Appendix B

RF Test Data for Zigbee (Conducted Measurement)

Product Name: In Wall Dimmer(ZB)

Trade Mark: FANTEM

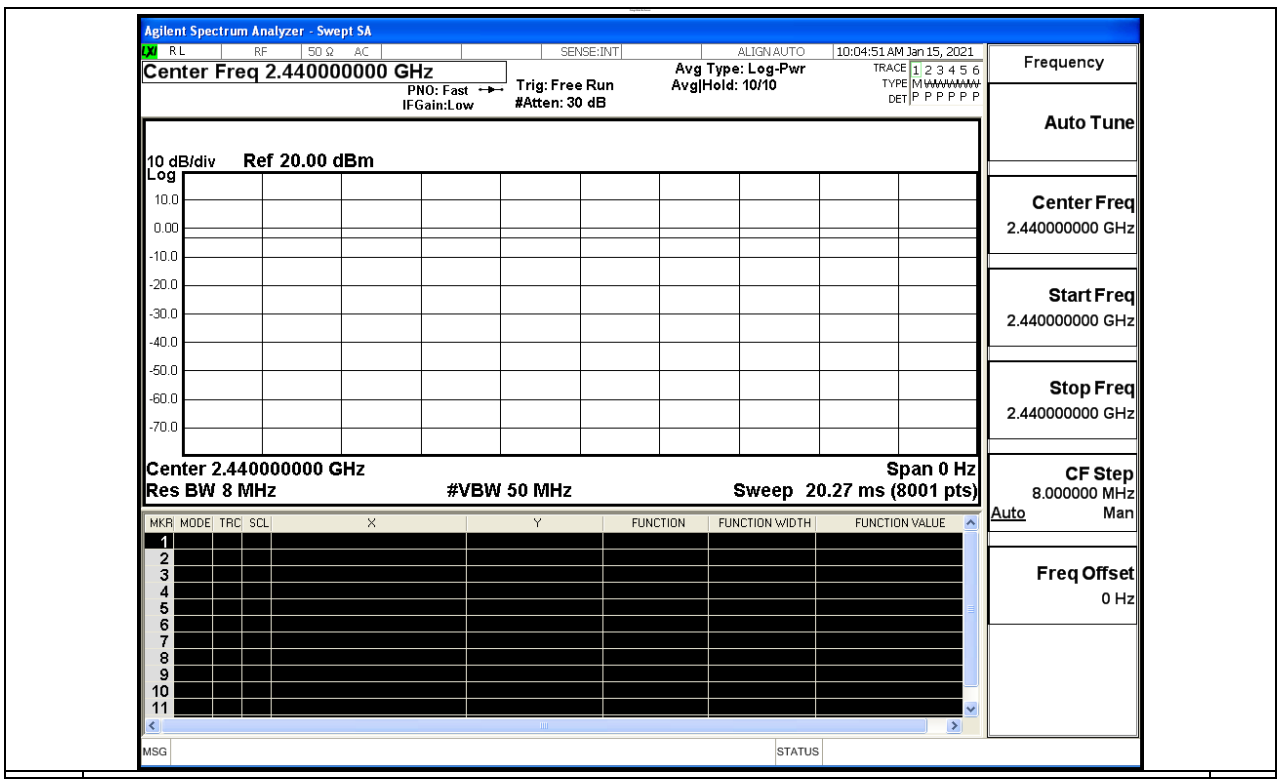
Test Model: ZB006-X

Environmental Conditions

Temperature:	23.4°C
Relative Humidity:	54.5%
ATM Pressure:	100.0 kPa
Test Engineer:	Ben Jin
Supervised by:	Li Huan

