

TEST REPORT

Report No.: CSTC-26050005E

Applicant: Dongguan Fengcheng Trading Co., Ltd.

Product Name: True Wireless Stereo

Model/Type Ref.: PB01

Tested Date: Apr. 29, 2026 to May 07, 2026

Issued Date: May 07, 2026

Shenzhen CSTC Testing Co., Ltd.

Product Name: True Wireless Stereo

Trademark: N/A

Model/Type Ref.: PB01
PB02, NX01, VX01, VX02

Prepared For: Dongguan Fengcheng Trading Co., Ltd.

Address: Room 502, Building 6, Yongjing Residence, No. 9 Shenglian Road, Fenggang Town, Dongguan City, Guangdong Province, China

Manufacturer: Dong Guan Geku Acoustics Co., Ltd

Address: 4th and 5th Floor of Building 1, 1st Floor and 3rd Floor of Building 2, No. 6, Xifu Street, Lincun, Tangxia Town, Dongguan City, Guangdong Province

Prepared By: Shenzhen CSTC Testing Co., Ltd.

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Sample Received Date: Apr. 29, 2026

Sample tested Date: Apr. 29, 2026 to May 07, 2026

Issue Date: May 07, 2026

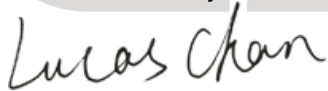
Report No.: CSTC-26050005E

Test Standards: Article 2 paragraph 1 of item 19
MIC Notice No.88 Annex 1
MIC Notice No.88 Annex 43

Test Results: PASS

Remark: This is JAPAN RADIO test report.

Tested by:



Lucas Chan/Project Handler



Approved by:



Jeff.Fu/Reviewer

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1. VERSION

Report No.	Version	Description	Approved
CSTC-26050005E	Rev.01	Initial issue of report	May 07, 2026



2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

NO.	Test Item	Test Requirement	Result
1	RF shielding method	item 19 Clause 3.7	Pass
2	Frequency Error	item 19 Clause 3.2(4)	Pass
3	Antenna Power & EIRP Power	item 19 Clause 3.2(2)	Pass
4	99% Occupied bandwidth	item 19 Clause 3.2(7)	Pass
5	Spread spectrum bandwidth	item 19 Clause 3.2(8)	Pass
6	Dwell time	item 19 Clause 3.2(11)	Pass
7	Spurious Emissions Intensity	item 19 Clause 3.2(6)	Pass
8	Limit of secondary radiated emissions	item 19 Clause 3.3(1)	Pass
9	Interference suppression	item 19 Clause 3.4.1	Pass
10	Transmission Antenna Gain	item 19 Clause 3.6	Pass
11	Transmission Radiation Angle Width(3dB Beam width)	item 19 Clause 3.6	N/A

Remarks

Test method reference: Mic Notice No.88 Appendix No.43

N/A: EIRP does not exceed 6.91dBm/MHz



2.1 TEST FACILITY

Shenzhen CSTC Testing Co., Ltd.

Add. : No. 101, Building 1, Shajing Wanfeng Huafeng Entrepreneurship Park, Heyi Community, Shajing Street, Bao'an District, Shenzhen City, Guangdong Province, China.

2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$ · 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	$\pm 3.2\text{dB}$
2	Radiated Emission Test	$\pm 4.7\text{dB}$
3	RF power conducted	$\pm 0.16\text{dB}$
4	Spurious emissions conducted	$\pm 0.21\text{dB}$
5	All emissions radiated(<1G)	$\pm 4.68\text{dB}$
6	All emissions radiated(>1G)	$\pm 5.0\text{dB}$
7	frequency error ppm	$\pm 0.5\text{ppm}$
8	RF Occupied Bandwidth	$U=1.8\text{MHz}$

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Product Name:	True Wireless Stereo
Model No.:	PB01
Series models:	PB02, NX01, VX01, VX02
Model Difference:	All the models are electrical identical (i.e., circuit design, PCB Layout, RF module/circuit, antenna type(s) and antenna location, components on PCB, etc.), same mechanical structure and design, except model names and appearance color.
Hardware Version:	N/A
Software Version:	N/A
Operation Frequency:	2402MHz~2480MHz
Channel numbers:	79
Channel separation:	1MHz
Modulation technology:	GFSK, $\pi/4$ -DQPSK, 8DPSK
Rated power:	GFSK: 2mW/MHz $\pi/4$ -DQPSK: 2mW/MHz 8DPSK: 2mW/MHz
Antenna Specification:	Chip antenna
Antenna Gain:	2.5dBi
Ratings:	Input: 5V== Output: 3.7V==

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- 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
03	2405	30	2432	57	2459
04	2406	31	2433	58	2460
05	2407	32	2434	59	2461
06	2408	33	2435	60	2462
07	2409	34	2436	61	2463
08	2410	35	2437	62	2464
09	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476
21	2423	48	2450	75	2477
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		

- 3.

Final test channel as follow:					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	39	2441	78	2480

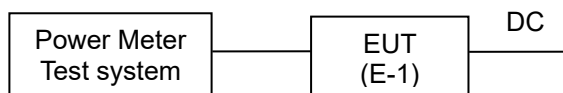
3.2 DESCRIPTION OF TEST MODES

Software used to control the EUT for staying in continuous transmitting and receiving mode is programmed.		
The EUT was tuned to a low, middle, and high channel for all tests. For all test case pre/scans were completed in all Modes to determine worst case levels. test software Qualcomm BlueSuite 3.3.9 used for controlling the EUT. 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 firmware of the final end product power parameters of FHSS		
	Test Software: SecureCRT	
	Test Mode	Power Level
	GFSK	Default
	$\pi/4$ -DQPSK	Default
	8DPSK	Default

3.3 TEST CONDITIONS

Supply Voltage				
	Input Voltage (DC)		Voltage at the input of the RF Circuit (Vdc)	Tolerance (%)
Normal	3.7	Normal	3.3	
+10%	3.7	+10%	3.3	0
-10%	3.7	-10%	3.3	0
Others				
Temperature (°C)		20-25		
Relative humidity		51%.		
ATM Pressure:		1019 mbar		
Note 1: When the input voltage is reduced or increased by 10%, the regulator voltage changes of less than 1%.So the following test items are conducted in the normal voltage.				

3.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



3.5 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	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	True Wireless Stereo	N/A	PB01	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.



3.6 EQUIPMENTS LIST FOR ALL TEST ITEMS

Calibration company: Guangzhou LiSai Metrology & Test Co., Ltd. (Article 24-2, Paragraph 4 of the Radio Act) method c

Radiation Emissions & Radiation Spurious Emissions Test

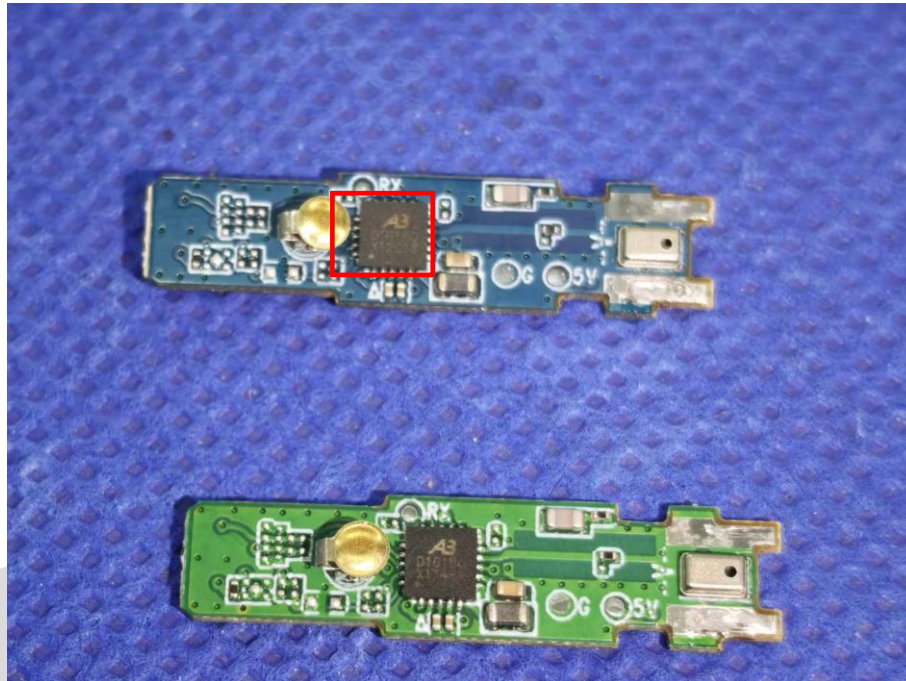
Item	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	N9020A	MY55370835	A.17.05	Sep. 17, 2025	Sep. 16, 2026
2	Spectrum Analyzer (10kHz-39.9GHz)	R&S	FSV40-N	100363	1.71 SP2	Sep. 17, 2025	Sep. 16, 2026
3	EMI Test Receiver (9kHz-7GHz)	R&S	ESCI7	100969	4.32	Sep. 17, 2025	Sep. 16, 2026
4	Bilog Antenna (30MHz-1500MHz)	Schwarzbeck	VULB9168	00877	N/A	Sep. 17, 2025	Sep. 16, 2026
5	Horn Antenna (1GHz-18GHz)	Agilent	AH-118	071145	N/A	Sep. 17, 2025	Sep. 16, 2026
6	Horn Antenna (15GHz-40GHz)	A.H.System	SAS-574	588	N/A	Sep. 17, 2025	Sep. 16, 2026
7	Loop Antenna	TESEQ	HLA6121	58357	N/A	Sep. 17, 2025	Sep. 16, 2026
8	Amplifier (30-1000MHz)	EM Electronics	EM330 Amplifier	60747	N/A	Sep. 17, 2025	Sep. 16, 2026
signal 9	Amplifier (1GHz-26.5GHz)	HuiPu	8449B	3008A00315	N/A	Sep. 17, 2025	Sep. 16, 2026
10	Amplifier (500MHz-40GHz)	QuanJuDa	DLE-161	097	N/A	Sep. 17, 2025	Sep. 16, 2026
11	Test Cable	N/A	R-01	N/A	N/A	Sep. 17, 2025	Sep. 16, 2026
12	Test Cable	N/A	R-02	N/A	N/A	Sep. 17, 2025	Sep. 16, 2026
13	Test Cable	N/A	R-03	N/A	N/A	Sep. 17, 2025	Sep. 16, 2026
14	D.C. Power Supply	LongWei	TPR-6405D	GQ7516	N/A	Sep. 17, 2025	Sep. 16, 2026
15	EMC Software	Frad	EZ-EMC	Ver.EMC-CO N 3A1.1	N/A	\	\
16	Turntable	MF	MF-7802BS	N/A	N/A	\	\
17	Antenna tower	MF	MF-7802BS	N/A	N/A	\	\
18	Power Meter	KEYSIGHT	N1912AP	926431	A.05.00	Sep. 17, 2025	Sep. 16, 2026
19	Attenuator	GuoRenTong Xin	SGR-SJQ-6 dB-DC-3	N/A	N/A	Sep. 17, 2025	Sep. 16, 2026
20	Signal Generator	Agilent	N5182A	MY47420215	A.01.87	Sep. 17, 2025	Sep. 16, 2026

4. RF SHIELDING METHOD

Chipset:

The product structure is uses SMD patch process.

As shown in the picture, If the will be open so the product be damage.
terminalnumber is 24. Pitch is 0.4mm.



5. TEST RESULT FOR BLUETOOTH

5.1 FREQUENCY ERROR

5.1.1 LIMIT

Item	Limits
Frequency Error	±50ppm

5.1.2 MEASURING INSTRUMENTS AND SETTING

The following table is the setting of Spectrum Analyzer.

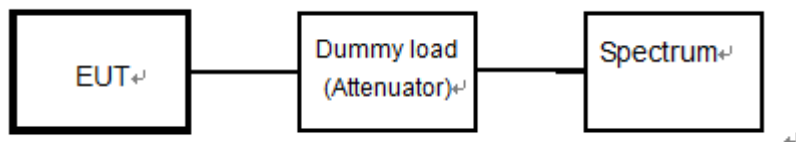
Spectrum Parameter	Setting
Attenuation	Auto
RB / VB	10KHz
Detector	Peak
Span	1MHz
Trace	Max Hold
Sweep Time	Auto

5.1.3 TEST PROCEDURES

- (1) In the case of unmodulated signal (continuous or continuous burst), measure the frequency directly by a frequency meter.
- (2) In the case of burst waves, the measurement shall be done for enough time in order to obtain the enough measuring accuracy, and the average of the measured values becomes the final value.
- (3) In the case of a test mode with a specific frequency spectrum, measure the frequency of the specific spectrum by a spectrum analyzer.
- (4) In the cases above, if the frequency equivalent to the test frequency is not directly measured in principle, it shall be obtained by necessary calculation.

In the case of modulated signal, if there is no specific spectrum measurable by a spectrum analyzer but a specific dip is observed, it is allowed to measure the frequency with the signal generator (synthesized). That is, observe a signal of the signal generator concurrently (or alternately) with the tested signal using the spectrum analyzer while setting the frequency of the signal generator to the position of the dip on the screen of the spectrum analyzer, and determine the frequency of the signal generator at the time as a measured value.

5.1.4 TEST SETUP LAYOUT



5.1.5 EUT OPERATION DURING TEST

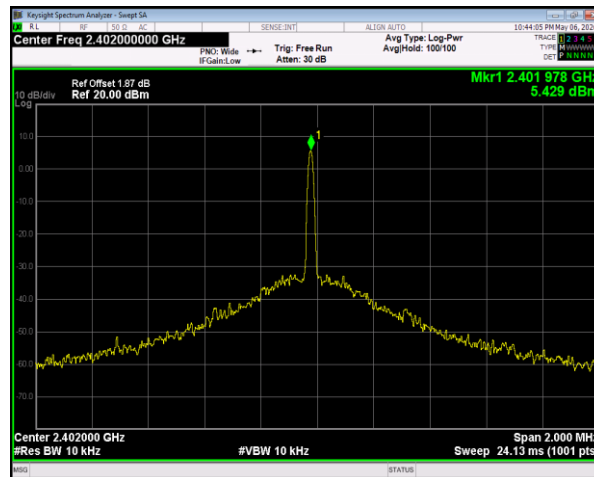
The EUT was placed on the test table and programmed in un-modulation function.

