

Appendix A

RF Test Data for BT 4.0(BLE) (Conducted Measurement)

Product Name: BLE Module

Trade Mark: WiSilica

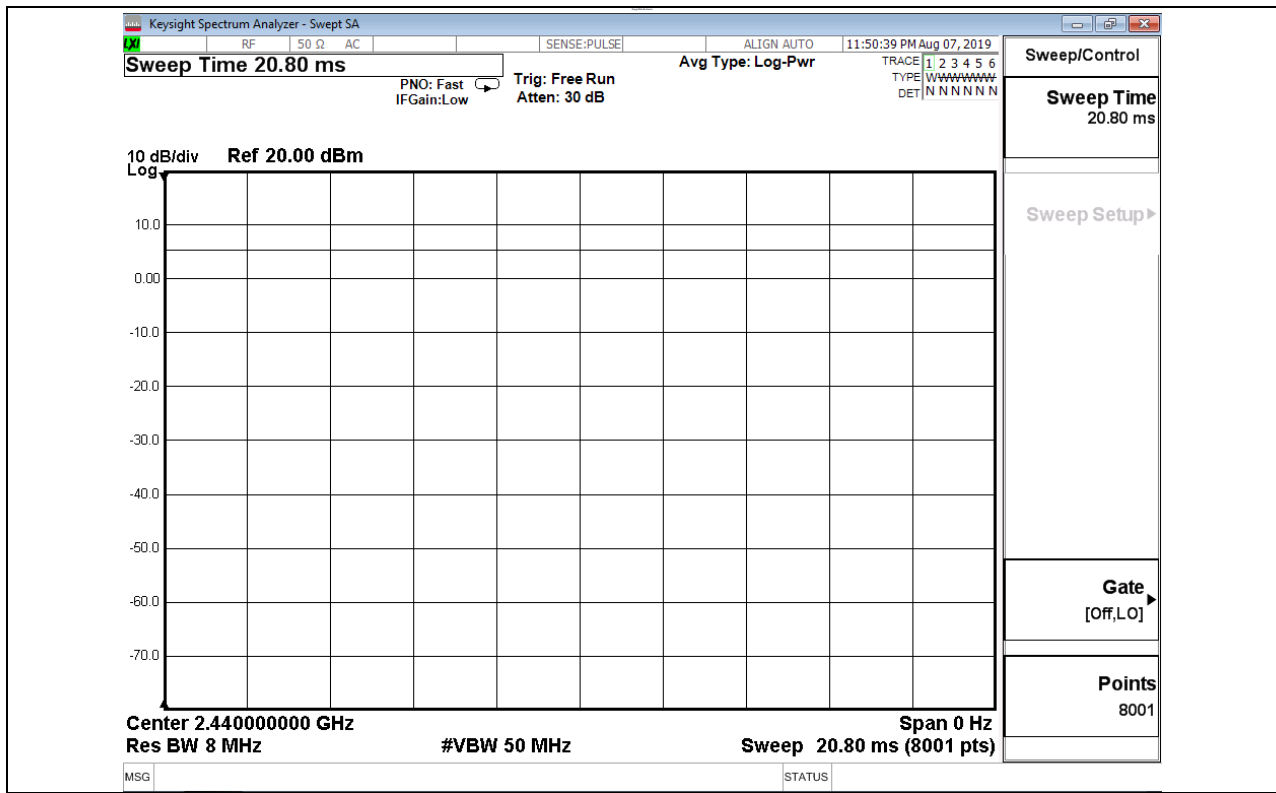
Test Model: WIM1280E

Environmental Conditions

Temperature:	23.6 ° C
Relative Humidity:	57%
ATM Pressure:	100.0 kPa
Test Engineer:	CHUANG WANG
Supervised by:	JAYDEN ZHUO

