



FCC Part 15C Test Report

FCC ID: 2BN7H-MFSTAND02

Applicant: Blucalm Technology (Xiamen) Co., Ltd.

Address: Room 603-2, Building 2# Torch Xinke Plaza, Huli District, Xiamen, 361000, China

Manufacturer: Blucalm Technology (Xiamen) Co., Ltd.

Address: Room 603-2, Building 2# Torch Xinke Plaza, Huli District, Xiamen, 361000, China

Product Name: Multifunctional Touchscreen Base

Trade Mark: Blucalm

Model Number: MF Stand02, MF Stand03, MF Stand04, MF Stand05, MF Stand06, MF Base01, MF Base02, MF Base03, MF Base04, MF Base05, MF Base06

Date of Receipt: Jan. 20, 2026

Test Date: Jan. 20, 2026 ~ Feb. 28, 2026

Date of Report: Feb. 28, 2026

Prepared By: Shenzhen DL Testing Technology Co., Ltd.

Address: 101-201, Comprehensive Building, Tongzhou Electronics Longgang Factory Area, No.1 Baolong Fifth Road, Baolong Community, Baolong Street, Longgang District, Shenzhen, China

Applicable Standards: FCC PART 15 C 15.247
ANSI C63.10:2020

Test Result: Pass

Report Number: DLE-260228009R

Prepared by(Engineer): Ken Tan

Reviewer(Supervisor): Jack Bu

Approved(Manager): Jade Yang



This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Shenzhen DL Testing Technology Co., Ltd.

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**** Issued History ****

Revision	Description	Issued Date	Remark
Revision 1.0	Initial Test Report Release	Feb. 28, 2026	



1 Test Summary

1.1 Test Description

Test Item	Test Requirement	Result
Antenna Requirement	§15.203/§15.247(b)(4)	PASS
AC Conducted Emission	FCC Part 15.207	PASS
Radiated Emissions	FCC Part 15.205/15.209	PASS
Maximum Peak Output Power	FCC Part 15.247(b)	PASS
Power Spectral Density	FCC Part 15.247(e)	PASS
6dB Bandwidth & 99% Bandwidth	FCC Part 15.247(a)(2)	PASS
Spurious RF Conducted Emission	FCC Part 15.247(d)	PASS
Band Edge	FCC Part 15.247(d)	PASS

Note:

1. PASS: Test item meets the requirement.
2. Fail: Test item does not meet the requirement.
3. N/A: Test case does not apply to the test object.
4. The test result judgment is decided by the limit of test standard.



1.2 Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 2.56\text{dB}$
2	RF power,conducted	$\pm 0.42\text{dB}$
3	Spurious emissions,conducted	$\pm 2.76\text{dB}$
4	All emissions,radiated($<1\text{G}$)	$\pm 3.65\text{dB}$
5	All emissions,radiated($>1\text{G}$)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2\%$
8	6dB Bandwidth	$\pm 0.2\text{MHz}$
9	Power Spectral Density	$\pm 0.3\text{dBm}$

1.3 Information of the Test Laboratory

Shenzhen DL Testing Technology Co., Ltd.

Add.: 101-201, Comprehensive Building, Tongzhou Electronics Longgang Factory Area, No.1
Baolong Fifth Road, Baolong Community, Baolong Street, Longgang District, Shenzhen, China



2 General Information

2.1 General Description of EUT

EUT Name:	Multifunctional Touchscreen Base
Model No:	MF Stand02
Series Model:	MF Stand03, MF Stand04, MF Stand05, MF Stand06, MF Base01, MF Base02, MF Base03, MF Base04, MF Base05, MF Base06
Model Difference:	All model's the function, software and electric circuit are the same, only with product appearance, color and model named different. Test sample model: MF Stand02.
Trade Mark:	Blucalm
Operation Frequency:	2402 MHz to 2480 MHz
Channel Separation:	2MHz
Number of Channel:	40
Modulation Technology:	GFSK
Hardware Version:	V1.0
Software Version:	V1.0
Antenna Type:	PCB Antenna
Antenna Gain:	-3.14dBi
Power Supply:	DC5V from Type-C
Note:	1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual. 2. Antenna gain Refer to the antenna specifications. 3. The cable loss data is obtained from the supplier. 4. The test results in the report only apply to the tested sample.



Description of Channel					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	14	2430	28	2458
1	2404	15	2432	29	2460
2	2406	16	2434	30	2462
3	2408	17	2436	31	2464
4	2410	18	2438	32	2466
5	2412	19	2440	33	2468
6	2414	20	2442	34	2470
7	2416	21	2444	35	2472
8	2418	22	2446	36	2474
9	2420	23	2448	37	2476
10	2422	24	2450	38	2478
11	2424	25	2452	39	2480
12	2426	26	2454		
13	2428	27	2456		

The EUT has been operated in modulations: GFSK independently.

No.	Test Mode Description
1	Low channel TX
2	Middle channel TX
3	High channel TX

Note:

1. All the test modes can be supply by button battery, only the result of the worst case was recorded in the report if no any records.
2. For Radiated Emission, 3axis were chosen for testing for each applicable mode.



2.2 Description of Test Conditions

(1) E.U.T. test conditions:

For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

(2) Frequency range of radiated measurements:

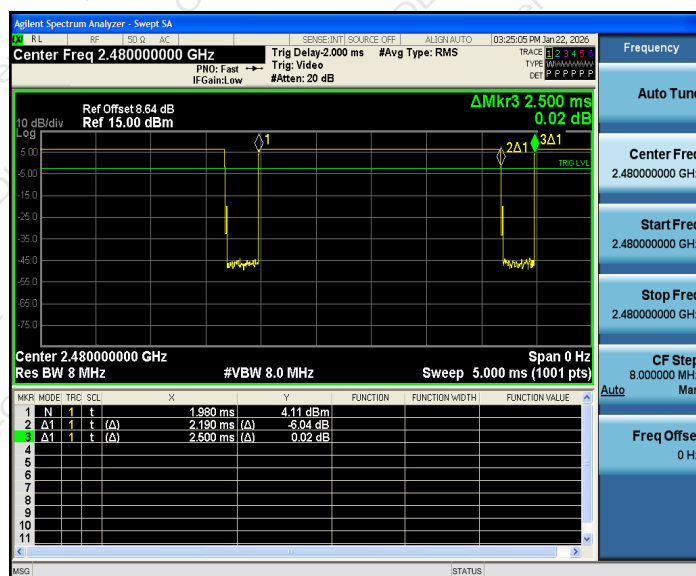
The test range will be up to the tenth harmonic of the highest fundamental frequency.

(3) Pre-test the EUT in all transmitting mode at the lowest (2402 MHz), middle (2440 MHz) and highest (2480 MHz) channel with different data packet and conducted to determine the worst-case mode, only the worst-case results are recorded in this report.

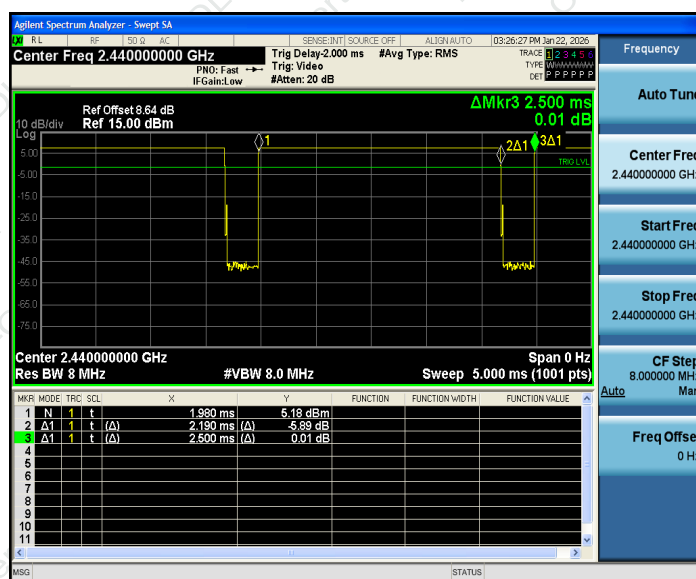
(4) Mode Test Duty Cycle

Mode	Duty Cycle
BT-LE(1Mbps)	0.876
BT-LE(2Mbps)	0.876

1M



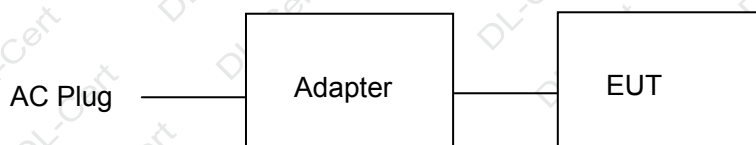
2M





2.3 Description of Test Setup

Operation of EUT during AC Conducted testing and Radiation testing:



Operation of EUT during RF Conducted testing:



The sample was placed (0.8m below 1GHz, 1.5m above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages. The worst case is X position.



2.4 Description of Support Units

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.

Item	Equipment	Trade Mark	Model/Type No.	Specification	Note
1	Multifunctional Touchscreen Base	Blucalm	MF Stand02	N/A	EUT
2	USB Cable	N/A	N/A	Length: 120cm	
3	Adapter	N/A	CD289	Input: AC100-240V, 50/60Hz, 2A Max USB-C1 Output: DC5V/3A, 9V/3A, 12V/3A, 15V/3A, 20V/5A, 28V/5A 140W MAX USB-C2 Output: DC5V/3A, 9V/3A, 12V/3A, 15V/3A, 20V/5A 100W MAX USB-A Output: DC5V/4.5A, 4.5V/5A, 5V/3A, 9V/2A, 12V/1.5A 22.5W MAX Total Output: 140W Max	

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.
3. For conducted measurements (Output Power, 6dB Emission Bandwidth, Power Spectral Density, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.



3 Equipments List for All Test Items

Radiation test, Band-edge test and 6db bandwidth test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	Agilent	E4408B	MY50140780	Oct. 25, 2025	Oct. 24, 2026
2	Test Receiver (9kHz-7GHz)	R&S	ESRP7	101393	Oct. 25, 2025	Oct. 24, 2026
3	Bilog Antenna (30MHz-1GHz)	R&S	VULB9162	00306	Oct. 25, 2025	Oct. 24, 2026
4	Horn Antenna (1GHz-18GHz)	Schwarzbeck	BBHA9120D	02139	Oct. 25, 2025	Oct. 24, 2026
5	Horn Antenna (18GHz-40GHz)	A.H. Systems	SAS-574	588	Oct. 25, 2025	Oct. 24, 2026
6	Amplifier (9kHz-6GHz)	Schwarzbeck	BBV9743B	00153	Oct. 25, 2025	Oct. 24, 2026
7	Amplifier (1GHz-18GHz)	EMEC	EM01G8GA	00270	Oct. 25, 2025	Oct. 24, 2026
8	Amplifier (18GHz-40GHz)	Quanjuda	DLE-161	97	Oct. 25, 2025	Oct. 24, 2026
9	Loop Antenna (9kHz-30MHz)	Schwarzbeck	FMZB1519B	00014	Oct. 25, 2025	Oct. 24, 2026
10	RF cables1 (9kHz-1GHz)	ChengYu	966	004	Oct. 25, 2025	Oct. 24, 2026
11	RF cables2 (1GHz-40GHz)	ChengYu	966	003	Oct. 25, 2025	Oct. 24, 2026
12	Antenna connector	Florida RF Labs	N/A	RF 01#	Oct. 25, 2025	Oct. 24, 2026
13	Power probe	KEYSIGHT	U2021XA	MY55210018	Oct. 25, 2025	Oct. 24, 2026
14	Signal Analyzer 9kHz-26.5GHz	Agilent	N9020A	MY55370280	Oct. 25, 2025	Oct. 24, 2026
15	Test Receiver 20kHz-40GHz	R&S	ESU 40	100376	Oct. 25, 2025	Oct. 24, 2026
16	D.C. Power Supply	LongWei	PS-305D	010964729	Oct. 25, 2025	Oct. 24, 2026

Conduction Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	843 Shielded Room	ChengYu	843 Room	843	Nov. 05, 2023	Nov. 04, 2026
2	EMI Receiver	R&S	ESR	101421	Oct. 25, 2025	Oct. 24, 2026
3	LISN	R&S	ENV216	102417	Oct. 25, 2025	Oct. 24, 2026
4	843 Cable 1#	ChengYu	CE Cable	001	Oct. 25, 2025	Oct. 24, 2026

