Appendix A

RF Test Data for Zigbee (Conducted Measurement)

Product Name: Water Leak Sensor

Test Model: SZW06

Environmental Conditions

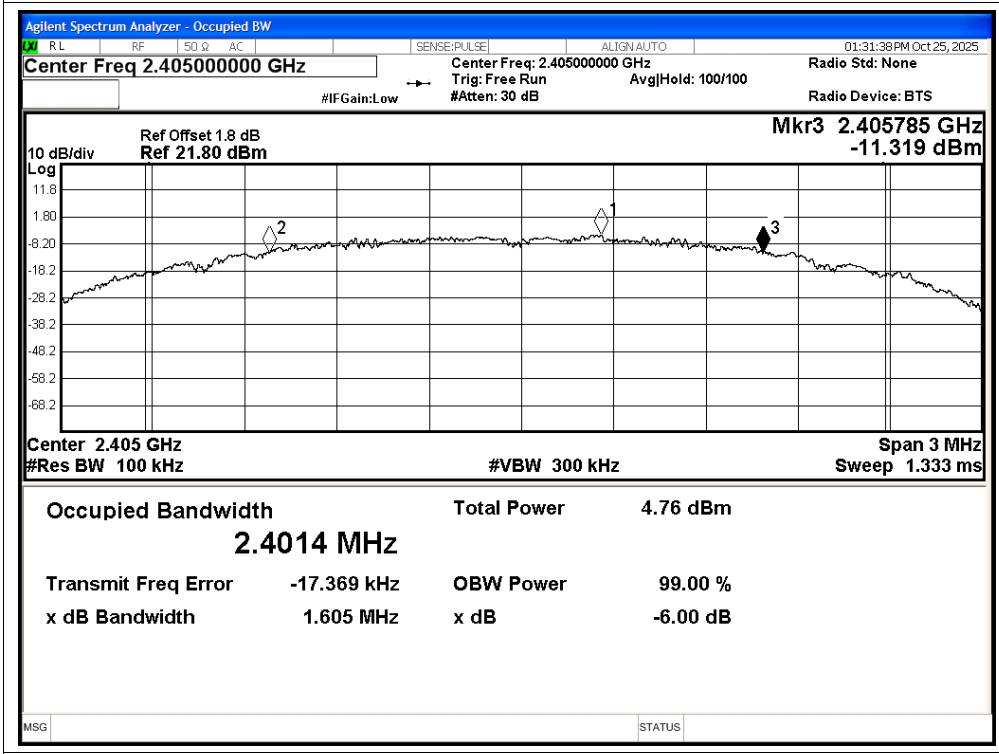
Temperature:	23.5°C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Suichao Lai
Supervised by:	Yan Chen

A.1 -6dB Bandwidth

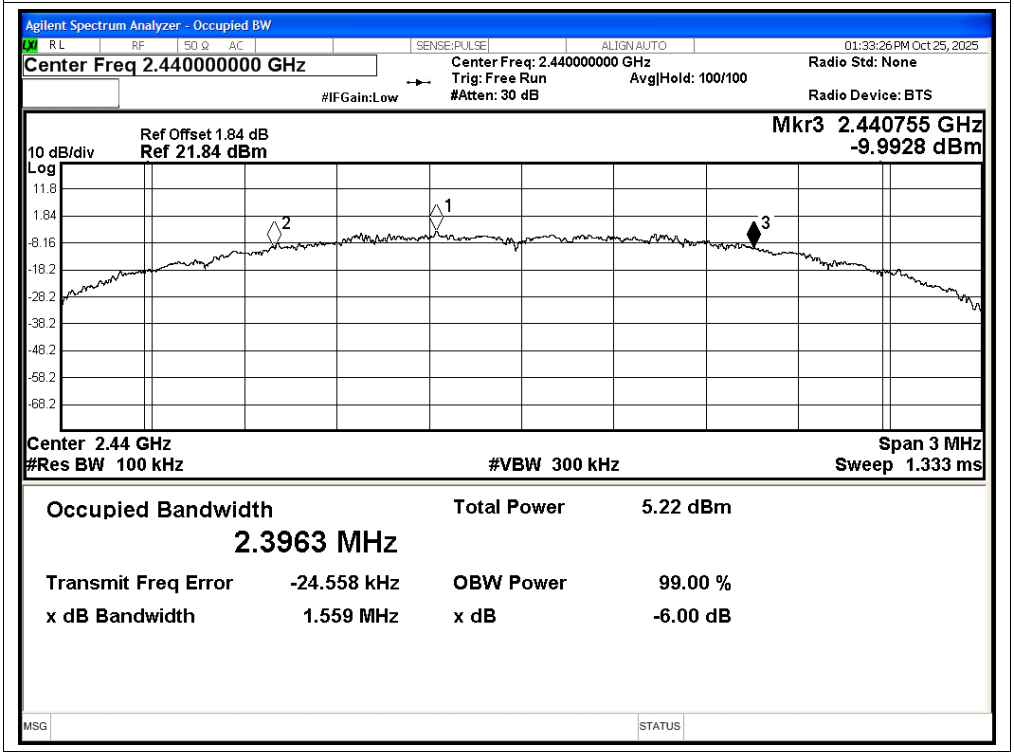
Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	ZIGBEE	2405	Ant	1.605	>=0.5	Pass
NVNT	ZIGBEE	2440	Ant	1.559	>=0.5	Pass
NVNT	ZIGBEE	2480	Ant	1.625	>=0.5	Pass

