

Appendix B

RF Test Data for BT V4.2(BDR/EDR) (Conducted Measurement)

Product Name: TITAN 7132

Trade Mark: TITAN

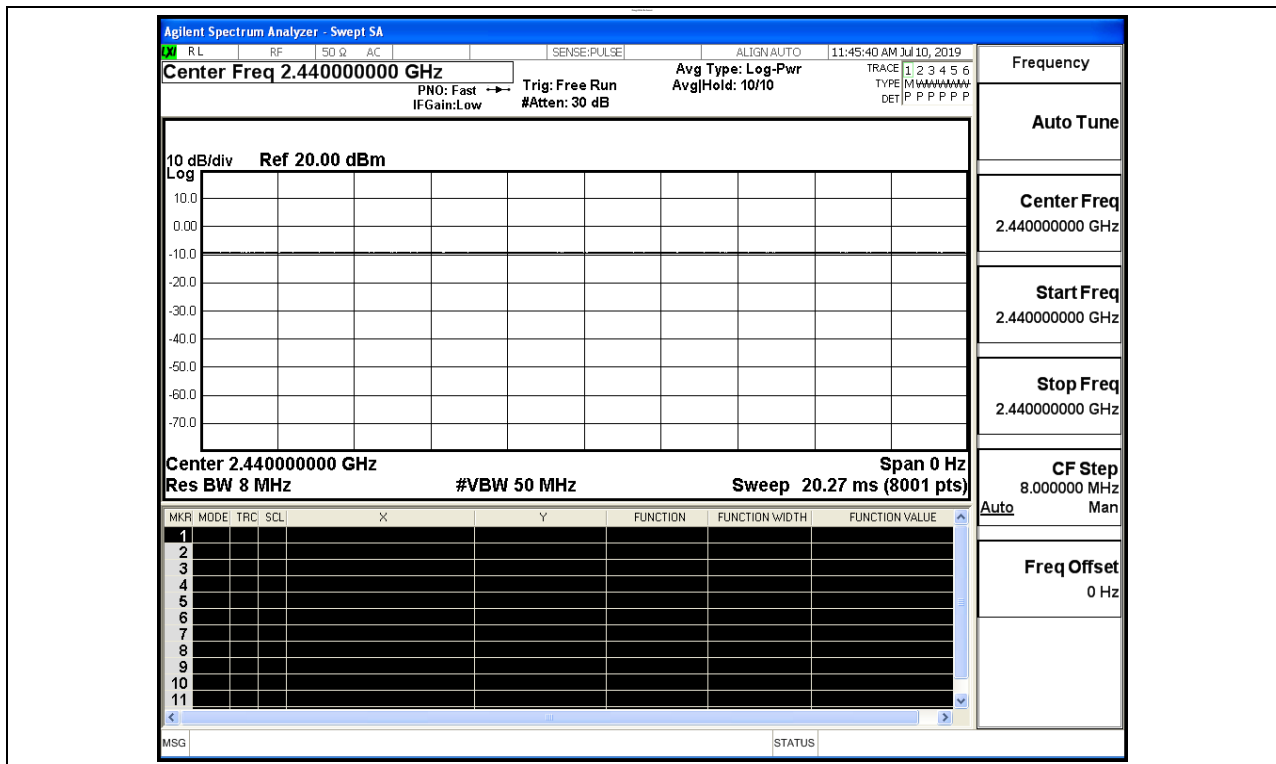
Test Model: 7132PL01

Environmental Conditions

Temperature:	24.3 ° C
Relative Humidity:	52.8%
ATM Pressure:	100.0 kPa
Test Engineer:	Jerry.zeng
Supervised by:	Wang.Chuang

