

Appendix C

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: HyBook Plus

Trade Mark: Hyundai

Test Model: HT14CBI581SG

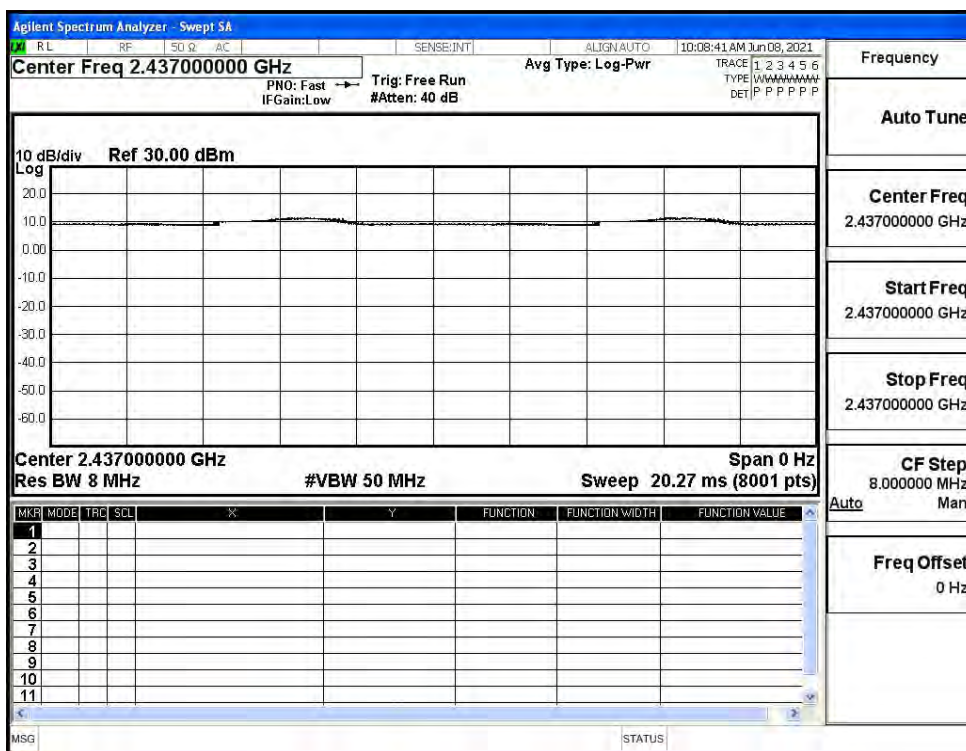
Environmental Conditions

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

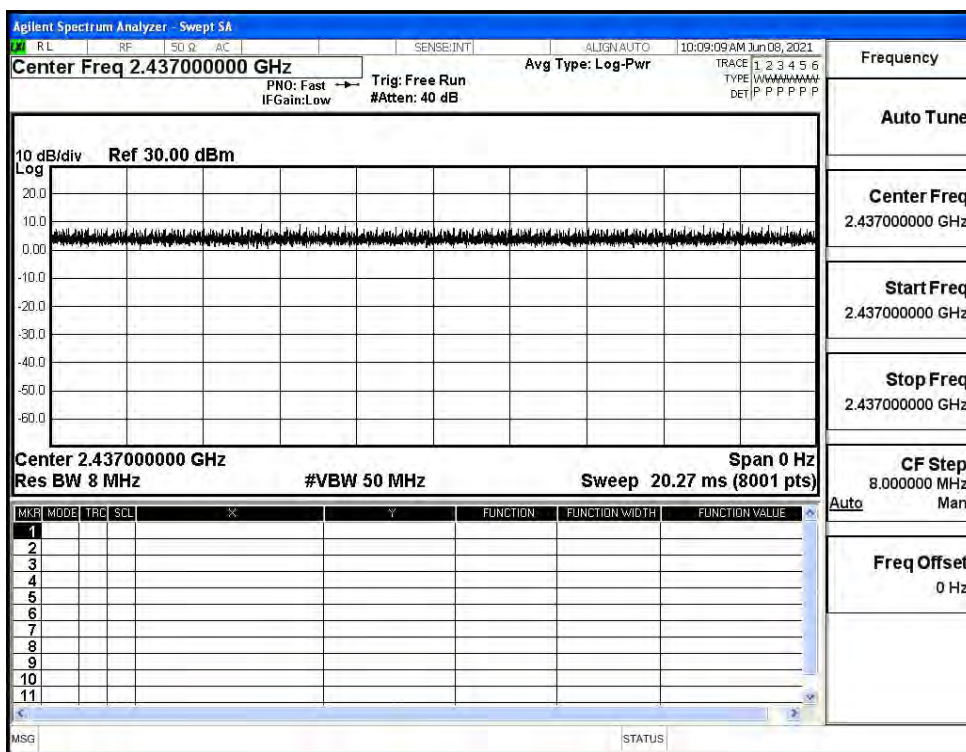
C.1 Duty Cycle

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

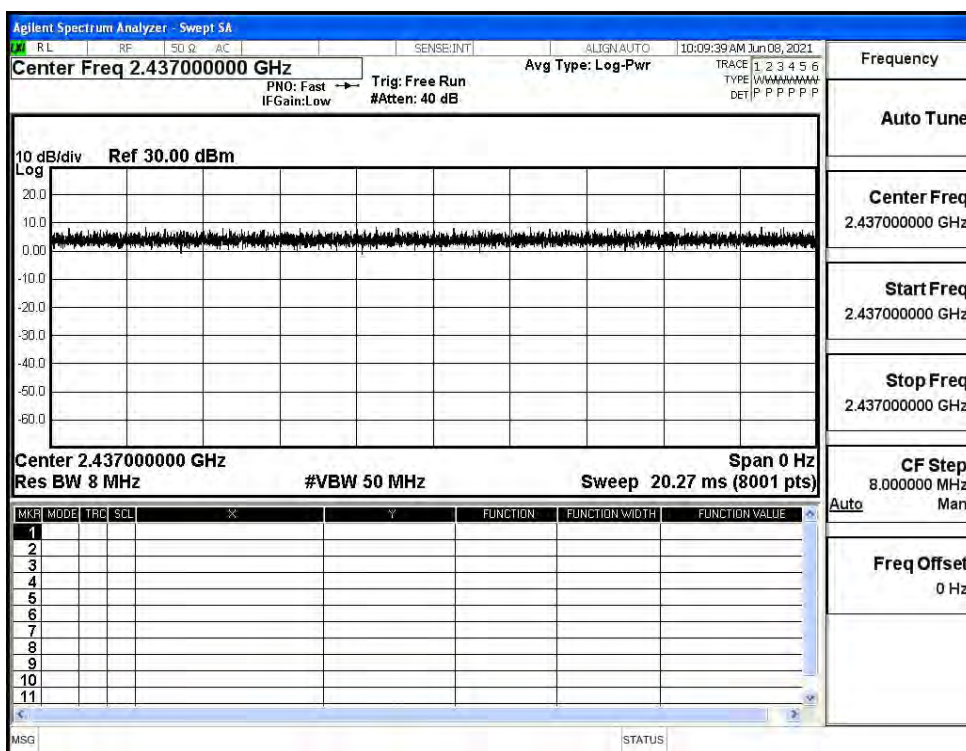
Duty Cycle_11B_2437_Ant1



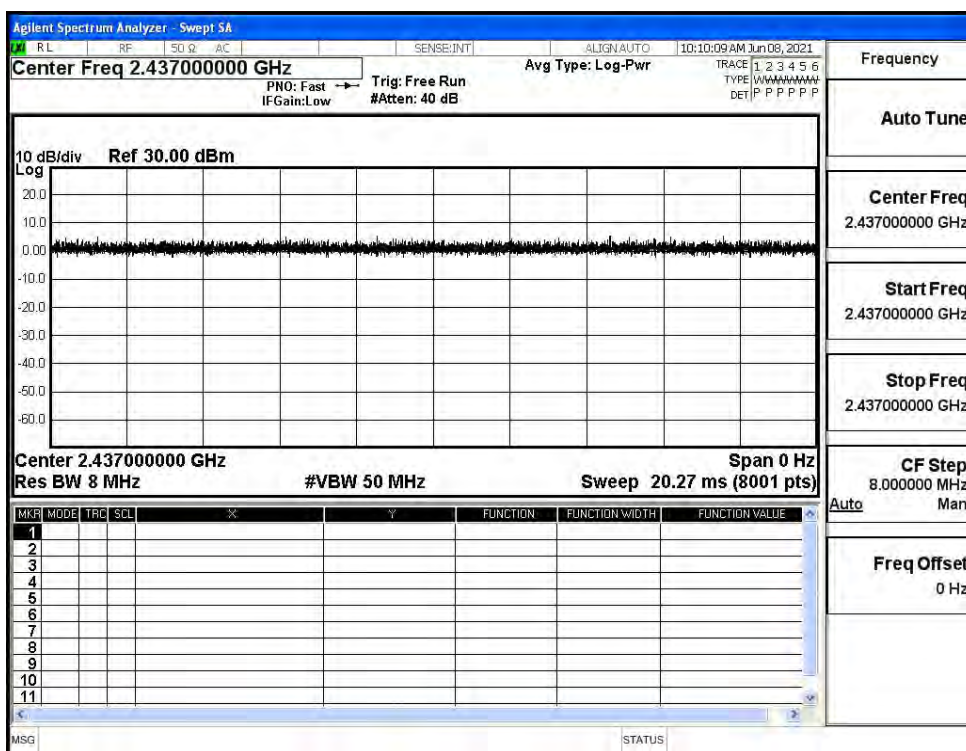
Duty Cycle_11G_2437_Ant1



Duty Cycle_11N20SISO_2437_Ant1



Duty Cycle_11N40SISO_2437_Ant1

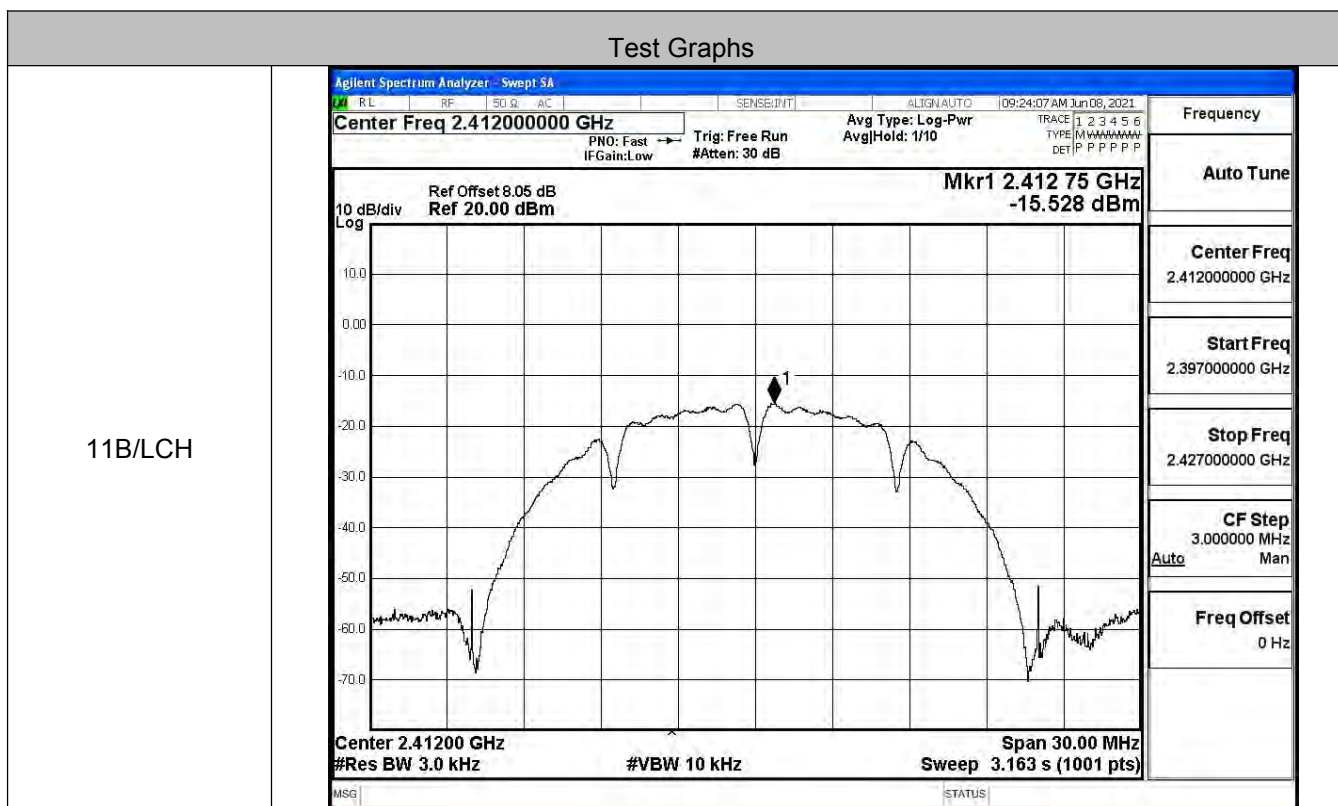


C.2 Maximum Conducted Output Power

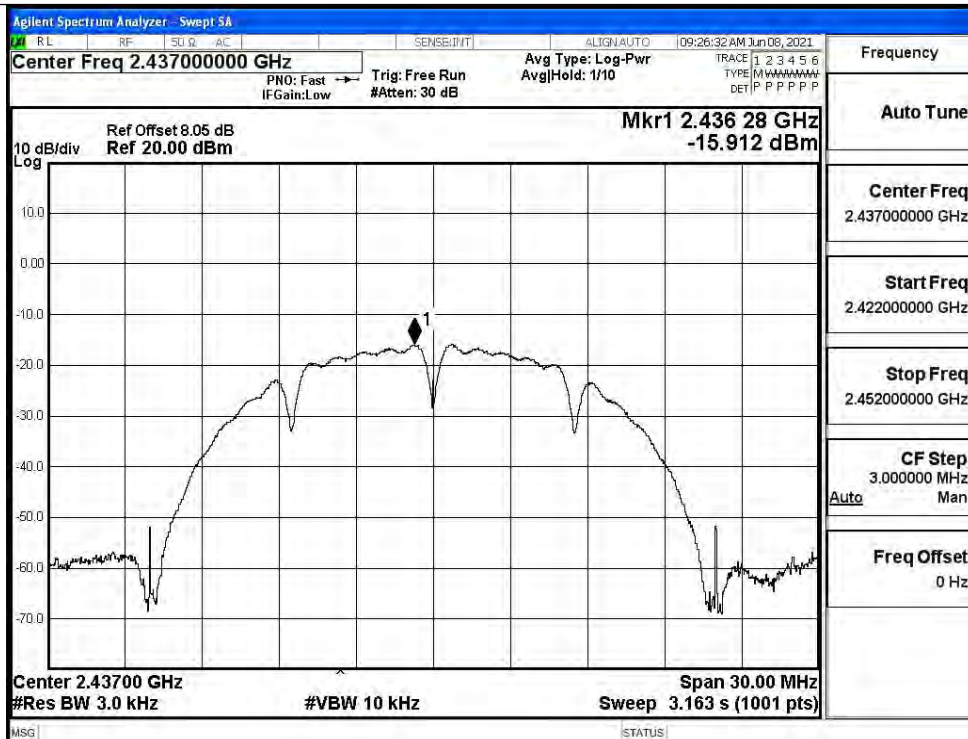
Mode	Channel	Meas.Level [dBm]	Limit [dBm]	Verdict
11B	LCH	8.42	30	PASS
	MCH	8.43	30	PASS
	HCH	8.41	30	PASS
11G	LCH	8.61	30	PASS
	MCH	8.64	30	PASS
	HCH	8.62	30	PASS
11N20SISO	LCH	8.64	30	PASS
	MCH	8.61	30	PASS
	HCH	8.71	30	PASS
11N40SISO	LCH	8.74	30	PASS
	MCH	8.74	30	PASS
	HCH	8.74	30	PASS

C.3 Maximum Power Spectral Density

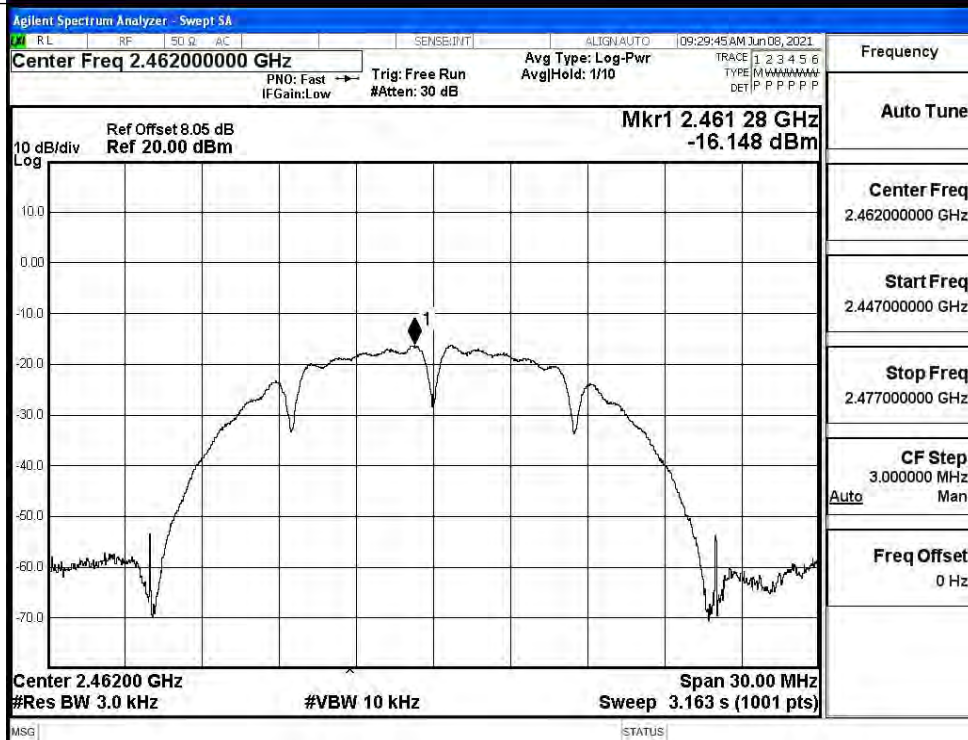
Mode	Channel	Meas.Level [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
11B	LCH	-15.528	8	PASS
	MCH	-15.912	8	PASS
	HCH	-16.148	8	PASS
11G	LCH	-19.051	8	PASS
	MCH	-19.541	8	PASS
	HCH	-19.242	8	PASS
11N20SISO	LCH	-18.023	8	PASS
	MCH	-19.056	8	PASS
	HCH	-18.669	8	PASS
11N40SISO	LCH	-19.891	8	PASS
	MCH	-19.710	8	PASS
	HCH	-20.169	8	PASS



