



Appendix A

RF Test Data for Zigbee (Conducted Measurement)

Product Name: Smart Door Sensor

Test Model: D1-E

Environmental Conditions

Temperature:	23.5°C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Can Kun
Supervised by:	Paddi Chen





A.1 -6dB Bandwidth

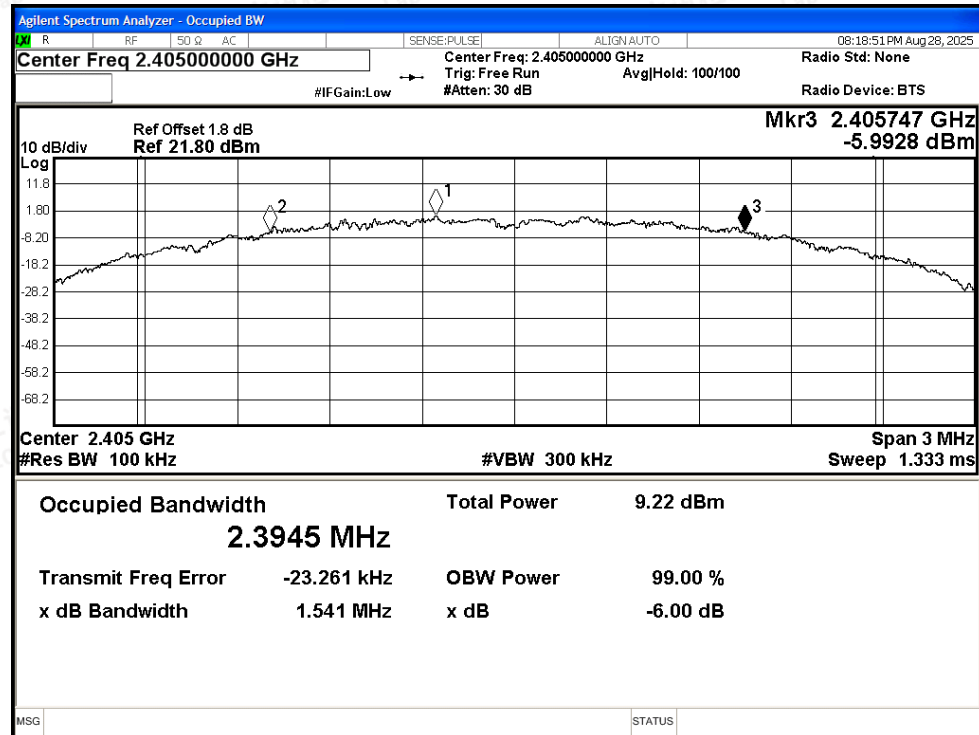
Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	ZigBee	2405	Ant	1.541	≥ 0.5	Pass
NVNT	ZigBee	2440	Ant	1.576	≥ 0.5	Pass
NVNT	ZigBee	2480	Ant	1.578	≥ 0.5	Pass



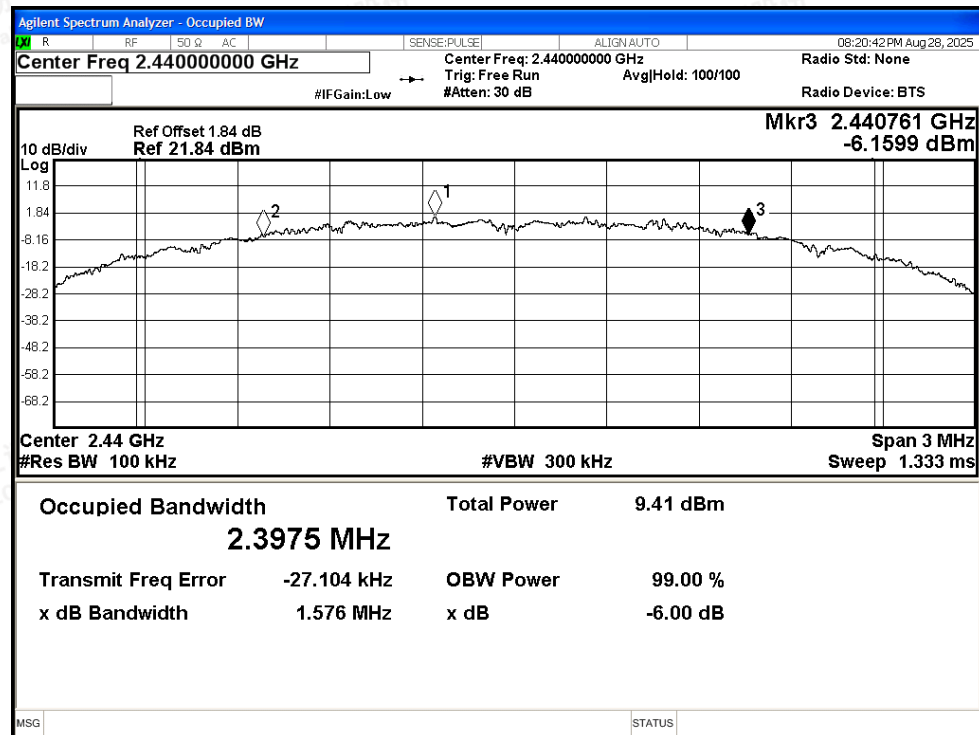


Test Graphs

-6dB Bandwidth NVNT ZigBee 2405MHz Ant



-6dB Bandwidth NVNT ZigBee 2440MHz Ant

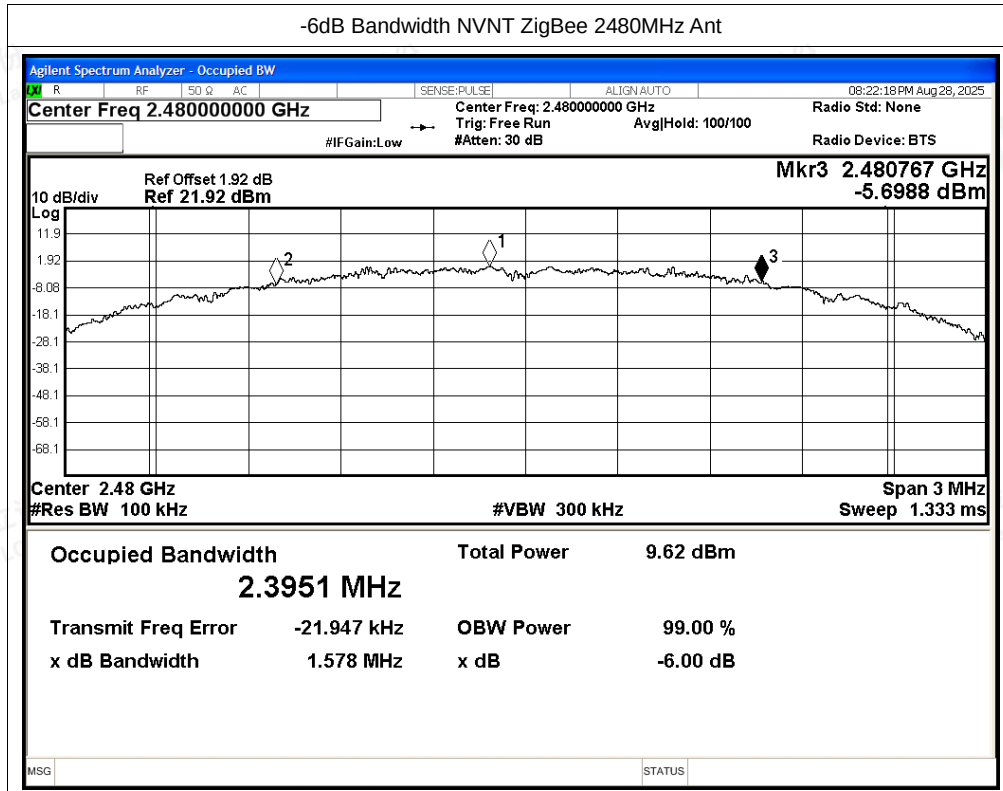


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A.2 Maximum Peak Conducted Output Power

