

Appendix B

RF Test Data for BT V5.0(BDR/EDR) (Conducted Measurement)

Product Name: Hand-held Barcode Scanner

Trade Mark: Newland

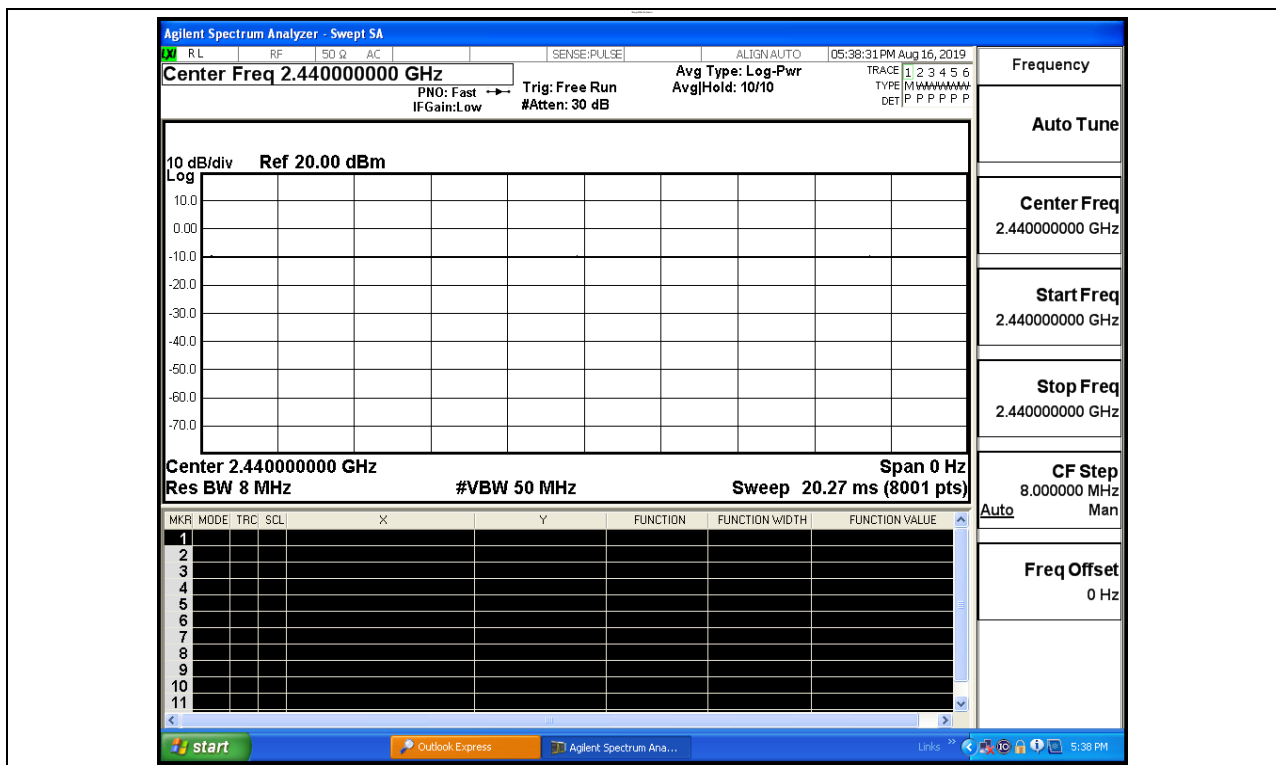
Test Model: NLS-HR15

Environmental Conditions

Temperature:	24.2° C
Relative Humidity:	53.1%
ATM Pressure:	100.0 kPa
Test Engineer:	SCENT HU
Supervised by:	Wang.Chuang

