

Appendix B

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

Product Name: atomi Shower Speaker

Trade Mark: atomi

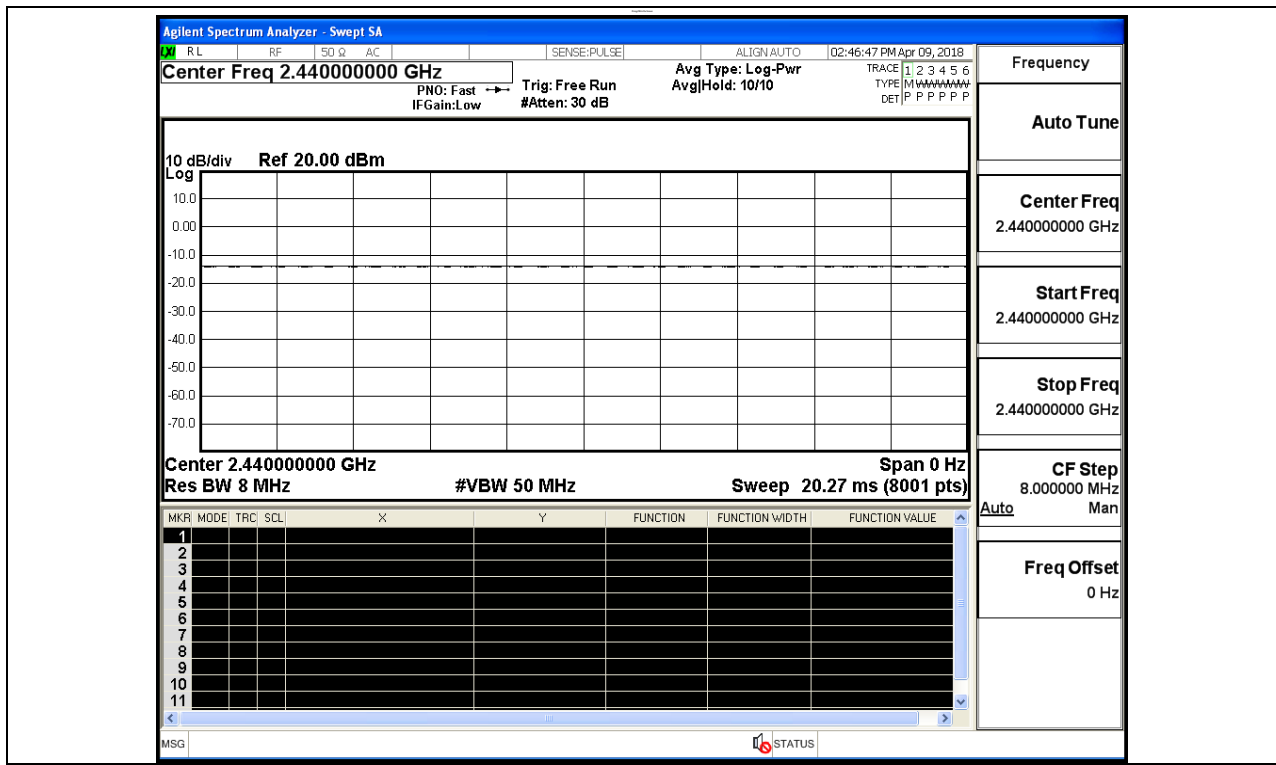
Test Model: AT1219

Environmental Conditions

Temperature:	23.2 ° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Wangchuang
Supervised by:	Jayden Zhuo

B.1 Duty Cycle

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

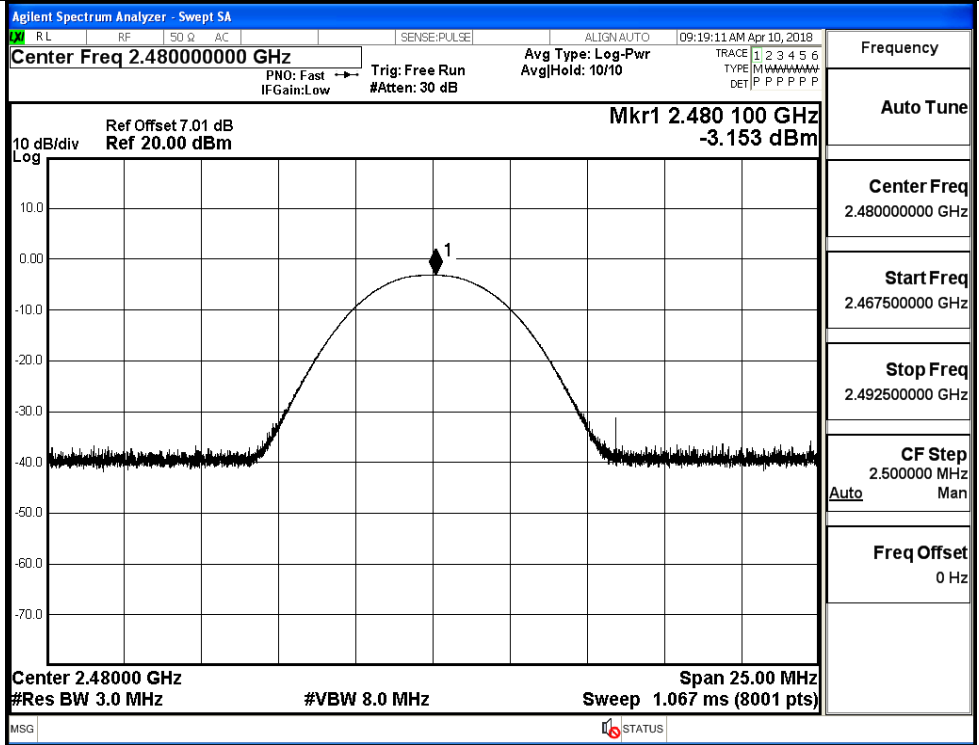


B.2 Maximum Conducted Peak Output Power

Mode	Channel	Conduct Peak Power[dBm]	Limit [dBm]	Verdict
BT LE	LCH	-2.988	30	PASS
BT LE	MCH	-3.135	30	PASS
BT LE	HCH	-3.153	30	PASS