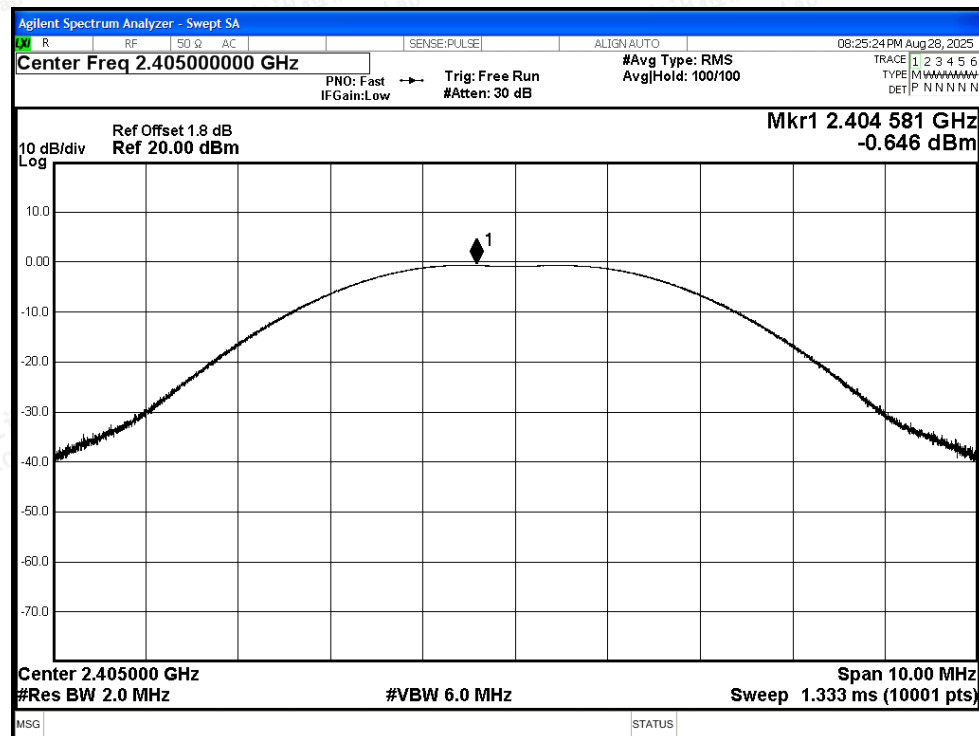
Condition	Mode	Frequency (MHz)	Antenna	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	ZigBee	2405	Ant	-0.65	30	Pass
NVNT	ZigBee	2440	Ant	-0.53	30	Pass
NVNT	ZigBee	2480	Ant	-0.53	30	Pass



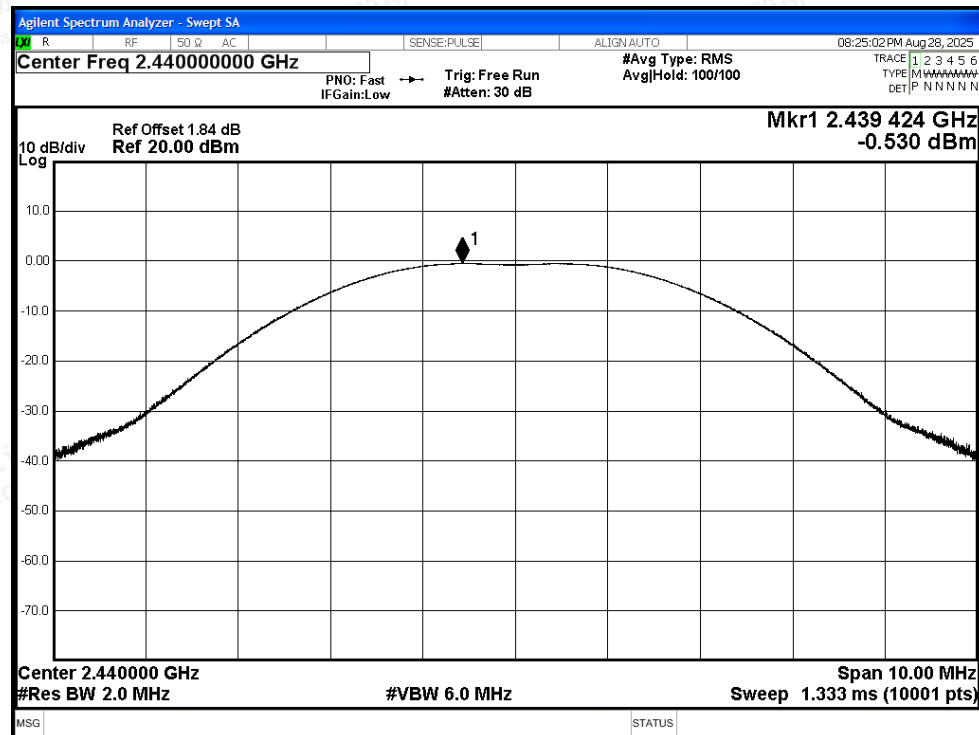


Test Graphs

Power NVNT ZigBee 2405MHz Ant



Power NVNT ZigBee 2440MHz Ant

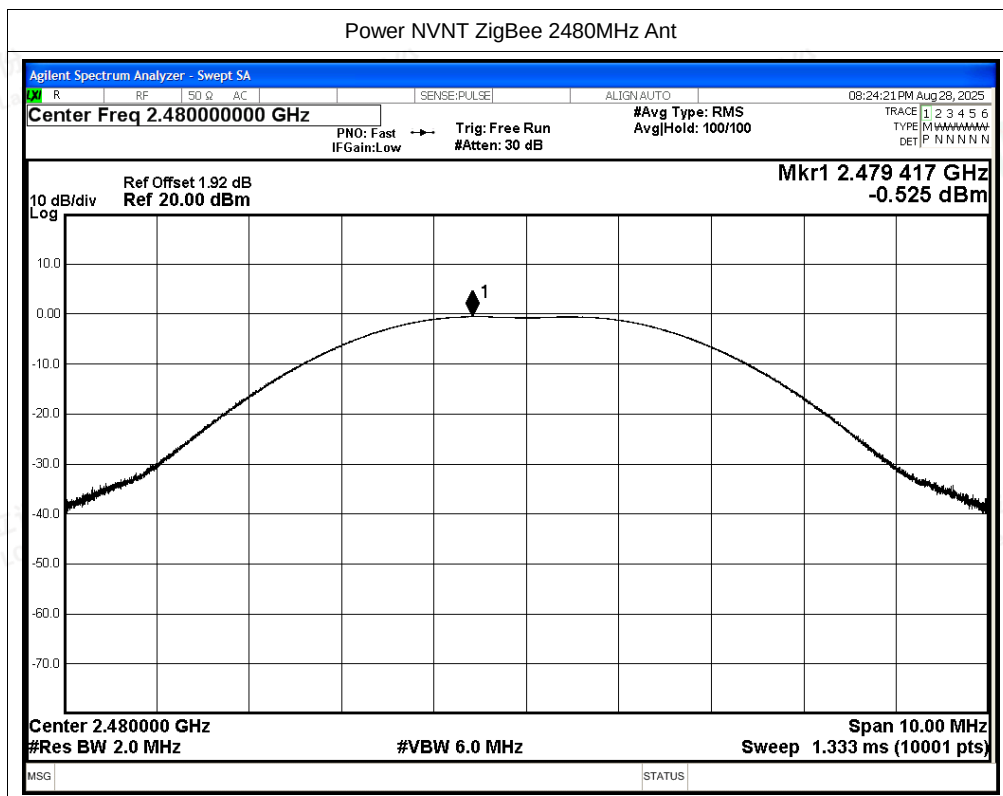


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A.3 Maximum Power Spectral Density Level

