

Appendix B

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

Product Name: Remote Control

Trade Mark: TORRAS

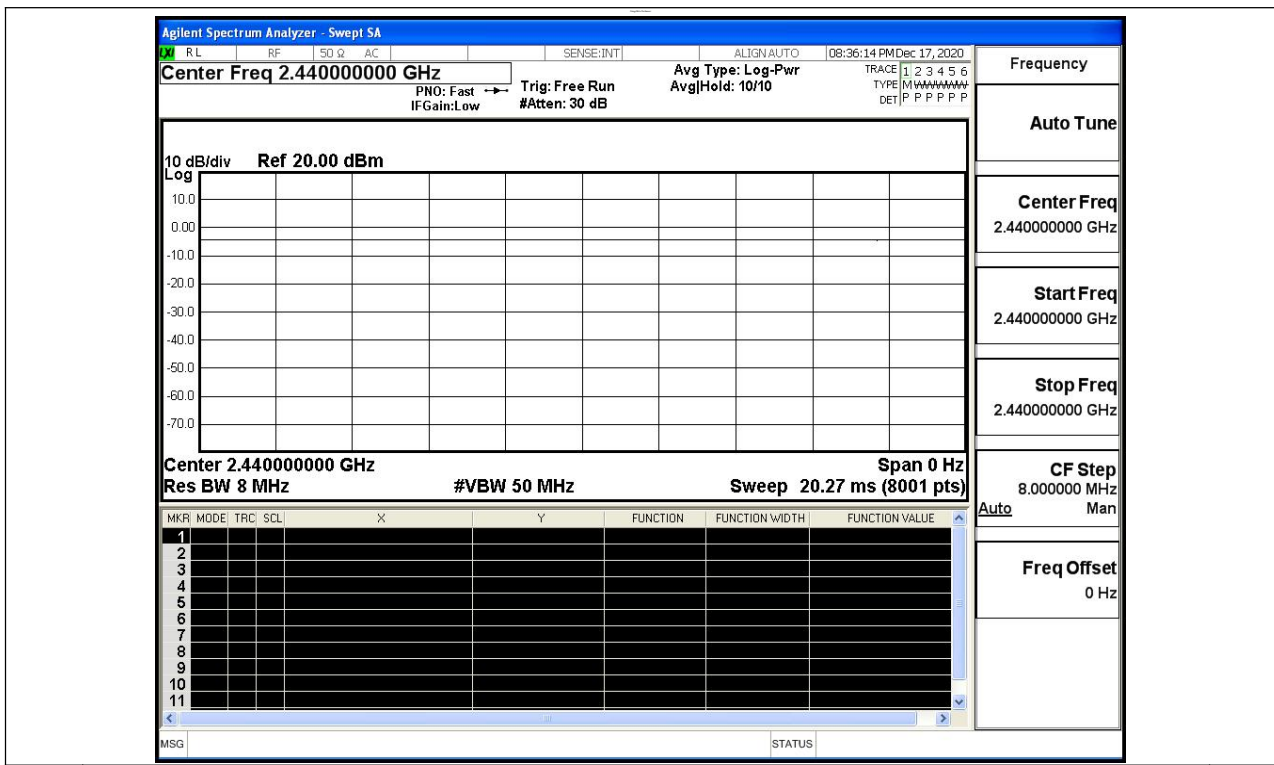
Test Model: PDUZ59

Environmental Conditions

Temperature:	24.1° C
Relative Humidity:	54.6%
ATM Pressure:	100.0 kPa
Test Engineer:	Ben Jin
Supervised by:	Li Huan

