FCC Part 15C Test Report
FCC ID: 2BC49-C77

Applicant:	Shenzhen James Audio Technology Co., Ltd
Address:	4th Floor, A- building, No.2 Guiyuan Road, Guihua Community, Guanlan Town, Longhua New District, Shenzhen, China
Manufacturer:	Shenzhen James Audio Technology Co., Ltd
Address:	4th Floor, A- building, No.2 Guiyuan Road, Guihua Community, Guanlan Town, Longhua New District, Shenzhen, China
EUT:	Bluetooth FM transmitter
Trade Mark:	N/A
Model Number:	C77 C77Q, C77S, C89, C90, BT17S, BT17P
Date of Receipt:	Jul. 22, 2024
Test Date:	Oct. 08, 2024 - Oct. 17, 2024
Date of Report:	Oct. 17, 2024
Prepared By:	Shenzhen DL Testing Technology Co., Ltd.
Address:	101-201, Building C, Shuanghuan, No.8, Baoqing Road, Baolong Industrial Zone, Baolong Street, Longgang District, Shenzhen, Guangdong, China
Applicable Standards:	FCC PART 15 C 15.247 ANSI C63.10:2013
Test Result:	Pass
Report Number:	DL-240722027ER

Prepared (Test Engineer):	Alisa Song
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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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	N/A	
15.247(c)	Radiated Spurious Emission	PASS	
15.205	Band Edge Emission	PASS	
15.247(b)(1)	Peak Output Power	PASS	
15.247(a)(iii)	Number of Hopping Frequency	PASS	
15.247(a)(iii)	Dwell Time	PASS	
15.247(a)(1)	Bandwidth	PASS	
15.247(a)(1)	Hopping Channel Separation	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

1.1 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y** ± **U**, where expended 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	±2.56dB
2	RF power,conducted	±0.42dB
3	Spurious emissions,conducted	±2.76dB
4	All emissions,radiated(<1G)	±3.65dB
5	All emissions,radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%
8	20dB Bandwidth	±0.2MHz

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product Name:	Bluetooth FM transmitter
Trademark	N/A
Model No.:	C77 C77Q, C77S, C89, C90, BT17S, BT17P
Model Difference	The product's different for model number and appearance color.
BT Version:	5.3
Operation Frequency:	2402~2480MHz
Channel numbers:	79 Channels
Channel separation:	1/2M
Modulation technology:	GFSK, PI/4 DQPSK
Antenna Type:	Internal Antenna
Antenna gain:	2.42dBi
Power supply:	DC 12-24V

Note:

1.For a more detailed features description, please refer to the manufacturer’s specifications or the User's Manual.

2.The EUT’s all information provided by client.

2.

Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	27	2429	54	2456
01	2403	28	2430	55	2457
02	2404	29	2431	56	2458
~	~	~	~	~	~
08	2410	35	2437	62	2464
09	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2441	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
~	~	~	~	~	~
14	2416	41	2443	68	2470
22	2424	49	2451	76	2478
23	2425	50	2452	77	2479
24	2426	51	2453	78	2480
25	2427	52	2454		
26	2428	53	2455		

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

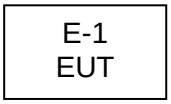
Pretest Mode	Description	
Mode 1	CH00	GFSK,π/4 DQPSK
Mode 2	CH39	
Mode 3	CH78	
Mode 4	Link Mode	
For Conducted & Radiated Emission		
Final Test Mode	Description	
Mode 1	CH00	GFSK,π/4 DQPSK
Mode 2	CH39	
Mode 3	CH78	
Mode 4	Link Mode	

Note:

(1) The measurements are performed at the highest, middle, lowest available channels.

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Spurious Emission Test



2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

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	Model/Type No.	Series No.	Note
E-1	Bluetooth FM transmitter	C77	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note

Note:

(1) For detachable type I/O cable should be specified the length in cm in『Length』column.

2.5 TABLE OF PARAMETERS OF TEST SOFTWARE SETTING

During testing, channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the end product.

Test software Version	Test program: FCC_assist_1.0.2.2		
Frequency	2402 MHz	2441 MHz	2480 MHz
Power Setting of Softwave	10	10	10

2.6 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	Nov. 04, 2023	Nov. 03, 2024
2	Test Receiver (9kHz-7GHz)	R&S	ESRP7	101393	Nov. 04, 2023	Nov. 03, 2024
3	Bilog Antenna (30MHz-1GHz)	R&S	VULB9162	00306	Nov. 04, 2023	Nov. 03, 2024
4	Horn Antenna (1GHz-18GHz)	Schwarzbeck	BBHA9120D	02139	Nov. 04, 2023	Nov. 03, 2024
5	Horn Antenna (18GHz-40GHz)	A.H. Systems	SAS-574	588	Nov. 04, 2023	Nov. 03, 2024
6	Amplifier (9KHz-6GHz)	Schwarzbeck	BBV9743B	00153	Nov. 04, 2023	Nov. 03, 2024
7	Amplifier (1GHz-18GHz)	EMEC	EM01G8GA	00270	Nov. 04, 2023	Nov. 03, 2024
8	Amplifier (18GHz-40GHz)	Quanjuda	DLE-161	97	Nov. 04, 2023	Nov. 03, 2024
9	Loop Antenna (9KHz-30MHz)	Schwarzbeck	FMZB1519B	00014	Nov. 04, 2023	Nov. 03, 2024
10	RF cables1 (9kHz-1GHz)	ChengYu	966	004	Nov. 04, 2023	Nov. 03, 2024
11	RF cables2 (1GHz-40GHz)	ChengYu	966	003	Nov. 04, 2023	Nov. 03, 2024
12	Antenna connector	Florida RF Labs	N/A	RF 01#	Nov. 04, 2023	Nov. 03, 2024
13	Power probe	KEYSIGHT	U2021XA	MY55210018	Nov. 04, 2023	Nov. 03, 2024
14	Signal Analyzer 9kHz-26.5GHz	Agilent	N9020A	MY55370280	Nov. 04, 2023	Nov. 03, 2024
15	Test Receiver 20kHz-40GHz	R&S	ESU 40	100376	Nov. 04, 2023	Nov. 03, 2024
16	D.C. Power Supply	LongWei	PS-305D	010964729	Nov. 04, 2023	Nov. 03, 2024

Conduction Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	843 Shielded Room	YIHENG	843 Room	843	Nov. 04, 2023	Nov. 05, 2026
2	EMI Receiver	R&S	ESR	101421	Nov. 04, 2023	Nov. 03, 2024
3	LISN	R&S	ENV216	102417	Nov. 04, 2023	Nov. 03, 2024
4	843 Cable 1#	ChengYu	CE Cable	001	Nov. 04, 2023	Nov. 03, 2024

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

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Limit (dBuV)		Standard
	Quasi-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.1.2 TEST PROCEDURE

a. The EUT was placed 0.1 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.

b. 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.

c. 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.

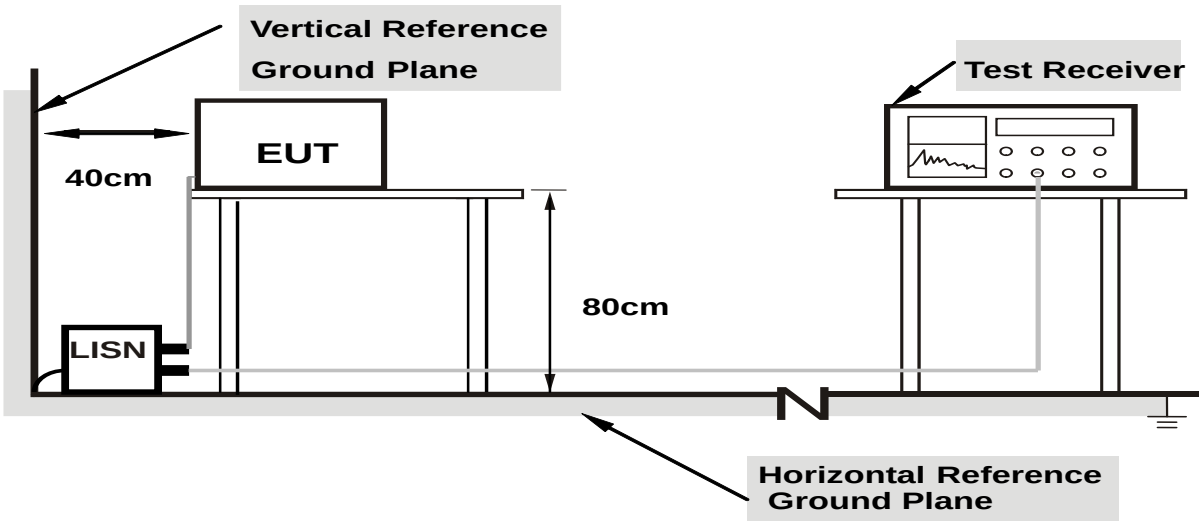
d. LISN at least 80 cm from nearest part of EUT chassis.

e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

3.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

3.1.6 TEST RESULTS

The EUT is powered by DC, no requirements for this item.

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Limit (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	25GHz
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

Below 1GHz test procedure as below:

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber (Above 18GHz the distance is 1.5 meter).
h. Test the EUT in the lowest channel ,the middle channel ,the Highest channel

Note:

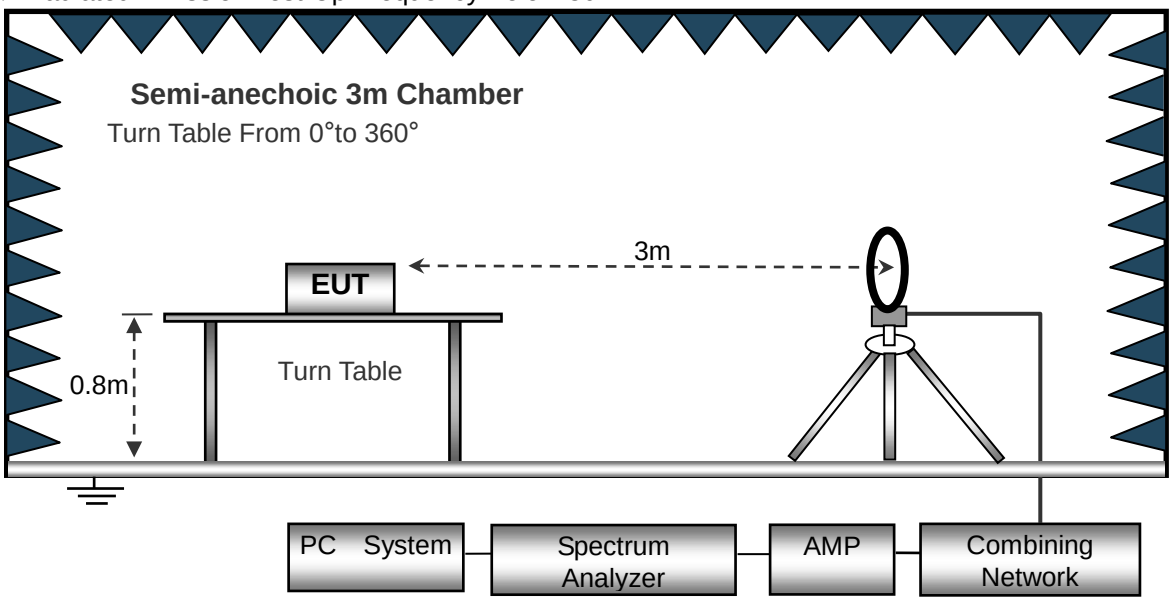
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD

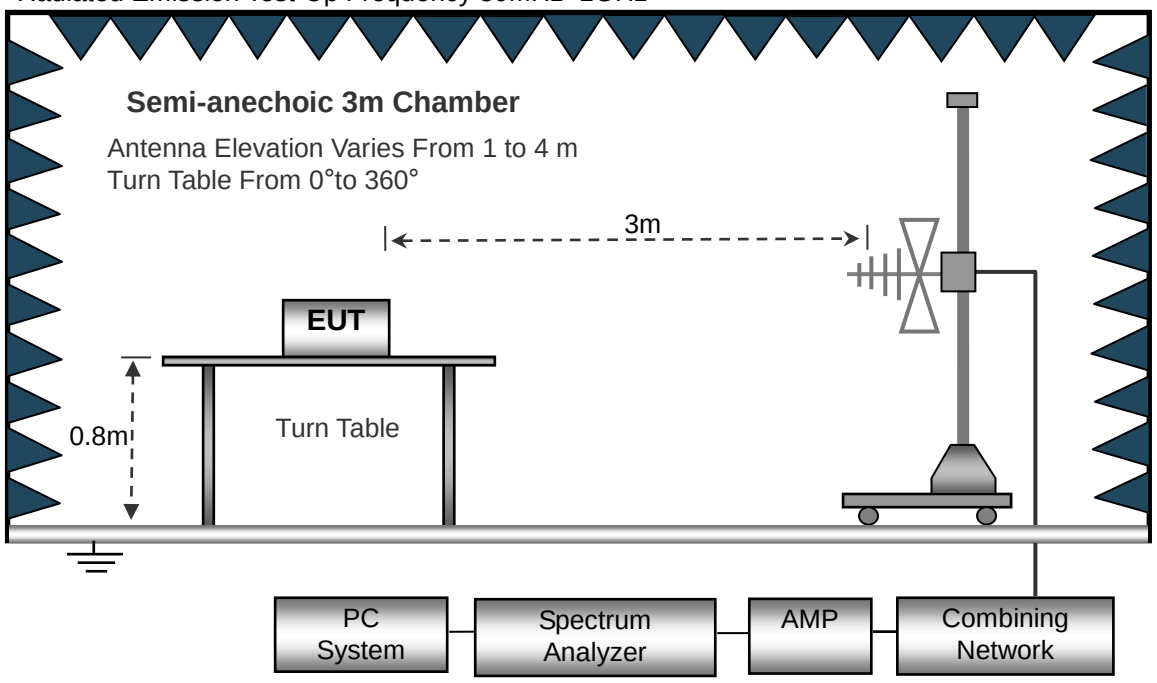
No deviation

3.2.4 TEST SETUP

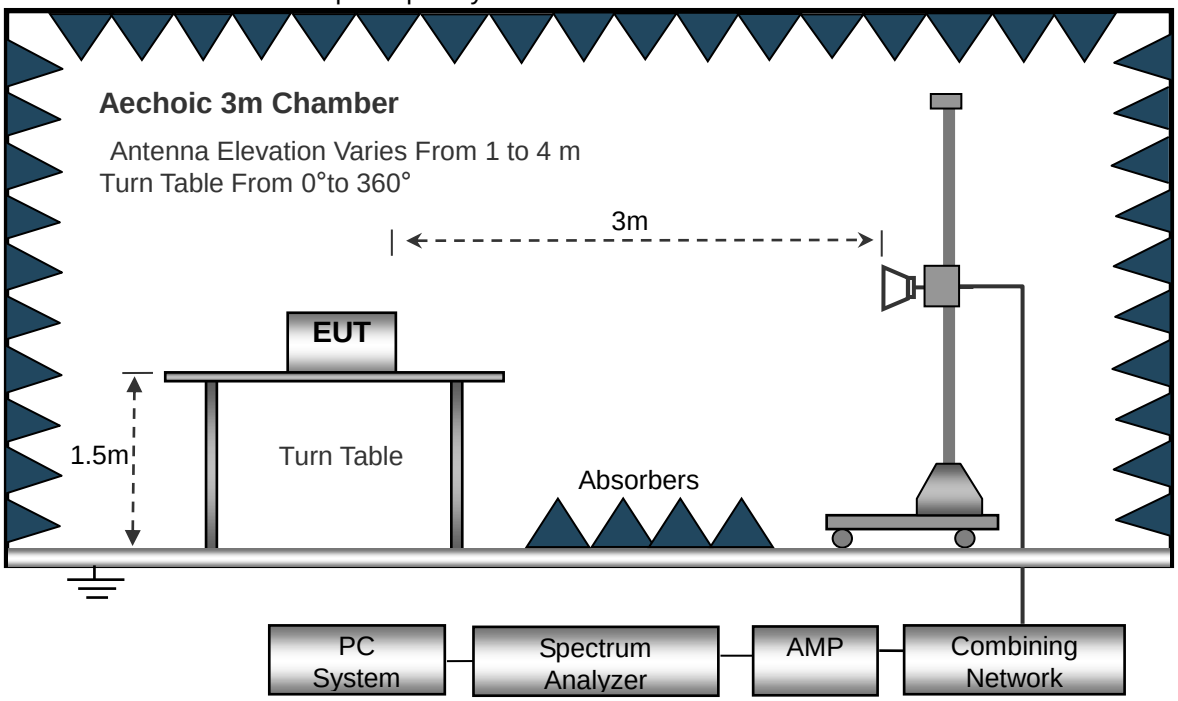
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)

Temperature:	20℃	Relative Humidtity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 12V
Test Mode :	Mode 4	Polarization :	--

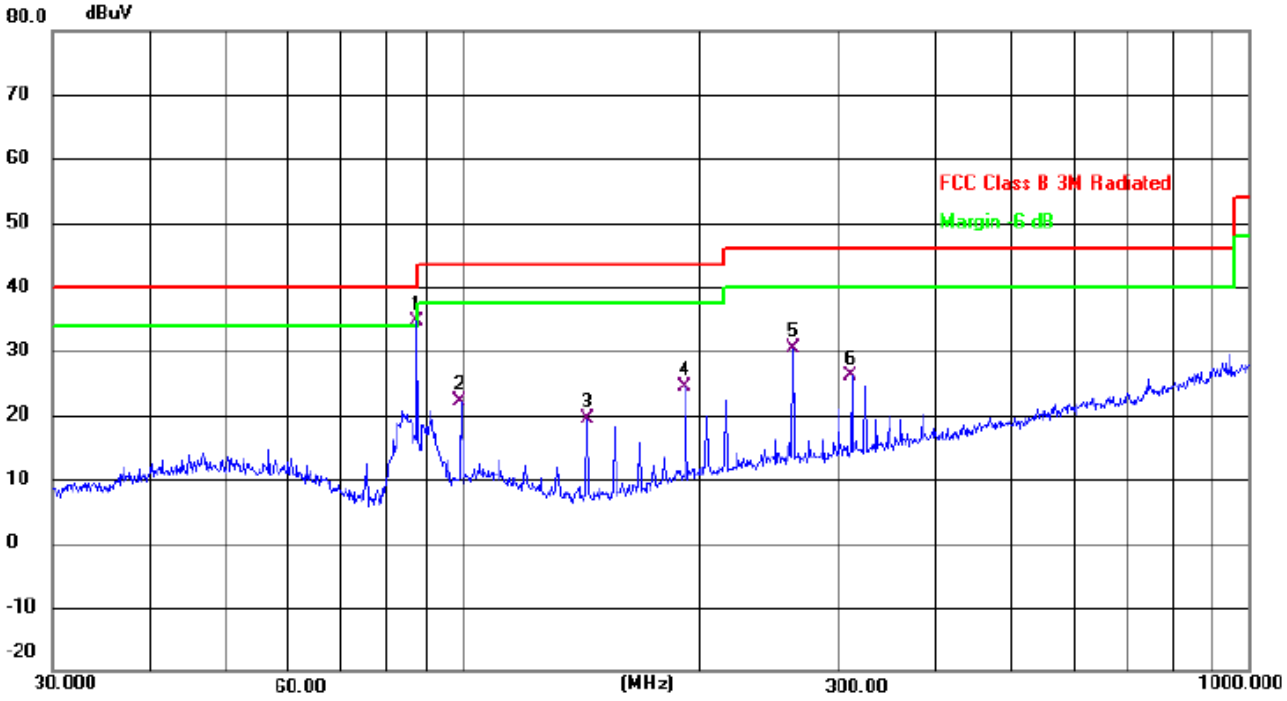
Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =40 log (specific distance/test distance)(dB);
Limit line = specific limits(dBuv) + distance extrapolation factor.

3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)

Temperature:	26℃	Relative Humidity:	54%
Pressure:	1010 hPa	Polarization :	Horizontal
Test Voltage :	DC 12V		
Test Mode :	Mode 4		



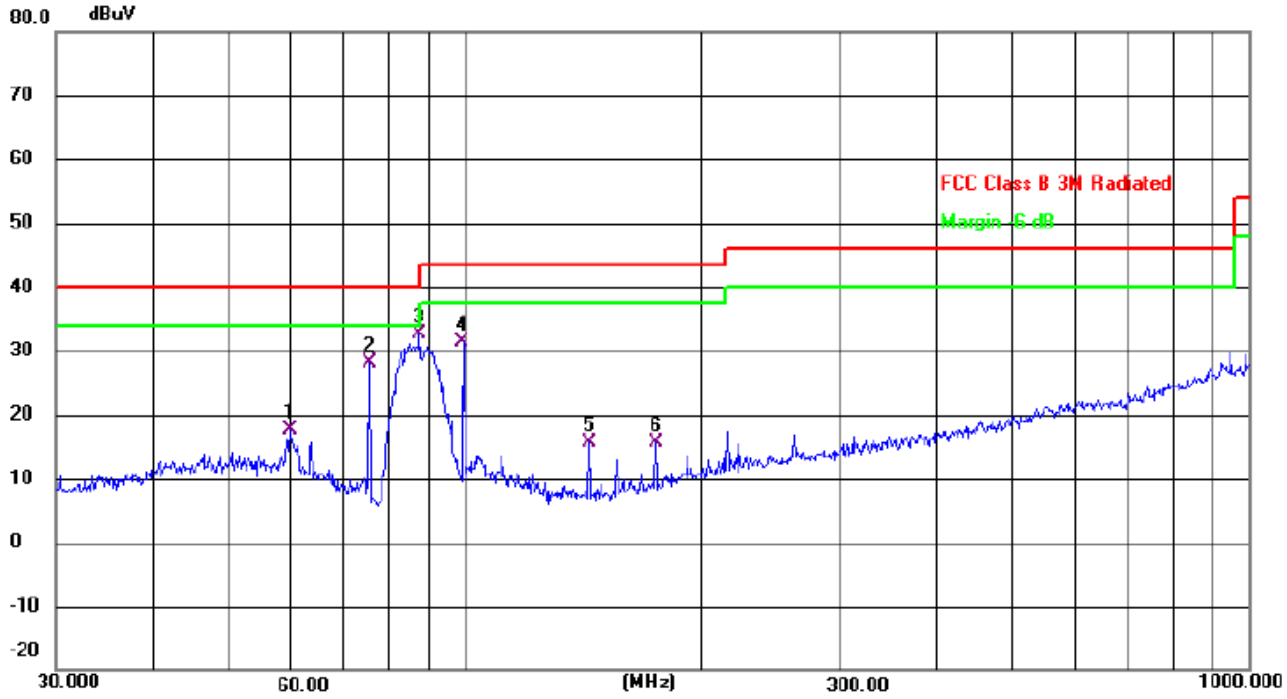
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	
		MHz	dBuV	dB	dBuV	dB	dB	Detector
1	*	87.4175	52.48	-17.85	34.63	40.00	-5.37	QP
2		99.5279	37.06	-14.97	22.09	43.50	-21.41	QP
3		143.8293	37.82	-18.48	19.34	43.50	-24.16	QP
4		191.7450	40.01	-15.65	24.36	43.50	-19.14	QP
5		262.8955	43.36	-13.00	30.36	46.00	-15.64	QP
6		312.1792	37.74	-11.67	26.07	46.00	-19.93	QP

