

Appendix B

RF Test Data for 2.4G WIFI (Conducted Measurement)

Product Name: Ceiling fan remote control kit

Trade Mark: YukiHalu

Test Model: FRT-2001A

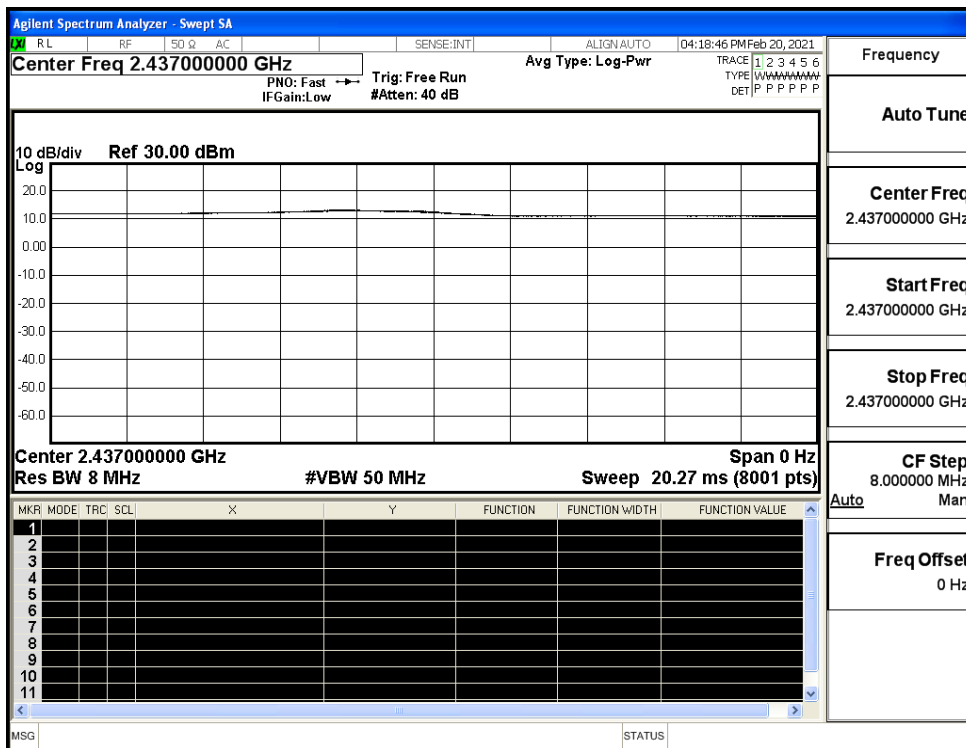
Environmental Conditions

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

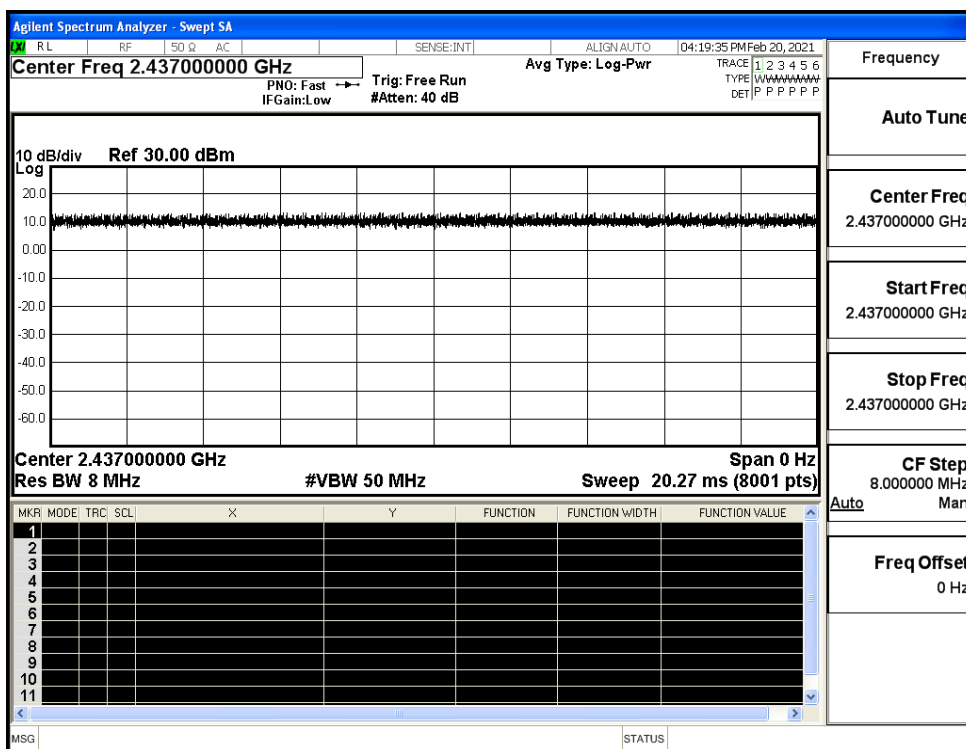
B.1 Duty Cycle

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

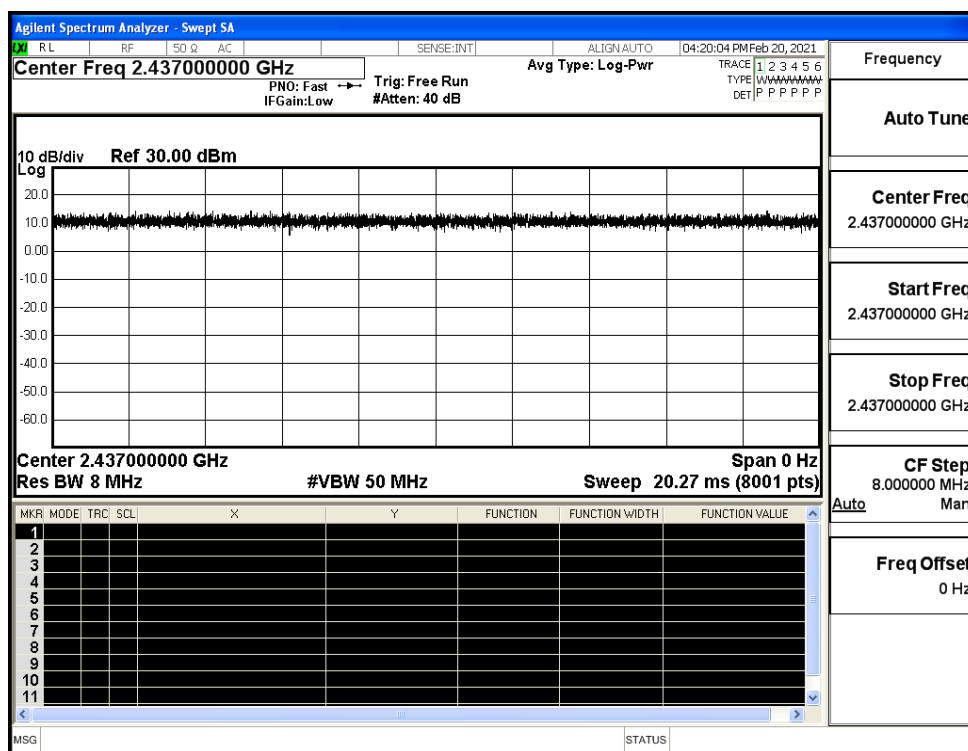
Duty Cycle_11B_2437_Ant1



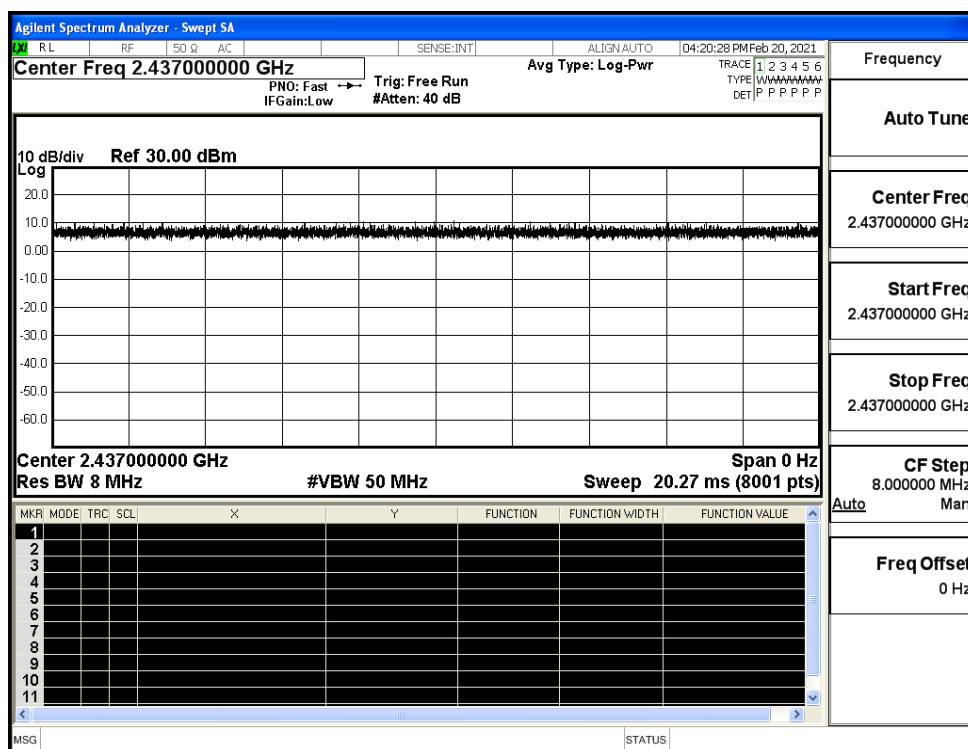
Duty Cycle_11G_2437_Ant1



Duty Cycle_11N20SISO_2437_Ant1



Duty Cycle_11N40SISO_2437_Ant1



B.2 Maximum Conducted Output Power

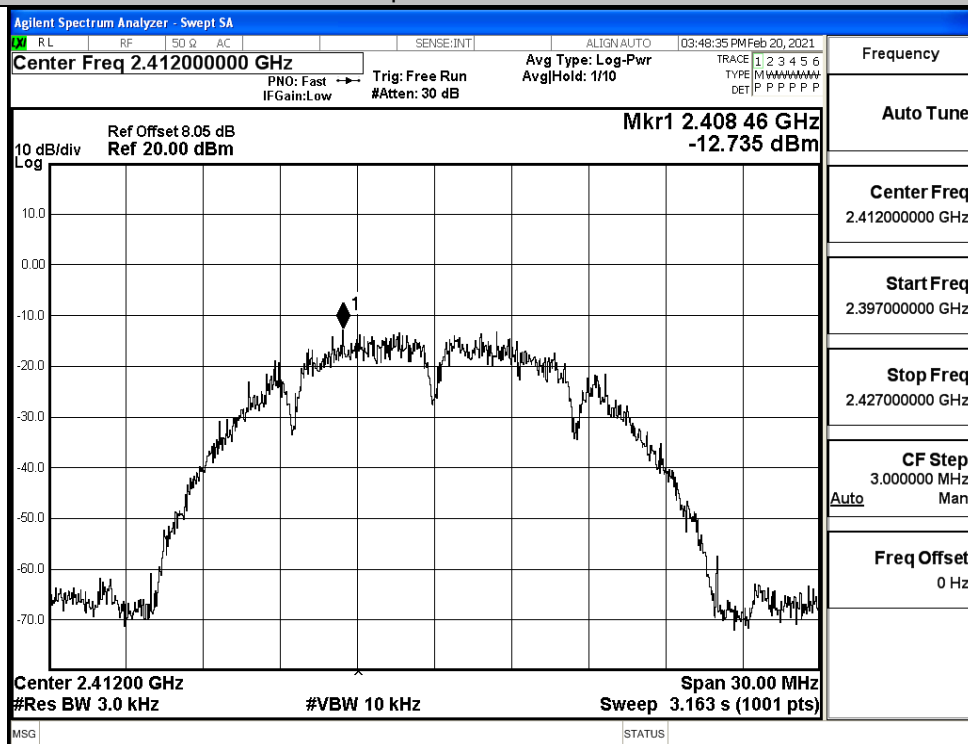
Mode	Channel	Meas.Level [dBm]	Limit [dBm]	Verdict
11B	LCH	14.2	30	PASS
	MCH	14.14	30	PASS
	HCH	13.64	30	PASS
11G	LCH	13.52	30	PASS
	MCH	13.81	30	PASS
	HCH	13.19	30	PASS
11N20SISO	LCH	12.75	30	PASS
	MCH	12.77	30	PASS
	HCH	12.2	30	PASS
11N40SISO	LCH	13.24	30	PASS
	MCH	12.89	30	PASS
	HCH	12.79	30	PASS

B.3 Maximum Power Spectral Density

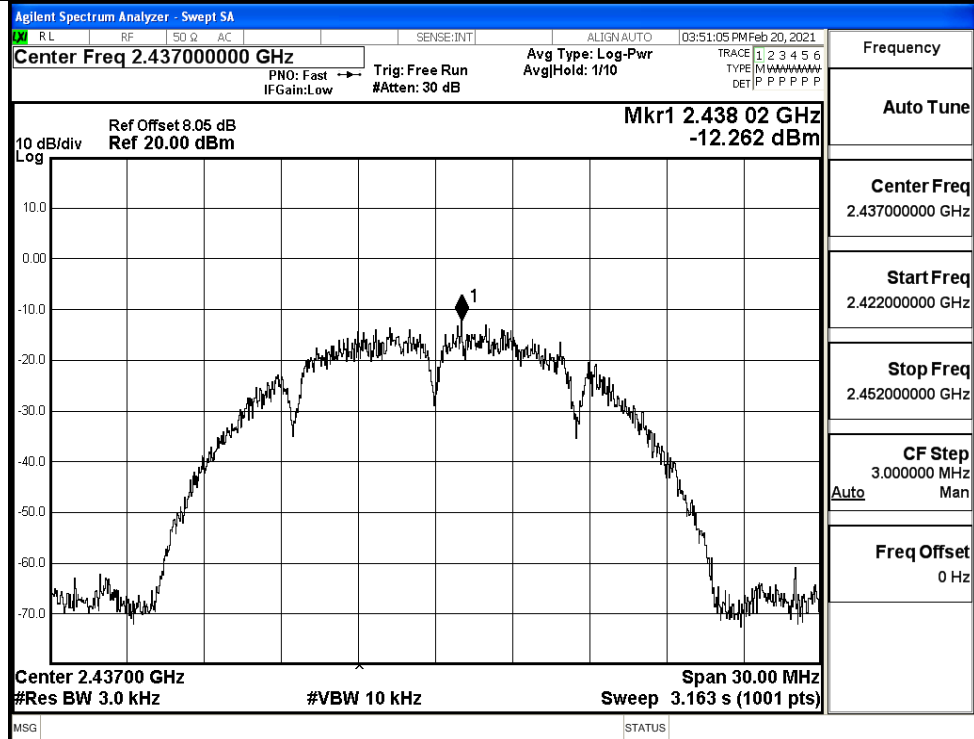
Mode	Channel	Meas.Level [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
11B	LCH	-12.735	8	PASS
	MCH	-12.262	8	PASS
	HCH	-6.360	8	PASS
11G	LCH	-19.856	8	PASS
	MCH	-20.548	8	PASS
	HCH	-19.537	8	PASS
11N20SISO	LCH	-21.177	8	PASS
	MCH	-21.789	8	PASS
	HCH	-21.790	8	PASS
11N40SISO	LCH	-24.532	8	PASS
	MCH	-23.911	8	PASS
	HCH	-24.218	8	PASS

