

Appendix A

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

Product Name: BABI Alert Plus

Trade Mark: BABI

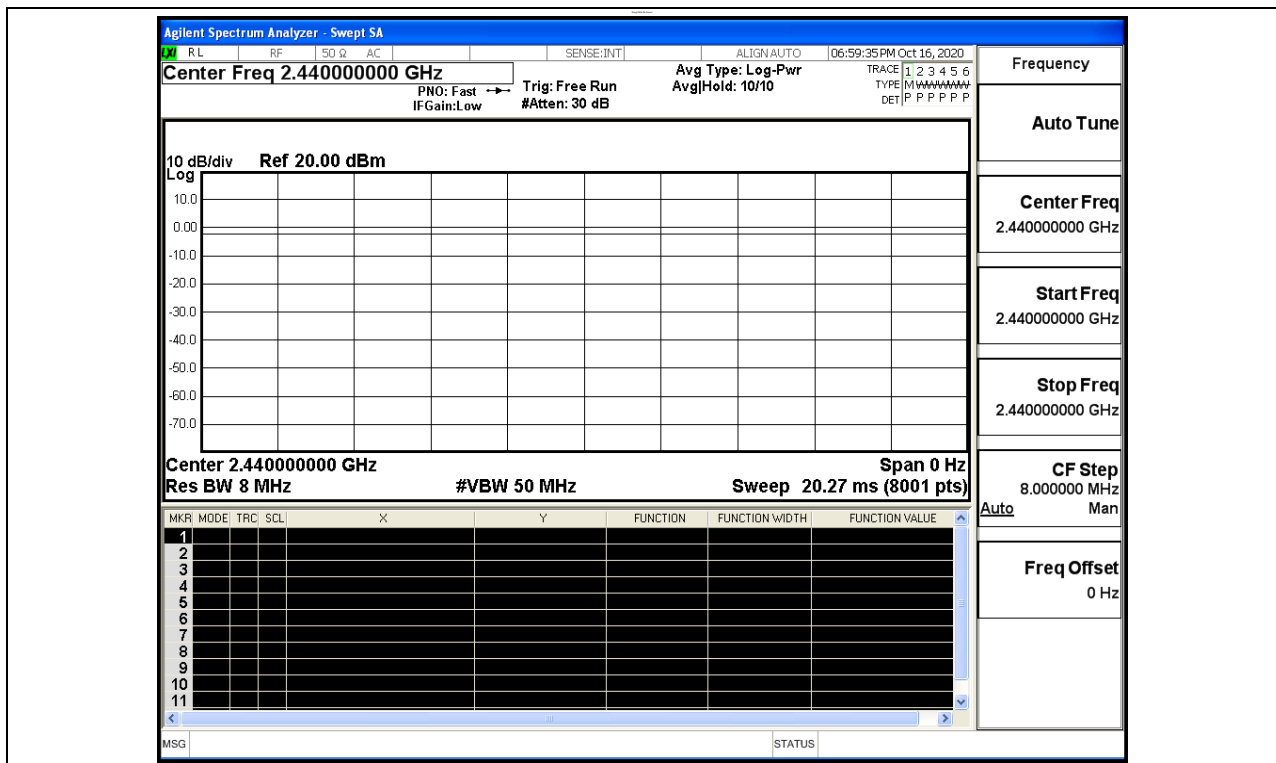
Test Model: BAP1001

Environmental Conditions

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

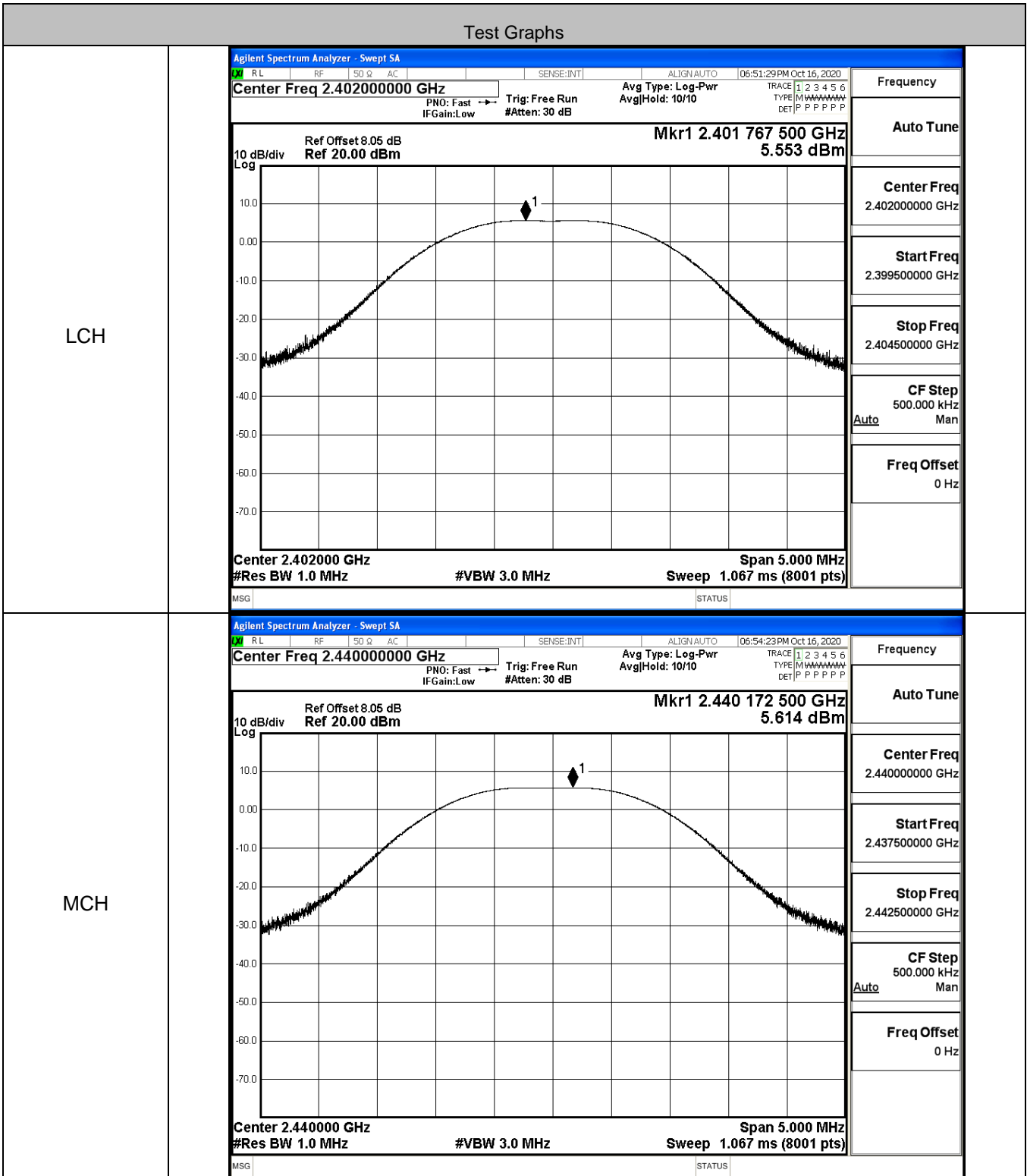
A.1 Duty Cycle

