11N20_2437

11N20_2462

11AX20_2412

11AX20_2437

11AX20_2462


7.3. Output Power Measurement

7.3.1. Test Limit

The maximum permissible conducted output power is 1 Watt (30dBm). And for antenna gain greater than 6dBi the limit shall reduce by the amount in dB that the directional gain of the antenna exceeds 6dBi.

7.3.2. Test Procedure Used

ANSI C63.10-2013 – Section 11.9.2.2.4

KDB 558074 D01 v05r02 – Section 8.3.2.2

7.3.3. Test Setting

1. Set span to at least 1.5 times the OBW..

2. Set RBW = 1% to 5% of the OBW, not to exceed 1 MHz.

3. Set VBW ≥ [3 × RBW].

4. Number of points in sweep ≥ [2 × span / RBW]. (This gives bin-to-bin spacing RBW / 2, so that narrowband signals are not lost between frequency bins.)

5.Sweep time = auto.

6. Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.

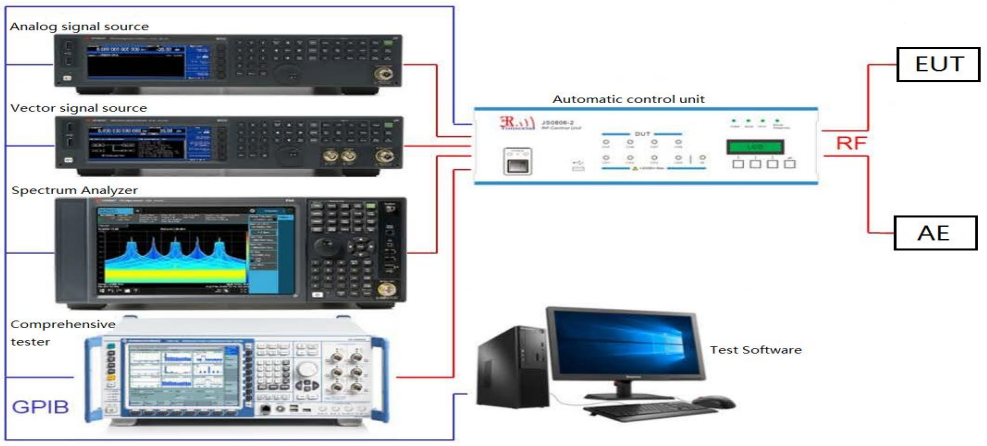
7. Do not use sweep triggering. Allow the sweep to “free run.”

8. Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed such that the average accurately represents the true average over the ON and OFF periods of the transmitter.

9. Compute power by integrating the spectrum across the OBW of the signal using the instrument’s band power measurement function with band limits set equal to the OBW band edges. If the instrument does not have a band power function, then sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum. 10Add [10 log (1 / D)], where D is the duty cycle, to the measured power to compute the average power

during the actual transmission times (because the measurement represents an average over both the ON and OFF times of the transmission). For example, add [10 log (1/0.25)] = 6 dB if the duty cycle is 25%.

7.3.4. Test Setup

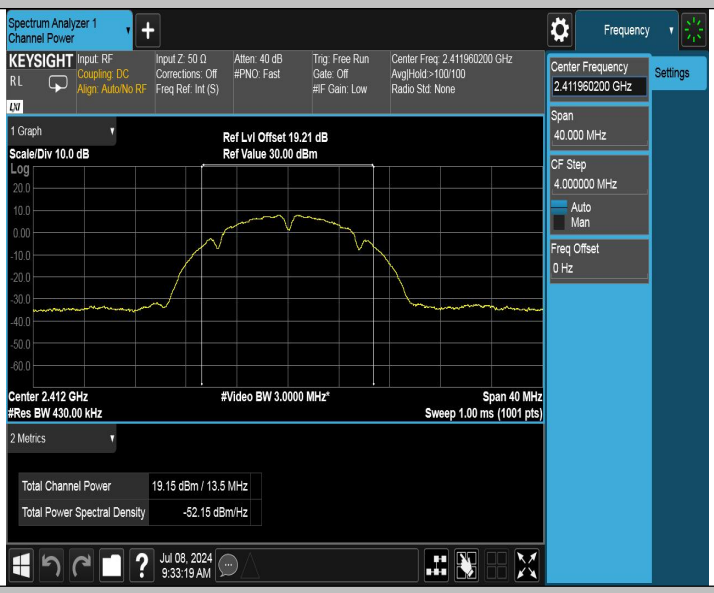


7.3.5. Test Result of Output Power

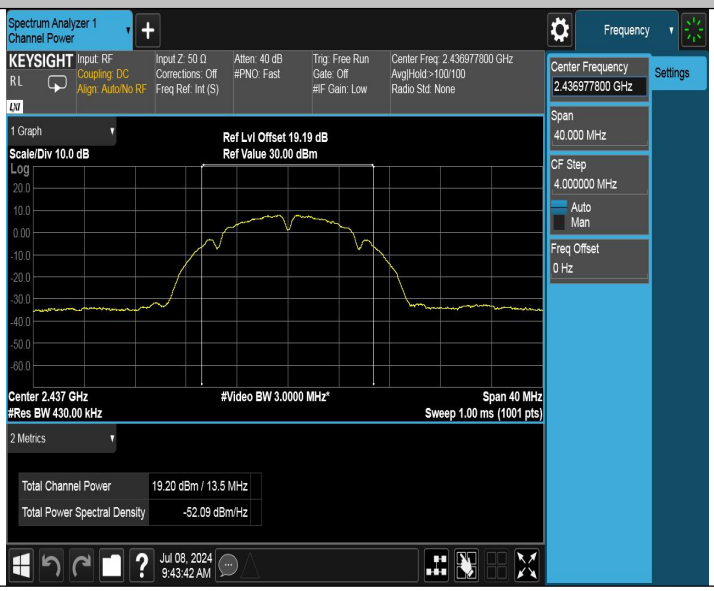
Test Mode	Channel	Average power [dBm]	Limit[dBm]	Verdict
802.11b	2412	19.15	≤30	PASS
	2437	19.20	≤30	PASS
	2462	19.87	≤30	PASS
802.11g	2412	16.58	≤30	PASS
	2437	16.22	≤30	PASS
	2462	16.89	≤30	PASS
802.11n-HT20	2412	16.60	≤30	PASS
	2437	16.26	≤30	PASS
	2462	16.80	≤30	PASS
802.11ax-HE20	2412	15.57	≤30	PASS
	2437	15.43	≤30	PASS
	2462	15.86	≤30	PASS

