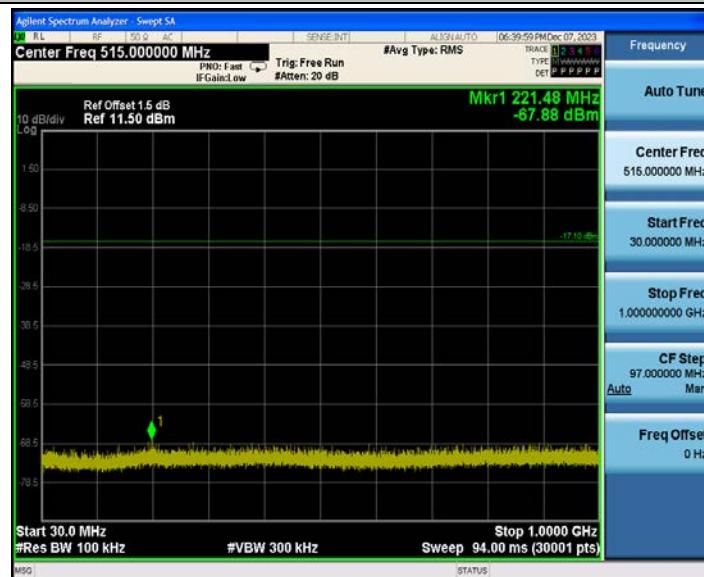




8-DPSK_2441_30~1000



8-DPSK_2441_1000~26500



8-DPSK_2480_0~Reference

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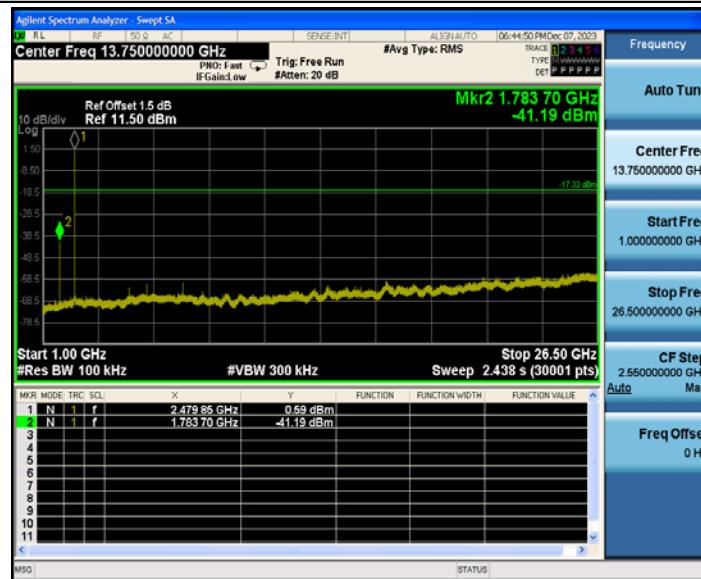
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8-DPSK_2480_30~1000



8-DPSK_2480_1000~26500

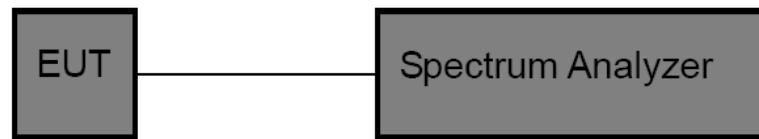


3.5. 20DB Bandwidth

Limit

N/A

Test Configuration



Test Procedure

5. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
6. OCB and 20dB Spectrum Setting:
 - (1) Set RBW = 1% ~ 5% occupied bandwidth.
 - (2) Set the video bandwidth (VBW) \geq 3 RBW.
 - (3) Detector = Peak.
 - (4) Trace mode = Max hold.
 - (5) Sweep = Auto couple.

Note: The EUT was set to continuously transmitting in each mode and low, Middle and high channel for the test.

Test Mode

Please refer to the clause 2.4.

Test Results

Test Mode	Frequency[MHz]	20db EBW[MHz]	20dB Bandwidth *2/3 (kHz)	Verdict
GFSK	2402	0.954	636	PASS
	2441	1.047	698	PASS
	2480	1.011	674	PASS
$\pi/4$ -DQPSK	2402	1.362	908	PASS
	2441	1.368	912	PASS
	2480	1.362	908	PASS
8-DPSK	2402	1.320	880	PASS
	2441	1.320	880	PASS
	2480	1.320	880	PASS

GFSK_2402



GFSK_2441



GFSK_2480



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**π/4-DQPSK_2402****π/4-DQPSK_2441****π/4-DQPSK_2480****8-DPSK_2402**

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8-DPSK_2441



8-DPSK_2480



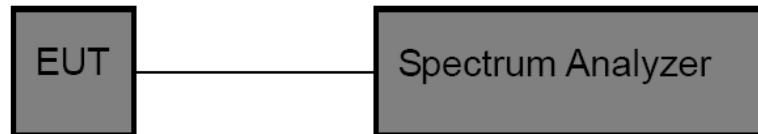
3.6. Channel Separation

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(1)/ RSS-247 5.1 b :

