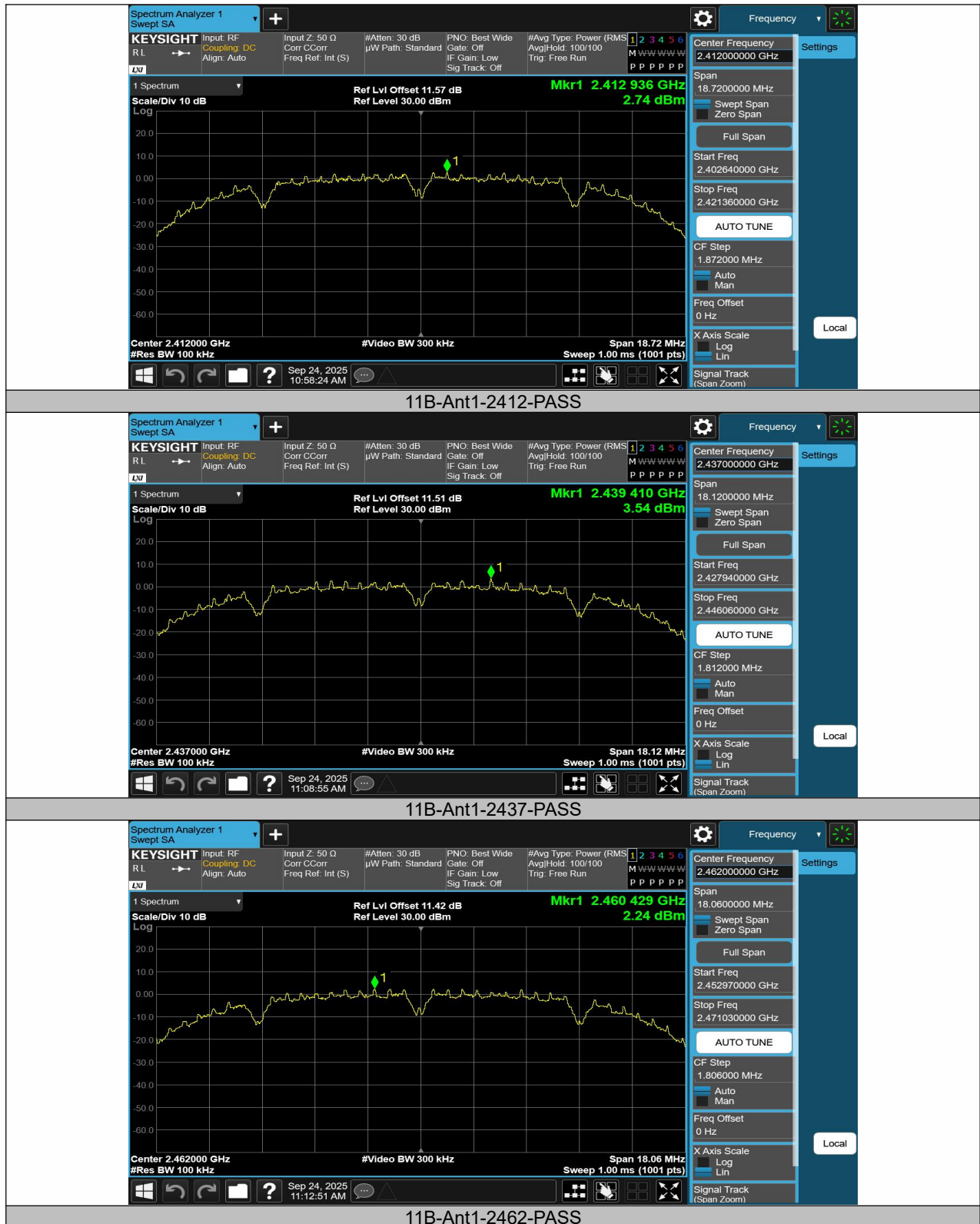


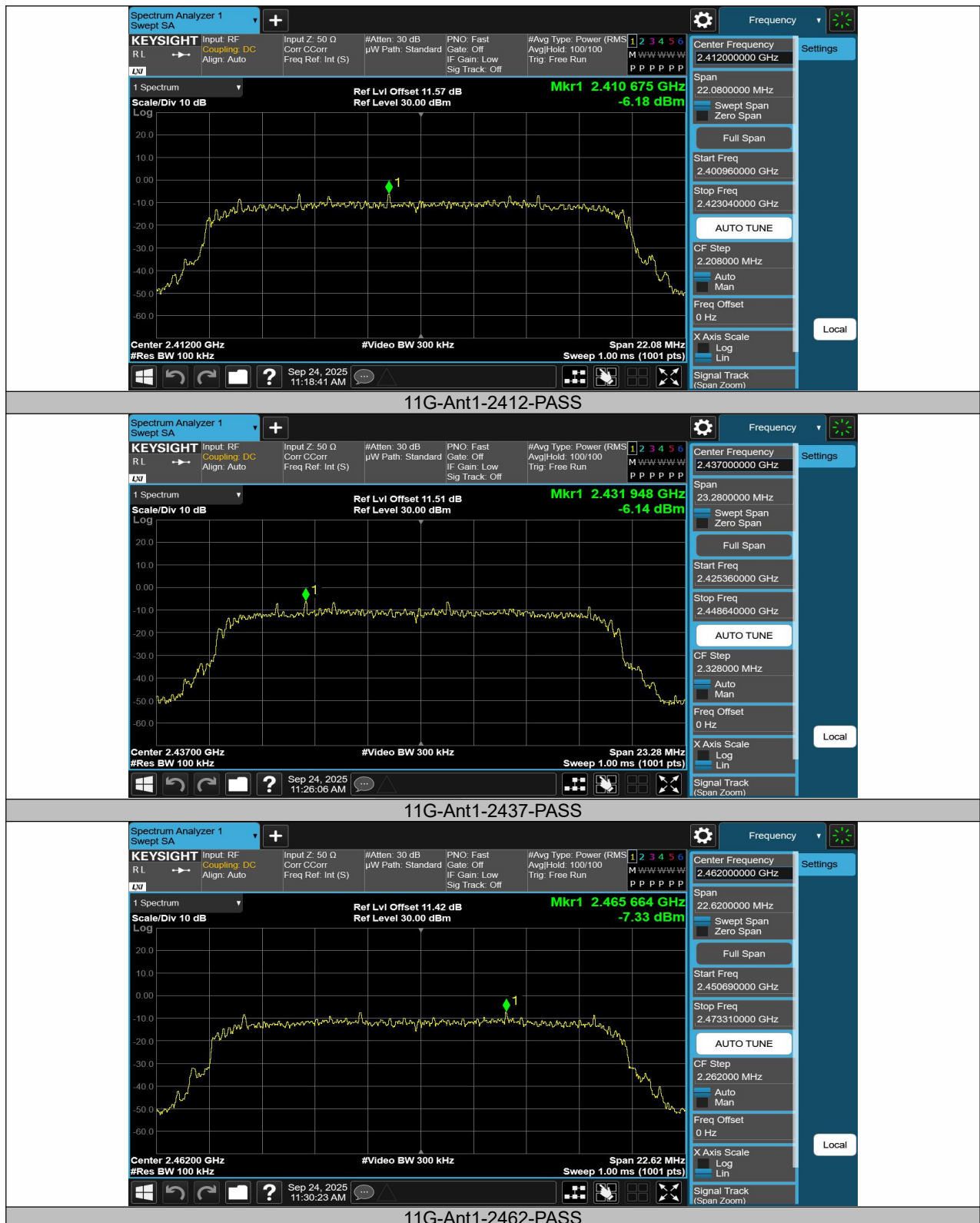
8.5.5 Test Results

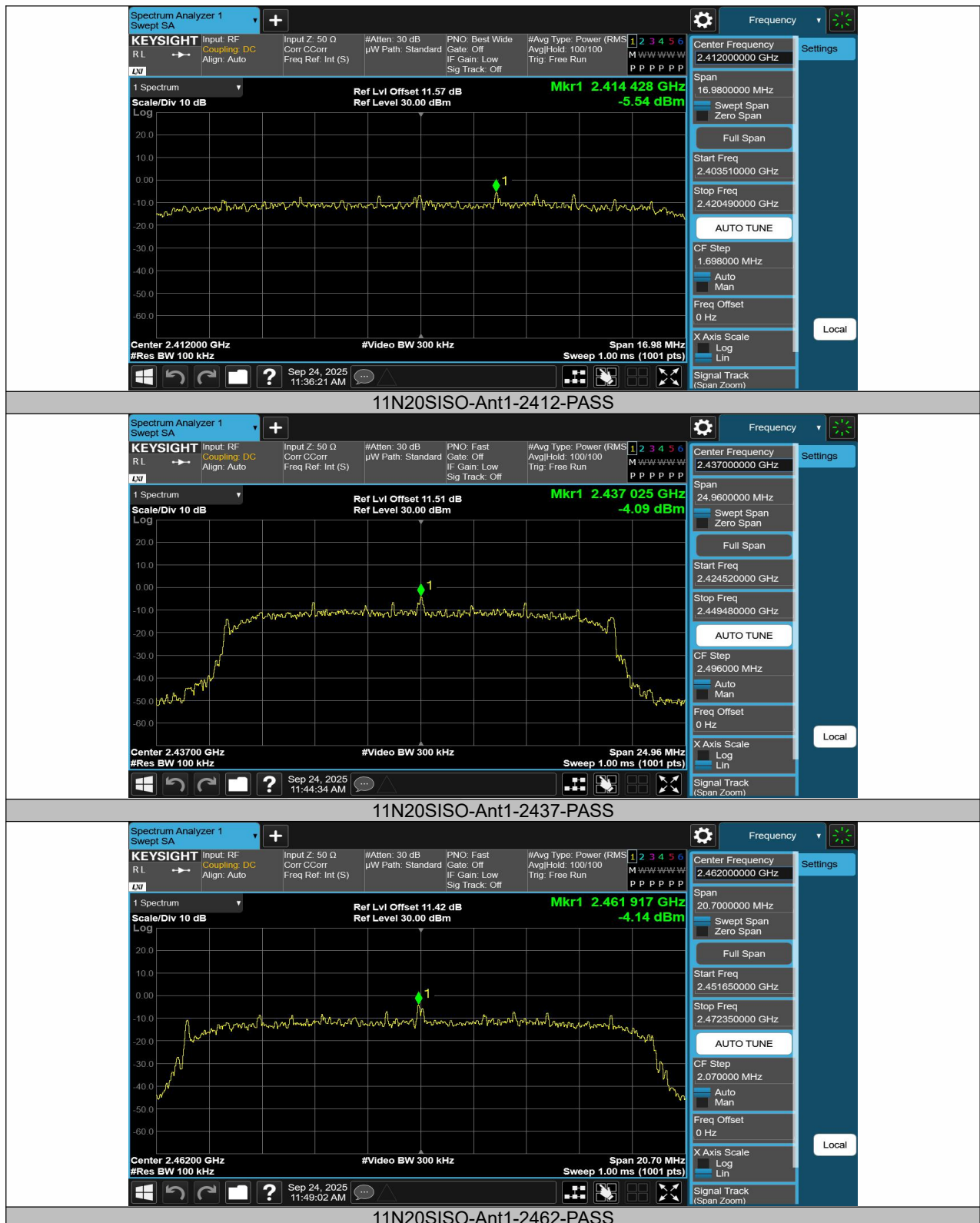
Temperature:	24°C
Relative Humidity:	61%
ATM Pressure:	1011 mbar

■ Reference level measurement

TestMode	Antenna	Freq(MHz)	Max.Point[MHz]	Result[dBm]
11B	Ant1	2412	2412.94	2.74
11B	Ant1	2437	2439.41	3.54
11B	Ant1	2462	2460.43	2.24
11G	Ant1	2412	2410.68	-6.18
11G	Ant1	2437	2431.95	-6.14
11G	Ant1	2462	2465.66	-7.33
11N20SISO	Ant1	2412	2414.43	-5.54
11N20SISO	Ant1	2437	2437.02	-4.09
11N20SISO	Ant1	2462	2461.92	-4.14



