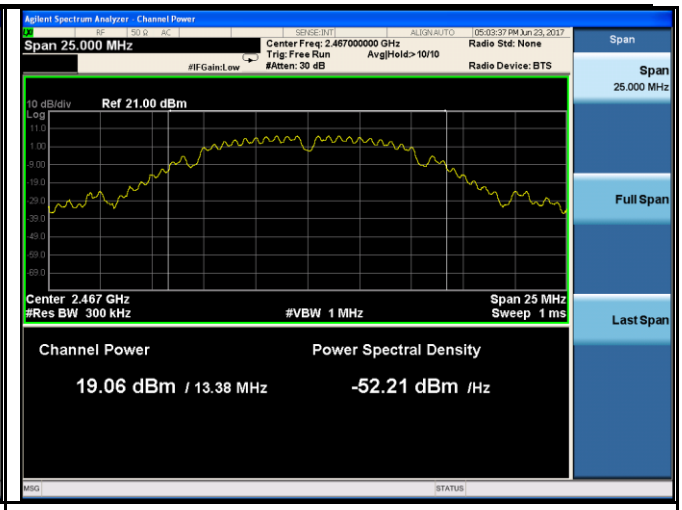
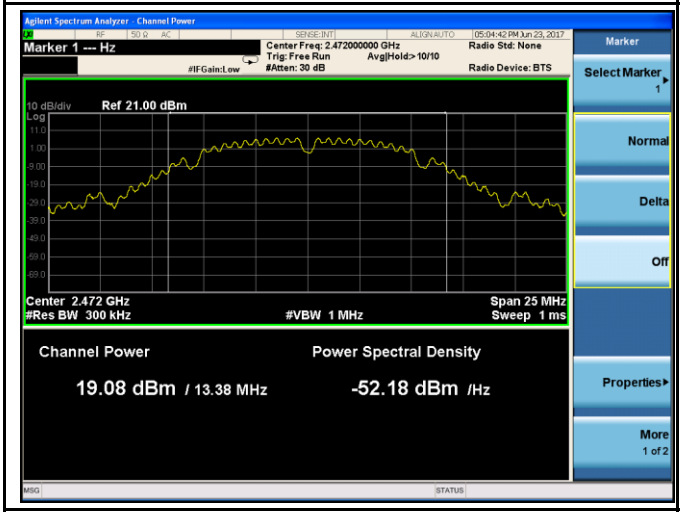
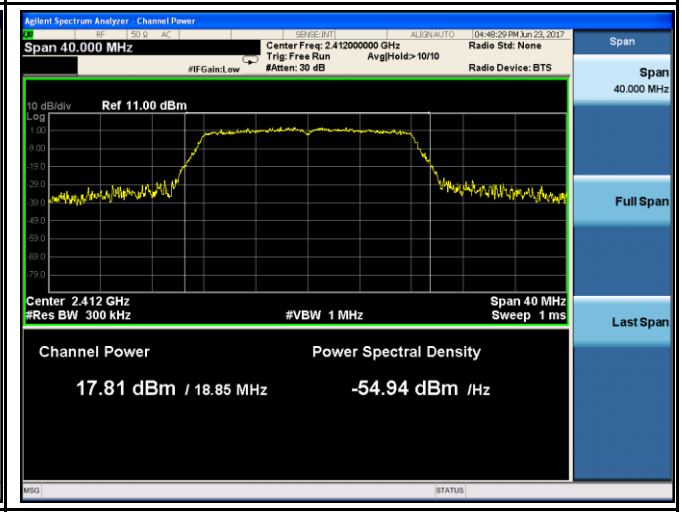
802.11b - AV Output power - CH 11



