20.36	47.00	61.89	-14.89	QP	P	
4	0.2460	12.63	20.36	32.99	51.89	-18.90	AVG	P	
5 *	0.9020	21.72	20.38	42.10	56.00	-13.90	QP	P	
6	0.9020	9.55	20.38	29.93	46.00	-16.07	AVG	P	
7	1.8540	19.66	20.37	40.03	56.00	-15.97	QP	P	
8	1.8540	8.79	20.37	29.16	46.00	-16.84	AVG	P	
9	7.3260	15.16	20.76	35.92	60.00	-24.08	QP	P	
10	7.3260	4.88	20.76	25.64	50.00	-24.36	AVG	P	
11	25.6020	16.06	23.40	39.46	60.00	-20.54	QP	P	
12	25.6020	7.12	23.40	30.52	50.00	-19.48	AVG	P	

10.2 Duty cycle

Test Requirement:	Reporting purposes only
Test Limit:	---
Test Method:	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024, section 11.6 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer. Use the following spectrum analyzer settings: a) Set the center frequency of the instrument to the center frequency of the transmission. b) Set RBW $\geq$ OBW if possible; otherwise, set RBW to the largest available value. c) Set VBW $\geq$ RBW. Set detector = peak or average.

10.2.1 Test Setup Diagram:



10.2.2 E.U.T. Operation:

Operating Environment:					
Temperature:	23.6 °C	Humidity:	56 %	Atmospheric Pressure:	100.1 mbar
Per-test mode:	TM1				
Final test mode:	TM1				

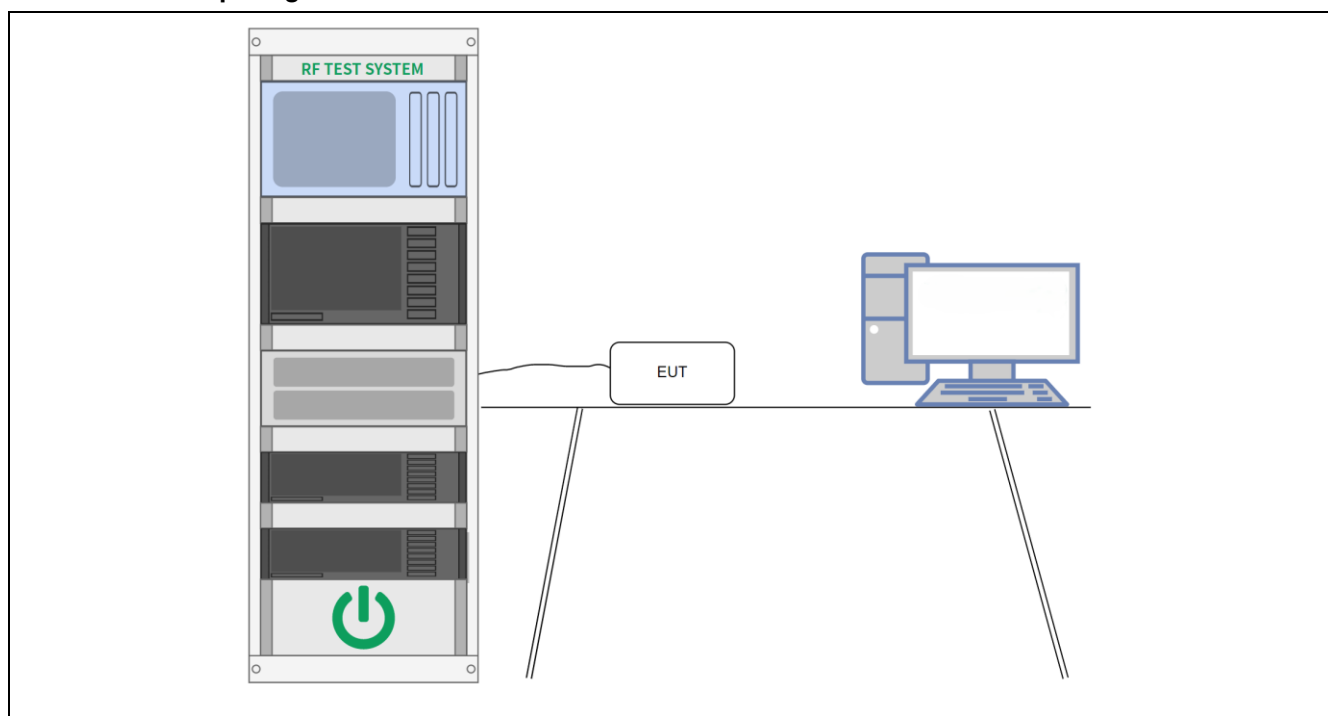
10.2.3 Test Data:

Please Refer to Appendix for Details.

10.3 99% Bandwidth

Test Requirement:	Reporting purposes only
Test Limit:	---
Test Method:	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024, section 6.9.3. KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer. Use the following spectrum analyzer settings: a) Span = The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW. b) RBW = 1% to 5% of the OBW. c) VBW $\geq 3 \times$ RBW d) Sweep = auto; e) Detector function = peak f) Trace = max hold g) Use the 99% power bandwidth function of the instrument and report the measured bandwidth. Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

10.3.1 Test Setup Diagram:



10.3.2 E.U.T. Operation:

Operating Environment:					
Temperature:	23.6 °C	Humidity:	56 %	Atmospheric Pressure:	100.1 mbar
Per-test mode:		TM1			
Final test mode:		TM1			

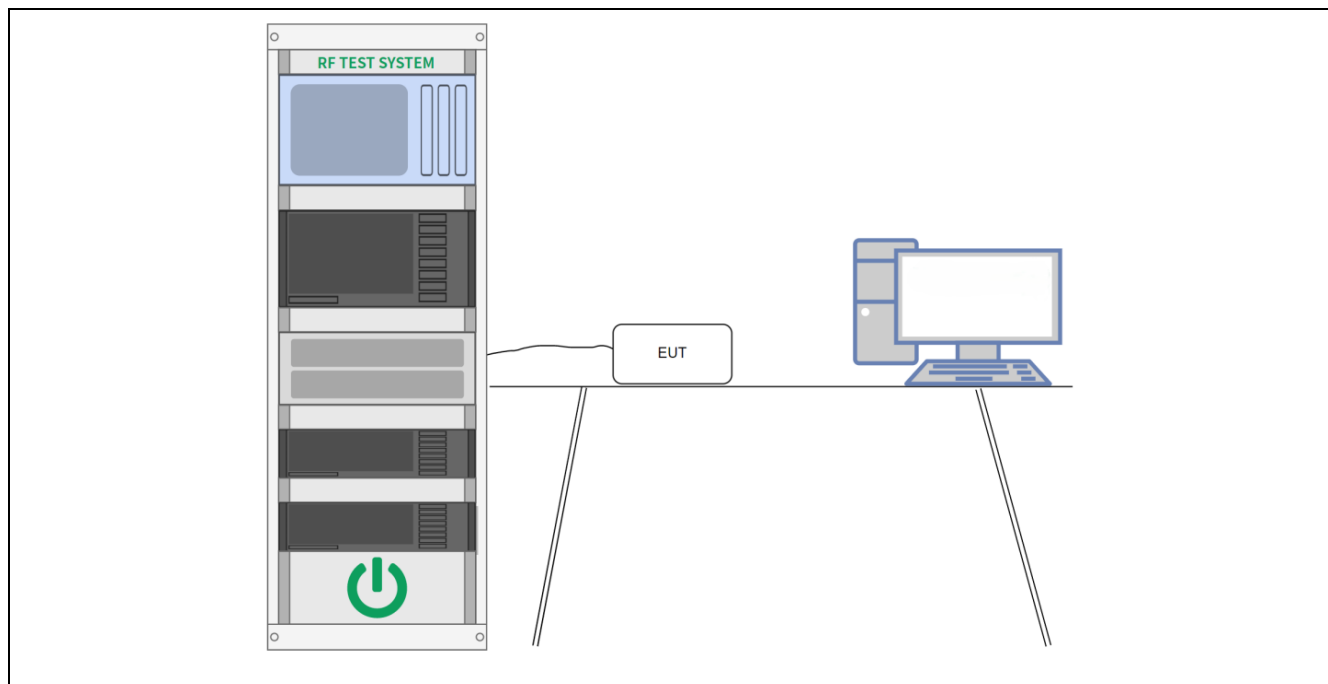
10.3.3 Test Data:

Please Refer to Appendix for Details.

10.4 6dB Bandwidth

Test Requirement:	47 CFR 15.247(a)(2)
Test Limit:	Refer to 47 CFR 15.247(a)(2), Systems using digital modulation techniques may operate in the 902-928 MHz, and 2400-2483.5 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.
Test Method:	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024, section 11.8 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	11.8.1 Option 1 The steps for the first option are as follows: a) Set RBW = shall be in the range of 1% to 5% of the OBW but not less than 100 kHz. b) Set the VBW $\geq [3 \times \text{RBW}]$. c) Detector = peak. d) Trace mode = max-hold. e) Sweep = No faster than coupled (auto) time. f) Allow the trace to stabilize. g) Measure the maximum width of the emission by placing two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the “-6 dB down amplitude”. If a marker is below this “-6 dB down amplitude” value, then it shall be as close as possible to this value. 11.8.2 Option 2 The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described in 11.8.1 (i.e., RBW = 100 kHz, VBW $\geq 3 \times \text{RBW}$, and peak detector with maximum hold) is implemented by the instrumentation function. When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ≥ 6 dB. Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

10.4.1 Test Setup Diagram:



10.4.2E.U.T. Operation:

Operating Environment:					
Temperature:	23.6 °C	Humidity:	56 %	Atmospheric Pressure:	100.1 mbar
Per-test mode:	TM1				
Final test mode:	TM1				

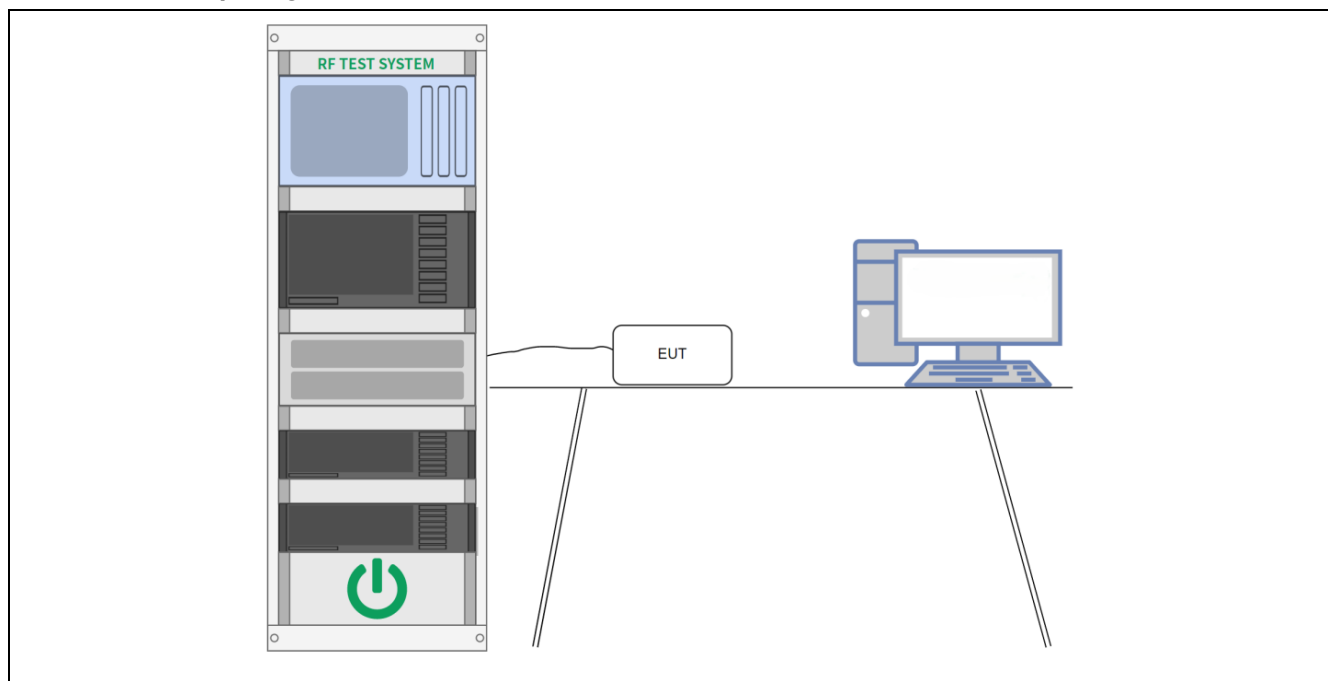
10.4.3Test Data:

Please Refer to Appendix for Details.

10.5 Maximum Conducted Output Power

Test Requirement:	47 CFR 15.247(b)(3)
Test Limit:	Refer to 47 CFR 15.247(b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.
Test Method:	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 section 11.9.1 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer. Use the following spectrum analyzer settings: a) Set the RBW $\geq$ DTS bandwidth. b) Set VBW $\geq$ $[3 \times \text{RBW}]$. c) Set span $\geq$ $[3 \times \text{RBW}]$. d) Sweep time = No faster than coupled (auto) time. e) Detector = peak. f) Trace mode = max-hold. g) Allow trace to fully stabilize. h) Use peak marker function to determine the peak amplitude level. Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

10.5.1 Test Setup Diagram:



10.5.2 E.U.T. Operation:

Operating Environment:					
Temperature:	23.6 °C	Humidity:	56 %	Atmospheric Pressure:	100.1 mbar
Per-test mode:	TM1				
Final test mode:	TM1				

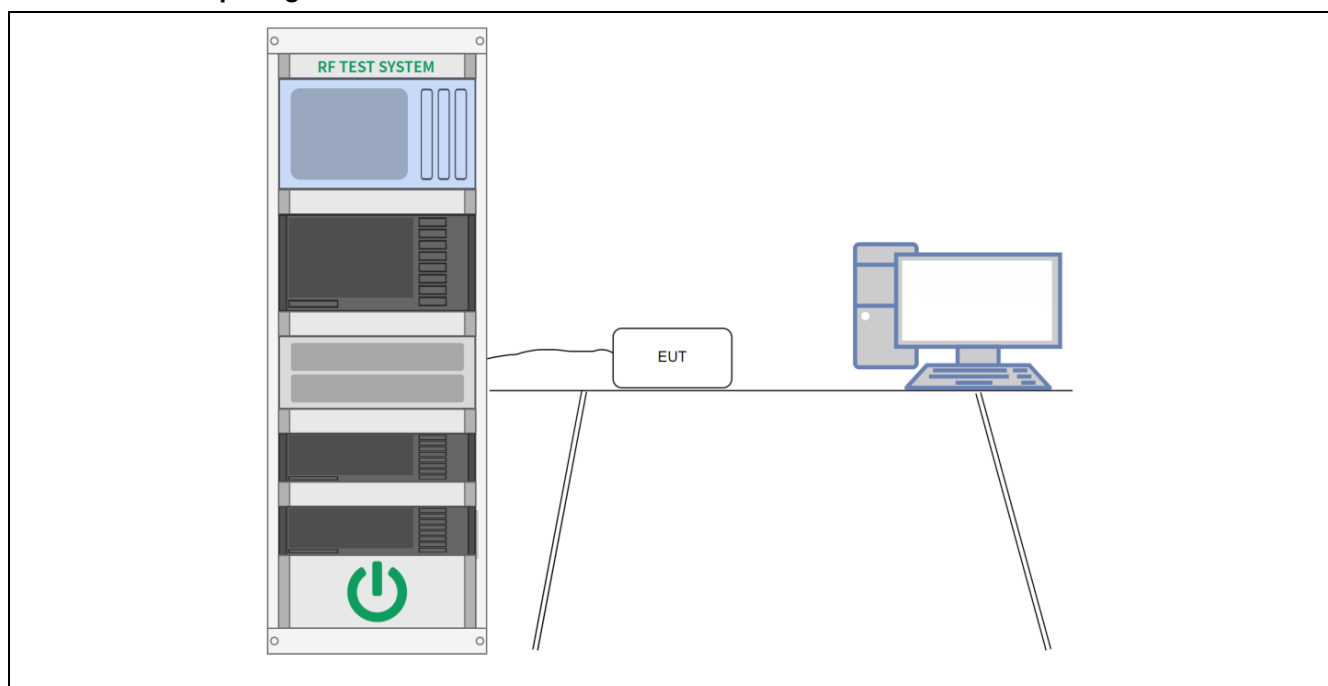
10.5.3 Test Data:

Please Refer to Appendix for Details.

