



# TEST REPORT

**APPLICANT** : MiMOMax Wireless Limited  
**PRODUCT NAME** : 900MHz TornadoXR Transceiver  
**MODEL NAME** : MWL-TORNADOX-\*G\*A/B/C  
**BRAND NAME** : MiMOMax Wireless  
**FCC ID** : XMK-MMXTRNXB005  
**STANDARD(S)** : 47 CFR Part 15 Subpart A and B  
**RECEIPT DATE** : 2022-11-30  
**TEST DATE** : 2023-01-10  
**ISSUE DATE** : 2023-11-09



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Change History		
Version	Date	Reason for change
1.0	2023-11-09	First edition



# 1. Technical Information

**Note:** Provide by applicant

## 1.1. Applicant and Manufacturer Information

<b>Applicant:</b>	MiMOMax Wireless Limited
<b>Applicant Address:</b>	540 Wairakei Road, Christchurch 8053, New Zealand
<b>Manufacturer:</b>	MiMOMax Wireless Limited
<b>Manufacturer Address:</b>	540 Wairakei Road, Christchurch 8053, New Zealand

## 1.2. Equipment Under Test (EUT) Description

<b>Product Name:</b>	900MHz TornadoXR Transceiver
<b>EUT No.:</b>	1#
<b>Hardware Version:</b>	P001
<b>Software Version:</b>	TRN_04.08.00.HPT76
<b>Frequency Range:</b>	901 MHz ~902MHz; 930 MHz ~931MHz; 940 MHz ~941 MHz
<b>Operating Voltage:</b>	10.5V~60V DC

**Note:**

1. For a more detailed description, please refer to specification or user's manual supplied by the applicant and/or manufacturer.
2. This test report is variant from the original report (Report No.: SZ22110153E01, Model Name: MWL-TORNADOX-\*G\*A/B/C) based on the similarity between before, only changed the FCC ID, the others are the same as before. We evaluated the above changes, which had no impact on the test results. The test results in this report still refer to the test results of the original test report.



## 2. Test Results

### 2.1. Applied Reference Documents

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart A and B:

No.	Identity	Document Title
1	47 CFR Part 15	Radio Frequency Devices

Test detailed items/section required by FCC rules and results are listed as below:

No.	Section	Description	Test Date	Test Engineer	Result	Method Determination Remark
1	15.101	Equipment authorization requirement	Receiver contained within a FCC Part 24 transceiver that has been certified. The receiver has therefore been verified.			No deviation
2	15.103	Exempted devices	Device is not exempt as it is a receiver that contains a digital device			No deviation
3	15.107	Conducted Emission	2023.01.10	Fan Zehang	PASS <sup>Note 4</sup>	No deviation
4	15.109	Radiated Emissions	2023.01.10	Lin Jiayong	PASS <sup>Note 4</sup>	No deviation
5	15.111	Antenna Terminal Disturbance	2023.01.10	Fan Zehang	PASS <sup>Note 4</sup>	No deviation

**Note 1:** Additions to, deviation, or exclusions from the method shall be judged in the "method determination" column of add, deviate or exclude from the specific method shall be explained in the "Remark" of the above table.

**Note 2:** TORNADOX TRANSCEIVER complies with FCC Part 15 Subparts A and B as a Class B Unintentional Radiator. Tests were performed according to the method of measurements prescribed in ANSI C63.4-2014.

**Note 3:** When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% confidence intervals.

**Note 4:** The test results of these test items in this report refer to the test report (Report No.: SZ22110153E01).



## 2.2. EUT Setup and Operating Conditions

<b>Test Item</b>	
<b>Conducted Emission</b>	
<b>Mode 1</b>	<b>: EUT + 24V DC Source + PC + PC Adapter + 901.5 MHz Idle + Ping Network</b>
Mode 2	: EUT + 24V DC Source + PC + PC Adapter + 930.5 MHz Idle + Ping Network
Mode 3	: EUT + 24V DC Source + PC + PC Adapter + 940.5 MHz Idle + Ping Network
<b>Radiated Emission</b>	
<b>Mode 1</b>	<b>: EUT + 24V DC Source + PC + PC Adapter + 901.5 MHz Idle + Ping Network</b>
Mode 2	: EUT + 24V DC Source + PC + PC Adapter + 930.5 MHz Idle + Ping Network
Mode 3	: EUT + 24V DC Source + PC + PC Adapter + 940.5 MHz Idle + Ping Network
<b>Antenna Terminal Disturbance</b>	
Mode 1	: EUT + 24V DC Source + PC + PC Adapter + 901.5 MHz Idle + Ping Network
Mode 2	: EUT + 24V DC Source + PC + PC Adapter + 930.5 MHz Idle + Ping Network
Mode 3	: EUT + 24V DC Source + PC + PC Adapter + 940.5 MHz Idle + Ping Network
<b>Remark:</b>	
The above test mode in boldface (Mode 1) was the worst case of conducted emission test and radiated emission test, only the test data of these modes were reported.	

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15 - 35
Relative Humidity (%):	30 - 60
Atmospheric Pressure (kPa):	86 - 106

## 3. 47 CFR Part 15B Requirements

### 3.1. Conducted Emission

#### 3.1.1. Requirement

According to FCC section 15.107, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50 $\mu$ H/50 $\Omega$  line impedance stabilization network (LISN).

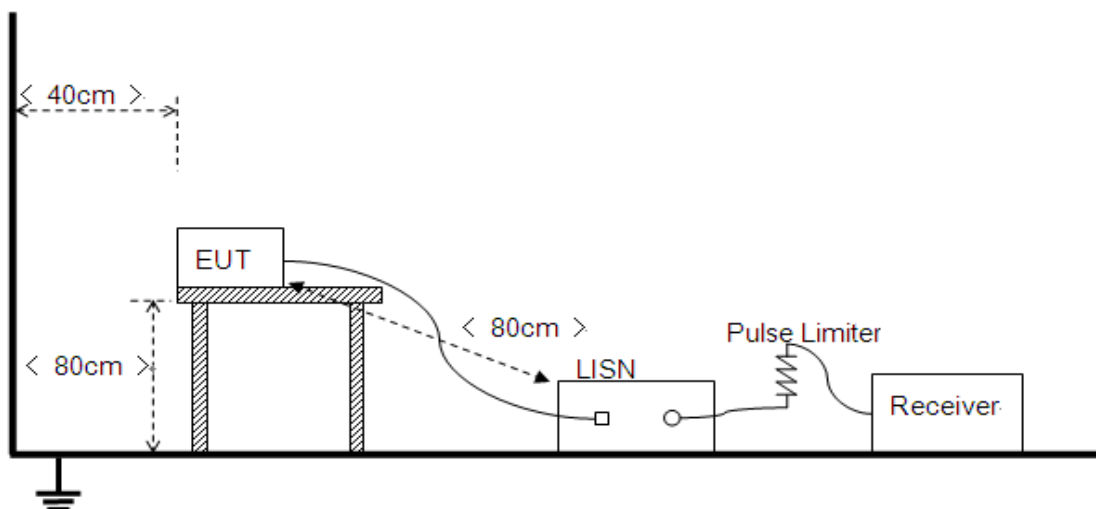
Frequency Range (MHz)	Conducted Limit (dB $\mu$ V)	
	Quasi-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

Note:

- The limit subjects to the Class B digital device.
- The lower limit shall apply at the band edges.
- The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

#### 3.1.2. Test Setup

Please refer to Annex A for the photographs of the Test Configuration.





The EUT is placed on a 0.8m high insulating table, which stands on the grounded conducting floor, and keeps 0.4m away from the grounded conducting wall. The EUT is connected to the power mains through a LISN which provides 50Ω/50μH of coupling impedance for the measuring instrument. A Pulse Limiter is used to protect the measuring instrument. The factors of the whole test system are calibrated to correct the reading.

The power strip or extension cord has been investigated to make sure that the LISN integrity is maintained with respect to the impedance characteristics as prescribed in ANSI C63.4-2014 at Clause 4.3.

### 3.1.3. Test Result

Set RBW=9 kHz, VBW=30 kHz. The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. All test modes are considered, refer to recorded points and plots below.