Test Graphs

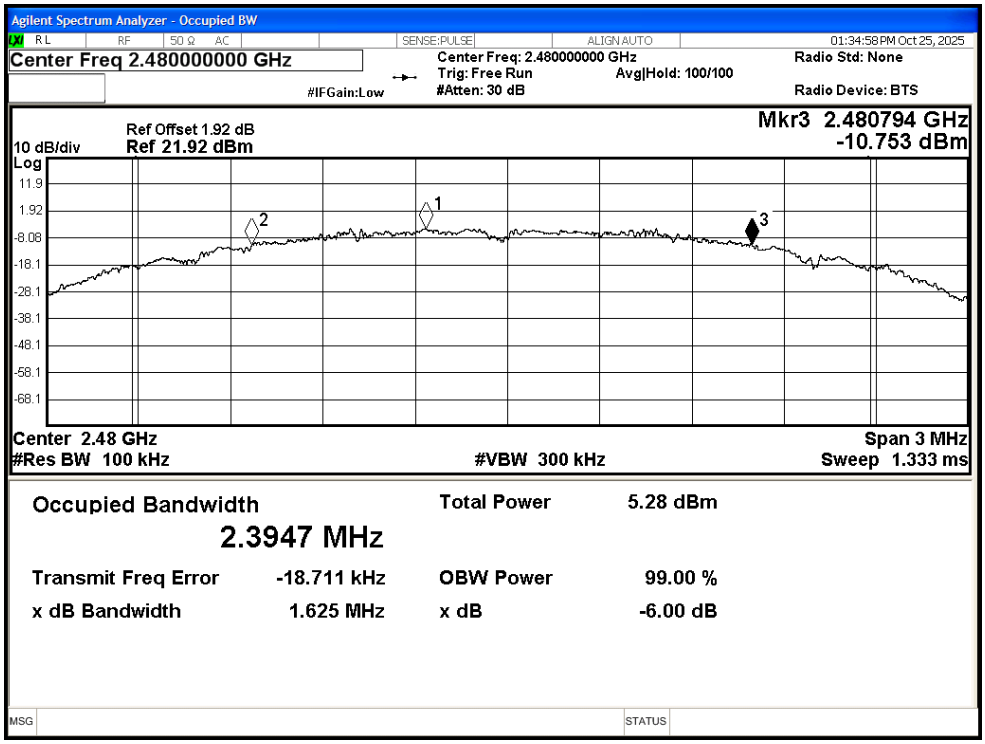
-6dB Bandwidth NVNT ZIGBEE 2405MHz Ant



-6dB Bandwidth NVNT ZIGBEE 2440MHz Ant



-6dB Bandwidth NVNT ZIGBEE 2480MHz Ant

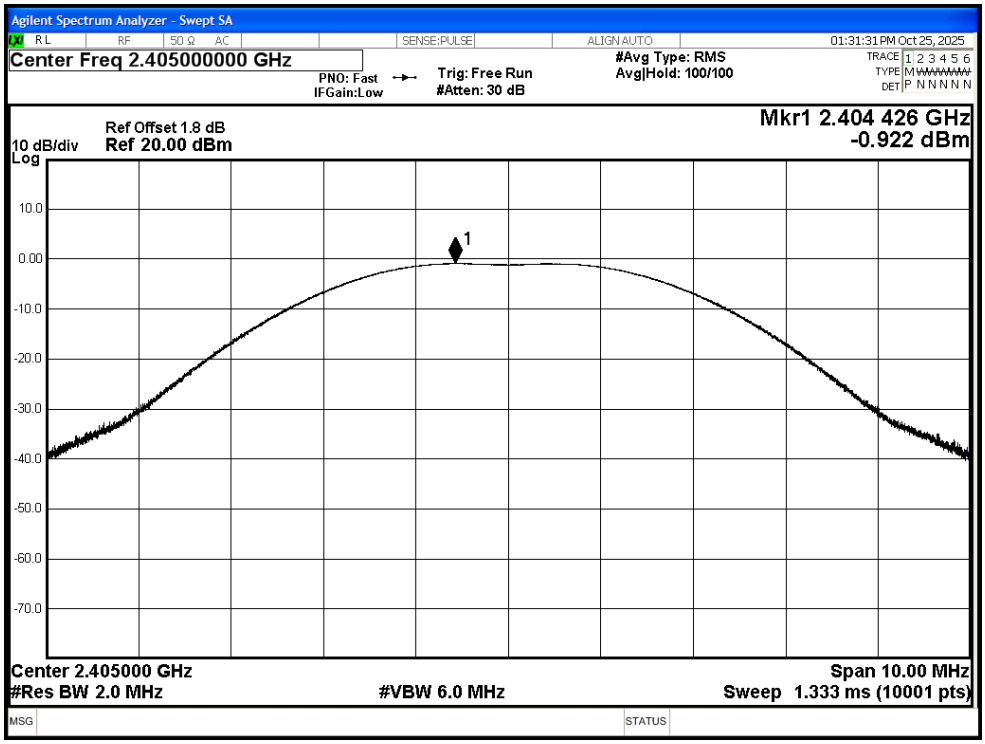


A.2 Maximum Peak Conducted Output Power

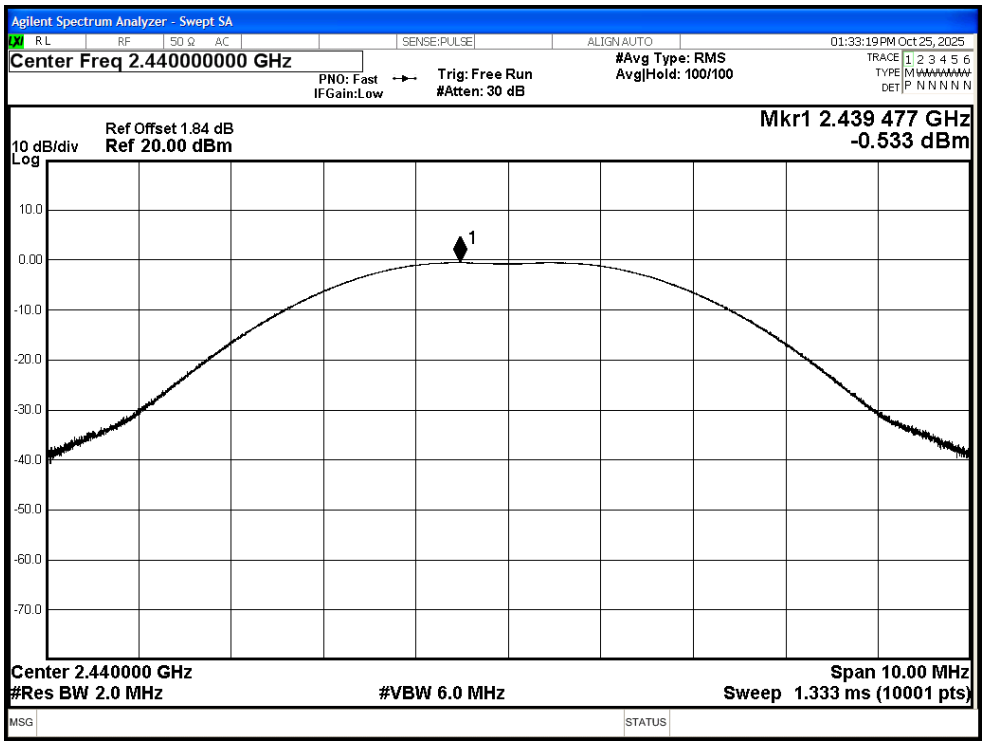
Condition	Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	ZigBee	2405	Ant	-0.92	30	Pass
NVNT	ZigBee	2440	Ant	-0.53	30	Pass
NVNT	ZigBee	2480	Ant	-0.44	30	Pass