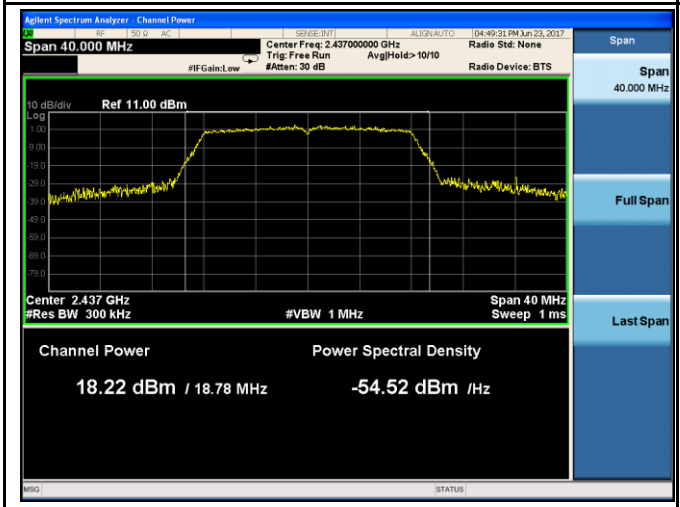
802.11b - AV Output power - CH 12



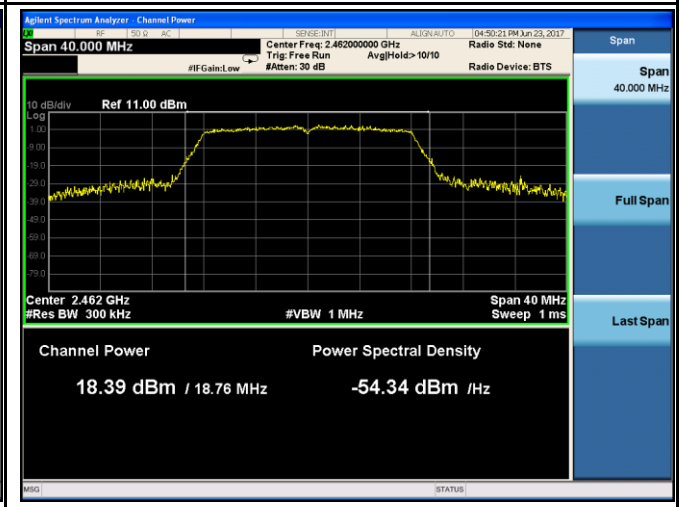
802.11b - AV Output power - CH 13



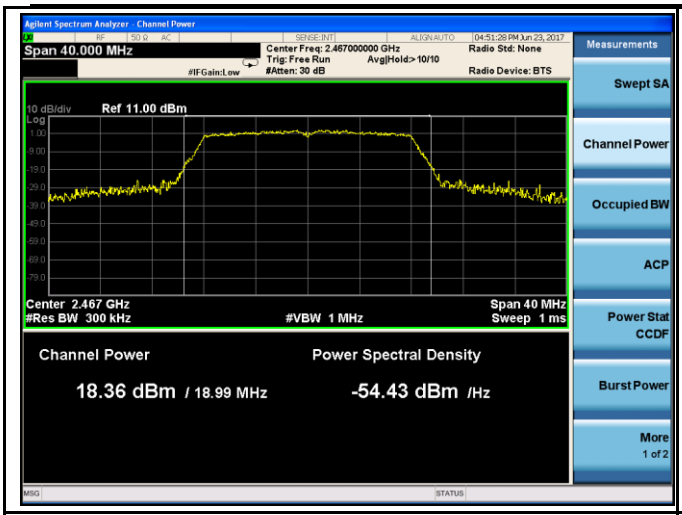
802.11g - AV Output power - CH 1



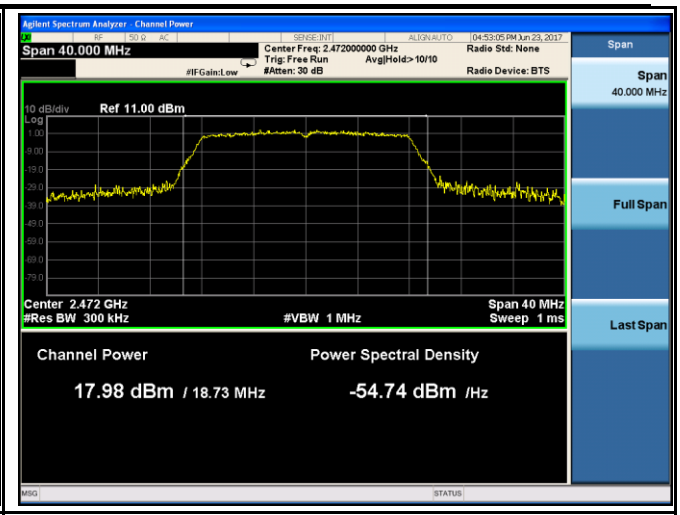
802.11g - AV Output power - CH 6



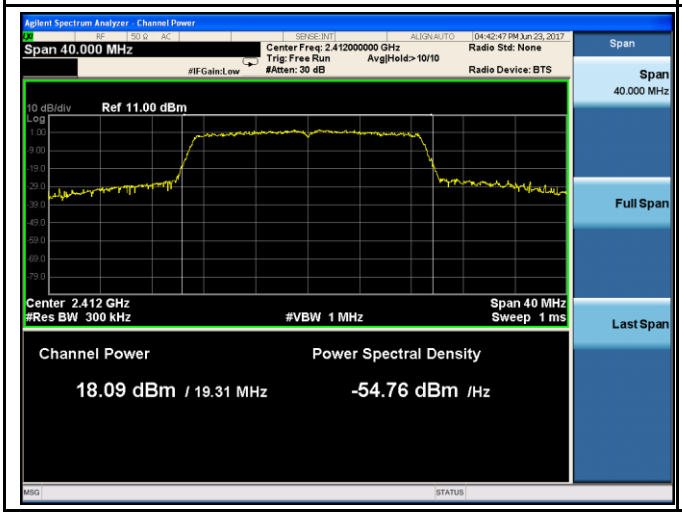
802.11g - AV Output power - CH 11



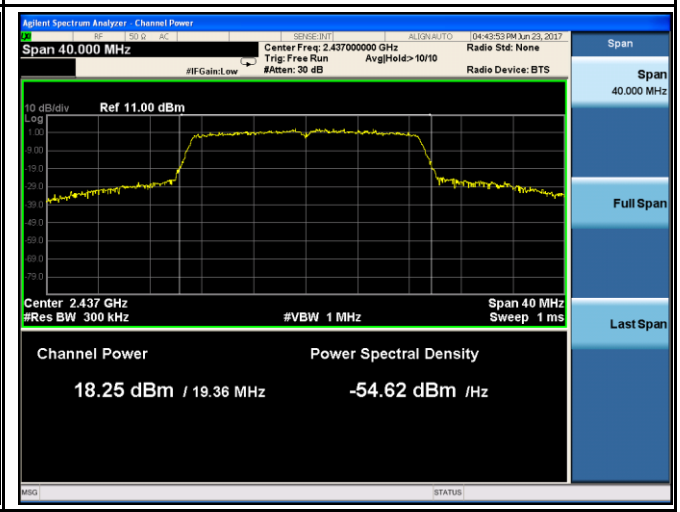
802.11g - AV Output power - CH 12



802.11g - AV Output power - CH 13

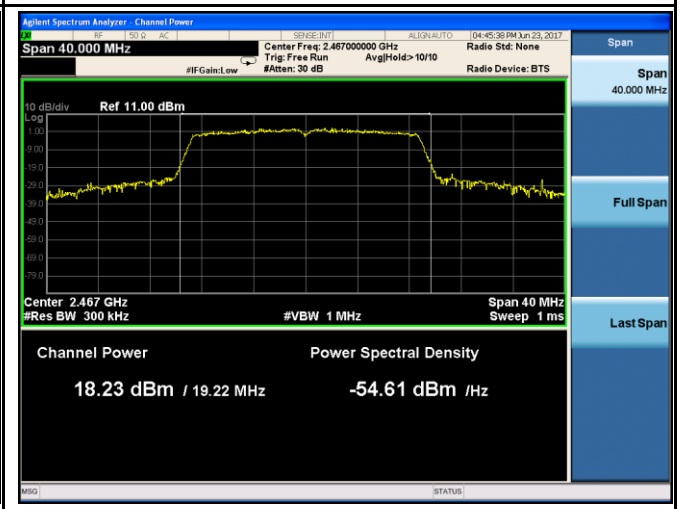


802.11n20 - AV Output power - CH 1

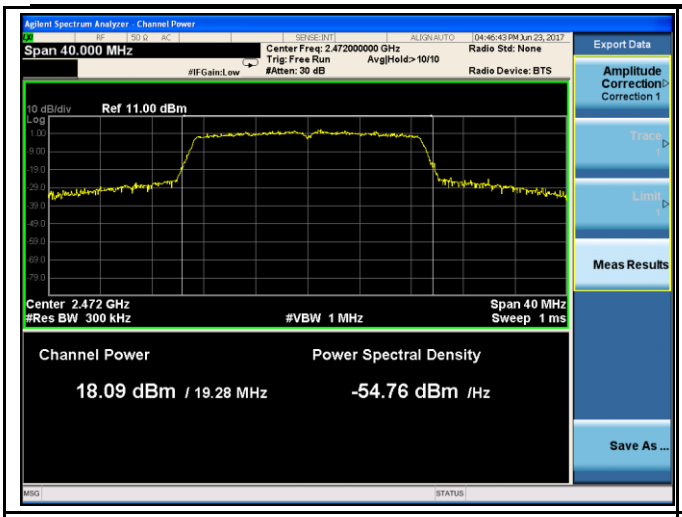


802.11n20 - AV Output power - CH 6

802.11n20 - AV Output power - CH 11

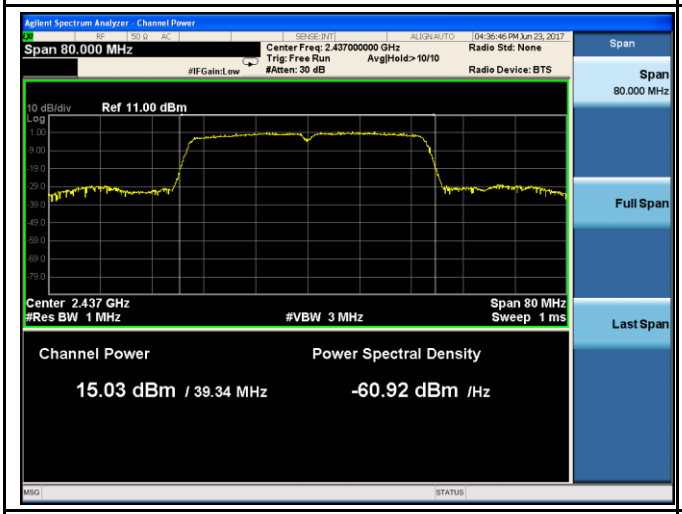


802.11n20 - AV Output power - CH 12



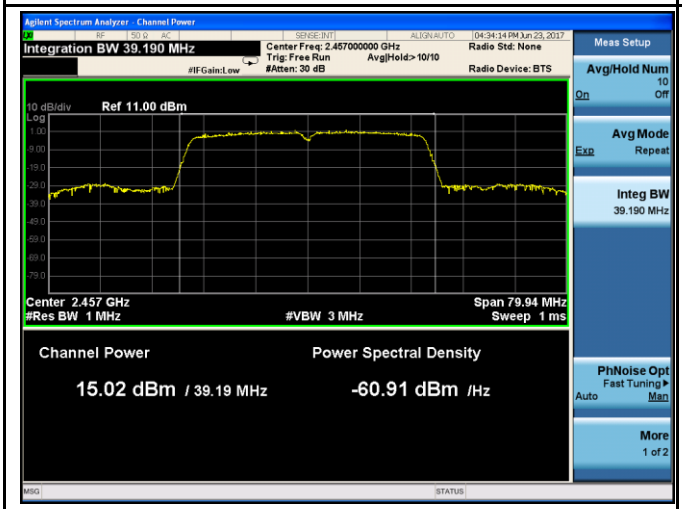
802.11n20 - AV Output power - CH 13

802.11n40 - AV Output power - CH 3

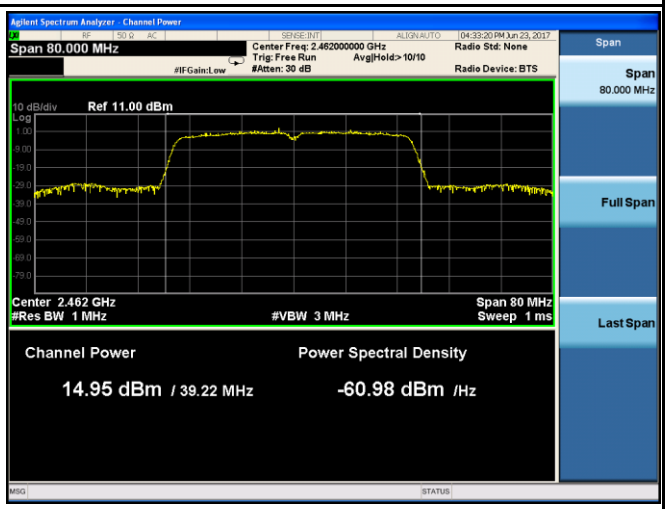


802.11n40 - AV Output power - CH 6

802.11n40 - AV Output power - CH 9



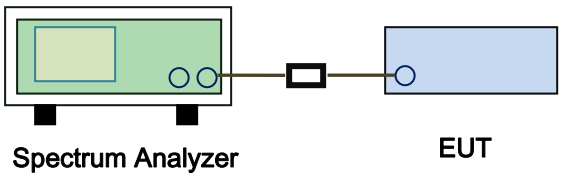
802.11n40 - AV Output power - CH 10



802.11n40 - AV Output power - CH 11

6.4 Power Spectral Density

Temperature	22℃
Relative Humidity	54%
Atmospheric Pressure	1021mbar
Test date :	June 23, 2017
Tested By :	Trety Lu

Spec	Item	Requirement	Applicable
§15.247(e)	a)	The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.	☑
Test Setup			
Test Procedure	558074 D01 DTS MEAS Guidance V04, 10.2 power spectral density method power spectral density measurement procedure - a) Set analyzer center frequency to DTS channel center frequency. - b) Set the span to 1.5 times the DTS bandwidth. - c) Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz. - d) Set the VBW ≥ 3 × RBW. - e) Detector = peak. - f) Sweep time = auto couple. - g) Trace mode = max hold. - h) Allow trace to fully stabilize. - i) Use the peak marker function to determine the maximum amplitude level within the RBW. - j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.		
Remark			
Result	☑ Pass ☐ Fail		

Test Data ☑ Yes ☐ N/A

Test Plot ☑ Yes (See below) ☐ N/A

Power Spectral Density measurement result

Type	Test mode	CH	Freq (MHz)	PSD (dBm)	Limit (dBm)	Result
PSD	802.11b	1	2412	3.440	8	Pass
		6	2437	4.509	8	Pass
		11	2462	5.864	8	Pass
		12	2467	5.624	8	Pass
		13	2472	3.017	8	Pass
	802.11g	1	2412	-3.629	8	Pass
		6	2437	-3.273	8	Pass
		11	2462	-3.557	8	Pass
		12	2467	-2.813	8	Pass
		13	2472	-3.915	8	Pass
	802.11n(20M)	1	2412	-3.329	8	Pass
		6	2437	-3.148	8	Pass
		11	2462	-2.955	8	Pass
		12	2467	-3.116	8	Pass
		13	2472	-3.284	8	Pass
	802.11n(40M)	3	2422	-9.568	8	Pass
		6	2437	-9.310	8	Pass
		9	2452	-8.940	8	Pass
		10	2457	-9.226	8	Pass
		11	2462	-9.534	8	Pass