The measurement results are obtained as below:

$$E [\text{dB}\mu\text{V}] = U_R [\text{dB}\mu\text{V}] + L_{\text{Cable loss}} [\text{dB}] + A_{\text{Factor}} [\text{dB}]$$

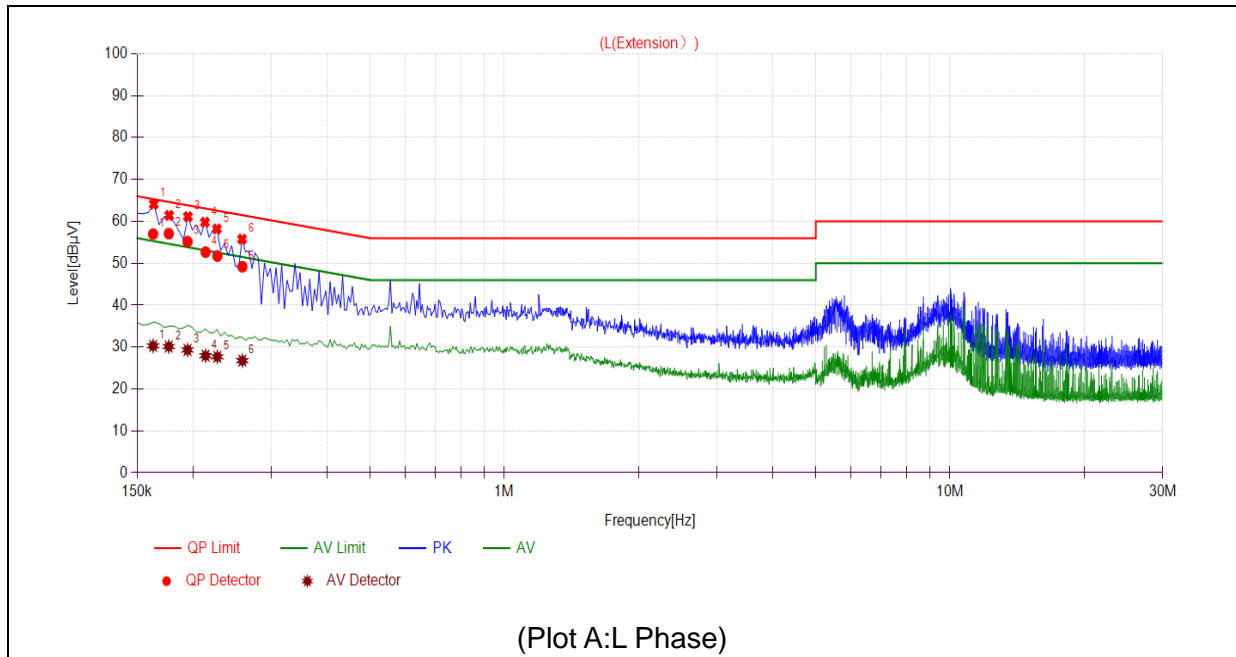
$U_R$ : Receiver Reading

$A_{\text{Factor}}$ : Voltage Division Factor of LISN

$L_{\text{Cable loss}}$ : Correction Factor Contains Pulse Limiter and Cable

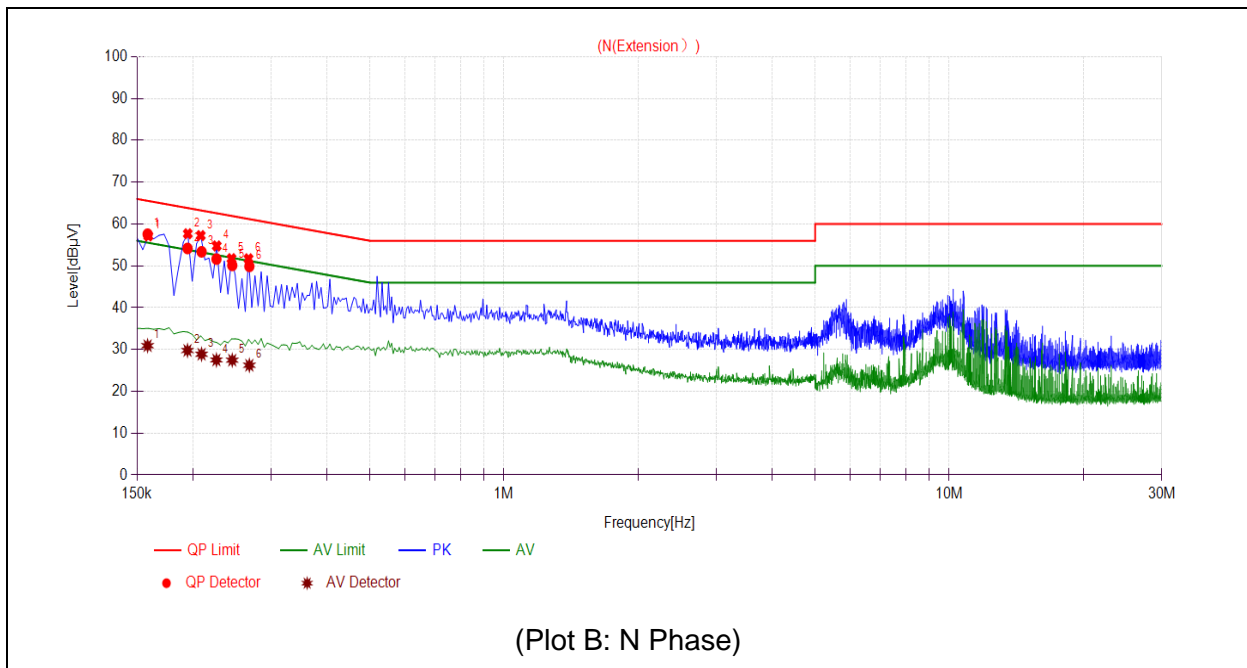
During the test, the total correction Factor  $L_{\text{Cable loss}}$  and  $A_{\text{Factor}}$  were built in test software.

**A. Test Plot and Suspicious Points:**



No.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quasi-peak	Average	Quasi-peak	Average		
1	0.1629	56.97	30.28	65.31	55.31	Line	PASS
2	0.1766	57.08	30.12	64.64	54.64		PASS
3	0.1946	55.17	29.30	63.84	53.84		PASS
4	0.2136	52.66	27.95	63.06	53.06		PASS
5	0.2270	51.72	27.67	62.56	52.56		PASS
6	0.2583	49.18	26.76	61.49	51.49		PASS





No.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quasi-peak	Average	Quasi-peak	Average		
1	0.1584	57.58	30.91	65.55	55.55	Neutral	PASS
2	0.1947	54.17	29.77	63.83	53.83		PASS
3	0.2094	53.36	28.87	63.23	53.23		PASS
4	0.2261	51.63	27.50	62.59	52.59		PASS
5	0.2454	50.12	27.45	61.91	51.91		PASS
6	0.2681	49.89	26.23	61.18	51.18		PASS



## 3.2. Radiated Emission

### 3.2.1. Requirement

According to FCC section 15.109 (a), the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency range (MHz)	Field Strength Limitation at 3m Measurement Distance	
	( $\mu\text{V/m}$ )	(dB $\mu\text{V/m}$ )
30.0 - 88.0	100	20log 100
88.0 - 216.0	150	20log 150
216.0 - 960.0	200	20log 200
Above 960.0	500	20log 500

For CB receivers, the field strength of radiated emissions within the frequency range of 25-30 MHz shall not exceed 40 microvolts/meter at a distance of 3 meters.

As shown in FCC section 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector. When average radiated emission measurements are specified in this part, including emission measurements below 1000MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

Note:

- 1) The tighter limit shall apply at the boundary between two frequency range.
- 2) Limitation expressed in dB $\mu\text{V/m}$  is calculated by 20log Emission Level( $\mu\text{V/m}$ ).



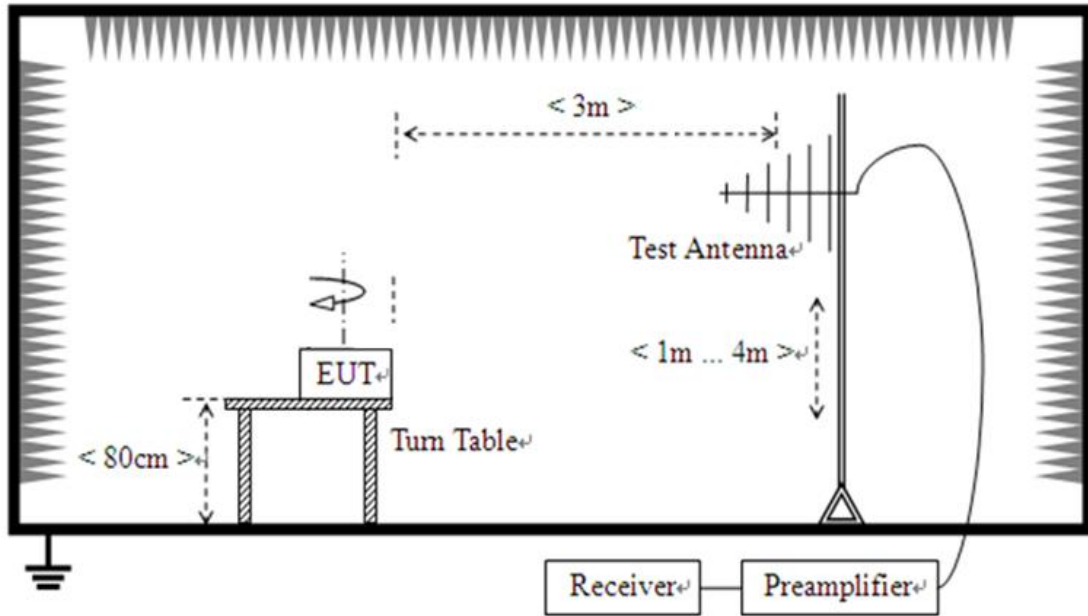
### 3.2.2. Frequency range of measurement

