

Appendix B

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

Product Name: FreeOne



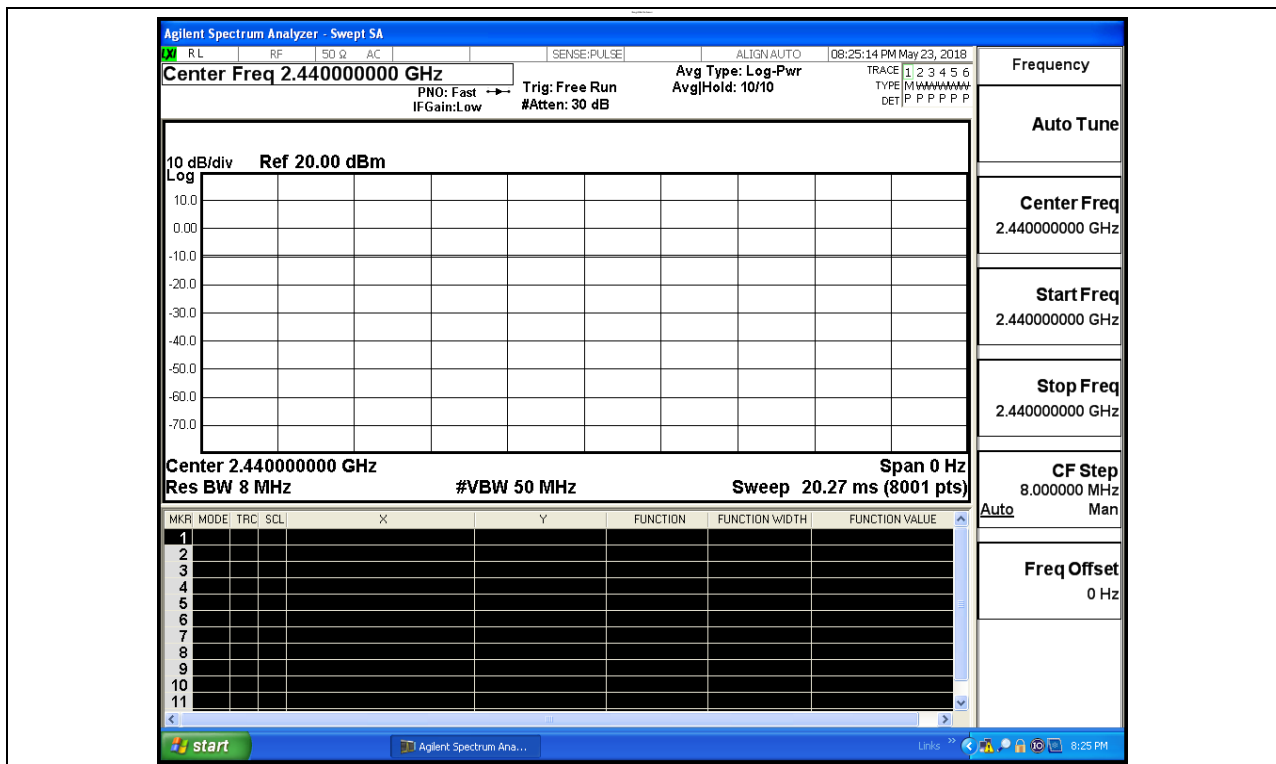
Test Model: JW600

Environmental Conditions

Temperature:	23.6 °C
Relative Humidity:	51.3%
ATM Pressure:	100.0 kPa
Test Engineer:	WANGCHUANG
Supervised by:	Jayden.Zhuo

