20dB Bandwidth:

DH5_Ant1_2402

DH5_Ant1_2441

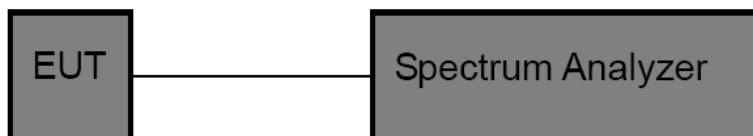| DH5_Ant1_2480 |
|:-:|
| |

2DH5_Ant1_2402

2DH5_Ant1_2441

2DH5_Ant1_2480

3.6. Channel Separation

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(1):

Test Item	Limit	Frequency Range(MHz)
Channel Separation	>25KHz or >two-thirds of the 20 dB bandwidth Which is greater	2400~2483.5

Test Configuration

Test Procedure

7. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
8. Spectrum Setting:
   (1) Set RBW = 100 kHz.
   (2) Set the video bandwidth (VBW) ≥ 3 RBW.
   (3) Detector = Peak.
   (4) Trace mode = Max hold.
   (5) Sweep = Auto couple.

Test Mode

   Please refer to the clause 2.4.

Test Results

TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.01	≥0.662	PASS
2DH5	Ant1	Hop	0.984	≥0.858	PASS

DH5_Ant1_Hop

2DH5_Ant1_Hop

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3.7. Number of Hopping Channel

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(iii)

Section	Test Item	Limit
15.247 (a)(iii)	Number of Hopping Channel	≥15

Test Configuration
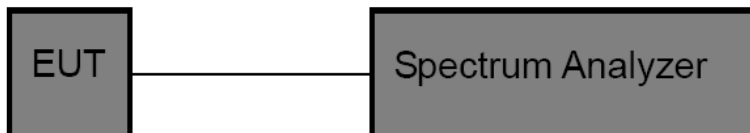
Test Procedure

1.　The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2.　Spectrum Setting:
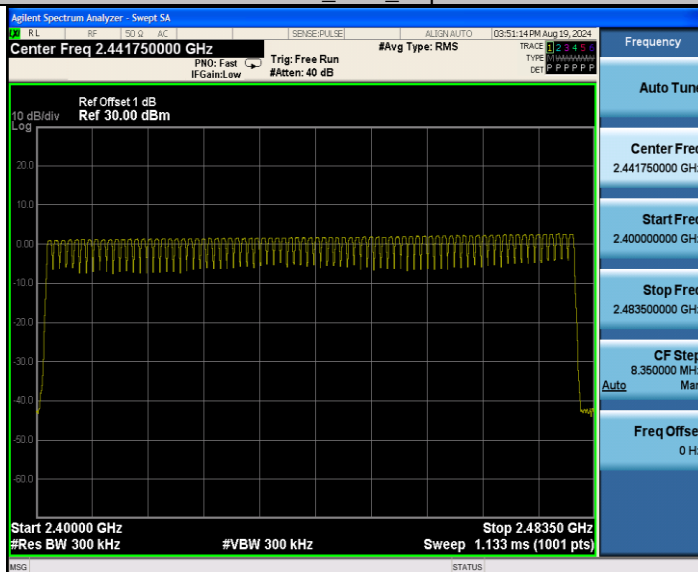　　(1)　Peak Detector: RBW=100 kHz, VBW≥RBW, Sweep time= Auto.

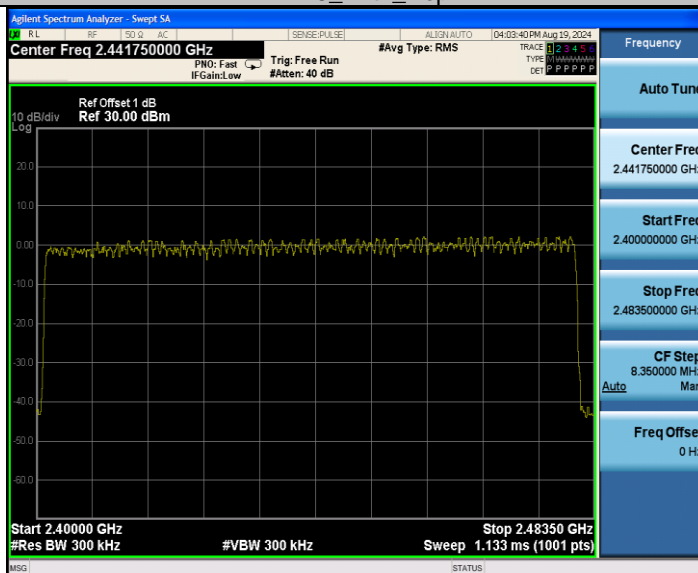**Test Mode**

Please refer to the clause 2.4.