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



A.2 Maximum Conducted Peak Output Power

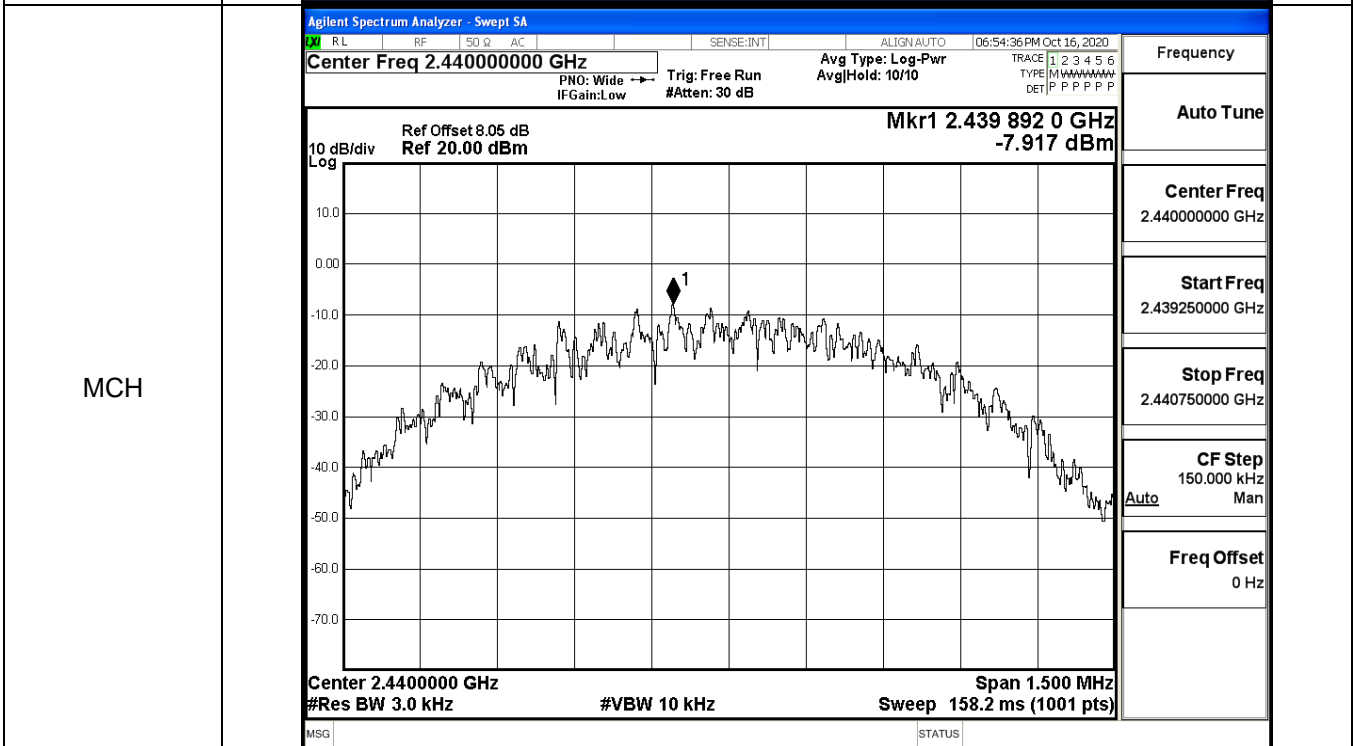
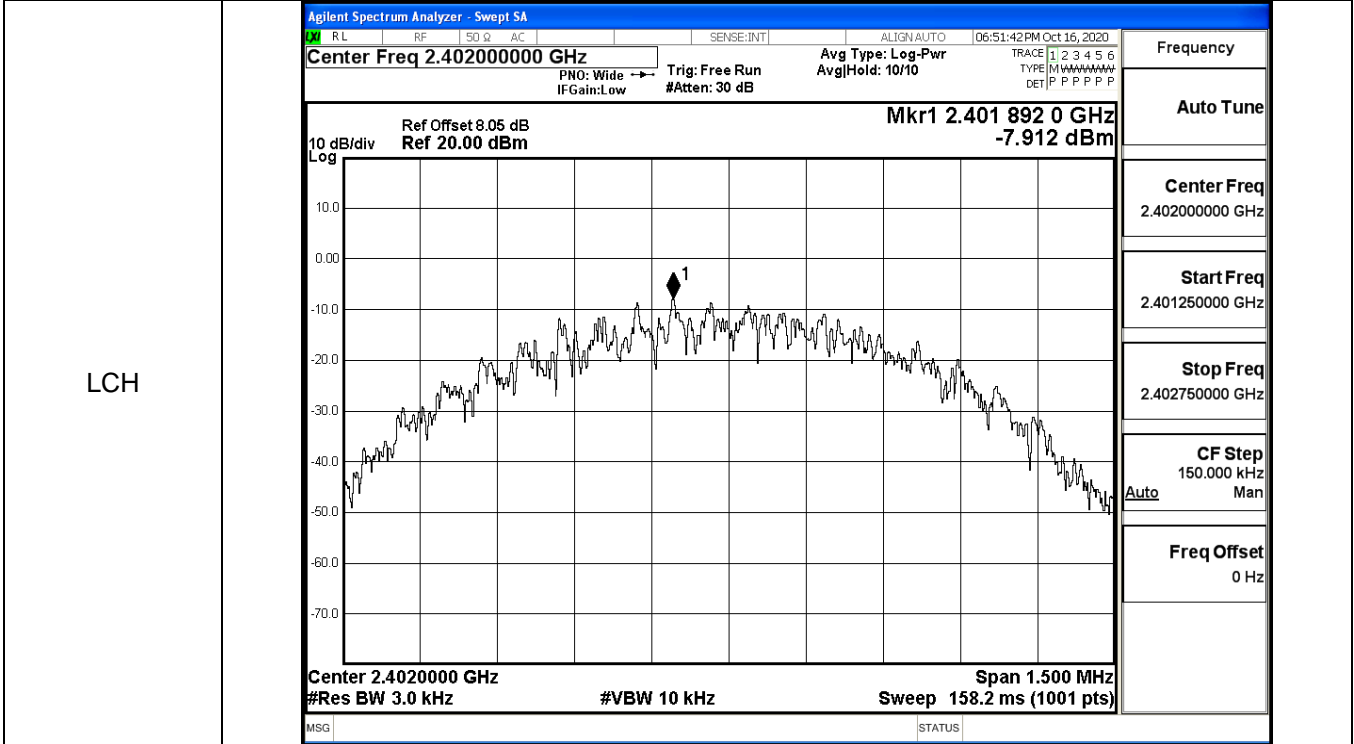
Mode	Channel	Conduct Peak Power[dBm]	Limit [dBm]	Verdict
BT LE	LCH	5.553	30	PASS
BT LE	MCH	5.614	30	PASS
BT LE	HCH	5.634	30	PASS