Test Graphs	
LCH	<div style="border: 1px solid black; padding: 5px;"> <p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.40200000 GHz</p> <p>Mkr1 2.401 925 GHz -2.988 dBm</p> <p>Center 2.40200 GHz #Res BW 3.0 MHz #VBW 8.0 MHz Span 25.00 MHz Sweep 1.067 ms (8001 pts)</p> </div>
MCH	<div style="border: 1px solid black; padding: 5px;"> <p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.44000000 GHz</p> <p>Mkr1 2.439 972 GHz -3.135 dBm</p> <p>Center 2.44000 GHz #Res BW 3.0 MHz #VBW 8.0 MHz Span 25.00 MHz Sweep 1.067 ms (8001 pts)</p> </div>

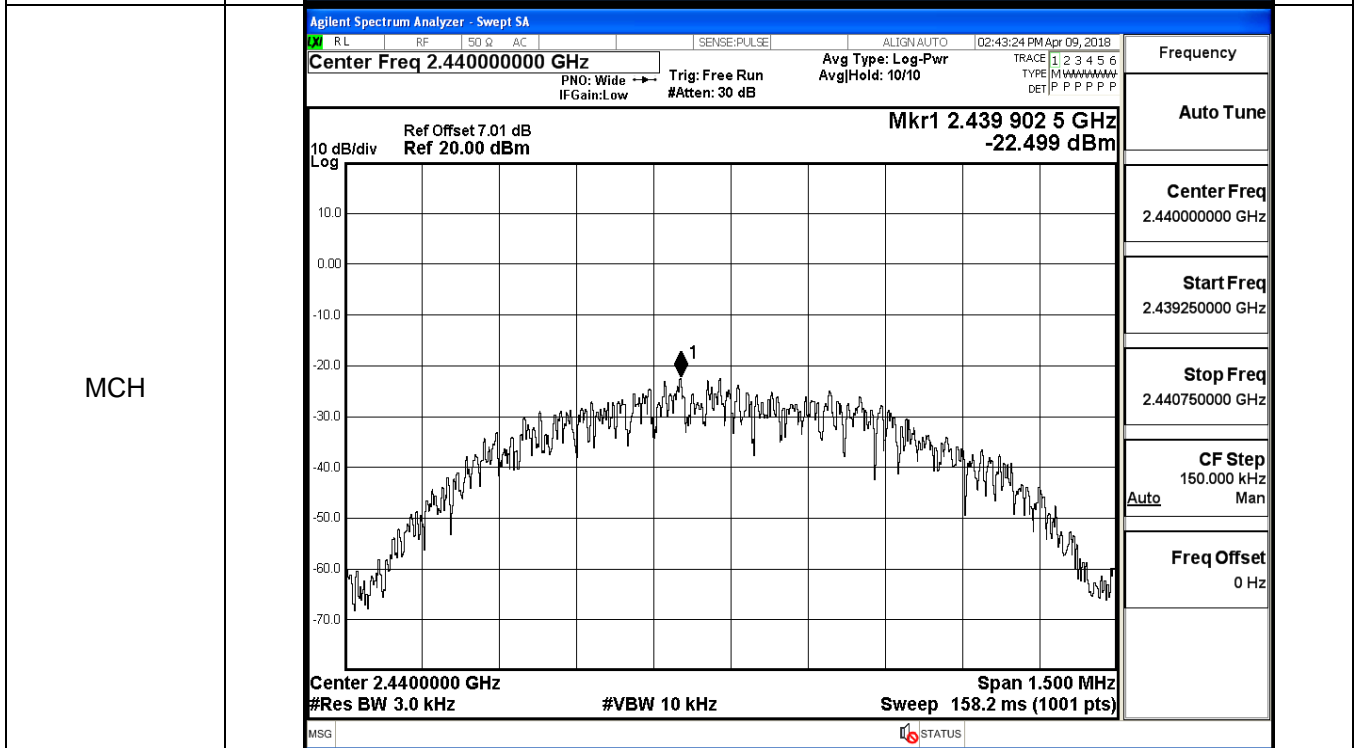
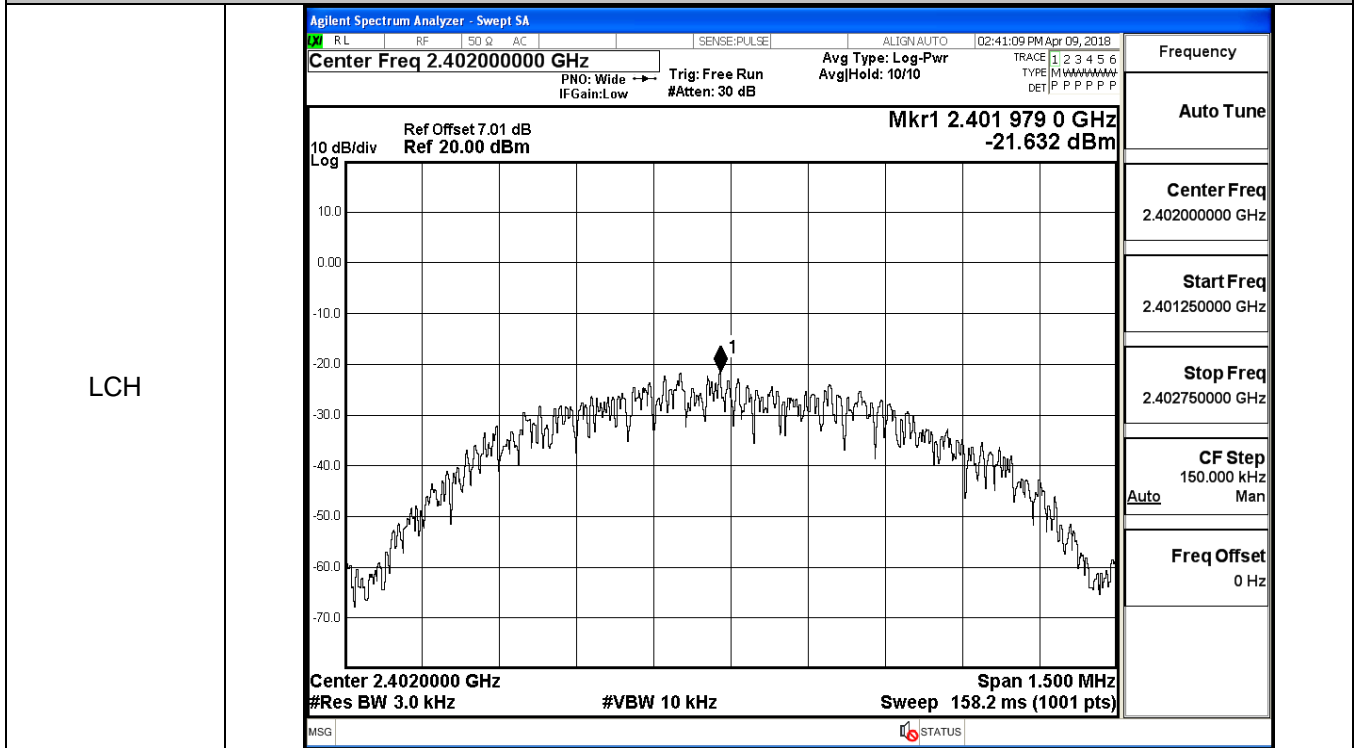
HCH

