

Appendix B

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: HyFlip
Trade Mark: N/A
Test Model: HTLF11INC4Z1ES

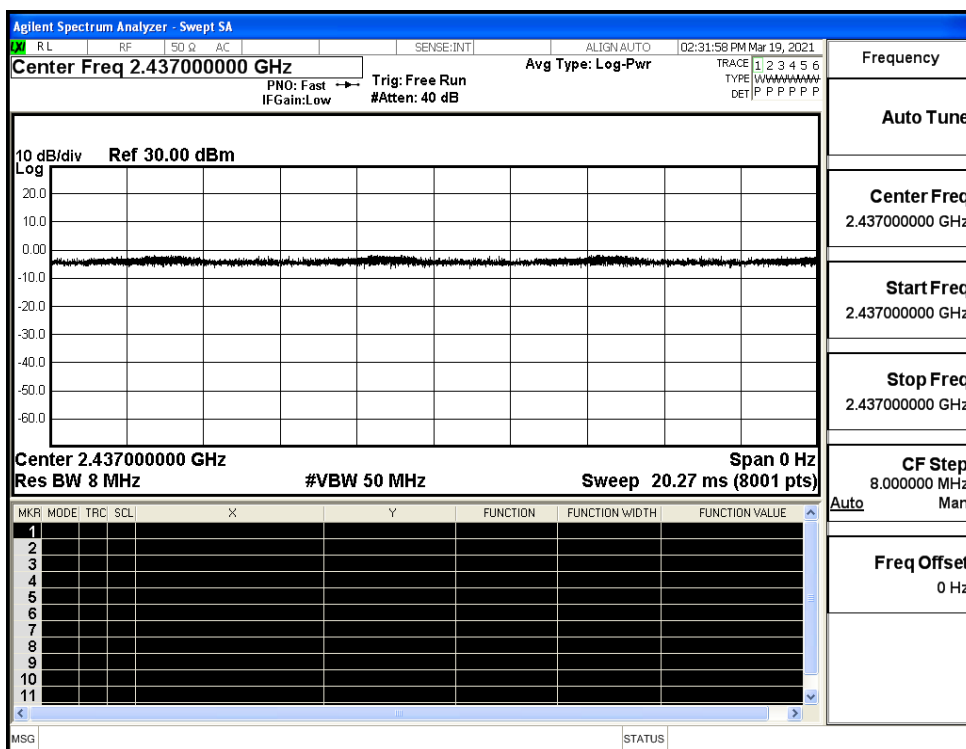
Environmental Conditions

Temperature:	24.6 ° C
Relative Humidity:	54.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Carl Fu
Supervised by:	Li Huan

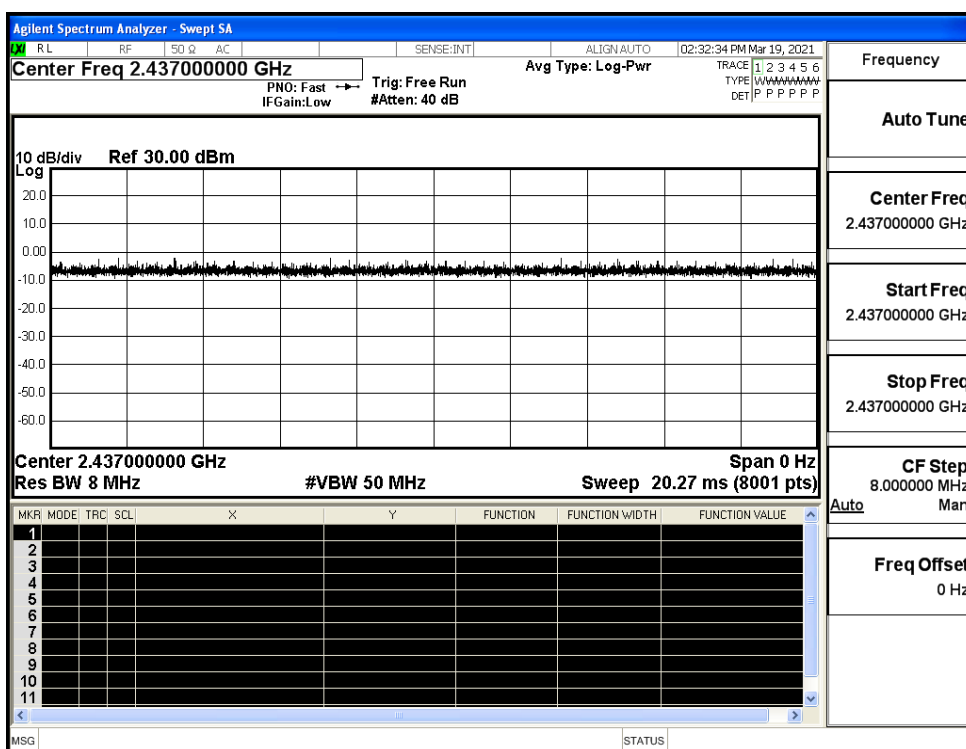
B.1 Duty Cycle

Test Mode	Test Channel	Ant	Duty Cycle[%]	Verdict
11B	2437	Ant1	100	PASS
11G	2437	Ant1	100	PASS
11N20SISO	2437	Ant1	100	PASS
11N40SISO	2437	Ant1	100	PASS

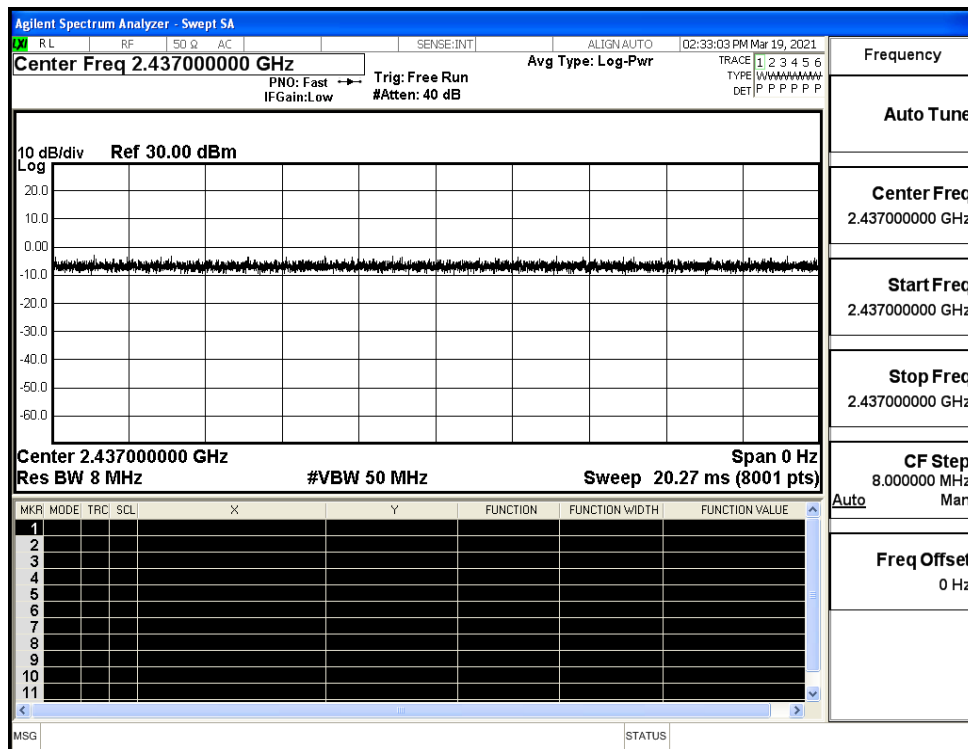
Duty Cycle_11B_2437_Ant1



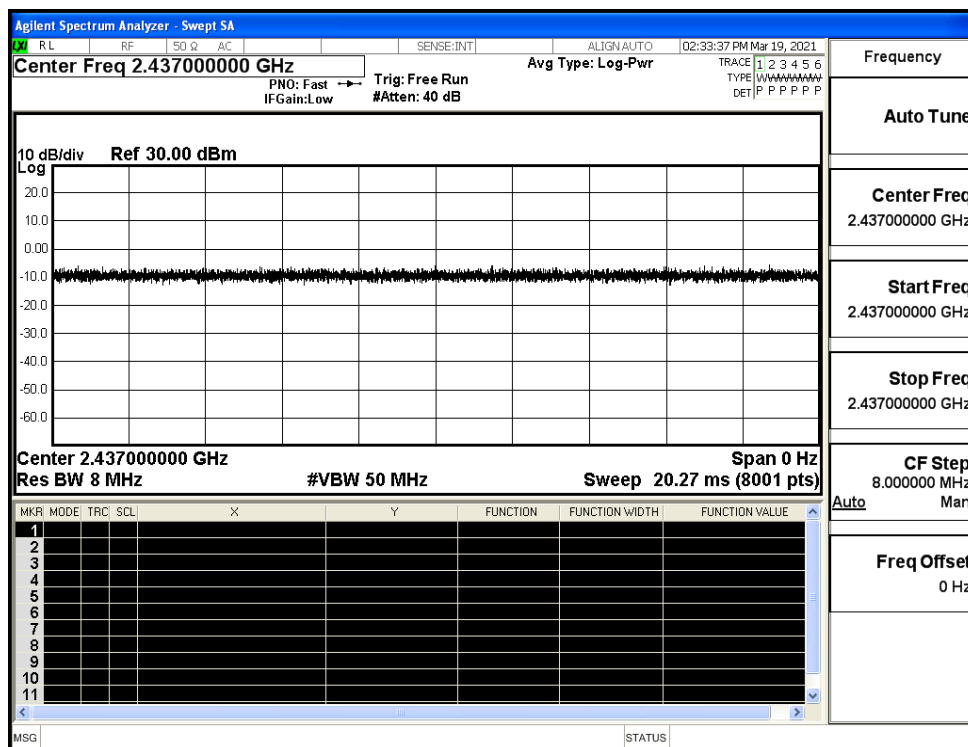
Duty Cycle_11G_2437_Ant1



Duty Cycle_11N20SISO_2437_Ant1



Duty Cycle_11N40SISO_2437_Ant1



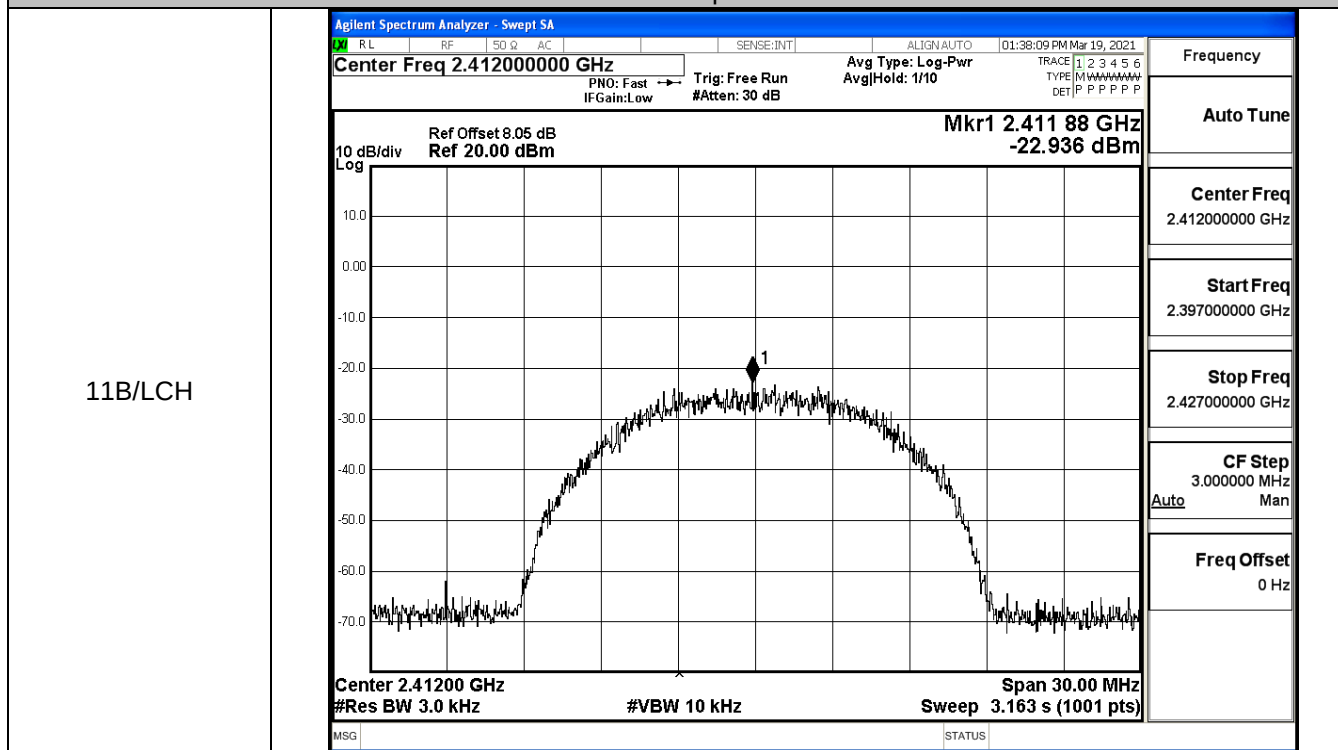
B.2 Maximum Conducted Output Power

Mode	Channel	Meas.Level [dBm]	Limit [dBm]	Verdict
11B	LCH	8.98	30	PASS
	MCH	8.35	30	PASS
	HCH	8.65	30	PASS
11G	LCH	8.79	30	PASS
	MCH	8.16	30	PASS
	HCH	8.19	30	PASS
11N20SISO	LCH	8.84	30	PASS
	MCH	8.12	30	PASS
	HCH	8.15	30	PASS
11N40SISO	LCH	8.43	30	PASS
	MCH	8.83	30	PASS
	HCH	8.51	30	PASS

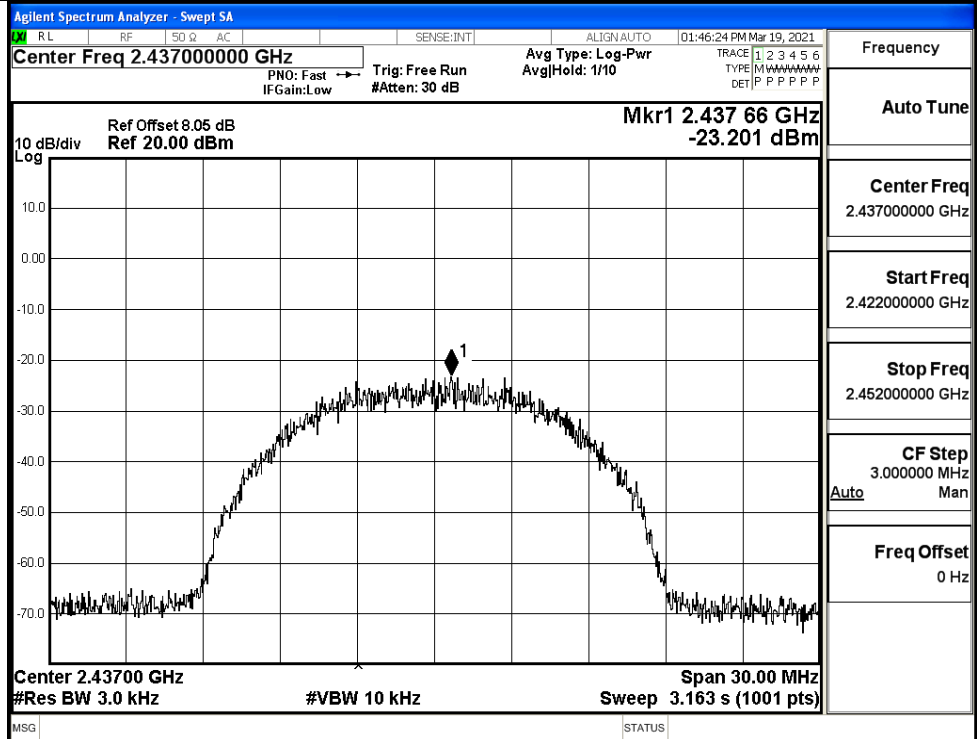
B.3 Maximum Power Spectral Density

Mode	Channel	Meas.Level [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
11B	LCH	-22.936	8	PASS
	MCH	-23.201	8	PASS
	HCH	-22.509	8	PASS
11G	LCH	-27.037	8	PASS
	MCH	-27.956	8	PASS
	HCH	-25.655	8	PASS
11N20SISO	LCH	-27.142	8	PASS
	MCH	-26.092	8	PASS
	HCH	-25.000	8	PASS
11N40SISO	LCH	-26.557	8	PASS
	MCH	-19.228	8	PASS
	HCH	-19.635	8	PASS

