

## Appendix B

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

Product Name: Bluetooth Speaker

Trade Mark: iCreation,samwe

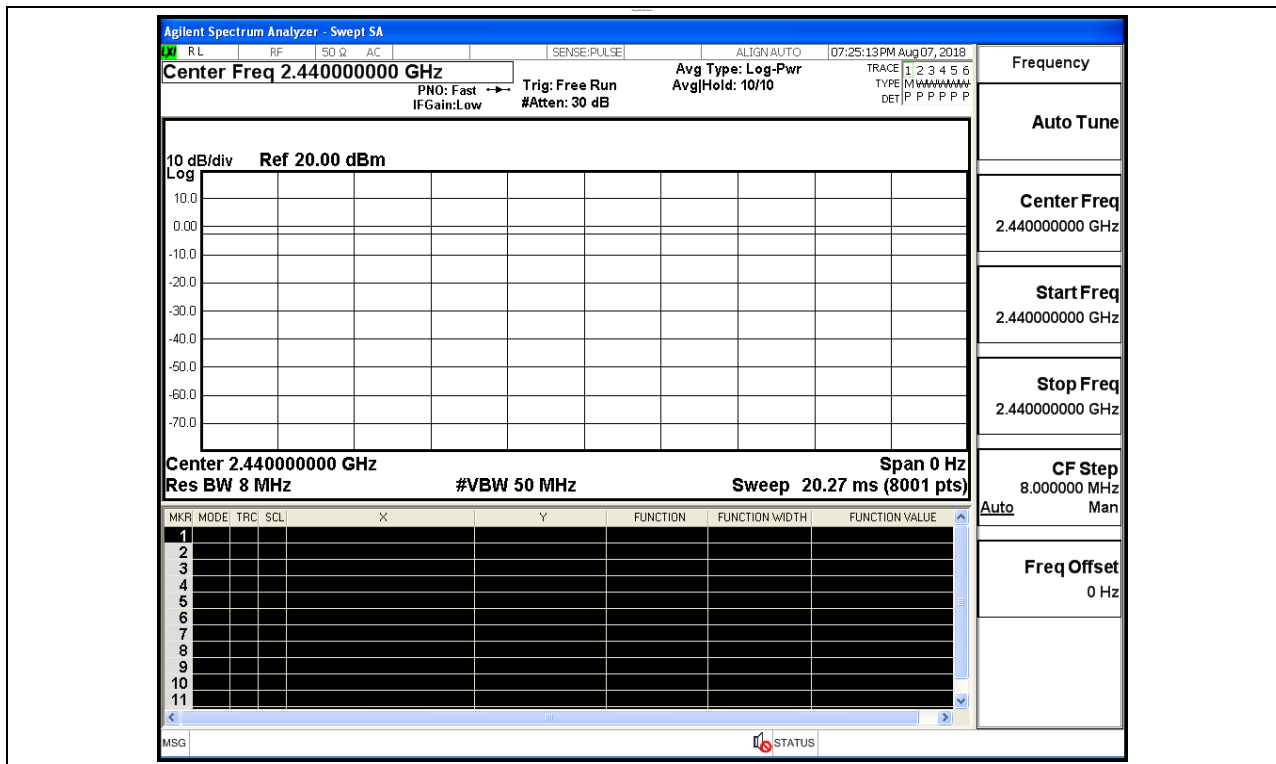
Test Model: BT-143

#### Environmental Conditions

Temperature:	24.3 ° C
Relative Humidity:	54.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Mina.Xu
Supervised by:	Jayden.Zhuo

#### B.1 Duty Cycle

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

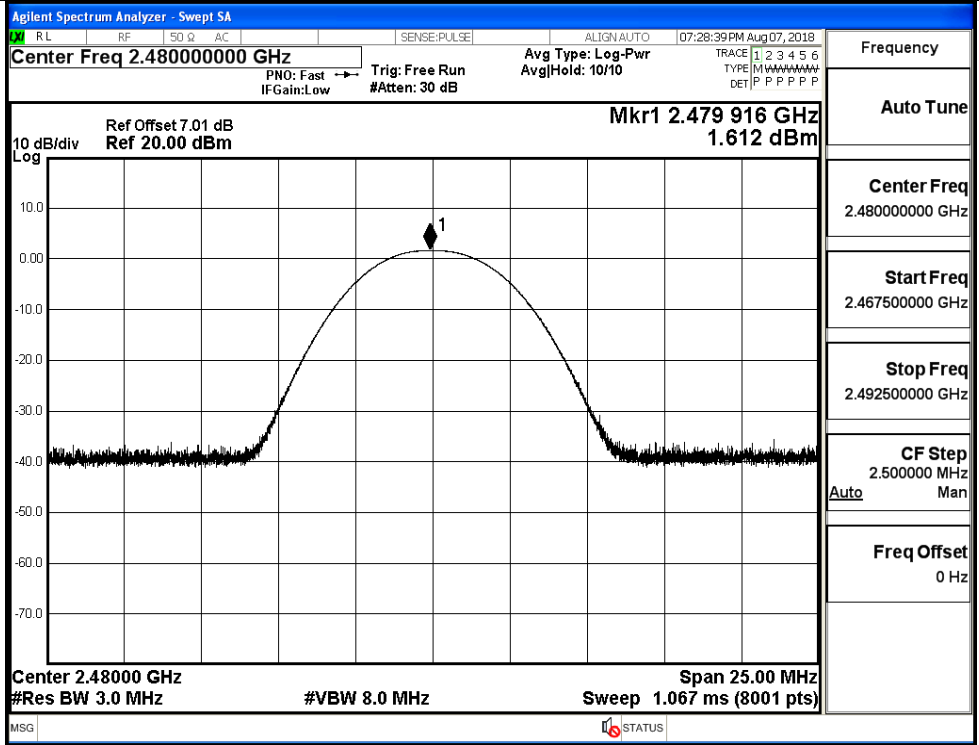


**B.2 Maximum Conducted Peak Output Power**

Mode	Channel	Conduct Peak Power[dBm]	Limit [dBm]	Verdict
BT LE	LCH	2.993	30	PASS
BT LE	MCH	3.602	30	PASS
BT LE	HCH	1.612	30	PASS