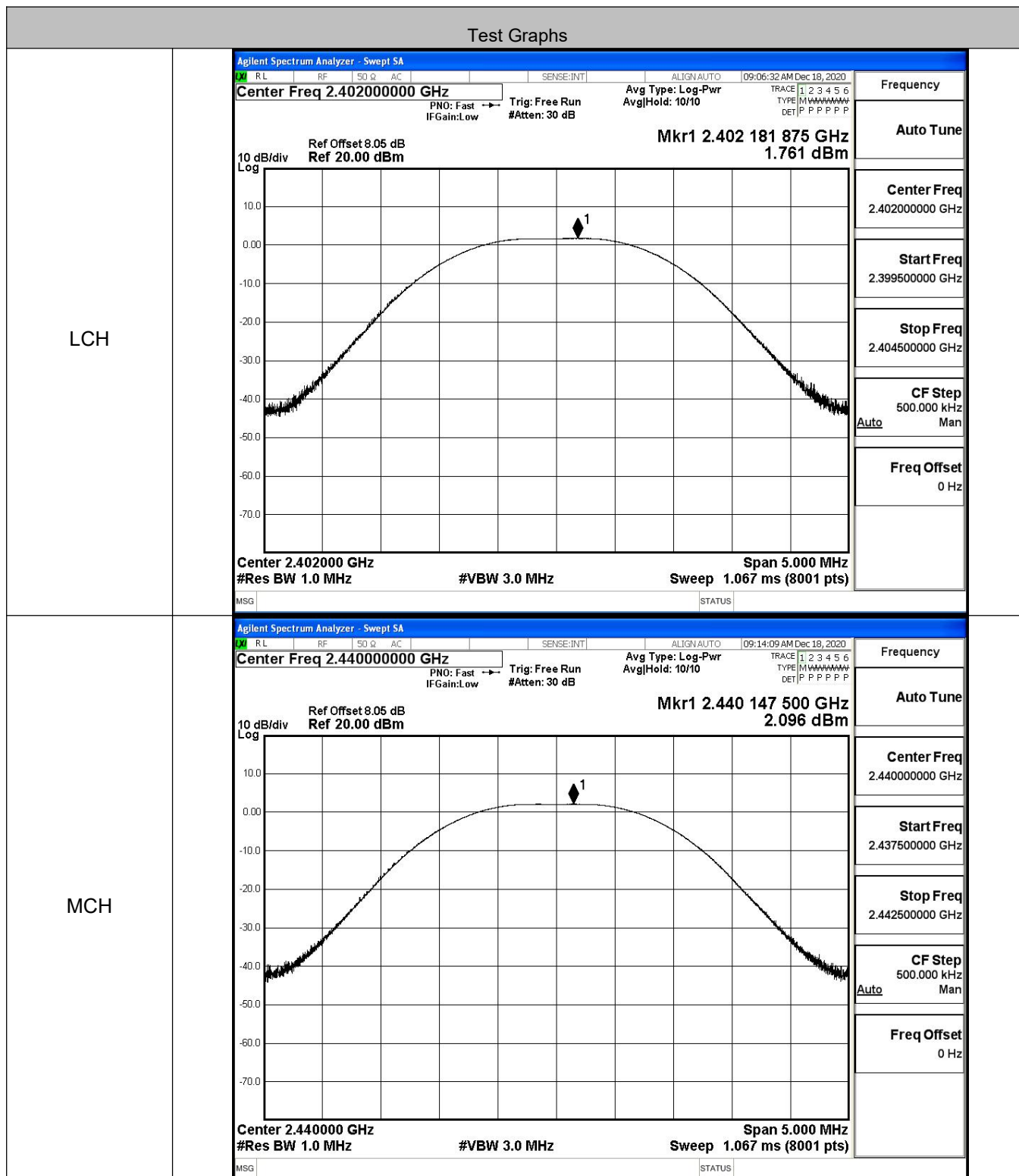
A.1 Duty Cycle

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

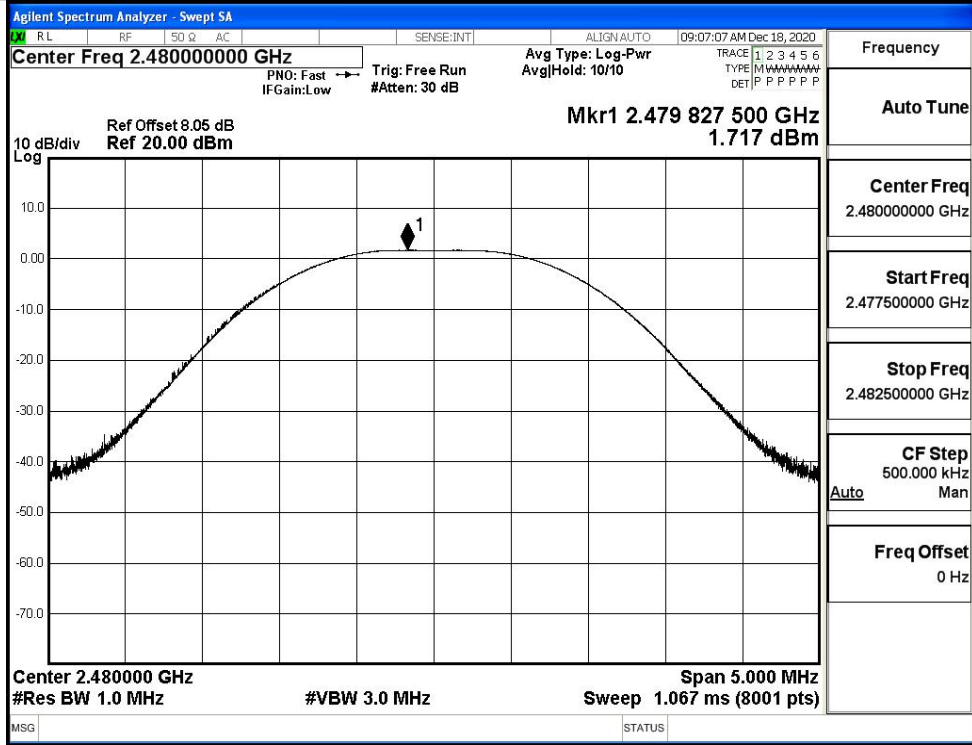


A.2 Maximum Conducted Peak Output Power

Mode	Channel	Conduct Peak Power[dBm]	Limit [dBm]	Verdict
BT LE	LCH	1.761	30	PASS
BT LE	MCH	2.096	30	PASS
BT LE	HCH	1.717	30	PASS



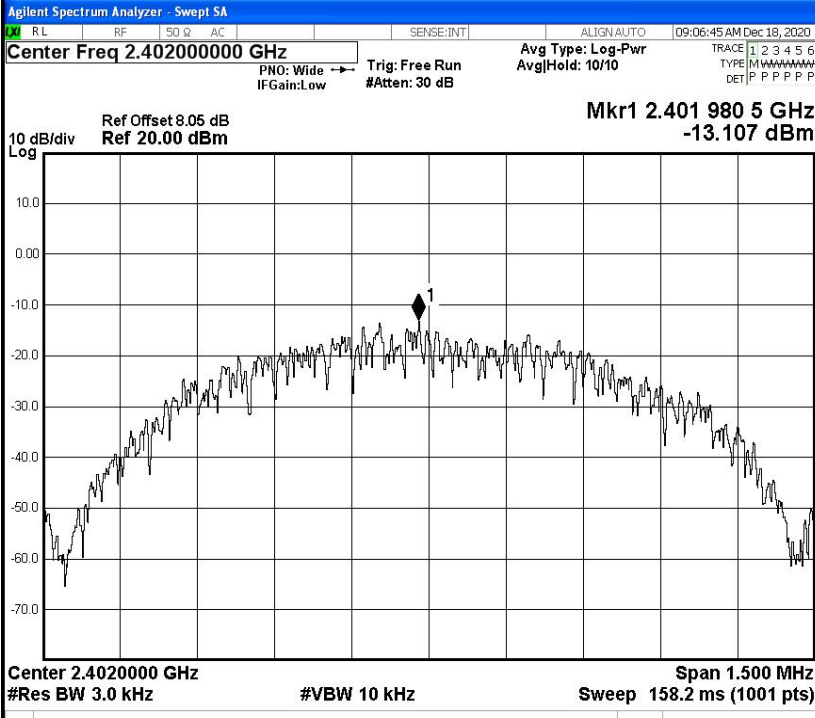
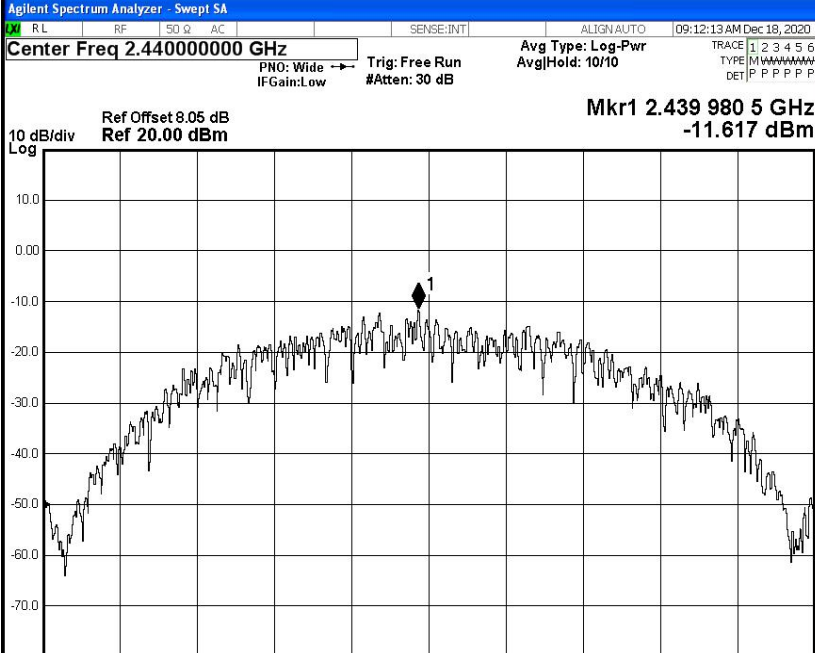
HCH



