

## Appendix A

### RF Test Data for BT V4.0(BLE) (Conducted Measurement)

Product Name: ELEPHONE mgcool Band5

Trade Mark: N/A

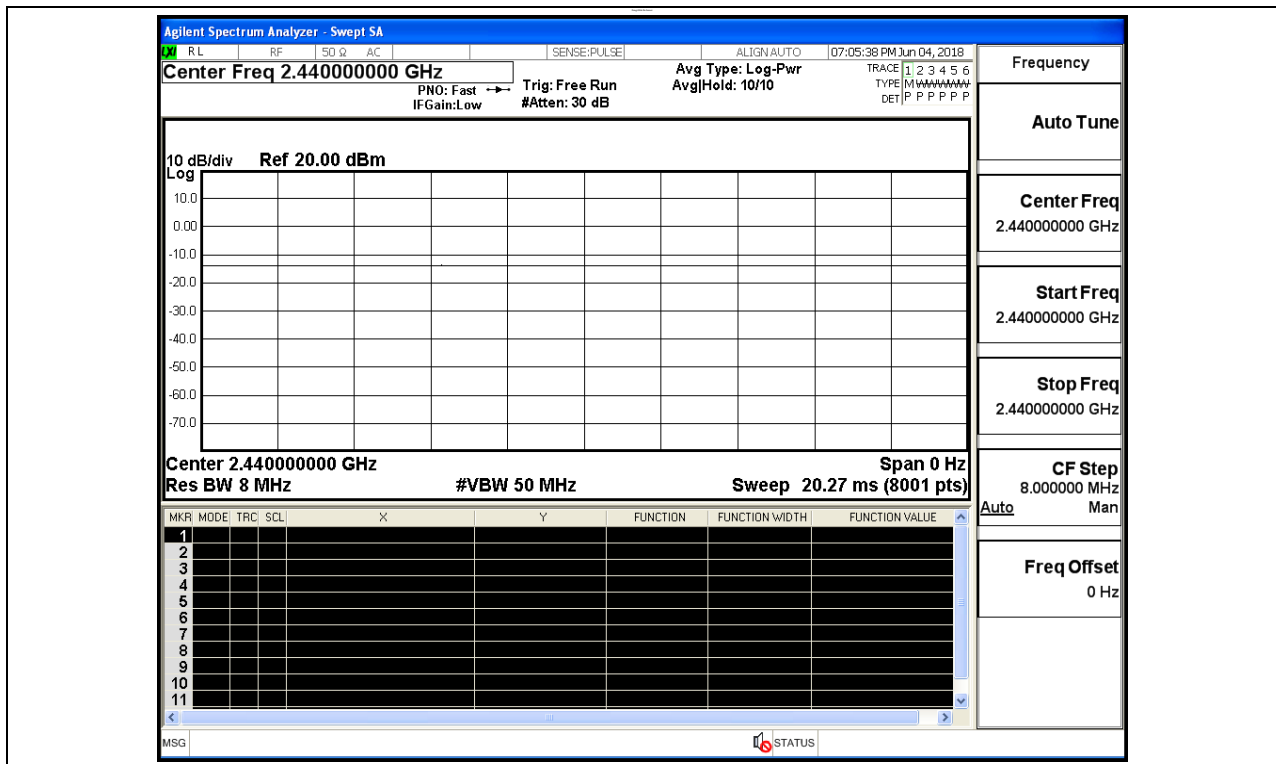
Test Model: Band 5

#### Environmental Conditions

Temperature:	24.7 ° C
Relative Humidity:	53.4%
ATM Pressure:	100.0 kPa
Test Engineer:	Willson Hong
Supervised by:	Jayden.Zhuo

#### A.1 Duty Cycle

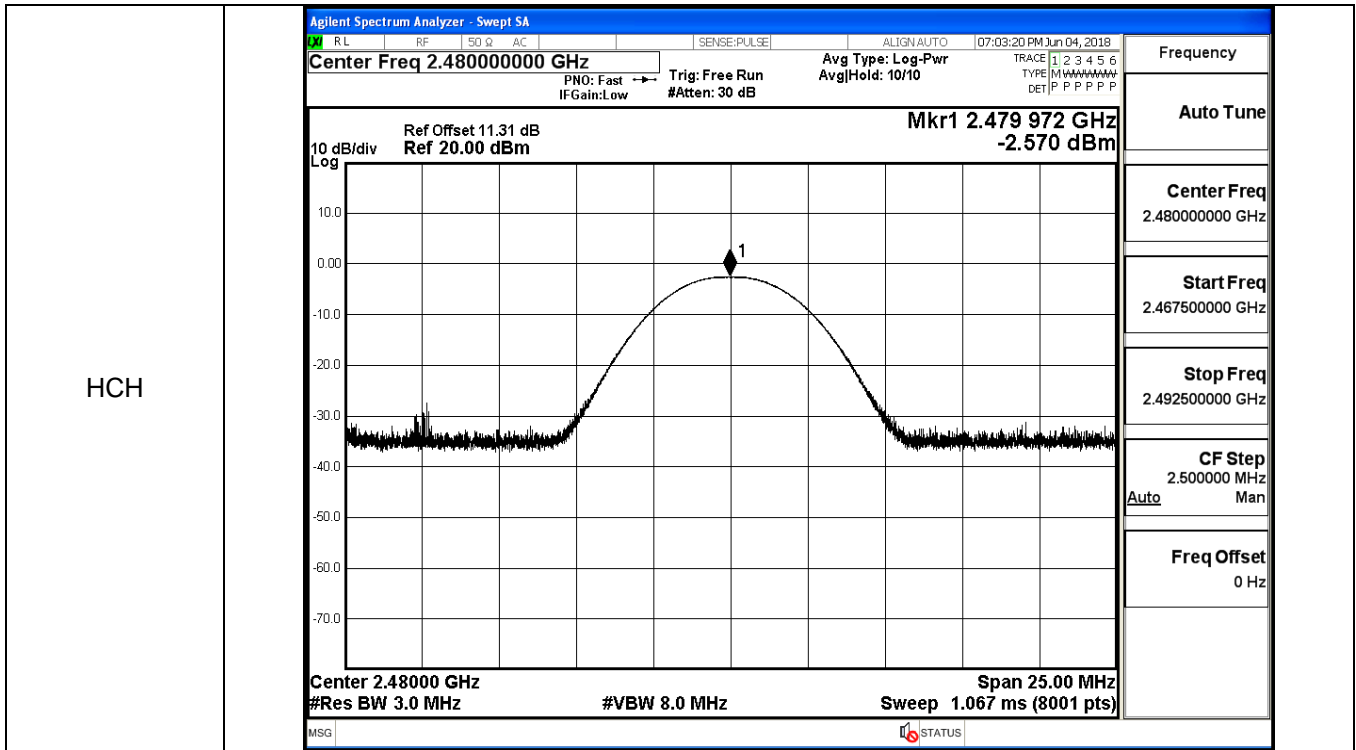
Test Mode	Test Channel	Ant	Duty Cycle[%]	Verdict
BT LE	2440	Ant1	100	PASS