Test Result

Modulation type	Channel number	Limit	Result
GFSK	79	≥15.00	Pass
π/4-DQPSK	79		

DH5_Ant1_Hop

2DH5_Ant1_Hop

3.8. Dwell Time

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(iii)

Section	Test Item	Limit
15.247 (a)(iii)	Average Time of Occupancy	0.4 sec

Test Configuration
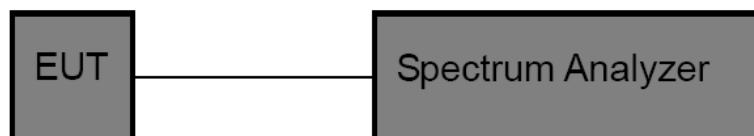
Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. Spectrum Setting:

    (1) Spectrum Setting: RBW=1MHz, VBW≥RBW.

    (2) Use video trigger with the trigger level set to enable triggering only on full pulses.

    (3) Sweep Time is more than once pulse time.

    (4) Set the center frequency on any frequency would be measure and set the frequency span to zero.

    (5) Measure the maximum time duration of one single pulse.

    (6) Set the EUT for packet transmitting.

Test Mode

Please refer to the clause 2.4.

Test Result

TestMode	Antenna	Freq(MHz)	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.381	320	0.122	≤0.4	PASS
DH3	Ant1	Hop	1.638	160	0.262	≤0.4	PASS
DH5	Ant1	Hop	2.885	110	0.317	≤0.4	PASS
2DH1	Ant1	Hop	0.390	330	0.129	≤0.4	PASS
2DH3	Ant1	Hop	1.643	170	0.279	≤0.4	PASS
2DH5	Ant1	Hop	2.891	70	0.202	≤0.4	PASS
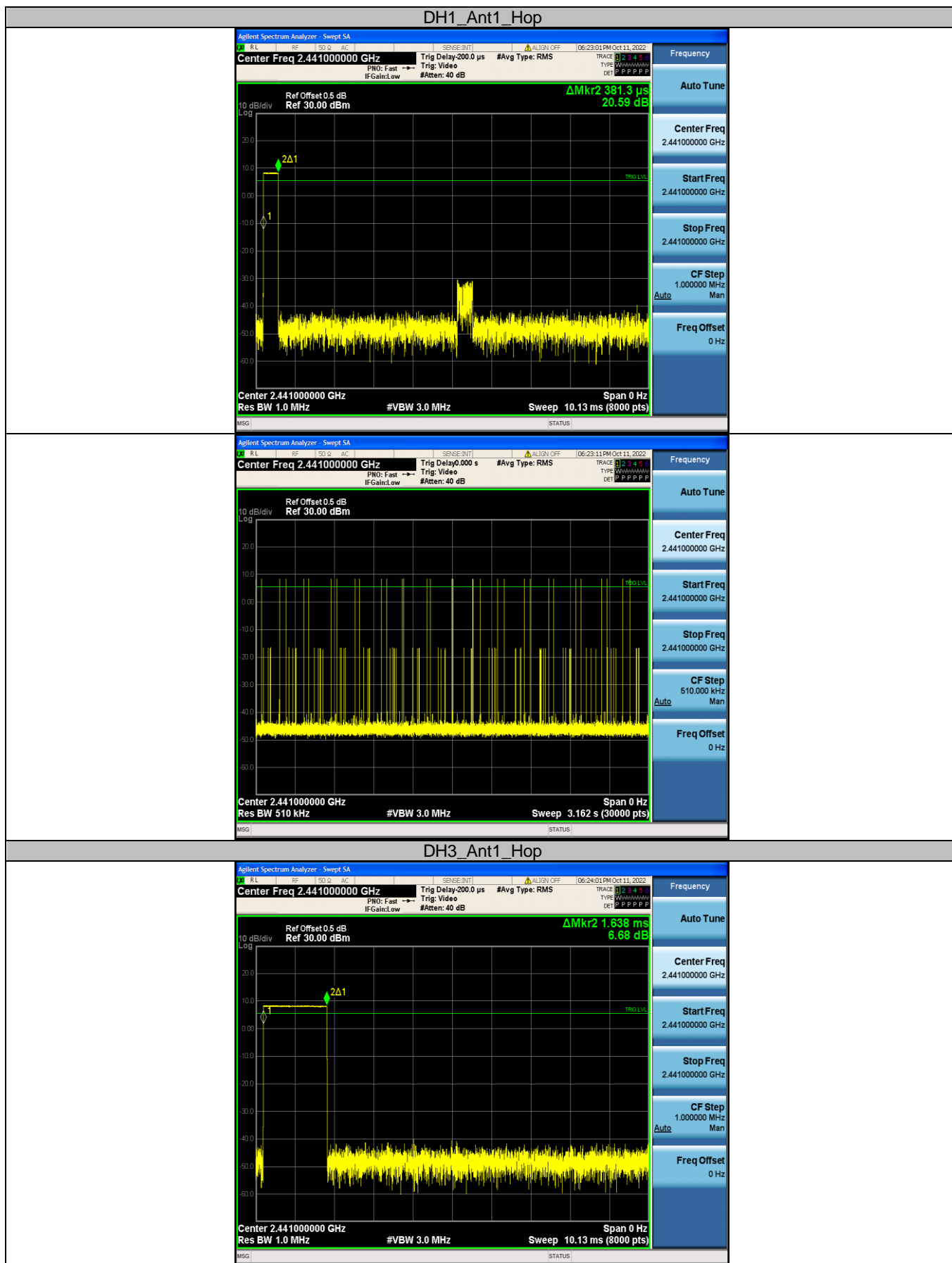
DH1_Ant1_Hop

