

7.6. Time of Occupancy Measurement

7.6.1. Test Limit

The maximum permissible time of occupancy is 400ms within a period of 400ms multiplied by the number of hopping channels employed.

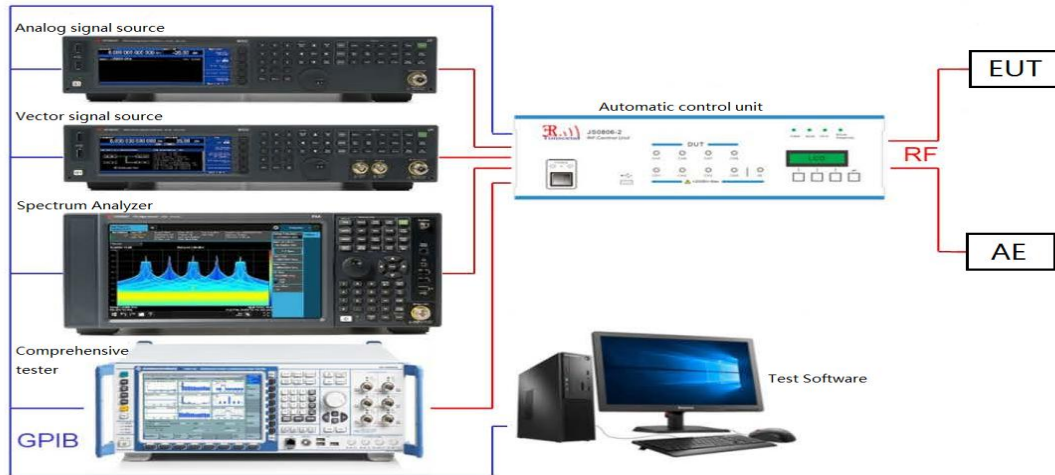
7.6.2. Test Procedure Used

ANSI C63.10-2013 - Section 7.8.4

7.6.3. Test Settling

1. Span = zero span, centered on a hopping channel.
2. RBW shall be \leq channel spacing and where possible RBW should be set $\gg 1 / T$, where T is the expected dwell time per channel.
3. VBW \geq RBW
4. Sweep time = as necessary to capture the entire dwell time per hopping channel
5. Detector = Peak
6. Trace mode = max hold
7. Use the marker-delta function to determine the transmit time per hop. If this value varies with different modes of operation (data rate, modulation format, number of hopping channels, etc.), then repeat this test for each variation in transmit time. An oscilloscope may be used instead of a spectrum analyzer. The EUT shall show compliance with the appropriate regulatory limit for the number of hopping channels. A plot of the data shall be included in the test report.

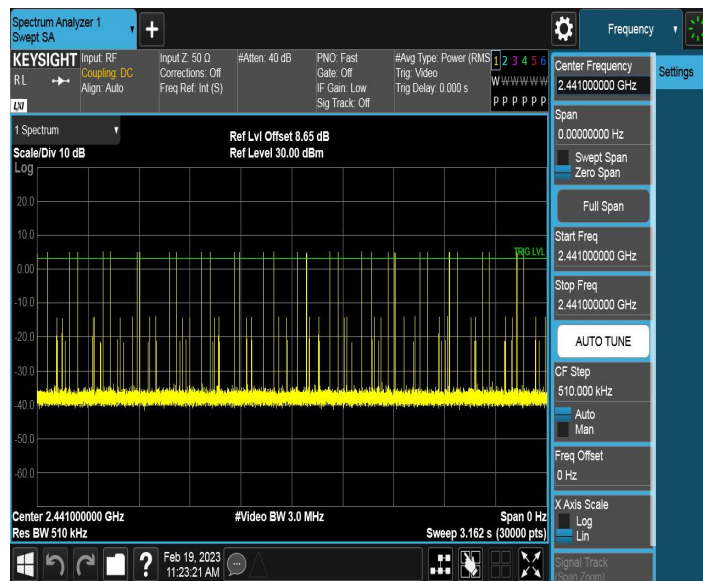
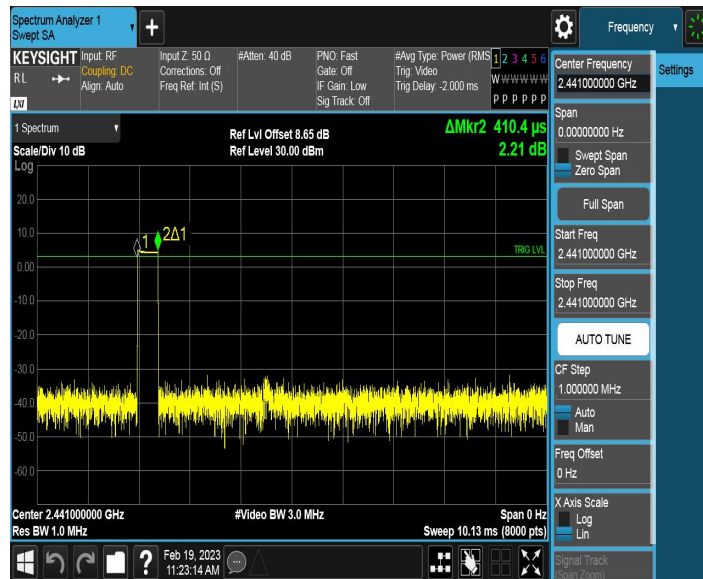
7.6.4. Test Setup



