TEST REPORT

Applicant	:	Shenzhen Daxingyang E-commerce Co., Ltd
Address	:	Room 2203, Block 1, Evergrande Metropolis Plaza, No.15 Huancheng South Road, Longgang District, Shenzhen, China
Manufacturer	:	Nantong Xingboshen Culture Technology Co.,Ltd
Address	:	Jiangsu Province Nantong City Lushigang Town Maojiagang Xingboshen Electric Tools Factory
Product Name	:	16 Lines Laser Level
Model Number	:	SPY-16
Trademark	:	N/A
FCC ID	:	2BYDY-SPY16
Test Date	:	Jul. 28, 2026 to Sep. 08, 2026
Date of Report	:	Sep. 08, 2026
Test Result	:	This device described above has been tested by NTT, and the test results show that the equipment under test (EUT) is in compliance with the Standard requirements. And it is applicable only to the tested sample identified in the report.

Test Procedure Used:

Standards	:	FCC CFR Title 47 Part 15 Subpart C Section 15.247 ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 KDB 558074 D01 15.247 Meas Guidance v05r02

Prepared by(Test Engineer):
Gary Lu

Approved(Manager):
Cindy Qin

Approved(Manager):
Abel Yu

Shenzhen NTT Testing Technology Co., Ltd. Special Seal for Inspection and Testing

TABLE OF CONTENT

1. General Information 4
1.1. Description of Device (EUT) 4
1.2. Channel List 4
1.3. Summary of test result 5
1.4. Special Accessories and Auxiliary Equipment 5
1.5. Test mode 5
1.6. Test configuration 5
1.7. Block Diagram 6
1.8. Test Conditions 6
1.9. Measurement Uncertainty (95% confidence levels, k=2) 6
1.10. Test Facility 7
1.11. Test Equipment 8
2. Conducted emission at the mains terminals test 11
2.1. Limit 11
2.2. Test Setup 11
2.3. Test Procedure 11
2.4. Test Result 12
3. Radiated Spurious Emissions 13
3.1. Limit 13
3.2. Test Setup 14
3.3. Test Procedure 16
3.4. Test Result 17
4. Conducted Spurious Emissions 22
4.1. Limit 22
4.2. Test Setup 22
4.3. Test Procedure 22
4.4. Test Result 23
5. Band Edge Measurement 24
5.1. Limit 24
5.2. Test setup 24
5.3. Test Procedure 24
5.4. Test Result 25
6. -6 dB Bandwidth and 99% Bandwidth Measurement 26
6.1. Limit 26
6.2. Test Setup 26
6.3. Test Procedure 26
6.4. Test Result 26
7. Maximum Peak Output Power 29
7.1. Limit 29
7.2. Test Setup 29
7.3. Test Procedure 29
7.4. Test Result 30
8. Power Spectral density 33
8.1. Limit 33
8.2. Test Setup 33
8.3. Test Procedure 33
8.4. Test Result 33
9. Antenna Requirement 35
10. TEST SETUP & EUT PHOTOGRAPH 36

Revision History of This Test Report

Report Number	Description	Issued Date
SZNTT26036050E1-1	Initial Issue	2026-09-08

1. General Information

1.1.Description of Device (EUT)

EUT Name	:	16 Lines Laser Level
Model No.	:	SPY-16
Model Difference	:	N/A
Power supply	:	DC 3V by battery
Operation frequency	:	2402-2480MHz
Modulation	:	GFSK
Antenna Type	:	PCB antenna, Maximum Gain is 2.85dBi
Intend use environment	:	Residential, commercial and light industrial environment

1.2.Channel List

CH No.	Frequency (MHz)	CH No.	Frequency (MHz)	CH No.	Frequency (MHz)	CH No.	Frequency (MHz)
0	2402	1	2404	2	2406	3	2408
4	2410	5	2412	6	2414	7	2416
8	2418	9	2420	10	2422	11	2424
12	2426	13	2428	14	2430	15	2432
16	2434	17	2436	18	2438	19	2440
20	2442	21	2444	22	2446	23	2448
24	2450	25	2452	26	2454	27	2456
28	2458	29	2460	30	2462	31	2464
32	2466	33	2468	34	2470	35	2472
36	2474	37	2476	38	2478	39	2480

1.3.Summary of test result

RF PART		
Test Items	**Test Requirement**	**Result**
Antenna requirement	FCC part 15.203/15.247 (b)(4)	PASS
AC Power Line Conducted Emission	FCC part 15.207	N/A
Conducted Peak Output Power	FCC part 15.247 (b)(3)	PASS
Channel Bandwidth& 99% OCB	FCC part 15.247 (a)(2)	PASS
Power Spectral Density	FCC part 15.247 (e)	PASS
Band Edge	FCC part 15.247(d)	PASS
Spurious Emission	FCC part 15.205/15.209	PASS
Remark: N/A is an abbreviation for Not Applicable. Measurement Uncertainty is not taken into account for conformity statement		

1.4.Special Accessories and Auxiliary Equipment

Description	Manufacturer	Model No.	Hardware Version	Software Version
Laptop	DELL	Vostro 5490	/	/
Adapter	/	/	/	/

1.5.Test mode

The special RF test software was used to control EUT work in Continuous BLE TX mode, and select test channel, wireless mode.

Test mode	Low channel	Middle channel	High channel
GFSK	2402MHz	2440MHz	2480MHz
Note：Only the worst Data Record in the report			

1.6. Test configuration

Transmitting mode	Keep the EUT in continuously transmitting mode.
Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.	

Test Software	Moca_configuratorOUT
Power level setup	default

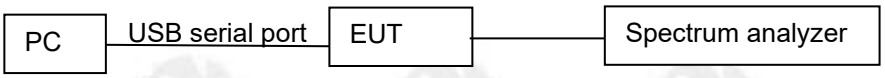
1.7.Block Diagram

Conducted Emission

N/A

Radiated Emission

RF Conducted Test



1.8.Test Conditions

Category	Normal Conditions	Extreme Conditions
Temperature range	15-35℃	N/A
Humidity range	20-75%	N/A
Pressure range	86-106kPa	N/A
Power supply	DC 3V	N/A
Note: N/A is an abbreviation for Not Applicable.		

1.9.Measurement Uncertainty (95% confidence levels, k=2)

Parameter	**Uncertainty**
RF output power, conducted	±1.0dB
Power Spectral Density, conducted	±2.2dB
Radio Frequency	± 1 x 10-6
Bandwidth	± 1.5 x 10-6
Time	±2%
Duty Cycle	±2%
Temperature	±1°C
Humidity	±5%
DC and low frequency voltages	±3%
Conducted Emissions (150kHz~30MHz)	±3.64dB
Radiated Emission(9KHz~30MHz)	±4.51dB
Radiated Emission(30MHz~1GHz)	±5.03dB
Radiated Emission(1GHz~25GHz)	±4.74dB
Remark:When making a conformity declaration based on test results for regulations/standards or specifications,the default is to use Clause 4.2.1of ILAC-G8:09/2019 and the guidelines on decision rules and	

conformity declaration in IEC Guide 115:2023.

1.10.Test Facility

Site Description		
Name of Firm	:	Shenzhen NTT Testing Technology Co.,Ltd.
Site Location	:	1B, Building 2, Factory Building & 103, Building 3, Factory Building, Dayang Industrial Park No.4, Industrial Avenue, Tangwei Community, Fuhai Sub-district, Bao 'an District, Shenzhen City, China
FCC Designation Number	:	CN3446
FCC Test Firm Registration Number	:	129414

1.11.Test Equipment

Radiated Test Site(Below 1G and Above 1G)&RF Test Site

Name	Model No.	Serial No.	Manufacturer	Date of Cal.	Due Date
966 Shielded Room	966 Room	/	EMToni	2025/7/24	2028/7/23
EMI Test Receiver	ESCI	101018	RS	2025/9/8	2026/9/7
Amplifi（30MHz-1GHz）	BBV 9718D	00042	SCHWARZBECK	2025/9/8	2026/9/7
Bilog Antenna（30MHz-1GHz）	VULB9168	1858	SCHWARZBECK	2025/9/9	2026/9/8
Horn antenna（1GHz-18GHz）	BBHA 9120 D	02622	SCHWARZBECK	2025/9/9	2026/9/8
Pream plifier（1GHz-18GHz）	BBV 9718D	0024	SCHWARZBECK	2025/9/8	2026/9/7
Spectrum Analyze（10Hz-40GHz）	FSV 40	100952	Rohde & Schwarz	2025/9/8	2026/9/7
Pream plifier（18GHz-40GHz）	BBV 9721	0056	SCHWARZBECK	2025/9/8	2026/9/7
Double Ridge Guide Horn Antenna（18GHz-40GHz）	SAS-574	588	A.H.System	2025/9/8	2026/9/7
Loop Antenna (9KHz-30MHz)	FMZB1519B	014	SCHWARZBECK	2025/9/8	2026/9/7
Amplifier (9KHz-30MHz)	CVP 9222 C	00109	SCHWARZBECK	2025/9/8	2026/9/7
MXG Signal Analyzer	N9020A	MY50510202	Agilent	2025/9/8	2026/9/7
MXG Vector Signal Generator	N5182A	MY50140020	Agilent	2025/9/8	2026/9/7
MXG Analog Signal Generator	N5181A	MY47420919	Agilent	2025/9/8	2026/9/7
Power Sensor	TR1029-2	512364	Techoy	2025/9/8	2026/9/7
RF Swith	TR1029-1	512364	Techoy	2025/9/8	2026/9/7
Cable	DA800-4000MM	NA	DA	2025/9/8	2026/9/7
Cable	DA800-11000MM	NA	DA	2025/9/8	2026/9/7

