

Appendix B

RF Test Data for BT V5.0 (BLE) (Conducted Measurement)

Product Name: AMPLIFIER

Trade Mark: N/A

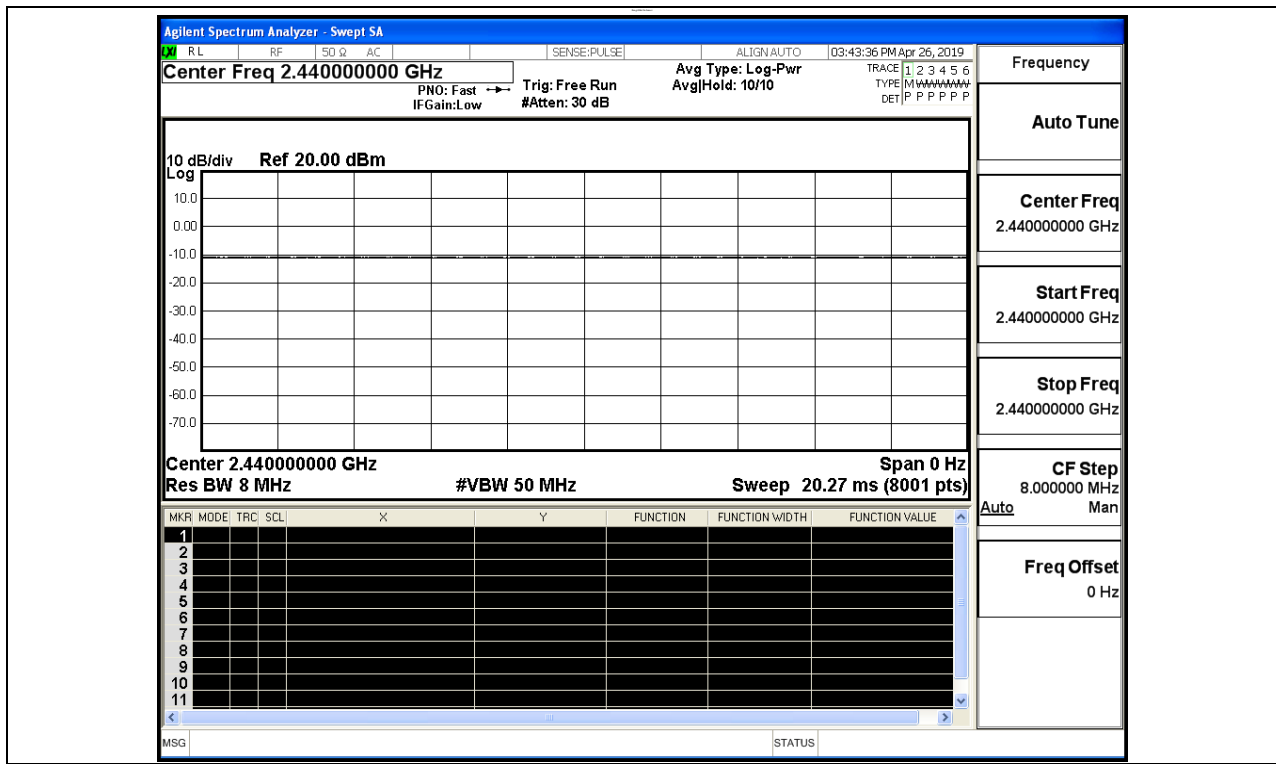
Test Model: K1

Environmental Conditions

Temperature:	23.4 ° C
Relative Humidity:	52.6%
ATM Pressure:	100.0 kPa
Test Engineer:	David.Luo
Supervised by:	Tom.Liu

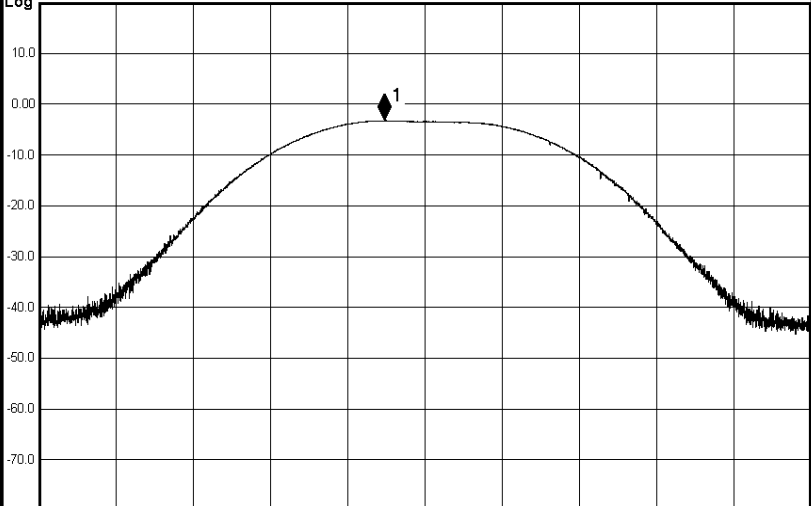
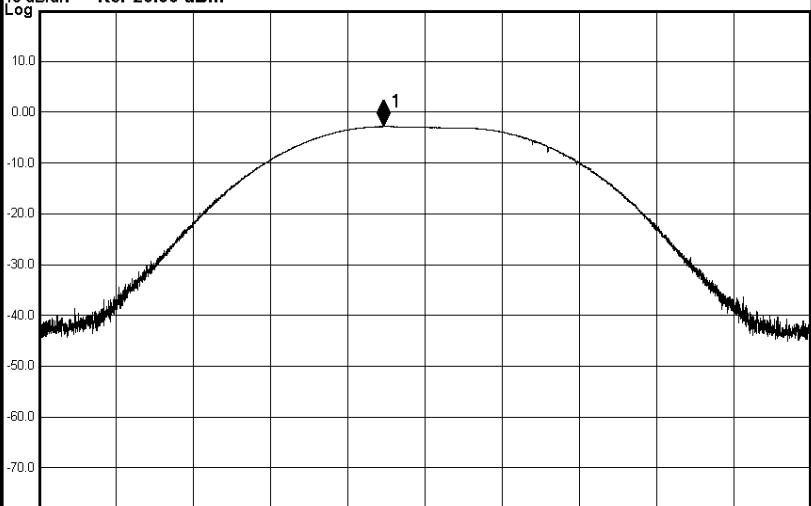
B.1 Duty Cycle