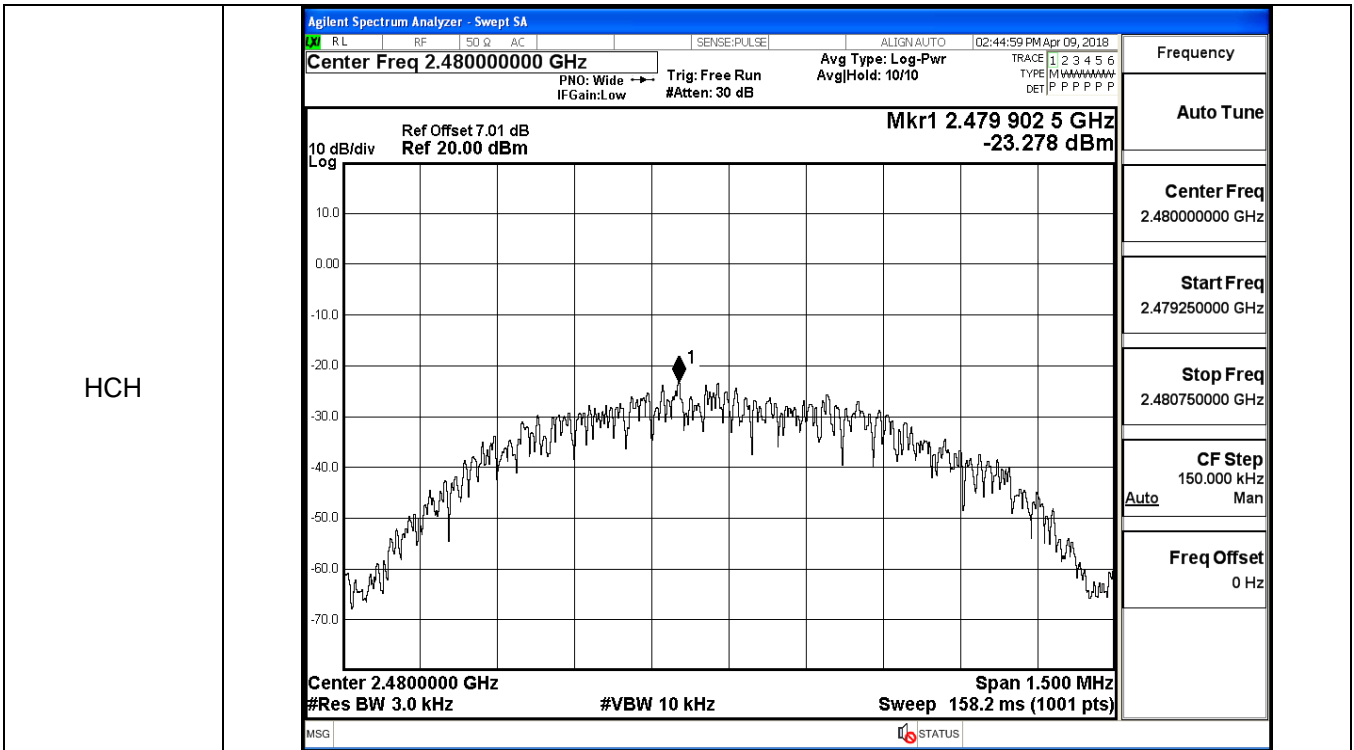


B.3 Maximum Power Spectral Density

Mode	Channel	PSD [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
BT LE	LCH	-21.632	8	PASS
BT LE	MCH	-22.499	8	PASS
BT LE	HCH	-23.278	8	PASS