Test Graphs

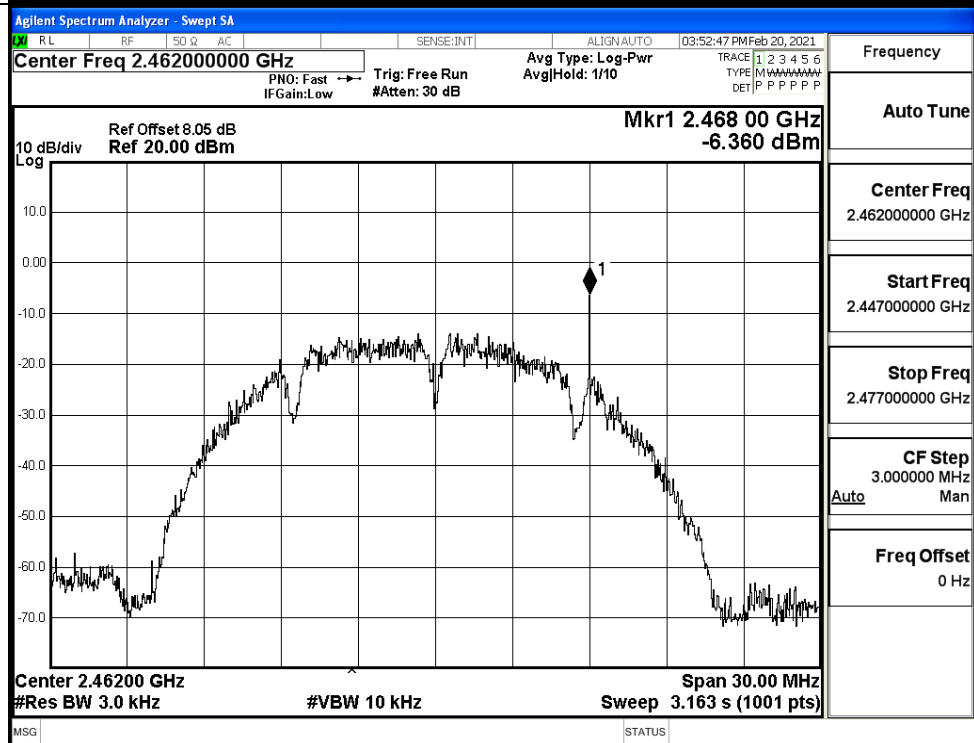
11B/LCH



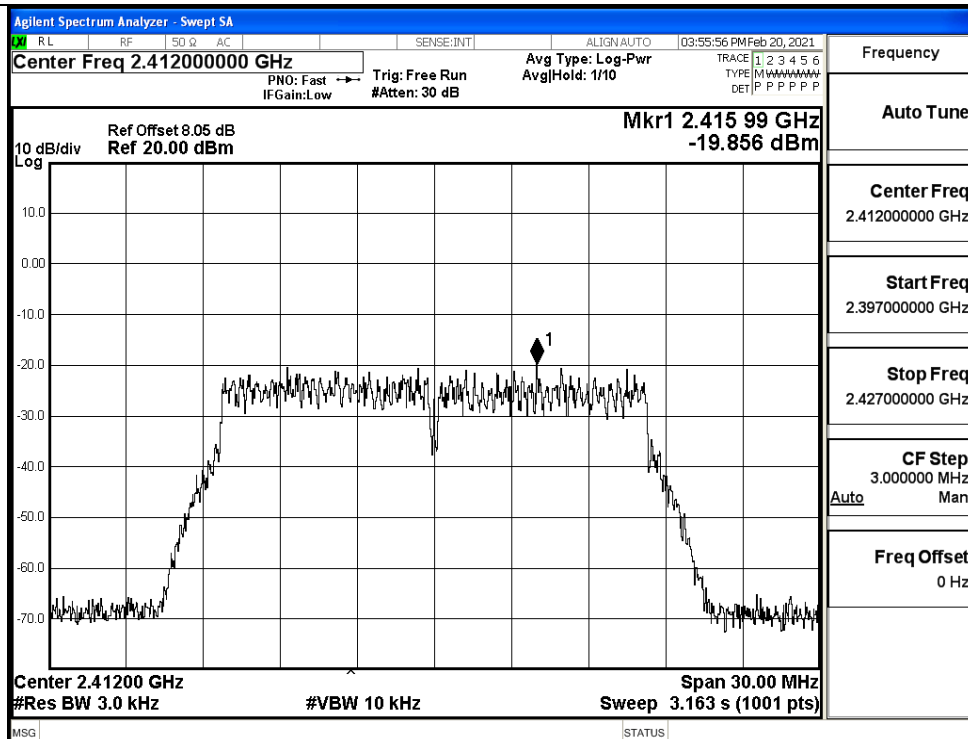
11B/MCH



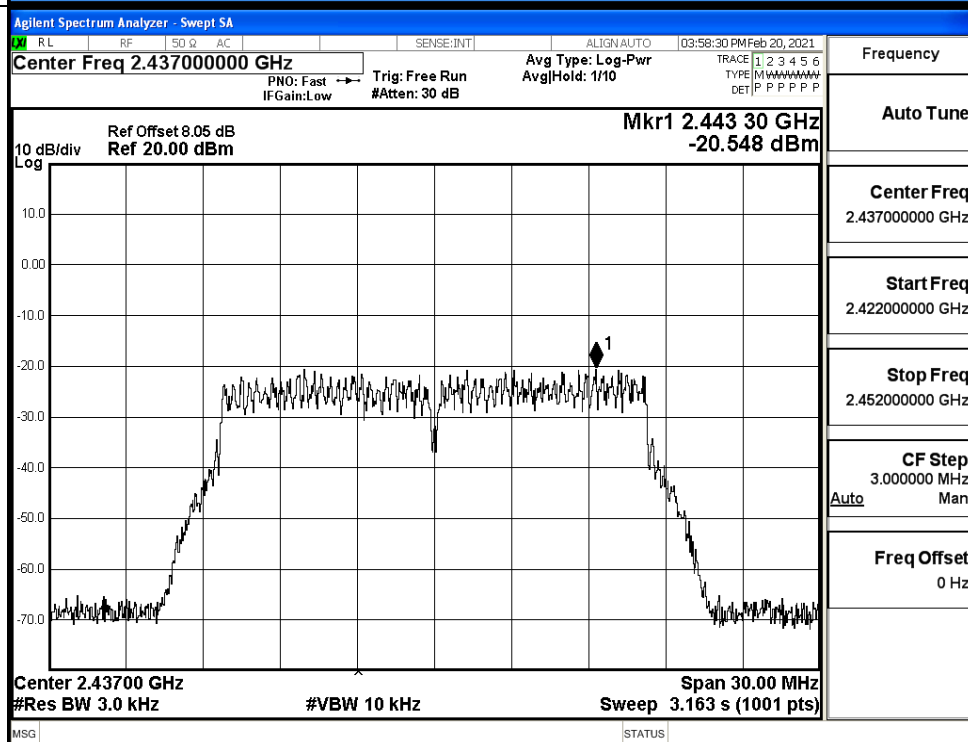
11B/HCH



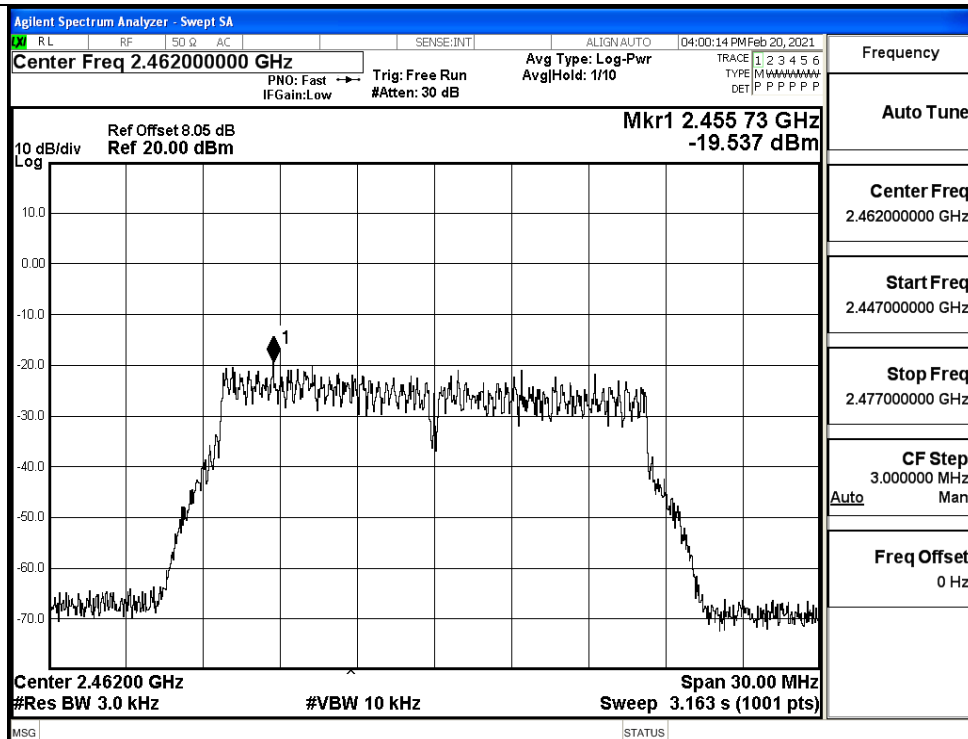
11G/LCH



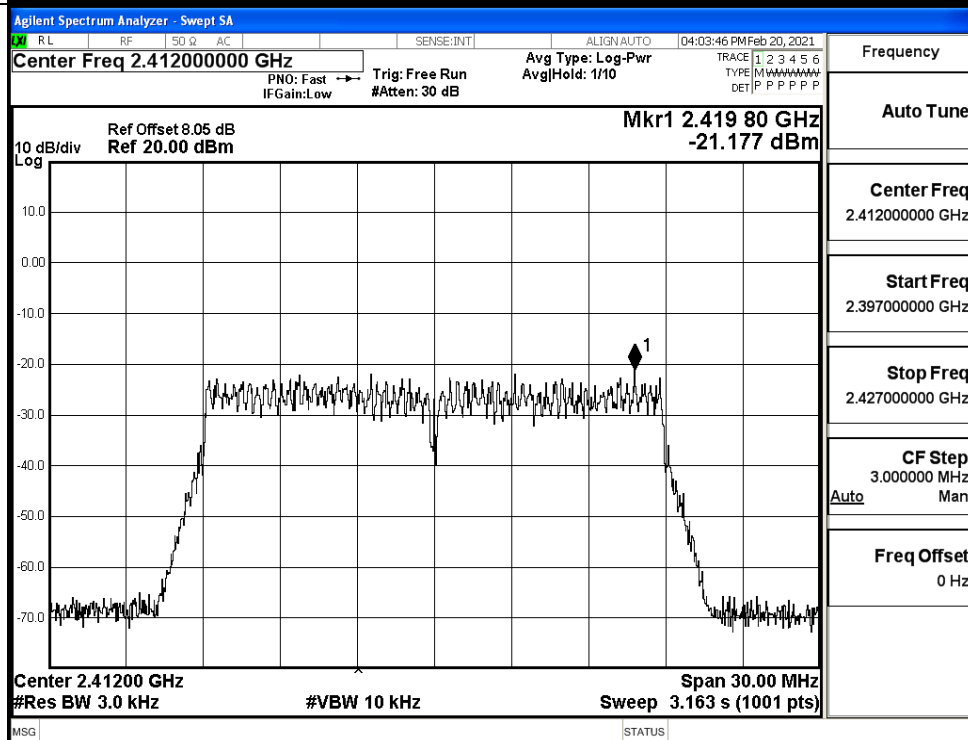
11G/MCH



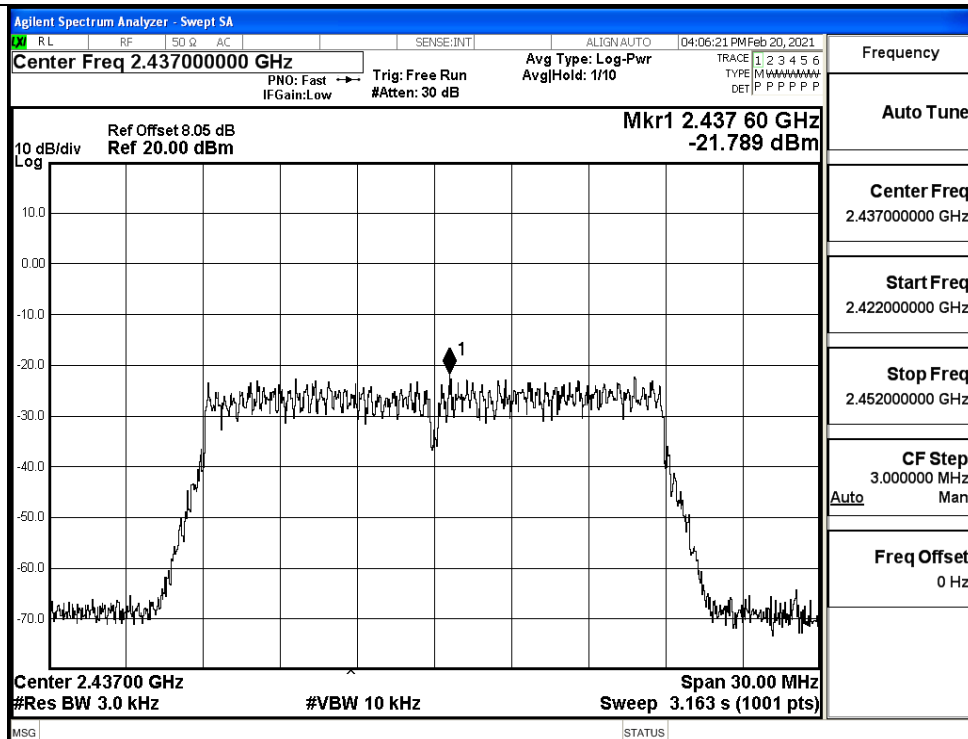
11G/HCH



11N20SISO/LCH



11N20SISO/MCH



Frequency

Auto Tune

Center Freq
2.437000000 GHz

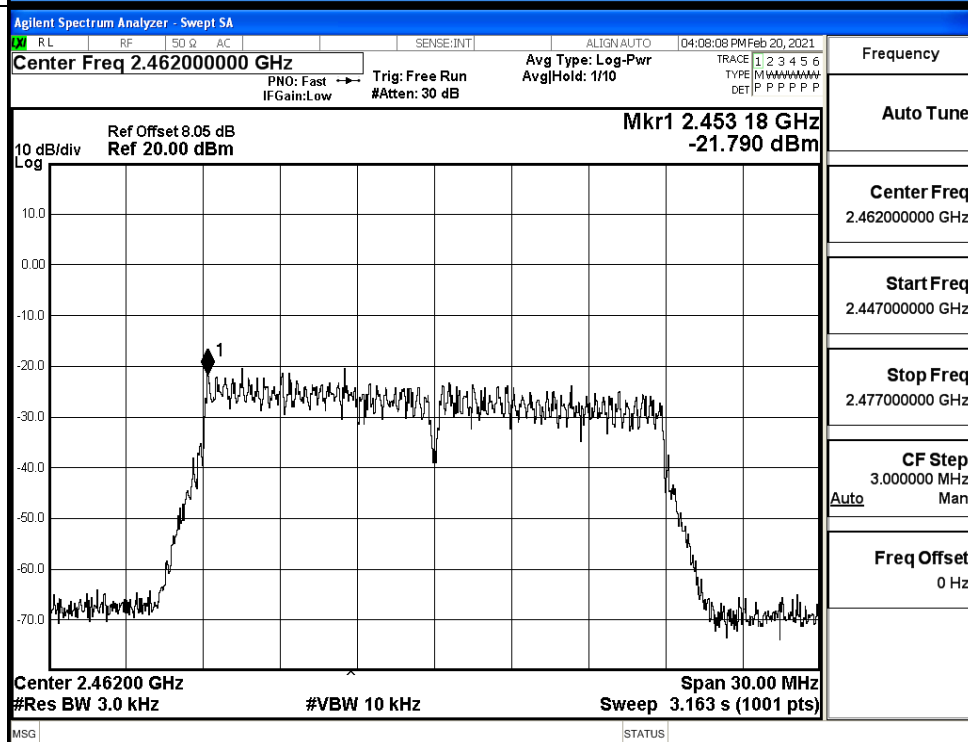
Start Freq
2.422000000 GHz

Stop Freq
2.452000000 GHz

CF Step
3.000000 MHz
Auto Man

Freq Offset
0 Hz

11N20SISO/HCH



Frequency

Auto Tune

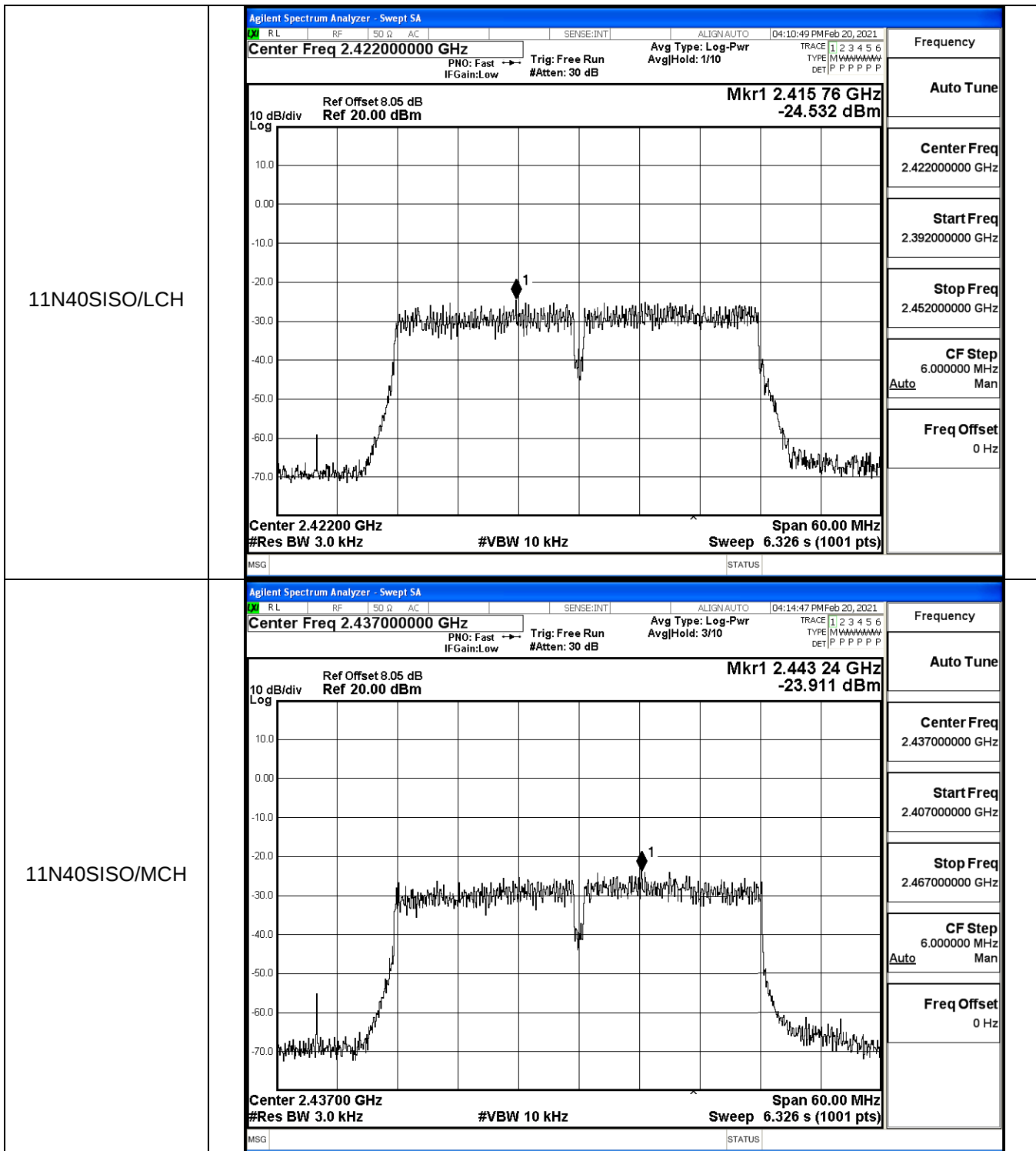
Center Freq
2.462000000 GHz

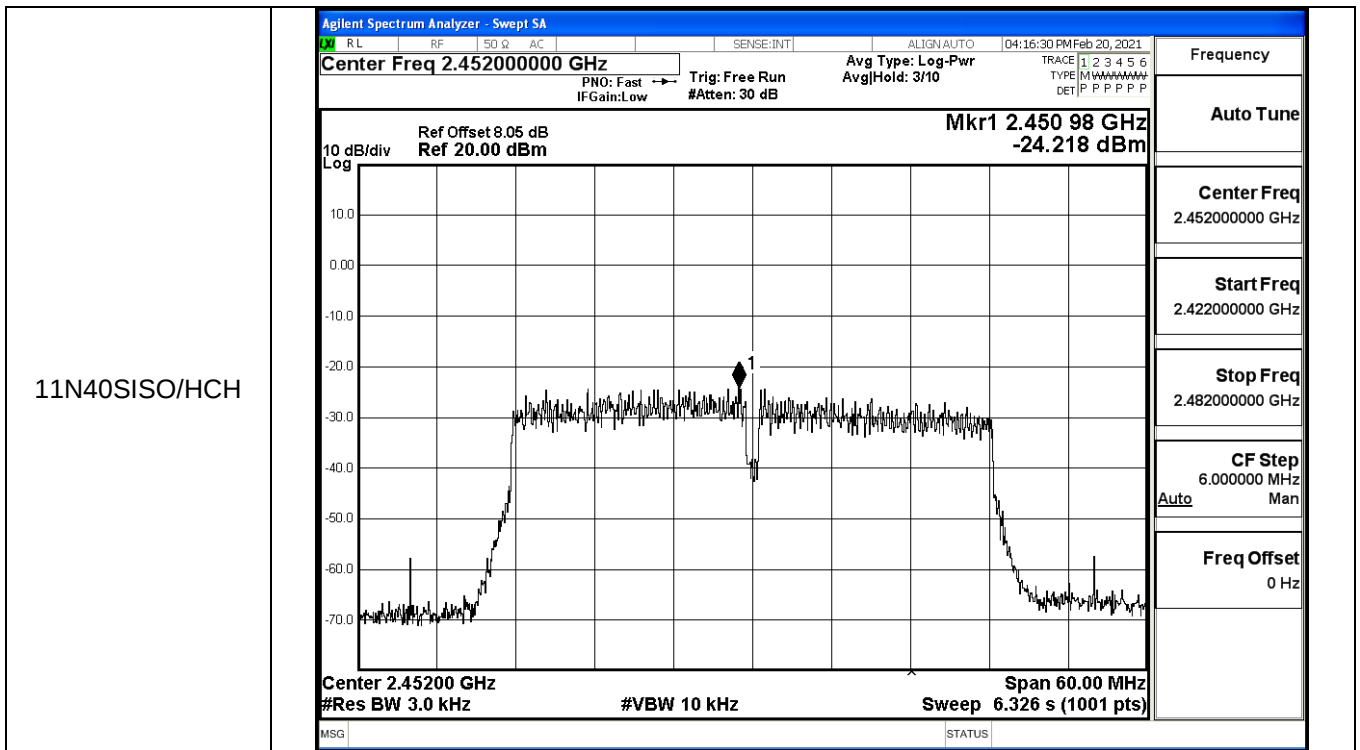
Start Freq
2.447000000 GHz

Stop Freq
2.477000000 GHz

CF Step
3.000000 MHz
Auto Man

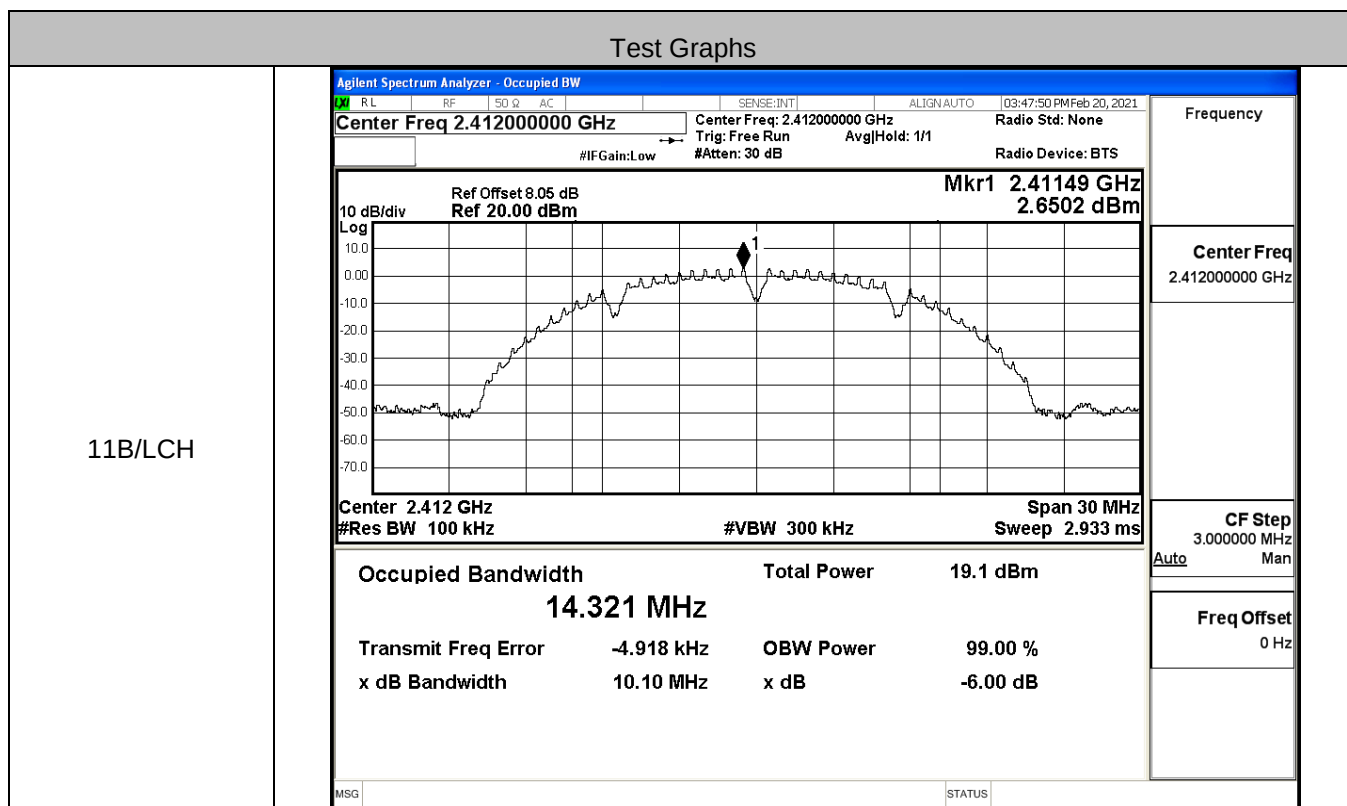
Freq Offset
0 Hz



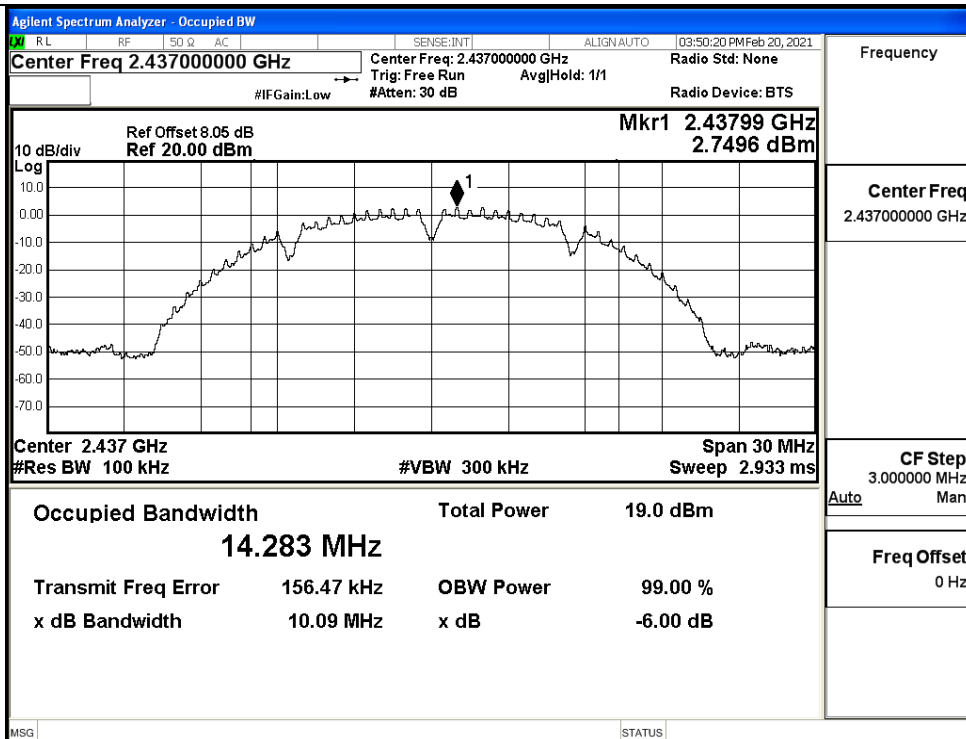


B.4 6dB Bandwidth

Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
11B	LCH	10.10	≥ 0.5	PASS
	MCH	10.09	≥ 0.5	PASS
	HCH	10.09	≥ 0.5	PASS
11G	LCH	16.38	≥ 0.5	PASS
	MCH	16.38	≥ 0.5	PASS
	HCH	15.81	≥ 0.5	PASS
11N20SISO	LCH	17.63	≥ 0.5	PASS
	MCH	17.36	≥ 0.5	PASS
	HCH	16.38	≥ 0.5	PASS
11N40SISO	LCH	35.79	≥ 0.5	PASS
	MCH	35.51	≥ 0.5	PASS
	HCH	35.19	≥ 0.5	PASS