Name	Model No.	Serial No.	Manufacturer	Date of Cal.	Due Date
966 Shielded Room	966 Room	/	EMToni	2025/07/24	2028/07/23

EMI Test Receiver	ESPI	101018	ROHDE&SCHWARZ	2026/09/04	2027/09/03
Amplifi（30MHz-1GHz）	BBV 9745	00431	SCHWARZBECK	2026/09/09	2027/09/08
Bilog Antenna（30MHz-1GHz）	VULB9168	1858	SCHWARZBECK	2026/09/05	2027/09/04
Horn antenna（1GHz-18GHz）	BBHA 9120 D	02622	SCHWARZBECK	2026/09/05	2027/09/04
Pream plifier（1GHz-18GHz）	BBV 9718D	0024	SCHWARZBECK	2026/09/04	2027/09/03
Spectrum Analyze（10Hz-40GHz）	FSV 40	100952	ROHDE&SCHWARZ	2026/09/04	2027/09/03
Pream plifier（18GHz-40GHz）	BBV 9721	0056	SCHWARZBECK	2026/09/04	2027/09/03
Double Ridge Guide Horn Antenna（18GHz-40GHz）	SAS-574	588	A.H.System	2026/09/05	2027/09/04
Loop Antenna (9KHz-30MHz)	FMZB 1513-60	00115	SCHWARZBECK	2026/09/04	2027/09/03
MXG Signal Analyzer	N9020A	MY49100730	Agilent	2026/09/04	2027/09/03
MXG Vector Signal Generator	N5182A	MY50144920	Agilent	2026/09/04	2027/09/03
WIDEBAND RADIO COMMUNICATION TESTER	CMW500	/	ROHDE&SCHWARZ	2026/09/07	2027/09/06
Power Sensor	MW100-RFCB-2	MW260105NTT-64	MWRFtest	2026/09/04	2027/09/03
RF Swith	MW100-RFCB-1	MW260105NTT-64	MWRFtest	2026/09/04	2027/09/03
Cable	RG223-3M	/	DA	2026/09/04	2027/09/03
Cable	RG223-12M	/	DA	2026/09/04	2027/09/03
Cable	SFT205-NMNMSW-2.5M	/	DA	2026/09/04	2027/09/03
Cable	SFT205-NMNM-12M	/	DA	2026/09/04	2027/09/03
Cable	UCA500-NJWSM-1.5M	017	MWRFtest	2026/09/04	2027/09/03

Test software

Item	Name	Manufacturer	Model	Software version
1	EMC Conduction Test System	FALA	EZ-EMC	Ver.EMC-CON 3A1.1+
2	EMC radiation test system	FALA	EZ-EMC	Ver.FA-03A2 RE+

3	RF test system	TACHOY	RFTest	V1.0.0
4	RF communication test system	TACHOY	RFTest	V1.0.0

2. Conducted emission at the mains terminals test

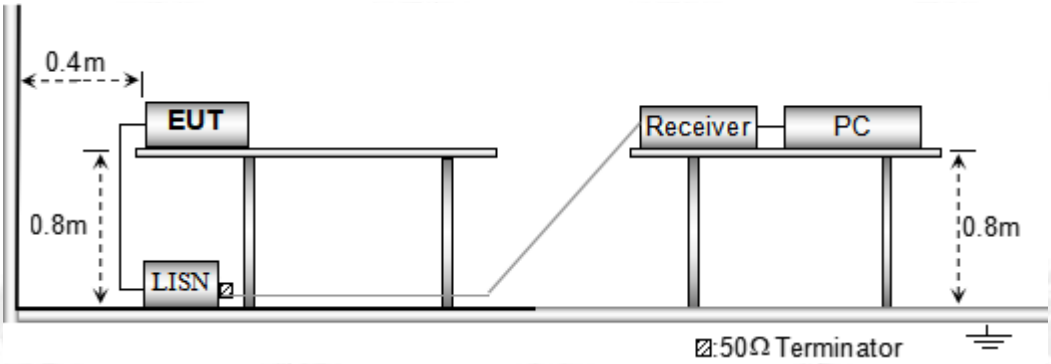
2.1.Limit

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

2.2.Test Setup



2.3.Test Procedure

1. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
2. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
3. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
4. LISN at least 80 cm from nearest part of EUT chassis.
5.For the actual test configuration, please refer to the related Item – EUT Test Photos.

2.4.Test Result

N/A

NOTE: This EUT is powered by DC power only, this test item is not applicable.

3. Radiated Spurious Emissions

3.1.Limit

Test Requirement: FCC CFR47 Part 15 Section 15.209 & 15.247

Test Method: KDB 558074 D01 15.247 Meas Guidance v05r02April 2,2019; ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024

Test Result: PASS

Measurement Distance: 3m

Frequency	Detector	RBW	VBW	Value
9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

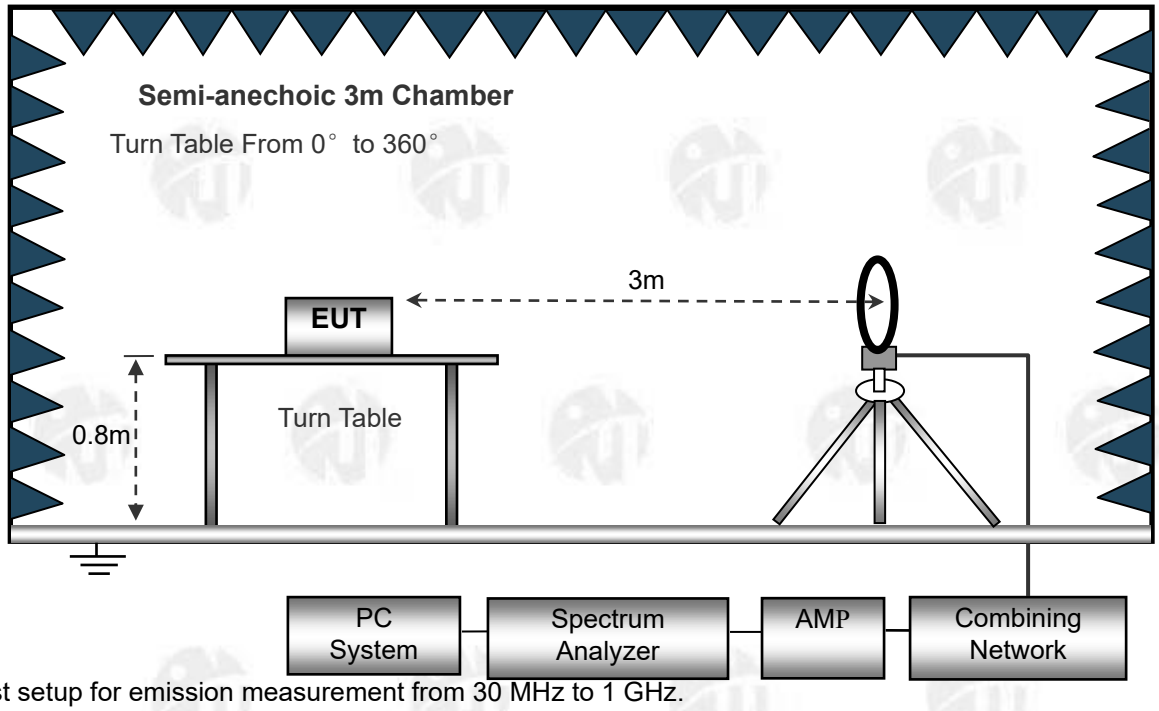
Limit:

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	10000 * 2400/F(kHz)	20log(2400/F(kHz)) + 80
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	20log(24000/F(kHz)) + 40
1.705 ~ 30	30	30	100 * 30	20log(30) + 40
30 ~ 88	100	3	100	20log(100)
88 ~ 216	150	3	150	20log(150)
216 ~ 960	200	3	200	20log(200)
Above 960	500	3	500	20log(500)

