

Appendix B

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

Product Name: TITAN 1785

Trade Mark: TITAN

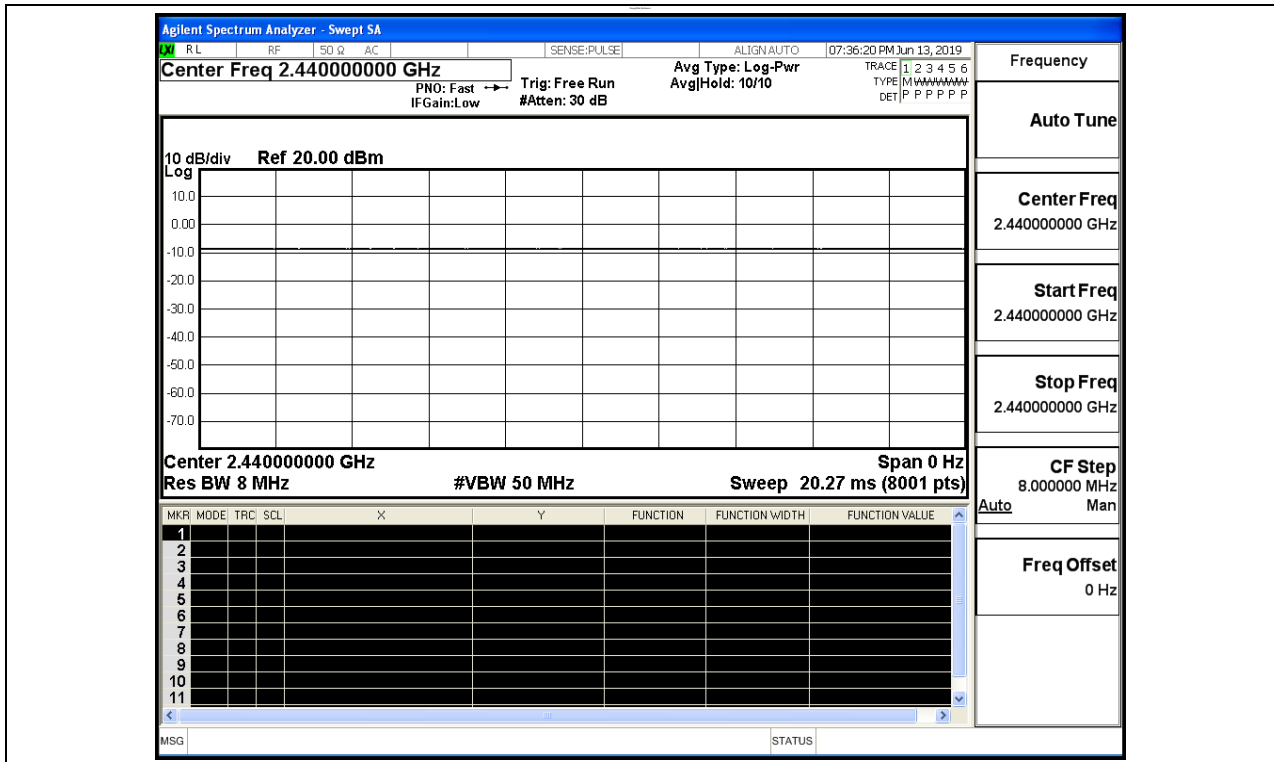
Test Model: 1785SL01

Environmental Conditions

Temperature:	25.4 ° C
Relative Humidity:	52.8%
ATM Pressure:	100.0 kPa
Test Engineer:	David.Luo
Supervised by:	Tom.Liu