Test Graphs

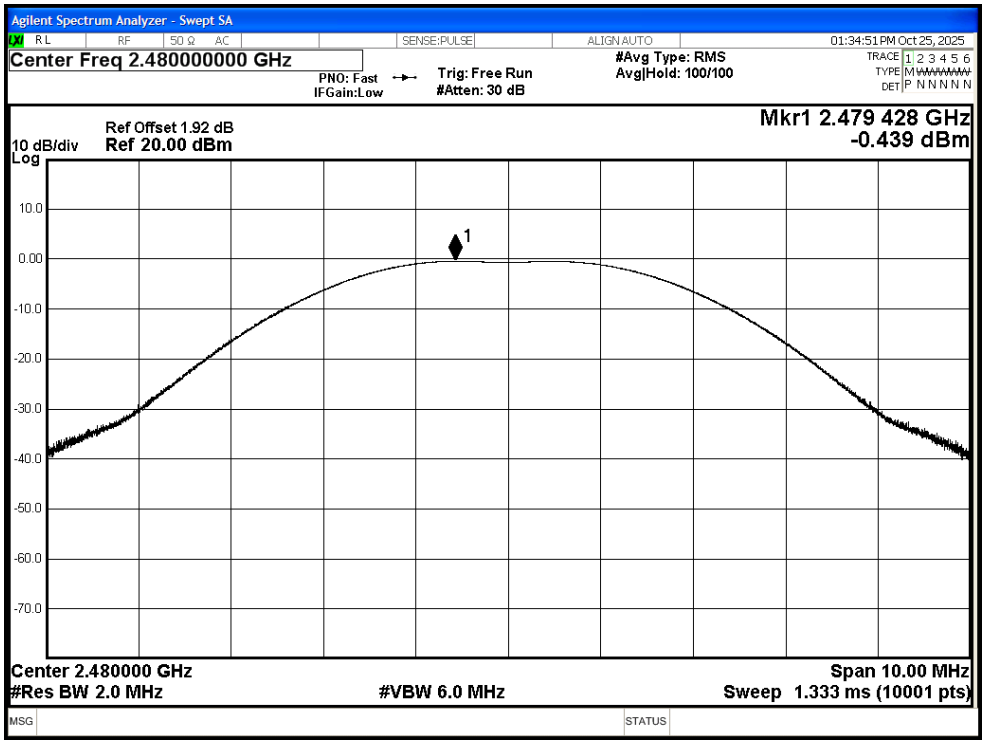
Power NVNT ZIGBEE 2405MHz Ant



Power NVNT ZIGBEE 2440MHz Ant



Power NVNT ZIGBEE 2480MHz Ant

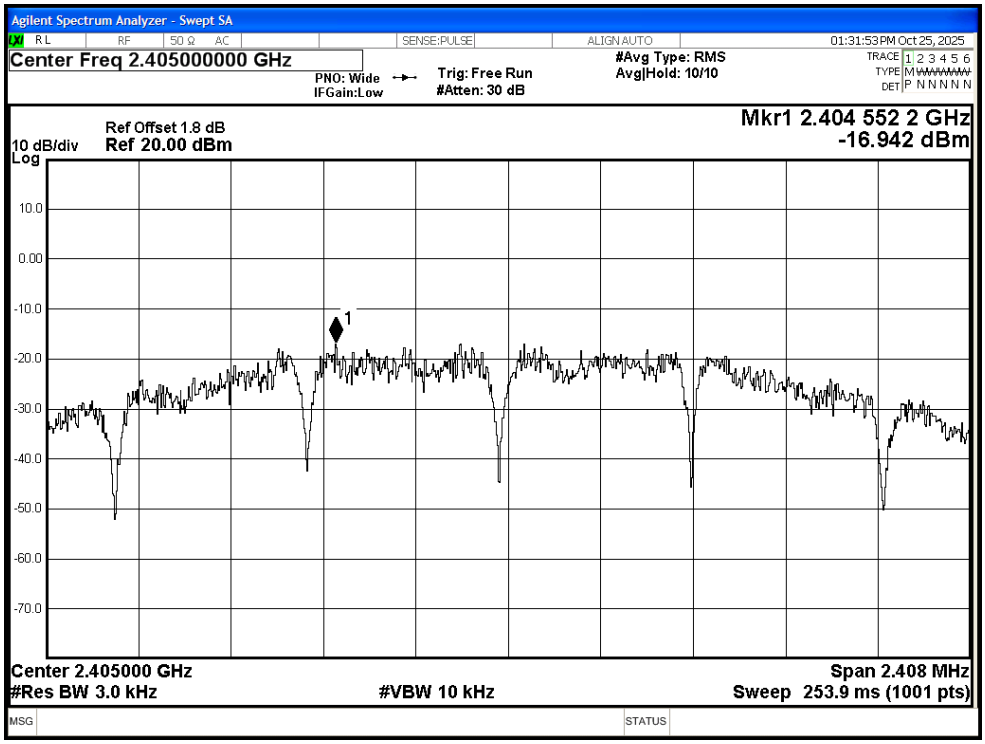


A.3 Maximum Power Spectral Density Level

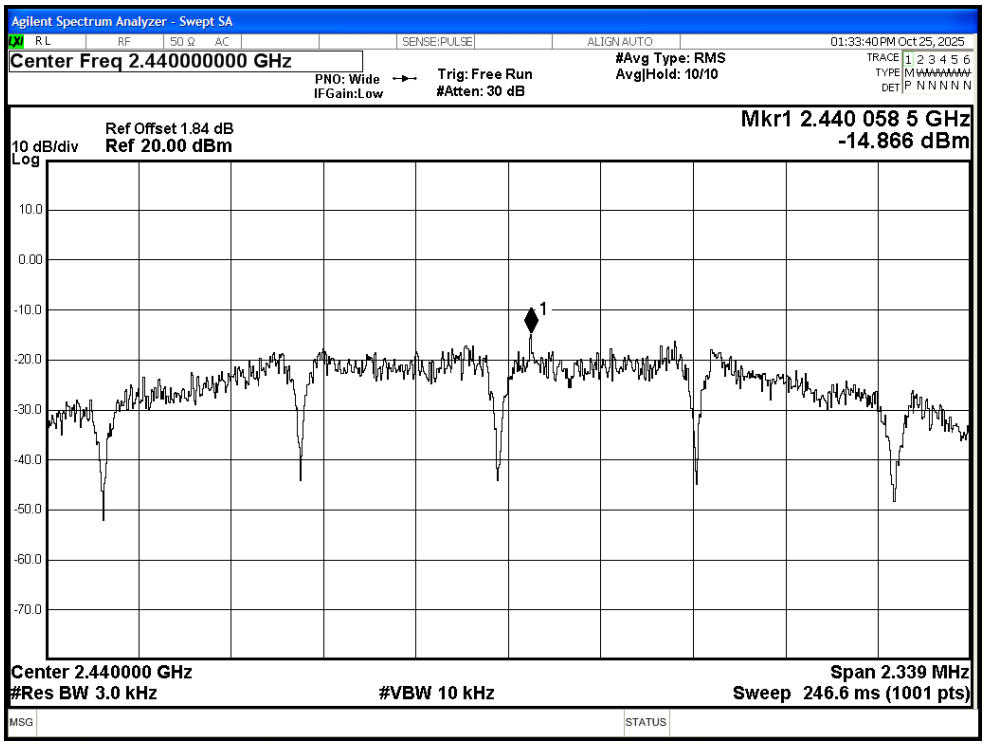
Condition	Mode	Frequency (MHz)	Antenna	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	ZigBee	2405	Ant	-16.94	8	Pass
NVNT	ZigBee	2440	Ant	-14.87	8	Pass
NVNT	ZigBee	2480	Ant	-16.69	8	Pass

