

TEST REPORT

Applicant : Shenzhen ChangYun Technology CO., LTD

Address : 14, Building 2, Kaidal Group Center Building, No. 168 Tongsha Road, Xinwei Community, Xili Street, Nanshan District, Shenzhen

Manufacturer : Shenzhen ChangYun Technology CO., LTD

Address : 14, Building 2, Kaidal Group Center Building, No. 168 Tongsha Road, Xinwei Community, Xili Street, Nanshan District, Shenzhen

Product Name : Gaming Headset

Model Number : GX1, GX1 PRO, GX1 PRO MAX, GX2, GX2 PRO, GX2 PRO MAX, GX3, GX3 PRO, GX3 PRO MAX, GX4, GX4 PRO, GX4 PRO MAX, GX5, GX5 PRO, GX5 PRO MAX, GX6, GX6 PRO MAX, GX7, GX7 PRO, GX7 PRO MAX

Trademark : Epomaker

FCC ID : 2BN64-GX1

Test Date : Aug. 10, 2026 to Sep. 07, 2026

Date of Report : Sep. 07, 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

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Revision History of This Test Report

Report Number	Description	Issued Date
SZNTT26039393E1-1	Initial Issue	2026-09-07

1. General Information

1.1. Description of Device (EUT)

EUT Name : Gaming Headset
 Model No. : GX1, GX1 PRO, GX1 PRO MAX, GX2, GX2 PRO, GX2 PRO MAX, GX3, GX3 PRO, GX3 PRO MAX, GX4, GX4 PRO, GX4 PRO MAX, GX5, GX5 PRO, GX5 PRO MAX, GX6, GX6 PRO MAX, GX7, GX7 PRO, GX7 PRO MAX
 Model Difference : All the model are the same circuit and RF module, only the model names are different. Test sample model: GX1
 Power supply : DC 5V charging from adapter
 DC 3.7V by battery
 Operation frequency : 2402-2480MHz
 Modulation : GFSK
 Antenna Type : Chip antenna, Maximum Gain is 2.7dBi
 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	PASS
Conducted Peak Output Power	FCC part 15.247 (b)(1)	PASS
Channel Bandwidth	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	/	/	/	/
cable	/	/	/	/

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	FCC_assist 1.0.1.1
Power level setup	default

1.7. Block Diagram

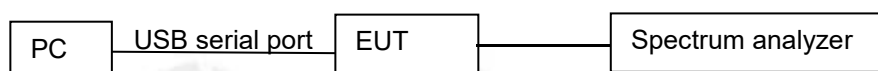
Conducted Emission



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

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℃
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 4.2.1 of 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

Conducted Test Site

Name	Model No.	Serial No.	Manufacturer	Date of Cal.	Due Date
944 Shielded Room	HSRCE944	/	HTEC	2025/4/30	2028/4/29
EMI Test Receiver	ESCI	100881/003	ROHDE&SCHWARZ	2025/09/08 2026/09/04	2026/09/07 2027/09/03
LISN	AMN6500	101185	ROHDE&SCHWARZ	2025/09/08 2026/09/04	2026/09/07 2027/09/03
LISN	NNLK 8129	00603	SCHWARZBECK	2025/09/08 2026/09/04	2026/09/07 2027/09/03
Pulse Limiters	VTSD 9561 F	00343	SCHWARZBECK	2025/09/08 2026/09/04	2026/09/07 2027/09/03
Cable	RG223-2M	/	RG	2025/09/08 2026/09/04	2026/09/07 2027/09/03

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	ESPI	101018	ROHDE&SCHWARZ	2025/09/08 2026/09/04	2026/09/07 2027/09/03
Amplifier (30MHz-1GHz)	BBV 9745	00431	SCHWARZBECK	2025/09/08 2026/09/09	2026/09/07 2027/09/08
Bilog Antenna (30MHz-1GHz)	VULB9168	1858	SCHWARZBECK	2025/09/09 2026/09/05	2026/09/08 2027/09/04
Horn antenna (1GHz-18GHz)	BBHA 9120 D	02622	SCHWARZBECK	2025/09/09 2026/09/05	2026/09/08 2027/09/04
Preamplifier (1GHz-18GHz)	BBV 9718D	0024	SCHWARZBECK	2025/09/08 2026/09/04	2026/09/07 2027/09/03
Spectrum Analyzer (10Hz-40GHz)	FSV 40	100952	ROHDE&SCHWARZ	2025/09/08 2026/09/04	2026/09/07 2027/09/03
Preamplifier (18GHz-40GHz)	BBV 9721	0056	SCHWARZBECK	2025/09/08 2026/09/04	2026/09/07 2027/09/03
Double Ridge Guide Horn Antenna (18GHz-40GHz)	SAS-574	588	A.H.System	2025/09/09 2026/09/05	2026/09/08 2027/09/04
Loop Antenna (9KHz-30MHz)	FMZB 1513-60	00115	SCHWARZBECK	2025/09/08 2026/09/04	2026/09/07 2027/09/03
MXG Signal Analyzer	N9020A	MY49100730	Agilent	2025/09/08 2026/09/04	2026/09/07 2027/09/03
MXG Vector Signal Generator	N5182A	MY50144920	Agilent	2025/09/08 2026/09/04	2026/09/07 2027/09/03
WIDEBAND RADIO COMMUNICATION TESTER	CMW500	/	ROHDE&SCHWARZ	2025/09/08 2026/09/07	2026/09/07 2027/09/06

Power Sensor	MW100-RFC B-2	MW260105N TT-64	MWRFTtest	2025/09/08 2026/09/04	2026/09/07 2027/09/03
RF Swith	MW100-RFC B-1	MW260105N TT-64	MWRFTtest	2025/09/08 2026/09/04	2026/09/07 2027/09/03
Cable	RG223-3M	/	DA	2025/09/08 2026/09/04	2026/09/07 2027/09/03
Cable	RG223-12M	/	DA	2025/09/08 2026/09/04	2026/09/07 2027/09/03
Cable	SFT205-NM NMSW-2.5M	/	DA	2025/09/08 2026/09/04	2026/09/07 2027/09/03
Cable	SFT205-NM NM-12M	/	DA	2025/09/08 2026/09/04	2026/09/07 2027/09/03
Cable	UCA500-NJ WSM-1.5M	017	MWRFTtest	2025/09/08 2026/09/04	2026/09/07 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	RFTtest	V1.0.0
4	RF communication test system	TACHOY	RFTtest	V1.0.0

2. Conducted emission at the mains terminals test

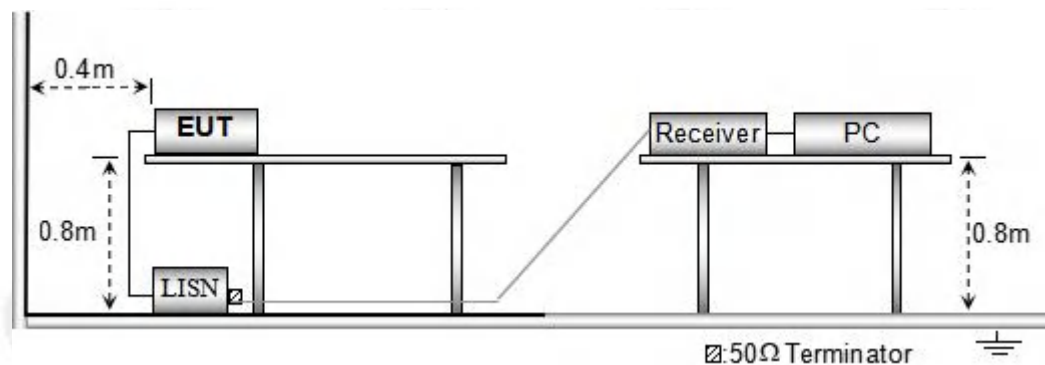
2.1.Limit

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

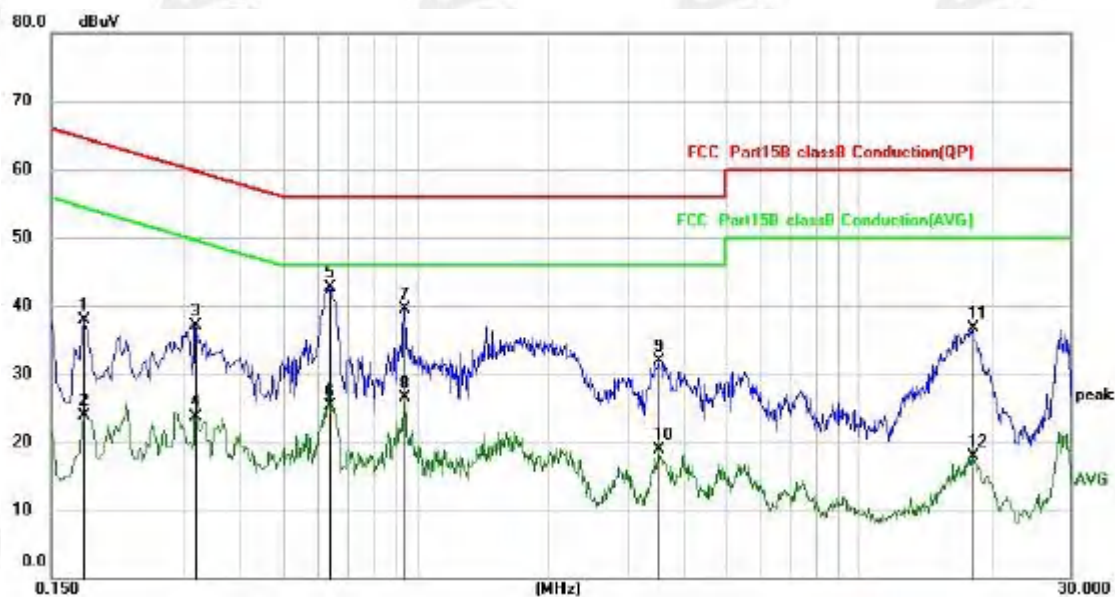


2.3.Test Procedure

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

Conducted Emission At The Mains Terminals Test Data			
Temperature:	25.1℃	Relative Humidity:	56%
Pressure:	1008hPa	Phase :	Line
Test Voltage :	DC 5V from Adapter Input AC 120V/60Hz	Test Mode:	GFSK(CH00)

