

Appendix Test Data for WLAN(2. 4G) (Conducted Measurement)

Product Name: WIFI TOUCH SCREEN KARAOKE SYSTEM

Trade Mark: singing machine

Test Model: ISM9033

FCC ID: 2AAXO-ISM9033

Environmental Conditions

Temperature:	23.5℃
Relative Humidity:	58%
ATM Pressure:	100.0 kPa
Test Engineer:	Allen Lai
Supervised by:	Max Zhang
NOTE	N/A

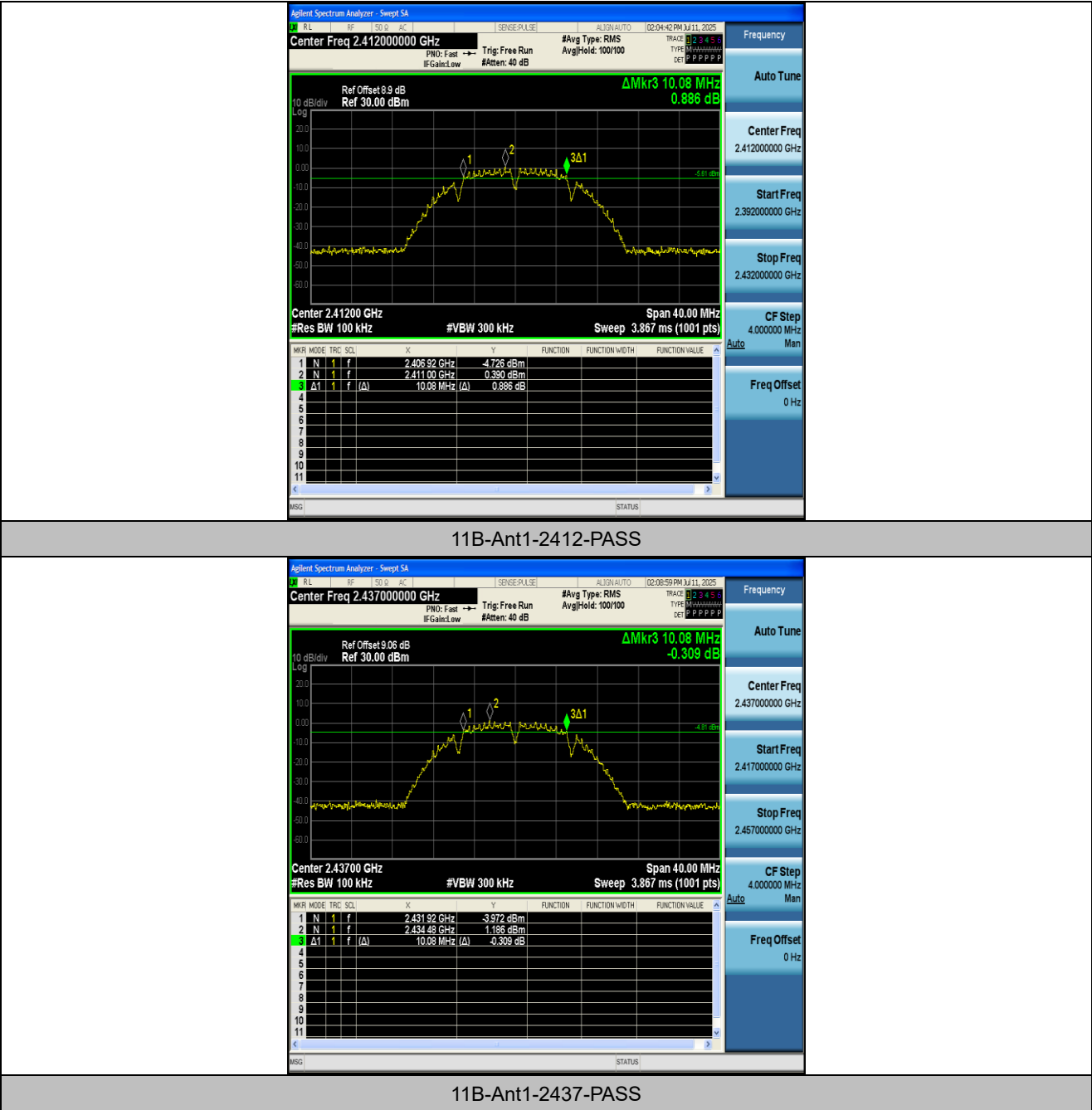
Appendix A: DTS Bandwidth

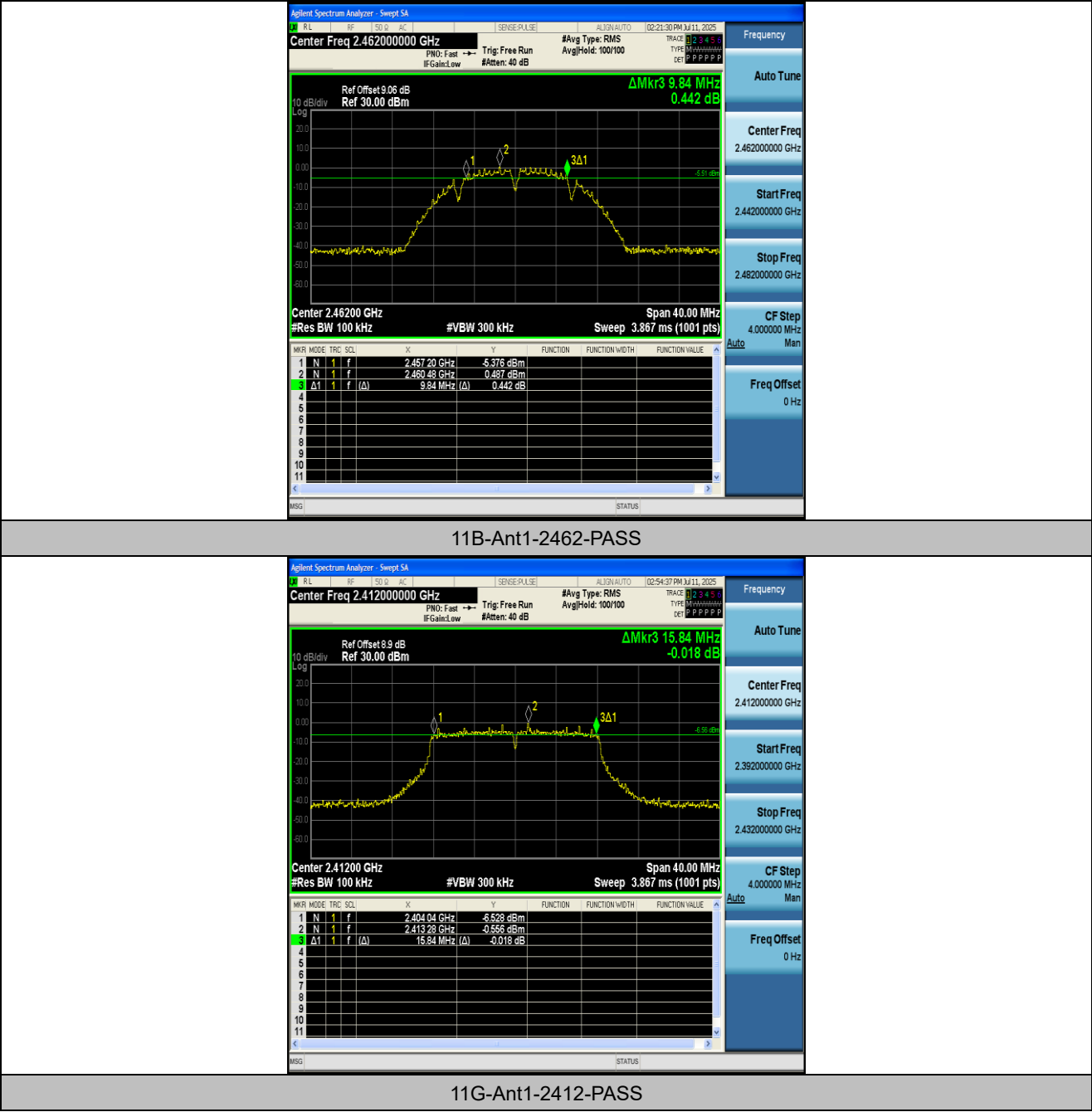
Test Result

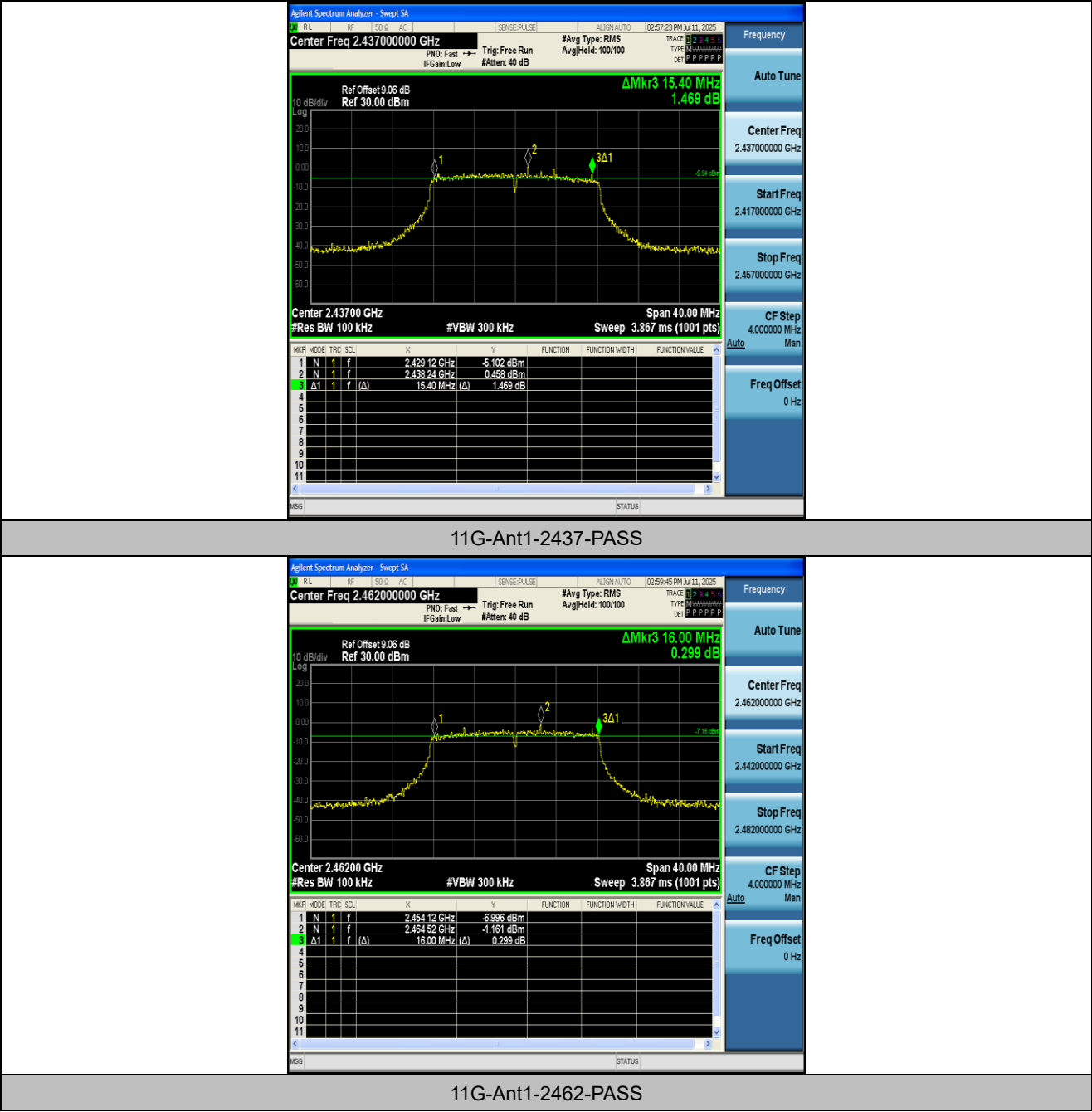
Test Mode	Antenna	Frequency [MHz]	DTS BW [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
11B	Ant1	2412	10.080	2406.920	2417.000	0.5	PASS
11B	Ant1	2437	10.080	2431.920	2442.000	0.5	PASS
11B	Ant1	2462	9.840	2457.200	2467.040	0.5	PASS
11G	Ant1	2412	15.840	2404.040	2419.880	0.5	PASS
11G	Ant1	2437	15.400	2429.120	2444.520	0.5	PASS
11G	Ant1	2462	16.000	2454.120	2470.120	0.5	PASS
11N20SISO	Ant1	2412	15.360	2404.400	2419.760	0.5	PASS
11N20SISO	Ant1	2437	15.000	2429.240	2444.240	0.5	PASS
11N20SISO	Ant1	2462	15.880	2454.520	2470.400	0.5	PASS

Note: offset(dB) = cable loss(dB) + attenuator factor(dB)