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 = Set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.
 - (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

Test Mode	Frequency[MHz]	Result[MHz]	Limit[kHz]	Verdict
GFSK	Hop_2441	1.006	>698	PASS
$\pi/4$ -DQPSK	Hop_2441	1.000	>912	PASS
8-DPSK	Hop_2441	0.994	>880	PASS

GFSK_Hop_2441



π/4-DQPSK_Hop_2441



8-DPSK_Hop_2441



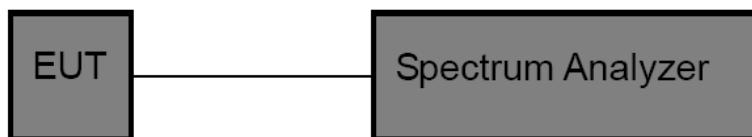
3.7. Number of Hopping Channel

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(iii)/ RSS-247 5.1 d:

Section	Test Item	Limit
15.247 (a)(iii)/ RSS-247 5.1 d:	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.

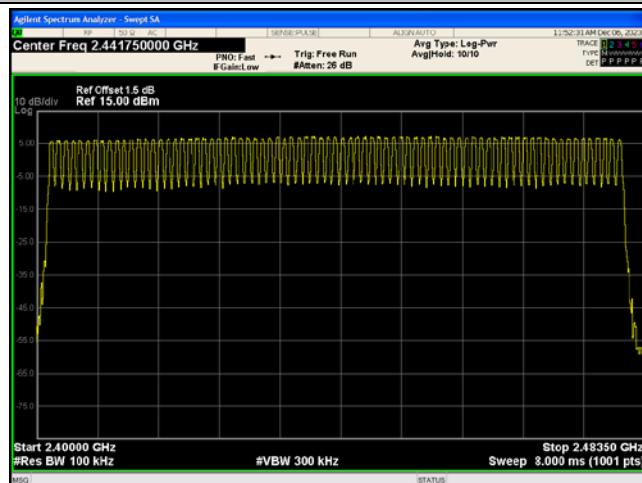
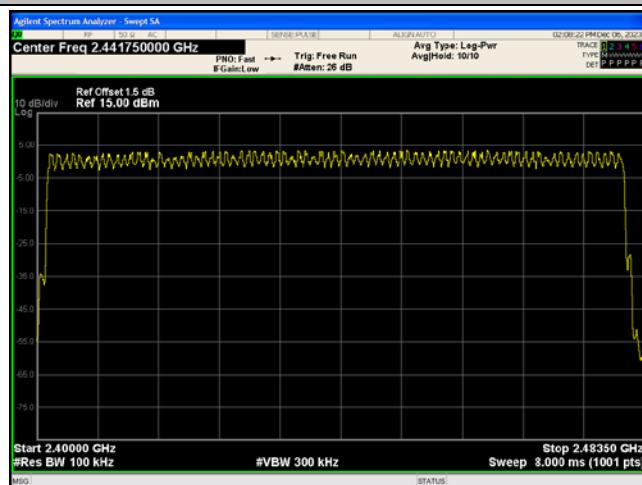
Test Mode

Please refer to the clause 2.4.

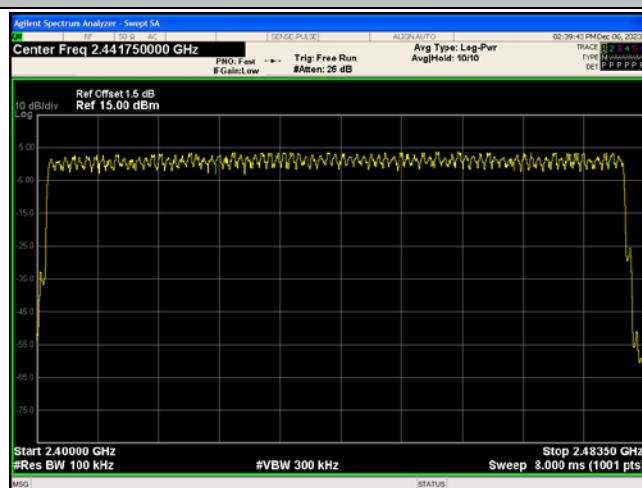
Test Result

Test Mode	Freq(MHz)	Result[Num]	Limit[Num]	Verdict
GFSK	Hop	79	≥15	PASS
π/4-DQPSK	Hop	79	≥15	PASS
8-DPSK	Hop	79	≥15	PASS

