

## Appendix A

### RF Test Data for BT V5.0 (BT LE) (Conducted Measurement)

Product Name: Hand-held Barcode Scanner

Trade Mark: Newland

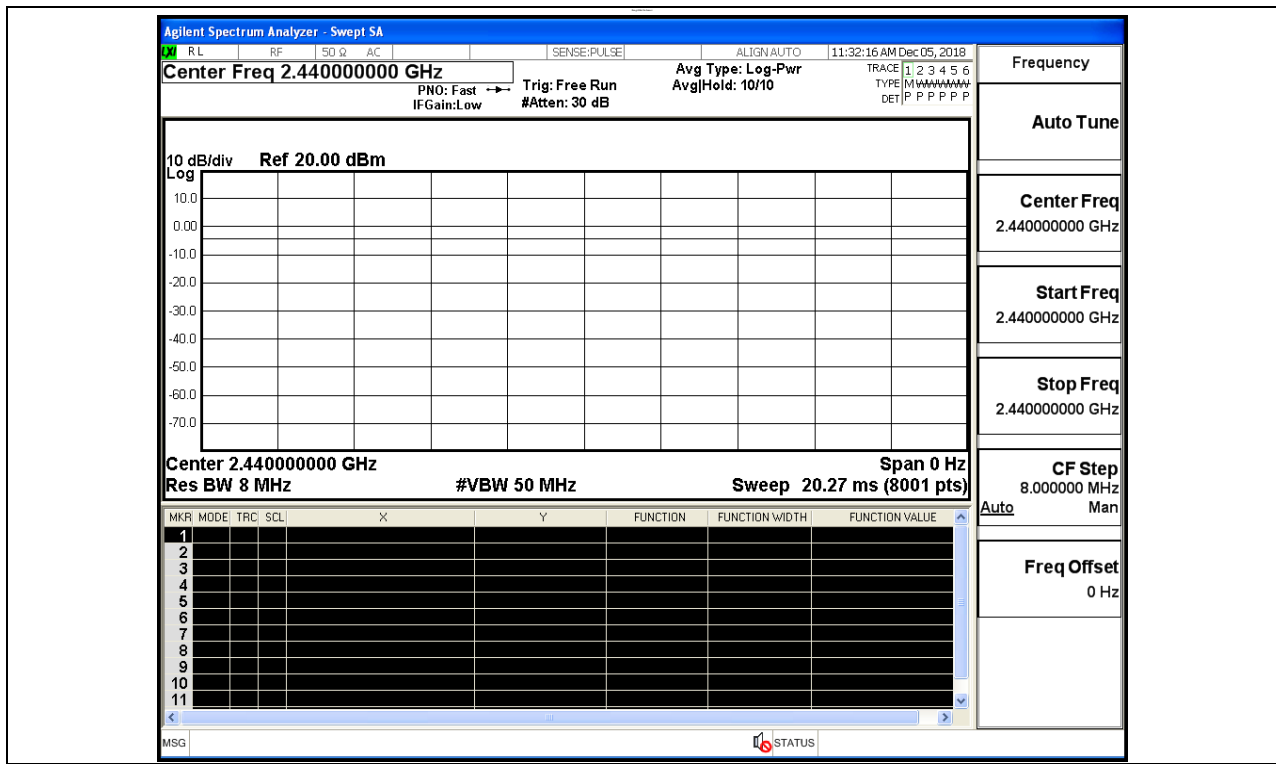
Test Model: NLS-HR52

#### Environmental Conditions

Temperature:	23.6 ° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Diamond.Lu
Supervised by:	Jayden.Zhuo