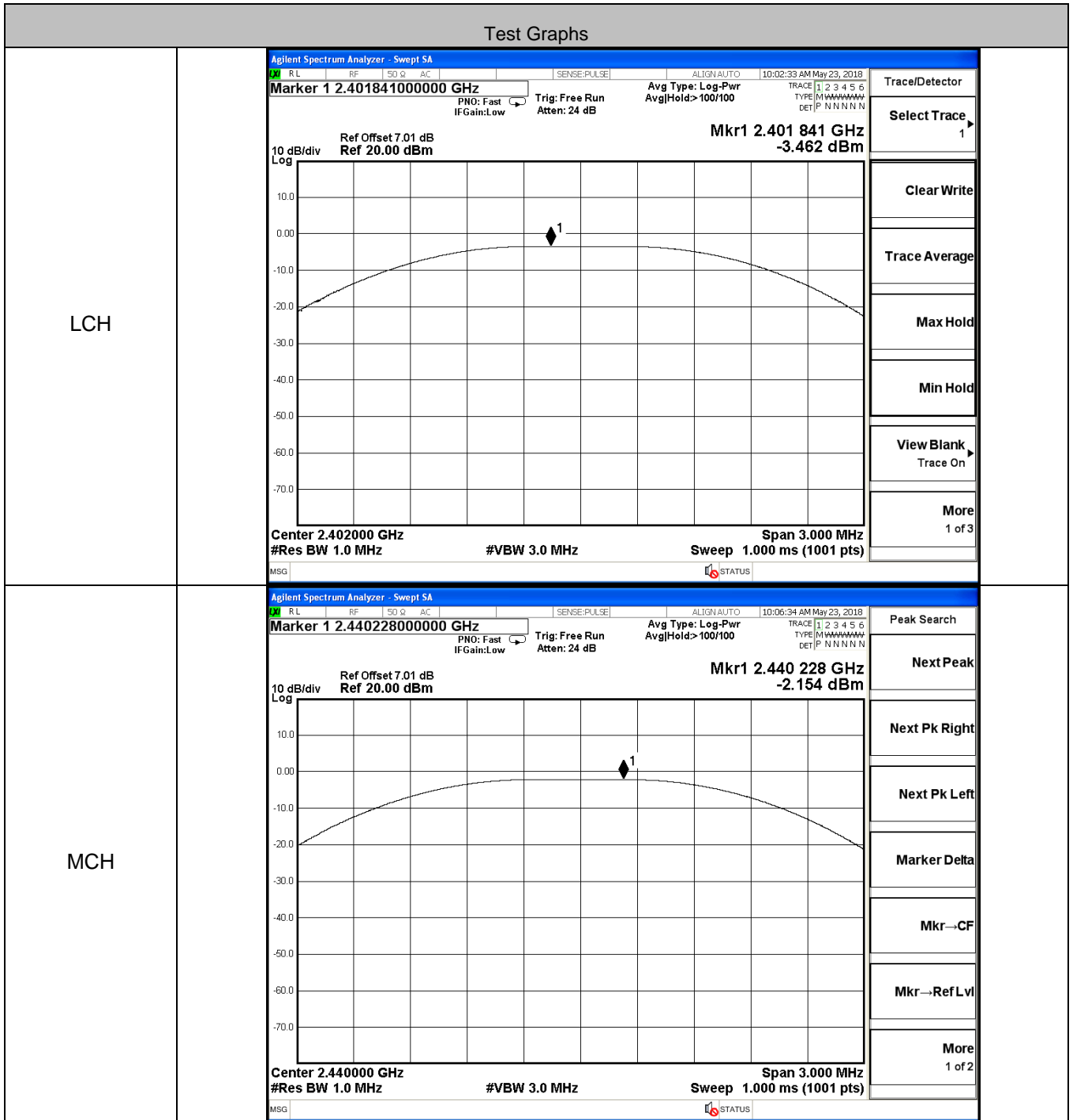
B.1 Duty Cycle

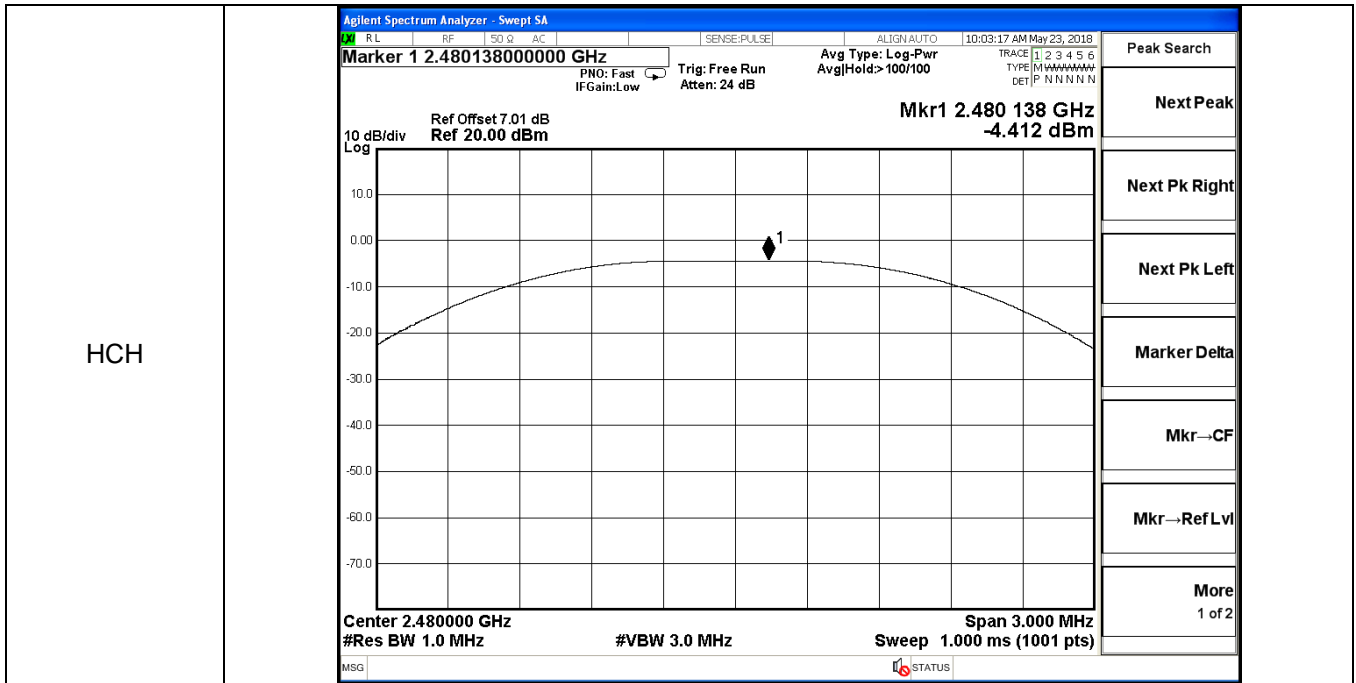
Test Mode	Test Channel	Ant	Duty Cycle[%]	Verdict
BT LE	2440	Ant1	100	PASS



B.2 Maximum Conducted Peak Output Power

Mode	Channel	Conduct Peak Power[dBm]	Limit [dBm]	Verdict
BT LE	LCH	-3.462	30	PASS
BT LE	MCH	-2.154	30	PASS
BT LE	HCH	-4.412	30	PASS