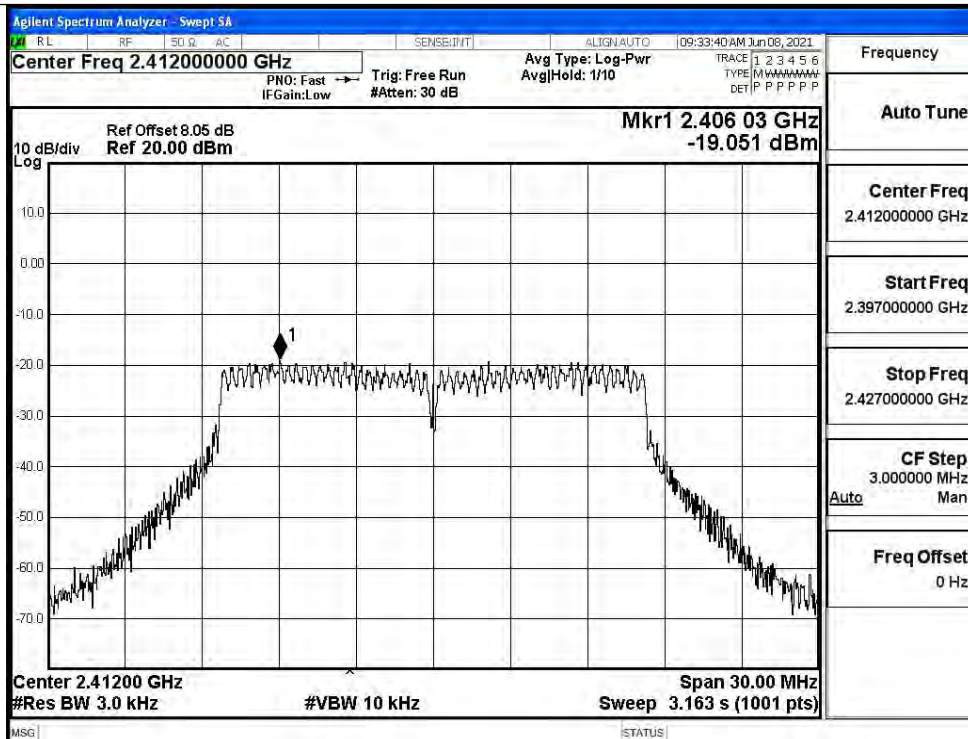
11B/MCH



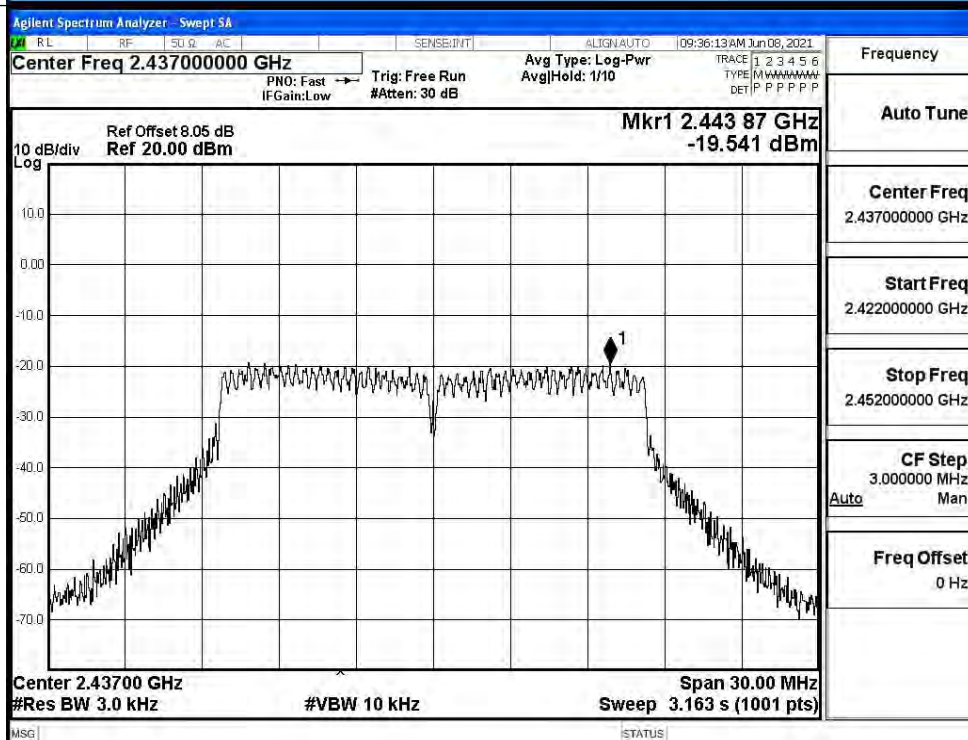
11B/HCH



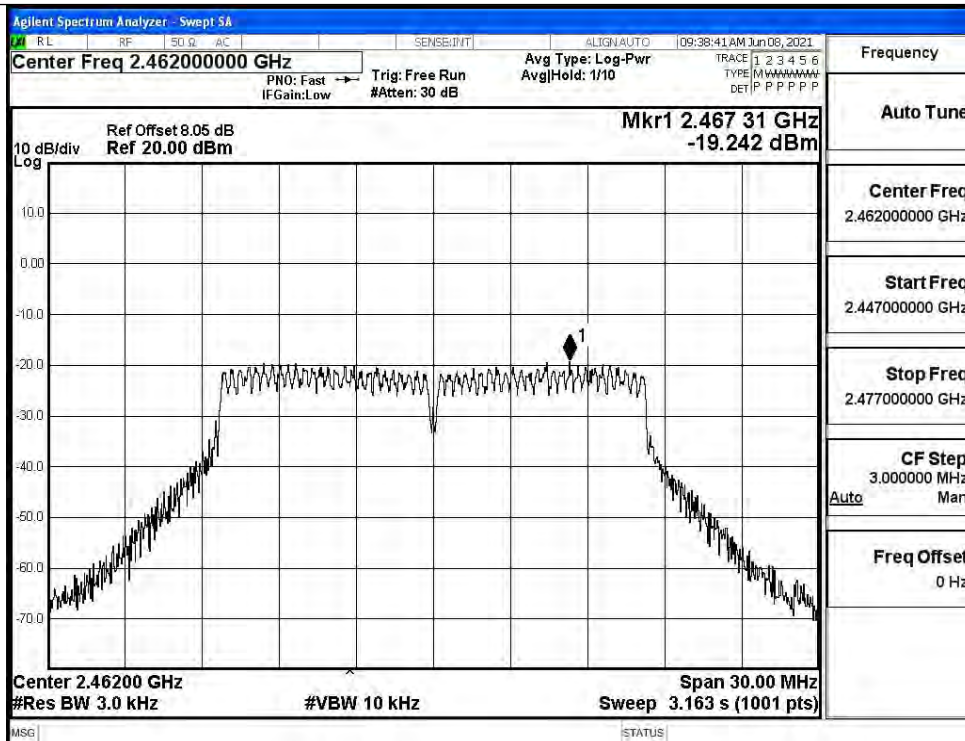
11G/LCH



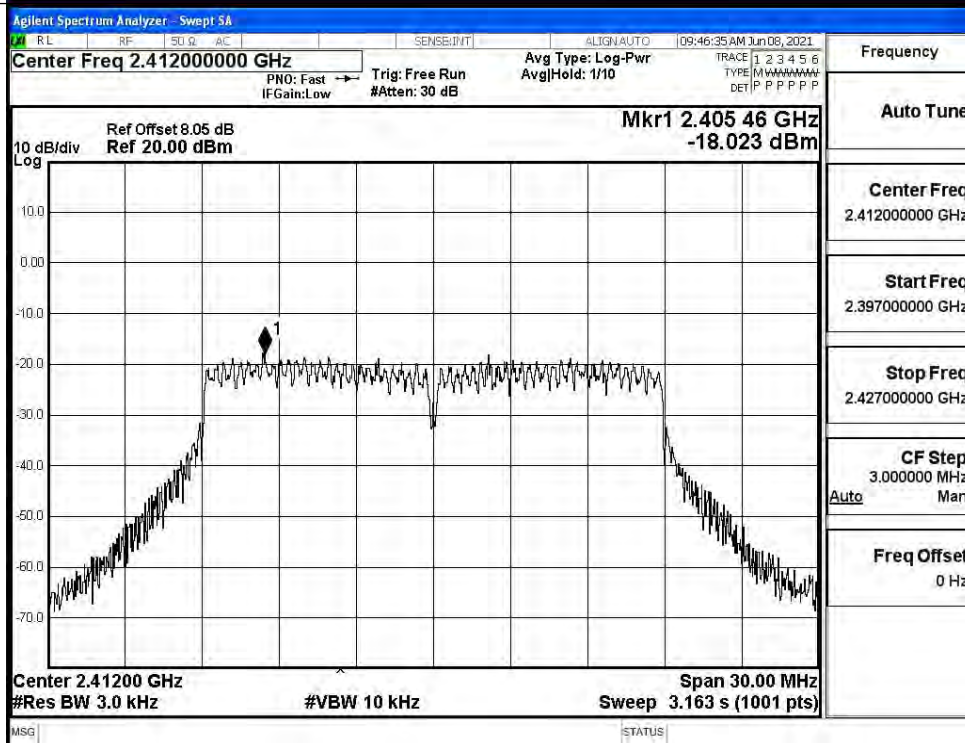
11G/MCH



11G/HCH



11N20SISO/LCH



11N20SISO/MCH	Agilent Spectrum Analyzer - Swept SA RL RF SU Q AC SENSE: [IT] ALIGN: AUTO 09:49:01 AM Jun 08, 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 TYPE [M] W 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 2.430 43 GHz -19.056 dBm 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 SU Q AC SENSE: [IT] ALIGN: AUTO 09:50:42 AM Jun 08, 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 TYPE [M] W 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 2.455 40 GHz -18.669 dBm 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

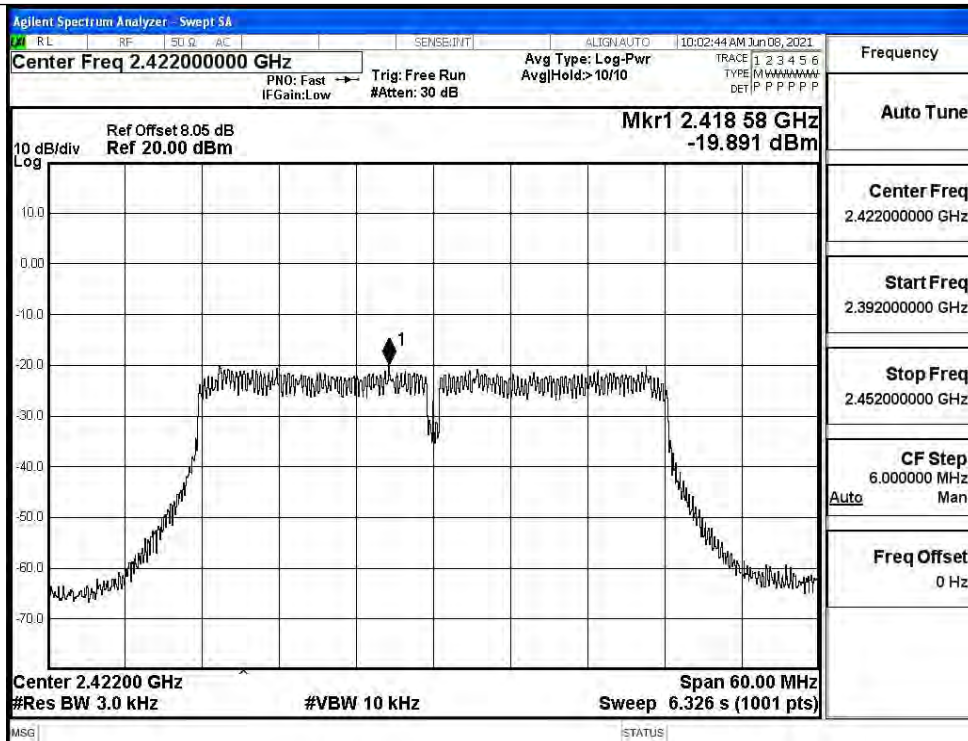
Start Freq
2.447000000 GHz

Stop Freq
2.477000000 GHz

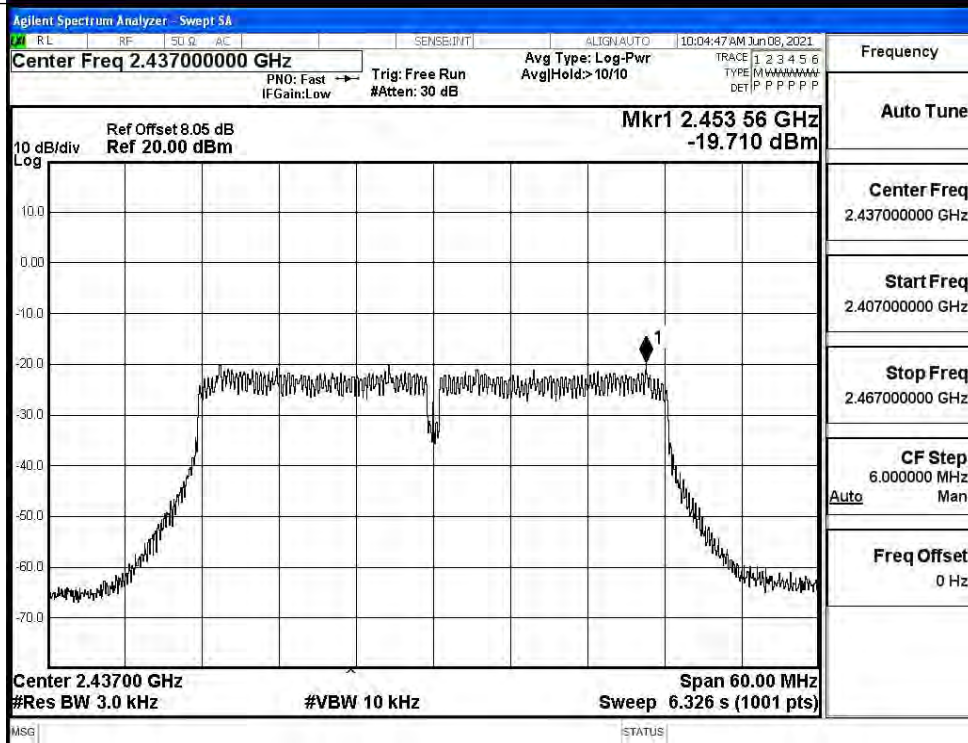
CF Step
3.000000 MHz
Auto Man

Freq Offset
0 Hz

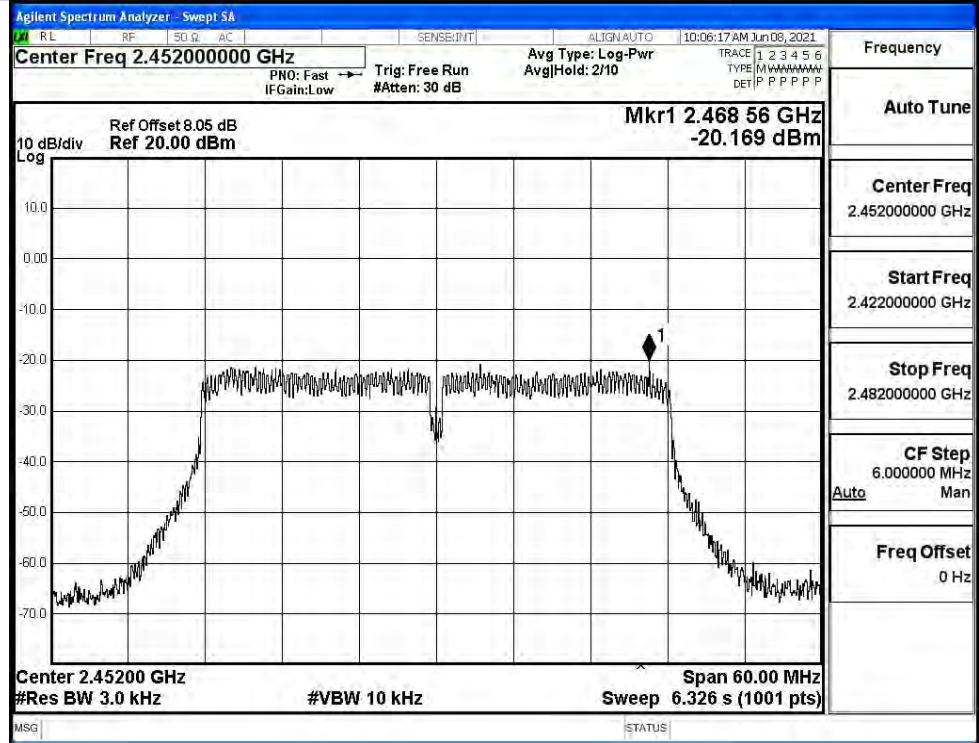
11N40SISO/LCH



11N40SISO/MCH



11N40SISO/HCH

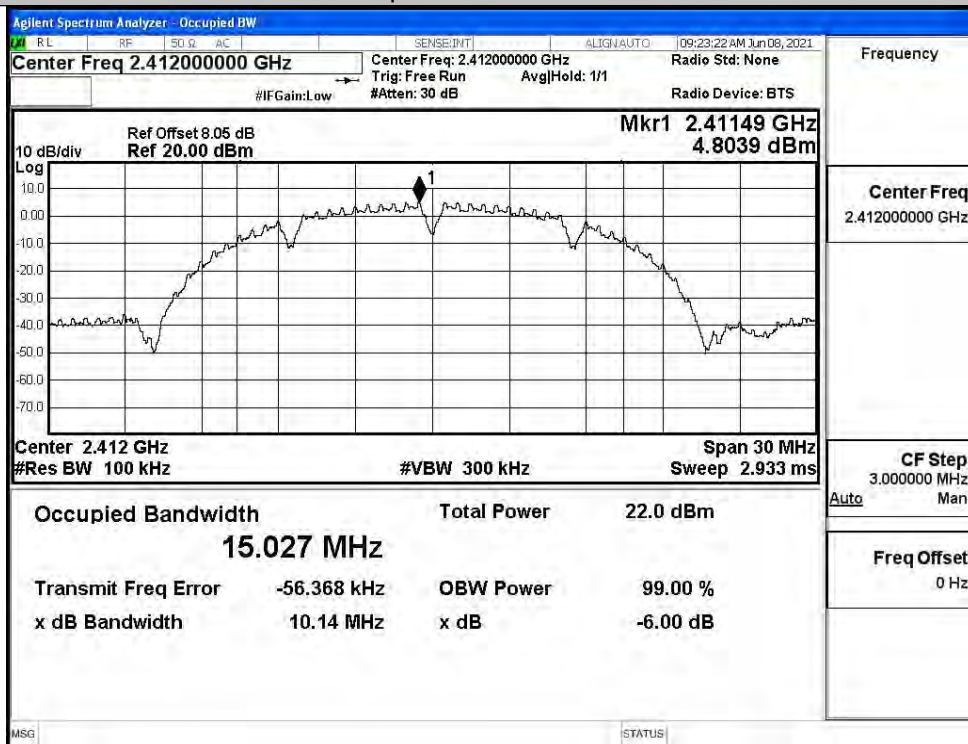


C.4 6dB Bandwidth

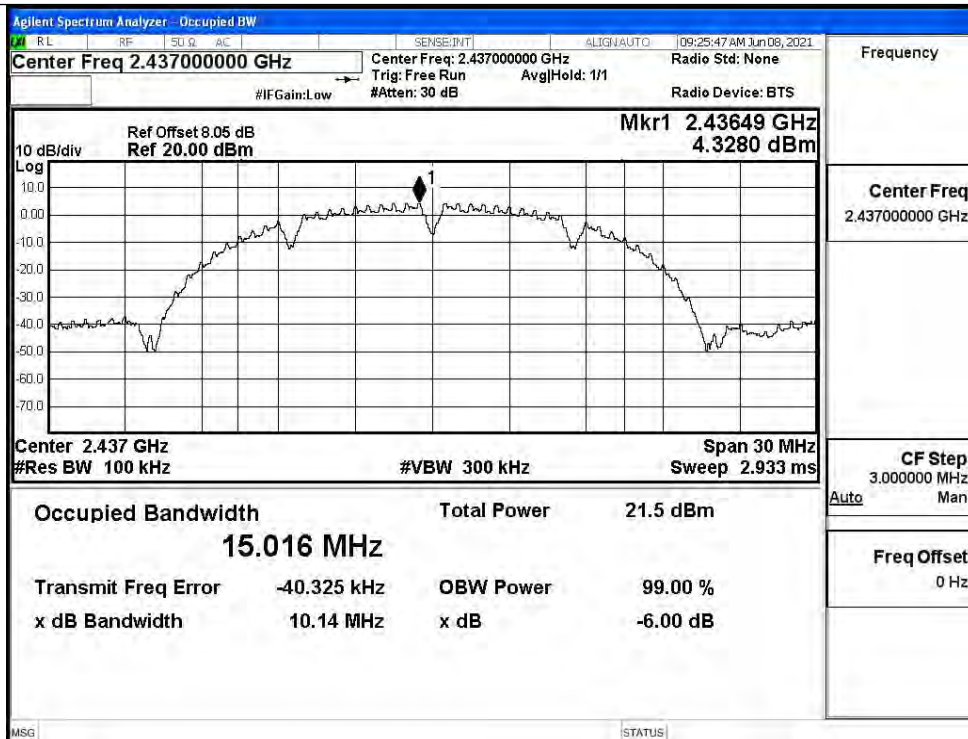
Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
11B	LCH	10.14	≥ 0.5	PASS
	MCH	10.14	≥ 0.5	PASS
	HCH	10.14	≥ 0.5	PASS
11G	LCH	16.58	≥ 0.5	PASS
	MCH	16.58	≥ 0.5	PASS
	HCH	16.58	≥ 0.5	PASS
11N20SISO	LCH	17.70	≥ 0.5	PASS
	MCH	17.71	≥ 0.5	PASS
	HCH	17.69	≥ 0.5	PASS
11N40SISO	LCH	36.50	≥ 0.5	PASS
	MCH	36.53	≥ 0.5	PASS
	HCH	36.52	≥ 0.5	PASS