B.1 Duty Cycle

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

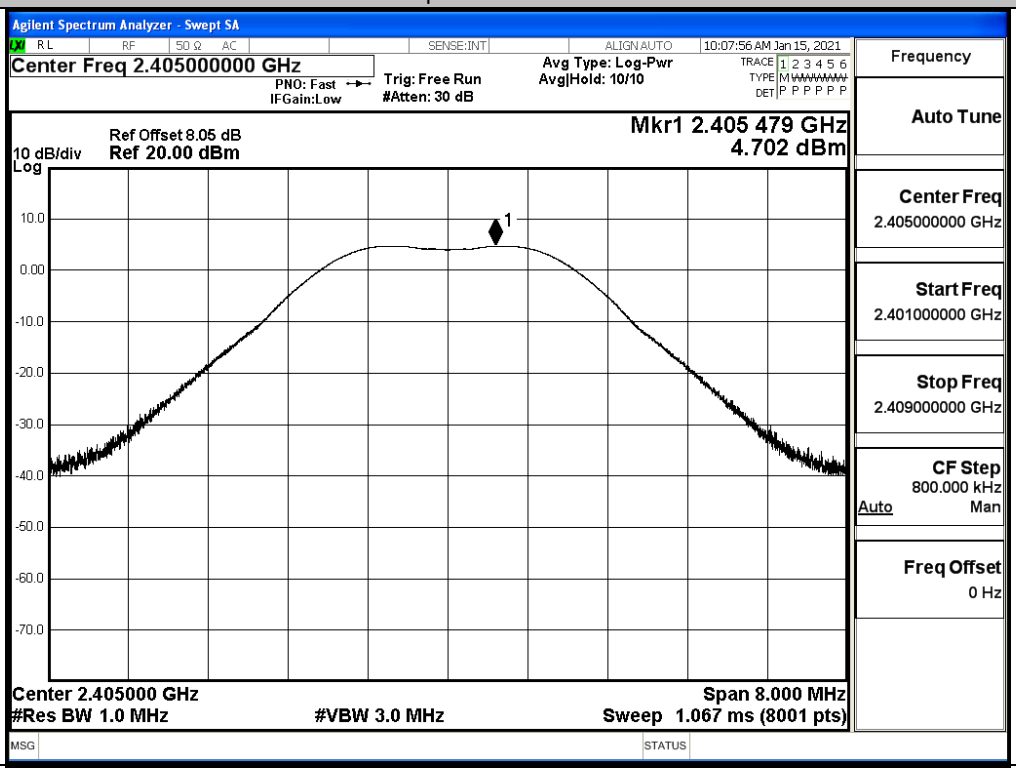


B.2 Maximum Conducted Peak Output Power

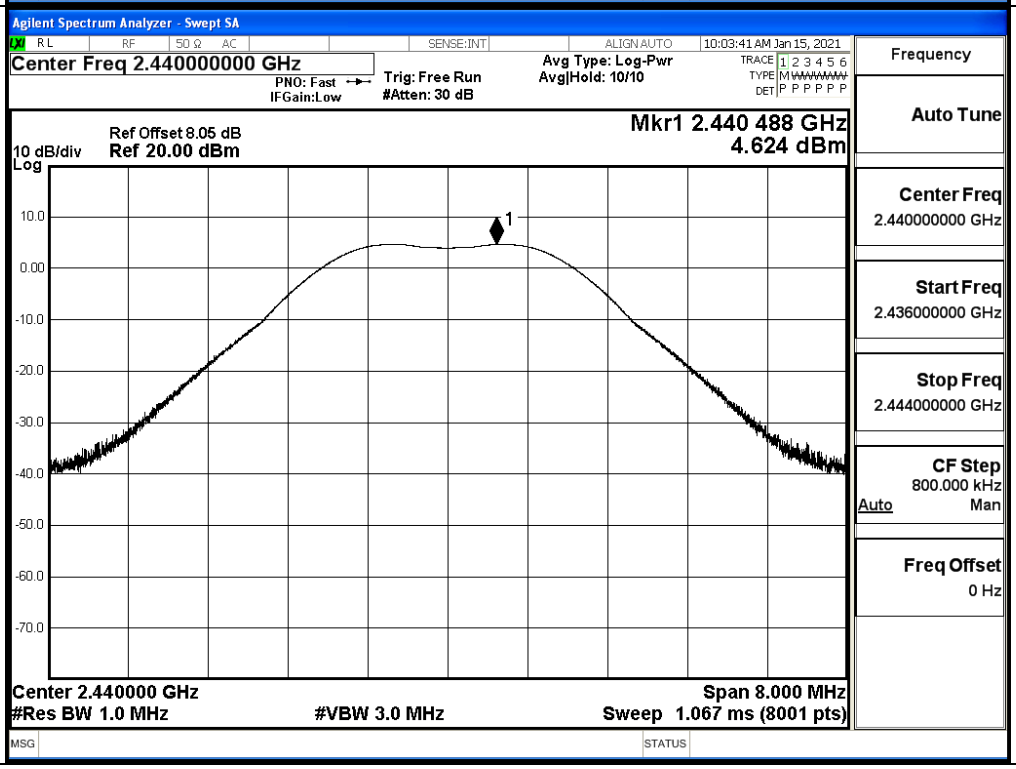
Mode	Channel	Conduct Peak Power[dBm]	Limit [dBm]	Verdict
Zigbee	LCH	4.702	30	PASS
Zigbee	MCH	4.624	30	PASS
Zigbee	HCH	5.072	30	PASS

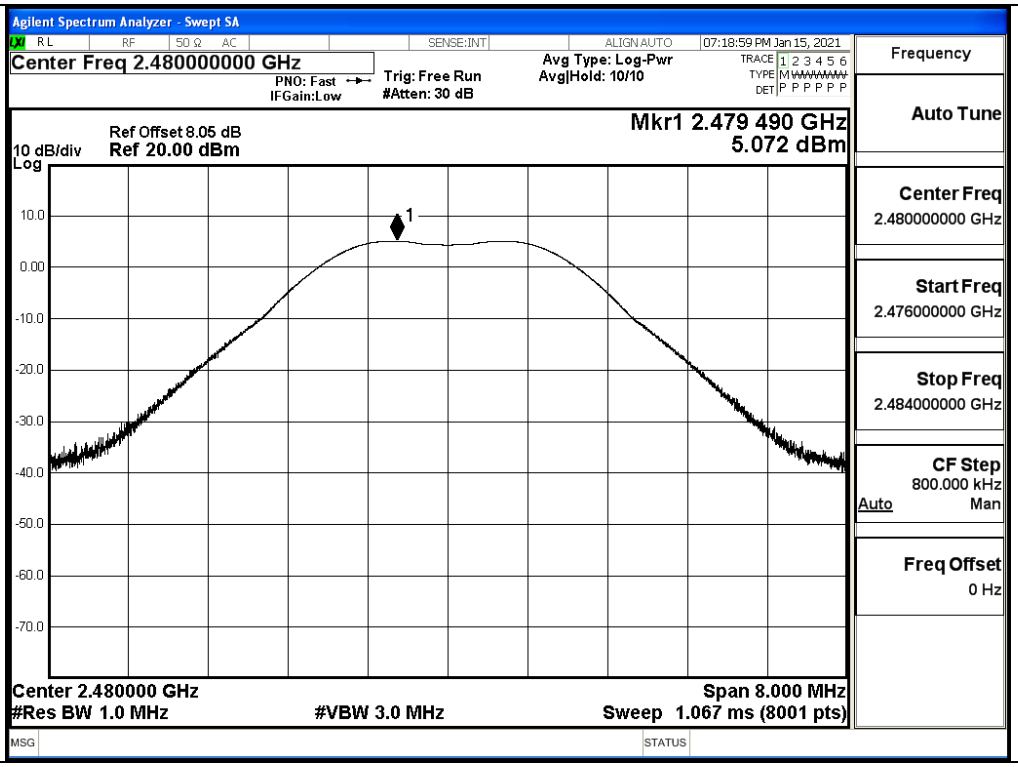
Test Graphs

LCH



MCH



HCH		

Agilent Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
07:18:59 PM Jan 15, 2021
Center Freq 2.480000000 GHz
PNO: Fast
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
DET P P P P P P
Ref Offset 8.05 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 2.479 490 GHz
5.072 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 8.000 MHz
Sweep 1.067 ms (8001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.476000000 GHz
Stop Freq
2.484000000 GHz
CF Step
800.000 kHz
Auto
Man
Freq Offset
0 Hz