### A.2 Maximum Conducted Peak Output Power

Mode	Channel	Conduct Peak Power[dBm]	Limit [dBm]	Verdict
BT LE	LCH	-2.334	30	PASS
BT LE	MCH	-2.677	30	PASS
BT LE	HCH	-2.570	30	PASS

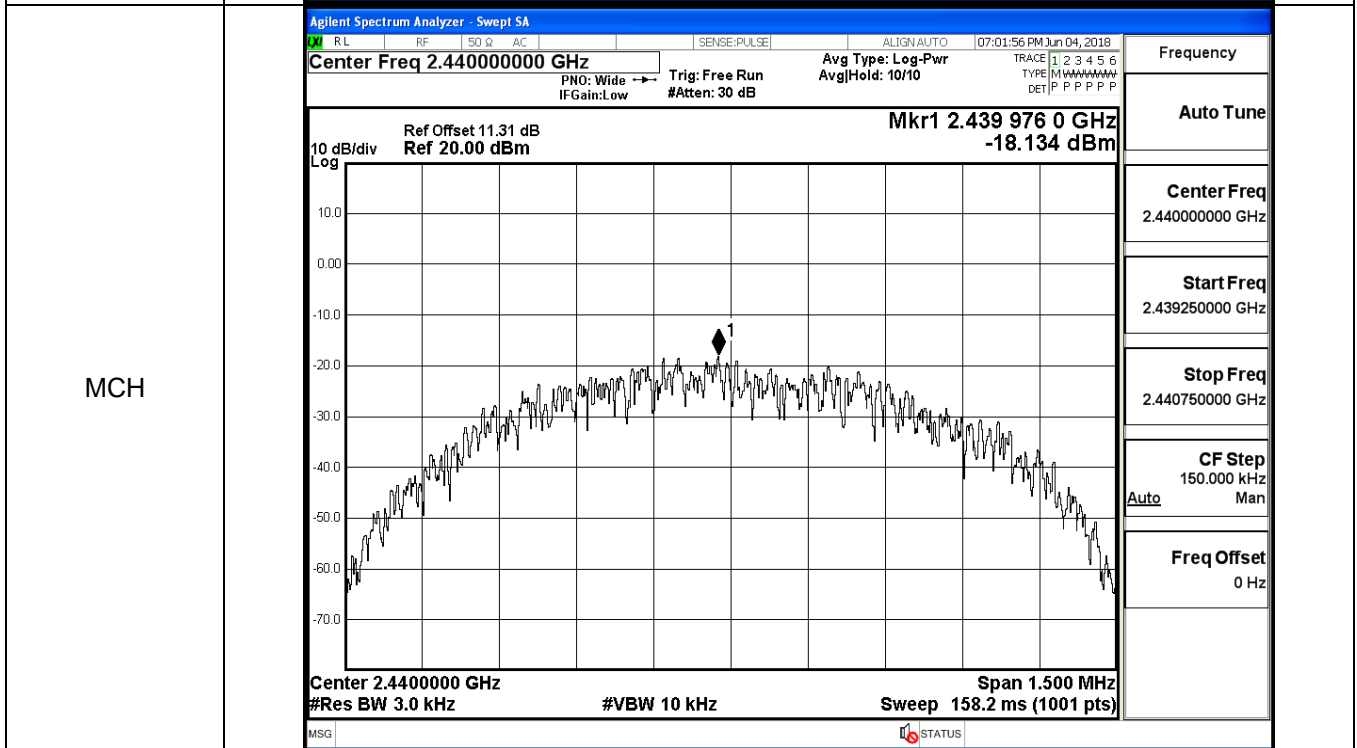
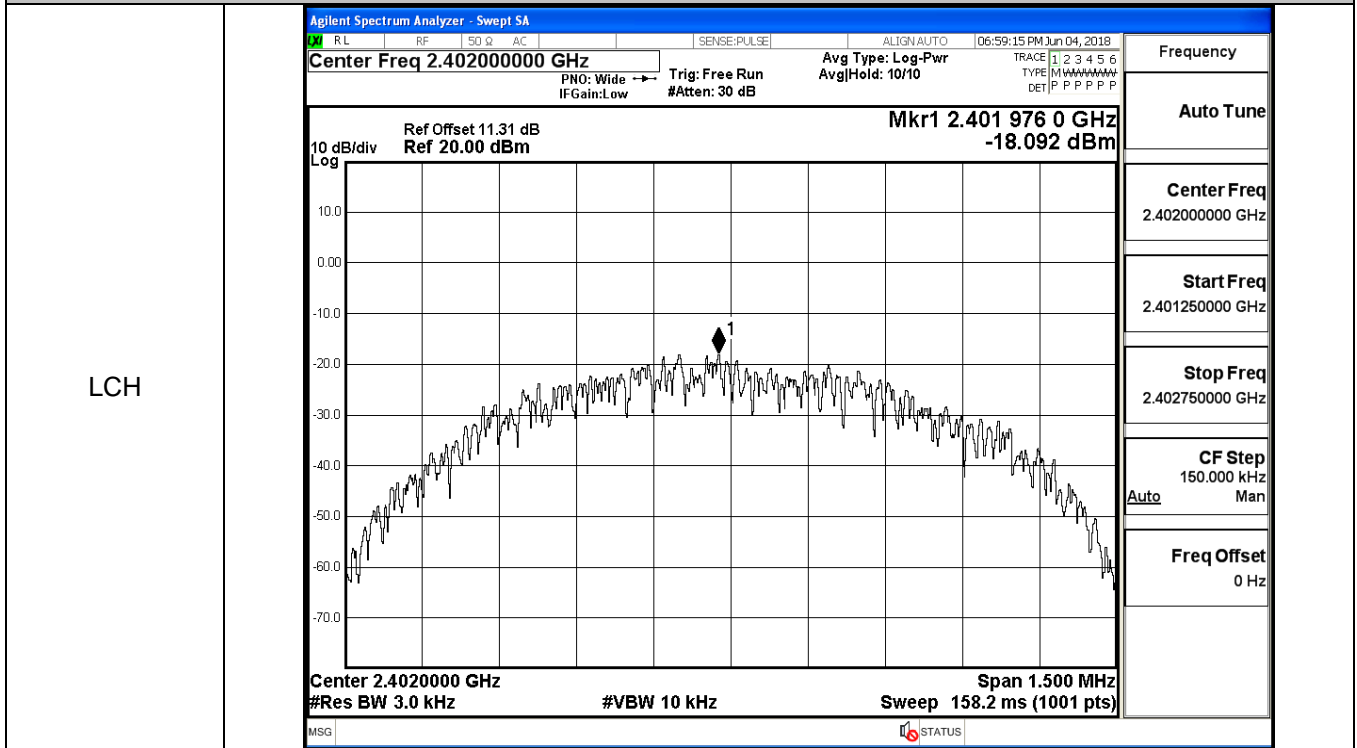
Test Graphs																	
LCH	<div style="border: 1px solid black; padding: 5px;"> <p style="font-size: small; margin: 0;">Agilent Spectrum Analyzer - Swept SA</p> <p style="font-size: x-small; margin: 0;">RL RF 50 Ω AC SENSE:PULSE ALIGN:AUTO 06:59:02 PM Jun 04, 2018</p> <p style="font-size: small; margin: 0;">Center Freq 2.40200000 GHz Avg Type: Log-Pwr PNO: Fast Trig: Free Run IFGain:Low #Atten: 30 dB</p> <p style="font-size: x-small; margin: 0;">Mkr1 2.401 944 GHz Ref Offset 11.31 dB Ref 20.00 dB -2.334 dBm</p> <p style="font-size: x-small; margin: 0;">Center 2.40200 GHz Span 25.00 MHz #Res BW 3.0 MHz #VBW 8.0 MHz Sweep 1.067 ms (8001 pts)</p> <p style="font-size: x-small; margin: 0;">MSG STATUS</p> </div> <table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <tr><td>Frequency</td><td></td></tr> <tr><td>Auto Tune</td><td></td></tr> <tr><td>Center Freq</td><td>2.402000000 GHz</td></tr> <tr><td>Start Freq</td><td>2.389500000 GHz</td></tr> <tr><td>Stop Freq</td><td>2.414500000 GHz</td></tr> <tr><td>CF Step</td><td>2.500000 MHz</td></tr> <tr><td>Auto</td><td>Man</td></tr> <tr><td>Freq Offset</td><td>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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Freq Offset	0 Hz																



### A.3 Maximum Power Spectral Density

Mode	Channel	PSD [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
BT LE	LCH	-18.092	8	PASS
BT LE	MCH	-18.134	8	PASS
BT LE	HCH	-18.270	8	PASS