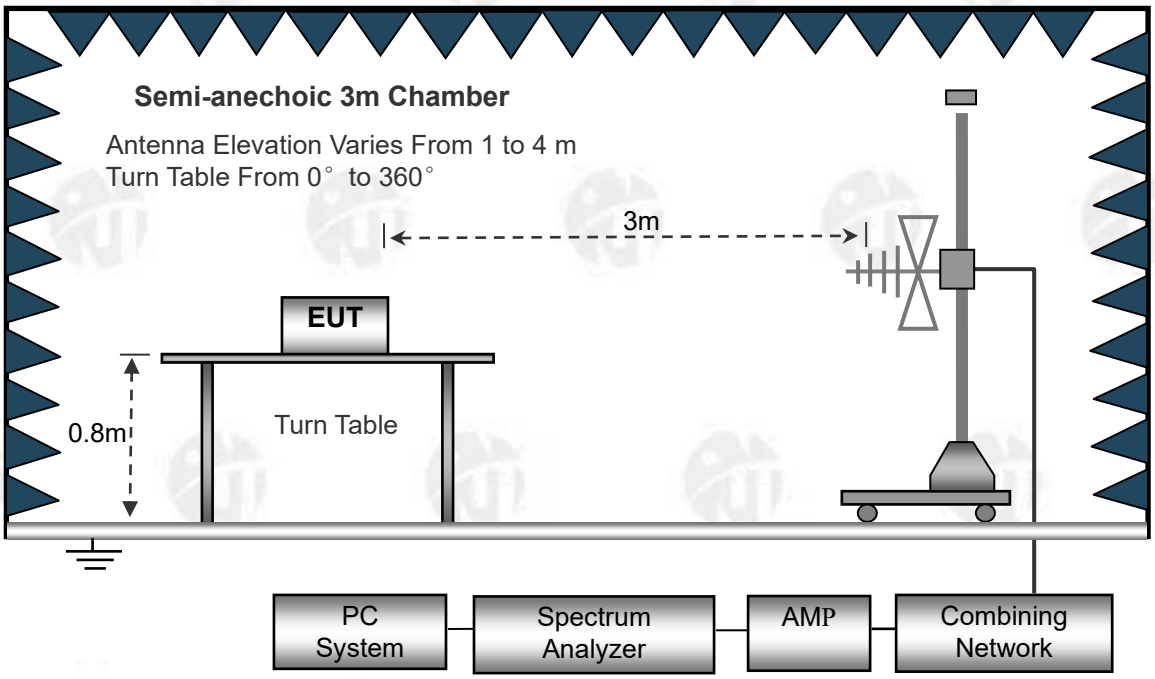
3.2.Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.10.

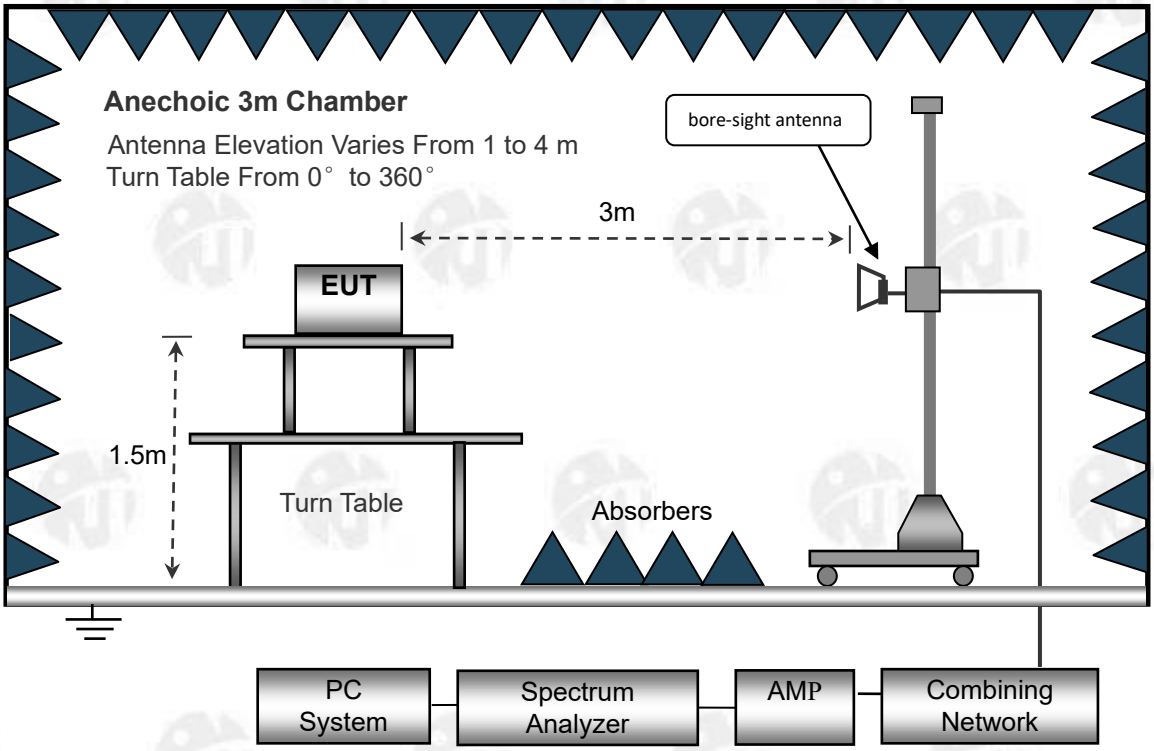
The test setup for emission measurement below 30MHz.

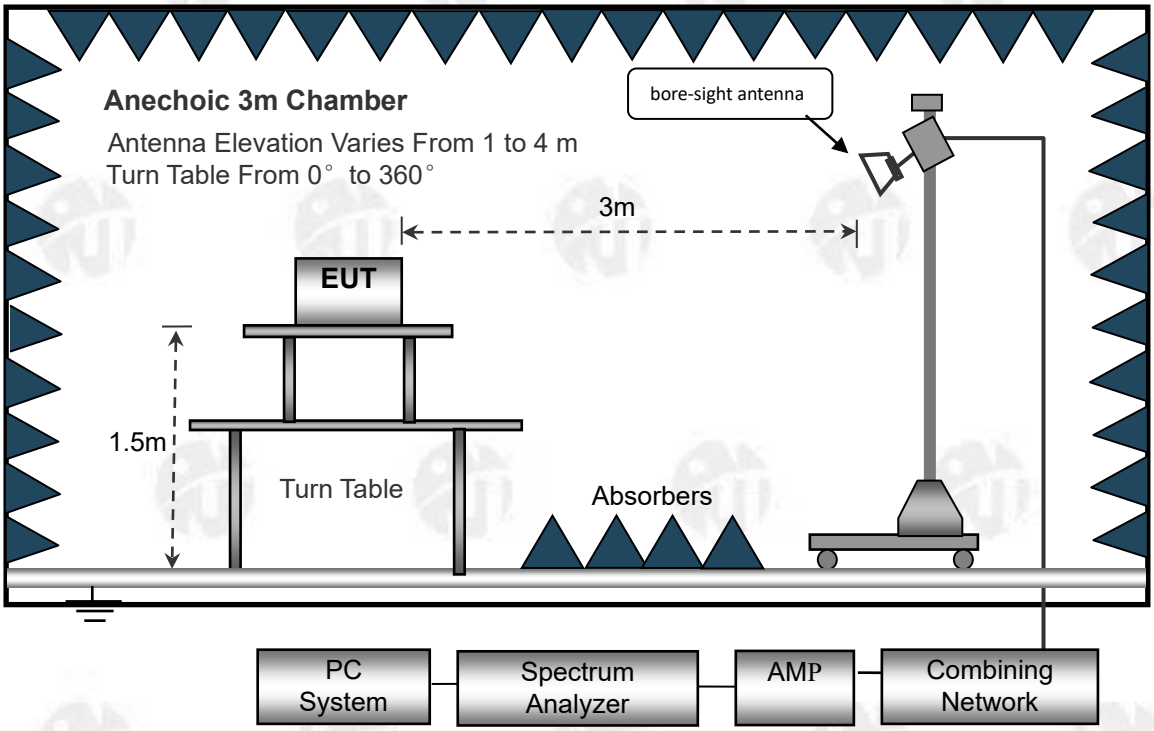


The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.





3.3.Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane for below 1GHz and 1.5m for above 1GHz.

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.

3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.

4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.

5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

6. Repeat above procedures until the measurements for all frequencies are complete.

7. The radiation measurements are performed in X,Y and Z axis positioning(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand),the worst condition was tested putting the eut in Z axis,so the worst data were shown as follow.