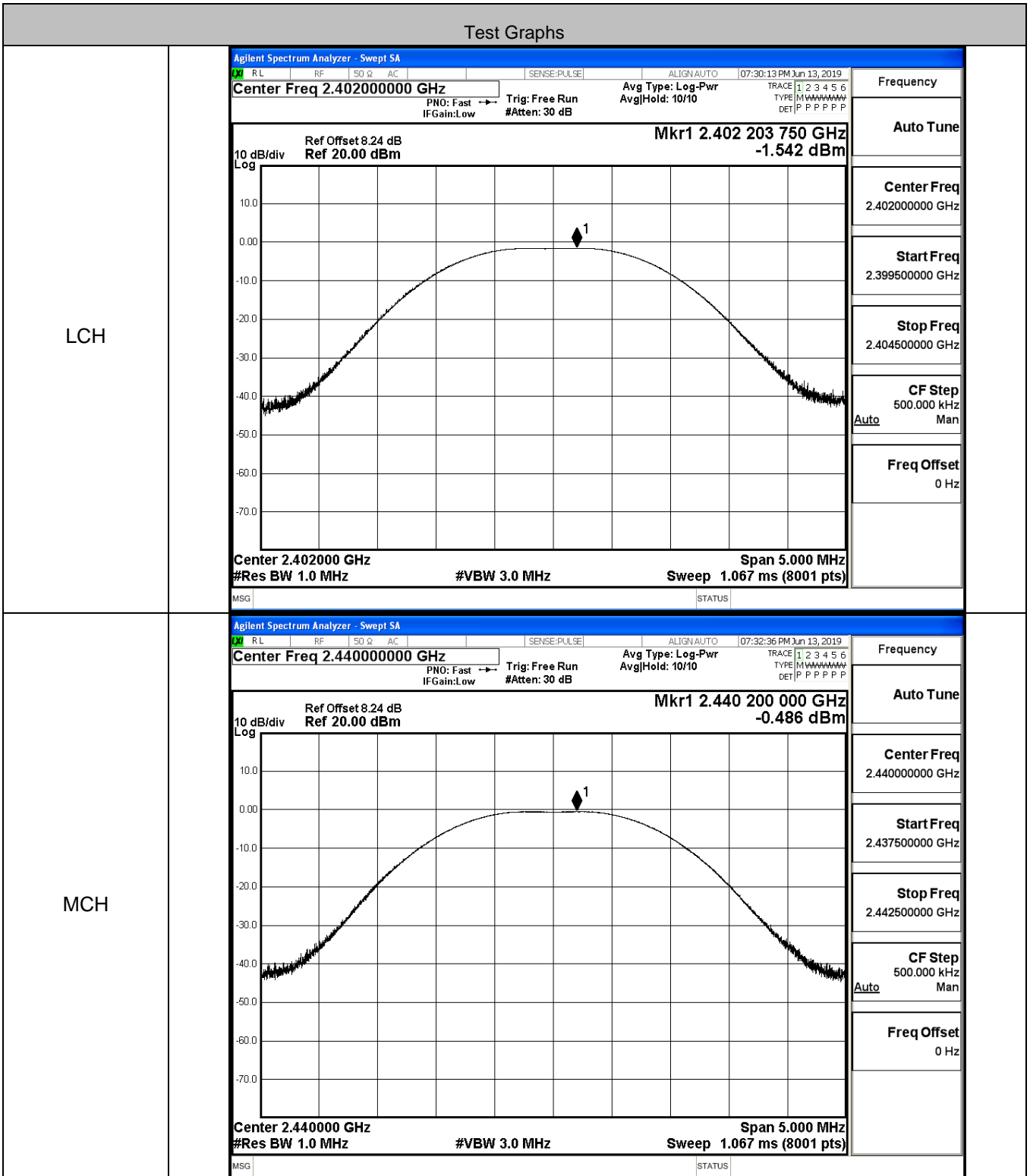
B.1 Duty Cycle

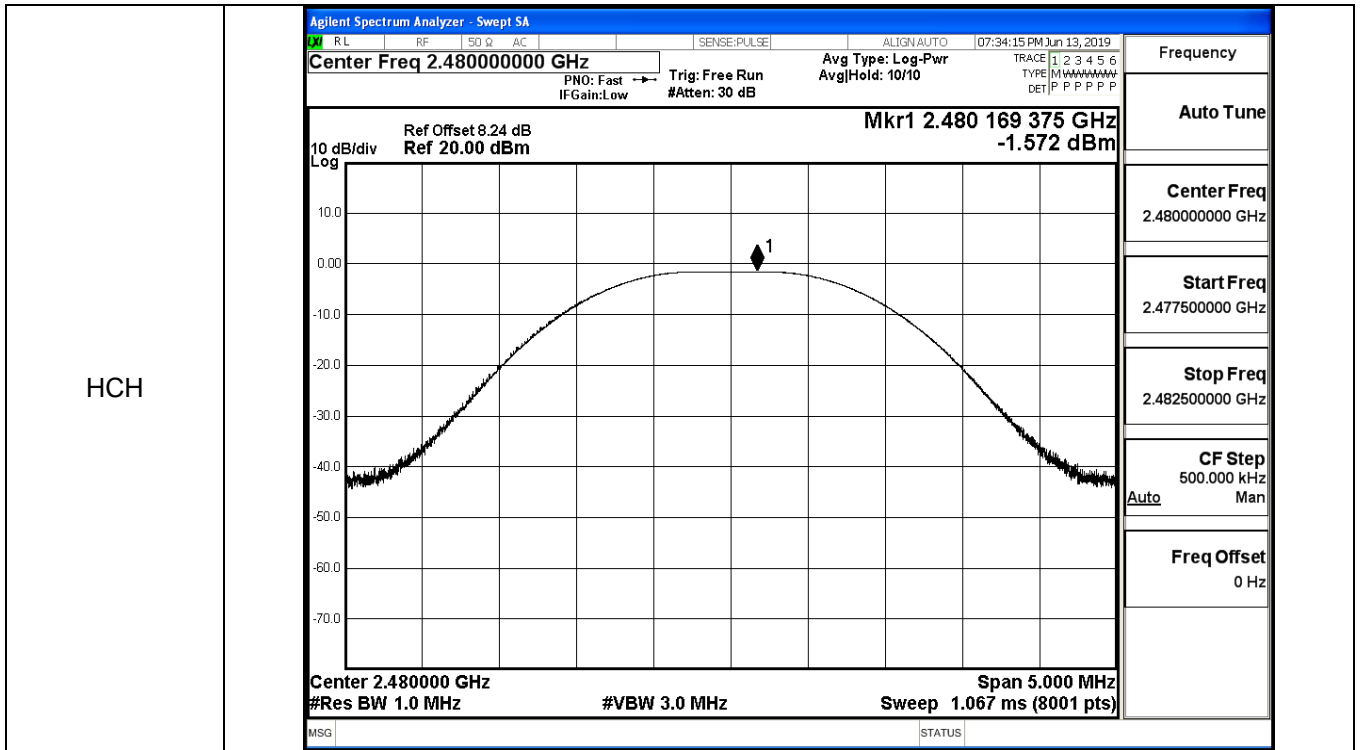
Test Mode	Test Channel	Ant	Duty Cycle[%]	Verdict
BT LE	2440	Ant1	100	PASS



B.2 Maximum Conducted Peak Output Power

Mode	Channel	Conduct Peak Power[dBm]	Limit [dBm]	Verdict
BT LE	LCH	-1.542	30	PASS
BT LE	MCH	-0.486	30	PASS
BT LE	HCH	-1.572	30	PASS