11B/MCH



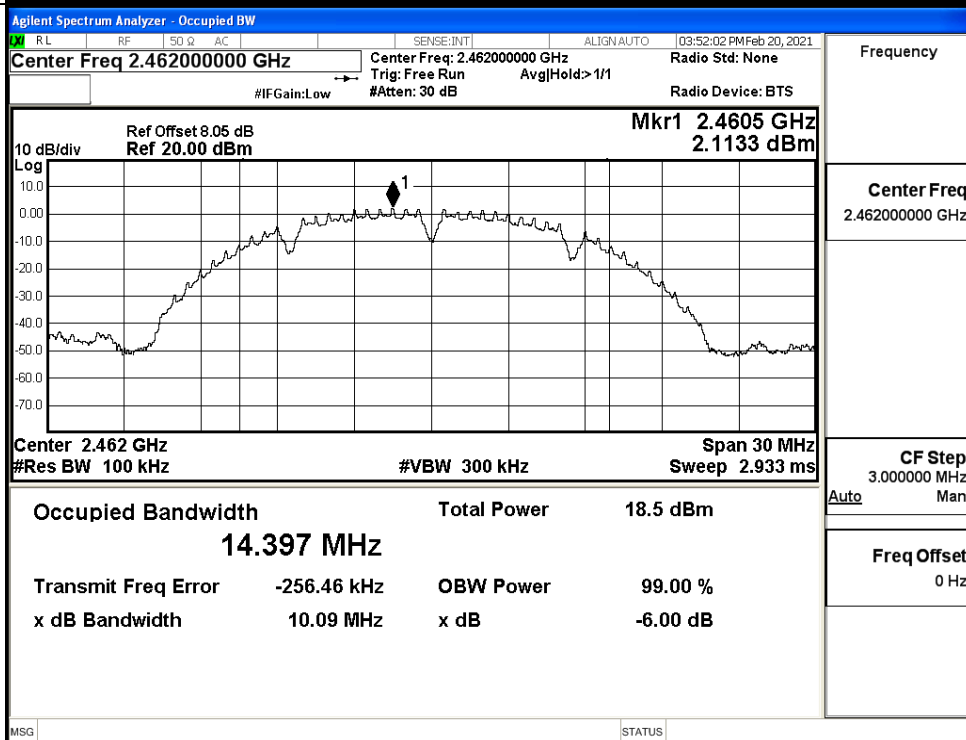
Frequency

Center Freq
2.437000000 GHz

CF Step
3.000000 MHz
Auto Man

Freq Offset
0 Hz

11B/HCH



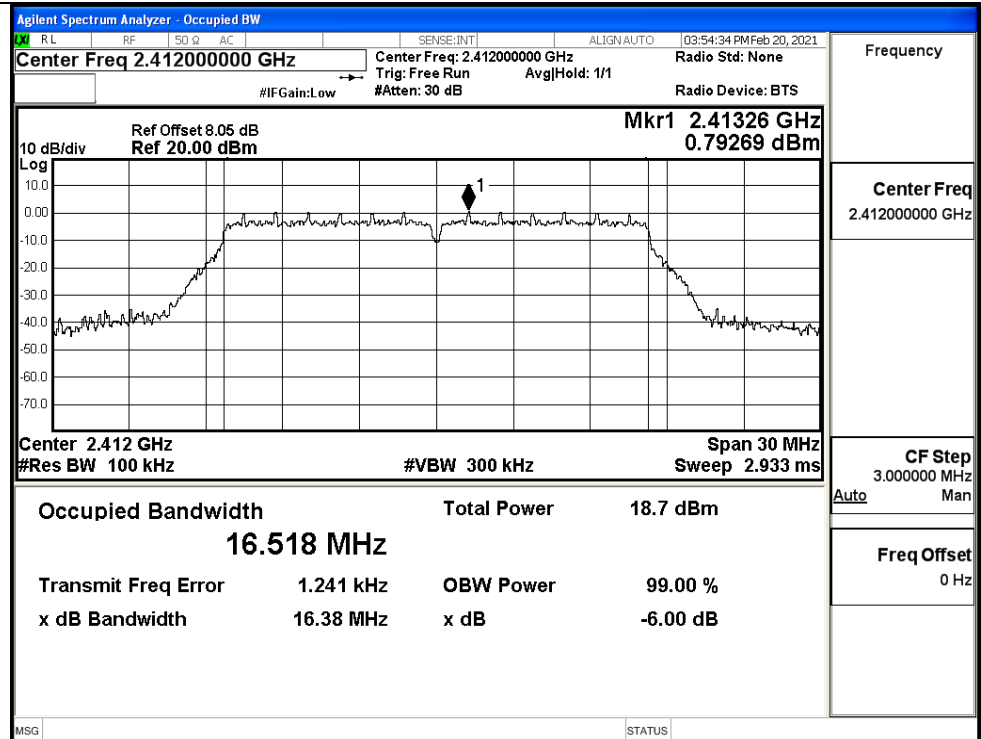
Frequency

Center Freq
2.462000000 GHz

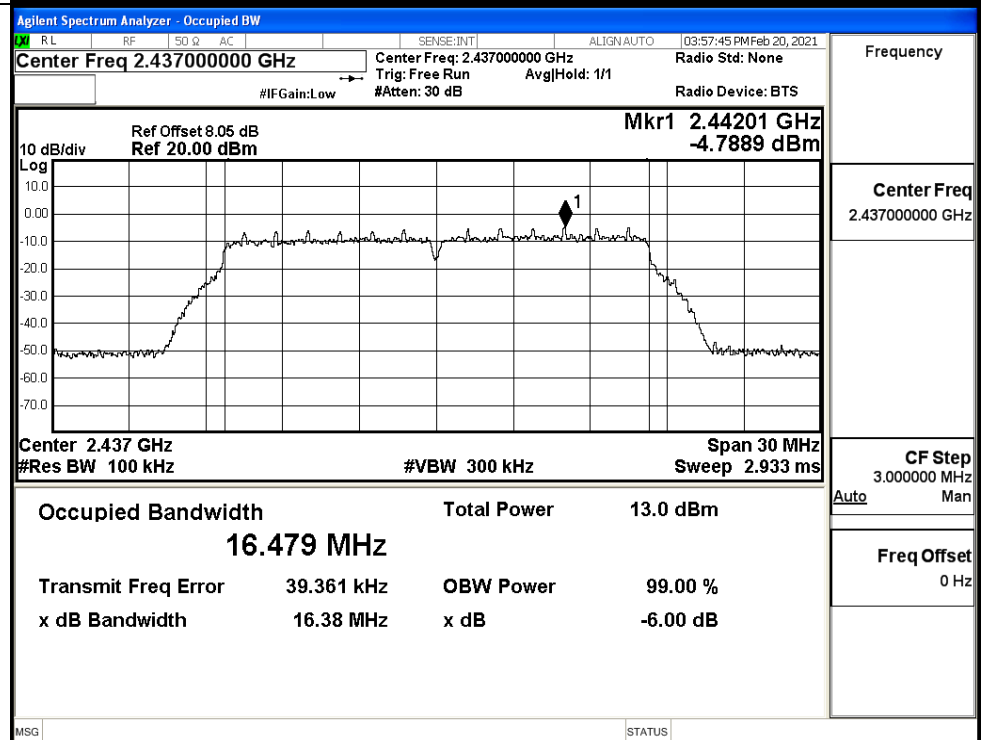
CF Step
3.000000 MHz
Auto Man

Freq Offset
0 Hz

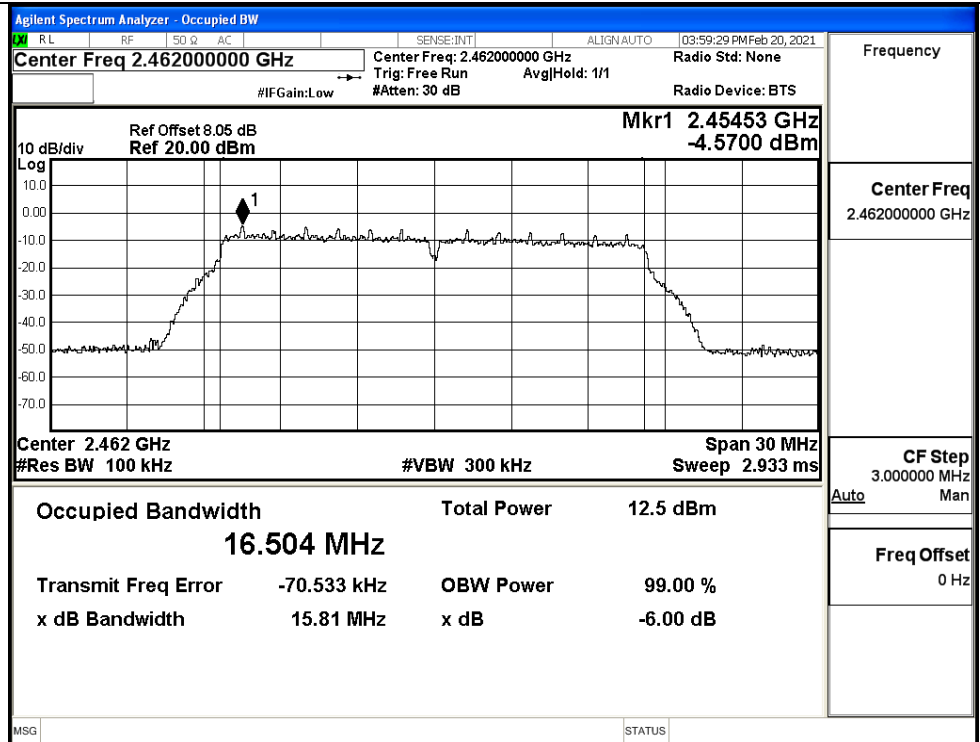
11G/LCH



11G/MCH



11G/HCH



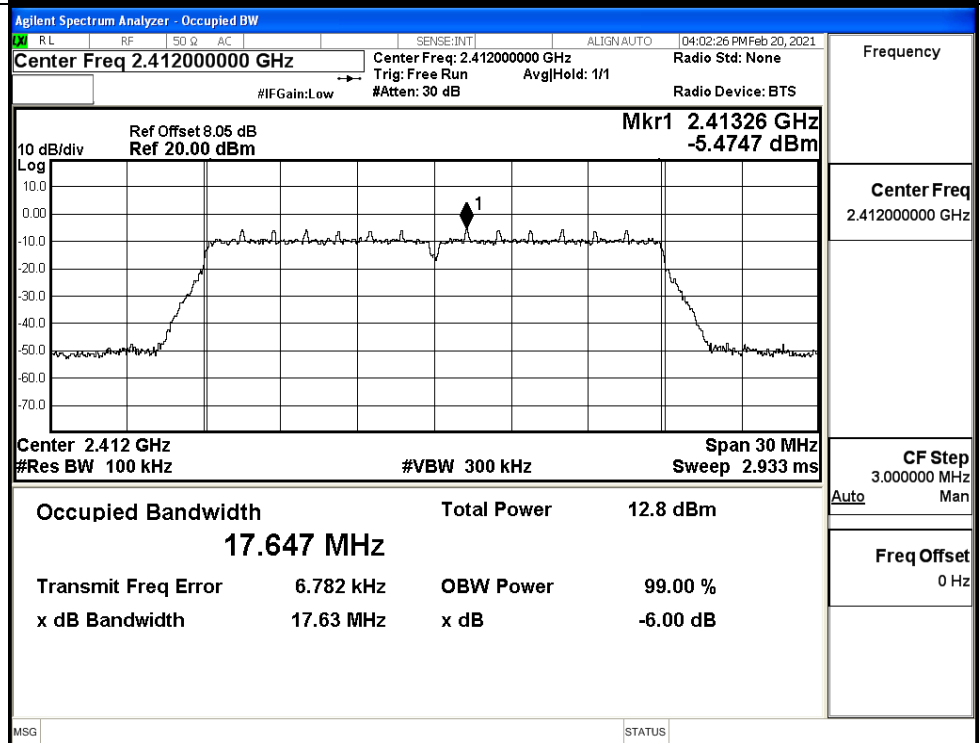
Frequency

Center Freq
2.462000000 GHz

CF Step
3.000000 MHz
Auto Man

Freq Offset
0 Hz

11N20SISO/LCH

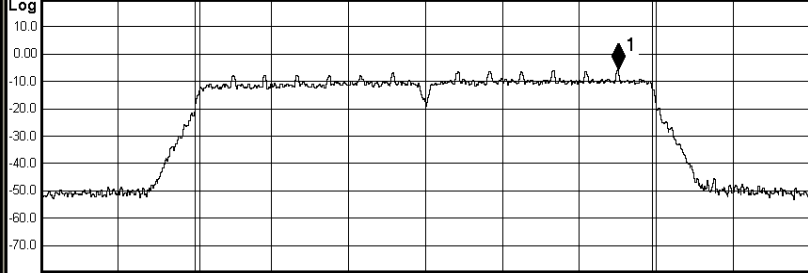
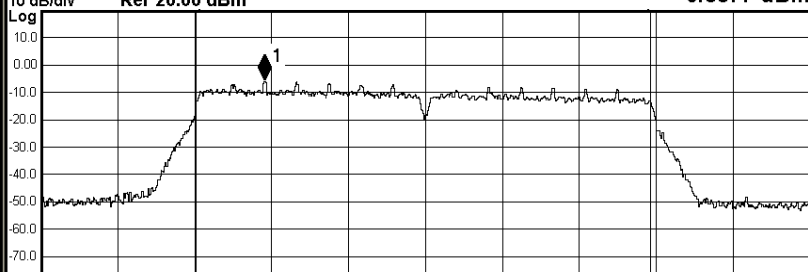


Frequency

Center Freq
2.412000000 GHz

CF Step
3.000000 MHz
Auto Man

Freq Offset
0 Hz

11N20SISO/MCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC SENSE:INT ALIGN:Auto 04:05:36 PM Feb 20, 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 2.4445 GHz -5.8266 dBm  Center 2.437 GHz #Res BW 100 kHz #VBW 300 kHz Span 30 MHz Sweep 2.933 ms Occupied Bandwidth Total Power 12.0 dBm 17.637 MHz Transmit Freq Error 38.538 kHz OBW Power 99.00 % x dB Bandwidth 17.36 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 50 Ω AC SENSE:INT ALIGN:Auto 04:07:23 PM Feb 20, 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 2.45573 GHz -5.8877 dBm  Center 2.462 GHz #Res BW 100 kHz #VBW 300 kHz Span 30 MHz Sweep 2.933 ms Occupied Bandwidth Total Power 11.5 dBm 17.640 MHz Transmit Freq Error -57.614 kHz OBW Power 99.00 % x dB Bandwidth 16.38 MHz x dB -6.00 dB MSG STATUS

Frequency

Center Freq

2.462000000 GHz

CF Step

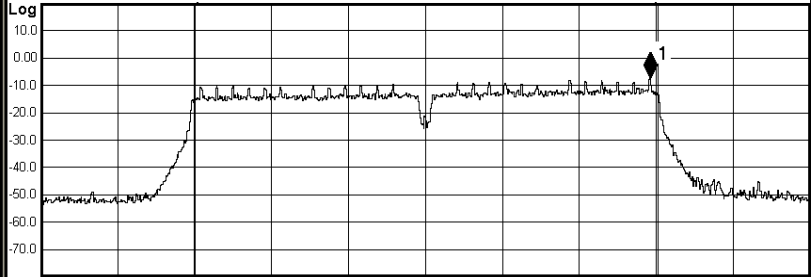
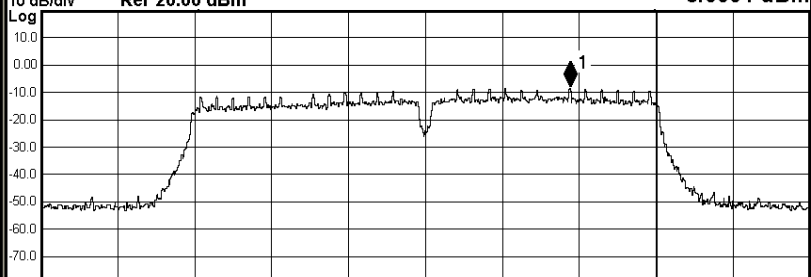
3.000000 MHz

Auto

Man

Freq Offset

0 Hz

11N40SISO/LCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC SENSE:INT ALIGN: AUTO 04:10:04 PM Feb 20, 2021 Center Freq 2.422000000 GHz Center Freq: 2.422000000 GHz Trig: Free Run Avg/Hold: 1/1 Radio Std: None Radio Device: BTS #IF Gain: Low #Atten: 30 dB Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.43952 GHz -7.6408 dBm  Center 2.422 GHz #Res BW 100 kHz #VBW 300 kHz Span 60 MHz Sweep 5.8 ms Occupied Bandwidth Total Power 12.4 dBm 36.098 MHz Transmit Freq Error 77.874 kHz OBW Power 99.00 % x dB Bandwidth 35.79 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 04:14:03 PM Feb 20, 2021 Center Freq 2.437000000 GHz Center Freq: 2.437000000 GHz Trig: Free Run Avg/Hold: 1/1 Radio Std: None Radio Device: BTS #IF Gain: Low #Atten: 30 dB Ref Offset 8.05 dB Ref 20.00 dBm Mkr1 2.44828 GHz -8.3504 dBm  Center 2.437 GHz #Res BW 100 kHz #VBW 300 kHz Span 60 MHz Sweep 5.8 ms Occupied Bandwidth Total Power 12.2 dBm 35.911 MHz Transmit Freq Error 83.946 kHz OBW Power 99.00 % x dB Bandwidth 35.51 MHz x dB -6.00 dB MSG STATUS