Test Graphs

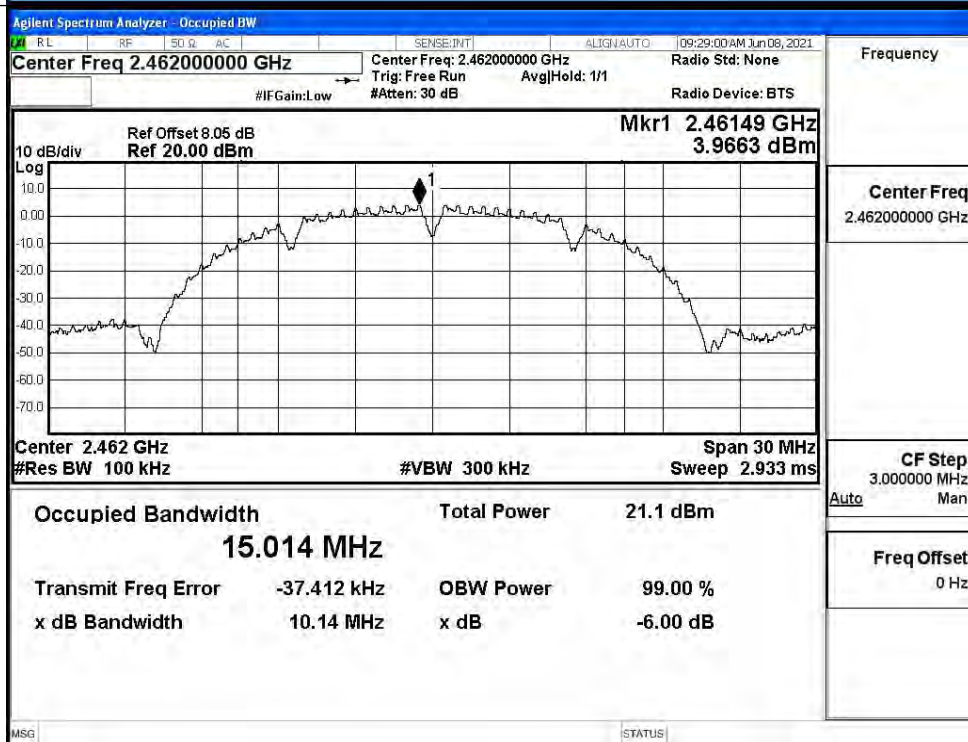
11B/LCH



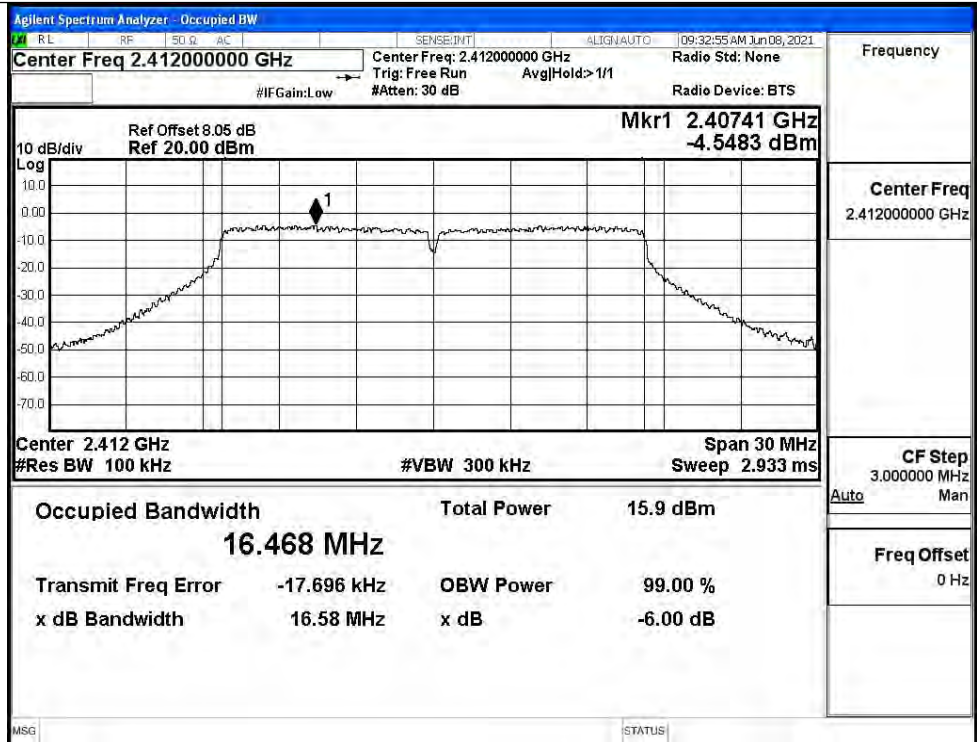
11B/MCH



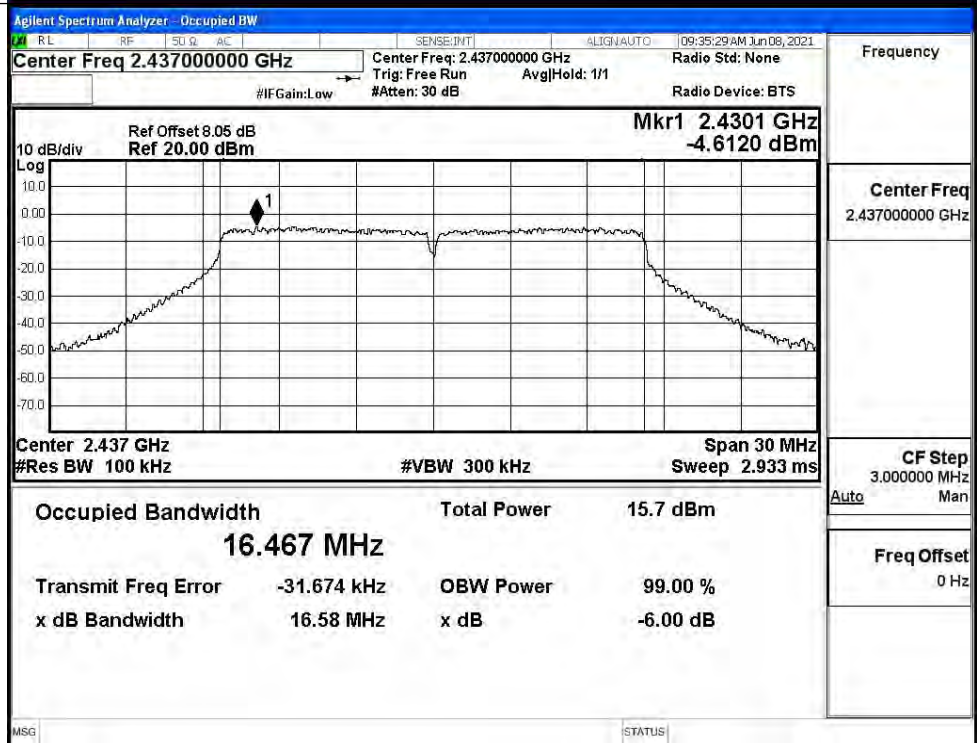
11B/HCH



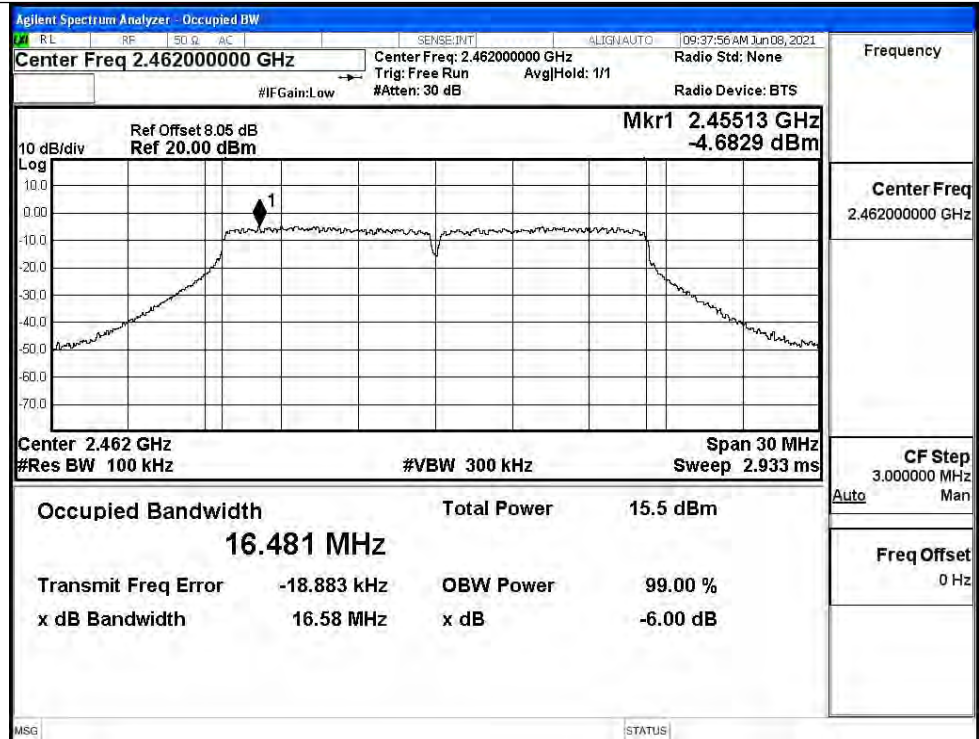
11G/LCH



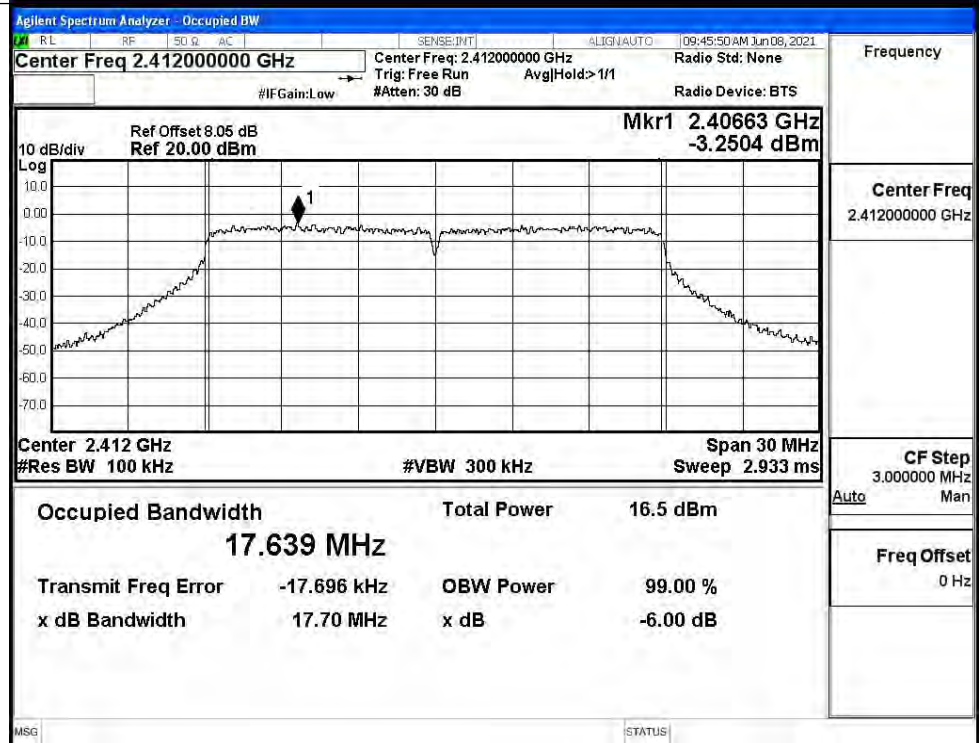
11G/MCH

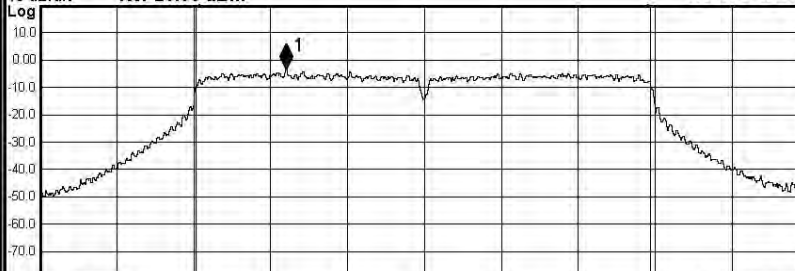
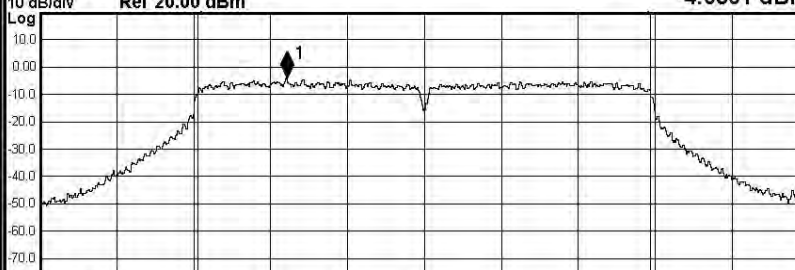


11G/HCH

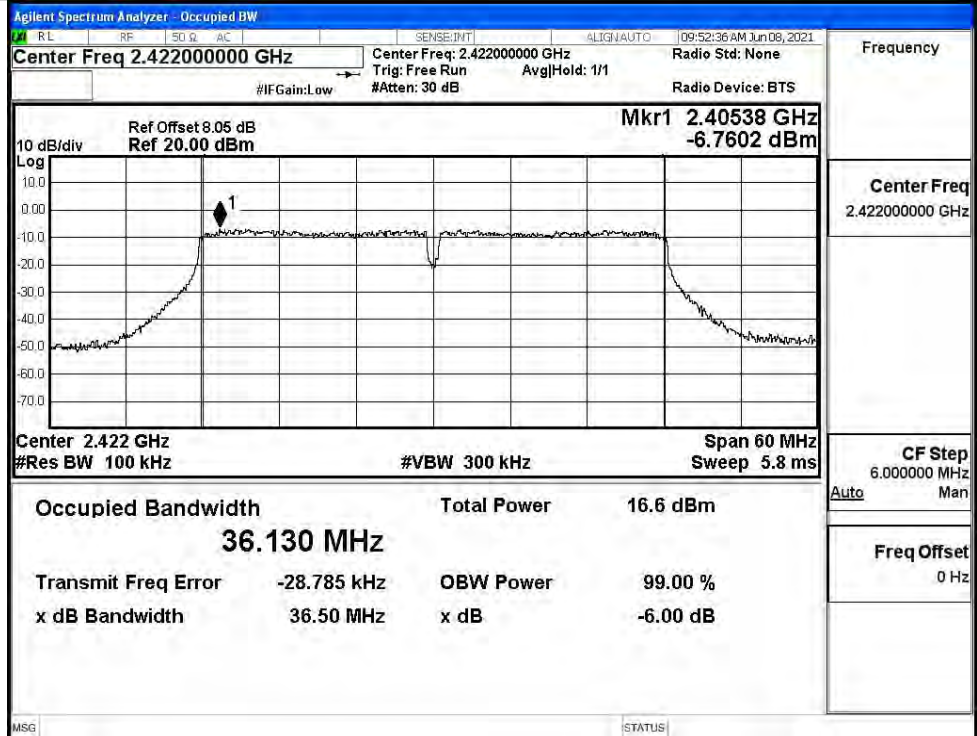


11N20SISO/LCH



11N20SISO/MCH	Agilent Spectrum Analyzer - Occupied BW RL RF SQ AC SENSE: [INT] ALIGN: [AUTO] 09:48:17 AM Jun 08, 2021 Center Freq 2.437000000 GHz Center Freq: 2.437000000 GHz Trig: Free Run Avg/Hold: 1/1 Radio Std: None #IF Gain: Low #Atten: 30 dB Radio Device: BTS 10 dB/div Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.4316 GHz -3.6670 dBm  Center 2.437 GHz #Res BW 100 kHz #VBW 300 kHz Span 30 MHz Sweep 2.933 ms Occupied Bandwidth 17.650 MHz Total Power 16.0 dBm Transmit Freq Error -19.983 kHz OBW Power 99.00 % x dB Bandwidth 17.71 MHz x dB -6.00 dB MSG STATUS	Frequency Center Freq 2.437000000 GHz CF Step 3.000000 MHz Auto Man Freq Offset 0 Hz
11N20SISO/HCH	Agilent Spectrum Analyzer - Occupied BW RL RF SQ AC SENSE: [INT] ALIGN: [AUTO] 09:49:57 AM Jun 08, 2021 Center Freq 2.462000000 GHz Center Freq: 2.462000000 GHz Trig: Free Run Avg/Hold: 1/1 Radio Std: None #IF Gain: Low #Atten: 30 dB Radio Device: BTS 10 dB/div Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.4563 GHz -4.0801 dBm  Center 2.462 GHz #Res BW 100 kHz #VBW 300 kHz Span 30 MHz Sweep 2.933 ms Occupied Bandwidth 17.649 MHz Total Power 15.5 dBm Transmit Freq Error -12.686 kHz OBW Power 99.00 % x dB Bandwidth 17.69 MHz x dB -6.00 dB MSG STATUS	Frequency Center Freq 2.462000000 GHz CF Step 3.000000 MHz Auto Man Freq Offset 0 Hz

11N40SISO/LCH



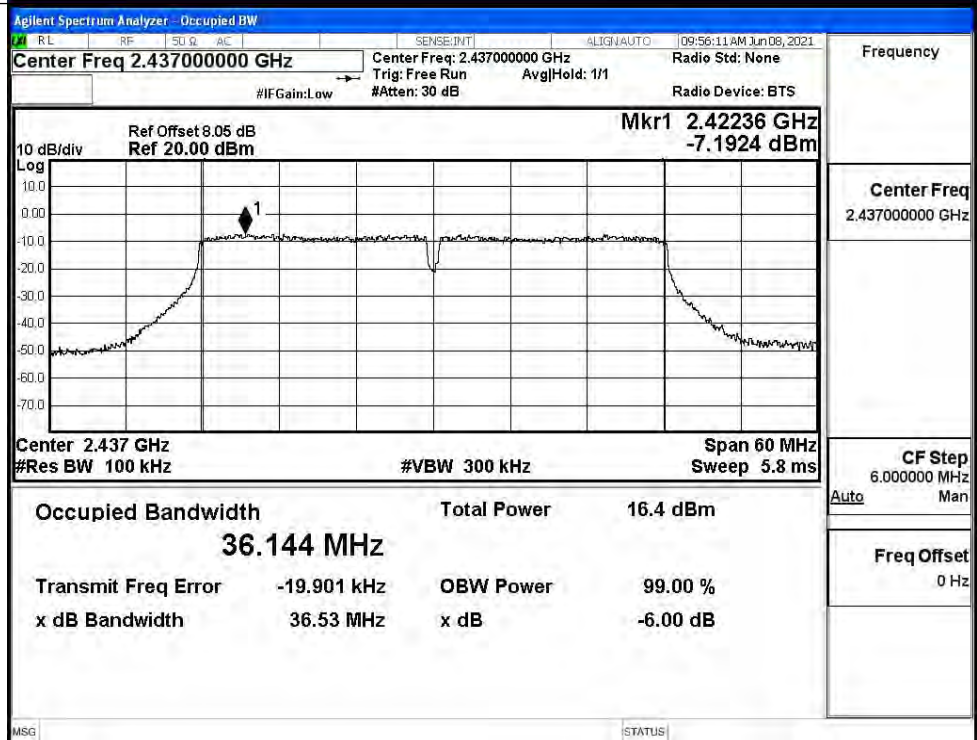
Frequency

Center Freq
2.422000000 GHz

CF Step
6.000000 MHz
Auto Man

Freq Offset
0 Hz

11N40SISO/MCH



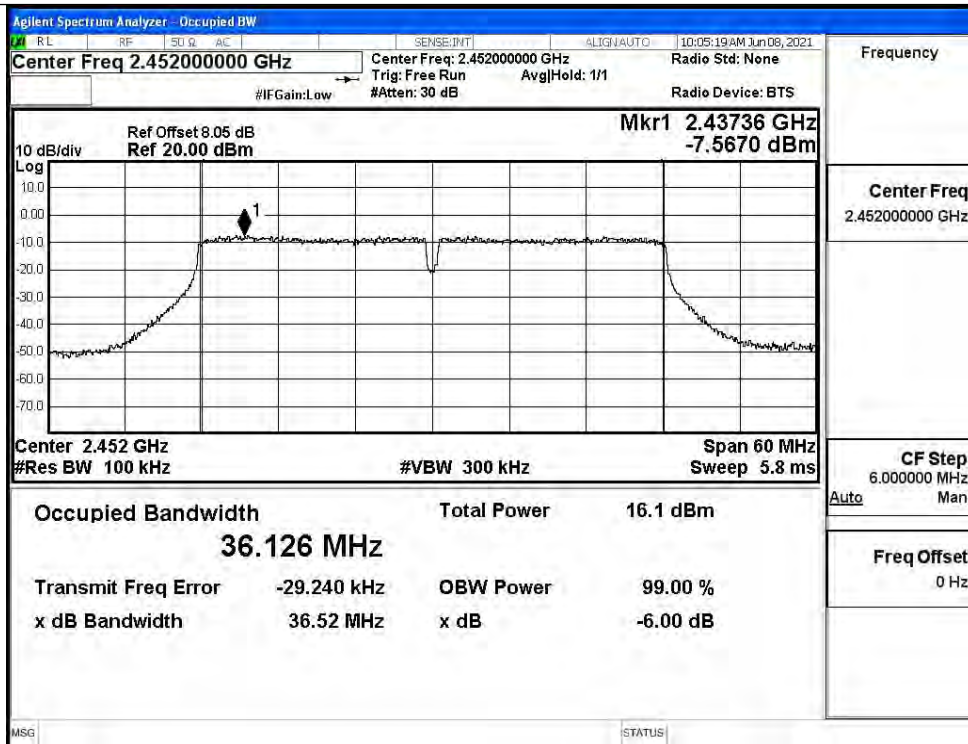
Frequency

Center Freq
2.437000000 GHz

CF Step
6.000000 MHz
Auto Man

Freq Offset
0 Hz

11N40SISO/HCH

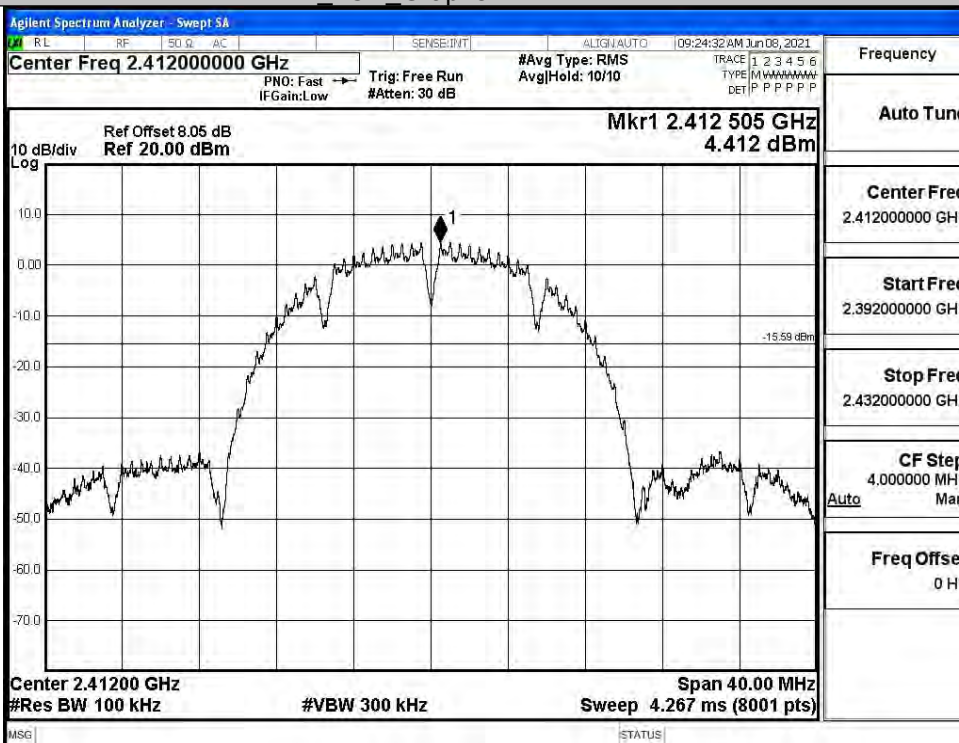


C.5 RF Conducted Spurious Emissions

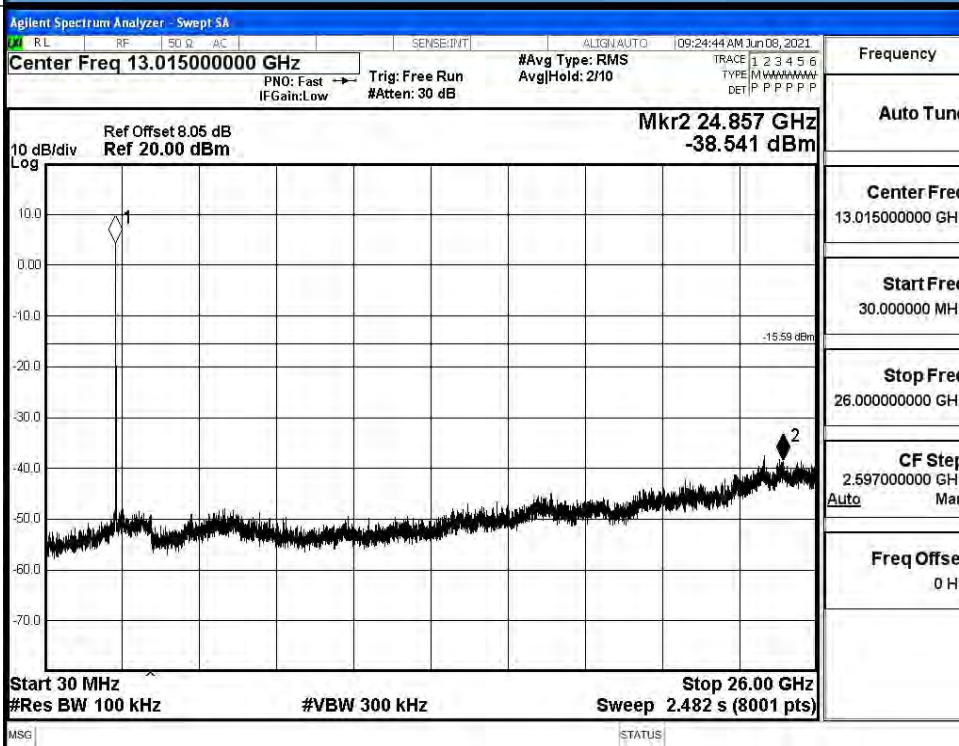
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	LCH	4.412	-38.541	-15.588	PASS
	MCH	4.062	-37.702	-15.938	PASS
	HCH	3.667	-38.071	-16.333	PASS
11G	LCH	-4.707	-36.523	-24.707	PASS
	MCH	-4.691	-38.357	-24.691	PASS
	HCH	-4.829	-37.935	-24.829	PASS
11N20 SISO	LCH	-3.859	-37.880	-23.859	PASS
	MCH	-3.836	-38.101	-23.836	PASS
	HCH	-4.294	-37.726	-24.294	PASS
11N40 SISO	LCH	-7.263	-37.852	-27.263	PASS
	MCH	-7.58	-37.240	-27.580	PASS
	HCH	-7.686	-38.419	-27.686	PASS