7.6.5. Test Result

Test Mode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.41	320	0.131	<=0.4	PASS
DH3	Ant1	Hop	1.78	200	0.356	<=0.4	PASS
DH5	Ant1	Hop	2.88	90	0.26	<=0.4	PASS
2DH1	Ant1	Hop	0.39	320	0.124	<=0.4	PASS
2DH3	Ant1	Hop	1.64	170	0.279	<=0.4	PASS
2DH5	Ant1	Hop	2.89	100	0.289	<=0.4	PASS
3DH1	Ant1	Hop	0.39	310	0.12	<=0.4	PASS
3DH3	Ant1	Hop	1.64	140	0.229	<=0.4	PASS
3DH5	Ant1	Hop	2.89	110	0.318	<=0.4	PASS

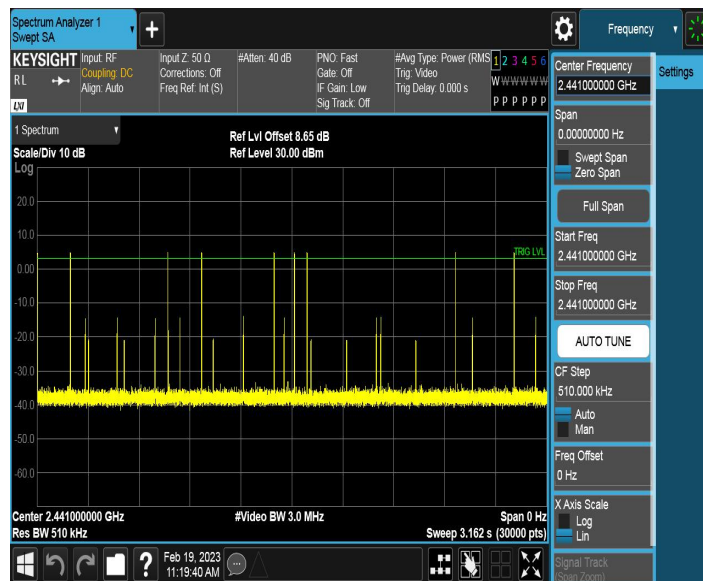
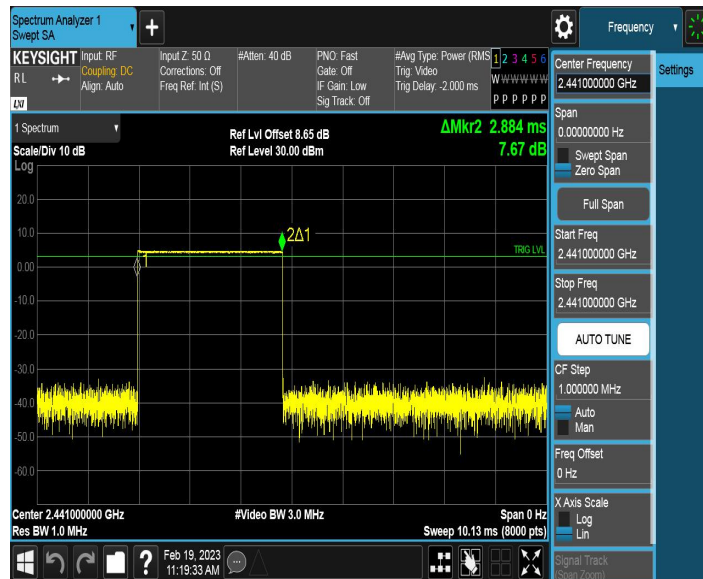
DH1_Ant1_Hop