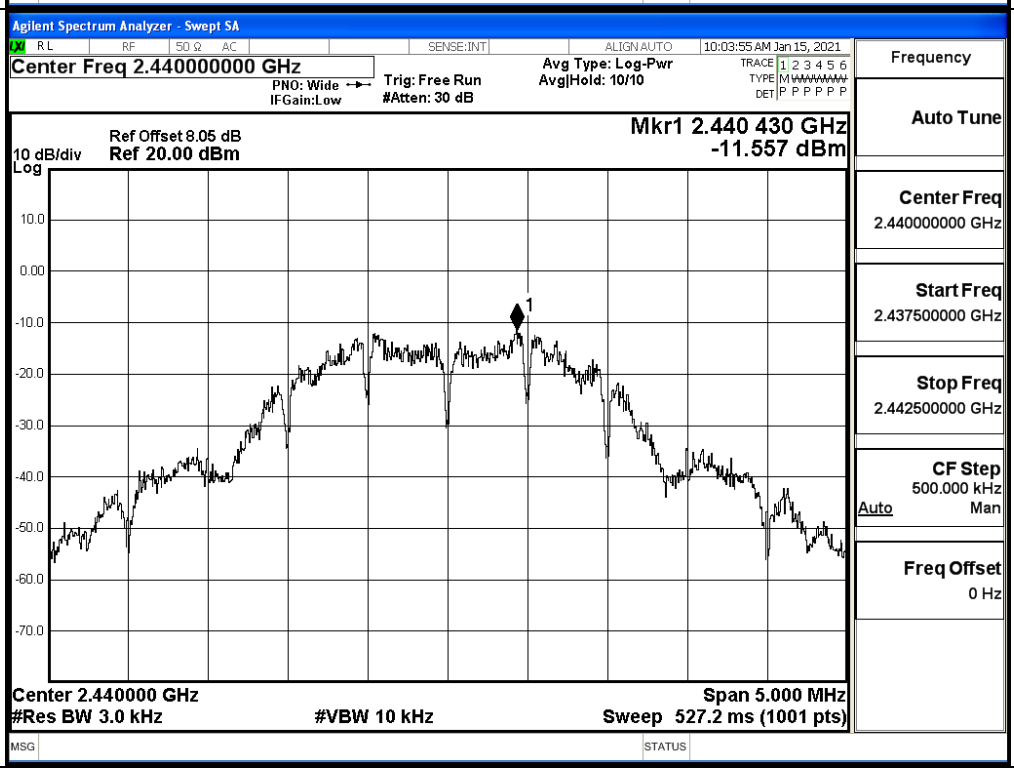
B.3 Maximum Power Spectral Density

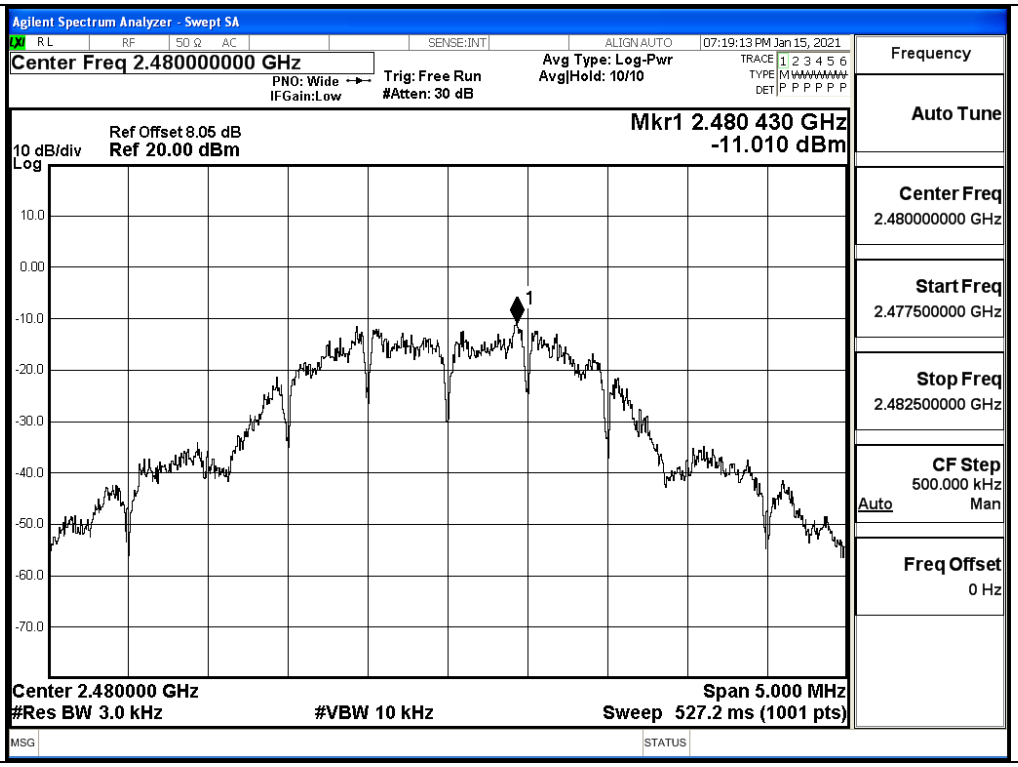
Mode	Channel	PSD [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
Zigbee	LCH	-11.844	8	PASS
Zigbee	MCH	-11.557	8	PASS
Zigbee	HCH	-11.010	8	PASS

Test Graphs

LCH

MCH



HCH		

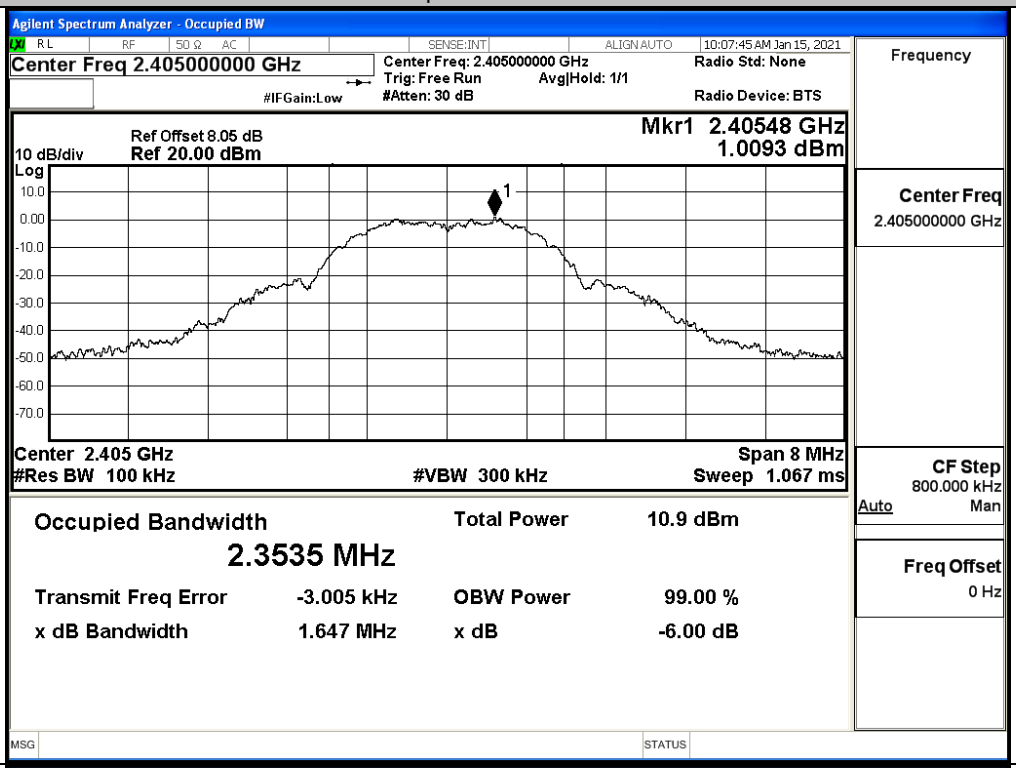
Agilent Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
07:19:13 PM Jan 15, 2021
Center Freq 2.480000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 10/10
TRACE 1 2 3 4 5 6
TYPE M
DET P P P P P P
Mkr1 2.480 430 GHz
-11.010 dBm
Ref Offset 8.05 dB
10 dB/div
Log
Ref 20.00 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 3.0 kHz
#VBW 10 kHz
Span 5.000 MHz
Sweep 527.2 ms (1001 pts)
MSG
STATUS
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