11B LCH Graphs

Pref/11B/LCH

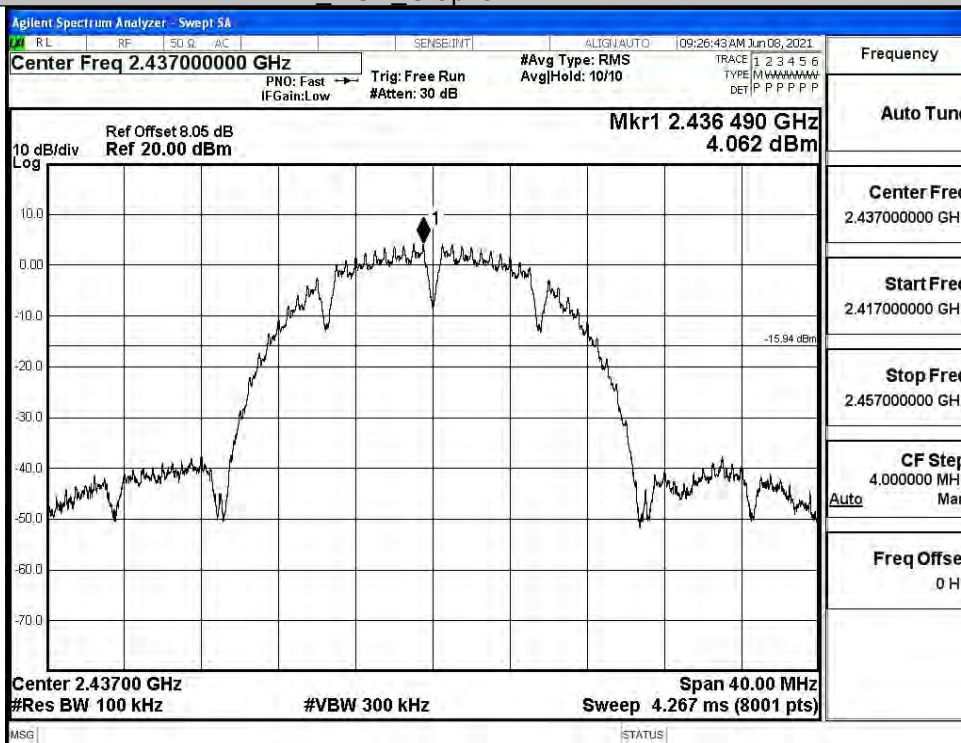


Puw/11B/LCH

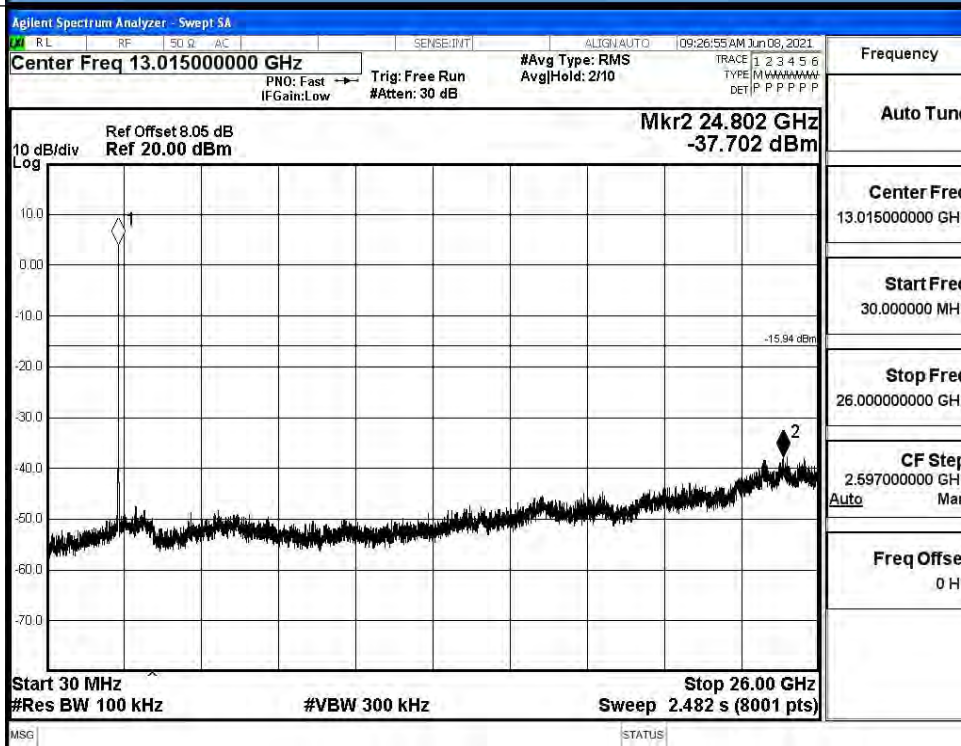


11B MCH Graphs

Pref/11B/MCH

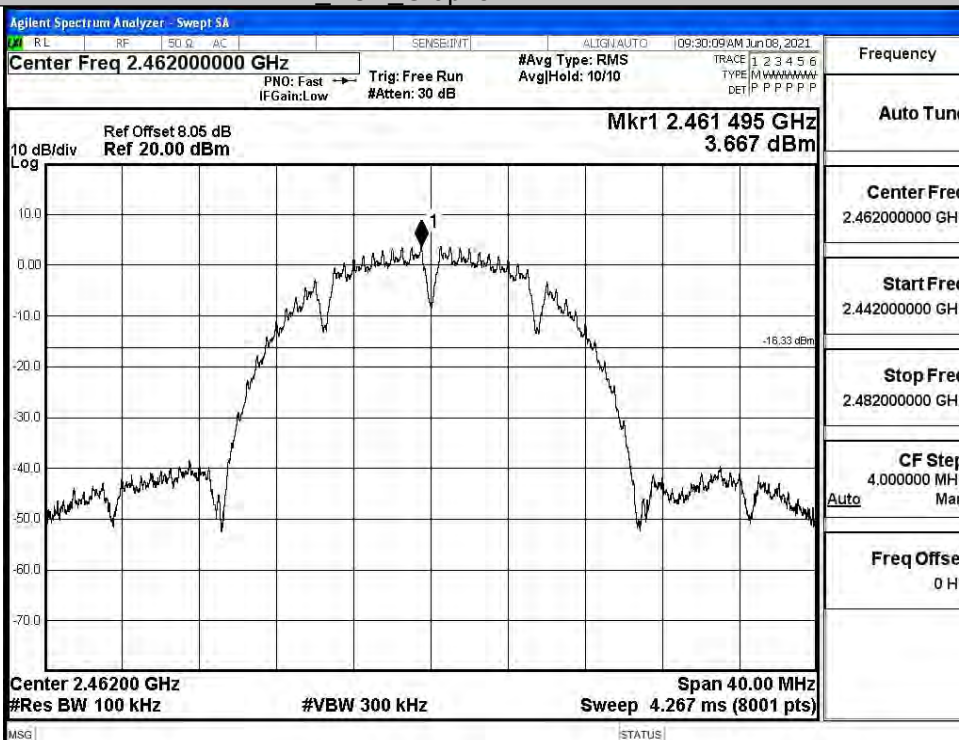


Puw/11B/MCH

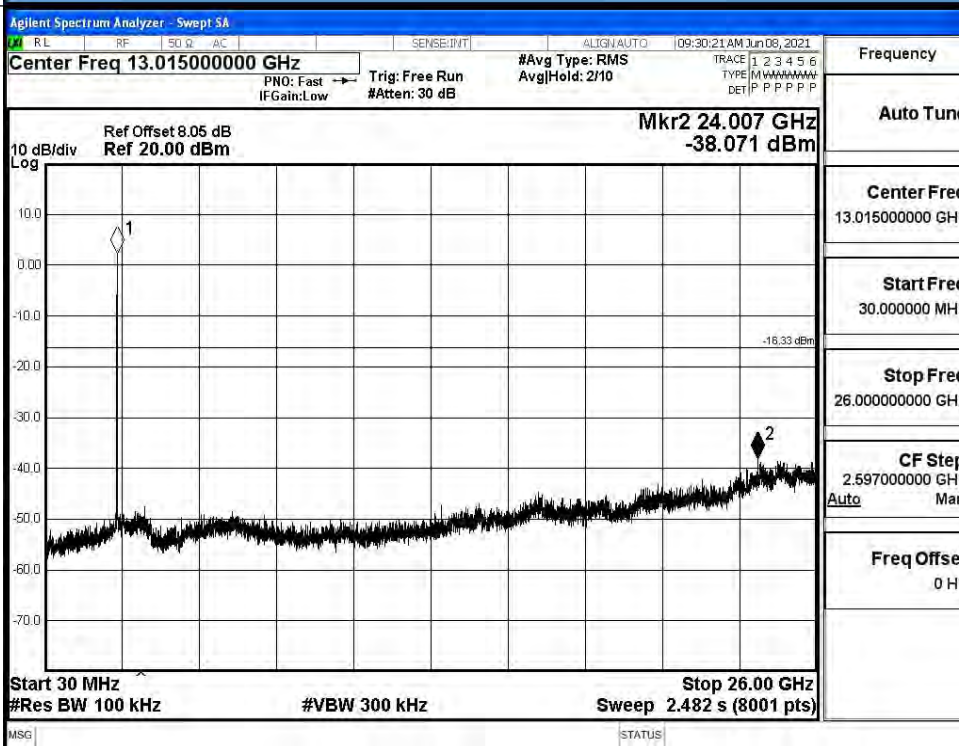


11B HCH Graphs

Pref/11B/HCH

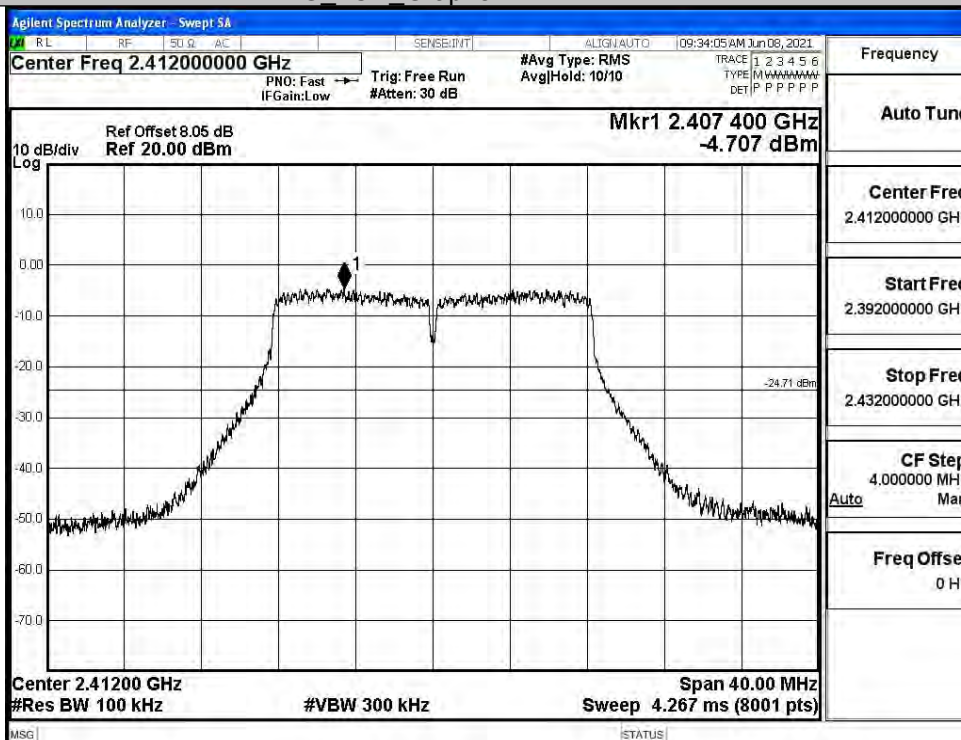


Puw/11B/HCH

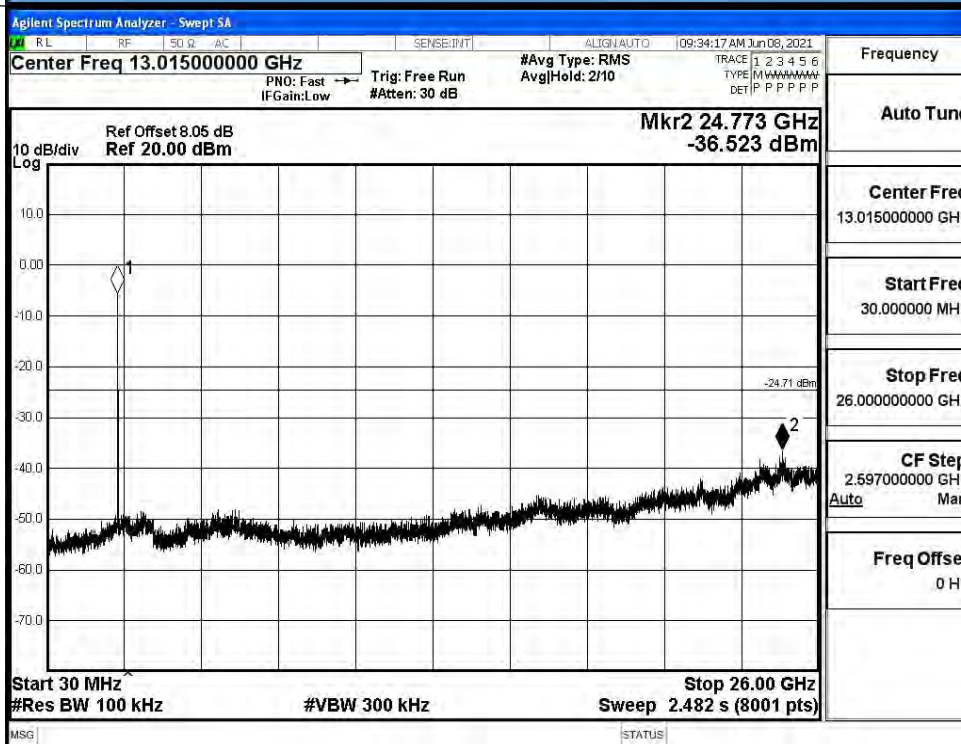


11G LCH Graphs

Pref/11G/LCH

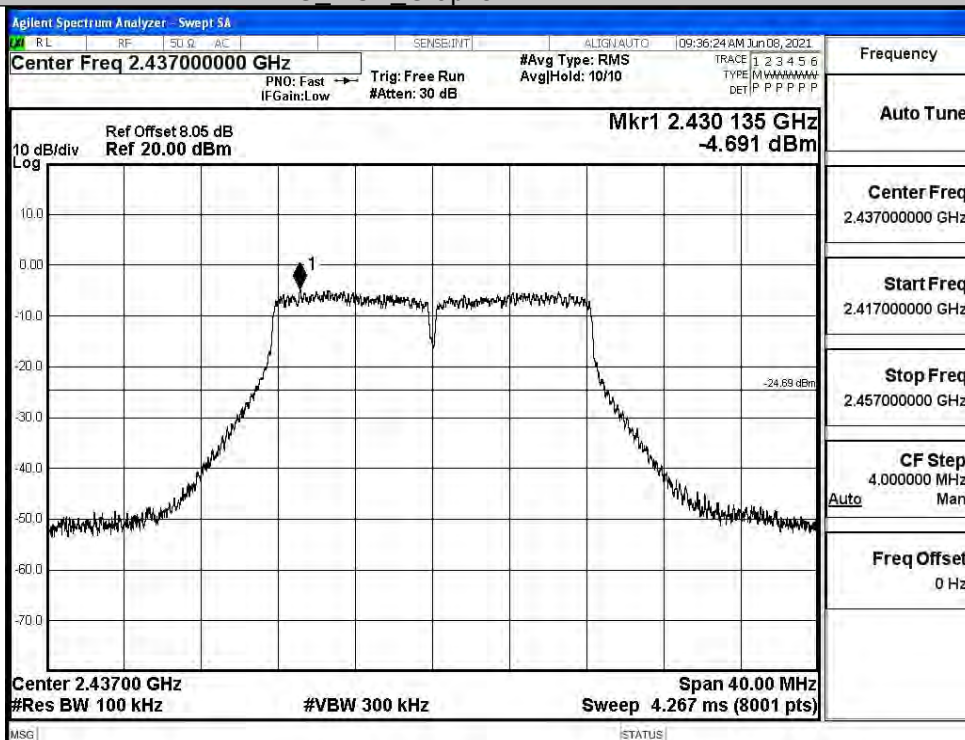


Puw/11G/LCH

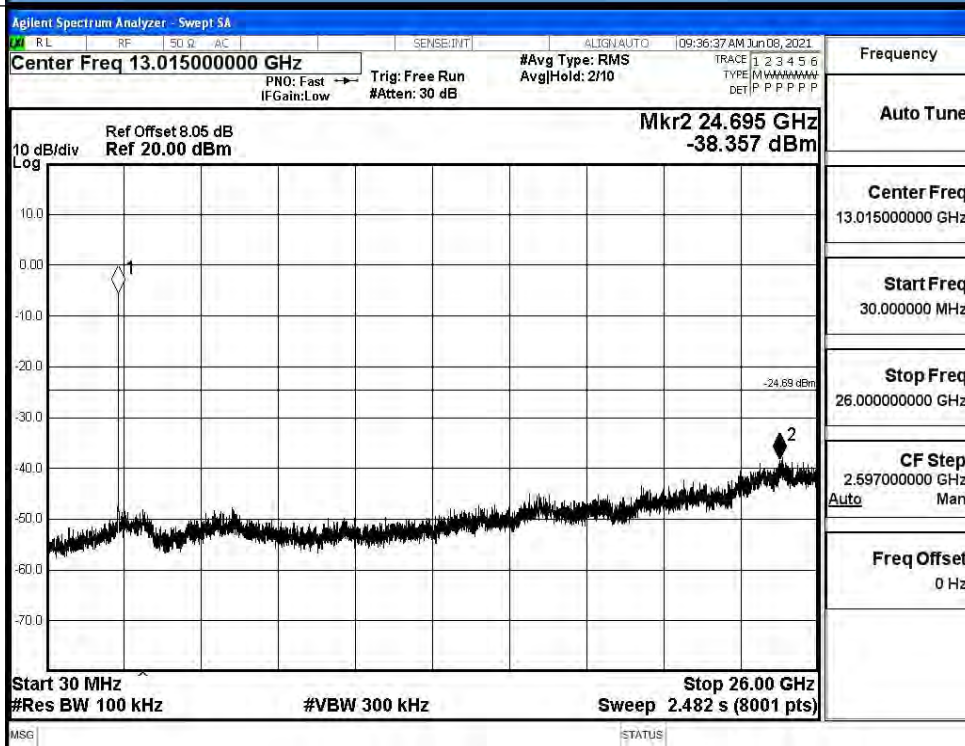


11G MCH Graphs

Pref/11G/MCH

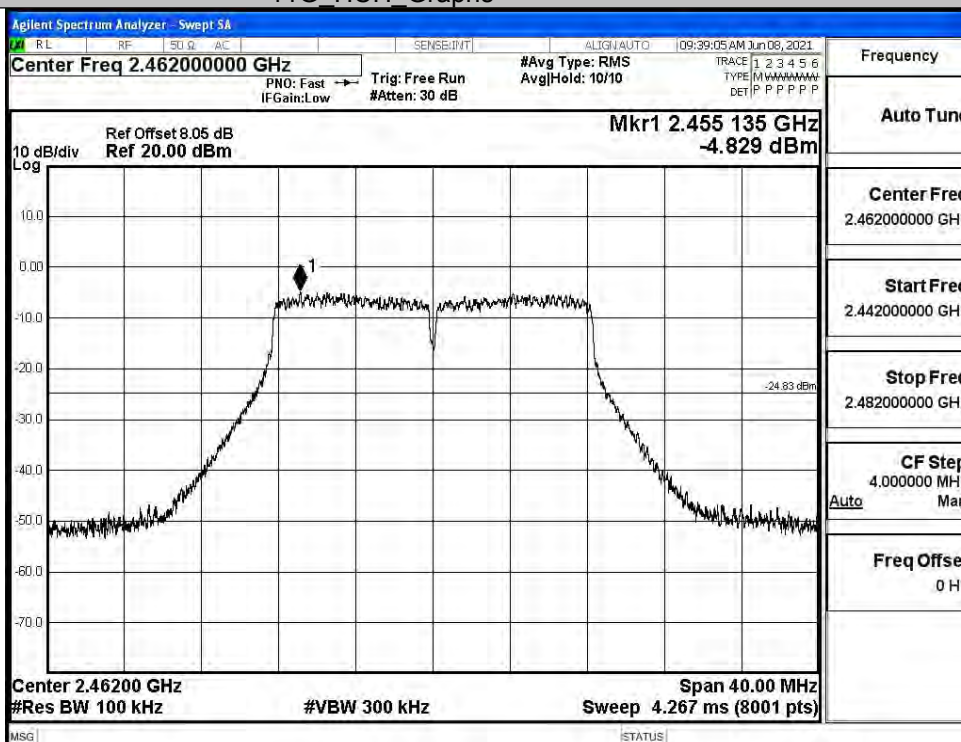


Puw/11G/MCH

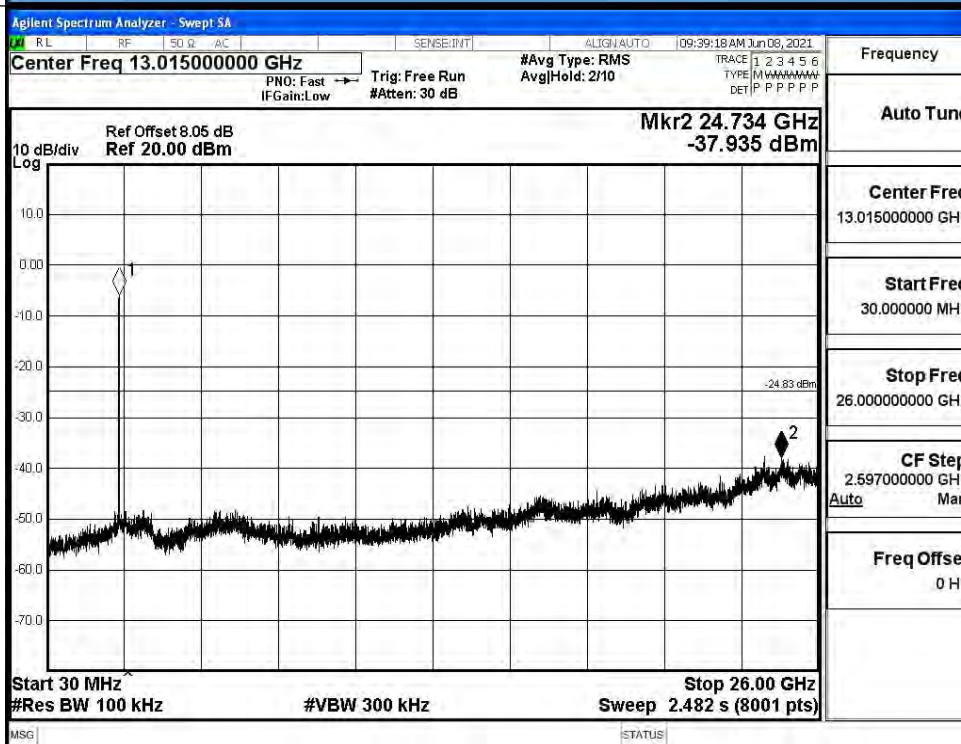


11G HCH Graphs

Pref/11G/HCH