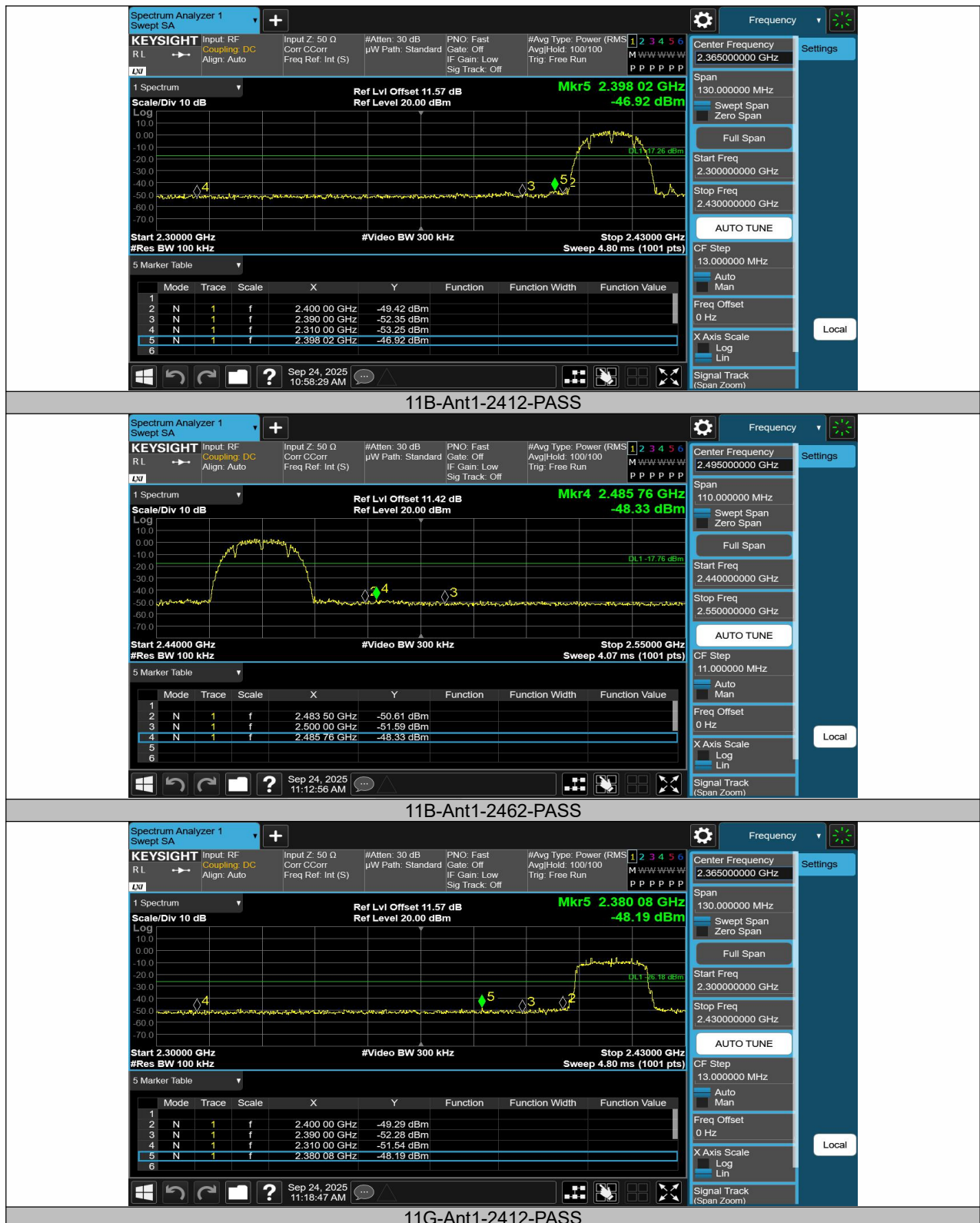


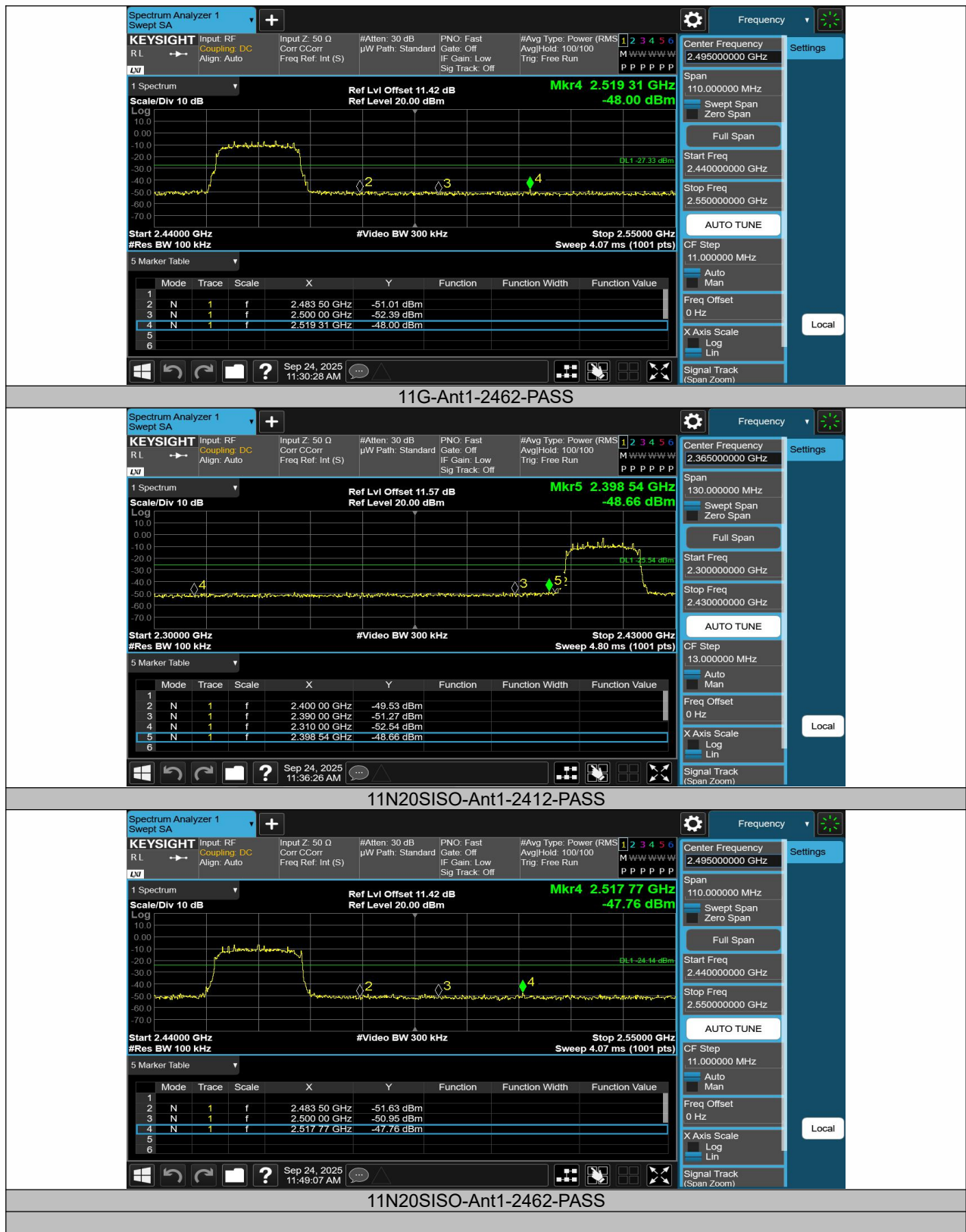


Band-edge measurement

TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	2.74	-46.92	≤-17.26	PASS
11B	Ant1	High	2462	2.24	-48.33	≤-17.76	PASS
11G	Ant1	Low	2412	-6.18	-48.19	≤-26.18	PASS
11G	Ant1	High	2462	-7.33	-48	≤-27.33	PASS
11N20SISO	Ant1	Low	2412	-5.54	-48.66	≤-25.54	PASS
11N20SISO	Ant1	High	2462	-4.14	-47.76	≤-24.14	PASS