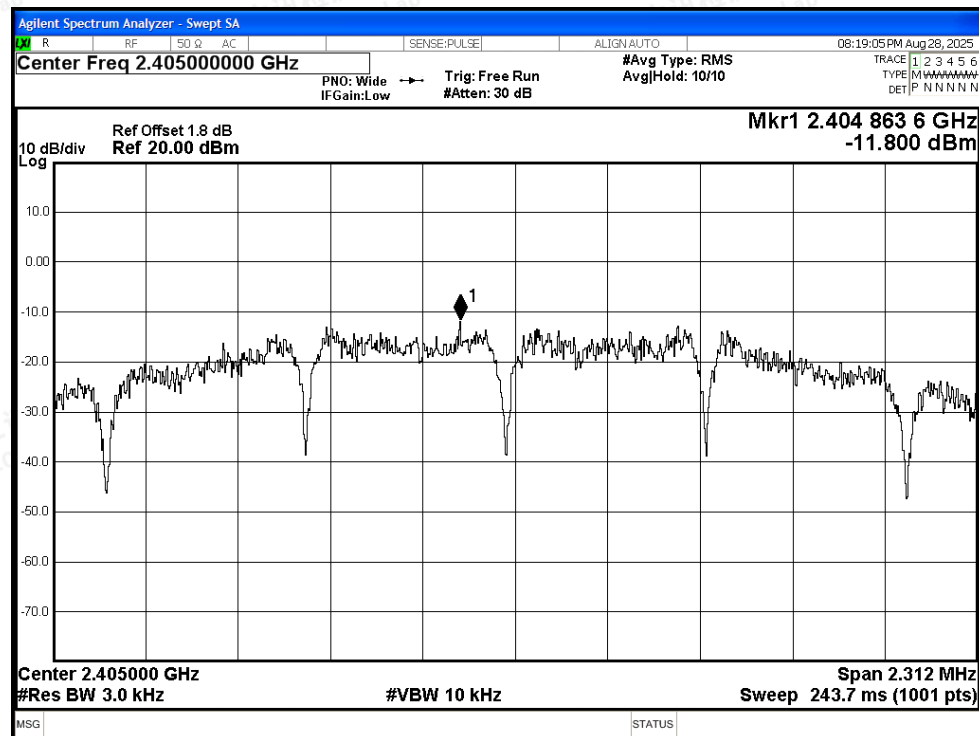
Condition	Mode	Frequency (MHz)	Antenna	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	ZigBee	2405	Ant	-11.8	8	Pass
NVNT	ZigBee	2440	Ant	-12.37	8	Pass
NVNT	ZigBee	2480	Ant	-11.39	8	Pass