#### Test Graphs

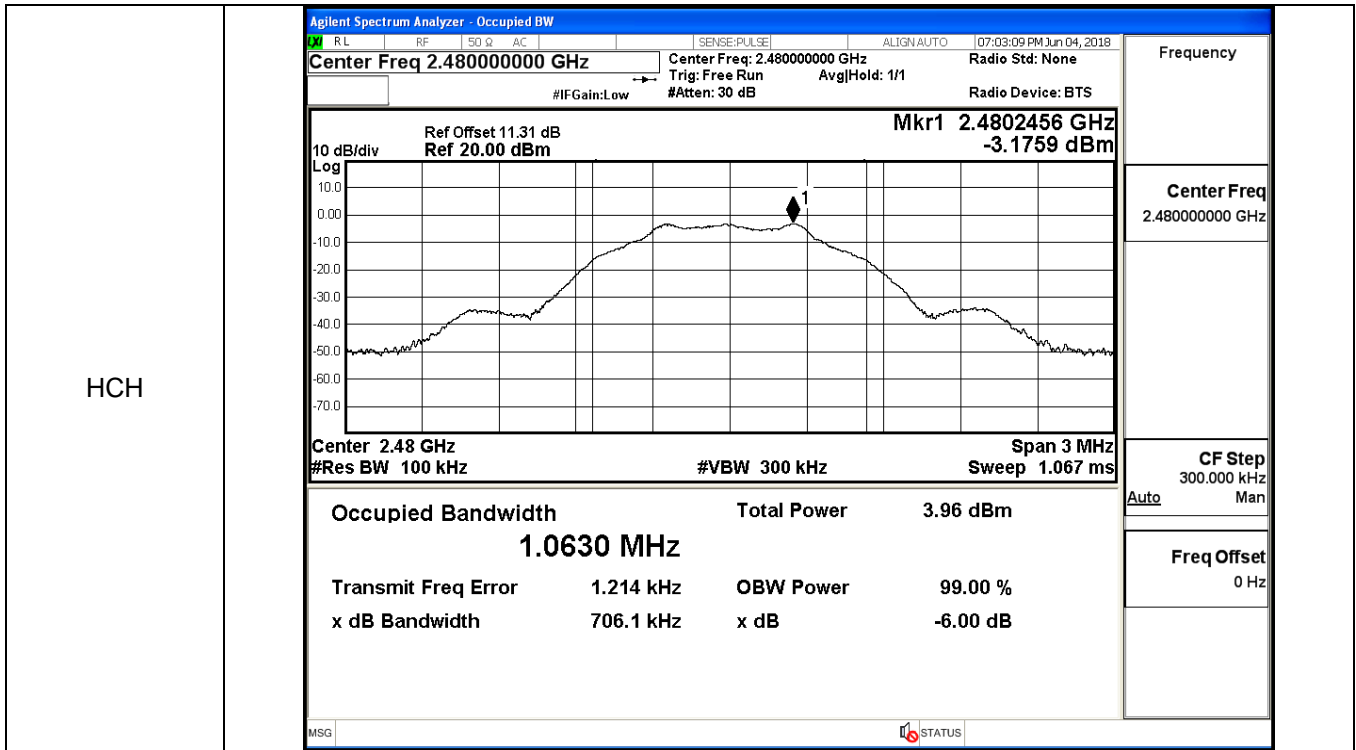




**A.4 6dB Bandwidth**

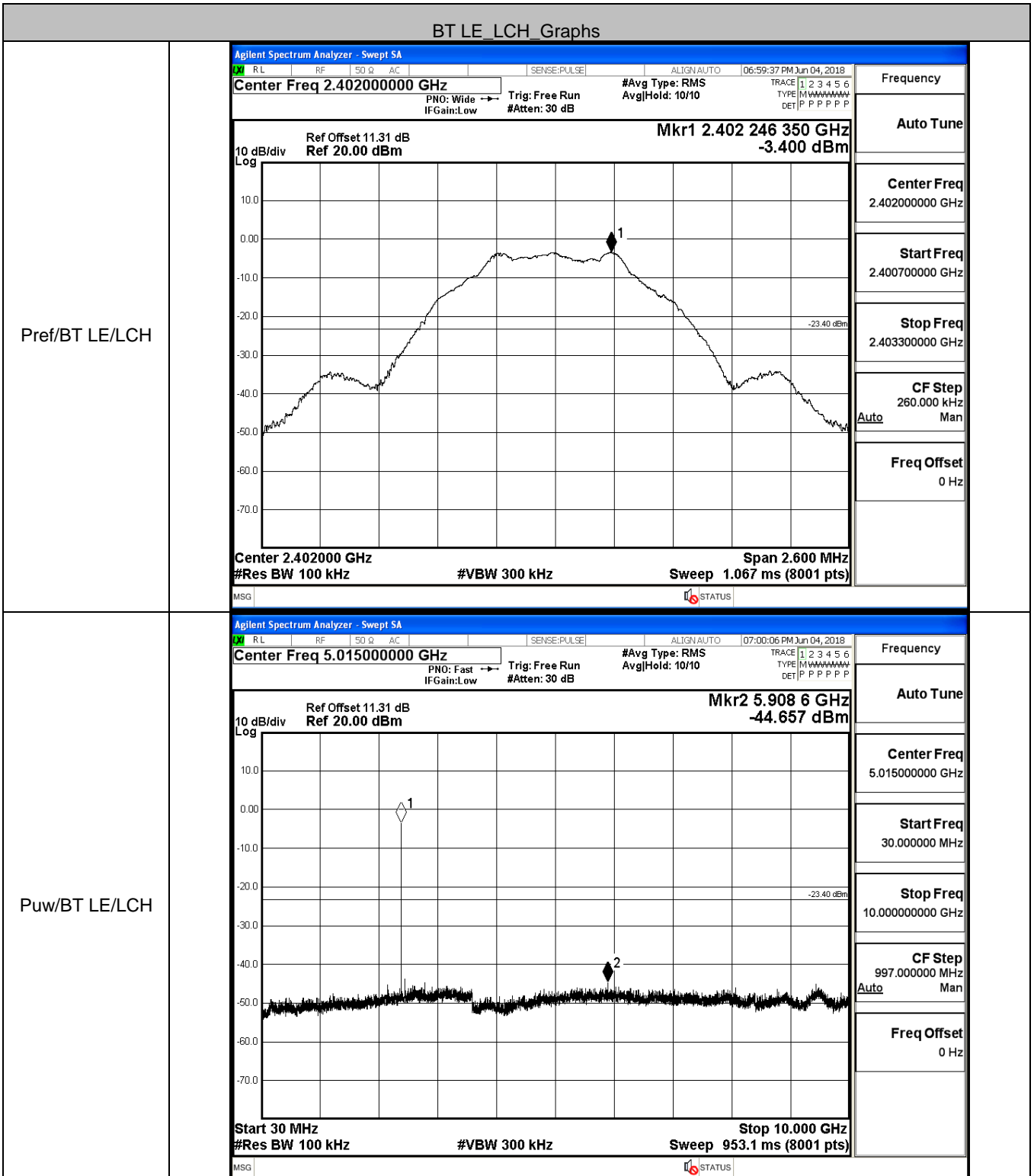
Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
BT LE	LCH	0.6994	≥0.5	PASS
BT LE	MCH	0.6983	≥0.5	PASS
BT LE	HCH	0.7061	≥0.5	PASS