GFSK


 $\pi/4$ -DQPSK


8-DPSK

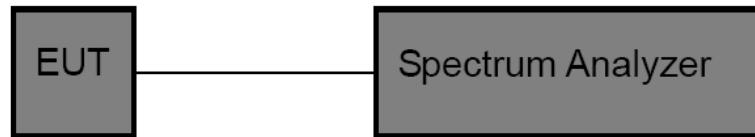


3.8. Dwell Time

Limit

Section	Test Item	Limit
15.247(a)(iii)/ RSS-247 5.1 d	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**

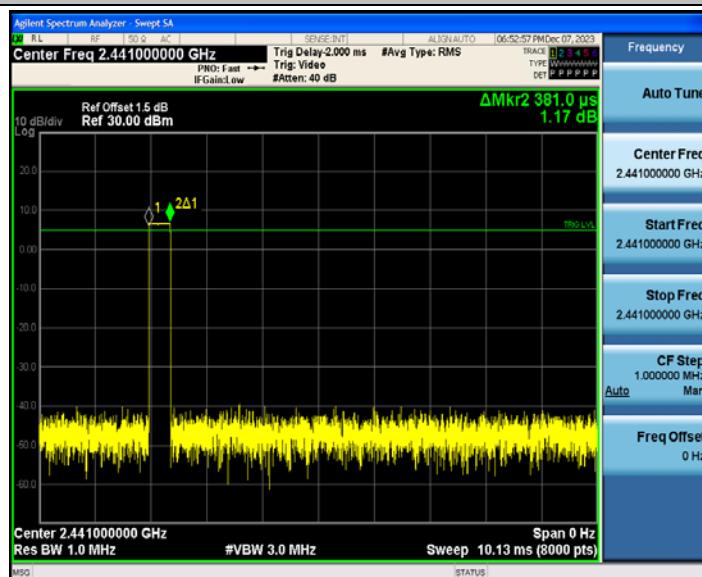
Modulation type	Channel	Frequency [MHz]	Pulse Time (ms)	Total of Dwell (ms)	Period Time (ms)	Limit (Second)	Result
GFSK	DH1	2441	0.381	121.92	31.60	≤ 0.40	Pass
	DH3	2441	1.642	262.72	31.60		
	DH5	2441	2.885	307.73	31.60		
$\pi/4$ -DQPSK	2DH1	2441	0.388	124.16	31.60	≤ 0.40	Pass
	2DH3	2441	1.240	198.40	31.60		
	2DH5	2441	2.888	308.05	31.60		
8-DPSK	3DH1	2441	0.388	124.16	31.60	≤ 0.40	Pass
	3DH3	2441	1.638	262.08	31.60		
	3DH5	2441	2.891	308.37	31.60		

