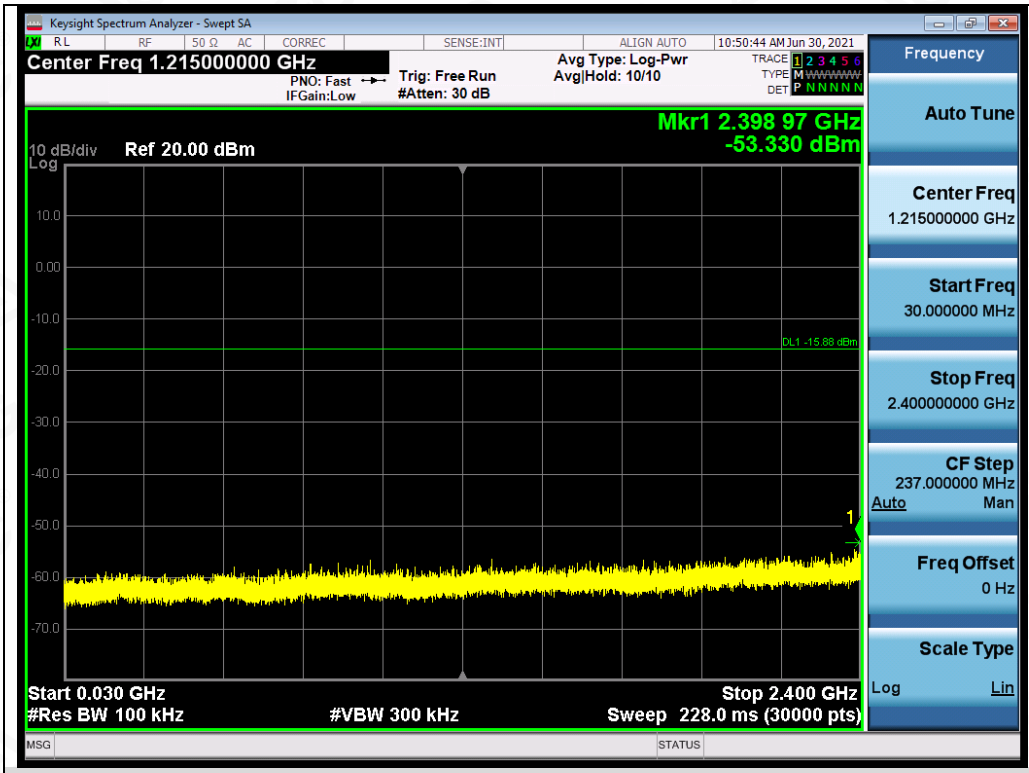
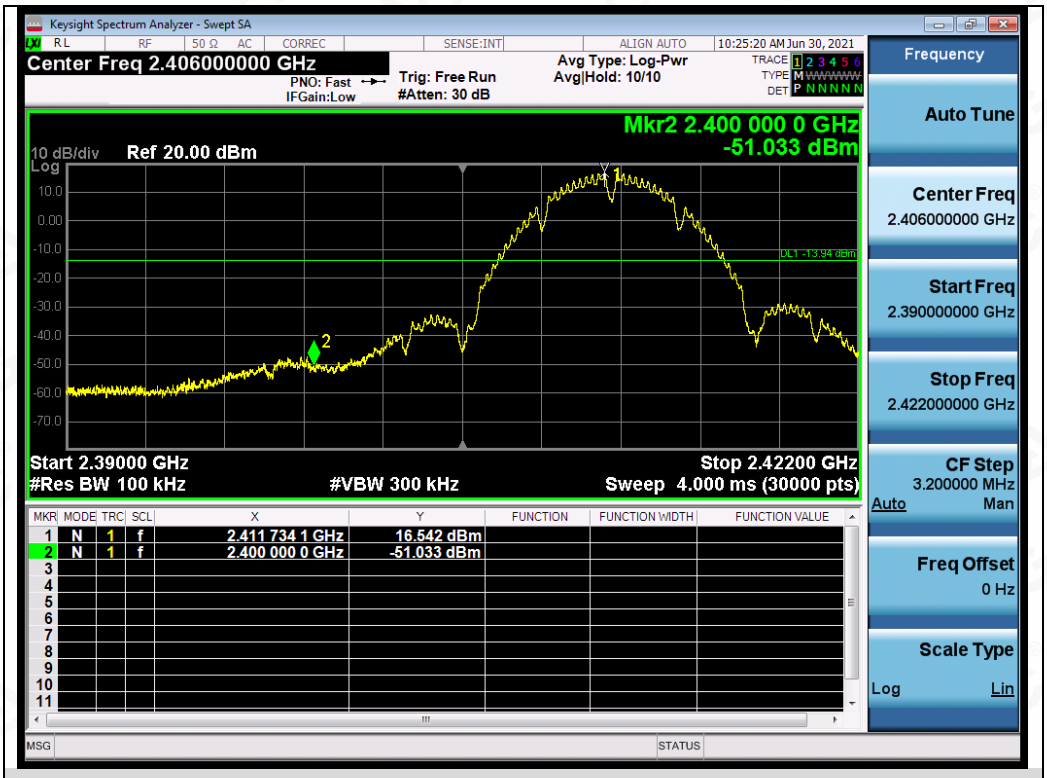


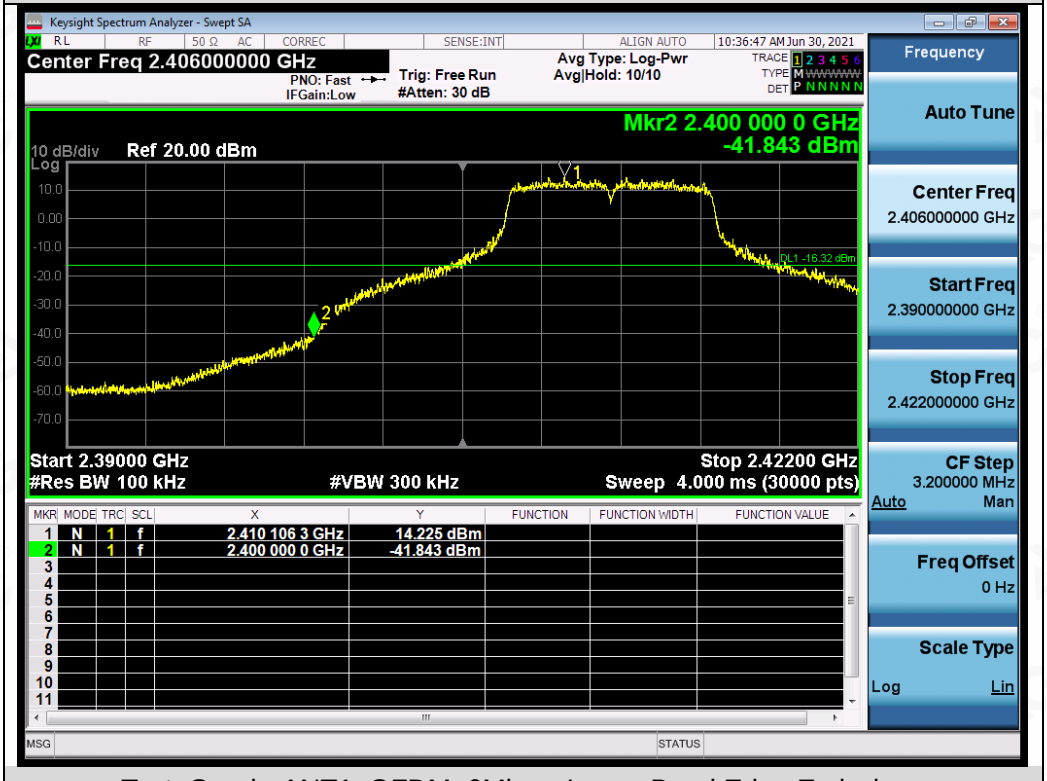
OFDM FOR MODULATION IN HIGH CHANNEL

OFDM FOR MODULATION IN HIGH CHANNEL

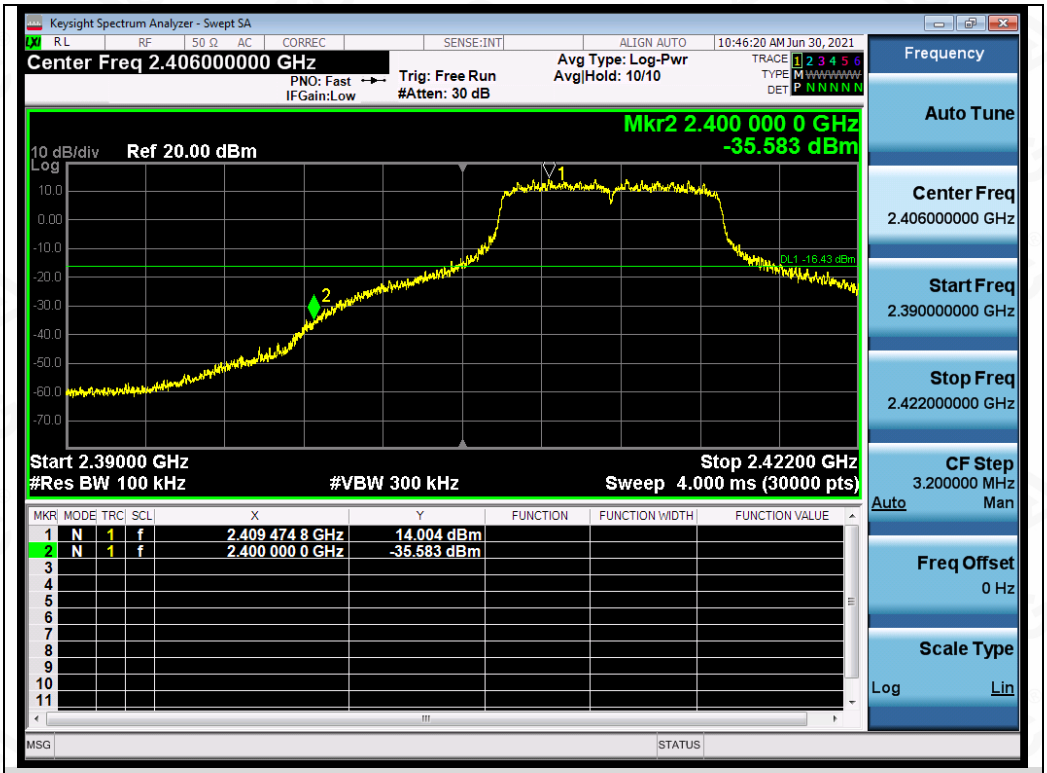
Test Graphs of Band Edge Emissions in Non-Restricted Frequency Bands



Test_Graph_ANT1_CCK_6Mbps_Lower Band Edge Emissions



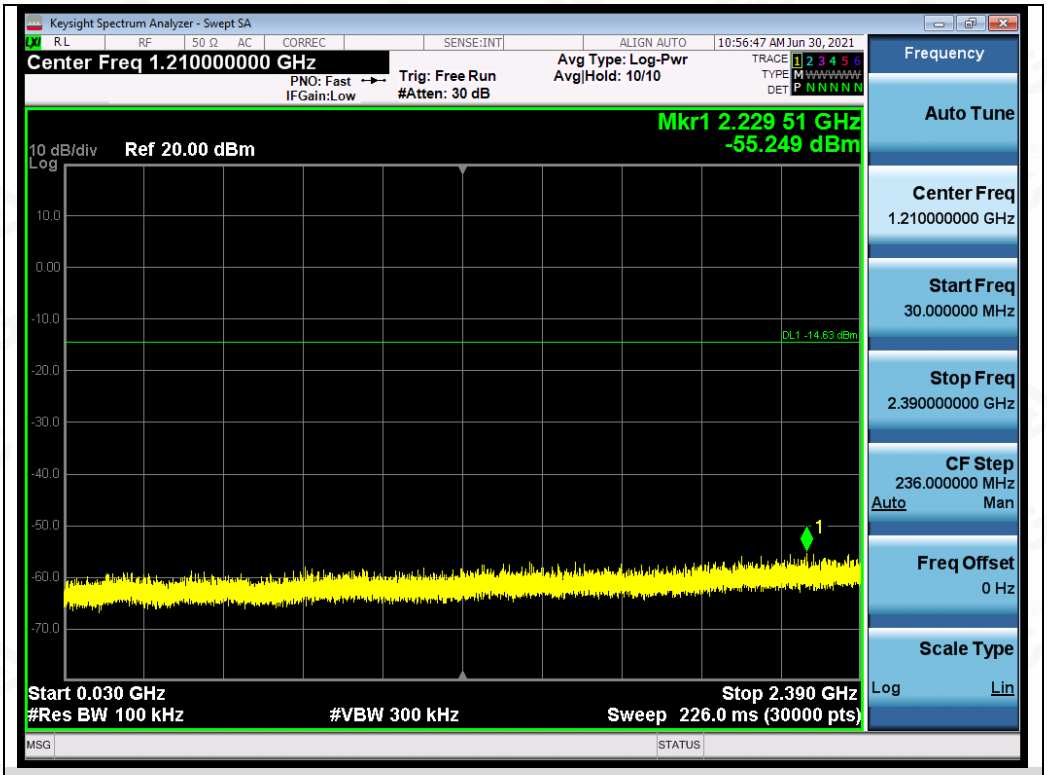
Test_Graph_ANT1_OFDM_6Mbps_Lower Band Edge Emissions