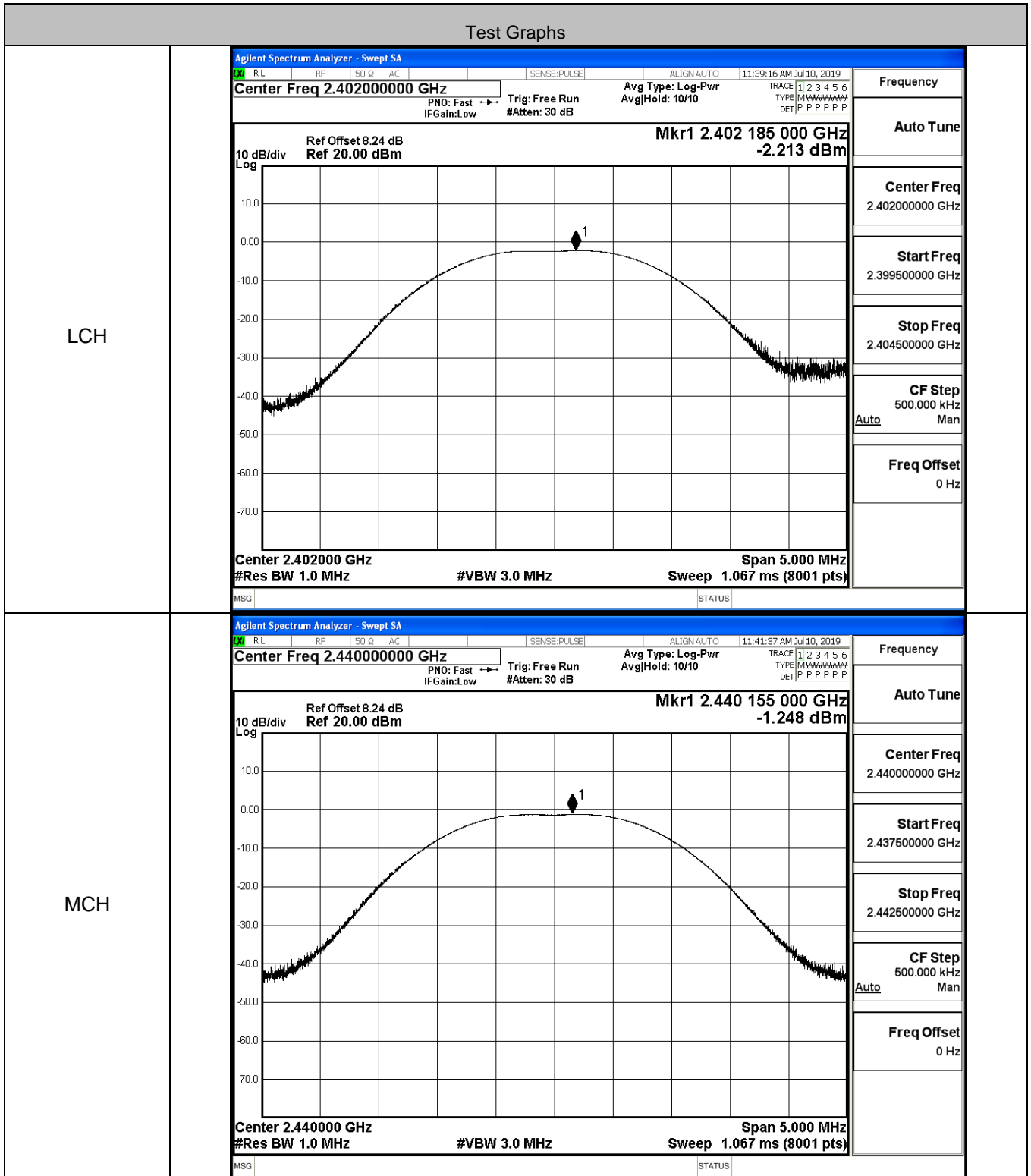
B.1 Duty Cycle

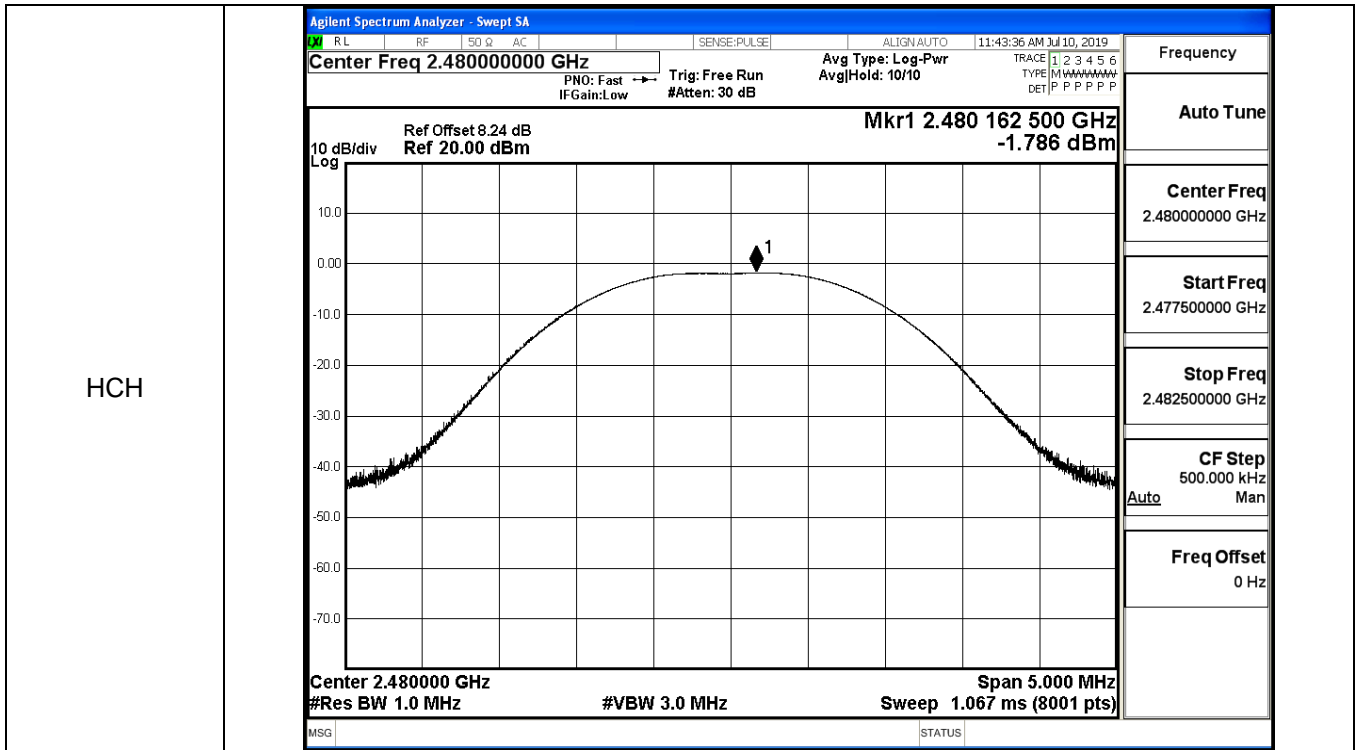
Test Mode	Test Channel	Ant	Duty Cycle[%]	Verdict
BT LE	2440	Ant1	100	PASS



B.2 Maximum Conducted Peak Output Power

Mode	Channel	Conduct Peak Power[dBm]	Limit [dBm]	Verdict
BT LE	LCH	-2.213	30	PASS
BT LE	MCH	-1.248	30	PASS
BT LE	HCH	-1.786	30	PASS