Test Plots
Power Spectral Density measurement result

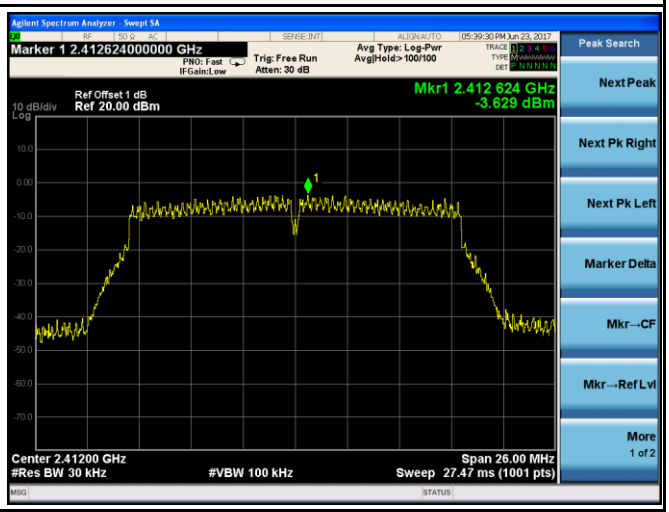
PSD - CH 1 - 802.11b

PSD - CH 6 - 802.11b

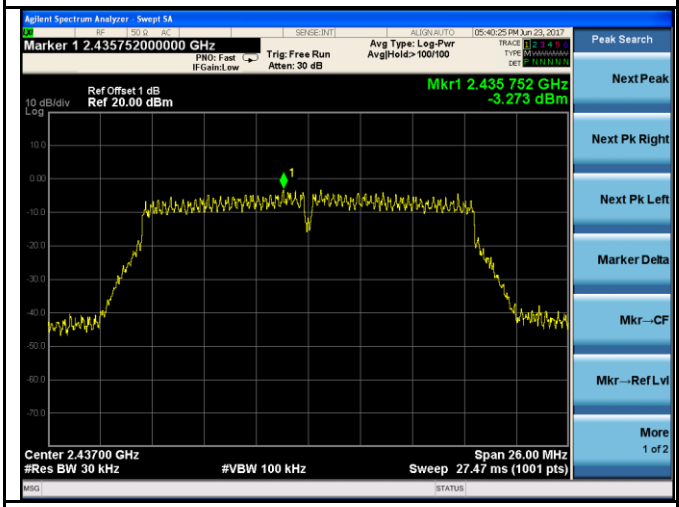
PSD - CH 11 - 802.11b

PSD - CH 12 - 802.11b

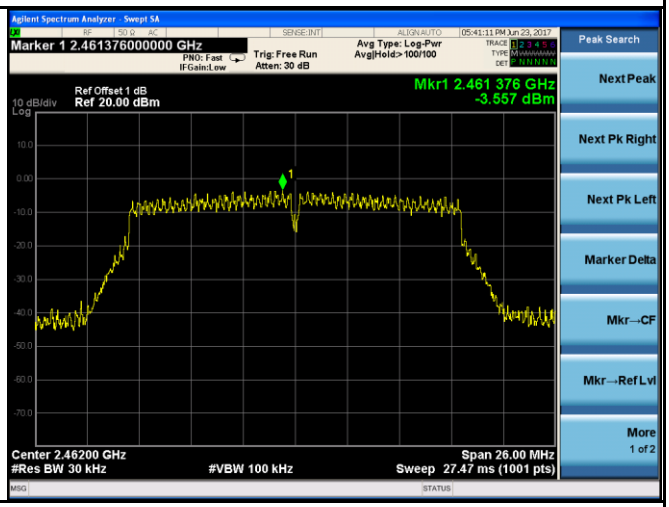
PSD - CH 13 - 802.11b



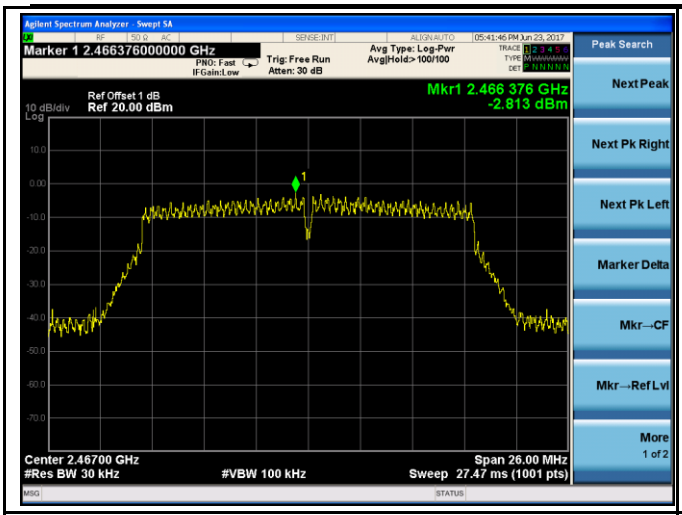
PSD - CH 1 – 802.11g



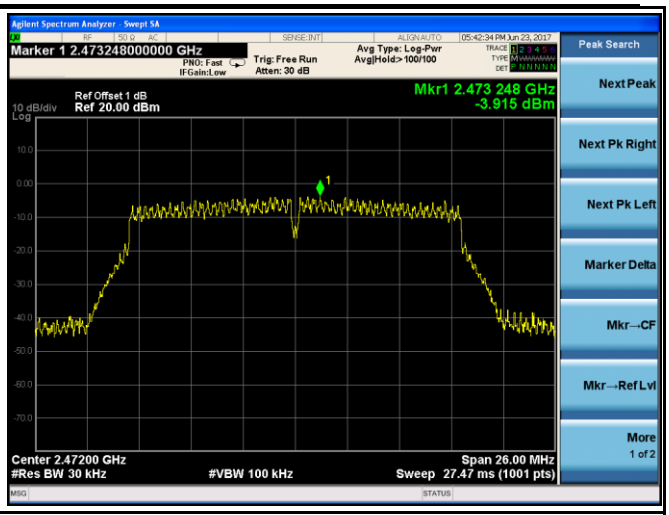
PSD - CH 6 – 802.11g



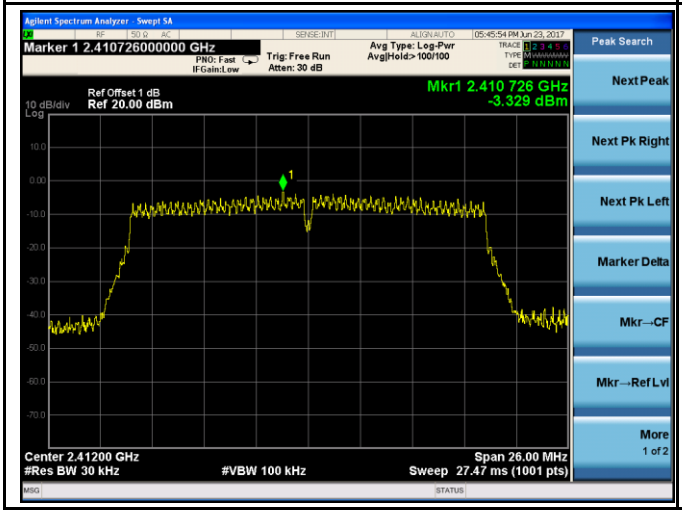
PSD - CH 11 – 802.11g



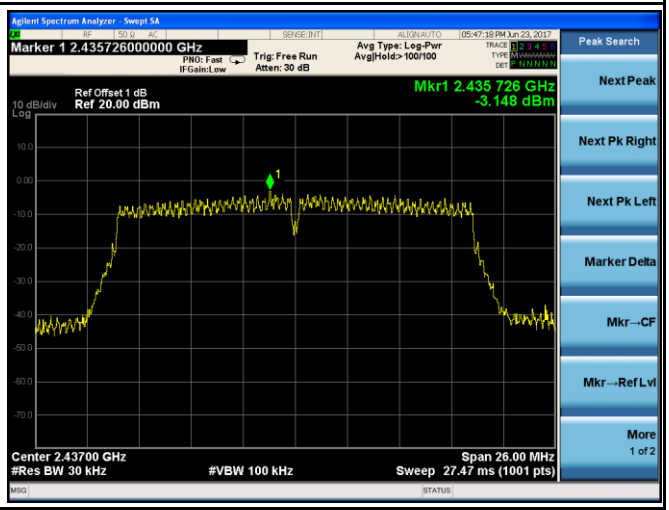
PSD - CH 12 – 802.11g



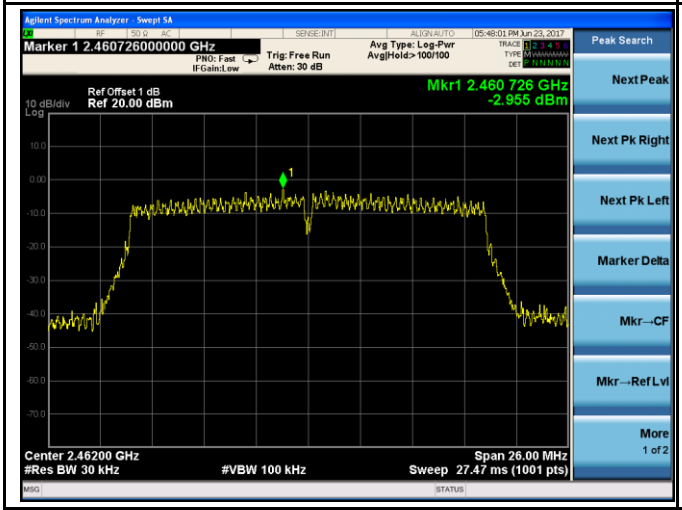
PSD - CH 13 – 802.11g



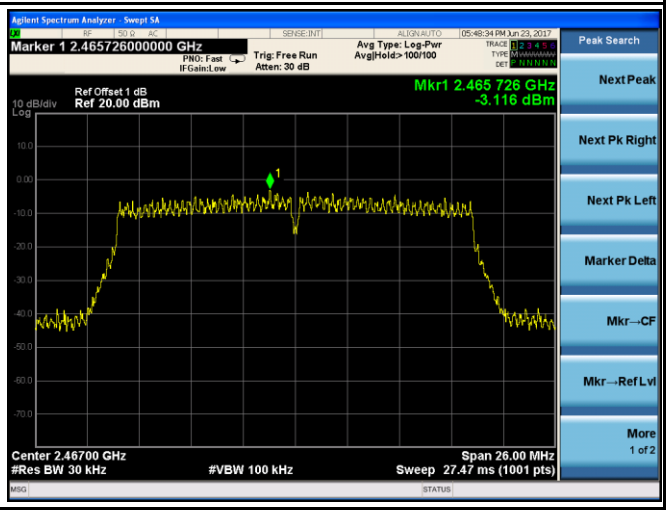
PSD - CH 1 – 802.11n20



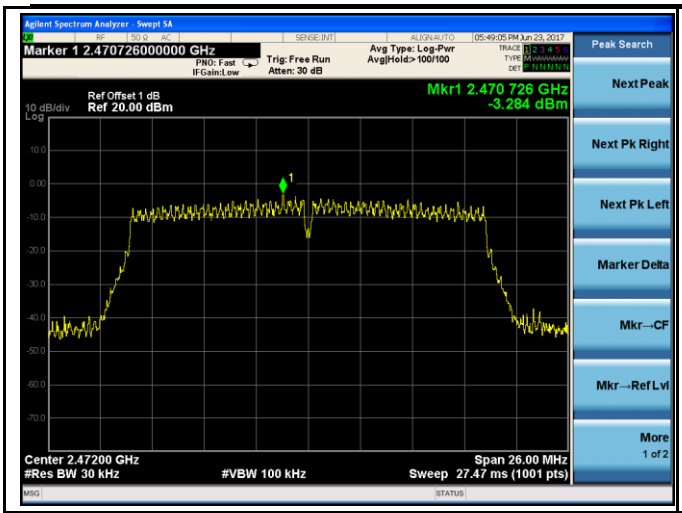