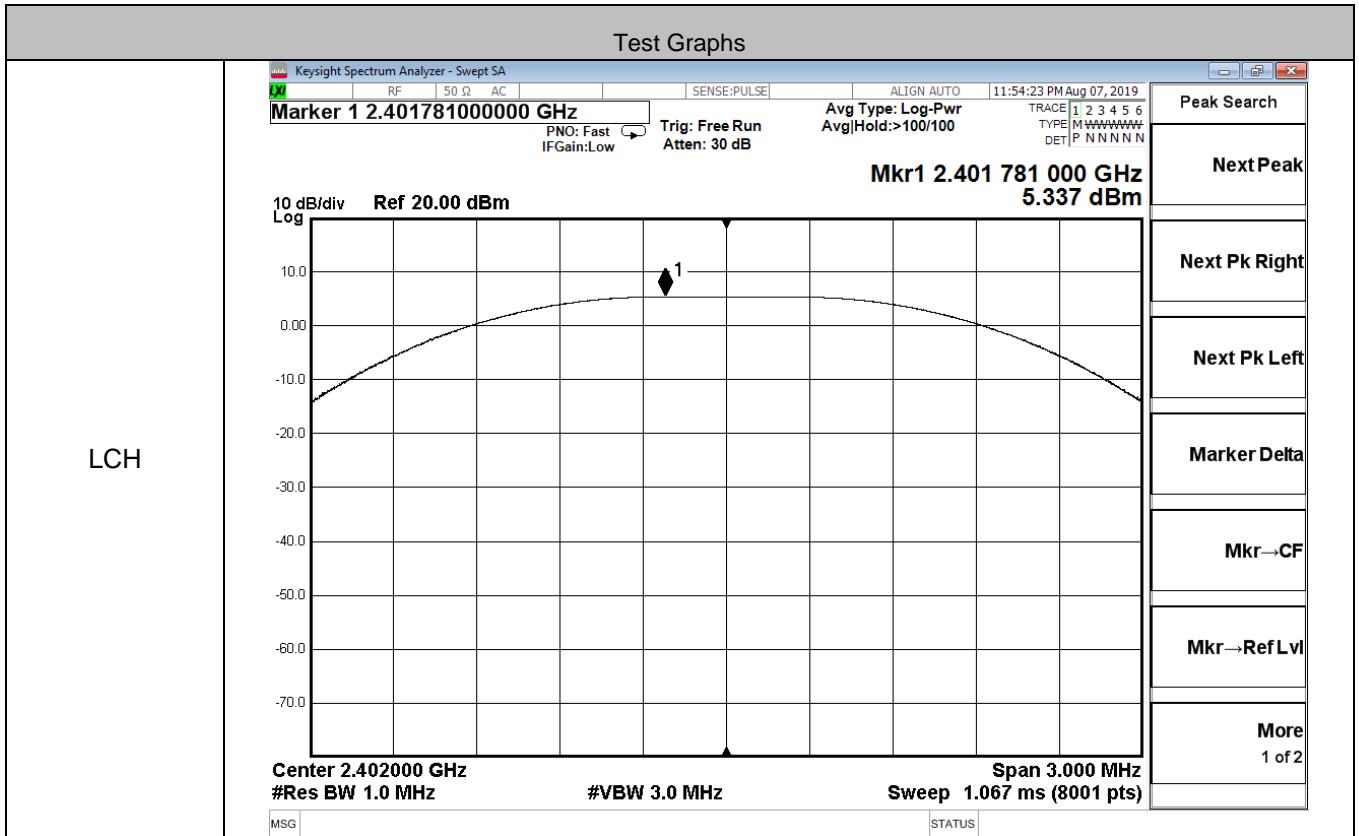
A.1 Duty Cycle

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

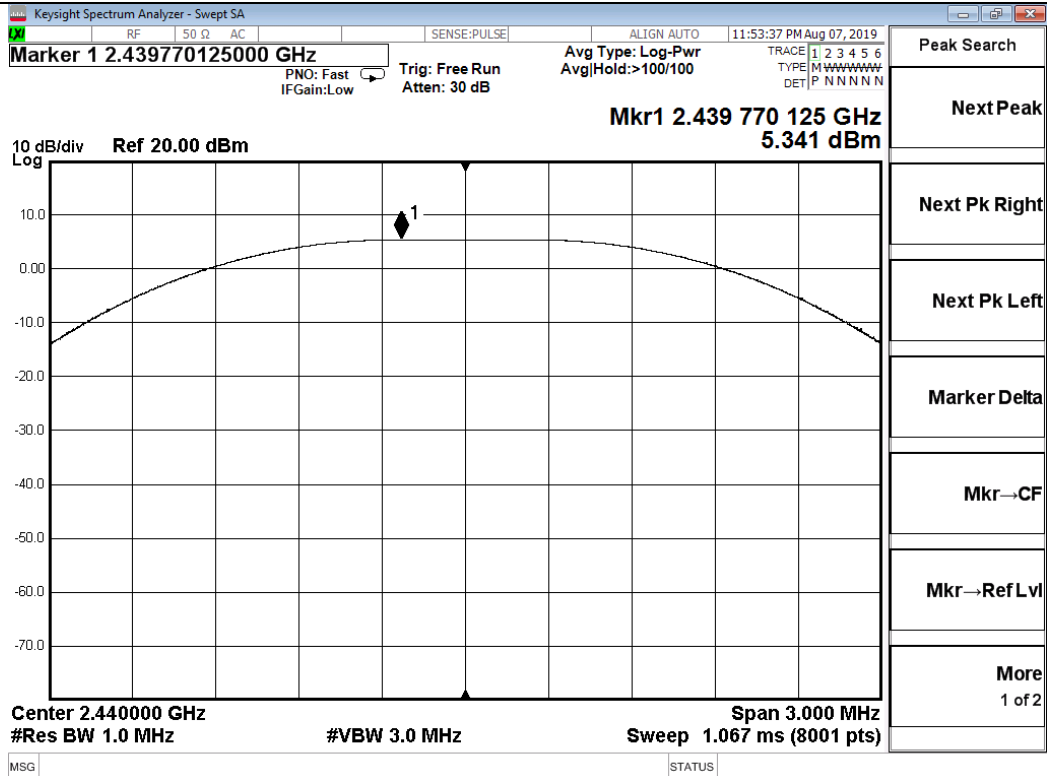


A.2 Maximum Conducted Peak Output Power

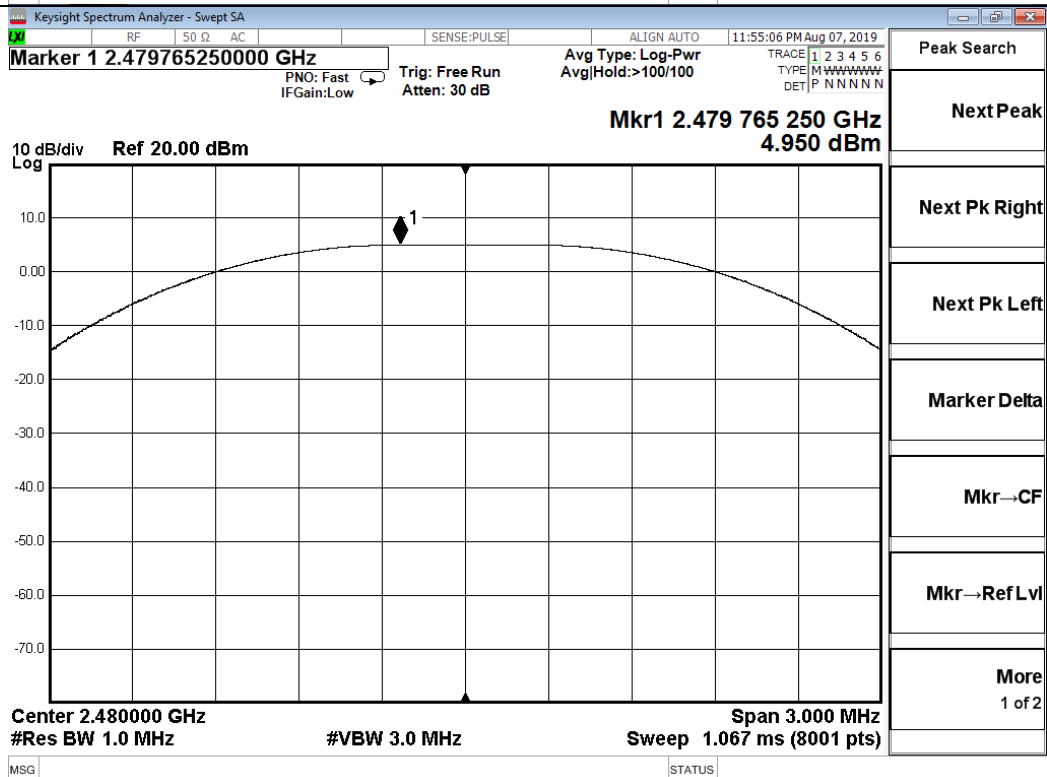
Mode	Channel	Conduct Peak Power[dBm]	Limit [dBm]	Verdict
BT LE	LCH	5.337	30	PASS
BT LE	MCH	5.341	30	PASS
BT LE	HCH	4.950	30	PASS