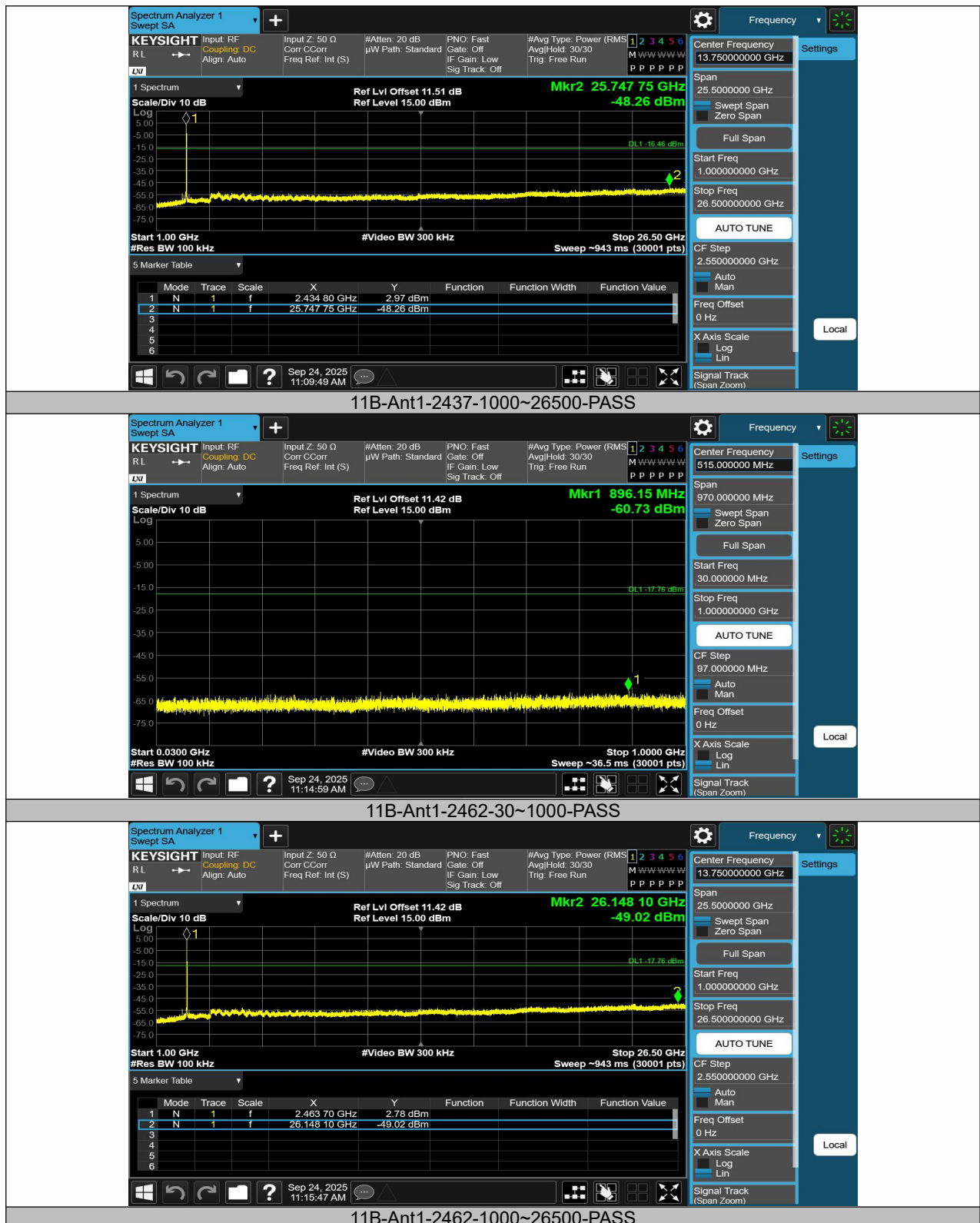


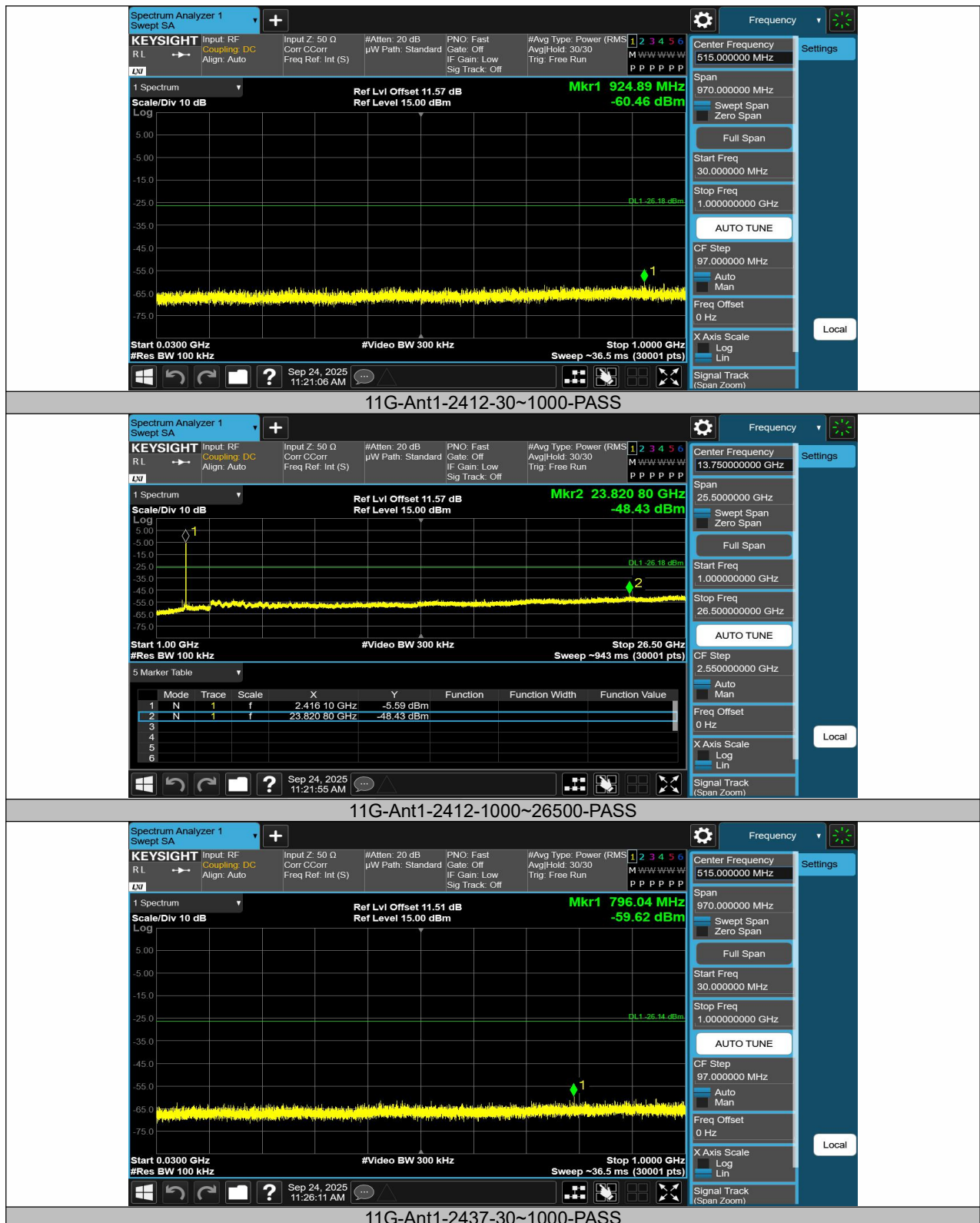


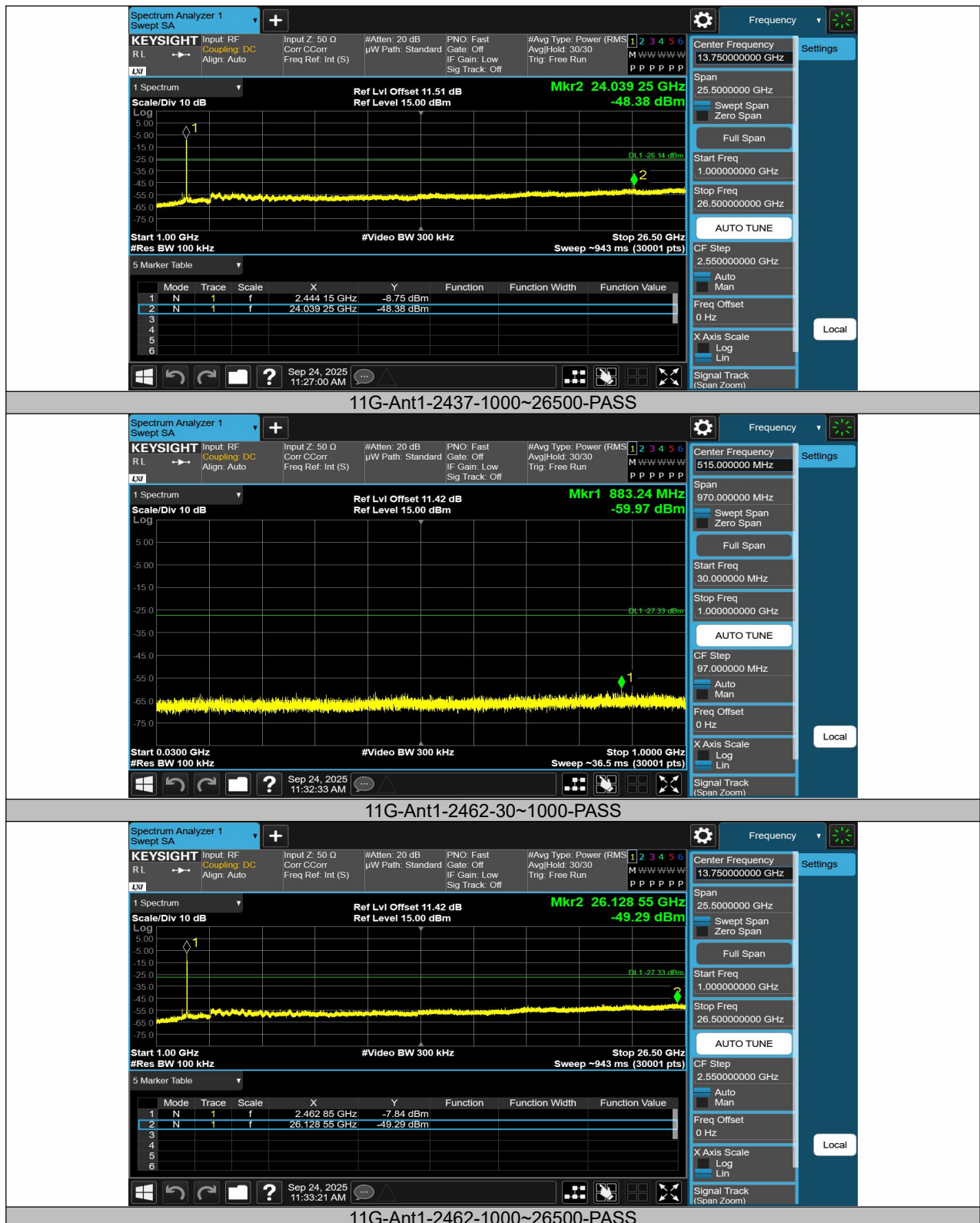
Emission level measurement

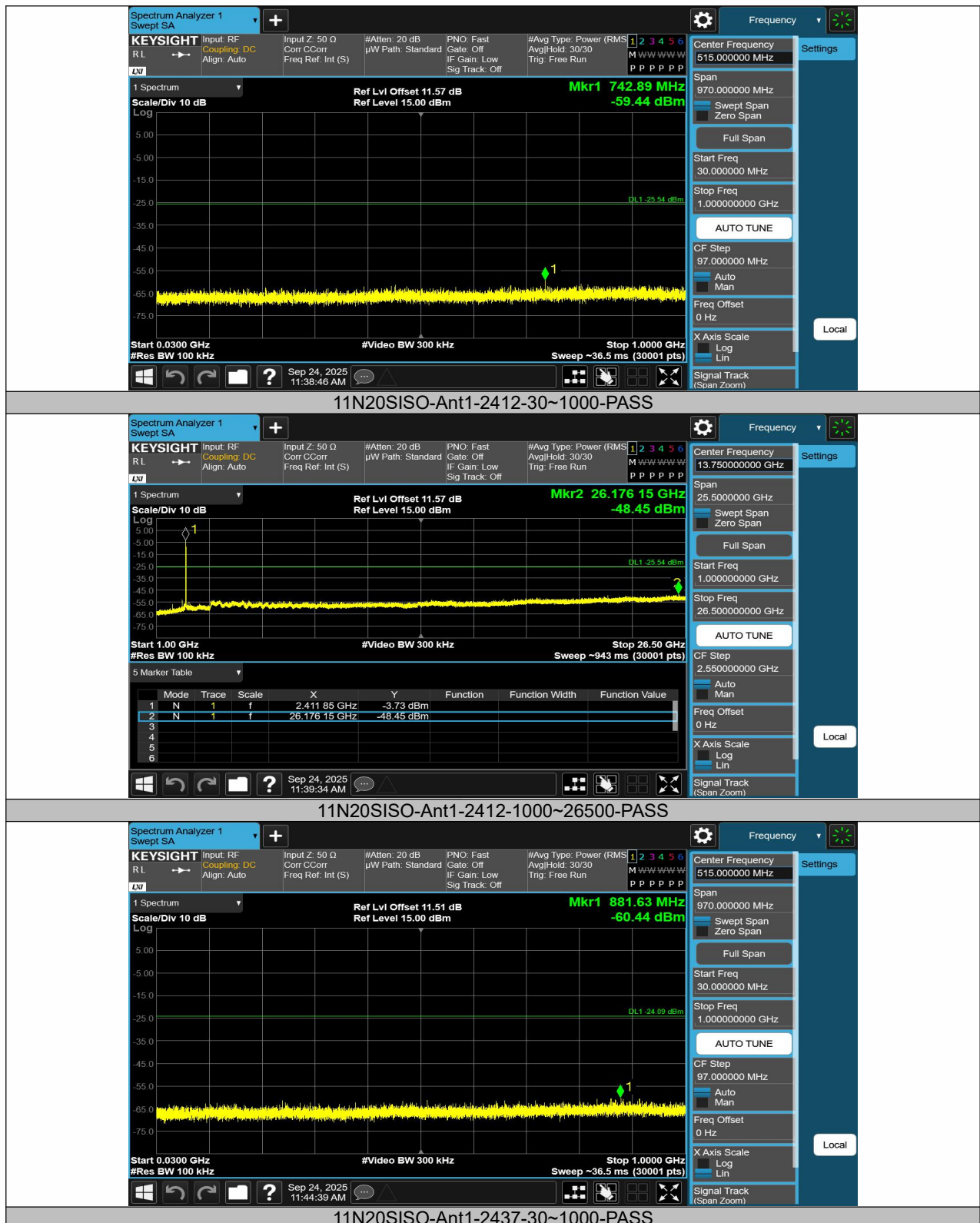
TestMode	Antenna	Frequency[MHz]	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	30~1000	2.74	-61.09	≤-17.26	PASS
11B	Ant1	2412	1000~26500	2.74	-48.53	≤-17.26	PASS
11B	Ant1	2437	30~1000	3.54	-60.47	≤-16.46	PASS
11B	Ant1	2437	1000~26500	3.54	-48.26	≤-16.46	PASS
11B	Ant1	2462	30~1000	2.24	-60.74	≤-17.76	PASS
11B	Ant1	2462	1000~26500	2.24	-49.03	≤-17.76	PASS
11G	Ant1	2412	30~1000	-6.18	-60.46	≤-26.18	PASS
11G	Ant1	2412	1000~26500	-6.18	-48.43	≤-26.18	PASS
11G	Ant1	2437	30~1000	-6.14	-59.62	≤-26.14	PASS
11G	Ant1	2437	1000~26500	-6.14	-48.38	≤-26.14	PASS
11G	Ant1	2462	30~1000	-7.33	-59.97	≤-27.33	PASS
11G	Ant1	2462	1000~26500	-7.33	-49.29	≤-27.33	PASS
11N20SISO	Ant1	2412	30~1000	-5.54	-59.44	≤-25.54	PASS
11N20SISO	Ant1	2412	1000~26500	-5.54	-48.45	≤-25.54	PASS
11N20SISO	Ant1	2437	30~1000	-4.09	-60.44	≤-24.09	PASS
11N20SISO	Ant1	2437	1000~26500	-4.09	-48.94	≤-24.09	PASS
11N20SISO	Ant1	2462	30~1000	-4.14	-60.53	≤-24.14	PASS
11N20SISO	Ant1	2462	1000~26500	-4.14	-49.12	≤-24.14	PASS

