

Appendix C

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: DP50-1

Trade Mark:  , 

Test Model: DP50-1

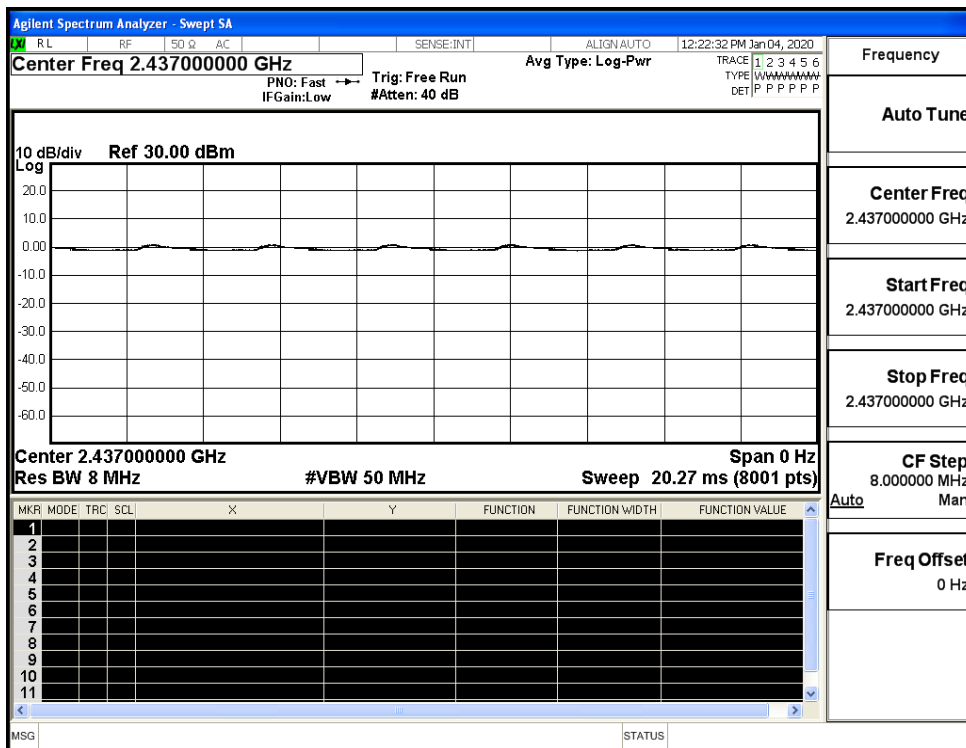
Environmental Conditions

Temperature:	23.7° C
Relative Humidity:	53.8%
ATM Pressure:	100.0 kPa
Test Engineer:	Li Huan
Supervised by:	Tom.Liu

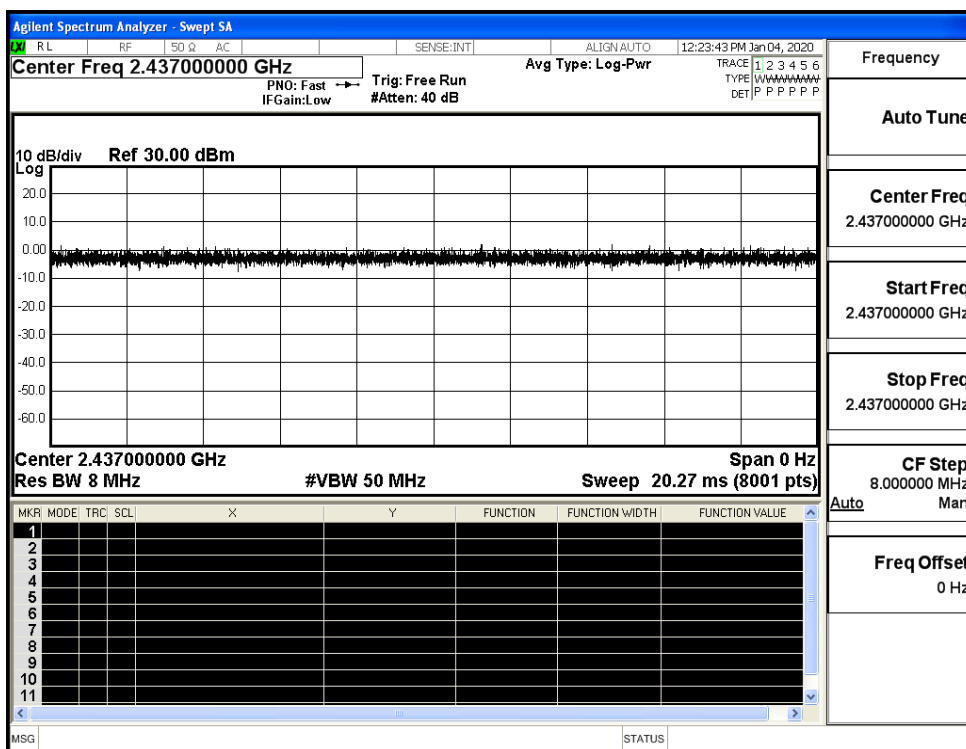
C.1 Duty Cycle

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

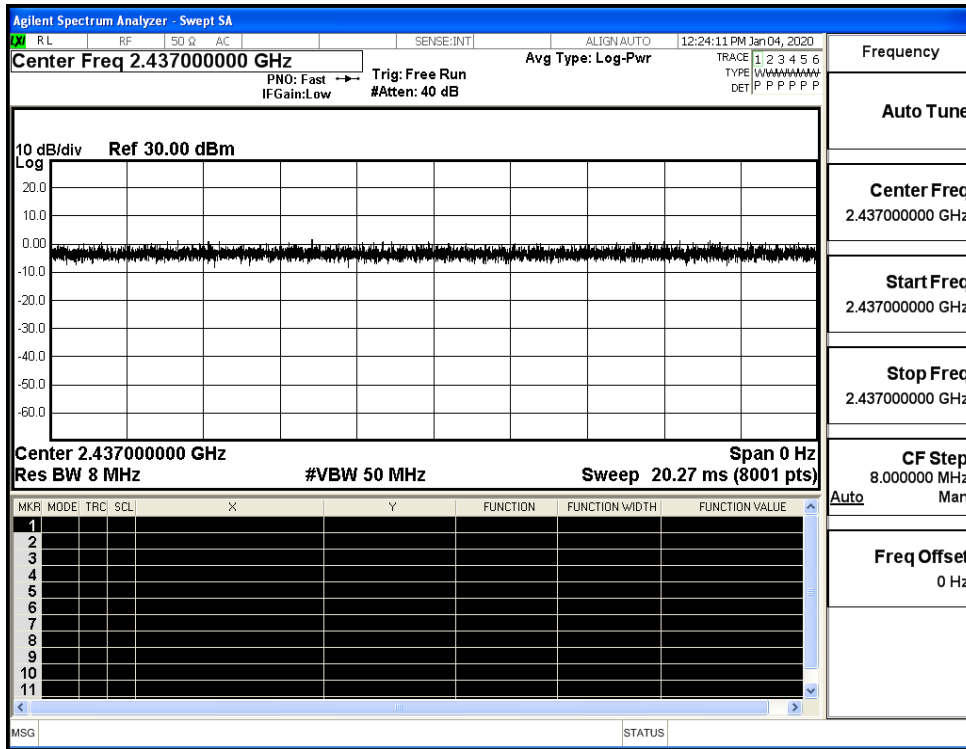
Duty Cycle_11B_2437_Ant1



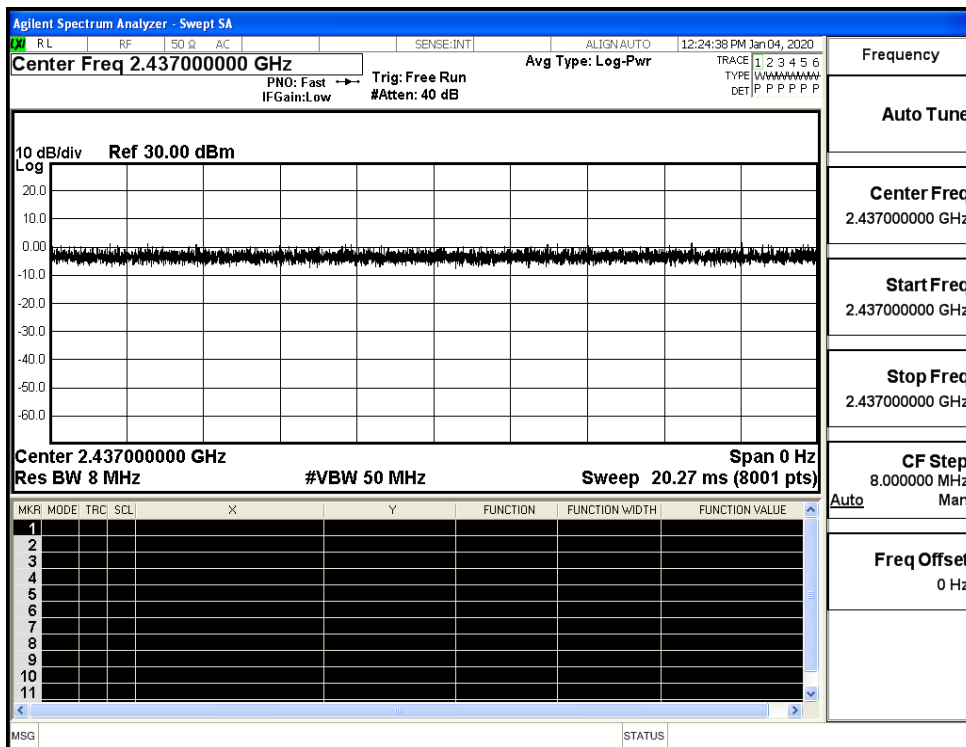
Duty Cycle_11G_2437_Ant1



Duty Cycle_11N20SISO_2437_Ant1



Duty Cycle_11N40SISO_2437_Ant1



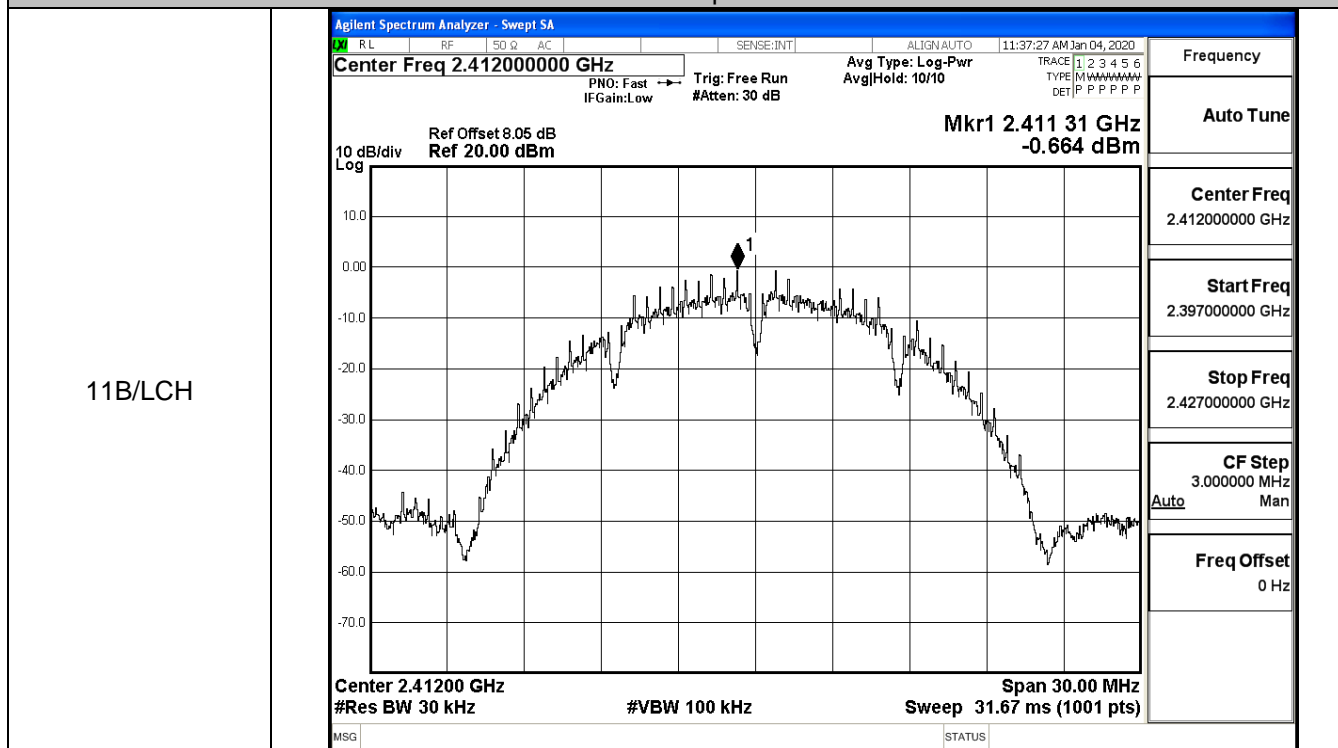
C.2 Maximum Conducted Output Power

Mode	Channel	Meas.Level [dBm]	Limit [dBm]	Verdict
11B	LCH	8.65	30	PASS
	MCH	7.68	30	PASS
	HCH	8.16	30	PASS
11G	LCH	7.98	30	PASS
	MCH	8.66	30	PASS
	HCH	7.85	30	PASS
11N20SISO	LCH	6.98	30	PASS
	MCH	8.38	30	PASS
	HCH	8.14	30	PASS
11N40SISO	LCH	8.25	30	PASS
	MCH	7.79	30	PASS
	HCH	7.92	30	PASS

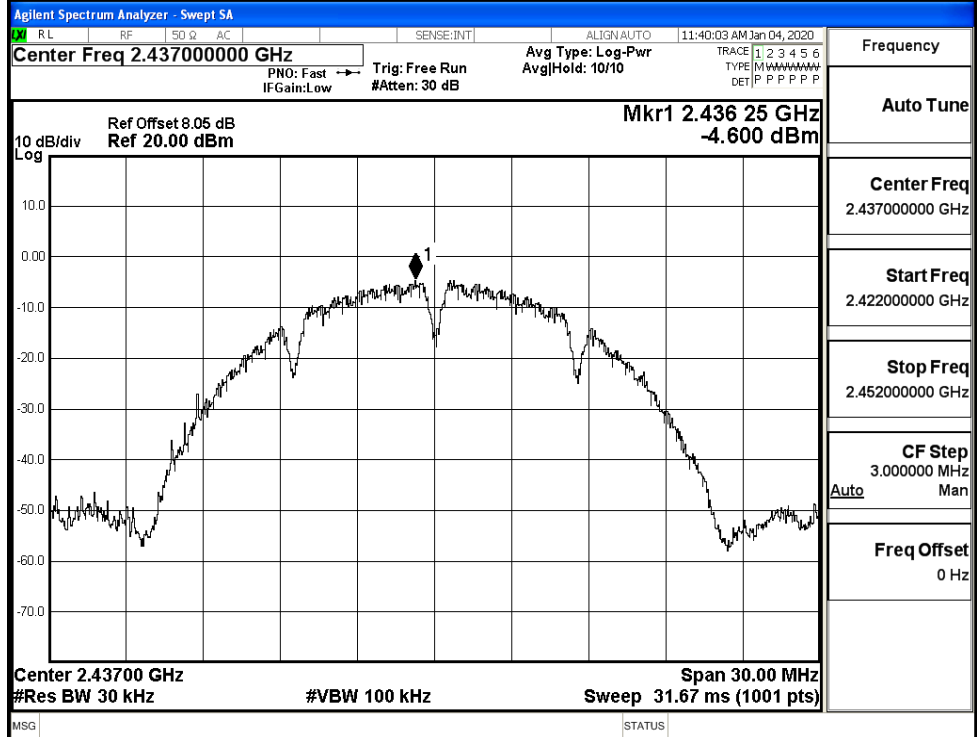
C.3 Maximum Power Spectral Density

Mode	Channel	Meas.Level [dBm/30KHz]	Limit [dBm/3KHz]	Verdict
11B	LCH	-0.664	8	PASS
	MCH	-4.600	8	PASS
	HCH	-0.452	8	PASS
11G	LCH	-11.082	8	PASS
	MCH	-12.318	8	PASS
	HCH	-12.641	8	PASS
11N20SISO	LCH	-11.485	8	PASS
	MCH	-12.584	8	PASS
	HCH	-11.153	8	PASS
11N40SISO	LCH	-16.402	8	PASS
	MCH	-16.064	8	PASS
	HCH	-16.173	8	PASS