DH3_Ant1_Hop
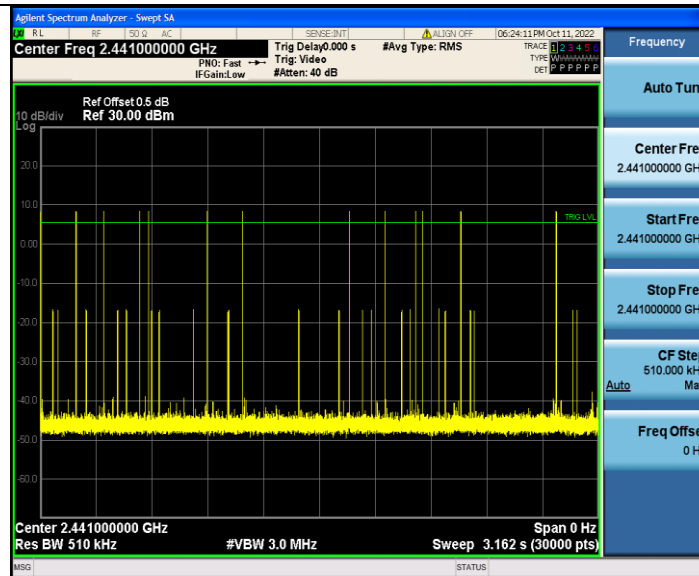
DH5_Ant1_Hop

2DH1_Ant1_Hop

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