Other

Item	Name	Manufacturer	Model	Software version
1	EMC Conduction Test System	FALA	EZ EMC	EMC-CON 3A1.1
2	EMC radiation test system	FALA	EZ EMC	FA-03A2
3	RF test system	MAIWEI	MTS8310	2.0.0.0
4	RF communication test system	MAIWEI	MTS8200	2.0.0.0



4 Test Result

4.1 Antenna Requirement

4.1.1 Standard Requirement

Standard Applicable

For intentional device, according to FCC 47 CFR Section 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. And according to FCC 47 CFR Section 15.247, if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

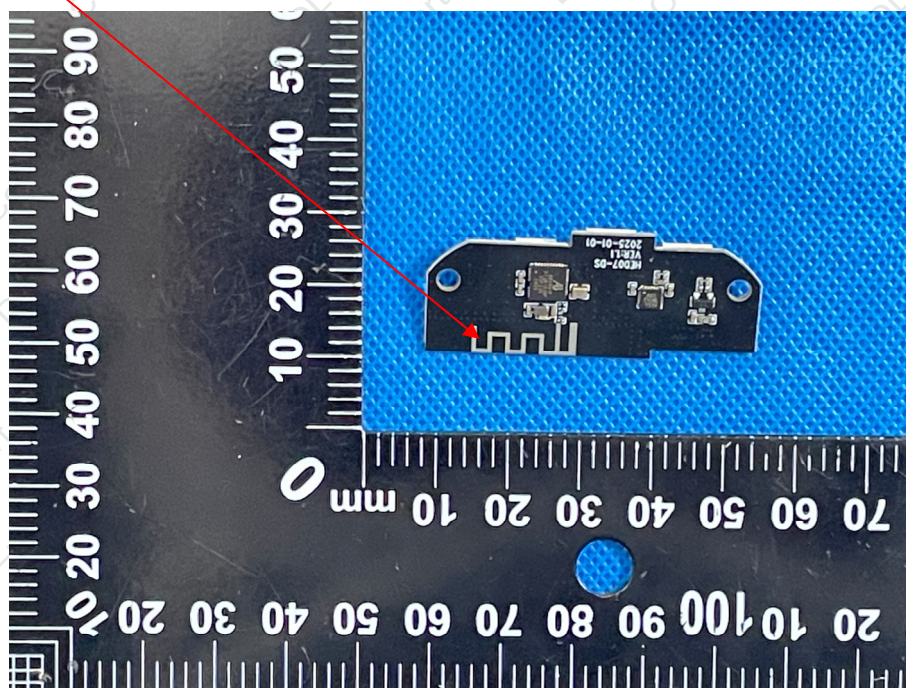
Refer to statement below for compliance.

The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

Antenna Connected Construction

The antenna used in this product is a PCB Antenna, is a permanently attached antenna on the PCB. It conforms to the standard requirements. The directional gains of antenna used for transmitting is -3.14dBi.

4.1.2 EUT Antenna





4.2 AC Conduction Emissions Measurement

4.2.1 Applied Procedures / Limit

According to FCC CFR Title 47 Part 15 Subpart C Section 15.207, AC Power Line Conducted Emissions Limits for Licence-Exempt Radio Apparatus as below:

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

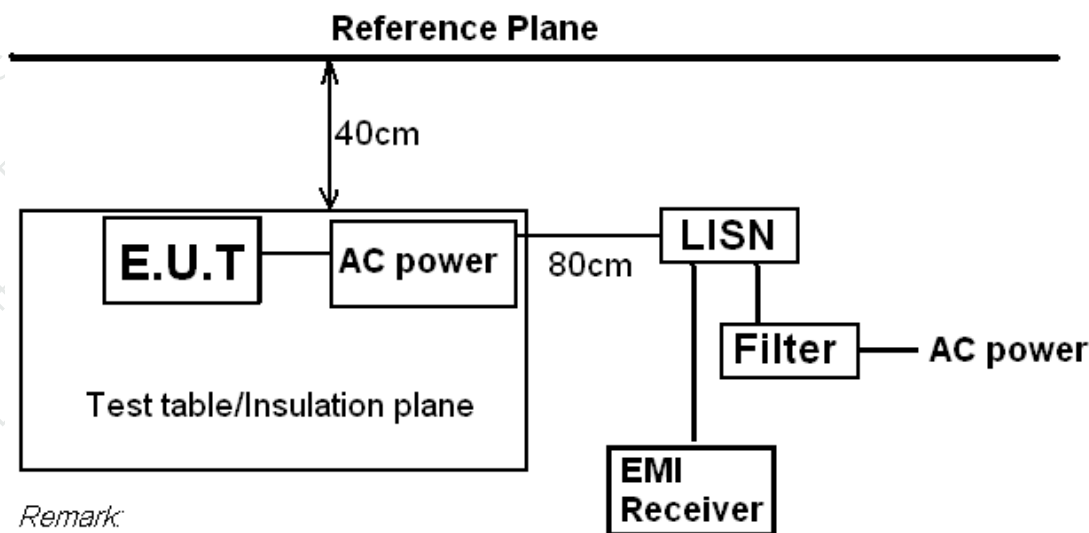
* Decreases with the logarithm of the frequency.

4.2.2 Test Procedure

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10.
2. Support equipment, if needed, was placed as per ANSI C63.10.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4. The adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5. All support equipments received AC power from a second LISN, if any.
6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.



4.2.3 Test Setup



Remark:

E.U.T: Equipment Under Test

LISN: Line Impedance Stabilization Network

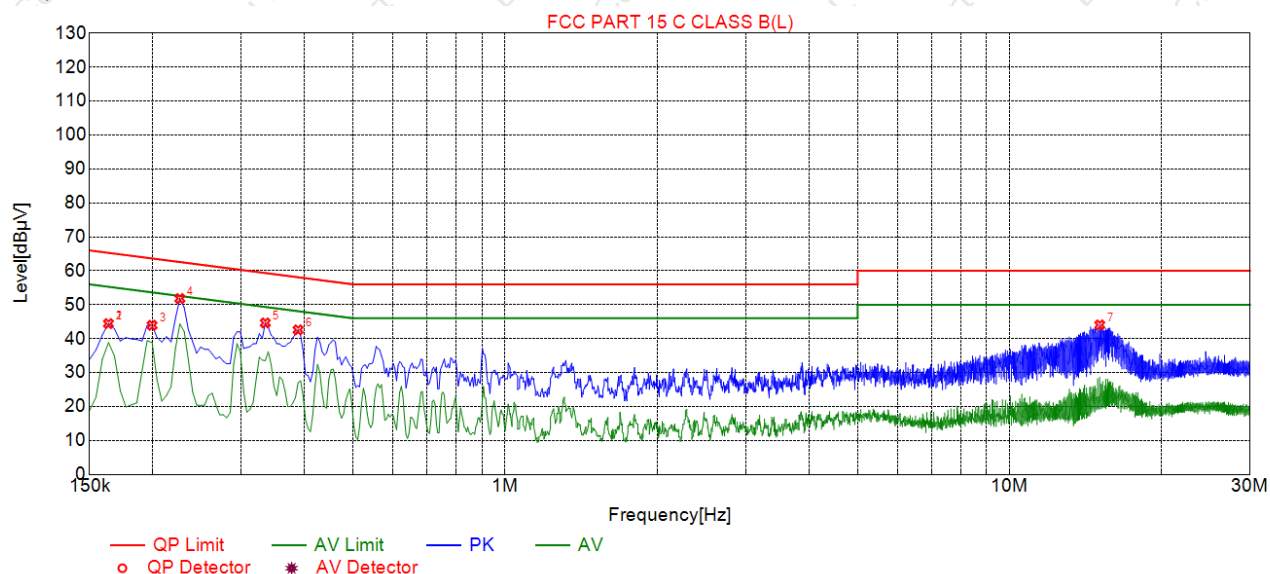
Test table height=0.8m



4.2.4 Test Results

All the test modes completed for test. Only the worst result was reported as below:

Test Specification: Line



Suspected List

NO.	Freq. [MHz]	Level [dBμV]	Factor [dB]	Limit [dBμV]	Margin [dB]	Reading [dBμV]	Detector	Type
1	0.1635	44.44	19.56	65.28	20.84	24.88	PK	L
2	0.1635	44.44	19.56	65.28	20.84	24.88	PK	L
3	0.1995	43.94	19.83	63.63	19.69	24.11	PK	L
4	0.2265	51.82	19.83	62.58	10.76	31.99	PK	L
5	0.3345	44.64	19.84	59.34	14.70	24.80	PK	L
6	0.3885	42.60	19.84	58.10	15.50	22.76	PK	L
7	15.1080	44.04	21.88	60.00	15.96	22.16	PK	L

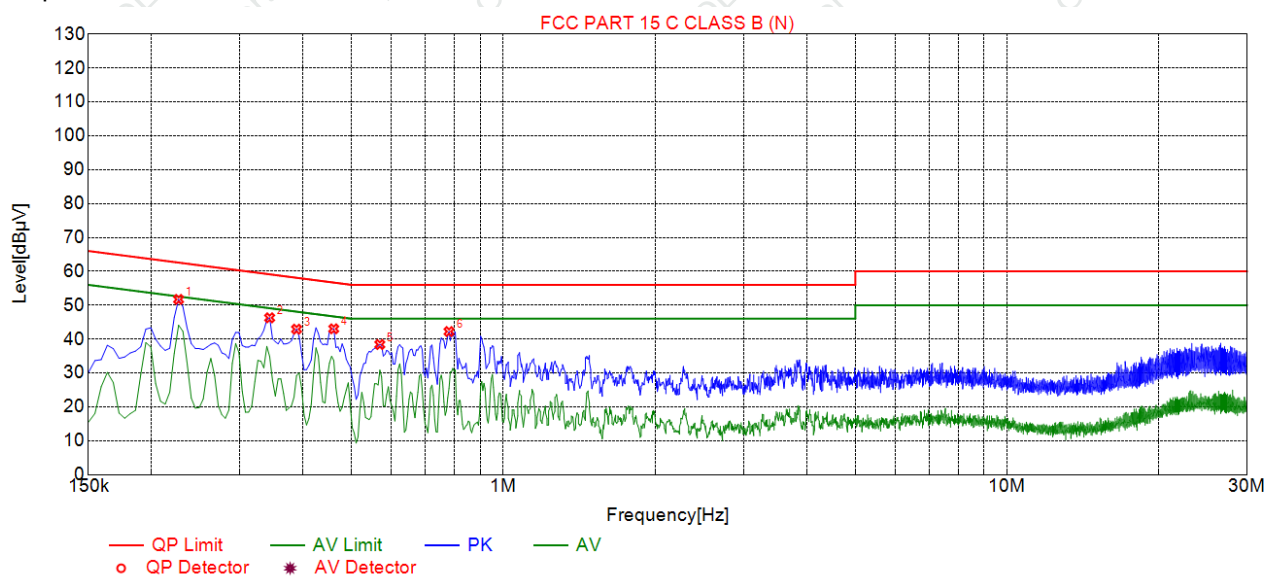
Remark: Margin = Limit – Level

Correction factor = Cable lose + LISN insertion loss

Level=Test receiver reading + correction factor



Test Specification: Neutral



Suspected List

NO.	Freq. [MHz]	Level [dBμV]	Factor [dB]	Limit [dBμV]	Margin [dB]	Reading [dBμV]	Detector	Type
1	0.2265	51.72	19.64	62.58	10.86	32.08	PK	N
2	0.3435	46.28	19.68	59.12	12.84	26.60	PK	N
3	0.3885	42.93	19.70	58.10	15.17	23.23	PK	N
4	0.4605	43.04	19.73	56.68	13.64	23.31	PK	N
5	0.5685	38.40	19.75	56.00	17.60	18.65	PK	N
6	0.7800	42.23	19.75	56.00	13.77	22.48	PK	N

Remark: Margin = Limit – Level

Correction factor = Cable lose + LISN insertion loss

Level=Test receiver reading + correction factor



4.3 Radiated Emissions Measurement

4.3.1 Applied Procedures / Limit

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission out of authorized band shall not exceed the following table at a 3 meters measurement distance.

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).

Except when the requirements applicable to a given device state otherwise, emissions from license-exempt transmitters shall comply with the field strength limits shown in table below. Additionally, the level of any transmitter emission shall not exceed the level of the transmitter's fundamental emission.