B.4 6dB Bandwidth

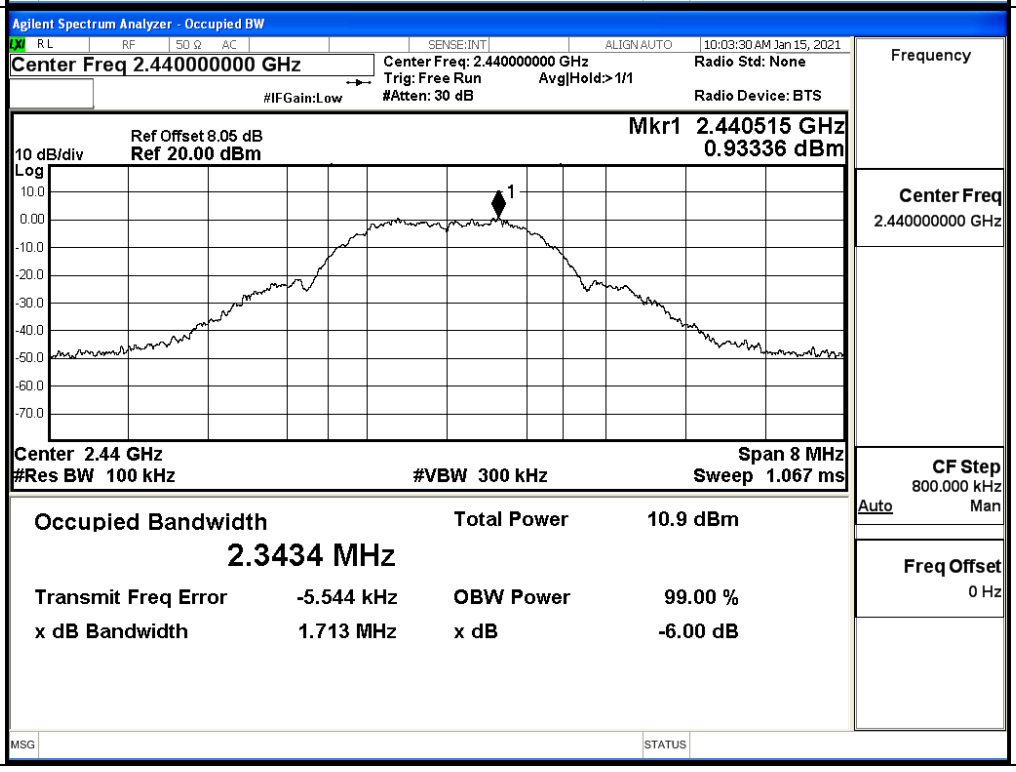
Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
Zigbee	LCH	1.647	⩾0.5	PASS
Zigbee	MCH	1.713	⩾0.5	PASS
Zigbee	HCH	1.776	⩾0.5	PASS