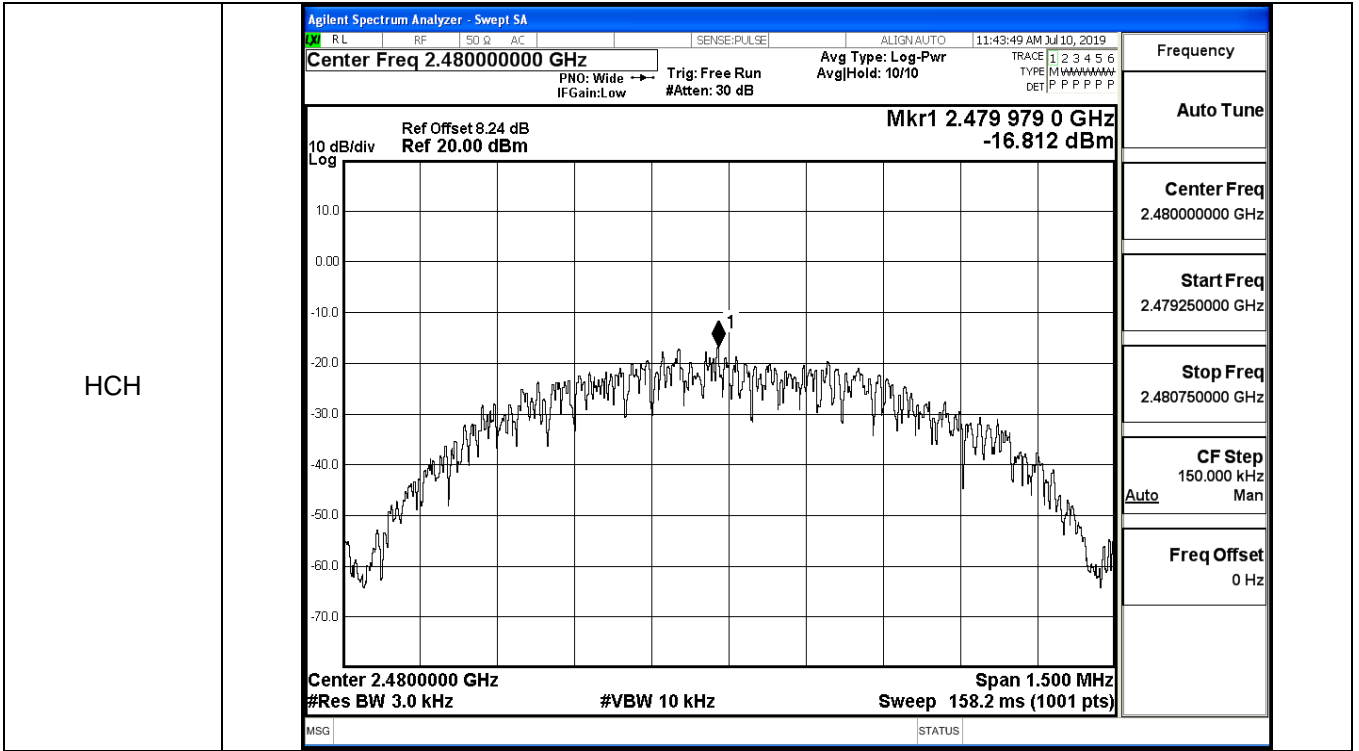




B.3 Maximum Power Spectral Density

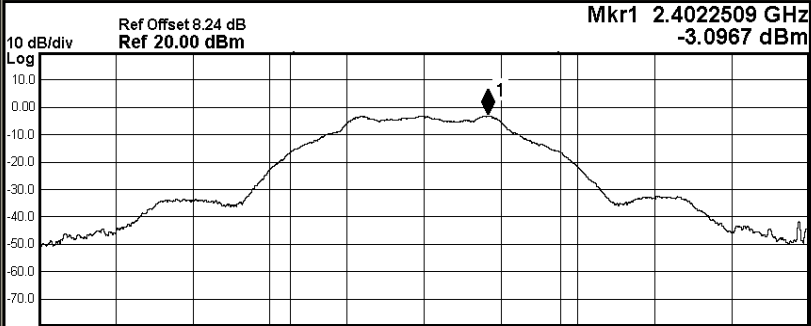
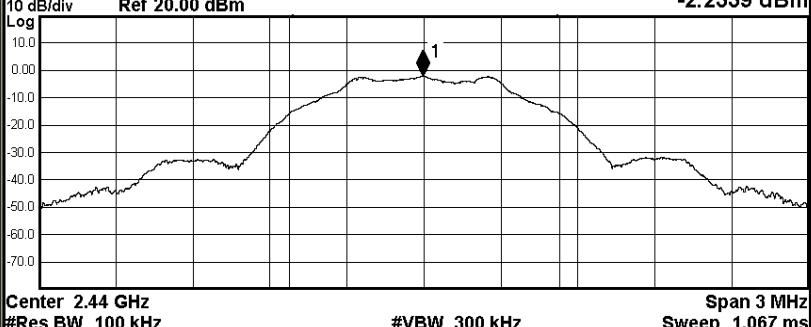
Mode	Channel	PSD [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
BT LE	LCH	-17.201	8	PASS
BT LE	MCH	-16.352	8	PASS
BT LE	HCH	-16.812	8	PASS