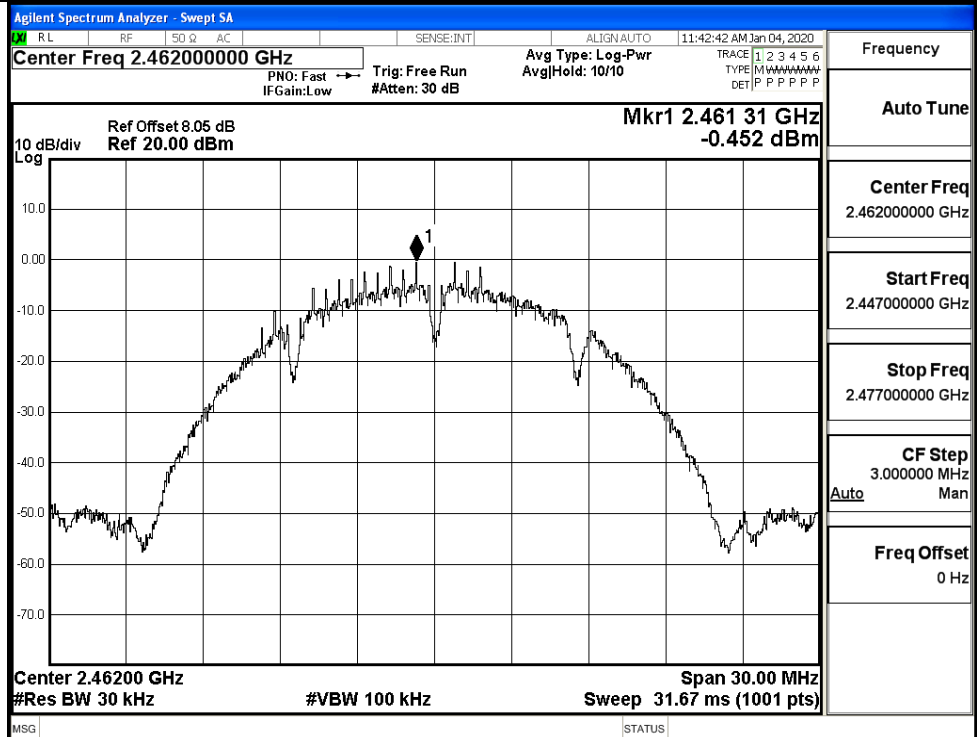
Test Graphs



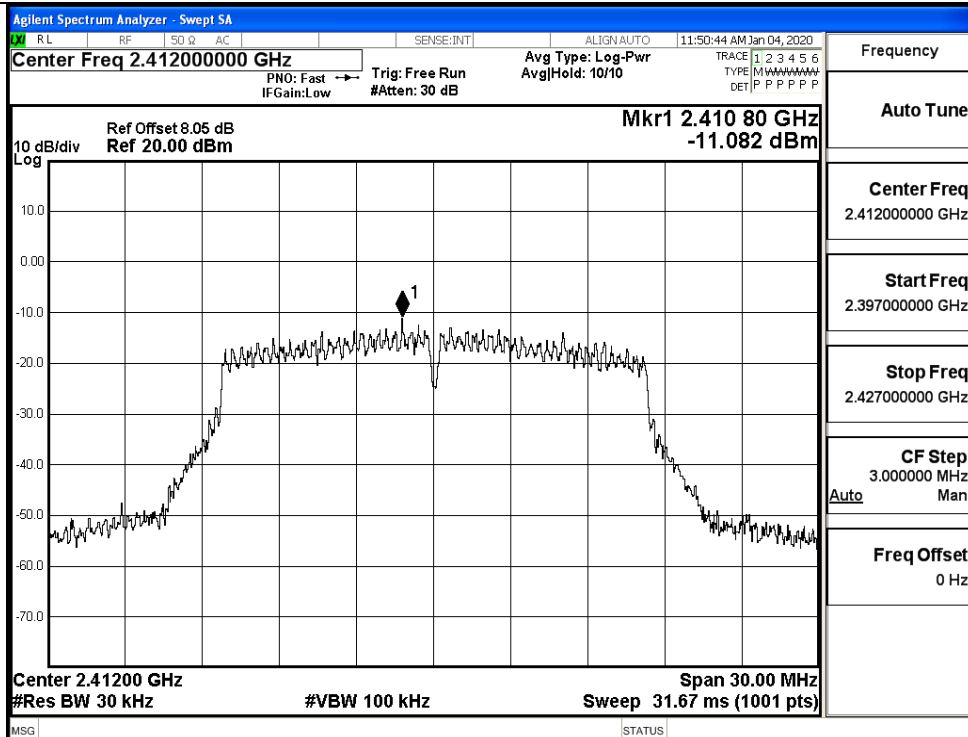
11B/MCH



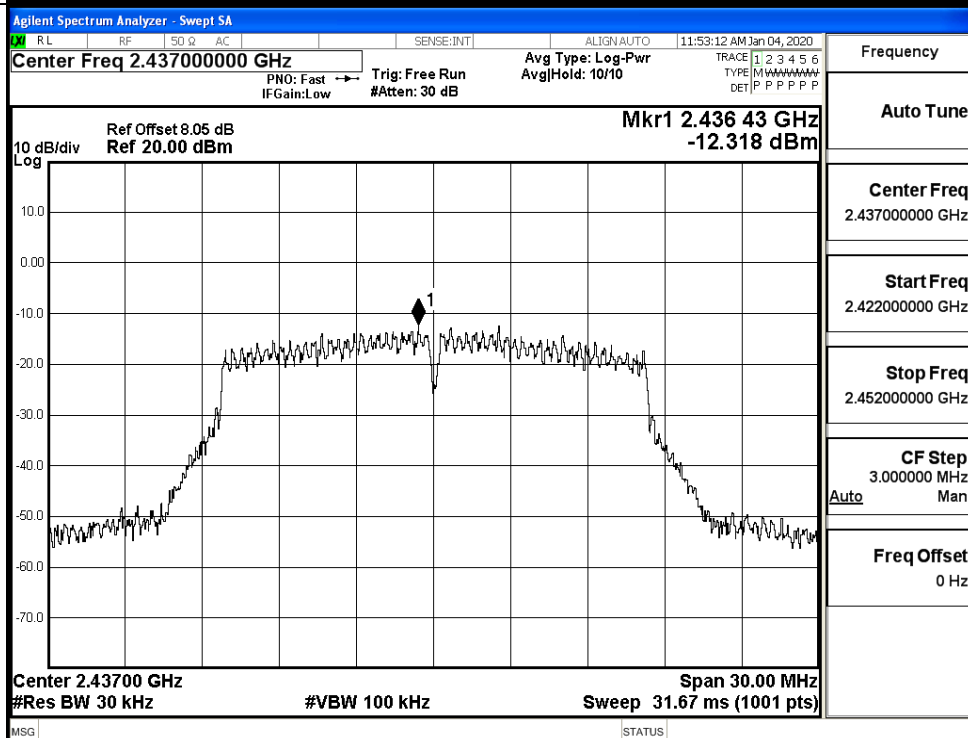
11B/HCH



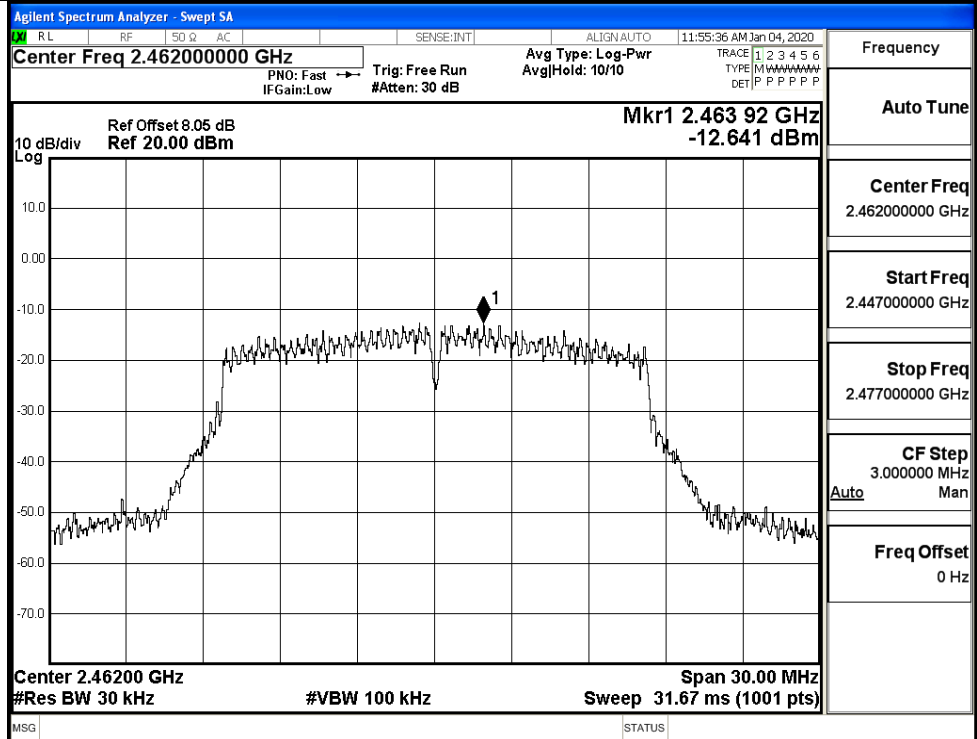
11G/LCH



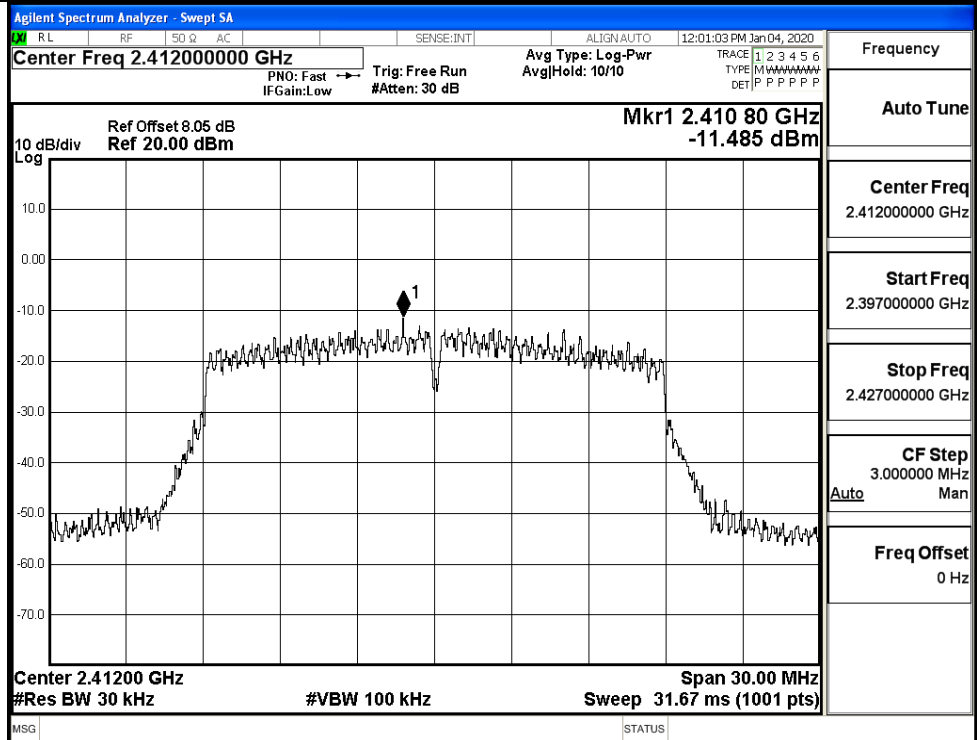
11G/MCH



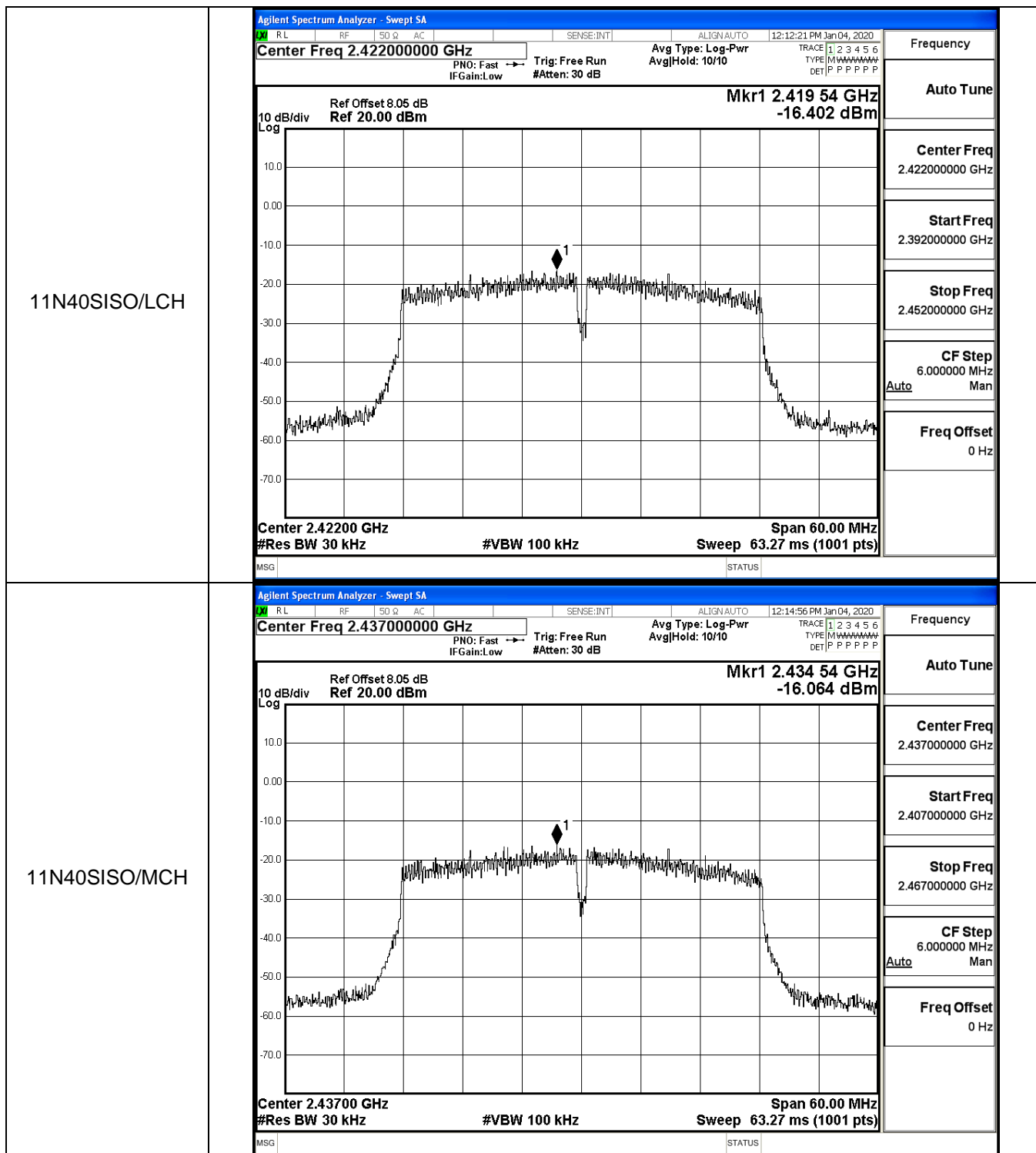
11G/HCH

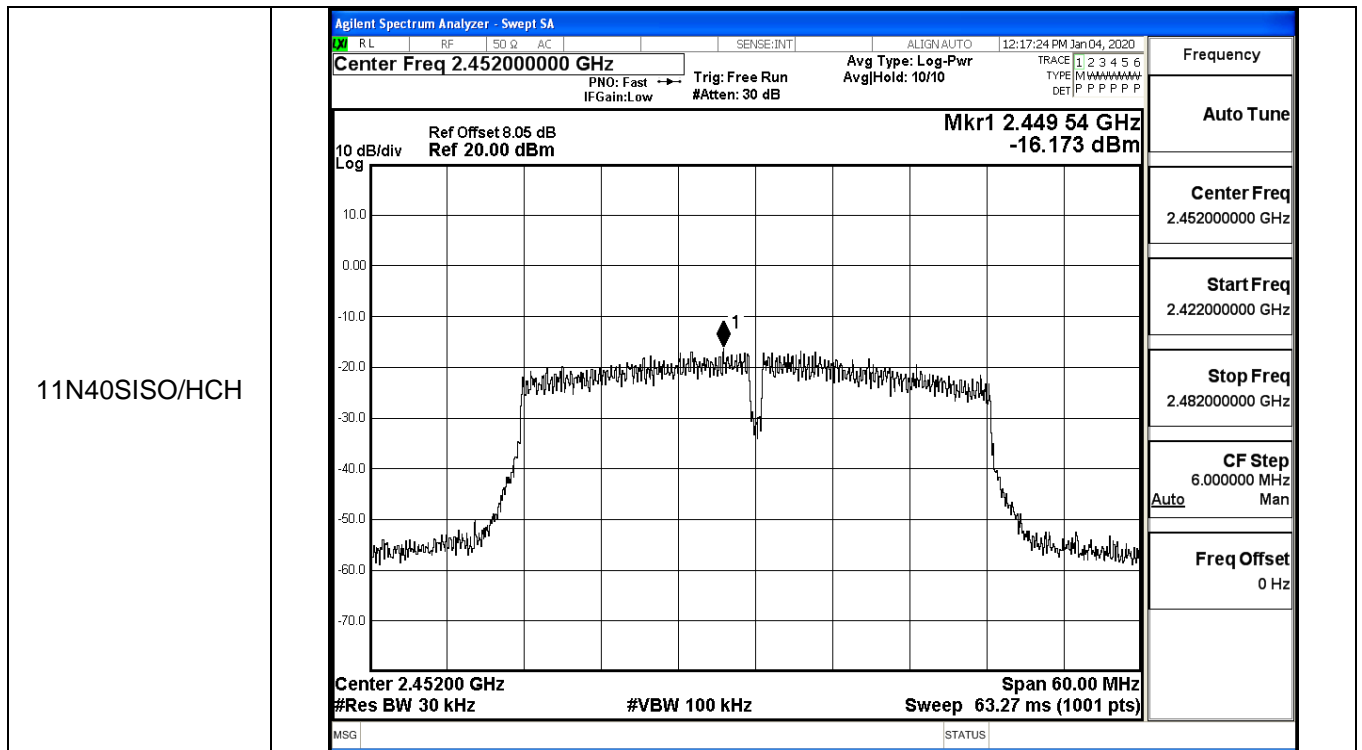


11N20SISO/LCH



<p>11N20SISO/MCH</p>	<div> <div> Agilent Spectrum Analyzer - Swept SA RL RF 50 Ω AC SENSE:INT ALIGN: AUTO 12:03:29 PM Jan 04, 2020 Center Freq 2.437000000 GHz PNO: Fast IF Gain: Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr AvgHold: 10/10 TRACE 1 2 3 4 5 6 TYPE: M W W W W W W W DET: P P P P P P P </div> <div> Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.437 69 GHz -12.584 dBm </div> <div> 10 dB/div Log </div> <div> </div> <div> Center 2.43700 GHz #Res BW 30 kHz #VBW 100 kHz Span 30.00 MHz Sweep 31.67 ms (1001 pts) </div> <div> MSG STATUS </div> </div> <div> 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 </div>
<p>11N20SISO/HCH</p>	<div> <div> Agilent Spectrum Analyzer - Swept SA RL RF 50 Ω AC SENSE:INT ALIGN: AUTO 12:05:12 PM Jan 04, 2020 Center Freq 2.462000000 GHz PNO: Fast IF Gain: Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr AvgHold: 10/10 TRACE 1 2 3 4 5 6 TYPE: M W W W W W W W DET: P P P P P P P </div> <div> Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.460 80 GHz -11.153 dBm </div> <div> 10 dB/div Log </div> <div> </div> <div> Center 2.46200 GHz #Res BW 30 kHz #VBW 100 kHz Span 30.00 MHz Sweep 31.67 ms (1001 pts) </div> <div> MSG STATUS </div> </div> <div> 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 </div>



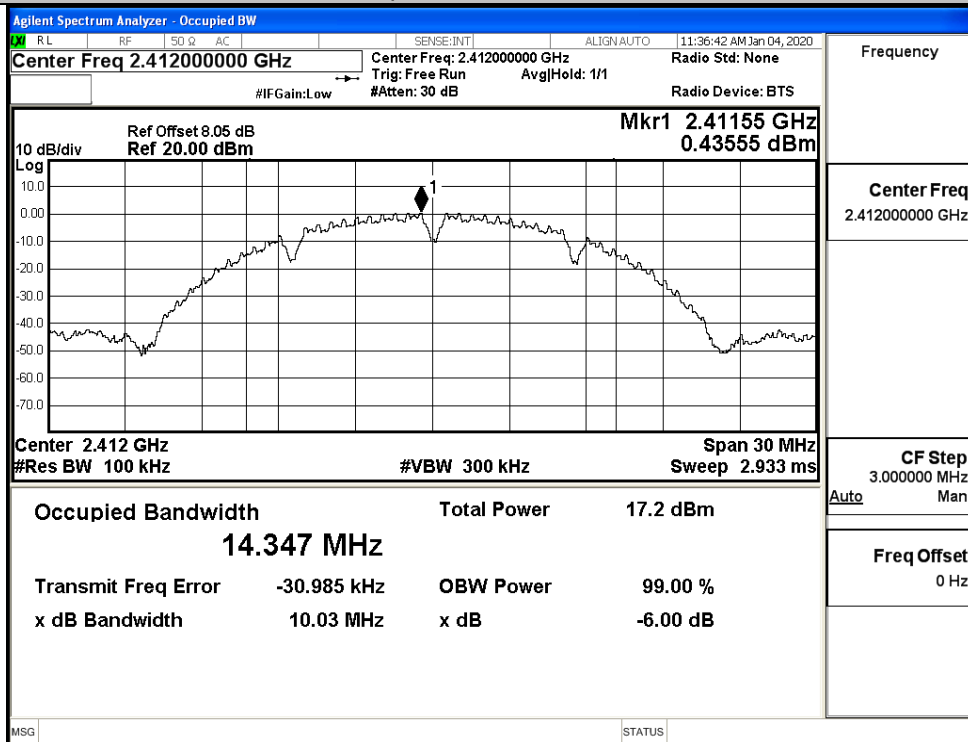


C.4 6dB Bandwidth

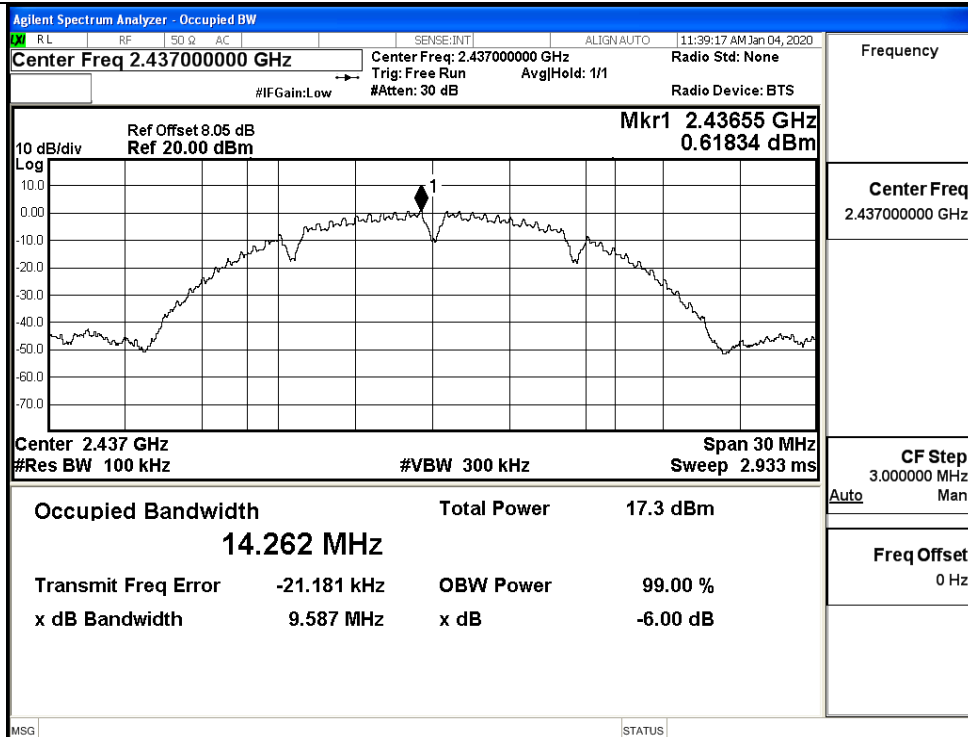
Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
11B	LCH	10.03	≥ 0.5	PASS
	MCH	9.587	≥ 0.5	PASS
	HCH	9.606	≥ 0.5	PASS
11G	LCH	15.11	≥ 0.5	PASS
	MCH	15.05	≥ 0.5	PASS
	HCH	15.12	≥ 0.5	PASS
11N20SISO	LCH	15.14	≥ 0.5	PASS
	MCH	15.12	≥ 0.5	PASS
	HCH	15.14	≥ 0.5	PASS
11N40SISO	LCH	33.89	≥ 0.5	PASS
	MCH	35.10	≥ 0.5	PASS
	HCH	35.13	≥ 0.5	PASS

