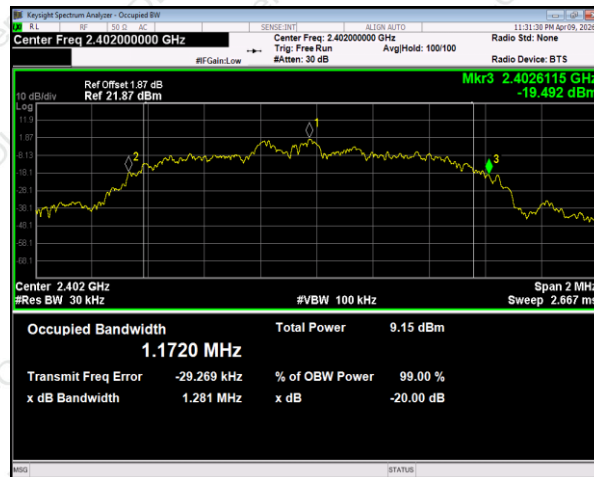
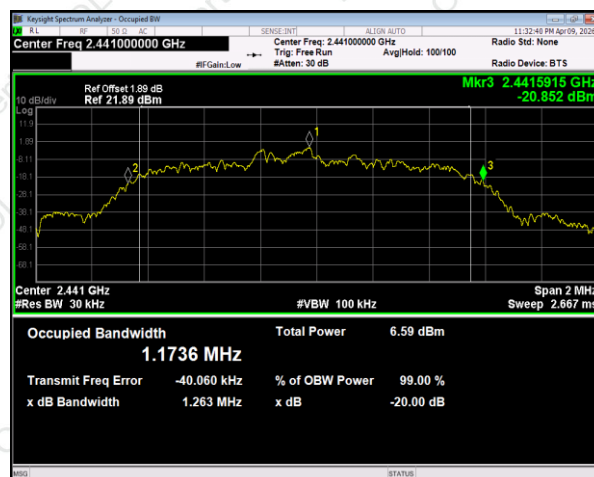


 $\pi/4$ -DQPSK - 2-DH1 Test plots

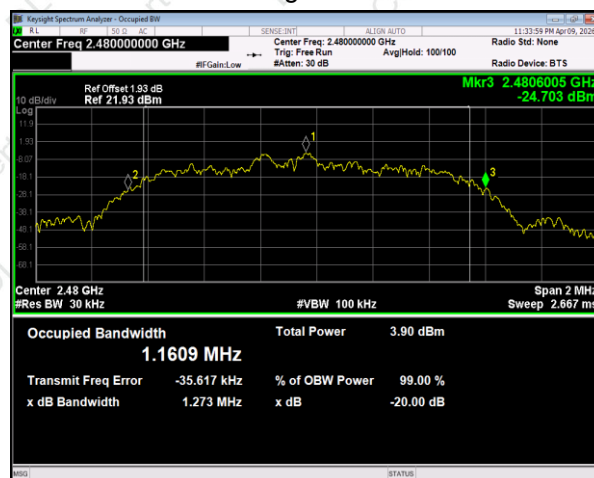
Low Channel



Middle Channel



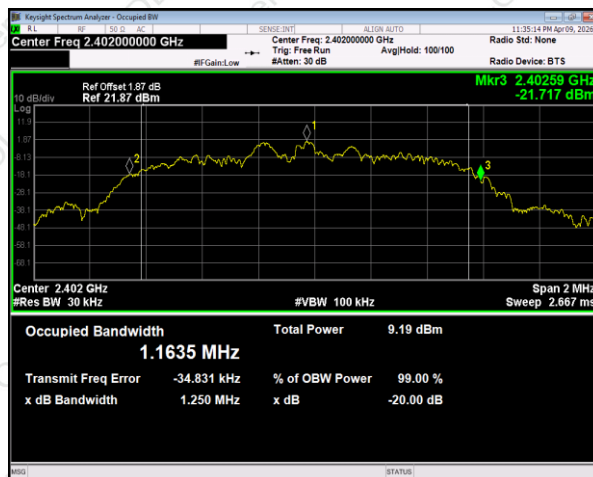
High Channel



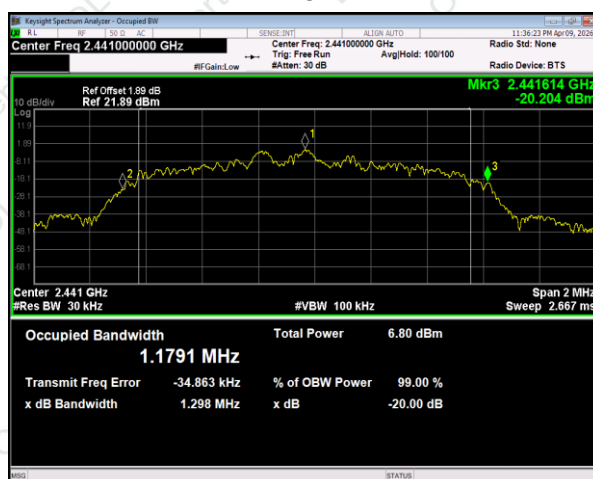


8-DPSK - 3-DH1 Test plots

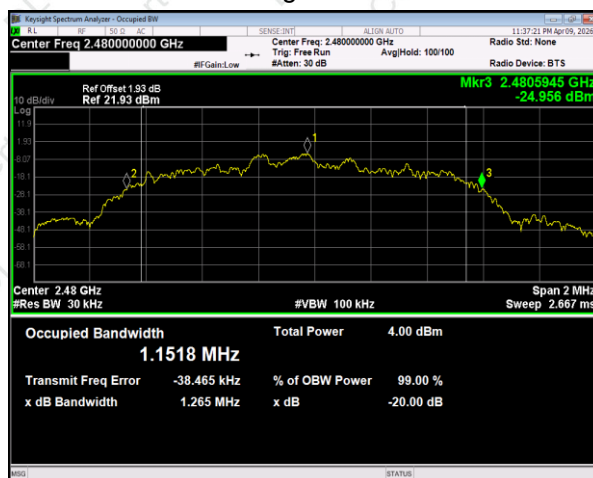
Low Channel



Middle Channel



High Channel

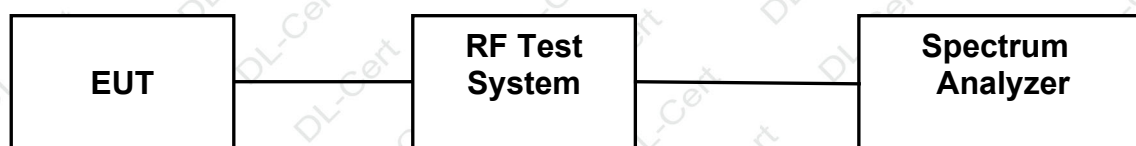




8. Maximum Peak Output Power

Test Requirement:	FCC Part15 C Section 15.247 (b)(1)
Test Method:	ANSI C63.10-2020+Cor 1-2023
Limit:	GFSK & $\pi/4$ -DQPSK & 8-DPSK: 21 dBm

8.1 Block Diagram Of Test Setup



8.2 Limit

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

For FHSs operating in the band 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1.0 W if the hopset uses 75 or more hopping channels; the maximum peak conducted output power shall not exceed 0.125 W if the hopset uses less than 75 hopping channels. The e.i.r.p. shall not exceed 4 W.