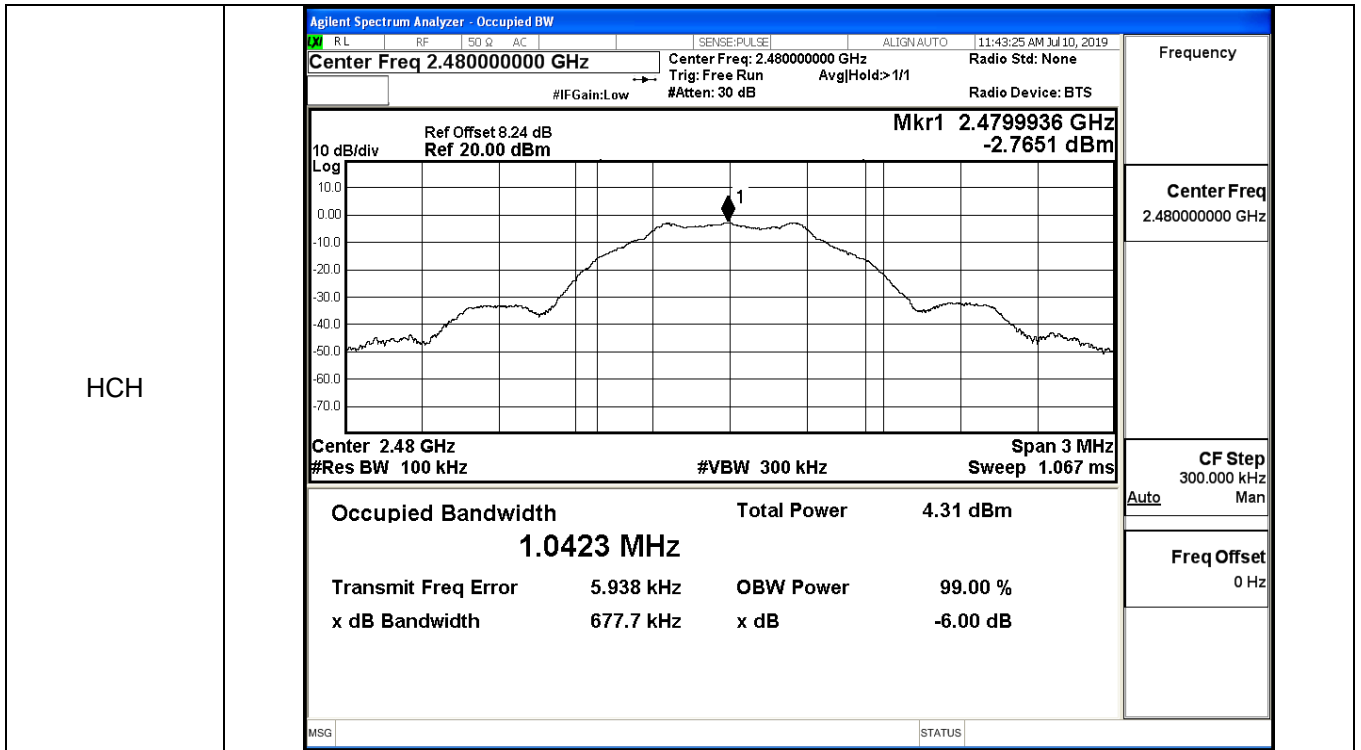
Test Graphs								
LCH	<div style="border: 1px solid black; padding: 5px;"> <p style="font-size: small; margin: 0;">Agilent Spectrum Analyzer - Swept SA</p> <p style="font-size: x-small; margin: 0;">RL RF 50 Ω AC SENSE:PULSE ALIGN:AUTO 11:39:29 AM Jul 10, 2019</p> <p style="font-size: small; margin: 0;">Center Freq 2.40200000 GHz Avg Type: Log-Pwr TRACE 1 2 3 4 5 6</p> <p style="font-size: x-small; margin: 0;">PNO: Wide → Trig: Free Run AvgHold: 10/10 TYPE M W W W W W W W</p> <p style="font-size: x-small; margin: 0;">IFGain:Low #Atten: 30 dB DET P P P P P P</p> <div style="display: flex; justify-content: space-between; font-size: small;"> <div>Ref Offset 8.24 dB Ref 20.00 dBm</div> <div>Mkr1 2.401 979 0 GHz -17.201 dBm</div> </div> <div style="display: flex; justify-content: space-between; font-size: small; margin-top: 5px;"> <div>Center 2.4020000 GHz #Res BW 3.0 kHz</div> <div>#VBW 10 kHz</div> <div>Span 1.500 MHz Sweep 158.2 ms (1001 pts)</div> </div> <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></tr> <tr><td>Auto Tune</td></tr> <tr><td>Center Freq 2.402000000 GHz</td></tr> <tr><td>Start Freq 2.401250000 GHz</td></tr> <tr><td>Stop Freq 2.402750000 GHz</td></tr> <tr><td>CF Step 150.000 kHz Auto Man</td></tr> <tr><td>Freq Offset 0 Hz</td></tr> </table>	Frequency	Auto Tune	Center Freq 2.402000000 GHz	Start Freq 2.401250000 GHz	Stop Freq 2.402750000 GHz	CF Step 150.000 kHz Auto Man	Freq Offset 0 Hz
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B.4 6dB Bandwidth

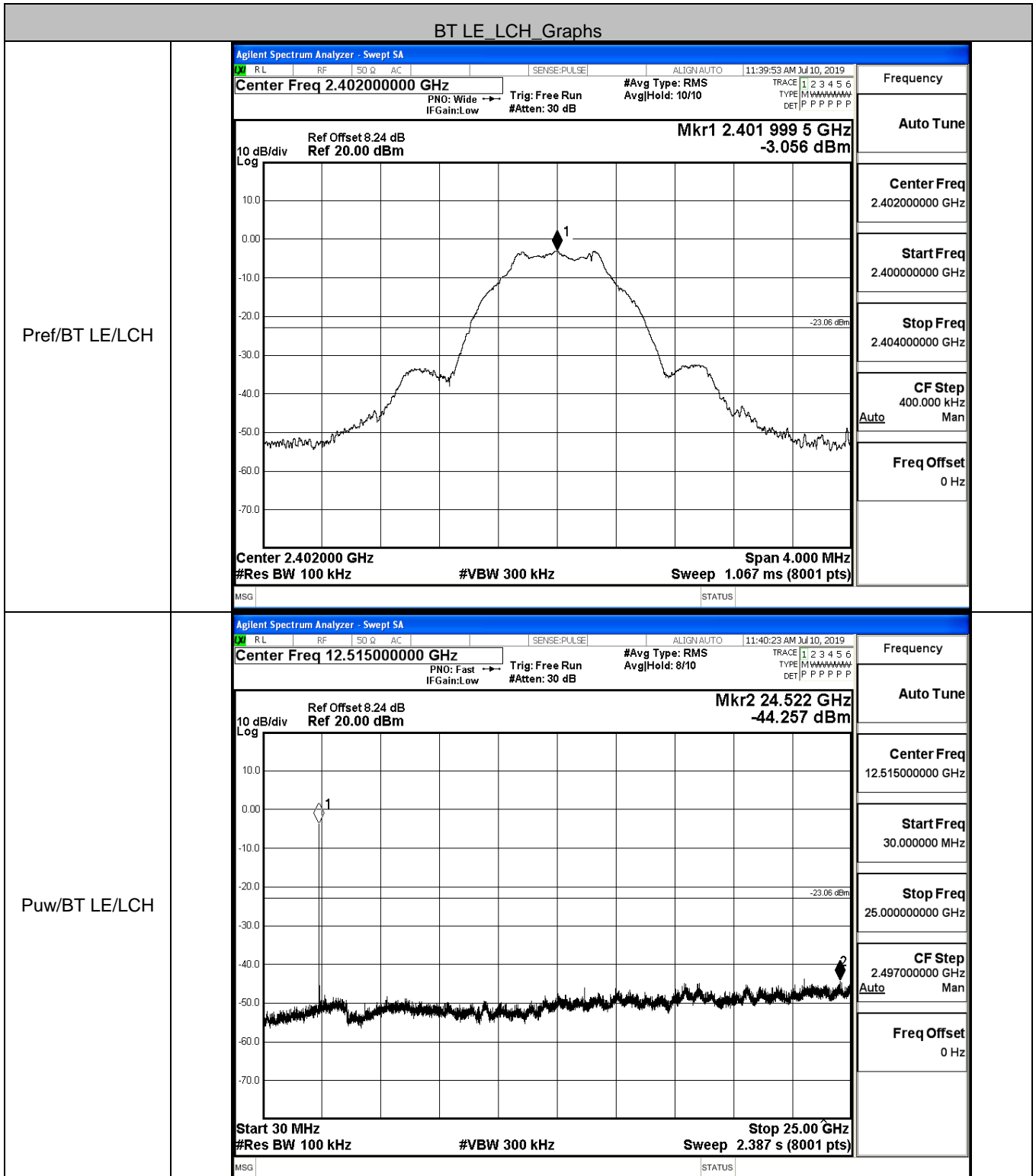
Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
BT LE	LCH	0.6849	≥0.5	PASS
BT LE	MCH	0.6848	≥0.5	PASS
BT LE	HCH	0.6777	≥0.5	PASS

