Compliance Laboratory

TEST REPORT

ARIB STD T-66 Ver.3.7
Item 19 of Article 2 Paragraph 1

Report Reference No..... :	MTEB26070168-R
Compiled by (position+printed name+signature).. :	Alisa(Engineer)
Supervised by (position+printed name+signature).. :	Sunny Deng(Engineer)
Approved by (position+printed name+signature).. :	Yvette Zhou (Manager)
Date of issue..... :	**Jul.20,2026**
Testing Laboratory Name.....:	**Shenzhen Most Technology Service Co., Ltd.**
Address..... :	No.5, 2nd Langshan Road, North District, Hi-tech Industrial Park, Nanshan, Shenzhen,China
Applicant's name..... :	**Shenzhen Hanrongda Electronics Co.,Ltd.**
Address..... :	No.21,LiYuan Xia,XinLi Road,PingHu Town,LongGang District Shenzhen
Test specification..... :	
Standard..... :	**ARIB STD T-66 Ver.3.7** **Item 19 of Article 2 Paragraph 1**

Shenzhen Most Technology Service Co., Ltd. All rights reserved.
This publication may be reproduced in whole or in part for non-commercial purposes as long as the Shenzhen Most Technology Service Co., Ltd. is acknowledged as copyright owner and source of the material. Shenzhen Most Technology Service Co., Ltd. takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

Test item description.....:	Wide Frequency Scanner Radio
Trade Mark..... :	N/A
Model/Type reference..... :	HRD-A330
Listed Models ..... :	ZWS-A330, RF780
Ratings..... :	DC 3.7V by Battery DC 5V by USB Port
Modulation ..... :	GFSK, π/4DQPSK, 8DPSK
Frequency.....	2402~2480MHz
HW Ver.....	V1.0
SW Ver.....	V1.0
Result..... :	**PASS**

TEST REPORT

Equipment under Test	:	Wide Frequency Scanner Radio
Model /Type	:	HRD-A330
Listed Models	:	ZWS-A330, RF780
Remark		Only the model “HRD-A330” was tested, Their electrical circuit design, layout, components used and internal wiring are identical, Only the Appearance color is different.
Applicant	:	**Shenzhen Hanrongda Electronics Co.,Ltd**
Address	:	No.21,LiYuan Xia,XinLi Road,PingHu Town,LongGang District Shenzhen
Manufacturer	:	**Shenzhen Hanrongda Electronics Co.,Ltd**
Address	:	No.21,LiYuan Xia,XinLi Road,PingHu Town,LongGang District Shenzhen

Test Result:	**PASS**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Contents

1 SUMMAR 4

1.1 Test Standards 4
1.2 Test Description 4
1.3 TEST ENVIRONMENT 5
1.4 Measurement Uncertainty 5

2 GENERAL INFORMATION 6

2.1 General Remarks 6
2.2 Environmental conditions 6
2.3 General Description of EUT 6
2.4 Description of Test Modes 7
2.5 Measurement Instruments List 8
2.6 Table for Parameters of Test Software Setting 8
2.7 Test Voltage 8

3 TEST CONDITIONS AND RESULTS 9

3.1 Frequency Error 9
3.2 Antenna Power 10
3.3 Occupied Frequency Bandwidth 11
3.4 Spread Bandwidth 12
3.5 Transmitter Spurious Emissions (conducted) 13
3.6 Secondary Radiated Emissions 14
3.7 Carrier sensing function 15
3.8 Interference prevention function 16

4 TEST SETUP PHOTOS OF THE EUT 17

5 PHOTOS OF THE EUT 18

APPENDIX I. Frequency Tolerance 19
APPENDIX II. Antenna Power 21
APPENDIX III. Occupied Bandwidth (99% BW) 22
APPENDIX IV. Spreading Bandwidth (90% BW) 24
APPENDIX V. Dwell Time 26
APPENDIX VI. Spurious Emissions 29
APPENDIX VII. Spurious Emissions of Receiver 37

複製禁止

1 SUMMAR

1.1 Test Standards

The tests were performed according to following standards:

ARIB STD-T66: Second-Generation Low-Power Data Communication System/Wireless LAN System
MIC Notice No.88 Appendix No. 43: 2.4 GHz band wide-band low-power data communication system

1.2 Test Description

ARIB STD-T66 Version 3.7/2014		
CLAUSE	Description of Test (Transmitter Parameters)	Result
3.2 (2)	Antenna Power	PASS
3.2 (3)	Tolerances for Antenna Power	PASS
3.2 (4)	Frequency Tolerance	PASS
3.2 (5)	Transmission Rate	PASS
3.2 (7)	Occupied Frequency Bandwidth	PASS
3.2 (8)	Spread Bandwidth	PASS
3.2 (6)	Spurious Emissions	PASS
3.6	Transmission Antenna Gain (EIRP Antenna Power)	N/A
3.6	Transmission Radiated Angle Width (3dB Beam width)	N/A
/	Interference prevention function	PASS
/	Carrier Sensing function	N/A
Receiver Parameters		
3.3 (1)	Secondary Radiated Emissions	PASS
Note: (1) N/A is an abbreviation for Not Applicable. *(2) N/T means this test item is not tested.*		

複製禁止

1.3 TEST ENVIRONMENT

1.3.1 Address of the test laboratory

Shenzhen Most Technology Service Co., Ltd.
No.5, 2nd Langshan Road, North District, Hi-tech Industrial Park, Nanshan, Shenzhen,China

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.4:2014 and CISPR 16-1-4:2010 SVSWR requirement for radiated emission above 1GHz.

1.3.2 Test Facility
The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L3573

1.4 Measurement Uncertainty

For the test methods, according to the present document, the measurement uncertainty figures shall be calculated in accordance with TR100028-1 [2] and shall correspond to an expansion factor (coverage factor) K=1.96 or K=2 (which provide confidence levels of respectively 95% and 95.5% in the case where the distributions characterizing the actual measurement uncertainties are normal.

Parameter	Uncertainty
Frequency error / 99%&90% bandwidth	$\pm 1.62*10^{-6}$
Total RF power, conducted	±0.8dB
Spurious emissions, conducted	±0.8dB
DC and low frequency voltages	±0.05%
Humidity	±5%
Temperature	±1℃

2 GENERAL INFORMATION

2.1 General Remarks

Date of receipt of test sample	:	2026.07.13
Testing commenced on	:	2026.07.14
Testing concluded on	:	2026.07.20

2.2 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Voltage	Normal Voltage	DC 3.7V
	High Voltage	DC 4.07V
	Low Voltage	DC 3.33V
Other	Normal Temperature	25°C
	Relative Humidity	55 %
	Air Pressure	989 hPa

Note: As the EUT was powered by DC12V from Adapter, and with the voltage stabilizing circuit used, the chip voltage received floating not exceed ±1% of nominal condition when working on extreme voltage, so all test performed at nominal voltage only.

2.3 General Description of EUT

Product Name:	Wide Frequency Scanner Radio
Model:	HRD-A330
Power supply:	DC 3.7V by Battery DC 5V by USB Port
BT	
Modulation Type	GFSK, π/4DQPSK, 8DPSK
Operation frequency	2402MHz -2480MHz
Channel number	79
Antenna Gain	PCB antenna -0.58dBi

Note: For more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

複製禁止

2.4 Description of Test Modes

The EUT has been tested under typical operating condition. The Applicant provides communication tools software to control the EUT for staying in continuous transmitting and receiving mode for testing.

Operation Frequency List:

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		

For Radiated Emission	
Final Test Mode	Description
Mode 1	GFSK Mode(CH00 CH39 CH78)

複製禁止

2.5 Measurement Instruments List

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Due Date
1	Spectrum Analyzer	Agilent	9020A	MY48010446	2026/02/28	2027/02/27
2	Power Meter	R&S	NRVS	100696	2026/02/28	2027/02/27
3	Power Meter	R&S	NRVS	100697	2026/02/28	2027/02/27
4	Test Software	Censheng	WCS-WCN	2024.7.25	N/A	N/A

Note：Calibration by the calibration agencies listed in the table correspond to paragraph 4 (ii) (c) of Article 24-2 in the Radio Law".

Calibration Information:	Article24-2,Paragraph 4 of the Radio Act
Calibration unit:	Ti Testing & Certification Group Co., Ltd. Shenzhen Branch
Address:	Room 103, Building B, Hongji High tech Intelligent Industrial Park, No. 1008 Songbai Road, Nanshan District, Shenzhen
CNAS:	L17117

2.6 Table for 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 firmware of the final end product.

Test software Version	Test program: FCC Test tool		
Frequency	2402 MHz	2441 MHz	2480 MHz
Parameter	DEF	DEF	DEF

2.7 Test Voltage

POWER SUPPLY VOLTAGE FLUCTUATION TEST

Voltage Fluctuation Test	Normal Voltage	High Voltage +10% of Normal Voltage	Low Voltage -10% of Normal Voltage
Input To EUT	DC 3.7V	DC 4.07V	DC 3.33V
Output To RF Module	DC 3.30V	DC 3.30V	DC 3.30V
Voltage Variation (%)	--	--	--

Note:
Voltage Variation (%)
= (Output high or Low Voltage - Output Normal Voltage)/ Output Normal Voltage* 100
During the input supply voltage to the EUT from the external power source is varied by +/- 10%, if output voltage had been confirmed that the fluctuation of power supply to the RF circuit of EUT (excluding power source) is equal to or less than +/-1%. Exempt extremely high and low supply voltage condition test, EUT only operated in normal voltage to test all regulations.
The sample power supply was confirmed that input voltage variation at the radio unit in the radio equipment to be tested is less than +1% against a variation of +10% at the input voltage from the external power supply to the radio equipment, and the radio equipment was designed so as to be operated in a specified voltage variation limit within +10%, Radio can only tested at rated voltage.

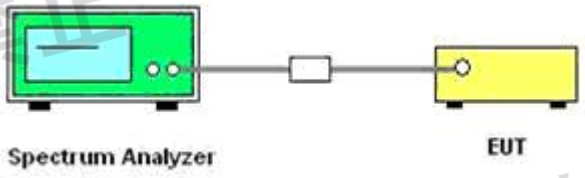
3 Test conditions and Results

3.1 Frequency Error

LIMIT

Tolerance of frequency shall be ±50x10-6.

TEST CONFIGURATION



TEST PROCEDURE

a. Set EUT work in test mode as described in clause 2.4.
b. Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:
Centre Frequency: The centre frequency of the channel under test.
Resolution BW: 10 KHz.
Video BW: 10 KHz.
Span: 1MHz.
Detector: Peak.
Trace Mode: Max Hold.
c. When the trace is complete, find the peak value of the power envelope and record.

TEST RESULTS

See Appendix I

3.2 Antenna Power

Standard Applicable

Type	Limit
DTS	10mW
OFDM OBW<26MHz, DS	10mW/MHz
OFDM OBW 26-40MHz	5mW/MHz
Tolerance	+20%

Upper Limit of EIRP for Modulation Systems

Modulation System	Frequency Band used	Antenna power (Max.)	EIRP (max.)	
			Omnidirectional case	Directional case
DS, OFDM	2400~2483.5MHz	10mW/MHz	12.14 dBm/MHz	22.14 dBm/MHz
FH, DS-FH, FH-OFDM	2400~2483.5MHz	3mW/MHz	6.91 dBm/MHz	16.91 dBm/MHz
	Excluding 2427~2470.75MHz	10mW/MHz	12.14 dBm/MHz	22.14 dBm/MHz
Other than the above	2400~2483.5MHz	10mW	12.14 dBm	22.14 dBm

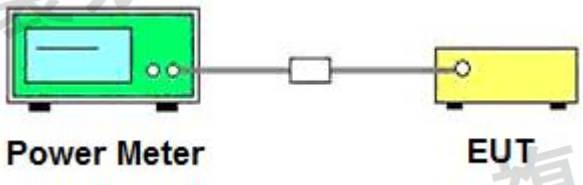
Measuring Instruments

Please refer to section 6 of equipments list in this report.

Test Procedures

a. EUT have transmitted continuous maximum power
b. Antenna Power Error is definition that actual measure antenna power tolerance +20% power range that base on manufacturer declare the conducted power density.
c. When the trace is complete, find the peak value of the power envelope and record.

Test Setup



EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

TEST RESULTS

See Appendix II

3.3 Occupied Frequency Bandwidth

Standard Applicable

Permissible value for occupied bandwidth using the FH system, a hybrid system combining DS and FH systems, or a hybrid system combining FH and OFDM systems shall be 83.5 MHz or less, while necessary bandwidth (minimum occupied bandwidth sufficient to ensure information transmission of required quality at a required transmission rate for the system used under specified conditions for a given emission type) using a system other than any of the above shall be 26 MHz or less.

Measuring Instruments

Please refer to section 6 of equipments list in this report.

Test Procedures

a. Set EUT work in test mode as described in clause 2.4.
b. Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:
Centre Frequency: The centre frequency of the channel under test.
RBW/VBW= 100 KHz/300KHz for WIFI.
Span: Wide enough to cover the complete power envelope of the signal of the EUT.
Sweep mode: Continuous sweeping.
Detector: Peak.
Trace Mode: Max Hold.
c. When the trace is complete, measure the occupied bandwidth (99% bandwidth) with spectrum analyzer's bandwidth measure function.

Test Setup Layout

EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

TEST RESULTS

See Appendix III

3.4 Spread Bandwidth

Standard Applicable

In spread spectrum systems, spread bandwidth (which refers to a frequency bandwidth with an upper limit and lower limit such that each of the mean powers radiated above the upper frequency limit and below the lower frequency limit is equal to 5 % of the total mean power radiated; this also applies hereafter) shall be 500 kHz or more.

Measuring Instruments

Please refer to section 6 of equipments list in this report.

Test Procedures

a. Set EUT work in test mode as described in clause 2.4.
b. Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:
Centre Frequency: The centre frequency of the channel under test.
RBW/VBW= 100 KHz/300KHz for WIFI.
Span: Wide enough to cover the complete power envelope of the signal of the EUT.
Detector: Peak.
Trace Mode: Max Hold.
c. When the trace is complete, measure the occupied bandwidth (90% bandwidth) with spectrum analyzer's bandwidth measure function.

Test Setup Layout

EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

TEST RESULTS

See Appendix IV

3.5 Transmitter Spurious Emissions (conducted)

Standard Applicable

Permissible mean power of spurious emission of each frequency supplied to a feeder, that is, mean power of spurious emission in the 1 MHz bandwidth at frequency f other than frequency band used shall be as follows:

STD-T66

a. 2,387MHz ≤ f ≤ 2,400MHz and 2,483.5MHz < f ≤ 2,496.5MHz 25 μW(-16dBm) or less

b. 2,387MHz > f and 2,496.5MHz < f 2.5 μW(-26 dBm) or less

STD-T33

a. 2,458MHz ≤ f ≤2,471MHz and 2,497MHz < f ≤ 2,510MHz 25 μW(-16dBm) or less

b. 2,458MHz > f and 2,510MHz < f 2.5 μW(-26 dBm) or less

Test Procedures

a. Set EUT work in test mode as described in clause 2.4.

b. Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:

Below 1GHz: RBW/VBW= 100 KHz/ 100KHz

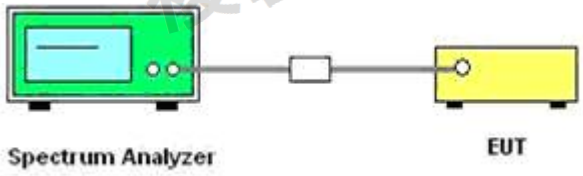
Above 1GHz: RBW/VBW= 1MHz / 1MHz.

Detector: Peak.

