

Appendix A

RF Test Data for BT V4.2(BLE) (Conducted Measurement)

Product Name:Siren Gateway

Trade Mark:Siren

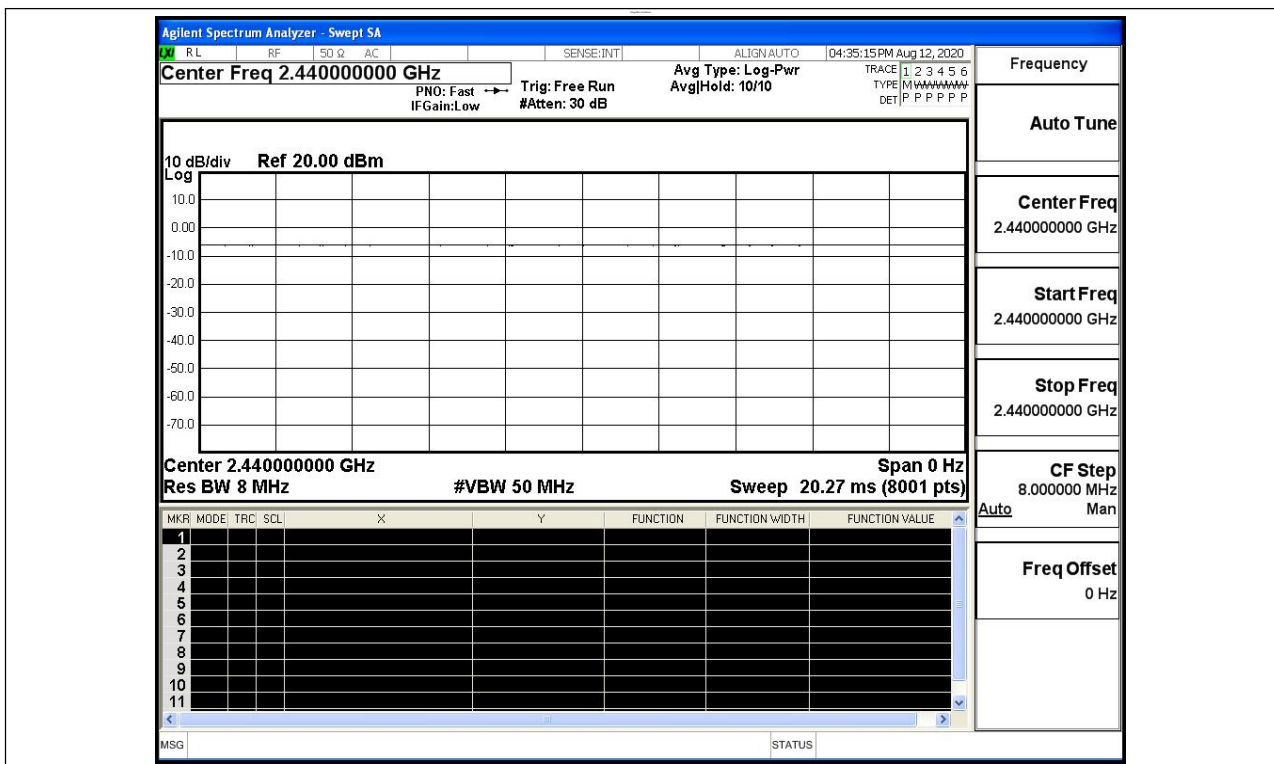
Test Model: HCUBR

Environmental Conditions

Temperature:	24.1° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Diamond.Lu
Supervised by:	Tom.Liu

