

Appendix B

RF Test Data for BT V4.1(LE) (Conducted Measurement)

Product Name: e-Safety

Trade Mark: Maxi-Cosi

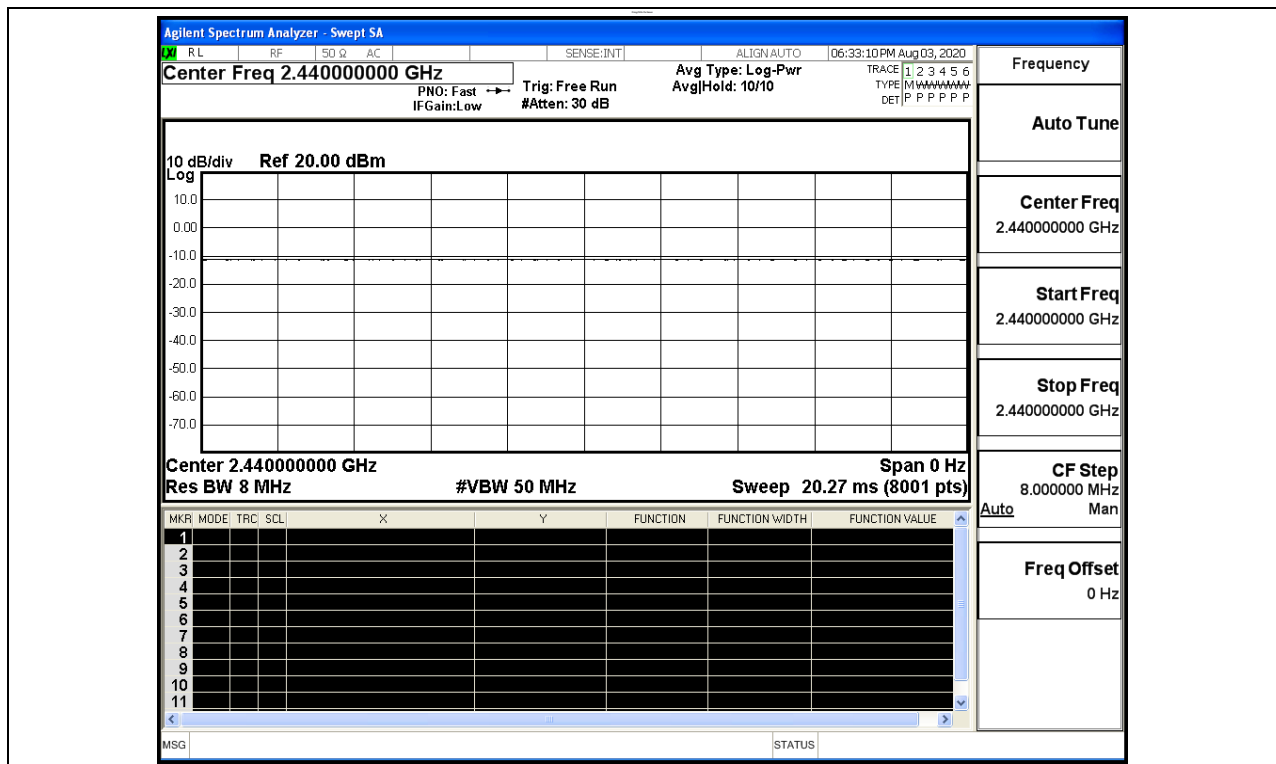
Test Model: 32602BLK

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	50%
ATM Pressure:	100.0 kPa
Test Engineer:	Jam Zheng
Supervised by:	Tom.Liu

B.1 Duty Cycle

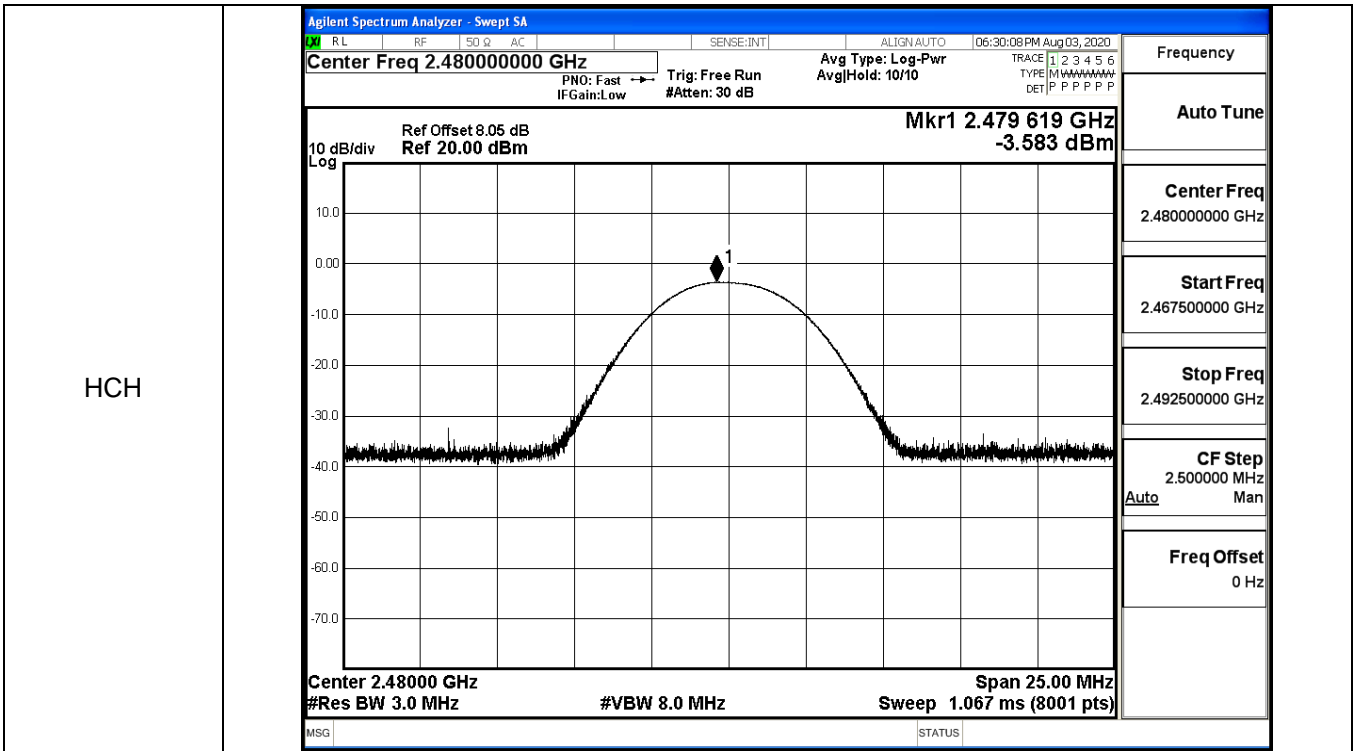
Test Mode	Test Channel	Ant	Duty Cycle[%]	Verdict
BT LE	2440	Ant1	100	PASS



