

Appendix A

RF Test Data for 2.4G (Conducted Measurement)

Product Name: Camera Flash

Trade Mark: NEEWER

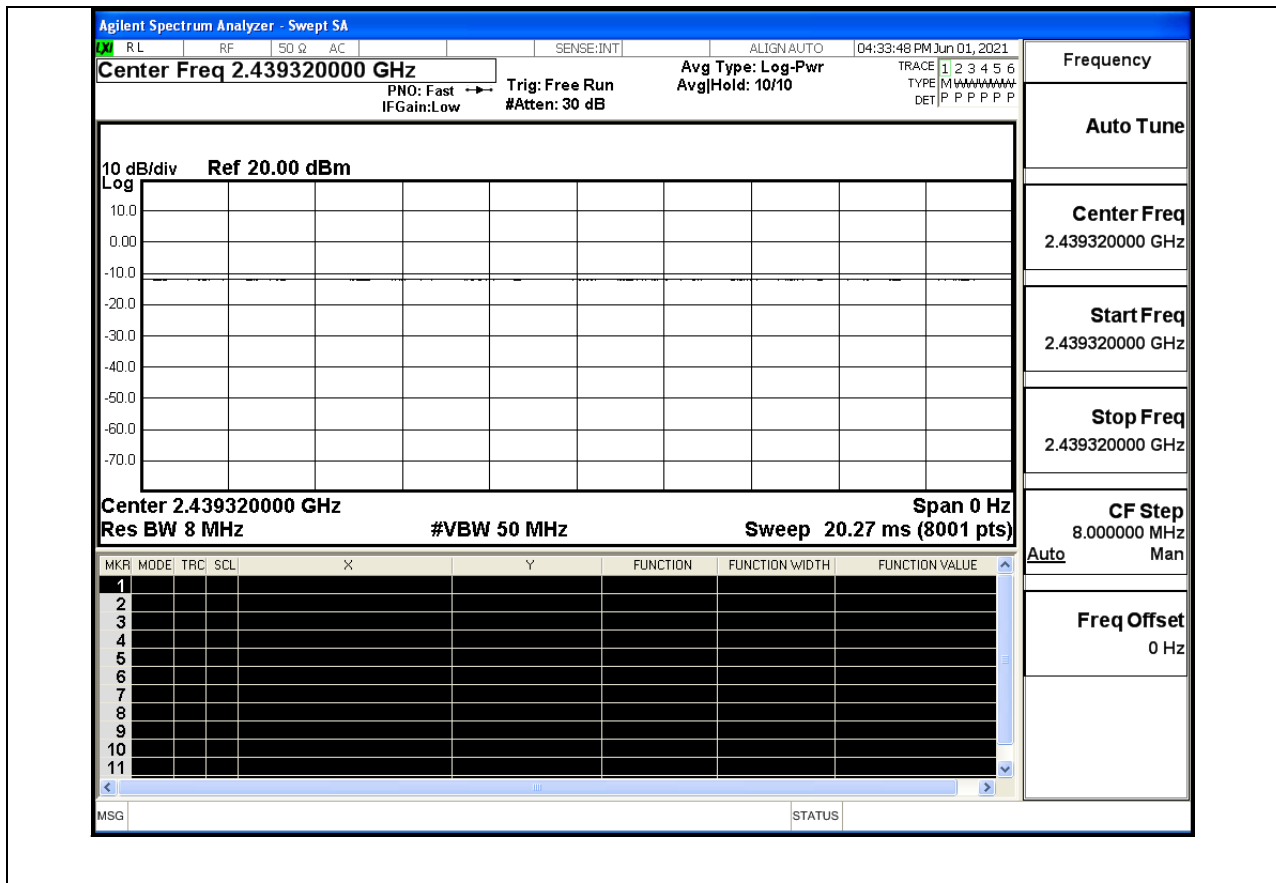
Test Model: NW420-N

Environmental Conditions

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

A.1 Duty Cycle

Test Mode	Test Channel	Ant	Duty Cycle[%]	Verdict
MSK	2439.32	Ant1	100	PASS

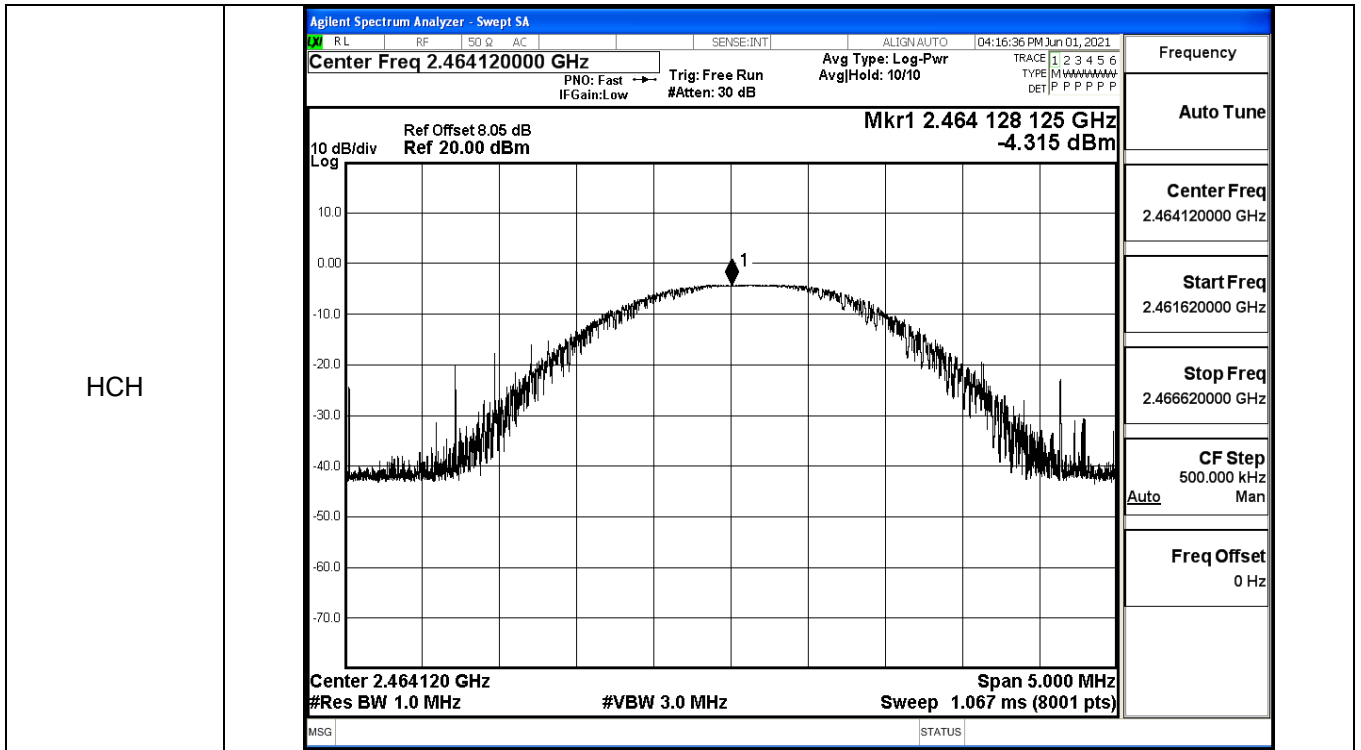


A.2 Maximum Conducted Peak Output Power

Mode	Channel	Conduct Peak Power[dBm]	Limit [dBm]	Verdict
MSK	LCH	-4.034	30	PASS
MSK	MCH	-4.116	30	PASS
MSK	HCH	-4.315	30	PASS

Test Graphs

LCH		<table border="1"> <thead> <tr> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>Auto Tune</td> </tr> <tr> <td>Center Freq 2.412760000 GHz</td> </tr> <tr> <td>Start Freq 2.410260000 GHz</td> </tr> <tr> <td>Stop Freq 2.415260000 GHz</td> </tr> <tr> <td>CF Step 500.000 kHz Auto Man</td> </tr> <tr> <td>Freq Offset 0 Hz</td> </tr> </tbody> </table>	Frequency	Auto Tune	Center Freq 2.412760000 GHz	Start Freq 2.410260000 GHz	Stop Freq 2.415260000 GHz	CF Step 500.000 kHz Auto Man	Freq Offset 0 Hz
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A.3 Maximum Power Spectral Density

