

Appendix A

RF Test Data for BT V4.0(BDR/EDR) (Conducted Measurement)

Product Name: Desktop UHF Reader

Trade Mark: Chainway

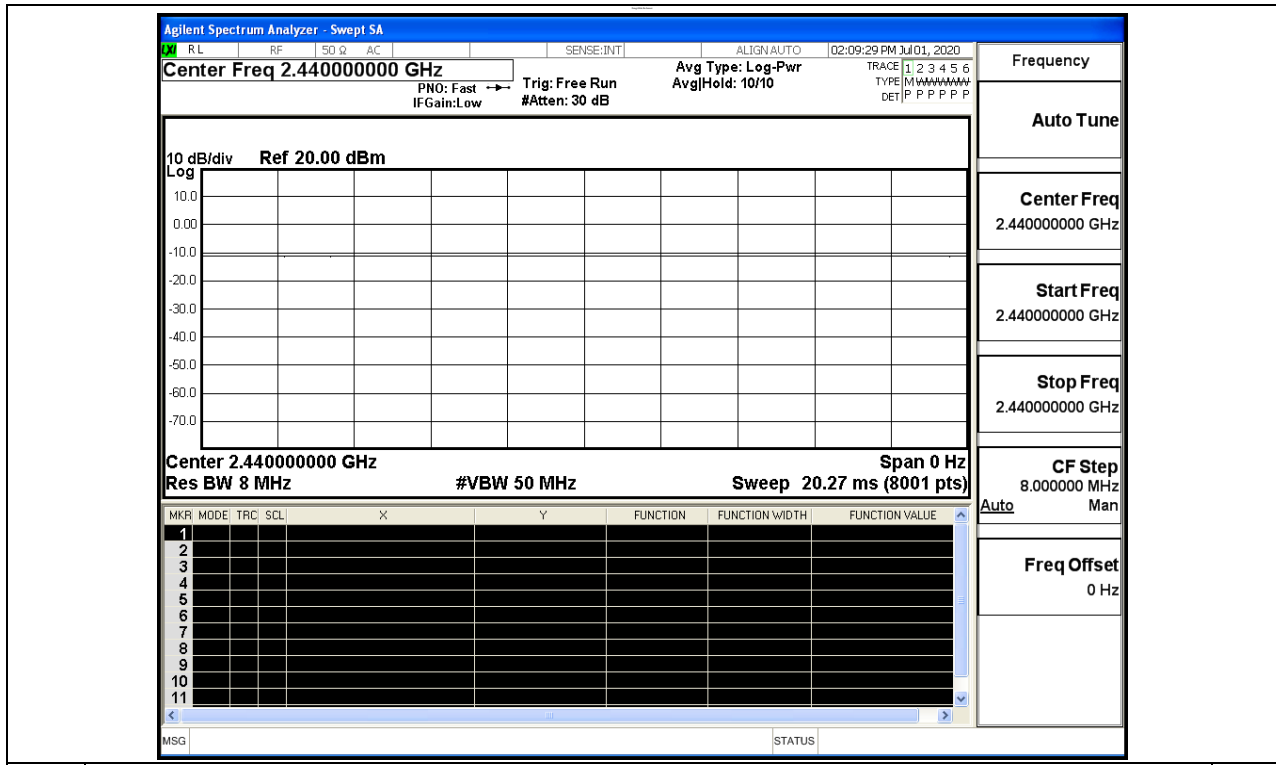
Test Model: R3

Environmental Conditions

Temperature:	22.5°C
Relative Humidity:	53.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Li Huan
Supervised by:	Tom Liu