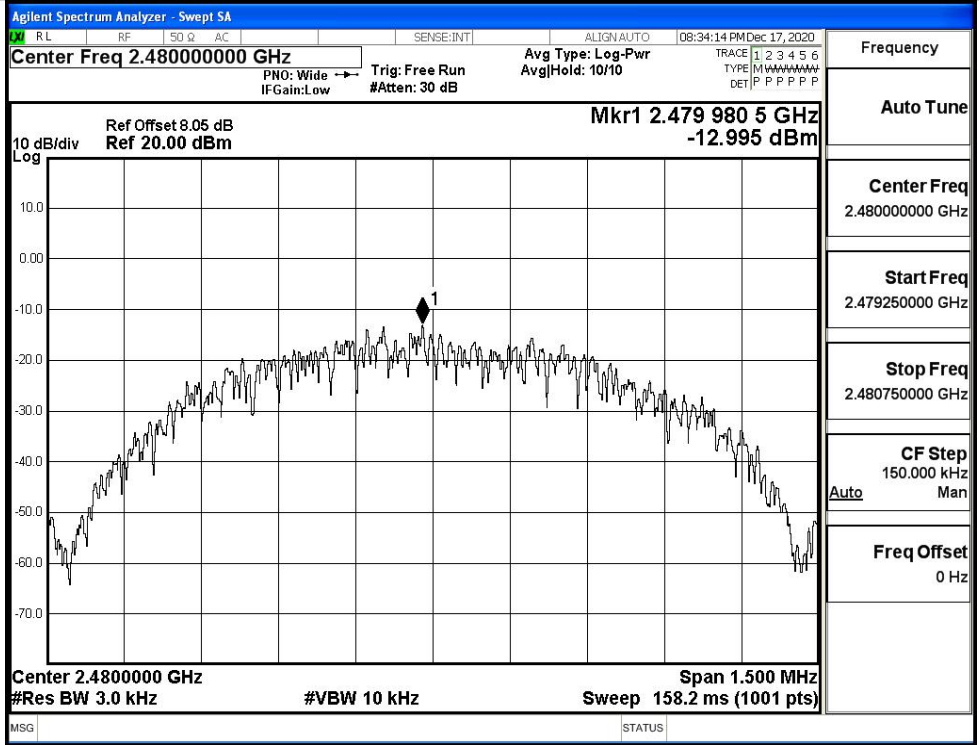
A.3 Maximum Power Spectral Density

Mode	Channel	PSD [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
BT LE	LCH	-13.107	8	PASS
BT LE	MCH	-11.617	8	PASS
BT LE	HCH	-12.995	8	PASS

Test Graphs

<p>LCH</p>	 <p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.40200000 GHz</p> <p>Mkr1 2.401 980 5 GHz -13.107 dBm</p> <p>Ref Offset 8.05 dB Ref 20.00 dBm</p> <p>10 dB/div Log</p> <p>Center 2.4020000 GHz #Res BW 3.0 kHz #VBW 10 kHz Sweep 158.2 ms (1001 pts) Span 1.500 MHz</p>	<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.402000000 GHz</p> <p>Start Freq 2.401250000 GHz</p> <p>Stop Freq 2.402750000 GHz</p> <p>CF Step 150.000 kHz Auto Man</p> <p>Freq Offset 0 Hz</p>
<p>MCH</p>	 <p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.440000000 GHz</p> <p>Mkr1 2.439 980 5 GHz -11.617 dBm</p> <p>Ref Offset 8.05 dB Ref 20.00 dBm</p> <p>10 dB/div Log</p> <p>Center 2.4400000 GHz #Res BW 3.0 kHz #VBW 10 kHz Sweep 158.2 ms (1001 pts) Span 1.500 MHz</p>	<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.440000000 GHz</p> <p>Start Freq 2.439250000 GHz</p> <p>Stop Freq 2.440750000 GHz</p> <p>CF Step 150.000 kHz Auto Man</p> <p>Freq Offset 0 Hz</p>