5.1.6 TEST RESULT

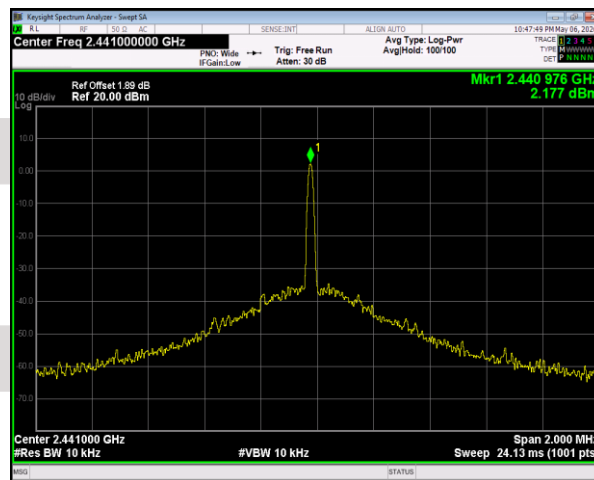
Test mode	Test voltage	Frequency (MHz)	Read (MHz)	Tolerance (ppm)	Limit (ppm)	Result
Un-modulation mode	Normal	2402	2401.978	-9.16	±50.00	Pass
		2441	2440.976	-9.83		
		2480	2479.976	-9.68		



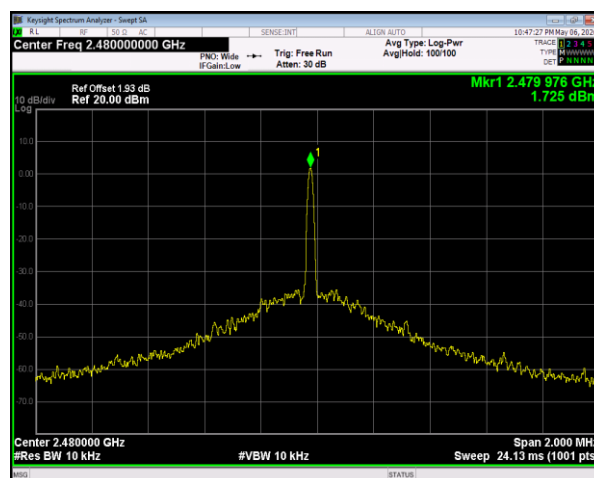
Lowest Channel	Test voltage:	NORMAL
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Middle Channel	Test voltage:	NORMAL
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Highest Channel	Test voltage:	NORMAL
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5.2 ANTENNA POWER & EIRP POWER

5.2.1 LIMIT

Item	Limits
Antenna Power Density	$\leq 3\text{mW/MHz}$
EIRP Power Density	6.91dBm/MHz
Antenna Power Error	+20%

5.2.2 MEASUREMENT WITH A POWER METER

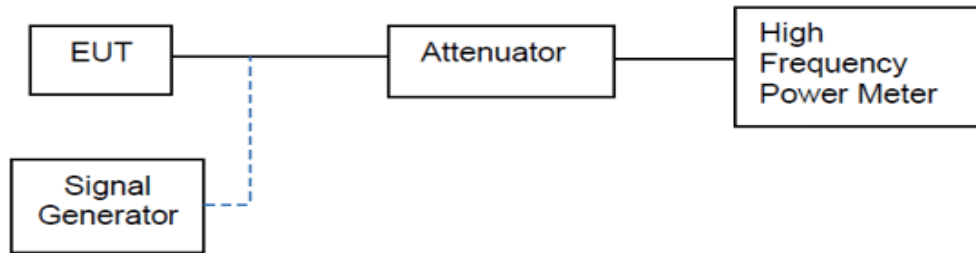
Total power / Spread bandwidth = Mean power in 1MHz = Antenna power

5.2.3 TEST PROCEDURES

(1) Frequency hopping system (including combined systems of direct spread and orthogonal frequency division multiplexing)

- a. Connect the high frequency power meter to the output of the attenuator and measure the total power.
- b. Divide the total power by the spread bandwidth and find the average power per MHz
- c. Confirm that the frequency distribution of frequency hopping (frequency hopping intervals are equally spaced at less than 1 MHz) and the emergence probability of the various hopping frequencies are even according to the supporting data. Furthermore, if frequency distribution of frequency hopping is not even, consider other measurement methods by referring to "6 Other Conditions".
- d. Set the antenna power as follows:
 - (1) Continuous waves: value in b.
 - (2) Burst waves: value in b. and value calculated from the average power within bursts from rates of transmission times.

5.2.4 TEST SETUP LAYOUT



5.2.5 TEST DEVIATION

There is no deviation with the original standard.

5.2.6 TEST RESULT

Test voltage:			Normal							
Modulation type	Channel (MHz)	Average Total Power (dBm)	Average Total Power (mW)	Spread bandwidth (MHz)	Antenna Power (mW/MHz)	Rated output power (mW/MHz)	Power Limit (mW/MHz)	Tolerance (%)	Tolerance Limit (%)	Result
GFSK	Hopping	20.24	105.64	71.403	1.48	2	3	-33	20	PASS
$\pi/4$ -DQPSK	Hopping	19.96	98.98	71.375	1.39	2	3	-33	20	PASS
8DPSK	Hopping	19.96	99.14	71.547	1.39	2	3	-33	20	PASS

Modulation type	Channel (MHz)	Antenna Power (dBm)	Antenna Gain (dBi)	EIRP Power (dBm/MHz)	EIRP Power Limit (dBm/MHz)	RESULT
GFSK	Hopping	1.262	2.5	3.76	6.91	PASS
$\pi/4$ -DQPSK	Hopping	0.979	2.5	3.48	6.91	PASS
8DPSK	Hopping	0.986	2.5	3.49	6.91	PASS

Note: EIRP Power = Antenna Power (mW/MHz) + Antenna Gain.
Antenna Power (mW/MHz)= Average Total Power (mW)/ Spread bandwidth (MHz)

5.3 OCCUPIED BANDWITH (99% AND 90%)

5.3.1 LIMIT

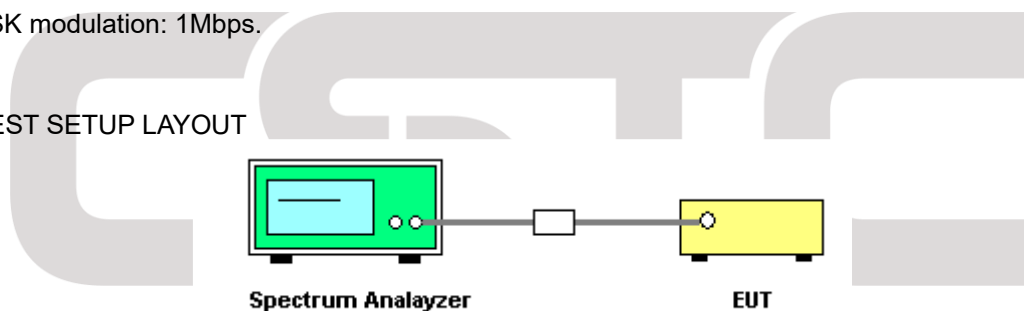
Item	Limits
Occupied Band Width:	83.5MHz or less

5.3.2 MEASURING INSTRUMENTS AND SETTING

5.3.3 TEST PROCEDURES

- Setting of SA is following as: RB: 1MHz / VB:1MHz / SPAN: 120MHz / AT: 30dB Ref: 21.89dBm / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold
- EUT have transmitted the maximum modulation signal and fixed channelize (For DSSS or OFDM Device) or continuous maximum power of hopping mode(For FHSS Device). SA set to 99% of occupied bandwidth to measure occupied bandwidth. The limit is less than 26MHz(For DSSS or OFDM Device) or 83.5MHz(For FHSS Device).
- SA set to 90% of occupied bandwidth to measure Spread Spectrum Bandwidth.
- Spread Spectrum Factor = Spread Spectrum Bandwidth / Symbol rate (Msymbols/s) of EUT.
- Symbol rate (Msymbols/s) of EUT is below:
 - GFSK modulation: 1Mbps;
 - π /4-DQPSK modulation: 1Mbps;
 - 8DPSK modulation: 1Mbps.

5.3.4 TEST SETUP LAYOUT



5.3.5 TEST DEVIATION

There is no deviation with the original standard.

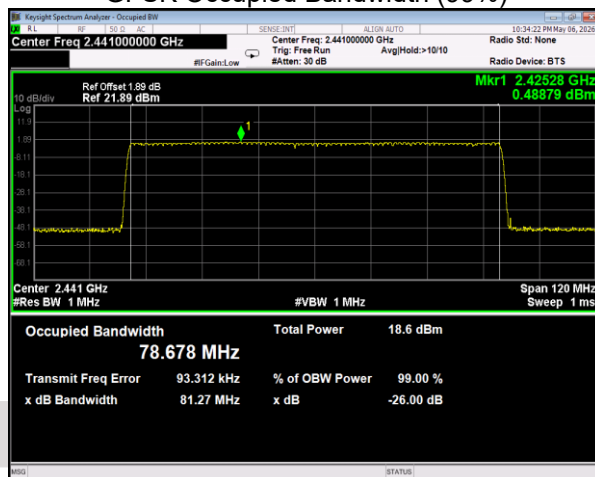
5.3.6 EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

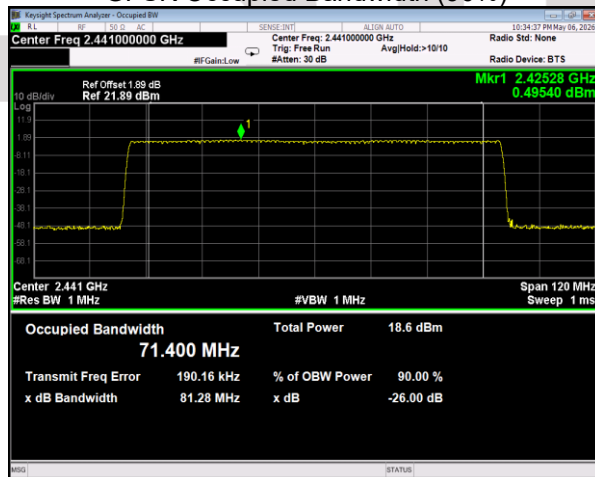
5.3.7 TEST RESULT

Test Voltage	TEST CONDITION	99%Hopping Mode(Occupied bandwidth) MHz	90%Hopping Mode(Occupied bandwidth) MHz	Modulation rate (Mbps)	99%OBW Limit (MHz)	Result
Normal Voltage	GFSK	78.678	71.403	1	≤83.5	PASS
	$\pi/4$ -DPSK	78.794	71.375	1	≤83.5	PASS
	8DPSK	78.765	71.547	1	≤83.5	PASS

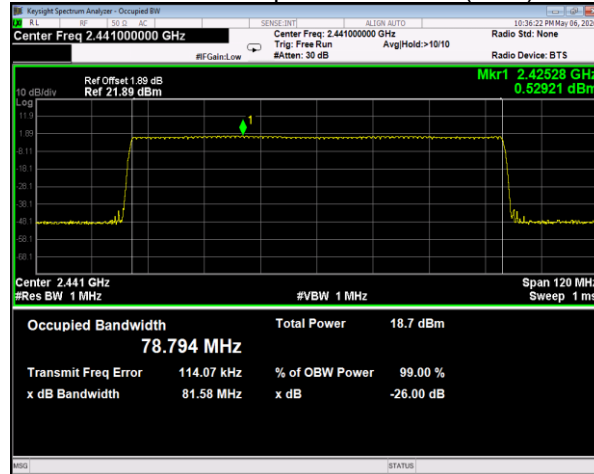
GFSK Occupied Bandwidth (99%)



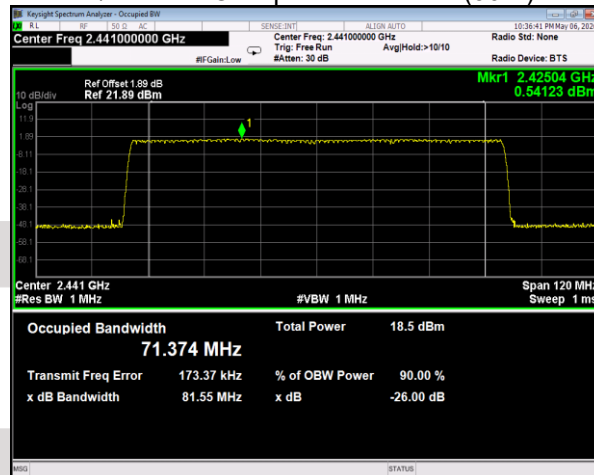
GFSK Occupied Bandwidth (90%)



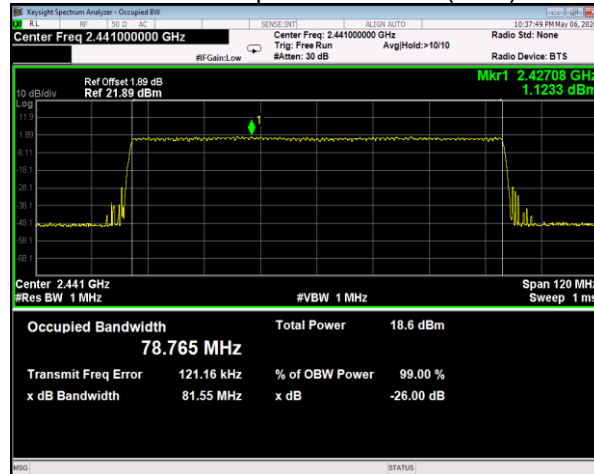
$\pi/4$ -DPSK Occupied Bandwidth (99%)



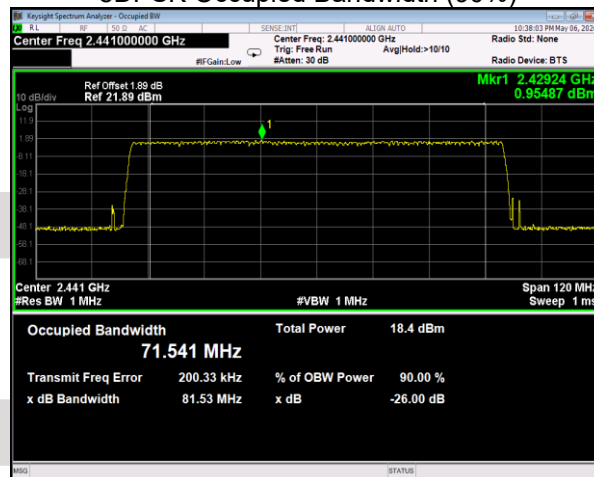
$\pi/4$ -DPSK Occupied Bandwidth (90%)