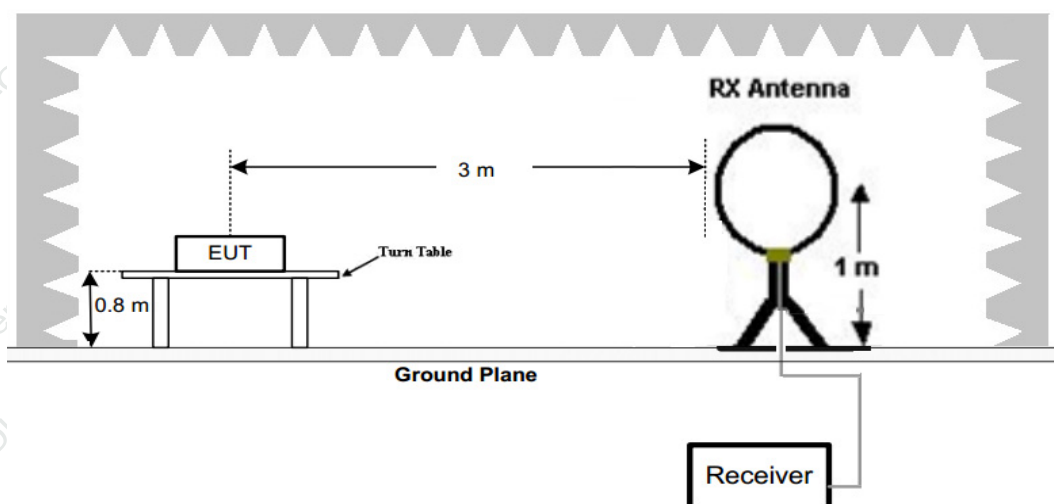
Radiated emission limits

Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	3	$20\log(2400/F(\text{KHz}))+40\log(300/3)$	$2400/F(\text{KHz})$
0.49-1.705	3	$20\log(24000/F(\text{KHz}))+40\log(30/3)$	$24000/F(\text{KHz})$
1.705-30	3	$20\log(30)+40\log(30/3)$	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

4.3.2 Test Setup

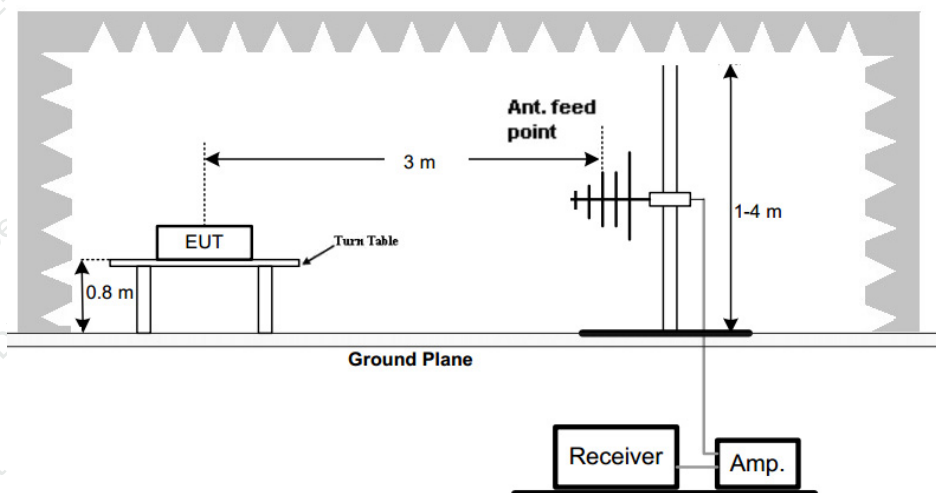
Test Configuration:

- 1) 9 kHz to 30 MHz emissions:

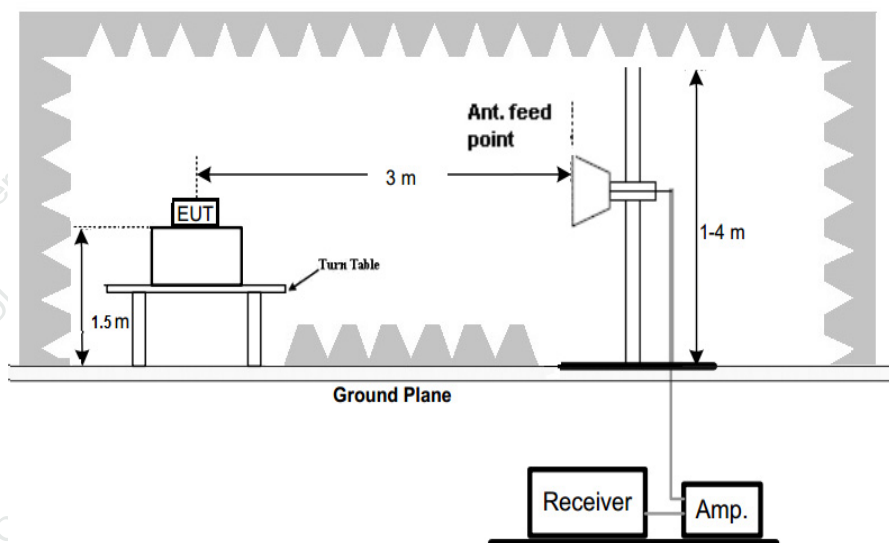




2) 30 MHz to 1 GHz emissions:



3) 1 GHz to 26 GHz emissions:

**Test Procedure**

1. The EUT was placed on turn table which is 0.8m above ground plane for below 1GHz test, and on a low permittivity and low loss tangent turn table which is 1.5m above ground plane for above 1GHz test.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0 degrees to 360 degrees to acquire the highest emissions from EUT.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.

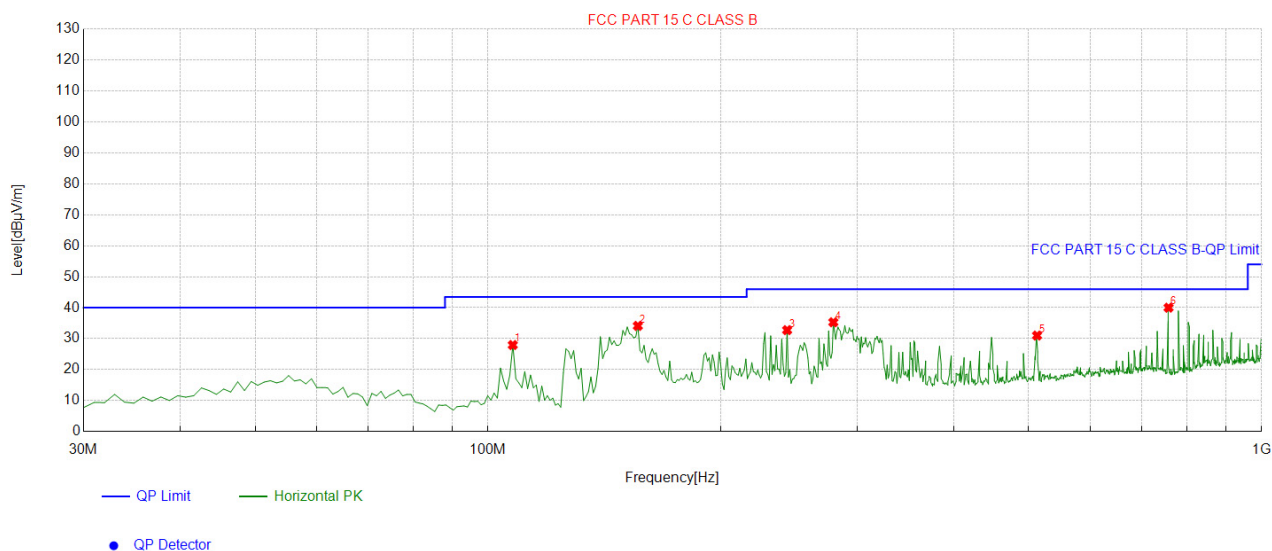


4.3.3 Test Result

Below 1GHz Test Results

All modes have been tested, only the worst mode of GFSK Low channel TX is reflected.

Antenna polarity: Horizontal

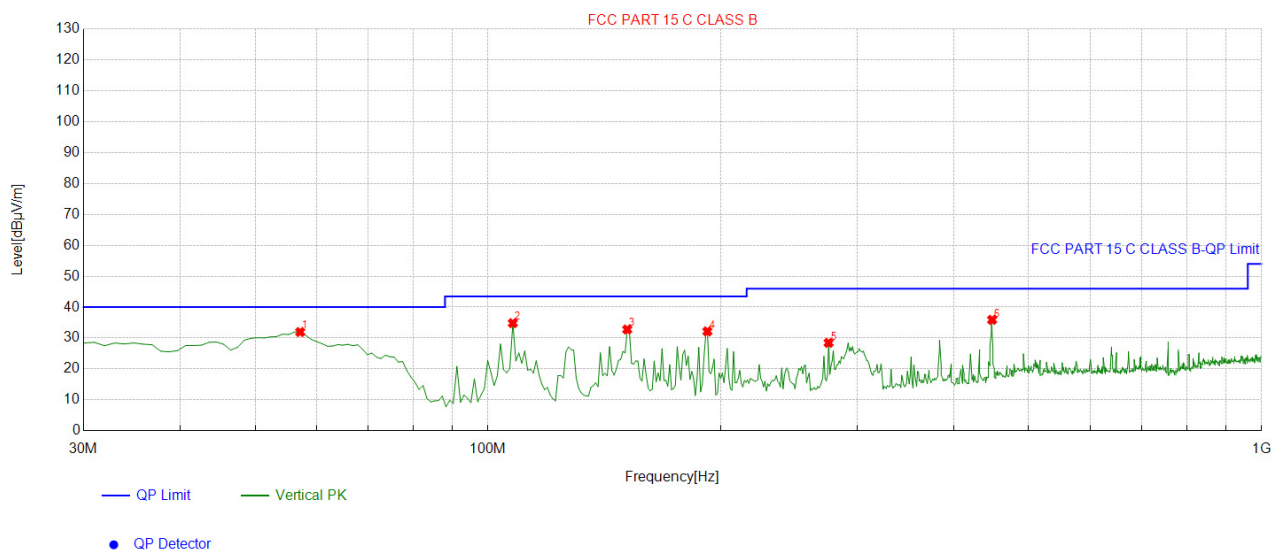


Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	107.6777	-14.18	42.13	27.95	43.50	15.55	100	330	Horizontal
2	156.2262	-17.78	51.91	34.13	43.50	9.37	100	359	Horizontal
3	243.6136	-13.32	46.08	32.76	46.00	13.24	100	37	Horizontal
4	279.5395	-12.64	47.94	35.30	46.00	10.70	100	157	Horizontal
5	512.5726	-8.10	39.11	31.01	46.00	14.99	100	298	Horizontal
6	758.2282	-4.89	44.91	40.02	46.00	5.98	100	132	Horizontal

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level;



Antenna polarity: Vertical



Suspected List

NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	57.1872	-13.76	45.72	31.96	40.00	8.04	100	107	Vertical
2	107.6777	-14.18	49.01	34.83	43.50	8.67	100	280	Vertical
3	151.3714	-18.06	50.84	32.78	43.50	10.72	100	336	Vertical
4	192.1522	-15.74	47.91	32.17	43.50	11.33	100	146	Vertical
5	275.6557	-12.70	41.16	28.46	46.00	17.54	100	104	Vertical
6	448.4885	-8.75	44.65	35.90	46.00	10.10	100	76	Vertical

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level;

Harmonics and Spurious Emissions

Frequency Range (9kHz-30MHz)

Frequency (MHz)	Level@3m (dBμV/m)	Limit@3m (dBμV/m)
--	--	--
--	--	--
--	--	--
--	--	--

Note: 1. Emission Level=Reading+ Cable loss+ Antenna factor-Amp factor.

