Appendix A

RF Test Data for BT V4.1(BT LE) (Conducted Measurement)

Product Name: LevelMatePRO

Trade Mark: Command Electronics

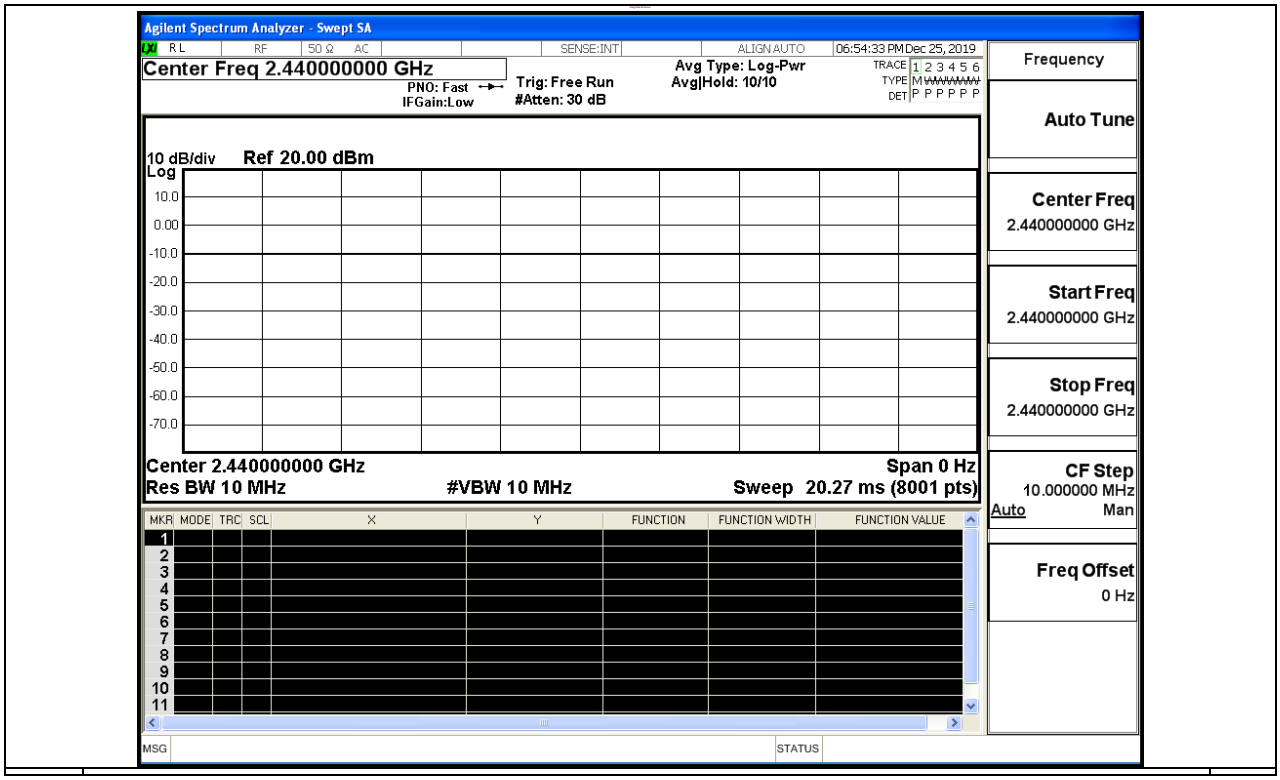
Test Model: LevelMatePRO

Environmental Conditions

Temperature:	24.5 ° C
Relative Humidity:	52.9%
ATM Pressure:	100.0 kPa
Test Engineer:	Qu Xin
Supervised by:	Wang Chuang

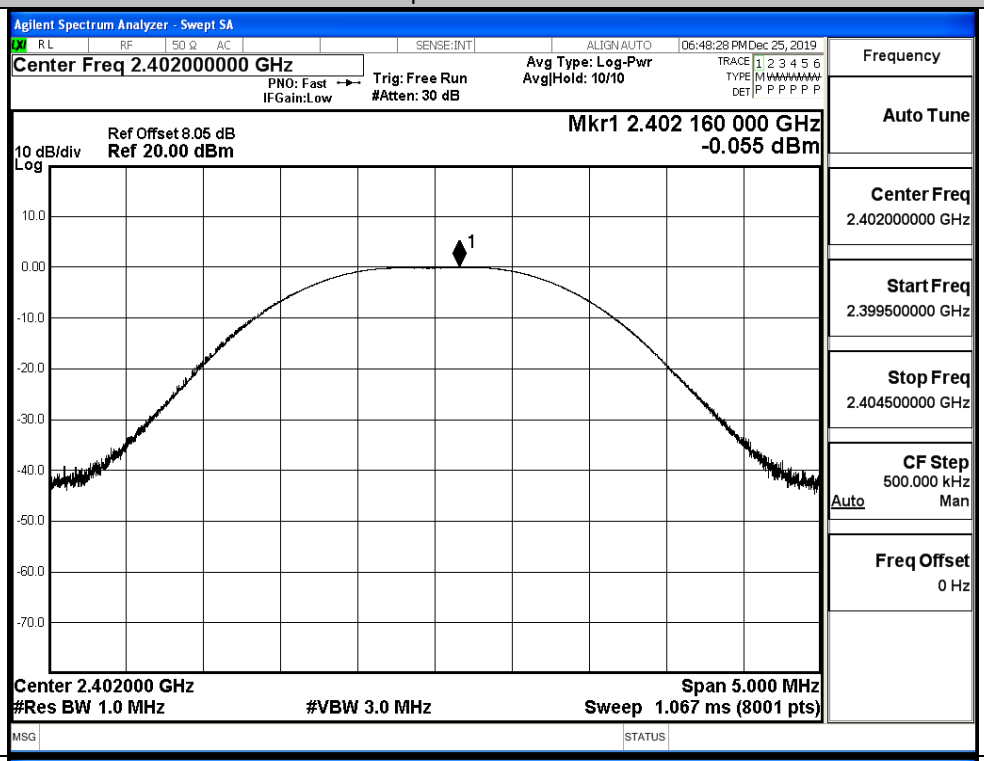
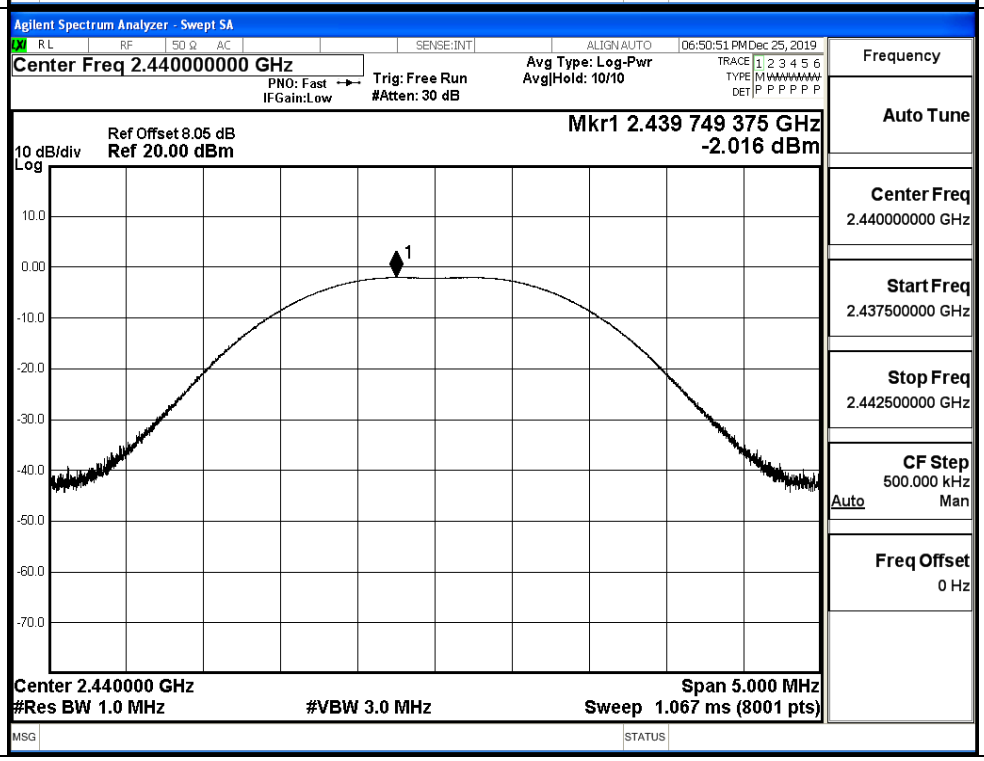
A.1 Duty Cycle