Frequency

Center Freq

2.437000000 GHz

CF Step

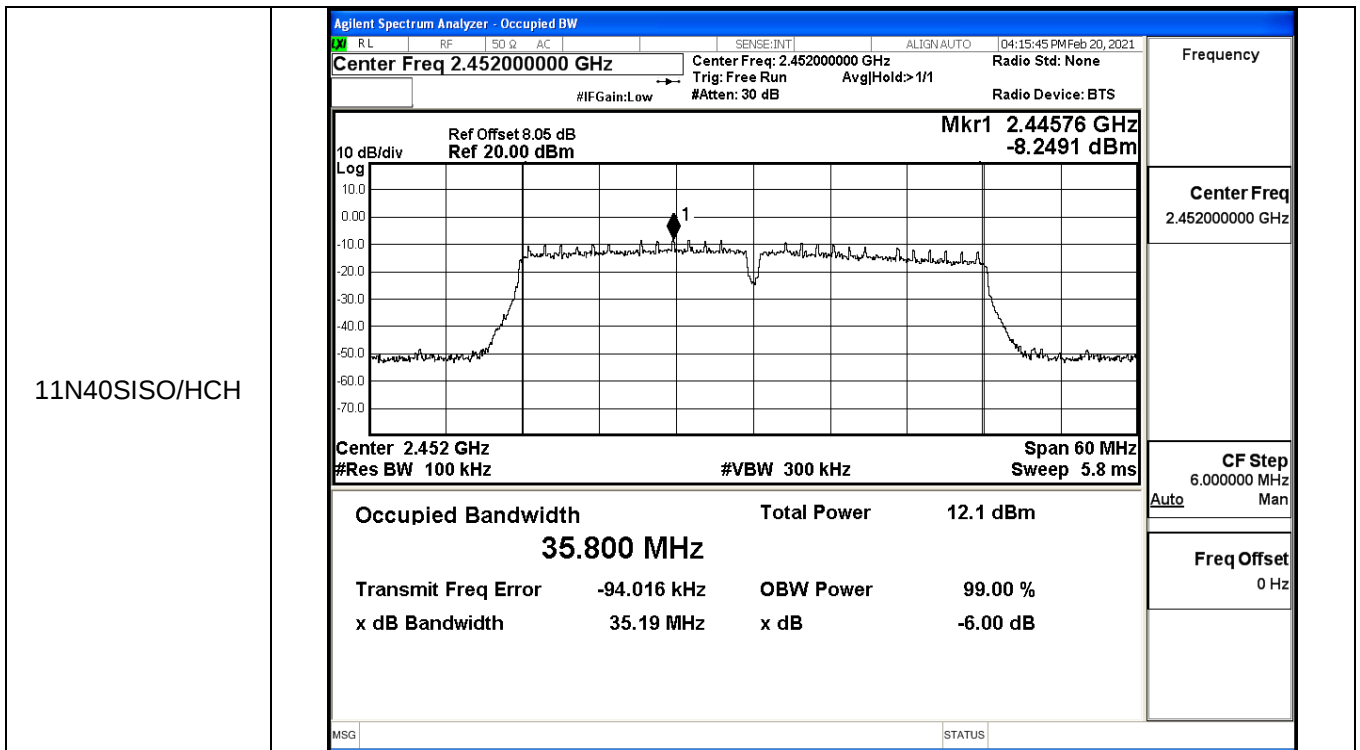
6.000000 MHz

Auto

Man

Freq Offset

0 Hz

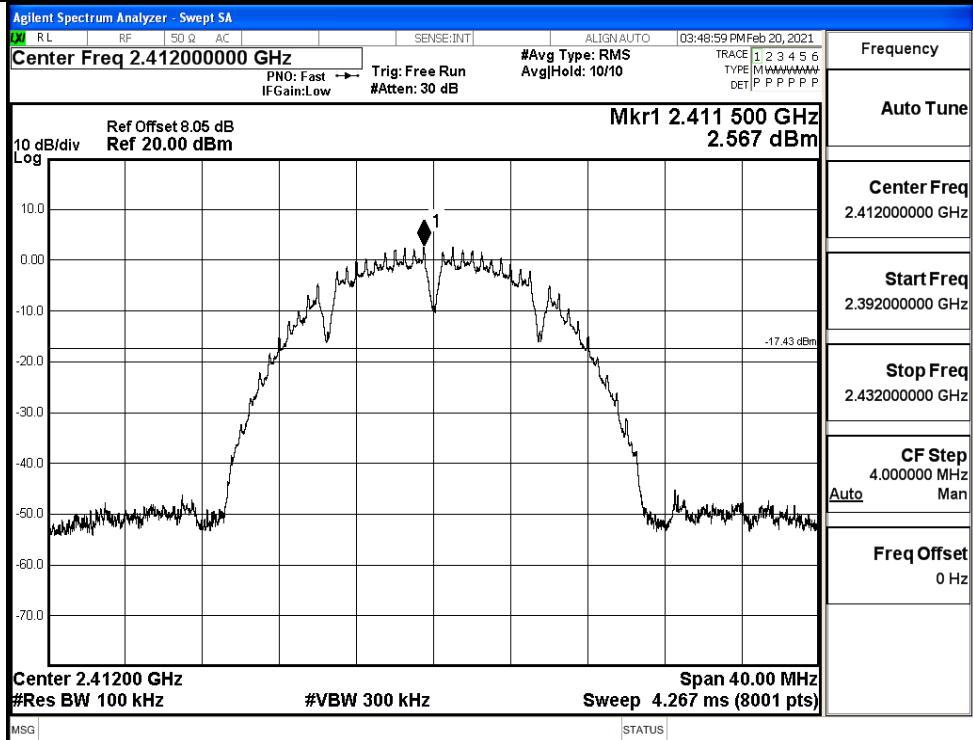


B.5 RF Conducted Spurious Emissions

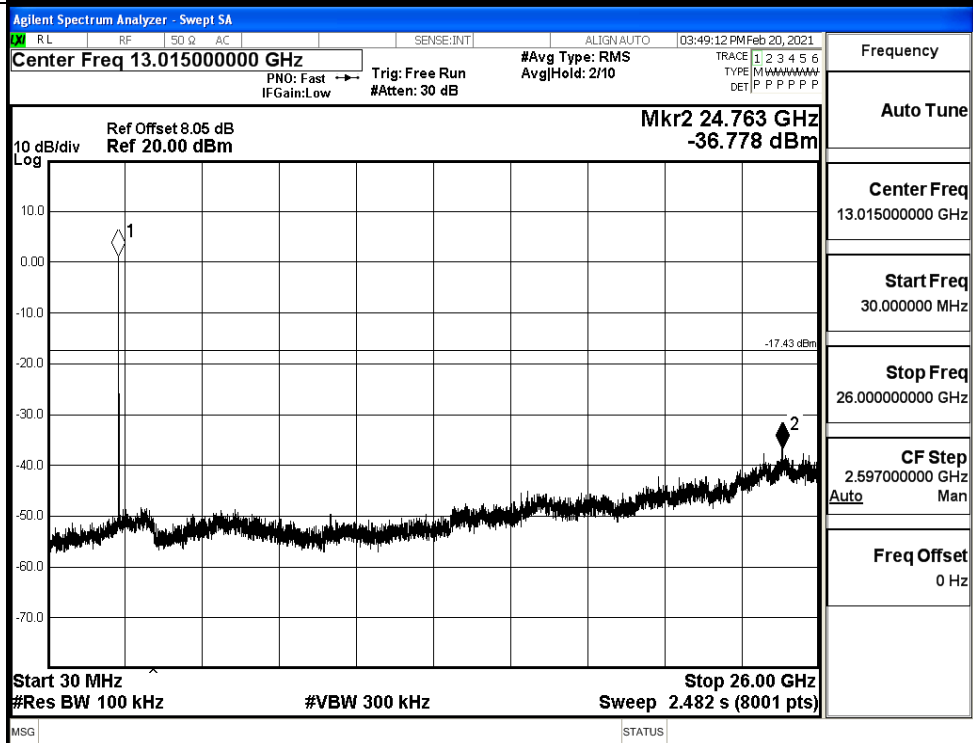
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
11B	LCH	2.567	-36.778	-17.433	PASS
	MCH	2.249	-37.613	-17.751	PASS
	HCH	2.173	-38.376	-17.827	PASS
11G	LCH	-5.731	-37.871	-25.731	PASS
	MCH	-5.143	-38.208	-25.143	PASS
	HCH	-5.075	-37.305	-25.075	PASS
11N20 SISO	LCH	-6.485	-38.222	-26.485	PASS
	MCH	-5.882	-36.921	-25.882	PASS
	HCH	-5.97	-37.882	-25.970	PASS
11N40 SISO	LCH	-8.164	-37.815	-28.164	PASS
	MCH	-8.345	-38.020	-28.345	PASS
	HCH	-8.454	-37.241	-28.454	PASS