8.3 Test procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 2MHz. VBW = 6MHz. Sweep = auto; Detector Function = Peak.
3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

8.4 DEVIATION FROM STANDARD

No deviation.



8.5 Test Result

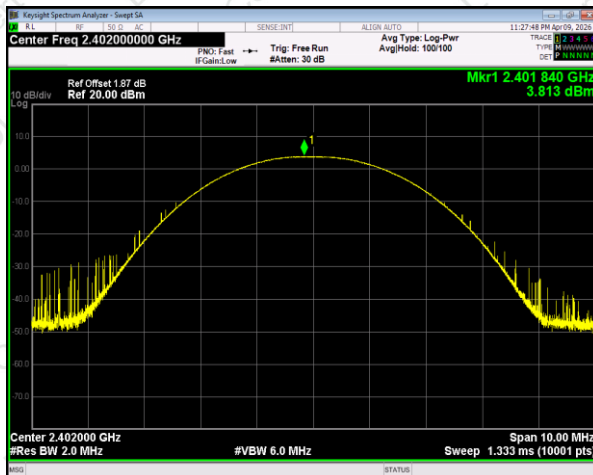
Modulation	Packet	Test Channel	Peak Output Power (dBm)	Limit (dBm)	Result
GFSK	1-DH1	Lowest	3.81	21.00	Pass
		Middle	1.33		
		Highest	-1.47		
$\pi/4$ -DQPSK	2-DH1	Lowest	3.93	21.00	Pass
		Middle	1.37		
		Highest	-1.46		
8-DPSK	3-DH1	Lowest	4.22	21.00	Pass
		Middle	1.52		
		Highest	-1.38		

Remark: The test data shows only the worst case 1-DH1/2DH1/3DH1 with GFSK / $\pi/4$ -DQPSK/8-DPSK.