10.6 Power Spectral Density

Test Requirement:	47 CFR 15.247(e)
Test Limit:	Refer to 47 CFR 15.247(e), For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.
Test Method:	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024, section 11.10 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer. Use the following spectrum analyzer settings: a) Set analyzer center frequency to DTS channel center frequency. b) Set the span >1.5 times the DTS bandwidth. c) Set the RBW to $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$. d) Set the VBW $\geq [3 \times \text{RBW}]$. e) Detector = peak. f) Sweep time = No faster than coupled (auto) time. g) Trace mode = max-hold. h) Allow trace to fully stabilize. i) Use the peak marker function to determine the maximum amplitude level within the RBW. j) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat. Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

10.6.1 Test Setup Diagram:



10.6.2 E.U.T. Operation:

Operating Environment:					
Temperature:	23.6 °C	Humidity:	56 %	Atmospheric Pressure:	100.1 mbar
Per-test mode:	TM1				
Final test mode:	TM1				

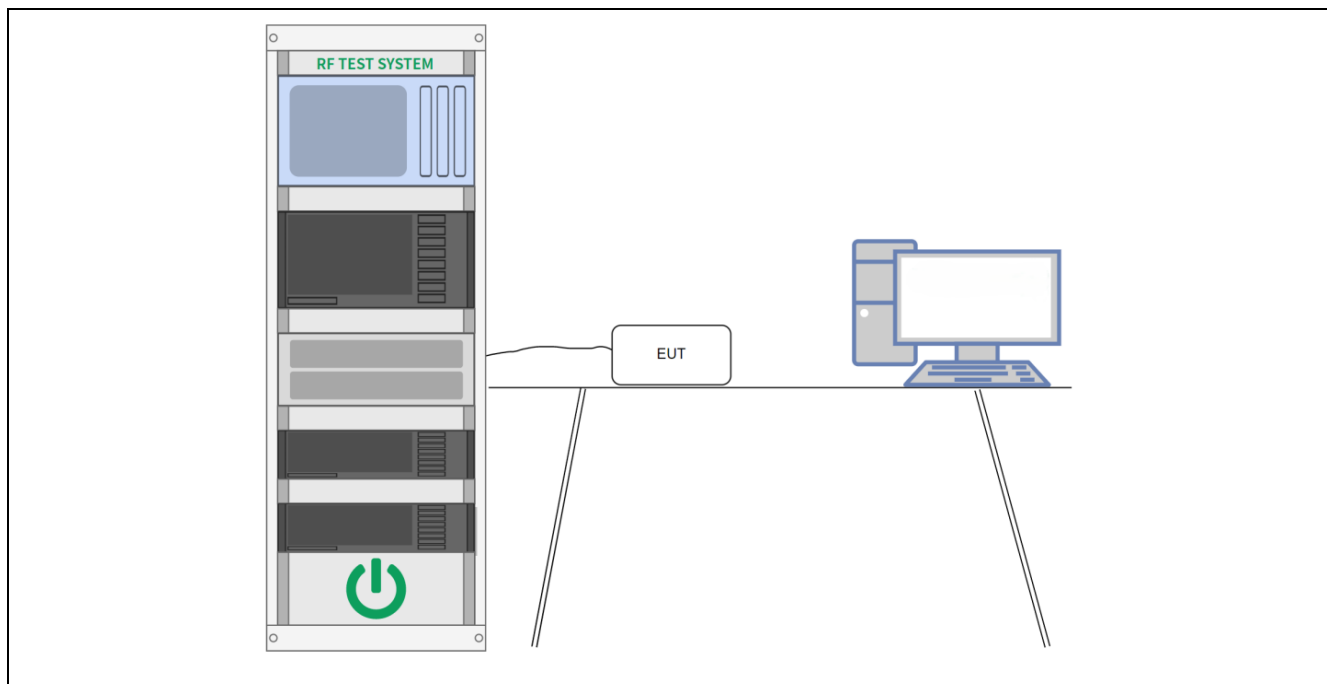
10.6.3 Test Data:

Please Refer to Appendix for Details.

10.7 Emissions in non-restricted frequency bands

Test Requirement:	47 CFR 15.247(d)
Test Limit:	Refer to 47 CFR 15.247(d), In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in § 15.209(a) is not required.
Test Method:	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 section 11.11 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer. Use the following spectrum analyzer settings: Step 1: Reference level measurement Establish a reference level by using the following procedure: - Set instrument center frequency to DTS channel center frequency. - Set the span to ≥ 1.5 times the DTS bandwidth. - Set the RBW = 100 kHz. - Set the VBW $\geq [3 \times \text{RBW}]$. - Detector = peak. - Sweep time = No faster than coupled (auto) time. - Trace mode = max-hold. - Allow trace to fully stabilize. - Use the peak marker function to determine the maximum PSD level. Note that the channel found to contain the maximum PSD level can be used to establish the reference level. Step 2: Emission level measurement Establish an emission level by using the following procedure: - Set the center frequency and span to encompass frequency range to be measured. Note that the frequency range might need to be divided into multiple frequency ranges to retain frequency resolution. NOTE—the number of points can also be increased for large spans to retain frequency resolution - Set the RBW = 100 kHz. - Set the VBW $\geq [3 \times \text{RBW}]$. - Detector = peak. - Sweep time = No faster than coupled (auto) time. - Trace mode = max-hold. - Allow trace to fully stabilize. - Use the peak marker function to determine the maximum amplitude level. Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

10.7.1 Test Setup Diagram:



10.7.2 E.U.T. Operation:

Operating Environment:					
Temperature:	23.6 °C	Humidity:	56 %	Atmospheric Pressure:	100.1 mbar
Per-test mode:	TM1				
Final test mode:	TM1				

10.7.3 Test Data:

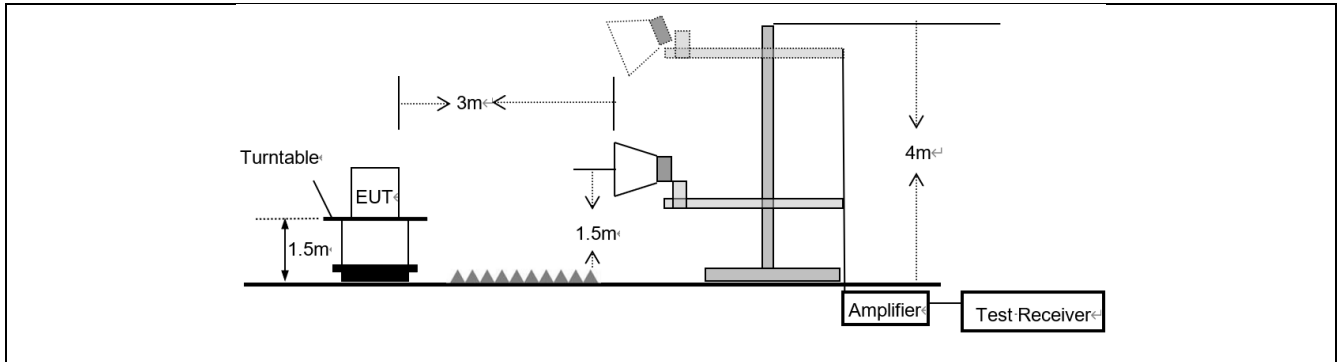
Please Refer to Appendix for Details.

10.8 Band edge emissions (Radiated)

Test Requirement:	Refer to 47 CFR 15.247(d), In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).																																																																									
Test Limit:	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)																																																																							
	0.009-0.490	2400/F(kHz)	300																																																																							
	0.490-1.705	24000/F(kHz)	30																																																																							
	1.705-30.0	30	30																																																																							
	30-88	100 **	3																																																																							
	88-216	150 **	3																																																																							
	216-960	200 **	3																																																																							
	Above 960	500	3																																																																							
	** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241. In the emission table above, the tighter limit applies at the band edges. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.																																																																									
	Table 1 – Restricted frequency bands <table> <tr> <th>MHz</th><th>MHz</th><th>MHz</th><th>GHz</th></tr> <tr> <td>0.090-0.110</td><td>16.42-16.423</td><td>399.9-410</td><td>4.5-5.15</td></tr> <tr> <td>0.495-0.505</td><td>16.69475-16.69525</td><td>608-614</td><td>5.35-5.46</td></tr> <tr> <td>2.1735-2.1905</td><td>16.80425-16.80475</td><td>960-1240</td><td>7.25-7.75</td></tr> <tr> <td>4.125-4.128</td><td>25.5-25.67</td><td>1300-1427</td><td>8.025-8.5</td></tr> <tr> <td>4.17725-4.17775</td><td>37.5-38.25</td><td>1435-1626.5</td><td>9.0-9.2</td></tr> <tr> <td>4.20725-4.20775</td><td>73-74.6</td><td>1645.5-1646.5</td><td>9.3-9.5</td></tr> <tr> <td>6.215-6.218</td><td>74.8-75.2</td><td>1660-1710</td><td>10.6-12.7</td></tr> <tr> <td>6.26775-6.26825</td><td>108-121.94</td><td>1718.8-1722.2</td><td>13.25-13.4</td></tr> <tr> <td>6.31175-6.31225</td><td>123-138</td><td>2200-2300</td><td>14.47-14.5</td></tr> <tr> <td>8.291-8.294</td><td>149.9-150.05</td><td>2310-2390</td><td>15.35-16.2</td></tr> <tr> <td>8.362-8.366</td><td>156.52475-156.52525</td><td>2483.5-2500</td><td>17.7-21.4</td></tr> <tr> <td>8.37625-8.38675</td><td>156.7-156.9</td><td>2690-2900</td><td>22.01-23.12</td></tr> <tr> <td>8.41425-8.41475</td><td>162.0125-167.17</td><td>3260-3267</td><td>23.6-24.0</td></tr> <tr> <td>12.29-12.293</td><td>167.72-173.2</td><td>3332-3339</td><td>31.2-31.8</td></tr> <tr> <td>12.51975-12.52025</td><td>240-285</td><td>3345.8-3358</td><td>36.43-36.5</td></tr> <tr> <td>12.57675-12.57725</td><td>322-335.4</td><td>3600-4400</td><td>Above 38.6</td></tr> <tr> <td>13.36-13.41</td><td></td><td></td><td></td></tr> </table>			MHz	MHz	MHz	GHz	0.090-0.110	16.42-16.423	399.9-410	4.5-5.15	0.495-0.505	16.69475-16.69525	608-614	5.35-5.46	2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75	4.125-4.128	25.5-25.67	1300-1427	8.025-8.5	4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2	4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5	6.215-6.218	74.8-75.2	1660-1710	10.6-12.7	6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4	6.31175-6.31225	123-138	2200-2300	14.47-14.5	8.291-8.294	149.9-150.05	2310-2390	15.35-16.2	8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4	8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12	8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0	12.29-12.293	167.72-173.2	3332-3339	31.2-31.8	12.51975-12.52025	240-285	3345.8-3358	36.43-36.5	12.57675-12.57725	322-335.4	3600-4400	Above 38.6	13.36-13.41		
MHz	MHz	MHz	GHz																																																																							
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15																																																																							
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46																																																																							
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75																																																																							
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5																																																																							
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2																																																																							
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5																																																																							
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7																																																																							
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4																																																																							
6.31175-6.31225	123-138	2200-2300	14.47-14.5																																																																							
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2																																																																							
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4																																																																							
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12																																																																							
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0																																																																							
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8																																																																							
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5																																																																							
12.57675-12.57725	322-335.4	3600-4400	Above 38.6																																																																							
13.36-13.41																																																																										
Test Method:	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 section 6.10 KDB 558074 D01 15.247 Meas Guidance v05r02																																																																									
Procedure:	Radiated band edge measurements at 2390 MHz and 2483.5 MHz were made with the unit transmitting in the low end of the channel range and the high end closest to the restricted bands respectively. The emissions were made on the 966 Semi-Chamber. Use (resolution bandwidth (RBW) = 1 MHz, video bandwidth (VBW) = 3 MHz for peak levels and RBW = 1 MHz and VBW = 10 Hz or 1/T for average levels). a) Use radiated spurious emission test procedure described in clause 10.12. The transmitter output (antenna port) was connected to the antenna. b) Set the PK and AV limit line. c) Record the fundamental emission and emissions out of the band-edge. d) Determine band-edge compliance as required. Where, a) Factor = Antenna Factor + Cable Loss, the value was added to Original																																																																									

Receiver Reading by the software automatically.
b) Level = Reading + Factor.
c) Margin = Level – Limit

10.8.1 Test Setup Diagram:



10.8.2 E.U.T. Operation:

Operating Environment:

Temperature:	24.4 °C	Humidity:	53 %	Atmospheric Pressure:	100 mbar
--------------	---------	-----------	------	-----------------------	----------

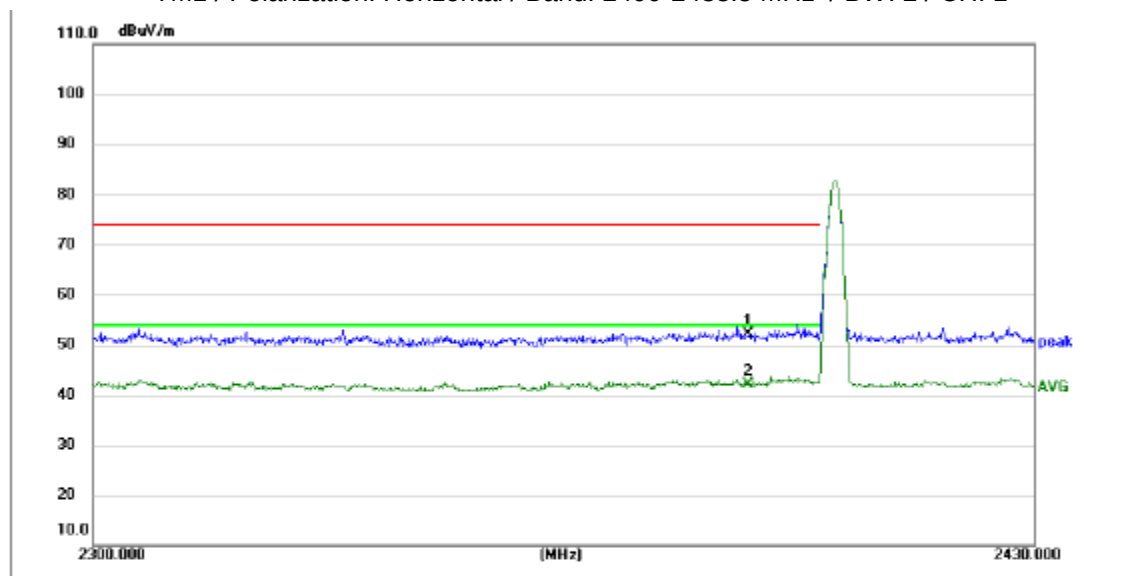
Per-test mode:	TM1
----------------	-----

Final test mode:	TM1
------------------	-----

Note: All the modulation modes have been tested, and the worst case result was reported.