PSD - CH 6 – 802.11n20



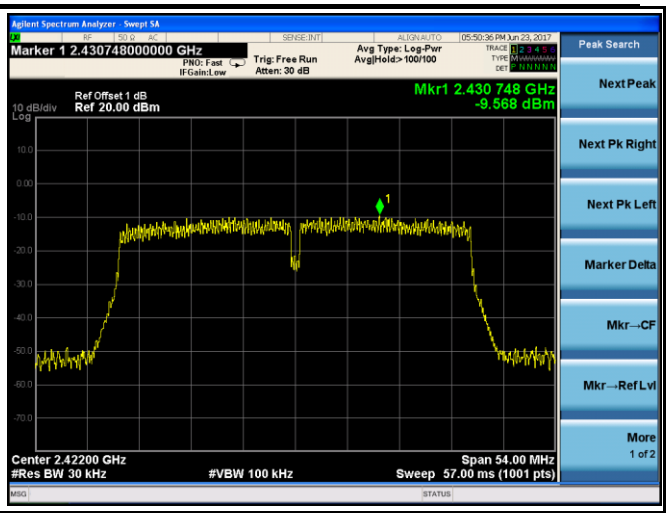
PSD - CH 11 – 802.11n20



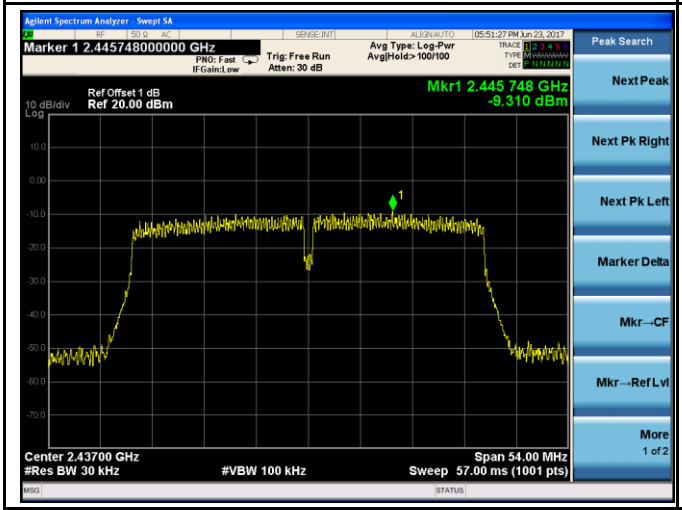
PSD - CH 12 – 802.11n20



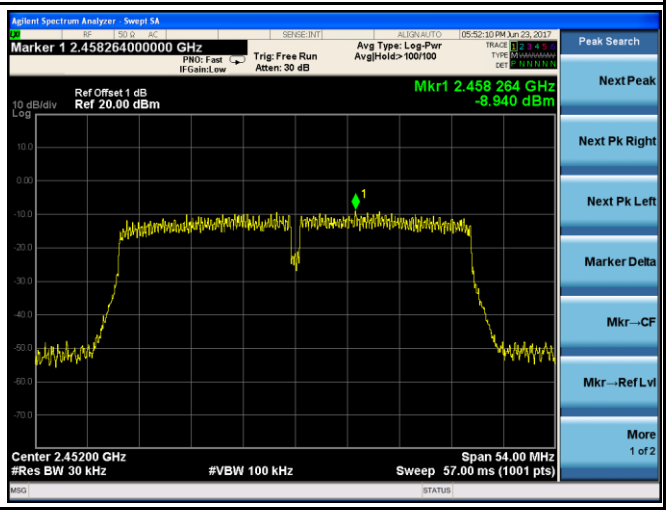
PSD - CH 13 – 802.11n20



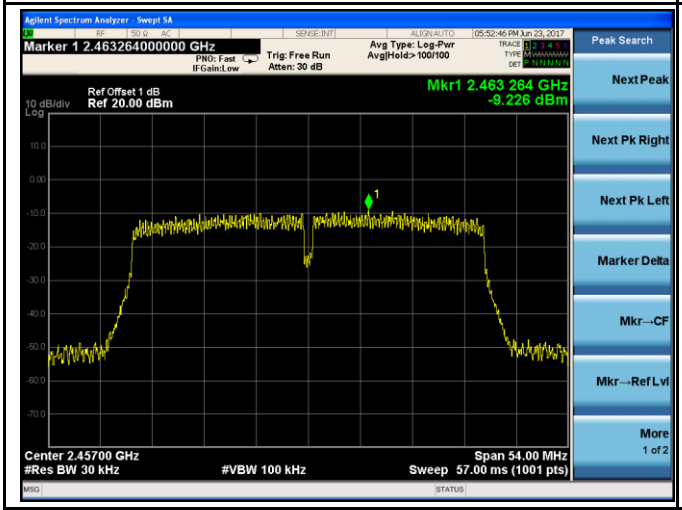
PSD - CH 3 – 802.11n40



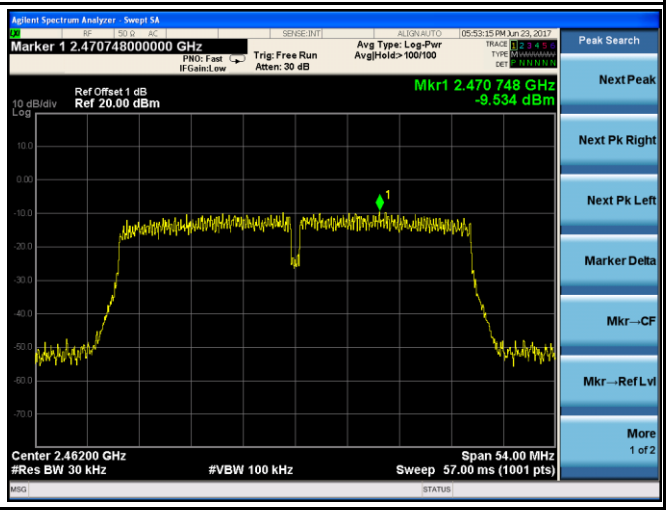
PSD - CH 6 – 802.11n40



PSD - CH 9 – 802.11n40



PSD - CH 10 – 802.11n40

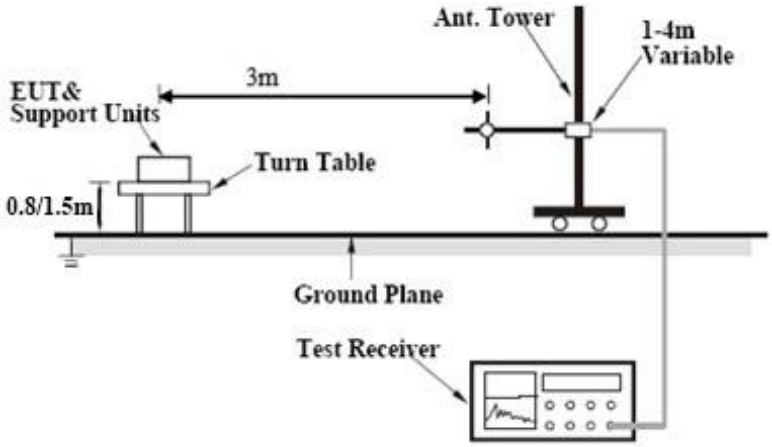


PSD - CH 11 – 802.11n40

6.5 Band-Edge & Unwanted Emissions into Non-Restricted Frequency Bands

Temperature	24℃
Relative Humidity	52%
Atmospheric Pressure	1019mbar
Test date :	June 15 to June 19, 2017
Tested By :	Trety Lu

Requirement(s):