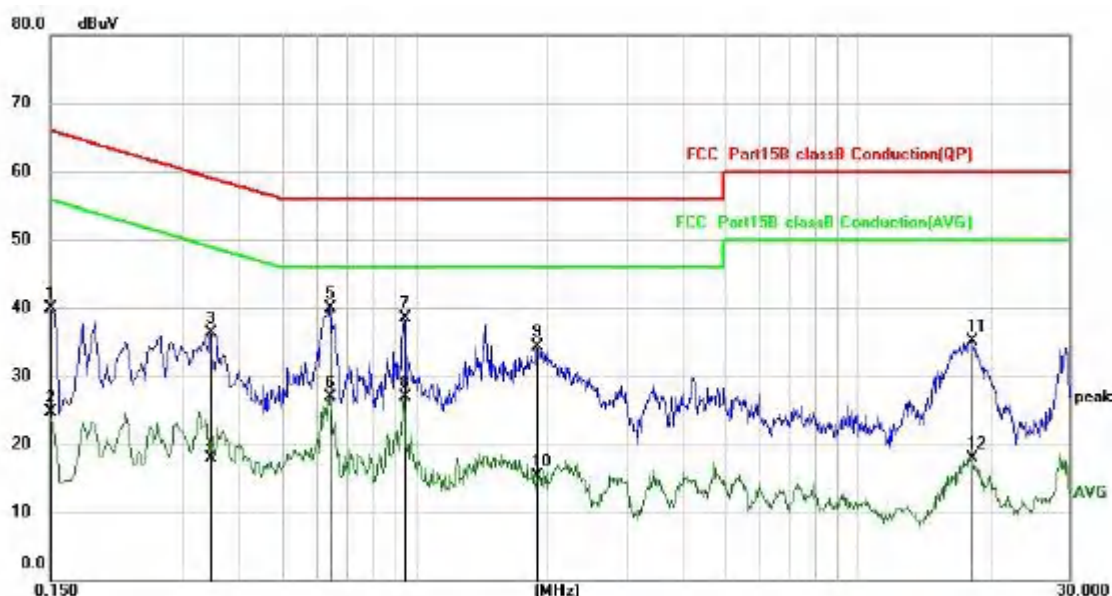


No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1	0.1780	27.18	10.81	37.99	64.58	-26.59	QP
2	0.1780	13.10	10.81	23.91	54.58	-30.67	AVG
3	0.3180	26.44	10.65	37.09	59.76	-22.67	QP
4	0.3180	13.02	10.65	23.67	49.76	-26.09	AVG
5 *	0.6380	32.31	10.46	42.77	56.00	-13.23	QP
6	0.6380	14.78	10.46	25.24	46.00	-20.76	AVG
7	0.9420	29.10	10.46	39.56	56.00	-16.44	QP
8	0.9420	16.12	10.46	26.58	46.00	-19.42	AVG
9	3.5380	21.45	10.49	31.94	56.00	-24.06	QP
10	3.5380	8.49	10.49	18.98	46.00	-27.02	AVG
11	17.9779	25.85	10.84	36.69	60.00	-23.31	QP
12	17.9779	7.02	10.84	17.86	50.00	-32.14	AVG

Note:

1. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
2. Margin = Reading level + Correct Factor - Limit
3. All the modes have tested and recorded the worst mode(GFSK) in the report

Conducted Emission At The Mains Terminals Test Data			
Temperature:	25.1°C	Relative Humidity:	56%
Pressure:	1008hPa	Phase :	Neutral
Test Voltage :	DC 5V from Adapter Input AC 120V/60Hz	Test Mode:	GFSK(CH00)



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.1500	29.00	10.88	39.88	66.00	-26.12	QP
2		0.1500	13.91	10.88	24.79	56.00	-31.21	AVG
3		0.3460	25.59	10.62	36.21	59.06	-22.85	QP
4		0.3460	7.38	10.62	18.00	49.06	-31.06	AVG
5 *		0.6419	29.41	10.46	39.87	56.00	-16.13	QP
6		0.6419	16.38	10.46	26.84	46.00	-19.16	AVG
7		0.9460	28.09	10.46	38.55	56.00	-17.45	QP
8		0.9460	16.41	10.46	26.87	46.00	-19.13	AVG
9		1.8860	23.77	10.47	34.24	56.00	-21.76	QP
10		1.8860	4.87	10.47	15.34	46.00	-30.66	AVG
11		17.9580	24.31	10.84	35.15	60.00	-24.85	QP
12		17.9580	7.01	10.84	17.85	50.00	-32.15	AVG

Note:

1. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
2. Margin = Reading level + Correct Factor - Limit
3. All the modes have tested and recorded the worst mode(GFSK) in the report

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 v05r02 April 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

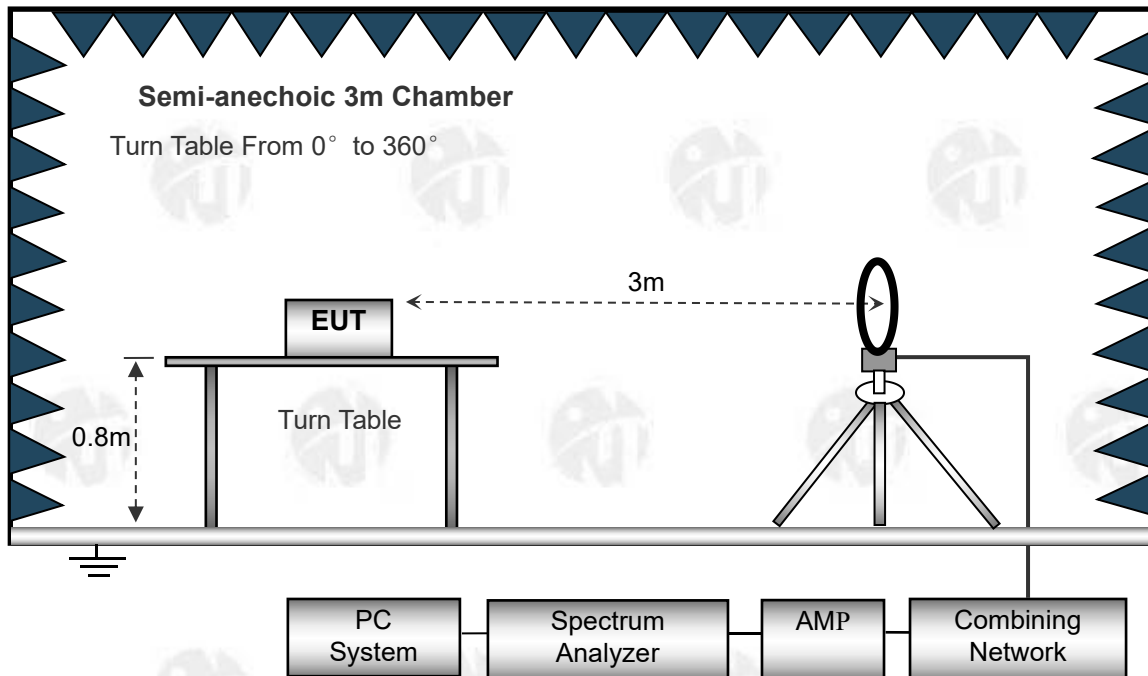
Limit:

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	$10000 * 2400/F(kHz)$	$20\log(2400/F(kHz)) + 80$
0.490 ~ 1.705	24000/F(kHz)	30	$100 * 24000/F(kHz)$	$20\log(24000/F(kHz)) + 40$
1.705 ~ 30	30	30	$100 * 30$	$20\log(30) + 40$
30 ~ 88	100	3	100	$20\log(100)$
88 ~ 216	150	3	150	$20\log(150)$
216 ~ 960	200	3	200	$20\log(200)$
Above 960	500	3	500	$20\log(500)$