Test Graphs

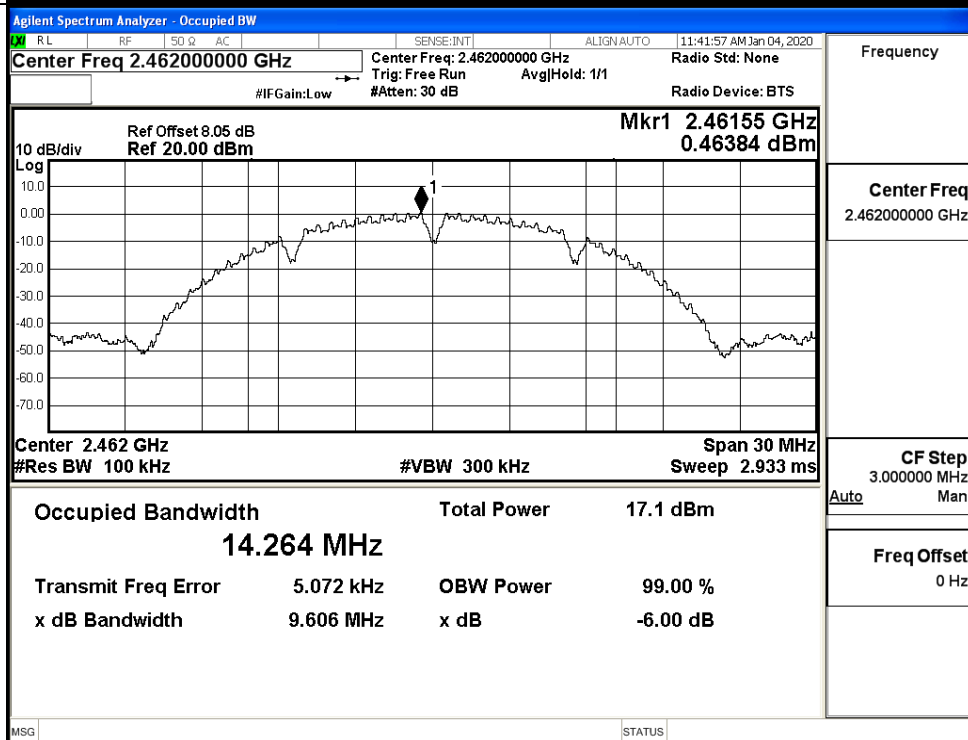
11B/LCH



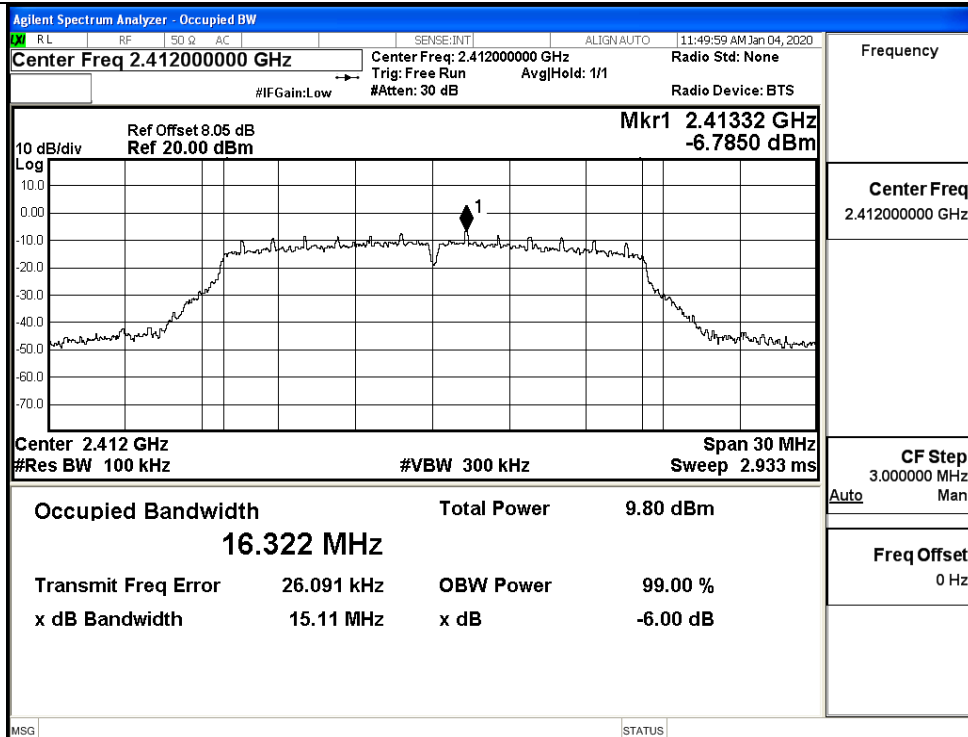
11B/MCH



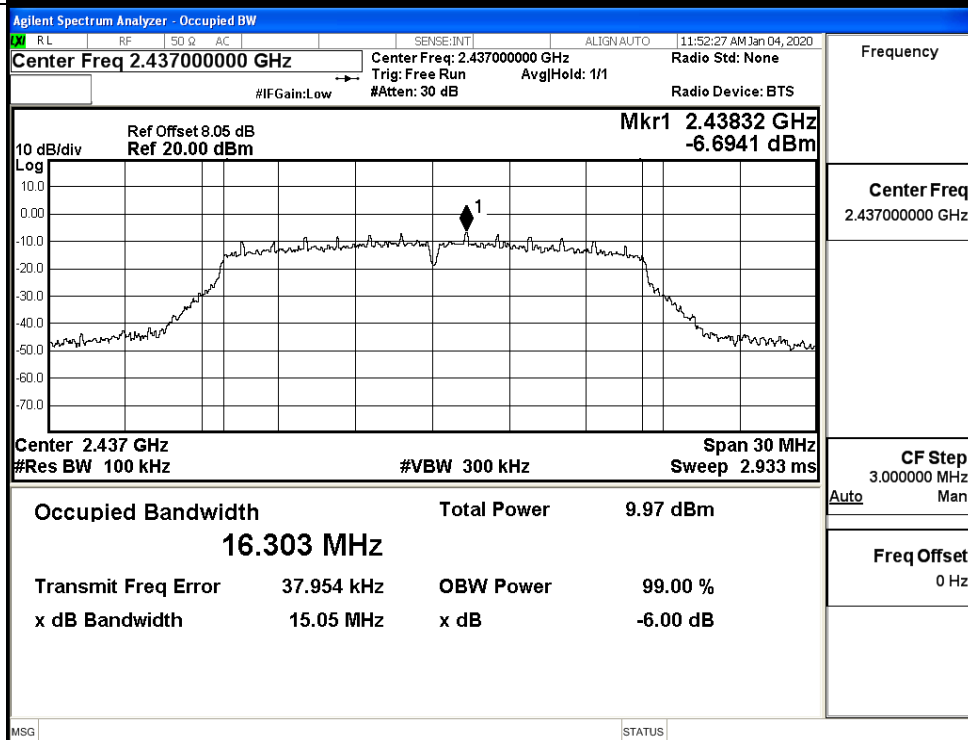
11B/HCH



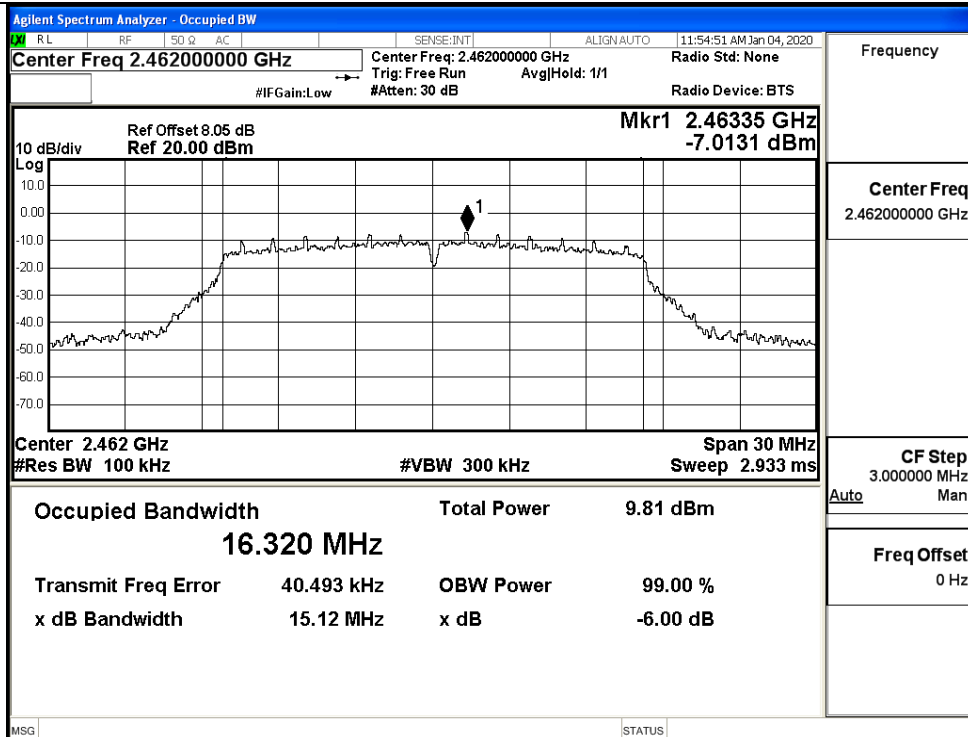
11G/LCH



11G/MCH



11G/HCH



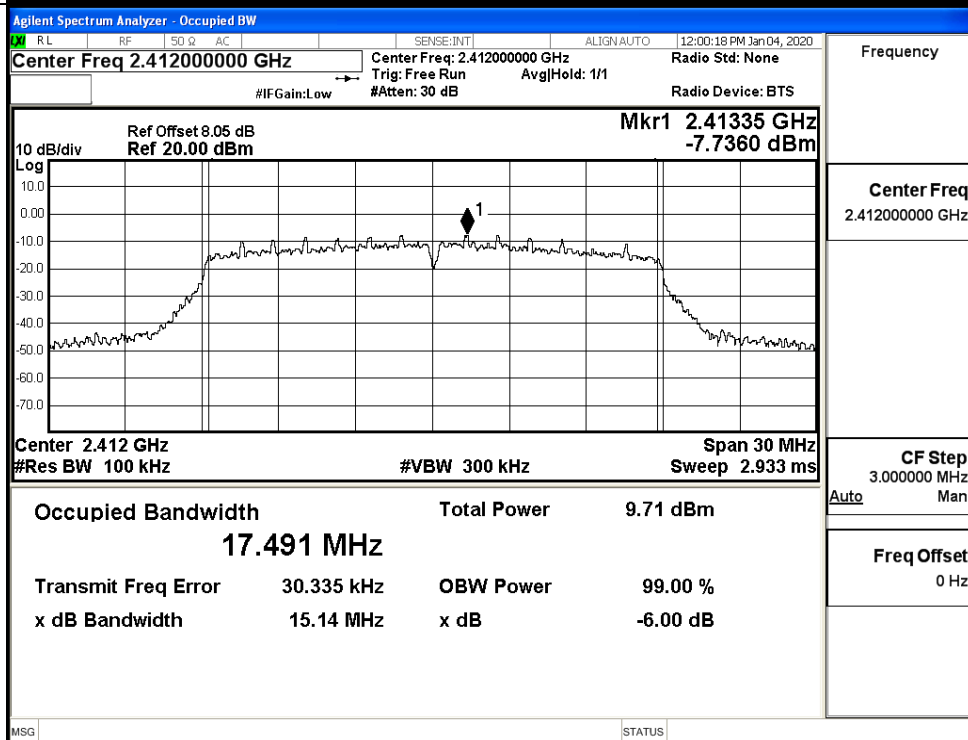
Frequency

Center Freq
2.46200000 GHz

CF Step
3.000000 MHz
Auto Man

Freq Offset
0 Hz

11N20SISO/LCH

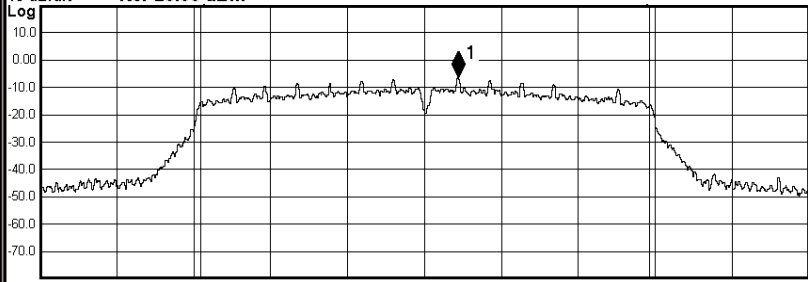
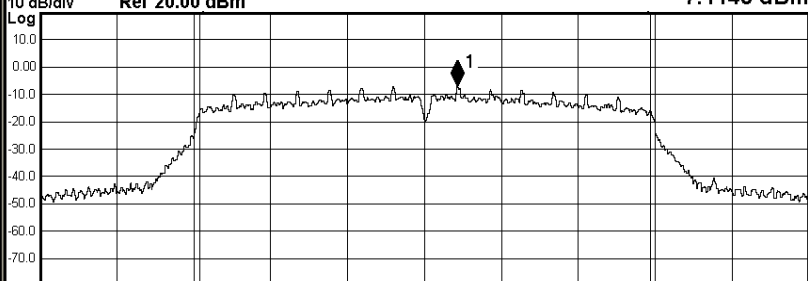


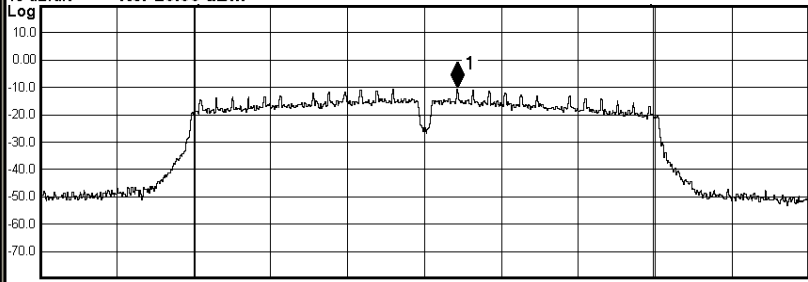
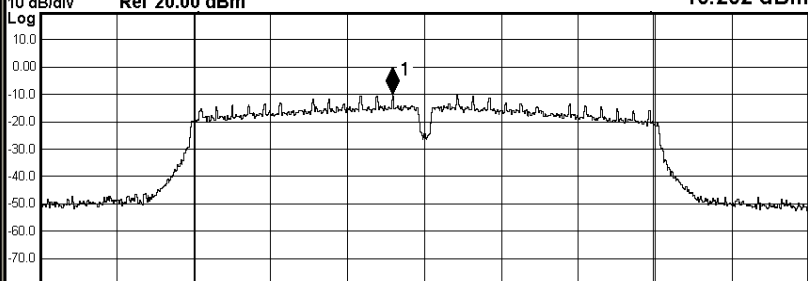
Frequency

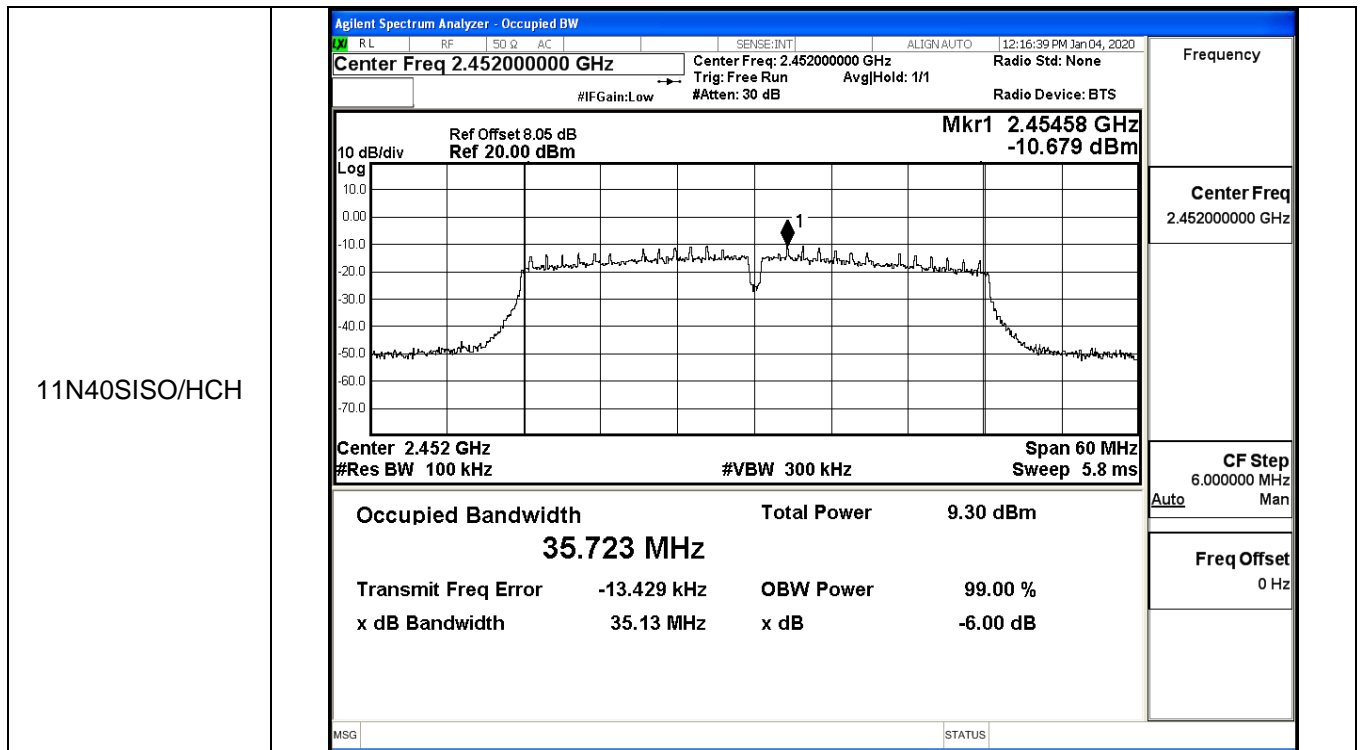
Center Freq
2.41200000 GHz

CF Step
3.000000 MHz
Auto Man

Freq Offset
0 Hz

11N20SISO/MCH	<div> <div>Agilent Spectrum Analyzer - Occupied BW</div> <div> <div> <div> <div>RL</div> <div>RF</div> <div>50 Ω</div> <div>AC</div> </div> <div> <div>SENSE:INT</div> <div>ALIGN AUTO</div> <div>12:02:44 PM Jan 04, 2020</div> </div> </div> <div> <div>Center Freq 2.437000000 GHz</div> <div> <div>Center Freq: 2.437000000 GHz</div> <div>Trig: Free Run</div> <div>Avg Hold: 1/1</div> </div> <div>Radio Std: None</div> </div> <div> <div>#IFGain:Low</div> <div>#Atten: 30 dB</div> <div>Radio Device: BTS</div> </div> </div> <div> <div>10 dB/div</div> <div>Ref Offset 8.05 dB</div> <div>Ref 20.00 dBm</div> <div>Mkr1 2.43832 GHz</div> <div>-6.5547 dBm</div> </div>  <div> <div>Center 2.437 GHz</div> <div>#Res BW 100 kHz</div> <div>#VBW 300 kHz</div> <div>Span 30 MHz</div> <div>Sweep 2.933 ms</div> </div> <div> <div>Occupied Bandwidth</div> <div>Total Power</div> <div>9.88 dBm</div> </div> <div>17.480 MHz</div> <div> <div>Transmit Freq Error</div> <div>32.278 kHz</div> <div>OBW Power</div> <div>99.00 %</div> </div> <div> <div>x dB Bandwidth</div> <div>15.12 MHz</div> <div>x dB</div> <div>-6.00 dB</div> </div> <div>MSG</div> <div>STATUS</div> </div>	<div>Frequency</div> <div>Center Freq</div> <div>2.437000000 GHz</div> <div>CF Step</div> <div>3.000000 MHz</div> <div>Auto</div> <div>Man</div> <div>Freq Offset</div> <div>0 Hz</div>
11N20SISO/HCH	<div> <div>Agilent Spectrum Analyzer - Occupied BW</div> <div> <div> <div>RL</div> <div>RF</div> <div>50 Ω</div> <div>AC</div> </div> <div> <div>SENSE:INT</div> <div>ALIGN AUTO</div> <div>12:04:27 PM Jan 04, 2020</div> </div> </div> <div> <div>Center Freq 2.462000000 GHz</div> <div> <div>Center Freq: 2.462000000 GHz</div> <div>Trig: Free Run</div> <div>Avg Hold: 1/1</div> </div> <div>Radio Std: None</div> </div> <div> <div>#IFGain:Low</div> <div>#Atten: 30 dB</div> <div>Radio Device: BTS</div> </div> </div> <div> <div>10 dB/div</div> <div>Ref Offset 8.05 dB</div> <div>Ref 20.00 dBm</div> <div>Mkr1 2.46329 GHz</div> <div>-7.1148 dBm</div> </div>  <div> <div>Center 2.462 GHz</div> <div>#Res BW 100 kHz</div> <div>#VBW 300 kHz</div> <div>Span 30 MHz</div> <div>Sweep 2.933 ms</div> </div> <div> <div>Occupied Bandwidth</div> <div>Total Power</div> <div>9.80 dBm</div> </div> <div>17.489 MHz</div> <div> <div>Transmit Freq Error</div> <div>40.435 kHz</div> <div>OBW Power</div> <div>99.00 %</div> </div> <div> <div>x dB Bandwidth</div> <div>15.14 MHz</div> <div>x dB</div> <div>-6.00 dB</div> </div> <div>MSG</div> <div>STATUS</div>	<div>Frequency</div> <div>Center Freq</div> <div>2.462000000 GHz</div> <div>CF Step</div> <div>3.000000 MHz</div> <div>Auto</div> <div>Man</div> <div>Freq Offset</div> <div>0 Hz</div>

11N40SISO/LCH	<div> <div>Agilent Spectrum Analyzer - Occupied BW</div> <div> <div> <div> <div> <div>RL</div> <div>RF</div> <div>50 Ω</div> <div>AC</div> </div> <div> <div>SENSE:INT</div> <div>ALIGN AUTO</div> <div>12:11:36 PM Jan 04, 2020</div> </div> </div> <div> <div>Center Freq 2.422000000 GHz</div> <div> <div>Center Freq: 2.422000000 GHz</div> <div>Trig: Free Run</div> <div>Avg/Hold: 1/1</div> </div> <div>Radio Std: None</div> </div> <div> <div>#IF Gain: Low</div> <div>#Atten: 30 dB</div> <div>Radio Device: BTS</div> </div> </div> <div> <div>10 dB/div</div> <div>Ref Offset 8.05 dB</div> <div>Ref 20.00 dBm</div> <div>Mkr1 2.42458 GHz</div> <div>-10.617 dBm</div> </div>  <div> <div>Center 2.422 GHz</div> <div>#Res BW 100 kHz</div> <div>#VBW 300 kHz</div> <div>Span 60 MHz</div> <div>Sweep 5.8 ms</div> </div> <div> <div>Occupied Bandwidth</div> <div>35.747 MHz</div> <div>Total Power</div> <div>9.24 dBm</div> </div> <div> <div>Transmit Freq Error</div> <div>-29.884 kHz</div> <div>OBW Power</div> <div>99.00 %</div> </div> <div> <div>x dB Bandwidth</div> <div>33.89 MHz</div> <div>x dB</div> <div>-6.00 dB</div> </div> </div> <div> <div>MSG</div> <div>STATUS</div> </div> </div>	<div>Frequency</div> <div>Center Freq</div> <div>2.422000000 GHz</div> <div>CF Step</div> <div>6.000000 MHz</div> <div>Auto</div> <div>Man</div> <div>Freq Offset</div> <div>0 Hz</div>
11N40SISO/MCH	<div> <div>Agilent Spectrum Analyzer - Occupied BW</div> <div> <div> <div> <div>RL</div> <div>RF</div> <div>50 Ω</div> <div>AC</div> </div> <div> <div>SENSE:INT</div> <div>ALIGN AUTO</div> <div>12:14:10 PM Jan 04, 2020</div> </div> </div> <div> <div>Center Freq 2.437000000 GHz</div> <div> <div>Center Freq: 2.437000000 GHz</div> <div>Trig: Free Run</div> <div>Avg/Hold: 1/1</div> </div> <div>Radio Std: None</div> </div> <div> <div>#IF Gain: Low</div> <div>#Atten: 30 dB</div> <div>Radio Device: BTS</div> </div> </div> <div> <div>10 dB/div</div> <div>Ref Offset 8.05 dB</div> <div>Ref 20.00 dBm</div> <div>Mkr1 2.43454 GHz</div> <div>-10.202 dBm</div> </div>  <div> <div>Center 2.437 GHz</div> <div>#Res BW 100 kHz</div> <div>#VBW 300 kHz</div> <div>Span 60 MHz</div> <div>Sweep 5.8 ms</div> </div> <div> <div>Occupied Bandwidth</div> <div>35.716 MHz</div> <div>Total Power</div> <div>9.24 dBm</div> </div> <div> <div>Transmit Freq Error</div> <div>-21.994 kHz</div> <div>OBW Power</div> <div>99.00 %</div> </div> <div> <div>x dB Bandwidth</div> <div>35.10 MHz</div> <div>x dB</div> <div>-6.00 dB</div> </div> </div> <div> <div>MSG</div> <div>STATUS</div> </div>	<div>Frequency</div> <div>Center Freq</div> <div>2.437000000 GHz</div> <div>CF Step</div> <div>6.000000 MHz</div> <div>Auto</div> <div>Man</div> <div>Freq Offset</div> <div>0 Hz</div>