Test Graphs

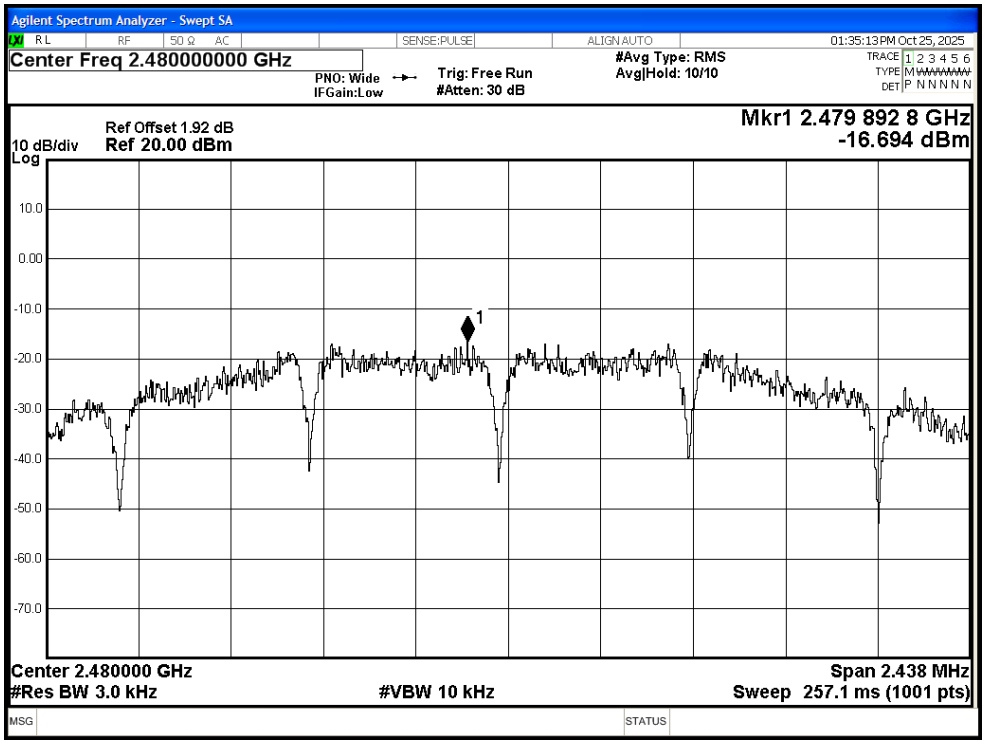
PSD NVNT ZIGBEE 2405MHz Ant



PSD NVNT ZIGBEE 2440MHz Ant



PSD NVNT ZIGBEE 2480MHz Ant

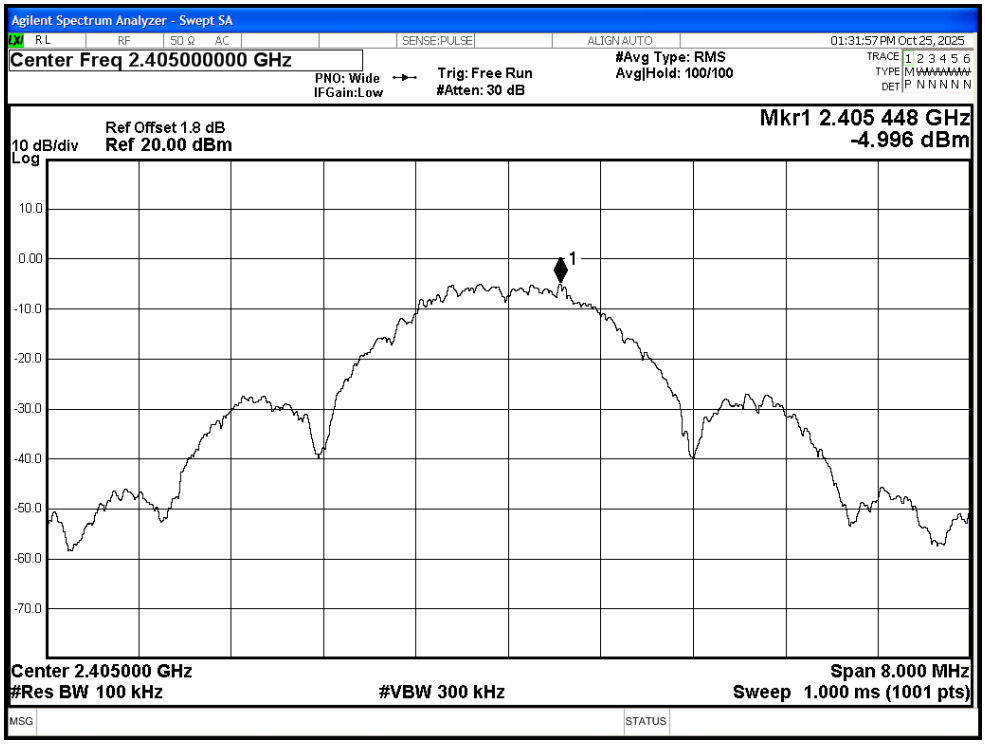


A.4 Band Edge

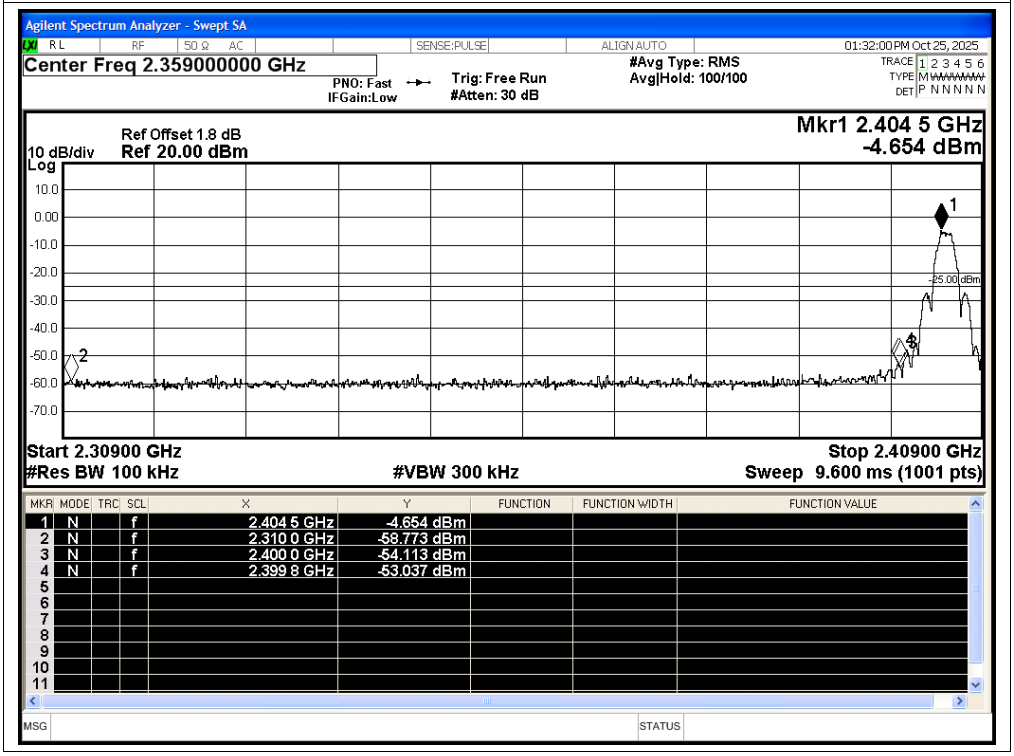
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	ZIGBEE	2405	Ant	-48.04	-20	Pass
NVNT	ZIGBEE	2480	Ant	-44.03	-20	Pass

Test Graphs

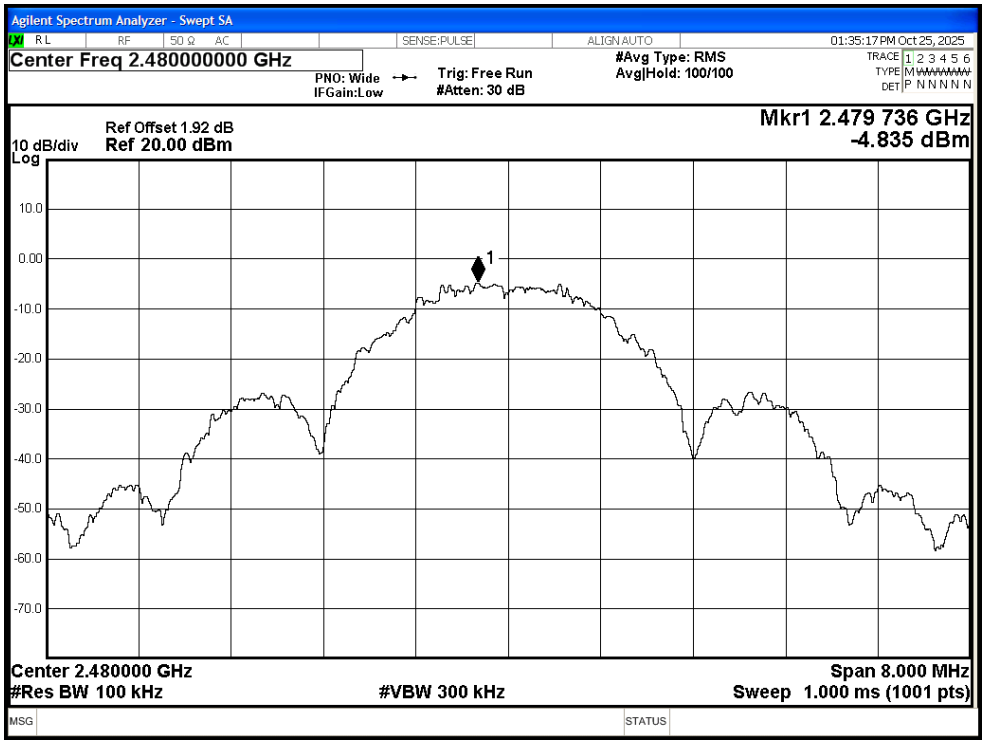
Band Edge NVNT ZIGBEE 2405MHz Ant Ref



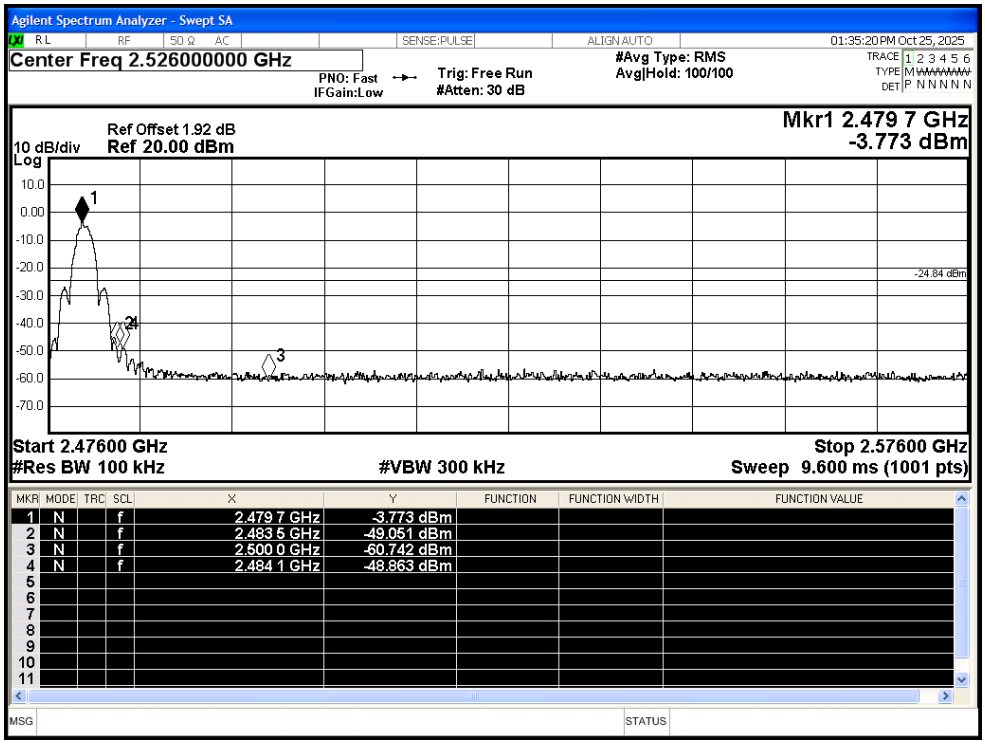
Band Edge NVNT ZIGBEE 2405MHz Ant Emission