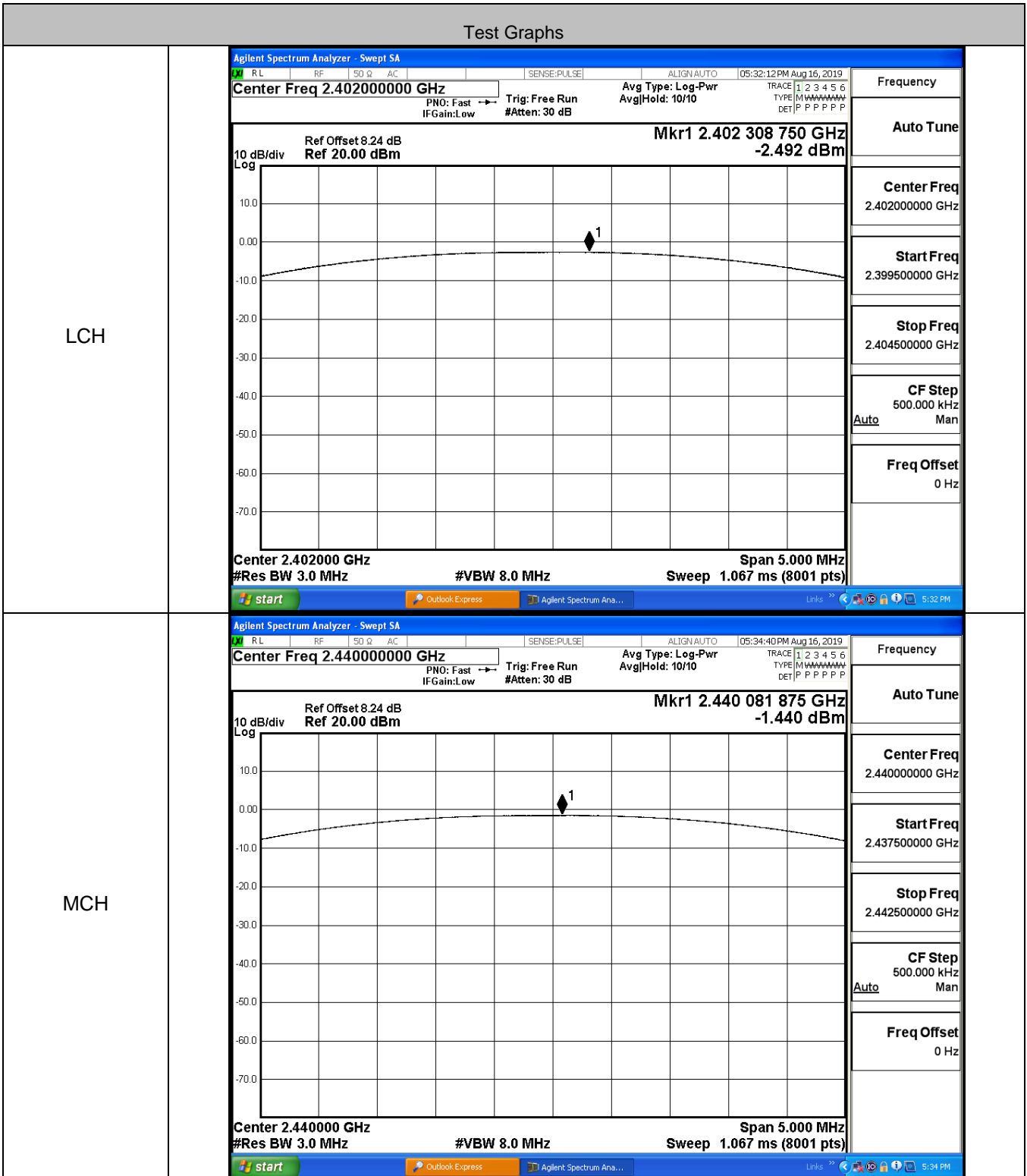
B.1 Duty Cycle

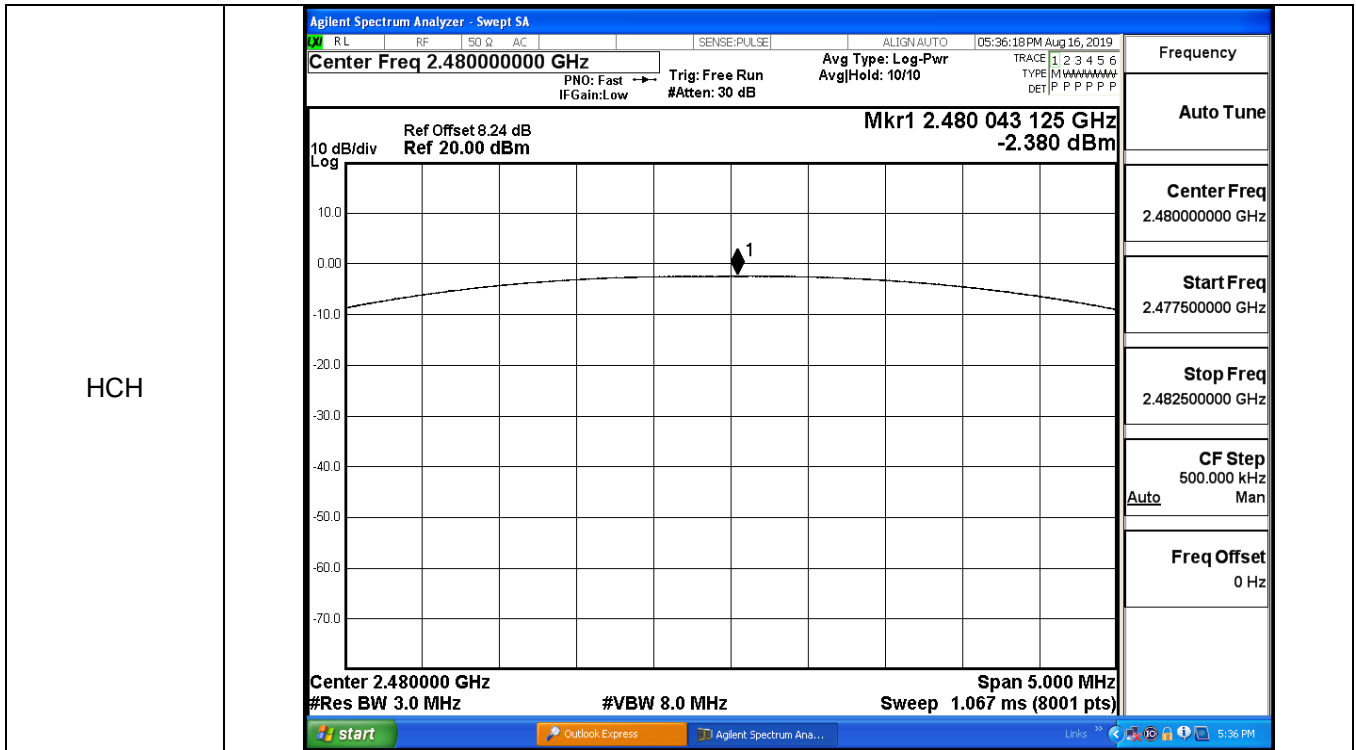
Test Mode	Test Channel	Ant	Duty Cycle[%]	Verdict
BT LE	2440	Ant1	100	PASS