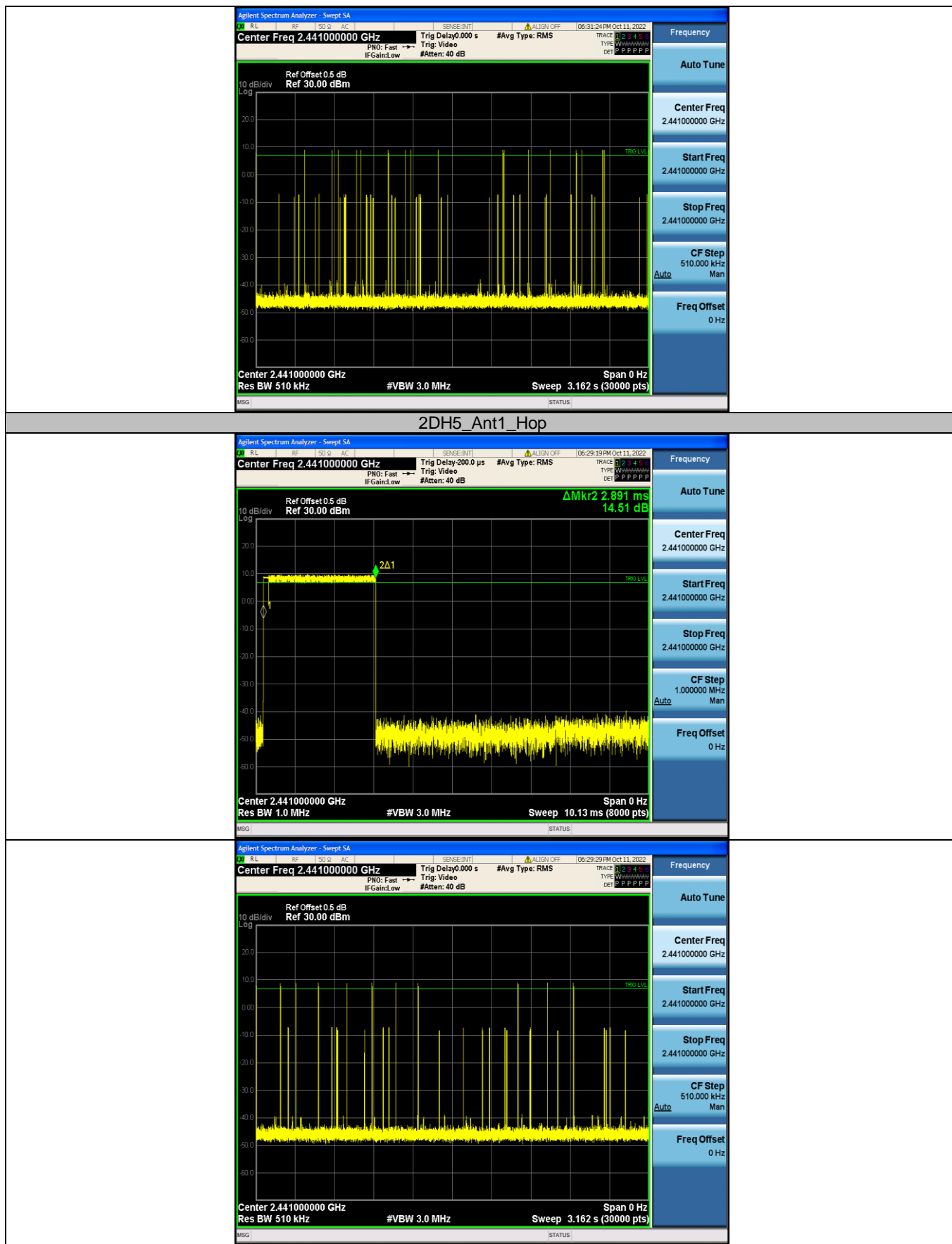
For anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China : yz.cnca.cn