Test Graphs	
LCH	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.40200000 GHz</p> <p>Mkr1 2.402 219 GHz 2.993 dBm</p> <p>Ref Offset 7.01 dB Ref 20.00 dBm</p> <p>Center 2.40200 GHz #Res BW 3.0 MHz #VBW 8.0 MHz Sweep 1.067 ms (8001 pts)</p>
MCH	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.44000000 GHz</p> <p>Mkr1 2.439 728 GHz 3.602 dBm</p> <p>Ref Offset 7.01 dB Ref 20.00 dBm</p> <p>Center 2.44000 GHz #Res BW 3.0 MHz #VBW 8.0 MHz Sweep 1.067 ms (8001 pts)</p>

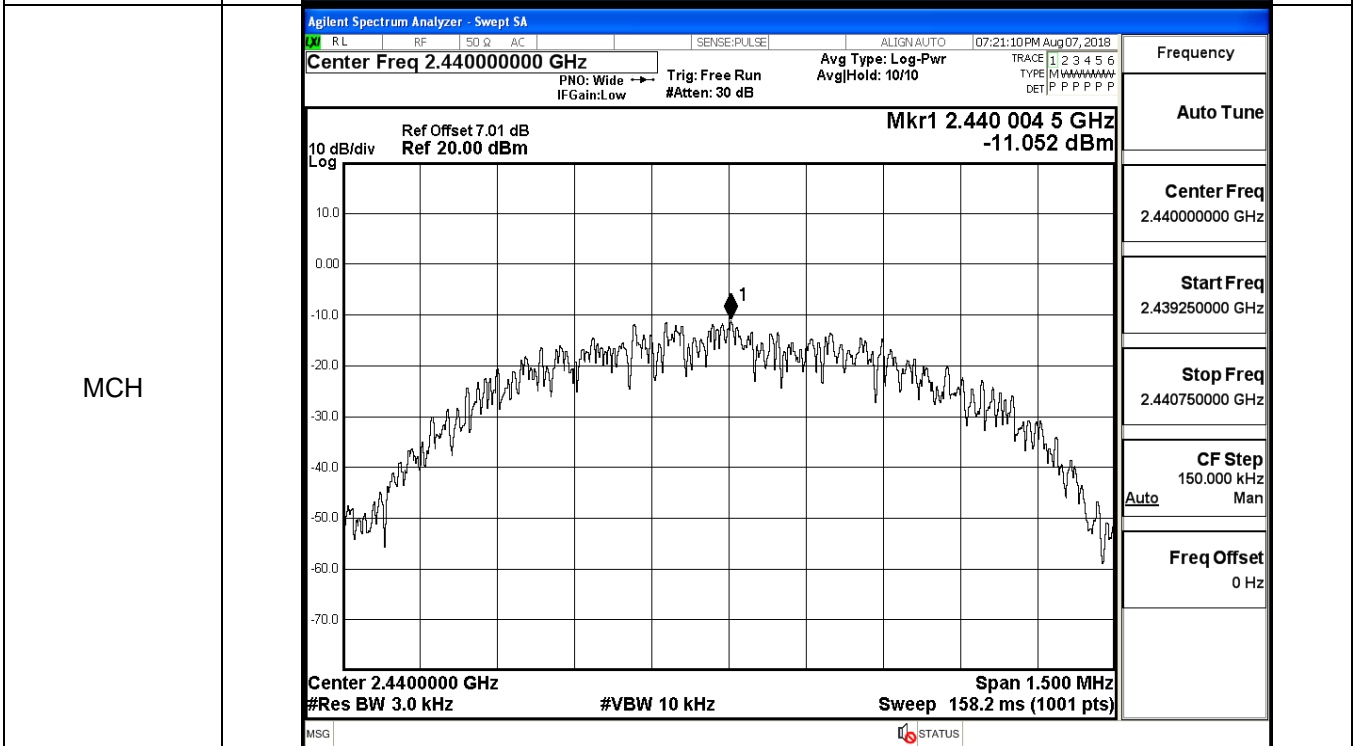
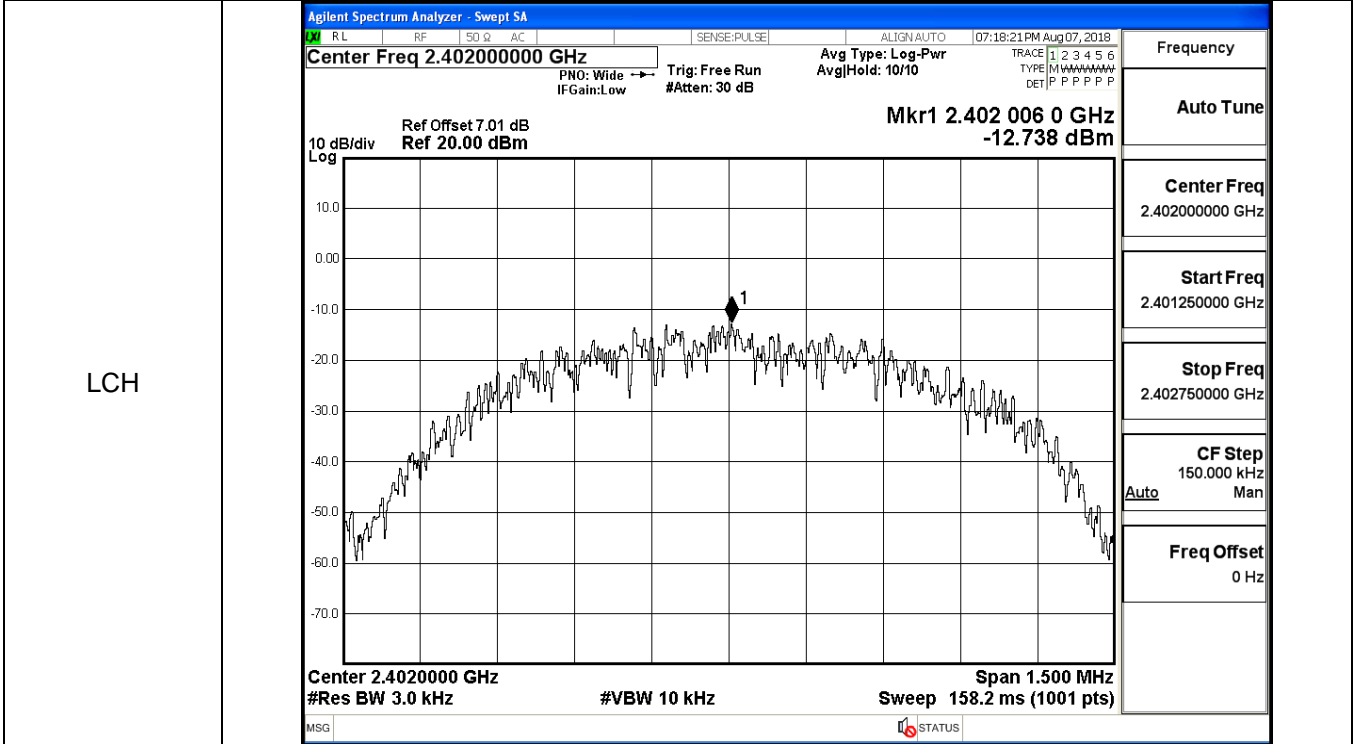
HCH