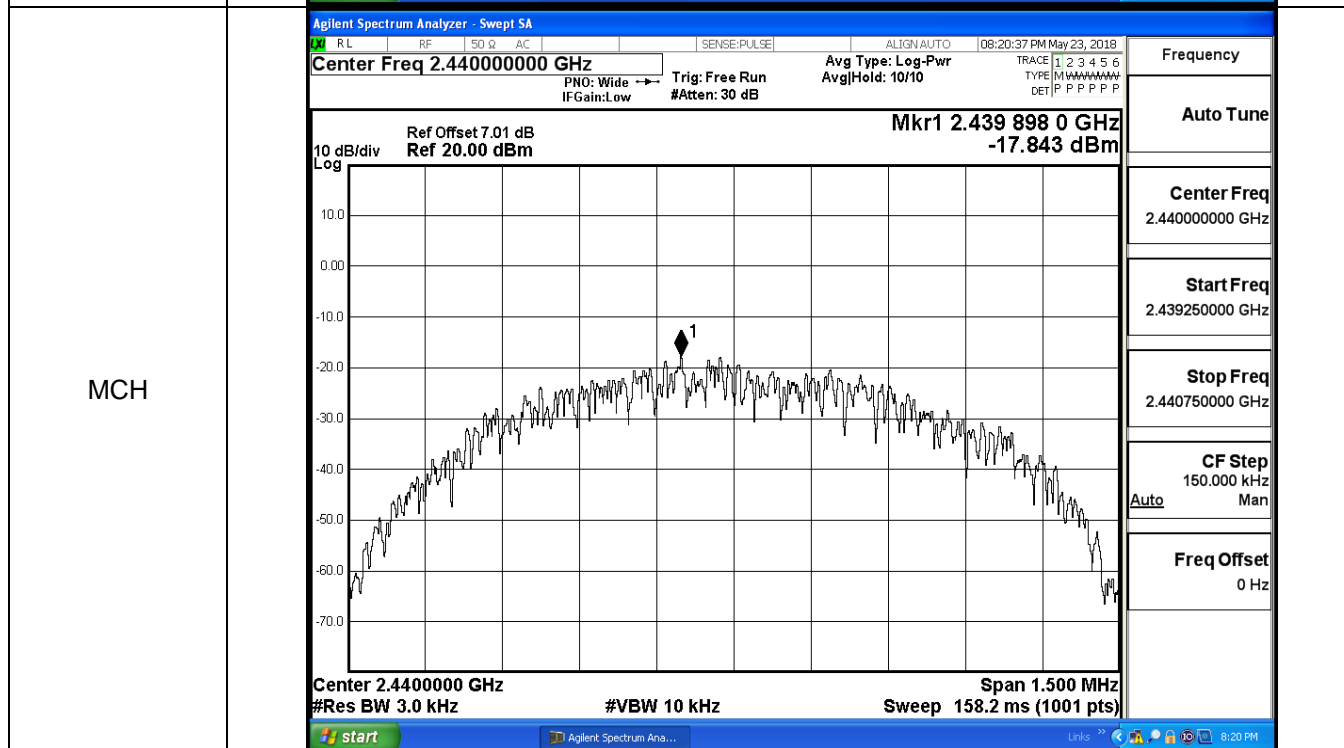
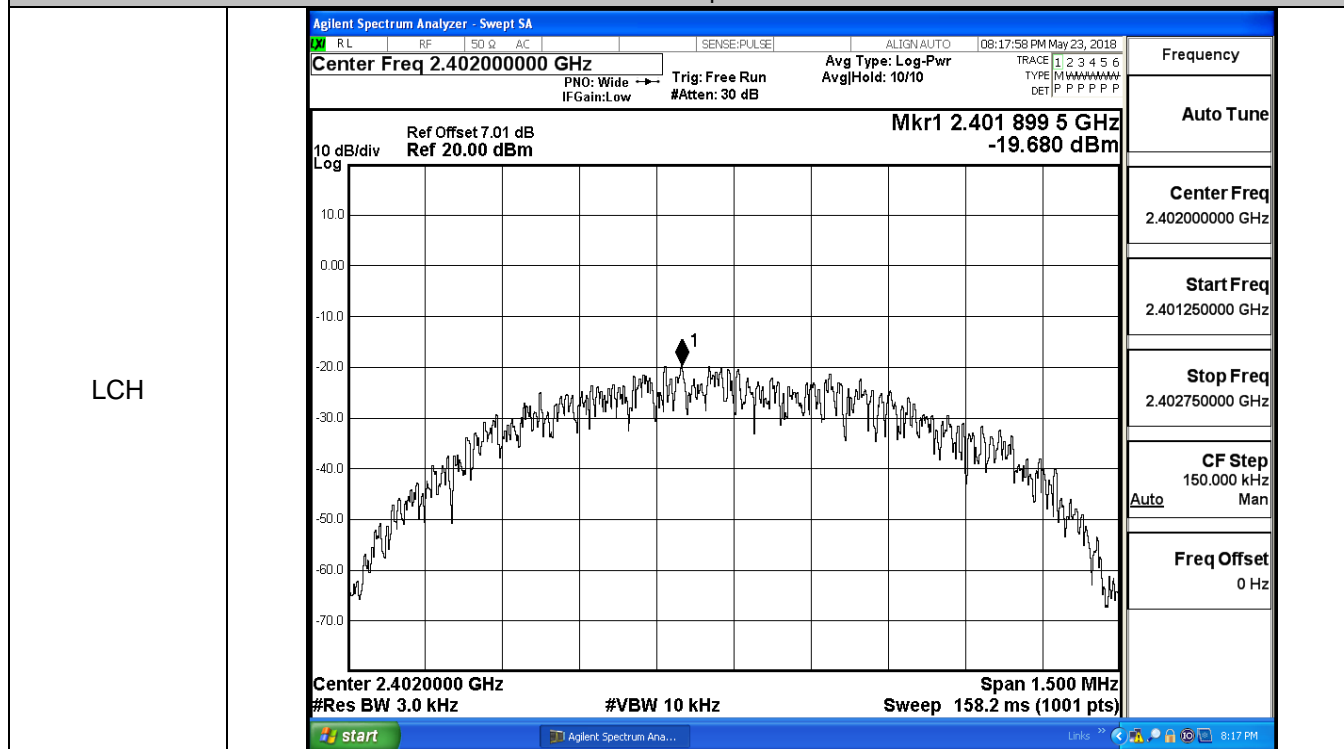


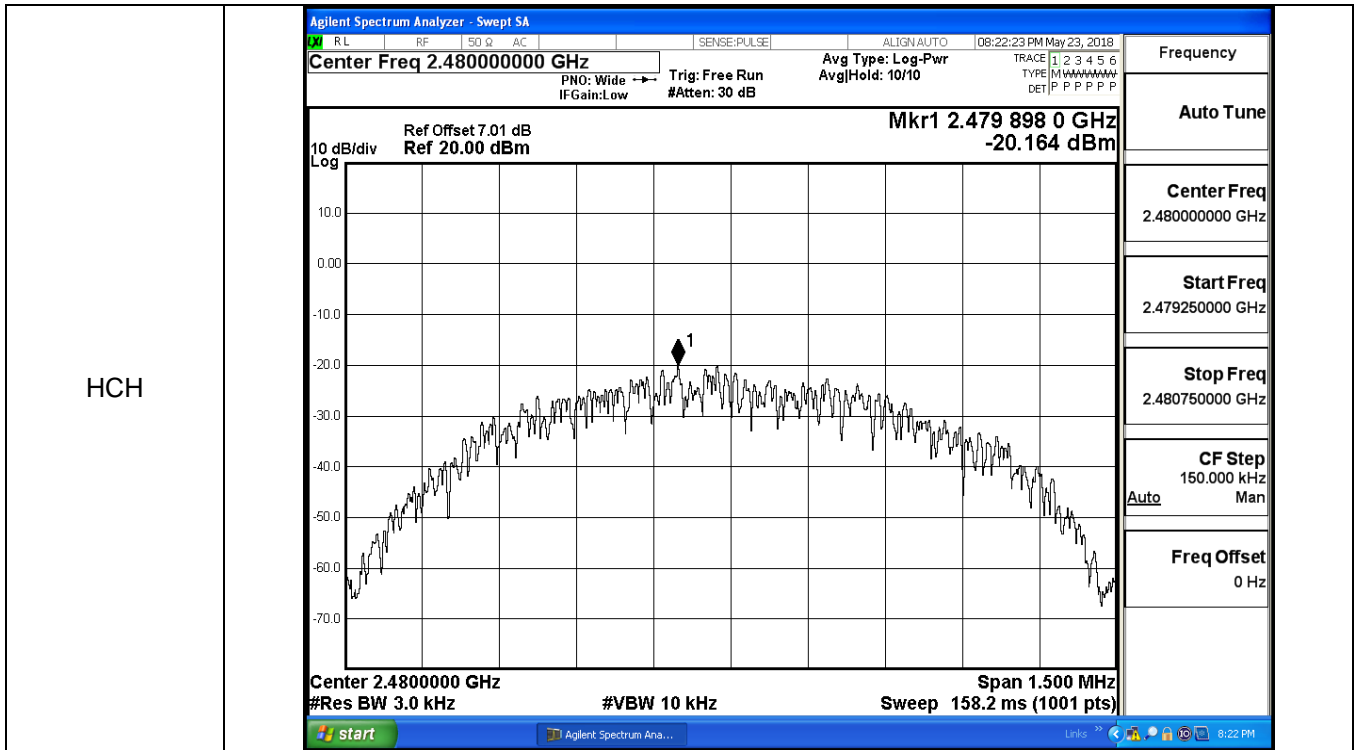


B.3 Maximum Power Spectral Density

Mode	Channel	PSD [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
BT LE	LCH	-19.680	8	PASS
BT LE	MCH	-17.843	8	PASS
BT LE	HCH	-20.164	8	PASS