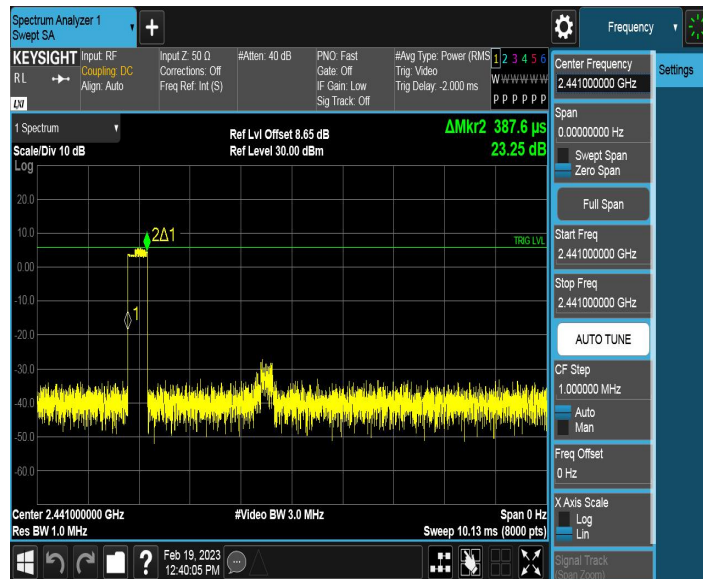
DH3_Ant1_Hop



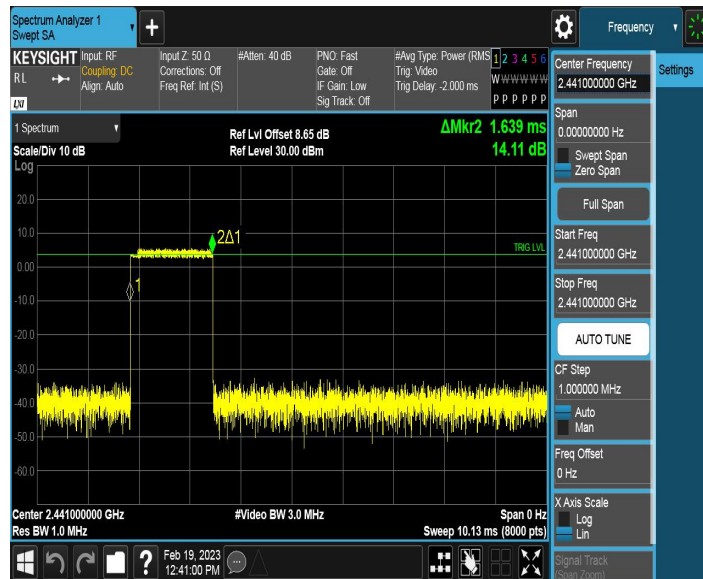
DH5_Ant1_Hop



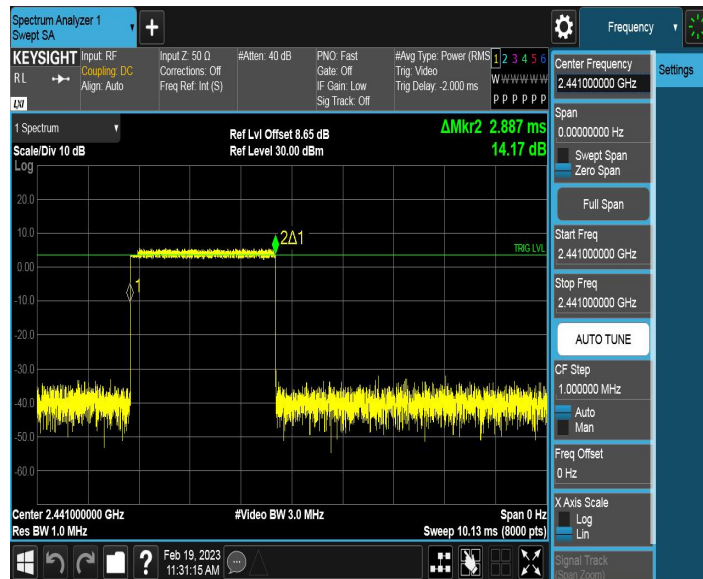
2DH1_Ant1_Hop



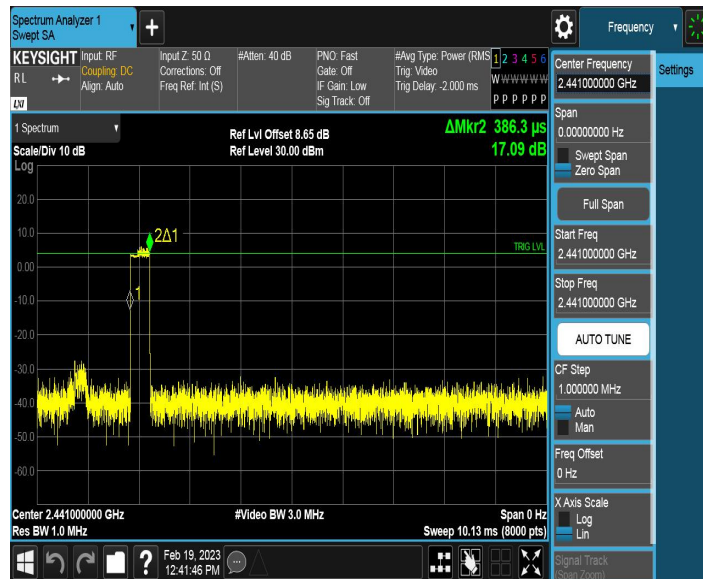
2DH3_Ant1_Hop



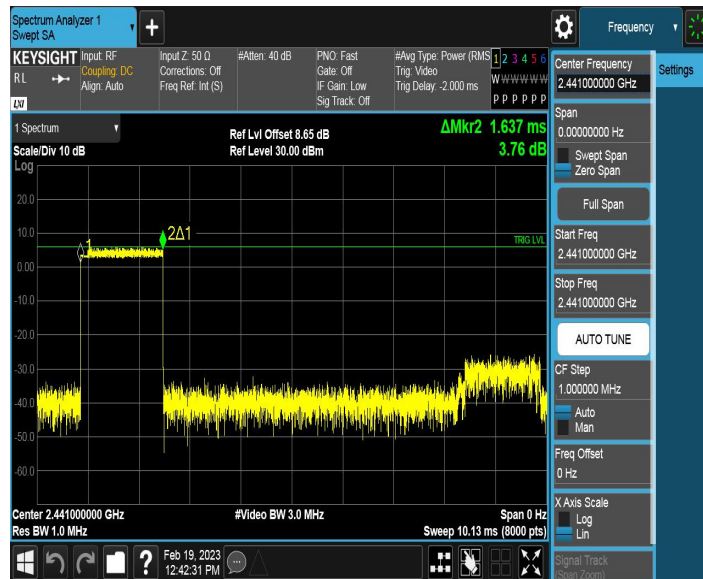
2DH5_Ant1_Hop



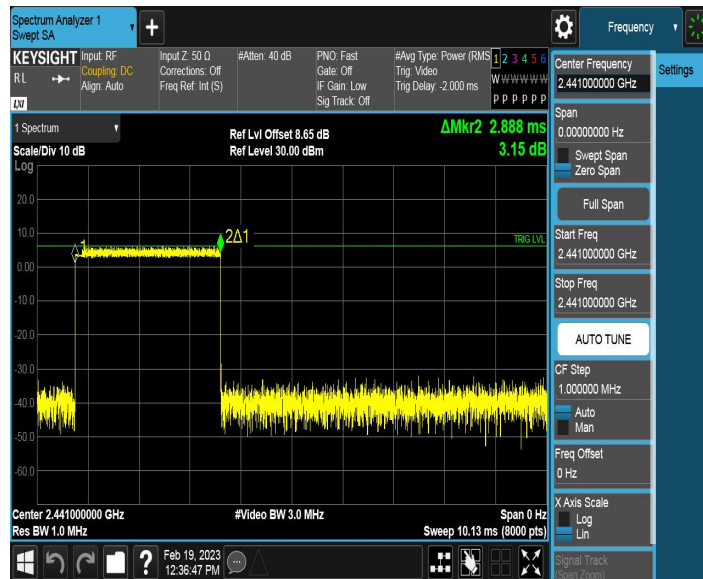
3DH1_Ant1_Hop



3DH3_Ant1_Hop



3DH5_Ant1_Hop



7.7. Band-edge Compliance Measurement