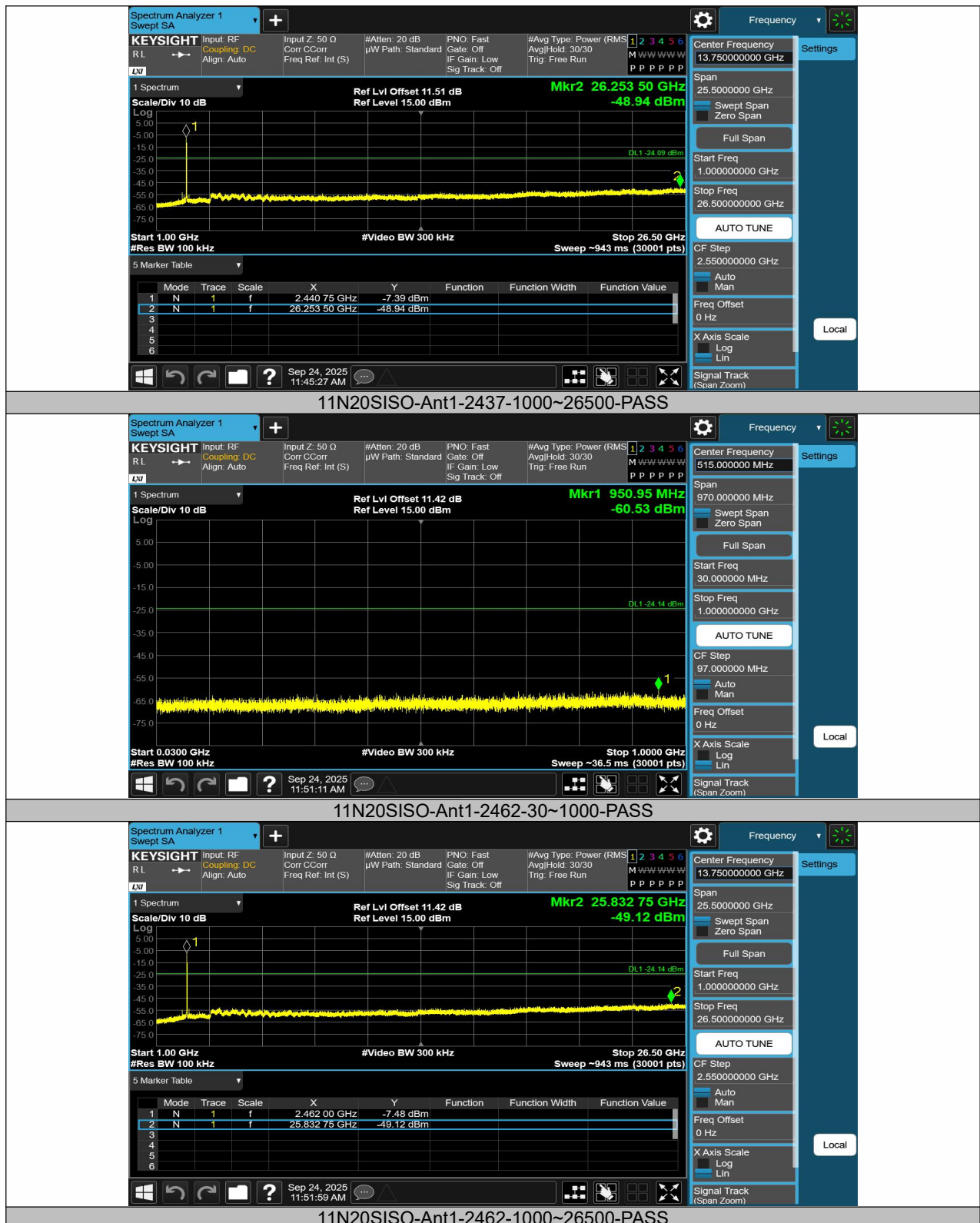












8.6 RADIATED SPURIOUS EMISSION

8.6.1 Applicable Standard

According to FCC Part 15.247(d), 15.205, 15.209 and KDB 558074 D01 15.247 Meas Guidance v05r02
According to IC RSS-Gen and RSS-247

8.6.2 Conformance Limit

According to FCC Part 15.247(d): radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).
According to FCC Part 15.205, Restricted bands

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(2)
13.36-13.41			

According to FCC Part 15.205 the level of any transmitter spurious emission in Restricted bands shall not exceed the level of the emission specified in the following table

Restricted Frequency (MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance
0.009-0.490	2400/F(KHz)	20 log (μV/m)	300
0.490-1.705	24000/F(KHz)	20 log (μV/m)	30
1.705-30	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

8.6.3 Test Configuration

Test according to clause 6.2 radio frequency test setup

8.6.4 Test Procedure

This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205. It must be performed with the highest gain of each type of antenna proposed for use with the EUT. Use the following spectrum analyzer settings:

For Above 1GHz:

The EUT was placed on a turn table which is 1.5m above ground plane.

