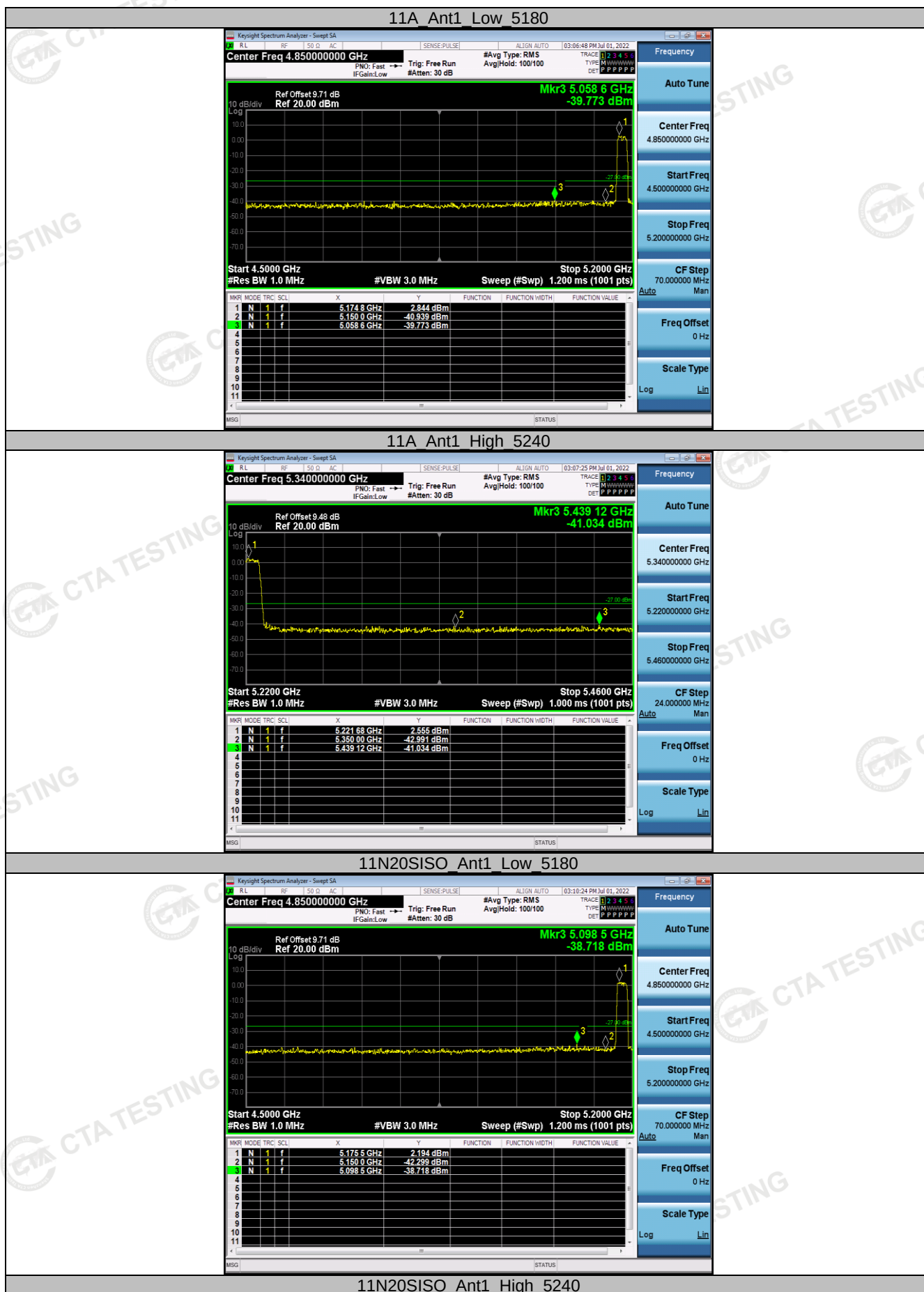