7.7.1. Test Limit

The maximum permissible emission level is 20dBc. Any emissions were lying outside of the emission bandwidth and in authorized band edges to a field strength limit specified in Section 15.209 of the Title 47 CFR.

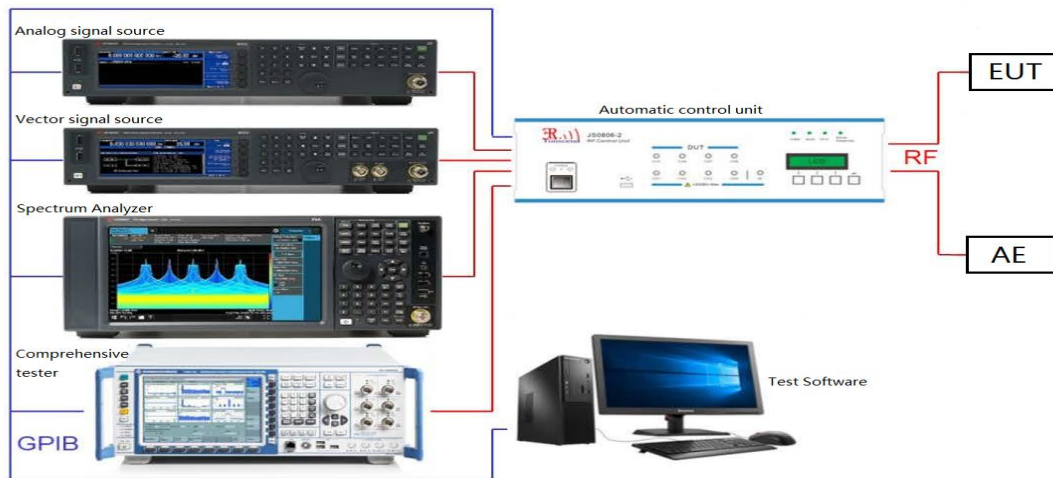
7.7.2. Test Procedure Used

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7.7.3. Test Setting

1. Span = wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products which fall outside of the authorized band of operation.
2. RBW = 100kHz
3. VBW = 300kHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize
8. Allow the trace to stabilize. Set the marker on the emission at the band edge, or on the highest modulation product outside of the band, if this level is greater than that at the band edge. Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission.