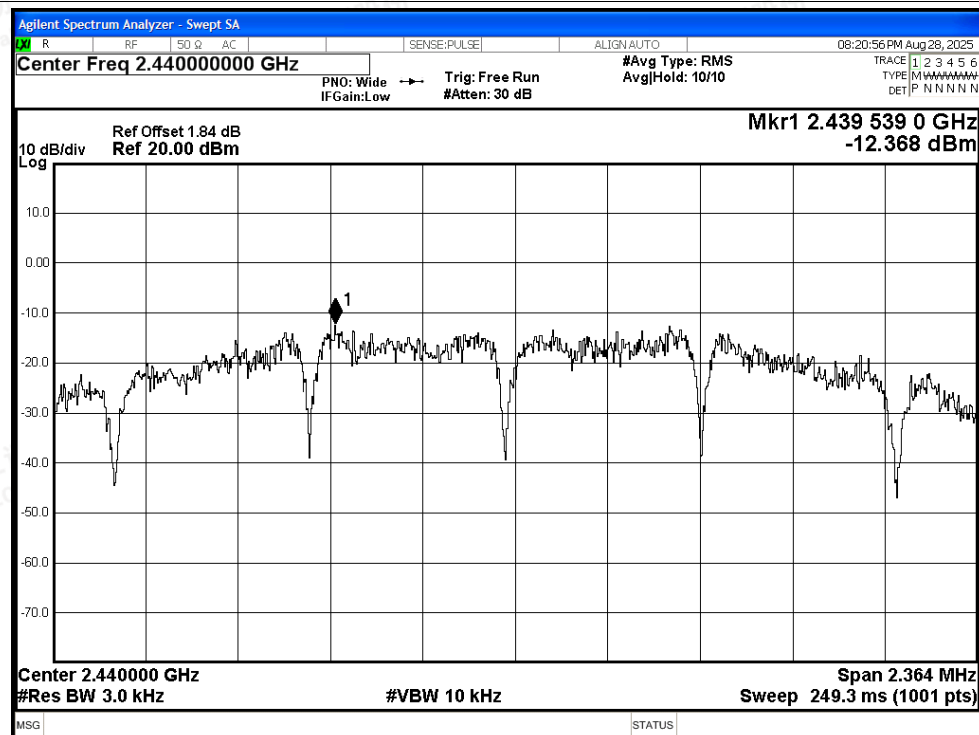


Test Graphs

PSD NVNT ZigBee 2405MHz Ant



PSD NVNT ZigBee 2440MHz Ant

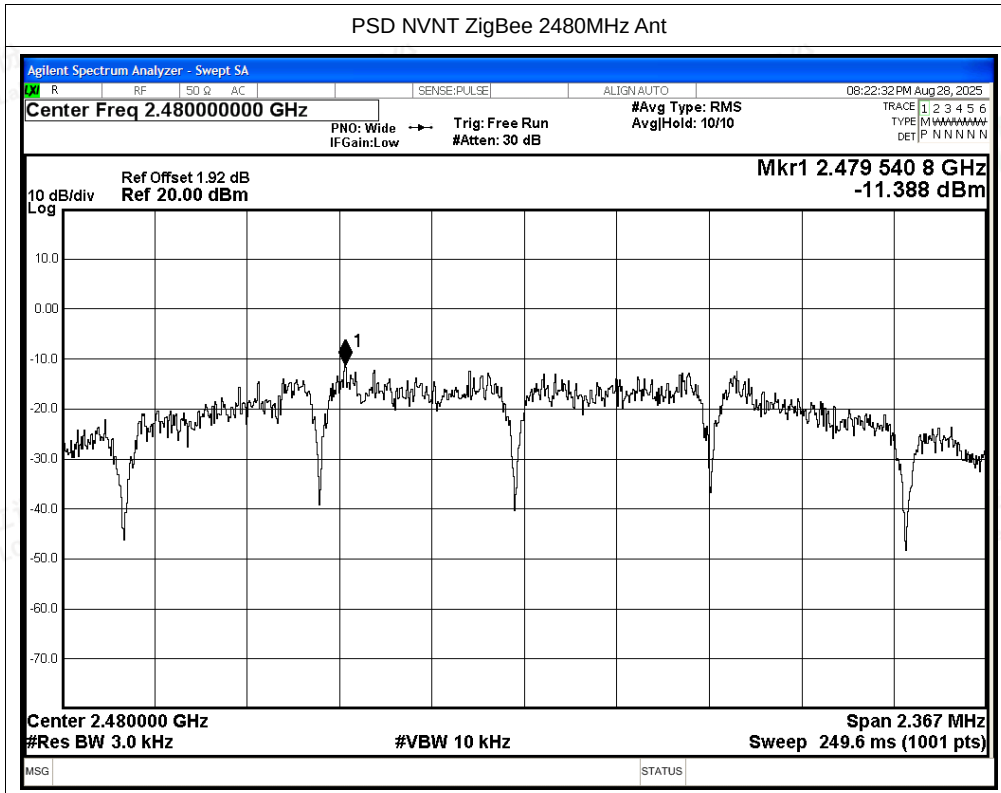


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A.4 Band Edge

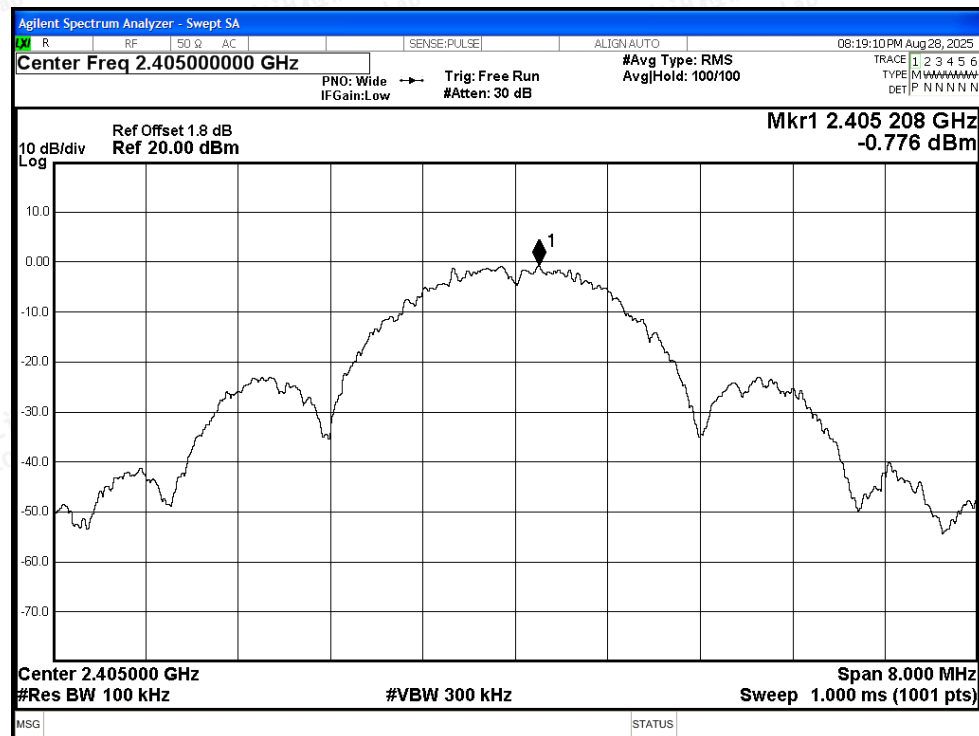
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	ZigBee	2405	Ant	-47.78	-20	Pass
NVNT	ZigBee	2480	Ant	-43.52	-20	Pass



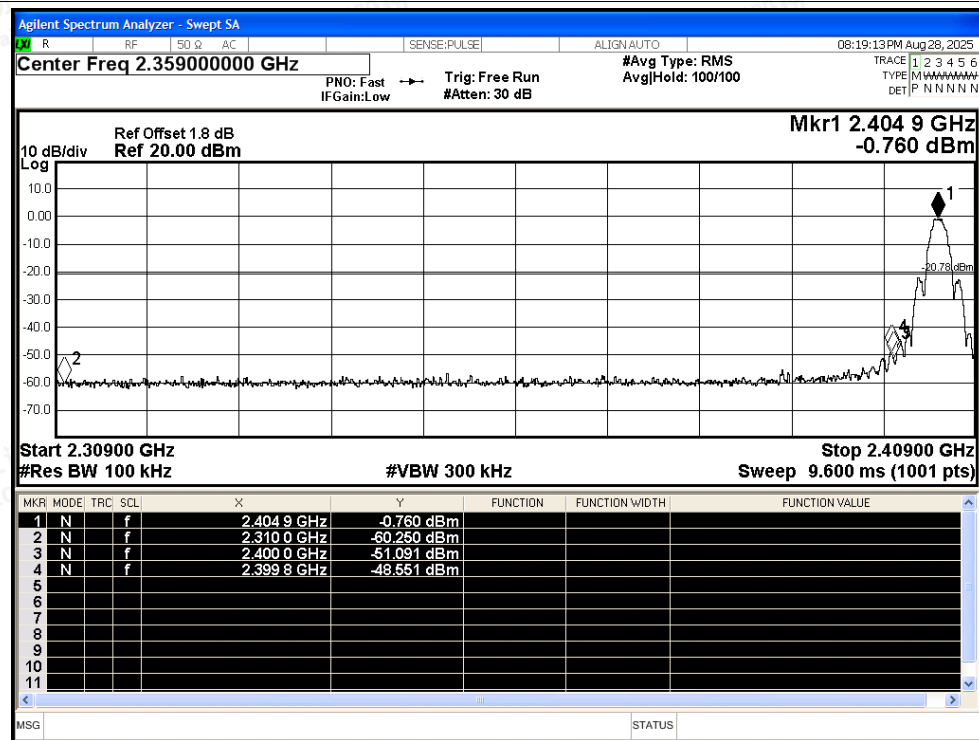


Test Graphs

Band Edge NVNT ZigBee 2405MHz Ant Ref



Band Edge NVNT ZigBee 2405MHz Ant Emission



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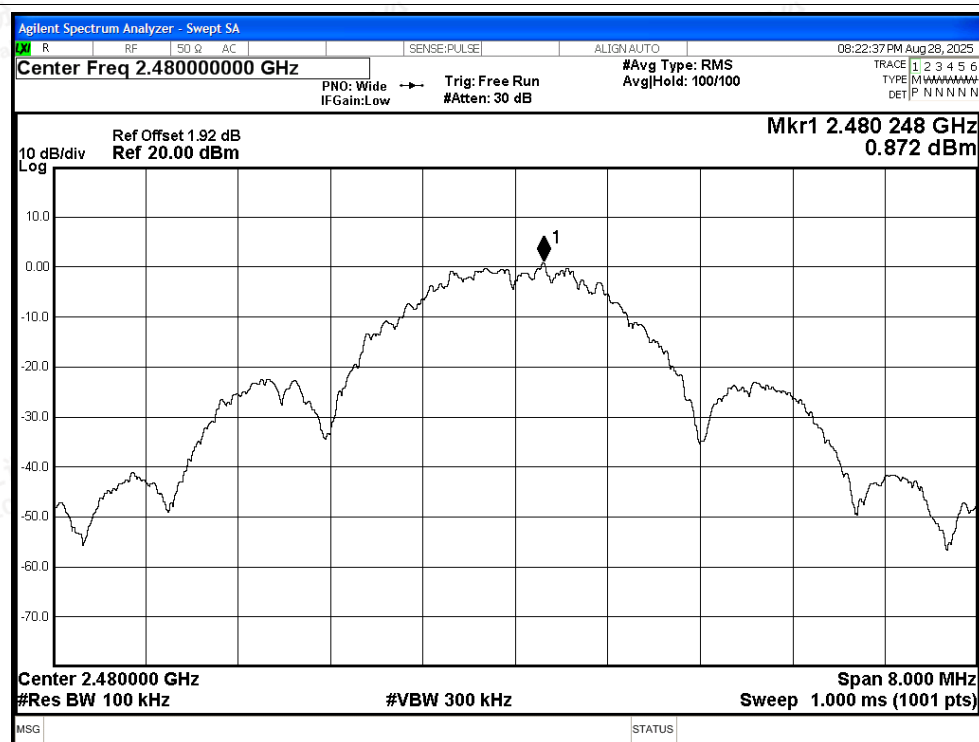
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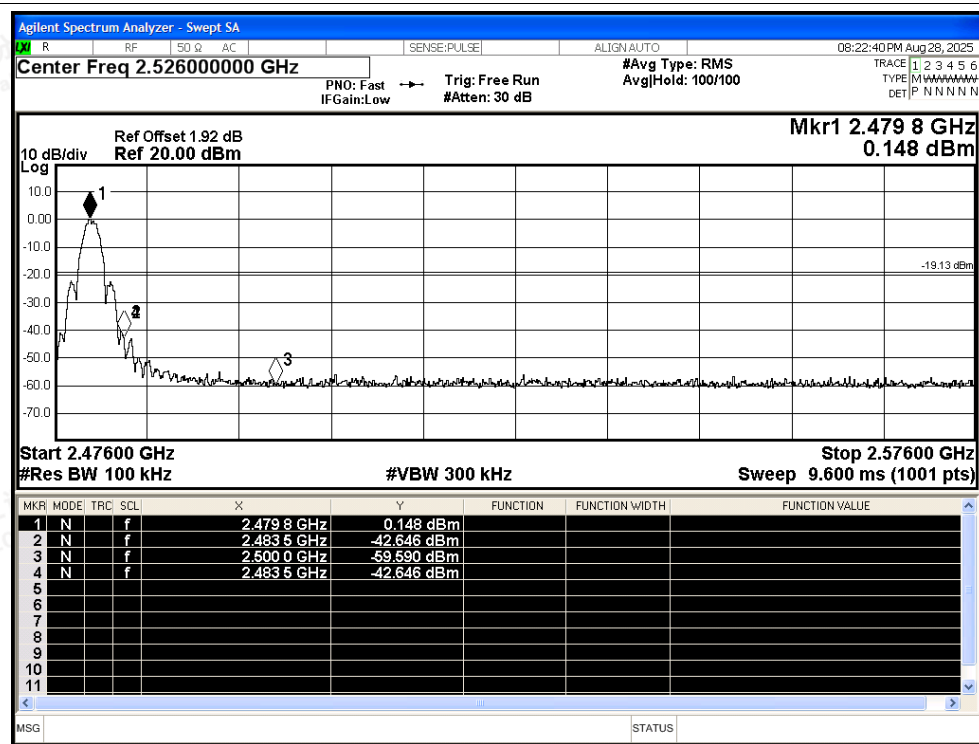
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Band Edge NVNT ZigBee 2480MHz Ant Ref