2. The emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with the requirement.

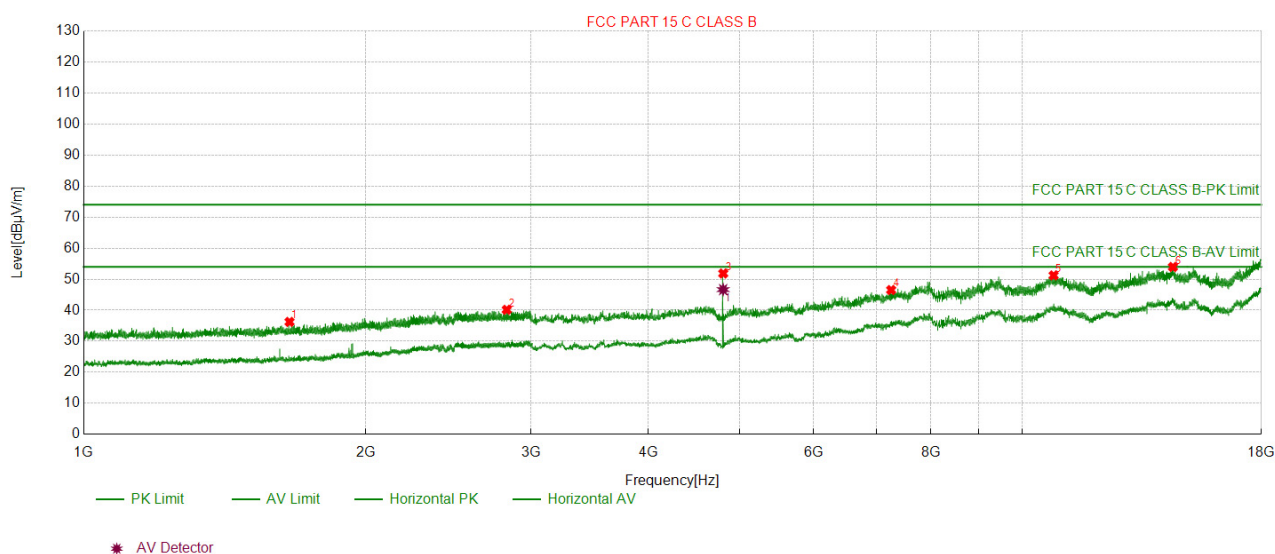


Above 1GHz Test Results

All the test modes completed for test. Only the worst result was reported as below:

For 1GHz to 18GHz

Antenna polarity: Horizontal



Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1657.865	54.84	36.25	-18.59	74.00	37.75	150	219	Horizontal
2	2824.982	54.06	40.16	-13.90	74.00	33.84	150	16	Horizontal
3	4804.680	62.44	51.85	-10.59	74.00	22.15	150	78	Horizontal
4	7254.425	50.78	46.53	-4.25	74.00	27.47	150	213	Horizontal
5	10806.78	49.49	51.22	1.73	74.00	22.78	150	37	Horizontal
6	14482.14	47.00	53.95	6.95	74.00	20.05	150	249	Horizontal

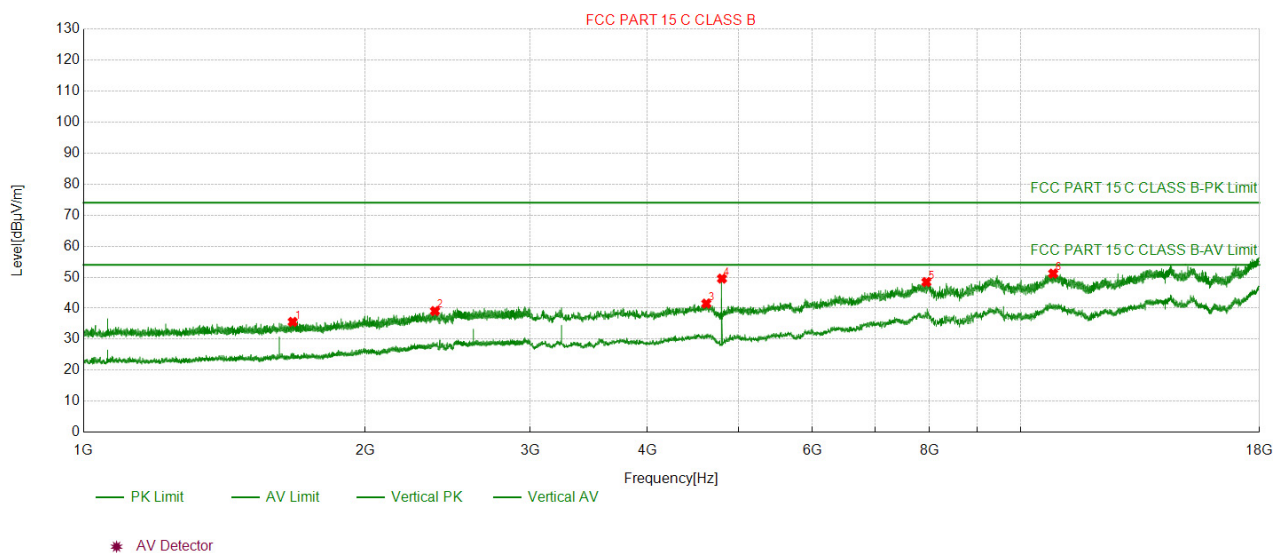
AV Final Data List

NO	Freq. [MHz]	Factor [dB]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	4803.960	-10.59	46.66	54.00	7.34	150	78	Horizontal

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level



Antenna polarity: Vertical



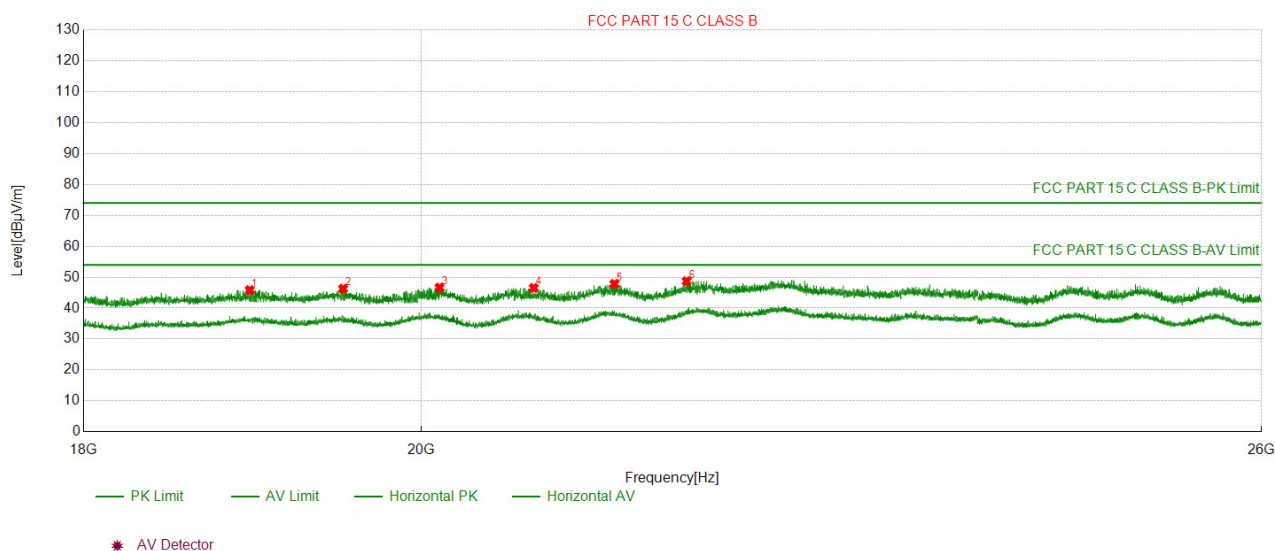
Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1672.867	54.14	35.61	-18.53	74.00	38.39	150	80	Vertical
2	2372.737	53.80	39.09	-14.71	74.00	34.91	150	180	Vertical
3	4621.662	51.67	41.50	-10.17	74.00	32.50	150	239	Vertical
4	4803.180	60.15	49.55	-10.60	74.00	24.45	150	11	Vertical
5	7936.993	50.54	48.43	-2.11	74.00	25.57	150	138	Vertical
6	10836.78	49.38	51.18	1.80	74.00	22.82	150	121	Vertical

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level



For 18GHz to 26GHz

Antenna polarity: Horizontal

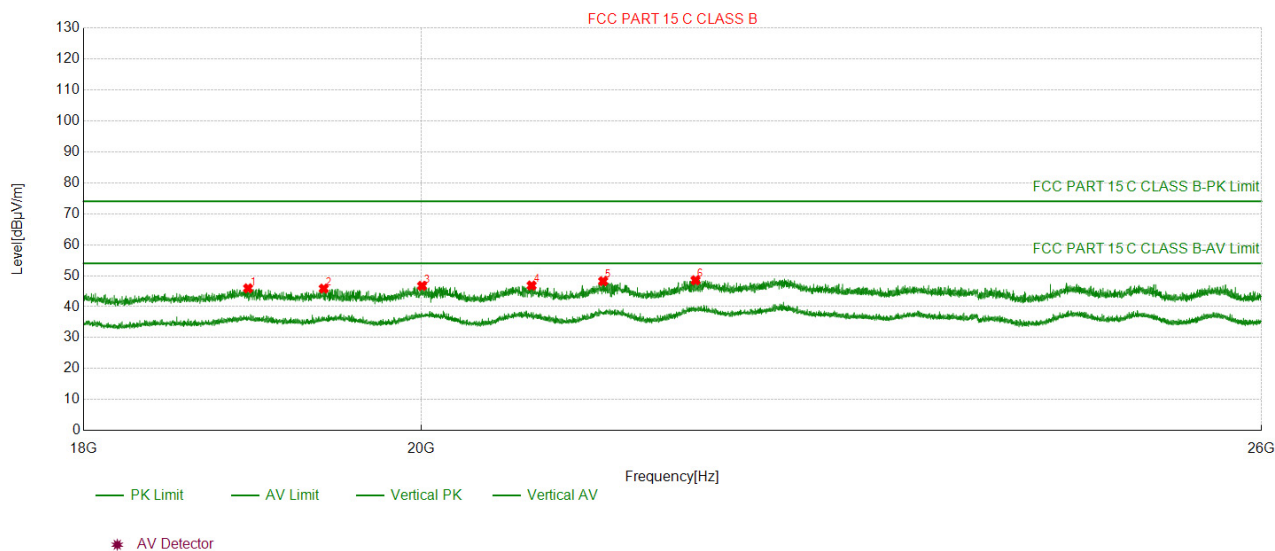


Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18958.49	40.18	45.83	5.65	74.00	28.17	150	260	Horizontal
2	19519.35	40.19	46.29	6.10	74.00	27.71	150	130	Horizontal
3	20115.41	40.51	46.64	6.13	74.00	27.36	150	340	Horizontal
4	20716.27	40.78	46.53	5.75	74.00	27.47	150	300	Horizontal
5	21244.32	42.55	47.82	5.27	74.00	26.18	150	350	Horizontal
6	21729.17	43.24	48.74	5.50	74.00	25.26	150	320	Horizontal

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level



Antenna polarity: Vertical



Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18948.89	40.29	45.94	5.65	74.00	28.06	150	200	Vertical
2	19401.74	39.79	45.84	6.05	74.00	28.16	150	140	Vertical
3	20006.60	40.51	46.72	6.21	74.00	27.28	150	220	Vertical
4	20702.67	41.06	46.83	5.77	74.00	27.17	150	70	Vertical
5	21169.91	42.94	48.24	5.30	74.00	25.76	150	40	Vertical
6	21789.17	42.97	48.53	5.56	74.00	25.47	150	230	Vertical

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level



4.4 Maximum Output Power Measurement

4.4.1 Limit

The Maximum Peak Output Power Measurement is 30dBm.

4.4.2 Test Procedure

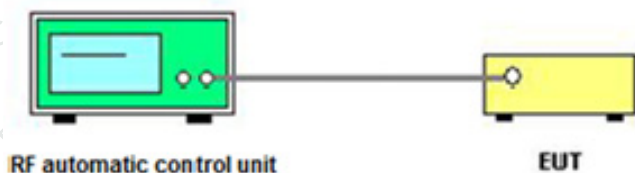
The maximum peak conducted output power may be measured using a broadband peak RF automatic control unit. The RF automatic control unit shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

The maximum Average conducted output power may be measured using a wideband RF automatic control unit with a thermocouple detector or equivalent. The RF automatic control unit shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

4.4.3 Deviation from Standard

No deviation.

4.4.4 Test Setup





4.4.5 Test Results

1M

Channel	Channel Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)	Limit (dBm)	Result
Low	2402	1.25	30.00	Pass
Middle	2440	2.02		Pass
High	2480	0.93		Pass

2M

Channel	Channel Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)	Limit (dBm)	Result
Low	2402	1.21	30.00	Pass
Middle	2440	2.01		Pass
High	2480	0.92		Pass

Note: The test results including the cable loss.