Trace Mode: Max Hold.

c. All the emissions from 30MHz to 13GHz were measured and record.

Test Setup Layout



EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

TEST RESULT

See Appendix VI

3.6 Secondary Radiated Emissions

Standard Applicable

The limit on secondary emissions radiated from the receiving equipment within which the function of other radio equipment will not be impaired shall be, in terms of the power of a dummy antenna circuit that has the same electrical constant as the receiving antenna, 4nW(-54dBm) or less at a frequency below 1 GHz and 20 nW(-47dBm) or less at a frequency of 1 GHz or higher as measured using the circuit

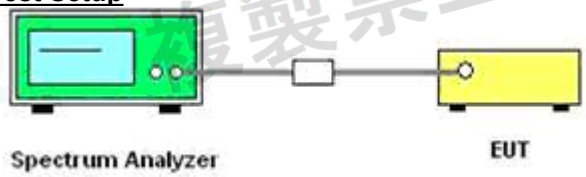
Measuring Instruments

Please refer to section 6 of equipments list in this report.

Test Procedures

a. Set EUT work in test mode as described in clause 2.4.
b. Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:
Resolution BW: 100 KHz for frequency below 1GHz and
1MHz for frequency above 1GHz
Video BW: 100 KHz for frequency below 1GHz and
1MHz for frequency above 1GHz
Detector: Peak.
Trace Mode: Max Hold.
c. All the emissions from 30MHz to 13GHz were measured and record.

Test Setup



EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

TEST RESULT

See Appendix VII

3.7 Carrier sensing function

Standard Applicable

Item	Limits
Carrier Sense	Good – EUT stop RF transmission signal after carrier inject to EUT. (On 22.79+Gr-20*log (f)[dBm] (Gr: dBi; f: MHz) or 100mV/m)

Measuring Instruments

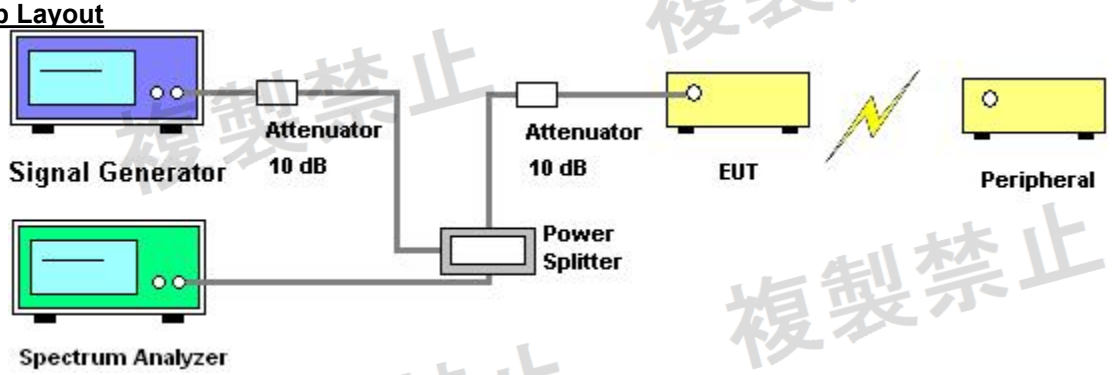
Please refer to section 6 of equipments list in this report. The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
RB / VB	1 MHz
Span	0 MHz
Sweep	Continuous
Detector	Peak
Trigger mode	Video

Test Procedures

1. SSG adjusted the frequency as same as the EUT transmitted signal and emitted the absence of modulation from SSG and power level is (On 22.79+Gr-20*log(f)[dBm] (Gr: dBi; f: MHz). Then turn off the RF signal of SSG.
2. EUT have transmitted the maximum modulation signal and fixed channelize.
3. Setting of SA is following as: RB: 1MHz / VB: 1MHz / SPAN: 50MHz / AT: 10dB /Ref: 0dBm / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak.
4. SSG RF Signal On.
5. EUT shall be stop the transmitted any signal and SSG RF Signal Off. Then EUT will be continuous transmitted signal.

Test Setup Layout



EUT Operation during Test

The EUT was programmed to be in normal transmitting mode.

Test Result

Not Applicable

3.8 Interference prevention function

Standard Applicable

Item	Limits
Identification code	≧ 48 bits

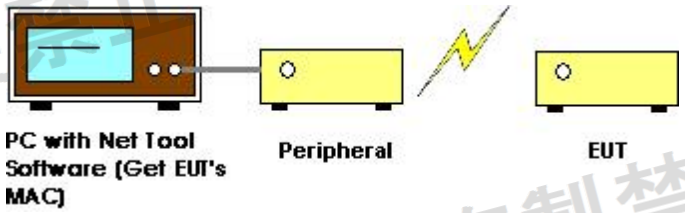
Measuring ID Code Software

PC with NetTool	Setting
MAC IP List	MAC Scan

Test Procedures

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

Test Setup Layout



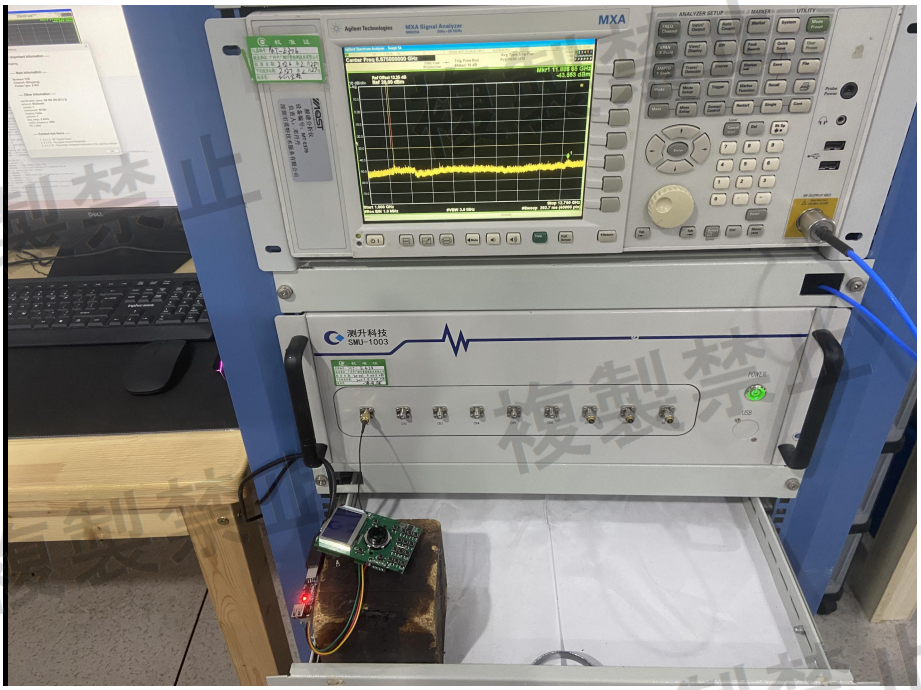
EUT Operation during Test

The EUT was programmed to be in normal transmitting mode.

Test Result

MAC Address: E3:D4:A1:67:27:35
Complies.

4 Test Setup Photos of the EUT



5 Photos of the EUT

See EUT Reports.

複製禁止

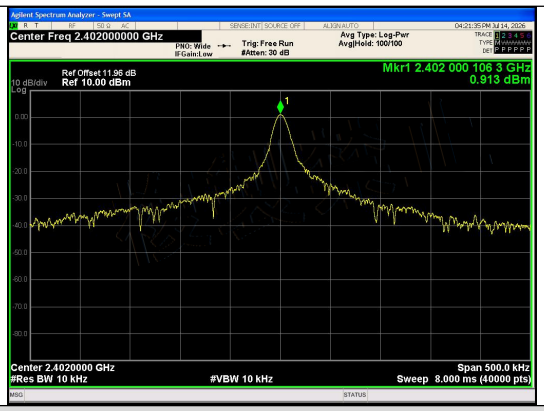
APPENDIX I. Frequency Tolerance

Test Result

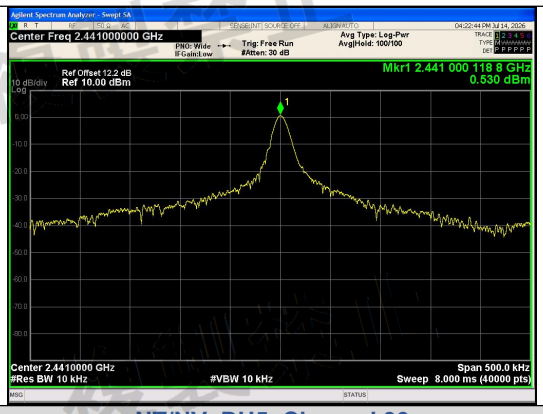
Condition	Mode	Ch.	Center Frequency (MHz)	Measured Value (MHz)	Result (ppm)	Limit (ppm)	Result
NT/NV	GFSK(CW)	0	2402	2402.0001063	0.04	± 50	PASS
NT/NV	GFSK(CW)	39	2441	2441.0001188	0.05	± 50	PASS
NT/NV	GFSK(CW)	78	2480	2479.9999813	-0.01	± 50	PASS
NT/NV	π/4DQPSK(CW)	0	2402	2402.0000938	0.04	± 50	PASS
NT/NV	π/4DQPSK(CW)	39	2441	2441.0000313	0.01	± 50	PASS
NT/NV	π/4DQPSK(CW)	78	2480	2480.0000688	0.03	± 50	PASS
NT/NV	8DPSK(CW)	0	2402	2402.0000688	0.03	± 50	PASS
NT/NV	8DPSK(CW)	39	2441	2441.0001688	0.07	± 50	PASS
NT/NV	8DPSK(CW)	78	2480	2480.0000563	0.02	± 50	PASS

Test Graphs

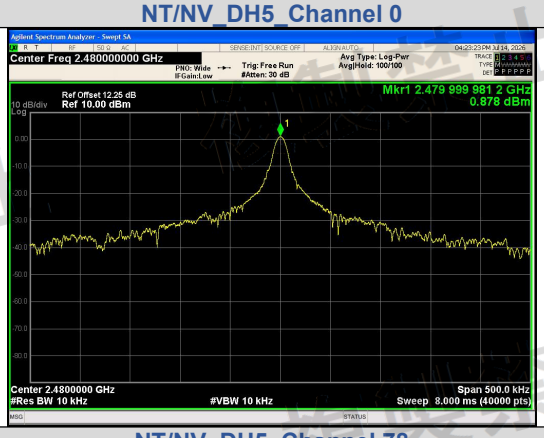
NT/NV



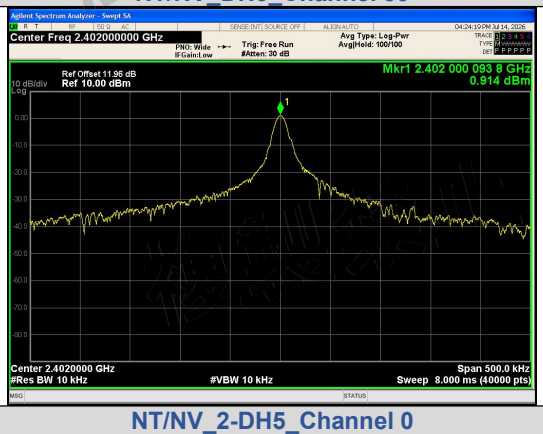
NT/NV_DH5_Channel 0



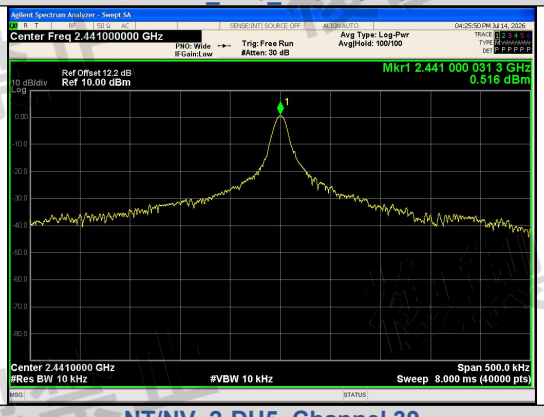
NT/NV_DH5_Channel 39



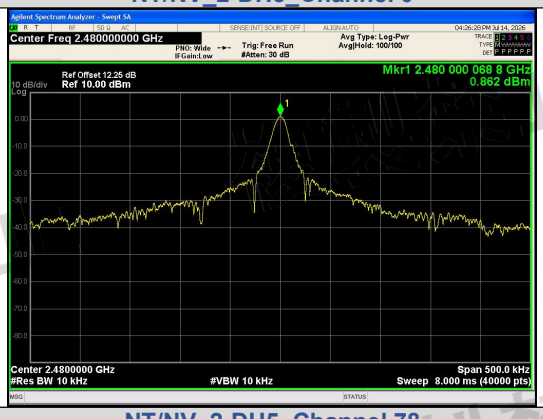
NT/NV_DH5_Channel 78



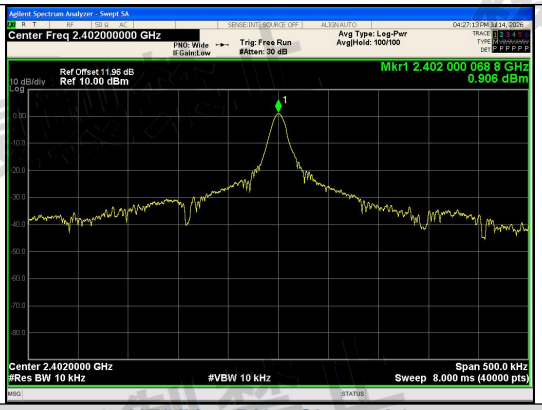
NT/NV_2-DH5_Channel 0



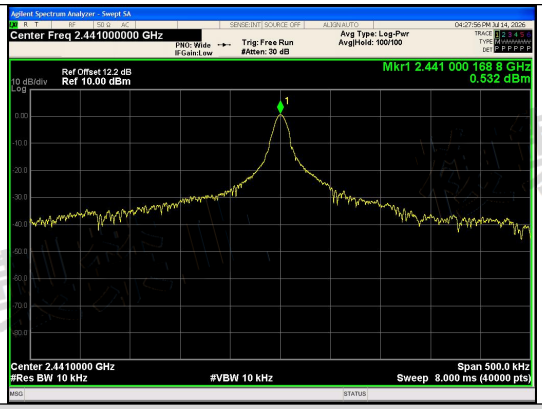
NT/NV_2-DH5_Channel 39



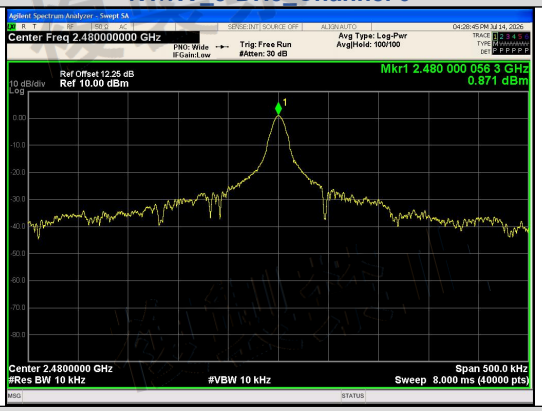
NT/NV_2-DH5_Channel 78



NT/NV_3-DH5_Channel 0



NT/NV_3-DH5_Channel 39



NT/NV_3-DH5_Channel 78

APPENDIX II. Antenna Power

Test Result

Mode	Packet	Rated power (mW/MHz)	Measured Value (dBm)	Result (mW/MHz)	Tolerance (%)	Tolerance Limit	Limit (mW/MHz)
Tx (1Mbps)	DH5	0.02	1.018	0.0176	-12.0	-- to +20	3
Tx (2Mbps)	2-DH5	0.02	1.578	0.0202	1.0	-- to +20	
Tx (3Mbps)	3-DH5	0.02	1.872	0.0214	7.0	-- to +20	
Conclusion: PASS							