B.2 Maximum Conducted Peak Output Power

Mode	Channel	Conduct Peak Power[dBm]	Limit [dBm]	Verdict
BT LE	LCH	-2.492	30	PASS
BT LE	MCH	-1.44	30	PASS
BT LE	HCH	-2.38	30	PASS

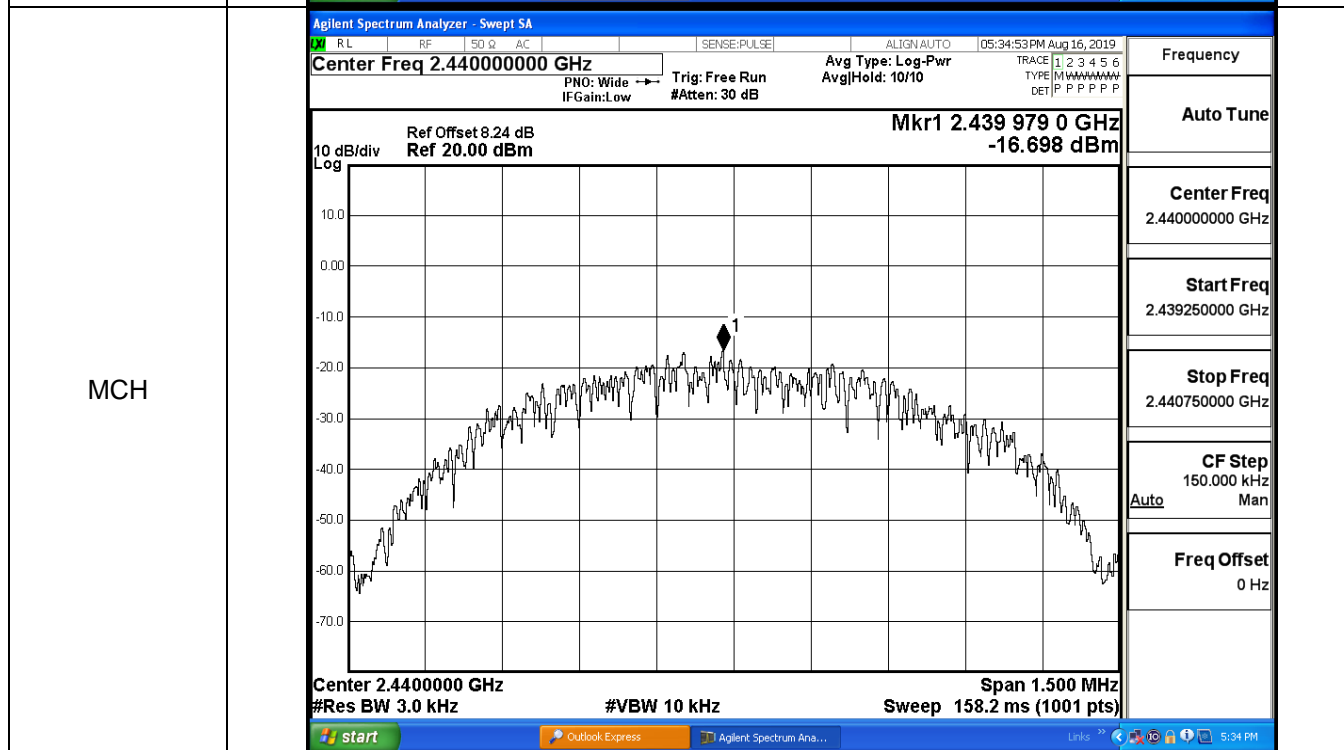
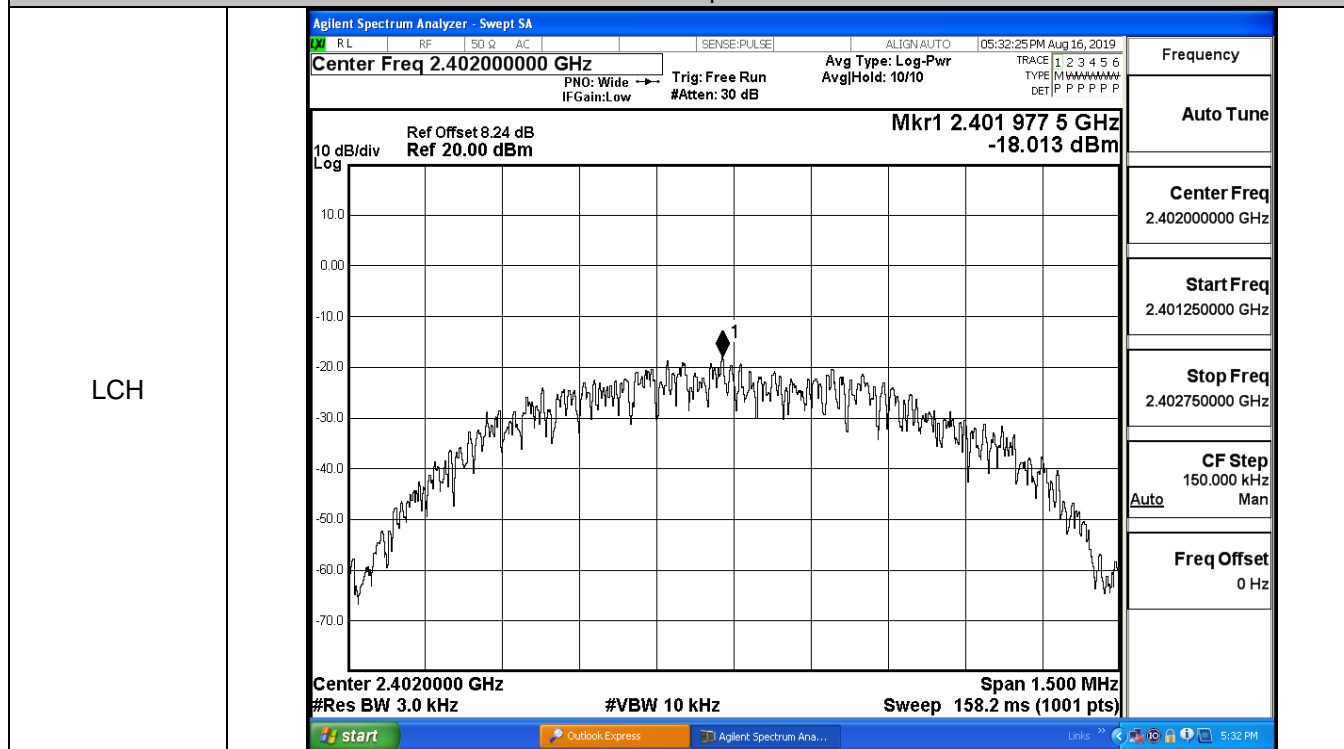