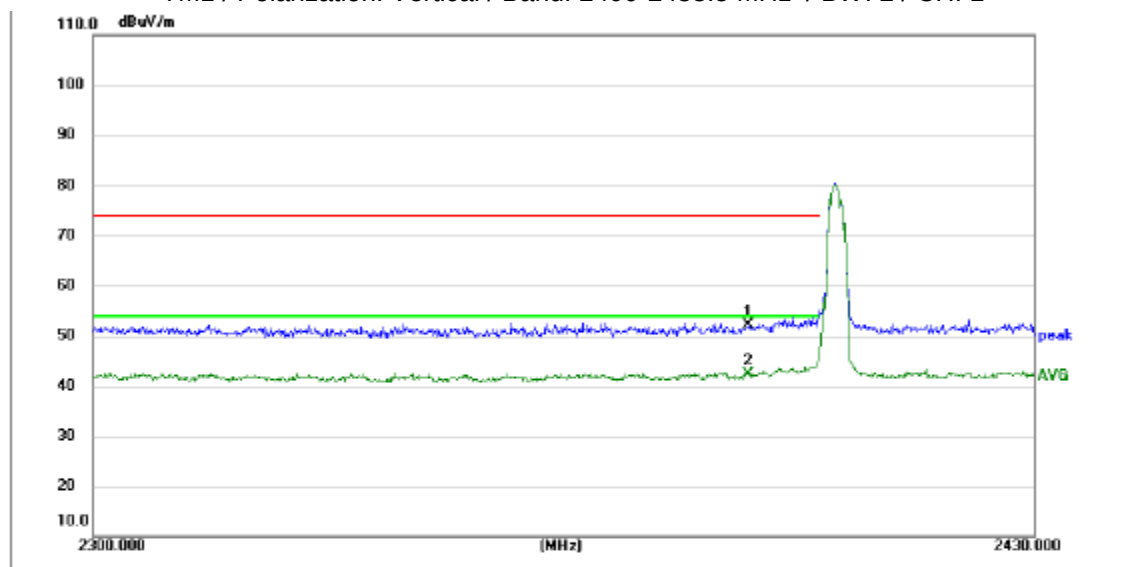
10.8.3 Test Data:

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 2 / CH: L



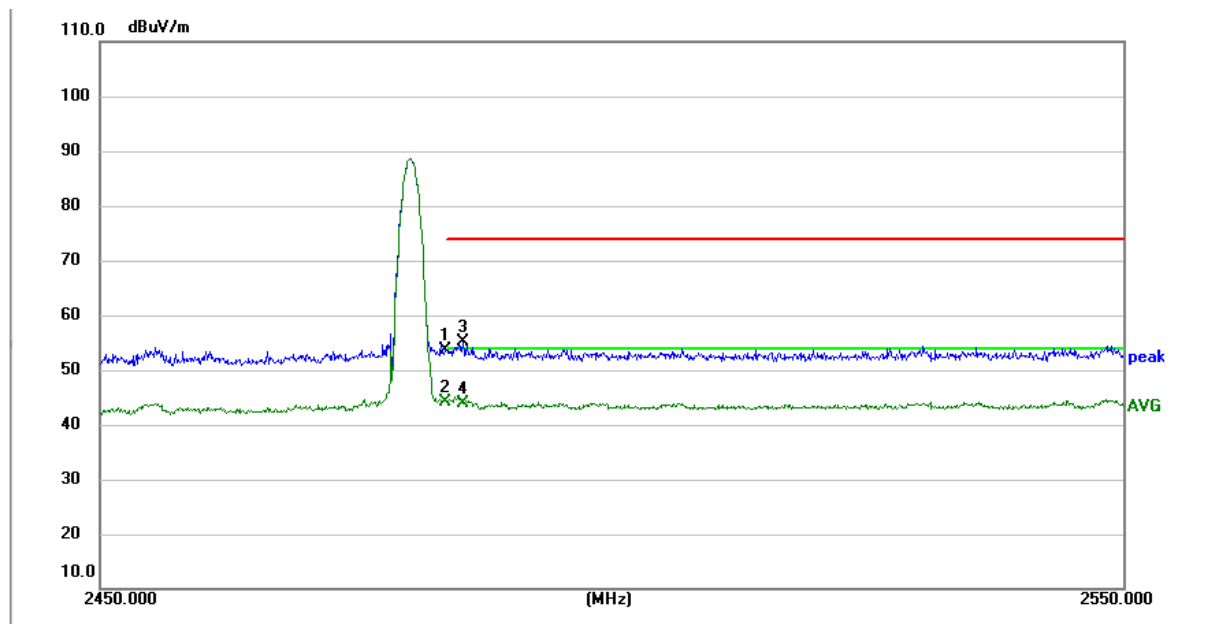
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	2390.000	22.21	29.88	52.09	74.00	-21.91	peak	P	
2 *	2390.000	12.14	29.88	42.02	54.00	-11.98	AVG	P	

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 2 / CH: L



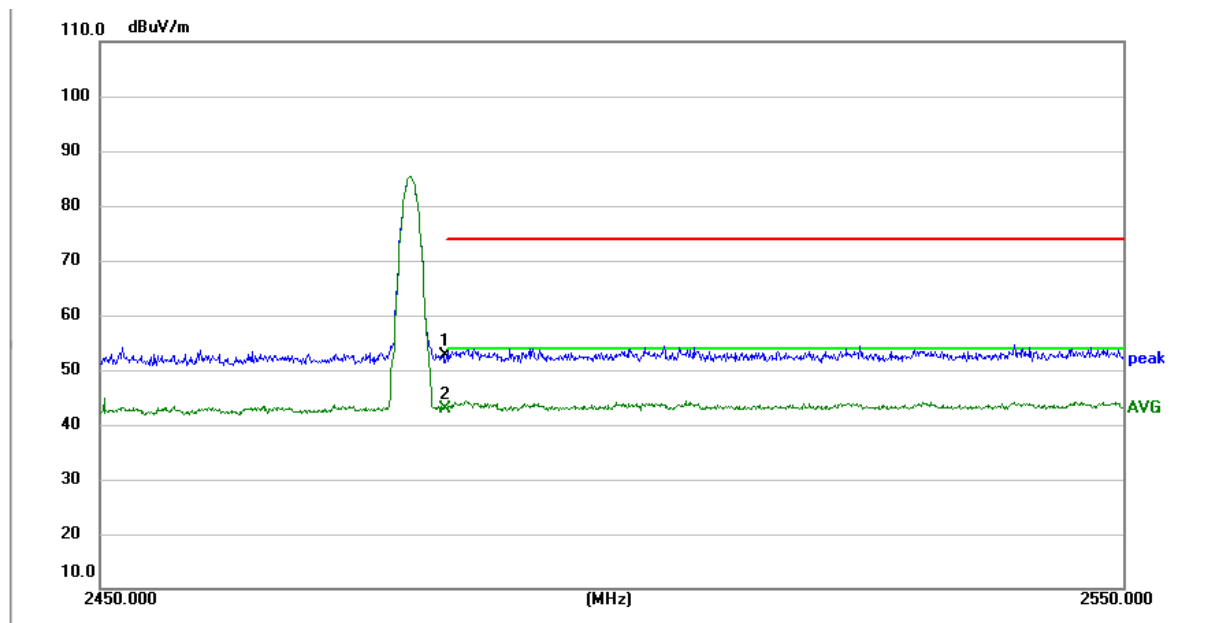
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	2390.000	22.32	29.88	52.20	74.00	-21.80	peak	P	
2 *	2390.000	12.41	29.88	42.29	54.00	-11.71	AVG	P	

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 2 / CH: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	2483.500	22.89	30.69	53.58	74.00	-20.42	peak	P	
2 *	2483.500	13.47	30.69	44.16	54.00	-9.84	AVG	P	
3	2485.090	24.42	30.71	55.13	74.00	-18.87	peak	P	
4	2485.090	13.23	30.71	43.94	54.00	-10.06	AVG	P	

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 2 / CH: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	2483.500	21.98	30.69	52.67	74.00	-21.33	peak	P	
2 *	2483.500	12.17	30.69	42.86	54.00	-11.14	AVG	P	

10.9 Emissions in frequency bands (below 30MHz)

Test Requirement:	Refer to 47 CFR 15.247(d), In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).																																																																									
Test Limit:	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)																																																																							
	0.009-0.490	2400/F(kHz)	300																																																																							
	0.490-1.705	24000/F(kHz)	30																																																																							
	1.705-30.0	30	30																																																																							
	30-88	100 **	3																																																																							
	88-216	150 **	3																																																																							
	216-960	200 **	3																																																																							
	Above 960	500	3																																																																							
	** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241. In the emission table above, the tighter limit applies at the band edges. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.																																																																									
	Table 1 – Restricted frequency bands <table> <tr> <th>MHz</th><th>MHz</th><th>MHz</th><th>GHz</th></tr> <tr> <td>0.090-0.110</td><td>16.42-16.423</td><td>399.9-410</td><td>4.5-5.15</td></tr> <tr> <td>0.495-0.505</td><td>16.69475-16.69525</td><td>608-614</td><td>5.35-5.46</td></tr> <tr> <td>2.1735-2.1905</td><td>16.80425-16.80475</td><td>960-1240</td><td>7.25-7.75</td></tr> <tr> <td>4.125-4.128</td><td>25.5-25.67</td><td>1300-1427</td><td>8.025-8.5</td></tr> <tr> <td>4.17725-4.17775</td><td>37.5-38.25</td><td>1435-1626.5</td><td>9.0-9.2</td></tr> <tr> <td>4.20725-4.20775</td><td>73-74.6</td><td>1645.5-1646.5</td><td>9.3-9.5</td></tr> <tr> <td>6.215-6.218</td><td>74.8-75.2</td><td>1660-1710</td><td>10.6-12.7</td></tr> <tr> <td>6.26775-6.26825</td><td>108-121.94</td><td>1718.8-1722.2</td><td>13.25-13.4</td></tr> <tr> <td>6.31175-6.31225</td><td>123-138</td><td>2200-2300</td><td>14.47-14.5</td></tr> <tr> <td>8.291-8.294</td><td>149.9-150.05</td><td>2310-2390</td><td>15.35-16.2</td></tr> <tr> <td>8.362-8.366</td><td>156.52475-156.52525</td><td>2483.5-2500</td><td>17.7-21.4</td></tr> <tr> <td>8.37625-8.38675</td><td>156.7-156.9</td><td>2690-2900</td><td>22.01-23.12</td></tr> <tr> <td>8.41425-8.41475</td><td>162.0125-167.17</td><td>3260-3267</td><td>23.6-24.0</td></tr> <tr> <td>12.29-12.293</td><td>167.72-173.2</td><td>3332-3339</td><td>31.2-31.8</td></tr> <tr> <td>12.51975-12.52025</td><td>240-285</td><td>3345.8-3358</td><td>36.43-36.5</td></tr> <tr> <td>12.57675-12.57725</td><td>322-335.4</td><td>3600-4400</td><td>Above 38.6</td></tr> <tr> <td>13.36-13.41</td><td></td><td></td><td></td></tr> </table>			MHz	MHz	MHz	GHz	0.090-0.110	16.42-16.423	399.9-410	4.5-5.15	0.495-0.505	16.69475-16.69525	608-614	5.35-5.46	2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75	4.125-4.128	25.5-25.67	1300-1427	8.025-8.5	4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2	4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5	6.215-6.218	74.8-75.2	1660-1710	10.6-12.7	6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4	6.31175-6.31225	123-138	2200-2300	14.47-14.5	8.291-8.294	149.9-150.05	2310-2390	15.35-16.2	8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4	8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12	8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0	12.29-12.293	167.72-173.2	3332-3339	31.2-31.8	12.51975-12.52025	240-285	3345.8-3358	36.43-36.5	12.57675-12.57725	322-335.4	3600-4400	Above 38.6	13.36-13.41		
MHz	MHz	MHz	GHz																																																																							
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15																																																																							
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46																																																																							
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75																																																																							
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5																																																																							
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2																																																																							
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5																																																																							
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7																																																																							
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4																																																																							
6.31175-6.31225	123-138	2200-2300	14.47-14.5																																																																							
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2																																																																							
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4																																																																							
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12																																																																							
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0																																																																							
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8																																																																							
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5																																																																							
12.57675-12.57725	322-335.4	3600-4400	Above 38.6																																																																							
13.36-13.41																																																																										
Test Method:	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024 section 6.4 KDB 558074 D01 15.247 Meas Guidance v05r02																																																																									
Procedure:	a) The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. b) The EUT was set 3 meters away from the interference-receiving antenna. c) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights 1 meter and the rota table table was turned from 0 degrees to 360 degrees to find the maximum reading. d) The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. e) If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. f) The radiation measurements are performed in X, Y, Z axis positioning. only the test worst case mode is recorded in the report.(for portable and mobile devices)																																																																									

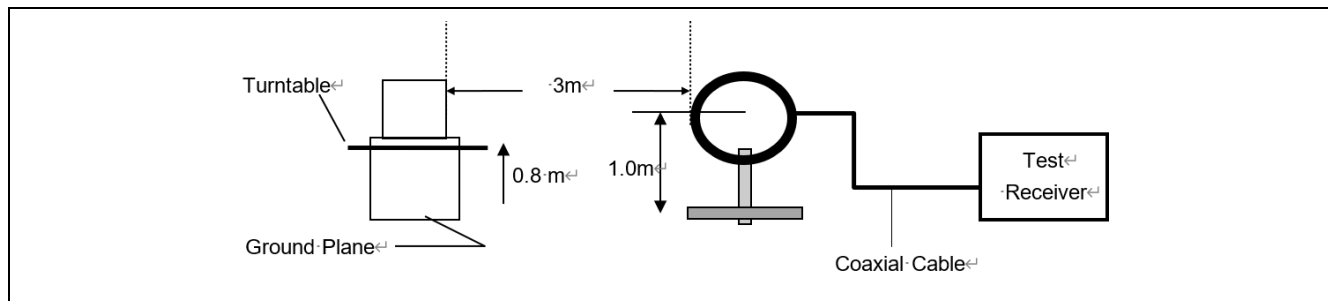
Where,

a) Factor = Antenna Factor + Cable Loss, the value was added to Original Receiver Reading by the software automatically.

b) Level = Reading + Factor.

c) Margin = Level – Limit

10.9.1 Test Setup Diagram:



10.9.2 E.U.T. Operation:

Operating Environment:					
Temperature:	23.7 °C	Humidity:	53.6 %	Atmospheric Pressure:	99.8 mbar
Per-test mode:	TM1				
Final test mode:	TM1				

10.9.3 Test Data:

Note: the amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

10.10 Emissions in frequency bands (30M - 1GHz)

Test Requirement:	Refer to 47 CFR 15.247(d), In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).																																																																									
Test Limit:	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)																																																																							
	0.009-0.490	2400/F(kHz)	300																																																																							
	0.490-1.705	24000/F(kHz)	30																																																																							
	1.705-30.0	30	30																																																																							
	30-88	100 **	3																																																																							
	88-216	150 **	3																																																																							
	216-960	200 **	3																																																																							
	Above 960	500	3																																																																							
	** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241. In the emission table above, the tighter limit applies at the band edges. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.																																																																									
	Table 1 – Restricted frequency bands <table> <tr> <th>MHz</th><th>MHz</th><th>MHz</th><th>GHz</th></tr> <tr> <td>0.090-0.110</td><td>16.42-16.423</td><td>399.9-410</td><td>4.5-5.15</td></tr> <tr> <td>0.495-0.505</td><td>16.69475-16.69525</td><td>608-614</td><td>5.35-5.46</td></tr> <tr> <td>2.1735-2.1905</td><td>16.80425-16.80475</td><td>960-1240</td><td>7.25-7.75</td></tr> <tr> <td>4.125-4.128</td><td>25.5-25.67</td><td>1300-1427</td><td>8.025-8.5</td></tr> <tr> <td>4.17725-4.17775</td><td>37.5-38.25</td><td>1435-1626.5</td><td>9.0-9.2</td></tr> <tr> <td>4.20725-4.20775</td><td>73-74.6</td><td>1645.5-1646.5</td><td>9.3-9.5</td></tr> <tr> <td>6.215-6.218</td><td>74.8-75.2</td><td>1660-1710</td><td>10.6-12.7</td></tr> <tr> <td>6.26775-6.26825</td><td>108-121.94</td><td>1718.8-1722.2</td><td>13.25-13.4</td></tr> <tr> <td>6.31175-6.31225</td><td>123-138</td><td>2200-2300</td><td>14.47-14.5</td></tr> <tr> <td>8.291-8.294</td><td>149.9-150.05</td><td>2310-2390</td><td>15.35-16.2</td></tr> <tr> <td>8.362-8.366</td><td>156.52475-156.52525</td><td>2483.5-2500</td><td>17.7-21.4</td></tr> <tr> <td>8.37625-8.38675</td><td>156.7-156.9</td><td>2690-2900</td><td>22.01-23.12</td></tr> <tr> <td>8.41425-8.41475</td><td>162.0125-167.17</td><td>3260-3267</td><td>23.6-24.0</td></tr> <tr> <td>12.29-12.293</td><td>167.72-173.2</td><td>3332-3339</td><td>31.2-31.8</td></tr> <tr> <td>12.51975-12.52025</td><td>240-285</td><td>3345.8-3358</td><td>36.43-36.5</td></tr> <tr> <td>12.57675-12.57725</td><td>322-335.4</td><td>3600-4400</td><td>Above 38.6</td></tr> <tr> <td>13.36-13.41</td><td></td><td></td><td></td></tr> </table>			MHz	MHz	MHz	GHz	0.090-0.110	16.42-16.423	399.9-410	4.5-5.15	0.495-0.505	16.69475-16.69525	608-614	5.35-5.46	2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75	4.125-4.128	25.5-25.67	1300-1427	8.025-8.5	4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2	4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5	6.215-6.218	74.8-75.2	1660-1710	10.6-12.7	6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4	6.31175-6.31225	123-138	2200-2300	14.47-14.5	8.291-8.294	149.9-150.05	2310-2390	15.35-16.2	8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4	8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12	8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0	12.29-12.293	167.72-173.2	3332-3339	31.2-31.8	12.51975-12.52025	240-285	3345.8-3358	36.43-36.5	12.57675-12.57725	322-335.4	3600-4400	Above 38.6	13.36-13.41		
MHz	MHz	MHz	GHz																																																																							
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15																																																																							
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46																																																																							
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75																																																																							
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5																																																																							
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2																																																																							
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5																																																																							
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7																																																																							
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4																																																																							
6.31175-6.31225	123-138	2200-2300	14.47-14.5																																																																							
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2																																																																							
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4																																																																							
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12																																																																							
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0																																																																							
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8																																																																							
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5																																																																							
12.57675-12.57725	322-335.4	3600-4400	Above 38.6																																																																							
13.36-13.41																																																																										
Test Method:	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024 section 6.5.4 KDB 558074 D01 15.247 Meas Guidance v05r02																																																																									
Procedure:	a) The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. b) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c) The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. d) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table table was turned from 0 degrees to 360 degrees to find the maximum reading. e) The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f) If the emission level of the EUT in peak mode was 10dB lower than the limit																																																																									

specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

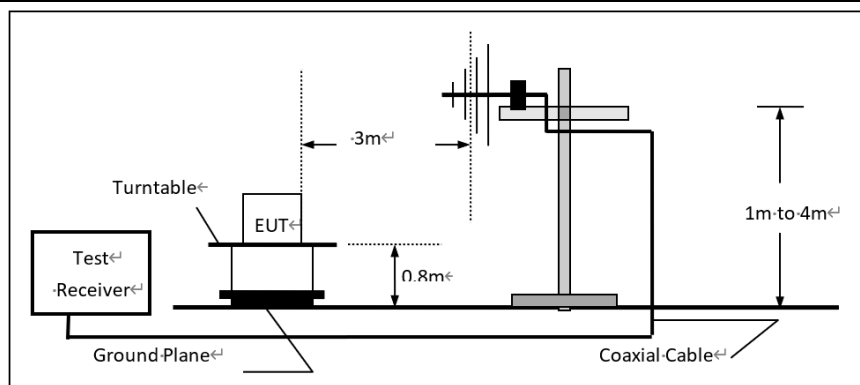
Where,

a) Factor = Antenna Factor + Cable Loss, the value was added to Original Receiver Reading by the software automatically.

b) Level = Reading + Factor.

c) Margin = Level – Limit

10.10.1 Test Setup Diagram:



10.10.2 E.U.T. Operation:

Operating Environment:

Temperature:	23.7 °C	Humidity:	53.6 %	Atmospheric Pressure:	99.8 mbar
--------------	---------	-----------	--------	-----------------------	-----------

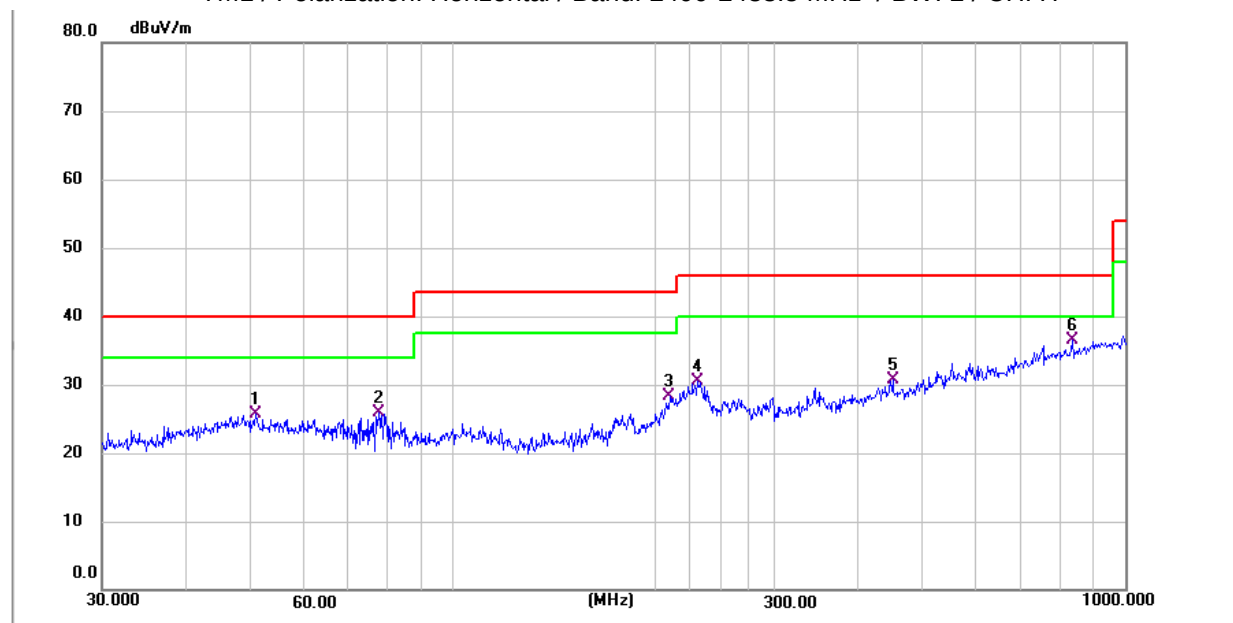
Per-test mode:	TM1
----------------	-----

Final test mode:	TM1
------------------	-----

Note: All the modulation modes have been tested, and the worst case result was reported.

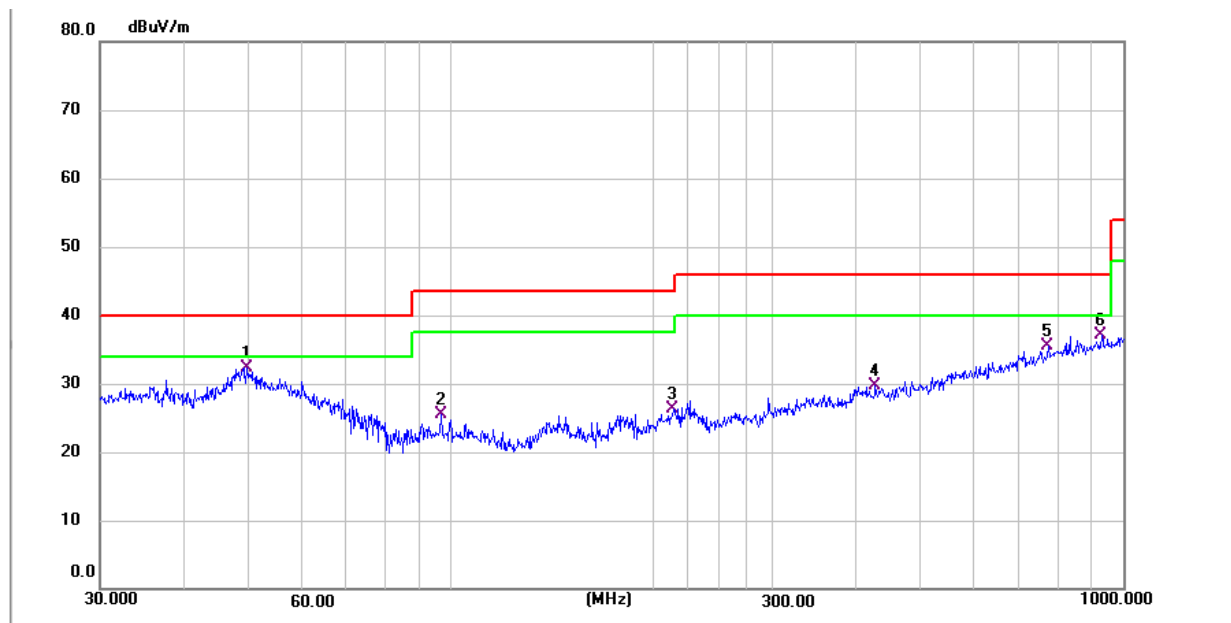
10.10.3 Test Data:

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 2 / CH: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	50.7639	5.96	19.65	25.61	40.00	-14.39	QP	P	
2	77.5930	11.89	13.97	25.86	40.00	-14.14	QP	P	
3	210.0480	10.17	18.13	28.30	43.50	-15.20	QP	P	
4	230.9070	11.69	18.75	30.44	46.00	-15.56	QP	P	
5	449.5560	7.44	23.20	30.64	46.00	-15.36	QP	P	
6 *	836.2440	6.77	29.69	36.46	46.00	-9.54	QP	P	

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 2 / CH: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	49.5330	12.38	20.02	32.40	40.00	-7.60	QP	P	
2	96.7750	8.01	17.40	25.41	43.50	-18.09	QP	P	
3	213.7630	8.06	18.22	26.28	43.50	-17.22	QP	P	
4	426.5210	6.55	23.24	29.79	46.00	-16.21	QP	P	
5	774.1579	6.69	28.84	35.53	46.00	-10.47	QP	P	
6	929.0080	6.41	30.78	37.19	46.00	-8.81	QP	P	

10.11 Emissions in frequency bands (1G - 18GHz)

Test Requirement:	Refer to 47 CFR 15.247(d), in addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).																																																																									
Test Limit:	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)																																																																							
	0.009-0.490	2400/F(kHz)	300																																																																							
	0.490-1.705	24000/F(kHz)	30																																																																							
	1.705-30.0	30	30																																																																							
	30-88	100 **	3																																																																							
	88-216	150 **	3																																																																							
	216-960	200 **	3																																																																							
	Above 960	500	3																																																																							
	** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241. In the emission table above, the tighter limit applies at the band edges. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.																																																																									
	Table 1 – Restricted frequency bands <table> <tr> <th>MHz</th><th>MHz</th><th>MHz</th><th>GHz</th></tr> <tr> <td>0.090-0.110</td><td>16.42-16.423</td><td>399.9-410</td><td>4.5-5.15</td></tr> <tr> <td>0.495-0.505</td><td>16.69475-16.69525</td><td>608-614</td><td>5.35-5.46</td></tr> <tr> <td>2.1735-2.1905</td><td>16.80425-16.80475</td><td>960-1240</td><td>7.25-7.75</td></tr> <tr> <td>4.125-4.128</td><td>25.5-25.67</td><td>1300-1427</td><td>8.025-8.5</td></tr> <tr> <td>4.17725-4.17775</td><td>37.5-38.25</td><td>1435-1626.5</td><td>9.0-9.2</td></tr> <tr> <td>4.20725-4.20775</td><td>73-74.6</td><td>1645.5-1646.5</td><td>9.3-9.5</td></tr> <tr> <td>6.215-6.218</td><td>74.8-75.2</td><td>1660-1710</td><td>10.6-12.7</td></tr> <tr> <td>6.26775-6.26825</td><td>108-121.94</td><td>1718.8-1722.2</td><td>13.25-13.4</td></tr> <tr> <td>6.31175-6.31225</td><td>123-138</td><td>2200-2300</td><td>14.47-14.5</td></tr> <tr> <td>8.291-8.294</td><td>149.9-150.05</td><td>2310-2390</td><td>15.35-16.2</td></tr> <tr> <td>8.362-8.366</td><td>156.52475-156.52525</td><td>2483.5-2500</td><td>17.7-21.4</td></tr> <tr> <td>8.37625-8.38675</td><td>156.7-156.9</td><td>2690-2900</td><td>22.01-23.12</td></tr> <tr> <td>8.41425-8.41475</td><td>162.0125-167.17</td><td>3260-3267</td><td>23.6-24.0</td></tr> <tr> <td>12.29-12.293</td><td>167.72-173.2</td><td>3332-3339</td><td>31.2-31.8</td></tr> <tr> <td>12.51975-12.52025</td><td>240-285</td><td>3345.8-3358</td><td>36.43-36.5</td></tr> <tr> <td>12.57675-12.57725</td><td>322-335.4</td><td>3600-4400</td><td>Above 38.6</td></tr> <tr> <td>13.36-13.41</td><td></td><td></td><td></td></tr> </table>			MHz	MHz	MHz	GHz	0.090-0.110	16.42-16.423	399.9-410	4.5-5.15	0.495-0.505	16.69475-16.69525	608-614	5.35-5.46	2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75	4.125-4.128	25.5-25.67	1300-1427	8.025-8.5	4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2	4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5	6.215-6.218	74.8-75.2	1660-1710	10.6-12.7	6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4	6.31175-6.31225	123-138	2200-2300	14.47-14.5	8.291-8.294	149.9-150.05	2310-2390	15.35-16.2	8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4	8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12	8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0	12.29-12.293	167.72-173.2	3332-3339	31.2-31.8	12.51975-12.52025	240-285	3345.8-3358	36.43-36.5	12.57675-12.57725	322-335.4	3600-4400	Above 38.6	13.36-13.41		
MHz	MHz	MHz	GHz																																																																							
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15																																																																							
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46																																																																							
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75																																																																							
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5																																																																							
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2																																																																							
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5																																																																							
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7																																																																							
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4																																																																							
6.31175-6.31225	123-138	2200-2300	14.47-14.5																																																																							
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2																																																																							
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4																																																																							
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12																																																																							
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0																																																																							
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8																																																																							
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5																																																																							
12.57675-12.57725	322-335.4	3600-4400	Above 38.6																																																																							
13.36-13.41																																																																										
Test Method:	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 section 6.6 KDB 558074 D01 15.247 Meas Guidance v05r02																																																																									
Procedure:	a) The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. b) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c) The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. d) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. e) The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f) If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be																																																																									

reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

g) Test the EUT in the lowest channel ,middle channel, the Highest channel

h) The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, only the test worst case is recorded in the report.

i) Repeat above procedures until all frequencies measured was complete.