Test Graphs																													
LCH	<div style="border: 1px solid black; padding: 5px;"> <p style="font-size: small; margin: 0;">Agilent Spectrum Analyzer - Occupied BW</p> <p style="font-size: x-small; margin: 0;">RL RF 50 Ω AC SENSE:PULSE ALIGN:AUTO 11:39:05 AM Jul 10, 2019</p> <p style="font-size: small; margin: 0;">Center Freq 2.402000000 GHz Center Freq: 2.402000000 GHz Radio Std: None</p> <p style="font-size: x-small; margin: 0;">Trig: Free Run AvgHold>1/1</p> <p style="font-size: x-small; margin: 0;">#IFGain:Low #Atten: 30 dB Radio Device: BTS</p> <div style="border: 1px solid black; padding: 2px;"> <p style="font-size: x-small; margin: 0;">10 dB/div Ref Offset 8.24 dB Mkr1 2.4022509 GHz</p> <p style="font-size: x-small; margin: 0;">Log Ref 20.00 dBm -3.0967 dBm</p>  <p style="font-size: x-small; margin: 0;">Center 2.402 GHz Span 3 MHz</p> <p style="font-size: x-small; margin: 0;">#Res BW 100 kHz #VBW 300 kHz Sweep 1.067 ms</p> <table style="width: 100%; font-size: x-small; border-collapse: collapse;"> <tr> <td style="width: 33%;">Occupied Bandwidth</td> <td style="width: 33%;">Total Power</td> <td style="width: 33%;">4.01 dBm</td> </tr> <tr> <td style="text-align: center;">1.0497 MHz</td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>6.541 kHz</td> <td>OBW Power</td> </tr> <tr> <td>x dB Bandwidth</td> <td>684.9 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> </div> <table style="width: 100%; font-size: x-small; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 60%;">Frequency</td> <td style="width: 40%;">2.402000000 GHz</td> </tr> <tr> <td>Center Freq</td> <td>2.402000000 GHz</td> </tr> <tr> <td>CF Step</td> <td>300.000 kHz</td> </tr> <tr> <td>Auto</td> <td>Man</td> </tr> <tr> <td>Freq Offset</td> <td>0 Hz</td> </tr> </table>	Occupied Bandwidth	Total Power	4.01 dBm	1.0497 MHz			Transmit Freq Error	6.541 kHz	OBW Power	x dB Bandwidth	684.9 kHz	x dB			99.00 %			-6.00 dB	Frequency	2.402000000 GHz	Center Freq	2.402000000 GHz	CF Step	300.000 kHz	Auto	Man	Freq Offset	0 Hz
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B.5 RF Conducted Spurious Emissions

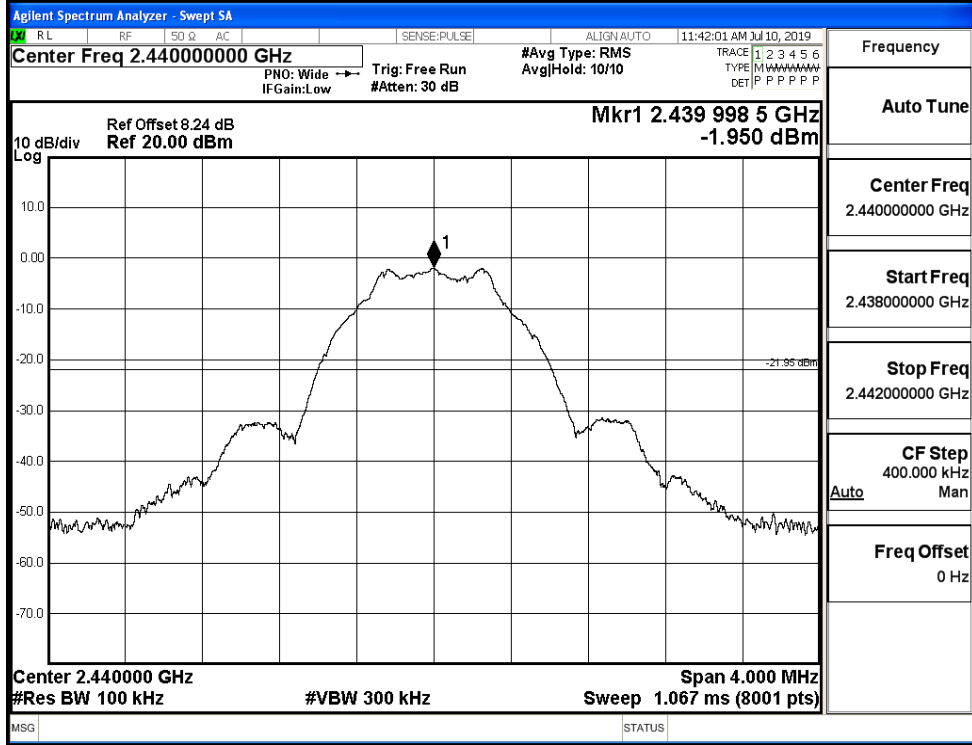
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	-3.056	-44.257	-23.056	PASS
BT LE	MCH	-1.95	-44.601	-21.950	PASS
BT LE	HCH	-2.61	-44.730	-22.610	PASS