Test Graphs

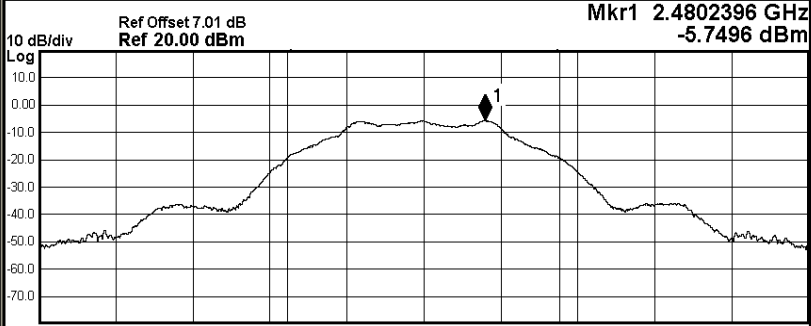




B.4 6dB Bandwidth

Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
BT LE	LCH	0.6992	≥0.5	PASS
BT LE	MCH	0.6954	≥0.5	PASS
BT LE	HCH	0.6824	≥0.5	PASS

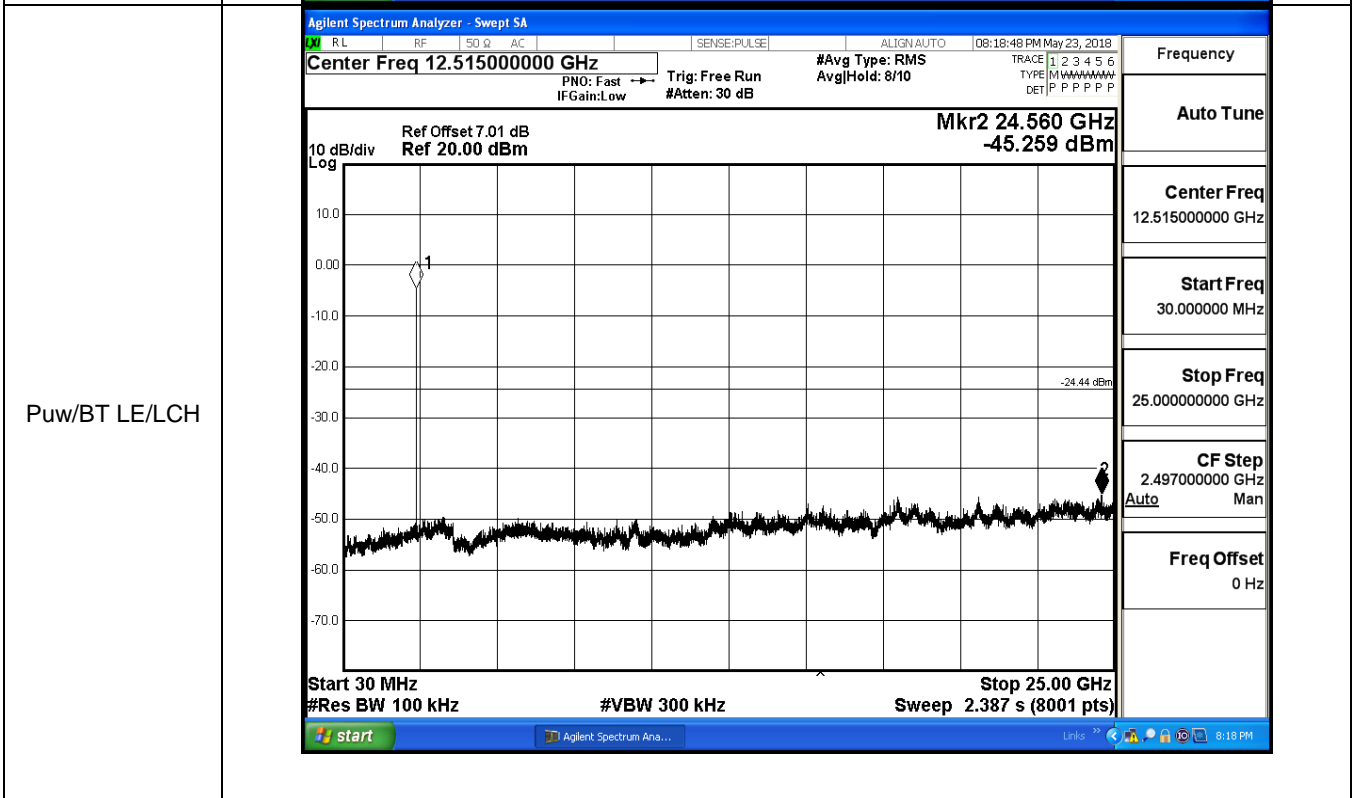
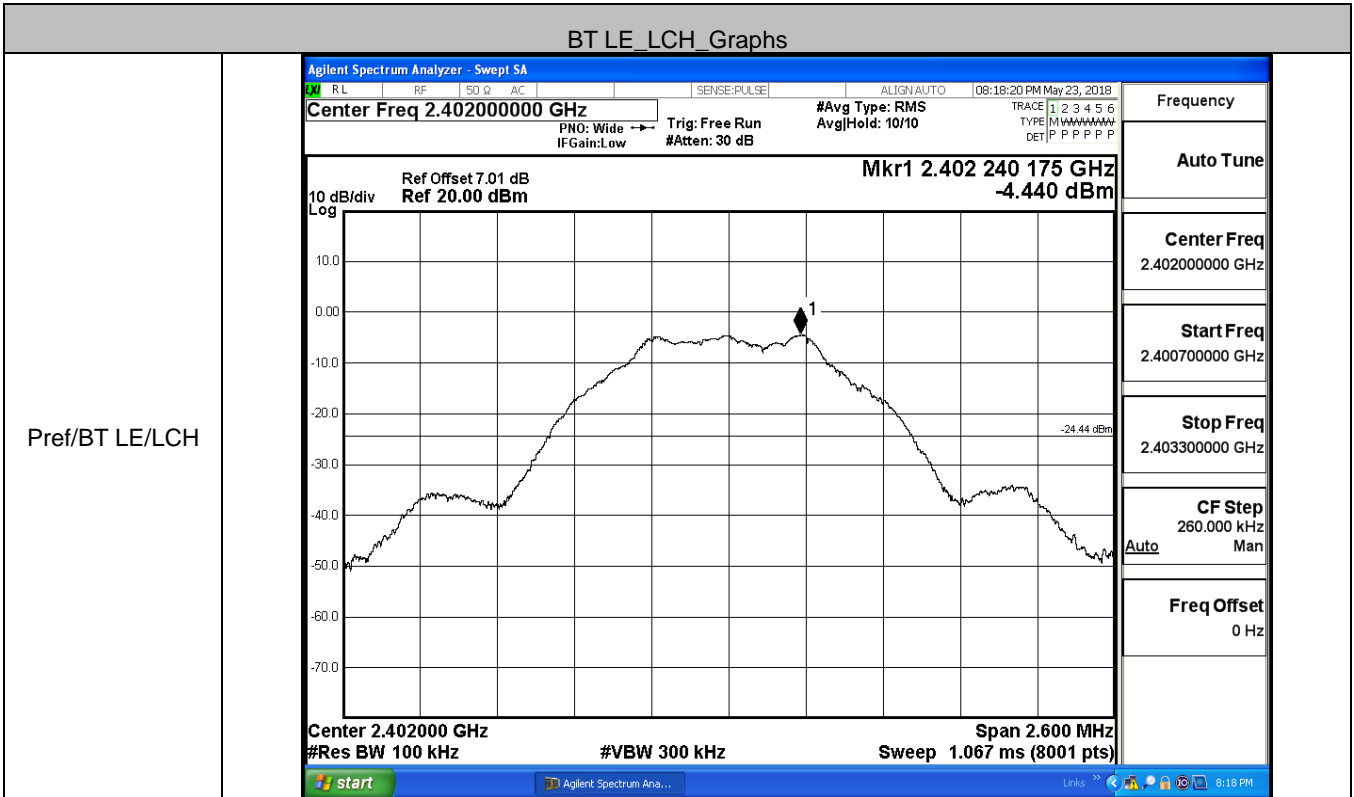
Test Graphs																	
LCH	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;">Agilent Spectrum Analyzer - Occupied BW</p> <p style="font-size: small; margin: 0;">RL RF 50 Ω AC SENSE:PULSE ALIGN:AUTO 08:17:34 PM May 23, 2018</p> <p style="margin: 0;">Center 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="display: flex; justify-content: space-between;"> <div style="font-size: x-small;"> 10 dB/div Log Ref Offset 7.01 dB Ref 20.00 dBm </div> <div style="text-align: right;"> Mkr1 2.402237 GHz -4.4407 dBm </div> </div> <div style="display: flex; justify-content: space-between; font-size: x-small;"> <div>Center 2.402 GHz #Res BW 100 kHz</div> <div>#VBW 300 kHz</div> <div>Span 3 MHz Sweep 1.067 ms</div> </div> <table style="width: 100%; font-size: x-small; margin-top: 5px;"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td colspan="2">2.64 dBm</td> </tr> <tr> <td colspan="4" style="text-align: center;">1.0595 MHz</td> </tr> <tr> <td>Transmit Freq Error</td> <td>4.218 kHz</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td>699.2 kHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> </table> <p style="font-size: x-small; margin-top: 5px;">start Agilent Spectrum Ana... Links 8:17 PM</p> </div>	Occupied Bandwidth	Total Power	2.64 dBm		1.0595 MHz				Transmit Freq Error	4.218 kHz	OBW Power	99.00 %	x dB Bandwidth	699.2 kHz	x dB	-6.00 dB
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MCH	<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 08:20:13 PM May 23, 2018</p> <p style="margin: 0;">Center Freq: 2.440000000 GHz Center Freq: 2.440000000 GHz Radio Std: None Trig: Free Run AvgHold: >1/1 #IFGain: Low #Atten: 30 dB Radio Device: BTS</p> <div style="display: flex; justify-content: space-between;"> <div style="font-size: x-small;"> 10 dB/div Log Ref Offset 7.01 dB Ref 20.00 dBm </div> <div style="text-align: right;"> Mkr1 2.44024 GHz -3.4400 dBm </div> </div> <div style="display: flex; justify-content: space-between; font-size: x-small;"> <div>Center 2.44 GHz #Res BW 100 kHz</div> <div>#VBW 300 kHz</div> <div>Span 3 MHz Sweep 1.067 ms</div> </div> <table style="width: 100%; font-size: x-small; margin-top: 5px;"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td colspan="2">3.68 dBm</td> </tr> <tr> <td colspan="4" style="text-align: center;">1.0600 MHz</td> </tr> <tr> <td>Transmit Freq Error</td> <td>2.662 kHz</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td>695.4 kHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> </table> <p style="font-size: x-small; margin-top: 5px;">start Agilent Spectrum Ana... Links 8:20 PM</p> </div>	Occupied Bandwidth	Total Power	3.68 dBm		1.0600 MHz				Transmit Freq Error	2.662 kHz	OBW Power	99.00 %	x dB Bandwidth	695.4 kHz	x dB	-6.00 dB
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1.0600 MHz																	
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x dB Bandwidth	695.4 kHz	x dB	-6.00 dB														

HCH	Agilent Spectrum Analyzer - Occupied BW														
	RL RF 50 Ω AC SENSE:PULSE ALIGN:AUTO 08:21:59 PM May 23, 2018	Center Freq: 2.480000000 GHz Radio Std: None													
	Center Freq: 2.480000000 GHz Trig: Free Run AvgHold: 1/1	Radio Device: BTS													
	#IFGain:Low #Atten: 30 dB														
															
Center 2.48 GHz Span 3 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 1.067 ms															
<table border="1"><tr><td>Occupied Bandwidth</td><td>Total Power</td><td>1.38 dBm</td></tr><tr><td>1.0539 MHz</td><td></td><td></td></tr><tr><td>Transmit Freq Error</td><td>1.086 kHz</td><td>OBW Power</td><td>99.00 %</td></tr><tr><td>x dB Bandwidth</td><td>682.4 kHz</td><td>x dB</td><td>-6.00 dB</td></tr></table>		Occupied Bandwidth	Total Power	1.38 dBm	1.0539 MHz			Transmit Freq Error	1.086 kHz	OBW Power	99.00 %	x dB Bandwidth	682.4 kHz	x dB	-6.00 dB
Occupied Bandwidth	Total Power	1.38 dBm													
1.0539 MHz															
Transmit Freq Error	1.086 kHz	OBW Power	99.00 %												
x dB Bandwidth	682.4 kHz	x dB	-6.00 dB												
<p>start Agilent Spectrum Ana... 8:22 PM</p>															