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



B.2 Maximum Conducted Peak Output Power

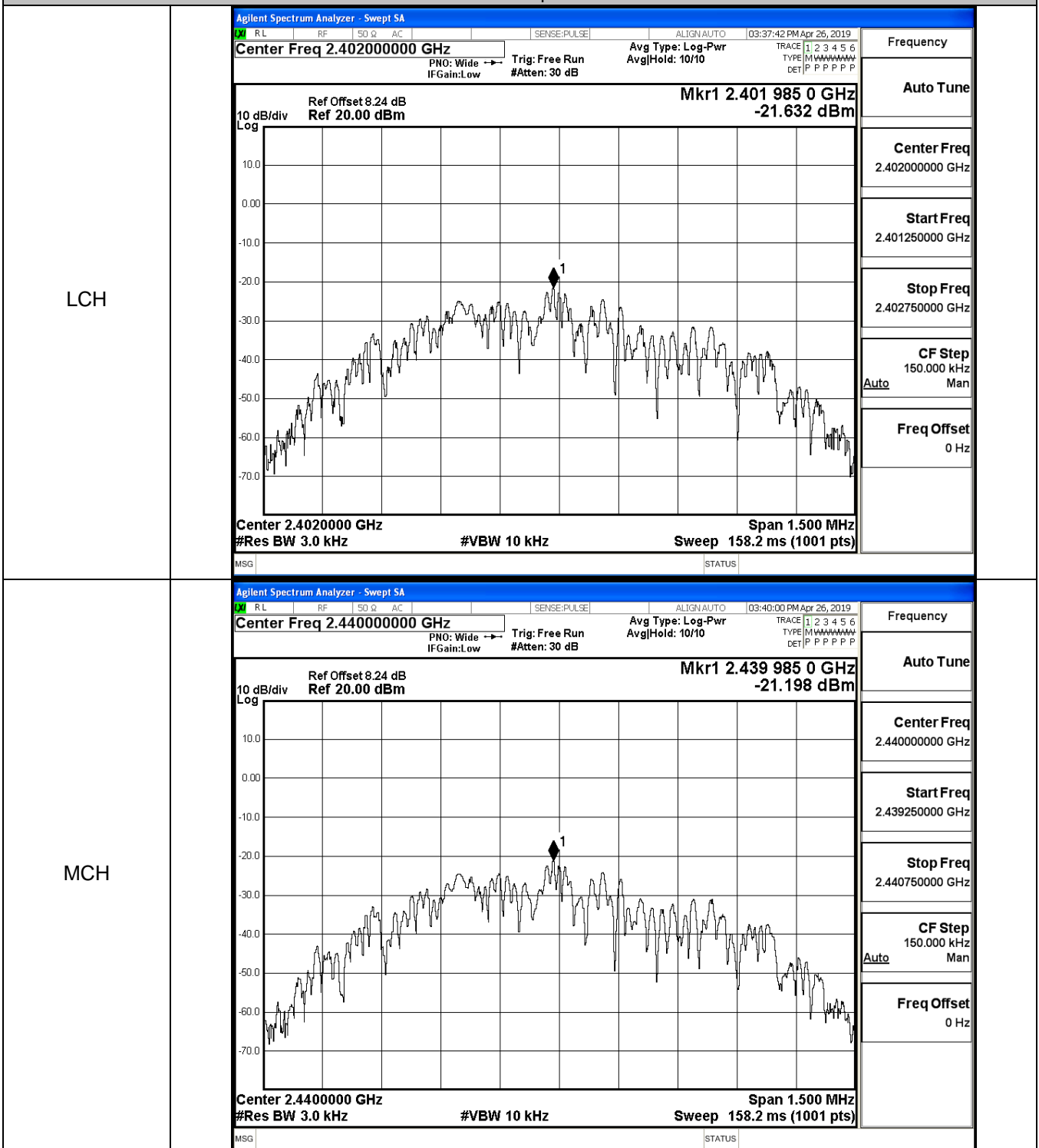
Mode	Channel	Conduct Peak Power[dBm]	Limit [dBm]	Verdict
BT LE	LCH	-3.240	30	PASS
BT LE	MCH	-2.807	30	PASS
BT LE	HCH	-2.370	30	PASS