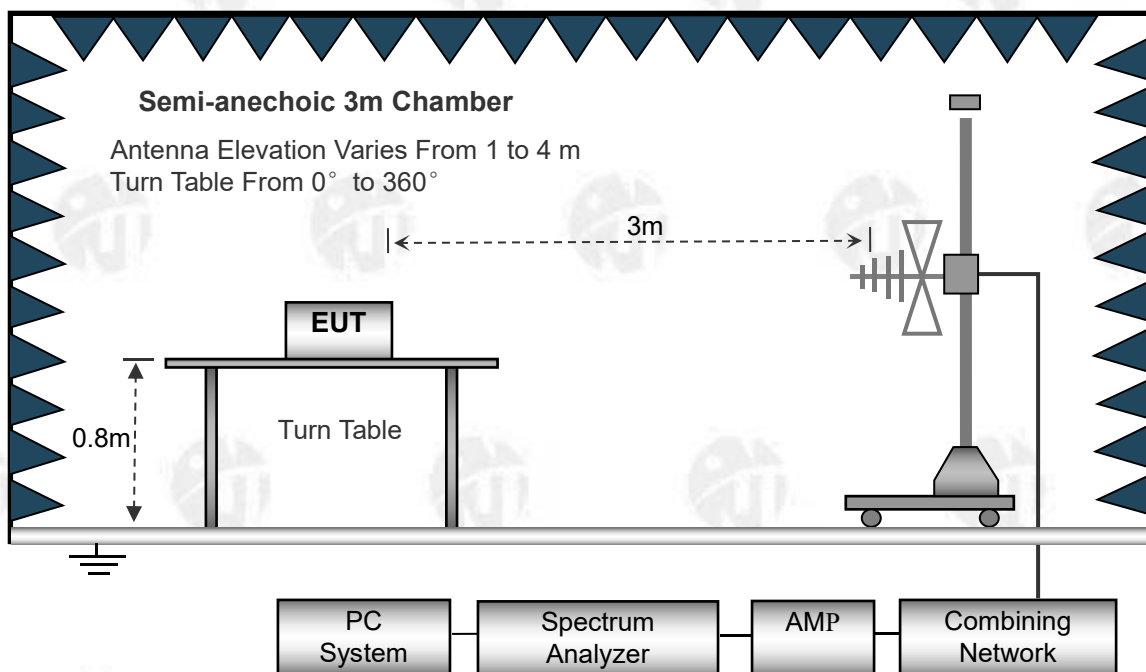
3.2.Test Setup

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

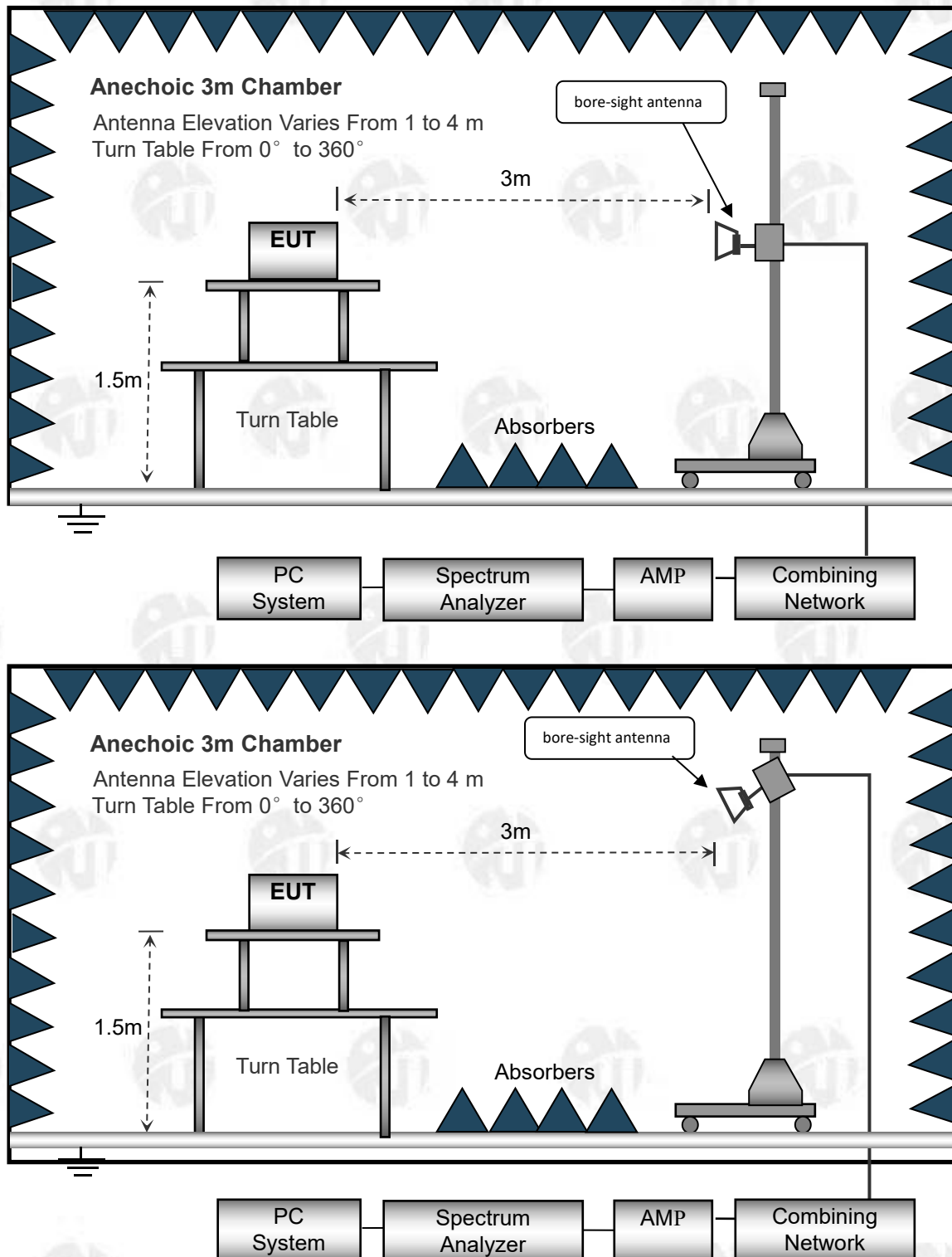
The test setup for emission measurement below 30MHz.



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 during radiated emissions above 1GHz measurement.

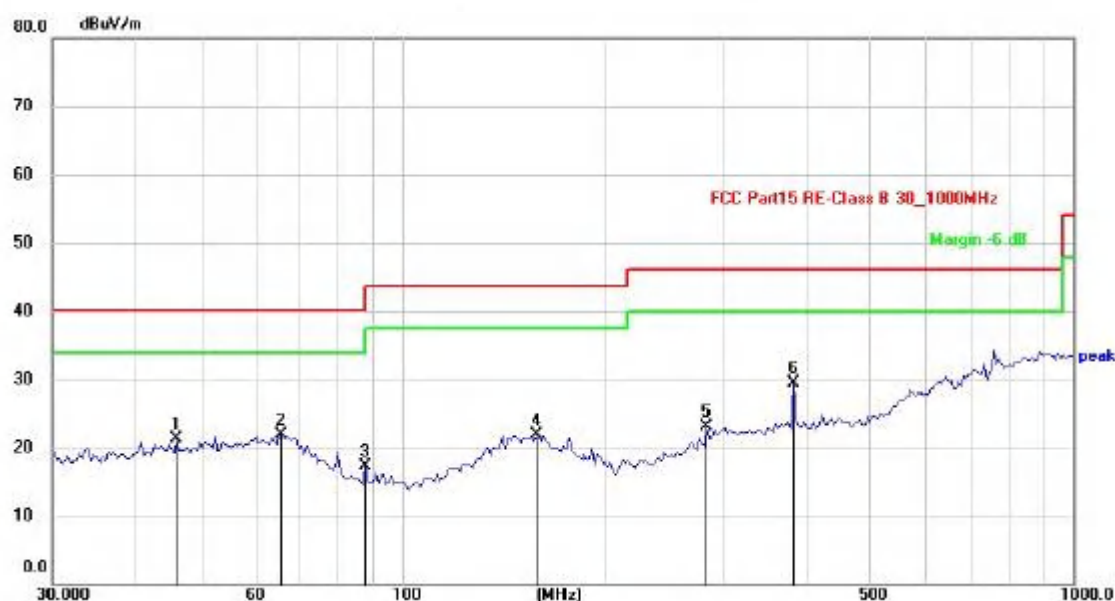
3.4.Test Result

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 3.7V by battery	Test Mode:	GFSK(CH00)



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		46.0971	26.90	-5.62	21.28	40.00	-18.72	QP
2		66.0342	26.93	-5.02	21.91	40.00	-18.09	QP
3		88.1873	27.44	-10.20	17.24	43.50	-26.26	QP
4		158.6677	26.16	-4.25	21.91	43.50	-21.59	QP
5		285.4768	27.33	-4.16	23.17	46.00	-22.83	QP
6	*	384.6055	31.63	-2.06	29.57	46.00	-16.43	QP

Note:

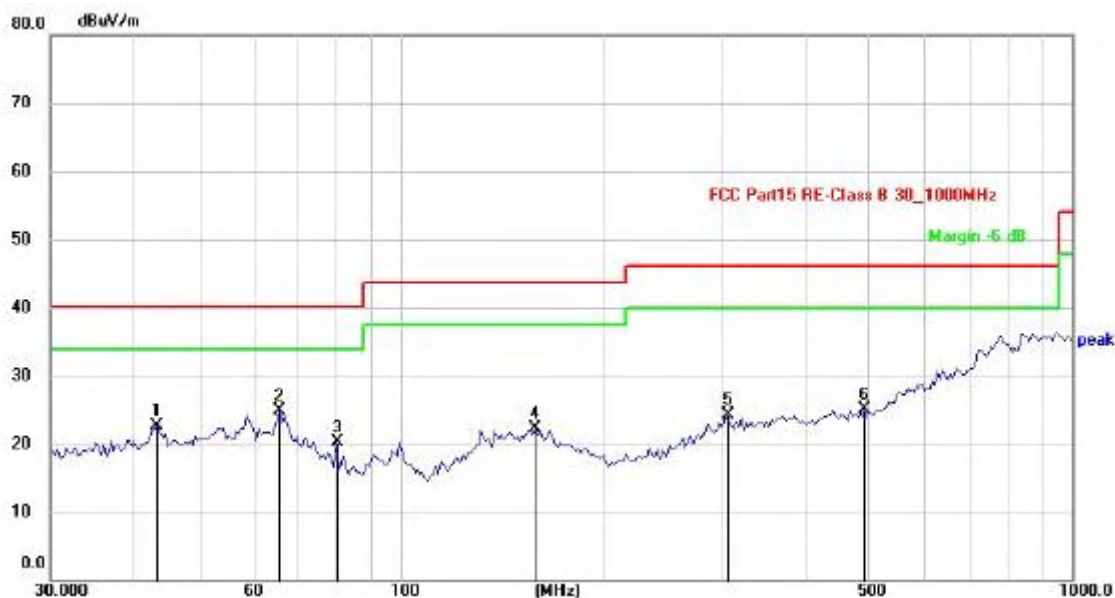
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

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 3.7V by battery	Test Mode:	GFSK(CH00)



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		43.3534	28.58	-5.81	22.77	40.00	-17.23	QP
2	*	66.0342	29.91	-5.02	24.89	40.00	-15.11	QP
3		80.0806	29.13	-8.73	20.40	40.00	-19.60	QP
4		158.6677	26.65	-4.25	22.40	43.50	-21.10	QP
5		306.2164	27.55	-3.21	24.34	46.00	-21.66	QP
6		487.3151	26.24	-1.11	25.13	46.00	-20.87	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	Meter Reading	Pre-ampli fier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel: 2402MHz									
V	4804	52.13	50.3	34.07	5.09	40.99	74	-33.01	Pk
V	4804	39.56	38.38	34.07	5.09	40.34	54	-13.66	AV
V	7206	50.45	46.62	32.63	6.34	42.80	74	-31.20	Pk
V	7206	34.61	36.22	32.63	6.34	37.36	54	-16.64	AV
V	9608	47.30	44.04	32.92	7.59	43.77	74	-30.23	Pk
V	9608	33.94	30.94	32.92	7.59	43.51	54	-10.49	AV
V	12010	44.91	41.52	31.96	8.88	44.23	74	-29.77	Pk
V	12010	27.55	30.68	31.96	8.88	37.71	54	-16.29	AV
H	4804	49.76	50.25	34.07	5.09	38.67	74	-35.33	Pk
H	4804	41.10	38.65	34.07	5.09	41.61	54	-12.39	AV
H	7206	47.65	46.69	32.63	6.34	39.93	74	-34.07	Pk
H	7206	32.16	33.84	32.63	6.34	37.29	54	-16.71	AV
H	9608	47.47	43.62	32.92	7.59	44.36	74	-29.64	Pk
H	9608	31.18	30.78	32.92	7.59	40.91	54	-13.09	AV
H	12010	38.23	39.71	31.96	8.88	39.36	74	-34.64	Pk
H	12010	26.14	28.87	31.96	8.88	38.11	54	-15.89	AV

Polar (H/V)	Frequency	Meter Reading	Pre-ampli fier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Middle Channel: 2440MHz									
V	4880	50.11	34.05	5.11	32.61	53.78	74	-20.22	Pk
V	4880	39.10	34.05	5.11	32.61	42.77	54	-11.23	AV
V	7320	45.52	32.67	6.37	35.98	55.20	74	-18.80	Pk
V	7320	35.73	32.67	6.37	35.98	45.41	54	-8.59	AV
V	9760	42.76	32.89	7.6	38.4	55.87	74	-18.13	Pk
V	9760	31.16	32.89	7.6	38.4	44.27	54	-9.73	AV
V	12200	41.95	31.89	8.86	39.06	57.98	74	-16.02	Pk
V	12200	29.19	31.89	8.86	39.06	45.22	54	-8.78	AV
H	4880	49.99	34.05	5.11	32.61	53.66	74	-20.34	Pk
H	4880	38.68	34.05	5.11	32.61	42.35	54	-11.65	AV
H	7320	48.12	32.67	6.37	35.98	57.80	74	-16.20	Pk
H	7320	33.96	32.67	6.37	35.98	43.64	54	-10.36	AV
H	9760	43.29	32.89	7.6	38.4	56.40	74	-17.60	Pk
H	9760	30.55	32.89	7.6	38.4	43.66	54	-10.34	AV
H	12200	39.02	31.89	8.86	39.06	55.05	74	-18.95	Pk
H	12200	29.51	31.89	8.86	39.06	45.54	54	-8.46	AV