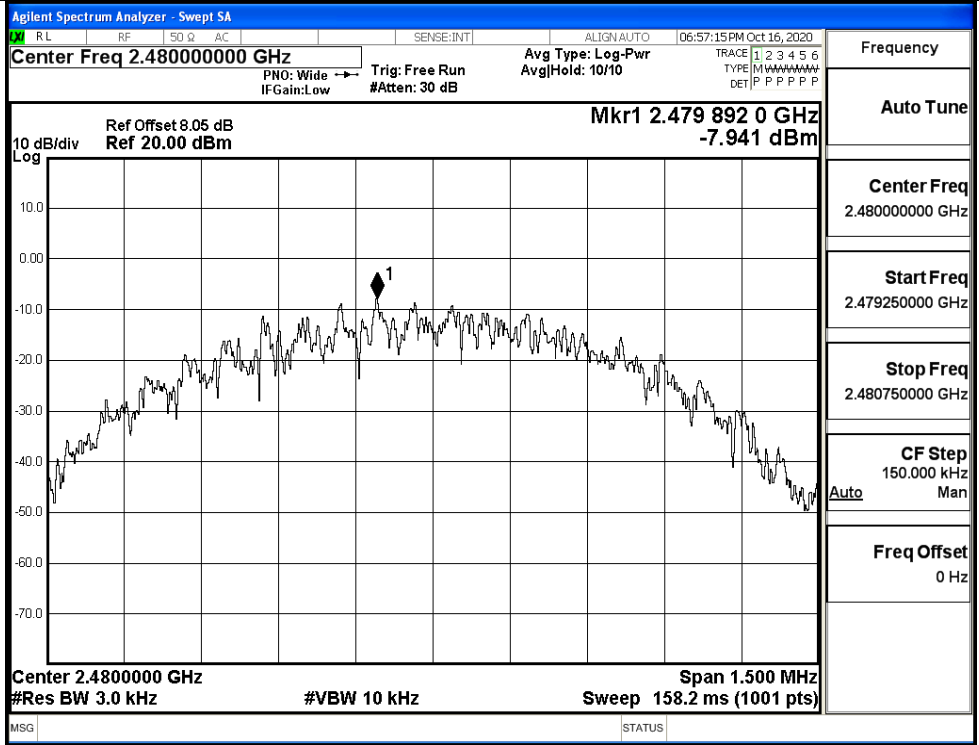
A.3 Maximum Power Spectral Density

Mode	Channel	PSD [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
BT LE	LCH	-7.912	8	PASS
BT LE	MCH	-7.917	8	PASS
BT LE	HCH	-7.941	8	PASS

Test Graphs

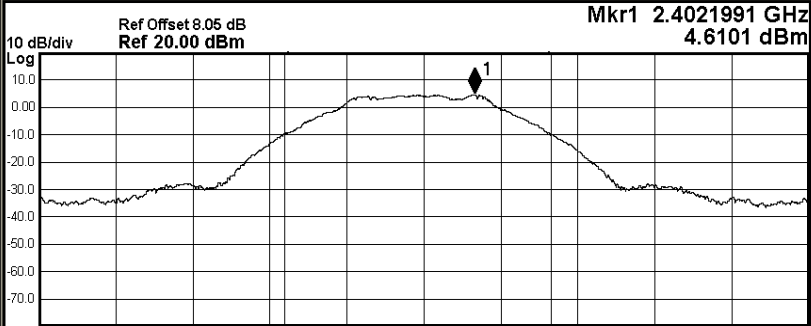
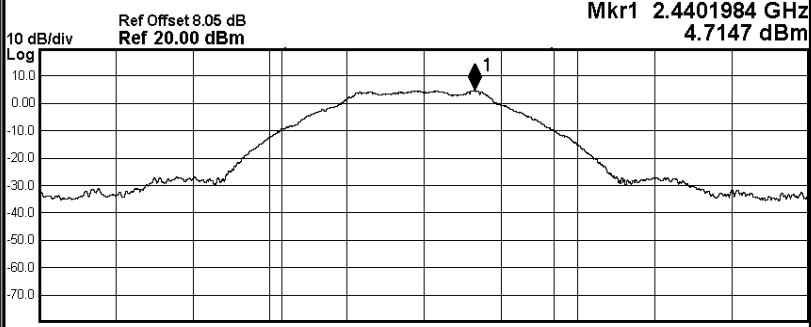


HCH



A.4 6dB Bandwidth

Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
BT LE	LCH	0.6730	≥0.5	PASS
BT LE	MCH	0.6714	≥0.5	PASS
BT LE	HCH	0.6767	≥0.5	PASS