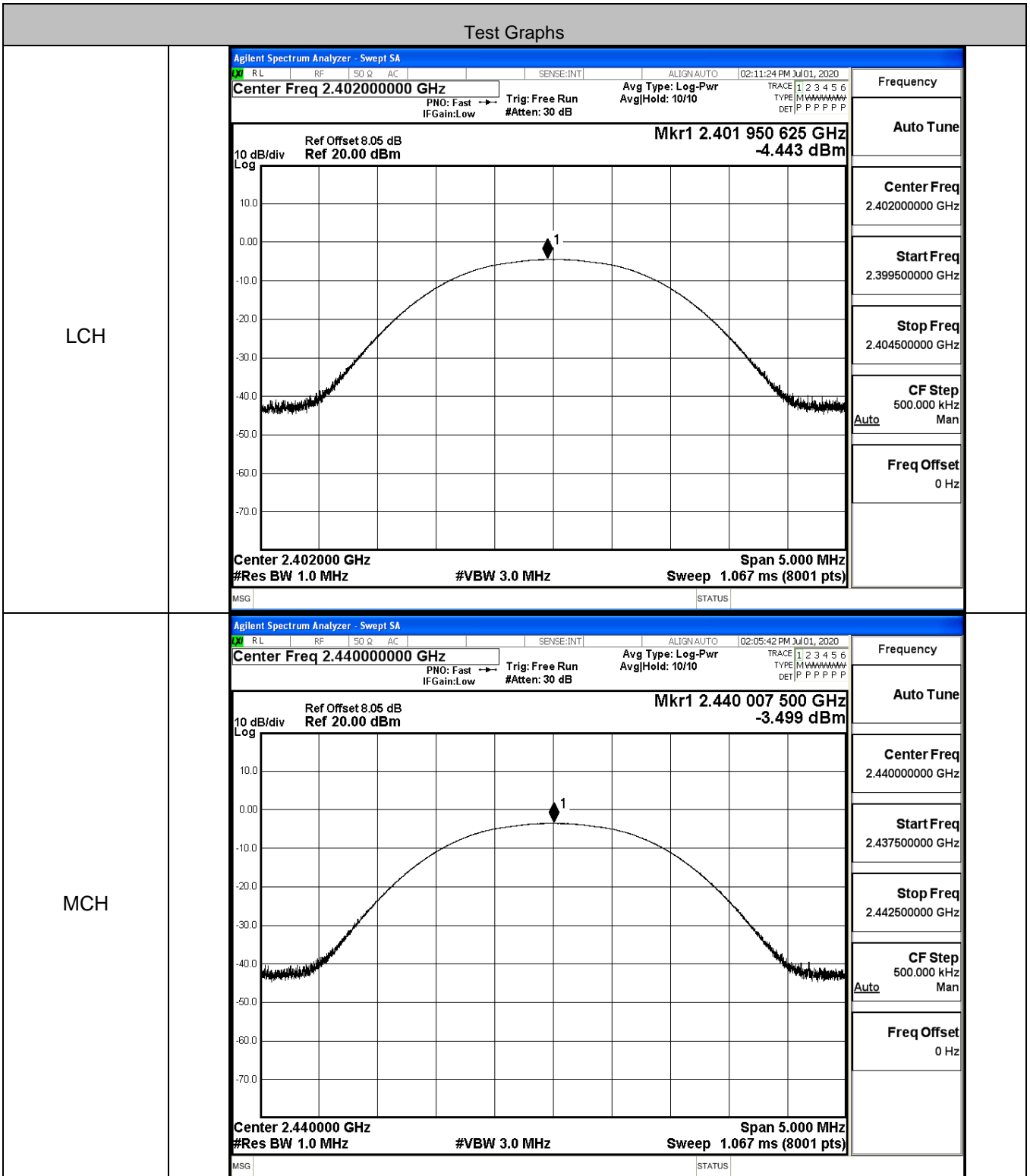
A.1 Duty Cycle

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

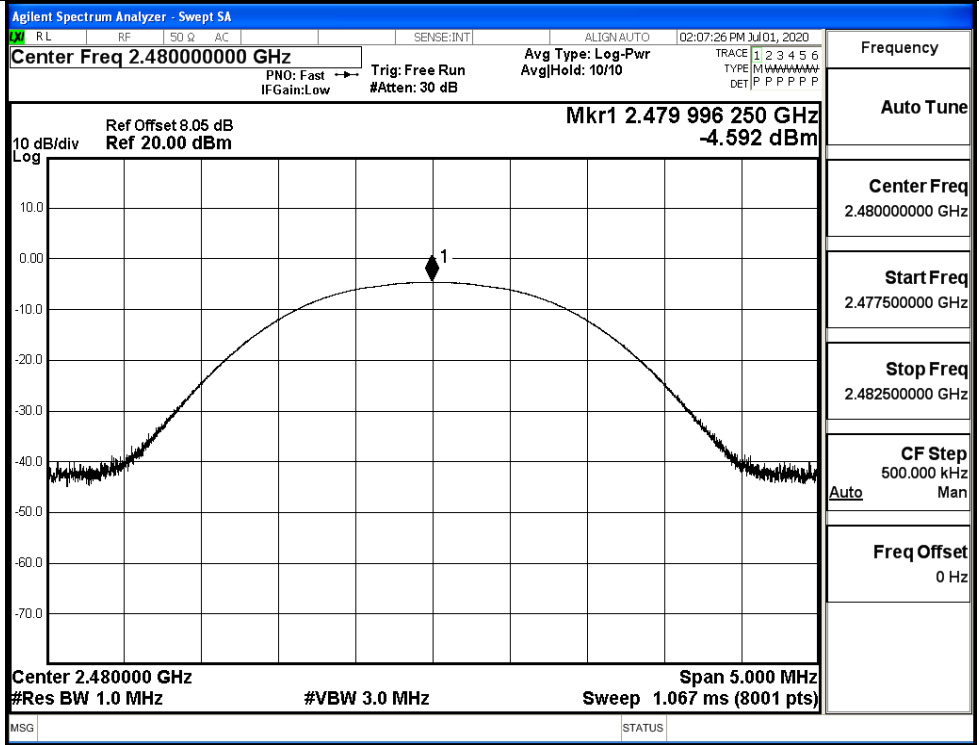


A.2 Maximum Conducted Peak Output Power

Mode	Channel	Conduct Peak Power[dBm]	Limit [dBm]	Verdict
BT LE	LCH	-4.443	30	PASS
BT LE	MCH	-3.499	30	PASS
BT LE	HCH	-4.592	30	PASS