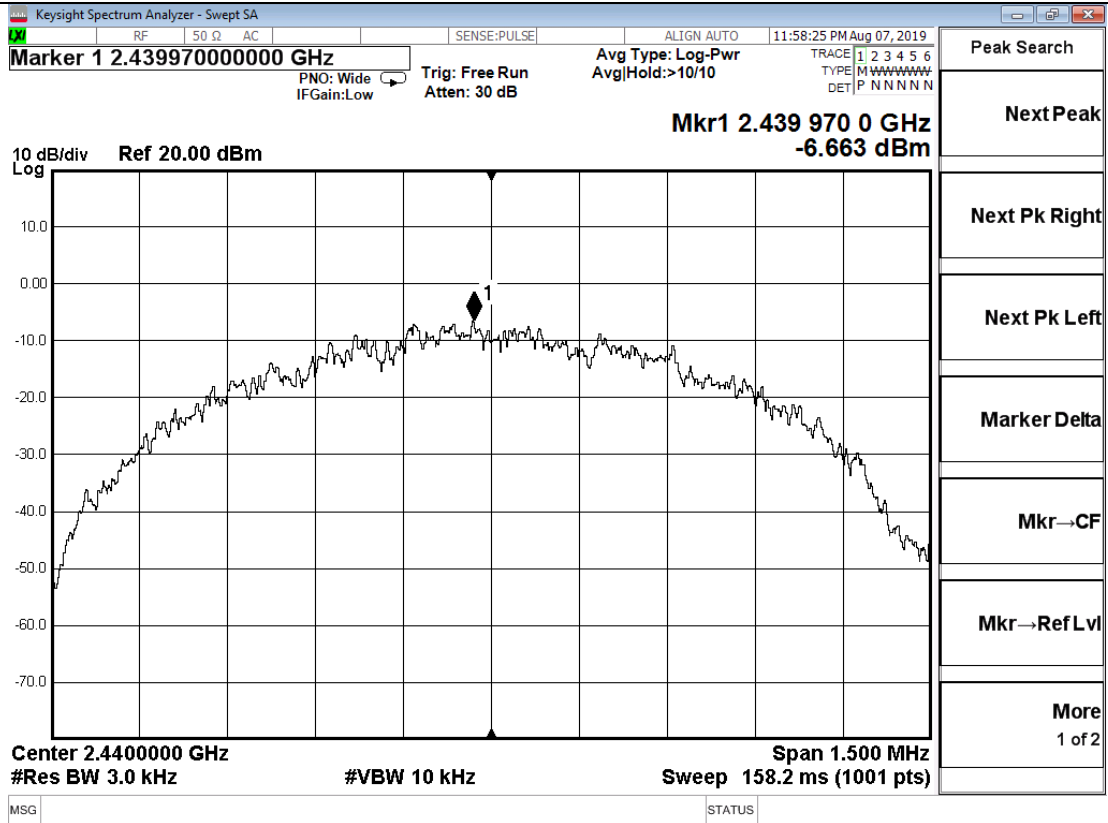
MCH



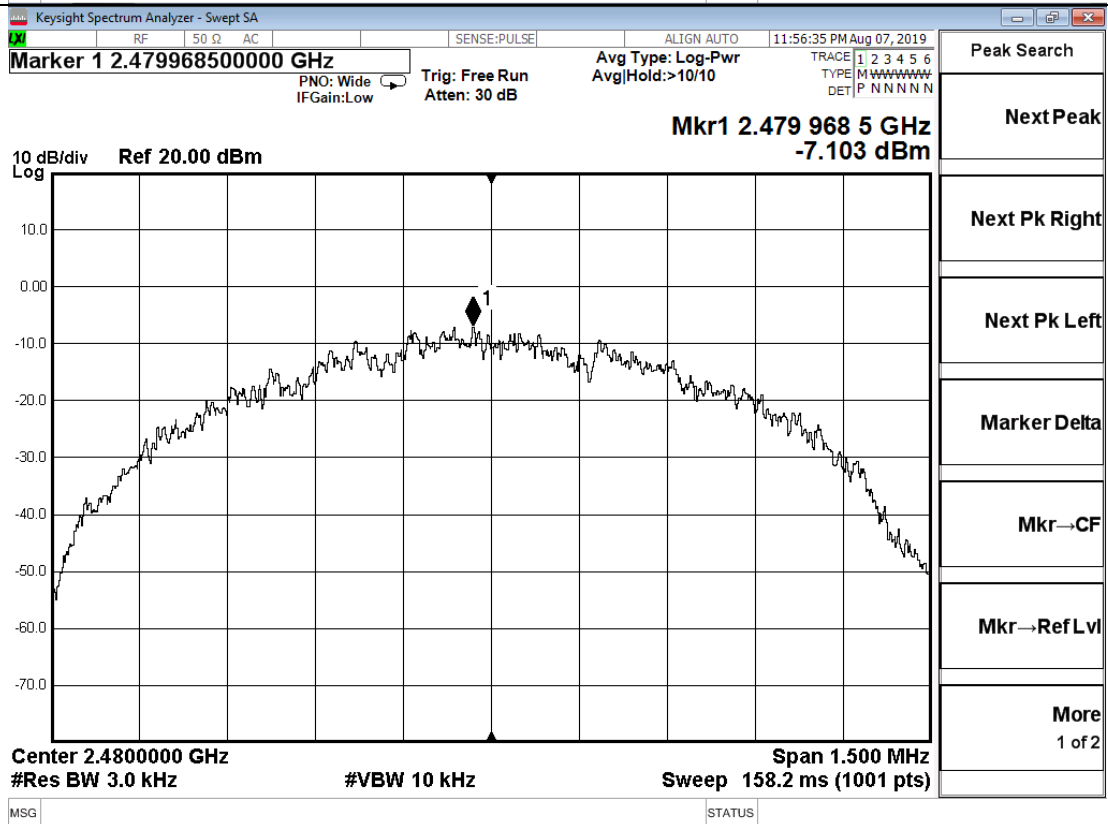
HCH



MCH

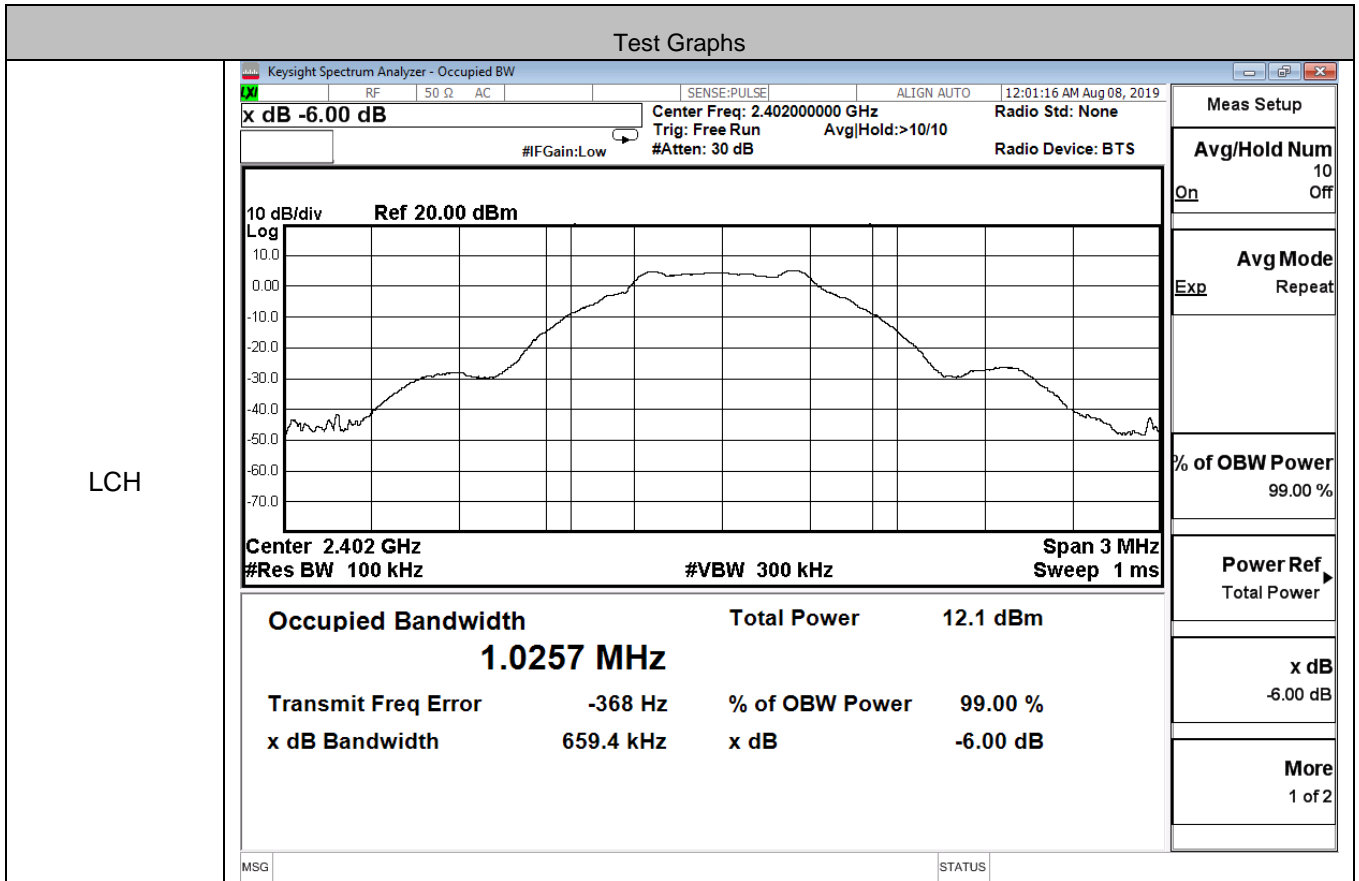


HCH



A.4 6dB Bandwidth and Occupied Bandwidth

Mode	Channel	Occupied Bandwidth [MHz]	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
BT LE	LCH	1.0257	0.6594	≥0.5	PASS
BT LE	MCH	1.0296	0.6652	≥0.5	PASS
BT LE	HCH	1.0246	0.6589	≥0.5	PASS



MCH

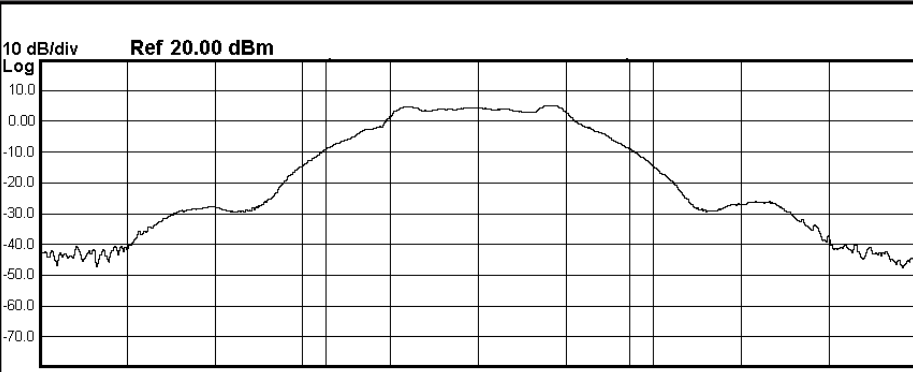
Keysight Spectrum Analyzer - Occupied BW
 12:02:52 AM Aug 08, 2019

