Appendix A

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

Product Name: Surface mounted Ceiling Lamp LED 24W

Trade Mark: Artika

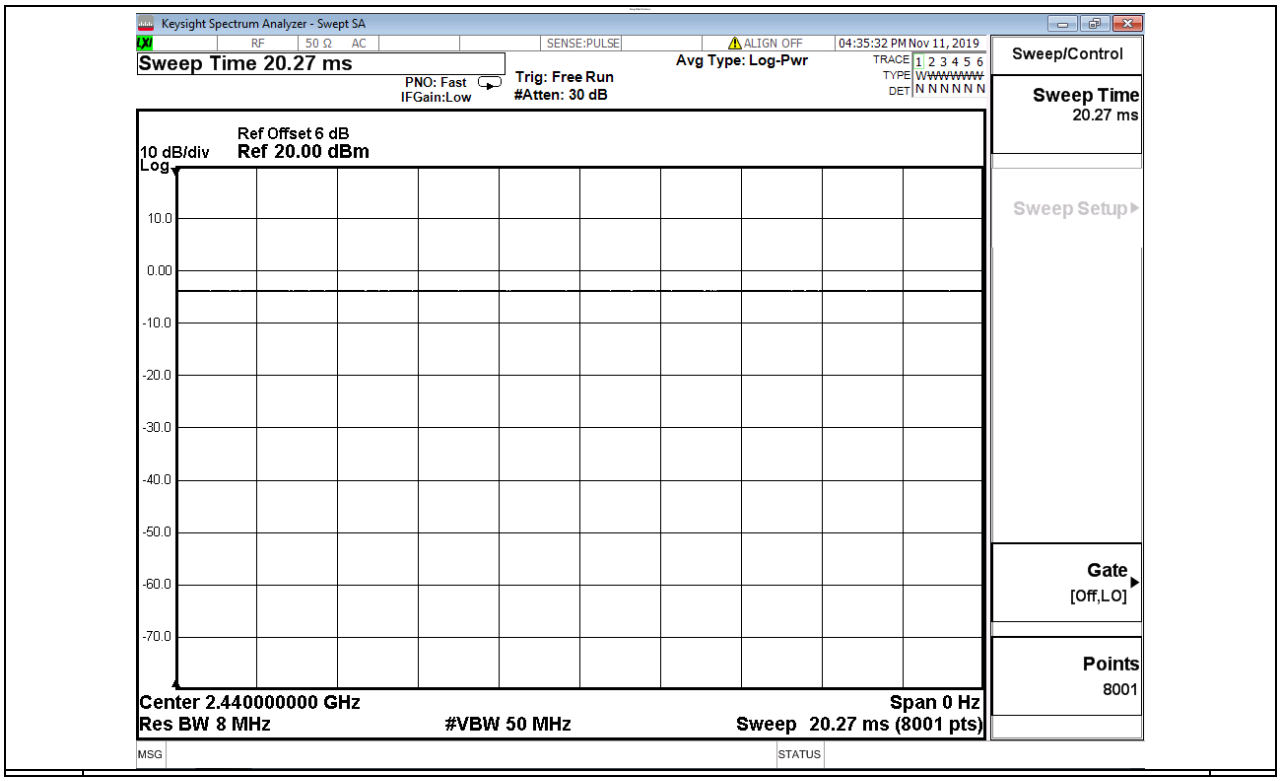
Test Model: CL-GLX-C

Environmental Conditions

Temperature:	23.6° C
Relative Humidity:	53.5%
ATM Pressure:	100.0 kPa
Test Engineer:	Dana Tang
Supervised by:	Jayden Zhuo

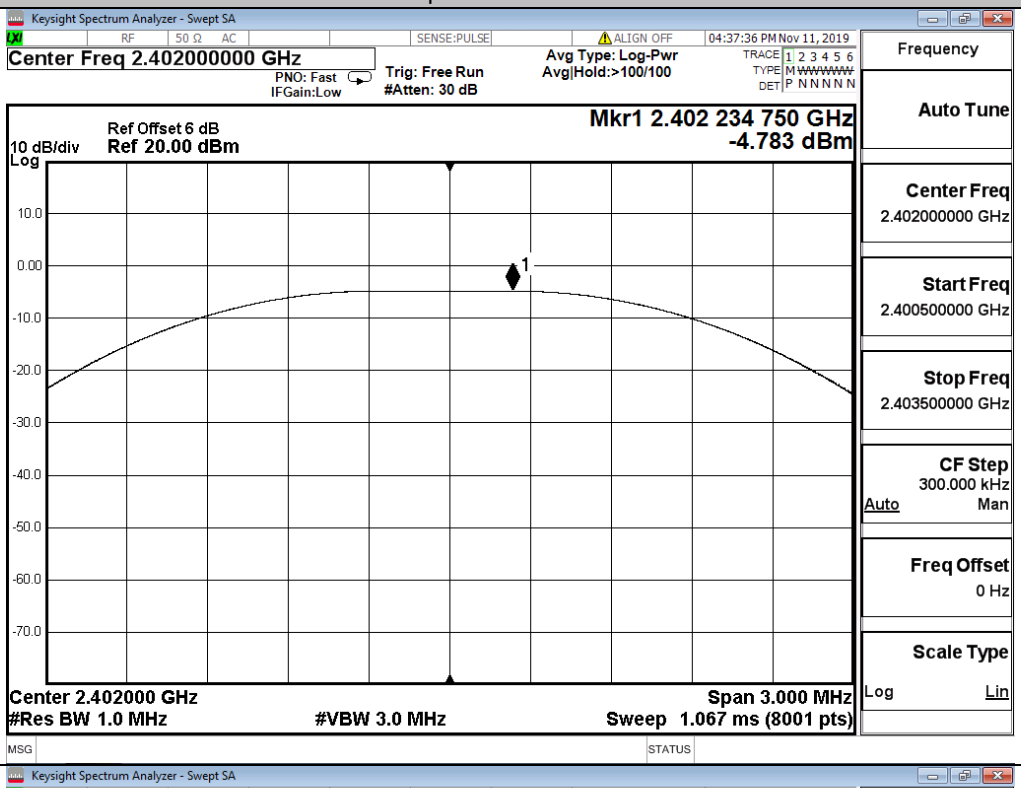
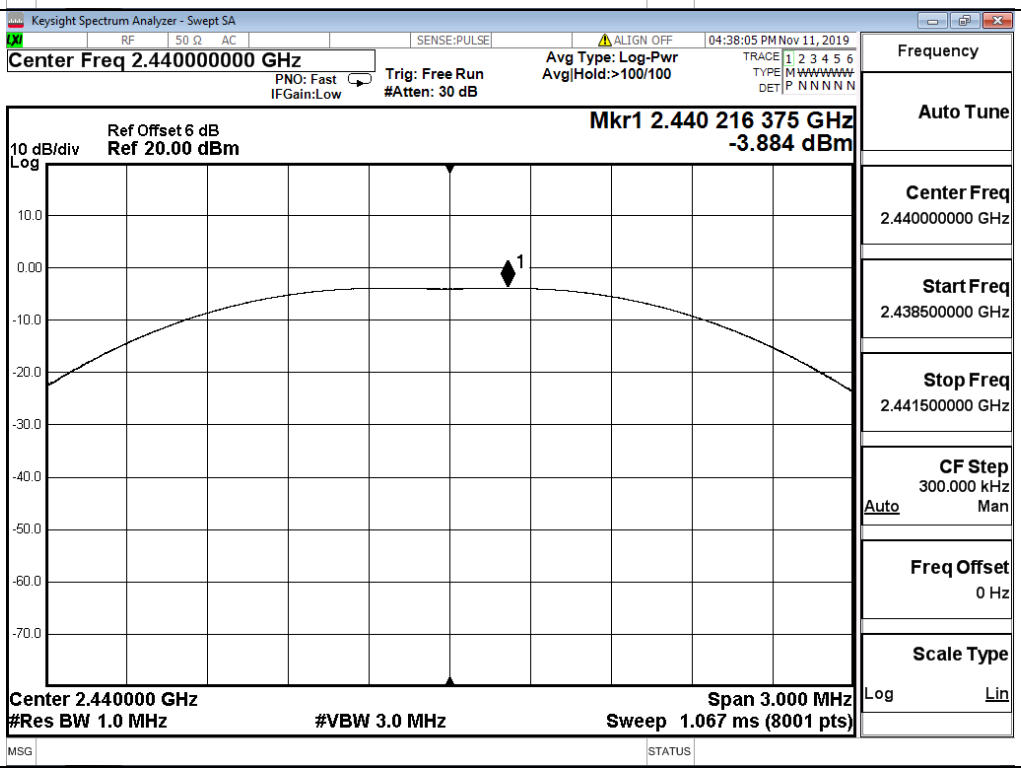
A.1 Duty Cycle