Test_Graph_ANT1_OFDM_MCS0_Lower Band Edge Emissions

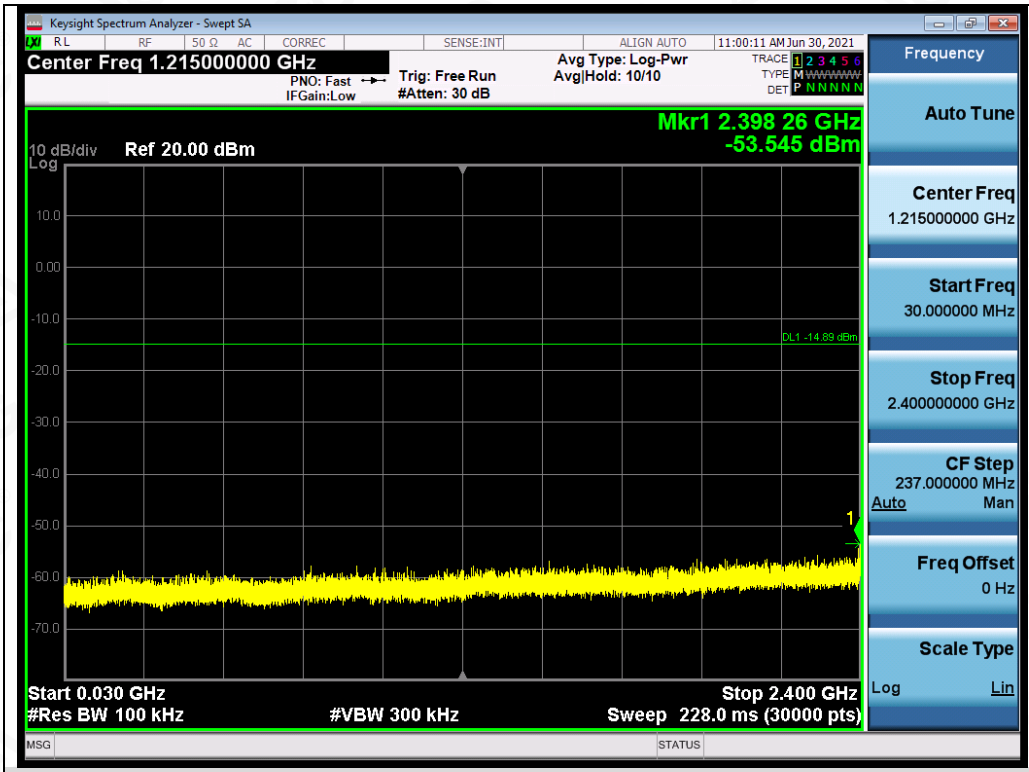
Bandwidth 20 MHz

Test Graphs of Spurious Emissions in Non-Restricted Frequency Bands



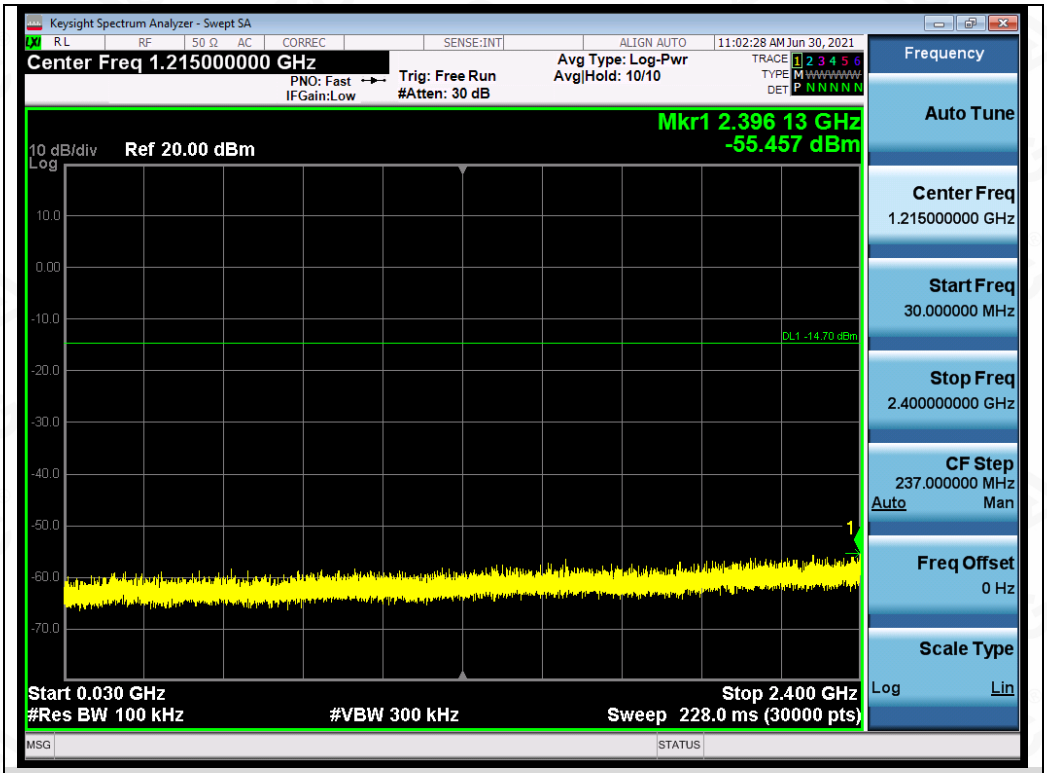
Test_Graph_802.11b_ANT1_2412_1Mbps_Lower Band Emissions

Test_Graph_802.11b_ANT1_2412_1Mbps_Higher Band Emissions



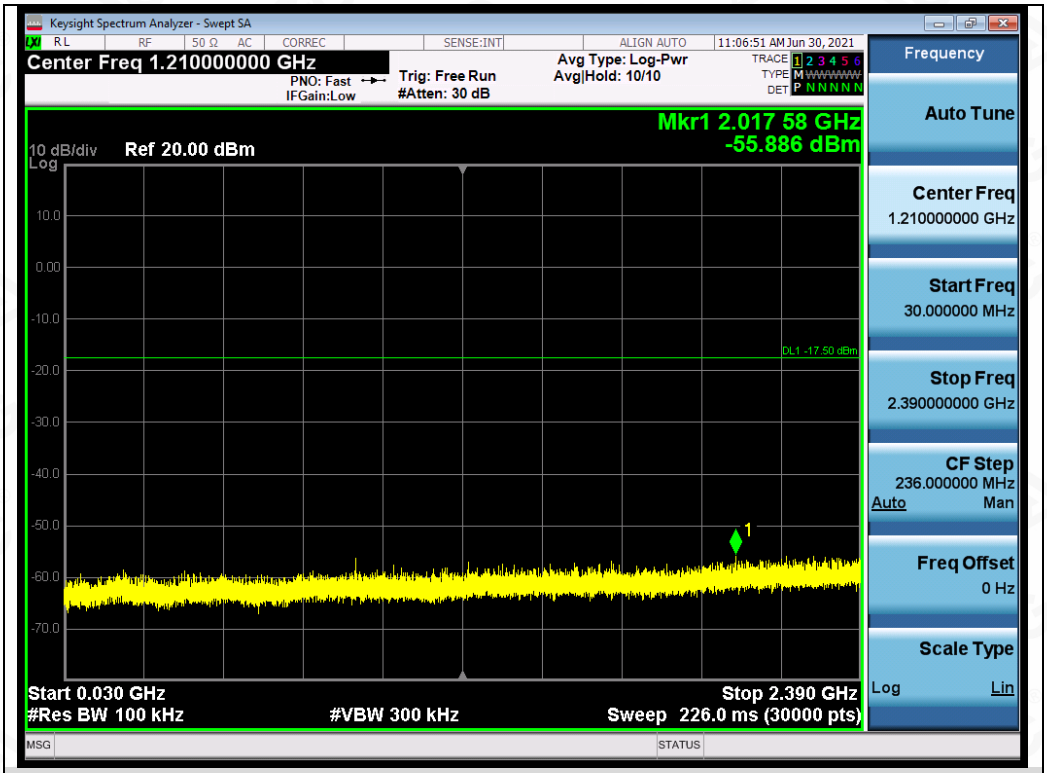
Test_Graph_802.11b_ANT1_2437_1Mbps_Lower Band Emissions

Test_Graph_802.11b_ANT1_2437_1Mbps_Higher Band Emissions



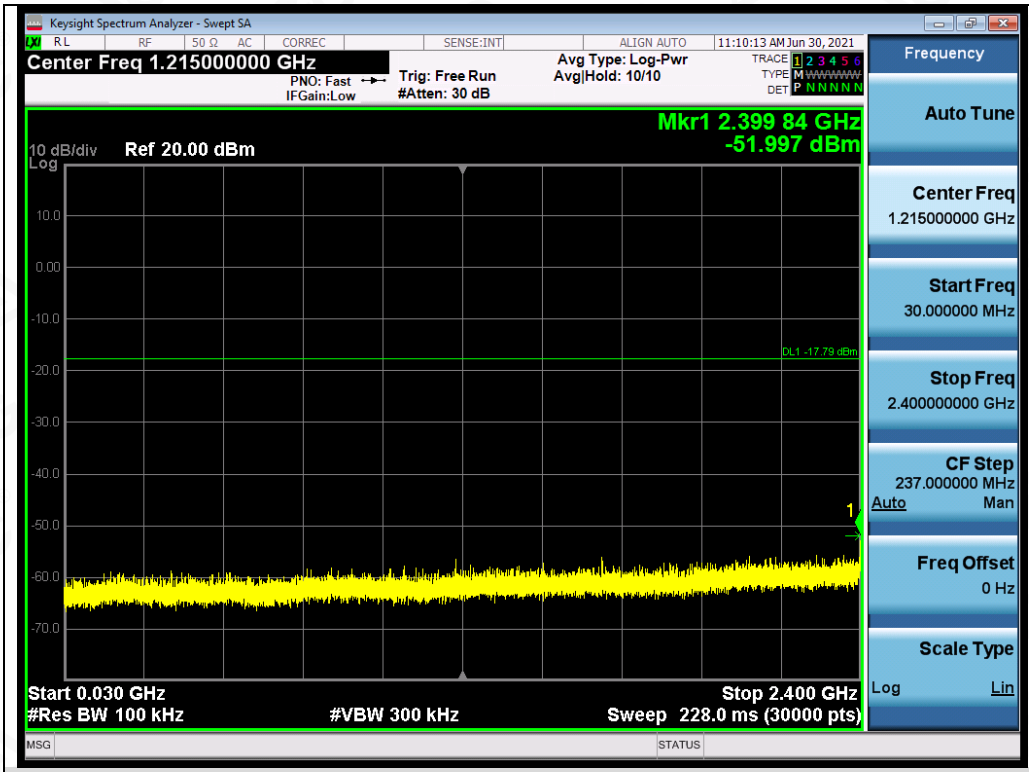
Test_Graph_802.11b_ANT1_2462_1Mbps_Lower Band Emissions