4.5 Power Spectral Density

4.5.1 Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

4.5.2 Test Procedure

Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.

Set the RBW =3 kHz.

Set the VBW =10 kHz.

Set the span to 1.5 times the DTS channel bandwidth.

Detector = peak.

Sweep time = auto couple.

Trace mode = max hold.

Allow trace to fully stabilize.

Use the peak marker function to determine the maximum power level.

If measured value exceeds limit, reduce RBW(no less than 3 kHz)and repeat.

The resulting peak PSD level must be 8 dBm.

4.5.3 Deviation from Standard

No deviation.

4.5.4 Test Setup



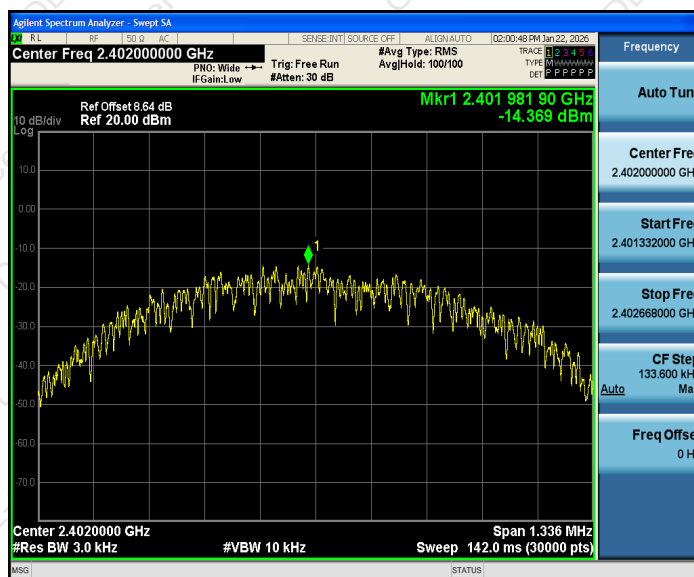


4.5.5 Test Results

1M

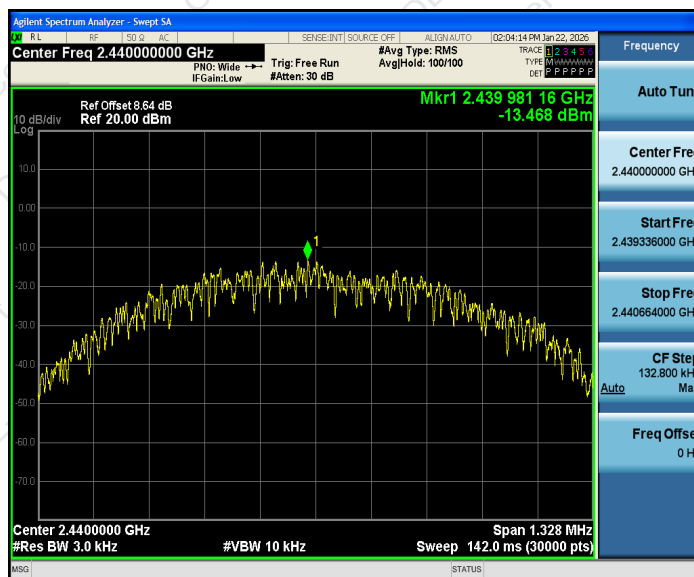
Channel	Channel frequency (MHz)	Test Result (dBm/3kHz)
Low	2402	-14.37
Middle	2440	-13.47
High	2480	-14.27
Limit : 8dBm/3KHz		
Test Result	PASS	

CH 00

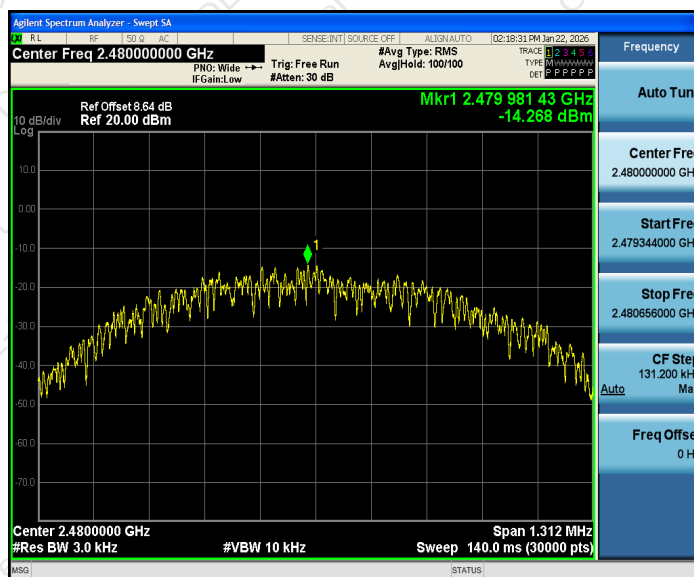




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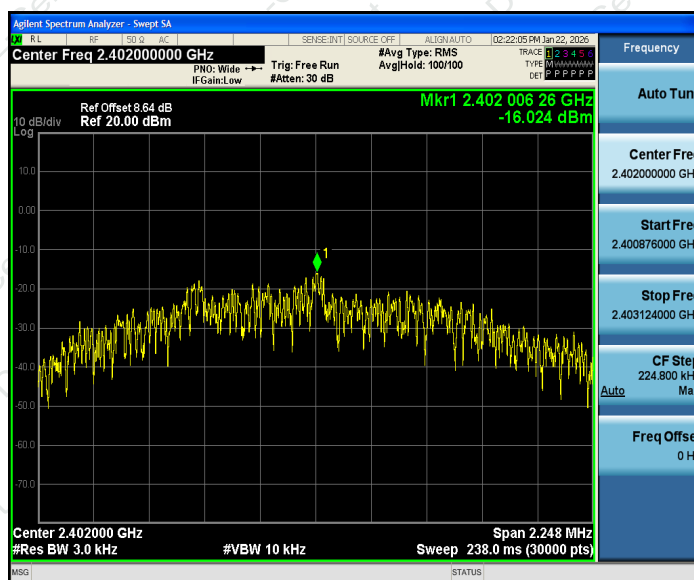




2M

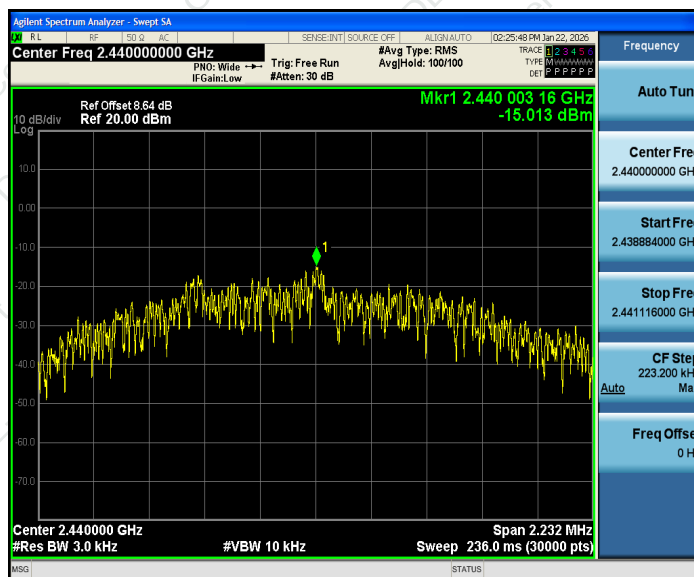
Channel	Channel frequency (MHz)	Test Result (dBm/3kHz)
Low	2402	-16.02
Middle	2440	-15.01
High	2480	-16.28
Limit : 8dBm/3KHz		
Test Result	PASS	

CH 00

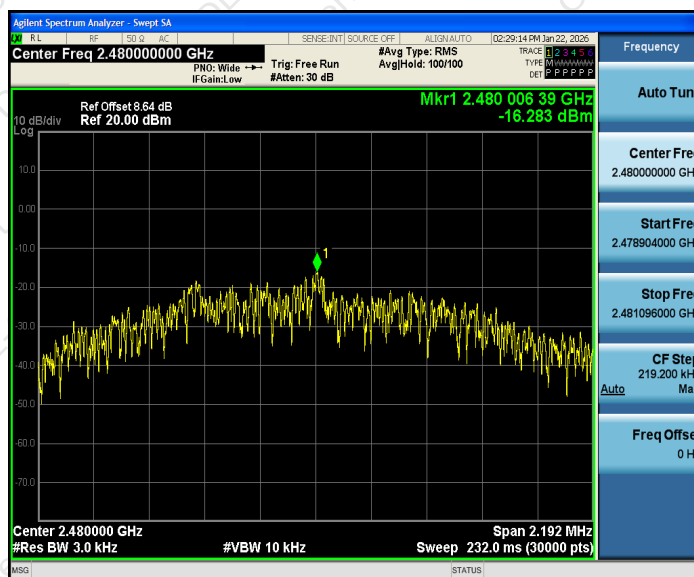




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4.6 6dB Bandwidth

4.6.1 Limit

For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

4.6.2 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with RBW=100 KHz and VBW=300 KHz. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

4.6.3 Deviation from Standard

No deviation.

4.6.4 Test Setup



4.6.5 Test Result

1M

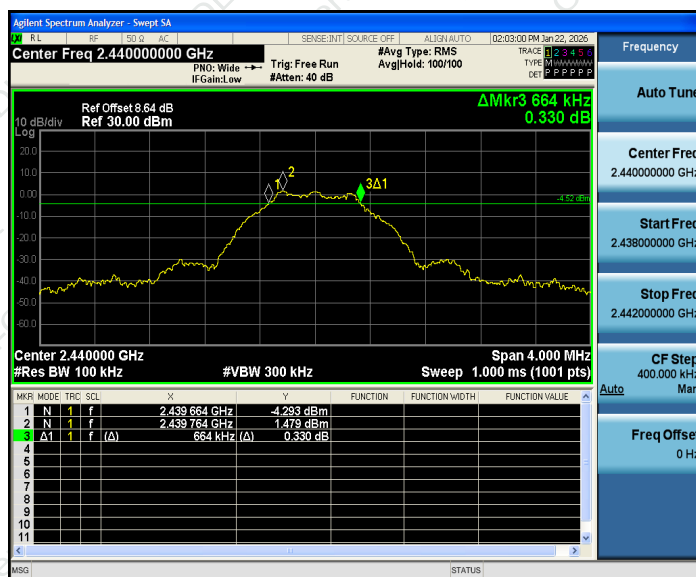
Channel	Channel frequency (MHz)	6dB Bandwidth (MHz)	Limit (KHz)	Result
CH00	2402	0.668	≥ 500	Pass
CH19	2440	0.664		Pass
CH39	2480	0.656		Pass



CH 00



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[illegible]

Channel	Channel frequency (MHz)	6dB Bandwidth (MHz)	Limit (KHz)	Result
CH00	2402	1.124	≥500	Pass
CH19	2440	1.116		Pass
CH39	2480	1.096		Pass

Agilent Spectrum Analyzer - Sweep SA

RL RF SD Q AC SENSE:INT SOURCE:OFF ALIGN:AUTO 02:20:42 PM Jan 22, 2025

Center Freq 2.402000000 GHz PNO: Wide → Trig: Free Run #Avg Type: RMS #Att: 40 dB Avg Hold: 100/100

Trace 1 2 3 4 5 6
Type BW:AWWAVEW Type P P P P P P

Frequency

Auto Tune

Center Freq 2.402000000 GHz

Start Freq 2.400000000 GHz

Stop Freq 2.404000000 GHz

CF Step 400.000000 kHz

Auto

Freq Offset 0 Hz

The screenshot displays the spectrum analyzer interface. The main plot shows a signal centered at 2.402 GHz. A green horizontal line indicates the reference level at -3.35 dBm. A yellow trace shows the signal spectrum. A peak is identified at 1.124 MHz offset with a magnitude of -0.242 dB. The peak is labeled '3d1'. The plot also shows a reference level at 30.00 dBm and a reference offset of 8.64 dB. The span is 4.000 MHz, and the resolution bandwidth (RBW) is 300 kHz. The sweep time is 1.000 ms (1001 pts). The table below the plot lists the measurement parameters.

