

## Appendix A

### RF Test Data for ZigBee (Conducted Measurement)

Product Name: Smart Gateway

Trade Mark: HEIMAN

Test Model: HS1GW-E-2

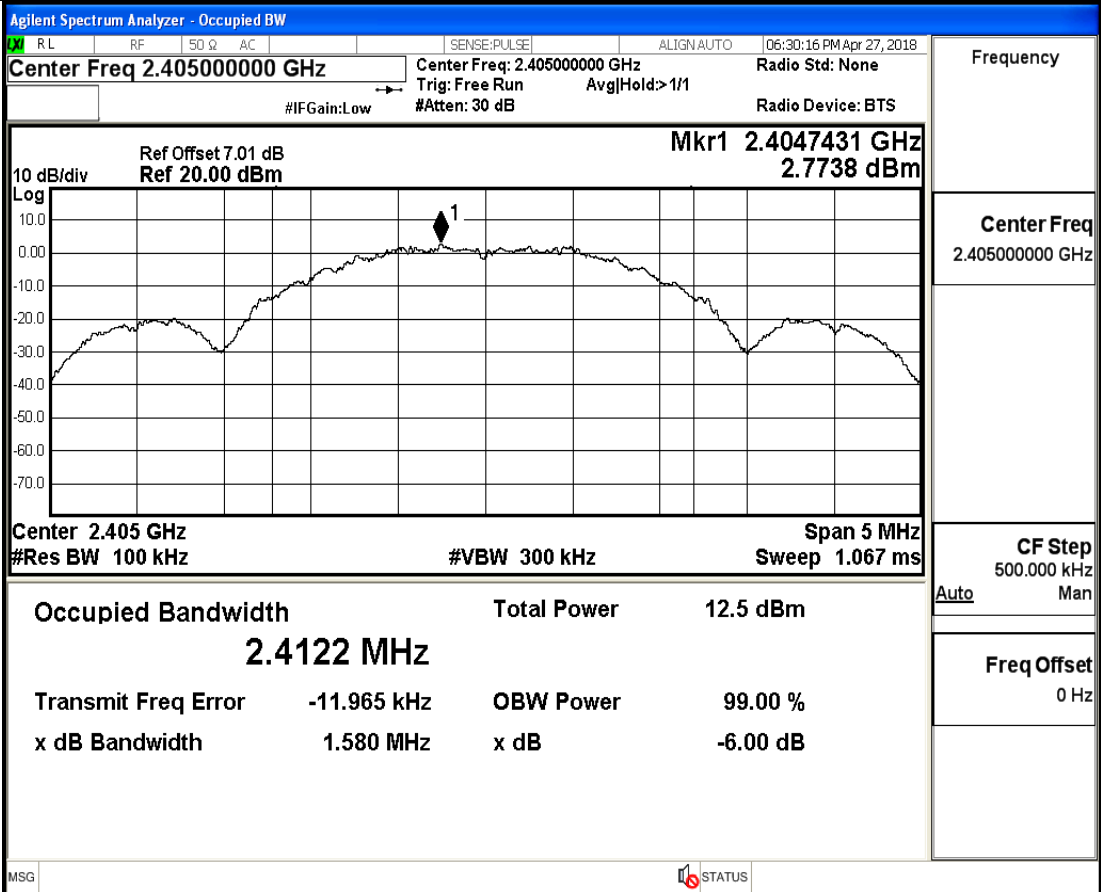
#### Environmental Conditions

Temperature:	22.6 ° C
Relative Humidity:	51.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Tom.Liu
Supervised by:	Jayden.Zhuo

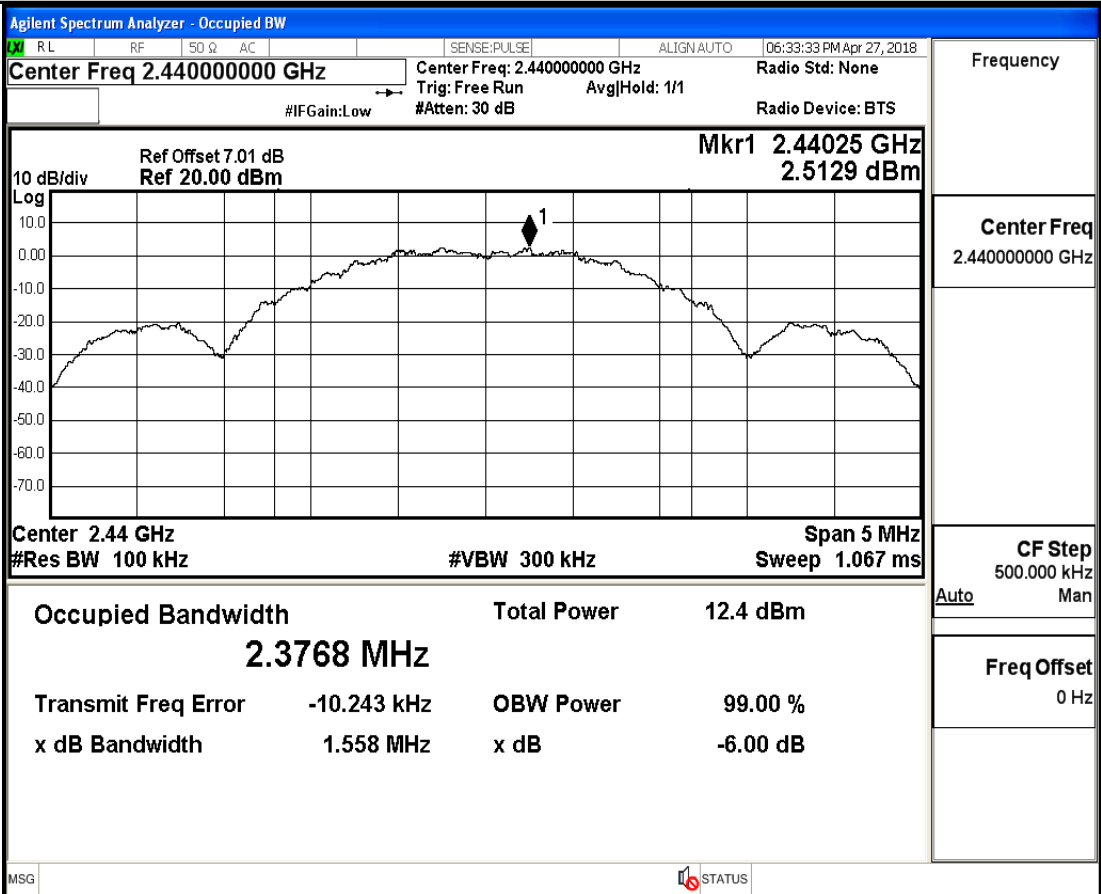
#### 1. 6dB Bandwidth

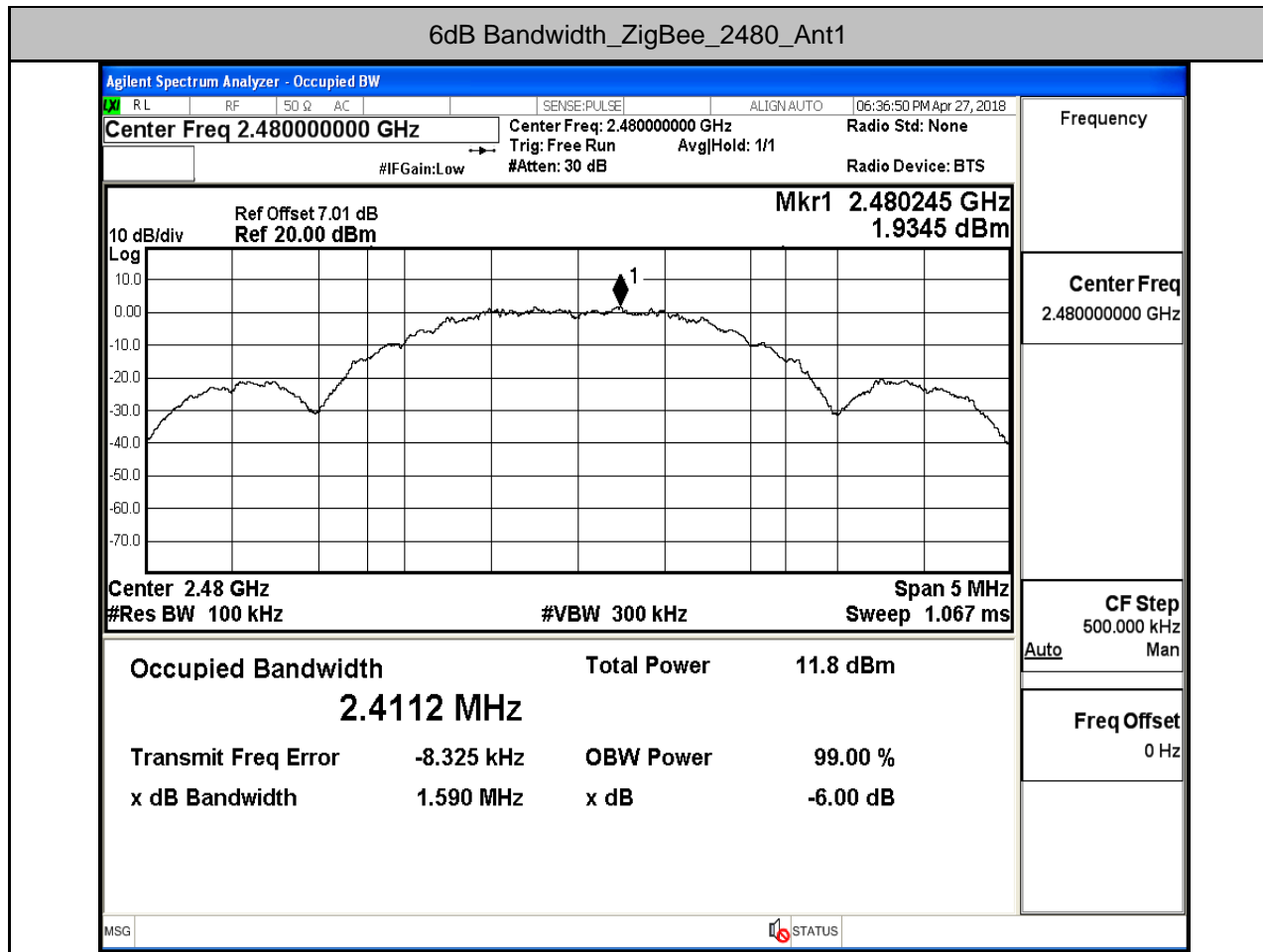
Test Mode	Test Channel	Ant	EBW[MHz]	Limit	Verdict
ZigBee	2405	Ant1	1.580	0.5	PASS
ZigBee	2440	Ant1	1.558	0.5	PASS
ZigBee	2480	Ant1	1.590	0.5	PASS