A.1 Duty Cycle

Test Mode	Test Channel	Ant	Duty Cycle[%]	Verdict
BT LE	2440	Ant1	100	PASS

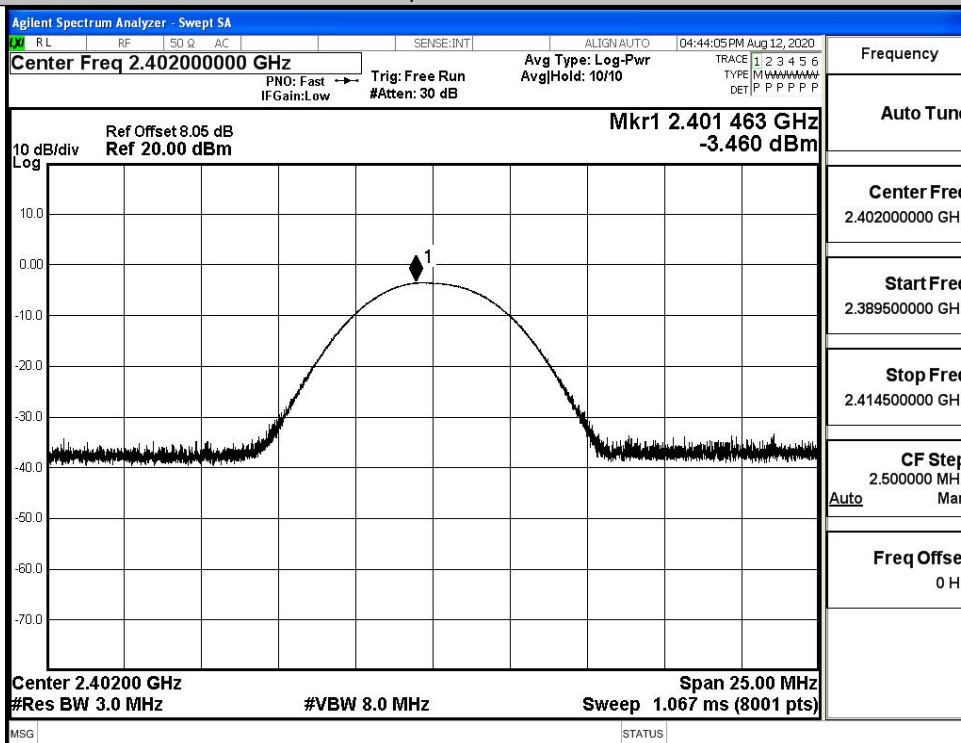


A.2 Maximum Conducted Peak Output Power

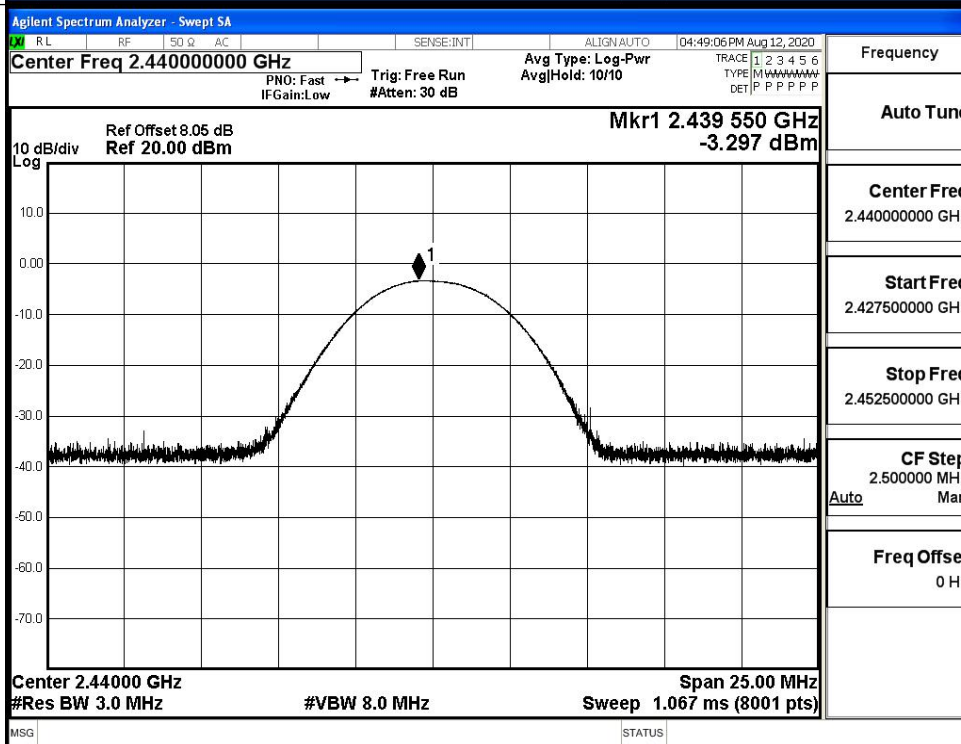
Mode	Channel	Conduct Peak Power[dBm]	Limit [dBm]	Verdict
BT LE	LCH	-3.46	30	PASS
BT LE	MCH	-3.297	30	PASS
BT LE	HCH	-3.52	30	PASS