Note: 1DH1/2DH1/3DH1 Total of Dwell= Pulse Time*(1600/2)*31.6/79

1DH3/2DH3/3DH3 Total of Dwell= Pulse Time*(1600/4)*31.6/79

1DH5/2DH5/3DH5 Total of Dwell= Pulse Time*(1600/6)*31.6/79

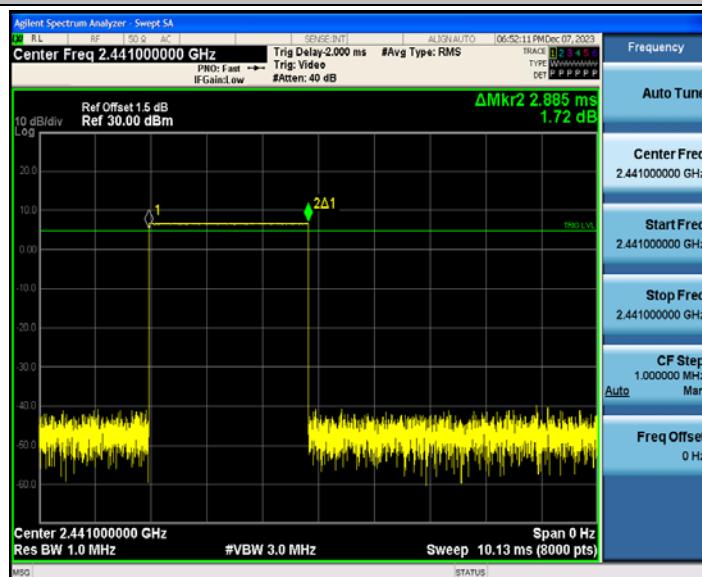
GFSK_DH1_2441



GFSK_DH3_2441



GFSK_DH5_2441



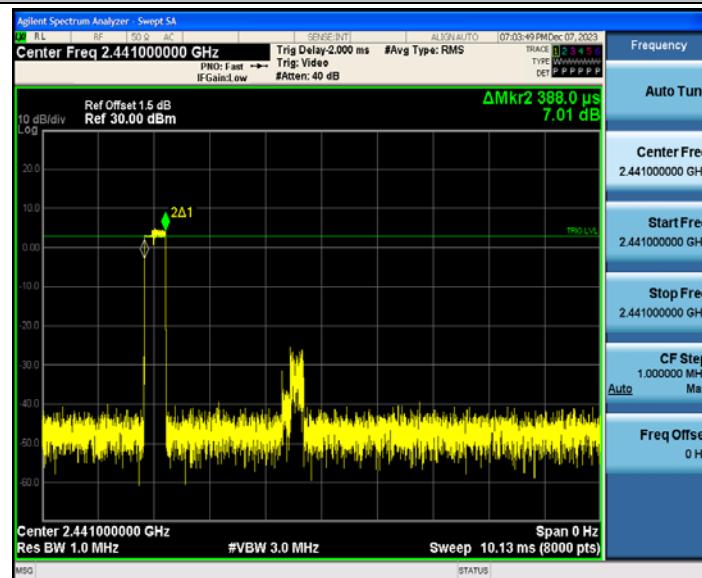
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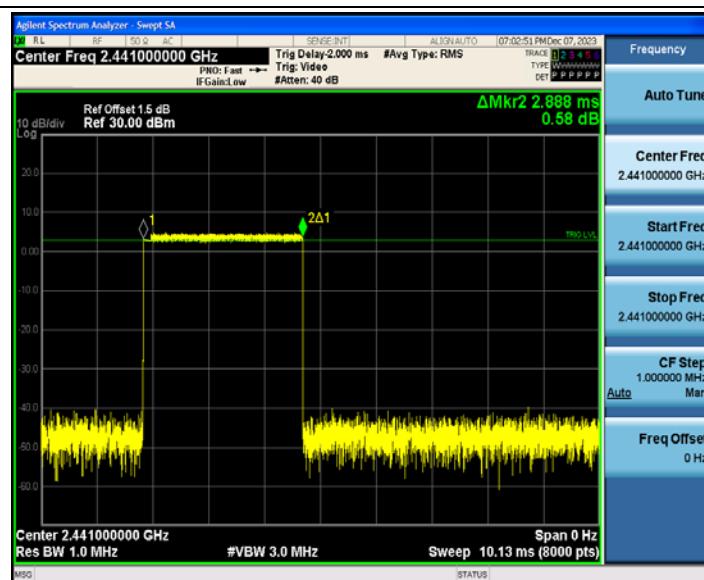
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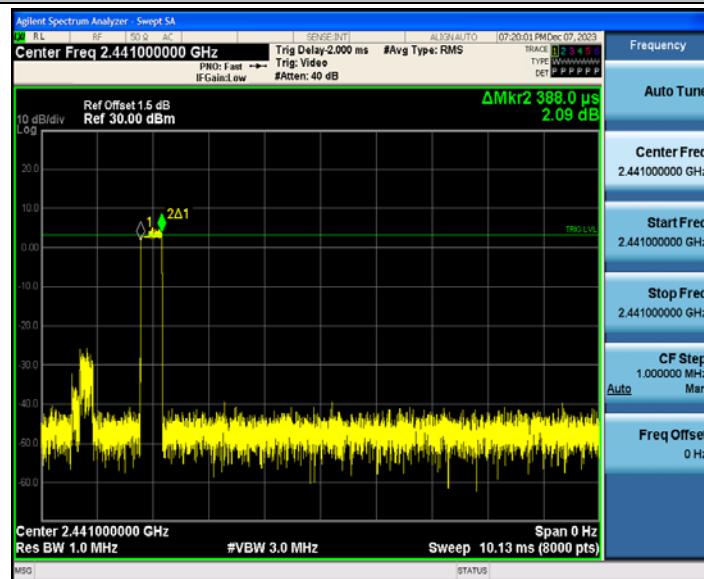
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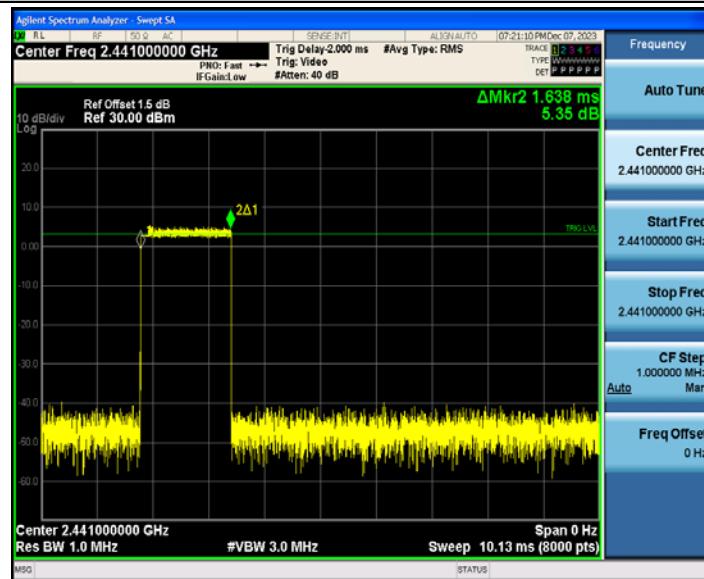
 $\pi/4$ -DQPSK_2DH1_2441 $\pi/4$ -DQPSK_2DH3_2441 $\pi/4$ -DQPSK_2DH5_2441