8DPSK Occupied Bandwidth (99%)



8DPSK Occupied Bandwidth (90%)



5.4 UNWANTED EMISSION INTENSITY MEASUREMENT

5.4.1 LIMIT

Item	Limits
TX Spurious Emission	Below 1G: 2.5uW/MHz or less Below 2387 MHz: 2.5μW/MHz or less 2387 to 2400 MHz: 25μW/MHz or less 2483.5 through 2496.5 MHz: 25μW/MHz or less Over 2496.5 MHz: 2.5μW/MHz or less

5.4.2 MEASURING INSTRUMENTS AND SETTING

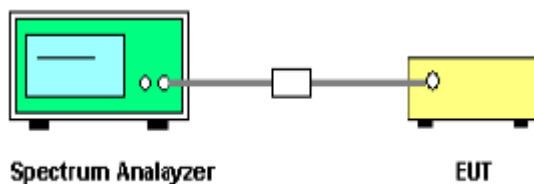
Please refer to section 5 in this report. The following table is the setting of Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
RB / VB	Below 1GHz: 100 kHz / 100 kHz Above 1GHz: 1 MHz / 1 MHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

5.4.3 TEST PROCEDURES

- EUT have transmitted the maximum modulation signal and fixed channelize.
- Setting of SA is following as: Below 1GHz RB:100KHz / VB:100KHz
Above 1GHz RB:1MHz / VB:1MHz / AT: 30dB Ref: 20dBm / Sweep time: Auto
Sweep Mode: Continuous sweep / Detect mode: Positive peak
Trace mode: Max hold
- Setting of SA is following as 30MHz and stop frequency 1000MHz Then to mark peak reading value + cable loss shall be less than 2.5uW/MHz.
- Setting of SA is following as 1000MHz and stop frequency 2387MHz Then to mark peak reading value + cable loss shall be less than 2.5μW/MHz..
- SA adjusted to start frequency 2387MHz and stop frequency 2400MHz. Then to mark peak reading value + cable loss shall be less than 25μW/MHz..
- SA adjusted to start frequency 2483.5MHz and stop frequency 2496.5MHz Then to mark peak reading value + cable loss shall be less than 25μW/MHz.
- SA adjusted to start frequency 2496.5MHz and stop frequency 12500MHz Then to mark peak reading value + cable loss shall be less than 2.5μW/MHz.
- Measure side band spurious as follows: For 2.4GHz band: 2374MHz~2400MHz and 2483.5MHz~2509.5MHz RBW = VBW = 30kHz, Result_Value = Measured_Value + 15.2 [dBm]
- If the Result_Value is over the requirement, take total sum of 1MHz band centered at the spur frequency like ACLP measurement as Result_Value.
- The test was conducted in the Hopping mode.

5.4.4 TEST SETUP LAYOUT



5.4.5 TEST DEVIATION

There is no deviation with the original standard.

5.4.6 TEST RESULT

Test Voltage	Mode	Frequency (MHz)	Range (MHz)	Emission Frequency (MHz)	Max Value (dBm)	Max Value (uW/MHz)	Limit (uW/MHz)	Verdict
Normal	GFSK	2402	30-1000	811.82	-48.86	0.0130	2.5	Pass
Normal	GFSK	2402	1000-2387	1979.22	-48.11	0.0155	2.5	Pass
Normal	GFSK	2402	2387-2400	2399.92	-39.56	0.1107	25	Pass
Normal	GFSK	2402	2483.5-2496.5	2484.61	-47.32	0.0185	25	Pass
Normal	GFSK	2402	2496.5-13000	4807.27	-33.54	0.4426	2.5	Pass
Normal	GFSK	2441	30-1000	826.37	-49.16	0.0121	2.5	Pass
Normal	GFSK	2441	1000-2387	2033.31	-47.93	0.0161	2.5	Pass
Normal	GFSK	2441	2387-2400	2387.01	-48.31	0.0148	25	Pass
Normal	GFSK	2441	2483.5-2496.5	2485.59	-48.08	0.0156	25	Pass
Normal	GFSK	2441	2496.5-13000	4880.79	-33.06	0.4943	2.5	Pass
Normal	GFSK	2480	30-1000	773.02	-48.56	0.0139	2.5	Pass
Normal	GFSK	2480	1000-2387	2242.75	-48.48	0.0142	2.5	Pass
Normal	GFSK	2480	2387-2400	2394.51	-48.19	0.0152	25	Pass
Normal	GFSK	2480	2483.5-2496.5	2483.50	-47.80	0.0166	25	Pass
Normal	GFSK	2480	2496.5-13000	4964.82	-33.93	0.4046	2.5	Pass
Normal	$\pi/4$ -DQPSK	2402	30-1000	807.94	-49.01	0.0126	2.5	Pass
Normal	$\pi/4$ -DQPSK	2402	1000-2387	2123.47	-48.08	0.0156	2.5	Pass
Normal	$\pi/4$ -DQPSK	2402	2387-2400	2400.00	-37.20	0.1905	25	Pass
Normal	$\pi/4$ -DQPSK	2402	2483.5-2496.5	2492.07	-47.87	0.0163	25	Pass
Normal	$\pi/4$ -DQPSK	2402	2496.5-13000	4807.27	-33.78	0.4188	2.5	Pass
Normal	$\pi/4$ -DQPSK	2441	30-1000	762.35	-48.79	0.0132	2.5	Pass
Normal	$\pi/4$ -DQPSK	2441	1000-2387	2355.10	-48.54	0.014	2.5	Pass
Normal	$\pi/4$ -DQPSK	2441	2387-2400	2388.60	-47.10	0.0195	25	Pass
Normal	$\pi/4$ -DQPSK	2441	2483.5-2496.5	2495.19	-48.16	0.0153	25	Pass
Normal	$\pi/4$ -DQPSK	2441	2496.5-13000	4880.79	-33.83	0.414	2.5	Pass
Normal	$\pi/4$ -DQPSK	2480	30-1000	947.62	-49.02	0.0125	2.5	Pass
Normal	$\pi/4$ -DQPSK	2480	1000-2387	2185.88	-48.52	0.0141	2.5	Pass
Normal	$\pi/4$ -DQPSK	2480	2387-2400	2398.97	-48.44	0.0143	25	Pass
Normal	$\pi/4$ -DQPSK	2480	2483.5-2496.5	2484.79	-46.60	0.0219	25	Pass
Normal	$\pi/4$ -DQPSK	2480	2496.5-13000	4964.82	-34.72	0.3373	2.5	Pass
Normal	8DPSK	2402	30-1000	831.22	-48.42	0.0144	2.5	Pass
Normal	8DPSK	2402	1000-2387	2337.07	-48.52	0.0141	2.5	Pass
Normal	8DPSK	2402	2387-2400	2399.91	-28.26	1.4928	25	Pass
Normal	8DPSK	2402	2483.5-2496.5	2489.86	-48.11	0.0155	25	Pass
Normal	8DPSK	2402	2496.5-13000	4807.27	-33.94	0.4036	2.5	Pass
Normal	8DPSK	2441	30-1000	967.02	-48.46	0.0143	2.5	Pass
Normal	8DPSK	2441	1000-2387	2378.68	-48.34	0.0147	2.5	Pass
Normal	8DPSK	2441	2387-2400	2387.39	-48.30	0.0148	25	Pass
Normal	8DPSK	2441	2483.5-2496.5	2496.47	-47.42	0.0181	25	Pass
Normal	8DPSK	2441	2496.5-13000	4880.79	-33.01	0.5	2.5	Pass
Normal	8DPSK	2480	30-1000	524.70	-48.10	0.0155	2.5	Pass
Normal	8DPSK	2480	1000-2387	2201.14	-47.58	0.0175	2.5	Pass
Normal	8DPSK	2480	2387-2400	2398.57	-47.64	0.0172	25	Pass
Normal	8DPSK	2480	2483.5-2496.5	2484.01	-37.39	0.1824	25	Pass
Normal	8DPSK	2480	2496.5-13000	4964.82	-34.35	0.3673	2.5	Pass

Note: 30M-1GHz test for RB=100kHz,

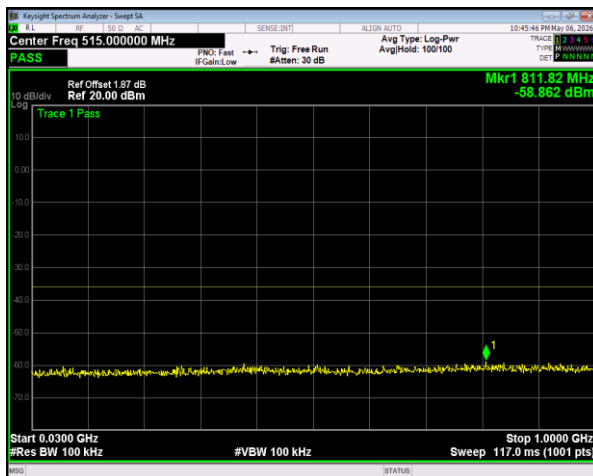
Test Result = Max Value +RB factor

RB factor = $10\log(RB_0/RB_1) = 10\log(1M/100K) = 10\text{dB}$

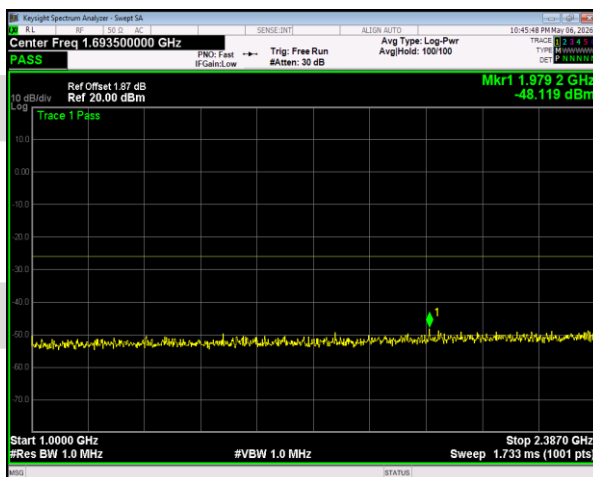
Modulation type: GFSK - 2402MHz

Test voltage	Normal	RESULT	PASS
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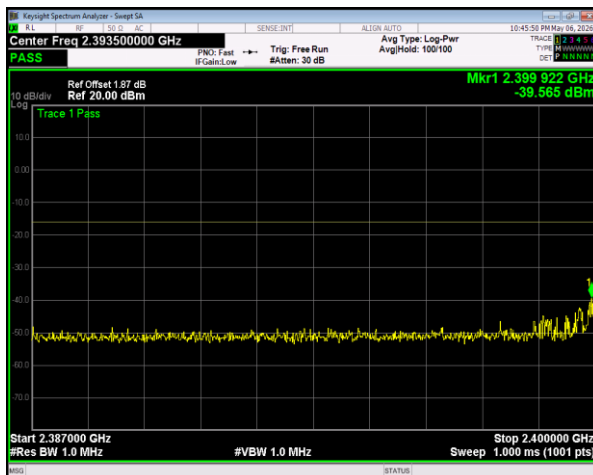
30MHz~1GHz