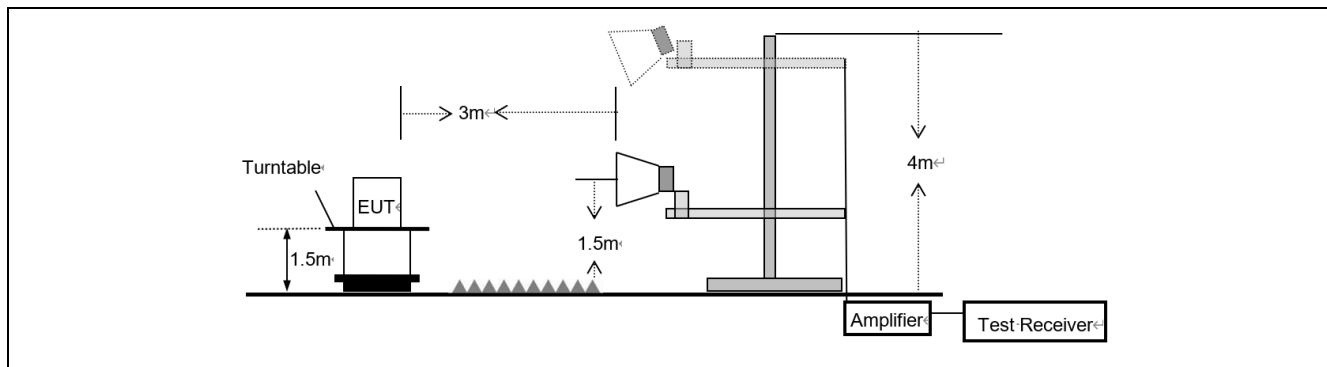
Where,

a) Factor = Antenna Factor + Cable Loss - Amplifier Gain, the value was added to Original Receiver Reading by the software automatically.

b) Level = Reading + Factor.

c) Margin = Level – Limit

10.11.1 Test Setup Diagram:



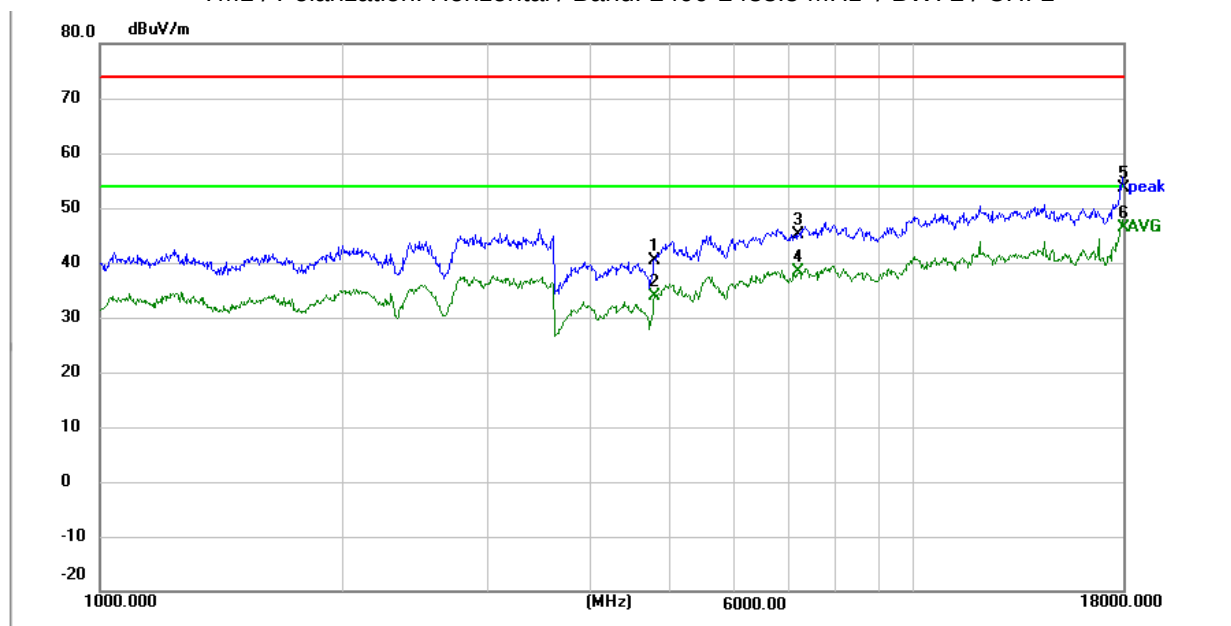
10.11.2 E.U.T. Operation:

Operating Environment:					
Temperature:	26 °C	Humidity:	57.5 %	Atmospheric Pressure:	99.8 mbar
Per-test mode:	TM1				
Final test mode:	TM1				

Note: All the modulation modes have been tested, and the worst case result was reported.

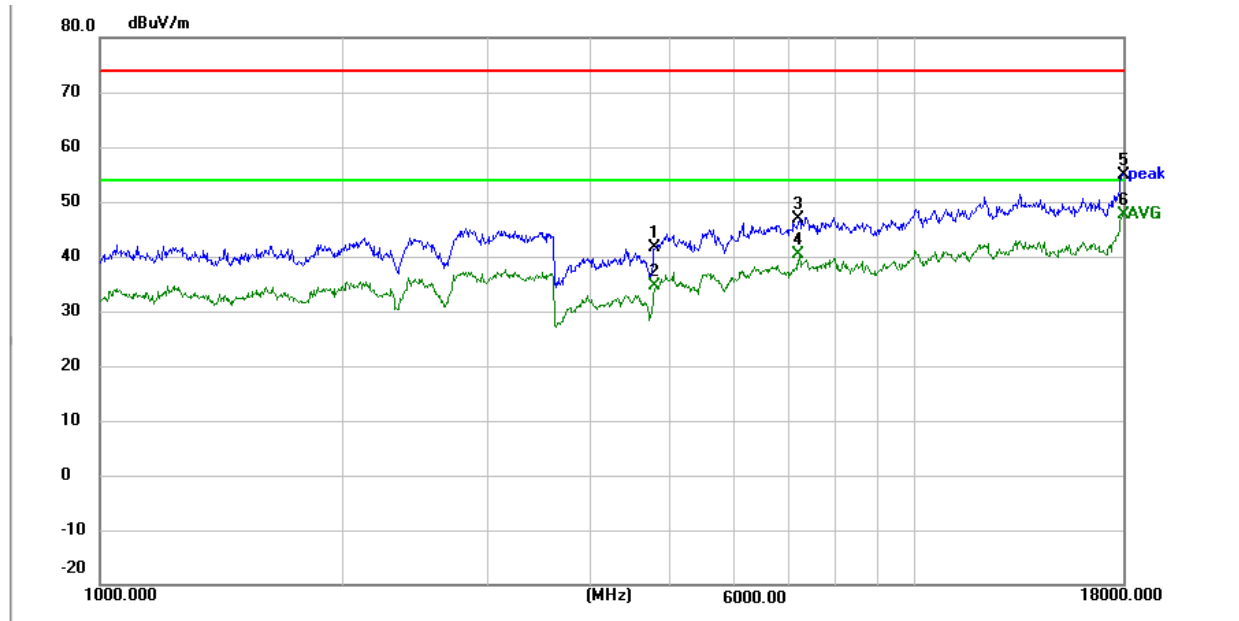
10.11.3 Test Data:

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 2 / CH: L



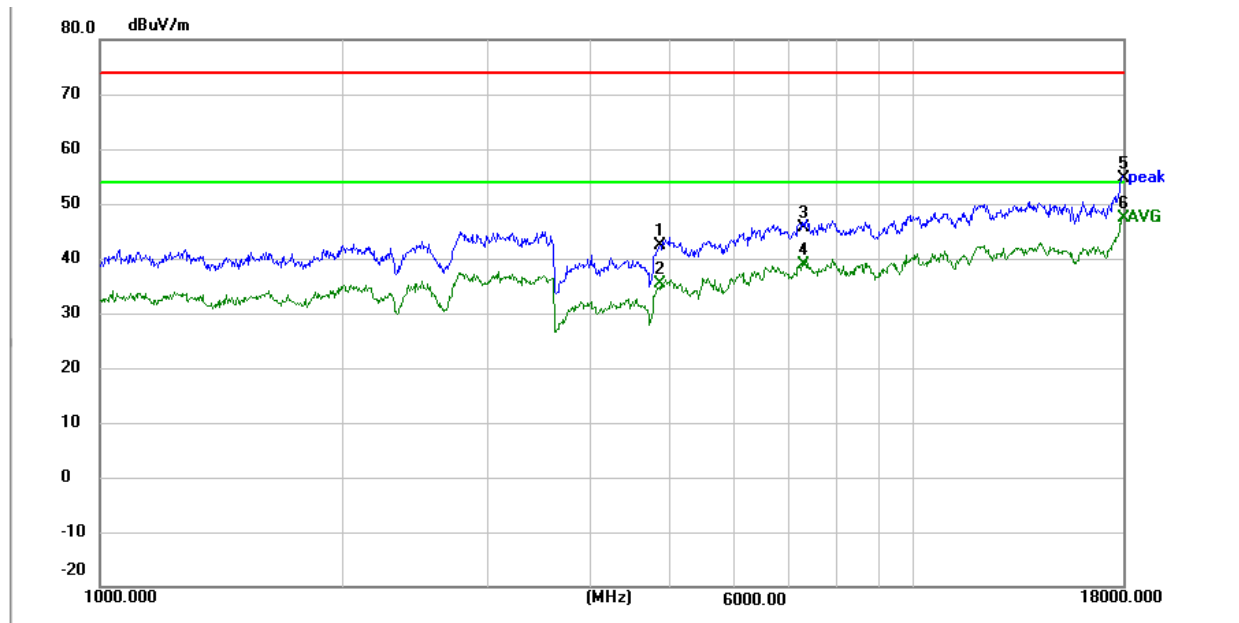
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	4804.000	47.43	-7.02	40.41	74.00	-33.59	peak	P	
2	4804.000	40.80	-7.02	33.78	54.00	-20.22	AVG	P	
3	7206.000	47.13	-2.07	45.06	74.00	-28.94	peak	P	
4	7206.000	40.53	-2.07	38.46	54.00	-15.54	AVG	P	
5	18000.000	40.03	13.61	53.64	74.00	-20.36	peak	P	
6 *	18000.000	32.80	13.61	46.41	54.00	-7.59	AVG	P	

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 2 / CH: L



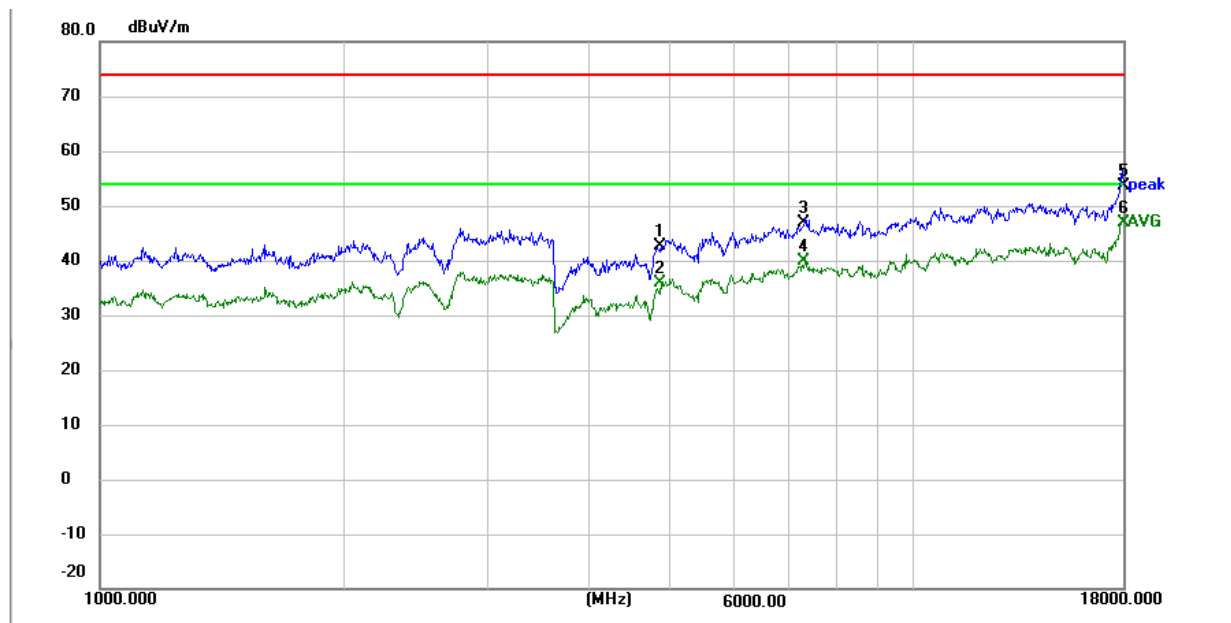
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	4804.000	48.61	-7.02	41.59	74.00	-32.41	peak	P	
2	4804.000	41.72	-7.02	34.70	54.00	-19.30	AVG	P	
3	7206.000	48.83	-2.07	46.76	74.00	-27.24	peak	P	
4	7206.000	42.40	-2.07	40.33	54.00	-13.67	AVG	P	
5	18000.000	41.26	13.61	54.87	74.00	-19.13	peak	P	
6 *	18000.000	33.94	13.61	47.55	54.00	-6.45	AVG	P	

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 2 / CH: M



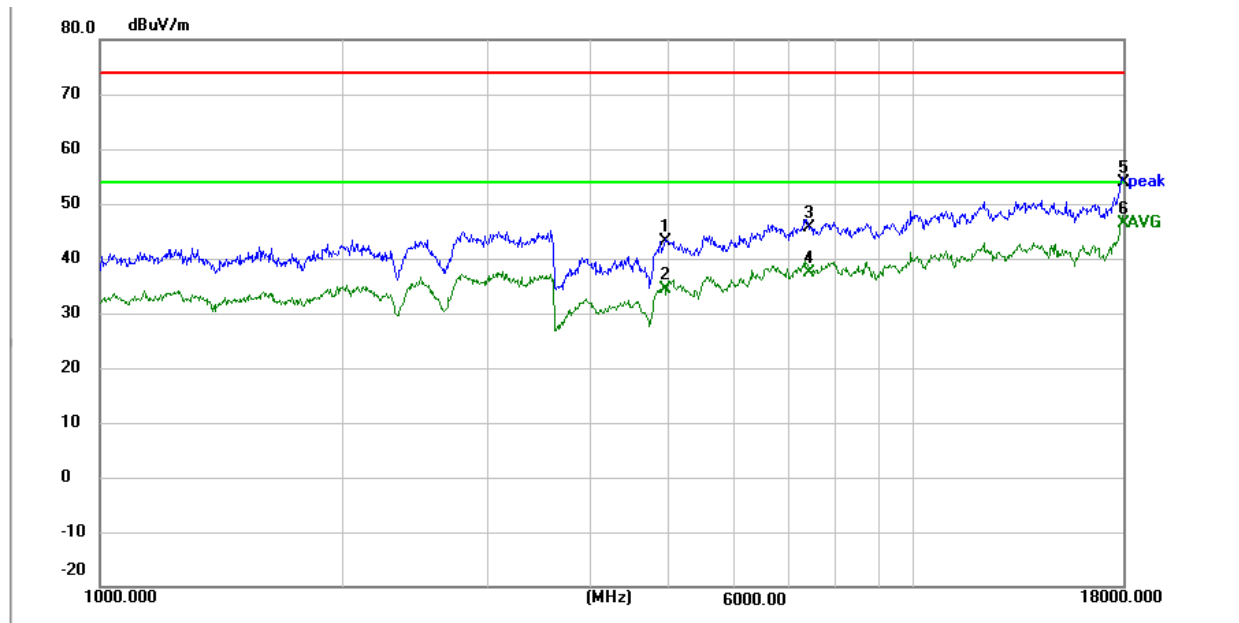
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	4880.000	49.53	-7.23	42.30	74.00	-31.70	peak	P	
2	4880.000	42.72	-7.23	35.49	54.00	-18.51	AVG	P	
3	7320.000	47.81	-2.11	45.70	74.00	-28.30	peak	P	
4	7320.000	40.98	-2.11	38.87	54.00	-15.13	AVG	P	
5	18000.000	41.02	13.61	54.63	74.00	-19.37	peak	P	
6 *	18000.000	33.85	13.61	47.46	54.00	-6.54	AVG	P	

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 2 / CH: M



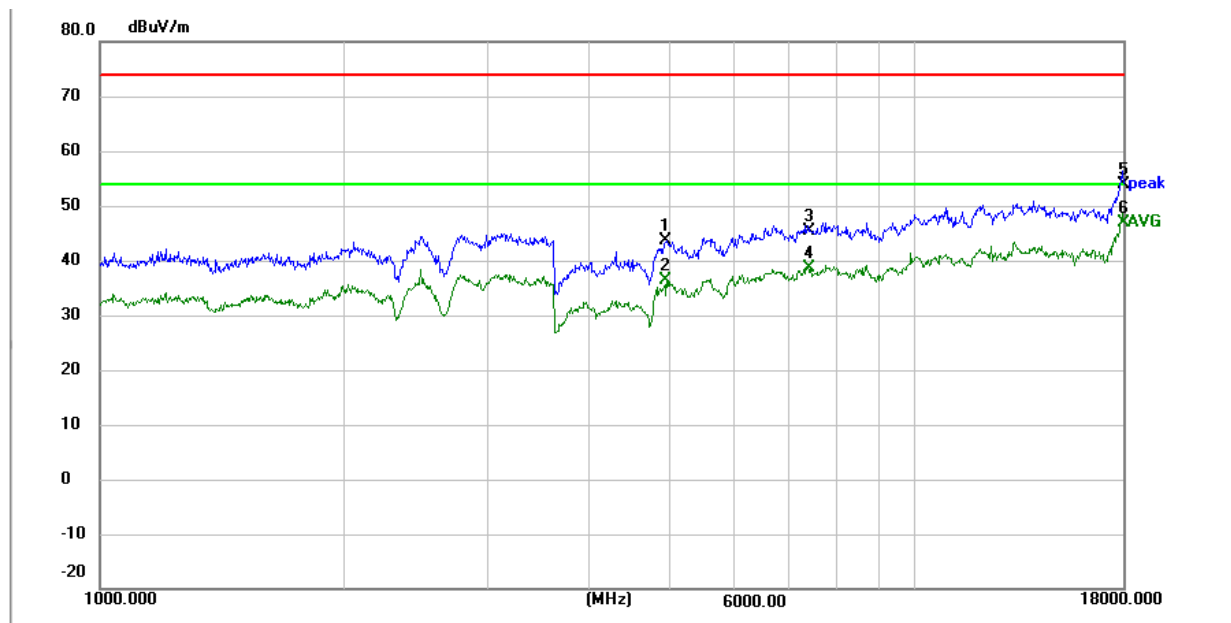
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	4880.000	49.76	-7.23	42.53	74.00	-31.47	peak	P	
2	4880.000	43.15	-7.23	35.92	54.00	-18.08	AVG	P	
3	7320.000	48.92	-2.11	46.81	74.00	-27.19	peak	P	
4	7320.000	41.92	-2.11	39.81	54.00	-14.19	AVG	P	
5	18000.000	39.98	13.61	53.59	74.00	-20.41	peak	P	
6 *	18000.000	33.21	13.61	46.82	54.00	-7.18	AVG	P	