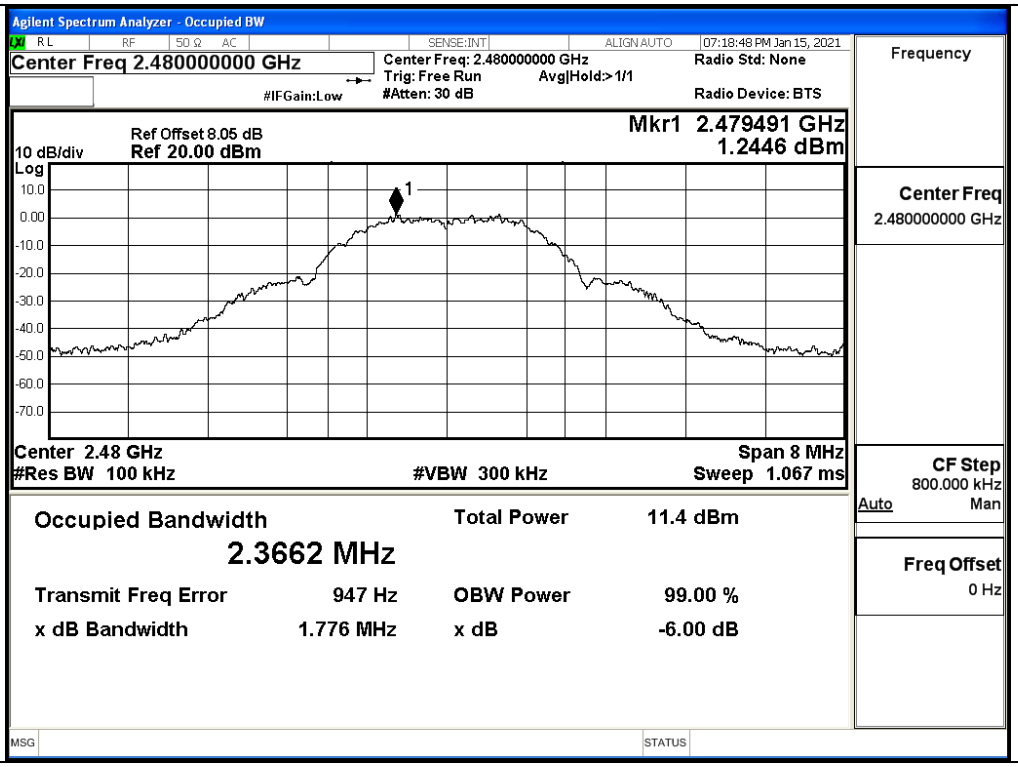
Test Graphs

LCH



MCH

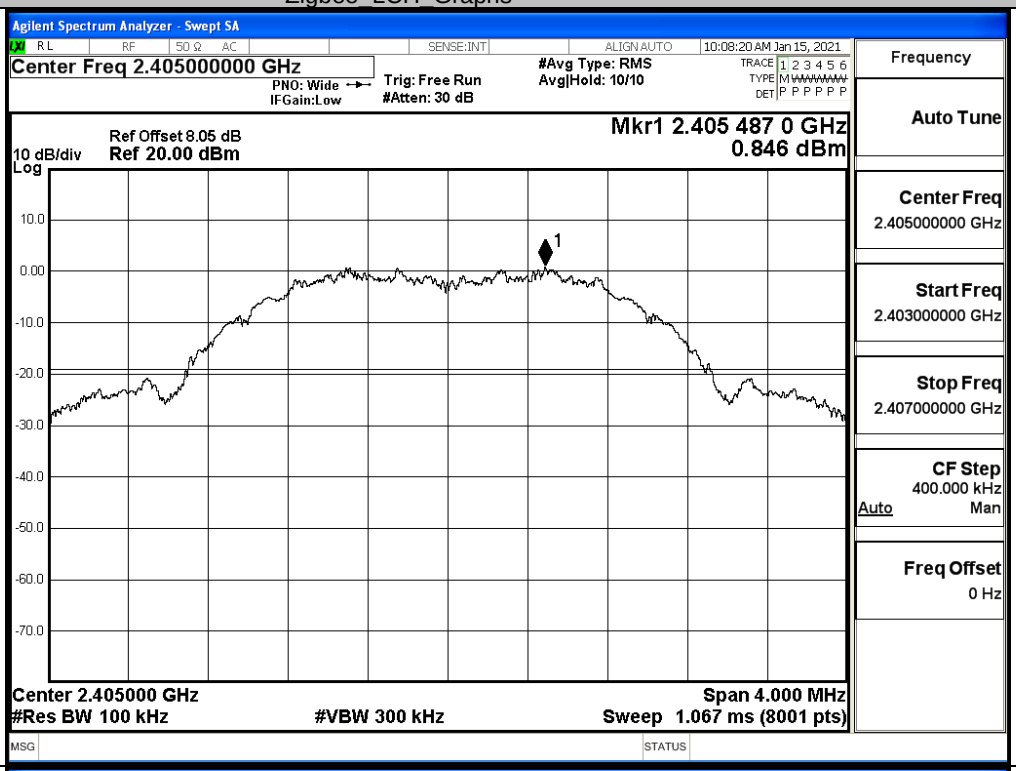
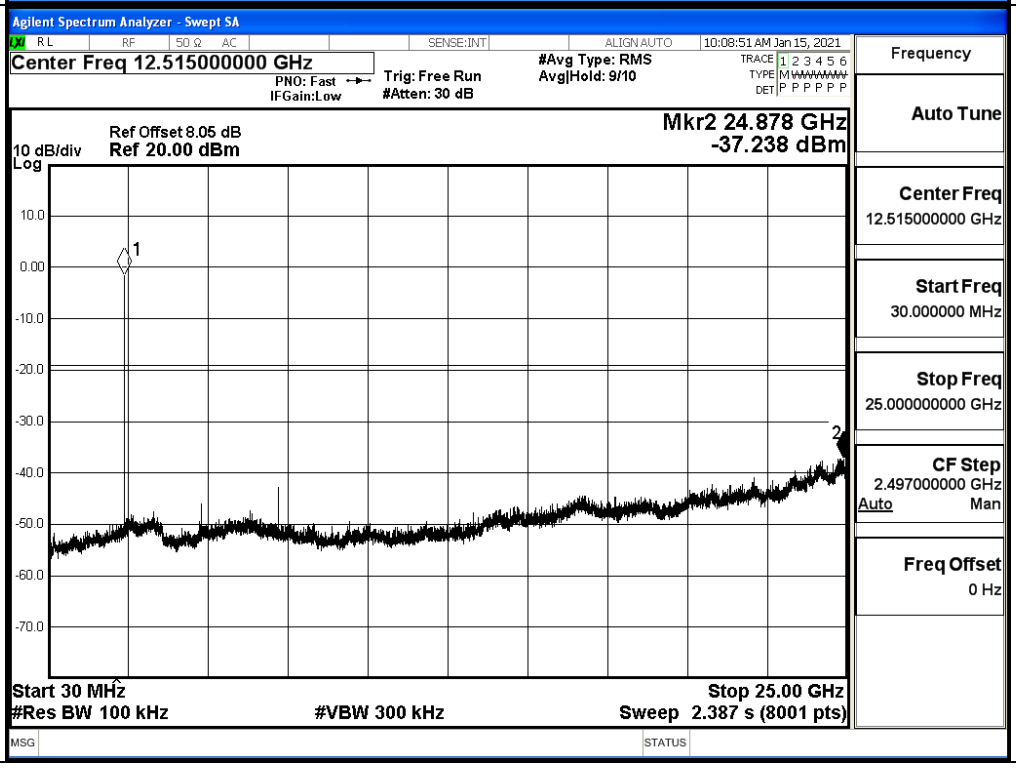


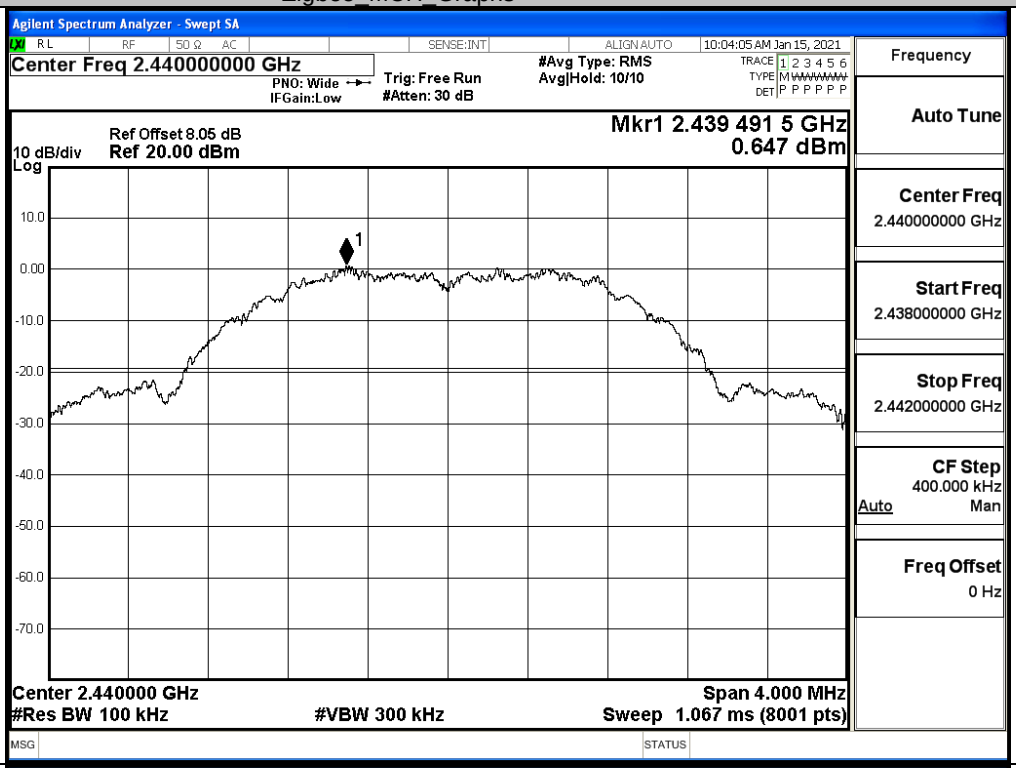
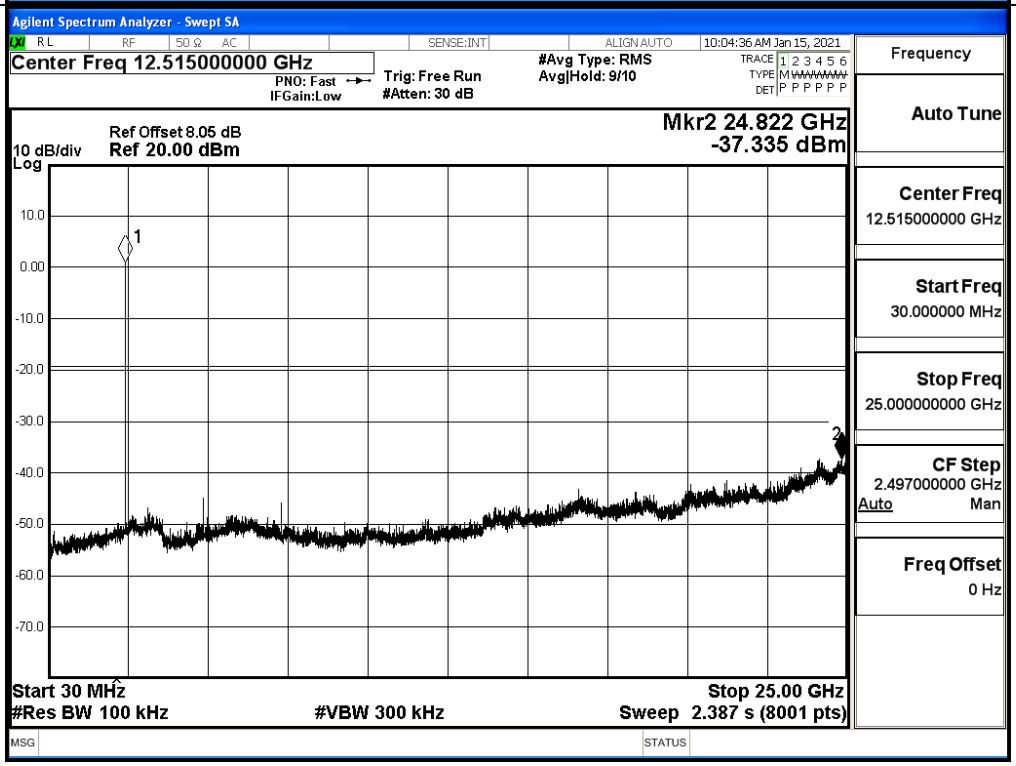
HCH		

