FCC RADIO TEST REPORT

Applicant……....	:	Robert Bosch GmbH
Address…….....	:	Robert-Bosch-Platz 1, 70839 Gerlingen, Germany
Manufacturer…….....	:	Robert Bosch GmbH
Address…….....	:	Robert-Bosch-Platz 1, 70839 Gerlingen, Germany
Factory 1.....	:	Robert Bosch Malaysia
Address.....	:	Phase 1 – Free Industrial Zone, 11900 Bayan Lepas, Penang, Malaysia
Factory 2.....	:	Bosch Automotive Electronics India Pvt.Ltd.
Address.....	:	Hangar 703 Naganathapura, Electronic city PO, Bengaluru - 560100
Product Name……..:		Multimedia device with Bluetooth and WLAN
Brand Name…….....:		BOSCH
Model No. ……:		71U0
FCC ID……..…:		2AUXS-71U0
Measurement Standard…….....:		47 CFR FCC Part 15, Subpart C (Section 15.247)
Receipt Date of Samples……	:	February 18, 2025
Date of Tested…….	:	February 18, 2025 to March 24, 2025
Date of Report……..:		March 25, 2025

This report shows that above equipment is technically compliant with the requirements of the standards above. All test results in this report apply only to the tested sample(s). Without prior written approval of Dongguan Nore Testing Center Co., Ltd, this report shall not be reproduced except in full.

Prepared by

Jenny Liu / Project Engineer

Approved by

Iori Fan / Authorized Signatory

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Revision History

Report Number	Description	Issued Date
NTC2502406FV00	Initial Issue	2025-03-25

1. Summary of Test Result

FCC Rules	Description of Test	Result	Remarks
§15.247(a)(1)	Channel Separation test	PASS	---
§15.247(a)(1)	20dB Bandwidth	PASS	---
§15.247(a)(1)(iii)	Hopping Channel Number	PASS	---
§15.247(a)(1)(iii)	Time of Occupancy (Dwell Time)	PASS	---
§15.247(b)	Max Peak output Power test	PASS	---
§15.247(d)	Band edge test	PASS	---
§15.207 (a)	AC Power Conducted Emission	PASS	---
§15.247(d),§15.209, §15.205	Radiated Emission	PASS	---
§15.203	Antenna Requirement	PASS	---
§15.247(d)	Conducted Spurious Emission	N/A	See note

Note: The device is designed for vehicle environment using and cannot connect to the public low-voltage network.

2. General Description of EUT

Product Information	
Product Name:	Multimedia device with Bluetooth and WLAN
Main Model Name:	71U0
Additional Model Name:	N/A
Model Difference:	N/A
S/N:	4c8117b1 (conducted sample) / 60c50fde (radiated sample)
Brand Name	BOSCH
Hardware Version:	DA3-002
Software Version:	D3I_51.6(S3R-01-00 (2024-51-6))
Rating:	DC 10V to 16 V come from vehicle environment
Classification:	Class B
Typical Arrangement:	Tabletop
I/O Port:	Refer to the user's manual
Accessories Information	
Adapter:	N/A
Cable:	N/A
Other:	N/A
Additional Information	
Note:	1. The device has six variant versions, and all the versions have the same schematic, construction, PCB Layout, Bluetooth & WIFI RF module; the differences are software version and components populated in accordance with the function feature. Details refer to following the variant version description. 2. According to the version differences and the manufacturer, all tests are performed on version GEX w/DAB.
Remark:	All the information above are provided by the manufacturer. More detailed feature of the EUT please refers to the user manual.

Technical Specification	
Bluetooth Version:	V5.2
Frequency Range:	2402-2480MHz
Modulation Type:	GFSK, π/4-DQPSK, 8DPSK
Number of Channel:	79 (refer to following channel list for details)
Channel Space:	1MHz
Antenna Type:	Chip Antenna
Number of Antenna	2 (BT & 5G WIFI x1, 2.4G & 5G WIFI x 1)
Antenna Gain:	1.87 dBi (Declared by the manufacturer)
Note: This report only applies to BDR+EDR feature of the EUT.	

Variant Version Description:

Function	Versions					
	IND	GEX w/DAB	GEX with no 5GHz AP support	GEX w/o DAB	EU w/DAB	EU w/o DAB
AM	Yes	Yes	Yes	Yes	Yes	Yes
FM	Yes	Yes	Yes	Yes	Yes	Yes
DAB	---	Yes	---	---	Yes	---
DRM	Yes	---	---	---	---	---
BT	Yes	Yes	Yes	Yes	Yes	Yes
BLE	Yes	Yes	Yes	Yes	Yes	Yes
Wifi Station (2.4 GHz)	Yes	Yes	Yes	Yes	Yes	Yes
GNSS	Yes	Yes	Yes	Yes	Yes	Yes
Wifi AP 2.4GHz	---	---	Yes	---	---	---
Wifi AP 5GHz	Yes	Yes	---	Yes	Yes	Yes
USB DCM	Yes	---	---	---	Yes	Yes
USB	Yes	Yes	Yes	Yes	Yes	Yes
QZSS	Yes	Yes	Yes	Yes	Yes	Yes
RVC	Yes	Yes	Yes	Yes	Yes	Yes
Int SVS	Yes	Yes	Yes	Yes	---	---
Ext SVS	---	---	---	---	---	---
Audio (8 CH)	Yes	Yes	Yes	Yes	---	---
Audio (4 CH)	---	---	---	---	Yes	Yes

Note: For wireless functions Bluetooth and WIFI, the hardware design is exactly the same. The WIFI bands and features are locked by the software at the factory and cannot be modified by the user.

Channel List							
Channel	**Frequency (MHz)**	**Channel**	**Frequency (MHz)**	**Channel**	**Frequency (MHz)**	**Channel**	**Frequency (MHz)**
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469
8	2410	28	2430	48	2450	68	2470
9	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461	---	---

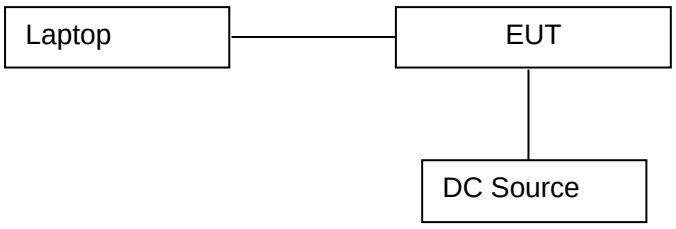
3. Test Channels and Modes Detail

No.	Mode	Channel	Frequency (MHz)	Modulation
1	TX	Hopping	2402-2480	GFSK, Π4/-DQPSK, 8DPSK
2	TX	Low	2402	GFSK, Π4/-DQPSK, 8DPSK
3	TX	Mid	2441	GFSK, Π4/-DQPSK, 8DPSK
4	TX	High	2480	GFSK, Π4/-DQPSK, 8DPSK

Note: TX mode means that the EUT was programmed to be in continuously transmitting mode.

4. Configuration of EUT

TX/ Mode



5. Modification of EUT

No modifications are made to the EUT during all test items.

6. Description of Support Device

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.

No.	Equipment	Brand	M/N	S/N	Cable Specification	Remarks
1.	Laptop	Lenovo	R720-151KBN	PF0Z35FH	---	Provided by the lab

No.	Test Software	Modulation	Power Setting
1.	ADB commands & BTCli tool	GFSK	0x08
		Π4/-DQPSK	0x08
		8DPSK	0x09

7. Test Facility and Location

Test Site	:	Dongguan Nore Testing Center Co., Ltd. (Dongguan NTC Co., Ltd.)
Accreditations and Authorizations	:	The Laboratory has been assessed and proved to be in compliance with CNAS/CL01 Listed by CNAS, August 13, 2018 The Certificate Registration Number is L5795. The Certificate is valid until August 13, 2030 The Laboratory has been assessed and proved to be in compliance with ISO17025 Listed by A2LA, November 01, 2017 The Certificate Registration Number is 4429.01 The Certificate is valid until December 31, 2025 Listed by FCC, November 06, 2017 Test Firm Registration Number: 907417 Listed by Industry Canada, June 08, 2017 The Certificate Registration Number. Is 46405-9743A
Test Site Location	:	Building D, Gaosheng Science and Technology Park, Hongtu Road, Nancheng District, Dongguan City, Guangdong Province, China

8. Applicable Standards and References

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

Test Standards:

47 CFR Part 15, Subpart C, 15.247

ANSI C63.10-2013

References Test Guidance:

DTS KDB 558074 D01 15.247 Meas Guidance v05r02

9. Deviations and Abnormalities from Standard Conditions

No additions, deviations and exclusions from the standard.

10. Test Conditions

No.	Test Item	Test Mode	Test Voltage	Tested by	Remarks
1.	Channel Separation test	1	DC 13.5V	Sean Yuan	See note [1]
2.	20dB Bandwidth	2-4	DC 13.5V	Sean Yuan	See note [1]
3.	Hopping Channel Number	1	DC 13.5V	Sean Yuan	See note [1]
4.	Time of Occupancy (Dwell Time)	1	DC 13.5V	Sean Yuan	See note [1]
5.	Max Peak output Power test	2-4	DC 13.5V	Sean Yuan	See note [1]
6.	Band edge test	1-4	DC 13.5V	Sean Yuan	See note [1]
7.	AC Power Conducted Emission	---	---	---	See note [2]
8.	Radiated Emission	1-4	DC 13.5V	Sean Yuan	See note [1]
9.	Antenna Requirement	---	---	---	---
10.	Conducted Spurious Emission	1-4	DC 13.5V	Sean Yuan	See note [1]

Note:

1. The testing climatic conditions for temperature, humidity, and atmospheric pressure are within: 15~35℃, 30~70%, 86~106kPa
2. The device is designed for vehicle environment using and cannot connect to the public low-voltage network.
3. DC 13.5V comes from the external DC source.

11. Measurement Uncertainty

No.	Test Item	Frequency	Uncertainty	Remarks
1.	Conducted Emission	150KHz ~ 30MHz	±2.52 dB	---
2.	Radiated Emission	9kHz ~ 30MHz	±5.60 dB	
		30MHz ~ 1GHz	±5.60 dB	---
		1GHz ~ 18GHz	±5.22 dB	---
		18GHz ~ 40GHz	±5.22 dB	
3.	RF Conducted	10Hz ~ 40GHz	±1.18 dB	---
4.	Occupied Channel Bandwidth	---	±1.05%	---

Note:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
2. The measurement uncertainly levels above are estimated and calculated according to CISPR 16-4-2.
3. The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

12. Sample Calculations

Conducted Emission						
Freq. (MHz)	**Reading Level (dBuV)**	**Correct Factor (dB)**	**Measurement (dBuV)**	**Limit (dBuV)**	**Over (dB)**	**Detector**
0.2379	16.70	20.60	37.30	62.17	-24.87	QP

Where,

Freq.	= Emission frequency in MHz
Reading Level	= Spectrum Analyzer/Receiver Reading
Corrector Factor	= Insertion loss of LISN + Cable Loss + RF Switching Unit attenuation
Measurement	= Reading + Corrector Factor
Limit	= Limit stated in standard
Margin	= Measurement - Limit
Detector	= Reading for Quasi-Peak / Average / Peak

Radiated Spurious Emissions and Restricted Bands						
Freq. (MHz)	**Reading Level (dBuV)**	**Correct Factor (dB/m)**	**Measurement (dBuV/m)**	**Limit (dBuV/m)**	**Over (dB)**	**Detector**
185.2000	35.99	-9.24	26.75	43.50	-16.75	QP

Where,

Freq.	= Emission frequency in MHz
Reading Level	= Spectrum Analyzer/Receiver Reading
Corrector Factor	= Antenna Factor + Cable Loss - Pre-amplifier
Measurement	= Reading + Corrector Factor
Limit	= Limit stated in standard
Over	= Margin, which calculated by Measurement - Limit
Detector	= Reading for Quasi-Peak / Average / Peak

Note: For all conducted test items, the spectrum analyzer offset or transducer is derived from RF cable loss and attenuator factor. The offset or transducer is equal to the RF cable loss plus attenuator factor.