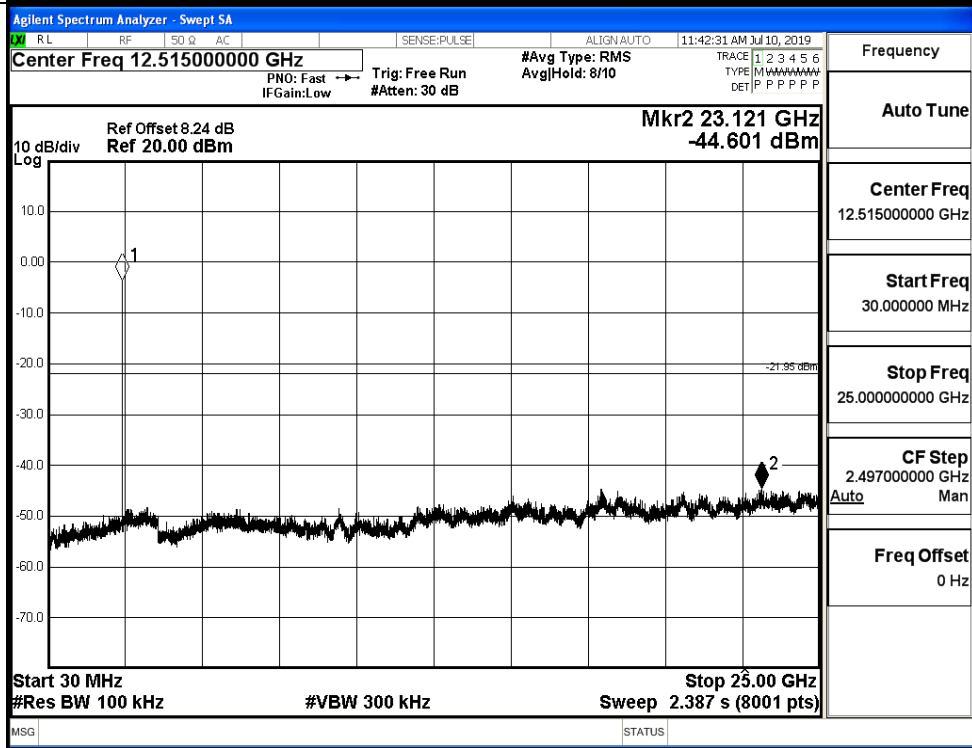
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BT LE_MCH_Graphs