8. A 2.4GHz high - pass filter is used druing radiated emissions above 1GHz measurement.

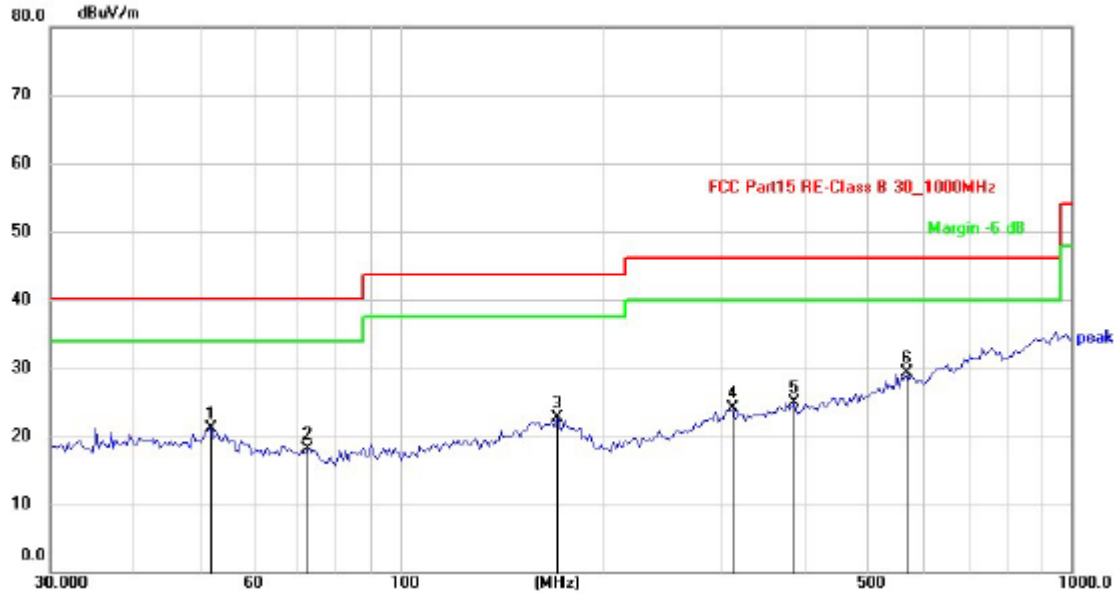
3.4.Test Result

Test Frequency: 9KHz~30MHz

The measurements were more than 20 dB below the limit and not reported.

Test Frequency : 30MHz ~ 1GHz

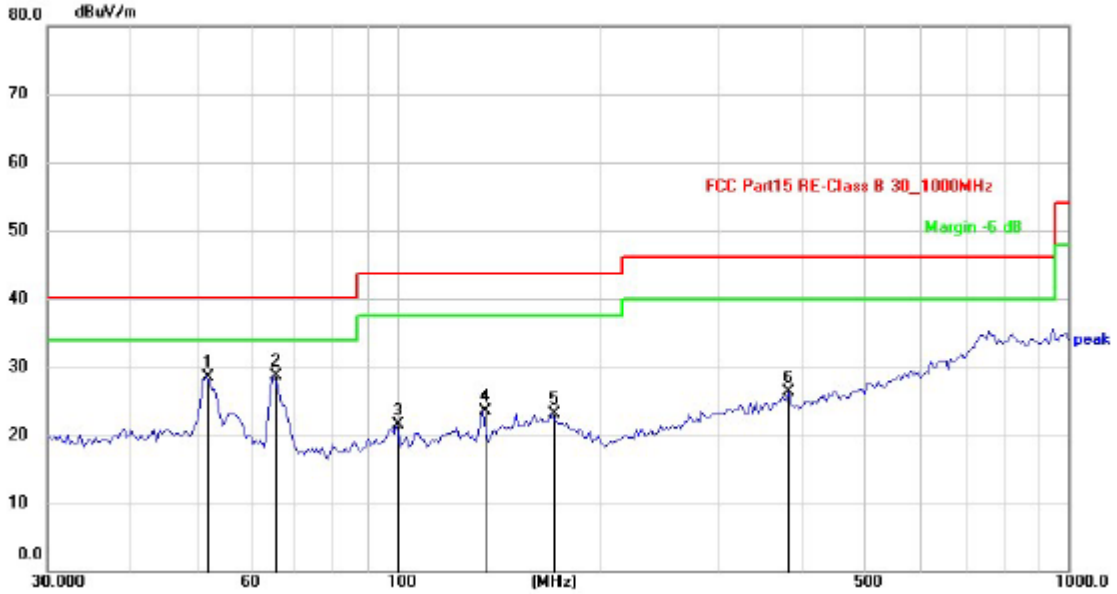
Radiation Emission Test Data			
Temperature:	25.1℃	Relative Humidity:	56%
Pressure:	1008hPa	Phase :	Horizontal
Test Voltage :	DC 3V	Test Mode:	GFSK(CH00)



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		52.1164	27.69	-6.62	21.07	40.00	-18.93	QP
2		72.7190	26.16	-8.09	18.07	40.00	-21.93	QP
3		171.6933	26.13	-3.52	22.61	43.50	-20.89	QP
4		314.3764	26.45	-2.29	24.16	46.00	-21.84	QP
5		387.9919	26.02	-1.09	24.93	46.00	-21.07	QP
6	*	570.6100	26.15	3.09	29.24	46.00	-16.76	QP

Note:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Emission Level = Reading + Factor
Margin=Emission Level-Limit
2. All the modes have tested and recorded the worst mode(GFSK) in the report

Radiation Emission Test Data			
Temperature:	25.1˚C	Relative Humidity:	56%
Pressure:	1008hPa	Phase :	Vertical
Test Voltage :	DC 3V	Test Mode:	GFSK(CH00)



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		51.6616	35.13	-6.58	28.55	40.00	-11.45	QP
2	*	65.4579	36.14	-7.53	28.61	40.00	-11.39	QP
3		99.7028	29.51	-7.94	21.57	43.50	-21.93	QP
4		134.3235	29.26	-5.76	23.50	43.50	-20.00	QP
5		170.1948	26.47	-3.38	23.09	43.50	-20.41	QP
6		384.6055	27.48	-1.15	26.33	46.00	-19.67	QP

Note:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Emission Level = Reading + Factor
Margin=Emission Level-Limit
2. All the modes have tested and recorded the worst mode(GFSK) in the report

1GHz~25GHz

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel: 2402MHz									
V	4804	52.78	50.3	34.07	5.09	41.64	74	-32.36	Pk
V	4804	40.42	38.38	34.07	5.09	41.20	54	-12.80	AV
V	7206	49.13	46.62	32.63	6.34	41.48	74	-32.52	Pk
V	7206	35.84	36.22	32.63	6.34	38.59	54	-15.41	AV
V	9608	48.04	44.04	32.92	7.59	44.51	74	-29.49	Pk
V	9608	34.31	30.94	32.92	7.59	43.88	54	-10.12	AV
V	12010	45.29	41.52	31.96	8.88	44.61	74	-29.39	Pk
V	12010	28.56	30.68	31.96	8.88	38.72	54	-15.28	AV
H	4804	49.18	50.25	34.07	5.09	38.09	74	-35.91	Pk
H	4804	40.24	38.65	34.07	5.09	40.75	54	-13.25	AV
H	7206	48.40	46.69	32.63	6.34	40.68	74	-33.32	Pk
H	7206	33.92	33.84	32.63	6.34	39.05	54	-14.95	AV
H	9608	48.08	43.62	32.92	7.59	44.97	74	-29.03	Pk
H	9608	30.22	30.78	32.92	7.59	39.95	54	-14.05	AV
H	12010	38.31	39.71	31.96	8.88	39.44	74	-34.56	Pk
H	12010	25.66	28.87	31.96	8.88	37.63	54	-16.37	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Middle Channel: 2440MHz									
V	4880	50.37	34.05	5.11	32.61	54.04	74	-19.96	Pk
V	4880	39.29	34.05	5.11	32.61	42.96	54	-11.04	AV
V	7320	45.19	32.67	6.37	35.98	54.87	74	-19.13	Pk
V	7320	36.57	32.67	6.37	35.98	46.25	54	-7.75	AV
V	9760	44.03	32.89	7.6	38.4	57.14	74	-16.86	Pk
V	9760	30.75	32.89	7.6	38.4	43.86	54	-10.14	AV
V	12200	40.88	31.89	8.86	39.06	56.91	74	-17.09	Pk
V	12200	29.60	31.89	8.86	39.06	45.63	54	-8.37	AV
H	4880	48.72	34.05	5.11	32.61	52.39	74	-21.61	Pk
H	4880	39.11	34.05	5.11	32.61	42.78	54	-11.22	AV
H	7320	48.19	32.67	6.37	35.98	57.87	74	-16.13	Pk
H	7320	34.18	32.67	6.37	35.98	43.86	54	-10.14	AV
H	9760	41.99	32.89	7.6	38.4	55.10	74	-18.90	Pk
H	9760	31.10	32.89	7.6	38.4	44.21	54	-9.79	AV
H	12200	40.23	31.89	8.86	39.06	56.26	74	-17.74	Pk
H	12200	28.92	31.89	8.86	39.06	44.95	54	-9.05	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
High Channel: 2480MHz									
V	4960	49.01	34.02	5.15	32.8	52.94	74	-21.06	Pk
V	4960	36.67	34.02	5.15	32.8	40.60	54	-13.40	AV
V	7440	45.59	32.71	6.4	36.05	55.33	74	-18.67	Pk
V	7440	35.43	32.71	6.4	36.05	45.17	54	-8.83	AV
V	9920	40.75	32.86	7.62	38.4	53.91	74	-20.09	Pk
V	9920	30.72	32.86	7.62	38.4	43.88	54	-10.12	AV
V	12400	38.74	31.82	8.84	39.08	54.84	74	-19.16	Pk
V	12400	28.41	31.82	8.84	39.08	44.51	54	-9.49	AV
H	4960	47.48	34.02	5.15	32.8	51.41	74	-22.59	Pk
H	4960	38.09	34.02	5.15	32.8	42.02	54	-11.98	AV
H	7440	45.48	32.71	6.4	36.05	55.22	74	-18.78	Pk
H	7440	32.56	32.71	6.4	36.05	42.30	54	-11.70	AV
H	9920	41.71	32.86	7.62	38.4	54.87	74	-19.13	Pk
H	9920	28.77	32.86	7.62	38.4	41.93	54	-12.07	AV
H	12400	40.32	31.82	8.84	39.08	56.42	74	-17.58	Pk
H	12400	30.19	31.82	8.84	39.08	46.29	54	-7.71	AV