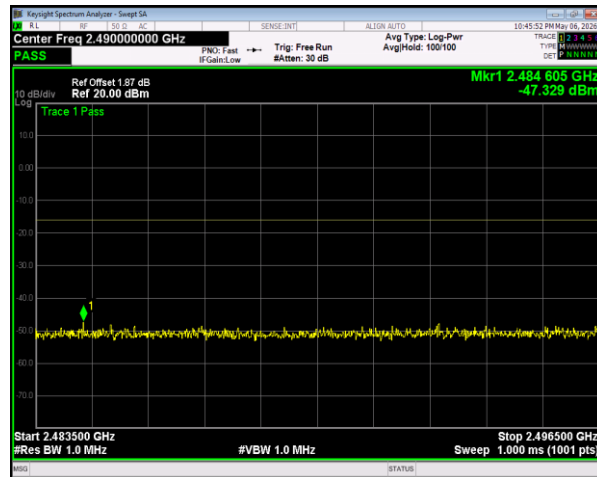
1GHz~2.387GHz



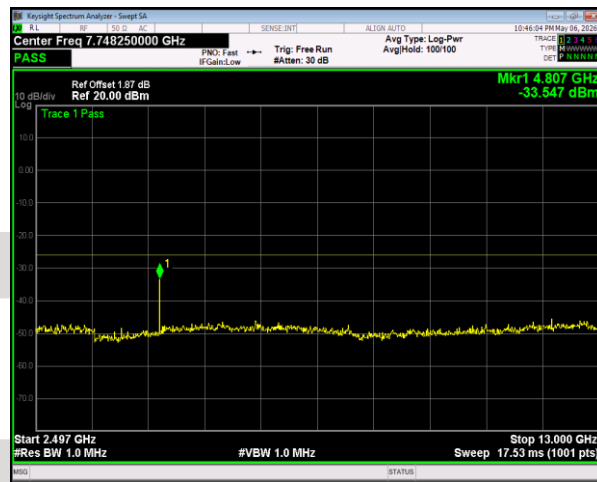
2.387GHz~2.4GHz



2.4835Hz~2.4965GHz



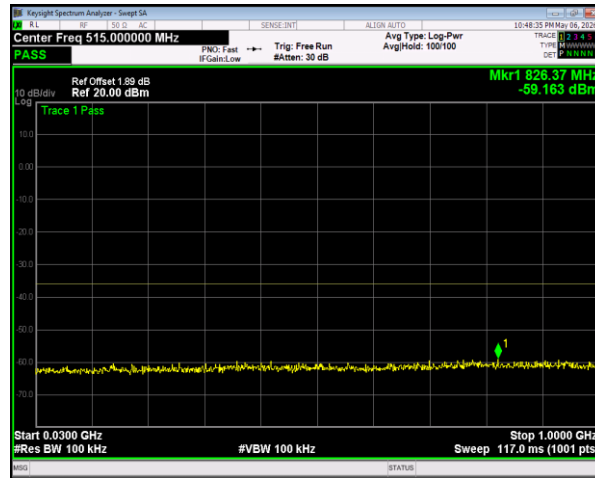
2.4965GHz~13GHz



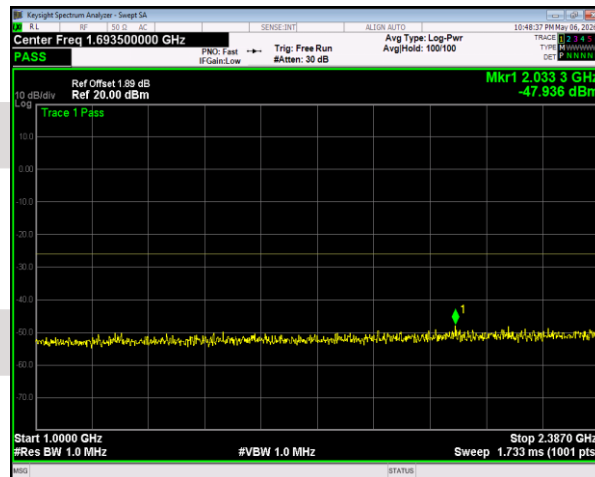
Modulation type: GFSK - 2441MHz

Test voltage	Normal	RESULT	PASS
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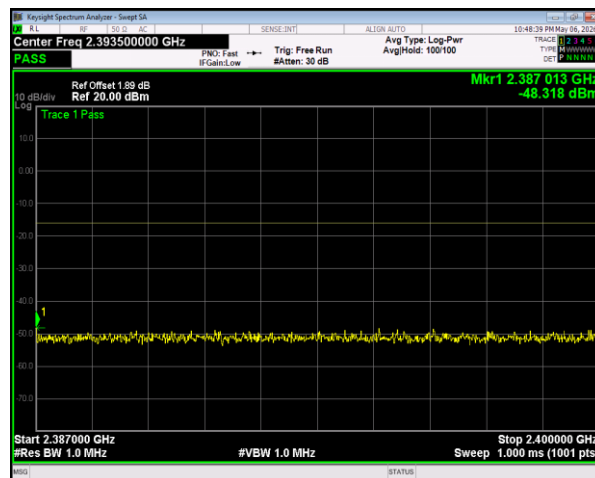
30MHz~1GHz



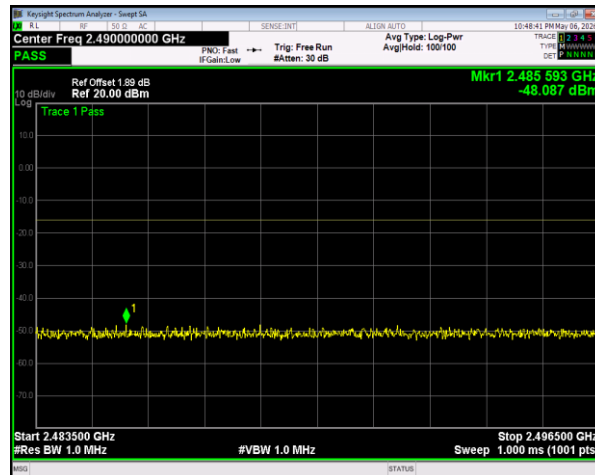
1GHz~2.387GHz



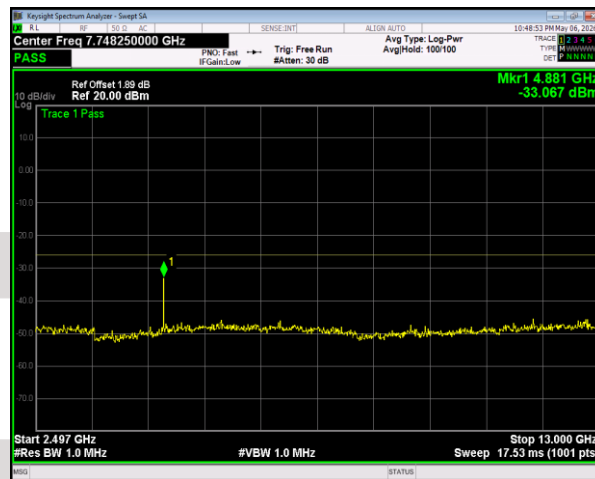
2.387GHz~2.4GHz



2.4835Hz~2.4965GHz



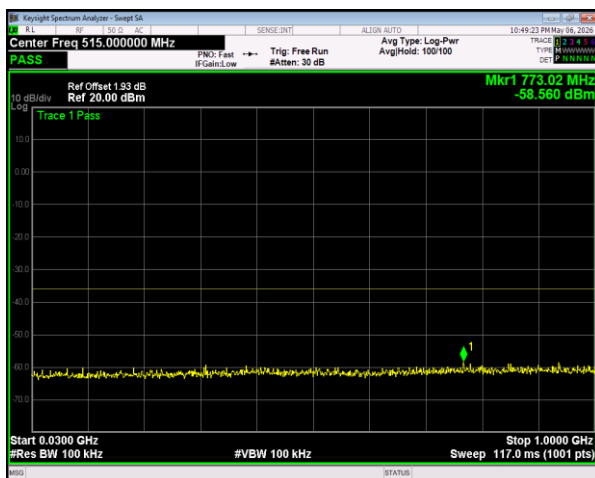
2.4965GHz~13GHz



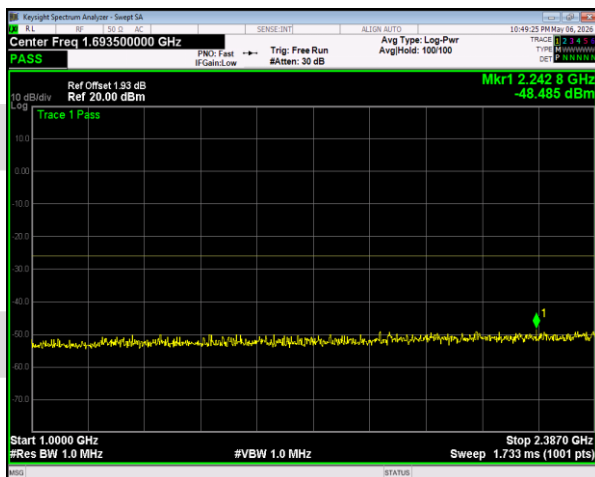
Modulation type: GFSK - 2480MHz

Test voltage	Normal	RESULT	PASS
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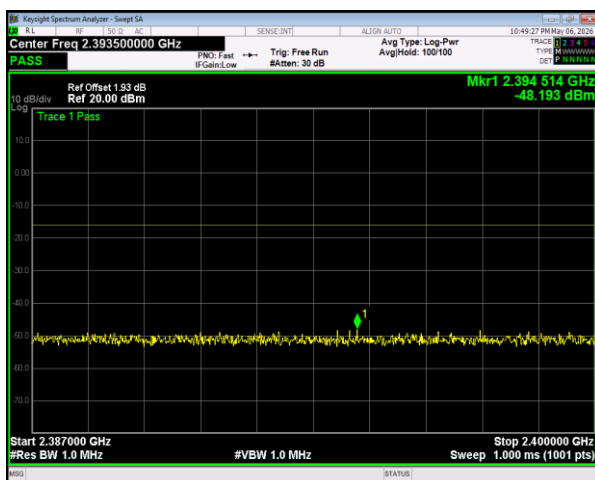
30MHz~1GHz



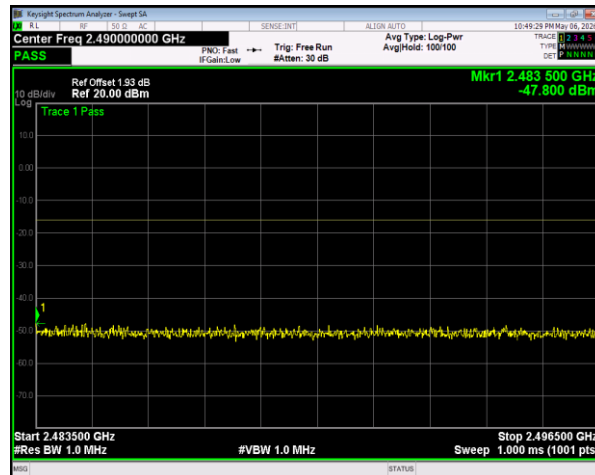
1GHz~2.387GHz



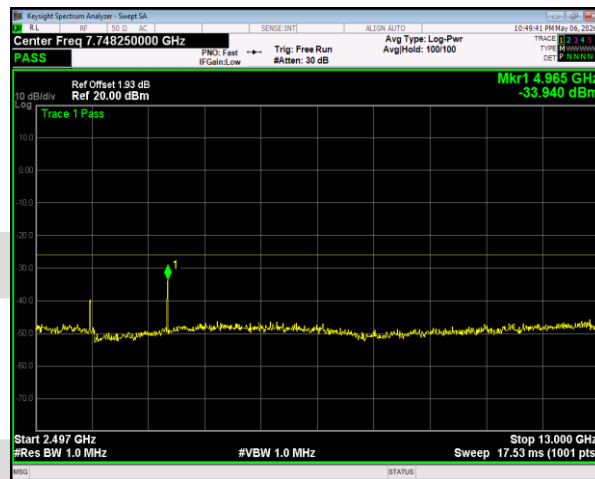
2.387GHz~2.4GHz



2.4835Hz~2.4965GHz



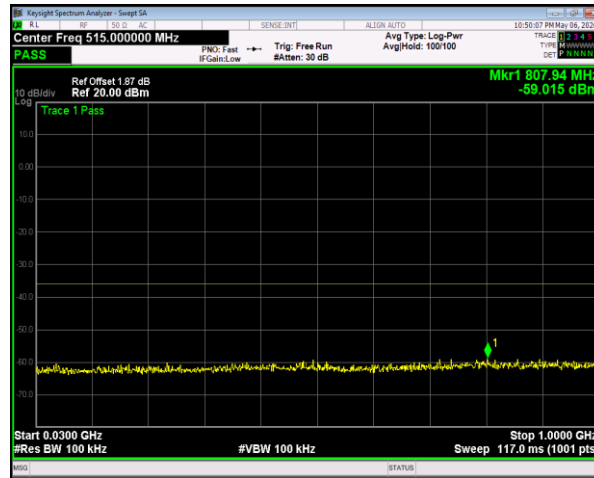
2.4965GHz~13GHz



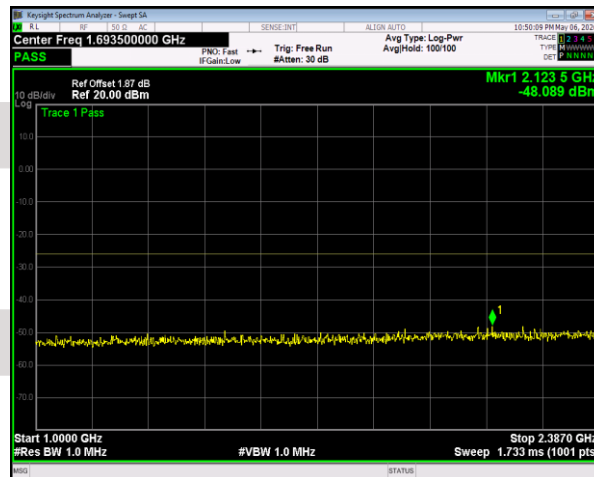
Modulation type: $\pi/4$ -DQPSK - 2402MHz

Test voltage	Normal	RESULT	PASS
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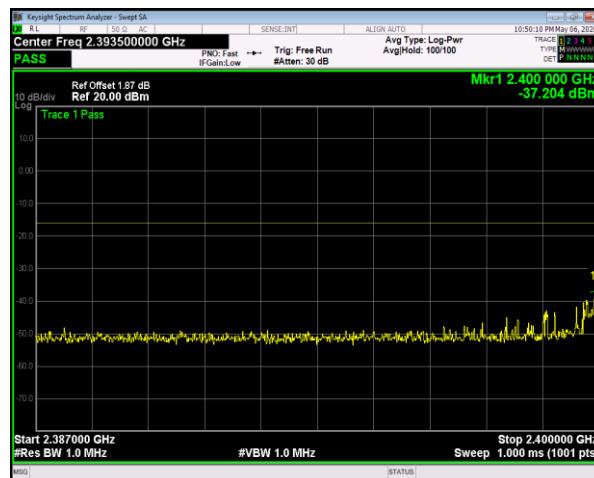
30MHz~1GHz