Spec	Item	Requirement	Applicable
§15.247(d)	a)	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 power limits.	☑
Test Setup			
Test Procedure	Radiated Method Only - 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator. - 2. Position the EUT without connection to measurement instrument. Put it on the Rotated table and turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range. - 3. First, set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100kHz bandwidth from band edge, check the emission of EUT, if pass then set Spectrum Analyzer as below: a. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasiy Peak detection at frequency below 1GHz. b. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz with Peak detection for Peak measurement at frequency above 1GHz. c. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz with Peak detection for Average Measurement as below at frequency above 1GHz. - 4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency. - 5. Repeat above procedures until all measured frequencies were complete.		
Remark			
Result	☑ Pass ☐ Fail		

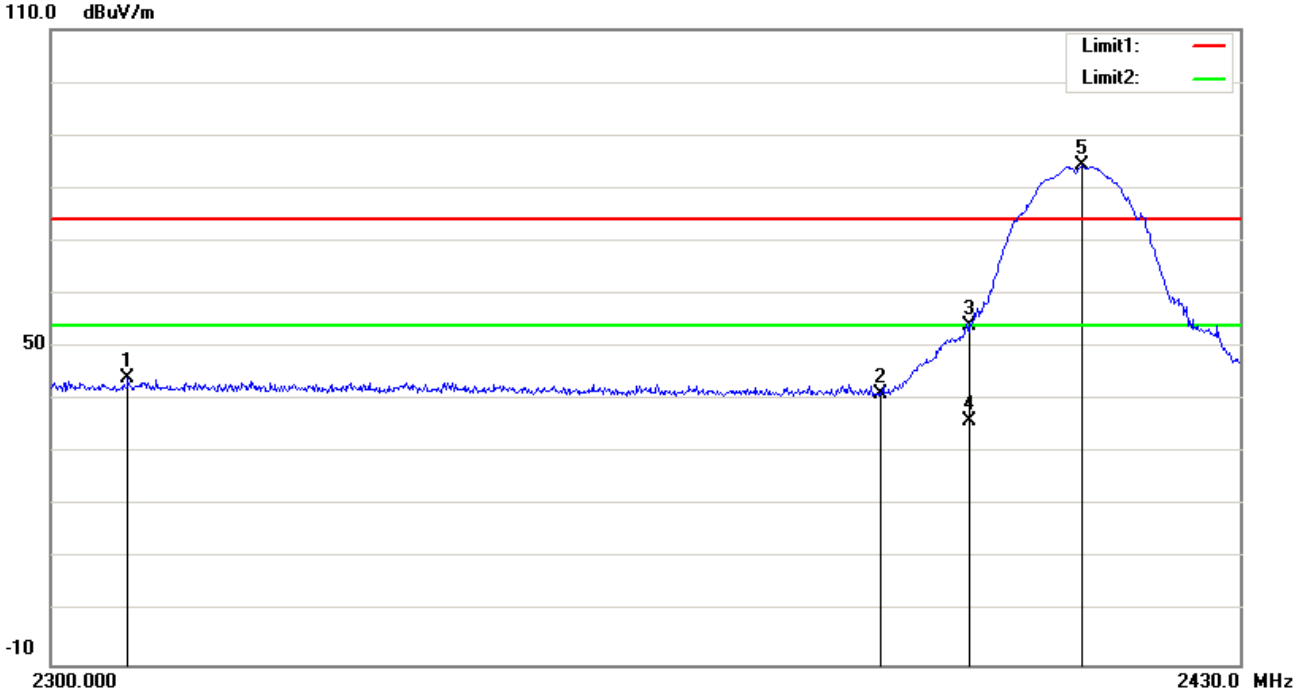
Test Data ☑ Yes ☐ N/A

Test Plot ☑ Yes (See below) ☐ N/A

Test Plots
Band Edge measurement result

Test Mode:	**802.11b (CH1)**

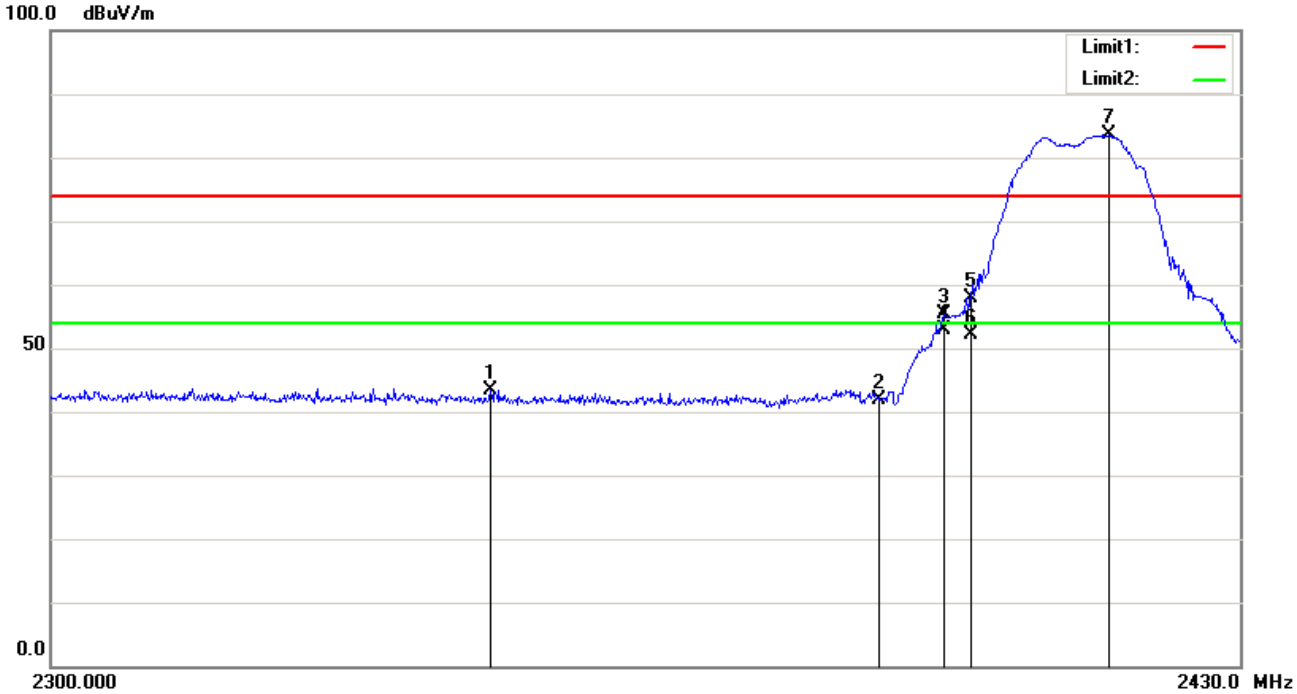
802.11b-Vertical-Left



No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)
1	2308.320	60.98	peak	31.48	52.49	4.10	44.07	74.00	-29.93	200	135
2	2390.000	58.27	peak	31.53	52.55	4.02	41.27	74.00	-32.73	200	100
3	2400.000	71.06	peak	31.54	52.56	4.01	54.05	74.00	-19.95	200	139
4	2400.000	53.12	AVG	31.54	52.56	4.01	36.11	54.00	-17.89	200	190
5	2412.320	101.34	peak	31.55	52.57	4.02	84.34	74.00	10.34	200	195

Test Mode:	802.11b (CH1)

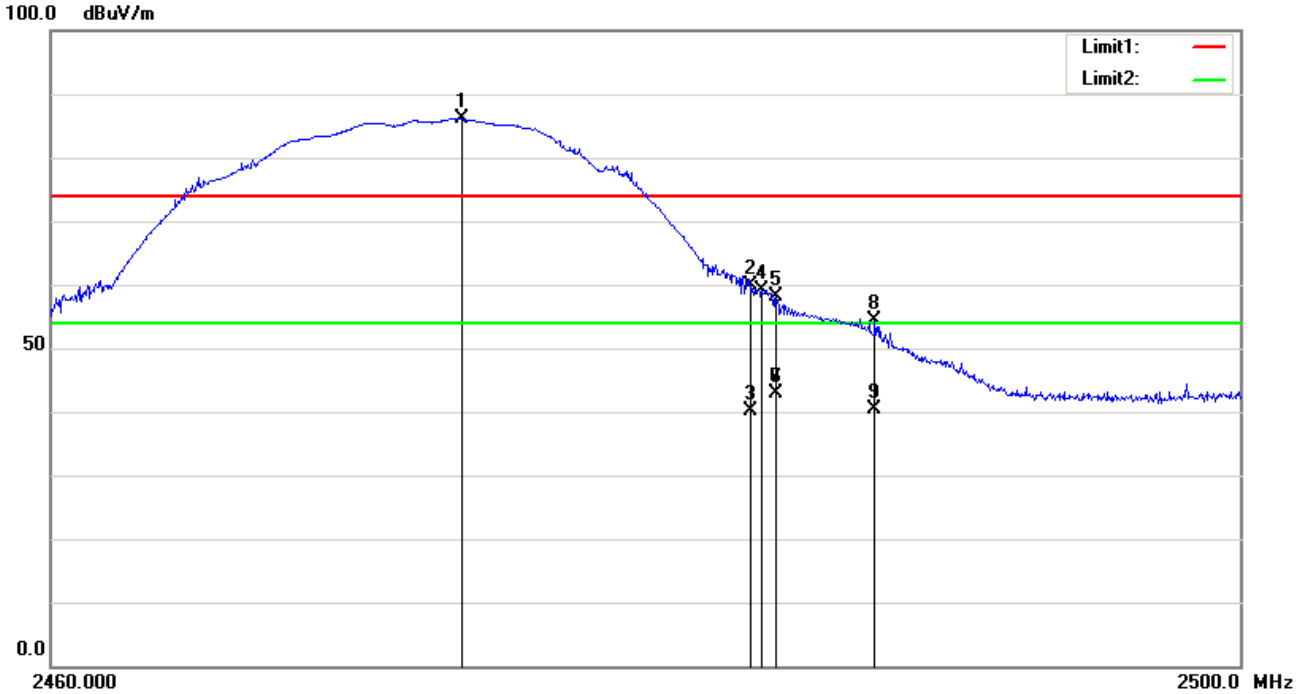
802.11b-Horizontal-Left



No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)
1	2347.320	60.29	peak	31.51	52.52	4.06	43.34	74.00	-30.66	200	179
2	2390.000	58.78	peak	31.53	52.55	4.02	41.78	74.00	-32.22	200	98
3	2396.980	72.45	peak	31.54	52.56	4.01	55.44	74.00	-18.56	200	87
4	2396.980	70.01	AVG	31.54	52.56	4.01	53.00	54.00	-1.00	200	87
5	2400.000	75.01	peak	31.54	52.56	4.01	58.00	74.00	-16.00	200	78
6	2400.000	69.12	AVG	31.54	52.56	4.01	52.11	54.00	-1.89	200	78
7	2415.440	100.54	peak	31.55	52.57	4.02	83.54	74.00	9.54	200	81