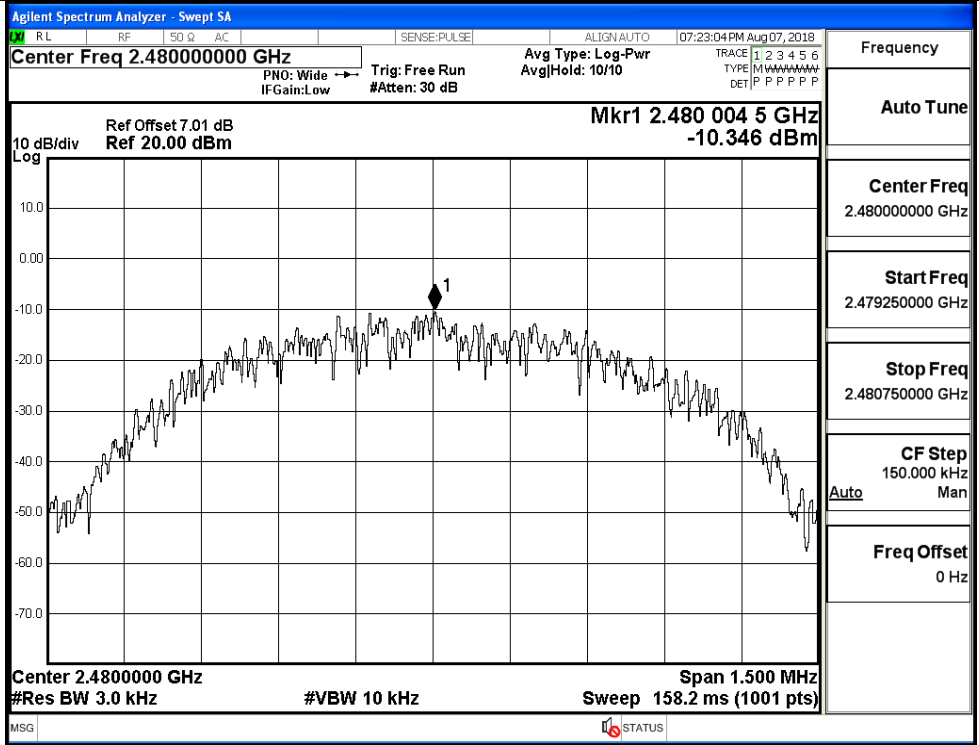
### B.3 Maximum Power Spectral Density

Mode	Channel	PSD [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
BT LE	LCH	-12.738	8	PASS
BT LE	MCH	-11.052	8	PASS
BT LE	HCH	-10.346	8	PASS