13. Test Items and Results

13.1 Conducted Emissions Measurement

LIMITS

According to the requirements of FCC PART 15.207, the limits are as follows:

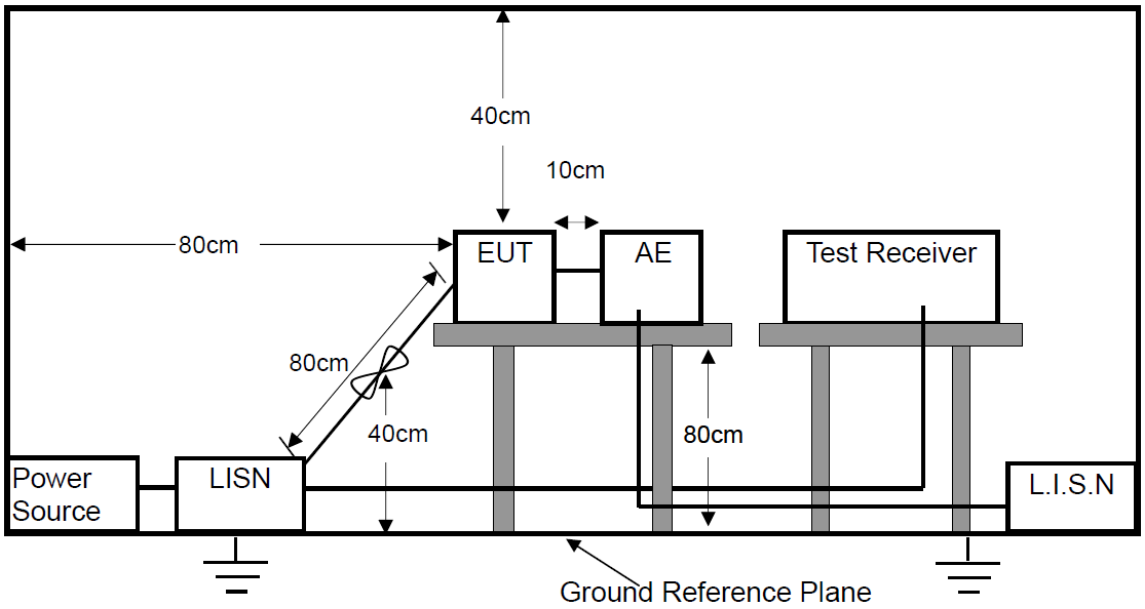
Frequency (MHz)	Quasi-peak	Average
0.15 to 0.5	66 to 56	56 to 46
0.5 to 5	56	46
5 to 30	60	50

Note: 1. If the limits for the average detector are met when using the quasi-peak detector, then the limits for the measurements with the average detector are considered to be met.

2. The lower limit shall apply at the transition frequencies.

3. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5MHz.

BLOCK DIAGRAM OF TEST SETUP



TEST PROCEDURES

a. The EUT was placed on a wooden table 0.8m height from the metal ground plan and 0.4m from the conducting wall of the shielding room and it was kept at 0.8m from any other grounded conducting surface.

b. All I/O cables and support devices were positioned as per ANSI C63.10.

c. Connect mains power port of the EUT to a line impedance stabilization network (LISN).

d. Connect all support devices to the other LISN and AAN, if needed.

e. Scan the frequency range from 150KHz to 30MHz at both sides of AC line for maximum conducted interference checking and record the test data.

TEST RESULTS

Not applicable

13.2 Radiated Spurious Emissions and Restricted Bands Measurement

LIMIT of Radiated Band Edges and non-restricted bands

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB.

LIMIT of Restricted bands

In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below:

Frequency range MHz	Distance Meters	Field Strengths Limit (15.209)
		μV/m
0.009 ~ 0.490	300	2400/F(kHz)
0.490 ~ 1.705	30	24000/F(kHz)
1.705 ~ 30	30	30
30 ~ 88	3	100
88 ~ 216	3	150
216 ~ 960	3	200
Above 960	3	500

Remark: (1) Emission level (dB)μV = 20 log Emission level μV/m

(2) The smaller limit shall apply at the cross point between two frequency bands.

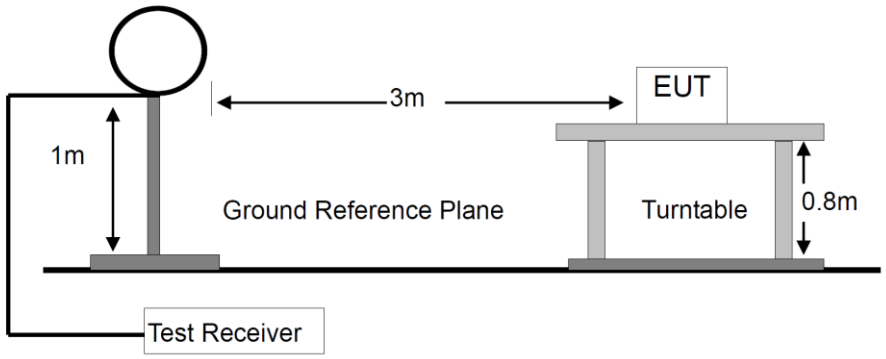
(3) As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

(4) The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower.

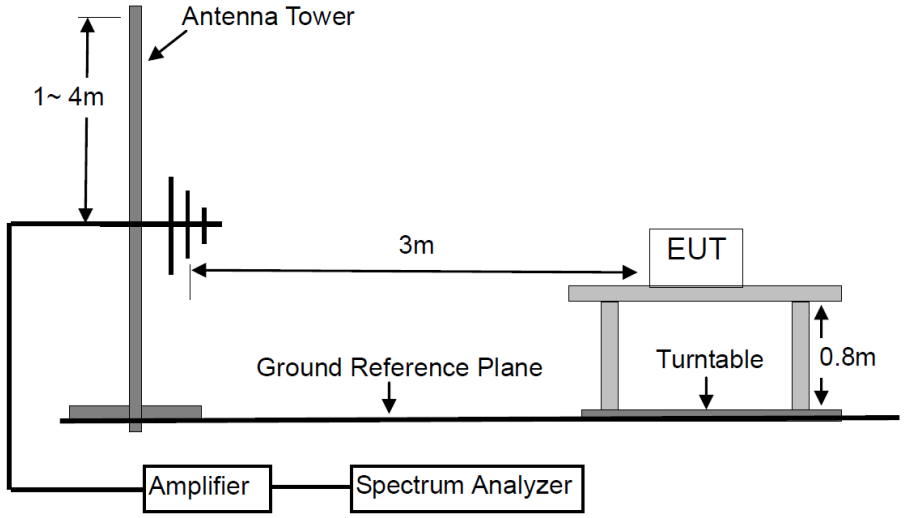
(5) §15.247(d) specifies that emissions which fall in the restricted bands, as defined in §15.205 comply with radiated emission limits specified in §15.209.

BLOCK DIAGRAM OF TEST SETUP

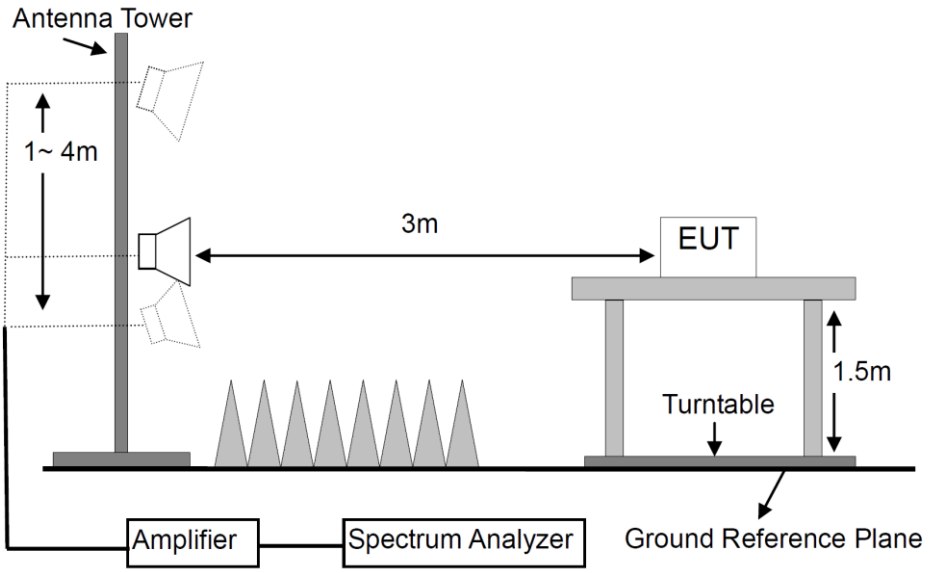
For Radiated Emission below 30MHz



For Radiated Emission 30-1000MHz



For Radiated Emission Above 1000MHz.



TEST PROCEDURES

a. Below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi- anechoic chamber room.

b. For the radiated emission test above 1GHz:

The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter full anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

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

d. The height of antenna 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.

e. 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 rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. The test-receiver system was set to peak detect function and specified bandwidth with maximum hold mode.

f. A Quasi-peak measurement was then made for that frequency point for below 1GHz test. PK and AV for above 1GHz emission test.

g. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and packet type.

During the radiated emission test, the spectrum analyzer was set with the following configurations:

Frequency Band (MHz)	Detector	Resolution Bandwidth	Video Bandwidth
0.009 to 0.090	AVG	300 Hz	1 KHz
0.091 to 0.109	QP	300 Hz	1 KHz
0.110 to 0.490	AVG	300 Hz / 10 KHz	1 KHz / 30 KHz
0.15 to 30	QP, AVG	10 KHz	30 KHz
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	3 MHz
	Average	1 MHz	10 Hz

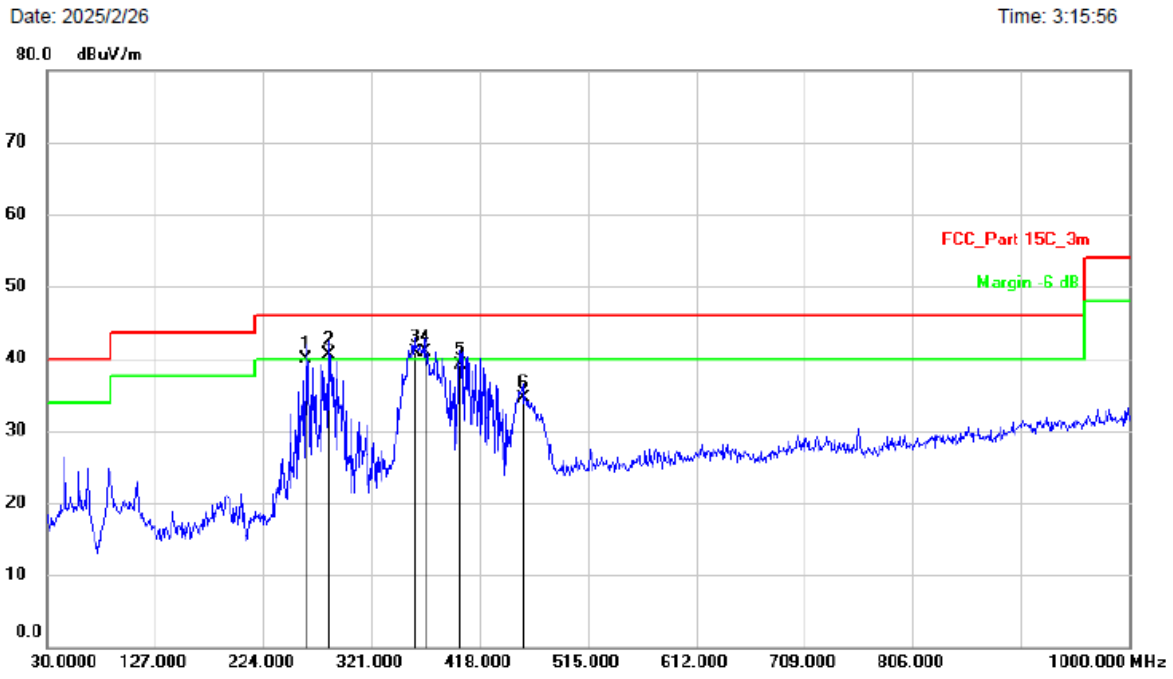
TEST RESULTS

PASS

Please refer to the following pages of the worst case.

