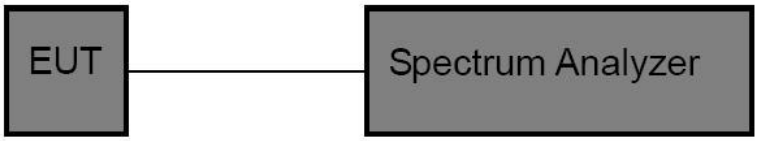
11 Number of Hopping Channel Test

11.1 Test Standard and Limit

Test Standard	FCC Part15 C Section 15.247 (a)(1)
Test Limit	>15 channels

11.2 Test Setup



11.3 Test Procedure

The EUT must have its hopping function enabled. Using the following spectrum analyzer setting:

1. Span= the frequency band of operation
2. Set the RBW = 300kHz.
3. Set the VBW = 300kHz.
4. Sweep time = auto couple.
5. Detector function = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.

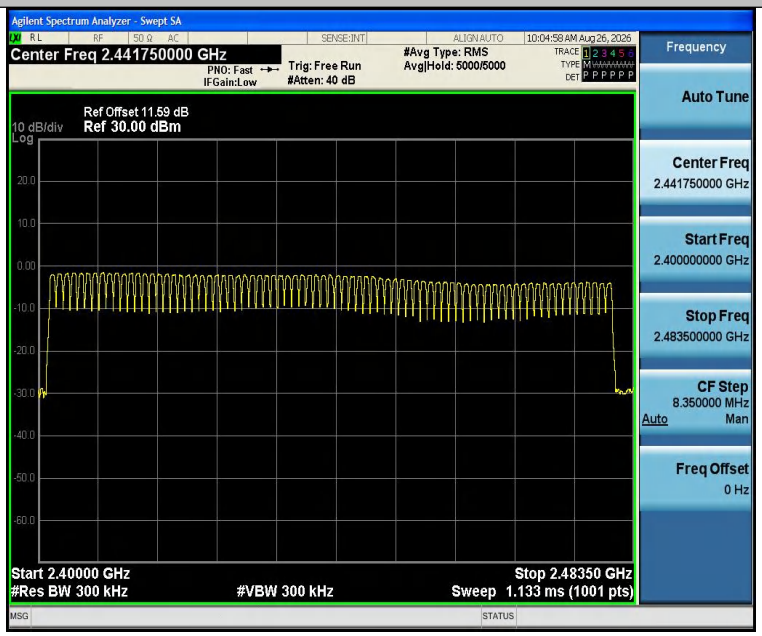
11.4 Test Data

Test Item	:	Number of Hopping Frequency	Test Mode	:	CH Low ~ CH High
Test Voltage	:	AC120V	Temperature	:	24.5℃
Test Result	:	PASS	Humidity	:	55%RH

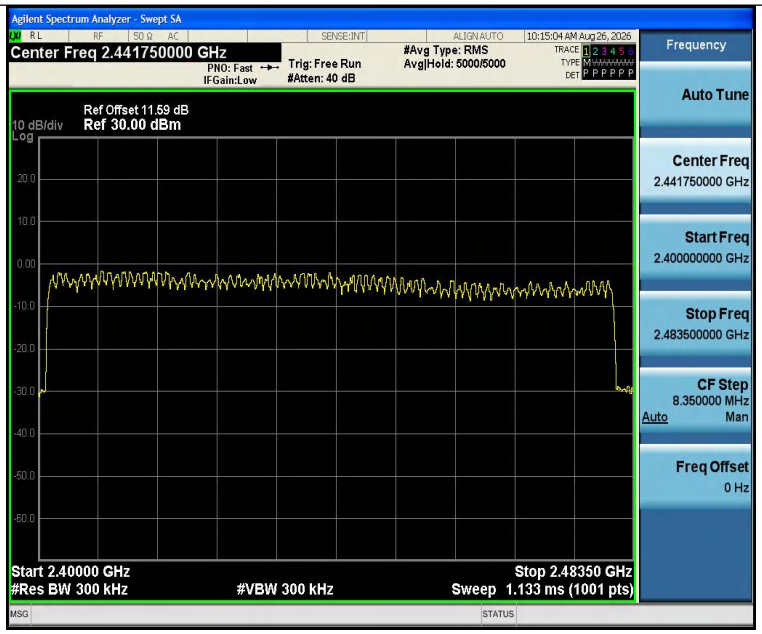
TestMode	Antenna	Frequency[MHz]	Result[Num]	Limit[Num]	Verdict
DH5	ANT1	Hop	79	≥15	PASS
2DH5	ANT1	Hop	79	≥15	PASS
3DH5	ANT1	Hop	79	≥15	PASS

Test Graphs:

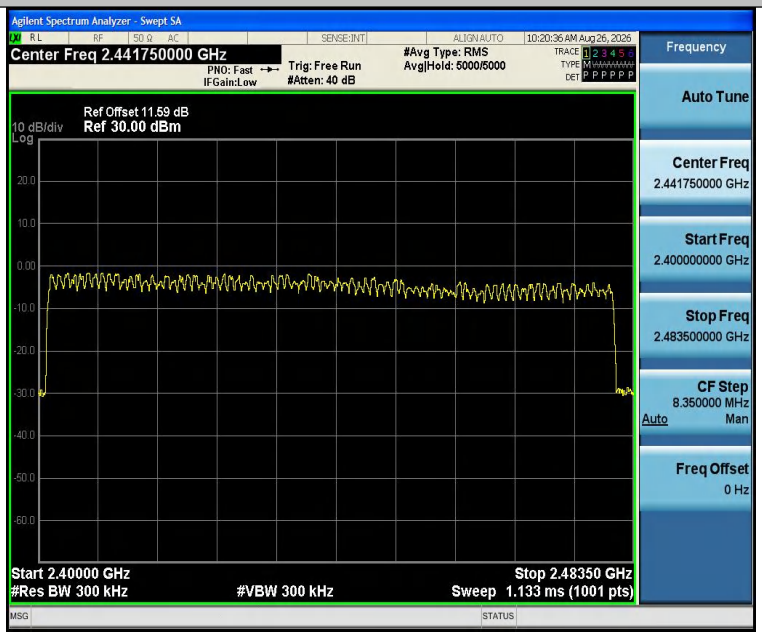
DH5-Ant1-Hop-PASS



2DH5-Ant1-Hop-PASS



3DH5-Ant1-Hop-PASS

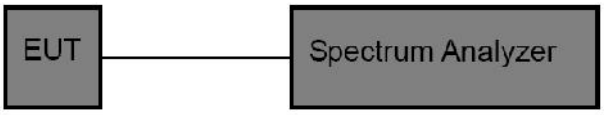


12 Dwell Time Test

12.1 Test Standard and Limit

Test Standard	FCC Part15 C Section 15.247 (a)(1)
Test Limit	0.4 sec

12.2 Test Setup



12.3 Test Procedure

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

1. Span= zero span, centered on a hopping channel
2. Set the RBW = 1 MHz.
3. Set the VBW = 3 MHz.
4. Sweep time = as necessary to capture the entire dwell time per hopping channel.
5. Detector function = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.