6dB Bandwidth\_ZigBee\_2405\_Ant1



6dB Bandwidth\_ZigBee\_2440\_Ant1

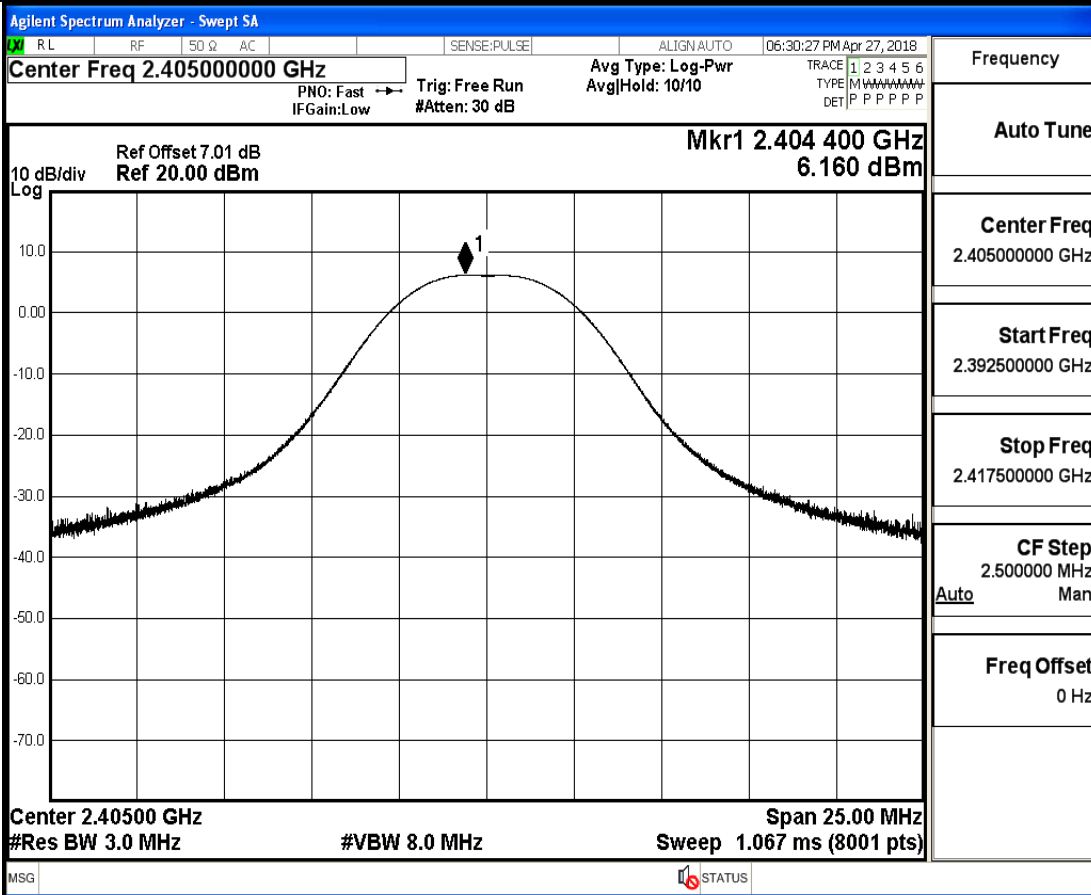




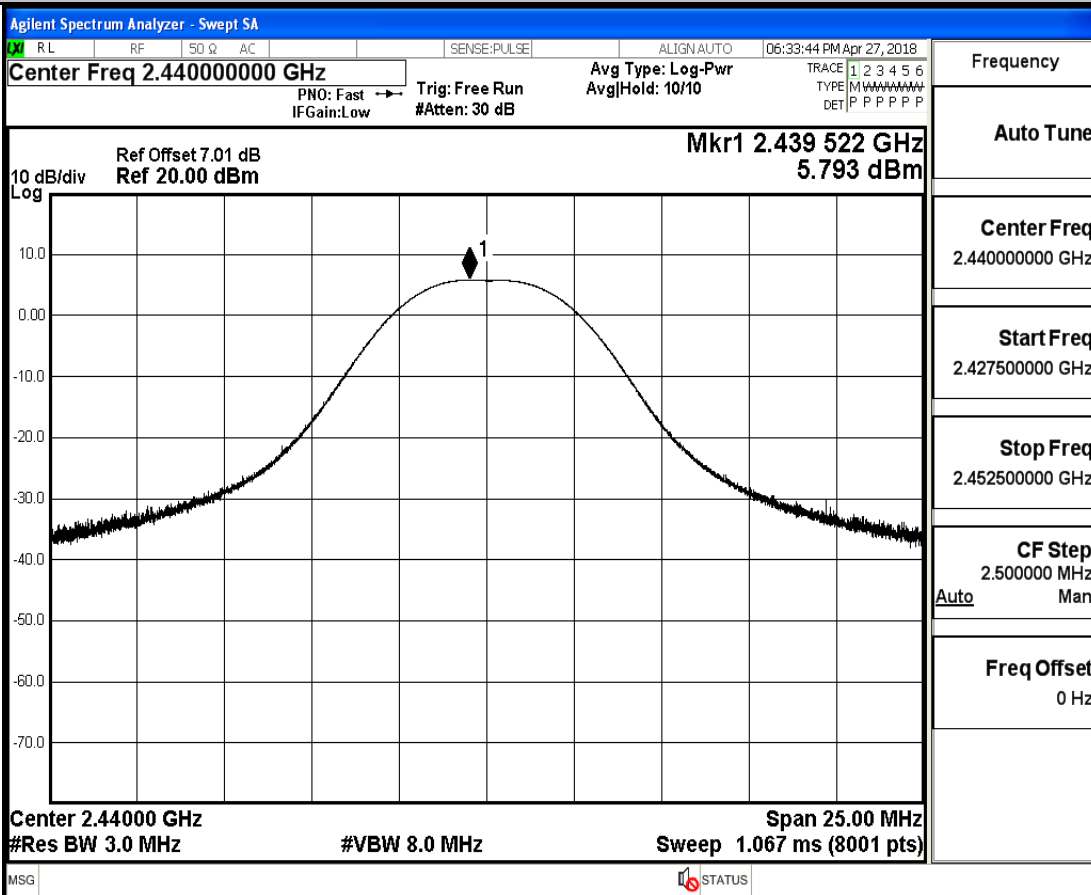
**2. Maximum peak conducted output power**

Test Mode	Test Channel	Ant	Power[dBm]	Limit[dBm]	Verdict
ZigBee	2405	Ant1	6.160	30	PASS
ZigBee	2440	Ant1	5.793	30	PASS
ZigBee	2480	Ant1	5.327	30	PASS