Remark:

Correct Factor = Cable loss + Antenna factor – Preamplifier;

Level = Reading Level + Correct Factor; Margin = Limit – Level;

Temperature:	26℃	Relative Humidity:	54%
Pressure:	1010 hPa	Polarization :	Vertical
Test Voltage :	DC 12V		
Test Mode :	Mode 4		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	
		MHz	dBuV	dB	dBuV	dB	dB	Detector
1		59.6492	31.15	-13.61	17.54	40.00	-22.46	QP
2		75.4462	46.62	-18.53	28.09	40.00	-11.91	QP
3	*	87.4175	50.48	-17.85	32.63	40.00	-7.37	QP
4		99.5279	46.30	-14.97	31.33	43.50	-12.17	QP
5		143.8291	34.13	-18.48	15.65	43.50	-27.85	QP
6		175.0363	32.34	-16.80	15.54	43.50	-27.96	QP

Remark:

Correct Factor = Cable loss + Antenna factor – Preamplifier;

Level = Reading Level + Correct Factor; Margin = Limit – Level;

3.2.8 TEST RESULTS (1GHZ~25GHZ)

GFSK

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:2402									
V	4804.00	67.63	50.65	6.88	31.29	55.15	74	-18.85	PK
V	4804.00	55.25	50.65	6.88	31.29	42.77	54	-11.23	AV
V	7206.00	66.69	49.98	7.16	36.63	60.5	74	-13.5	PK
V	7206.00	46.41	49.98	7.16	36.63	40.22	54	-13.78	AV
V	16132.00	48.62	51.53	11.34	41.52	49.95	74	-24.05	PK
H	4804.00	66.59	50.65	6.88	31.29	54.11	74	-19.89	PK
H	4804.00	55.52	50.65	6.88	31.29	43.04	54	-10.96	AV
H	7206.00	69.69	49.98	7.16	36.63	63.5	74	-10.5	PK
H	7206.00	45.17	49.98	7.16	36.63	38.98	54	-15.02	AV
H	16132.00	48.43	51.53	11.34	41.52	49.76	74	-24.24	PK
operation frequency:2441									
V	4882.00	67.85	50.67	6.89	31.38	55.45	74	-18.55	PK
V	4882.00	55.21	50.67	6.89	31.38	42.81	54	-11.19	AV
V	7323.00	69.96	50.02	7.24	36.63	63.81	74	-10.19	PK
V	7323.00	46.65	50.02	7.24	36.63	40.5	54	-13.5	AV
V	16132.00	48.85	51.53	11.34	41.52	50.18	74	-23.82	PK
H	4882.00	66.56	50.67	6.89	31.38	54.16	74	-19.84	PK
H	4882.00	55.18	50.67	6.89	31.38	42.78	54	-11.22	AV
H	7323.00	69.65	50.02	7.24	36.63	63.5	74	-10.5	PK
H	7323.00	47.36	50.02	7.24	36.63	41.21	54	-12.79	AV
H	16132.00	48.58	51.53	11.34	41.52	49.91	74	-24.09	PK
operation frequency:2480									
V	4960.00	68.69	50.79	6.83	31.36	55.75	74	-18.25	PK
V	4960.00	55.25	50.79	6.83	31.36	43.16	54	-10.84	AV
V	7440.00	69.41	50.11	7.25	36.58	62.99	74	-11.01	PK
V	7440.00	46.96	50.11	7.25	36.58	40.14	54	-13.86	AV
V	16132.00	49.52	51.53	11.34	41.52	50.57	74	-23.43	PK
H	4960.00	67.99	50.79	6.83	31.36	55.06	74	-18.94	PK
H	4960.00	55.52	50.79	6.83	31.36	42.68	54	-11.32	AV
H	7440.00	67.84	50.11	7.25	36.58	61.11	74	-12.89	PK
H	7440.00	48.13	50.11	7.25	36.58	41.94	54	-12.06	AV
H	16132.00	49.85	51.53	11.34	41.52	50.47	74	-23.53	PK

Remark:

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.

π/4 DQPSK

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:2402									
V	4804.00	67.25	50.65	6.88	31.29	54.77	74	-19.23	PK
V	4804.00	55.63	50.65	6.88	31.29	43.15	54	-10.85	AV
V	7206.00	66.84	49.98	7.16	36.63	60.65	74	-13.35	PK
V	7206.00	46.63	49.98	7.16	36.63	40.44	54	-13.56	AV
V	16132.00	49.85	51.53	11.34	41.52	51.18	74	-22.82	PK
H	4804.00	69.49	50.65	6.88	31.29	57.01	74	-16.99	PK
H	4804.00	52.55	50.65	6.88	31.29	40.07	54	-13.93	AV
H	7206.00	66.54	49.98	7.16	36.63	60.35	74	-13.65	PK
H	7206.00	47.87	49.98	7.16	36.63	41.68	54	-12.32	AV
H	16132.00	47.96	51.53	11.34	41.52	49.29	74	-24.71	PK
operation frequency:2441									
V	4882.00	67.41	50.67	6.89	31.38	55.01	74	-18.99	PK
V	4882.00	55.56	50.67	6.89	31.38	43.16	54	-10.84	AV
V	7323.00	66.25	50.02	7.24	36.63	60.1	74	-13.9	PK
V	7323.00	46.31	50.02	7.24	36.63	40.16	54	-13.84	AV
V	16132.00	48.85	51.53	11.34	41.52	50.18	74	-23.82	PK
H	4882.00	66.16	50.67	6.89	31.38	53.76	74	-20.24	PK
H	4882.00	55.84	50.67	6.89	31.38	43.44	54	-10.56	AV
H	7323.00	65.85	50.02	7.24	36.63	59.7	74	-14.3	PK
H	7323.00	47.16	50.02	7.24	36.63	41.01	54	-12.99	AV
H	16132.00	48.41	51.53	11.34	41.52	49.74	74	-24.26	PK
operation frequency:2480									
V	4960.00	67.36	50.79	6.83	31.36	54.76	74	-19.24	PK
V	4960.00	55.52	50.79	6.83	31.36	42.92	54	-11.08	AV
V	7440.00	66.99	50.11	7.25	36.58	60.71	74	-13.29	PK
V	7440.00	47.54	50.11	7.25	36.58	41.26	54	-12.74	AV
V	16132.00	46.14	51.53	11.34	41.52	47.47	74	-26.53	PK
H	4960.00	66.13	50.79	6.83	31.36	53.53	74	-20.47	PK
H	4960.00	54.52	50.79	6.83	31.36	41.92	54	-12.08	AV
H	7440.00	65.69	50.11	7.25	36.58	59.41	74	-14.59	PK
H	7440.00	45.54	50.11	7.25	36.58	39.26	54	-14.74	AV
H	16132.00	47.36	51.53	11.34	41.52	48.69	74	-25.31	PK

Remark:

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.

3.3 RADIATED BAND EMISSION MEASUREMENT

3.3.1 TEST REQUIREMENT:

FCC Part15 C Section 15.209 and 15.205

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Limit (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	2300MHz
Stop Frequency	2520
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

3.3.2 TEST PROCEDURE

Above 1GHz test procedure as below:

a. 1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

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

g. Test the EUT in the lowest channel,the Highest channel

Note:

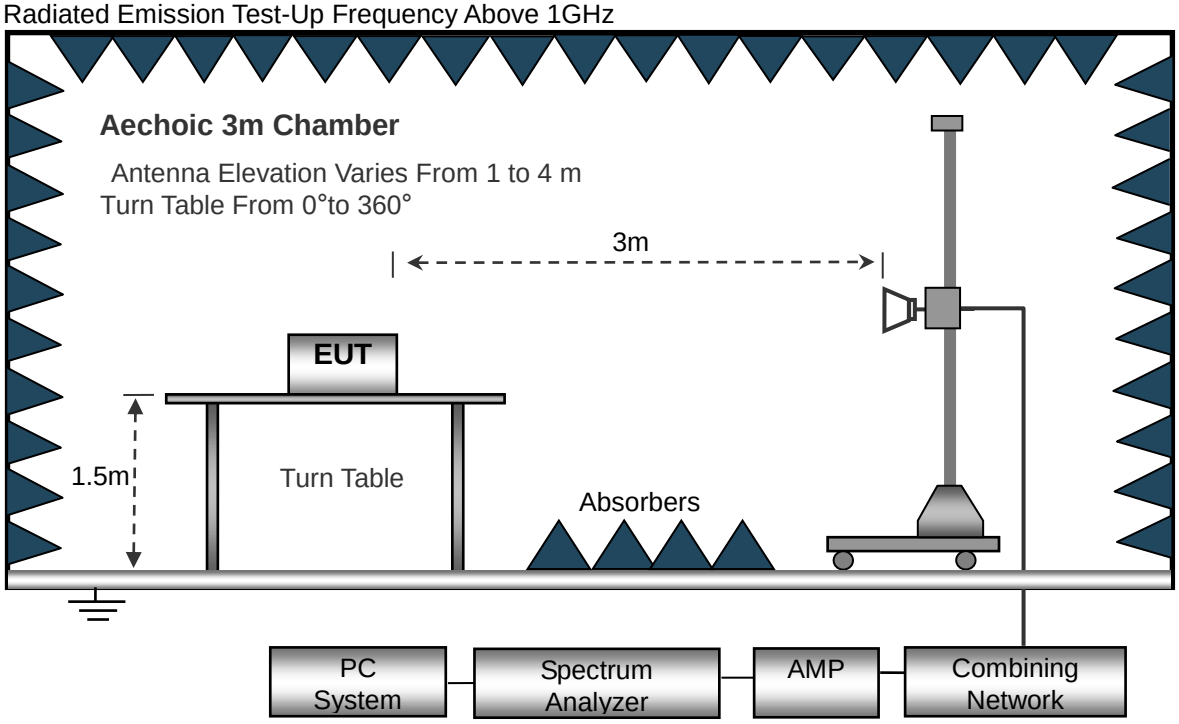
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