複製禁止

APPENDIX III. Occupied Bandwidth (99% BW)

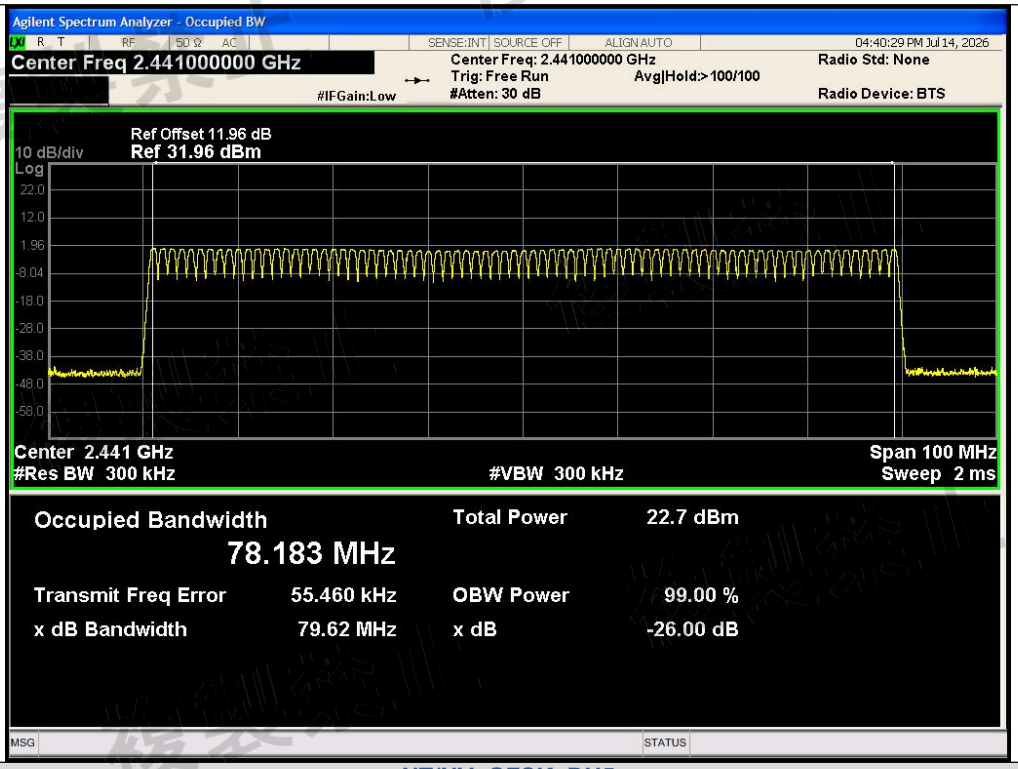
Test Result

Normal Mode

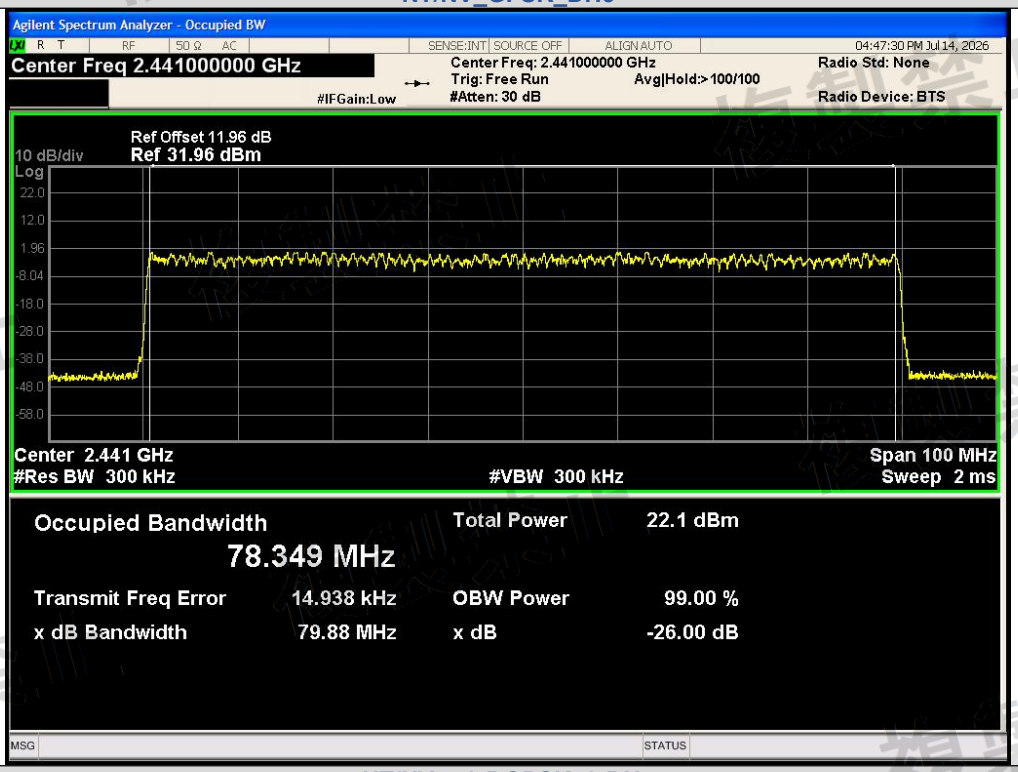
Condition	Modulation	99% BW (MHz)	Limit (MHz)	Result
NT/NV	GFSK_DH5	78.183	83.5	PASS
	π/4DQPSK_2-DH5	78.349		PASS
	8DPSK_3-DH5	78.276		PASS

Test Graphs

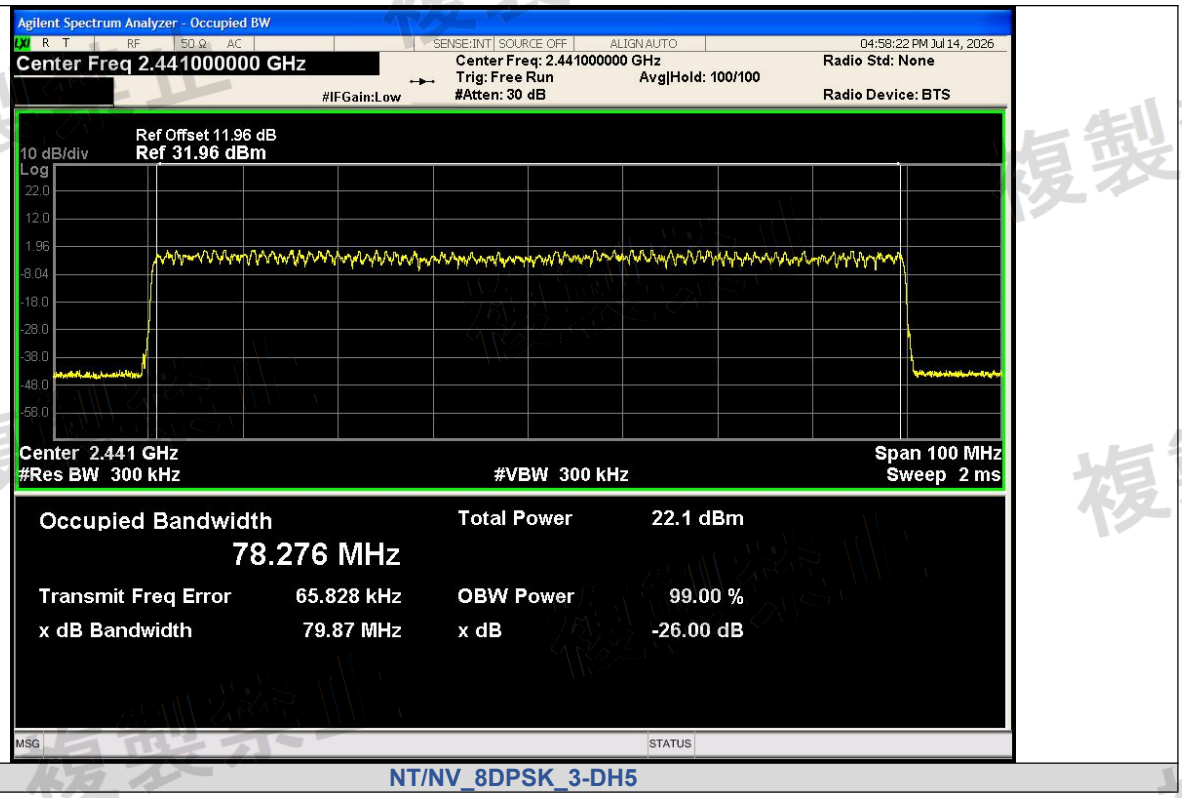
Normal Mode



NT/NV_GFSK_DH5



NT/NV_π/4DQPSK_2-DH5



NT/NV_8DPSK_3-DH5

APPENDIX IV. Spreading Bandwidth (90% BW)

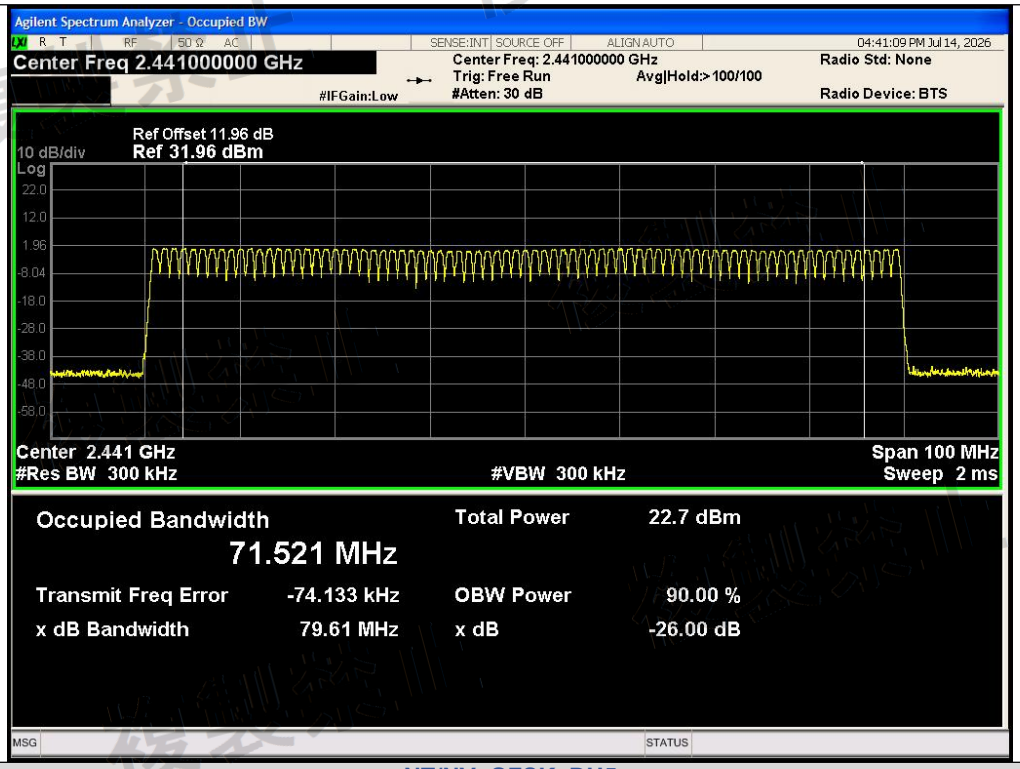
Test Result

Normal Mode

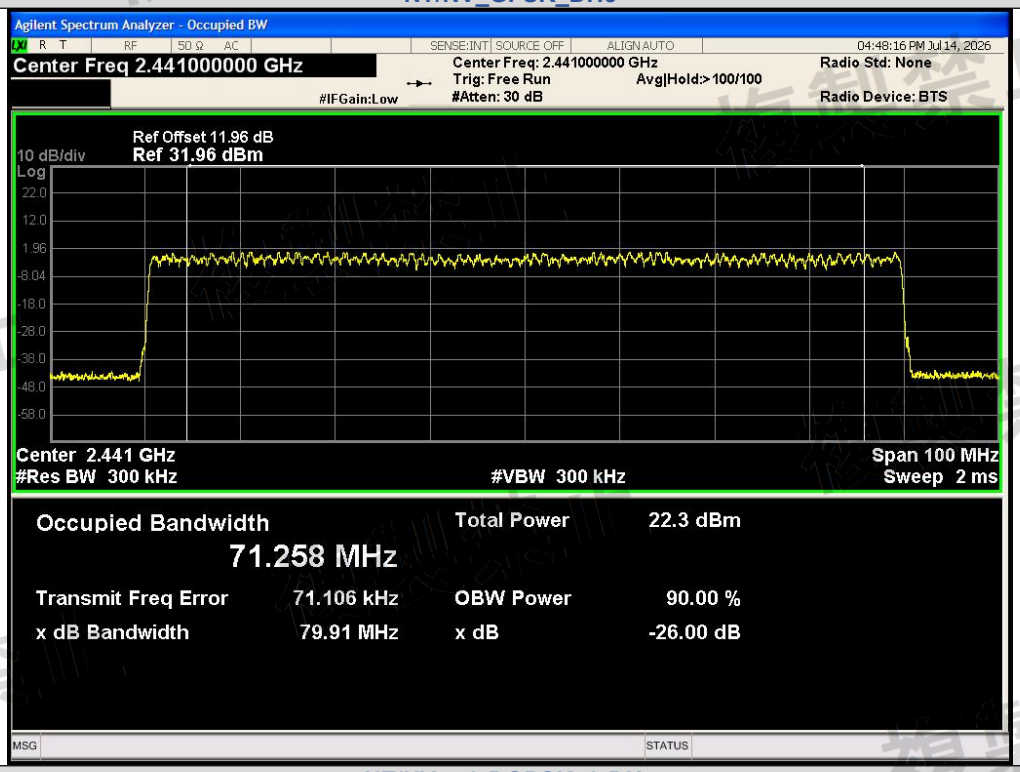
Condition	Mode	90% SBW (MHz)	Result
NT/NV	GFSK_DH5	71.521	PASS
NT/NV	π/4DQPSK_2-DH5	71.258	PASS
NT/NV	8DPSK_3-DH5	71.970	PASS