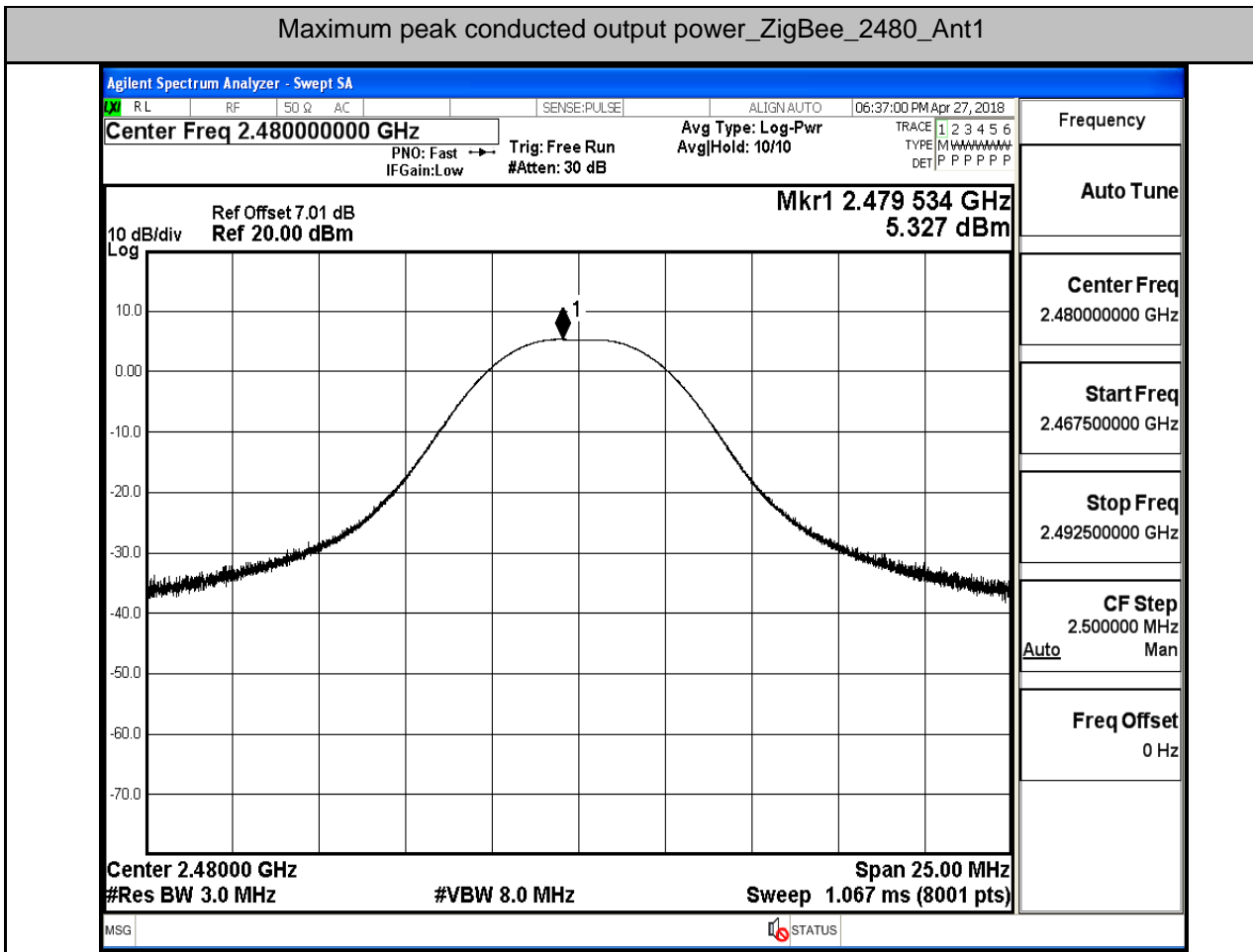
Maximum peak conducted output power\_ZigBee\_2405\_Ant1



Maximum peak conducted output power\_ZigBee\_2440\_Ant1



Maximum peak conducted output power\_ZigBee\_2480\_Ant1



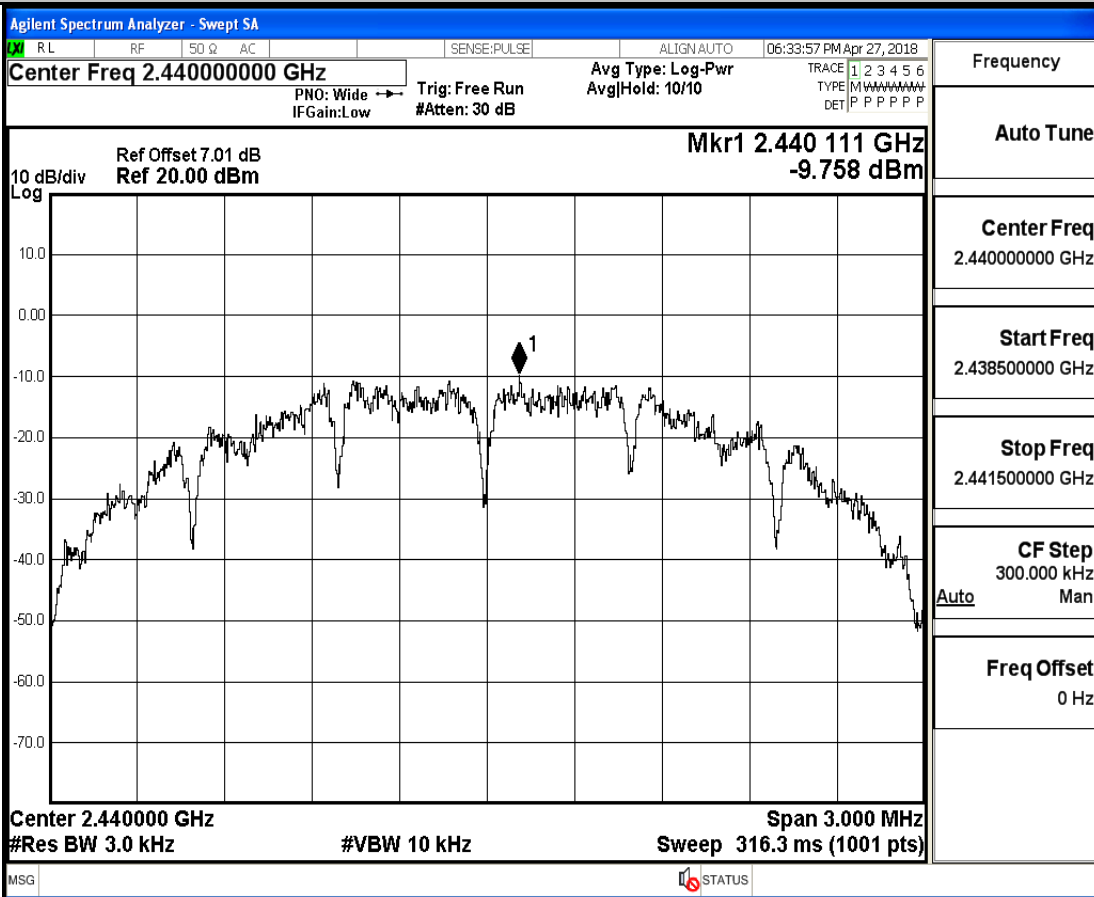
**3. Maximum Peak power spectral density**

Test Mode	Test Channel	Ant	PSD[dBm/3KHz]	Limit[dBm/3KHz]	Verdict
ZigBee	2405	Ant1	-9.695	8.00	PASS
ZigBee	2440	Ant1	-9.758	8.00	PASS
ZigBee	2480	Ant1	-9.828	8.00	PASS