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 06:58:51 PM Jun 04, 2018</p> <p style="margin: 0;">Center Freq 2.402000000 GHz Center Freq: 2.402000000 GHz Radio Std: None                      Trig: Free Run AvgHold: &gt;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 11.31 dB                          Ref 20.00 dBm                     </div> <div style="text-align: right;">                         Mkr1 2.4019884 GHz                          -3.0230 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>4.08 dBm</td> </tr> <tr> <td colspan="3" style="text-align: center;"><b>1.0638 MHz</b></td> </tr> <tr> <td>Transmit Freq Error</td> <td>1.764 kHz</td> <td>OBW Power 99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td>699.4 kHz</td> <td>x dB -6.00 dB</td> </tr> </table> <p style="font-size: x-small; margin-top: 5px;">MSG STATUS</p> </div>	Occupied Bandwidth	Total Power	4.08 dBm	<b>1.0638 MHz</b>			Transmit Freq Error	1.764 kHz	OBW Power 99.00 %	x dB Bandwidth	699.4 kHz	x dB -6.00 dB
Occupied Bandwidth	Total Power	4.08 dBm											
<b>1.0638 MHz</b>													
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x dB Bandwidth	699.4 kHz	x dB -6.00 dB											
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Occupied Bandwidth	Total Power	3.54 dBm											
<b>1.0633 MHz</b>													
Transmit Freq Error	2.073 kHz	OBW Power 99.00 %											
x dB Bandwidth	698.3 kHz	x dB -6.00 dB											



### A.5 RF Conducted Spurious Emissions

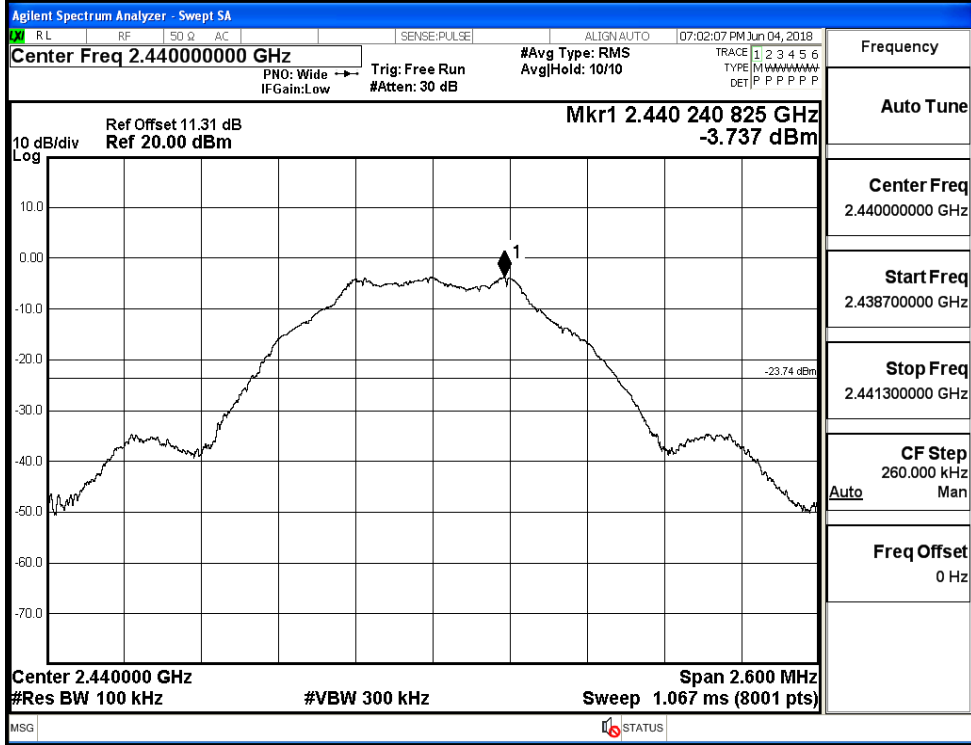
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	-3.4	-44.657	-23.400	PASS
BT LE	MCH	-3.737	-45.143	-23.737	PASS
BT LE	HCH	-3.604	-45.264	-23.604	PASS