The Duty Cycle Factor is compensated in the Offset of graph.

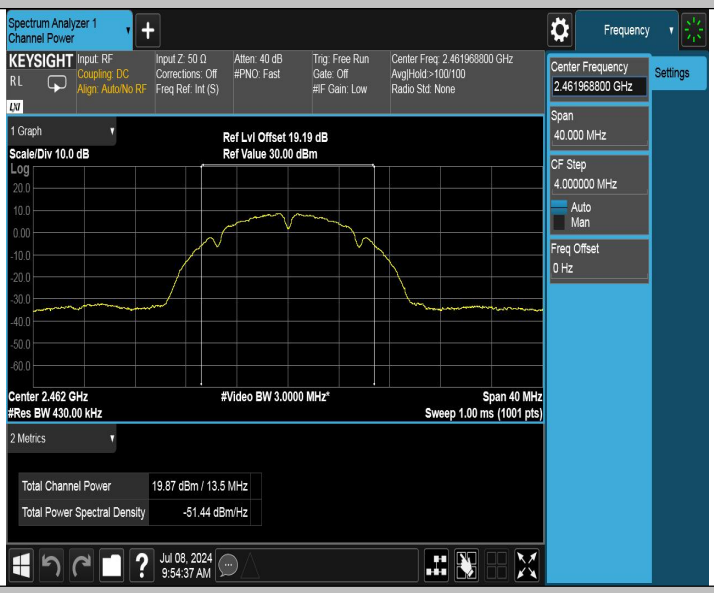
11B_2412



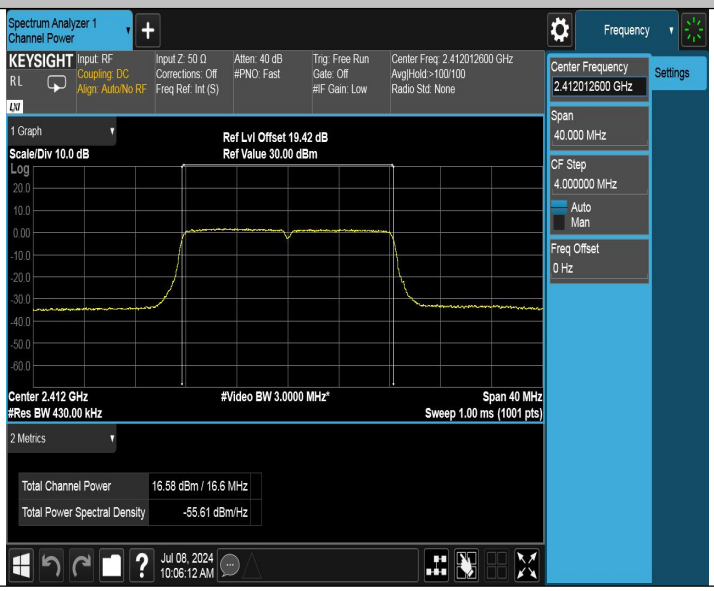
11B_2437



11B_2462



11G_2412



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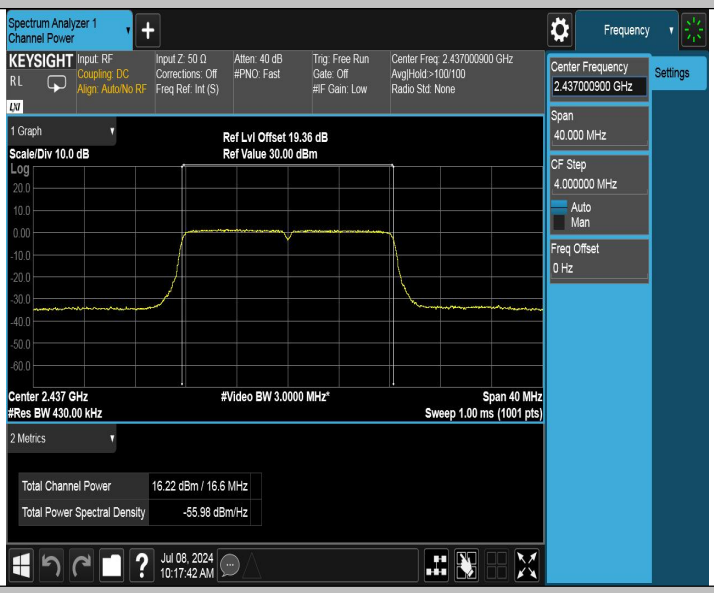
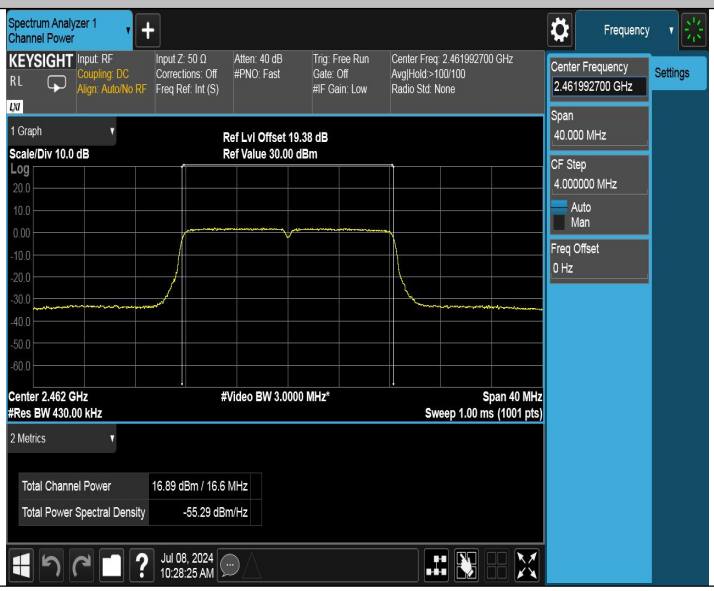
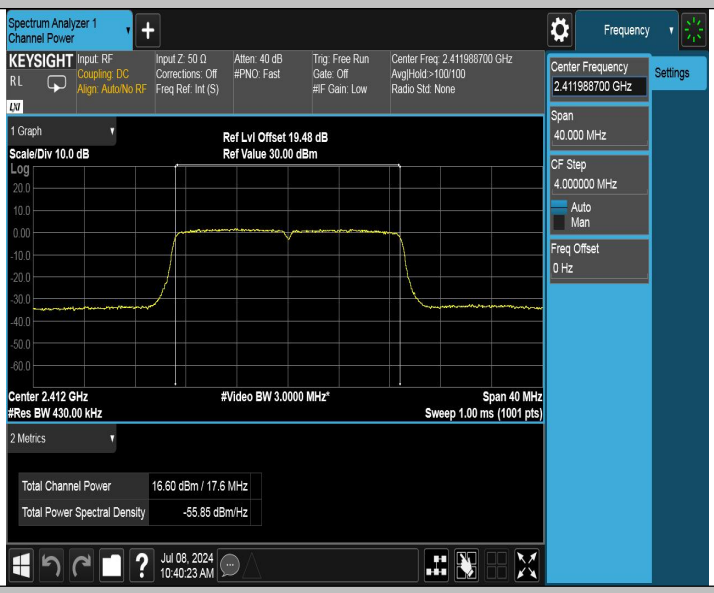