Test_Graph_802.11b_ANT1_2462_1Mbps_Higher Band Emissions

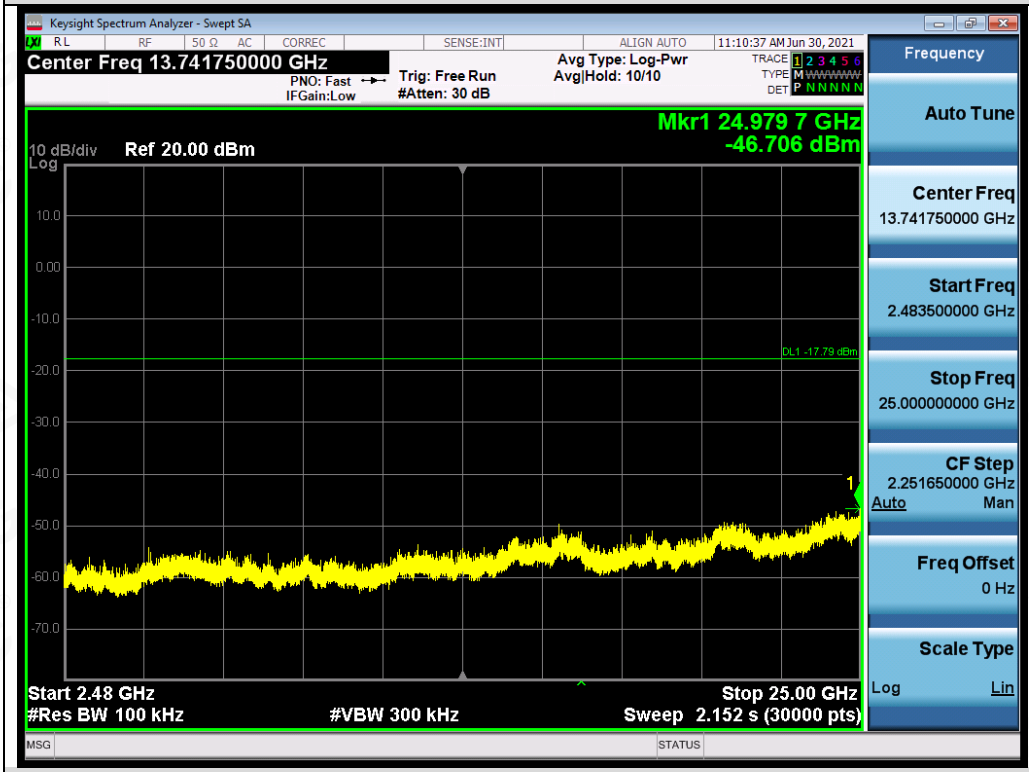


Test_Graph_802.11g_ANT1_2412_6Mbps_Lower Band Emissions

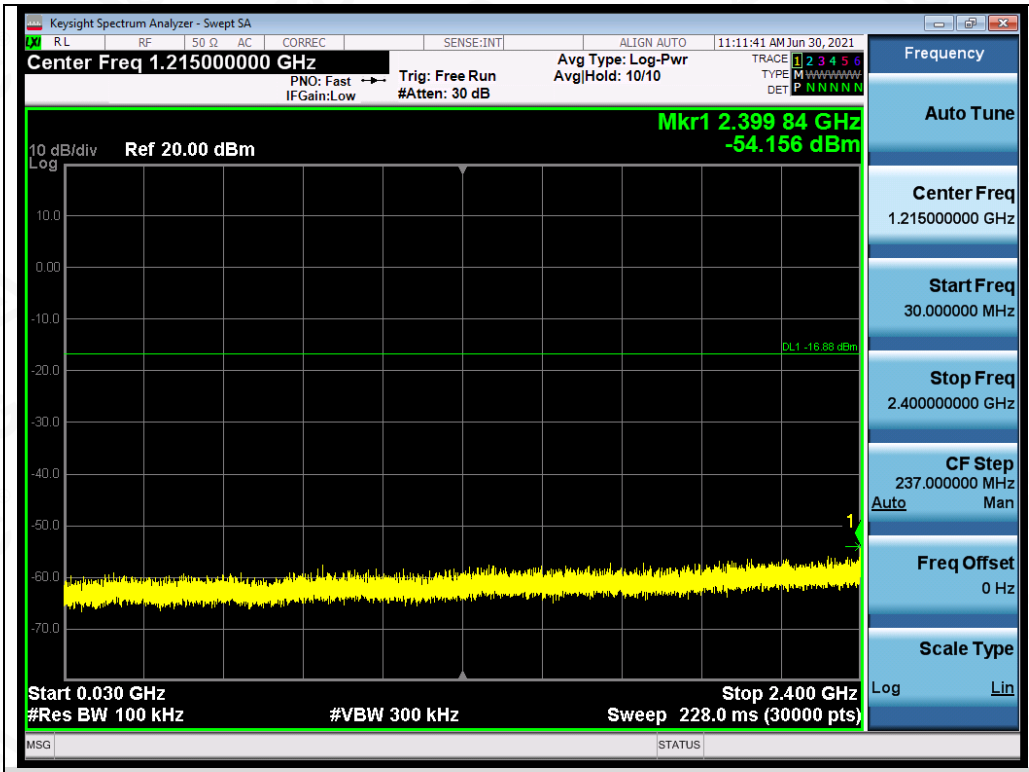
Test_Graph_802.11g_ANT1_2412_6Mbps_Higher Band Emissions



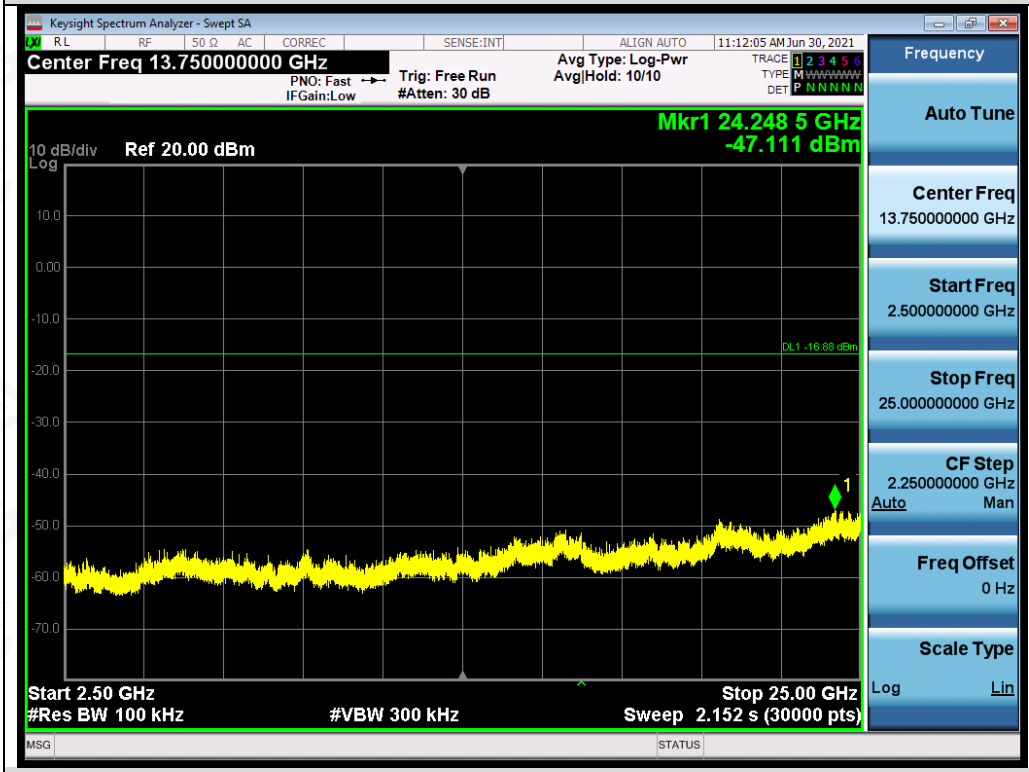
Test_Graph_802.11g_ANT1_2437_6Mbps_Lower Band Emissions



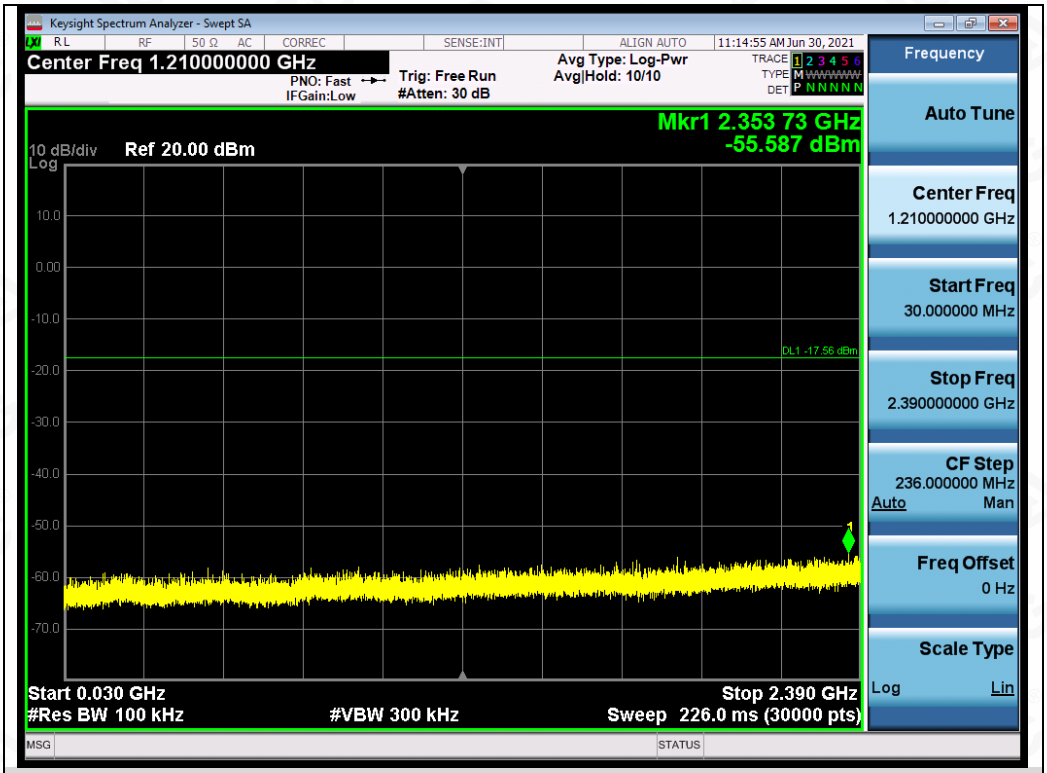
Test_Graph_802.11g_ANT1_2437_6Mbps_Higher Band Emissions