Maximum procedure was performed on the highest emissions to ensure EUT compliance.

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

For Below 1GHz:

The EUT was placed on a turn table which is 0.8m above ground plane.

Maximum procedure was performed on the highest emissions to ensure EUT compliance.

Span = wide enough to fully capture the emission being measured

RBW = 100 kHz for

VBW $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

For Below 30MHz:

The EUT was placed on a turn table which is 0.8m above ground plane.

Maximum procedure was performed on the highest emissions to ensure EUT compliance.

Span = wide enough to fully capture the emission being measured

RBW = 9kHz

VBW $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

For Below 150KHz:

The EUT was placed on a turn table which is 0.8m above ground plane.

Maximum procedure was performed on the highest emissions to ensure EUT compliance.

Span = wide enough to fully capture the emission being measured

RBW = 200Hz

VBW $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Follow the guidelines in ANSI C63.10 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization, etc. A pre-amp and a high pass filter are required for this test, in order to provide the measuring system with sufficient sensitivity. Allow the trace to stabilize. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, which must comply with the limit. Submit this data.

Now set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit. If the dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a "duty cycle correction factor", derived from $20\log(\text{dwell time}/100 \text{ ms})$, in an effort to demonstrate compliance with the limit. Submit this data.

Repeat above procedures until all frequency measured was complete.

8.6.5 Test Results

Temperature:	22°C
Relative Humidity:	69%
ATM Pressure:	1011 mbar

■ Spurious Emission below 30MHz(9KHz to 30MHz)

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
--	--	--	--	--	--	--	--

Note: the amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Distance extrapolation factor = $40\log(\text{Specific distance}/ \text{test distance})$ (dB);

Limit line=Specific limits(dBuV) + distance extrapolation factor

■ Spurious Emission Above 1GHz(1GHz to 25GHz)

All the antenna(Antenna 1)and modes(802.11b/g/n)have been tested and the worst(Antenna 1,802.11b) result recorded was report as below:

Test mode: 802.11b Frequency: Channel 1: 2412MHz

Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
4824	V	46.60	24.78	74.00	54.00	-27.40	-29.22
12060	V	57.19	42.73	74.00	54.00	-16.81	-11.27
16884	V	56.27	43.38	74.00	54.00	-17.73	-10.62
4824	H	48.84	22.58	74.00	54.00	-25.16	-31.42
12060	H	54.92	38.52	74.00	54.00	-19.08	-15.48
16884	H	53.02	38.07	74.00	54.00	-20.98	-15.93

Test mode: 802.11b Frequency: Channel 6: 2437MHz

Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
4874	V	46.56	25.00	74.00	54.00	-27.44	-29.00
12185	V	57.17	42.87	74.00	54.00	-16.83	-11.13
17059	V	56.25	43.51	74.00	54.00	-17.75	-10.49
4874	H	48.80	22.84	74.00	54.00	-25.20	-31.16
12185	H	54.89	38.68	74.00	54.00	-19.11	-15.32
17059	H	53.00	38.22	74.00	54.00	-21.00	-15.78

Test mode: 802.11b Frequency: Channel 11: 2462MHz

Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
4924	V	46.53	25.22	74.00	54.00	-27.47	-28.78
12310	V	57.15	43.02	74.00	54.00	-16.85	-10.98
17234	V	56.23	43.64	74.00	54.00	-17.77	-10.36
4924	H	48.76	23.10	74.00	54.00	-25.24	-30.90
12310	H	54.86	38.85	74.00	54.00	-19.14	-15.15
17234	H	52.97	38.37	74.00	54.00	-21.03	-15.63

- Note:**
- (1) All Readings are Peak Value (VBW=3MHz) and Average Value (VBW=10Hz).
 - (2) Emission Level= Reading Level+Correct Factor.
 - (3) Correct Factor= Ant_F + Cab_L - Preamp
 - (4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

■ Spurious Emission in Restricted Band 2310-2390MHz and 2483.5-2500MHz

All the antenna(Antenna 1) and modes(802.11b/g/n) have been tested and the worst(Antenna 1,802.11b) result recorded was report as below:

Test mode: 802.11b Frequency: Channel 1: 2412MHz

Frequency (MHz)	Polarity	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)
2397.522	H	65.29	74.00	51.62	54.00
2397.174	V	58.97	74.00	45.37	54.00

Test mode: 802.11b Frequency: Channel 11: 2462MHz

Frequency (MHz)	Polarity	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)
2482.970	H	58.76	74.00	43.51	54.00
2479.382	V	62.37	74.00	48.65	54.00

- Note:**
- (1) All Readings are Peak Value (VBW=3MHz) and Average Value (VBW=10Hz).
 - (2) Emission Level= Reading Level+Correct Factor.
 - (3) Correct Factor= Ant_F + Cab_L - Preamp
 - (4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

Spurious Emission below 1GHz (30MHz to 1GHz)

All the antenna(Antenna 1) and modes(802.11b/g/n) have been tested and the worst(Antenna 1,802.11b) result recorded was report as below:

Mode:	802.11b 2412
Environment:	Temp: 22℃; Humi:69%

Final Data List								
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	42.2621	52.85	-26.35	26.50	QP	40.00	-13.50	Vertical
2	43.8149	52.10	-26.00	26.10	QP	40.00	-13.90	Vertical
3	52.8648	51.85	-26.62	25.23	QP	40.00	-14.77	Vertical
4	80.6368	54.26	-27.06	27.20	QP	40.00	-12.80	Vertical
5	100.6286	53.03	-28.03	25.00	QP	43.50	-18.50	Vertical
6	132.1140	48.08	-27.98	20.10	QP	43.50	-23.40	Vertical

Final Data List								
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	35.3750	40.05	-26.30	13.75	QP	40.00	-26.25	Horizontal
2	43.1107	40.14	-26.16	13.98	QP	40.00	-26.02	Horizontal
3	50.1091	39.93	-25.52	14.41	QP	40.00	-25.59	Horizontal
4	54.6236	40.76	-27.33	13.43	QP	40.00	-26.57	Horizontal
5	71.3050	41.76	-27.58	14.18	QP	40.00	-25.82	Horizontal
6	96.7410	41.96	-28.91	13.05	QP	43.50	-30.45	Horizontal