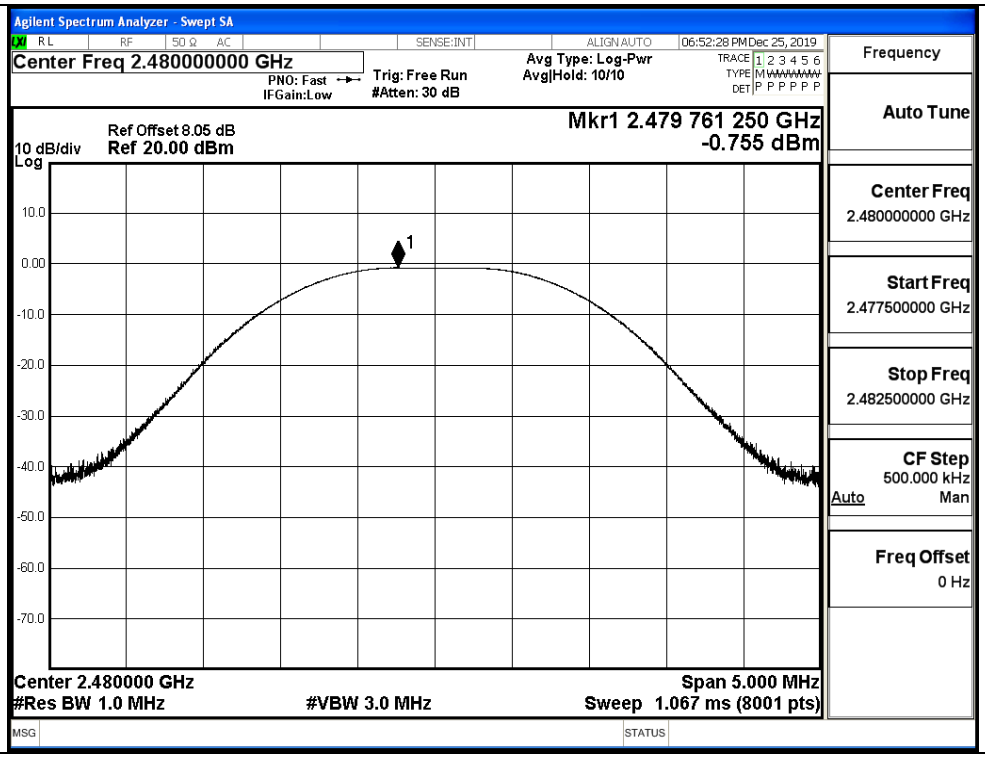
Test Mode	Test Channel	Ant	Duty Cycle[%]	Verdict
BT LE	2440	Ant1	100	PASS



A.2 Maximum Conducted Peak Output Power

Mode	Channel	Conduct Peak Power[dBm]	Limit [dBm]	Verdict
BT LE	LCH	-0.055	30	PASS
BT LE	MCH	-2.016	30	PASS
BT LE	HCH	-0.755	30	PASS

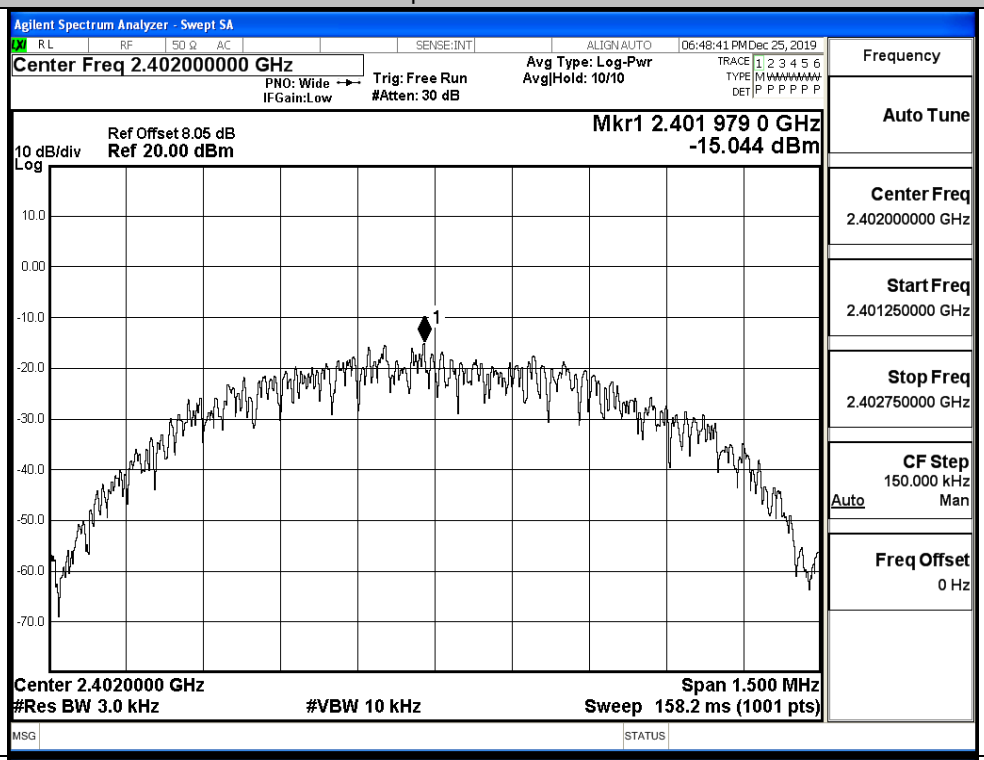
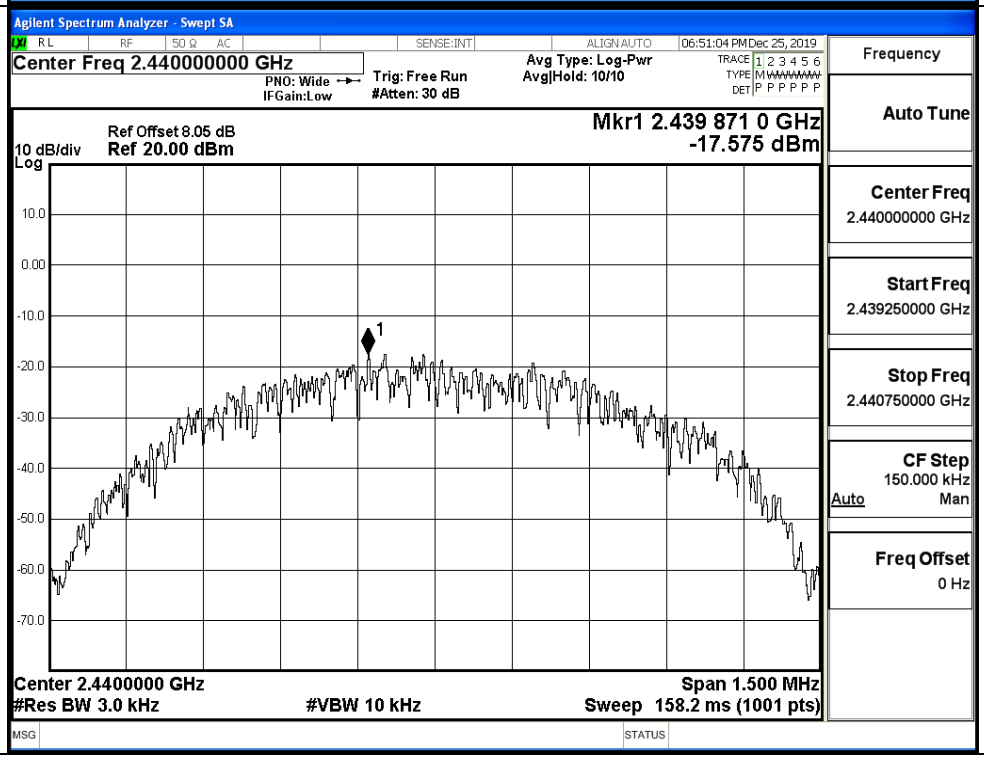
Test Graphs		
LCH		
MCH		