Maximum Peak power spectral density\_ZigBee\_2405\_Ant1

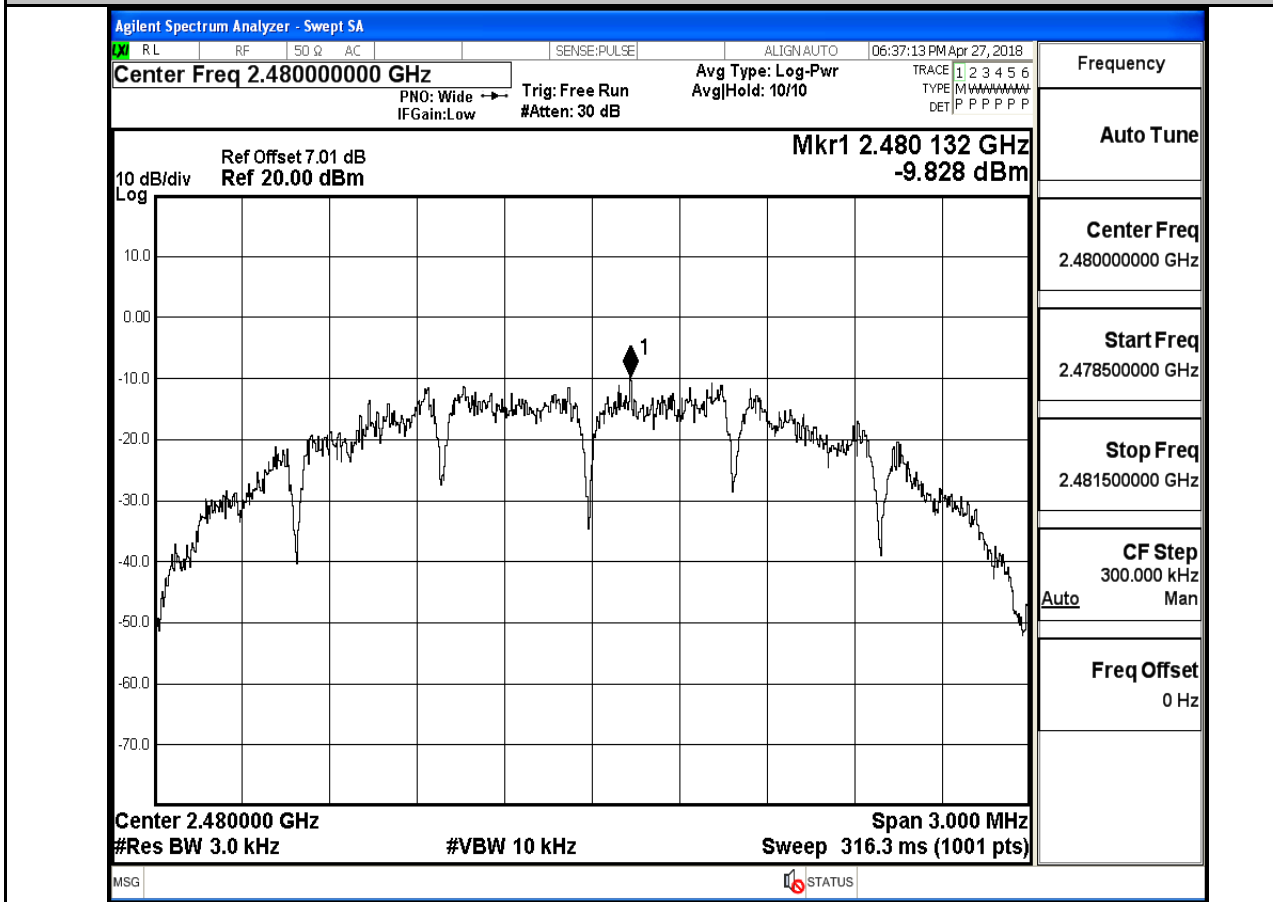


Maximum Peak power spectral density\_ZigBee\_2440\_Ant1





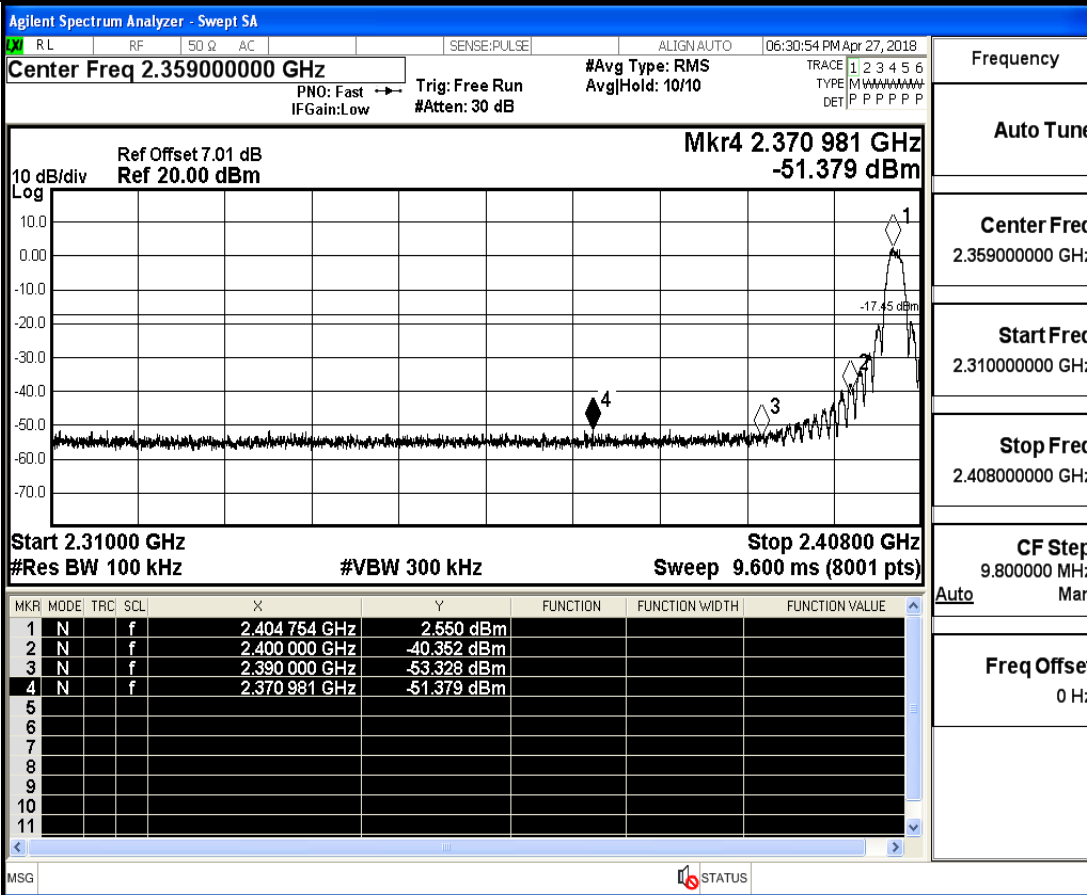
### Maximum Peak power spectral density\_ZigBee\_2480\_Ant1



**4. Band-edge for RF Conducted Emissions**

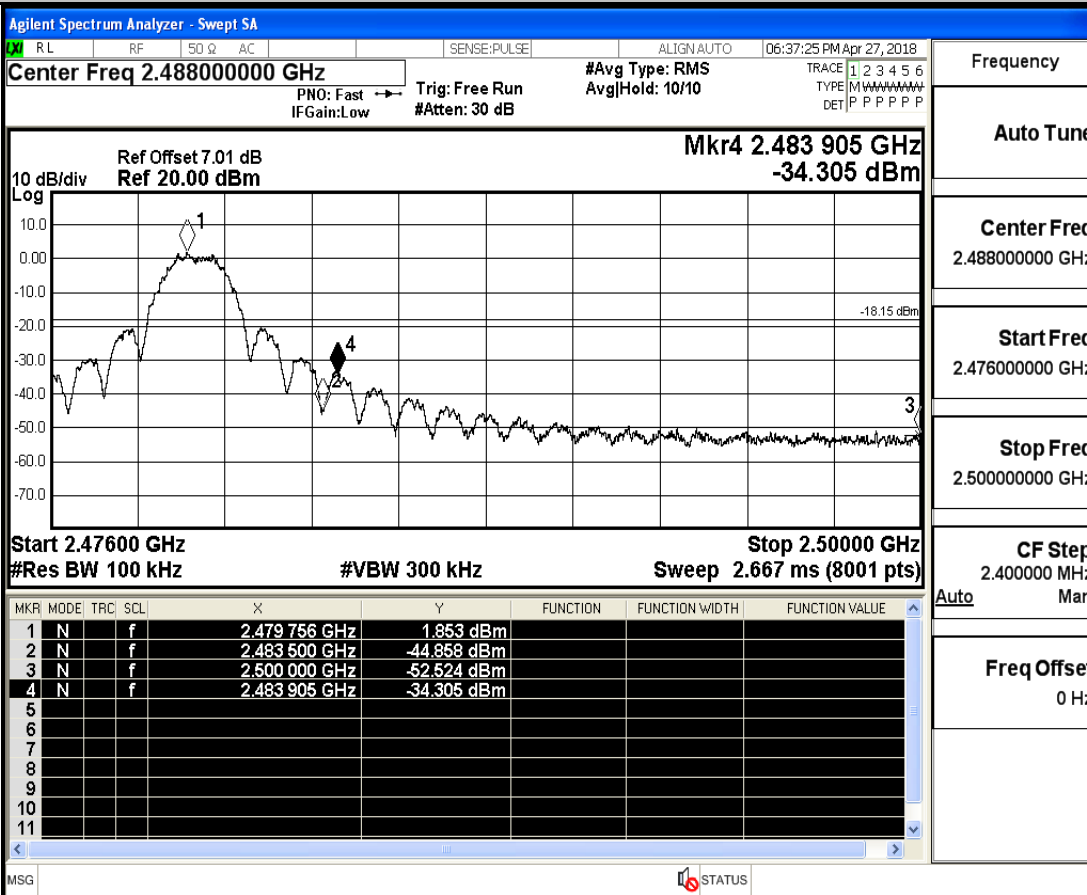
Test Mode	Test Channel	Ant	Carrier Power[dBm]	Max. Spurious Level [dBm]	Limit [dBm]	Verdict
ZigBee	2402	Ant1	2.550	-51.379	-17.45	PASS
ZigBee	2480	Ant1	1.853	-34.305	-18.15	PASS

Band-edge for RF Conducted Emissions\_ZigBee\_2402\_Ant1



Frequency
Auto Tune
Center Freq 2.359000000 GHz
Start Freq 2.310000000 GHz
Stop Freq 2.408000000 GHz
CF Step 9.800000 MHz
Freq Offset 0 Hz