Test Graphs

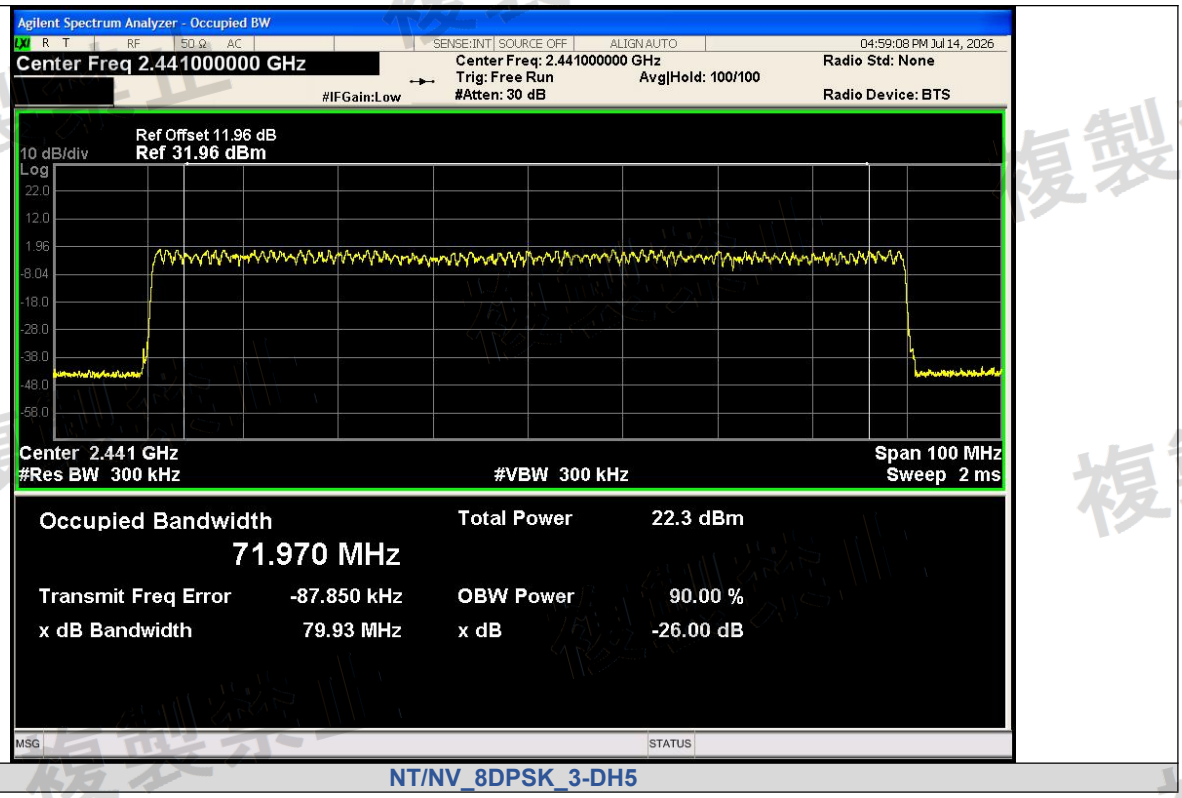
Normal Mode



NT/NV_GFSK_DH5



NT/NV_π/4DQPSK_2-DH5



NT/NV_8DPSK_3-DH5

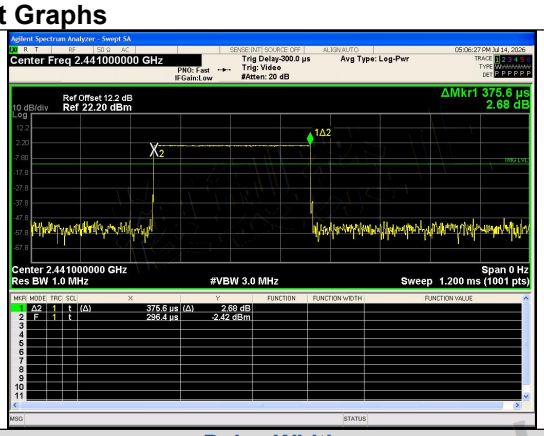
APPENDIX V. Dwell Time

Test Result

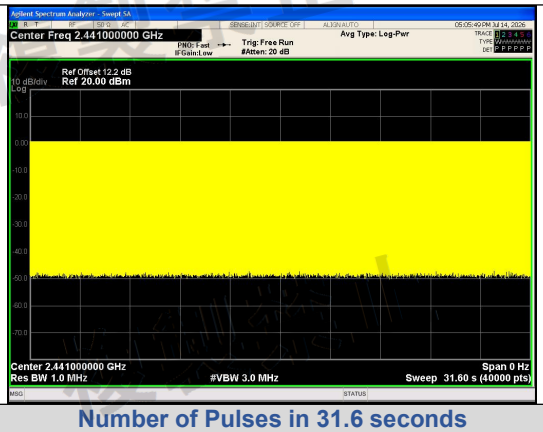
Modulation	Packet	Channel	Pulse Width (ms)	Number of Pulses in 31.6 seconds	Dwell Time (ms)	Limit (ms)	Result
GFSK	DH1	Hopping	0.3756	1	0.38	< 400	PASS
	DH3		1.632	1	1.63		PASS
	DH5		2.880	1	2.88		PASS
π/4DQPSK	2-DH1		0.3864	1	0.39		PASS
	2-DH3		1.644	1	1.64		PASS
	2-DH5		2.896	1	2.9		PASS
8DPSK	3-DH1		0.3864	1	0.39		PASS
	3-DH3		1.644	1	1.64		PASS
	3-DH5		2.896	1	2.9		PASS

Note: Dwell time=Pulse time(ms)*Number of Pulses in 31.6 seconds

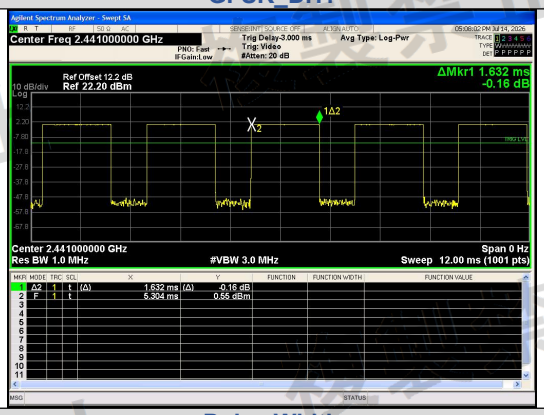
Test Graphs



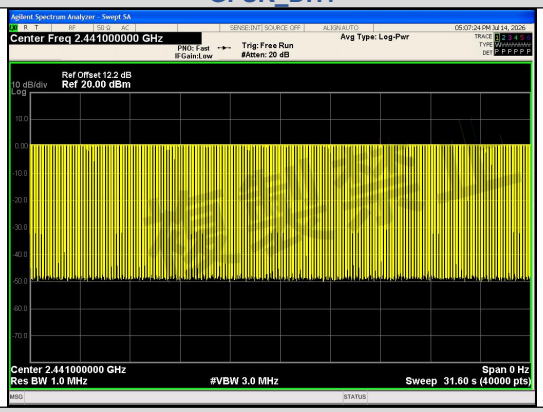
Pulse Width
GFSK_DH1



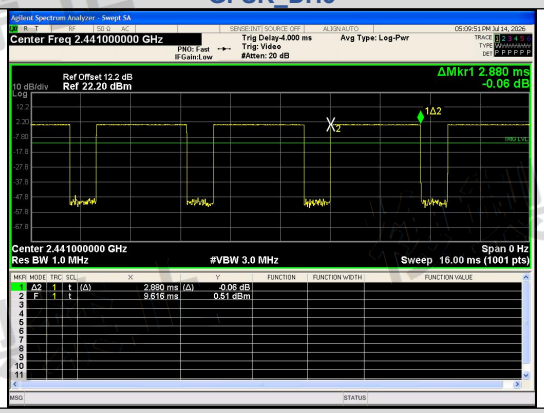
Number of Pulses in 31.6 seconds
GFSK_DH1



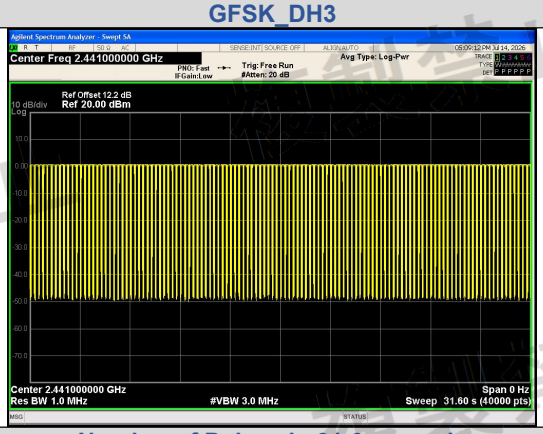
Pulse Width
GFSK_DH3



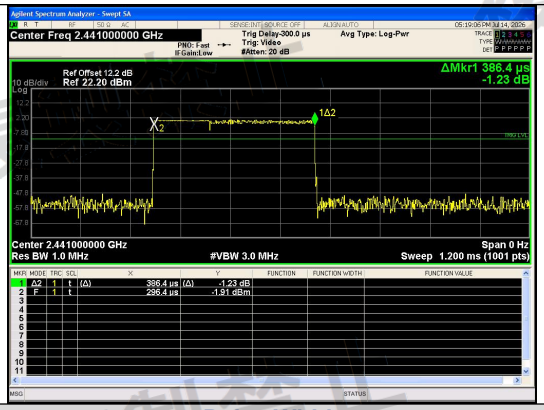
Number of Pulses in 31.6 seconds
GFSK_DH3



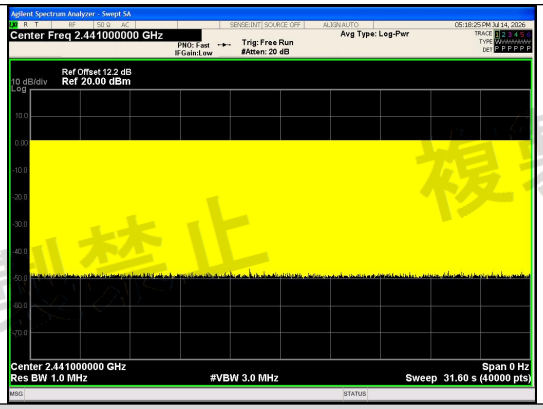
Pulse Width
GFSK_DH5



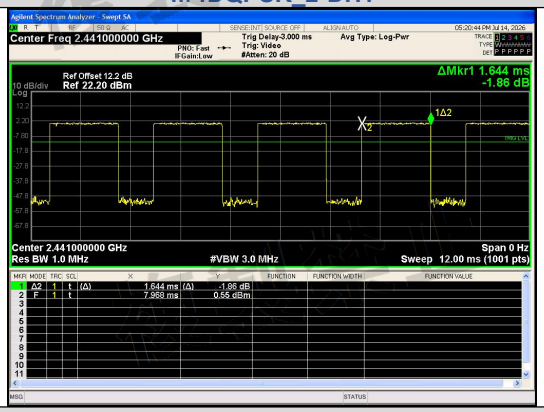
Number of Pulses in 31.6 seconds
GFSK_DH5



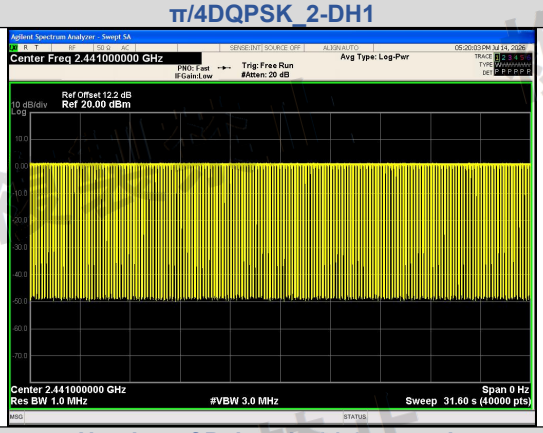
Pulse Width
π/4DQPSK_2-DH1



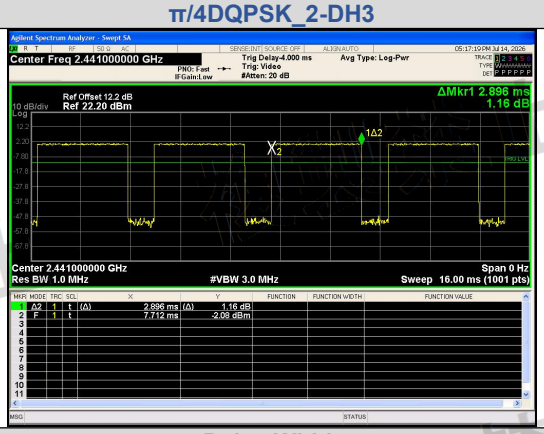
Number of Pulses in 31.6 seconds
π/4DQPSK_2-DH1



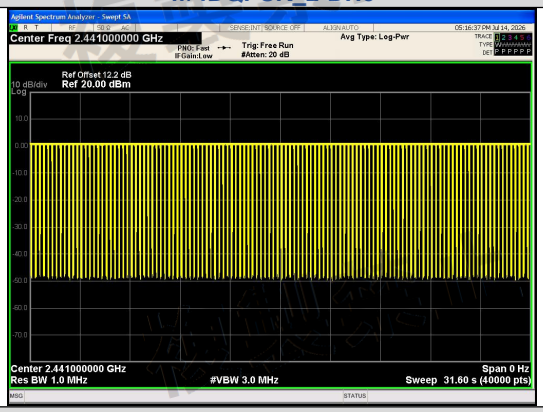
Pulse Width
π/4DQPSK_2-DH3



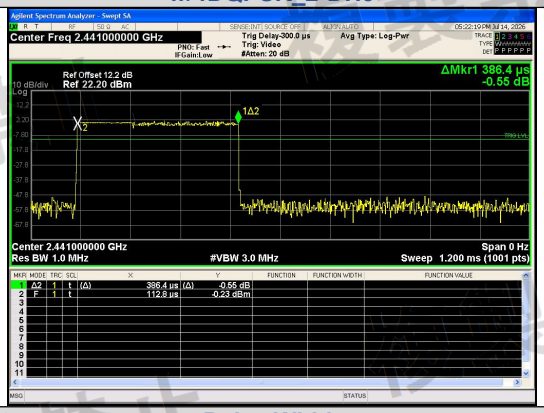
Number of Pulses in 31.6 seconds
π/4DQPSK_2-DH3



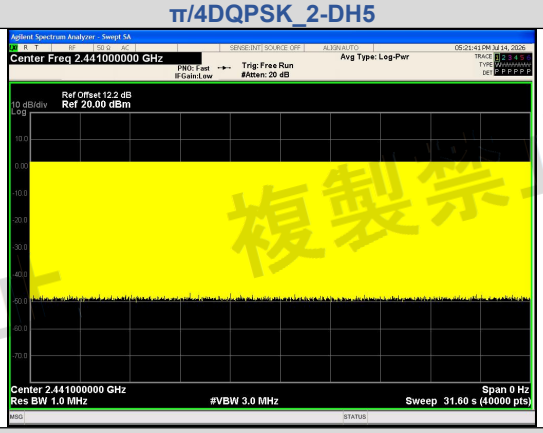
Pulse Width
π/4DQPSK_2-DH5



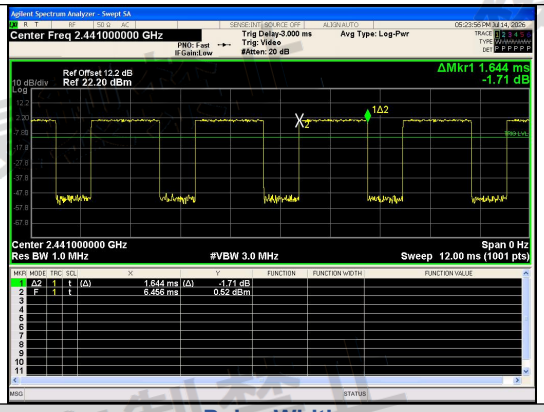
Number of Pulses in 31.6 seconds
π/4DQPSK_2-DH5