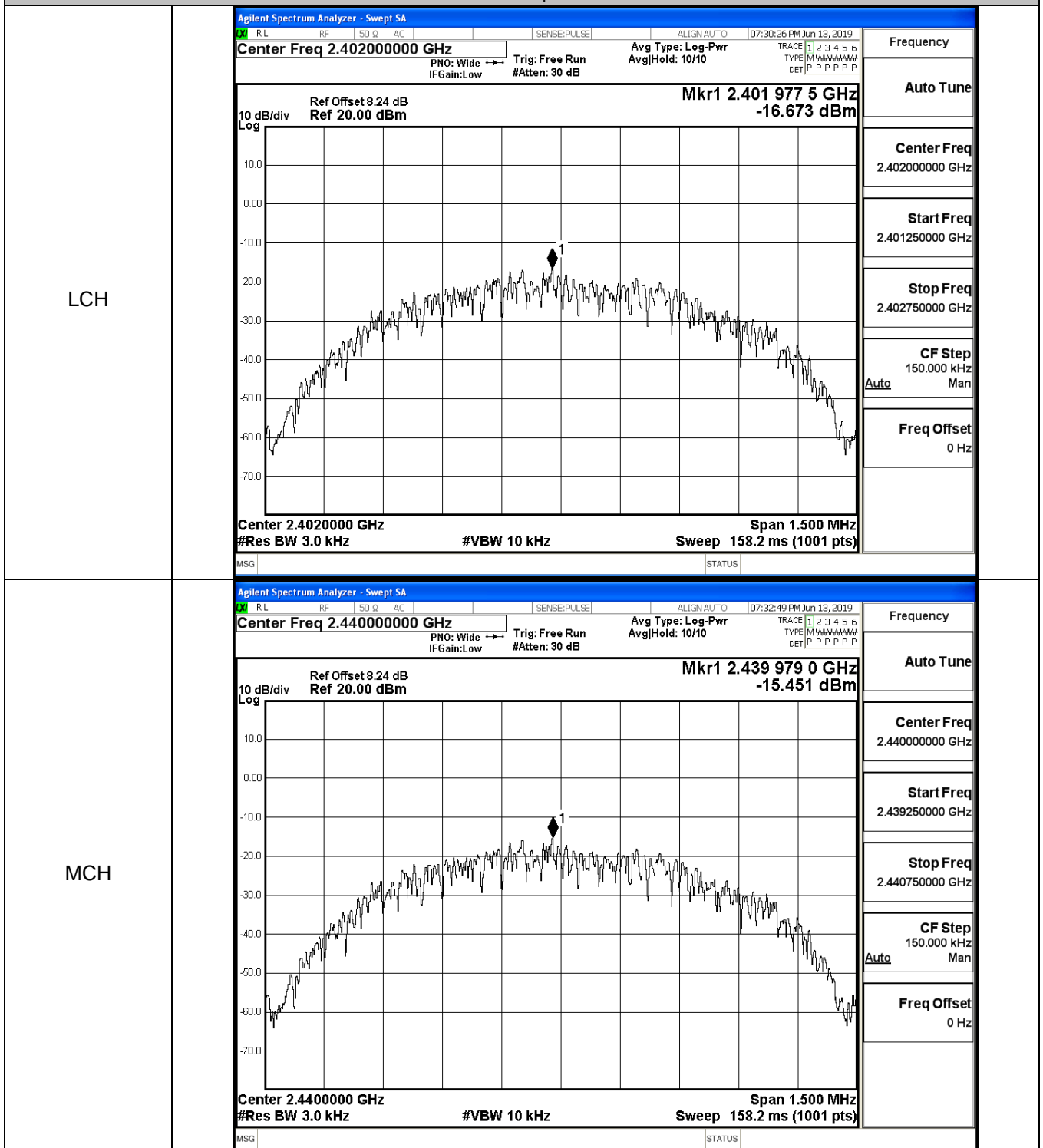


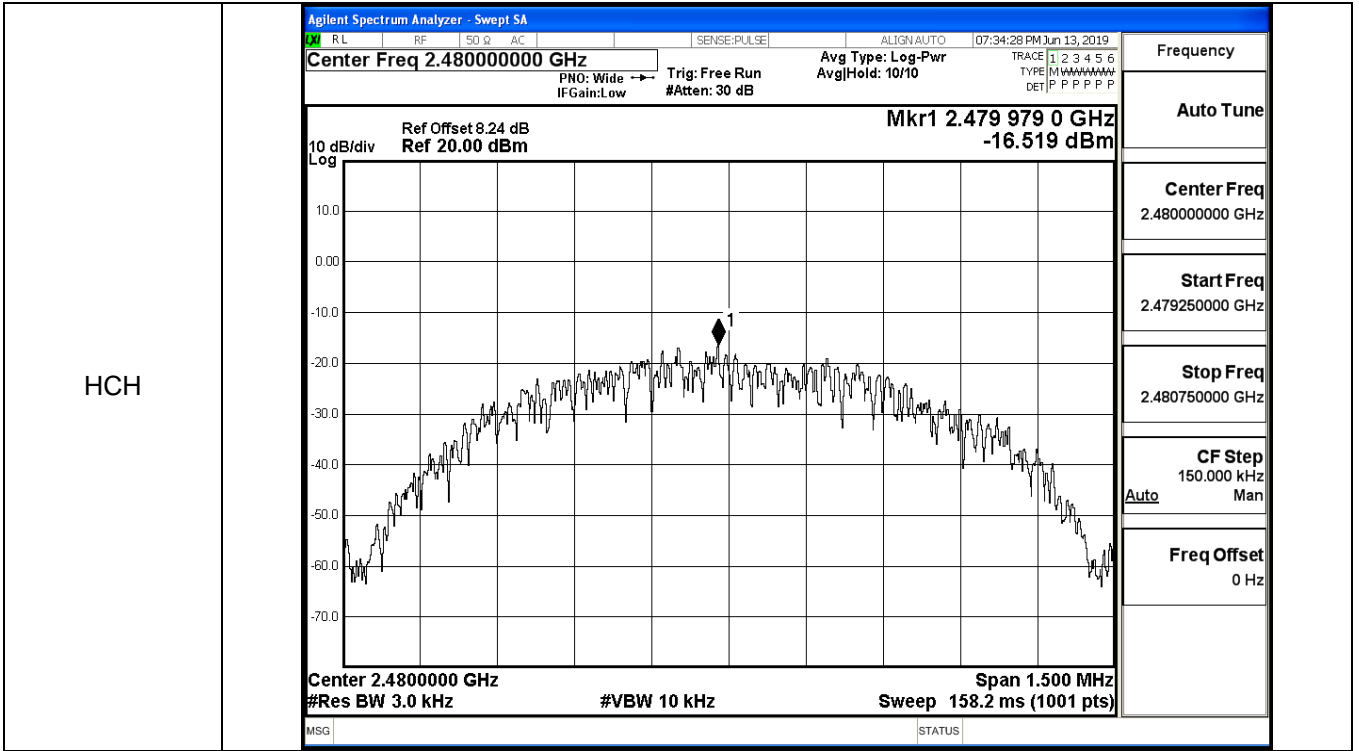


B.3 Maximum Power Spectral Density

Mode	Channel	PSD [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
BT LE	LCH	-16.673	8	PASS
BT LE	MCH	-15.451	8	PASS
BT LE	HCH	-16.519	8	PASS