Test Graphs

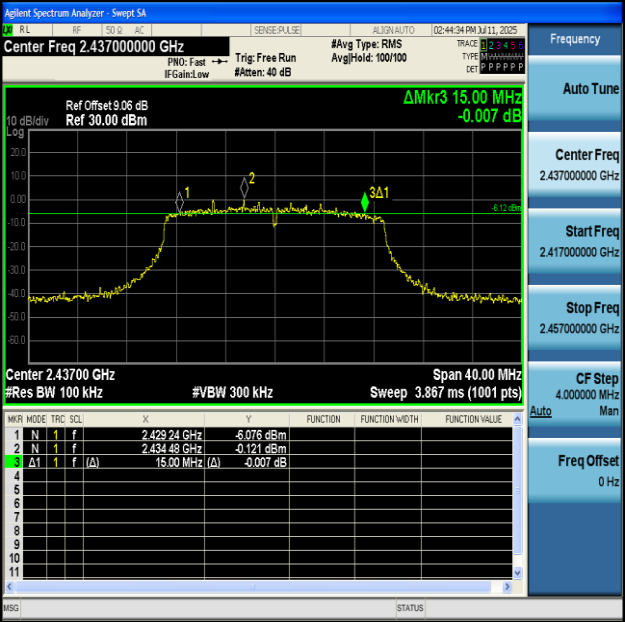




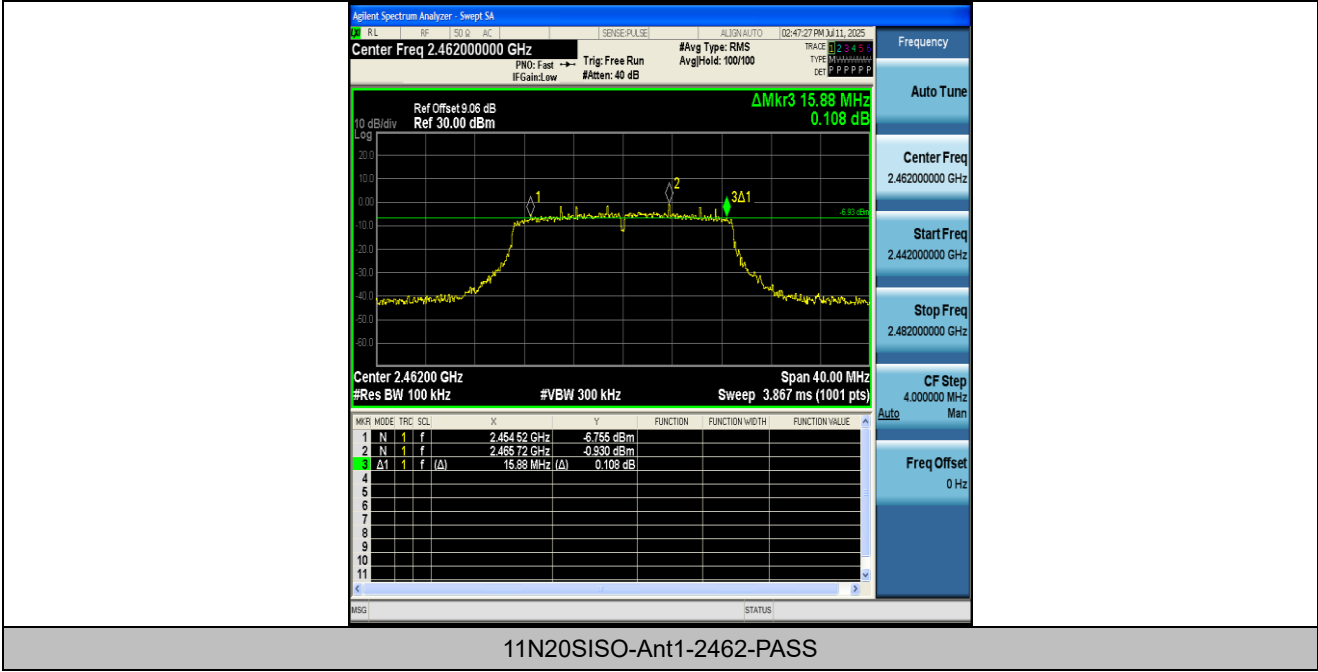




11N20SISO-Ant1-2412-PASS



11N20SISO-Ant1-2437-PASS



Appendix B: Occupied Channel Bandwidth

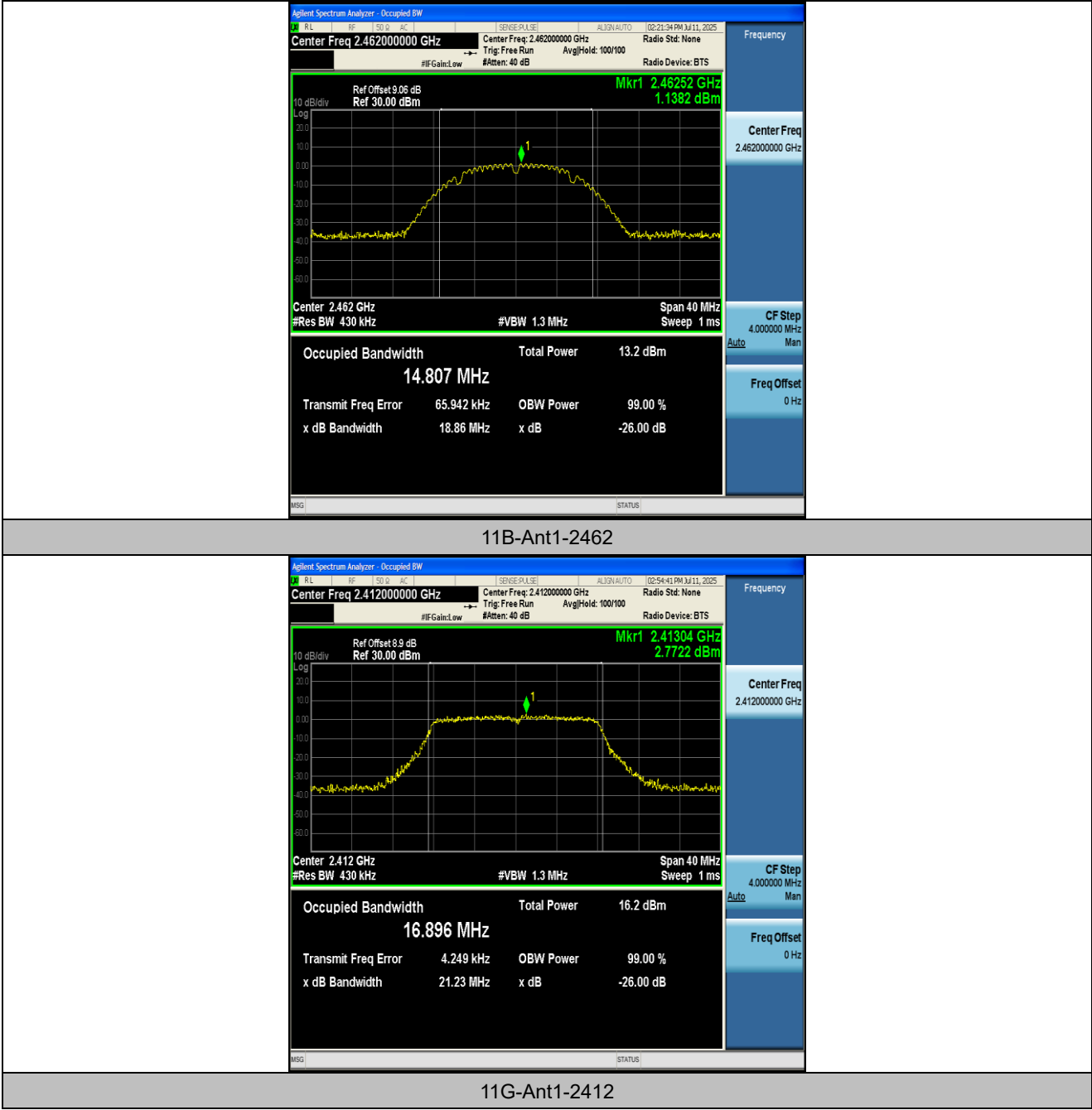
Test Result

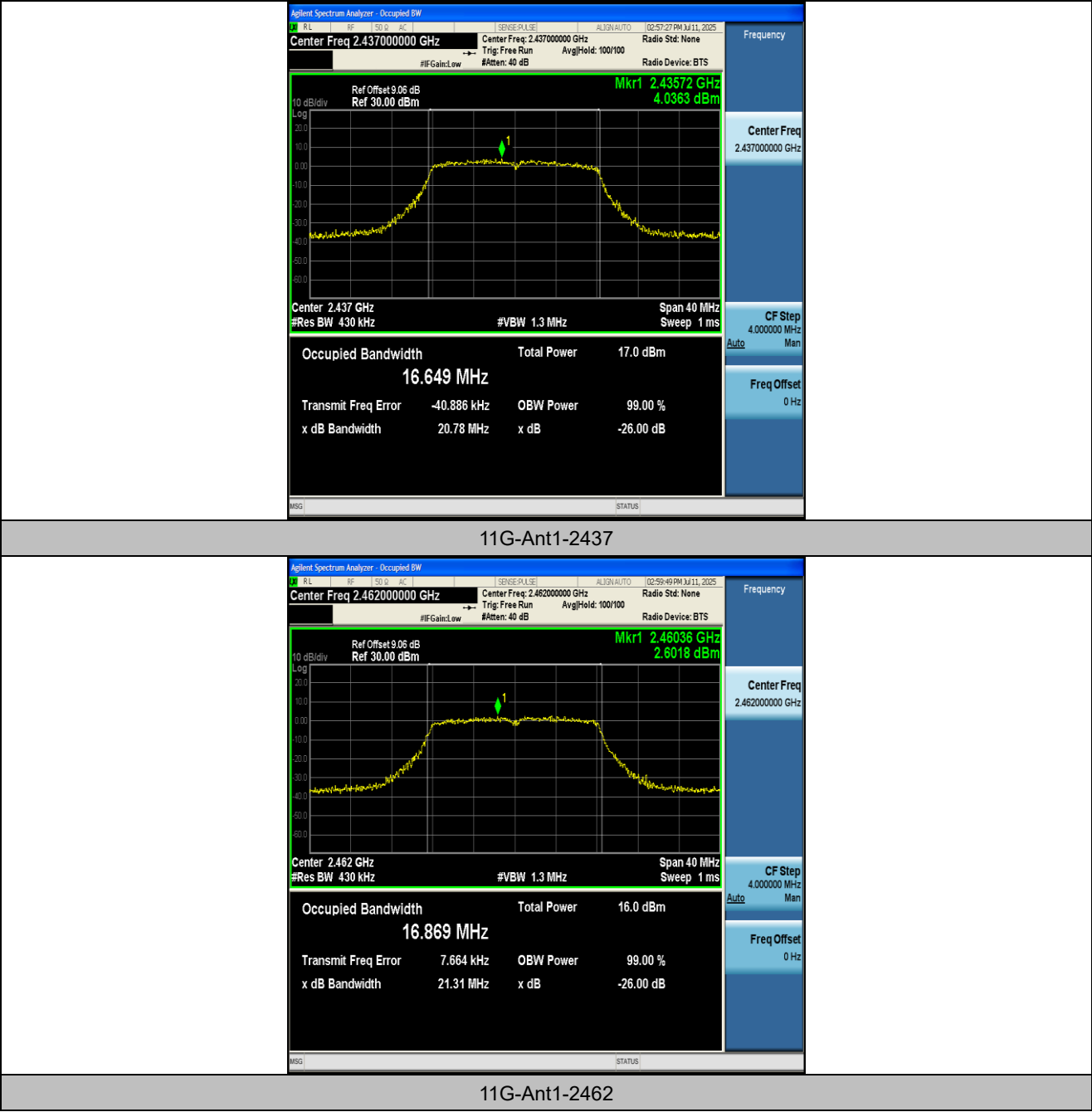
Test Mode	Antenna	Channel Frequency [MHz]	OCB [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
11B	Ant1	2412	14.928	2404.5558	2419.4838	---	---
11B	Ant1	2437	14.655	2429.5662	2444.2212	---	---
11B	Ant1	2462	14.807	2454.6624	2469.4694	---	---
11G	Ant1	2412	16.896	2403.5563	2420.4523	---	---
11G	Ant1	2437	16.649	2428.6346	2445.2836	---	---
11G	Ant1	2462	16.869	2453.5732	2470.4422	---	---
11N20SISO	Ant1	2412	17.942	2403.0161	2420.9581	---	---
11N20SISO	Ant1	2437	17.789	2428.0769	2445.8659	---	---
11N20SISO	Ant1	2462	17.888	2453.0670	2470.9550	---	---

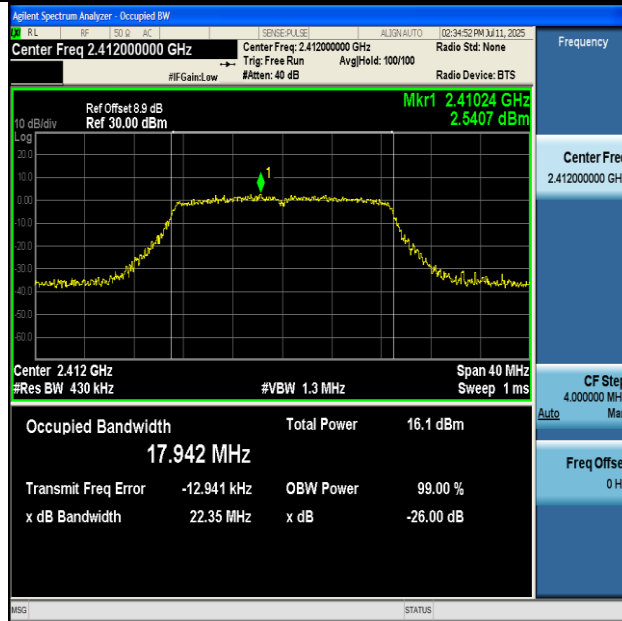
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)

Test Graphs

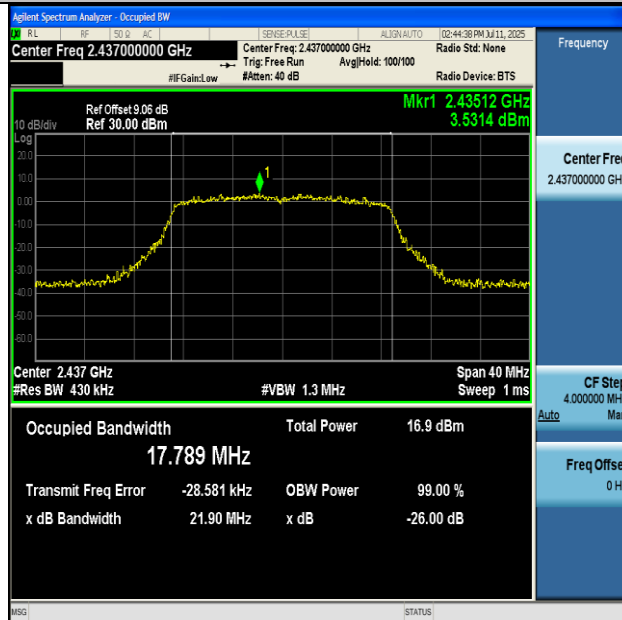




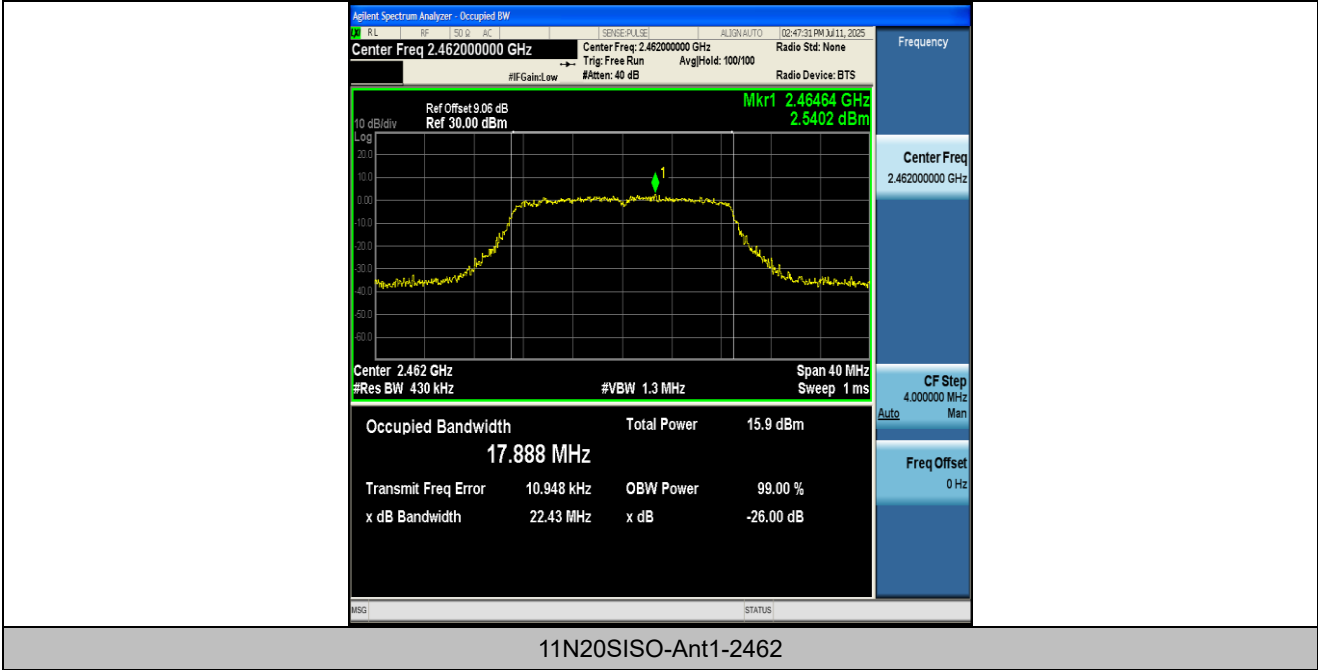




11N20SISO-Ant1-2412



11N20SISO-Ant1-2437



Appendix C: Maximum Average conducted output power

Test Result

Test Mode	Antenna	Frequency [MHz]	Conducted Power [dBm]	Conducted Limit [dBm]	Verdict
11B	Ant1	2412	10.26	≤30.00	PASS
11B	Ant1	2437	10.69	≤30.00	PASS
11B	Ant1	2462	10.05	≤30.00	PASS
11G	Ant1	2412	10.42	≤30.00	PASS
11G	Ant1	2437	11.11	≤30.00	PASS
11G	Ant1	2462	9.93	≤30.00	PASS
11N20SISO	Ant1	2412	10.22	≤30.00	PASS
11N20SISO	Ant1	2437	11.01	≤30.00	PASS
11N20SISO	Ant1	2462	10.06	≤30.00	PASS