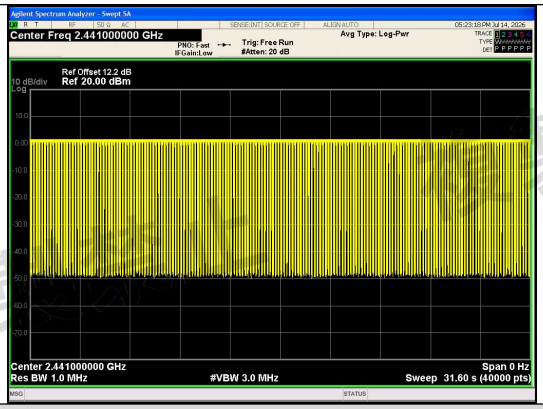
Pulse Width
8DPSK_3-DH1



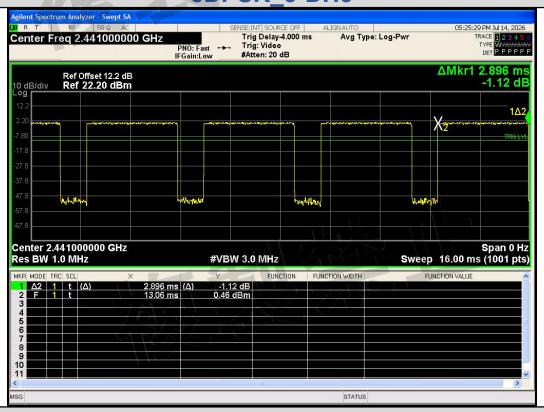
Number of Pulses in 31.6 seconds
8DPSK_3-DH1



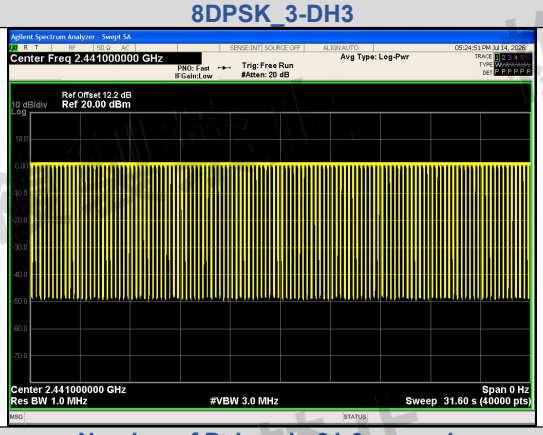
Pulse Width
8DPSK_3-DH3



Number of Pulses in 31.6 seconds
8DPSK_3-DH3



Pulse Width
8DPSK_3-DH5



Number of Pulses in 31.6 seconds
8DPSK_3-DH5

APPENDIX VI. Spurious Emissions

Test Result

GFSK_DH5

Condition	Frequency Range	Lowest Channel			Middle Channel			Highest Channel			Limit (μW/MHz)
		Peak (Mhz)	Measured Value (dbm)	Measured Value (μW/MHz)	Peak (Mhz)	Measured Value (dbm)	Measured Value (μW/MHz)	Peak (Mhz)	Measured Value (dbm)	Measured Value (μW/MHz)	
NT/NV	30 to 2387	2382.521	-48.477	0.014	2384.289	-49.992	0.01	2385.350	-49.533	0.011	2.5
NT/NV	2387 to 2400	2399.938	-41.739	0.067	2399.948	-40.813	0.083	2399.976	-41.354	0.073	25
NT/NV	2483.5 to 2496.5	2491.412	-44.126	0.039	2486.270	-43.807	0.042	2490.575	-44.004	0.04	25
NT/NV	2496.5 to 12500	9768.908	-39.261	0.119	9632.353	-38.663	0.136	9608.844	-38.600	0.138	2.5
NT/NV											None
Result:PASS											

π/4DQPSK_2-DH5

Condition	Frequency Range	Lowest Channel			Middle Channel			Highest Channel			Limit (μW/MHz)
		Peak (Mhz)	Measured Value (dbm)	Measured Value (μW/MHz)	Peak (Mhz)	Measured Value (dbm)	Measured Value (μW/MHz)	Peak (Mhz)	Measured Value (dbm)	Measured Value (μW/MHz)	
NT/NV	30 to 2387	1767.432	-46.107	0.025	2328.543	-49.707	0.011	2385.232	-49.081	0.012	2.5
NT/NV	2387 to 2400	2392.763	-43.111	0.049	2399.994	-37.538	0.176	2395.216	-44.259	0.038	25
NT/NV	2483.5 to 2496.5	2494.725	-43.660	0.043	2491.205	-42.798	0.053	2492.049	-44.494	0.036	25
NT/NV	2496.5 to 12500	9608.844	-39.659	0.108	9760.905	-39.401	0.115	9624.350	-39.284	0.118	2.5
NT/NV											None
Result:PASS											

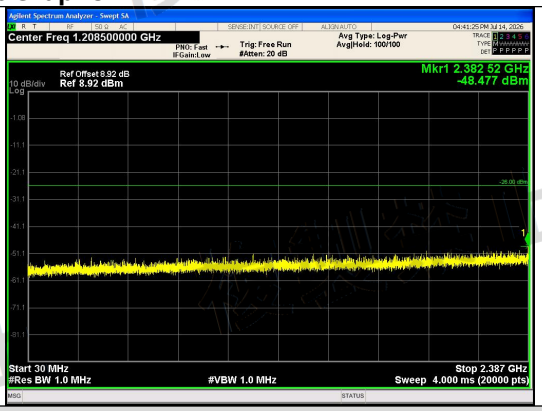
8DPSK_3-DH5

Condition	Frequency Range	Lowest Channel			Middle Channel			Highest Channel			Limit (μW/MHz)
		Peak (Mhz)	Measured Value (dbm)	Measured Value (μW/MHz)	Peak (Mhz)	Measured Value (dbm)	Measured Value (μW/MHz)	Peak (Mhz)	Measured Value (dbm)	Measured Value (μW/MHz)	
NT/NV	30 to 2387	2285.997	-49.710	0.011	2161.424	-49.635	0.011	2381.696	-49.378	0.012	2.5
NT/NV	2387 to 2400	2387.478	-44.051	0.039	2397.214	-43.608	0.044	2391.185	-44.037	0.039	25
NT/NV	2483.5 to 2496.5	2484.987	-44.415	0.036	2483.765	-42.035	0.063	2489.894	-44.158	0.038	25
NT/NV	2496.5 to 12500	9620.349	-39.267	0.118	9620.349	-39.789	0.105	9804.922	-39.500	0.112	2.5
NT/NV											None
Result:PASS											

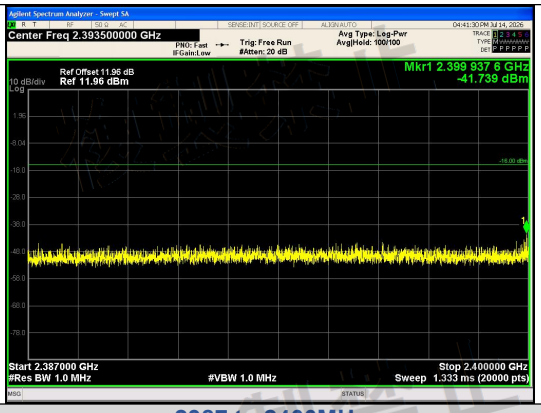
Hopping

Mode	Ch.	Range	Peak (MHz)	Emission (dBm)	Limit	Margin (dBm)	Result
GFSK_DH5	Hopping	30 to 2387	2382.521476	-48.477	-26	-22.48	PASS
GFSK_DH5	Hopping	2387 to 2400	2399.937597	-41.739	-16	-25.74	PASS
GFSK_DH5	Hopping	2483.5 to 2496.5	2491.412196	-44.126	-16	-28.13	PASS
GFSK_DH5	Hopping	2496.5 to 12500	9768.907945	-39.261	-26	-13.26	PASS
π/4DQPSK_2-DH5	Hopping	30 to 2387	1767.431572	-46.107	-26	-20.11	PASS
π/4DQPSK_2-DH5	Hopping	2387 to 2400	2392.763188	-43.111	-16	-27.11	PASS
π/4DQPSK_2-DH5	Hopping	2483.5 to 2496.5	2494.724761	-43.66	-16	-27.66	PASS
π/4DQPSK_2-DH5	Hopping	2496.5 to 12500	9608.843942	-39.659	-26	-13.66	PASS
8DPSK_3-DH5	Hopping	30 to 2387	2285.9975	-49.71	-26	-23.71	PASS
8DPSK_3-DH5	Hopping	2387 to 2400	2387.478424	-44.051	-16	-28.05	PASS
8DPSK_3-DH5	Hopping	2483.5 to 2496.5	2484.987274	-44.415	-16	-28.41	PASS
8DPSK_3-DH5	Hopping	2496.5 to 12500	9620.348542	-39.267	-26	-13.27	PASS

Test Graphs

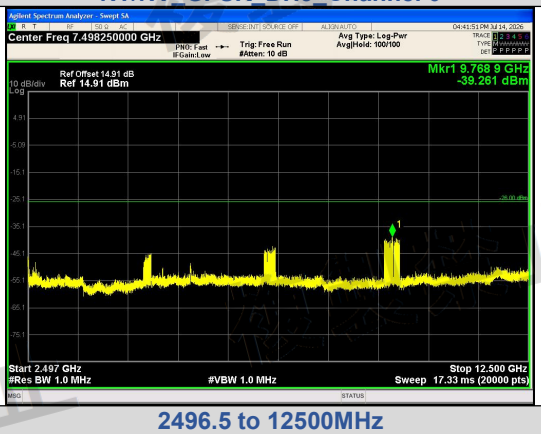


30 to 2387MHz
NT/NV_GFSK_DH5_Channel 0

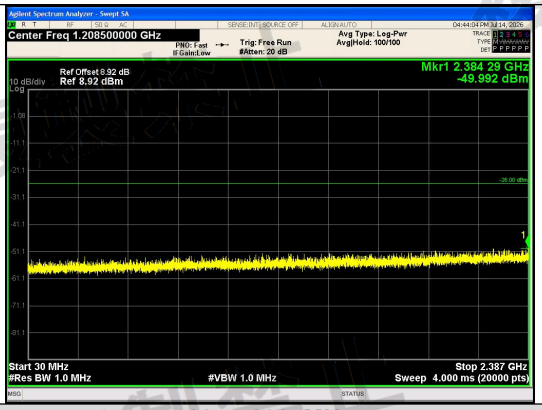


2387 to 2400MHz
NT/NV_GFSK_DH5_Channel 0

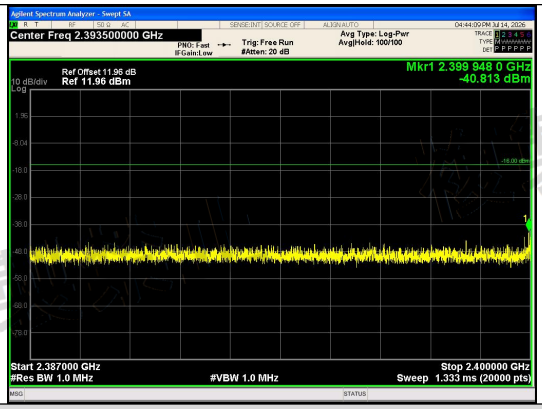
2483.5 to 2496.5MHz
NT/NV_GFSK_DH5_Channel 0



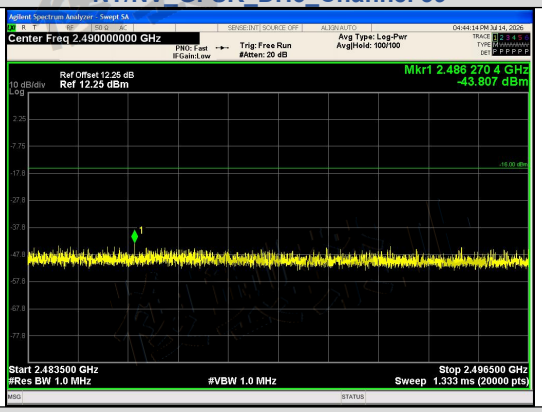
2496.5 to 12500MHz
NT/NV_GFSK_DH5_Channel 0



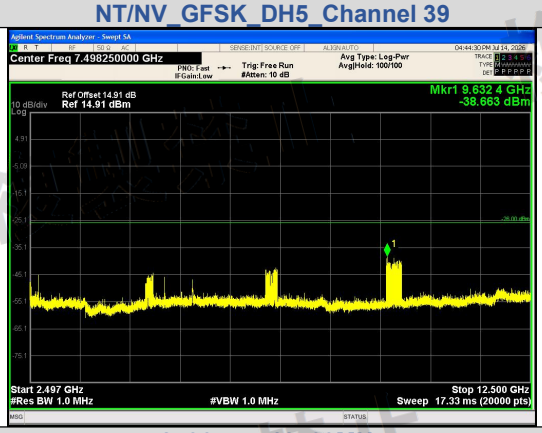
30 to 2387MHz
NT/NV_GFSK_DH5_Channel 39



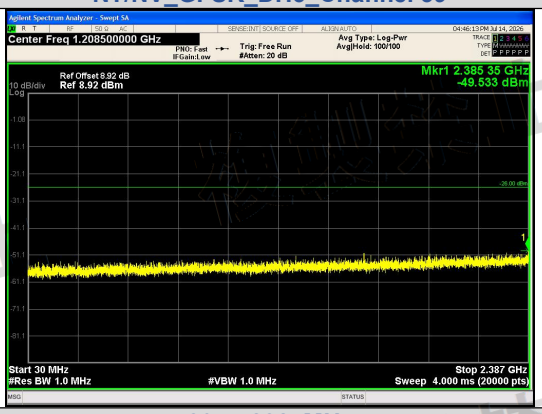
2387 to 2400MHz
NT/NV_GFSK_DH5_Channel 39



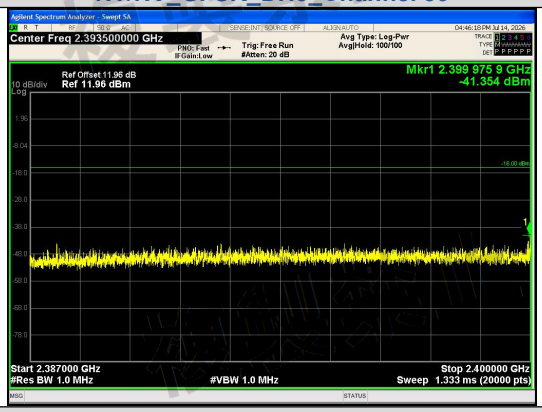
2483.5 to 2496.5MHz
NT/NV_GFSK_DH5_Channel 39



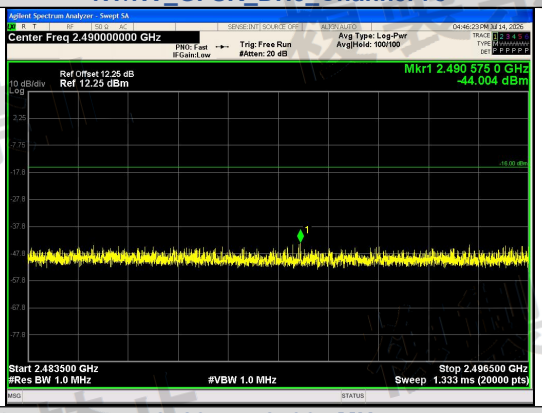
2496.5 to 12500MHz
NT/NV_GFSK_DH5_Channel 39



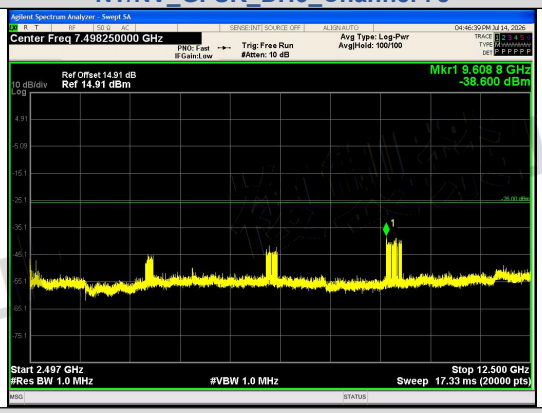
30 to 2387MHz
NT/NV_GFSK_DH5_Channel 78



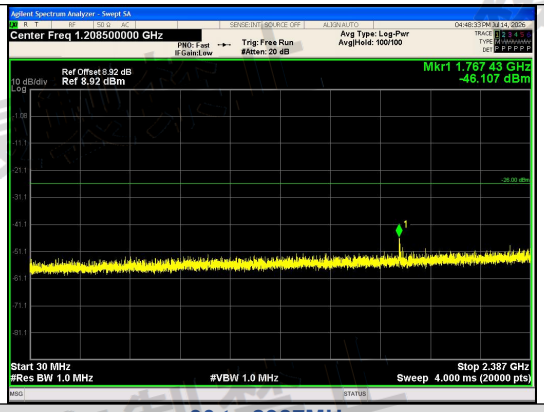
2387 to 2400MHz
NT/NV_GFSK_DH5_Channel 78



