



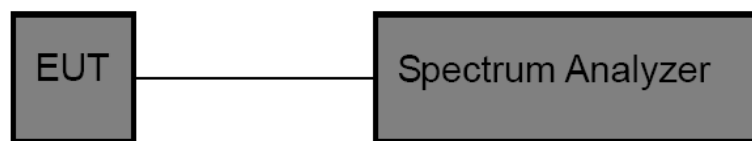
3.4. Band Edge and Spurious Emissions (Conducted)

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d) / RSS-247 5.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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 power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

Test Configuration



Test Procedure

1. The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Use the following spectrum analyzer settings:
RBW = 100 kHz, VBW $\geq$ RBW, scan up through 10th harmonic.
Sweep = auto, Detector function = peak, Trace = max hold.
4. Measure and record the results in the test report.

Test Mode

Please refer to the clause 2.4.

**Test Result**

Mode	Channel	Ant.	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
IEEE 802.11b	1	1	2398.66	-35.822	-13.87	-21.952	PASS
			2400.00	-47.437	-13.87	-33.567	PASS
			24662.9	-36.825	-13.87	-22.955	PASS
		2	2353.55	-31.113	-13.66	-17.453	PASS
			2400.00	-46.808	-13.66	-33.148	PASS
			24634.8	-36.309	-13.66	-22.649	PASS
	6	1	24460.6	-36.727	-13.77	-22.957	PASS
		2	24621.1	-37.289	-13.75	-23.539	PASS
	11	1	2483.50	-51.291	-13.51	-37.781	PASS
			23754.6	-37.262	-13.51	-23.752	PASS
		2	2483.50	-50.495	-13.76	-36.735	PASS
			24139.8	-36.779	-13.76	-23.019	PASS
IEEE 802.11g	1	1	2398.79	-37.633	-20.47	-17.163	PASS
			2400.00	-49.165	-20.47	-28.695	PASS
			24163.5	-37.072	-20.47	-16.602	PASS
		2	2363.82	-36.428	-21.27	-15.159	PASS
			2400.00	-48.630	-21.27	-27.360	PASS
			24306.4	-37.289	-21.27	-16.019	PASS
	6	1	23683.4	-36.695	-20.55	-16.145	PASS
		2	24655.4	-36.789	-20.86	-15.929	PASS
	11	1	2483.50	-50.439	-20.68	-29.759	PASS
			24642.3	-36.977	-20.68	-16.297	PASS
		2	2483.50	-50.497	-21.20	-29.297	PASS
			24659.8	-36.666	-21.20	-15.466	PASS
IEEE 802.11n_20	1	1	2395.80	-40.935	-23.16	-17.775	PASS
			2400.00	-50.356	-23.16	-27.196	PASS
			24358.9	-35.792	-23.16	-12.632	PASS
		2	2365.64	-38.458	-22.64	-15.818	PASS
			2400.00	-49.617	-22.64	-26.977	PASS
			24136.6	-37.175	-22.64	-14.535	PASS
	6	1	24594.9	-36.997	-22.68	-14.317	PASS
		2	24176.6	-37.392	-23.19	-14.202	PASS
	11	1	2483.50	-36.297	-21.98	-14.317	PASS
			24659.8	-46.094	-21.98	-24.114	PASS
		2	2483.50	-37.201	-23.23	-13.971	PASS
			24528.1	-36.847	-23.23	-13.617	PASS
IEEE 802.11n_40	3	1	2384.36	-46.946	-26.05	-20.896	PASS
			2400.00	-50.102	-26.05	-24.052	PASS
			24177.2	-35.930	-26.05	-9.880	PASS
		2	2375.91	-42.392	-26.43	-15.962	PASS
			2400.00	-50.289	-26.43	-23.859	PASS
			24653.5	-36.514	-26.43	-10.084	PASS
	6	1	24929.5	-36.953	-25.32	-11.633	PASS
		2	24687.2	-36.995	-27.25	-9.745	PASS
	9	1	2483.50	-51.455	-25.79	-25.665	PASS
			24074.8	-36.791	-25.79	-11.001	PASS
		2	2483.50	-49.965	-25.22	-24.745	PASS
			24655.4	-36.369	-25.22	-11.149	PASS
IEEE 802.11ax_20	1	1	2388.78	-49.104	-24.03	-25.074	PASS
			2400.00	-50.552	-24.03	-26.522	PASS
			24606.7	-36.256	-24.03	-12.226	PASS
		2	2363.17	-42.207	-24.45	-17.757	PASS
			2400.00	-50.738	-24.45	-26.288	PASS

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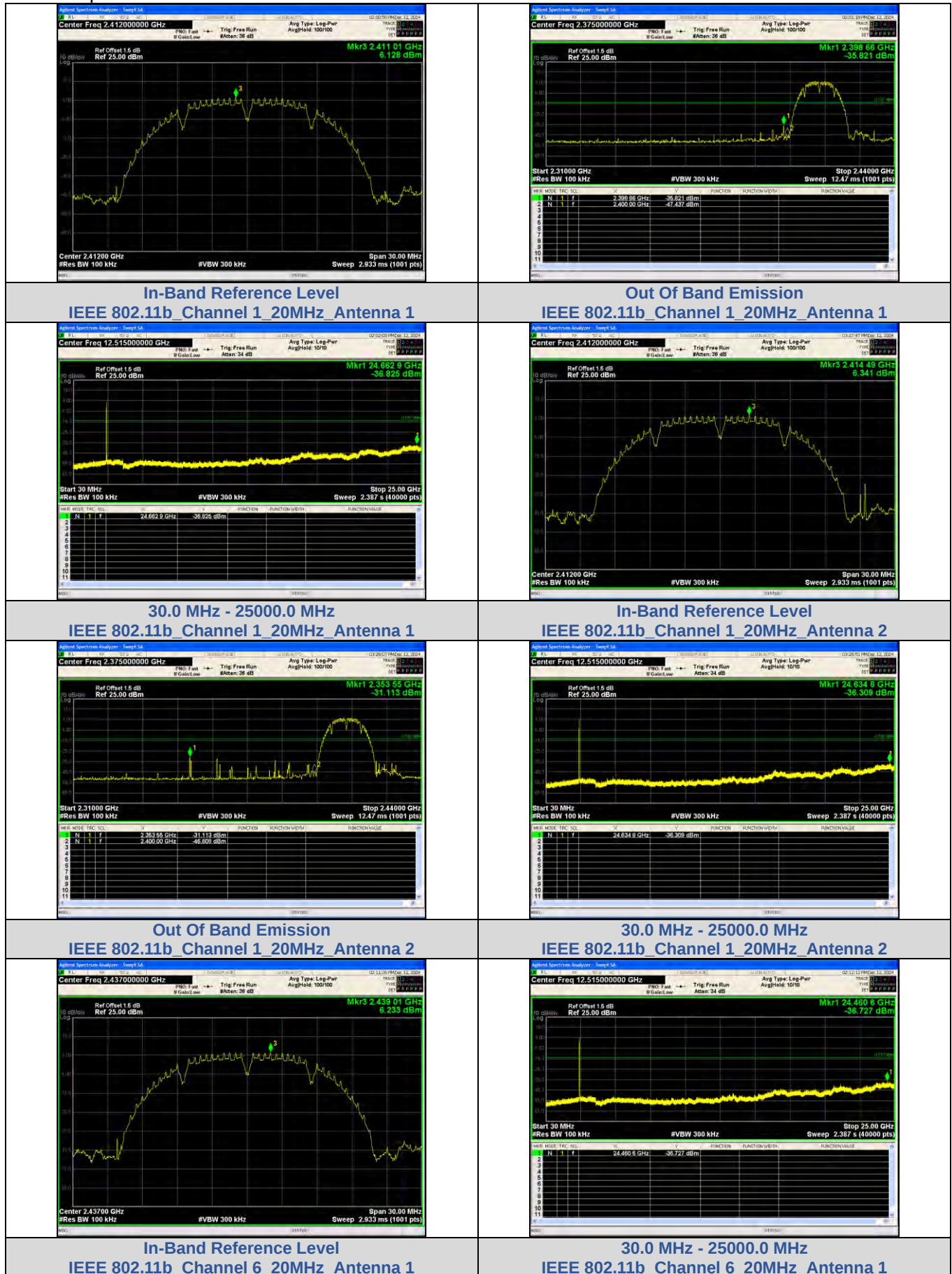
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	6	1	24672.3	-36.590	-24.45	-12.140	PASS
		2	24684.1	-37.201	-23.67	-13.531	PASS
		2	24121.1	-36.999	-24.55	-12.449	PASS
	11	1	2483.50	-51.865	-24.46	-27.405	PASS
			24667.9	-37.414	-24.46	-12.954	PASS
		2	2483.50	-51.409	-24.16	-27.249	PASS
			24660.4	-36.945	-24.16	-12.785	PASS
IEEE 802.11ax_40	3	1	2315.46	-48.915	-28.04	-20.875	PASS
			2400.00	-51.007	-28.04	-22.967	PASS
			24690.4	-36.686	-28.04	-8.646	PASS
		2	2397.23	-45.014	-29.51	-15.504	PASS
			2400.00	-48.850	-29.51	-19.340	PASS
			24642.9	-36.513	-29.51	-7.003	PASS
	6	1	24319.6	-37.296	-27.54	-9.756	PASS
		2	24199.7	-36.723	-28.46	-8.263	PASS
	9	1	2483.50	-52.222	-27.03	-25.192	PASS
			24059.9	-37.363	-27.03	-10.333	PASS
		2	2483.50	-52.111	-28.59	-23.521	PASS
			24604.8	-36.318	-28.59	-7.728	PASS