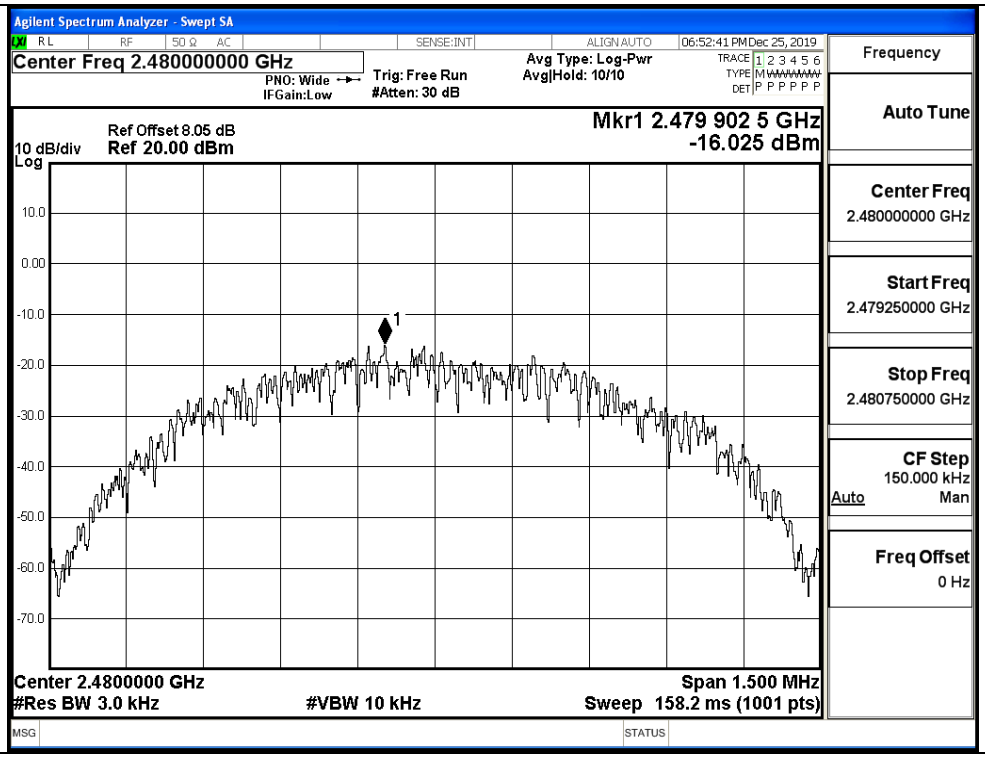
HCH		

Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 10/10
06:52:28 PM Dec 25, 2019
Ref Offset 8.05 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 2.479 761 250 GHz
-0.755 dBm
Center 2.480000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Span 5.000 MHz
Sweep 1.067 ms (8001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.477500000 GHz
Stop Freq
2.482500000 GHz
CF Step
500.000 kHz
Auto
Man
Freq Offset
0 Hz

A.3 Maximum Power Spectral Density

Mode	Channel	PSD [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
BT LE	LCH	-15.044	8	PASS
BT LE	MCH	-17.575	8	PASS
BT LE	HCH	-16.025	8	PASS

Test Graphs		
LCH		
MCH		

HCH		

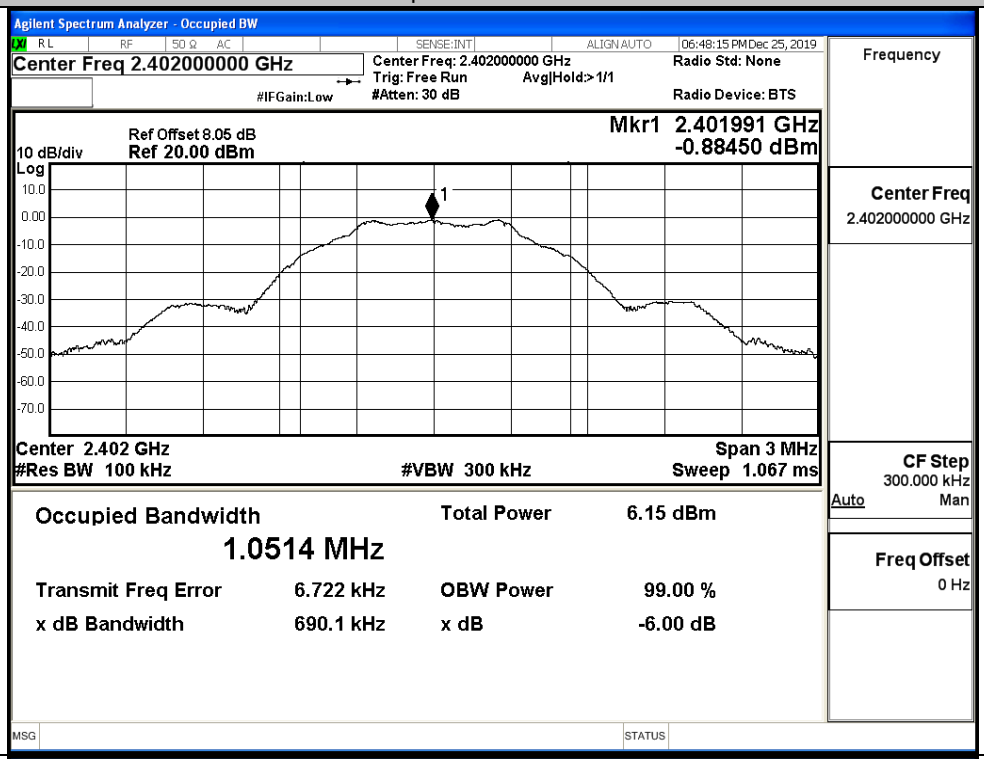
Agilent Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
06:52:41 PM Dec 25, 2019
Center Freq 2.480000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 10/10
TRACE 1 2 3 4 5 6
TYPE M WWWWW
DET P P P P P
Ref Offset 8.05 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 2.479 902 5 GHz
-16.025 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
1
Center 2.4800000 GHz
#Res BW 3.0 kHz
#VBW 10 kHz
Span 1.500 MHz
Sweep 158.2 ms (1001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.479250000 GHz
Stop Freq
2.480750000 GHz
CF Step
150.000 kHz
Auto
Man
Freq Offset
0 Hz