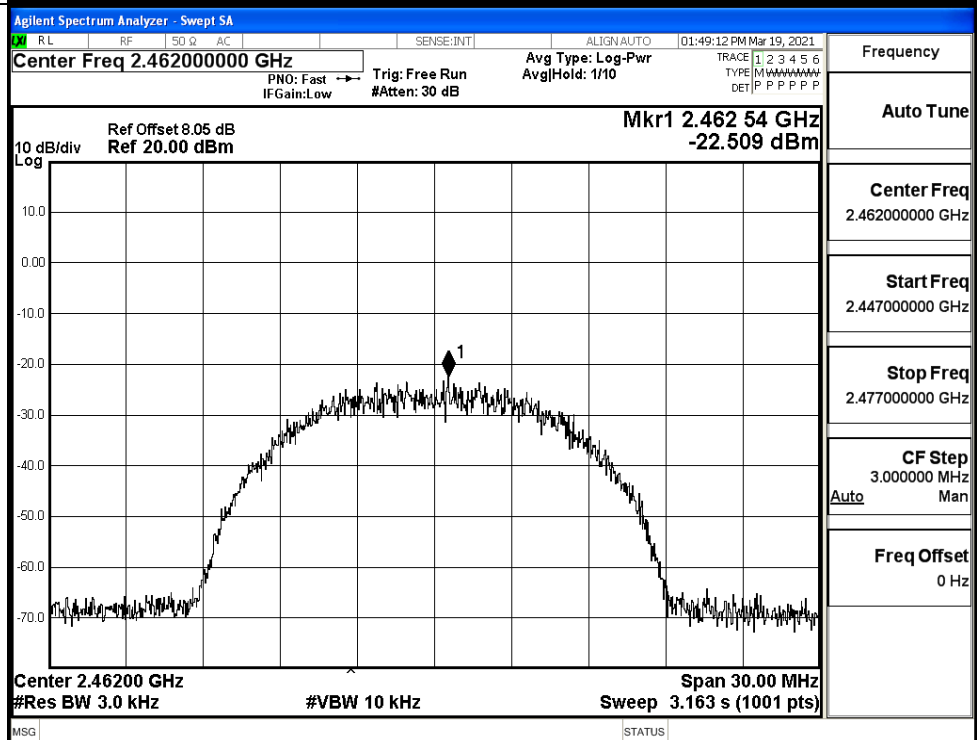
Test Graphs



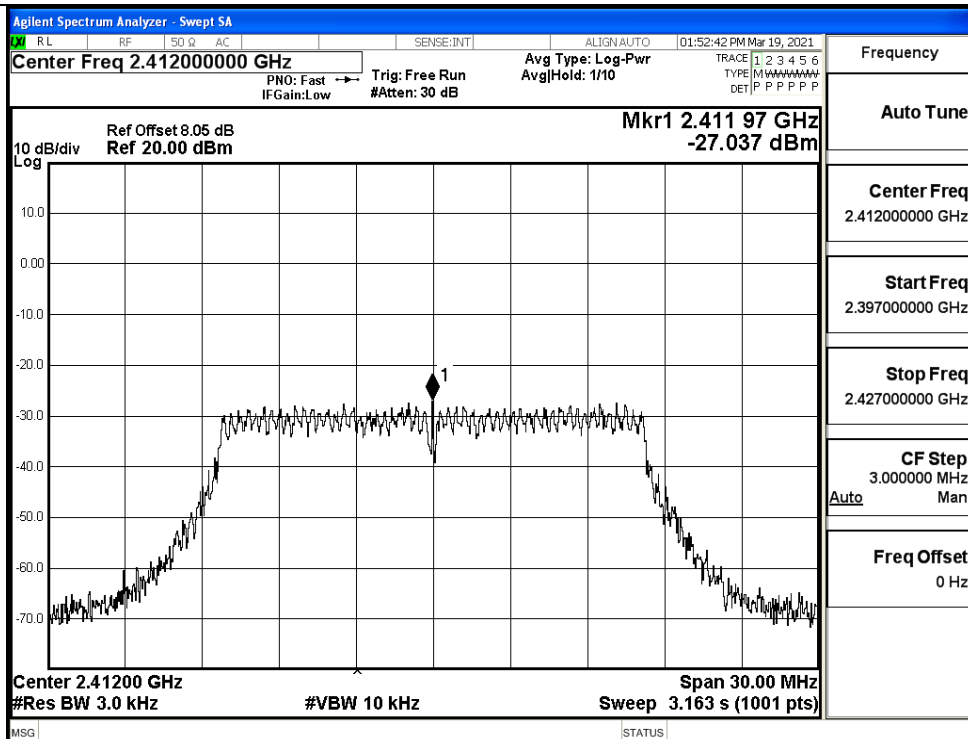
11B/MCH



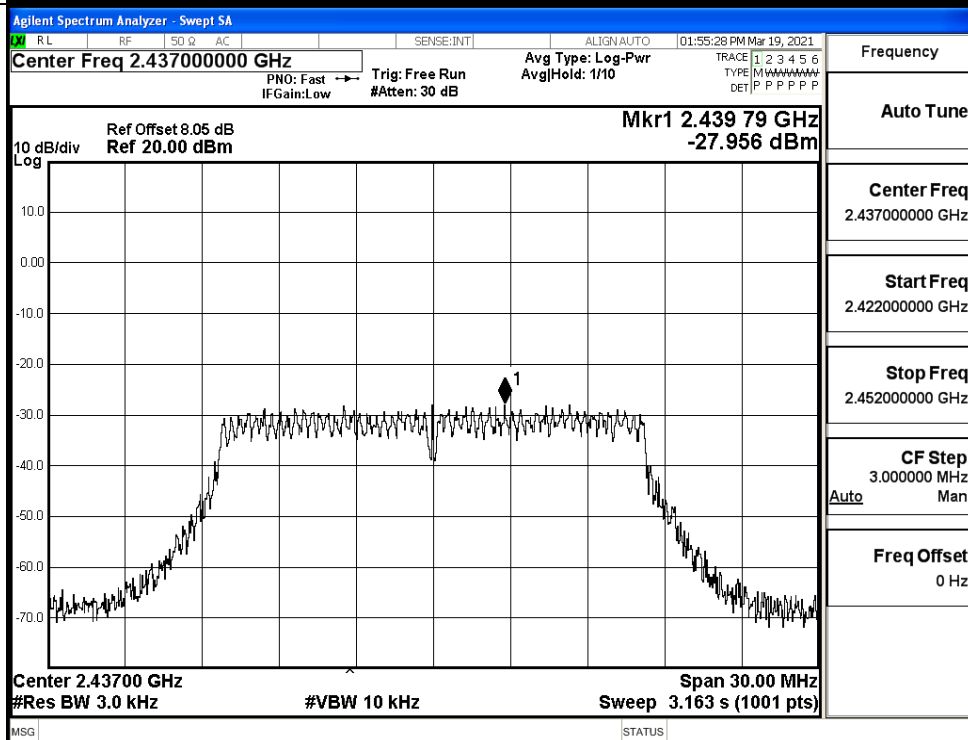
11B/HCH



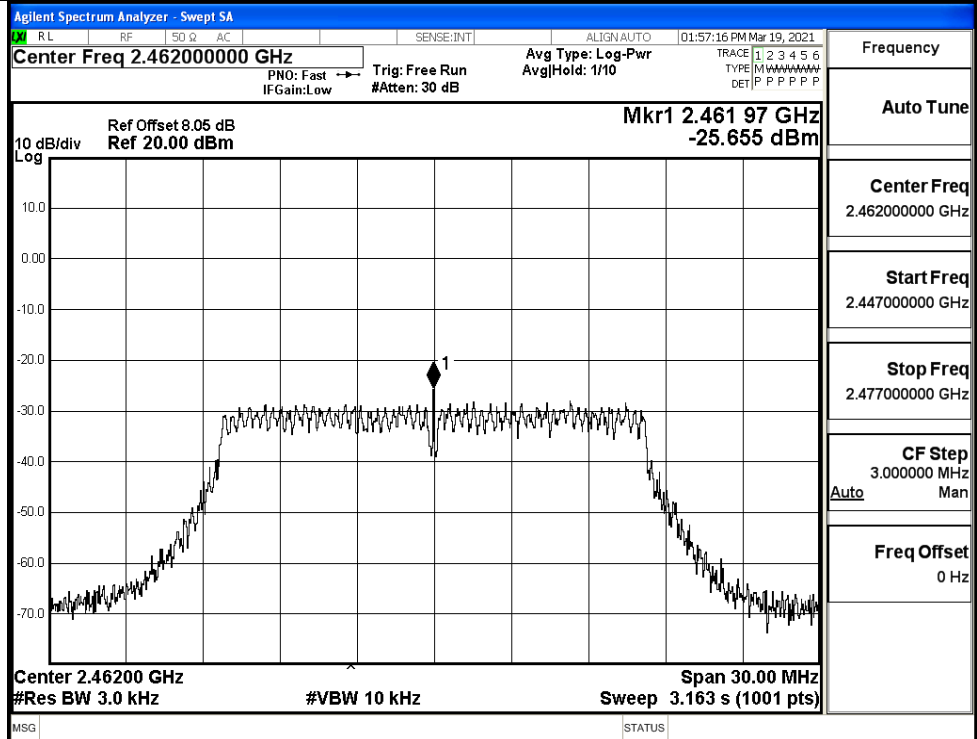
11G/LCH



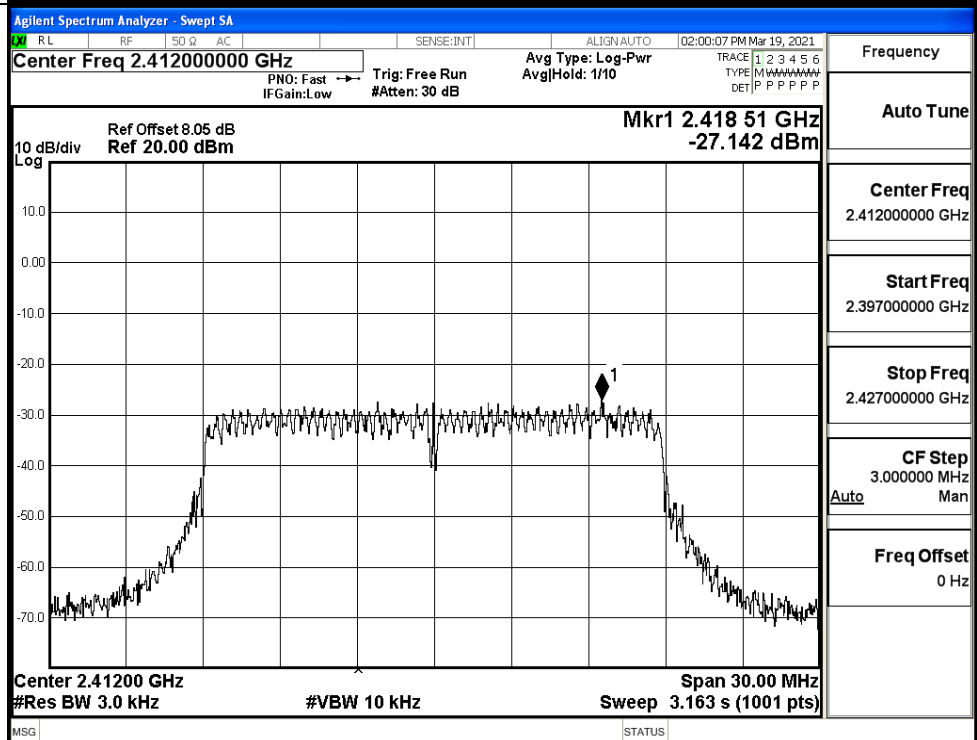
11G/MCH



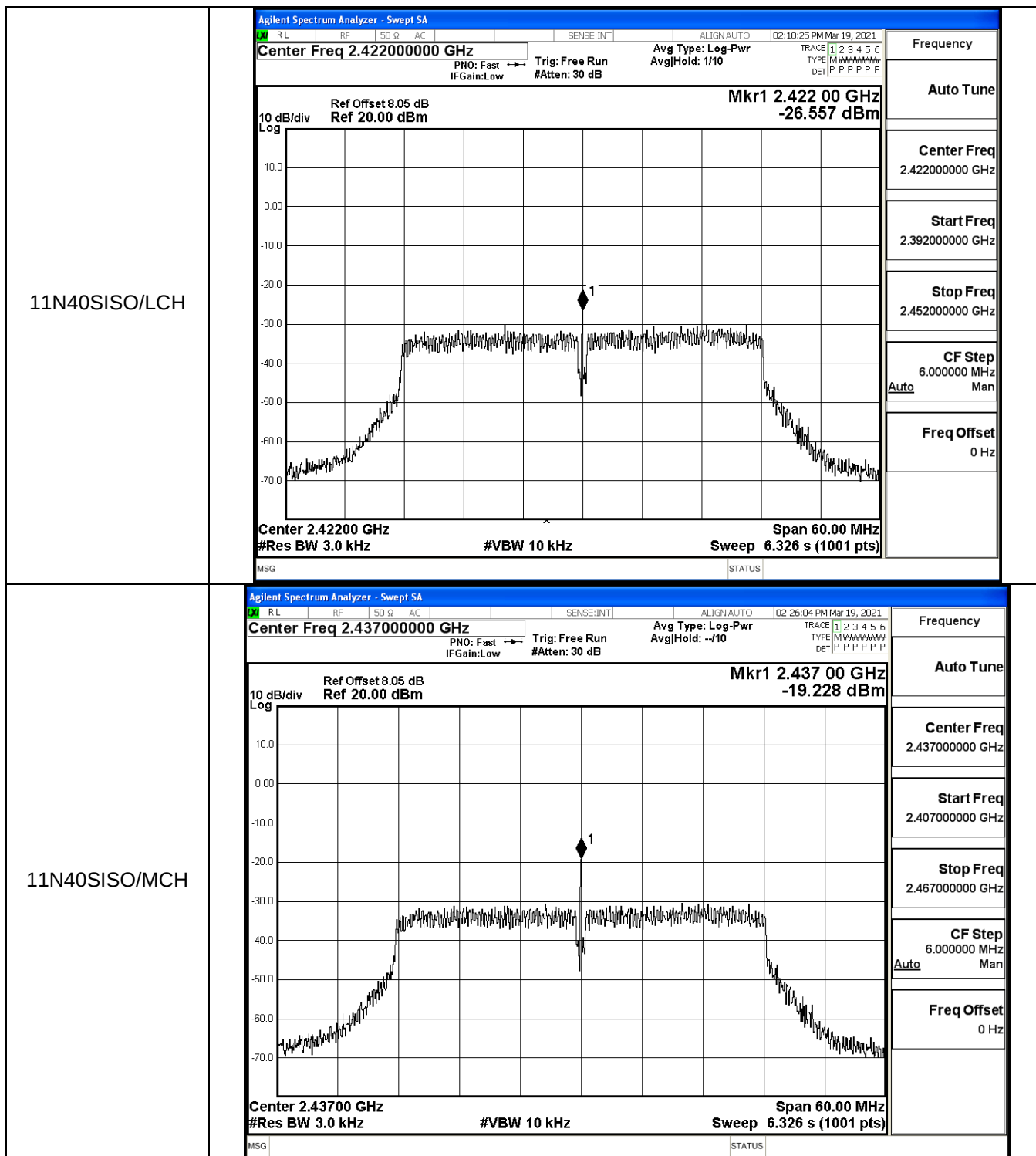
11G/HCH

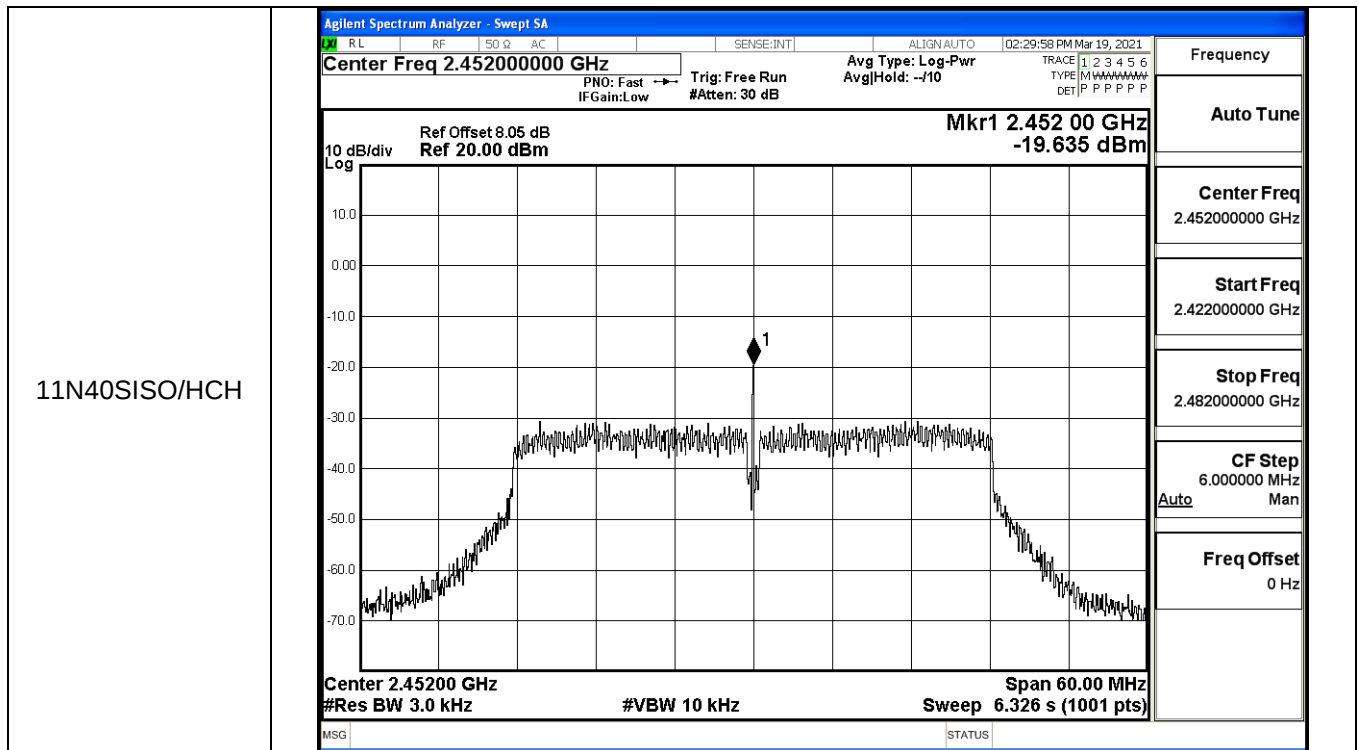


11N20SISO/LCH



11N20SISO/MCH	Agilent Spectrum Analyzer - Swept SA RL RF 50 Ω AC SENSE:INT ALIGN: AUTO 02:02:45 PM Mar 19, 2021 Center Freq 2.437000000 GHz PNO: Fast IF Gain: Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr Avg Hold: 1/10 TRACE 1 2 3 4 5 6 TYPE M W W W W W W W DET P P P P P P P Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.436 97 GHz -26.092 dBm 10 dB/div Log Center 2.43700 GHz #Res BW 3.0 kHz #VBW 10 kHz Sweep 3.163 s (1001 pts) MSG STATUS Frequency Auto Tune Center Freq 2.437000000 GHz Start Freq 2.422000000 GHz Stop Freq 2.452000000 GHz CF Step 3.000000 MHz Auto Man Freq Offset 0 Hz
11N20SISO/HCH	Agilent Spectrum Analyzer - Swept SA RL RF 50 Ω AC SENSE:INT ALIGN: AUTO 02:05:09 PM Mar 19, 2021 Center Freq 2.462000000 GHz PNO: Fast IF Gain: Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr Avg Hold: 1/10 TRACE 1 2 3 4 5 6 TYPE M W W W W W W W DET P P P P P P P Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.461 97 GHz -25.000 dBm 10 dB/div Log Center 2.46200 GHz #Res BW 3.0 kHz #VBW 10 kHz Sweep 3.163 s (1001 pts) MSG STATUS Frequency Auto Tune Center Freq 2.462000000 GHz Start Freq 2.447000000 GHz Stop Freq 2.477000000 GHz CF Step 3.000000 MHz Auto Man Freq Offset 0 Hz



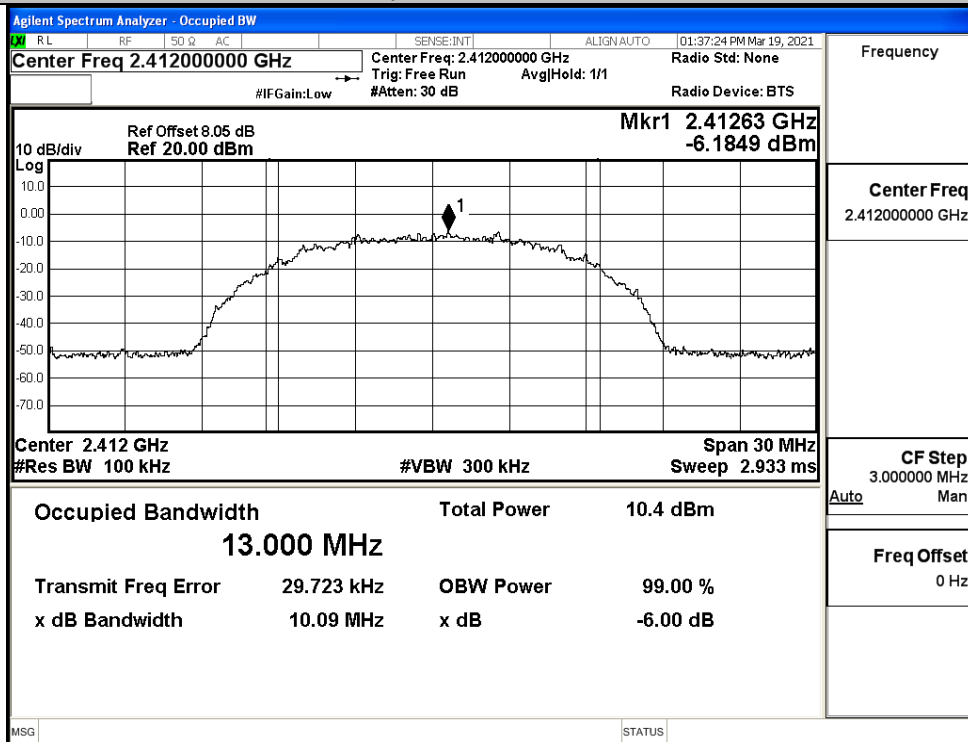


B.4 6dB Bandwidth

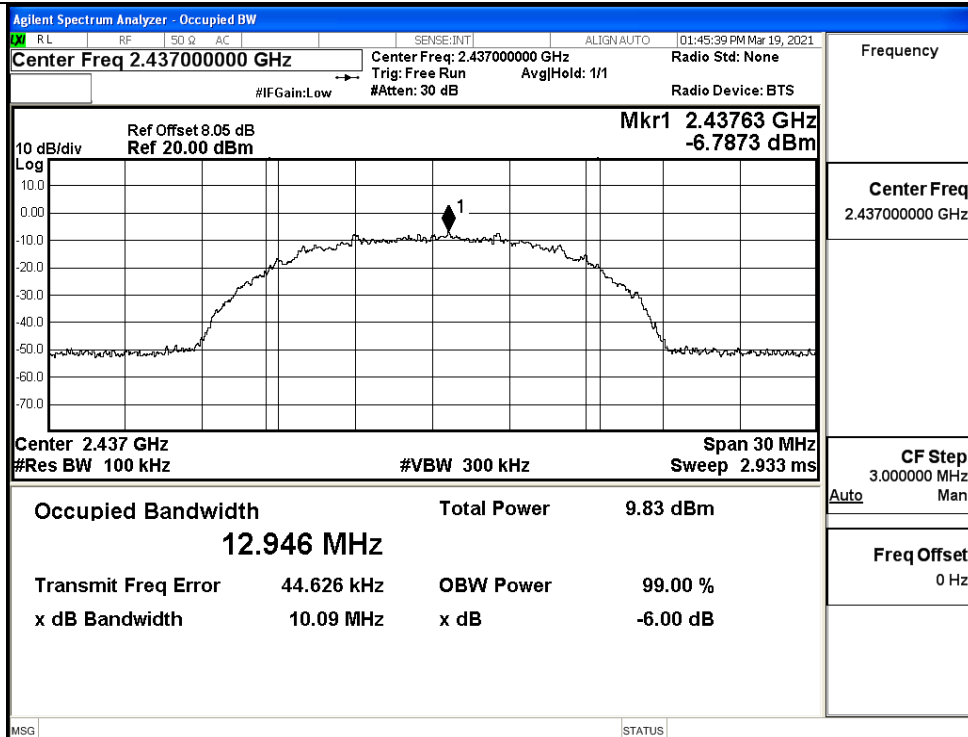
Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
11B	LCH	10.09	≥ 0.5	PASS
	MCH	10.09	≥ 0.5	PASS
	HCH	10.06	≥ 0.5	PASS
11G	LCH	16.46	≥ 0.5	PASS
	MCH	16.47	≥ 0.5	PASS
	HCH	16.49	≥ 0.5	PASS
11N20SISO	LCH	17.60	≥ 0.5	PASS
	MCH	17.60	≥ 0.5	PASS
	HCH	17.62	≥ 0.5	PASS
11N40SISO	LCH	36.49	≥ 0.5	PASS
	MCH	36.47	≥ 0.5	PASS
	HCH	36.44	≥ 0.5	PASS