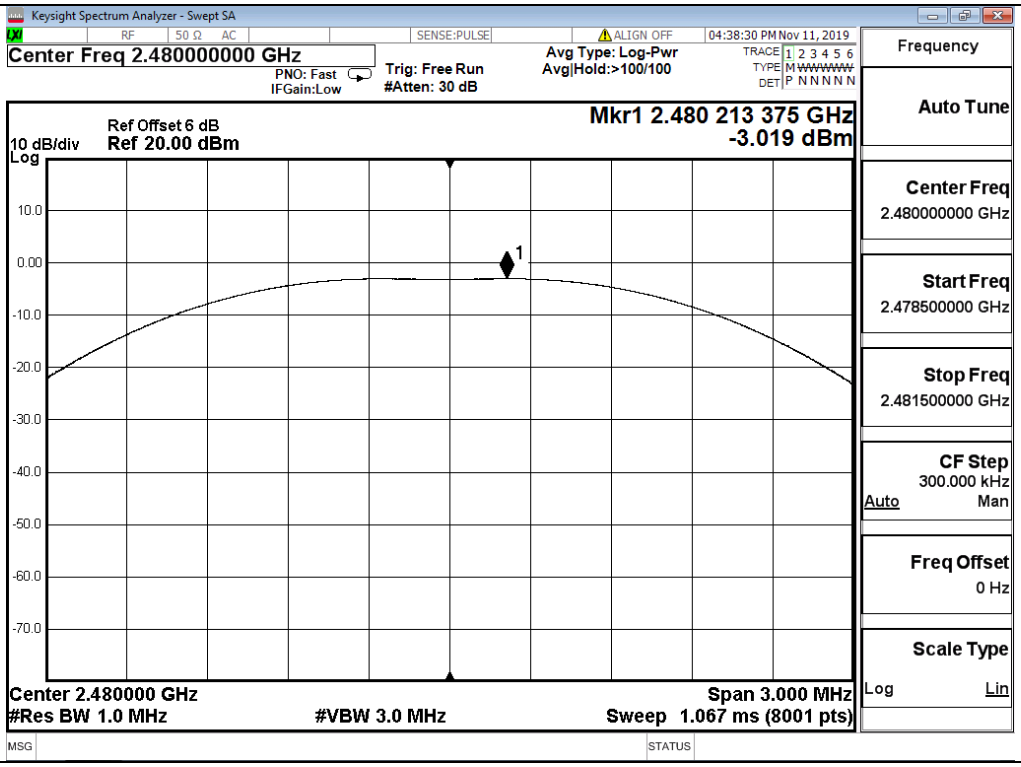
Test Mode	Test Channel	Ant	Duty Cycle[%]	Verdict
BT LE	2440	Ant1	100	PASS



A.2 Maximum Conducted Peak Output Power

Mode	Channel	Conduct Peak Power[dBm]	Limit [dBm]	Verdict
BT LE	LCH	-4.783	30	PASS
BT LE	MCH	-3.884	30	PASS
BT LE	HCH	-3.019	30	PASS

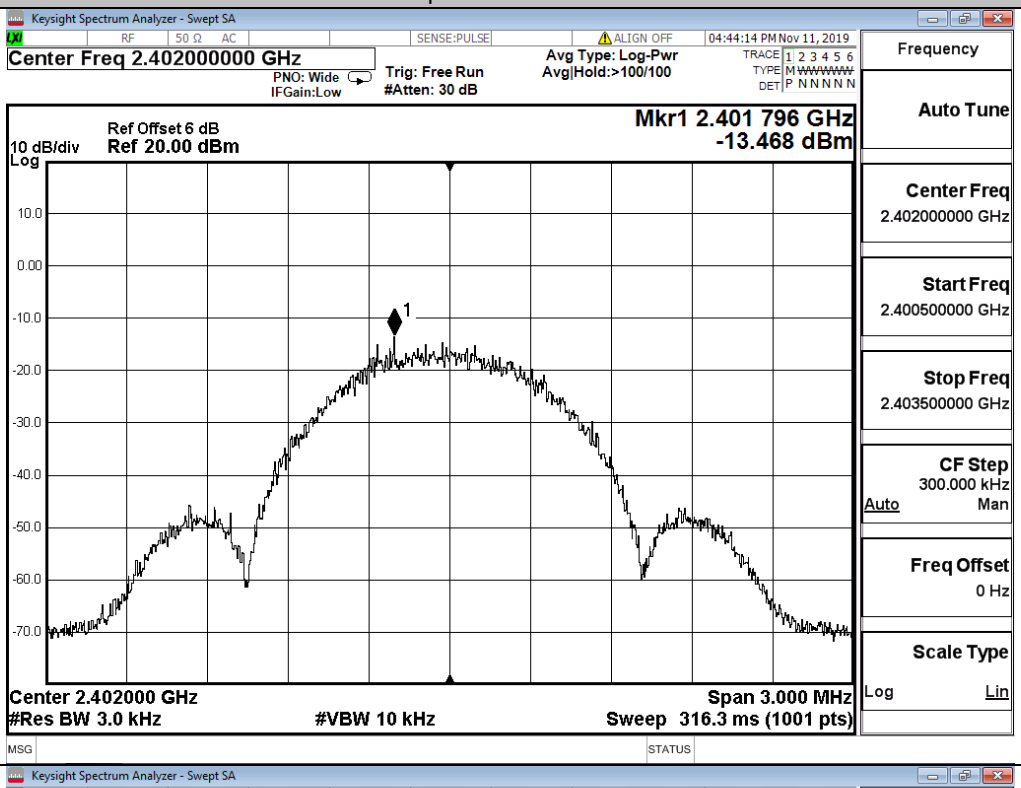
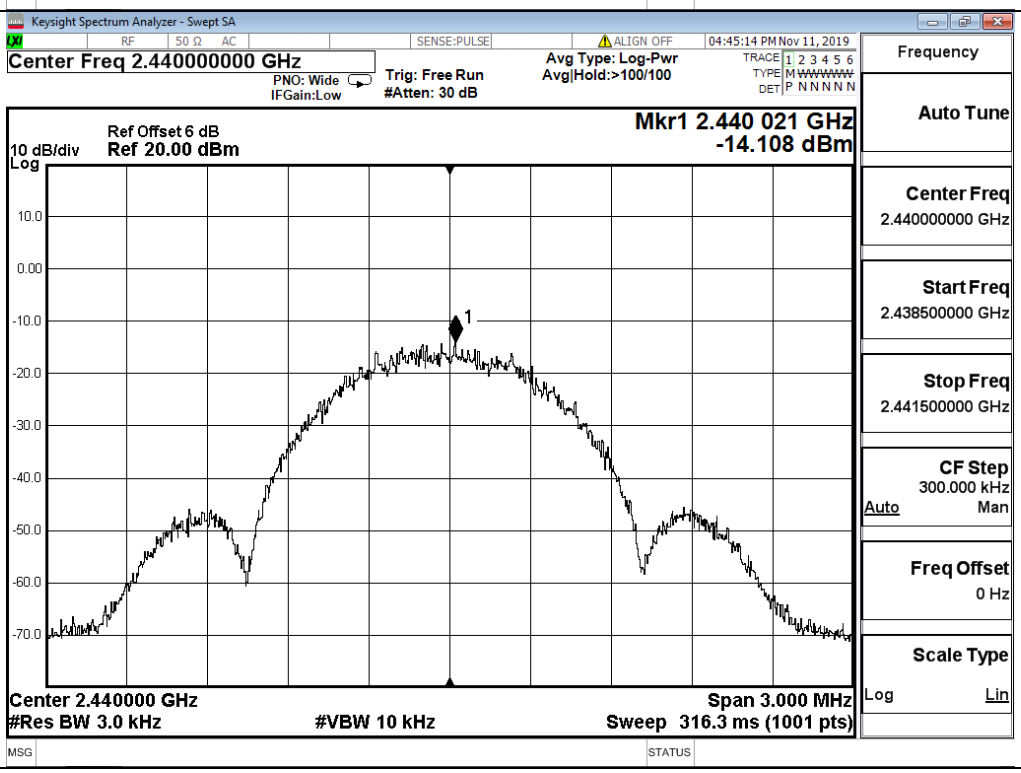
Test Graphs	
LCH	
MCH	