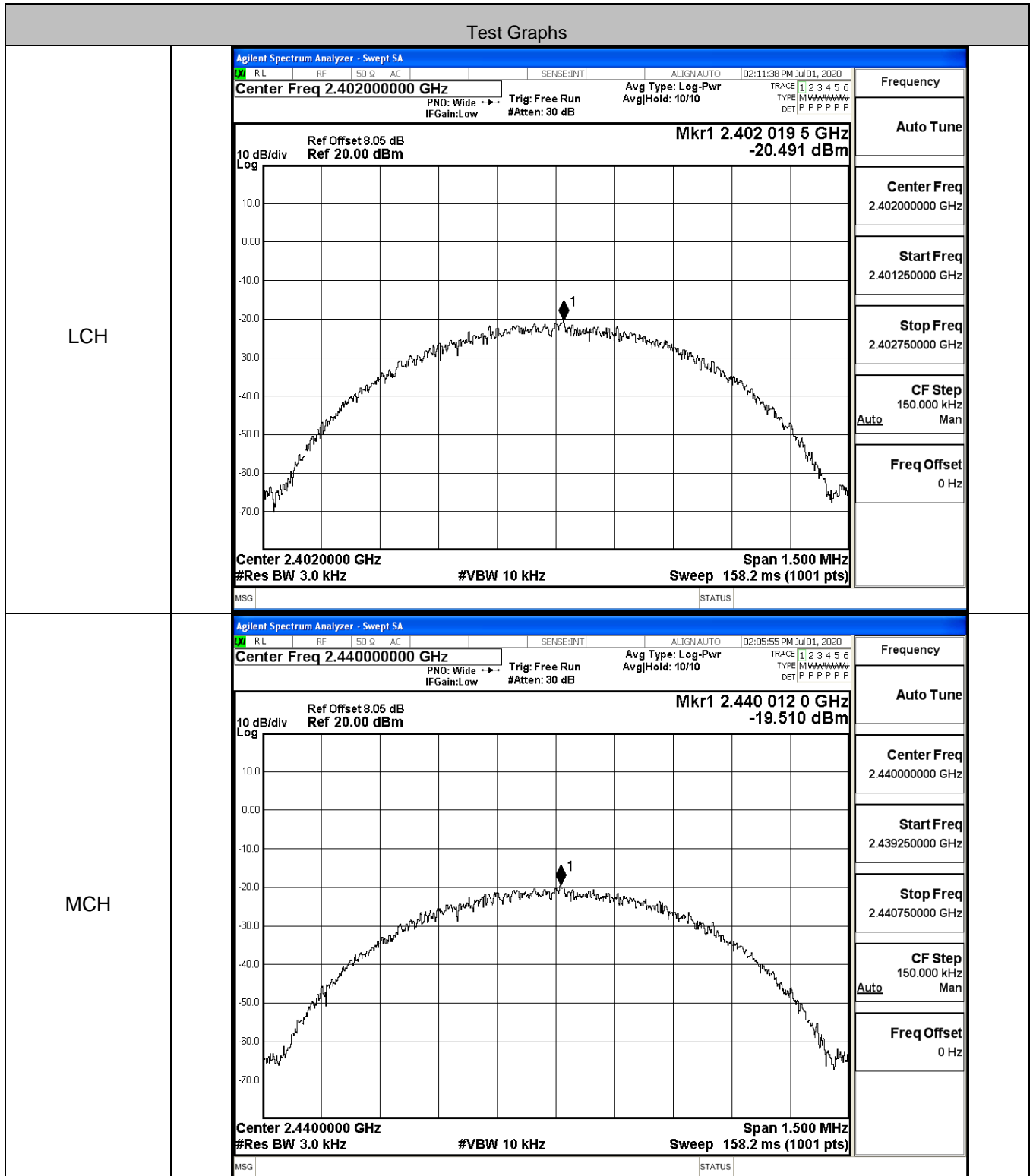


HCH

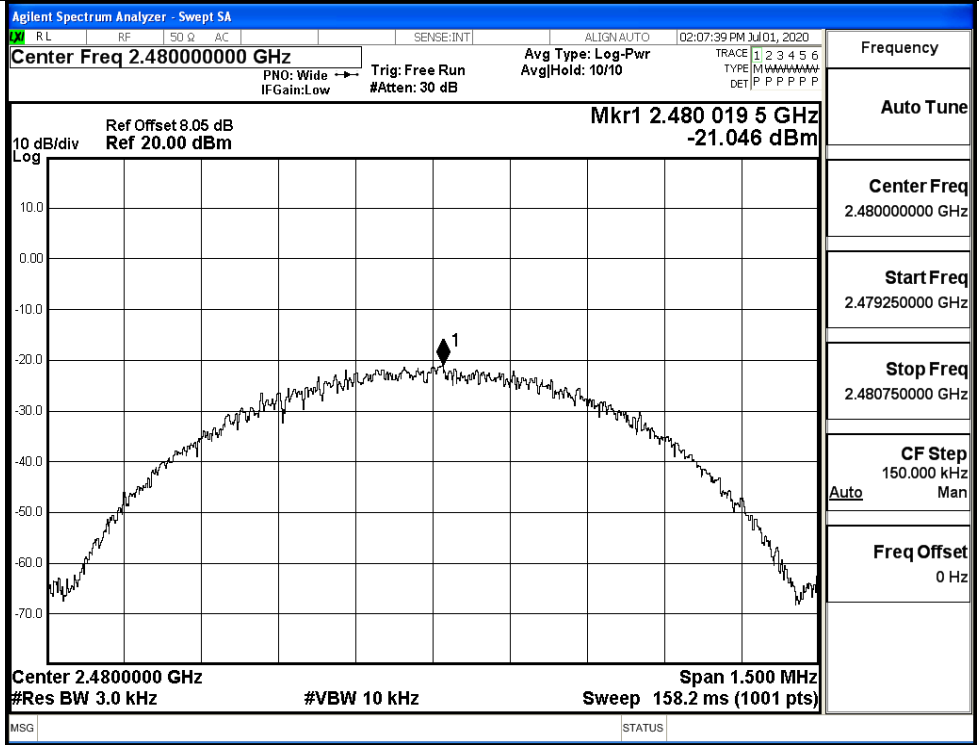


A.3 Maximum Power Spectral Density

Mode	Channel	PSD [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
BT LE	LCH	-20.491	8	PASS
BT LE	MCH	-19.510	8	PASS
BT LE	HCH	-21.046	8	PASS