Test Graphs

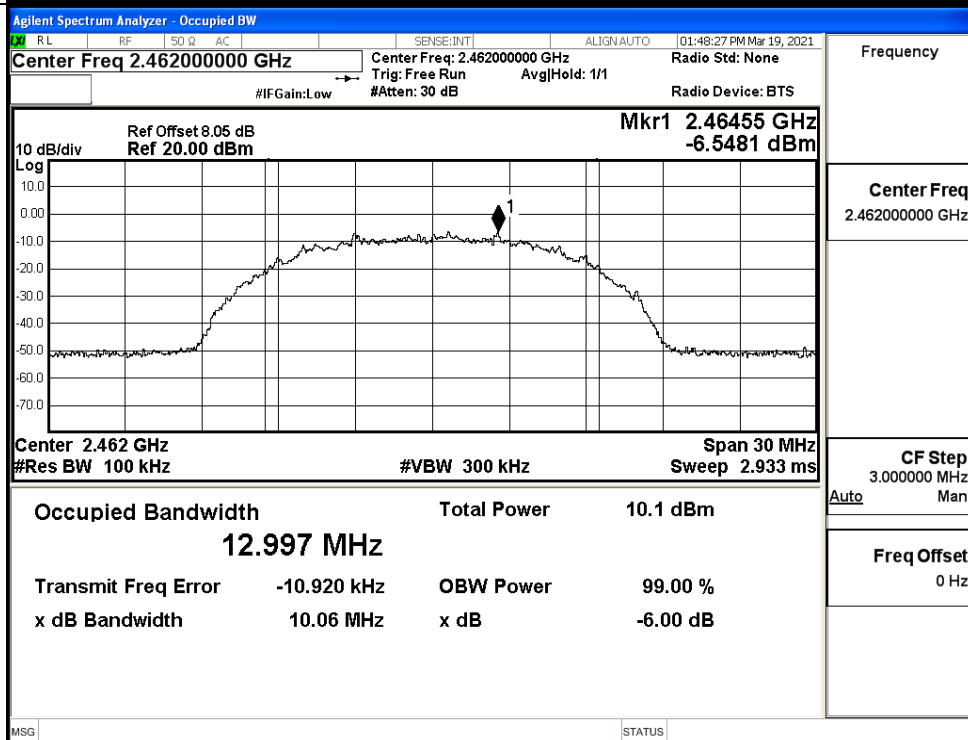
11B/LCH



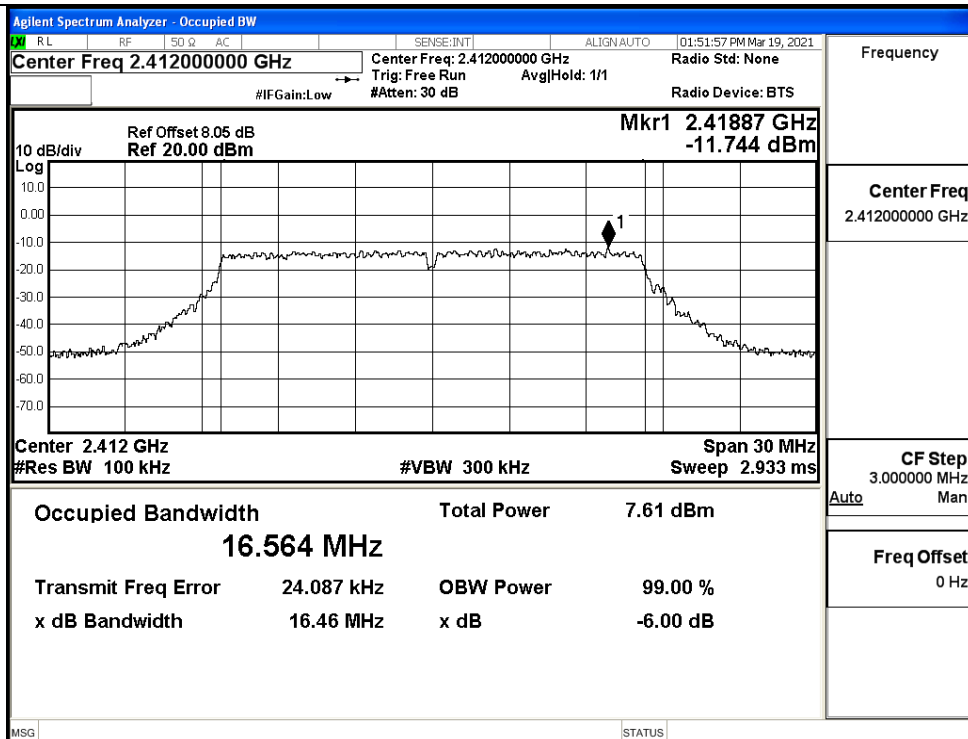
11B/MCH



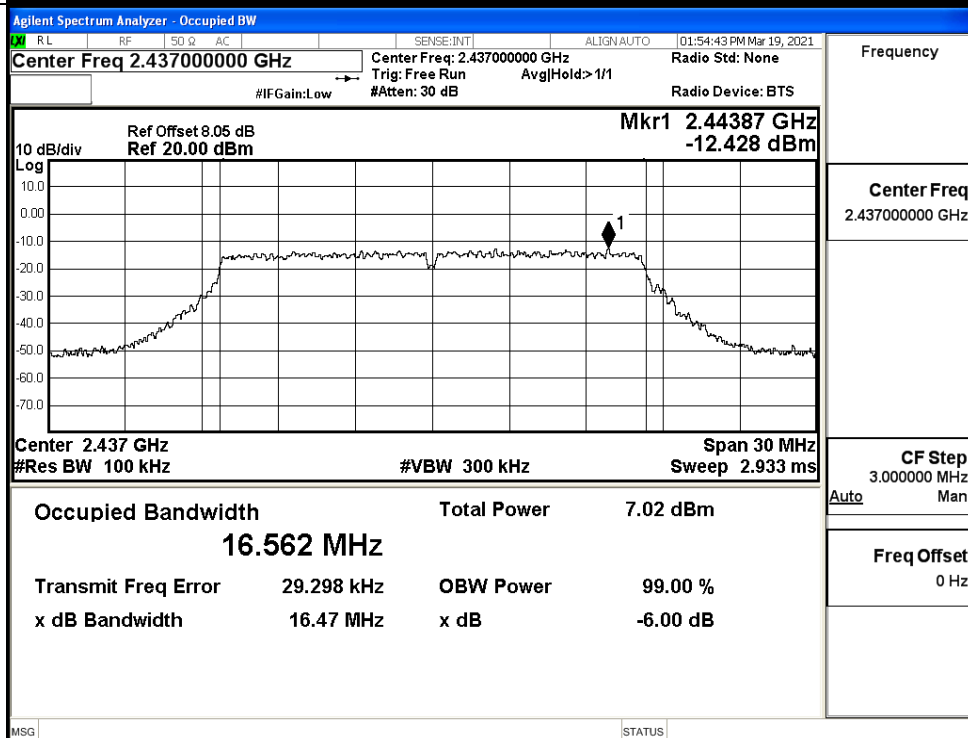
11B/HCH



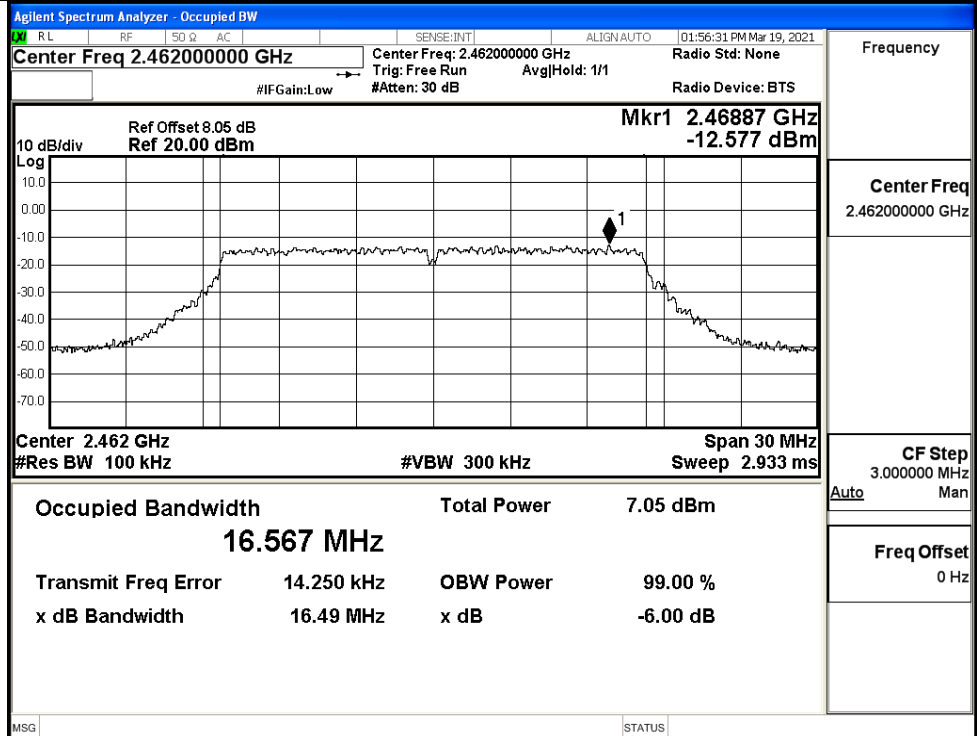
11G/LCH



11G/MCH



11G/HCH



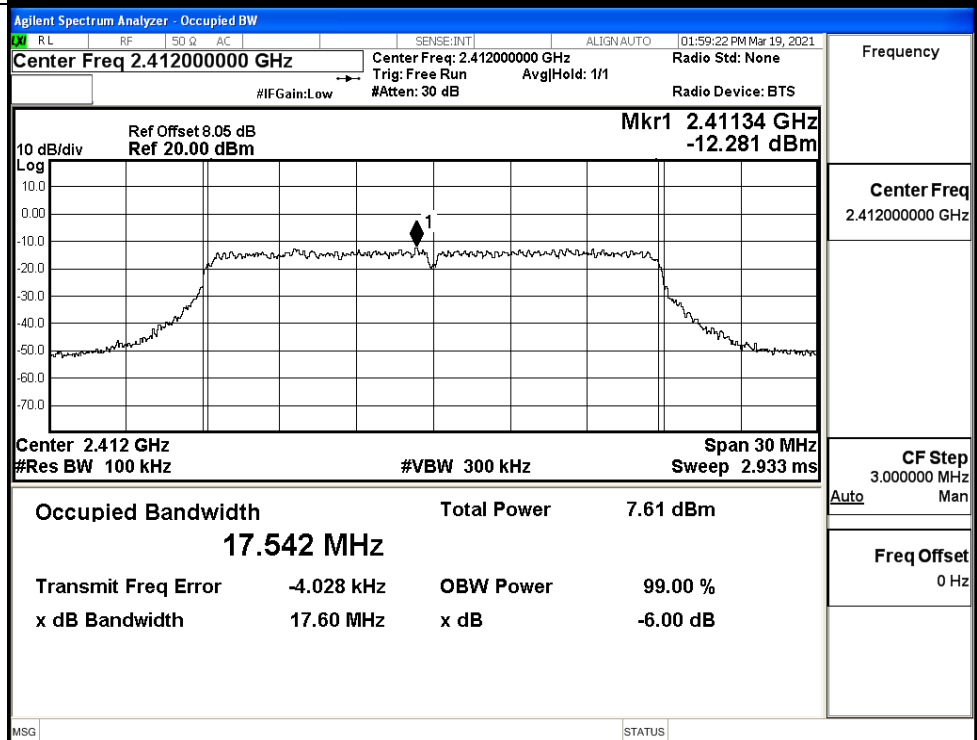
Frequency

Center Freq
2.46200000 GHz

CF Step
3.000000 MHz
Auto Man

Freq Offset
0 Hz

11N20SISO/LCH



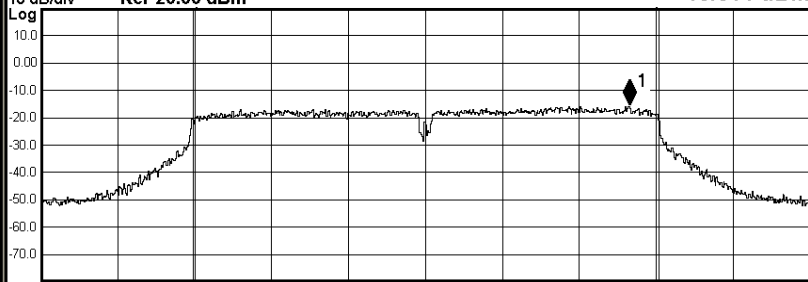
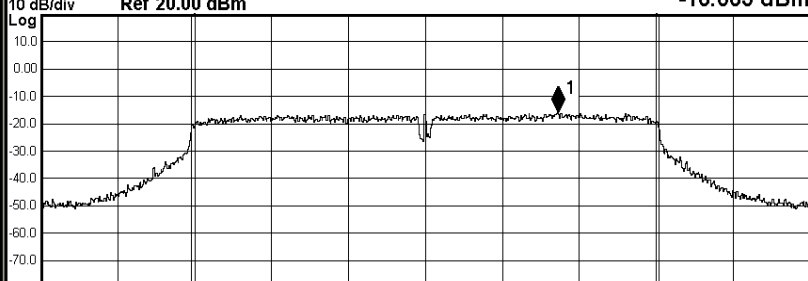
Frequency

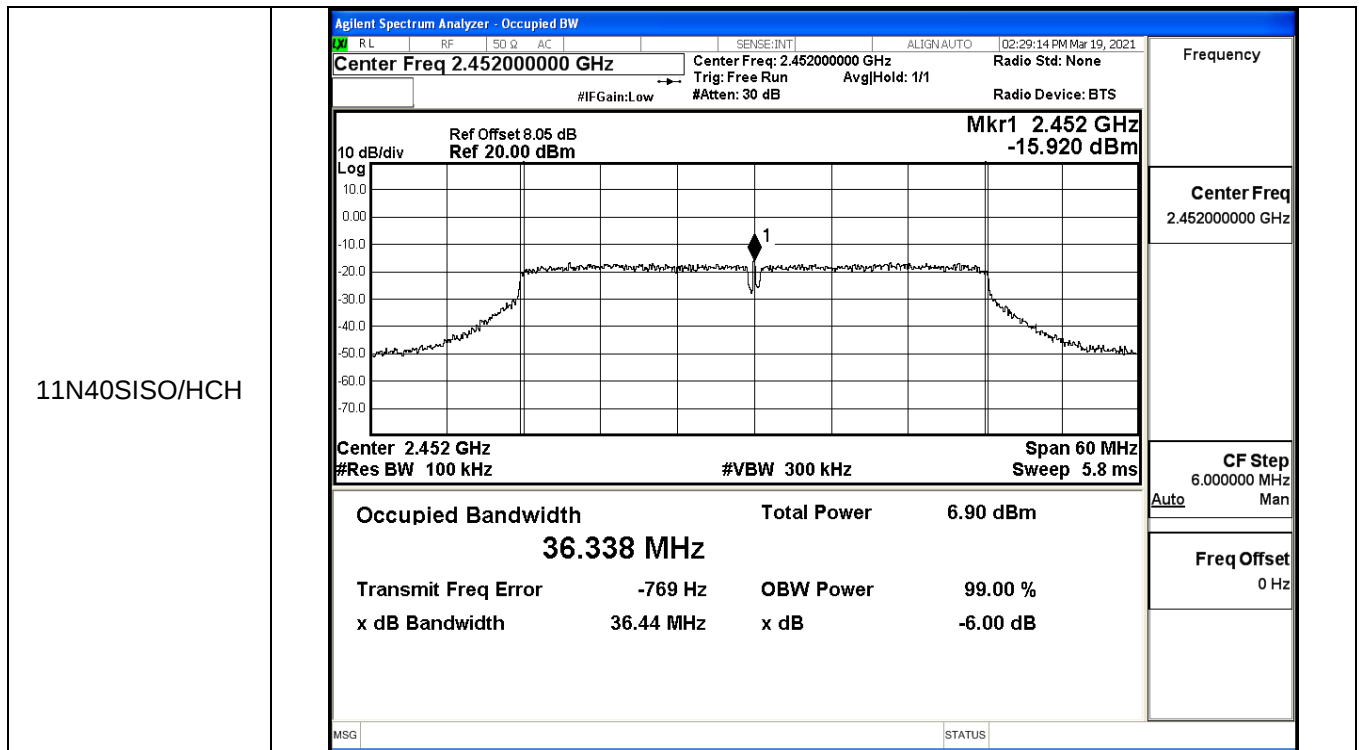
Center Freq
2.41200000 GHz

CF Step
3.000000 MHz
Auto Man

Freq Offset
0 Hz

[illegible]

11N40SISO/LCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC SENSE:INT ALIGN AUTO 02:14:12 PM Mar 19, 2021 Center Freq 2.422000000 GHz Center Freq: 2.422000000 GHz Trig: Free Run Avg Hold: 1/1 Radio Std: None #IFGain:Low #Atten: 30 dB Radio Device: BTS 10 dB/div Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.4379 GHz -15.814 dBm  Center 2.422 GHz #Res BW 100 kHz #VBW 300 kHz Span 60 MHz Sweep 5.8 ms Occupied Bandwidth 36.315 MHz Total Power 7.18 dBm Transmit Freq Error 41.842 kHz OBW Power 99.00 % x dB Bandwidth 36.49 MHz x dB -6.00 dB MSG STATUS	Frequency Center Freq 2.422000000 GHz CF Step 6.000000 MHz Auto Man Freq Offset 0 Hz	
	11N40SISO/MCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC SENSE:INT ALIGN AUTO 02:25:19 PM Mar 19, 2021 Center Freq 2.437000000 GHz Center Freq: 2.437000000 GHz Trig: Free Run Avg Hold: 1/1 Radio Std: None #IFGain:Low #Atten: 30 dB Radio Device: BTS 10 dB/div Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.44732 GHz -16.065 dBm  Center 2.437 GHz #Res BW 100 kHz #VBW 300 kHz Span 60 MHz Sweep 5.8 ms Occupied Bandwidth 36.309 MHz Total Power 7.31 dBm Transmit Freq Error 13.979 kHz OBW Power 99.00 % x dB Bandwidth 36.47 MHz x dB -6.00 dB MSG STATUS	Frequency Center Freq 2.437000000 GHz CF Step 6.000000 MHz Auto Man Freq Offset 0 Hz

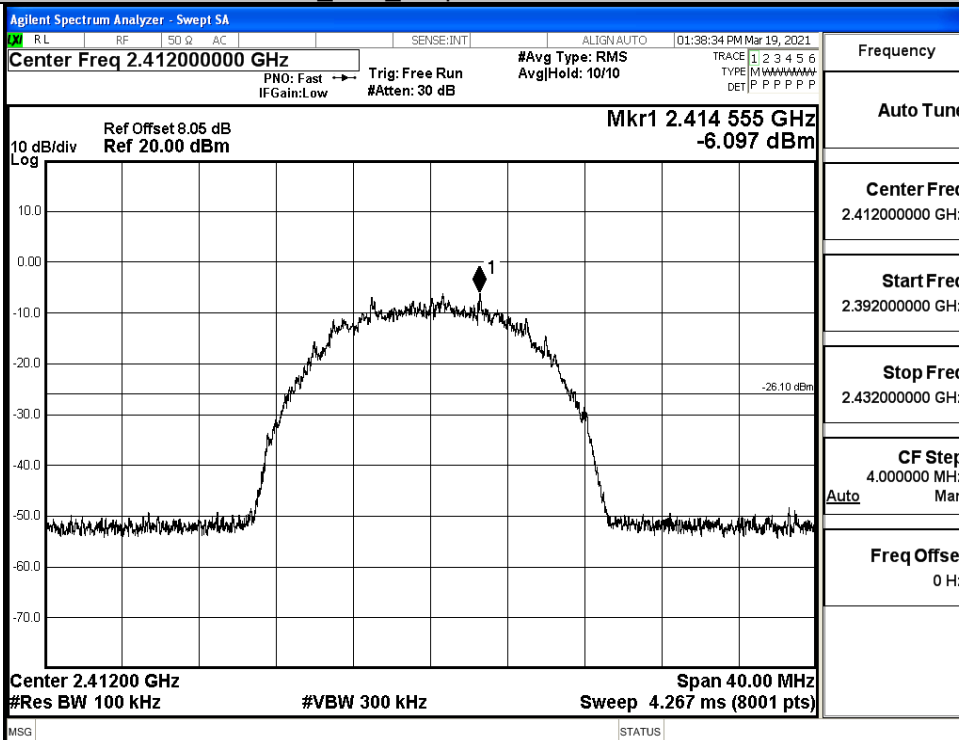


B.5 RF Conducted Spurious Emissions

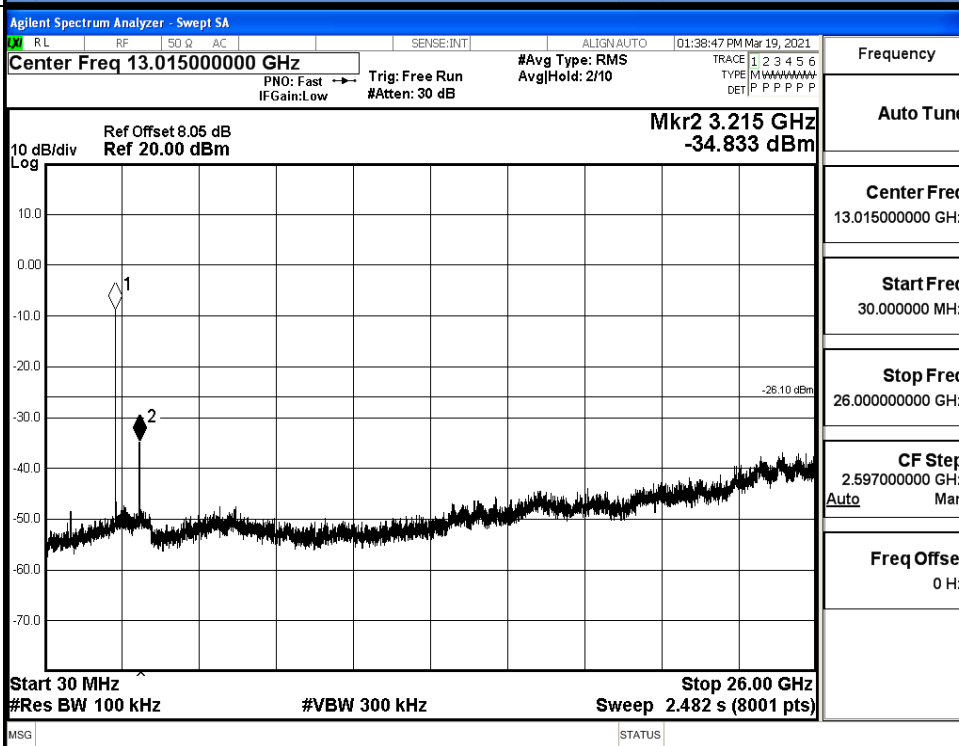
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	LCH	-6.097	-34.833	-26.097	PASS
	MCH	-6.699	-33.878	-26.699	PASS
	HCH	-6.609	-34.464	-26.609	PASS
11G	LCH	-11.837	-34.081	-31.837	PASS
	MCH	-12.459	-33.528	-32.459	PASS
	HCH	-12.921	-33.647	-32.921	PASS
11N20 SISO	LCH	-12.361	-34.452	-32.361	PASS
	MCH	-13.267	-33.918	-33.267	PASS
	HCH	-13.049	-34.178	-33.049	PASS
11N40 SISO	LCH	0.459	-37.849	-19.541	PASS
	MCH	-16.352	-37.740	-36.352	PASS
	HCH	-16.148	-37.792	-36.148	PASS