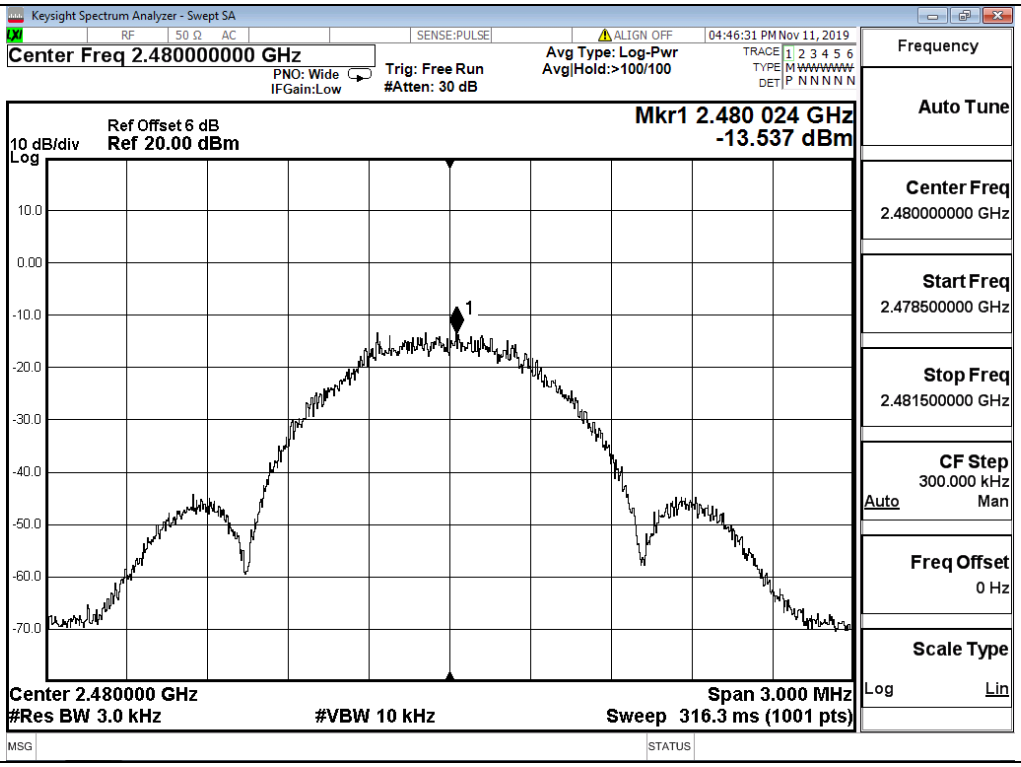
HCH	

Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:PULSE
ALIGN OFF
04:38:30 PM Nov 11, 2019
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
Ref Offset 6 dB
10 dB/div Ref 20.00 dBm
Log
Mkr1 2.480 213 375 GHz
-3.019 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
1
Center 2.480000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Span 3.000 MHz
Sweep 1.067 ms (8001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.478500000 GHz
Stop Freq
2.481500000 GHz
CF Step
300.000 kHz
Auto Man
Freq Offset
0 Hz
Scale Type
Log Lin

A.3 Maximum Power Spectral Density

Mode	Channel	PSD [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
BT LE	LCH	-13.468	8	PASS
BT LE	MCH	-14.108	8	PASS
BT LE	HCH	-13.537	8	PASS

Test Graphs	
LCH	
MCH	

HCH	

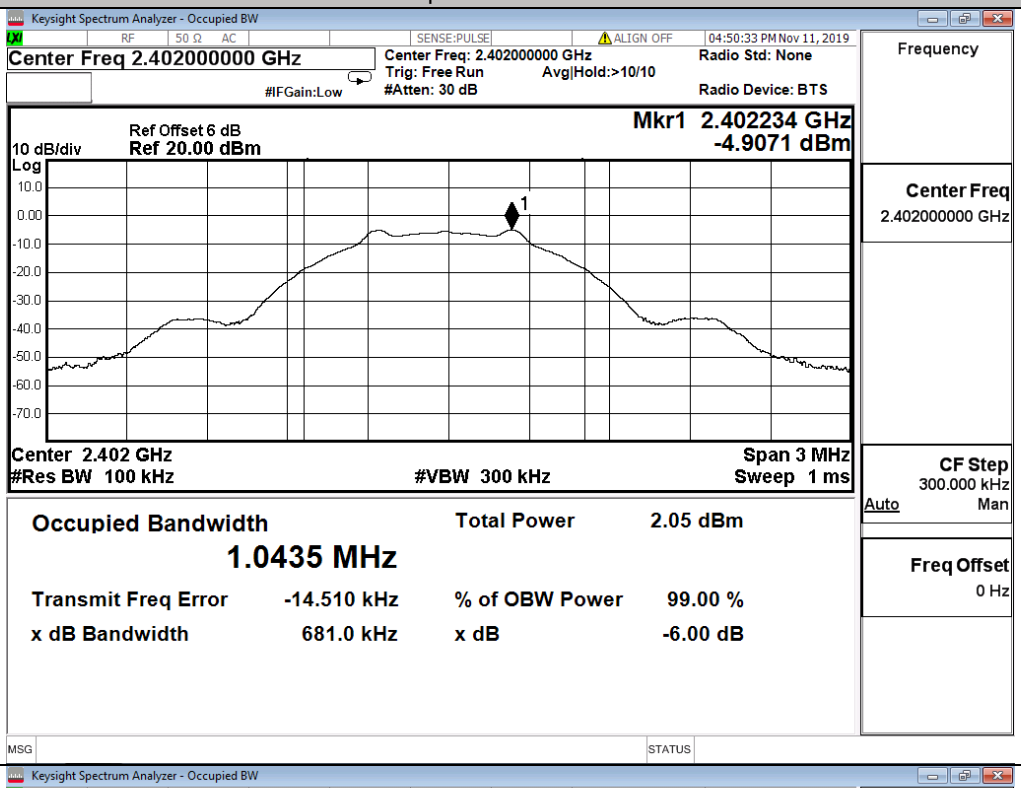
Keysight Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
04:46:31 PM Nov 11, 2019
Ref Offset 6 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.480 024 GHz
-13.537 dBm
Center 2.480000 GHz
#Res BW 3.0 kHz
#VBW 10 kHz
Span 3.000 MHz
Sweep 316.3 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.478500000 GHz
Stop Freq
2.481500000 GHz
CF Step
300.000 kHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin

A.4 6dB Bandwidth

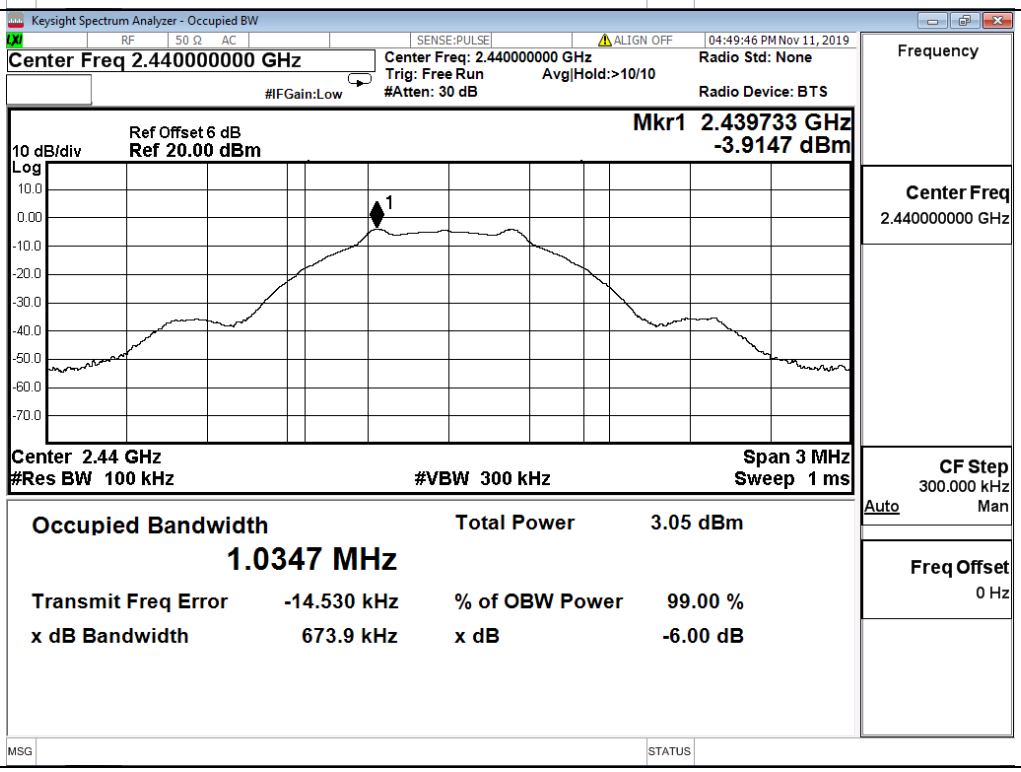
Mode	Channel	6dB Bandwidth [MHz]	6dB Bandwidth Limit [MHz]	Verdict
BT LE	LCH	0.6810	≥0.5	PASS
BT LE	MCH	0.6739	≥0.5	PASS
BT LE	HCH	0.6743	≥0.5	PASS