Test Graphs





B.4 6dB Bandwidth

Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
BT LE	LCH	0.6919	≥0.5	PASS
BT LE	MCH	0.6874	≥0.5	PASS
BT LE	HCH	0.6939	≥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 07:30:02 PM Jun 13, 2019</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="width: 45%;"> <p style="font-size: x-small;">10 dB/div Ref Offset 8.24 dB Log Ref 20.00 dBm</p> <p style="font-size: x-small;">Center 2.402 GHz Span 3 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 1.067 ms</p> <table style="width: 100%; font-size: x-small;"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>4.69 dBm</td> </tr> <tr> <td colspan="3" style="text-align: center;">1.0506 MHz</td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td>x dB</td> <td>-6.00 dB</td> </tr> </table> </div> <div style="width: 50%;"> <p style="text-align: right; margin: 0;">Mkr1 2.4019933 GHz -2.4142 dBm</p> <p style="text-align: right; margin: 0;">Center Freq 2.402000000 GHz</p> <p style="text-align: right; margin: 0;">CF Step 300.000 kHz Auto Man</p> <p style="text-align: right; margin: 0;">Freq Offset 0 Hz</p> </div> </div> <p style="font-size: x-small; margin-top: 5px;">MSG STATUS</p> </div>	Occupied Bandwidth	Total Power	4.69 dBm	1.0506 MHz			Transmit Freq Error	OBW Power	99.00 %	x dB Bandwidth	x dB	-6.00 dB
Occupied Bandwidth	Total Power	4.69 dBm											
1.0506 MHz													
Transmit Freq Error	OBW Power	99.00 %											
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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 07:32:25 PM Jun 13, 2019</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="width: 45%;"> <p style="font-size: x-small;">10 dB/div Ref Offset 8.24 dB Log Ref 20.00 dBm</p> <p style="font-size: x-small;">Center 2.44 GHz Span 3 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 1.067 ms</p> <table style="width: 100%; font-size: x-small;"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>5.73 dBm</td> </tr> <tr> <td colspan="3" style="text-align: center;">1.0484 MHz</td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td>x dB</td> <td>-6.00 dB</td> </tr> </table> </div> <div style="width: 50%;"> <p style="text-align: right; margin: 0;">Mkr1 2.4399925 GHz -1.3296 dBm</p> <p style="text-align: right; margin: 0;">Center Freq 2.440000000 GHz</p> <p style="text-align: right; margin: 0;">CF Step 300.000 kHz Auto Man</p> <p style="text-align: right; margin: 0;">Freq Offset 0 Hz</p> </div> </div> <p style="font-size: x-small; margin-top: 5px;">MSG STATUS</p> </div>	Occupied Bandwidth	Total Power	5.73 dBm	1.0484 MHz			Transmit Freq Error	OBW Power	99.00 %	x dB Bandwidth	x dB	-6.00 dB
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1.0484 MHz													
Transmit Freq Error	OBW Power	99.00 %											
x dB Bandwidth	x dB	-6.00 dB											

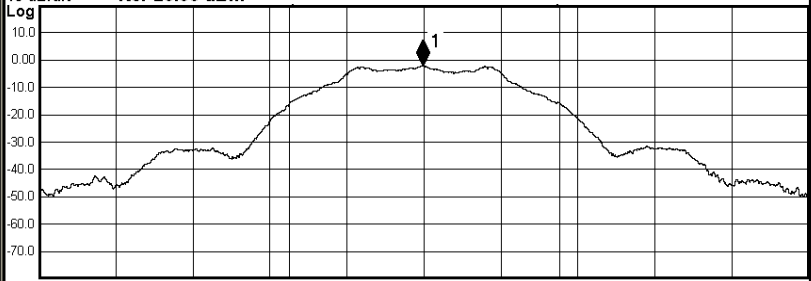
HCH

Agilent Spectrum Analyzer - Occupied BW

RL	RF	50 Ω	AC	SENSE:PULSE	ALIGN:AUTO	07:34:04 PM Jun 13, 2019
Center Freq 2.480000000 GHz				Center Freq: 2.480000000 GHz		Radio Std: None
				Trig: Free Run		AvgJHold: 1/1
				#IFGain:Low		#Atten: 30 dB
						Radio Device: BTS

10 dB/div
 Log
 10.0
 0.00
 -10.0
 -20.0
 -30.0
 -40.0
 -50.0
 -60.0
 -70.0

Mkr1 2.4799978 GHz
 -2.2457 dBm



Center 2.48 GHz
 #Res BW 100 kHz

#VBW 300 kHz

Span 3 MHz
 Sweep 1.067 ms

Occupied Bandwidth		Total Power	4.81 dBm
1.0426 MHz			
Transmit Freq Error	5.311 kHz	OBW Power	99.00 %
x dB Bandwidth	693.9 kHz	x dB	-6.00 dB