Test_Graph_802.11g_ANT1_2462_6Mbps_Lower Band Emissions

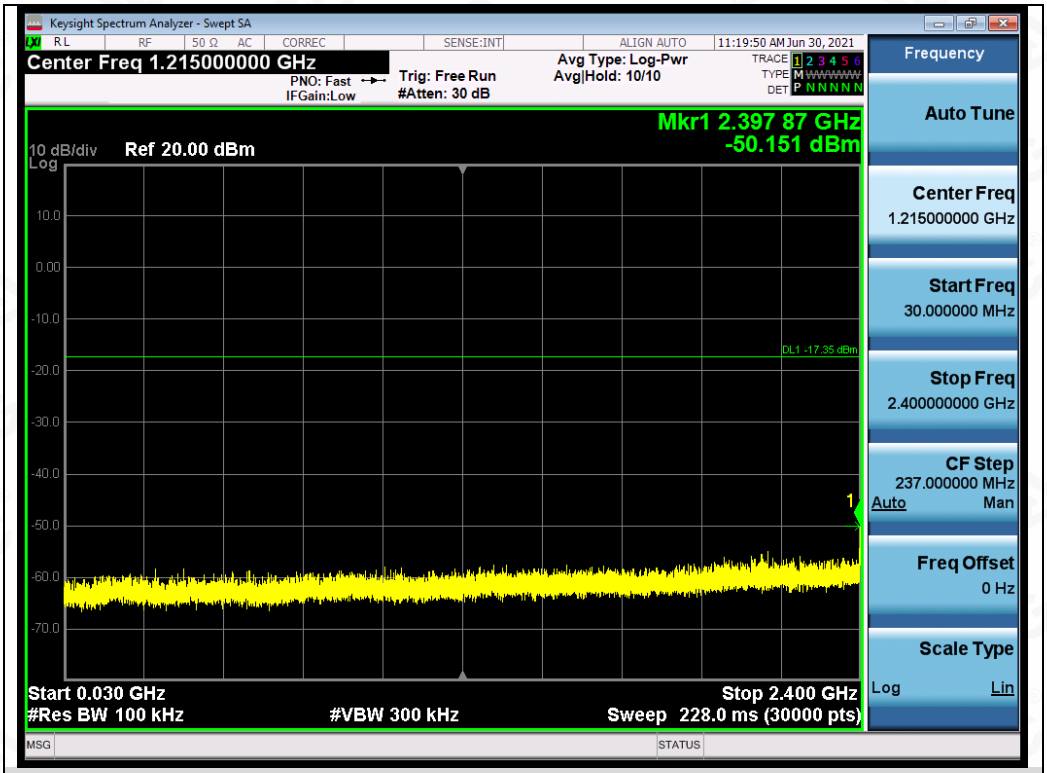


Test_Graph_802.11g_ANT1_2462_6Mbps_Higher Band Emissions

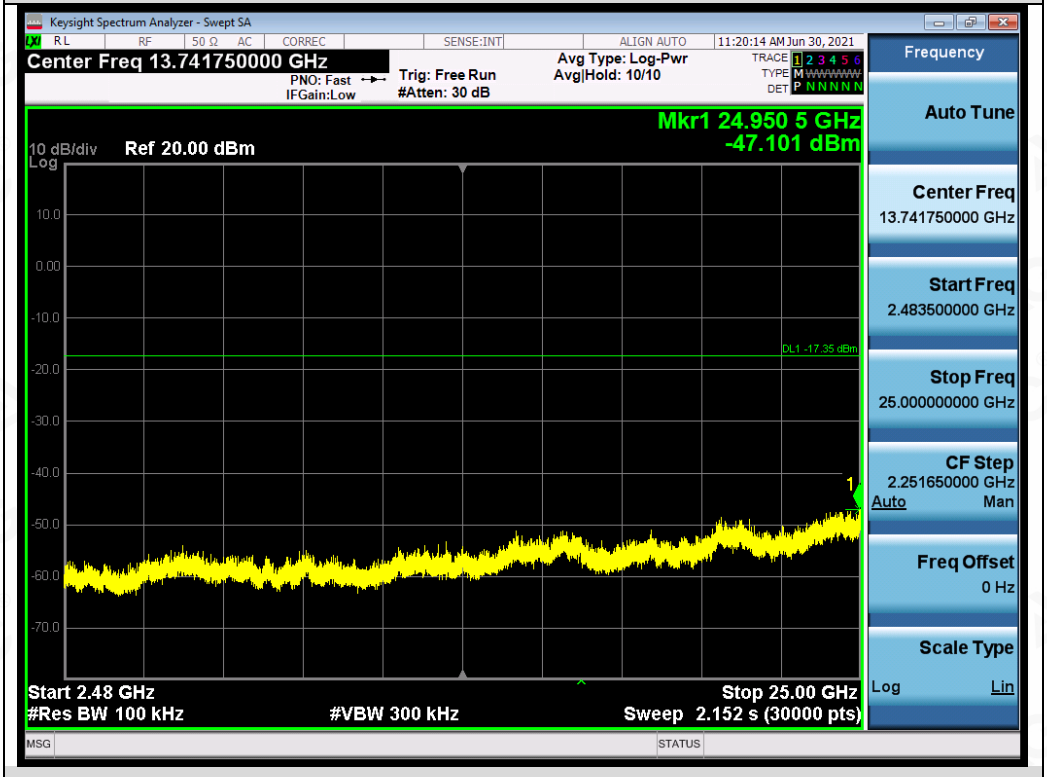


Test_Graph_802.11n20_ANT1_2412_MCS0_Lower Band Emissions

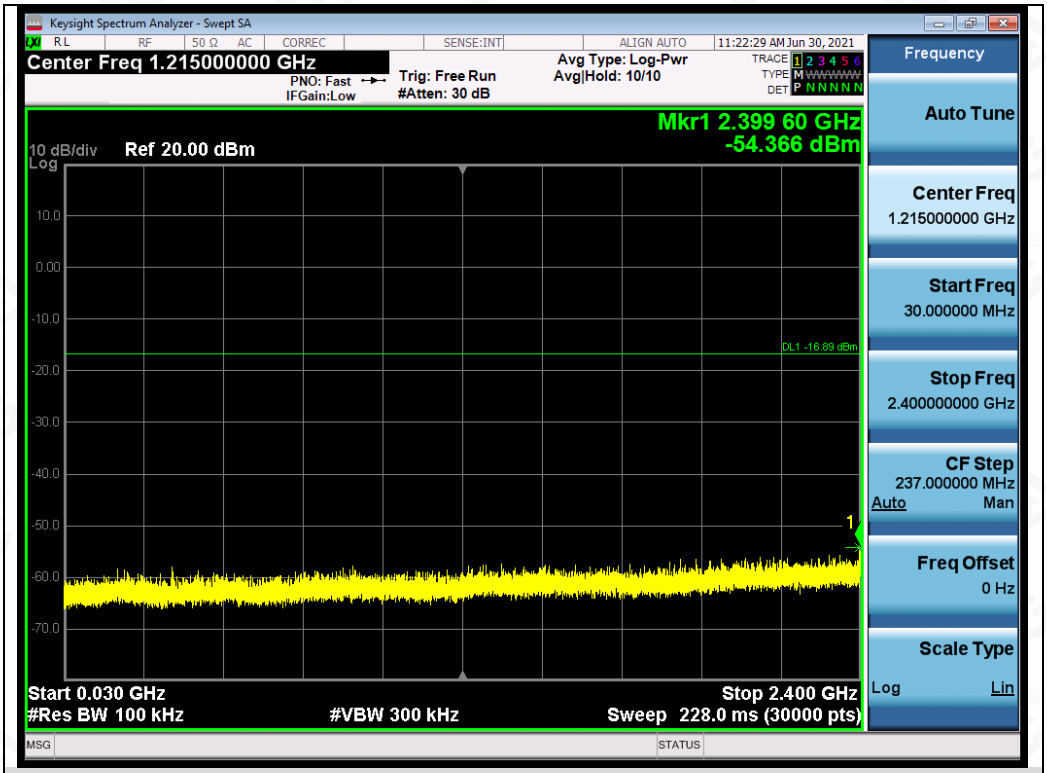
Test_Graph_802.11n20_ANT1_2412_MCS0_Higher Band Emissions



Test_Graph_802.11n20_ANT1_2437_MCS0_Lower Band Emissions



Test_Graph_802.11n20_ANT1_2437_MCS0_Higher Band Emissions

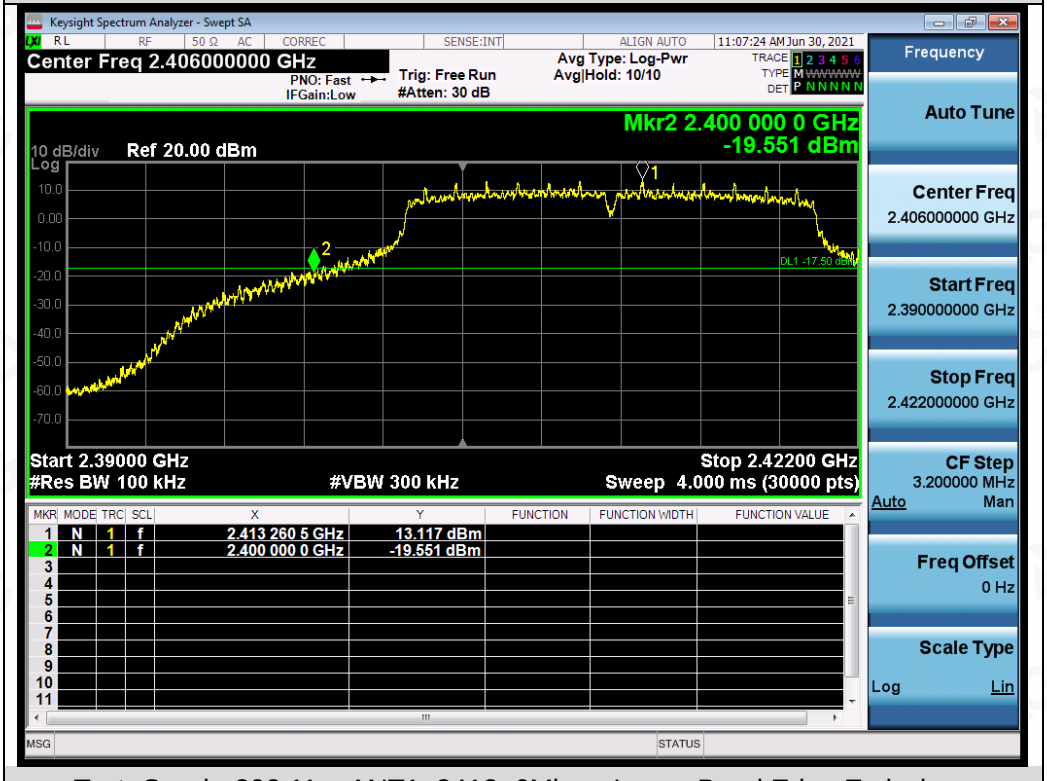


Test_Graph_802.11n20_ANT1_2462_MCS0_Lower Band Emissions

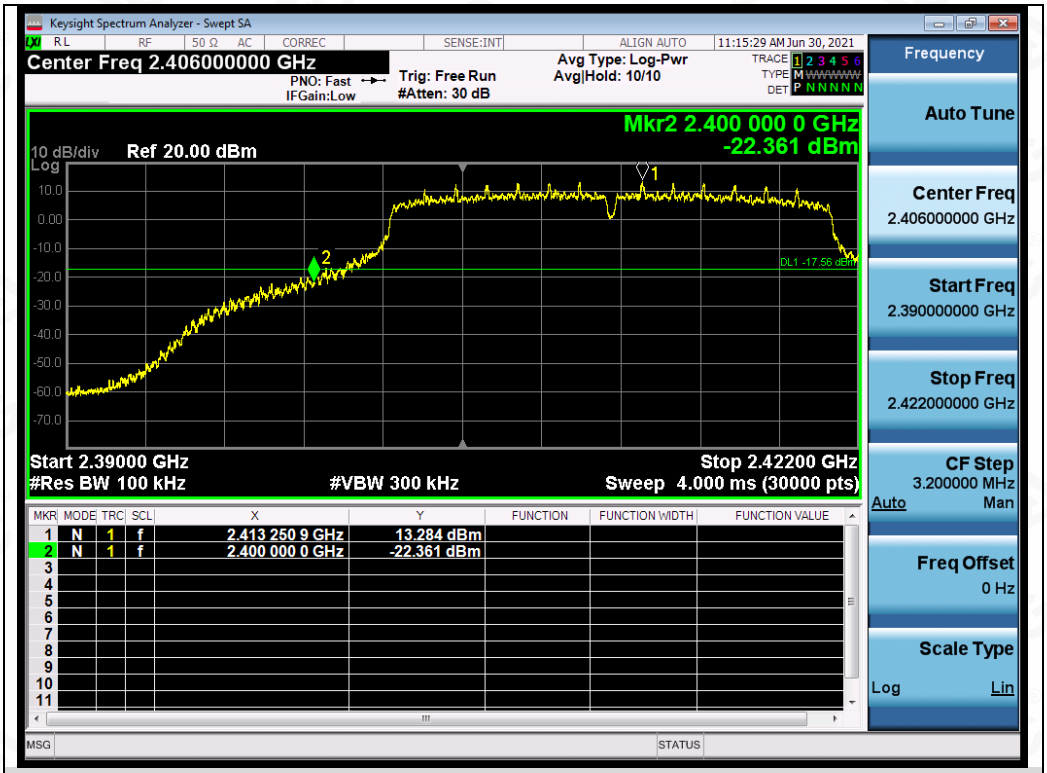
Test_Graph_802.11n20_ANT1_2462_MCS0_Higher Band Emissions

Test Graphs of Band Edge Emissions in Non-Restricted Frequency Bands

Test_Graph_802.11b_ANT1_2412_1Mbps_Lower Band Edge Emissions



Test_Graph_802.11g_ANT1_2412_6Mbps_Lower Band Edge Emissions



Test_Graph_802.11n20_ANT1_2412_MCS0_Lower Band Edge Emissions

Note: 1. Emissions from 2483.5-2500MHz which fall in the restricted bands had been considered with the radiated emission limits specified.