Note: 1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Spurious Emission in Restricted Band 2310-2390MHz and 2483.5-2500MHz

	Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
	High Channel: 2480MHz									
	H	2483.5	57.94	35.11	3.56	27.75	54.14	74	-19.86	PK
	H	2483.5	49.65	35.11	3.56	27.75	45.85	54	-8.15	AV
	H	2500	59.80	35.1	3.57	27.8	56.07	74	-17.93	PK
	H	2500	50.26	35.1	3.57	27.8	46.53	54	-7.47	AV
	V	2483.5	58.01	35.11	3.56	27.75	54.21	74	-19.79	PK
	V	2483.5	51.46	35.11	3.56	27.75	47.66	54	-6.34	AV
	V	2500	60.19	35.1	3.57	27.8	56.46	74	-17.54	PK
	V	2500	51.01	35.1	3.57	27.8	47.28	54	-6.72	AV

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss − Pre-amplifier, Margin= Emission Level - Limit

4. Conducted Spurious Emissions

4.1.Limit

Test Requirement: FCC CFR47 Part 15 Section 15.247
Test Method: KDB 558074 D01 15.247 Meas Guidance v05r02April 2,2019; ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024
Test Result: PASS

Limit:

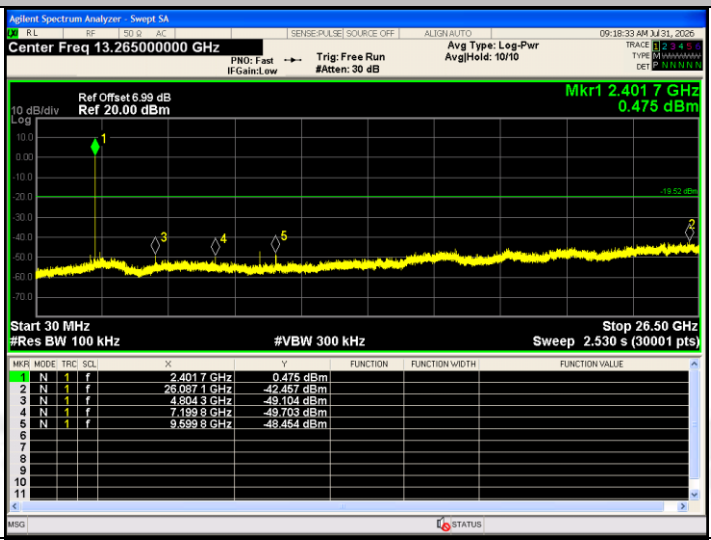
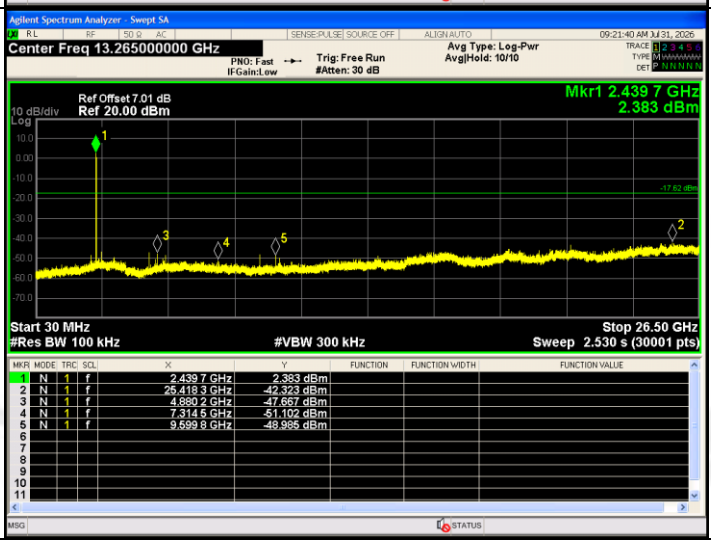
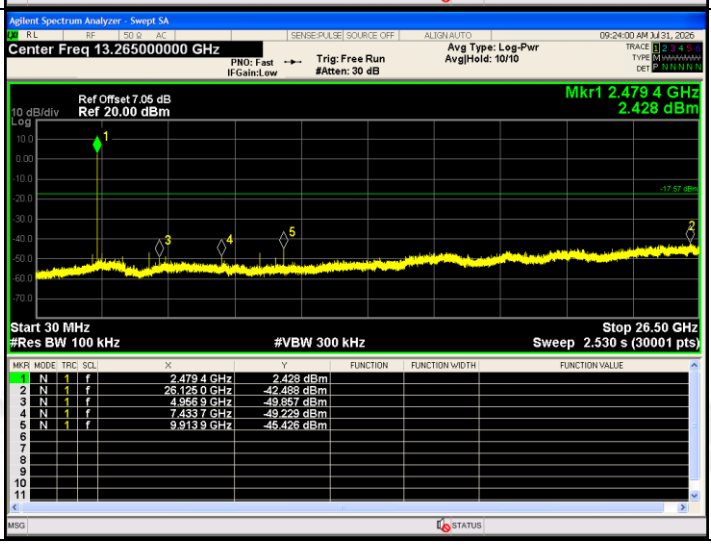
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the 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 Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

4.2.Test Setup

4.3.Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer:
a) Set instrument center frequency to DTS channel center frequency.
b) Set the span to _ 1.5 times the DTS bandwidth.
c) Set the RBW = 100 kHz.
d) Set the VBW _ [3 × RBW].
e) Detector = peak.
f) Sweep time = auto couple.
g) Trace mode = max hold.
h) Allow trace to fully stabilize.
i) 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.

4.4.Test Result

RF Conducted Spurious Emissions Graphs			
GFSK/LCH			
GFSK/MCH			
GFSK/HCH			

5. Band Edge Measurement

5.1.Limit

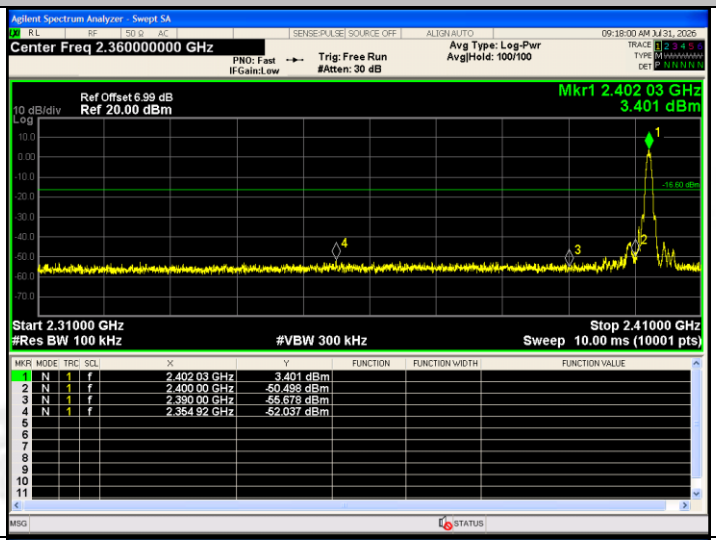
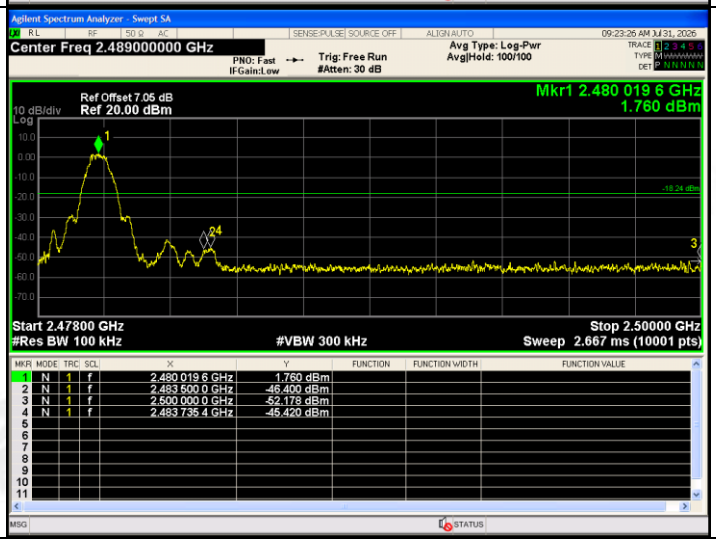
Test Requirement: FCC CFR47 Part 15 Section 15.247
Test Method: KDB 558074 D01 15.247 Meas Guidance v05r02April 2,2019;
ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024
Test Limit: Regulation 15.247 (d),In any 100 kHz bandwidth outside the frequency band which the spread spectrum 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. 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 Mode: Transmitting