B.2 Maximum Conducted Peak Output Power

Mode	Channel	Conduct Peak Power[dBm]	Limit [dBm]	Verdict
BT LE	LCH	-3.246	30	PASS
BT LE	MCH	-3.181	30	PASS
BT LE	HCH	-3.583	30	PASS

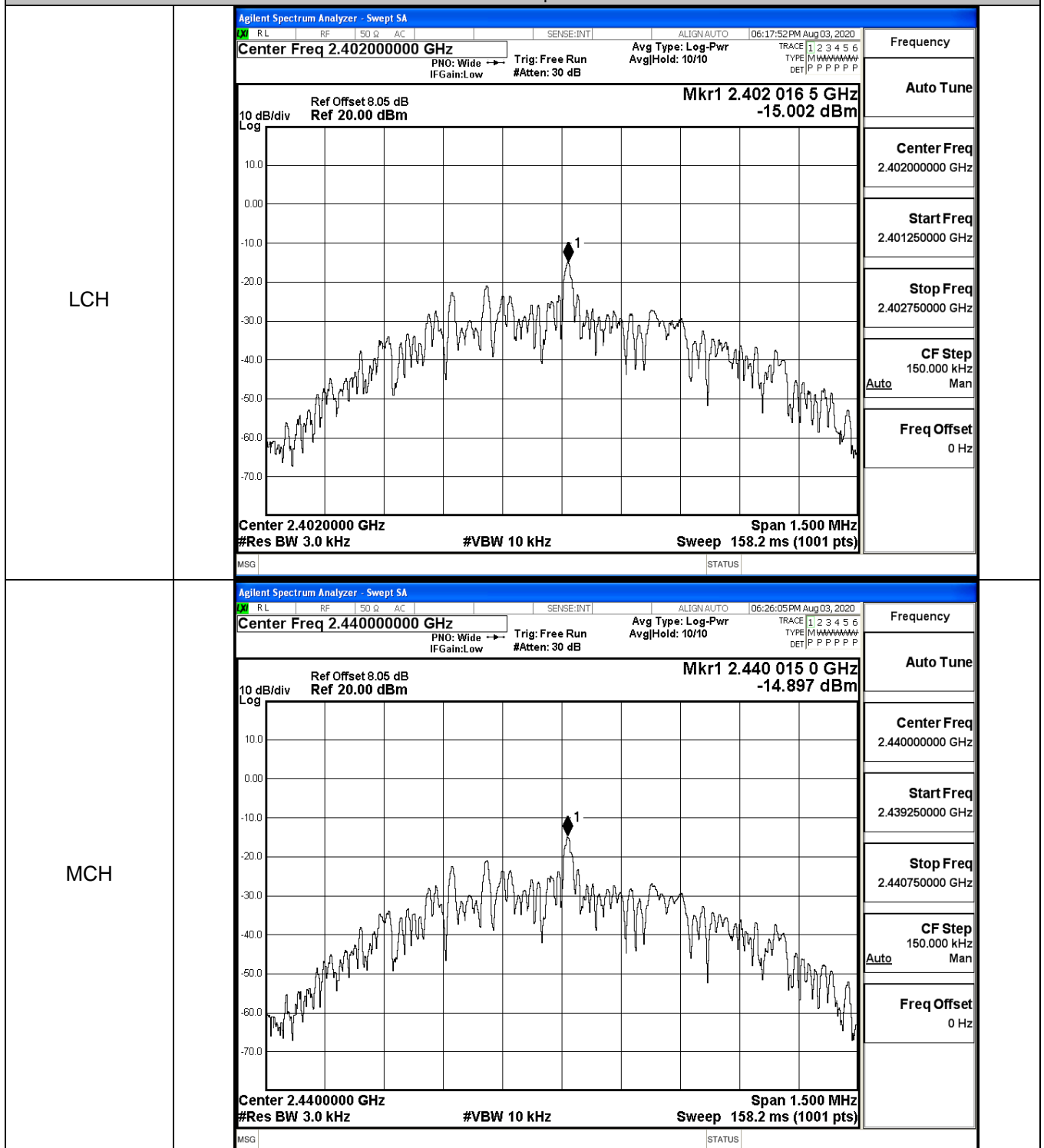
Test Graphs								
LCH	<div style="border: 1px solid black; padding: 5px;"> <p style="font-size: small; margin: 0;">Agilent Spectrum Analyzer - Swept SA</p> <p style="font-size: x-small; margin: 0;">RL RF 50 Ω AC SENSE:INT ALIGN:AUTO 06:17:39 PM Aug 03, 2020</p> <p style="font-size: small; margin: 0;">Center Freq 2.40200000 GHz Avg Type: Log-Pwr TRACE 1 2 3 4 5 6</p> <p style="font-size: x-small; margin: 0;">PNO: Fast Trig: Free Run #Atten: 30 dB AvgHold: 10/10 TYPE M W M M M M M M M M</p> <p style="font-size: x-small; margin: 0;">IFGain:Low DET P 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 2.401 653 GHz </div> <div style="display: flex; justify-content: space-between; font-size: small;"> Ref 20.00 dBm -3.246 dBm </div> <div style="display: flex; justify-content: space-between; font-size: small; margin-top: 10px;"> Center 2.40200 GHz Span 25.00 MHz </div> <div style="display: flex; justify-content: space-between; font-size: x-small;"> #Res BW 3.0 MHz #VBW 8.0 MHz Sweep 1.067 ms (8001 pts) </div> <p style="font-size: x-small; margin-top: 5px;">MSG STATUS</p> </div> <table border="1" style="width: 100%; font-size: x-small; border-collapse: collapse;"> <tr><td>Frequency</td></tr> <tr><td>Auto Tune</td></tr> <tr><td>Center Freq 2.402000000 GHz</td></tr> <tr><td>Start Freq 2.389500000 GHz</td></tr> <tr><td>Stop Freq 2.414500000 GHz</td></tr> <tr><td>CF Step 2.500000 MHz Auto Man</td></tr> <tr><td>Freq Offset 0 Hz</td></tr> </table>	Frequency	Auto Tune	Center Freq 2.402000000 GHz	Start Freq 2.389500000 GHz	Stop Freq 2.414500000 GHz	CF Step 2.500000 MHz Auto Man	Freq Offset 0 Hz
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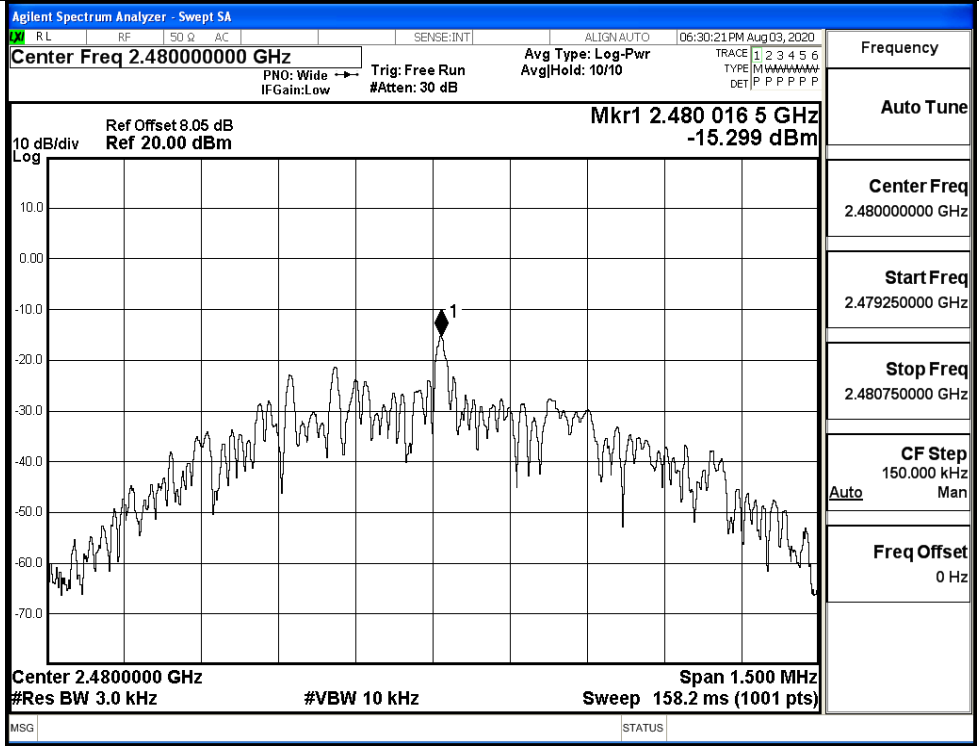
B.3 Maximum Power Spectral Density