Band-edge for RF Conducted Emissions\_ZigBee\_2480\_Ant1

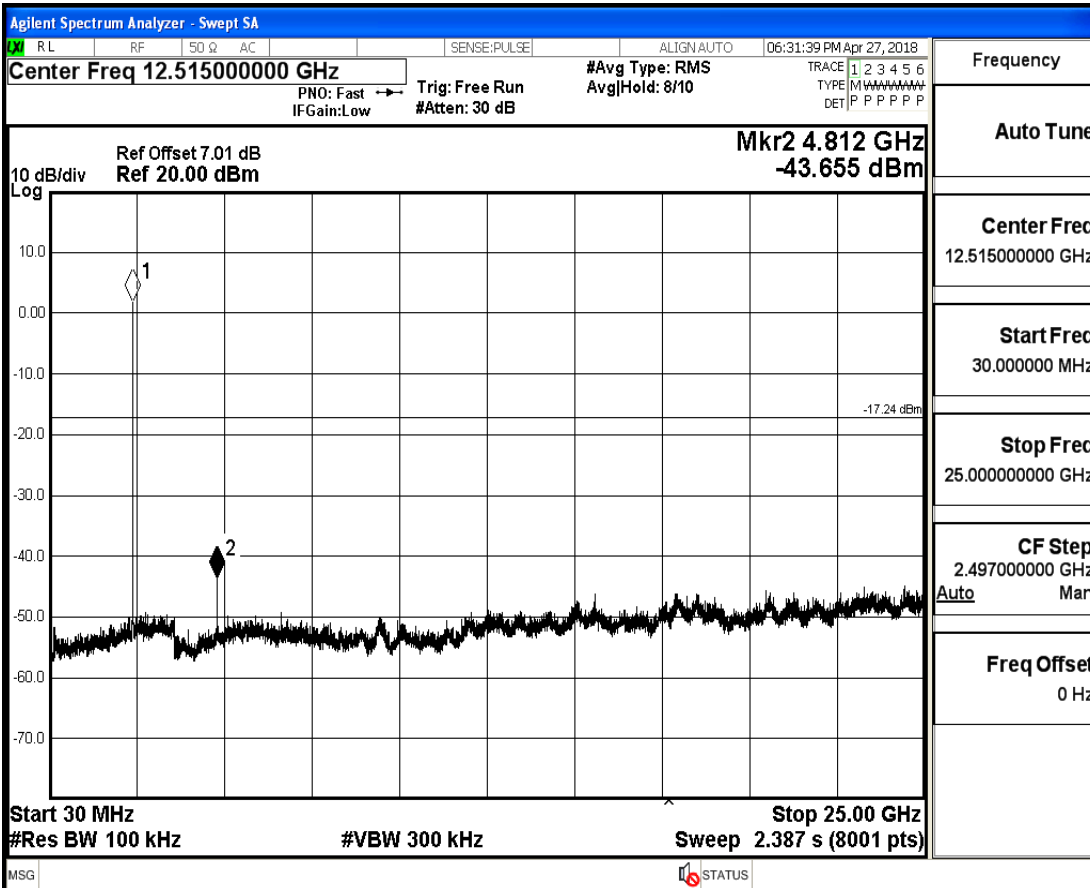
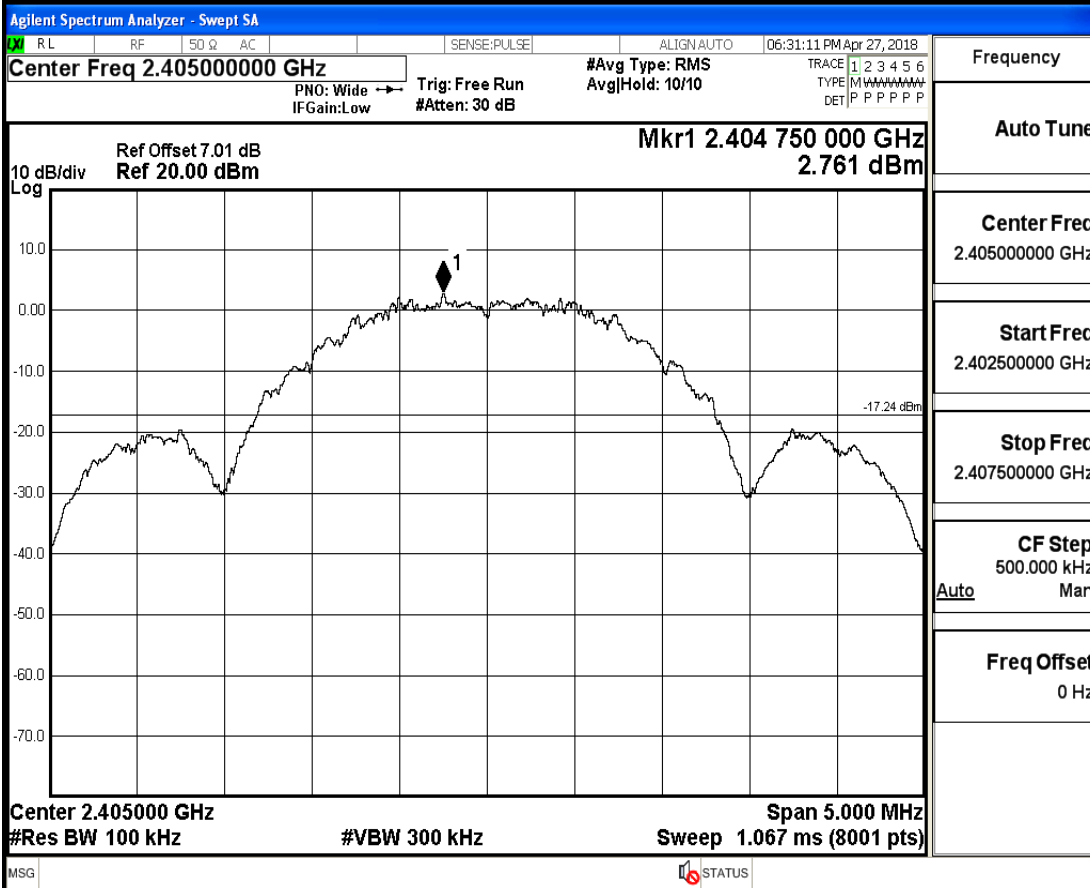


Frequency
Auto Tune
Center Freq 2.488000000 GHz
Start Freq 2.476000000 GHz
Stop Freq 2.500000000 GHz
CF Step 2.400000 MHz
Freq Offset 0 Hz