5.2.Test setup

5.3.Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

5.4.Test Result

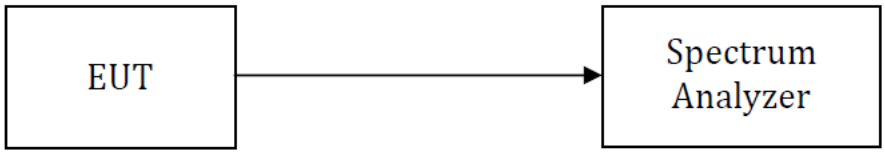
BAND EDGE Graphs			
GFSK/LCH			
GFSK/HCH			

6. -6 dB Bandwidth and 99% Bandwidth Measurement

6.1.Limit

Test Requirement: FCC CFR47 Part 15 Section 15.247
Test Method: KDB 558074 D01 15.247 Meas Guidance v05r02April 2,2019;
ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024

6.2.Test Setup



6.3.Test Procedure

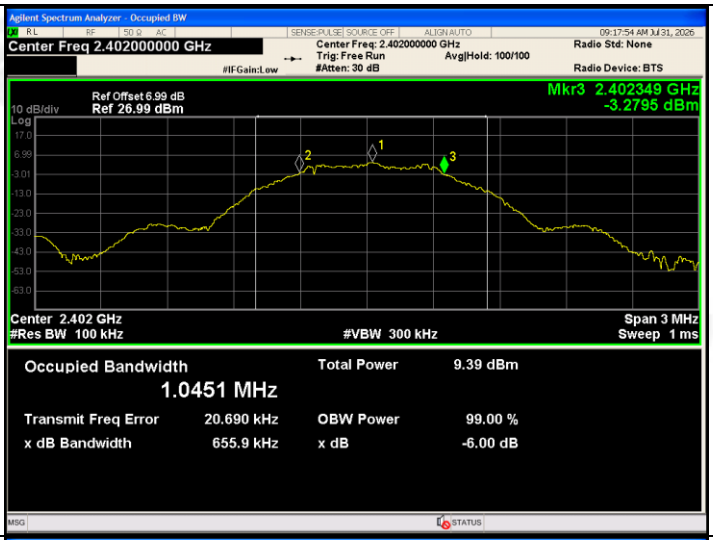
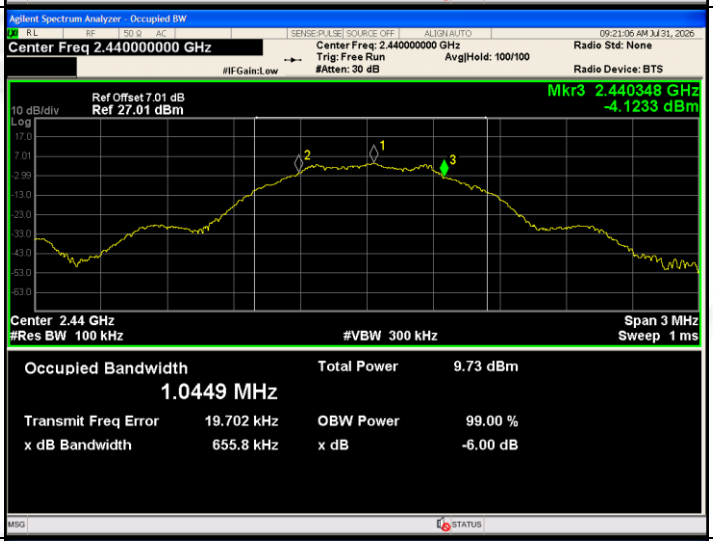
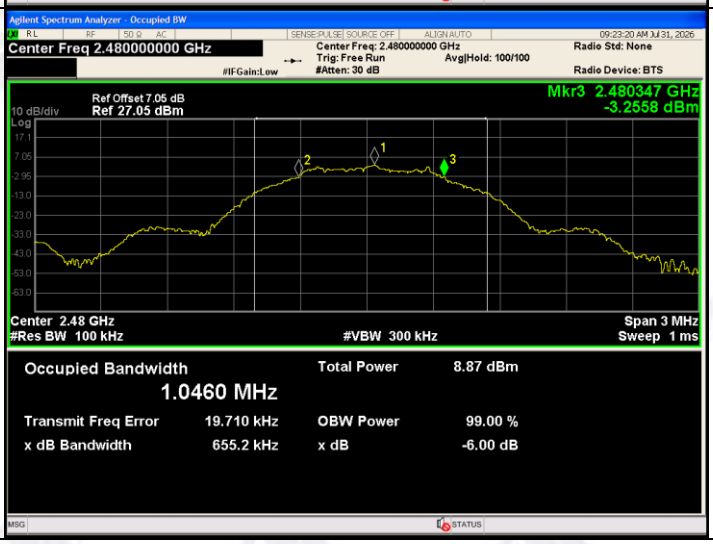
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz

6.4.Test Result

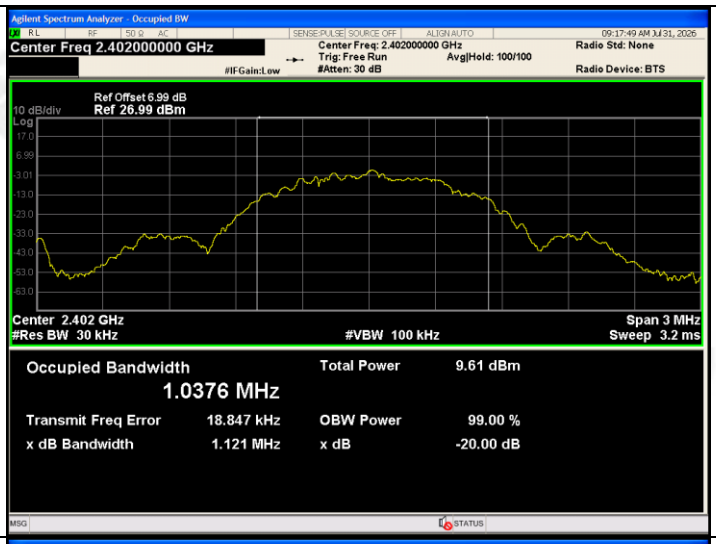
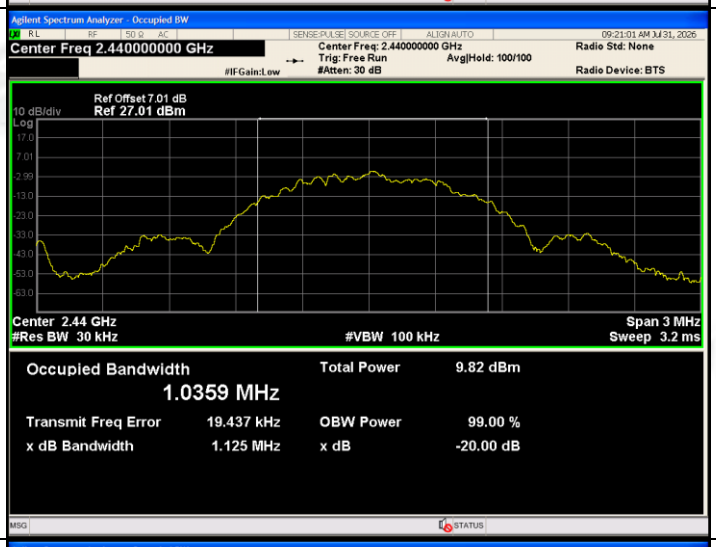
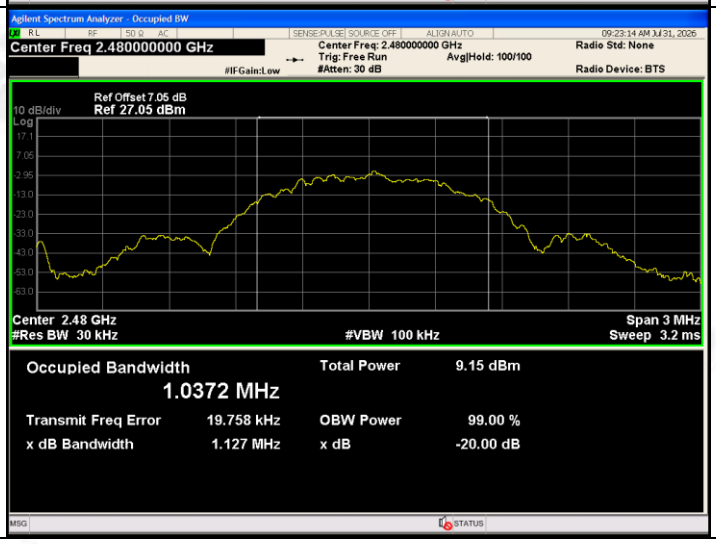
Test Mode	Frequency	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (kHz)	Result
GFSK	Low channel	0.656	1.0376	>= 500	PASS
	Mid channel	0.656	1.0359	>= 500	PASS
	High channel	0.655	1.0372	>= 500	PASS