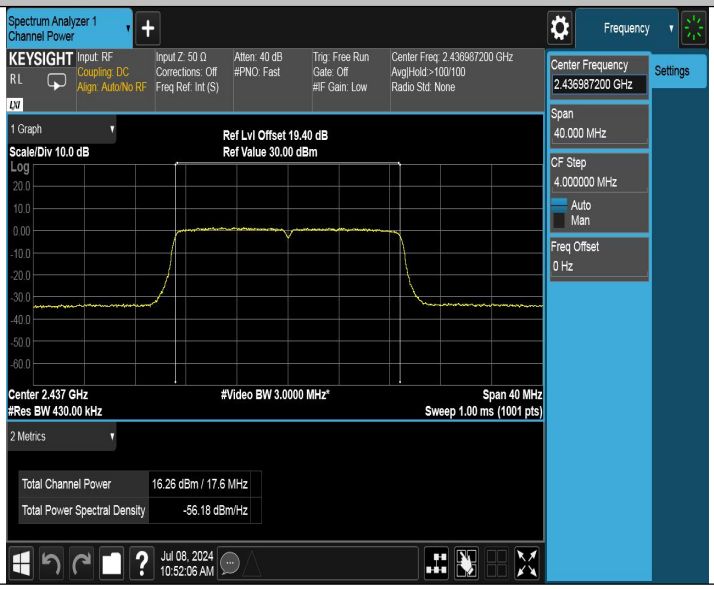
11G_2462



11N20_2412



11N20_2437



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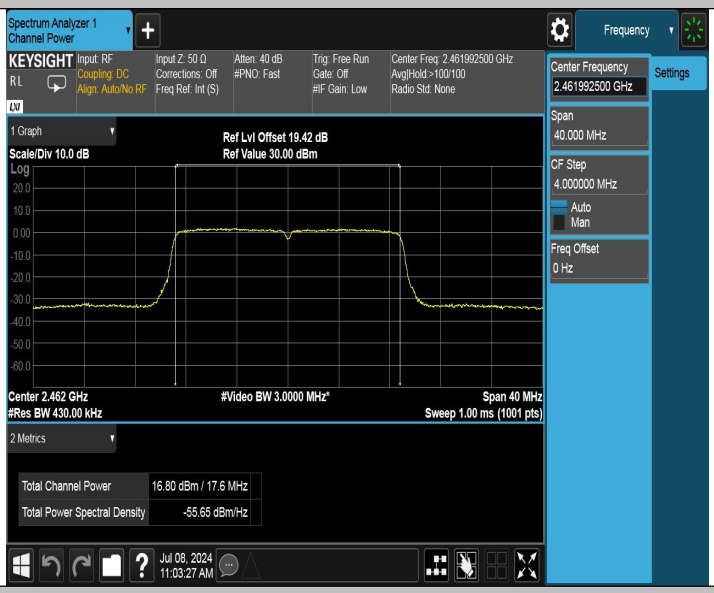
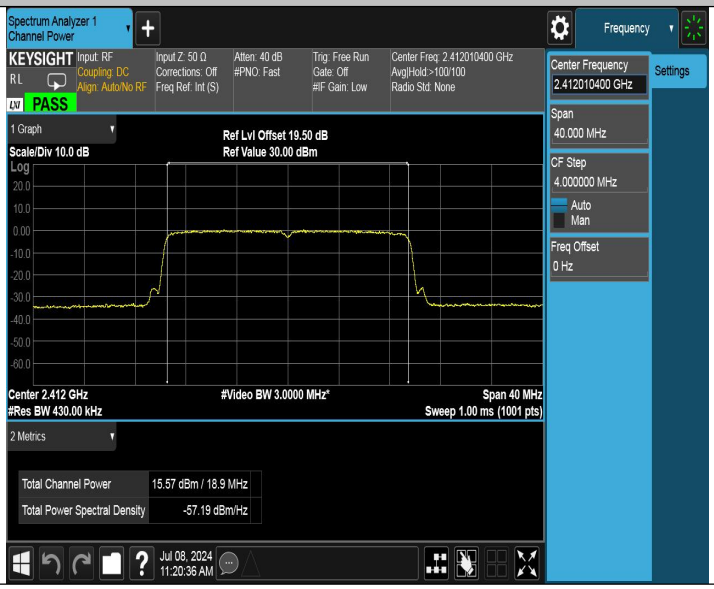
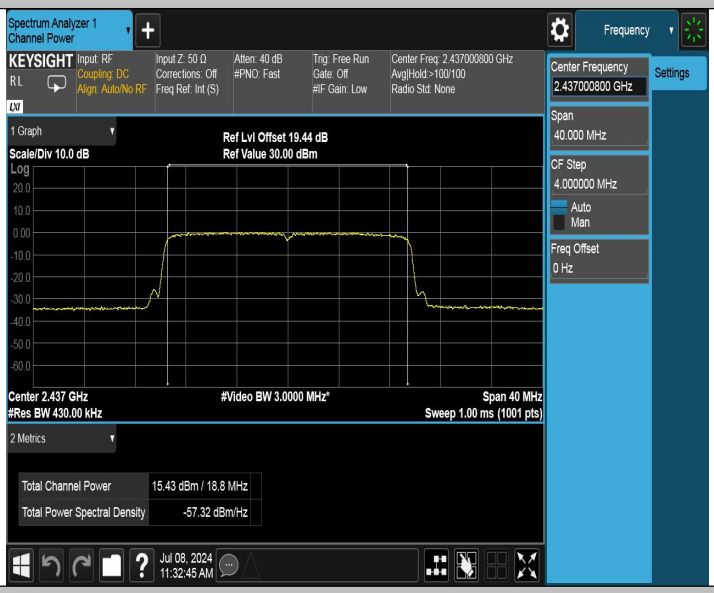


11AX20_2412



11AX20_2437



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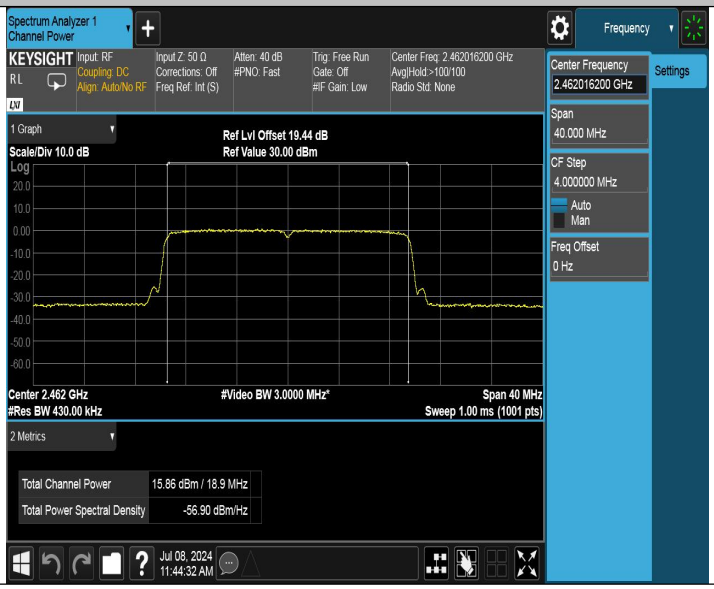


7.4. Power Spectral Density Measurement

7.4.1. Test Limit

The maximum permissible power spectral density is 8dBm in any 3 kHz band. And for antenna gain greater than 6dBi the limit shall reduce by the amount in dB that the directional gain of the antenna exceeds 6dBi.