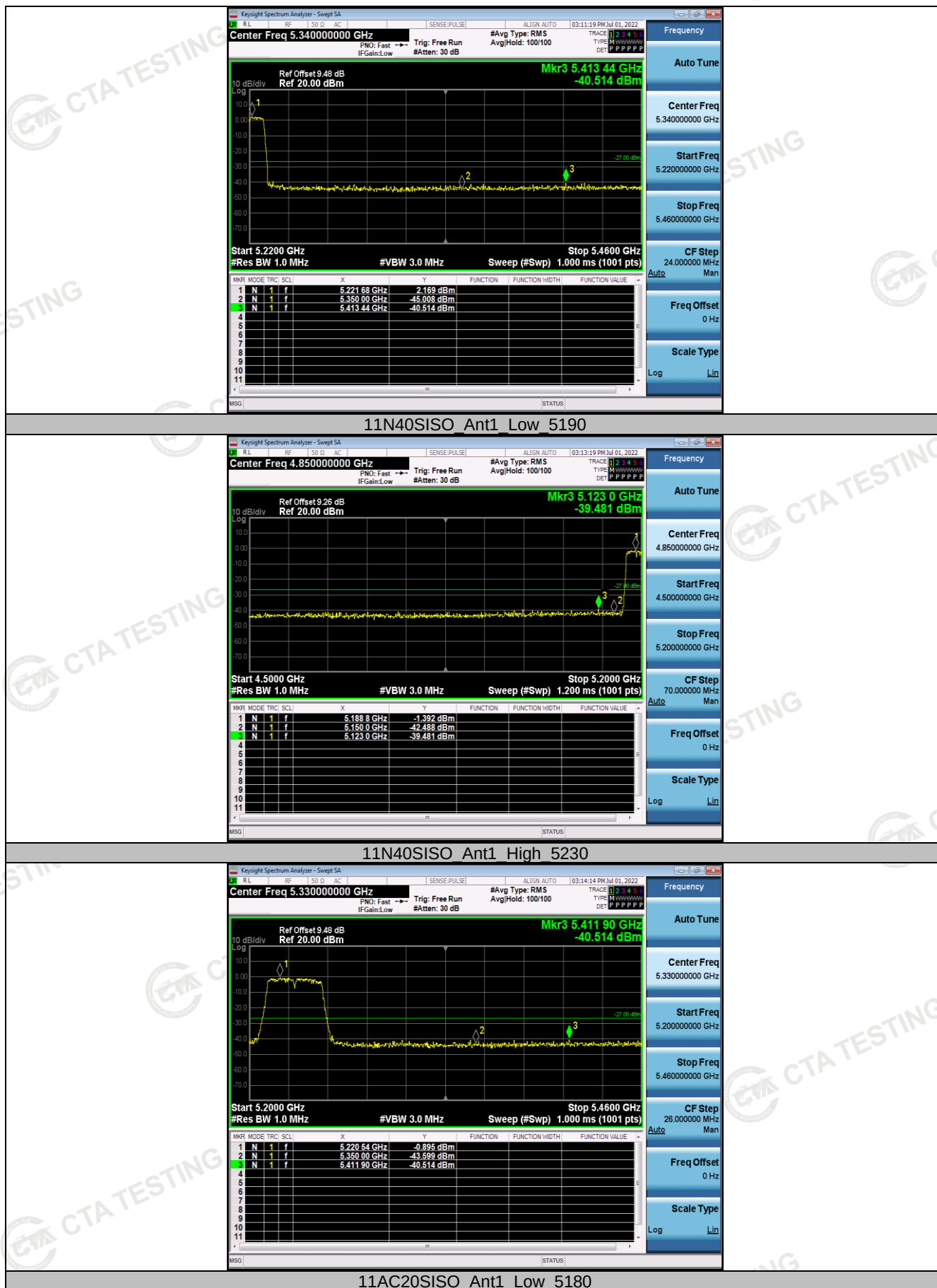
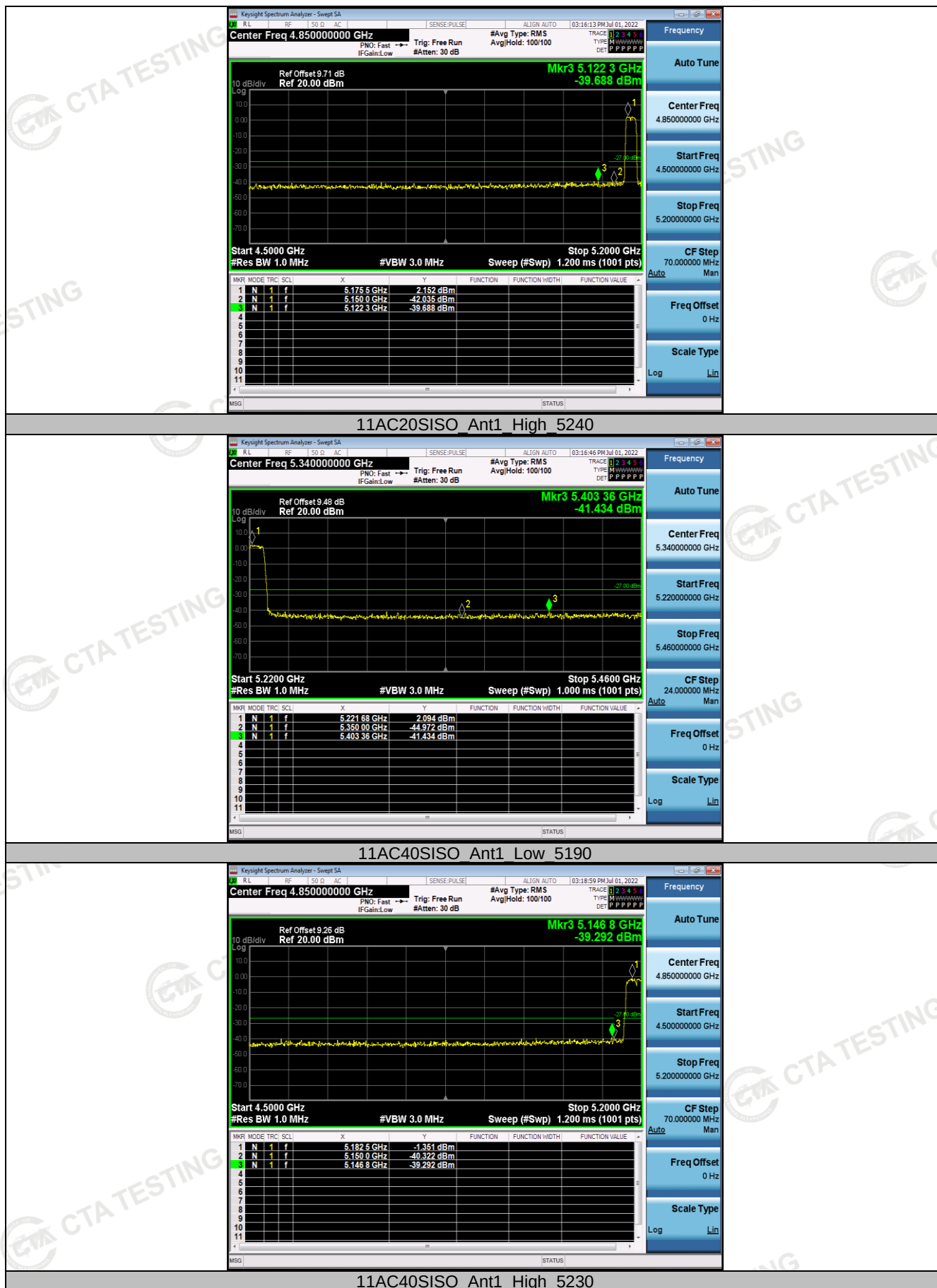