M/N: 71U0	Testing Voltage: DC 13.5V
Polarization: Horizontal	Detector: QP
Test Mode: 3 (8DPSK)	Distance: 3m

Radiated Emission Measurement



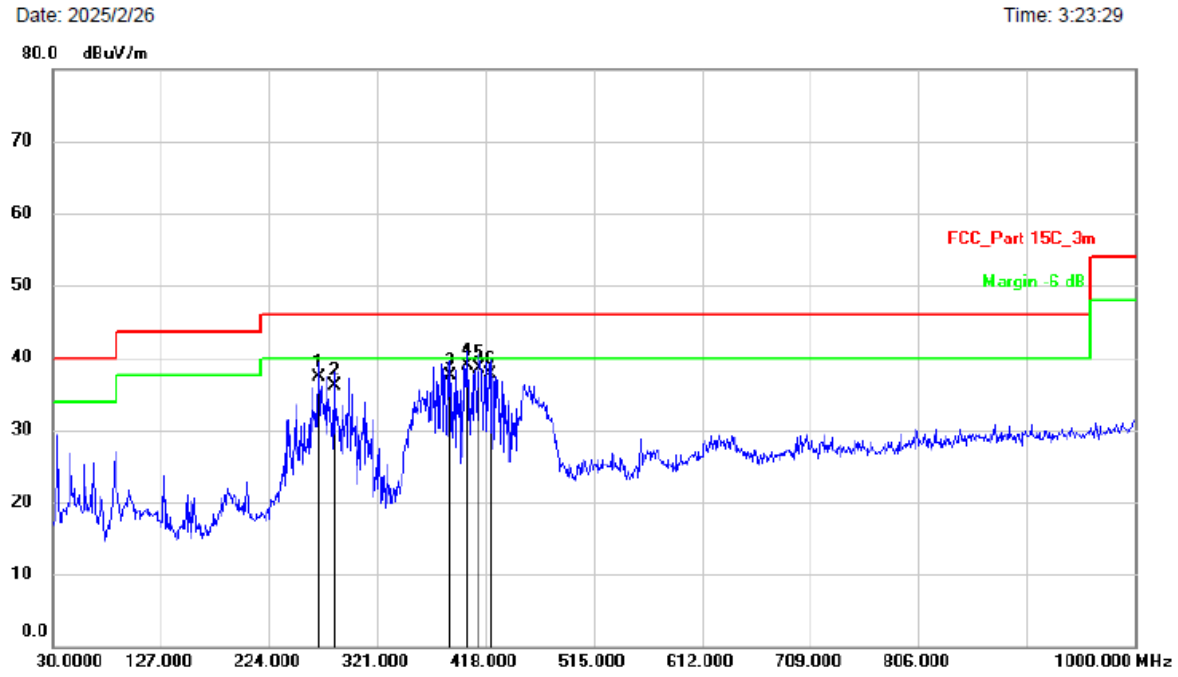
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		261.8299	46.09	-6.13	39.96	46.00	-6.04	QP	
2	!	282.2000	46.32	-5.84	40.48	46.00	-5.52	QP	
3	*	359.8000	44.95	-4.01	40.94	46.00	-5.06	QP	
4	!	369.5000	44.79	-3.89	40.90	46.00	-5.10	QP	
5		400.5400	42.46	-3.32	39.14	46.00	-6.86	QP	
6		456.8000	36.85	-2.44	34.41	46.00	-11.59	QP	

Note 1: Below 30MHz, the emissions are lower than 20dB below the allowable limit.

Note 2: *:Maximum data x:Over limit !:over margin

M/N: 71U0	Testing Voltage: DC 13.5V
Polarization: Vertical	Detector: QP
Test Mode: 3 (8DPSK)	Distance: 3m

Radiated Emission Measurement



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		268.6200	44.37	-7.03	37.34	46.00	-8.66	QP	
2		282.2000	42.97	-6.84	36.13	46.00	-9.87	QP	
3		385.9900	42.19	-4.62	37.57	46.00	-8.43	QP	
4	*	401.5100	43.24	-4.30	38.94	46.00	-7.06	QP	
5		412.1800	42.57	-4.12	38.45	46.00	-7.55	QP	
6		421.8800	41.63	-3.98	37.65	46.00	-8.35	QP	

Note 1: Below 30MHz, the emissions are lower than 20dB below the allowable limit.

Note 2: *:Maximum data x:Over limit !:over margin

Modulation: 8DPSK					Test Result: PASS		Test frequency range: 1-25GHz			
Freq. (MHz)	Ant. Pol. (H/V)	Reading Level(dBuV)		Factor (dB/m)	Emission Level (dBuV/m)		Limit 3m (dBuV/m)		Margin (dB)	
		PK	AV		PK	AV	PK	AV	PK	AV
Operation Mode: TX Mode (Low)										
4804	H	46.89	38.46	6.30	53.19	44.76	74.00	54.00	-20.81	-9.24
7206	H	45.57	31.93	10.44	56.01	42.37	74.00	54.00	-17.99	-11.63

4804	V	46.85	38.41	6.30	53.15	44.71	74.00	54.00	-20.85	-9.29
7206	V	45.32	31.98	10.44	55.76	42.42	74.00	54.00	-18.24	-11.58

Operation Mode: TX Mode (Mid)										
4882	H	49.42	37.92	6.60	56.02	44.52	74.00	54.00	-17.98	-9.48
7323	H	45.65	32.46	10.55	56.20	43.01	74.00	54.00	-17.80	-10.99

4882	V	45.67	34.74	6.60	52.27	41.34	74.00	54.00	-21.73	-12.66
7323	V	44.89	32.66	10.55	55.44	43.21	74.00	54.00	-18.56	-10.79

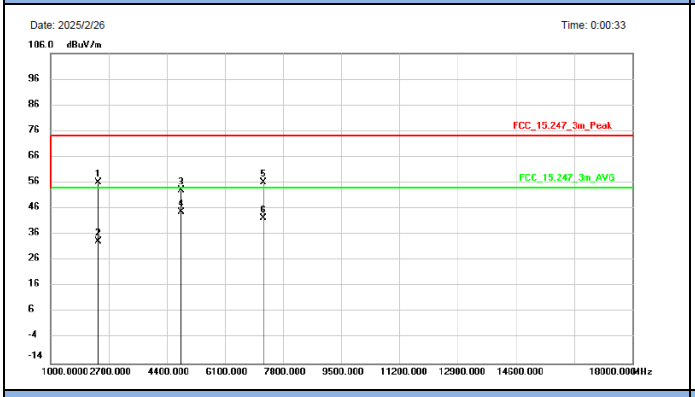
Operation Mode: TX Mode (High)										
4960	H	47.05	34.05	6.89	53.94	40.94	74.00	54.00	-20.06	-13.06
7440	H	45.19	31.05	10.60	55.79	41.65	74.00	54.00	-18.21	-12.35

4960	V	46.73	33.85	6.89	53.62	40.74	74.00	54.00	-20.38	-13.26
7440	V	44.76	30.65	10.60	55.36	41.25	74.00	54.00	-18.64	-12.75

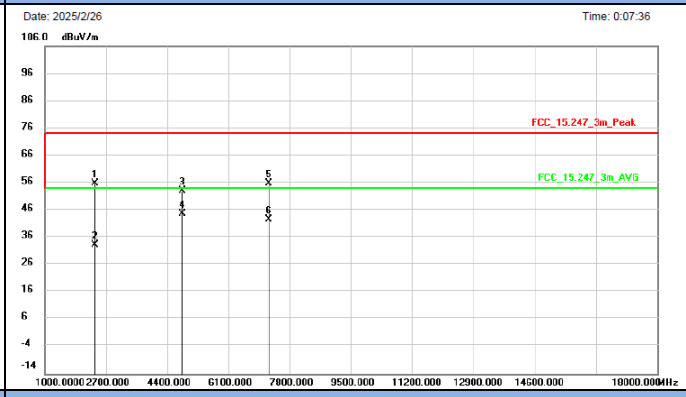
Spurious Emission in restricted band:										
2390.000	H	56.04	33.06	0.13	56.17	33.19	74.00	54.00	-17.83	-20.81
2390.000	V	55.54	33.27	0.13	55.67	33.40	74.00	54.00	-18.33	-20.60
2483.500	H	53.13	32.52	0.34	53.47	32.86	74.00	54.00	-20.53	-21.14
2483.500	V	52.91	34.12	0.34	53.25	34.46	74.00	54.00	-20.75	-19.54

Remark: Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits.

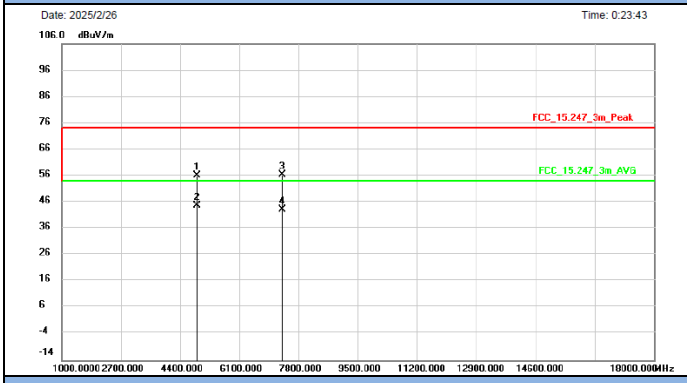
8DPSK / Low Channel / Horizontal



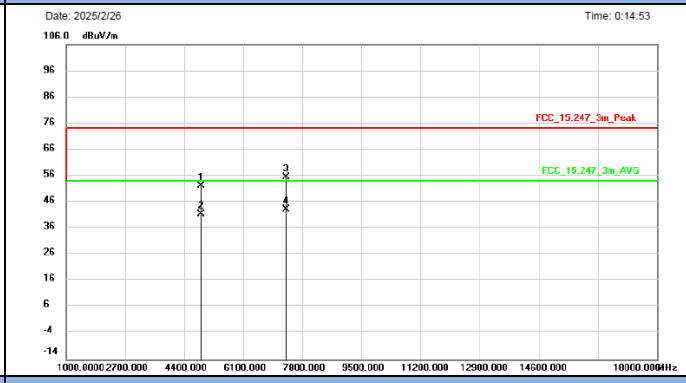
8DPSK / Low Channel / Vertical



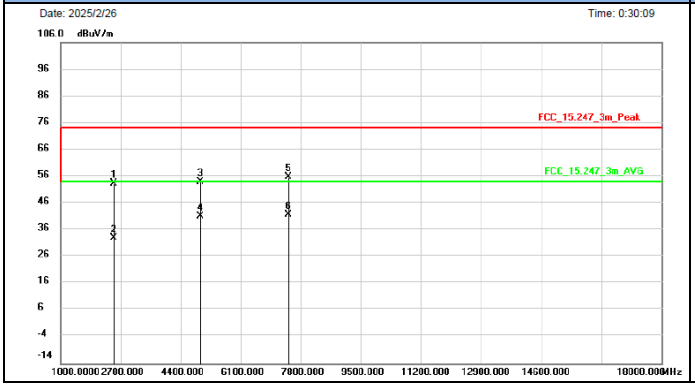
8DPSK / Mid Channel / Horizontal



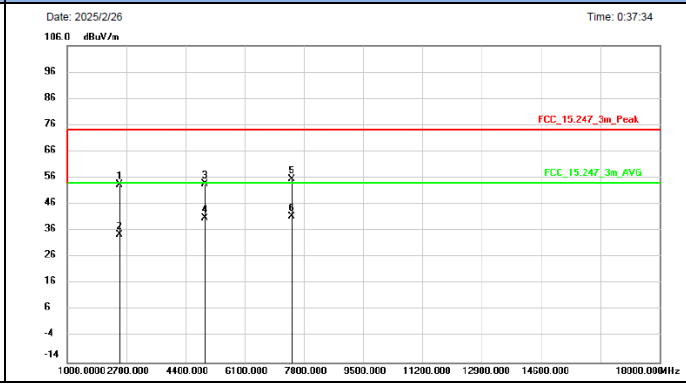
8DPSK / Mid Channel / Vertical



8DPSK / High Channel / Horizontal



8DPSK / High Channel / Vertical

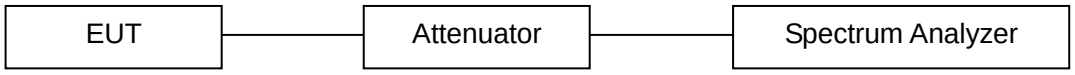


13.3 Channel Separation test

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.