Test Graphs

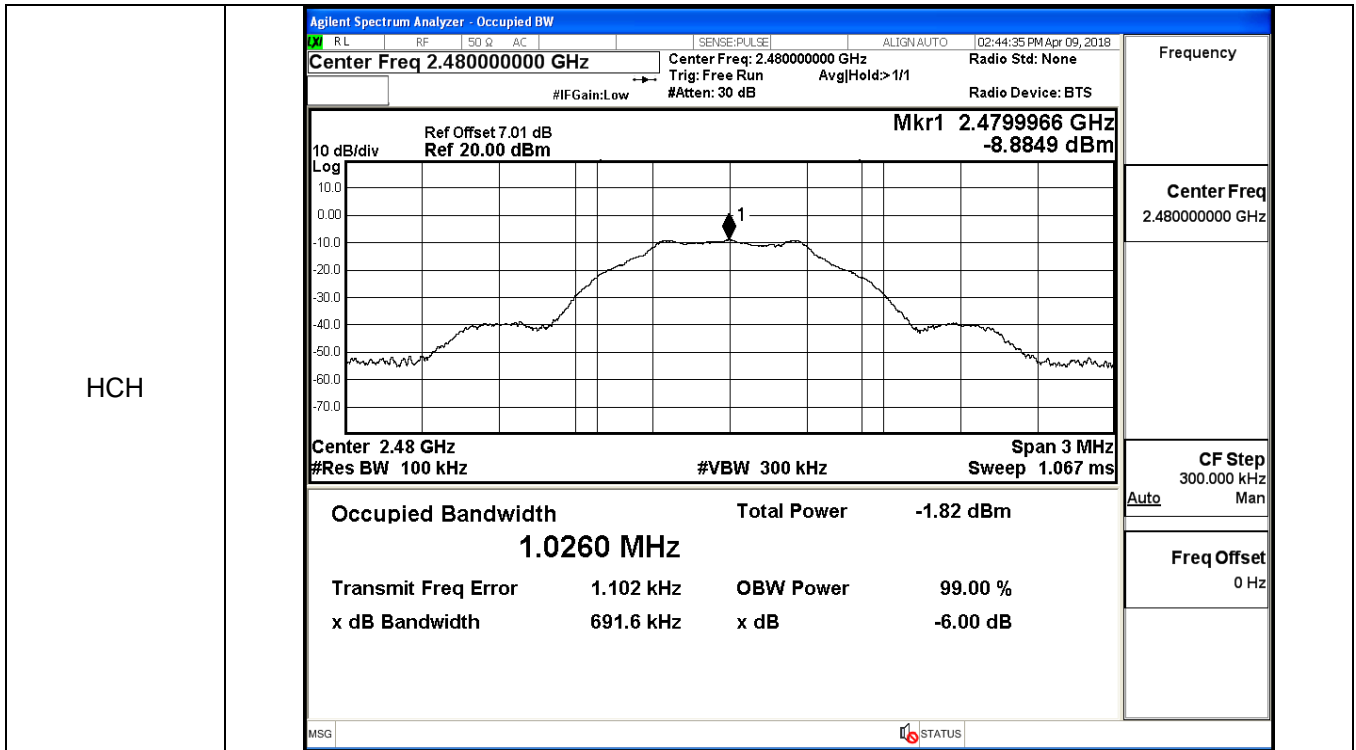




B.4 6dB Bandwidth

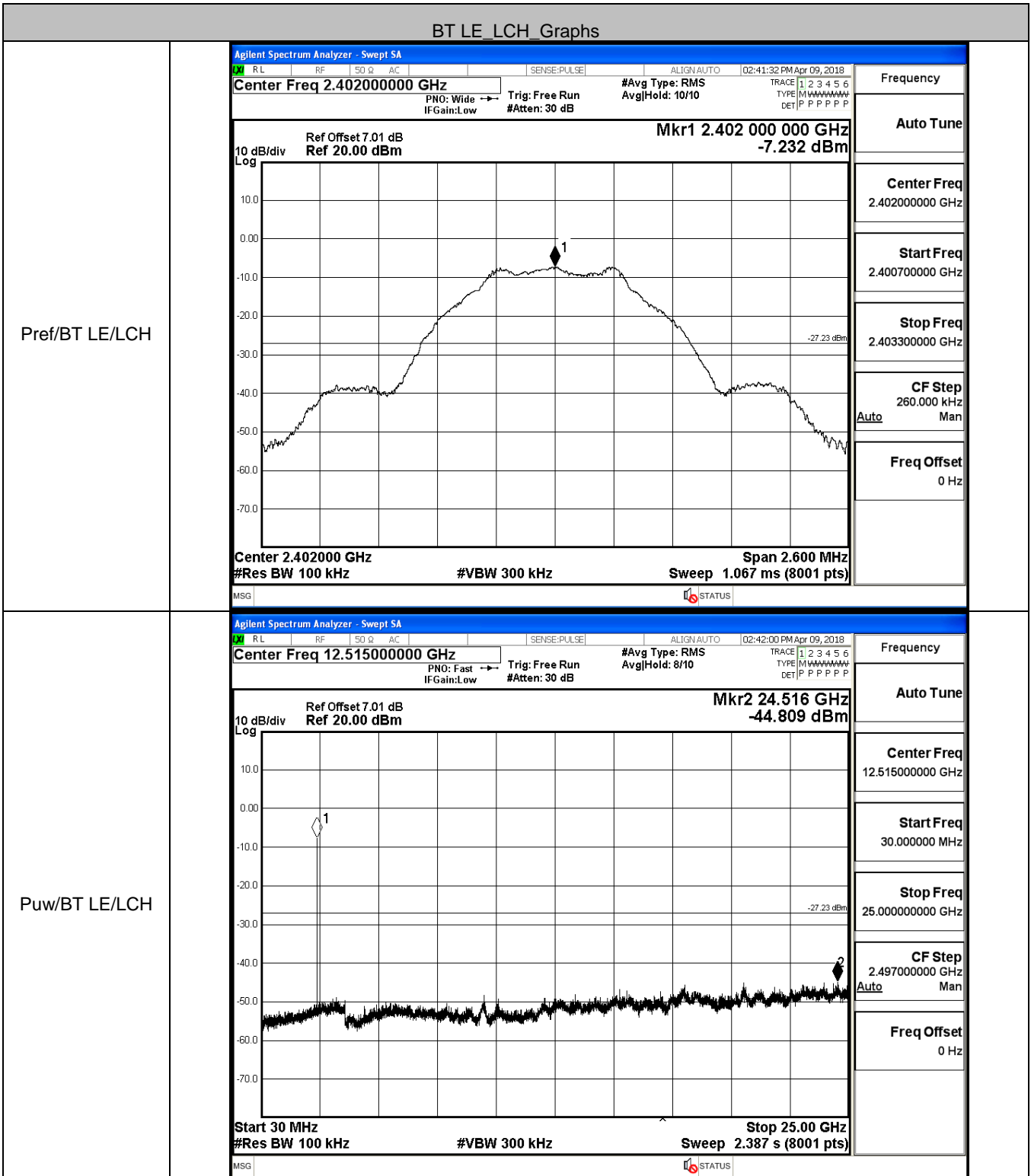
Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
BT LE	LCH	0.6695	≥0.5	PASS
BT LE	MCH	0.6865	≥0.5	PASS
BT LE	HCH	0.6916	≥0.5	PASS