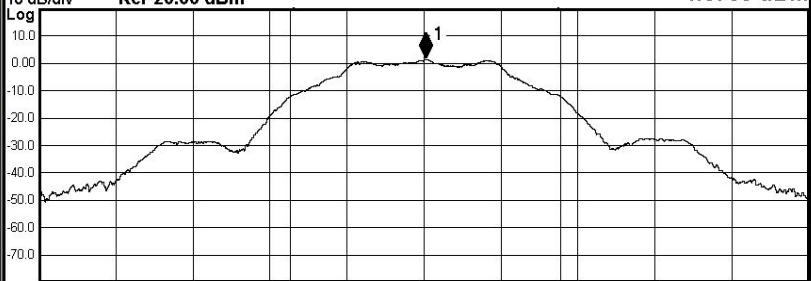
HCH

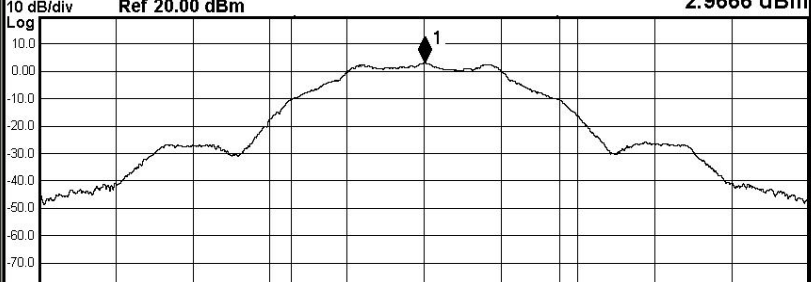


A.4 6dB Bandwidth

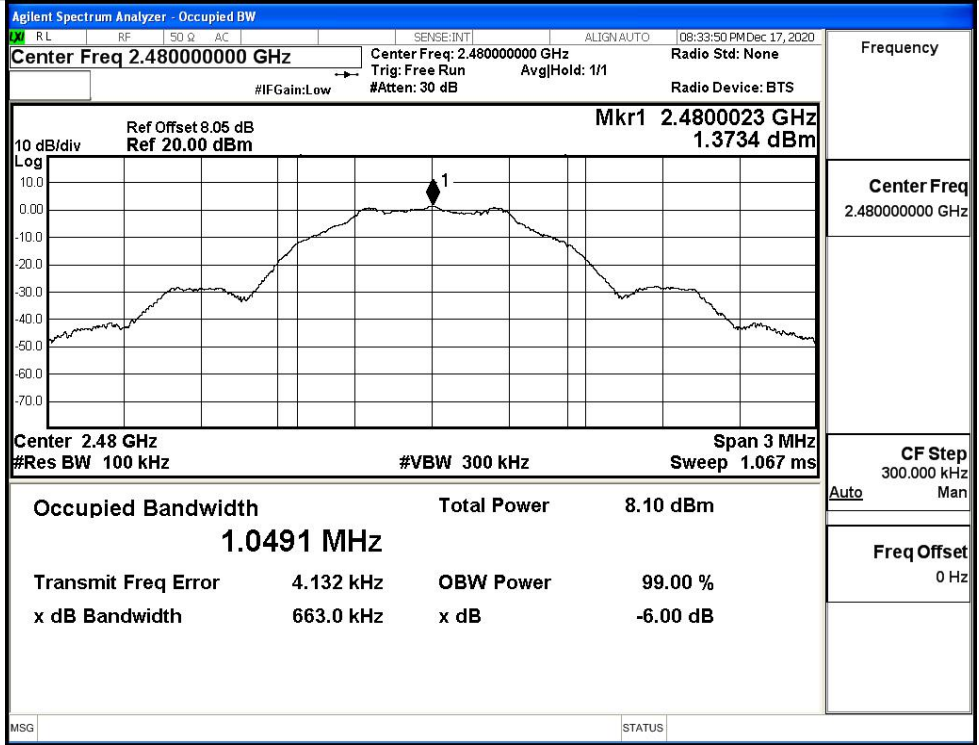
Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
BT LE	LCH	0.6593	≥0.5	PASS
BT LE	MCH	0.6585	≥0.5	PASS
BT LE	HCH	0.6630	≥0.5	PASS

Test Graphs

LCH	<p style="font-size: small; margin: 0;">Agilent Spectrum Analyzer - Occupied BW</p> <p style="font-size: x-small; margin: 0;">RL RF 50 Ω AC SENSE:INT ALIGN: AUTO 08:29:39 PM Dec 17, 2020</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</p> <p style="font-size: x-small; margin: 0;">#IFGain: Low #Atten: 30 dB Radio Device: BTS</p> <div style="border: 1px solid black; padding: 2px;"> <p style="font-size: x-small; margin: 0;">10 dB/div Ref Offset 8.05 dB Mkr1 2.4020075 GHz</p> <p style="font-size: x-small; margin: 0;">Log Ref 20.00 dBm 1.3733 dBm</p>  </div> <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%;">8.18 dBm</td> </tr> <tr> <td style="text-align: center;">1.0495 MHz</td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>6.796 kHz</td> <td>OBW Power</td> </tr> <tr> <td>x dB Bandwidth</td> <td>659.3 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>	Occupied Bandwidth	Total Power	8.18 dBm	1.0495 MHz			Transmit Freq Error	6.796 kHz	OBW Power	x dB Bandwidth	659.3 kHz	x dB			99.00 %			-6.00 dB	<p>Frequency</p> <hr/> <p>Center Freq 2.402000000 GHz</p> <hr/> <p>CF Step 300.000 kHz Auto Man</p> <hr/> <p>Freq Offset 0 Hz</p>
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	1.0495 MHz																			
	Transmit Freq Error	6.796 kHz	OBW Power																	
x dB Bandwidth	659.3 kHz	x dB																		
		99.00 %																		
		-6.00 dB																		

MCH	<p style="font-size: small; margin: 0;">Agilent Spectrum Analyzer - Occupied BW</p> <p style="font-size: x-small; margin: 0;">RL RF 50 Ω AC SENSE:INT ALIGN: AUTO 08:32:14 PM Dec 17, 2020</p> <p style="margin: 0;">Center Freq 2.440000000 GHz Center Freq: 2.440000000 GHz Radio Std: None</p> <p style="font-size: x-small; margin: 0;">Trig: Free Run AvgHold: 1/1</p> <p style="font-size: x-small; margin: 0;">#IFGain: Low #Atten: 30 dB Radio Device: BTS</p> <div style="border: 1px solid black; padding: 2px;"> <p style="font-size: x-small; margin: 0;">10 dB/div Ref Offset 8.05 dB Mkr1 2.4400049 GHz</p> <p style="font-size: x-small; margin: 0;">Log Ref 20.00 dBm 2.9666 dBm</p>  </div> <p style="font-size: x-small; margin: 0;">Center 2.44 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%;">9.73 dBm</td> </tr> <tr> <td style="text-align: center;">1.0473 MHz</td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>5.741 kHz</td> <td>OBW Power</td> </tr> <tr> <td>x dB Bandwidth</td> <td>658.5 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>	Occupied Bandwidth	Total Power	9.73 dBm	1.0473 MHz			Transmit Freq Error	5.741 kHz	OBW Power	x dB Bandwidth	658.5 kHz	x dB			99.00 %			-6.00 dB	<p>Frequency</p> <hr/> <p>Center Freq 2.440000000 GHz</p> <hr/> <p>CF Step 300.000 kHz Auto Man</p> <hr/> <p>Freq Offset 0 Hz</p>
	Occupied Bandwidth	Total Power	9.73 dBm																	
	1.0473 MHz																			
	Transmit Freq Error	5.741 kHz	OBW Power																	
x dB Bandwidth	658.5 kHz	x dB																		
		99.00 %																		
		-6.00 dB																		