12.4 Test Data

Test Item	:	Time of Occupancy	Test Mode	:	CH Low ~ CH High
Test Voltage	:	AC120V	Temperature	:	24.5℃
Test Result	:	PASS	Humidity	:	55%RH

TestMode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	2.867	106.67	0.306	≤0.4	PASS
2DH5	Ant1	Hop	2.879	106.67	0.307	≤0.4	PASS
3DH5	Ant1	Hop	2.880	106.67	0.307	≤0.4	PASS
DH1	Ant1	Hop	0.370	320	0.118	≤0.4	PASS
2DH1	Ant1	Hop	0.379	320	0.121	≤0.4	PASS
3DH1	Ant1	Hop	0.379	320	0.121	≤0.4	PASS
DH3	Ant1	Hop	1.620	160	0.259	≤0.4	PASS
2DH3	Ant1	Hop	1.630	160	0.261	≤0.4	PASS
3DH3	Ant1	Hop	1.630	160	0.261	≤0.4	PASS

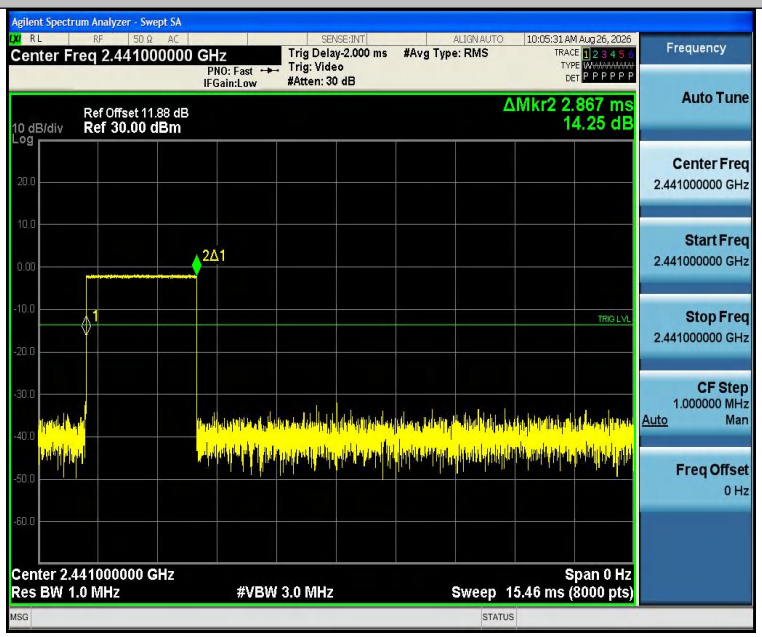
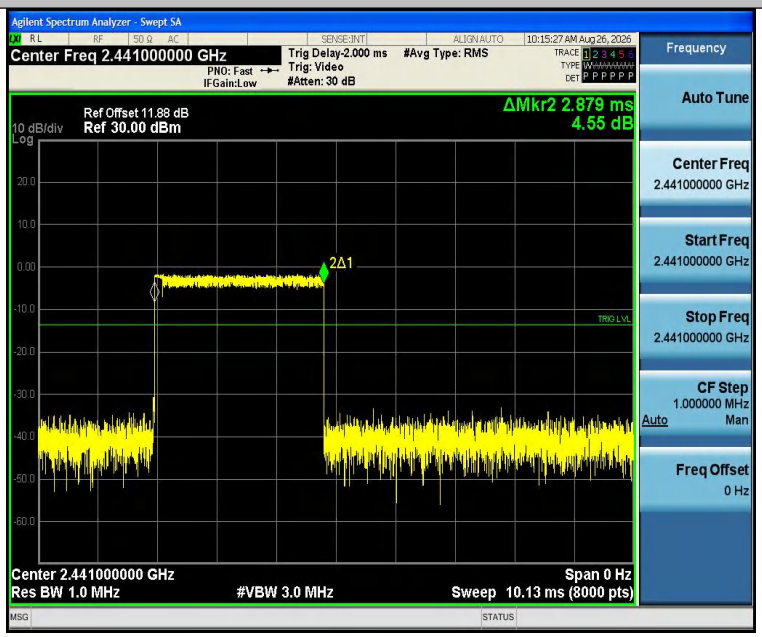
Note:

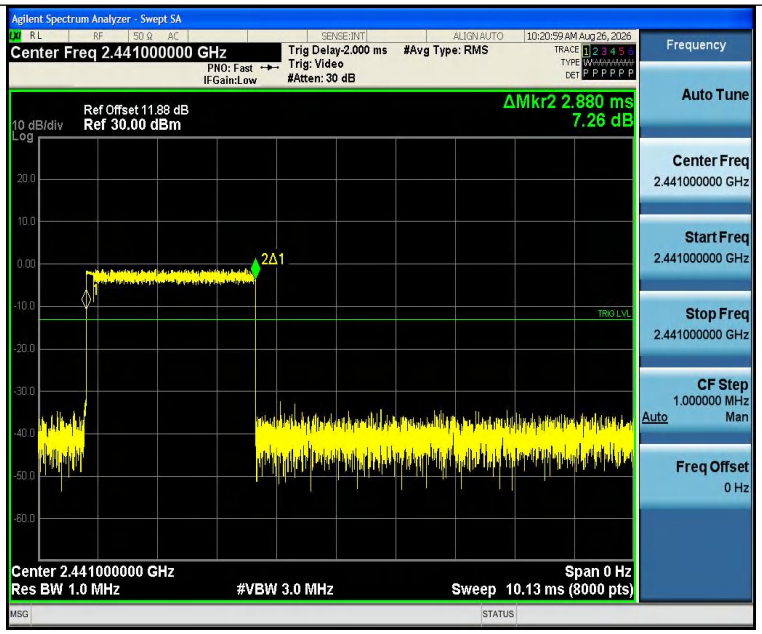
1.DH1/2DH1 Dwell Time: Reading * (1600/2)*31.6/(channel number).

2.DH3/2DH3 Dwell Time: Reading * (1600/4)*31.6/(channel number).

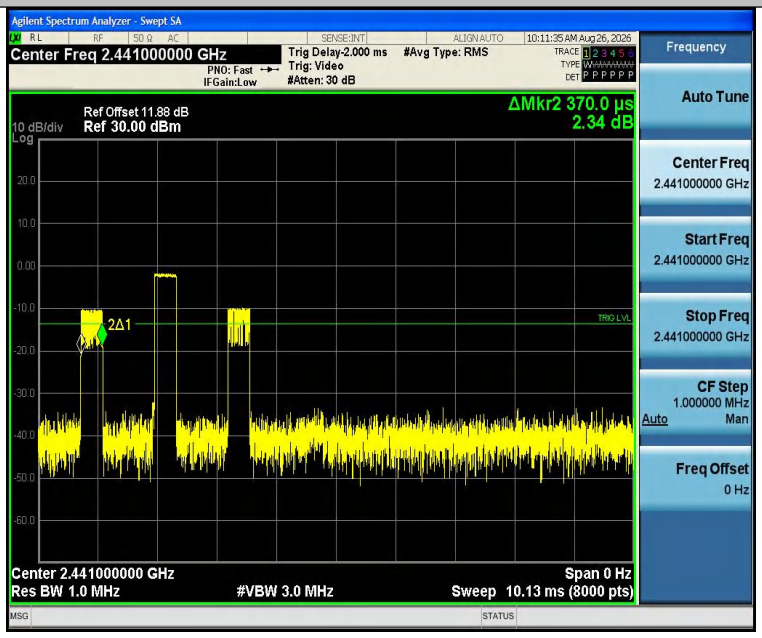
3.DH5/2DH5 Dwell Time: Reading * (1600/6)*31.6/(channel number).