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 2 / CH: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	4960.000	49.29	-6.07	43.22	74.00	-30.78	peak	P	
2	4960.000	40.42	-6.07	34.35	54.00	-19.65	AVG	P	
3	7440.000	48.11	-2.54	45.57	74.00	-28.43	peak	P	
4	7440.000	39.96	-2.54	37.42	54.00	-16.58	AVG	P	
5	18000.000	40.16	13.61	53.77	74.00	-20.23	peak	P	
6 *	18000.000	32.69	13.61	46.30	54.00	-7.70	AVG	P	

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 2 / CH: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	4960.000	49.59	-6.07	43.52	74.00	-30.48	peak	P	
2	4960.000	42.48	-6.07	36.41	54.00	-17.59	AVG	P	
3	7440.000	47.90	-2.54	45.36	74.00	-28.64	peak	P	
4	7440.000	41.19	-2.54	38.65	54.00	-15.35	AVG	P	
5	18000.000	40.38	13.61	53.99	74.00	-20.01	peak	P	
6 *	18000.000	33.32	13.61	46.93	54.00	-7.07	AVG	P	

10.12 Emissions in frequency bands (above 18GHz)

Test Requirement:	Refer to 47 CFR 15.247(d), in addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)(see § 15.205(c)).																																																																									
Test Limit:	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)																																																																							
	0.009-0.490	2400/F(kHz)	300																																																																							
	0.490-1.705	24000/F(kHz)	30																																																																							
	1.705-30.0	30	30																																																																							
	30-88	100 **	3																																																																							
	88-216	150 **	3																																																																							
	216-960	200 **	3																																																																							
	Above 960	500	3																																																																							
	** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241. In the emission table above, the tighter limit applies at the band edges. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.																																																																									
	Table 1 – Restricted frequency bands <table> <tr> <th>MHz</th><th>MHz</th><th>MHz</th><th>GHz</th></tr> <tr> <td>0.090-0.110</td><td>16.42-16.423</td><td>399.9-410</td><td>4.5-5.15</td></tr> <tr> <td>0.495-0.505</td><td>16.69475-16.69525</td><td>608-614</td><td>5.35-5.46</td></tr> <tr> <td>2.1735-2.1905</td><td>16.80425-16.80475</td><td>960-1240</td><td>7.25-7.75</td></tr> <tr> <td>4.125-4.128</td><td>25.5-25.67</td><td>1300-1427</td><td>8.025-8.5</td></tr> <tr> <td>4.17725-4.17775</td><td>37.5-38.25</td><td>1435-1626.5</td><td>9.0-9.2</td></tr> <tr> <td>4.20725-4.20775</td><td>73-74.6</td><td>1645.5-1646.5</td><td>9.3-9.5</td></tr> <tr> <td>6.215-6.218</td><td>74.8-75.2</td><td>1660-1710</td><td>10.6-12.7</td></tr> <tr> <td>6.26775-6.26825</td><td>108-121.94</td><td>1718.8-1722.2</td><td>13.25-13.4</td></tr> <tr> <td>6.31175-6.31225</td><td>123-138</td><td>2200-2300</td><td>14.47-14.5</td></tr> <tr> <td>8.291-8.294</td><td>149.9-150.05</td><td>2310-2390</td><td>15.35-16.2</td></tr> <tr> <td>8.362-8.366</td><td>156.52475-156.52525</td><td>2483.5-2500</td><td>17.7-21.4</td></tr> <tr> <td>8.37625-8.38675</td><td>156.7-156.9</td><td>2690-2900</td><td>22.01-23.12</td></tr> <tr> <td>8.41425-8.41475</td><td>162.0125-167.17</td><td>3260-3267</td><td>23.6-24.0</td></tr> <tr> <td>12.29-12.293</td><td>167.72-173.2</td><td>3332-3339</td><td>31.2-31.8</td></tr> <tr> <td>12.51975-12.52025</td><td>240-285</td><td>3345.8-3358</td><td>36.43-36.5</td></tr> <tr> <td>12.57675-12.57725</td><td>322-335.4</td><td>3600-4400</td><td>Above 38.6</td></tr> <tr> <td>13.36-13.41</td><td></td><td></td><td></td></tr> </table>			MHz	MHz	MHz	GHz	0.090-0.110	16.42-16.423	399.9-410	4.5-5.15	0.495-0.505	16.69475-16.69525	608-614	5.35-5.46	2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75	4.125-4.128	25.5-25.67	1300-1427	8.025-8.5	4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2	4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5	6.215-6.218	74.8-75.2	1660-1710	10.6-12.7	6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4	6.31175-6.31225	123-138	2200-2300	14.47-14.5	8.291-8.294	149.9-150.05	2310-2390	15.35-16.2	8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4	8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12	8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0	12.29-12.293	167.72-173.2	3332-3339	31.2-31.8	12.51975-12.52025	240-285	3345.8-3358	36.43-36.5	12.57675-12.57725	322-335.4	3600-4400	Above 38.6	13.36-13.41		
MHz	MHz	MHz	GHz																																																																							
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15																																																																							
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46																																																																							
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75																																																																							
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5																																																																							
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2																																																																							
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5																																																																							
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7																																																																							
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4																																																																							
6.31175-6.31225	123-138	2200-2300	14.47-14.5																																																																							
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2																																																																							
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4																																																																							
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12																																																																							
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0																																																																							
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8																																																																							
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5																																																																							
12.57675-12.57725	322-335.4	3600-4400	Above 38.6																																																																							
13.36-13.41																																																																										
Test Method:	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024 section 6.6 KDB 558074 D01 15.247 Meas Guidance v05r02																																																																									
Procedure:	a) The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. b) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c) The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. d) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table table was turned from 0 degrees to 360 degrees to find the maximum reading. e) The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.																																																																									

f) If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

g) Test the EUT in the lowest channel ,middle channel, the Highest channel

h) The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, only the test worst case is recorded in the report.

i) Repeat above procedures until all frequencies measured was complete.

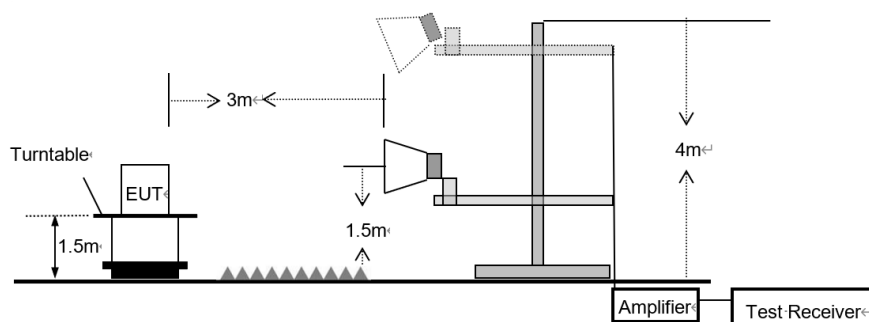
Where,

a) Factor = Antenna Factor + Cable Loss - Amplifier Gain, the value was added to Original Receiver Reading by the software automatically.

b) Level = Reading + Factor.

c) Margin = Level – Limit

10.12.1 Test Setup Diagram:



10.12.2 E.U.T. Operation:

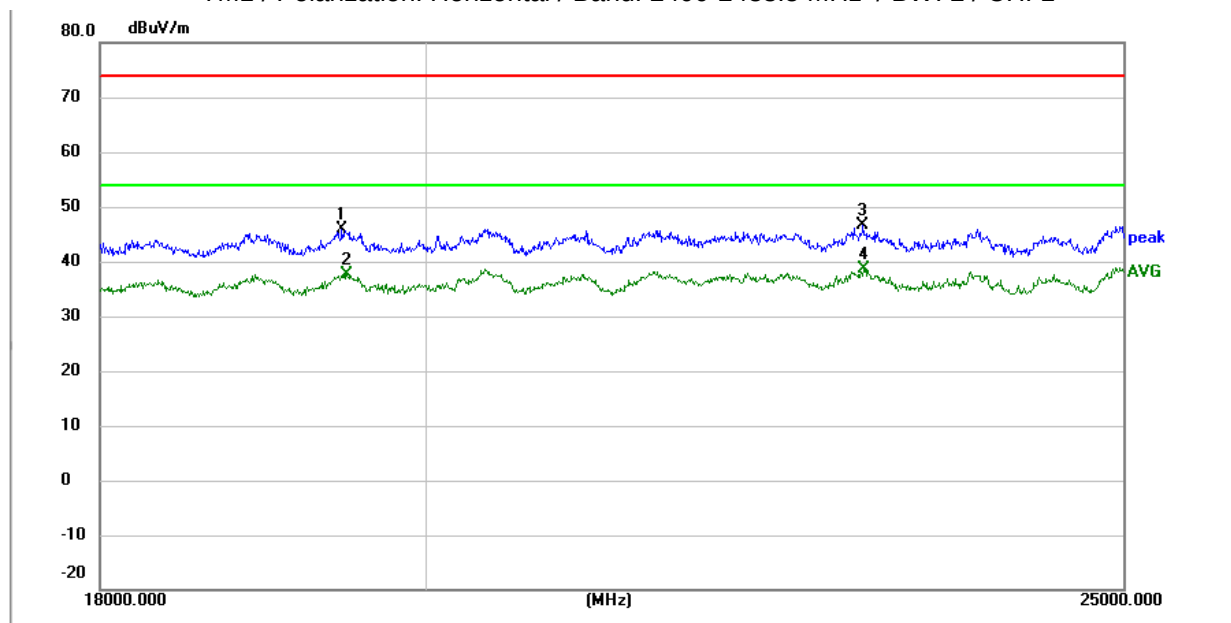
Operating Environment:

Temperature:	23 °C	Humidity:	52 %	Atmospheric Pressure:	1010 mbar
Per-test mode:	TM1, TM2				
Final test mode:	TM1				

Note: All the modulation modes have been tested, and the worst case result was reported.

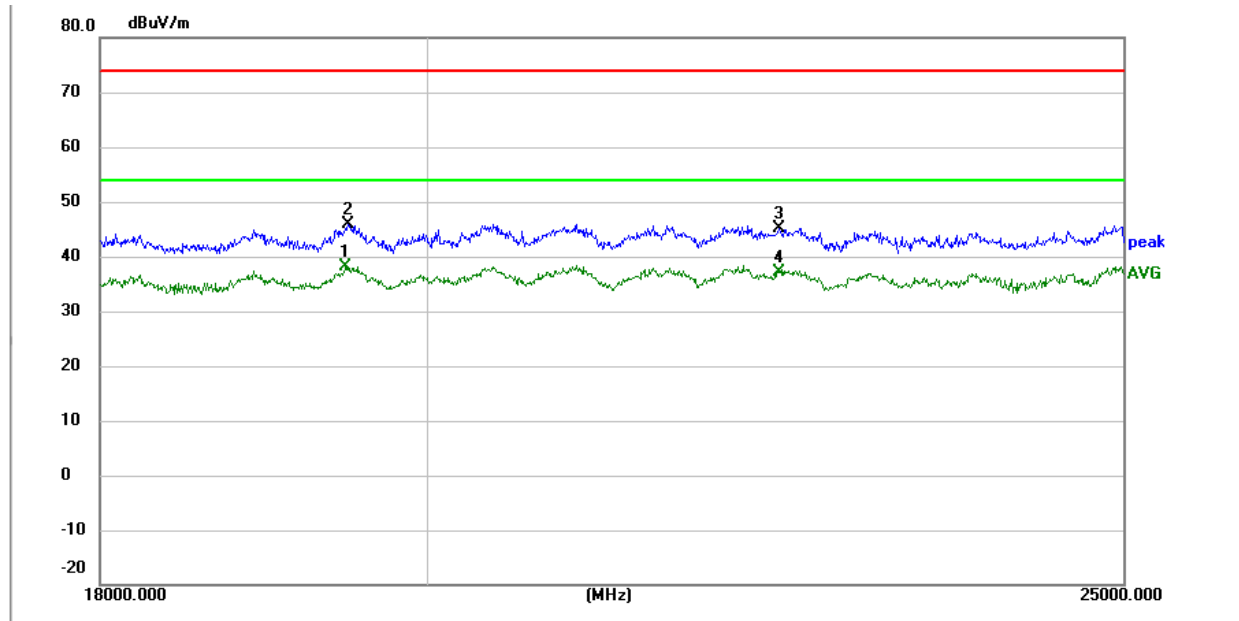
10.12.3 Test Data:

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 2 / CH: L



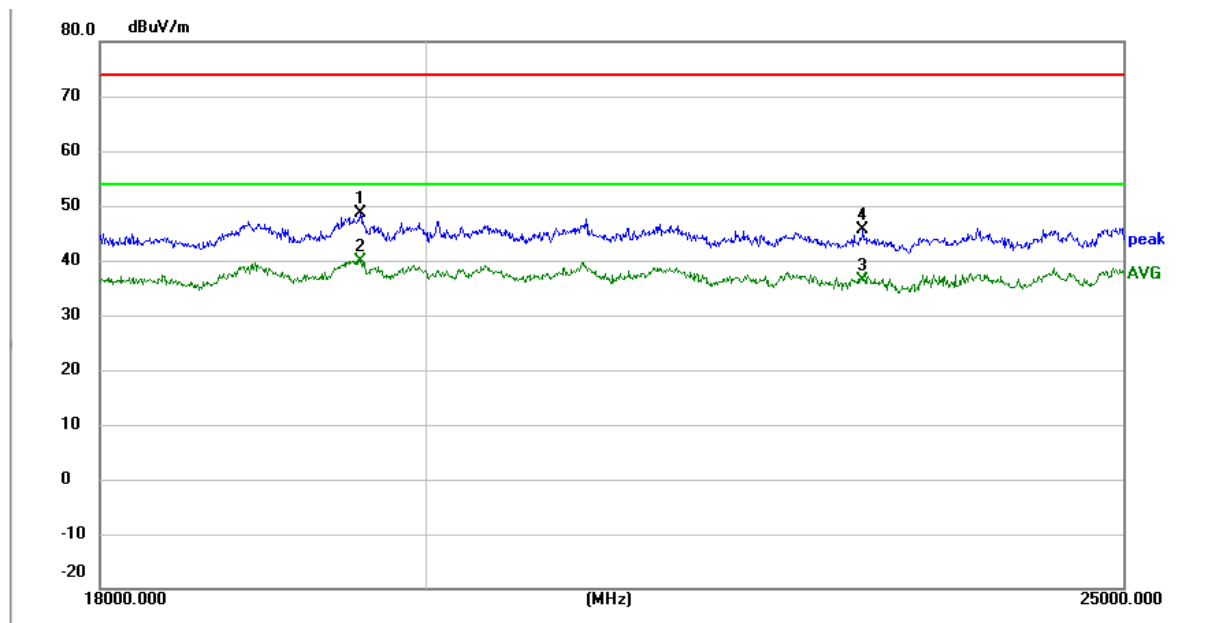
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	19462.825	59.32	-13.53	45.79	74.00	-28.21	peak	P	
2	19494.850	51.06	-13.49	37.57	54.00	-16.43	AVG	P	
3	22991.700	58.47	-11.79	46.68	74.00	-27.32	peak	P	
4 *	22998.700	50.45	-11.79	38.66	54.00	-15.34	AVG	P	