RF 50 Ω AC
SENSE:PULSE ALIGN AUTO
Radio Std: None

Span 3.0000 MHz
Center Freq: 2.440000000 GHz
Trig: Free Run Avg|Hold:>10/10
Radio Device: BTS

#FGain:Low
#Atten: 30 dB

10 dB/div
Ref 20.00 dBm



Center 2.44 GHz
Span 3 MHz

#Res BW 100 kHz
#VBW 300 kHz
Sweep 1 ms

Occupied Bandwidth
1.0296 MHz

Total Power
 12.1 dBm

Transmit Freq Error
 1.302 kHz

% of OBW Power
 99.00 %

x dB Bandwidth
 665.2 kHz

x dB
 -6.00 dB

Trace/Detector

Clear Write

Average

Max Hold

Min Hold

Detector
 Average ▶
 Auto Man

MSG
STATUS

HCH

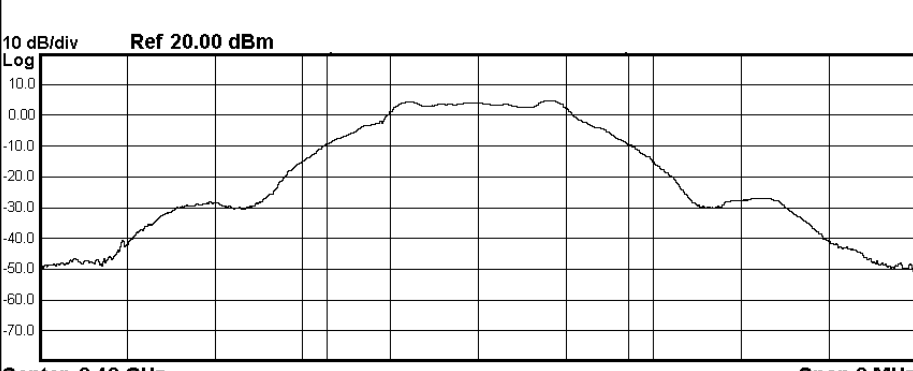
Keysight Spectrum Analyzer - Occupied BW
 12:03:43 AM Aug 08, 2019

RF 50 Ω AC
SENSE:PULSE ALIGN AUTO
Radio Std: None

Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run Avg|Hold:>10/10
Radio Device: BTS

#FGain:Low
#Atten: 30 dB

10 dB/div
Ref 20.00 dBm



Center 2.48 GHz
Span 3 MHz

#Res BW 100 kHz
#VBW 300 kHz
Sweep 1 ms

Occupied Bandwidth
1.0246 MHz

Total Power
 11.7 dBm

Transmit Freq Error
 532 Hz

% of OBW Power
 99.00 %

x dB Bandwidth
 658.9 kHz

x dB
 -6.00 dB

Frequency

Center Freq
2.480000000 GHz

CF Step
300.000 kHz

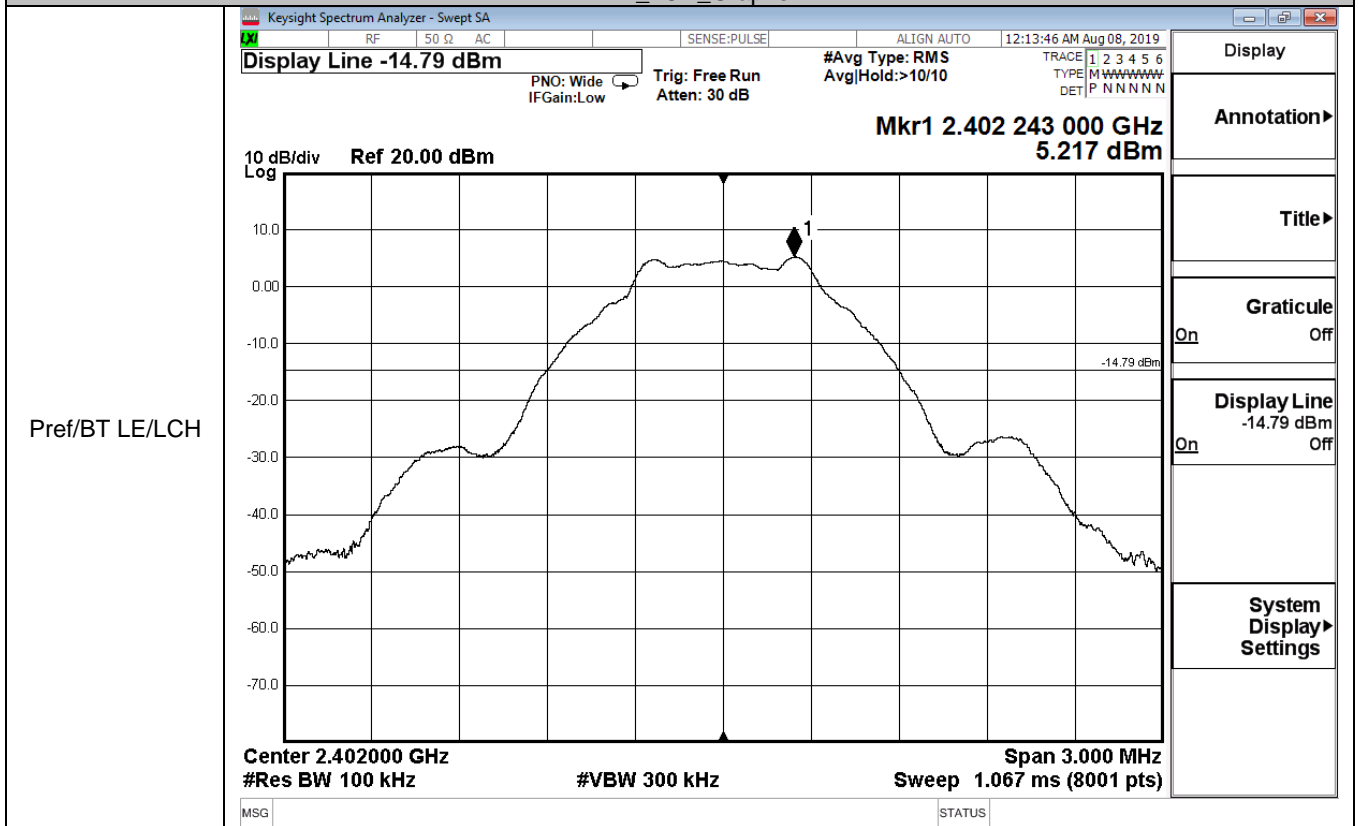
Freq Offset
 0 Hz

MSG
STATUS

A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	5.217	-44.694	-14.78	PASS
BT LE	MCH	5.204	-45.060	-14.80	PASS
BT LE	HCH	4.835	-47.633	-15.17	PASS

