



Appendix A

RF Test Data for Zigbee (Conducted Measurement)

Product Name: Smart zigbee switch

Test Model: TYSH-Z2813

Environmental Conditions

Temperature:	23.8°C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Jerry Chu
Supervised by:	Nick Peng



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A.1 -6dB Bandwidth

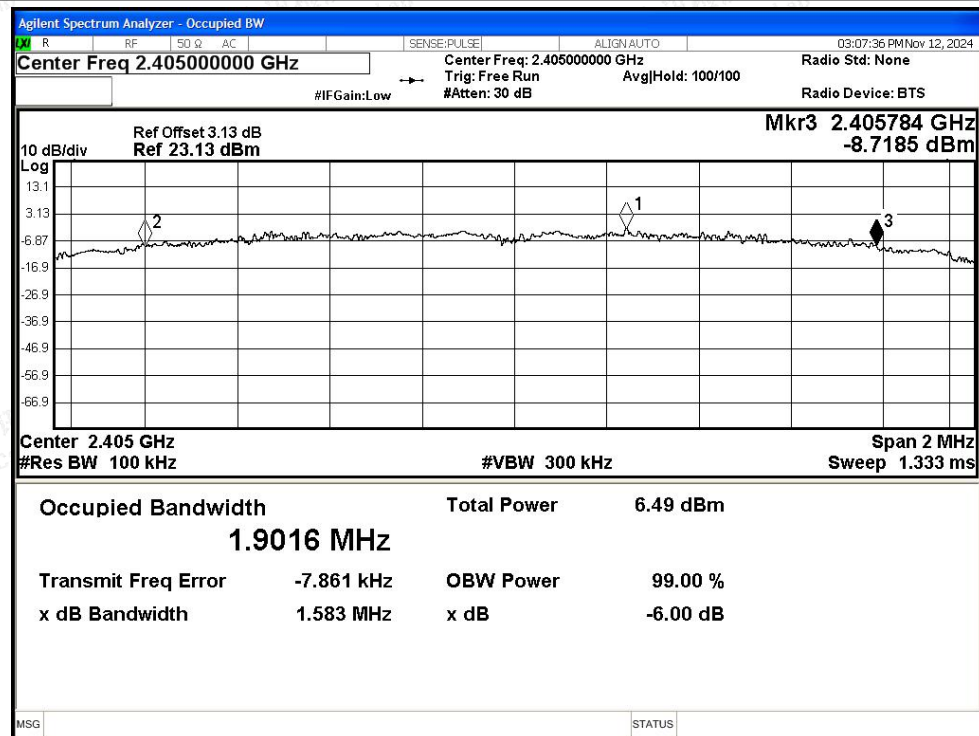
Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	ZIGBEE	2405	Ant1	1.583	≥ 0.5	Pass
NVNT	ZIGBEE	2440	Ant1	1.602	≥ 0.5	Pass
NVNT	ZIGBEE	2480	Ant1	1.592	≥ 0.5	Pass



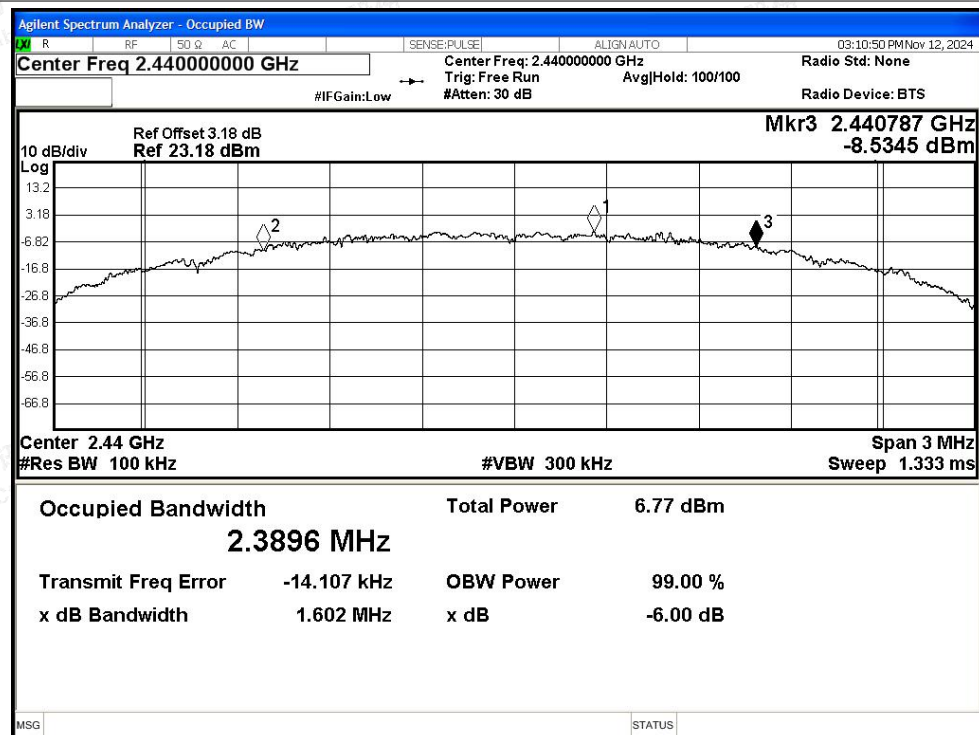


Test Graphs

-6dB Bandwidth NVNT ZIGBEE 2405MHz Ant1



-6dB Bandwidth NVNT ZIGBEE 2440MHz Ant1

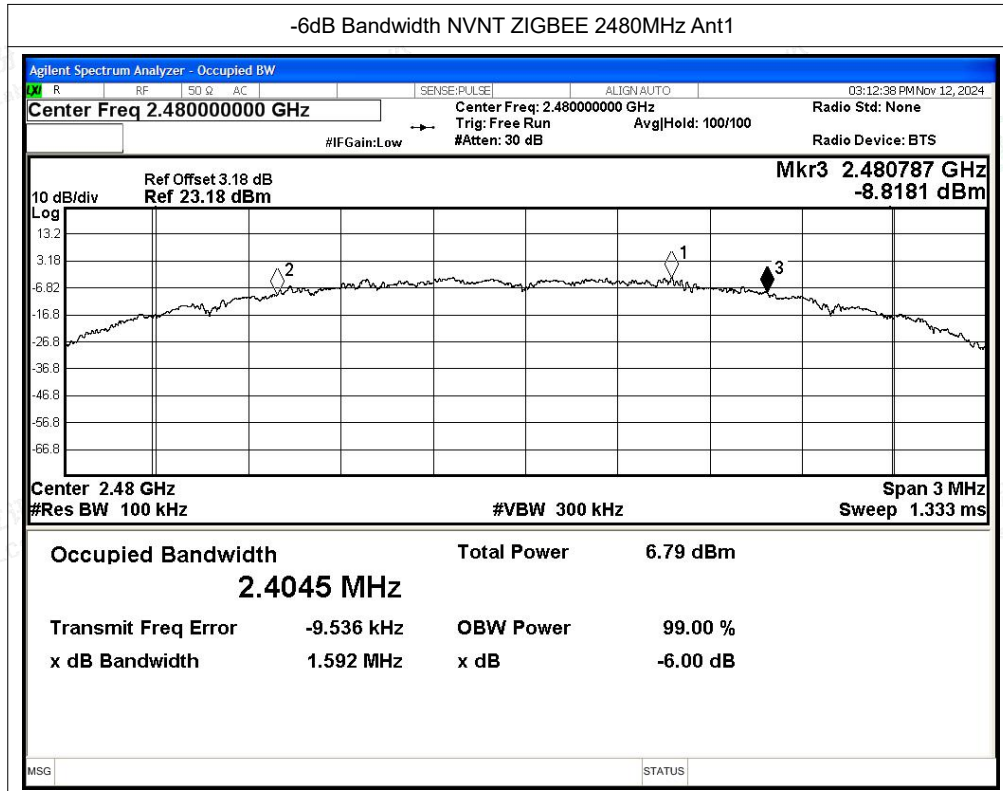


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A.2 Maximum Peak Conducted Output Power