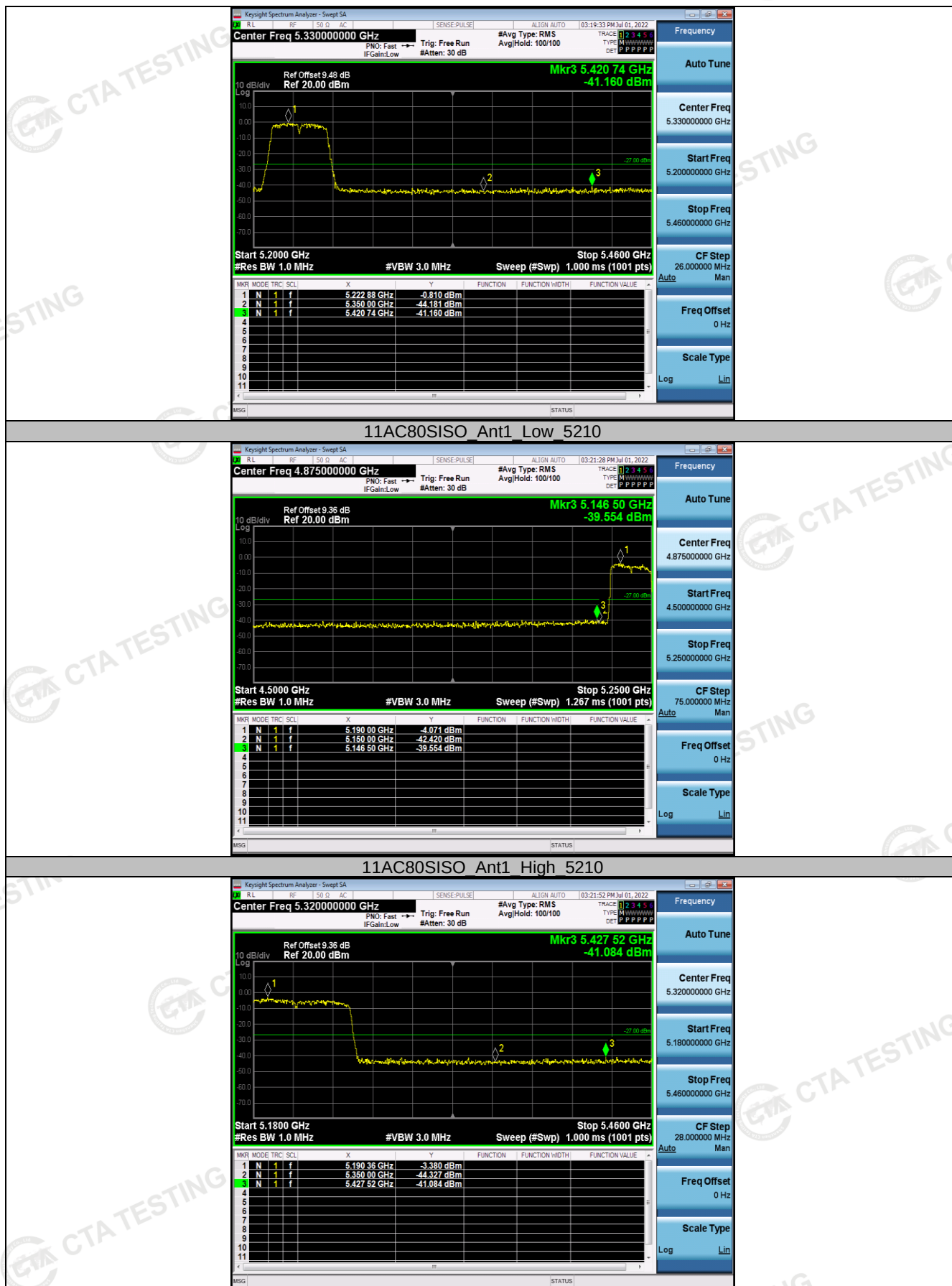