Band Edge NVNT ZIGBEE 2480MHz Ant Ref



Band Edge NVNT ZIGBEE 2480MHz Ant Emission

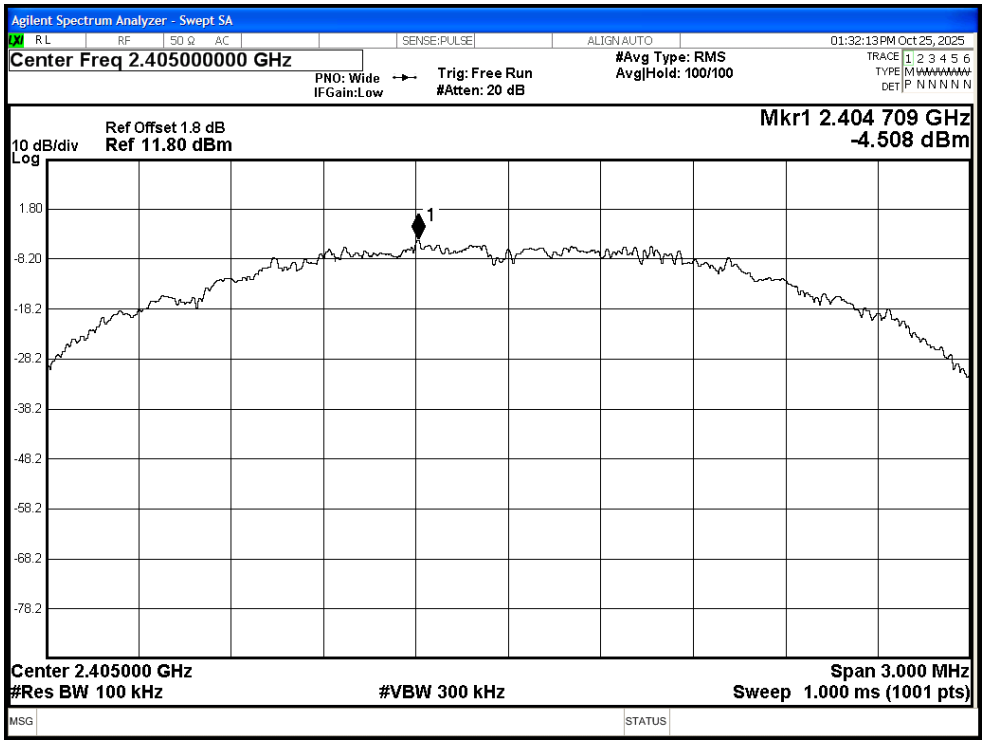


A.5 Conducted RF Spurious Emission

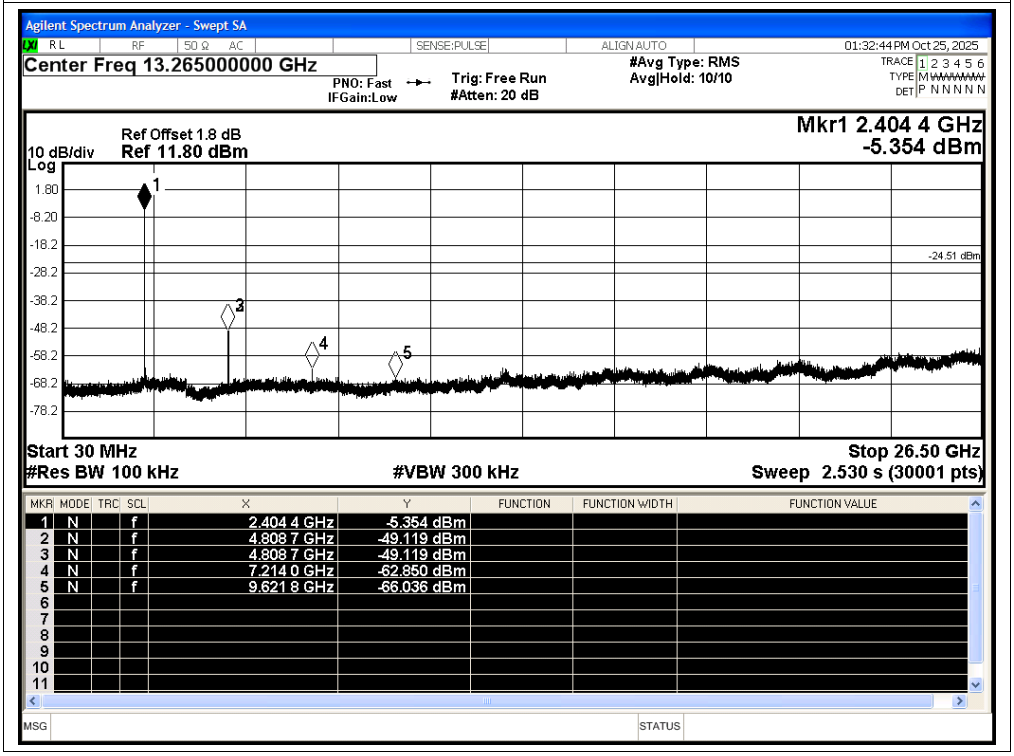
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	ZIGBEE	2405	Ant	-44.61	-20	Pass
NVNT	ZIGBEE	2440	Ant	-47.13	-20	Pass
NVNT	ZIGBEE	2480	Ant	-50.62	-20	Pass