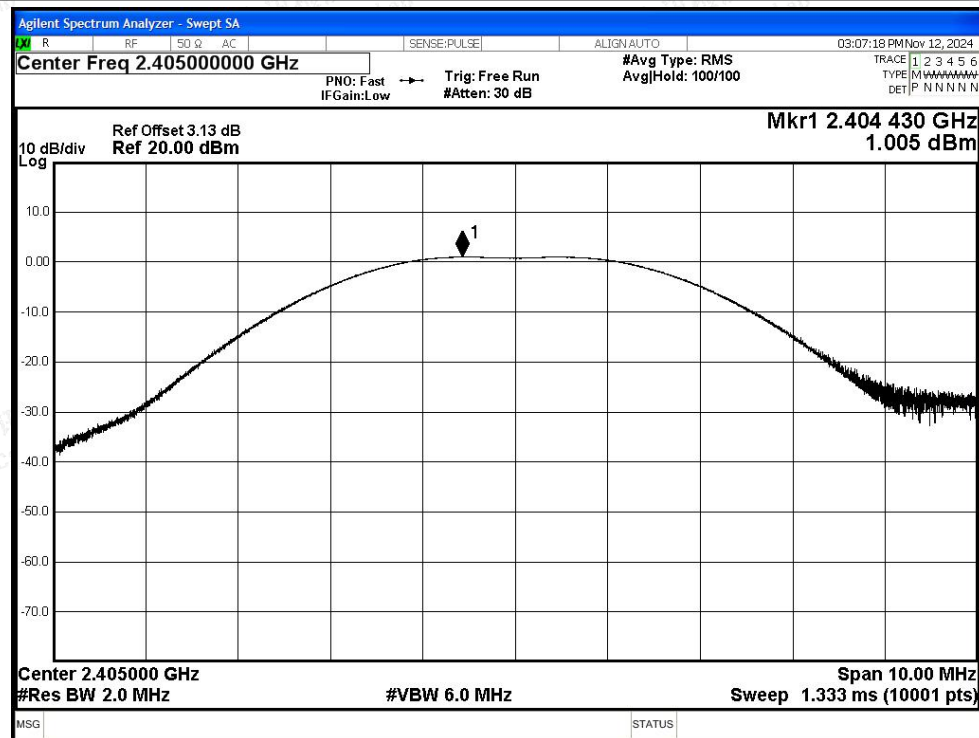
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	ZIGBEE	2405	Ant	1	30	Pass
NVNT	ZIGBEE	2440	Ant	1.02	30	Pass
NVNT	ZIGBEE	2480	Ant	1.18	30	Pass



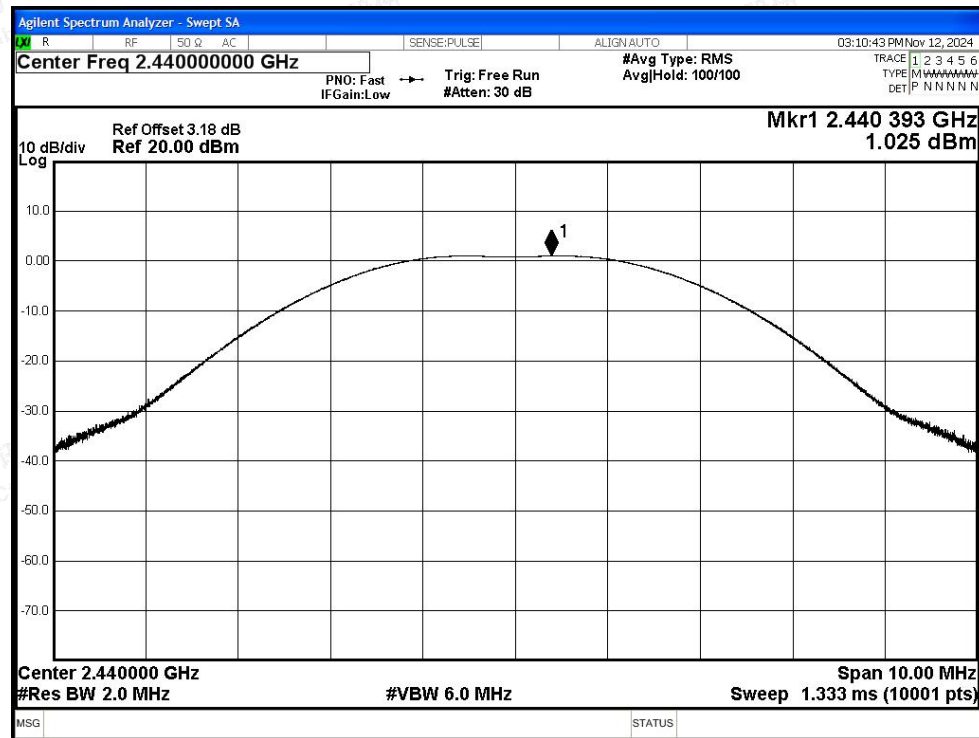


Test Graphs

Power NVNT ZIGBEE 2405MHz Ant1



Power NVNT ZIGBEE 2440MHz Ant1

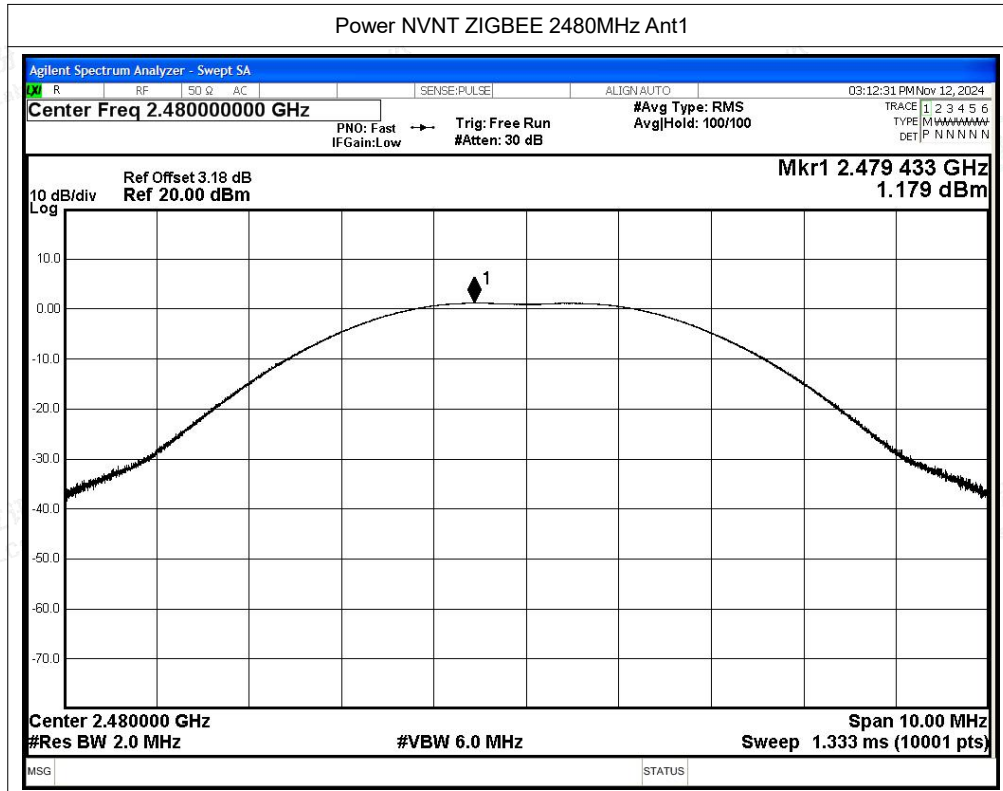


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A.3 Maximum Power Spectral Density Level