7.4.2. Test Procedure Used

KDB 558074 D01 v05r02 - Section 8.4

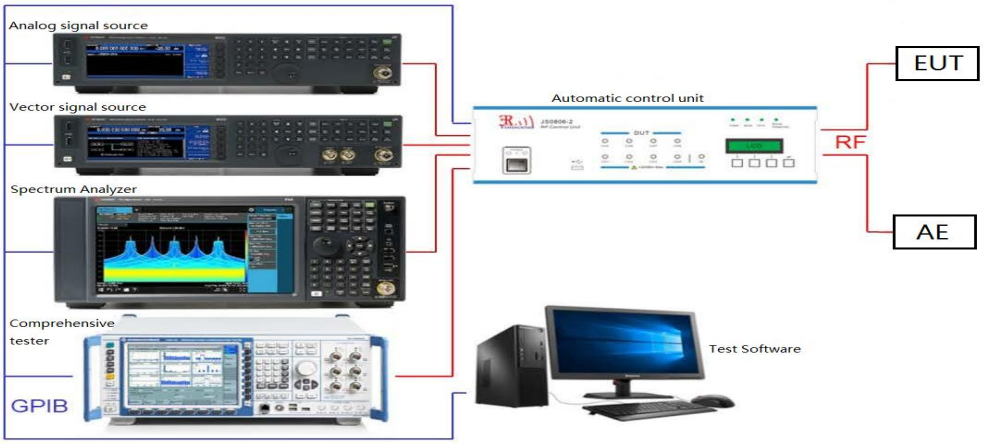
ANSI C63.10 – Section 11.10.5

7.4.3. Test Setting

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the OBW.
3. Set the RBW to 3 kHz ≤ RBW ≤ 100 kHz.
4. Set the VBW ≥ [3 × RBW].
5. Detector = power averaging (rms) or sample detector (when rms not available).
6. Ensure that the number of measurement points in the sweep ≥ [2 × span / RBW].
7. Sweep time = auto couple.
8. Do not use sweep triggering; allow sweep to “free run.”
9. Employ trace averaging (rms) mode over a minimum of 100 traces.
10. Use the peak marker function to determine the maximum amplitude level.
11. Add [10 log (1 / D)], where D is the duty cycle measured in step a), to the measured PSD to

    If measured value exceeds requirement specified by regulatory agency, then reduce RBW (but no less than 3 kHz) and repeat (note that this may require zooming in on the emission of interest and reducing the span to meet the minimum measurement point requirement as the RBW is reduced).

7.4.4. Test Setup



7.4.5. Test Result

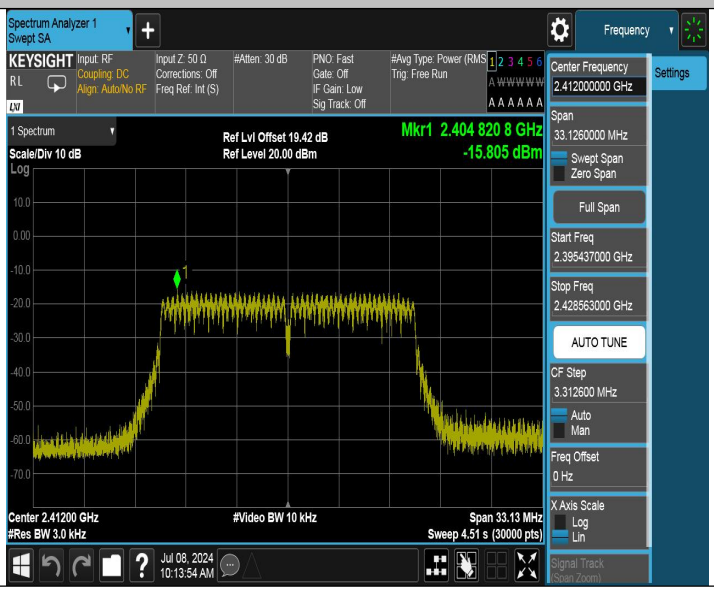
Test Mode	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
802.11b	2412	-12.13	≤8.00	PASS
	2437	-11.78	≤8.00	PASS
	2462	-11.08	≤8.00	PASS
802.11g	2412	-15.81	≤8.00	PASS
	2437	-16.37	≤8.00	PASS
	2462	-16.42	≤8.00	PASS
802.11n-HT20	2412	-17.06	≤8.00	PASS
	2437	-17.08	≤8.00	PASS
	2462	-19.65	≤8.00	PASS
802.11ax-HE20	2412	-18.02	≤8.00	PASS
	2437	-17.77	≤8.00	PASS
	2462	-17.55	≤8.00	PASS