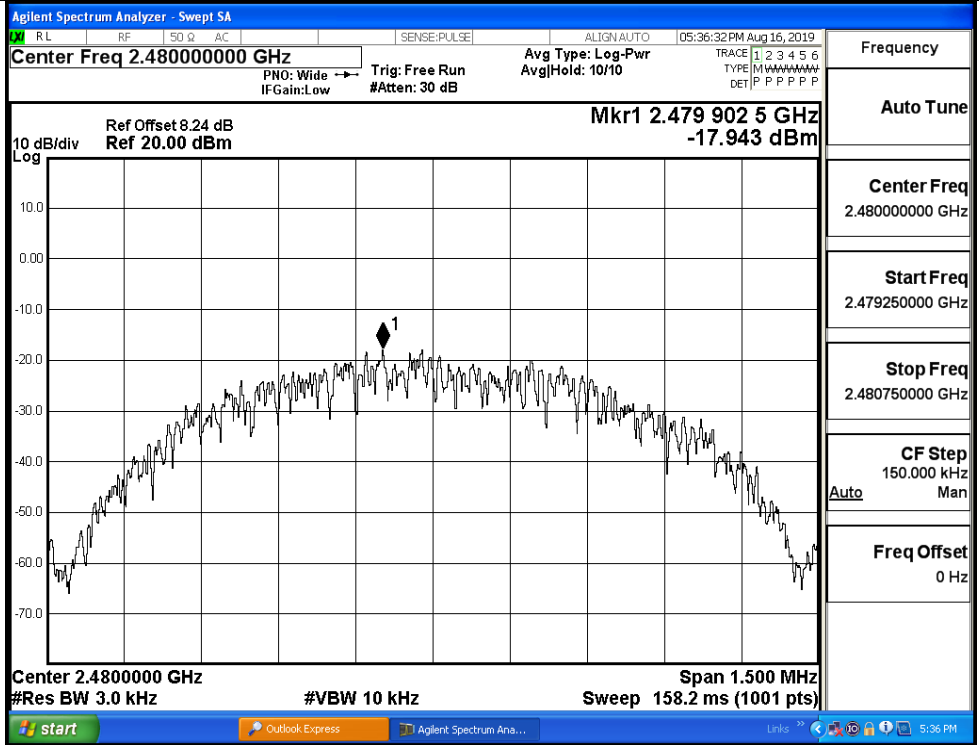
B.3 Maximum Power Spectral Density

Mode	Channel	PSD [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
BT LE	LCH	-18.013	8	PASS
BT LE	MCH	-16.698	8	PASS
BT LE	HCH	-17.943	8	PASS

Test Graphs



HCH



B.4 6dB Bandwidth

Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
BT LE	LCH	0.6930	≥0.5	PASS
BT LE	MCH	0.6857	≥0.5	PASS
BT LE	HCH	0.6861	≥0.5	PASS

Test Graphs	
LCH	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.40200000 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>Ref Offset 8.24 dB Mkr1 2.402389 GHz Ref 20.00 dBm -3.5329 dBm</p> <p>10 dB/div Log</p> <p>Center 2.402 GHz #Res BW 100 kHz #VBW 300 kHz Span 3 MHz Sweep 1.067 ms</p> <p>Occupied Bandwidth 1.0515 MHz Total Power 3.54 dBm</p> <p>Transmit Freq Error 6.089 kHz OBW Power 99.00 % x dB Bandwidth 693.0 kHz x dB -6.00 dB</p> <p>start Outlook Express Agilent Spectrum Ana... Links 5:32 PM</p>
MCH	<p>Agilent Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.44000000 GHz Center Freq: 2.440000000 GHz Radio Std: None Trig: Free Run AvgHold: 1/1 #IFGain: Low #Atten: 30 dB Radio Device: BTS</p> <p>Ref Offset 8.24 dB Mkr1 2.439994 GHz Ref 20.00 dBm -2.4126 dBm</p> <p>10 dB/div Log</p> <p>Center 2.44 GHz #Res BW 100 kHz #VBW 300 kHz Span 3 MHz Sweep 1.067 ms</p> <p>Occupied Bandwidth 1.0471 MHz Total Power 4.65 dBm</p> <p>Transmit Freq Error 5.221 kHz OBW Power 99.00 % x dB Bandwidth 685.7 kHz x dB -6.00 dB</p> <p>start Outlook Express Agilent Spectrum Ana... Links 5:34 PM</p>