Test Graphs

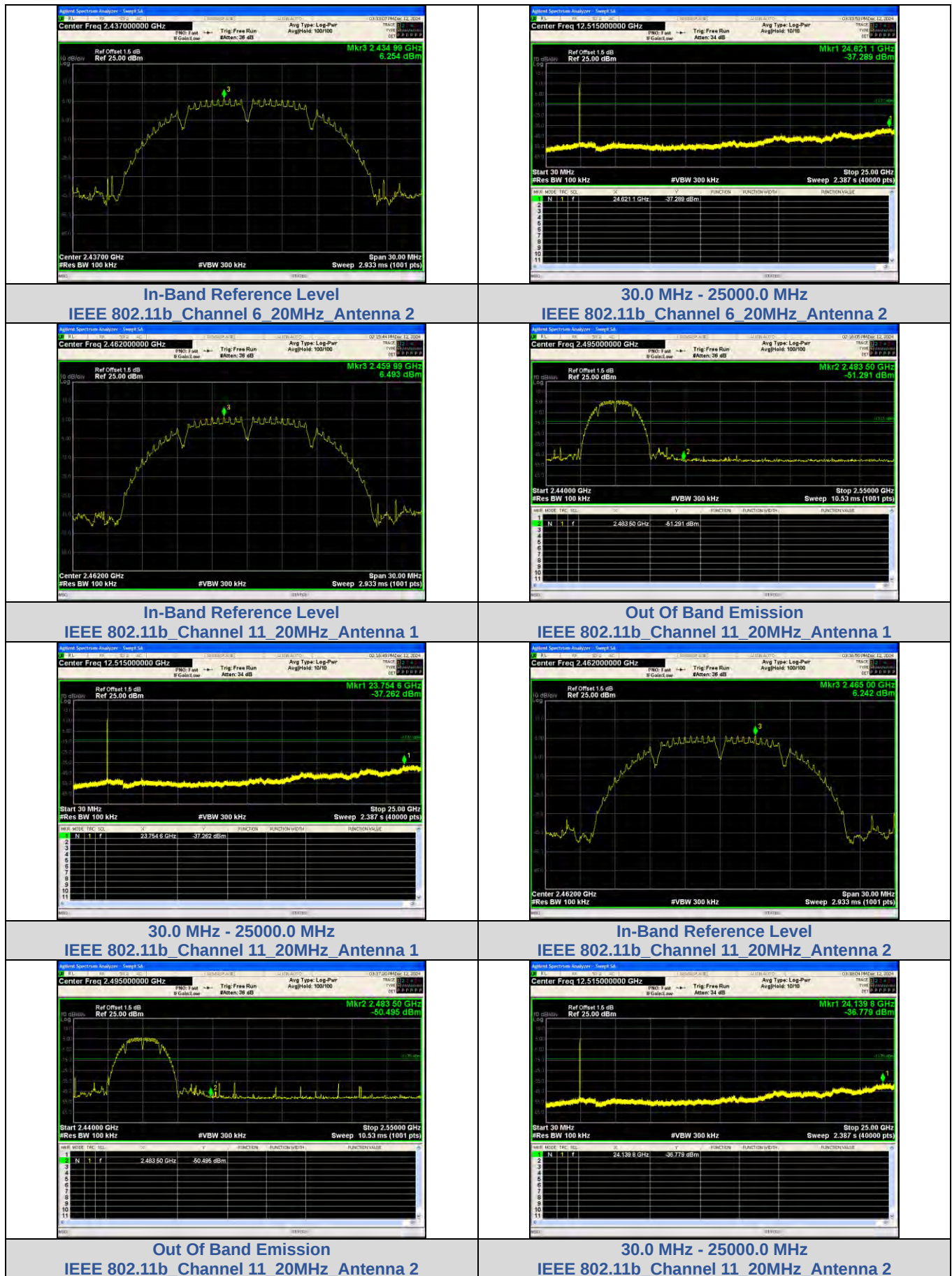


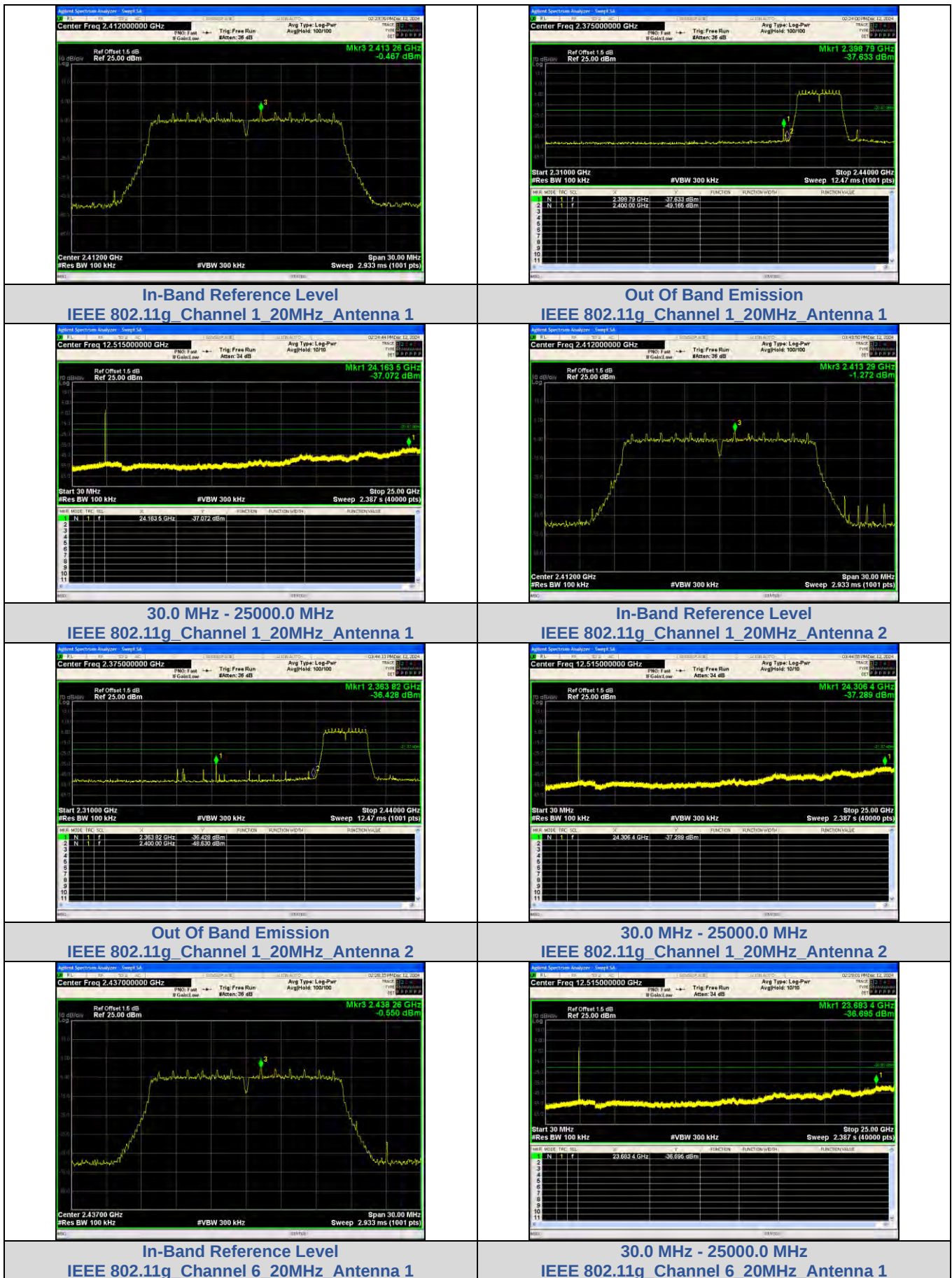
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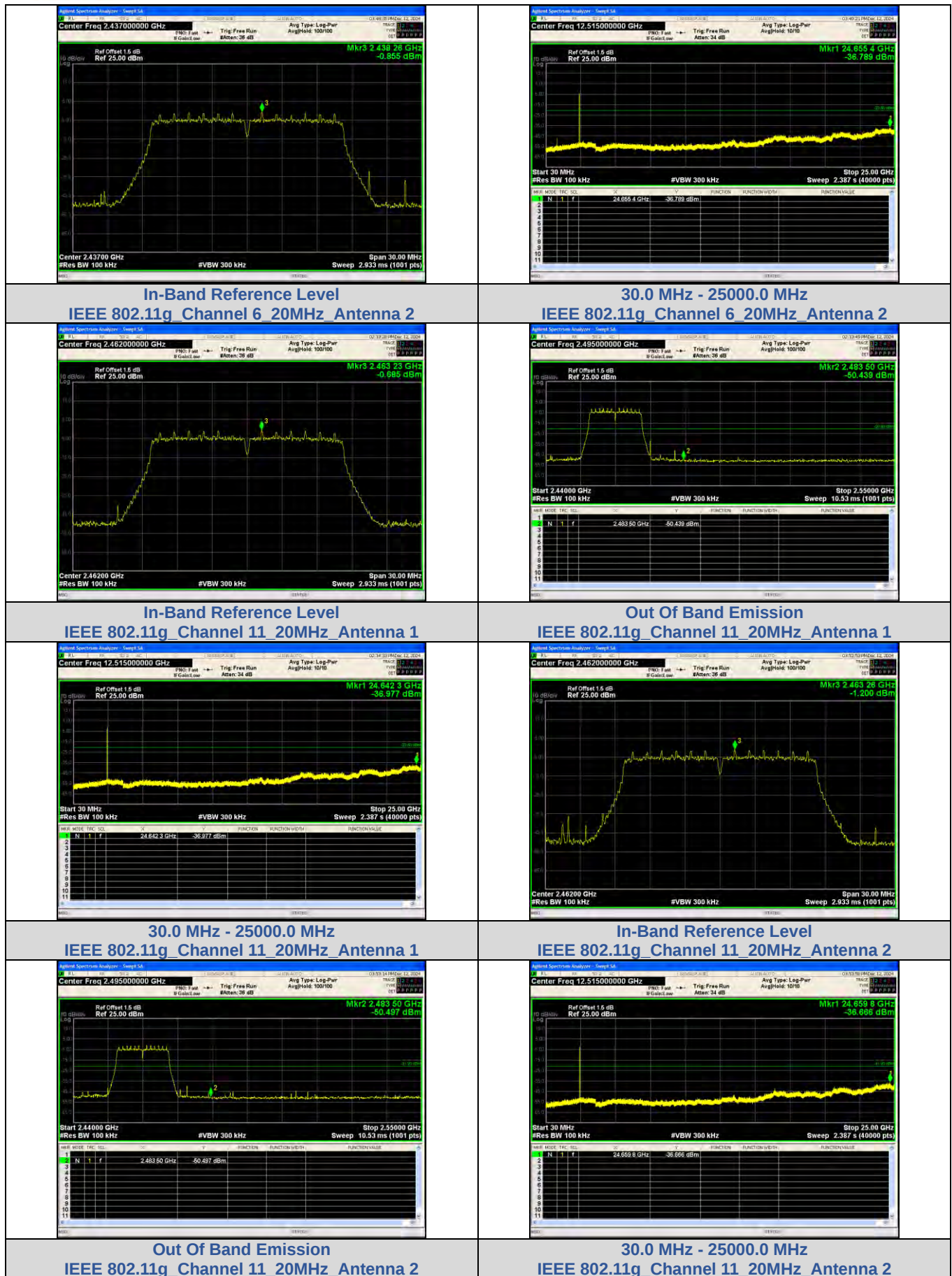
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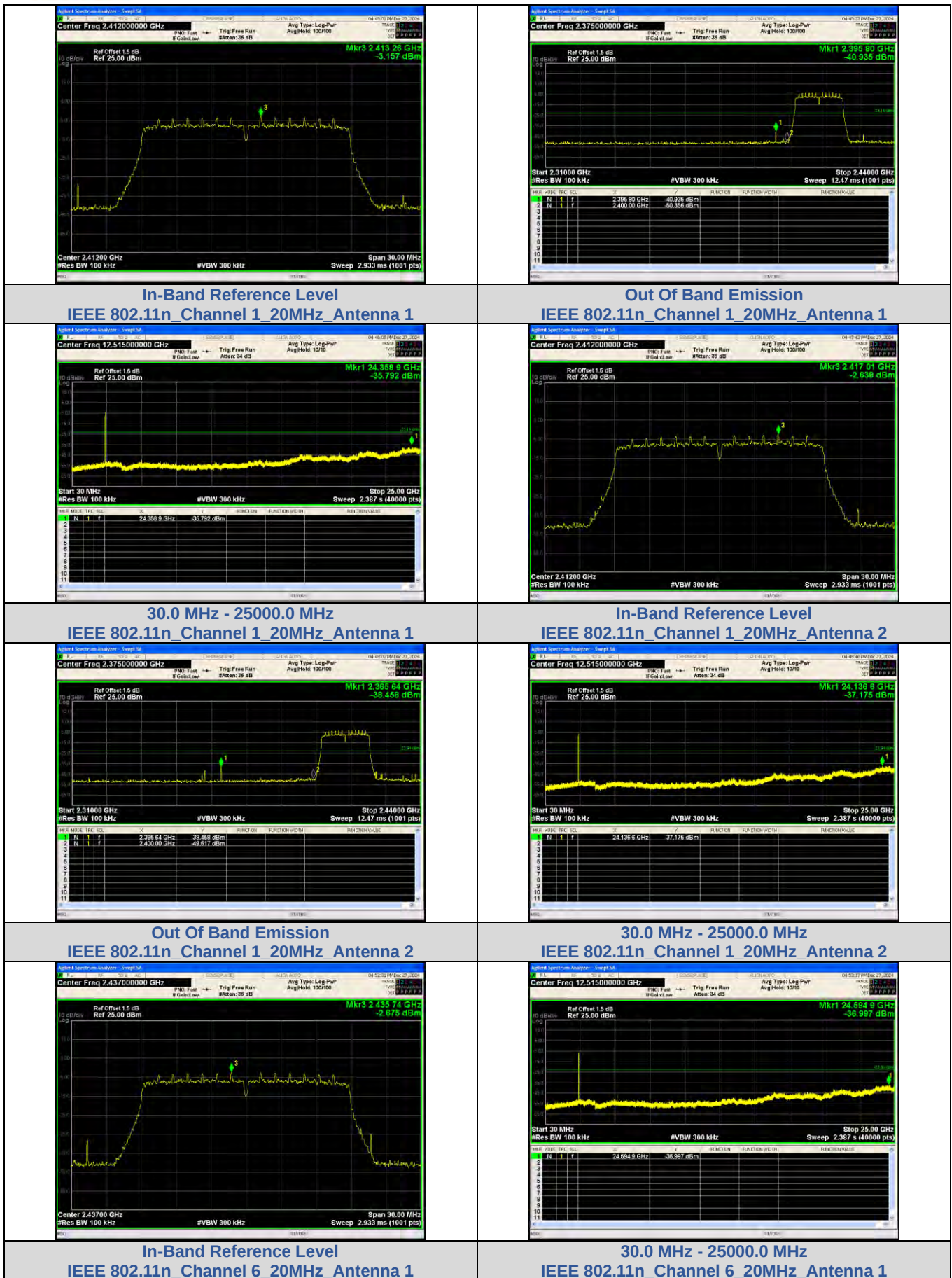
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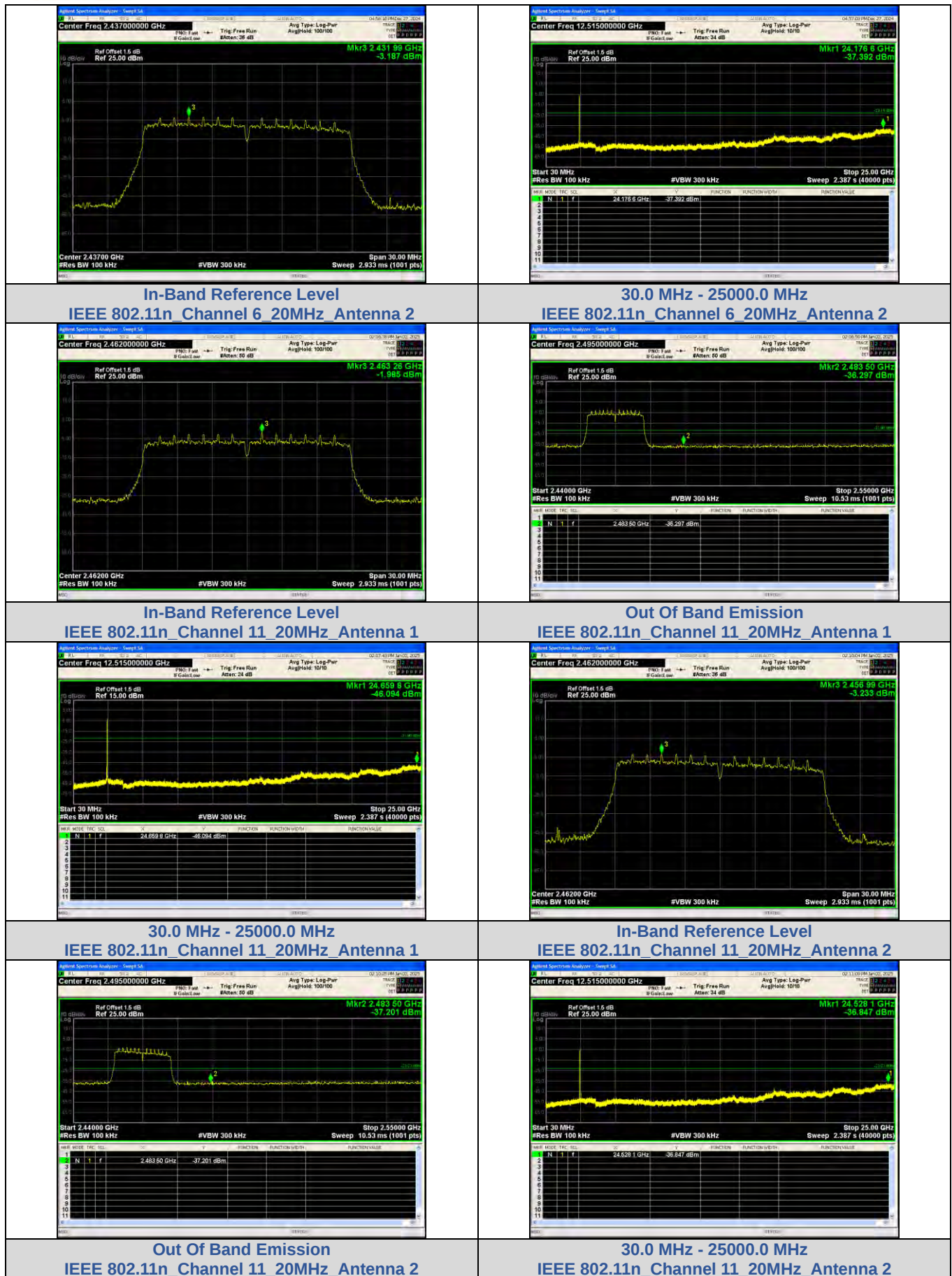
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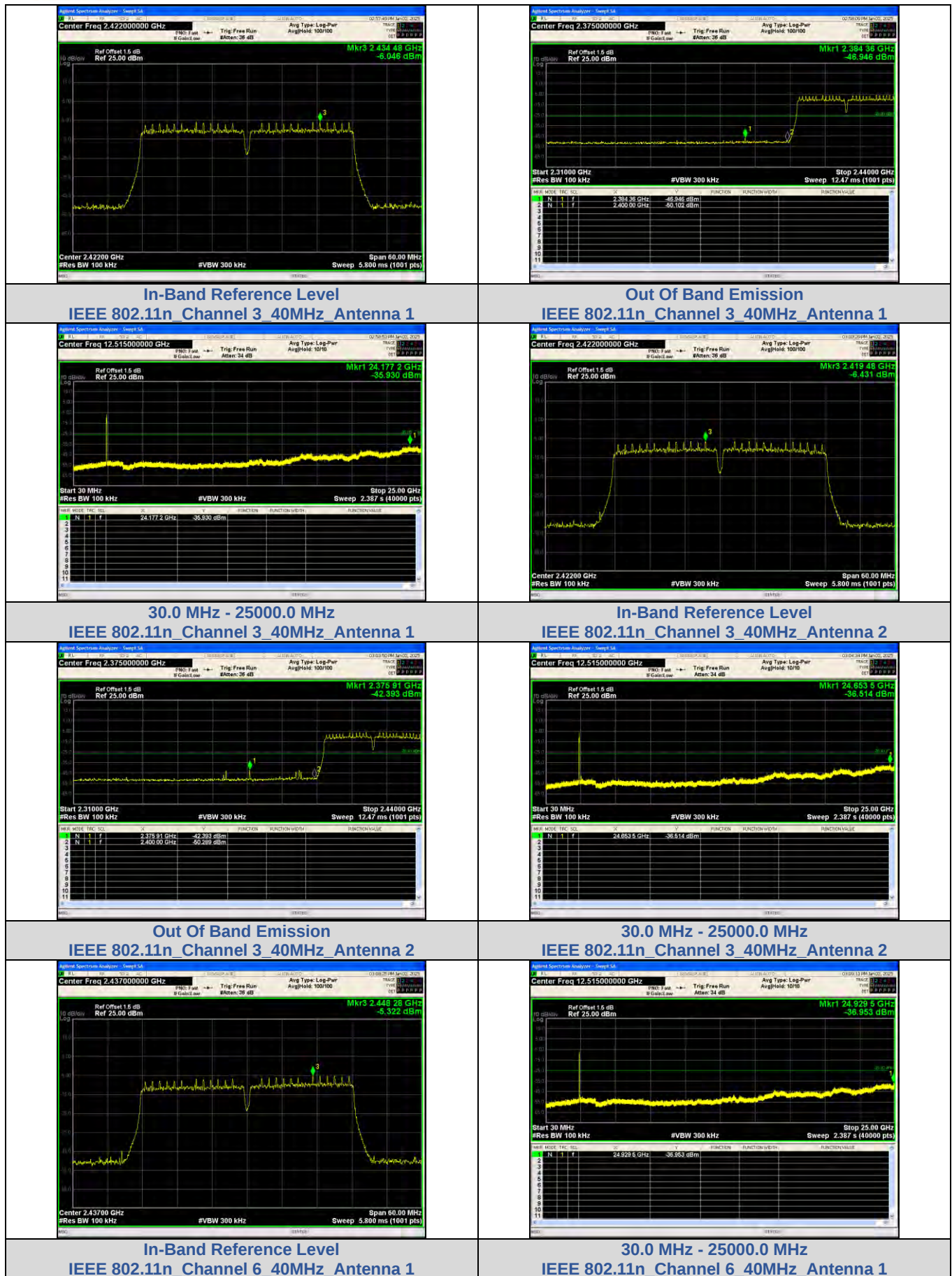