11B_2412

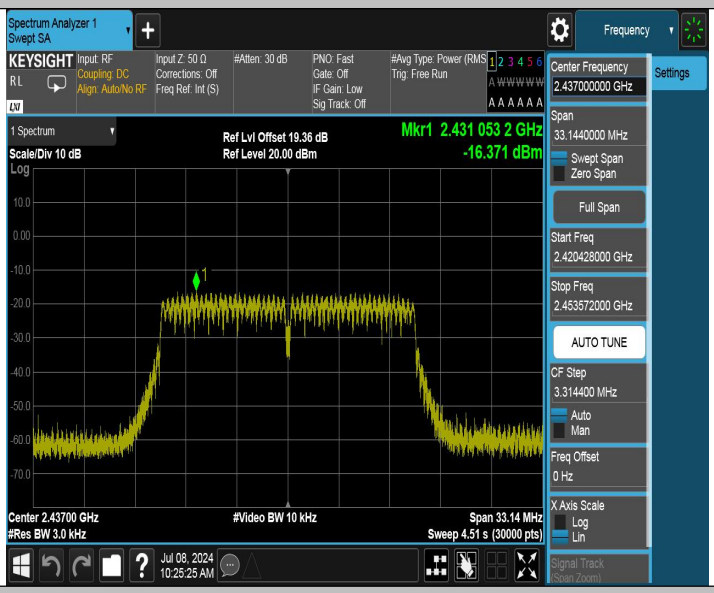
11B_2437

11B_2462

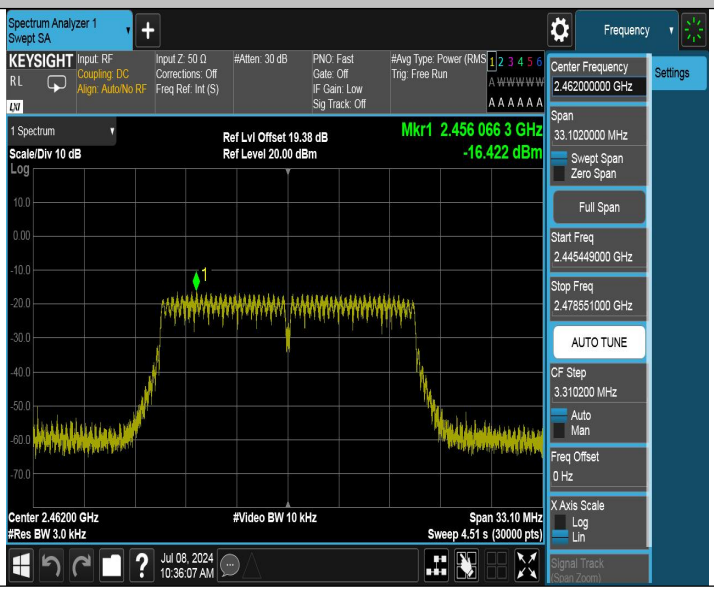
11G_2412



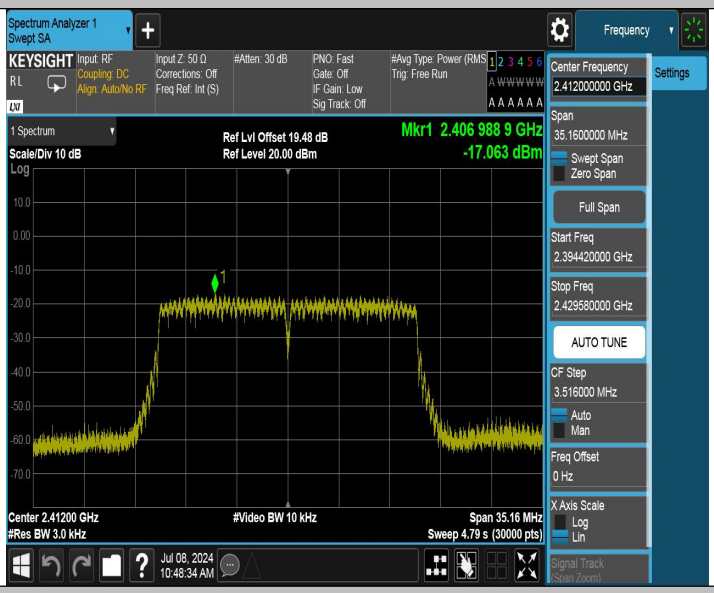
11G_2437