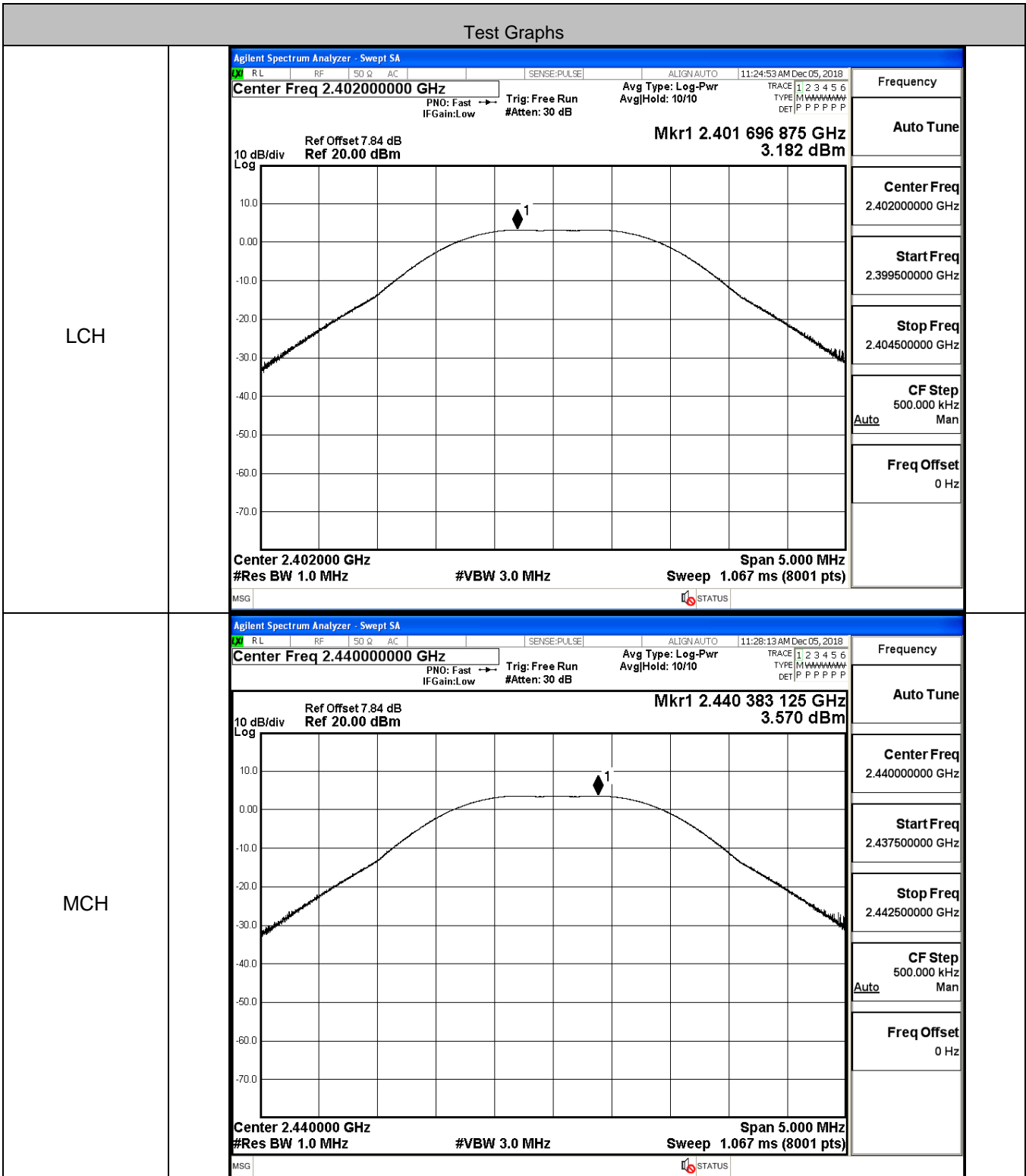
#### A.1 Duty Cycle

Test Mode	Test Channel	Data Rate	Ant	Duty Cycle[%]	Verdict
BT LE	2440	2M	Ant1	100	PASS

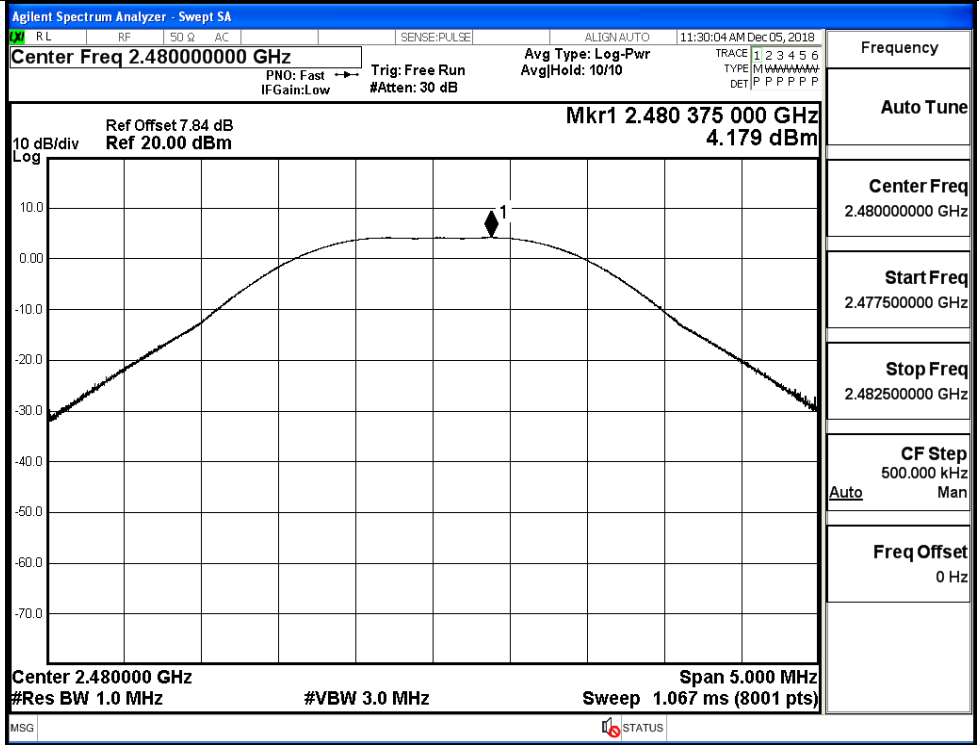


### A.2 Maximum Conducted Peak Output Power

Mode	Data Rate	Channel	Conduct Peak Power[dBm]	Limit [dBm]	Verdict
BT LE	2M	LCH	3.182	30	PASS
BT LE	2M	MCH	3.570	30	PASS
BT LE	2M	HCH	4.179	30	PASS