11B LCH Graphs

Pref/11B/LCH

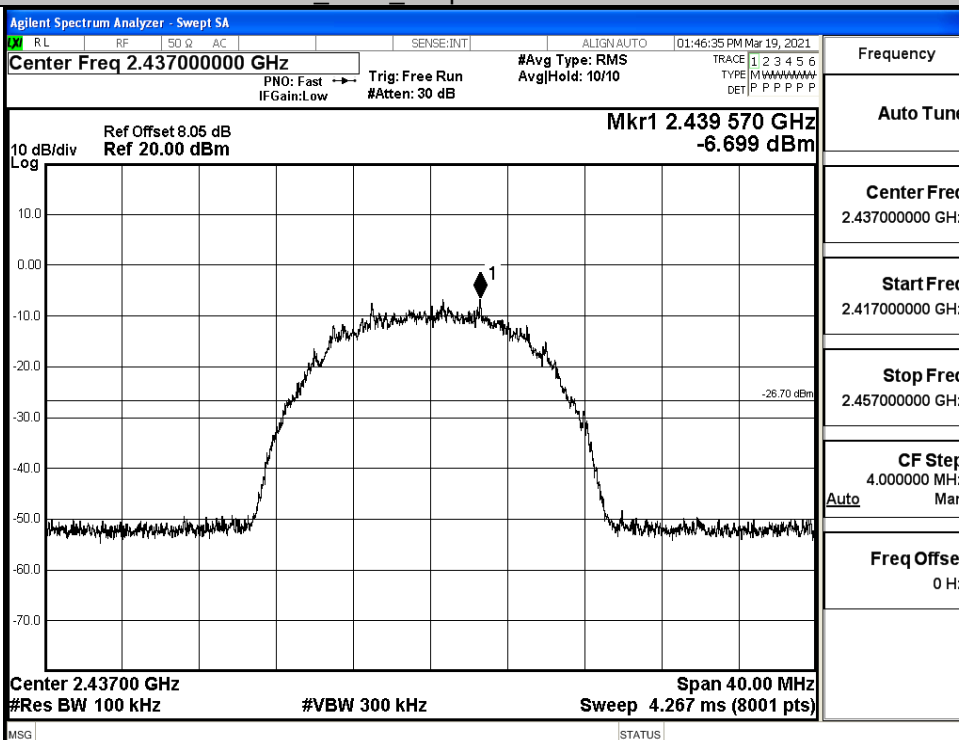


Puw/11B/LCH

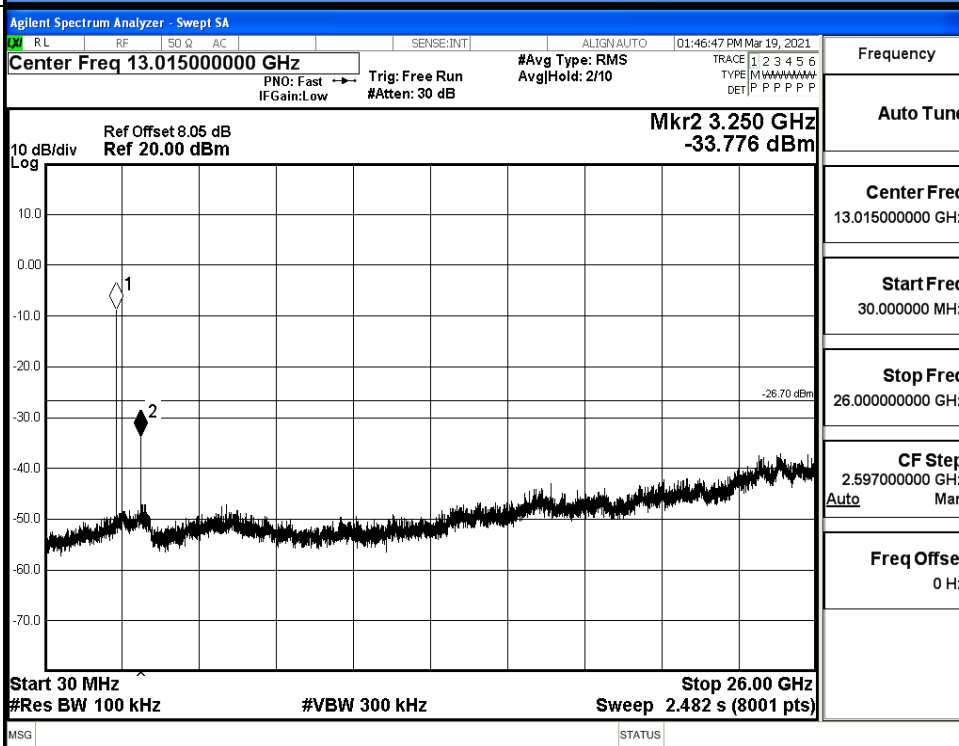


11B MCH Graphs

Pref/11B/MCH

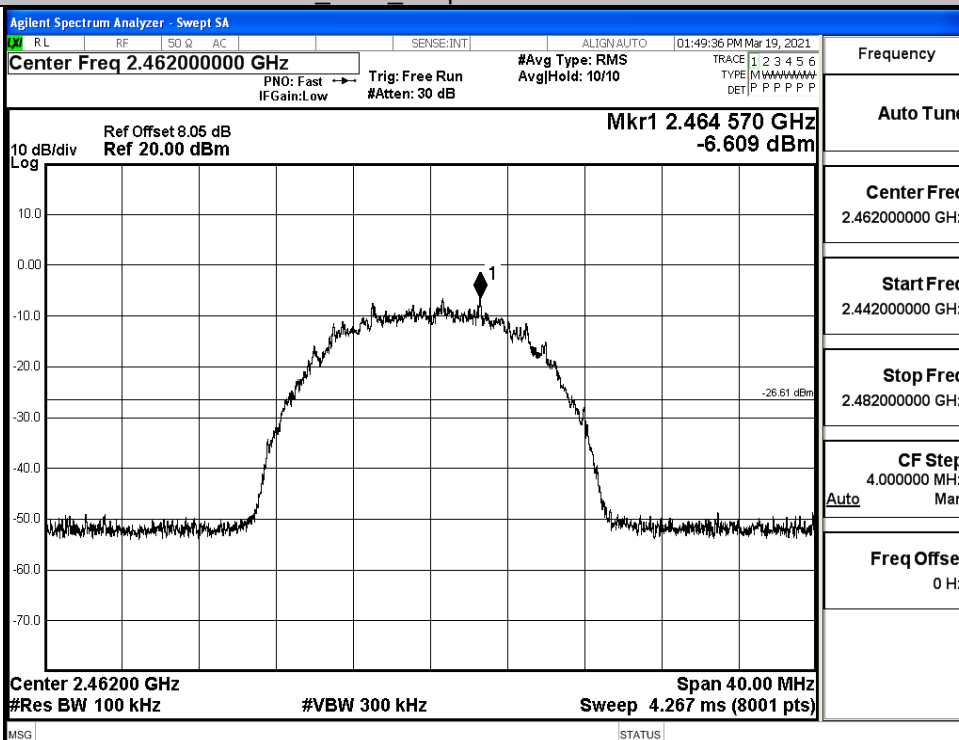


Puw/11B/MCH

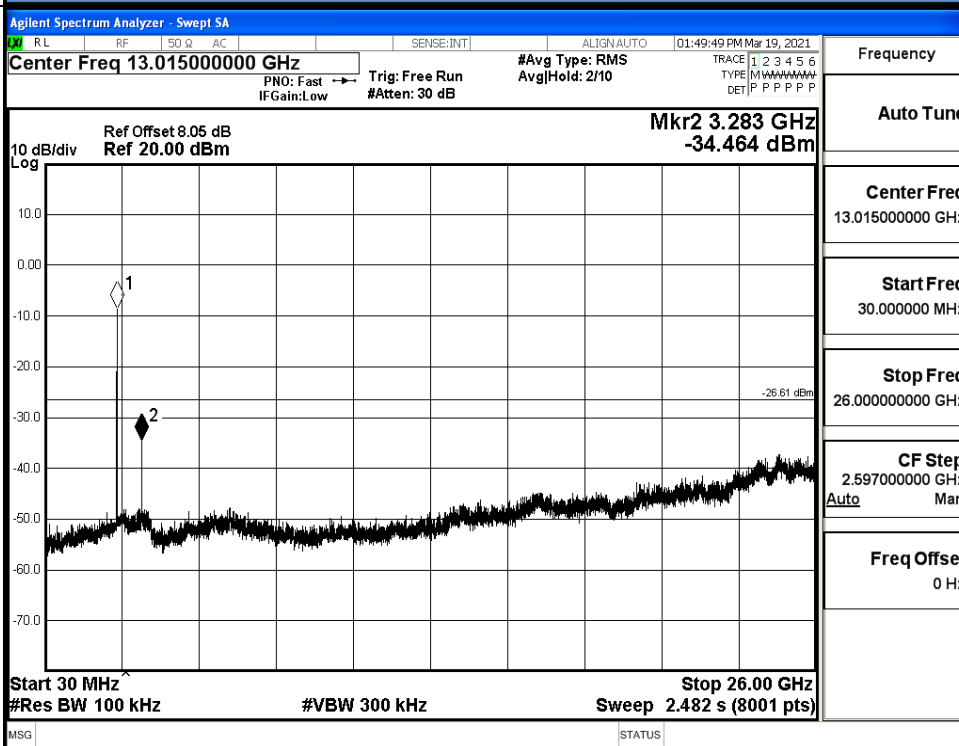


11B HCH Graphs

Pref/11B/HCH

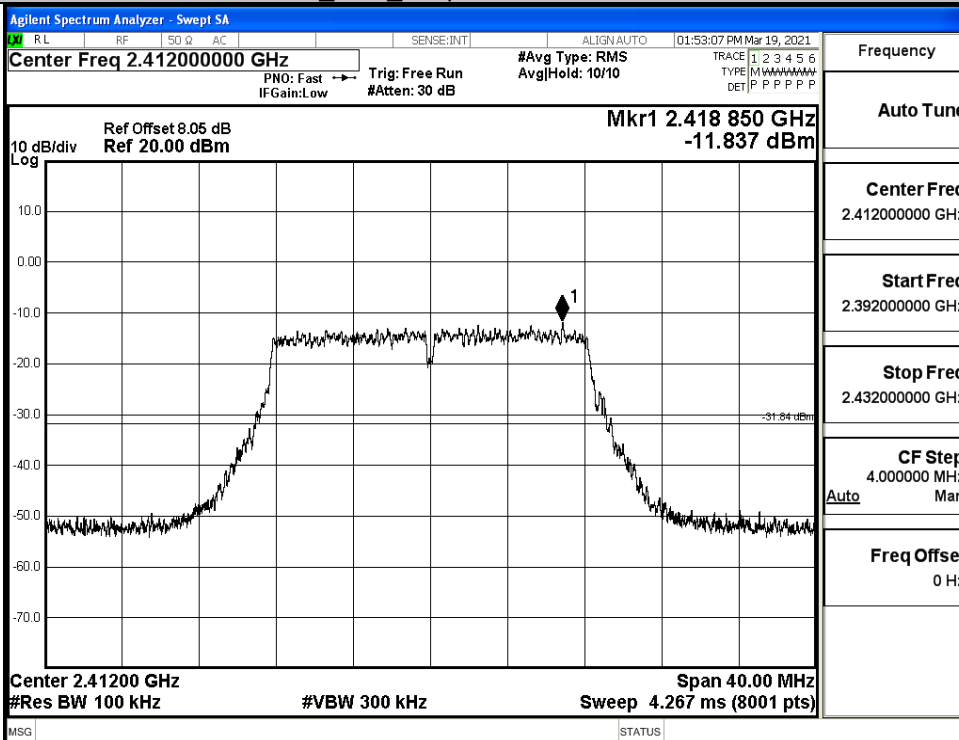


Puw/11B/HCH

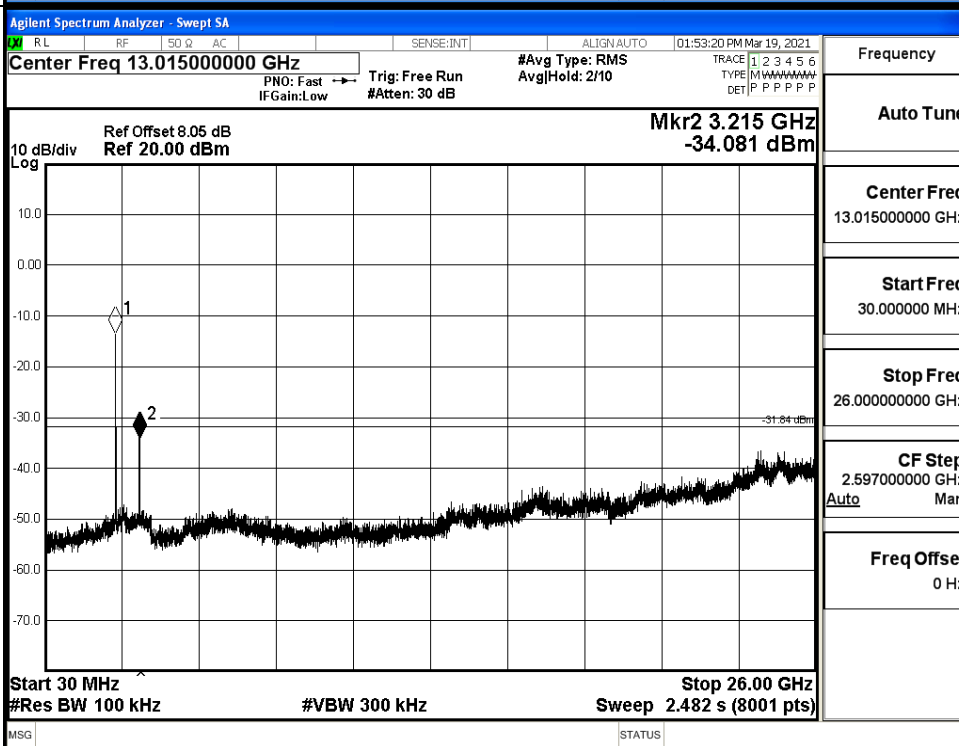


11G LCH Graphs

Pref/11G/LCH

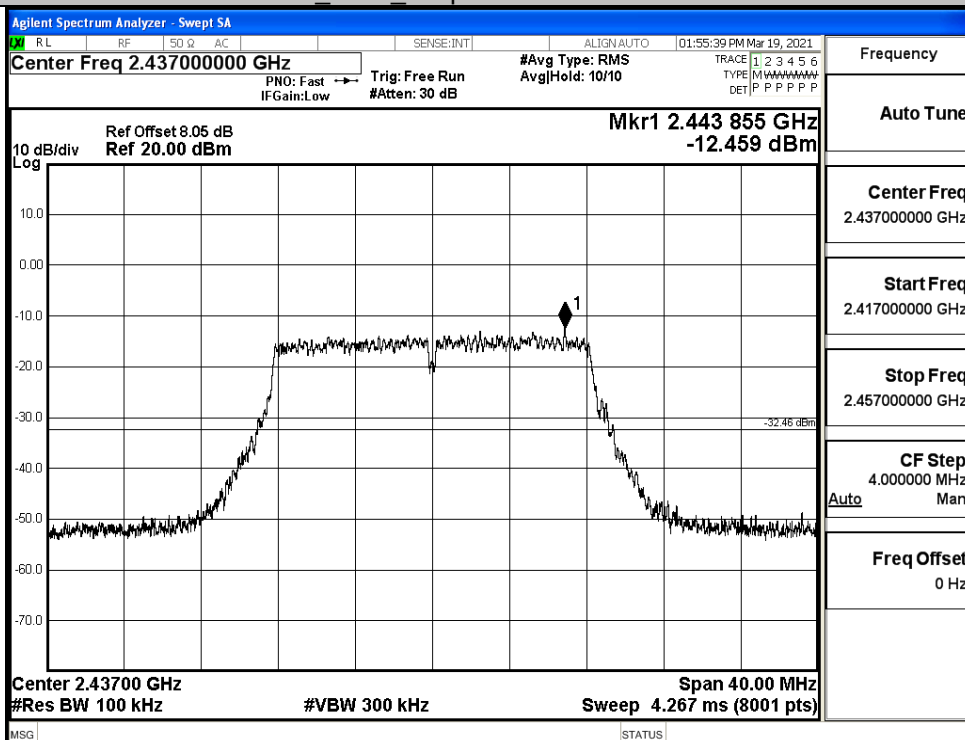


Puw/11G/LCH

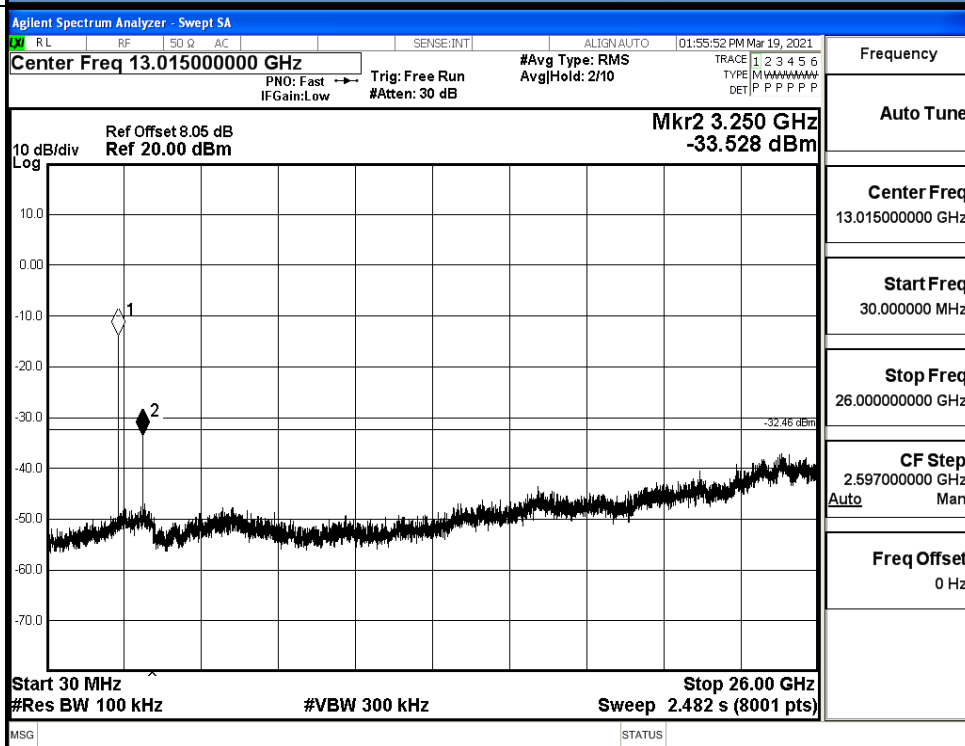


11G MCH Graphs

Pref/11G/MCH

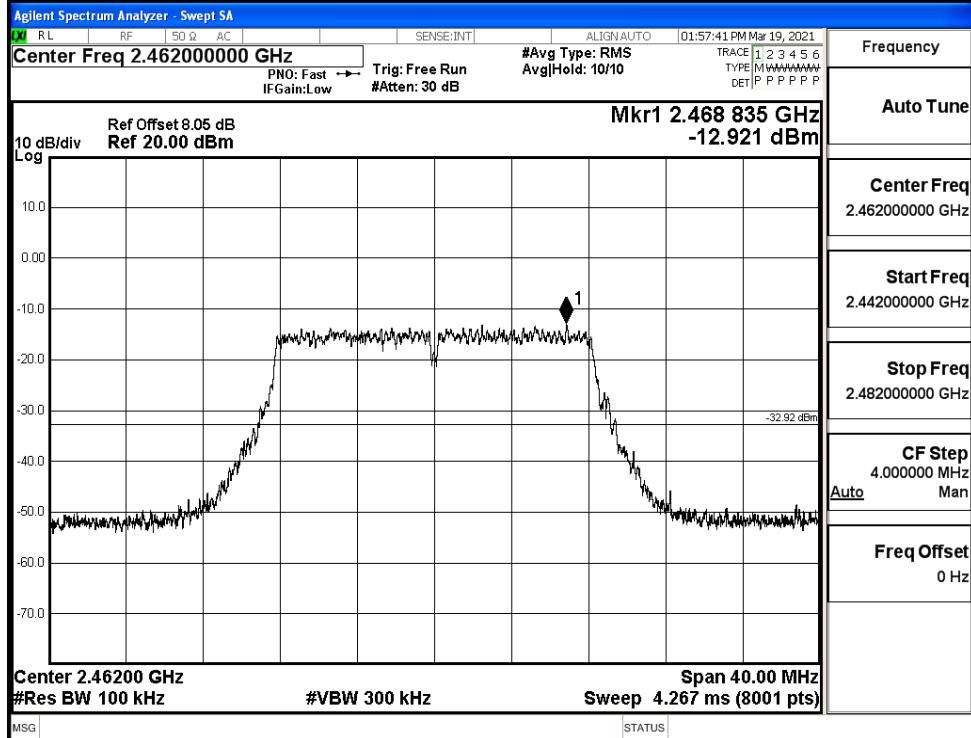


Puw/11G/MCH

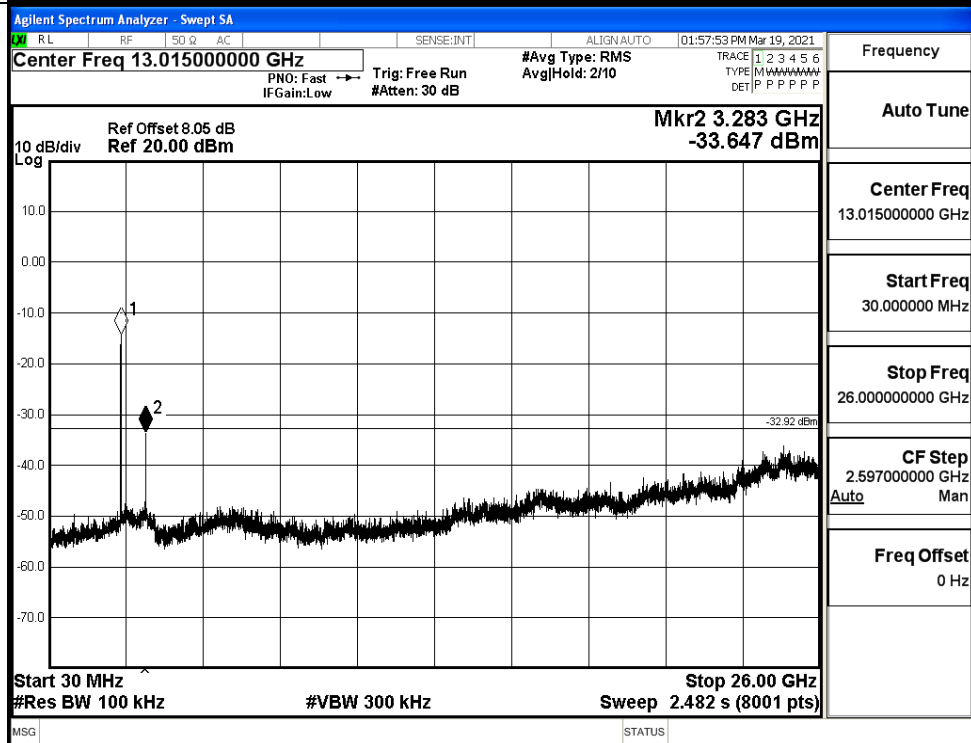


11G HCH Graphs

Pref/11G/HCH

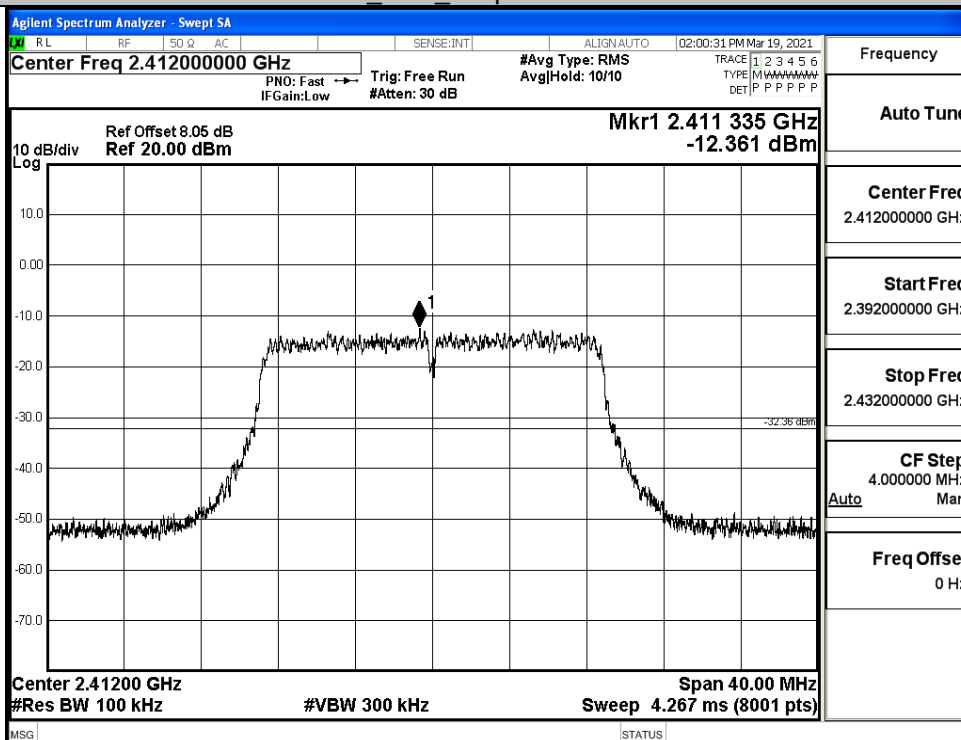


Puw/11G/HCH

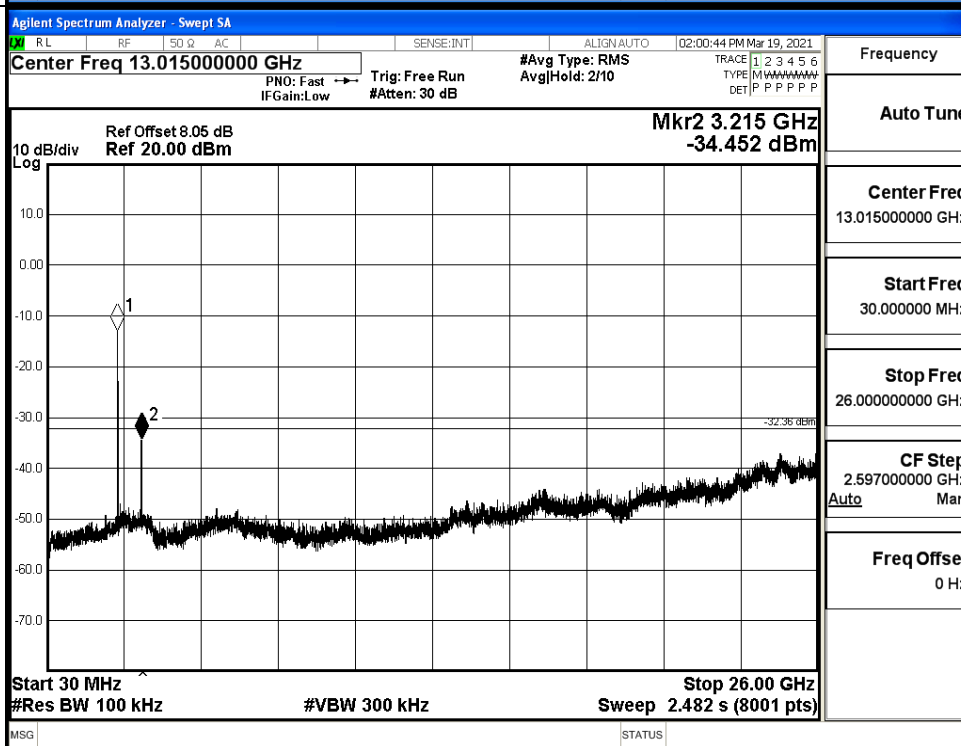


11N20SISO LCH Graphs

Pref/11N20SIS
O/LCH

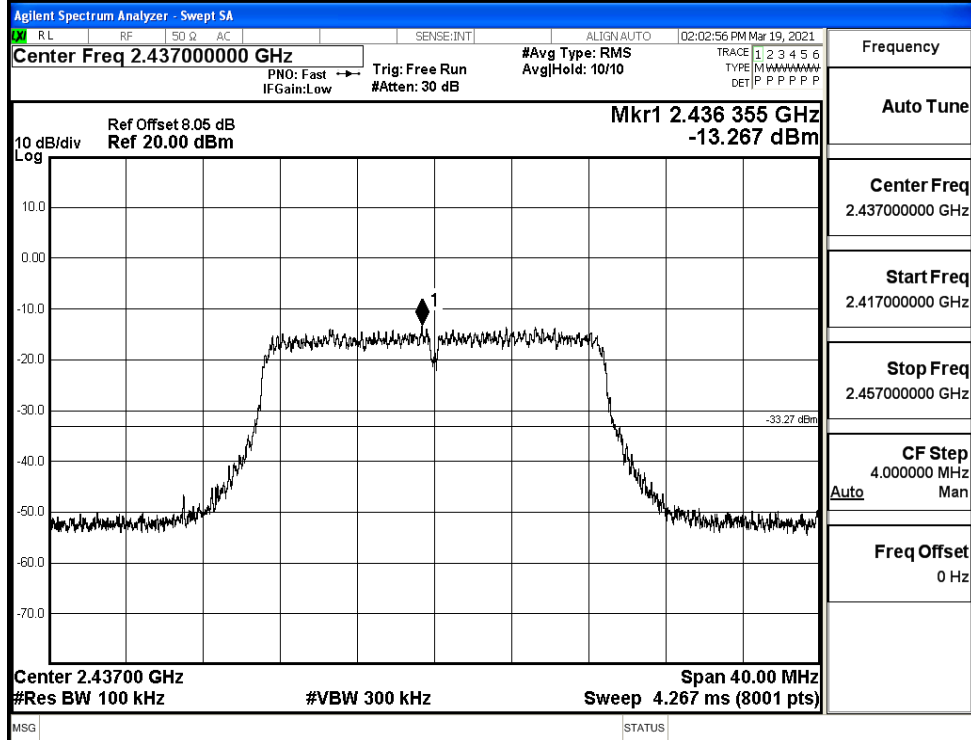


Puw/11N20
SISO/LCH

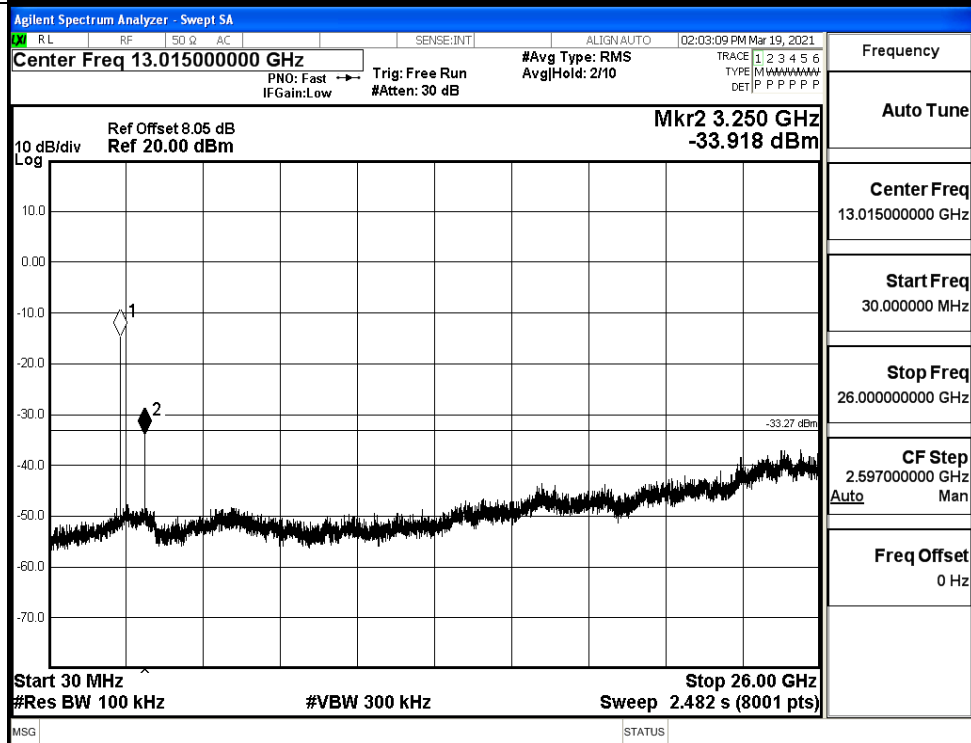