Polar (H/V)	Frequency	Meter Reading	Pre-ampli fier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
High Channel: 2480MHz									
V	4960	48.06	34.02	5.15	32.8	51.99	74	-22.01	Pk
V	4960	35.51	34.02	5.15	32.8	39.44	54	-14.56	AV
V	7440	44.30	32.71	6.4	36.05	54.04	74	-19.96	Pk
V	7440	36.04	32.71	6.4	36.05	45.78	54	-8.22	AV
V	9920	41.89	32.86	7.62	38.4	55.05	74	-18.95	Pk
V	9920	30.16	32.86	7.62	38.4	43.32	54	-10.68	AV
V	12400	38.40	31.82	8.84	39.08	54.50	74	-19.50	Pk
V	12400	27.01	31.82	8.84	39.08	43.11	54	-10.89	AV
H	4960	48.83	34.02	5.15	32.8	52.76	74	-21.24	Pk
H	4960	38.14	34.02	5.15	32.8	42.07	54	-11.93	AV
H	7440	45.60	32.71	6.4	36.05	55.34	74	-18.66	Pk
H	7440	31.18	32.71	6.4	36.05	40.92	54	-13.08	AV
H	9920	40.74	32.86	7.62	38.4	53.90	74	-20.10	Pk
H	9920	27.66	32.86	7.62	38.4	40.82	54	-13.18	AV
H	12400	40.14	31.82	8.84	39.08	56.24	74	-17.76	Pk
H	12400	29.28	31.82	8.84	39.08	45.38	54	-8.62	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)	Frequenc y (MHz)	Meter Reading (dBuV)	Pre- amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission level (dBuV/m)	Limit (dBuV /m)	Margi n (dB)	Detec tor Type
High Channel: 2402MHz										
	H	2390	56.20	35.17	3.48	27.49	52.00	74	-22.00	PK
	H	2390	51.22	35.17	3.48	27.49	47.02	54	-6.98	AV
	H	2400	60.66	35.16	3.49	27.52	56.51	74	-17.49	PK
	H	2400	50.60	35.16	3.49	27.52	46.45	54	-7.55	AV
	V	2390	59.18	35.17	3.48	27.49	54.98	74	-19.02	PK
	V	2390	51.78	35.17	3.48	27.49	47.58	54	-6.42	AV
	V	2400	59.82	35.16	3.49	27.52	55.67	74	-18.33	PK
	V	2400	50.93	35.16	3.49	27.52	46.78	54	-7.22	AV

Remark:

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

	Polar (H/V)	Frequenc y (MHz)	Meter Reading (dBuV)	Pre- amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission level (dBuV/m)	Limit (dBuV /m)	Margi n (dB)	Detec tor Type
High Channel: 2480MHz										
	H	2483.5	58.68	35.11	3.56	27.75	54.88	74	-19.12	PK
	H	2483.5	50.70	35.11	3.56	27.75	46.90	54	-7.10	AV
	H	2500	61.22	35.1	3.57	27.8	57.49	74	-16.51	PK
	H	2500	49.34	35.1	3.57	27.8	45.61	54	-8.39	AV
	V	2483.5	59.62	35.11	3.56	27.75	55.82	74	-18.18	PK
	V	2483.5	50.54	35.11	3.56	27.75	46.74	54	-7.26	AV
	V	2500	59.88	35.1	3.57	27.8	56.15	74	-17.85	PK
	V	2500	49.10	35.1	3.57	27.8	45.37	54	-8.63	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 v05r02 April 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

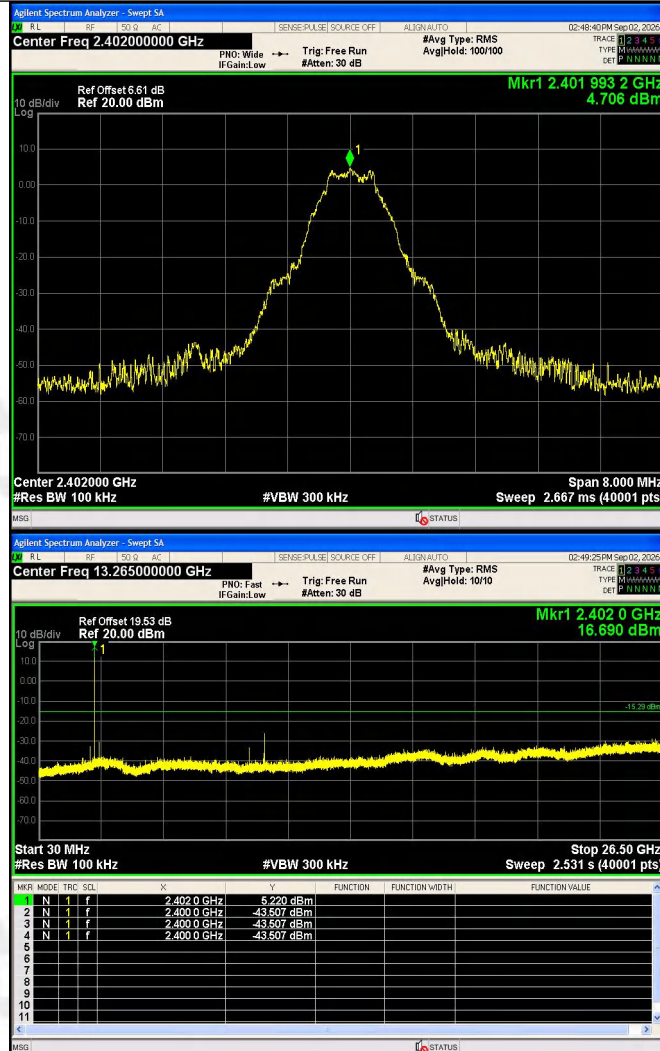
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
 2. Set the spectrum analyzer:
 - a) Set instrument center frequency to DTS channel center frequency.
 - b) Set the span to ≈ 1.5 times the DTS bandwidth.
 - c) Set the RBW = 100 kHz.
 - d) Set the VBW $\approx [3 \times \text{RBW}]$.
 - 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

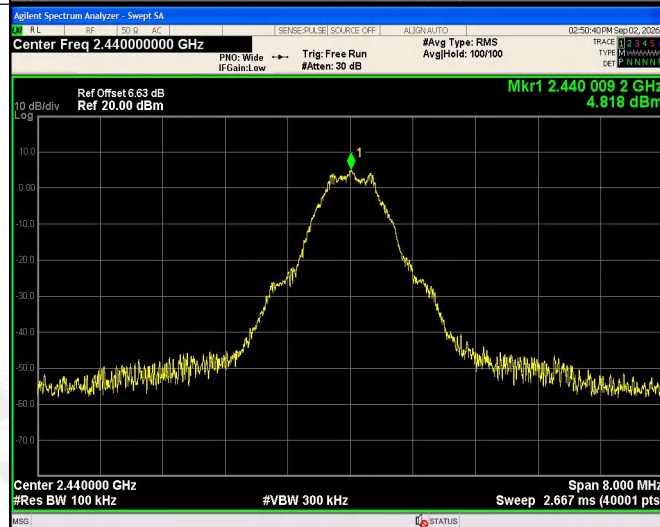
1M:

RF Conducted Spurious Emissions Graphs

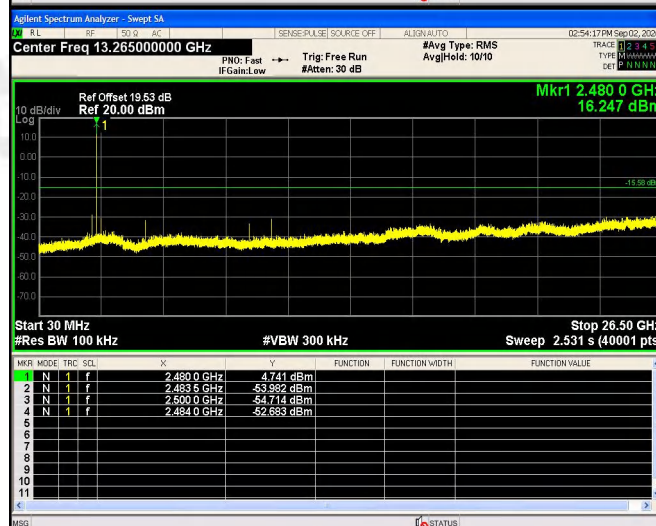
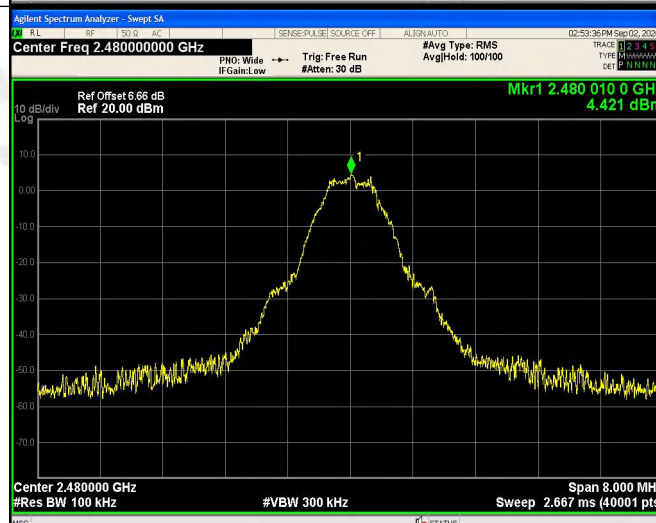
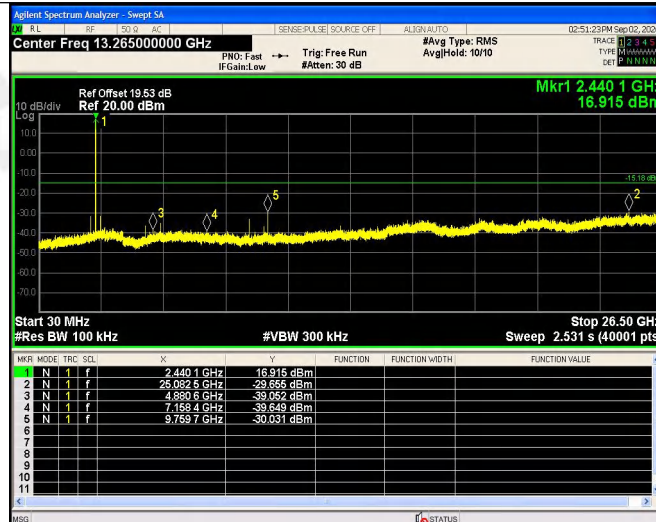
GFSK/LCH