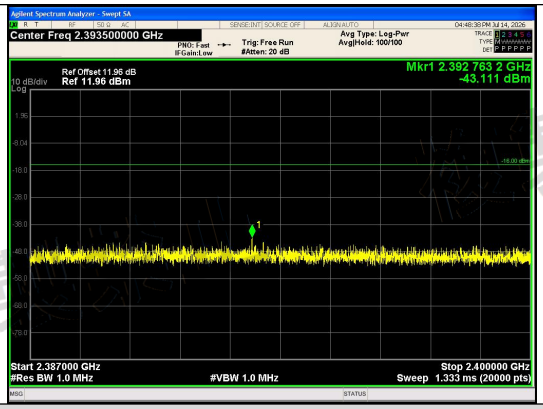
2483.5 to 2496.5MHz
NT/NV_GFSK_DH5_Channel 78



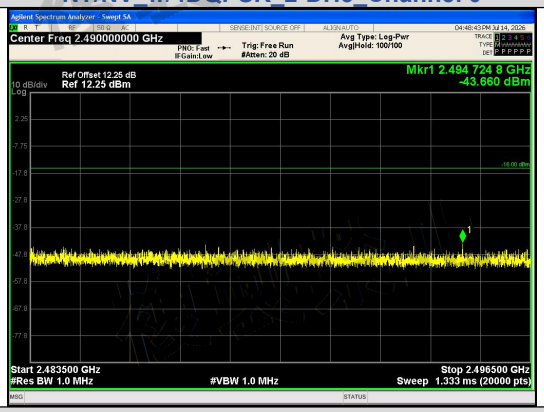
2496.5 to 12500MHz
NT/NV_GFSK_DH5_Channel 78



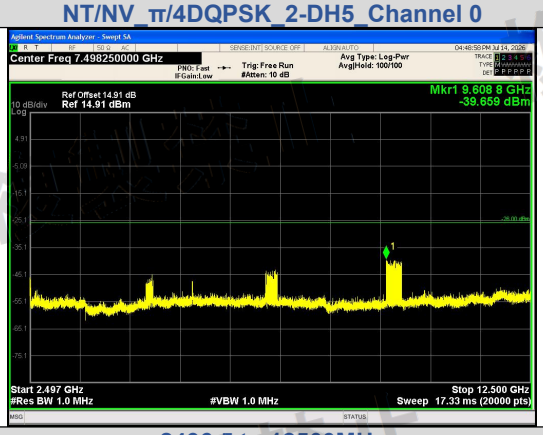
30 to 2387MHz
NT/NV_π/4DQPSK_2-DH5_Channel 0



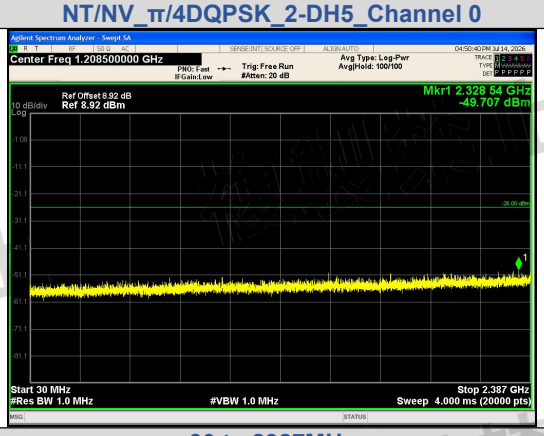
2387 to 2400MHz
NT/NV_π/4DQPSK_2-DH5_Channel 0



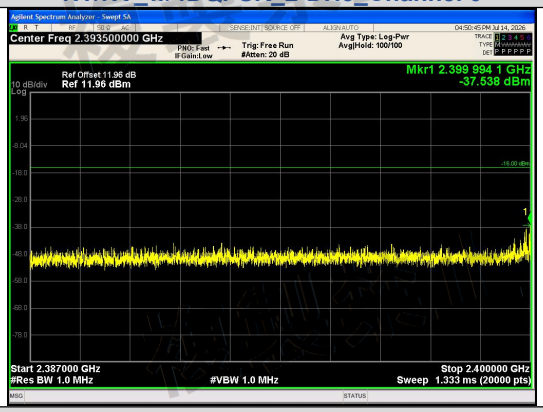
2483.5 to 2496.5MHz
NT/NV_π/4DQPSK_2-DH5_Channel 0



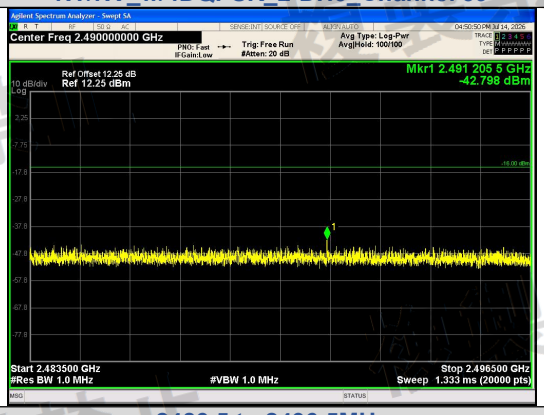
2496.5 to 12500MHz
NT/NV_π/4DQPSK_2-DH5_Channel 0



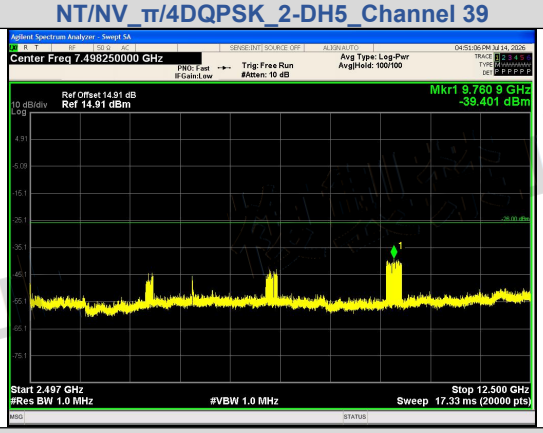
30 to 2387MHz
NT/NV_π/4DQPSK_2-DH5_Channel 39



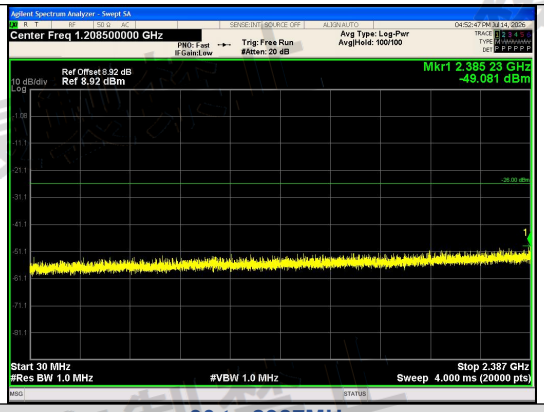
2387 to 2400MHz
NT/NV_π/4DQPSK_2-DH5_Channel 39



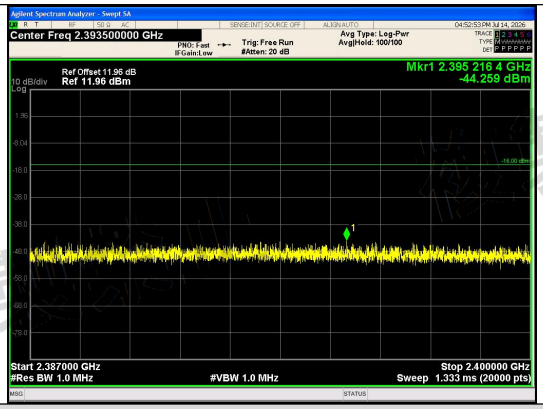
2483.5 to 2496.5MHz
NT/NV_π/4DQPSK_2-DH5_Channel 39



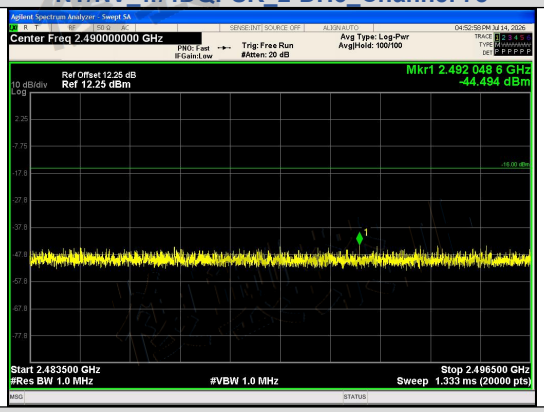
2496.5 to 12500MHz
NT/NV_π/4DQPSK_2-DH5_Channel 39



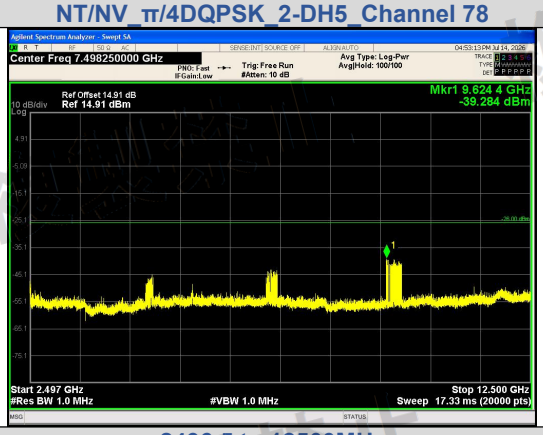
30 to 2387MHz
NT/NV_π/4DQPSK_2-DH5_Channel 78



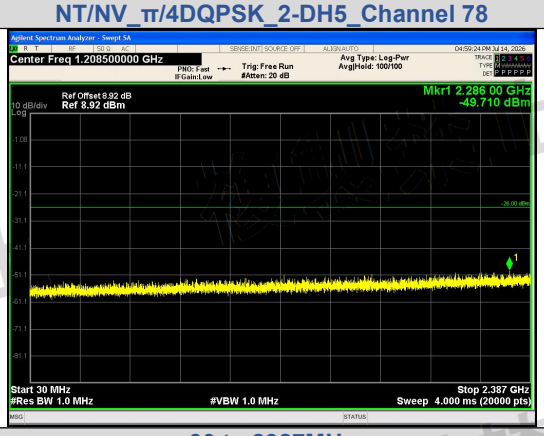
2387 to 2400MHz
NT/NV_π/4DQPSK_2-DH5_Channel 78



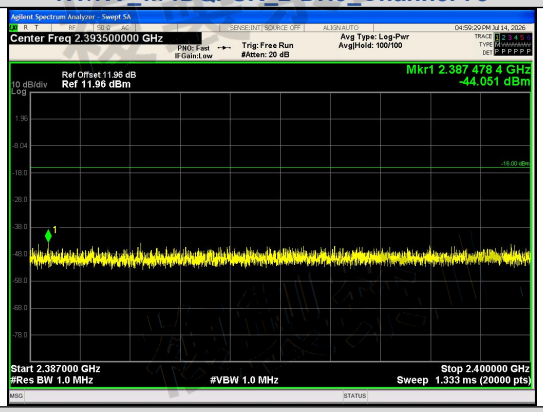
2483.5 to 2496.5MHz
NT/NV_π/4DQPSK_2-DH5_Channel 78



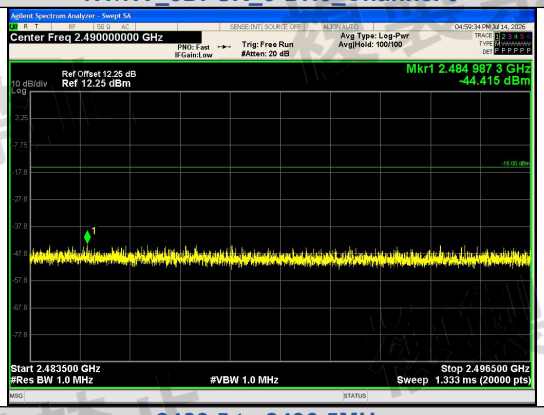
2496.5 to 12500MHz
NT/NV_π/4DQPSK_2-DH5_Channel 78



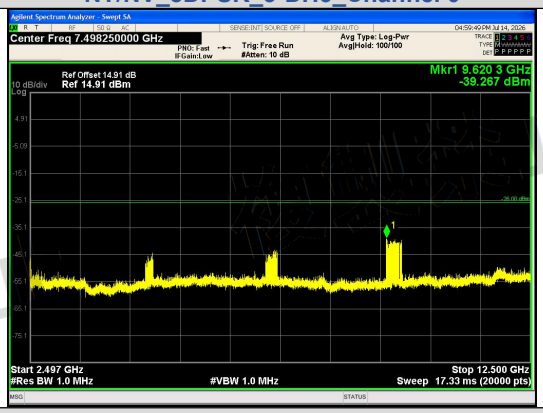
30 to 2387MHz
NT/NV_8DPSK_3-DH5_Channel 0



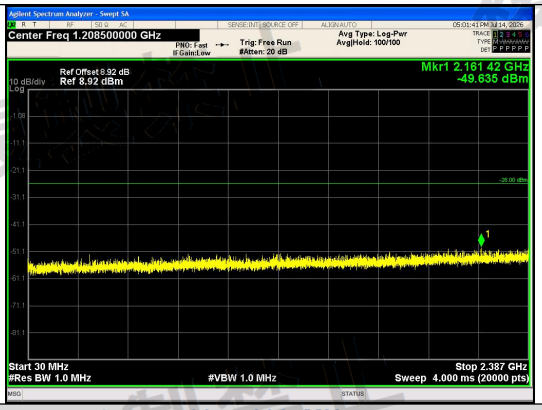
2387 to 2400MHz
NT/NV_8DPSK_3-DH5_Channel 0



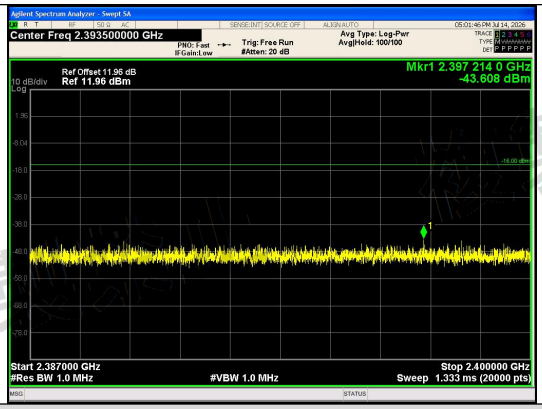
2483.5 to 2496.5MHz
NT/NV_8DPSK_3-DH5_Channel 0