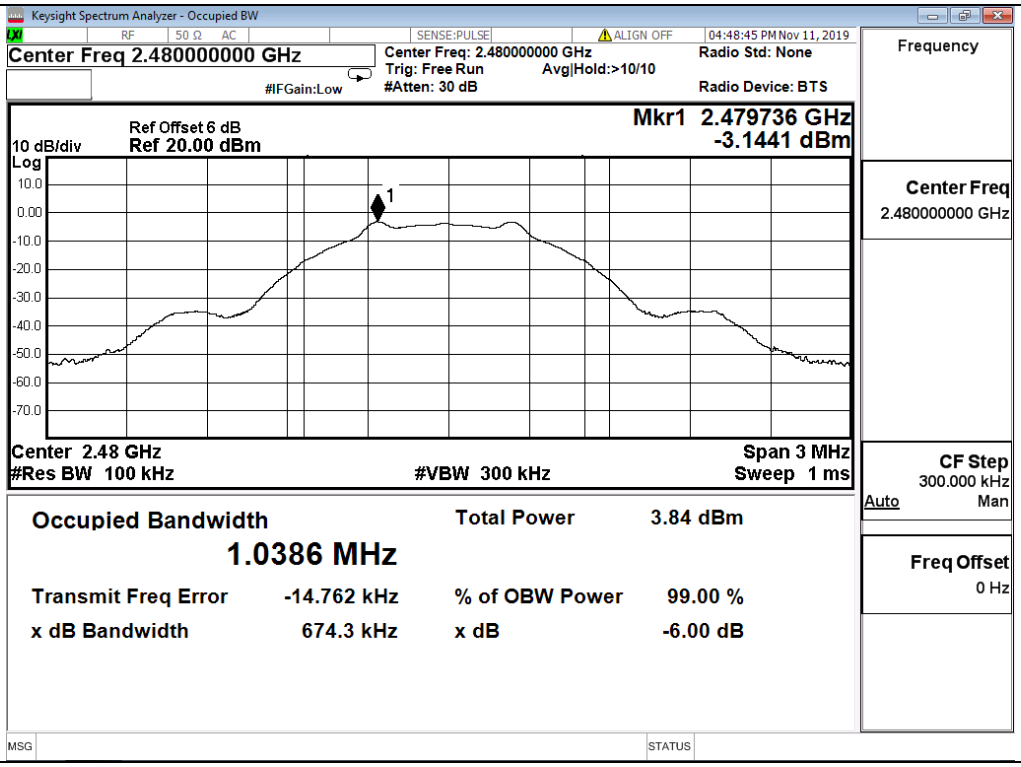
Test Graphs

LCH



MCH

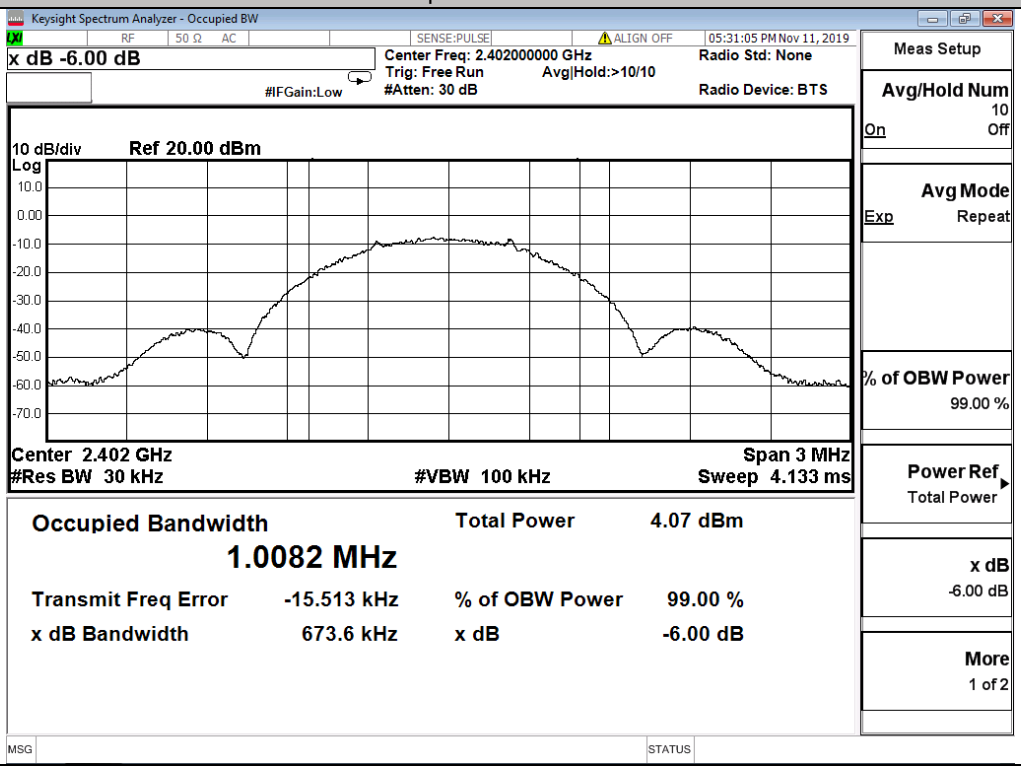


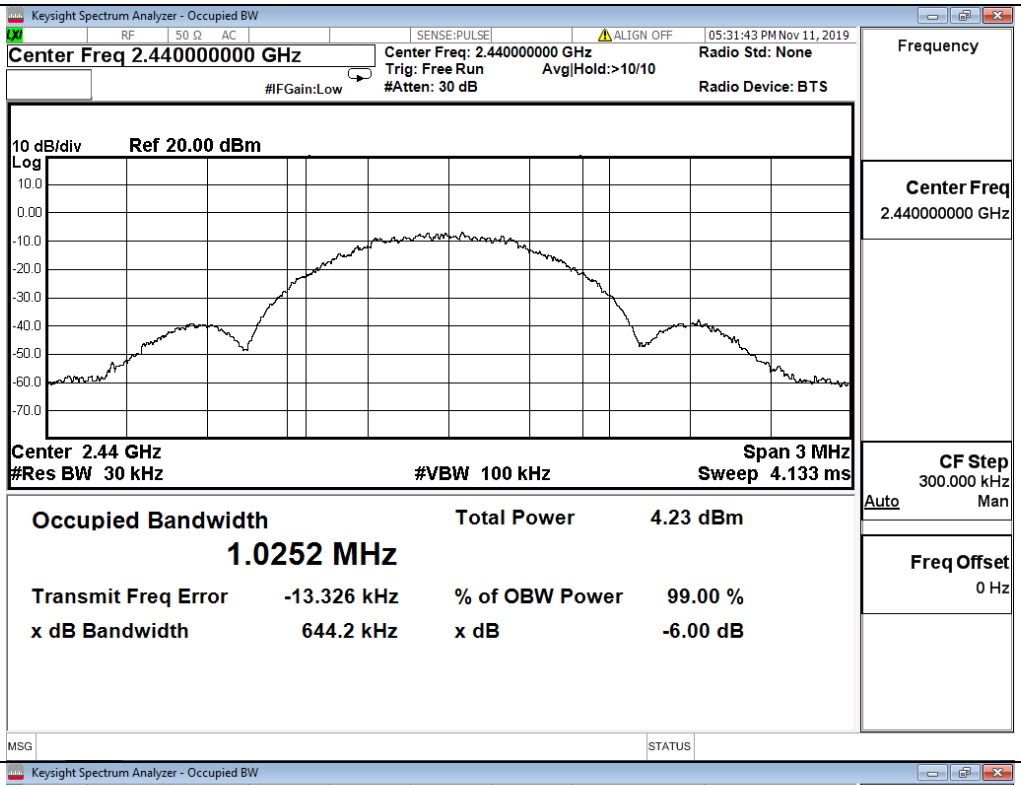
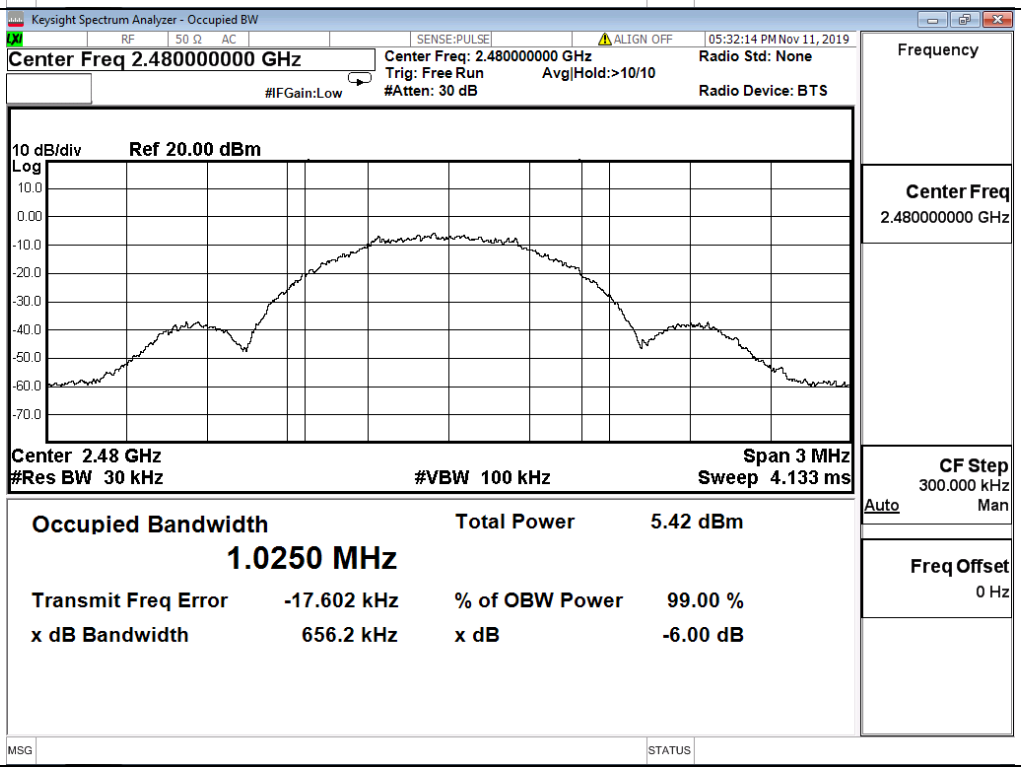
HCH	