Mode	Channel	PSD [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
BT LE	LCH	-15.002	8	PASS
BT LE	MCH	-14.897	8	PASS
BT LE	HCH	-15.299	8	PASS

Test Graphs



HCH

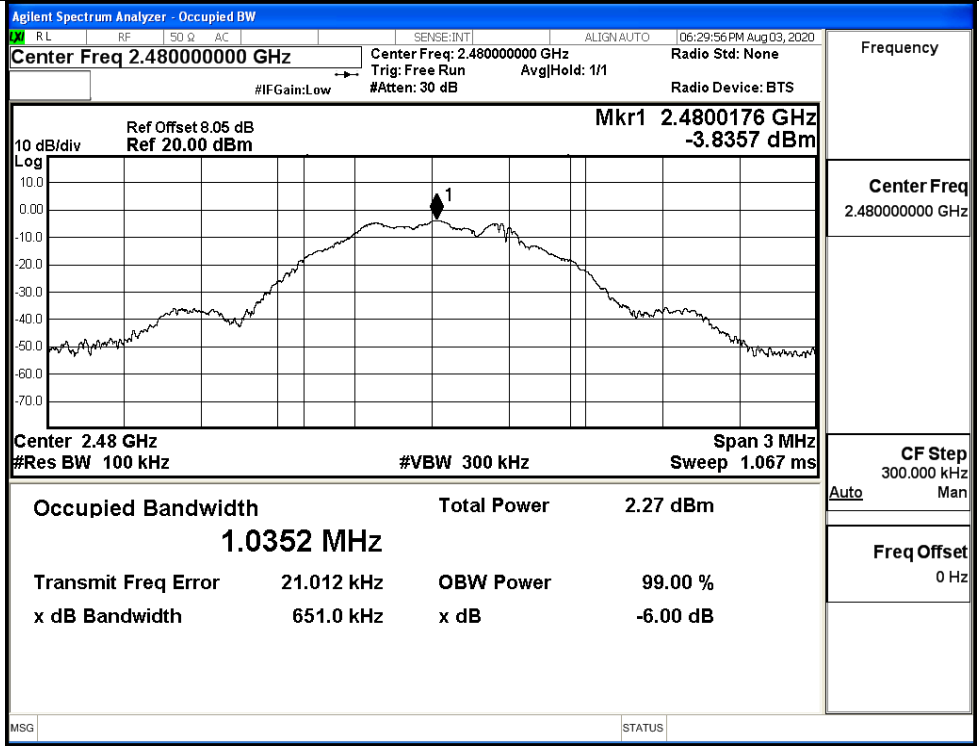


B.4 6dB Bandwidth

Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
BT LE	LCH	0.6550	≥0.5	PASS
BT LE	MCH	0.6526	≥0.5	PASS
BT LE	HCH	0.6510	≥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:INT ALIGN:AUTO 06:17:27 PM Aug 03, 2020</p> <p style="margin: 0;">Center Freq 2.402000000 GHz Center Freq: 2.402000000 GHz Radio Std: None Trig: Free Run AvgHold: >1/1 #IFGain:Low #Atten: 30 dB Radio Device: BTS</p> <div style="border: 1px solid black; padding: 2px;"> <p style="text-align: right; margin: 0;">Mkr1 2.4020173 GHz -3.4832 dBm</p> </div> <p style="font-size: small; margin: 0;">Center 2.402 GHz Span 3 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 1.067 ms</p> <table style="width: 100%; border-collapse: collapse; font-size: small;"> <tr> <td style="width: 33%;">Occupied Bandwidth</td> <td style="width: 33%;">Total Power</td> <td style="width: 33%;">2.55 dBm</td> </tr> <tr> <td style="text-align: center;">1.0399 MHz</td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>20.549 kHz</td> <td>OBW Power</td> </tr> <tr> <td>x dB Bandwidth</td> <td>655.0 kHz</td> <td>x dB</td> </tr> <tr> <td></td> <td></td> <td style="text-align: right;">99.00 %</td> </tr> <tr> <td></td> <td></td> <td style="text-align: right;">-6.00 dB</td> </tr> </table> <p style="font-size: x-small; margin: 0;">MSG STATUS</p> </div>	Occupied Bandwidth	Total Power	2.55 dBm	1.0399 MHz			Transmit Freq Error	20.549 kHz	OBW Power	x dB Bandwidth	655.0 kHz	x dB			99.00 %			-6.00 dB
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		99.00 %																	
		-6.00 dB																	