HCH

Agilent Spectrum Analyzer - Occupied BW

RL	RF	50 Ω	AC	SENSE:PULSE	ALIGN:AUTO	05:36:07 PM Aug 16, 2019
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	

Mkr1 2.4799966 GHz

-3.2946 dBm

Center 2.48 GHz	#VBW 300 kHz	Span 3 MHz
#Res BW 100 kHz	Sweep 1.067 ms	

Occupied Bandwidth	Total Power	3.77 dBm
1.0436 MHz		
Transmit Freq Error	5.064 kHz	OBW Power
x dB Bandwidth	686.1 kHz	x dB
		99.00 %
		-6.00 dB

start
Outlook Express
Agilent Spectrum Ana...
Links
5:36 PM

Frequency

Center Freq

2.480000000 GHz

CF Step

300.000 kHz

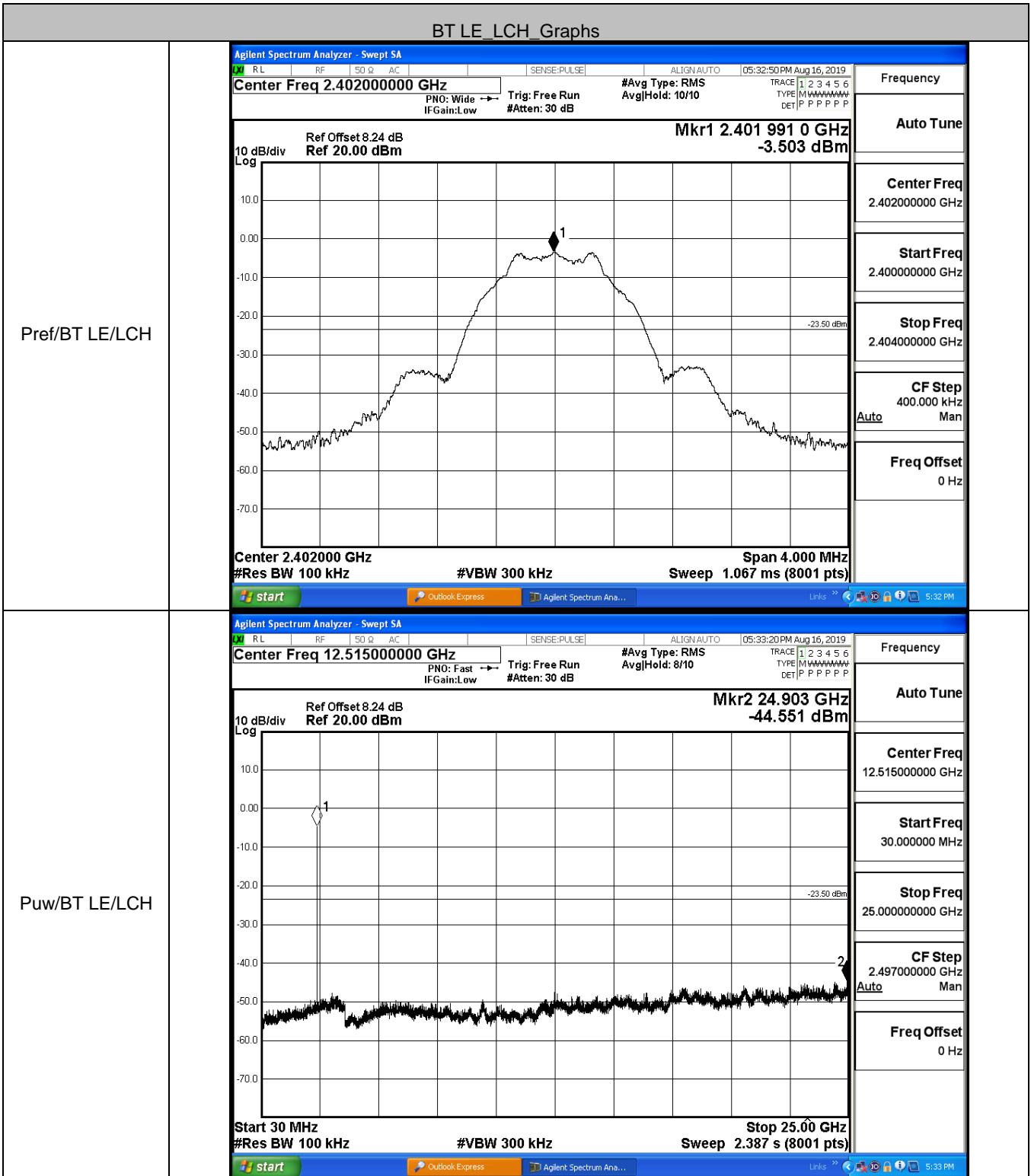