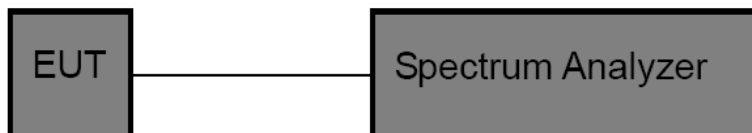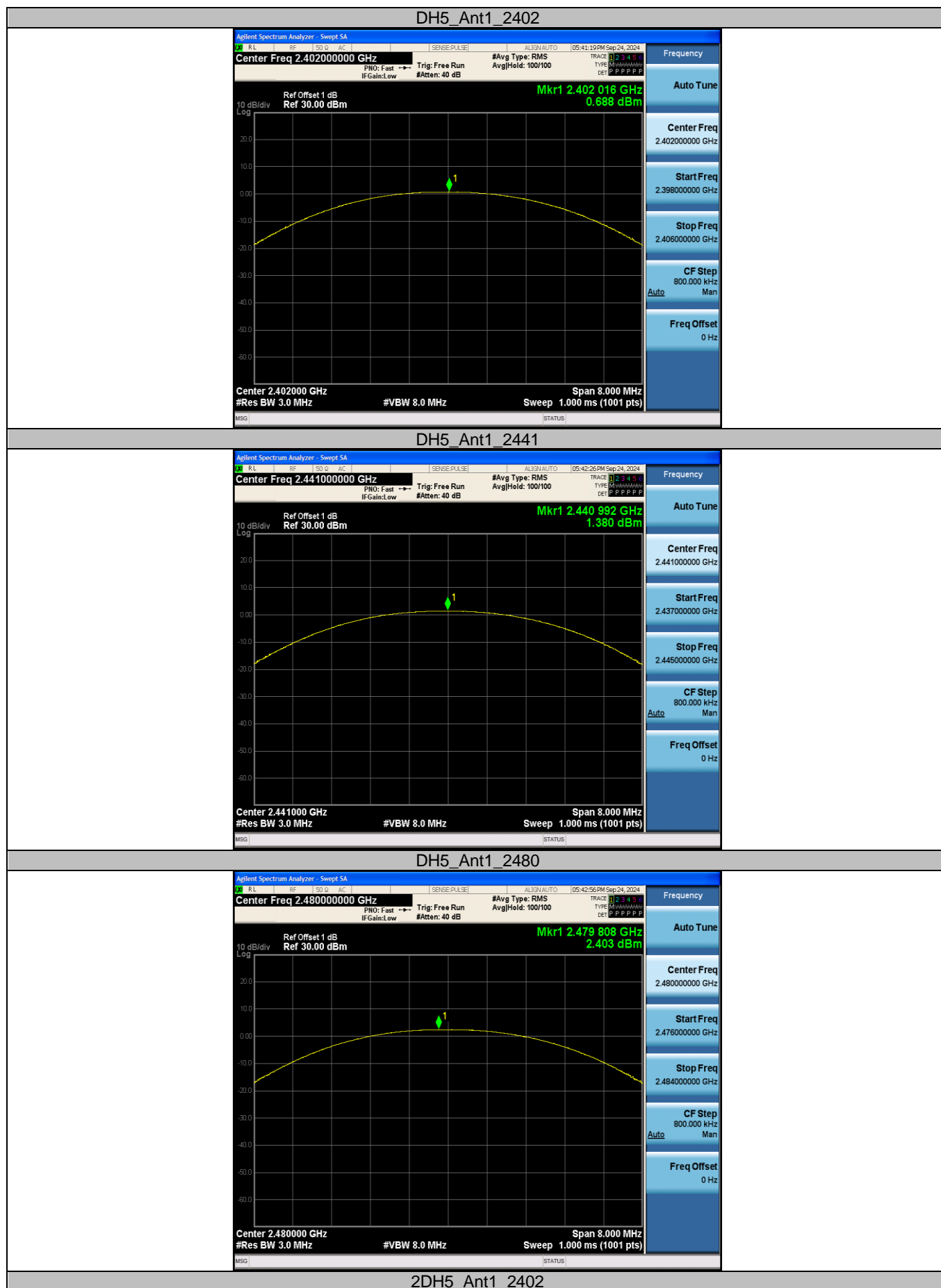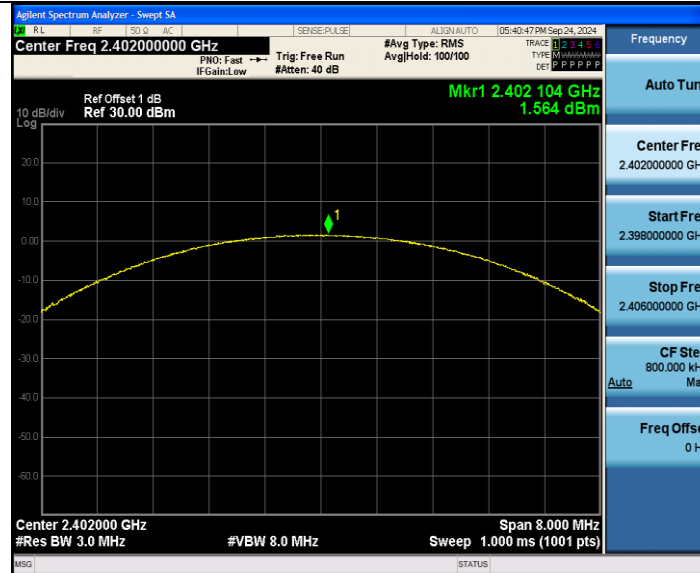