HCH



Frequency	Center Freq 2.48000000 GHz
CF Step	300.000 kHz Auto Man
Freq Offset	0 Hz

B.5 Occupied Bandwidth

Mode	Channel	Occupied Bandwidth [MHz]	Limit [MHz]	Verdict
BT LE	LCH	1.0007	≥0.5	PASS
BT LE	MCH	1.0029	≥0.5	PASS
BT LE	HCH	1.0012	≥0.5	PASS

Test Graphs

LCH	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.40200000 GHz</p> <p>Center Freq: 2.402000000 GHz Trig: Free Run #IFGain: Low #Atten: 30 dB</p> <p>Radio Std: None AvgHold: 10/10 Radio Device: BTS</p> <p>Ref Offset 8.05 dB Ref 20.00 dBm</p> <p>Center 2.402 GHz #Res BW 30 kHz #VBW 100 kHz Span 4 MHz Sweep 4.267 ms</p> <table border="1"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>2.71 dBm</td> </tr> <tr> <td colspan="3" style="text-align: center;">1.0007 MHz</td> </tr> <tr> <td>Transmit Freq Error</td> <td>28.161 kHz</td> <td>OBW Power 99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td>245.9 kHz</td> <td>x dB -6.00 dB</td> </tr> </table> <p>MSG STATUS</p>	Occupied Bandwidth	Total Power	2.71 dBm	1.0007 MHz			Transmit Freq Error	28.161 kHz	OBW Power 99.00 %	x dB Bandwidth	245.9 kHz	x dB -6.00 dB	<p>Frequency</p> <p>Center Freq 2.402000000 GHz</p> <p>CF Step 400.000 kHz Auto Man</p> <p>Freq Offset 0 Hz</p>
	Occupied Bandwidth	Total Power	2.71 dBm											
1.0007 MHz														
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MCH	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.44000000 GHz</p> <p>Center Freq: 2.440000000 GHz Trig: Free Run #IFGain: Low #Atten: 30 dB</p> <p>Radio Std: None AvgHold: 10/10 Radio Device: BTS</p> <p>Ref Offset 8.05 dB Ref 20.00 dBm</p> <p>Center 2.44 GHz #Res BW 30 kHz #VBW 100 kHz Span 4 MHz Sweep 4.267 ms</p> <table border="1"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>2.75 dBm</td> </tr> <tr> <td colspan="3" style="text-align: center;">1.0029 MHz</td> </tr> <tr> <td>Transmit Freq Error</td> <td>28.618 kHz</td> <td>OBW Power 99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td>247.0 kHz</td> <td>x dB -6.00 dB</td> </tr> </table> <p>MSG STATUS</p>	Occupied Bandwidth	Total Power	2.75 dBm	1.0029 MHz			Transmit Freq Error	28.618 kHz	OBW Power 99.00 %	x dB Bandwidth	247.0 kHz	x dB -6.00 dB	<p>Frequency</p> <p>Center Freq 2.440000000 GHz</p> <p>CF Step 400.000 kHz Auto Man</p> <p>Freq Offset 0 Hz</p>
	Occupied Bandwidth	Total Power	2.75 dBm											
1.0029 MHz														
Transmit Freq Error	28.618 kHz	OBW Power 99.00 %												
x dB Bandwidth	247.0 kHz	x dB -6.00 dB												

HCH

Agilent Spectrum Analyzer - Occupied BW

<input type="checkbox"/> RL	<input type="checkbox"/> RF	<input type="checkbox"/> 50 Ω	<input type="checkbox"/> AC		SENSE:INT	ALIGN:AUTO	06:16:28 PM Aug 03, 2020
Center Freq 2.480000000 GHz				Center Freq: 2.480000000 GHz		Radio Std: None	
				Trig: Free Run		AvgHold: 10/10	
				#IFGain:Low		#Atten: 30 dB	
				Radio Device: BTS			

10 dB/div
Log

Ref Offset 8.05 dB
Ref 20.00 dBm

Center 2.48 GHz	#VBW 100 kHz	Span 4 MHz
#Res BW 30 kHz	Sweep 4.267 ms	

Occupied Bandwidth	Total Power	2.32 dBm
1.0012 MHz		
Transmit Freq Error	29.620 kHz	OBW Power 99.00 %
x dB Bandwidth	246.1 kHz	x dB -6.00 dB