Mode:	802.11b 2437
Environment:	Temp: 22°C; Humi:69%

Final Data List								
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	41.2620	54.00	-26.59	27.41	QP	40.00	-12.59	Vertical
2	43.9350	52.06	-25.97	26.09	QP	40.00	-13.91	Vertical
3	63.6248	54.76	-28.54	26.22	QP	40.00	-13.78	Vertical
4	80.1367	54.79	-26.93	27.86	QP	40.00	-12.14	Vertical
5	52.4647	51.97	-26.47	25.50	QP	40.00	-14.50	Vertical
6	100.2283	53.24	-28.04	25.20	QP	43.50	-18.30	Vertical

Final Data List								
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	50.1091	39.93	-25.52	14.41	QP	40.00	-25.59	Horizontal
2	54.6811	42.02	-27.36	14.66	QP	40.00	-25.34	Horizontal
3	71.3050	42.76	-27.58	15.18	QP	40.00	-24.82	Horizontal
4	80.6160	41.11	-27.06	14.05	QP	40.00	-25.95	Horizontal
5	96.3683	43.55	-29.02	14.53	QP	43.50	-28.97	Horizontal
6	99.9826	43.96	-28.05	15.91	QP	43.50	-27.59	Horizontal

Mode:	802.11b 2462
Environment:	Temp: 22°C; Humi:69%

Final Data List								
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	41.2620	53.50	-26.59	26.91	QP	40.00	-13.09	Vertical
2	52.4647	51.97	-26.47	25.50	QP	40.00	-14.50	Vertical
3	80.1367	52.79	-26.93	25.86	QP	40.00	-14.14	Vertical
4	134.3232	53.93	-27.93	26.00	QP	43.50	-17.50	Vertical
5	144.2840	53.73	-28.03	25.70	QP	43.50	-17.80	Vertical
6	213.7632	56.16	-25.80	30.36	QP	43.50	-13.14	Vertical

Final Data List								
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	50.4090	37.70	-25.63	12.07	QP	40.00	-27.93	Horizontal
2	54.6236	40.76	-27.33	13.43	QP	40.00	-26.57	Horizontal
3	70.5835	42.05	-27.73	14.32	QP	40.00	-25.68	Horizontal
4	82.9966	41.15	-27.75	13.40	QP	40.00	-26.60	Horizontal
5	96.0648	43.25	-29.11	14.14	QP	43.50	-29.36	Horizontal
6	159.4482	44.11	-28.41	15.70	QP	43.50	-27.80	Horizontal

8.7 CONDUCTED EMISSION TEST

8.7.1 Applicable Standard

According to FCC Part 15.207(a)

According to IC RSS-Gen 8.8

8.7.2 Conformance Limit

Frequency(MHz)	Conducted Emission Limit	
	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

8.7.3 Test Configuration

Test according to clause 6.3conducted emission test setup

8.7.4 Test Procedure

The EUT was placed on a table which is 0.8m above ground plane.

Maximum procedure was performed on the highest emissions to ensure EUT compliance.

Repeat above procedures until all frequency measured were complete.

8.7.5 Test Results

Pass

The AC 120 V voltage have been tested, and the worst result recorded was report as below:

Mode:	802.11b 2412
Environment:	Temp: 25°C; Humi:73%

Final_Result (Margin=Limit-Meas.(Reading +Corr.))

No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV)	Limit (dBμV)	Margin (dB)	Det.	Line	PE	Verdict
1	0.154	29.19	10.2	39.39	65.78	26.39	QPK	N	GND	PASS
2	0.154	29.50	10.2	39.70	55.78	16.08	AVG	N	GND	PASS
3	0.164	31.12	10.23	41.35	65.26	23.91	QPK	N	GND	PASS
4	0.164	29.04	10.23	39.27	55.26	15.99	AVG	N	GND	PASS
5	0.172	31.67	10.26	41.93	64.86	22.93	QPK	N	GND	PASS
6	0.172	24.60	10.26	34.86	54.86	20.00	AVG	N	GND	PASS
7	0.191	27.49	10.32	37.81	63.99	26.18	QPK	N	GND	PASS
8	0.191	23.57	10.32	33.89	53.99	20.10	AVG	N	GND	PASS
9	0.21	33.00	10.35	43.35	63.21	19.86	QPK	N	GND	PASS
10	0.21	26.66	10.35	37.01	53.21	16.20	AVG	N	GND	PASS
11	0.288	33.38	10.34	43.72	60.58	16.86	QPK	N	GND	PASS
12	0.288	31.80	10.34	42.14	50.58	8.44	AVG	N	GND	PASS

No.	Freq. (MHz)	Reading (dBμV)	Corr. (dB)	Meas. (dBμV)	Limit (dBμV)	Margin (dB)	Det.	Line	PE	Verdict
1	0.15	31.20	10.21	41.41	66	24.59	QPK	L1	GND	PASS
2	0.15	27.23	10.21	37.44	56	18.56	AVG	L1	GND	PASS
3	0.164	31.93	10.25	42.18	65.26	23.08	QPK	L1	GND	PASS
4	0.164	24.62	10.25	34.87	55.26	20.39	AVG	L1	GND	PASS
5	0.173	39.57	10.27	49.84	64.82	14.98	QPK	L1	GND	PASS
6	0.173	21.57	10.27	31.84	54.82	22.98	AVG	L1	GND	PASS
7	0.196	31.50	10.33	41.83	63.78	21.95	QPK	L1	GND	PASS
8	0.196	28.39	10.33	38.72	53.78	15.06	AVG	L1	GND	PASS
9	0.203	33.16	10.34	43.50	63.49	19.99	QPK	L1	GND	PASS
10	0.203	24.50	10.34	34.84	53.49	18.65	AVG	L1	GND	PASS
11	0.288	36.90	10.37	47.27	60.58	13.31	QPK	L1	GND	PASS
12	0.288	31.52	10.37	41.89	50.58	8.69	AVG	L1	GND	PASS

8.8 ANTENNA APPLICATION

8.8.1 Antenna Requirement

Standard	Requirement
FCC CRF Part15.203	An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.
FCC 47 CFR Part 15.247 (b)	If transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.
RSS-Gen Section 6.8	The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.
RSS-247 Section 5.4	If the transmitter employs an antenna system that emits multiple directional beams, but does not emit multiple directional beams simultaneously, the total output power conducted to the array or arrays that comprise the device (i.e. the sum of the power supplied to all antennas, antenna elements, staves, etc., and summed across all carriers or frequency channels) shall not exceed the applicable output power limit. However, the total conducted output power shall be reduced by 1 dB below the specified limits for each 3 dB that the directional gain of the antenna/antenna array exceeds 6 dBi. The directional antenna gain shall be computed as the sum of 10 log (number of array elements or staves) plus the directional gain of the element or stave having the highest gain.

8.8.2 Result

PASS.

- Note:
- ☒ Antenna use a permanently attached antenna which is not replaceable.
 - ☐ Not using a standard antenna jack or electrical connector for antenna replacement
 - ☐ The antenna has to be professionally installed (please provide method of installation)

Please refer to the attached document Internal Photos to show the antenna connector.

*** End of Report ***