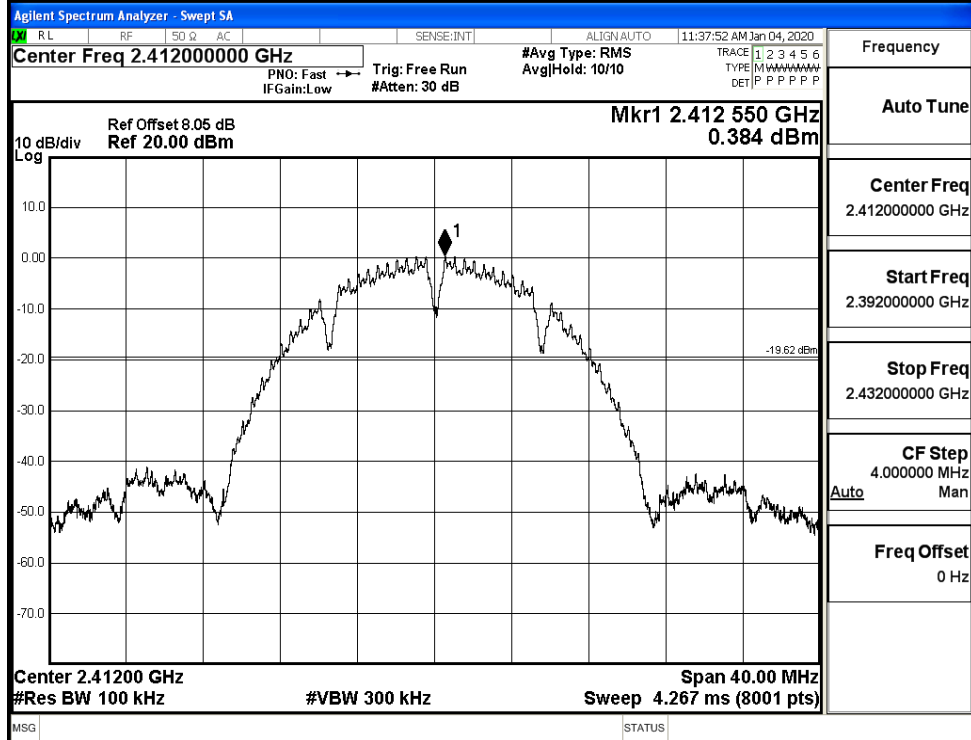


C.5 RF Conducted Spurious Emissions

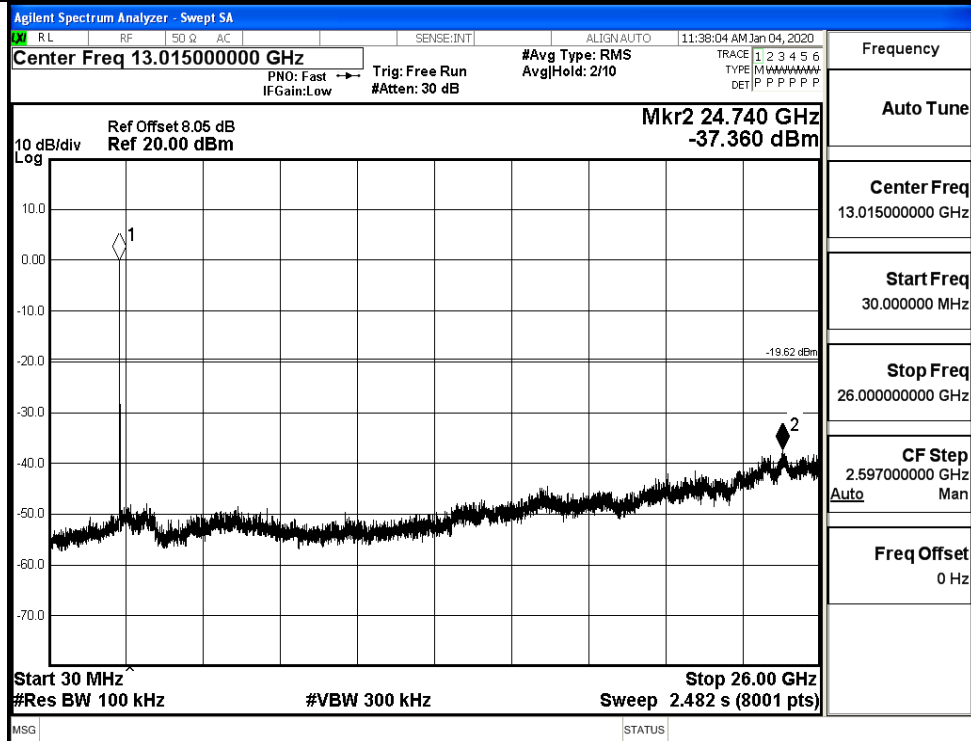
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	LCH	0.384	-37.360	-19.616	PASS
	MCH	0.451	-37.492	-19.549	PASS
	HCH	0.554	-38.001	-19.446	PASS
11G	LCH	-6.84	-38.229	-26.840	PASS
	MCH	-7.089	-38.081	-27.089	PASS
	HCH	-7.147	-36.404	-27.147	PASS
11N20 SISO	LCH	-6.905	-37.948	-26.905	PASS
	MCH	-6.876	-37.790	-26.876	PASS
	HCH	-6.794	-36.271	-26.794	PASS
11N40 SISO	LCH	-10.458	-38.386	-30.458	PASS
	MCH	-10.206	-37.049	-30.206	PASS
	HCH	-10.622	-37.637	-30.622	PASS