BLOCK DIAGRAM OF TEST SETUP



TEST PROCEDURES

a. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

b. Set to the maximum power setting and enable the EUT transmit continuously.

c. Enable the EUT hopping function.

d. Set spectrum analyzer and perform testing according to ANSI C63.10 clause 7.8.2.

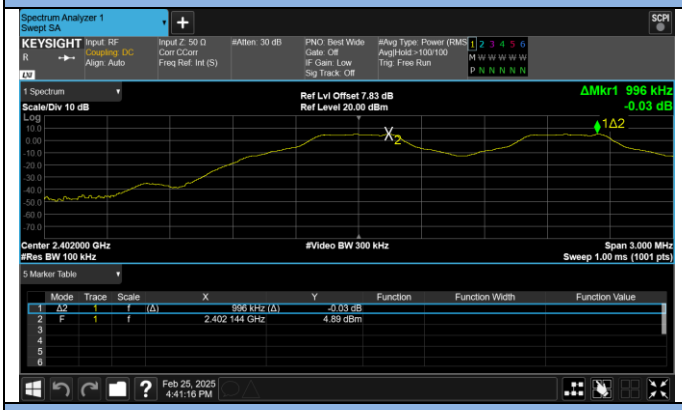
TEST RESULTS

PASS

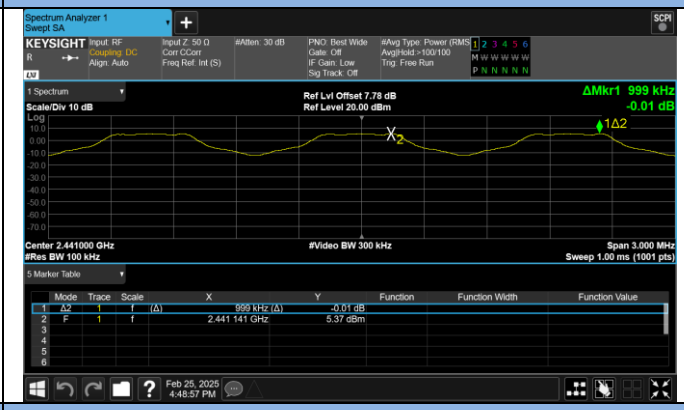
Please refer to the following tables.

Modulation	Channel	Frequency (MHz)	Hopping Separation Measurement (MHz)	Hopping Separation Limit (MHz)	Test Result
GFSK	Low	2402	0.996	> 0.615	Pass
	Mid	2441	0.999	> 0.619	Pass
	High	2480	0.999	> 0.614	Pass
Π4/-DPQSK	Low	2402	0.999	> 0.853	Pass
	Mid	2441	0.996	> 0.853	Pass
	High	2480	1.002	> 0.852	Pass
8DPSK	Low	2402	1.002	> 0.865	Pass
	Mid	2441	1.002	> 0.864	Pass
	High	2480	1.002	> 0.863	Pass

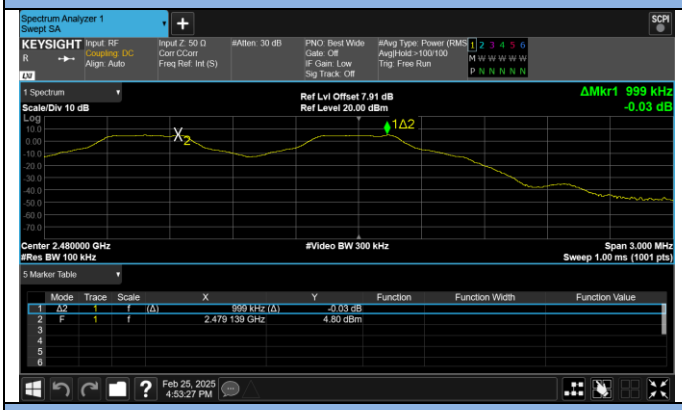
GFSK / Low Channel



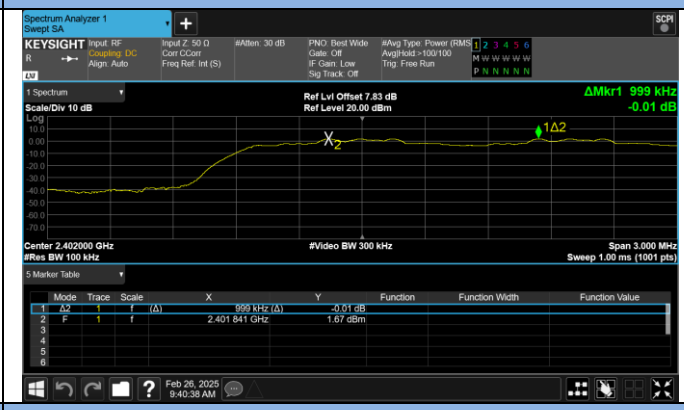
GFSK / Mid Channel



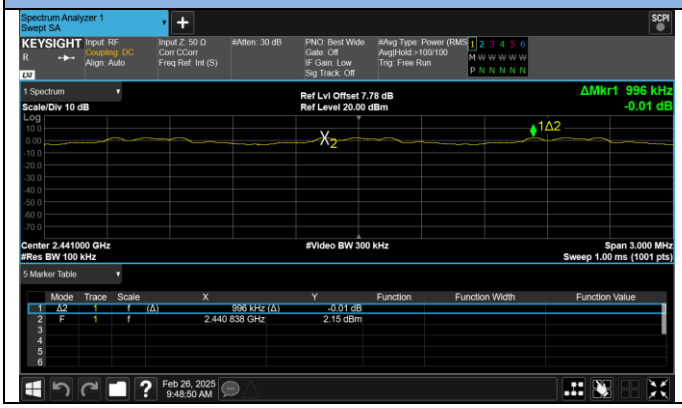
GFSK / High Channel



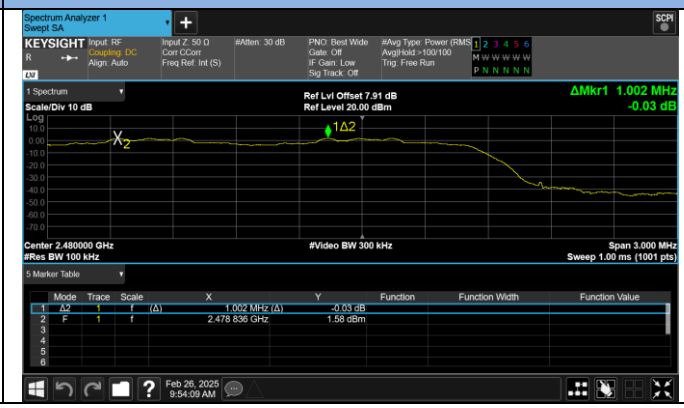
П4/-DQPSK / Low Channel

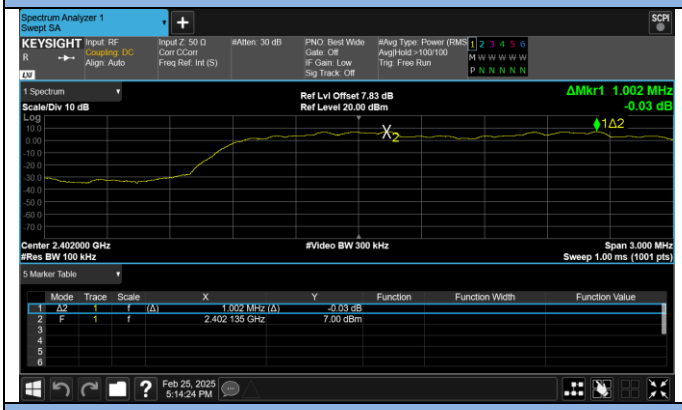
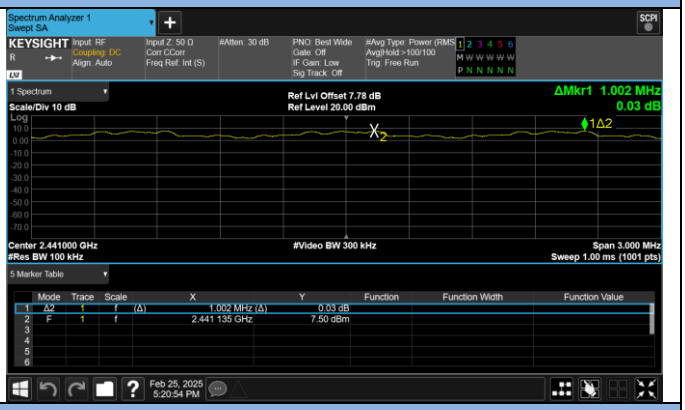
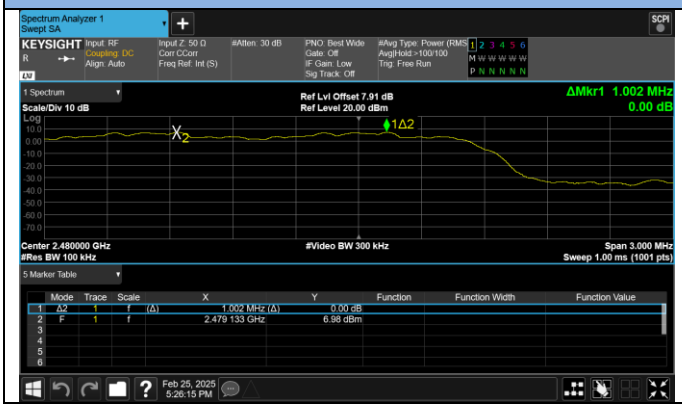


П4/-DQPSK / Mid Channel



П4/-DQPSK / High Channel



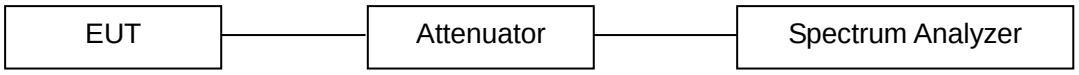
8DPSK / Low Channel	8DPSK / Mid Channel
	
8DPSK / High Channel	**---**
	Blank

13.4 20dB Bandwidth

LIMIT

N/A

BLOCK DIAGRAM OF TEST SETUP



TEST PROCEDURES

a. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

b. Set to the maximum power setting and enable the EUT transmit continuously.

c. Set spectrum analyzer and perform testing according to ANSI C63.10 clause 6.9.2.

TEST RESULTS

PASS

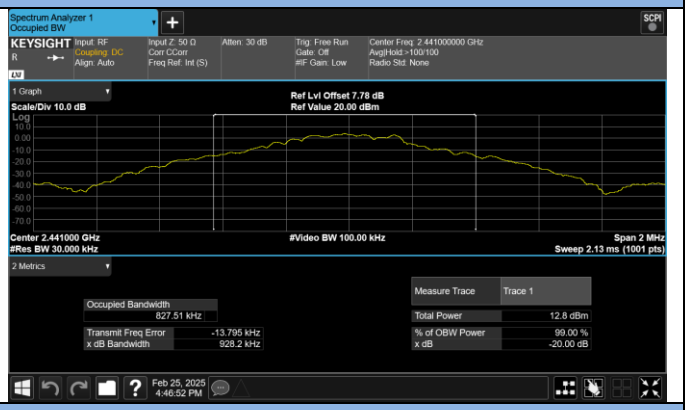
Please refer to the following tables.