Test Graphs

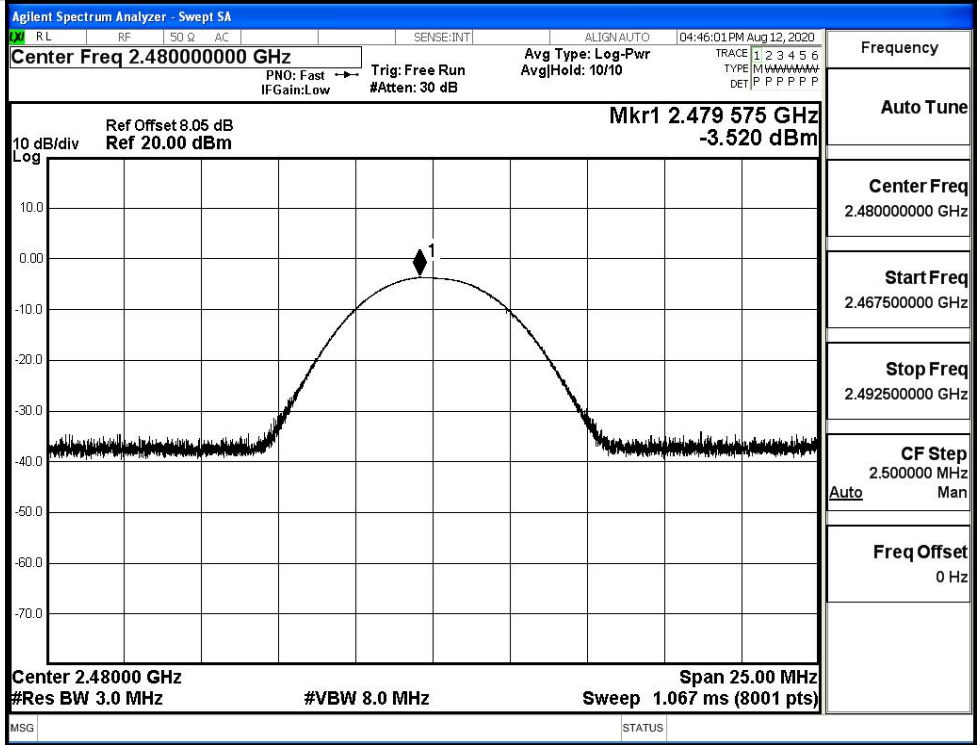
LCH



MCH



HCH

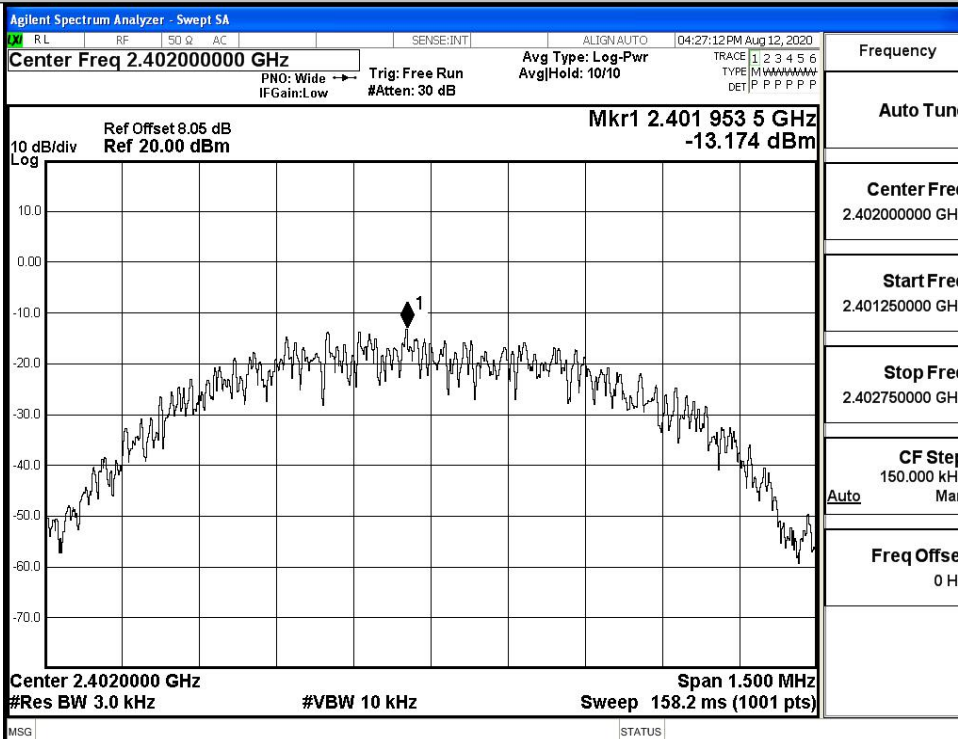


A.3 Maximum Power Spectral Density

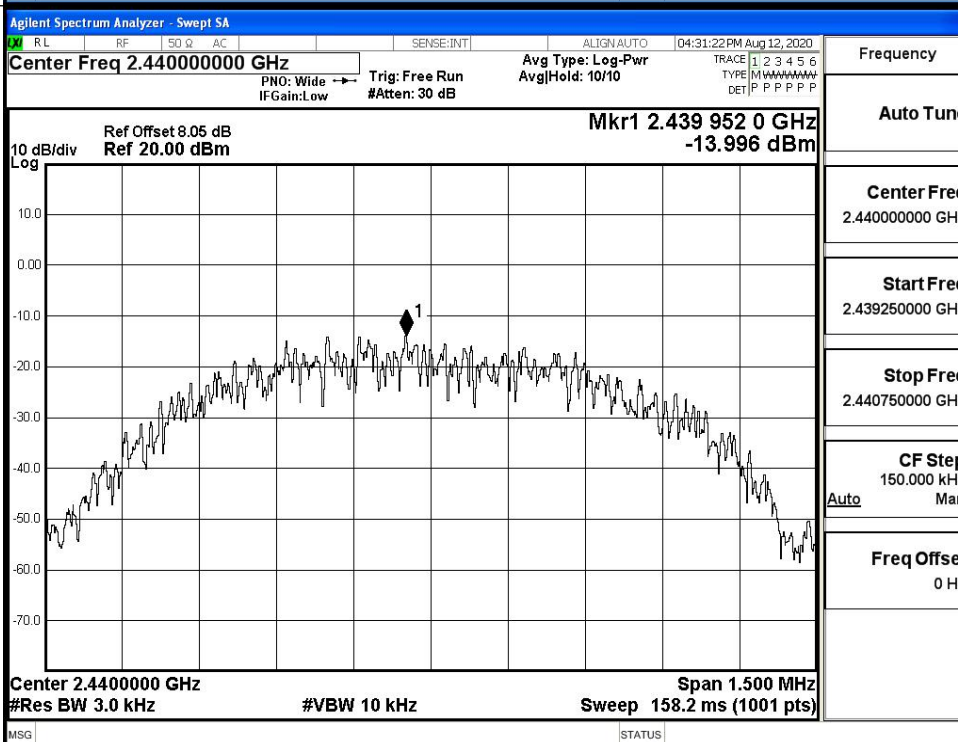
Mode	Channel	PSD [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
BT LE	LCH	-13.174	8	PASS
BT LE	MCH	-13.996	8	PASS