MSG

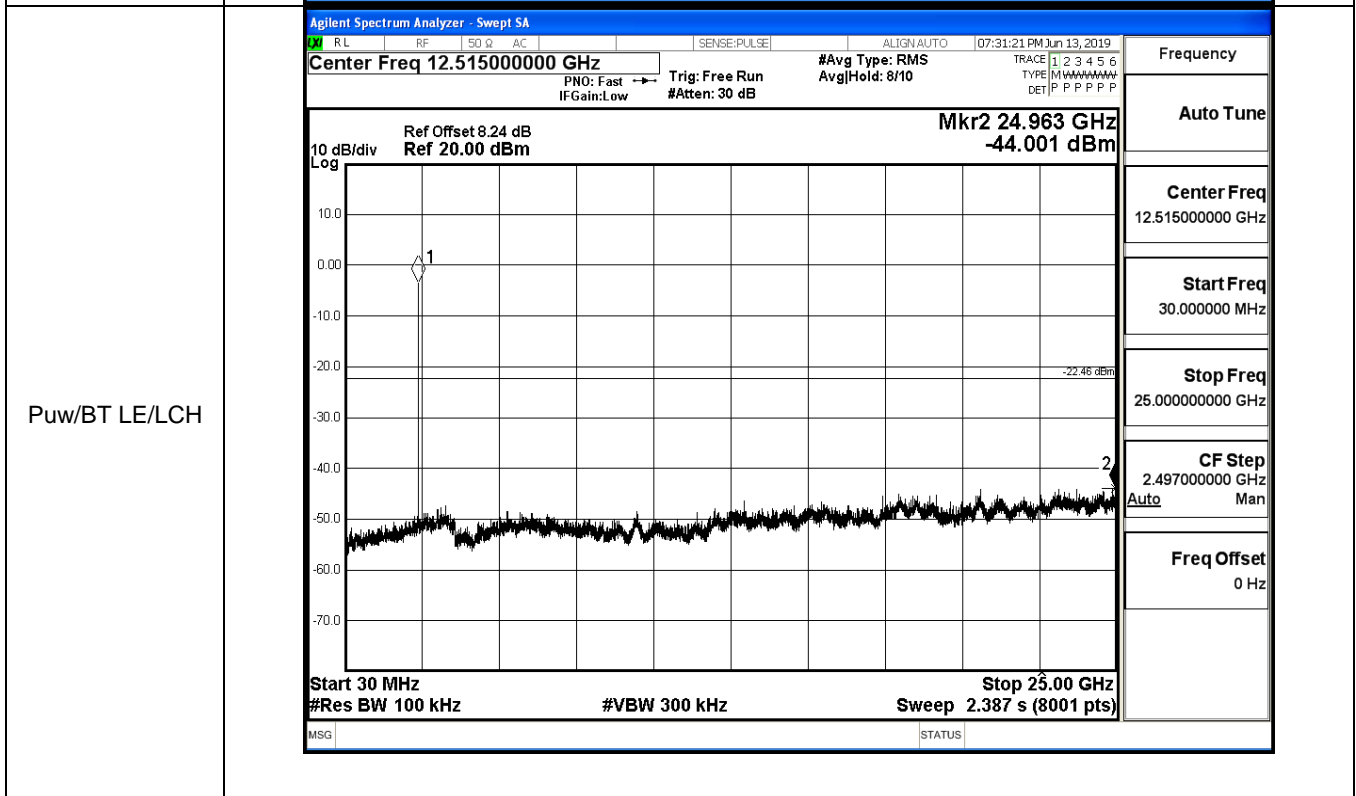
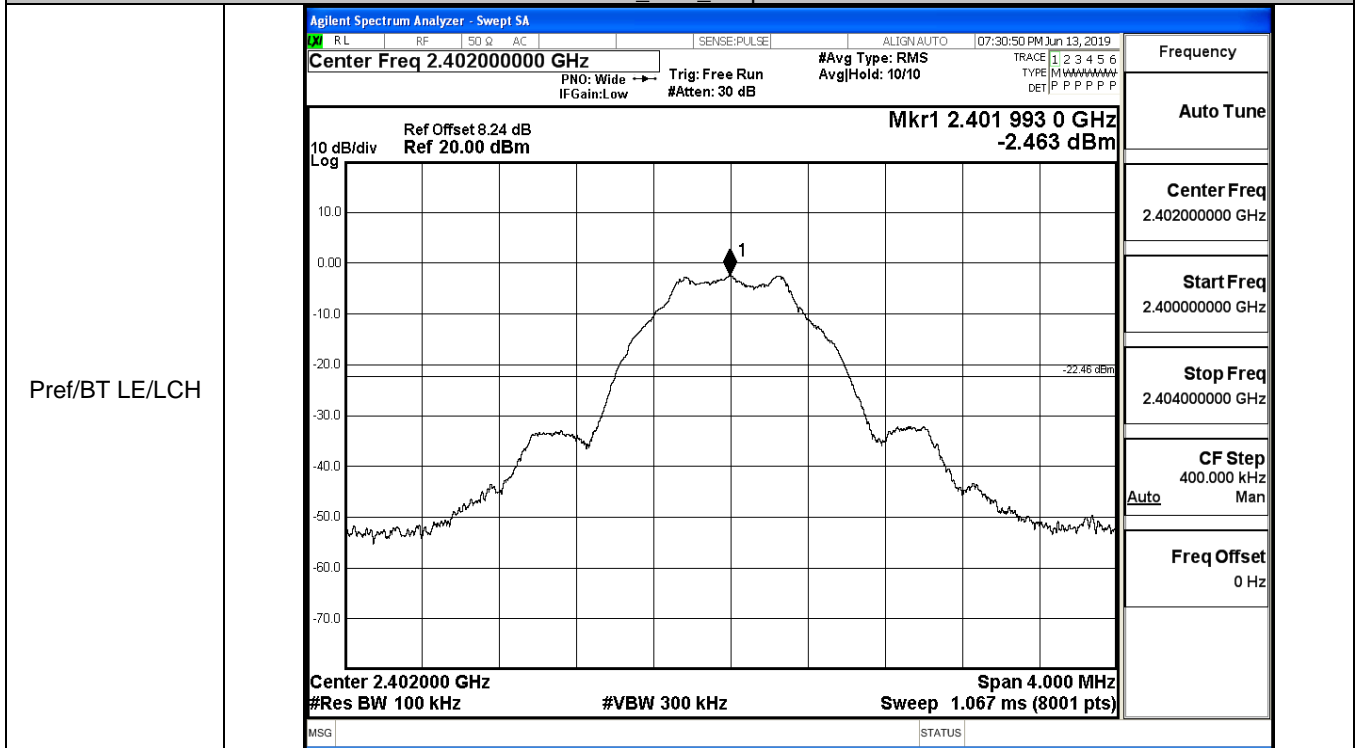
STATUS