B.5 RF Conducted Spurious Emissions

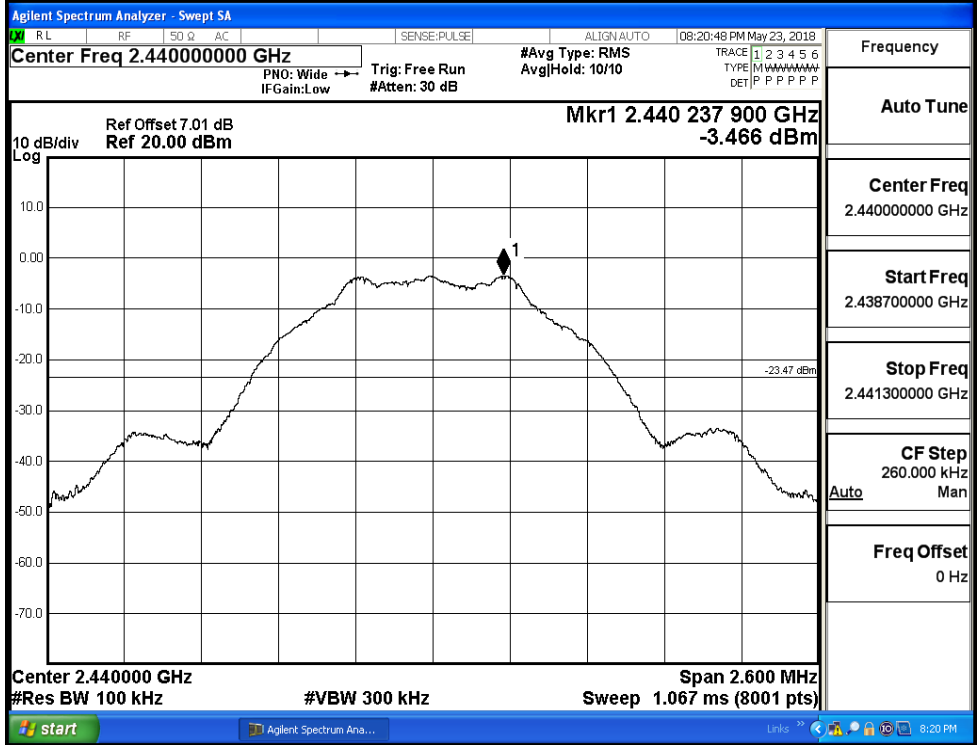
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	-4.44	-45.259	-24.440	PASS
BT LE	MCH	-3.466	-45.585	-23.466	PASS
BT LE	HCH	-5.778	-45.678	-25.778	PASS