4.3.7 Test Graphs B1/2/3

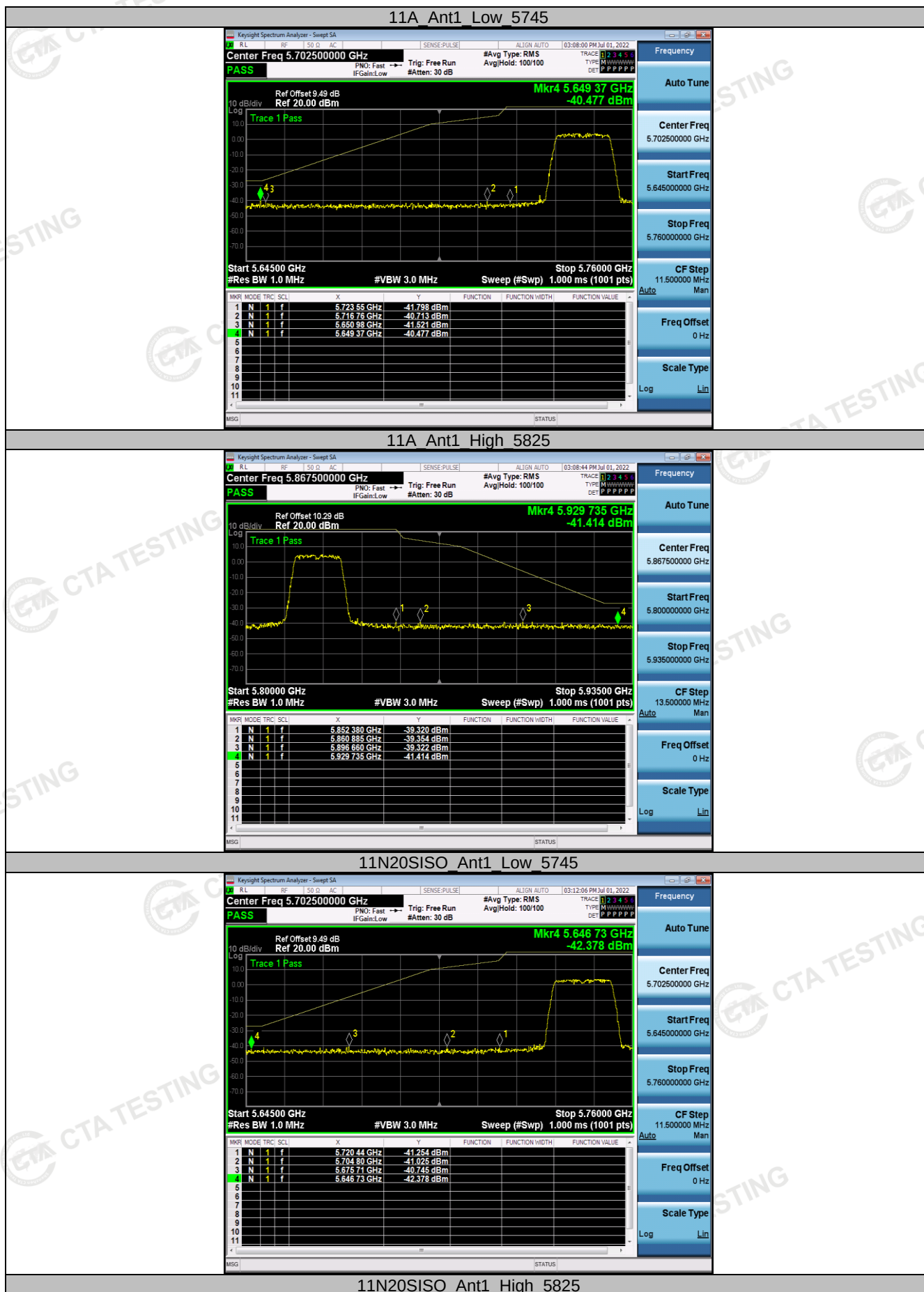


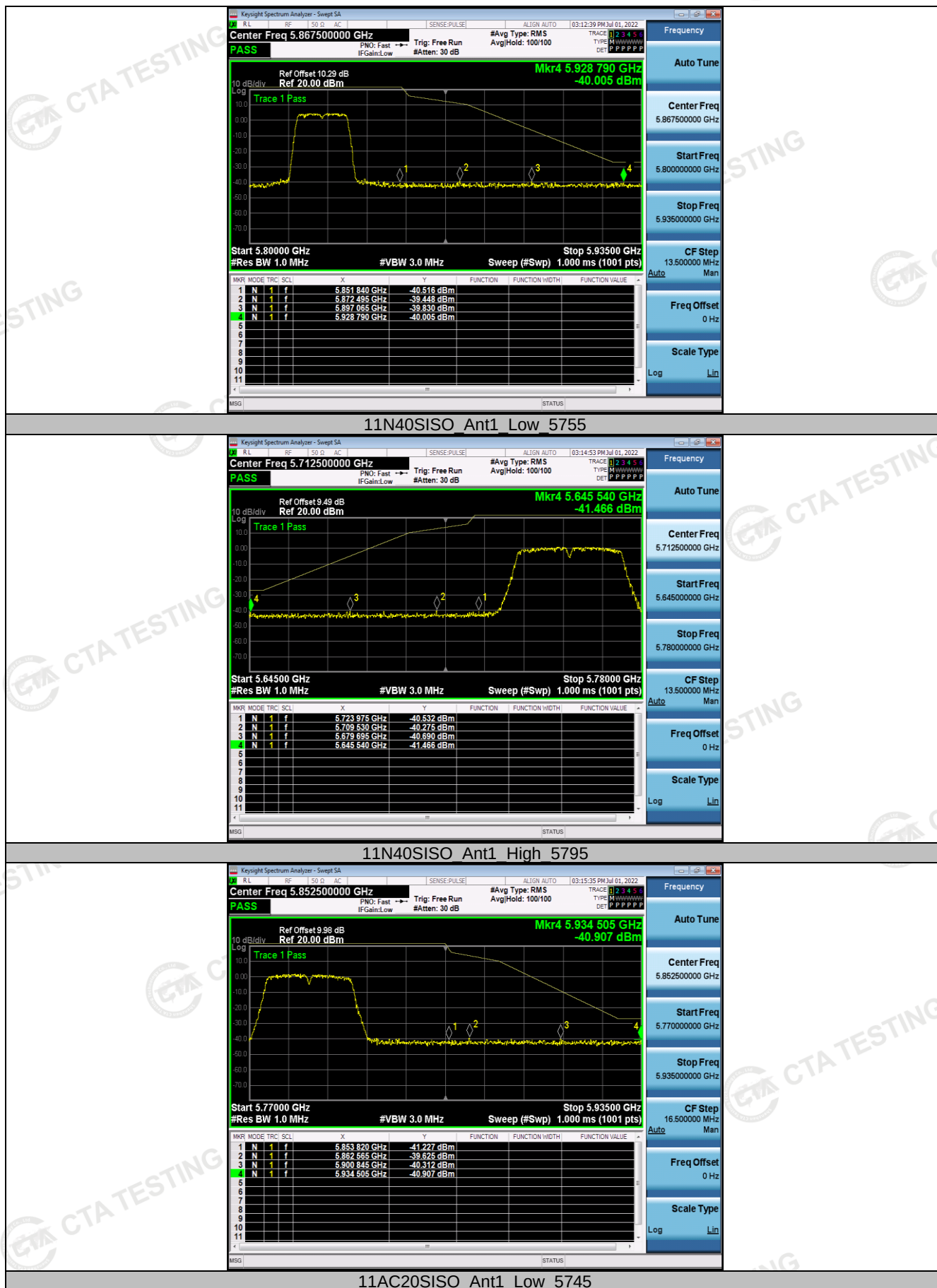


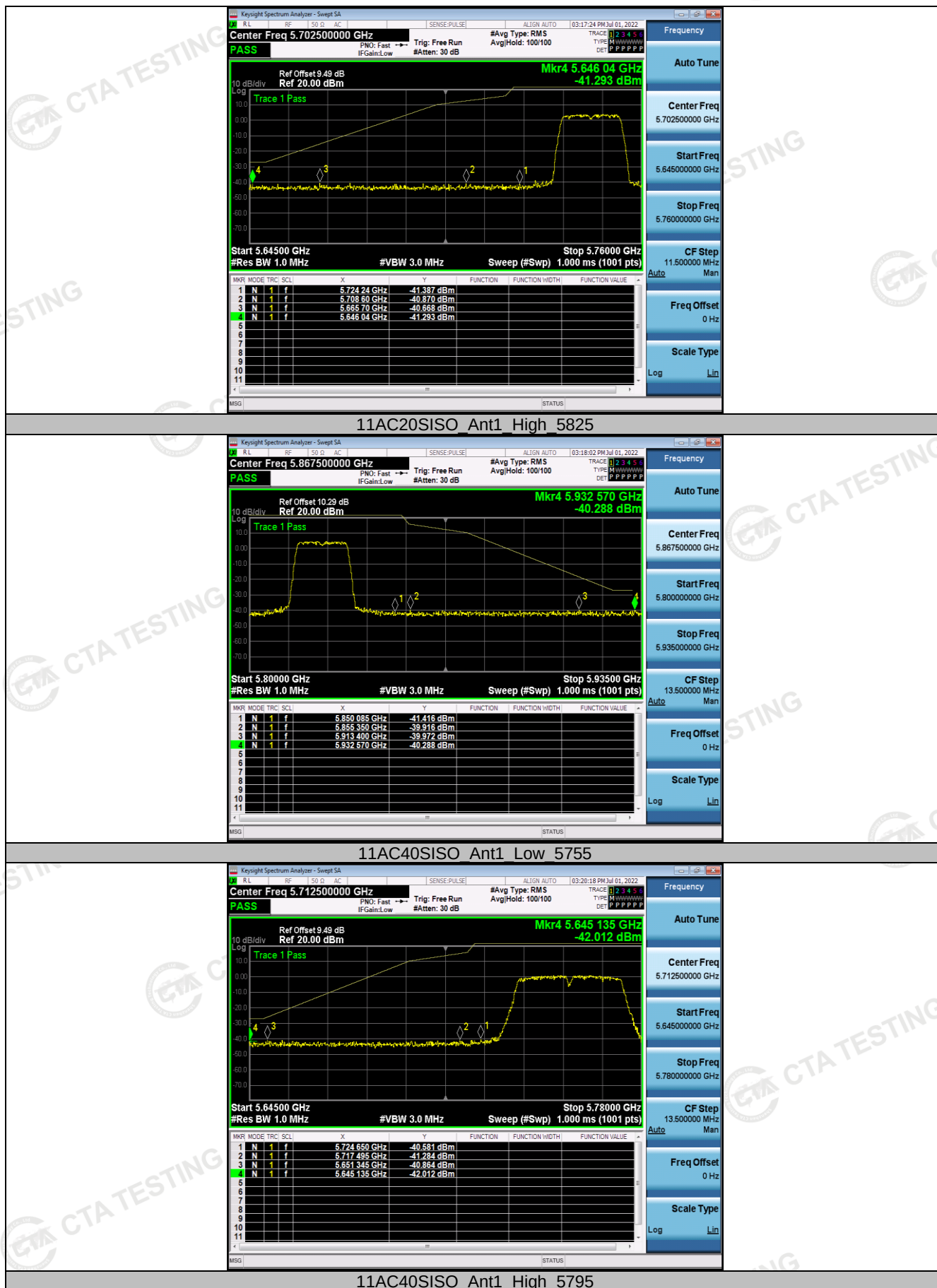


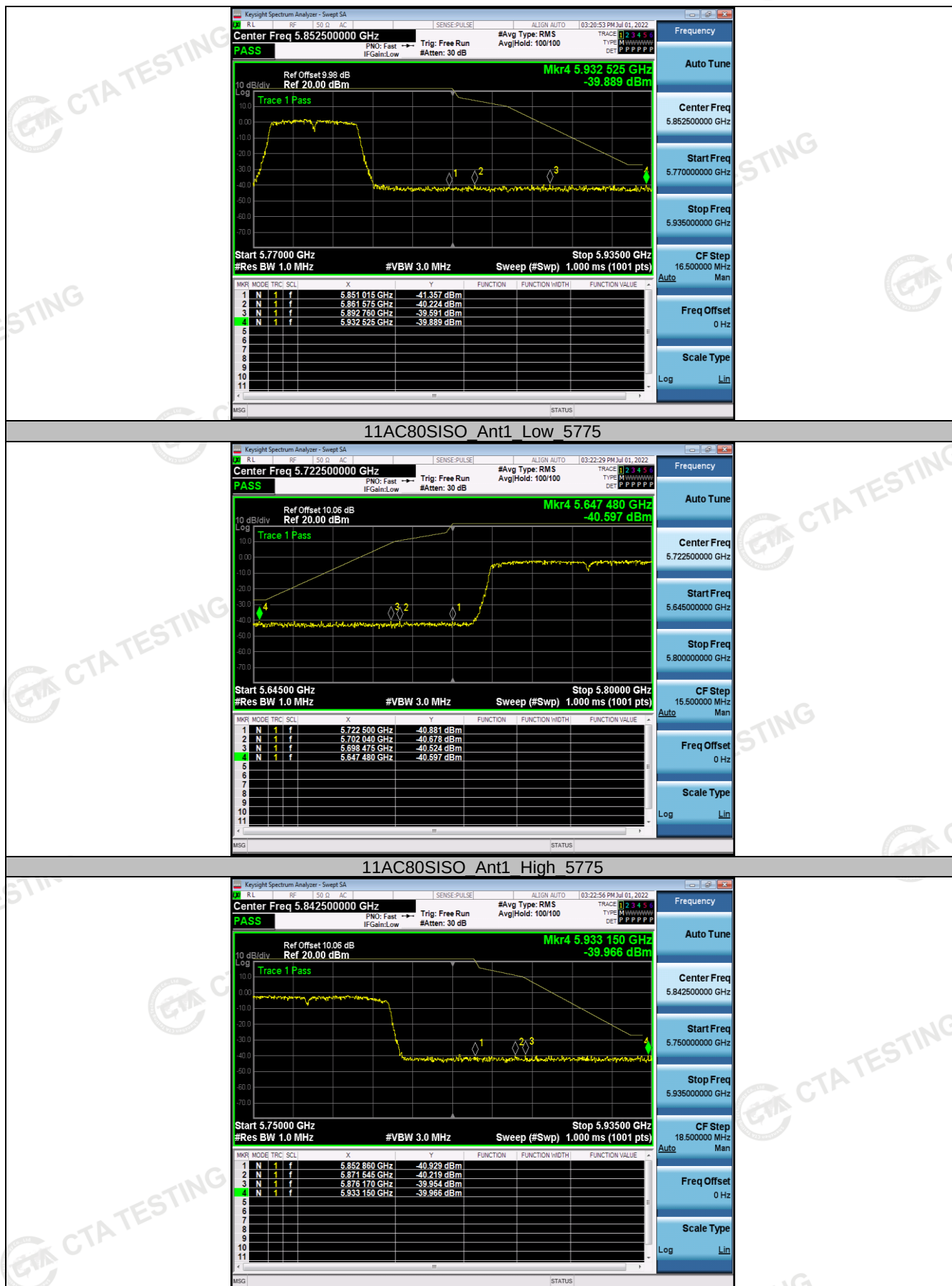


4.3.8 Test Graphs B4









4.4 Maximum Conducted Average Output Power

Limit

For the band 5.15-5.25 GHz.

- (i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi.
- (ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi.
- (iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.
- (iv) For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W

Test Procedure

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power sensor.

Test Configuration



Test Results**U-NII 1****ANT 1**

Type	Channel	Output power (dBm)	Limit (dBm)	Result
802.11a	36	11.45	30.0	Pass
	40	11.86		
	48	11.98		
802.11n(HT20)	36	10.73	30.0	Pass
	40	10.04		
	48	10.24		