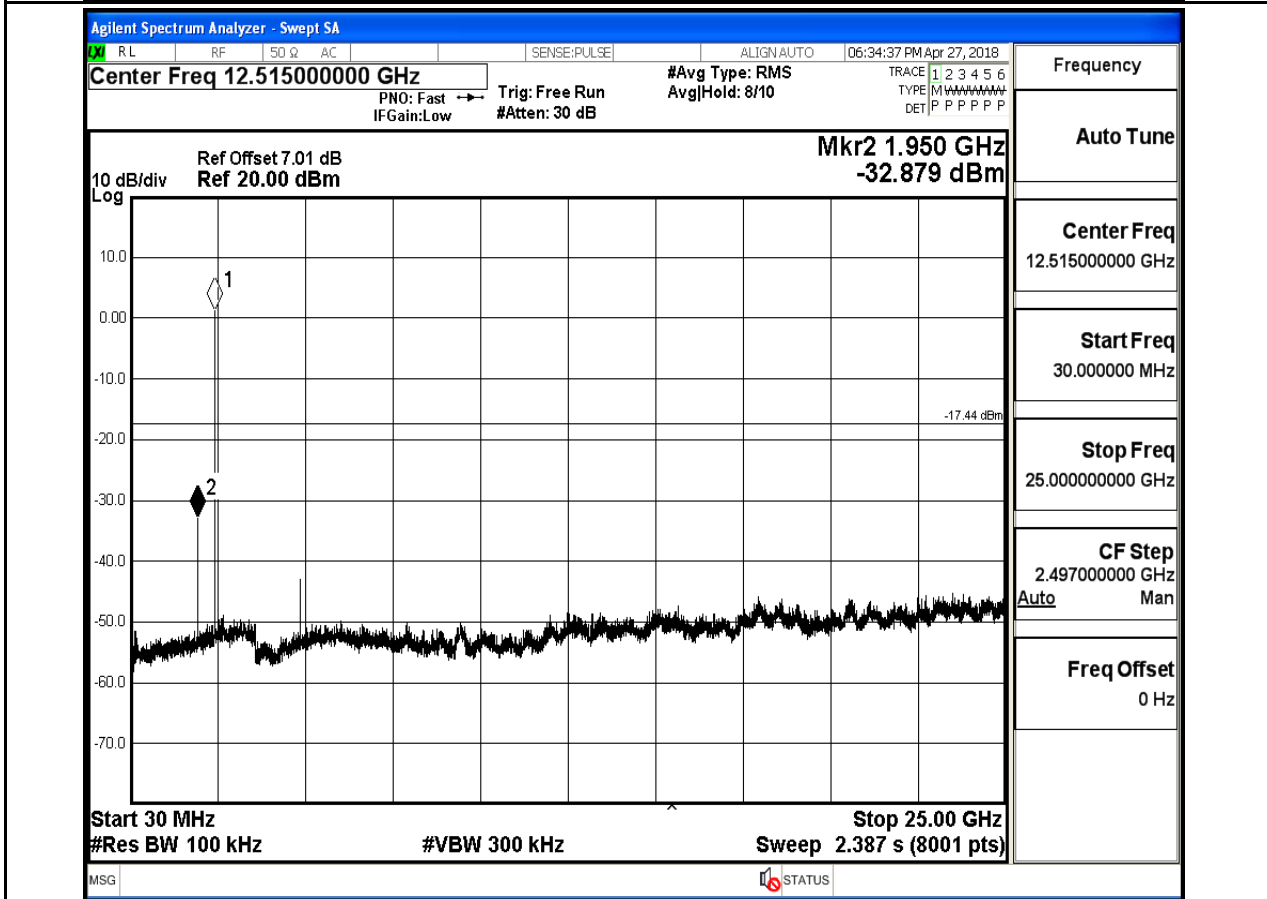
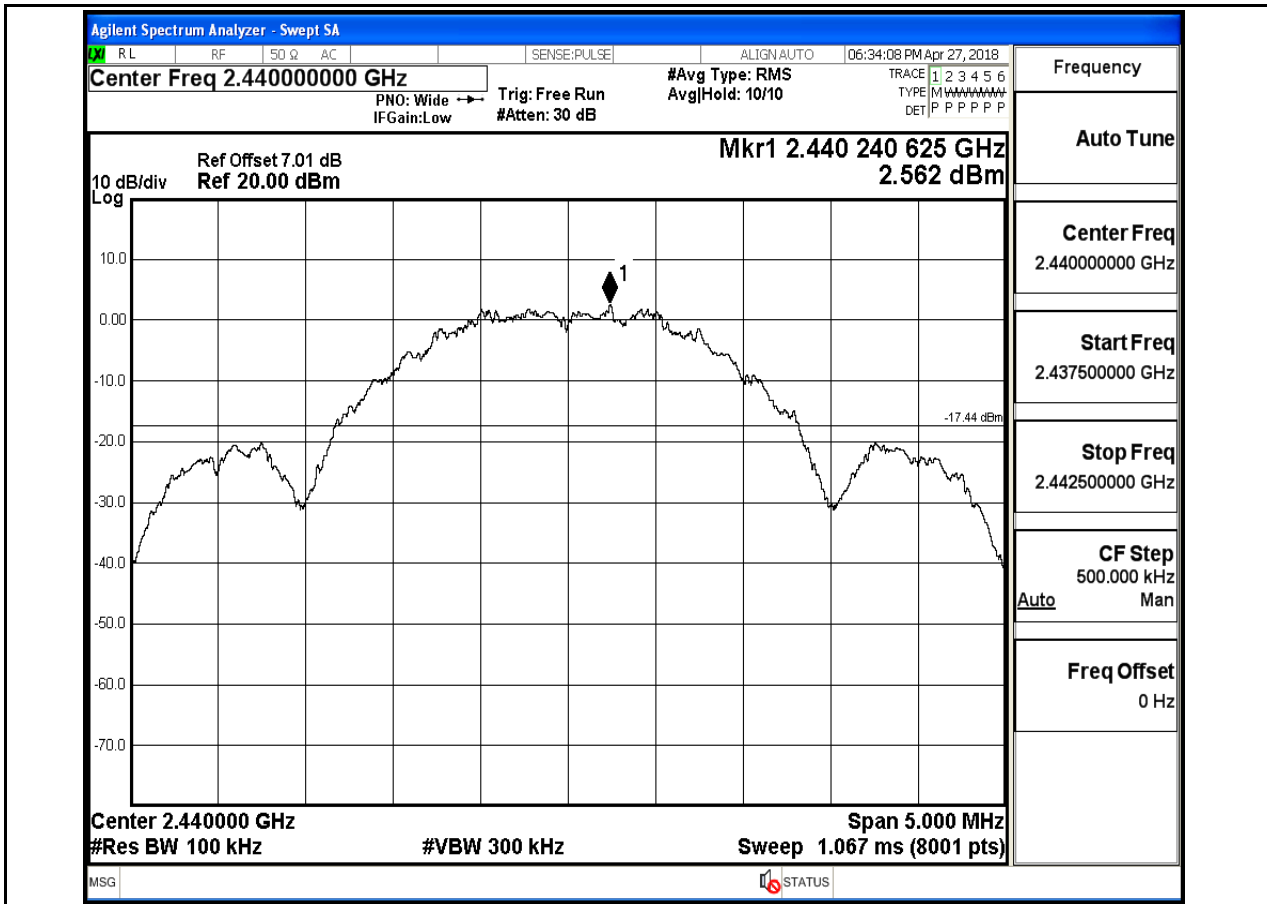
**5.RF Conducted Spurious Emissions**

Test Mode	Test Channel	Ant	StartFre [MHz]	StopFre [MHz]	RBW [kHz]	VBW [kHz]	Pref[dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
ZigBee	2405	Ant1	30	25000	100	300	2.761	-43.655	<-17.239	PASS
ZigBee	2440	Ant1	30	25000	100	300	2.562	-32.879	<-17.438	PASS
ZigBee	2480	Ant1	30	25000	100	300	1.088	-42.403	<-18.912	PASS

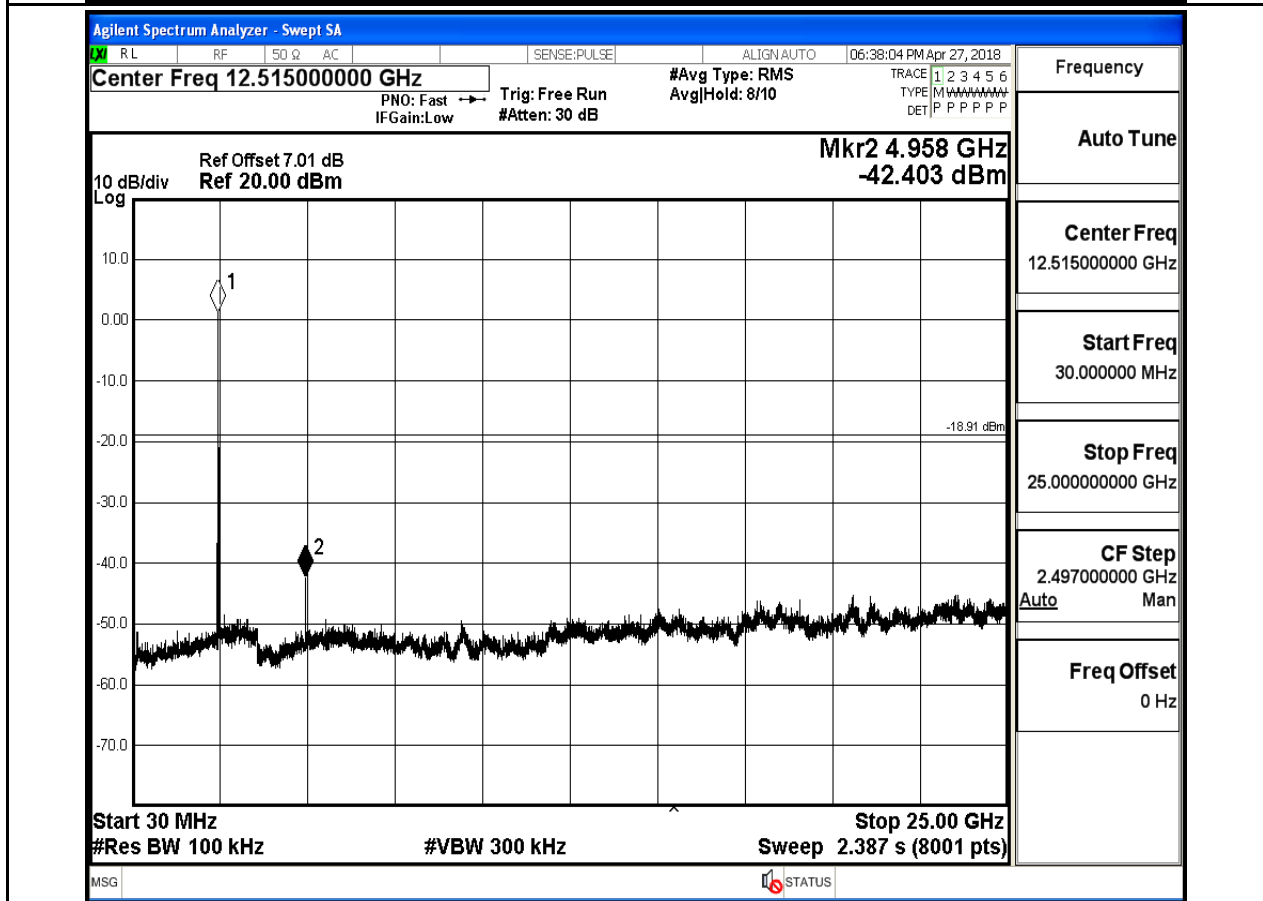
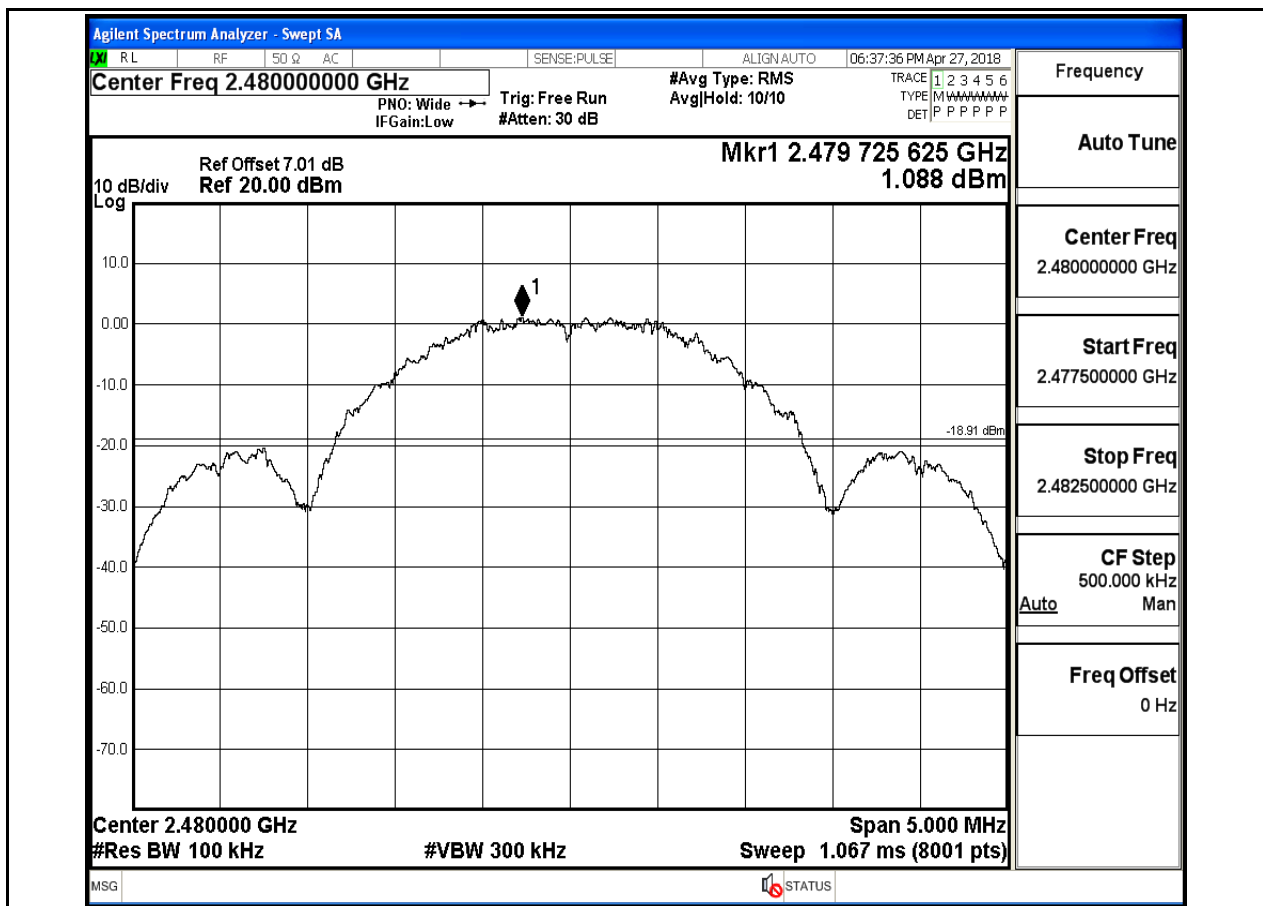
RF Conducted Spurious Emissions\_ZigBee\_2405\_Ant1