11B_LCH_Graphs

Pref/11B/LCH

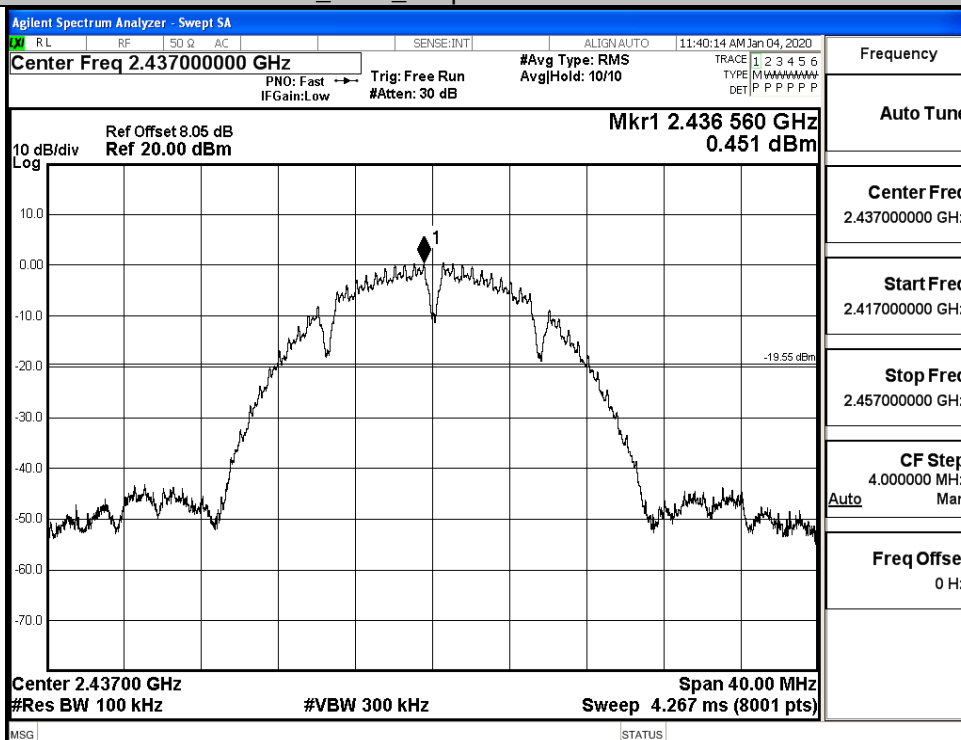


Puw/11B/LCH

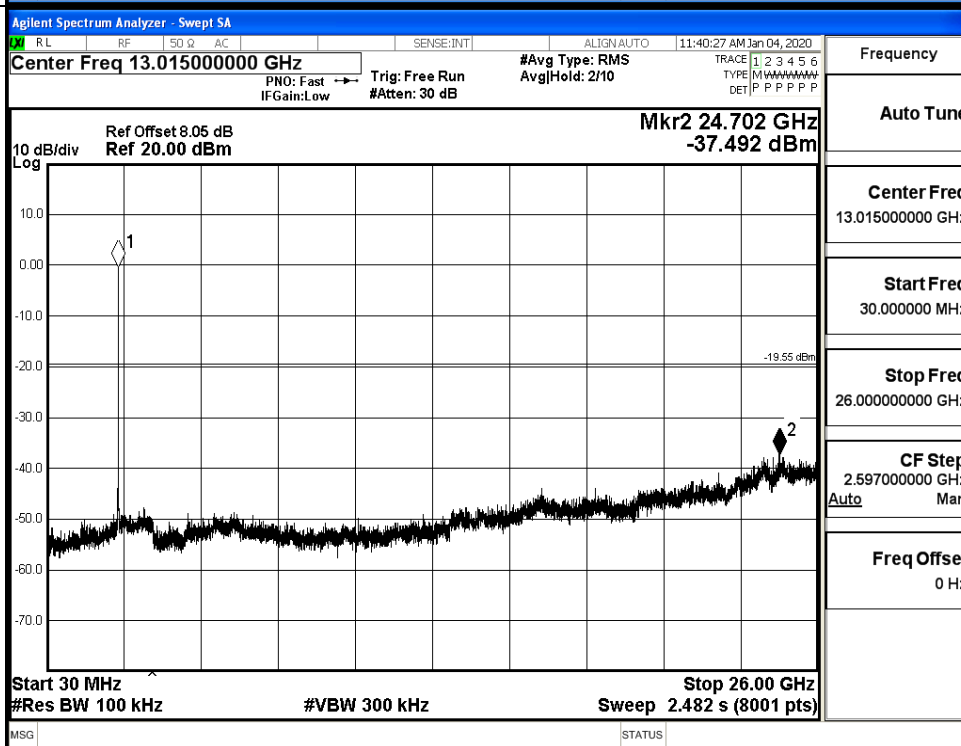


11B_MCH_Graphs

Pref/11B/MCH

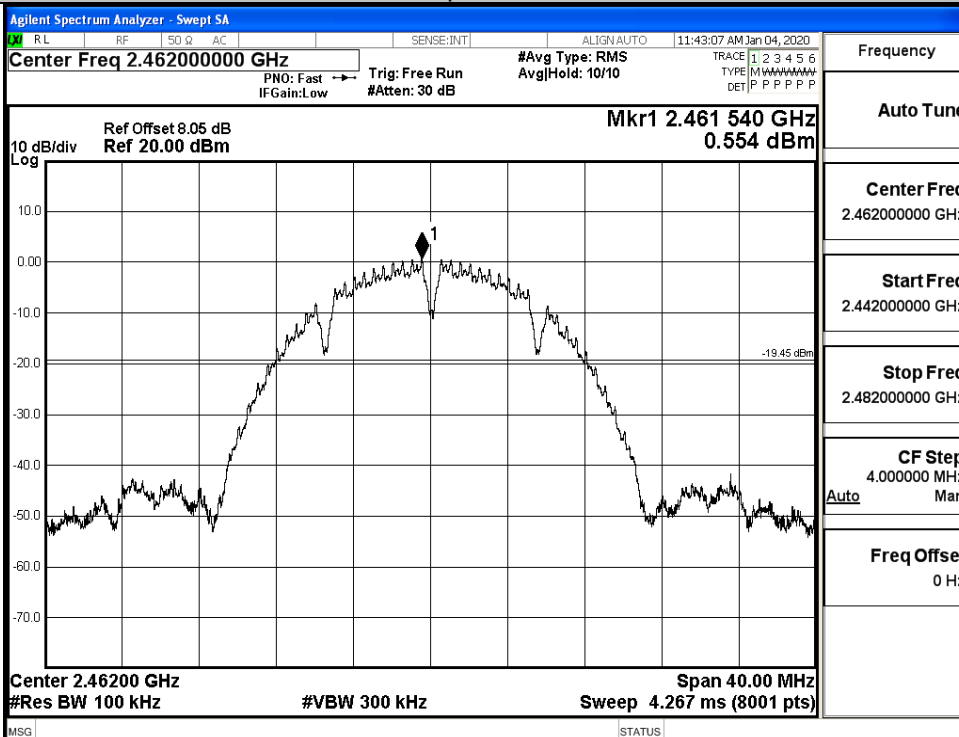


Puw/11B/MCH

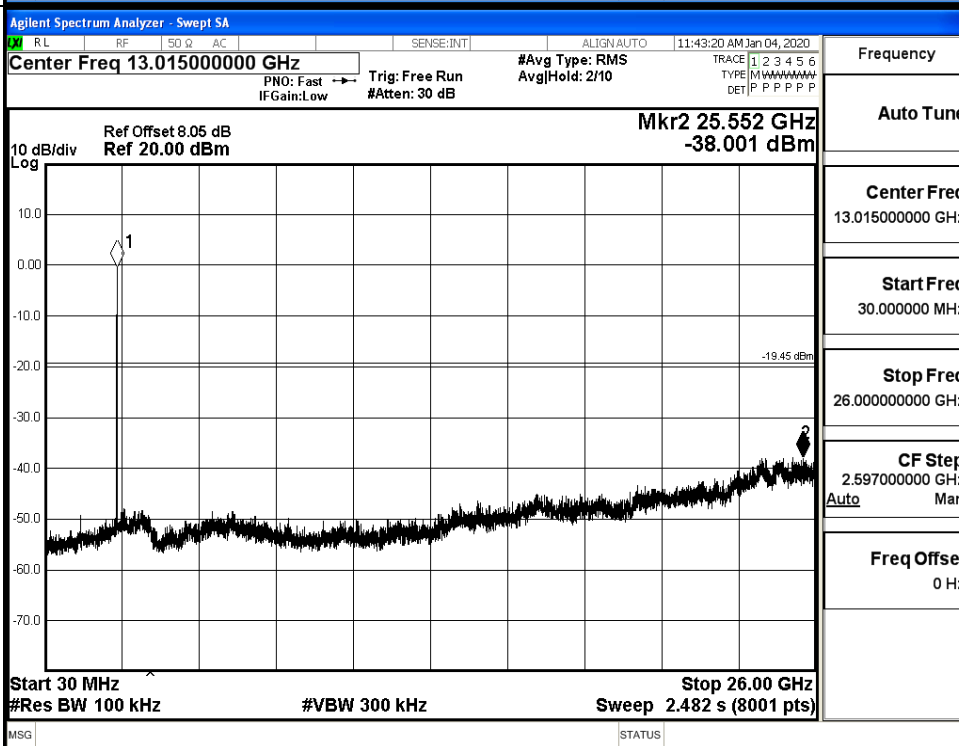


11B_HCH_Graphs

Pref/11B/HCH

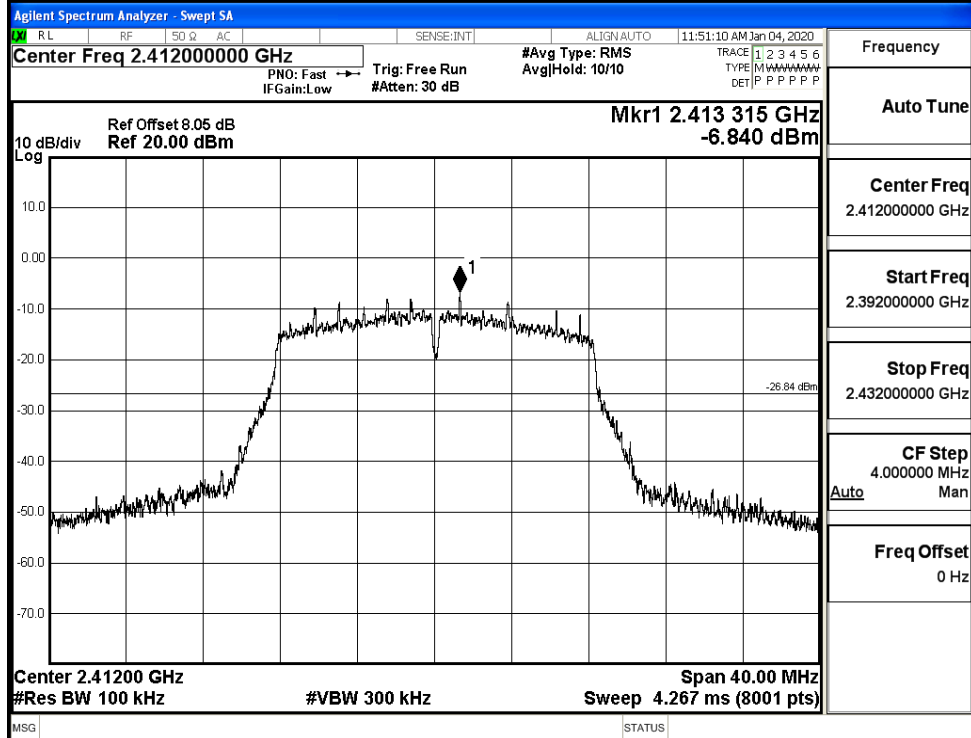


Puw/11B/HCH

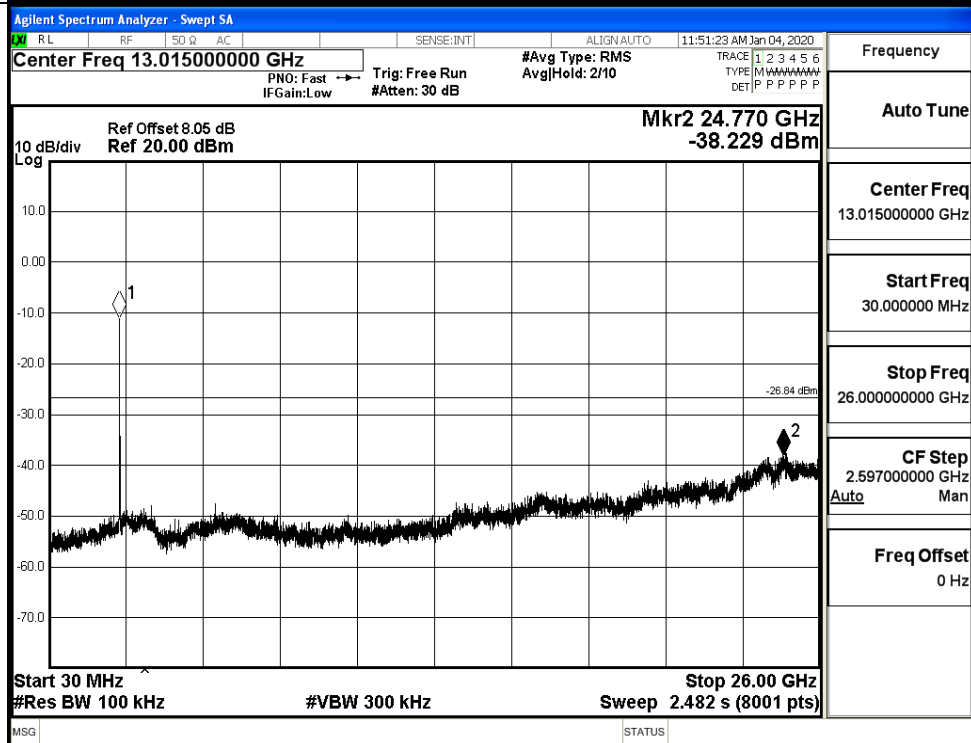


11G_LCH_Graphs

Pref/11G/LCH

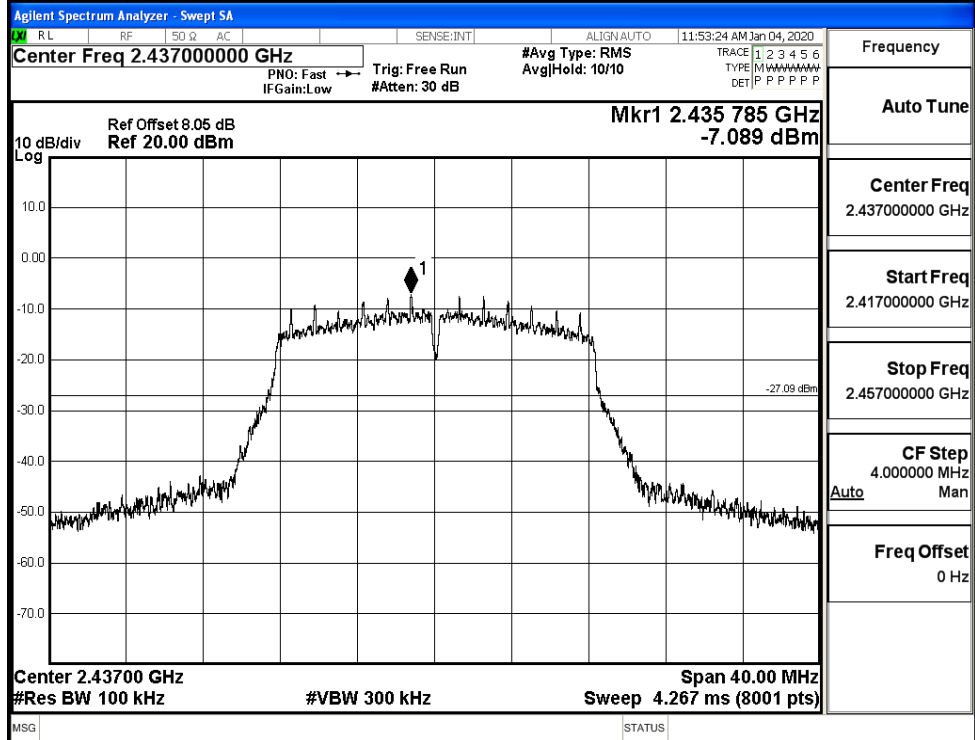


Puw/11G/LCH

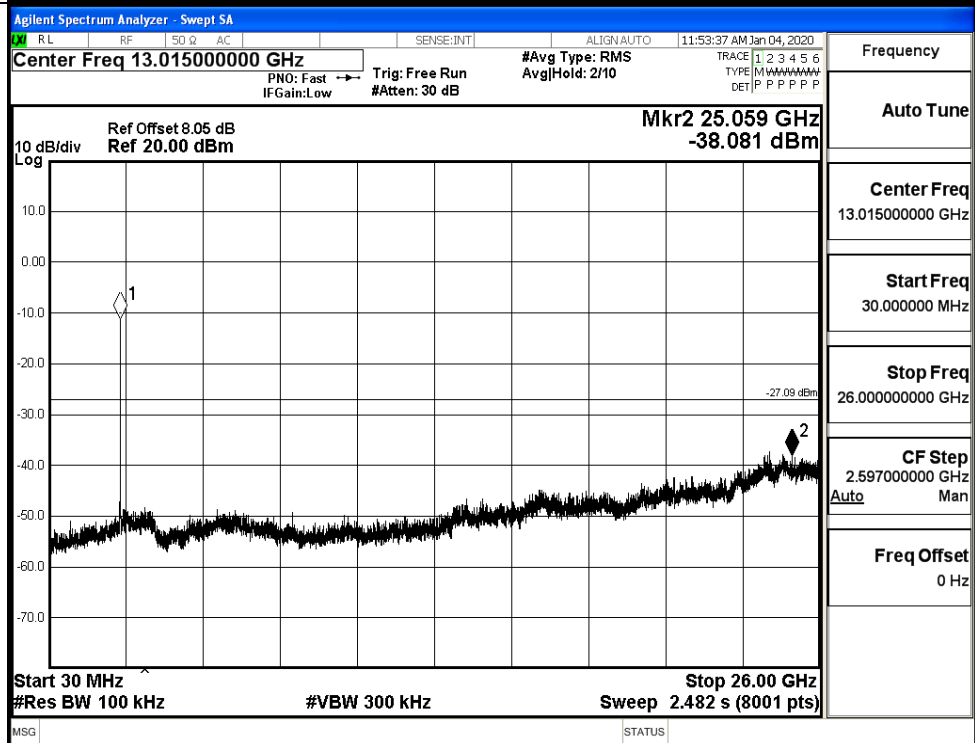


11G_MCH_Graphs

Pref/11G/MCH

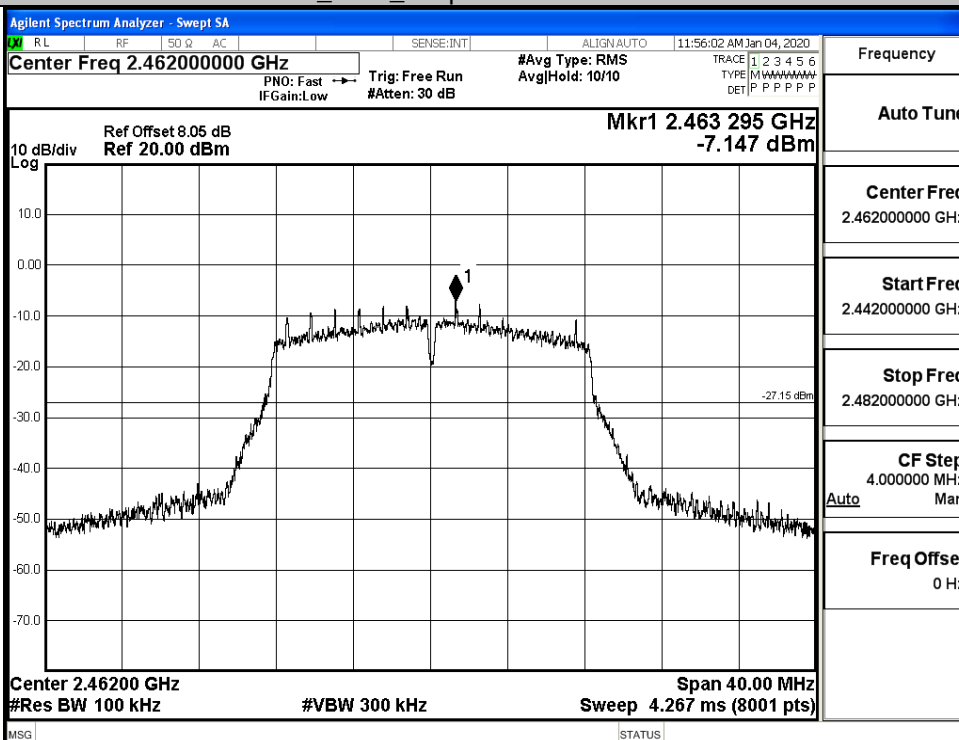


Puw/11G/MCH

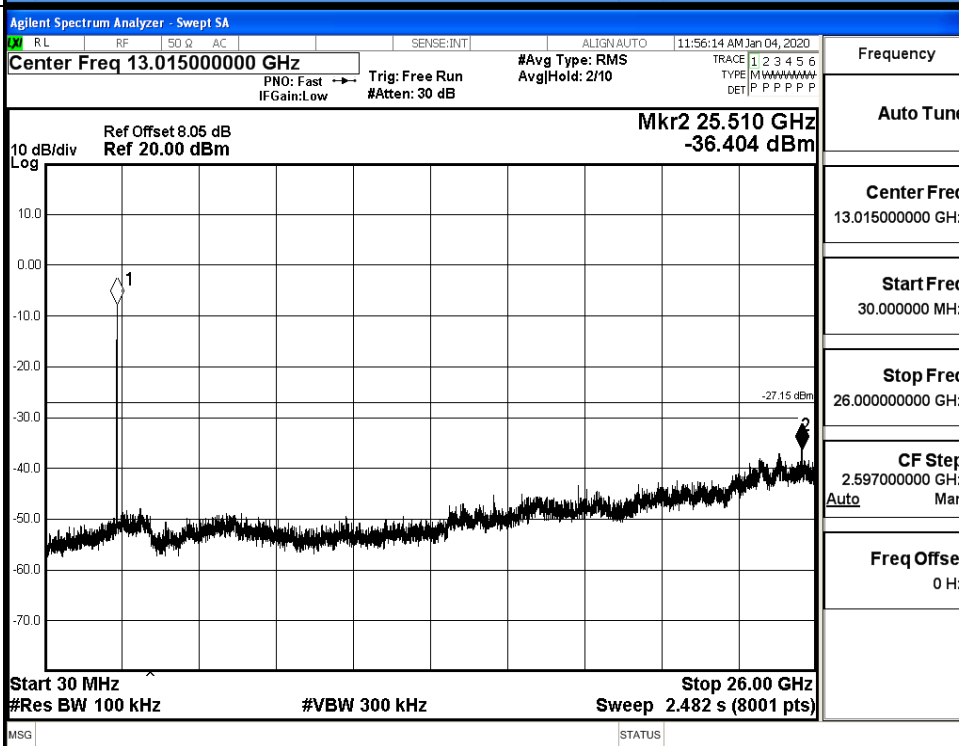


11G_HCH_Graphs

Pref/11G/HCH

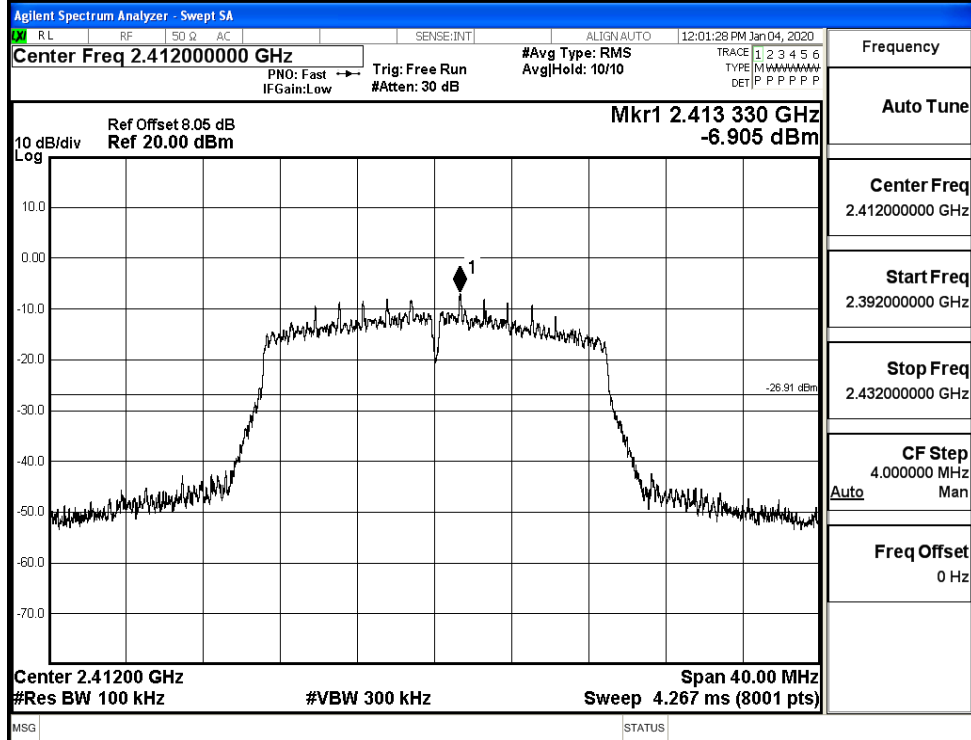


Puw/11G/HCH

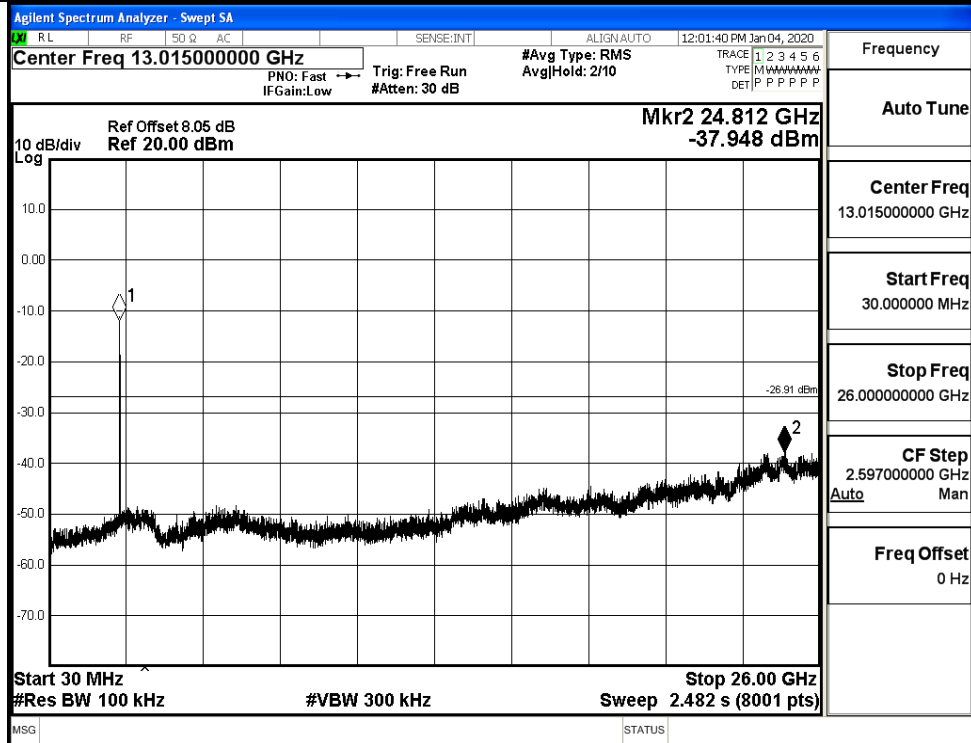


11N20ISO_LCH_Graphs

Pref/11N20SIS
O/LCH

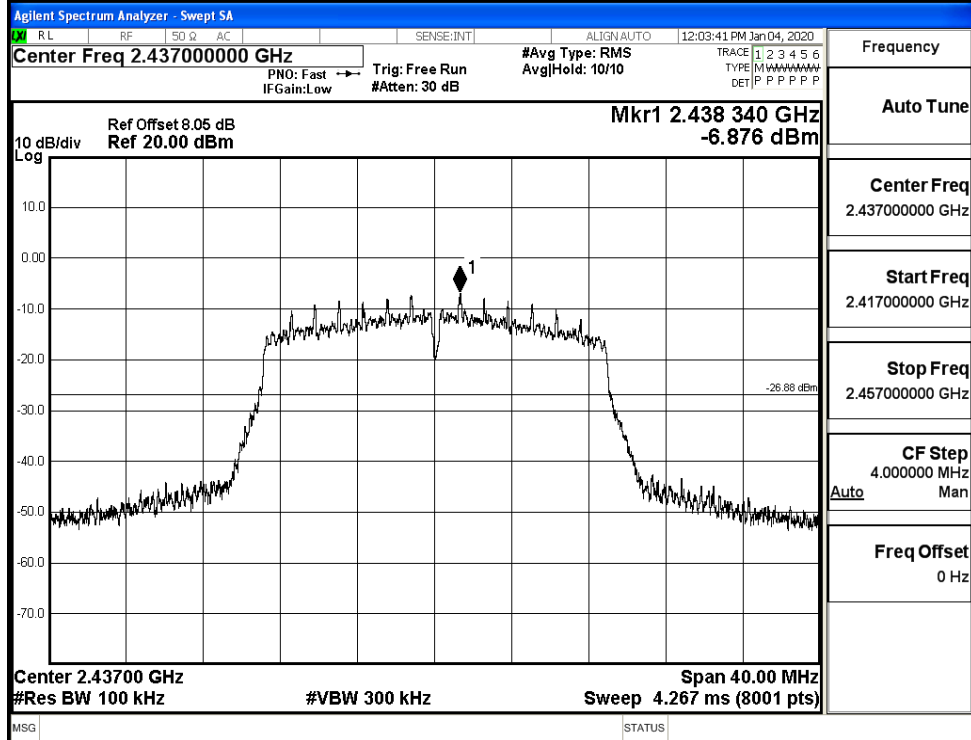


Puw/11N20
SISO/LCH

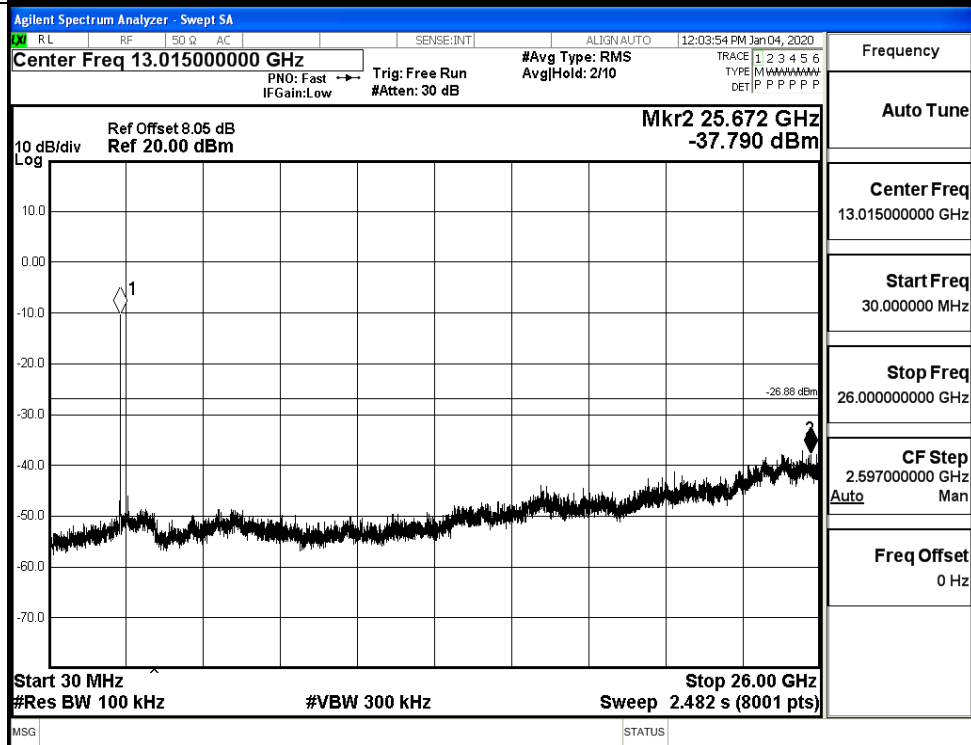


11N20SISO_MCH_Graphs

Pref/11N20
SISO/MCH

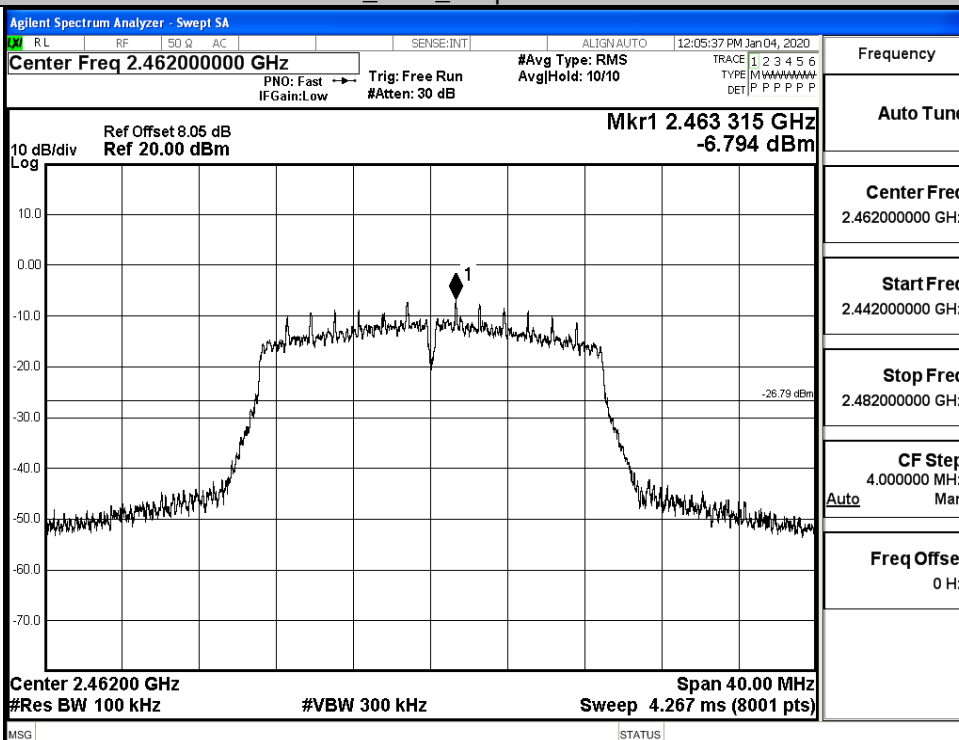