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.401440 GHz	-5.169 dBm			
2	N	1	f	2.402004 GHz	0.652 dBm			
3	A1	1	f (Δ)	1.124 MHz (Δ)	0.242 dB			
4								
5								
6								
7								
8								
9								
10								
11								

Ref Offset 8.64 dB
Ref 30.00 dBm

ΔMkr3 1.124 MHz
0.242 dB

Center 2.402000 GHz Span 4.000 MHz
#Res BW 100 kHz #VBW 300 kHz Sweep 1.000 ms (1001 pts)

MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE

1 N 1 f 2.401440 GHz -5.169 dBm

2 N 1 f 2.402004 GHz 0.652 dBm

3 A1 1 f (Δ) 1.124 MHz (Δ) 0.242 dB

4

5

6

7

8

9

10

11



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4.7 Occupied Bandwidth

4.7.1 Test Procedure

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth:

RBW=1% to 5% of the OBW

VBW=approximately 3 X RBW

Detector=Peak

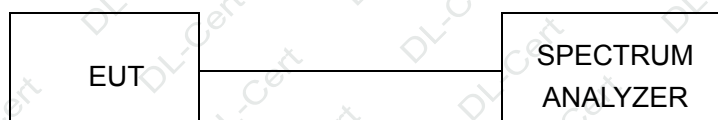
Trace Mode: Max Hold

Use the 99% power bandwidth function of the instrument to measure the Occupied Bandwidth and recorded.

4.7.2 Deviation from Standard

No deviation.

4.7.3 Test Setup



4.7.4 Test Result

N/A



4.8 Band Edge

4.8.1 Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under FCC rules in section 5.8.1, the attenuation required shall be 30 dB instead of 20 dB.

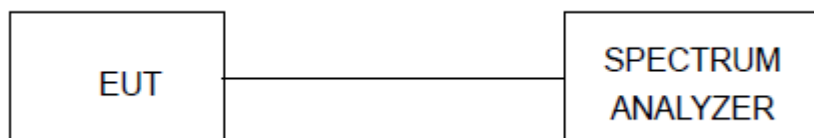
4.8.2 Test Procedure

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- Span = wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products which fall outside of the authorized band of operation, RBW $\geq$ 1% of the span, VBW $\geq$ RBW, Sweep = auto, Detector function = peak, Trace = max hold.

4.8.3 Deviation from Standard

No deviation.

4.8.4 Test Setup

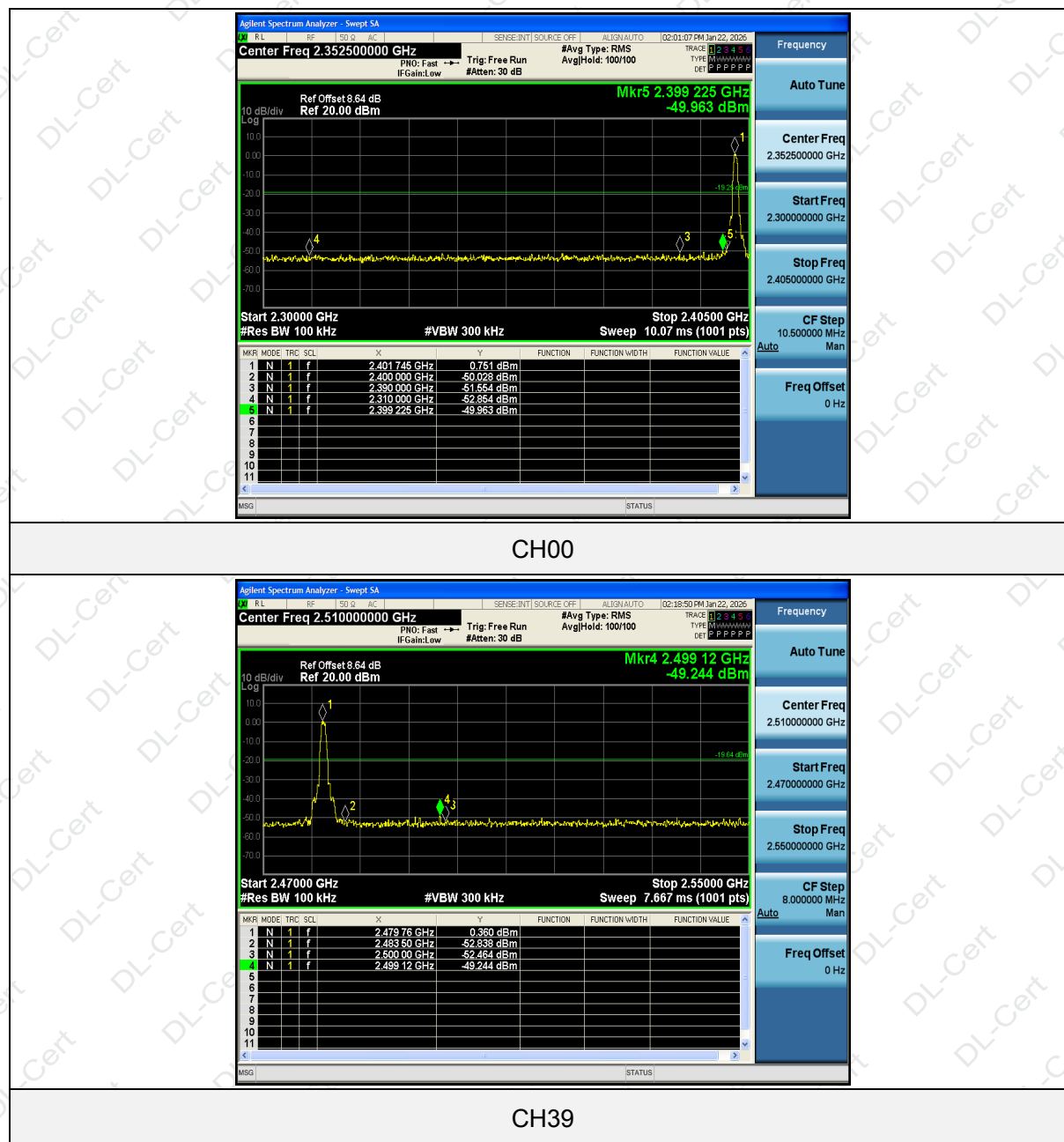




4.8.5 Test Results

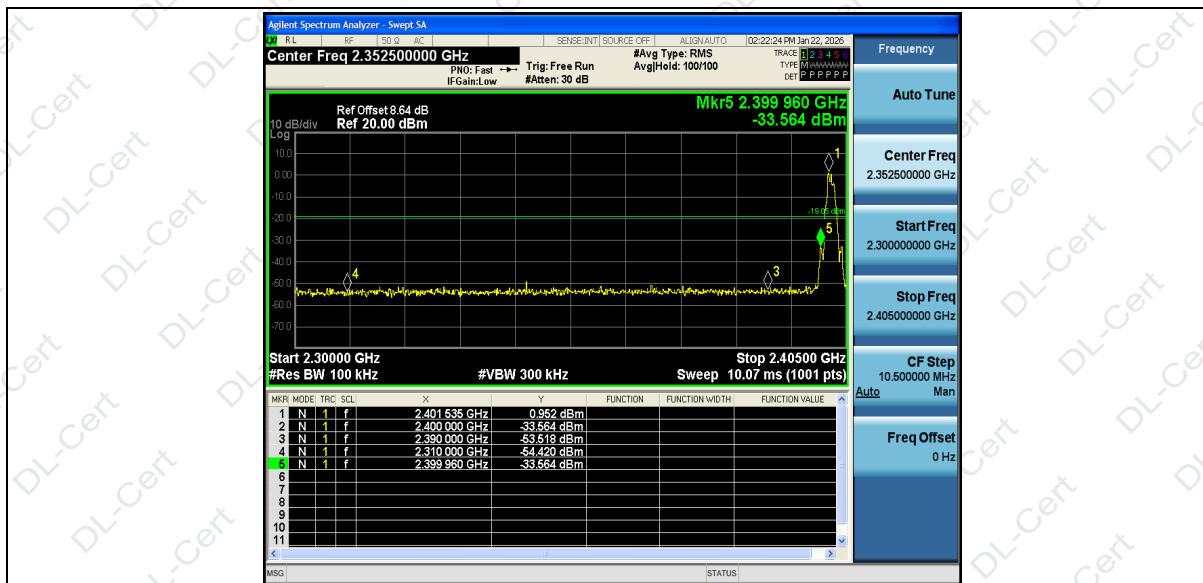
PASS

1M

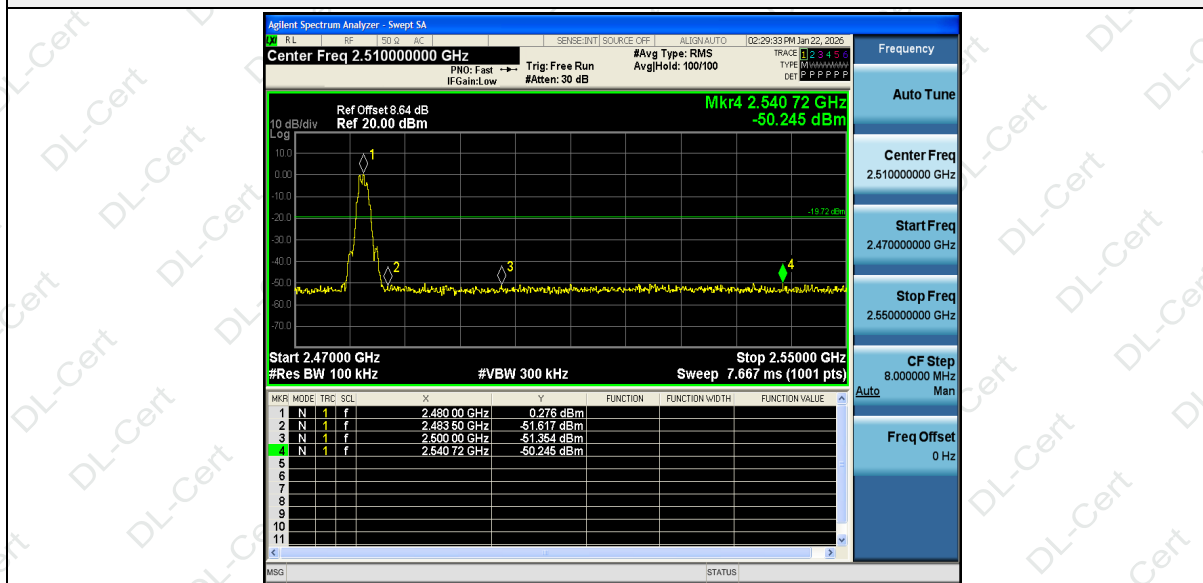




2M



CH00



CH39



4.9 Conducted Spurious Emissions

4.9.1 Applied Procedures / Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section (b)(3) of RSS 5.4(4), the attenuation required shall be 30 dB instead of 20 dB.

For below 30MHz, For 9KHz-150kHz, 150K-10MHz, We use the RBW 1KHz, 10KHz, So the limit need to calculated by " $10\lg(BW1/BW2)$ ". for example For 9KHz-150kHz, RBW 1KHz, The Limit= the highest emission level-20-10log(100/1)= the highest emission level-40.

4.9.2 Test Procedure

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- Span = wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products which fall outside of the authorized band of operation, $RBW \geq 1\%$ of the span, $VBW \geq RBW$, Sweep = auto, Detector function = peak, Trace = max hold.

4.9.3 Deviation from Standard

No deviation.