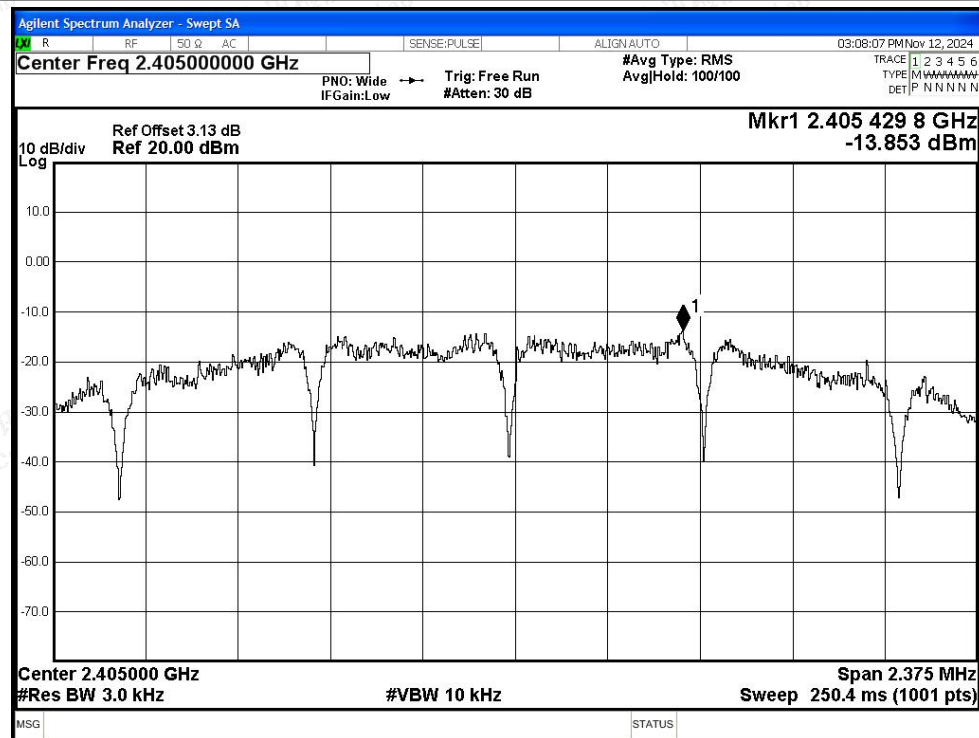
Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	ZIGBEE	2405	Ant	-13.85	8	Pass
NVNT	ZIGBEE	2440	Ant	-15.22	8	Pass
NVNT	ZIGBEE	2480	Ant	-12.61	8	Pass



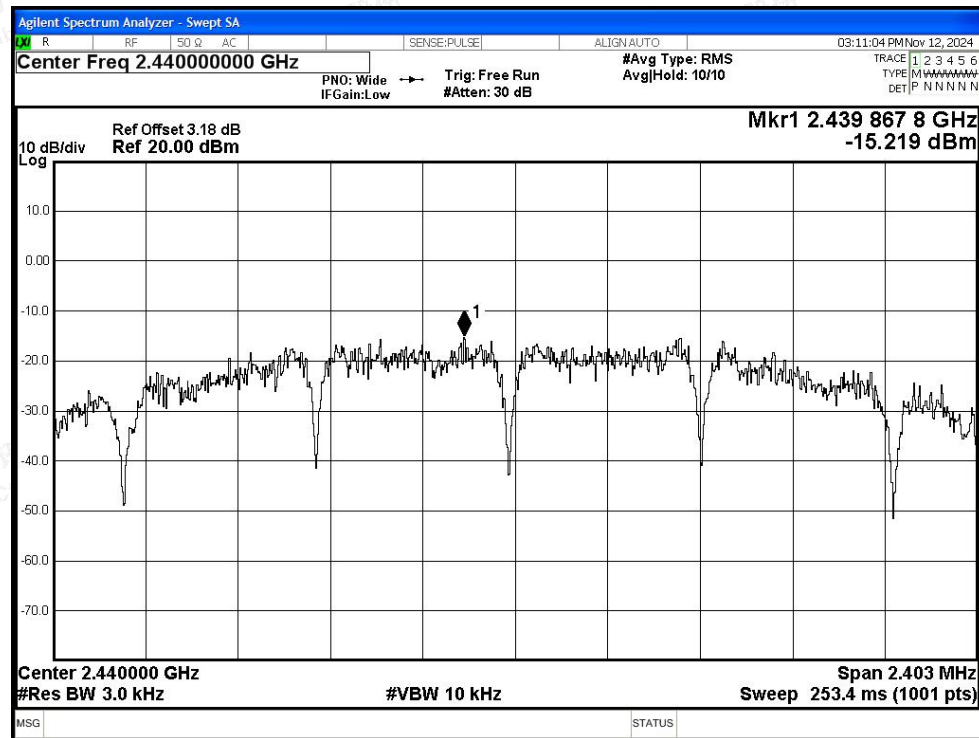


Test Graphs

PSD NVNT ZIGBEE 2405MHz Ant1



PSD NVNT ZIGBEE 2440MHz Ant1

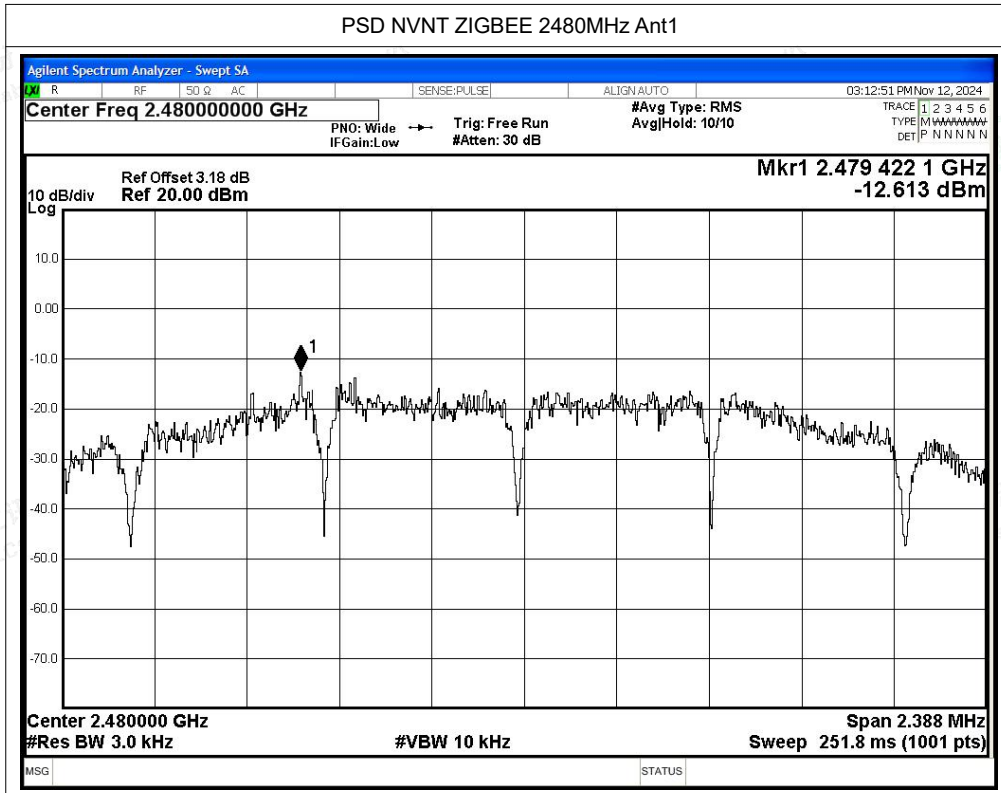


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A.4 Band Edge

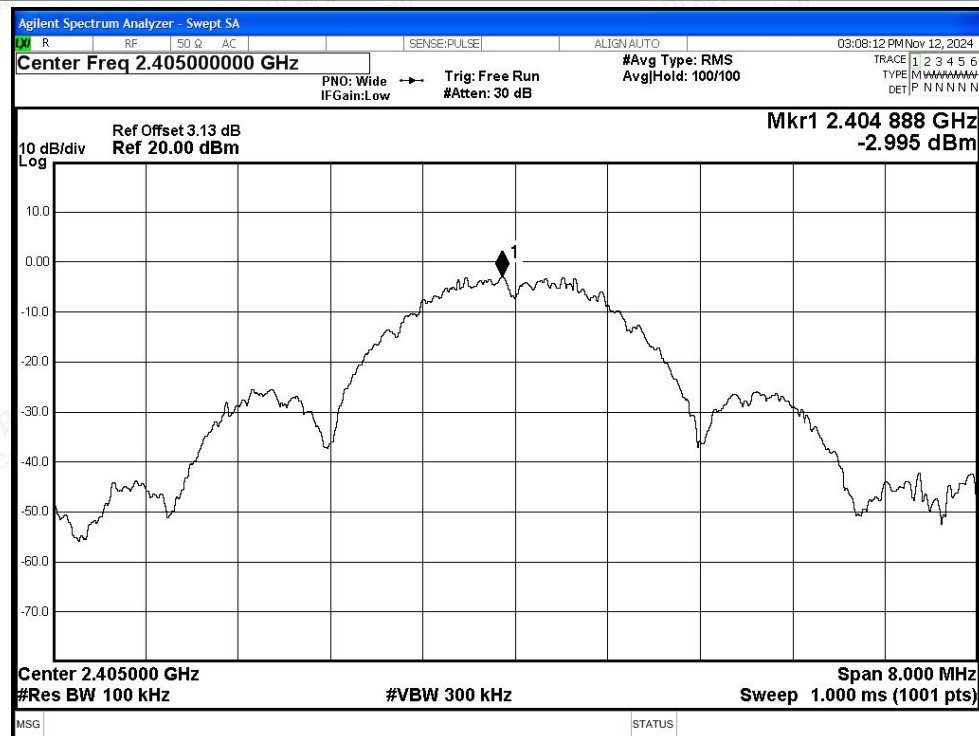
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	ZIGBEE	2405	Ant1	-47.76	-20	Pass
NVNT	ZIGBEE	2480	Ant1	-44.5	-20	Pass