11B LCH Graphs

Pref/11B/LCH

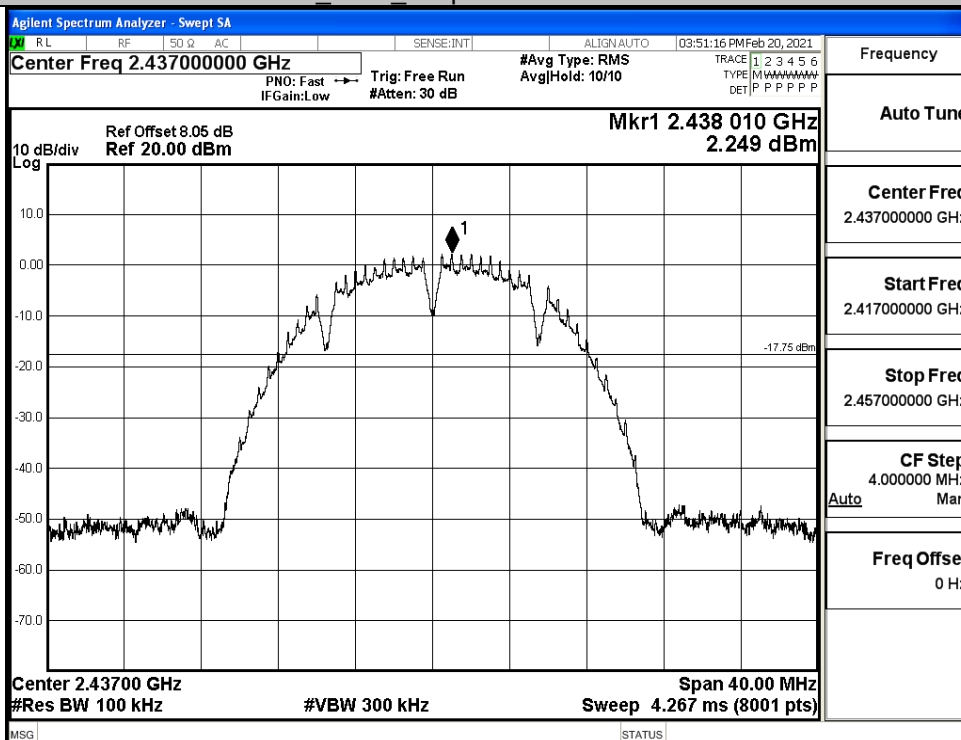


Puw/11B/LCH

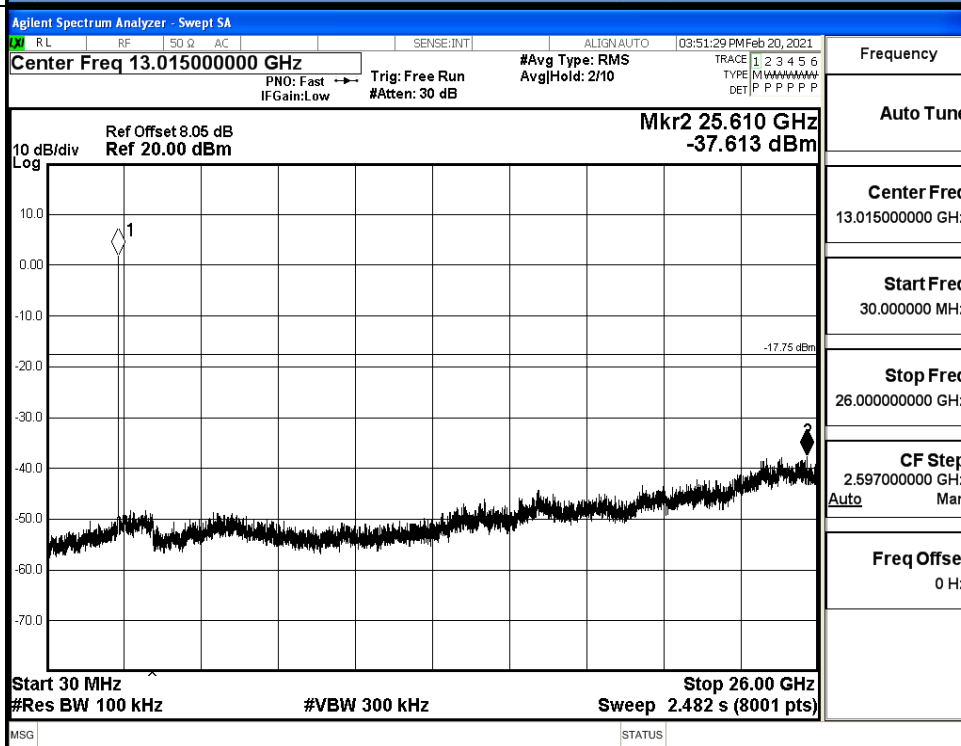


11B_MCH_Graphs

Pref/11B/MCH

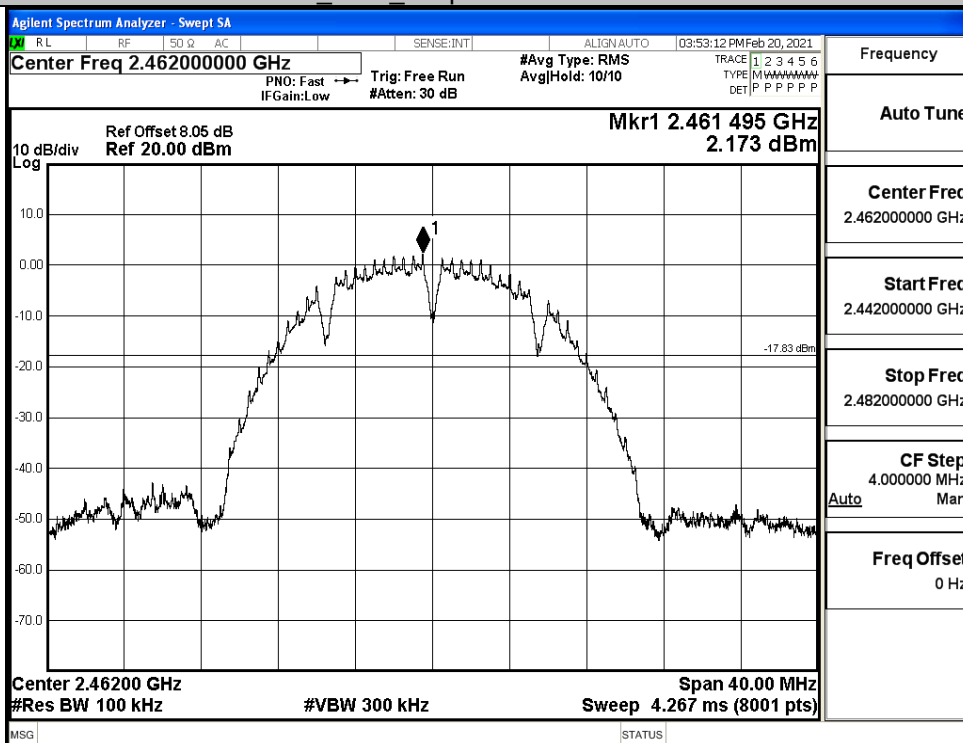


Puw/11B/MCH

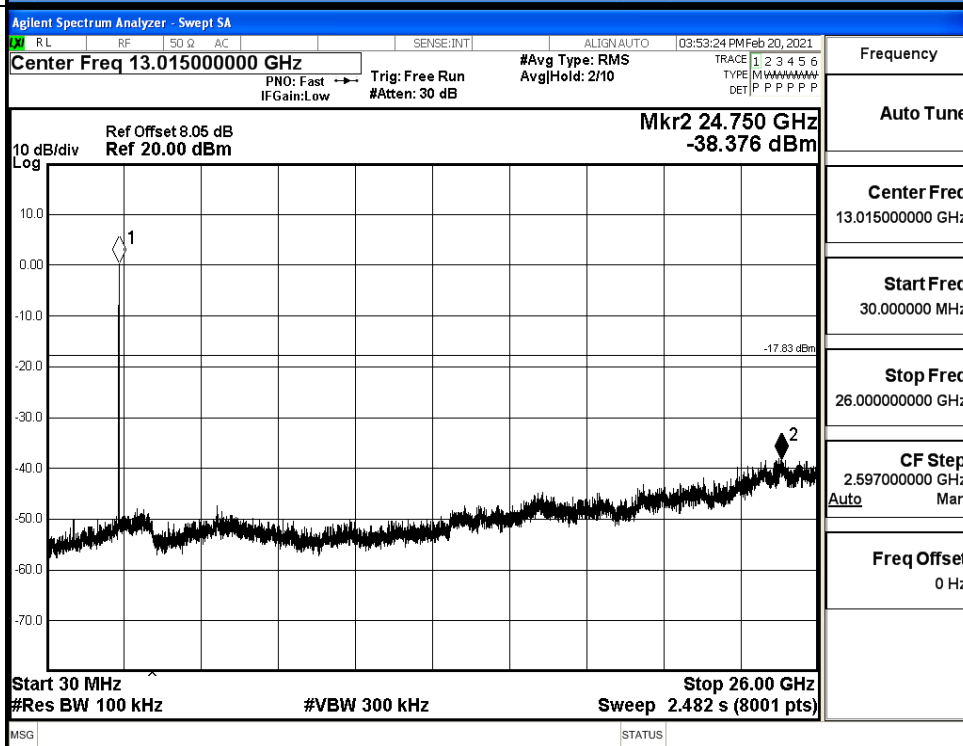


11B HCH Graphs

Pref/11B/HCH

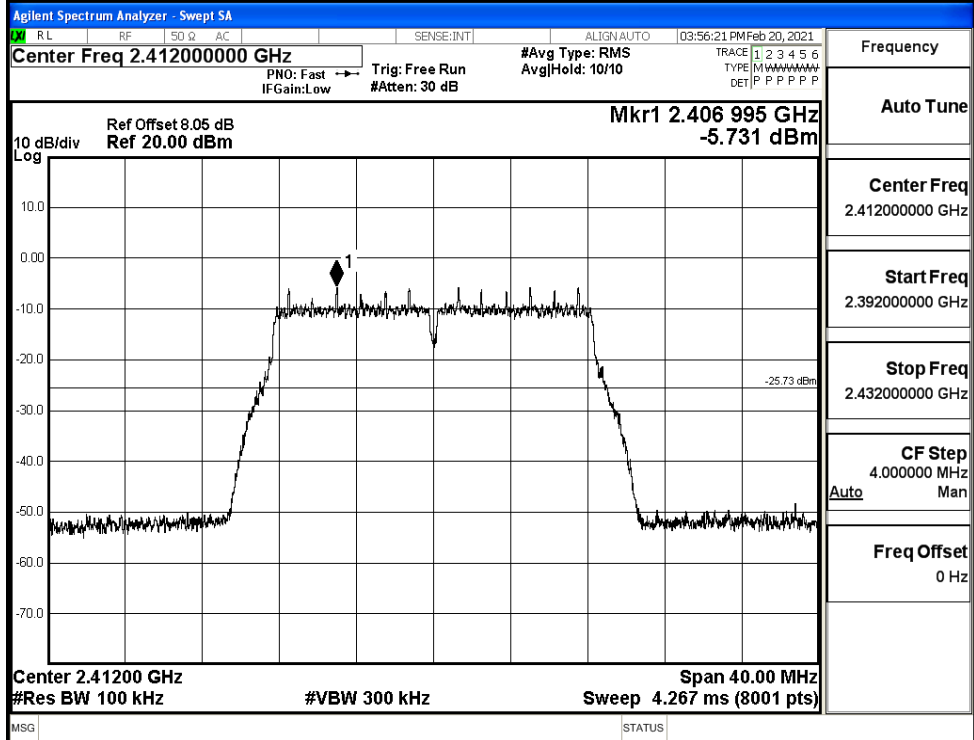


Puw/11B/HCH

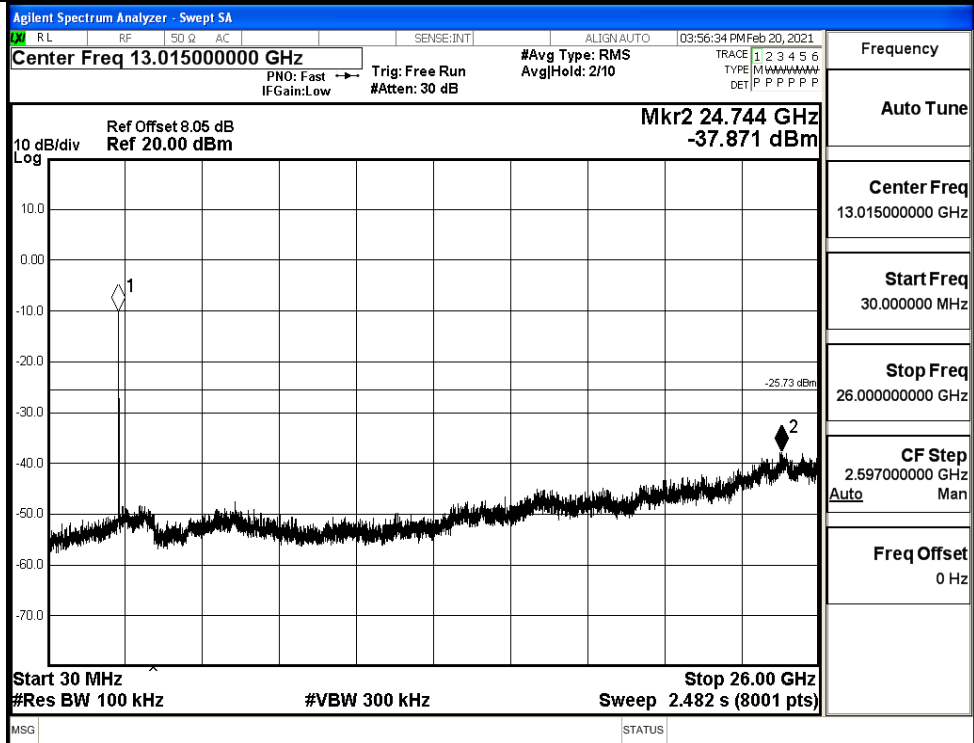


11G LCH Graphs

Pref/11G/LCH

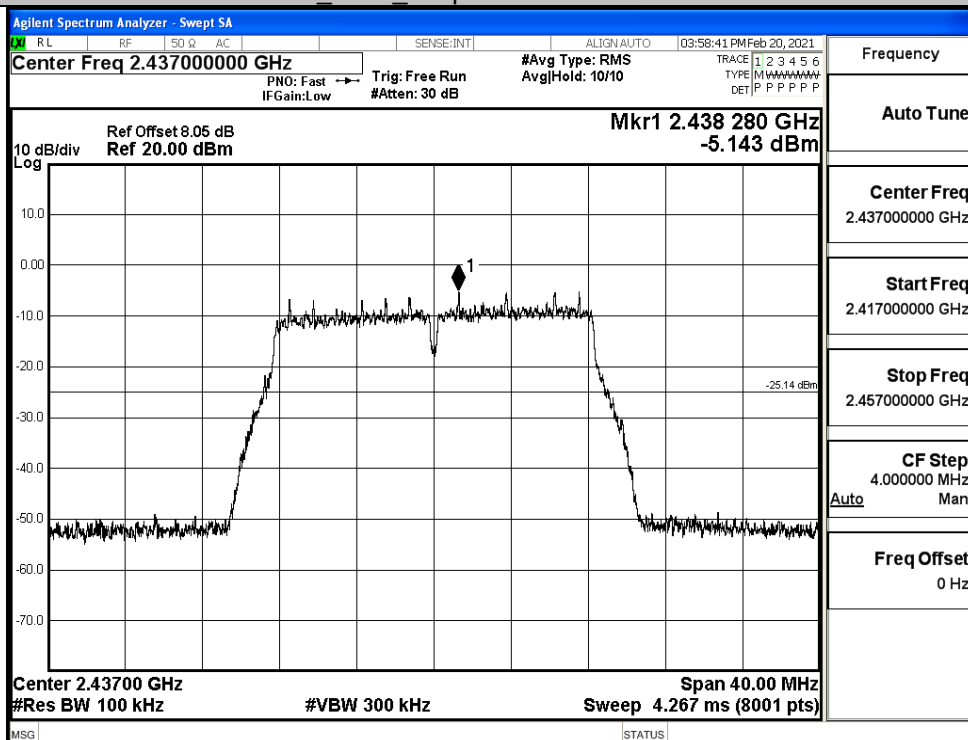


Puw/11G/LCH

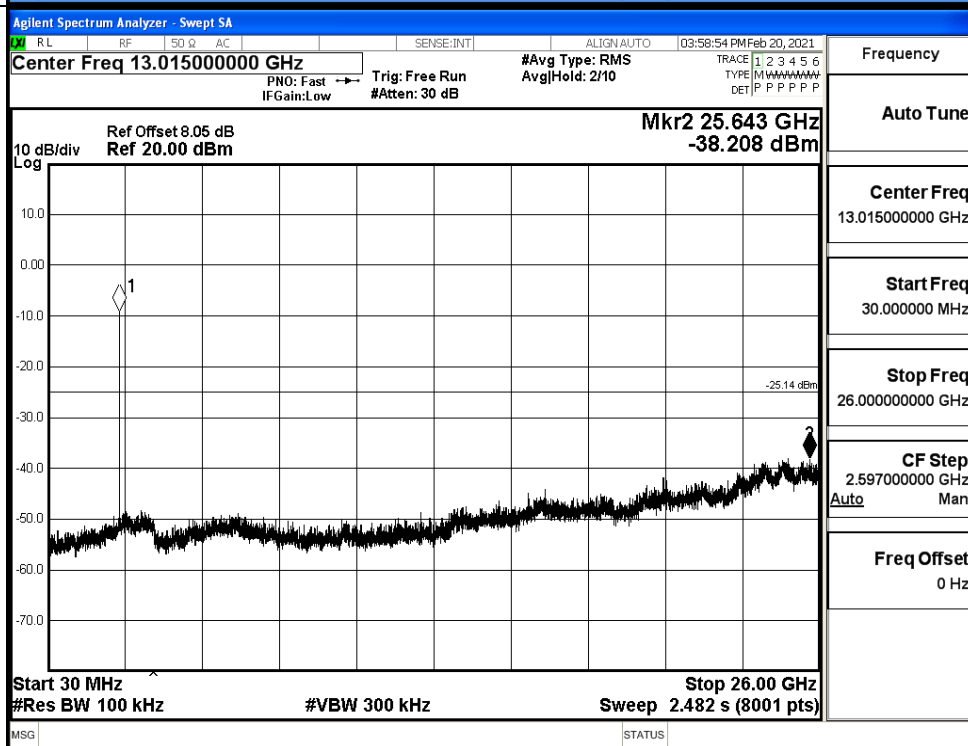


11G MCH Graphs

Pref/11G/MCH

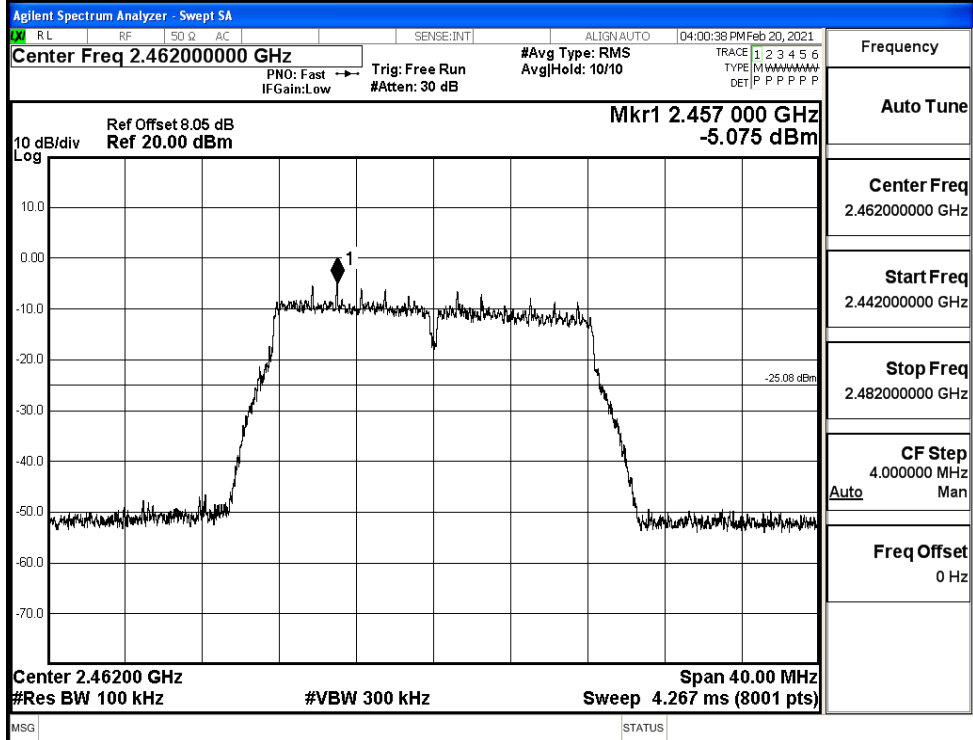


Puw/11G/MCH

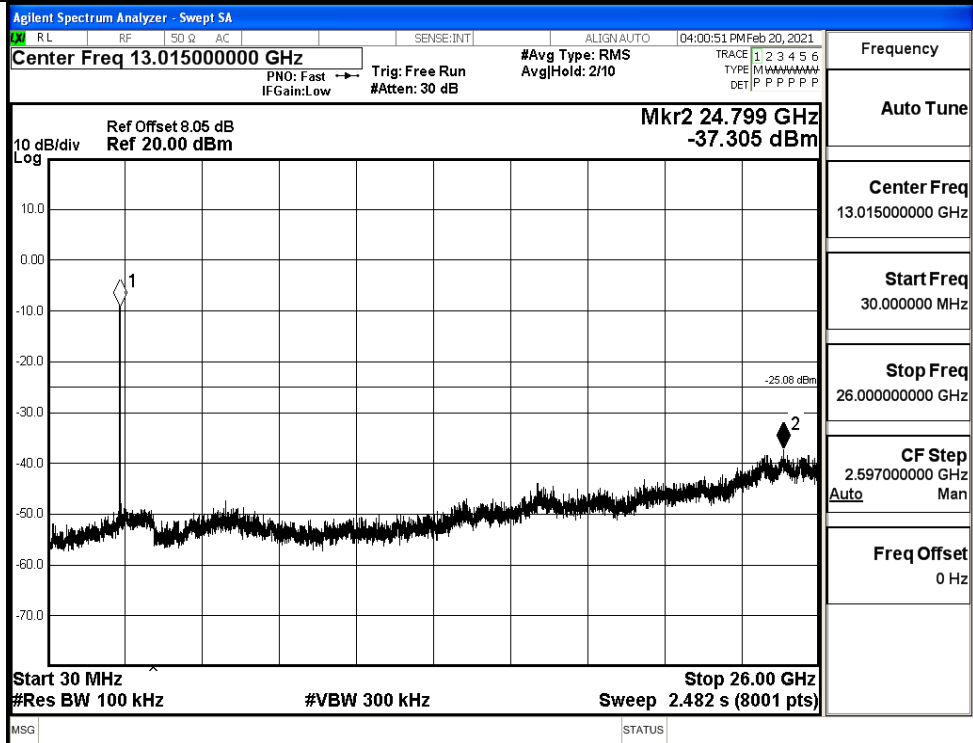


11G HCH Graphs

Pref/11G/HCH

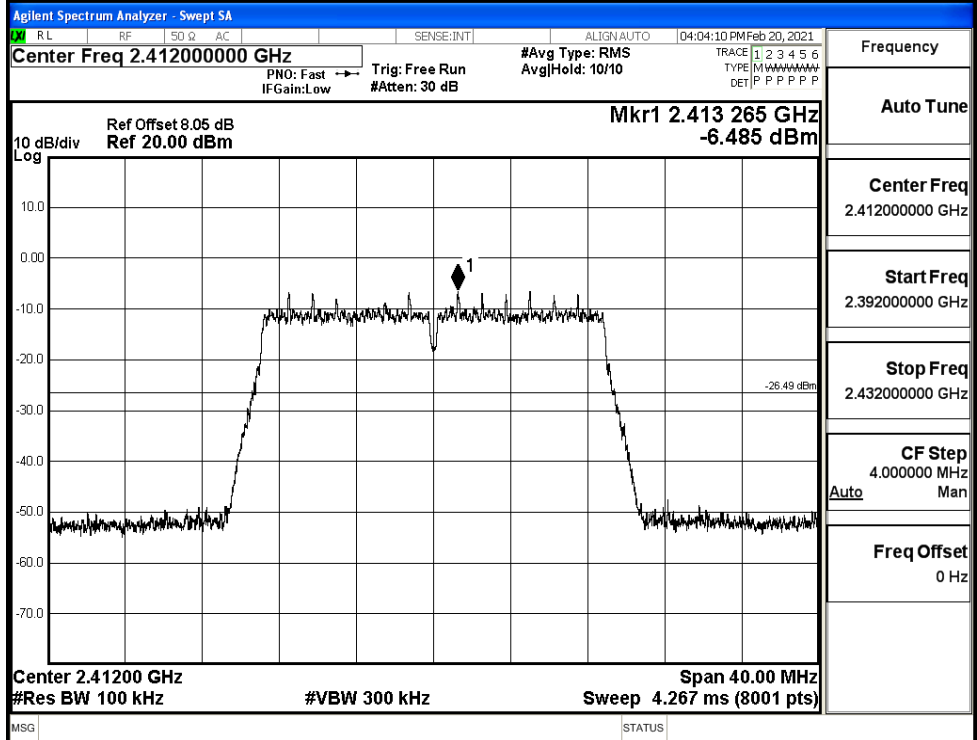


Puw/11G/HCH

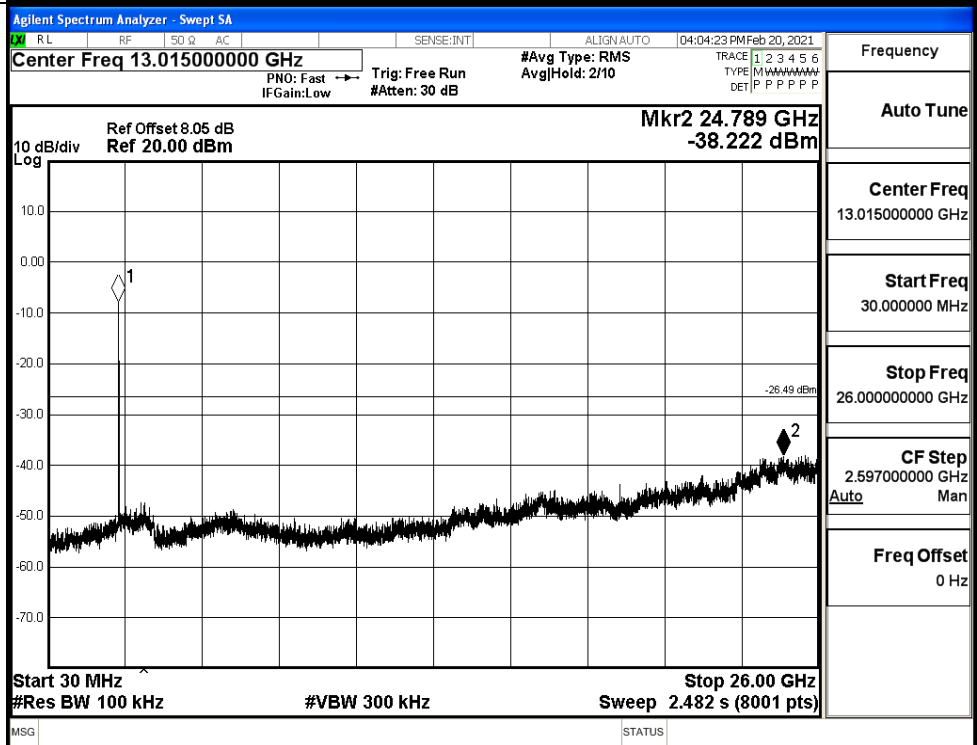


11N20SISO LCH Graphs

Pref/11N20SIS
O/LCH

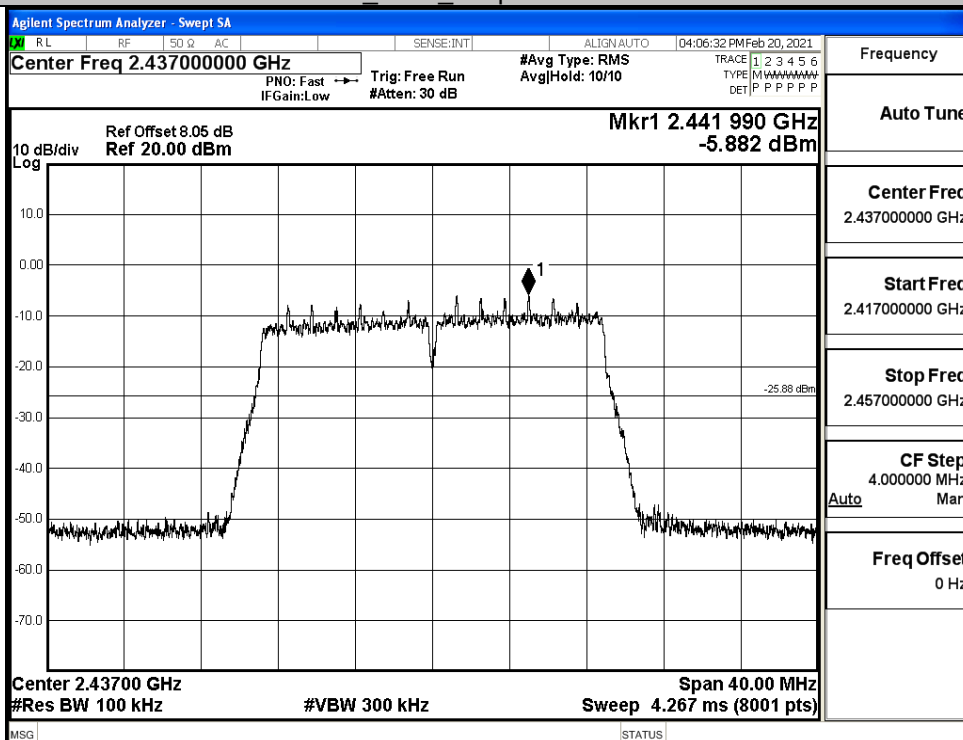


Puw/11N20
SISO/LCH

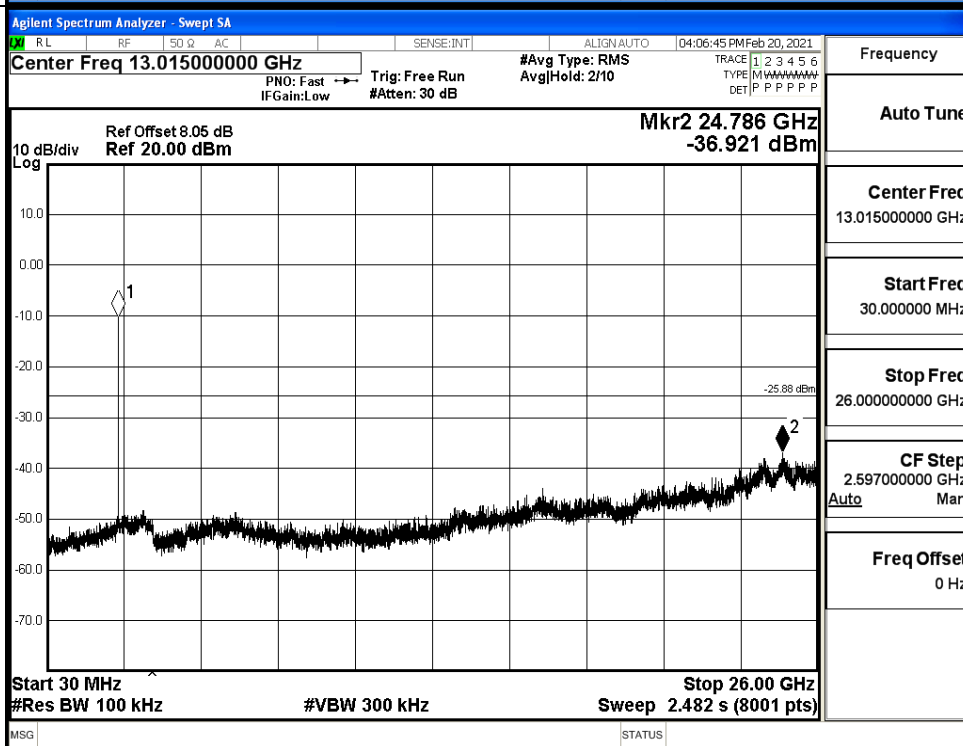


11N20SISO_MCH_Graphs

Pref/11N20
SISO/MCH

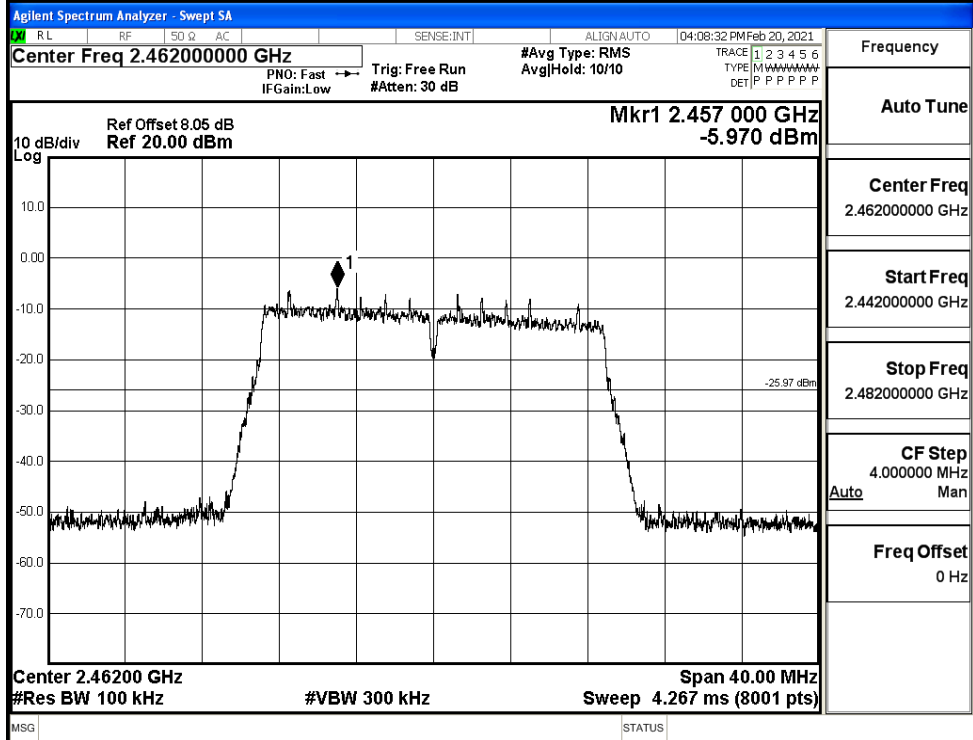


Puw/11N20
SISO/MCH

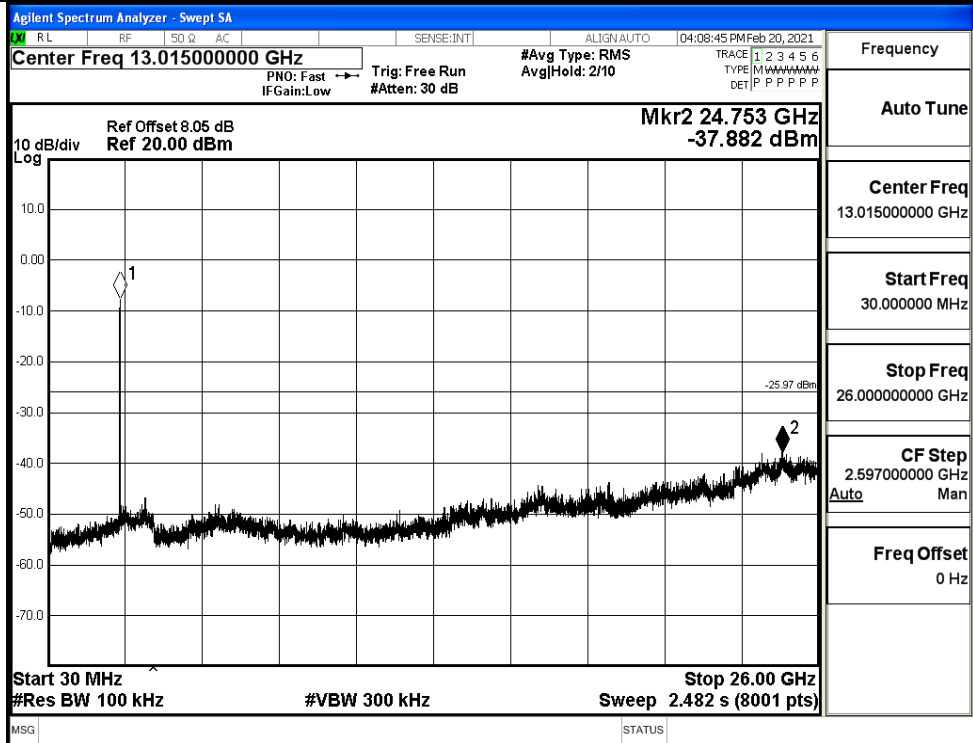


11N20SISO_HCH_Graphs

Pref/11N20
SISO/HCH

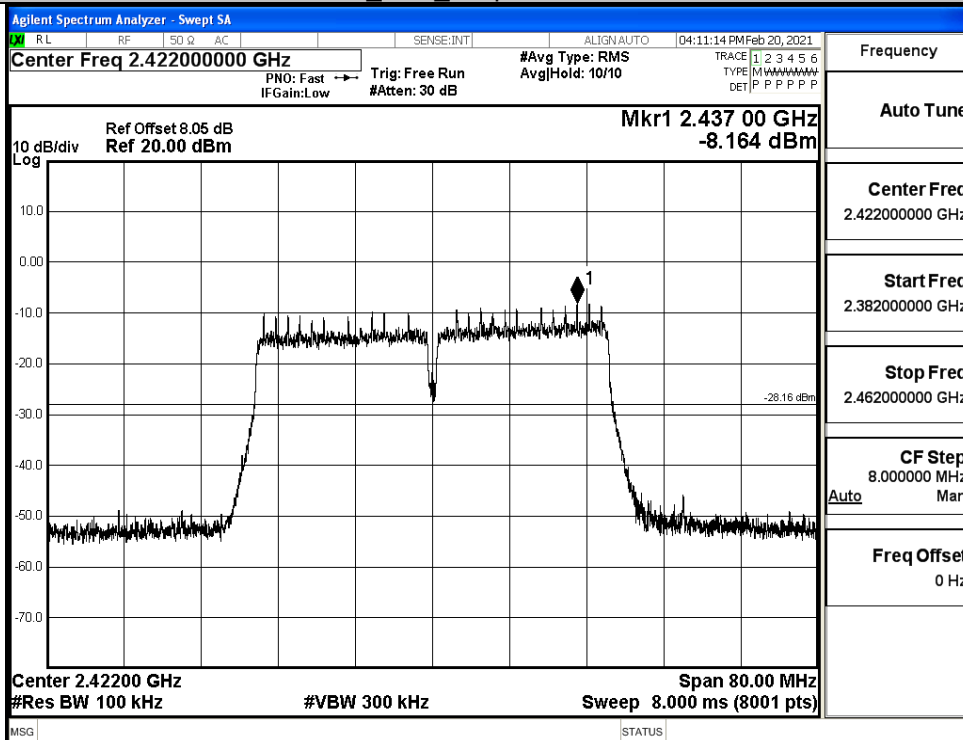


Puw/11N20
SISO/HCH

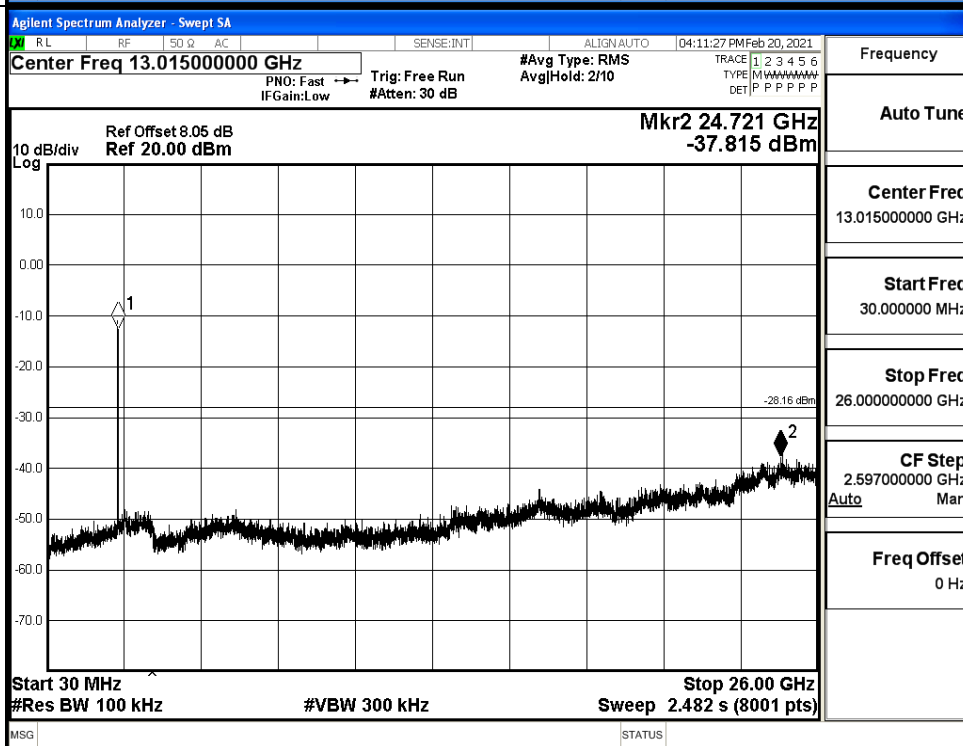