Mode	Channel	PSD [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
MSK	LCH	-13.021	8	PASS
MSK	MCH	-12.929	8	PASS
MSK	HCH	-12.873	8	PASS

Test Graphs									
LCH	<div style="border: 1px solid black; padding: 5px;"> <p style="font-size: small; margin: 0;">Agilent Spectrum Analyzer - Swept SA</p> <p style="font-size: x-small; margin: 0;">RL RF 50 Ω AC SENSE:INT ALIGN:AUTO 03:55:27 PM Jun 01, 2021</p> <p style="font-size: small; margin: 0;">Center Freq 2.412760000 GHz Avg Type: Log-Pwr TRACE 1 2 3 4 5 6</p> <p style="font-size: x-small; margin: 0;">PNO: Wide → Trig: Free Run AvgHold: 10/10 TYPE M W W W W W W W</p> <p style="font-size: x-small; margin: 0;">IFGain:Low #Atten: 30 dB DET P P P P P P P</p> <div style="display: flex; justify-content: space-between; font-size: small;"> Ref Offset 8.05 dB Mkr1 2.412 749 5 GHz </div> <div style="display: flex; justify-content: space-between; font-size: small;"> Ref 20.00 dBm -13.021 dBm </div> <div style="display: flex; justify-content: space-between; font-size: x-small; margin-top: 10px;"> Center 2.4127600 GHz Span 1.500 MHz </div> <div style="display: flex; justify-content: space-between; font-size: x-small; margin-top: 5px;"> #Res BW 3.0 kHz #VBW 10 kHz Sweep 158.2 ms (1001 pts) </div> <p style="font-size: x-small; margin: 0;">MSG STATUS</p> </div> <table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <tr><td>Frequency</td></tr> <tr><td>Auto Tune</td></tr> <tr><td>Center Freq 2.412760000 GHz</td></tr> <tr><td>Start Freq 2.412010000 GHz</td></tr> <tr><td>Stop Freq 2.413510000 GHz</td></tr> <tr><td>CF Step 150.000 kHz</td></tr> <tr><td>Auto Man</td></tr> <tr><td>Freq Offset 0 Hz</td></tr> </table>	Frequency	Auto Tune	Center Freq 2.412760000 GHz	Start Freq 2.412010000 GHz	Stop Freq 2.413510000 GHz	CF Step 150.000 kHz	Auto Man	Freq Offset 0 Hz
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CF Step 150.000 kHz									
Auto Man									
Freq Offset 0 Hz									

A.4 6dB Bandwidth

Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
MSK	LCH	501.2	≥0.5	PASS
MSK	MCH	504.4	≥0.5	PASS
MSK	HCH	500.8	≥0.5	PASS

Test Graphs

LCH			<p>Frequency</p> <p>Center Freq 2.412760000 GHz</p>
	<p>Center 2.413 GHz Span 3 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 1.067 ms</p> <p>Occupied Bandwidth Total Power 0.36 dBm 903.22 kHz</p> <p>Transmit Freq Error -24.037 kHz OBW Power 99.00 % x dB Bandwidth 501.2 kHz x dB -6.00 dB</p>		<p>CF Step 300.000 kHz Auto Man</p> <p>Freq Offset 0 Hz</p>

MCH			<p>Frequency</p> <p>Center Freq 2.439320000 GHz</p>
	<p>Center 2.439 GHz Span 3 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 1.067 ms</p> <p>Occupied Bandwidth Total Power 0.17 dBm 927.12 kHz</p> <p>Transmit Freq Error -83.649 kHz OBW Power 99.00 % x dB Bandwidth 504.4 kHz x dB -6.00 dB</p>		<p>CF Step 300.000 kHz Auto Man</p> <p>Freq Offset 0 Hz</p>