Keysight Spectrum Analyzer - Occupied BW
RF 50 Ω AC
SENSE:PULSE
ALIGN OFF
04:48:45 PM Nov 11, 2019
Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 30 dB
#IFGain:Low
Radio Std: None
Radio Device: BTS
Frequency
Ref Offset 6 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.479736 GHz
-3.1441 dBm
Center Freq
2.480000000 GHz
Center 2.48 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 3 MHz
Sweep 1 ms
CF Step
300.000 kHz
Auto
Man
Occupied Bandwidth
1.0386 MHz
Total Power 3.84 dBm
Transmit Freq Error -14.762 kHz
% of OBW Power 99.00 %
x dB Bandwidth 674.3 kHz
x dB -6.00 dB
Freq Offset
0 Hz
MSG
STATUS

A.5 Occupied Bandwidth

Mode	Channel	Occupied Bandwidth (99%)[MHz]	Occupied Bandwidth Limit [MHz]	Verdict
BT LE	LCH	1.0082	--	PASS
BT LE	MCH	1.0252	--	PASS
BT LE	HCH	1.0250	--	PASS

Test Graphs	
LCH	

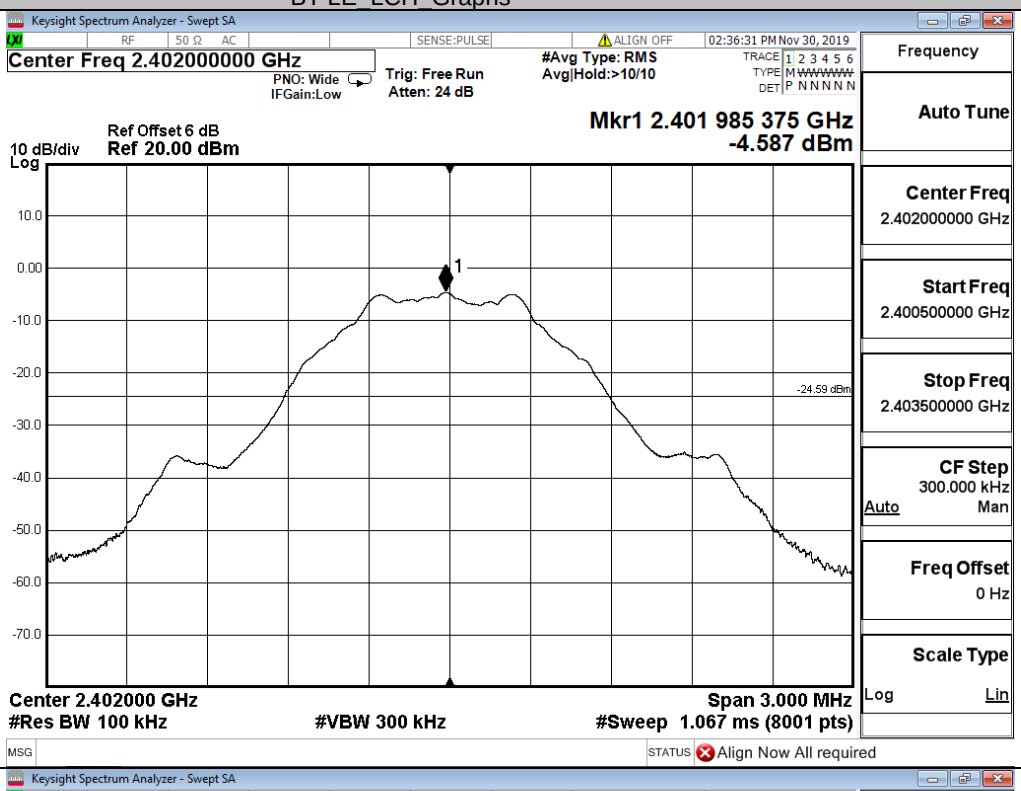
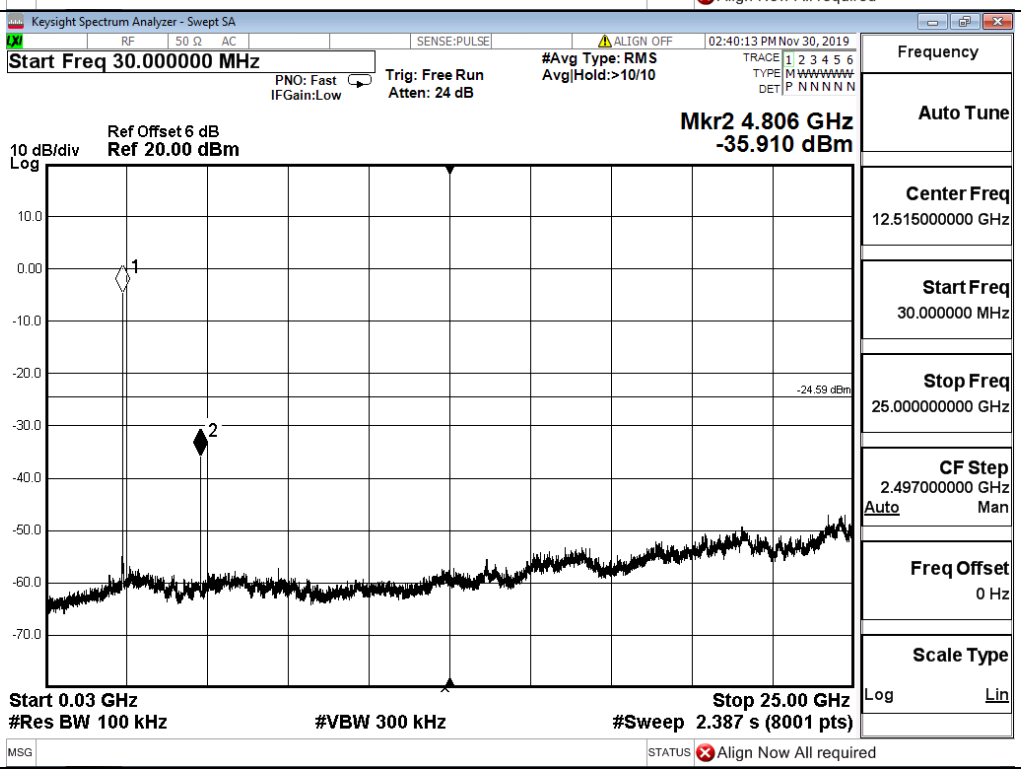
MCH	
HCH	