11N40SISO LCH Graphs

Pref/11N40
SISO/LCH

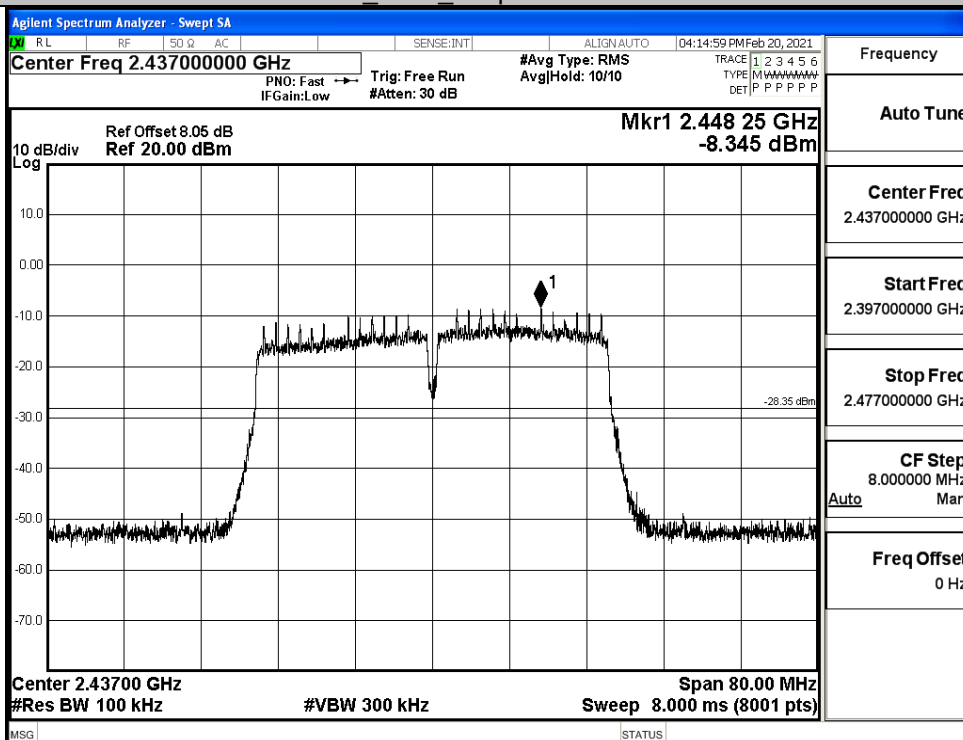


Puw/11N40
SISO/LCH

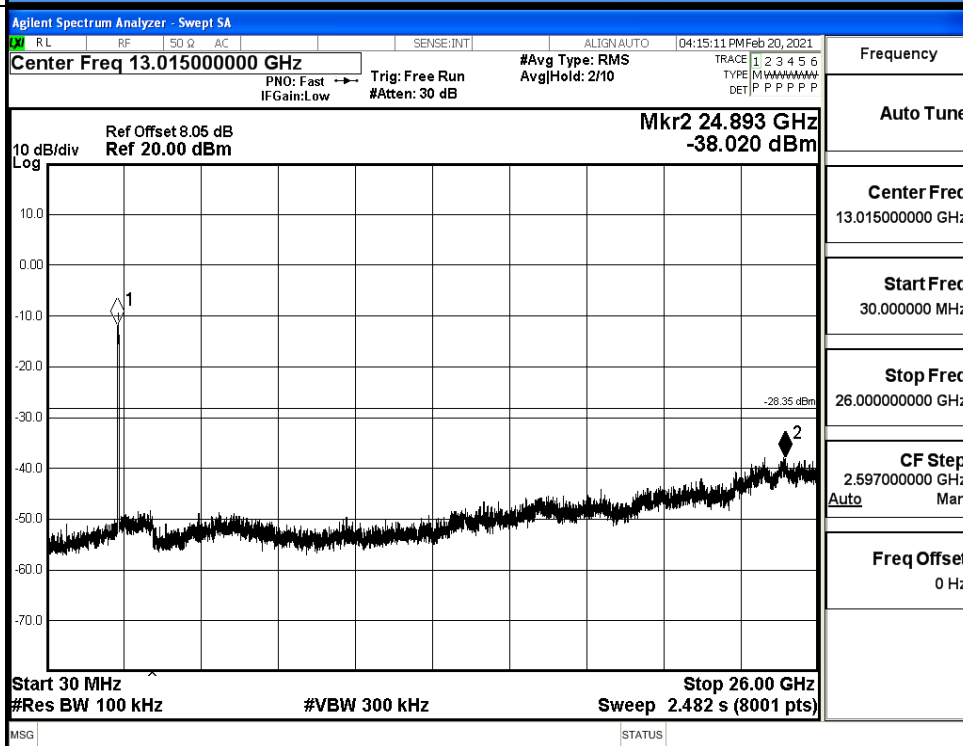


11N40SISO_MCH_Graphs

Pref/11N40
SISO/MCH

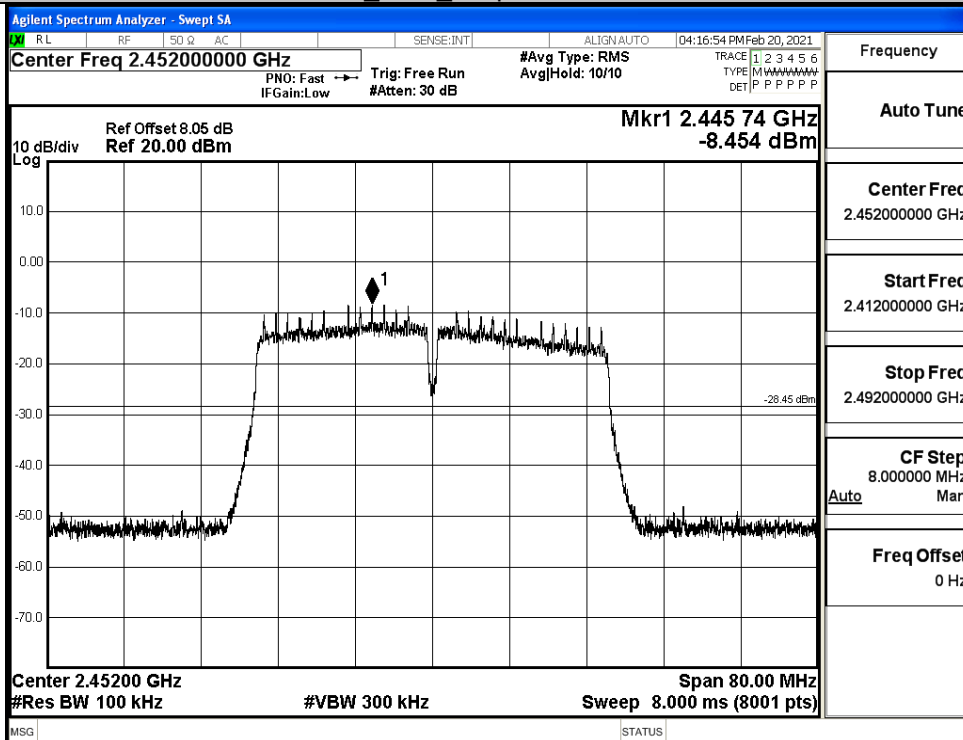


Puw/11N40
SISO/MCH

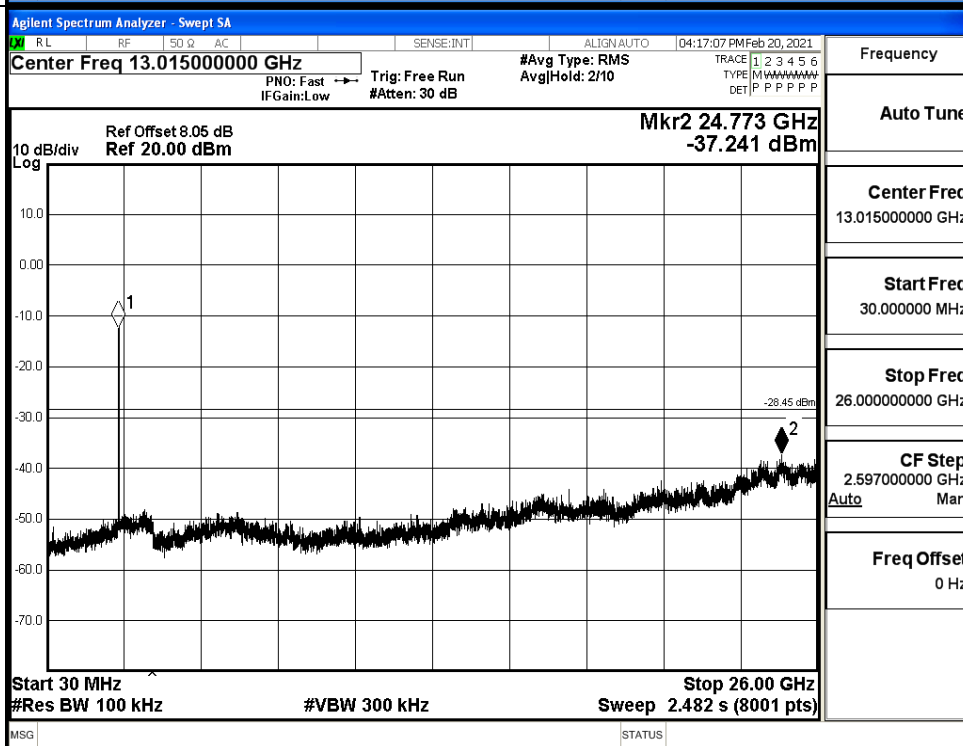


11N40SISO_HCH_Graphs

Pref/11N40
SISO/HCH



Puw/11N40
SISO/HCH

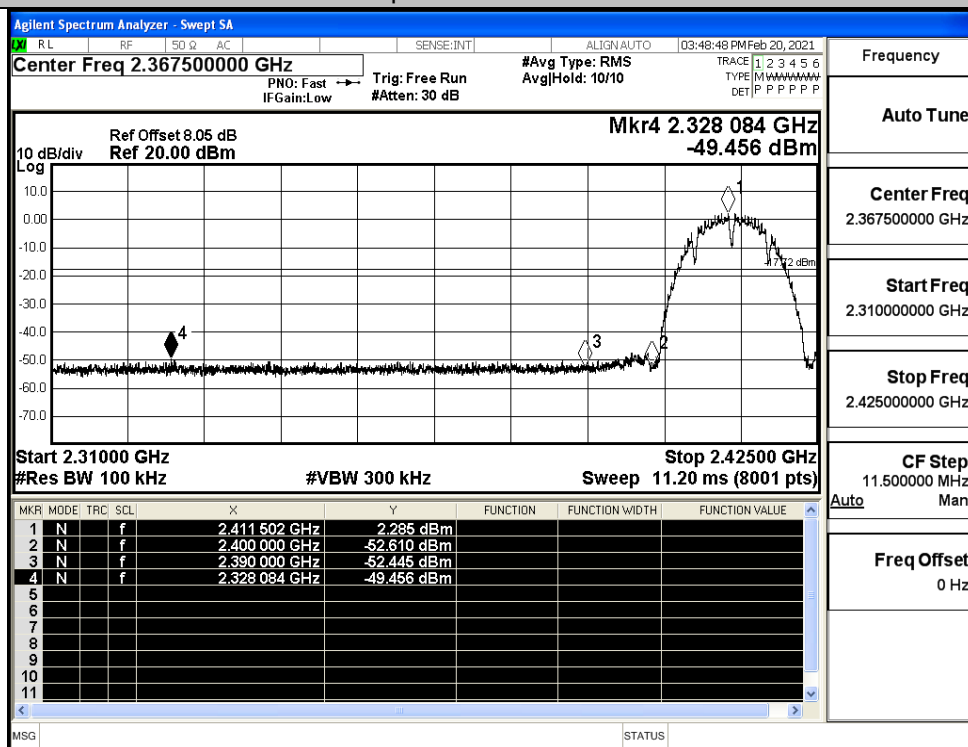


B.6 Band-edge for RF Conducted Emissions

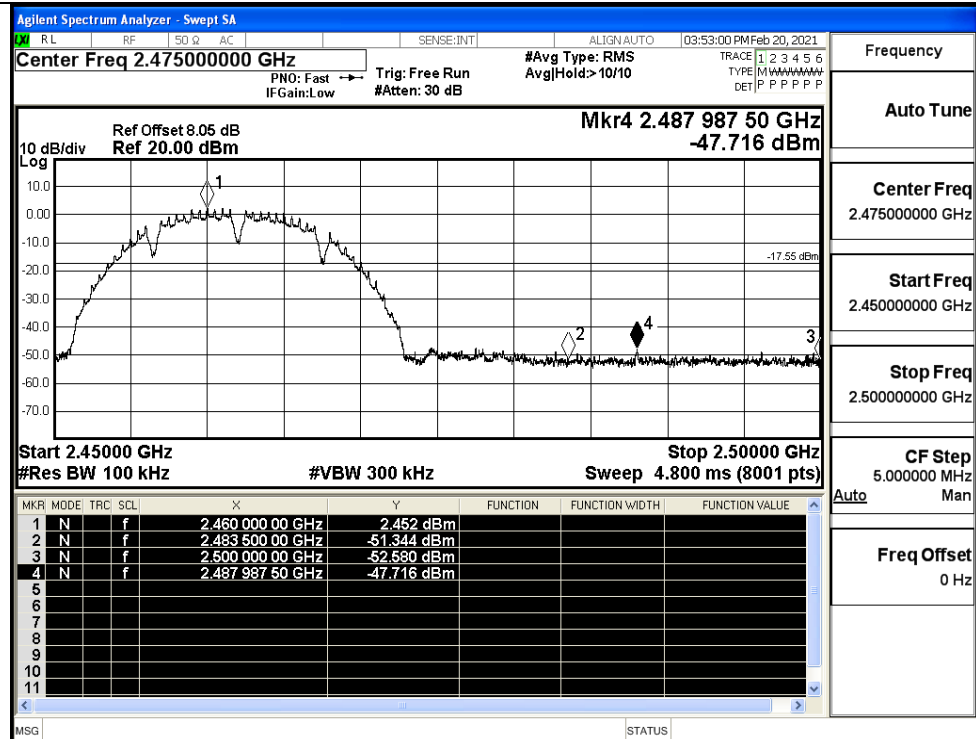
Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	2.285	-49.456	-17.72	PASS
	HCH	2.452	-47.716	-17.55	PASS
11G	LCH	-5.861	-49.557	-25.86	PASS
	HCH	-4.724	-47.069	-24.72	PASS
11N20SISO	LCH	-6.822	-48.950	-26.82	PASS
	HCH	-5.581	-48.424	-25.58	PASS
11N40SISO	LCH	-8.146	-49.795	-28.15	PASS
	HCH	-8.399	-49.252	-28.4	PASS

Test Graphs

11B/LCH



11B/HCH

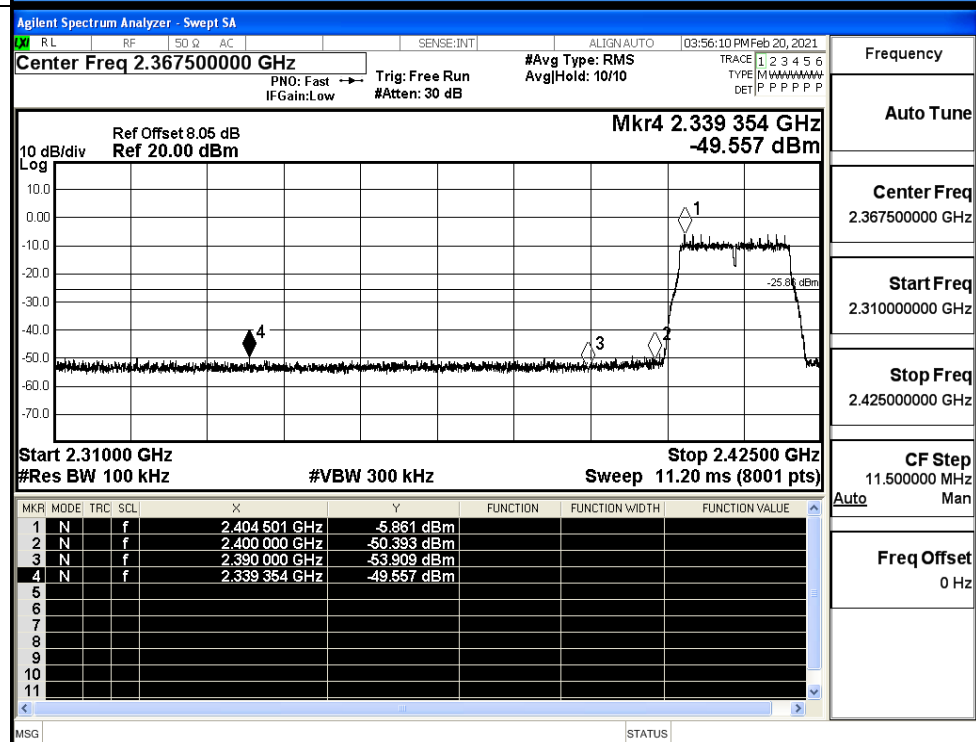


Frequency

Auto Tune

Center Freq
2.475000000 GHzStart Freq
2.450000000 GHzStop Freq
2.500000000 GHzCF Step
5.000000 MHz
Auto ManFreq Offset
0 Hz

11G/LCH

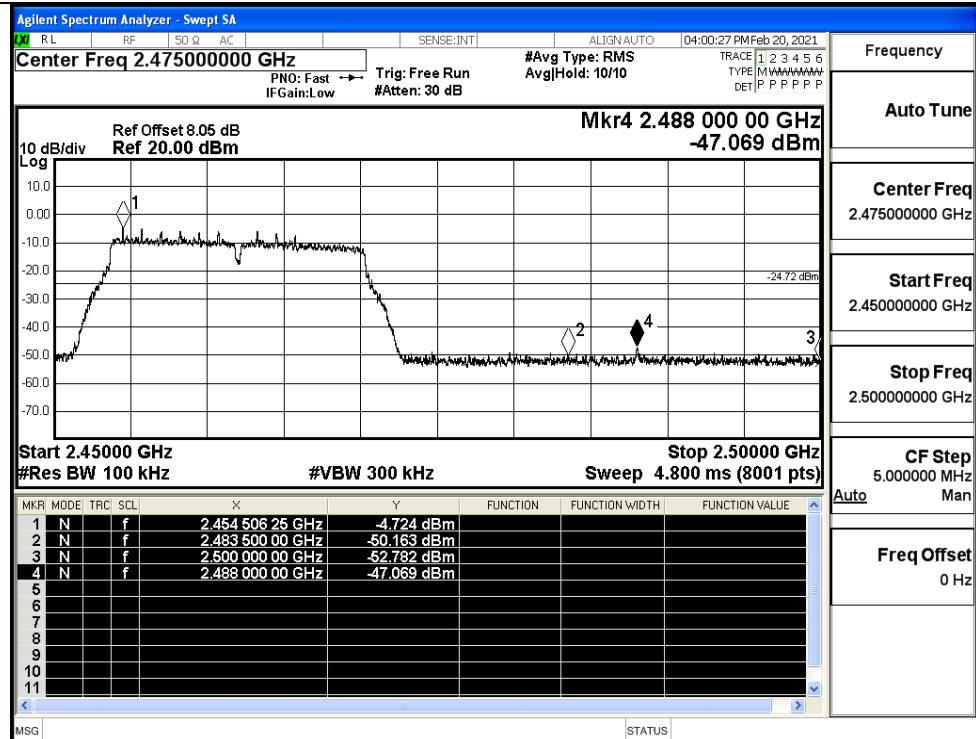


Frequency

Auto Tune

Center Freq
2.367500000 GHzStart Freq
2.310000000 GHzStop Freq
2.425000000 GHzCF Step
11.500000 MHz
Auto ManFreq Offset
0 Hz