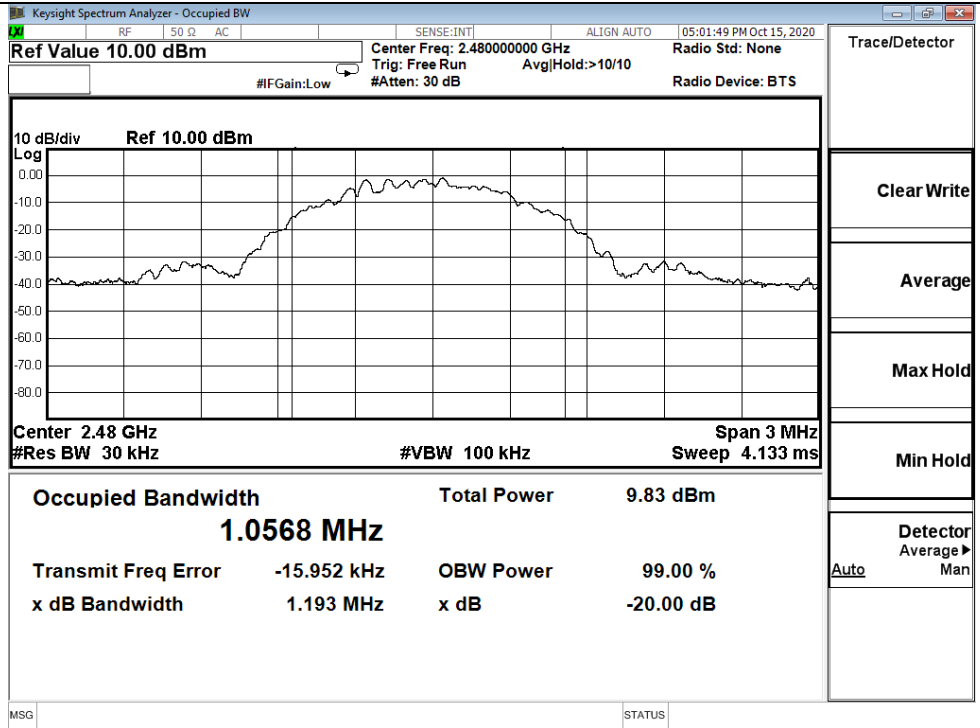
Test Graphs																							
LCH	<div style="border: 1px solid black; padding: 5px;"> <p style="font-size: small; margin: 0;">Agilent Spectrum Analyzer - Occupied BW</p> <p style="font-size: x-small; margin: 0;">RL RF 50 Ω AC SENSE:INT ALIGN:AUTO 06:51:18 PM Oct 16, 2020</p> <p style="font-size: small; 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 2.4021991 GHz</p> <p style="font-size: x-small; margin: 0;">Log Ref 20.00 dBm 4.6101 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>Occupied Bandwidth</td> <td>Total Power</td> <td>11.7 dBm</td> </tr> <tr> <td style="text-align: center;">1.0360 MHz</td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td>x dB</td> <td>-6.00 dB</td> </tr> </table> <p style="font-size: x-small; margin: 0;">MSG STATUS</p> </div> </div> <table 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	11.7 dBm	1.0360 MHz			Transmit Freq Error	OBW Power	99.00 %	x dB Bandwidth	x dB	-6.00 dB	Frequency	2.402000000 GHz	Center Freq	2.402000000 GHz	CF Step	300.000 kHz	Auto	Man	Freq Offset	0 Hz
Occupied Bandwidth	Total Power	11.7 dBm																					
1.0360 MHz																							
Transmit Freq Error	OBW Power	99.00 %																					
x dB Bandwidth	x dB	-6.00 dB																					
Frequency	2.402000000 GHz																						
Center Freq	2.402000000 GHz																						
CF Step	300.000 kHz																						
Auto	Man																						
Freq Offset	0 Hz																						
MCH	<div style="border: 1px solid black; padding: 5px;"> <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 06:54:12 PM Oct 16, 2020</p> <p style="font-size: small; 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 2.4401984 GHz</p> <p style="font-size: x-small; margin: 0;">Log Ref 20.00 dBm 4.7147 dBm</p>  <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>Occupied Bandwidth</td> <td>Total Power</td> <td>11.8 dBm</td> </tr> <tr> <td style="text-align: center;">1.0578 MHz</td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td>x dB</td> <td>-6.00 dB</td> </tr> </table> <p style="font-size: x-small; margin: 0;">MSG STATUS</p> </div> </div> <table style="width: 100%; font-size: x-small; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 50%;">Frequency</td> <td style="width: 50%;">2.440000000 GHz</td> </tr> <tr> <td>Center Freq</td> <td>2.440000000 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	11.8 dBm	1.0578 MHz			Transmit Freq Error	OBW Power	99.00 %	x dB Bandwidth	x dB	-6.00 dB	Frequency	2.440000000 GHz	Center Freq	2.440000000 GHz	CF Step	300.000 kHz	Auto	Man	Freq Offset	0 Hz
Occupied Bandwidth	Total Power	11.8 dBm																					
1.0578 MHz																							
Transmit Freq Error	OBW Power	99.00 %																					
x dB Bandwidth	x dB	-6.00 dB																					
Frequency	2.440000000 GHz																						
Center Freq	2.440000000 GHz																						
CF Step	300.000 kHz																						
Auto	Man																						
Freq Offset	0 Hz																						

A.5 Occupied Bandwidth

Mode	Channel	Occupied Bandwidth [MHz]	Limit [MHz]	Verdict
BT LE	LCH	1.0395	Not Specified	PASS
BT LE	MCH	1.0465	Not Specified	PASS
BT LE	HCH	1.0568	Not Specified	PASS