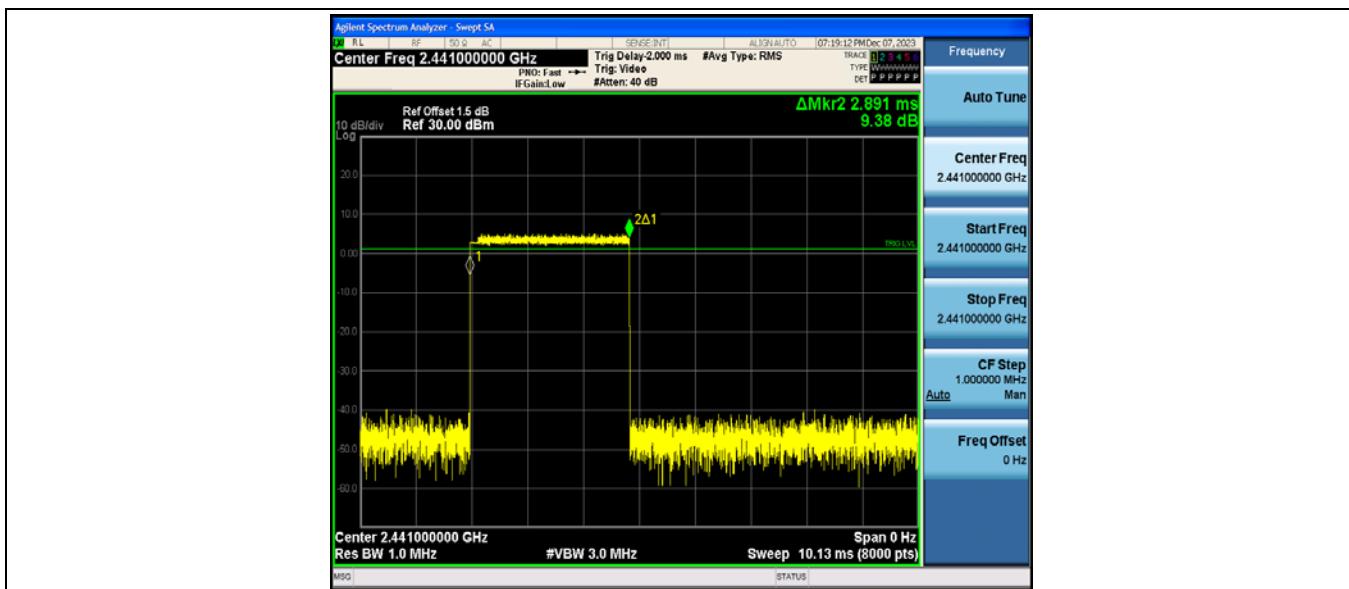
8-DPSK_3DH1_2441



8-DPSK_3DH3_2441



8-DPSK_3DH5_2441



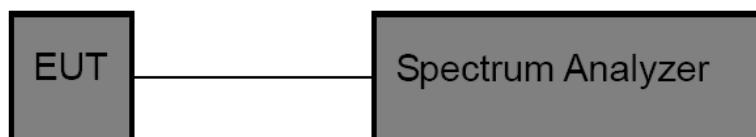
3.9. Peak Output Power

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (b)(1) / RSS-247 5.4 b:

Test Item	Limit	Frequency Range(MHz)
Maximum Conducted Peak Output Power	Hopping Channels>75 Power<1W(30dBm) Other <125mW(21dBm)	2400~2483.5
E.I.R.P	4 Watt or 36dBm	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) \geq RBW.
 - (3) Detector = Peak.
 - (4) Trace mode = Max hold.
 - (5) Sweep = Auto couple.

Test Mode

Please refer to the clause 2.4.

Test Result

Test Mode	Frequency[MHz]	Result[dBm]	Limit[dBm]	Verdict
GFSK	2402	5.37	<=30	PASS
	2441	6.71	<=30	PASS
	2480	6.20	<=30	PASS
$\pi/4$ -DQPSK	2402	4.03	<=30	PASS
	2441	5.08	<=30	PASS
	2480	4.59	<=30	PASS
8-DPSK	2402	4.38	<=30	PASS
	2441	5.42	<=30	PASS
	2480	4.88	<=30	PASS