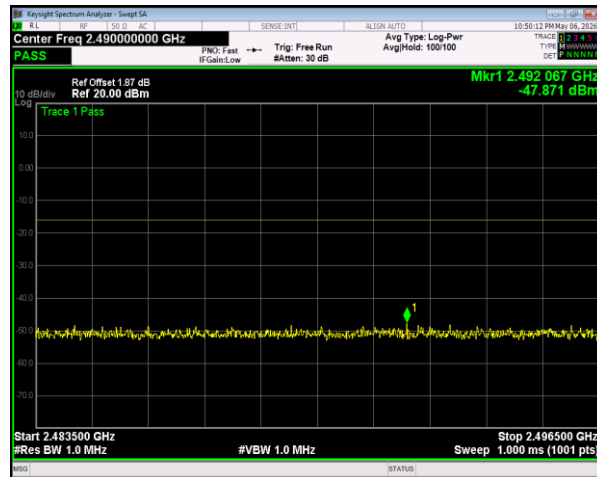
1GHz~2.387GHz



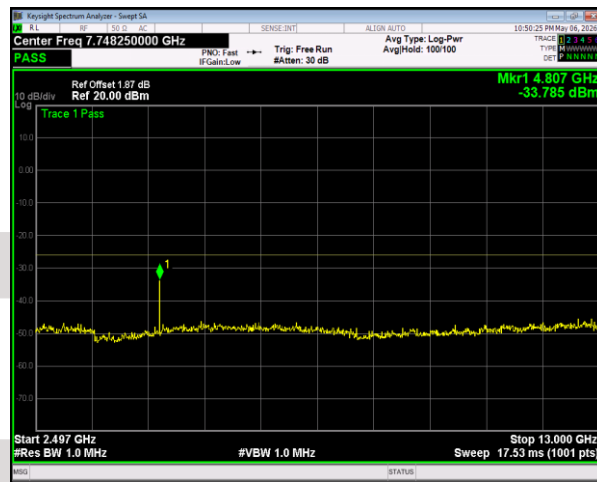
2.387GHz~2.4GHz



2.4835Hz~2.4965GHz



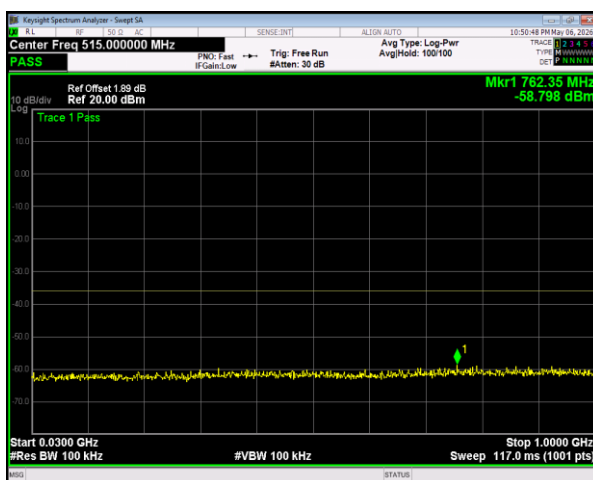
2.4965GHz~13GHz



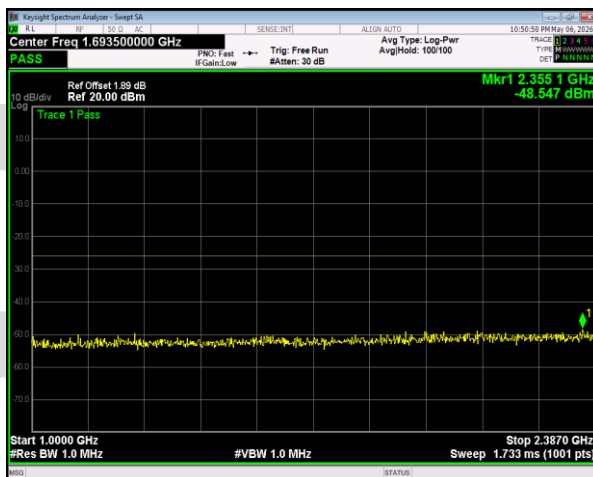
Modulation type: $\pi/4$ -DQPSK - 2441MHz

Test voltage	Normal	RESULT	PASS
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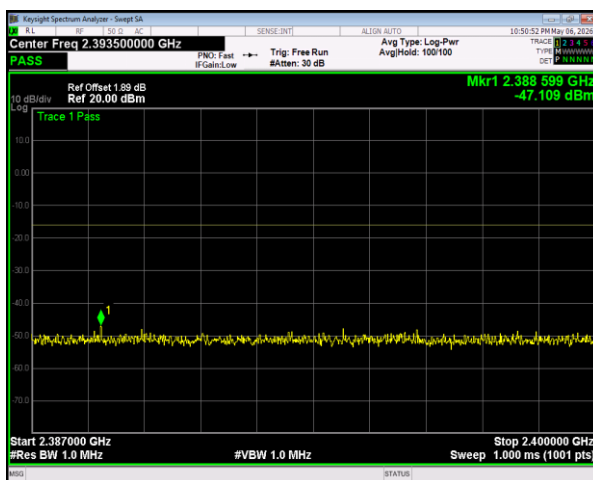
30MHz~1GHz



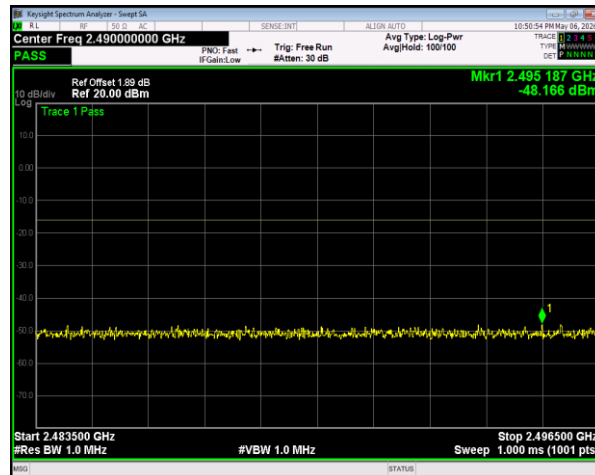
1GHz~2.387GHz



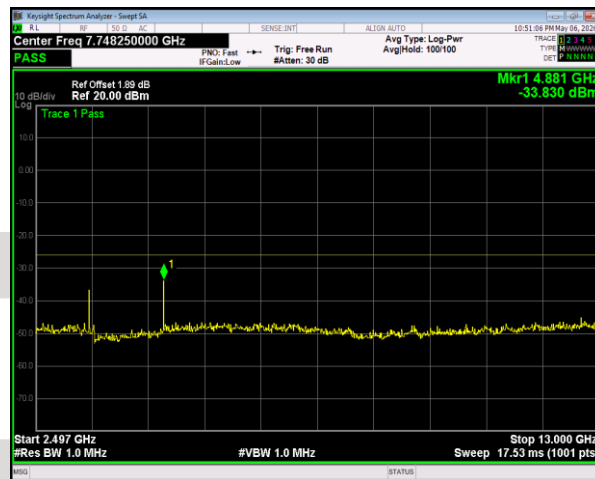
2.387GHz~2.4GHz



2.4835Hz~2.4965GHz



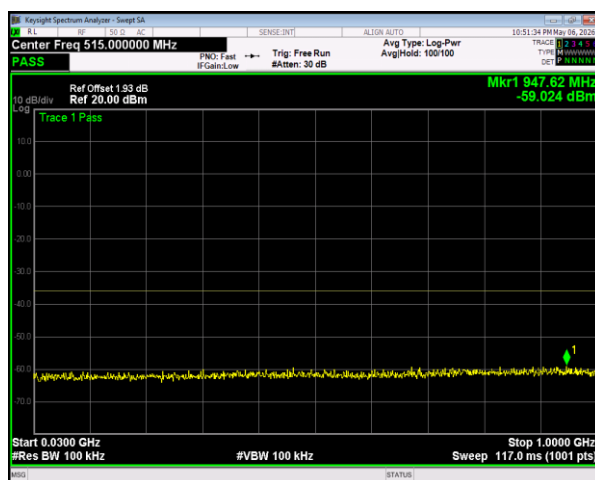
2.4965GHz~13GHz



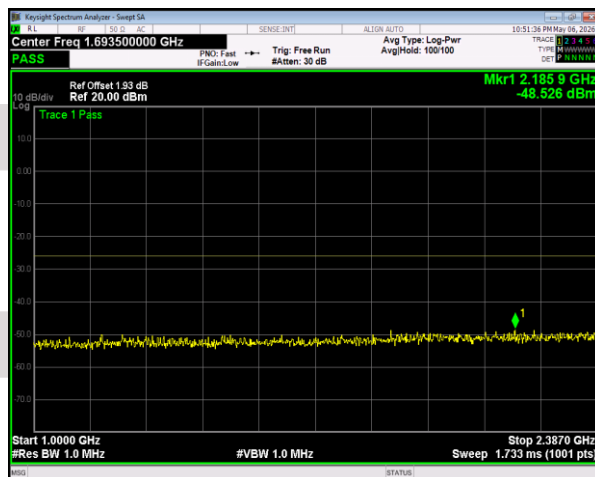
Modulation type: $\pi/4$ -DQPSK - 2480MHz

Test voltage	Normal	RESULT	PASS
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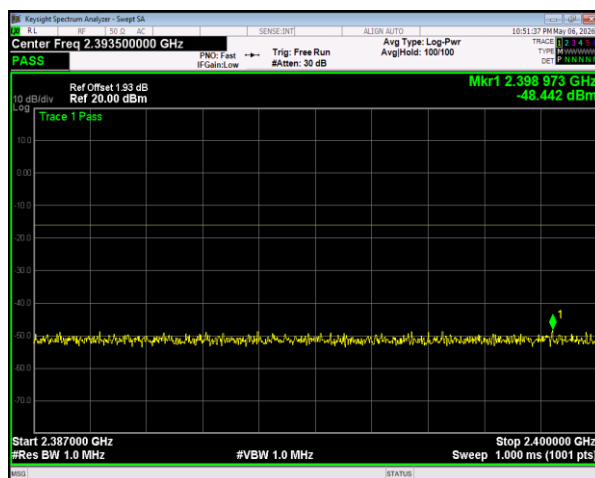
30MHz~1GHz



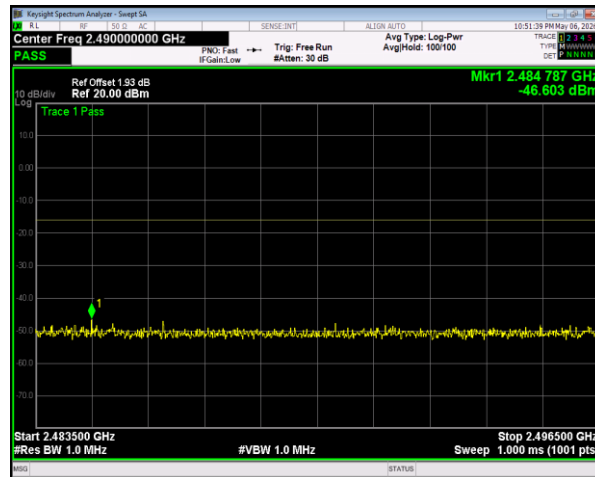
1GHz~2.387GHz



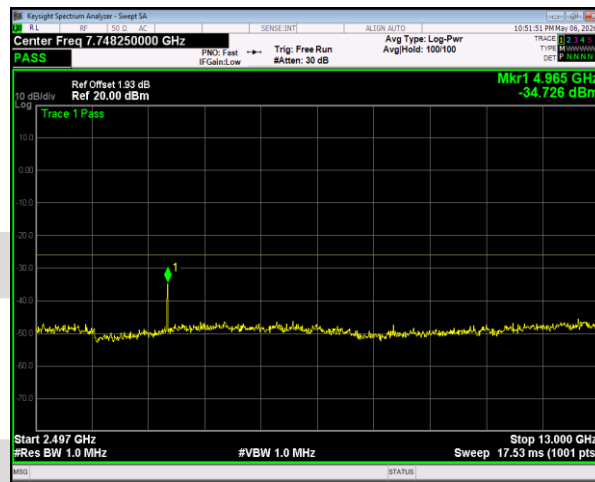
2.387GHz~2.4GHz



2.4835Hz~2.4965GHz



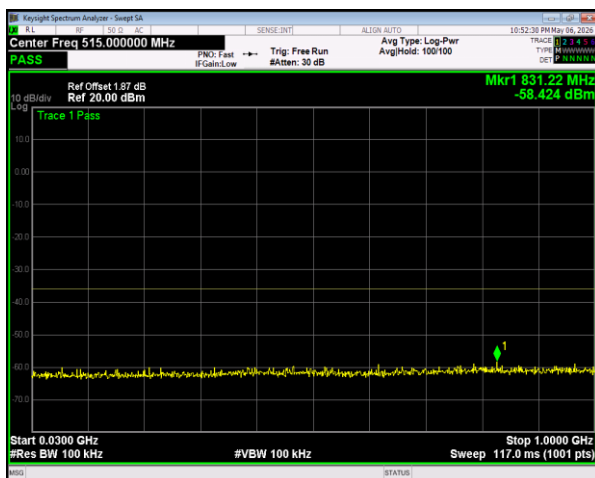
2.4965GHz~13GHz



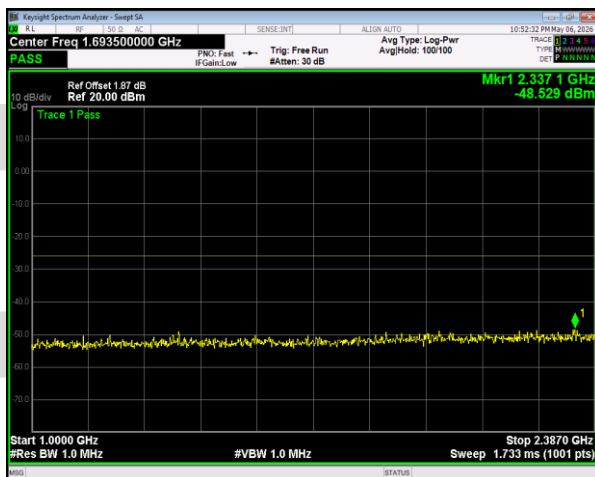
Modulation type: 8DPSK - 2402MHz

Test voltage	Normal	RESULT	PASS
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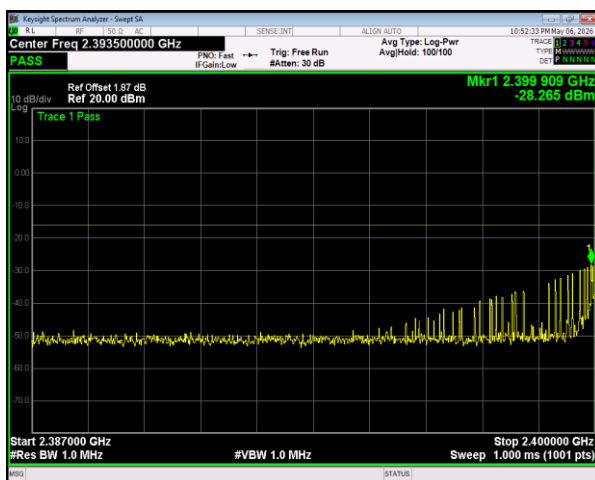
30MHz~1GHz