MSG
STATUS

Frequency

Center Freq

2.480000000 GHz

CF Step

400.000 kHz

Auto Man

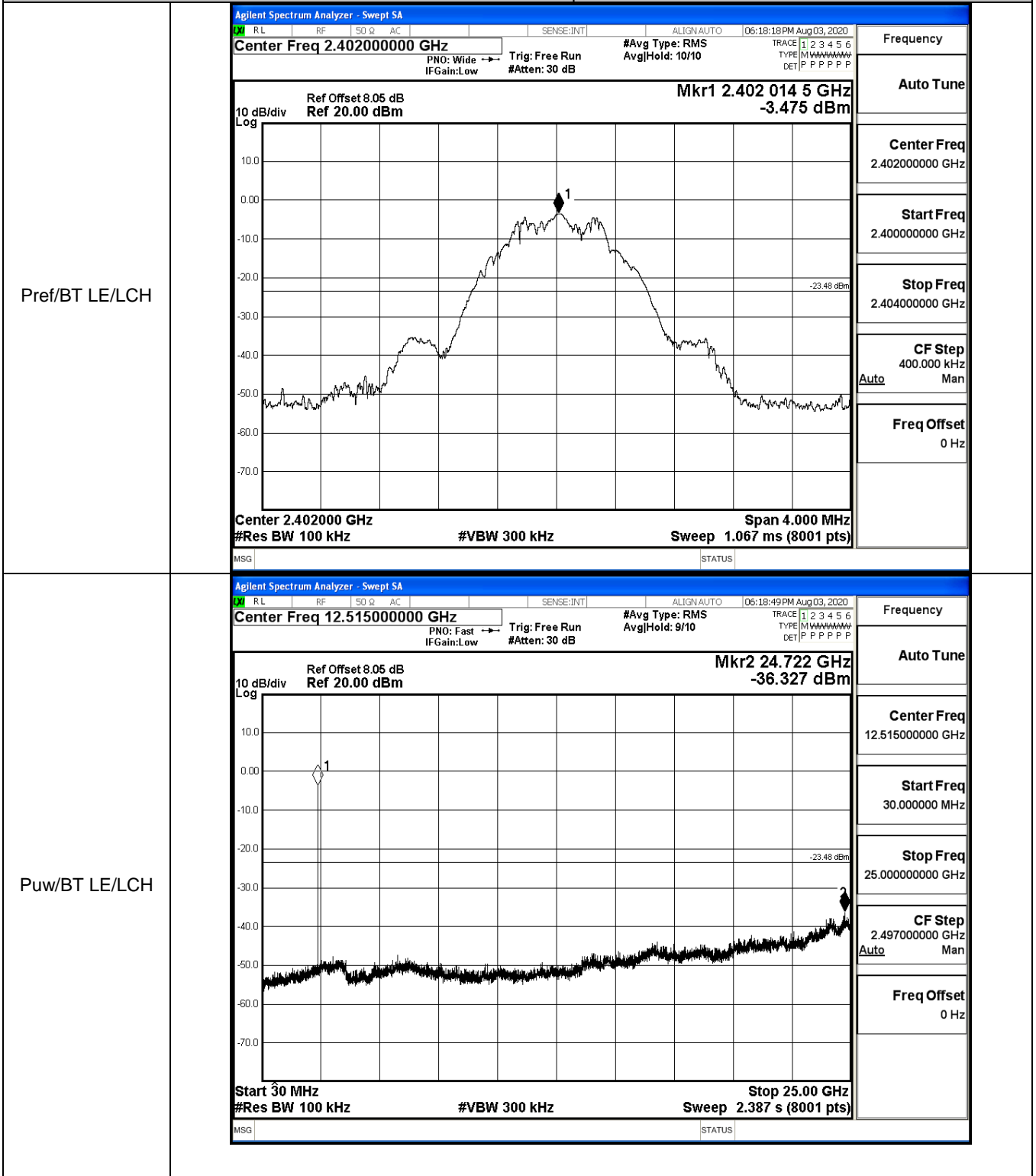
Freq Offset

0 Hz

B.6 RF Conducted Spurious Emissions

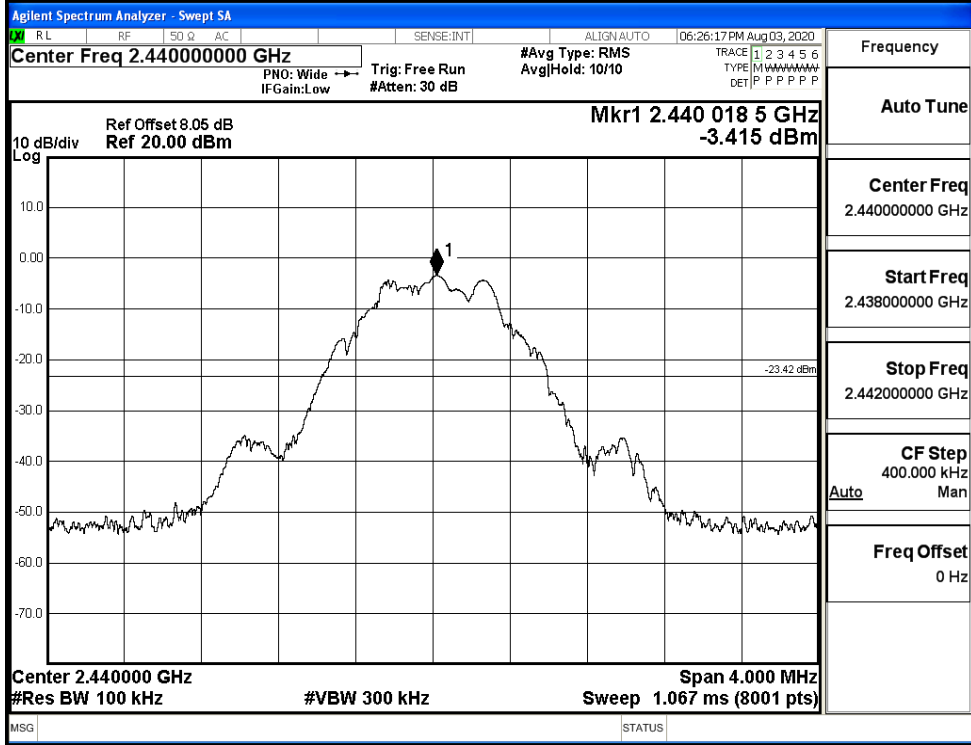
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	-3.475	-36.327	-23.475	PASS
BT LE	MCH	-3.415	-36.868	-23.415	PASS
BT LE	HCH	-3.858	-37.380	-23.858	PASS