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

B.5 RF Conducted Spurious Emissions

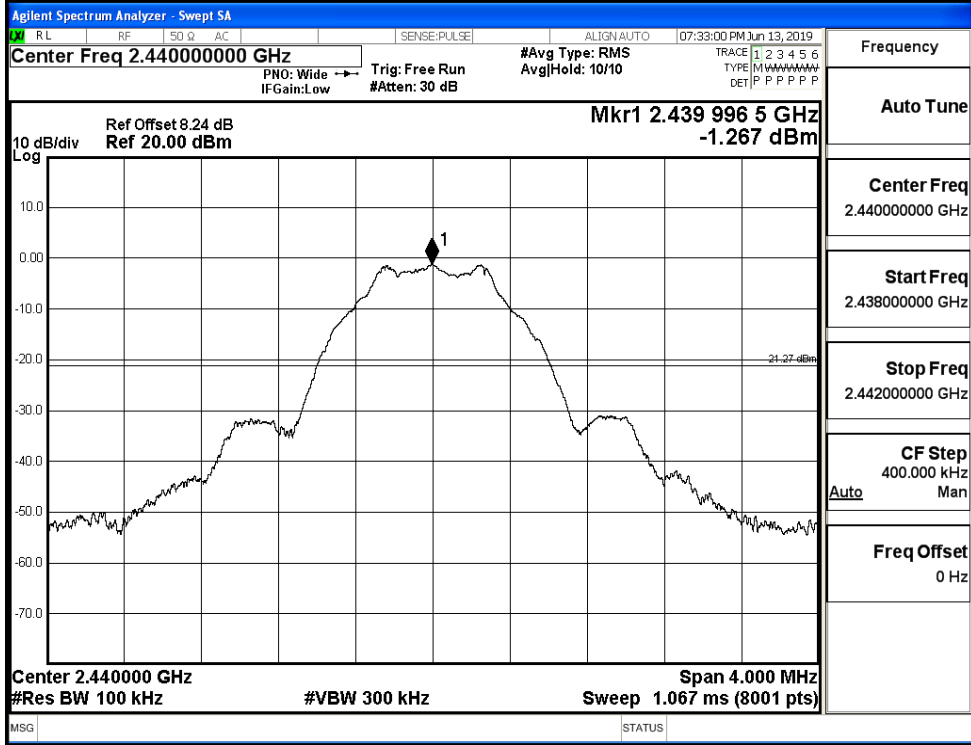
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	-2.463	-44.001	-22.463	PASS
BT LE	MCH	-1.267	-43.983	-21.267	PASS
BT LE	HCH	-2.377	-43.793	-22.377	PASS