11N20SISO_MCH_Graphs

Pref/11N20
SISO/MCH

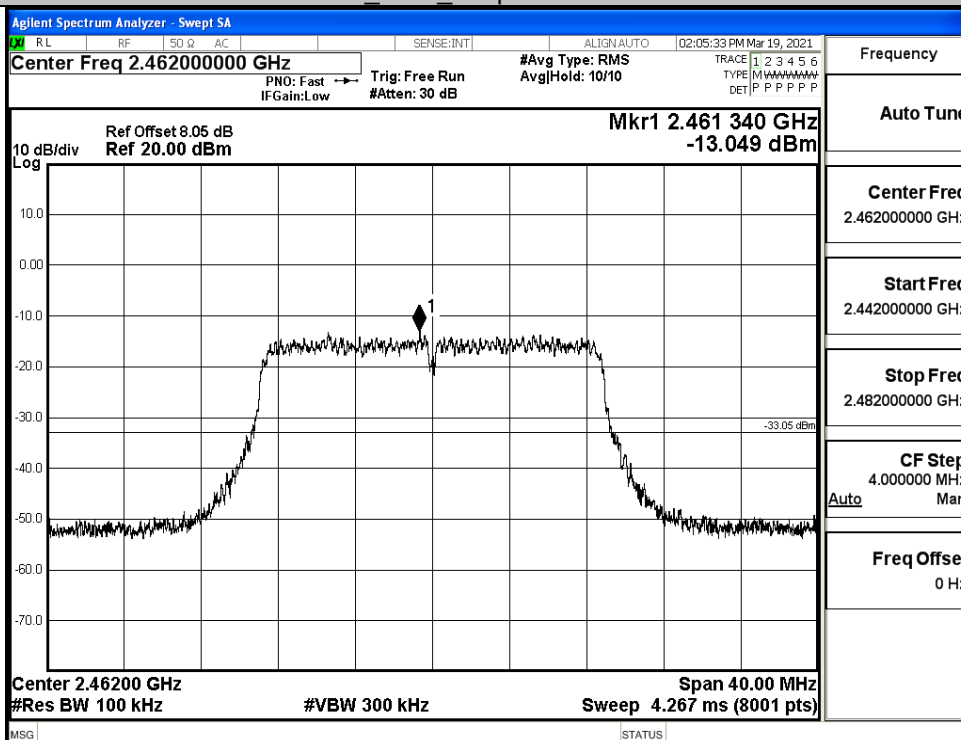


Puw/11N20
SISO/MCH

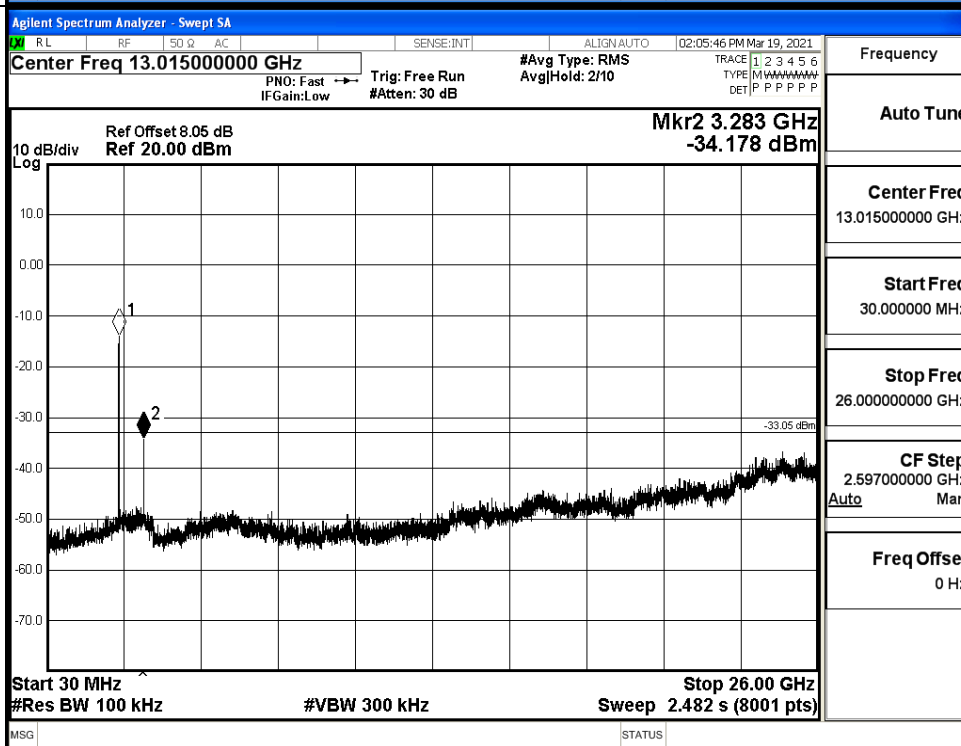


11N20SISO HCH Graphs

Pref/11N20
SISO/HCH

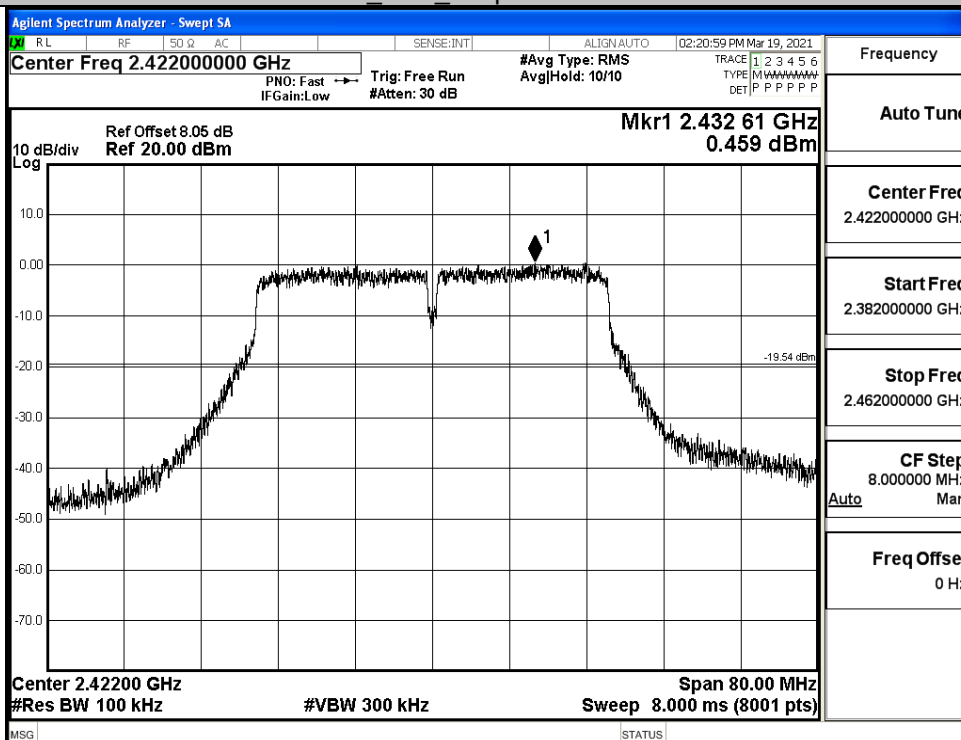


Puw/11N20
SISO/HCH

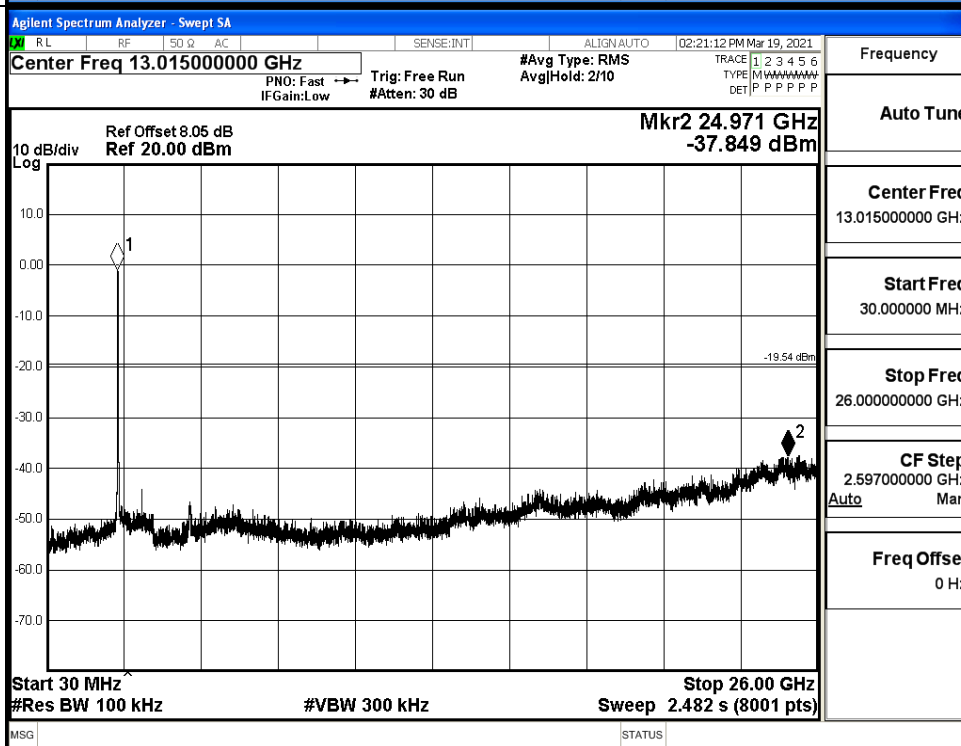


11N40SISO LCH Graphs

Pref/11N40
SISO/LCH

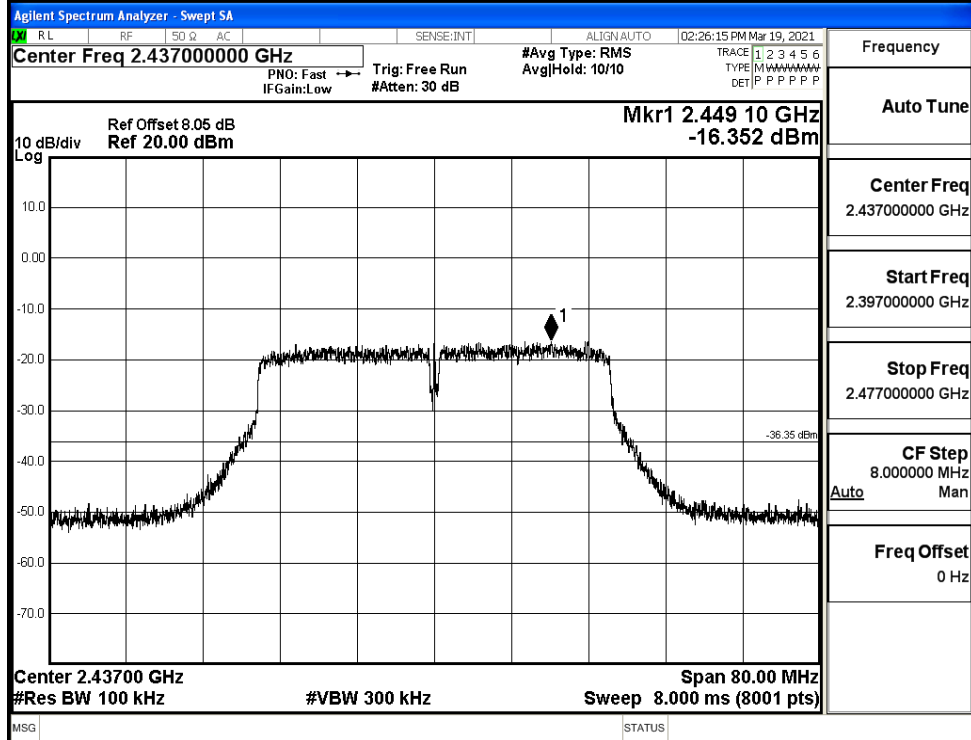


Puw/11N40
SISO/LCH

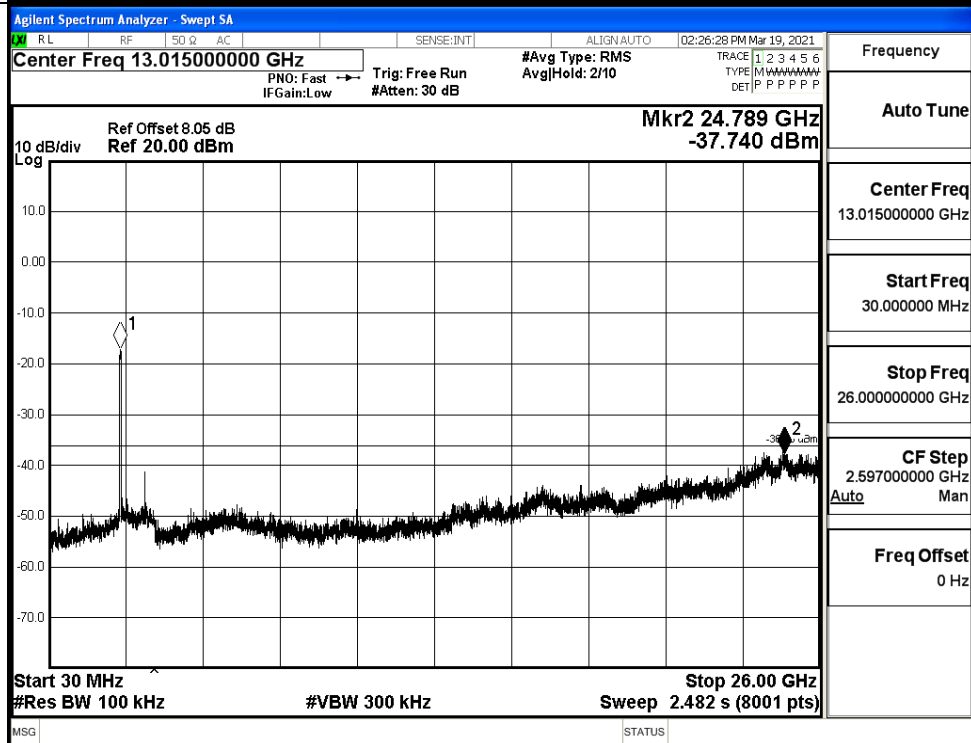


11N40SISO_MCH_Graphs

Pref/11N40
SISO/MCH

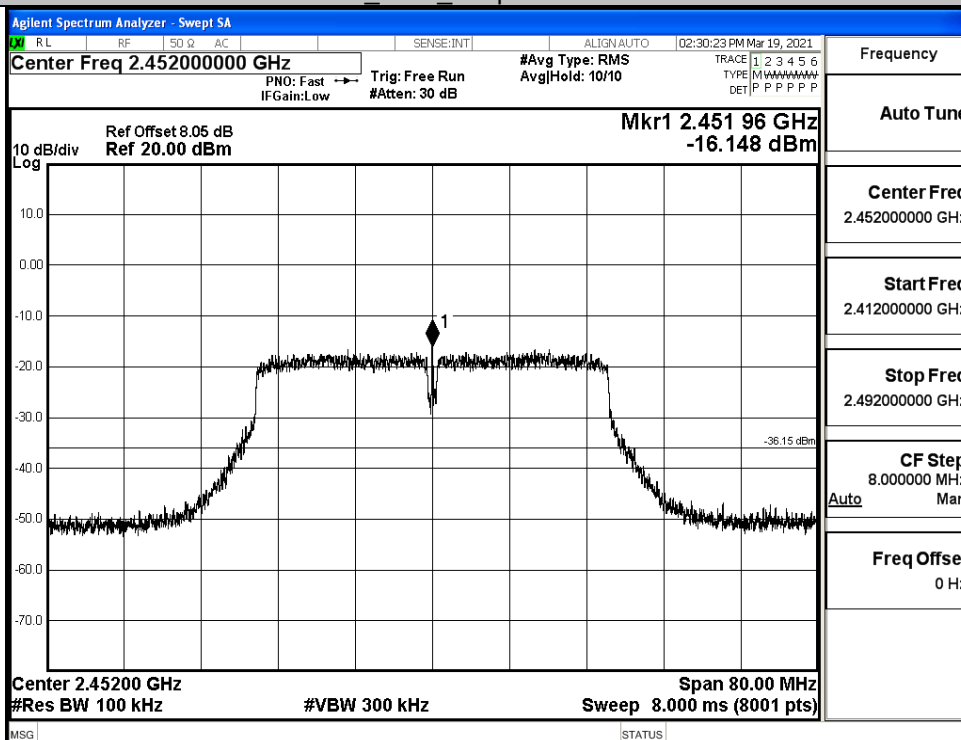


Puw/11N40
SISO/MCH

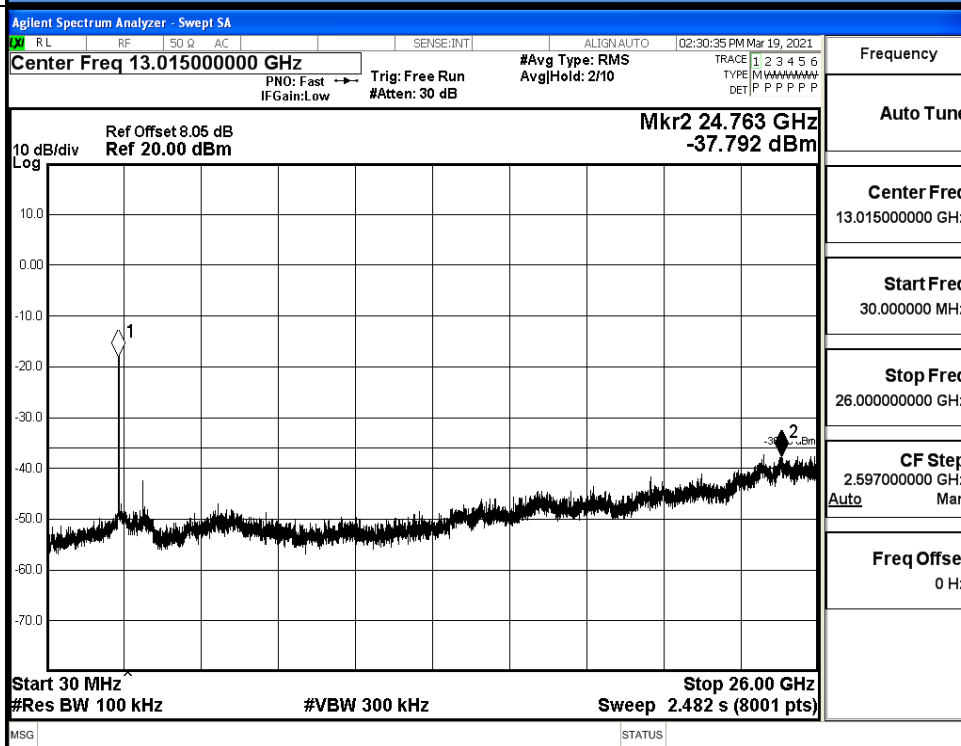


11N40SISO HCH Graphs

Pref/11N40
SISO/HCH



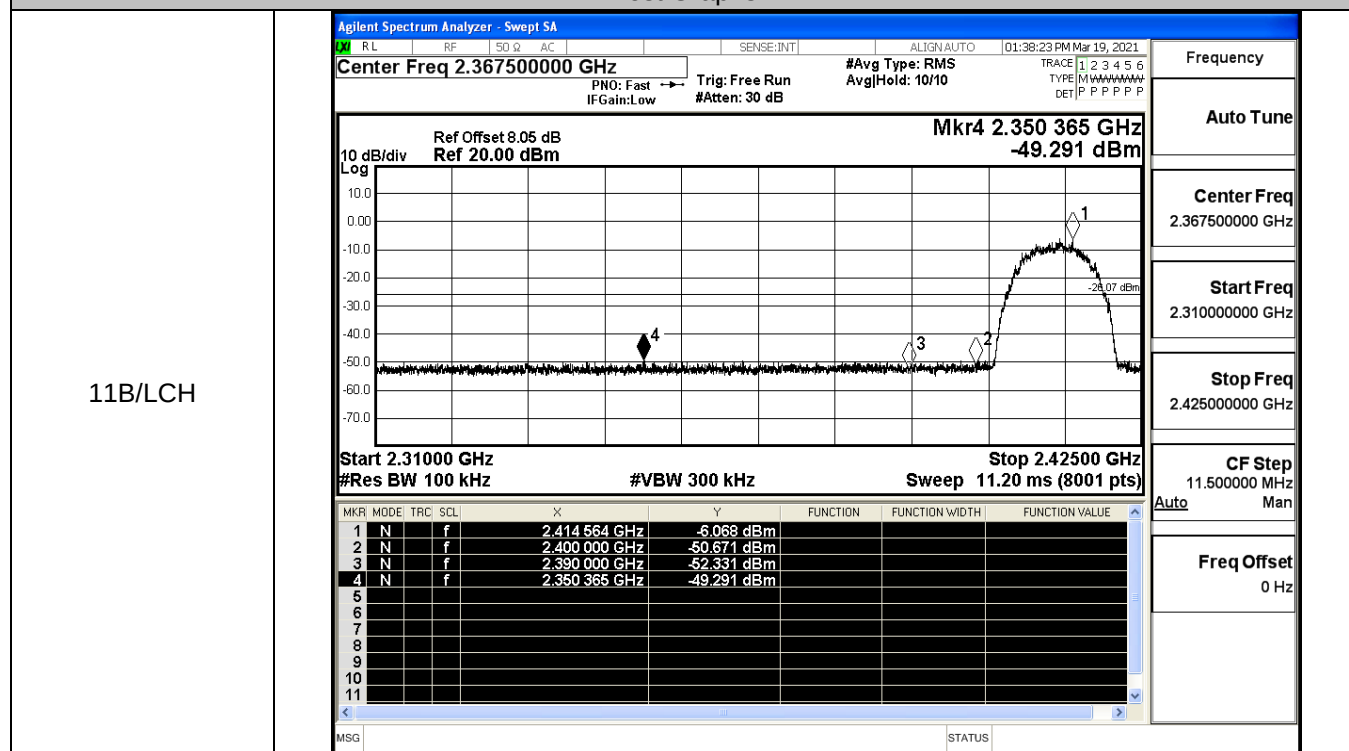
Puw/11N40
SISO/HCH



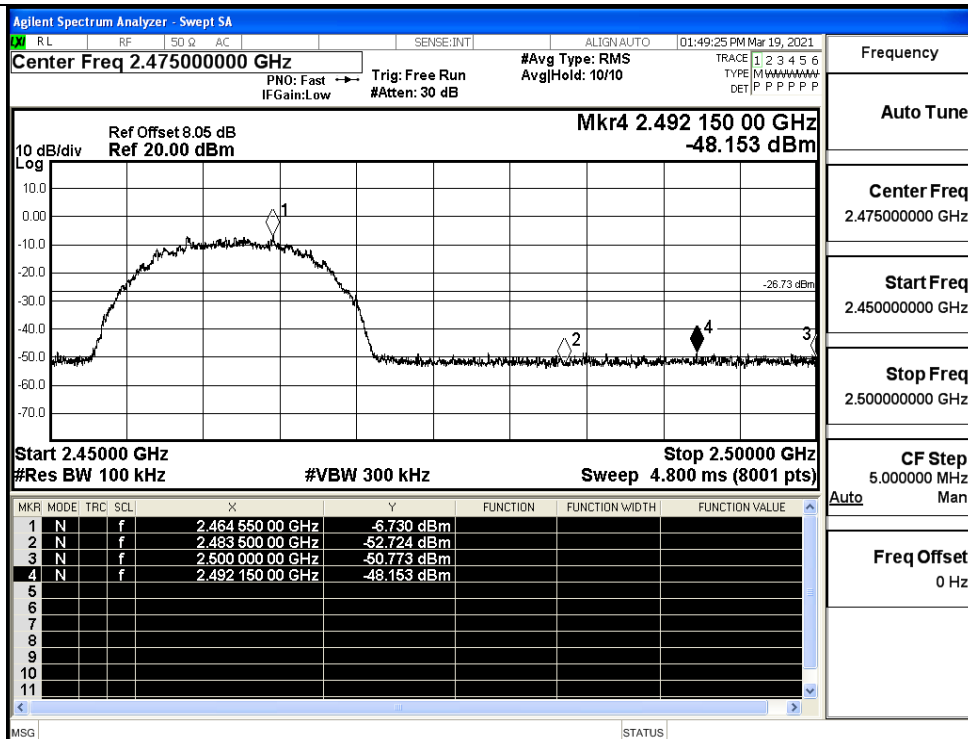
B.6 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	-6.068	-49.291	-26.07	PASS
	HCH	-6.730	-48.153	-26.73	PASS
11G	LCH	-11.826	-48.904	-31.83	PASS