Modulation	Channel	Frequency (MHz)	20dB Bandwidth Measurement (MHz)	99% Bandwidth Measurement (MHz)	Limit (MHz)	Remark
GFSK	Low	2402	0.9221	0.82888	N/A	Reporting only
	Mid	2441	0.9282	0.82898	N/A	
	High	2480	0.9214	0.82907	N/A	
Π4/-DPQSK	Low	2402	1.280	1.1659	N/A	
	Mid	2441	1.279	1.1654	N/A	
	High	2480	1.278	1.1655	N/A	
8DPSK	Low	2402	1.297	1.1763	N/A	
	Mid	2441	1.296	1.1768	N/A	
	High	2480	1.295	1.1756	N/A	

20dB Bandwidth

GFSK / Low Channel

GFSK / Mid Channel



GFSK / High Channel

П4/-DQPSK / Low Channel

П4/-DQPSK / Mid Channel

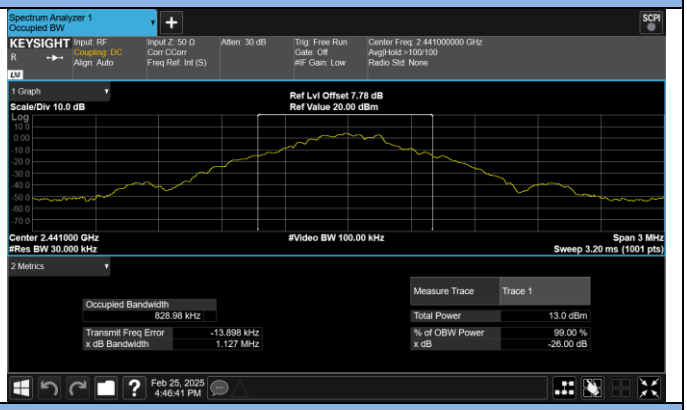
П4/-DQPSK / High Channel

8DPSK / Low Channel	8DPSK / Mid Channel
	
8DPSK / High Channel	**---**
	Blank

99% Bandwidth

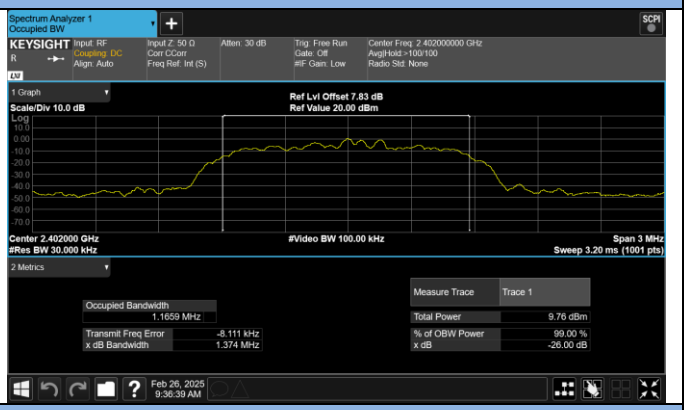
GFSK / Low Channel

GFSK / Mid Channel



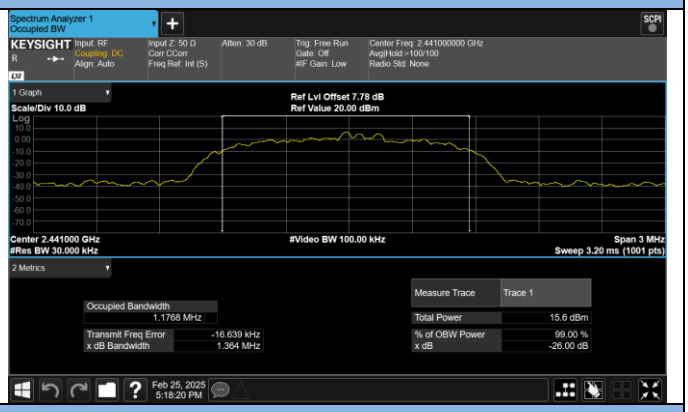
GFSK / High Channel

П4/-DQPSK / Low Channel



П4/-DQPSK / Mid Channel

П4/-DQPSK / High Channel

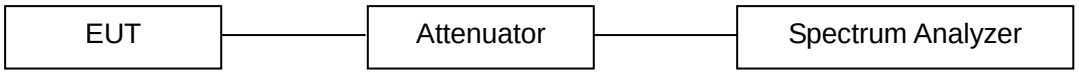
8DPSK / Low Channel	8DPSK / Mid Channel
	
8DPSK / High Channel	**---**
	Blank

13.5 Hopping Channel Number

LIMIT

Frequency hopping systems in the 2400-2483.5MHz band shall use at least 15 channels.

BLOCK DIAGRAM OF TEST SETUP



TEST PROCEDURES

a. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

b. Set to the maximum power setting and enable the EUT transmit continuously.

c. Enable the EUT hopping function.

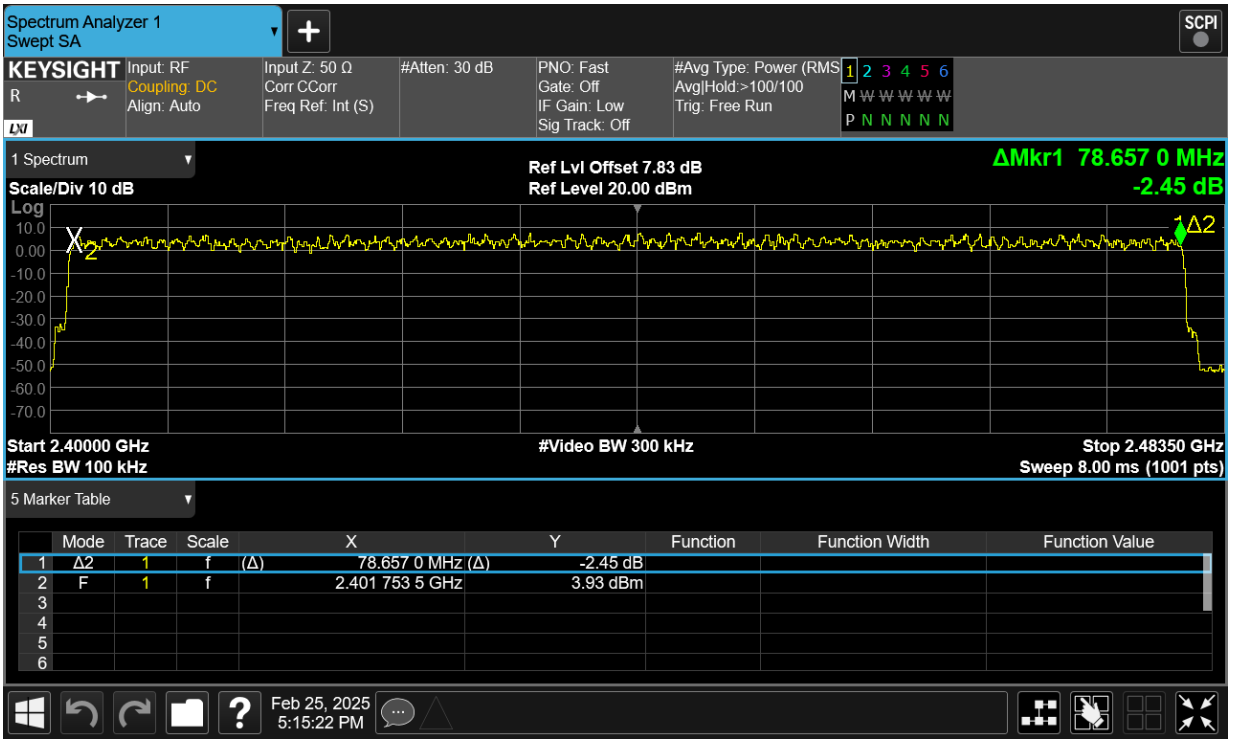
d. Set spectrum analyzer and perform testing according to ANSI C63.10 clause 7.8.3.

TEST RESULTS

PASS

Please refer to the following table.

Modulation	Number of Hopping Channels Measurement	Limit	Test Result
8DPSK	79	≥15	PASS

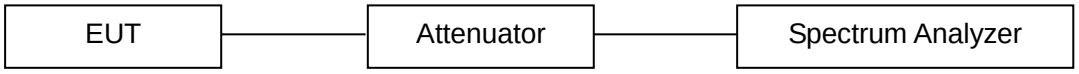


13.6 Time of Occupancy (Dwell Time)

LIMIT

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

BLOCK DIAGRAM OF TEST SETUP



TEST PROCEDURES

a. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

b. Set to the maximum power setting and enable the EUT transmit continuously.

c. Enable the EUT hopping function.

d. Set spectrum analyzer and perform testing according to ANSI C63.10 clause 7.8.4.

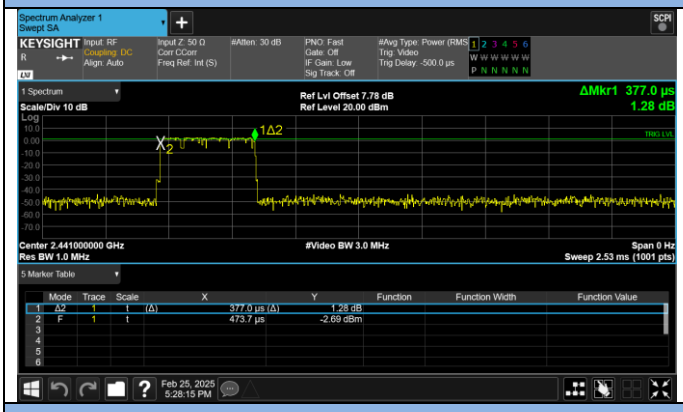
TEST RESULTS

PASS

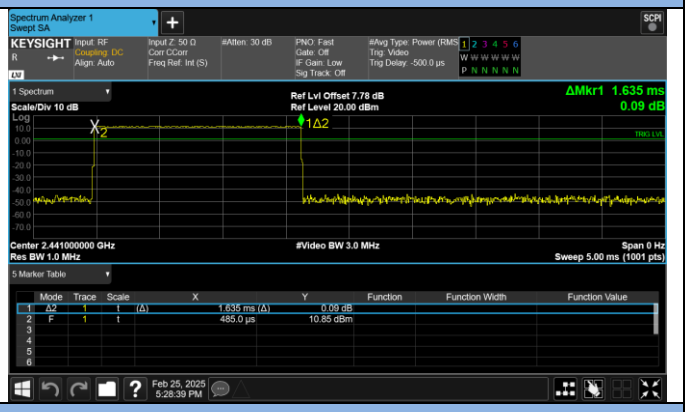
Please refer to the following table.

Modulation	Packet	Frequency (MHz)	Dwell Time Measurement (msec)			Limit (msec)	Test Result
GFSK	DH1	2441	0.377	(ms)*(1600/(2*79))*31.6=	120.64	400	Pass
	DH3	2441	1.635	(ms)*(1600/(4*79))*31.6=	261.60	400	Pass
	DH5	2441	2.885	(ms)*(1600/(6*79))*31.6=	307.73	400	Pass
Π4/-DPQSK	2-DH1	2441	0.383	(ms)*(1600/(2*79))*31.6=	122.56	400	Pass
	2-DH3	2441	1.635	(ms)*(1600/(4*79))*31.6=	261.60	400	Pass
	2-DH5	2441	2.915	(ms)*(1600/(6*79))*31.6=	310.93	400	Pass
8DPSK	3-DH1	2441	0.383	(ms)*(1600/(2*79))*31.6=	122.56	400	Pass
	3-DH3	2441	1.640	(ms)*(1600/(4*79))*31.6=	262.40	400	Pass
	3-DH5	2441	2.885	(ms)*(1600/(6*79))*31.6=	307.73	400	Pass