Band Edge NVNT ZigBee 2480MHz Ant Emission



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A.5 Conducted RF Spurious Emission

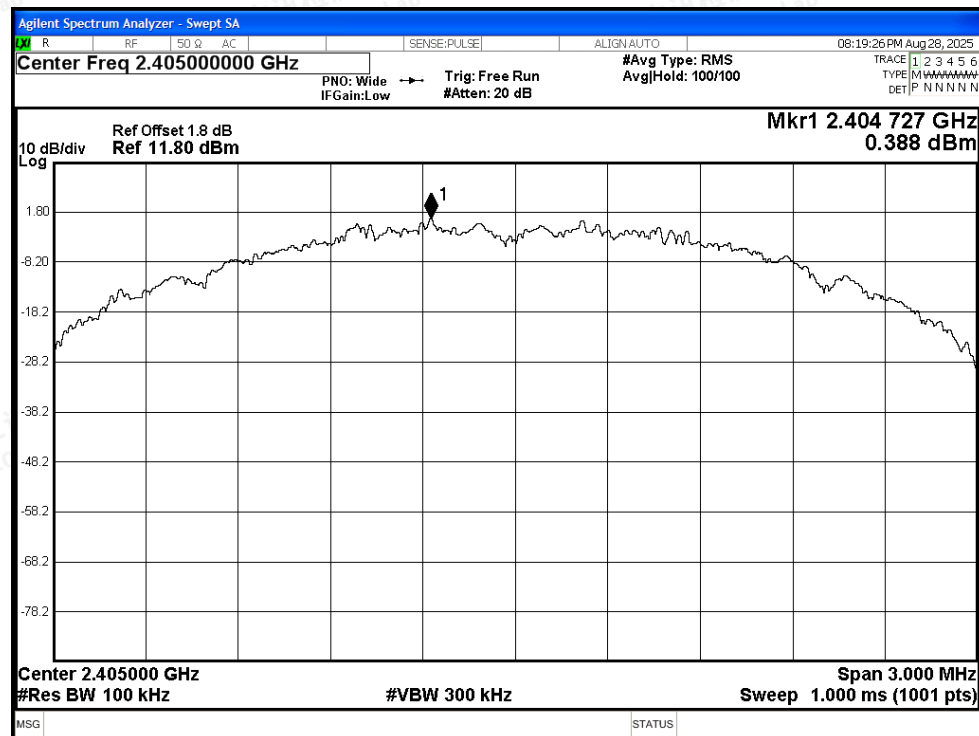
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	ZigBee	2405	Ant	-42.41	-20	Pass
NVNT	ZigBee	2440	Ant	-44.21	-20	Pass
NVNT	ZigBee	2480	Ant	-44.81	-20	Pass



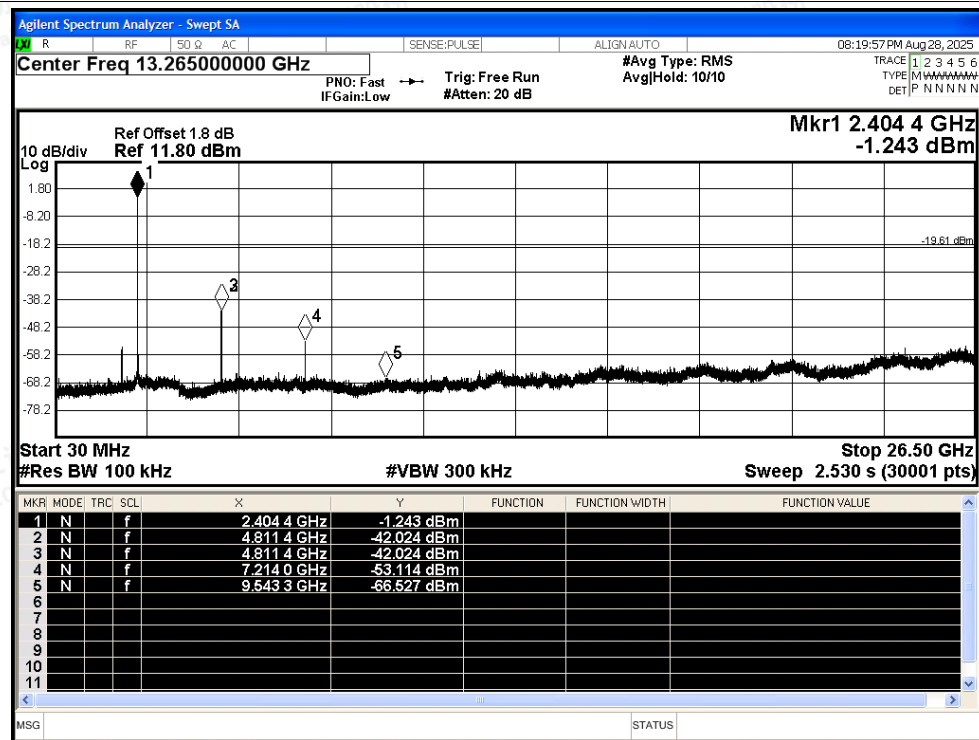


Test Graphs

Tx. Spurious NVNT ZigBee 2405MHz Ant Ref



Tx. Spurious NVNT ZigBee 2405MHz Ant Emission



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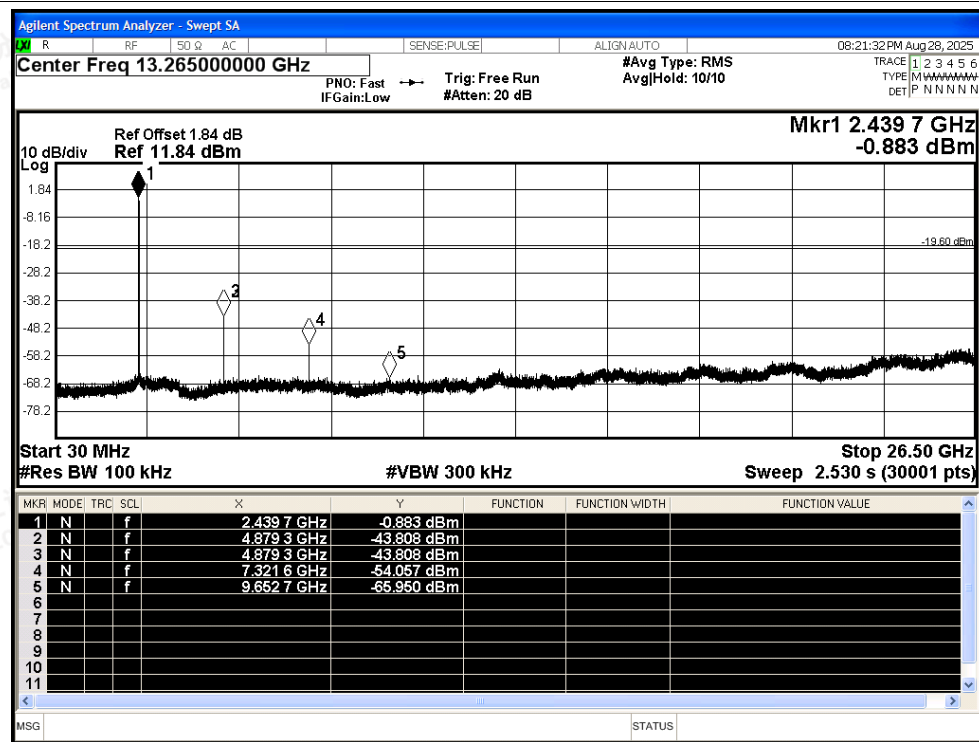
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Tx. Spurious NVNT ZigBee 2440MHz Ant Ref