BT LE	HCH	-14.689	8	PASS

Test Graphs

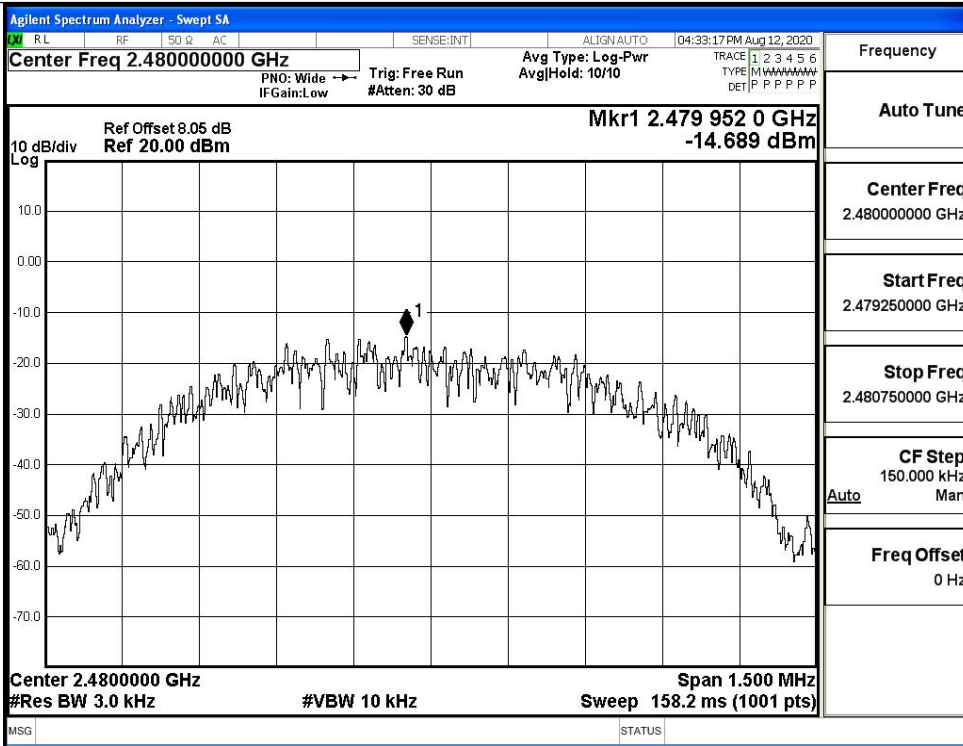
LCH



MCH



HCH



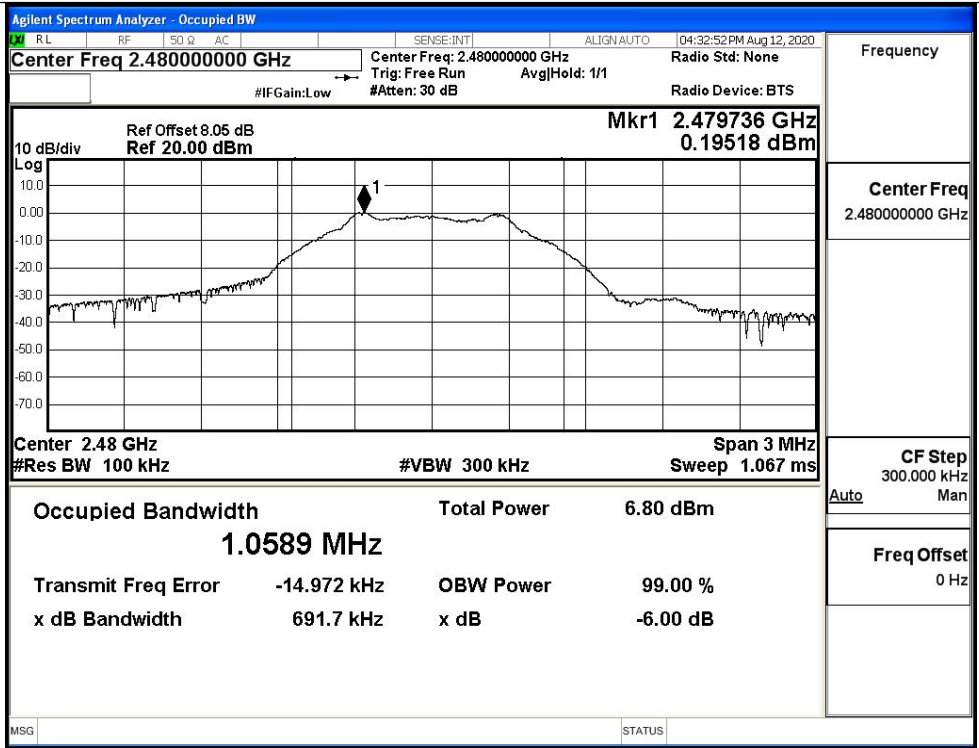
A.4 6dB Bandwidth

Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
BT LE	LCH	0.6996	≥0.5	PASS
BT LE	MCH	0.6997	≥0.5	PASS
BT LE	HCH	0.6917	≥0.5	PASS