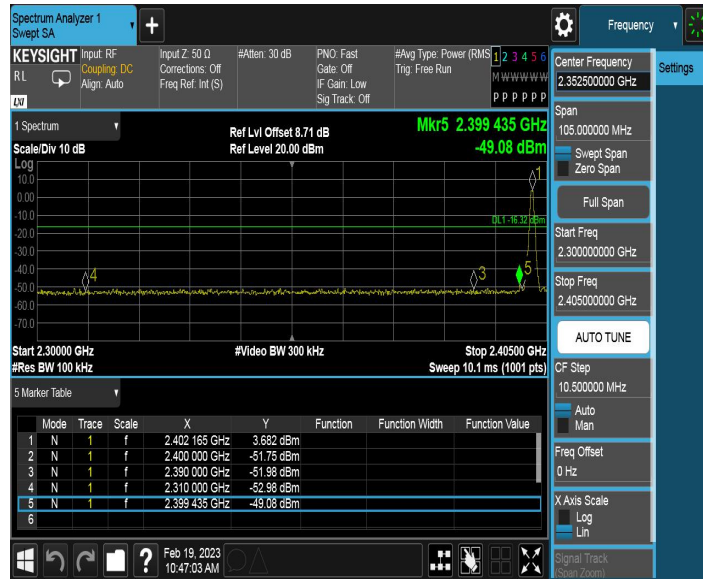
7.7.4. Test Setup



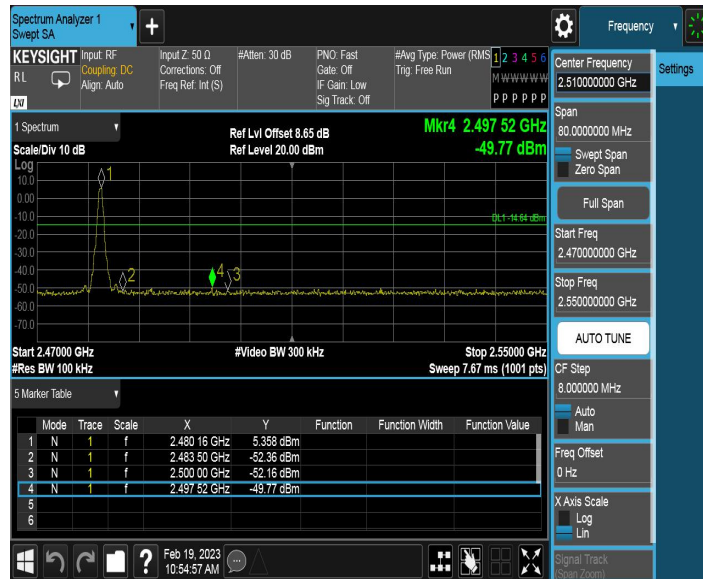
7.7.5. Test Result

Test Mode	Antenna	Ch Name	Channel	Ref Level [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	3.68	-49.08	≤ -16.32	PASS
		High	2480	5.36	-49.77	≤ -14.64	PASS
		Low	Hop_2402	2.90	-50.47	≤ -17.1	PASS
		High	Hop_2480	4.66	-50.13	≤ -15.35	PASS
2DH5	Ant1	Low	2402	2.33	-49.39	≤ -17.67	PASS
		High	2480	3.90	-50.34	≤ -16.1	PASS
		Low	Hop_2402	1.35	-50.17	≤ -18.65	PASS
		High	Hop_2480	2.37	-49.5	≤ -17.64	PASS
3DH5	Ant1	Low	2402	2.86	-49.76	≤ -17.14	PASS
		High	2480	3.60	-50.66	≤ -16.41	PASS
		Low	Hop_2402	0.30	-50.48	≤ -19.7	PASS
		High	Hop_2480	3.42	-50	≤ -16.58	PASS