Tx. Spurious NVNT ZigBee 2440MHz Ant Emission



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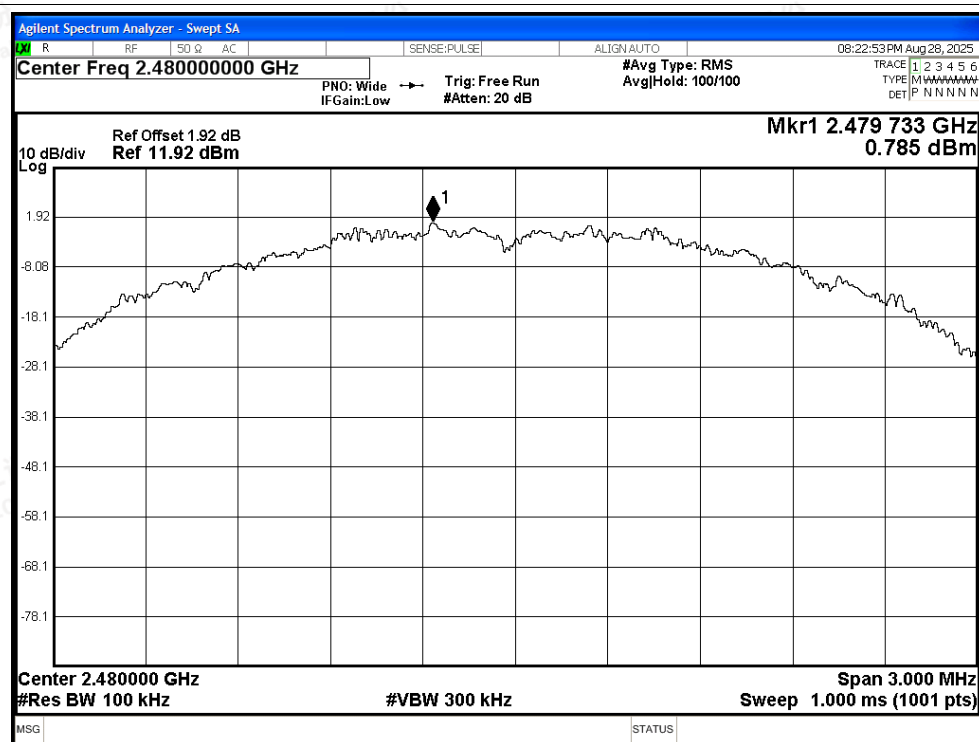
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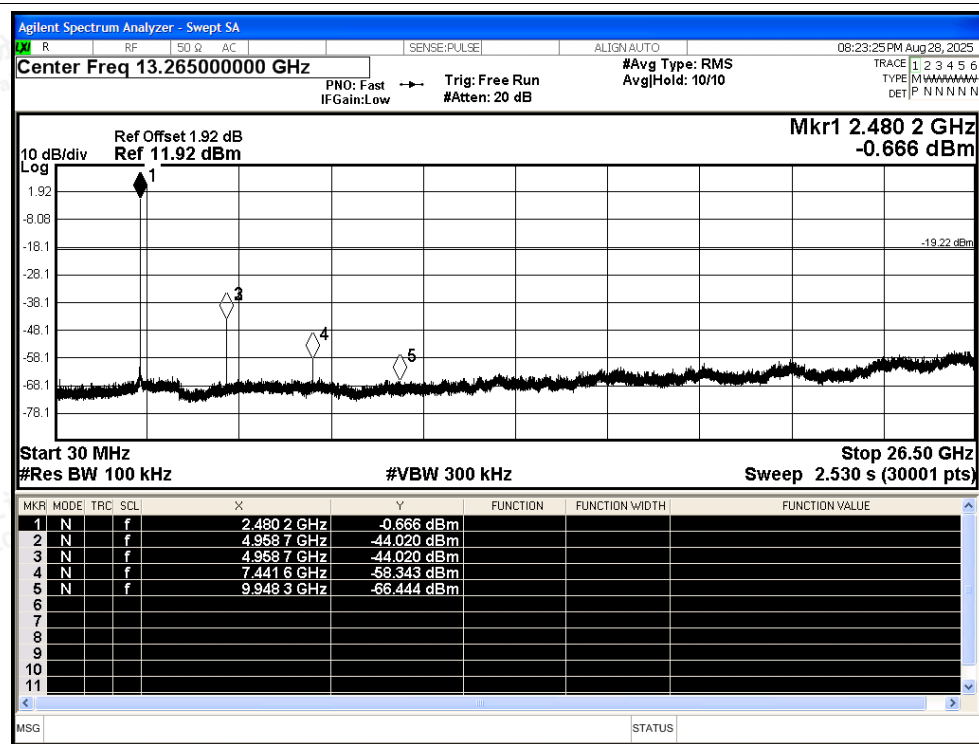
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Tx. Spurious NVNT ZigBee 2480MHz Ant Ref



Tx. Spurious NVNT ZigBee 2480MHz Ant Emission



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A.6 Duty Cycle

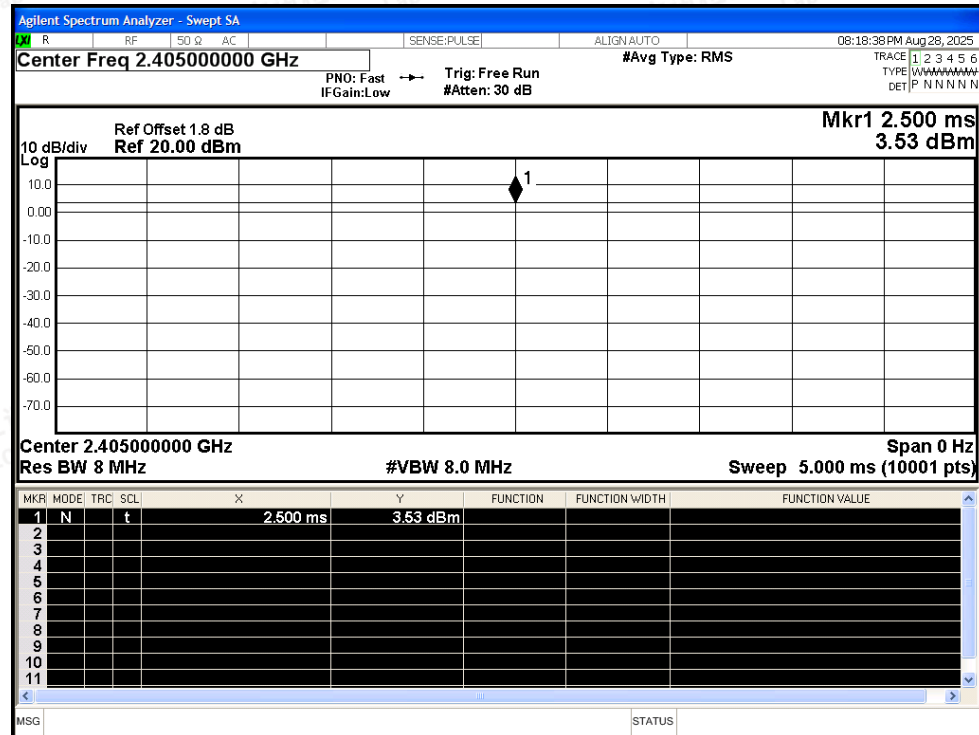
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	ZigBee	2405	Ant	100	0	0
NVNT	ZigBee	2440	Ant	100	0	0
NVNT	ZigBee	2480	Ant	100	0	0