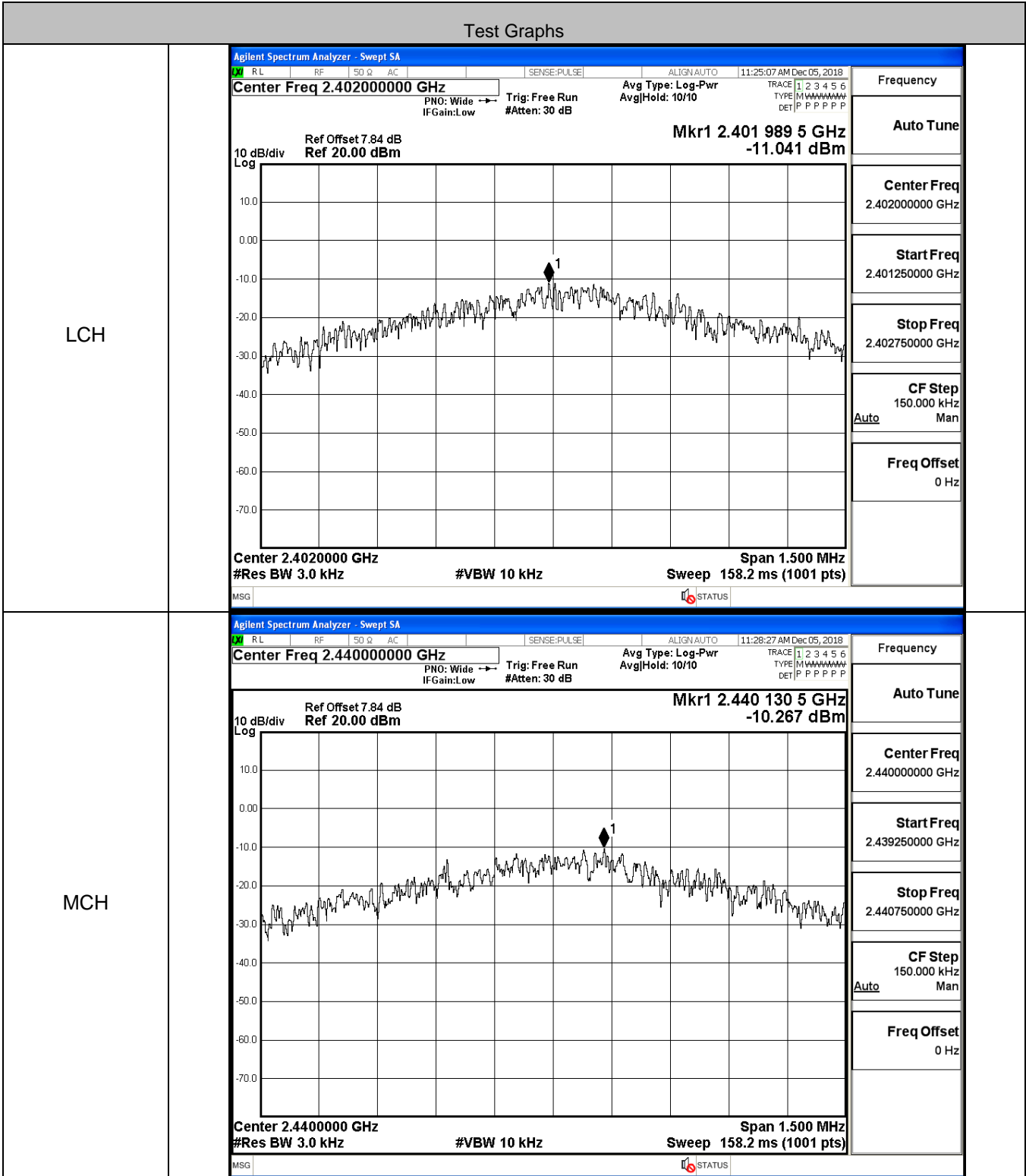


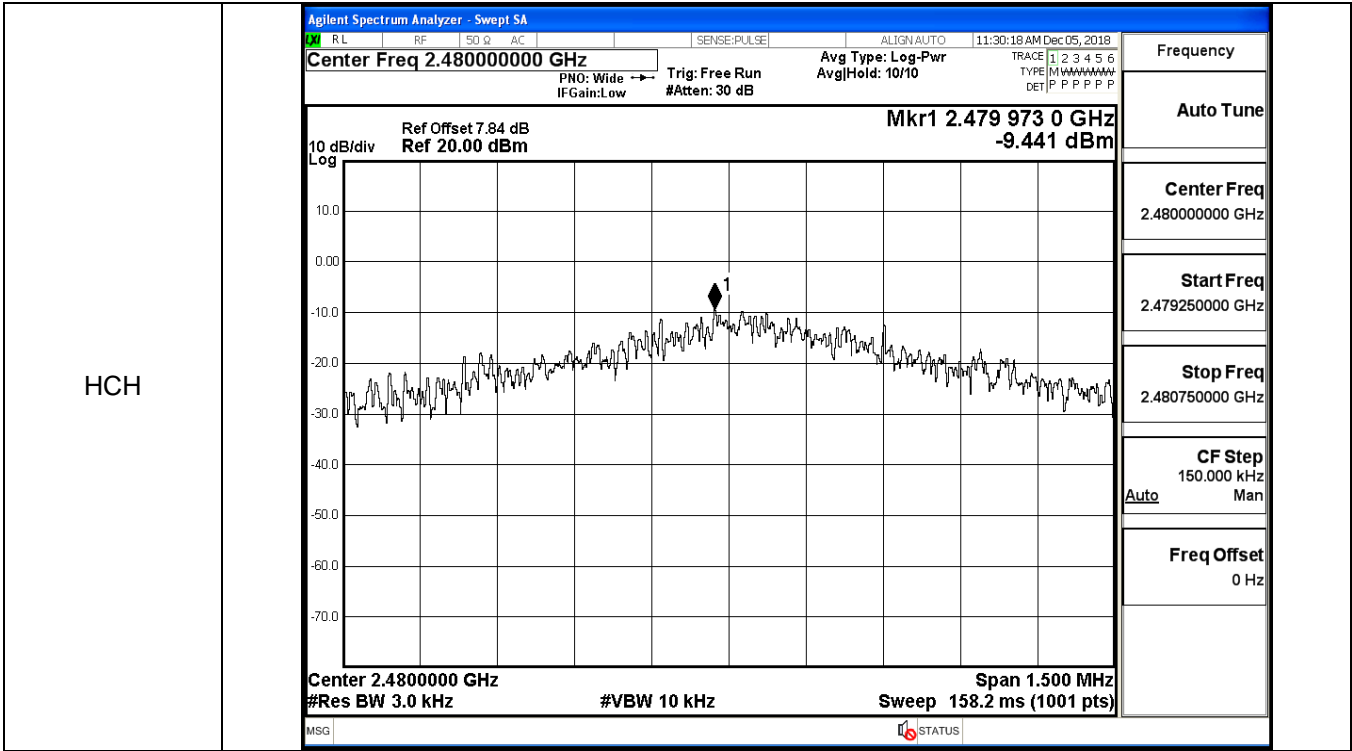
HCH



### A.3 Maximum Power Spectral Density

Mode	Data Rate	Channel	PSD [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
BT LE	2M	LCH	-11.041	8	PASS
BT LE	2M	MCH	-10.267	8	PASS
BT LE	2M	HCH	-9.441	8	PASS