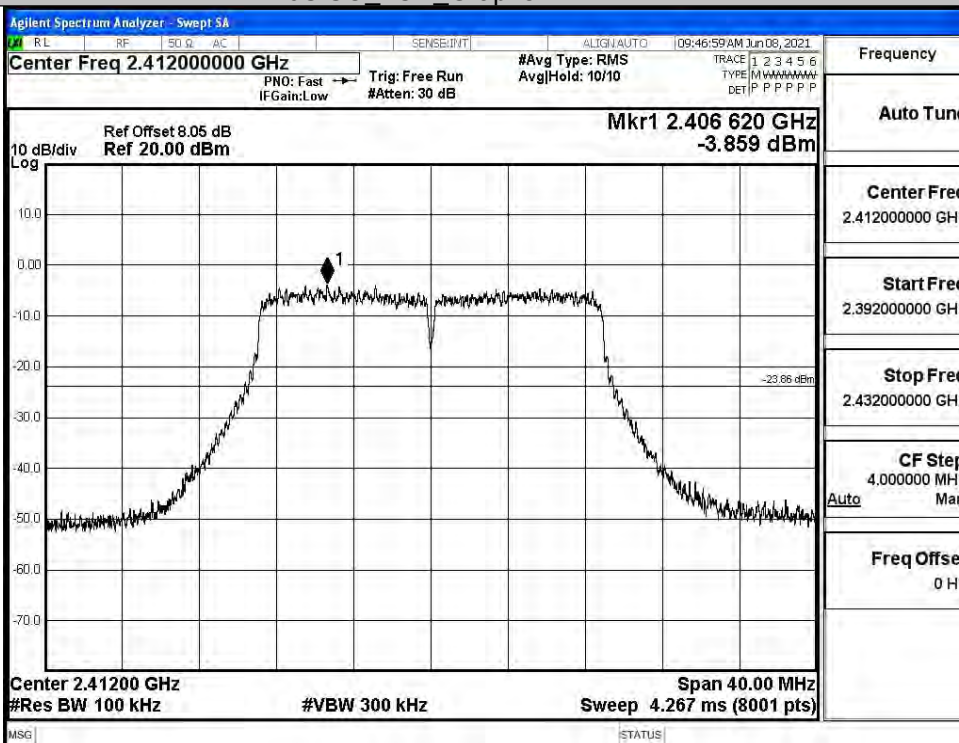


Puw/11G/HCH

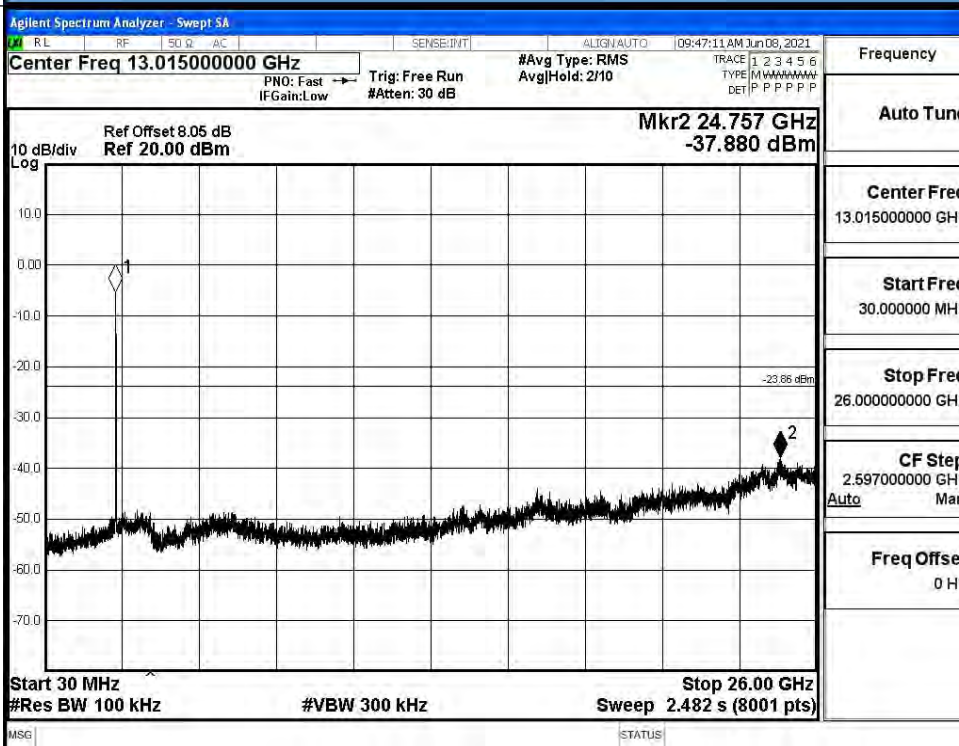


11N20SISO LCH Graphs

Pref/11N20SIS
O/LCH

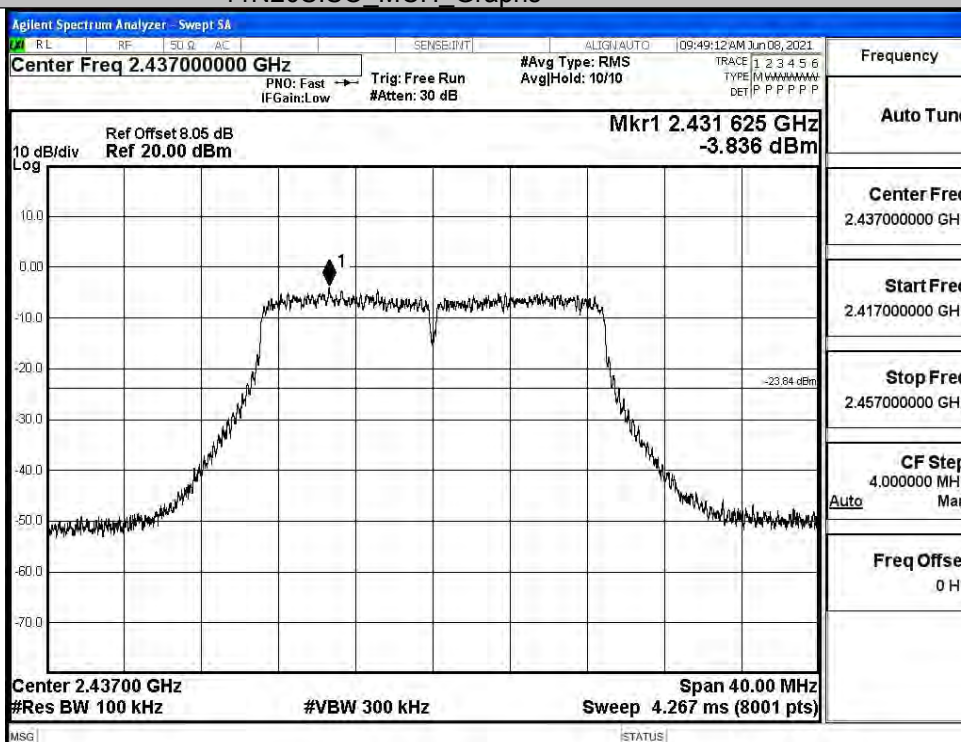


Puw/11N20
SISO/LCH

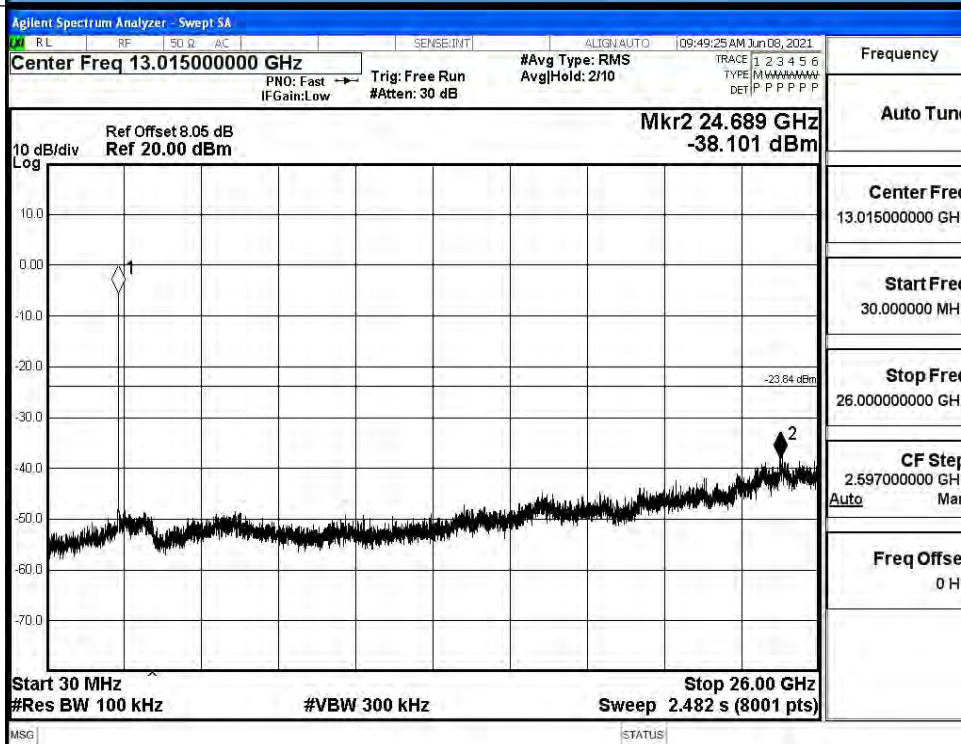


11N20SISO MCH Graphs

Pref/11N20
SISO/MCH

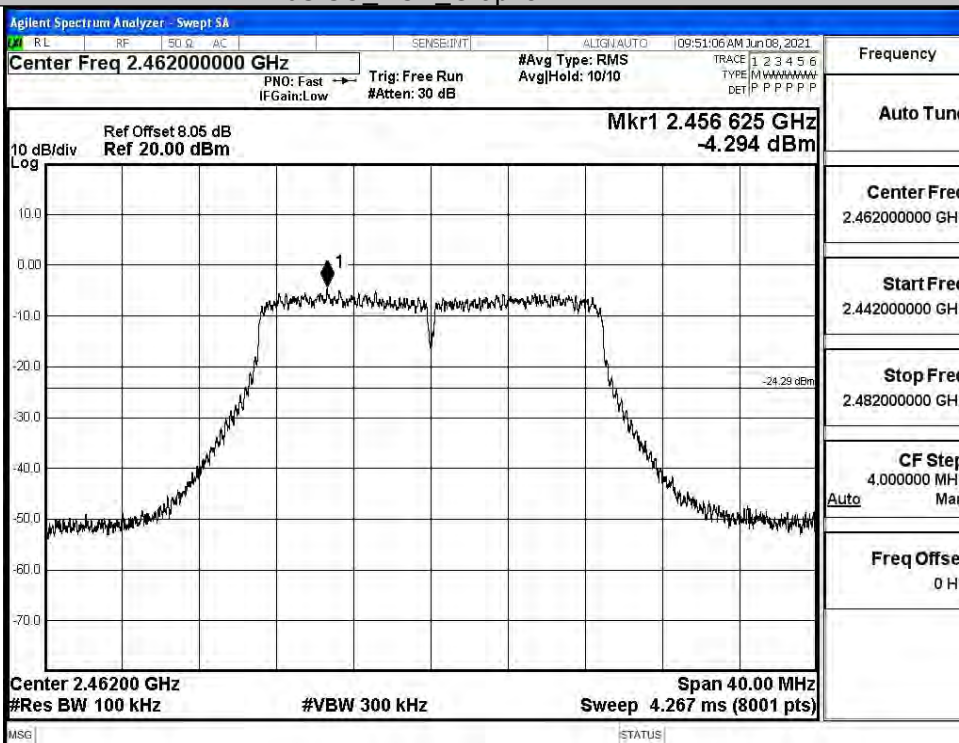


Puw/11N20
SISO/MCH

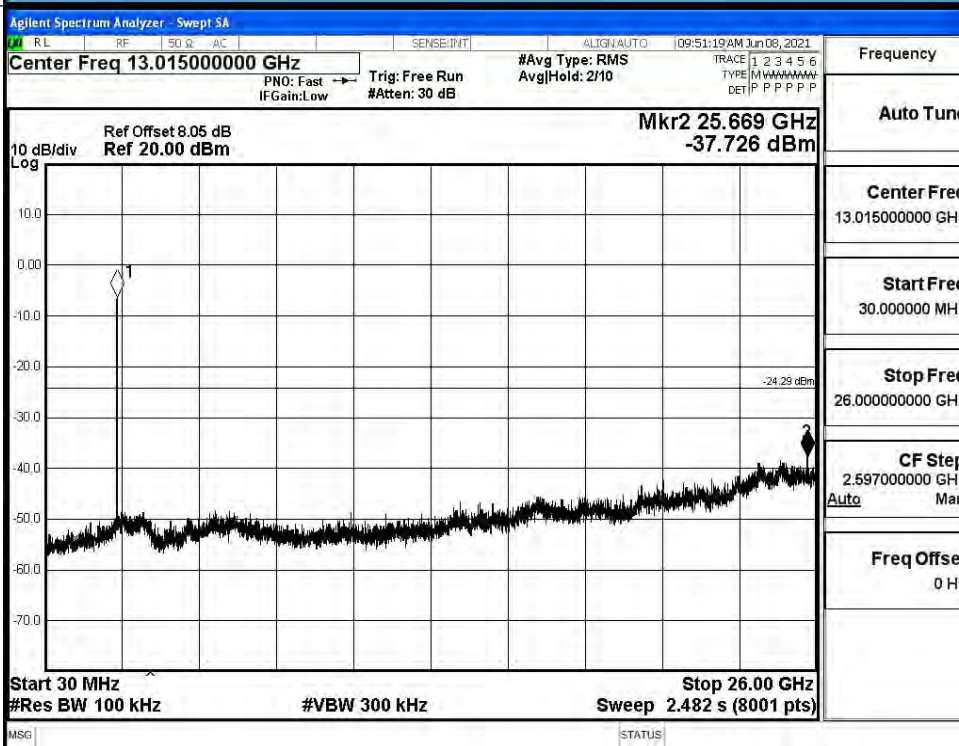


11N20SISO HCH Graphs

Pref/11N20
SISO/HCH

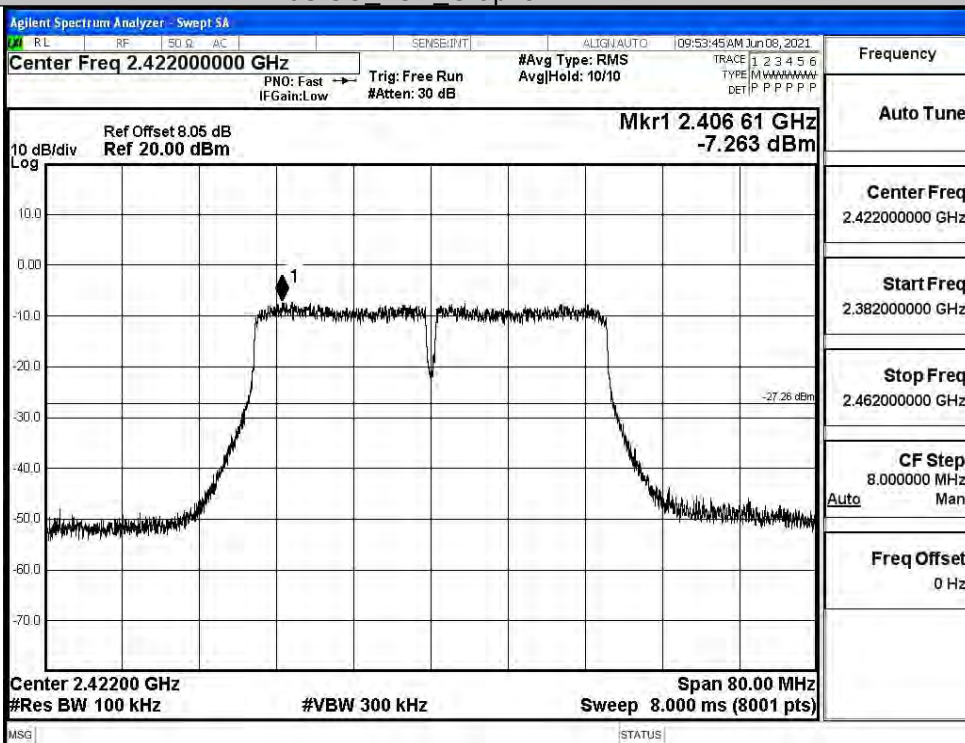


Puw/11N20
SISO/HCH

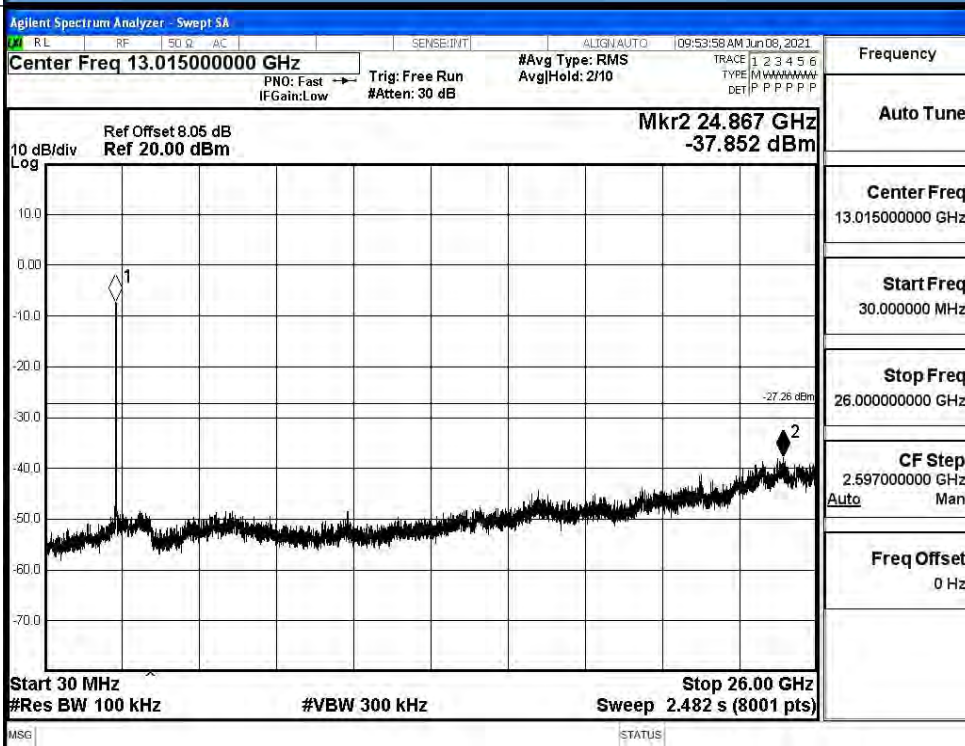


11N40SISO LCH Graphs

Pref/11N40
SISO/LCH

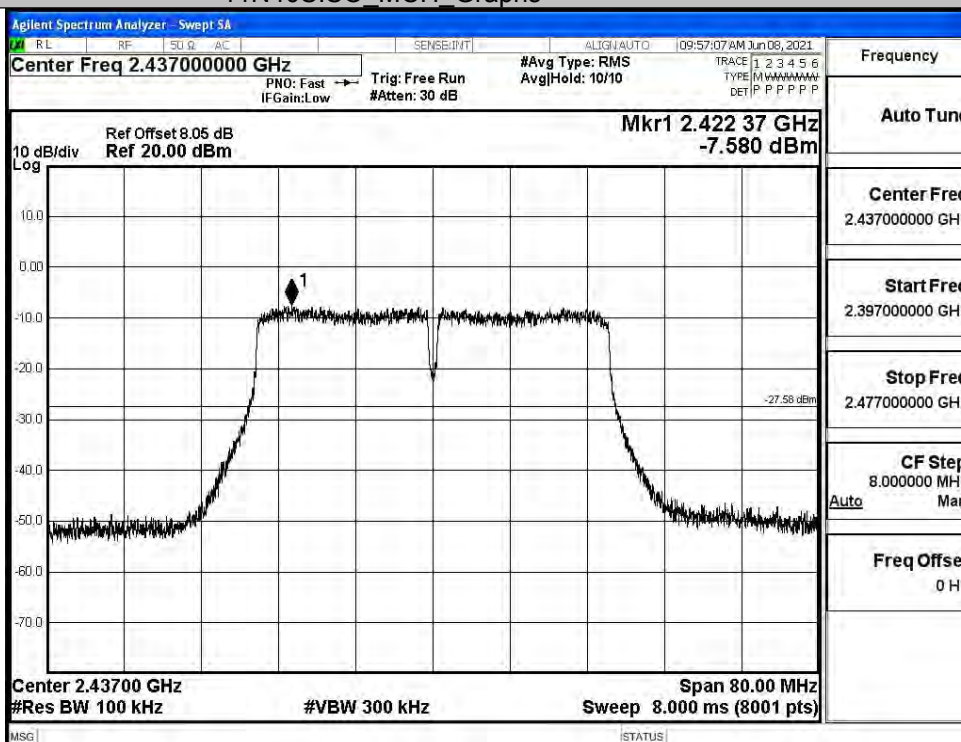


Puw/11N40
SISO/LCH

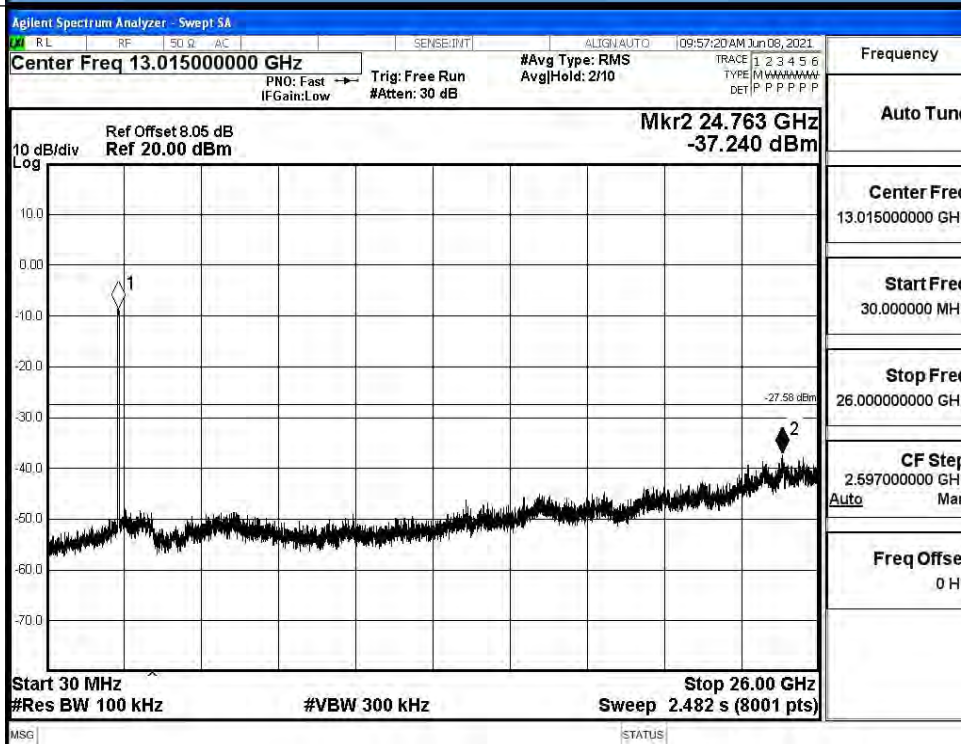