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:PULSE ALIGN:AUTO 03:37:29 PM Apr 26, 2019</p> <p style="font-size: small; margin: 0;">Center Freq 2.40200000 GHz Avg Type: Log-Pwr PNO: Fast Trig: Free Run IFGain:Low #Atten: 30 dB</p> <p style="font-size: x-small; margin: 0;">Mkr1 2.401 736 250 GHz Ref Offset 8.24 dB Ref 20.00 dBm -3.240 dBm</p>  <p style="font-size: x-small; margin: 0;">Center 2.402000 GHz Span 5.000 MHz #Res BW 1.0 MHz #VBW 3.0 MHz Sweep 1.067 ms (8001 pts)</p> <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><td></td></tr> <tr><td>Auto Tune</td><td></td></tr> <tr><td>Center Freq</td><td>2.402000000 GHz</td></tr> <tr><td>Start Freq</td><td>2.399500000 GHz</td></tr> <tr><td>Stop Freq</td><td>2.404500000 GHz</td></tr> <tr><td>CF Step</td><td>500.000 kHz</td></tr> <tr><td>Auto</td><td>Man</td></tr> <tr><td>Freq Offset</td><td>0 Hz</td></tr> </table>	Frequency		Auto Tune		Center Freq	2.402000000 GHz	Start Freq	2.399500000 GHz	Stop Freq	2.404500000 GHz	CF Step	500.000 kHz	Auto	Man	Freq Offset	0 Hz
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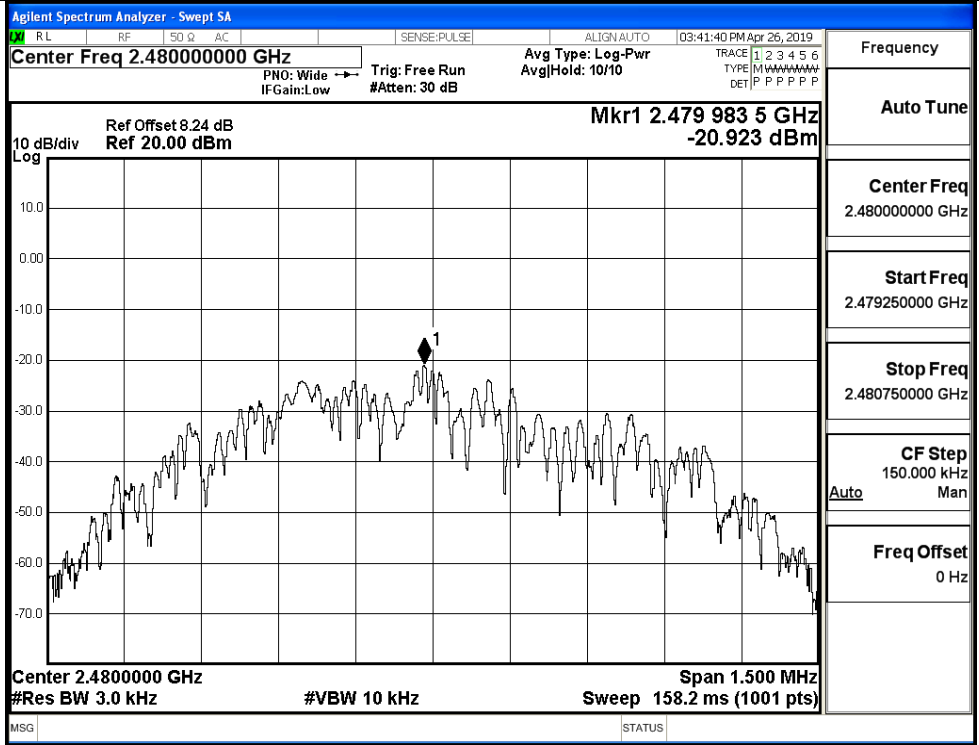
B.3 Maximum Power Spectral Density

Mode	Channel	PSD [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
BT LE	LCH	-21.632	8	PASS
BT LE	MCH	-21.198	8	PASS
BT LE	HCH	-20.923	8	PASS

Test Graphs

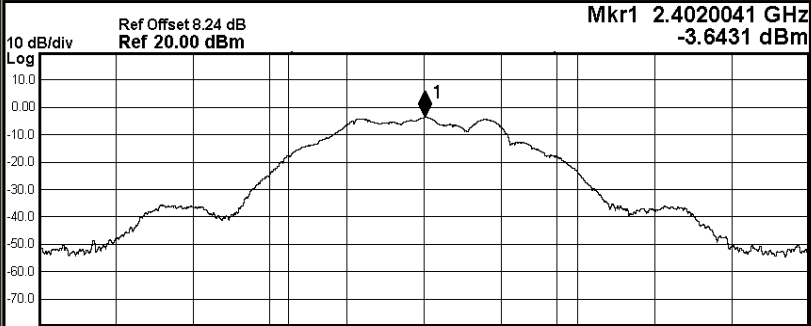
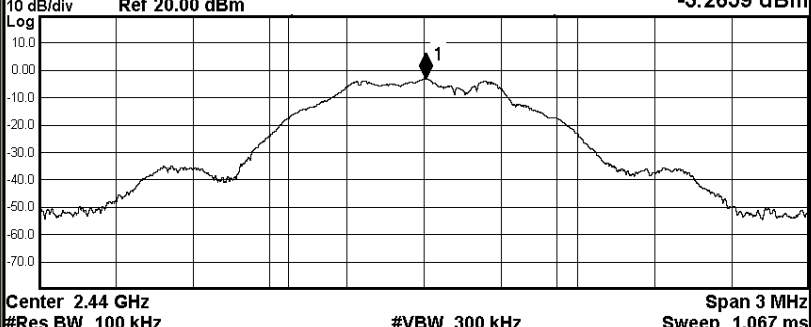