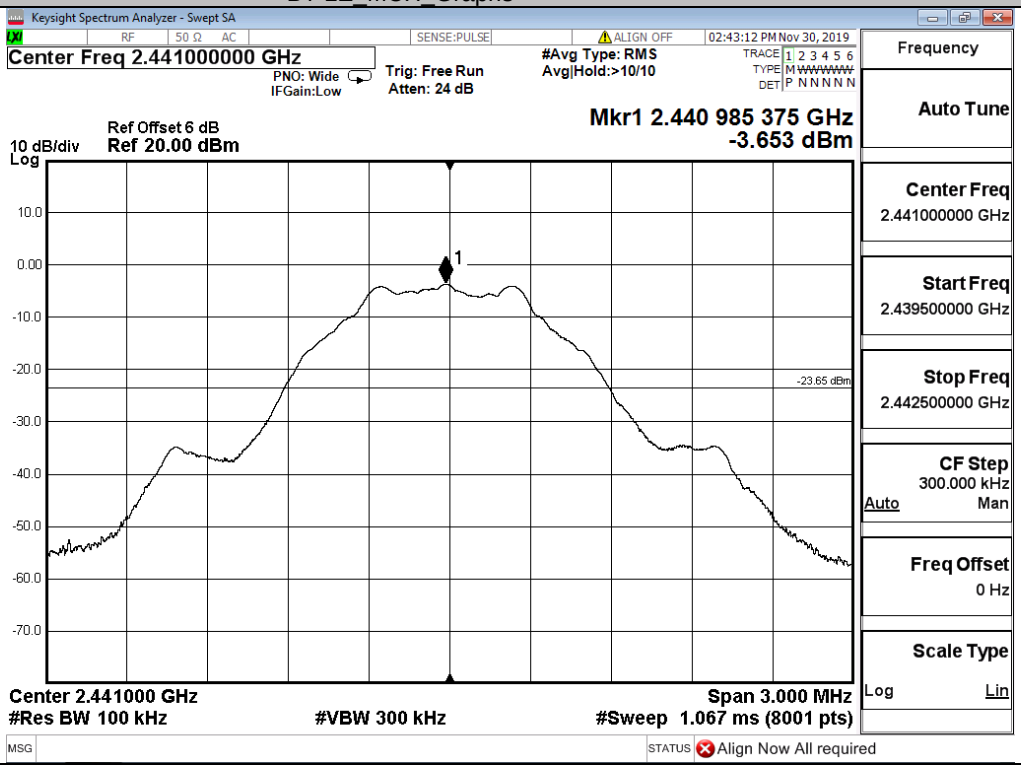
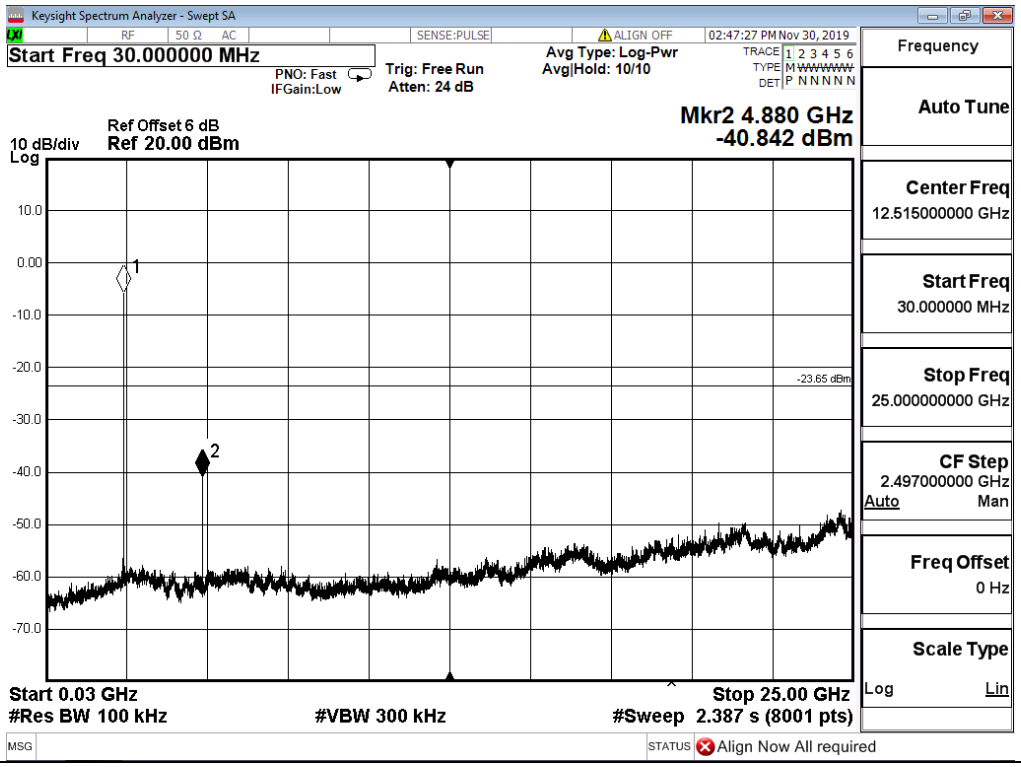
Keysight Spectrum Analyzer - Occupied BW
RF 50 Ω AC
SENSE:PULSE
ALIGN OFF
05:31:43 PM Nov 11, 2019
Center Freq 2.440000000 GHz
#IFGain:Low
Center Freq: 2.440000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Frequency
10 dB/div
Ref 20.00 dBm
Log
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center Freq
2.440000000 GHz
Center 2.44 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 3 MHz
Sweep 4.133 ms
CF Step
300.000 kHz
Auto
Man
Occupied Bandwidth
1.0252 MHz
Total Power 4.23 dBm
Transmit Freq Error -13.326 kHz
% of OBW Power 99.00 %
x dB Bandwidth 644.2 kHz
x dB -6.00 dB
Freq Offset
0 Hz
MSG
STATUS

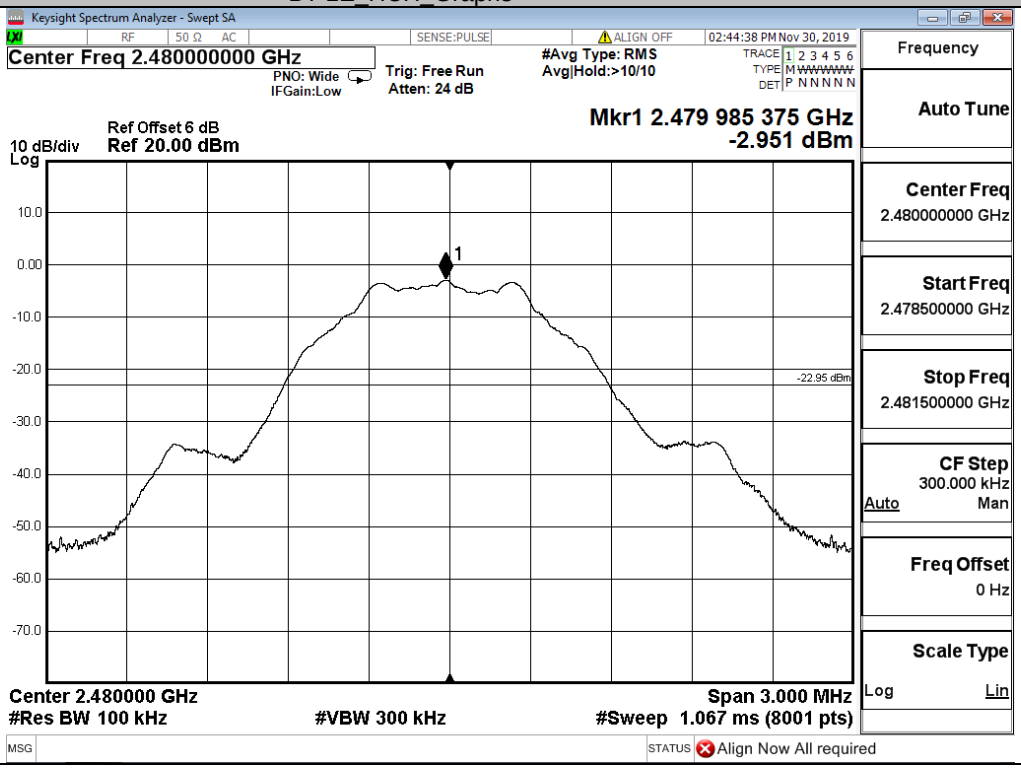
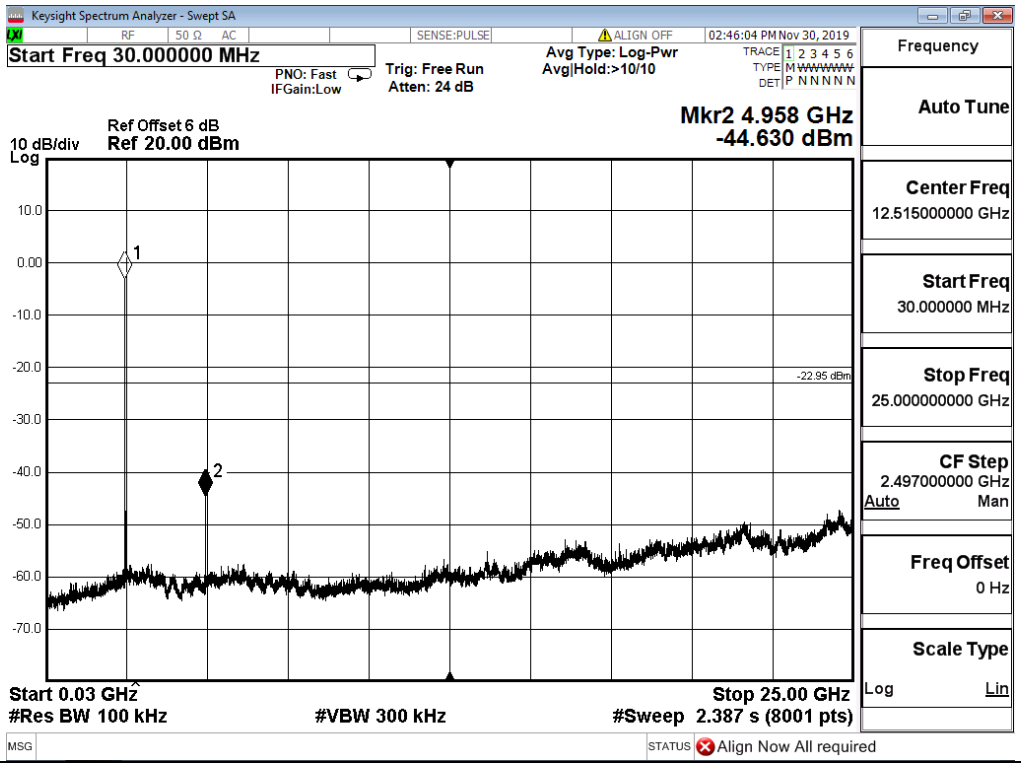
Keysight Spectrum Analyzer - Occupied BW
RF 50 Ω AC
SENSE:PULSE
ALIGN OFF
05:32:14 PM Nov 11, 2019
Center Freq 2.480000000 GHz
#IFGain:Low
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Frequency
10 dB/div
Ref 20.00 dBm
Log
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center Freq
2.480000000 GHz
Center 2.48 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 3 MHz
Sweep 4.133 ms
CF Step
300.000 kHz
Auto
Man
Occupied Bandwidth
1.0250 MHz
Total Power 5.42 dBm
Transmit Freq Error -17.602 kHz
% of OBW Power 99.00 %
x dB Bandwidth 656.2 kHz
x dB -6.00 dB
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	-4.587	-35.910	-24.59	PASS
BT LE	MCH	-3.653	-40.842	-23.65	PASS
BT LE	HCH	-2.951	-44.630	-22.95	PASS