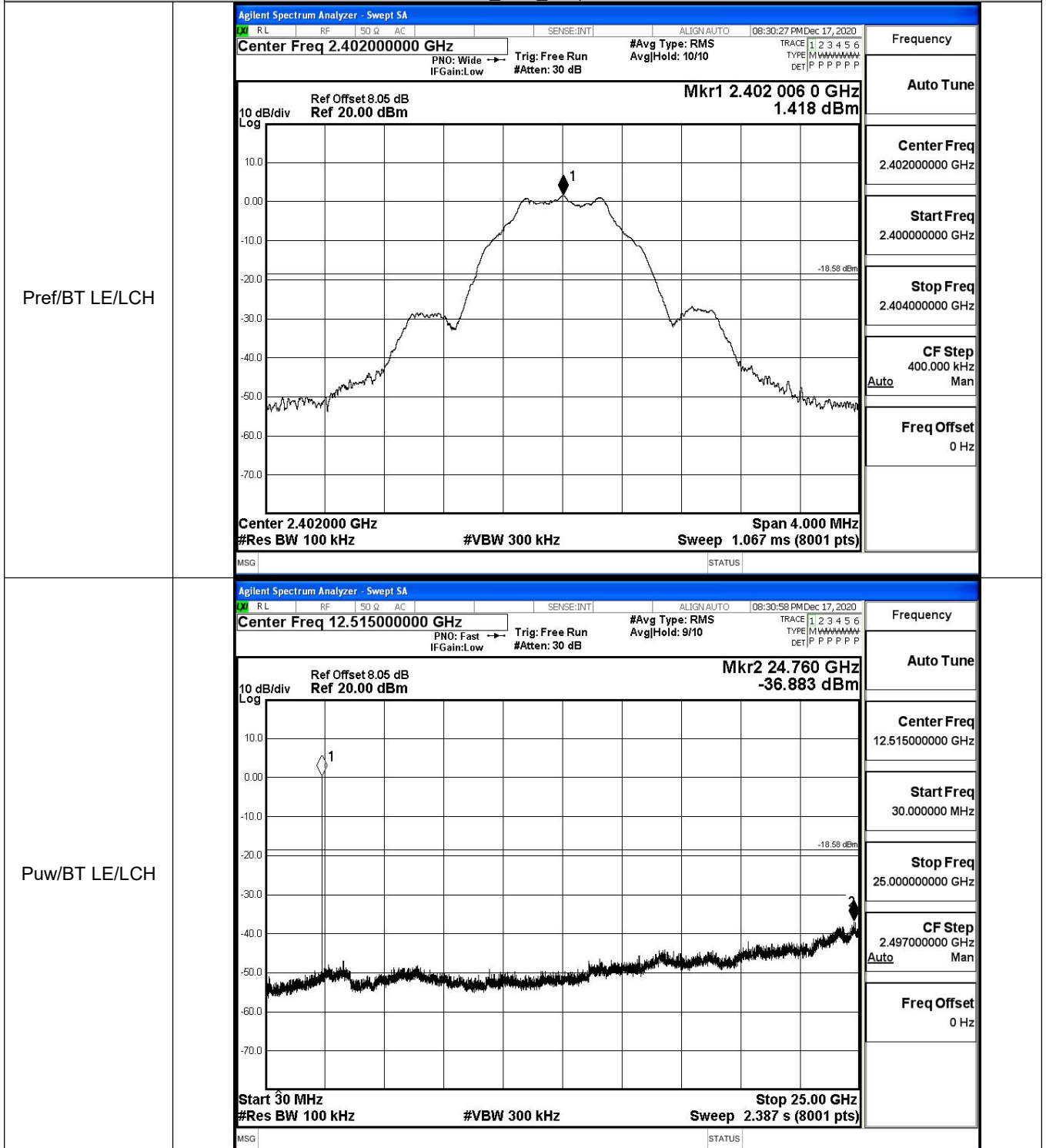
HCH



A.5 RF Conducted Spurious Emissions

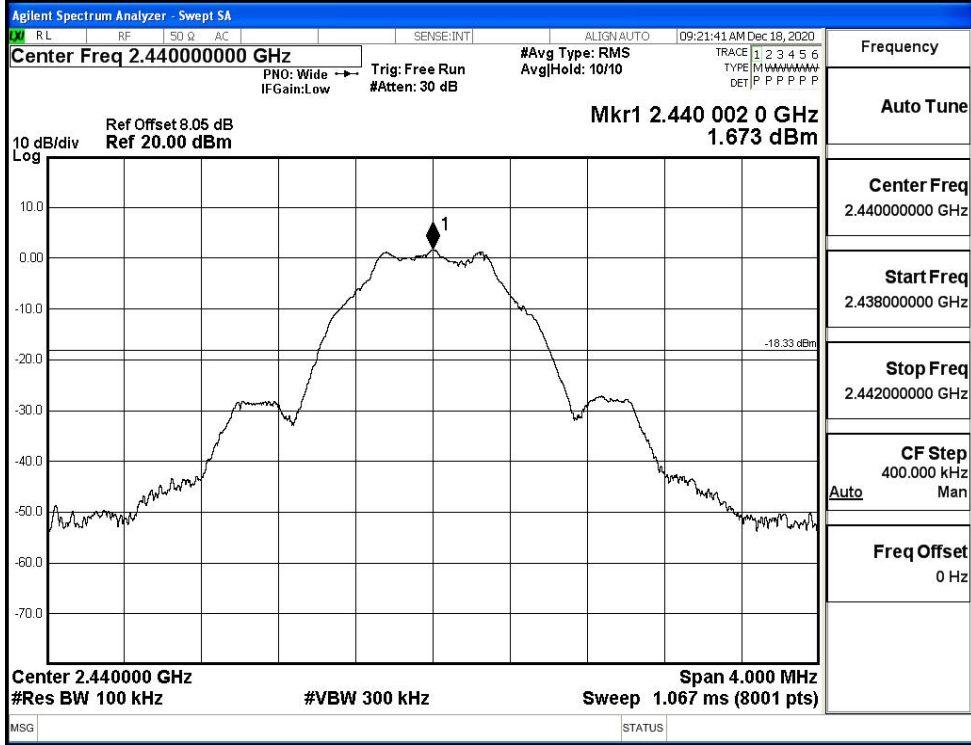
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	1.418	-36.883	-18.582	PASS
BT LE	MCH	1.673	-36.678	-18.327	PASS
BT LE	HCH	1.31	-37.014	-18.690	PASS