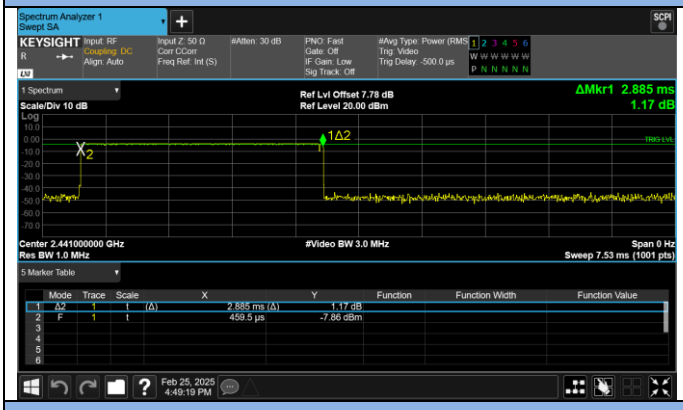
GFSK DH1



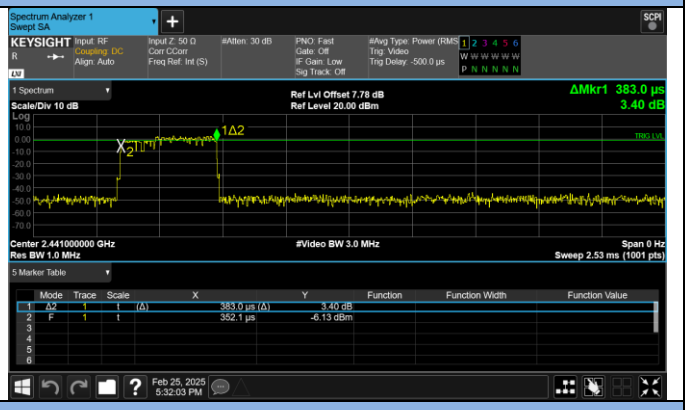
GFSK DH3



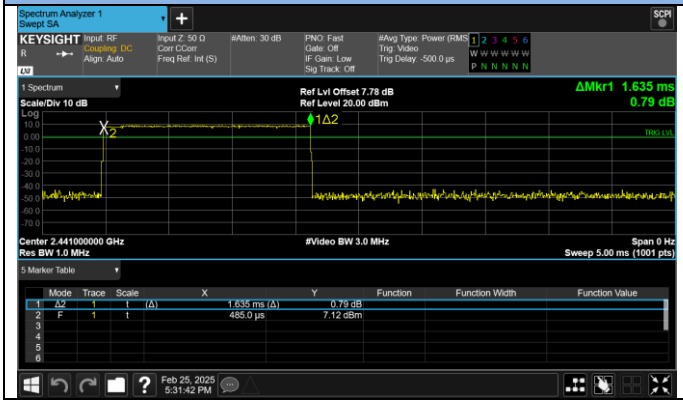
GFSK DH5



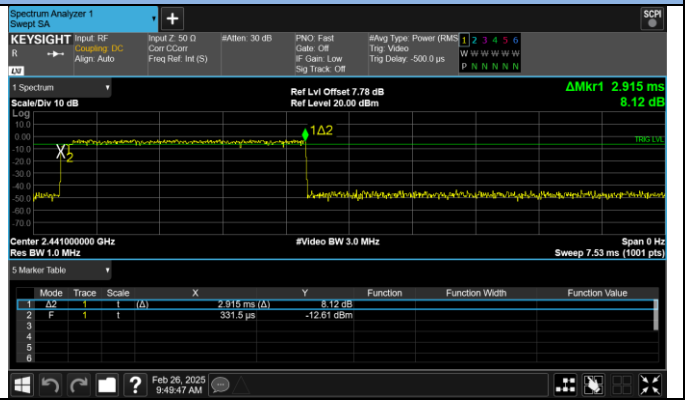
П4/-DQPSK 2-DH1

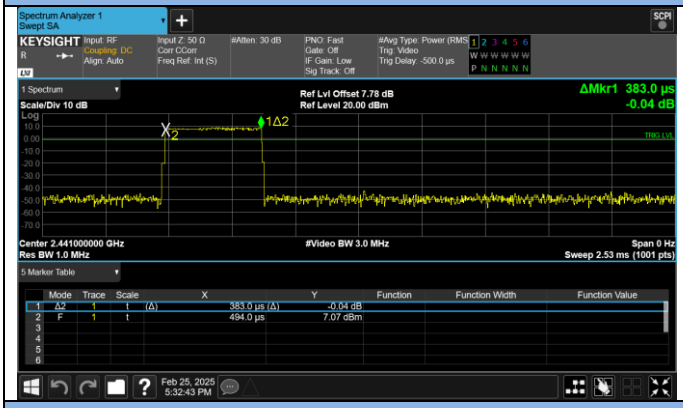
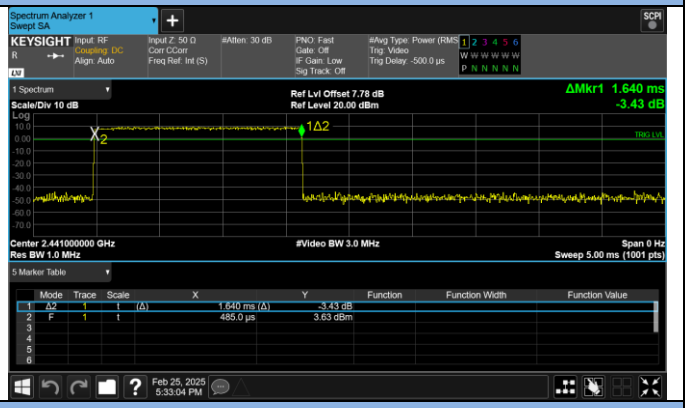
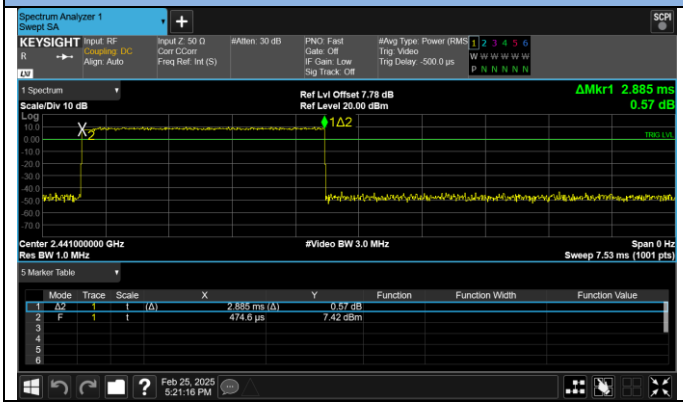


П4/-DQPSK 2-DH3



П4/-DQPSK 2-DH5



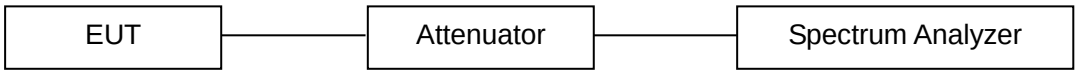
8DPSK 3-DH1	8DPSK 3-DH3
	
8DPSK 3-DH5	**---**
	Blank

13.7 Maximum Peak Output Power

LIMIT

The maximum peak conducted output power of the intentional radiator shall not exceed the following: For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band 0.125 watts.

BLOCK DIAGRAM OF TEST SETUP



TEST PROCEDURES

a. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

b. Set to the maximum power setting and enable the EUT transmit continuously.

c. Set spectrum analyzer and perform testing according to ANSI C63.10 clause 7.8.5.

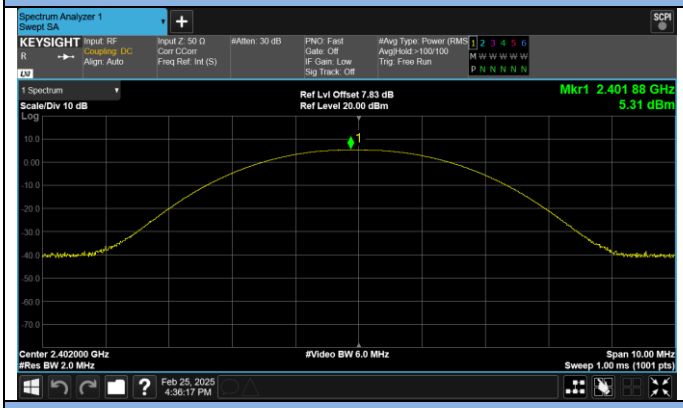
TEST RESULTS

PASS

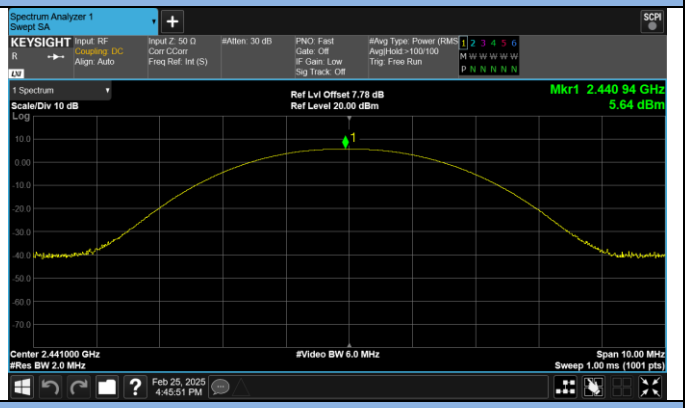
Please refer to the following tables.

Modulation	Frequency (MHz)	Peak Power output Measurement (dBm)	Peak Power output Measurement (mW)	Peak Power Limit (dBm)	Test Result
GFSK	2402.00	5.31	3.40	21	Pass
	2441.00	5.64	3.66	21	Pass
	2480.00	5.16	3.28	21	Pass
Π4/-DPQSK	2402.00	3.63	2.31	21	Pass
	2441.00	4.20	2.63	21	Pass
	2480.00	3.67	2.33	21	Pass
8DPSK	2402.00	9.34	8.59	21	Pass
	2441.00	9.79	9.53	21	Pass
	2480.00	9.36	8.63	21	Pass