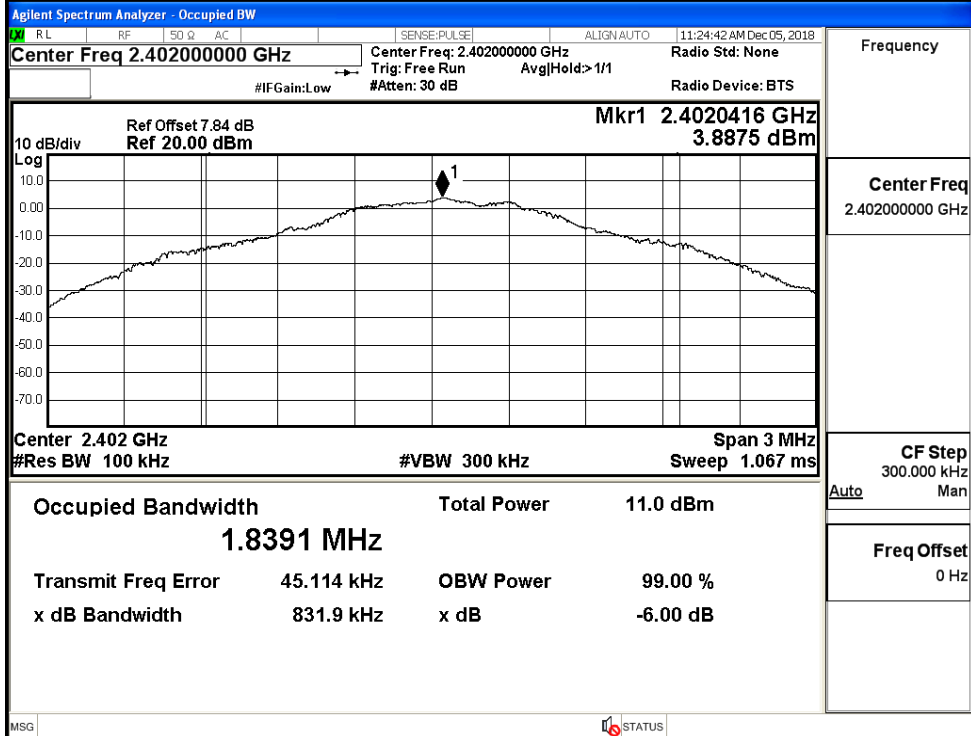
HCH

**A.4 6dB Bandwidth**

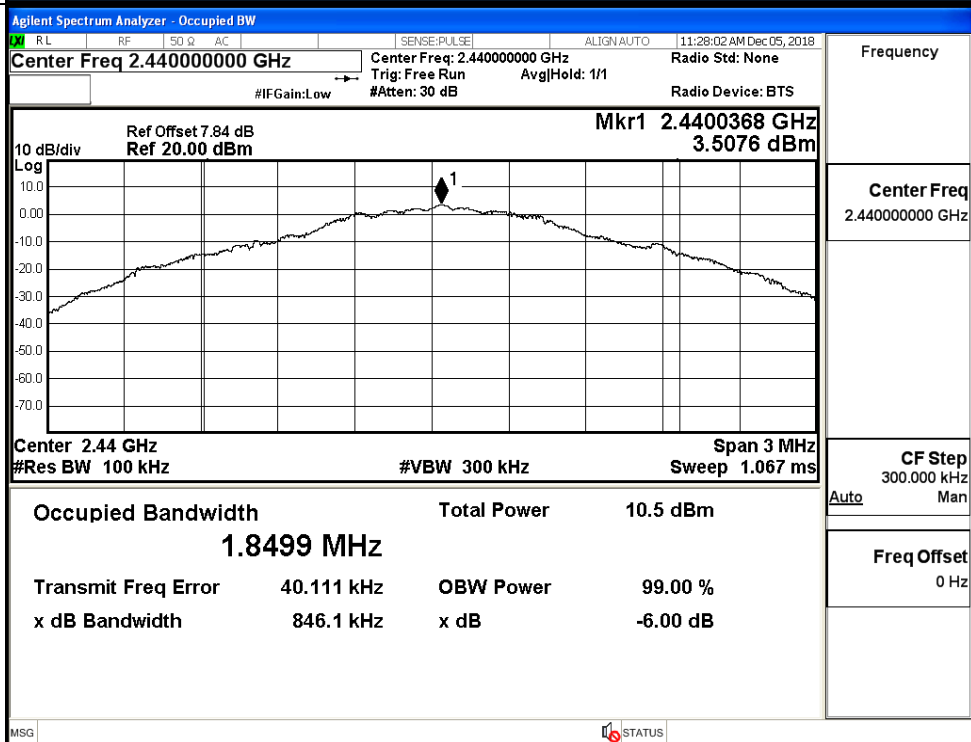
Mode	Data Rate	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
BT LE	2M	LCH	0.8319	≥0.5	PASS
BT LE	2M	MCH	0.8461	≥0.5	PASS
BT LE	2M	HCH	0.8005	≥0.5	PASS

**Test Graphs**

LCH



MCH



HCH

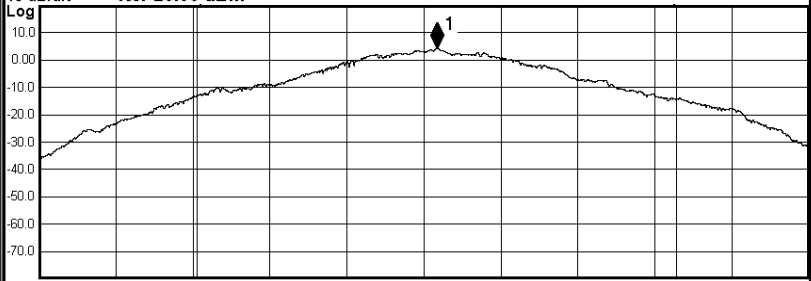
Agilent Spectrum Analyzer - Occupied BW

RL	RF	50 Ω	AC	SENSE:PULSE	ALIGN:AUTO	11:29:53 AM Dec 05, 2018
Center Freq 2.480000000 GHz			Center Freq: 2.480000000 GHz		Radio Std: None	
			Trig: Free Run		AvgHold>1/1	
			#IFGain:Low		#Atten: 30 dB	
			Radio Device: BTS			

10 dB/div  
 Log

Ref Offset 7.84 dB  
 Ref 20.00 dBm

Mkr1 2.4800521 GHz  
 4.0498 dBm



Center 2.48 GHz

#VBW 300 kHz

Span 3 MHz

#Res BW 100 kHz

Sweep 1.067 ms

Occupied Bandwidth	Total Power	11.0 dBm
<b>1.8617 MHz</b>		
Transmit Freq Error	50.379 kHz	OBW Power 99.00 %
x dB Bandwidth	800.5 kHz	x dB -6.00 dB

MSG

STATUS

Frequency
Center Freq 2.480000000 GHz
CF Step 300.000 kHz Auto Man
Freq Offset 0 Hz