Test Graphs:

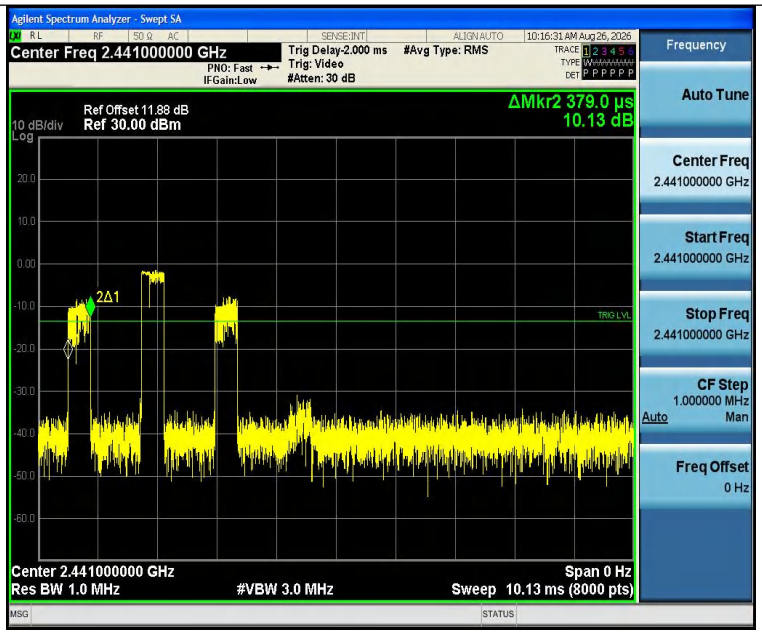
DH5-Ant1-Hop-PASS

2DH5-Ant1-Hop-PASS

3DH5-Ant1-Hop-PASS



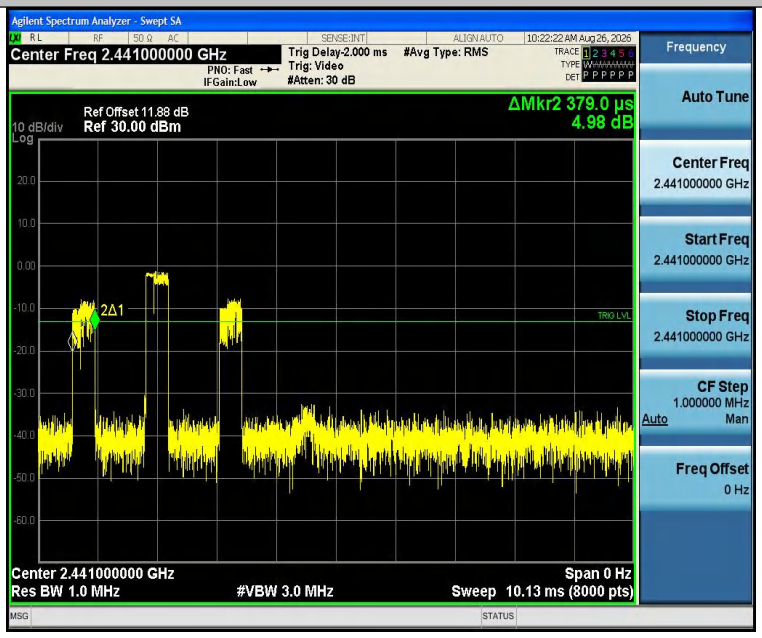
DH1-Ant1-Hop-PASS



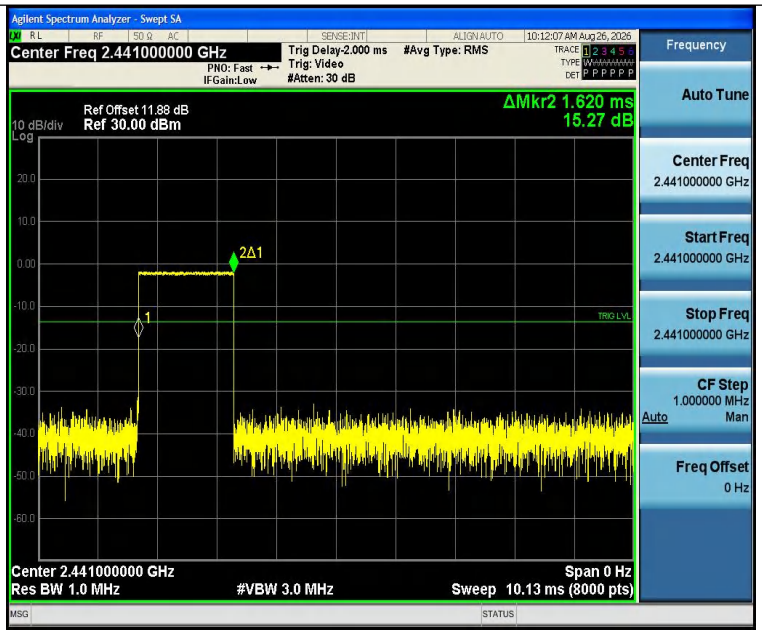
2DH1-Ant1-Hop-PASS



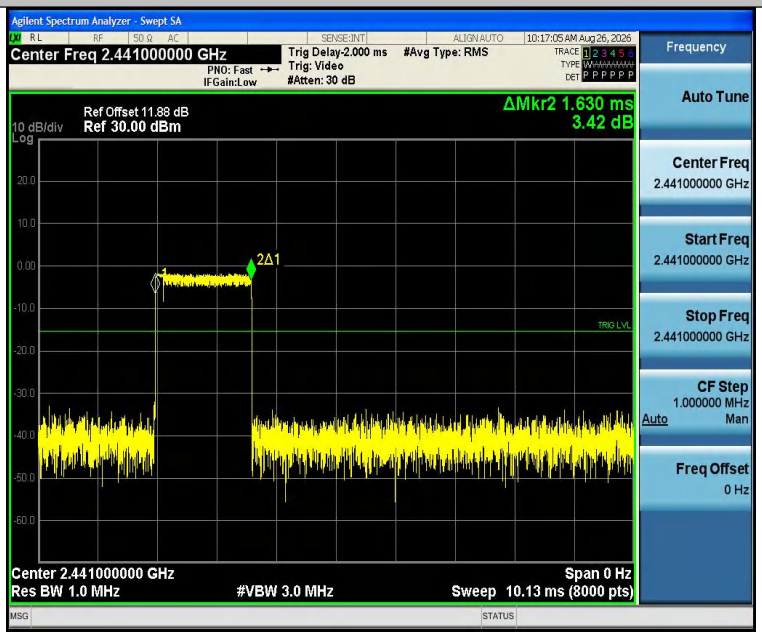
3DH1-Ant1-Hop-PASS



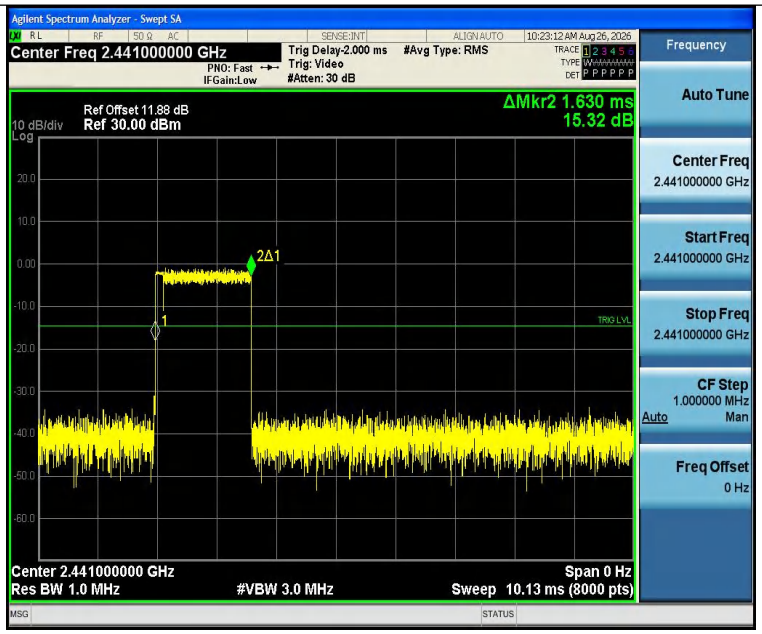
DH3-Ant1-Hop-PASS



2DH3-Ant1-Hop-PASS



3DH3-Ant1-Hop-PASS

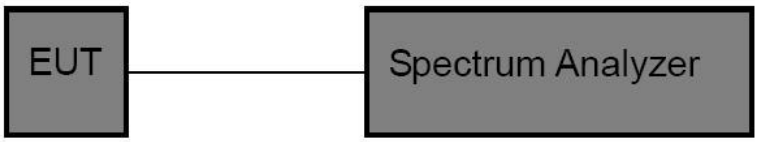

Agilent Spectrum Analyzer - Swept SA
Center Freq 2.441000000 GHz
PNO: Fast
IFGain:Low
Trig Delay-2.000 ms
Trig: Video
#Avg Type: RMS
#Atten: 30 dB
10:23:12 AM Aug 26, 2026
Ref Offset 11.88 dB
10 dB/div
Log
Ref 30.00 dBm
ΔMkr2 1.630 ms
15.32 dB
2Δ1
1
TRIG LVL
Center 2.441000000 GHz
Res BW 1.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 10.13 ms (8000 pts)
Frequency
Auto Tune
Center Freq
2.441000000 GHz
Start Freq
2.441000000 GHz
Stop Freq
2.441000000 GHz
CF Step
1.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

13 100kHz Bandwidth of Frequency Band Edge Requirement

13.1 Test Standard and Limit

Test Standard	FCC Part15 C Section 15.247 (d)
Test Limit	in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a).