Note: All modes of operation were Pre-scan and the worst-case emissions are reported.

Test Graph:
6dB Bandwidth

GFSK Low channel			
GFSK Mid channel			
GFSK High channel			

99% Bandwidth

GFSK Low channel			
GFSK Mid channel			
GFSK High channel			

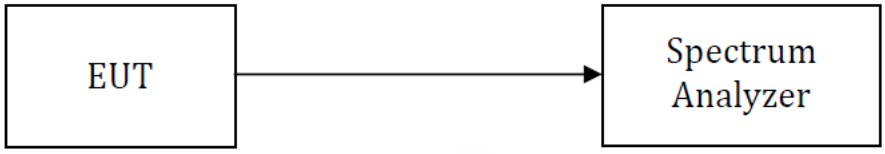
7. Maximum Peak Output Power

7.1.Limit

Test Requirement: FCC CFR47 Part 15 Section 15.247
Test Method: KDB 558074 D01 15.247 Meas Guidance v05r02April 2,2019;
ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

7.2.Test Setup



7.3.Test Procedure

KDB 558074 D01 15.247 Meas Guidance v05r02April 2,2019
section 8.3.1.1 (For BLE)
This procedure shall be used when the measurement instrument has available a resolution bandwidth that is greater than the DTS bandwidth.
a)Set the RBW ⩾ DTS bandwidth.
b)Set VBW ⩾ 3 RBW.
c)Set span ⩾ 3 x RBW
d)Sweep time = auto couple.
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.
section 8.3.1.2 (For WIFI)
This procedure may be used when the maximum available RBW of the measurement instrument is less than the DTS bandwidth.
a)Set the RBW = 1% to 5% of the OBW, not to exceed 1 MHz..
b)Set the VBW ⩾ 3 x RBW
c)Set the span ⩾ 1.5 x OBW.
d)Detector = RMS.
e)Sweep time = auto couple.
f) trigger = free run..
g) Number of points in sweep _ [2 × span / RBW]. (This gives bin-to-bin spacing _ RBW / 2, so that narrowband signals are not lost between frequency bins.)
h) Trace average at least 100 traces in power averaging (rms) mode.
i) Compute power by integrating the spectrum across the OBW of the signal using the instrument’s band power measurement function, with band limits set equal to the OBW band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

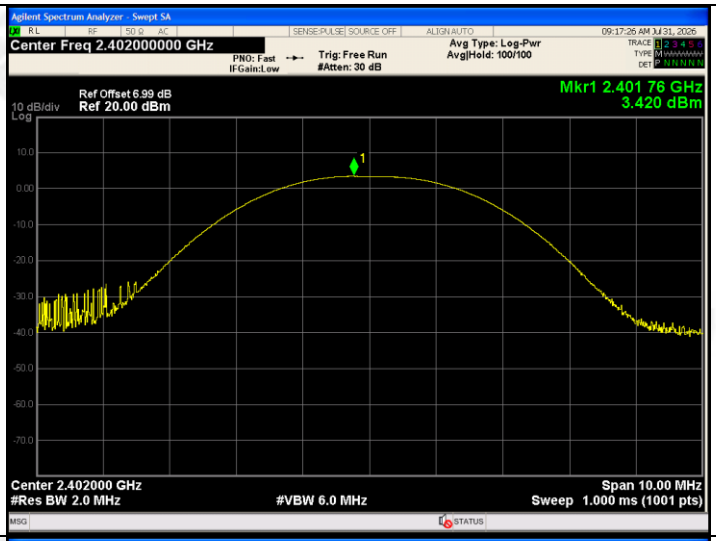
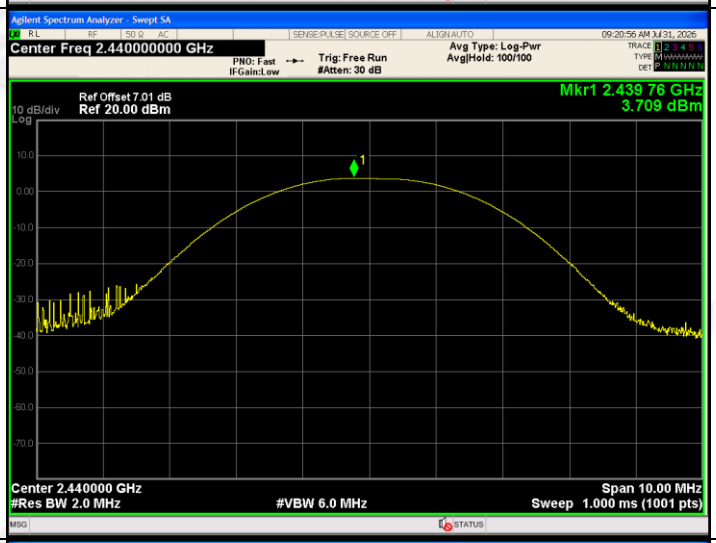
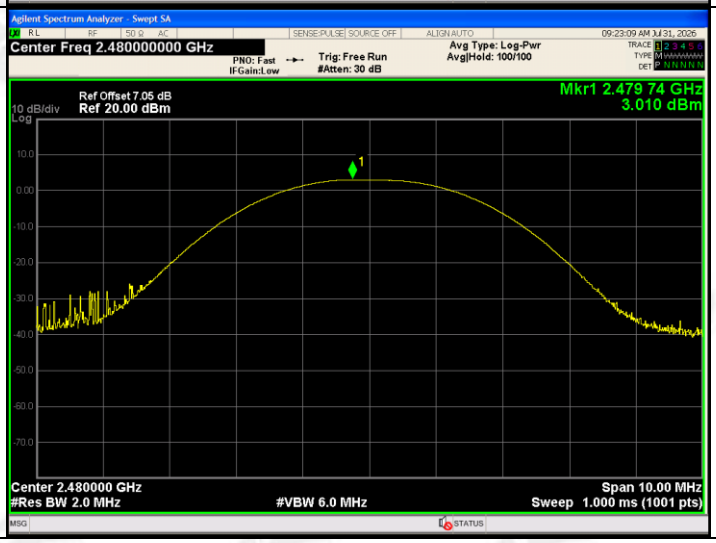
7.4.Test Result

Mode	Channel.	Maximum Output Power [dBm]	Limit[dBm]	Verdict
GFSK	LCH	3.42	30	PASS
	MCH	3.709	30	PASS
	HCH	3.01	30	PASS