BT LE_LCH_Graphs

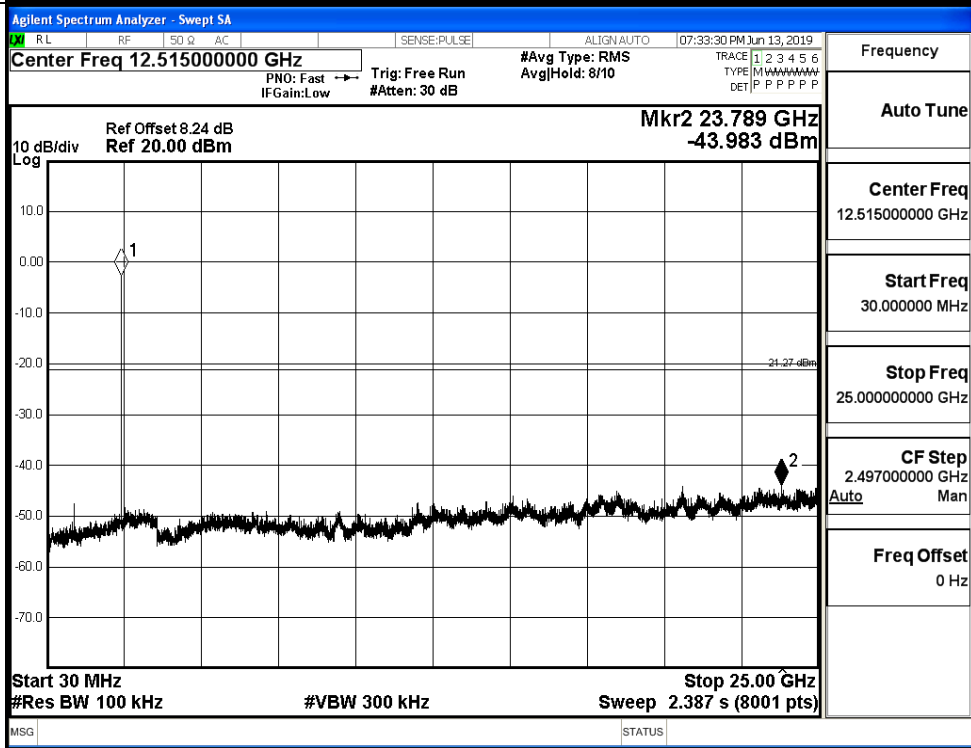


BT LE_MCH_Graphs

Pref/BT LE/MCH

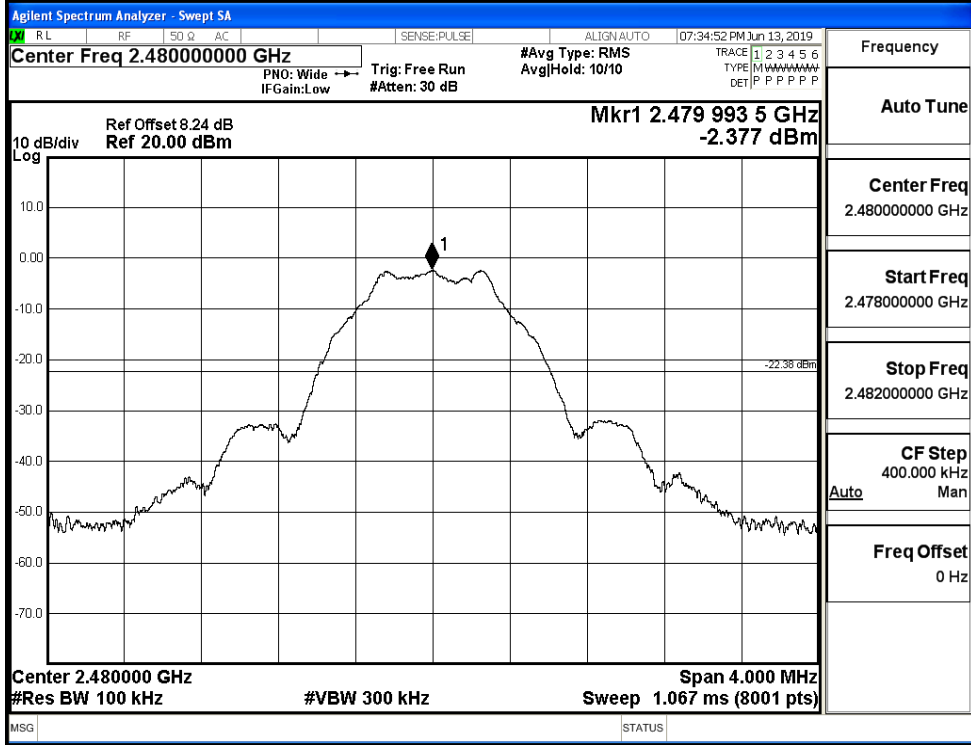


Puw/BT LE/MCH

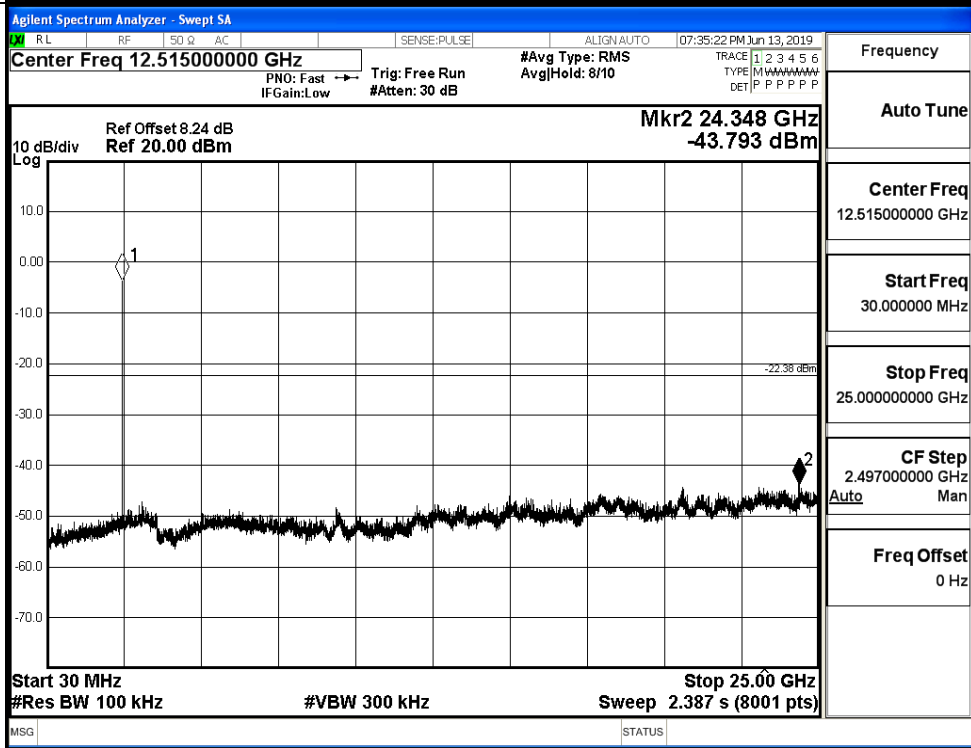


BT LE_HCH_Graphs

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	-2.237	-50.166	-22.24	PASS
BT LE	HCH	-2.025	-49.997	-22.03	PASS

Test Graphs

LCH

Agilent Spectrum Analyzer - Swept SA
 Center Freq 2.35700000 GHz
 Max Spurious Level -50.166 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		2.402003 GHz	-2.237 dBm			
2	N	f		2.400000 GHz	-52.677 dBm			
3	N	f		2.390000 GHz	-54.142 dBm			
4	N	f		2.328142 GHz	-50.166 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
 Max Spurious Level -49.997 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		2.47999925 GHz	-2.025 dBm			
2	N	f		2.48350000 GHz	-53.053 dBm			
3	N	f		2.50000000 GHz	-52.134 dBm			
4	N	f		2.49408750 GHz	-49.997 dBm			