HCH

Agilent Spectrum Analyzer - Occupied BW

<input type="checkbox"/> RL	<input type="checkbox"/> RF	<input type="checkbox"/> 50 Ω	<input type="checkbox"/> AC	<input type="checkbox"/> SENSE:INT	<input type="checkbox"/> ALIGN:AUTO	<input type="checkbox"/> 04:16:08 PM Jun 01, 2021
Center Freq 2.464120000 GHz				Center Freq: 2.464120000 GHz	Radio Std: None	
				Trig: Free Run	Avg/Hold: 1/1	
				#IFGain:Low	#Atten: 20 dB	Radio Device: BTS

10 dB/div Ref 10.00 dBm

Center 2.464 GHz	Span 3 MHz	
#Res BW 100 kHz	#VBW 300 kHz	Sweep 1.067 ms

Occupied Bandwidth	Total Power	0.00 dBm
897.85 kHz		
Transmit Freq Error	115.12 kHz	OBW Power 99.00 %
x dB Bandwidth	500.8 kHz	x dB -6.00 dB

MSG
STATUS

Frequency

Center Freq
2.464120000 GHz

CF Step
300.000 kHz
Auto Man

Freq Offset
0 Hz

A.5 RF Conducted Spurious Emissions

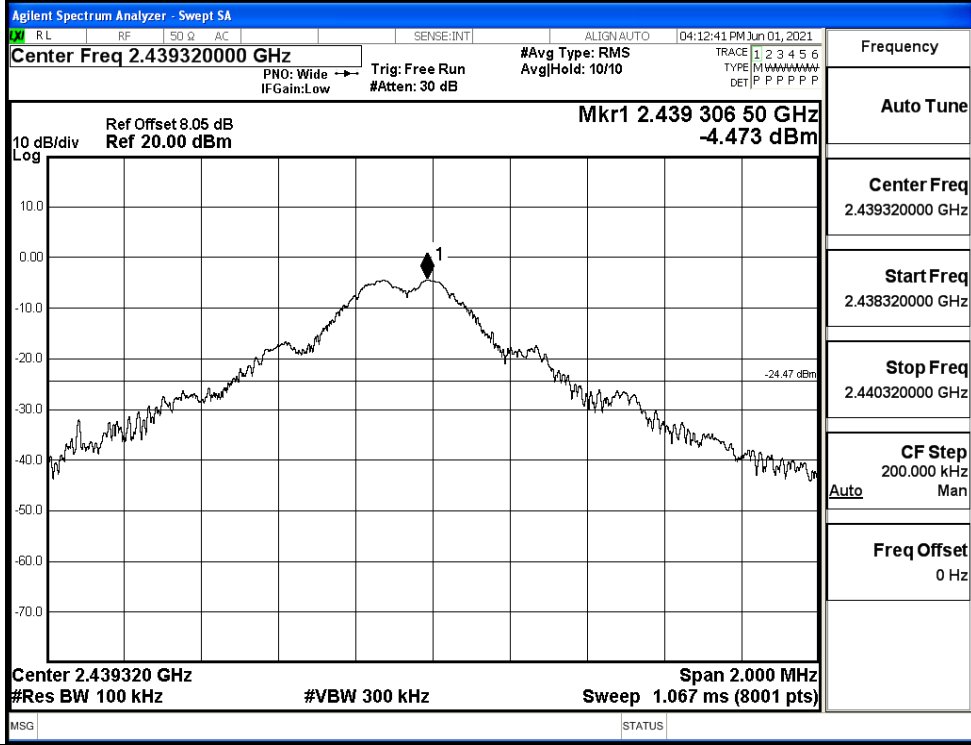
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
MSK	LCH	-4.516	-36.943	-24.516	PASS
MSK	MCH	-4.473	-30.183	-24.473	PASS
MSK	HCH	-4.746	-35.893	-24.746	PASS