According to 15.33(b)(1), the frequency range of radiated measurement for the EUT is listed in the following table:

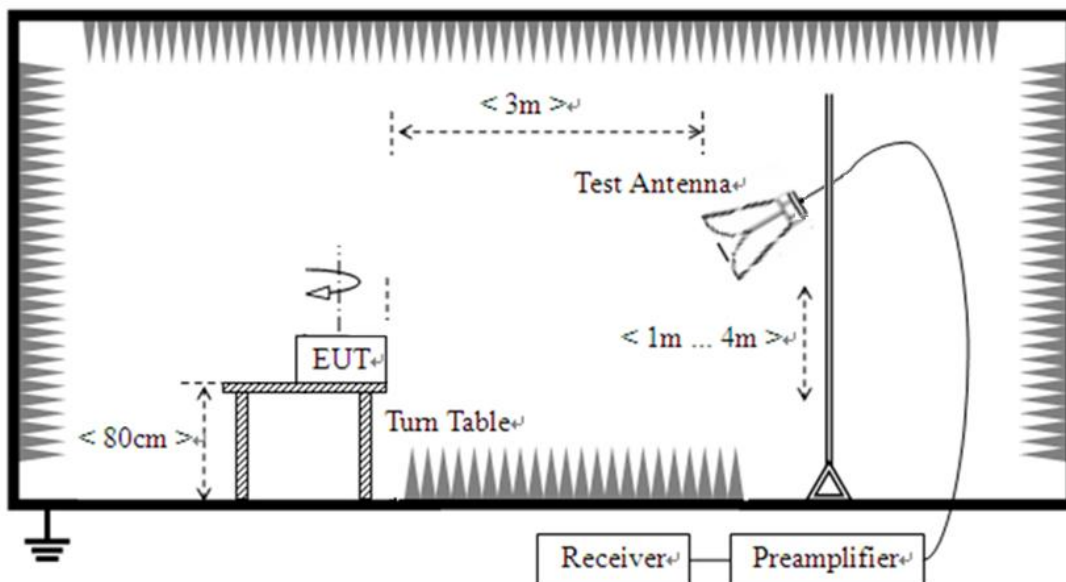
Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705 .....	30.
1.705 – 108 .....	1000.
108 – 500 .....	2000.
500 – 1000 .....	5000.
Above 1000 .....	5 <sup>th</sup> harmonic of the highest frequency or 40GHz, whichever is lower

### 3.2.3. Test Setup

- 1) For radiated emissions from 30MHz to 1GHz



- 2) For radiated emissions above 1GHz





The test is performed in a 3m Semi-Anechoic Chamber, the antenna factor, cable loss and so on of the site (factors) is calculated to correct the reading. The EUT is placed on a 0.8m high insulating Turn Table, and keeps 3m away from the Test Antenna, which is mounted on a variable-height antenna master tower.

For the test Antenna:

In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength. The emission levels at both horizontal and vertical polarizations should be tested.

For measurements below 1GHz the resolution bandwidth is set to 120 kHz for peak detection measurements or 120kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1GHz the resolution bandwidth is set to 1MHz, the video bandwidth is set to 3MHz for peak measurements and as applicable for average measurements.



### 3.2.4. Test Result

The maximum radiated emission is searched using PK, QP and AV detectors; the emission levels more than the limits, and that have narrow margins from the limits will be re-measured with AV and QP detectors. Both the vertical and the horizontal polarizations of the Test Antenna are considered to perform the tests. All test modes are considered, refer to recorded points and plots below.

The amplitude of emissions which are attenuated more than 20 dB below the permissible value need not be reported.

The measurement results are obtained as below:

$$E [\text{dB}\mu\text{V}/\text{m}] = U_R [\text{dB}\mu\text{V}] + A_T [\text{dB}] + A_{\text{Factor}} [\text{dB}]; A_T = L_{\text{Cable loss}} [\text{dB}] - G_{\text{preamp}} [\text{dB}]$$

$A_T$ : Total correction Factor except Antenna

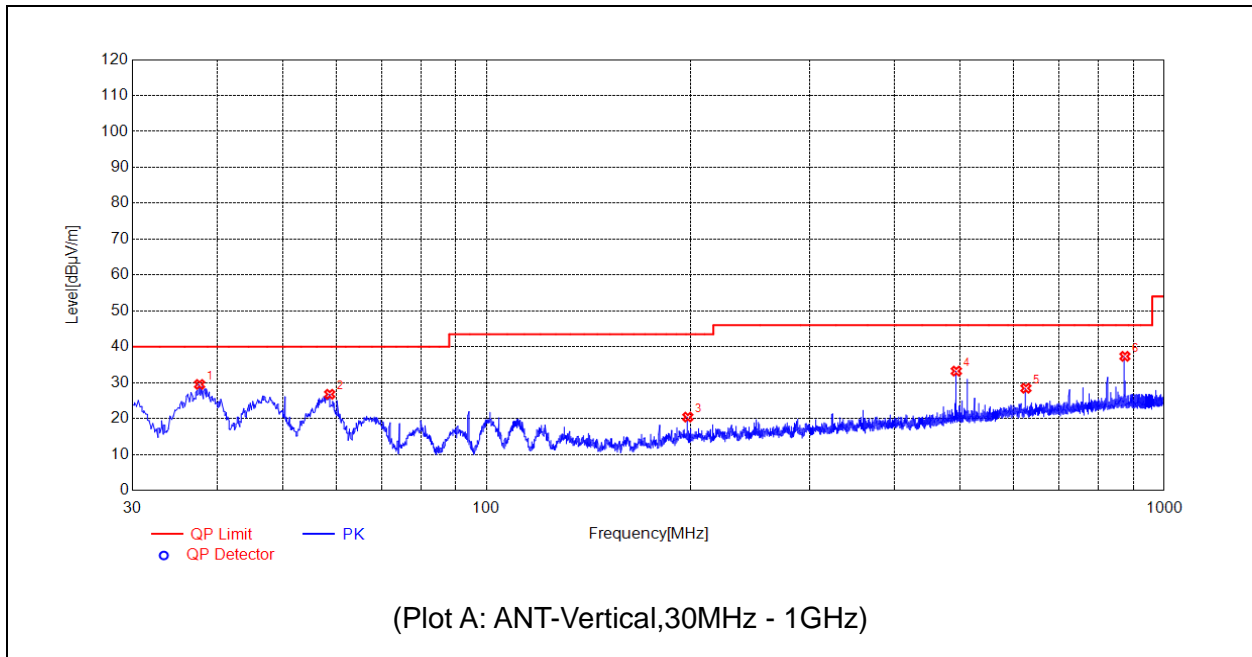
$U_R$ : Receiver Reading

$G_{\text{preamp}}$ : Preamplifier Gain

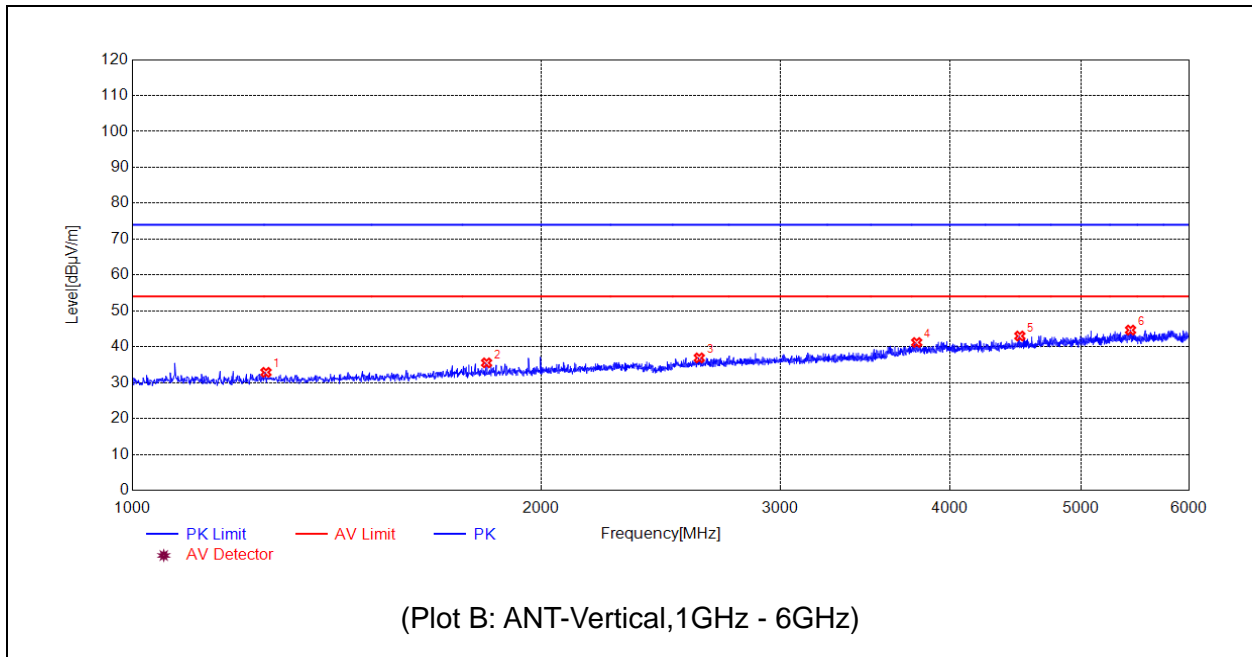
$A_{\text{Factor}}$ : Antenna Factor at 3m