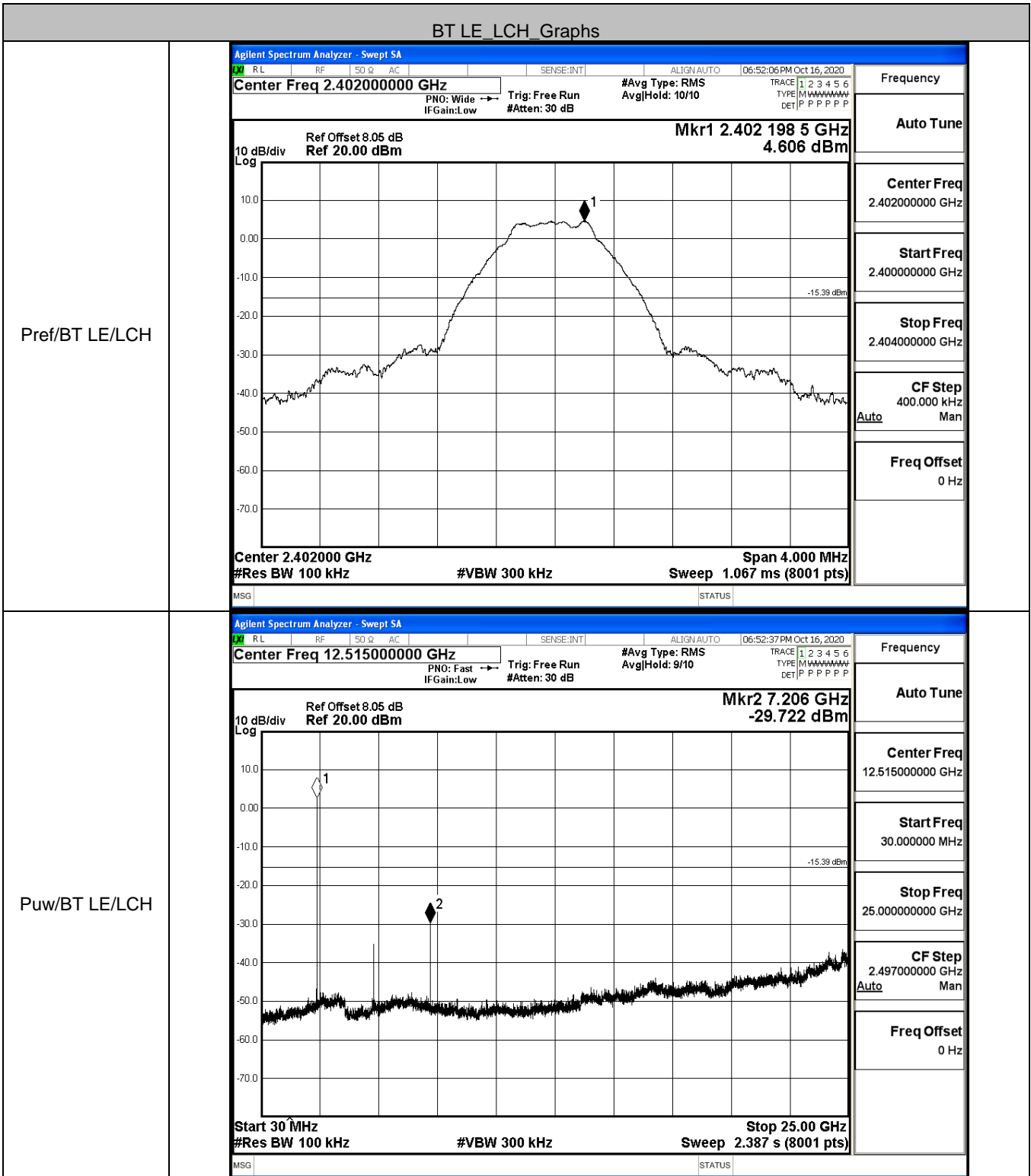
Test Graphs	
LCH	<p>Center Freq 2.40200000 GHz</p> <p>Occupied Bandwidth 1.0395 MHz</p> <p>Total Power 7.96 dBm</p> <p>Transmit Freq Error -15.791 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 1.149 MHz</p> <p>x dB -20.00 dB</p>
MCH	<p>Center Freq 2.44000000 GHz</p> <p>Occupied Bandwidth 1.0465 MHz</p> <p>Total Power 8.82 dBm</p> <p>Transmit Freq Error -15.683 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 1.157 MHz</p> <p>x dB -20.00 dB</p>

HCH



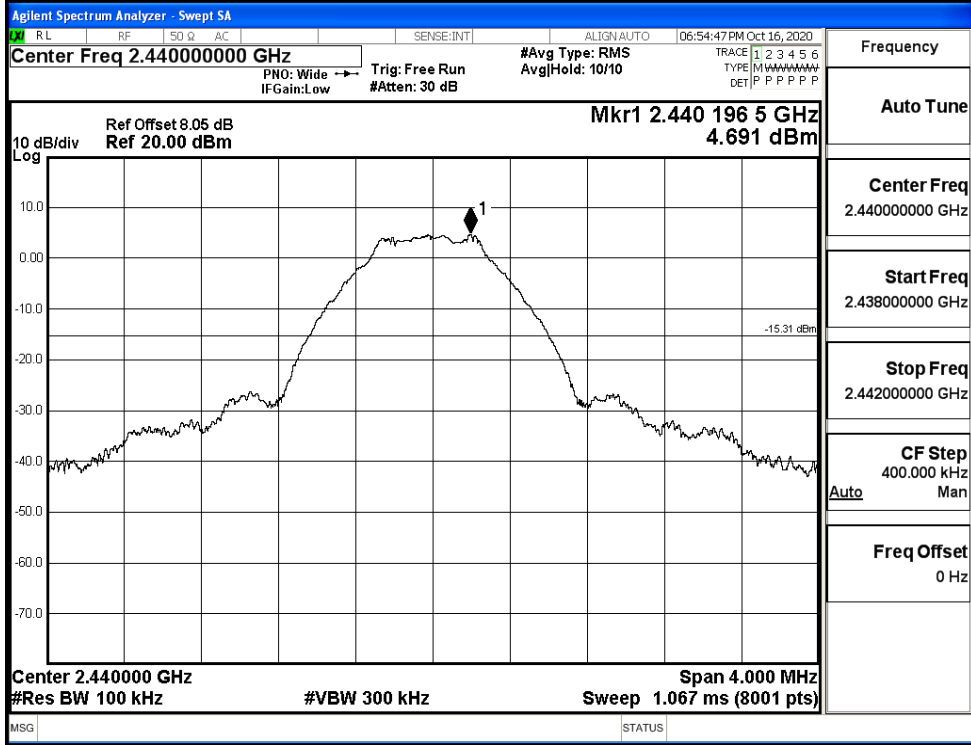
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	4.606	-29.722	-15.394	PASS
BT LE	MCH	4.691	-31.458	-15.309	PASS
BT LE	HCH	4.724	-29.717	-15.276	PASS