MSK_LCH_Graphs

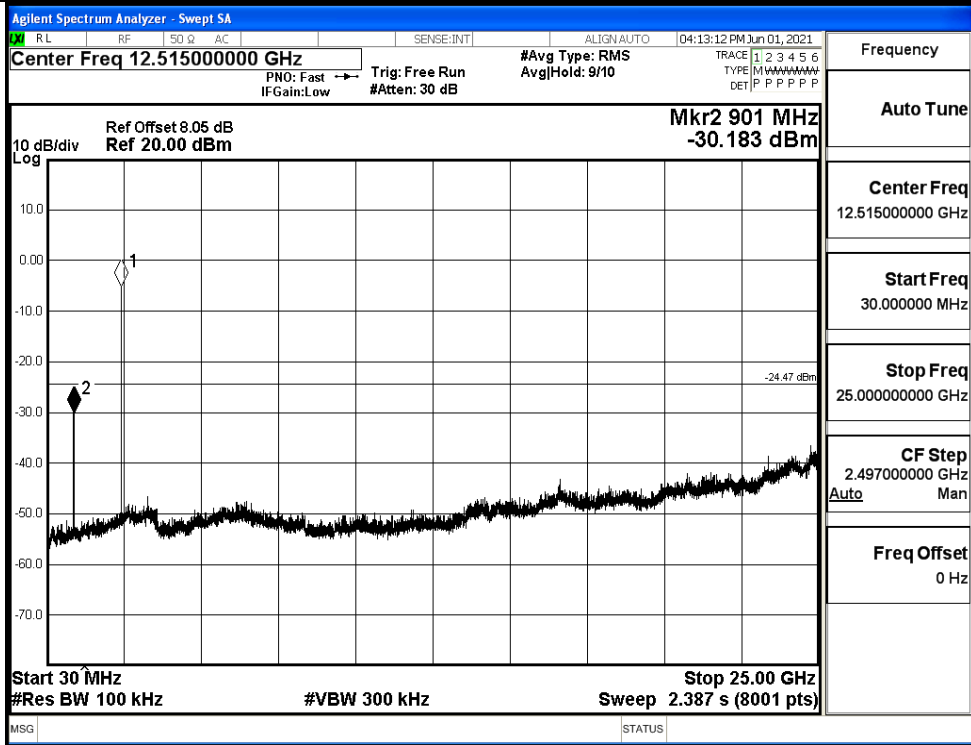
<p>Pref/MSK/LCH</p>		<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.412760000 GHz</p> <p>Start Freq 2.411760000 GHz</p> <p>Stop Freq 2.413760000 GHz</p> <p>CF Step 200.000 kHz Auto Man</p> <p>Freq Offset 0 Hz</p>
<p>Puw/MSK/LCH</p>		<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 12.515000000 GHz</p> <p>Start Freq 30.000000 MHz</p> <p>Stop Freq 25.000000000 GHz</p> <p>CF Step 2.497000000 GHz Auto Man</p> <p>Freq Offset 0 Hz</p>