BT LE_LCH_Graphs



Pref/BT LE/LCH

Display

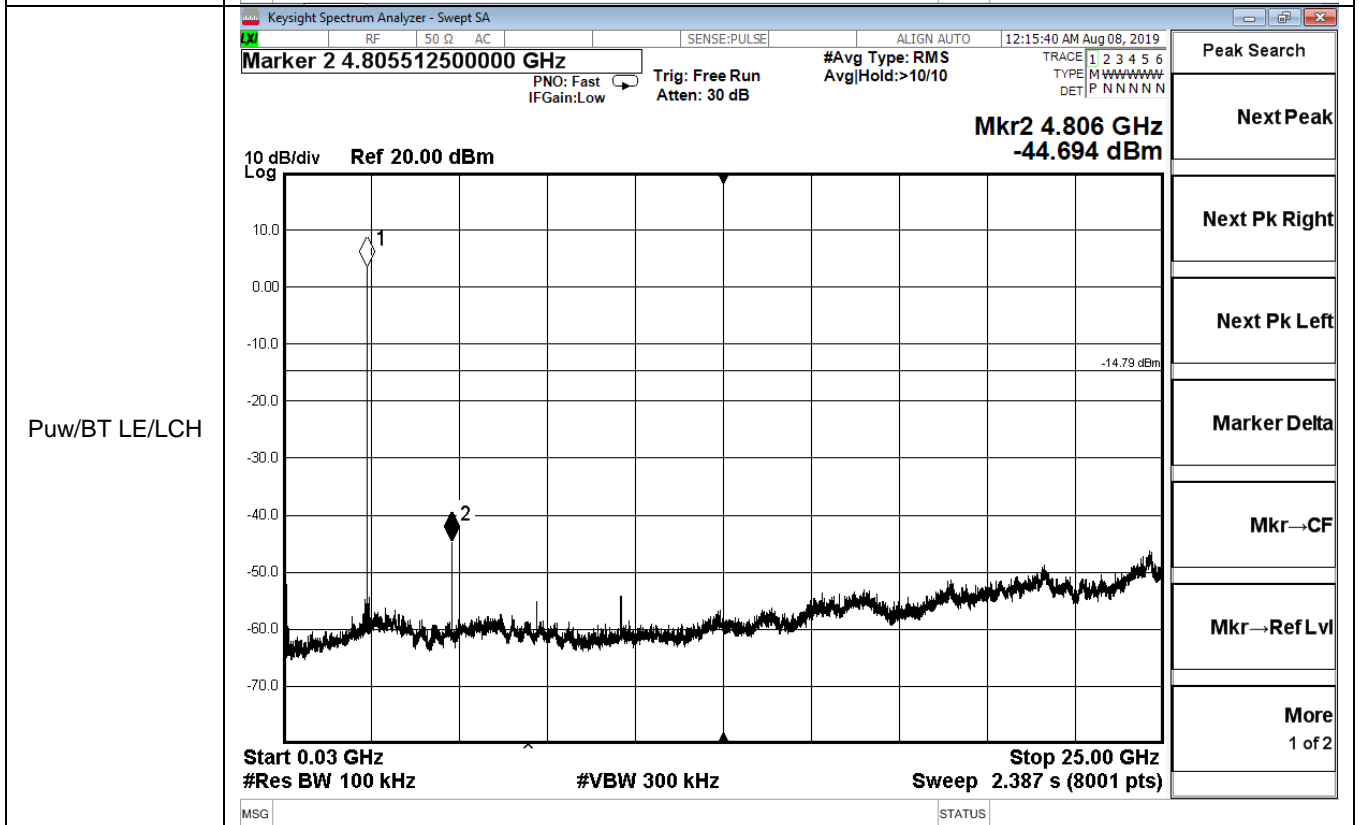
Annotation ▶

Title ▶

Graticule On Off

Display Line -14.79 dBm On Off

System Display ▶ Settings



Puw/BT LE/LCH

Peak Search

Next Peak

Next Pk Right

Next Pk Left

Marker Delta

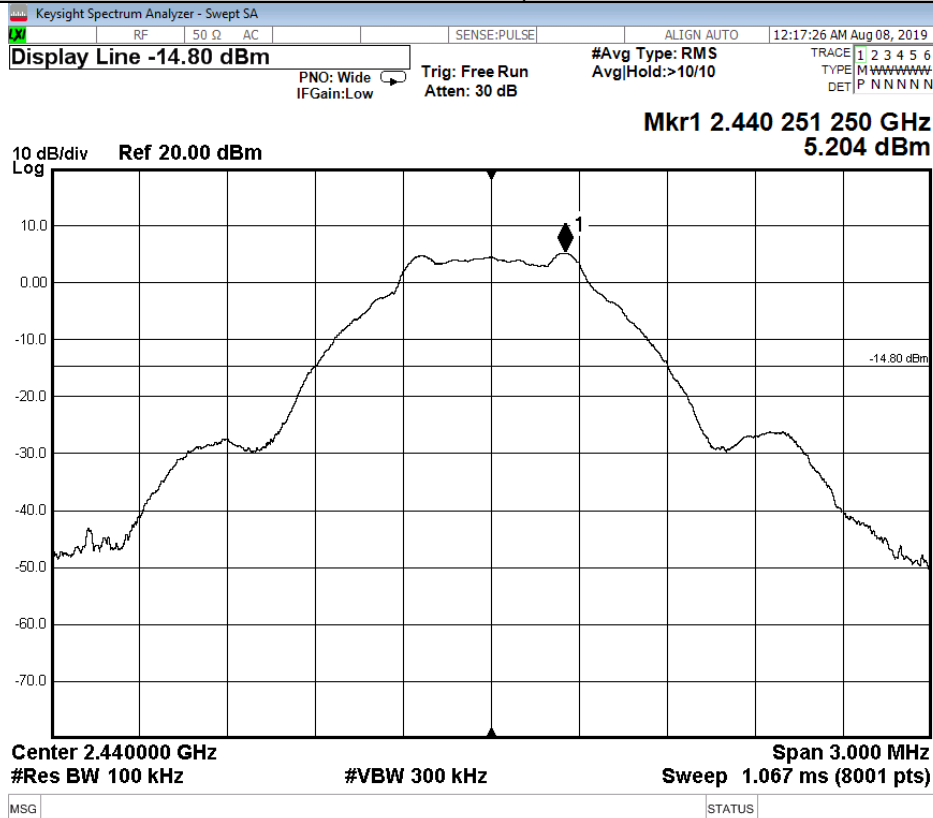
Mkr→CF

Mkr→Ref Lvl

More 1 of 2