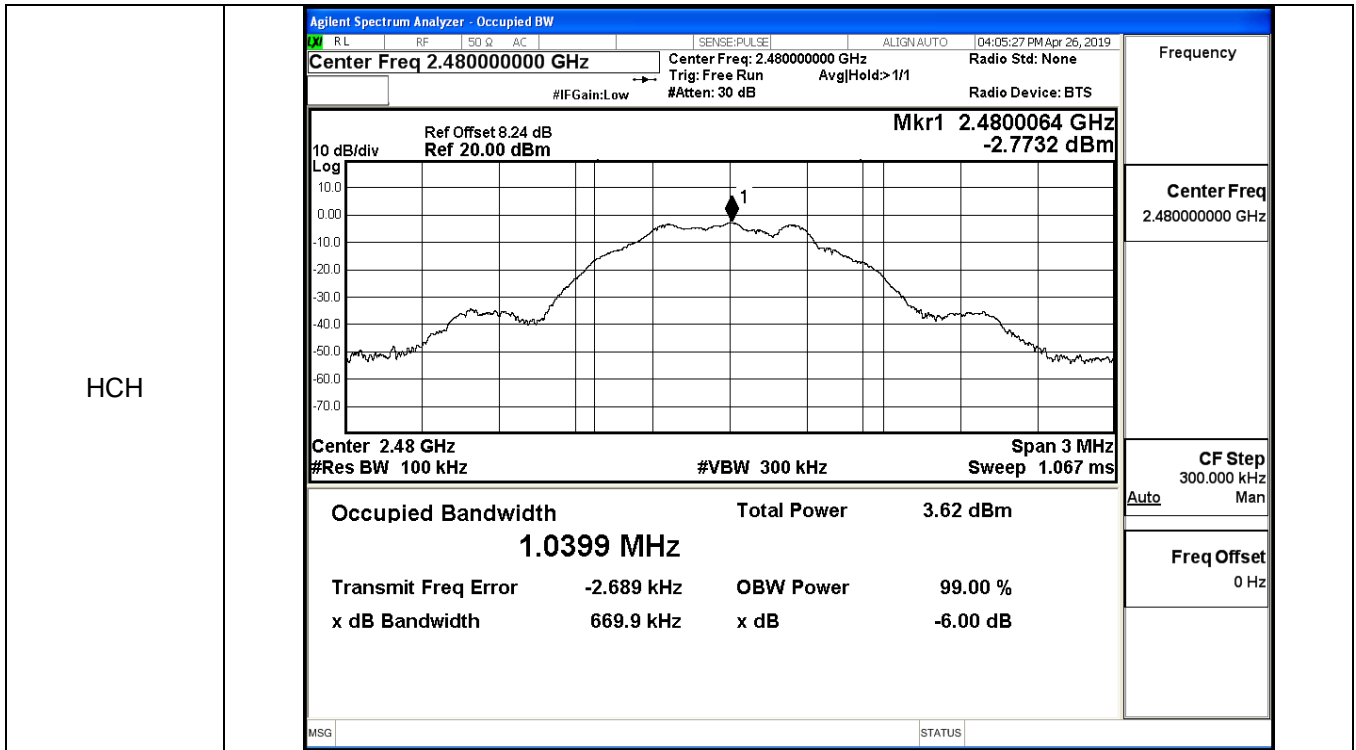
HCH



B.4 6dB Bandwidth

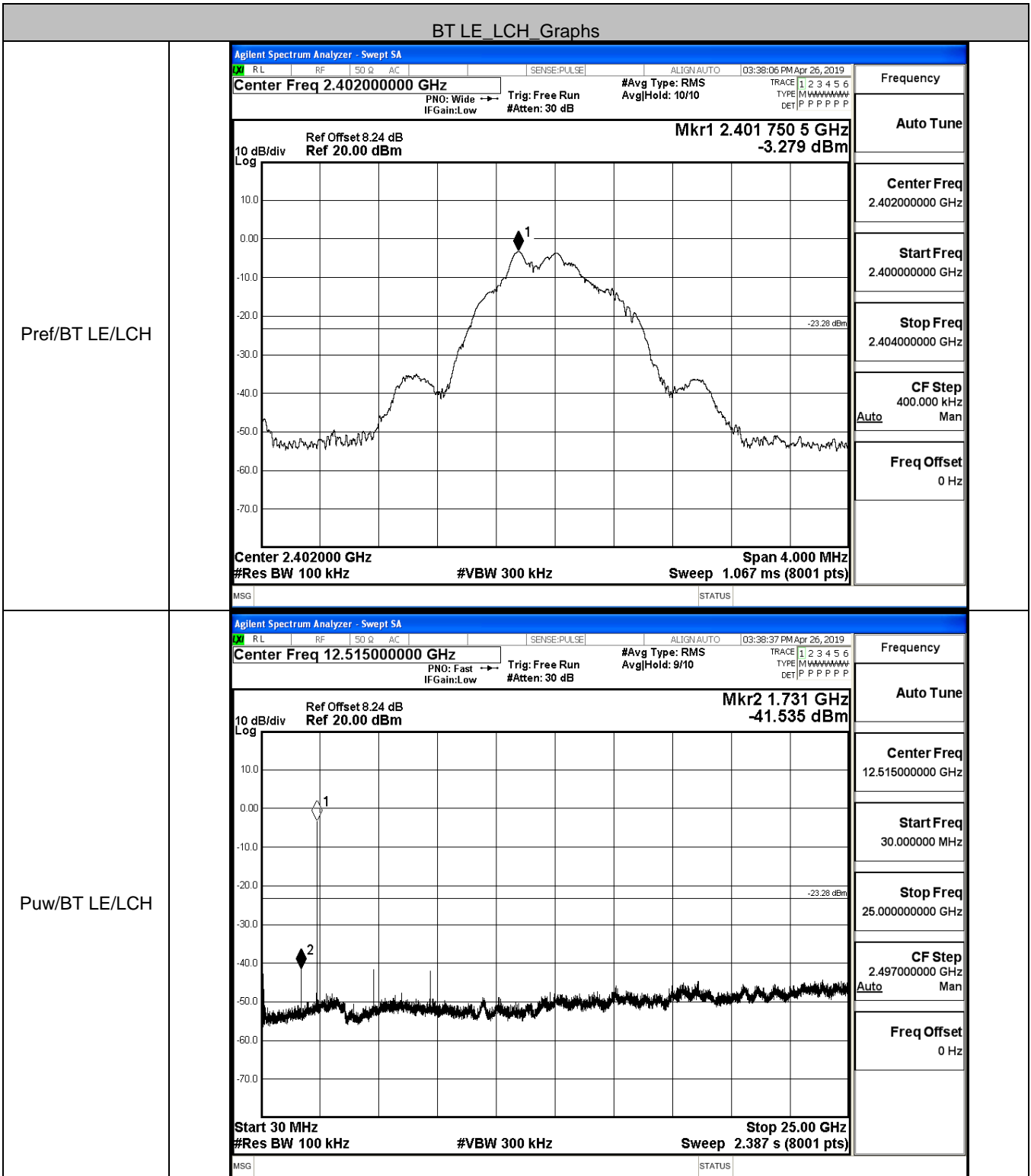
Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
BT LE	LCH	0.6676	≥0.5	PASS
BT LE	MCH	0.6690	≥0.5	PASS
BT LE	HCH	0.6699	≥0.5	PASS