802.11n(HT40)	38	9.78	30.0	Pass
	46	9.63		
802.11ac(HT20)	36	9.86	30.0	Pass
	40	9.59		
	48	9.31		
802.11ac(HT40)	38	8.88	30.0	Pass
	46	8.88		
802.11ac(HT80)	42	8.75	30.0	Pass

ANT 2

Type	Channel	Output power (dBm)	Limit (dBm)	Result
802.11a	36	11.34	30.0	Pass
	40	11.11		
	48	11.78		
802.11n(HT20)	36	10.68	30.0	Pass
	40	10.52		
	48	10.39		
802.11n(HT40)	38	9.57	30.0	Pass
	46	9.35		
802.11ac(HT20)	36	9.63	30.0	Pass
	40	9.47		
	48	9.30		
802.11ac(HT40)	38	8.61	30.0	Pass
	46	8.27		
802.11ac(HT80)	42	8.15	30.0	Pass

U-NII 3

ANT 1

Type	Channel	Output power (dBm)	Limit (dBm)	Result
802.11a	149	11.59	30.00	Pass
	157	11.80		
	165	11.94		
802.11n(HT20)	149	10.89	30.00	Pass
	157	10.18		
	165	10.33		
802.11n(HT40)	151	10.15	30.00	Pass
	159	10.15		
802.11ac(HT20)	149	9.83	30.00	Pass
	157	9.20		
	165	9.24		
802.11ac(HT40)	151	9.07	30.00	Pass
	159	9.08		
802.11ac(HT80)	155	9.88	30.00	Pass