DH5_Ant1_Low_2402



DH5_Ant1_High_2480



DH5_Ant1_Low_Hop_2402



DH5_Ant1_High_Hop_2480



2DH5_Ant1_Low_2402



2DH5_Ant1_High_2480



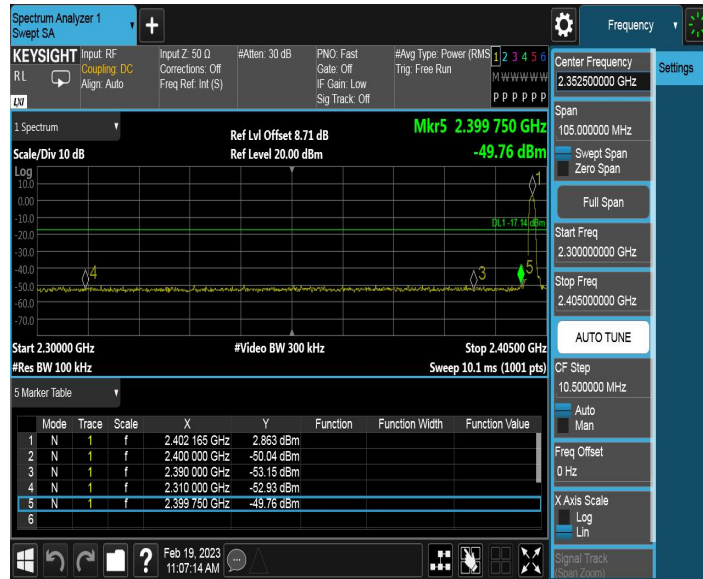
2DH5_Ant1_Low_Hop_2402



2DH5_Ant1_High_Hop_2480



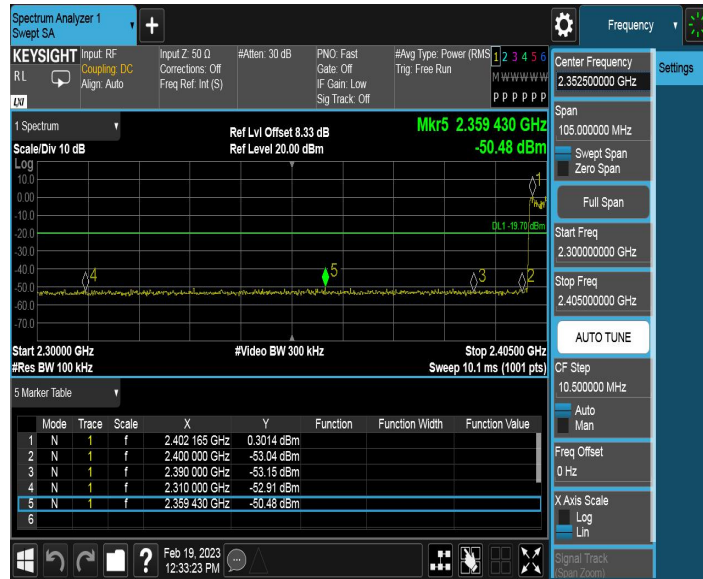
3DH5_Ant1_Low_2402



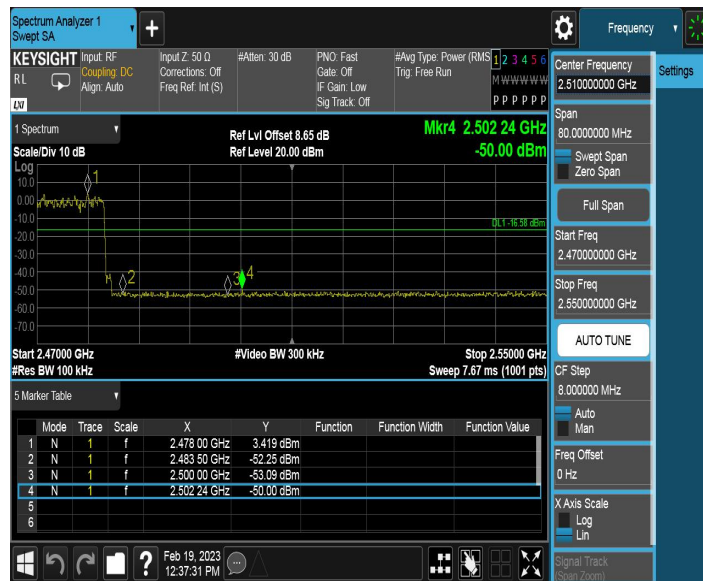
3DH5_Ant1_High_2480



3DH5_Ant1_Low_Hop_2402



3DH5_Ant1_High_Hop_2480



7.8. Conducted Spurious Emissions Measurement

7.8.1. Test Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

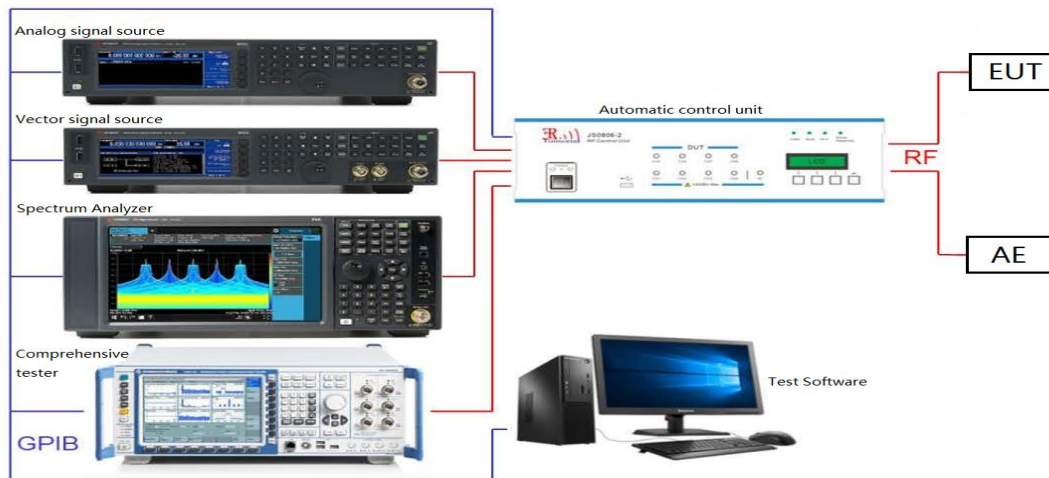
7.8.2. Test Procedure Used

ANSI C63.10-2013 - Section 7.8.8

7.8.3. Test Setting

1. Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic.
Typically, several plots are required to cover this entire span.
2. RBW = 100 KHz
3. VBW \geq RBW
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize
8. Set the marker on the peak of any spurious emission recorded. The level displayed must comply with the limit specified in this section.

7.8.4. Test Setup



7.8.5. Test Result