BT LE_MCH_Graphs

Pref/BT LE/MCH



Display

Annotation ▶

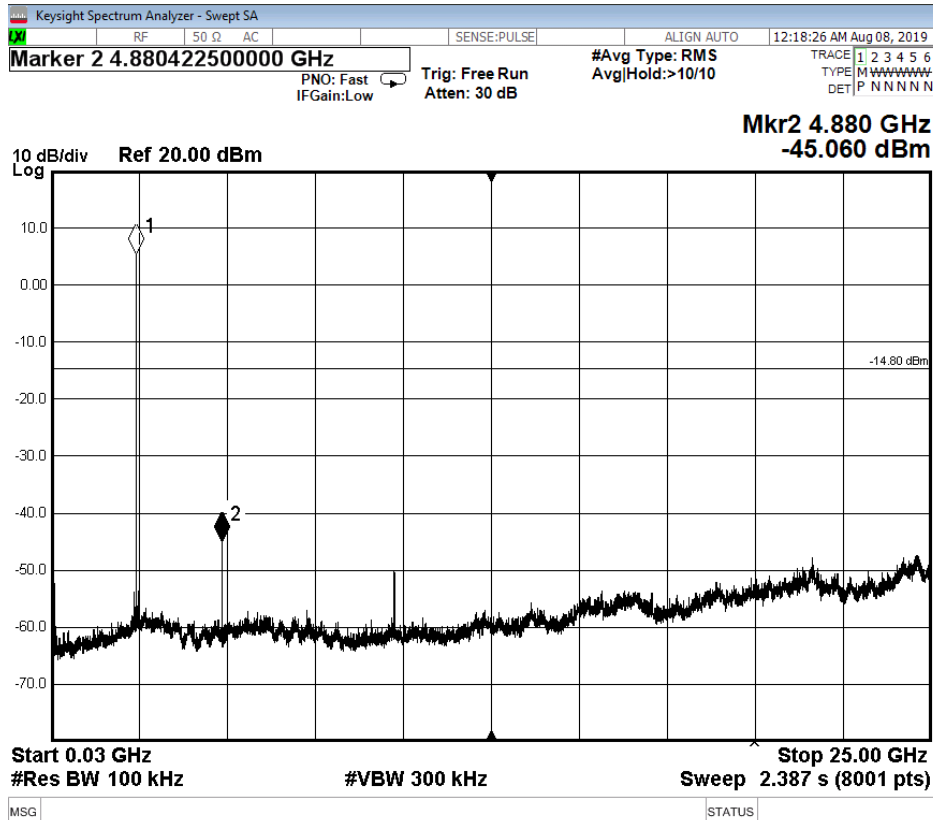
Title ▶

Graticule On Off

Display Line -14.80 dBm On Off

System Display ▶ Settings

Puw/BT LE/MCH



Peak Search

Next Peak

Next Pk Right

Next Pk Left

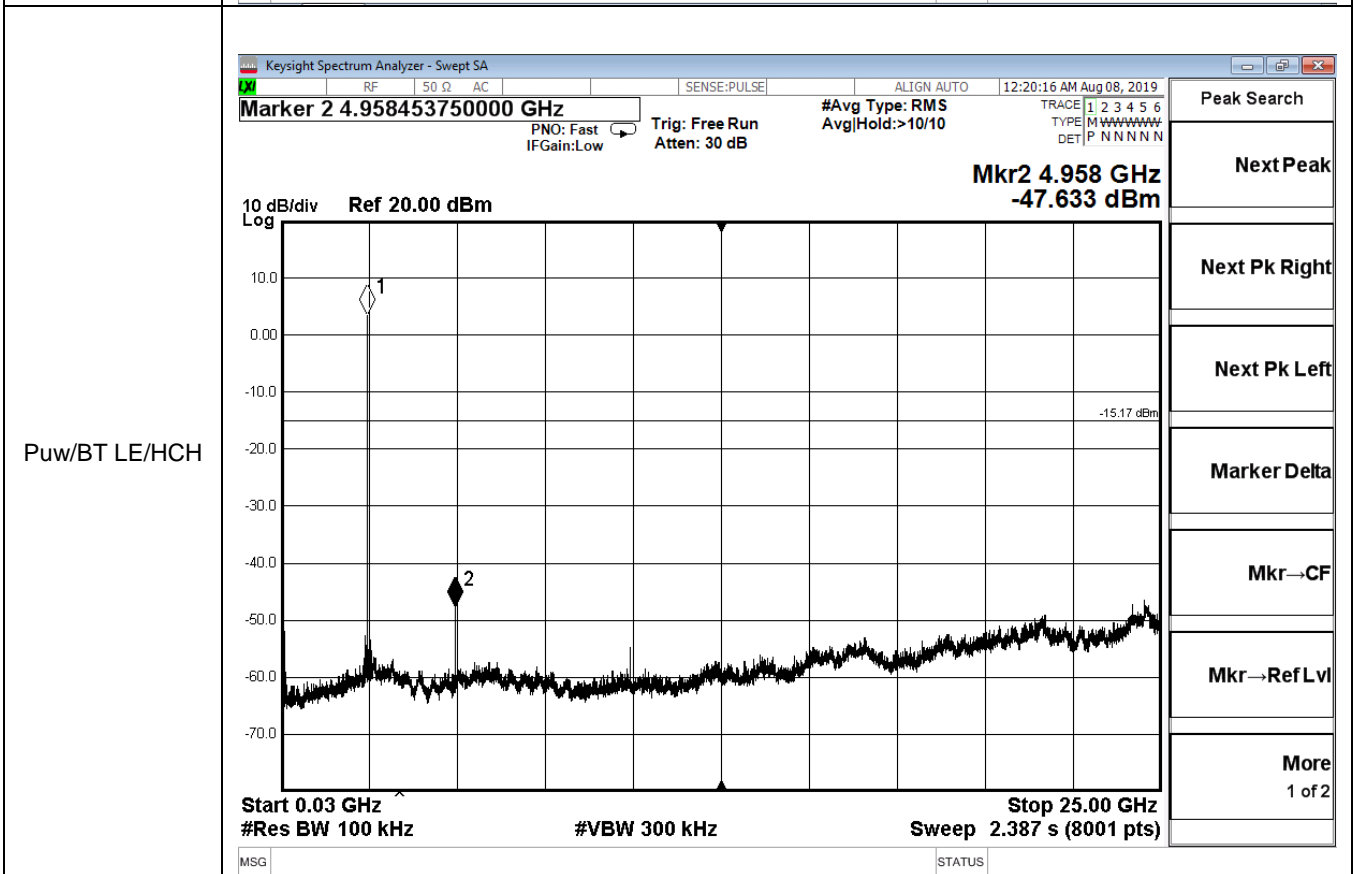
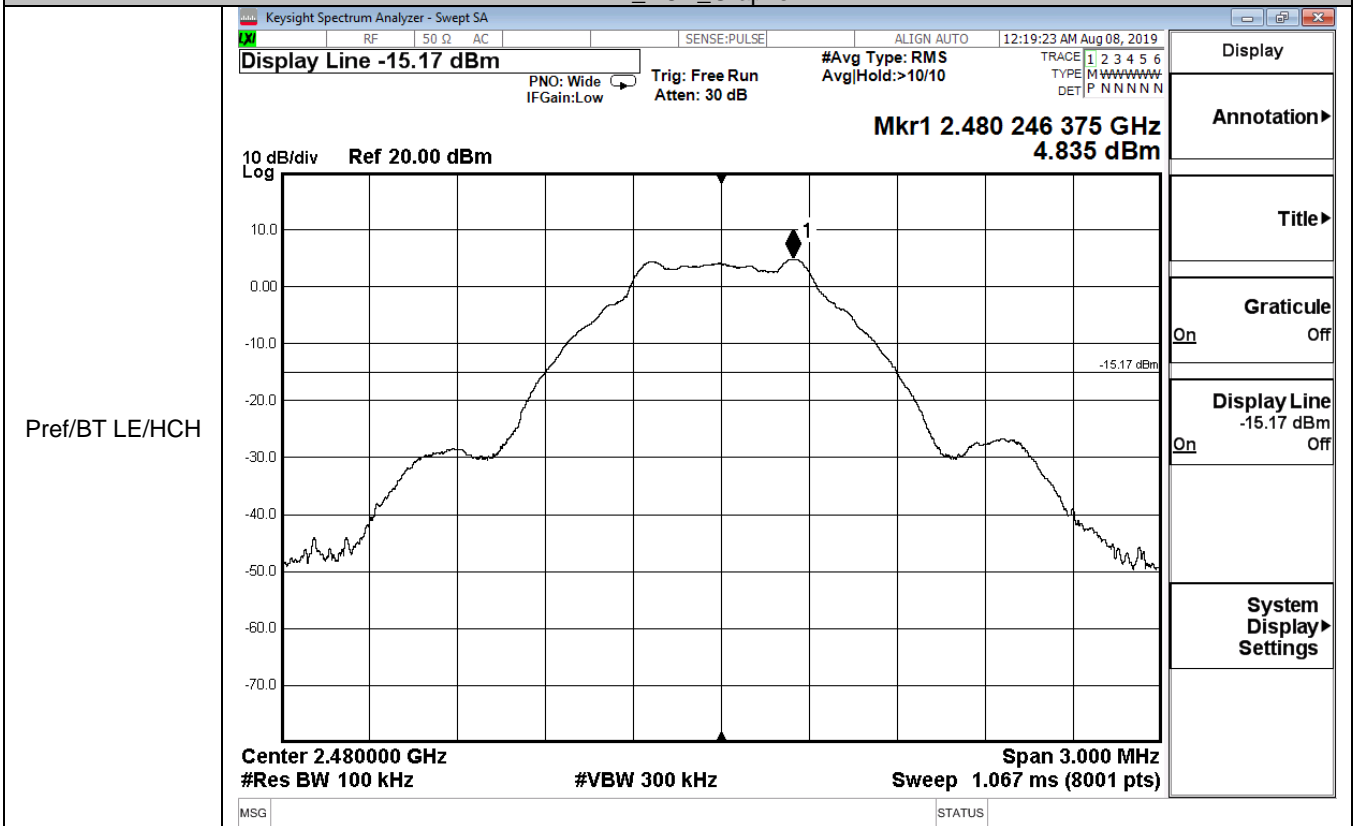
Marker Delta