11G/HCH



Frequency

Auto Tune

Center Freq
2.475000000 GHz

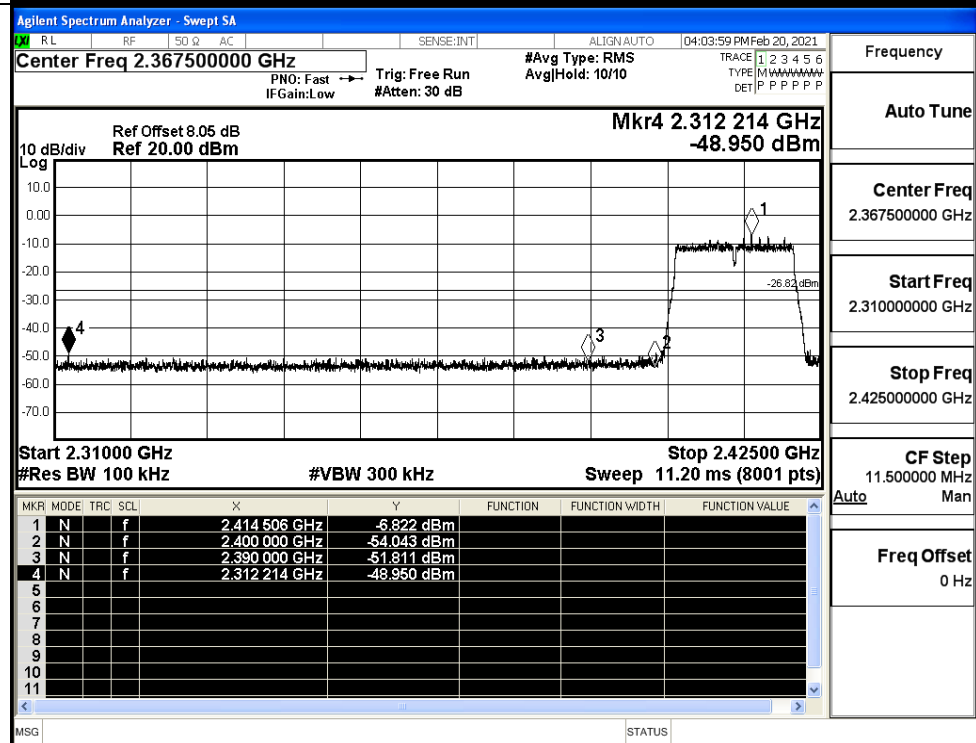
Start Freq
2.450000000 GHz

Stop Freq
2.500000000 GHz

CF Step
5.000000 MHz
Auto Man

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
Auto Man

Freq Offset
0 Hz

11N20SISO/HCH

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.47500000 GHz

PNO: Fast IF Gain: Low Trig: Free Run #Atten: 30 dB

#Avg Type: RMS Avg|Hold: 10/10

TRACE 1 2 3 4 5 6
TYPE M W A W A W A W A W
DET P P P P P P

Ref Offset 8.05 dB Ref 20.00 dBm

Mkr4 2.487 968 75 GHz -48.424 dBm

10 dB/div Log

Start 2.45000 GHz Stop 2.50000 GHz
#Res BW 100 kHz #VBW 300 kHz Sweep 4.800 ms (8001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f		2.454 512 50 GHz	-5.581 dBm			
2	N	f		2.483 500 00 GHz	-51.279 dBm			
3	N	f		2.500 000 00 GHz	-51.515 dBm			
4	N	f		2.487 968 75 GHz	-48.424 dBm			
5								
6								
7								
8								
9								
10								
11								

MSG STATUS

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

PNO: Fast IF Gain: Low Trig: Free Run #Atten: 30 dB

#Avg Type: RMS Avg|Hold: 10/10

TRACE 1 2 3 4 5 6
TYPE M W A W A W A W A W
DET P P P P P P

Ref Offset 8.05 dB Ref 20.00 dBm

Mkr4 2.381 904 GHz -49.795 dBm

10 dB/div Log

Start 2.31000 GHz Stop 2.44500 GHz
#Res BW 100 kHz #VBW 300 kHz Sweep 13.33 ms (8001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f		2.433 272 GHz	-9.146 dBm			
2	N	f		2.400 000 GHz	-52.700 dBm			
3	N	f		2.390 000 GHz	-52.619 dBm			
4	N	f		2.381 904 GHz	-49.795 dBm			
5								
6								
7								
8								
9								
10								
11								

MSG STATUS

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

Frequency

Auto Tune

Center Freq
2.377500000 GHz

Start Freq
2.310000000 GHz

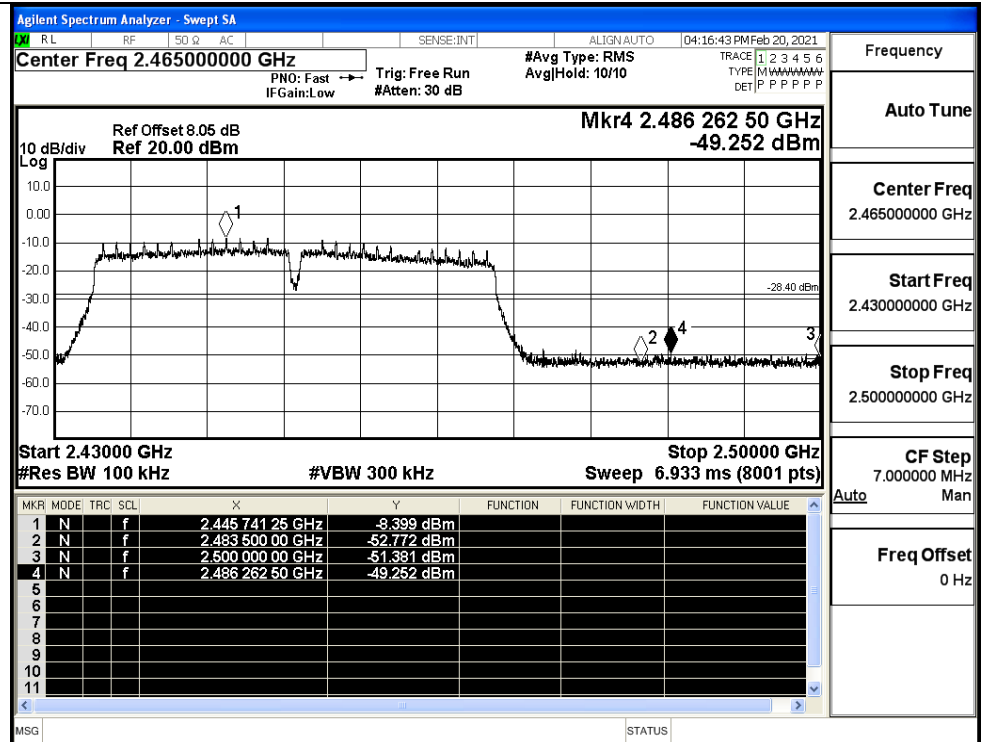
Stop Freq
2.445000000 GHz

CF Step
13.500000 MHz

Auto

Freq Offset
0 Hz

11N40SISO/HCH



Frequency

Auto Tune

Center Freq
2.465000000 GHz

Start Freq
2.430000000 GHz

Stop Freq
2.500000000 GHz

CF Step
7.000000 MHz
Auto Man

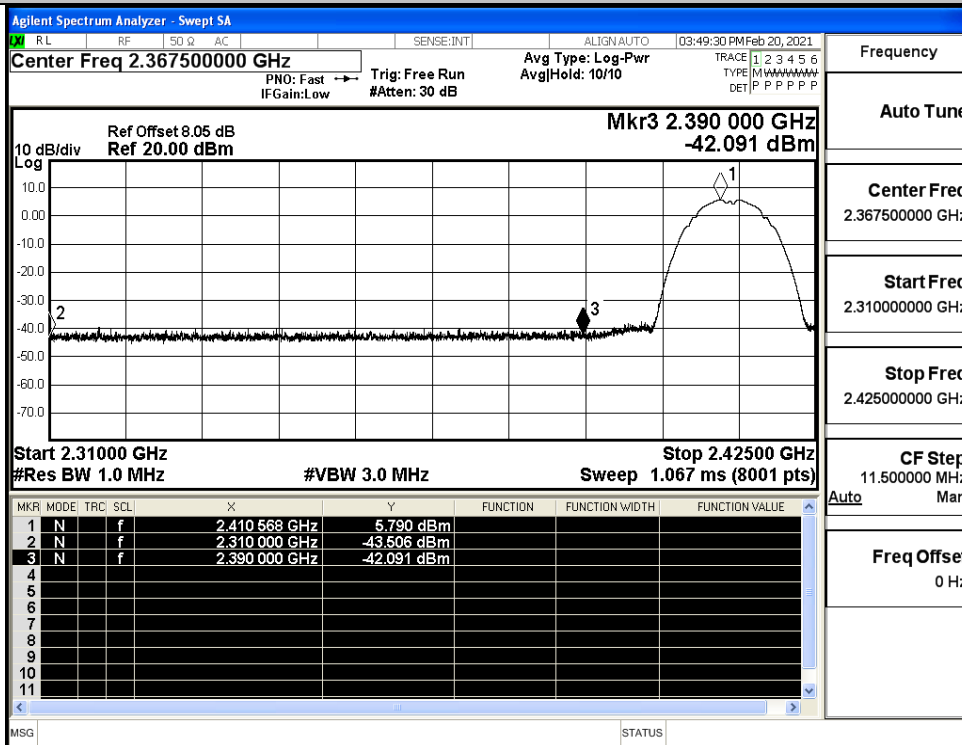
Freq Offset
0 Hz

B.7 Restrict-band band-edge measurements

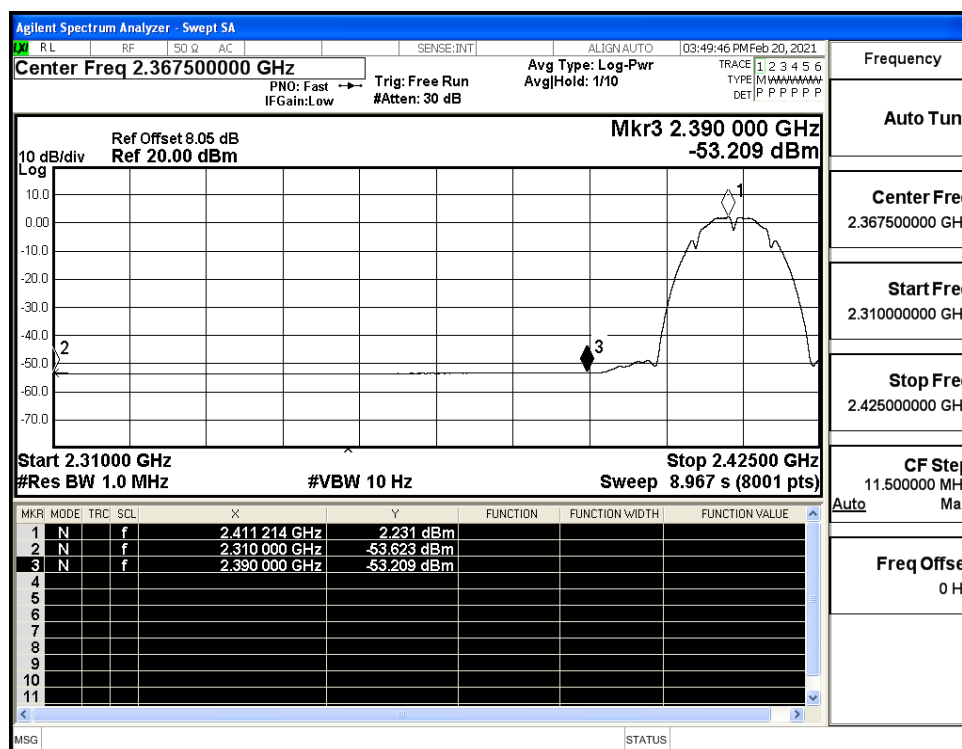
Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
11B	2412	Ant1	2310.0	-43.51	2.0	0	51.75	PEAK	74	PASS
	2412	Ant1	2310.0	-53.62	2.0	0	41.63	AV	54	PASS
	2412	Ant1	2390.0	-42.09	2.0	0	53.17	PEAK	74	PASS
	2412	Ant1	2390.0	-53.21	2.0	0	42.05	AV	54	PASS
	2462	Ant1	2483.5	-42.42	2.0	0	52.84	PEAK	74	PASS
	2462	Ant1	2483.5	-52.50	2.0	0	42.76	AV	54	PASS
	2462	Ant1	2500.0	-43.25	2.0	0	52.01	PEAK	74	PASS
	2462	Ant1	2500.0	-52.66	2.0	0	42.60	AV	54	PASS
11G	2412	Ant1	2310.0	-43.37	2.0	0	51.89	PEAK	74	PASS
	2412	Ant1	2310.0	-53.57	2.0	0	41.69	AV	54	PASS
	2412	Ant1	2390.0	-42.69	2.0	0	52.57	PEAK	74	PASS
	2412	Ant1	2390.0	-53.16	2.0	0	42.10	AV	54	PASS
	2462	Ant1	2483.5	-42.39	2.0	0	52.87	PEAK	74	PASS
	2462	Ant1	2483.5	-52.25	2.0	0	43.01	AV	54	PASS
	2462	Ant1	2500.0	-41.30	2.0	0	53.96	PEAK	74	PASS
	2462	Ant1	2500.0	-52.66	2.0	0	42.60	AV	54	PASS
11N20 SISO	2412	Ant1	2310.0	-43.35	2.0	0	51.91	PEAK	74	PASS
	2412	Ant1	2310.0	-53.64	2.0	0	41.61	AV	54	PASS
	2412	Ant1	2390.0	-42.48	2.0	0	52.78	PEAK	74	PASS
	2412	Ant1	2390.0	-53.23	2.0	0	42.03	AV	54	PASS
	2462	Ant1	2483.5	-41.73	2.0	0	53.53	PEAK	74	PASS
	2462	Ant1	2483.5	-52.53	2.0	0	42.73	AV	54	PASS
	2462	Ant1	2500.0	-42.35	2.0	0	52.91	PEAK	74	PASS
	2462	Ant1	2500.0	-52.67	2.0	0	42.59	AV	54	PASS
11N40 SISO	2422	Ant1	2310.0	-42.83	2.0	0	52.43	PEAK	74	PASS
	2422	Ant1	2310.0	-53.61	2.0	0	41.65	AV	54	PASS

	2422	Ant1	2390.0	-42.15	2.0	0	53.11	PEAK	74	PASS
	2422	Ant1	2390.0	-53.21	2.0	0	42.05	AV	54	PASS
	2452	Ant1	2483.5	-42.75	2.0	0	52.51	PEAK	74	PASS
	2452	Ant1	2483.5	-52.55	2.0	0	42.71	AV	54	PASS
	2452	Ant1	2500.0	-41.41	2.0	0	53.85	PEAK	74	PASS
	2452	Ant1	2500.0	-52.66	2.0	0	42.60	AV	54	PASS

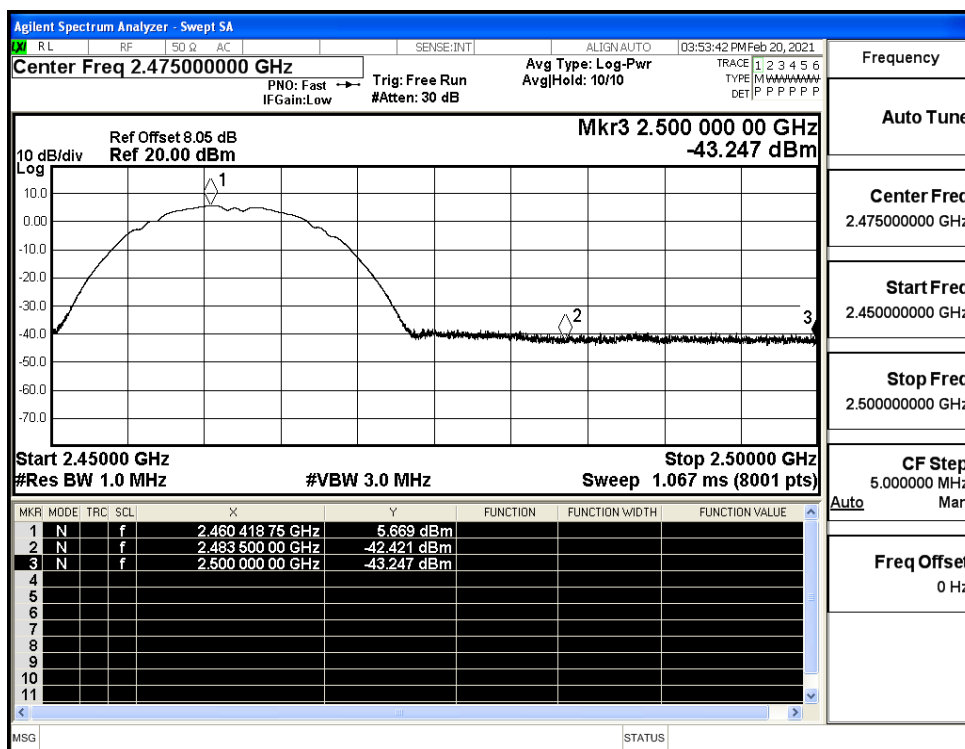
Restrict-band band-edge measurements_11B_2412_Ant1_PEAK



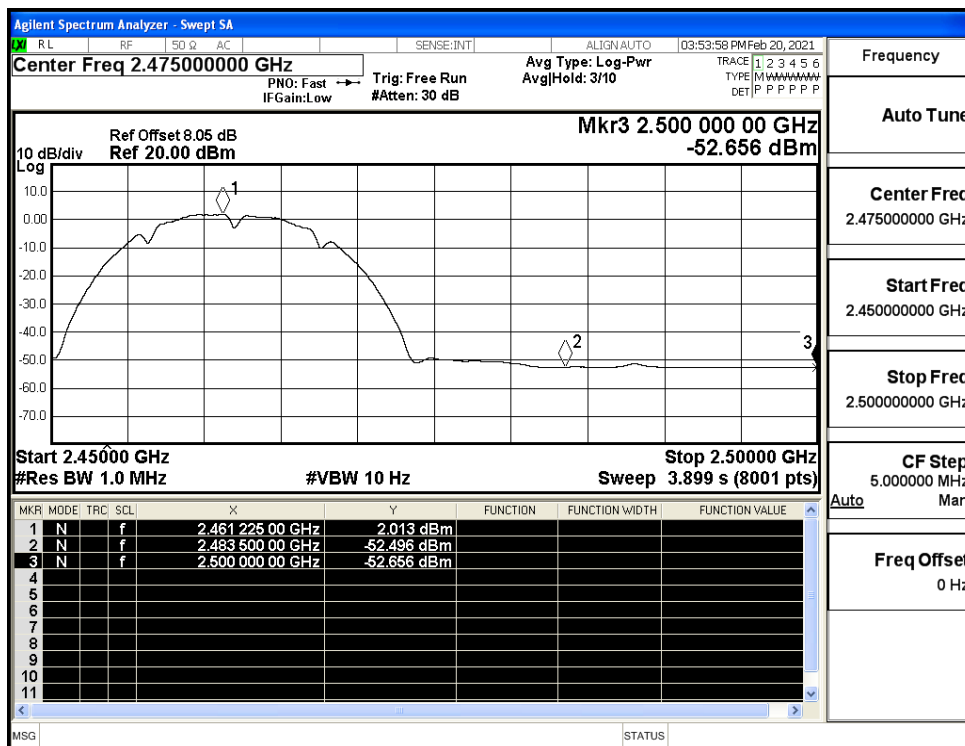
Restrict-band band-edge measurements_11B_2412_Ant1_AV