GFSK/MCH



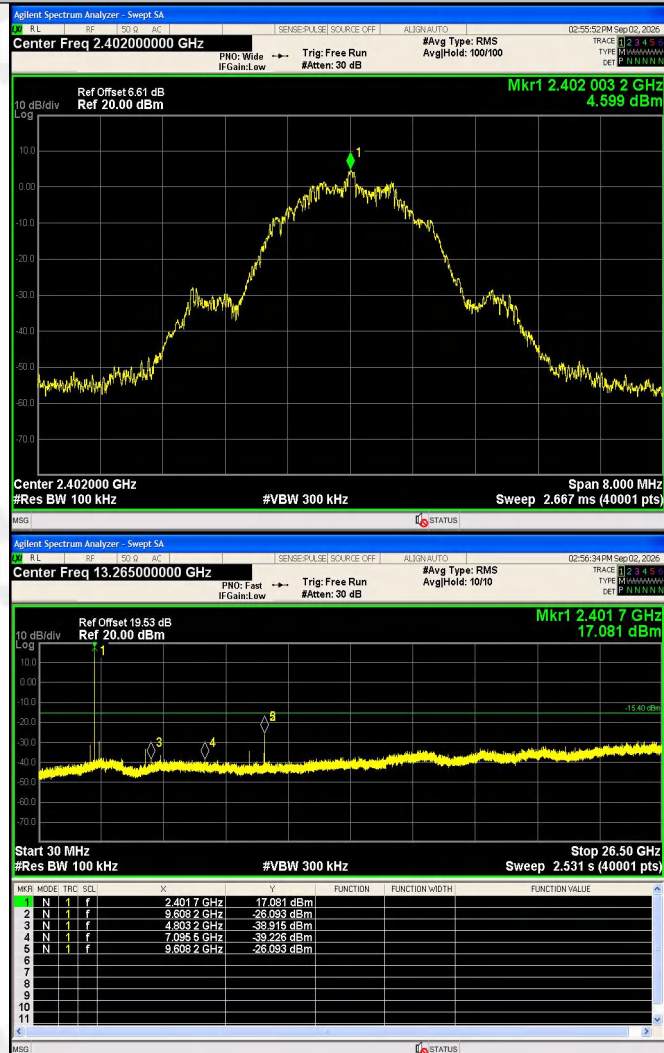
GFSK/HCH



2M :

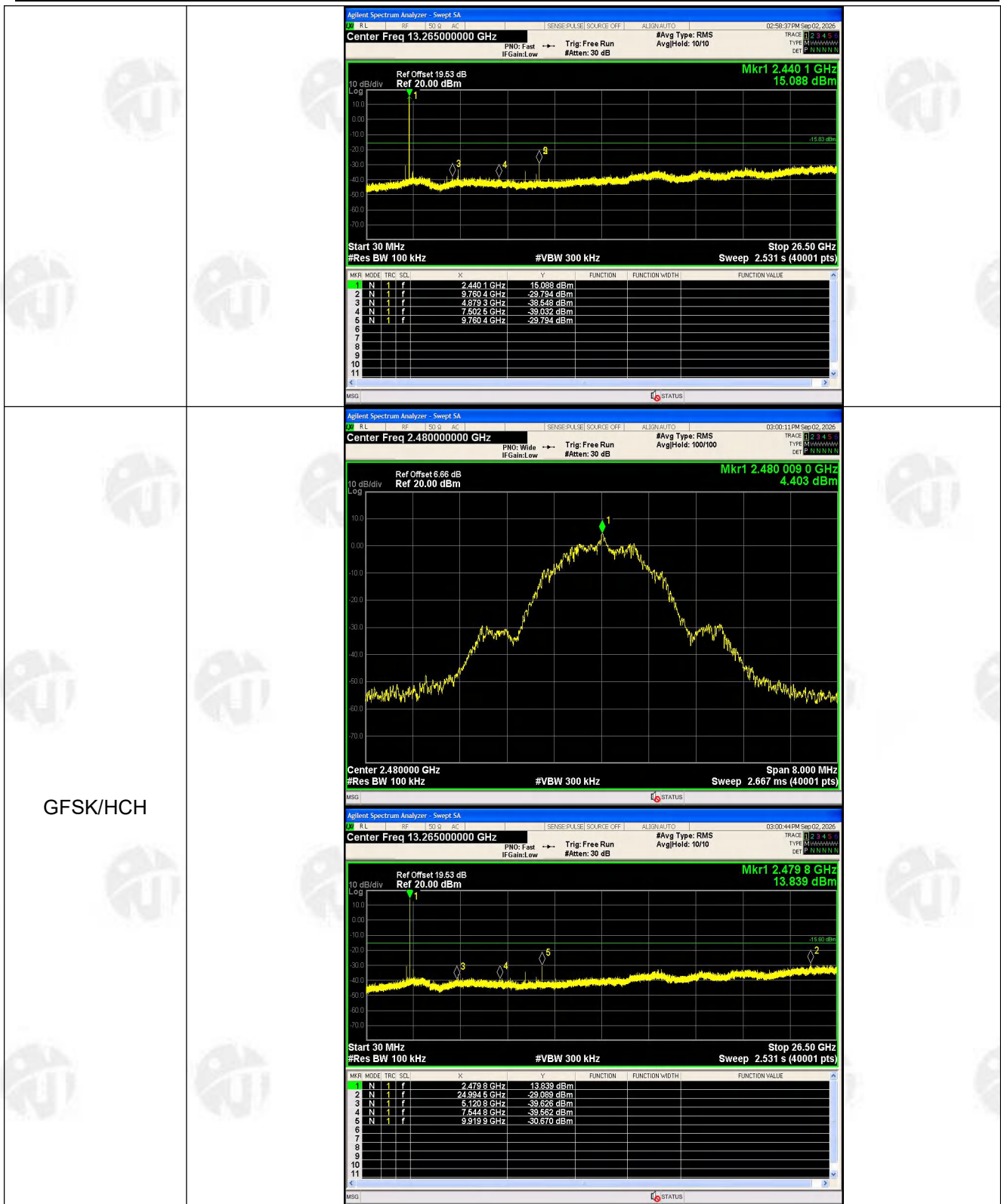
RF Conducted Spurious Emissions Graphs

GFSK/LCH



GFSK/MCH





30MHz~26.5GHz

With in the 30M-26.5G frequency band, the worst attenuation value offset is 19.53dB

5. Band Edge Measurement

5.1.Limit

Test Requirement: FCC CFR47 Part 15 Section 15.247

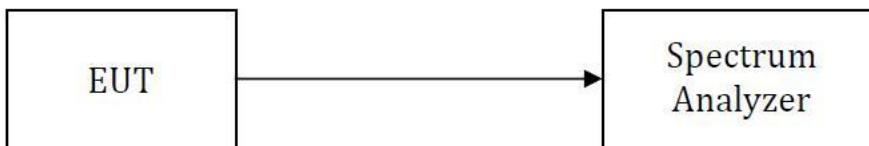
Test Method: KDB 558074 D01 15.247 Meas Guidance v05r02April 2,2019;

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

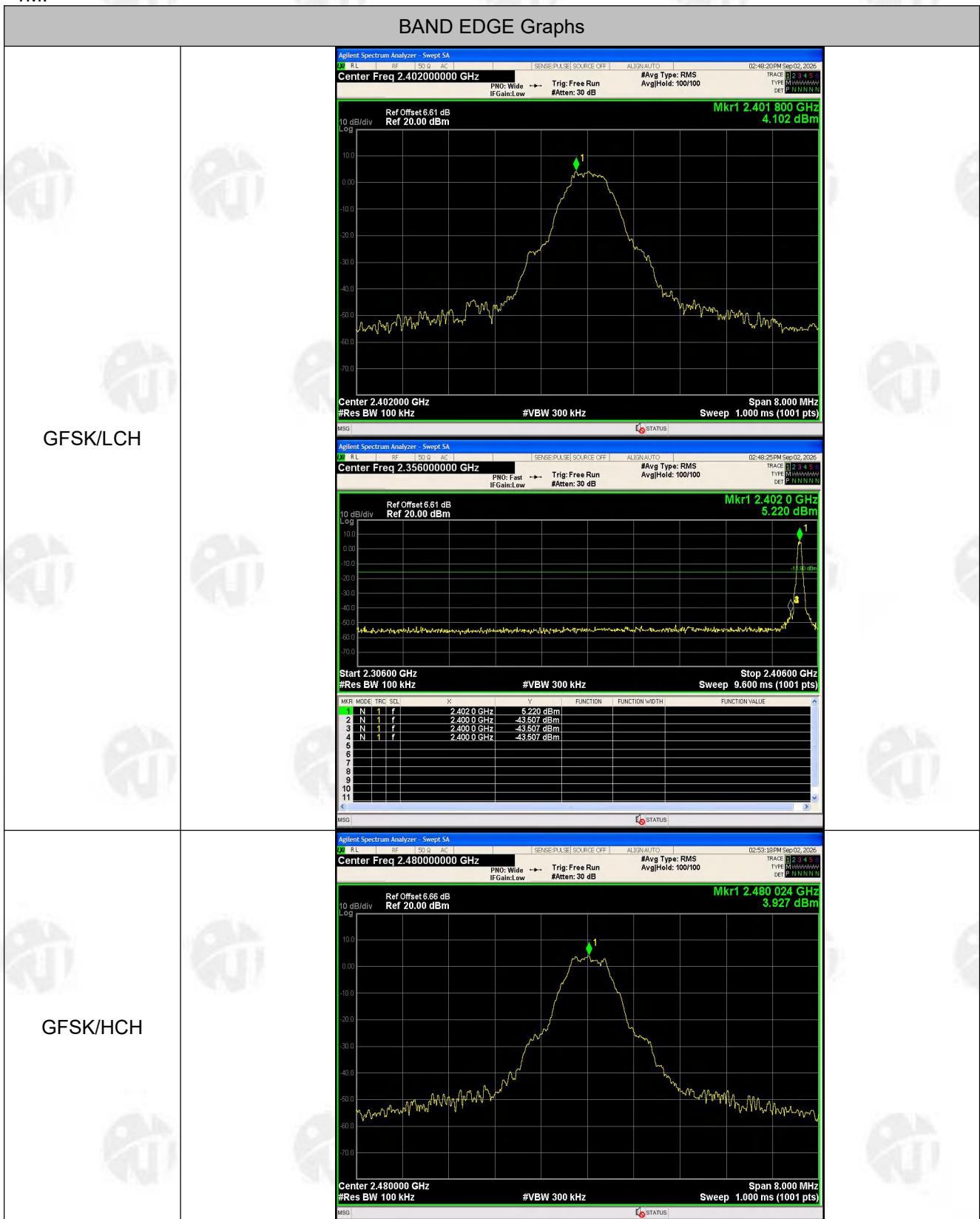


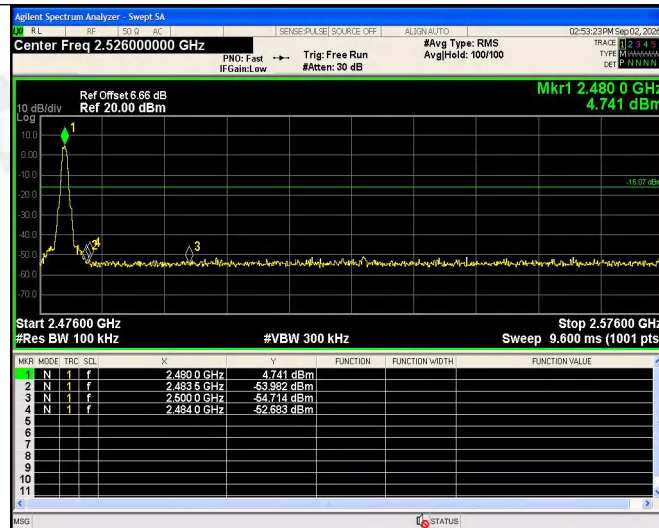
5.3.Test Procedure

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

1M:





2M:

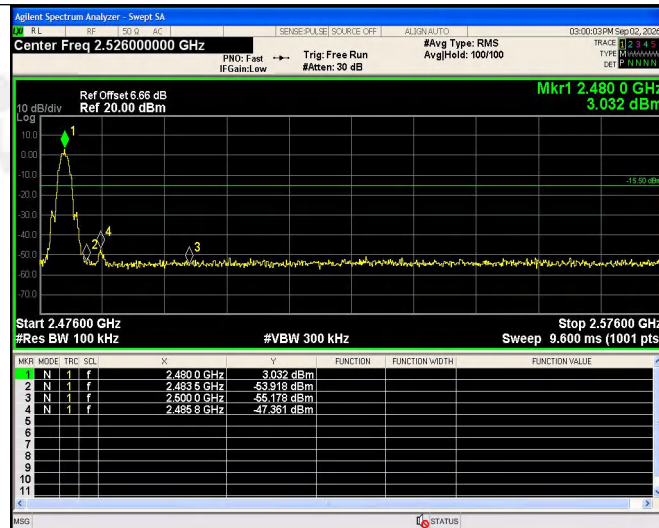
BAND EDGE Graphs

GFSK/LCH



GFSK/HCH





6. -6 dB Bandwidth Measurement

6.1.Limit

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: KDB 558074 D01 15.247 Meas Guidance v05r02 April 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

1M:

Test Mode	Frequency	6dB Bandwidth (MHz)	Limit (kHz)	Result
GFSK	Low channel	0.6559	>= 500	PASS
	Mid channel	0.6652	>= 500	PASS
	High channel	0.6760	>= 500	PASS

2M:

Test Mode	Frequency	6dB Bandwidth (MHz)	Limit (kHz)	Result
GFSK	Low channel	1.0580	>= 500	PASS
	Mid channel	1.0864	>= 500	PASS
	High channel	1.0924	>= 500	PASS

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

1M:

Test Graph:

6dB Bandwidth

GFSK
Low channel



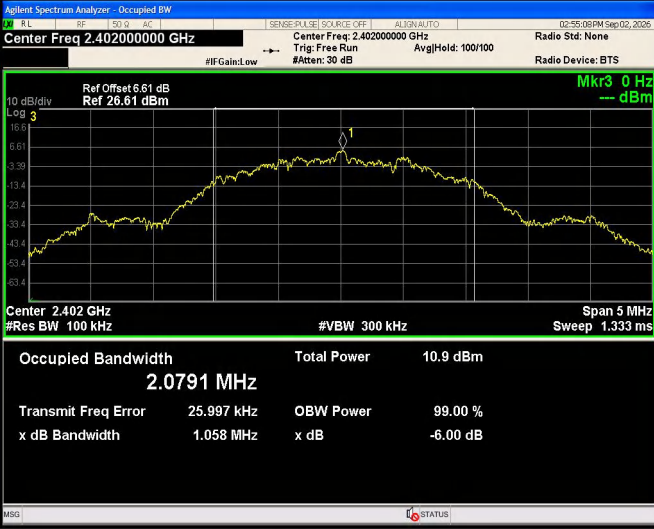
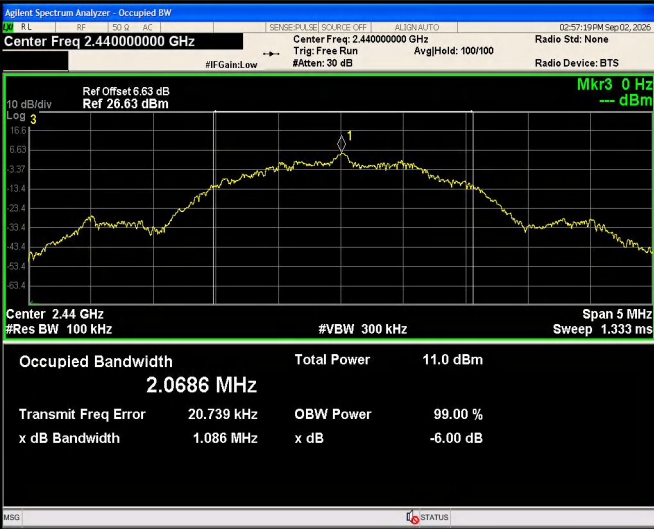
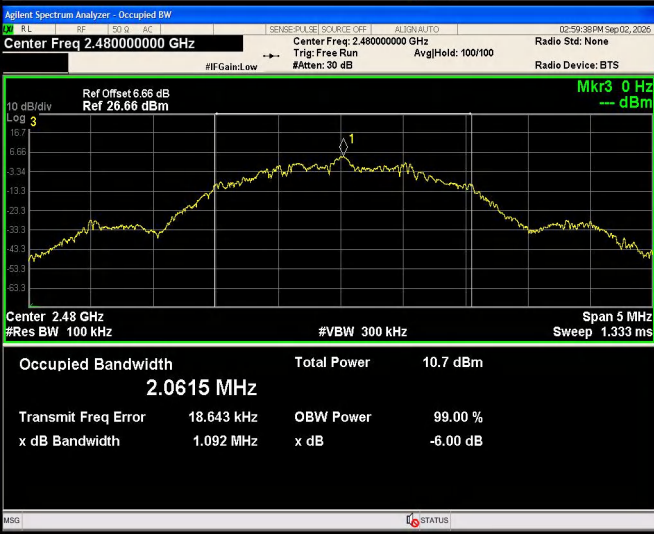
GFSK
Mid channel



GFSK
High channel



2M:
Test Graph:
6dB Bandwidth

GFSK Low channel	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.402000000 GHz Ref Offset 6.61 dB Ref 26.61 dBm Occupied Bandwidth 2.0791 MHz Total Power 10.9 dBm Transmit Freq Error 25.997 kHz OBW Power 99.00 % x dB Bandwidth 1.058 MHz x dB -6.00 dB
GFSK Mid channel	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.440000000 GHz Ref Offset 6.63 dB Ref 26.63 dBm Occupied Bandwidth 2.0686 MHz Total Power 11.0 dBm Transmit Freq Error 20.739 kHz OBW Power 99.00 % x dB Bandwidth 1.086 MHz x dB -6.00 dB
GFSK High channel	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.480000000 GHz Ref Offset 6.66 dB Ref 26.66 dBm Occupied Bandwidth 2.0615 MHz Total Power 10.7 dBm Transmit Freq Error 18.643 kHz OBW Power 99.00 % x dB Bandwidth 1.092 MHz x dB -6.00 dB

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)(1)	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.

- Set the RBW $\geq$ DTS bandwidth.
- Set VBW ≥ 3 RBW.
- Set span $\geq 3 \times$ RBW
- Sweep time = auto couple.
- Detector = peak.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- 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.

- Set the RBW = 1% to 5% of the OBW, not to exceed 1 MHz..
- Set the VBW $\geq 3 \times$ RBW
- Set the span $\geq 1.5 \times$ OBW.
- Detector = RMS.
- Sweep time = auto couple.
- trigger = free run..
- Number of points in sweep $\geq [2 \times \text{span} / \text{RBW}]$. (This gives bin-to-bin spacing $\geq \text{RBW} / 2$, so that narrowband signals are not lost between frequency bins.)
- Trace average at least 100 traces in power averaging (rms) mode.
- 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

1M:

Mode	Channel.	Maximum Output Power [dBm]	Limit[dBm]	Verdict
GFSK	LCH	5.09	30	PASS
	MCH	5.13	30	PASS
	HCH	4.8	30	PASS

Duty Cycle

Mode	Channel.	Duty Cycle(%)	Correction Factor (dB)
GFSK	LCH	55.56	2.55
	MCH	55.56	2.55
	HCH	57.26	2.42

2M:

Mode	Channel.	Maximum Output Power [dBm]	Limit[dBm]	Verdict
GFSK	LCH	5.08	30	PASS
	MCH	5.1	30	PASS
	HCH	4.77	30	PASS

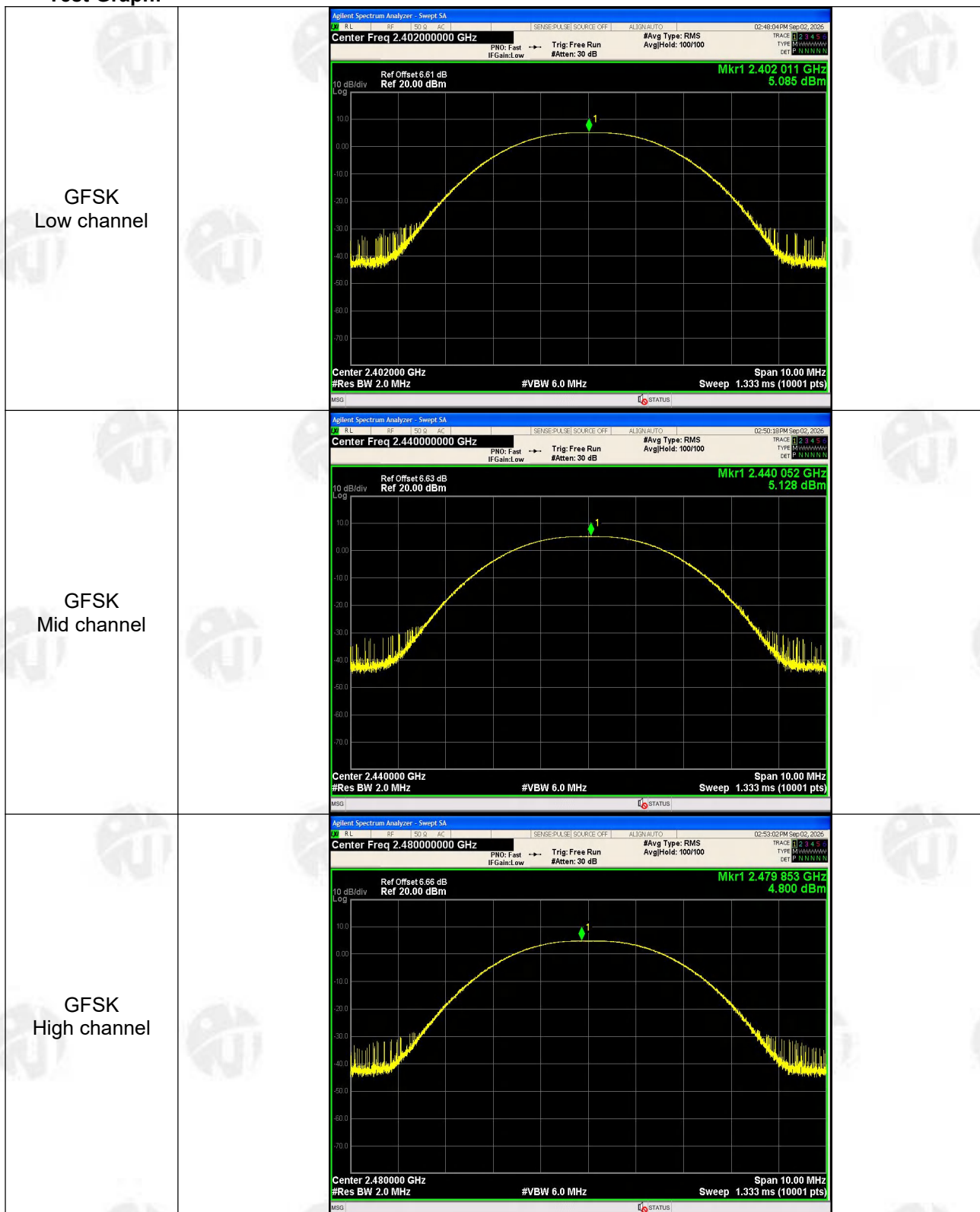
Duty Cycle

Mode	Channel.	Duty Cycle(%)	Correction Factor (dB)
GFSK	LCH	27.42	5.62
	MCH	26.72	5.73
	HCH	29.37	5.32

 Note: Duty Cycle Factor= $10 \log (1/x)$, x is Duty Cycle.