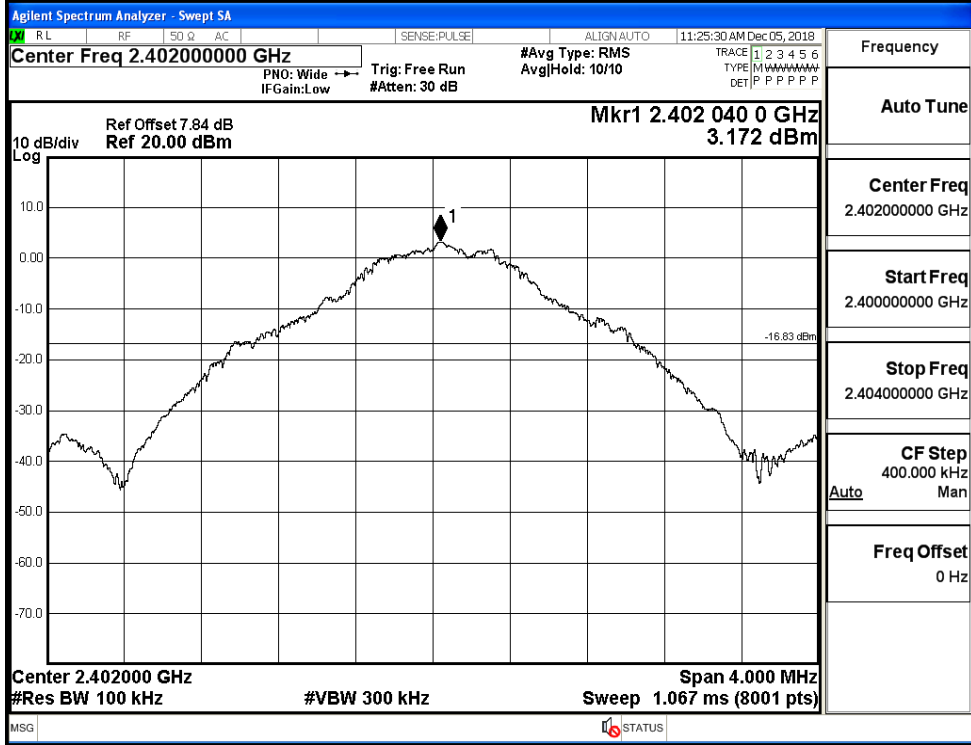
### A.5 RF Conducted Spurious Emissions

Mode	Channel	Data Rate	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	2M	3.172	-45.099	-16.828	PASS
BT LE	MCH	2M	3.389	-44.257	-16.611	PASS
BT LE	HCH	2M	3.989	-43.780	-16.011	PASS