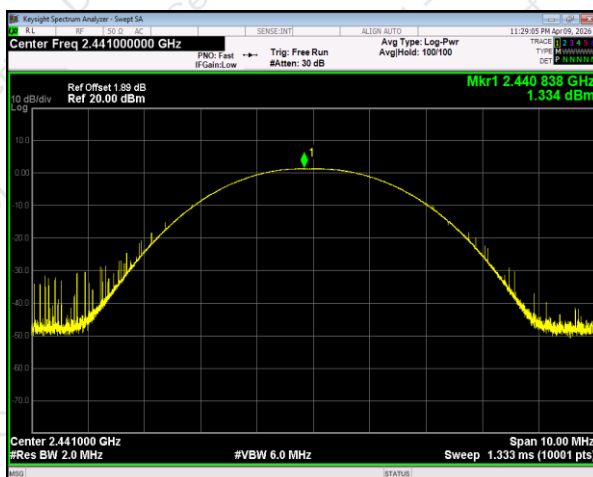


GFSK - 1-DH1 Test plots

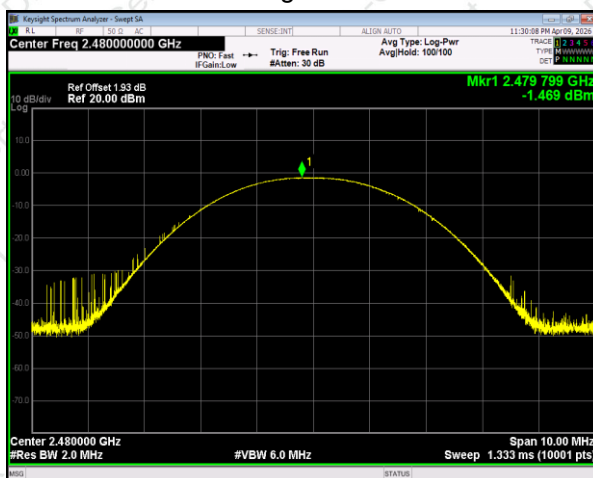
Low Channel



Middle Channel

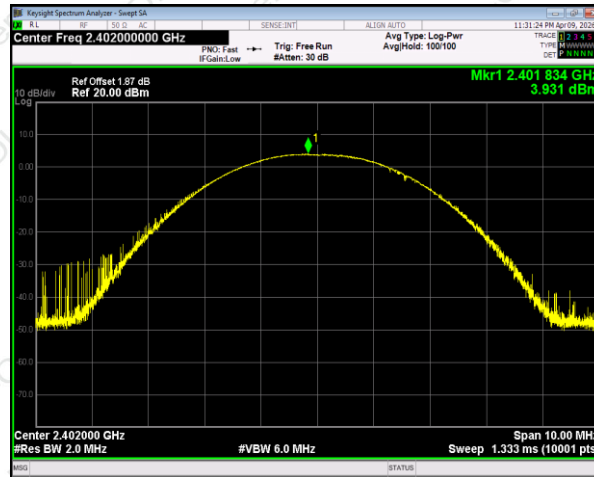


High Channel

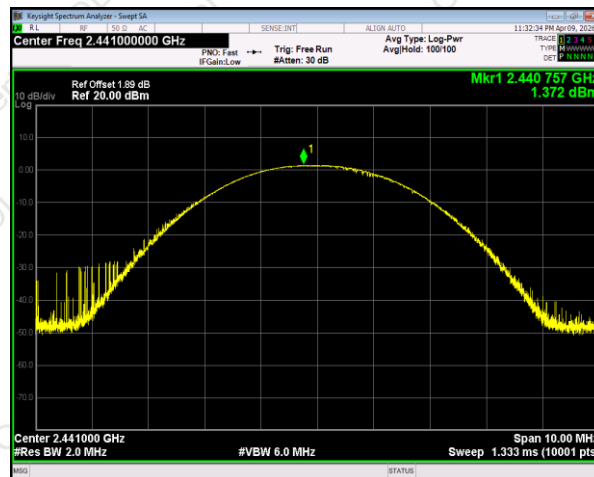


 $\pi/4$ -DQPSK - 2-DH1 Test plots

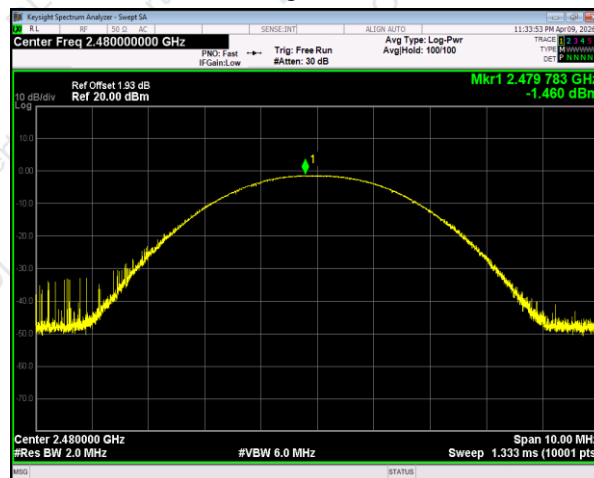
Low Channel



Middle Channel



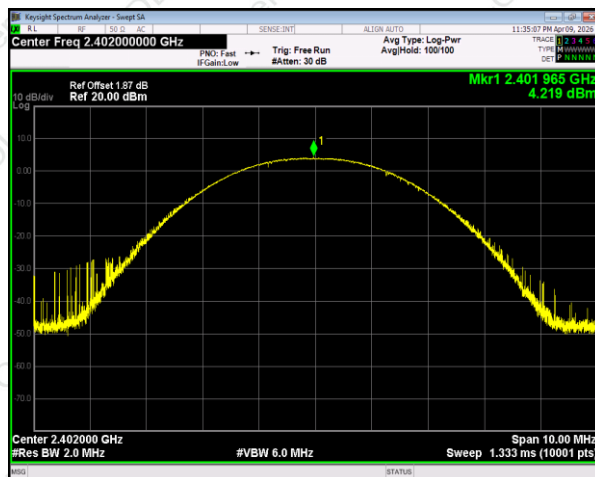
High Channel



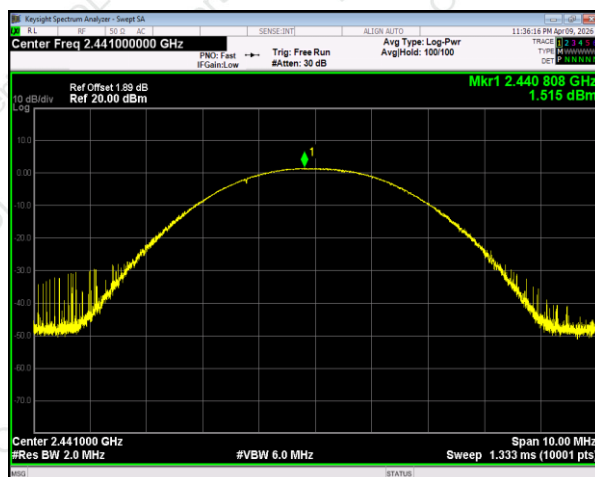


8-DPSK - 3-DH1 Test plots

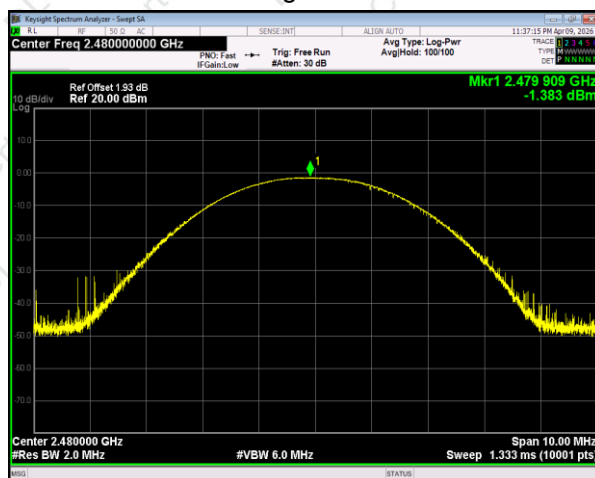
Low Channel



Middle Channel



High Channel

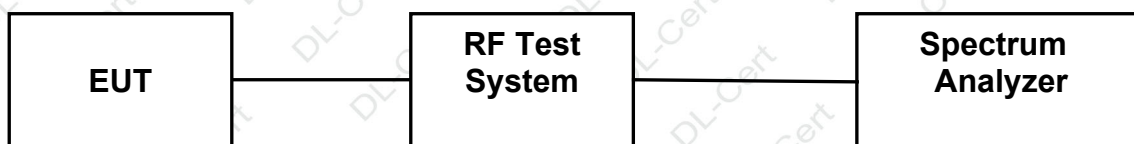




9. HOPPING CHANNEL SEPARATION

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.10-2020+Cor 1-2023
Receiver setup:	RBW=30KHz, VBW=100KHz, detector=Peak
Limit:	GFSK & $\pi/4$ -DQPSK & 8DSK: 0.025MHz or 2/3 of the 20dB bandwidth (whichever is greater)

9.1 Test Setup



9.2 Test procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 30kHz. VBW = 100kHz , Span = 2.0MHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

9.3 DEVIATION FROM STANDARD

No deviation.



9.4 Test Result

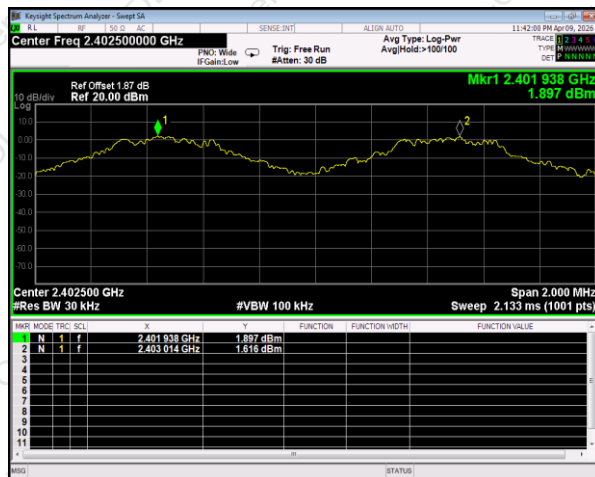
Modulation	Packet	Test Channel	Separation (MHz)	Limit (MHz)	Result
GFSK	1-DH1	Low	1.076	0.627	PASS
		Middle	1.034	0.616	PASS
		High	1.032	0.658	PASS
$\pi/4$ -DQPSK	2-DH1	Low	1.01	0.854	PASS
		Middle	1	0.842	PASS
		High	1	0.849	PASS
8-DPSK	3-DH1	Low	1.004	0.833	PASS
		Middle	1	0.865	PASS
		High	1.002	0.843	PASS

Remark: The test data shows only the worst case 1-DH1/2DH1/3DH1 with GFSK / $\pi/4$ -DQPSK/8-DPSK.