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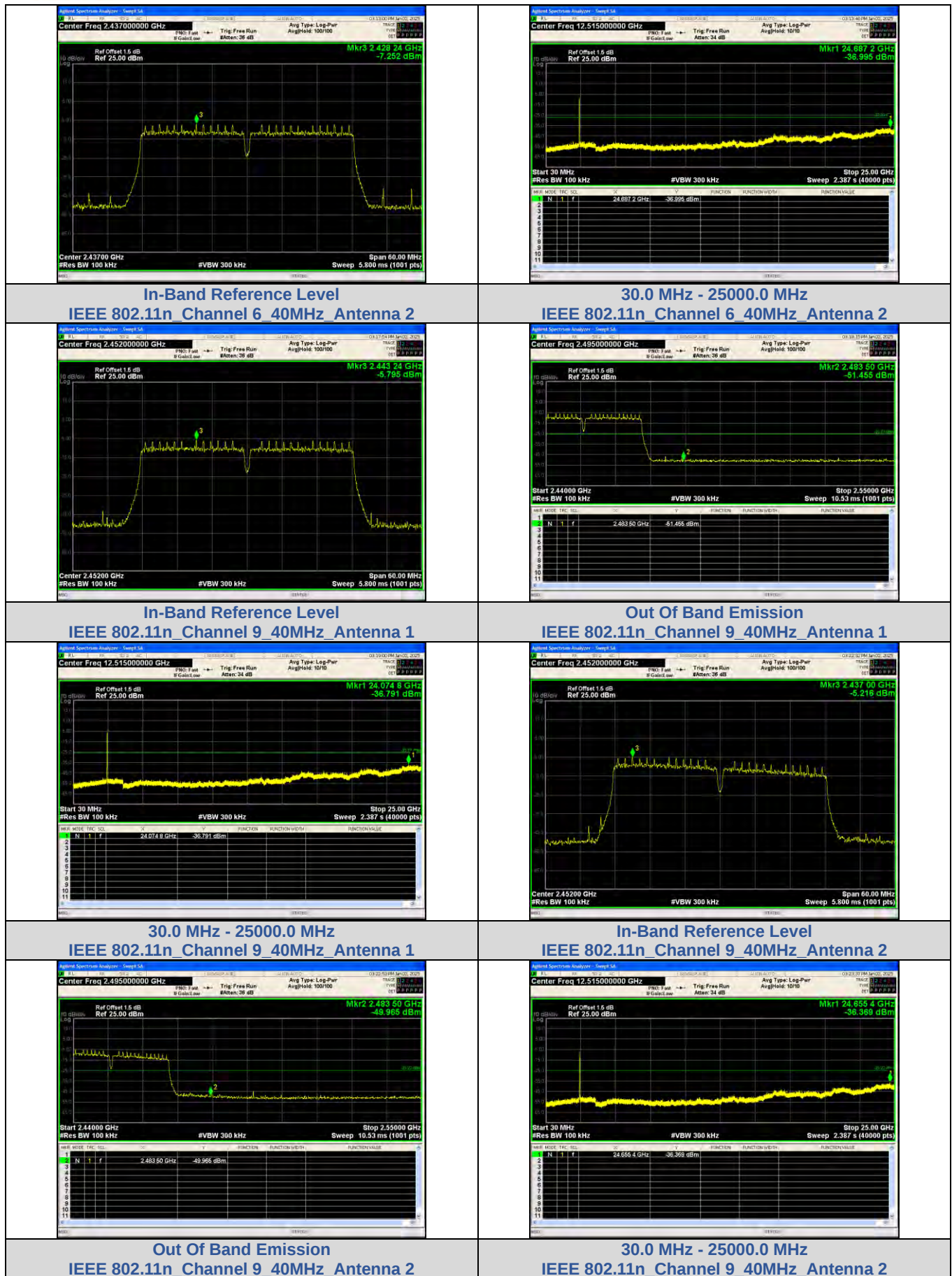


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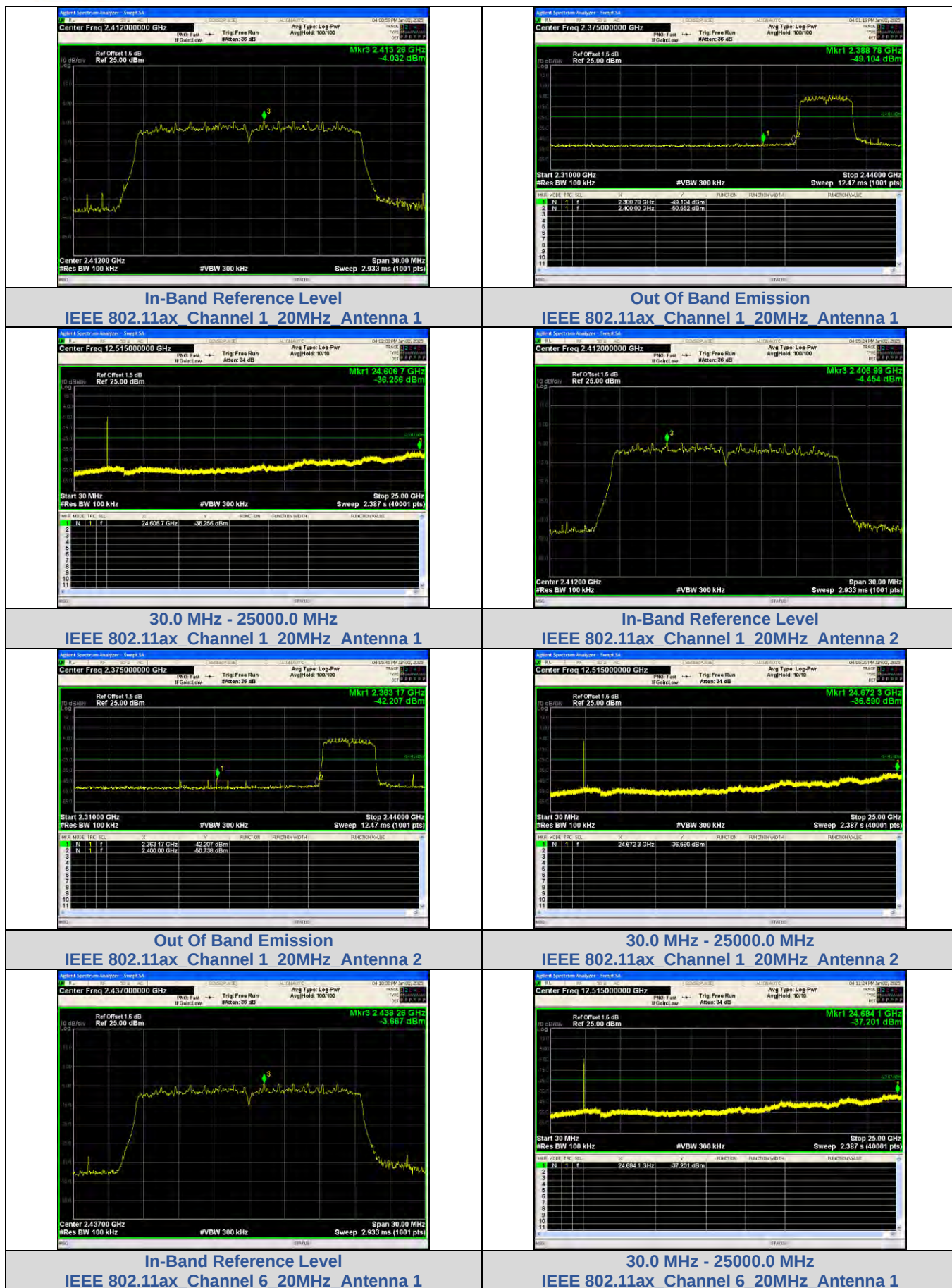