GFSK_2402



GFSK_2441



GFSK_2480



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π/4-DQPSK_2402

π/4-DQPSK_2441

π/4-DQPSK_2480

8-DPSK_2402

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8-DPSK_2441



8-DPSK_2480

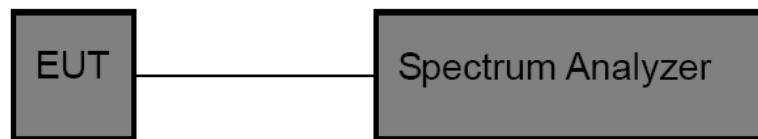


3.10. Duty Cycle

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

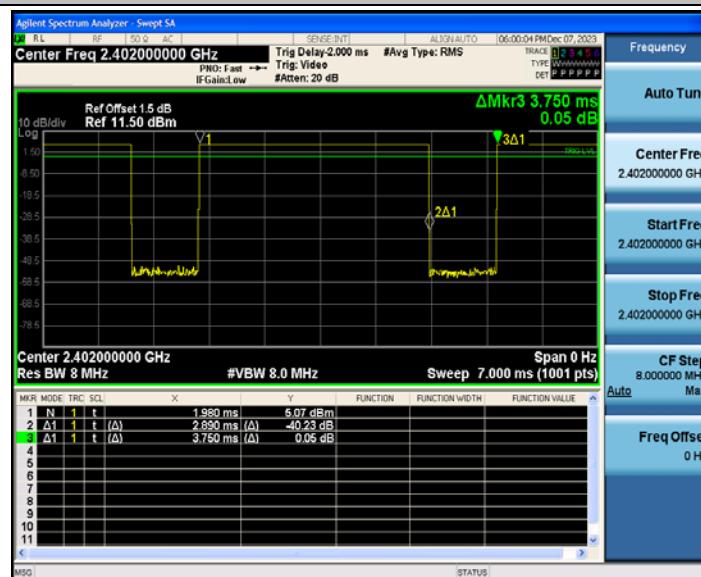
Please refer to the clause 2.4.

Test Result

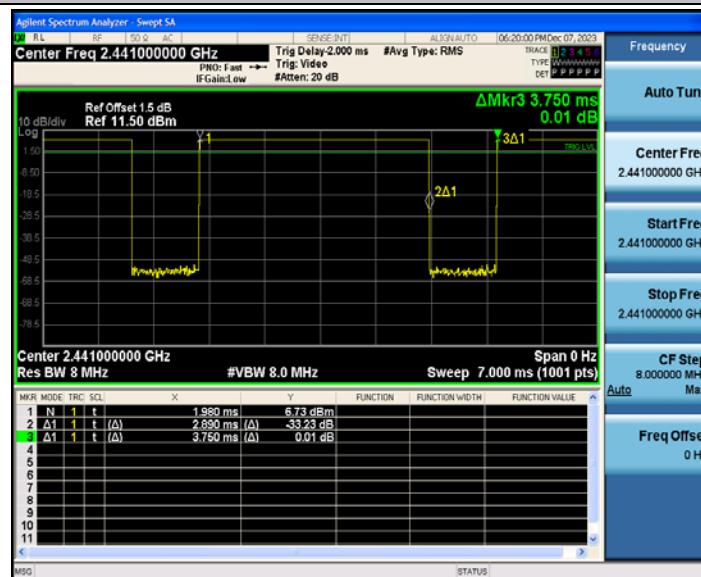
Test Mode	Frequency [MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	1/T Minimum VBW (kHz)	Final setting For VBW (kHz)
GFSK	2402	2.89	3.75	77.07	0.35	1
	2441	2.89	3.75	77.07	0.35	1
	2480	2.89	3.75	77.07	0.35	1
$\pi/4$ -DQPSK	2402	2.89	3.75	77.07	0.35	1
	2441	2.89	3.75	77.07	0.35	1
	2480	2.89	3.75	77.07	0.35	1
8-DPSK	2402	2.89	3.74	77.27	0.35	1
	2441	2.89	3.75	77.07	0.35	1
	2480	2.90	3.76	77.13	0.34	1