Mkr→CF

Mkr→Ref Lvl

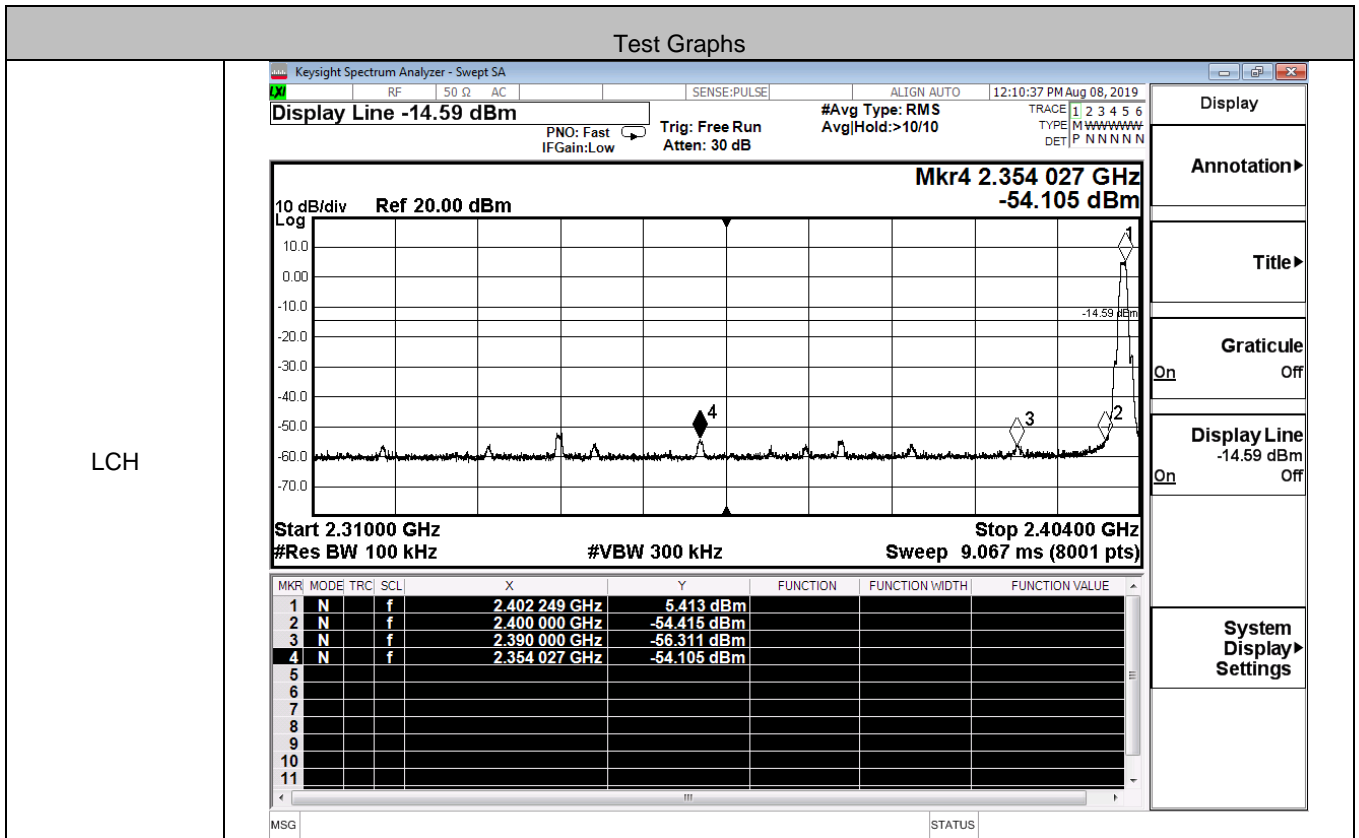
More 1 of 2

BT LE_HCH_Graphs

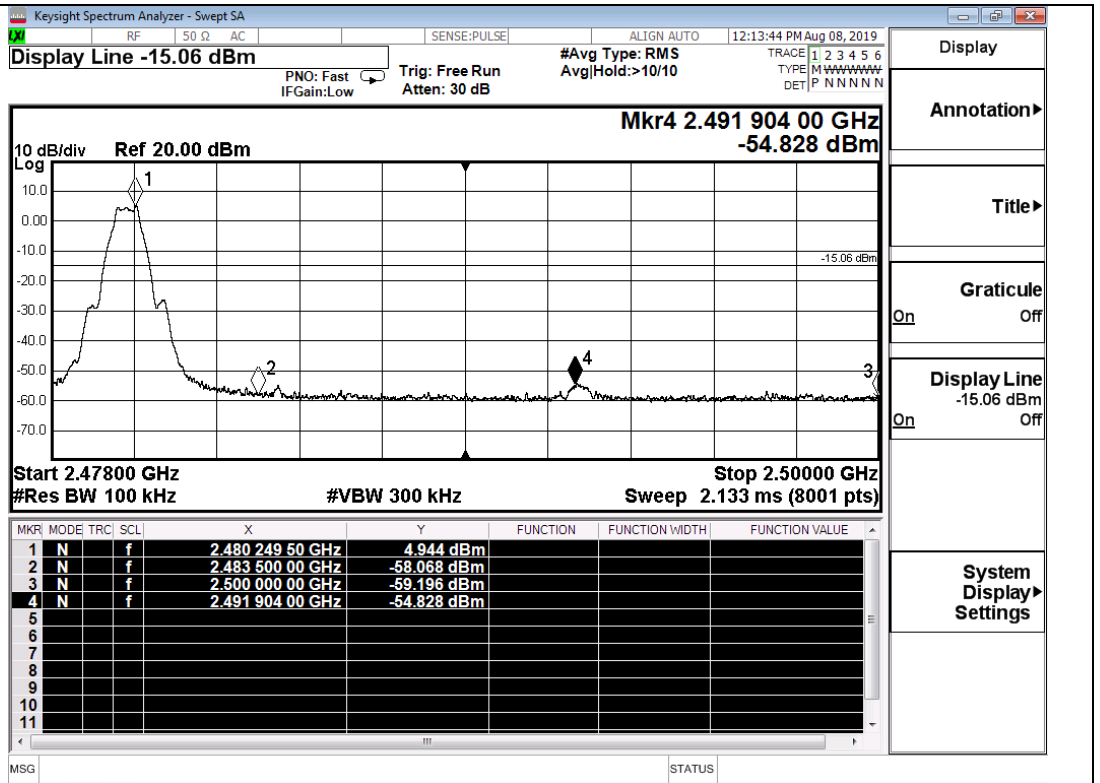


A.7 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	5.413	-54.105	-14.59	PASS
BT LE	HCH	4.944	-54.828	-15.06	PASS