11N40SISO MCH_Graphs

Pref/11N40
SISO/MCH

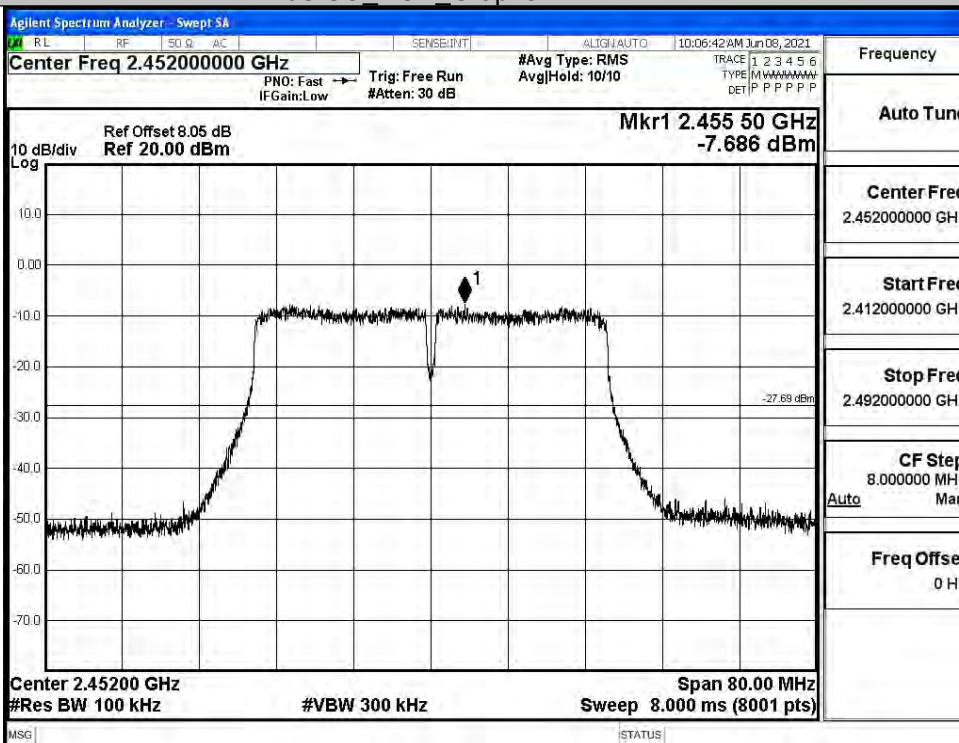


Puw/11N40
SISO/MCH

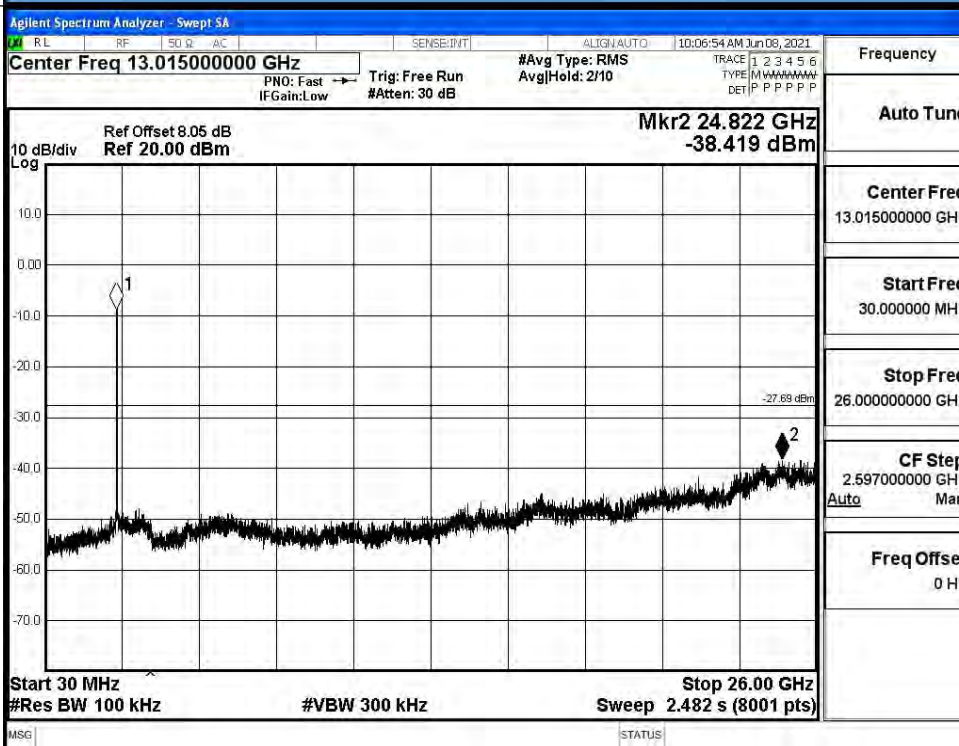


11N40SISO HCH Graphs

Pref/11N40
SISO/HCH



Puw/11N40
SISO/HCH

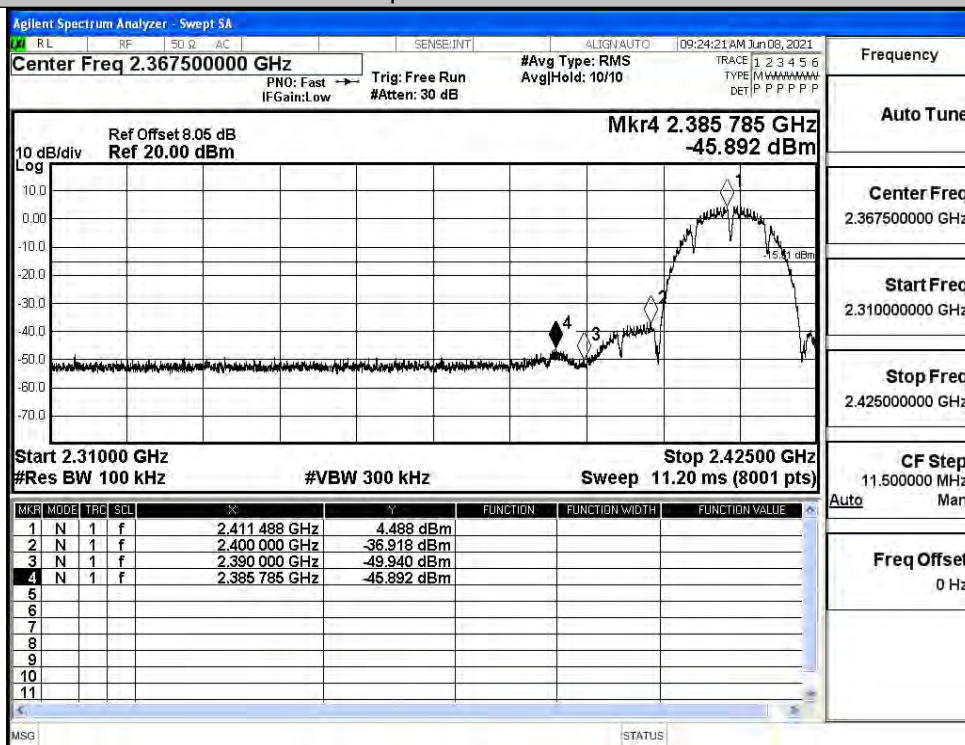


C.6 Band-edge for RF Conducted Emissions

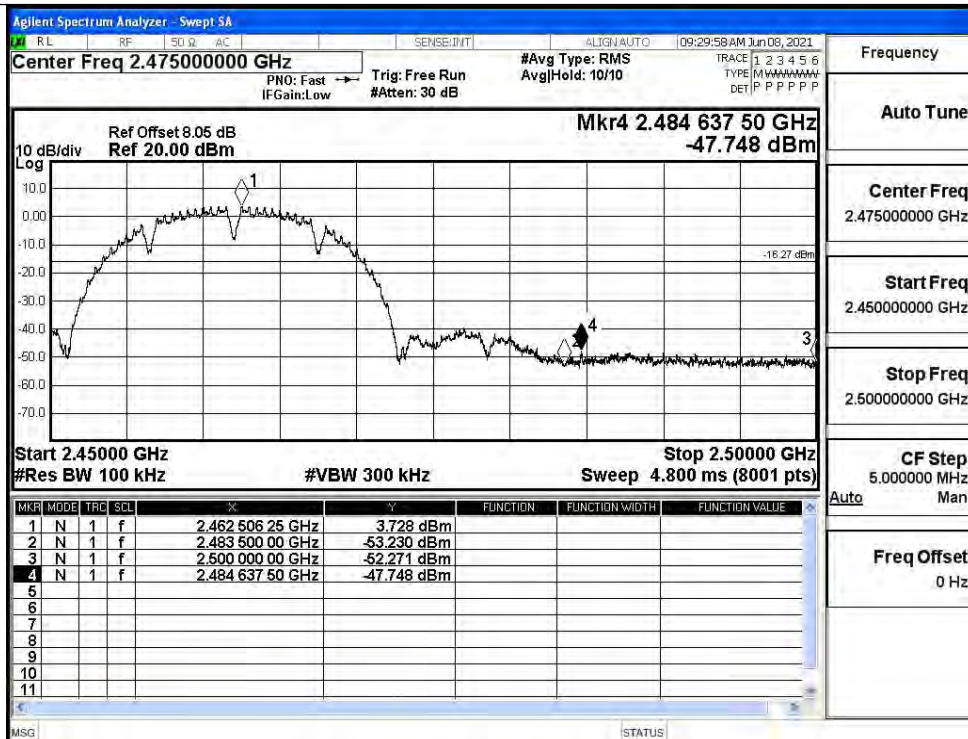
Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	4.488	-45.892	-15.51	PASS
	HCH	3.728	-47.748	-16.27	PASS
11G	LCH	-4.597	-48.882	-24.6	PASS
	HCH	-4.791	-49.325	-24.79	PASS
11N20SISO	LCH	-3.445	-48.405	-23.45	PASS
	HCH	-4.741	-48.399	-24.74	PASS
11N40SISO	LCH	-7.176	-47.999	-27.18	PASS
	HCH	-7.813	-47.430	-27.81	PASS