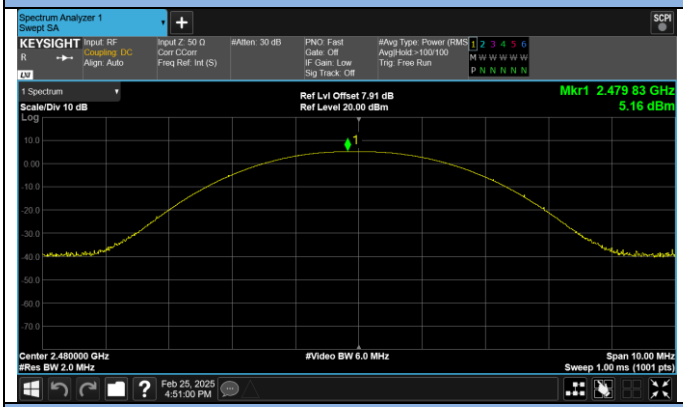
GFSK / Low Channel



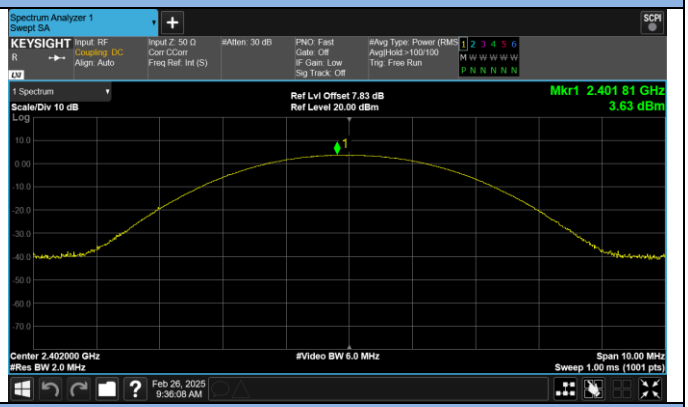
GFSK / Mid Channel



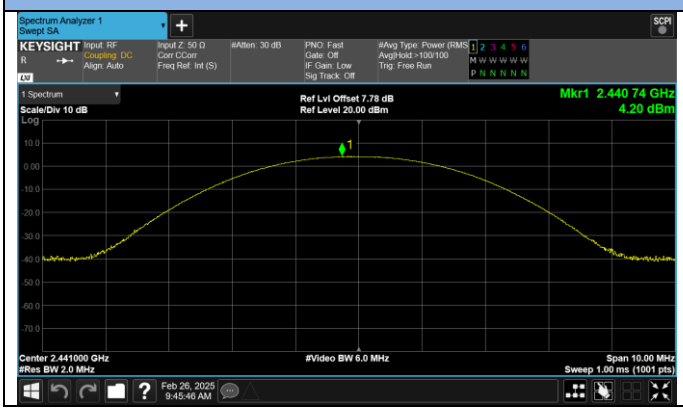
GFSK / High Channel



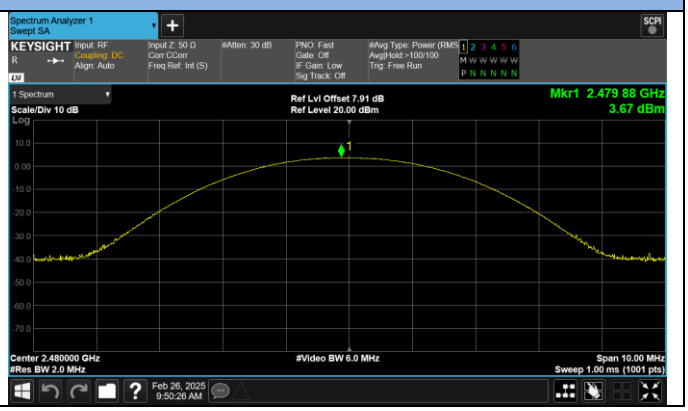
П4/-DQPSK / Low Channel

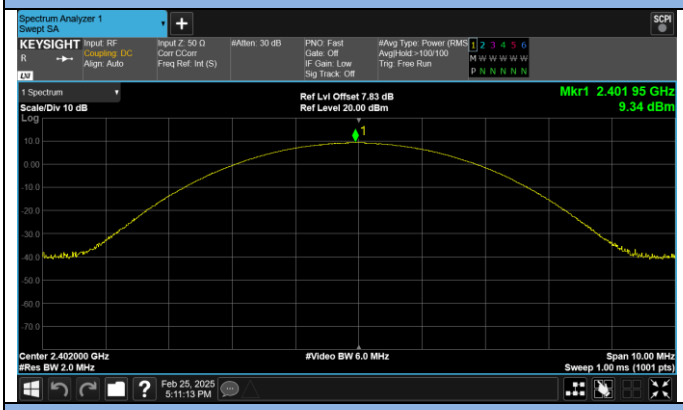
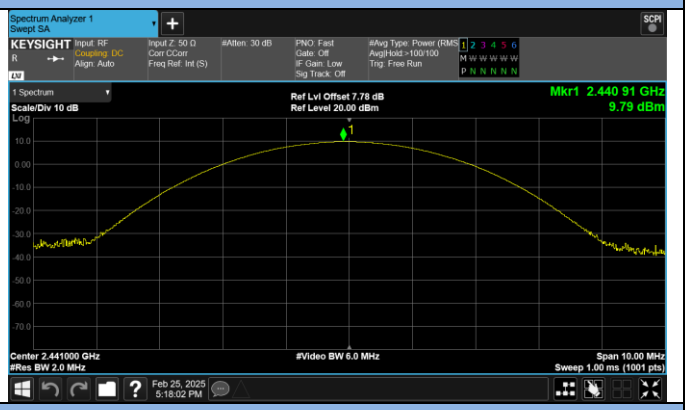
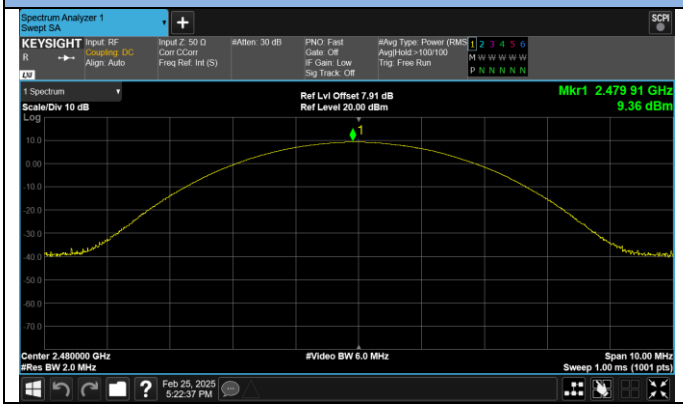


П4/-DQPSK / Mid Channel



П4/-DQPSK / High Channel



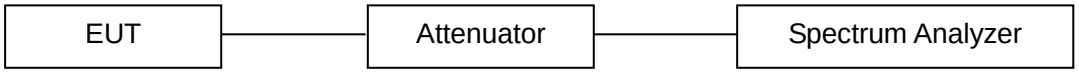
8DPSK / Low Channel	8DPSK / Mid Channel
	
8DPSK / High Channel	**---**
	Blank

13.8 Band Edge Conducted Spurious Emission Measurement

LIMIT

In any 100KHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is 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, based on either an RF conducted or a radiated measurement.

BLOCK DIAGRAM OF TEST SETUP



TEST PROCEDURES

a. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

b. Set to the maximum power setting and enable the EUT transmit continuously.

c. Set spectrum analyzer and perform testing according to ANSI C63.10 clause 7.8.6 and 6.10.

d. Enable hopping function of the EUT and then repeat steps above.

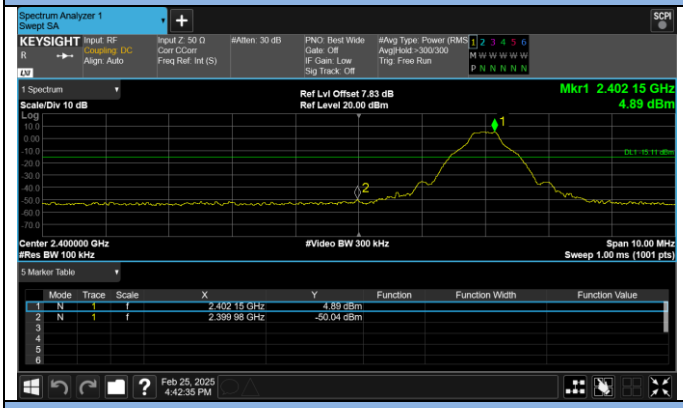
TEST RESULTS

PASS

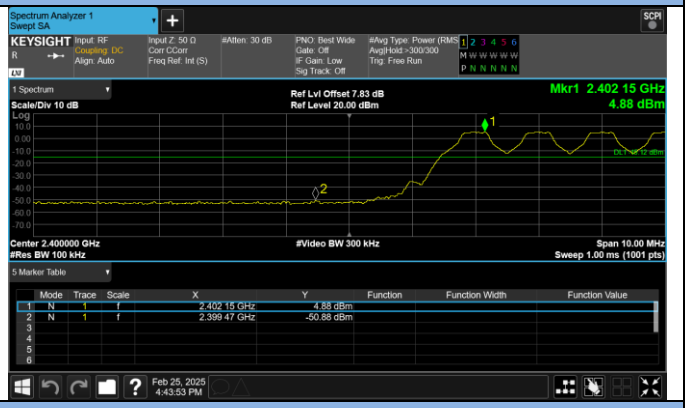
Please refer to the following test plots.