Test Graphs

LCH	<p>Agilent Spectrum Analyzer - Occupied BW Center Freq 2.40200000 GHz Mkr1 2.4017281 GHz 1.9109 dBm Occupied Bandwidth 1.0581 MHz Total Power 8.38 dBm Transmit Freq Error -13.485 kHz x dB Bandwidth 699.6 kHz</p>	Frequency Center Freq 2.40200000 GHz CF Step 300.000 kHz Freq Offset 0 Hz
	<p>Agilent Spectrum Analyzer - Occupied BW Center Freq 2.44000000 GHz Mkr1 2.4397259 GHz 1.4825 dBm Occupied Bandwidth 1.0568 MHz Total Power 7.98 dBm Transmit Freq Error -14.204 kHz x dB Bandwidth 699.7 kHz</p>	Frequency Center Freq 2.44000000 GHz CF Step 300.000 kHz Freq Offset 0 Hz

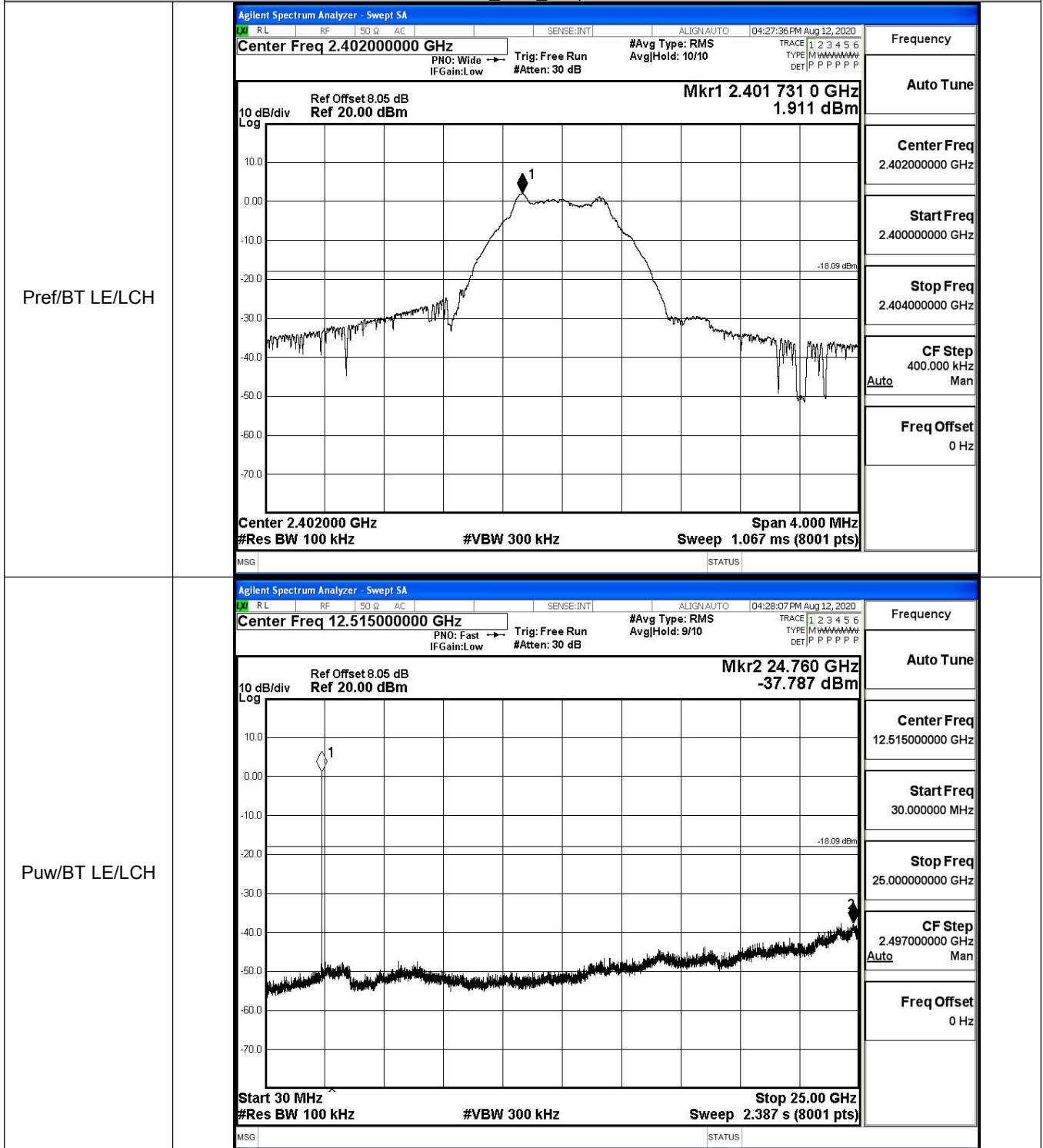
HCH

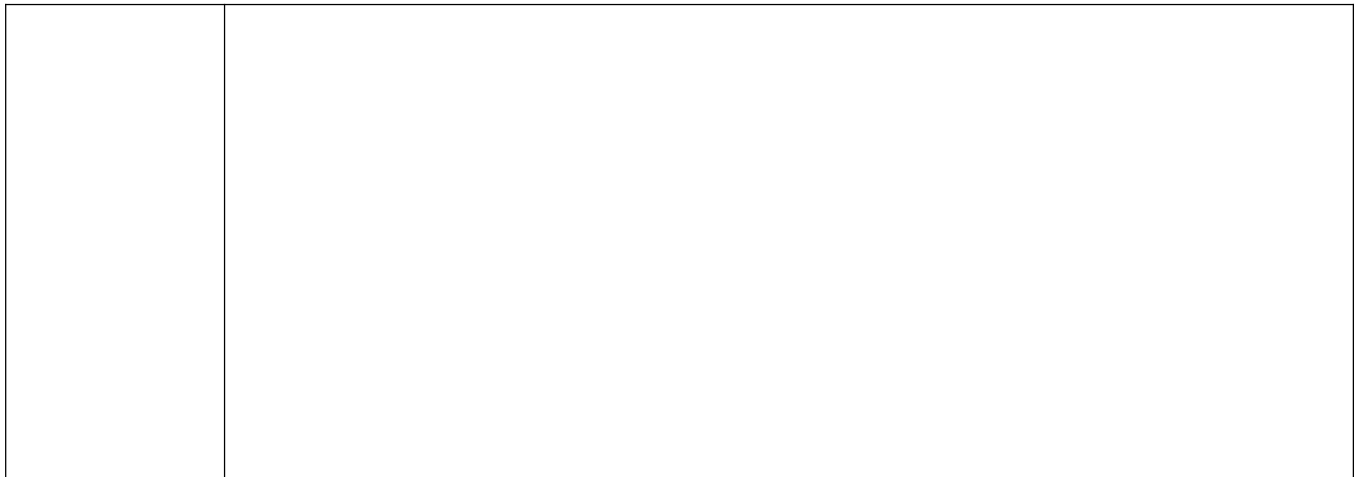


A.5 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	1.911	-37.787	-18.089	PASS
BT LE	MCH	1.447	-37.370	-18.553	PASS
BT LE	HCH	0.227	-37.175	-19.773	PASS