Test Mode:	802.11b (CH13)

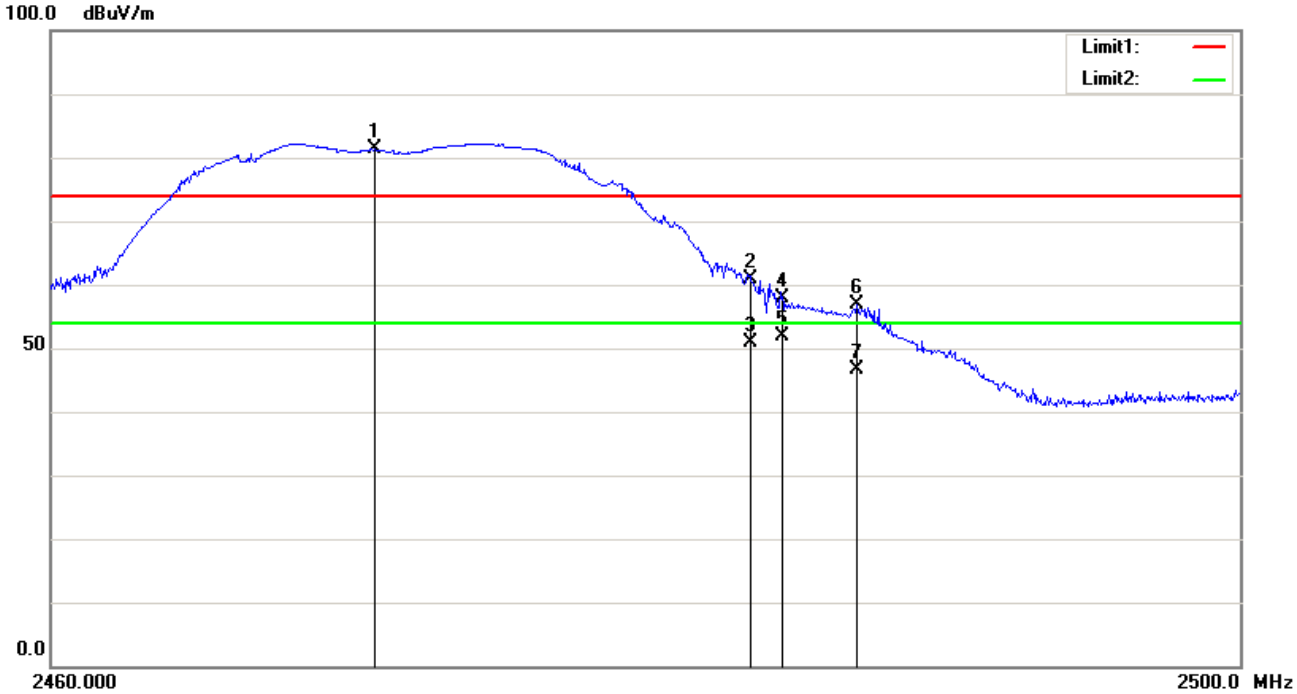
802.11b-Vertical-Right



No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)
1	2473.800	103.08	peak	31.58	52.62	4.05	86.09	74.00	12.09	200	120
2	2483.500	76.78	peak	31.59	52.63	4.06	59.80	74.00	-14.20	200	159
3	2483.500	57.16	AVG	31.59	52.63	4.06	40.18	54.00	-13.82	200	159
4	2483.880	76.17	peak	31.59	52.63	4.06	59.19	74.00	-14.81	200	151
5	2484.360	75.00	peak	31.59	52.63	4.06	58.02	74.00	-15.98	200	119
6	2484.360	59.79	AVG	31.59	52.63	4.06	42.81	54.00	-11.19	200	119
7	2484.360	59.89	AVG	31.59	52.63	4.06	42.91	54.00	-11.09	200	119
8	2487.680	71.24	peak	31.59	52.63	4.06	54.26	74.00	-19.74	200	121
9	2487.680	57.41	AVG	31.59	52.63	4.06	40.43	54.00	-13.57	200	121

Test Mode:	802.11b (CH13)

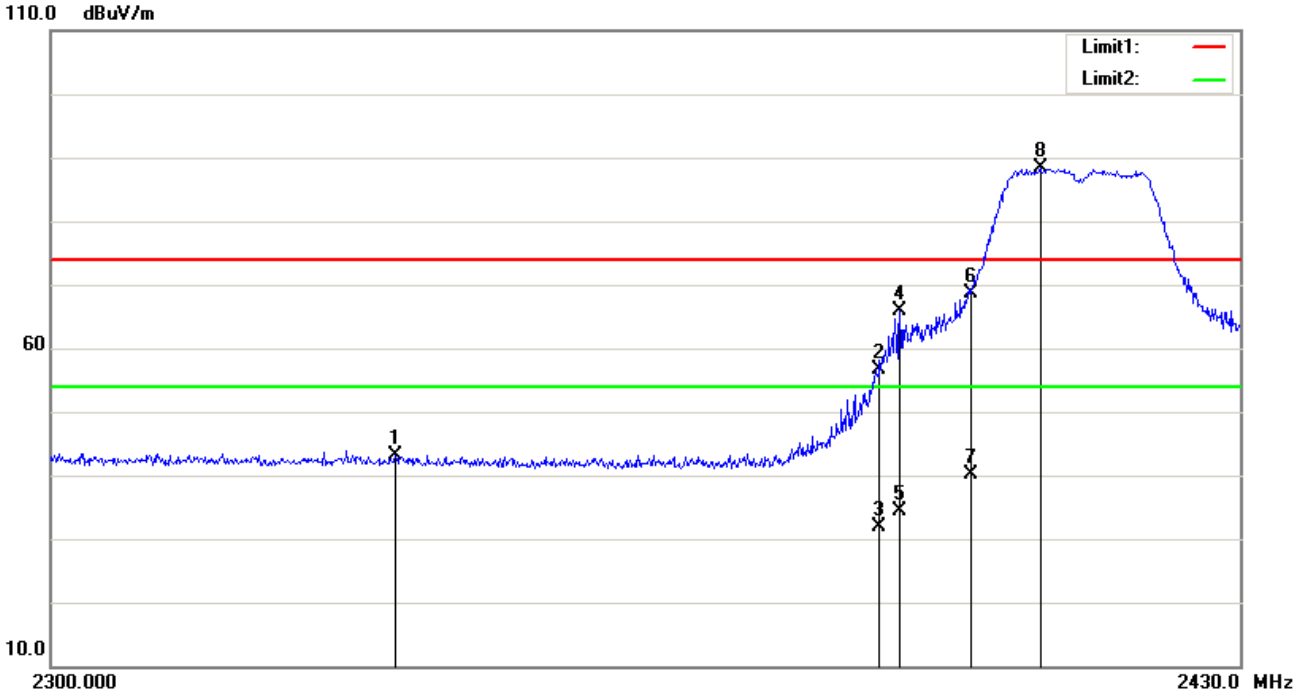
802.11b-Horizontal- Right



No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)
1	2470.840	98.26	peak	31.58	52.62	4.05	81.27	74.00	7.27	129	0
2	2483.500	77.89	peak	31.59	52.63	4.06	60.91	74.00	-13.09	200	1
3	2483.500	67.78	AVG	31.59	52.63	4.06	50.80	54.00	-3.20	200	87
4	2484.560	74.94	peak	31.59	52.63	4.06	57.96	74.00	-16.04	200	3
5	2484.560	68.77	AVG	31.59	52.63	4.06	51.79	54.00	-2.21	200	87
6	2487.080	73.78	peak	31.59	52.63	4.06	56.80	74.00	-17.20	142	0
7	2487.080	63.67	AVG	31.59	52.63	4.06	46.69	54.00	-7.31	200	87

Test Mode:	802.11g (CH1)