Note: offset(dB) = cable loss(dB) + attenuator factor(dB) + Duty Cycle Factor(dB)

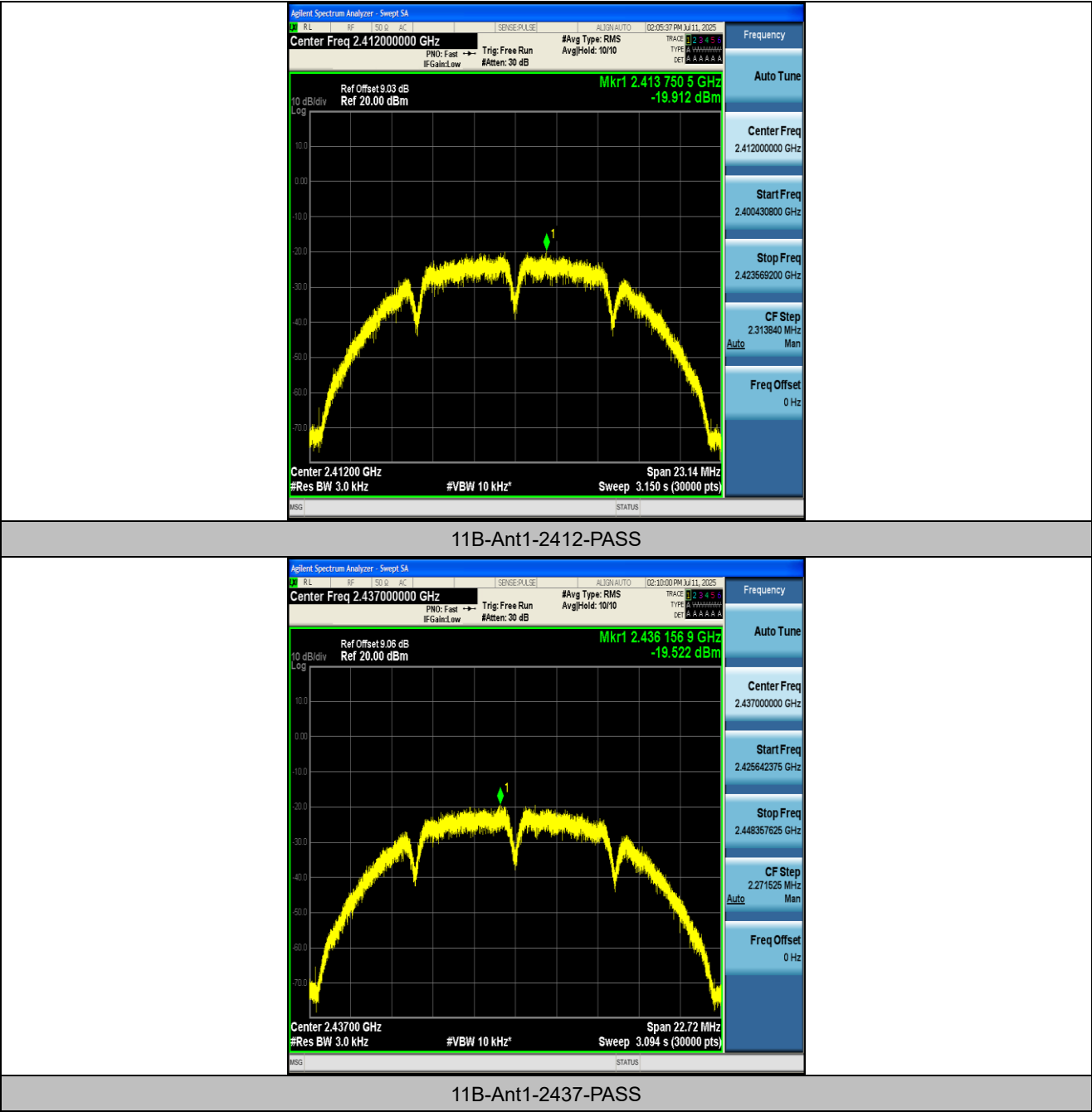
Appendix D: Maximum Average power spectral density

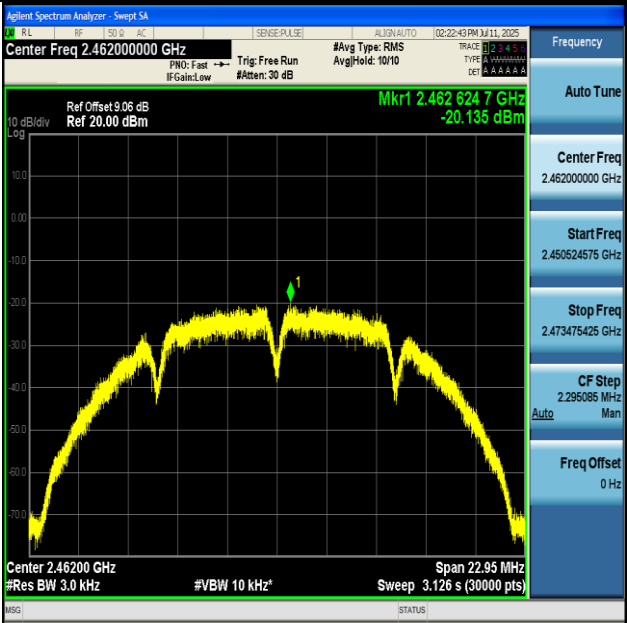
Test Result

Test Mode	Antenna	Frequency [MHz]	Raw. Data [dBm/3kHz]	Dc. Factor	Result [dBm/3kHz]	Limit [dBm/3kHz]	Verdict
11B	Ant1	2412	-20.04	0.13	-19.91	≤8.00	PASS
11B	Ant1	2437	-19.52	0.00	-19.52	≤8.00	PASS
11B	Ant1	2462	-20.14	0.00	-20.14	≤8.00	PASS
11G	Ant1	2412	-19.49	0.26	-19.23	≤8.00	PASS
11G	Ant1	2437	-19.67	0.26	-19.41	≤8.00	PASS
11G	Ant1	2462	-20.19	0.26	-19.93	≤8.00	PASS
11N20SISO	Ant1	2412	-20.87	0.24	-20.63	≤8.00	PASS
11N20SISO	Ant1	2437	-19.72	0.43	-19.29	≤8.00	PASS
11N20SISO	Ant1	2462	-20.72	0.33	-20.39	≤8.00	PASS

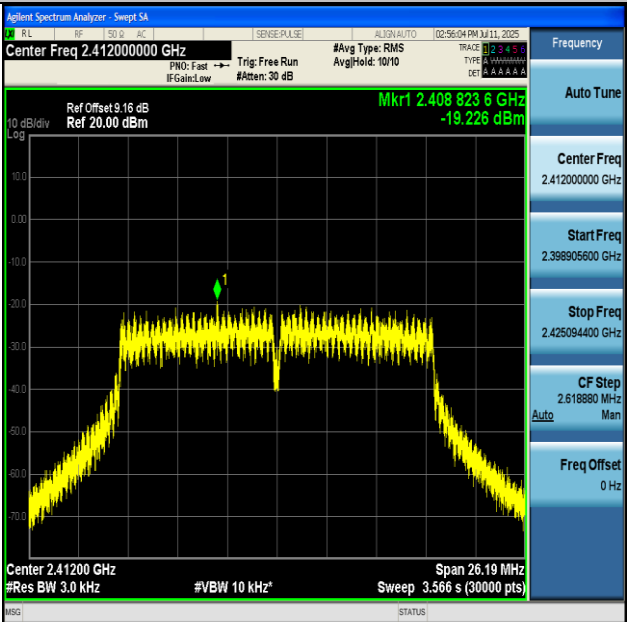
Note: offset(dB) = cable loss(dB) + attenuator factor(dB) + Duty Cycle Factor(dB)