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 2/ CH: L



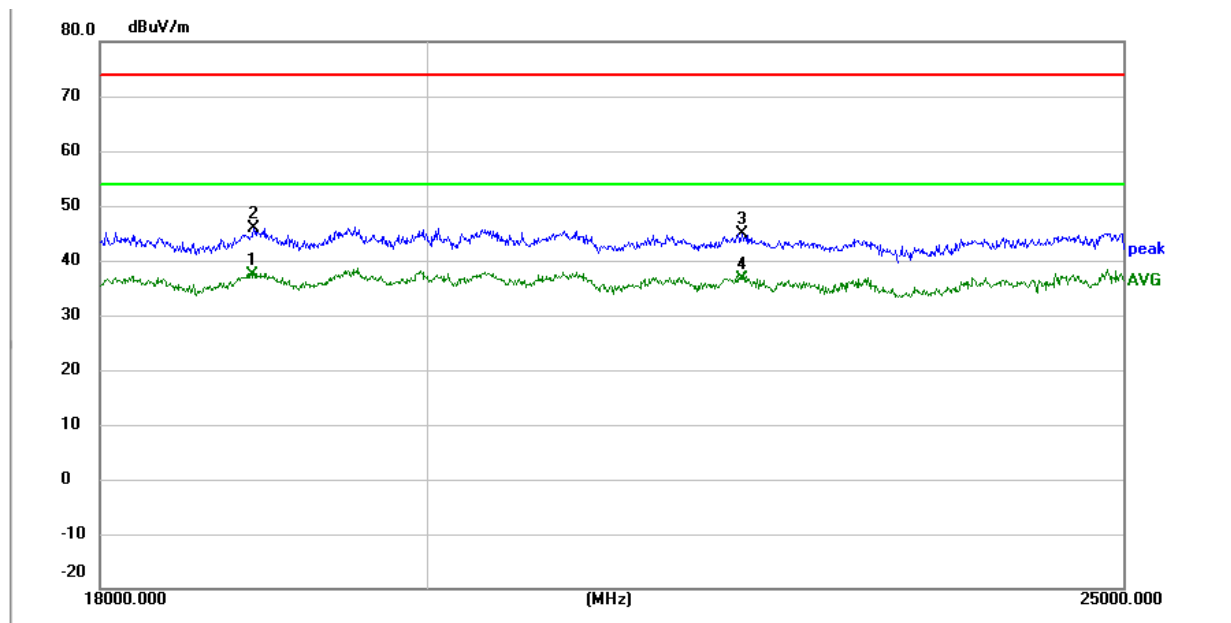
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	19485.925	51.51	-13.50	38.01	54.00	-15.99	AVG	P	
2	19500.625	59.24	-13.48	45.76	74.00	-28.24	peak	P	
3	22382.000	56.70	-11.63	45.07	74.00	-28.93	peak	P	
4	22382.000	48.69	-11.63	37.06	54.00	-16.94	AVG	P	

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 2/ CH: M



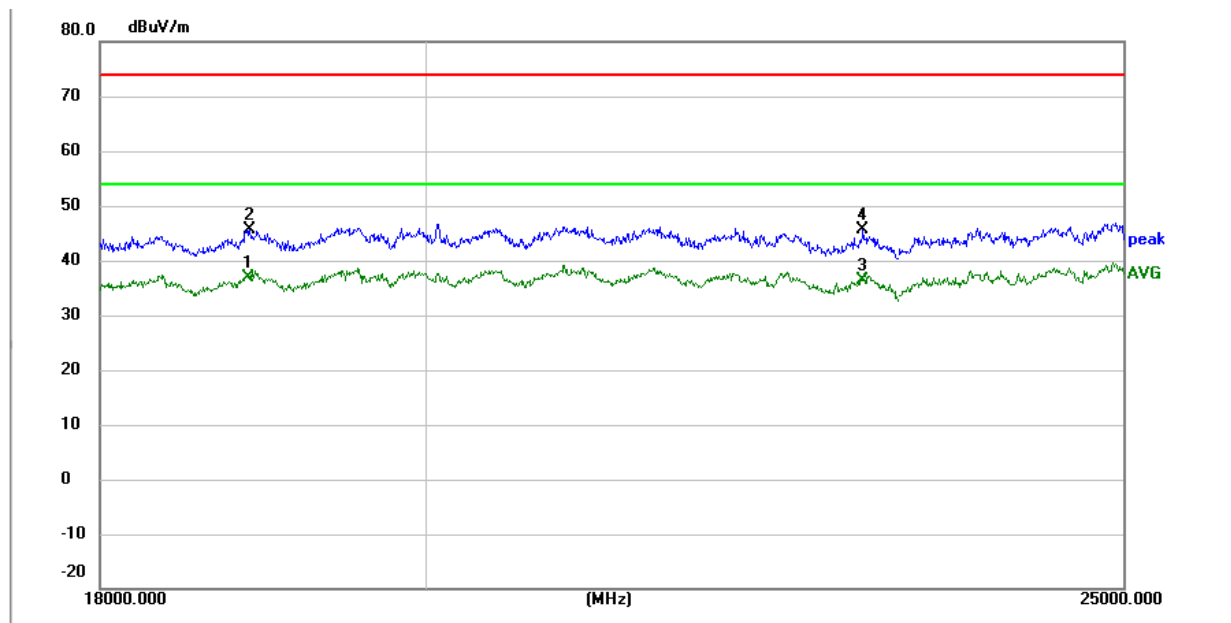
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	19578.850	61.83	-13.30	48.53	74.00	-25.47	peak	P	
2 *	19578.850	53.20	-13.30	39.90	54.00	-14.10	AVG	P	
3	22984.350	48.23	-11.79	36.44	54.00	-17.56	AVG	P	
4	22991.700	57.47	-11.79	45.68	74.00	-28.32	peak	P	

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 2/ CH: M



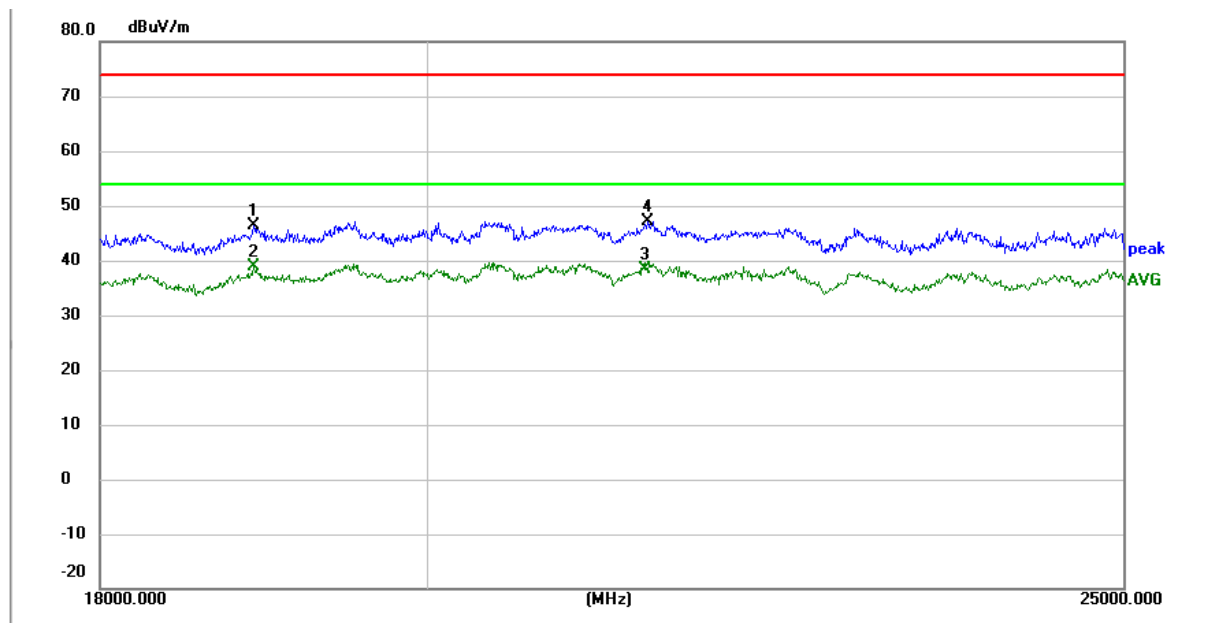
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	18900.025	51.64	-14.27	37.37	54.00	-16.63	AVG	P	
2	18914.025	60.23	-14.24	45.99	74.00	-28.01	peak	P	
3	22122.300	56.83	-11.89	44.94	74.00	-29.06	peak	P	
4	22122.300	48.58	-11.89	36.69	54.00	-17.31	AVG	P	

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 2/ CH: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	18876.050	51.10	-14.32	36.78	54.00	-17.22	AVG	P	
2	18884.625	59.83	-14.29	45.54	74.00	-28.46	peak	P	
3	22984.350	48.23	-11.79	36.44	54.00	-17.56	AVG	P	
4	22991.700	57.47	-11.79	45.68	74.00	-28.32	peak	P	

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 2/ CH: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	18914.025	60.73	-14.24	46.49	74.00	-27.51	peak	P	
2 *	18914.025	53.00	-14.24	38.76	54.00	-15.24	AVG	P	
3	21444.525	50.65	-12.25	38.40	54.00	-15.60	AVG	P	
4	21458.875	59.46	-12.24	47.22	74.00	-26.78	peak	P	

11 Test Setup Photos

Refer to Appendix - Test Setup Photos

12 EUT Constructional Details (EUT Photos)

Refer to Appendix - EUT Photos

Appendix A

Test Result

Mode	Channel	Peak Output Power (dBm)	Limit (dBm)	Result
BLE 1M	0	-9.02	≤30	PASS
	19	-9.79	≤30	PASS
	39	-4.85	≤30	PASS
BLE 2M	0	-8.88	≤30	PASS
	19	-9.72	≤30	PASS
	39	-4.31	≤30	PASS

The figure displays eight Keysight Spectrum Analyzer screenshots arranged in a 4x2 grid, showing the Peak Output Power for various BLE channels. Each screenshot includes the following information:

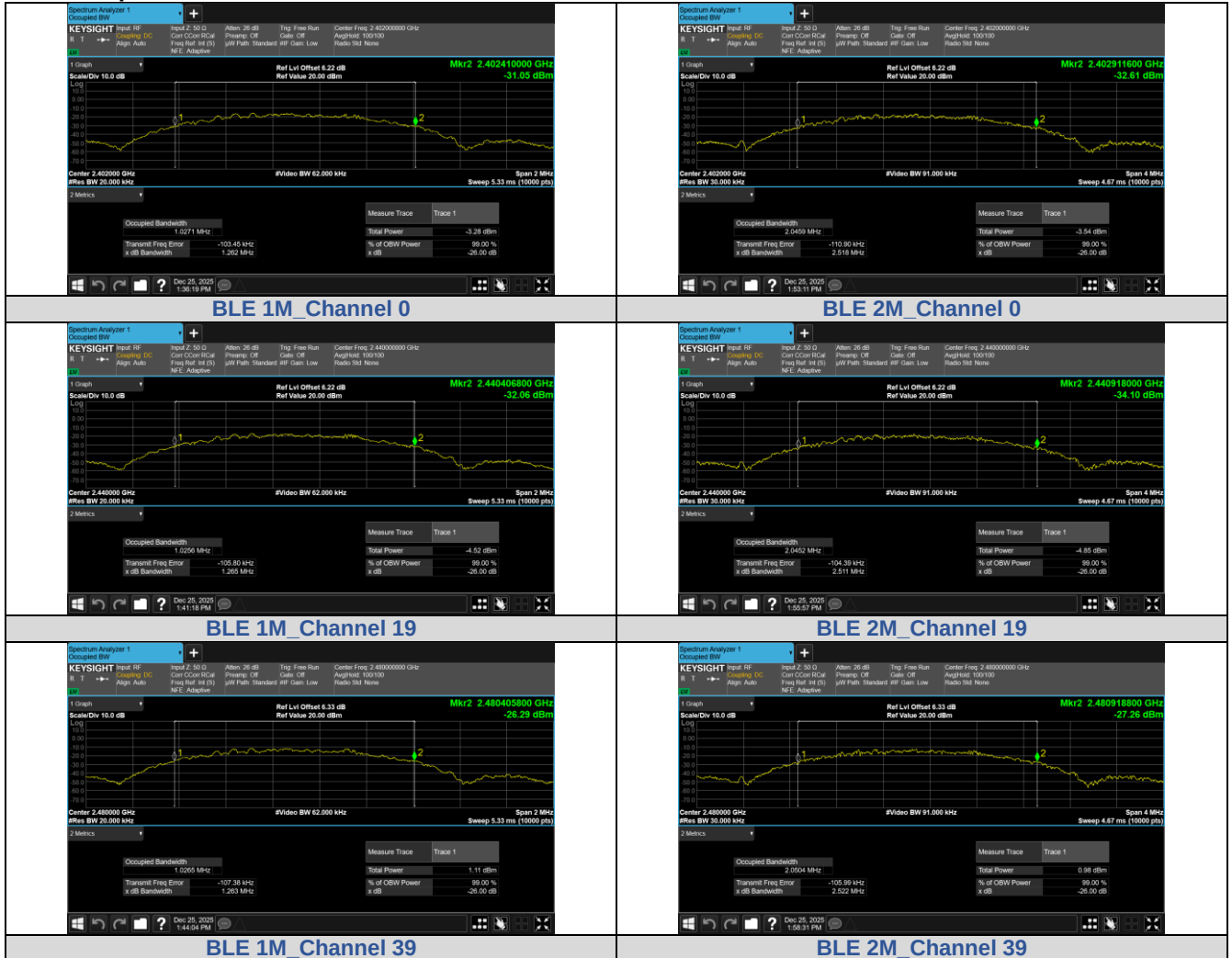
- Channel:** BLE 1M Channel 0, BLE 1M Channel 19, BLE 1M Channel 39, BLE 2M Channel 0, BLE 2M Channel 19, and BLE 2M Channel 39.
- Frequency (Mkr1):** 2.401 635 GHz, 2.440 120 GHz, 2.479 655 GHz, 2.479 310 GHz, 2.479 655 GHz, and 2.479 390 GHz.
- Power (dBm):** -9.02 dBm, -9.79 dBm, -4.85 dBm, -9.88 dBm, -9.72 dBm, and -4.31 dBm.
- Bandwidth (BW):** 5.0 MHz.
- Resolution Bandwidth (RBW):** 1.0 MHz.
- Span:** 5.000 MHz.
- Center Frequency:** 2.400000 GHz, 2.440000 GHz, 2.480000 GHz, and 2.480000 GHz.
- Video Bandwidth (VBW):** 3.0 MHz.
- Reference Level:** 21.22 dBm, 21.33 dBm, 21.22 dBm, 21.33 dBm, 21.22 dBm, and 21.33 dBm.
- Offset:** 6.22 dB, 6.22 dB, 6.22 dB, 6.22 dB, 6.22 dB, and 6.22 dB.
- Time:** Dec 25, 2025, 1:30:50 PM, 1:30:51 PM, 1:44:43 PM, 1:53:49 PM, 2:08:03 PM, and 2:09:12 PM.