A.4 6dB Bandwidth

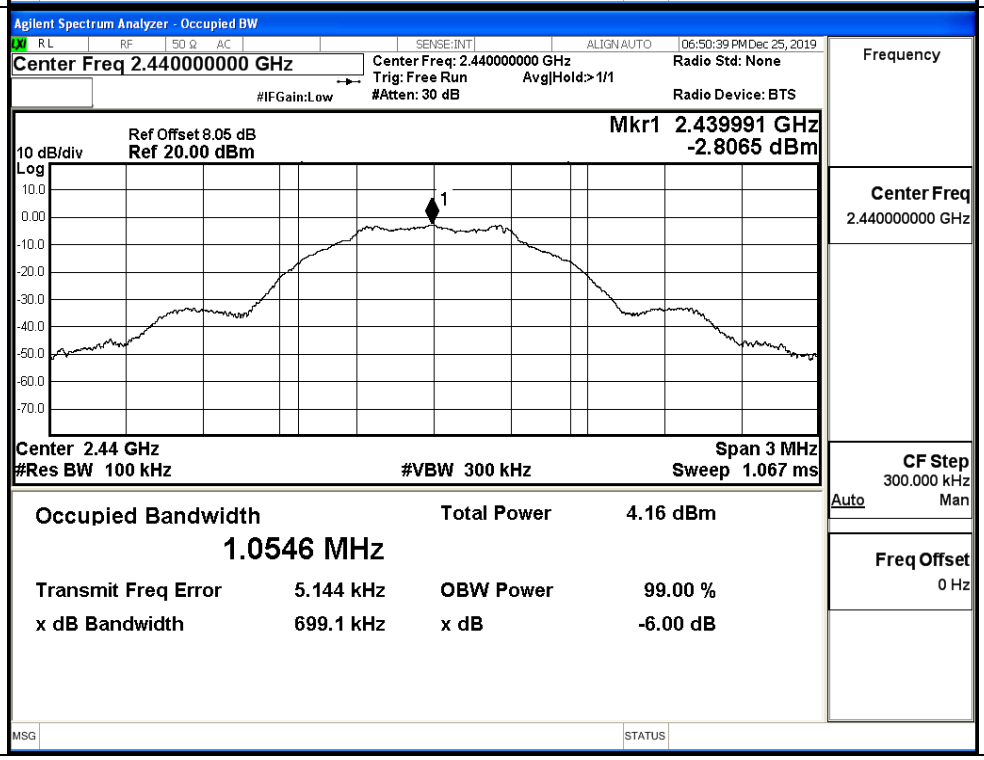
Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
BT LE	LCH	0.6901	⩾0.5	PASS
BT LE	MCH	0.6991	⩾0.5	PASS
BT LE	HCH	0.7033	⩾0.5	PASS

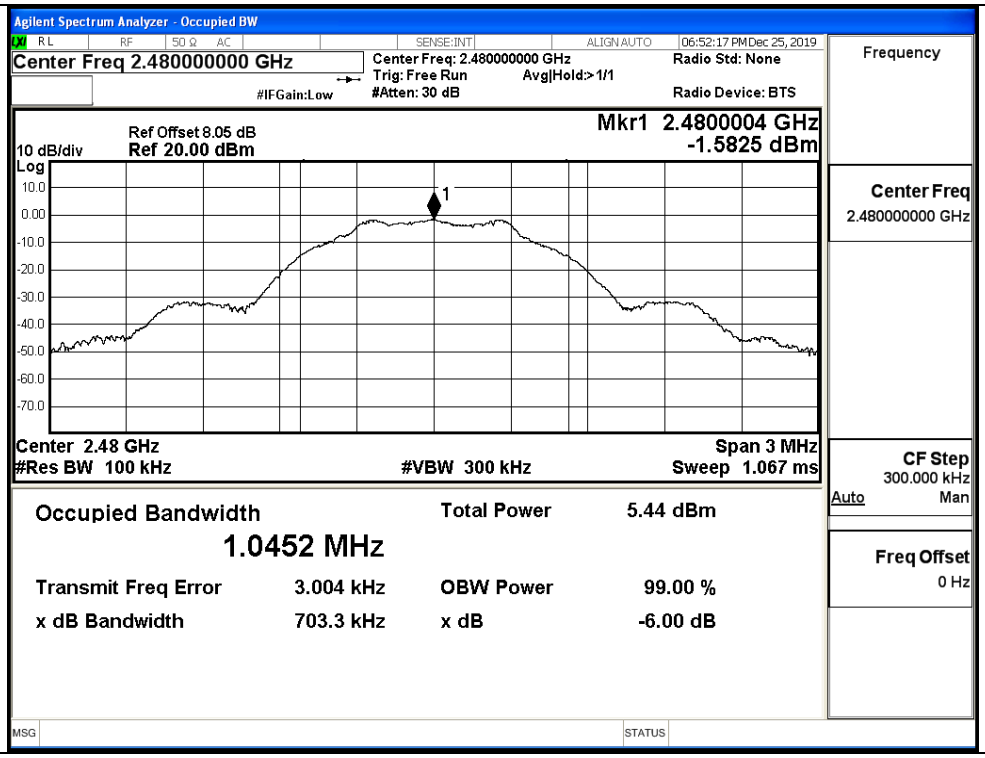
Test Graphs

LCH



MCH



HCH		

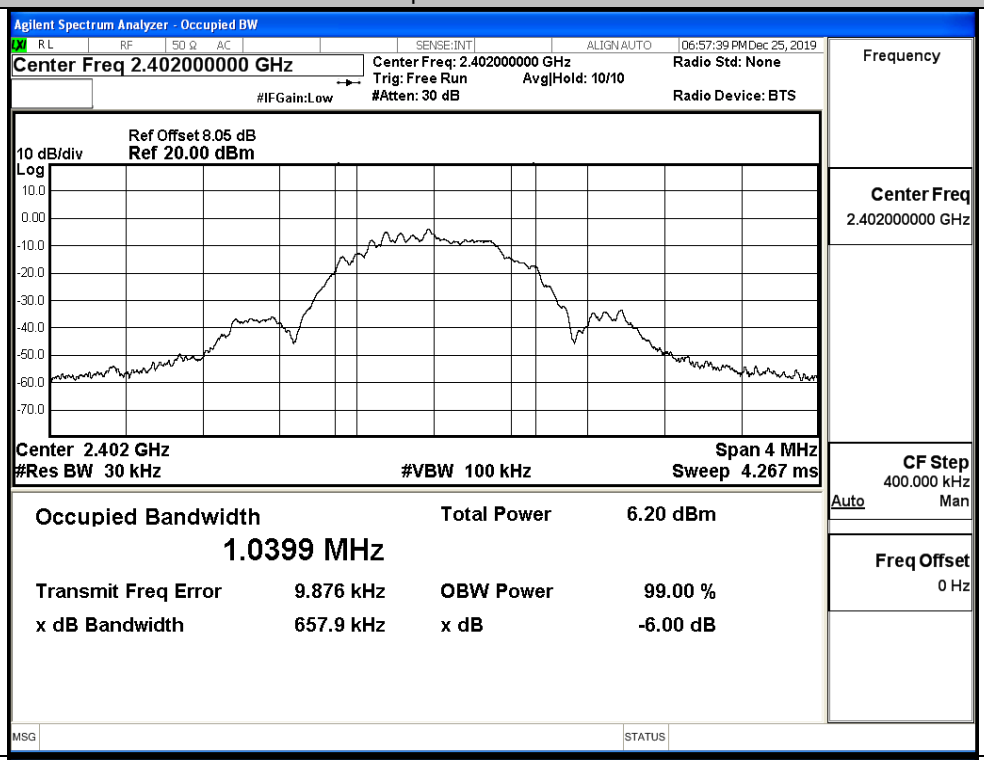
Agilent Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
06:52:17 PM Dec 25, 2019
Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold:>1/1
#IFGain:Low
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Frequency
Ref Offset 8.05 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.4800004 GHz
-1.5825 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
1
Center Freq
2.480000000 GHz
Center 2.48 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 3 MHz
Sweep 1.067 ms
CF Step
300.000 kHz
Auto
Man
Occupied Bandwidth
1.0452 MHz
Total Power
5.44 dBm
Freq Offset
0 Hz
Transmit Freq Error
3.004 kHz
OBW Power
99.00 %
x dB Bandwidth
703.3 kHz
x dB
-6.00 dB
MSG
STATUS