Test Graphs

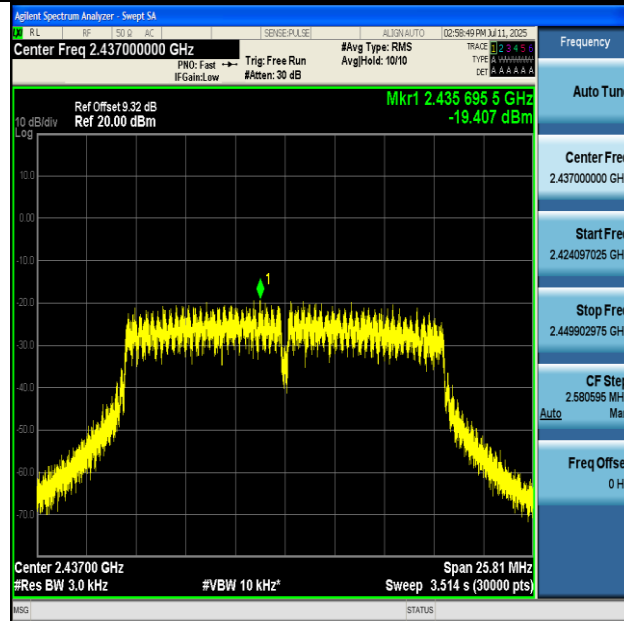




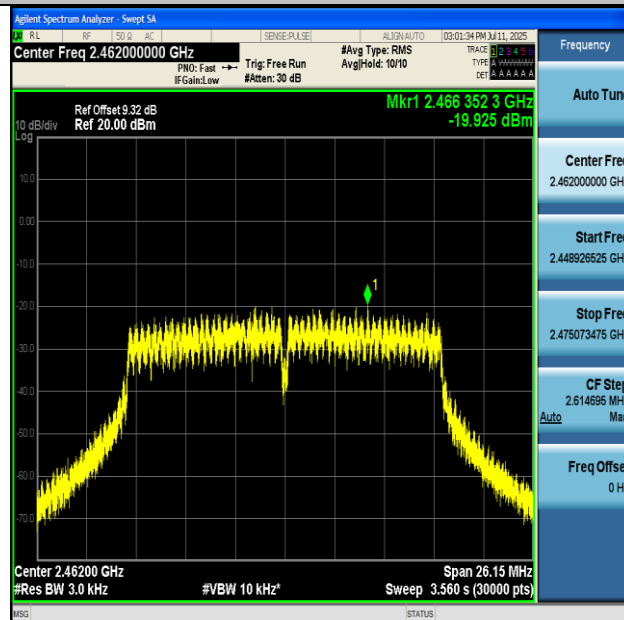
11B-Ant1-2462-PASS



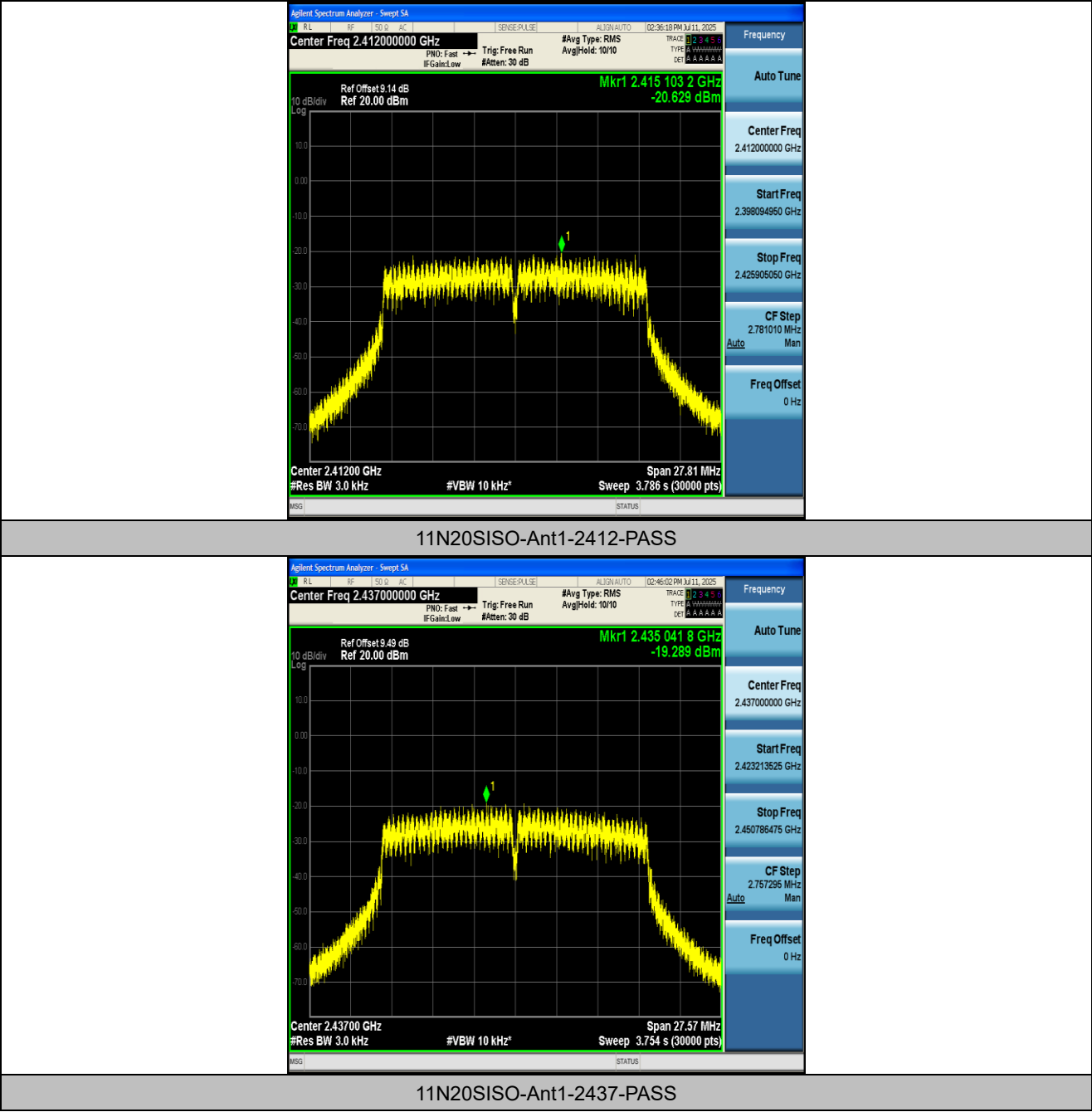
11G-Ant1-2412-PASS

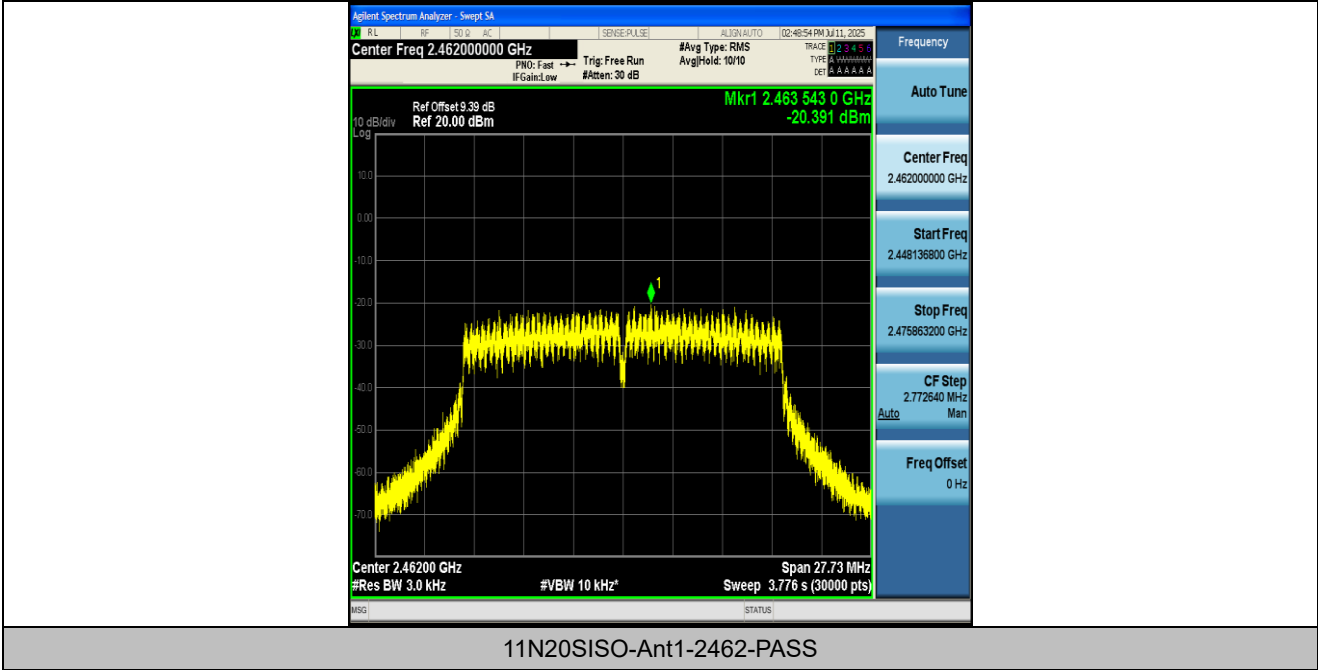


11G-Ant1-2437-PASS



11G-Ant1-2462-PASS





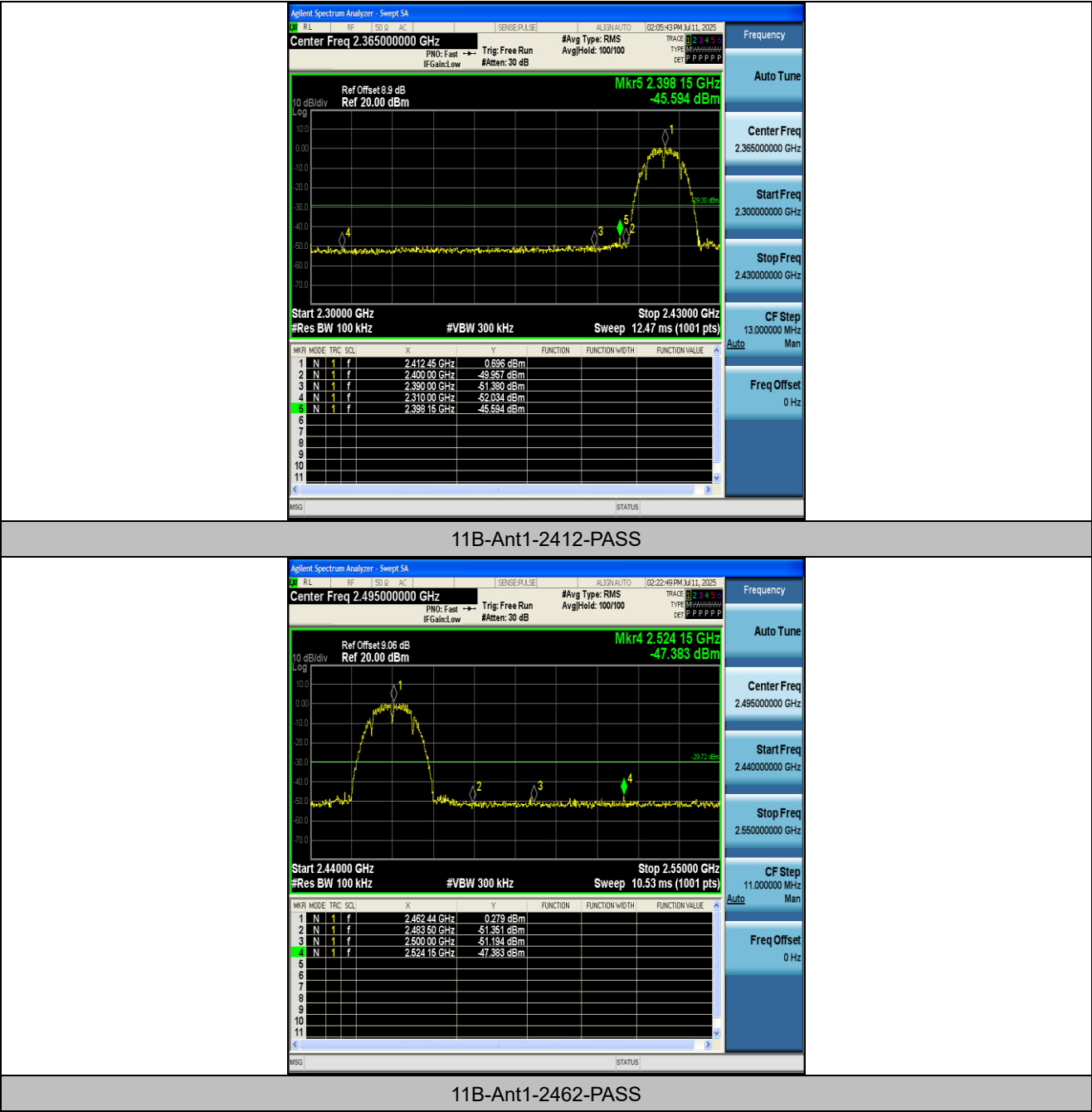
Appendix E: Band edge measurements

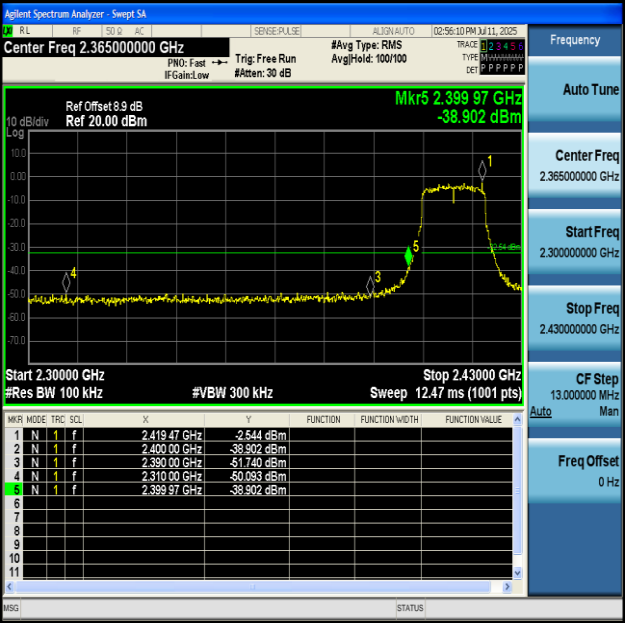
Test Result

Test Mode	Antenna	Ch. Name	Frequency.[M Hz]	Ref. Level [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	Low	2412	0.70	-45.59	≤-29.3	PASS
11B	Ant1	High	2462	0.28	-47.38	≤-29.72	PASS
11G	Ant1	Low	2412	-2.54	-38.9	≤-32.54	PASS
11G	Ant1	High	2462	-2.68	-48.72	≤-32.68	PASS
11N20SISO	Ant1	Low	2412	-1.03	-36.92	≤-31.03	PASS
11N20SISO	Ant1	High	2462	-2.99	-48.43	≤-32.99	PASS

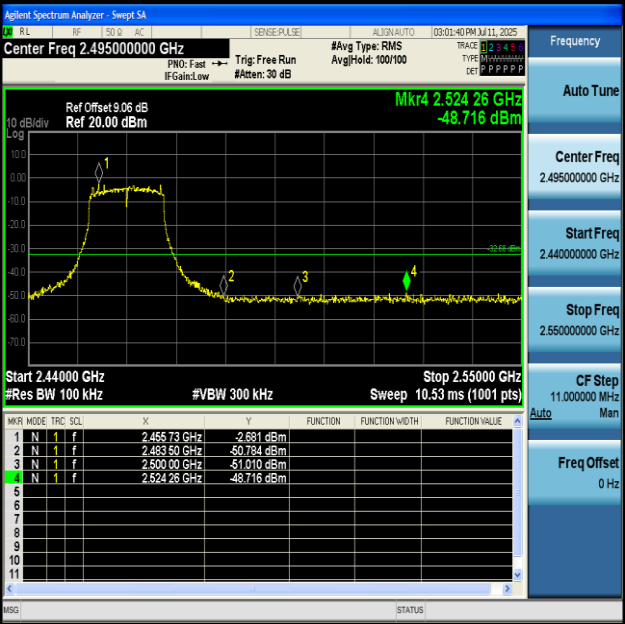
Note: offset(dB) = cable loss(dB) + attenuator factor(dB)