BT LE_LCH_Graphs

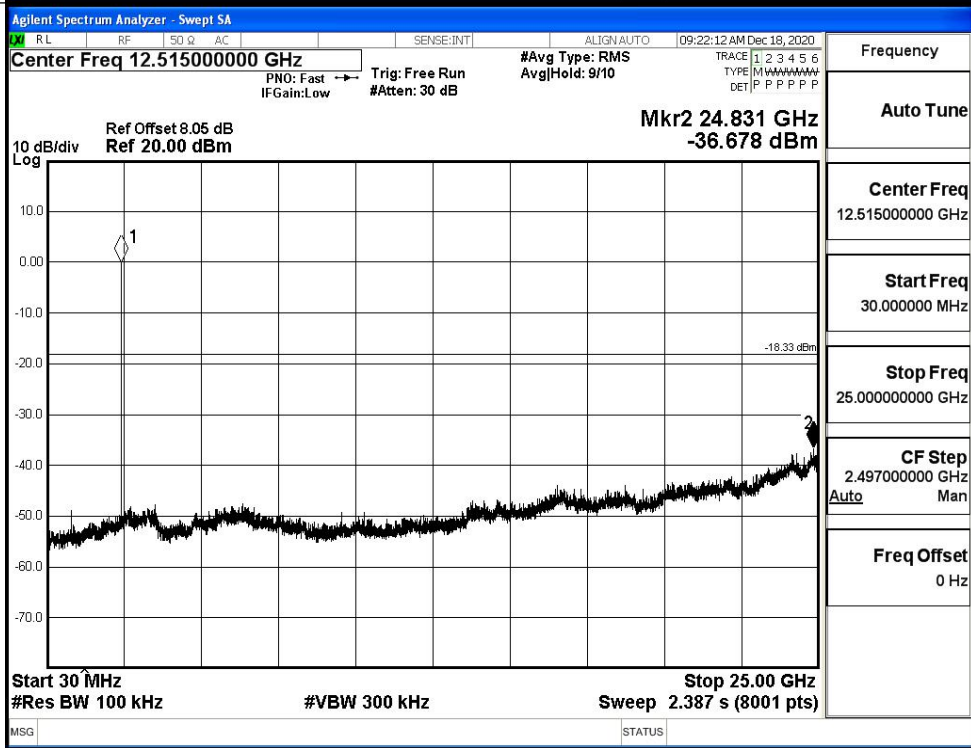


BT LE MCH Graphs

Pref/BT LE/MCH

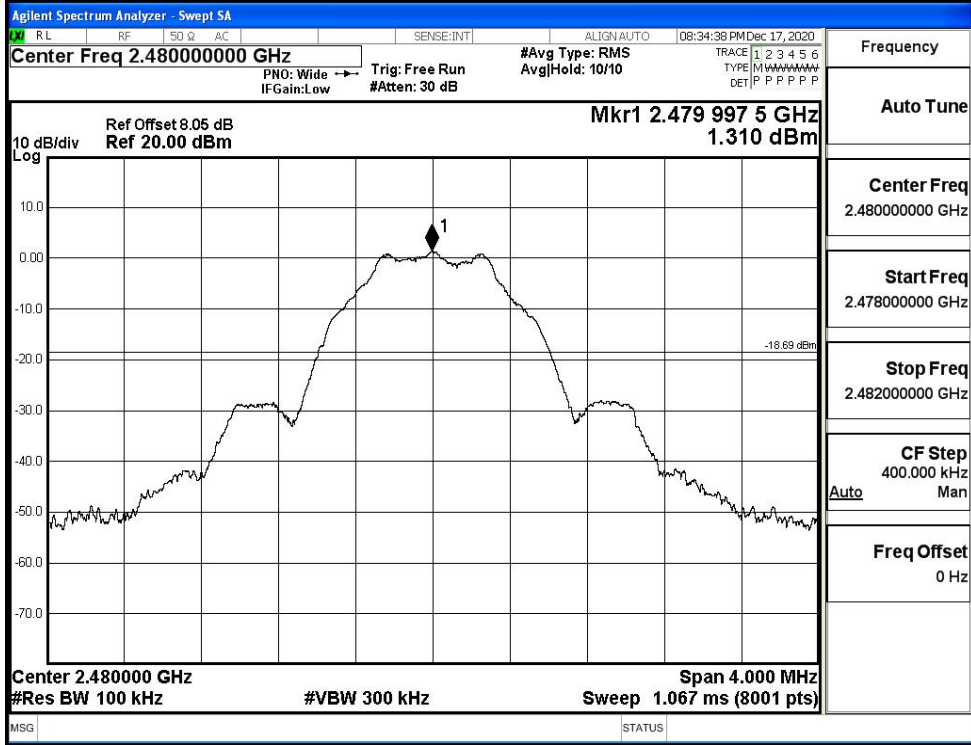


Puw/BT LE/MCH

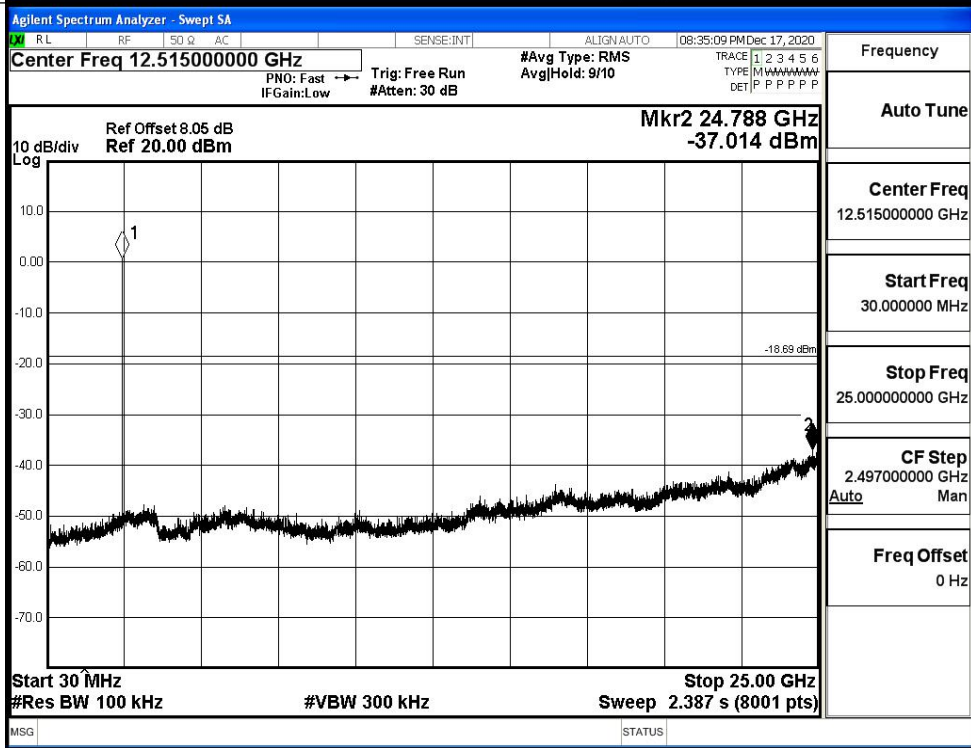


BT LE HCH Graphs

Pref/BT LE/HCH



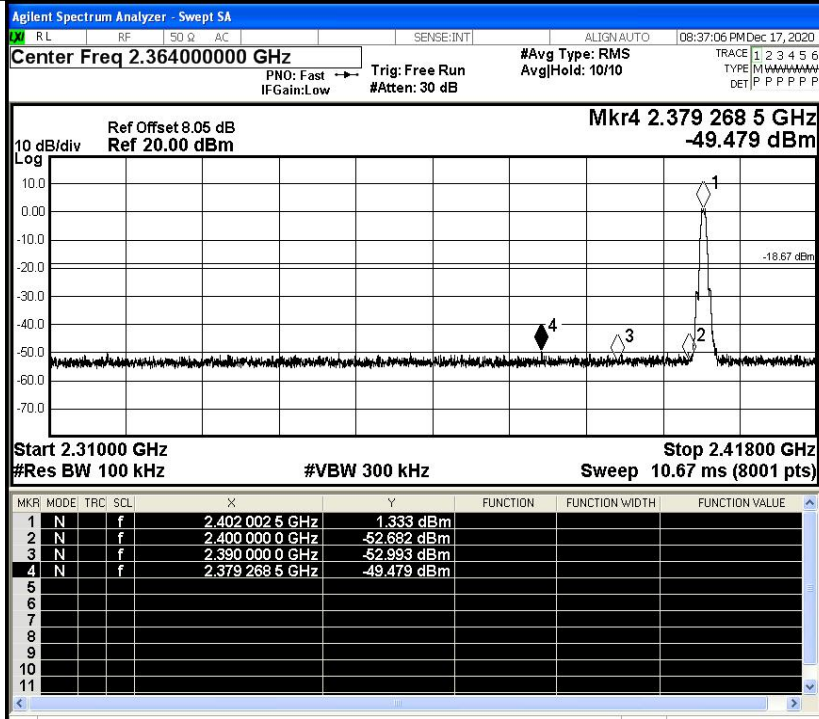
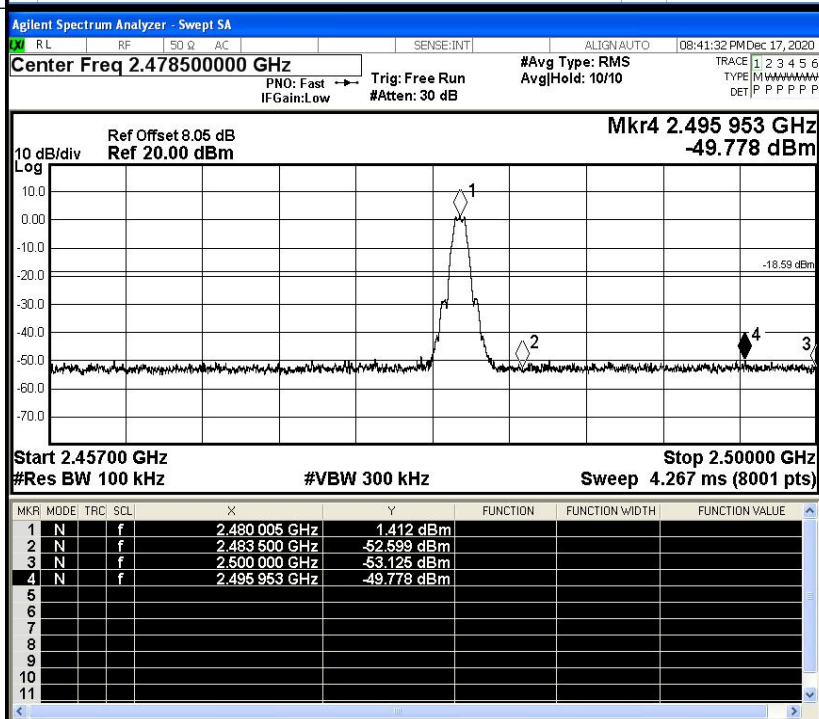
Puw/BT LE/HCH



A.6 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	1.333	-49.479	-18.67	PASS
BT LE	HCH	1.412	-49.778	-18.59	PASS