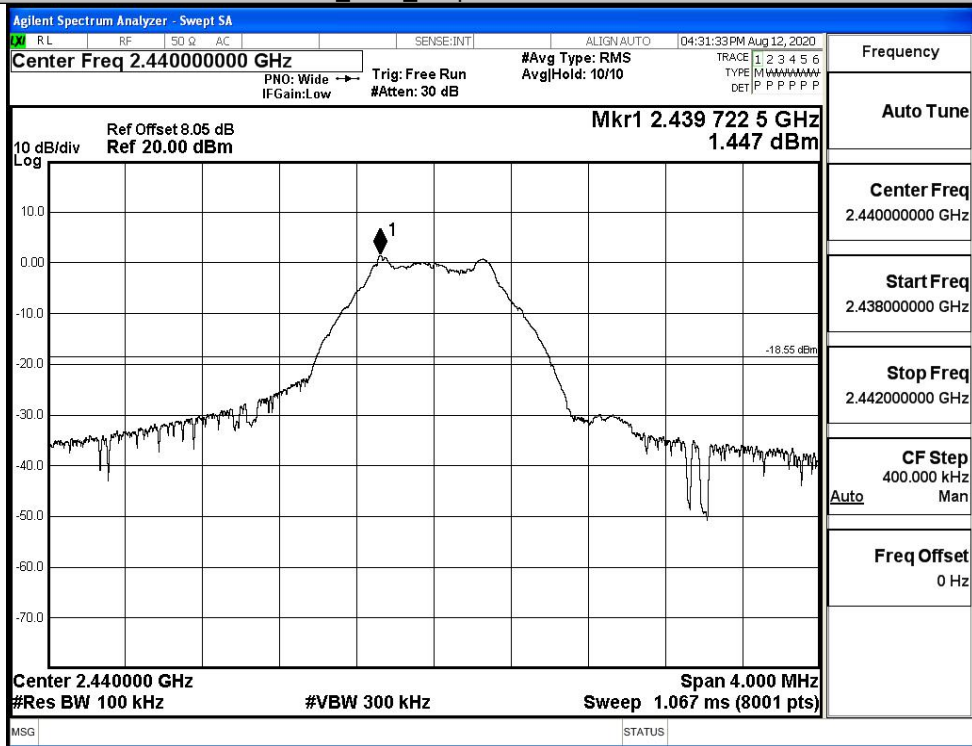
BT LE_LCH_Graphs

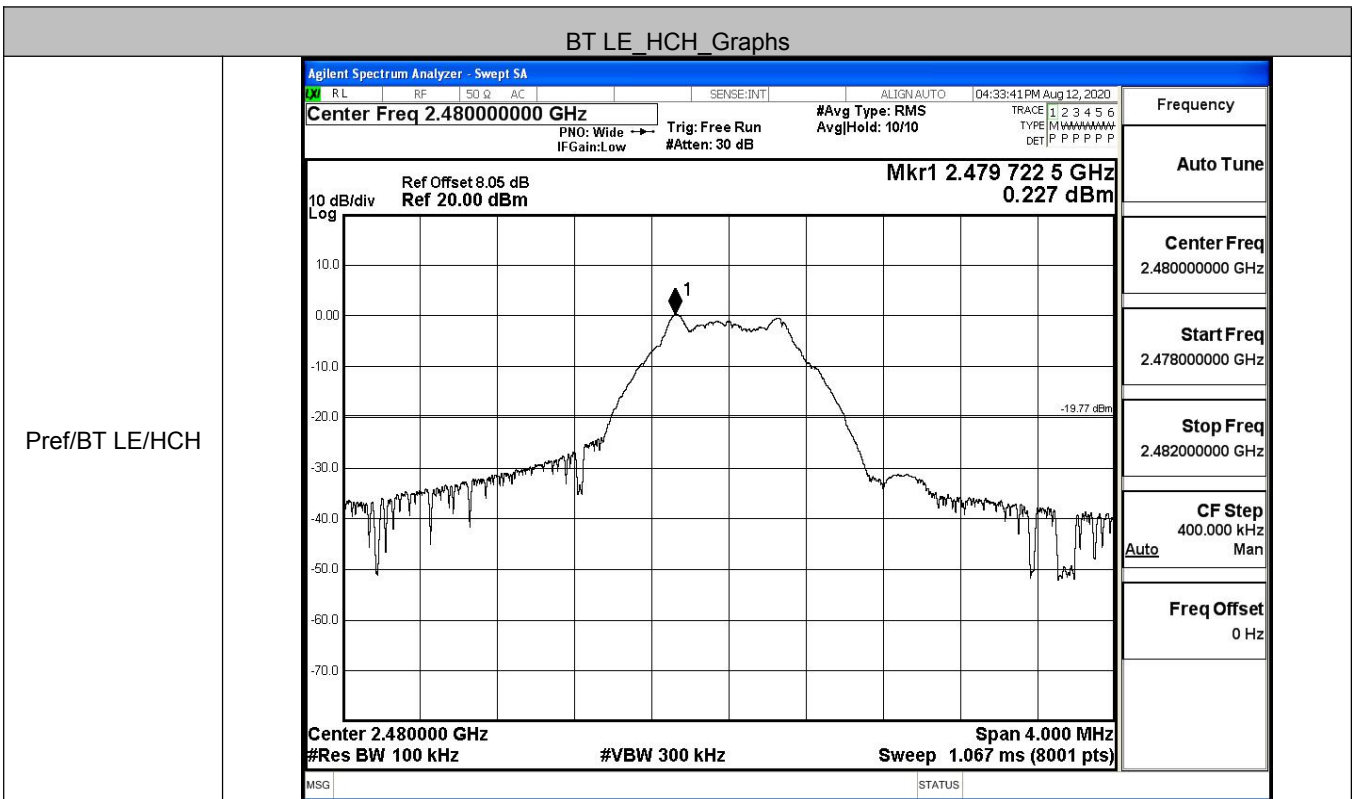
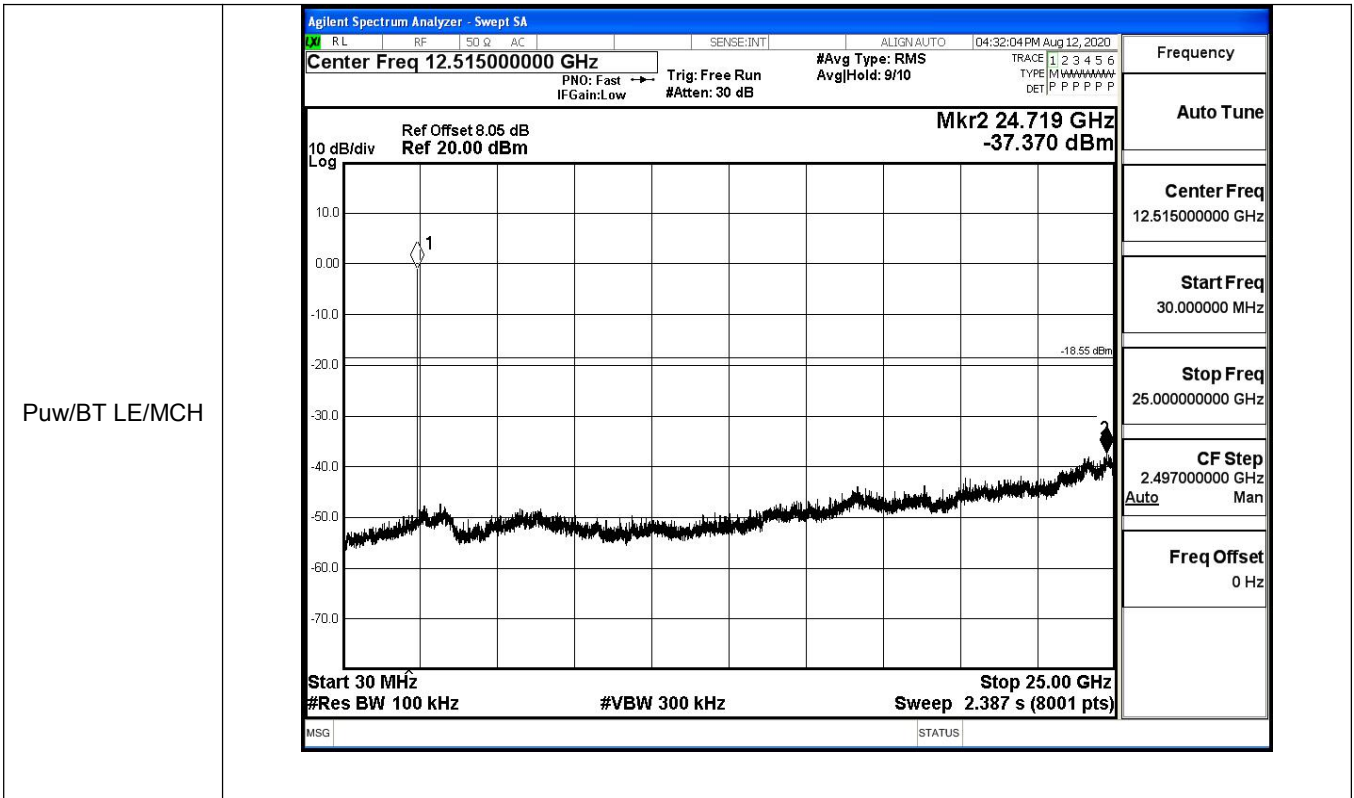