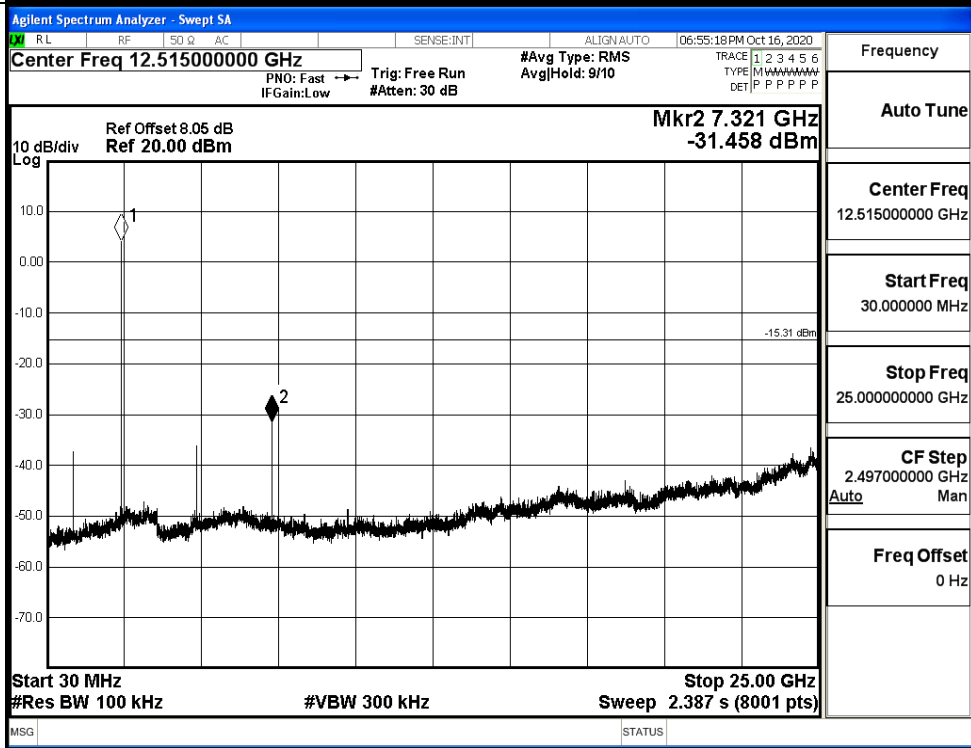


BT LE_MCH_Graphs

Pref/BT LE/MCH

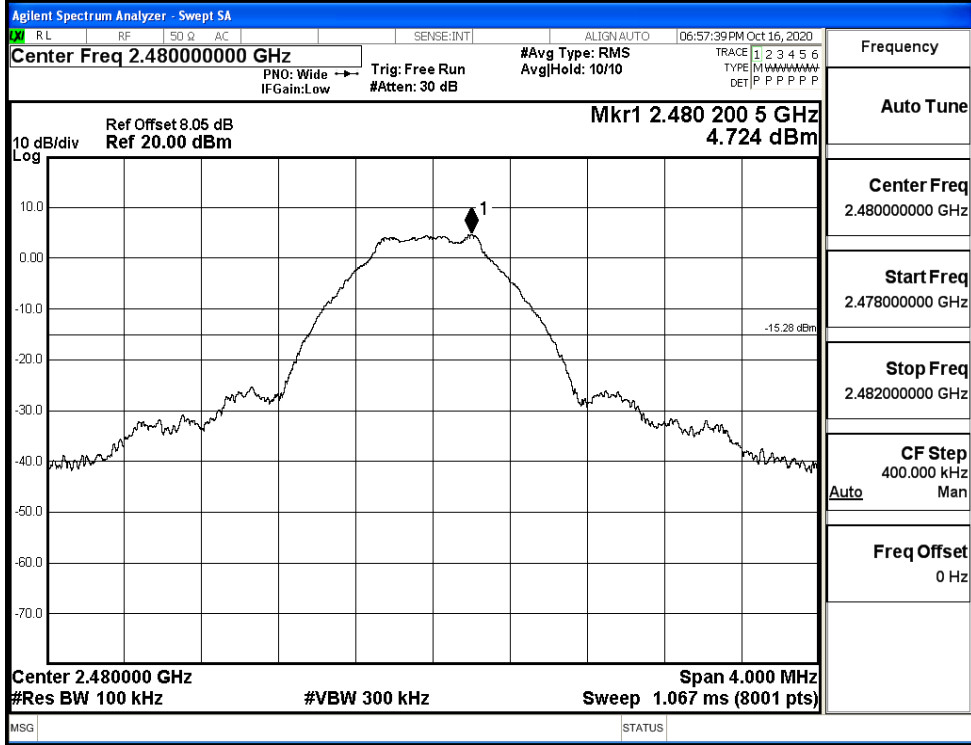


Puw/BT LE/MCH

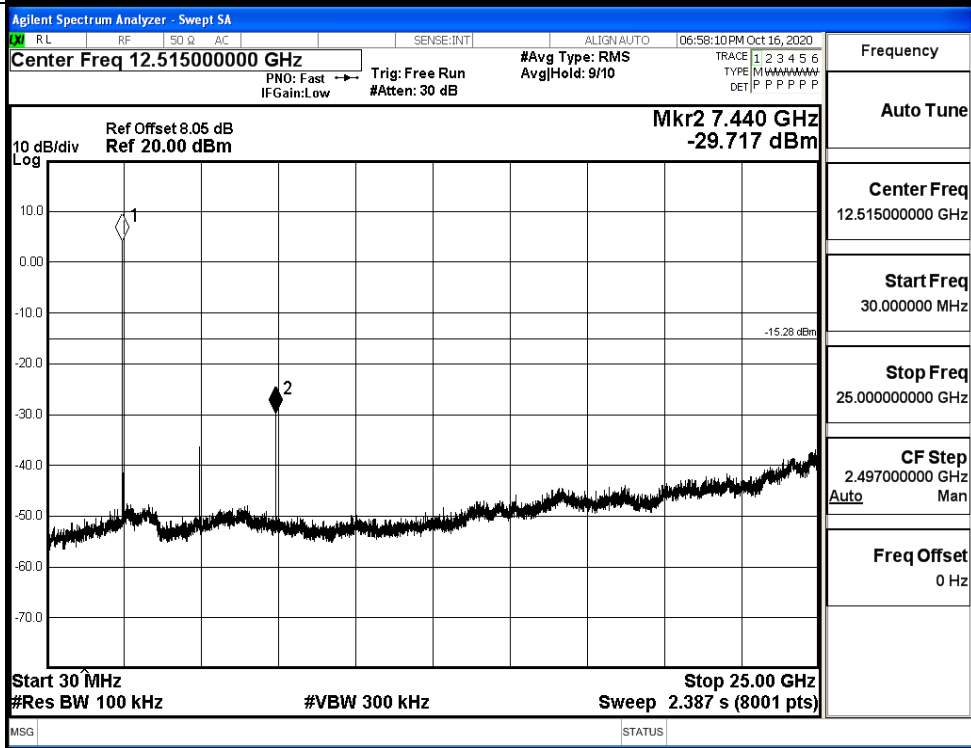


BT LE_HCH_Graphs

Pref/BT LE/HCH



Puw/BT LE/HCH



A.7 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	4.890	-47.615	-15.11	PASS
BT LE	HCH	4.865	-40.890	-15.14	PASS

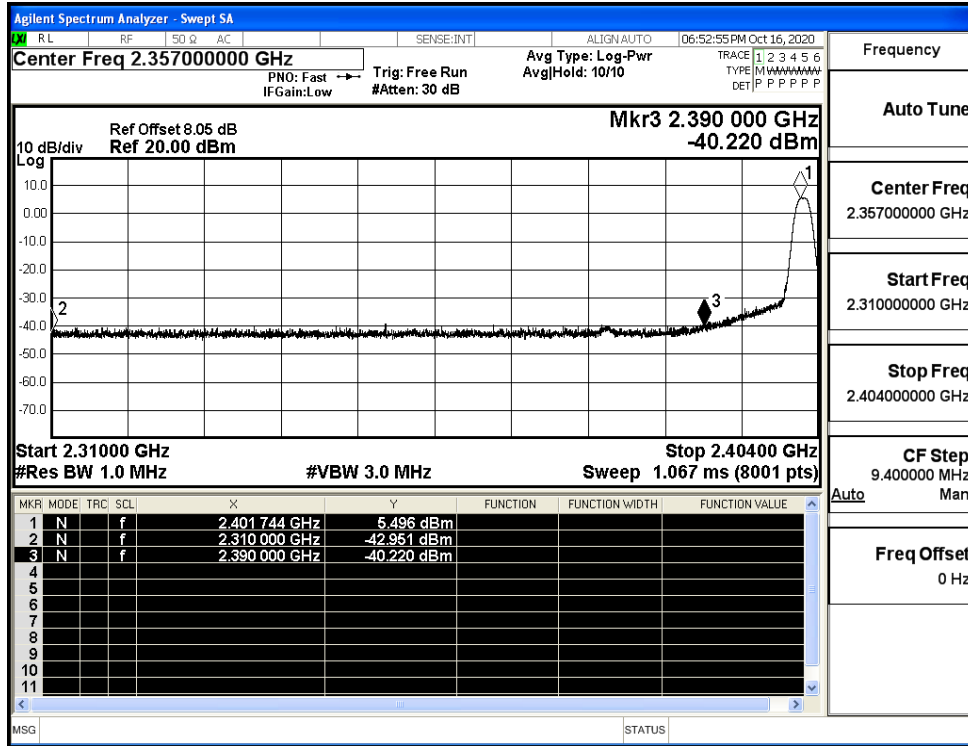
Test Graphs

LCH	<p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.35700000 GHz #Avg Type: RMS AvgHold: 10/10 Mkr4 2.378 138 GHz -47.615 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" style="width: 100%; border-collapse: collapse;"> <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>2.401 991 GHz</td><td>4.890 dBm</td><td></td><td></td><td></td></tr> <tr><td>2</td><td>N</td><td>f</td><td></td><td>2.400 000 GHz</td><td>-39.907 dBm</td><td></td><td></td><td></td></tr> <tr><td>3</td><td>N</td><td>f</td><td></td><td>2.390 000 GHz</td><td>-50.866 dBm</td><td></td><td></td><td></td></tr> <tr><td>4</td><td>N</td><td>f</td><td></td><td>2.378 138 GHz</td><td>-47.615 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		2.401 991 GHz	4.890 dBm				2	N	f		2.400 000 GHz	-39.907 dBm				3	N	f		2.390 000 GHz	-50.866 dBm				4	N	f		2.378 138 GHz	-47.615 dBm				Frequency Auto Tune Center Freq 2.35700000 GHz Start Freq 2.310000000 GHz Stop Freq 2.404000000 GHz CF Step 9.400000 MHz Freq Offset 0 Hz
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																																							
1	N	f		2.401 991 GHz	4.890 dBm																																										
2	N	f		2.400 000 GHz	-39.907 dBm																																										