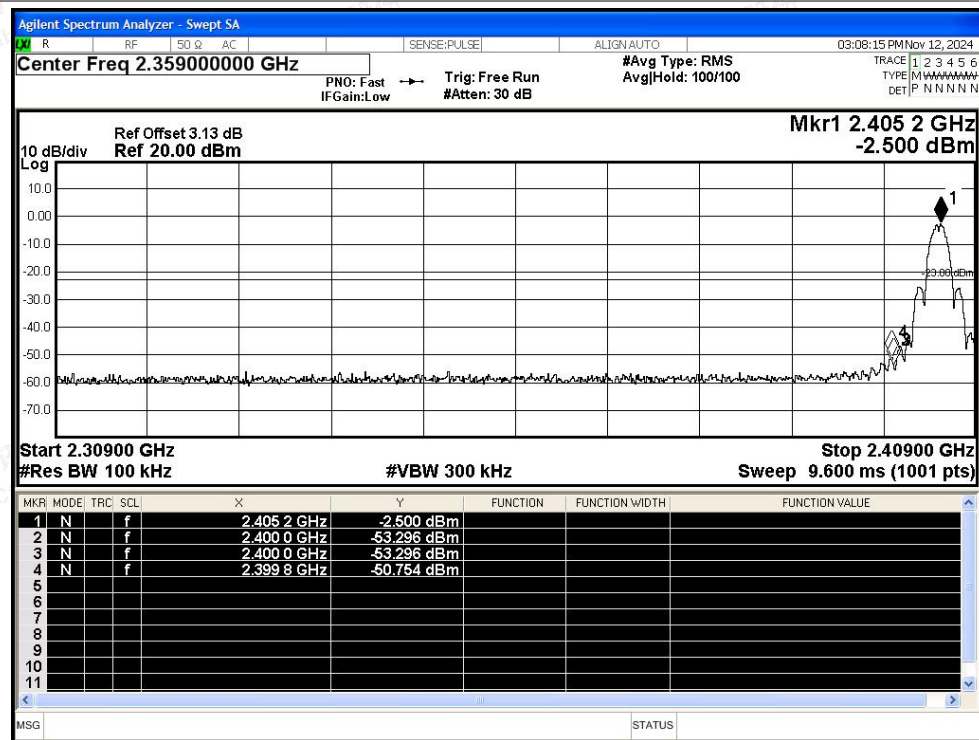


Test Graphs

Band Edge NVNT ZIGBEE 2405MHz Ant1 Ref



Band Edge NVNT ZIGBEE 2405MHz Ant1 Emission



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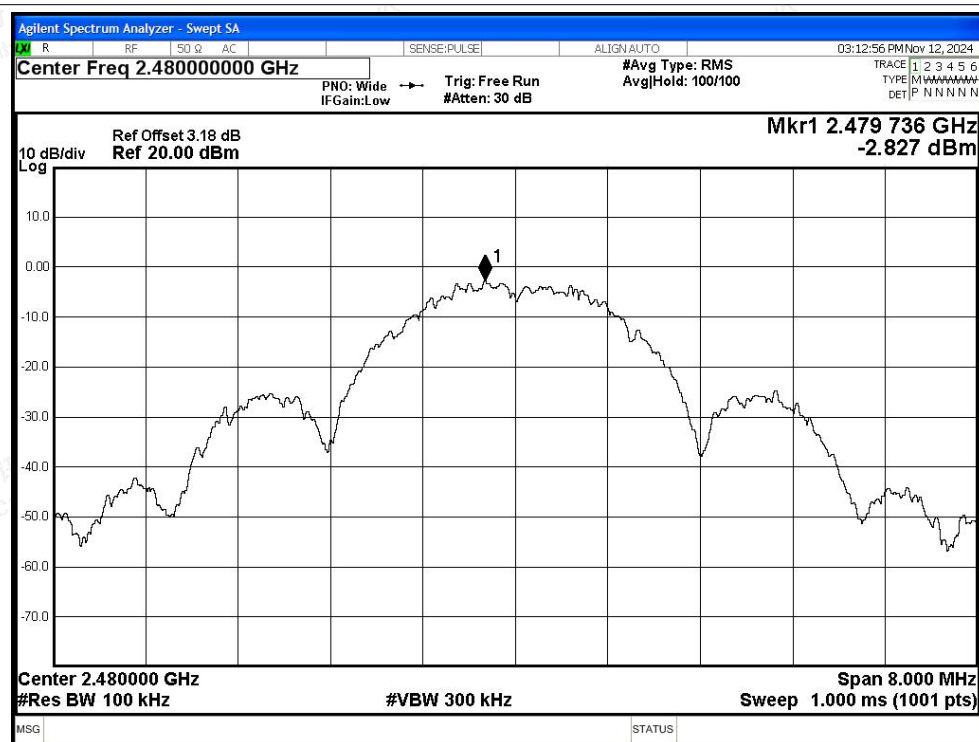
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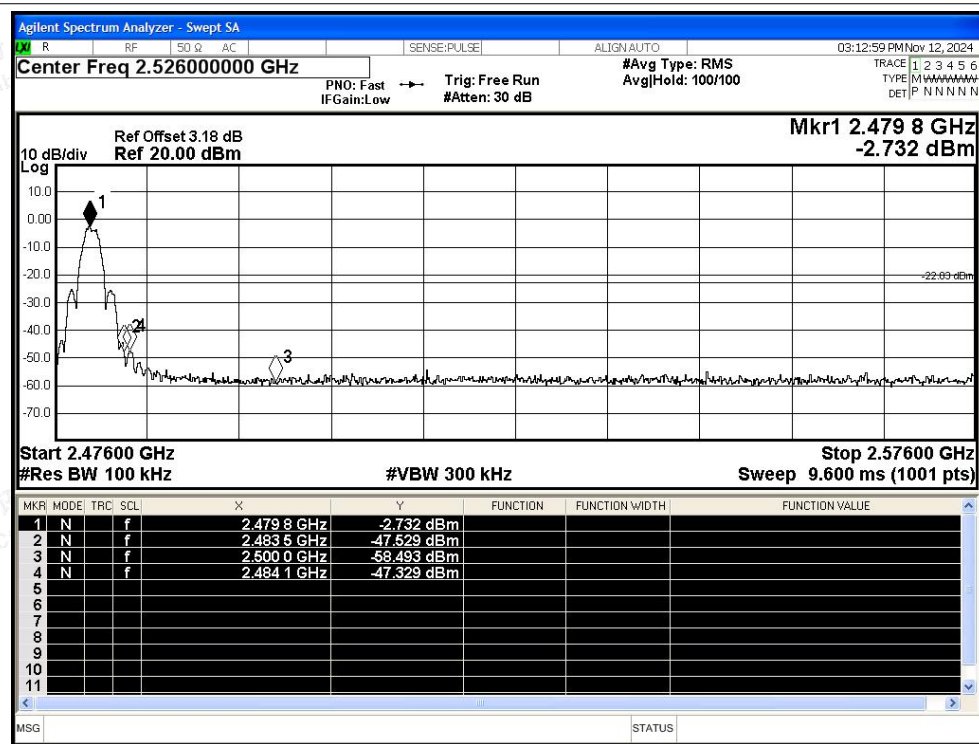
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Band Edge NVNT ZIGBEE 2480MHz Ant1 Ref



Band Edge NVNT ZIGBEE 2480MHz Ant1 Emission



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A.5 Conducted RF Spurious Emission