HCH

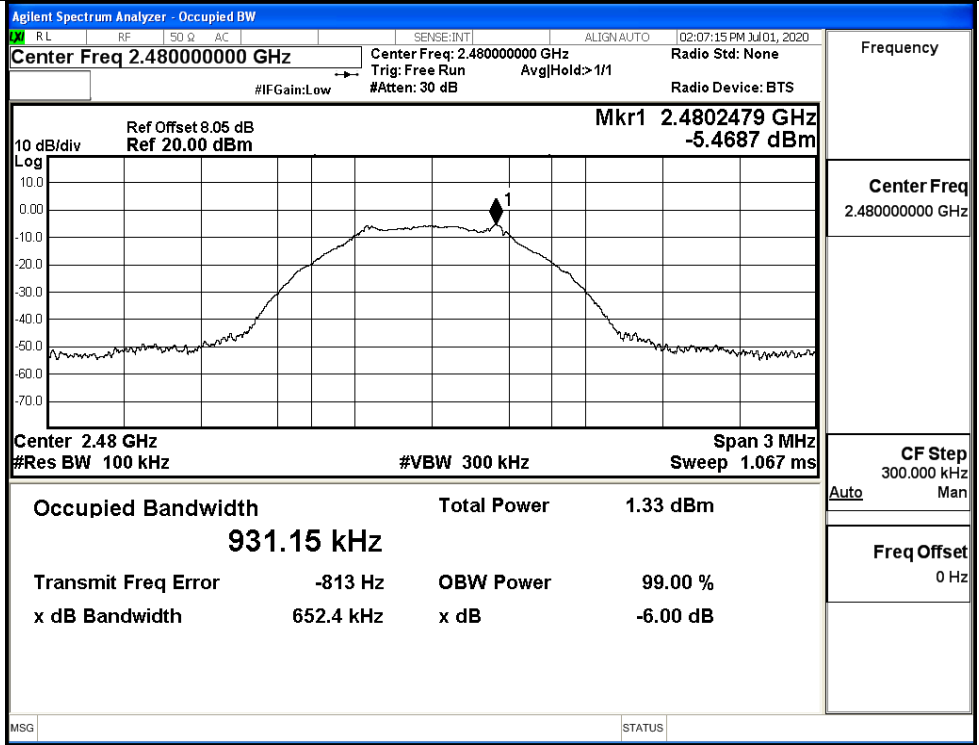


A.4 6dB Bandwidth

Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
BT LE	LCH	0.5047	≥0.5	PASS
BT LE	MCH	0.6472	≥0.5	PASS
BT LE	HCH	0.6524	≥0.5	PASS

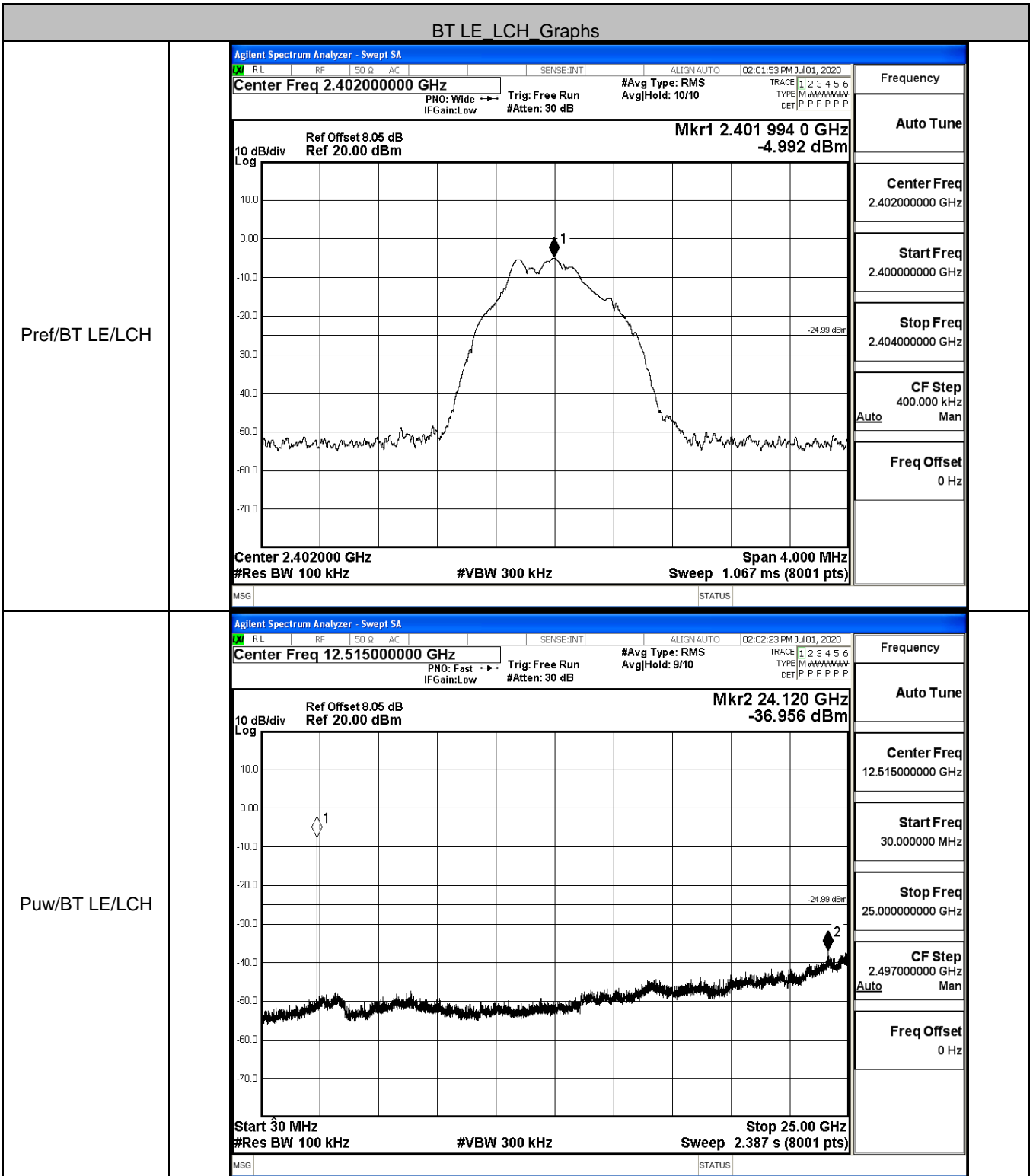
Test Graphs																			
LCH	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;">Agilent Spectrum Analyzer - Occupied BW</p> <p style="font-size: small; margin: 0;">RL RF 50 Ω AC SENSE:INT ALIGN:AUTO 02:01:04 PM Jul 01, 2020</p> <p style="margin: 0;">Center 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="display: flex; justify-content: space-between;"> <div style="font-size: x-small;"> 10 dB/div Log Ref Offset 8.05 dB Ref 20.00 dBm </div> <div style="text-align: right;"> Mkr1 2.4019914 GHz -5.0752 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>0.27 dBm</td> </tr> <tr> <td style="text-align: center;">958.96 kHz</td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>-1.710 kHz</td> <td>OBW Power</td> </tr> <tr> <td>x dB Bandwidth</td> <td>504.7 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-top: 5px;">MSG STATUS</p> </div>	Occupied Bandwidth	Total Power	0.27 dBm	958.96 kHz			Transmit Freq Error	-1.710 kHz	OBW Power	x dB Bandwidth	504.7 kHz	x dB			99.00 %			-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:INT ALIGN:AUTO 02:05:31 PM Jul 01, 2020</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 8.05 dB Ref 20.00 dBm </div> <div style="text-align: right;"> Mkr1 2.44 GHz -4.1211 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>2.39 dBm</td> </tr> <tr> <td style="text-align: center;">932.49 kHz</td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>-906 Hz</td> <td>OBW Power</td> </tr> <tr> <td>x dB Bandwidth</td> <td>647.2 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-top: 5px;">MSG STATUS</p> </div>	Occupied Bandwidth	Total Power	2.39 dBm	932.49 kHz			Transmit Freq Error	-906 Hz	OBW Power	x dB Bandwidth	647.2 kHz	x dB			99.00 %			-6.00 dB
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		99.00 %																	
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HCH