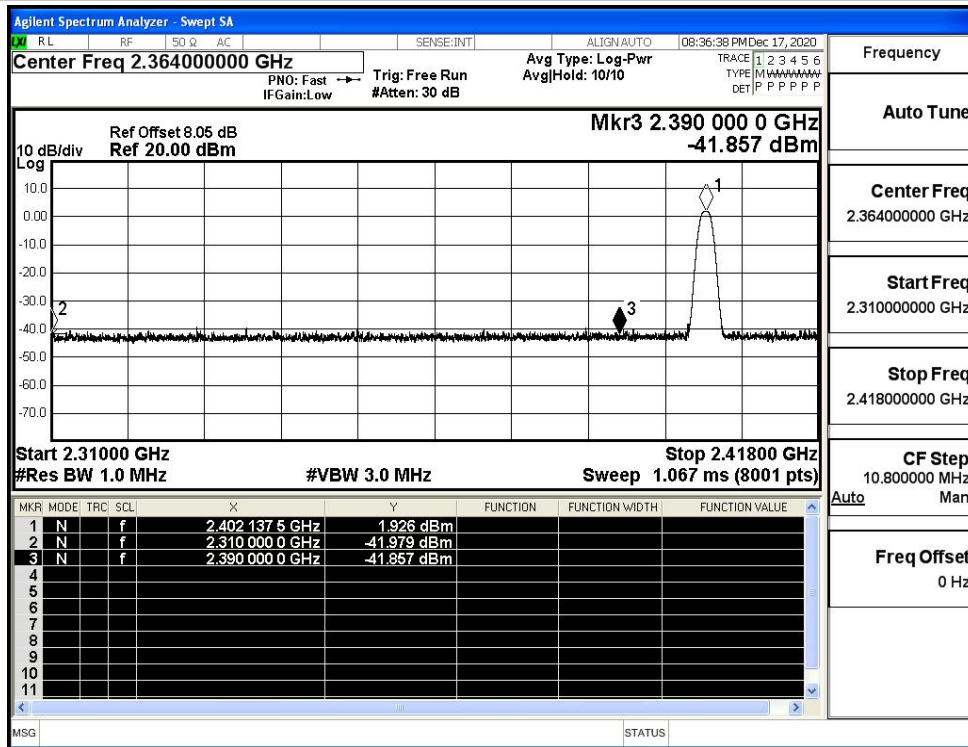
Test Graphs

LCH		<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.36400000 GHz</p> <p>Start Freq 2.31000000 GHz</p> <p>Stop Freq 2.41800000 GHz</p> <p>CF Step 10.800000 MHz</p> <p>Freq Offset 0 Hz</p>
HCH		<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.47850000 GHz</p> <p>Start Freq 2.45700000 GHz</p> <p>Stop Freq 2.50000000 GHz</p> <p>CF Step 4.300000 MHz</p> <p>Freq Offset 0 Hz</p>