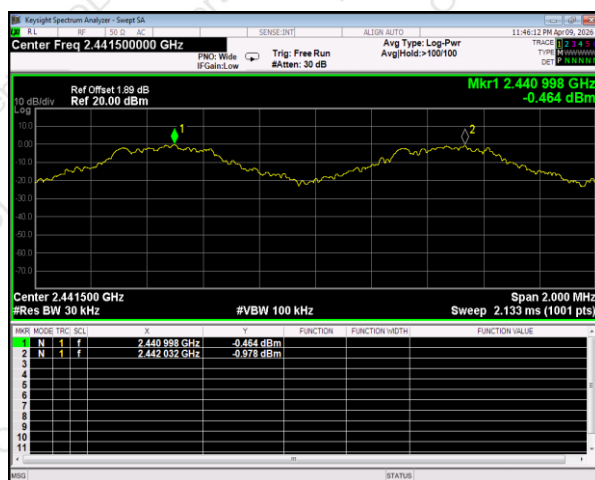


GFSK - 1-DH1 Test plots

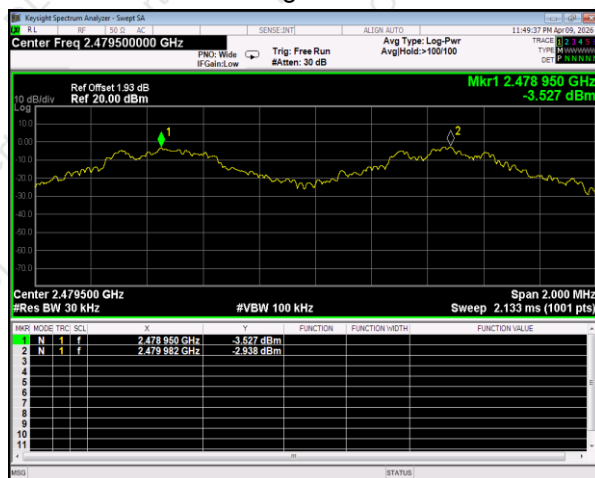
Low Channel



Middle Channel

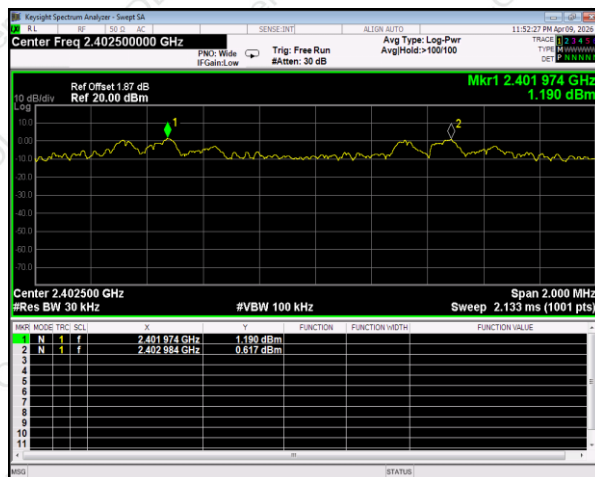


High Channel

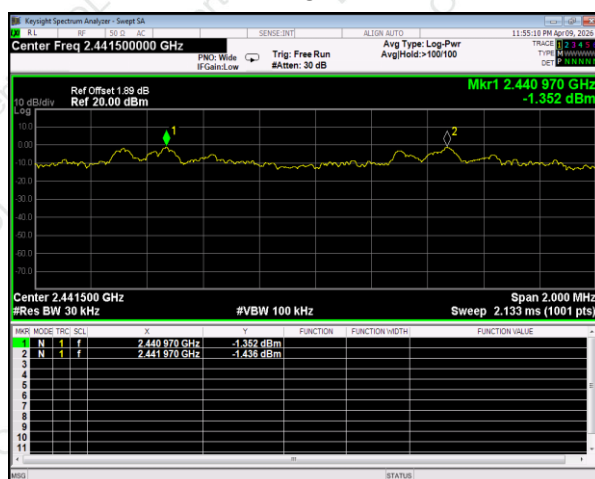


 $\pi/4$ -DQPSK - 2-DH1 Test plots

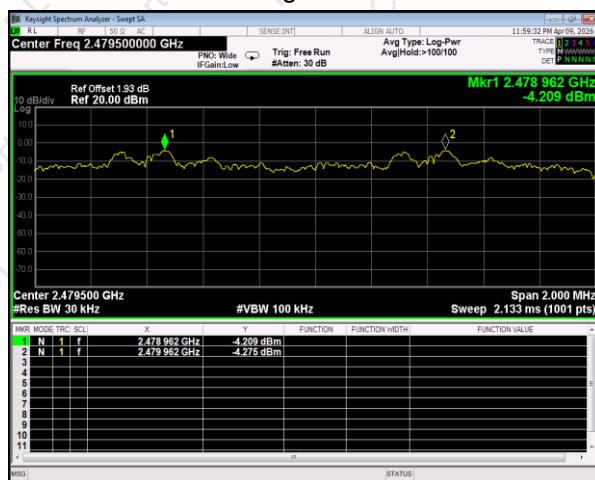
Low Channel



Middle Channel



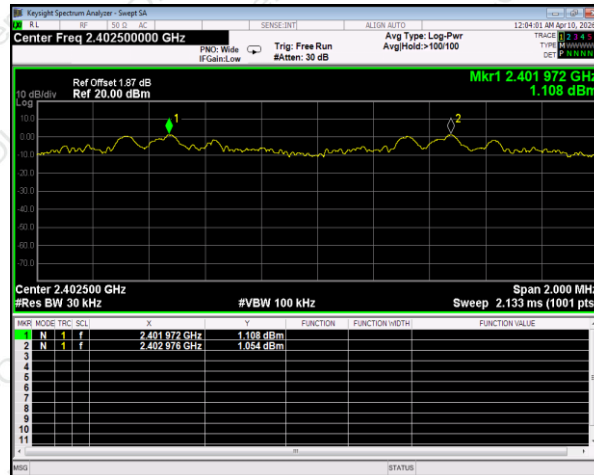
High Channel



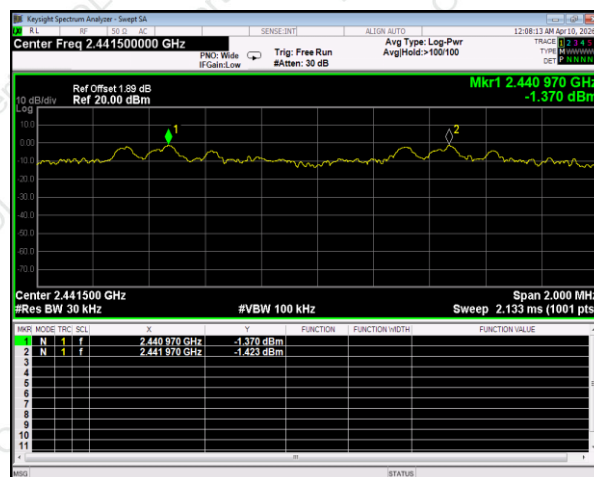


8-DPSK - 3-DH1 Test plots

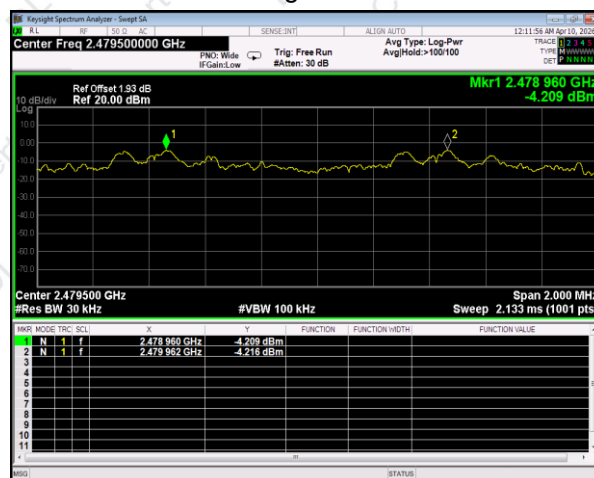
Low Channel



Middle Channel

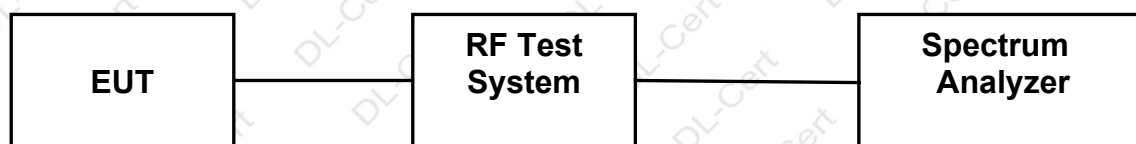


High Channel



**10. NUMBER OF HOPPING FREQUENCY**

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)(iii)
Test Method:	ANSI C63.10-2020+Cor 1-2023
Receiver setup:	RBW=100kHz, VBW=300kHz, Frequency range=2400MHz-2483.5MHz, Detector=Peak
Limit:	15 Channels

10.1 Test Setup**10.2 Test procedure**

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 100kHz. VBW = 300kHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. It may prove necessary to break the span up to sections. in order to clearly show all of the hopping frequencies. The limit is specified in one of the subparagraphs of this Section.