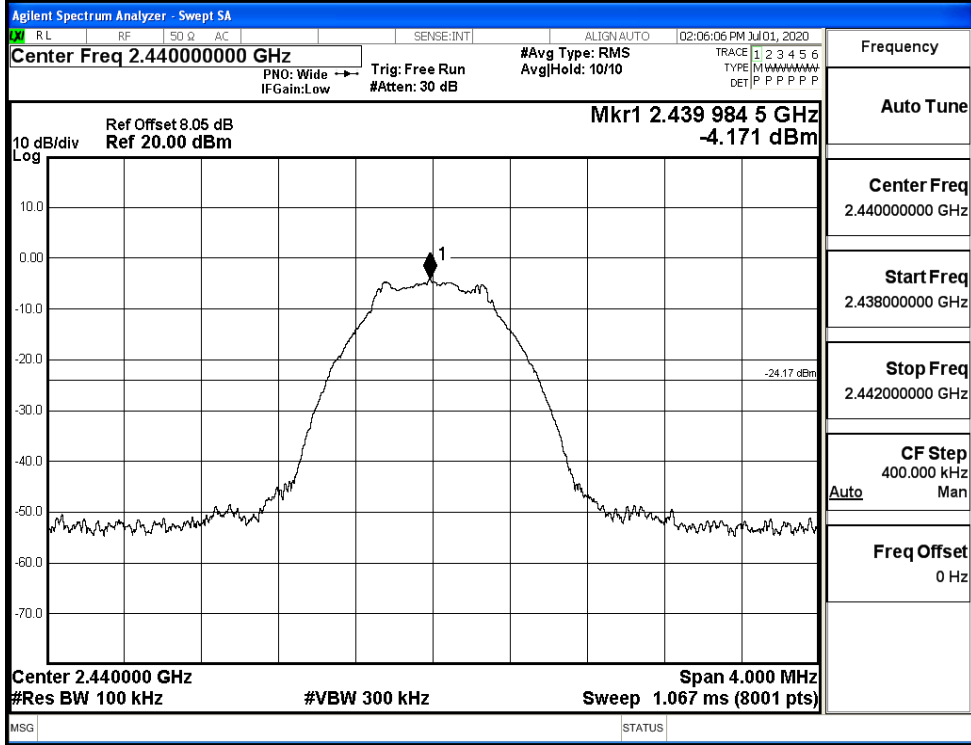
A.5 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	-4.992	-36.956	-24.992	PASS
BT LE	MCH	-4.171	-36.883	-24.171	PASS
BT LE	HCH	-5.121	-36.912	-25.121	PASS