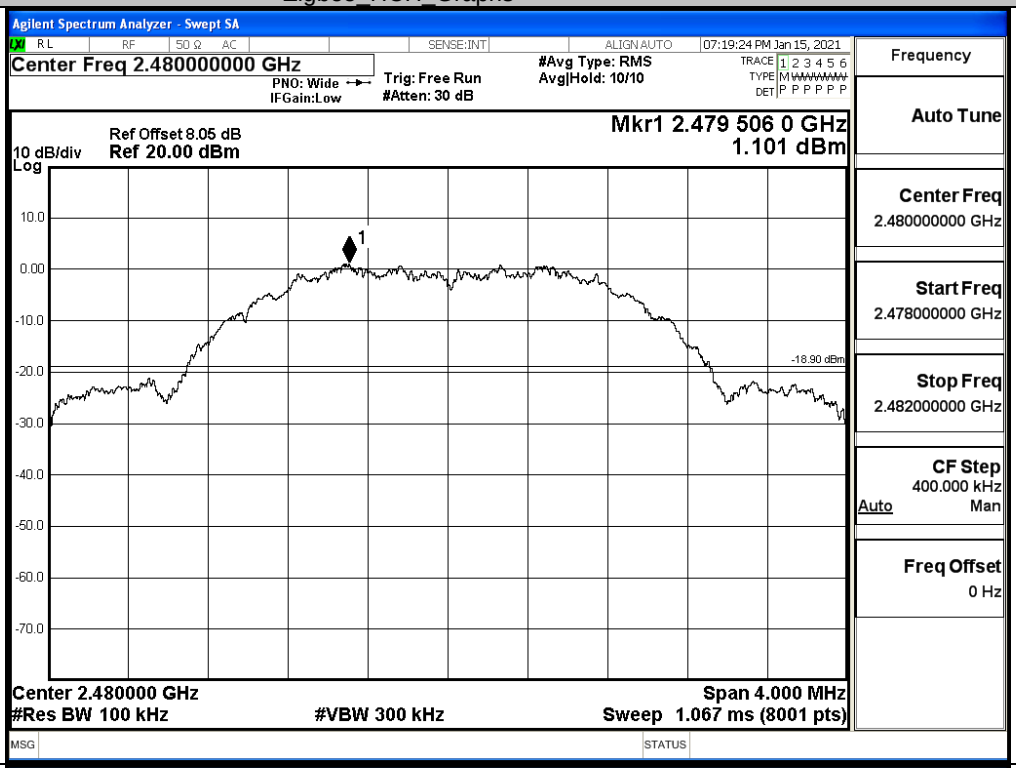
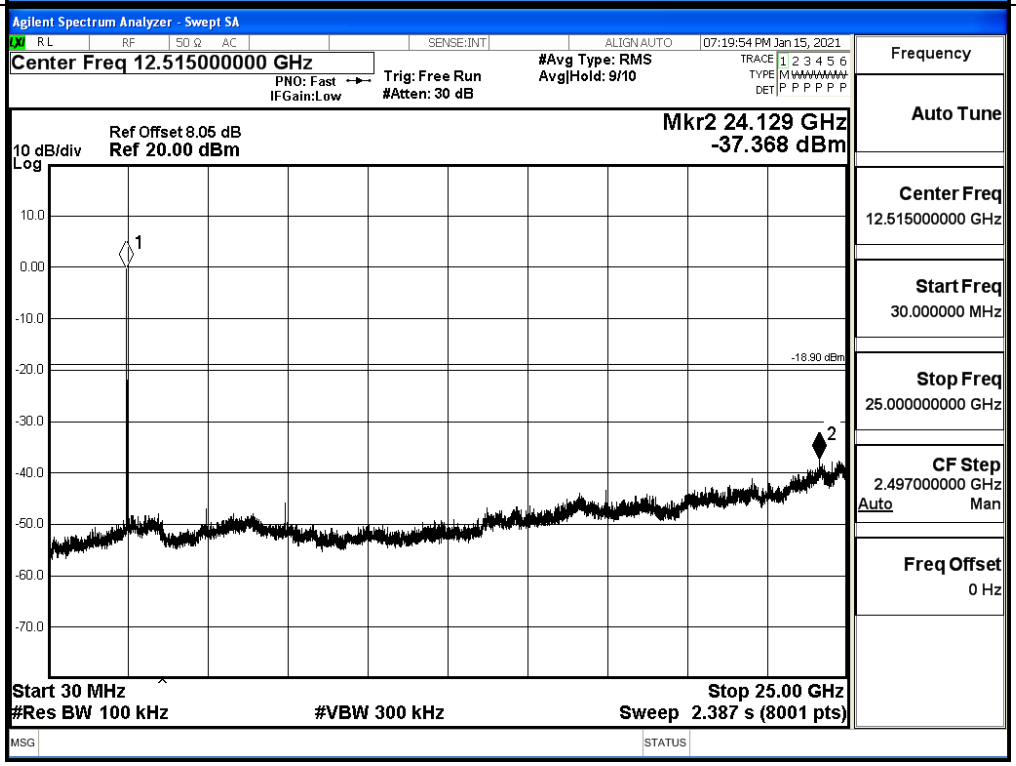
Agilent Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
07:18:48 PM Jan 15, 2021
Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold:>1/1
#IFGain:Low
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Frequency
Mkr1 2.479491 GHz
1.2446 dBm
Ref Offset 8.05 dB
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
1
Center Freq
2.480000000 GHz
Center 2.48 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 8 MHz
Sweep 1.067 ms
CF Step
800.000 kHz
Auto
Man
Occupied Bandwidth
2.3662 MHz
Total Power
11.4 dBm
Transmit Freq Error
947 Hz
OBW Power
99.00 %
x dB Bandwidth
1.776 MHz
x dB
-6.00 dB
Freq Offset
0 Hz
MSG
STATUS

B.5 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
Zigbee	LCH	0.846	-37.238	-19.15	PASS
Zigbee	MCH	0.647	-37.335	-19.35	PASS
Zigbee	HCH	1.101	-37.368	-18.90	PASS