4. Set the spectrum analyzer: Start Frequency = 2.4GHz, Stop Frequency = 2.4835GHz. Sweep=auto;

10.3 DEVIATION FROM STANDARD

No deviation.

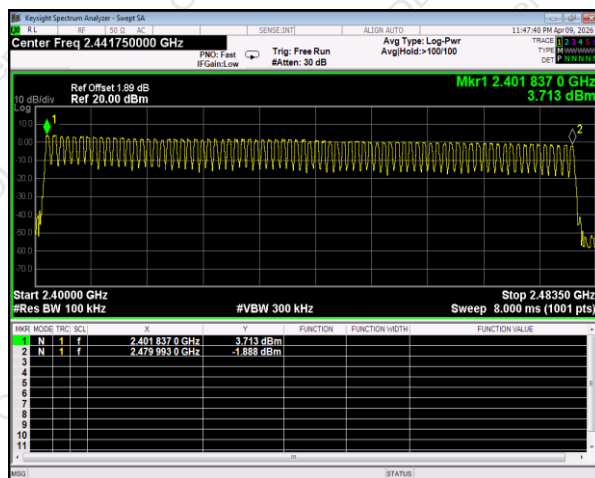
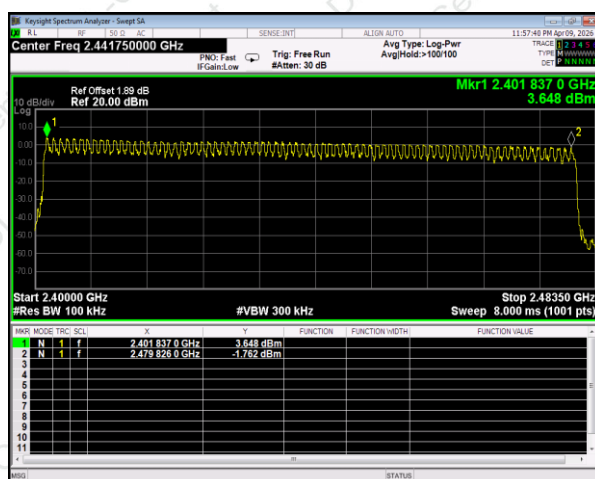


10.4 Test Result

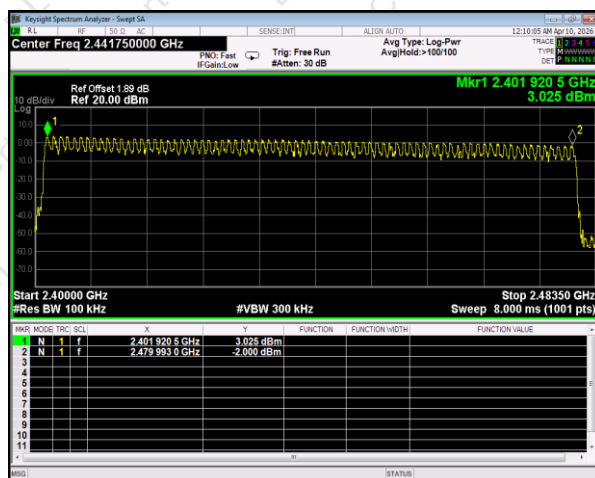
Modulation	Packet	Hopping Number	Limit	Result
GFSK	1-DH1	79	15	Pass
$\pi/4$ -DQPSK	2-DH1	79	15	Pass
8-DPSK	3-DH1	79	15	Pass
Remark: The test data shows only the worst case 1-DH1/2DH1/3DH1 with GFSK / $\pi/4$ -DQPSK/8-DPSK.				



GFSK - 1-DH1 Test Plots

 $\pi/4$ -DQPSK - 2-DH1 Test Plots

8-DPSK - 3-DH1 Test Plots

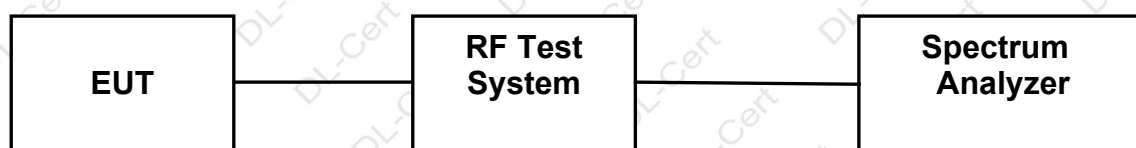




11. DWELL TIME

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)(iii)
Test Method:	ANSI C63.10-2020+Cor 1-2023
Receiver setup:	RBW=1MHz, VBW=3MHz, Span=0Hz, Detector=Peak
Limit:	0.4 Second

11.1 Test Setup



11.2 Test procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set spectrum analyzer span = 0Hz;
3. Set RBW = 1MHz and VBW = 3MHz. Sweep = as necessary to capture the entire dwell time per hopping channel. Set the EUT for DH5, DH3 and DH1 packet transmitting.
4. Use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s).