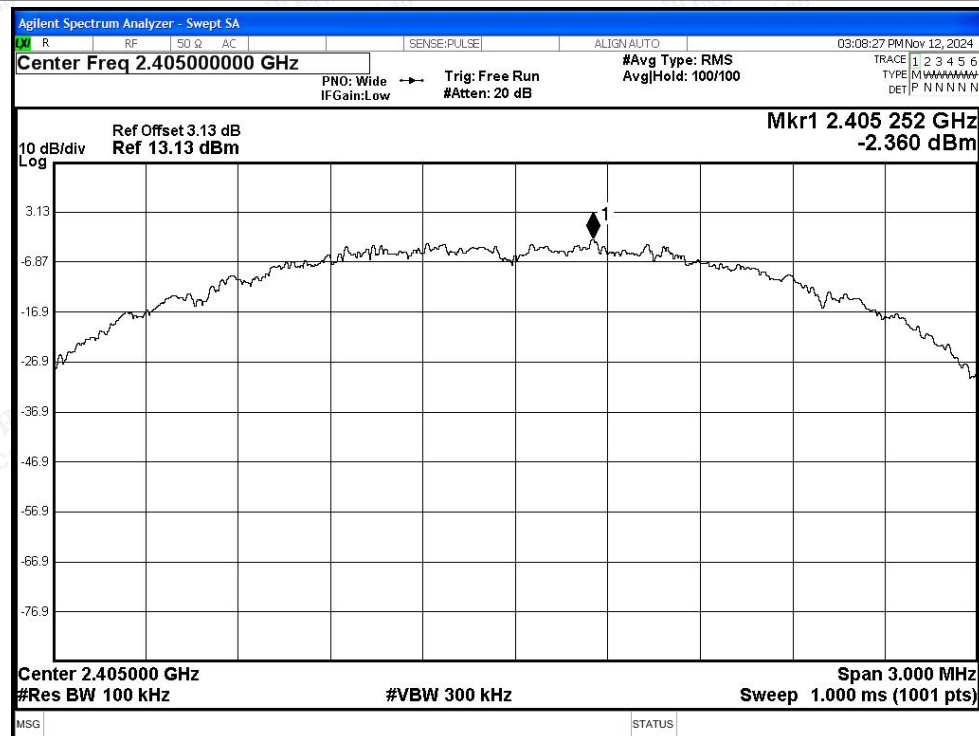
Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	ZIGBEE	2405	Ant1	-43.92	-20	Pass
NVNT	ZIGBEE	2440	Ant1	-45.57	-20	Pass
NVNT	ZIGBEE	2480	Ant1	-47.18	-20	Pass



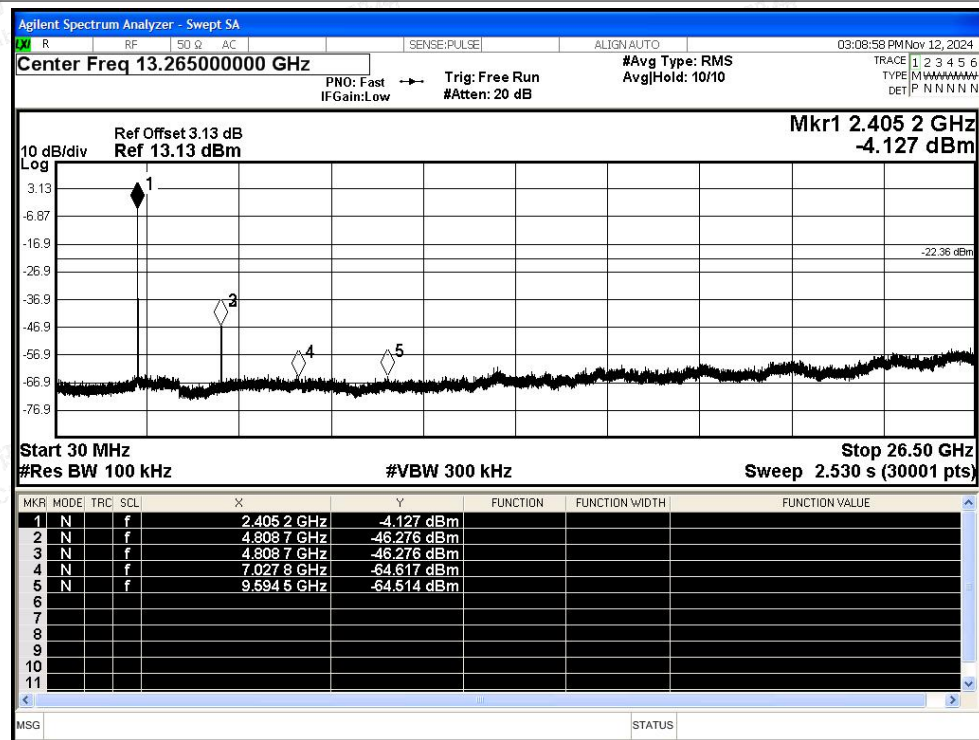


Test Graphs

Tx. Spurious NVNT ZIGBEE 2405MHz Ant1 Ref



Tx. Spurious NVNT ZIGBEE 2405MHz Ant1 Emission



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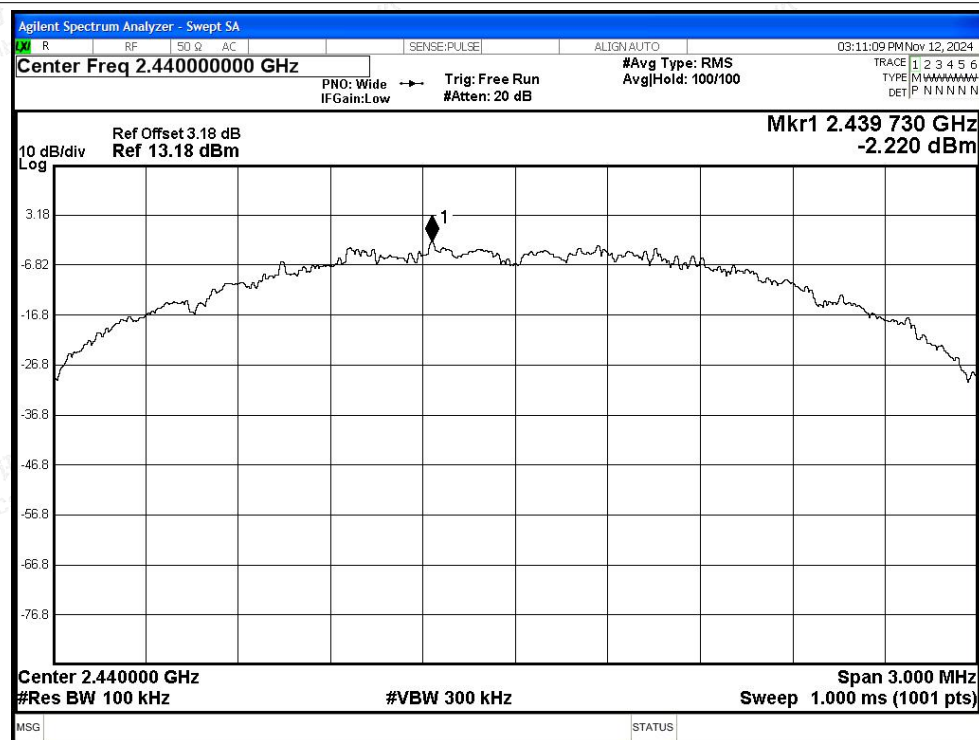
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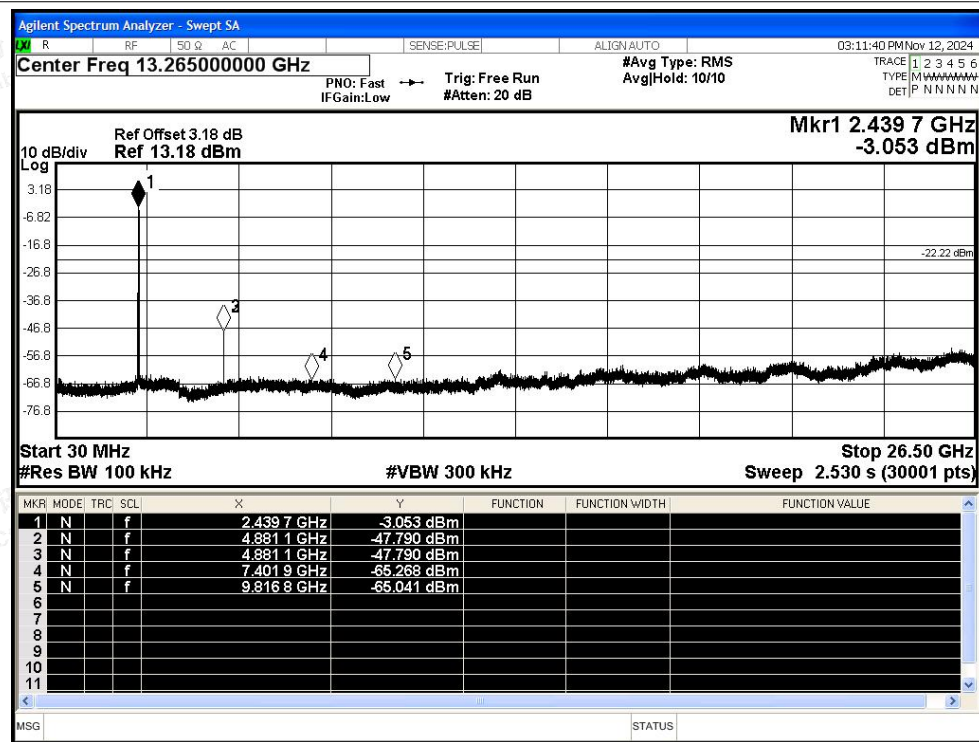
Scan code to check authenticity