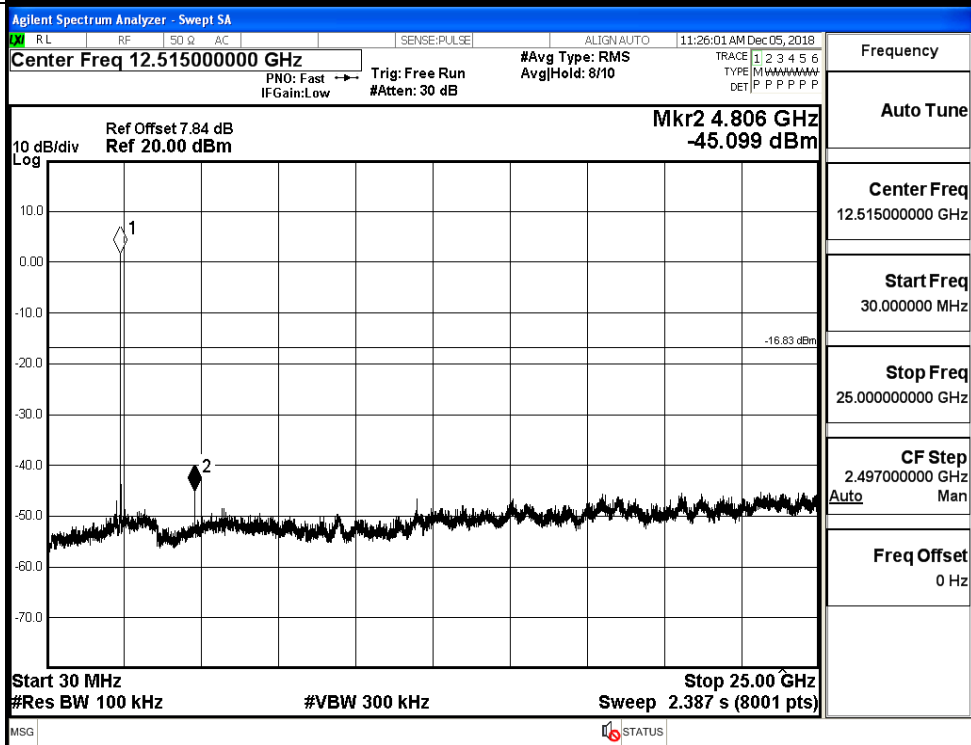


BT LE\_LCH\_Graphs

Pref/BT LE/LCH

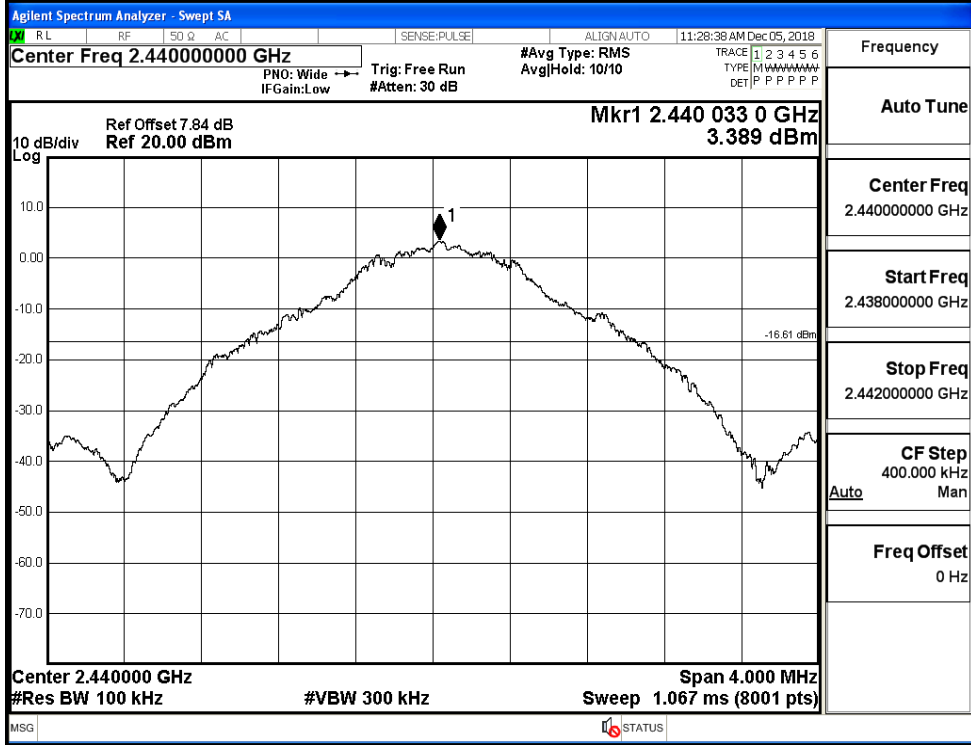


Puw/BT LE/LCH

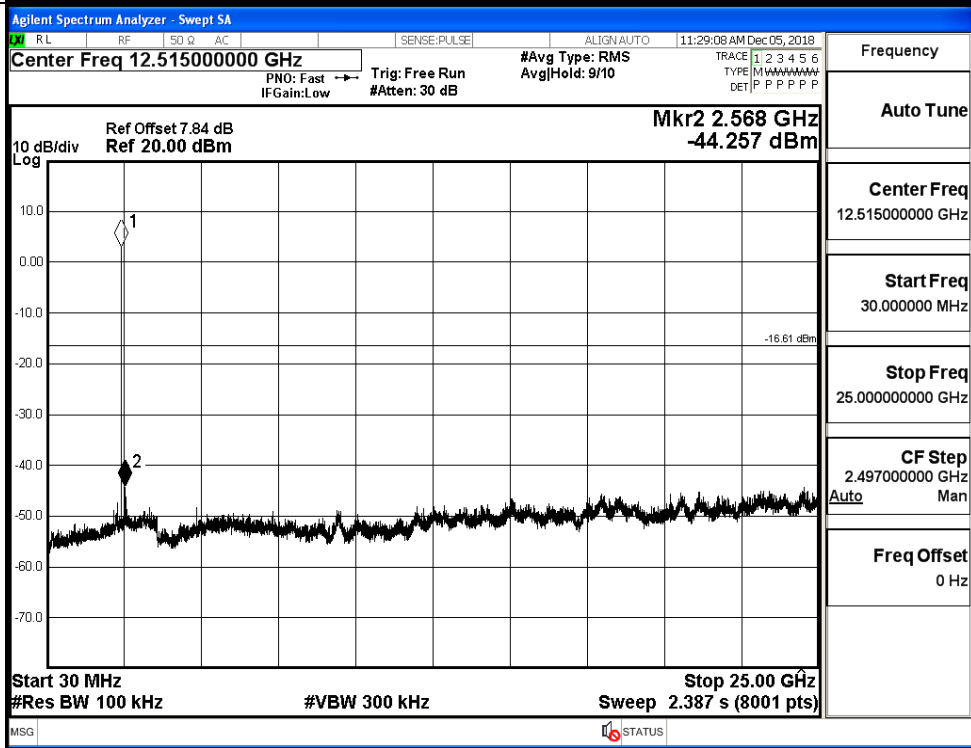


BT LE\_MCH\_Graphs

Pref/BT LE/MCH

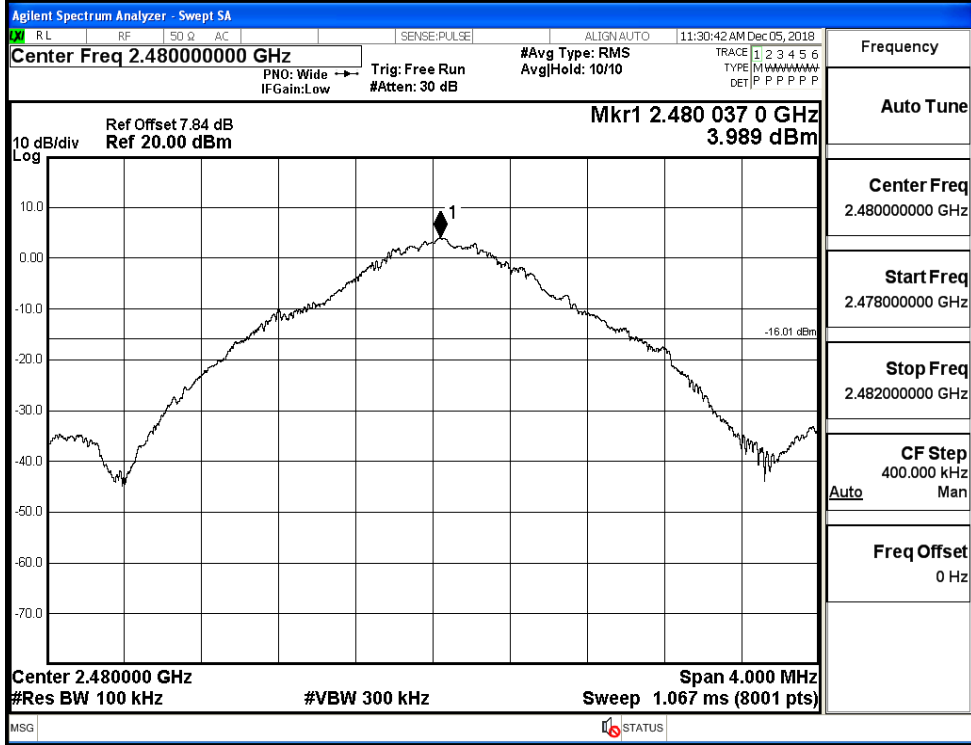


Puw/BT LE/MCH