3.3.3 DEVIATION FROM TEST STANDARD

No deviation

3.3.4 TEST SETUP

Radiated Emission Test-Up Frequency Above 1GHz



3.3.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

3.3.6 TEST RESULT

GFSK

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:2402									
V	2390.00	76.63	52.12	2.73	27.38	54.62	74	-19.38	PK
V	2390.00	65.14	52.12	2.73	27.38	43.13	54	-10.87	AV
V	2400.00	76.59	52.16	2.78	27.41	54.62	74	-19.38	PK
V	2400.00	64.35	52.16	2.78	27.41	42.38	54	-11.62	AV
H	2390.00	76.36	52.12	2.73	27.38	54.35	74	-19.65	PK
H	2390.00	65.34	52.12	2.73	27.38	43.33	54	-10.67	AV
H	2400.00	76.92	52.16	2.78	27.41	54.95	74	-19.05	PK
H	2400.00	65.59	52.16	2.78	27.41	43.62	54	-10.38	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:2480									
V	2483.50	76.21	52.23	2.86	27.44	54.28	74	-19.72	PK
V	2483.50	65.83	52.23	2.86	27.44	43.9	54	-10.1	AV
V	2500.00	76.85	52.26	2.88	27.49	54.96	74	-19.04	PK
V	2500.00	64.24	52.26	2.88	27.49	42.35	54	-11.65	AV
H	2483.50	76.68	52.23	2.86	27.44	54.75	74	-19.25	PK
H	2483.50	65.35	52.23	2.86	27.44	43.42	54	-10.58	AV
H	2500.00	76.56	52.26	2.88	27.49	54.67	74	-19.33	PK
H	2500.00	65.37	52.26	2.88	27.49	43.48	54	-10.52	AV

Remark:

1. Emission Level = Meter Reading + Factor, 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.

π/4 DQPSK

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:2402									
V	2390.00	76.29	52.12	2.73	27.38	54.28	74	-19.72	PK
V	2390.00	65.24	52.12	2.73	27.38	43.23	54	-10.77	AV
V	2400.00	76.85	52.16	2.78	27.41	54.88	74	-19.12	PK
V	2400.00	64.16	52.16	2.78	27.41	42.19	54	-11.81	AV
H	2390.00	76.54	52.12	2.73	27.38	54.53	74	-19.47	PK
H	2390.00	65.57	52.12	2.73	27.38	43.56	54	-10.44	AV
H	2400.00	76.86	52.16	2.78	27.41	54.89	74	-19.11	PK
H	2400.00	65.69	52.16	2.78	27.41	43.72	54	-10.28	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:2480									
V	2483.50	76.25	52.23	2.86	27.44	54.32	74	-19.68	PK
V	2483.50	65.36	52.23	2.86	27.44	43.43	54	-10.57	AV
V	2500.00	76.54	52.26	2.88	27.49	54.65	74	-19.35	PK
V	2500.00	65.32	52.26	2.88	27.49	43.43	54	-10.57	AV
H	2483.50	76.39	52.23	2.86	27.44	54.46	74	-19.54	PK
H	2483.50	65.52	52.23	2.86	27.44	43.59	54	-10.41	AV
H	2500.00	76.26	52.26	2.88	27.49	54.37	74	-19.63	PK
H	2500.00	65.87	52.26	2.88	27.49	43.98	54	-10.02	AV

Remark:

1. Emission Level = Meter Reading + Factor, 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.

3.4 CONDUCTED BAND EDGE EMISSION&CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	KDB558074 D0115.247 Meas Guidance v05r02

3.4.1 APPLICABLE STANDARD

in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, 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 in15.209(a).
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.

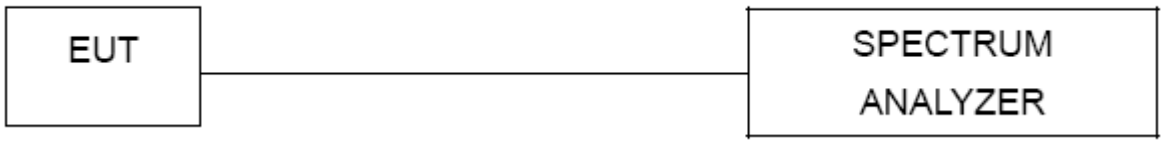
3.4.2 TEST PROCEDURE

Using the following spectrum analyzer setting:
Set the RBW = 100KHz.
Set the VBW = 300KHz.
Sweep time = auto couple.
Detector function = peak.
Trace mode = max hold.
Allow trace to fully stabilize.

3.4.3 DEVIATION FROM STANDARD

No deviation.

3.4.4 TEST SETUP



3.4.5 EUT OPERATION CONDITIONS

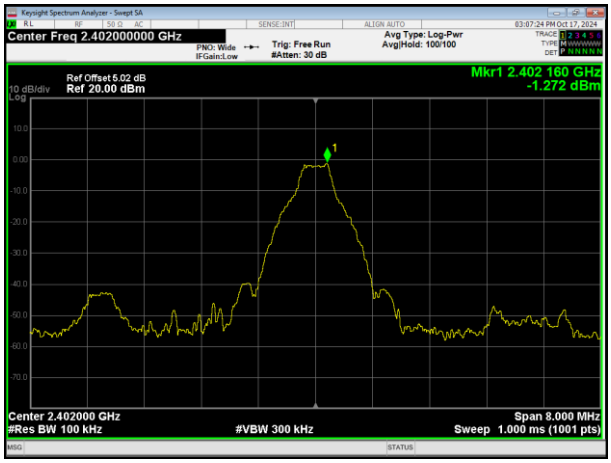
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

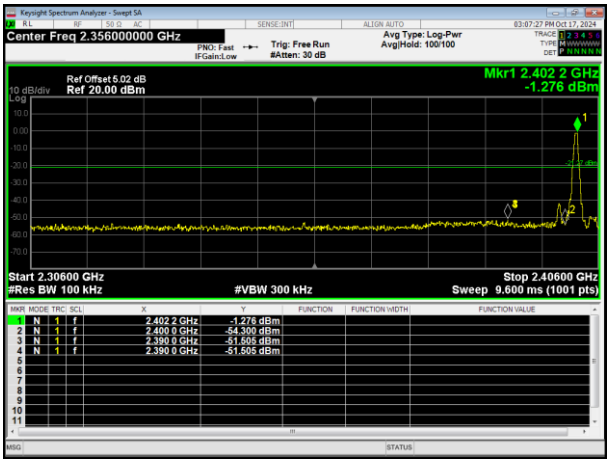
3.4.6 TEST RESULTS

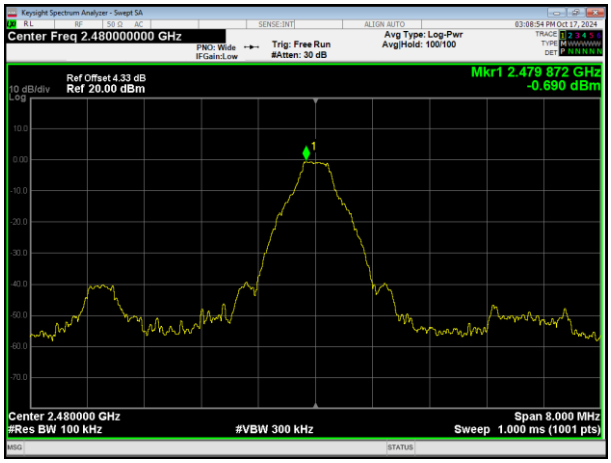
For Conducted

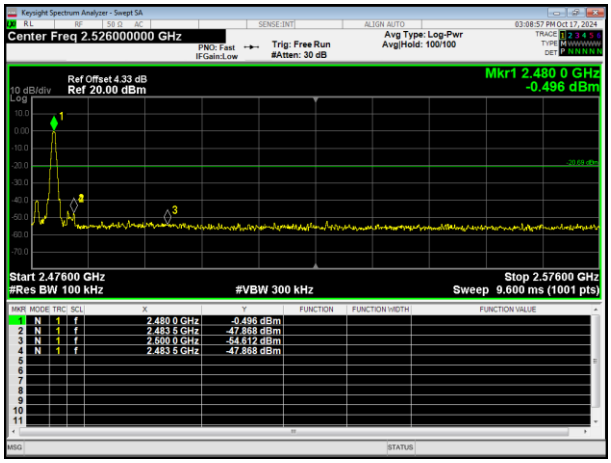
Unhopping

GFSK

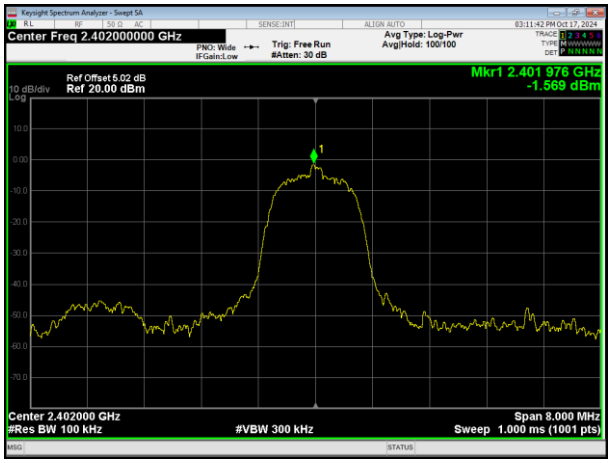


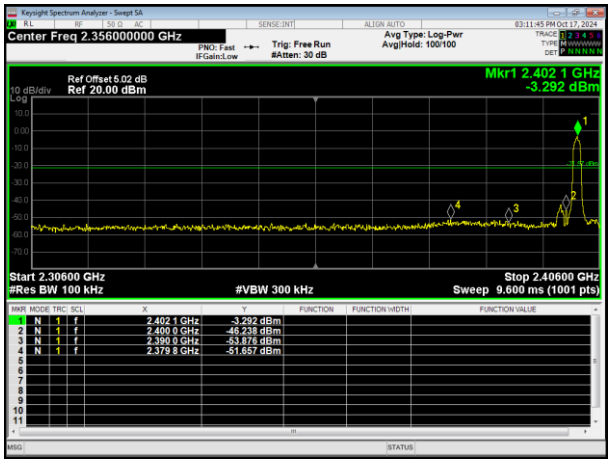


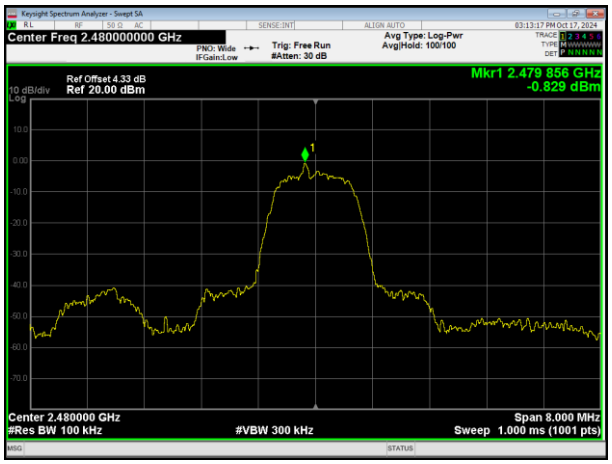


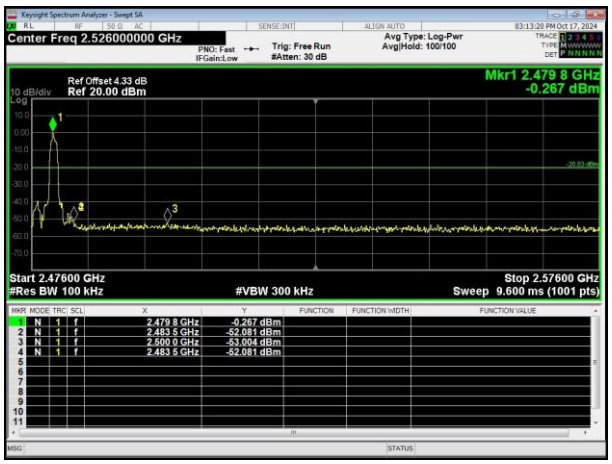


π/4 DQPSK

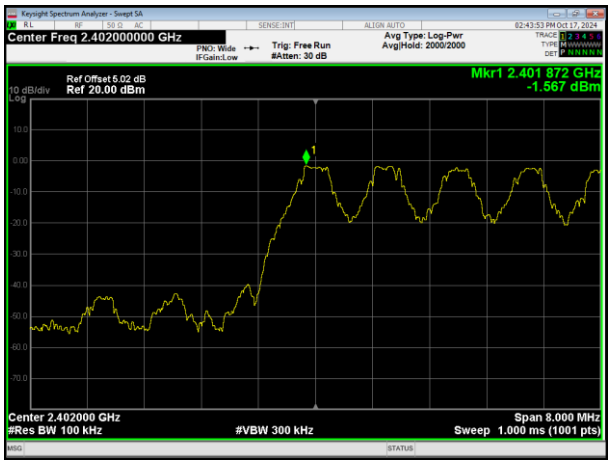

Center Freq 2.402000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
Ref Offset 5.02 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.401 976 GHz
-1.569 dBm
Center 2.402000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 8.000 MHz
Sweep 1.000 ms (1001 pts)