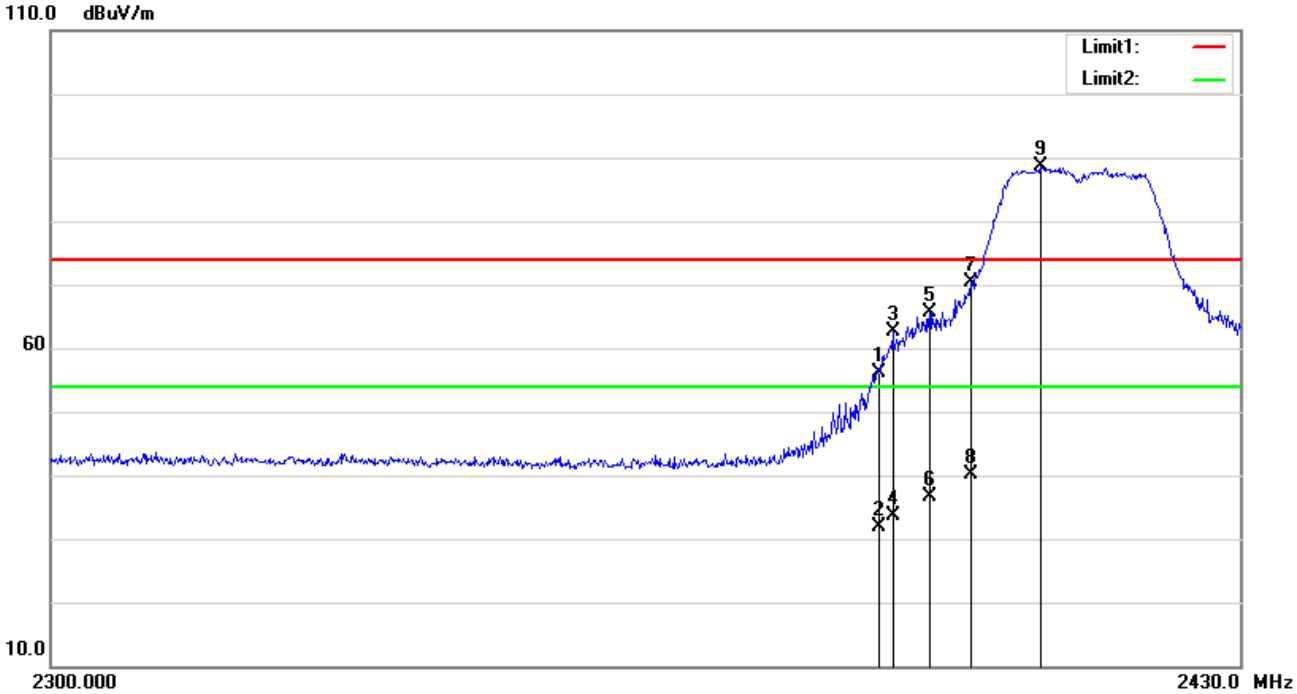
802.11g-Vertical - Left



No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)
1	2337.050	60.03	peak	31.50	52.51	4.07	43.09	74.00	-30.91	100	242
2	2390.000	73.70	peak	31.53	52.55	4.02	56.70	74.00	-17.30	200	190
3	2390.000	48.78	AVG	31.53	52.55	4.02	31.78	54.00	-22.22	200	127
4	2392.170	82.83	peak	31.54	52.55	4.02	65.84	74.00	-8.16	200	183
5	2392.170	51.34	AVG	31.54	52.55	4.02	34.35	54.00	-19.65	200	183
6	2400.000	85.74	peak	31.54	52.56	4.01	68.73	74.00	-5.27	200	120
7	2400.000	57.20	AVG	31.54	52.56	4.01	40.19	54.00	-13.81	200	120
8	2407.770	105.33	peak	31.54	52.57	4.01	88.31	74.00	14.31	200	131

Test Mode:	802.11g (CH1)

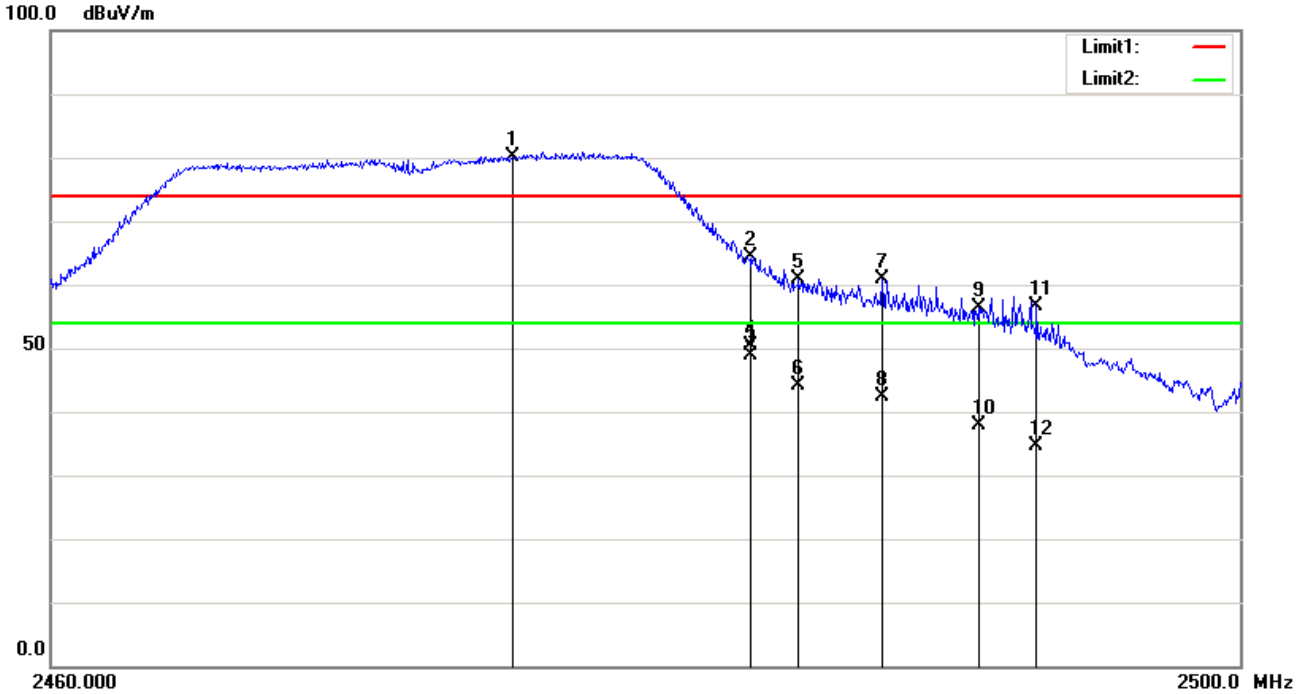
802.11g-Horizontal- Left



No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)
1	2390.000	73.06	peak	31.53	52.55	4.02	56.06	74.00	-17.94	200	158
2	2390.000	48.81	AVG	31.53	52.55	4.02	31.81	54.00	-22.19	200	197
3	2391.390	79.53	peak	31.53	52.55	4.02	62.53	74.00	-11.47	200	162
4	2391.390	50.59	AVG	31.53	52.55	4.02	33.59	54.00	-20.41	100	62
5	2395.420	82.67	peak	31.54	52.56	4.01	65.66	74.00	-8.34	200	186
6	2395.420	53.70	AVG	31.54	52.56	4.01	36.69	54.00	-17.31	200	186
7	2400.000	87.33	peak	31.54	52.56	4.01	70.32	74.00	-3.68	200	182
8	2400.000	57.21	AVG	31.54	52.56	4.01	40.20	54.00	-13.80	200	182
9	2407.770	105.74	peak	31.54	52.57	4.01	88.72	74.00	14.72	200	126

Test Mode:	802.11g (CH13)

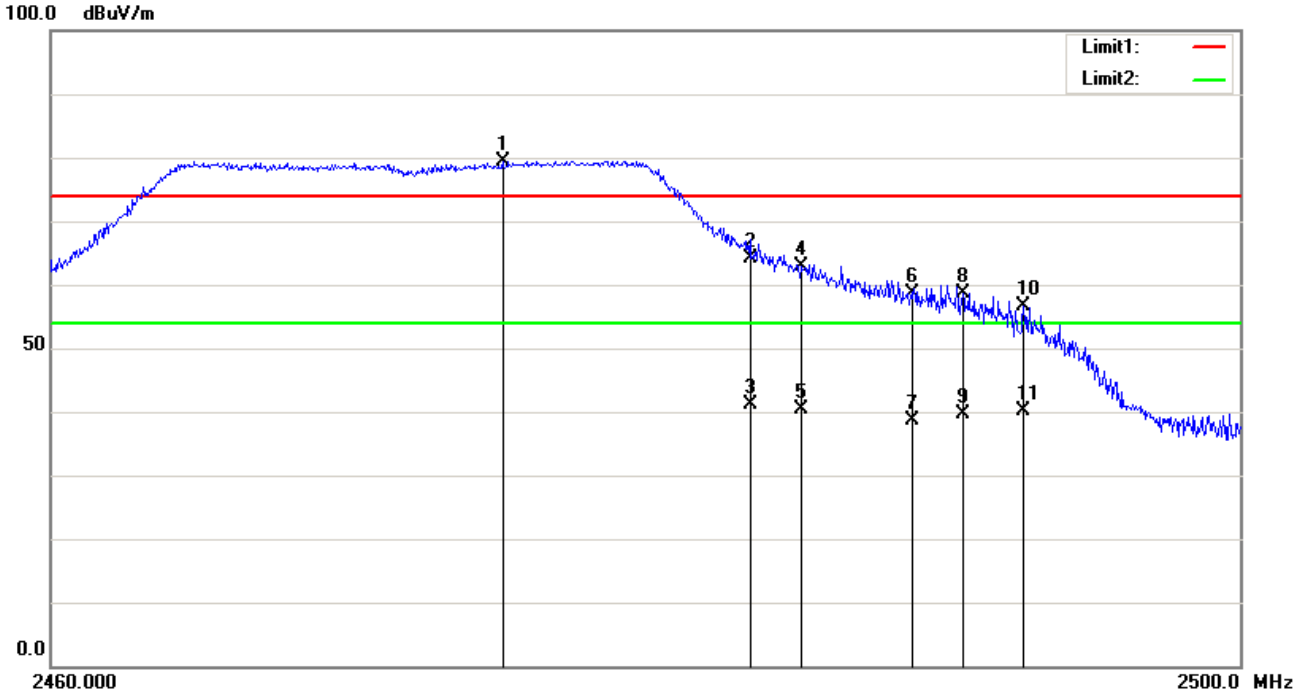
802.11g-Vertical - Right



No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)
1	2475.520	97.04	peak	31.59	52.62	4.06	80.07	74.00	6.07	200	118
2	2483.500	81.44	peak	31.59	52.63	4.06	64.46	74.00	-9.54	200	123
3	2483.500	65.79	AVG	31.59	52.63	4.06	48.81	54.00	-5.19	200	115
4	2483.500	67.31	AVG	31.59	52.63	4.06	50.33	54.00	-3.67	200	115
5	2485.120	77.80	peak	31.59	52.63	4.06	60.82	74.00	-13.18	200	124
6	2485.120	61.09	AVG	31.59	52.63	4.06	44.11	54.00	-9.89	200	124
7	2487.920	77.76	peak	31.59	52.63	4.06	60.78	74.00	-13.22	200	147
8	2487.920	59.44	AVG	31.59	52.63	4.06	42.46	54.00	-11.54	200	147
9	2491.160	73.25	peak	31.59	52.63	4.06	56.27	74.00	-17.73	100	125
10	2491.160	54.83	AVG	31.59	52.63	4.06	37.85	54.00	-16.15	100	125
11	2493.120	73.56	peak	31.60	52.63	4.07	56.60	74.00	-17.40	200	135
12	2493.120	51.58	AVG	31.60	52.63	4.07	34.62	54.00	-19.38	200	135