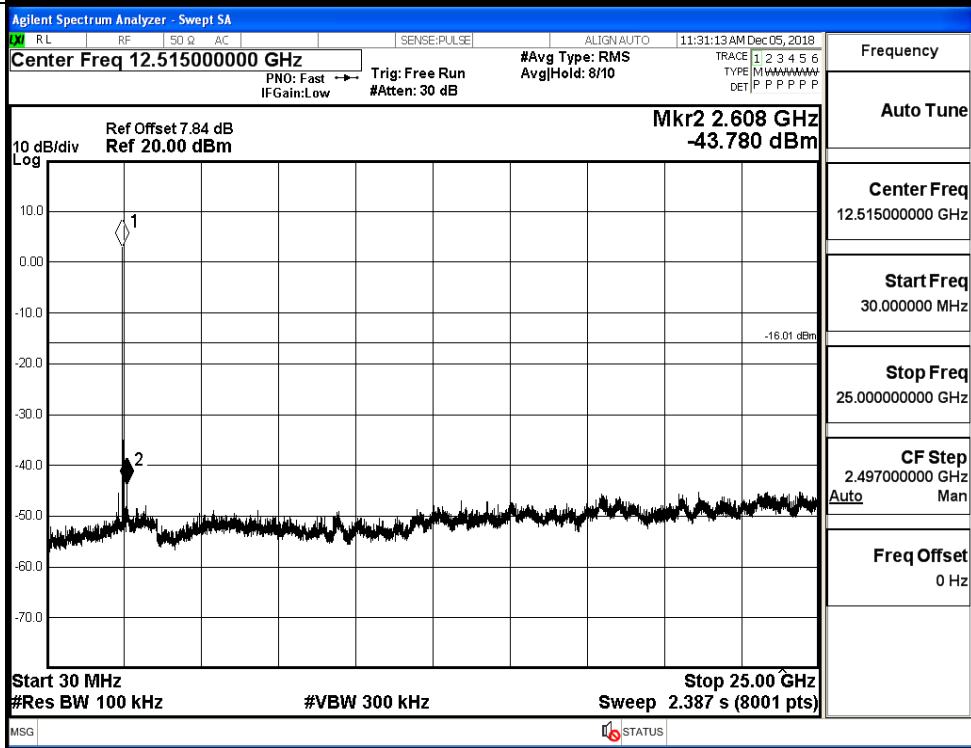


BT LE\_HCH\_Graphs

Pref/BT LE/HCH



Puw/BT LE/HCH



### A.6 Band-edge for RF Conducted Emissions

Mode	Data Rate	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
BT LE	2M	LCH	2.771	-50.136	-17.23	PASS
BT LE	2M	HCH	4.212	-47.766	-15.79	PASS