#### Test Graphs



HCH

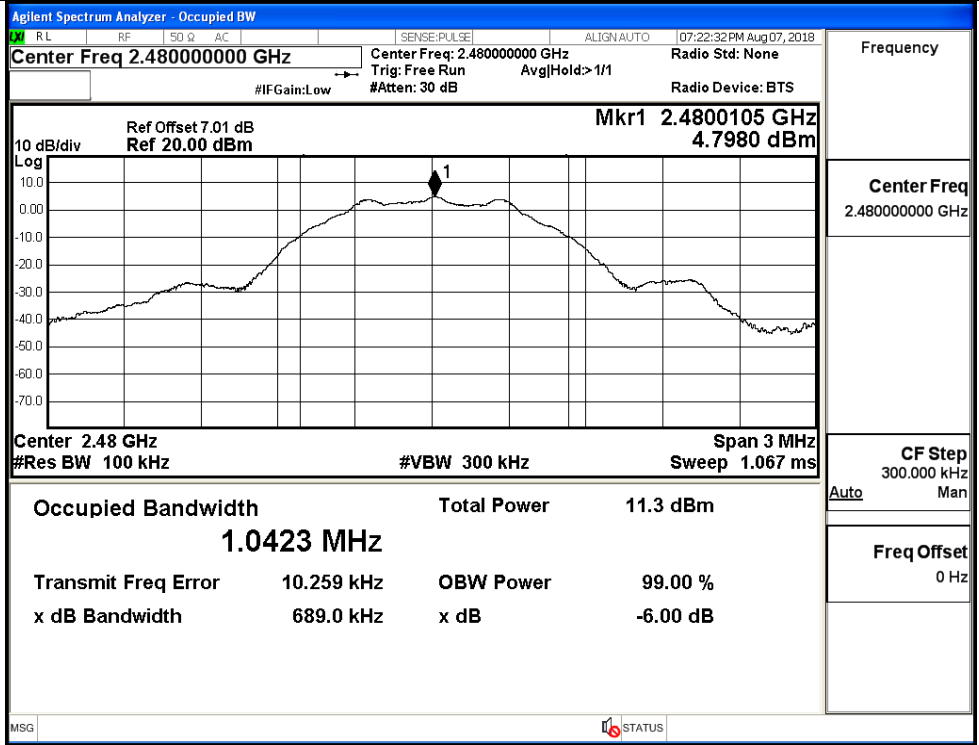


**B.4 6dB Bandwidth**

Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
BT LE	LCH	0.6906	≥0.5	PASS
BT LE	MCH	0.6875	≥0.5	PASS
BT LE	HCH	0.6890	≥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 07:17:49 PM Aug 07, 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> <p style="margin: 0;">Center 2.402 GHz #Res BW 100 kHz #VBW 300 kHz Span 3 MHz Sweep 1.067 ms</p> <table border="0" style="width: 100%; font-size: small;"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>9.29 dBm</td> </tr> <tr> <td style="text-align: center;"><b>1.0428 MHz</b></td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>15.852 kHz</td> <td>OBW Power</td> </tr> <tr> <td>x dB Bandwidth</td> <td>690.6 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: 0;">MSG STATUS</p> </div>	Occupied Bandwidth	Total Power	9.29 dBm	<b>1.0428 MHz</b>			Transmit Freq Error	15.852 kHz	OBW Power	x dB Bandwidth	690.6 kHz	x dB			99.00 %			-6.00 dB
Occupied Bandwidth	Total Power	9.29 dBm																	
<b>1.0428 MHz</b>																			
Transmit Freq Error	15.852 kHz	OBW Power																	
x dB Bandwidth	690.6 kHz	x dB																	
		99.00 %																	
		-6.00 dB																	
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 07:20:39 PM Aug 07, 2018</p> <p style="margin: 0;">Center Freq: 2.440000000 GHz Center Freq: 2.440000000 GHz Radio Std: None                      Trig: Free Run AvgHold: &gt;1/1                      #IFGain:Low #Atten: 30 dB Radio Device: BTS</p> <p style="margin: 0;">Center 2.44 GHz #Res BW 100 kHz #VBW 300 kHz Span 3 MHz Sweep 1.067 ms</p> <table border="0" style="width: 100%; font-size: small;"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>10.7 dBm</td> </tr> <tr> <td style="text-align: center;"><b>1.0396 MHz</b></td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>8.394 kHz</td> <td>OBW Power</td> </tr> <tr> <td>x dB Bandwidth</td> <td>687.5 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: 0;">MSG STATUS</p> </div>	Occupied Bandwidth	Total Power	10.7 dBm	<b>1.0396 MHz</b>			Transmit Freq Error	8.394 kHz	OBW Power	x dB Bandwidth	687.5 kHz	x dB			99.00 %			-6.00 dB
Occupied Bandwidth	Total Power	10.7 dBm																	
<b>1.0396 MHz</b>																			
Transmit Freq Error	8.394 kHz	OBW Power																	
x dB Bandwidth	687.5 kHz	x dB																	
		99.00 %																	
		-6.00 dB																	

HCH



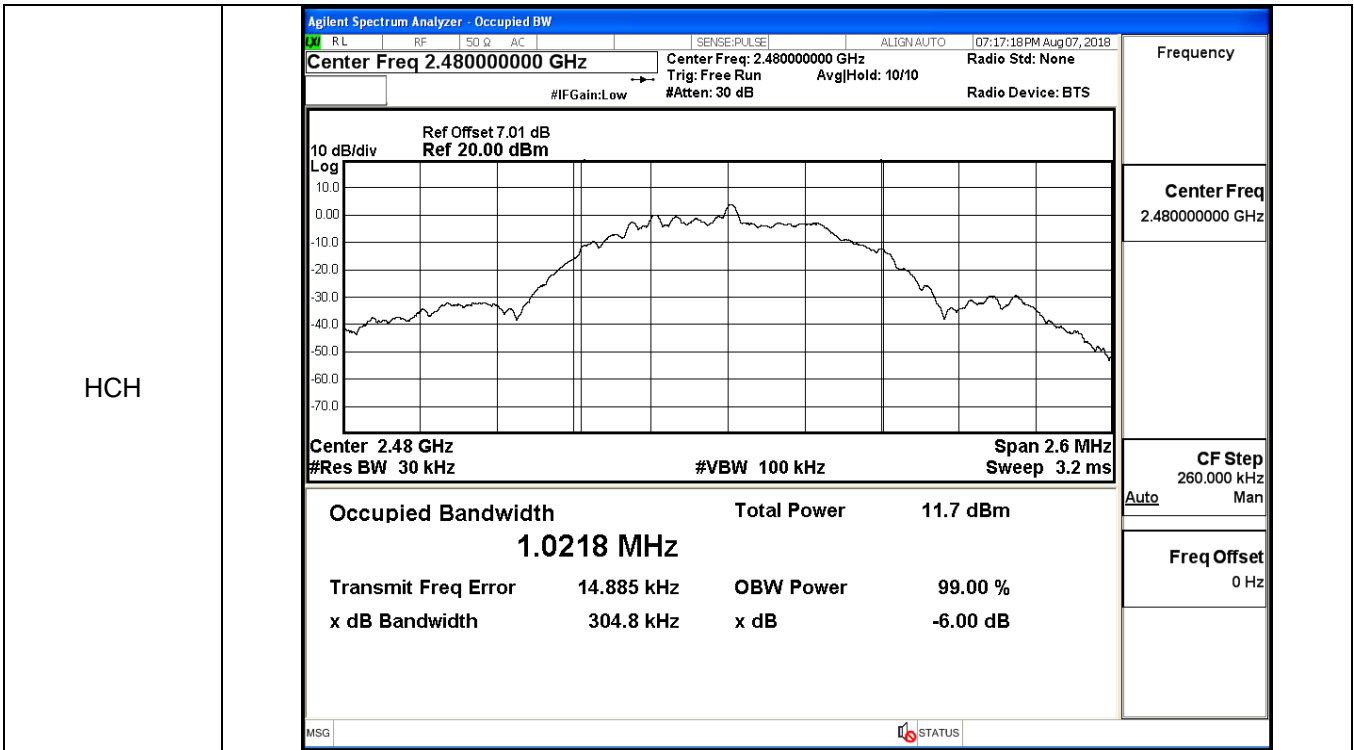
### B.5 Occupied Bandwidth

Mode	Channel	Occupied Bandwidth [MHz]	Limit [MHz]	Verdict
BT LE	LCH	1.0252	≥0.5	PASS
BT LE	MCH	1.0244	≥0.5	PASS
BT LE	HCH	1.0218	≥0.5	PASS