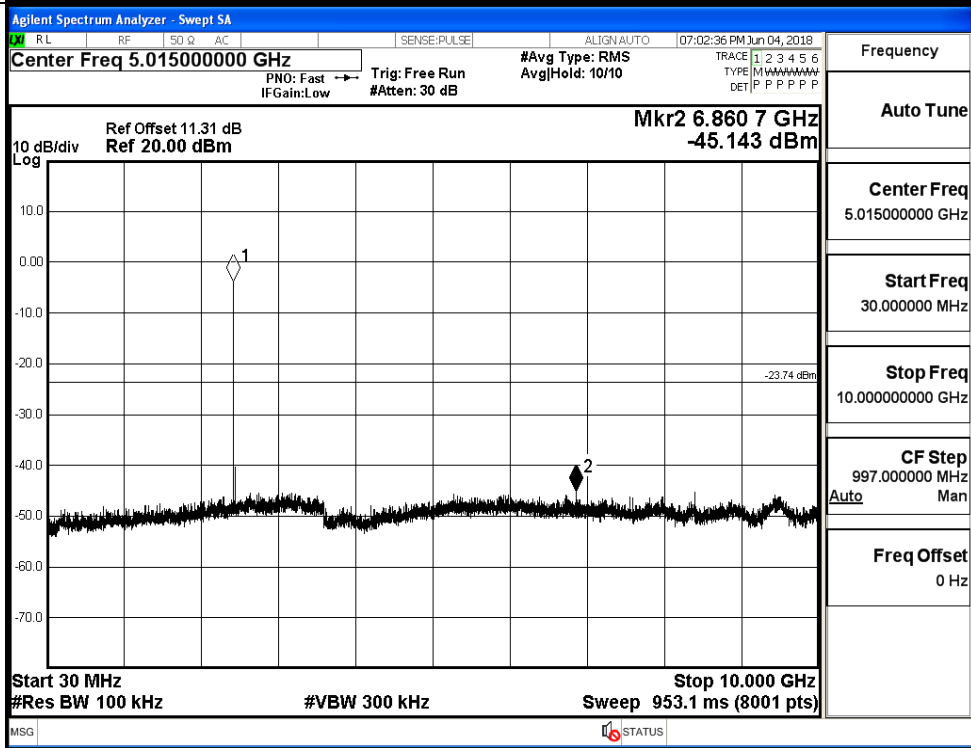


BT LE\_MCH\_Graphs

Pref/BT LE/MCH

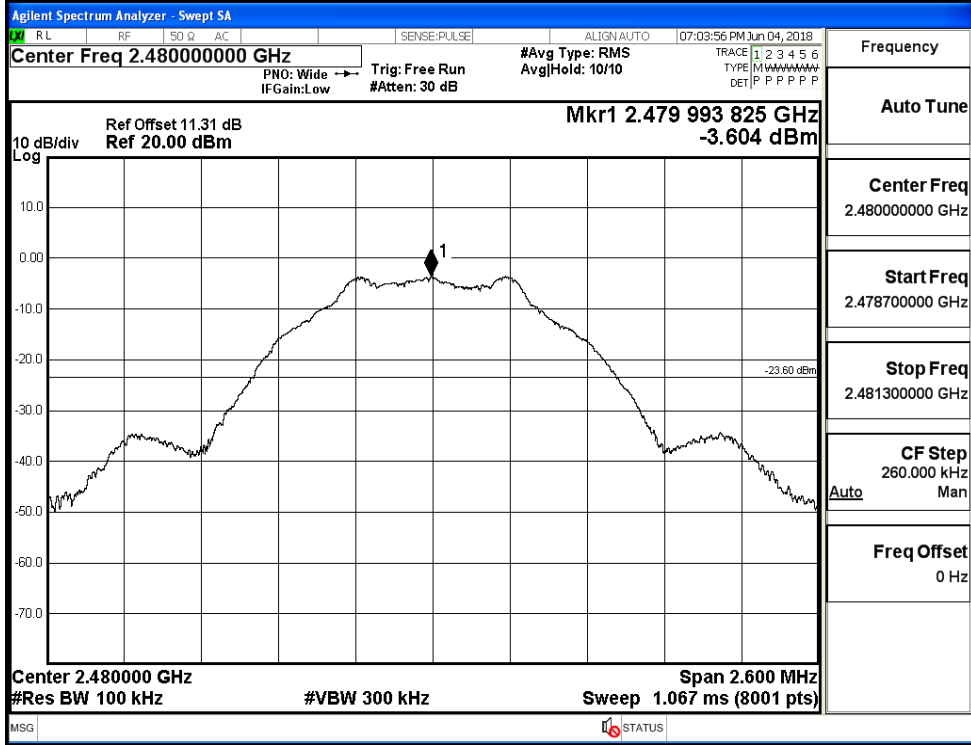


Puw/BT LE/MCH

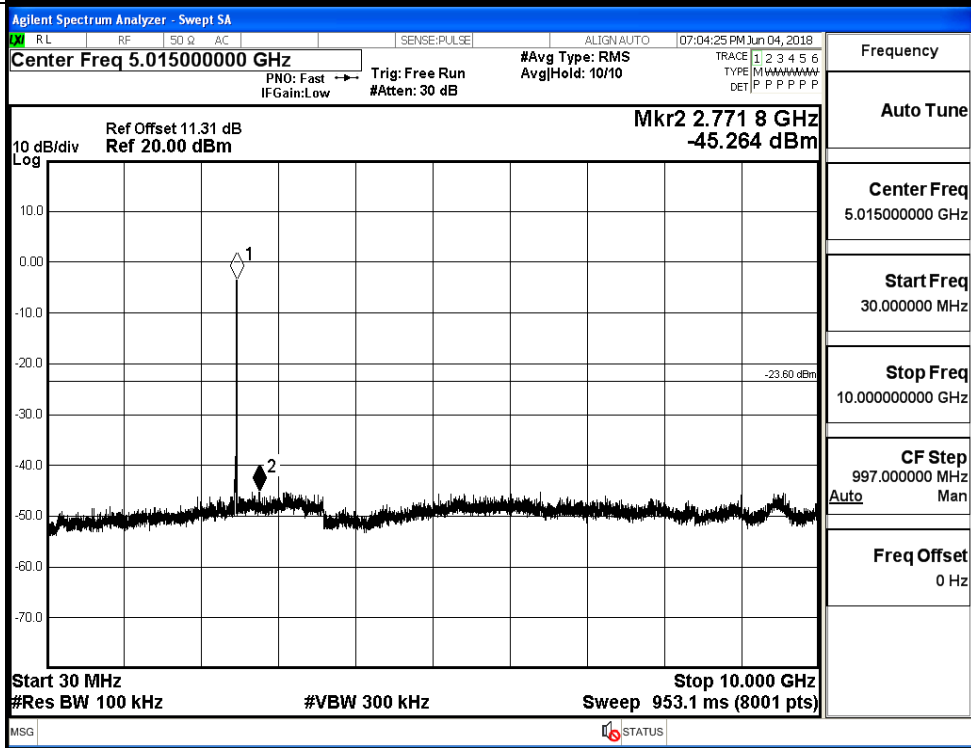


BT LE\_HCH\_Graphs

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	-3.170	-46.800	-23.17	PASS
BT LE	HCH	-2.951	-46.281	-22.95	PASS

Test Graphs

LCH

Agilent Spectrum Analyzer - Swept SA  
 Center Freq 2.35700000 GHz  
 Mkr4 2.366 283 GHz  
 -46.800 dBm  
 Start 2.31000 GHz Stop 2.40400 GHz  
 #Res BW 100 kHz #VBW 300 kHz Sweep 9.067 ms (8001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f		2.402 249 GHz	-3.170 dBm			
2	N	f		2.400 000 GHz	-50.255 dBm			
3	N	f		2.390 000 GHz	-51.154 dBm			
4	N	f		2.366 283 GHz	-46.800 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  
 Mkr4 2.499 128 25 GHz  
 -46.281 dBm  
 Start 2.47800 GHz Stop 2.50000 GHz  
 #Res BW 100 kHz #VBW 300 kHz 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	-2.951 dBm			
2	N	f		2.483 500 00 GHz	-50.410 dBm			
3	N	f		2.500 000 00 GHz	-50.313 dBm			
4	N	f		2.499 128 25 GHz	-46.281 dBm			