13.2 Test Setup



13.3 Test Procedure

The EUT must have its hopping/Non-hopping function enabled. Using the following spectrum analyzer setting:

1. Set the RBW = 100kHz.

2. Set the VBW = 300kHz.

3. Sweep time = auto couple.

4. Detector function = peak.

5. Trace mode = max hold.

6. Allow trace to fully stabilize.

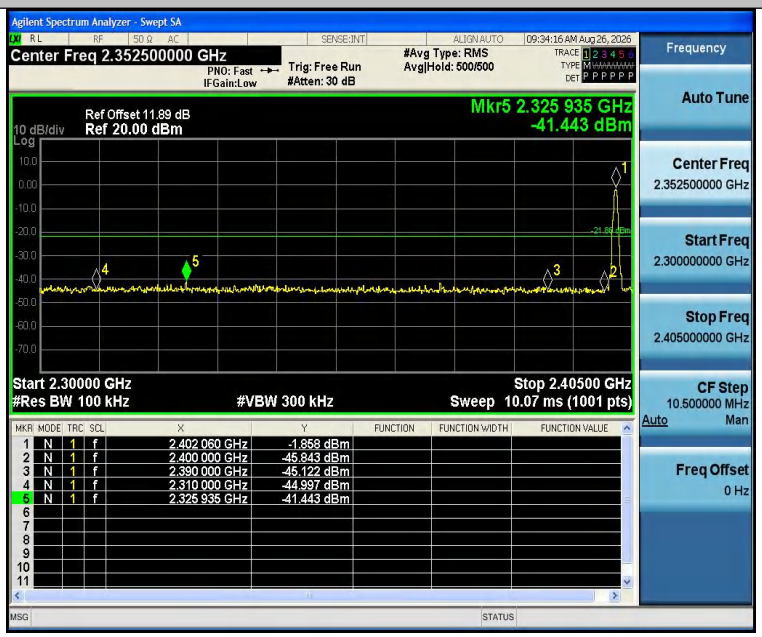
13.4 Test Data

Test Item	:	Band edge	Test Mode	:	CH Low ~ CH High
Test Voltage	:	AC120V	Temperature	:	24.5℃
Test Result	:	PASS	Humidity	:	55%RH

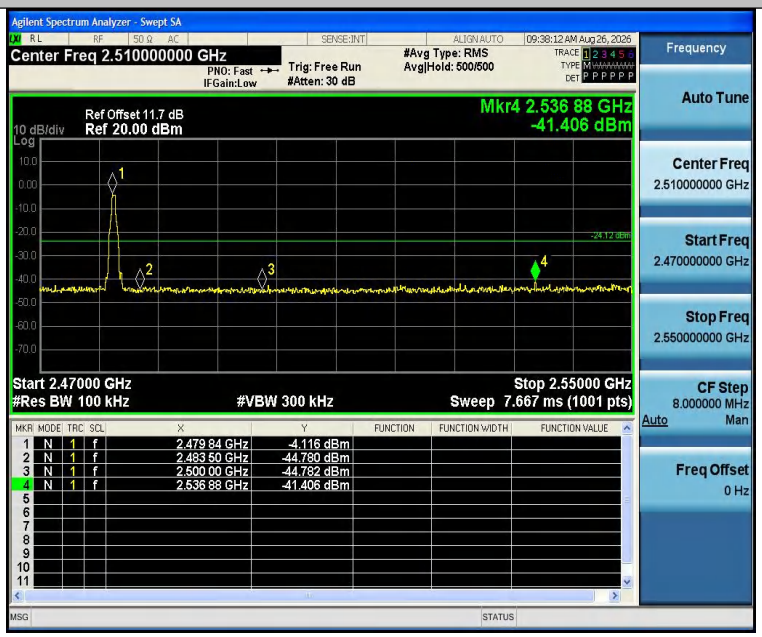
TestMode	Antenna	ChName	Frequency[MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	-1.86	-41.44	≤-21.86	PASS
DH5	Ant1	High	2480	-4.12	-41.41	≤-24.12	PASS
DH5	Ant1	Low	Hop_2402	-2.88	-42.71	≤-22.88	PASS
DH5	Ant1	High	Hop_2480	-4.07	-41.72	≤-24.07	PASS
2DH5	Ant1	Low	2402	-2.08	-41.71	≤-22.08	PASS
2DH5	Ant1	High	2480	-4.34	-41.77	≤-24.34	PASS
2DH5	Ant1	Low	Hop_2402	-2.54	-42.38	≤-22.54	PASS
2DH5	Ant1	High	Hop_2480	-5.25	-41.82	≤-25.25	PASS
3DH5	Ant1	Low	2402	-3.02	-41.56	≤-23.02	PASS
3DH5	Ant1	High	2480	-4.57	-42.18	≤-24.57	PASS
3DH5	Ant1	Low	Hop_2402	-2.23	-42.09	≤-22.23	PASS
3DH5	Ant1	High	Hop_2480	-3.92	-41.75	≤-23.92	PASS

Test Graphs:

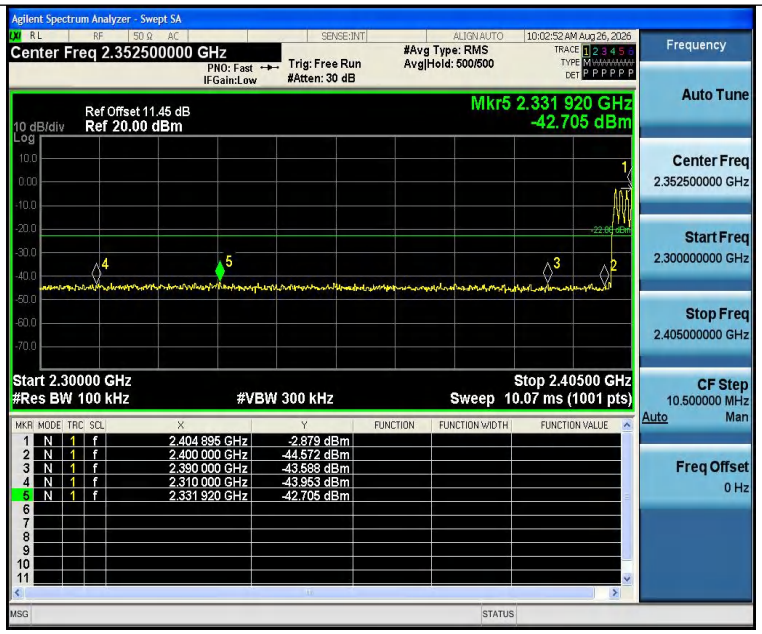
DH5-Ant1-2402-PASS



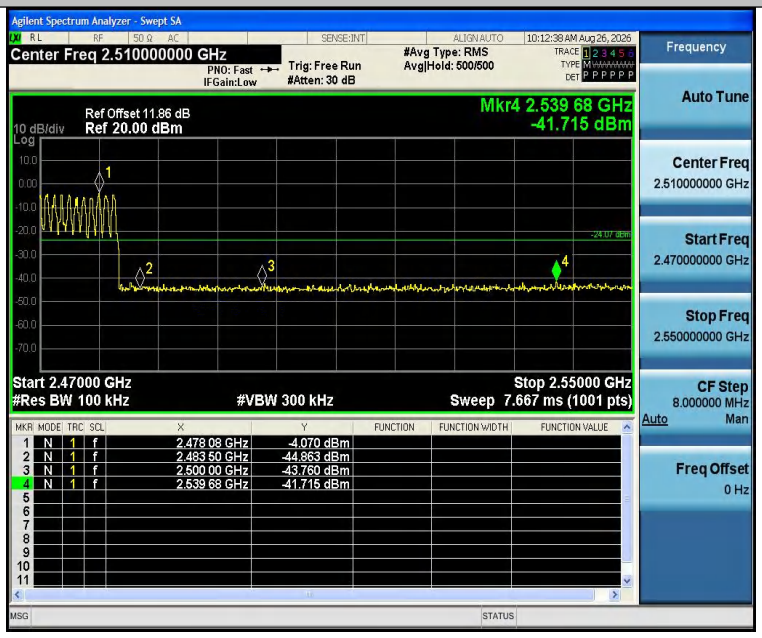
DH5-Ant1-2480-PASS



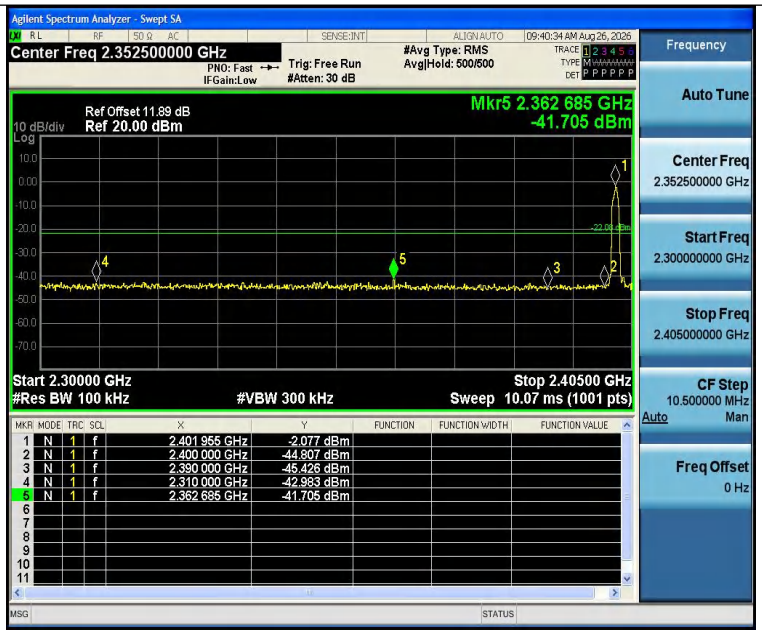
DH5-Ant1-Hop_2402-PASS



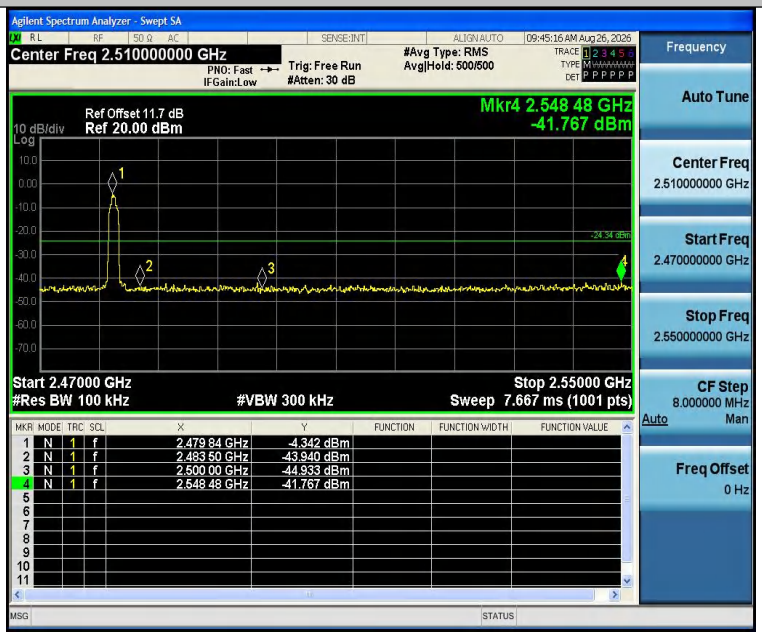
DH5-Ant1-Hop_2480-PASS



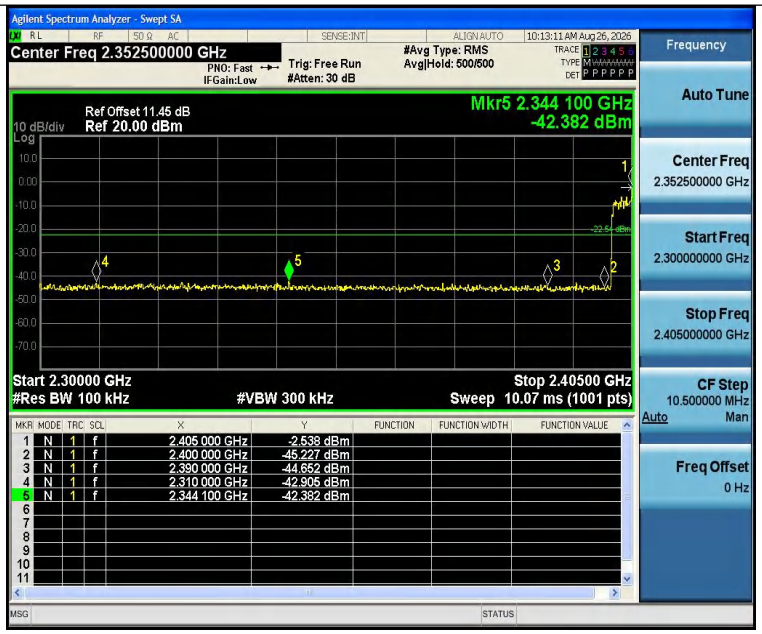
2DH5-Ant1-2402-PASS



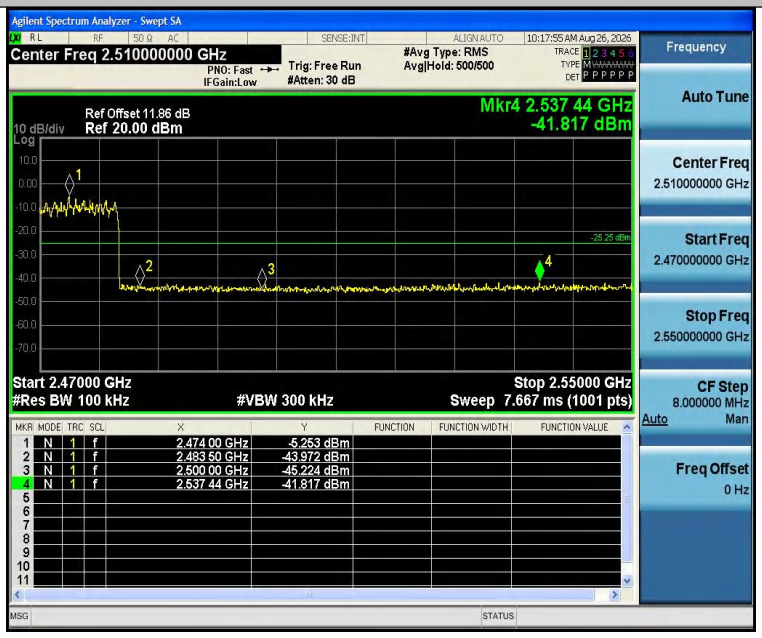
2DH5-Ant1-2480-PASS



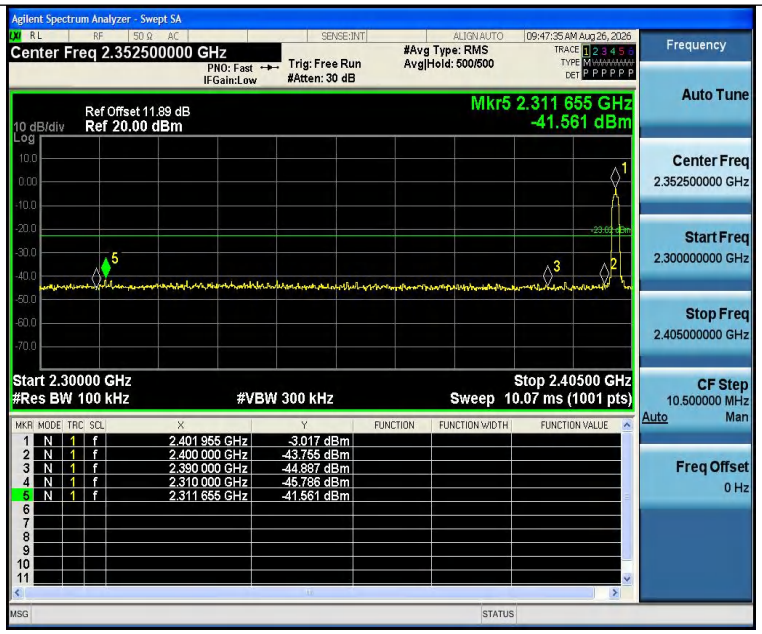
2DH5-Ant1-Hop_2402-PASS



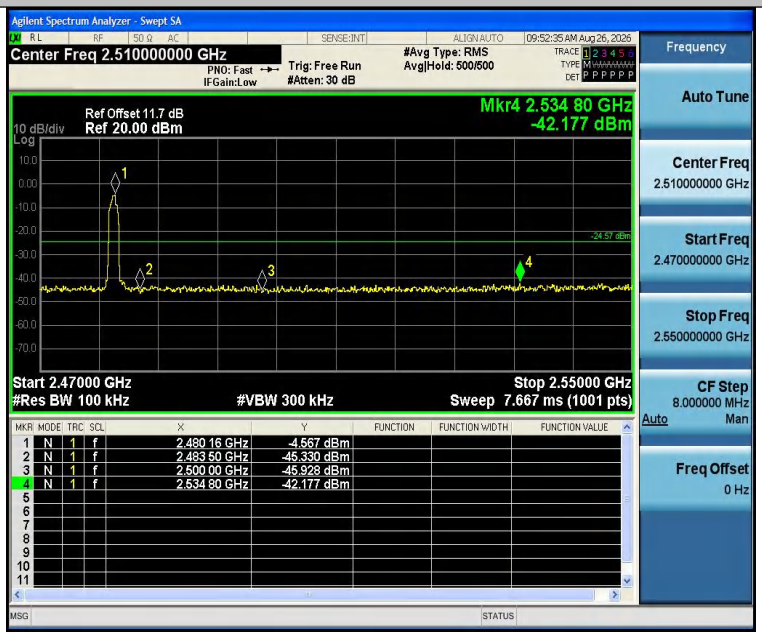
2DH5-Ant1-Hop_2480-PASS



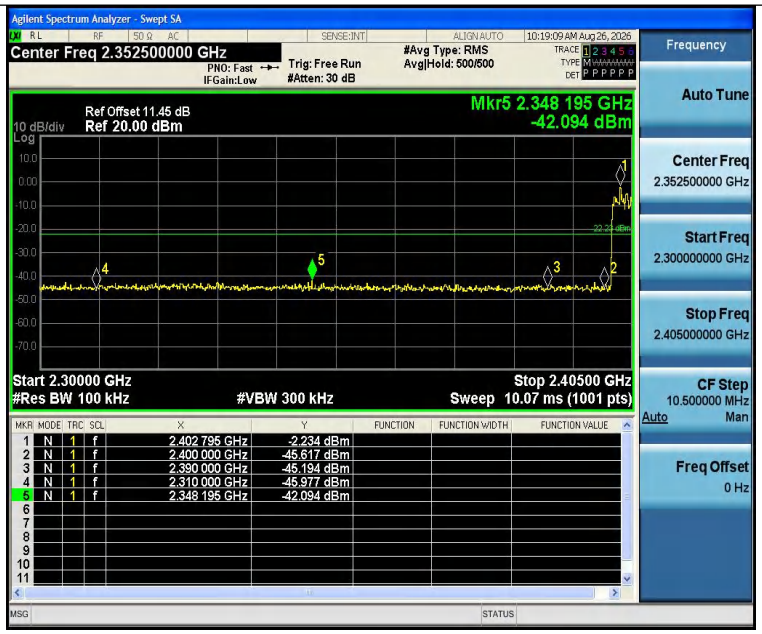
3DH5-Ant1-2402-PASS



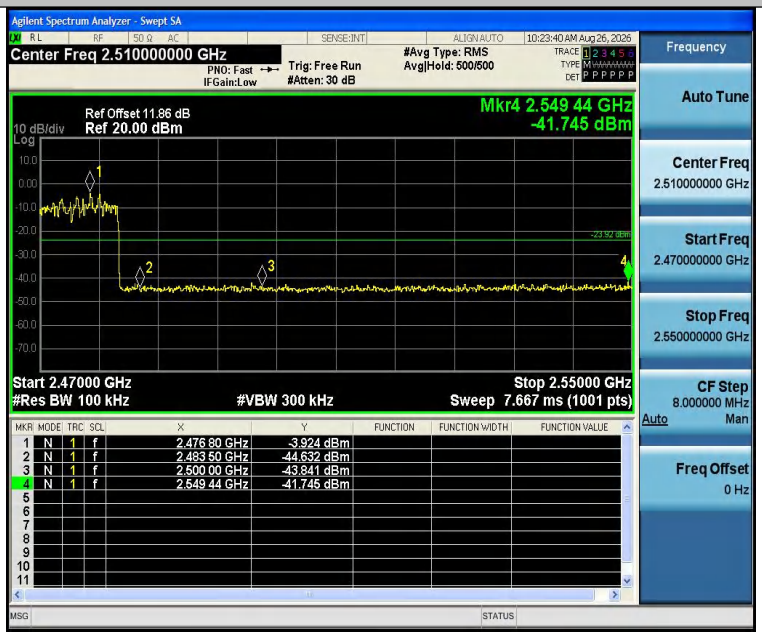
3DH5-Ant1-2480-PASS



3DH5-Ant1-Hop_2402-PASS



3DH5-Ant1-Hop_2480-PASS



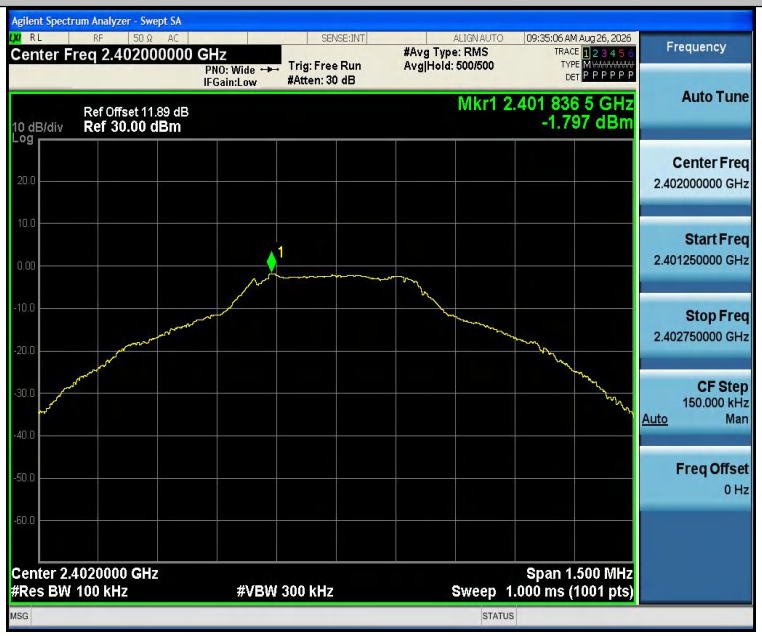