#### Test Graphs

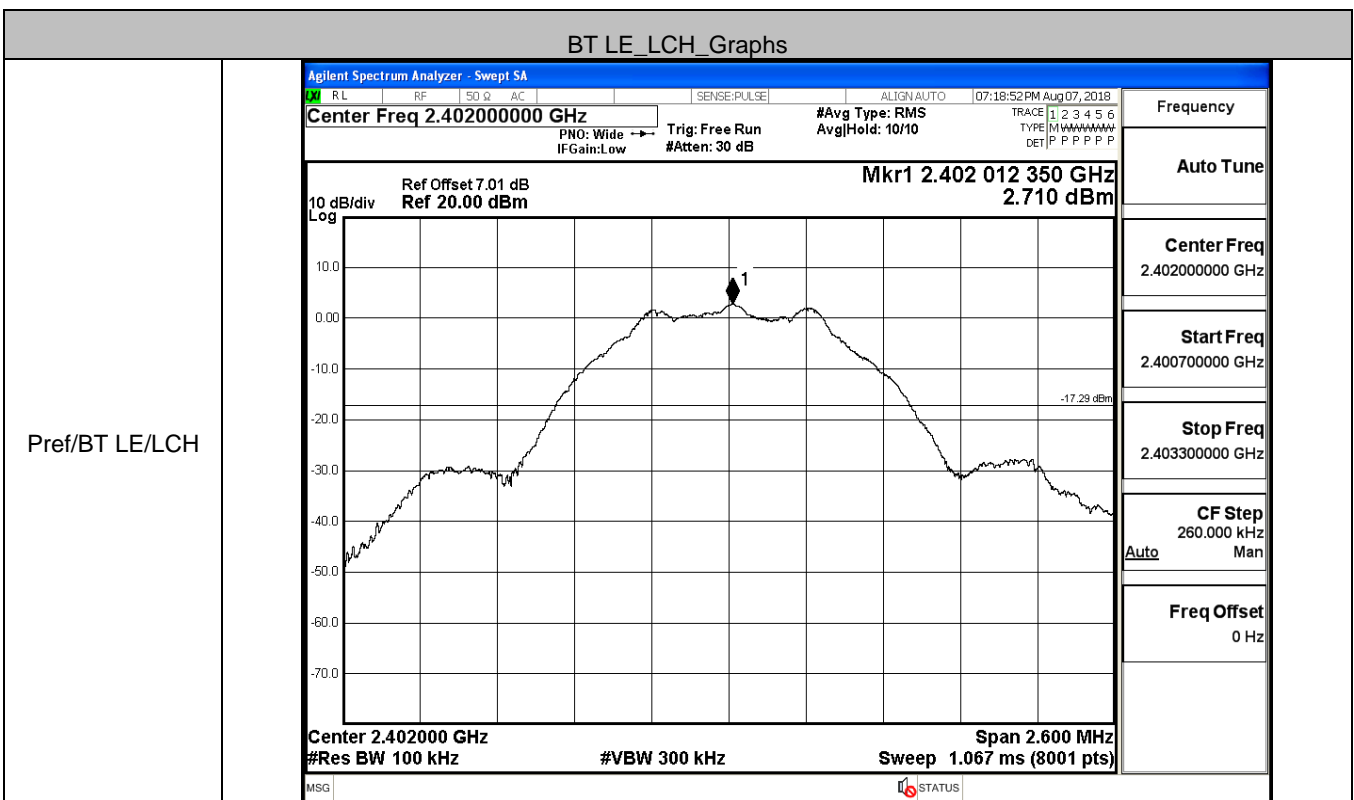
LCH	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.40200000 GHz</p> <p>Center Freq: 2.40200000 GHz Trig: Free Run #IFGain: Low #Atten: 30 dB</p> <p>Radio Std: None AvgHold: 10/10 Radio Device: BTS</p> <p>Ref Offset 7.01 dB Ref 20.00 dBm</p> <p>Center 2.402 GHz #Res BW 30 kHz</p> <p>Span 2.6 MHz Sweep 3.2 ms</p> <p>#VBW 100 kHz</p> <p>Occupied Bandwidth <b>1.0252 MHz</b></p> <p>Total Power <b>9.52 dBm</b></p> <p>Transmit Freq Error 20.003 kHz x dB Bandwidth 305.8 kHz</p> <p>OBW Power 99.00 % x dB -6.00 dB</p>	<p>Frequency</p> <p>Center Freq 2.40200000 GHz</p> <p>CF Step 260.000 kHz</p> <p>Freq Offset 0 Hz</p>
	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.44000000 GHz</p> <p>Center Freq: 2.44000000 GHz Trig: Free Run #IFGain: Low #Atten: 30 dB</p> <p>Radio Std: None AvgHold: 10/10 Radio Device: BTS</p> <p>Ref Offset 7.01 dB Ref 20.00 dBm</p> <p>Center 2.44 GHz #Res BW 30 kHz</p> <p>Span 2.6 MHz Sweep 3.2 ms</p> <p>#VBW 100 kHz</p> <p>Occupied Bandwidth <b>1.0244 MHz</b></p> <p>Total Power <b>11.0 dBm</b></p> <p>Transmit Freq Error 14.021 kHz x dB Bandwidth 305.8 kHz</p> <p>OBW Power 99.00 % x dB -6.00 dB</p>	<p>Frequency</p> <p>Center Freq 2.44000000 GHz</p> <p>CF Step 260.000 kHz</p> <p>Freq Offset 0 Hz</p>



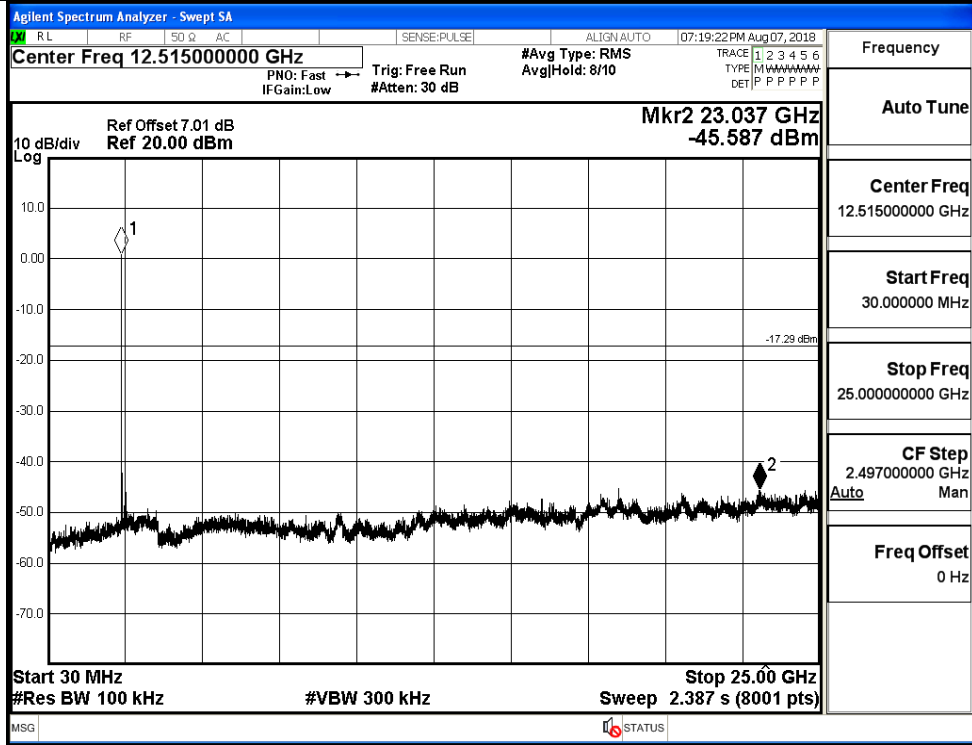


### B.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	2.71	-45.587	-17.290	PASS
BT LE	MCH	4.141	-45.093	-15.859	PASS
BT LE	HCH	4.794	-45.563	-15.206	PASS