MSK_MCH_Graphs

Pref/MSK/MCH

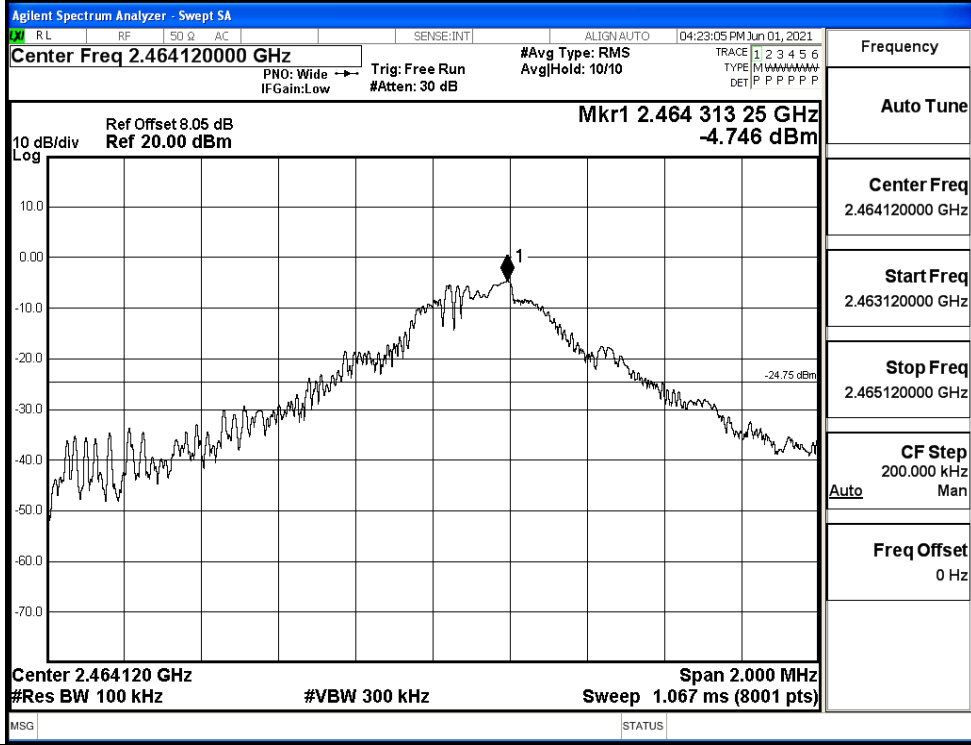


Puw/MSK/MCH

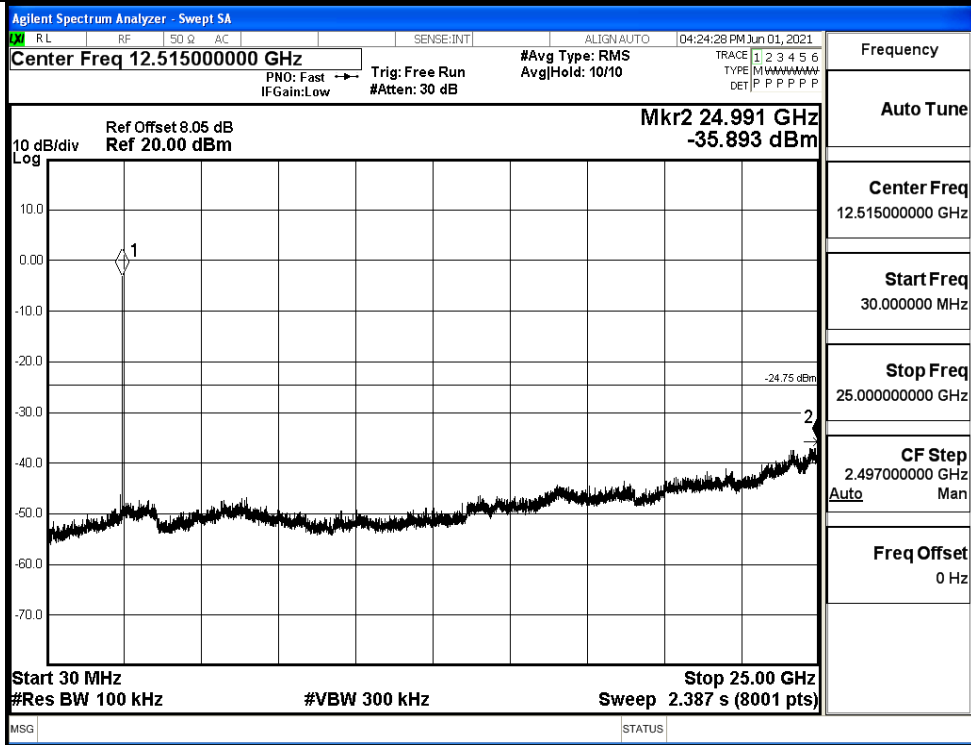


MSK_HCH_Graphs

Pref/MSK/HCH



Puw/MSK/HCH



A.6 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
MSK	LCH	-4.684	-49.514	-24.68	PASS
MSK	HCH	-4.617	-49.206	-24.62	PASS