Tx. Spurious NVNT ZIGBEE 2440MHz Ant1 Ref



Tx. Spurious NVNT ZIGBEE 2440MHz Ant1 Emission



Shenzhen LCS Compliance Testing Laboratory Ltd.

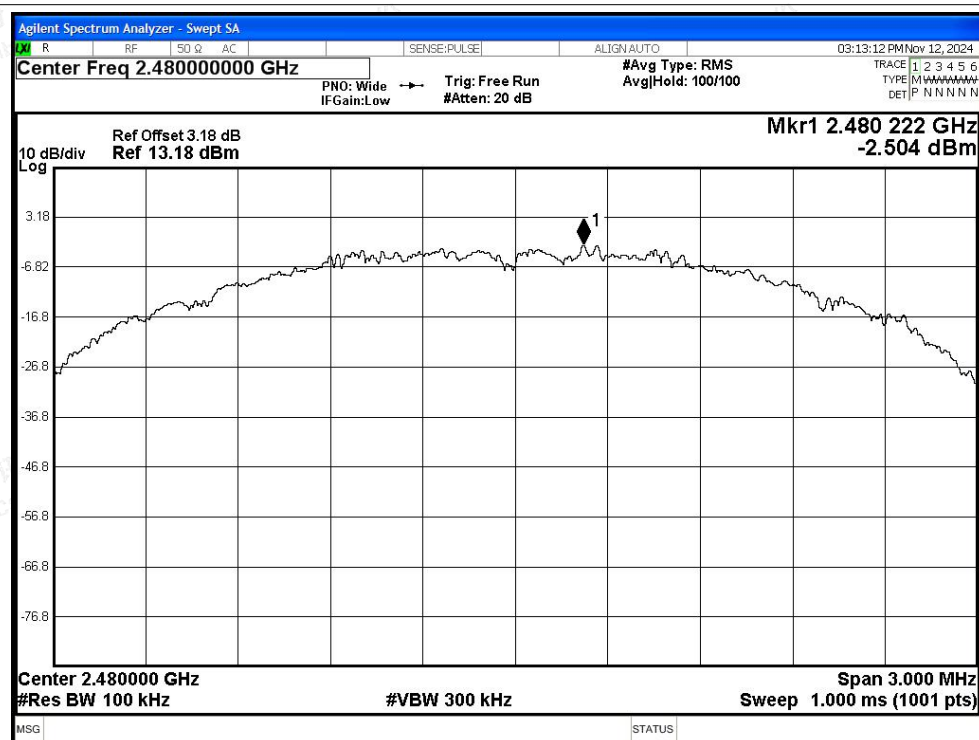
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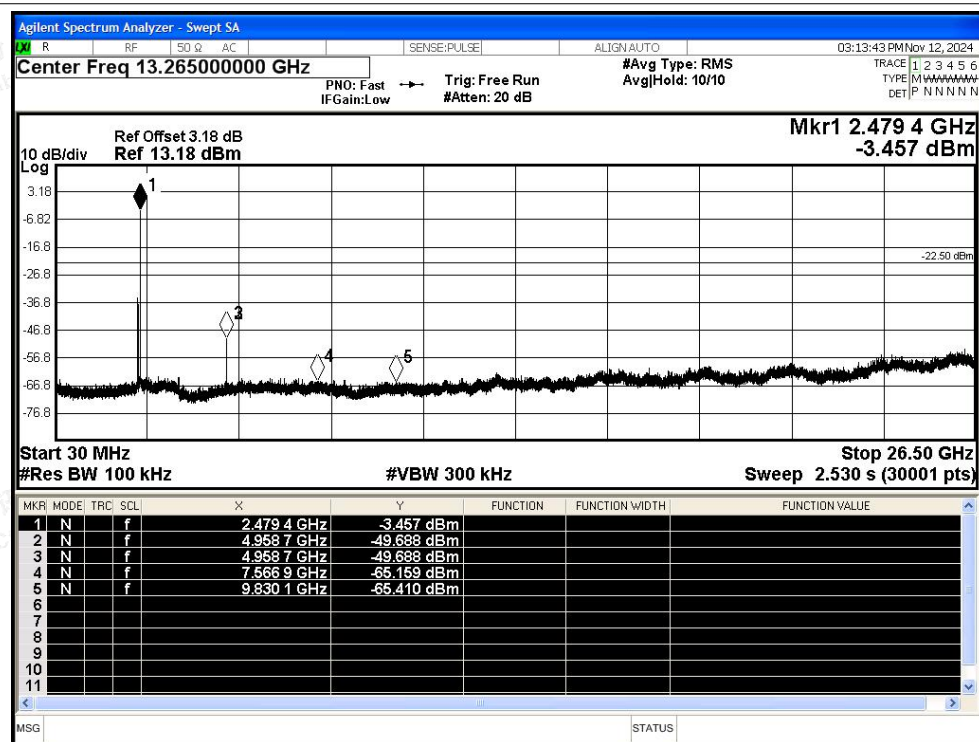
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Tx. Spurious NVNT ZIGBEE 2480MHz Ant1 Ref



Tx. Spurious NVNT ZIGBEE 2480MHz Ant1 Emission



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A.6 Duty Cycle

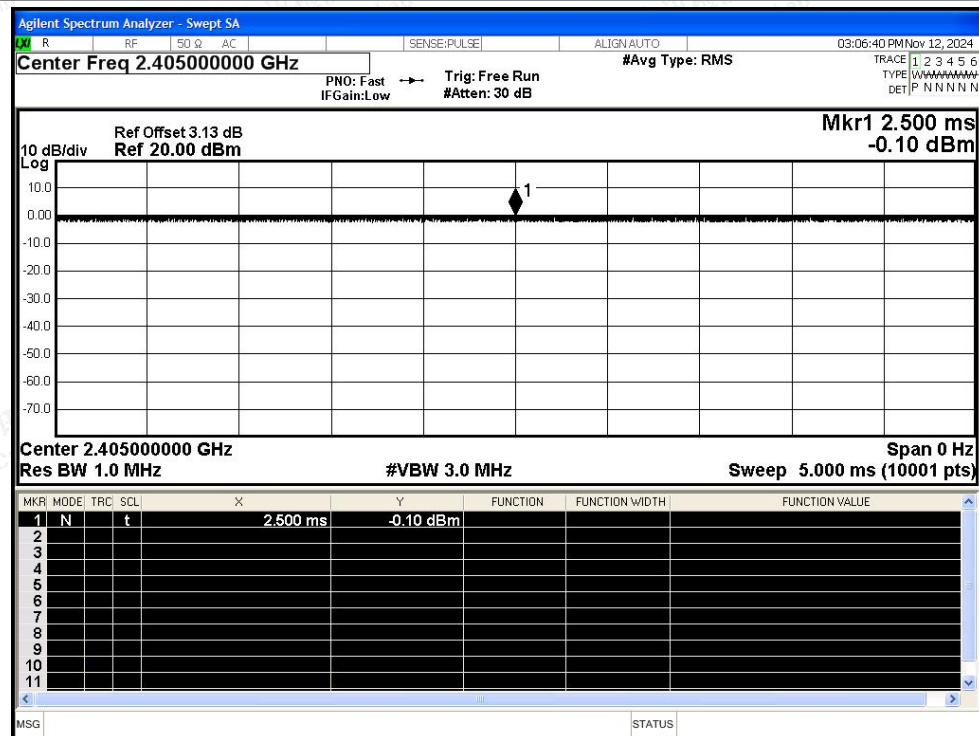
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
NVNT	ZIGBEE	2405	Ant1	100	0	0
NVNT	ZIGBEE	2440	Ant1	100	0	0
NVNT	ZIGBEE	2480	Ant1	100	0	0