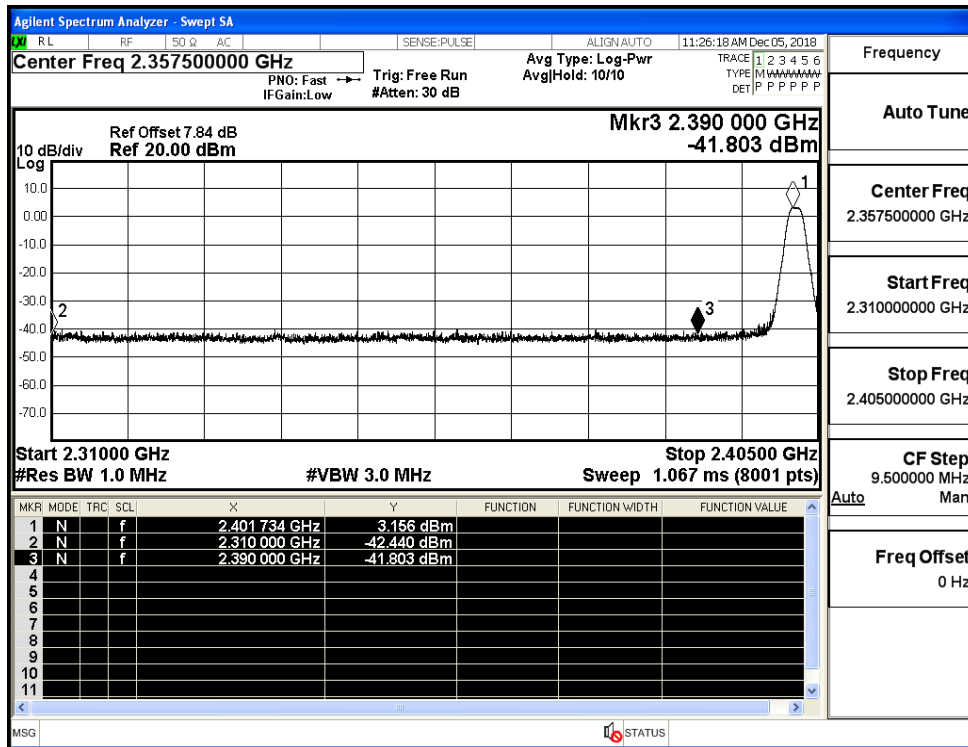
Test Graphs

LCH	<p>Agilent Spectrum Analyzer - Swept SA                  Center Freq 2.35750000 GHz                  Mkr4 2.312 078 GHz                  -50.136 dBm                  Start 2.31000 GHz Stop 2.40500 GHz                  #Res BW 100 kHz #VBW 300 kHz Sweep 9.600 ms (8001 pts)</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>2.402 079 GHz</td><td>2.771 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>-38.215 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>-53.230 dBm</td><td></td><td></td><td></td></tr> <tr><td>4</td><td>N</td><td>f</td><td></td><td>2.312 078 GHz</td><td>-50.136 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		2.402 079 GHz	2.771 dBm				2	N	f		2.400 000 GHz	-38.215 dBm				3	N	f		2.390 000 GHz	-53.230 dBm				4	N	f		2.312 078 GHz	-50.136 dBm				Frequency Auto Tune Center Freq 2.35750000 GHz Start Freq 2.310000000 GHz Stop Freq 2.405000000 GHz CF Step 9.500000 MHz Freq Offset 0 Hz
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HCH	<p>Agilent Spectrum Analyzer - Swept SA                  Center Freq 2.488500000 GHz                  Mkr4 2.483 813 8 GHz                  -47.766 dBm                  Start 2.47700 GHz Stop 2.50000 GHz                  #Res BW 100 kHz #VBW 300 kHz Sweep 2.667 ms (8001 pts)</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>2.480 050 4 GHz</td><td>4.212 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 0 GHz</td><td>-49.776 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 0 GHz</td><td>-53.326 dBm</td><td></td><td></td><td></td></tr> <tr><td>4</td><td>N</td><td>f</td><td></td><td>2.483 813 8 GHz</td><td>-47.766 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		2.480 050 4 GHz	4.212 dBm				2	N	f		2.483 500 0 GHz	-49.776 dBm				3	N	f		2.500 000 0 GHz	-53.326 dBm				4	N	f		2.483 813 8 GHz	-47.766 dBm				Frequency Auto Tune Center Freq 2.488500000 GHz Start Freq 2.477000000 GHz Stop Freq 2.500000000 GHz CF Step 2.300000 MHz Freq Offset 0 Hz
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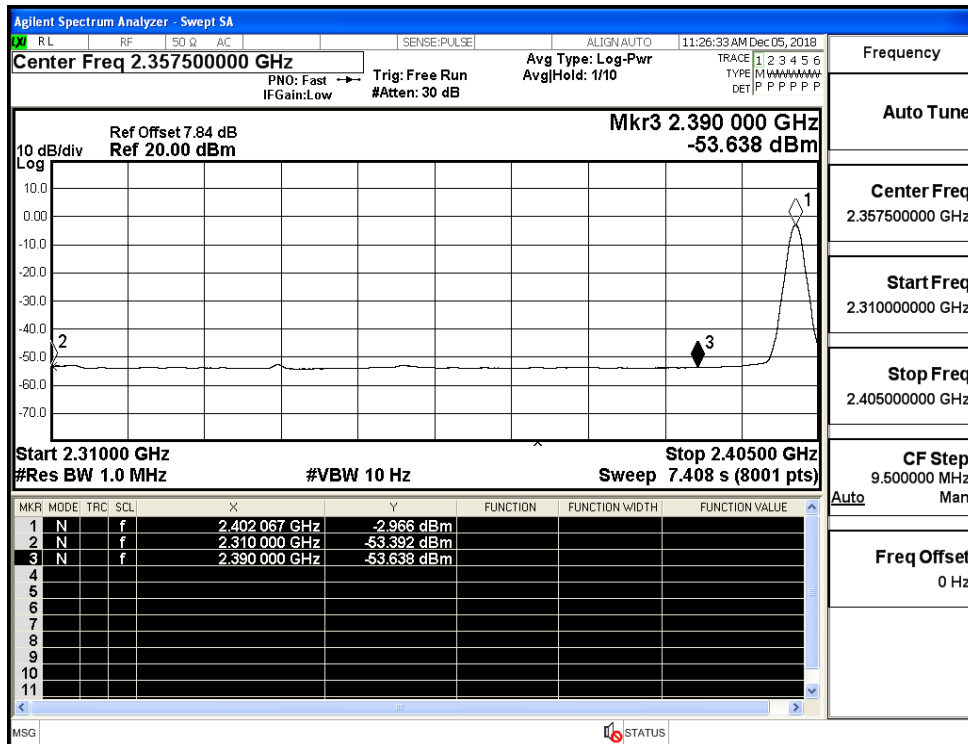
## A.7 Restrict-band band-edge measurements

Test Mode	Test Channel	Data Rate	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
BT LE	2402	2M	Ant1	2310.0	-42.44	2.0	0	54.82	PEAK	74	PASS
			Ant1	2310.0	-53.39	2.0	0	43.87	AV	54	PASS
			Ant1	2390.0	-41.80	2.0	0	55.45	PEAK	74	PASS
			Ant1	2390.0	-53.64	2.0	0	43.62	AV	54	PASS
	2480	2M	Ant1	2483.5	-34.83	2.0	0	62.43	PEAK	74	PASS
			Ant1	2483.5	-50.12	2.0	0	47.13	AV	54	PASS
			Ant1	2500.0	-43.01	2.0	0	54.25	PEAK	74	PASS
			Ant1	2500.0	-53.13	2.0	0	44.13	AV	54	PASS

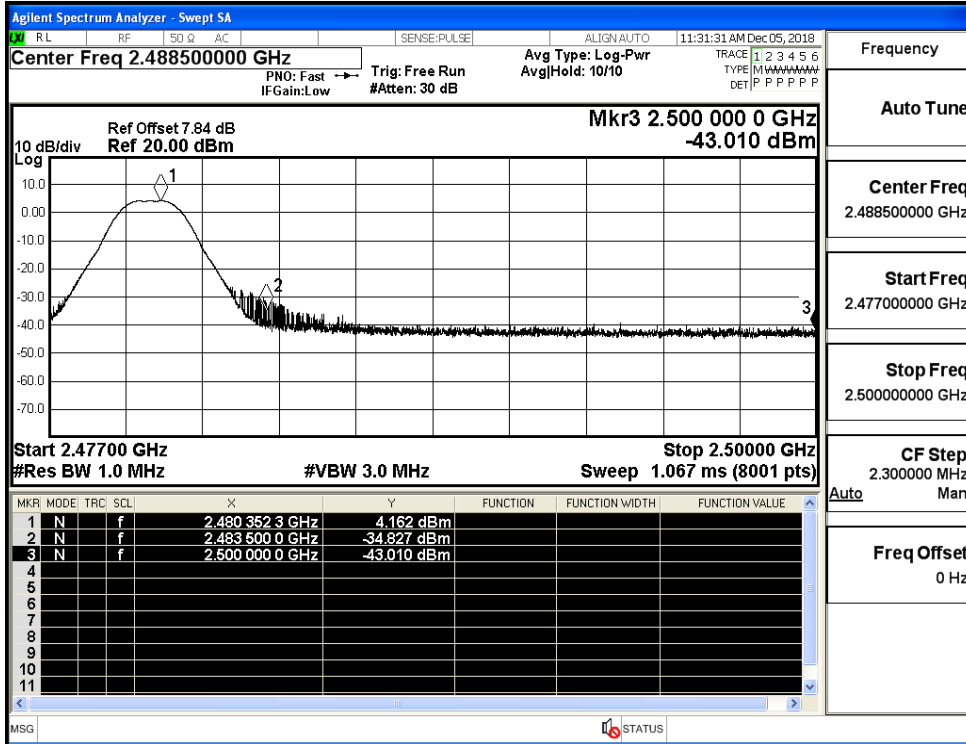
Restrict-band band-edge measurements\_BT LE\_2402\_Ant1\_PEAK



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