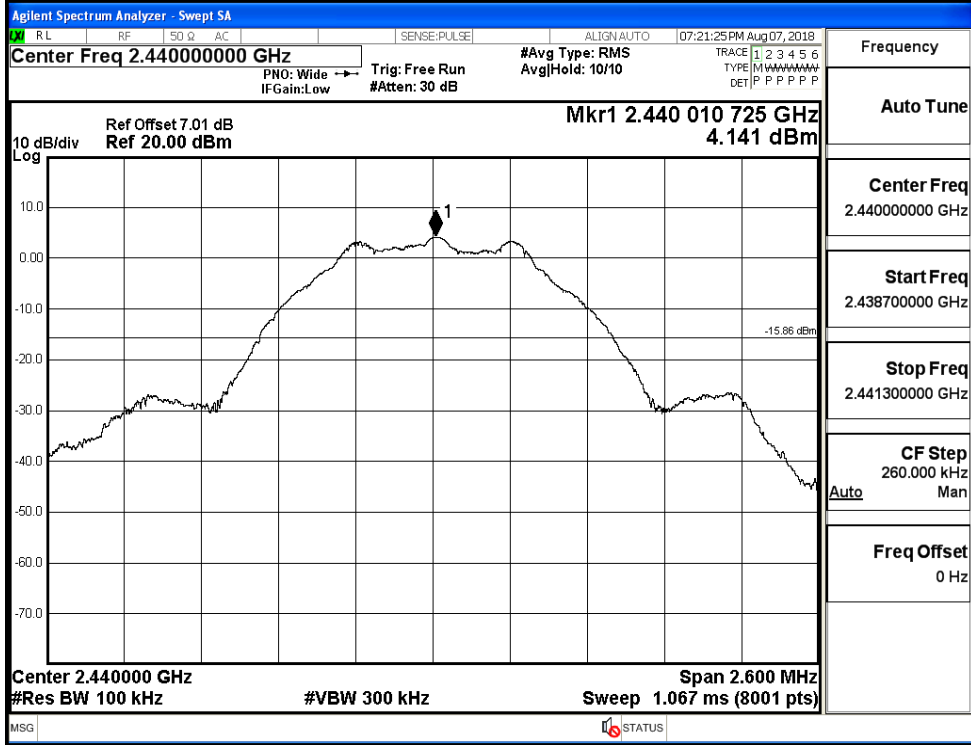


Puw/BT LE/LCH

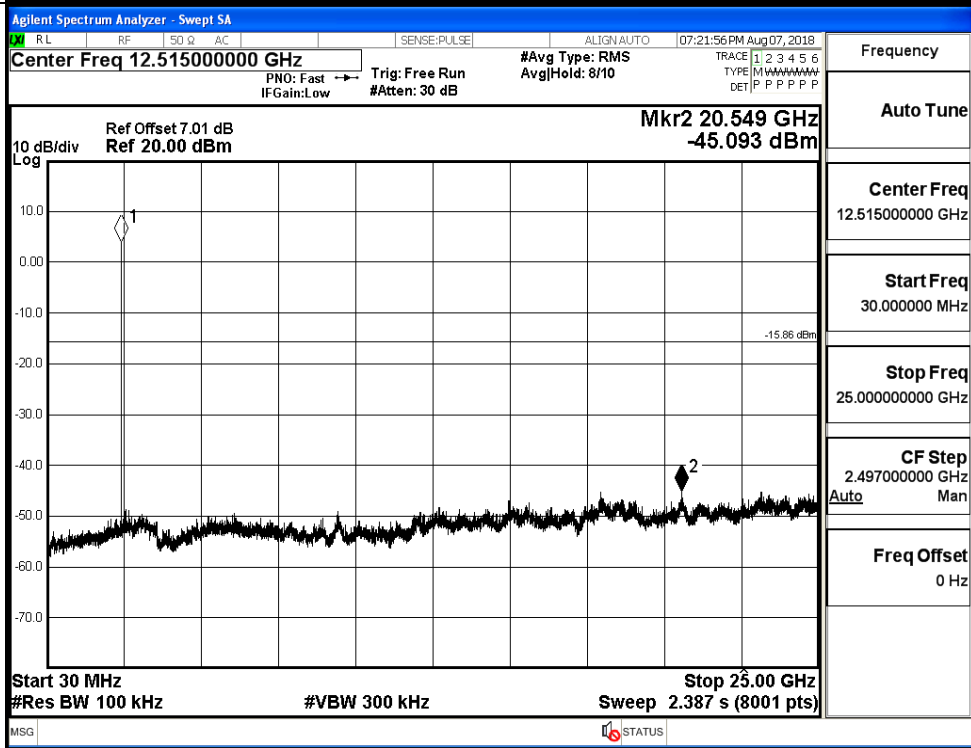


BT LE\_MCH\_Graphs

Pref/BT LE/MCH

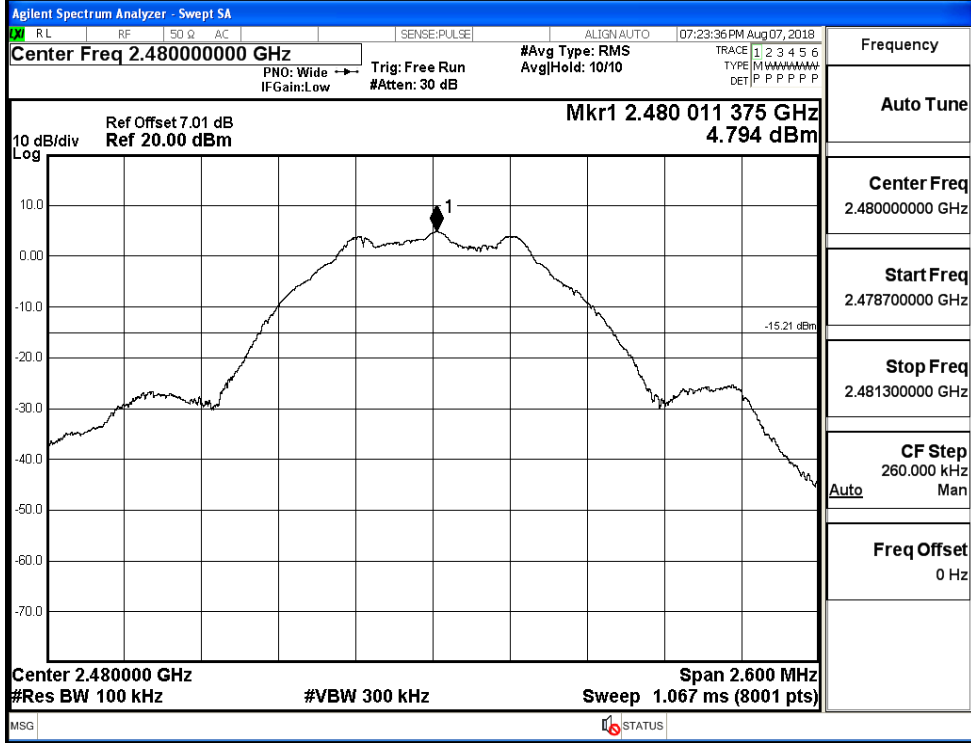


Puw/BT LE/MCH

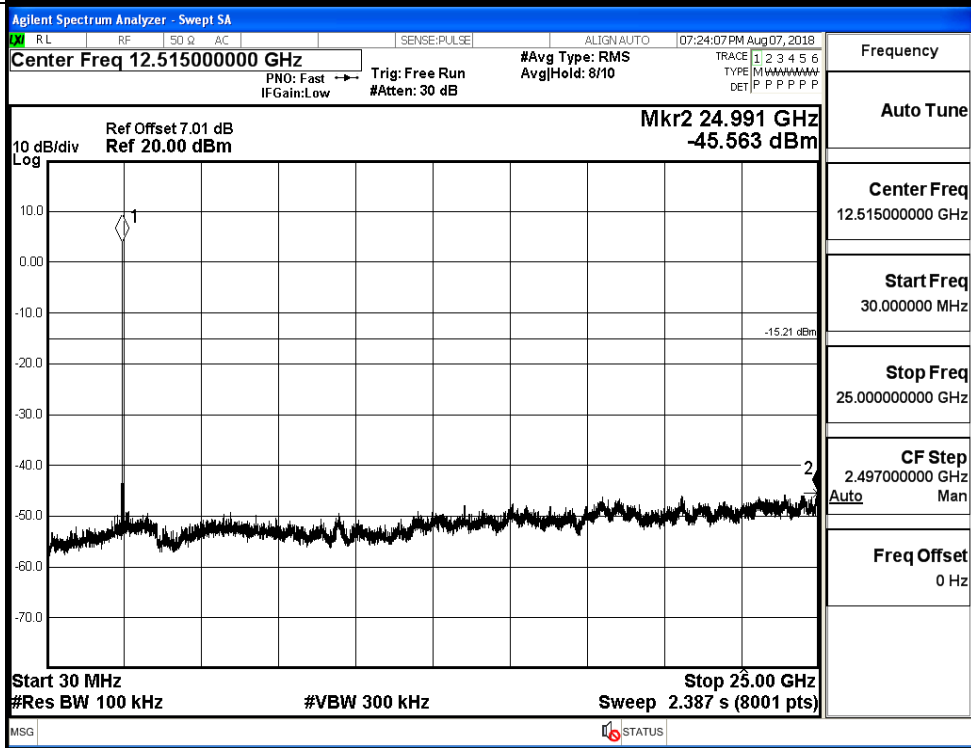


BT LE\_HCH\_Graphs

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	2.846	-50.491	-17.15	PASS
BT LE	HCH	4.930	-50.366	-15.07	PASS

**Test Graphs**

LCH

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f		2.402 014 GHz	2.846 dBm			
2	N	f		2.400 000 GHz	-44.129 dBm			
3	N	f		2.390 000 GHz	-55.079 dBm			
4	N	f		2.349 468 GHz	-50.491 dBm			
5								
6								
7								
8								
9								
10								
11								

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

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f		2.480 018 50 GHz	4.930 dBm			
2	N	f		2.483 500 00 GHz	-50.781 dBm			
3	N	f		2.500 000 00 GHz	-54.741 dBm			
4	N	f		2.483 535 75 GHz	-50.366 dBm			
5								
6								
7								
8								
9								
10								
11								