During the test, the total correction Factor  $A_T$  and  $A_{\text{Factor}}$  were built in test software.

Note: All radiated emission tests were performed in X, Y, Z axis direction, and only the worst axis test condition was recorded in this test report.

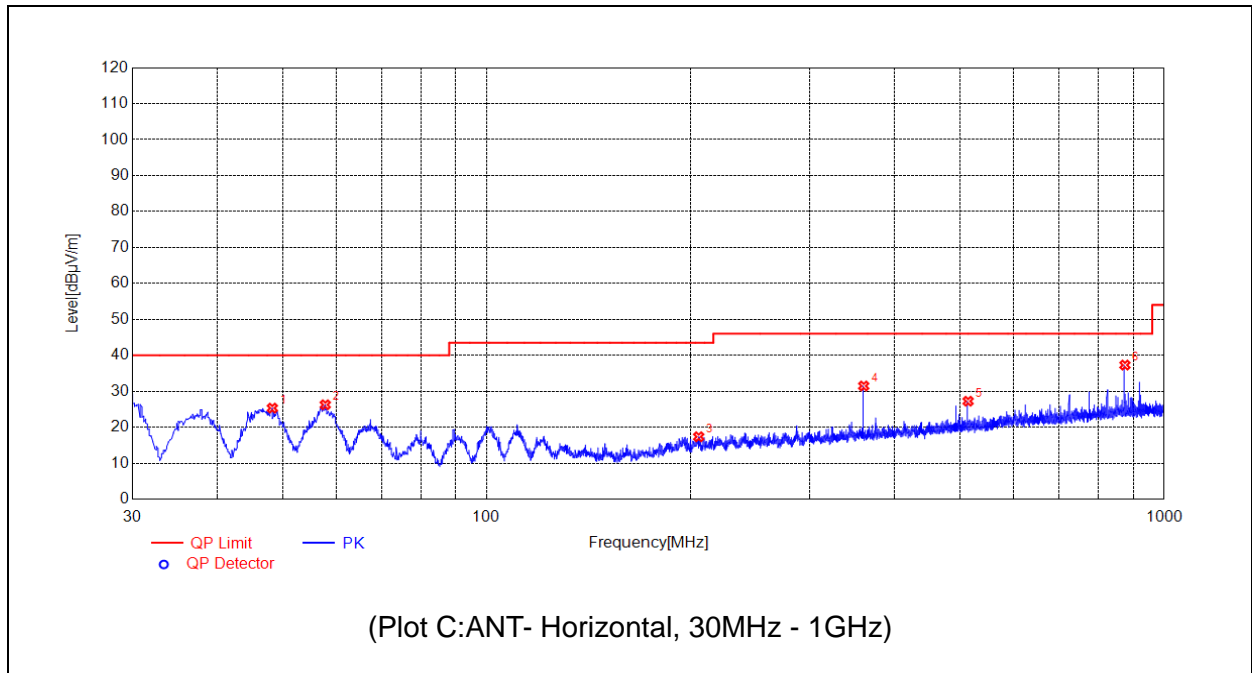


No.	Fre. MHz	Pk dBµV/m	QP dBµV/m	AV dBµV/m	Limit-PK dBµV/m	Limit-QP dBµV/m	Limit-AV dBµV/m	ANT	Verdict
1	37.6638	29.51	N.A.	N.A.	N.A.	40.00	N.A.	V	PASS
2	58.6179	26.76	N.A.	N.A.	N.A.	40.00	N.A.	V	PASS
3	198.0208	20.41	N.A.	N.A.	N.A.	43.50	N.A.	V	PASS
4	493.2213	33.22	N.A.	N.A.	N.A.	46.00	N.A.	V	PASS
5	624.9605	28.44	N.A.	N.A.	N.A.	46.00	N.A.	V	PASS
6	874.9545	37.33	N.A.	N.A.	N.A.	46.00	N.A.	V	PASS

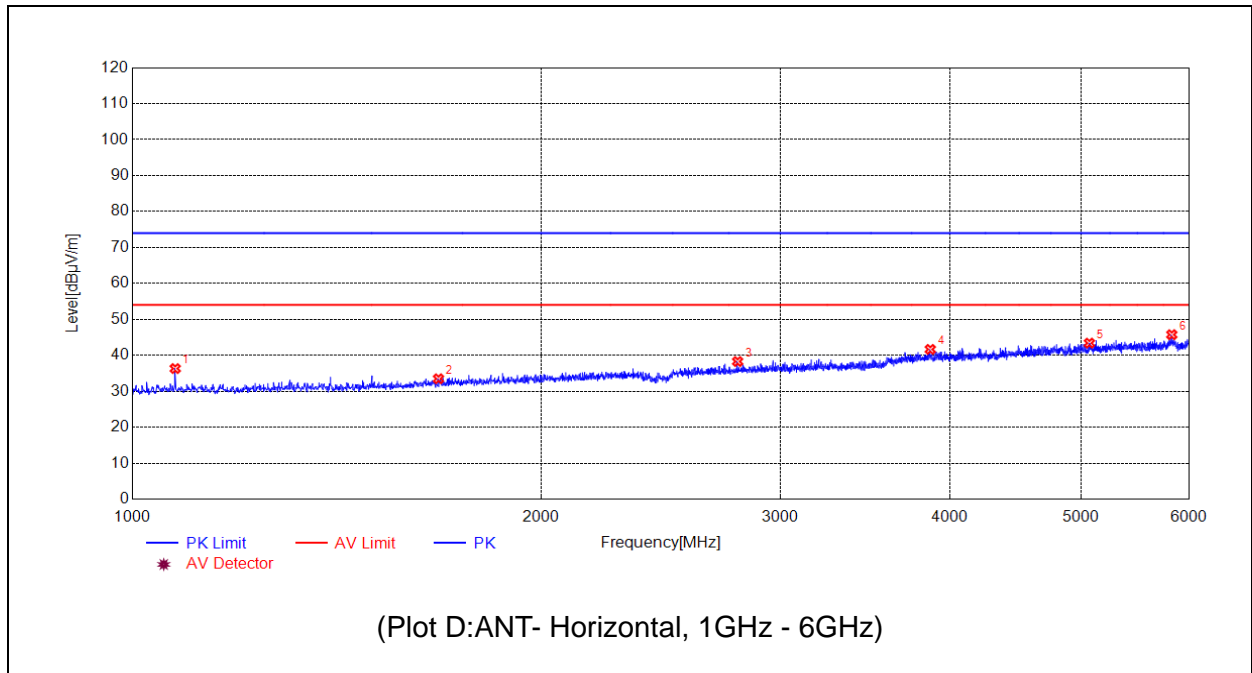


No.	Fre. MHz	Pk dBµV/m	QP dBµV/m	AV dBµV/m	Limit-PK dBµV/m	Limit-QP dBµV/m	Limit-AV dBµV/m	ANT	Verdict
1	1254.0508	32.87	N.A.	N.A.	74.00	N.A.	54.00	V	PASS
2	1823.1646	35.51	N.A.	N.A.	74.00	N.A.	54.00	V	PASS
3	2615.3231	36.90	N.A.	N.A.	74.00	N.A.	54.00	V	PASS
4	3782.5565	41.19	N.A.	N.A.	74.00	N.A.	54.00	V	PASS
5	4505.7011	42.99	N.A.	N.A.	74.00	N.A.	54.00	V	PASS
6	5436.8874	44.65	N.A.	N.A.	74.00	N.A.	54.00	V	PASS