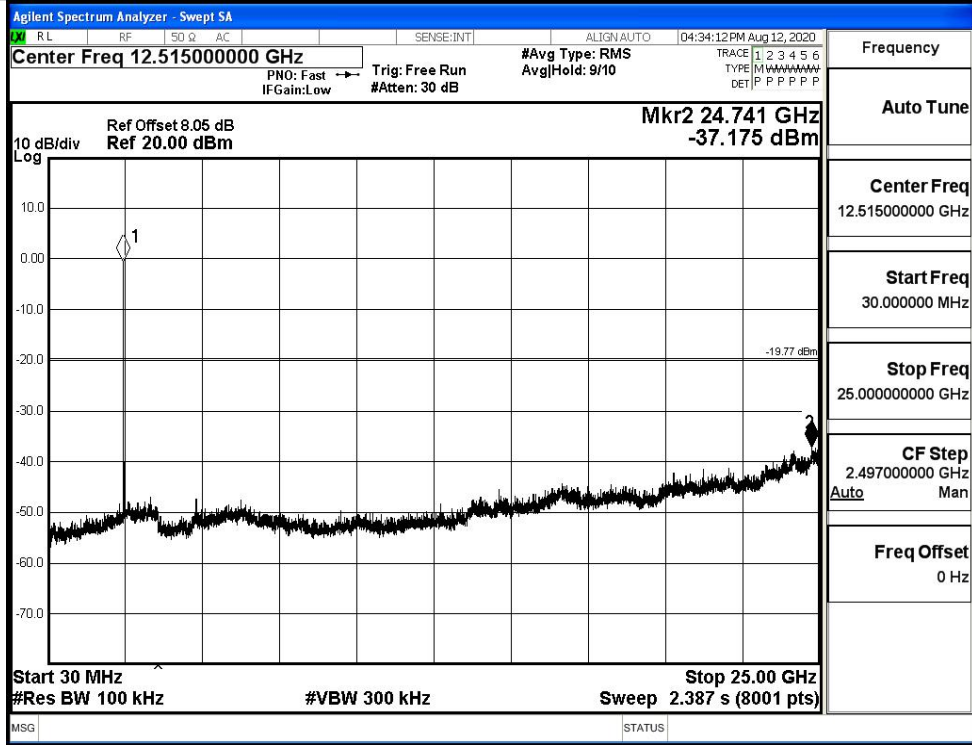
BT LE_MCH_Graphs

Pref/BT LE/MCH





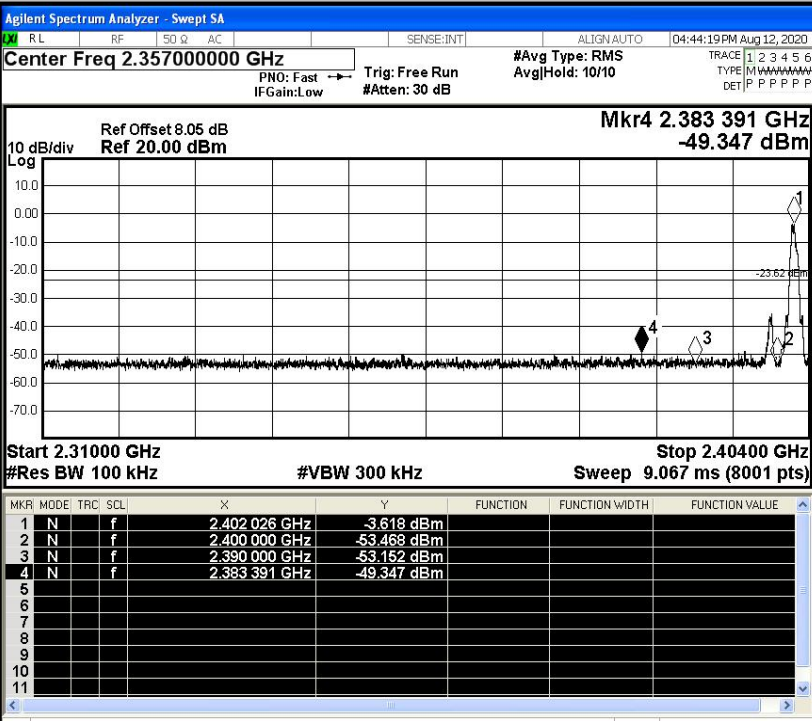
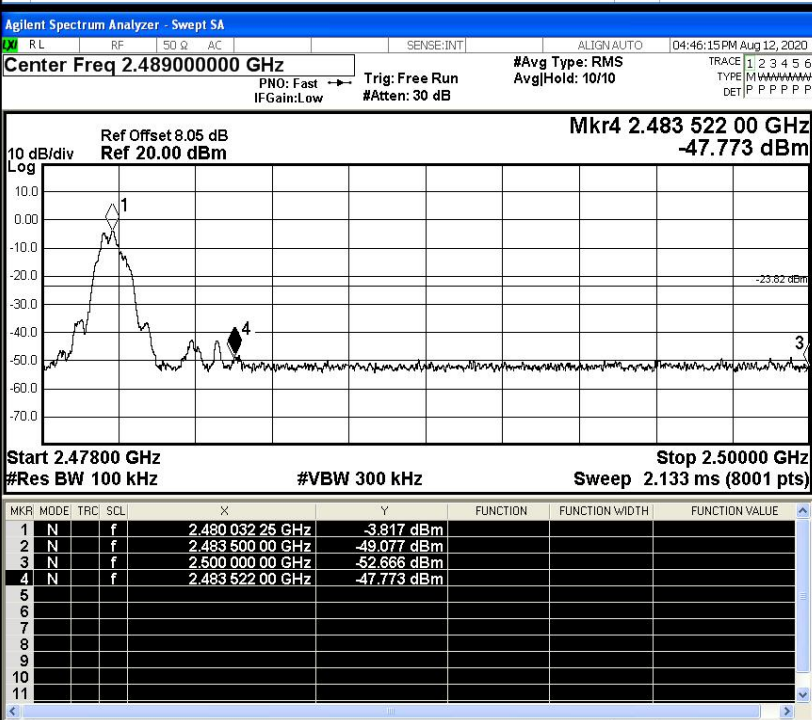
Puw/BT LE/HCH



A.6 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	-3.618	-49.347	-23.62	PASS
BT LE	HCH	-3.817	-47.773	-23.82	PASS