A.5 Occupied Bandwidth

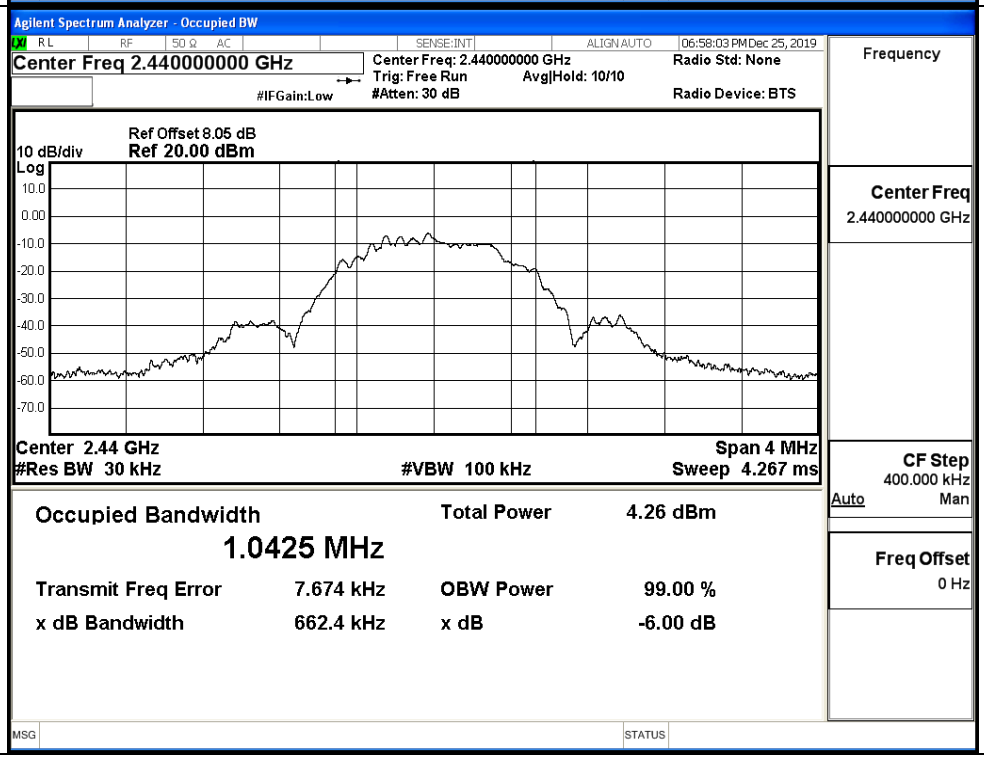
Mode	Channel	Occupied Bandwidth [MHz]	Limit [MHz]	Verdict
BT LE	LCH	1.0399	⩾0.5	PASS
BT LE	MCH	1.0425	⩾0.5	PASS
BT LE	HCH	1.0400	⩾0.5	PASS