Test Graphs

Tx. Spurious NVNT ZIGBEE 2405MHz Ant Ref

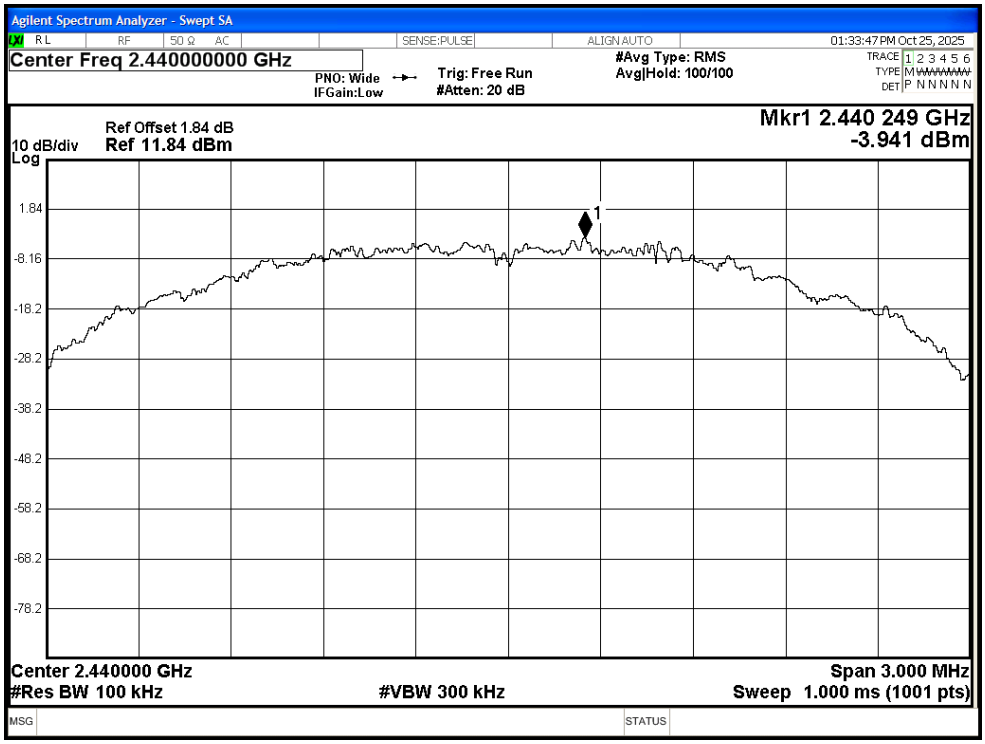


Tx. Spurious NVNT ZIGBEE 2405MHz Ant Emission

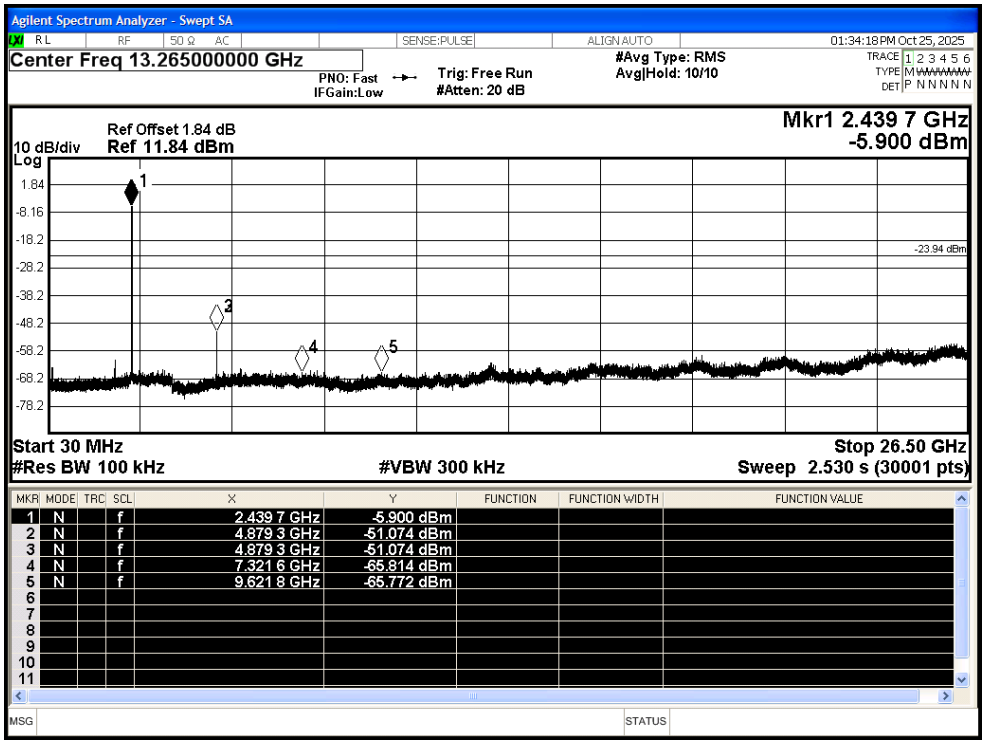


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N		f	2.404 4 GHz	-5.354 dBm			
2	N		f	4.808 7 GHz	-49.119 dBm			
3	N		f	4.808 7 GHz	-49.119 dBm			
4	N		f	7.214 0 GHz	-62.850 dBm			
5	N		f	9.621 8 GHz	-66.036 dBm			
6								
7								
8								
9								
10								
11								

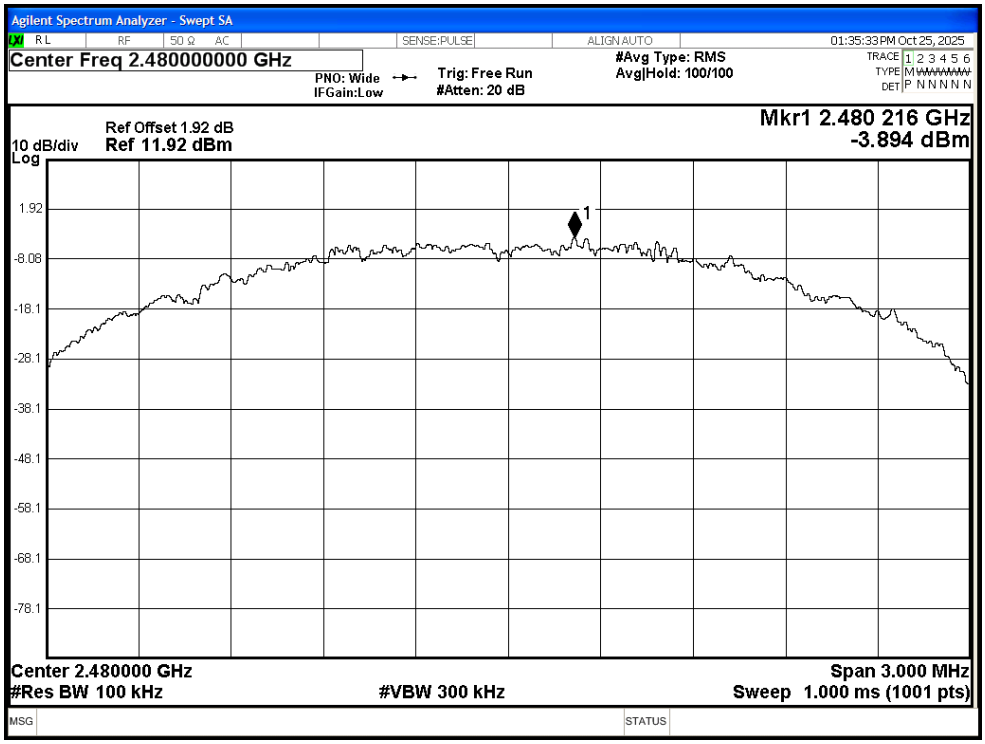
Tx. Spurious NVNT ZIGBEE 2440MHz Ant Ref



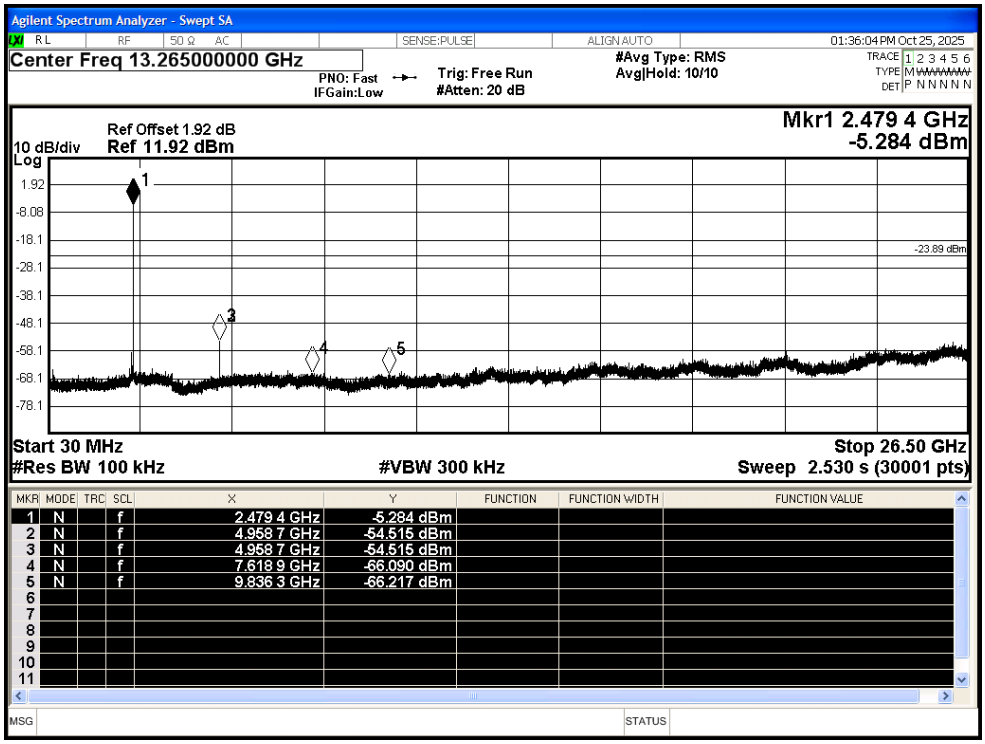
Tx. Spurious NVNT ZIGBEE 2440MHz Ant Emission