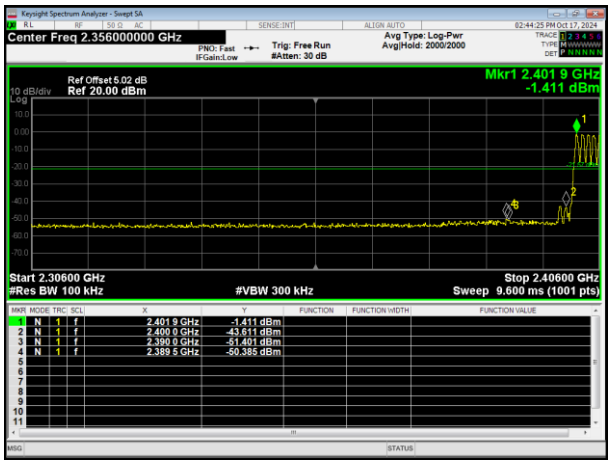

Center Freq 2.356000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
Ref Offset 5.02 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.402 1 GHz
-3.292 dBm
Start 2.30600 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.40600 GHz
Sweep 9.600 ms (1001 pts)
1 N 1 f 2.402 1 GHz -3.292 dBm
2 N 1 f 2.400 0 GHz -46.238 dBm
3 N 1 f 2.390 0 GHz -53.876 dBm
4 N 1 f 2.379 8 GHz -51.857 dBm

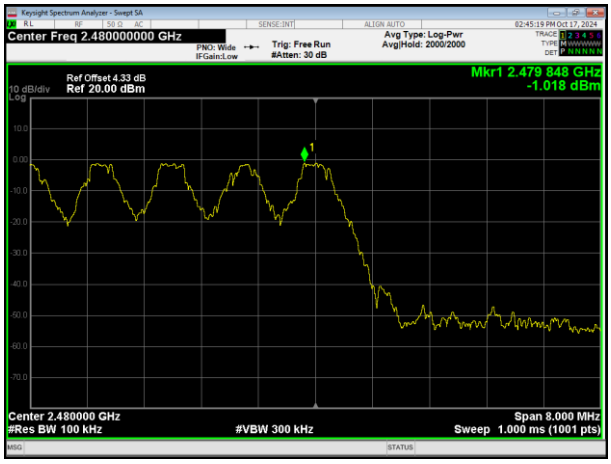

Center Freq 2.480000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
Ref Offset 4.33 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.479 856 GHz
-0.829 dBm
Center 2.480000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 8.000 MHz
Sweep 1.000 ms (1001 pts)

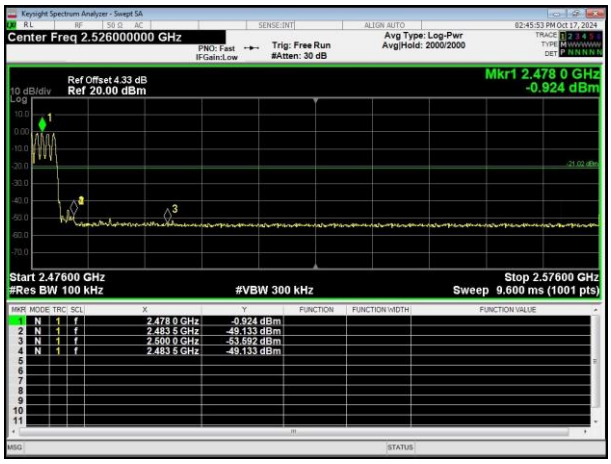

Center Freq 2.526000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
Ref Offset 4.33 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.479 8 GHz
-0.267 dBm
Start 2.47600 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.57600 GHz
Sweep 9.600 ms (1001 pts)
1 N 1 f 2.479 8 GHz -0.267 dBm
2 N 1 f 2.483 5 GHz -52.081 dBm
3 N 1 f 2.500 0 GHz -53.004 dBm
4 N 1 f 2.483 5 GHz -52.081 dBm

Hopping Mode
GFSK

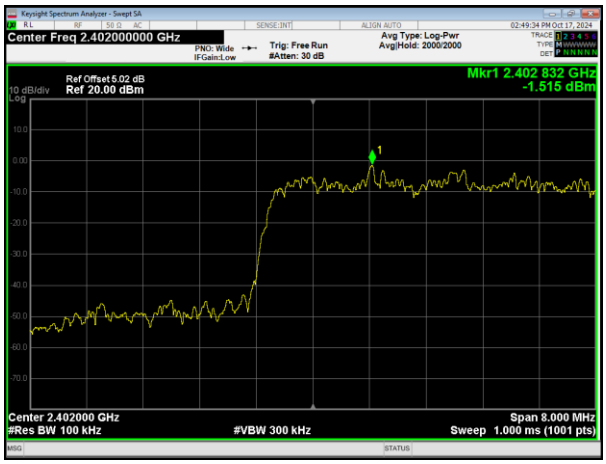


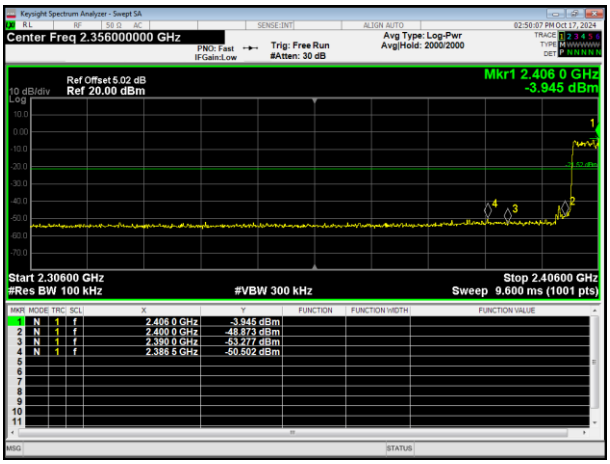


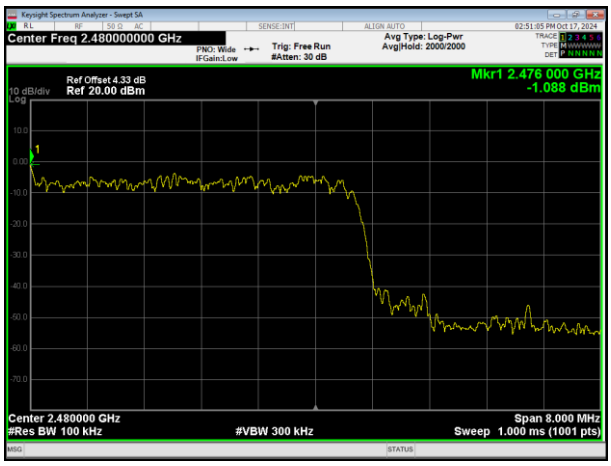


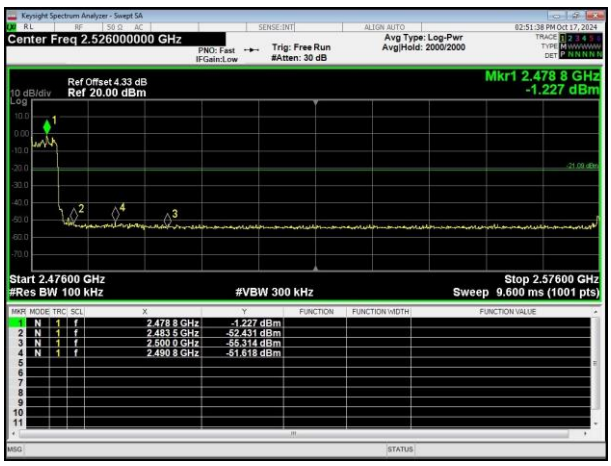


π/4 DQPSK


Center Freq 2.402000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 2000/2000
Ref Offset 5.02 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.402 832 GHz
-1.515 dBm
Center 2.402000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 8.000 MHz
Sweep 1.000 ms (1001 pts)


Center Freq 2.356000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 2000/2000
Ref Offset 5.02 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.406 0 GHz
-3.945 dBm
Start 2.30600 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.40600 GHz
Sweep 9.600 ms (1001 pts)
1 N 1 f 2.406 0 GHz -3.945 dBm
2 N 1 f 2.400 0 GHz -48.873 dBm
3 N 1 f 2.390 0 GHz -53.277 dBm
4 N 1 f 2.386 5 GHz -50.502 dBm

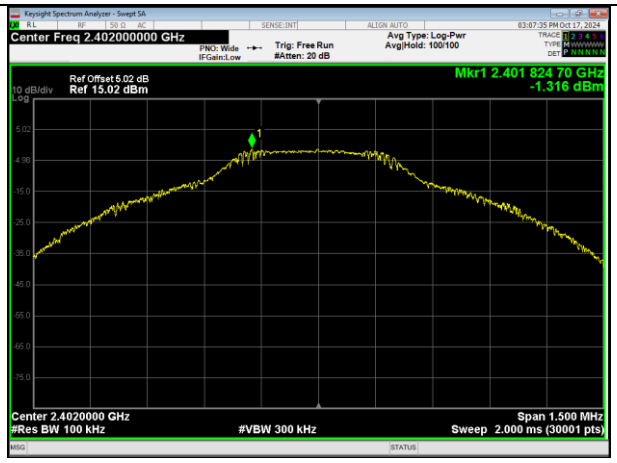

Center Freq 2.480000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 2000/2000
Ref Offset 4.33 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.476 000 GHz
-1.088 dBm
Center 2.480000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 8.000 MHz
Sweep 1.000 ms (1001 pts)

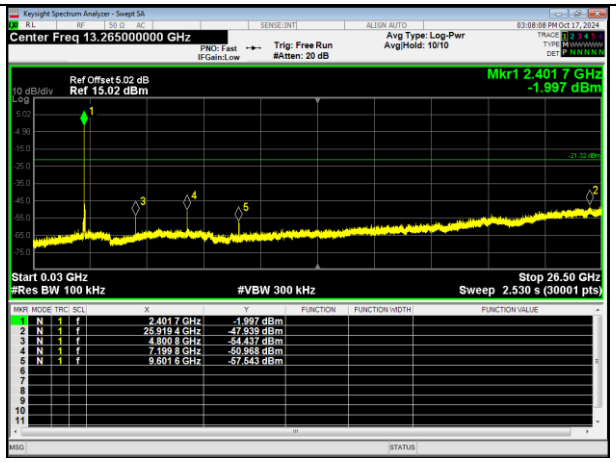

Center Freq 2.526000000 GHz
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 2000/2000
Ref Offset 4.33 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.478 8 GHz
-1.227 dBm
Start 2.47600 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.57600 GHz
Sweep 9.600 ms (1001 pts)
1 N 1 f 2.478 8 GHz -1.227 dBm
2 N 1 f 2.483 5 GHz -52.431 dBm
3 N 1 f 2.500 0 GHz -55.314 dBm
4 N 1 f 2.490 8 GHz -51.618 dBm

For Conducted

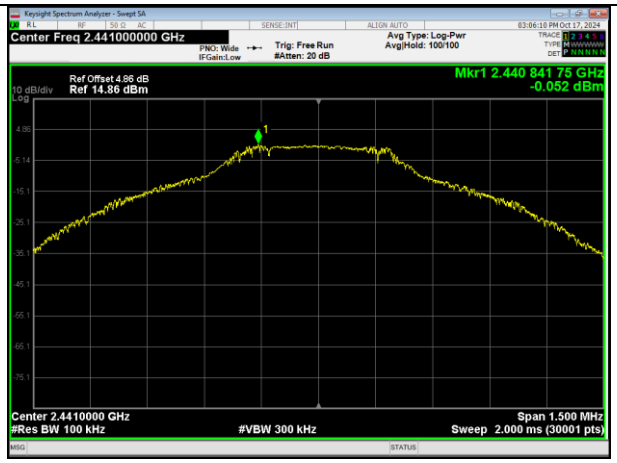
During the test, pre-scan the GFSK, Pi/4QPSK modulation, and found the GFSK modulation which it is worse case.