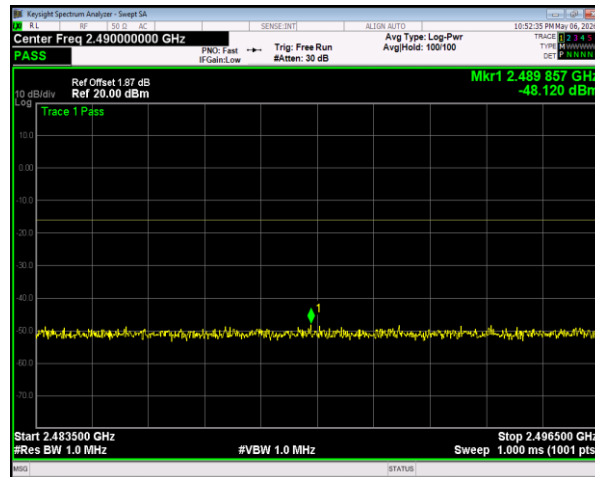
1GHz~2.387GHz



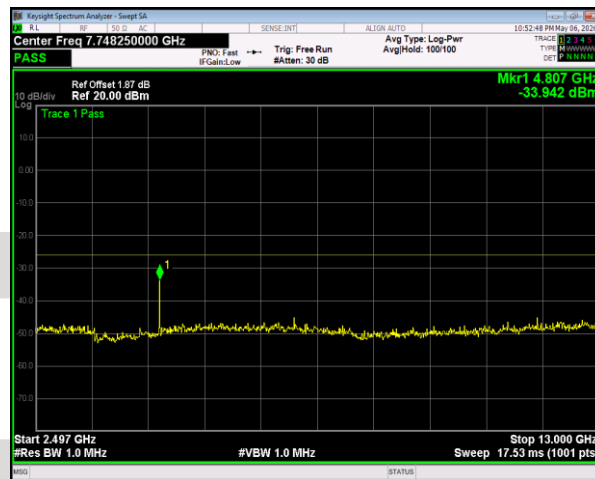
2.387GHz~2.4GHz



2.4835Hz~2.4965GHz



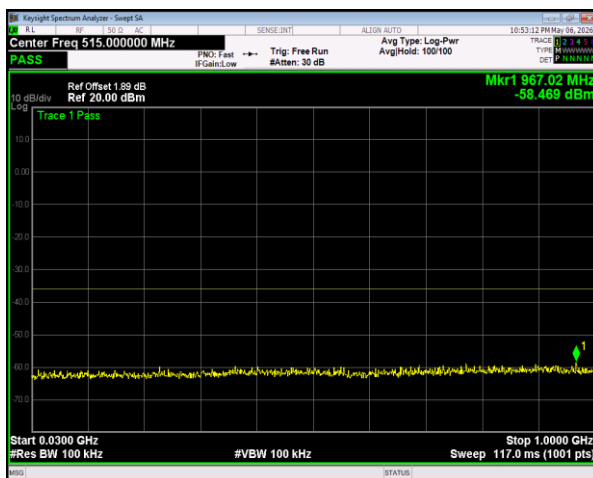
2.4965GHz~13GHz



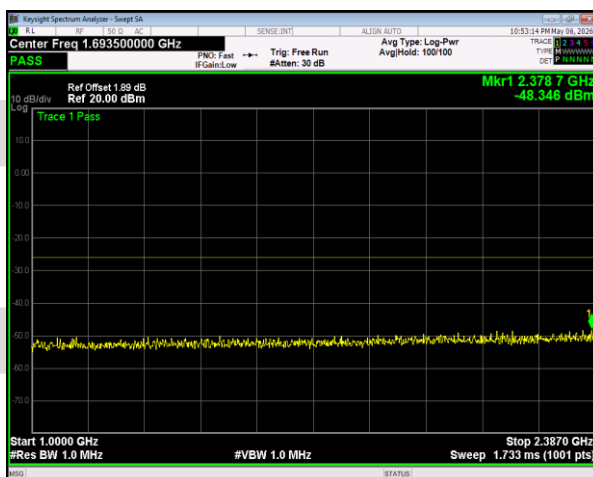
Modulation type: 8DPSK - 2441MHz

Test voltage	Normal	RESULT	PASS
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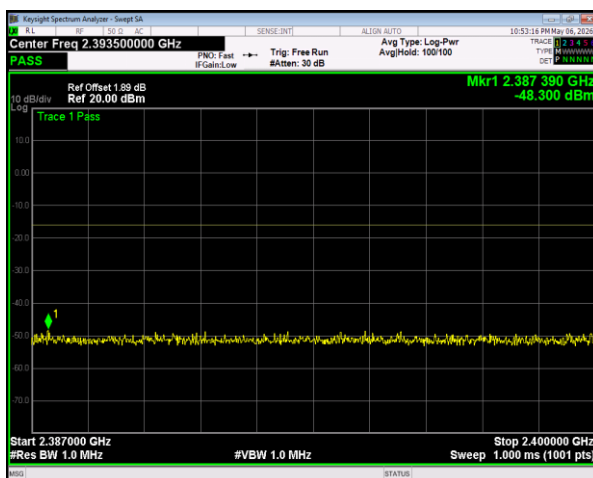
30MHz~1GHz



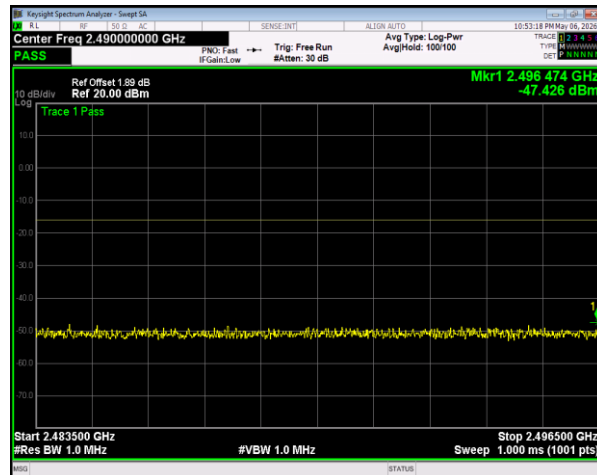
1GHz~2.387GHz



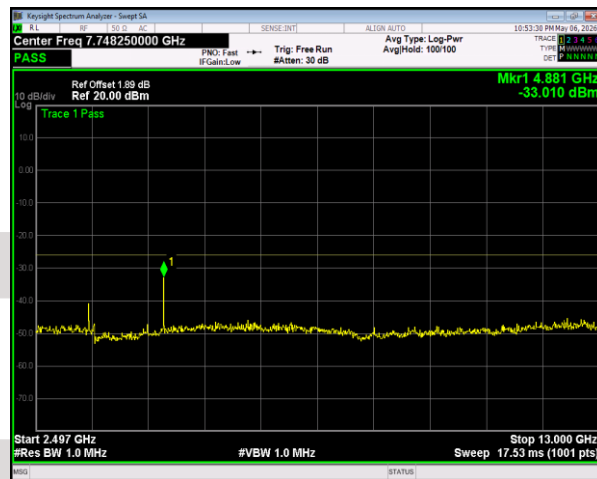
2.387GHz~2.4GHz



2.4835Hz~2.4965GHz



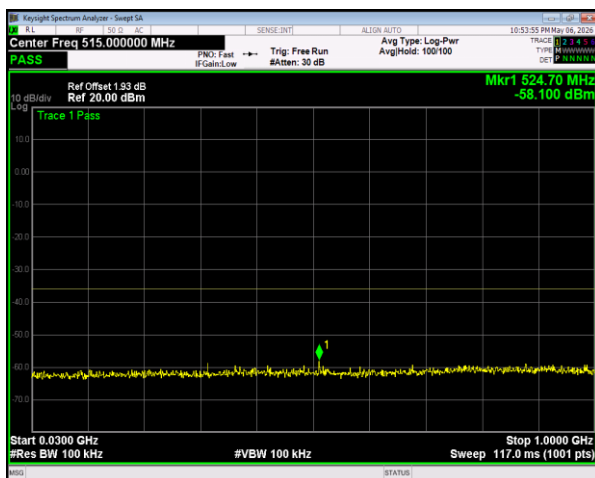
2.4965GHz~13GHz



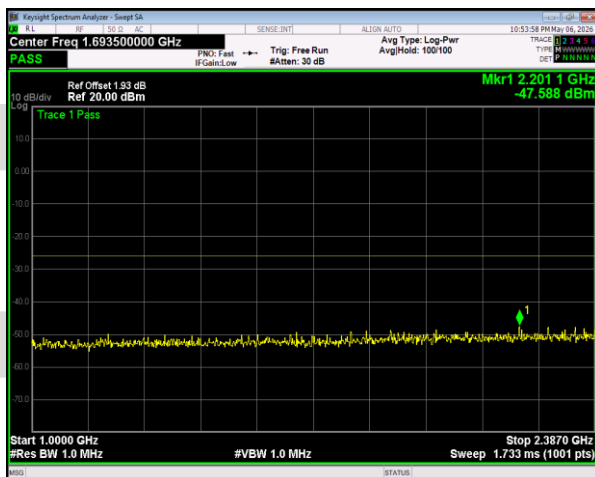
Modulation type: 8DPSK - 2480MHz

Test voltage	Normal	RESULT	PASS
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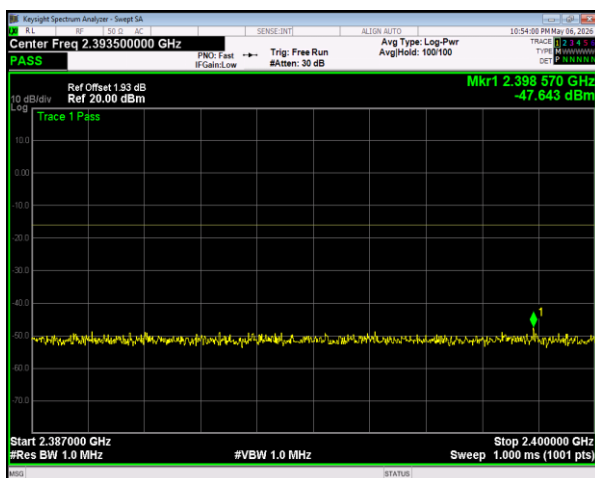
30MHz~1GHz



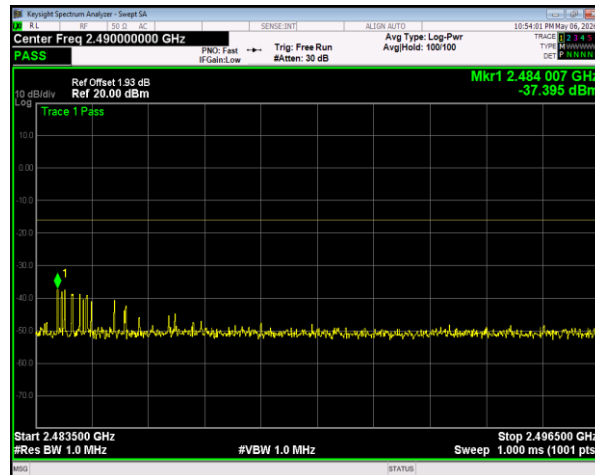
1GHz~2.387GHz



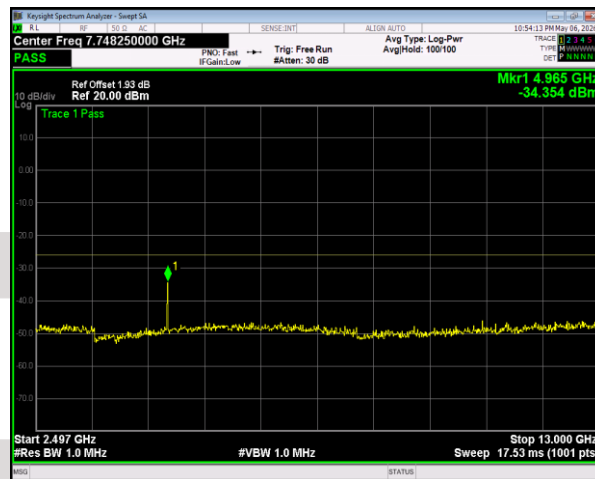
2.387GHz~2.4GHz



2.4835Hz~2.4965GHz



2.4965GHz~13GHz



5.5 RADIO INTERFERENCE PREVENTION CAPABILITY MEASUREMENT

5.5.1 LIMIT

Item	Limits
Identification code	≥ 48 bits

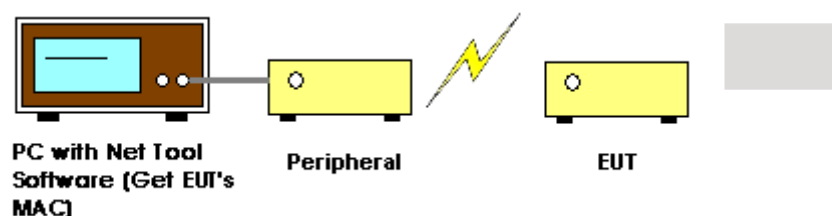
5.5.2 MEASURING ID CODE SOFTWARE

Item	Limits
MAC IP List	MAC Scan

5.5.3 TEST PROCEDURESC

1. In the case that the EUT has the function of automatically transmitting the identification code: a. Transmit the predetermined identification codes form EUT. b. Check the transmitted identification codes with the demodulator.
2. In the case of receiving the identification ocde: a. Transmit the predetermined identification codes form the counterpart. b . Check if communication is normal. c. Transmit the signals other than predetermined ID codes form the counterpart. d. check if the EUT stops the transmission, or if it displays that idnetification codes are different from the predetermined ones.

5.5.4 TEST SETUP LAYOUT



5.5.5 TEST DEVIATION

There is no deviation with the original standard.

5.5.6 EUT OPERATION DURING TEST

The EUT was programmed to be in normal transmitting mode.

5.5.7 TEST RESULT OF RADIO INTERFERENCE PREVENTION CAPABILIT

Bluetooth Device Address: 5B-DA-A9-AF-C8-21

5.6 DWELL TIME

5.6.1 LIMIT

Item	Limits
Hopping Freq. Dwell Time	$\leq 0.4 \text{ sec (In } 0.4 \text{ sec} \times \text{ spreading rate)}$

5.6.2 MEASURING INSTRUMENTS AND SETTING

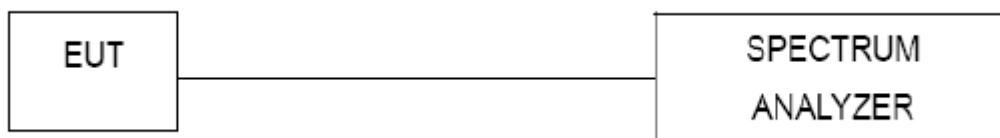
Please refer to section 5 in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	0 Hz
RB	1 MHz
VB	1 MHz
Detector	Peak
Trace	Max Hold
Sweep	Continuous

5.6.3 TEST PROCEDURES

- The transmitter output (antenna port) was connected to the spectrum analyzer
- Set RBW of spectrum analyzer to 1MHz and VBW to 1MHz.
- Use a video trigger with the trigger level set to enable triggering only on full pulses.
- Sweep Time is more than once pulse time.
- Set the center frequency on any frequency would be measure and set the frequency span to zero span.
- Measure the maximum time duration of one single pulse.
- Set the EUT for DH5, DH3 and DH1 packet transmitting.
- Measure the maximum time duration of one single pulse.
- Dwell Time = (One Pulse Time * (Burst Count in the specified period time)

5.6.4 TEST SETUP LAYOUT



5.6.5 TEST RESULT

Dwell Time = (One Pulse Time * (Burst Count in the specified period time);
the specified period time = 0.4s * (Hopping channel in use).”