4.9.4 Test Setup

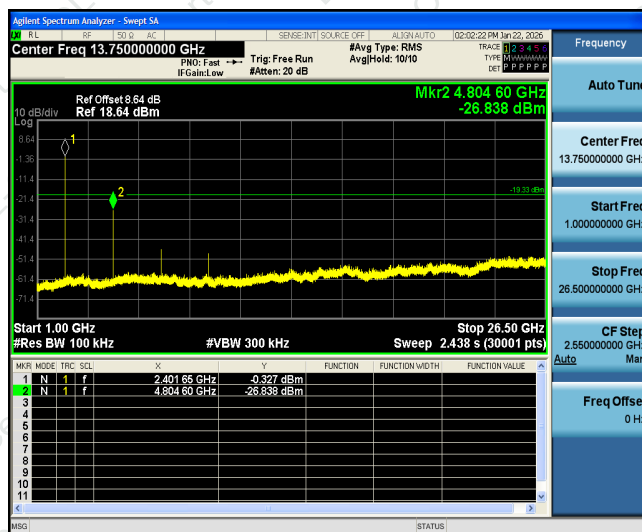
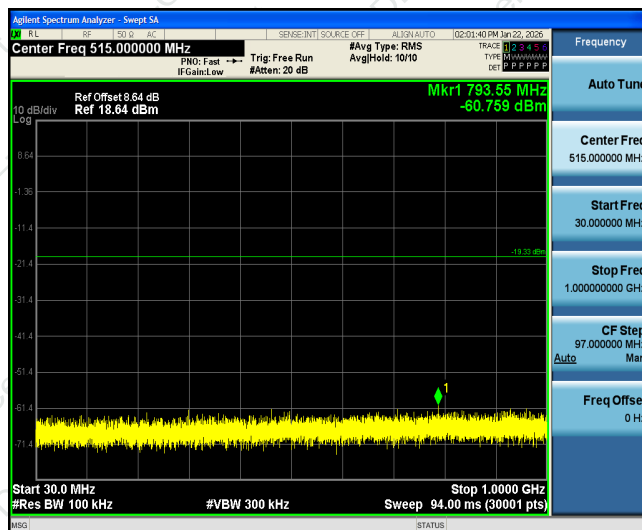
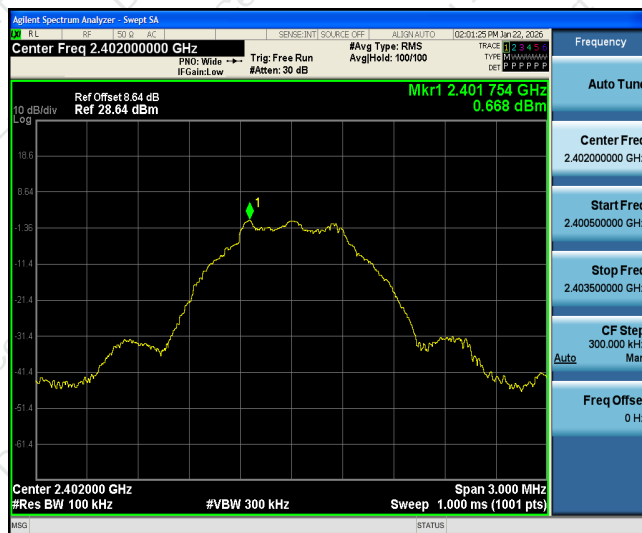




4.9.5 Test Results

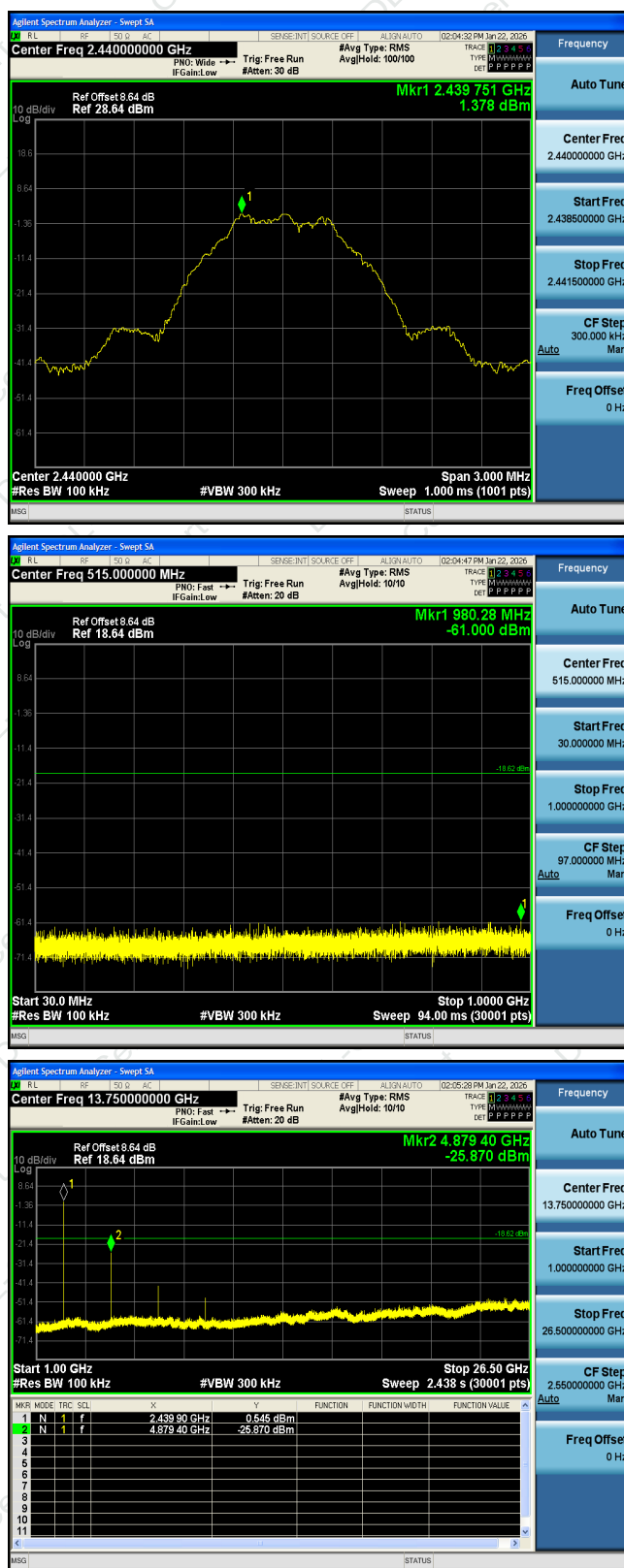
1M

CH 00



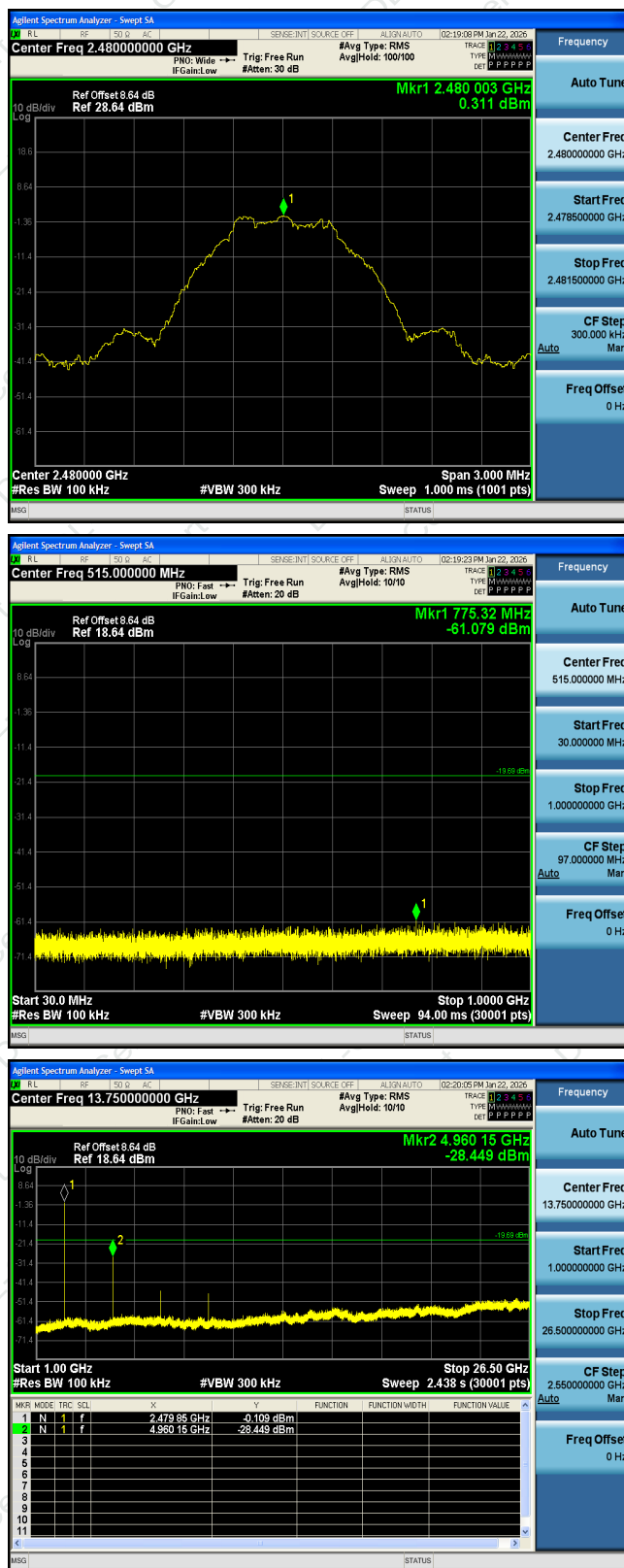


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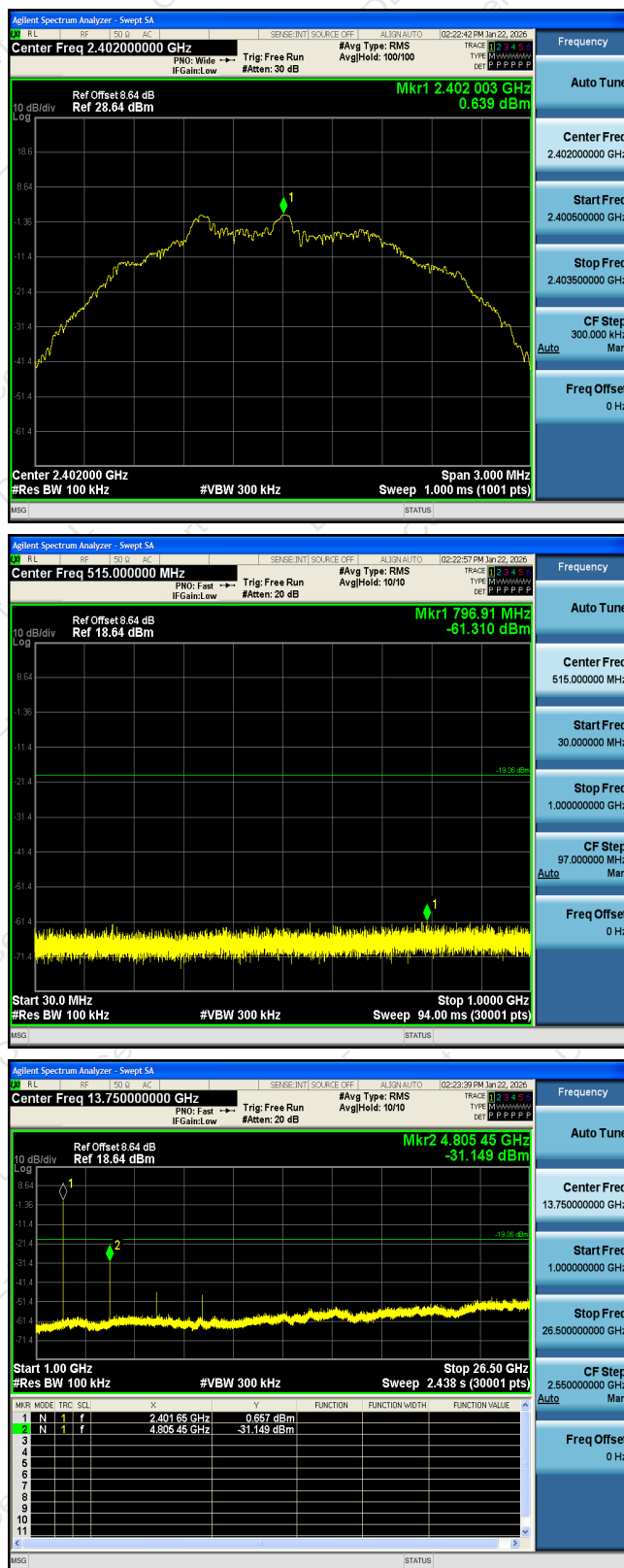
CH 39