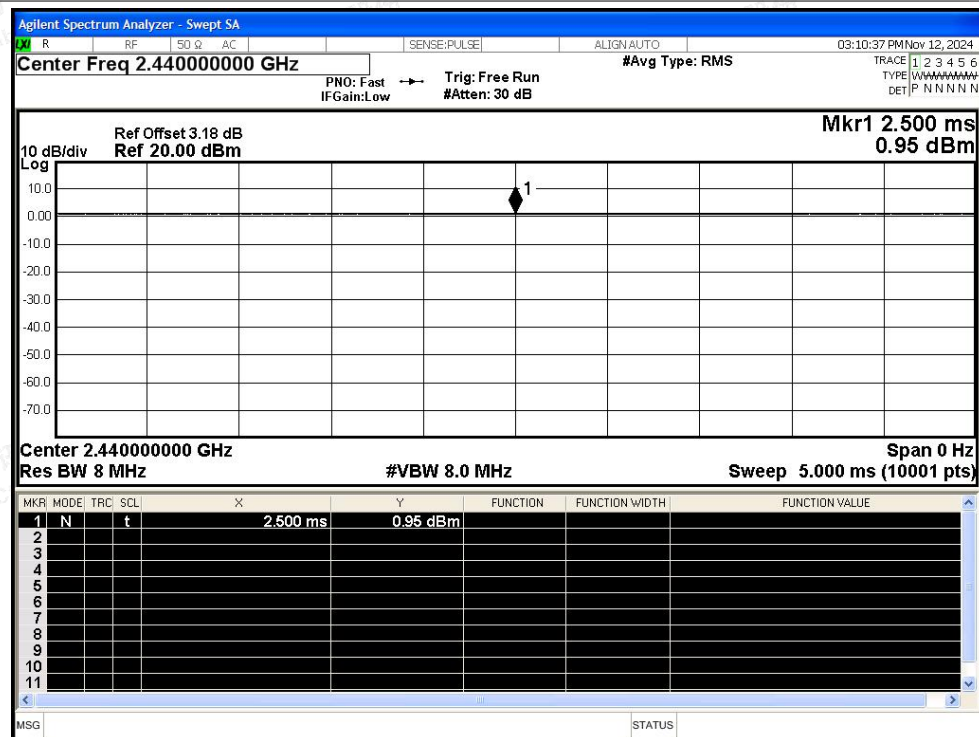


Test Graphs

Duty Cycle NVNT ZIGBEE 2405MHz Ant1



Duty Cycle NVNT ZIGBEE 2440MHz Ant1

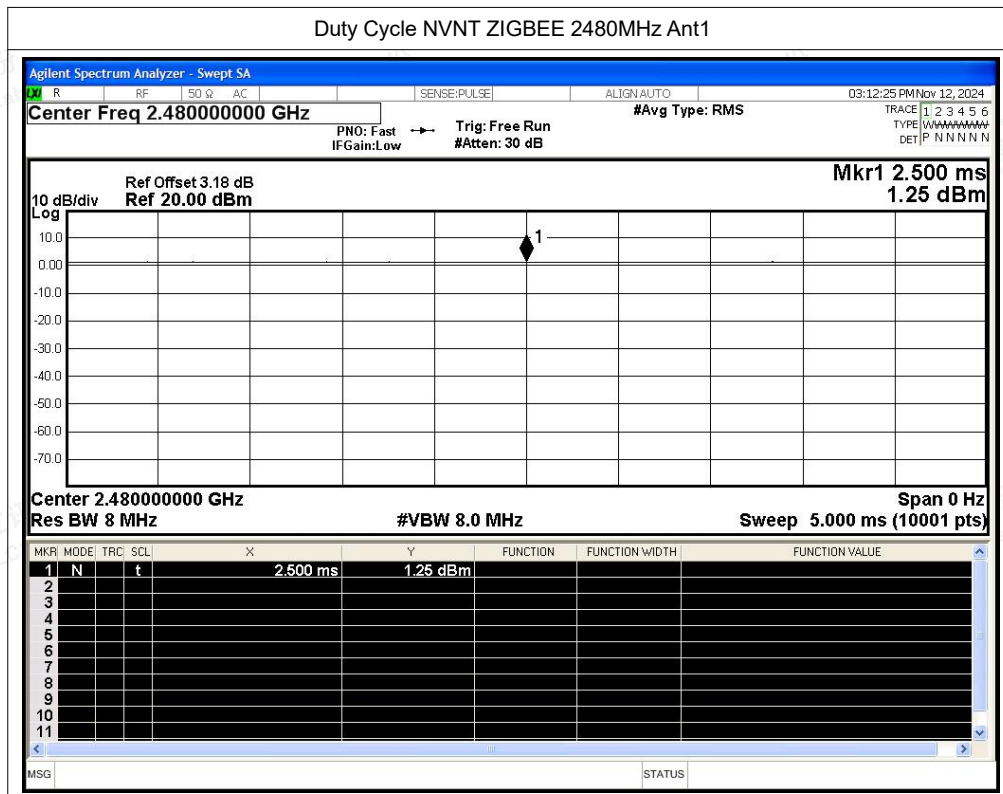


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A.7 Restrict Band

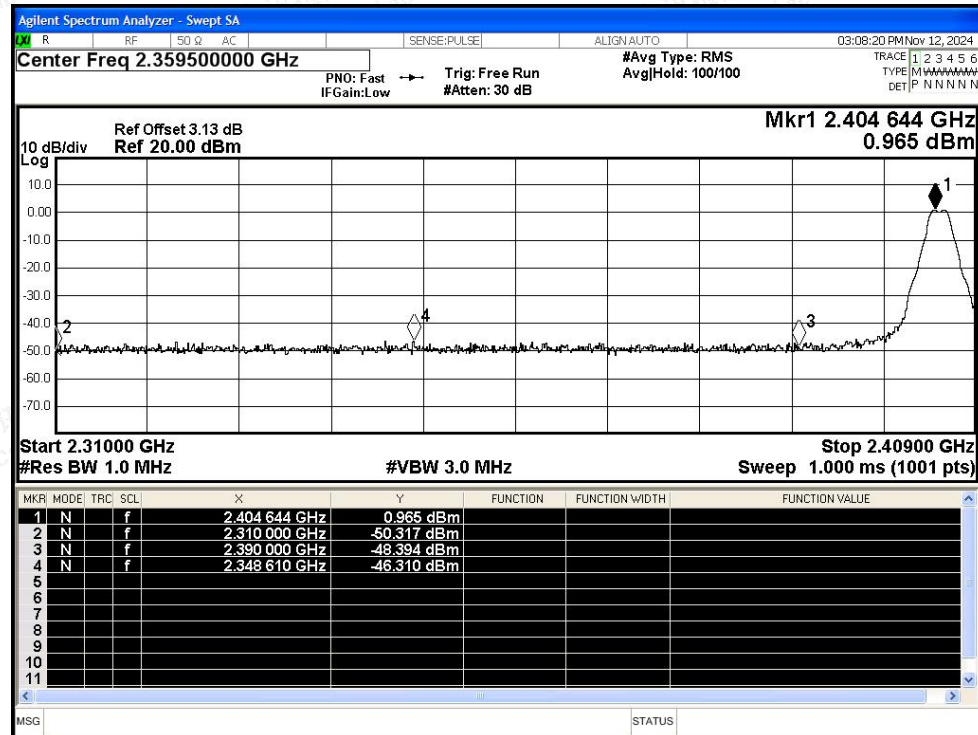
Condition	Mode	Frequency (MHz)	Antenna	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor (dB)	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
NVNT	ZIGBEE	2405	Ant1	2310	-50.32	2	-	46.94	Peak	74	Pass
NVNT	ZIGBEE	2405	Ant1	2310	-57.66	2	0	39.6	Average	54	Pass
NVNT	ZIGBEE	2405	Ant1	2348.61	-46.31	2	-	50.95	Peak	74	Pass
NVNT	ZIGBEE	2405	Ant1	2357.322	-56.28	2	0	40.98	Average	54	Pass
NVNT	ZIGBEE	2405	Ant1	2390	-48.39	2	-	48.87	Peak	74	Pass
NVNT	ZIGBEE	2405	Ant1	2390	-56.78	2	0	40.48	Average	54	Pass
NVNT	ZIGBEE	2480	Ant1	2483.5	-39.86	2	-	57.4	Peak	74	Pass
NVNT	ZIGBEE	2480	Ant1	2483.5	-46.42	2	0	50.84	Average	54	Pass
NVNT	ZIGBEE	2480	Ant1	2483.536	-39.25	2	-	58.01	Peak	74	Pass
NVNT	ZIGBEE	2480	Ant1	2483.512	-46.42	2	0	50.84	Average	54	Pass
NVNT	ZIGBEE	2480	Ant1	2500	-49.28	2	-	47.98	Peak	74	Pass
NVNT	ZIGBEE	2480	Ant1	2500	-56.79	2	0	40.47	Average	54	Pass