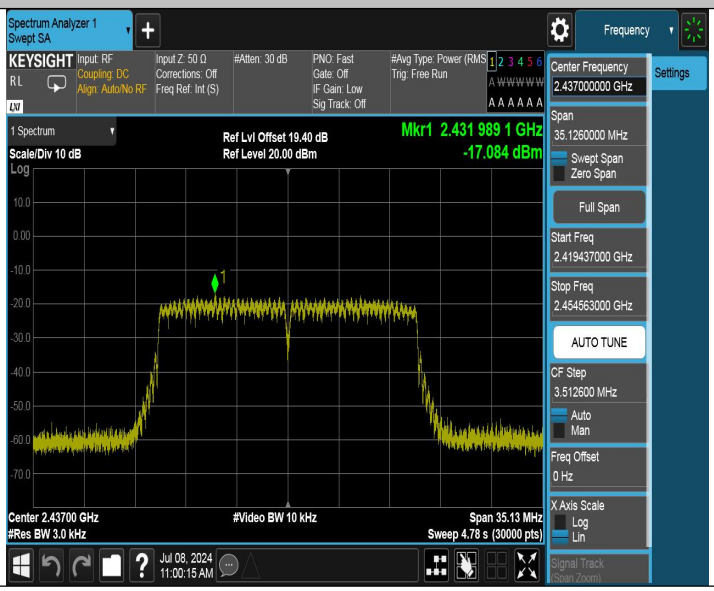
11G_2462



11N20_2412



11N20_2437



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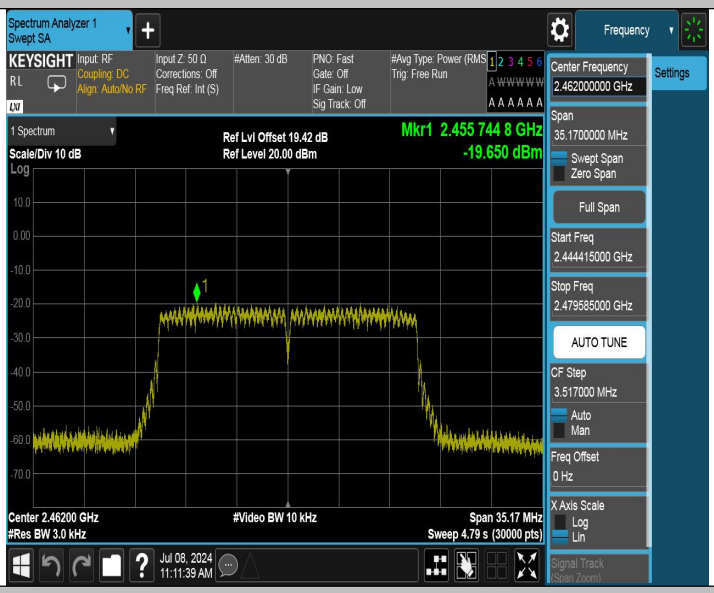
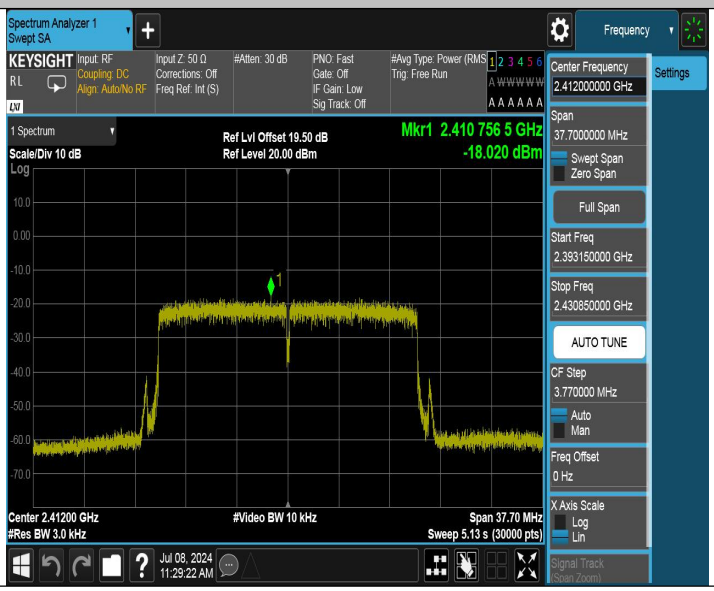