Test Graphs	
LCH	<div data-bbox="416 562 1390 1294"> <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.40200000 GHz Center Freq: 2.402000000 GHz Radio Std: None</p> <p>Trig: Free Run AvgHold>1/1</p> <p>#IFGain:Low #Atten: 30 dB Radio Device: BTS</p> <p>Ref Offset 7.01 dB Mkr1 2.4019989 GHz</p> <p>Ref 20.00 dBm -7.1914 dBm</p> <p>Center 2.402 GHz Span 3 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 1.067 ms</p> <p>Occupied Bandwidth Total Power -0.12 dBm</p> <p>1.0270 MHz</p> <p>Transmit Freq Error 5.769 kHz OBW Power 99.00 %</p> <p>x dB Bandwidth 669.5 kHz x dB -6.00 dB</p> <p>MSG STATUS</p> </div> <div data-bbox="1241 562 1390 1294"> <p>Frequency</p> <p>Center Freq 2.402000000 GHz</p> <p>CF Step 300.000 kHz</p> <p>Auto Man</p> <p>Freq Offset 0 Hz</p> </div>
MCH	<div data-bbox="416 1305 1390 2042"> <p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.44000000 GHz Center Freq: 2.440000000 GHz Radio Std: None</p> <p>Trig: Free Run AvgHold>1/1</p> <p>#IFGain:Low #Atten: 30 dB Radio Device: BTS</p> <p>Ref Offset 7.01 dB Mkr1 2.4399996 GHz</p> <p>Ref 20.00 dBm -8.0986 dBm</p> <p>Center 2.44 GHz Span 3 MHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 1.067 ms</p> <p>Occupied Bandwidth Total Power -1.00 dBm</p> <p>1.0268 MHz</p> <p>Transmit Freq Error 2.982 kHz OBW Power 99.00 %</p> <p>x dB Bandwidth 686.5 kHz x dB -6.00 dB</p> <p>MSG STATUS</p> </div> <div data-bbox="1241 1305 1390 2042"> <p>Frequency</p> <p>Center Freq 2.440000000 GHz</p> <p>CF Step 300.000 kHz</p> <p>Auto Man</p> <p>Freq Offset 0 Hz</p> </div>



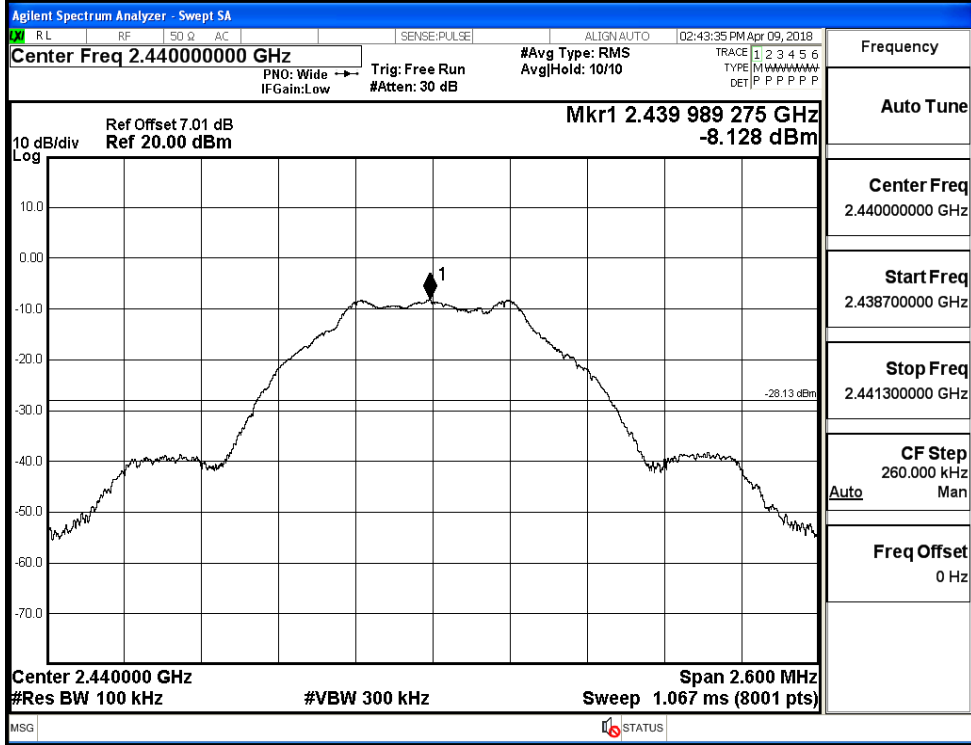
B.5 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	-7.232	-44.809	-27.232	PASS
BT LE	MCH	-8.128	-45.139	-28.128	PASS
BT LE	HCH	-8.923	-44.912	-28.923	PASS