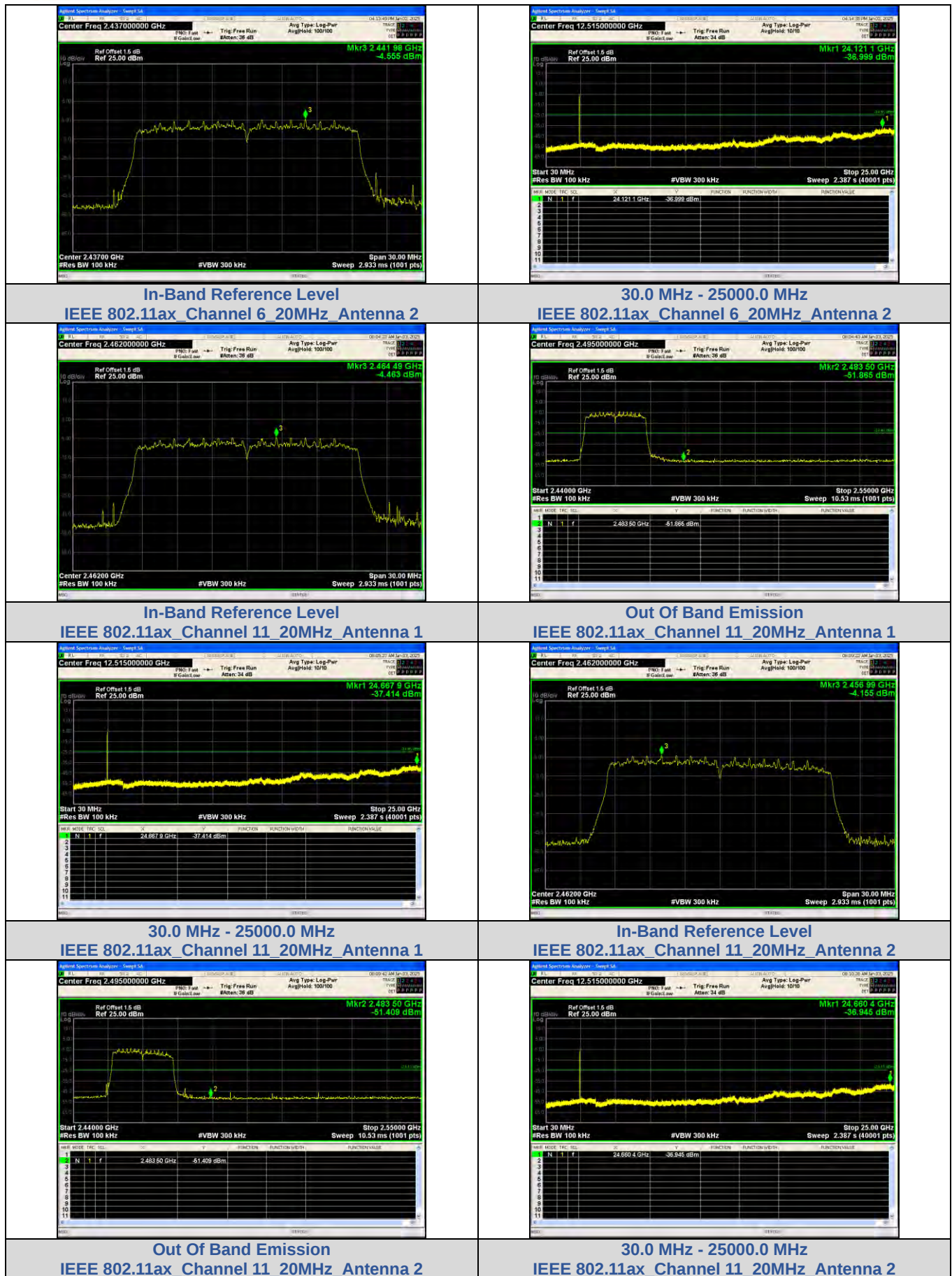
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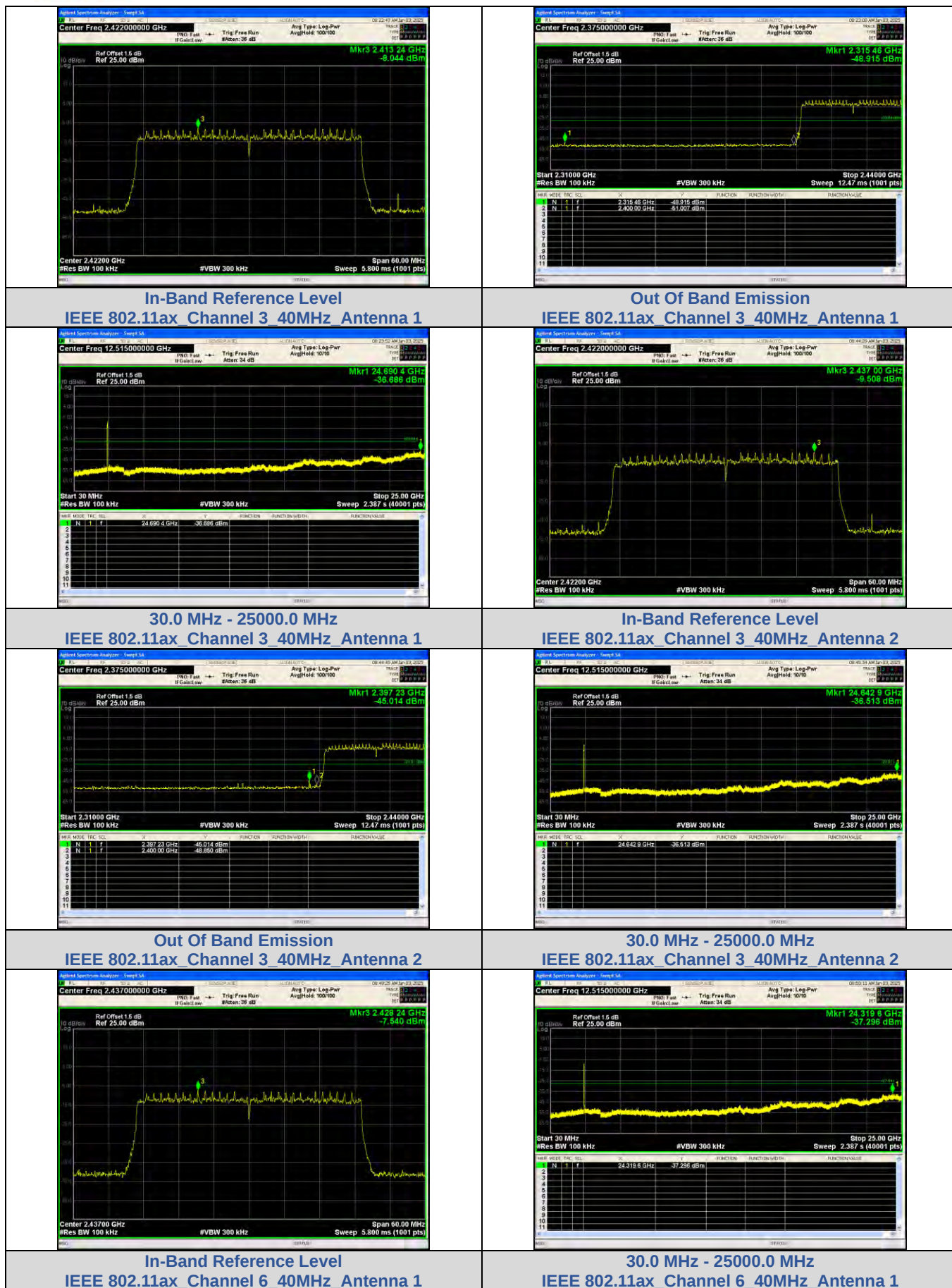
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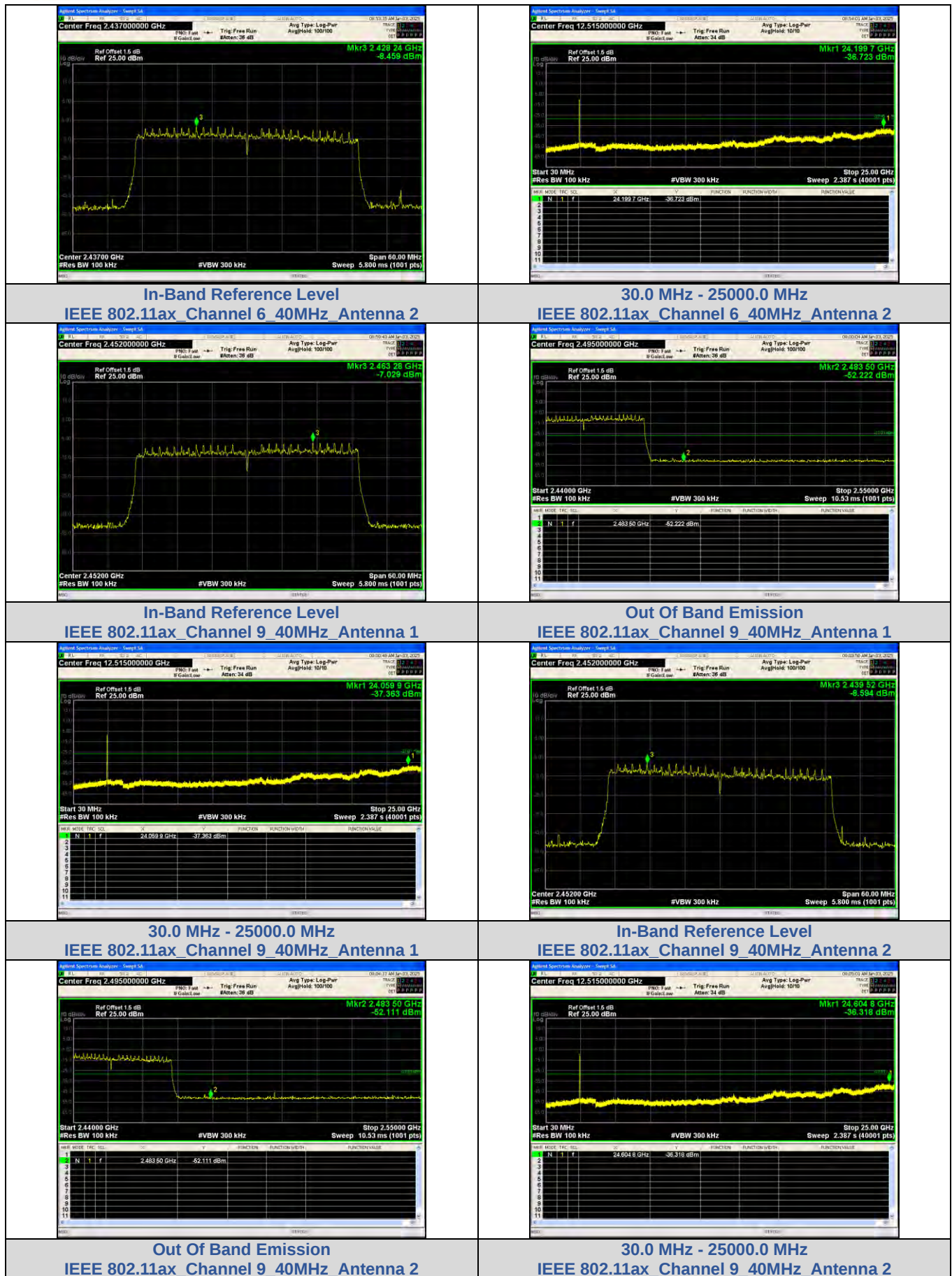
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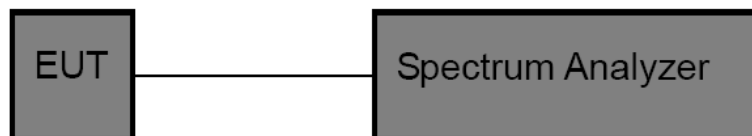
3.5. DTS Bandwidth

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(2) / RSS-247 5.2 a

Test Item	Limit	Frequency Range (MHz)
DTS Bandwidth	≥ 500 kHz (6dB bandwidth)	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. DTS Spectrum Setting:
 - (1) Set RBW = 100 kHz.
 - (2) Set the video bandwidth (VBW) ≥ 3 RBW.
 - (3) Detector = Peak.
 - (4) Trace mode = Max hold.
 - (5) Sweep = Auto couple.OCB Spectrum Setting:
 - (1) Set RBW = 1% ~ 5% occupied bandwidth.
 - (2) Set the video bandwidth (VBW) ≥ 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

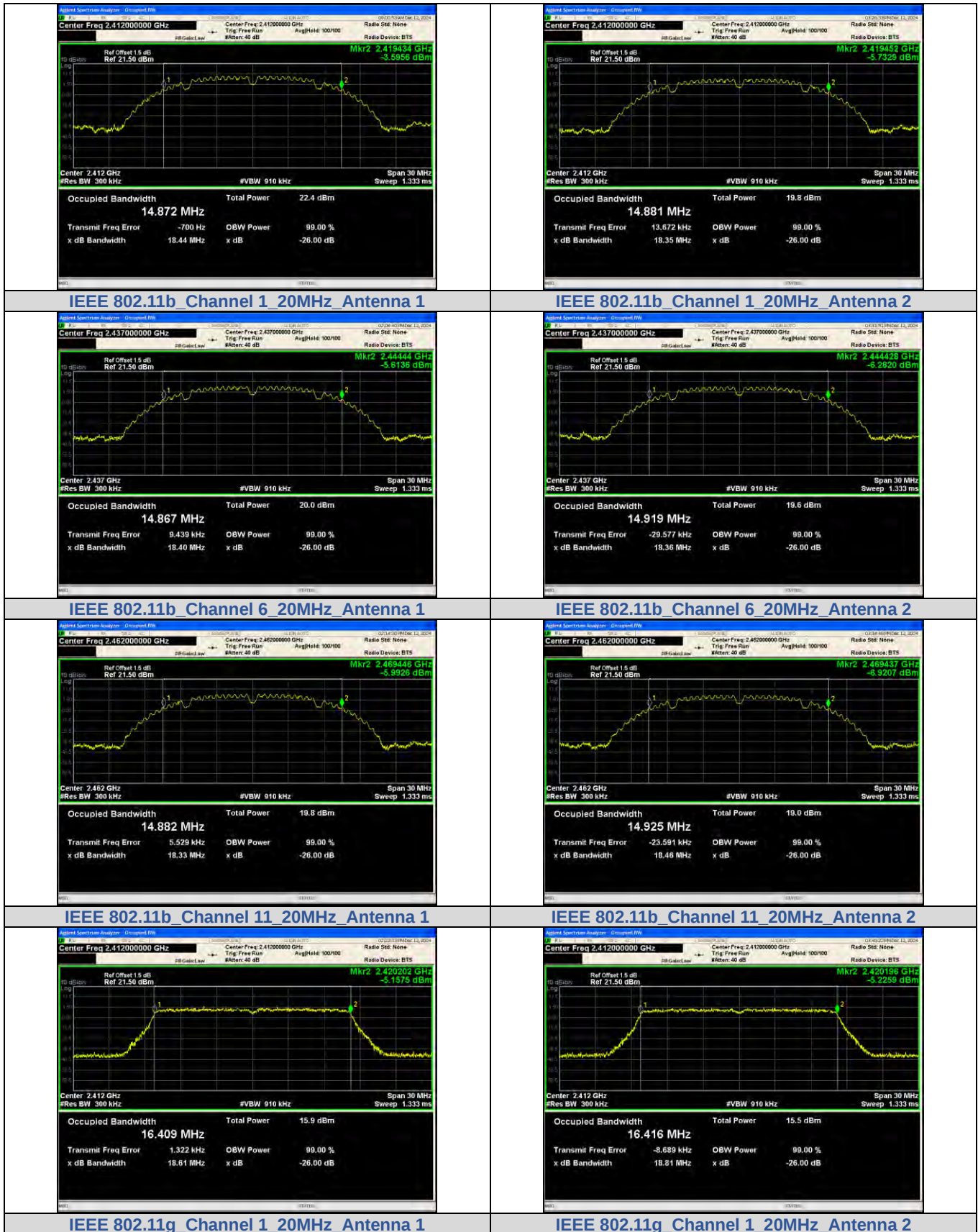
Please refer to the clause 2.4.

**Test Result**

Mode	Channel	Ant.	99% Bandwidth (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)	Result
IEEE 802.11b	1	1	14.872	10.12	≥0.5	PASS
		2	14.881	10.11		PASS
	6	1	14.867	11.07		PASS
		2	14.919	11.08		PASS
	11	1	14.882	10.10		PASS
		2	14.925	11.07		PASS
IEEE 802.11g	1	1	16.409	16.31		PASS
		2	16.416	16.33		PASS
	6	1	16.393	16.29		PASS
		2	16.410	16.31		PASS
	11	1	16.397	16.31		PASS
		2	16.423	16.33		PASS
IEEE 802.11n_20	1	1	17.541	17.54		PASS
		2	17.542	16.66		PASS
	6	1	17.545	17.19		PASS
		2	17.526	16.56		PASS
	11	1	17.544	17.02		PASS
		2	17.534	16.31		PASS
IEEE 802.11n_40	3	1	36.166	36.15		PASS
		2	36.003	35.67		PASS
	6	1	36.184	35.72		PASS
		2	36.163	36.32		PASS
	9	1	36.134	36.32		PASS
		2	35.997	35.69		PASS
IEEE 802.11ax_20	1	1	18.923	18.22		PASS
		2	18.922	18.24		PASS
	6	1	18.943	18.66		PASS
		2	18.938	18.65		PASS
	11	1	18.928	18.58		PASS
		2	18.893	17.41		PASS
IEEE 802.11ax_40	3	1	37.782	37.94		PASS
		2	37.639	37.69		PASS
	6	1	37.751	37.92		PASS
		2	37.646	36.47		PASS
	9	1	37.722	37.56		PASS
		2	37.779	36.54		PASS



99% Bandwidth:

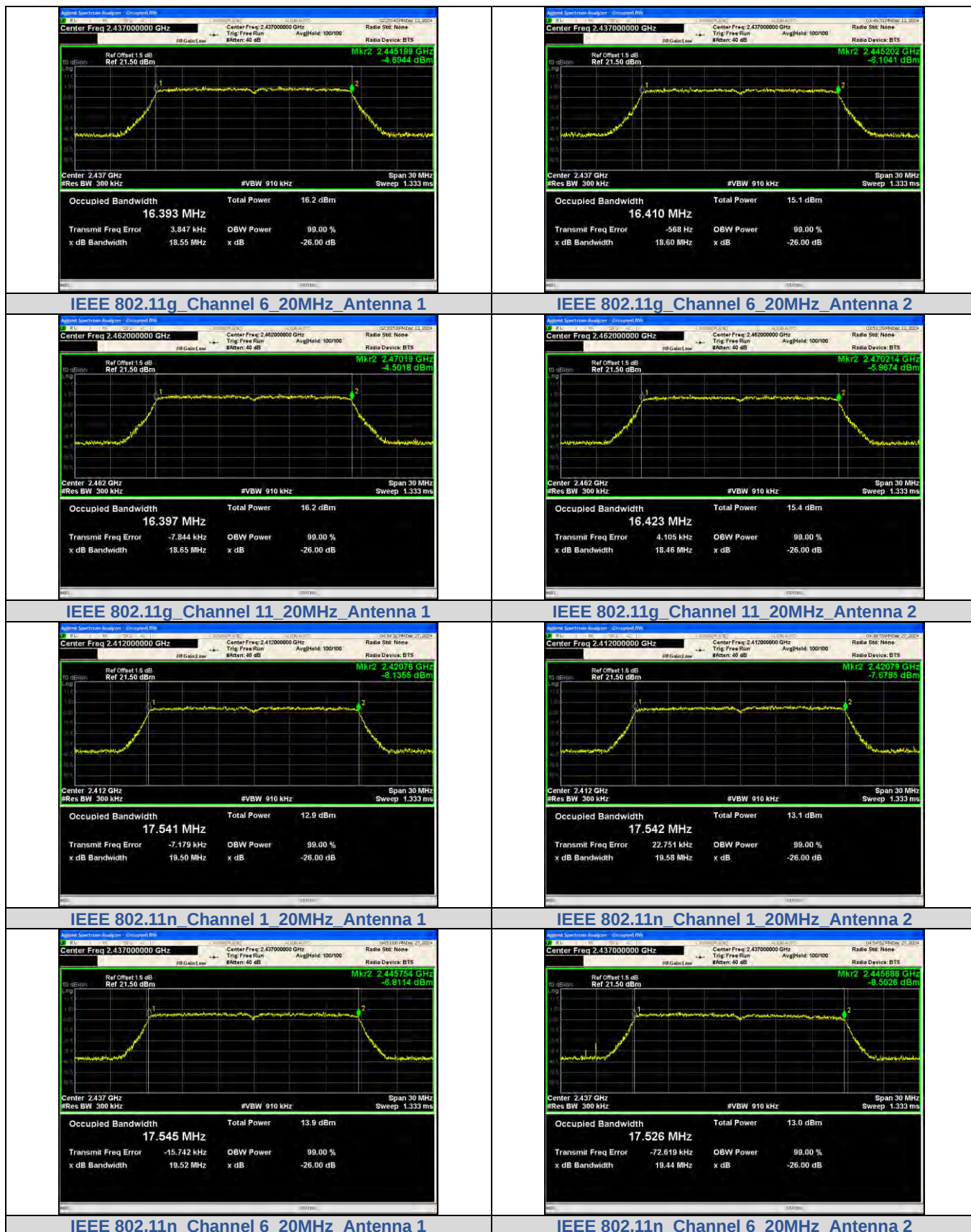


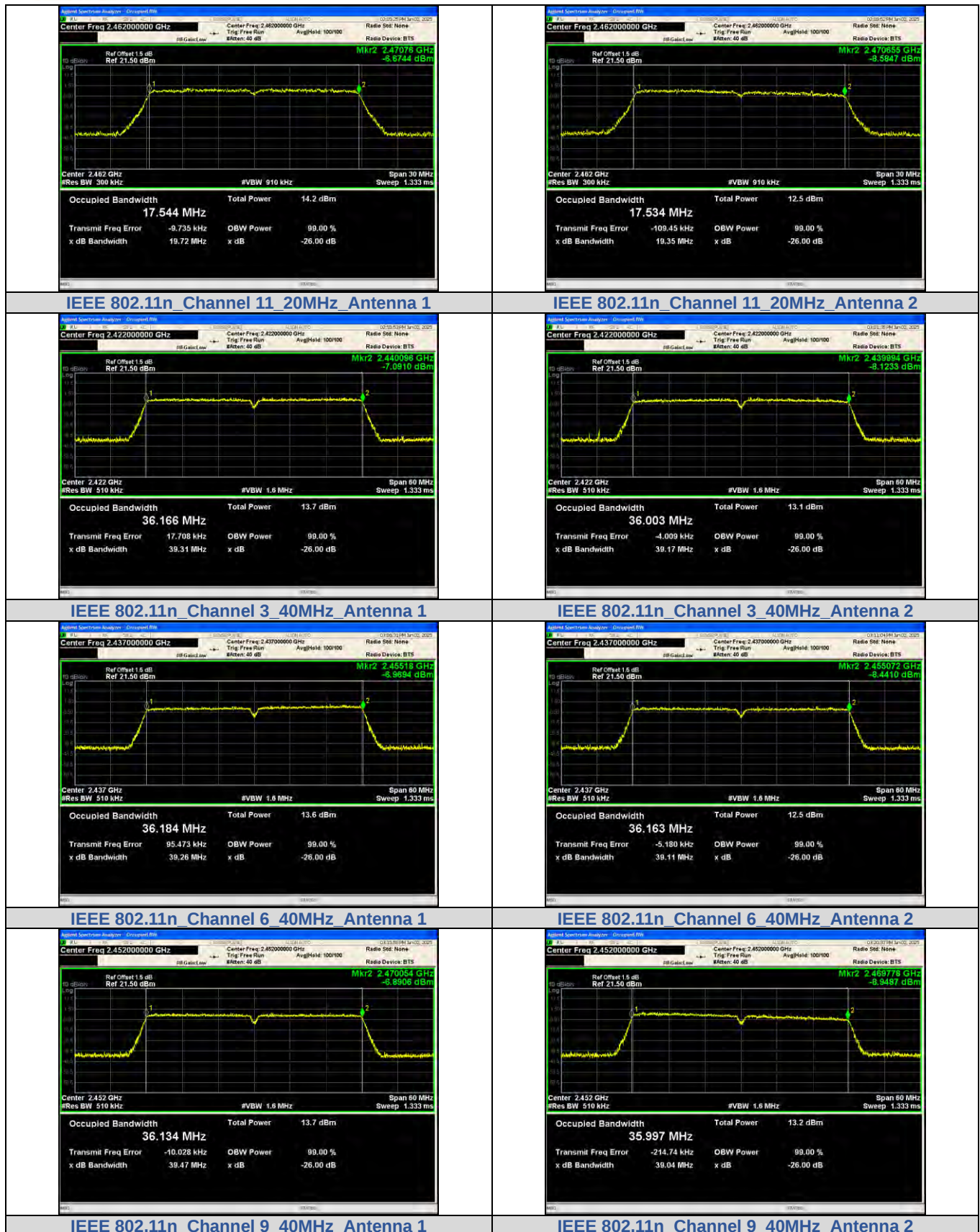
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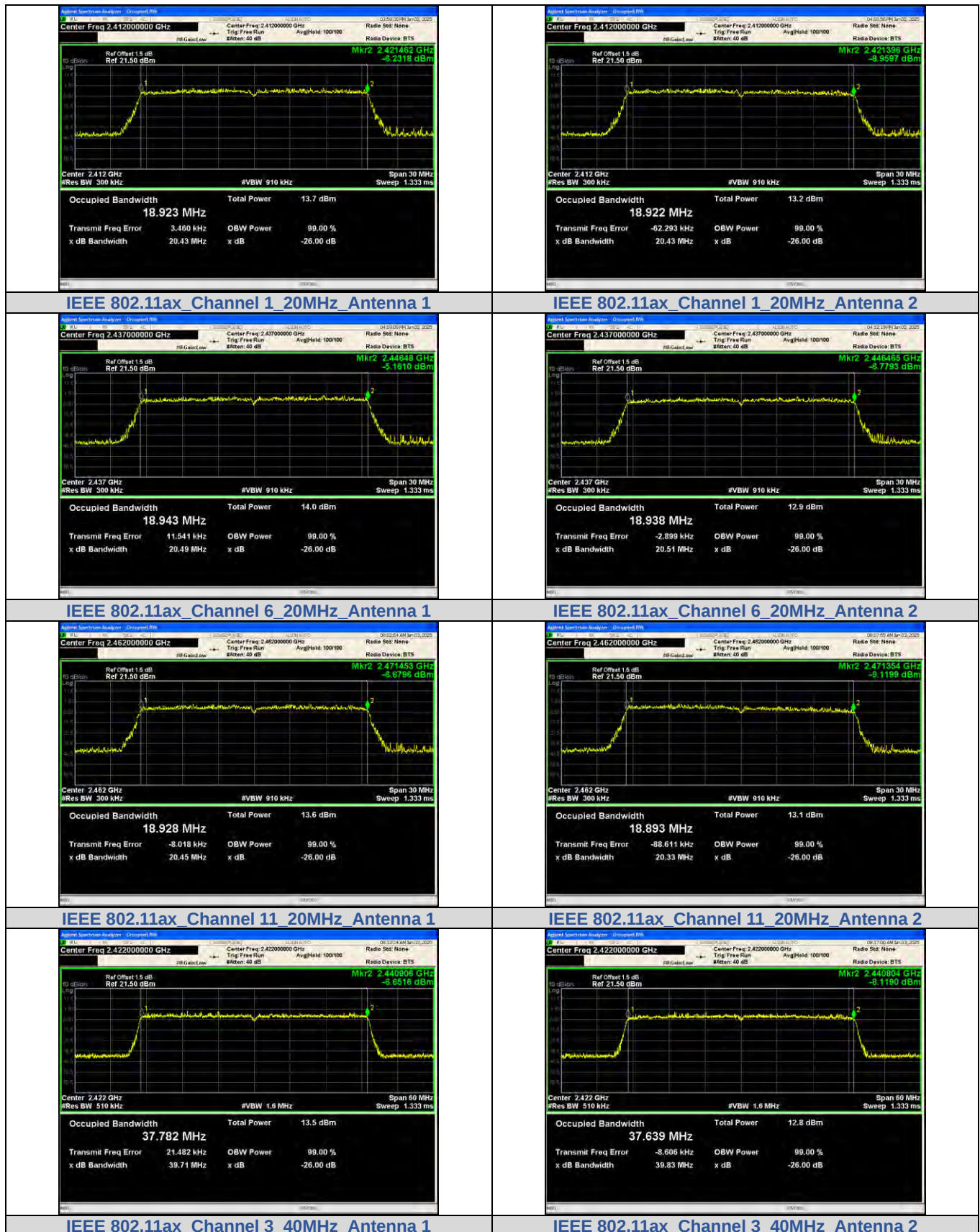
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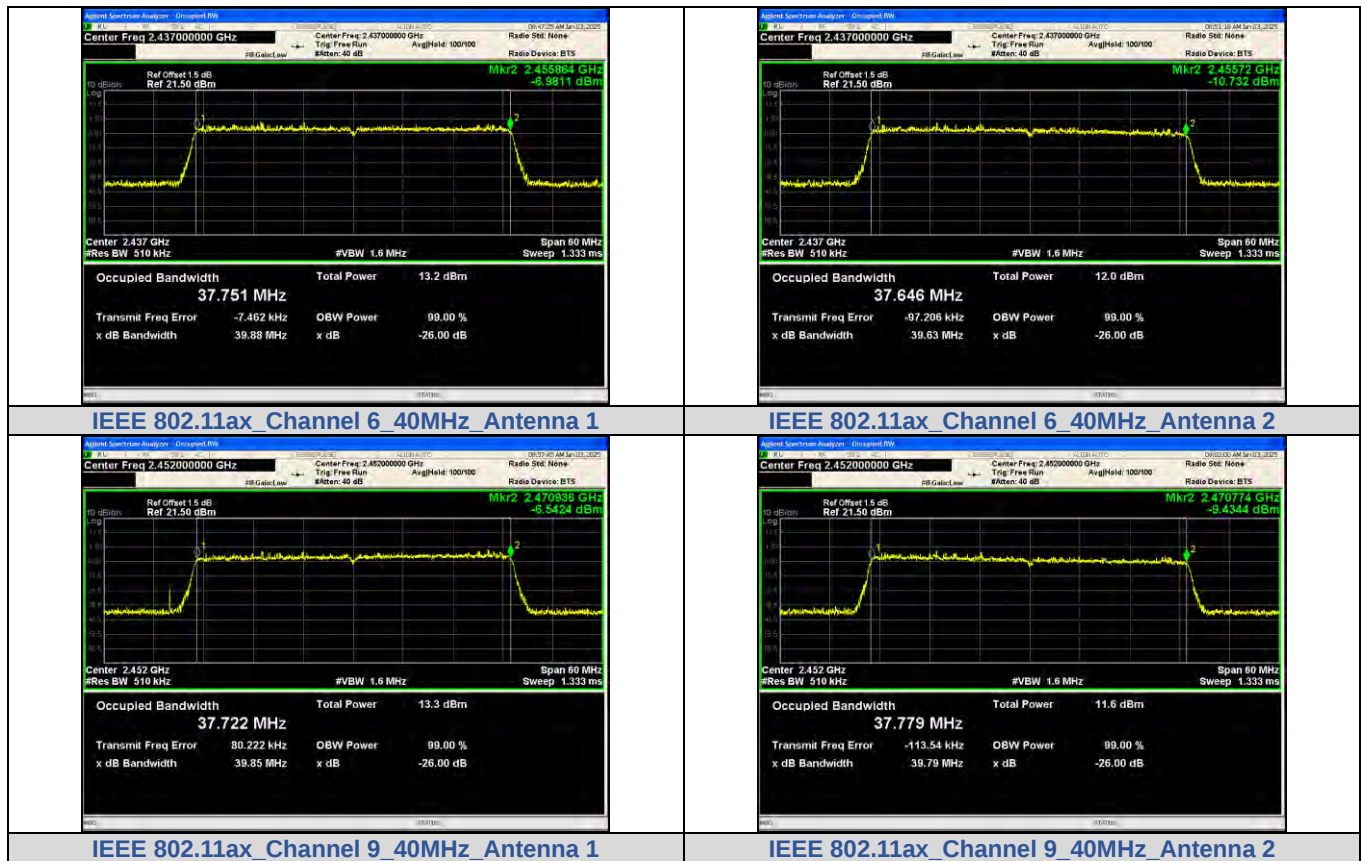
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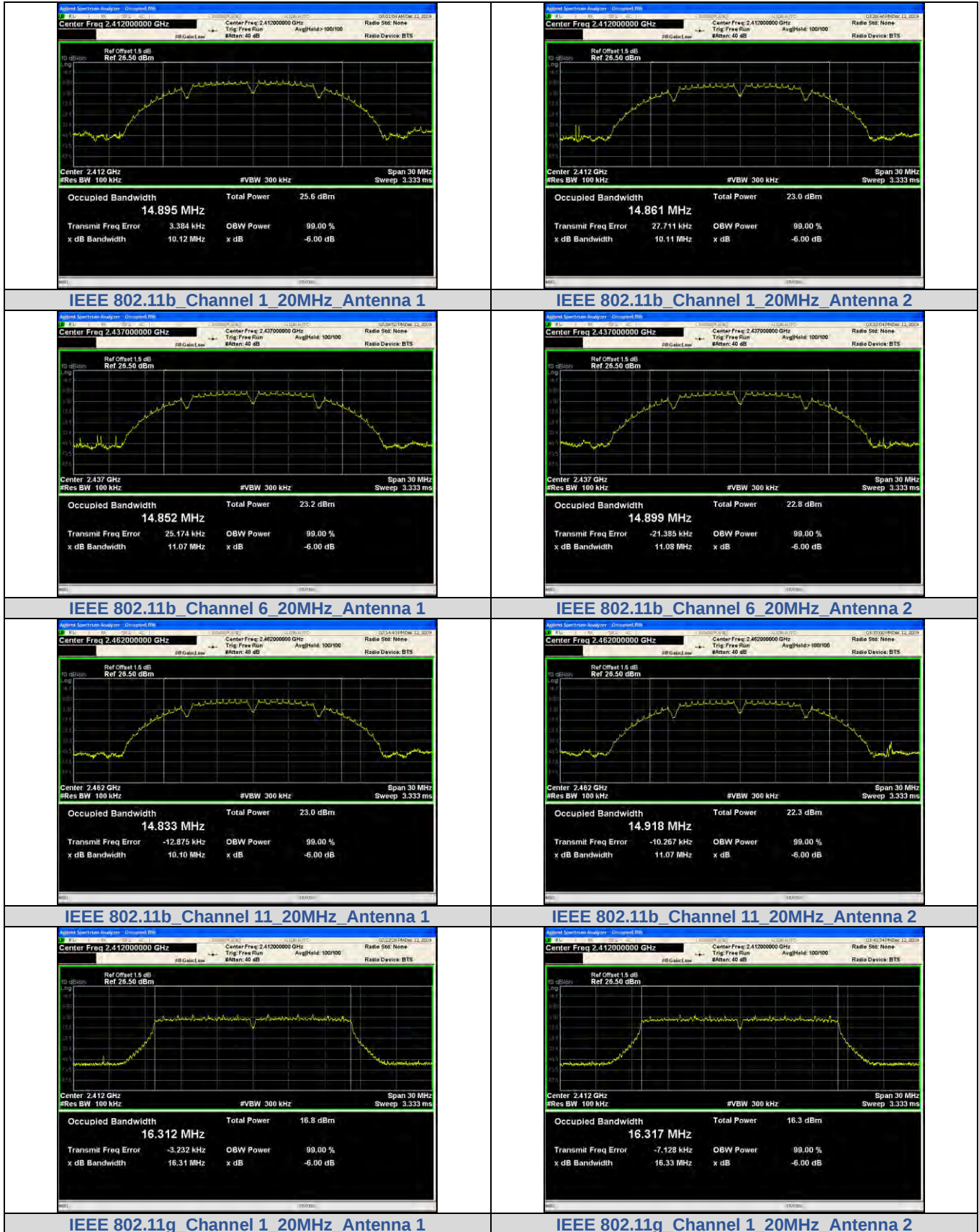