	HCH	-12.574	-48.715	-32.57	PASS
11N20SISO	LCH	-12.443	-49.484	-32.44	PASS
	HCH	-13.040	-48.752	-33.04	PASS
11N40SISO	LCH	-15.966	-48.425	-35.97	PASS
	HCH	-16.377	-47.537	-36.38	PASS

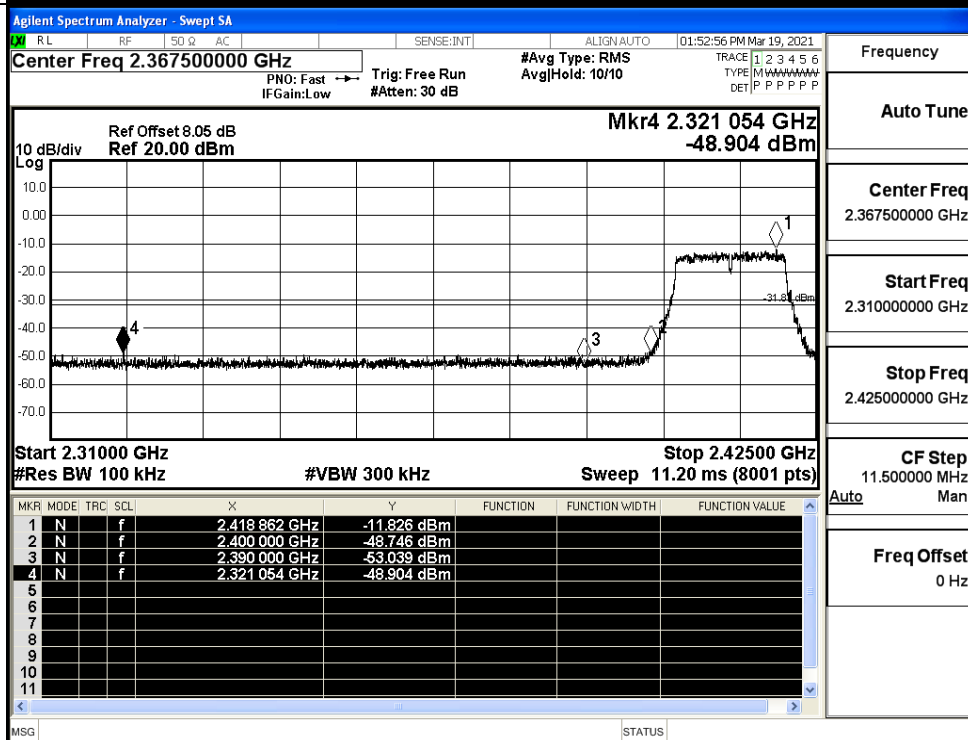
Test Graphs



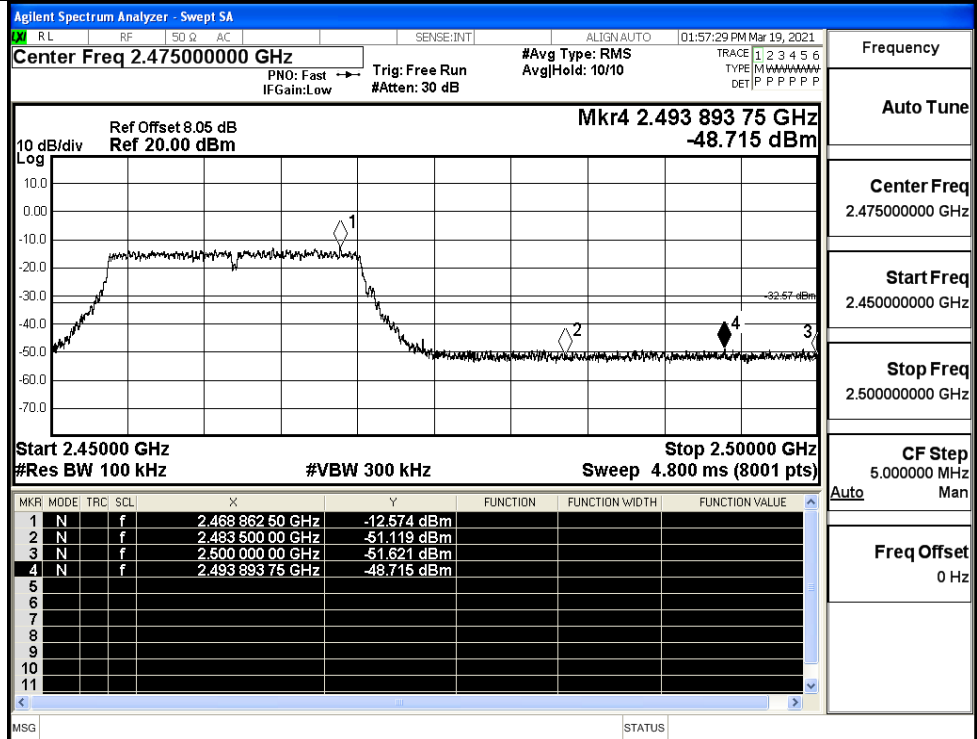
11B/HCH



11G/LCH



11G/HCH



Frequency

Auto Tune

Center Freq
2.475000000 GHz

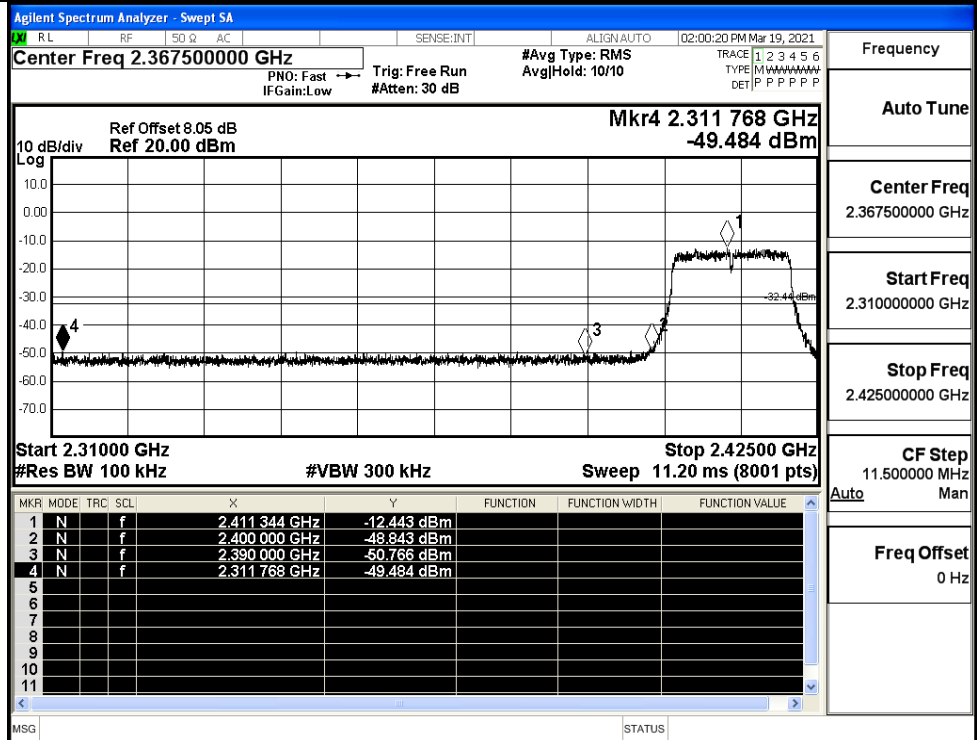
Start Freq
2.450000000 GHz

Stop Freq
2.500000000 GHz

CF Step
5.000000 MHz

Freq Offset
0 Hz

11N20SISO/LCH



Frequency

Auto Tune

Center Freq
2.367500000 GHz

Start Freq
2.310000000 GHz

Stop Freq
2.425000000 GHz

CF Step
11.500000 MHz

Freq Offset
0 Hz

11N20SISO/HCH

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.475000000 GHz

Ref Offset 8.05 dB
Ref 20.00 dBm

Mkr4 2.496 293 75 GHz
-48.752 dBm

Start 2.45000 GHz
#Res BW 100 kHz

#VBW 300 kHz

Stop 2.50000 GHz
Sweep 4.800 ms (8001 pts)