Frequency

Auto Tune

Center Freq  
2.48900000 GHz

Start Freq  
2.47800000 GHz

Stop Freq  
2.50000000 GHz

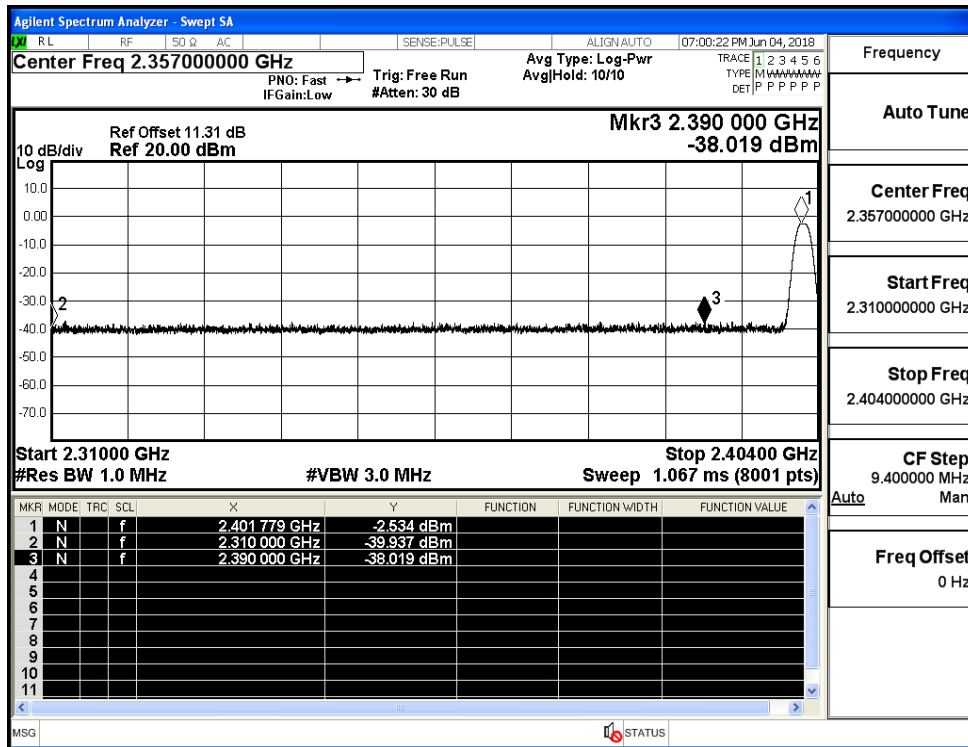
CF Step  
2.200000 MHz

Freq Offset  
0 Hz

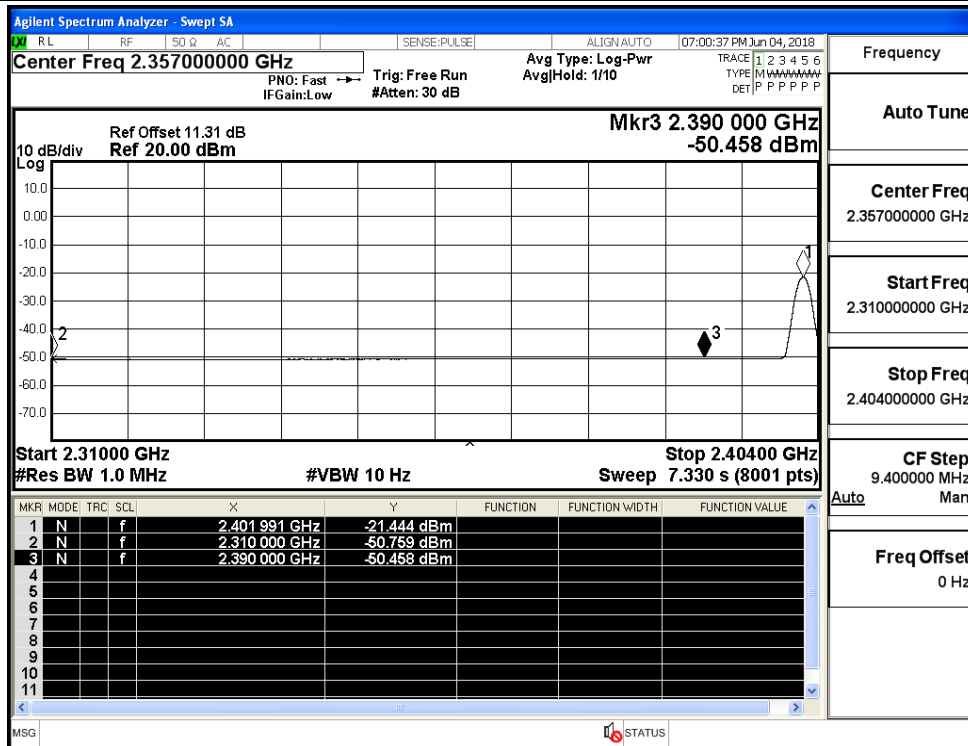
## A.7 Restrict-band band-edge measurements

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	-39.94	2.0	0	57.32	PEAK	74	PASS
		Ant1	2310.0	-50.76	2.0	0	46.50	AV	54	PASS
		Ant1	2390.0	-38.02	2.0	0	59.24	PEAK	74	PASS
		Ant1	2390.0	-50.46	2.0	0	46.80	AV	54	PASS
	2480	Ant1	2483.5	-40.87	2.0	0	56.39	PEAK	74	PASS
		Ant1	2483.5	-50.28	2.0	0	46.98	AV	54	PASS
		Ant1	2500.0	-38.72	2.0	0	58.54	PEAK	74	PASS
		Ant1	2500.0	-50.14	2.0	0	47.12	AV	54	PASS

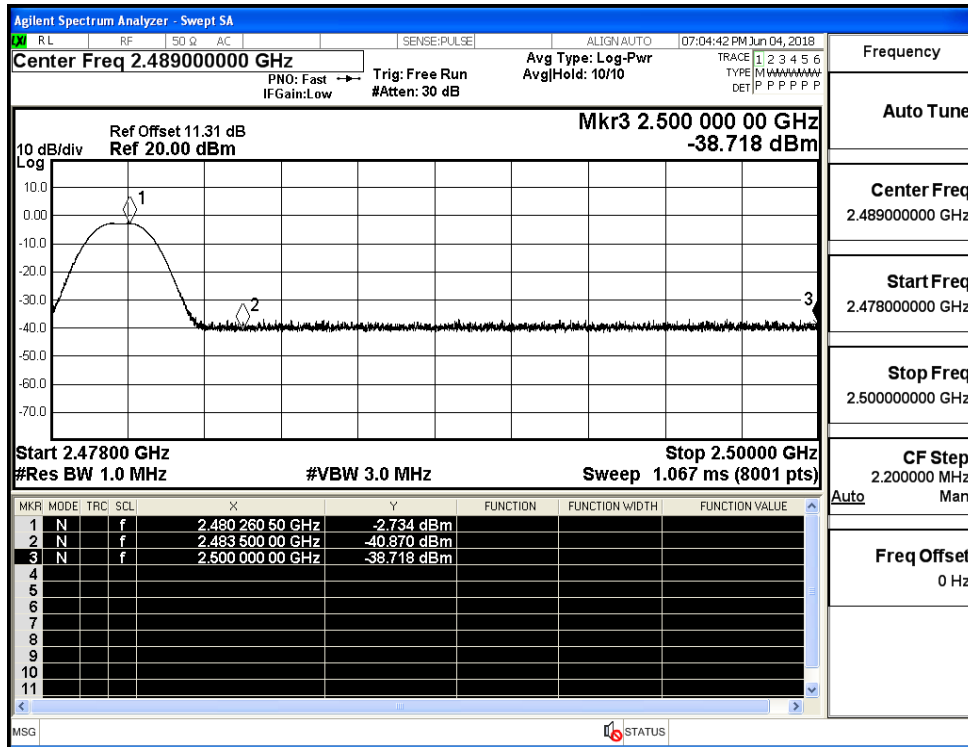
Restrict-band band-edge measurements\_BT LE\_2402\_Ant1\_PEAK



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