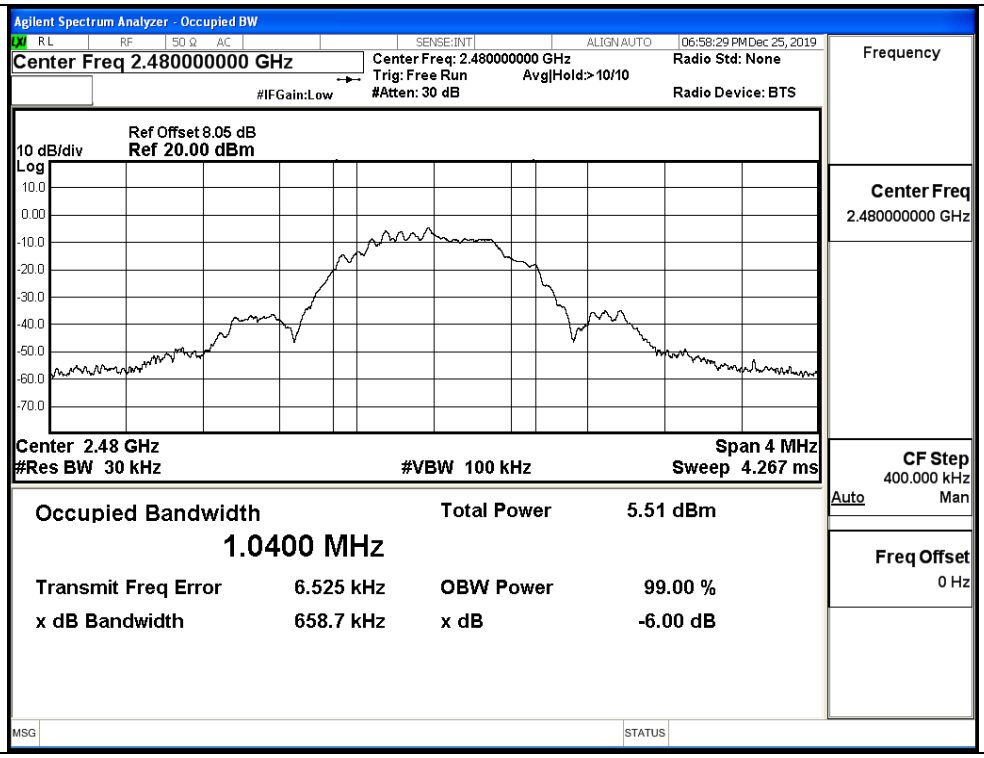
Test Graphs

LCH



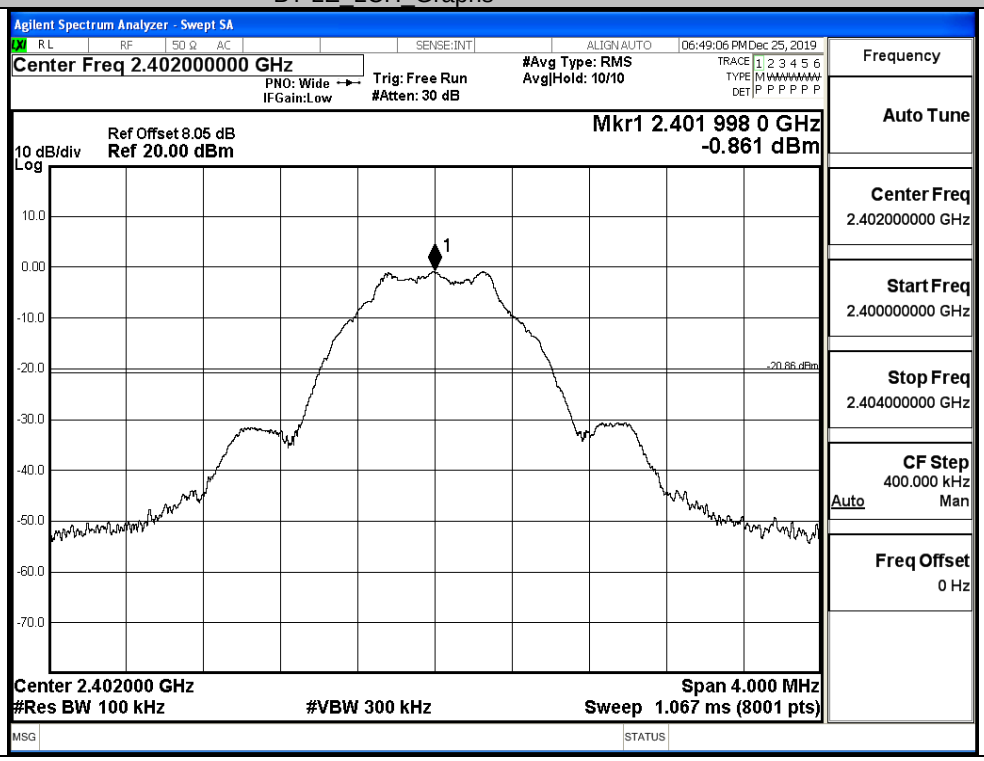
MCH

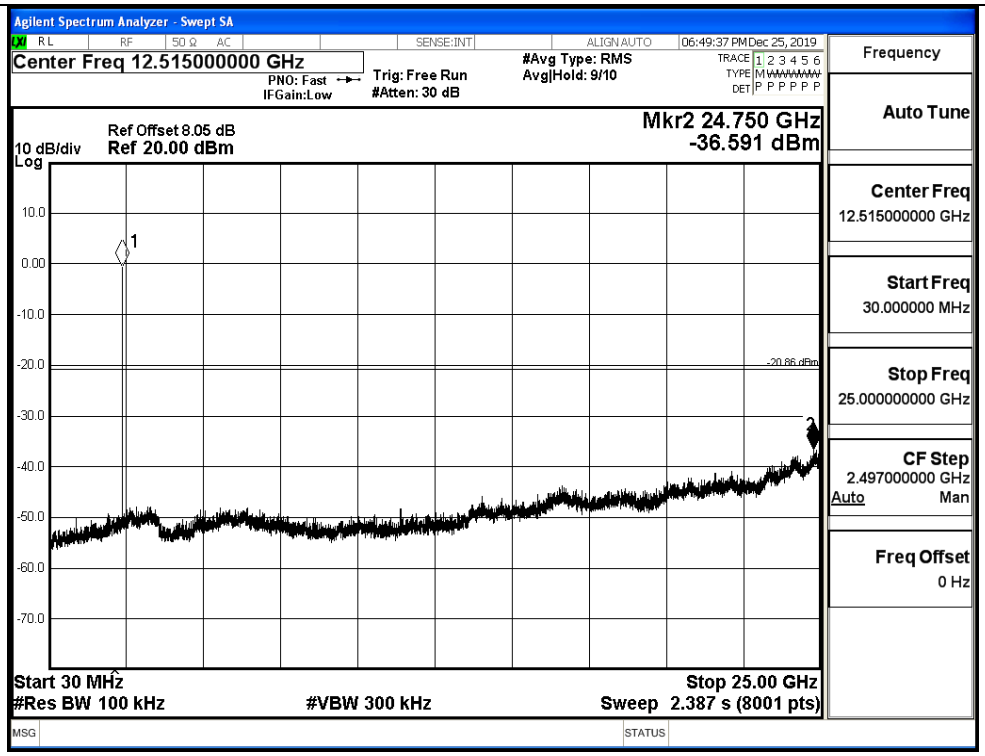


HCH	

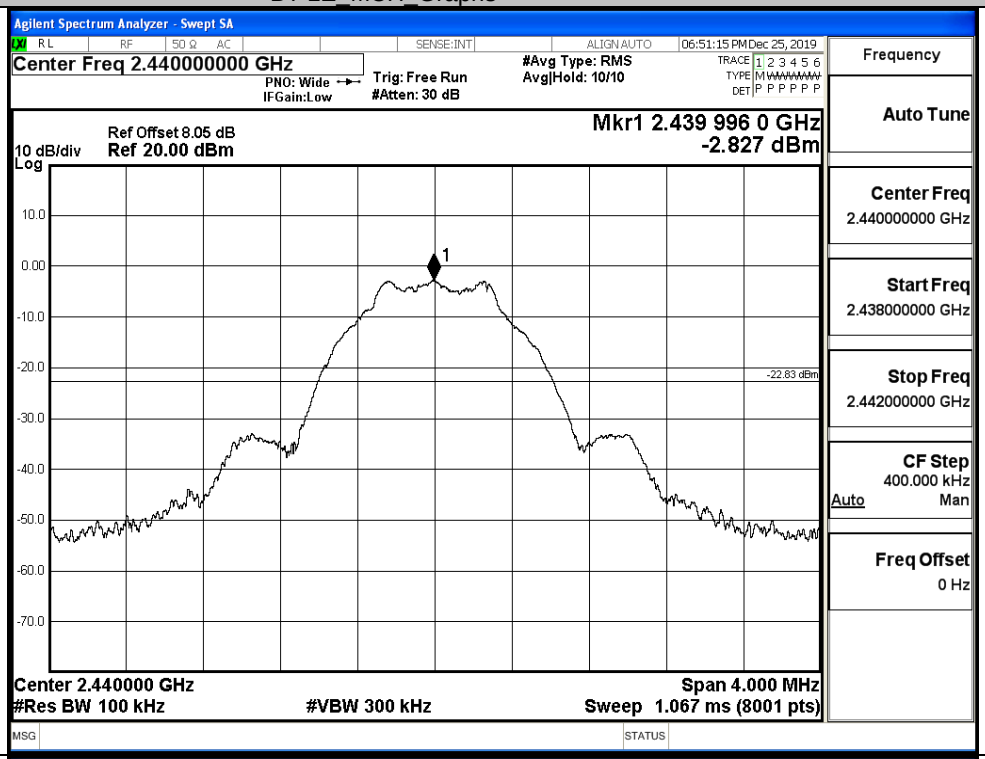
A.6 RF Conducted Spurious Emissions

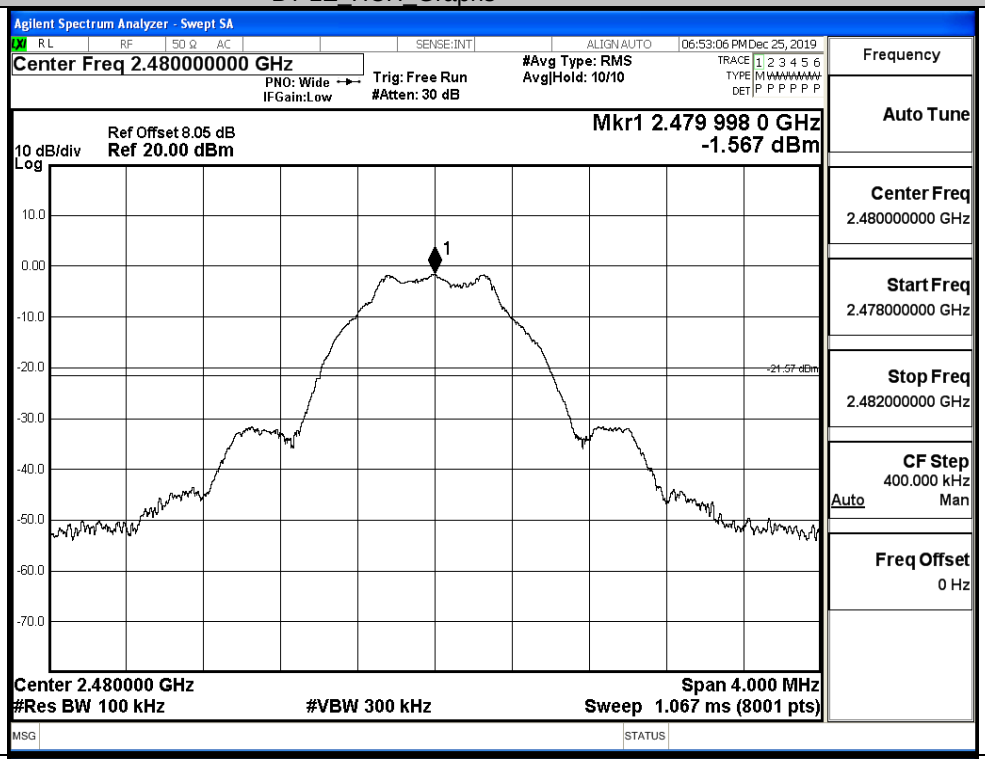
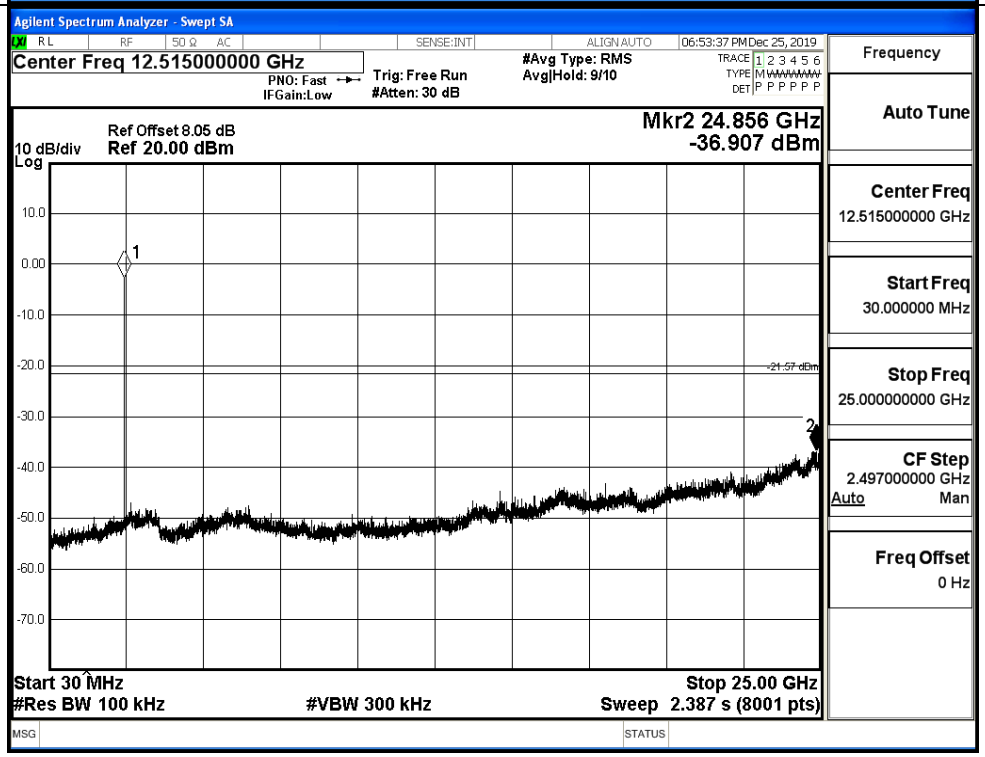
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	-0.861	-36.591	-20.861	PASS
BT LE	MCH	-2.827	-36.525	-22.827	PASS
BT LE	HCH	-1.567	-36.907	-21.567	PASS