Zigbee_LCH_Graphs		
Pref/Zigbee/LCH		
Puw/Zigbee/LCH		

Zigbee_MCH_Graphs	
Pref/Zigbee/MCH	
Puw/Zigbee/MCH	

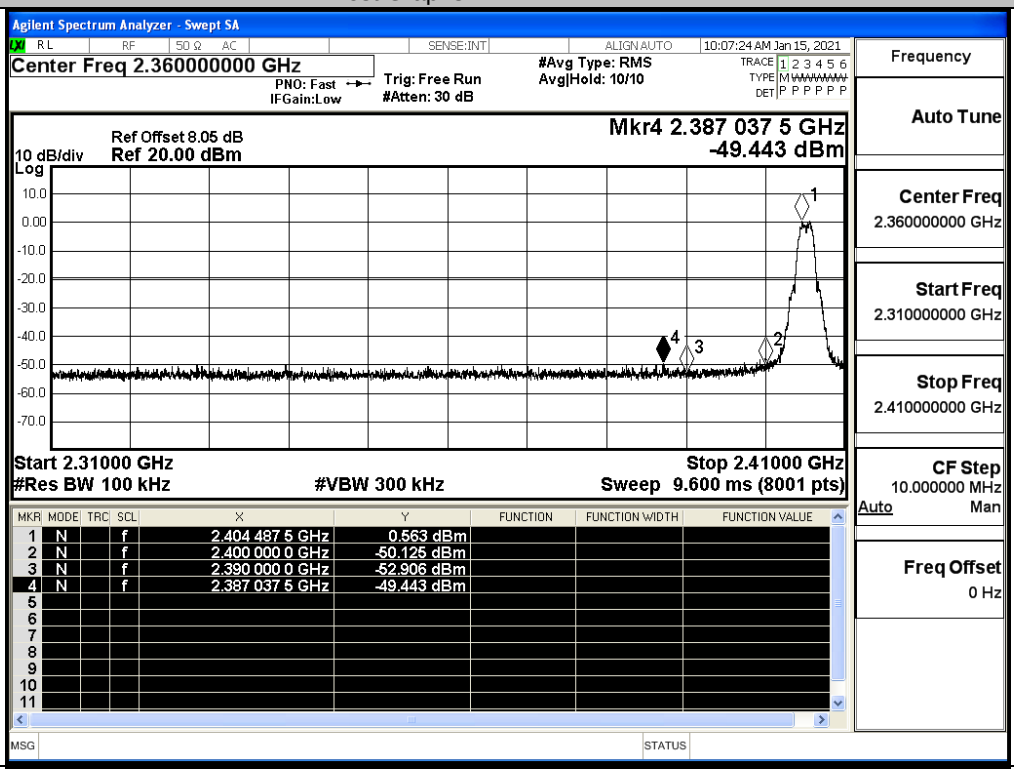
Zigbee_HCH_Graphs	
Pref/Zigbee/HCH	
Puw/Zigbee/HCH	

B.6 Band-edge for RF Conducted Emissions

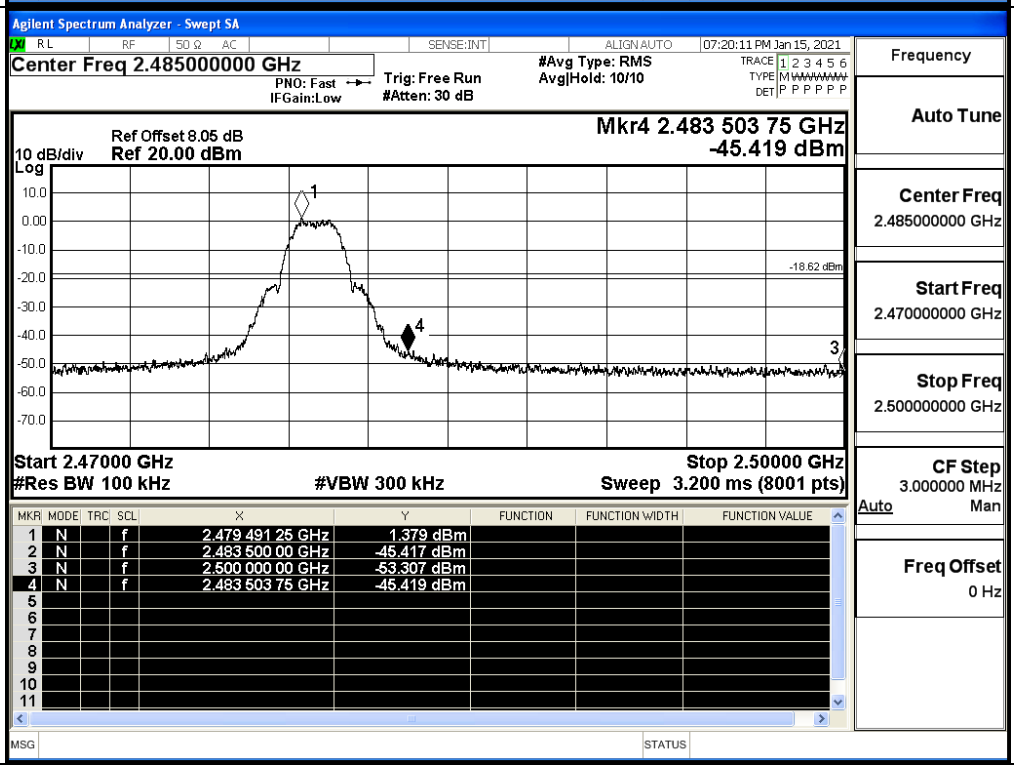
Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
Zigbee	LCH	0.563	-49.443	-19.27	PASS
Zigbee	HCH	1.379	-45.419	-18.62	PASS