BT LE_LCH_Graphs

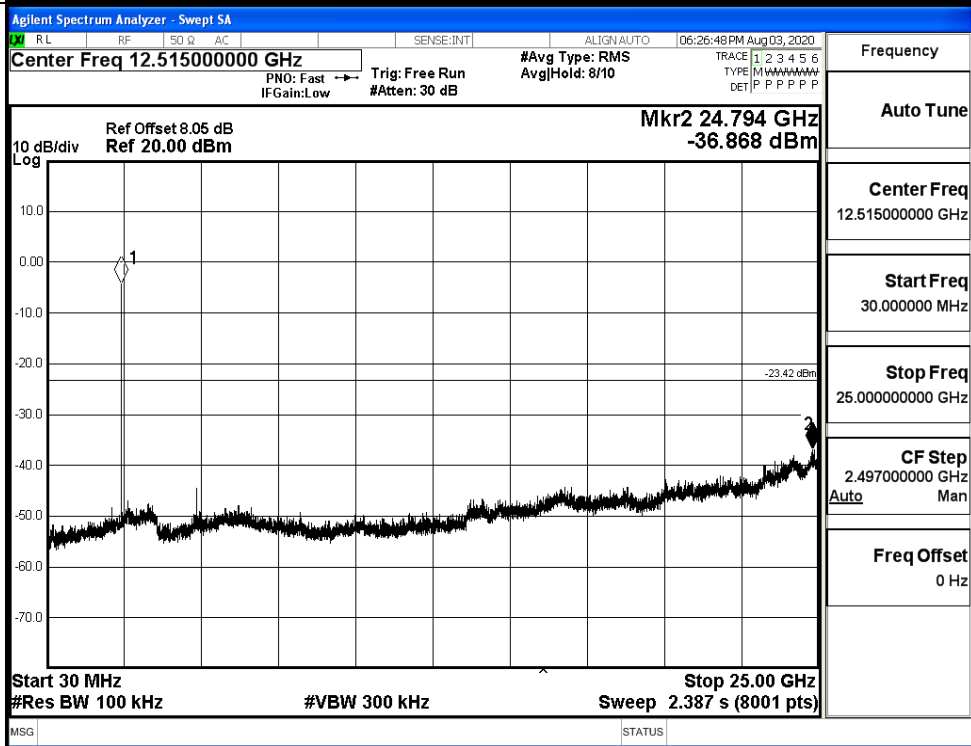


BT LE_MCH_Graphs

Pref/BT LE/MCH

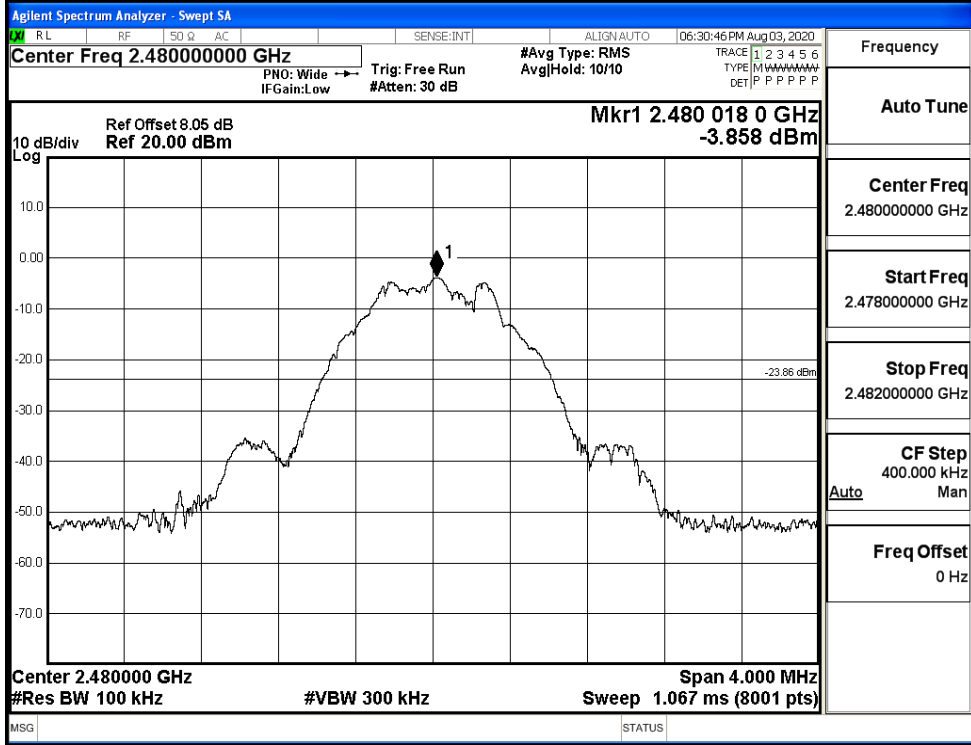


Puw/BT LE/MCH

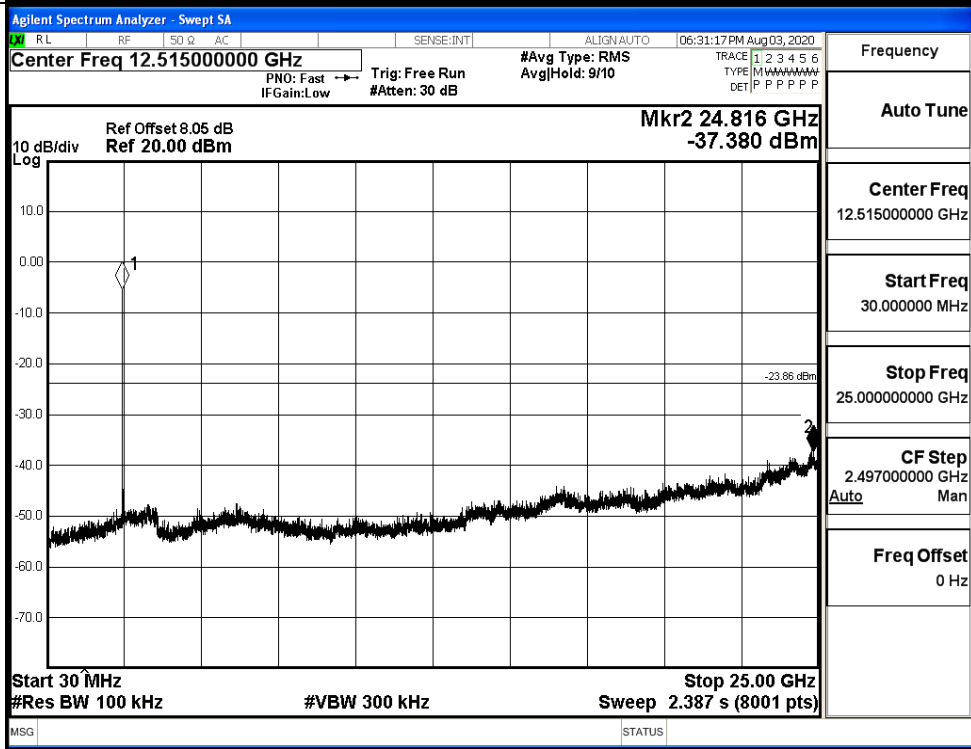


BT LE_HCH_Graphs

Pref/BT LE/HCH



Puw/BT LE/HCH



B.7 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	-3.473	-49.218	-23.47	PASS
BT LE	HCH	-3.736	-44.730	-23.74	PASS