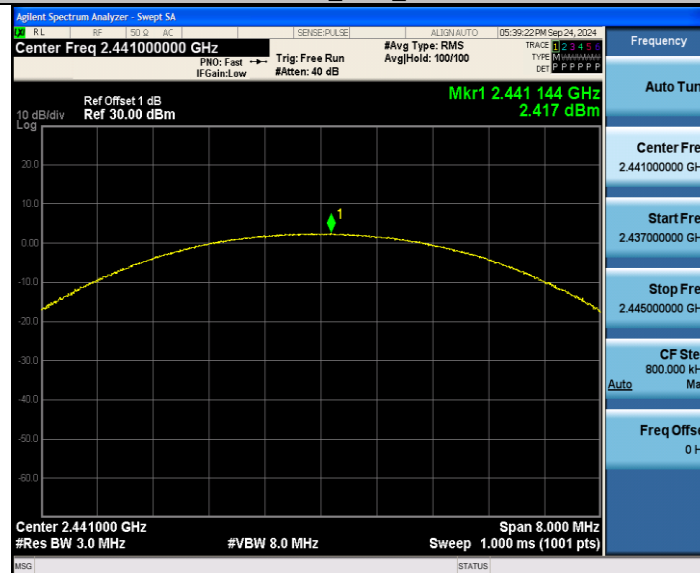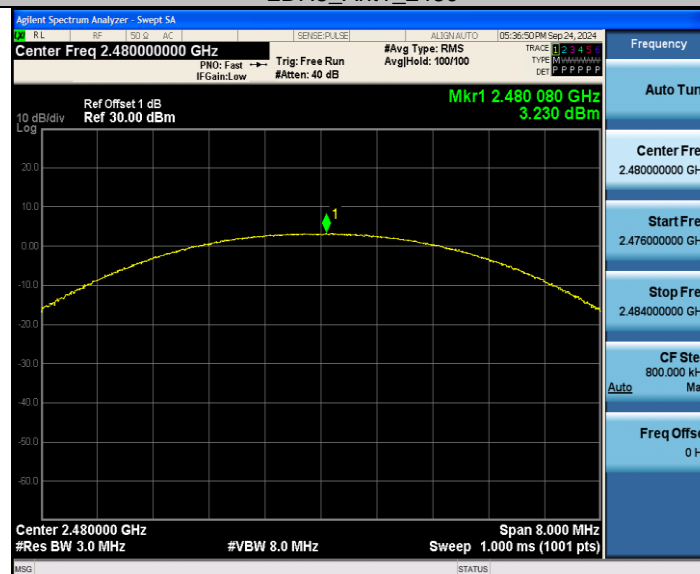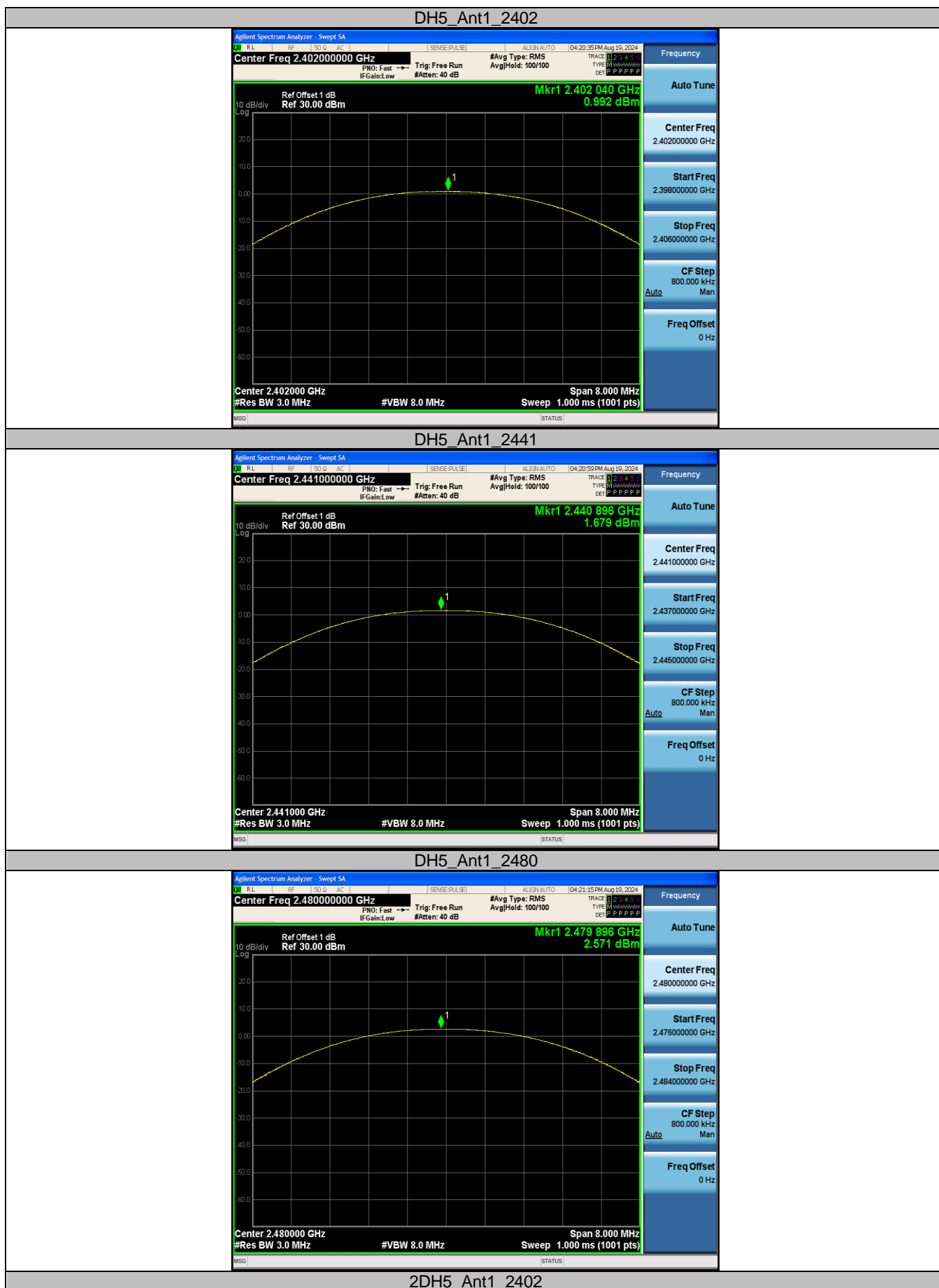
2DH3_Ant1_Hop