Auto Man

Freq Offset

0 Hz

B.5 RF Conducted Spurious Emissions

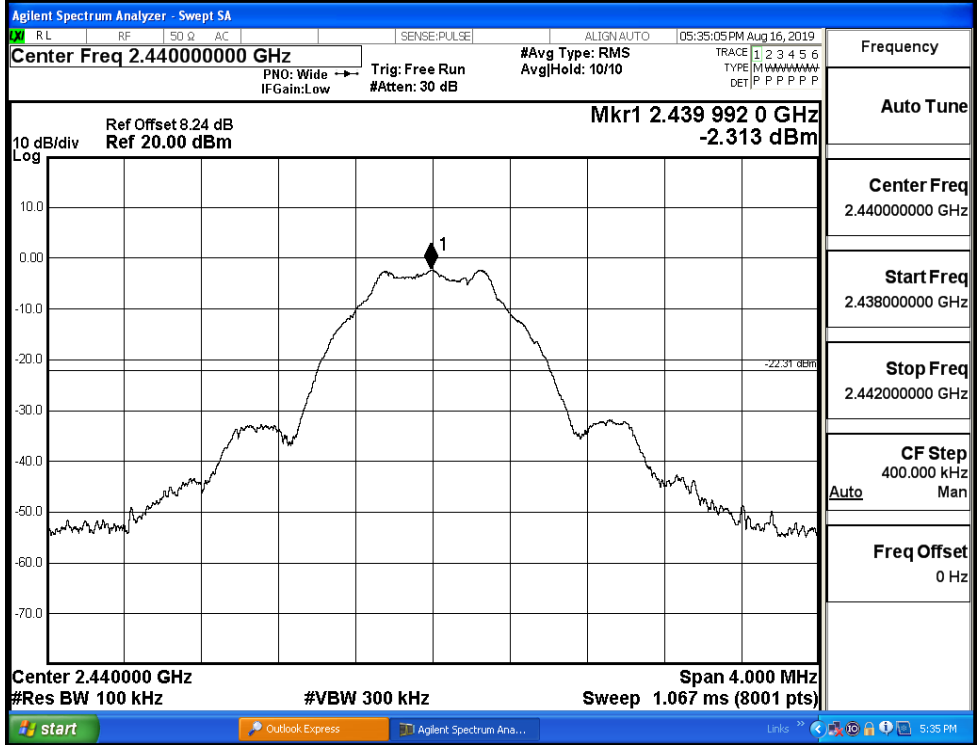
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	-3.503	-44.551	-23.503	PASS
BT LE	MCH	-2.313	-44.855	-22.313	PASS
BT LE	HCH	-3.436	-43.889	-23.436	PASS



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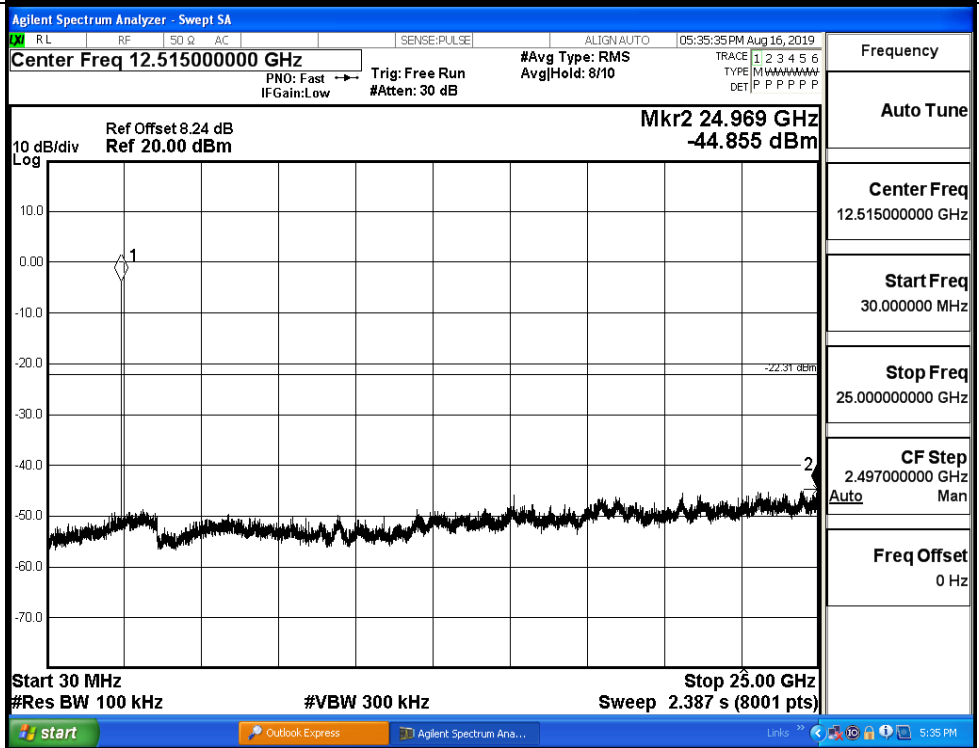
BT LE_MCH_Graphs

Pref/BT LE/MCH



Frequency
Auto Tune
Center Freq 2.44000000 GHz
Start Freq 2.438000000 GHz
Stop Freq 2.442000000 GHz
CF Step 400.000 kHz Auto
Freq Offset 0 Hz