2. All the 10MHz/20MHz bandwidth modulation had been tested. All the antennas have been pre-tested, and all modes of each antenna are tested. The In 802.11b, 802.11g mode antenna 1 is the worst case and recorded in the report; For 802.11n mode, the worst case Antenna 1 has more than 3dB margins, so the MIMO mode also compliance the limit.

10. MAXIMUM CONDUCTED OUTPUT POWER SPECTRAL DENSITY

10.1 MEASUREMENT PROCEDURE

(1). Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator

(2). Set the EUT Work on the top, the middle and the bottom operation frequency individually.

(3). Set SPA Trace 1 Max hold, then View.

Note: The method of PKPSD in the ANSI C63.10 (2013) item 11.10 was used in this testing.

10.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

Refer to Section 8.2.

10.3 MEASUREMENT EQUIPMENT USED

Refer to Section 6.

10.4 LIMITS AND MEASUREMENT RESULT

Bandwidth 10 MHz

TEST ITEM	POWER SPECTRAL DENSITY
TEST MODE	CCK with data rate 1

Channel No.	Power density Ant 1 (dBm/20kHz)	Power density Ant 2 (dBm/20kHz)	Power density Ant 3 (dBm/20kHz)	Power density Ant 4 (dBm/20kHz)	All	Limit (dBm/3kHz)	Result
Low Channel	3.735	3.387	3.597	3.382	N/A	8	Pass
Middle Channel	3.689	3.268	3.066	3.626	N/A	8	Pass
High Channel	3.723	3.295	3.301	3.680	N/A	8	Pass
Channel No.	Power density Ant 1 (dBm/3kHz)	Power density Ant 2 (dBm/3kHz)	Power density Ant 3 (dBm/3kHz)	Power density Ant 4 (dBm/3kHz)	All	Limit (dBm/3kHz)	Result
Low Channel	-4.504	-4.852	-4.642	-4.857	N/A	8	Pass
Middle Channel	-4.55	-4.971	-5.173	-4.613	N/A	8	Pass
High Channel	-4.516	-4.944	-4.938	-4.559	N/A	8	Pass

TEST ITEM	POWER SPECTRAL DENSITY
TEST MODE	OFDM with data rate 6

Channel No.	Power density Ant 1 (dBm/20kHz)	Power density Ant 2 (dBm/20kHz)	Power density Ant 3 (dBm/20kHz)	Power density Ant 4 (dBm/20kHz)	All	Limit (dBm/3kHz)	Result
Low Channel	0.196	-0.350	-0.526	-0.378	N/A	8	Pass
Middle Channel	0.379	-0.143	-0.118	-0.150	N/A	8	Pass
High Channel	0.361	-0.155	-0.331	-0.197	N/A	8	Pass
Channel No.	Power density Ant 1 (dBm/3kHz)	Power density Ant 2 (dBm/3kHz)	Power density Ant 3 (dBm/3kHz)	Power density Ant 4 (dBm/3kHz)	All	Limit (dBm/3kHz)	Result
Low Channel	-8.043	-8.589	-8.765	-8.617	N/A	8	Pass
Middle Channel	-7.86	-8.382	-8.357	-8.389	N/A	8	Pass
High Channel	-7.878	-8.394	-8.57	-8.436	N/A	8	Pass

TEST ITEM	POWER SPECTRAL DENSITY
TEST MODE	OFDM with data rate 6.5

Channel No.	Power density Ant 1 (dBm/20kHz)	Power density Ant 2 (dBm/20kHz)	Power density Ant 3 (dBm/20kHz)	Power density Ant 4 (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	-0.306	-0.592	-0.660	-0.278	8	Pass
Middle Channel	0.018	-0.027	-0.367	-0.249	8	Pass
High Channel	-0.126	-0.169	-0.318	-0.540	8	Pass
Channel No.	Power density Ant 1+2 (dBm/20kHz)	Power density Ant 3+4 (dBm/20kHz)	Power density Ant 1+3 (dBm/20kHz)	Power density Ant 2+4 (dBm/20kHz)	Limit (dBm/3kHz)	Result
Low Channel	2.56	2.55	2.53	2.58	7.89	Pass
Middle Channel	3.01	2.70	2.84	2.87	7.89	Pass
High Channel	2.86	2.58	2.79	2.66	7.89	Pass

Channel No.	Power density Ant 1 (dBm/3kHz)	Power density Ant 2 (dBm/3kHz)	Power density Ant 3 (dBm/3kHz)	Power density Ant 4 (dBm/3kHz)	Limit (dBm/3kHz)	Result
Low Channel	-8.545	-8.831	-8.899	-8.517	8	Pass
Middle Channel	-8.221	-8.266	-8.606	-8.488	8	Pass
High Channel	-8.365	-8.408	-8.557	-8.779	8	Pass
Channel No.	Power density Ant 1+2 (dBm/3kHz)	Power density Ant 3+4 (dBm/3kHz)	Power density Ant 1+3 (dBm/3kHz)	Power density Ant 2+4 (dBm/3kHz)	Limit (dBm/3kHz)	Result
Low Channel	-5.68	-5.69	-5.71	-5.66	7.89	Pass
Middle Channel	-5.23	-5.54	-5.40	-5.37	7.89	Pass
High Channel	-5.38	-5.66	-5.45	-5.58	7.89	Pass

Note: Power density(dBm/3kHz) = Power density(dBm/20kHz) – 10*log(20/3).

Bandwidth 20 MHz

TEST ITEM	POWER SPECTRAL DENSITY
TEST MODE	802.11b with data rate 1

Channel No.	Power density Ant 1 (dBm/20kHz)	Power density Ant 2 (dBm/20kHz)	Power density Ant 3 (dBm/20kHz)	Power density Ant 4 (dBm/20kHz)	All	Limit (dBm/3kHz)	Result
Low Channel	0.534	0.690	0.649	0.654	N/A	8	Pass
Middle Channel	0.586	0.726	0.486	0.366	N/A	8	Pass
High Channel	0.481	0.689	0.415	0.468	N/A	8	Pass
Channel No.	Power density Ant 1 (dBm/3kHz)	Power density Ant 2 (dBm3kHz)	Power density Ant 3 (dBm/3kHz)	Power density Ant 4 (dBm/3kHz)	All	Limit (dBm/3kHz)	Result
Low Channel	-7.705	-7.549	-7.59	-7.585	N/A	8	Pass
Middle Channel	-7.653	-7.513	-7.753	-7.873	N/A	8	Pass
High Channel	-7.758	-7.55	-7.824	-7.771	N/A	8	Pass

TEST ITEM	POWER SPECTRAL DENSITY
TEST MODE	802.11g with data rate 6

Channel No.	Power density Ant 1 (dBm/20kHz)	Power density Ant 2 (dBm/20kHz)	Power density Ant 3 (dBm/20kHz)	Power density Ant 4 (dBm/20kHz)	All	Limit (dBm/3kHz)	Result
Low Channel	-2.895	-2.656	-2.721	-2.807	N/A	8	Pass
Middle Channel	-3.075	-2.883	-2.750	-2.583	N/A	8	Pass
High Channel	-2.741	-2.333	-1.898	-2.633	N/A	8	Pass
Channel No.	Power density Ant 1 (dBm/3kHz)	Power density Ant 2 (dBm3kHz)	Power density Ant 3 (dBm/3kHz)	Power density Ant 4 (dBm/3kHz)	All	Limit (dBm/3kHz)	Result
Low Channel	-11.134	-10.895	-10.96	-11.046	N/A	8	Pass
Middle Channel	-11.314	-11.122	-10.989	-10.822	N/A	8	Pass
High Channel	-10.98	-10.572	-10.137	-10.872	N/A	8	Pass

TEST ITEM	POWER SPECTRAL DENSITY
TEST MODE	802.11n 20 with data rate 6.5

Channel No.	Power density Ant 1 (dBm/20kHz)	Power density Ant 2 (dBm/20kHz)	Power density Ant 3 (dBm/20kHz)	Power density Ant 4 (dBm/20kHz)	Limit (dBm/ 3kHz)	Result
Low Channel	-3.186	-3.105	-3.187	-3.102	8	Pass
Middle Channel	-3.189	-3.096	-2.964	-2.569	8	Pass
High Channel	-2.945	-2.902	-2.768	-2.736	8	Pass
Channel No.	Power density Ant 1 (dBm/3kHz)	Power density Ant 2 (dBm/3kHz)	Power density Ant 3 (dBm/3kHz)	Power density Ant 4 (dBm/3kHz)	Limit (dBm/ 3kHz)	Result
Low Channel	-11.425	-11.344	-11.426	-11.341	8	Pass
Middle Channel	-11.428	-11.335	-11.203	-10.808	8	Pass
High Channel	-11.184	-11.141	-11.007	-10.975	8	Pass

Channel No.	Power density Ant 1+2 (dBm/20kHz)	Power density Ant 3+4 (dBm/20kHz)	Power density Ant 1+3 (dBm/20kHz)	Power density Ant 2+4 (dBm/20kHz)	Limit (dBm/ 3kHz)	Result
Low Channel	-0.14	-0.13	-0.18	-0.09	7.89	Pass
Middle Channel	-0.13	0.25	-0.06	0.19	7.89	Pass
High Channel	0.09	0.26	0.15	0.19	7.89	Pass
Channel No.	Power density Ant 1+2 (dBm/3kHz)	Power density Ant 3+4 (dBm/3kHz)	Power density Ant 1+3 (dBm/3kHz)	Power density Ant 2+4 (dBm/3kHz)	Limit (dBm/ 3kHz)	Result
Low Channel	-8.37	-8.37	-8.42	-8.33	7.89	Pass
Middle Channel	-8.37	-7.99	-8.30	-8.05	7.89	Pass
High Channel	-8.15	-7.98	-8.08	-8.05	7.89	Pass

Note: The 802.11n20 mode can support MIMO.