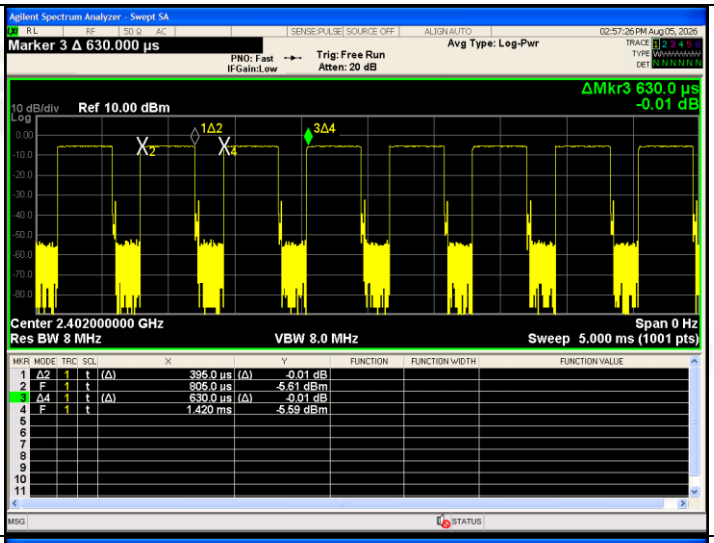
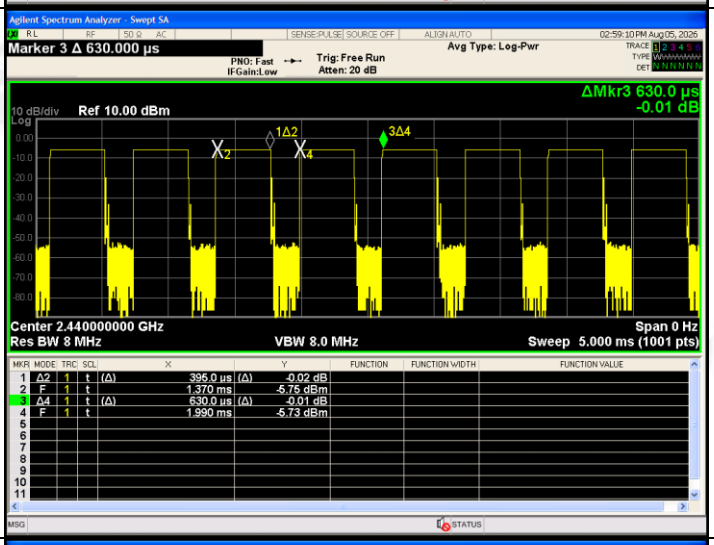
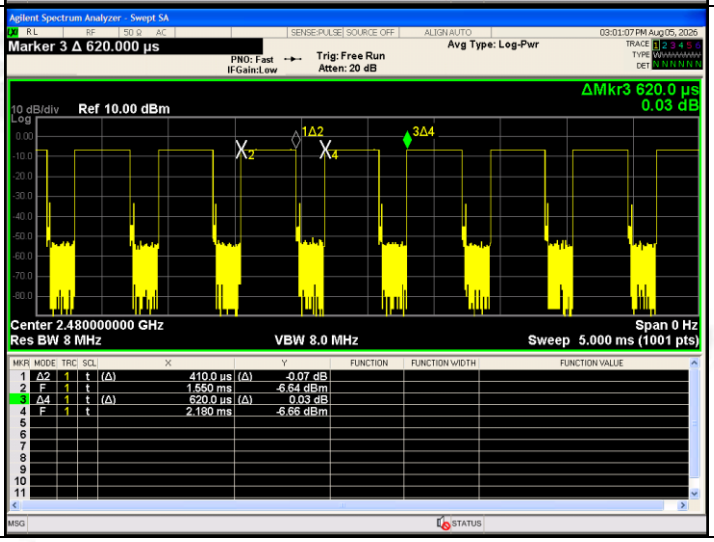
Duty Cycle

Mode	Channel.	Duty Cycle(%)	Correction Factor (dB)
GFSK	LCH	62.70	2.81
	MCH	62.70	2.65
	HCH	66.13	2.39

Test Graph:

GFSK Low channel			
GFSK Mid channel			
GFSK High channel			

Duty Cycle:

GFSK Low channel			
GFSK Mid channel			
GFSK High channel			

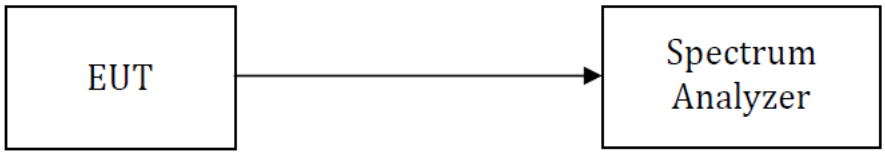
8. Power Spectral density

8.1.Limit

Test Requirement: FCC CFR47 Part 15 Section 15.247
Test Method: KDB 558074 D01 15.247 Meas Guidance v05r02April 2,2019;
ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8dBm/3kHz	2400-2483.5	PASS

8.2.Test Setup



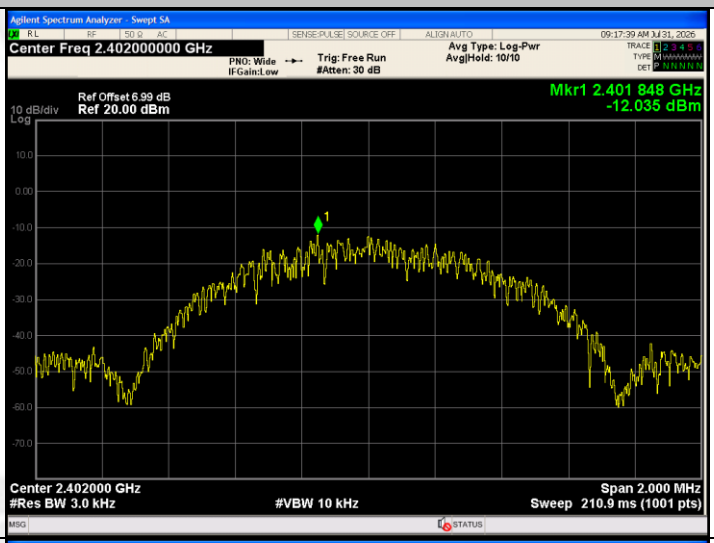
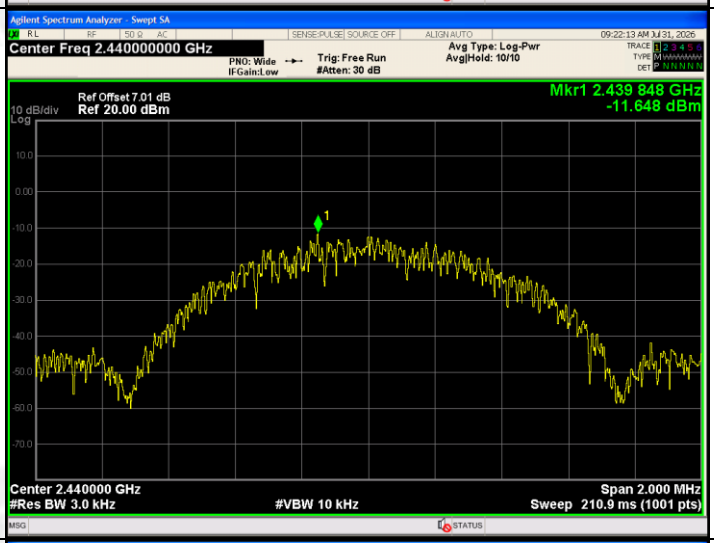
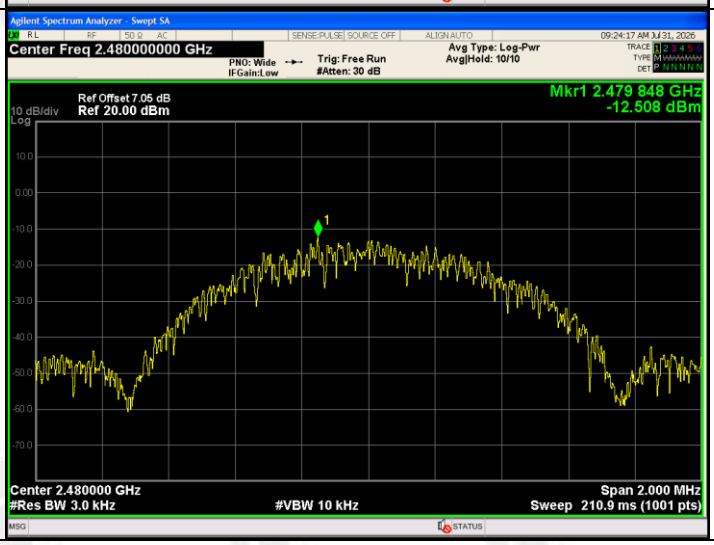
8.3.Test Procedure

KDB 558074 D01 15.247 Meas Guidance v05r02April 2,2019
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 3kHz. VBW = 10kHz , Span = 1.5 times the DTS channel bandwidth(6 dB bandwidth). Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

8.4.Test Result

Mode	Channel.	Power Spectral Density (dBm/3kHz)	Limit(dBm/3kHz)	Verdict
GFSK	LCH	-12.035	8	PASS
	MCH	-11.648	8	PASS
	HCH	-12.508	8	PASS

Test Graph:

Graphs			
GFSK/LCH			
GFSK/MCH			
GFSK/HCH			

9. Antenna Requirement

According to the FCC Part 15 Paragraph 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. This product has an integrated antenna fulfill the requirement of this section.

This product has an PCB antenna, and the maximum antenna gain is 2.85dBi, fulfill the requirement of this section.

10. TEST SETUP & EUT PHOTOGRAPH

Please see the attachment for details.

---------- End of Report ----------