BT LE_LCH_Graphs	
Pref/BT LE/LCH	
Puw/BT LE/LCH	

BT LE_MCH_Graphs	
Pref/BT LE/MCH	
Puw/BT LE/MCH	

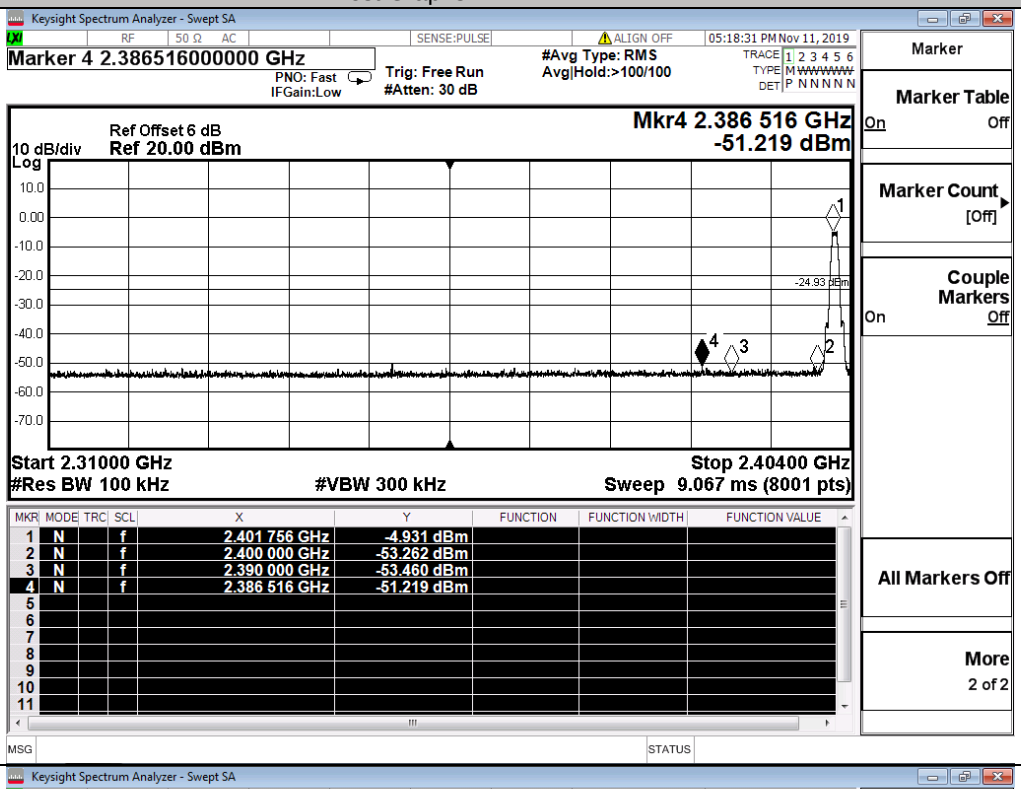
BT LE_HCH_Graphs	
Pref/BT LE/HCH	
Puw/BT LE/HCH	

A.7 Band-edge for RF Conducted Emissions

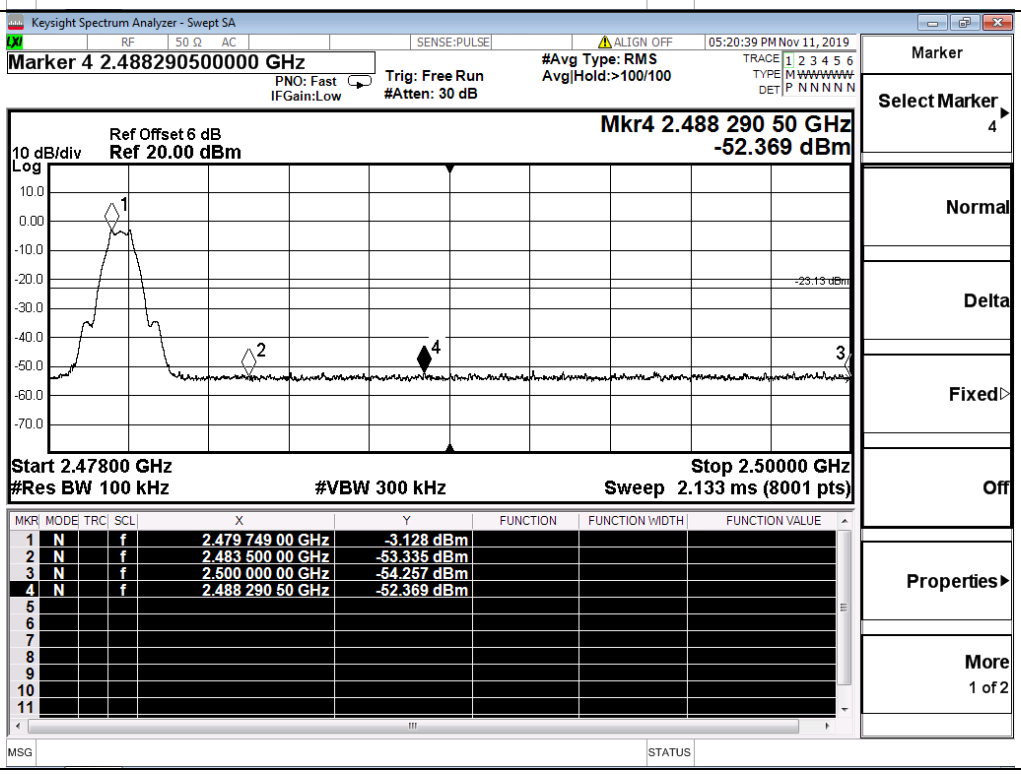
Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	-4.931	-51.219	-24.93	PASS
BT LE	HCH	-3.128	-52.369	-23.13	PASS