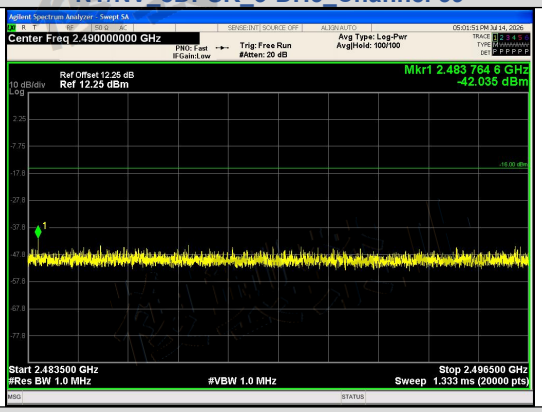
2496.5 to 12500MHz
NT/NV_8DPSK_3-DH5_Channel 0



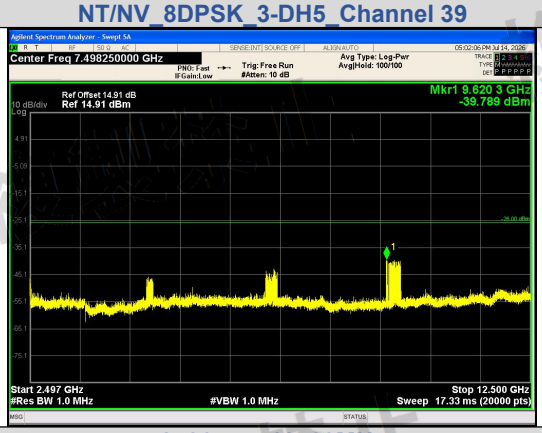
30 to 2387MHz
NT/NV_8DPSK_3-DH5_Channel 39



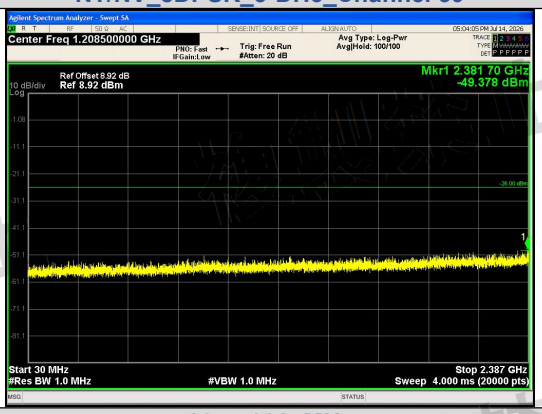
2387 to 2400MHz
NT/NV_8DPSK_3-DH5_Channel 39



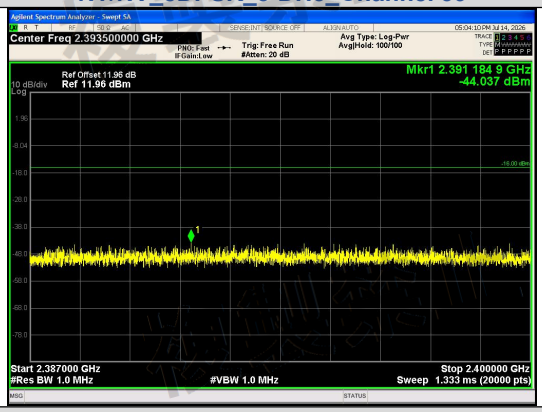
2483.5 to 2496.5MHz
NT/NV_8DPSK_3-DH5_Channel 39



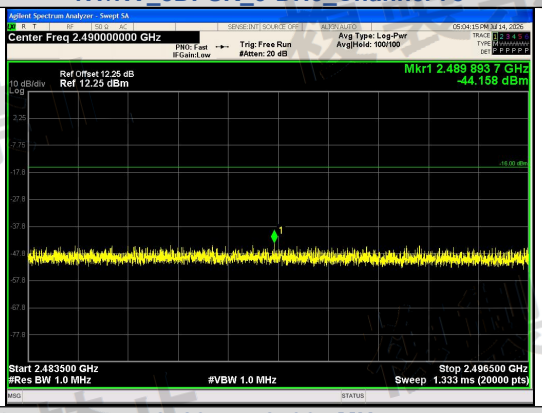
2496.5 to 12500MHz
NT/NV_8DPSK_3-DH5_Channel 39



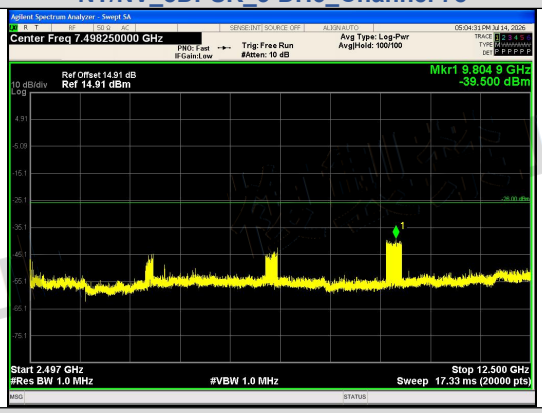
30 to 2387MHz
NT/NV_8DPSK_3-DH5_Channel 78



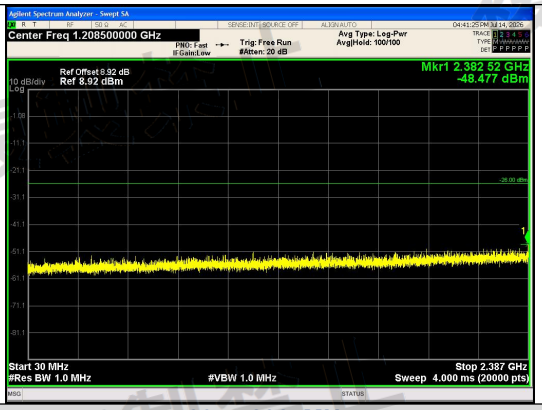
2387 to 2400MHz
NT/NV_8DPSK_3-DH5_Channel 78



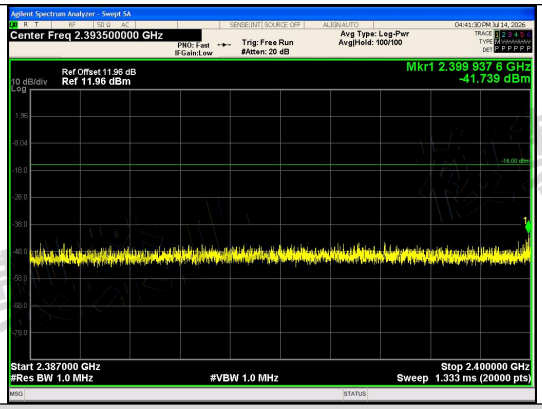
2483.5 to 2496.5MHz
NT/NV_8DPSK_3-DH5_Channel 78



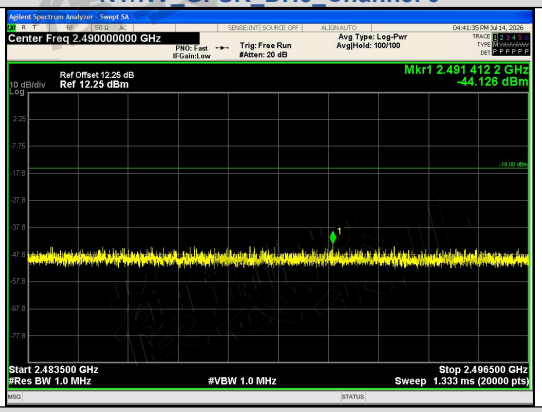
2496.5 to 12500MHz
NT/NV_8DPSK_3-DH5_Channel 78



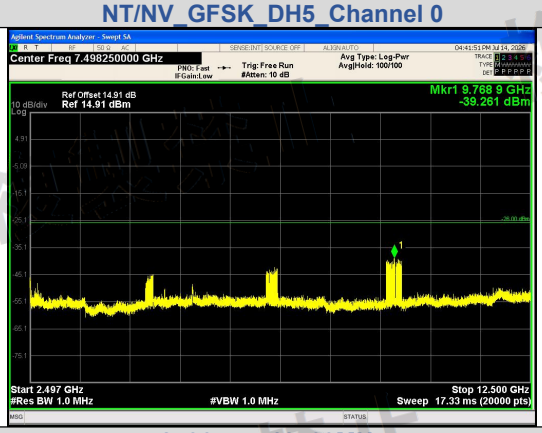
30 to 2387MHz
NT/NV_GFSK_DH5_Channel 0



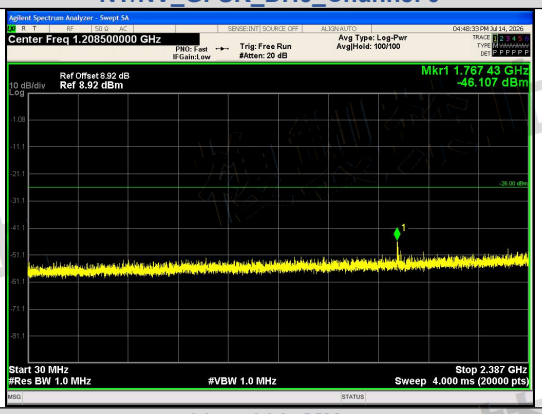
2387 to 2400MHz
NT/NV_GFSK_DH5_Channel 0



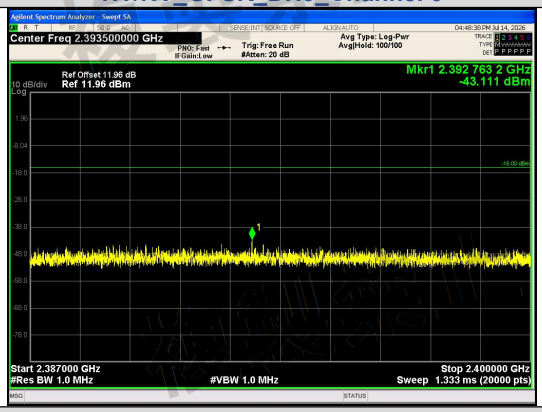
2483.5 to 2496.5MHz
NT/NV_GFSK_DH5_Channel 0



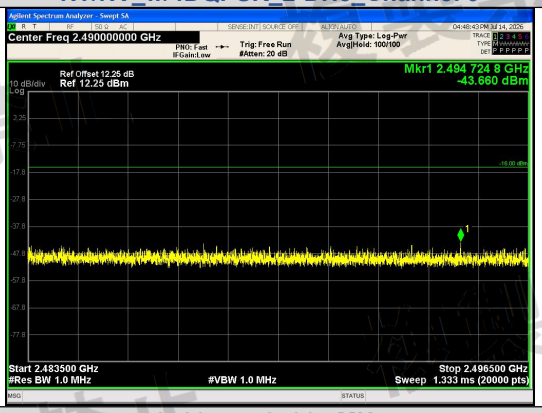
2496.5 to 12500MHz
NT/NV_GFSK_DH5_Channel 0



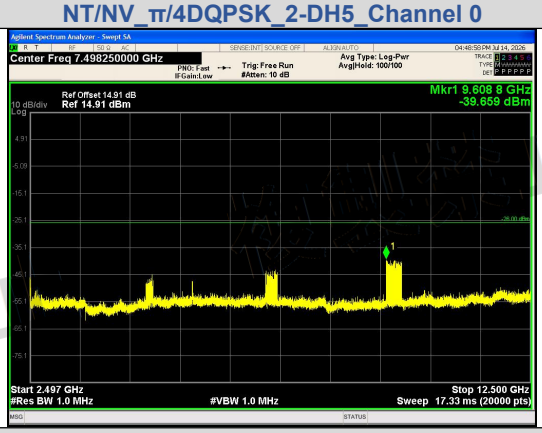
30 to 2387MHz
NT/NV_π/4DQPSK_2-DH5_Channel 0



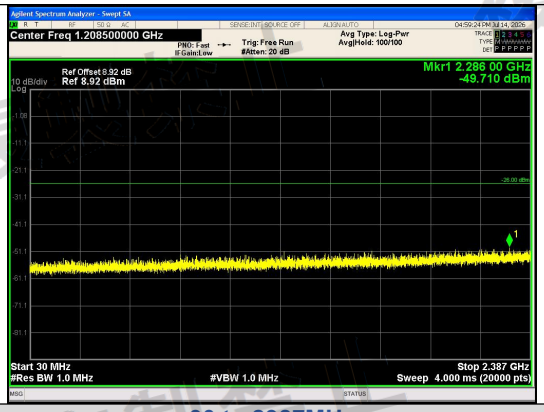
2387 to 2400MHz
NT/NV_π/4DQPSK_2-DH5_Channel 0



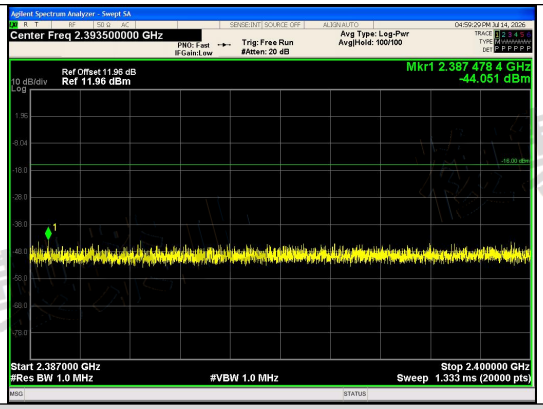
2483.5 to 2496.5MHz
NT/NV_π/4DQPSK_2-DH5_Channel 0



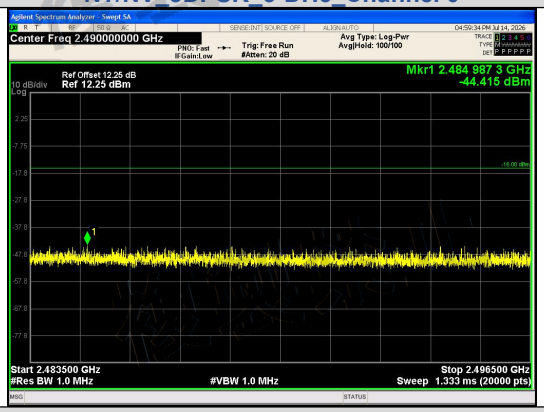
2496.5 to 12500MHz
NT/NV_π/4DQPSK_2-DH5_Channel 0



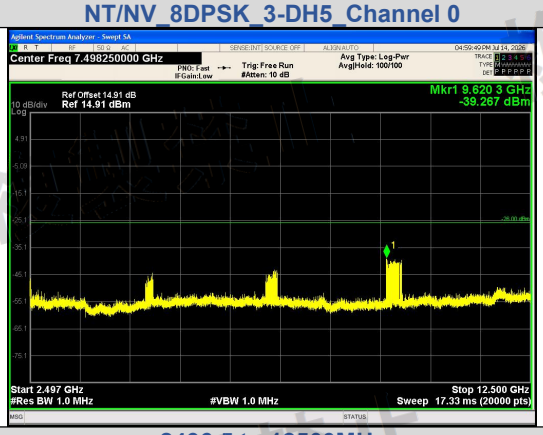
30 to 2387MHz
NT/NV_8DPSK_3-DH5_Channel 0



2387 to 2400MHz
NT/NV_8DPSK_3-DH5_Channel 0



2483.5 to 2496.5MHz
NT/NV_8DPSK_3-DH5_Channel 0



2496.5 to 12500MHz
NT/NV_8DPSK_3-DH5_Channel 0

APPENDIX VII. Spurious Emissions of Receiver

Test Result

Normal mode_GFSK_DH5

Condition	Channel	Frequency Range (MHz)	Peak (MHz)	Measured Value (dBm)	Limit		Result
					dBm	nW	
NT/NV	0	30 to 1000	210.009	-76.629	-54	≤4	PASS
		1000 to 12500	11900.447	-62.999	-47	≤20	PASS
	39	30 to 1000	210.059	-77.162	-54	≤4	PASS
		1000 to 12500	12443.265	-62.827	-47	≤20	PASS
	78	30 to 1000	210.059	-76.881	-54	≤4	PASS
		1000 to 12500	11923.064	-62.507	-47	≤20	PASS