Puw/11N20
SISO/MCH

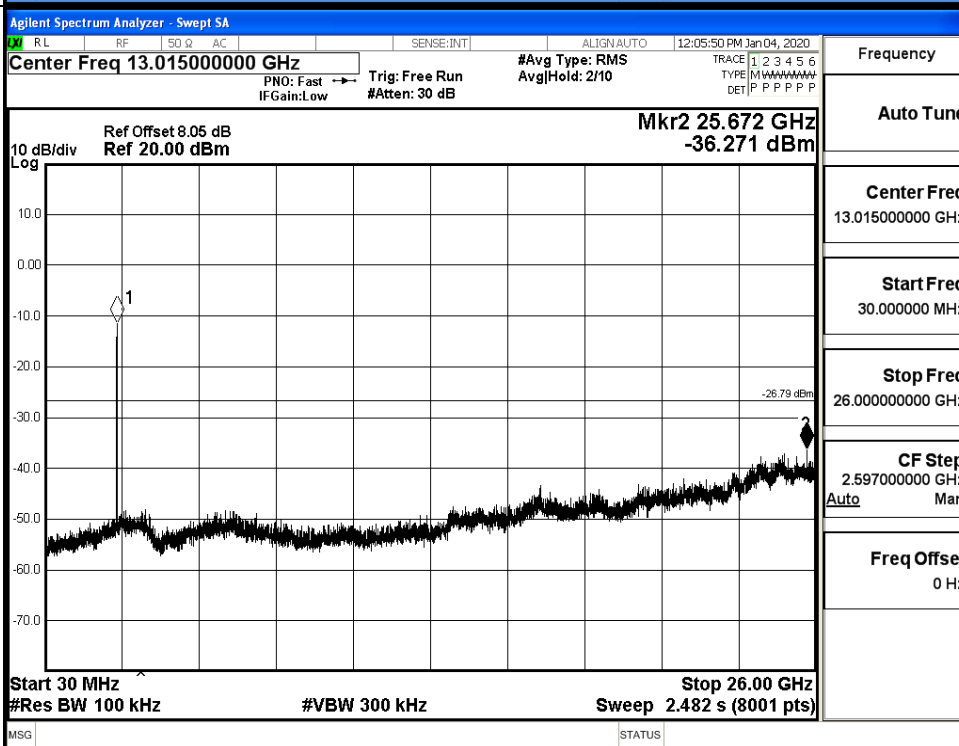


11N20ISO_HCH_Graphs

Pref/11N20
SISO/HCH

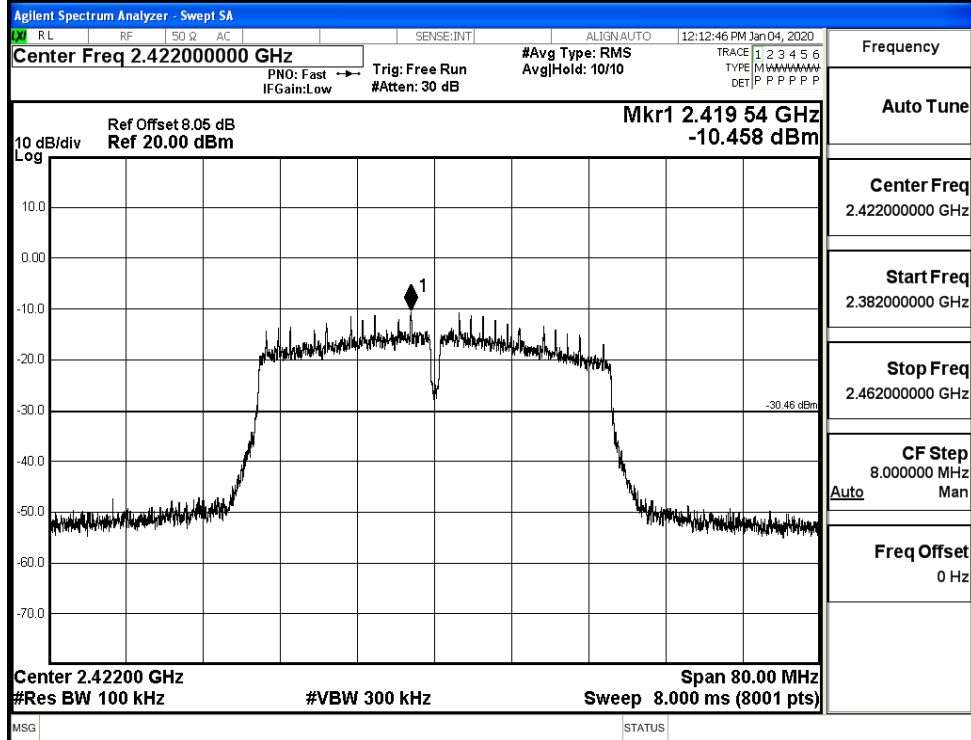


Puw/11N20
SISO/HCH

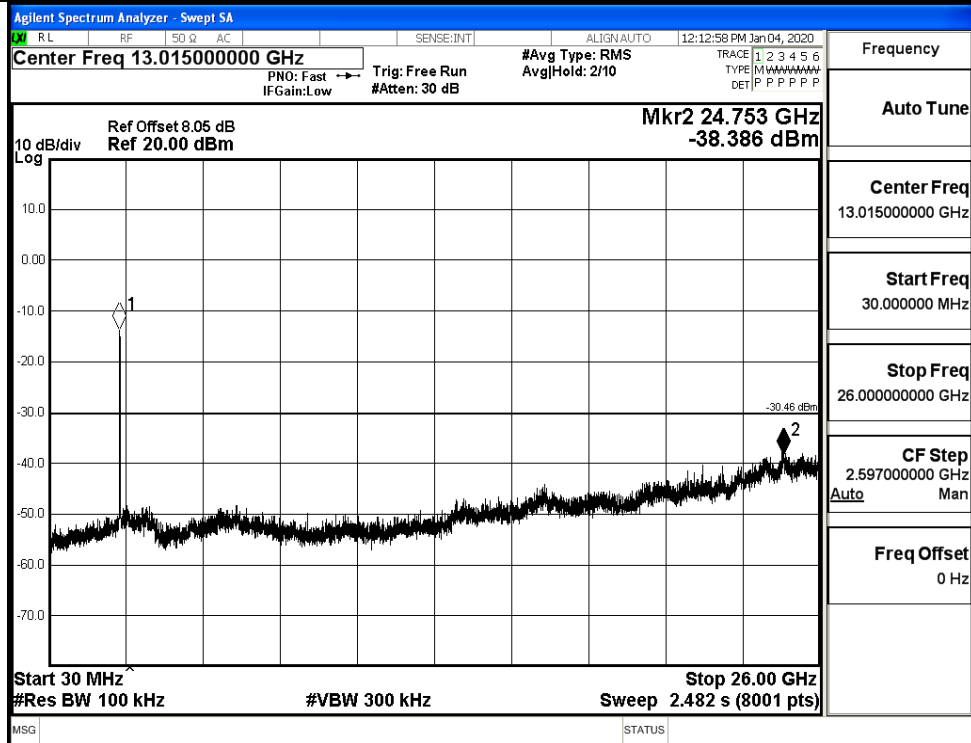


11N40SISO_LCH_Graphs

Pref/11N40
SISO/LCH

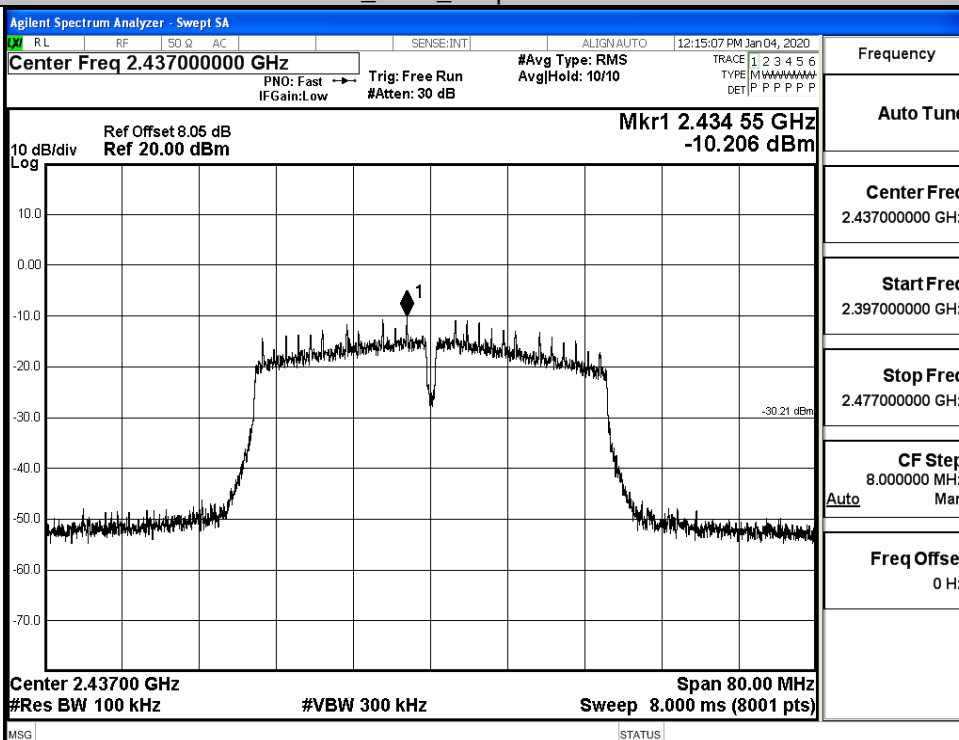


Puw/11N40
SISO/LCH

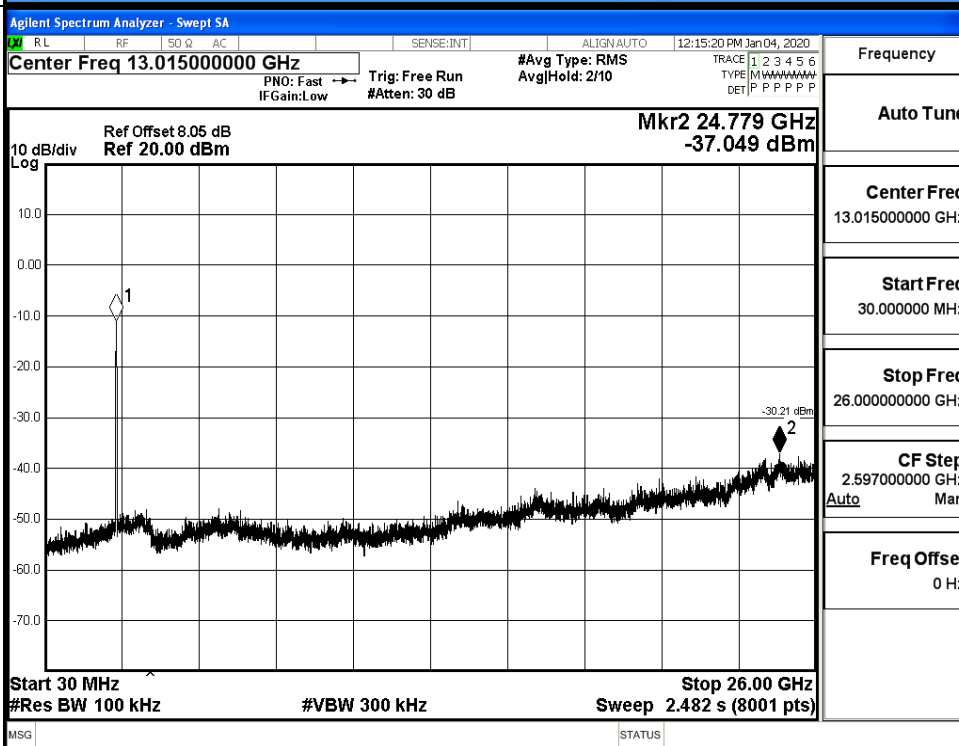


11N40SISO_MCH_Graphs

Pref/11N40
SISO/MCH

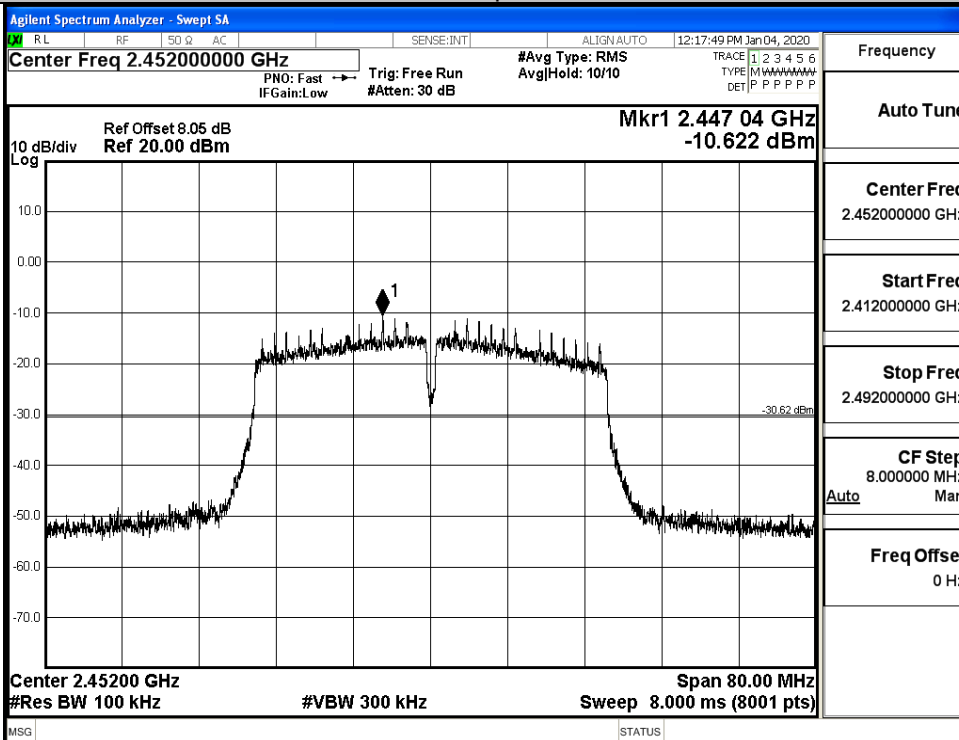


Puw/11N40
SISO/MCH

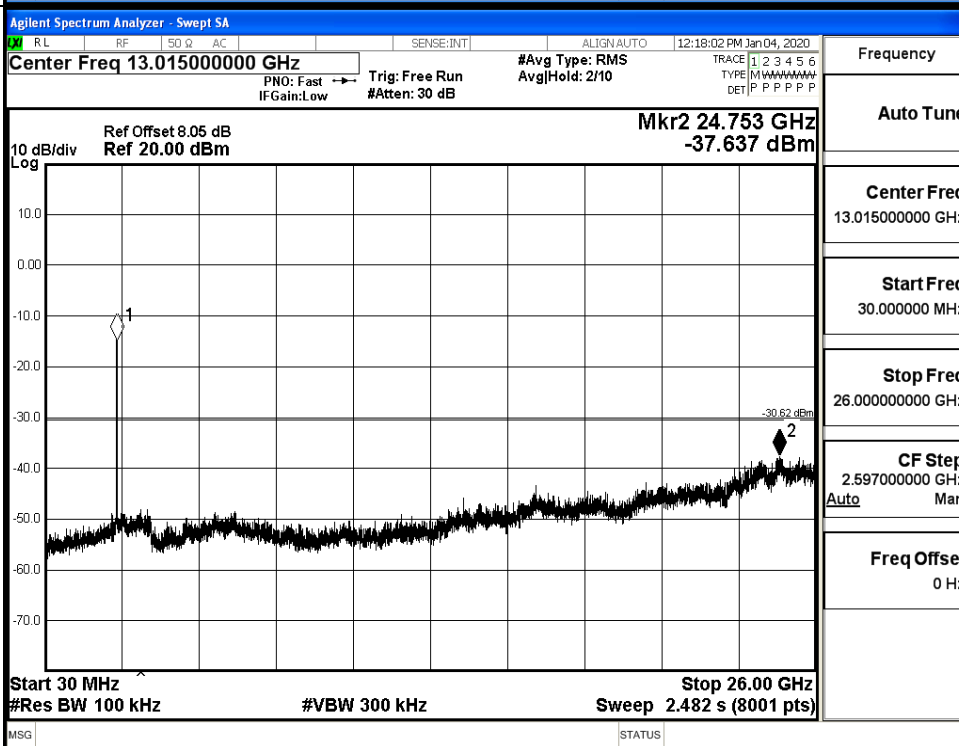


11N40SISO_HCH_Graphs

Pref/11N40
SISO/HCH



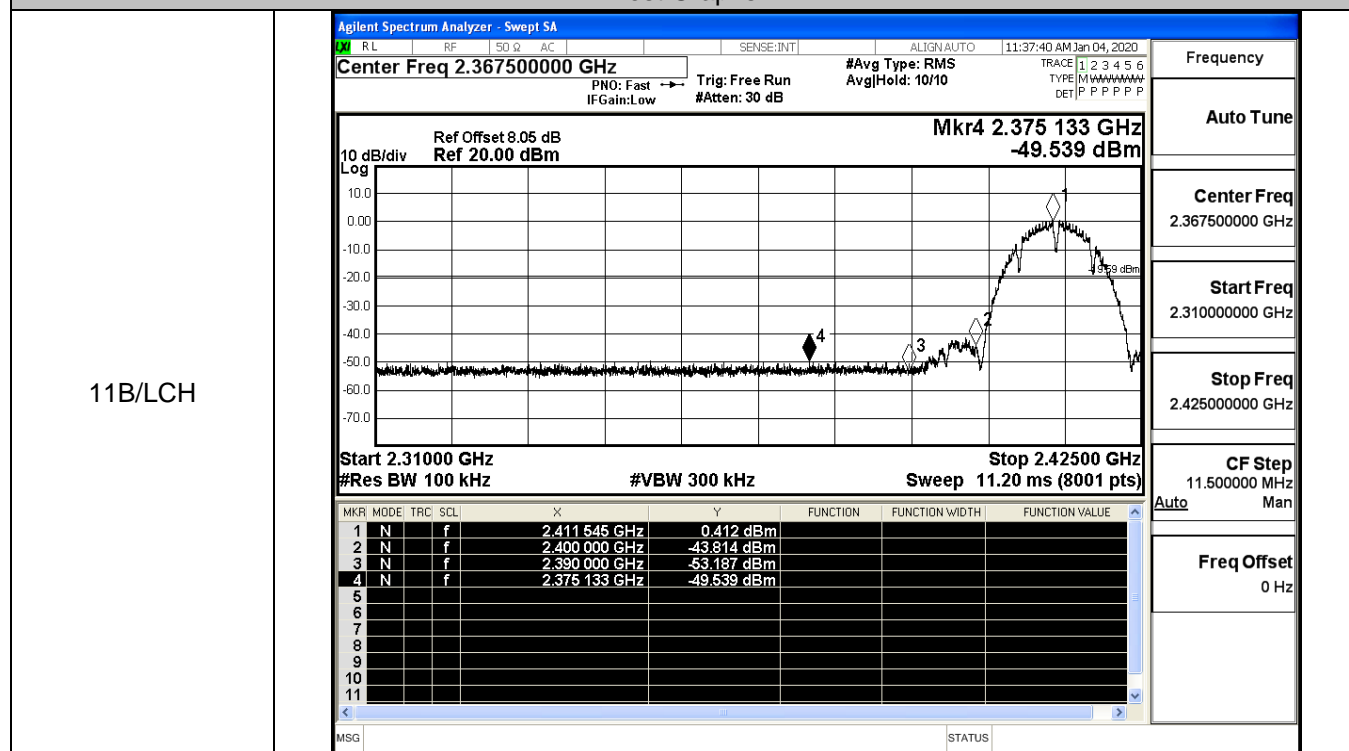
Puw/11N40
SISO/HCH



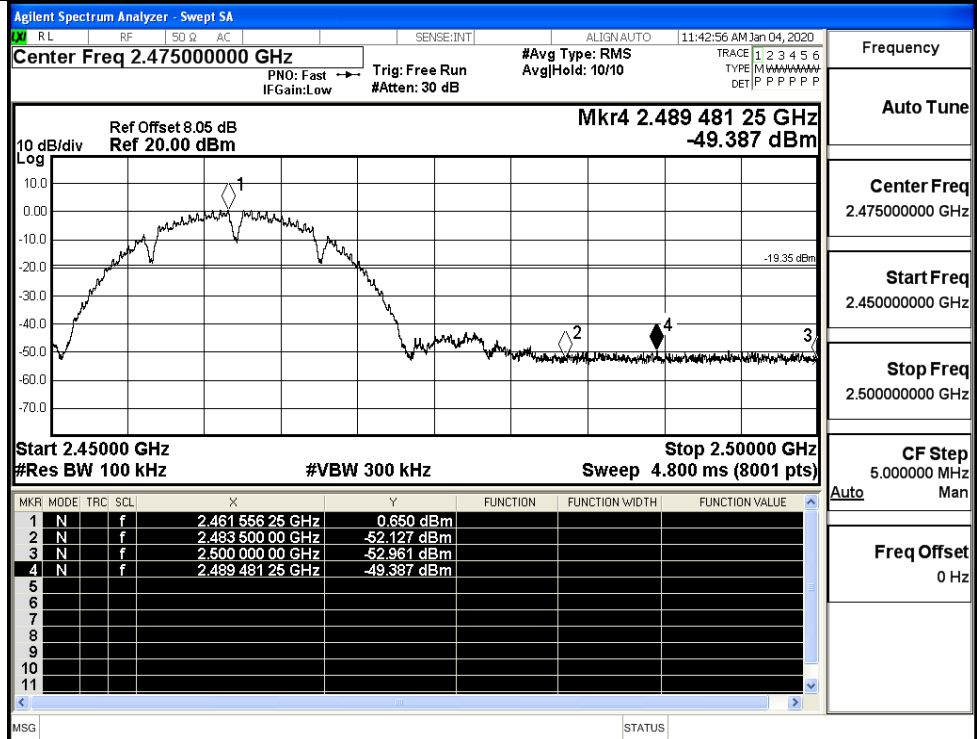
C.6 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	0.412	-49.539	-19.59	PASS
	HCH	0.650	-49.387	-19.35	PASS
11G	LCH	-7.069	-49.257	-27.07	PASS
	HCH	-7.365	-48.658	-27.37	PASS
11N20SISO	LCH	-6.797	-49.103	-26.8	PASS
	HCH	-6.761	-49.284	-26.76	PASS
11N40SISO	LCH	-11.014	-48.237	-31.01	PASS
	HCH	-10.486	-49.164	-30.49	PASS