Test Graphs

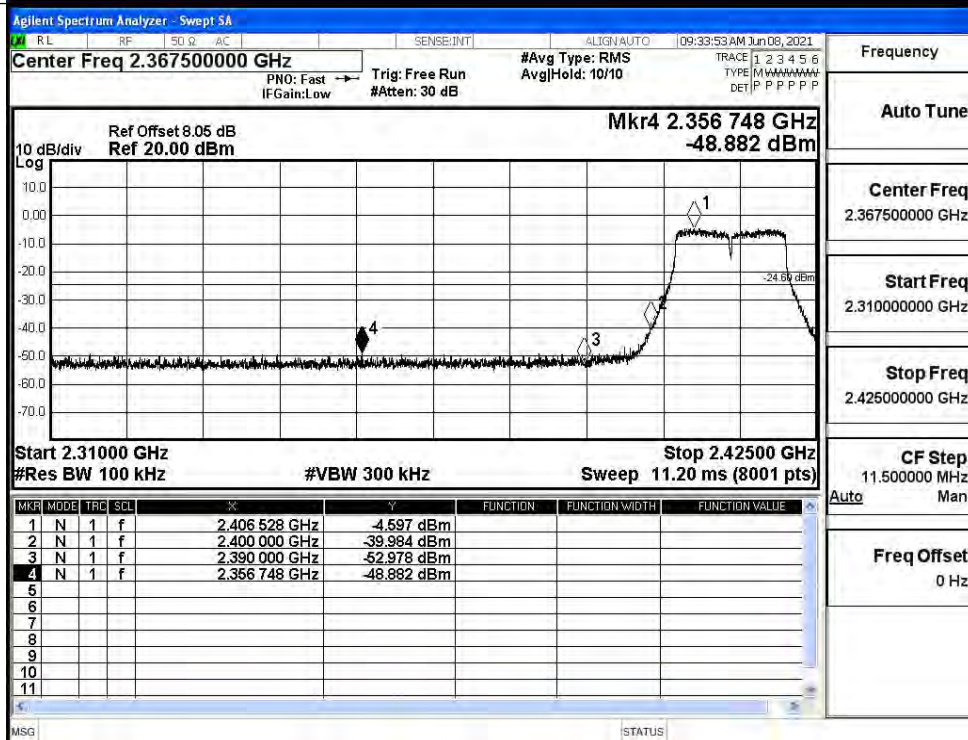
11B/LCH



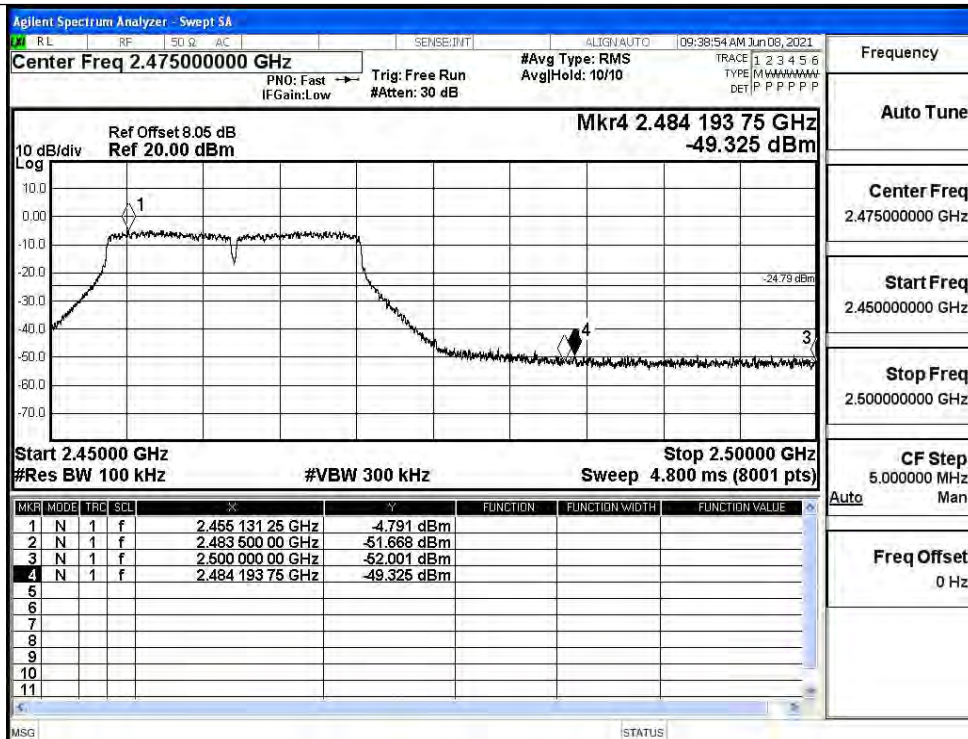
11B/HCH



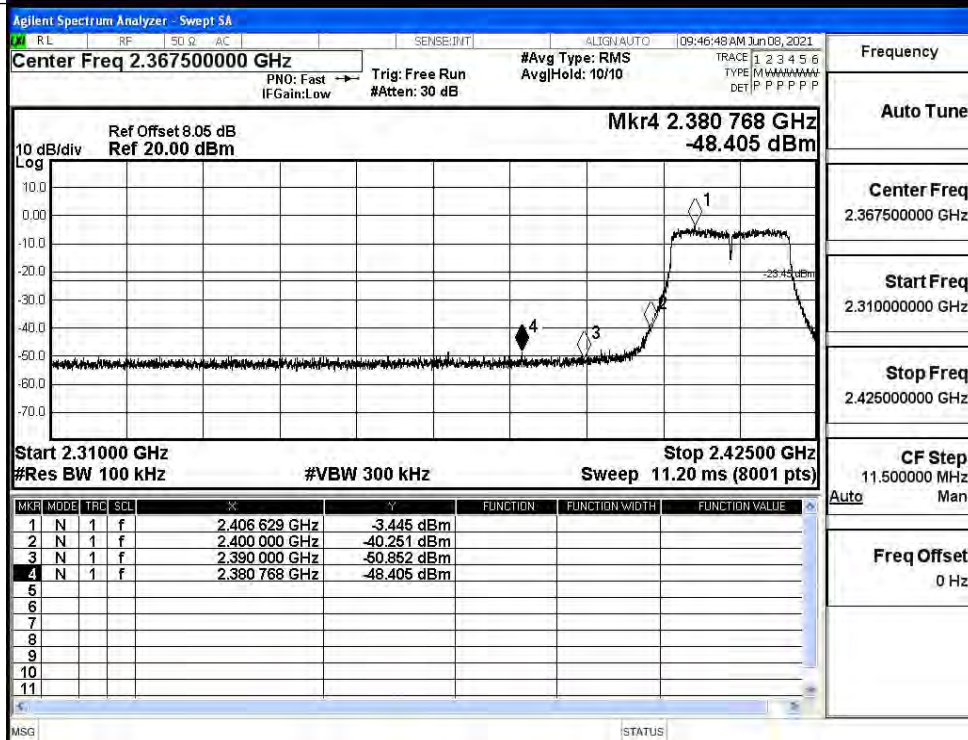
11G/LCH



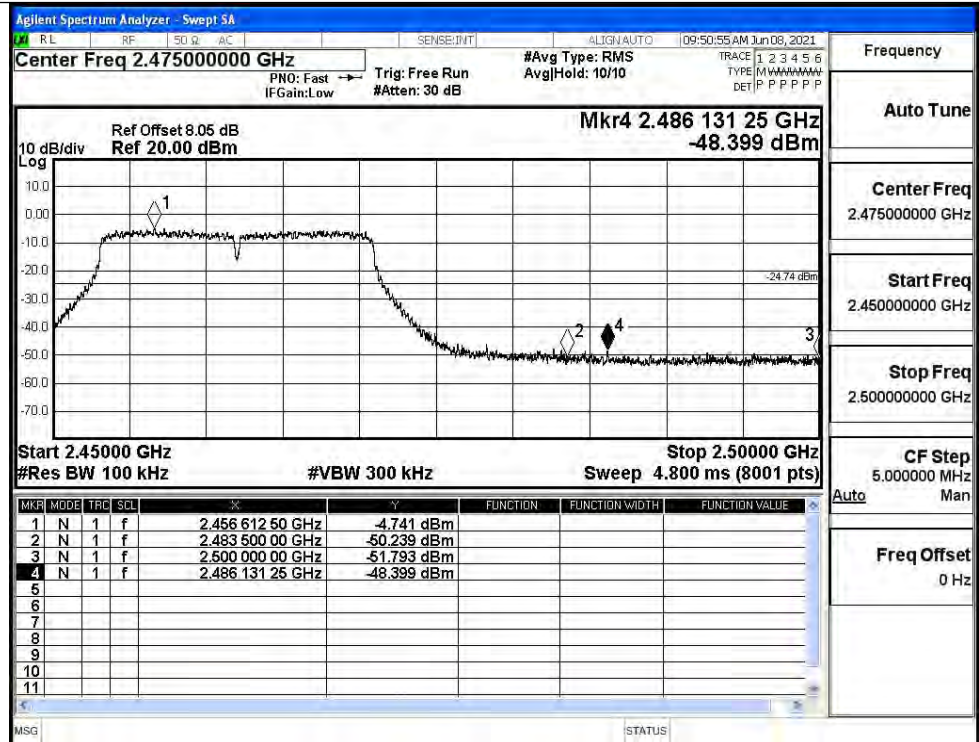
11G/HCH



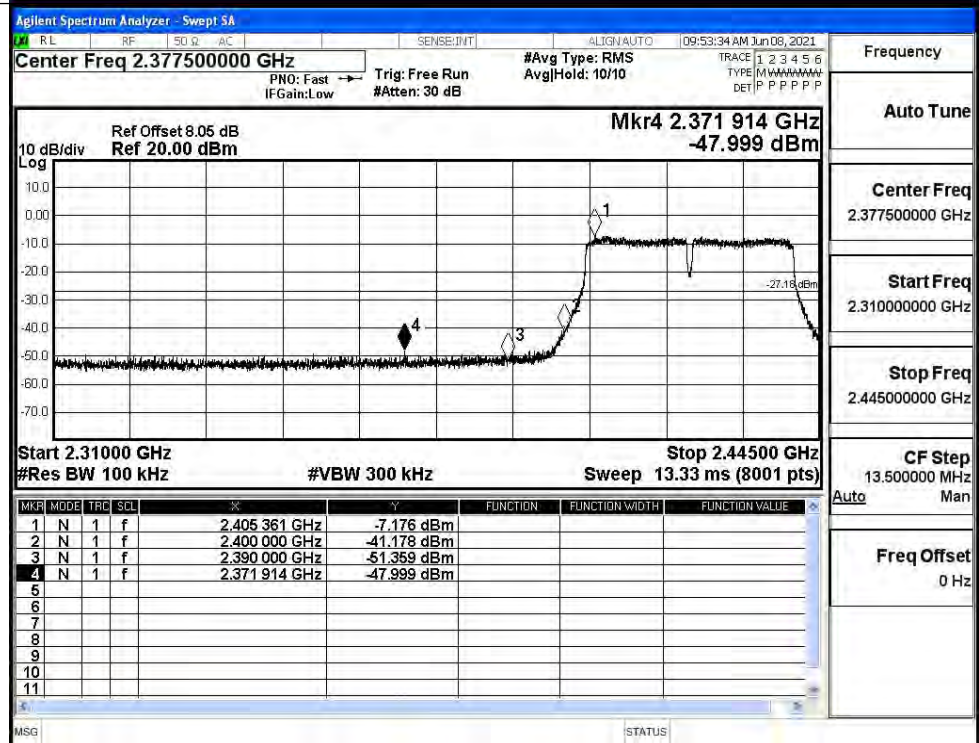
11N20SISO/LCH



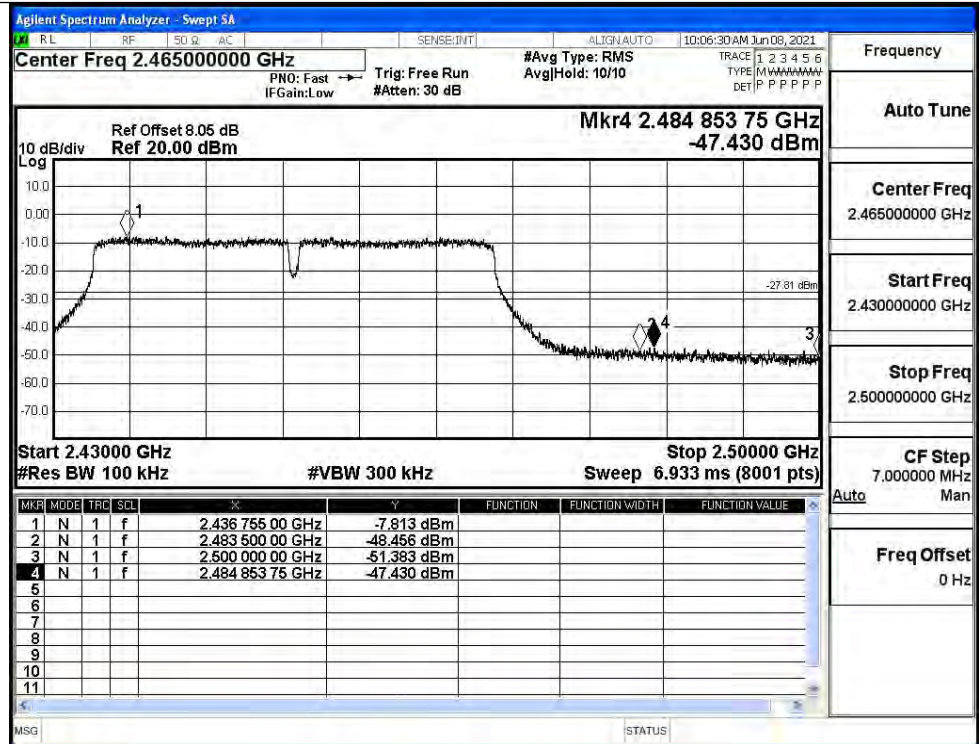
11N20SISO/HCH



11N40SISO/LCH



11N40SISO/HCH

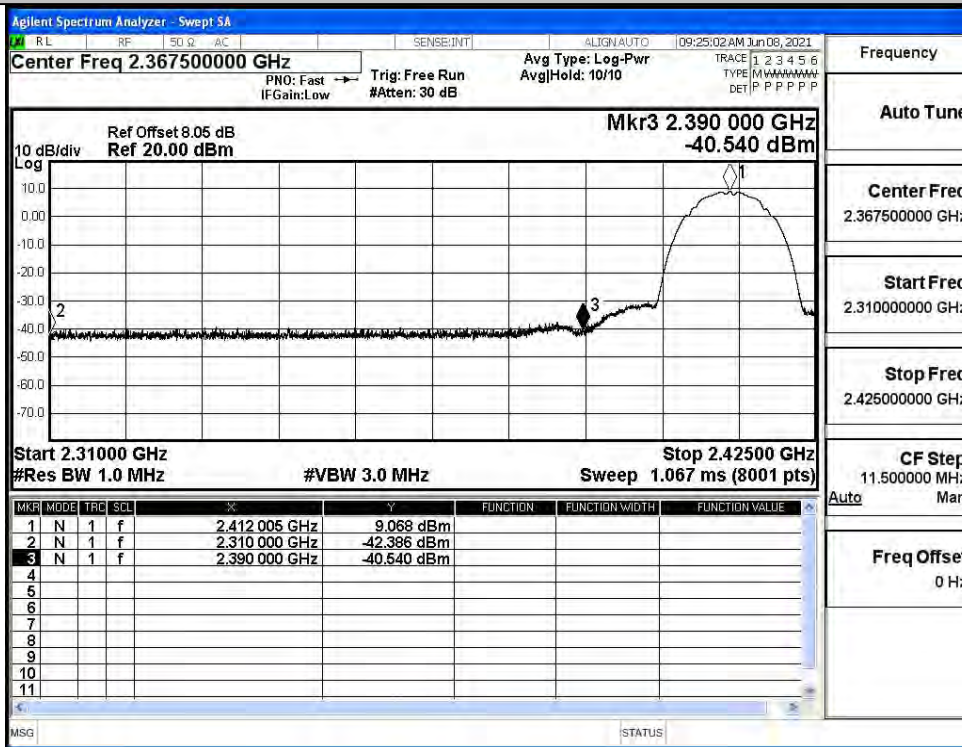


C.7 Restrict-band band-edge measurements

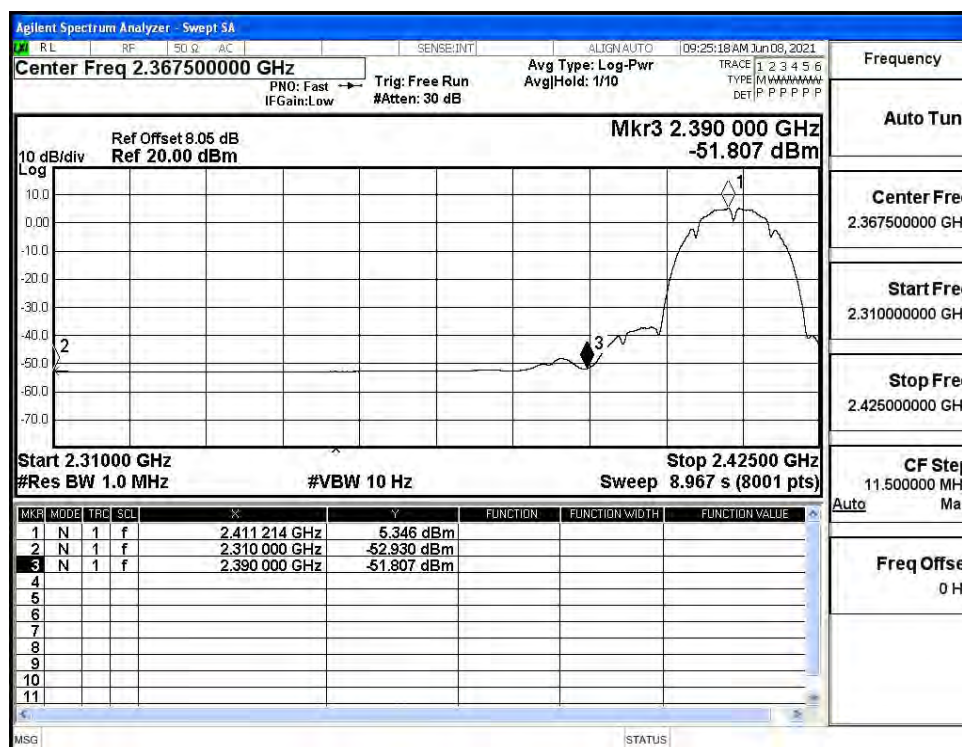
Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
11B	2412	Ant1	2310.0	-42.39	2.0	0	54.84	PEAK	74	PASS
	2412	Ant1	2310.0	-52.93	2.0	0	44.30	AV	54	PASS
	2412	Ant1	2390.0	-40.54	2.0	0	56.69	PEAK	74	PASS
	2412	Ant1	2390.0	-51.81	2.0	0	45.42	AV	54	PASS
	2462	Ant1	2483.5	-39.09	2.0	0	58.14	PEAK	74	PASS
	2462	Ant1	2483.5	-51.73	2.0	0	45.50	AV	54	PASS
	2462	Ant1	2500.0	-40.98	2.0	0	56.25	PEAK	74	PASS
	2462	Ant1	2500.0	-52.24	2.0	0	44.99	AV	54	PASS
11G	2412	Ant1	2310.0	-41.74	2.0	0	55.49	PEAK	74	PASS
	2412	Ant1	2310.0	-53.05	2.0	0	44.18	AV	54	PASS
	2412	Ant1	2390.0	-41.22	2.0	0	56.01	PEAK	74	PASS
	2412	Ant1	2390.0	-51.96	2.0	0	45.27	AV	54	PASS
	2462	Ant1	2483.5	-41.00	2.0	0	56.23	PEAK	74	PASS
	2462	Ant1	2483.5	-51.76	2.0	0	45.47	AV	54	PASS
	2462	Ant1	2500.0	-42.18	2.0	0	55.05	PEAK	74	PASS
	2462	Ant1	2500.0	-52.34	2.0	0	44.89	AV	54	PASS
11N20 SISO	2412	Ant1	2310.0	-43.34	2.0	0	53.89	PEAK	74	PASS
	2412	Ant1	2310.0	-53.04	2.0	0	44.19	AV	54	PASS
	2412	Ant1	2390.0	-41.34	2.0	0	55.89	PEAK	74	PASS
	2412	Ant1	2390.0	-51.82	2.0	0	45.41	AV	54	PASS
	2462	Ant1	2483.5	-39.55	2.0	0	57.68	PEAK	74	PASS
	2462	Ant1	2483.5	-51.46	2.0	0	45.77	AV	54	PASS
	2462	Ant1	2500.0	-41.94	2.0	0	55.29	PEAK	74	PASS
	2462	Ant1	2500.0	-52.33	2.0	0	44.90	AV	54	PASS
11N40 SISO	2422	Ant1	2310.0	-42.96	2.0	0	54.27	PEAK	74	PASS
	2422	Ant1	2310.0	-53.01	2.0	0	44.22	AV	54	PASS

	2422	Ant1	2390.0	-41.05	2.0	0	56.18	PEAK	74	PASS
	2422	Ant1	2390.0	-51.65	2.0	0	45.58	AV	54	PASS
	2452	Ant1	2483.5	-39.01	2.0	0	58.22	PEAK	74	PASS
	2452	Ant1	2483.5	-49.80	2.0	0	47.43	AV	54	PASS
	2452	Ant1	2500.0	-41.44	2.0	0	55.79	PEAK	74	PASS
	2452	Ant1	2500.0	-51.98	2.0	0	45.25	AV	54	PASS

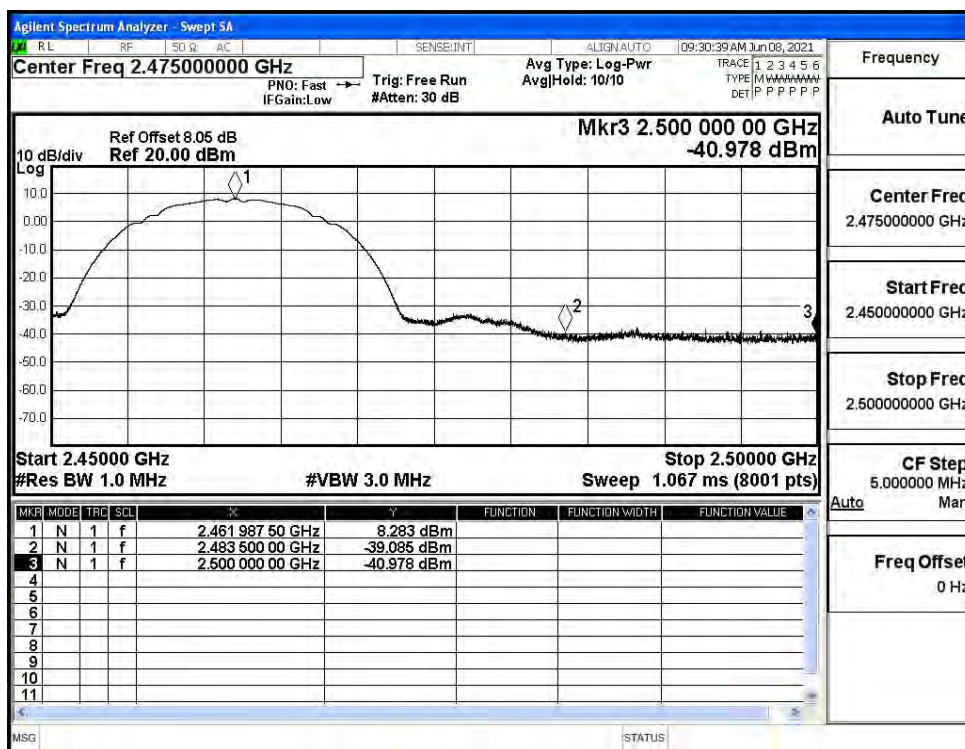
Restrict-band band-edge measurements_11B_2412_Ant1_PEAK



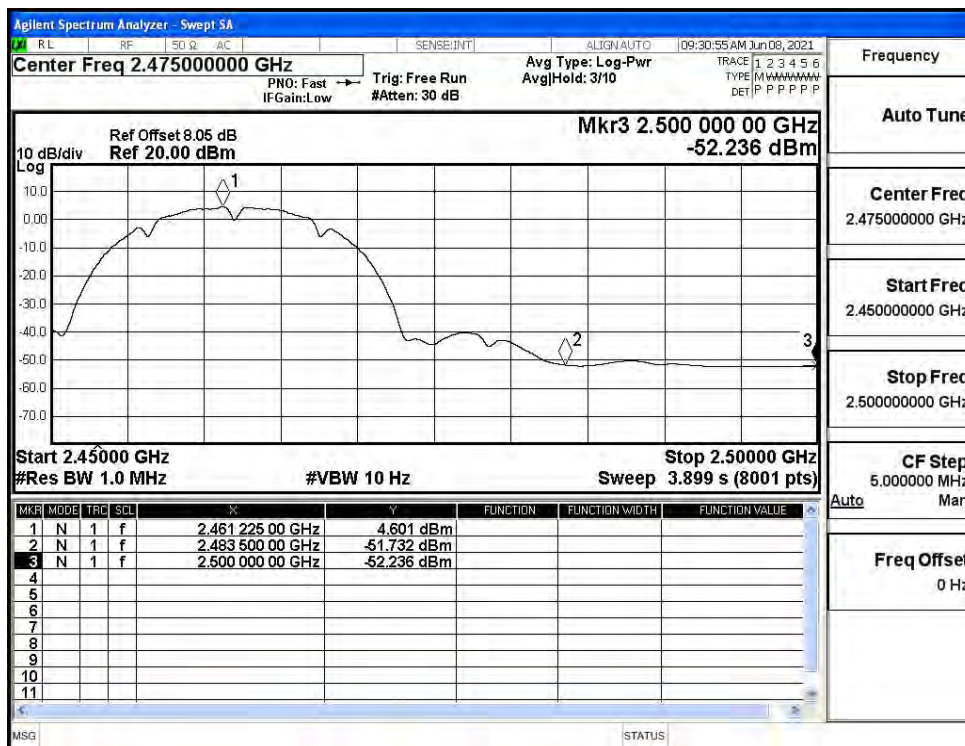
Restrict-band band-edge measurements_11B_2412_Ant1_AV



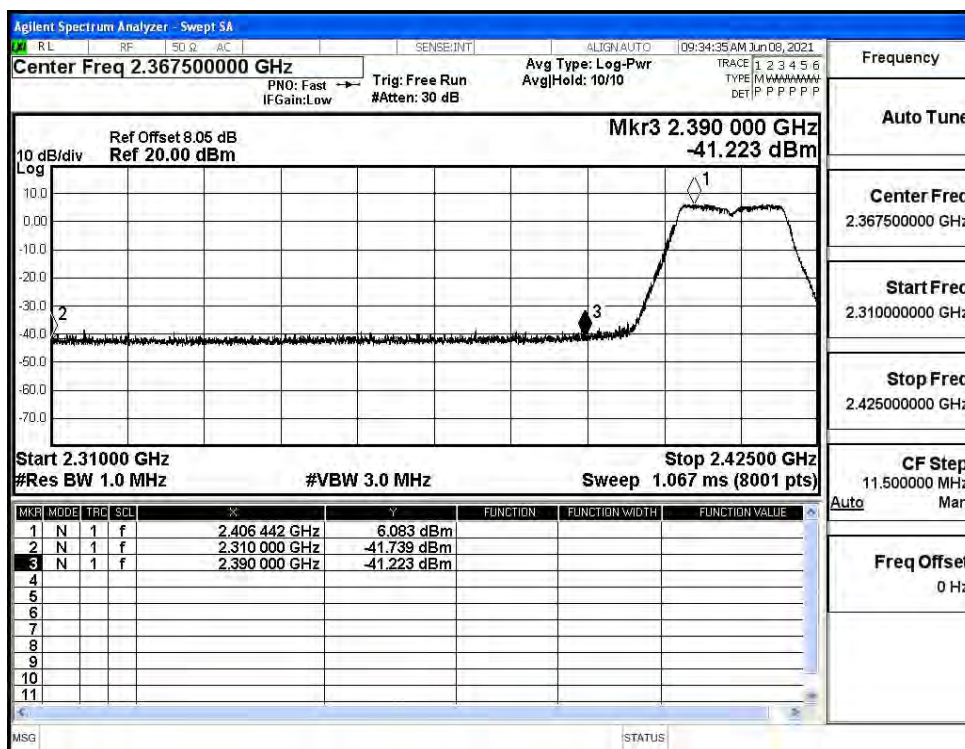
Restrict-band band-edge measurements_11B_2462_Ant1_PEAK



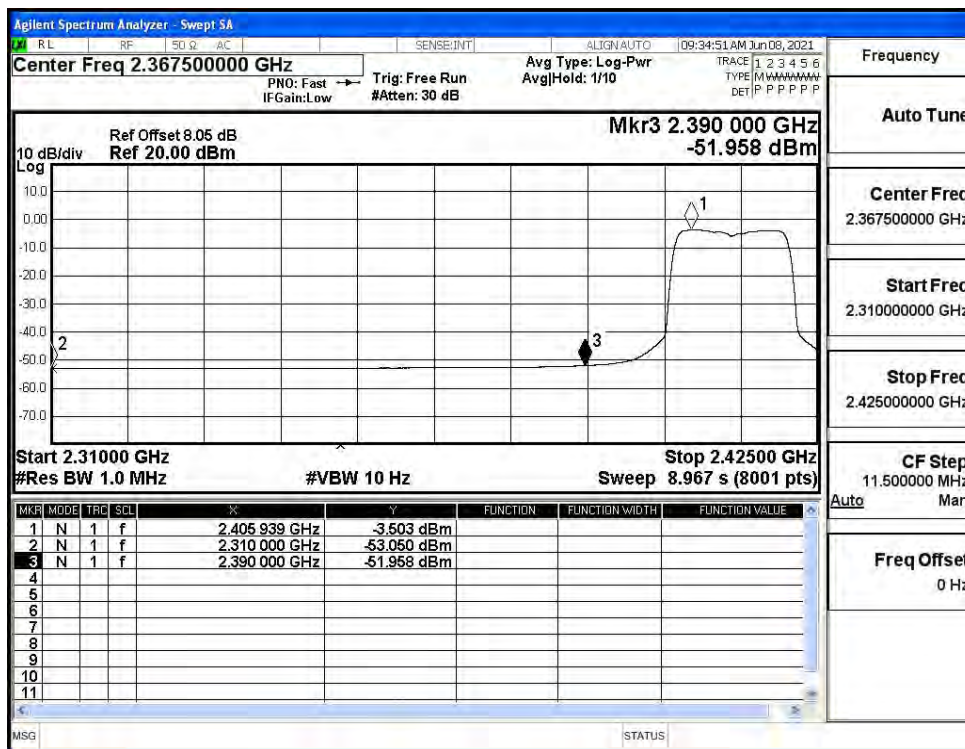
Restrict-band band-edge measurements_11B_2462_Ant1_AV