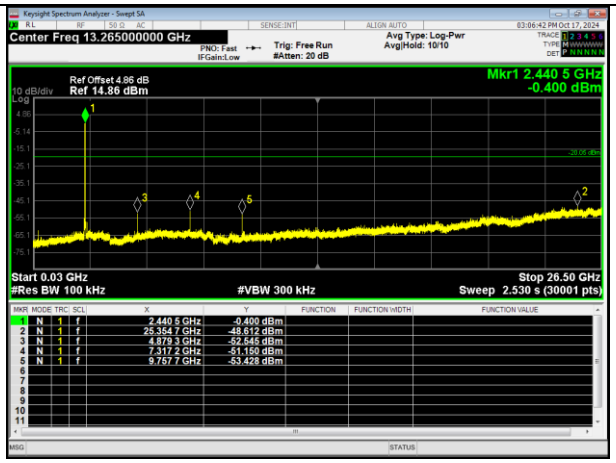
Test channel:	Lowest channel



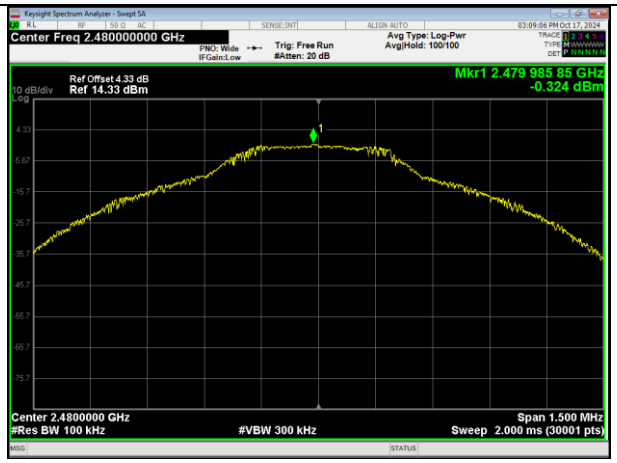


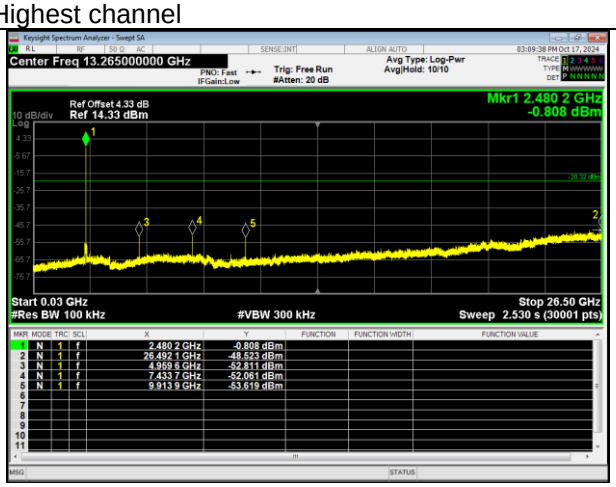
Test channel:	Middle channel





Test channel:	Highest channel





4. PEAK OUTPUT POWER

4.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (b)(i)	Peak Output Power	30Bm or 20.96dBm	2400-2483.5	PASS

4.1.1 TEST PROCEDURE

a. The EUT was directly connected to the power meter and antenna output port as show in the block diagram below,

b. Spectrum Setting : RBW > the 20 dB bandwidth of the emission being measured

Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel

VBW ≥ RBW

Sweep = auto

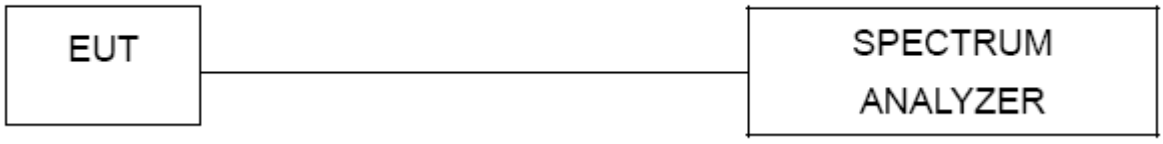
Detector function = peak

Trace = max hold

4.1.2 DEVIATION FROM STANDARD

No deviation.

4.1.3 TEST SETUP



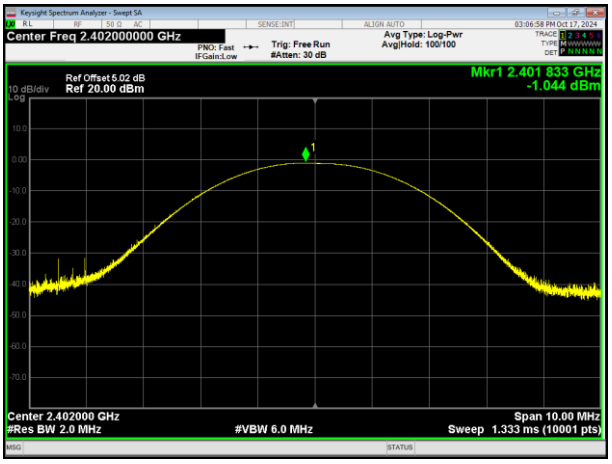
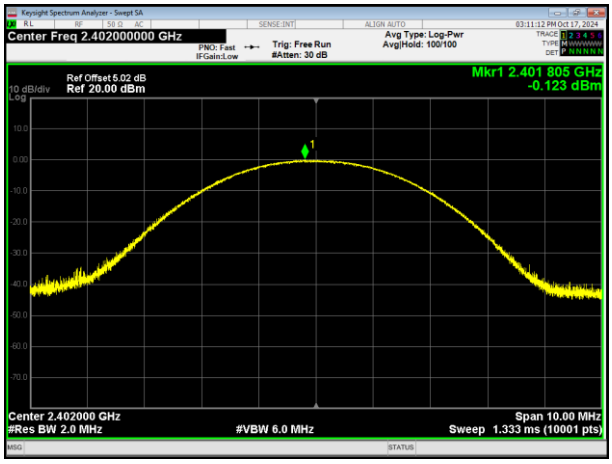
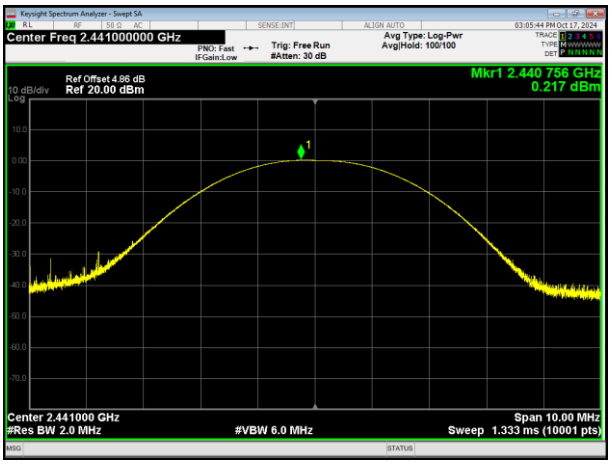
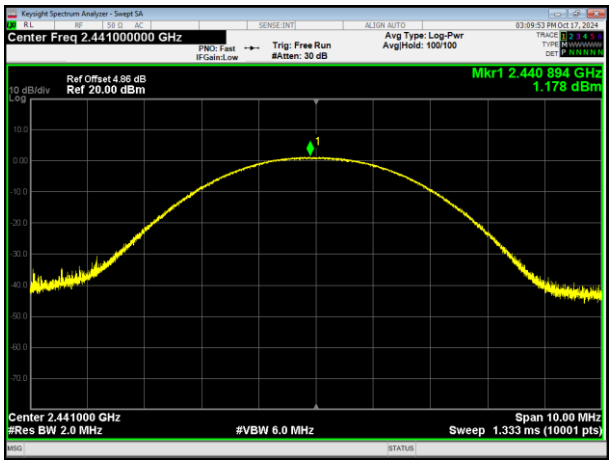
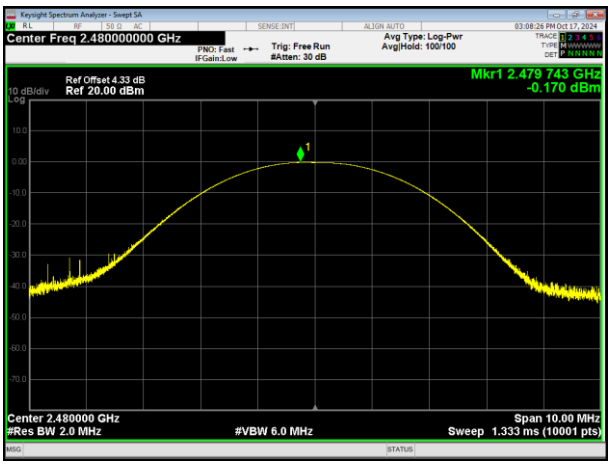
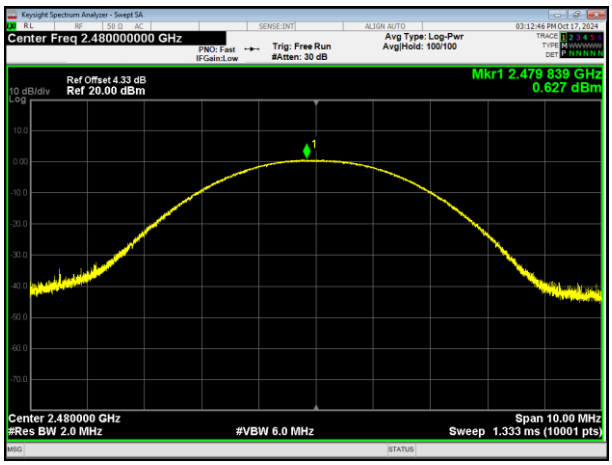
4.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

4.1.5 TEST RESULTS

Temperature:	25 ℃	Relative Humidity:	60%
Pressure:	1012 hPa	Test Mode :	CH00/ CH39 /CH78 (1M/2Mbps Mode)

Mode	Test Channel	Peak Output Power (dBm)	LIMIT (dBm)
GFSK	CH00	-1.044	30.00
	CH39	0.217	30.00
	CH78	-0.17	30.00
π/4 DQPSK	CH00	-0.123	20.96
	CH39	1.178	20.96
	CH78	0.627	20.96

GFSK	π/4 DQPSK
	
2402MHz	2402MHz
	
2441MHz	2441MHz
	
2480MHz	2480MHz

5. NUMBER OF HOPPING CHANNEL

5.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (a)(1)(iii)	Number of Hopping Channel	≥15	2400-2483.5	PASS

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	= the frequency band of operation
RB	RBW= 100KHz
VB	VBW ≥ RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

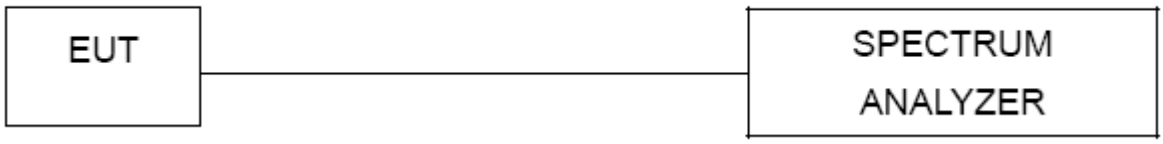
5.1.1 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting : RBW= 100KHz, VBW=300KHz, Sweep time = Auto.