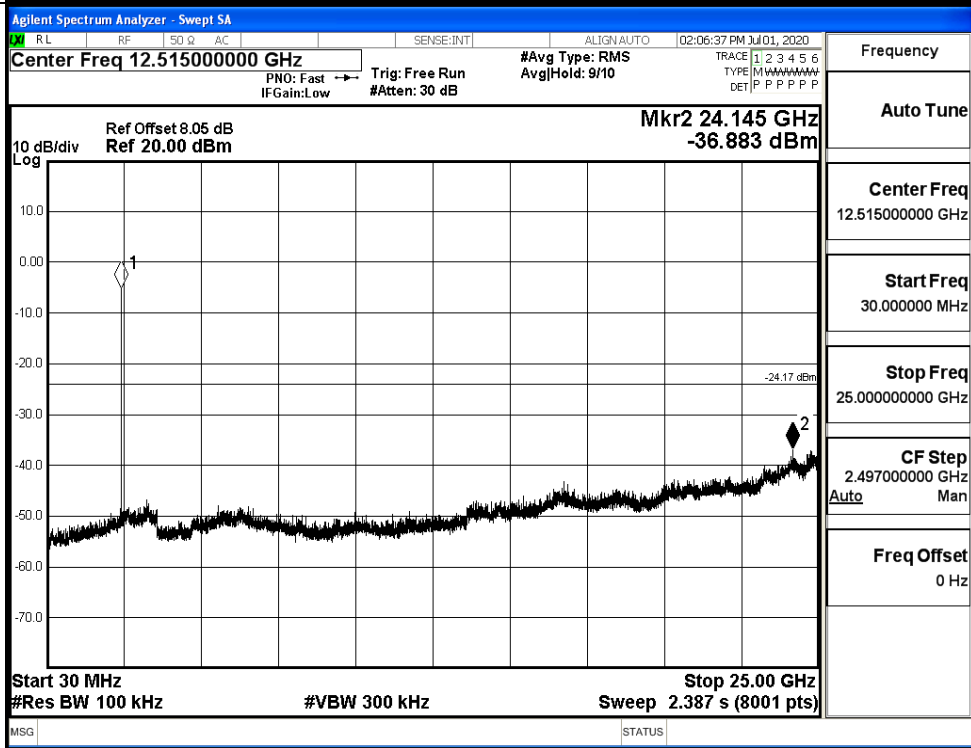


BT LE_MCH_Graphs

Pref/BT LE/MCH

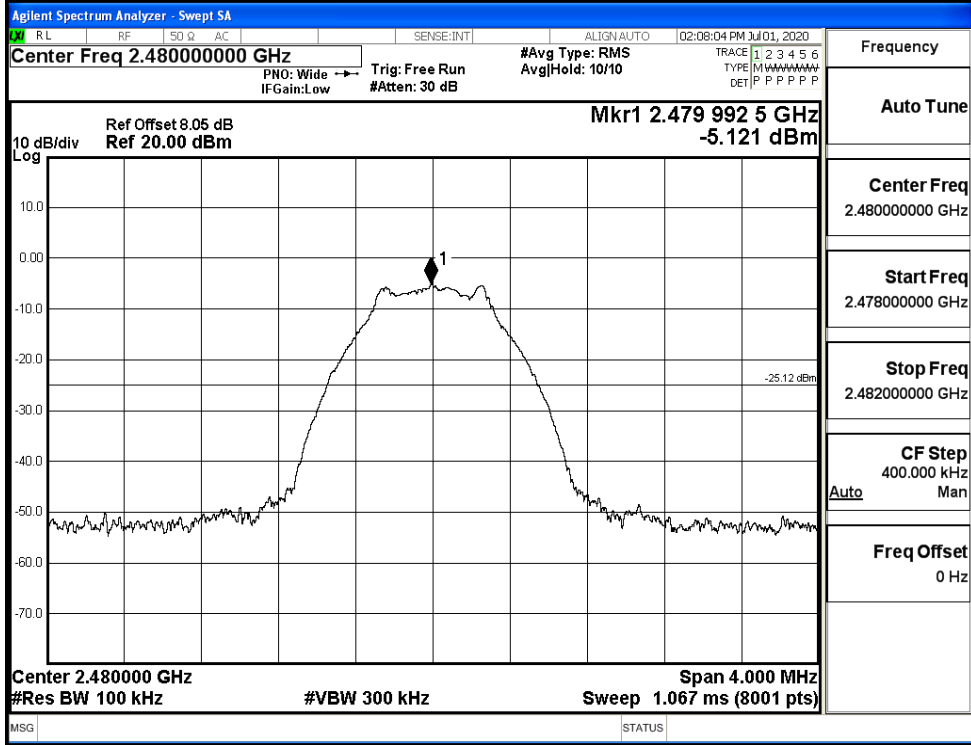


Puw/BT LE/MCH

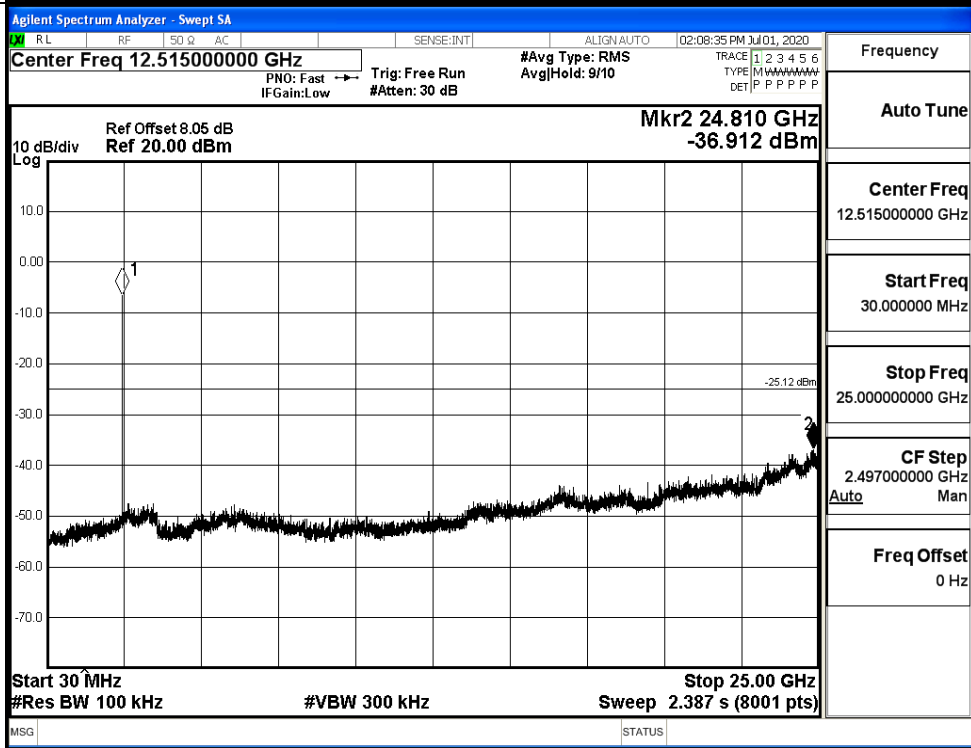


BT LE_HCH_Graphs

Pref/BT LE/HCH



Puw/BT LE/HCH



A.6 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	-4.817	-49.289	-24.82	PASS
BT LE	HCH	-5.245	-49.403	-25.25	PASS

Test Graphs

LCH

Agilent Spectrum Analyzer - Swept SA
 Center Freq 2.35700000 GHz
 #Avg Type: RMS
 #Res BW 100 kHz #VBW 300 kHz
 Mkr4 2.370 748 GHz -49.289 dBm
 Start 2.31000 GHz Stop 2.40400 GHz
 Sweep 9.067 ms (8001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f		2.402 003 GHz	-4.817 dBm			
2	N	f		2.400 000 GHz	-53.158 dBm			
3	N	f		2.390 000 GHz	-53.752 dBm			
4	N	f		2.370 748 GHz	-49.289 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
 #Avg Type: RMS
 #Res BW 100 kHz #VBW 300 kHz
 Mkr4 2.496 062 00 GHz -49.403 dBm
 Start 2.47800 GHz Stop 2.50000 GHz
 Sweep 2.133 ms (8001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f		2.480 007 50 GHz	-5.245 dBm			
2	N	f		2.483 500 00 GHz	-51.985 dBm			
3	N	f		2.500 000 00 GHz	-53.678 dBm			
4	N	f		2.496 062 00 GHz	-49.403 dBm			