Conducted Emission Method

Test Result

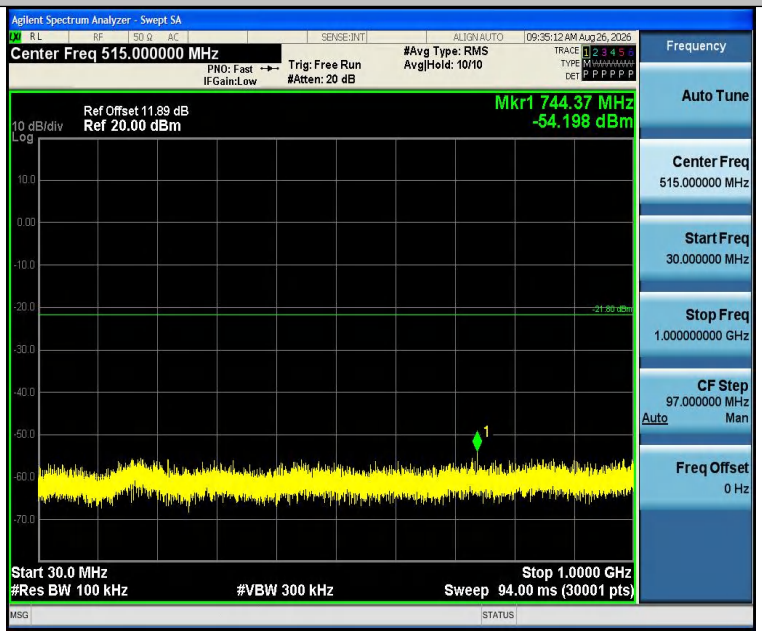
TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	0~Reference	-1.80	-1.80	---	PASS
DH5	Ant1	2402	30~1000	-1.80	-54.2	≤-21.8	PASS
DH5	Ant1	2402	1000~26500	-1.80	-42.2	≤-21.8	PASS
DH5	Ant1	2441	0~Reference	-2.03	-2.03	---	PASS
DH5	Ant1	2441	30~1000	-2.03	-54.39	≤-22.03	PASS
DH5	Ant1	2441	1000~26500	-2.03	-40.74	≤-22.03	PASS
DH5	Ant1	2480	0~Reference	-4.15	-4.15	---	PASS
DH5	Ant1	2480	30~1000	-4.15	-54.36	≤-24.15	PASS
DH5	Ant1	2480	1000~26500	-4.15	-41.31	≤-24.15	PASS
2DH5	Ant1	2402	0~Reference	-1.99	-1.99	---	PASS
2DH5	Ant1	2402	30~1000	-1.99	-53.8	≤-21.99	PASS
2DH5	Ant1	2402	1000~26500	-1.99	-43.12	≤-21.99	PASS