ANT 2

Type	Channel	Output power (dBm)	Limit (dBm)	Result
802.11a	149	11.37	30.00	Pass
	157	11.24		
	165	11.04		
802.11n(HT20)	149	10.75	30.00	Pass
	157	10.67		
	165	10.47		
802.11n(HT40)	151	10.83	30.00	Pass
	159	10.42		
802.11ac(HT20)	149	9.72	30.00	Pass
	157	9.54		
	165	9.45		
802.11ac(HT40)	151	9.74	30.00	Pass
	159	9.35		
802.11ac(HT80)	155	9.18	30.00	Pass

For MIMO:

U-NII 1

Type	Channel	Output power (dBm) ANT1	Output power (dBm) ANT2	Output power (dBm) MIMO	Limit (dBm)	Result
802.11n(HT20)	36	10.73	10.68	13.72	27.99	Pass
	40	10.04	10.52	13.30		
	48	10.24	10.39	13.33		
802.11n(HT40)	38	9.78	9.57	12.69	27.99	Pass
	46	9.63	9.35	12.50		
802.11ac(HT20)	36	9.86	9.63	12.76	27.99	Pass
	40	9.59	9.47	12.54		
	48	9.31	9.30	12.32		
802.11ac(HT40)	38	8.88	8.61	11.76	27.99	Pass
	46	8.88	8.27	11.60		
802.11ac(HT80)	42	8.75	8.15	11.47	27.99	Pass