Frequency

Auto Tune

Center Freq
2.48900000 GHz

Start Freq
2.47800000 GHz

Stop Freq
2.50000000 GHz

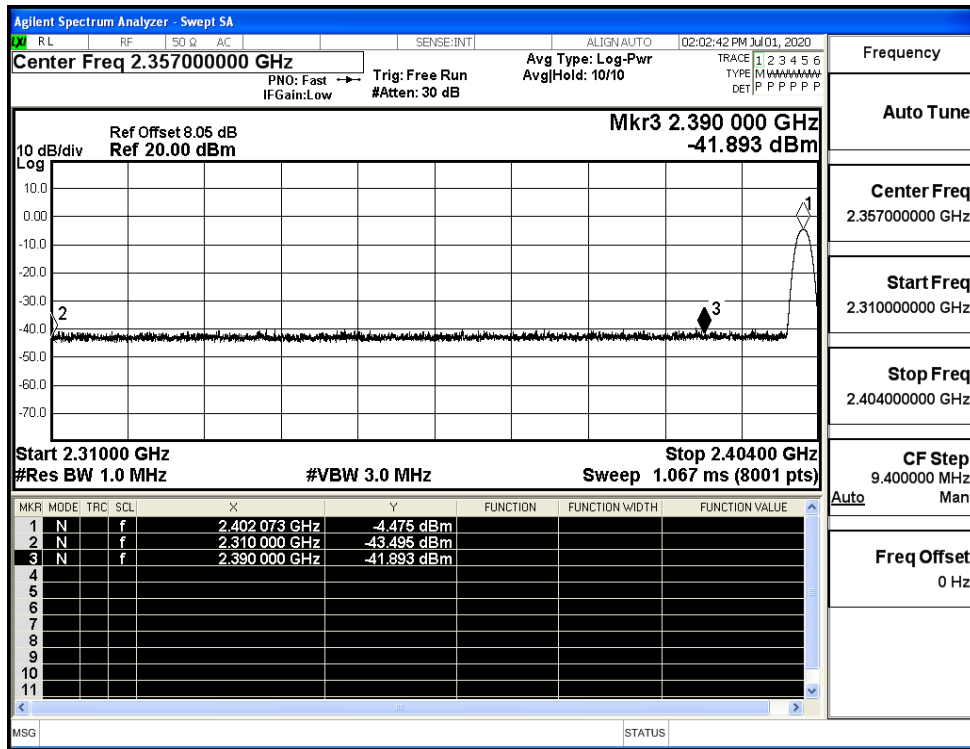
CF Step
2.200000 MHz

Freq Offset
0 Hz

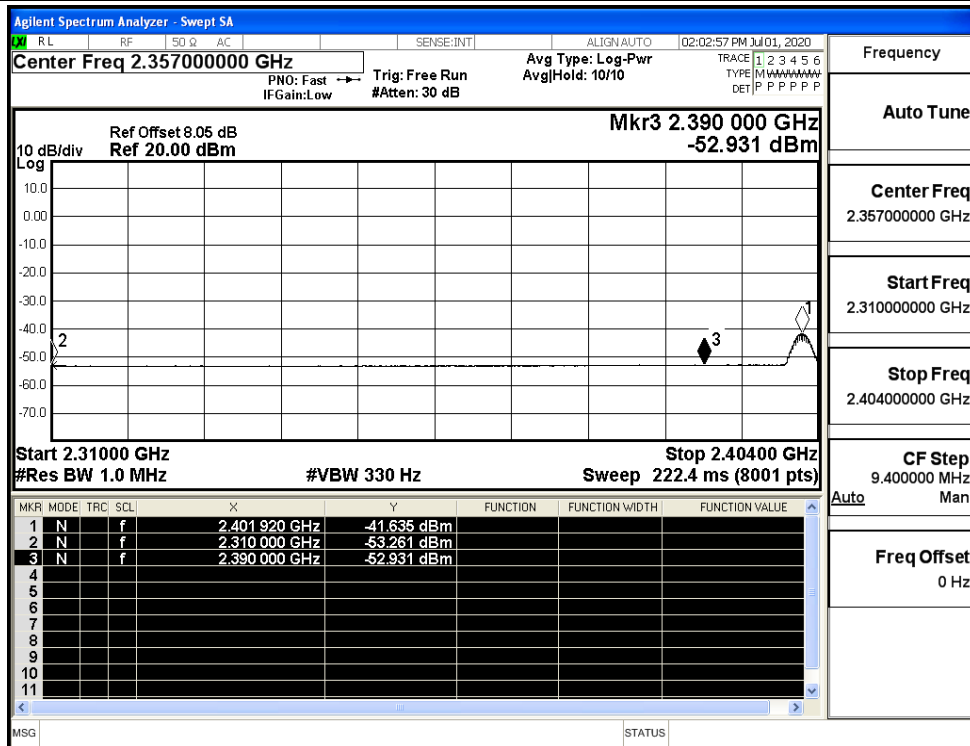
A.7 Restrict-band band-edge measurements

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	-43.50	2.1	0	53.83	PEAK	74	PASS
		Ant1	2310.0	-53.26	2.1	0	44.07	AV	54	PASS
		Ant1	2390.0	-41.89	2.1	0	55.44	PEAK	74	PASS
		Ant1	2390.0	-52.93	2.1	0	44.40	AV	54	PASS
	2480	Ant1	2483.5	-41.48	2.1	0	55.85	PEAK	74	PASS
		Ant1	2483.5	-52.47	2.1	0	44.86	AV	54	PASS
		Ant1	2500.0	-42.97	2.1	0	54.36	PEAK	74	PASS
		Ant1	2500.0	-52.21	2.1	0	45.12	AV	54	PASS

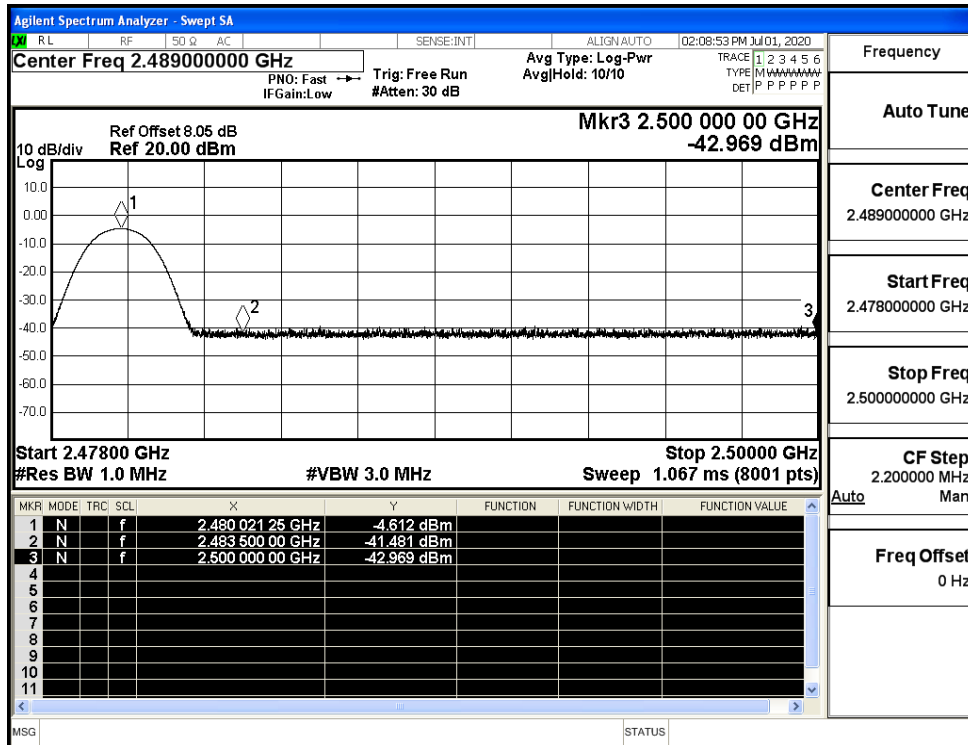
Restrict-band band-edge measurements_BT LE_2402_Ant1_PEAK



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