3	N	f		2.390 000 GHz	-50.866 dBm																																										
4	N	f		2.378 138 GHz	-47.615 dBm																																										
HCH	<p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.48900000 GHz #Avg Type: RMS AvgHold: 10/10 Mkr4 2.484 261 75 GHz -40.890 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" style="width: 100%; border-collapse: collapse;"> <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>2.480 194 50 GHz</td><td>4.865 dBm</td><td></td><td></td><td></td></tr> <tr><td>2</td><td>N</td><td>f</td><td></td><td>2.483 500 00 GHz</td><td>-42.385 dBm</td><td></td><td></td><td></td></tr> <tr><td>3</td><td>N</td><td>f</td><td></td><td>2.500 000 00 GHz</td><td>-52.683 dBm</td><td></td><td></td><td></td></tr> <tr><td>4</td><td>N</td><td>f</td><td></td><td>2.484 261 75 GHz</td><td>-40.890 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		2.480 194 50 GHz	4.865 dBm				2	N	f		2.483 500 00 GHz	-42.385 dBm				3	N	f		2.500 000 00 GHz	-52.683 dBm				4	N	f		2.484 261 75 GHz	-40.890 dBm				Frequency Auto Tune Center Freq 2.48900000 GHz Start Freq 2.478000000 GHz Stop Freq 2.500000000 GHz CF Step 2.200000 MHz Freq Offset 0 Hz
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																																							
1	N	f		2.480 194 50 GHz	4.865 dBm																																										
2	N	f		2.483 500 00 GHz	-42.385 dBm																																										
3	N	f		2.500 000 00 GHz	-52.683 dBm																																										
4	N	f		2.484 261 75 GHz	-40.890 dBm																																										