11.3 DEVIATION FROM STANDARD

No deviation.



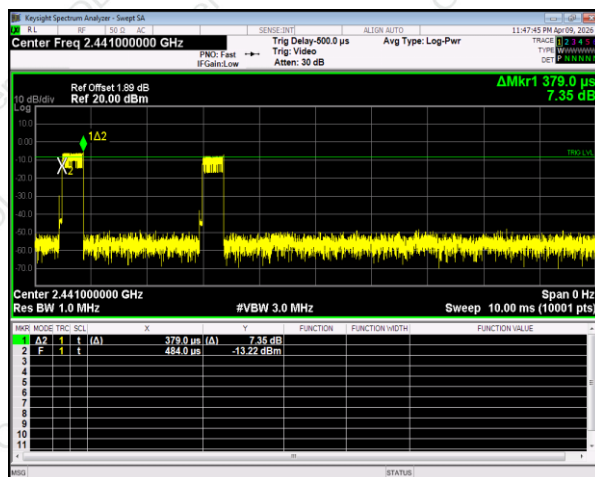
11.4 Test Result

Mode	Frequency (MHz)	Pulse Time (ms)	Total Dwell Time (ms)	Burst Count	Period Time (ms)	Limit (ms)	Verdict
1-DH1		0.379	120.901	319	31600	400	Pass
1-DH3	2441	1.644	261.396	159	31600	400	Pass
1-DH5	2441	2.891	306.446	106	31600	400	Pass
2-DH1	2441	0.386	122.748	318	31600	400	Pass
2-DH3	2441	1.638	263.718	161	31600	400	Pass
2-DH5	2441	2.886	352.092	122	31600	400	Pass
3-DH1	2441	0.386	123.134	319	31600	400	Pass
3-DH3	2441	1.636	251.944	154	31600	400	Pass
3-DH5	2441	2.887	337.779	117	31600	400	Pass

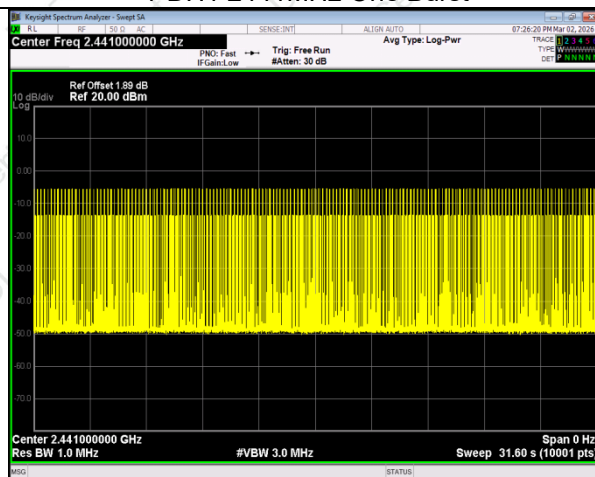
Note: Total Dwell Time (ms) = Pulse Time (ms)*Burst Count