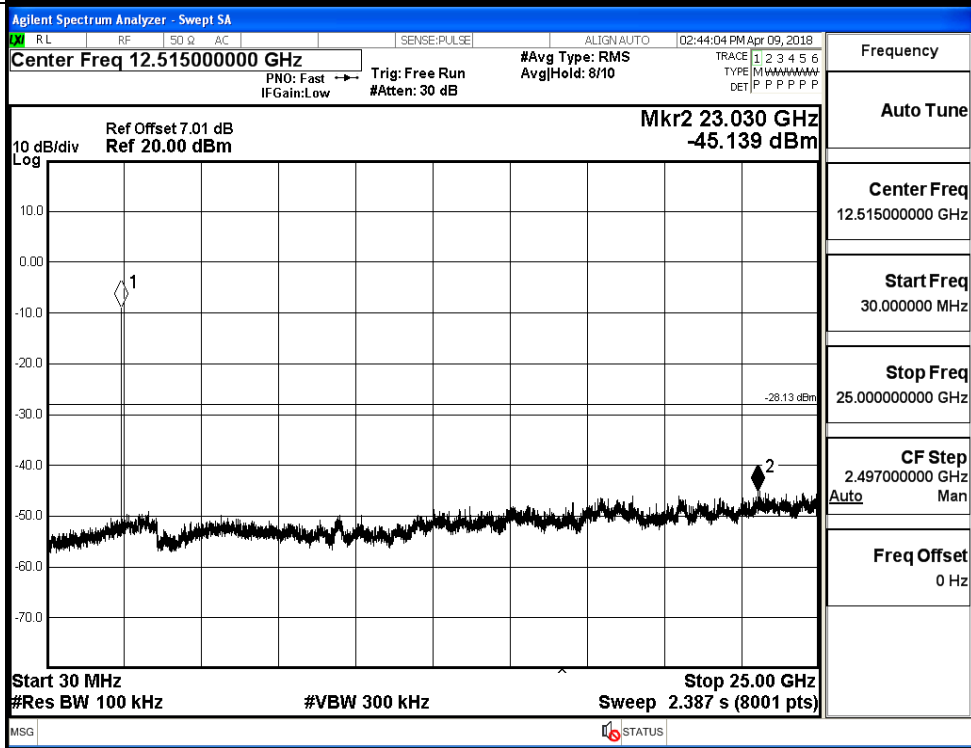


BT LE_MCH_Graphs

Pref/BT LE/MCH

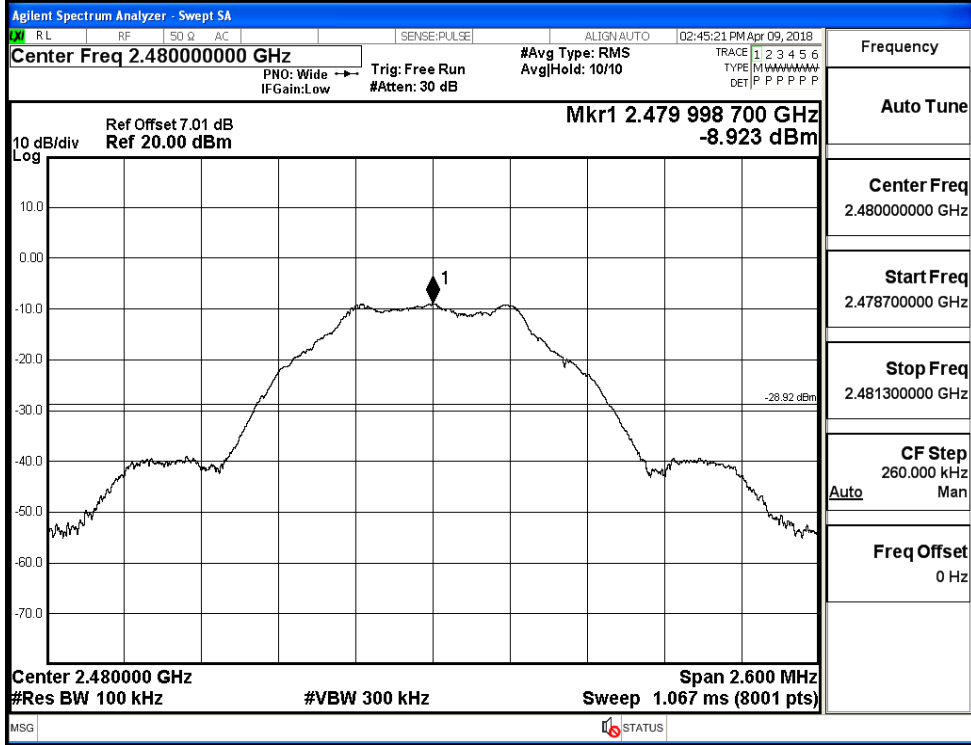


Puw/BT LE/MCH

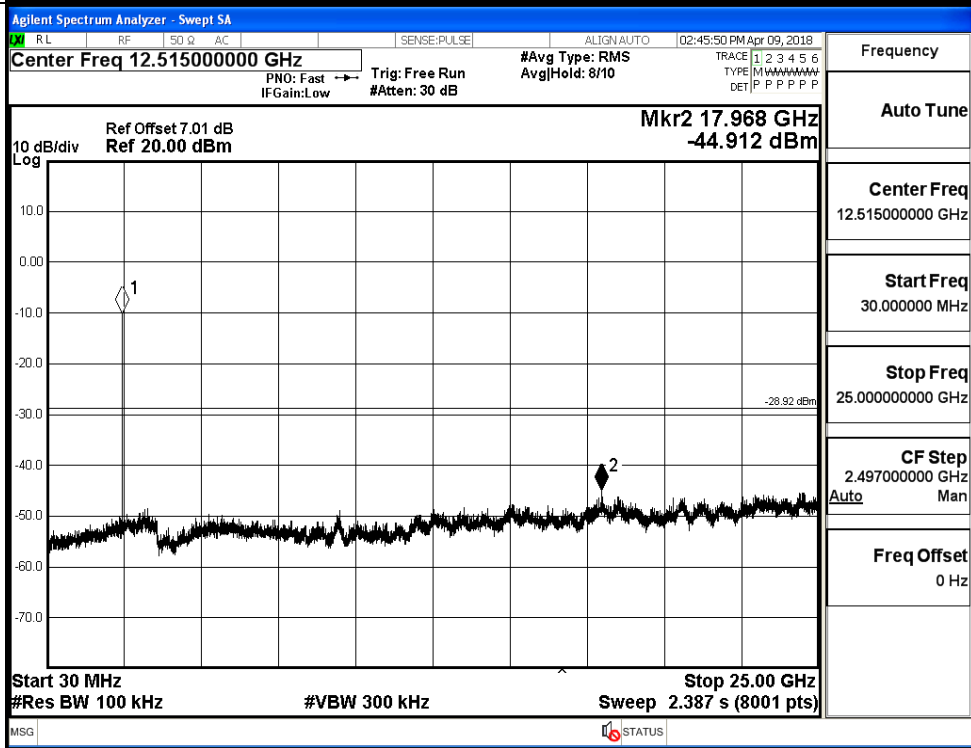


BT LE_HCH_Graphs

Pref/BT LE/HCH



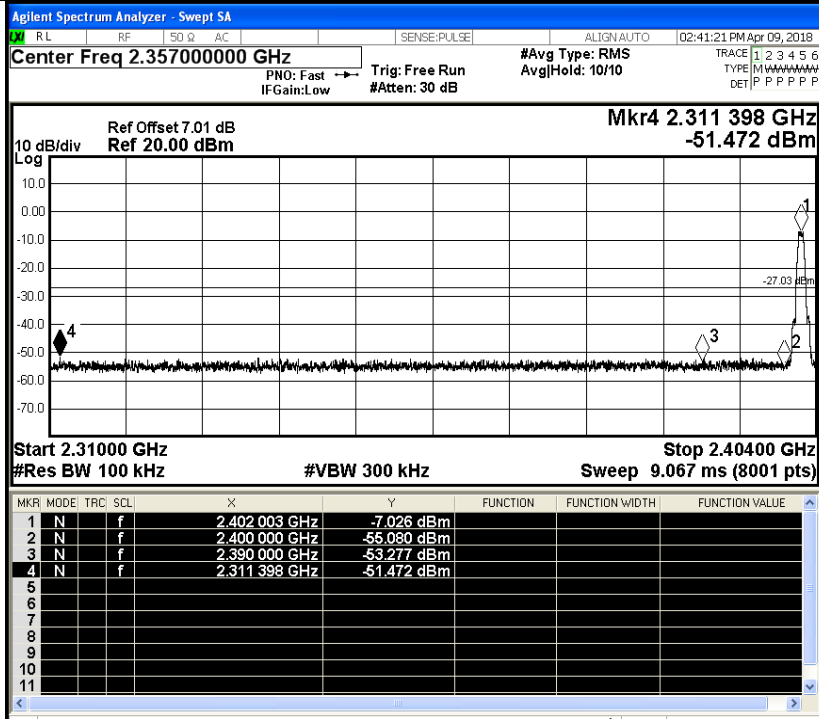
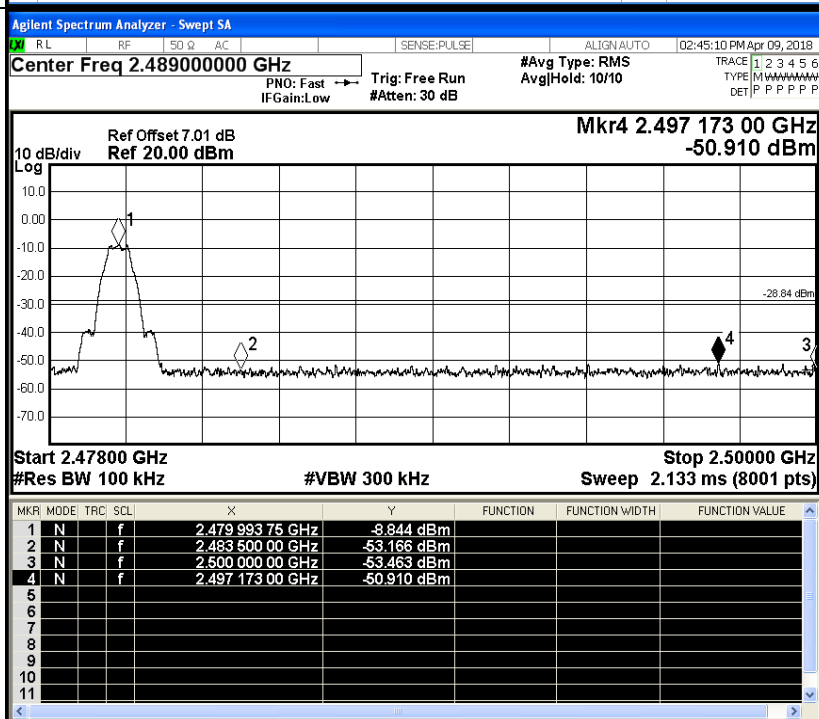
Puw/BT LE/HCH



B.6 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	-7.026	-51.472	-27.03	PASS
BT LE	HCH	-8.844	-50.910	-28.84	PASS