Test Mode:	802.11g (CH13)

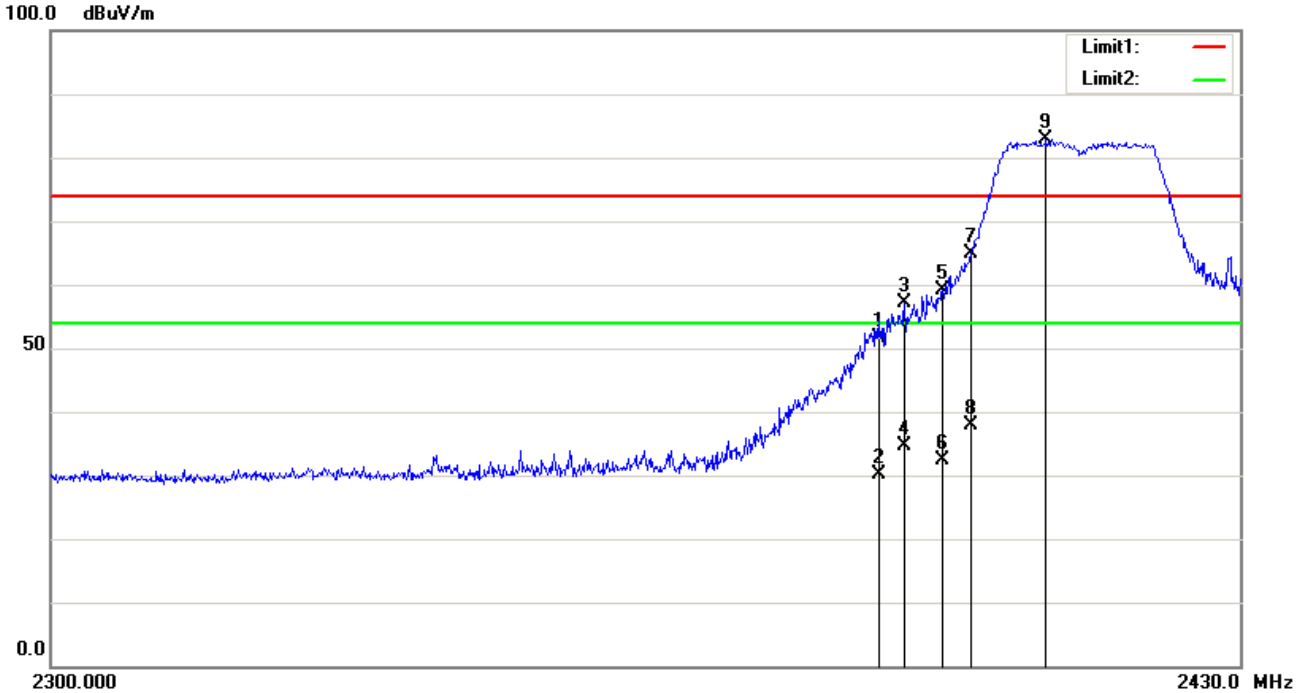
802.11g-Horizontal- Right



No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)
1	2475.160	96.47	peak	31.59	52.62	4.06	79.50	74.00	5.50	100	62
2	2483.500	81.12	peak	31.59	52.63	4.06	64.14	74.00	-9.86	200	186
3	2483.500	58.20	AVG	31.59	52.63	4.06	41.22	54.00	-12.78	100	58
4	2485.200	79.96	peak	31.59	52.63	4.06	62.98	74.00	-11.02	100	62
5	2485.200	57.34	AVG	31.59	52.63	4.06	40.36	54.00	-13.64	200	186
6	2488.960	75.73	peak	31.59	52.63	4.06	58.75	74.00	-15.25	100	74
7	2488.960	55.63	AVG	31.59	52.63	4.06	38.65	54.00	-15.35	200	186
8	2490.640	75.72	peak	31.59	52.63	4.06	58.74	74.00	-15.26	200	178
9	2490.640	56.49	AVG	31.59	52.63	4.06	39.51	54.00	-14.49	200	184
10	2492.680	73.61	peak	31.60	52.63	4.07	56.65	74.00	-17.35	100	62
11	2492.680	57.08	AVG	31.60	52.63	4.07	40.12	54.00	-13.88	200	186

Test Mode:	802.11n20 (CH1)

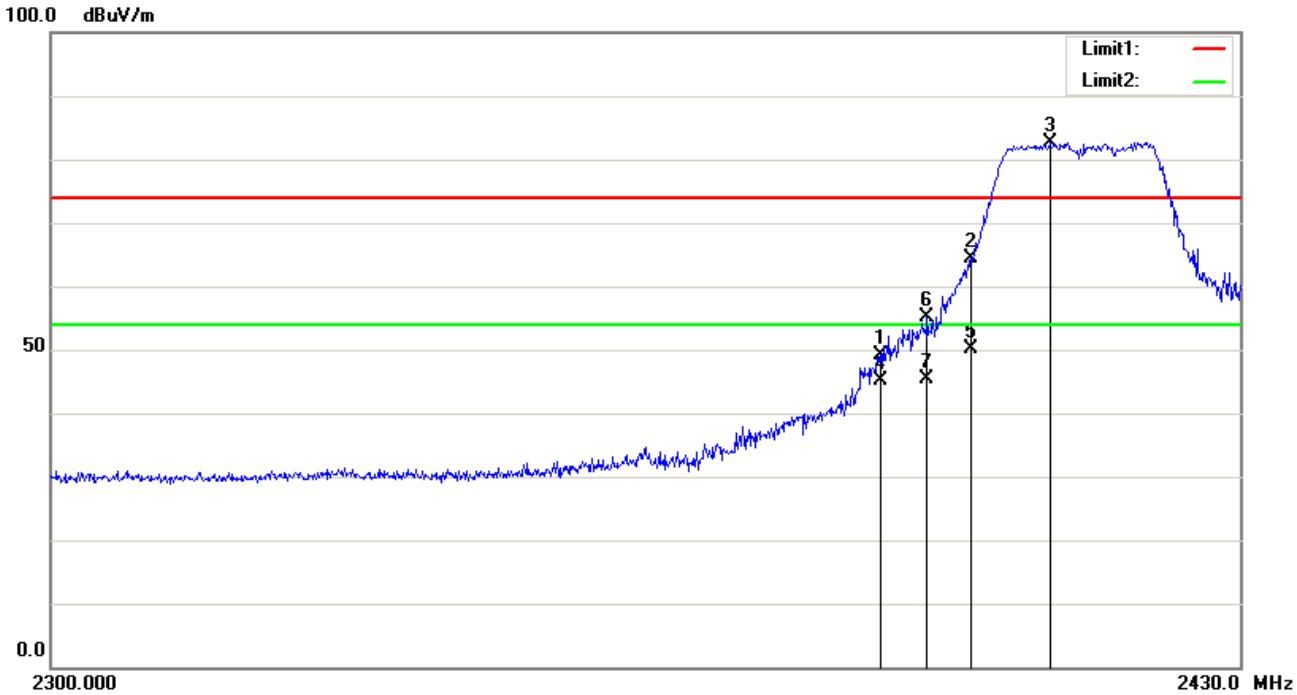
802.11n20-Vertical - Left



No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)
1	2390.000	68.53	peak	31.53	52.55	4.02	51.53	74.00	-22.47	200	298
2	2390.000	47.10	AVG	31.53	52.55	4.02	30.10	74.00	-43.90	200	298
3	2392.690	74.01	peak	31.54	52.55	4.02	57.02	74.00	-16.98	200	156
4	2392.690	51.59	AVG	31.54	52.55	4.02	34.60	74.00	-39.40	200	156
5	2396.850	76.17	peak	31.54	52.56	4.01	59.16	74.00	-14.84	200	257
6	2396.850	49.51	AVG	31.54	52.56	4.01	32.50	74.00	-41.50	200	257
7	2400.000	81.84	peak	31.54	52.56	4.01	64.83	74.00	-9.17	200	291
8	2400.000	54.81	AVG	31.54	52.56	4.01	37.80	74.00	-36.20	200	291
9	2408.420	99.88	peak	31.55	52.57	4.02	82.88	74.00	8.88	200	207

Test Mode:	802.11n20 (CH1)

802.11n20-Horizontal- Left



No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Ant_F (dB/m)	PA_G (dB)	Cab_L (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)
1	2390.000	66.22	peak	31.53	52.55	4.02	49.22	74.00	-24.78	100	106
2	2400.000	81.43	peak	31.54	52.56	4.01	64.42	74.00	-9.58	100	112
3	2408.810	99.59	peak	31.55	52.57	4.02	82.59	74.00	8.59	100	98
4	2390.000	62.20	AVG	31.53	52.55	4.02	45.20	74.00	-28.80	100	106
5	2400.000	67.11	AVG	31.54	52.56	4.01	50.10	74.00	-23.90	100	112
6	2395.160	72.25	peak	31.54	52.56	4.01	55.24	74.00	-18.76	100	108
7	2395.160	62.31	AVG	31.54	52.56	4.01	45.30	74.00	-28.70	100	108