Test Graphs

LCH



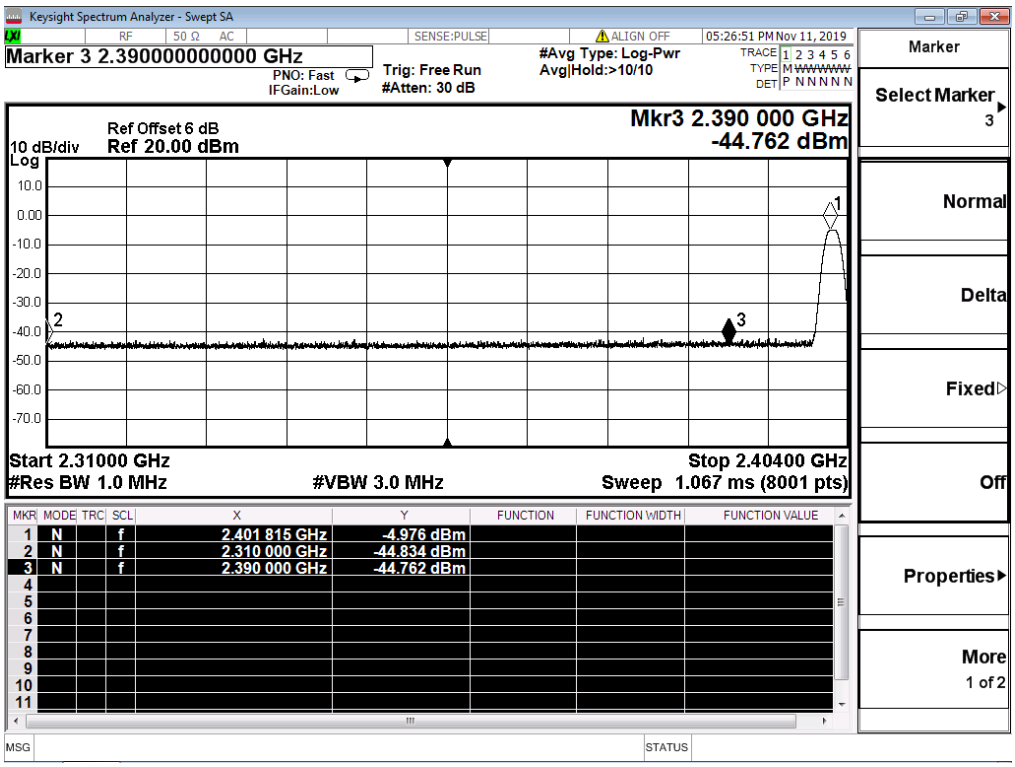
HCH



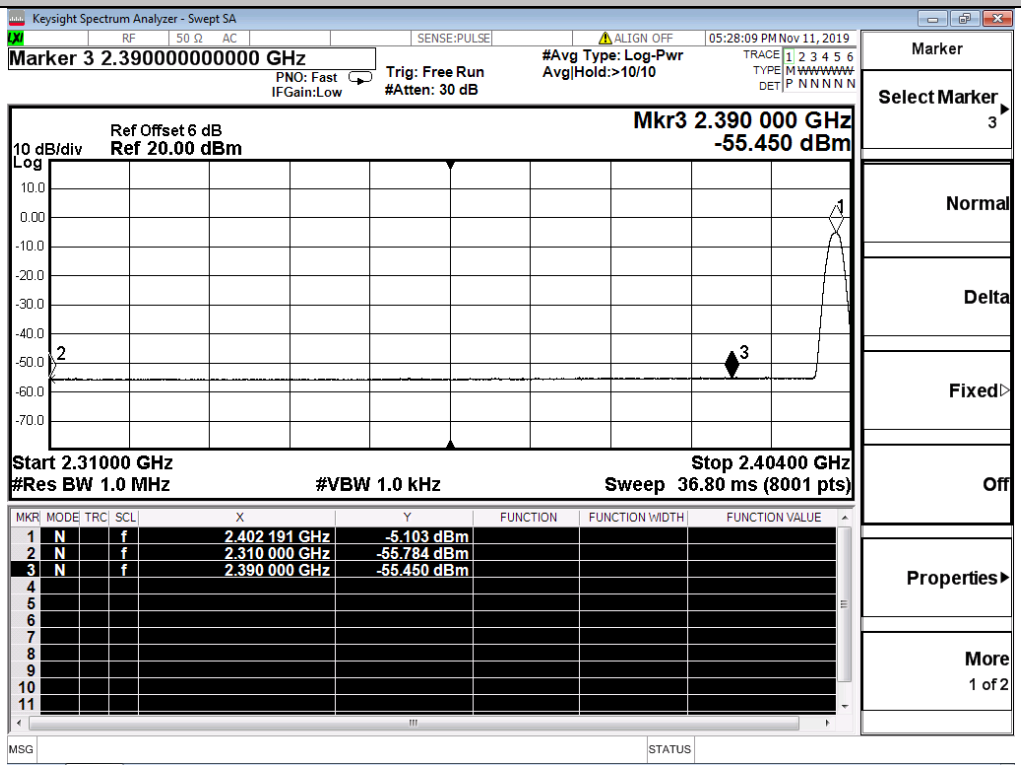
A.8 Restrict-band band-edge measurements

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	-44.834	2.5	0	52.93	PEAK	74	PASS
		Ant1	2310.0	-55.784	2.5	0	41.98	AV	54	PASS
		Ant1	2390.0	-44.762	2.5	0	53.00	PEAK	74	PASS
		Ant1	2390.0	-55.450	2.5	0	42.31	AV	54	PASS
	2480	Ant1	2483.5	-45.744	2.5	0	52.02	PEAK	74	PASS
		Ant1	2483.5	-55.087	2.5	0	42.67	AV	54	PASS
		Ant1	2500.0	-44.739	2.5	0	53.02	PEAK	74	PASS
		Ant1	2500.0	-54.877	2.5	0	42.88	AV	54	PASS

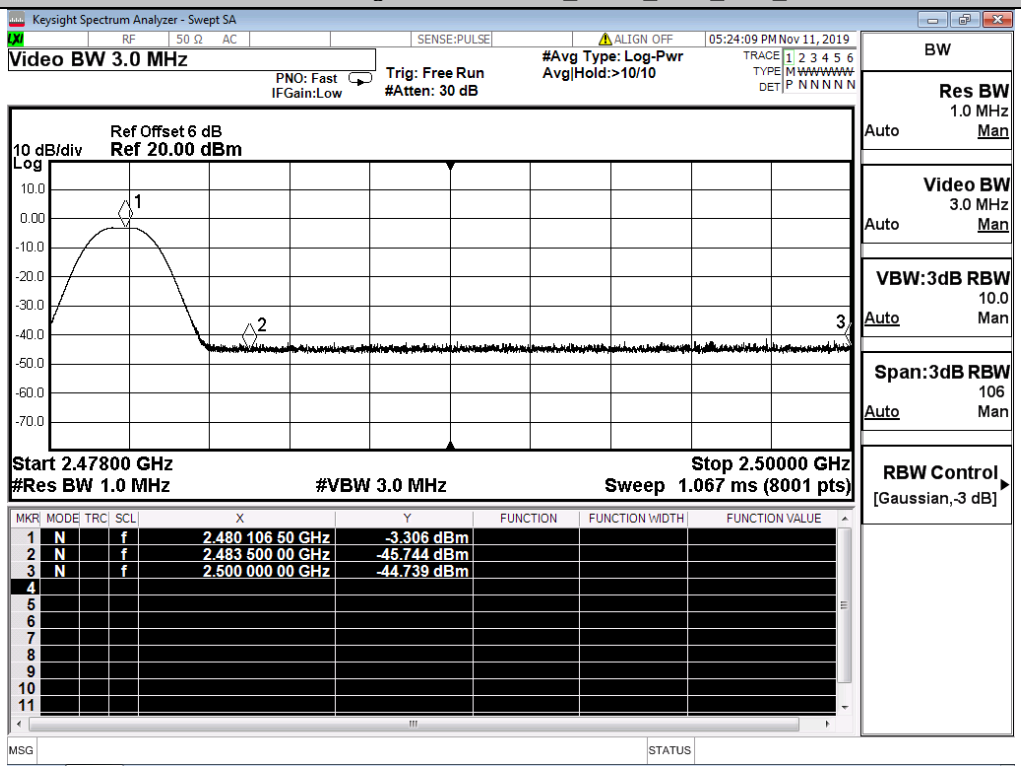
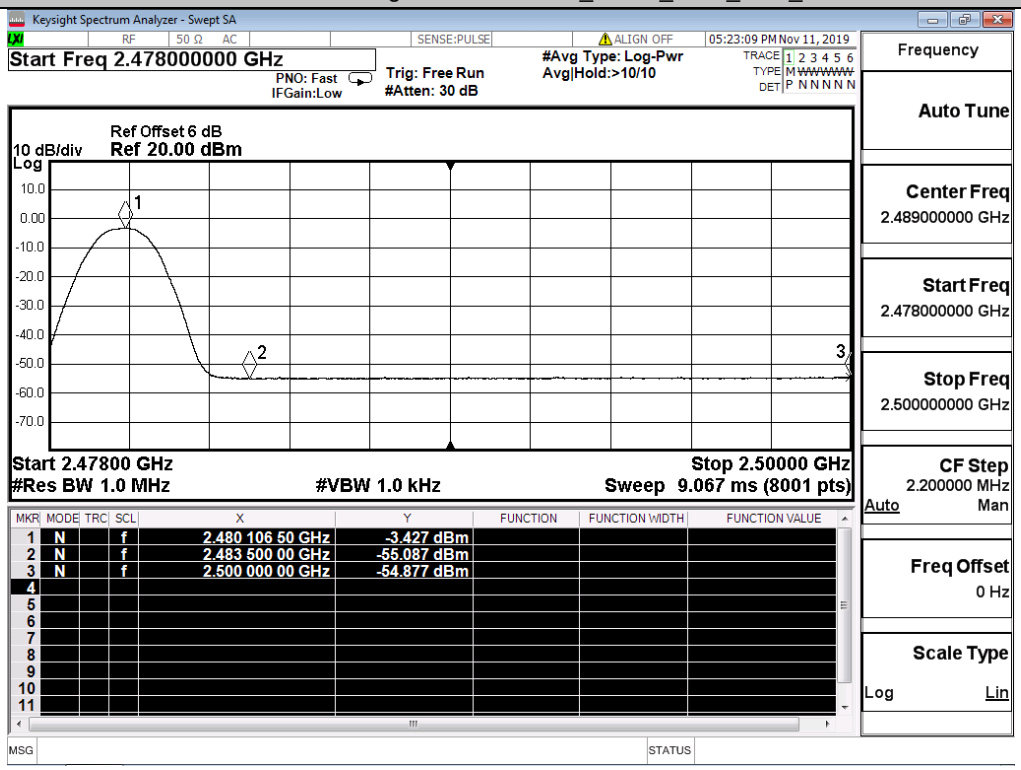
Restrict-band band-edge measurements_BT LE_2402_Ant1_PEAK



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