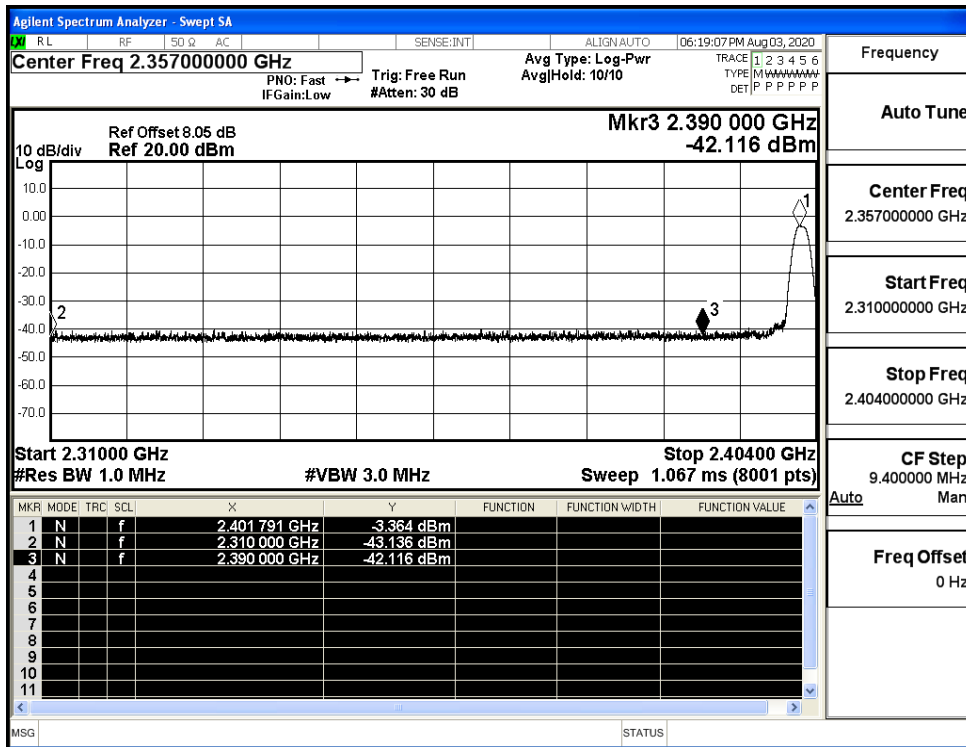
Test Graphs

LCH	<p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.35700000 GHz Mkr4 2.320 939 GHz -49.218 dBm Start 2.31000 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 9.067 ms (8001 pts) Stop 2.40400 GHz</p> <table border="1" style="font-size: small;"> <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>2.402 026 GHz</td><td>-3.473 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>-52.476 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>-53.434 dBm</td><td></td><td></td><td></td></tr> <tr><td>4</td><td>N</td><td>f</td><td></td><td>2.320 939 GHz</td><td>-49.218 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		2.402 026 GHz	-3.473 dBm				2	N	f		2.400 000 GHz	-52.476 dBm				3	N	f		2.390 000 GHz	-53.434 dBm				4	N	f		2.320 939 GHz	-49.218 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
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HCH	<p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.489000000 GHz Mkr4 2.483 731 00 GHz -44.730 dBm Start 2.47800 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.133 ms (8001 pts) Stop 2.50000 GHz</p> <table border="1" style="font-size: small;"> <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>2.480 029 50 GHz</td><td>-3.736 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>-49.950 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>-52.669 dBm</td><td></td><td></td><td></td></tr> <tr><td>4</td><td>N</td><td>f</td><td></td><td>2.483 731 00 GHz</td><td>-44.730 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		2.480 029 50 GHz	-3.736 dBm				2	N	f		2.483 500 00 GHz	-49.950 dBm				3	N	f		2.500 000 00 GHz	-52.669 dBm				4	N	f		2.483 731 00 GHz	-44.730 dBm				Frequency Auto Tune Center Freq 2.489000000 GHz Start Freq 2.478000000 GHz Stop Freq 2.500000000 GHz CF Step 2.200000 MHz Freq Offset 0 Hz
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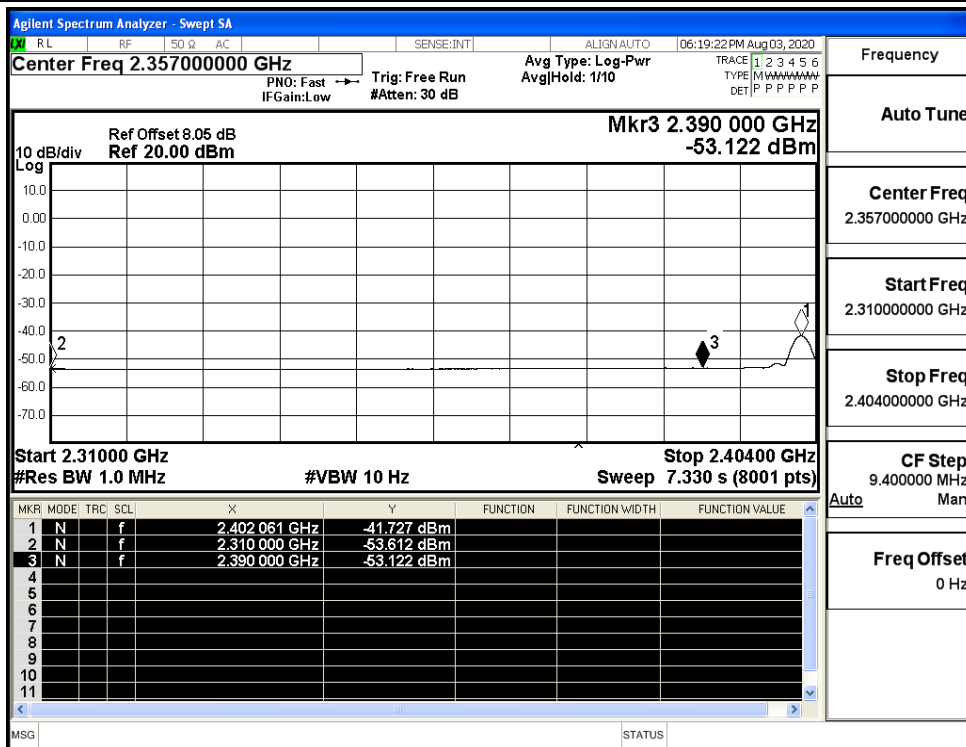
B.8 Restrict-band band-edge measurements