Frequency

Auto Tune

Center Freq
2.48900000 GHz

Start Freq
2.47800000 GHz

Stop Freq
2.50000000 GHz

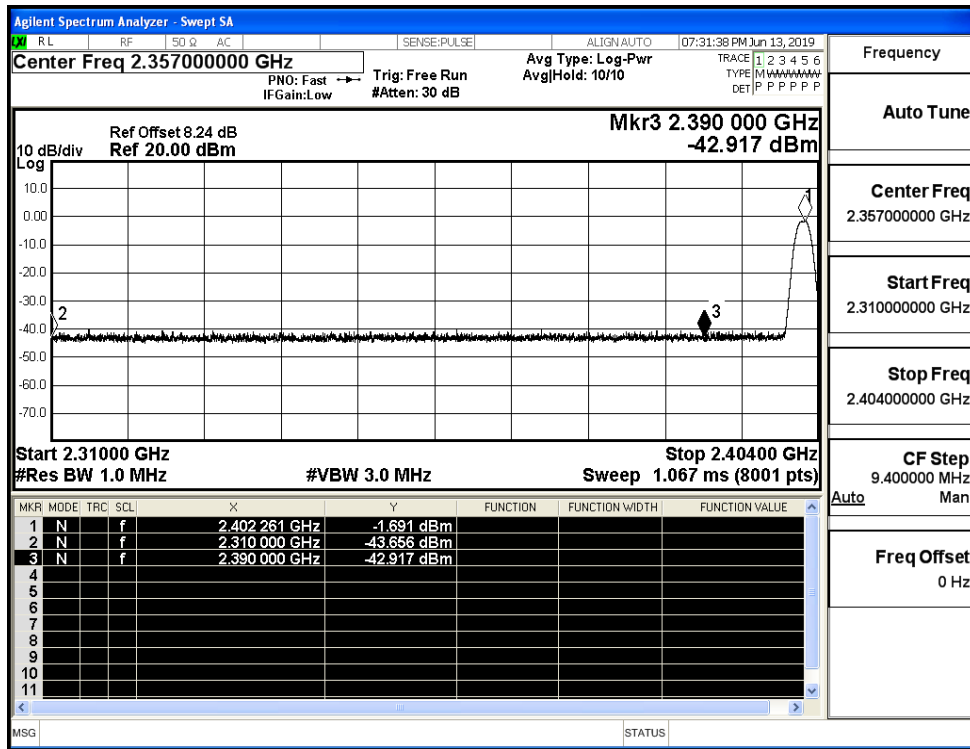
CF Step
2.200000 MHz

Freq Offset
0 Hz

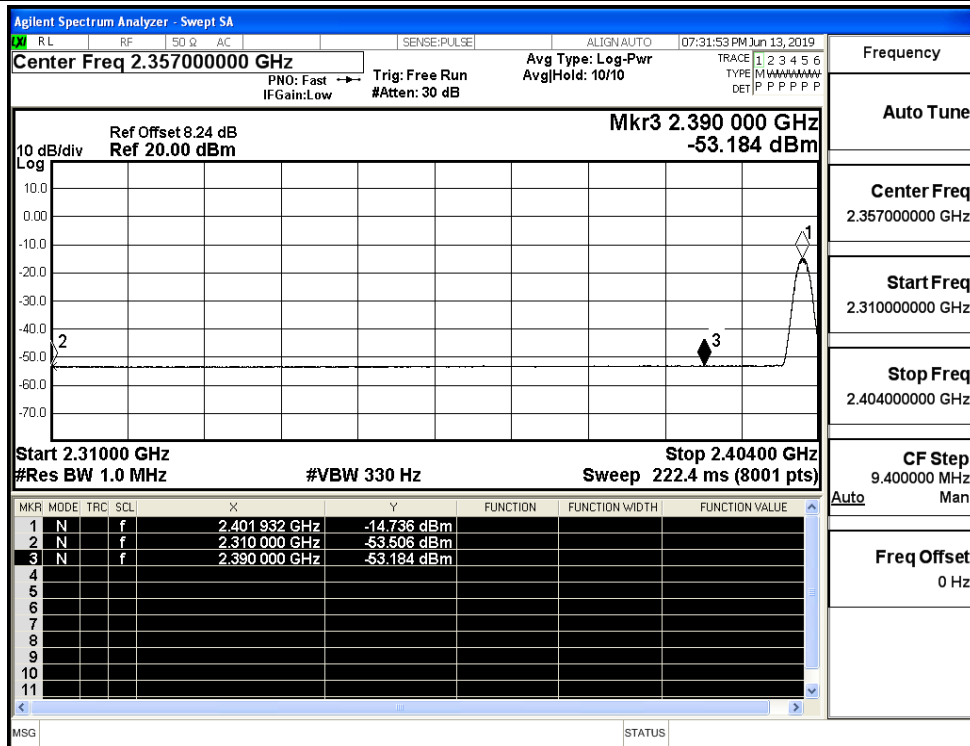
B.7 Restrict-band band-edge measurements

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	-43.66	2.0	0	53.60	PEAK	74	PASS
		Ant1	2310.0	-53.51	2.0	0	43.75	AV	54	PASS
		Ant1	2390.0	-42.92	2.0	0	54.34	PEAK	74	PASS
		Ant1	2390.0	-53.18	2.0	0	44.07	AV	54	PASS
	2480	Ant1	2483.5	-43.26	2.0	0	54.00	PEAK	74	PASS
		Ant1	2483.5	-52.99	2.0	0	44.27	AV	54	PASS
		Ant1	2500.0	-43.56	2.0	0	53.70	PEAK	74	PASS
		Ant1	2500.0	-52.84	2.0	0	44.42	AV	54	PASS

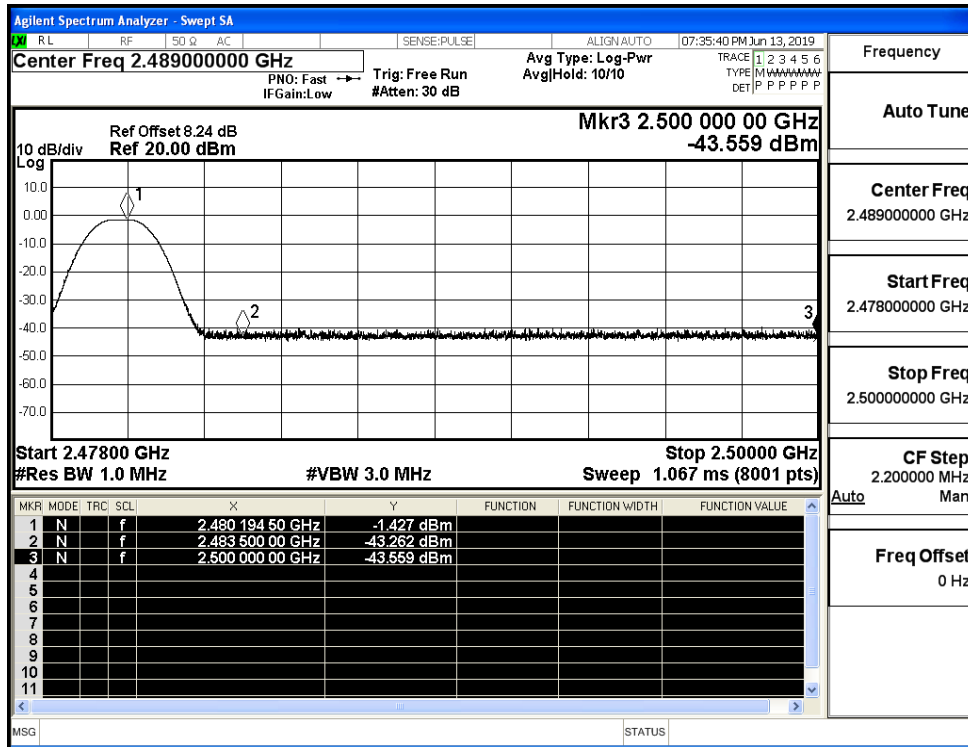
Restrict-band band-edge measurements_BT LE_2402_Ant1_PEAK



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