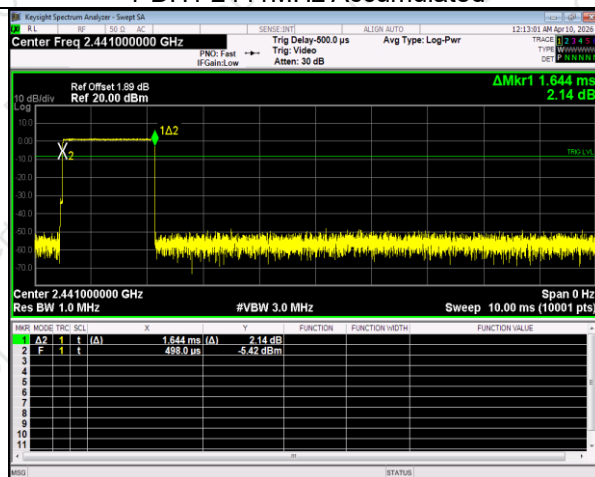
Test Plots



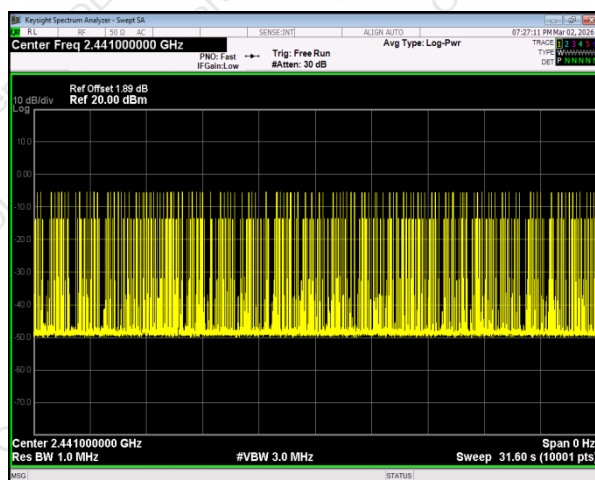
1-DH1 2441MHz One Burst



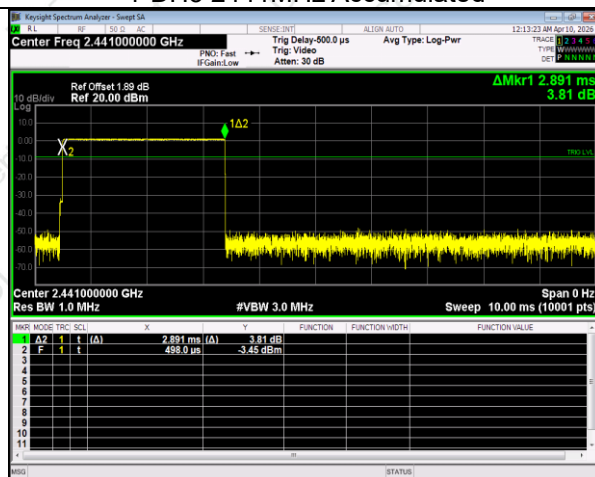
1-DH1 2441MHz Accumulated



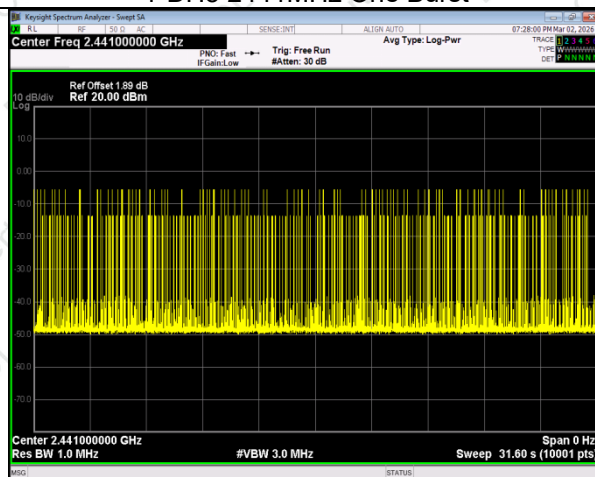
1-DH3 2441MHz One Burst



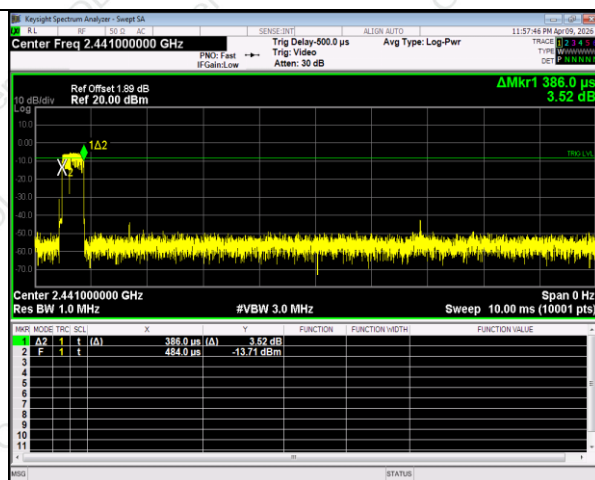
1-DH3 2441MHz Accumulated



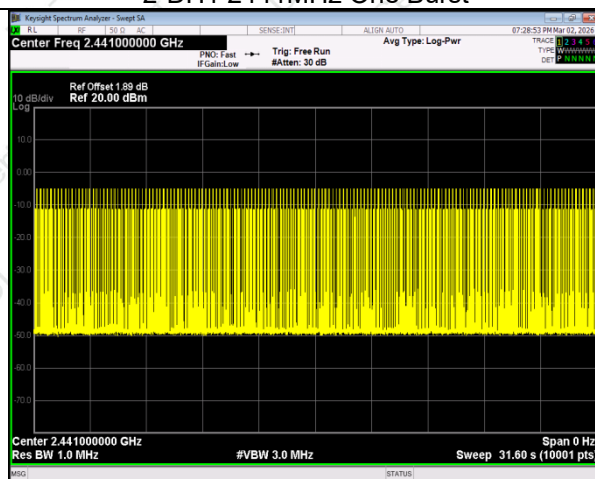
1-DH5 2441MHz One Burst



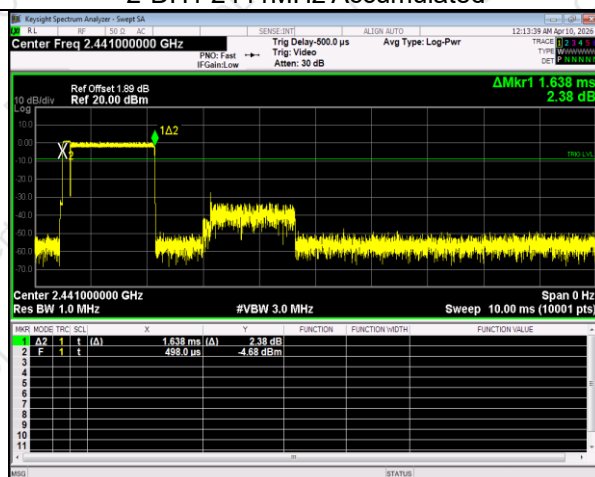
1-DH5 2441MHz Accumulated



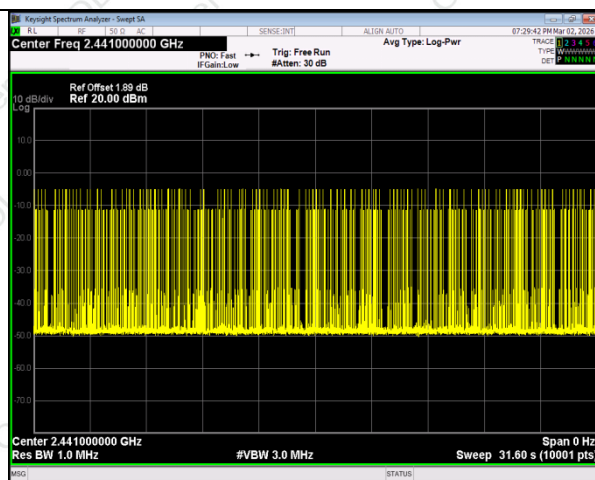
2-DH1 2441MHz One Burst



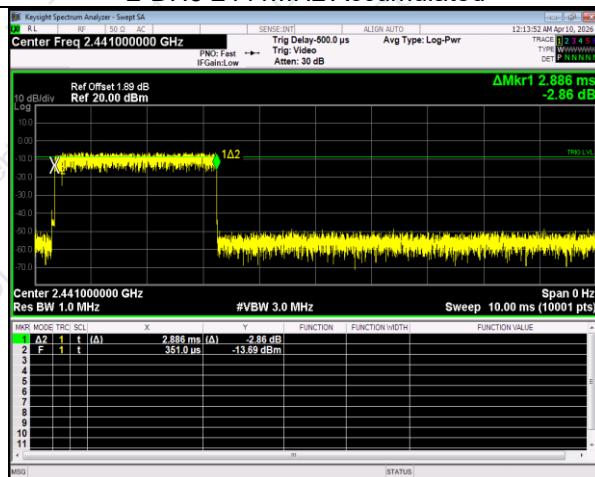
2-DH1 2441MHz Accumulated



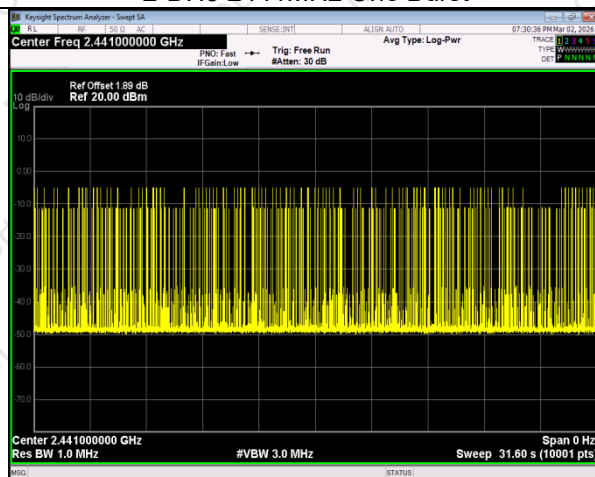
2-DH3 2441MHz One Burst



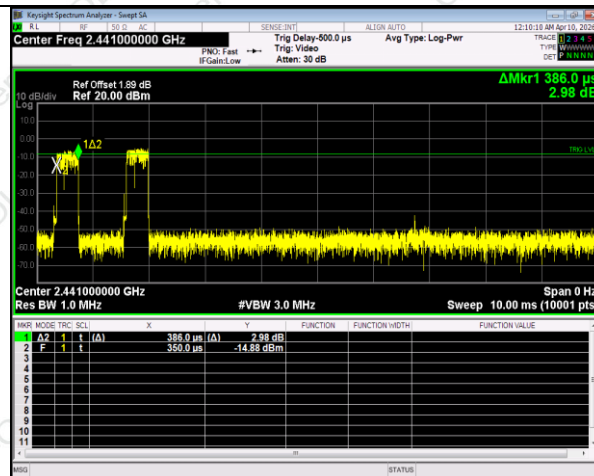
2-DH3 2441MHz Accumulated



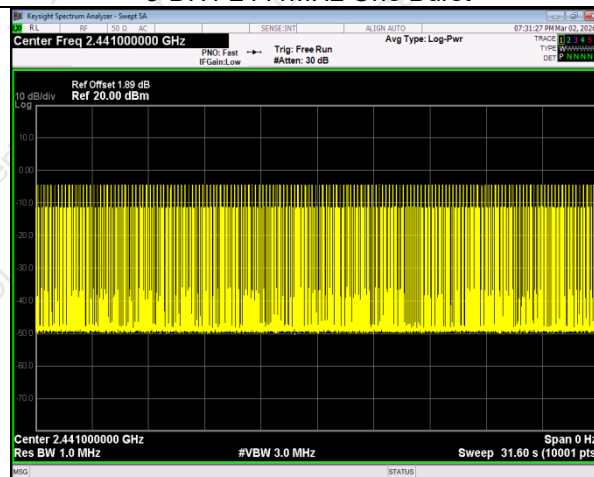
2-DH5 2441MHz One Burst



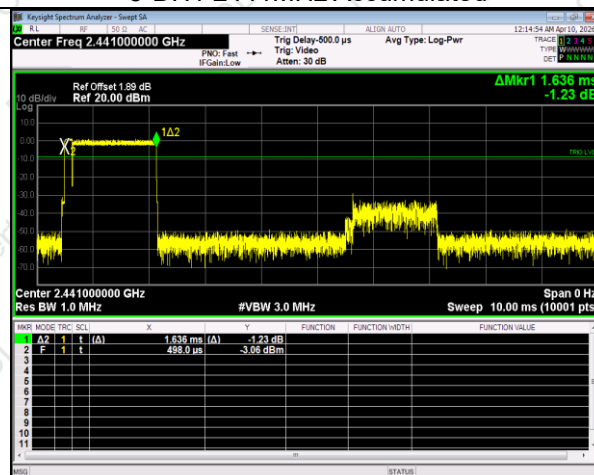