RF Conducted Spurious Emissions\_ZigBee\_2440\_Ant1



RF Conducted Spurious Emissions\_ZigBee\_2480\_Ant1

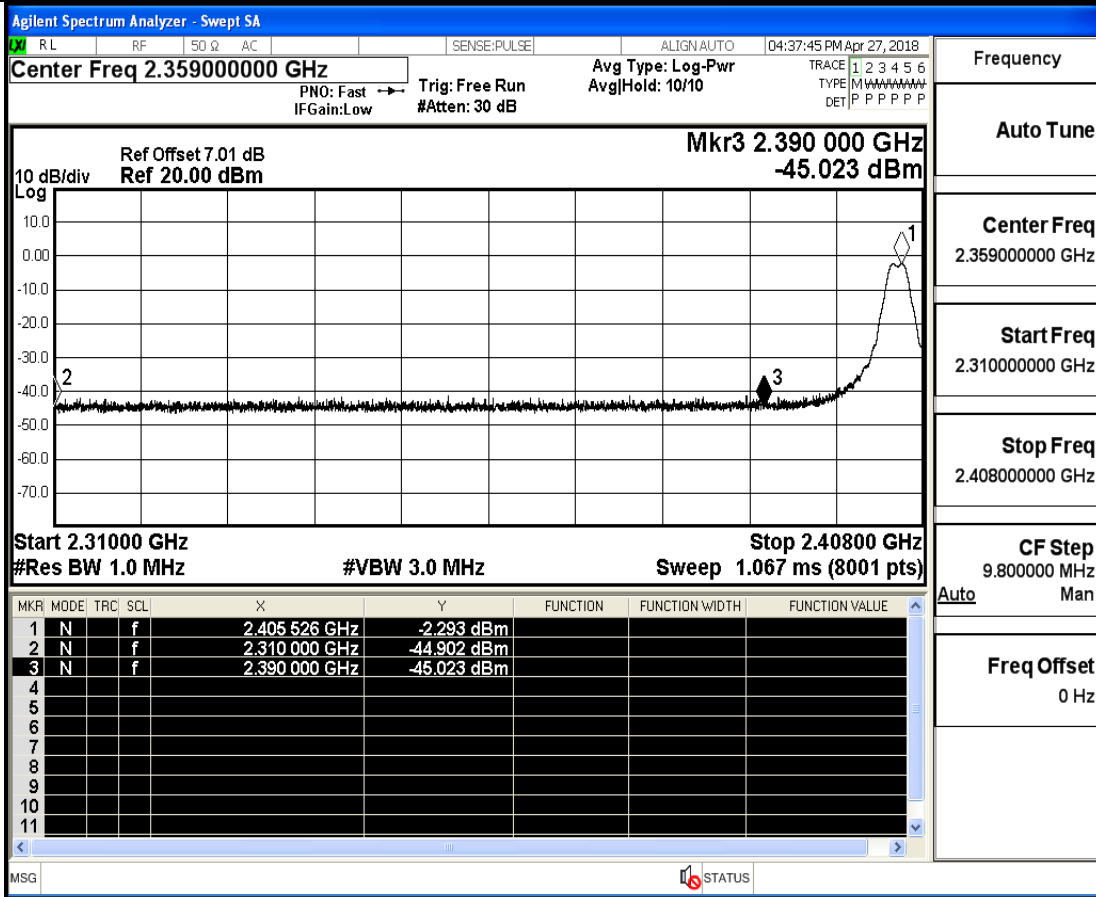


**6.Restrict-band band-edge measurements**

Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
ZigBee	2402	Ant1	2310.0	-44.90	2.0	0	52.33	PEAK	74	PASS
ZigBee	2402	Ant1	2310.0	-55.11	2.0	0	42.12	AV	54	PASS
ZigBee	2402	Ant1	2390.0	-45.02	2.0	0	52.21	PEAK	74	PASS
ZigBee	2402	Ant1	2390.0	-54.73	2.0	0	42.50	AV	54	PASS
ZigBee	2480	Ant1	2483.5	-31.67	2.0	0	65.56	PEAK	74	PASS
ZigBee	2480	Ant1	2483.5	-42.39	2.0	0	54.84	AV	54	PASS
ZigBee	2480	Ant1	2500.0	-44.05	2.0	0	53.18	PEAK	74	PASS
ZigBee	2480	Ant1	2500.0	-54.47	2.0	0	42.76	AV	54	PASS