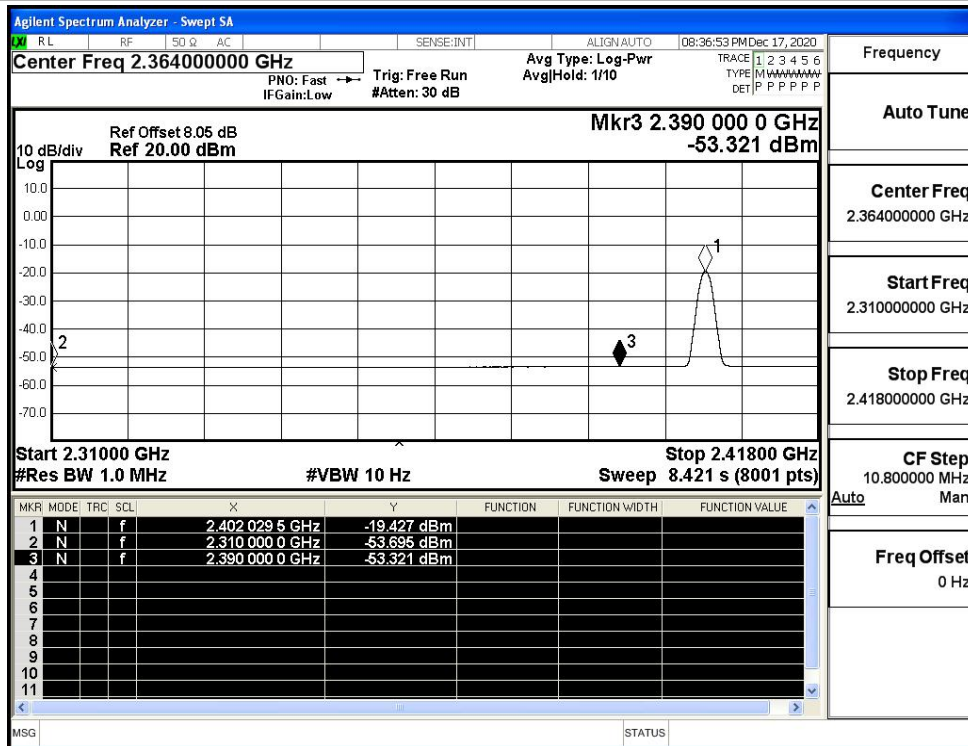
A.7 Restrict-band band-edge measurements

Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdi
BT LE	2402	Ant1	2310.0	-41.98	2.0	0	53.28	PEAK	74	PASS
		Ant1	2310.0	-53.70	2.0	0	41.56	AV	54	PASS
		Ant1	2390.0	-41.86	2.0	0	53.40	PEAK	74	PASS
		Ant1	2390.0	-53.32	2.0	0	41.94	AV	54	PASS
	2480	Ant1	2483.5	-41.34	2.0	0	53.92	PEAK	74	PASS
		Ant1	2483.5	-52.80	2.0	0	42.45	AV	54	PASS
		Ant1	2500.0	-41.43	2.0	0	53.83	PEAK	74	PASS
		Ant1	2500.0	-52.63	2.0	0	42.63	AV	54	PASS

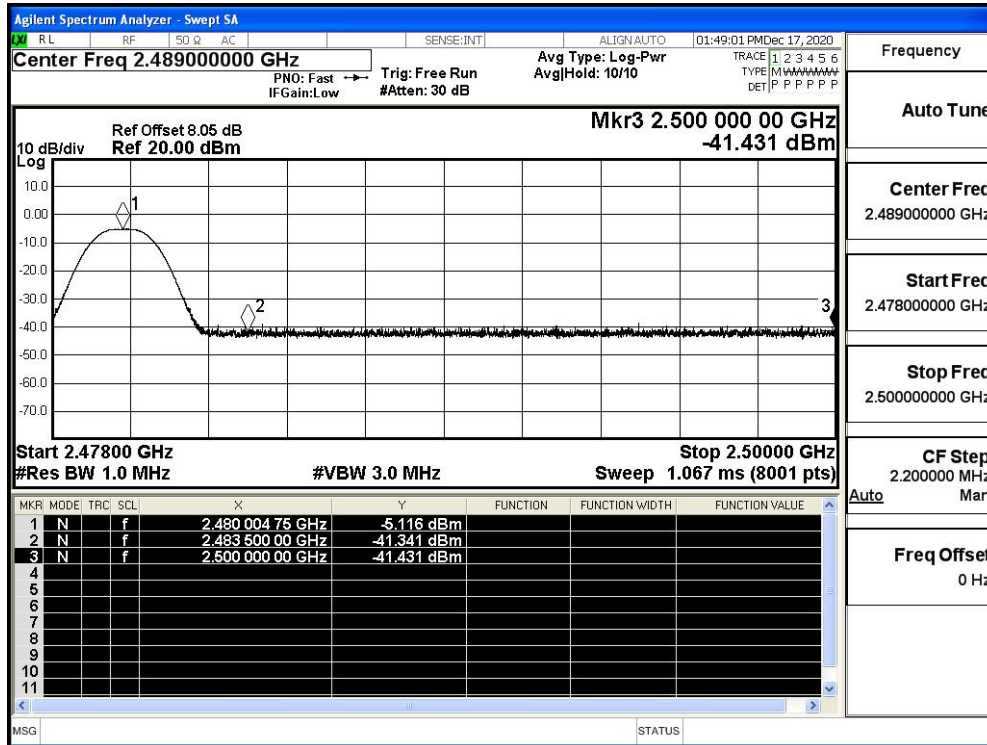
Restrict-band band-edge measurements_BT LE_2402_Ant1_PEAK



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