5.1.2 DEVIATION FROM STANDARD

No deviation.

5.1.3 TEST SETUP



5.1.4 EUT OPERATION CONDITIONS

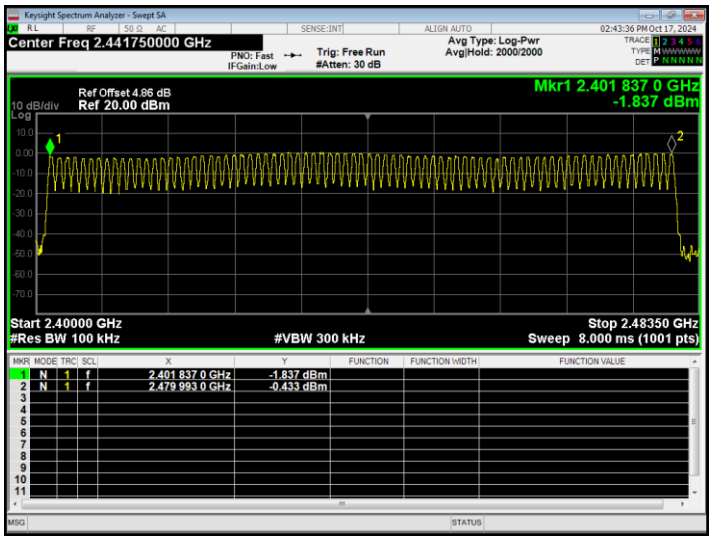
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

5.1.5 TEST RESULTS

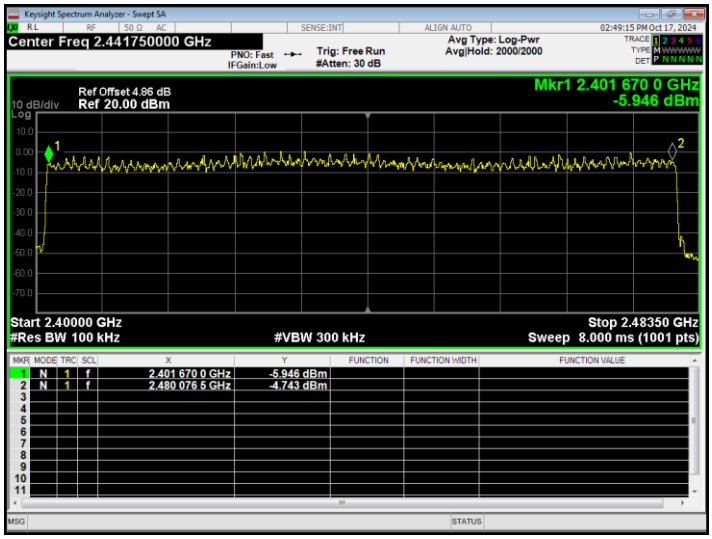
Test Mode :	Hopping Mode

Number of Hopping Channel	GFSK	79
	π/4 DQPSK	79

GFSK


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441750000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 2000/2000
02:43:36 PM Oct 17, 2024
Ref Offset 4.86 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.401 837 0 GHz
-1.837 dBm
Start 2.40000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.48350 GHz
Sweep 8.000 ms (1001 pts)
1 N 1 f 2.401 837 0 GHz -1.837 dBm
2 N 1 f 2.479 993 0 GHz -0.433 dBm

π/4 DQPSK


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441750000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 2000/2000
02:49:15 PM Oct 17, 2024
Ref Offset 4.86 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.401 670 0 GHz
-5.946 dBm
Start 2.40000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.48350 GHz
Sweep 8.000 ms (1001 pts)
1 N 1 f 2.401 670 0 GHz -5.946 dBm
2 N 1 f 2.480 076 5 GHz -4.743 dBm

6. BANDWIDTH TEST

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C	
Section	Test Item
15.247(a)(2)	Bandwidth

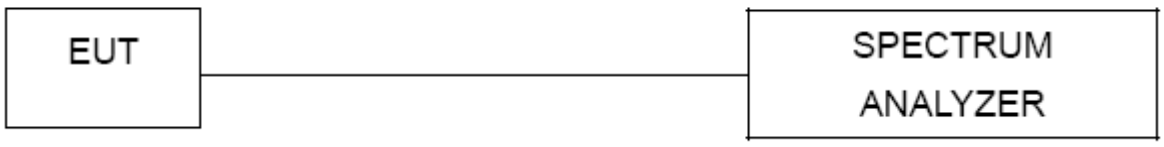
6.1.1 TEST PROCEDURE

1. Set RBW = 30 kHz.
2. Set the video bandwidth (VBW) ≥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 20 dB relative to the maximum level measured in the fundamental emission.

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP

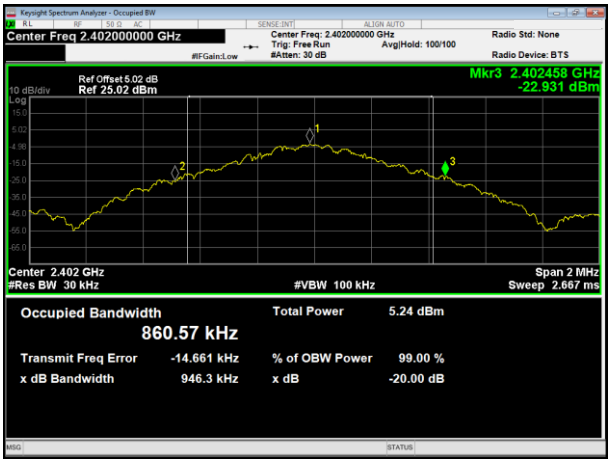
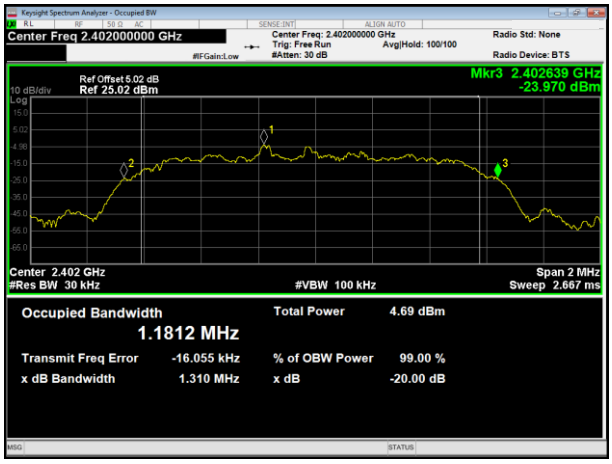
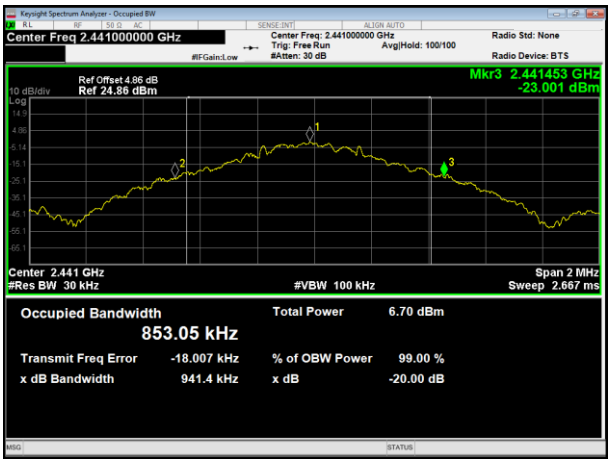
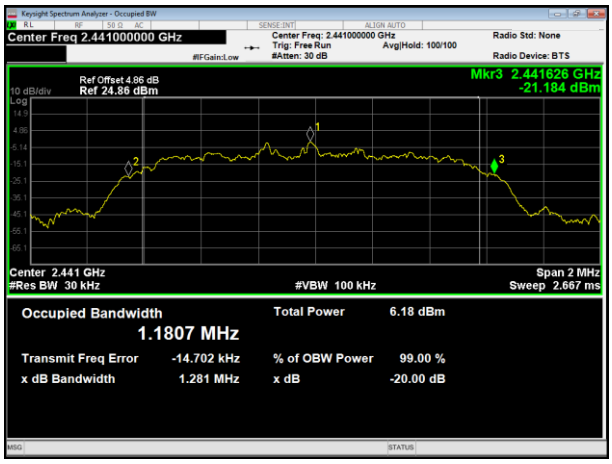
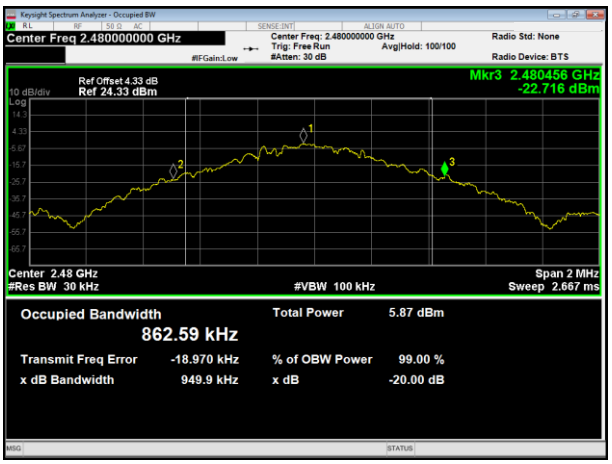
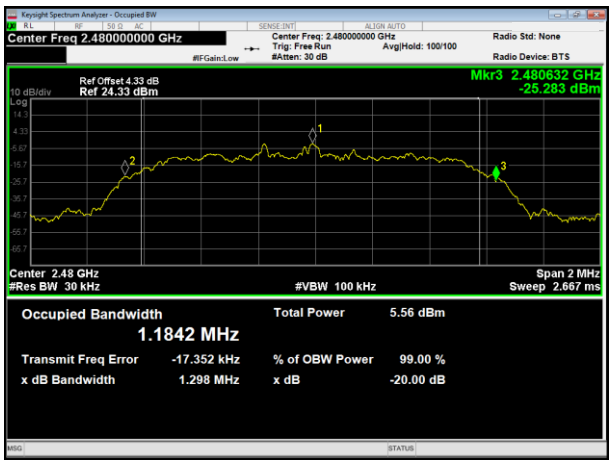


6.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

6.1.5 TEST RESULTS

	Frequency (MHz)	20dB Bandwidth (MHz)	Result
GFSK	2402	0.946	Pass
	2441	0.941	Pass
	2480	0.95	Pass
π/4 DQPSK	2402	1.31	Pass
	2441	1.281	Pass
	2480	1.298	Pass

GFSK	π/4 DQPSK
	
2402MHz	2402MHz
	
2441MHz	2441MHz
	
2480MHz	2480MHz

7. HOPPING CHANNEL SEPARATION MEASUREMENT

7.1 APPLIED PROCEDURES / LIMIT

Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RB	300 kHz (Channel Separation)
VB	1000 kHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

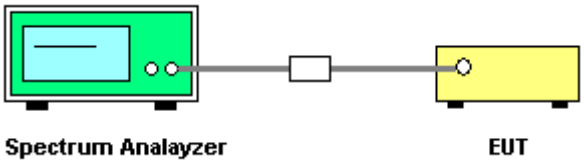
7.1.1 TEST PROCEDURE

a. The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
b. The resolution bandwidth of 300 kHz and the video bandwidth of 1000 kHz were utilised for channel separation measurement.