U-NII 3

Type	Channel	Output power (dBm) ANT1	Output power (dBm) ANT2	Output power (dBm) MIMO	Limit (dBm)	Result
802.11n(HT20)	149	10.89	10.75	13.83	27.99	Pass
	157	10.18	10.67	13.44		
	165	10.33	10.47	13.41		
802.11n(HT40)	151	10.15	10.83	13.51	27.99	Pass
	159	10.15	10.42	13.30		
802.11ac(HT20)	149	9.83	9.72	12.79	27.99	Pass
	157	9.20	9.54	12.38		
	165	9.24	9.45	12.36		
802.11ac(HT40)	151	9.07	9.74	12.43	27.99	Pass
	159	9.08	9.35	12.23		
802.11ac(HT80)	155	9.88	9.18	12.55	27.99	Pass

4.5 Power Spectral Density

Limit

(1) For the band 5.15 - 5.25 GHz.

(i) For an outdoor access point operating in the band 5.15 - 5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 MHz band. ^{note1}

(ii) For an indoor access point operating in the band 5.15 - 5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 MHz band. ^{note1}

(iii) For fixed point-to-point access points operating in the band 5.15 - 5.25 GHz, transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi.

(iv) For mobile and portable client devices in the 5.15 - 5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 MHz band. ^{note1}

(2) For the 5.25 - 5.35 GHz and 5.47 - 5.725 GHz bands, the peak power spectral density shall not exceed 11 dBm in any 1 MHz band. ^{note1}

(3) For the band 5.725 - 5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500 kHz band. ^{note1, note2}

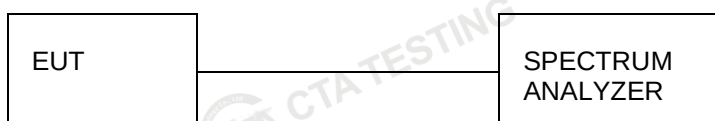
Note1: If transmitting antennas of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Note2: Fixed point - to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information.

Test Procedure

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the RBW = 1MHz for U-NII 1, U-NII 2A, U-NII C band and 510KHz for U-NII 3 band.
3. Set the VBW $\geq 3 \times$ RBW.
4. Set the span to encompass the entire EBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum power level.

Test Configuration



Test Results**ANT 1**

Type	Bands	Channel	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)	Result
802.11a	U-NII 1	36	-0.11	17.0	Pass
		40	-0.73		
		48	-0.86		
802.11n (HT20)	U-NII 1	36	-2.11		
		40	-2.80		
		48	-2.85		
802.11n (HT40)	U-NII 1	38	-5.68		
		46	-5.67		
802.11ac (HT20)	U-NII 1	36	-2.06		
		40	-2.68		
		48	-2.80		
802.11ac (HT40)	U-NII 1	38	-5.67		
		46	-5.70		
802.11ac (HT80)	U-NII 1	42	-8.30		

Type	Bands	Channel	Power Spectral Density (dBm/300KHz)	Power Spectral Density (dBm/500KHz)	Limit (dBm/500KHz)	Result
802.11a	U-NII 3	149	-2.04	0.18	30.0	Pass
		157	-1.28	0.94		
		165	-1.73	0.49		
802.11n (HT20)	U-NII 3	149	-3.87	-1.65		
		157	-3.25	-1.03		
		165	-3.28	-1.06		
802.11n (HT40)	U-NII 3	151	-6.95	-4.73		
		159	-6.03	-3.81		
802.11ac (HT20)	U-NII 3	149	-1.820	0.40		
		157	-2.102	0.12		
		165	-2.772	-0.55		
802.11ac (HT40)	U-NII 3	151	-5.074	-2.86		
		159	-5.430	-3.21		
802.11ac (HT80)	U-NII 3	155	-7.192	-4.97		

Remark: P.S.D(dBm/500KHz)= P.S.D(dBm/300KHz)+10 log (500 kHz/300KHz).

ANT 2

Type	Bands	Channel	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)	Result
802.11a	U-NII 1	36	0.00	17.0	Pass
		40	-0.73		
		48	-0.90		
802.11n (HT20)	U-NII 1	36	-1.94		
		40	-2.64		
		48	-2.81		
802.11n (HT40)	U-NII 1	38	-5.50		
		46	-5.47		
802.11ac (HT20)	U-NII 1	36	-1.93		
		40	-2.62		
		48	-2.88		
802.11ac (HT40)	U-NII 1	38	-5.47		
		46	-5.51		
802.11ac (HT80)	U-NII 1	42	-8.27		

Type	Bands	Channel	Power Spectral Density (dBm/300KHz)	Power Spectral Density (dBm/500KHz)	Limit (dBm/500KHz)	Result
802.11a	U-NII 3	149	-2.05	0.942	30.0	Pass
		157	-1.18	0.517		
		165	-1.47	0.027		
802.11n (HT20)	U-NII 3	149	-3.88	0.594		
		157	-3.10	0.543		
		165	-3.11	-0.311		
802.11n (HT40)	U-NII 3	151	-6.72	-2.509		
		159	-6.08	-2.939		
802.11ac (HT20)	U-NII 3	149	-3.92	0.836		
		157	-3.11	-0.015		
		165	-3.2	-0.063		
802.11ac (HT40)	U-NII 3	151	-6.79	-2.882		
		159	-6.19	-2.942		
802.11ac (HT80)	U-NII 3	155	-9.40	-5.098		

Remark: P.S.D(dBm/500KHz)= P.S.D(dBm/300KHz)+10 log (500 kHz/300KHz).