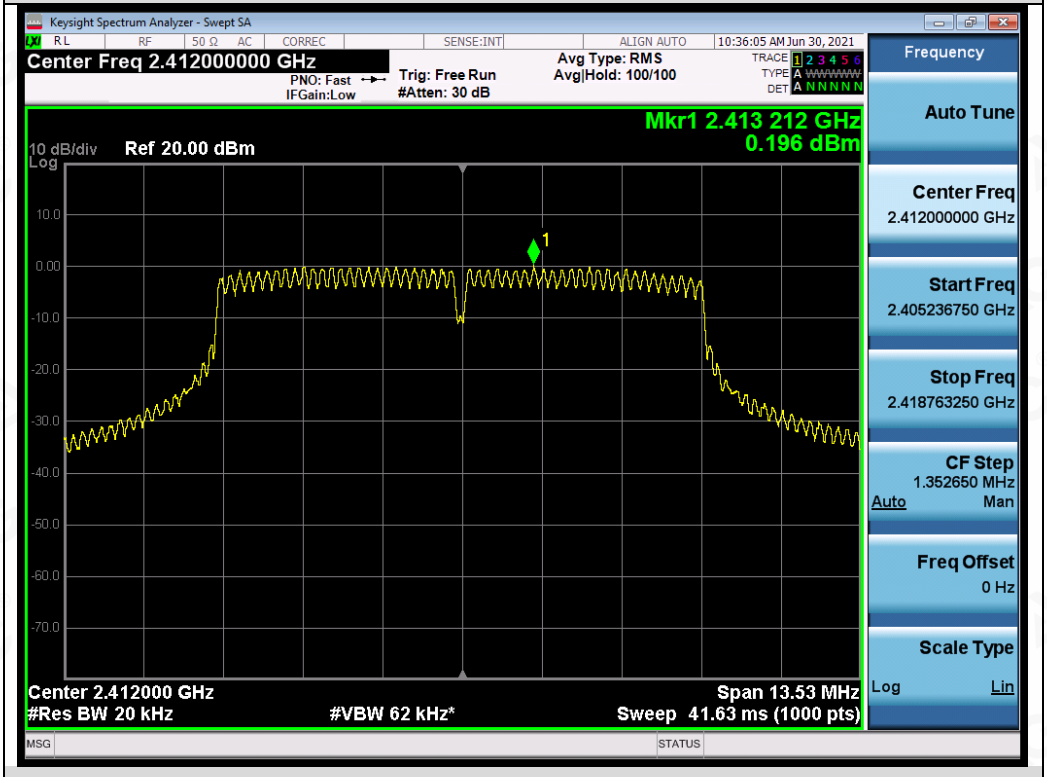
Bandwidth 10 MHz

Test Graphs of Conducted Output Power Spectral Density-Ant 1

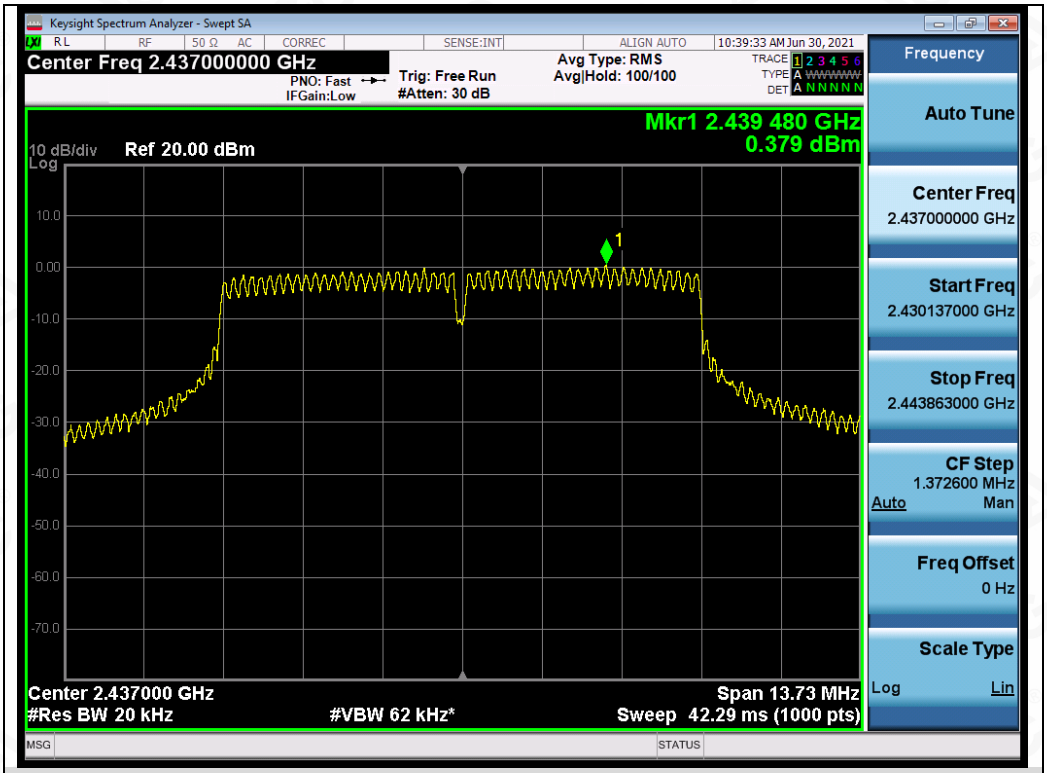
Test_Graph_CCK_ANT1_2412_1Mbps_PSD

Test_Graph_CCK_ANT1_2437_1Mbps_PSD

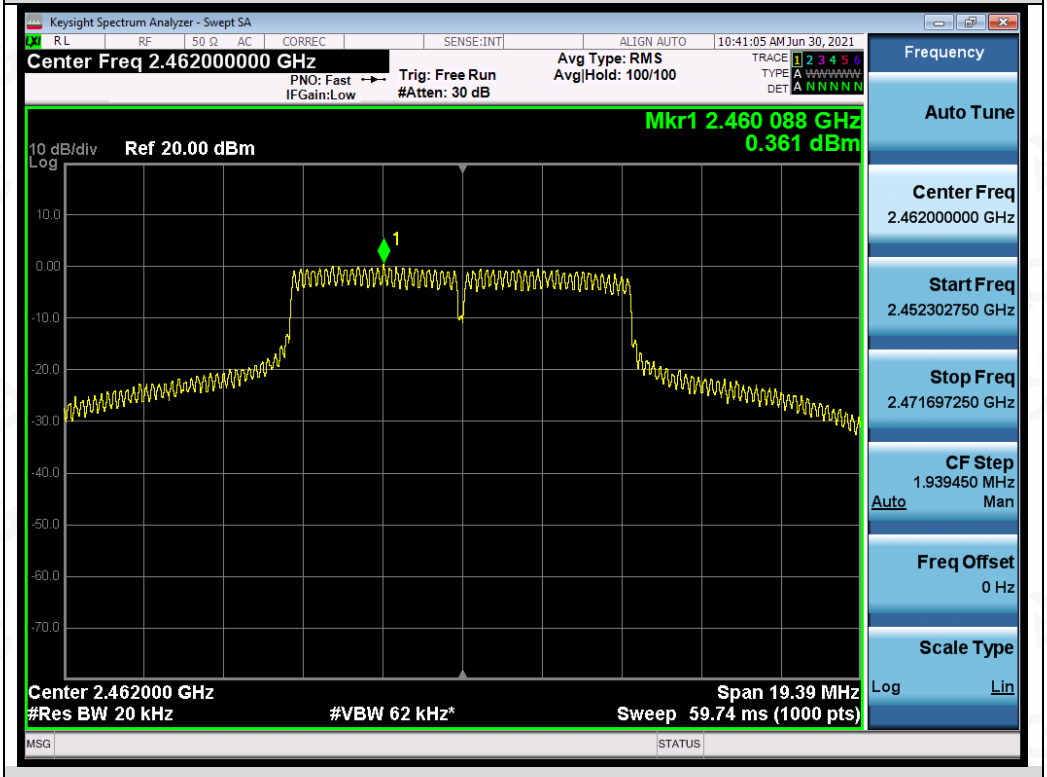
Test_Graph_CCK_ANT1_2462_1Mbps_PSD



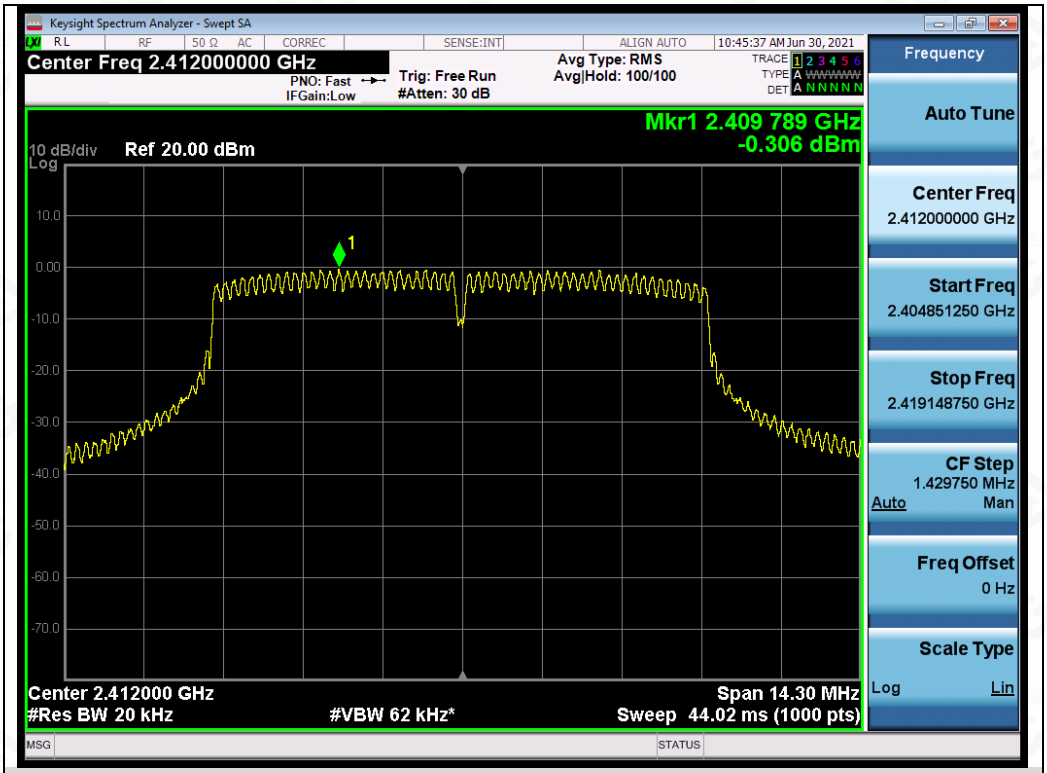
Test_Graph_OFDM_ANT1_2412_6Mbps_PSD