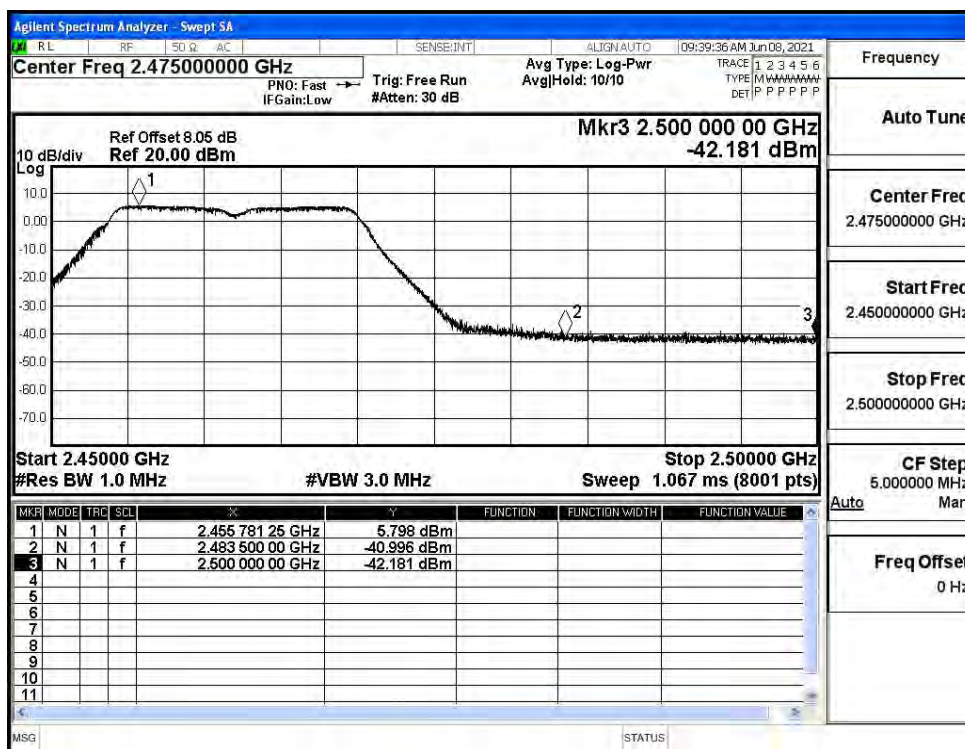
Restrict-band band-edge measurements_11G_2412_Ant1_PEAK



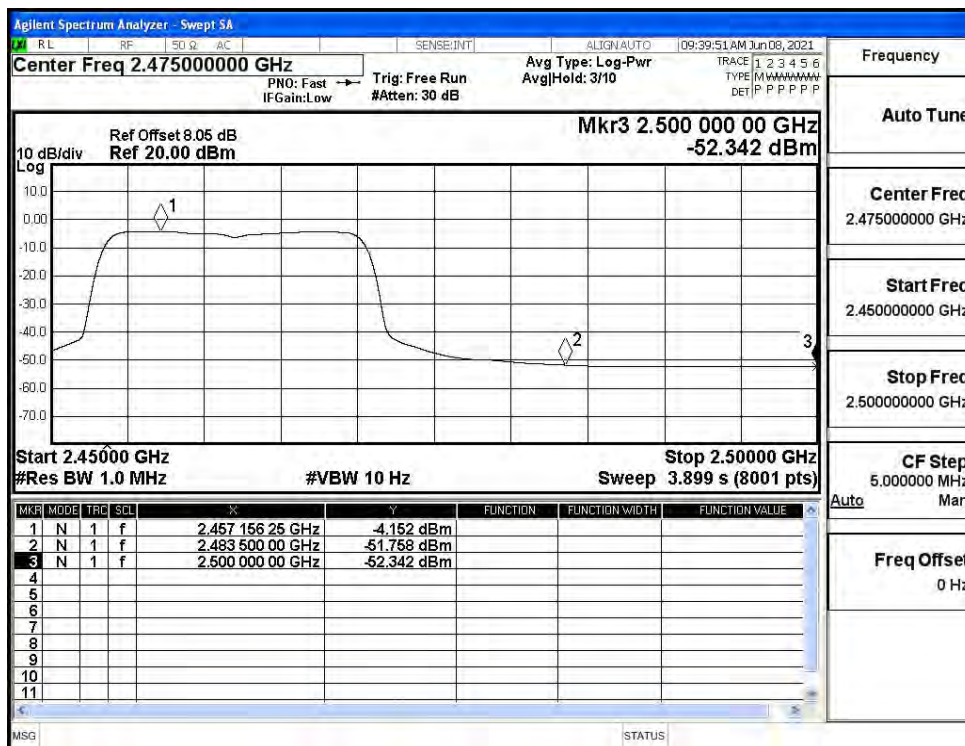
Restrict-band band-edge measurements_11G_2412_Ant1_AV



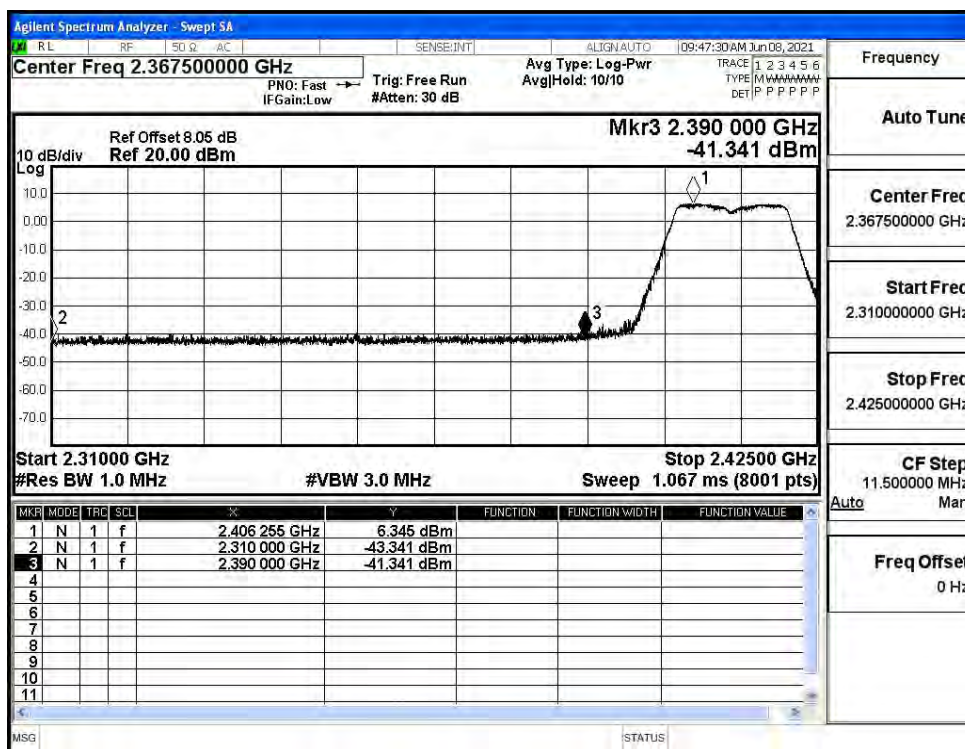
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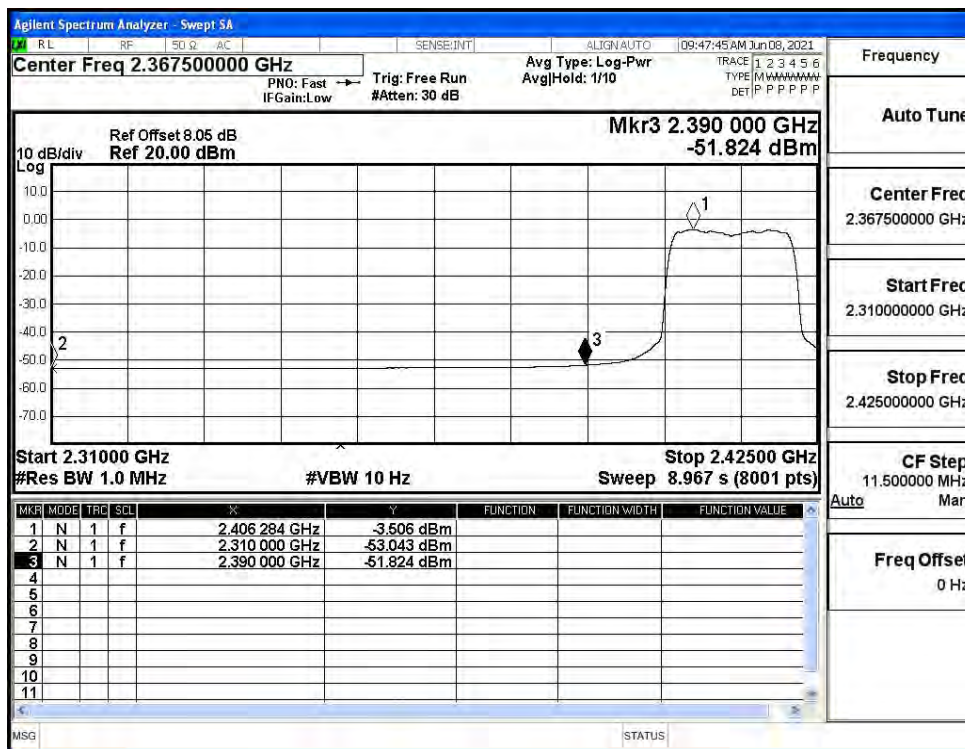
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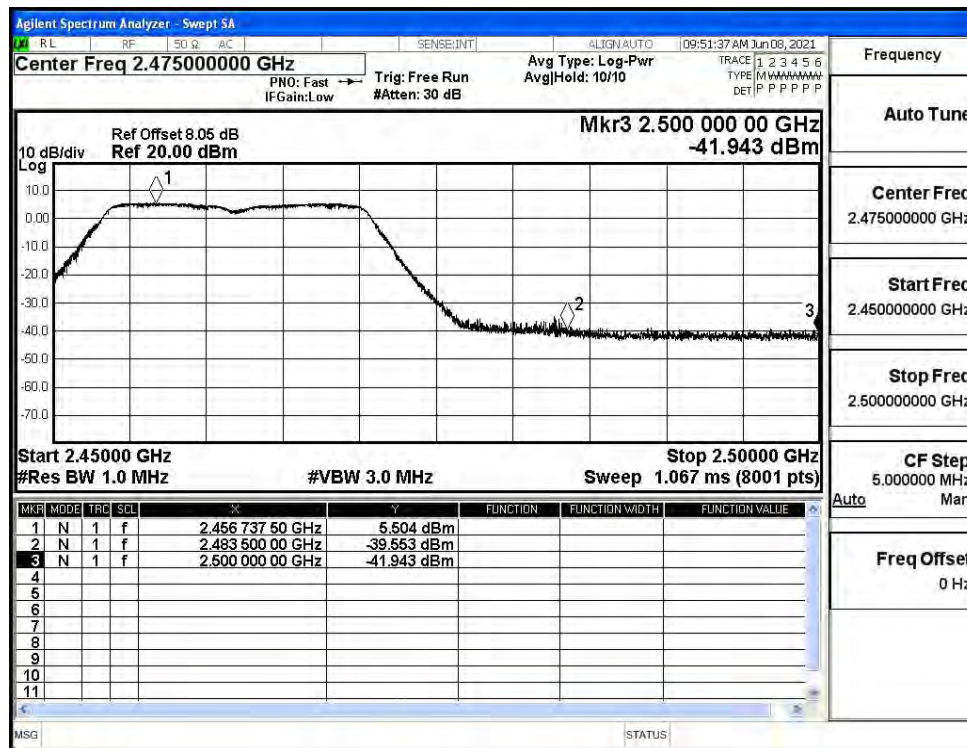
Restrict-band band-edge measurements_11N20SISO_2412_Ant1_PEAK



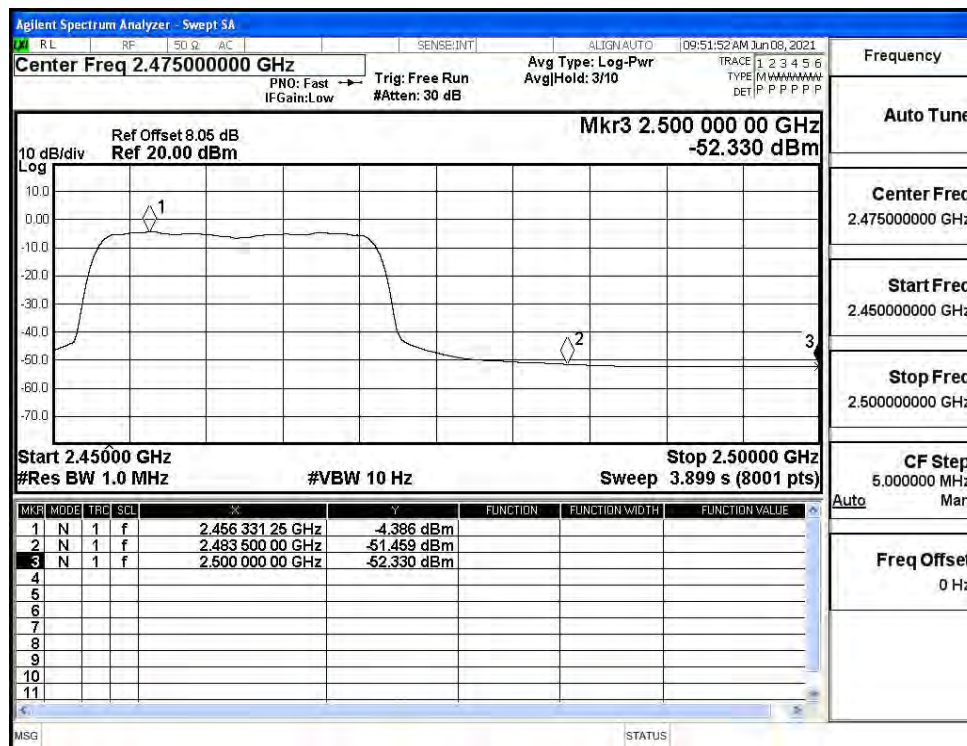
Restrict-band band-edge measurements_11N20SISO_2412_Ant1_AV



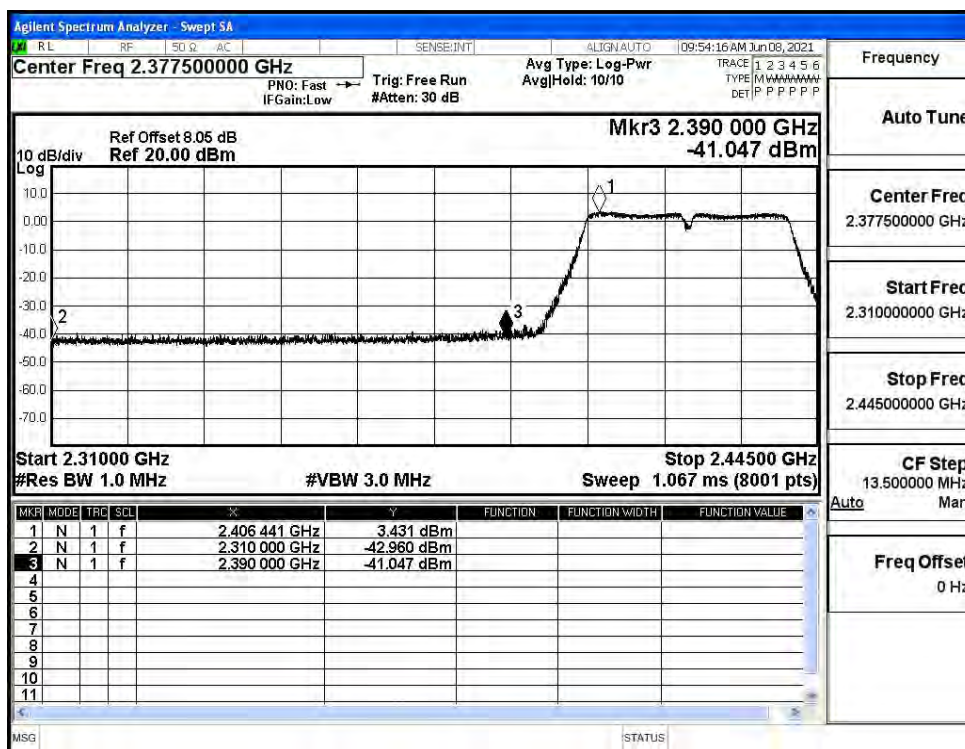
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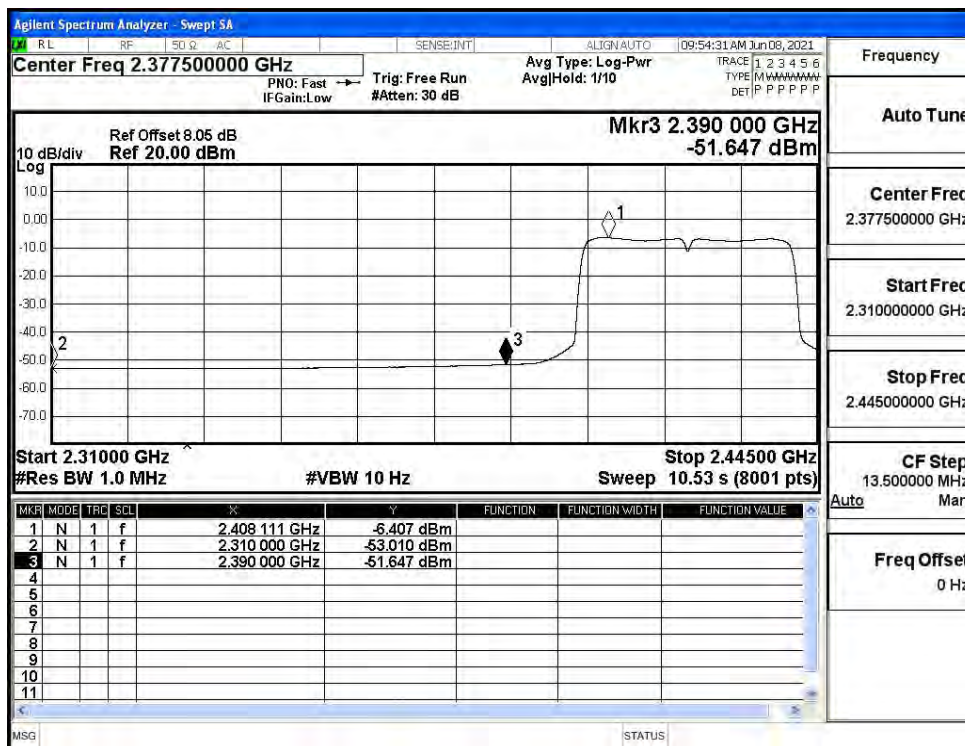
Restrict-band band-edge measurements_11N20SISO_2462_Ant1_AV



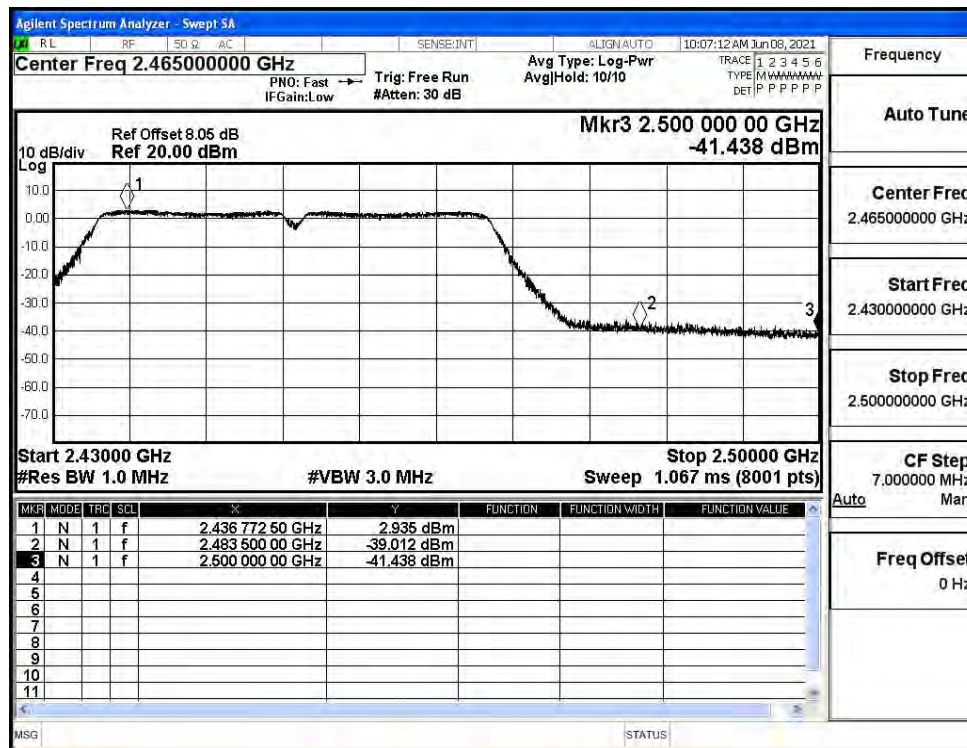
Restrict-band band-edge measurements_11N40SISO_2422_Ant1_PEAK



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