Test Graphs

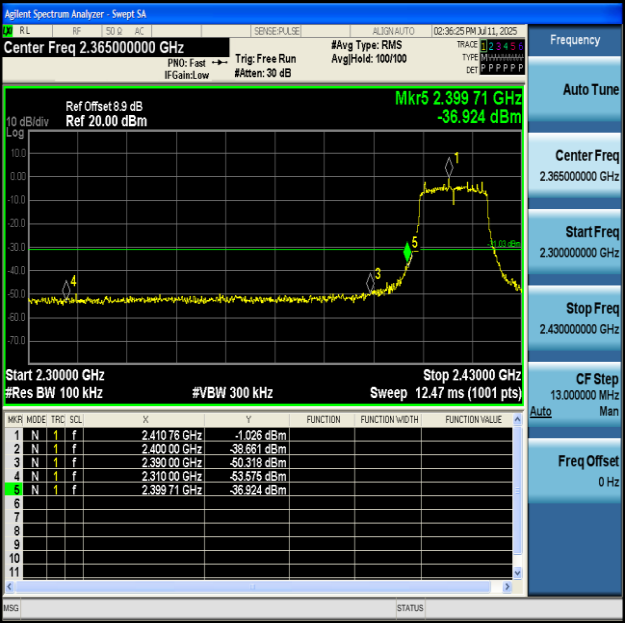




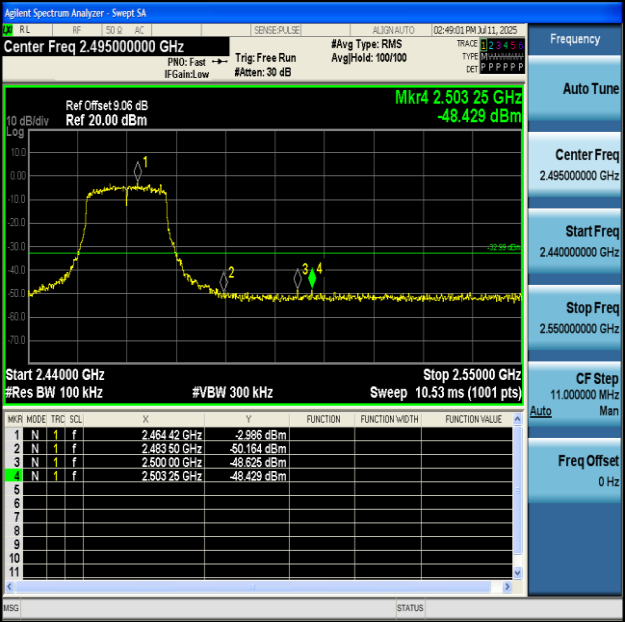
11G-Ant1-2412-PASS



11G-Ant1-2462-PASS



11N20SISO-Ant1-2412-PASS



11N20SISO-Ant1-2462-PASS

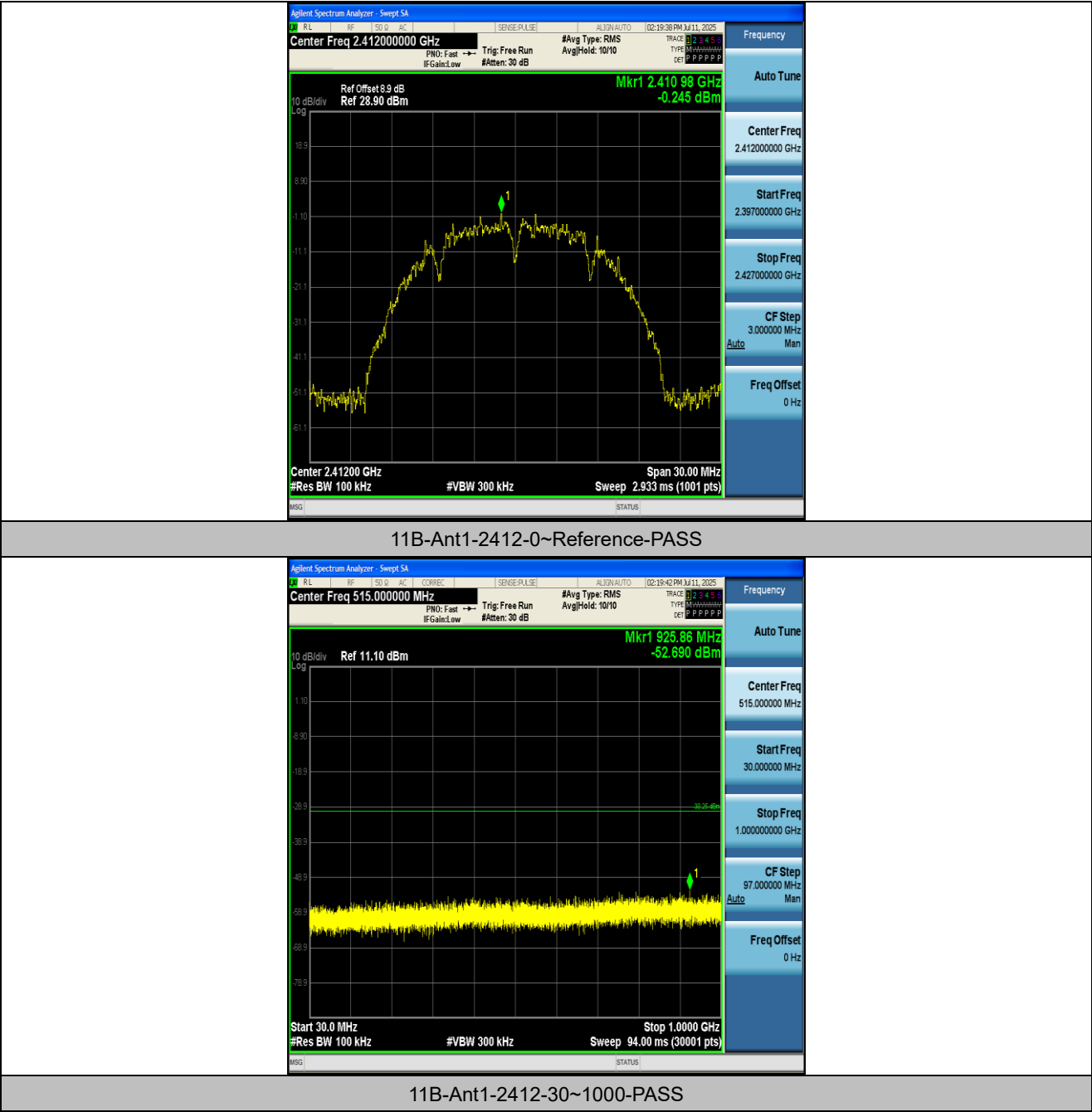
Appendix F: Conducted Spurious Emission

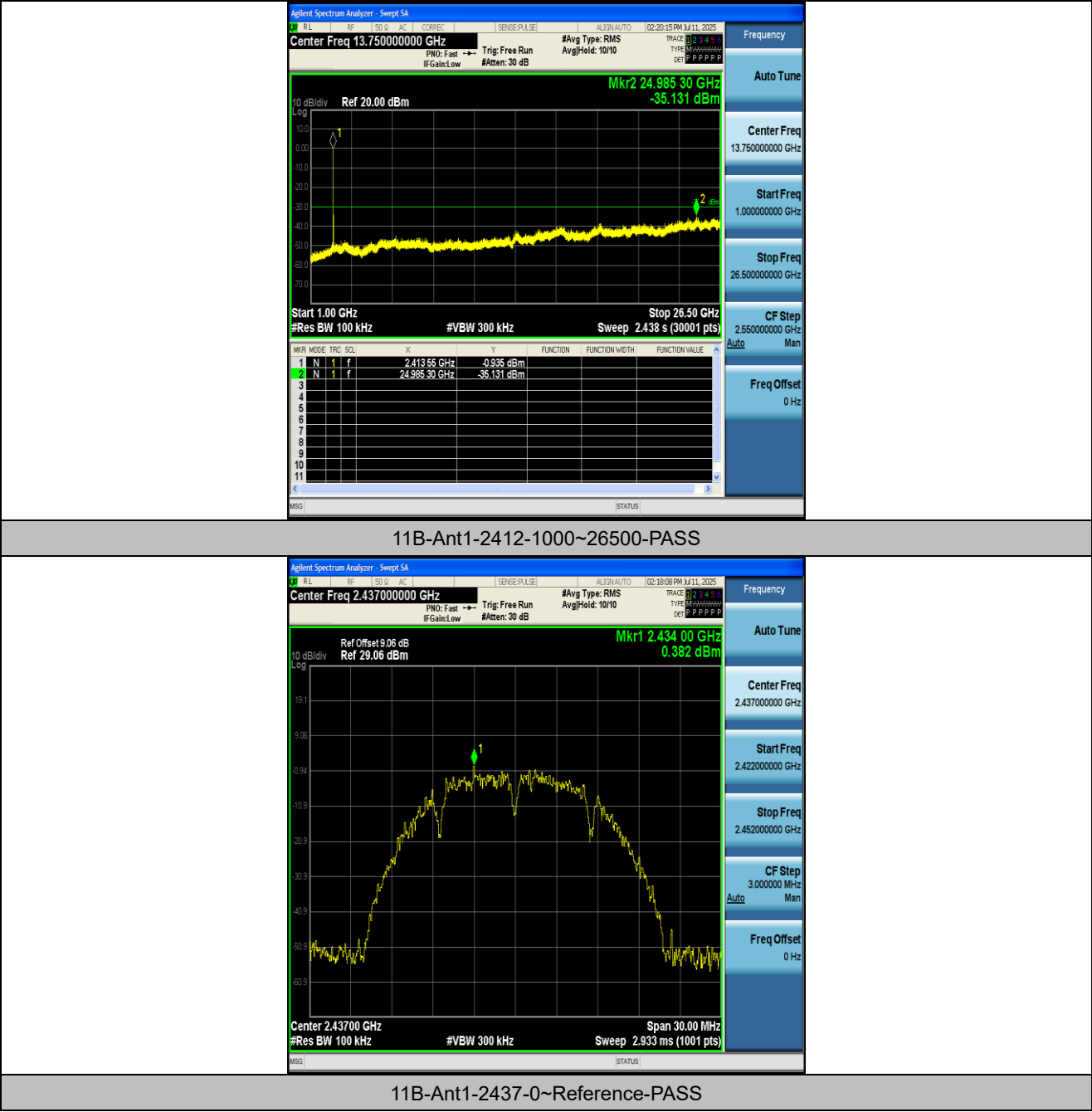
Test Result

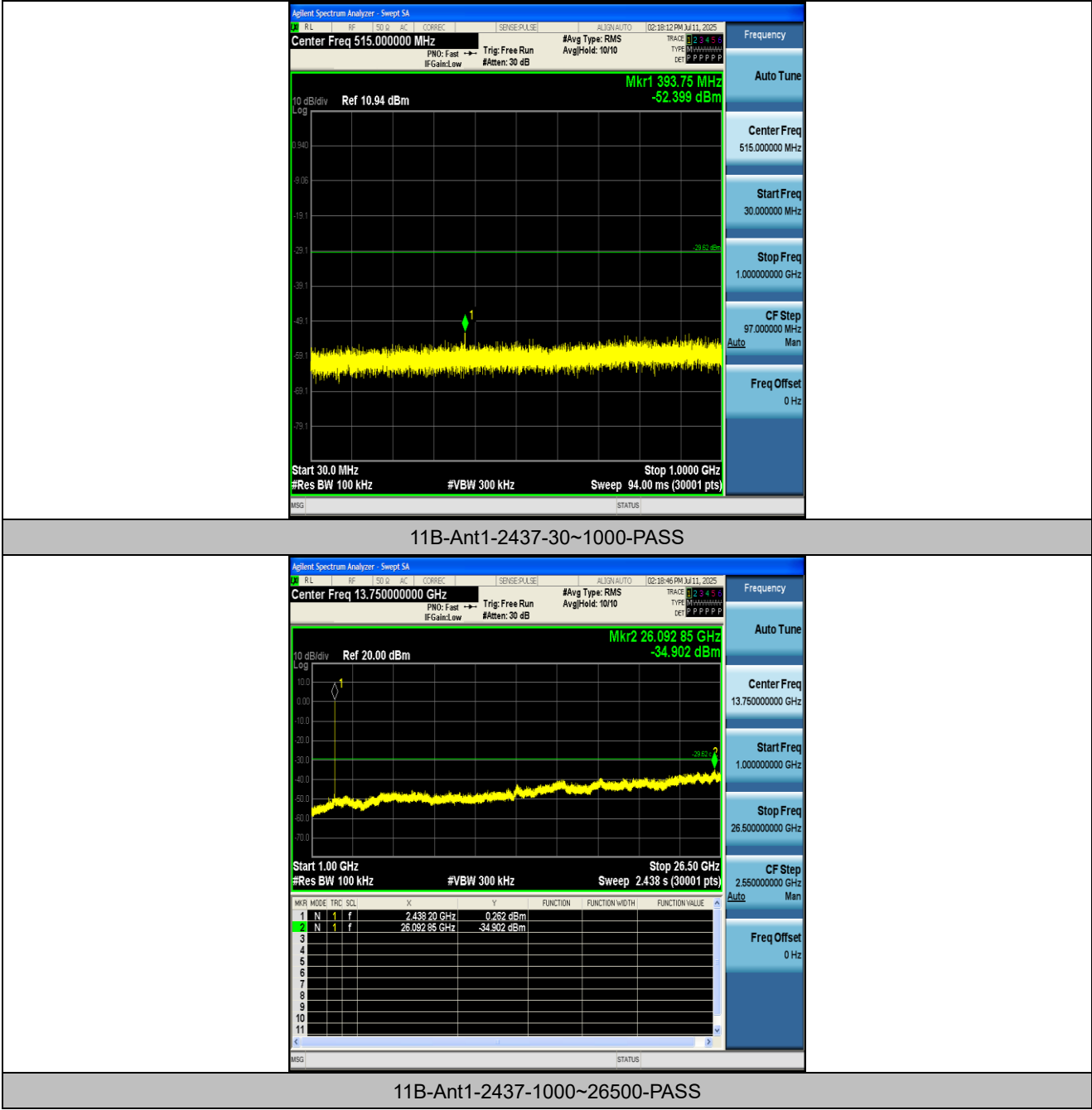
Test Mode	Antenna	Frequency [MHz]	Freq. Range [Mhz]	Ref. Level [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	0~Reference	-0.25	-0.25	---	PASS
11B	Ant1	2412	30~1000	-0.25	-52.69	≤-30.25	PASS
11B	Ant1	2412	1000~26500	-0.25	-35.13	≤-30.25	PASS
11B	Ant1	2437	0~Reference	0.38	0.38	---	PASS
11B	Ant1	2437	30~1000	0.38	-52.4	≤-29.62	PASS
11B	Ant1	2437	1000~26500	0.38	-34.9	≤-29.62	PASS
11B	Ant1	2462	0~Reference	-1.02	-1.02	---	PASS
11B	Ant1	2462	30~1000	-1.02	-52.65	≤-31.02	PASS
11B	Ant1	2462	1000~26500	-1.02	-35.62	≤-31.02	PASS
11G	Ant1	2412	0~Reference	-2.13	-2.13	---	PASS
11G	Ant1	2412	30~1000	-2.13	-63.23	≤-32.13	PASS
11G	Ant1	2412	1000~26500	-2.13	-45.55	≤-32.13	PASS
11G	Ant1	2437	0~Reference	-3.08	-3.08	---	PASS
11G	Ant1	2437	30~1000	-3.08	-62.6	≤-33.08	PASS
11G	Ant1	2437	1000~26500	-3.08	-44.91	≤-33.08	PASS
11G	Ant1	2462	0~Reference	-1.71	-1.71	---	PASS
11G	Ant1	2462	30~1000	-1.71	-63.14	≤-31.71	PASS
11G	Ant1	2462	1000~26500	-1.71	-45.64	≤-31.71	PASS
11N20SISO	Ant1	2412	0~Reference	-1.66	-1.66	---	PASS
11N20SISO	Ant1	2412	30~1000	-1.66	-62.01	≤-31.66	PASS
11N20SISO	Ant1	2412	1000~26500	-1.66	-45.3	≤-31.66	PASS
11N20SISO	Ant1	2437	0~Reference	-1.35	-1.35	---	PASS
11N20SISO	Ant1	2437	30~1000	-1.35	-63.14	≤-31.35	PASS
11N20SISO	Ant1	2437	1000~26500	-1.35	-45.78	≤-31.35	PASS
11N20SISO	Ant1	2462	0~Reference	-4.42	-4.42	---	PASS
11N20SISO	Ant1	2462	30~1000	-4.42	-62.95	≤-34.42	PASS
11N20SISO	Ant1	2462	1000~26500	-4.42	-45.42	≤-34.42	PASS

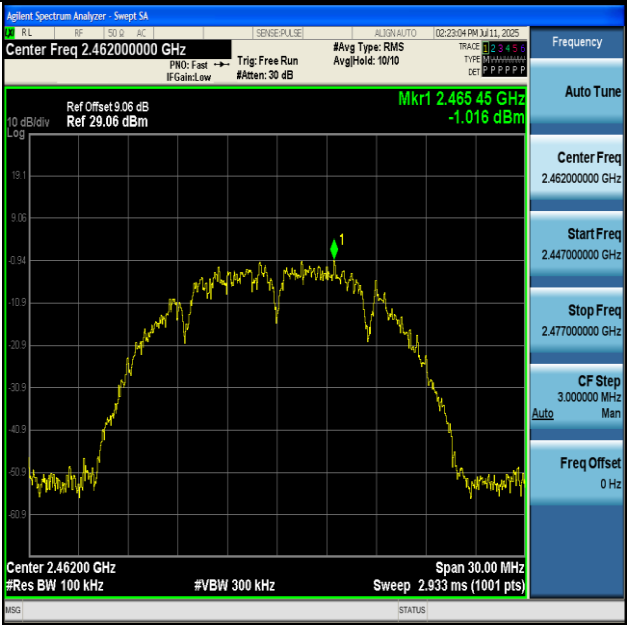
Note: offset(dB) in Reference test plots = cable loss(dB) + attenuator factor(dB); For spurious emissions plots from 30MHz to 26.5GHz, the cable loss and attenuator factors have been set in the 'Input Correction' of the Spectrum Analyzer during the test.