1M:

Test Graph:

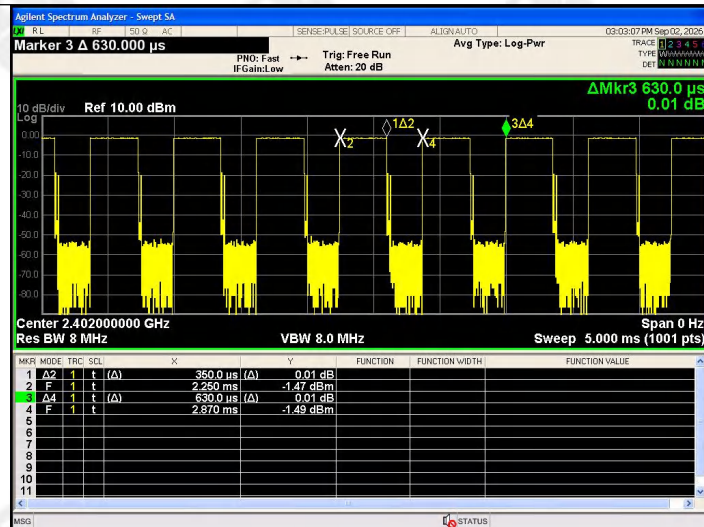


Duty Cycle

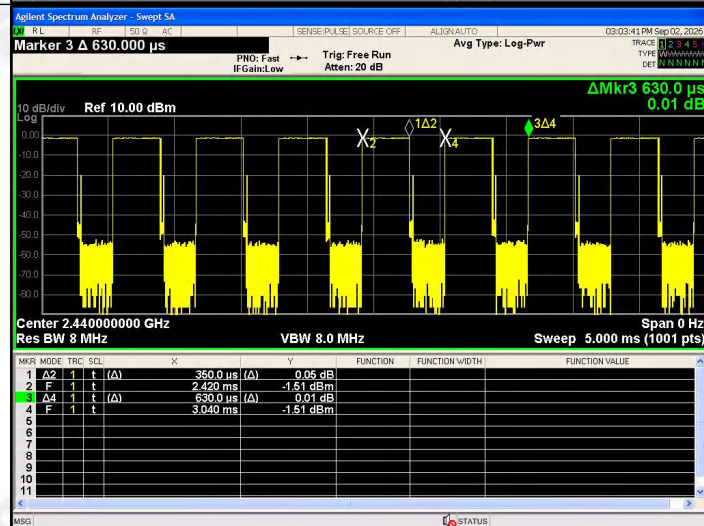
1M:

Test Graph:

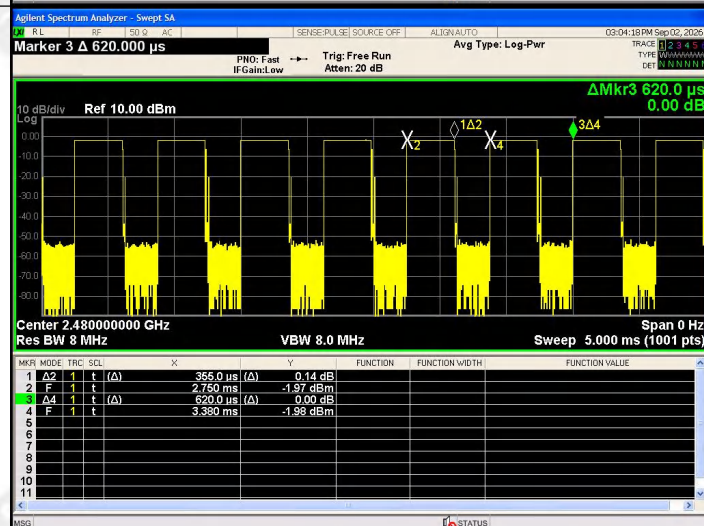
GFSK
Low channel



GFSK
Mid channel

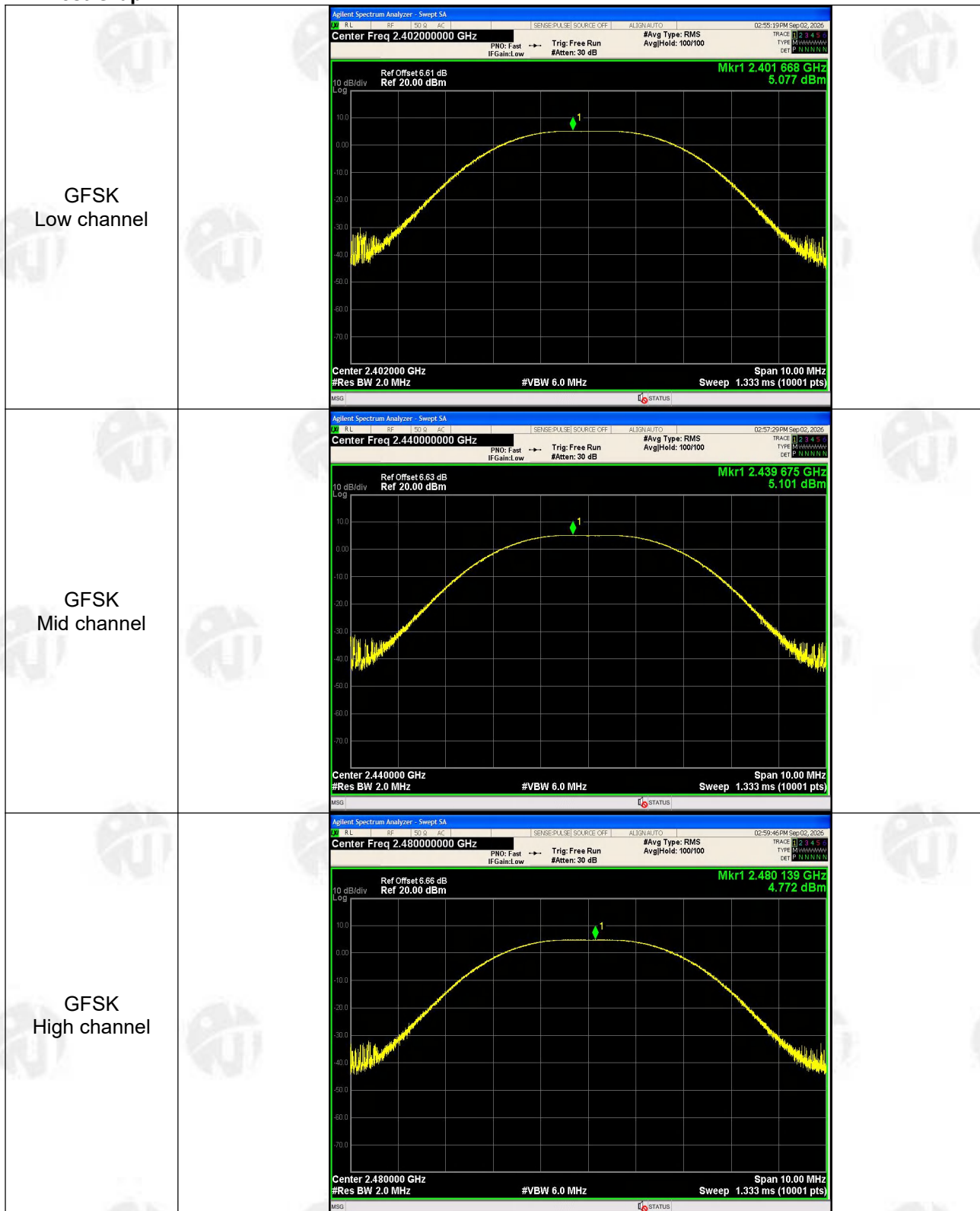


GFSK
High channel



2M:

Test Graph:

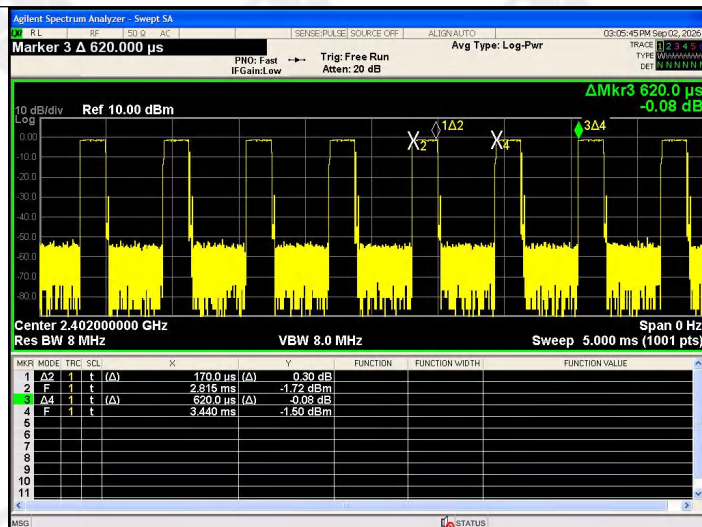


Duty Cycle

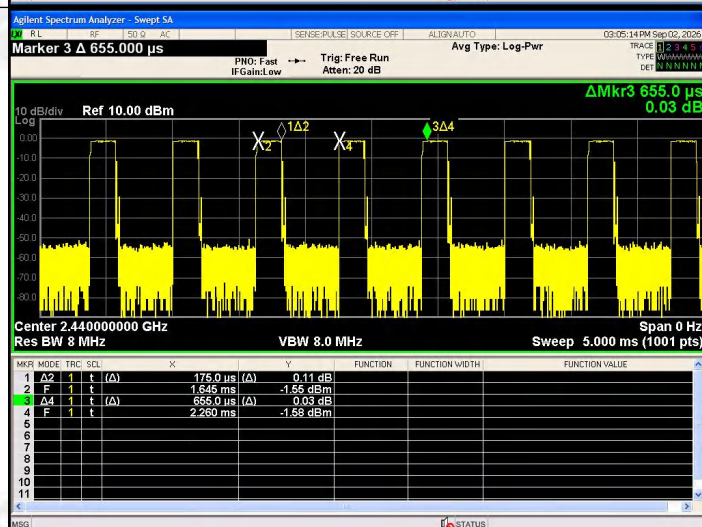
2M:

Test Graph:

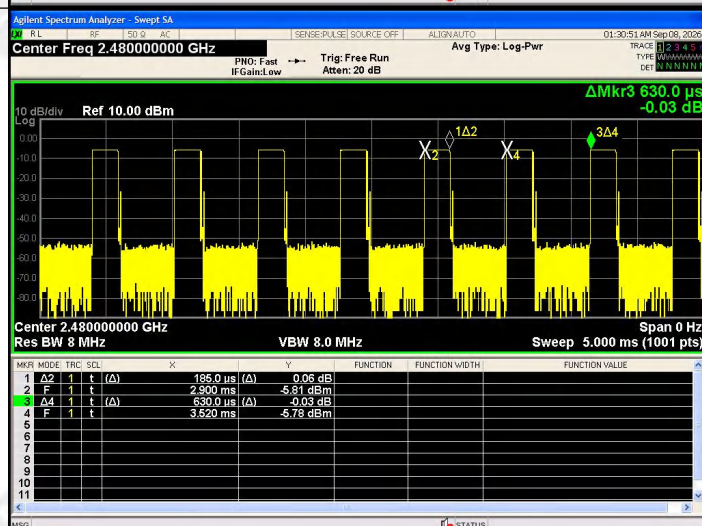
GFSK
Low channel



GFSK
Mid channel



GFSK
High channel



8. Power Spectral density

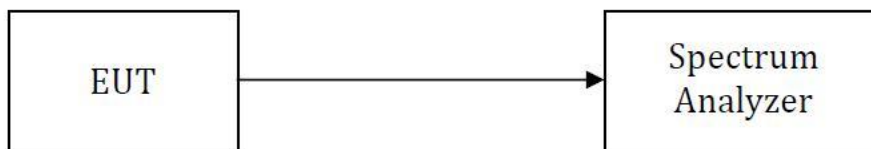
8.1.Limit

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

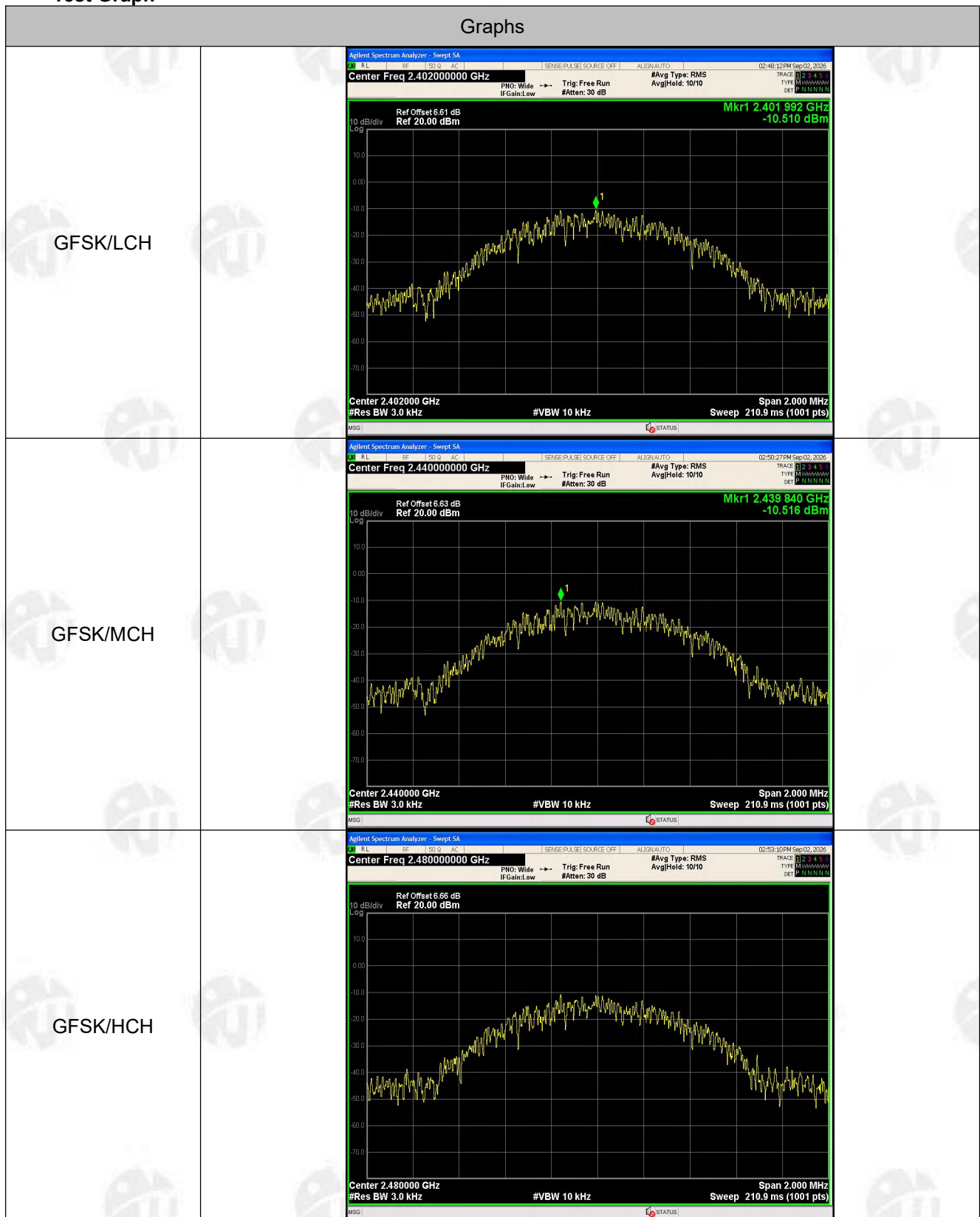
1M:

Mode	Channel.	Power Spectral Density (dBm/3KHz)	Limit(dBm/3KHz)	Verdict
GFSK	LCH	-10.51	8	PASS
GFSK	MCH	-10.52	8	PASS
GFSK	HCH	-10.75	8	PASS

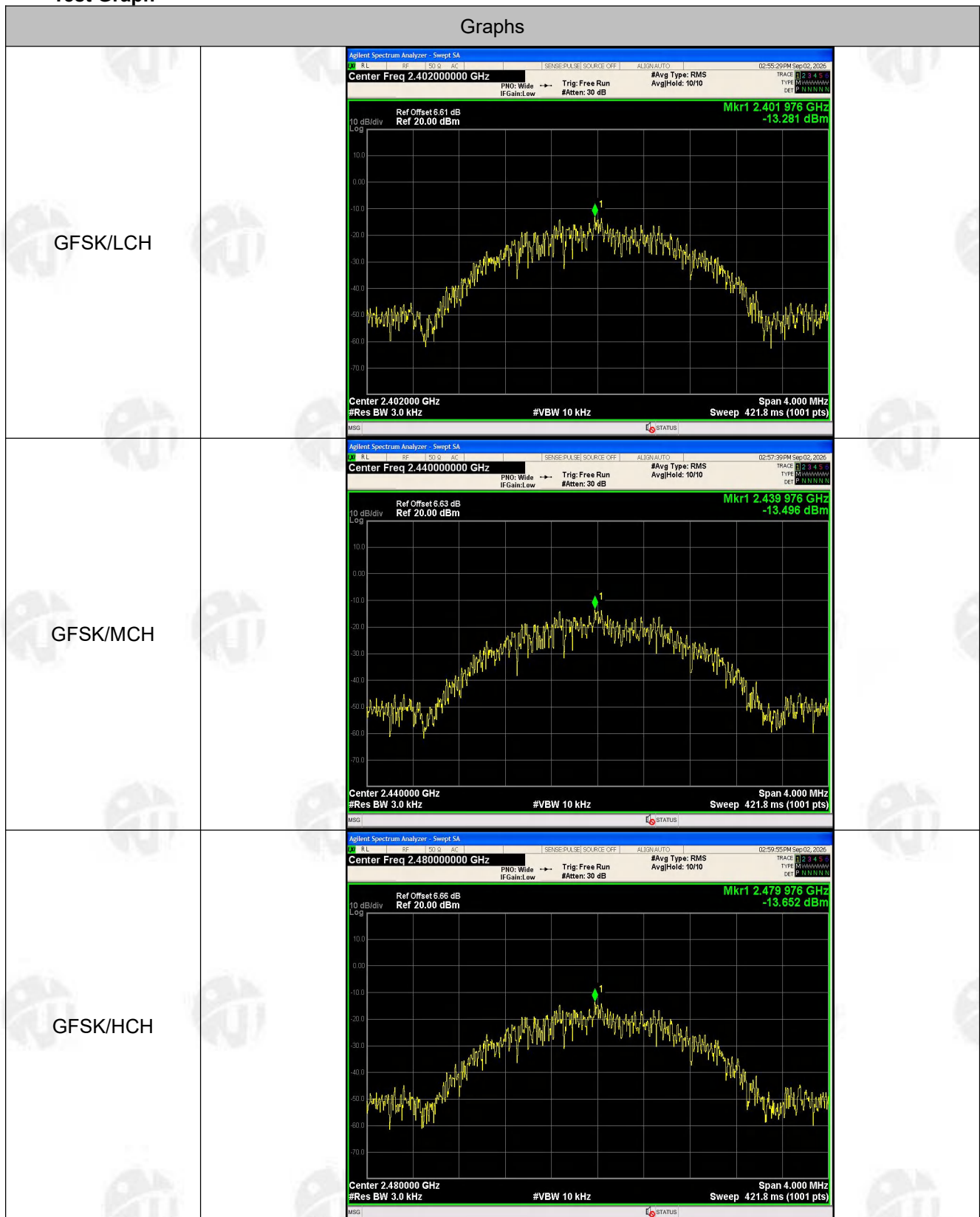
2M:

Mode	Channel.	Power Spectral Density (dBm/3KHz)	Limit(dBm/3KHz)	Verdict
GFSK	LCH	-13.28	8	PASS
GFSK	MCH	-13.5	8	PASS
GFSK	HCH	-13.65	8	PASS

1M:
Test Graph



2M:
Test Graph



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 Chip antenna, and the maximum antenna gain is 2.7dBi, fulfill the requirement of this section.

10. TEST SETUP & EUT PHOTOGRAPH

Reference to EUT photo attachment for details.

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