Spread Spectrum Factor = Spread Spectrum Bandwidth / Symbol rate (Msymbols/s) of EUT

Symbol rate (Msymbols/s) of EUT is below:

GFSK modulation: 1Mbps

$\pi/4$ -DQPSK modulation: 1Mbps

8DPSK modulation: 1Mbps

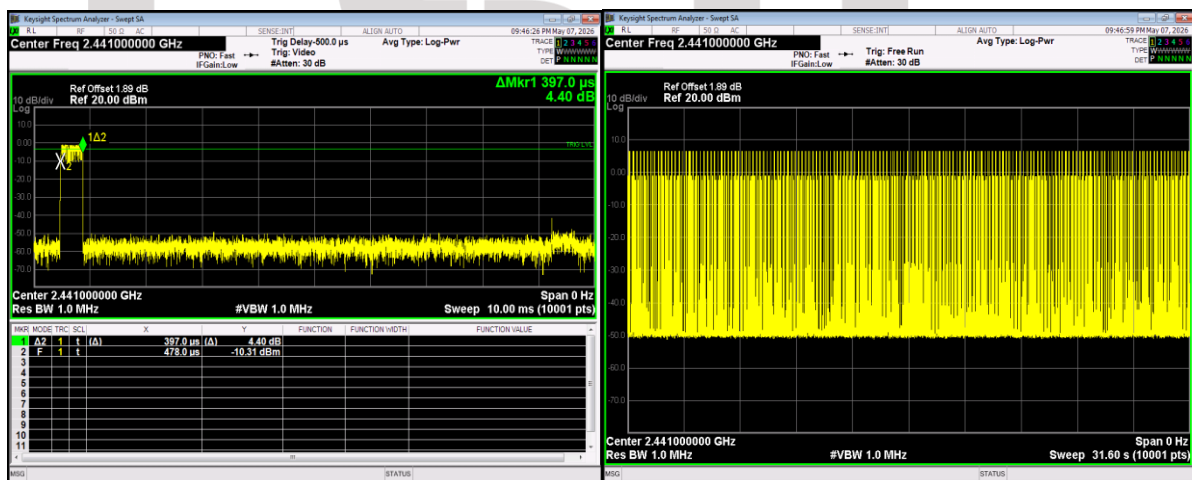
Spread Spectrum Factor = Spread Spectrum Bandwidth / Symbol rate (Msymbols/s)

Spread Spectrum Factor = Spread Spectrum Bandwidth / Symbol rate (Msymbols/s) of EUT.
=71.403

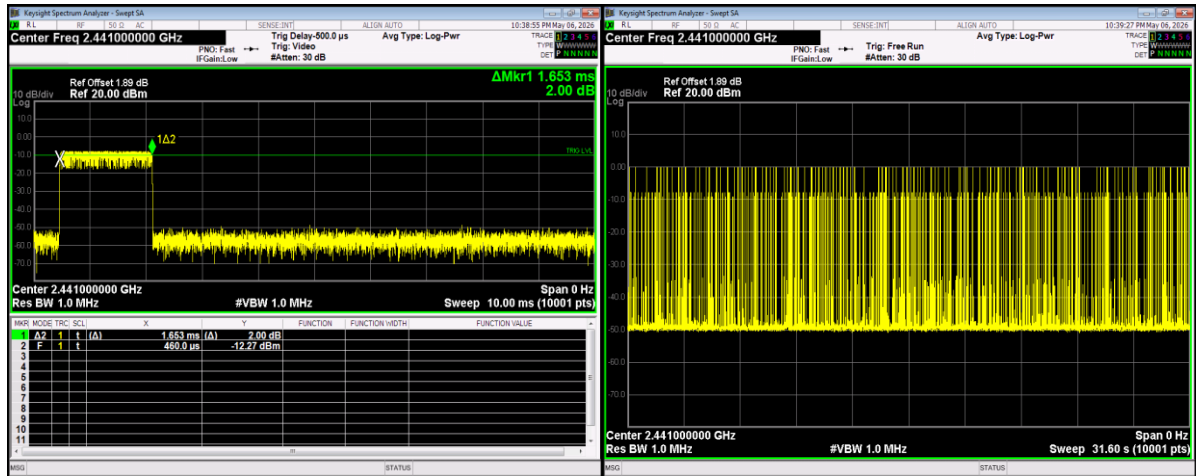
Condition	Mode	Frequency (MHz)	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	1-DH1	2441	0.397	198.897	501	31600	400	Pass
NVNT	1-DH3	2441	1.653	256.215	155	31600	400	Pass
NVNT	1-DH5	2441	2.902	330.828	114	31600	400	Pass

Modulation type:	GFSK	Test voltage:	Normal
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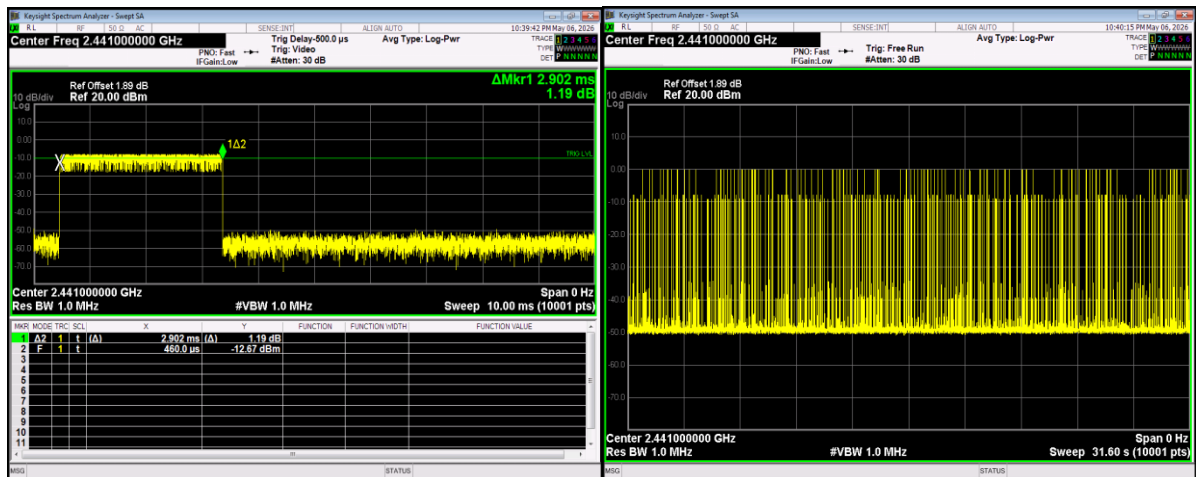
DH1



DH3



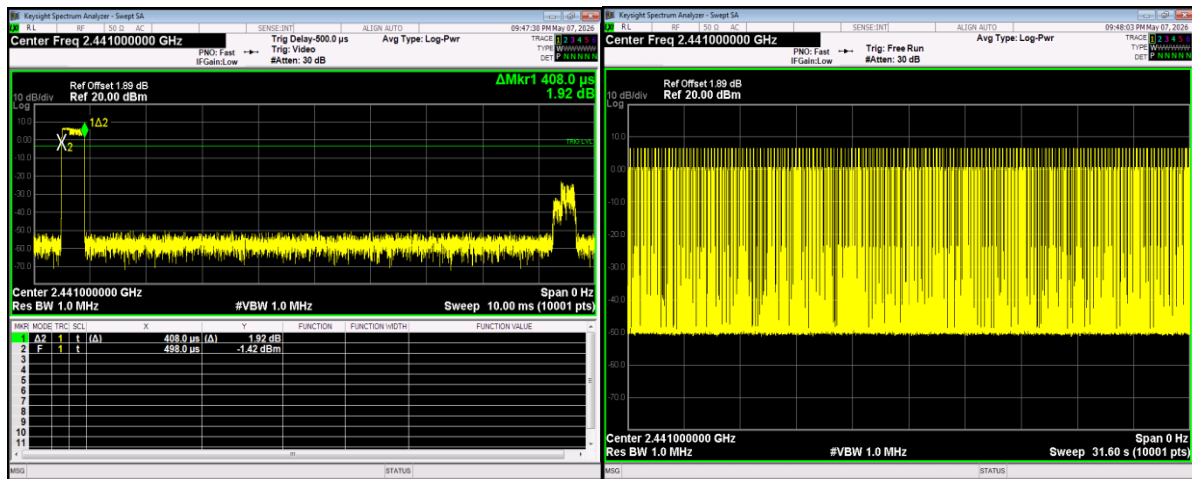
DH5



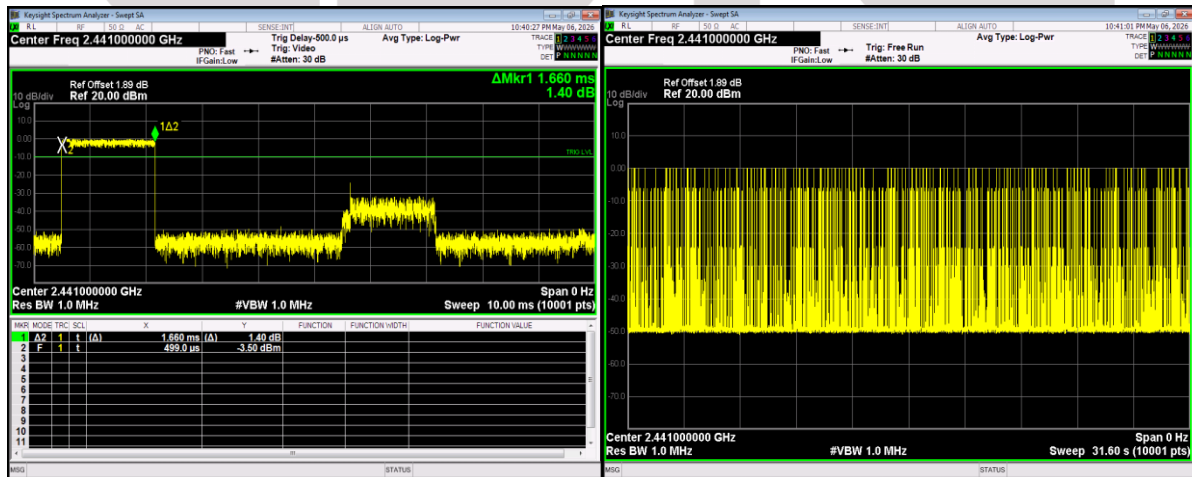
Spread Spectrum Factor = Spread Spectrum Bandwidth / modulation rate of EUT.
=71.375

Condition	Mode	Frequency (MHz)	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	2-DH1	2441	0.408	204.408	501	31600	400	Pass
NVNT	2-DH3	2441	1.66	258.96	156	31600	400	Pass
NVNT	2-DH5	2441	2.873	330.395	115	31600	400	Pass
Modulation type:		$\pi/4$ -DQPSK		Test voltage:		Normal		

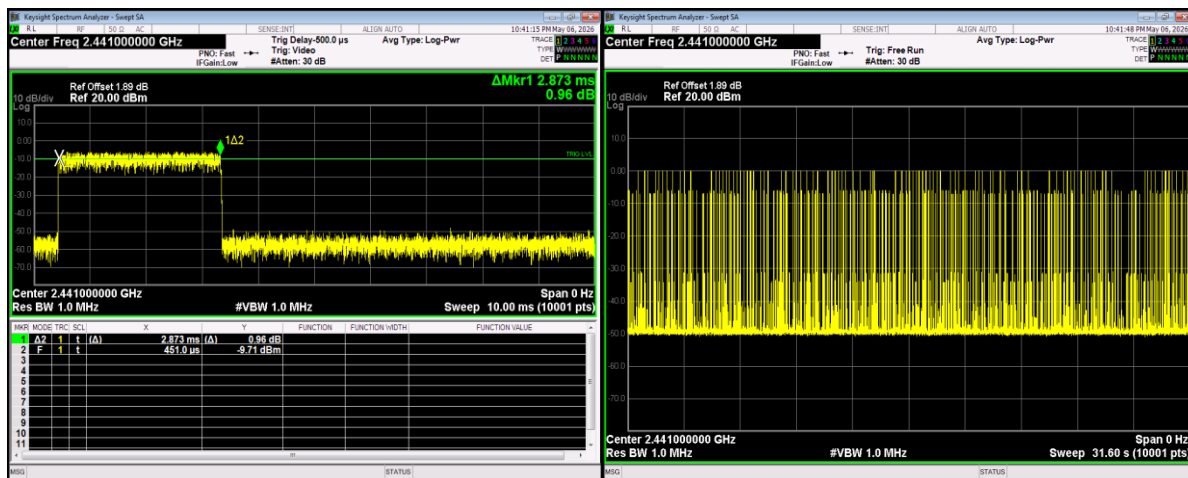
2DH1



2DH3



2DH5



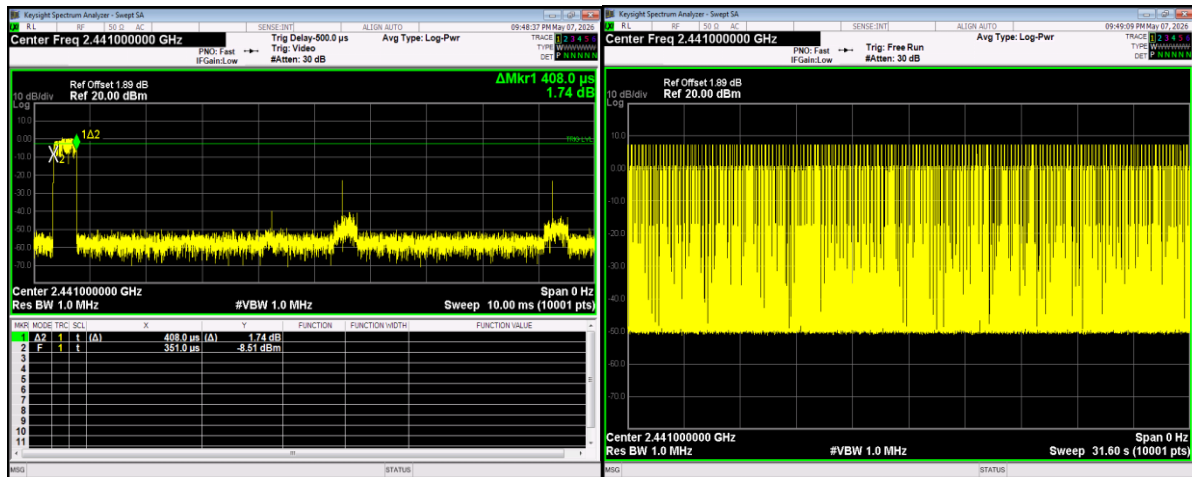
CSTC

Spread Spectrum Factor = Spread Spectrum Bandwidth / modulation rate of EUT.
=71.547