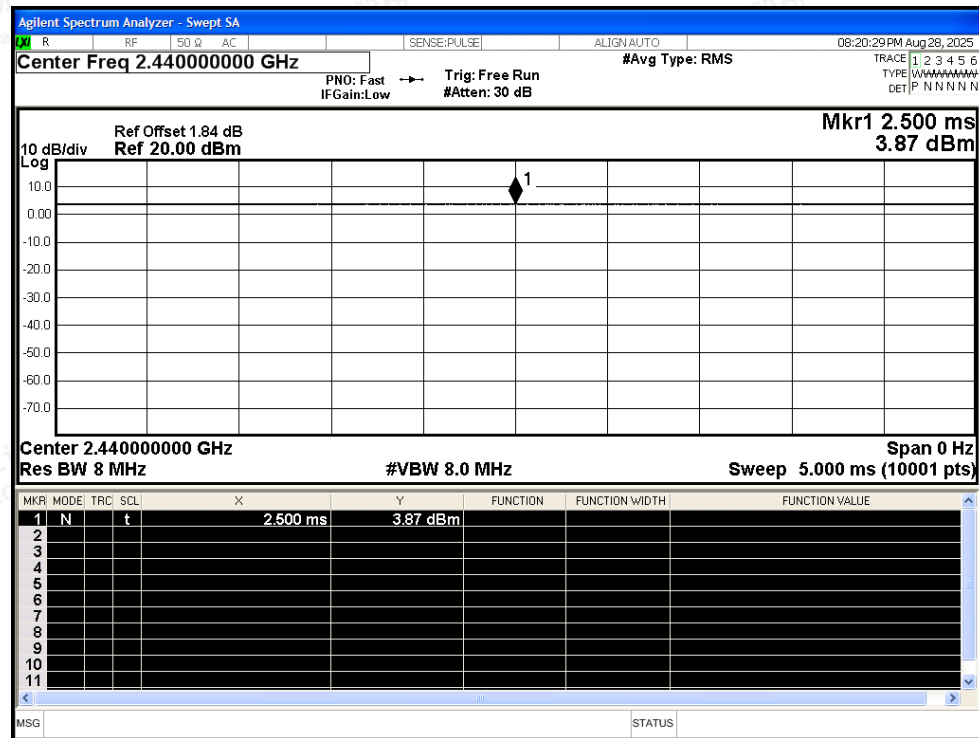


Test Graphs

Duty Cycle NVNT ZigBee 2405MHz Ant



Duty Cycle NVNT ZigBee 2440MHz Ant

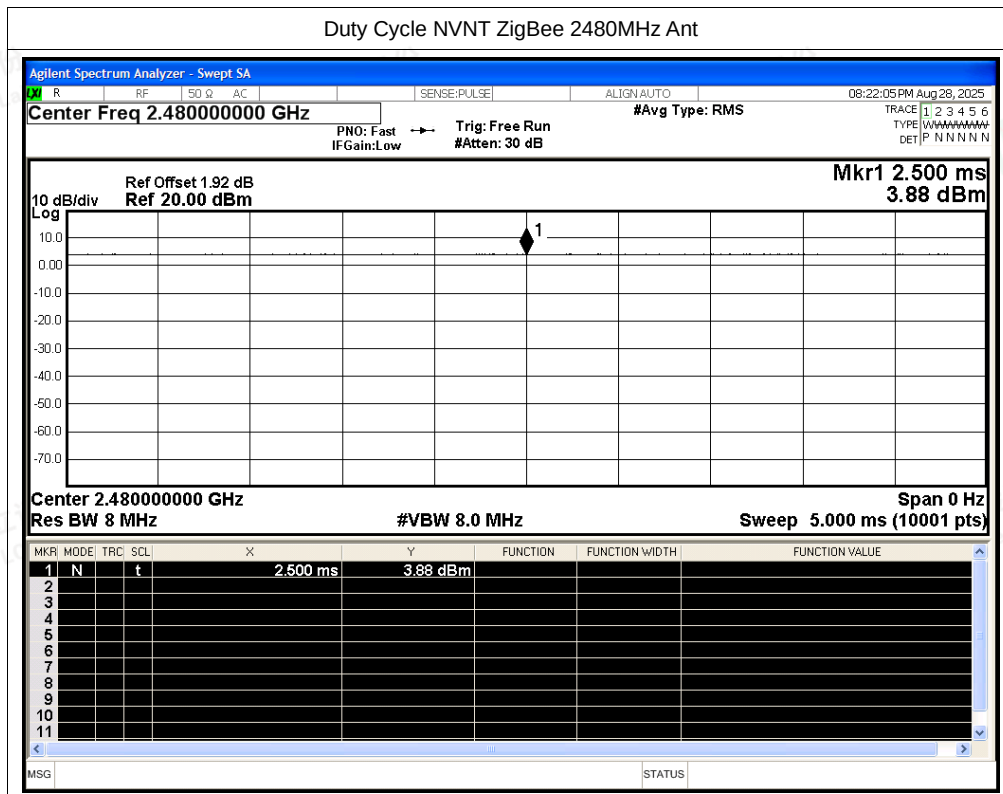


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A.7 Restrict Band

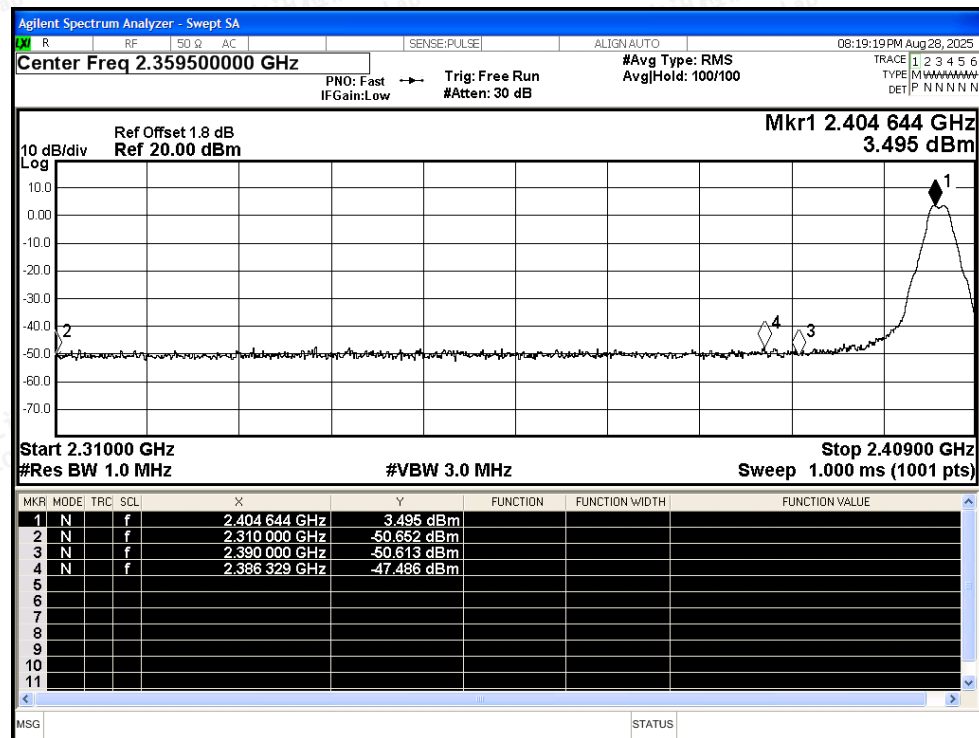
Condition	Mode	Frequency (MHz)	Antenna	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	ZigBee	2405	Ant	2310	-50.65	2	-	46.61	Peak	74	Pass
NVNT	ZigBee	2405	Ant	2310	-58.7	2	0	38.56	Average	54	Pass
NVNT	ZigBee	2405	Ant	2386.329	-47.49	2	-	49.77	Peak	74	Pass
NVNT	ZigBee	2405	Ant	2389.695	-56.97	2	0	40.29	Average	54	Pass
NVNT	ZigBee	2405	Ant	2390	-50.61	2	-	46.65	Peak	74	Pass
NVNT	ZigBee	2405	Ant	2390	-57.59	2	0	39.67	Average	54	Pass
NVNT	ZigBee	2480	Ant	2483.5	-41.52	2	-	55.74	Peak	74	Pass
NVNT	ZigBee	2480	Ant	2483.5	-47.05	2	0	50.21	Average	54	Pass
NVNT	ZigBee	2480	Ant	2483.536	-41.26	2	-	56	Peak	74	Pass
NVNT	ZigBee	2480	Ant	2483.512	-47.05	2	0	50.21	Average	54	Pass
NVNT	ZigBee	2480	Ant	2500	-49.73	2	-	47.53	Peak	74	Pass
NVNT	ZigBee	2480	Ant	2500	-57.75	2	0	39.51	Average	54	Pass