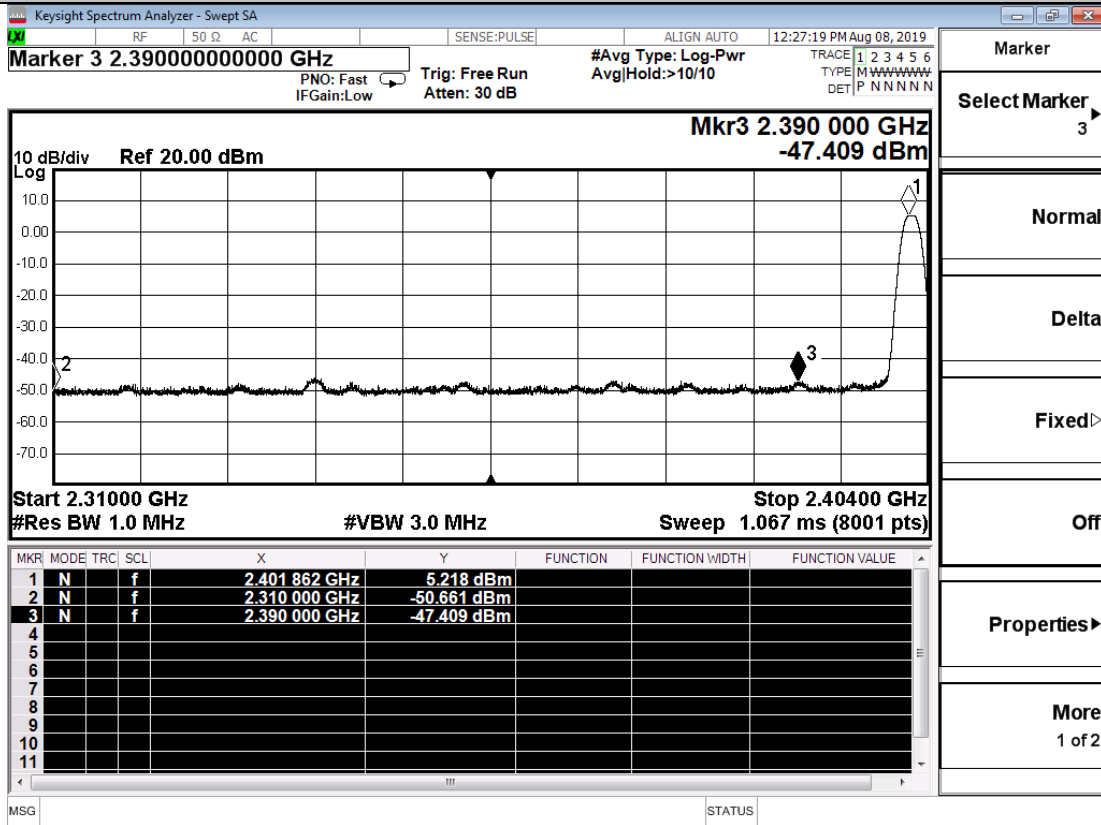
HCH



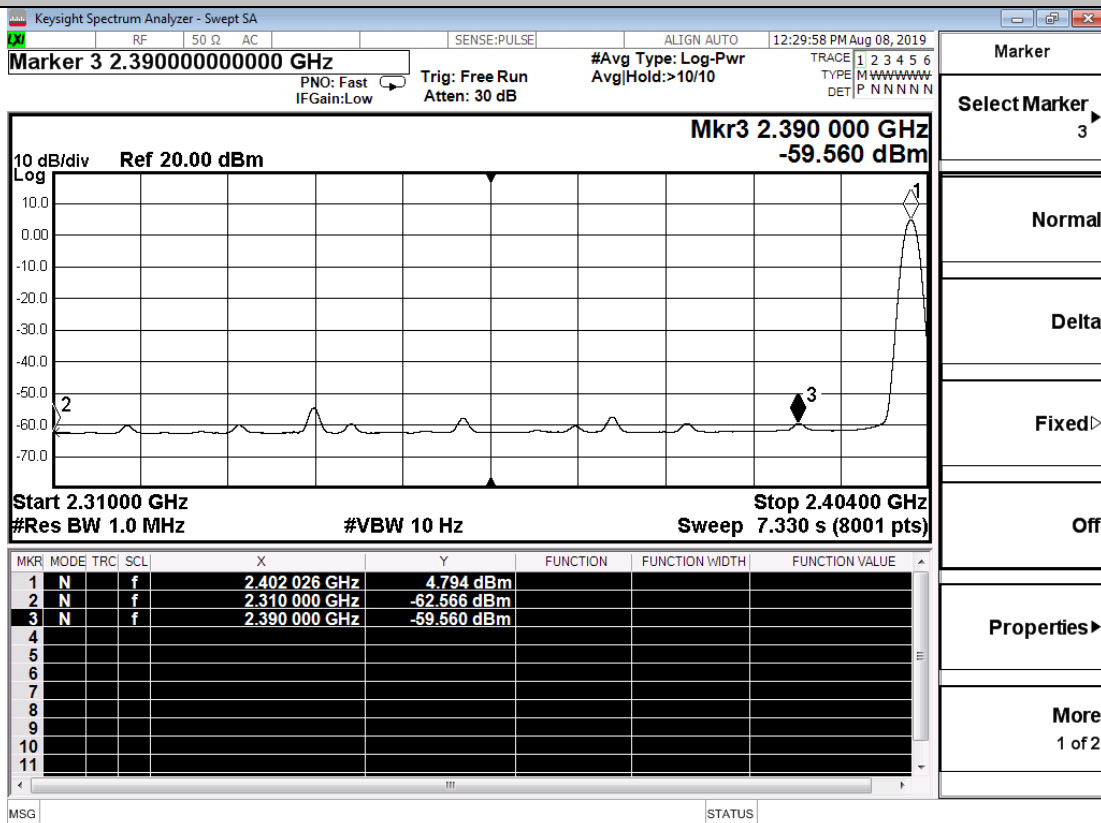
A.8 Restrict-band band-edge measurements

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	-50.661	2.0	0	46.57	PEAK	74	PASS
		Ant1	2310.0	-62.566	2.0	0	34.66	AV	54	PASS
		Ant1	2390.0	-47.409	2.0	0	49.82	PEAK	74	PASS
		Ant1	2390.0	-59.560	2.0	0	37.67	AV	54	PASS
	2480	Ant1	2483.5	-48.178	2.0	0	49.05	PEAK	74	PASS
		Ant1	2483.5	-59.649	2.0	0	37.58	AV	54	PASS
		Ant1	2500.0	-50.587	2.0	0	46.64	PEAK	74	PASS
		Ant1	2500.0	-61.703	2.0	0	35.53	AV	54	PASS

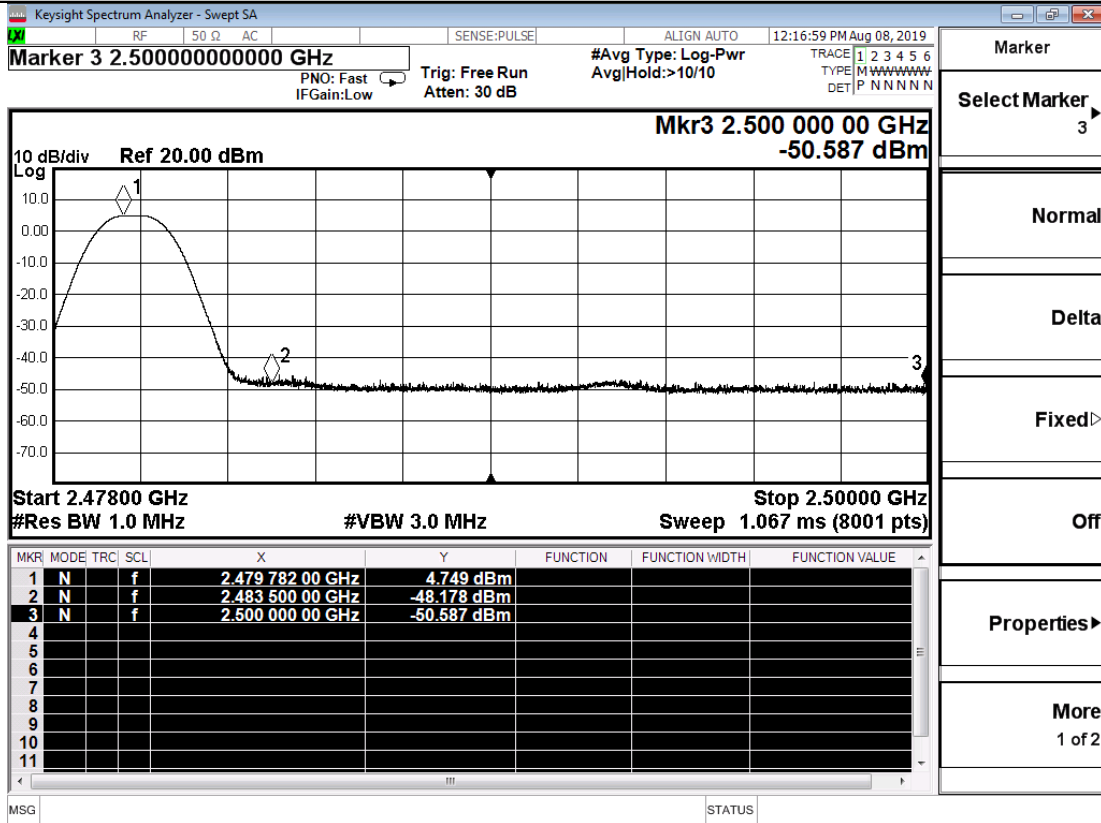
Restrict-band band-edge measurements_BT LE_2402_Ant1_PEAK



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