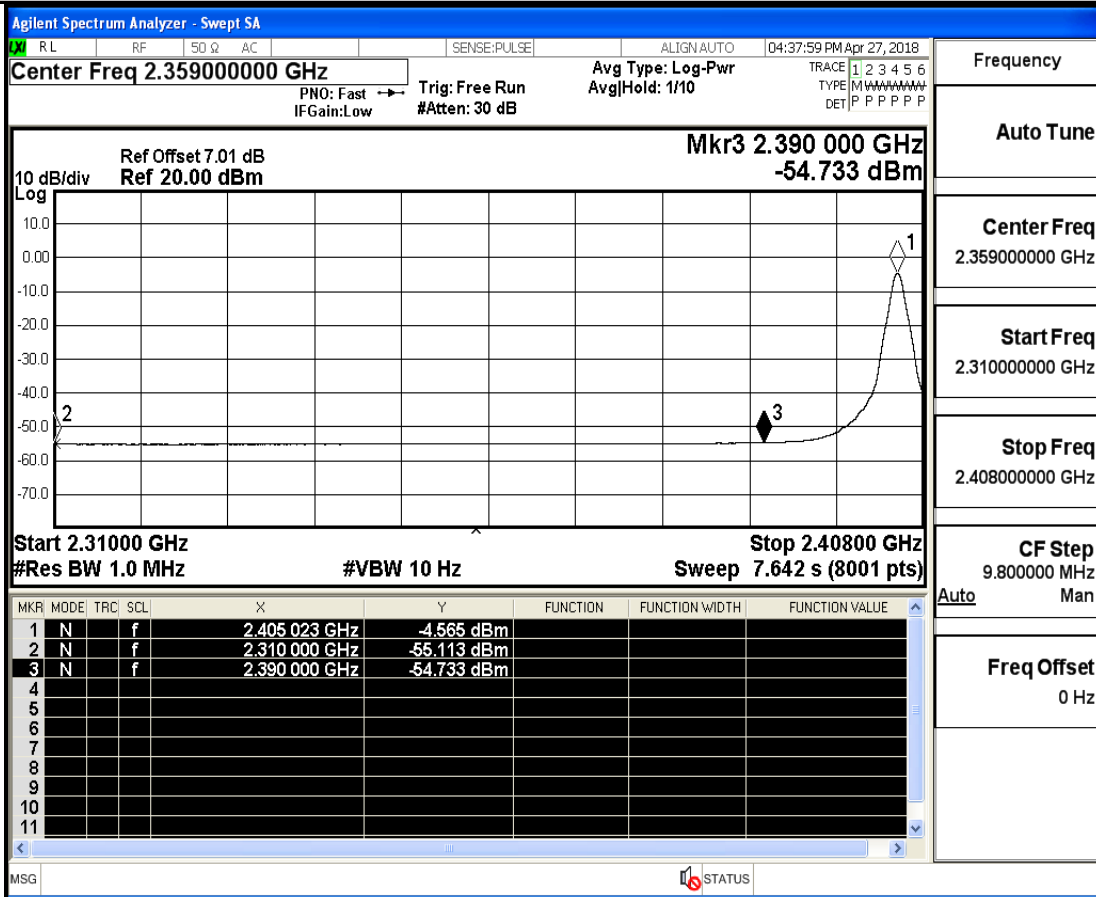


Restrict-band band-edge measurements\_ZigBee\_2402\_Ant1\_PEAK



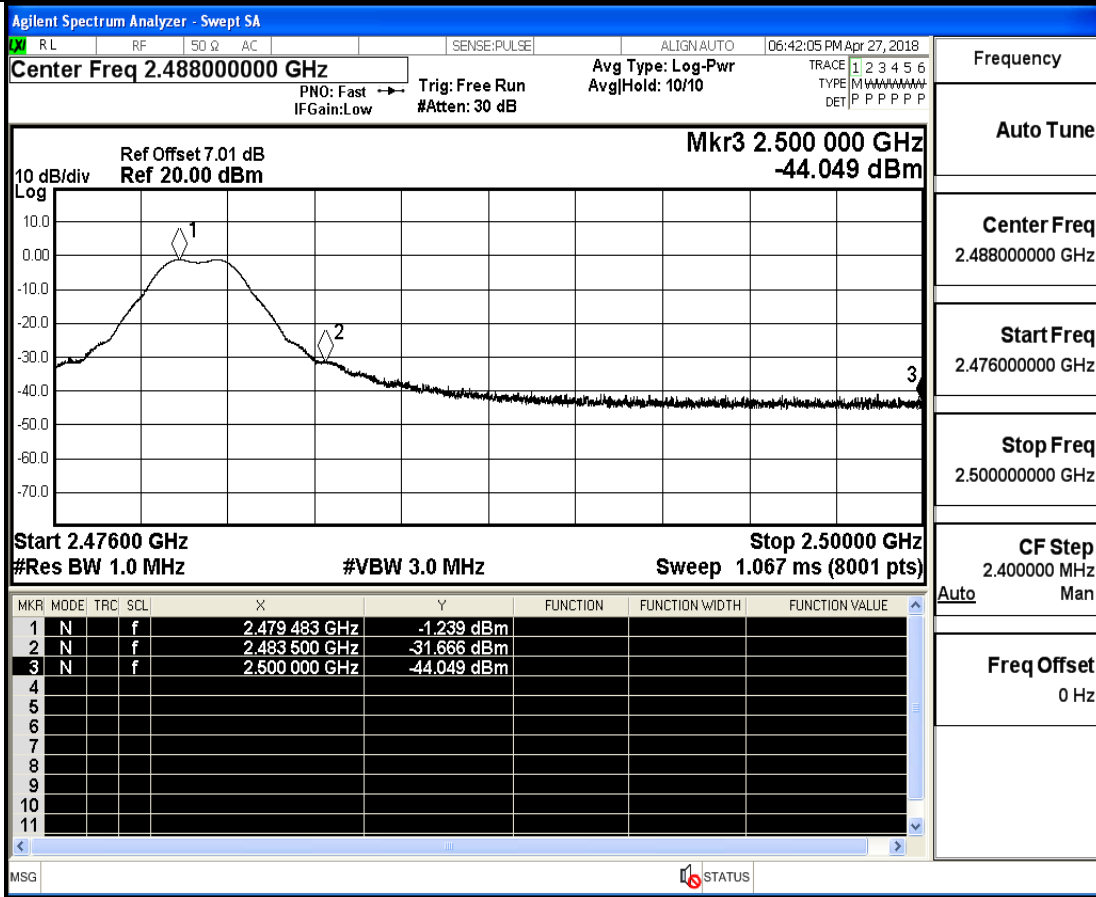
Frequency	
Auto Tune	
Center Freq	2.359000000 GHz
Start Freq	2.310000000 GHz
Stop Freq	2.408000000 GHz
CF Step	9.800000 MHz
Auto	Man
Freq Offset	0 Hz

Restrict-band band-edge measurements\_ZigBee\_2402\_Ant1\_AV

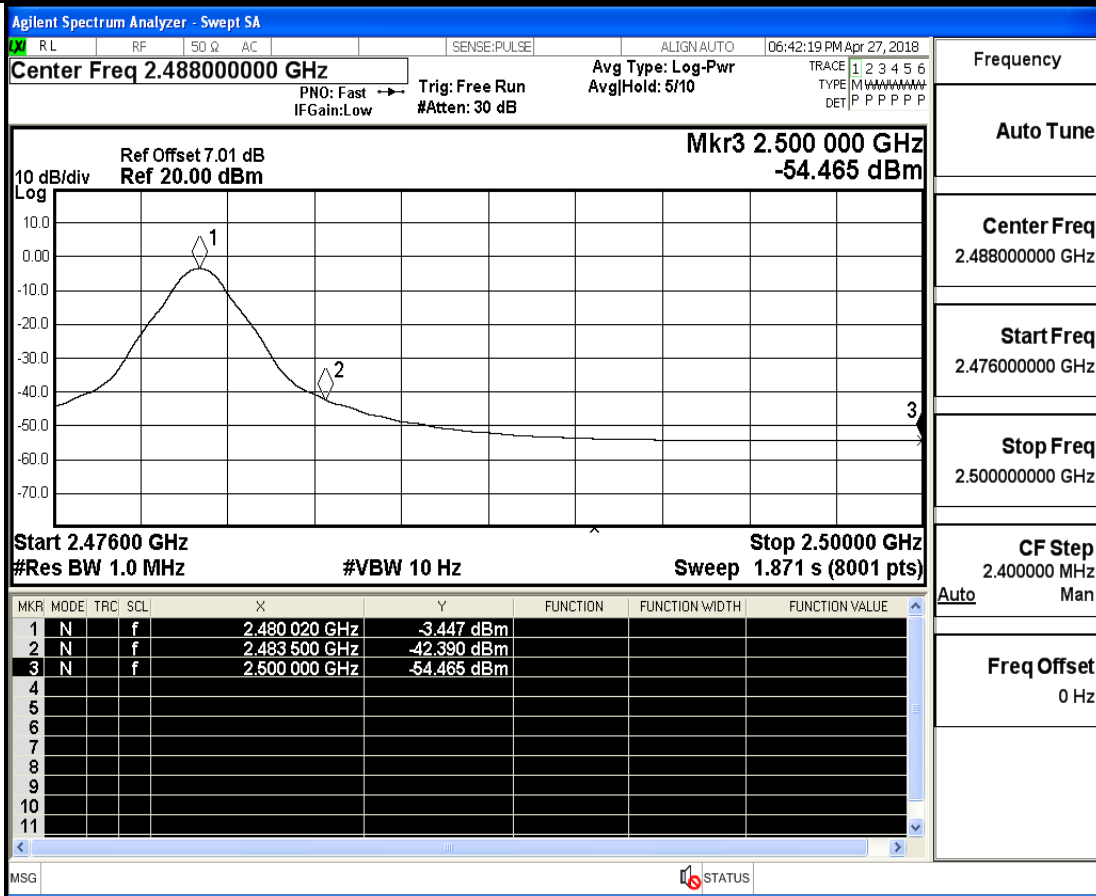


Frequency	
Auto Tune	
Center Freq	2.359000000 GHz
Start Freq	2.310000000 GHz
Stop Freq	2.408000000 GHz
CF Step	9.800000 MHz
Auto	Man
Freq Offset	0 Hz

Restrict-band band-edge measurements\_ZigBee\_2480\_Ant1\_PEAK



Restrict-band band-edge measurements\_ZigBee\_2480\_Ant1\_AV



7. Duty Cycle

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