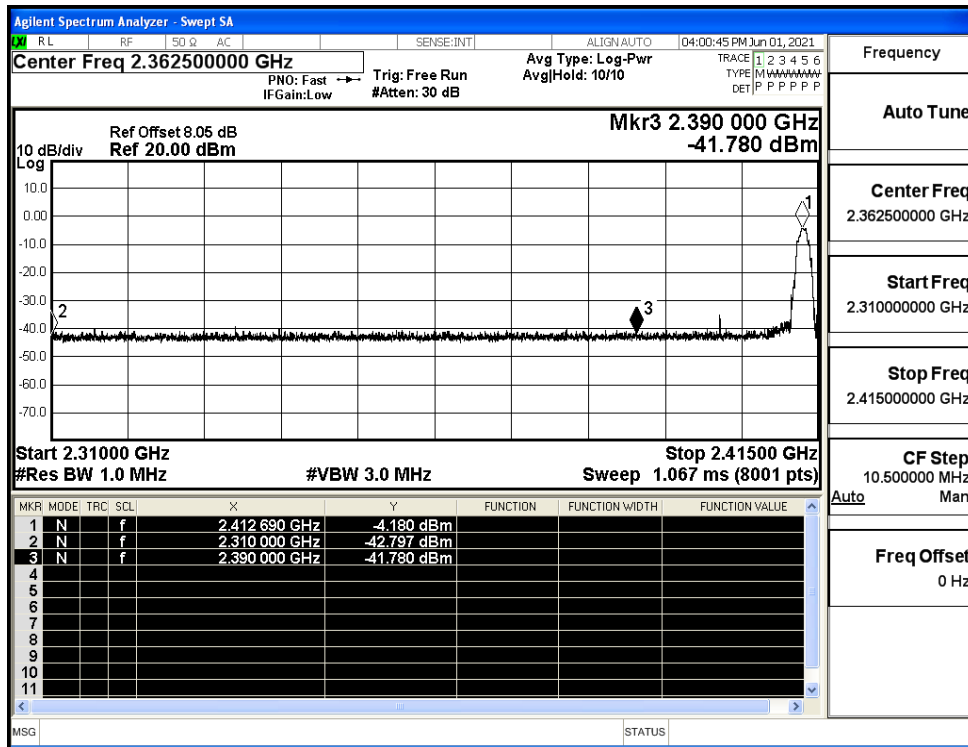
Test Graphs

LCH		<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.36250000 GHz</p> <p>Start Freq 2.31000000 GHz</p> <p>Stop Freq 2.41500000 GHz</p> <p>CF Step 10.500000 MHz</p> <p>Freq Offset 0 Hz</p>
HCH		<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.48000000 GHz</p> <p>Start Freq 2.46000000 GHz</p> <p>Stop Freq 2.50000000 GHz</p> <p>CF Step 4.000000 MHz</p> <p>Freq Offset 0 Hz</p>

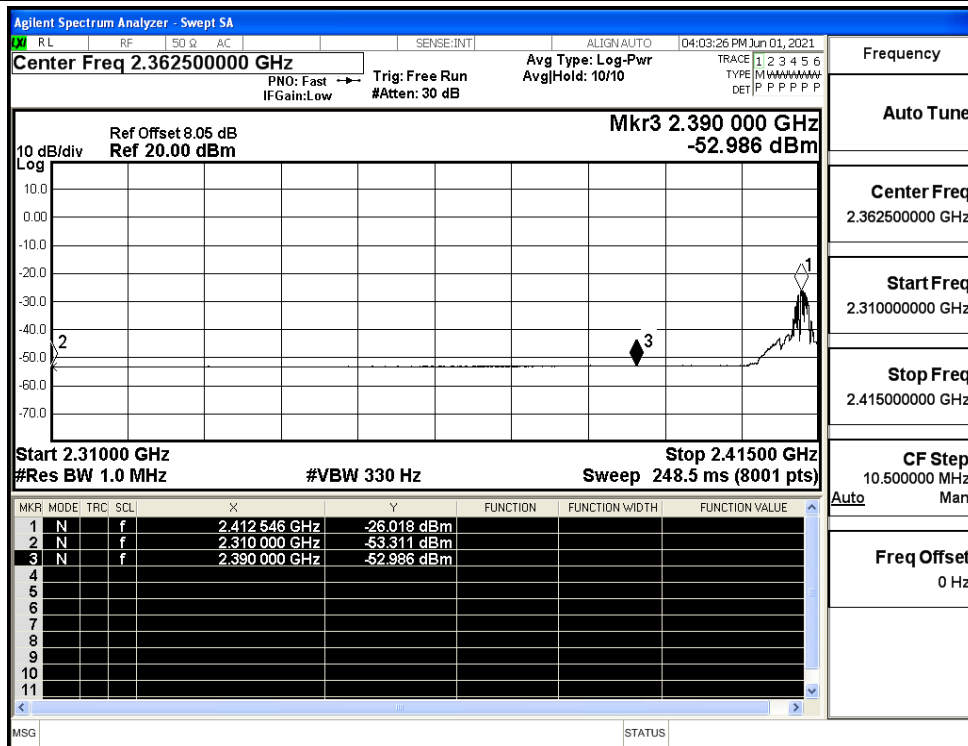
A.7 Restrict-band band-edge measurements

Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdi
MSK	2412.7 5	Ant1	2310.0	-42.80	3.0	0	55.46	PEAK	74	PASS
		Ant1	2310.0	-53.31	3.0	0	44.95	AV	54	PASS
		Ant1	2390.0	-41.78	3.0	0	56.48	PEAK	74	PASS
		Ant1	2390.0	-52.99	3.0	0	45.27	AV	54	PASS
	2464.2 5	Ant1	2483.5	-43.03	3.0	0	55.23	PEAK	74	PASS
		Ant1	2483.5	-52.58	3.0	0	45.68	AV	54	PASS
		Ant1	2500.0	-42.77	3.0	0	55.49	PEAK	74	PASS
		Ant1	2500.0	-52.36	3.0	0	45.90	AV	54	PASS

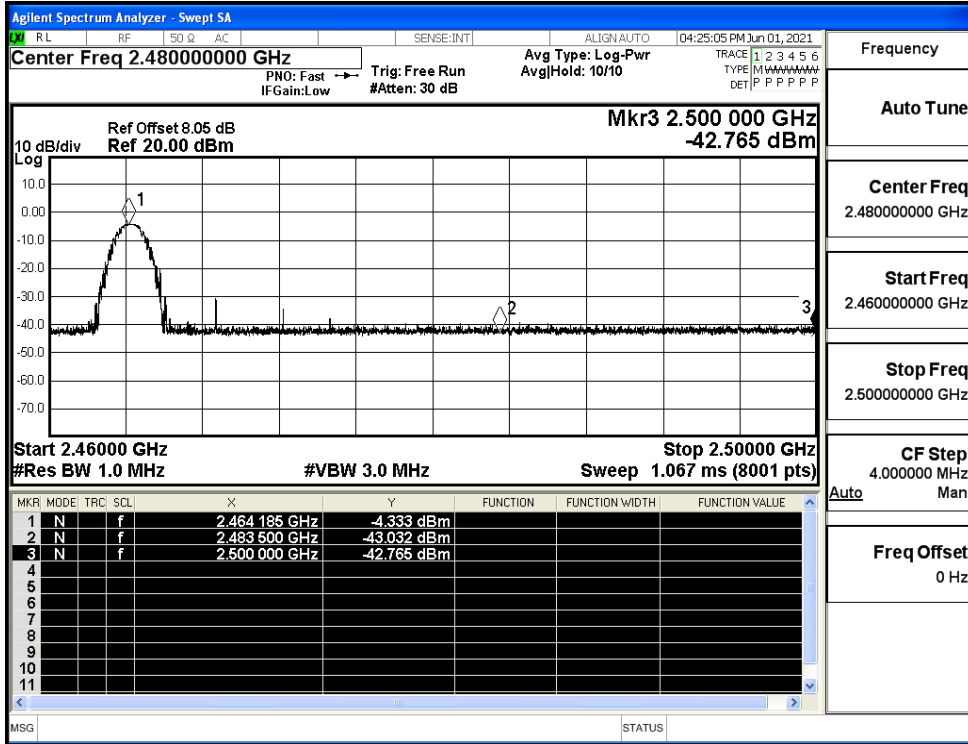
Restrict-band band-edge measurements_MSK_2412.75_Ant1_PEAK



Restrict-band band-edge measurements_MSK_2412.75_Ant1_AV



Restrict-band band-edge measurements_MSK_2464.25_Ant1_PEAK



Restrict-band band-edge measurements_MSK_2464.25_Ant1_AV