Test Graphs

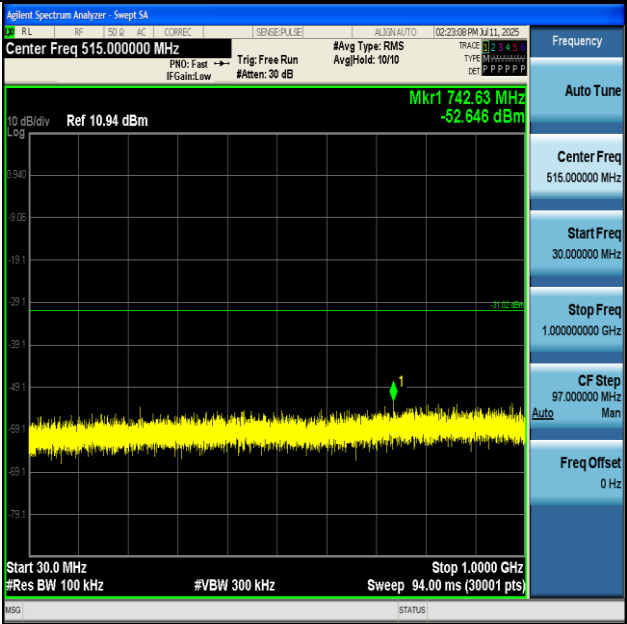




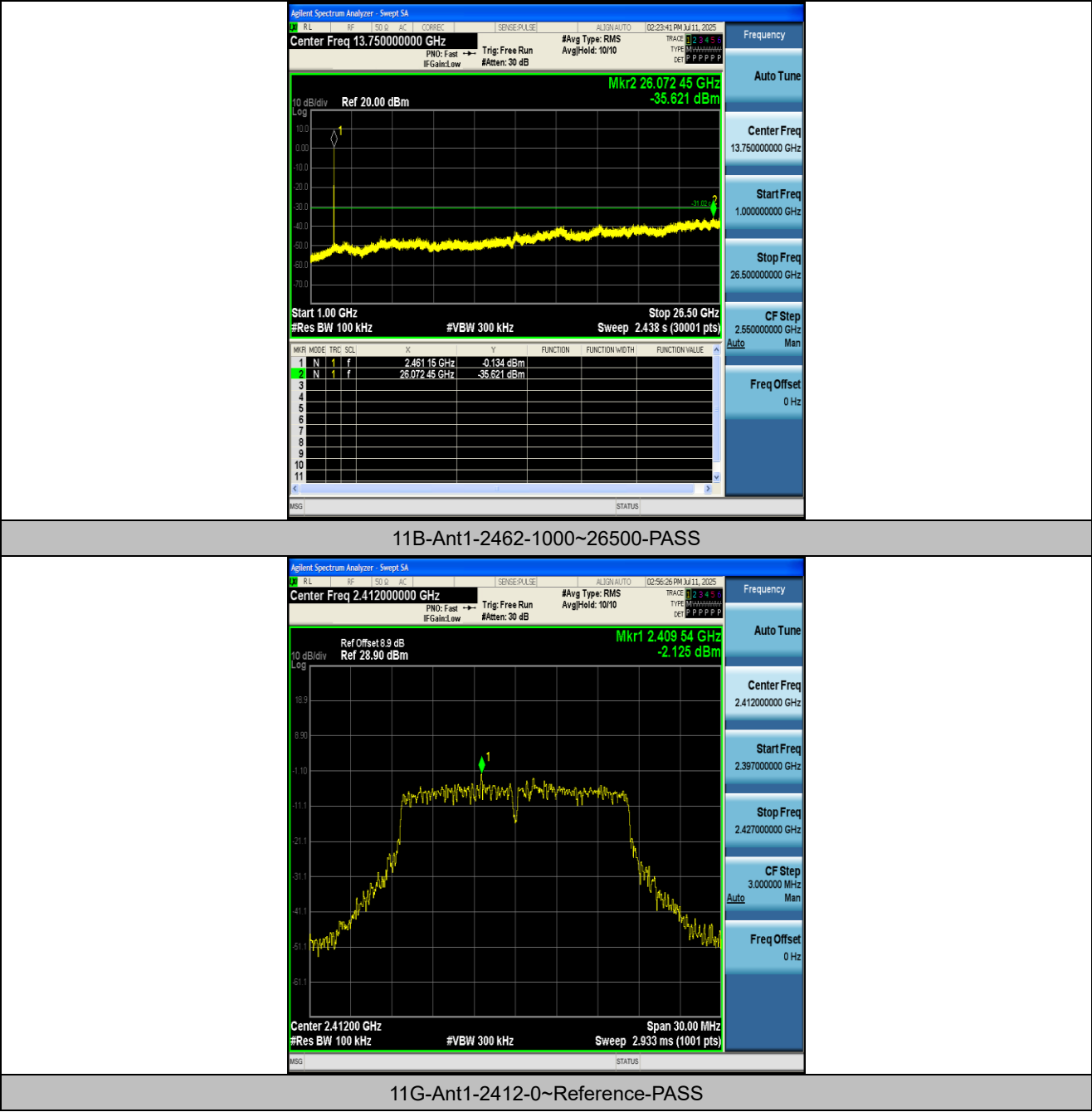


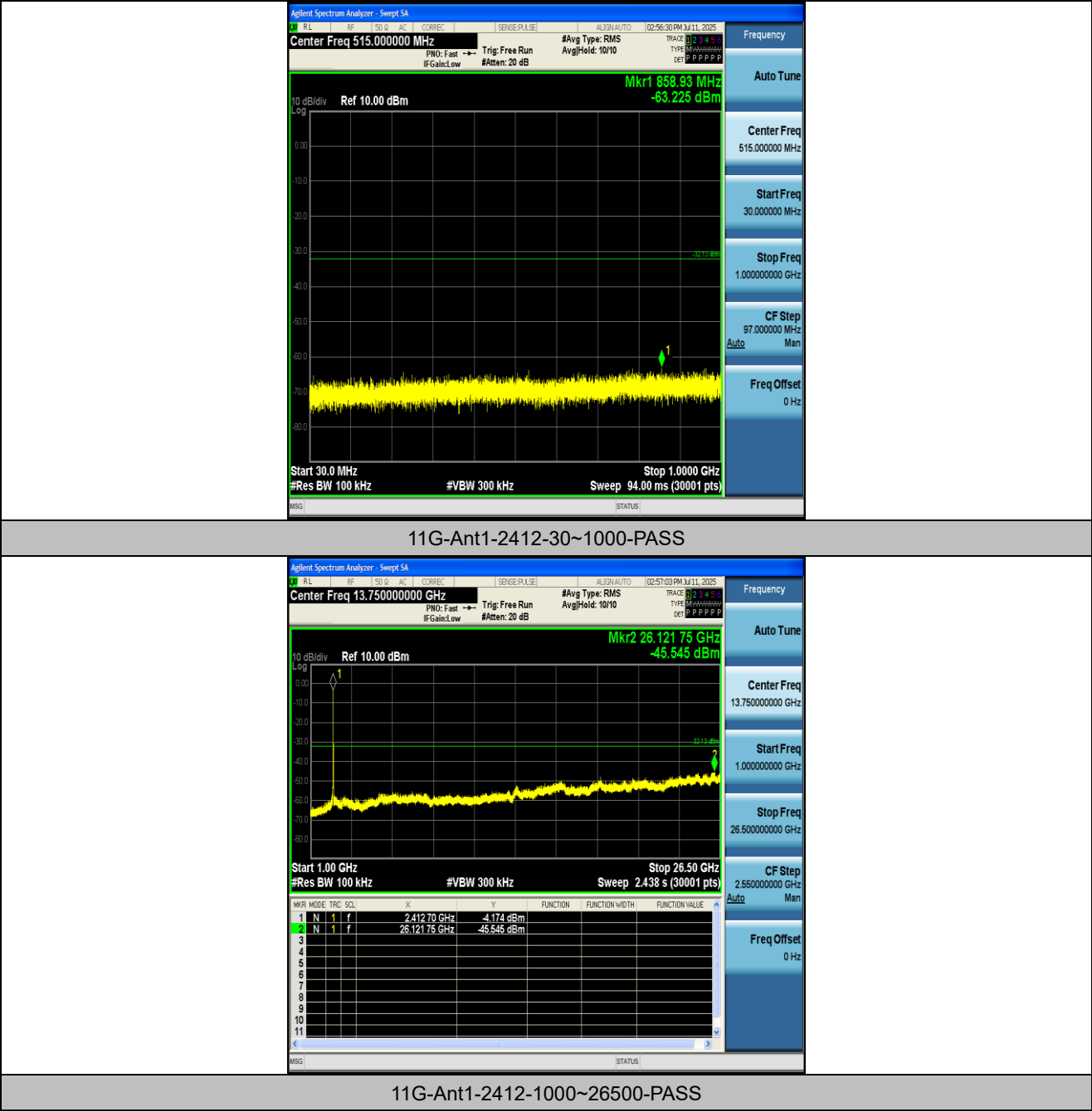


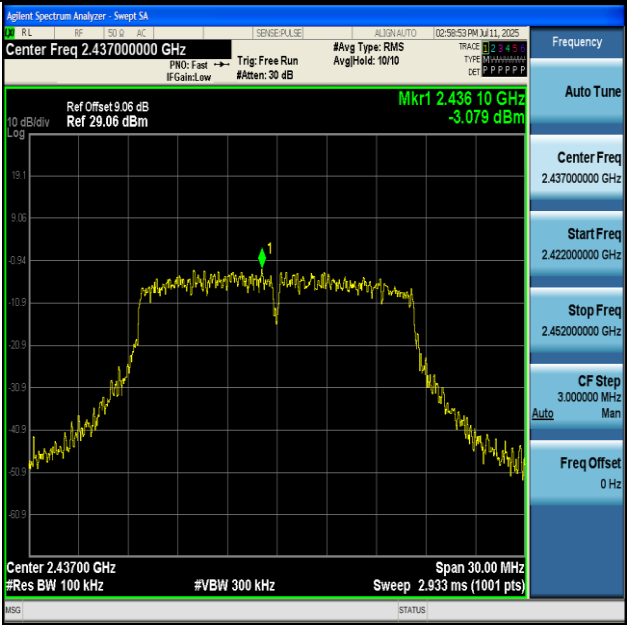
11B-Ant1-2462-0~Reference-PASS



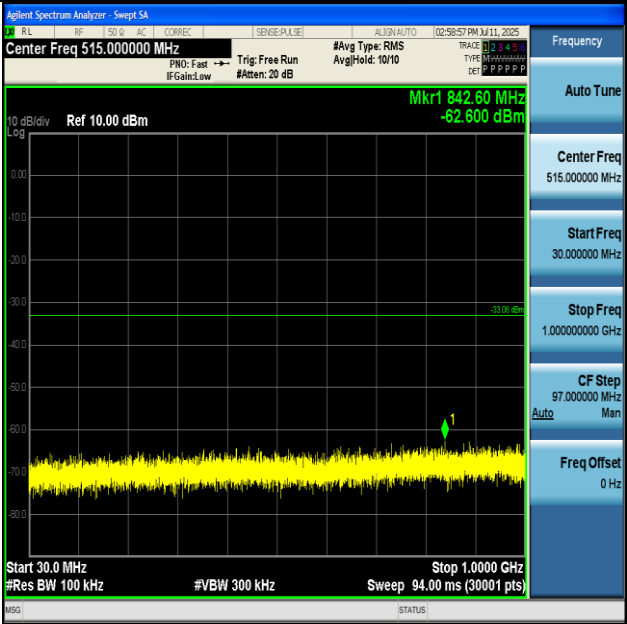
11B-Ant1-2462-30~1000-PASS



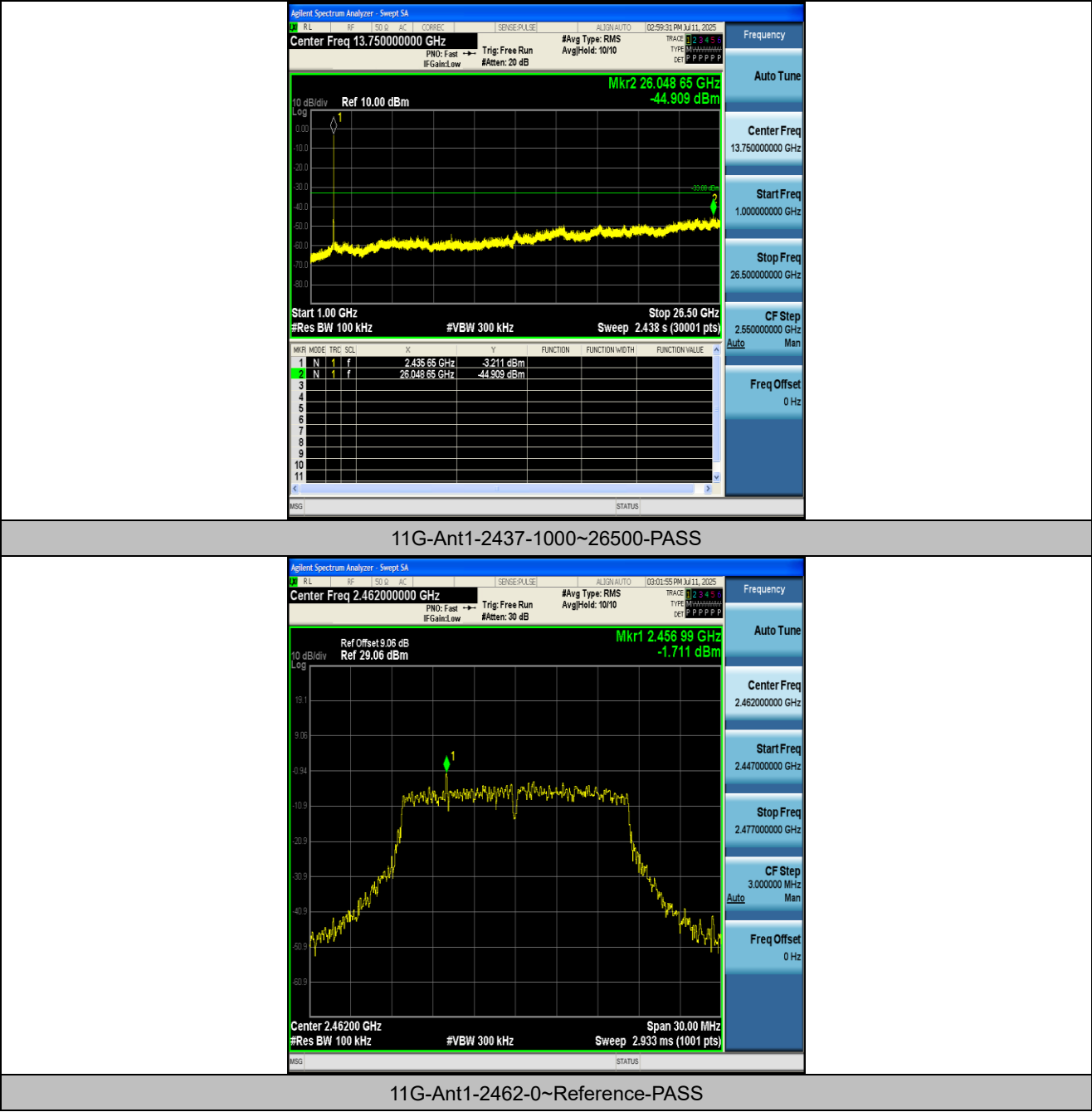


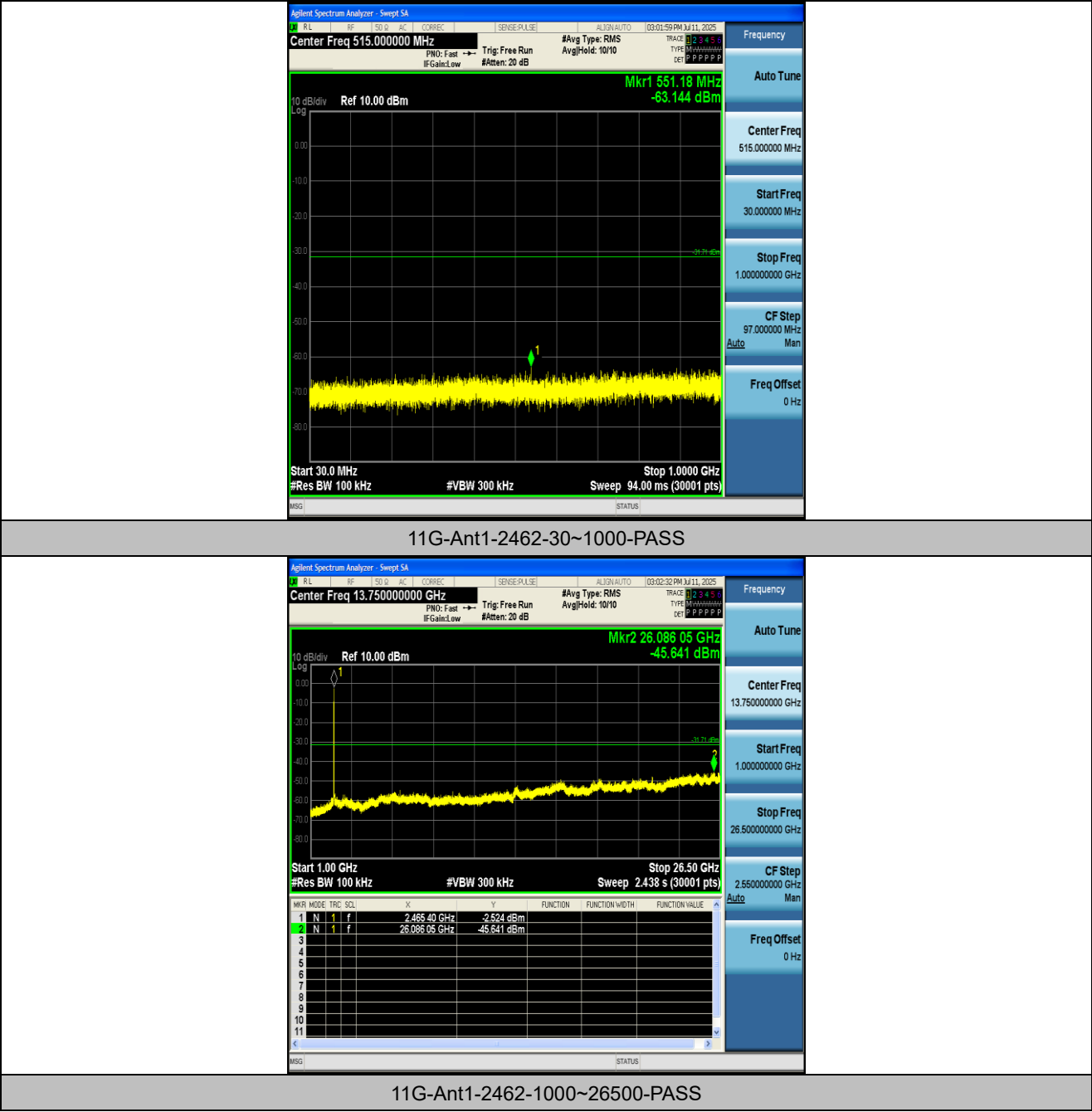


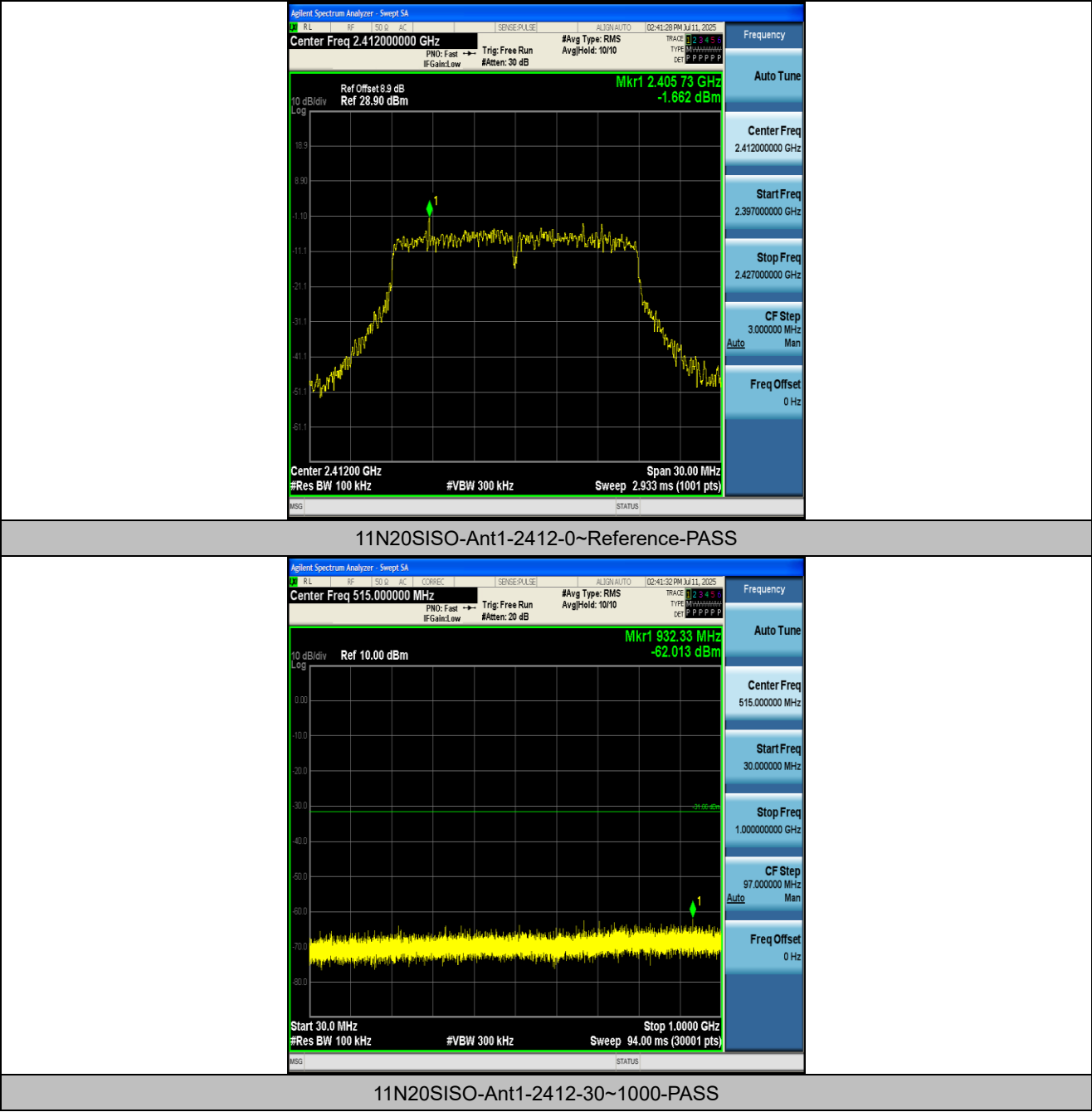
11G-Ant1-2437-0~Reference-PASS

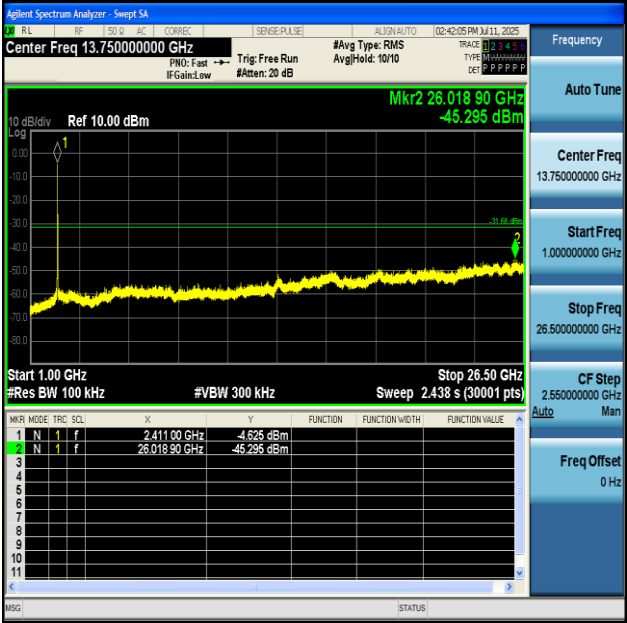


11G-Ant1-2437-30~1000-PASS

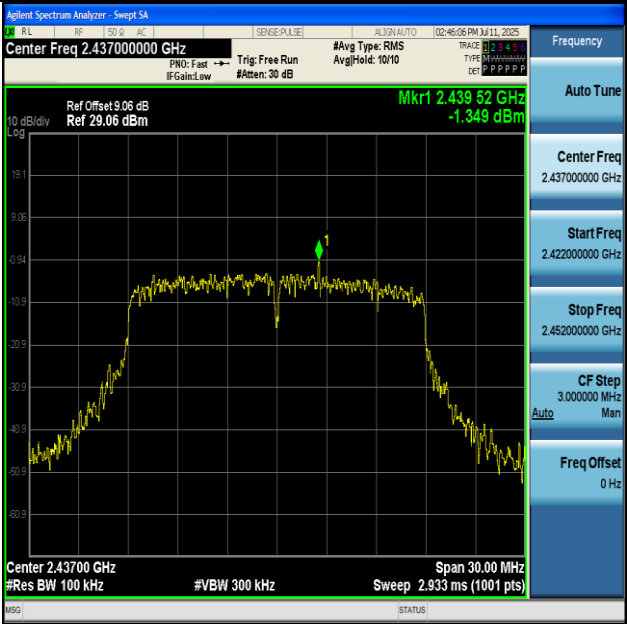




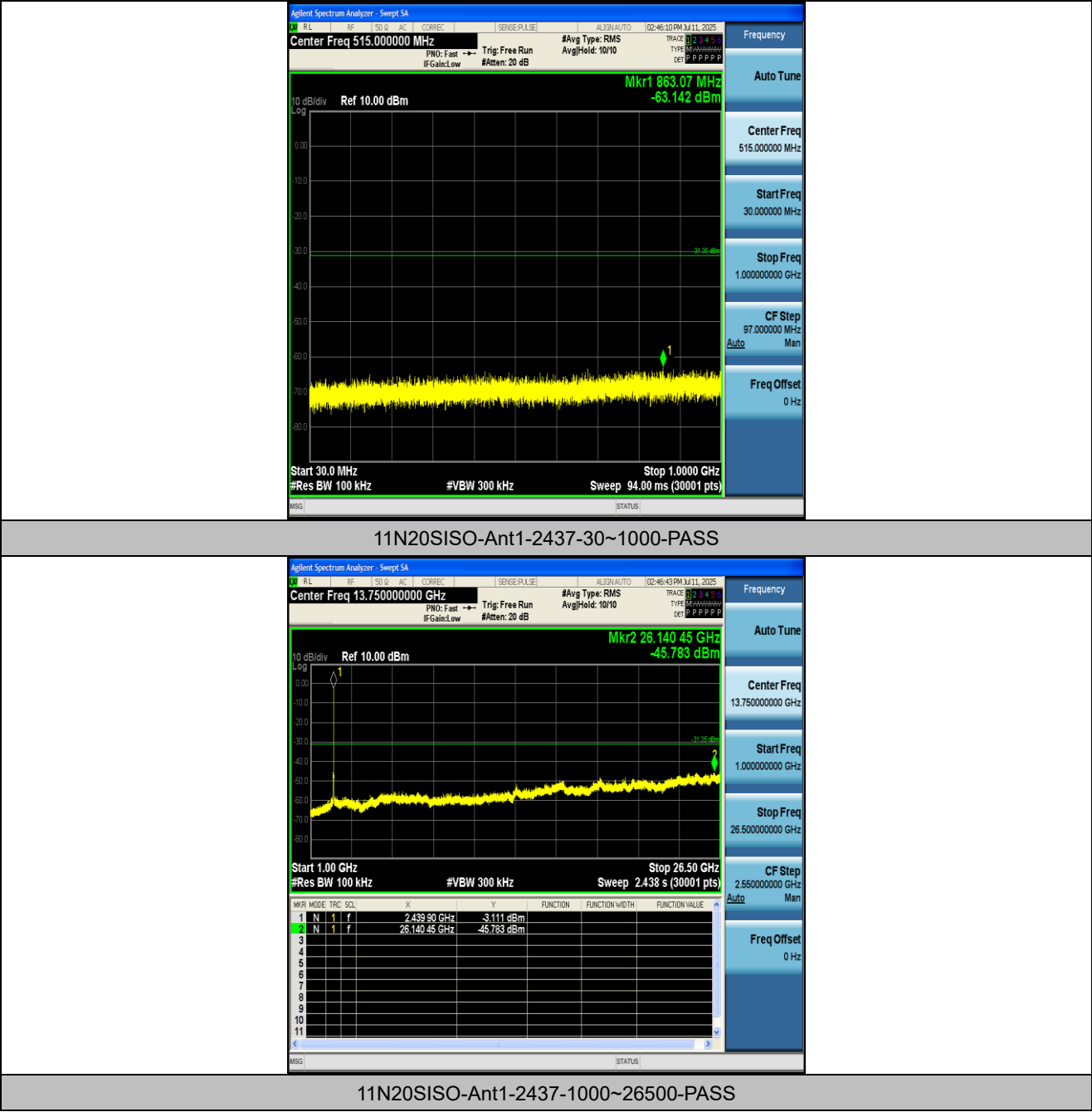


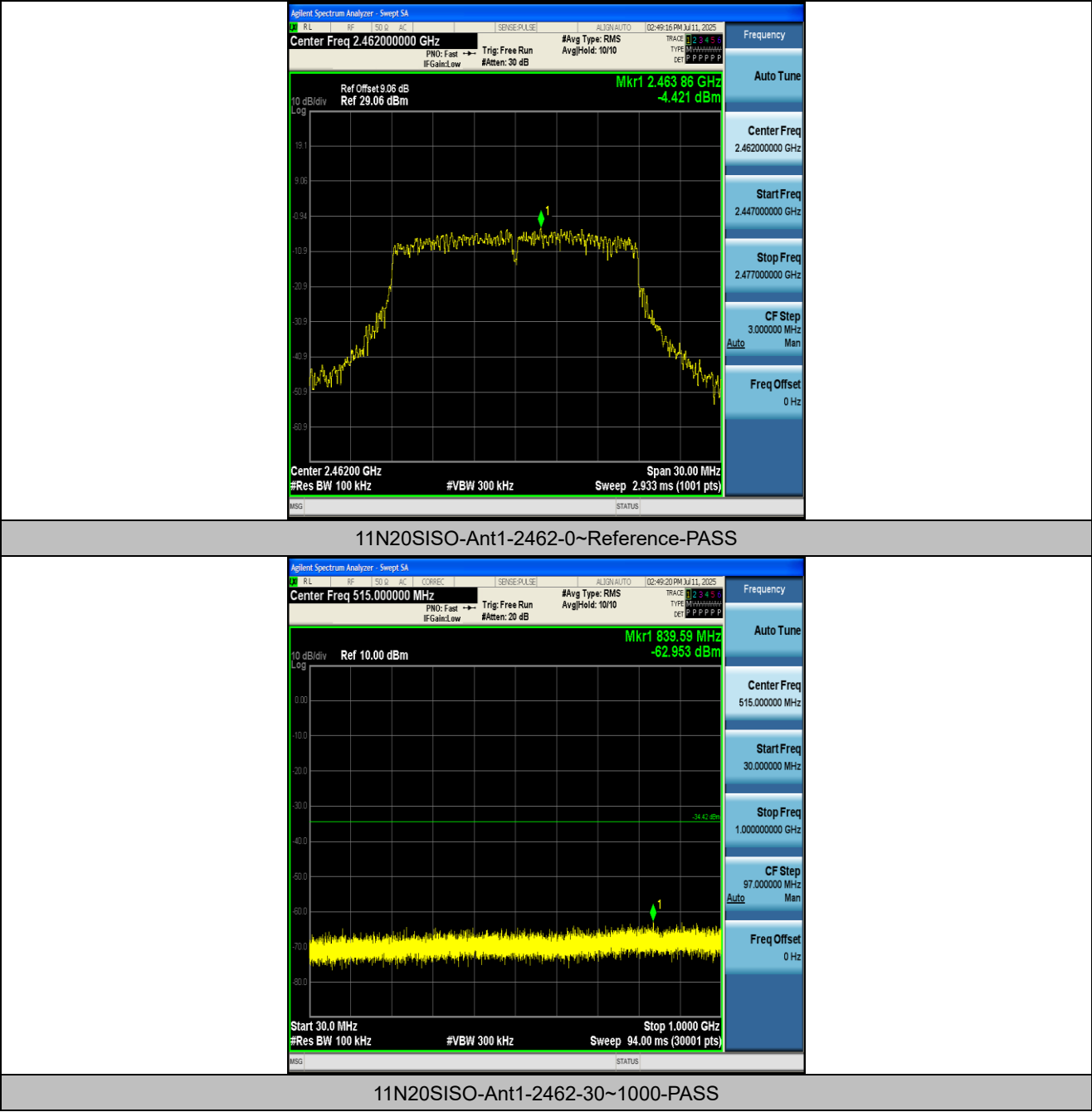


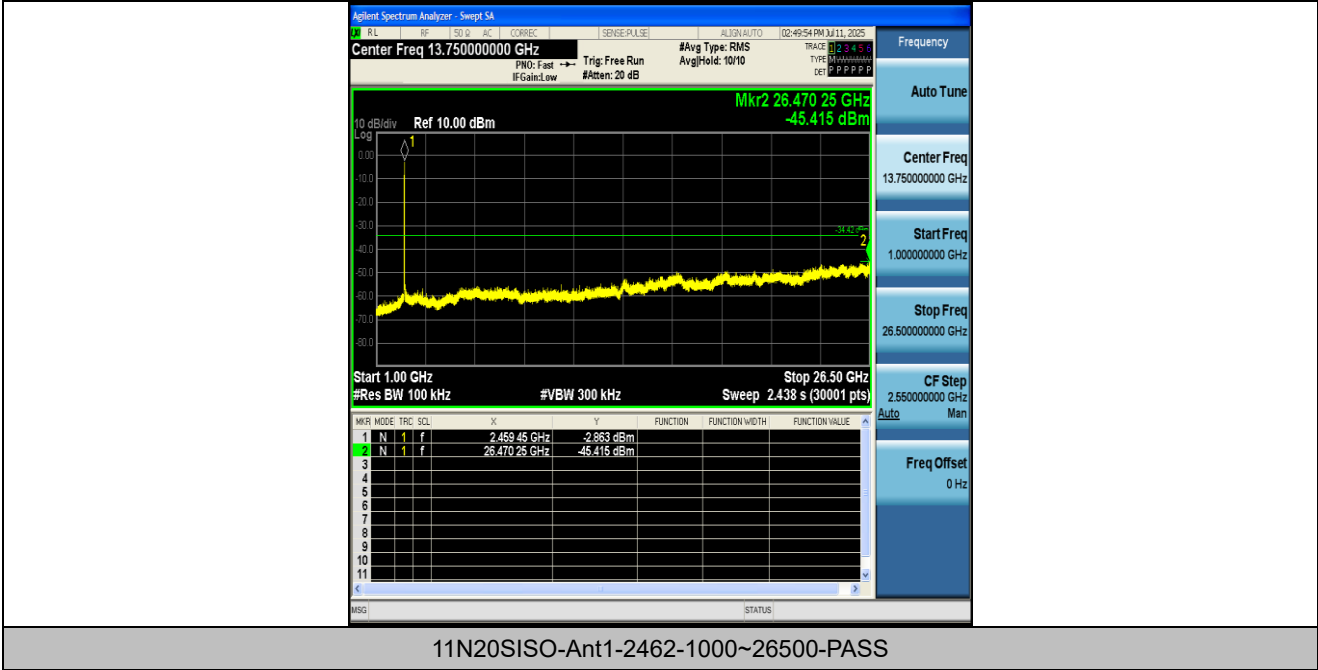
11N20SISO-Ant1-2412-1000~26500-PASS



11N20SISO-Ant1-2437-0~Reference-PASS







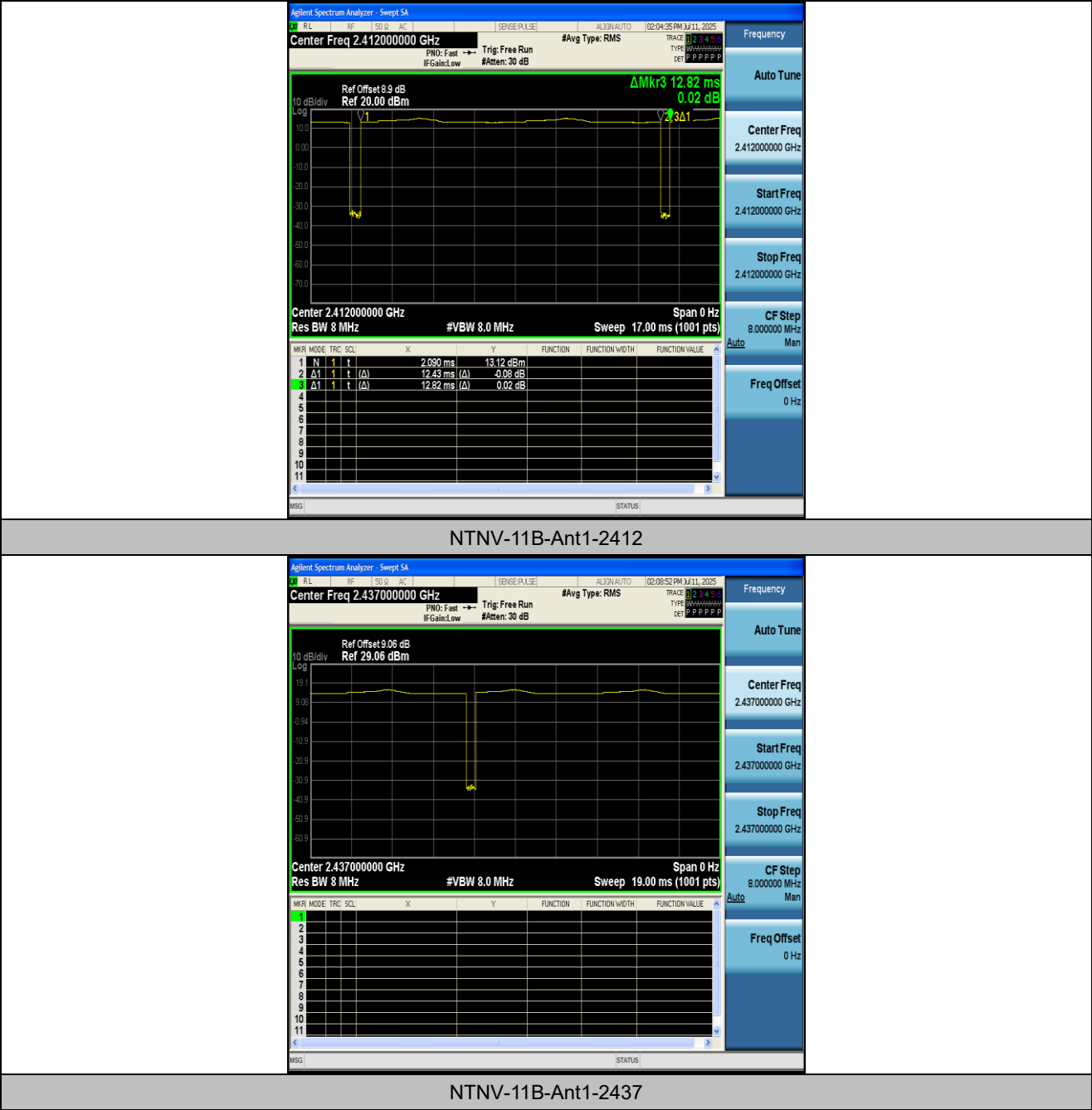