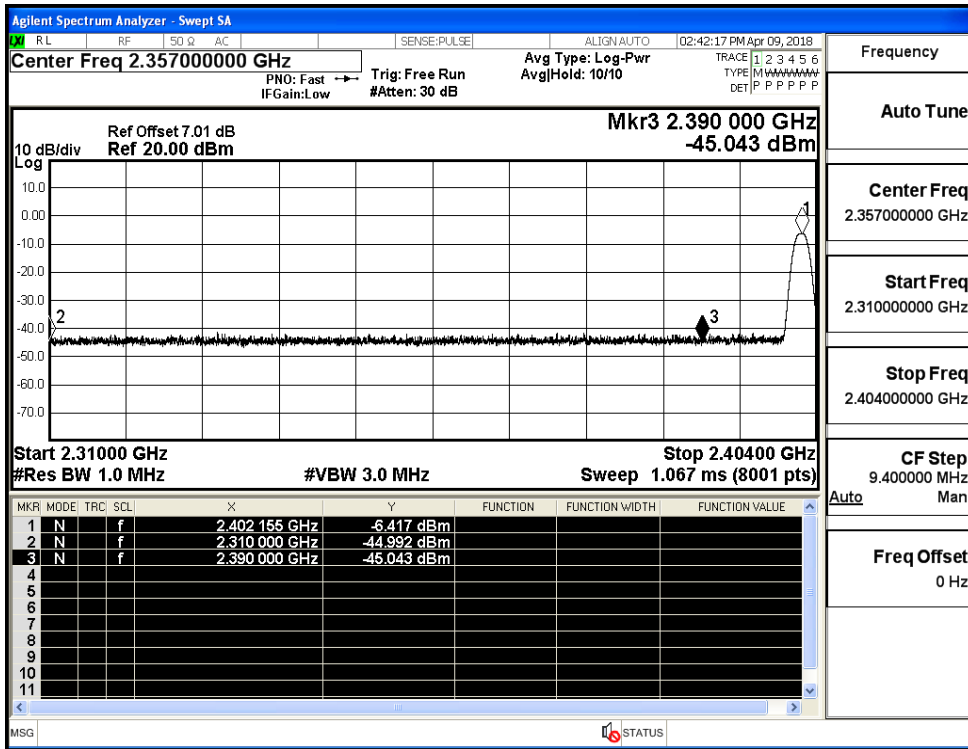
Test Graphs

LCH		<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.35700000 GHz</p> <p>Start Freq 2.31000000 GHz</p> <p>Stop Freq 2.40400000 GHz</p> <p>CF Step 9.400000 MHz</p> <p>Freq Offset 0 Hz</p>
HCH		<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.48900000 GHz</p> <p>Start Freq 2.47800000 GHz</p> <p>Stop Freq 2.50000000 GHz</p> <p>CF Step 2.200000 MHz</p> <p>Freq Offset 0 Hz</p>