Test Graphs																													
LCH	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;">Agilent Spectrum Analyzer - Occupied BW</p> <p style="font-size: small; margin: 0;">RL RF 50 Ω AC SENSE:PULSE ALIGN:AUTO 04:01:34 PM Apr 26, 2019</p> <p style="margin: 0;">Center Freq 2.402000000 GHz Center Freq: 2.402000000 GHz Radio Std: None</p> <p style="font-size: x-small; margin: 0;">Trig: Free Run AvgHold> 1/1 #IFGain:Low #Atten: 30 dB Radio Device: BTS</p> <div style="border: 1px solid black; padding: 2px; margin: 5px 0;"> <p style="font-size: x-small; margin: 0;">10 dB/div Ref Offset 8.24 dB Mkr1 2.4020041 GHz</p> <p style="font-size: x-small; margin: 0;">Log Ref 20.00 dBm -3.6431 dBm</p>  <p style="font-size: x-small; margin: 0;">Center 2.402 GHz Span 3 MHz</p> <p style="font-size: x-small; margin: 0;">#Res BW 100 kHz #VBW 300 kHz Sweep 1.067 ms</p> <table style="width: 100%; font-size: x-small; border-collapse: collapse;"> <tr> <td style="width: 33%;">Occupied Bandwidth</td> <td style="width: 33%;">Total Power</td> <td style="width: 33%;">2.79 dBm</td> </tr> <tr> <td style="text-align: center;">1.0380 MHz</td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>-2.450 kHz</td> <td>OBW Power</td> </tr> <tr> <td>x dB Bandwidth</td> <td>667.6 kHz</td> <td>x dB</td> </tr> <tr> <td></td> <td></td> <td>99.00 %</td> </tr> <tr> <td></td> <td></td> <td>-6.00 dB</td> </tr> </table> <p style="font-size: x-small; margin: 0;">MSG STATUS</p> </div> </div> <table border="1" style="width: 100%; font-size: x-small; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 50%;">Frequency</td> <td style="width: 50%;">2.402000000 GHz</td> </tr> <tr> <td>Center Freq</td> <td>2.402000000 GHz</td> </tr> <tr> <td>CF Step</td> <td>300.000 kHz</td> </tr> <tr> <td>Auto</td> <td>Man</td> </tr> <tr> <td>Freq Offset</td> <td>0 Hz</td> </tr> </table>	Occupied Bandwidth	Total Power	2.79 dBm	1.0380 MHz			Transmit Freq Error	-2.450 kHz	OBW Power	x dB Bandwidth	667.6 kHz	x dB			99.00 %			-6.00 dB	Frequency	2.402000000 GHz	Center Freq	2.402000000 GHz	CF Step	300.000 kHz	Auto	Man	Freq Offset	0 Hz
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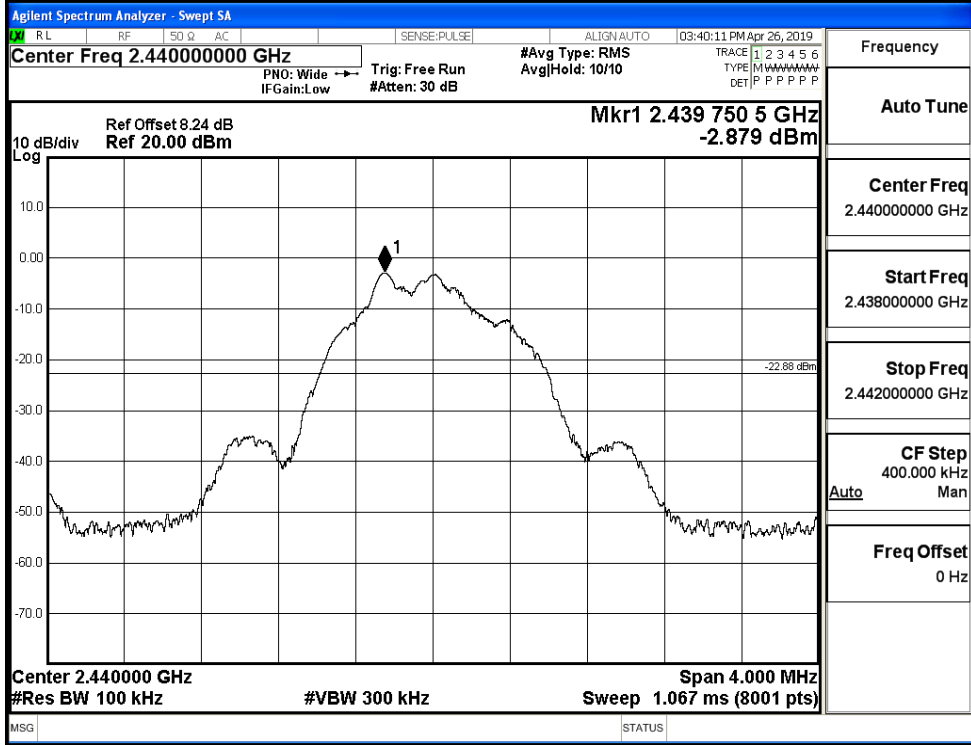
B.5 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	-3.279	-41.535	-23.279	PASS
BT LE	MCH	-2.879	-42.083	-22.879	PASS
BT LE	HCH	-2.456	-42.269	-22.456	PASS