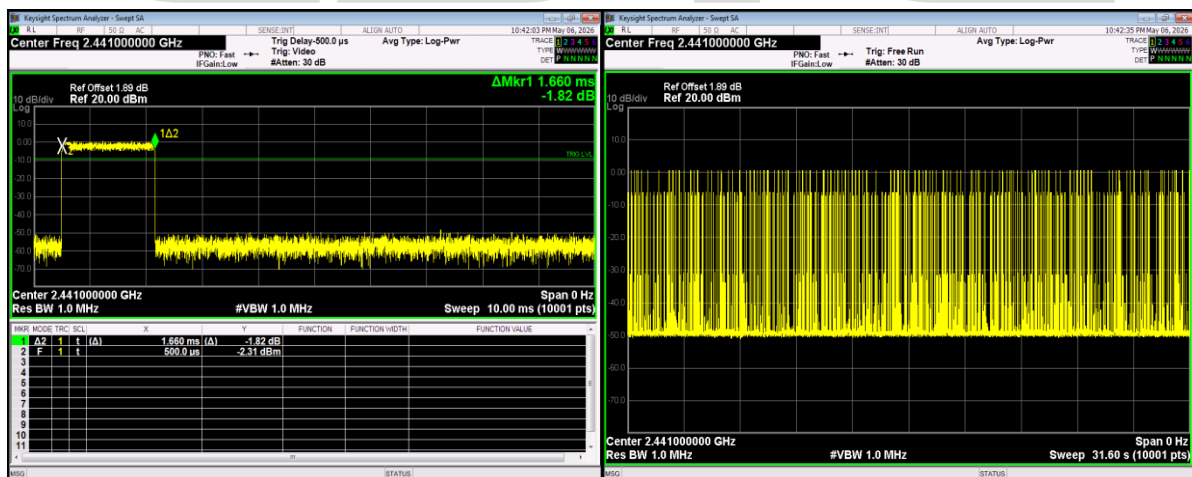
Condition	Mode	Frequency (MHz)	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
NVNT	3-DH1	2441	0.408	204.408	501	31600	400	Pass
NVNT	3-DH3	2441	1.66	257.3	155	31600	400	Pass
NVNT	3-DH5	2441	2.875	333.5	116	31600	400	Pass

Modulation type:	8DPSK	Test voltage:	Normal
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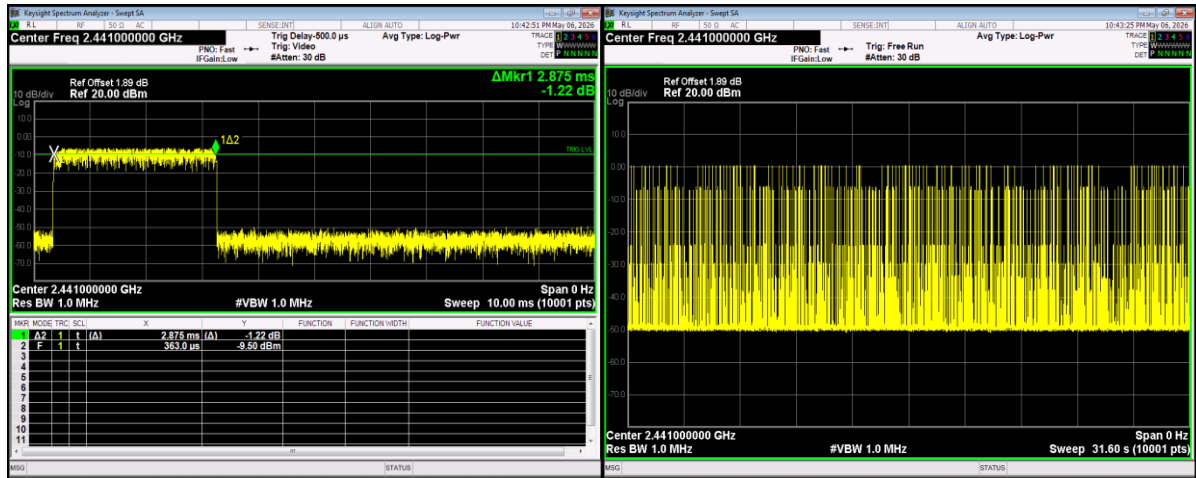
3DH1



3DH3



3DH5



5.7 IMITATION OF COLLATERAL EMISSION OF RECEIVER MEASUREMENT

5.7.1 LIMIT

Item	Limits
RX Spurious Emission:	$\leq 4\text{nW}$ ($f < 1\text{GHz}$)
	$\leq 20\text{nW}$ ($1\text{GHz} \leq f$)

5.7.2 MEASURING INSTRUMENTS AND SETTING

Please refer to section 5 in this report. The following table is the setting of Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
RB	100 kHz (below 1GHz emissions) 1 MHz (above 1GHz emissions)
VB	100 kHz (below 1GHz emissions) 1 MHz (above 1GHz emissions)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

5.7.3 TEST PROCEDURES

- EUT have the continuous reception mode and fixed only one channelize.
- Setting of SA is following as RB / VB: 100 kHz (below 1GHz emissions) / 1 MHz (above 1GHz emissions) / AT: 10dB / Ref: 0dBm / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold
- SA set RB: 100kHz and VB: 100kHz. Then adjust to start frequency 30MHz and stop frequency 1000MHz. Search to mark peak reading value + cable loss shall be less than 4nW
- SA set RB: 1MHz and VB: 1MHz. Then adjust to start frequency 1000MHz and stop frequency 12500MHz. Search to mark peak reading value + cable loss shall be less than 20nW
- If power level of lower emissions are more than 1/10 of limit (.0.4nW for $f < 1\text{GHz}$, 2nW for $f \geq 1\text{GHz}$), all those are to be indicated in the 2nd and 3rd lines. If others are 1/10 or less more of the limit, no necessary to be indicated.

5.7.4 TEST RESULT

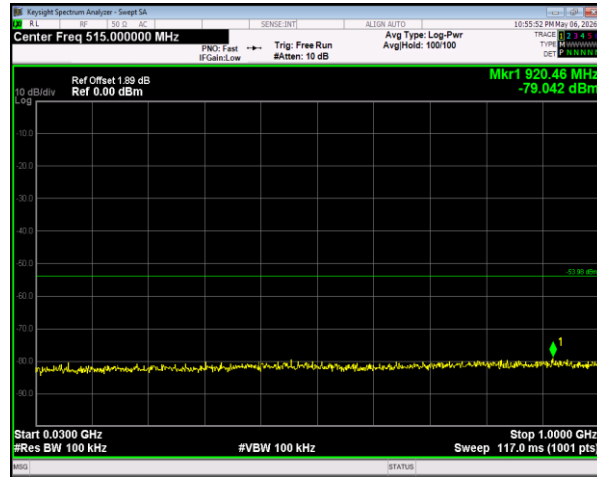
Test Voltage	Test Mode	Frequency (MHz)	Range (MHz)	Emission Frequency (MHz)	Max Peak Value (dBm)	Max RMS Value (dBm)	Max Peak Value (nW)	Max RMS Value (nW)	Limit (nW)	Verdict
Normal	GFSK	2441	30-1000	920.46	-79.04	NA	0.0125	920.46	4	Pass
Normal	GFSK	2441	1000-13000	6544.00	-66.48	NA	0.2249	6544.00	20	Pass
Normal	$\pi/4$ -DQPSK	2441	30-1000	822.49	-78.11	NA	0.0155	822.49	4	Pass
Normal	$\pi/4$ -DQPSK	2441	1000-13000	12796.00	-65.84	NA	0.2606	12796.00	20	Pass
Normal	8DPSK	2441	30-1000	820.55	-78.60	NA	0.0138	820.55	4	Pass
Normal	8DPSK	2441	1000-13000	12268.00	-65.28	NA	0.2965	12268.00	20	Pass

Note: All channels are tested , only the worst test data recorded was 2441MHz.

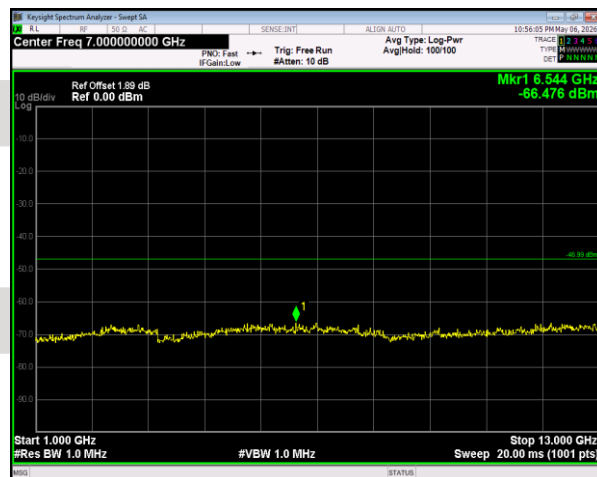
Modulation type: GFSK - 2441MHz

Test voltage	Normal	Test Channel	2441MHz
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30MHz~1GHz



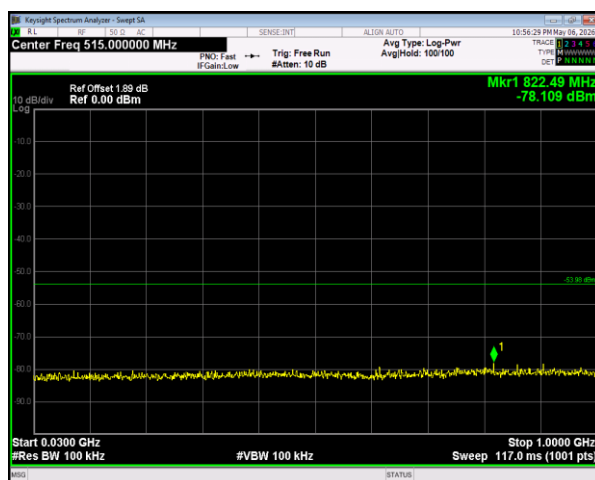
1GHz~13GHz



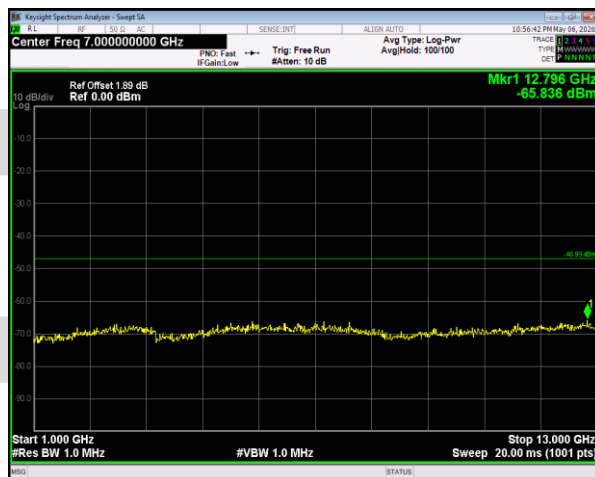
Modulation type: $\pi/4$ -DQPSK - 2441MHz

Test voltage	Normal	Test Channel	2441MHz
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30MHz~1GHz



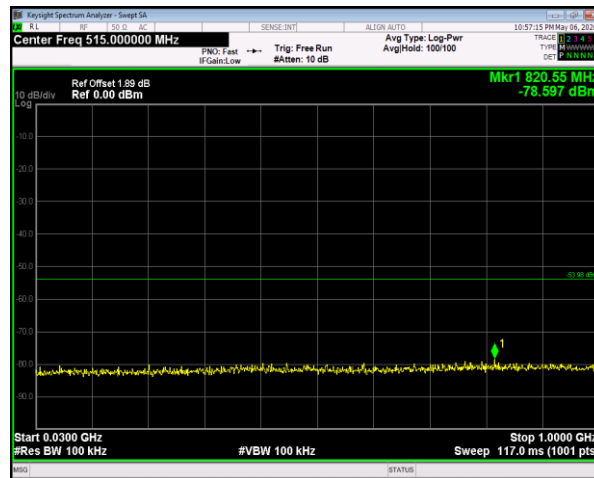
1GHz~13GHz



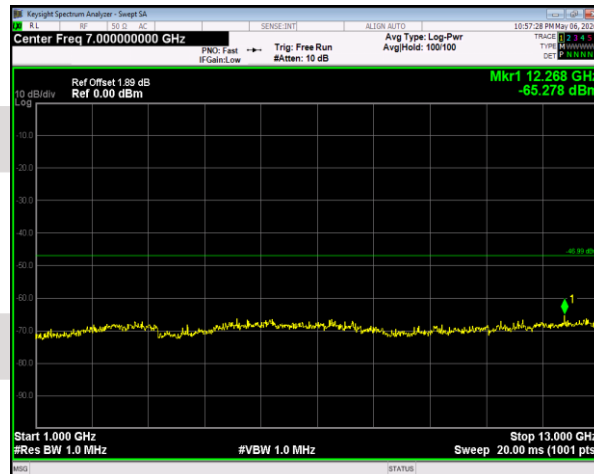
Modulation type: 8DPSK - 2441MHz

Test voltage	Normal	Test Channel	2441MHz
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30MHz~1GHz



1GHz~13GHz



6. EUT TEST PHOTO

Reference to the appendix I for details.

7. EUT CONSTRUCTIONAL DETAILS

Reference to the appendix II for details.

※※※※※ END OF REPORT ※※※※※