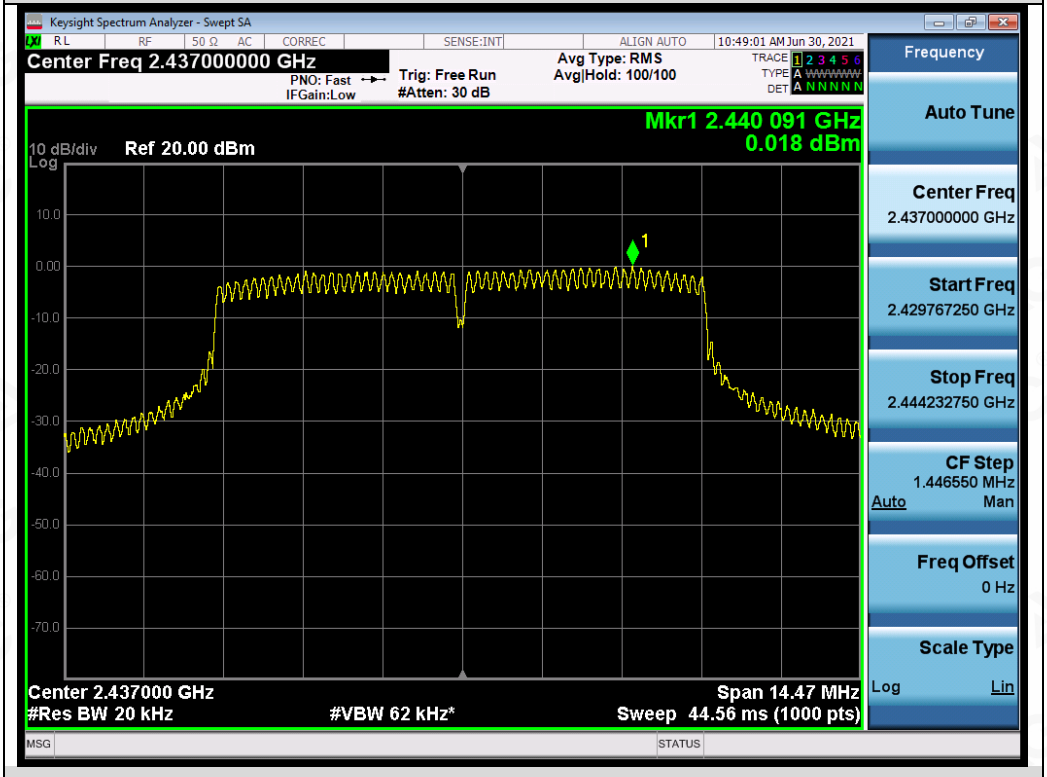
Test_Graph_OFDM_ANT1_2437_6Mbps_PSD



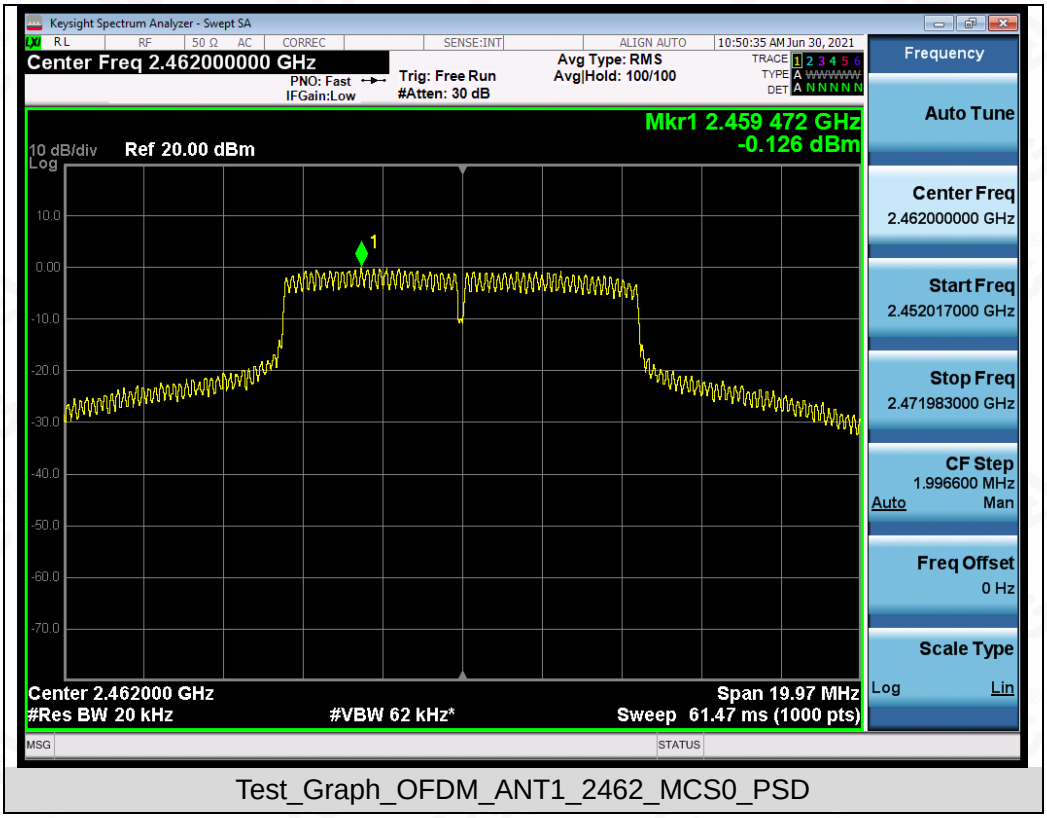
Test_Graph_OFDM_ANT1_2462_6Mbps_PSD



Test_Graph_OFDM_ANT1_2412_MCS0_PSD

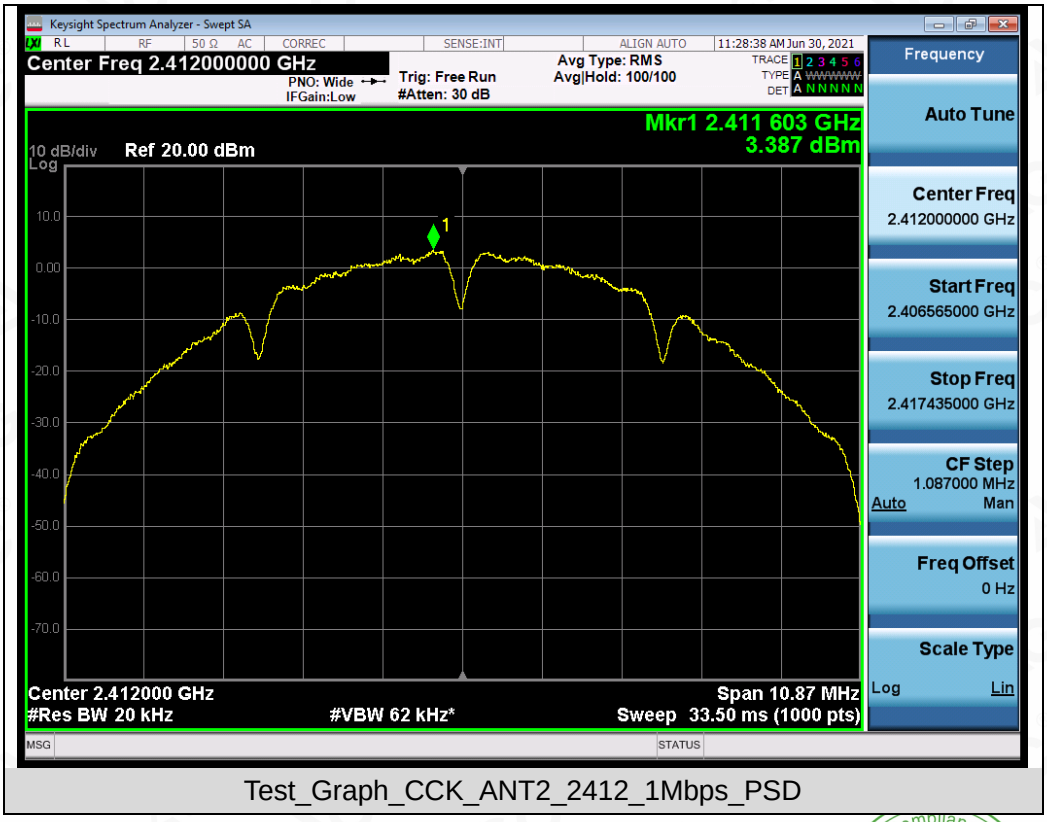


Test_Graph_OFDM_ANT1_2437_MCS0_PSD



Test_Graph_OFDM_ANT1_2462_MCS0_PSD

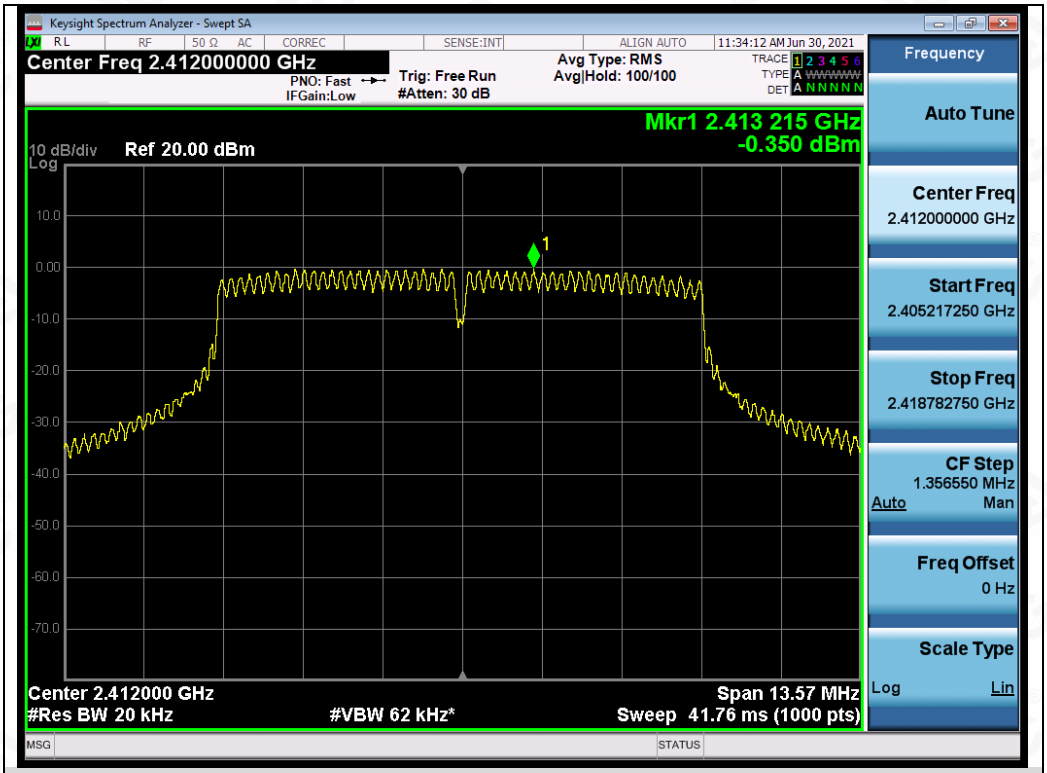
Test Graphs of Conducted Output Power Spectral Density-Ant 2