BT LE_LCH_Graphs

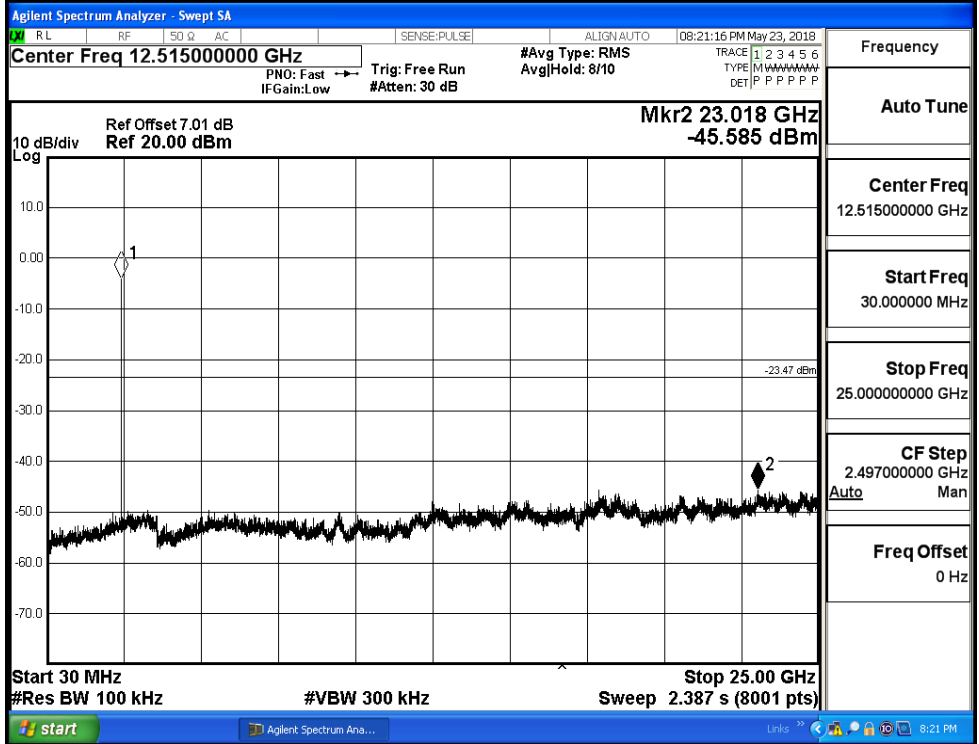


BT LE_MCH_Graphs

Pref/BT LE/MCH

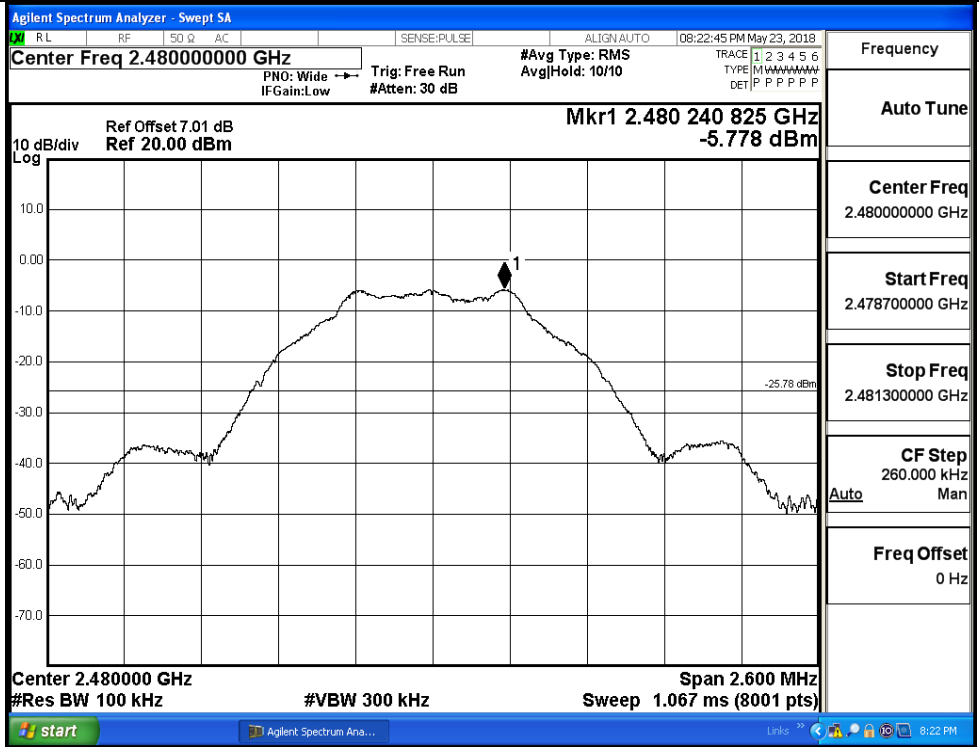


Puw/BT LE/MCH

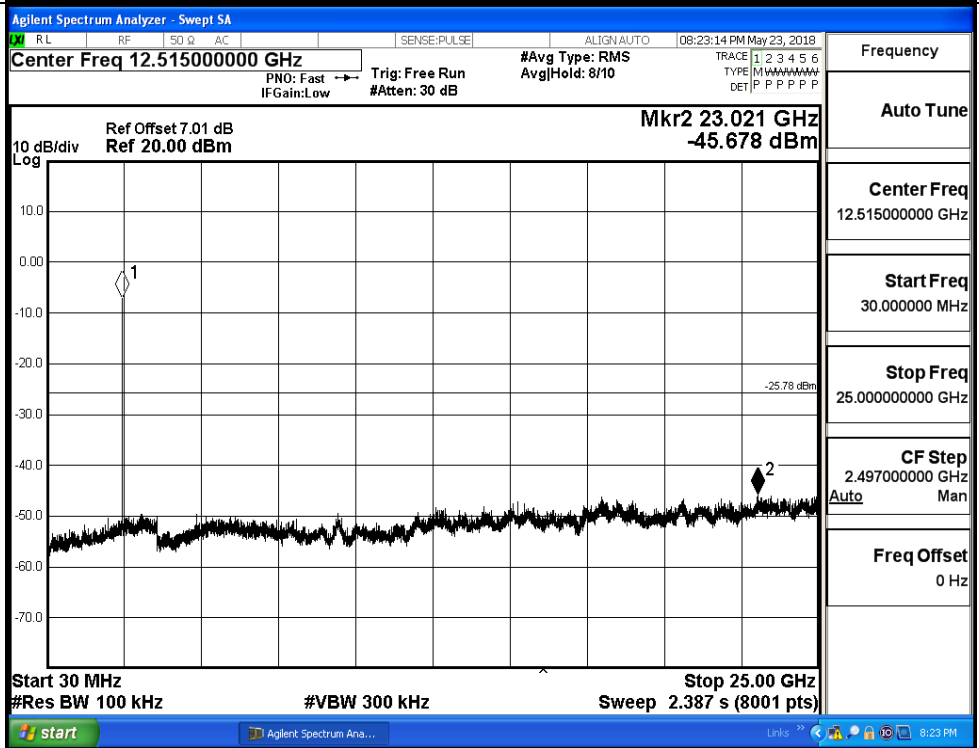


BT LE_HCH_Graphs

Pref/BT LE/HCH



Puw/BT LE/HCH



B.6 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	-4.221	-51.189	-24.22	PASS
BT LE	HCH	-5.586	-50.501	-25.59	PASS

Test Graphs

LCH

Agilent Spectrum Analyzer - Swept SA
 Center Freq 2.35700000 GHz
 Ref Offset 7.01 dB
 Ref 20.00 dBm
 Mkr4 2.325 111 GHz
 -51.189 dBm
 Start 2.31000 GHz
 #Res BW 100 kHz
 #VBW 300 kHz
 Stop 2.40400 GHz
 Sweep 9.067 ms (8001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f		2.402 226 GHz	-4.221 dBm			
2	N	f		2.400 000 GHz	-53.116 dBm			
3	N	f		2.390 000 GHz	-53.965 dBm			
4	N	f		2.325 111 GHz	-51.189 dBm			

Frequency

Auto Tune

Center Freq
2.35700000 GHz

Start Freq
2.31000000 GHz

Stop Freq
2.40400000 GHz

CF Step
9.400000 MHz

Freq Offset
0 Hz

HCH

Agilent Spectrum Analyzer - Swept SA
 Center Freq 2.48900000 GHz
 Ref Offset 7.01 dB
 Ref 20.00 dBm
 Mkr4 2.497 079 50 GHz
 -50.501 dBm
 Start 2.47800 GHz
 #Res BW 100 kHz
 #VBW 300 kHz
 Stop 2.50000 GHz
 Sweep 2.133 ms (8001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f		2.480 246 75 GHz	-5.586 dBm			
2	N	f		2.483 500 00 GHz	-54.795 dBm			
3	N	f		2.500 000 00 GHz	-56.105 dBm			
4	N	f		2.497 079 50 GHz	-50.501 dBm			