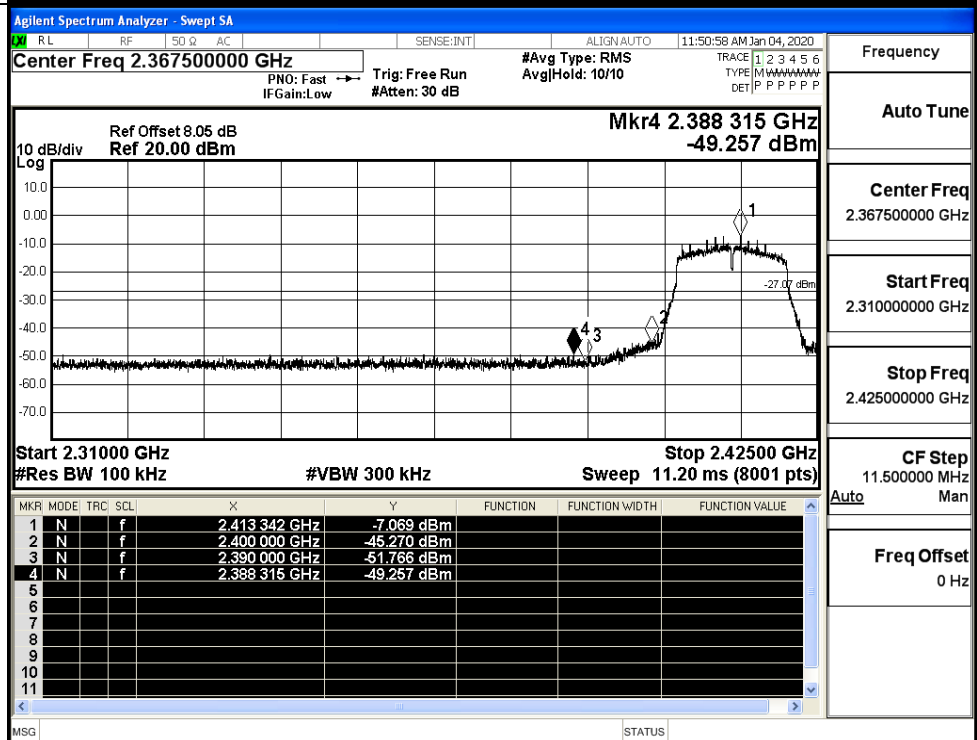
Test Graphs



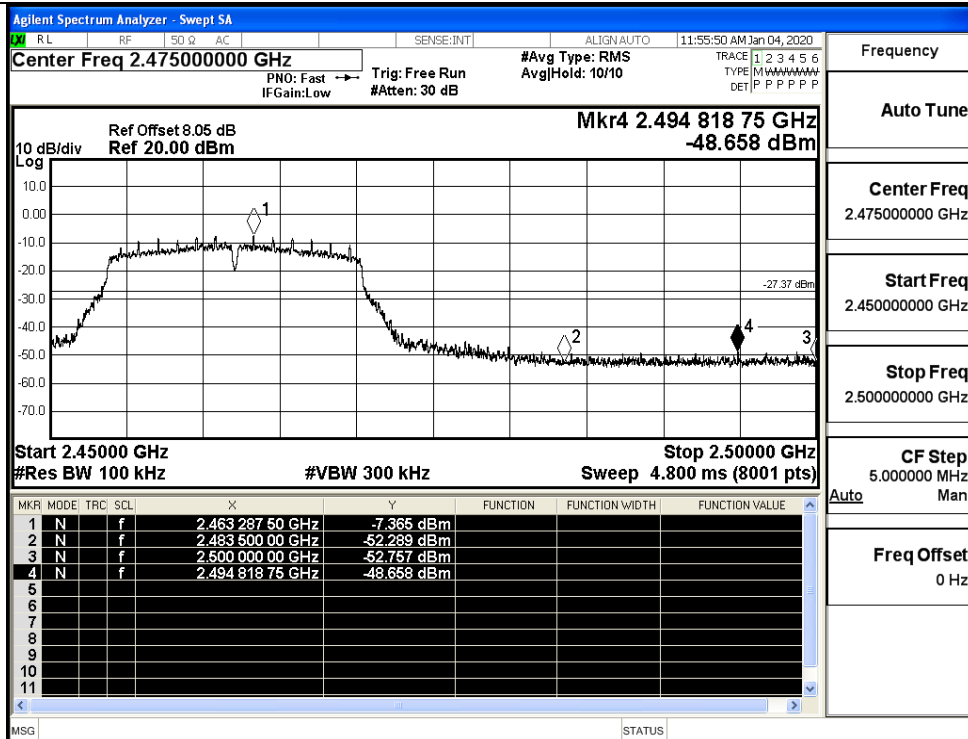
11B/HCH



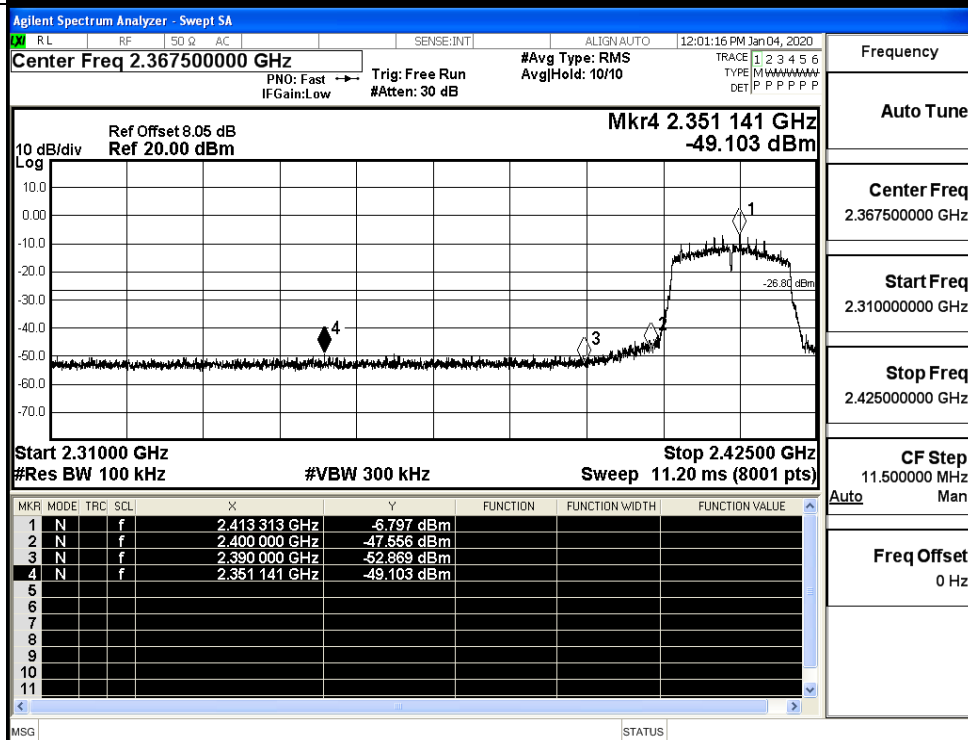
11G/LCH



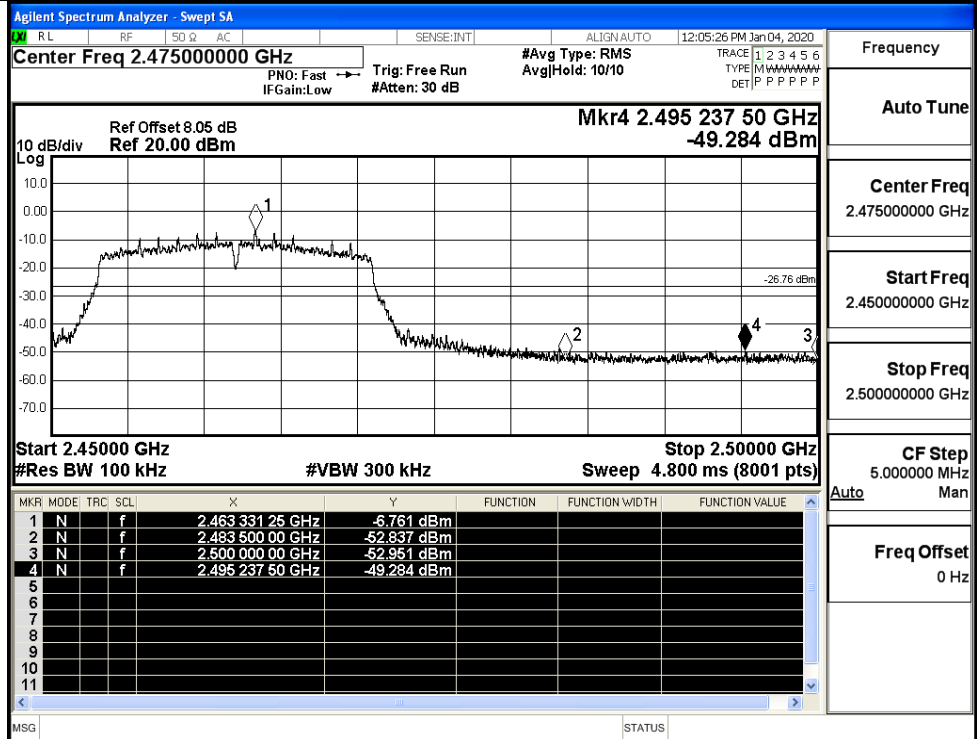
11G/HCH



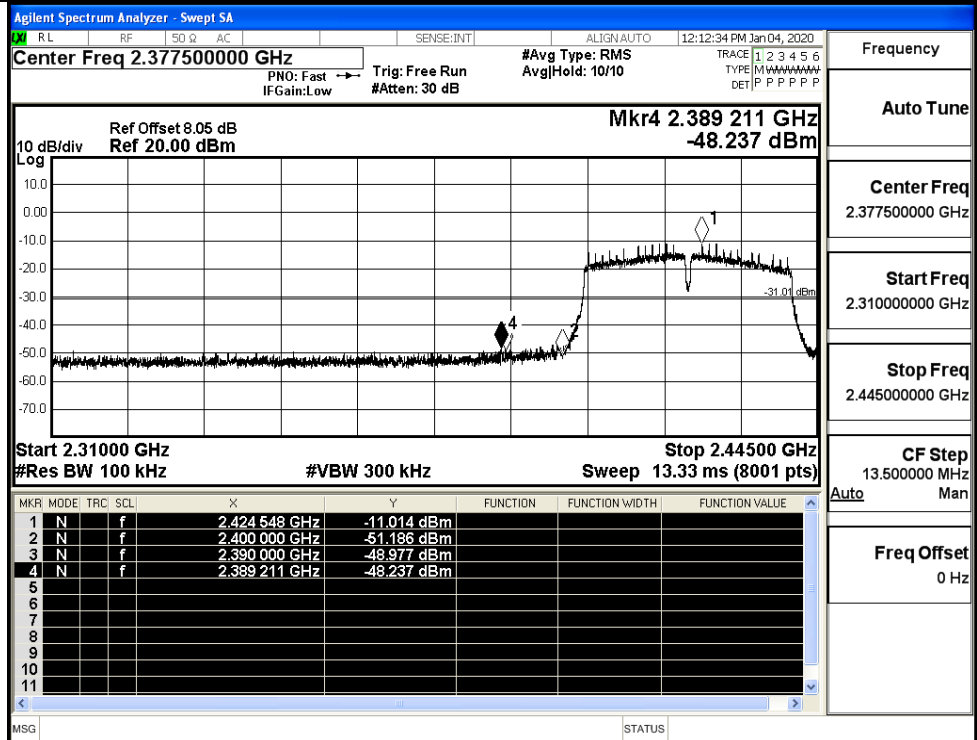
11N20SISO/LCH



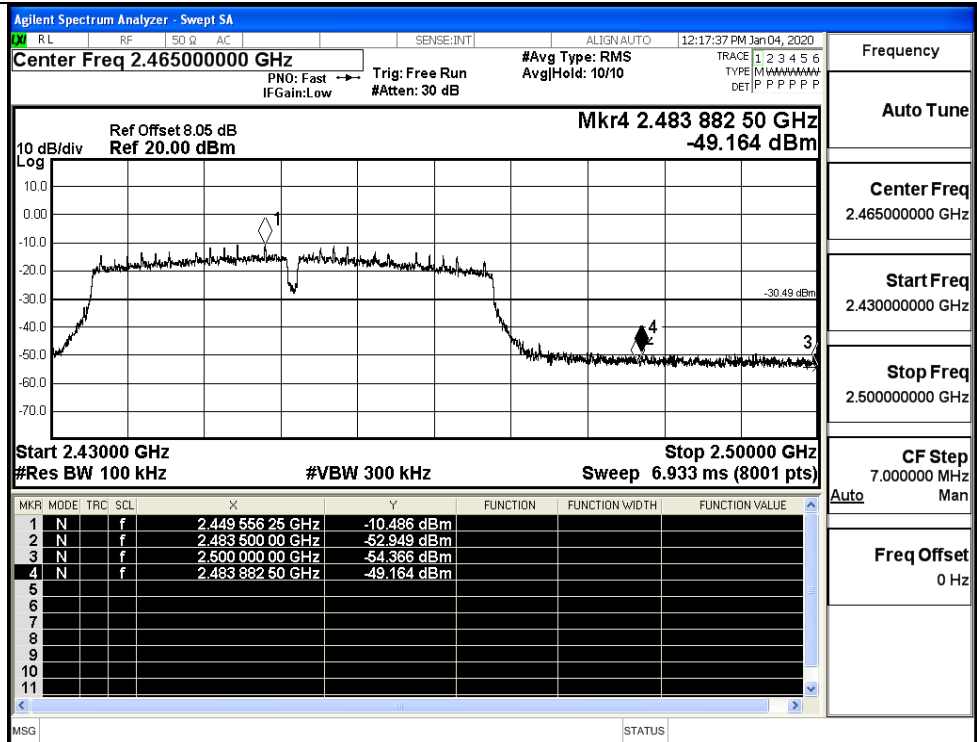
11N20SISO/HCH



11N40SISO/LCH



11N40SISO/HCH

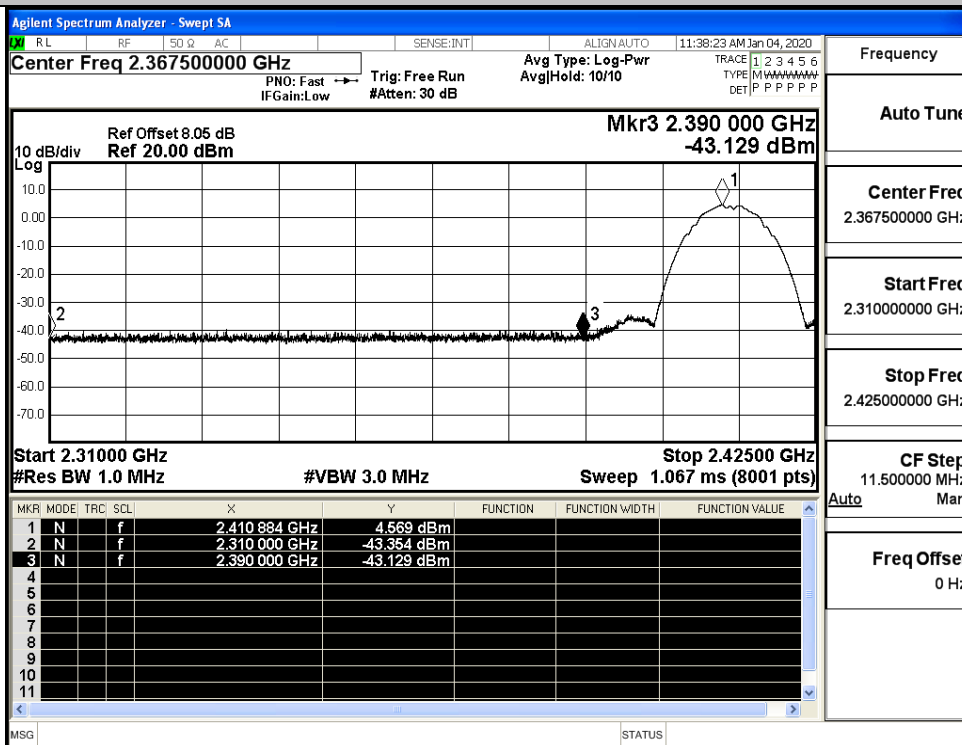


C.7 Restrict-band band-edge measurements

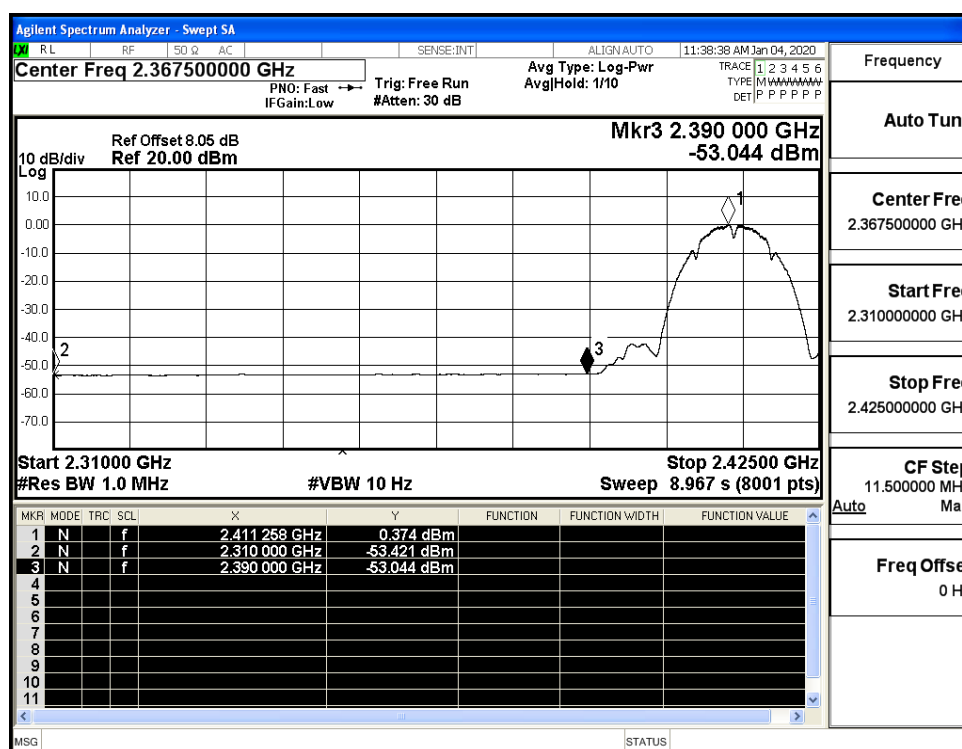
Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
11B	2412	Ant1	2310.0	-43.35	3.0	0	54.88	PEAK	74	PASS
	2412	Ant1	2310.0	-53.42	3.0	0	44.81	AV	54	PASS
	2412	Ant1	2390.0	-43.13	3.0	0	55.10	PEAK	74	PASS
	2412	Ant1	2390.0	-53.04	3.0	0	45.19	AV	54	PASS
	2462	Ant1	2483.5	-42.58	3.0	0	55.65	PEAK	74	PASS
	2462	Ant1	2483.5	-52.67	3.0	0	45.56	AV	54	PASS
	2462	Ant1	2500.0	-42.07	3.0	0	56.16	PEAK	74	PASS
	2462	Ant1	2500.0	-52.50	3.0	0	45.73	AV	54	PASS
11G	2412	Ant1	2310.0	-43.45	3.0	0	54.78	PEAK	74	PASS
	2412	Ant1	2310.0	-53.24	3.0	0	44.99	AV	54	PASS
	2412	Ant1	2390.0	-42.72	3.0	0	55.51	PEAK	74	PASS
	2412	Ant1	2390.0	-52.75	3.0	0	45.48	AV	54	PASS
	2462	Ant1	2483.5	-41.92	3.0	0	56.31	PEAK	74	PASS
	2462	Ant1	2483.5	-52.47	3.0	0	45.76	AV	54	PASS
	2462	Ant1	2500.0	-42.91	3.0	0	55.32	PEAK	74	PASS
	2462	Ant1	2500.0	-52.48	3.0	0	45.75	AV	54	PASS
11N20 SISO	2412	Ant1	2310.0	-41.41	3.0	0	56.82	PEAK	74	PASS
	2412	Ant1	2310.0	-53.28	3.0	0	44.95	AV	54	PASS
	2412	Ant1	2390.0	-41.07	3.0	0	57.16	PEAK	74	PASS
	2412	Ant1	2390.0	-52.58	3.0	0	45.65	AV	54	PASS
	2462	Ant1	2483.5	-41.97	3.0	0	56.26	PEAK	74	PASS
	2462	Ant1	2483.5	-52.31	3.0	0	45.92	AV	54	PASS
	2462	Ant1	2500.0	-42.47	3.0	0	55.76	PEAK	74	PASS
	2462	Ant1	2500.0	-52.48	3.0	0	45.75	AV	54	PASS
11N40 SISO	2422	Ant1	2310.0	-42.32	3.0	0	55.91	PEAK	74	PASS
	2422	Ant1	2310.0	-53.25	3.0	0	44.98	AV	54	PASS

	2422	Ant1	2390.0	-41.75	3.0	0	56.48	PEAK	74	PASS
	2422	Ant1	2390.0	-51.95	3.0	0	46.28	AV	54	PASS
	2452	Ant1	2483.5	-40.69	3.0	0	57.54	PEAK	74	PASS
	2452	Ant1	2483.5	-52.21	3.0	0	46.02	AV	54	PASS
	2452	Ant1	2500.0	-42.20	3.0	0	56.03	PEAK	74	PASS
	2452	Ant1	2500.0	-52.56	3.0	0	45.67	AV	54	PASS

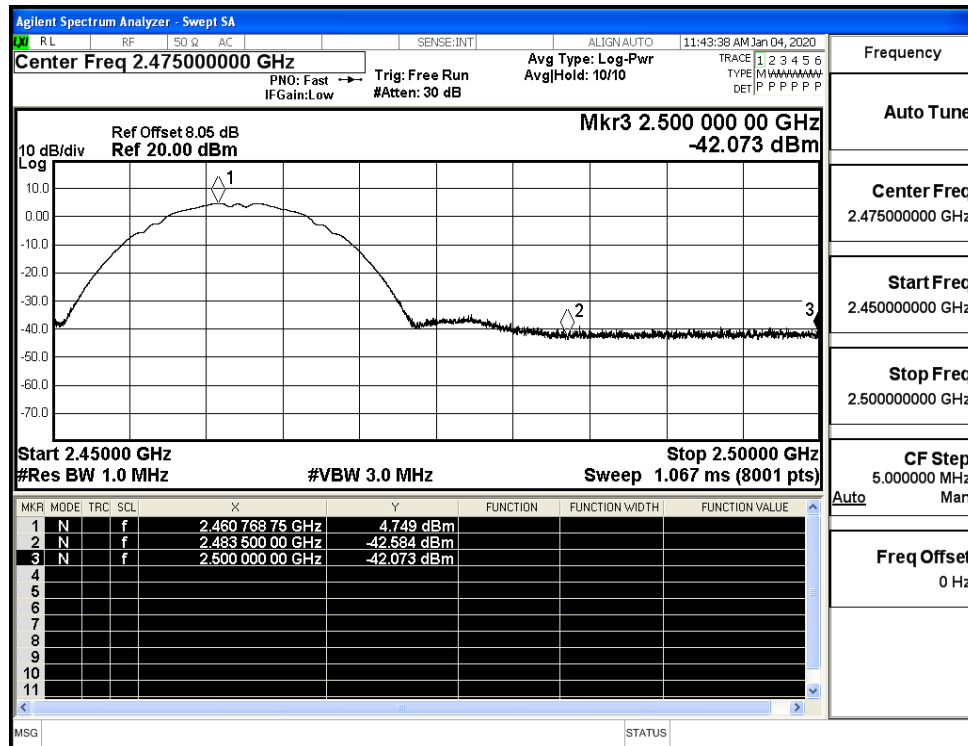
Restrict-band band-edge measurements_11B_2412_Ant1_PEAK



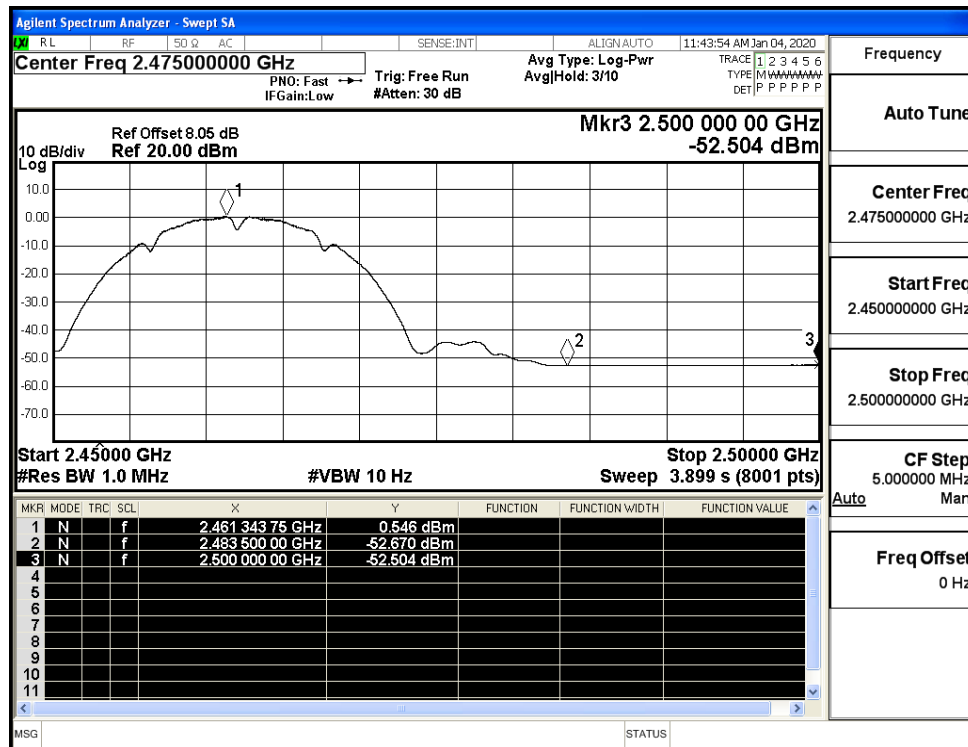
Restrict-band band-edge measurements_11B_2412_Ant1_AV



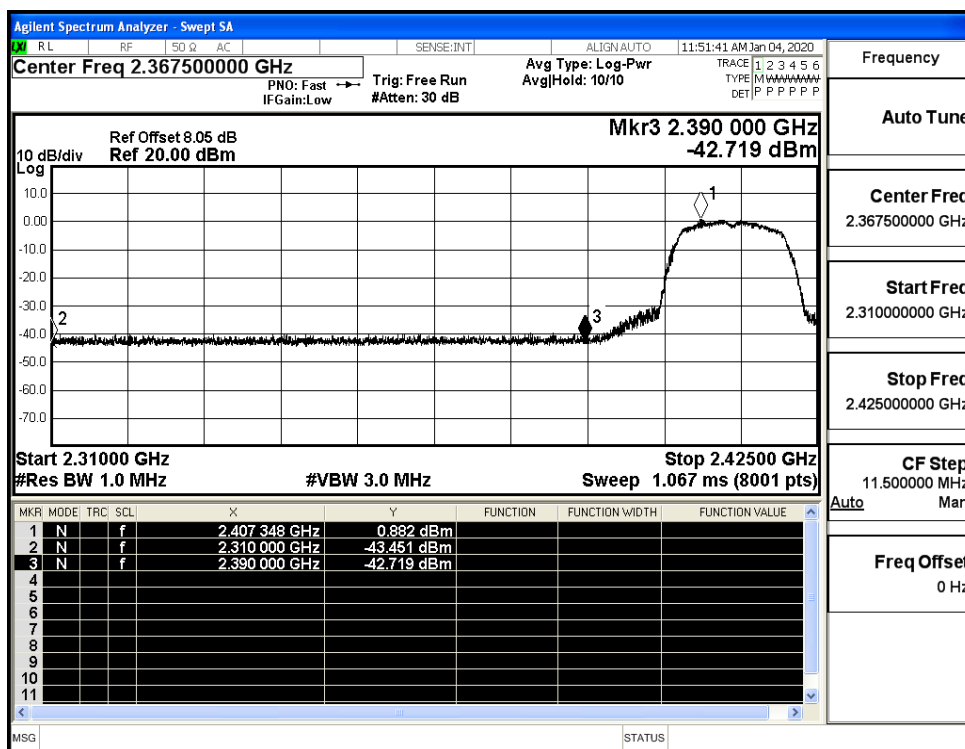
Restrict-band band-edge measurements_11B_2462_Ant1_PEAK