Test Graphs

LCH



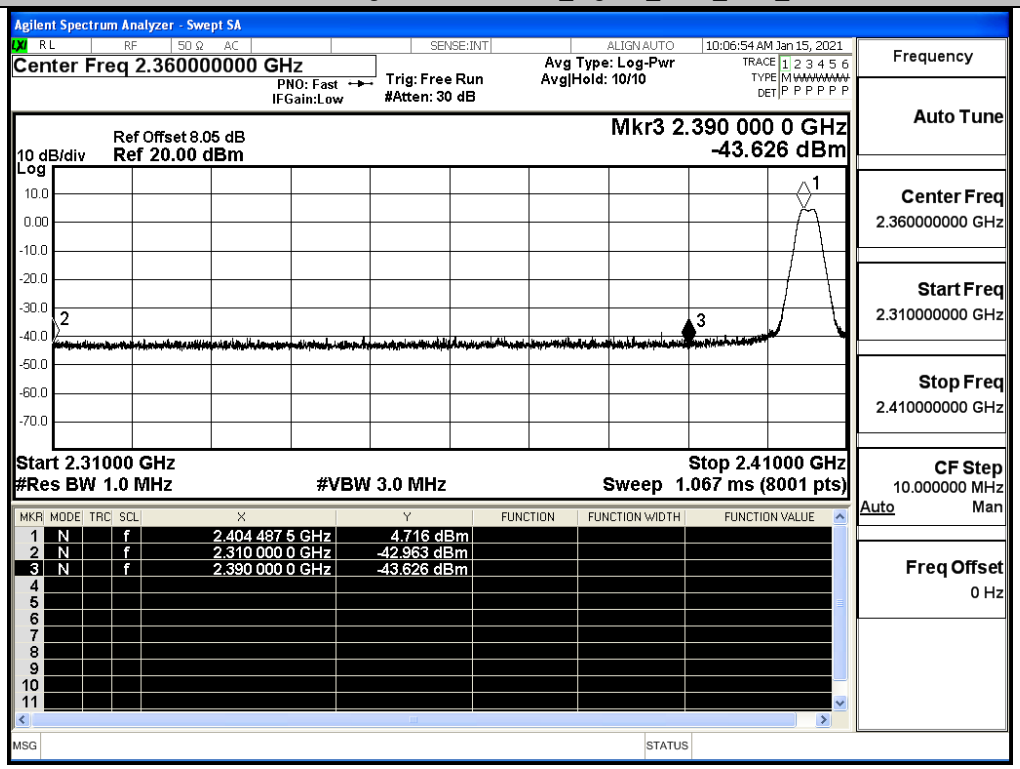
HCH



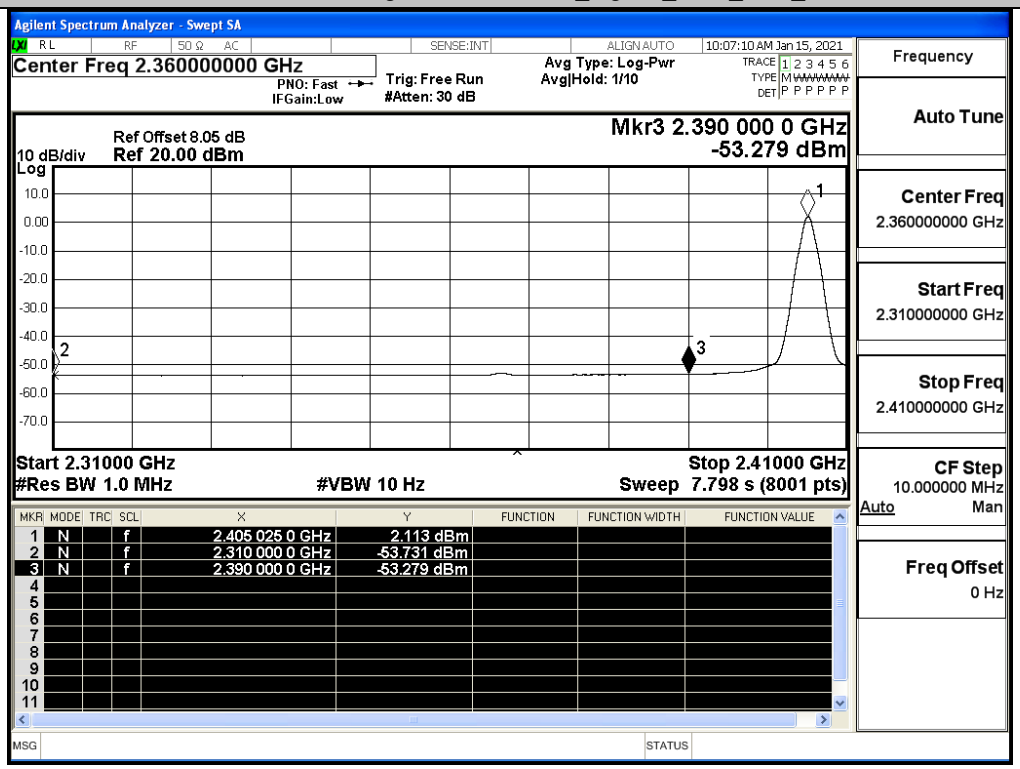
B.7 Restrict-band band-edge measurements

Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdi
Zigbee	2405	Ant1	2310.0	-42.96	2.0	0	54.30	PEAK	74	PASS
		Ant1	2310.0	-53.73	2.0	0	43.53	AV	54	PASS
		Ant1	2390.0	-43.63	2.0	0	53.63	PEAK	74	PASS
		Ant1	2390.0	-53.28	2.0	0	43.98	AV	54	PASS
	2480	Ant1	2483.5	-34.87	2.0	0	62.39	PEAK	74	PASS
		Ant1	2483.5	-45.82	2.0	0	51.44	AV	54	PASS
		Ant1	2500.0	-43.68	2.0	0	53.58	PEAK	74	PASS
		Ant1	2500.0	-52.89	2.0	0	44.37	AV	54	PASS

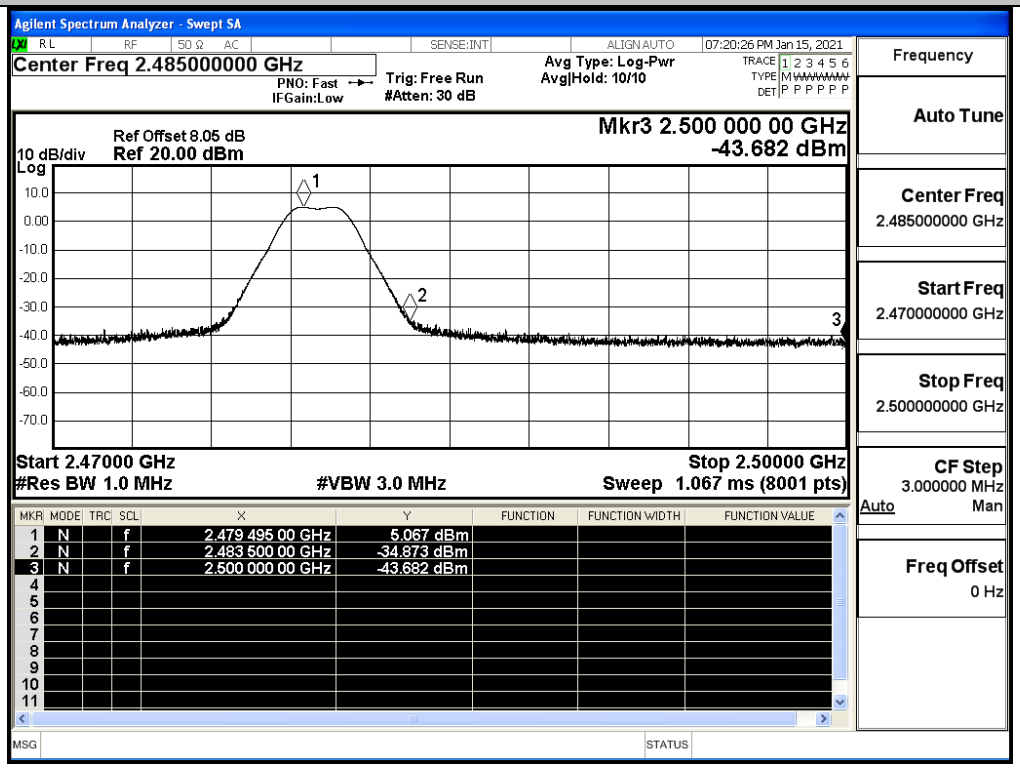
Restrict-band band-edge measurements_Zigbee_2405_Ant1_PEAK



Restrict-band band-edge measurements_Zigbee_2405_Ant1_AV



Restrict-band band-edge measurements_Zigbee_2480_Ant1_PEAK



Restrict-band band-edge measurements_Zigbee_2480_Ant1_AV