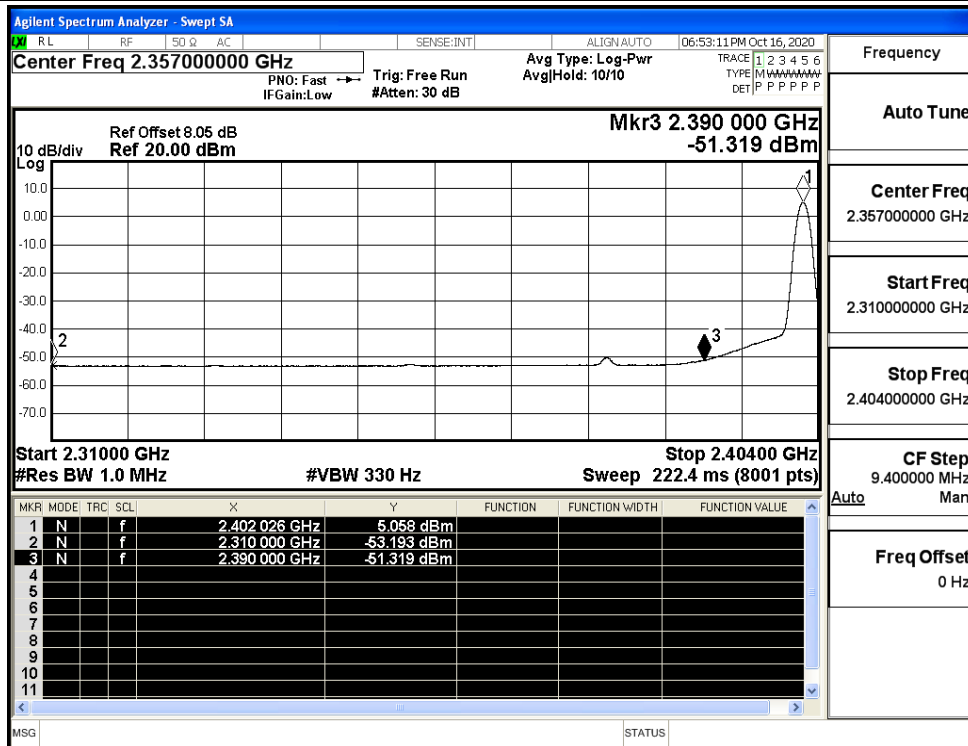
A.8 Restrict-band band-edge measurements

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	-42.95	2.0	0	52.31	PEAK	74	PASS
		Ant1	2310.0	-53.19	2.0	0	42.06	AV	54	PASS
		Ant1	2390.0	-40.22	2.0	0	55.04	PEAK	74	PASS
		Ant1	2390.0	-51.32	2.0	0	43.94	AV	54	PASS
	2480	Ant1	2483.5	-32.21	2.0	0	63.05	PEAK	74	PASS
		Ant1	2483.5	-42.16	2.0	0	53.10	AV	54	PASS
		Ant1	2500.0	-42.66	2.0	0	52.59	PEAK	74	PASS
		Ant1	2500.0	-52.17	2.0	0	43.09	AV	54	PASS

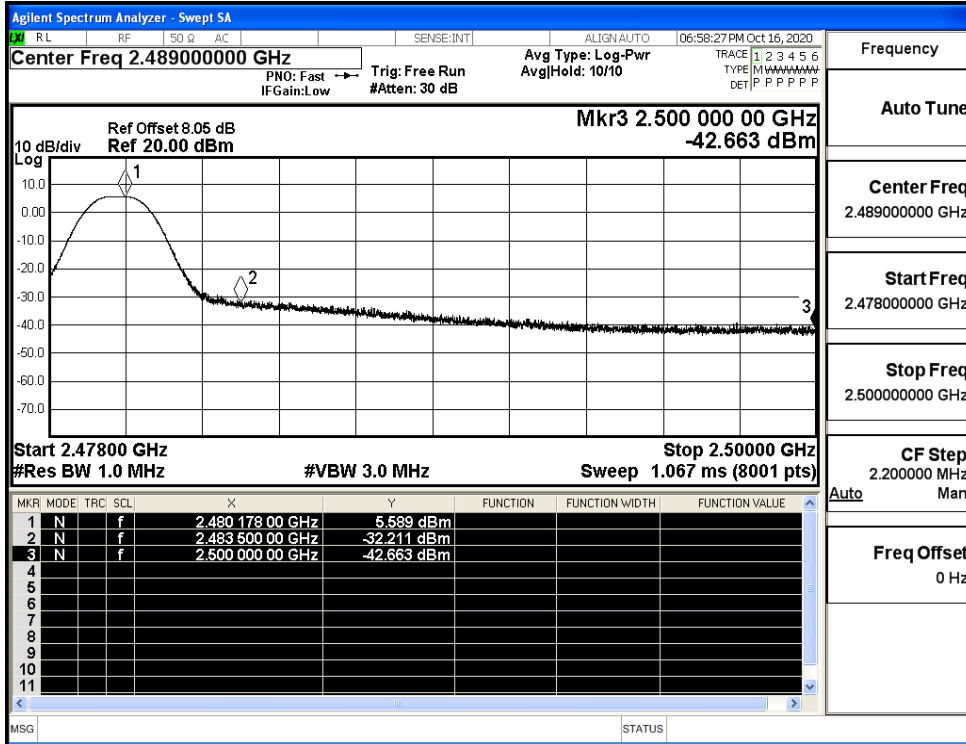
Restrict-band band-edge measurements_BT LE_2402_Ant1_PEAK



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