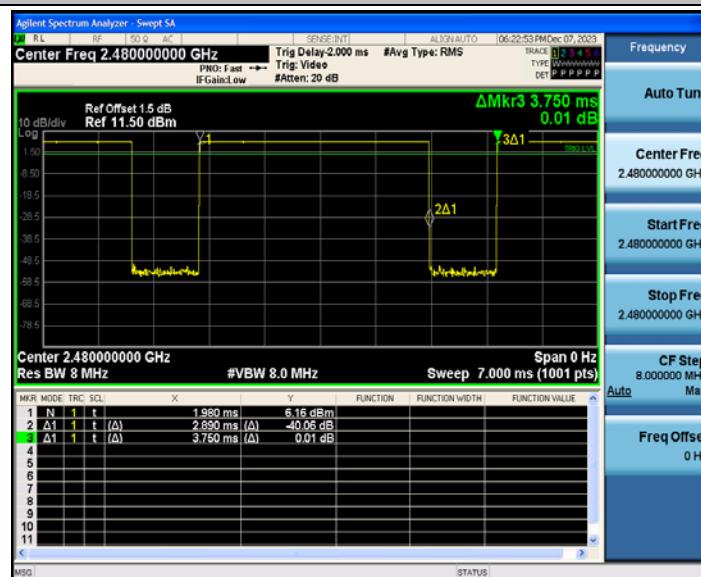
GFSK_2402



GFSK_2441



GFSK_2480



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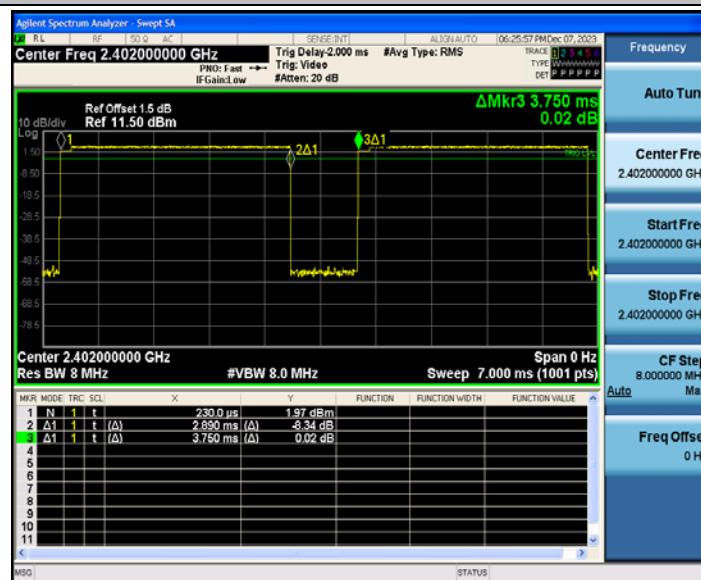
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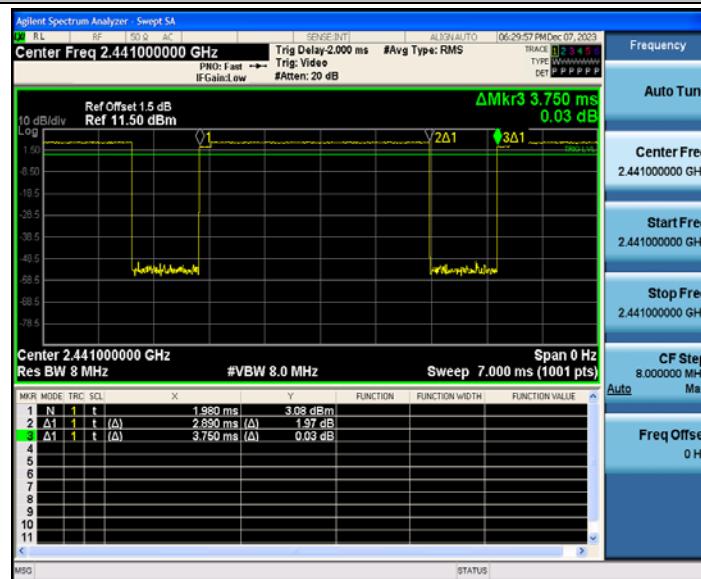
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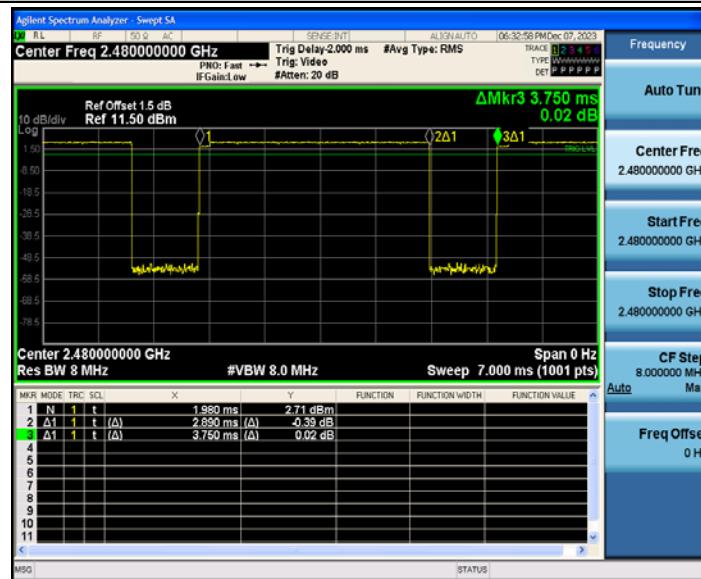
π/4-DQPSK_2402