BT LE_LCH_Graphs	
Pref/BT LE/LCH	

Puw/BT LE/LCH	

Agilent Spectrum Analyzer - Swept SA
Center Freq 12.515000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 9/10
06:49:37 PM Dec 25, 2019
Ref Offset 8.05 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr2 24.750 GHz
-36.591 dBm
-20.86 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 25.00 GHz
Sweep 2.387 s (8001 pts)
Frequency
Auto Tune
Center Freq
12.515000000 GHz
Start Freq
30.000000 MHz
Stop Freq
25.000000000 GHz
CF Step
2.497000000 GHz
Auto
Man
Freq Offset
0 Hz

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

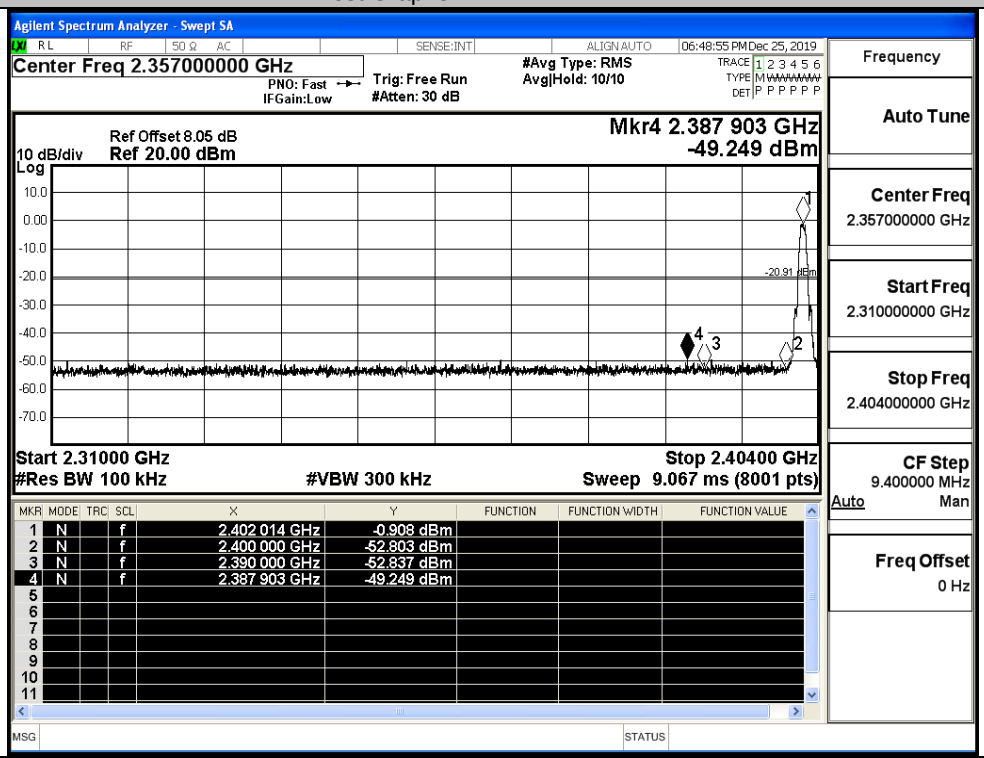
BT LE_HCH_Graphs	
Pref/BT LE/HCH	
Puw/BT LE/HCH	

A.7 Band-edge for RF Conducted Emissions

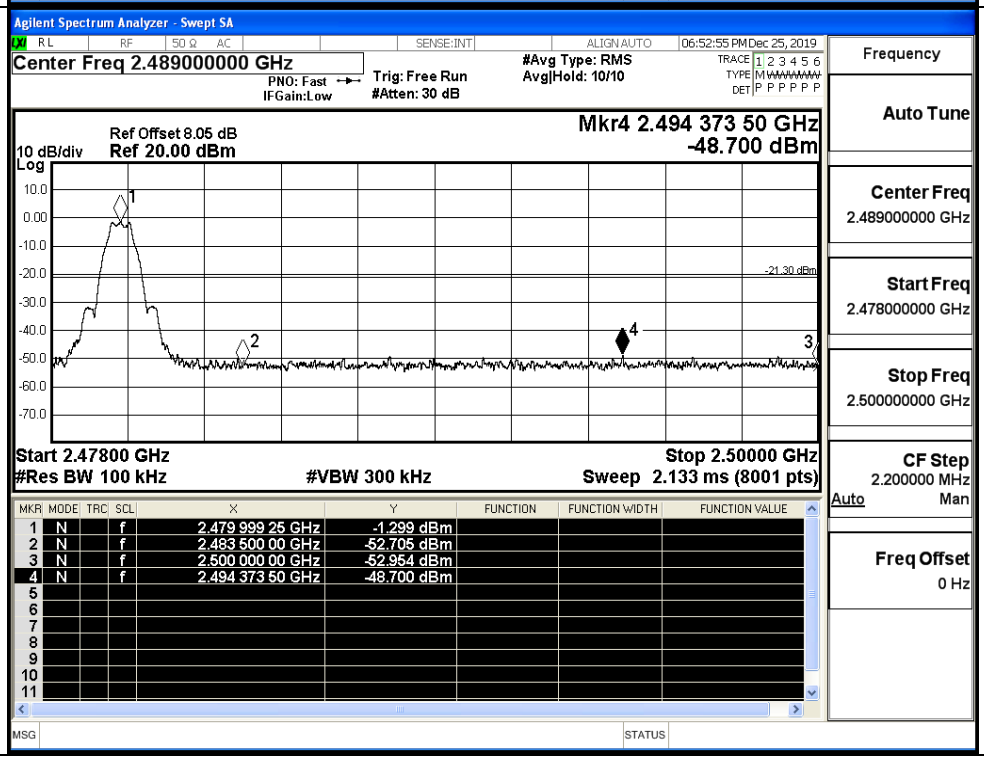
Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	-0.908	-49.249	-20.91	PASS
BT LE	HCH	-1.299	-48.700	-21.3	PASS