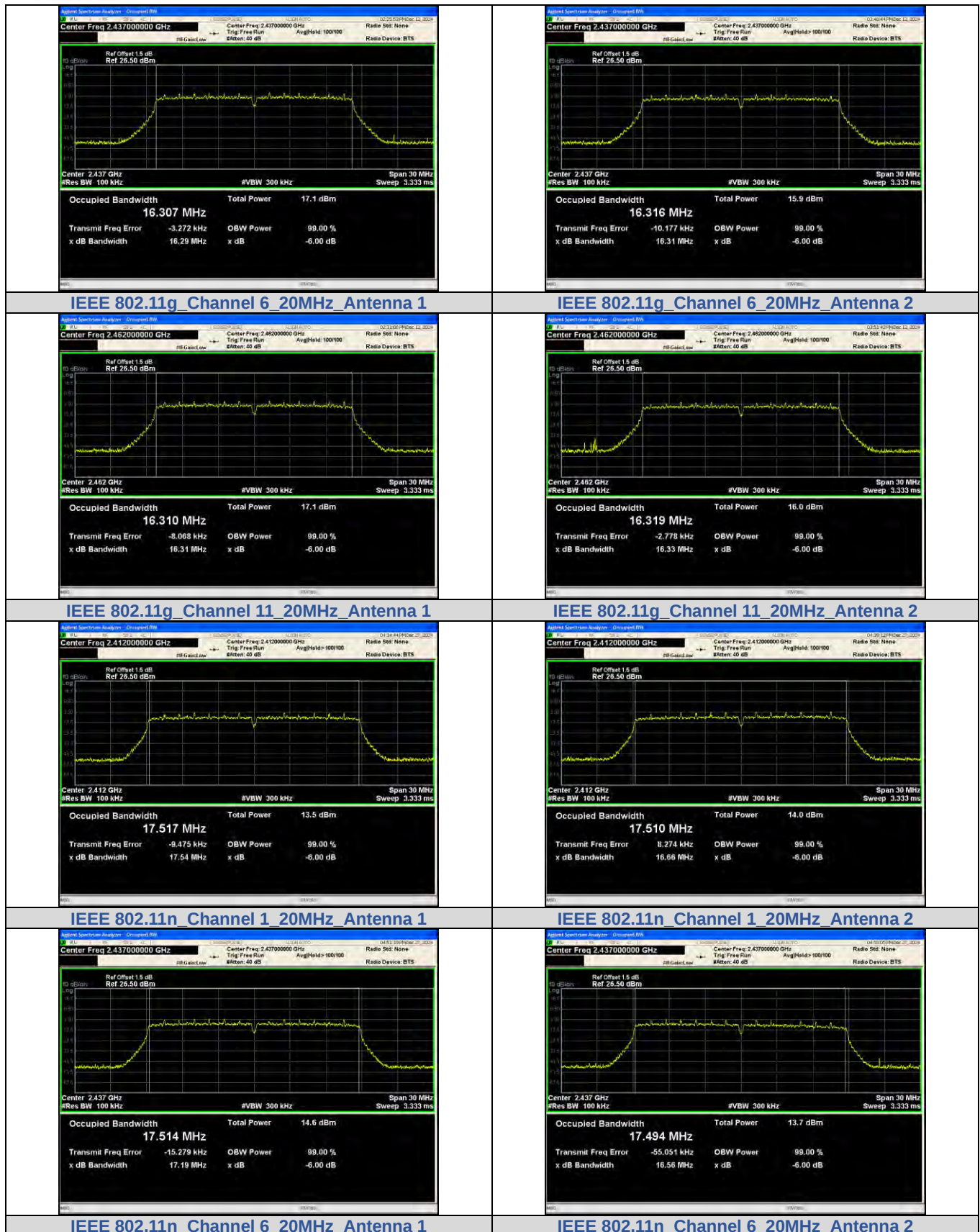


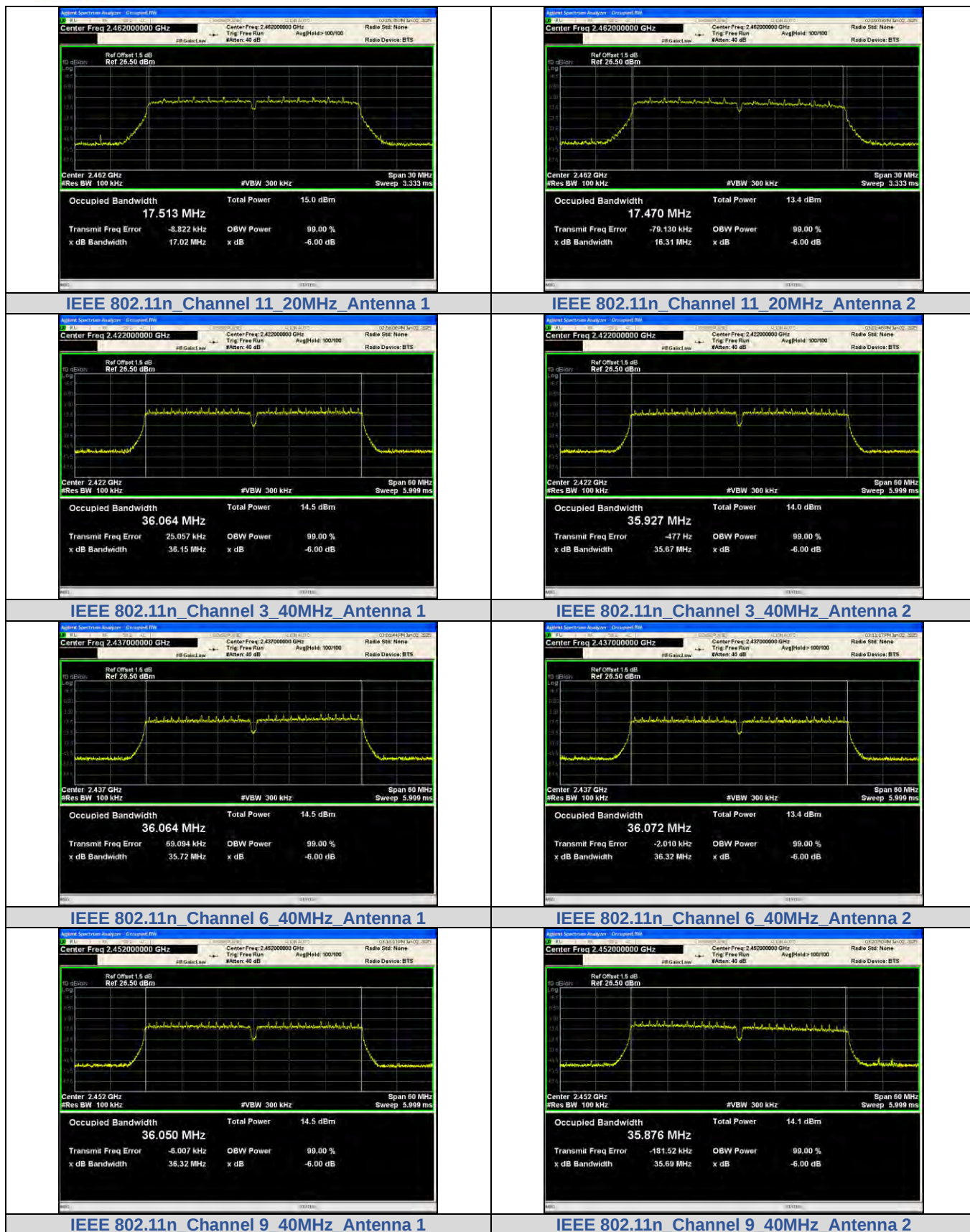


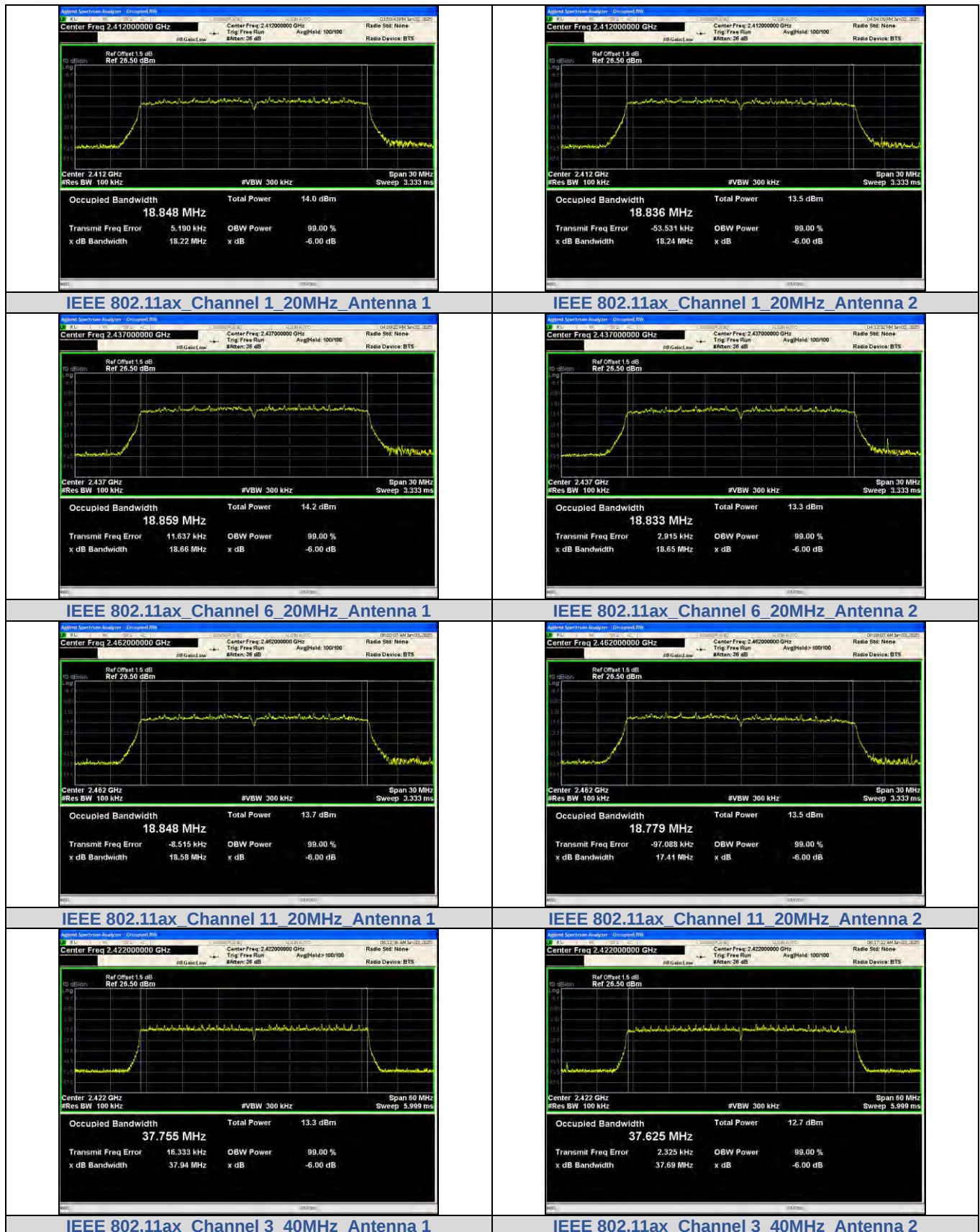


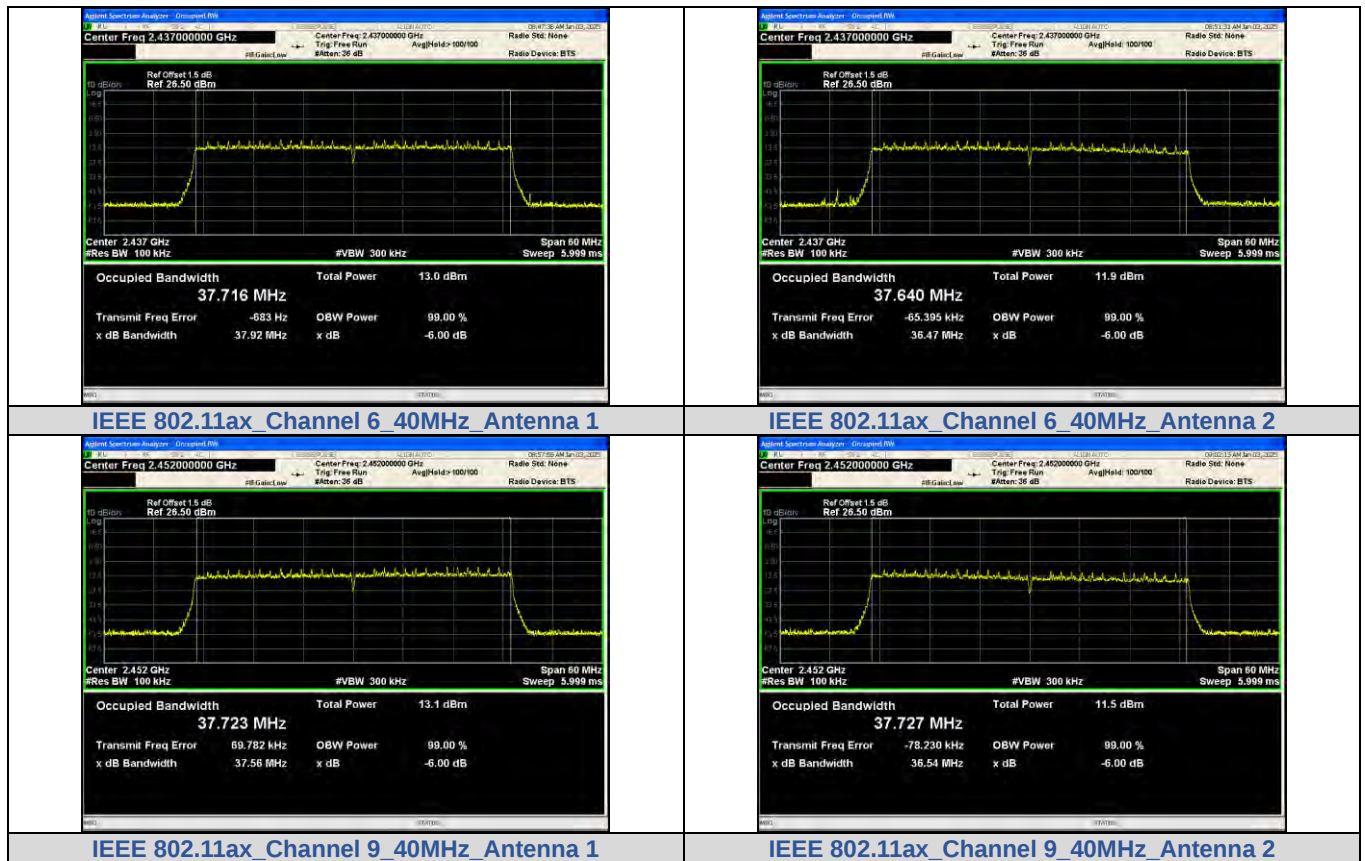
DTS Bandwidth:













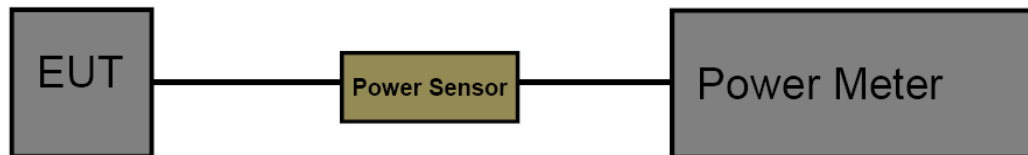
3.6. Peak Output Power

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (b)(3) / RSS-247 5.4 d

Section	Test Item	Limit	Frequency Range (MHz)
FCC CFR 47 Part 15.247 (b)(3)	Maximum Conducted Output Power	1 Watt or 30dBm	2400~2483.5
ISED RSS-247 5.4 d	Maximum Conducted Output Power	1 Watt or 30dBm	2400~2483.5
	EIRP	4 Watt or 36dBm	2400~2483.5

Test Configuration



Test Procedure

1. The maximum conducted output power may be measured using a broadband RF power meter.
2. Power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor.
3. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.
4. Record the measurement data.

Test Mode

Please refer to the clause 2.4.

**Test Result**

Mode	Channel	Ant. 1 (dBm)	Ant. 2 (dBm)	Total (dBm)	Limit (dBm)	Result
IEEE 802.11b	1	18.50	18.46	N/A	≤29.95	PASS
	6	18.53	18.41	N/A		PASS
	11	18.57	18.36	N/A		PASS
IEEE 802.11g	1	17.68	17.25	N/A		PASS
	6	17.58	17.40	N/A		PASS
	11	17.56	17.10	N/A		PASS
IEEE 802.11n_20	1	15.14	15.28	18.22		PASS
	6	15.73	14.68	18.25		PASS
	11	15.99	14.14	18.17		PASS
IEEE 802.11n_40	3	15.17	14.67	17.94		PASS
	6	15.13	14.06	17.64		PASS
	9	15.24	14.75	18.01		PASS
IEEE 802.11ax_20	1	14.90	14.34	17.64		PASS
	6	15.23	14.18	17.75		PASS
	11	14.87	14.27	17.59		PASS
IEEE 802.11ax_40	3	13.99	12.25	16.22		PASS
	6	14.33	13.01	16.73		PASS
	9	14.41	12.50	16.57		PASS



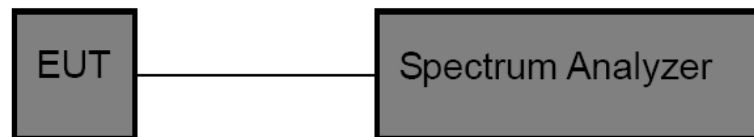
3.7. Power Spectral Density

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (e) / RSS-247 5.2 b