Pref/BT LE/MCH

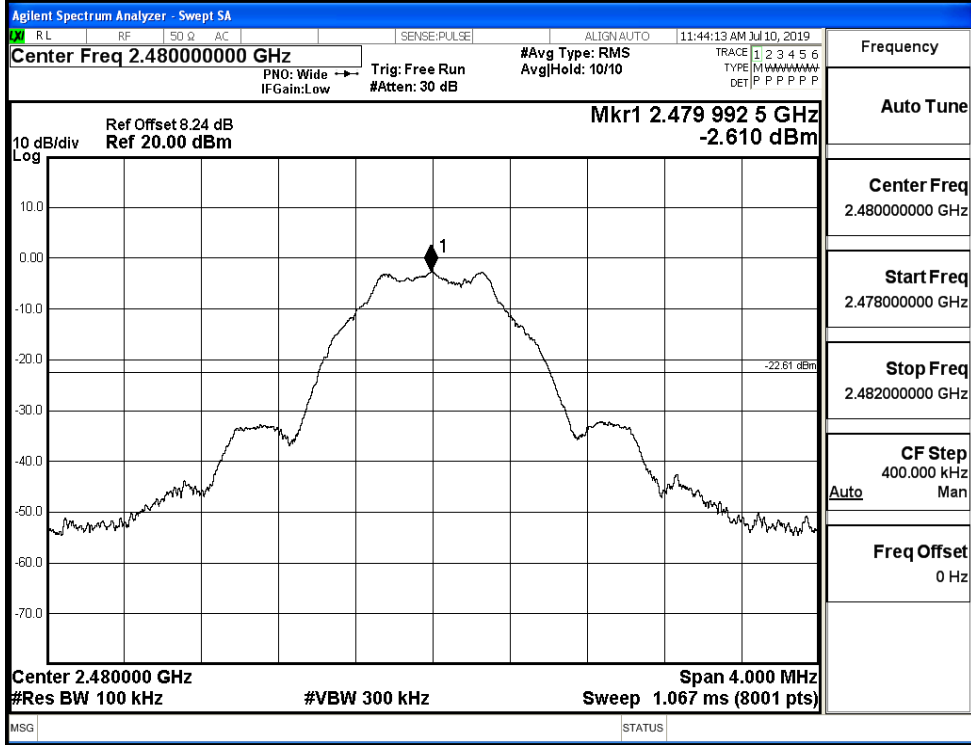


Puw/BT LE/MCH

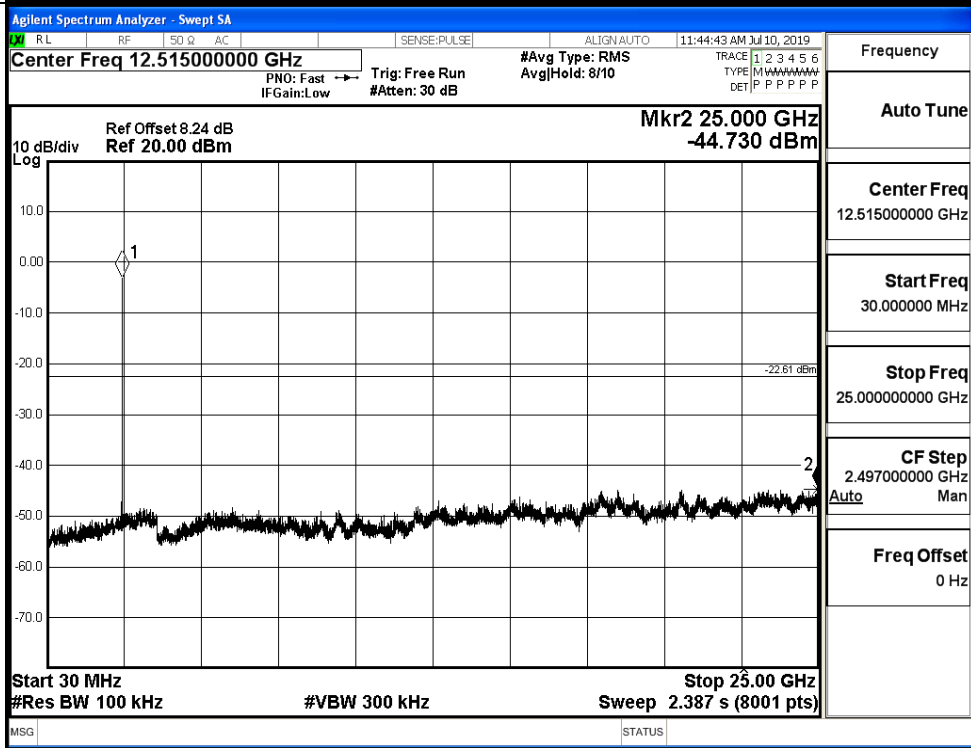


BT LE_HCH_Graphs

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	-2.808	-49.373	-22.81	PASS
BT LE	HCH	-2.442	-50.052	-22.44	PASS