7.1.2 DEVIATION FROM STANDARD

No deviation.

7.1.3 TEST SETUP

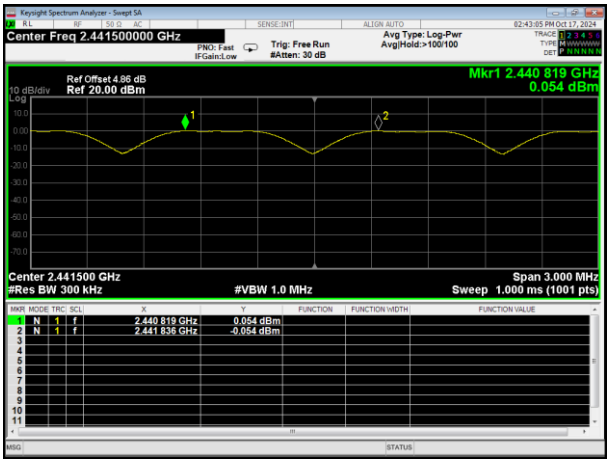
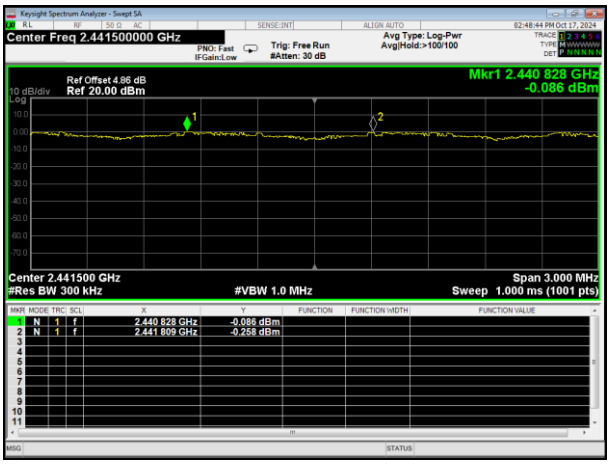


7.1.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

7.1.5 TEST RESULTS

Test Mode	Ch. Separation (MHz)	Max 20dB bandwidth(MHz)	Limit (MHz)	Result
GFSK	1.017	0.95	0.633	Pass
π/4 DQPSK	0.999	1.31	0.873	Pass

GFSK

π/4DPSK


8. DWELL TIME OF OCCUPANCY

8.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (a)(1)(iii)	Average Time of Occupancy	0.4sec	2400-2483.5	PASS

8.1.1 TEST PROCEDURE

a. The transmitter output (antenna port) was connected to the spectrum analyzer
b. Set RBW of spectrum analyzer to 1MHz and VBW to 3MHz.
c. Use a video trigger with the trigger level set to enable triggering only on full pulses.
d. Sweep Time is more than once pulse time.
e. Set the center frequency on any frequency would be measure and set the frequency span to zero span.
f. Measure the maximum time duration of one single pulse.
g. Set the EUT for DH5, DH3 and DH1 packet transmitting.
h. Measure the maximum time duration of one single pulse.
i. A Period Time = (channel number)*0.4
DH1 Time Slot: Reading * (1600/2)*31.6/(channel number)
DH3 Time Slot: Reading * (1600/4)*31.6/(channel number)
DH5 Time Slot: Reading * (1600/6)*31.6/(channel number)

8.1.2 DEVIATION FROM STANDARD

No deviation.

8.1.3 TEST SETUP

8.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

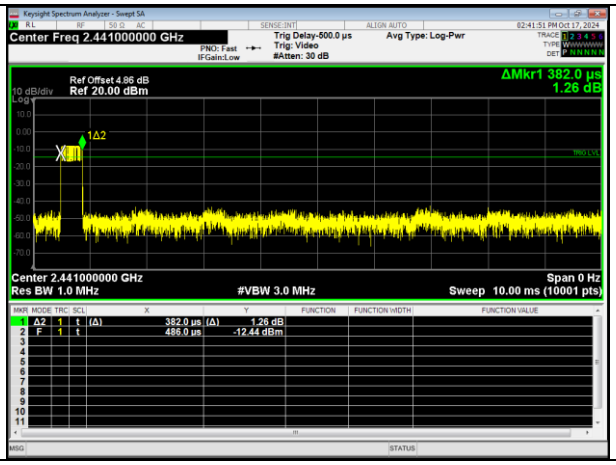
8.1.5 TEST RESULTS

Test Mode :	CH39-DH5, 2DH5, 3DH5

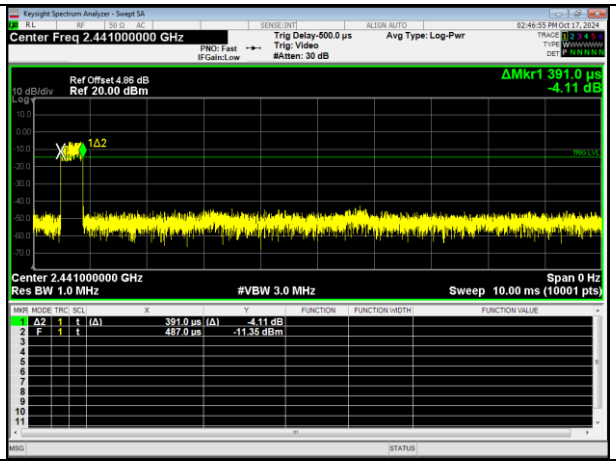
Frequency	Packet	Pulse time (ms)	Dwell time(ms)	Limit(s)	Result
2402MHz	DH1	0.382	122.24	0.4	Pass
	DH3	1.639	262.24	0.4	Pass
	DH5	2.887	307.947	0.4	Pass
2402MHz	2-DH1	0.391	125.12	0.4	Pass
	2-DH3	1.643	262.88	0.4	Pass
	2-DH5	2.885	307.733	0.4	Pass

Dwell time=Pulse time (ms) × (1600 ÷ 2 ÷ 79) ×31.6 Second for DH1, 2-DH1
Dwell time=Pulse time (ms) × (1600 ÷ 4 ÷ 79) ×31.6 Second for DH3, 2-DH3
Dwell time=Pulse time (ms) × (1600 ÷ 6 ÷ 79) ×31.6 Second for DH5, 2-DH5

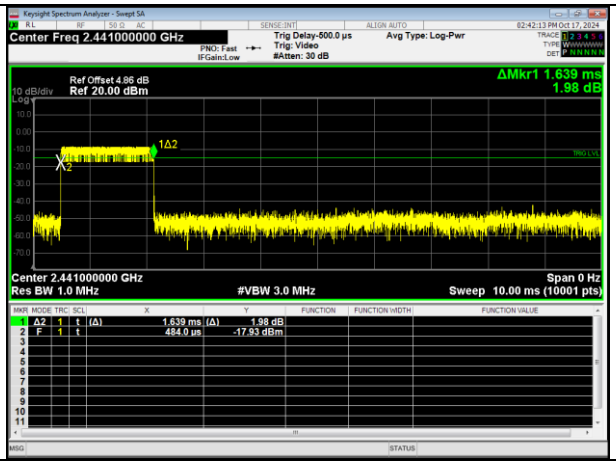
Test channel: 2402MHz



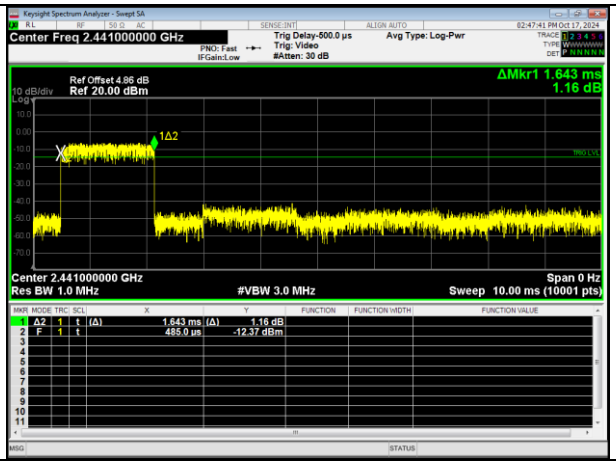
DH1



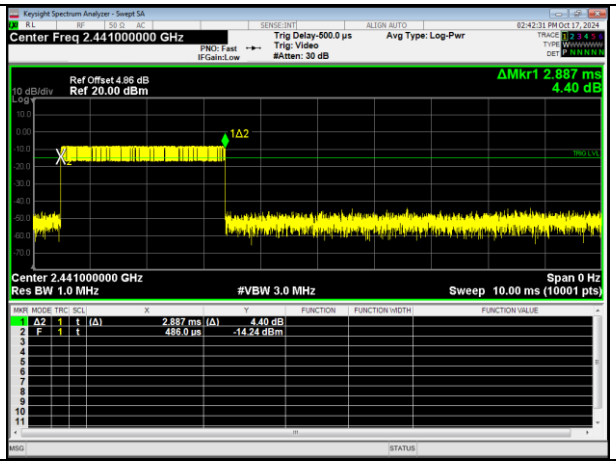
2-DH1



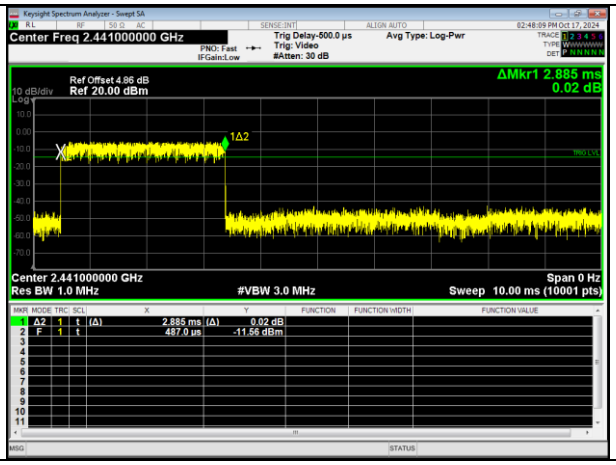
DH3



2-DH3



DH5



2-DH5

9. ANTENNA REQUIREMENT

9.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 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.

9.2 EUT ANTENNA

The EUT antenna is internal antenna,. It comply with the standard requirement.

10. TEST SEUUP PHOTO

Reference to the appendix I for details.

11. EUT PHOTO

Reference to the appendix II for details.

※※※※※ END OF REPORT ※※※※※