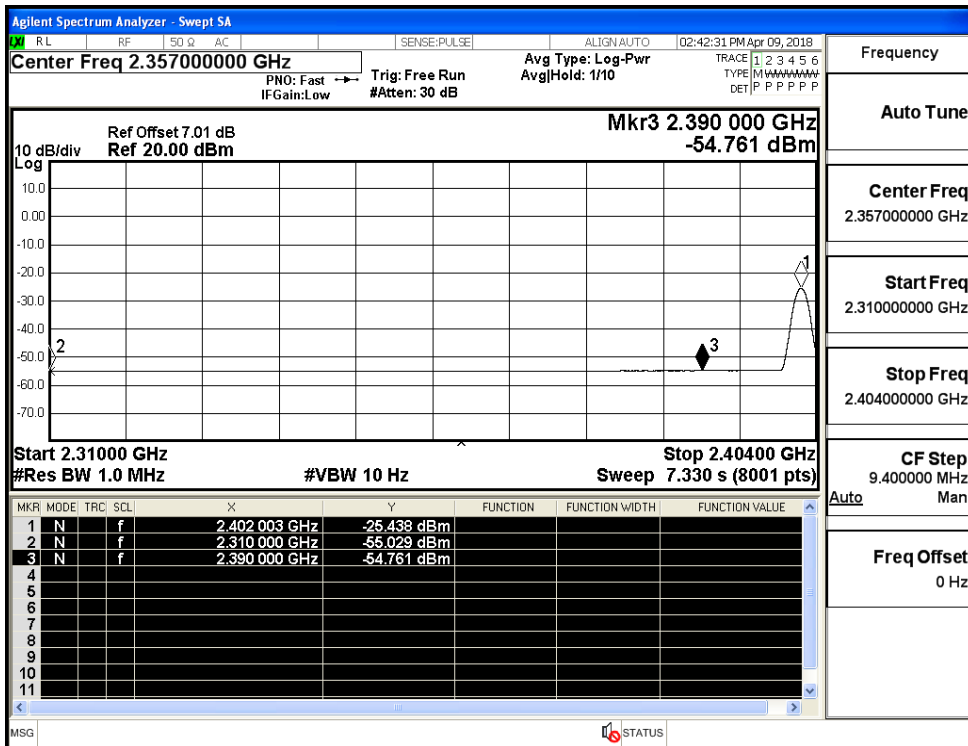
B.7 Restrict-band band-edge measurements

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	-44.99	2.0	0	50.27	PEAK	74	PASS
		Ant1	2310.0	-55.03	2.0	0	40.23	AV	54	PASS
		Ant1	2390.0	-45.04	2.0	0	50.21	PEAK	74	PASS
		Ant1	2390.0	-54.76	2.0	0	40.50	AV	54	PASS
	2480	Ant1	2483.5	-42.71	2.0	0	52.55	PEAK	74	PASS
		Ant1	2483.5	-54.56	2.0	0	40.70	AV	54	PASS
		Ant1	2500.0	-44.14	2.0	0	51.12	PEAK	74	PASS
		Ant1	2500.0	-54.42	2.0	0	40.84	AV	54	PASS

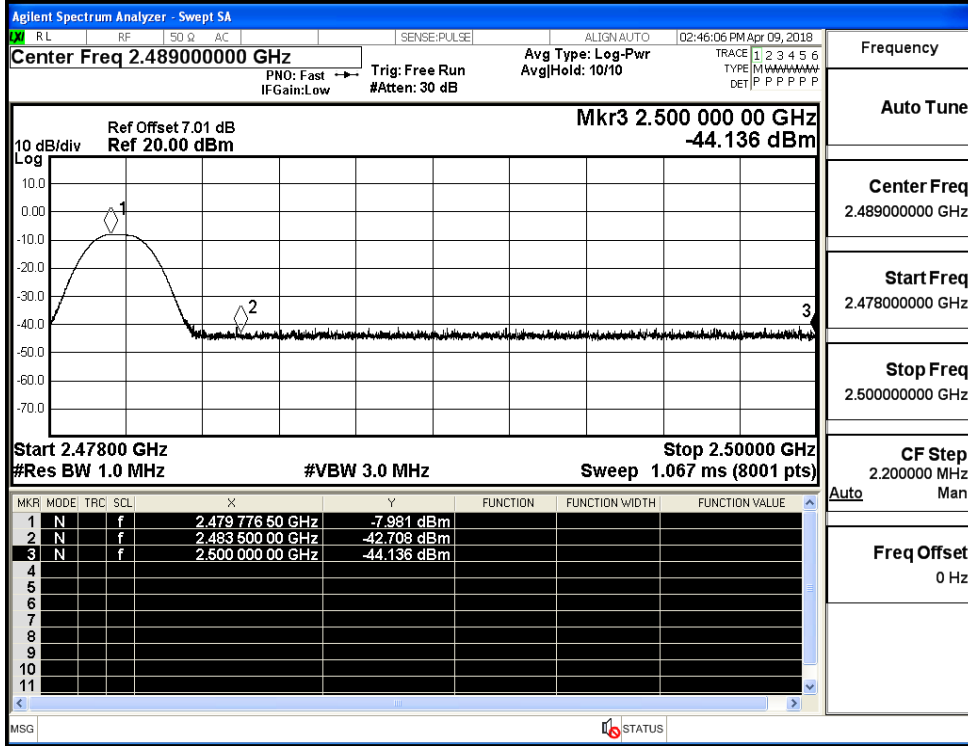
Restrict-band band-edge measurements_BT LE_2402_Ant1_PEAK



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