Tx. Spurious NVNT ZIGBEE 2480MHz Ant Ref



Tx. Spurious NVNT ZIGBEE 2480MHz Ant Emission

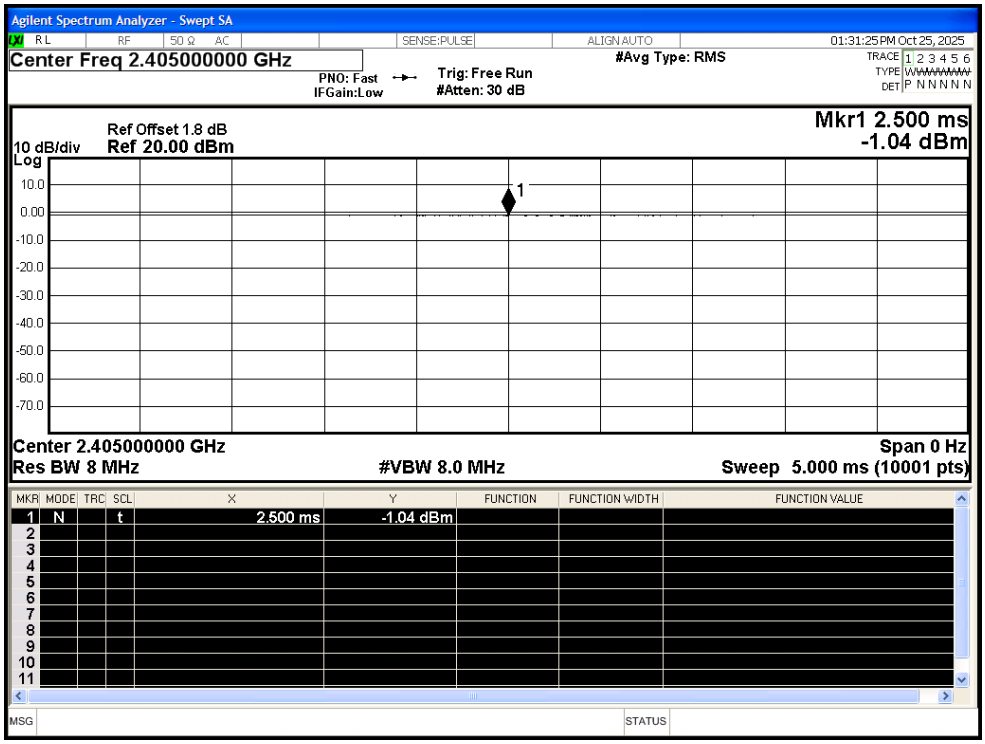


A.6 Duty Cycle

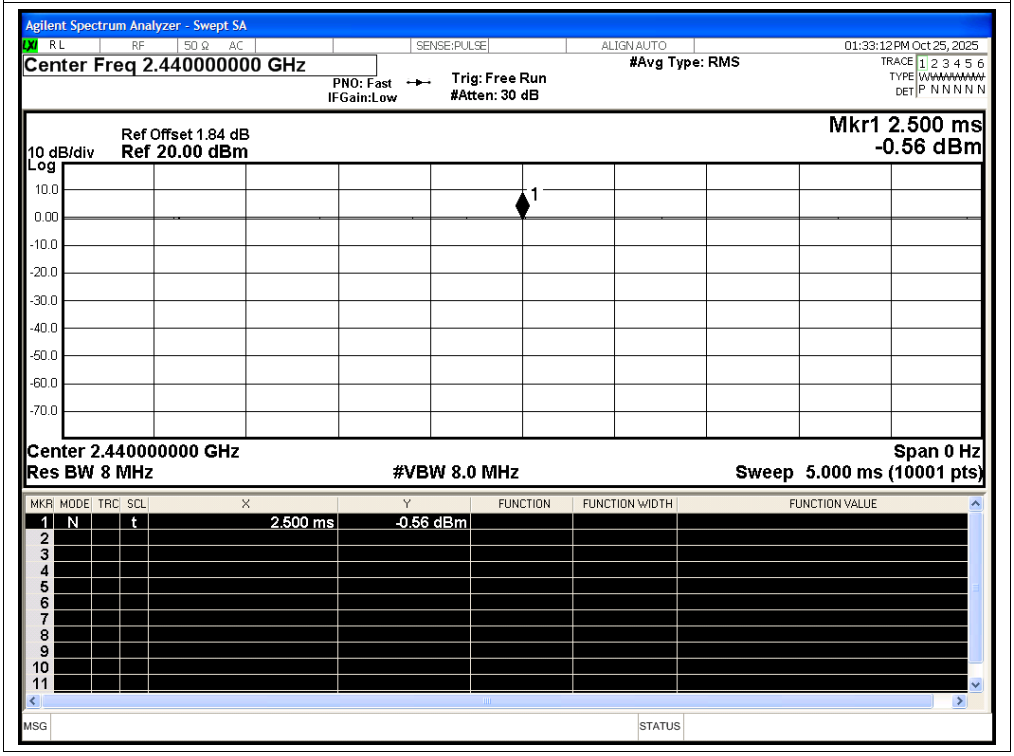
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	ZIGBEE	2405	Ant	100	0	0
NVNT	ZIGBEE	2440	Ant	100	0	0
NVNT	ZIGBEE	2480	Ant	100	0	0