11AX20_2412


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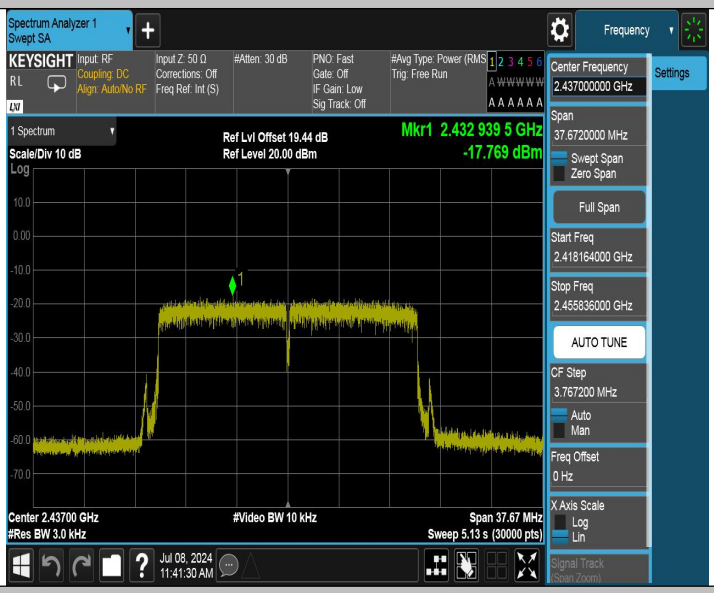
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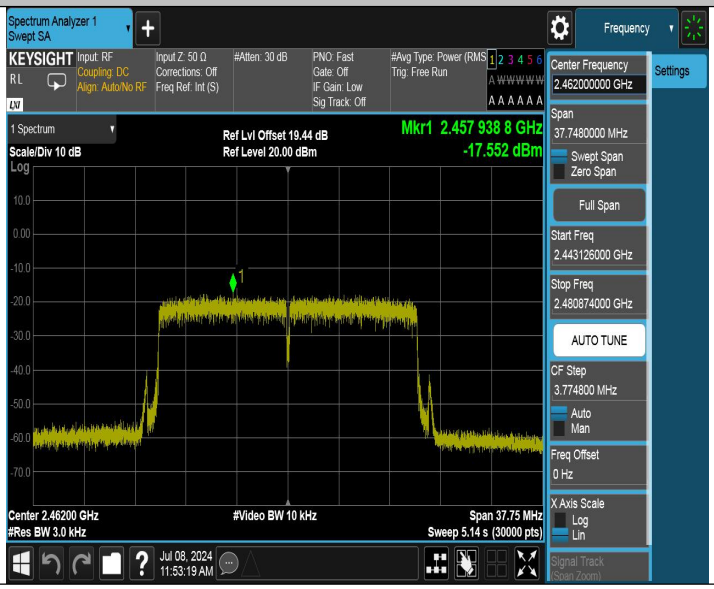


7.5. Conducted Band Edge and Out-of-Band Emissions

7.5.1. Test Limit

The limit for out-of-band spurious emissions at the band edge is 20dB below the fundamental emission level, as determined from the in-band power measurement of the DTS channel performed in a 100 kHz bandwidth per the PSD procedure.

7.5.2. Test Procedure Used

KDB 558074 D01 v05r02 - Section 8.5 & Section 8.6

ANSI C63.10 – Section 11.11&11.12

7.5.3. Test Settitng

(a) Set the center frequency and span to encompass frequency range to be measured