Test Item	Limit	Frequency Range (MHz)
Power Spectral Density	8 dBm (in any 3 kHz)	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. 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 DTS channel center frequency.
Set span to at least 1.5 times the OBW.
Set RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
Set VBW $\geq [3 \times \text{RBW}]$.
Detector = power averaging (rms) or sample detector (when rms not available).
Ensure that the number of measurement points in the sweep $\geq [2 \times \text{span} / \text{RBW}]$.
Sweep time = auto couple.
Employ trace averaging (rms) mode over a minimum of 100 traces.
Use the peak marker function to determine the maximum amplitude level.
If the measured value exceeds requirement, 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).

Test Mode

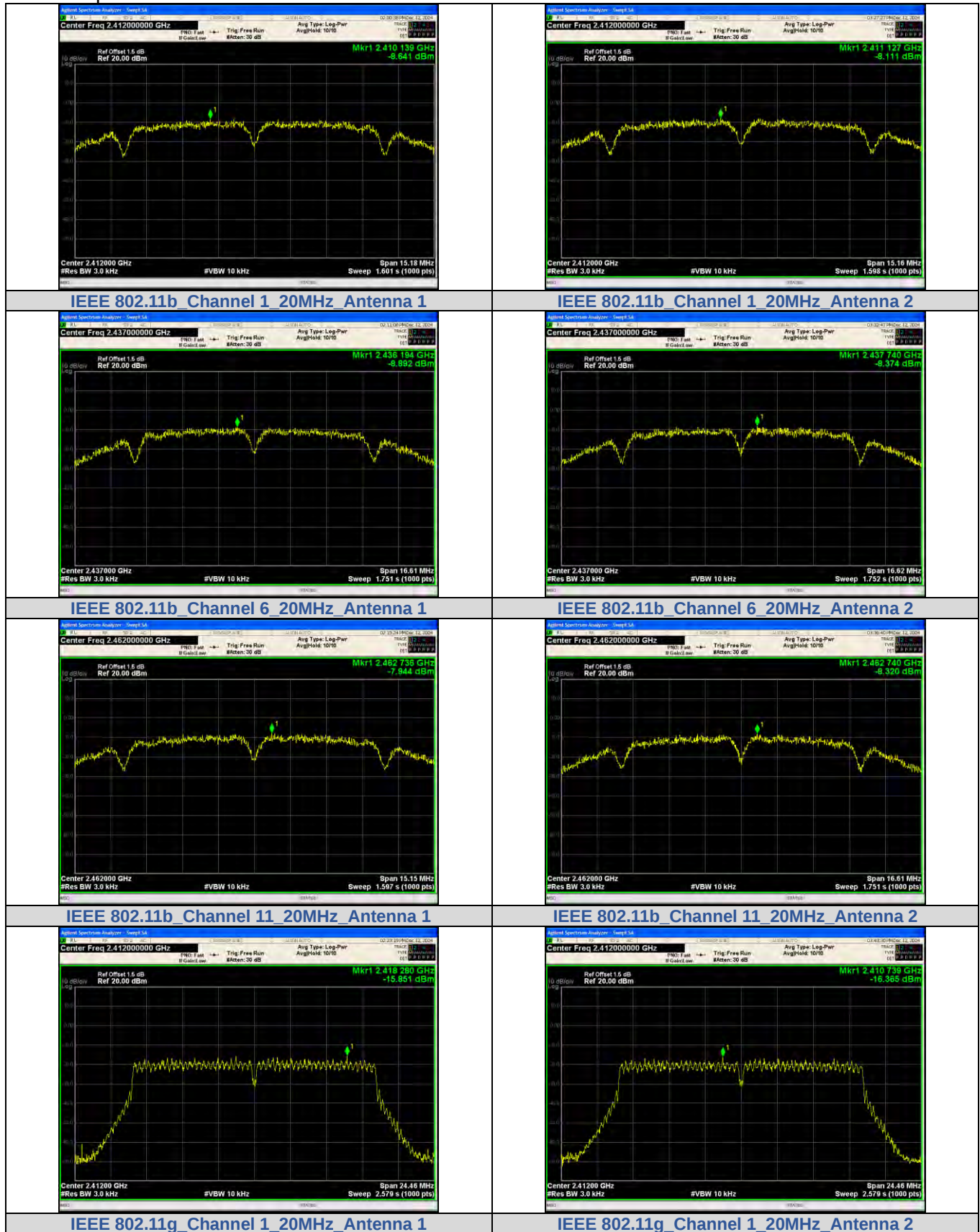
Please refer to the clause 2.4.

**Test Result**

Mode	Channel	PSD (dBm/3kHz) Ant. 1	PSD (dBm/3kHz) Ant. 2	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
IEEE 802.11b	1	-8.641	-8.111	N/A	≤7.95	PASS
	6	-8.892	-8.374	N/A		PASS
	11	-7.944	-8.320	N/A		PASS
IEEE 802.11g	1	-15.851	-16.365	N/A		PASS
	6	-16.431	-16.280	N/A		PASS
	11	-16.626	-16.816	N/A		PASS
IEEE 802.11n_20	1	-18.185	-18.288	-15.226		PASS
	6	-17.761	-18.953	-15.306		PASS
	11	-17.623	-18.781	-15.153		PASS
IEEE 802.11n_40	3	-19.408	-19.993	-16.680		PASS
	6	-19.832	-20.305	-17.052		PASS
	9	-19.597	-18.620	-16.071		PASS
IEEE 802.11ax_20	1	-18.852	-19.933	-16.349		PASS
	6	-18.255	-19.808	-15.952		PASS
	11	-19.013	-19.032	-16.012		PASS
IEEE 802.11ax_40	3	-23.352	-23.975	-20.642		PASS
	6	-23.131	-22.791	-19.947		PASS
	9	-22.538	-22.386	-19.451		PASS