2DH5_Ant1_Hop

3.9. Peak Output Power

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (b)(1):

Test Item	Limit	Frequency Range(MHz)
Maximum Conducted Peak Output Power	Hopping Channels>75 Power<1W(30dBm) Other <125mW(21dBm)	2400~2483.5

Test Configuration

Test Procedure

1.　The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.

2.　Spectrum Setting:

　　(1)　Set RBW> 20DB Bandwidth.

　　(2)　Set the video bandwidth (VBW) ≥ RBW.

　　(3)　Detector = Peak.

　　(4)　Trace mode = Max hold.

　　(5)　Sweep = Auto couple.

Test Mode

Please refer to the clause 2.4.

Test Result

Bluetooth modules 1:

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	0.69	≤20.97	PASS
		2441	1.38	≤20.97	PASS
		2480	2.40	≤20.97	PASS
2DH5	Ant1	2402	1.56	≤20.97	PASS
		2441	2.42	≤20.97	PASS
		2480	3.23	≤20.97	PASS

Bluetooth modules 2:

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	0.99	≤20.97	PASS
		2441	1.68	≤20.97	PASS
		2480	2.57	≤20.97	PASS
2DH5	Ant1	2402	1.65	≤20.97	PASS
		2441	2.45	≤20.97	PASS
		2480	3.32	≤20.97	PASS

Note: At the same power level, the power of module 2 is higher than that of module 1, so module 2 is selected for all tests.

Bluetooth modules 1 Test plot as follows:

DH5_Ant1_2402
DH5_Ant1_2441
DH5_Ant1_2480
2DH5_Ant1_2402

2DH5_Ant1_2441

2DH5_Ant1_2480

Bluetooth modules 2 Test plot as follows:

DH5_Ant1_2402
DH5_Ant1_2441
DH5_Ant1_2480
2DH5_Ant1_2402

2DH5_Ant1_2441

2DH5_Ant1_2480

3.10. Duty Cycle

Limit

None, for report purposes only.

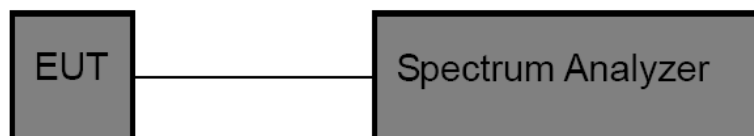**Test Configuration**

Test Procedure

1.   The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2.   The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement according to section 10.2 of KDB 558074 D01 DTS Meas Guidance v05r02.
3.   Spectrum Setting:
Set analyzer center frequency to test channel center frequency.
Set the span to 0Hz
Set the RBW to 10MHz
Set the VBW to 10MHz
Detector: Peak
Sweep time: Auto
Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

Test Mode

Please refer to the clause 2.4.