Test Graphs

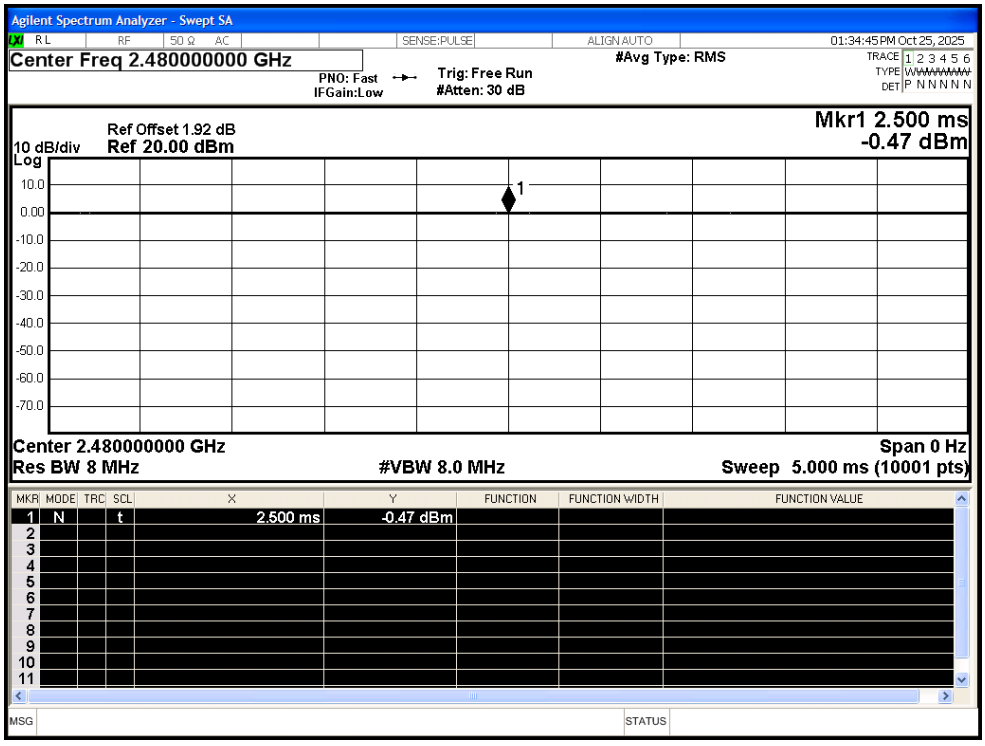
Duty Cycle NVNT ZIGBEE 2405MHz Ant



Duty Cycle NVNT ZIGBEE 2440MHz Ant



Duty Cycle NVNT ZIGBEE 2480MHz Ant

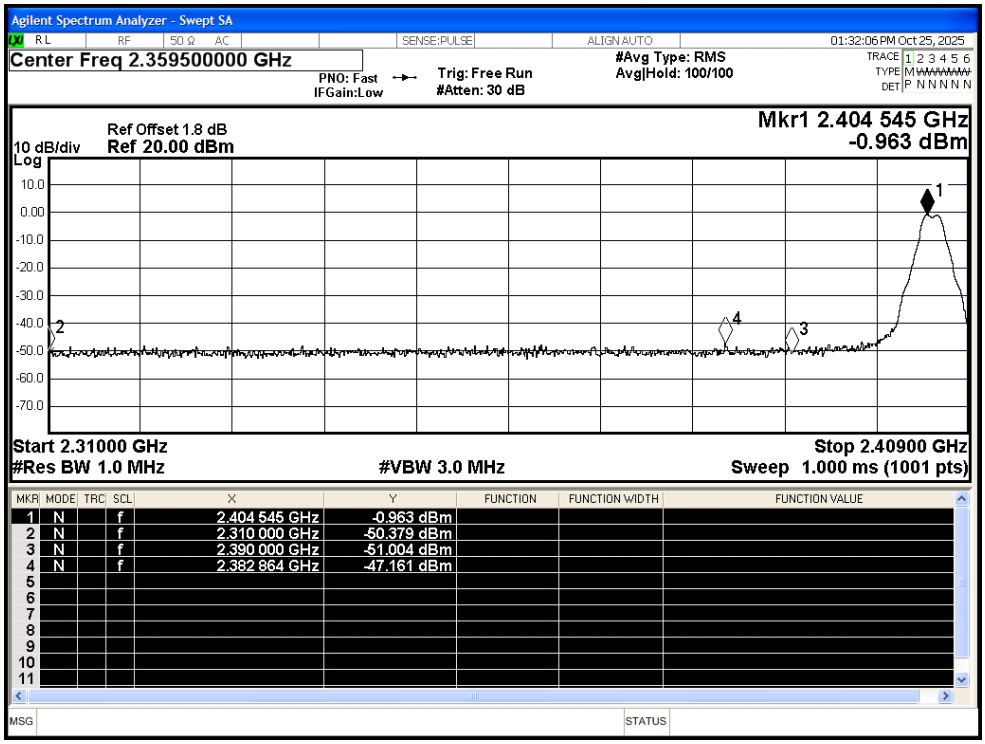


A.7 Restrict Band

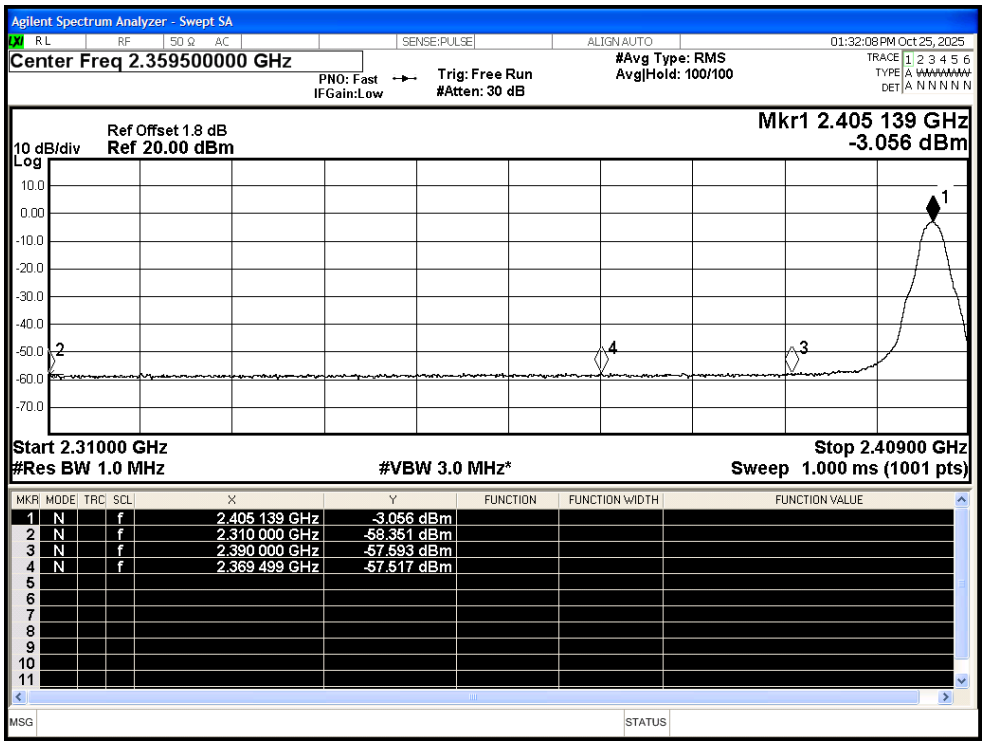
Condition	Mode	Frequency (MHz)	Antenna	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	ZIGBEE	2405	Ant	2310	-50.38	2	-	46.88	Peak	74	Pass
NVNT	ZIGBEE	2405	Ant	2310	-58.35	2	0	38.91	Average	54	Pass
NVNT	ZIGBEE	2405	Ant	2382.864	-47.16	2	-	50.1	Peak	74	Pass
NVNT	ZIGBEE	2405	Ant	2369.499	-57.52	2	0	39.74	Average	54	Pass
NVNT	ZIGBEE	2405	Ant	2390	-51	2	-	46.26	Peak	74	Pass
NVNT	ZIGBEE	2405	Ant	2390	-57.59	2	0	39.67	Average	54	Pass
NVNT	ZIGBEE	2480	Ant	2483.5	-40.31	2	-	56.95	Peak	74	Pass
NVNT	ZIGBEE	2480	Ant	2483.5	-46.69	2	0	50.57	Average	54	Pass
NVNT	ZIGBEE	2480	Ant	2483.512	-40.31	2	-	56.95	Peak	74	Pass
NVNT	ZIGBEE	2480	Ant	2483.512	-46.69	2	0	50.57	Average	54	Pass
NVNT	ZIGBEE	2480	Ant	2500	-48.64	2	-	48.62	Peak	74	Pass
NVNT	ZIGBEE	2480	Ant	2500	-58.35	2	0	38.91	Average	54	Pass

Test Graphs

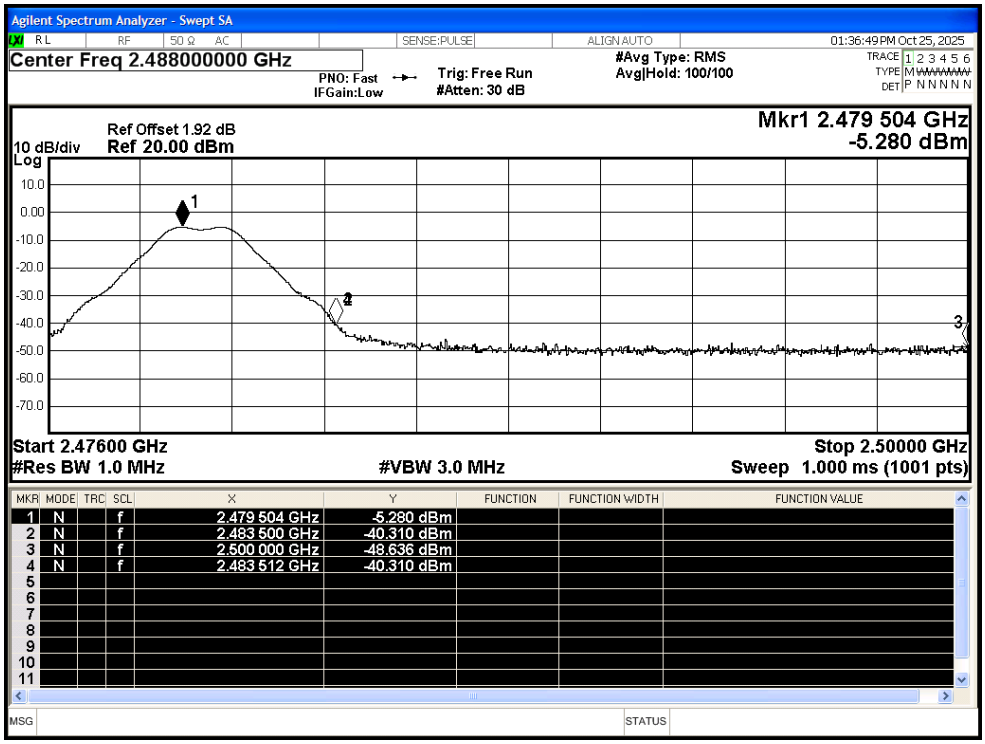
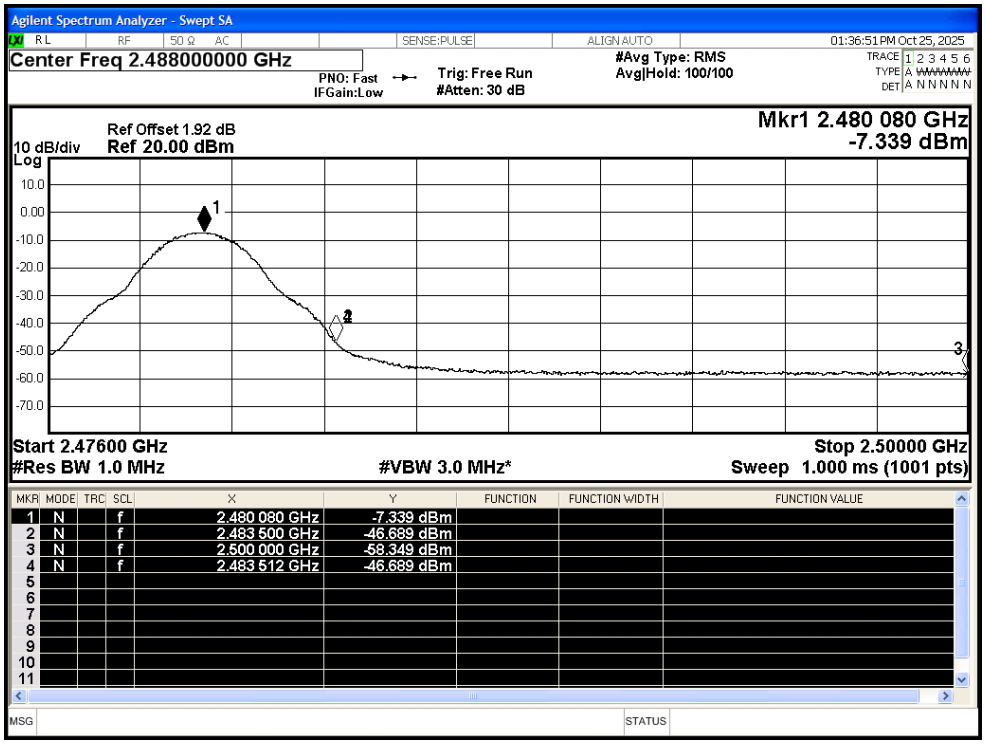
Restrict Band NVNT ZIGBEE 2405MHz Ant Peak



Restrict Band NVNT ZIGBEE 2405MHz Ant Average



Restrict Band NVNT ZIGBEE 2480MHz Ant Peak



Restrict Band NVNT ZIGBEE 2480MHz Ant Average