99% Bandwidth

Test Result

Mode	Channel	Center Frequency (MHz)	99% BW (MHz)
BLE 1M	0	2402	1.0271
BLE 1M	19	2440	1.0256
BLE 1M	39	2480	1.0265
BLE 2M	0	2402	2.0459
BLE 2M	19	2440	2.0452
BLE 2M	39	2480	2.0504

Test Graphs

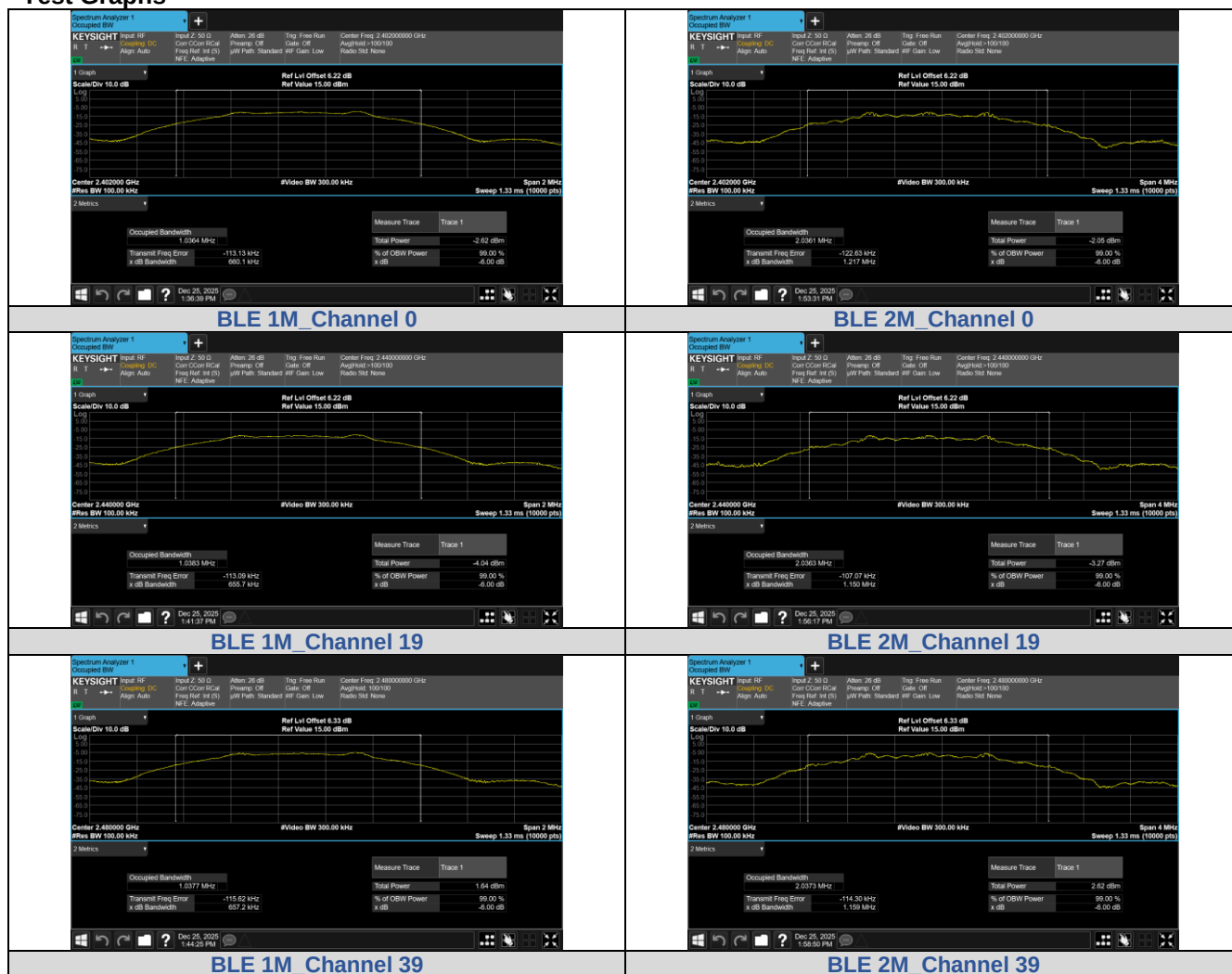


6dB Bandwidth

Test Result

Mode	Channel	Center Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)	Result
BLE 1M	0	2402	0.6601	≥0.5	PASS
	19	2440	0.6557		PASS
	39	2480	0.6572		PASS
BLE 2M	0	2402	1.217		PASS
	19	2440	1.150		PASS
	39	2480	1.159		PASS

Test Graphs



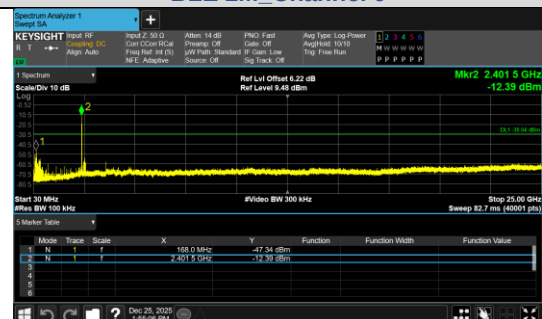
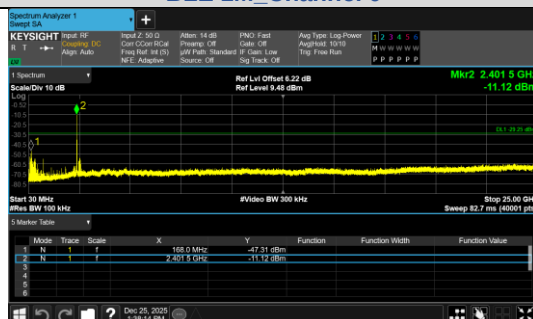
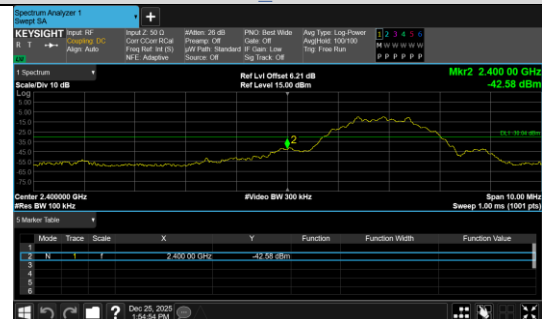
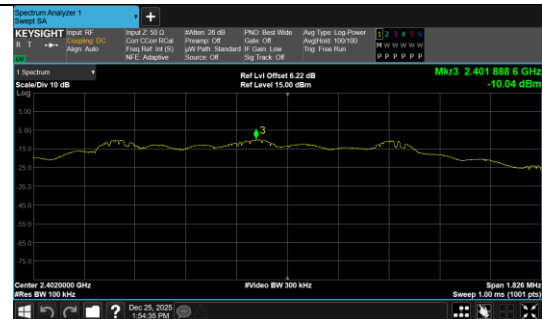
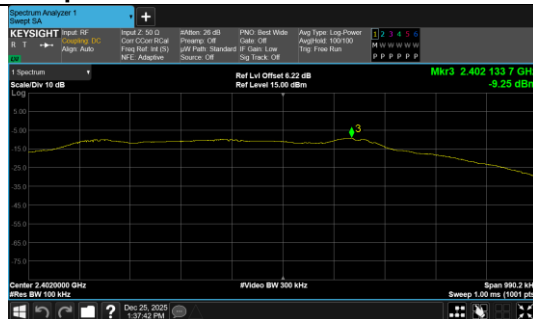
Conducted Spurious & Band Edge Emission

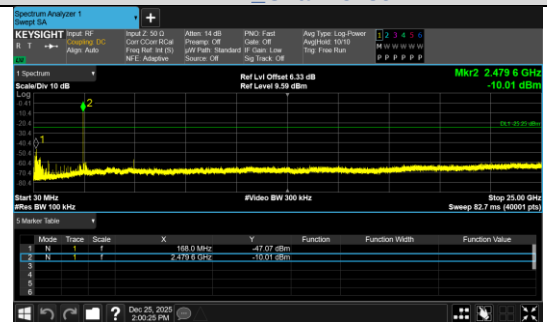
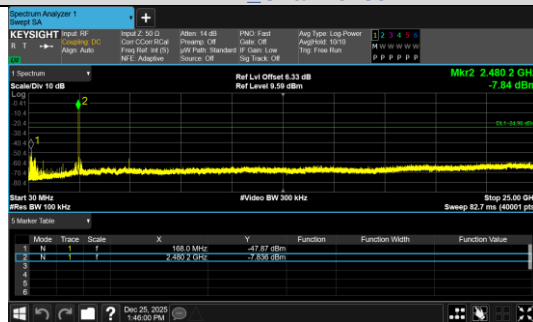
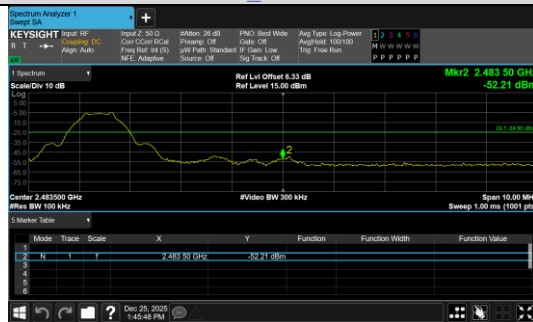
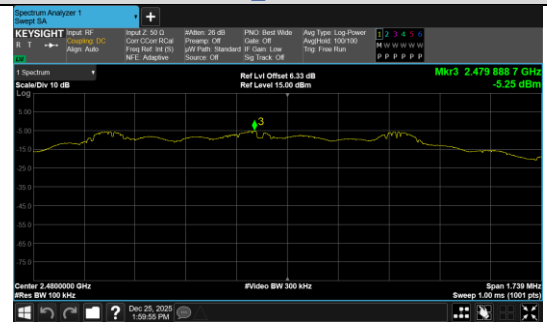
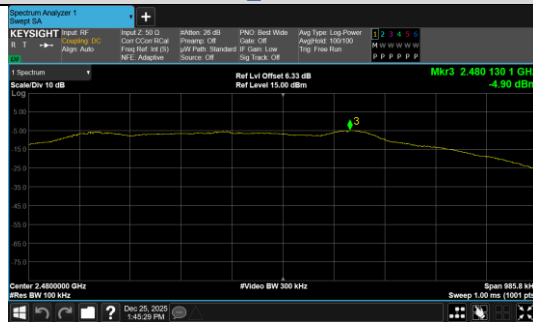
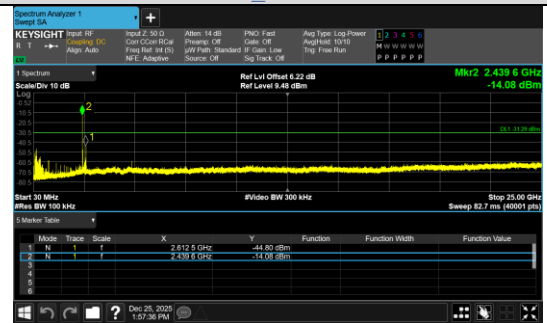
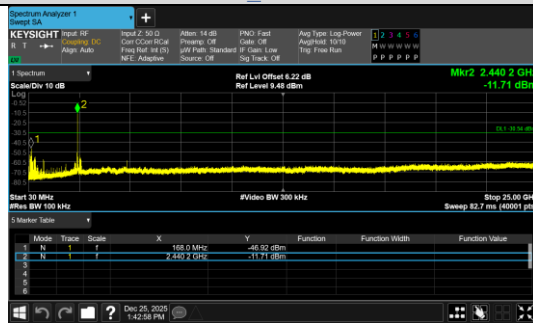
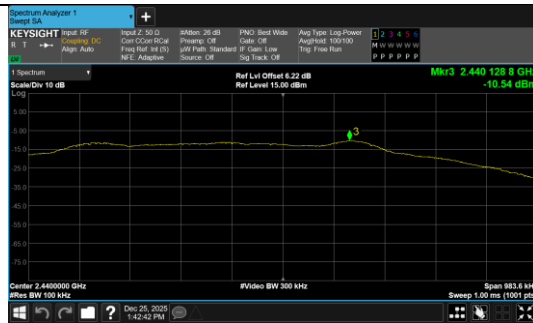
Test Result

Mode	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
BLE 1M	0	168.00	-47.314	-29.25	-18.064	PASS
		2398.98	-50.854	-29.25	-21.604	PASS
		2400.00	-58.209	-29.25	-28.959	PASS
	19	167.96	-46.918	-30.54	-16.378	PASS
		167.96	-47.865	-24.9	-22.965	PASS
		2483.50	-52.208	-24.9	-27.308	PASS
BLE 2M	0	167.96	-47.342	-30.04	-17.302	PASS
		2400.00	-42.579	-30.04	-12.539	PASS
	19	2612.52	-44.801	-31.29	-13.511	PASS
		167.96	-47.075	-25.25	-21.825	PASS
	39	2483.50	-58.301	-25.25	-33.051	PASS

Note: input compensation coefficient (dB)= Cable Loss (dB)

Test Graphs





Duty Cycle

Test Result

Mode	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)	1/T
BLE 1M	0	2.127	2.499	85.12	0.8512	0.6997	0.4701
	19	2.127	2.499	85.12	0.8512	0.6997	0.4701
	39	2.127	2.499	85.12	0.8512	0.6997	0.4701
BLE 2M	0	1.076	2.499	43.04	0.4304	3.6613	0.9294
	19	1.076	2.499	43.04	0.4304	3.6613	0.9294
	39	1.076	2.499	43.04	0.4304	3.6613	0.9294

Test Graphs

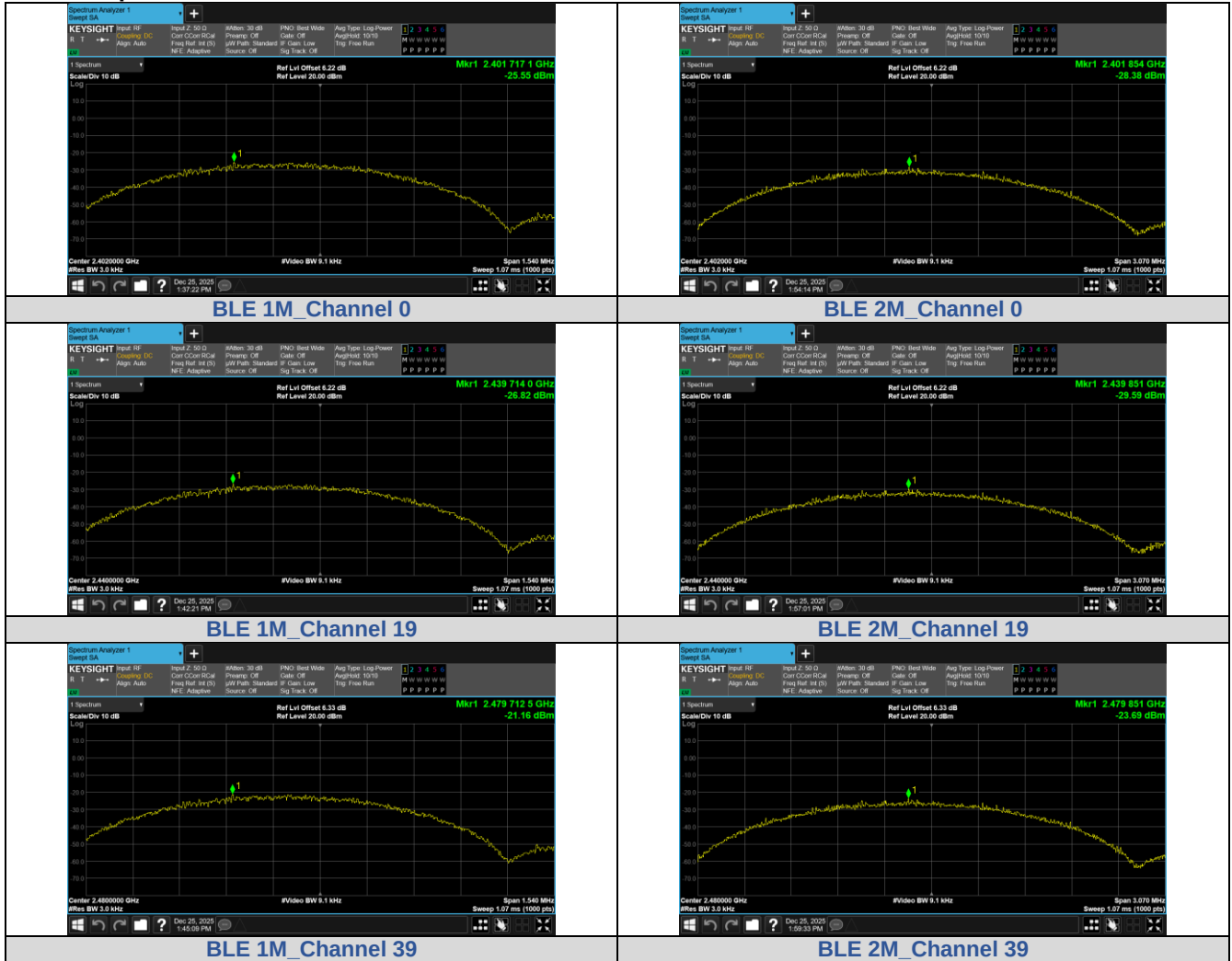


Power Spectral Density

Test Result

Mode	Channel	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
BLE 1M	0	-25.550	≤8	PASS
BLE 1M	19	-26.820	≤8	PASS
BLE 1M	39	-21.160	≤8	PASS
BLE 2M	0	-28.380	≤8	PASS
BLE 2M	19	-29.590	≤8	PASS
BLE 2M	39	-23.690	≤8	PASS

Test Graphs



--- End of Report ---