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	-43.14	2.0	0	52.12	PEAK	74	PASS
		Ant1	2310.0	-53.61	2.0	0	41.65	AV	54	PASS
		Ant1	2390.0	-42.12	2.0	0	53.14	PEAK	74	PASS
		Ant1	2390.0	-53.12	2.0	0	42.14	AV	54	PASS
	2480	Ant1	2483.5	-40.48	2.0	0	54.78	PEAK	74	PASS
		Ant1	2483.5	-51.75	2.0	0	43.50	AV	54	PASS
		Ant1	2500.0	-41.64	2.0	0	53.62	PEAK	74	PASS
		Ant1	2500.0	-52.55	2.0	0	42.71	AV	54	PASS

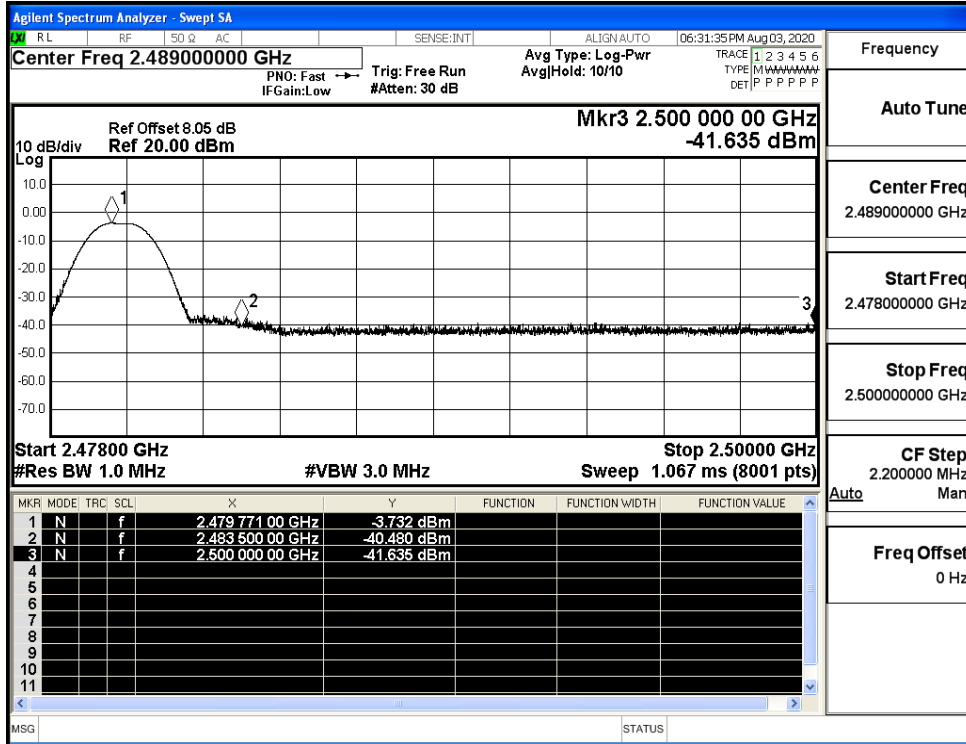
Restrict-band band-edge measurements_BT LE_2402_Ant1_PEAK



Restrict-band band-edge measurements_BT LE_2402_Ant1_AV

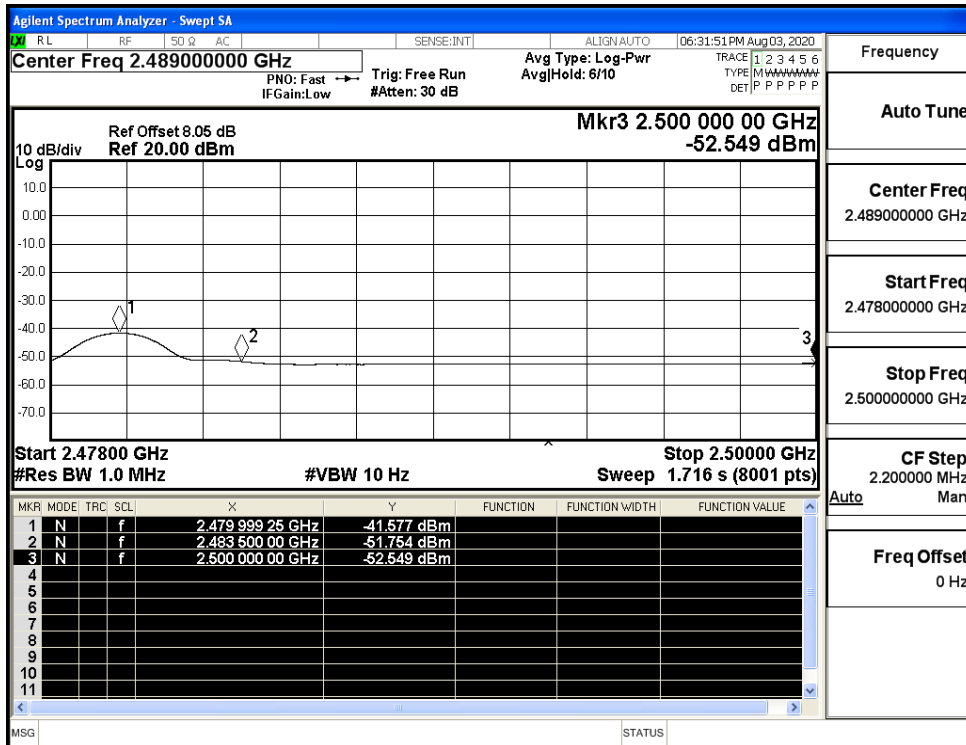


Restrict-band band-edge measurements_BT LE_2480_Ant1_PEAK



Frequency	
Auto Tune	
Center Freq	2.489000000 GHz
Start Freq	2.478000000 GHz
Stop Freq	2.500000000 GHz
CF Step	2.200000 MHz
Auto	Man
Freq Offset	0 Hz

Restrict-band band-edge measurements_BT LE_2480_Ant1_AV



Frequency	
Auto Tune	
Center Freq	2.489000000 GHz
Start Freq	2.478000000 GHz
Stop Freq	2.500000000 GHz
CF Step	2.200000 MHz
Auto	Man
Freq Offset	0 Hz