Test Mode	Antenna	Channel	Freq Range [MHz]	Ref Level [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	3.86	3.86	---	PASS
			30~1000	3.86	-61.86	≤-16.14	PASS
			1000~26500	3.86	-44.73	≤-16.14	PASS
		2441	Reference	4.66	4.66	---	PASS
			30~1000	4.66	-61.49	≤-15.34	PASS
			1000~26500	4.66	-46.68	≤-15.34	PASS
		2480	Reference	5.44	5.44	---	PASS
			30~1000	5.44	-62.2	≤-14.56	PASS
			1000~26500	5.44	-47.94	≤-14.56	PASS
2DH5	Ant1	2402	Reference	2.76	2.76	---	PASS
			30~1000	2.76	-61.85	≤-17.24	PASS
			1000~26500	2.76	-43.63	≤-17.24	PASS
		2441	Reference	3.49	3.49	---	PASS
			30~1000	3.49	-61.57	≤-16.51	PASS
			1000~26500	3.49	-45.54	≤-16.51	PASS
		2480	Reference	3.89	3.89	---	PASS
			30~1000	3.89	-62.54	≤-16.11	PASS
			1000~26500	3.89	-46.22	≤-16.11	PASS
3DH5	Ant1	2402	Reference	2.83	2.83	---	PASS
			30~1000	2.83	-61.66	≤-17.17	PASS
			1000~26500	2.83	-43.75	≤-17.17	PASS
		2441	Reference	3.57	3.57	---	PASS
			30~1000	3.57	-62.21	≤-16.43	PASS
			1000~26500	3.57	-45.96	≤-16.43	PASS
		2480	Reference	3.93	3.93	---	PASS
			30~1000	3.93	-62.23	≤-16.07	PASS
			1000~26500	3.93	-46.15	≤-16.07	PASS

DH5_Ant1_2402_0~Reference



DH5_Ant1_2402_30~1000