MRK	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N		f	2.461 331 25 GHz	-13.040 dBm			
2	N		f	2.483 500 00 GHz	-50.619 dBm			
3	N		f	2.500 000 00 GHz	-52.305 dBm			
4	N		f	2.496 293 75 GHz	-48.752 dBm			

Frequency

Auto Tune

Center Freq
2.475000000 GHz

Start Freq
2.450000000 GHz

Stop Freq
2.500000000 GHz

CF Step
5.000000 MHz

Auto Man

Freq Offset
0 Hz

11N40SISO/LCH

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.377500000 GHz

Ref Offset 8.05 dB
Ref 20.00 dBm

Mkr4 2.359 410 GHz
-48.425 dBm

Start 2.31000 GHz
#Res BW 100 kHz

#VBW 300 kHz

Stop 2.44500 GHz
Sweep 13.33 ms (8001 pts)

MRK	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N		f	2.433 204 GHz	-15.966 dBm			
2	N		f	2.400 000 GHz	-42.779 dBm			
3	N		f	2.390 000 GHz	-53.776 dBm			
4	N		f	2.359 410 GHz	-48.425 dBm			

Frequency

Auto Tune

Center Freq
2.377500000 GHz

Start Freq
2.310000000 GHz

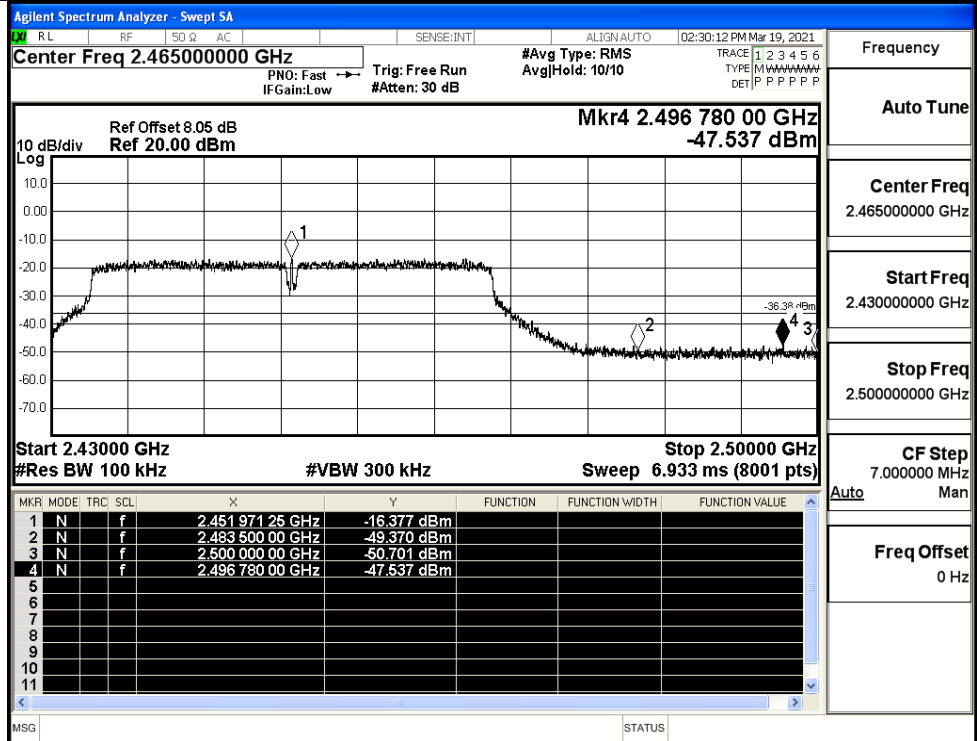
Stop Freq
2.445000000 GHz

CF Step
13.500000 MHz

Auto Man

Freq Offset
0 Hz

11N40SISO/HCH

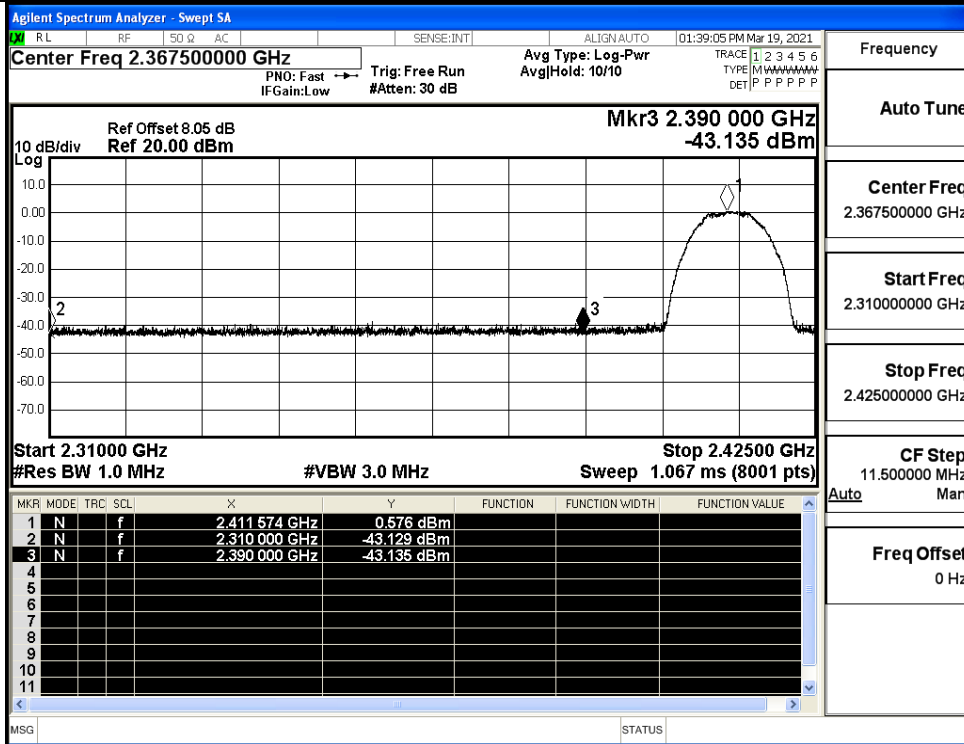


B.7 Restrict-band band-edge measurements

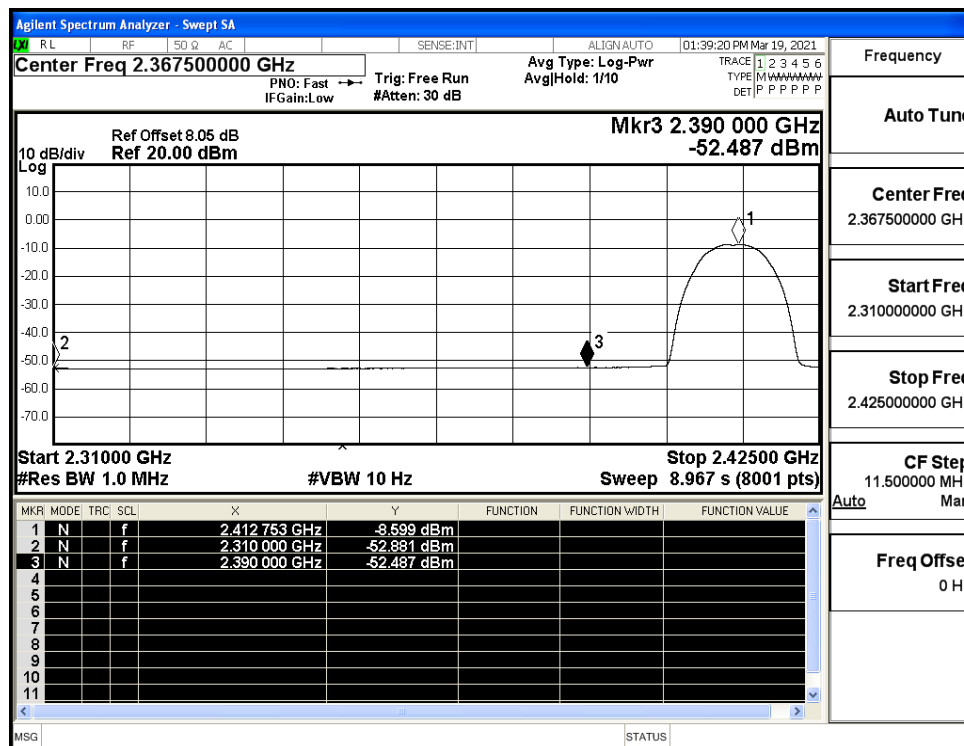
Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
11B	2412	Ant1	2310.0	-43.13	2.1	0	54.20	PEAK	74	PASS
	2412	Ant1	2310.0	-52.88	2.1	0	44.45	AV	54	PASS
	2412	Ant1	2390.0	-43.14	2.1	0	54.19	PEAK	74	PASS
	2412	Ant1	2390.0	-52.49	2.1	0	44.84	AV	54	PASS
	2462	Ant1	2483.5	-40.79	2.1	0	56.54	PEAK	74	PASS
	2462	Ant1	2483.5	-52.00	2.1	0	45.33	AV	54	PASS
	2462	Ant1	2500.0	-42.04	2.1	0	55.29	PEAK	74	PASS
	2462	Ant1	2500.0	-51.76	2.1	0	45.57	AV	54	PASS
11G	2412	Ant1	2310.0	-41.75	2.1	0	55.58	PEAK	74	PASS
	2412	Ant1	2310.0	-52.90	2.1	0	44.43	AV	54	PASS
	2412	Ant1	2390.0	-41.80	2.1	0	55.53	PEAK	74	PASS
	2412	Ant1	2390.0	-52.48	2.1	0	44.85	AV	54	PASS
	2462	Ant1	2483.5	-42.82	2.1	0	54.51	PEAK	74	PASS
	2462	Ant1	2483.5	-51.99	2.1	0	45.34	AV	54	PASS
	2462	Ant1	2500.0	-40.19	2.1	0	57.14	PEAK	74	PASS
	2462	Ant1	2500.0	-51.78	2.1	0	45.55	AV	54	PASS
11N20 SISO	2412	Ant1	2310.0	-42.38	2.1	0	54.95	PEAK	74	PASS
	2412	Ant1	2310.0	-52.88	2.1	0	44.45	AV	54	PASS
	2412	Ant1	2390.0	-41.29	2.1	0	56.04	PEAK	74	PASS
	2412	Ant1	2390.0	-52.49	2.1	0	44.84	AV	54	PASS
	2462	Ant1	2483.5	-41.81	2.1	0	55.52	PEAK	74	PASS
	2462	Ant1	2483.5	-51.98	2.1	0	45.35	AV	54	PASS
	2462	Ant1	2500.0	-41.85	2.1	0	55.48	PEAK	74	PASS
	2462	Ant1	2500.0	-51.76	2.1	0	45.57	AV	54	PASS
11N40 SISO	2422	Ant1	2310.0	-43.11	2.1	0	54.22	PEAK	74	PASS
	2422	Ant1	2310.0	-52.90	2.1	0	44.43	AV	54	PASS

	2422	Ant1	2390.0	-41.42	2.1	0	55.91	PEAK	74	PASS
	2422	Ant1	2390.0	-52.39	2.1	0	44.94	AV	54	PASS
	2452	Ant1	2483.5	-39.99	2.1	0	57.34	PEAK	74	PASS
	2452	Ant1	2483.5	-50.45	2.1	0	46.88	AV	54	PASS
	2452	Ant1	2500.0	-39.68	2.1	0	57.65	PEAK	74	PASS
	2452	Ant1	2500.0	-50.71	2.1	0	46.62	AV	54	PASS

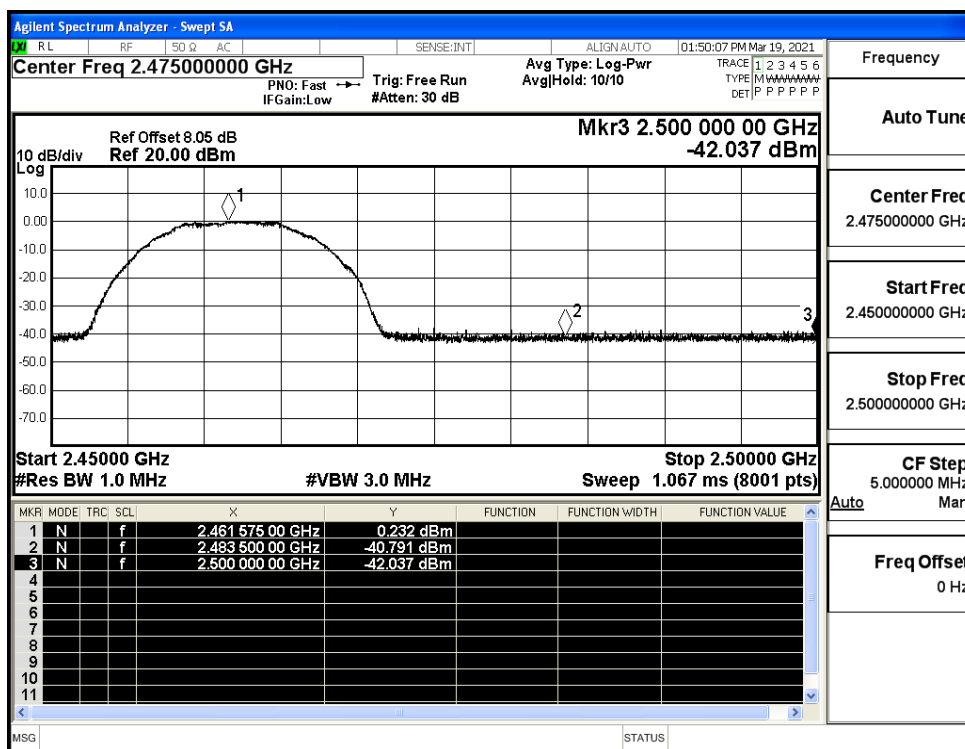
Restrict-band band-edge measurements_11B_2412_Ant1_PEAK



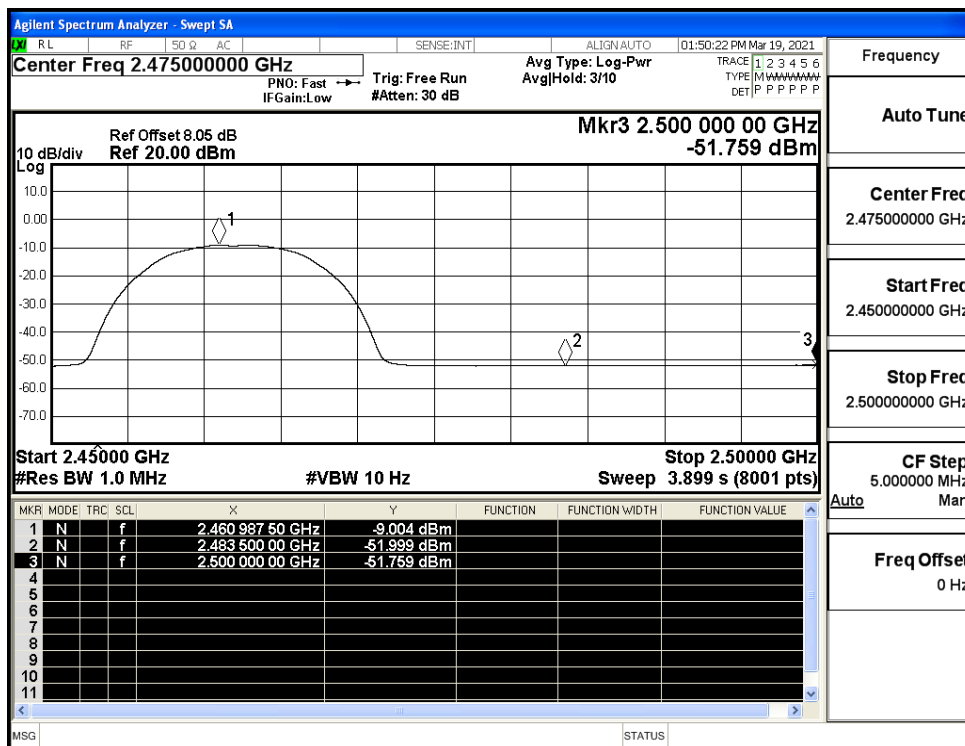
Restrict-band band-edge measurements_11B_2412_Ant1_AV



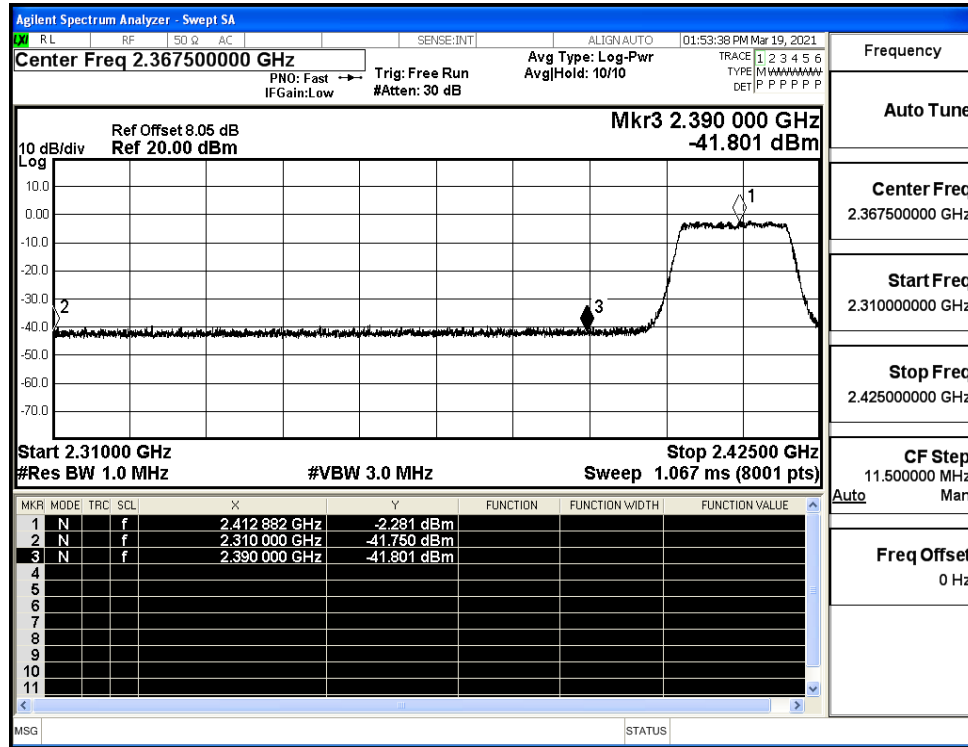
Restrict-band band-edge measurements_11B_2462_Ant1_PEAK



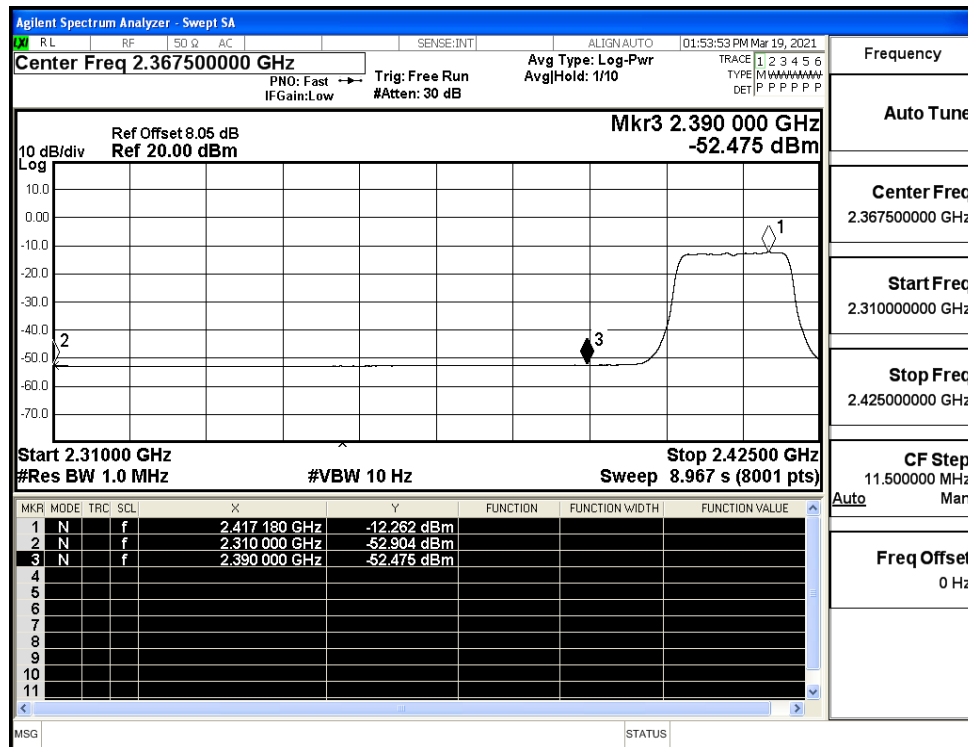
Restrict-band band-edge measurements_11B_2462_Ant1_AV