(b) RBW = 100kHz

(c) VBW = 300kHz

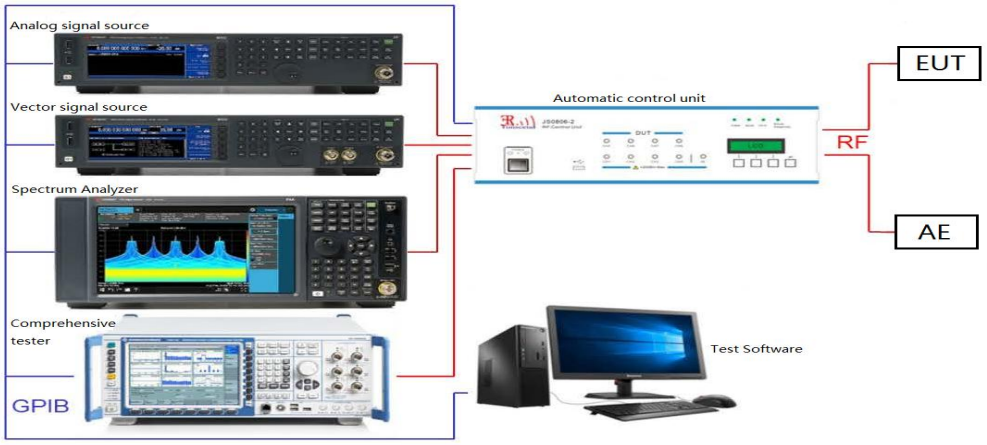
(d) Detector = Peak

(e) Trace mode = max hold

(f) Sweep time = auto couple

(g) The trace was allowed to stabilize

7.5.4. Test Setup



7.5.5. Test Result

Test Mode	Channel	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
802.11b	Low	2412	10.88	-34.64	≤-19.12	PASS
	High	2462	11.40	-38.39	≤-18.61	PASS
802.11g	Low	2412	5.30	-35.77	≤-24.70	PASS
	High	2462	5.07	-37.77	≤-24.93	PASS
802.11n-HT20	Low	2412	5.33	-31.19	≤-24.67	PASS
	High	2462	5.71	-37.14	≤-24.30	PASS
802.11ax-HE20	Low	2412	4.04	-29.75	≤-25.96	PASS
	High	2462	4.50	-36.83	≤-25.51	PASS

Test Mode	Channel	Frequency Range [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
802.11b	2412	Reference	10.74	10.74	---	PASS
		30~1000	10.74	-50.32	≤-9.26	PASS
		1000~26500	10.74	-41.74	≤-9.26	PASS
	2437	Reference	10.89	10.89	---	PASS
		30~1000	10.89	-47.45	≤-9.11	PASS
		1000~26500	10.89	-40.48	≤-9.11	PASS
	2462	Reference	11.51	11.51	---	PASS
		30~1000	11.51	-49.8	≤-8.49	PASS
		1000~26500	11.51	-38.25	≤-8.49	PASS
802.11g	2412	Reference	5.38	5.38	---	PASS
		30~1000	5.38	-50.28	≤-14.62	PASS
		1000~26500	5.38	-41.61	≤-14.62	PASS
	2437	Reference	5.15	5.15	---	PASS
		30~1000	5.15	-50.08	≤-14.85	PASS
		1000~26500	5.15	-41.65	≤-14.85	PASS
	2462	Reference	5.70	5.70	---	PASS
		30~1000	5.70	-50.34	≤-14.3	PASS
		1000~26500	5.70	-34.8	≤-14.3	PASS
802.11n-HT20	2412	Reference	5.43	5.43	---	PASS
		30~1000	5.43	-50.65	≤-14.57	PASS
		1000~26500	5.43	-41.46	≤-14.57	PASS
	2437	Reference	5.21	5.21	---	PASS

		30~1000	5.21	-51.07	≤-14.79	PASS
		1000~26500	5.21	-41.59	≤-14.79	PASS
	2462	Reference	5.82	5.82	---	PASS
		30~1000	5.82	-50.65	≤-14.18	PASS
		1000~26500	5.82	-41.5	≤-14.18	PASS
802.11ax-HE20	2412	Reference	4.36	4.36	---	PASS
		30~1000	4.36	-50.51	≤-15.64	PASS
		1000~26500	4.36	-41.88	≤-15.64	PASS
	2437	Reference	4.00	4.00	---	PASS
		30~1000	4.00	-51.07	≤-16	PASS
		1000~26500	4.00	-41.61	≤-16	PASS
	2462	Reference	4.48	4.48	---	PASS
		30~1000	4.48	-50	≤-15.52	PASS
		1000~26500	4.48	-40.62	≤-15.52	PASS

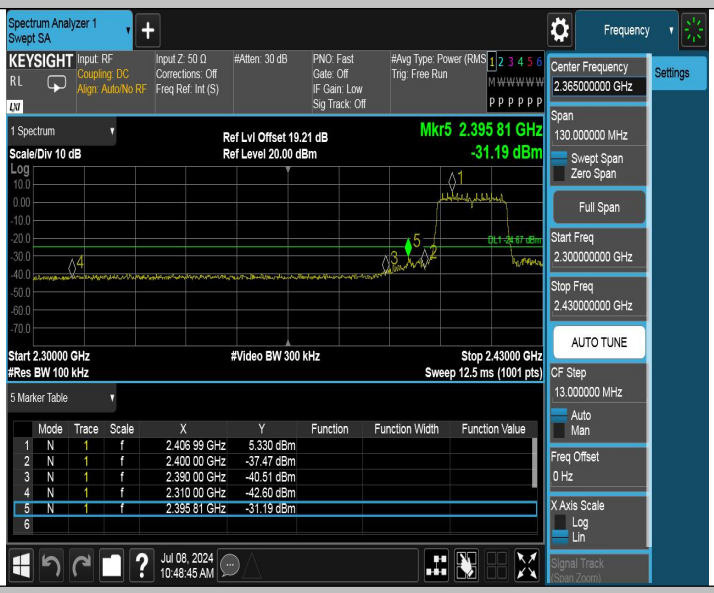
11B_Low_2412

11B_High_2462

11G_Low_2412

11G_High_2462

11N20_Low_2412



11N20_High_2462