2DH5	Ant1	2441	0~Reference	-2.32	-2.32	---	PASS
2DH5	Ant1	2441	30~1000	-2.32	-53.94	≤-22.32	PASS
2DH5	Ant1	2441	1000~26500	-2.32	-41.95	≤-22.32	PASS
2DH5	Ant1	2480	0~Reference	-4.68	-4.68	---	PASS
2DH5	Ant1	2480	30~1000	-4.68	-53.4	≤-24.68	PASS
2DH5	Ant1	2480	1000~26500	-4.68	-43.15	≤-24.68	PASS
3DH5	Ant1	2402	0~Reference	-1.96	-1.96	---	PASS
3DH5	Ant1	2402	30~1000	-1.96	-53.79	≤-21.96	PASS
3DH5	Ant1	2402	1000~26500	-1.96	-42.12	≤-21.96	PASS
3DH5	Ant1	2441	0~Reference	-2.22	-2.22	---	PASS
3DH5	Ant1	2441	30~1000	-2.22	-54.81	≤-22.22	PASS
3DH5	Ant1	2441	1000~26500	-2.22	-42.19	≤-22.22	PASS
3DH5	Ant1	2480	0~Reference	-4.32	-4.32	---	PASS
3DH5	Ant1	2480	30~1000	-4.32	-53.57	≤-24.32	PASS
3DH5	Ant1	2480	1000~26500	-4.32	-42.38	≤-24.32	PASS

Test Graphs:

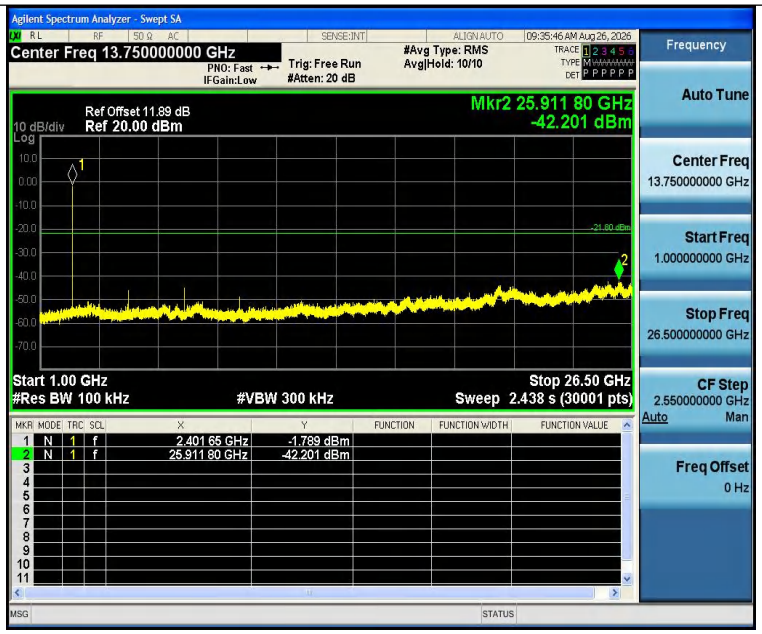
DH5-Ant1-2402-0~Reference-PASS



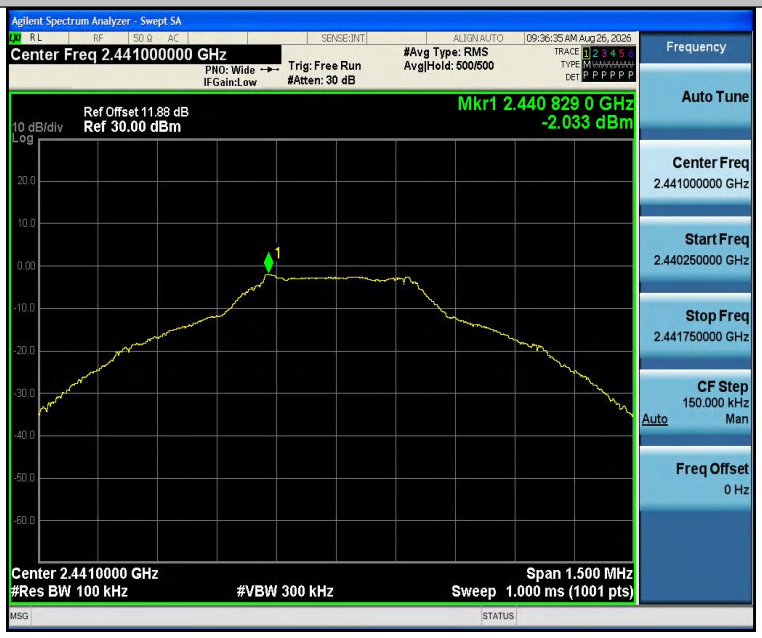
DH5-Ant1-2402-30~1000-PASS



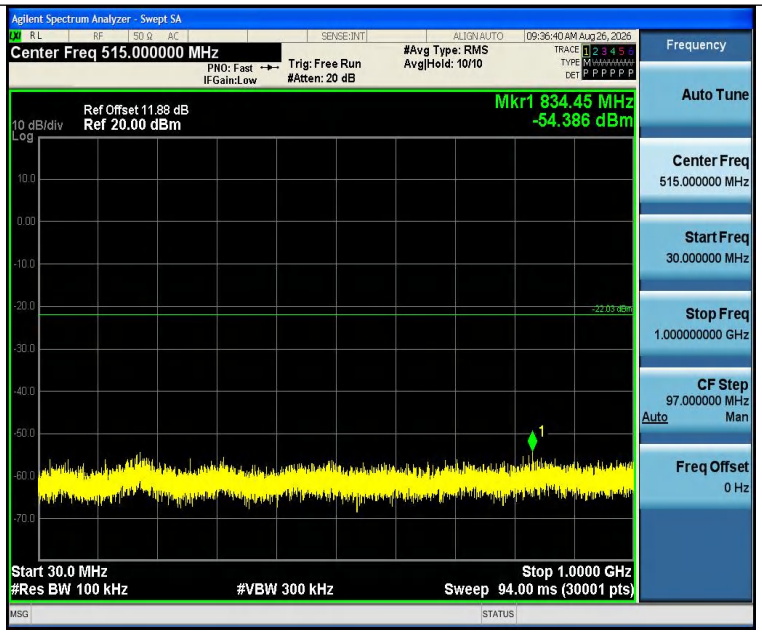
DH5-Ant1-2402-1000~26500-PASS



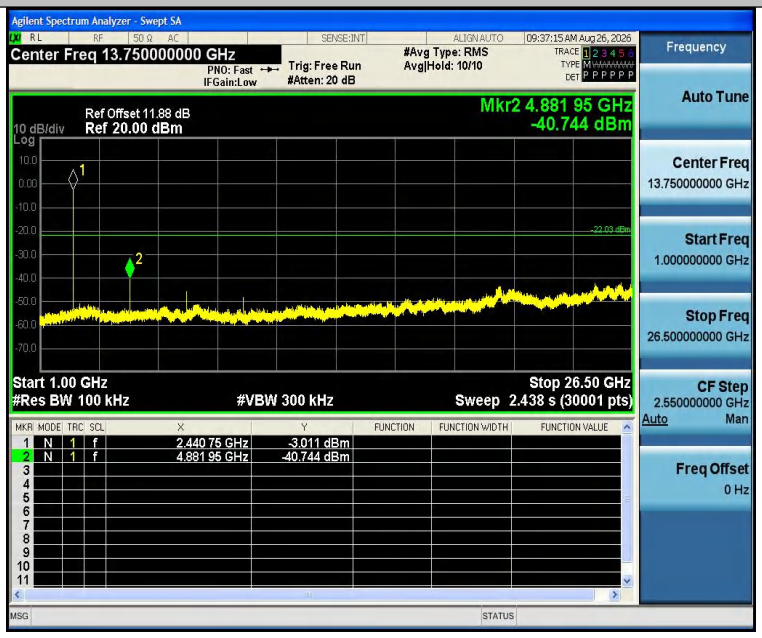
DH5-Ant1-2441-0~Reference-PASS



DH5-Ant1-2441-30~1000-PASS

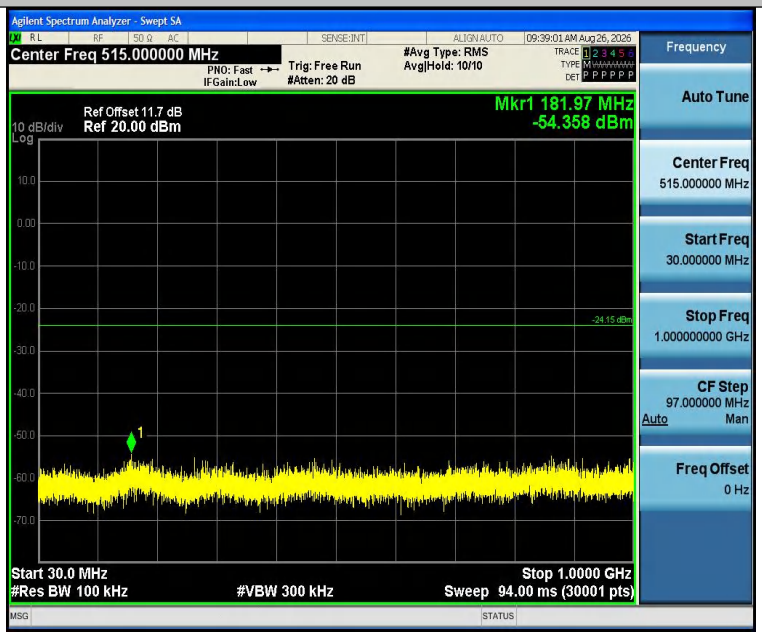


DH5-Ant1-2441-1000~26500-PASS

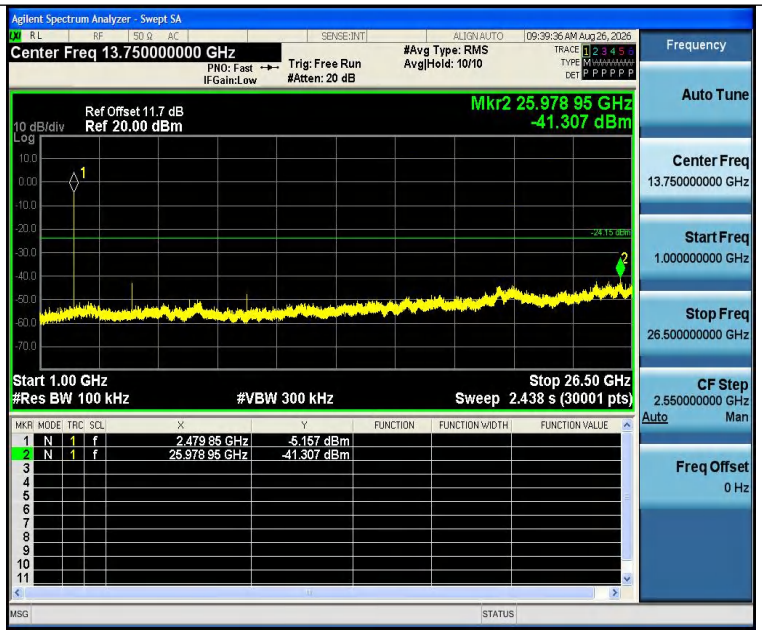


DH5-Ant1-2480-0~Reference-PASS

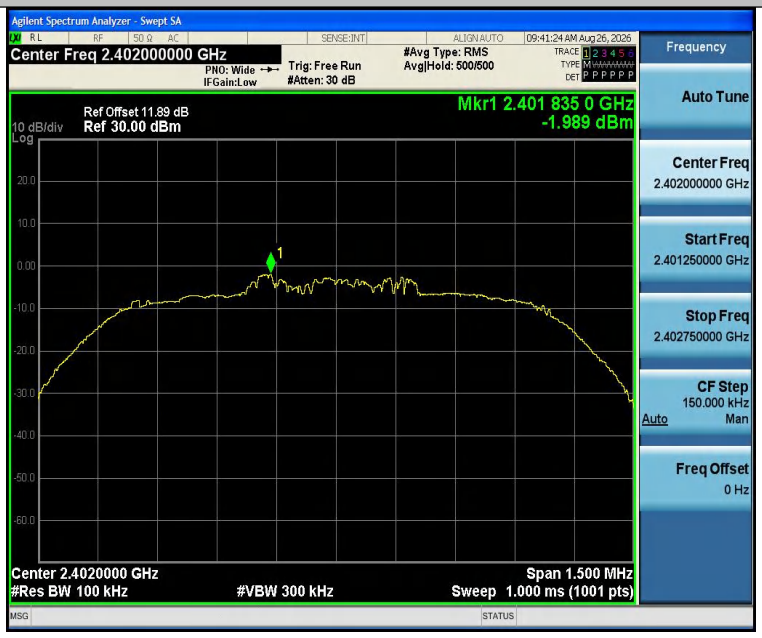
DH5-Ant1-2480-30~1000-PASS



DH5-Ant1-2480-1000~26500-PASS



2DH5-Ant1-2402-0~Reference-PASS



2DH5-Ant1-2402-30~1000-PASS