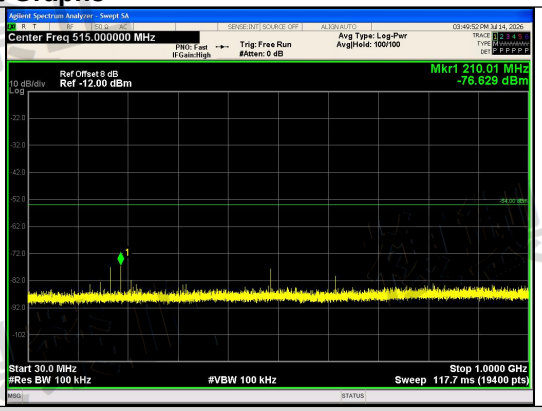
Normal mode_π/4DQPSK_2-DH5

Condition	Channel	Frequency Range (MHz)	Peak (MHz)	Measured Value (dBm)	Limit		Result
					dBm	nW	
NT/NV	0	30 to 1000	210.059	-76.725	-54	≤4	PASS
		1000 to 12500	11843.328	-62.480	-47	≤20	PASS
	39	30 to 1000	210.059	-77.188	-54	≤4	PASS
		1000 to 12500	11880.129	-62.634	-47	≤20	PASS
	78	30 to 1000	500.024	-76.924	-54	≤4	PASS
		1000 to 12500	11898.913	-62.688	-47	≤20	PASS

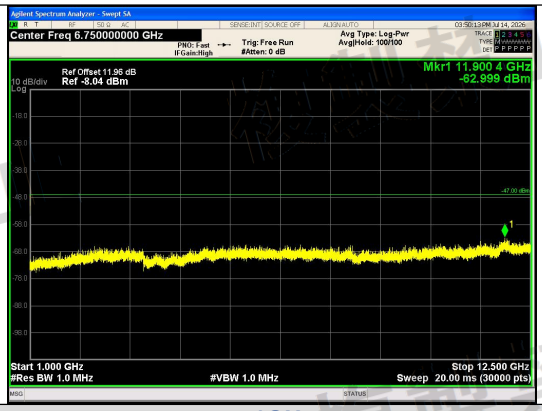
Normal mode_8DPSK_3-DH5

Condition	Channel	Frequency Range (MHz)	Peak (MHz)	Measured Value (dBm)	Limit		Result
					dBm	nW	
NT/NV	0	30 to 1000	210.059	-77.129	-54	≤4	PASS
		1000 to 12500	11935.331	-63.010	-47	≤20	PASS
	39	30 to 1000	500.024	-76.202	-54	≤4	PASS
		1000 to 12500	11867.479	-63.121	-47	≤20	PASS
	78	30 to 1000	500.024	-76.371	-54	≤4	PASS
		1000 to 12500	11918.847	-62.814	-47	≤20	PASS

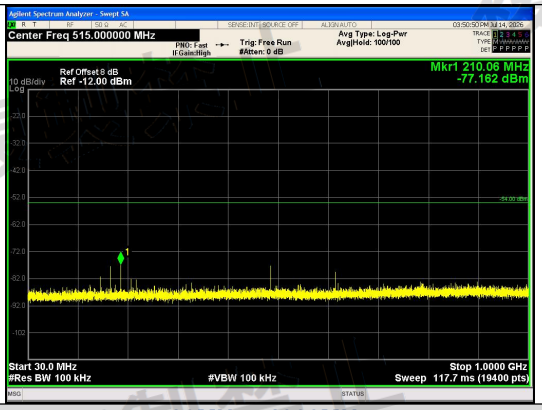
Test Graphs



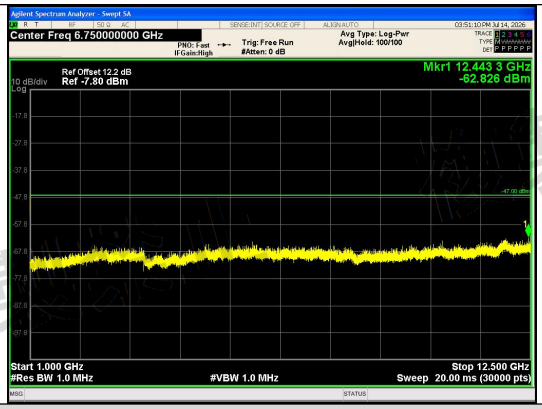
30MHz - 1000MHz
NT/NV_GFSK_DH5_Channel 0



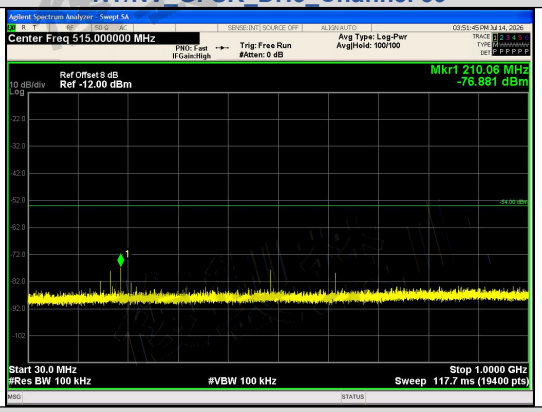
> 1GHz
NT/NV_GFSK_DH5_Channel 0



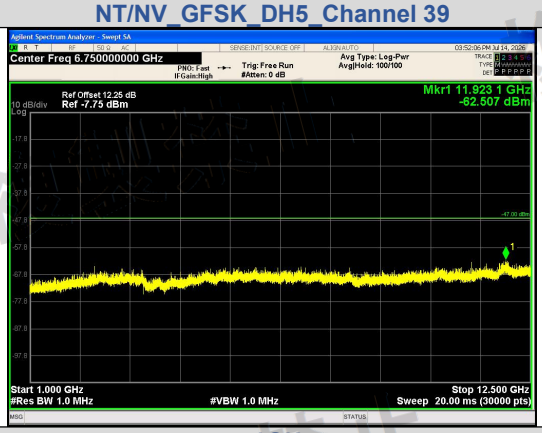
30MHz - 1000MHz
NT/NV_GFSK_DH5_Channel 39



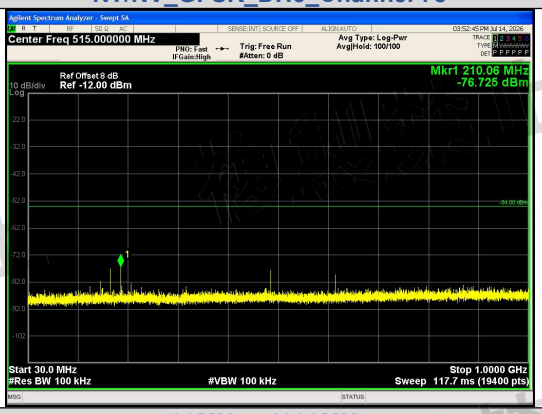
> 1GHz
NT/NV_GFSK_DH5_Channel 39



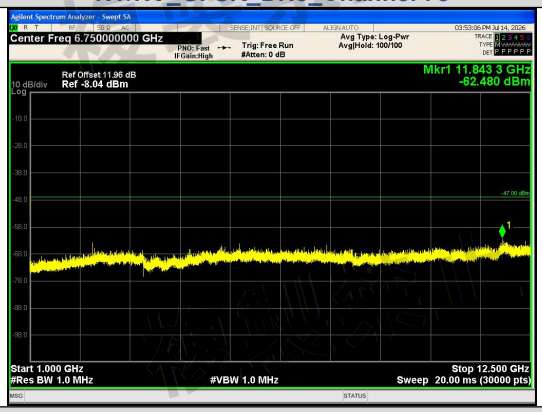
30MHz - 1000MHz
NT/NV_GFSK_DH5_Channel 78



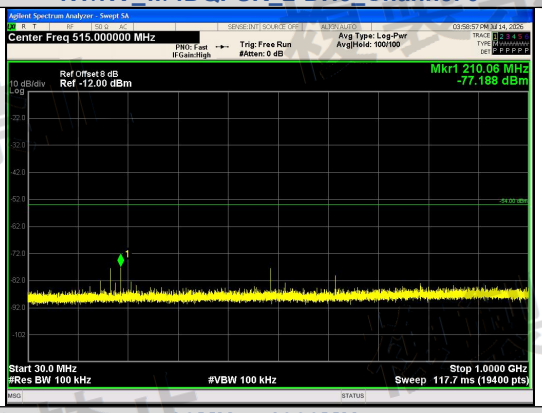
> 1GHz
NT/NV_GFSK_DH5_Channel 78



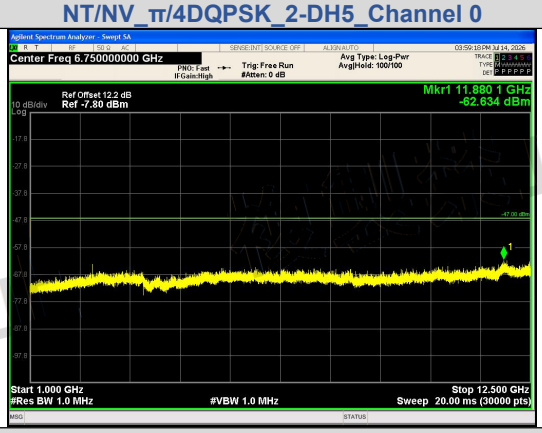
30MHz - 1000MHz
NT/NV_π/4DQPSK_2-DH5_Channel 0



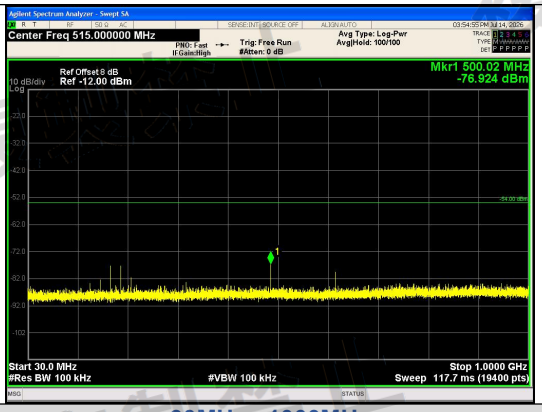
> 1GHz
NT/NV_π/4DQPSK_2-DH5_Channel 0



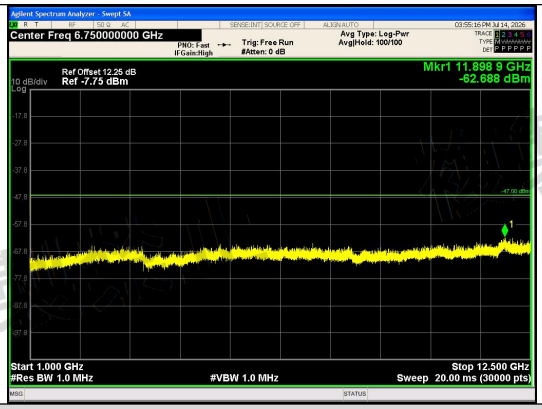
30MHz - 1000MHz
NT/NV_π/4DQPSK_2-DH5_Channel 39



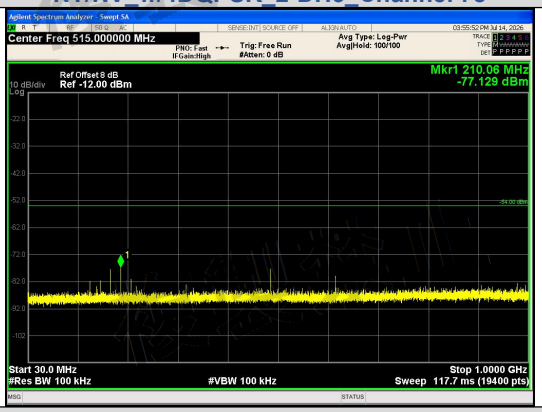
> 1GHz
NT/NV_π/4DQPSK_2-DH5_Channel 39



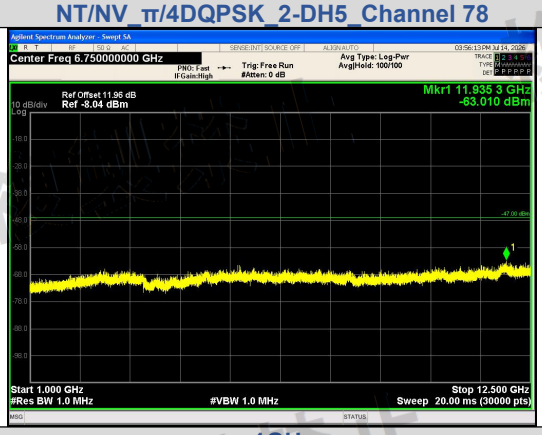
30MHz - 1000MHz
NT/NV_π/4DQPSK_2-DH5_Channel 78



> 1GHz
NT/NV_π/4DQPSK_2-DH5_Channel 78

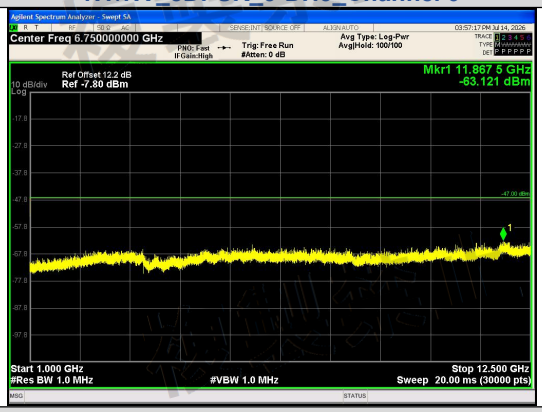


30MHz - 1000MHz
NT/NV_8DPSK_3-DH5_Channel 0

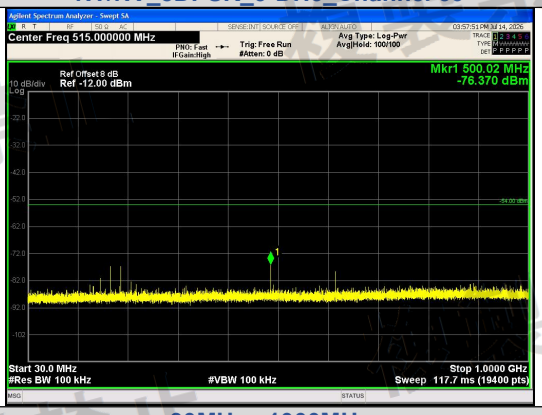


> 1GHz
NT/NV_8DPSK_3-DH5_Channel 0

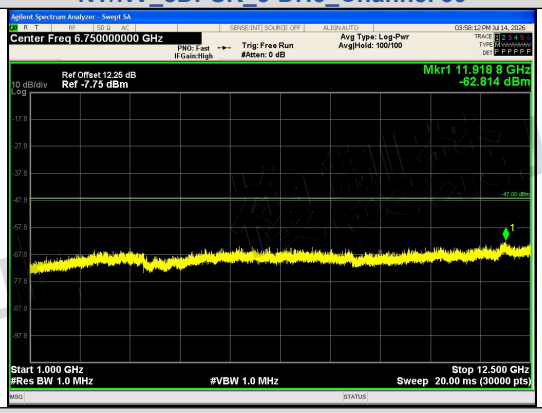
30MHz - 1000MHz
NT/NV_8DPSK_3-DH5_Channel 39



> 1GHz
NT/NV_8DPSK_3-DH5_Channel 39



30MHz - 1000MHz
NT/NV_8DPSK_3-DH5_Channel 78



> 1GHz
NT/NV_8DPSK_3-DH5_Channel 78

********** End of Report **********