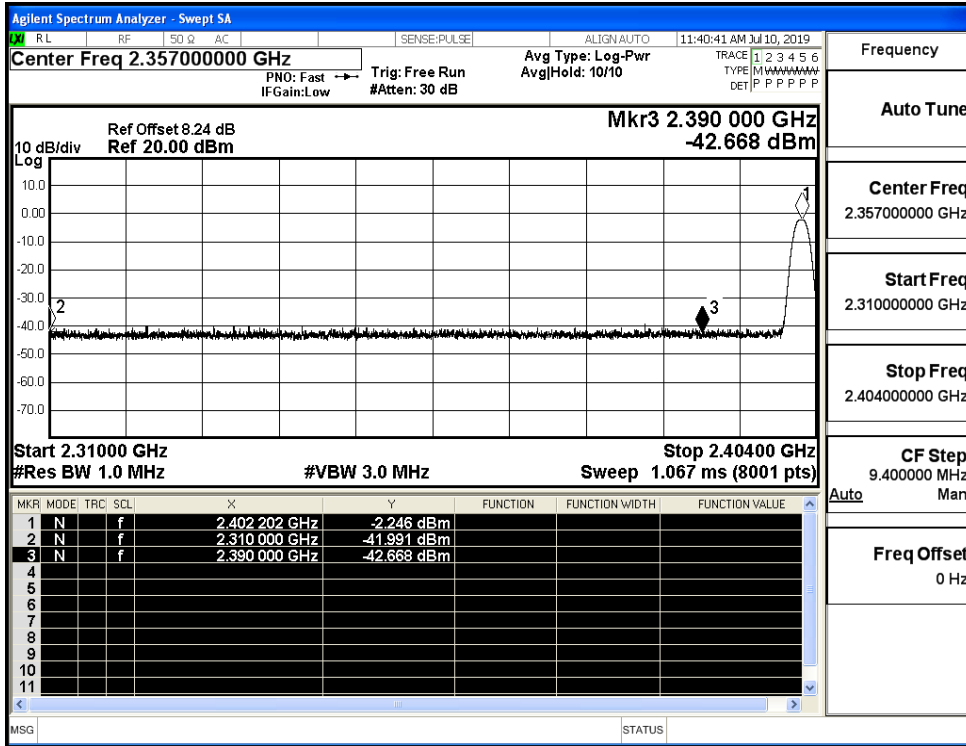
Test Graphs

LCH	<p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.35700000 GHz Ref Offset 8.24 dB, Ref 20.00 dBm Mkr4 2.342 818 GHz, -49.373 dBm Start 2.31000 GHz, Stop 2.40400 GHz #Res BW 100 kHz, #VBW 300 kHz, Sweep 9.067 ms (8001 pts)</p> <table border="1" style="width: 100%; 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>2.402 003 GHz</td><td>-2.808 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>-53.359 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>-52.689 dBm</td><td></td><td></td><td></td></tr> <tr><td>4</td><td>N</td><td>f</td><td></td><td>2.342 818 GHz</td><td>-49.373 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		2.402 003 GHz	-2.808 dBm				2	N	f		2.400 000 GHz	-53.359 dBm				3	N	f		2.390 000 GHz	-52.689 dBm				4	N	f		2.342 818 GHz	-49.373 dBm				Frequency Auto Tune Center Freq 2.35700000 GHz Start Freq 2.310000000 GHz Stop Freq 2.404000000 GHz CF Step 9.400000 MHz Freq Offset 0 Hz
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HCH	<p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.48900000 GHz Ref Offset 8.24 dB, Ref 20.00 dBm Mkr4 2.480 241 25 GHz, -50.052 dBm Start 2.47800 GHz, Stop 2.50000 GHz #Res BW 100 kHz, #VBW 300 kHz, Sweep 2.133 ms (8001 pts)</p> <table border="1" style="width: 100%; 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>2.480 241 25 GHz</td><td>-2.442 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 00 GHz</td><td>-52.953 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 00 GHz</td><td>-53.045 dBm</td><td></td><td></td><td></td></tr> <tr><td>4</td><td>N</td><td>f</td><td></td><td>2.493 496 25 GHz</td><td>-50.052 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		2.480 241 25 GHz	-2.442 dBm				2	N	f		2.483 500 00 GHz	-52.953 dBm				3	N	f		2.500 000 00 GHz	-53.045 dBm				4	N	f		2.493 496 25 GHz	-50.052 dBm				Frequency Auto Tune Center Freq 2.489000000 GHz Start Freq 2.478000000 GHz Stop Freq 2.500000000 GHz CF Step 2.200000 MHz Freq Offset 0 Hz
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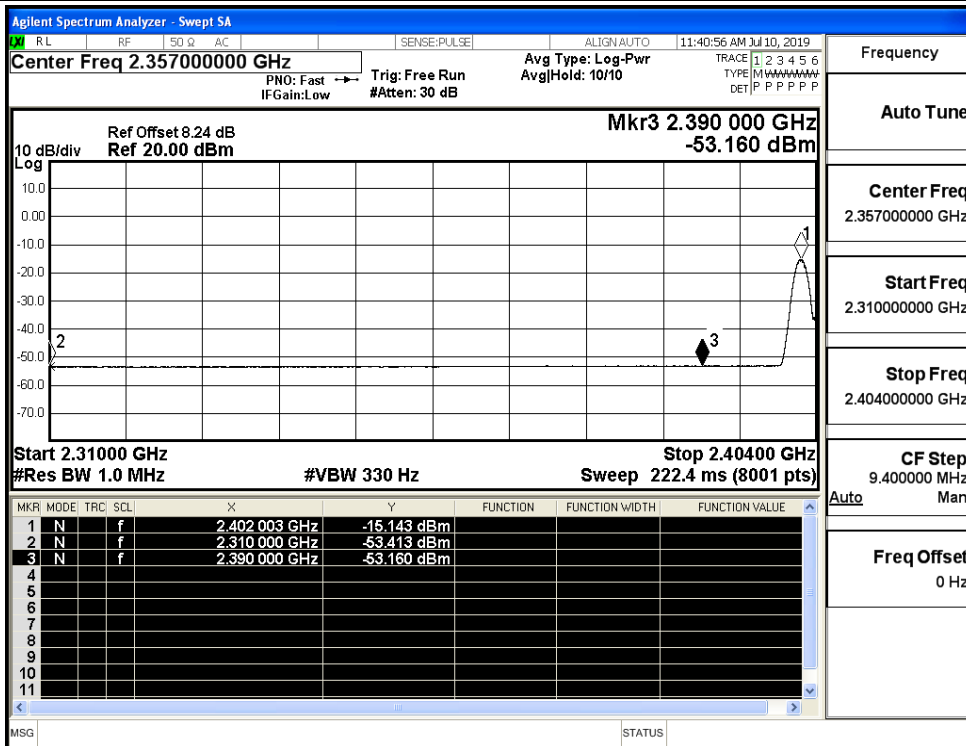
B.7 Restrict-band band-edge measurements

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	-41.99	2.0	0	53.27	PEAK	74	PASS
		Ant1	2310.0	-53.41	2.0	0	41.84	AV	54	PASS
		Ant1	2390.0	-42.67	2.0	0	52.59	PEAK	74	PASS
		Ant1	2390.0	-53.16	2.0	0	42.10	AV	54	PASS
	2480	Ant1	2483.5	-42.74	2.0	0	52.52	PEAK	74	PASS
		Ant1	2483.5	-53.00	2.0	0	42.26	AV	54	PASS
		Ant1	2500.0	-40.91	2.0	0	54.35	PEAK	74	PASS
		Ant1	2500.0	-52.85	2.0	0	42.41	AV	54	PASS

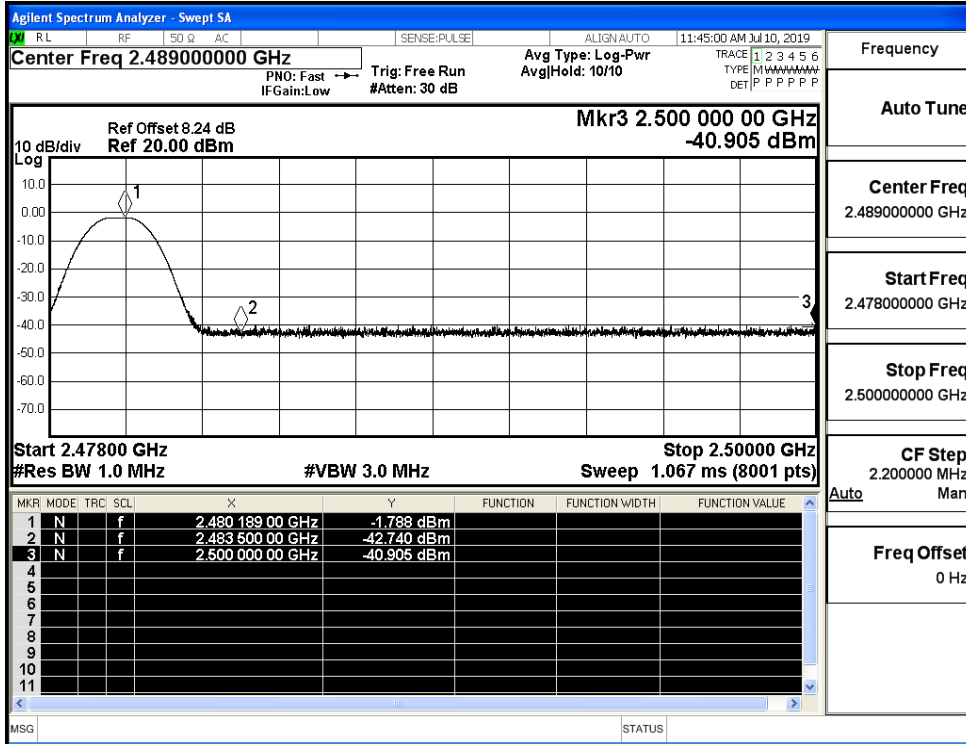
Restrict-band band-edge measurements_BT LE_2402_Ant1_PEAK



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