Frequency

Auto Tune

Center Freq
2.48900000 GHz

Start Freq
2.47800000 GHz

Stop Freq
2.50000000 GHz

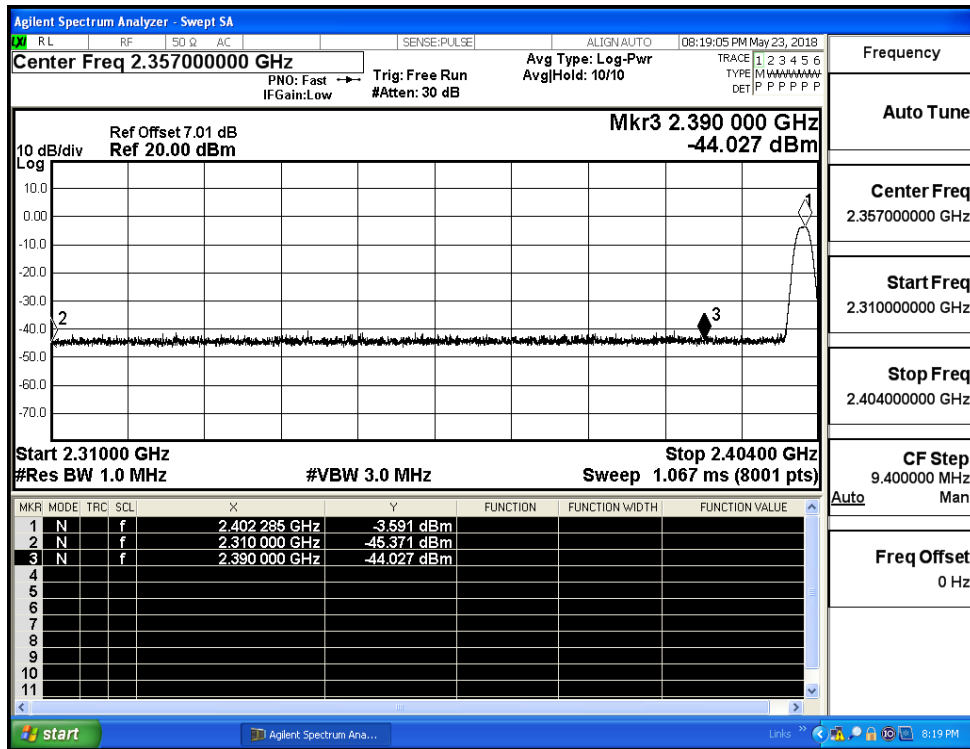
CF Step
2.200000 MHz

Freq Offset
0 Hz

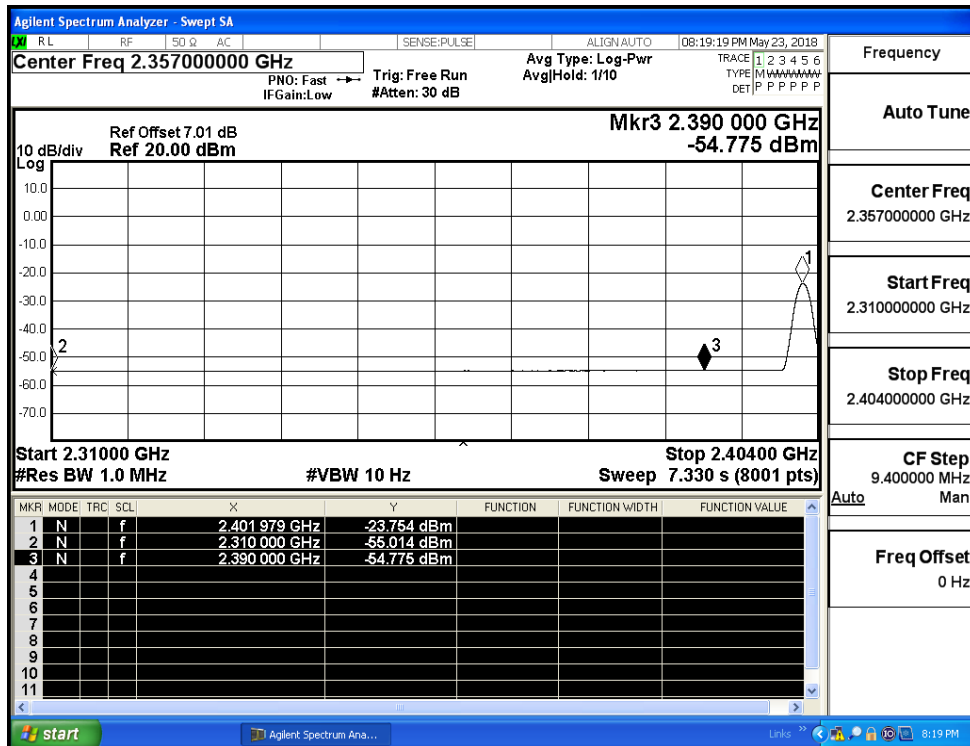
B.7 Restrict-band band-edge measurements

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	-45.37	2.0	0	51.86	PEAK	74	PASS
		Ant1	2310.0	-55.01	2.0	0	42.21	AV	54	PASS
		Ant1	2390.0	-44.03	2.0	0	53.20	PEAK	74	PASS
		Ant1	2390.0	-54.78	2.0	0	42.45	AV	54	PASS
	2480	Ant1	2483.5	-44.86	2.0	0	52.37	PEAK	74	PASS
		Ant1	2483.5	-54.51	2.0	0	42.72	AV	54	PASS
		Ant1	2500.0	-44.00	2.0	0	53.23	PEAK	74	PASS
		Ant1	2500.0	-54.35	2.0	0	42.88	AV	54	PASS

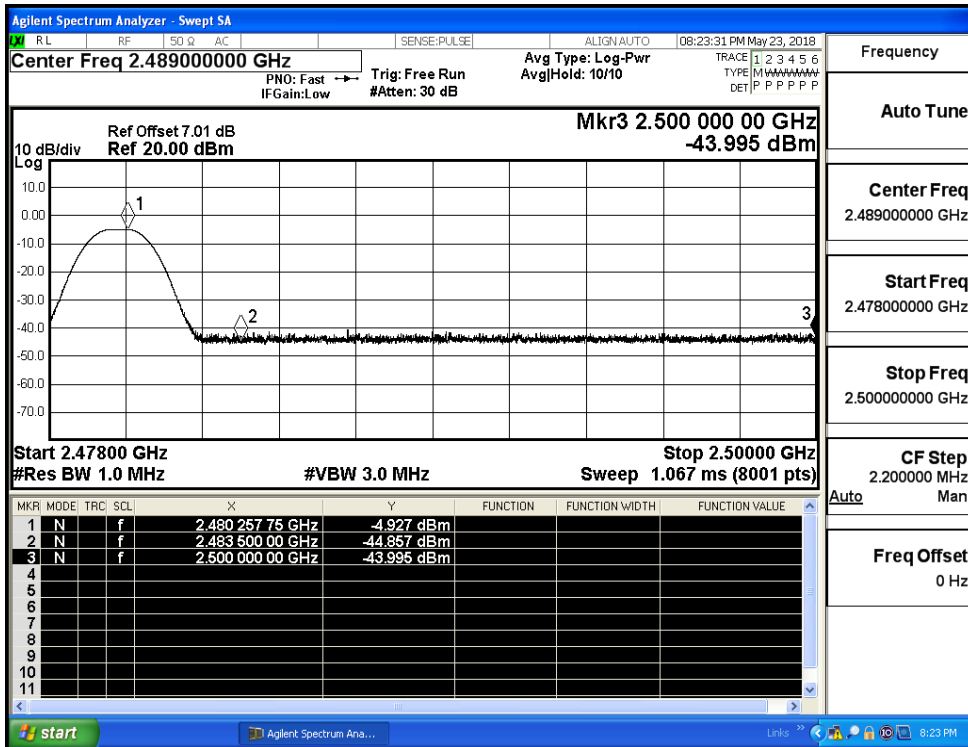
Restrict-band band-edge measurements_BT LE_2402_Ant1_PEAK



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