Frequency

Auto Tune

Center Freq  
2.48900000 GHz

Start Freq  
2.47800000 GHz

Stop Freq  
2.50000000 GHz

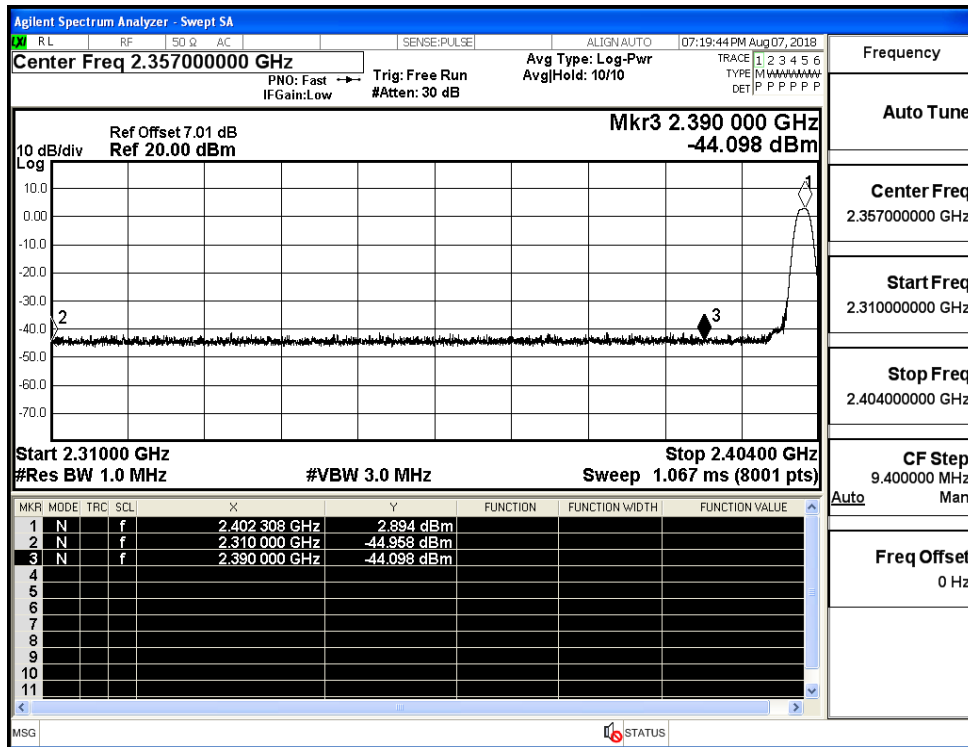
CF Step  
2.200000 MHz

Freq Offset  
0 Hz

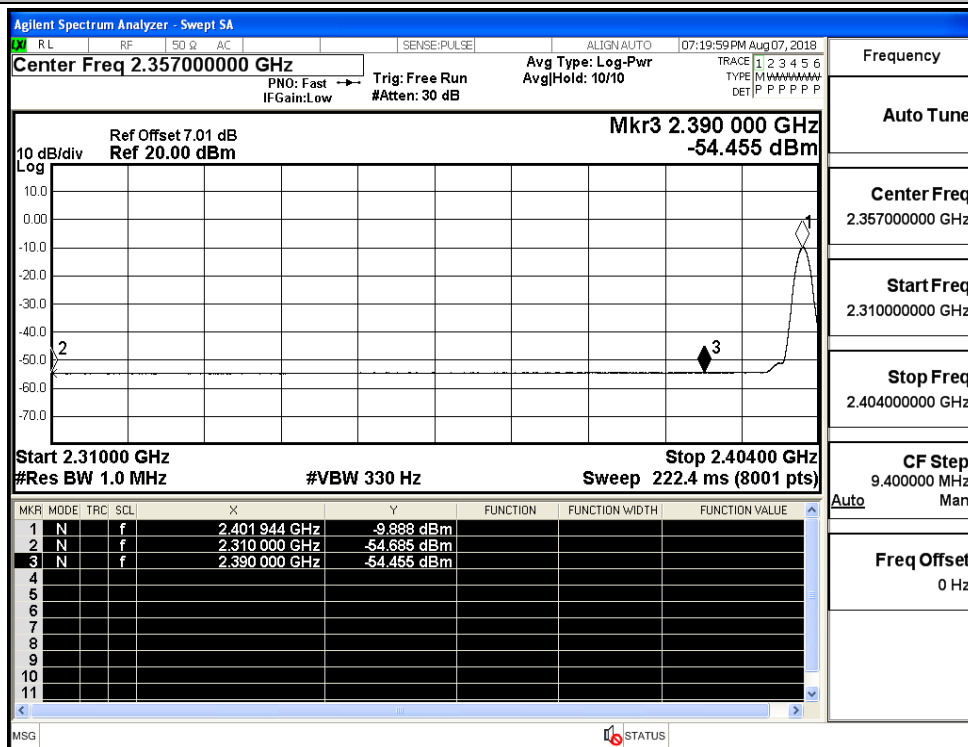
**B.8 Restrict-band band-edge measurements**

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	-44.96	2.0	0	52.30	PEAK	74	PASS
		Ant1	2310.0	-54.69	2.0	0	42.57	AV	54	PASS
		Ant1	2390.0	-44.10	2.0	0	53.16	PEAK	74	PASS
		Ant1	2390.0	-54.46	2.0	0	42.80	AV	54	PASS
	2480	Ant1	2483.5	-38.61	2.0	0	58.65	PEAK	74	PASS
		Ant1	2483.5	-50.72	2.0	0	46.53	AV	54	PASS
		Ant1	2500.0	-43.12	2.0	0	54.14	PEAK	74	PASS
		Ant1	2500.0	-54.05	2.0	0	43.21	AV	54	PASS

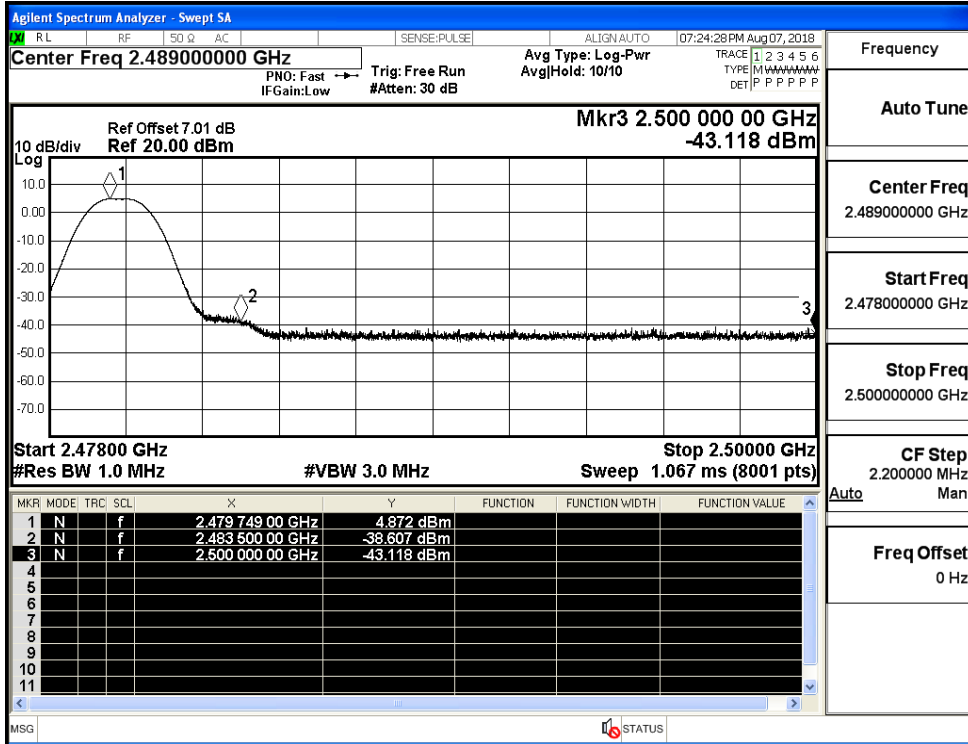
Restrict-band band-edge measurements\_BT LE\_2402\_Ant1\_PEAK



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