Appendix G: Duty Cycle

Test Result

Test Mode	Antenna	Frequency [MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Factor
11B	Ant1	2412	12.43	12.82	96.96	0.13
11B	Ant1	2437	9.00	9.00	100.00	0.00
11B	Ant1	2462	3.00	3.00	100.00	0.00
11G	Ant1	2412	2.07	2.25	92.00	0.36
11G	Ant1	2437	2.07	2.25	92.00	0.36
11G	Ant1	2462	2.07	2.20	94.09	0.26
11N20SISO	Ant1	2412	1.92	2.03	94.58	0.24
11N20SISO	Ant1	2437	1.92	2.12	90.57	0.43
11N20SISO	Ant1	2462	1.92	2.07	92.75	0.33

Note: offset(dB) = cable loss(dB) + attenuator factor(dB)

Test Graphs



Agilent Spectrum Analyzer - Swept SA

RLRF50.0dBmACSENSE PULSEALIGN AUTO02:08:52 PM Jul 11, 2025

Center Freq 2.437000000 GHz

PKW: FastTrig: Free Run#Avg Type: RMS

IF Gain: Low#Atten: 30 dB

Ref Offset 9.06 dB

Ref 29.06 dBm

10 dB/Div

Log

Center 2.437000000 GHz

Res BW 8 MHz

#VBW 8.0 MHz

Sweep 19.00 ms (1001 pts)

Span 0 Hz

CF Step 8.000000 MHz

Freq Offset 0 Hz

Auto Tune

Center Freq 2.437000000 GHz

Start Freq 2.437000000 GHz

Stop Freq 2.437000000 GHz

CF Step 8.000000 MHz

Auto Man

Freq Offset 0 Hz

MR MODE TRG SOL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE

1

2

3

4

5

6

7

8

9

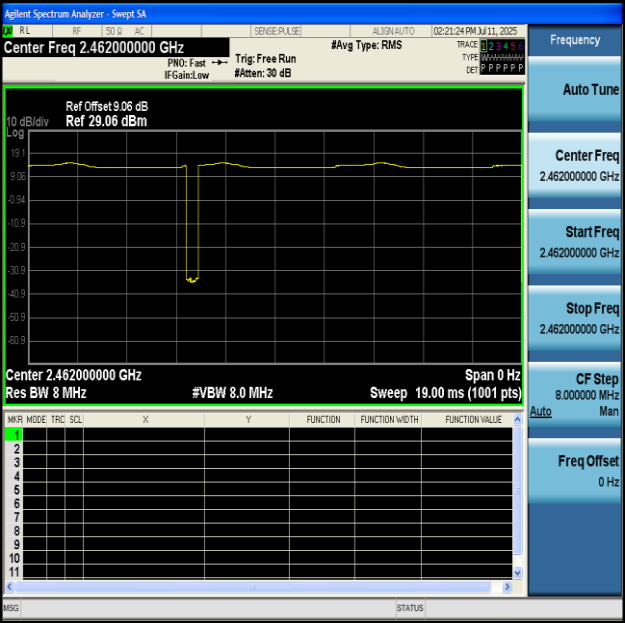
10

11

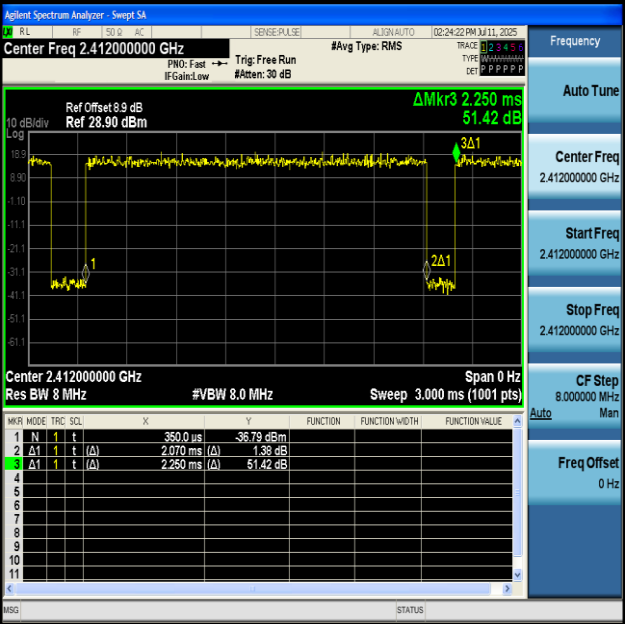
MSG

STATUS

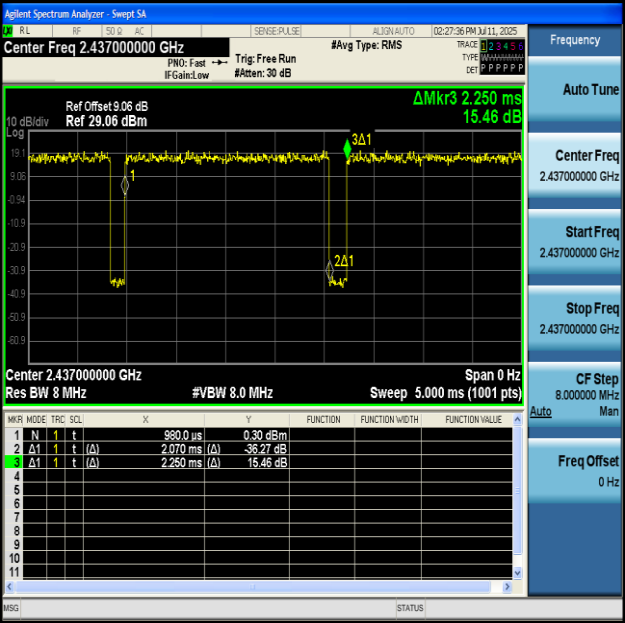
NTNV-11B-Ant1-2437



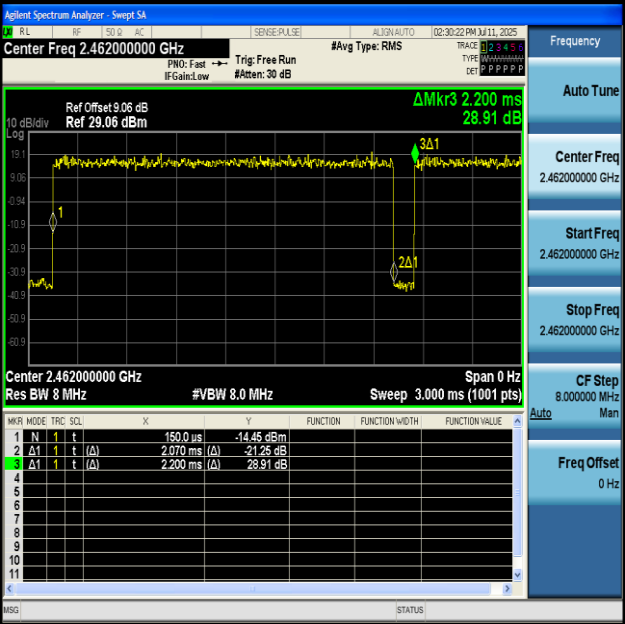
NTNV-11B-Ant1-2462



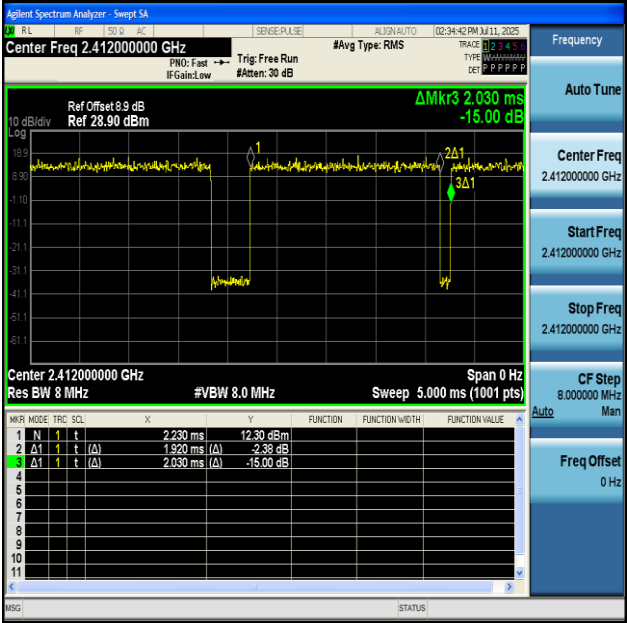
NTNV-11G-Ant1-2412



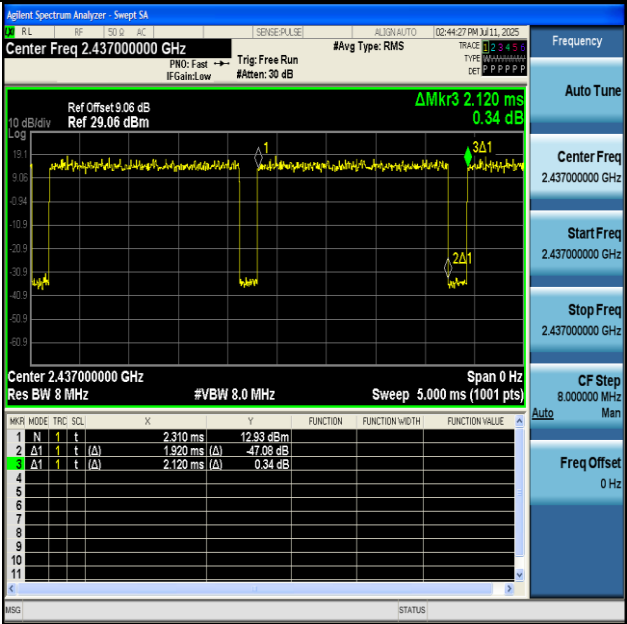
NTNV-11G-Ant1-2437



NTNV-11G-Ant1-2462



NTNV-11N20SISO-Ant1-2412



NTNV-11N20SISO-Ant1-2437