Puw/BT LE/MCH



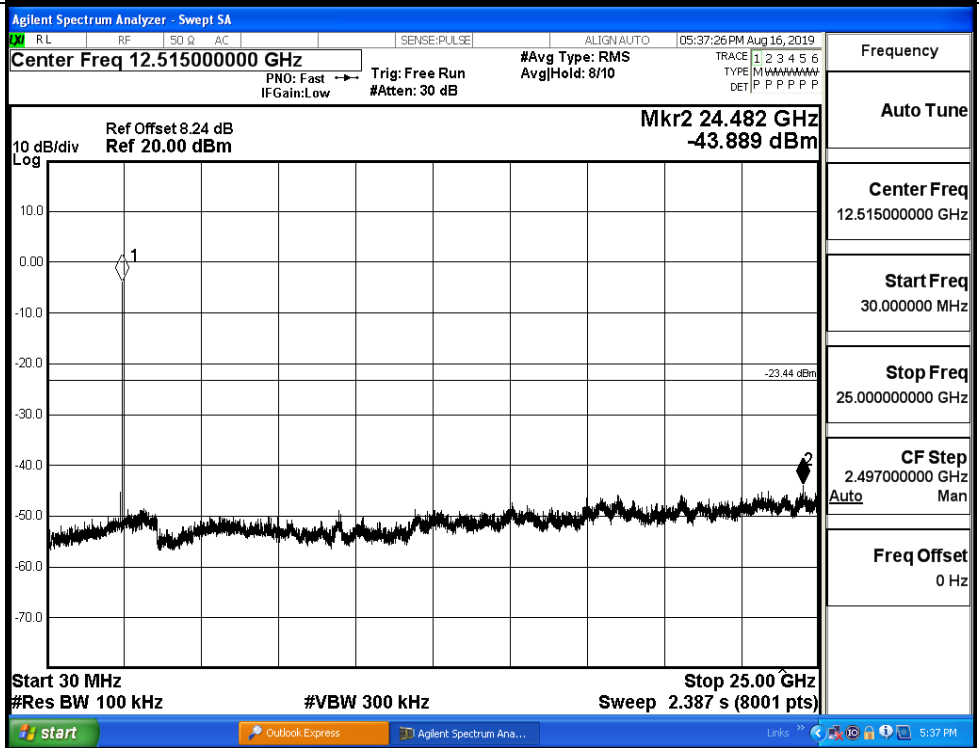
Frequency
Auto Tune
Center Freq 12.51500000 GHz
Start Freq 30.000000 MHz
Stop Freq 25.00000000 GHz
CF Step 2.497000000 GHz Auto
Freq Offset 0 Hz

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	-3.272	-49.705	-23.27	PASS
BT LE	HCH	-3.089	-50.306	-23.09	PASS

Test Graphs

LCH

Agilent Spectrum Analyzer - Swept SA
 Center Freq 2.35700000 GHz
 #Avg Type: RMS
 #Res BW 100 kHz #VBW 300 kHz
 Mkr4 2.369 831 GHz -49.705 dBm

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f		2.402 003 GHz	-3.272 dBm			
2	N	f		2.400 000 GHz	-54.441 dBm			
3	N	f		2.390 000 GHz	-52.079 dBm			
4	N	f		2.369 831 GHz	-49.705 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
 #Avg Type: RMS
 #Res BW 100 kHz #VBW 300 kHz
 Mkr4 2.492 429 25 GHz -50.306 dBm

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f		2.479 996 50 GHz	-3.089 dBm			
2	N	f		2.483 500 00 GHz	-53.087 dBm			
3	N	f		2.500 000 00 GHz	-52.129 dBm			
4	N	f		2.492 429 25 GHz	-50.306 dBm			