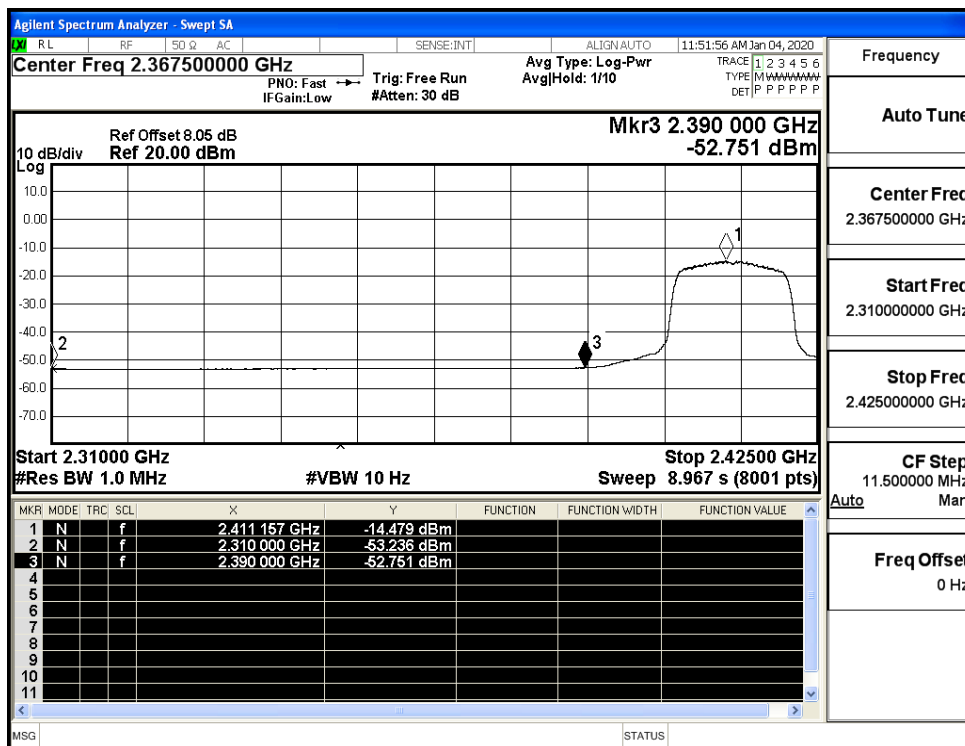
Restrict-band band-edge measurements_11B_2462_Ant1_AV



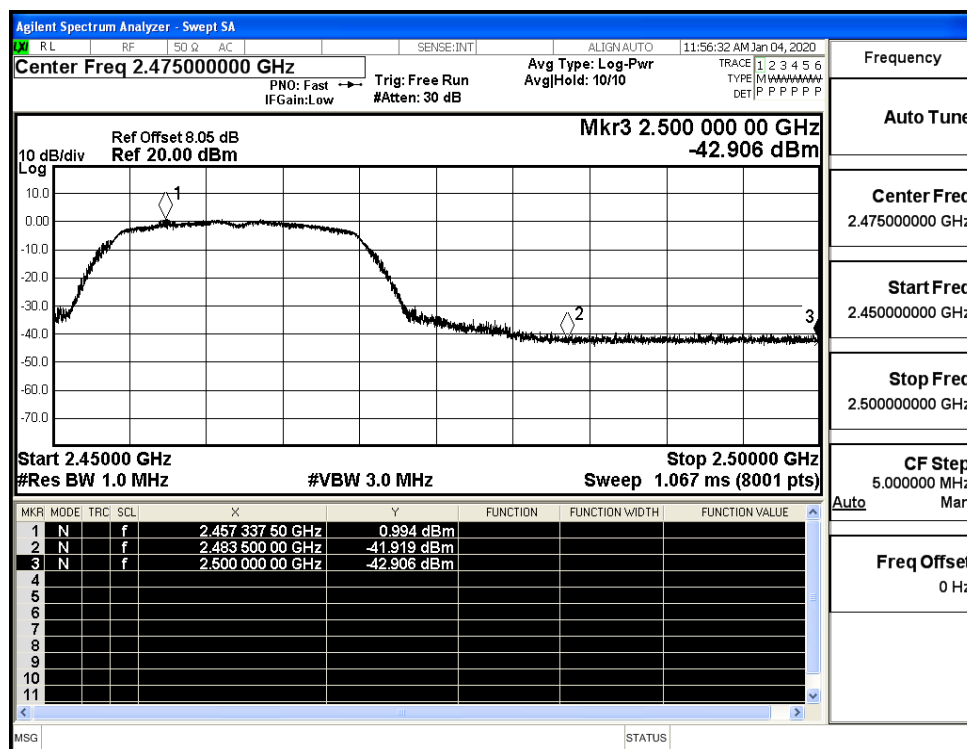
Restrict-band band-edge measurements_11G_2412_Ant1_PEAK



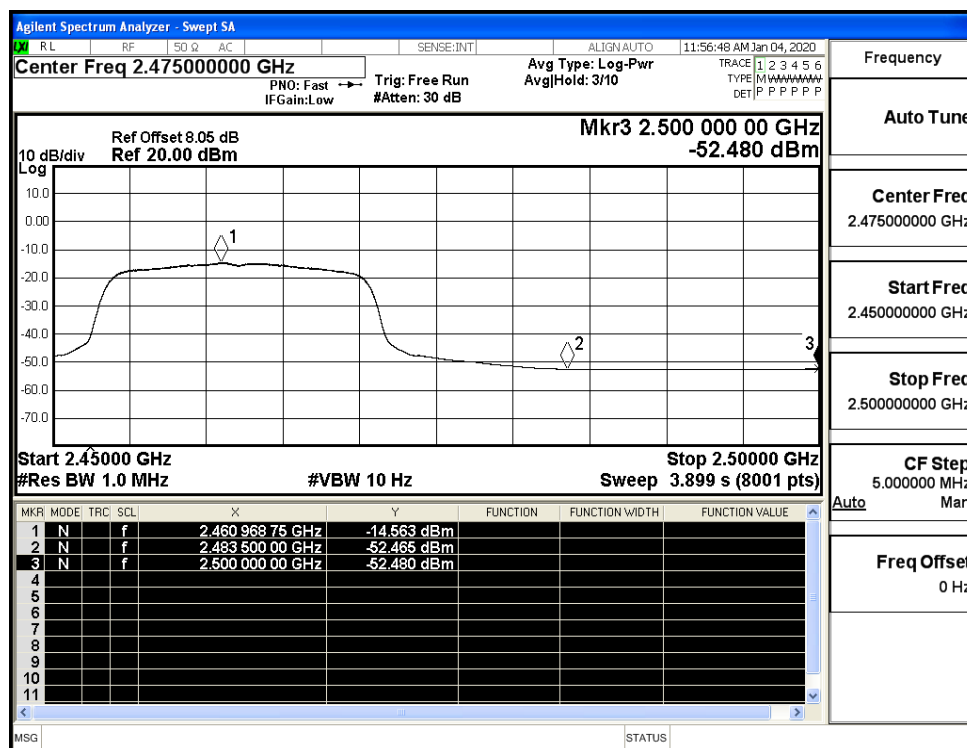
Restrict-band band-edge measurements_11G_2412_Ant1_AV



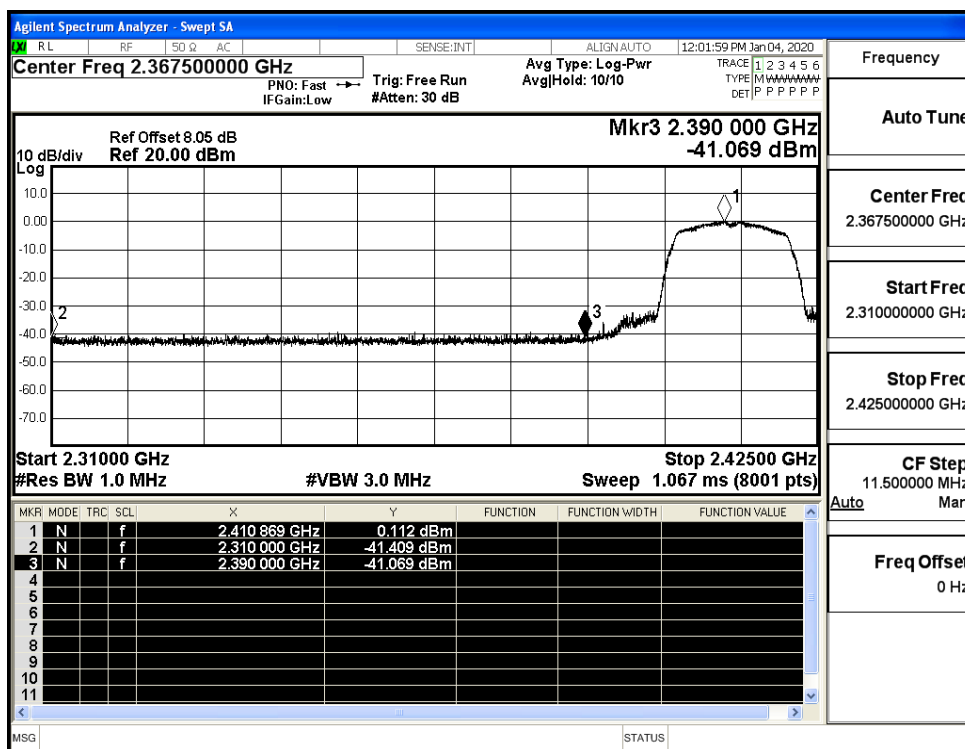
Restrict-band band-edge measurements_11G_2462_Ant1_PEAK



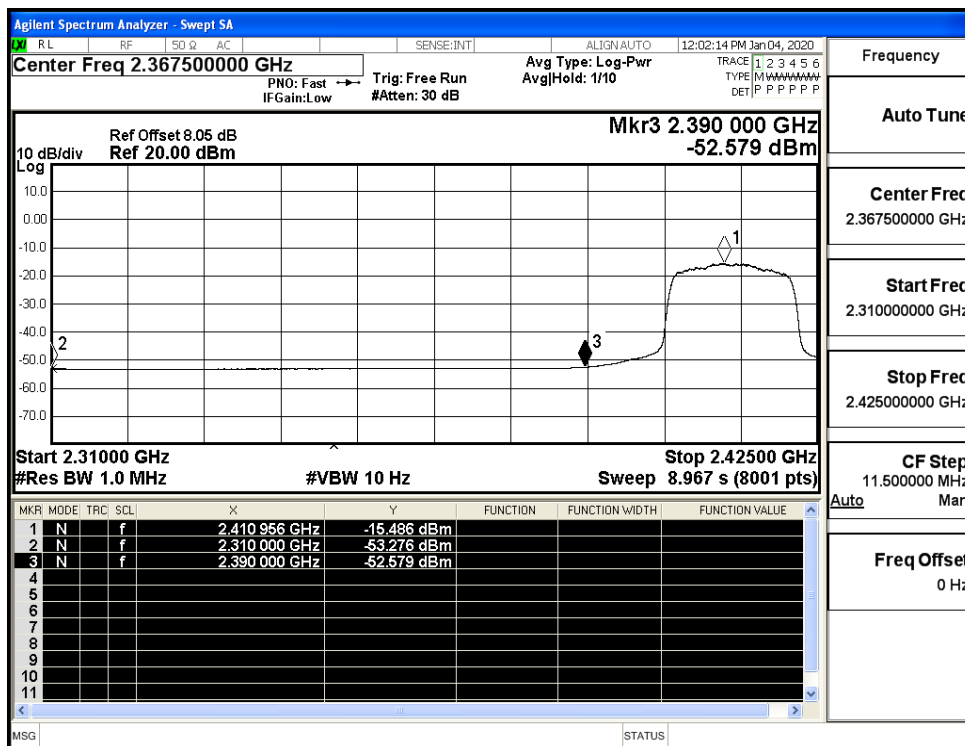
Restrict-band band-edge measurements_11G_2462_Ant1_AV



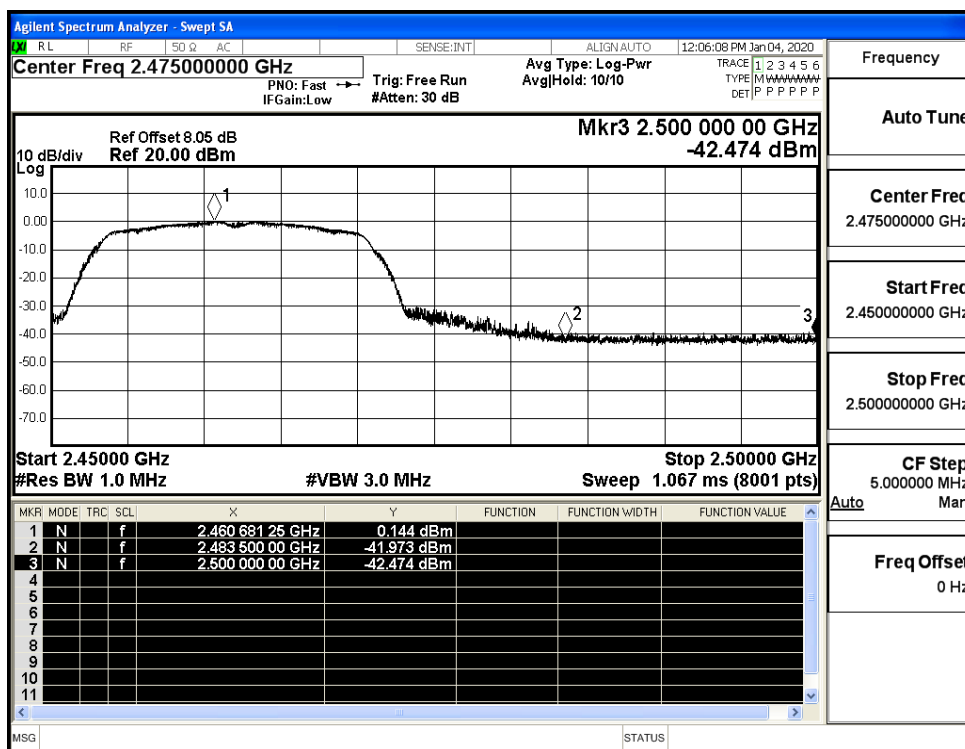
Restrict-band band-edge measurements_11N20SISO_2412_Ant1_PEAK



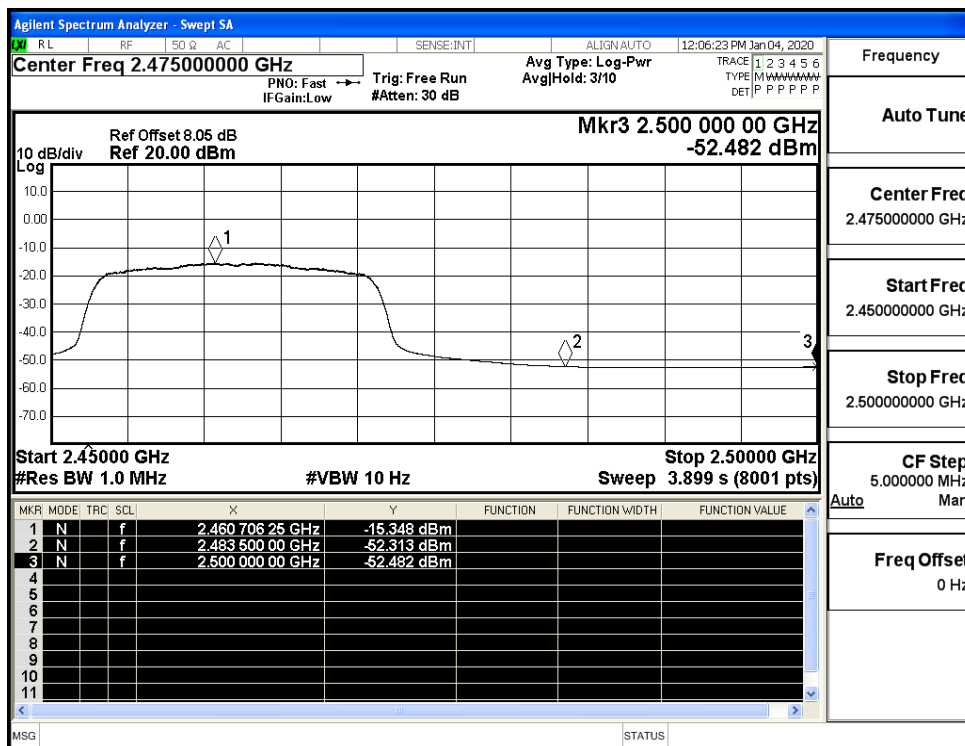
Restrict-band band-edge measurements_11N20SISO_2412_Ant1_AV



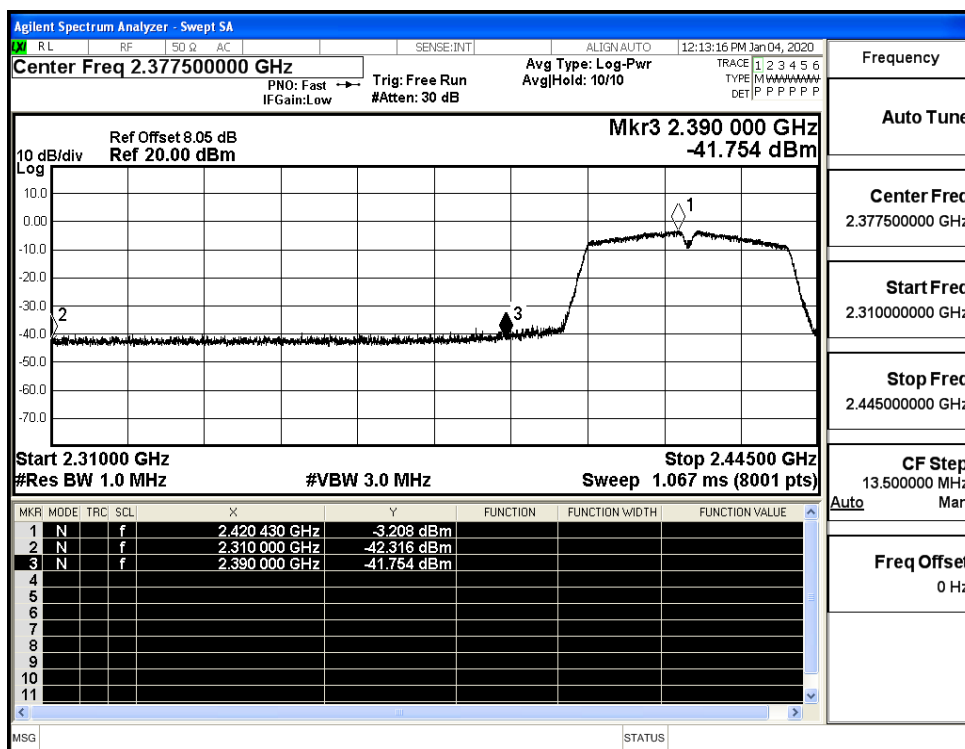
Restrict-band band-edge measurements_11N20SISO_2462_Ant1_PEAK



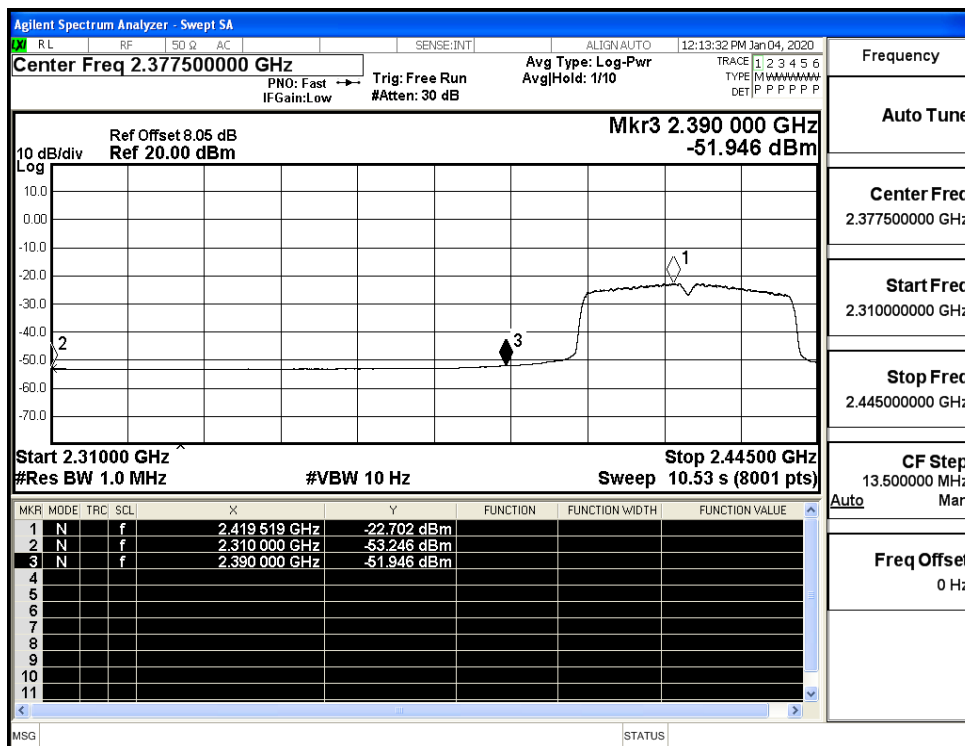
Restrict-band band-edge measurements_11N20SISO_2462_Ant1_AV



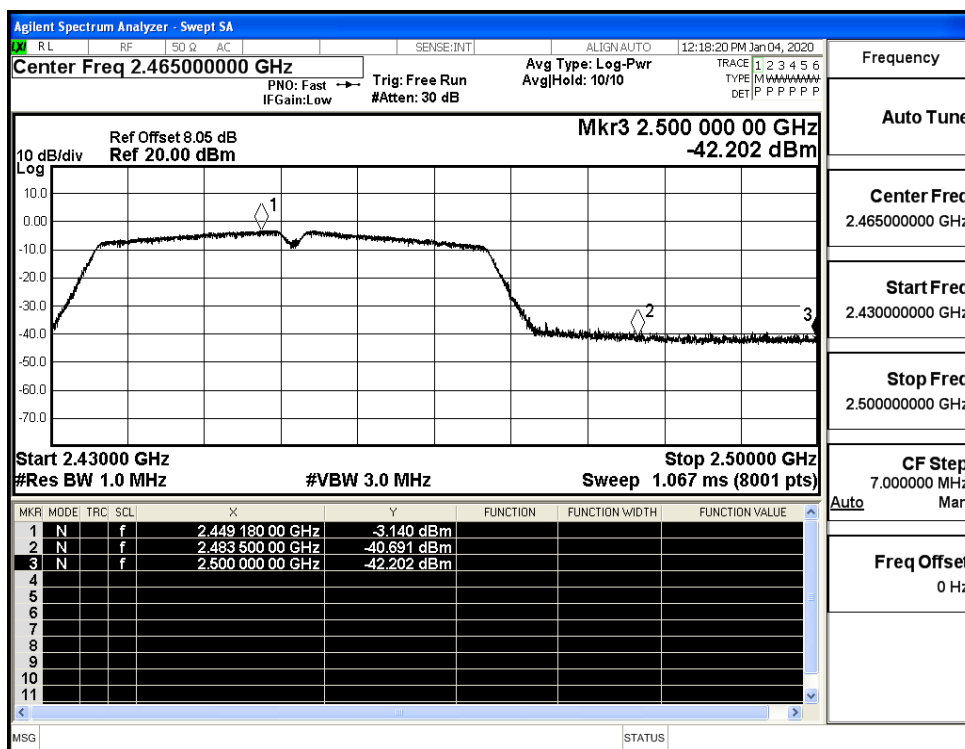
Restrict-band band-edge measurements_11N40SISO_2422_Ant1_PEAK



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