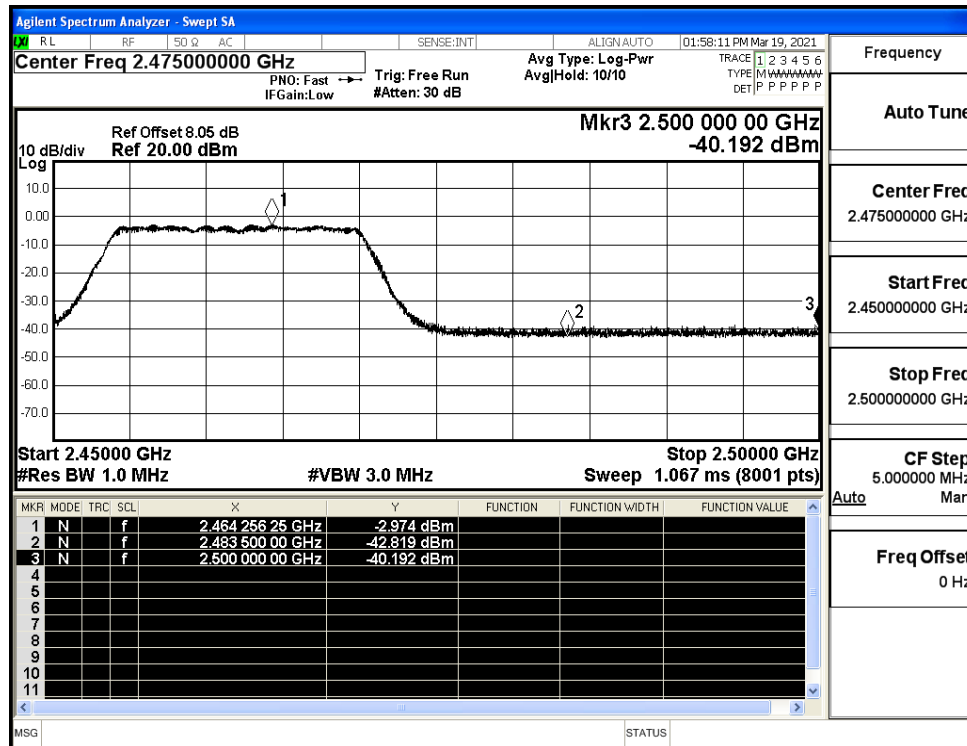
Restrict-band band-edge measurements_11G_2412_Ant1_PEAK



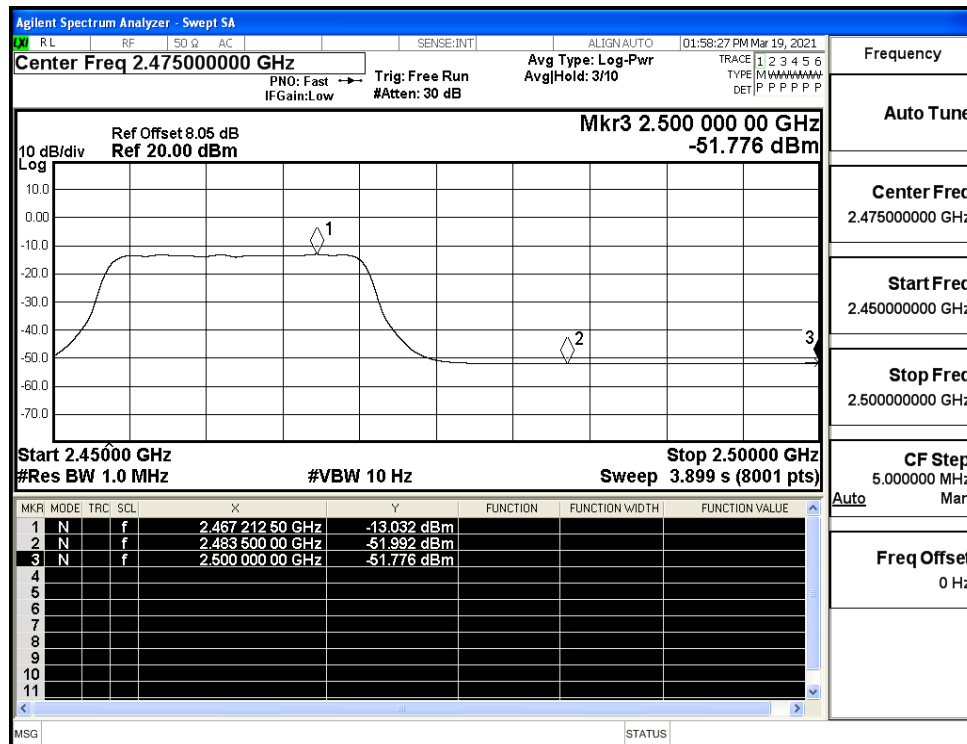
Restrict-band band-edge measurements_11G_2412_Ant1_AV



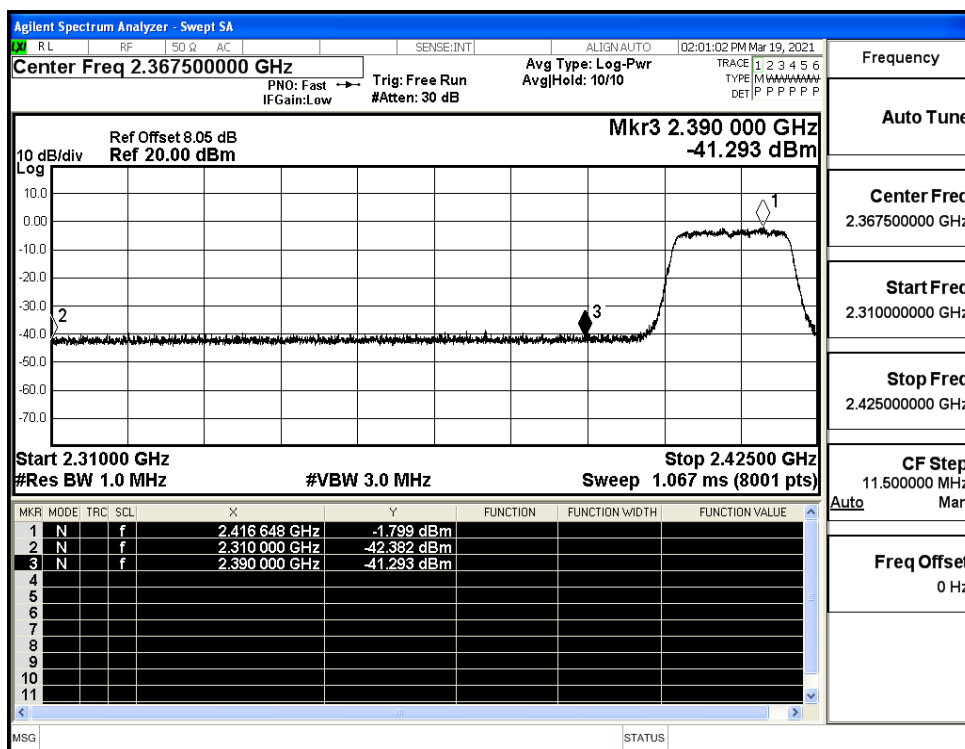
Restrict-band band-edge measurements_11G_2462_Ant1_PEAK



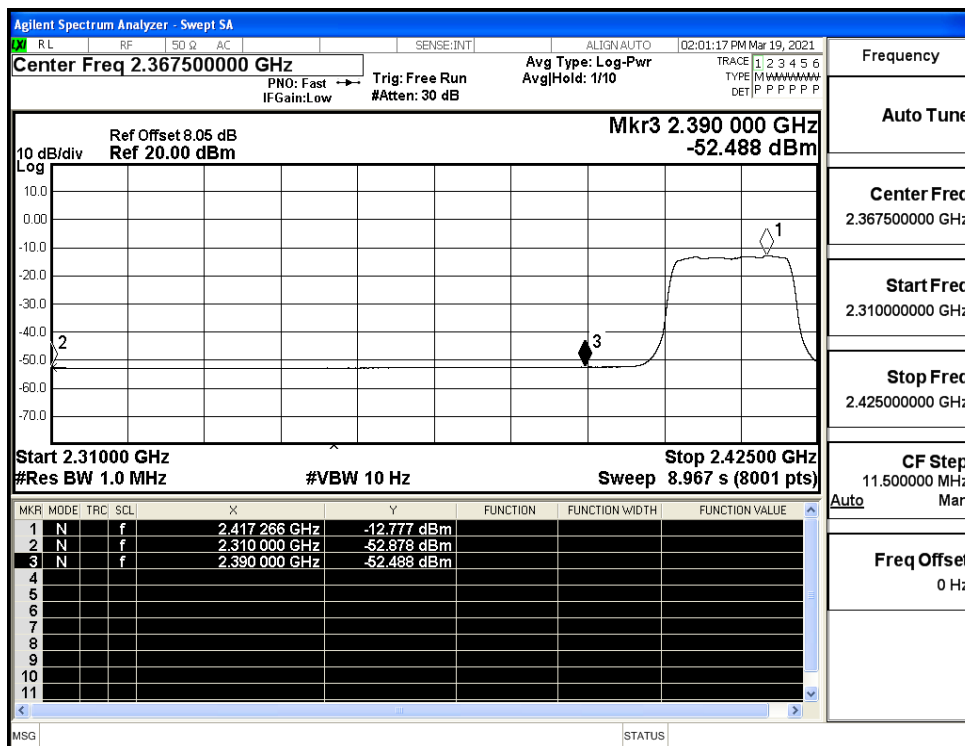
Restrict-band band-edge measurements_11G_2462_Ant1_AV



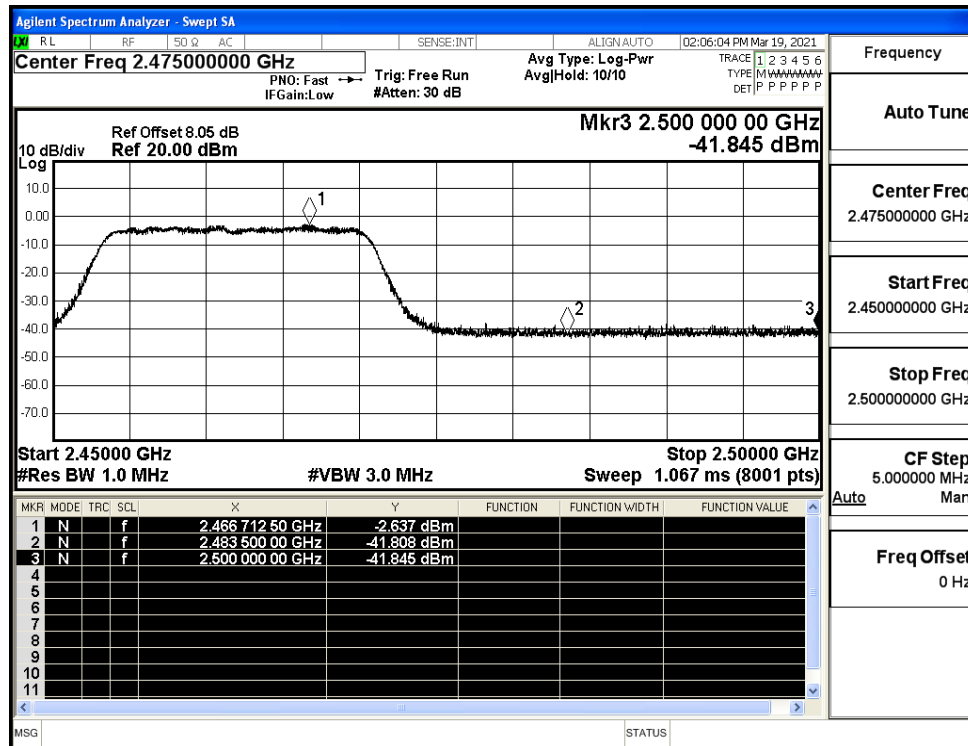
Restrict-band band-edge measurements_11N20SISO_2412_Ant1_PEAK



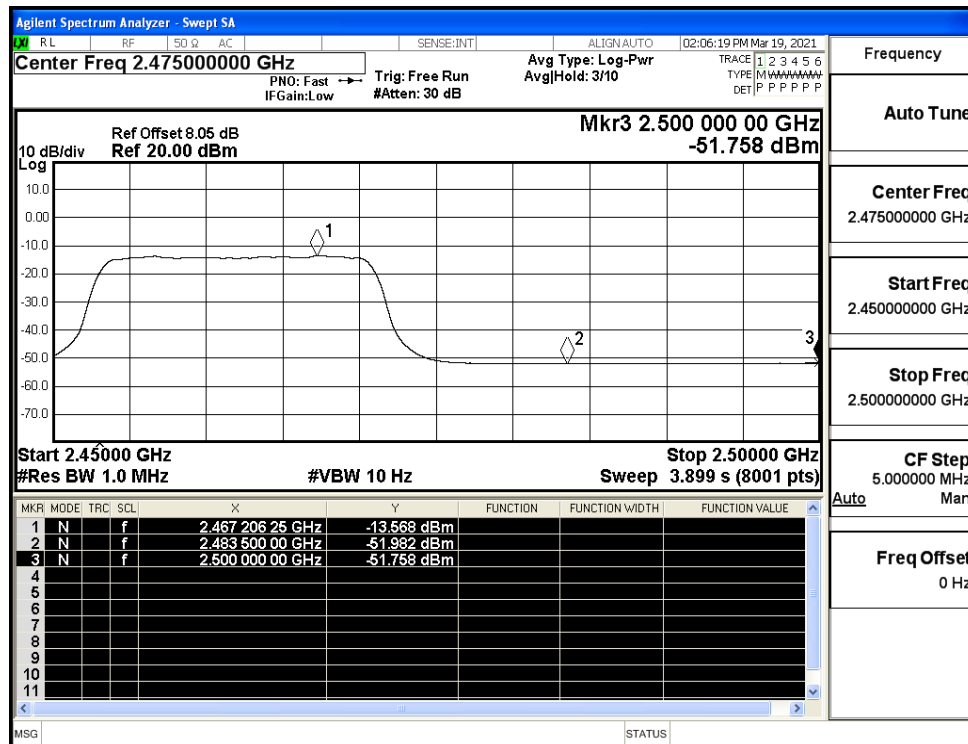
Restrict-band band-edge measurements_11N20SISO_2412_Ant1_AV



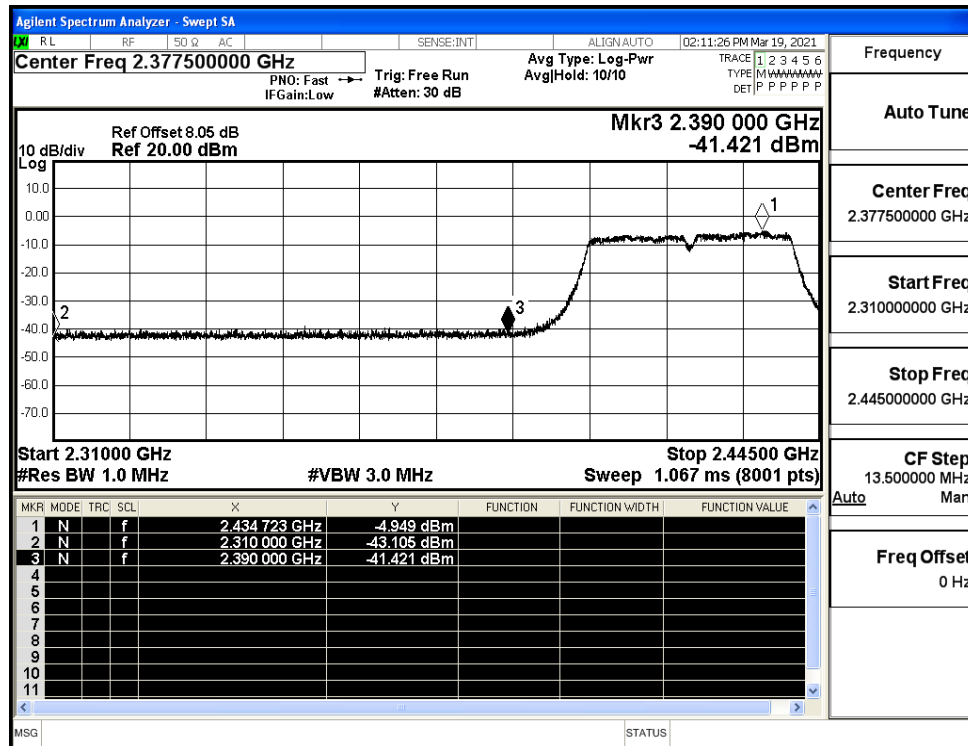
Restrict-band band-edge measurements_11N20SISO_2462_Ant1_PEAK



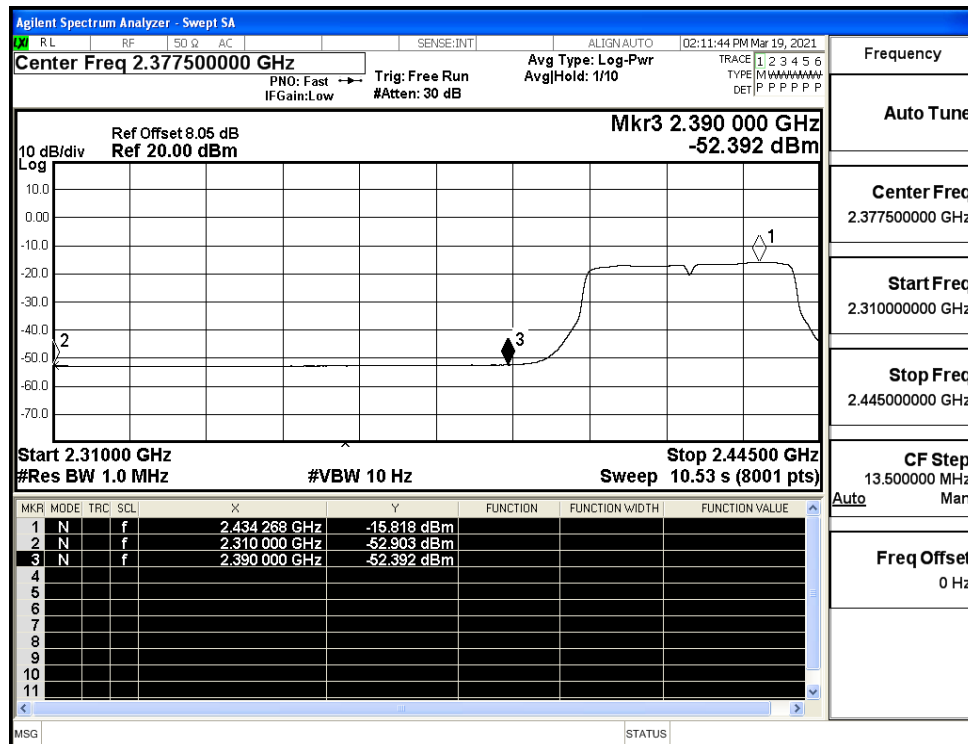
Restrict-band band-edge measurements_11N20SISO_2462_Ant1_AV



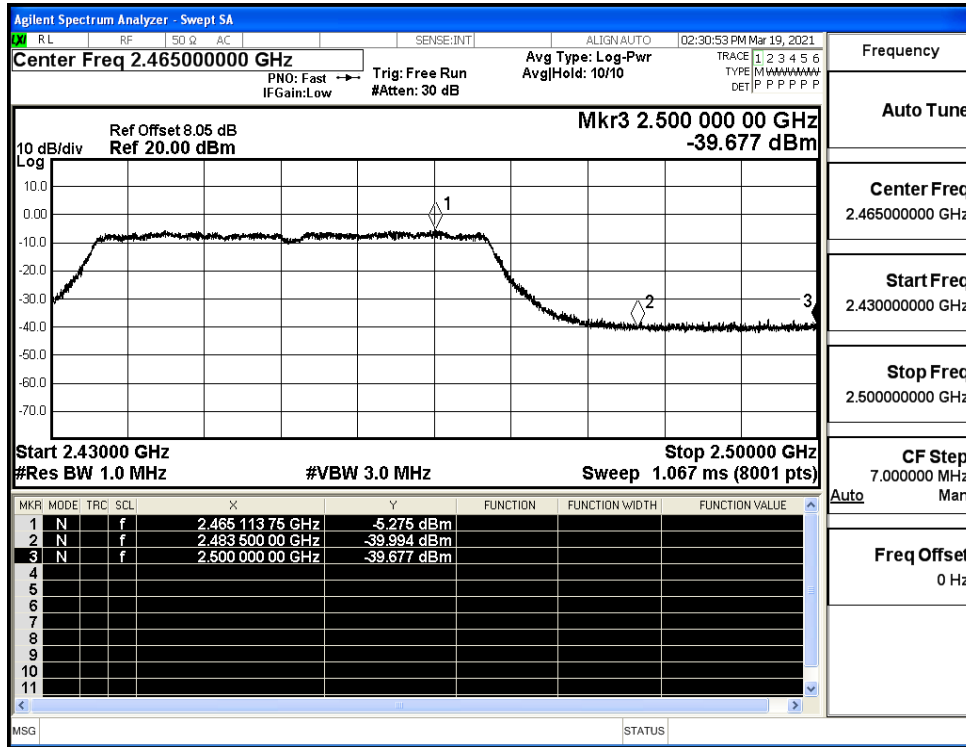
Restrict-band band-edge measurements_11N40SISO_2422_Ant1_PEAK



Restrict-band band-edge measurements_11N40SISO_2422_Ant1_AV



Restrict-band band-edge measurements_11N40SISO_2452_Ant1_PEAK



Restrict-band band-edge measurements_11N40SISO_2452_Ant1_AV