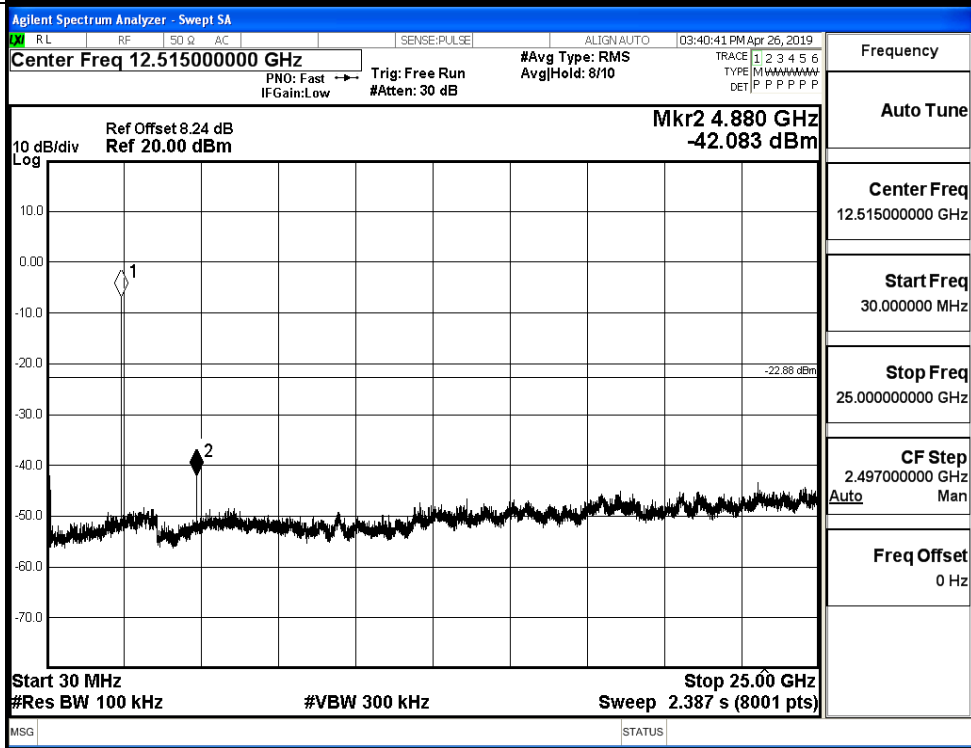


BT LE_MCH_Graphs

Pref/BT LE/MCH

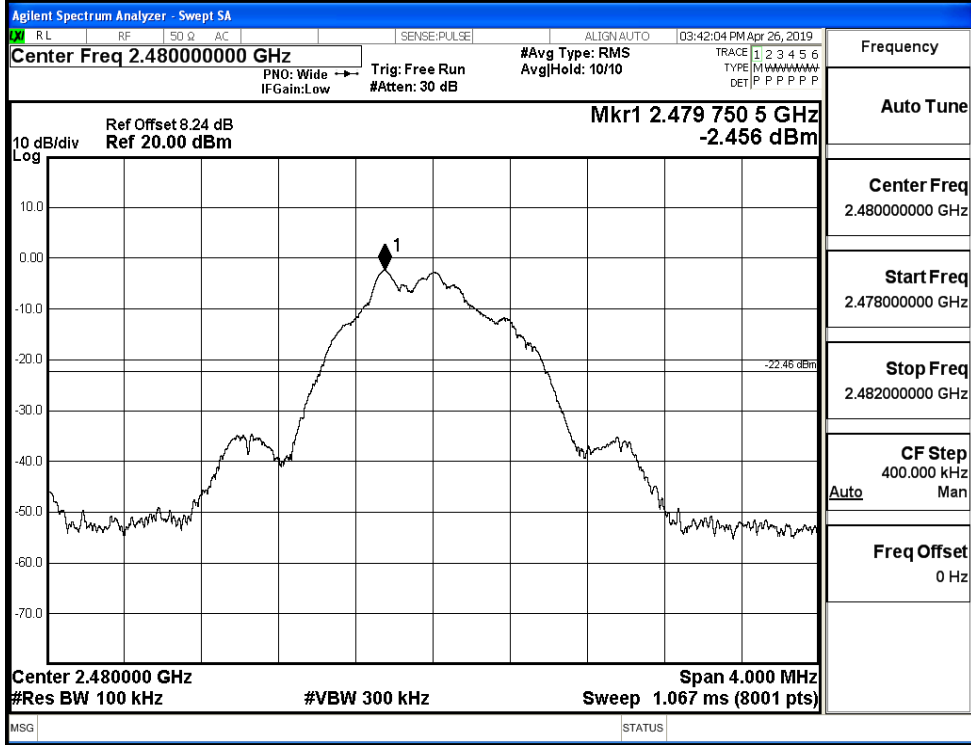


Puw/BT LE/MCH

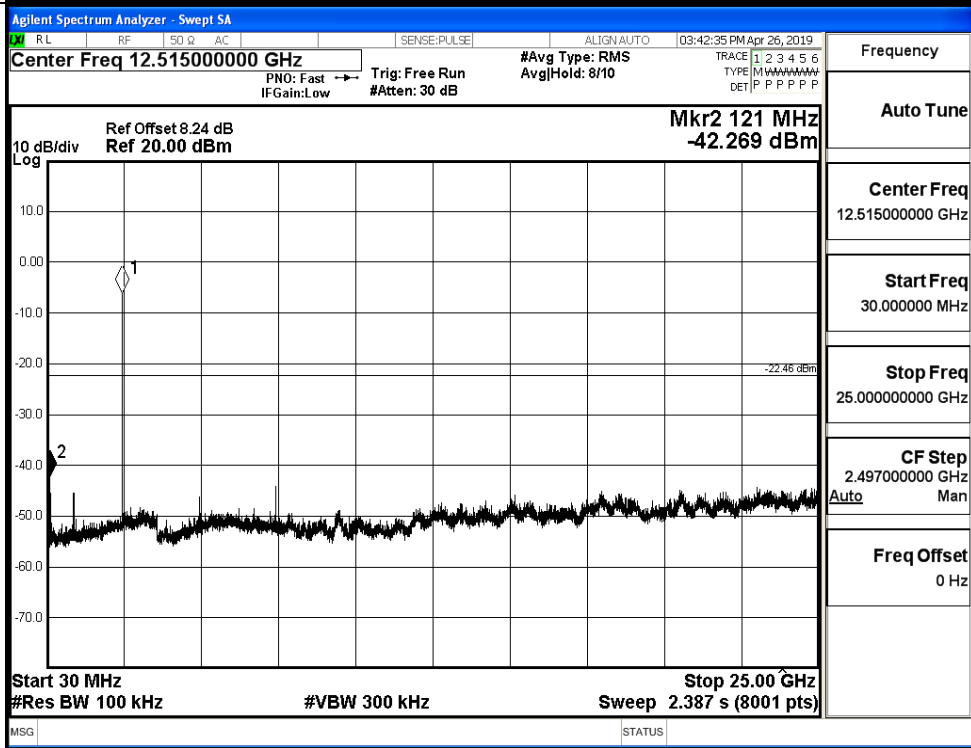


BT LE_HCH_Graphs

Pref/BT LE/HCH



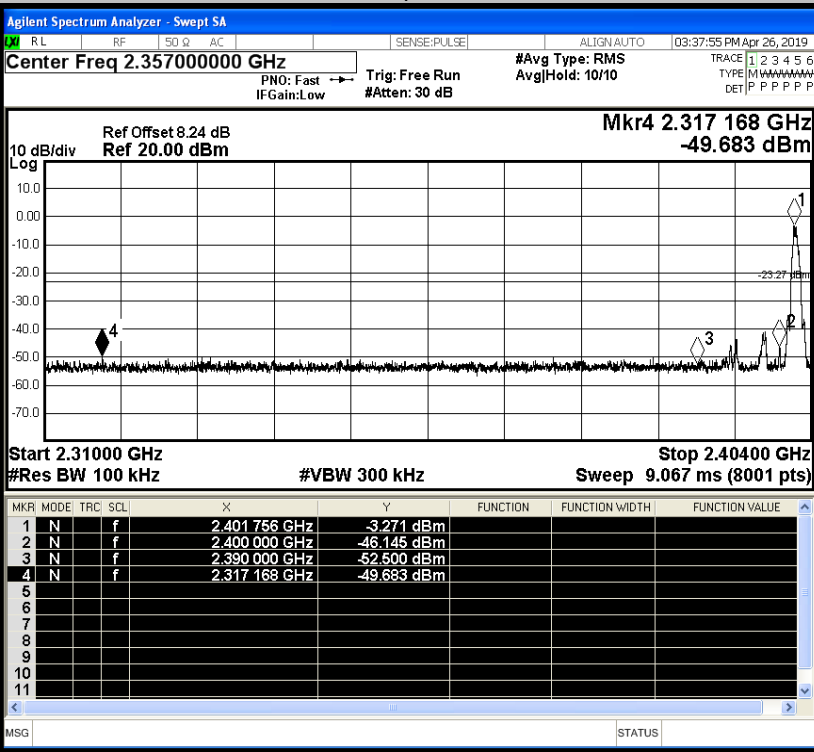
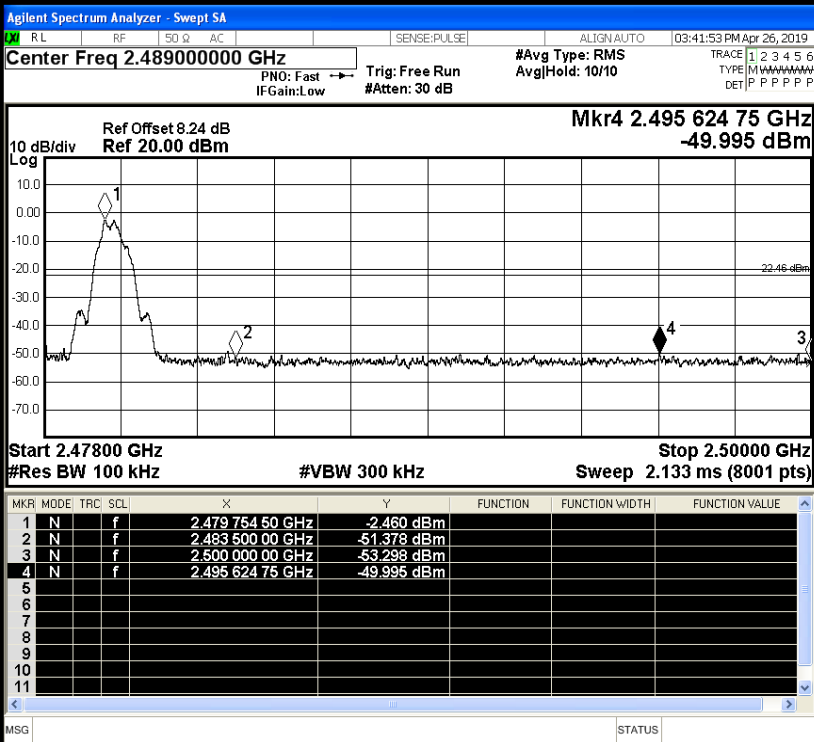
Puw/BT LE/HCH



B.6 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	-3.271	-49.683	-23.27	PASS
BT LE	HCH	-2.460	-49.995	-22.46	PASS