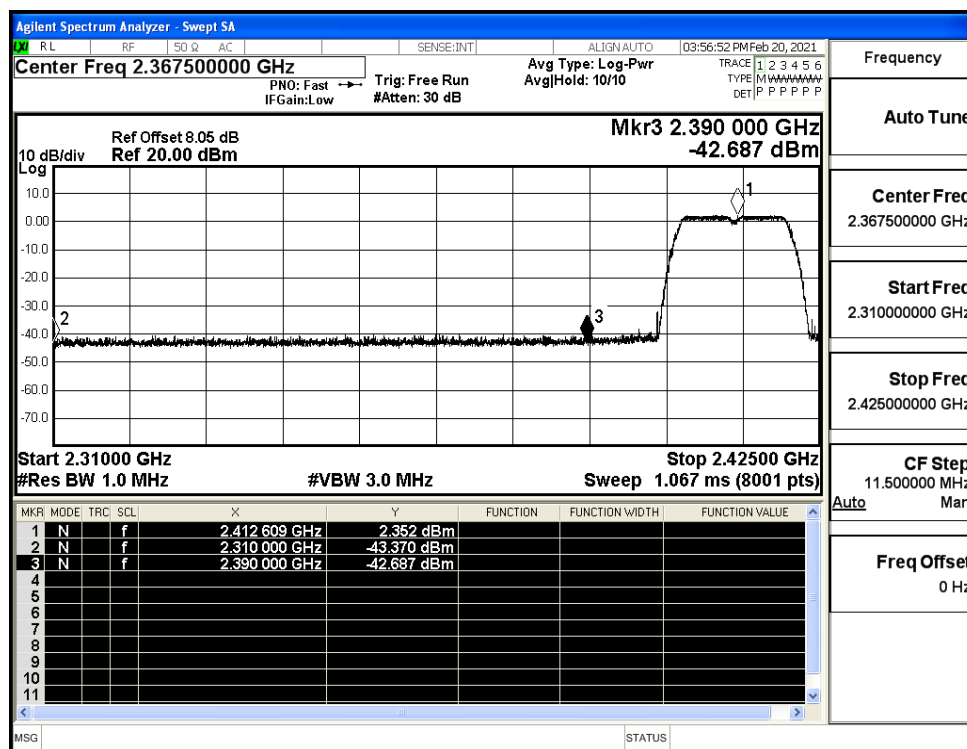
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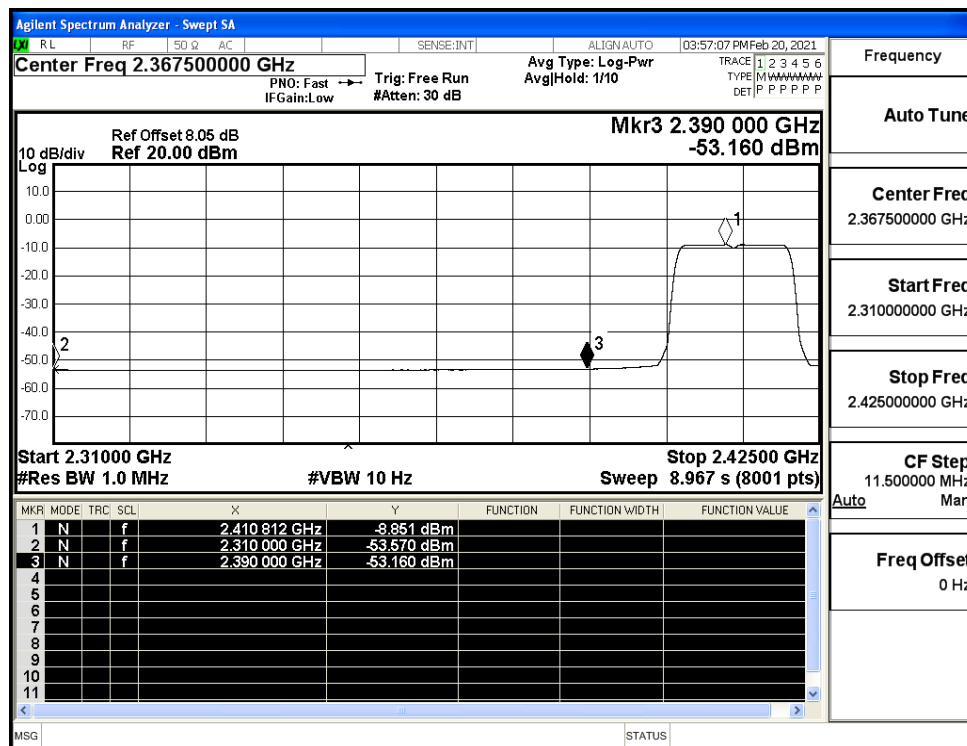
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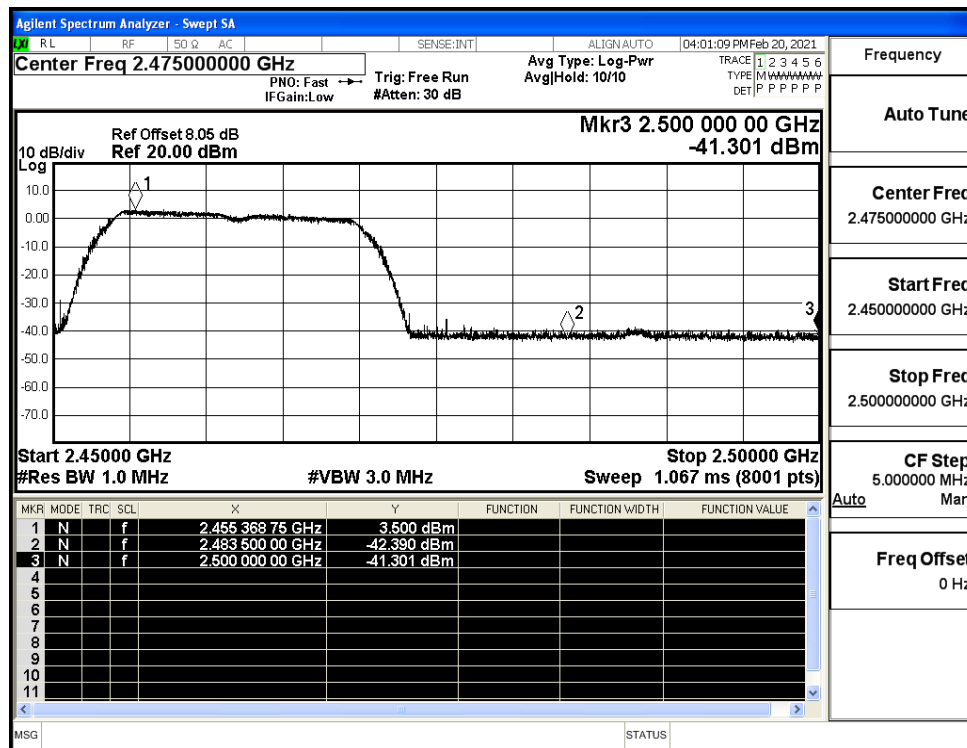
Restrict-band band-edge measurements_11G_2412_Ant1_PEAK



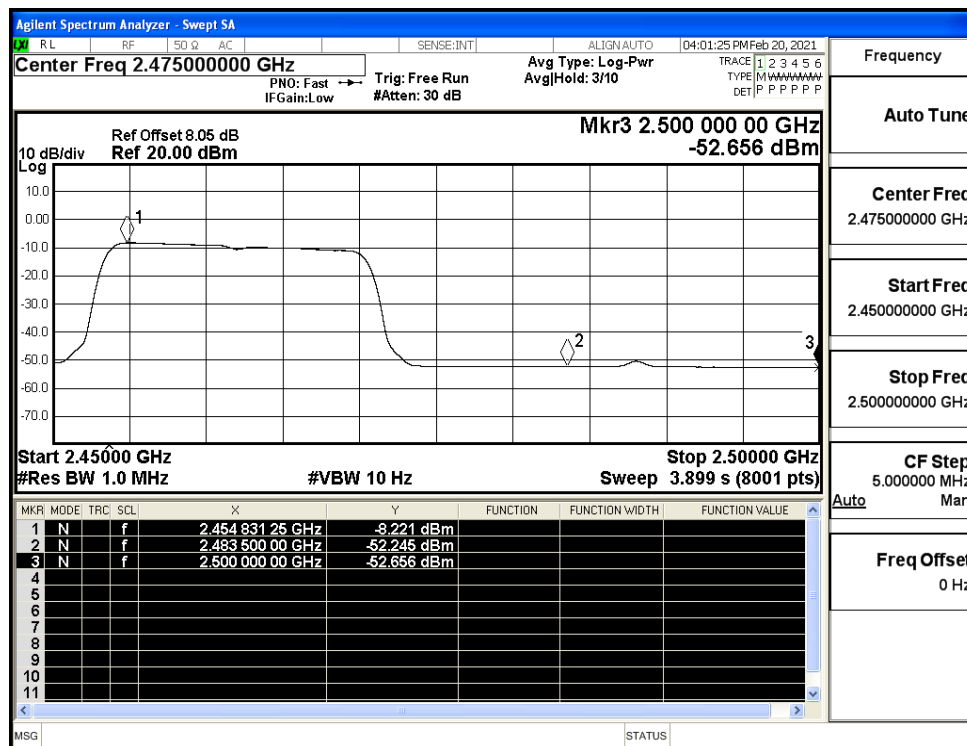
Restrict-band band-edge measurements_11G_2412_Ant1_AV



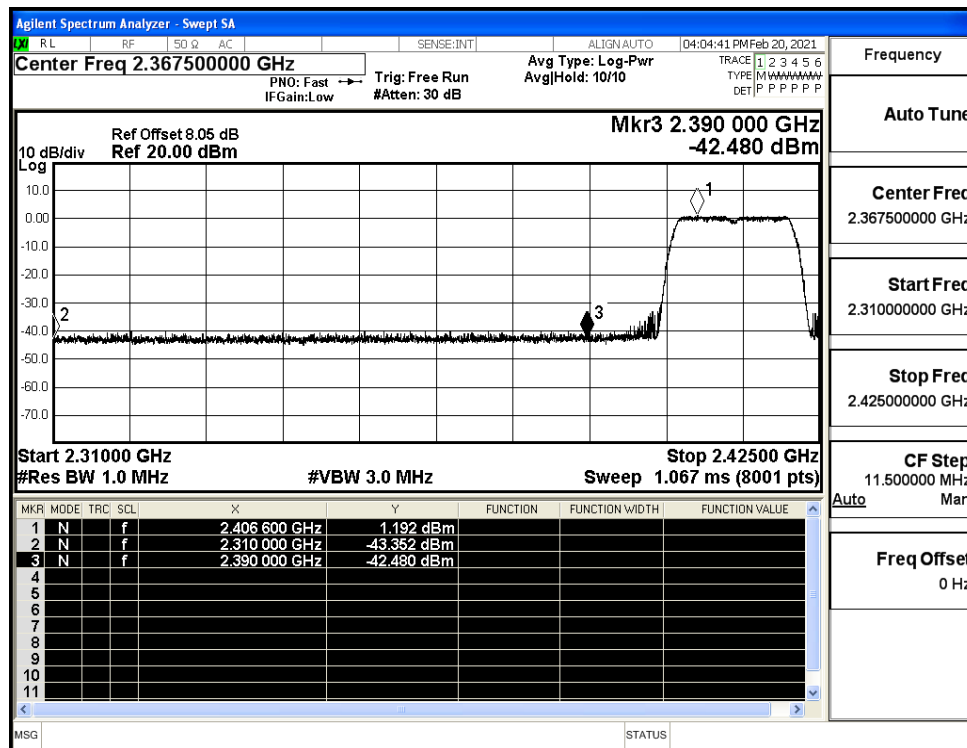
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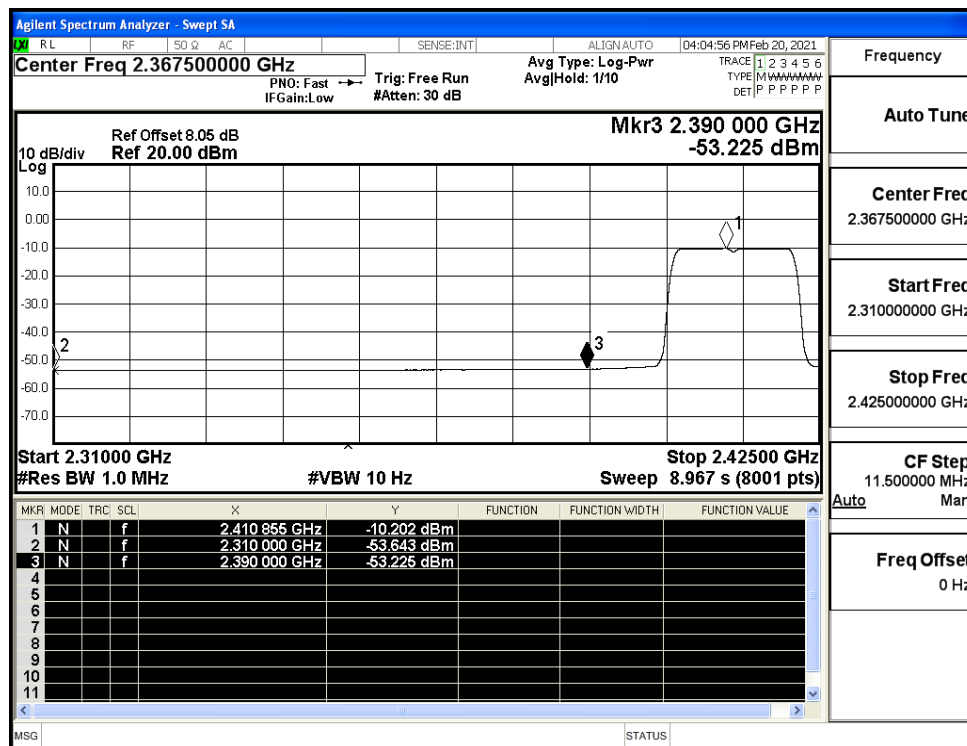
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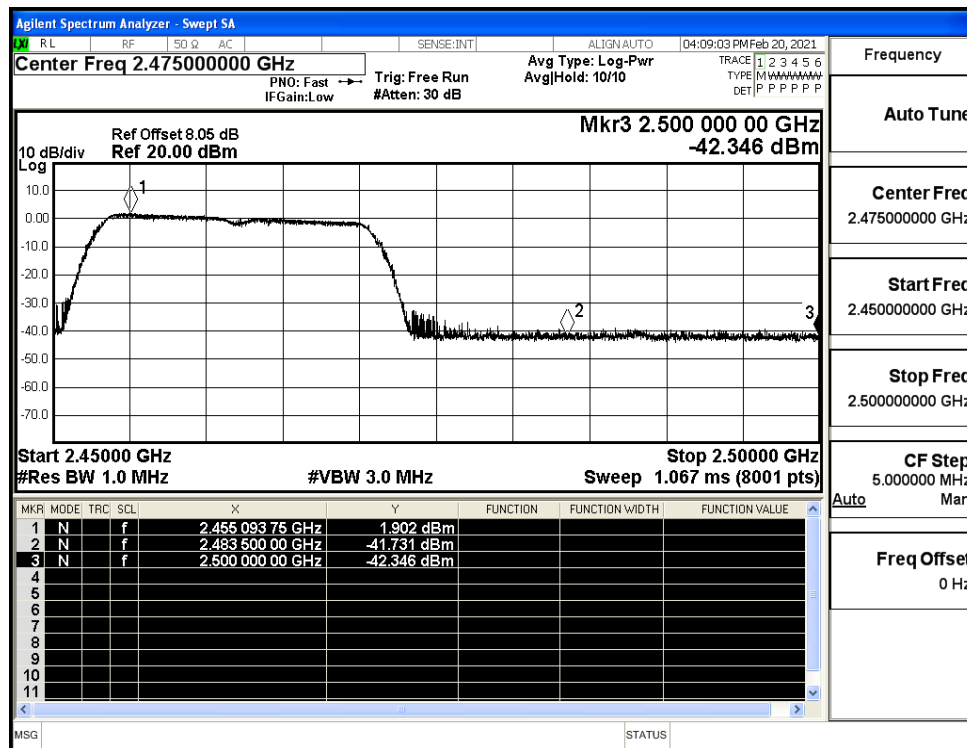
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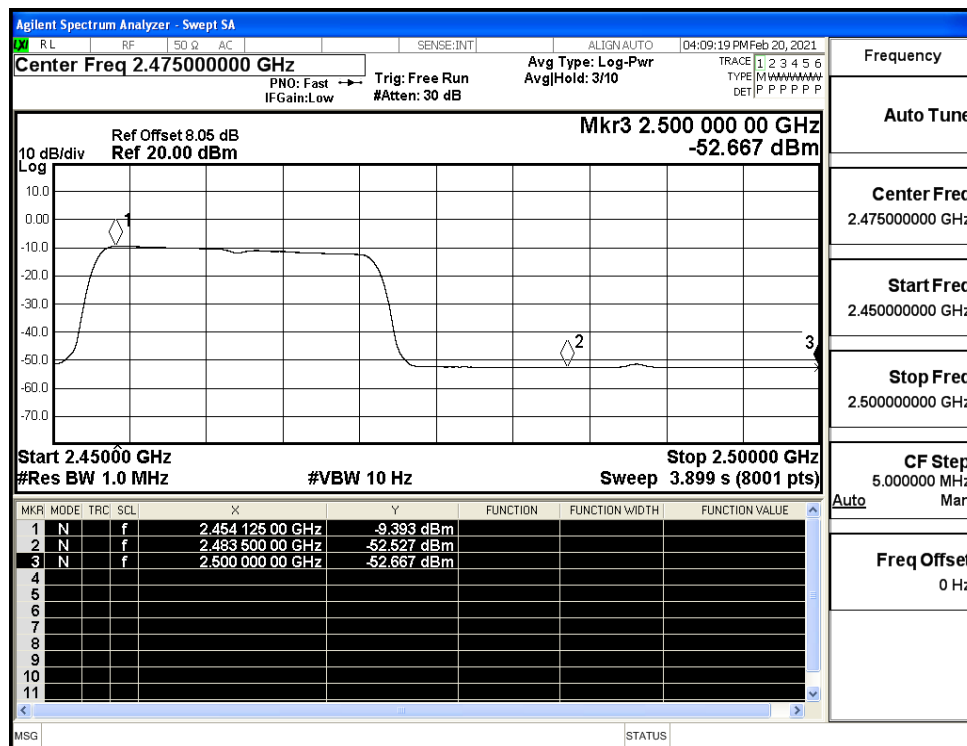
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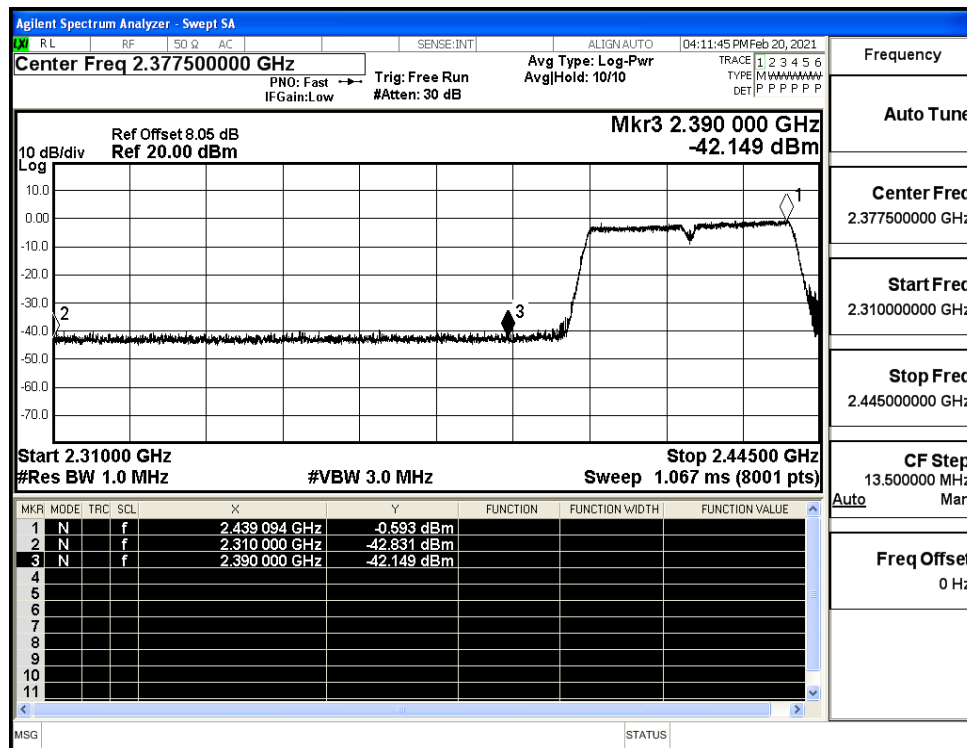
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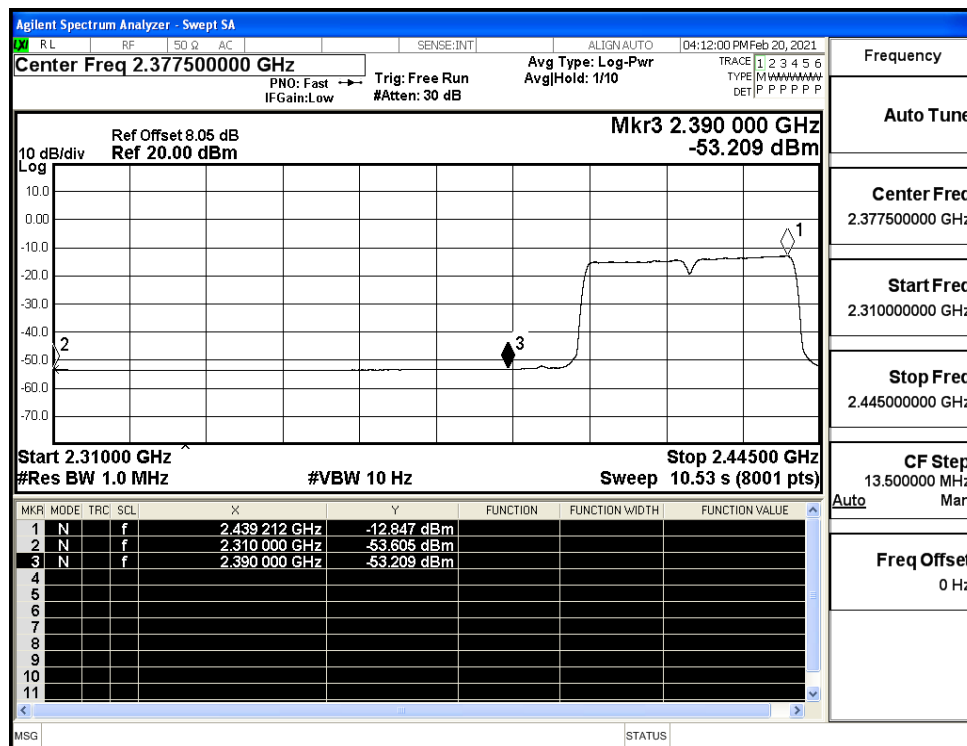
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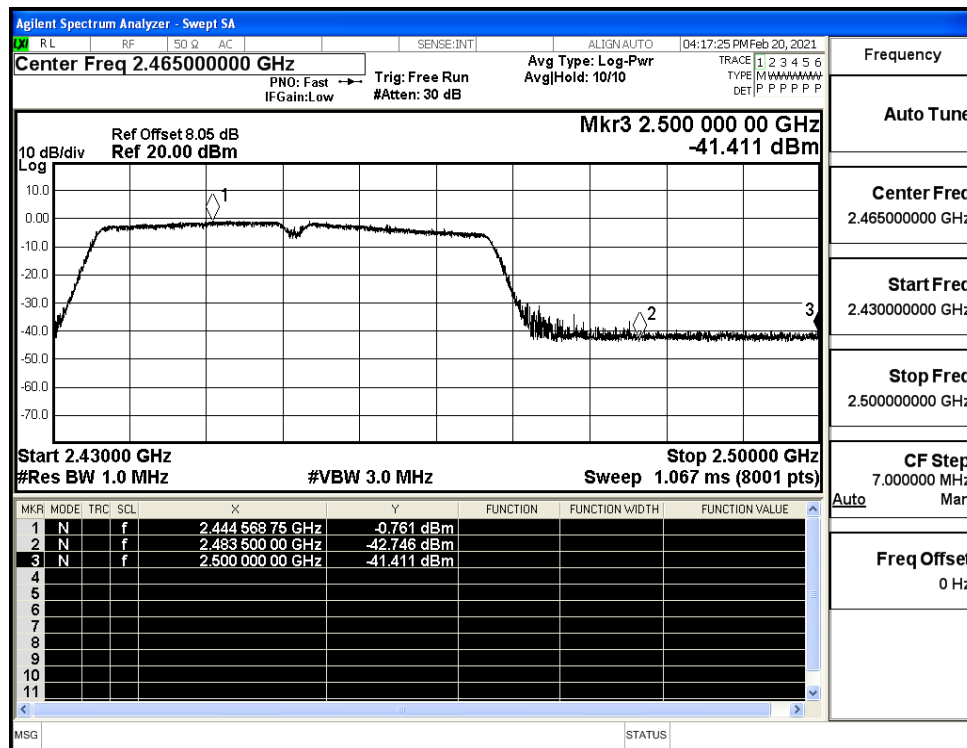
Restrict-band band-edge measurements_11N40SISO_2422_Ant1_PEAK



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