Frequency

Auto Tune

Center Freq
2.48900000 GHz

Start Freq
2.47800000 GHz

Stop Freq
2.50000000 GHz

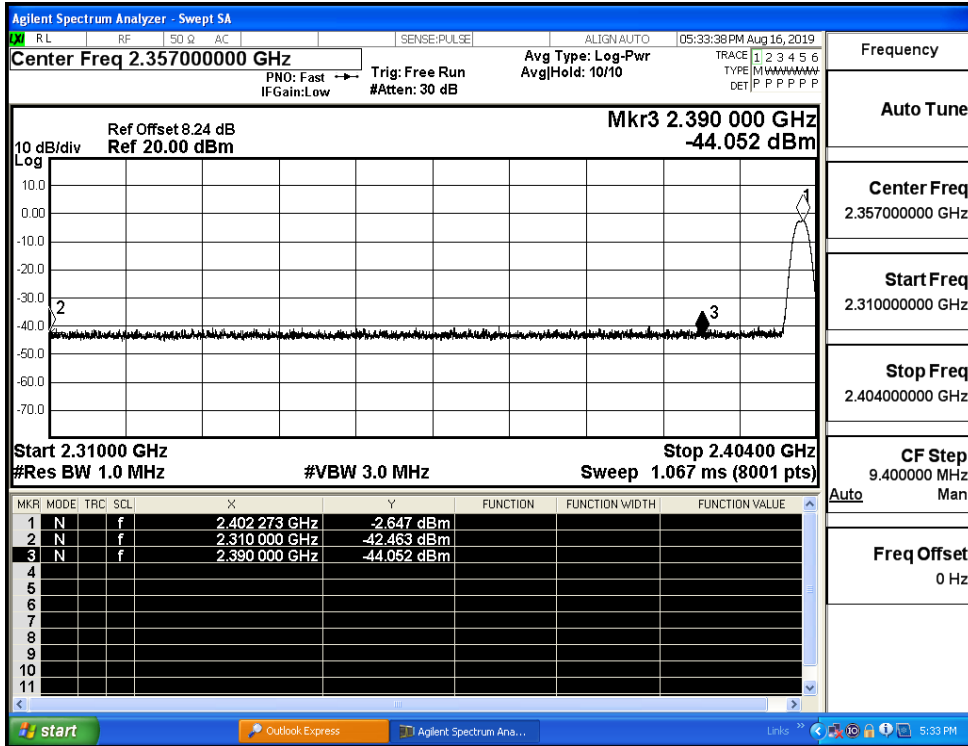
CF Step
2.200000 MHz

Freq Offset
0 Hz

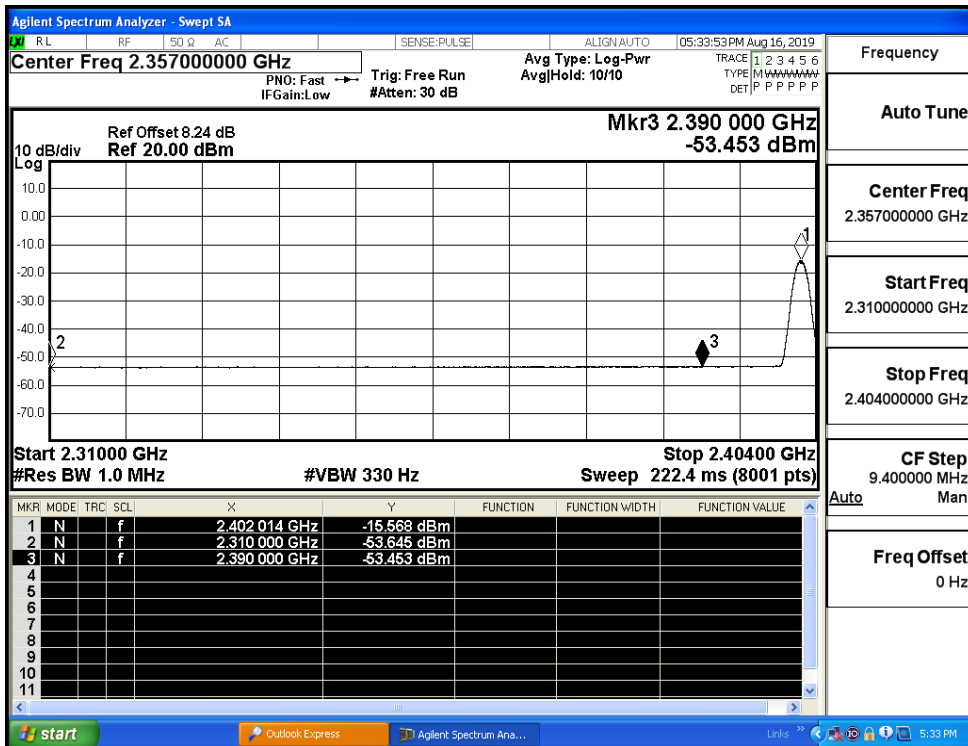
B.7 Restrict-band band-edge measurements

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	-42.46	2.0	0	52.79	PEAK	74	PASS
		Ant1	2310.0	-53.65	2.0	0	41.61	AV	54	PASS
		Ant1	2390.0	-44.05	2.0	0	51.21	PEAK	74	PASS
		Ant1	2390.0	-53.45	2.0	0	41.80	AV	54	PASS
	2480	Ant1	2483.5	-44.05	2.0	0	51.21	PEAK	74	PASS
		Ant1	2483.5	-53.18	2.0	0	42.08	AV	54	PASS
		Ant1	2500.0	-42.86	2.0	0	52.40	PEAK	74	PASS
		Ant1	2500.0	-53.02	2.0	0	42.23	AV	54	PASS

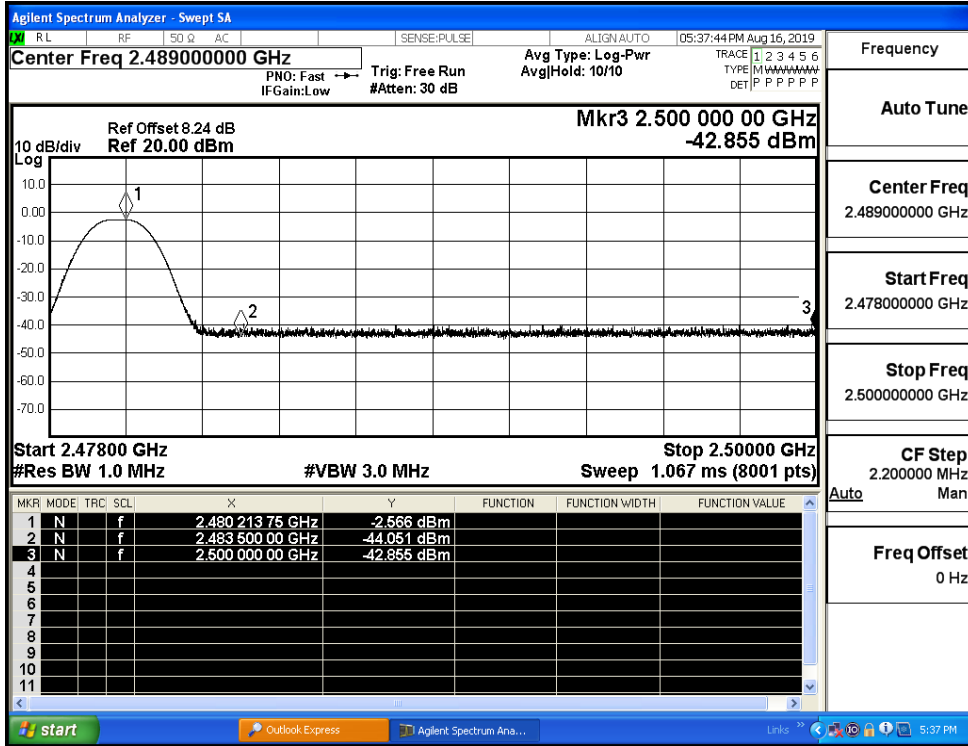
Restrict-band band-edge measurements_BT LE_2402_Ant1_PEAK



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