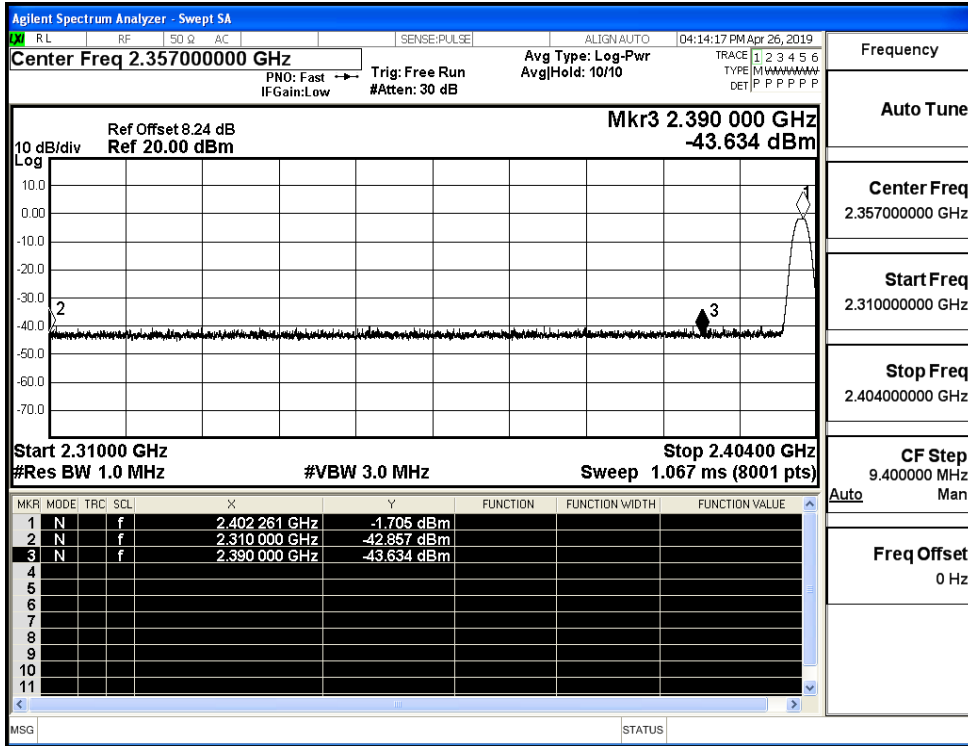
Test Graphs

LCH		<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.35700000 GHz</p> <p>Start Freq 2.31000000 GHz</p> <p>Stop Freq 2.40400000 GHz</p> <p>CF Step 9.400000 MHz</p> <p>Freq Offset 0 Hz</p>
HCH		<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.48900000 GHz</p> <p>Start Freq 2.47800000 GHz</p> <p>Stop Freq 2.50000000 GHz</p> <p>CF Step 2.200000 MHz</p> <p>Freq Offset 0 Hz</p>