π/4-DQPSK_2441



π/4-DQPSK_2480



8-DPSK_2402

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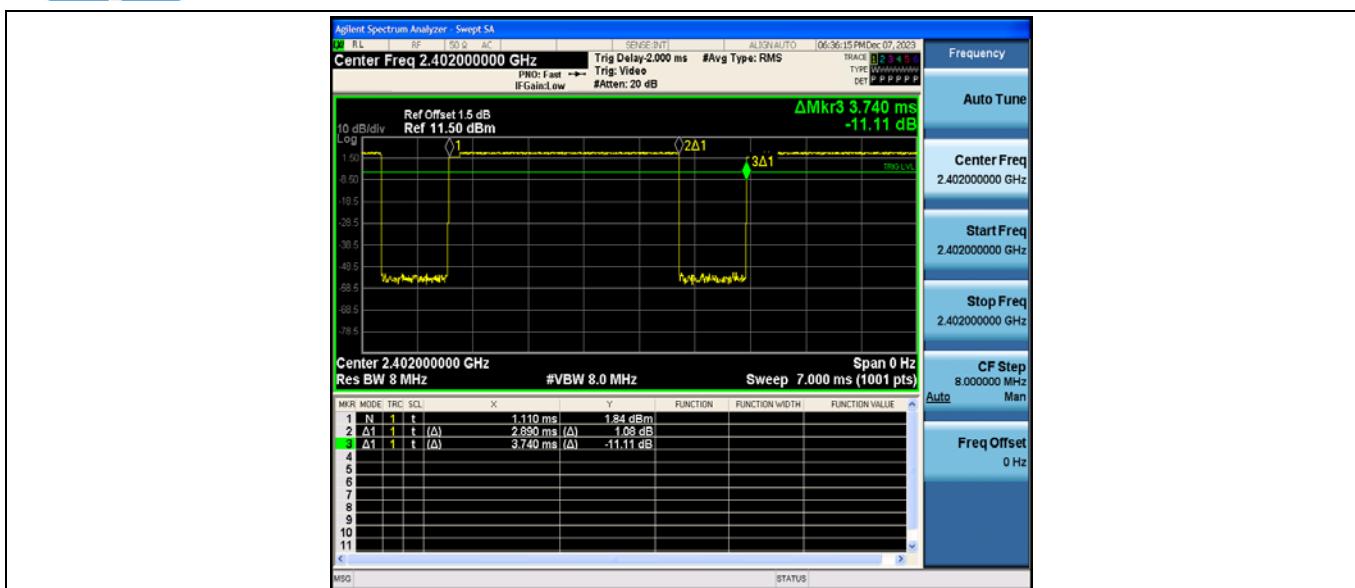
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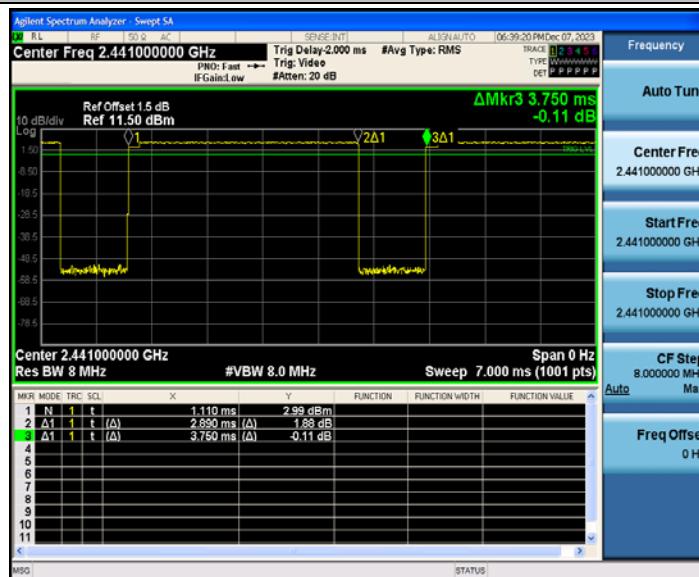


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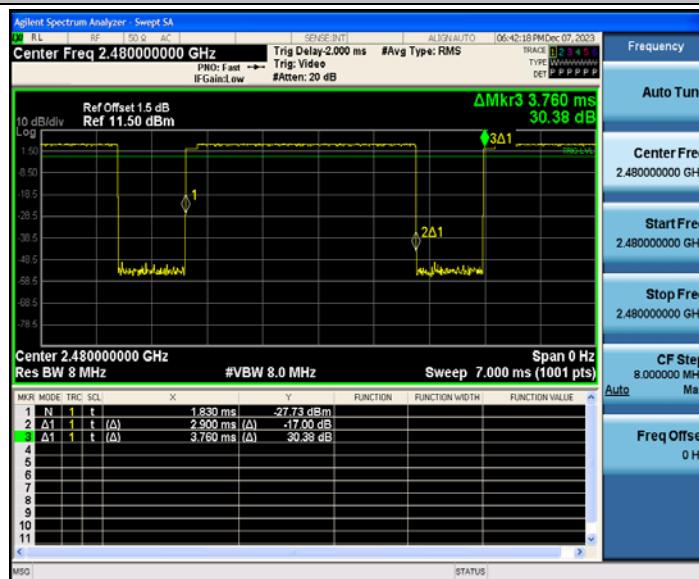
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8-DPSK_2441



8-DPSK_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*****