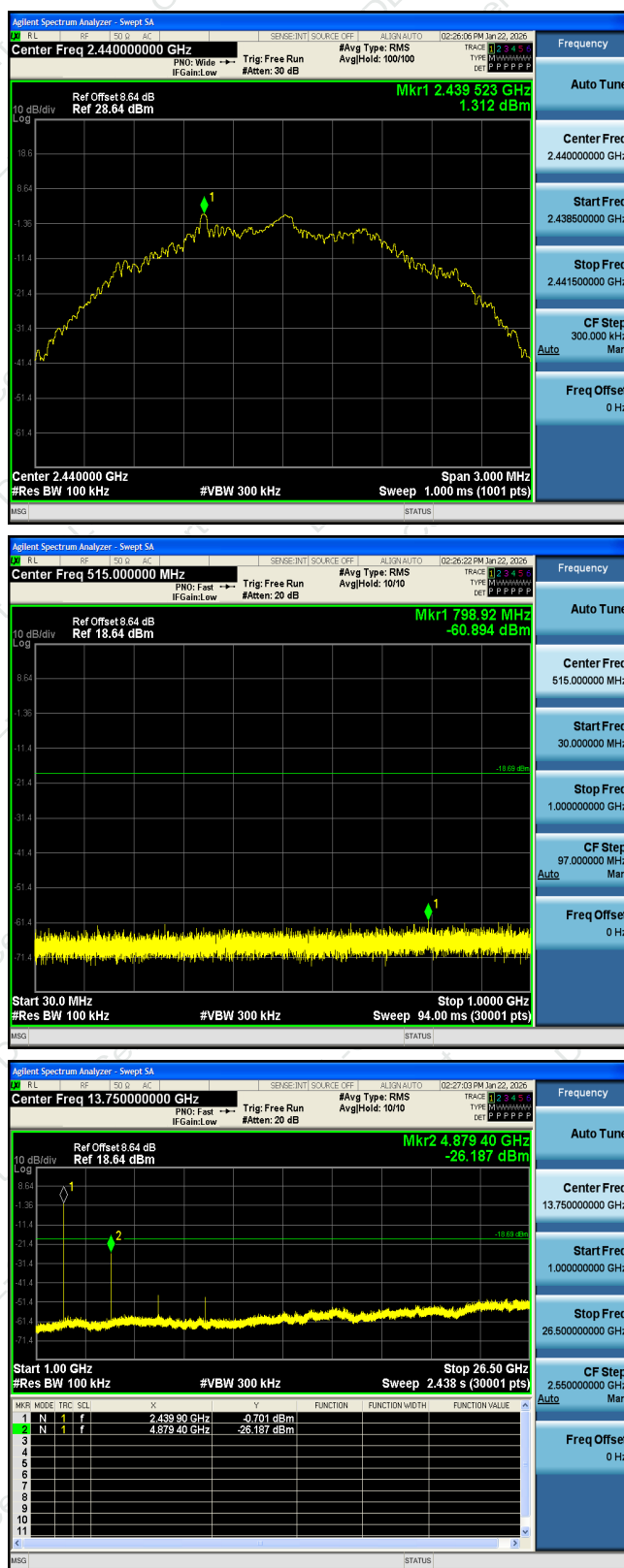
2M

CH 00



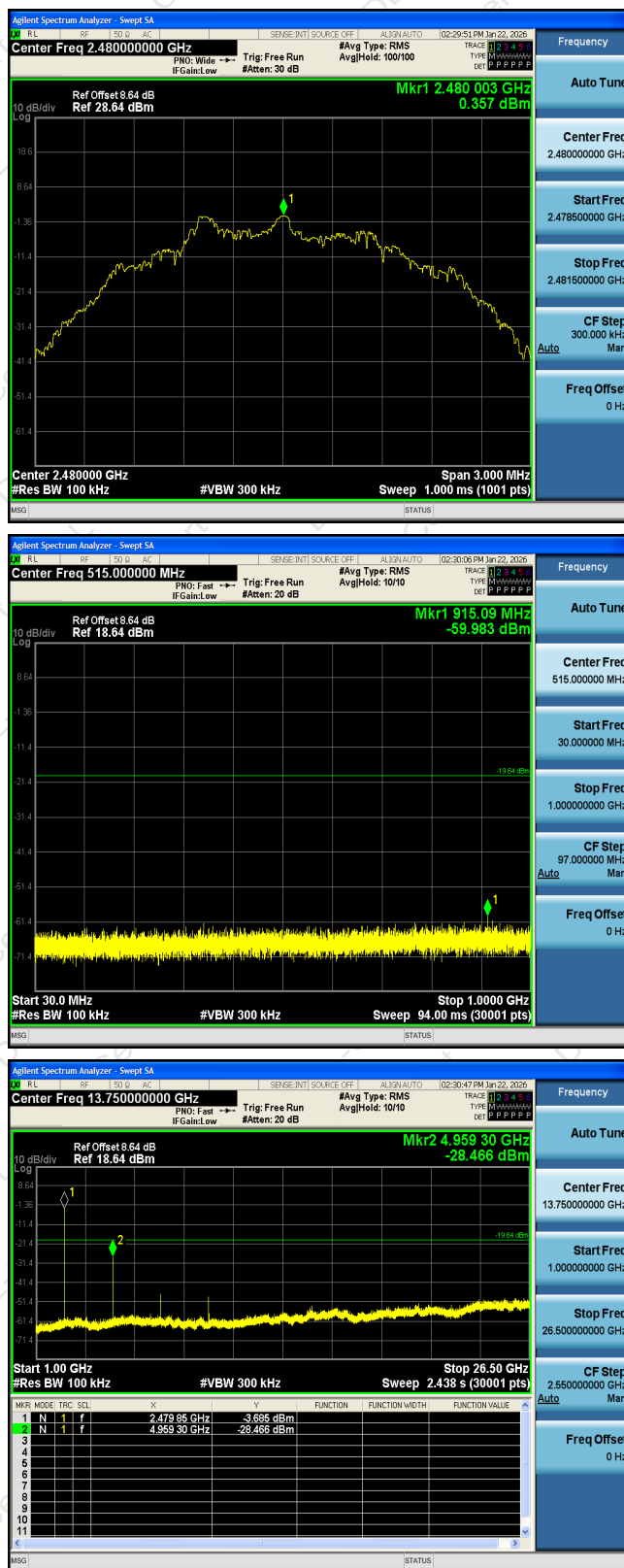


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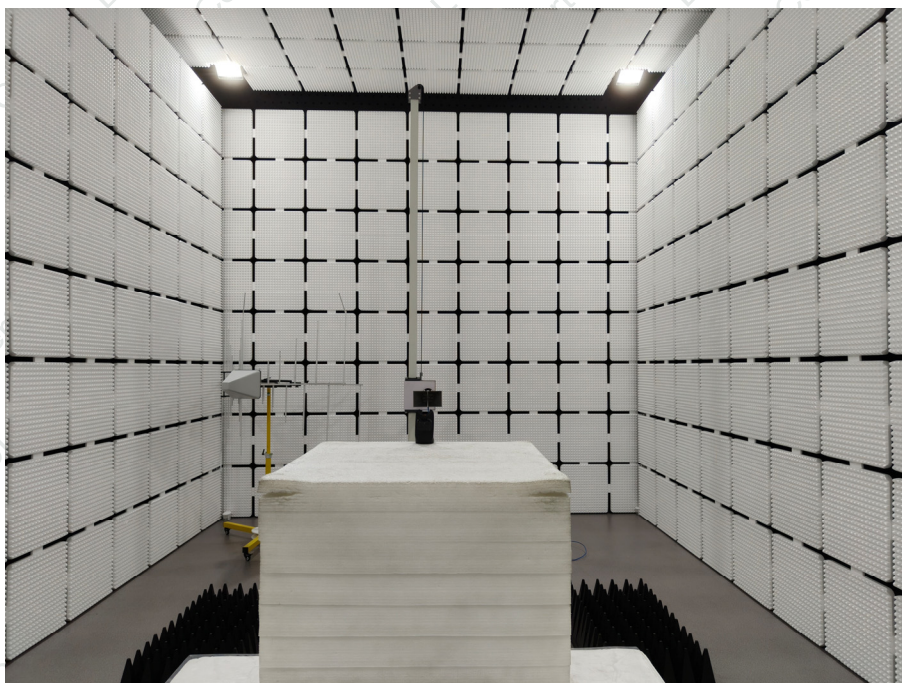
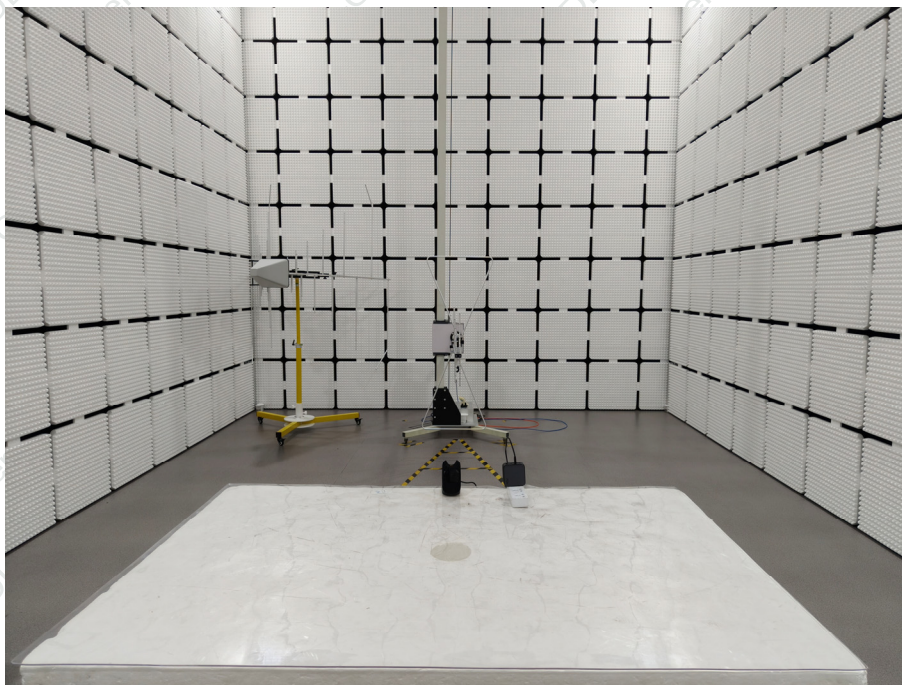
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5 Test Setup Photos

Radiated Emission

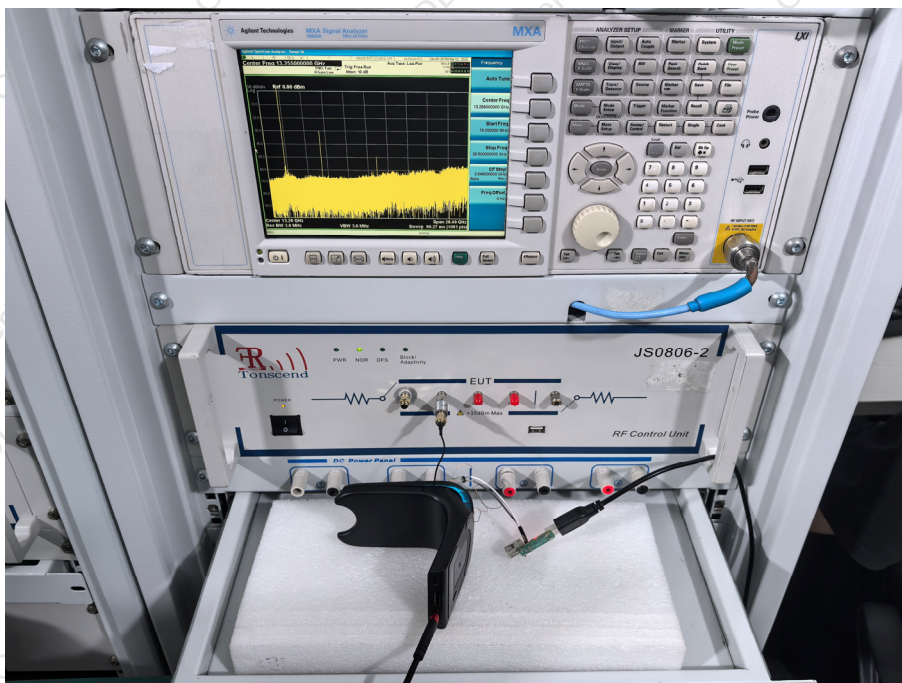




AC Conducted Emission



RF Conducted Emission





6 Photos of the EUT

Reference to the report: ANNEX A of external photos and ANNEX B of internal photos.

-----End of test report-----