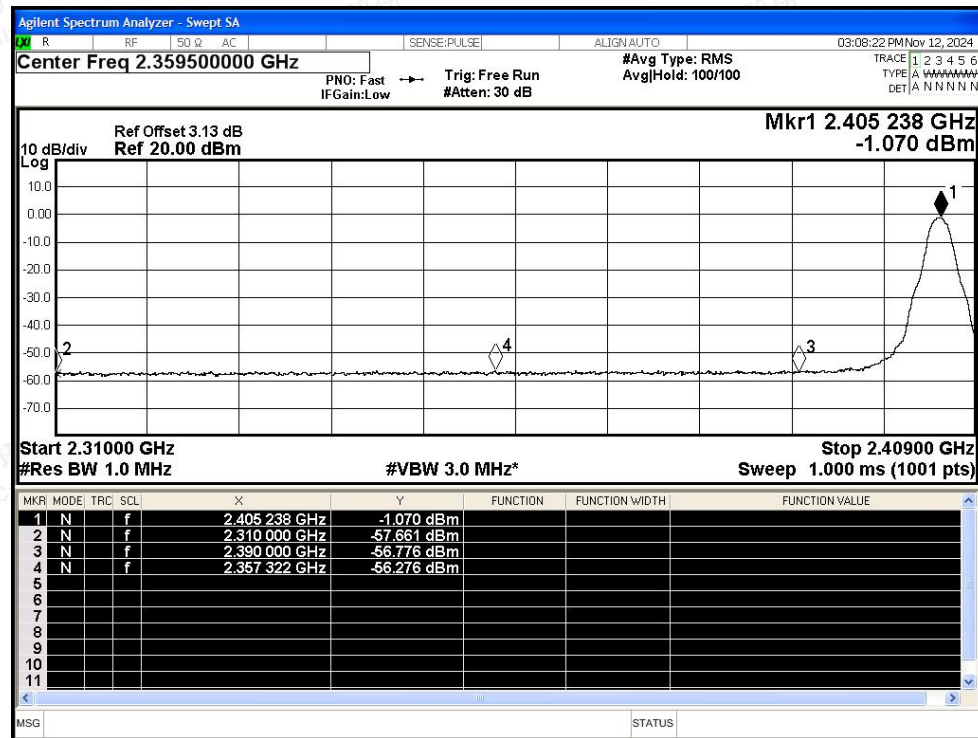


Test Graphs

Restrict Band NVNT ZIGBEE 2405MHz Ant1 Peak



Restrict Band NVNT ZIGBEE 2405MHz Ant1 Average



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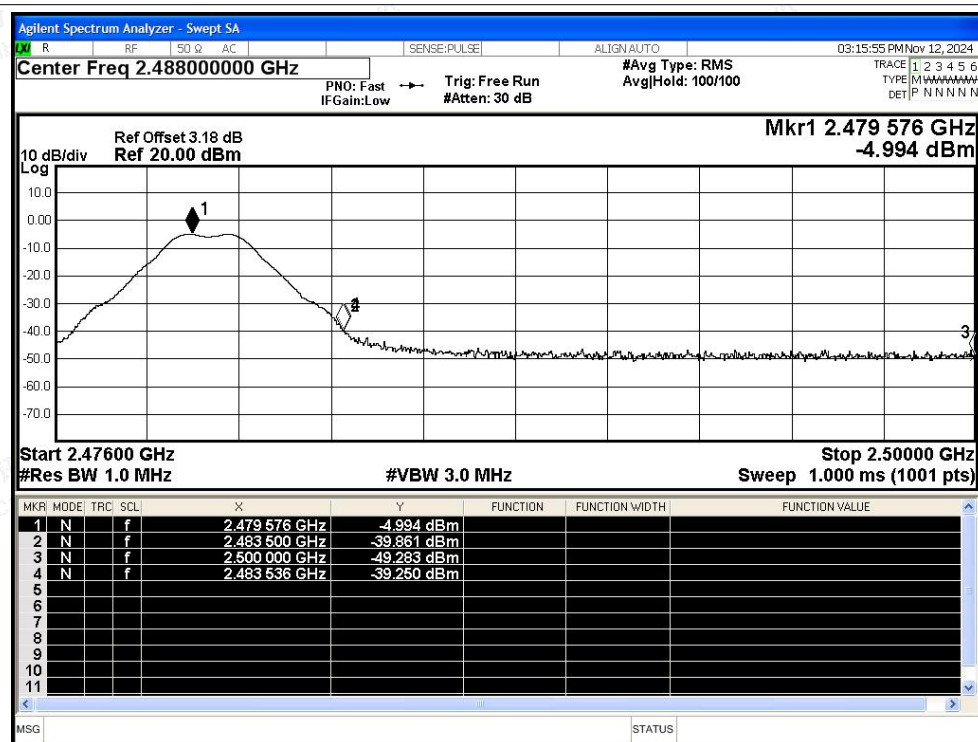
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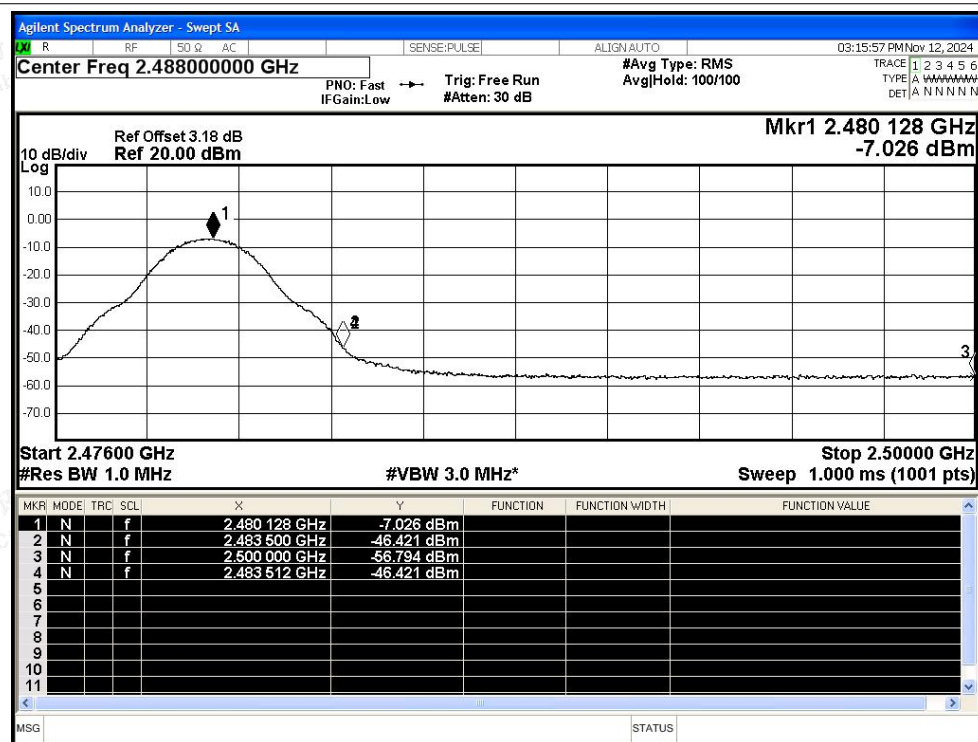
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Restrict Band NVNT ZIGBEE 2480MHz Ant1 Peak



Restrict Band NVNT ZIGBEE 2480MHz Ant1 Average



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