For MIMO:

U-NII 1

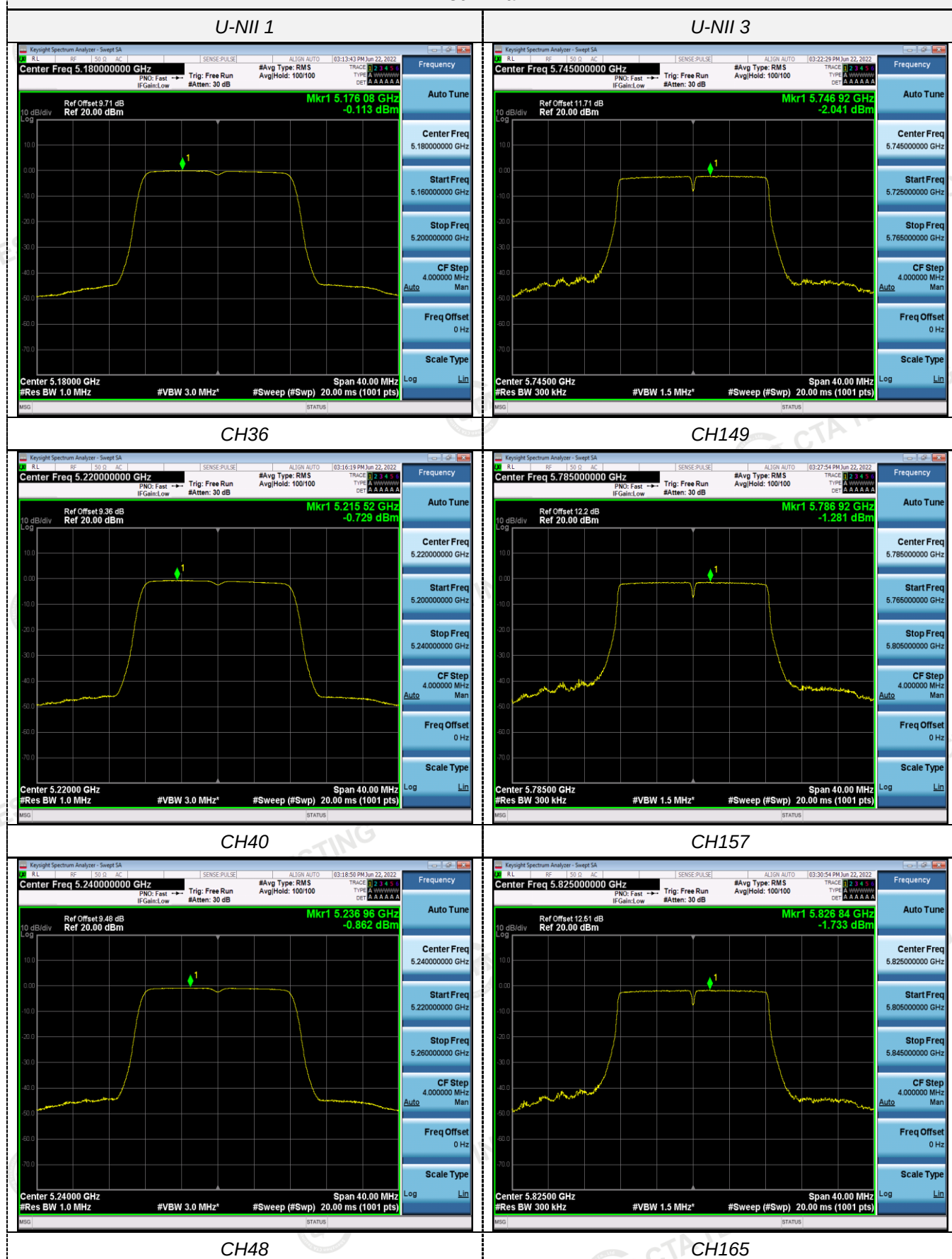
Type	Channel	Power Spectral Density ANT1	Power Spectral Density ANT2	Power Spectral Density MIMO	Limit (dBm)	Result
802.11n(HT20)	36	10.89	10.75	13.83	14.99	PASS
	40	10.18	10.67	13.44		
	48	10.33	10.47	13.41		
802.11n(HT40)	38	10.15	10.83	13.51		
	46	10.15	10.42	13.30		
802.11ac(HT20)	36	9.83	9.72	12.79		
	40	9.20	9.54	12.38		
	48	9.24	9.45	12.36		
802.11ac(HT40)	38	9.07	9.74	12.43		
	46	9.08	9.35	12.23		
802.11ac(HT80)	42	9.88	9.18	12.55		

U-NII 3

Type	Channel	Power Spectral Density (dBm/500KHz) ANT1	Power Spectral Density (dBm/500KHz) ANT2	Power Spectral Density (dBm/500KHz) MIMO	Limit (dBm)	Result
802.11n(HT20)	149	-1.65	0.594	2.63	27.99	Pass
	157	-1.03	0.543	2.84		
	165	-1.06	-0.311	2.34		
802.11n(HT40)	151	-4.73	-2.509	-0.47		
	159	-3.81	-2.939	-0.34		
802.11ac(HT20)	149	0.40	0.836	3.63		
	157	0.12	-0.015	3.06		
	165	-0.55	-0.063	2.71		
802.11ac(HT40)	151	-2.86	-2.882	0.14		
	159	-3.21	-2.942	-0.06		
802.11ac(HT80)	155	-4.97	-5.098	-2.02		

Test plot as follows
ANT 1

802.11a



802.11n(HT20)

U-NII 1



U-NII 3



CH36



CH149



CH40



CH157



CH48

CH165