Band Edge

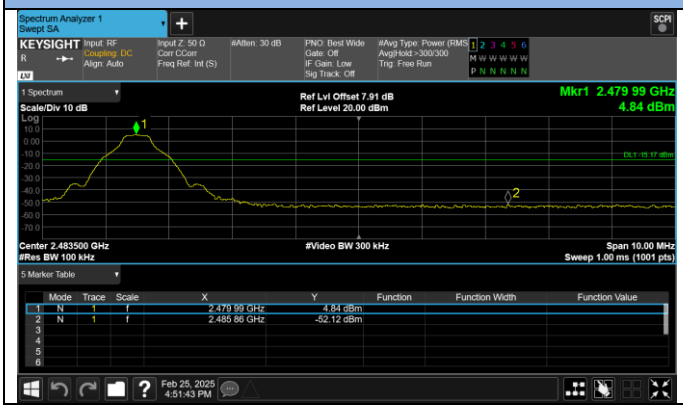
GFSK / Low Channel / 2402



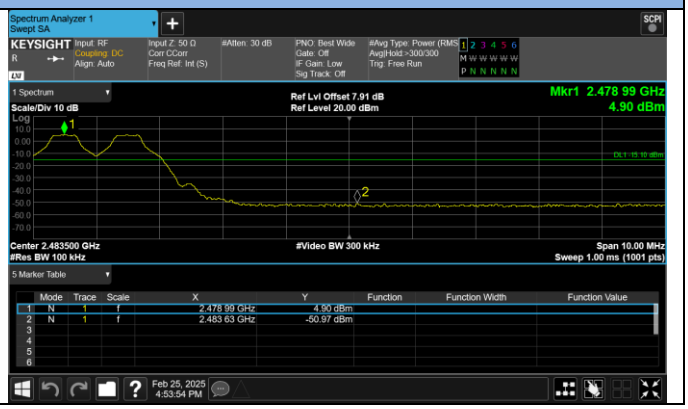
GFSK / Hopping



GFSK / High Channel / 2480

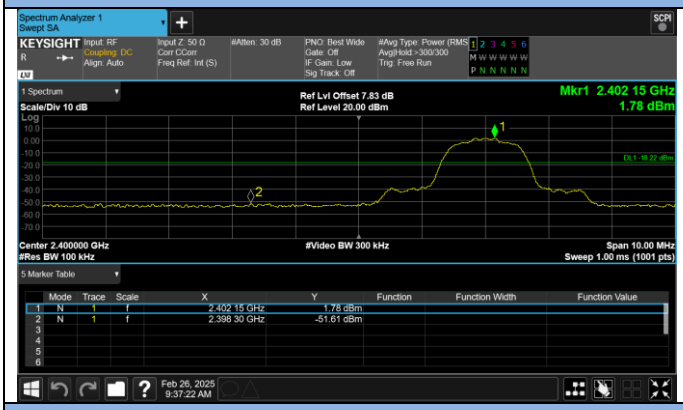


GFSK / Hopping

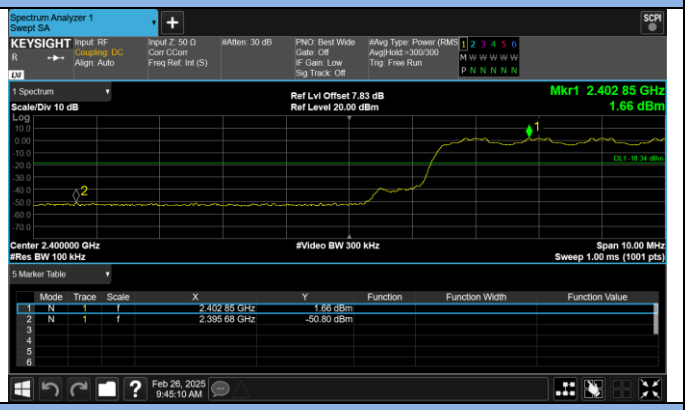


Band Edge

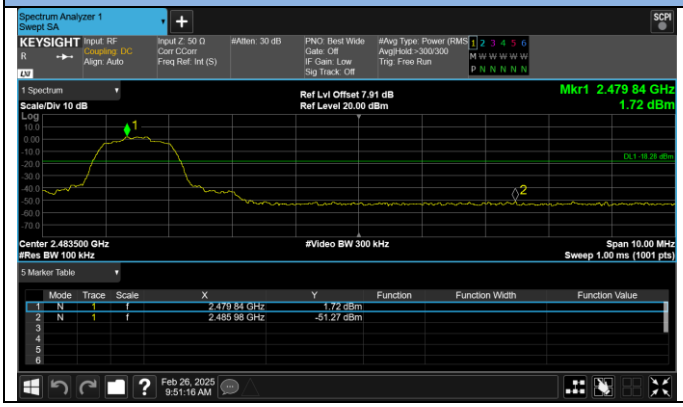
П4/-DQPSK / Low Channel / 2402



П4/-DQPSK / Hopping



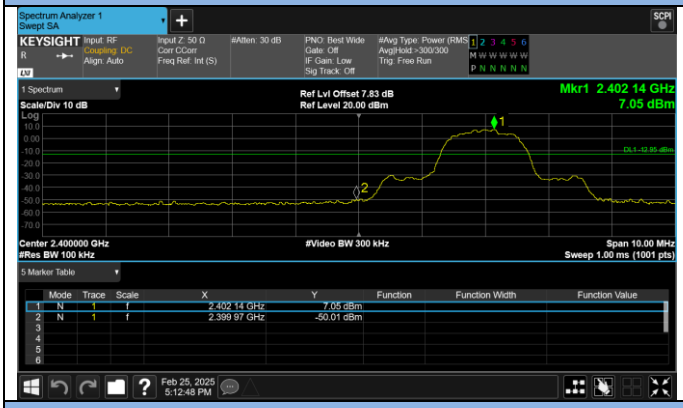
П4/-DQPSK / High Channel / 2480



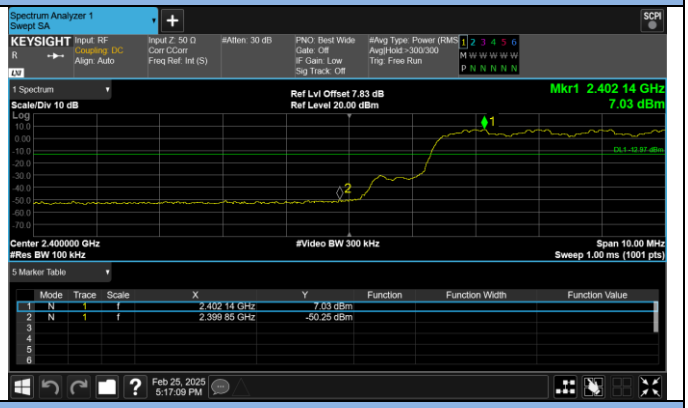
П4/-DQPSK / Hopping

Band Edge

8DPSK / Low Channel / 2402

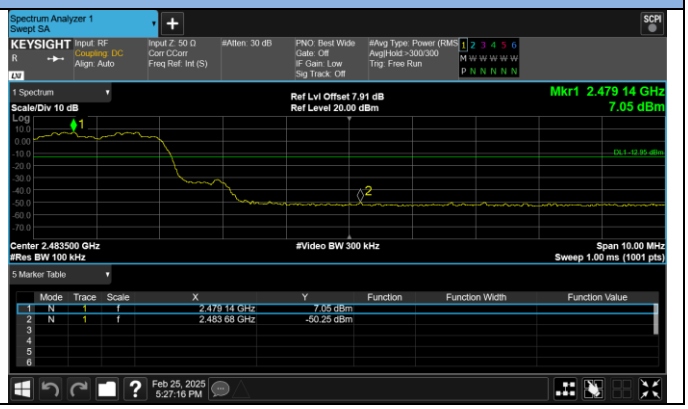


8DPSK / Hopping



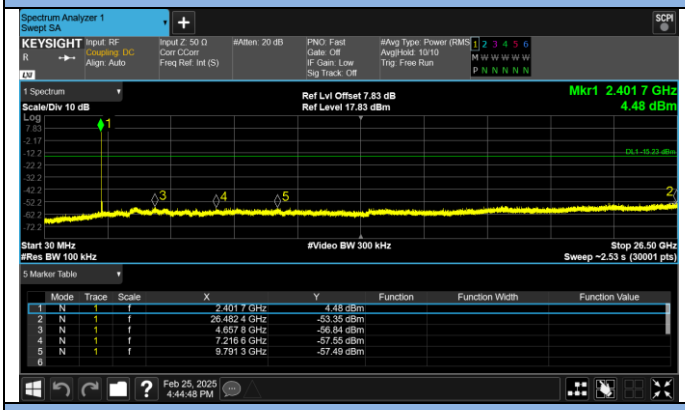
8DPSK / High Channel / 2480

8DPSK / Hopping

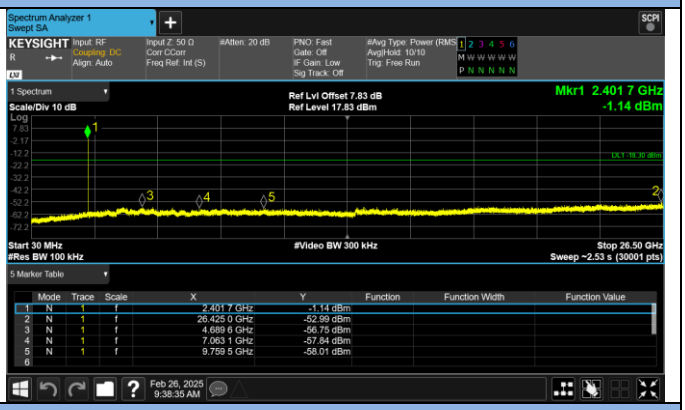


Conducted Spurious Emission

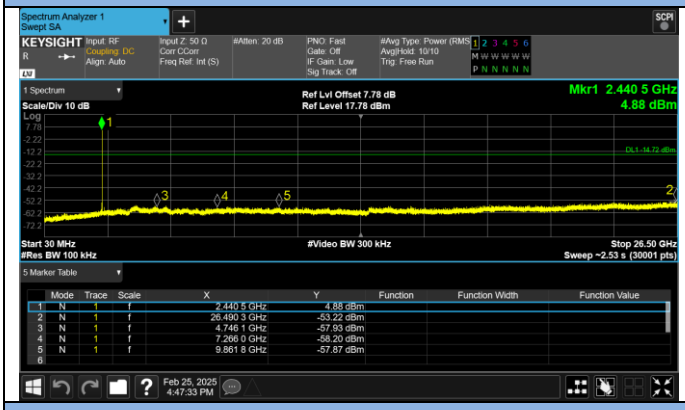
GFSK / Low Channel



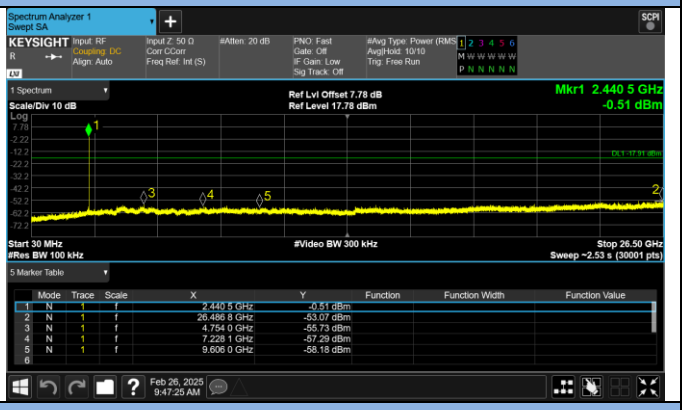
П4/-DQPSK / Low Channel



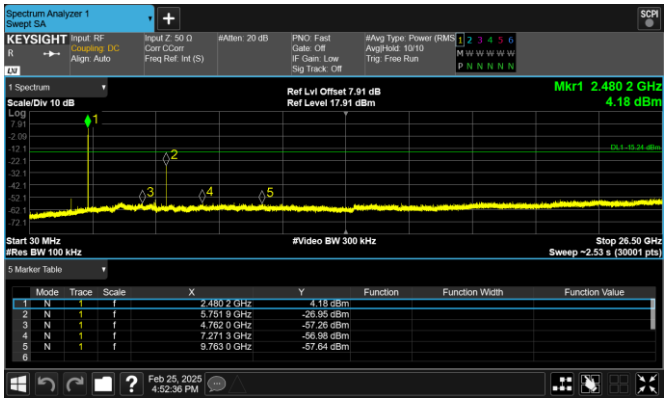
GFSK / Mid Channel



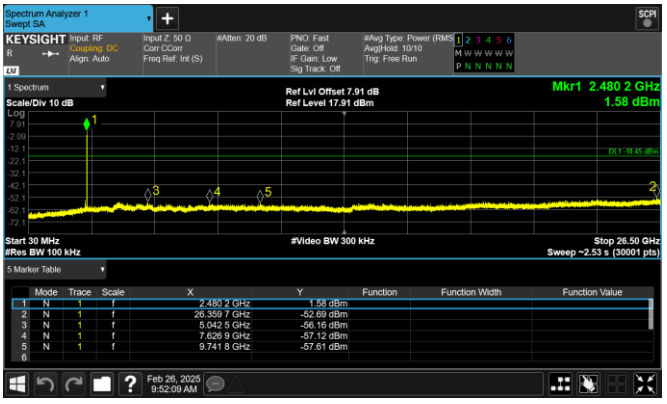
П4/-DQPSK / Mid Channel



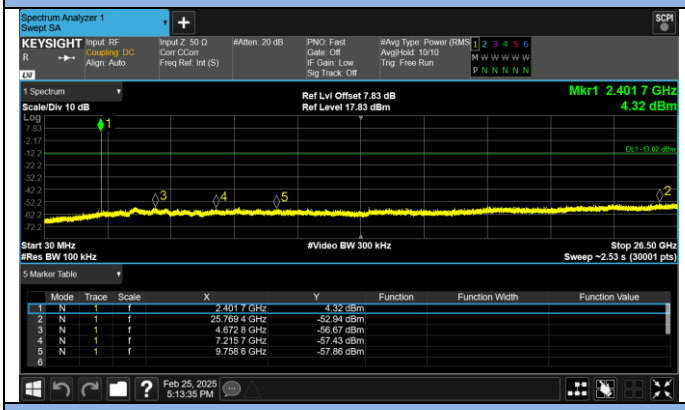
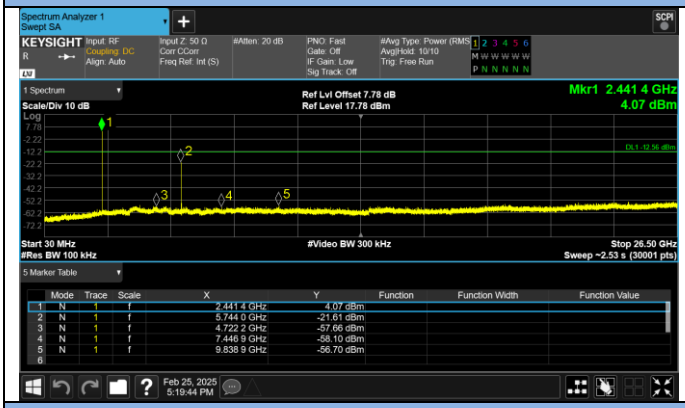
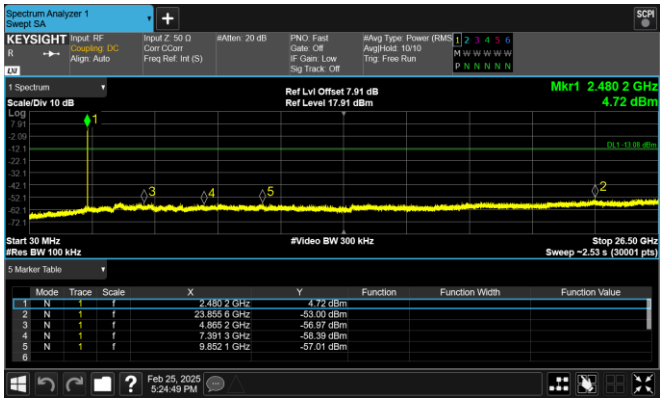
GFSK / High Channel



П4/-DQPSK / High Channel



Conducted Spurious Emission

8DPSK / Low Channel	---
	Blank
8DPSK / Mid Channel	**---**
	Blank
8DPSK / High Channel	**---**
	Blank

13.9 Antenna Requirement

STANDARD APPLICABLE

According to of FCC part 15C section 15.203 and 15.247:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Systems operating in the 2400-2483.5MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

ANTENNA CONNECTED CONSTRUCTION

The antenna is chip antenna that no antenna other than furnished by the responsible party shall be used with the device, and the best case gain of the antenna is 1.87 dBi, therefore, the antenna is considered to meet the requirement.

14. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCI7	100837	Mar. 12, 2025	1 Year
2.	Antenna	Schwarzbeck	VULB9162	9162-010	Mar. 23, 2024	2 Year
3.	Spectrum Analyzer	Keysight	N9010B	MY62170254	Aug. 14, 2024	1 Year
4.	Spectrum Analyzer	Keysight	N9020A	MY54200831	Mar. 12, 2025	1 Year
5.	Horn Antenna+Amplifier	COM-Power	AHA-840	10100020	Mar. 23, 2024	2 Year
6.	Horn Antenna	COM-Power	AH-118	071078	Mar. 23, 2024	2 Year
7.	Pre-Amplifier	HP	HP 8449B	3008A00964	Mar. 12, 2025	1 Year
8.	Pre-Amplifier	HP	HP 8447D	1145A00203	Mar. 12, 2025	1 Year
9.	Power Meter	Agilent	N1912A	MY41497159	Aug.14, 2024	1 Year
10.	Power Sensor	Agilent	N1921A	MY48251036	Aug.14, 2024	1 Year
11.	Loop Antenna	Schwarzbeck	FMZB 1513	1513-272	Mar. 23, 2024	2 Year
12.	Test Receiver	Rohde & Schwarz	ESCI	101152	Mar. 12, 2025	1 Year
13.	L.I.S.N	Rohde & Schwarz	ENV 216	101317	Mar. 12, 2025	1 Year
14.	L.I.S.N	Rohde & Schwarz	ESH2-Z5	893606/014	Mar. 12, 2025	1 Year
15.	RF Switching Unit	Compliance Direction Systems Inc.	RSU-M2	38311	Mar. 12, 2025	1 Year
16.	Temperature & Humidity Chamber	REMAFEE	SYHR225L	N/A	Mar. 12, 2025	1 Year
17.	DC Source	Maynuo	MY8811	N/A	Mar. 12, 2025	1 Year
18.	Temporary antenna connector	TESCOM	SS402	N/A	N/A	N/A
19.	Chamber	SAEMC	9*7*7m	N/A	Apr. 21, 2023	2 Year
20.	Test Software	EZ	EZ_EMC	N/A	N/A	N/A

Note: For photographs of EUT and measurement, please refer to appendix in separate documents.

---End---