Test Result

Test Mode	Frequency [MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	1/T Minimum VBW (kHz)	Final setting For VBW (kHz)
GFSK	2402	2.88	3.74	77.01	0.35	1
	2441	2.88	3.74	77.01	0.35	1
	2480	2.88	3.74	77.01	0.35	1
π/4-DQPSK	2402	2.88	3.74	77.01	0.35	1
	2441	2.90	3.76	77.13	0.34	1
	2480	2.88	3.74	77.01	0.35	1

DH5_Ant1_2402

DH5_Ant1_2441

DH5_Ant1_2480
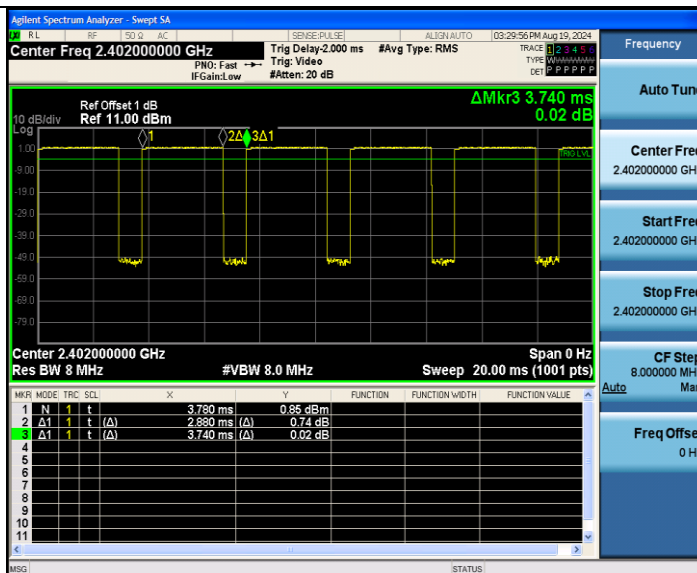
2DH5_Ant1_2402
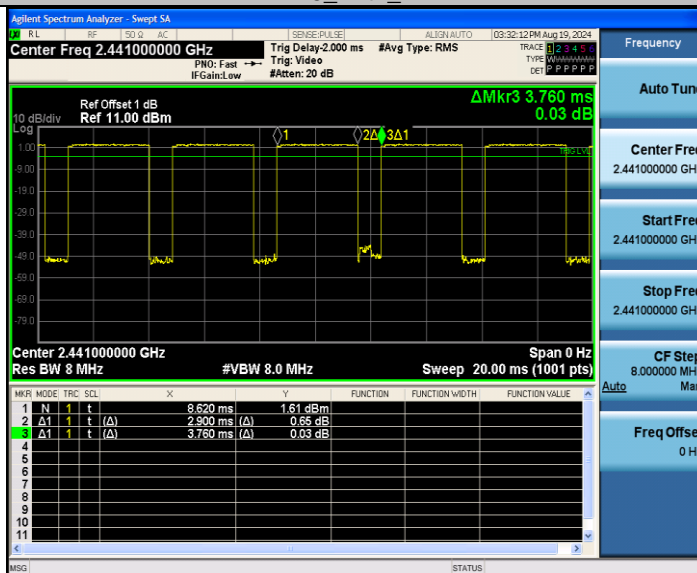
2DH5_Ant1_2441

2DH5_Ant1_2480
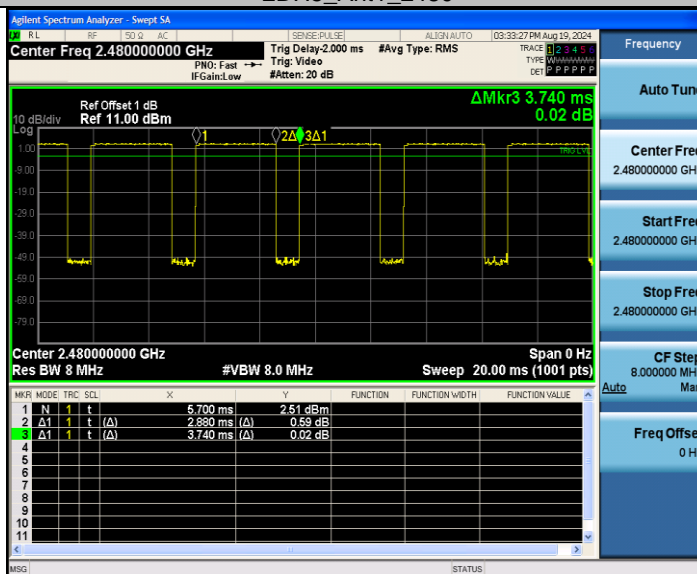
3.11. Antenna requirement

Requirement

FCC CFR Title 47 Part 15 Subpart C Section 15.203:

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

FCC CFR Title 47 Part 15 Subpart C Section 15.247(c) (1)(i):

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

Test Result

The directional gain of the antenna less than 6dBi, please refer to the EUT internal photographs antenna photo.

*********************THE END*********************