2-DH5 2441MHz Accumulated



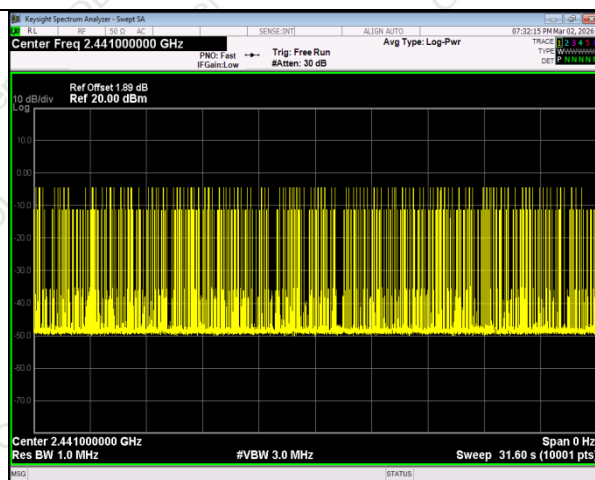
3-DH1 2441MHz One Burst



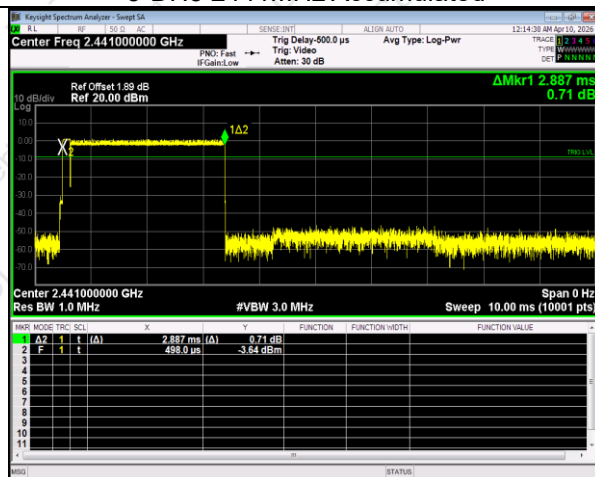
3-DH1 2441MHz Accumulated



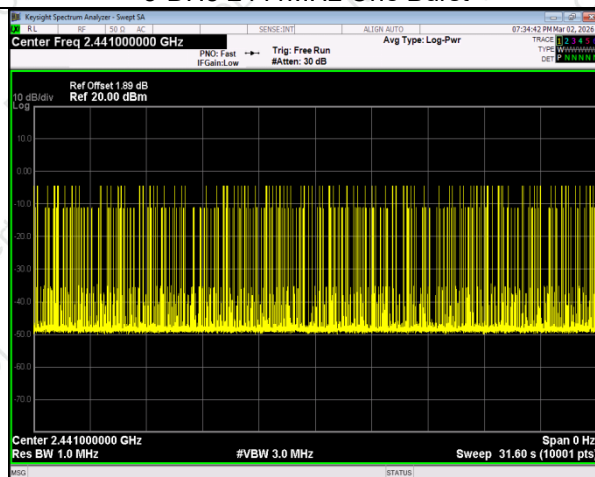
3-DH3 2441MHz One Burst



3-DH3 2441MHz Accumulated



3-DH5 2441MHz One Burst



3-DH5 2441MHz Accumulated

**12. Antenna Requirement**

Standard requirement:	FCC Part15 C Section 15.203 /247(b)(4)
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.	
15.247(b)(4) requirement: (4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.	
EUT Antenna:	
The antenna is Internal antenna, the best case gain of the antennas is 1.7dBi, reference to the appendix II for details.	



13. Test Setup Photo

Reference to the appendix I for details.

14. EUT Constructional Details

Reference to the appendix II for details.

***** END OF REPORT *****