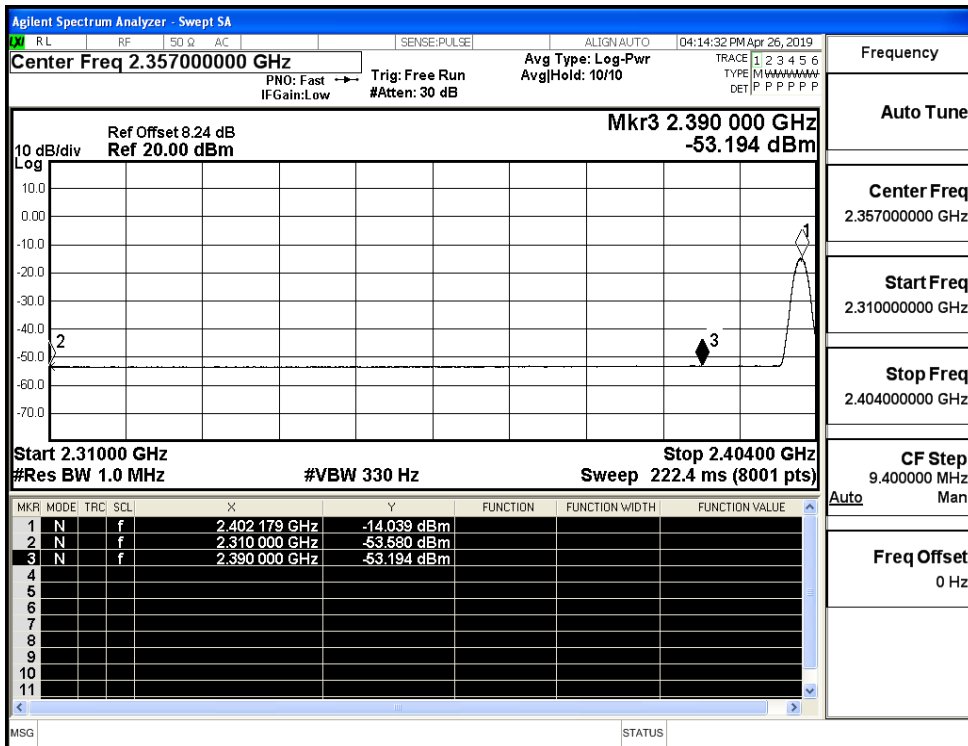
B.7 Restrict-band band-edge measurements

Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdi
BT LE	2402	Ant1	2310.0	-42.86	2.0	0	54.40	PEAK	74	PASS
		Ant1	2310.0	-53.58	2.0	0	43.68	AV	54	PASS
		Ant1	2390.0	-43.63	2.0	0	53.62	PEAK	74	PASS
		Ant1	2390.0	-53.19	2.0	0	44.06	AV	54	PASS
	2480	Ant1	2483.5	-43.10	2.0	0	54.16	PEAK	74	PASS
		Ant1	2483.5	-52.90	2.0	0	44.35	AV	54	PASS
		Ant1	2500.0	-42.68	2.0	0	54.58	PEAK	74	PASS
		Ant1	2500.0	-52.95	2.0	0	44.31	AV	54	PASS

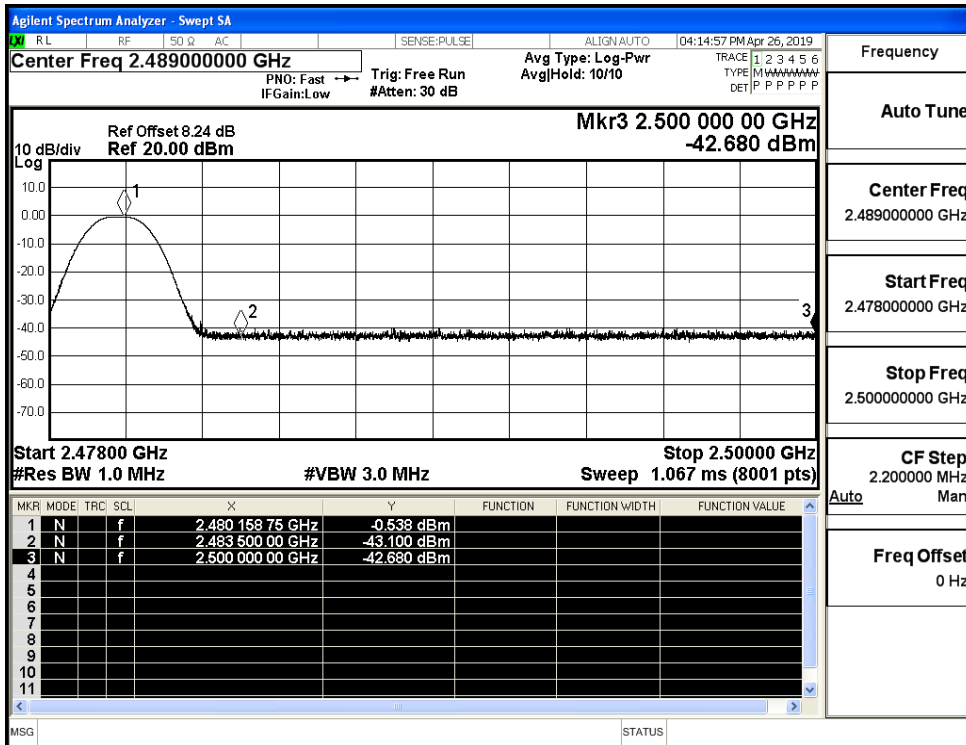
Restrict-band band-edge measurements_BT LE_2402_Ant1_PEAK



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