Test Graphs

LCH



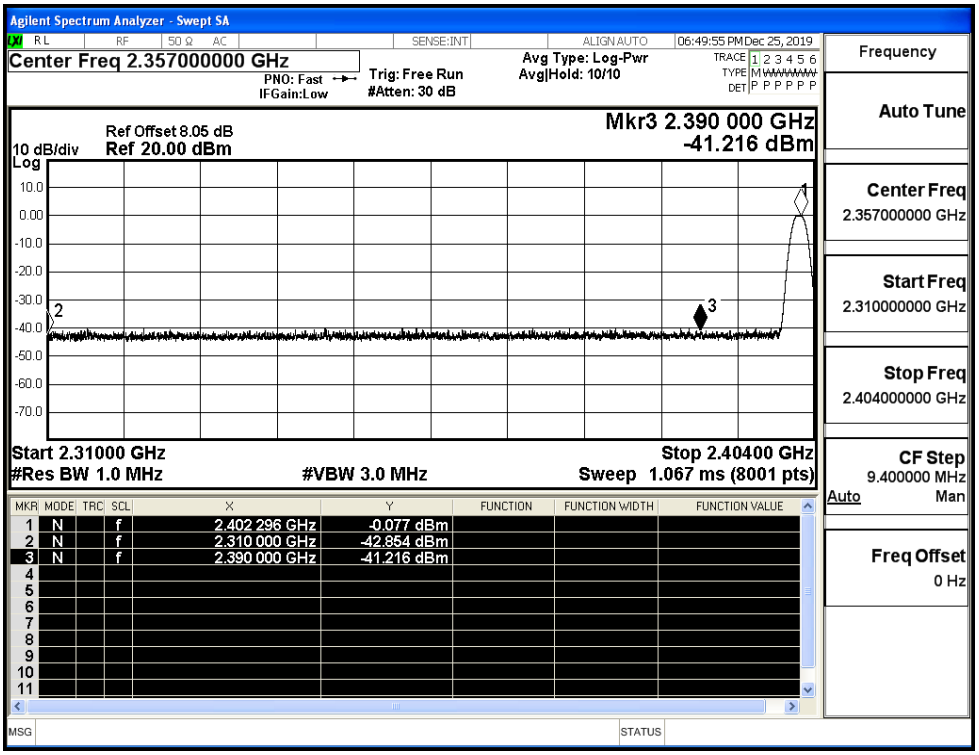
HCH



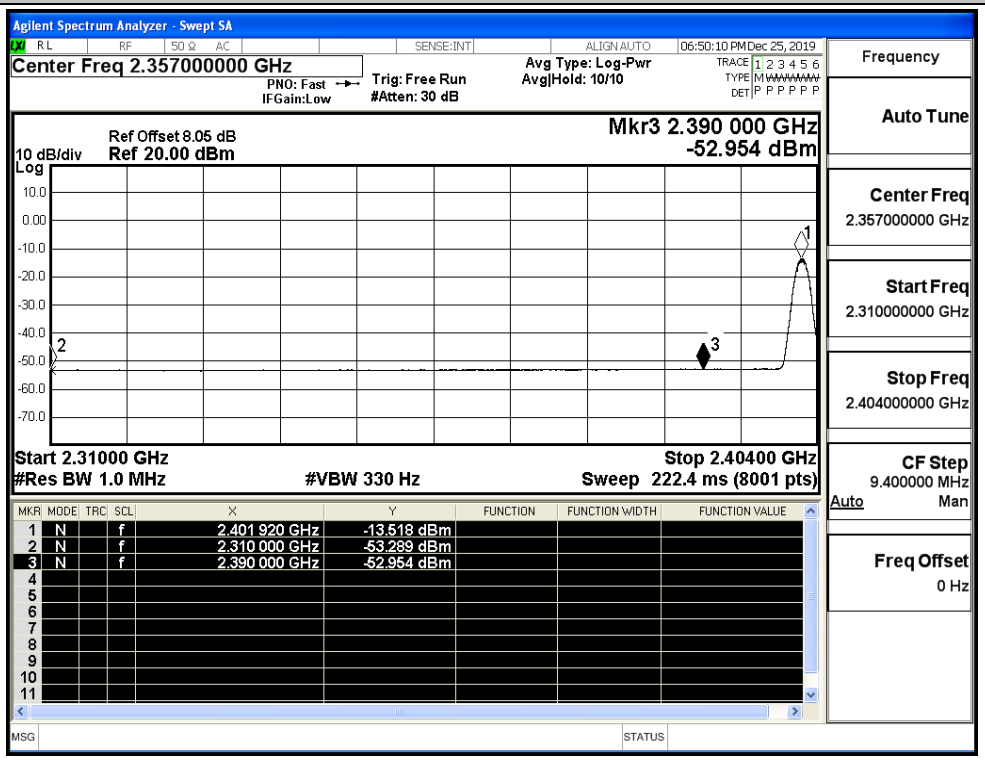
A.8 Restrict-band band-edge measurements

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	-42.85	2.0	0	54.40	PEAK	74	PASS
		Ant1	2310.0	-53.29	2.0	0	43.97	AV	54	PASS
		Ant1	2390.0	-41.22	2.0	0	56.04	PEAK	74	PASS
		Ant1	2390.0	-52.95	2.0	0	44.30	AV	54	PASS
	2480	Ant1	2483.5	-42.09	2.0	0	55.16	PEAK	74	PASS
		Ant1	2483.5	-52.52	2.0	0	44.74	AV	54	PASS
		Ant1	2500.0	-41.72	2.0	0	55.54	PEAK	74	PASS
		Ant1	2500.0	-52.37	2.0	0	44.89	AV	54	PASS

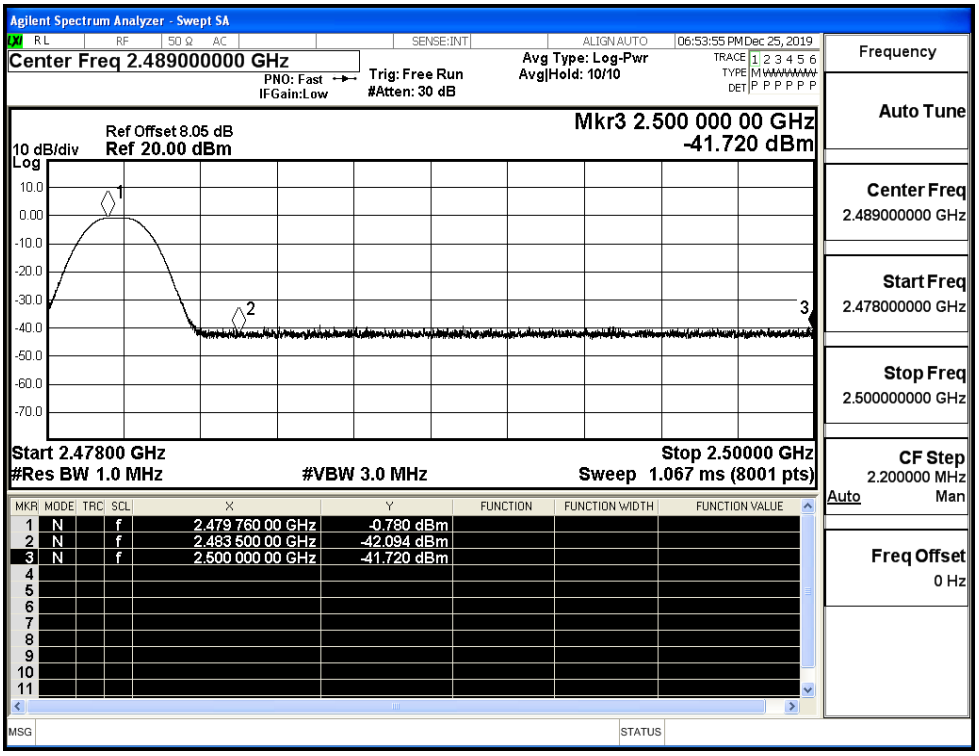
Restrict-band band-edge measurements_BT LE_2402_Ant1_PEAK



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