Test Graphs

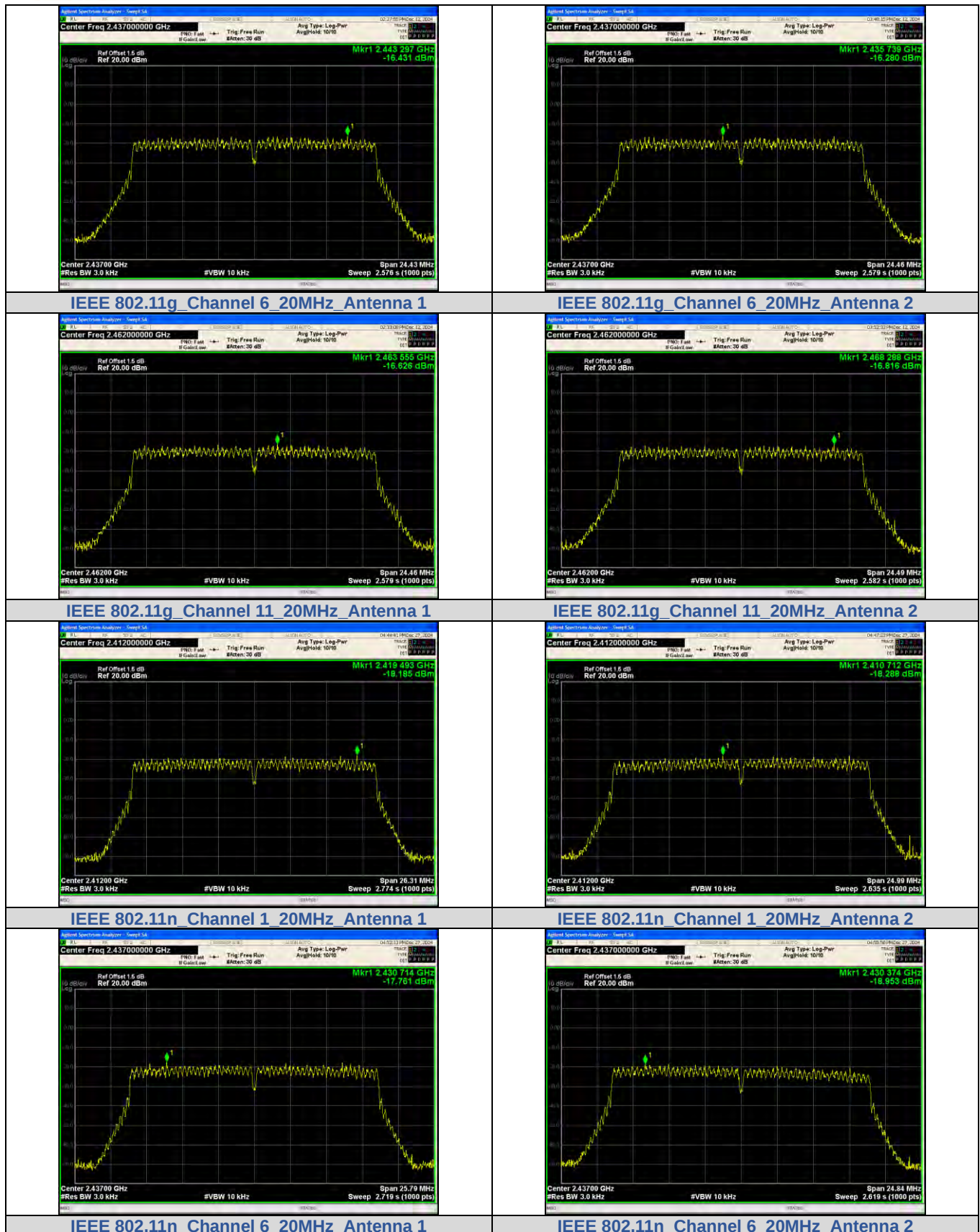


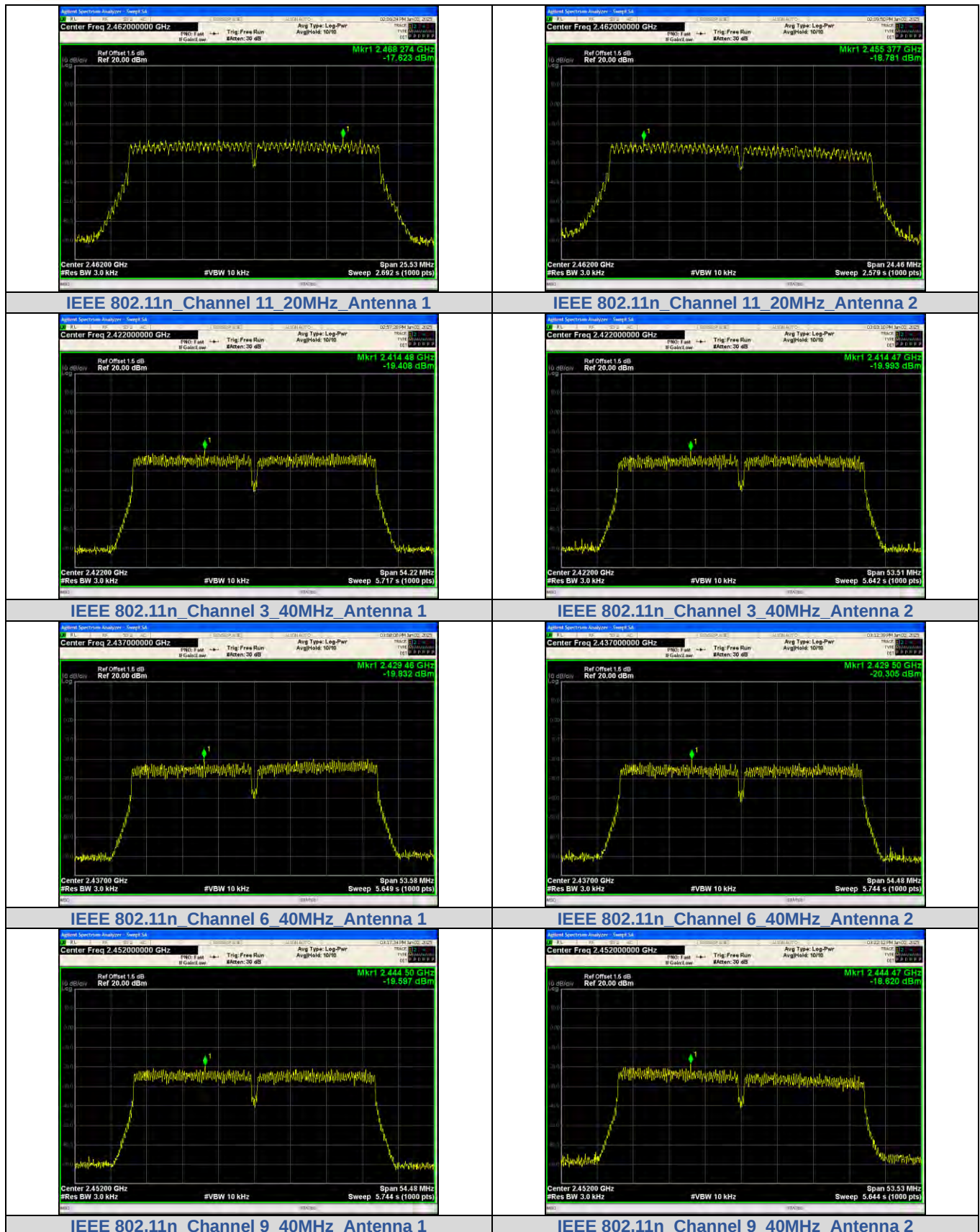
CTC Laboratories, Inc.

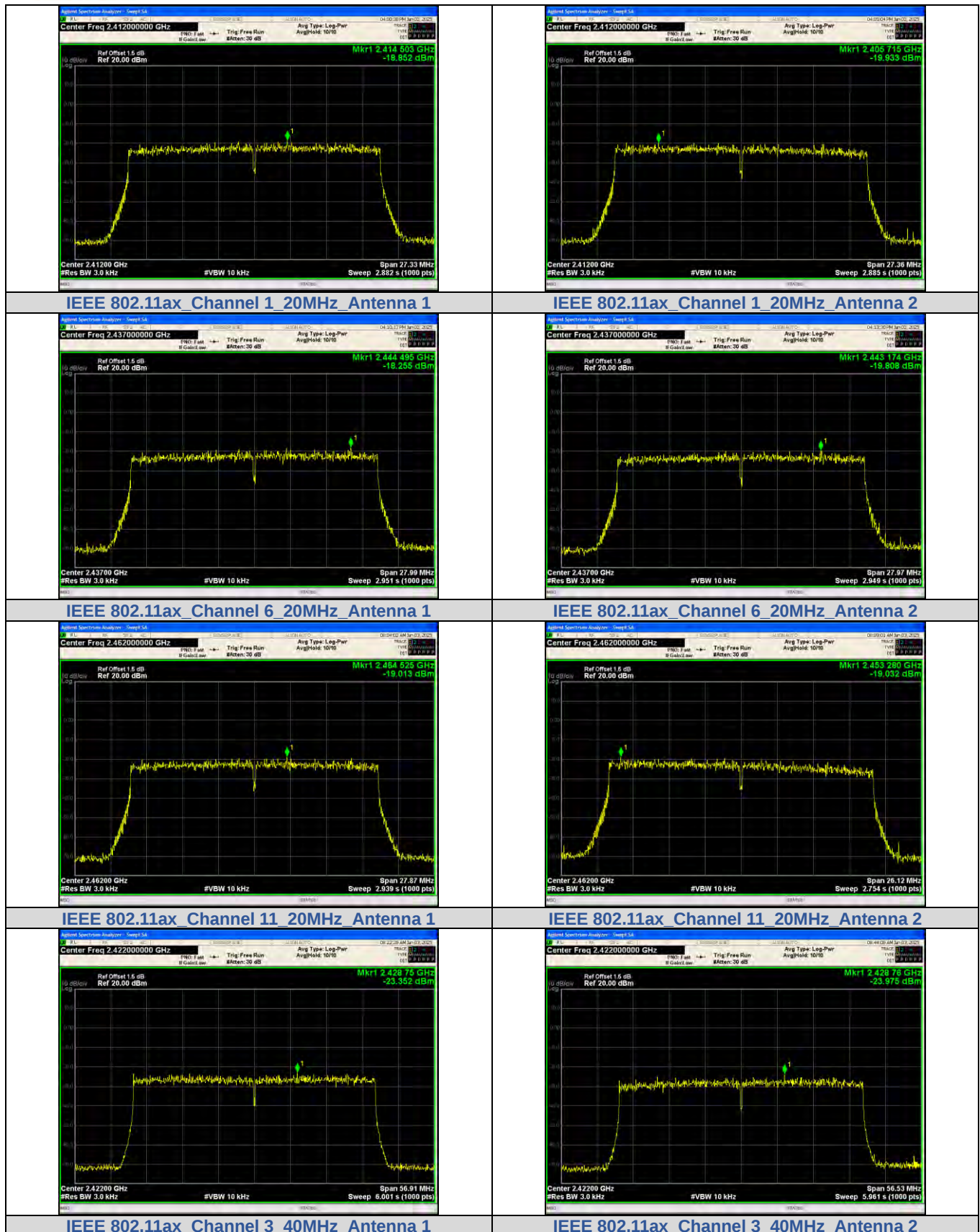
Room 101 Building B, No. 7, Lanqing 1st Road, Luhu Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China
Tel.: (86)755-27521059 Fax: (86)755-27521011 Http://www.sz-ctc.org.cn

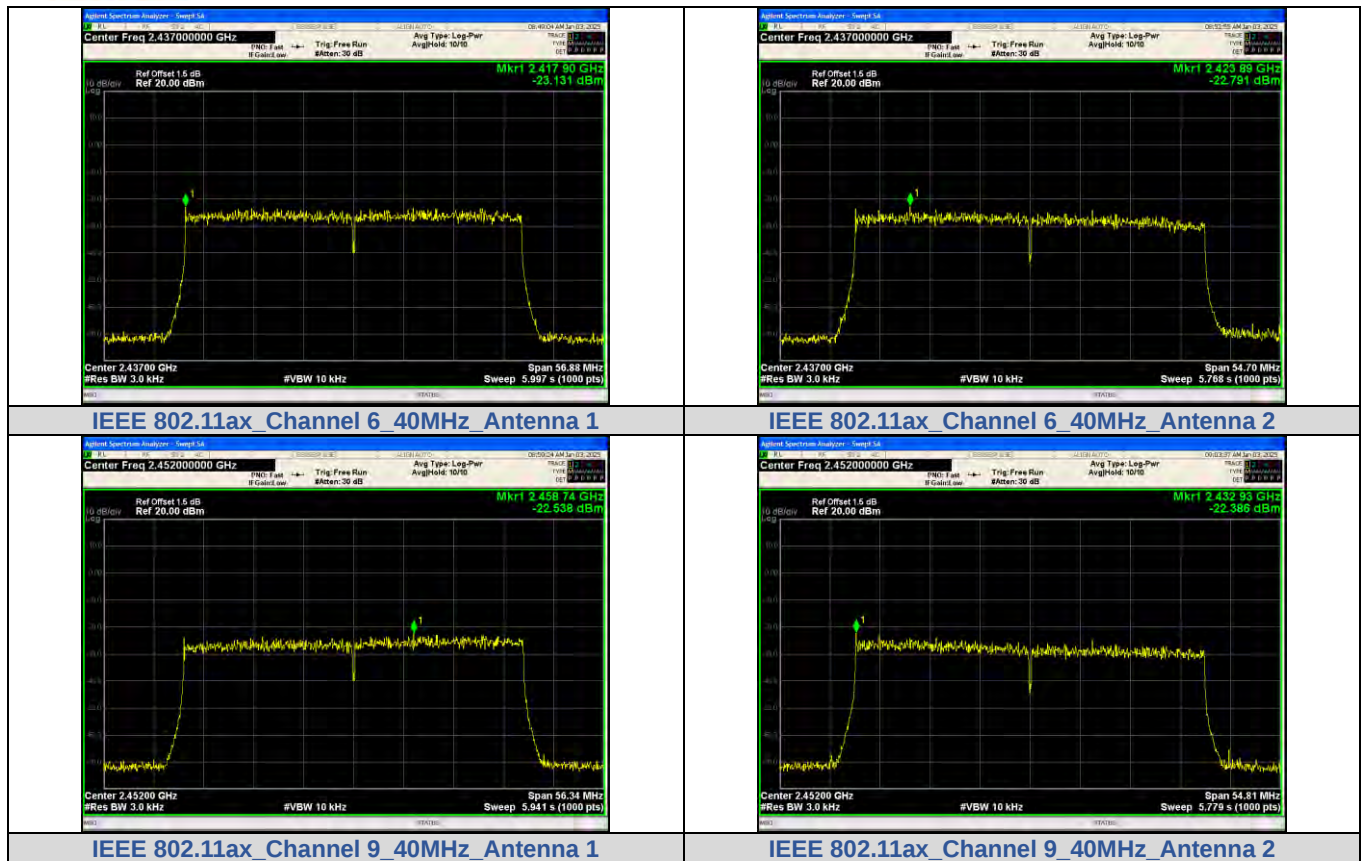
TRF No: CTC-TR-057_A1

For anti-fake verification, please visit the official website of China Inspection And Testing Society : yz.cnca.cn









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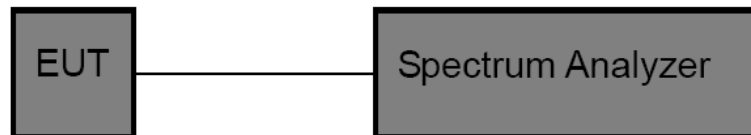


3.8. Duty Cycle

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**

Mode	Channel	Antenna	On Time (ms)	Period (ms)	Duty Cycle (%)	1/T Minimum VBW (kHz)	Final Setting for VBW (kHz)
IEEE 802.11b	1	1	8.096	8.103	99.91	0.12	1
		2	8.097	8.103	99.92	0.12	1
	6	1	8.097	8.103	99.92	0.12	1
		2	8.097	8.103	99.92	0.12	1
	11	1	8.096	8.103	99.91	0.12	1
		2	8.096	8.103	99.91	0.12	1
IEEE 802.11g	1	1	1.361	1.368	99.52	0.73	1
		2	1.361	1.368	99.50	0.73	1
	6	1	1.361	1.368	99.52	0.73	1
		2	1.361	1.368	99.52	0.73	1
	11	1	1.361	1.368	99.50	0.73	1
		2	1.361	1.368	99.51	0.73	1
IEEE 802.11n_20	1	1	1.273	1.280	99.47	0.79	1
		2	1.273	1.280	99.47	0.79	1
	6	1	1.273	1.280	99.49	0.79	1
		2	1.273	1.280	99.45	0.79	1
	11	1	1.273	1.280	99.45	0.79	1
		2	1.273	1.280	99.47	0.79	1
IEEE 802.11n_40	3	1	0.633	0.640	98.92	1.58	3
		2	0.633	0.640	98.91	1.58	3
	6	1	0.633	0.640	98.94	1.58	3
		2	0.633	0.640	98.91	1.58	3
	9	1	0.633	0.640	98.92	1.58	3
		2	0.633	0.640	98.91	1.58	3
IEEE 802.11ax_20	1	1	0.989	0.994	99.48	1.01	3
		2	0.988	0.995	99.37	1.01	3
	6	1	0.989	0.994	99.48	1.01	3
		2	0.989	0.994	99.48	1.01	3
	11	1	0.988	0.994	99.42	1.01	3
		2	0.989	0.994	99.48	1.01	3
IEEE 802.11ax_40	3	1	0.521	0.528	98.76	1.92	3
		2	0.521	0.528	98.82	1.92	3
	6	1	0.521	0.528	98.82	1.92	3
		2	0.521	0.528	98.76	1.92	3
	9	1	0.521	0.528	98.76	1.92	3
		2	0.521	0.528	98.82	1.92	3



3.9. 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 is 6.05dBi, please refer to the EUT internal photographs antenna photo.

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