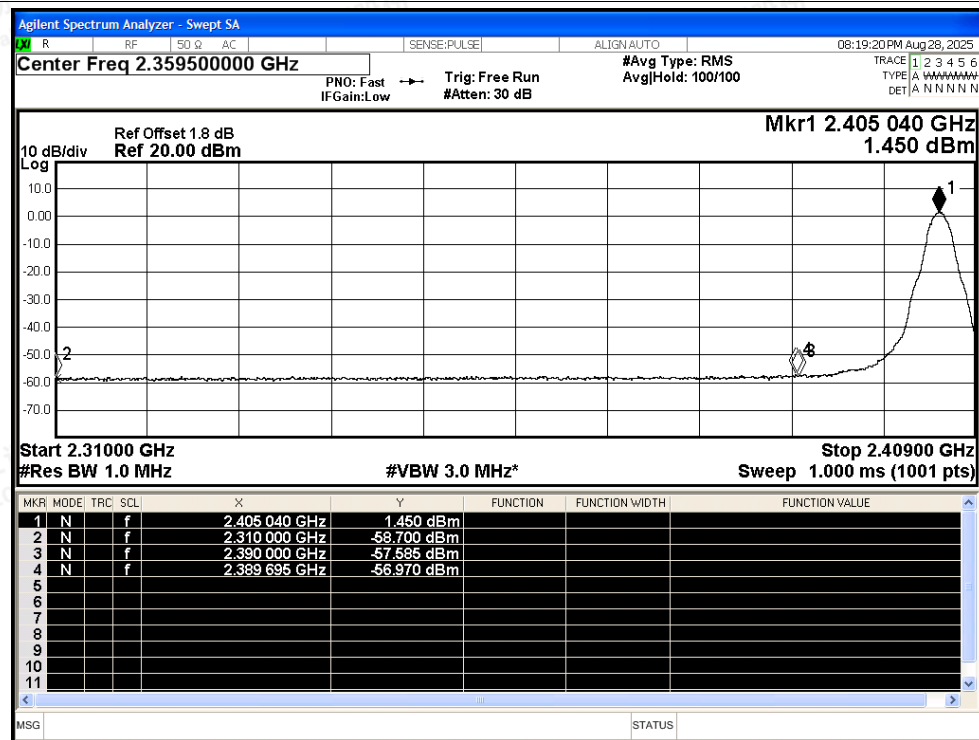


Test Graphs

Restrict Band NVNT ZigBee 2405MHz Ant Peak



Restrict Band NVNT ZigBee 2405MHz Ant Average



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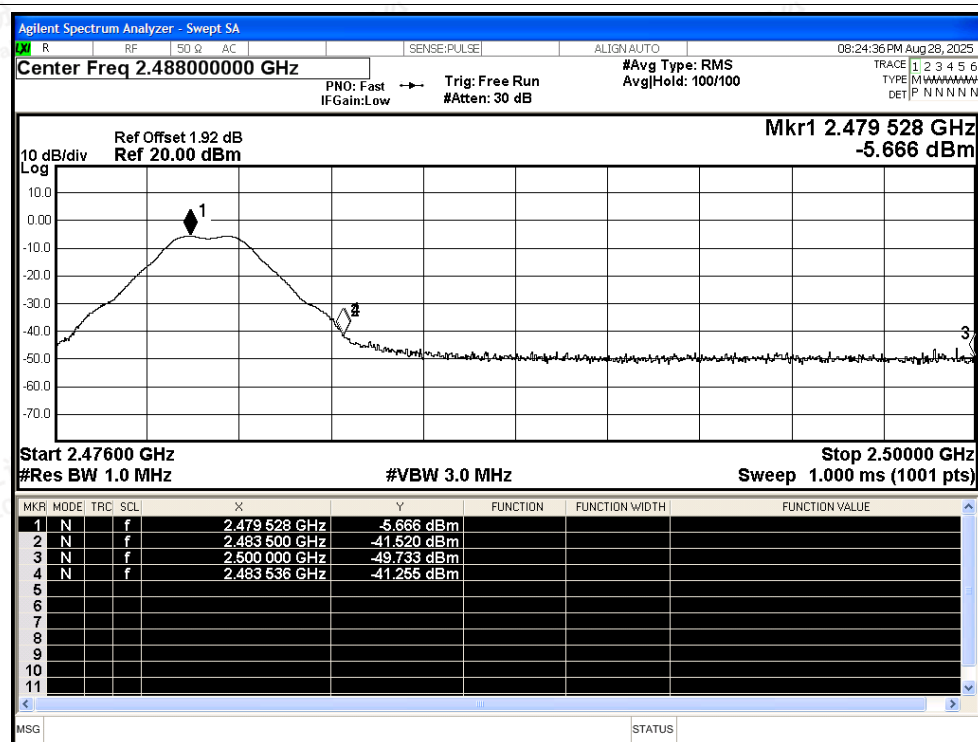
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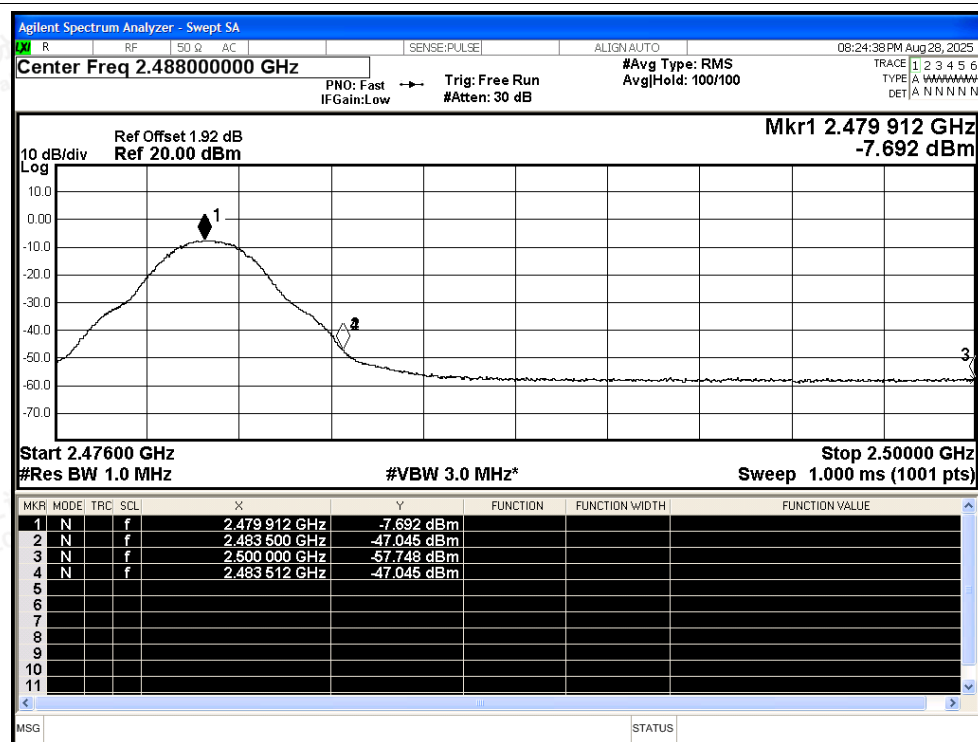
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Restrict Band NVNT ZigBee 2480MHz Ant Peak



Restrict Band NVNT ZigBee 2480MHz Ant Average



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