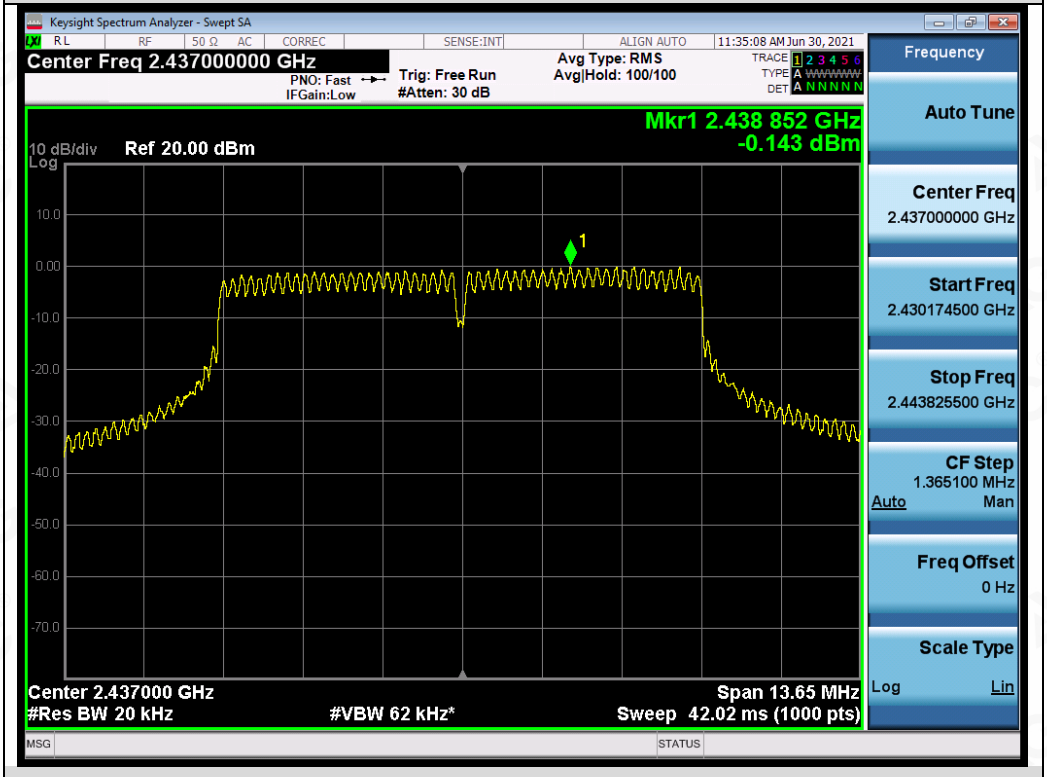
Test_Graph_CCK_ANT2_2412_1Mbps_PSD

Test_Graph_CCK_ANT2_2437_1Mbps_PSD

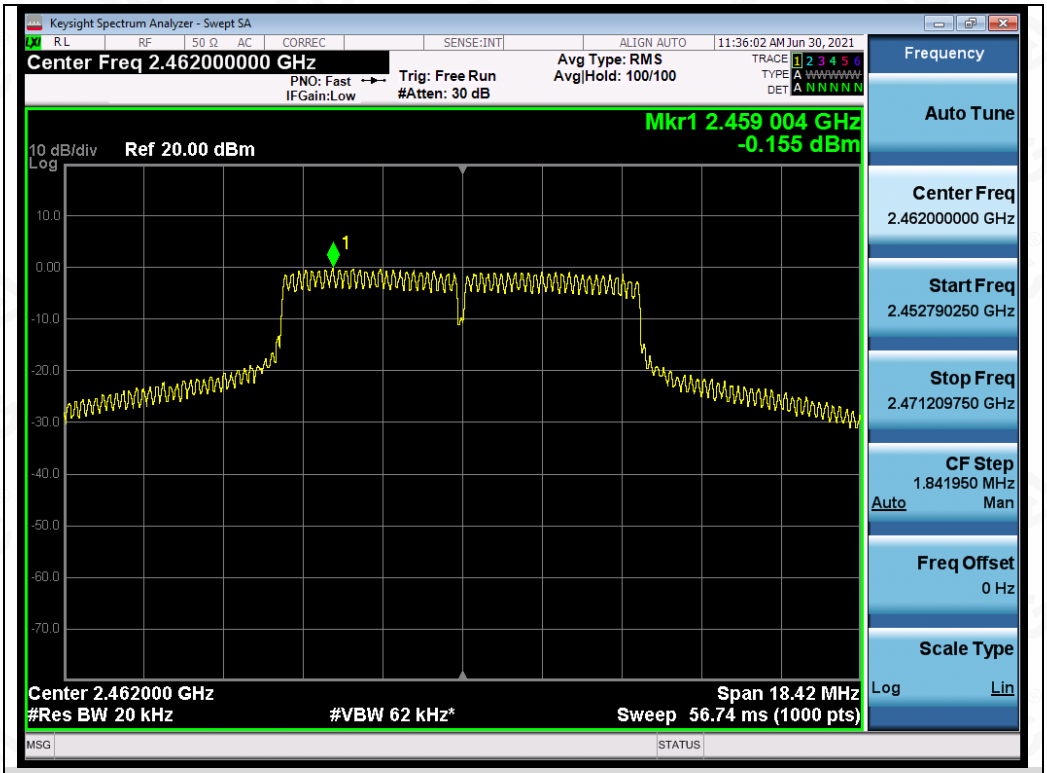
Test_Graph_CCK_ANT2_2462_1Mbps_PSD



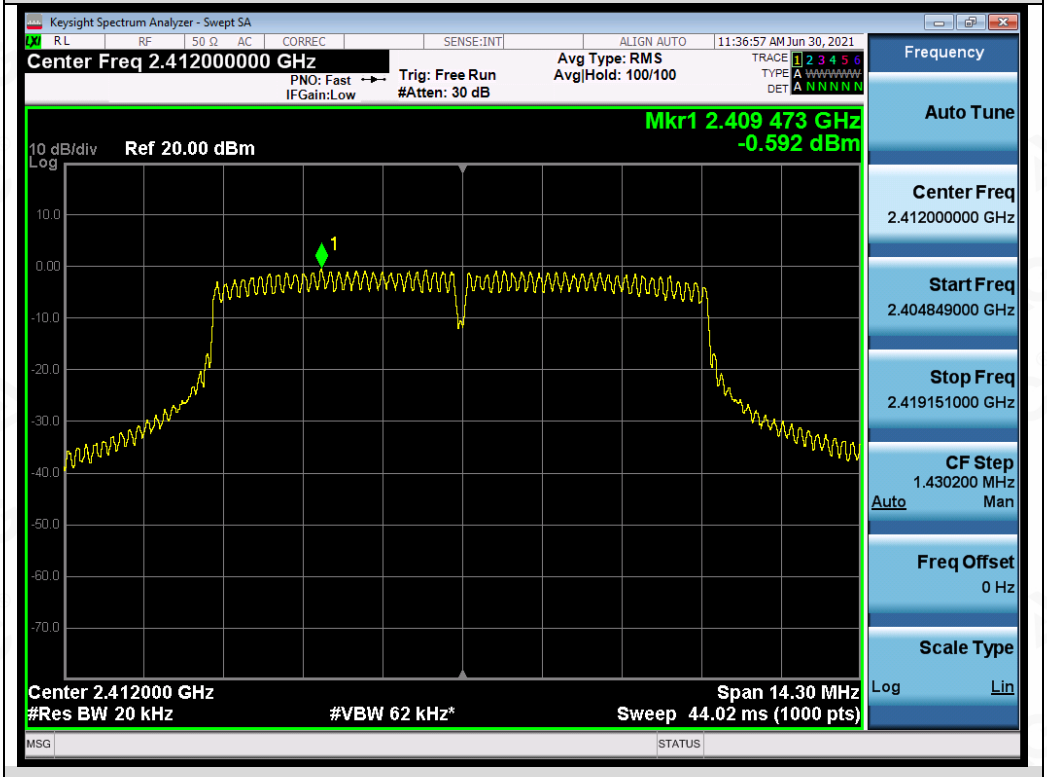
Test_Graph_OFDM_ANT2_2412_6Mbps_PSD



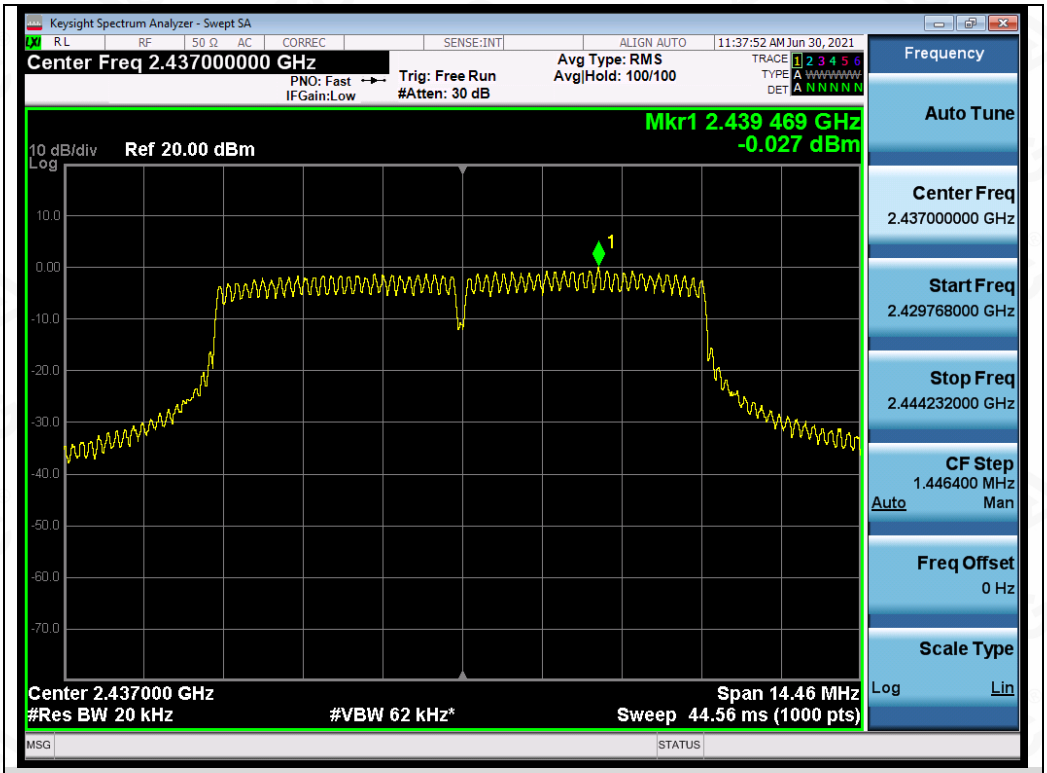
Test_Graph_OFDM_ANT2_2437_6Mbps_PSD



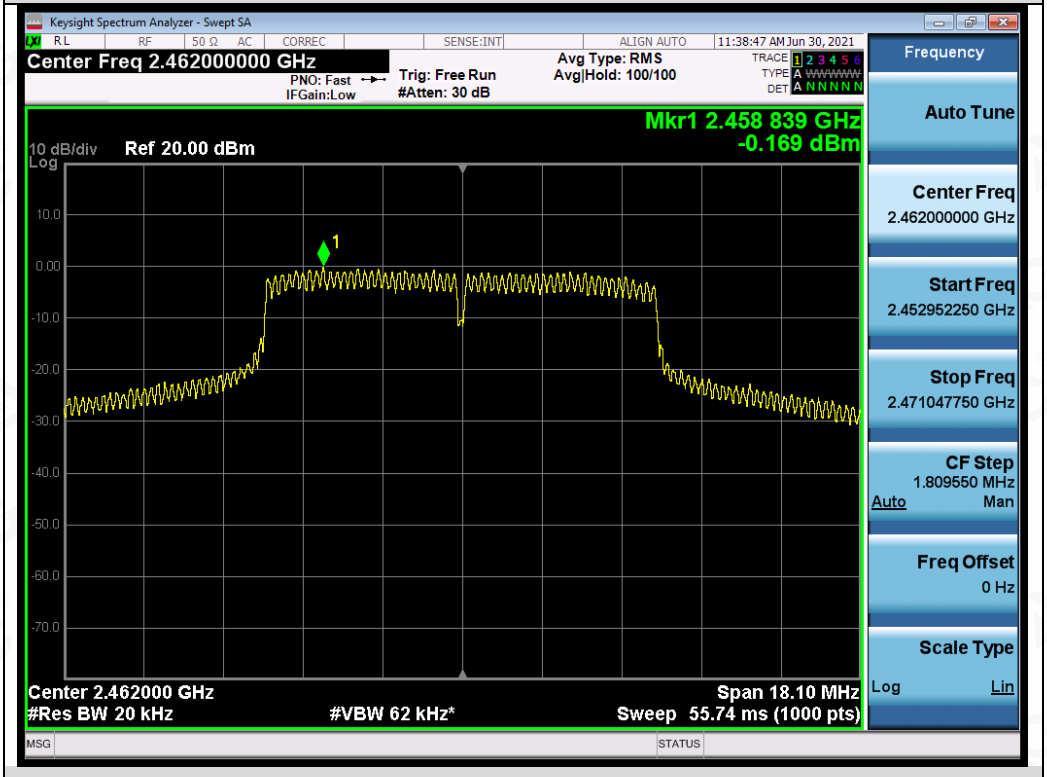
Test_Graph_OFDM_ANT2_2462_6Mbps_PSD



Test_Graph_OFDM_ANT2_2412_MCS0_PSD



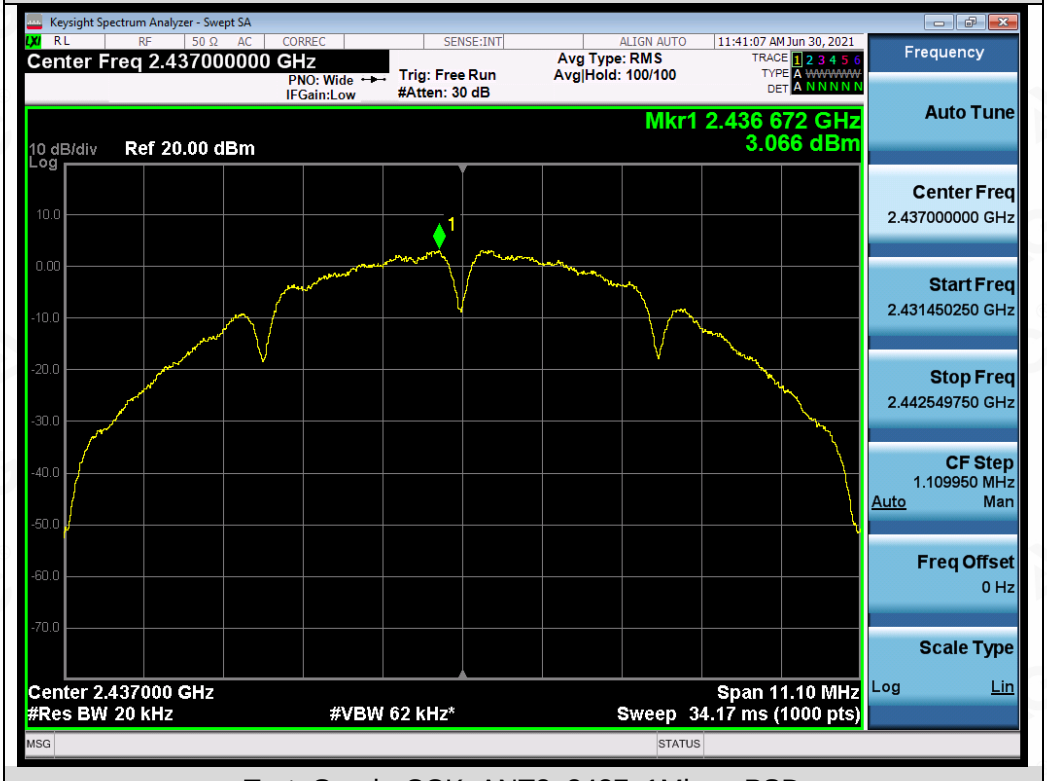
Test_Graph_OFDM_ANT2_2437_MCS0_PSD



Test_Graph_OFDM_ANT2_2462_MCS0_PSD

Test Graphs of Conducted Output Power Spectral Density-Ant 3

Test_Graph_CCK_ANT3_2412_1Mbps_PSD



Test_Graph_CCK_ANT3_2437_1Mbps_PSD