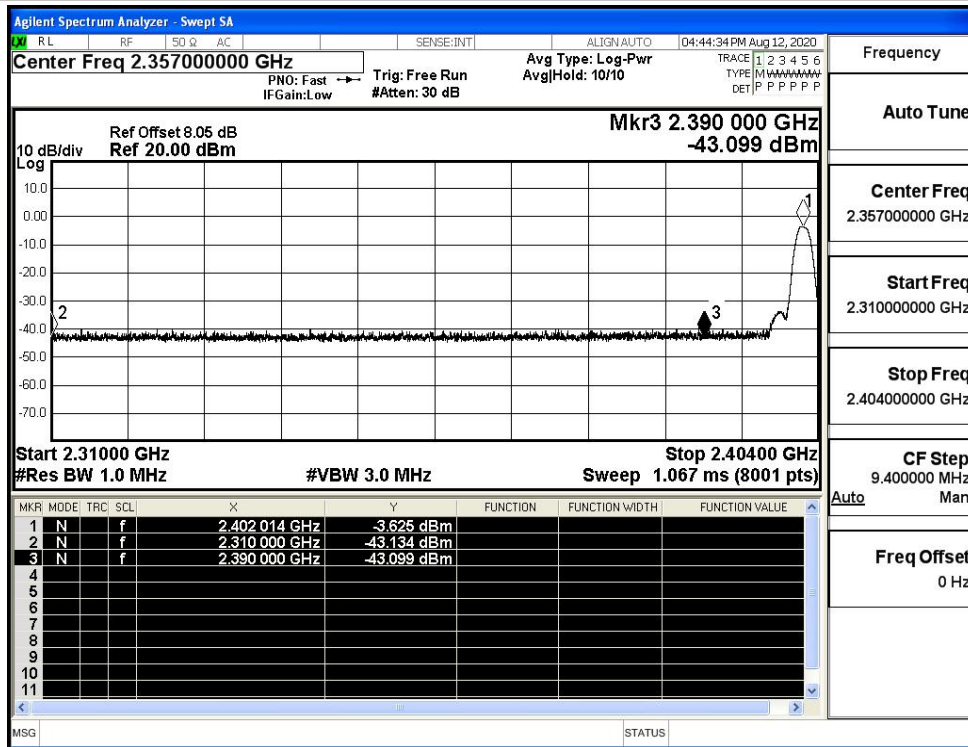
Test Graphs

LCH	 <p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.35700000 GHz Mkr4 2.383 391 GHz -49.347 dBm Start 2.31000 GHz Stop 2.40400 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 9.067 ms (8001 pts)</p> <table border="1"> <thead> <tr> <th>MKR</th> <th>MODE</th> <th>TRC</th> <th>SCL</th> <th>X</th> <th>Y</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr><td>1</td><td>N</td><td>f</td><td></td><td>2.402026 GHz</td><td>-3.618 dBm</td><td></td><td></td><td></td></tr> <tr><td>2</td><td>N</td><td>f</td><td></td><td>2.400000 GHz</td><td>-53.488 dBm</td><td></td><td></td><td></td></tr> <tr><td>3</td><td>N</td><td>f</td><td></td><td>2.390000 GHz</td><td>-53.152 dBm</td><td></td><td></td><td></td></tr> <tr><td>4</td><td>N</td><td>f</td><td></td><td>2.383391 GHz</td><td>-49.347 dBm</td><td></td><td></td><td></td></tr> </tbody> </table>	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	f		2.402026 GHz	-3.618 dBm				2	N	f		2.400000 GHz	-53.488 dBm				3	N	f		2.390000 GHz	-53.152 dBm				4	N	f		2.383391 GHz	-49.347 dBm				<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.35700000 GHz</p> <p>Start Freq 2.310000000 GHz</p> <p>Stop Freq 2.404000000 GHz</p> <p>CF Step 9.400000 MHz</p> <p>Freq Offset 0 Hz</p>
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4	N	f		2.383391 GHz	-49.347 dBm																																										
HCH	 <p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.48900000 GHz Mkr4 2.483 522 00 GHz -47.773 dBm Start 2.47800 GHz Stop 2.50000 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.133 ms (8001 pts)</p> <table border="1"> <thead> <tr> <th>MKR</th> <th>MODE</th> <th>TRC</th> <th>SCL</th> <th>X</th> <th>Y</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr><td>1</td><td>N</td><td>f</td><td></td><td>2.48003225 GHz</td><td>-3.917 dBm</td><td></td><td></td><td></td></tr> <tr><td>2</td><td>N</td><td>f</td><td></td><td>2.48350000 GHz</td><td>-49.077 dBm</td><td></td><td></td><td></td></tr> <tr><td>3</td><td>N</td><td>f</td><td></td><td>2.50000000 GHz</td><td>-52.686 dBm</td><td></td><td></td><td></td></tr> <tr><td>4</td><td>N</td><td>f</td><td></td><td>2.48352200 GHz</td><td>-47.773 dBm</td><td></td><td></td><td></td></tr> </tbody> </table>	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	f		2.48003225 GHz	-3.917 dBm				2	N	f		2.48350000 GHz	-49.077 dBm				3	N	f		2.50000000 GHz	-52.686 dBm				4	N	f		2.48352200 GHz	-47.773 dBm				<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.489000000 GHz</p> <p>Start Freq 2.478000000 GHz</p> <p>Stop Freq 2.500000000 GHz</p> <p>CF Step 2.200000 MHz</p> <p>Freq Offset 0 Hz</p>
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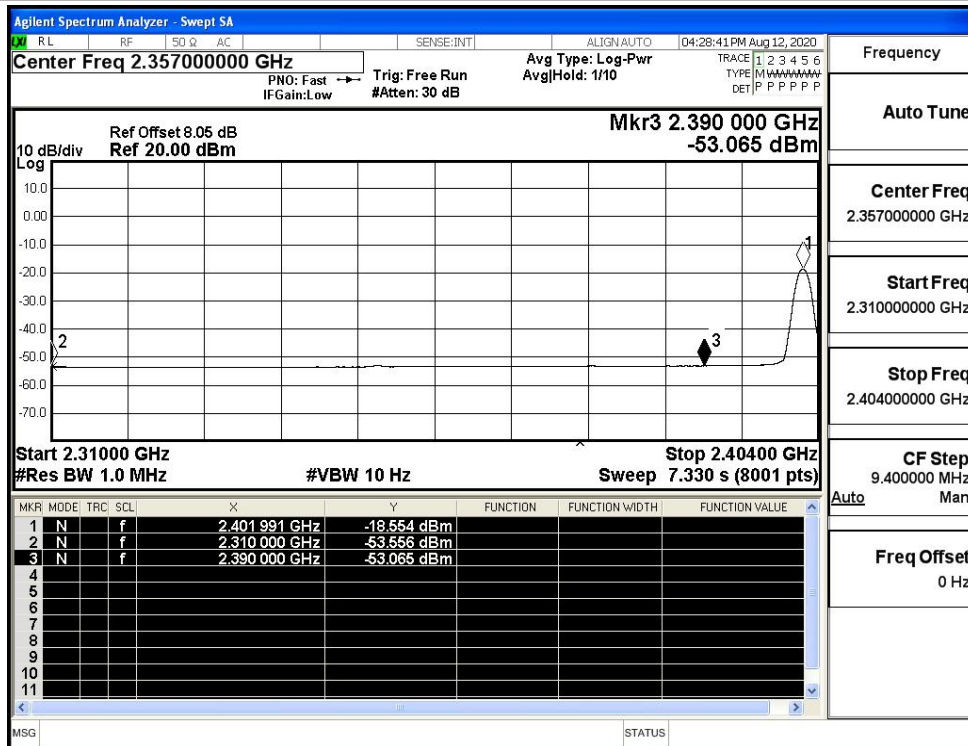
A.7 Restrict-band band-edge measurements

Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdi
BT LE	2402	Ant1	2310.0	-43.13	2.4	0	54.50	PEAK	74	PASS
		Ant1	2310.0	-53.56	2.4	0	44.07	AV	54	PASS
		Ant1	2390.0	-43.10	2.4	0	54.53	PEAK	74	PASS
		Ant1	2390.0	-53.07	2.4	0	44.56	AV	54	PASS
	2480	Ant1	2483.5	-40.64	2.4	0	56.99	PEAK	74	PASS
		Ant1	2483.5	-52.25	2.4	0	45.38	AV	54	PASS
		Ant1	2500.0	-42.43	2.4	0	55.20	PEAK	74	PASS
		Ant1	2500.0	-52.52	2.4	0	45.11	AV	54	PASS

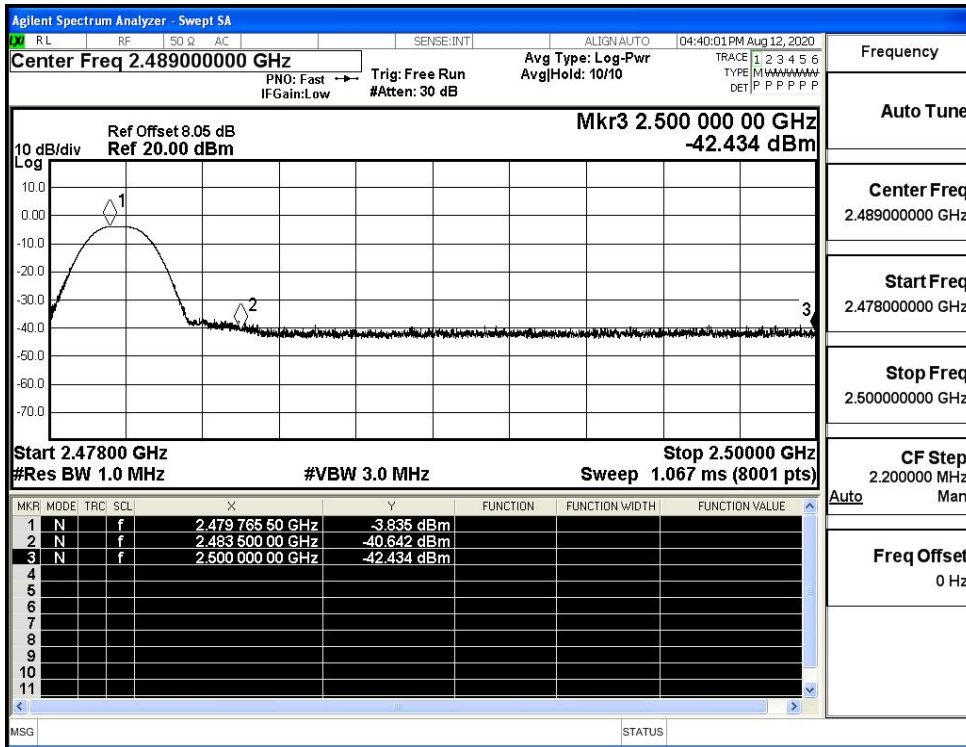
Restrict-band band-edge measurements_BT LE_2402_Ant1_PEAK



Restrict-band band-edge measurements_BT LE_2402_Ant1_AV



Restrict-band band-edge measurements_BT LE_2480_Ant1_PEAK



Restrict-band band-edge measurements_BT LE_2480_Ant1_AV