No.	Fre. MHz	Pk dBµV/m	QP dBµV/m	AV dBµV/m	Limit-PK dBµV/m	Limit-QP dBµV/m	Limit-AV dBµV/m	ANT	Verdict
1	48.2378	25.32	N.A.	N.A.	N.A.	40.00	N.A.	H	PASS
2	57.7448	26.25	N.A.	N.A.	N.A.	40.00	N.A.	H	PASS
3	205.4905	17.35	N.A.	N.A.	N.A.	43.50	N.A.	H	PASS
4	360.0270	31.48	N.A.	N.A.	N.A.	46.00	N.A.	H	PASS
5	513.3993	27.24	N.A.	N.A.	N.A.	46.00	N.A.	H	PASS
6	874.9545	37.29	N.A.	N.A.	N.A.	46.00	N.A.	H	PASS



No.	Fre. MHz	Pk dBµV/m	QP dBµV/m	AV dBµV/m	Limit-PK dBµV/m	Limit-QP dBµV/m	Limit-AV dBµV/m	ANT	Verdict
1	1075.0150	36.32	N.A.	N.A.	74.00	N.A.	54.00	H	PASS
2	1680.1360	33.49	N.A.	N.A.	74.00	N.A.	54.00	H	PASS
3	2791.3583	38.28	N.A.	N.A.	74.00	N.A.	54.00	H	PASS
4	3870.5741	41.66	N.A.	N.A.	74.00	N.A.	54.00	H	PASS
5	5069.8140	43.40	N.A.	N.A.	74.00	N.A.	54.00	H	PASS
6	5830.9662	45.75	N.A.	N.A.	74.00	N.A.	54.00	H	PASS



The test result for CB receiver RSE (25-30MHz) .

Test mode	Fre. MHz	QP dB $\mu$ V/m	Limit-QP dB $\mu$ V/m	ANT	Verdict
Mode 1	25.150	24.63	32.04	V	PASS
	26.462	23.92			PASS
	27.651	22.66			PASS
	28.550	22.84			PASS
	29.631	23.89			PASS
	29.881	23.88			PASS
	25.251	22.15	32.04	H	PASS
	25.674	20.62			PASS
	26.623	20.22			PASS
	27.468	21.33			PASS
	28.589	22.81			PASS
	29.556	22.54			PASS



### 3.3. Antenna Terminal Disturbance

#### 3.3.1. Requirement

In addition to the radiated emission limits, receivers that operate (tune) in the frequency range 30 to 960 MHz and CB receivers that provide terminals for the connection of an external receiving antenna may be tested to demonstrate compliance with the provisions of §15.109 with the antenna terminals shielded and terminated with a resistive termination equal to the impedance specified for the antenna, provided these receivers also comply with the following: With the receiver antenna terminal connected to a resistive termination equal to the impedance specified or employed for the antenna, the power at the antenna terminal at any frequency within the range of measurements specified in §15.33 shall not exceed 2.0 nanowatts(-57dBm).

Measurements were attempted over the range of 30 MHz– 5 GHz



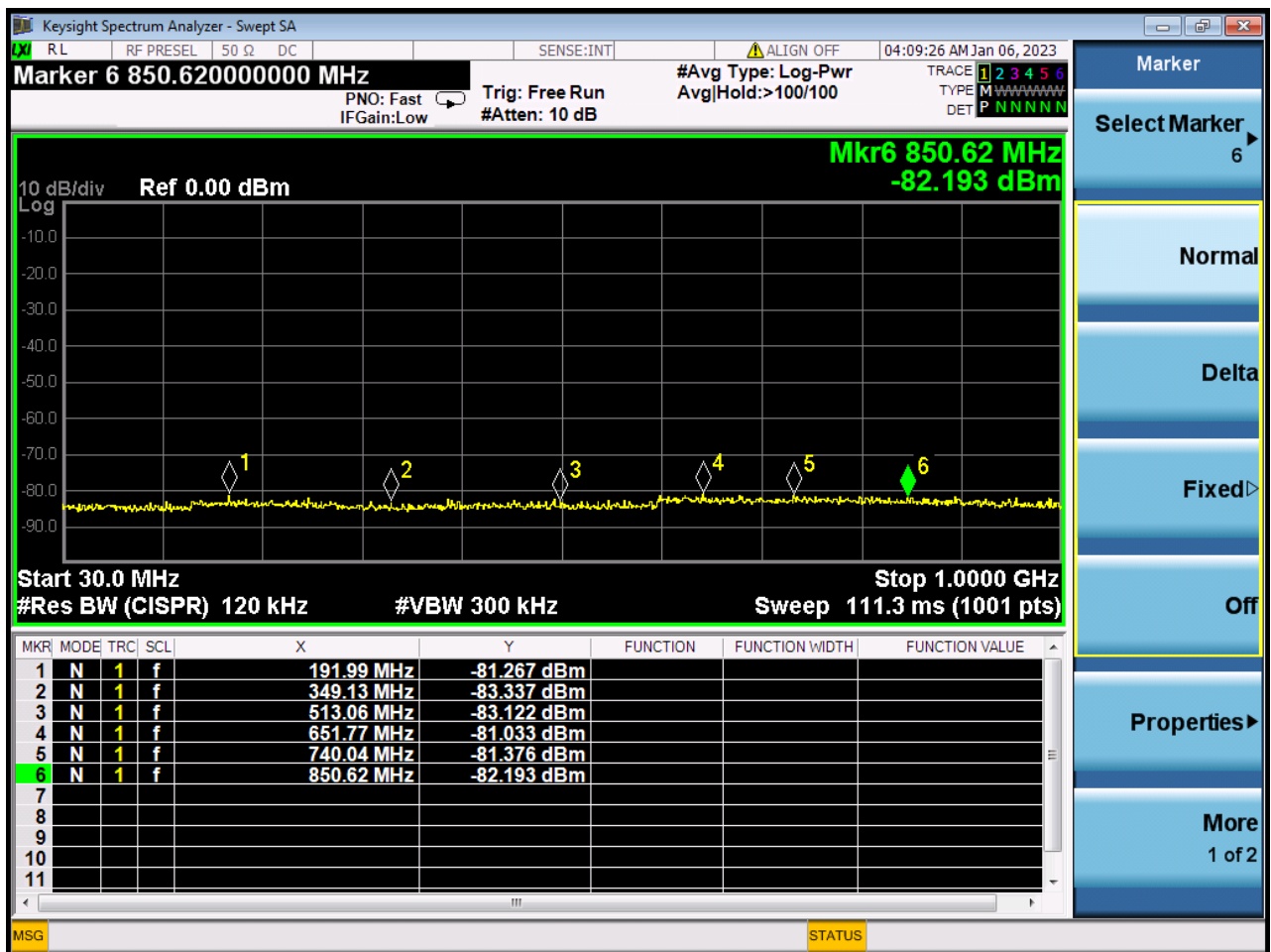
### 3.3.2. Test Result

**Note:**  $P_{\text{Final value}}(\text{dBm}) = P_{\text{Reading value}}(\text{dBm}) + \text{Factor}(\text{dB})$  ,  
 Factor = Cable loss(dB)

**H port, Operate at 901.5MHz, 30MHz -1000MHz**

Fre. MHz	P <sub>Reading value</sub> dBm	Factor dB	P <sub>Final value</sub> dBm	Limit dBm	Verdict
191.99	-81.267	0.15	-81.117	-57	PASS
349.13	-83.337	0.28	-83.057	-57	PASS
513.06	-83.122	0.41	-82.712	-57	PASS
651.77	-81.033	0.51	-80.523	-57	PASS
740.04	-81.376	0.58	-80.796	-57	PASS
850.62	-82.193	0.67	-81.523	-57	PASS

Attach spectrum pictures of P<sub>Reading value</sub> for this test here:

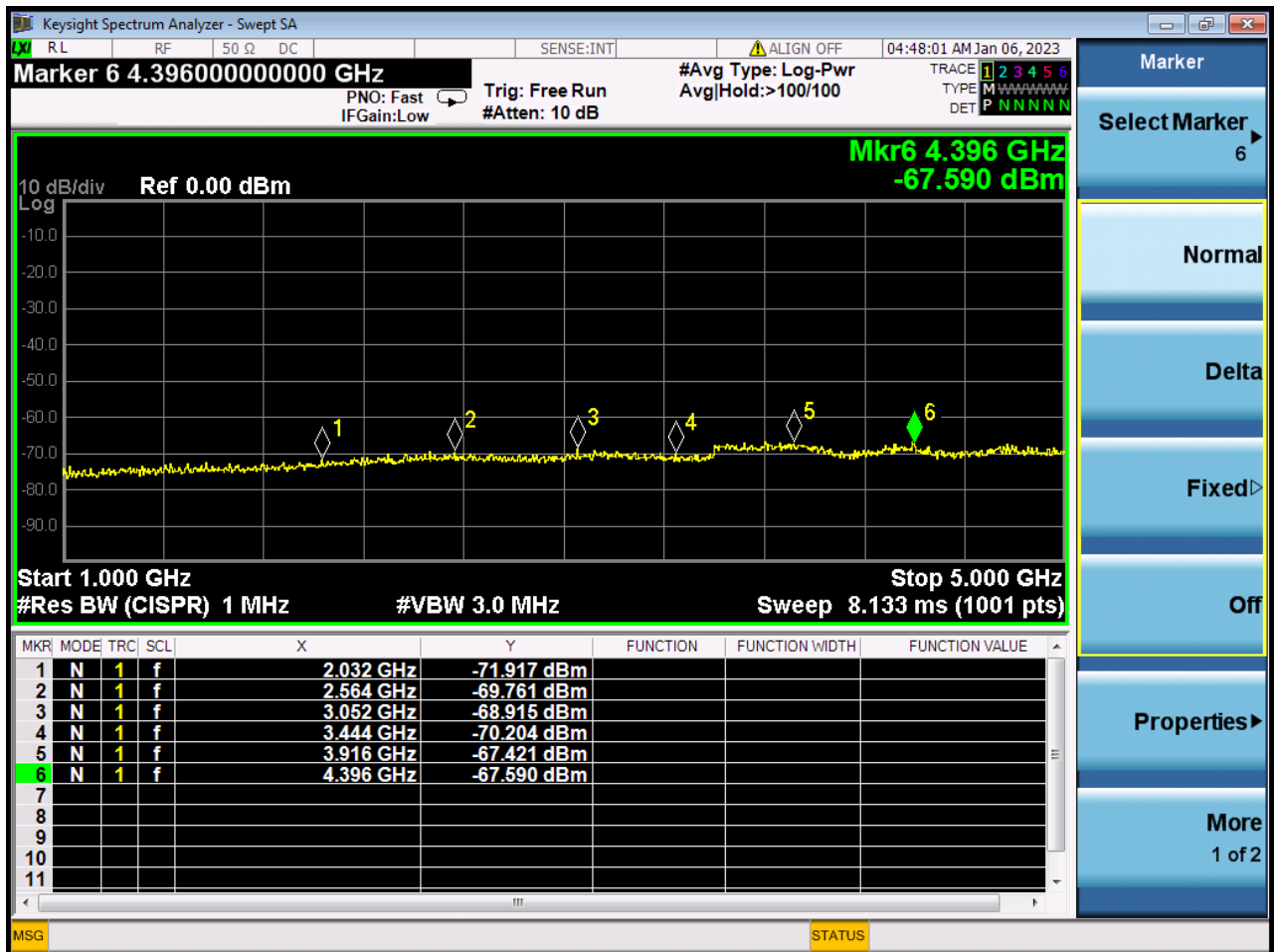




H port, Operate at 901.5MHz, 1GHz -5GHz

Fre. GHz	P <sub>Reading value</sub> dBm	Factor dB	P <sub>Final value</sub> dBm	Limit dBm	Verdict
2.032	-71.917	1.4	-70.517	-57	PASS
2.564	-69.761	1.77	-67.991	-57	PASS
3.052	-68.915	2.11	-66.805	-57	PASS
3.444	-70.204	2.38	-67.824	-57	PASS
3.916	-67.421	2.7	-64.721	-57	PASS
4.396	-67.59	3.03	-64.56	-57	PASS

Attach spectrum pictures of P<sub>Readingvalue</sub> for this test here:

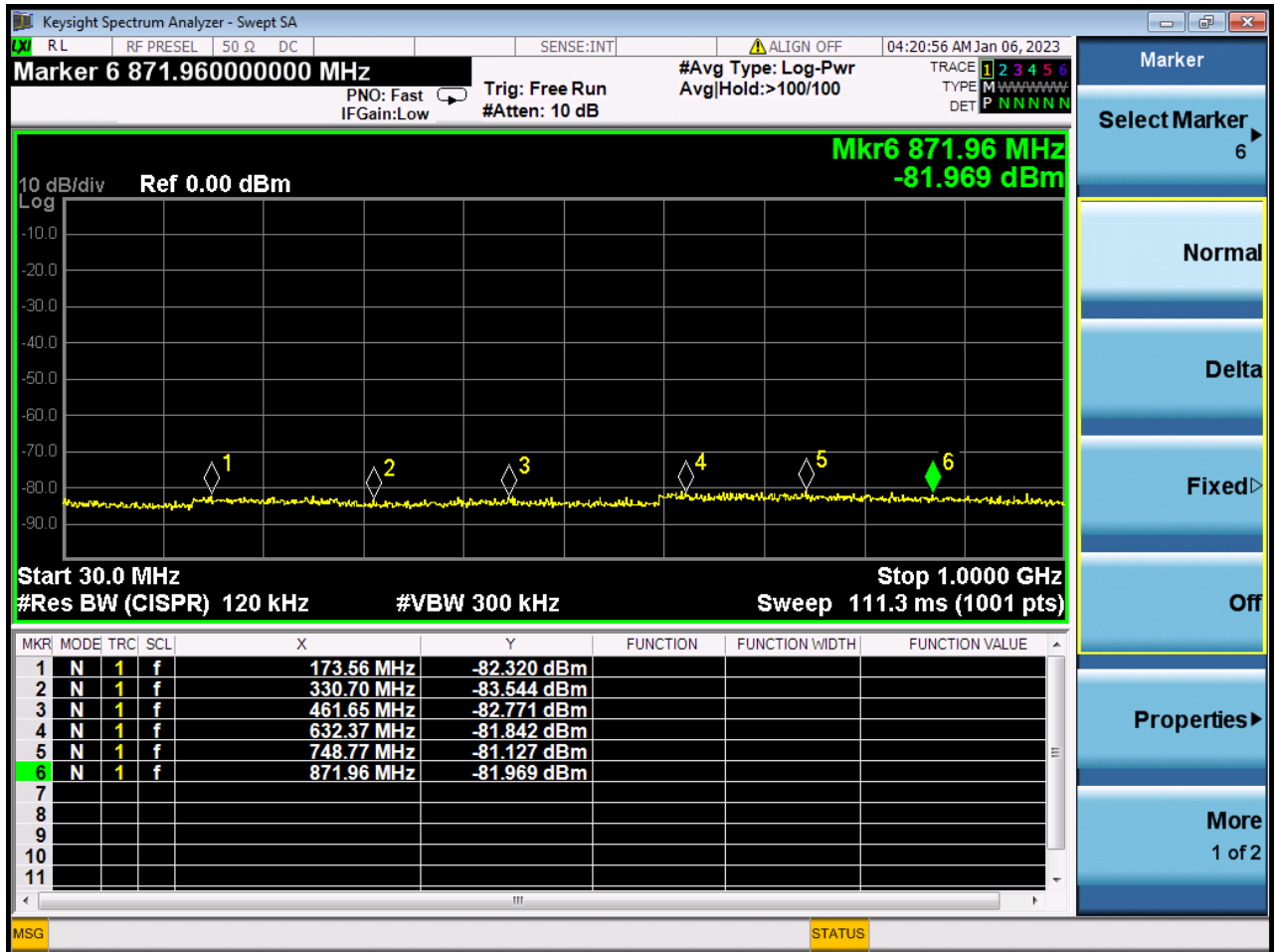




V port, Operate at 901.5MHz, 30MHz -1000MHz

Fre. MHz	P <sub>Reading value</sub> dBm	Factor dB	P <sub>Final value</sub> dBm	Limit dBm	Verdict
173.56	-82.32	0.14	-82.18	-57	PASS
330.7	-83.544	0.26	-83.284	-57	PASS
461.65	-82.771	0.36	-82.411	-57	PASS
632.37	-81.842	0.5	-81.342	-57	PASS
748.77	-81.127	0.59	-80.537	-57	PASS
871.96	-81.969	0.69	-81.279	-57	PASS

Attach spectrum pictures of P<sub>Readingvalue</sub> for this test here:

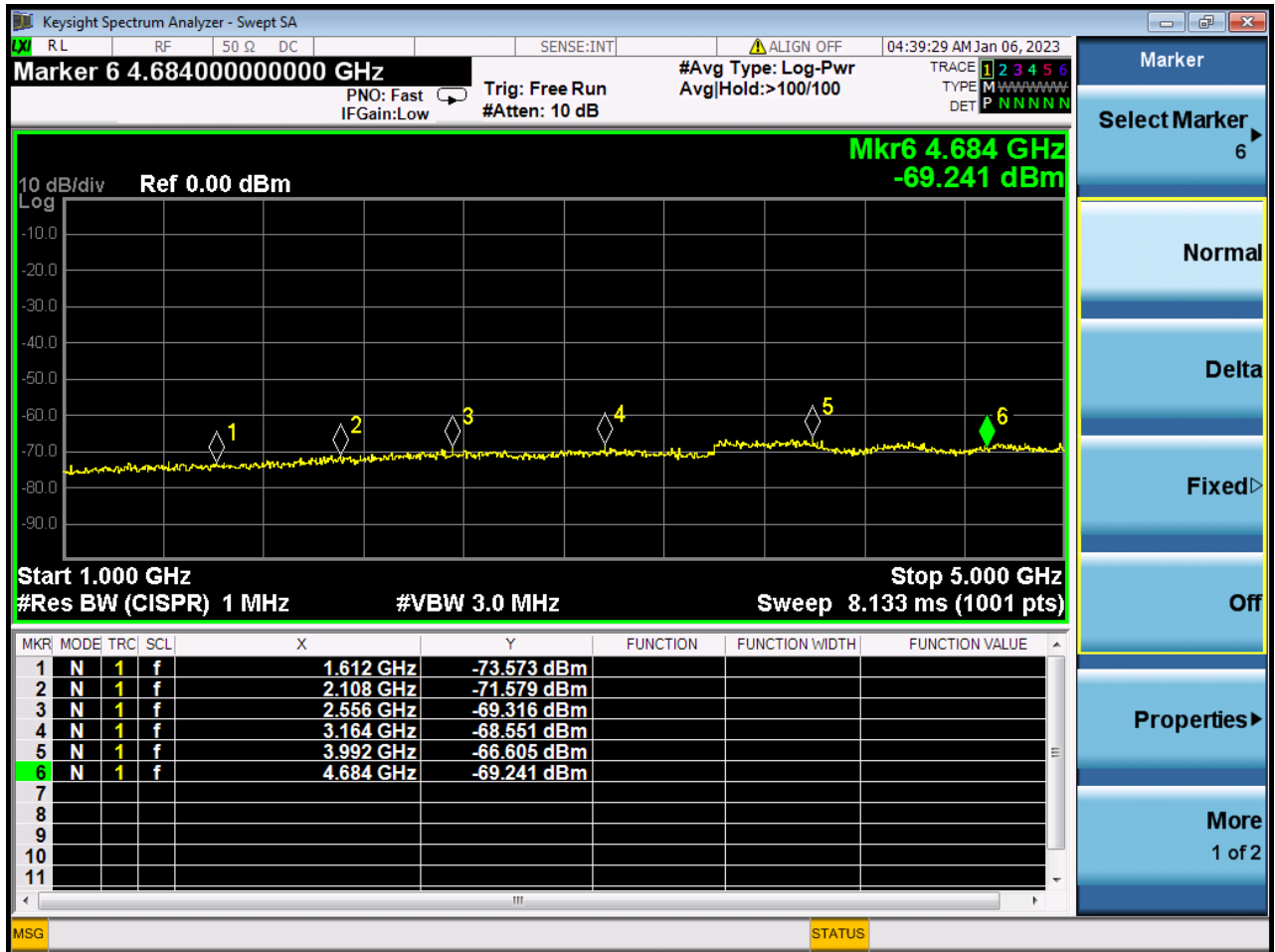




V port, Operate at 901.5MHz, 1GHz -5GHz

Fre. GHz	P <sub>Reading value</sub> dBm	Factor dB	P <sub>Final value</sub> dBm	Limit dBm	Verdict
1.612	-73.573	1.11	-72.463	-57	PASS
2.108	-71.579	1.45	-70.129	-57	PASS
2.556	-69.316	1.76	-67.556	-57	PASS
3.164	-68.551	2.18	-66.371	-57	PASS
3.992	-66.605	2.75	-63.855	-57	PASS
4.684	-69.241	3.23	-66.011	-57	PASS

Attach spectrum pictures of P<sub>Readingvalue</sub> for this test here:



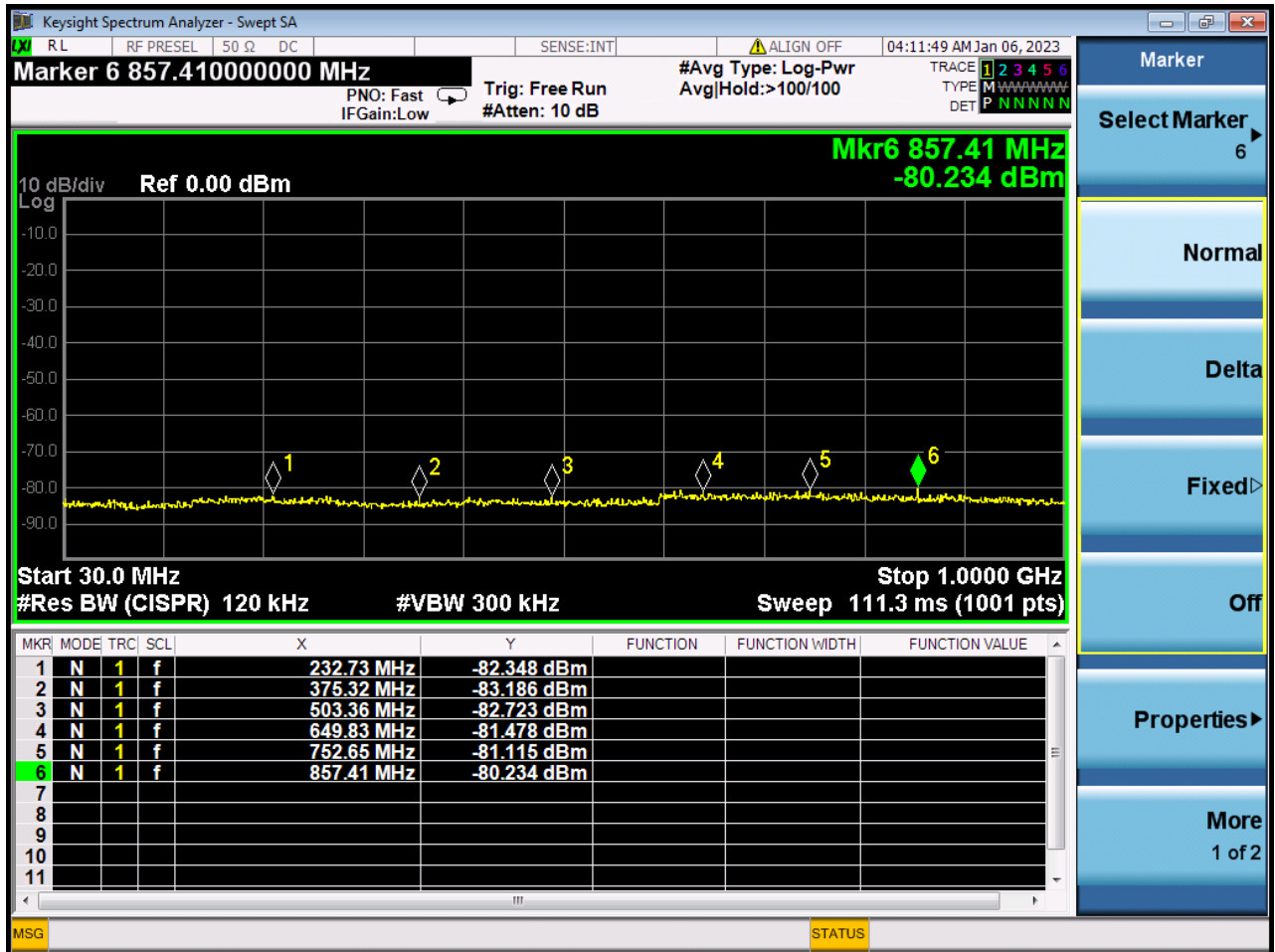




H port, Operate at 930.5MHz, 30MHz -1000MHz

Fre. MHz	P <sub>Reading value</sub> dBm	Factor dB	P <sub>Final value</sub> dBm	Limit dBm	Verdict
232.73	-82.348	0.18	-82.168	-57	PASS
375.32	-83.186	0.3	-82.886	-57	PASS
503.36	-82.723	0.4	-82.323	-57	PASS
649.83	-81.478	0.51	-80.968	-57	PASS
752.65	-81.115	0.59	-80.525	-57	PASS
857.41	-80.234	0.68	-79.554	-57	PASS

Attach spectrum pictures of P<sub>Readingvalue</sub> for this test here:

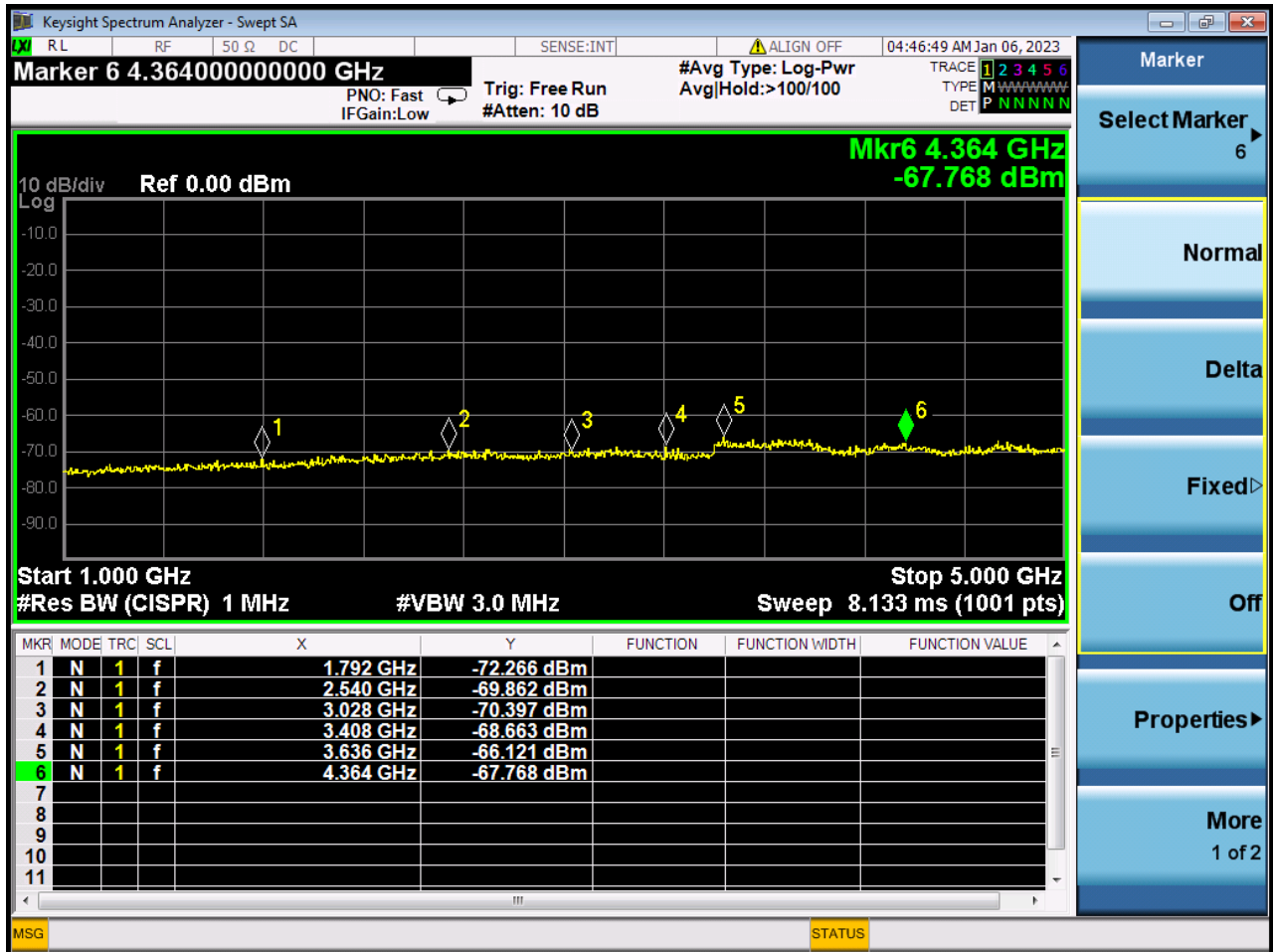




H port, Operate at 930.5MHz, 1GHz -5GHz

Fre. GHz	P <sub>Reading value</sub> dBm	Factor dB	P <sub>Final value</sub> dBm	Limit dBm	Verdict
1.792	-72.266	1.24	-71.026	-57	PASS
2.54	-69.862	1.75	-68.112	-57	PASS
3.028	-70.397	2.09	-68.307	-57	PASS
3.408	-68.663	2.35	-66.313	-57	PASS
3.636	-66.121	2.51	-63.611	-57	PASS
4.364	-67.768	3.01	-64.758	-57	PASS

Attach spectrum pictures of P<sub>Readingvalue</sub> for this test here:

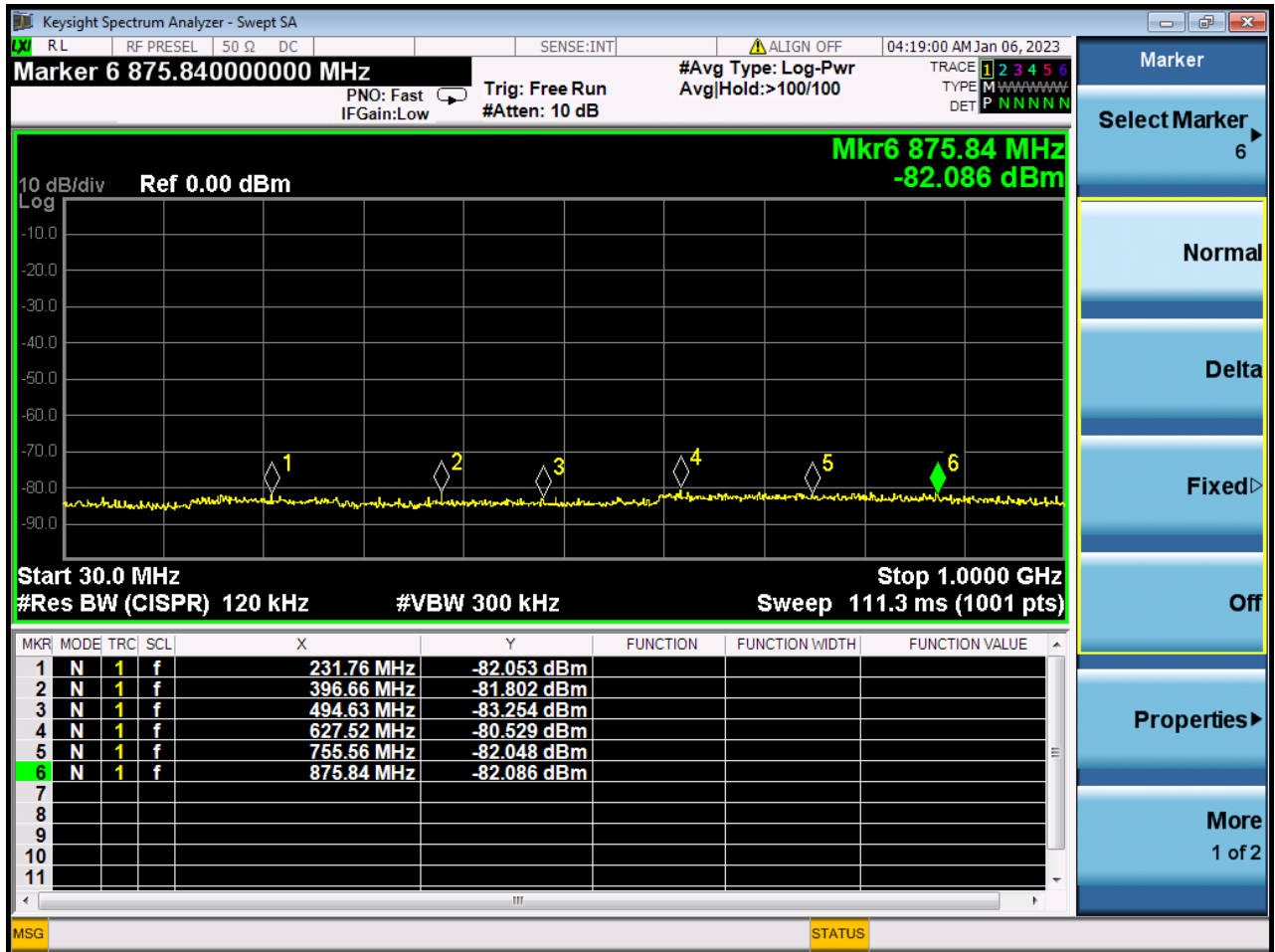




V port, Operate at 930.5MHz, 30MHz -1000MHz

Fre. MHz	P <sub>Reading value</sub> dBm	Factor dB	P <sub>Final value</sub> dBm	Limit dBm	Verdict
231.76	-82.053	0.18	-81.873	-57	PASS
396.66	-81.802	0.31	-81.492	-57	PASS
494.63	-83.254	0.39	-82.864	-57	PASS
627.52	-80.529	0.5	-80.029	-57	PASS
755.56	-82.048	0.6	-81.448	-57	PASS
875.84	-82.086	0.69	-81.396	-57	PASS

Attach spectrum pictures of P<sub>Readingvalue</sub> for this test here:

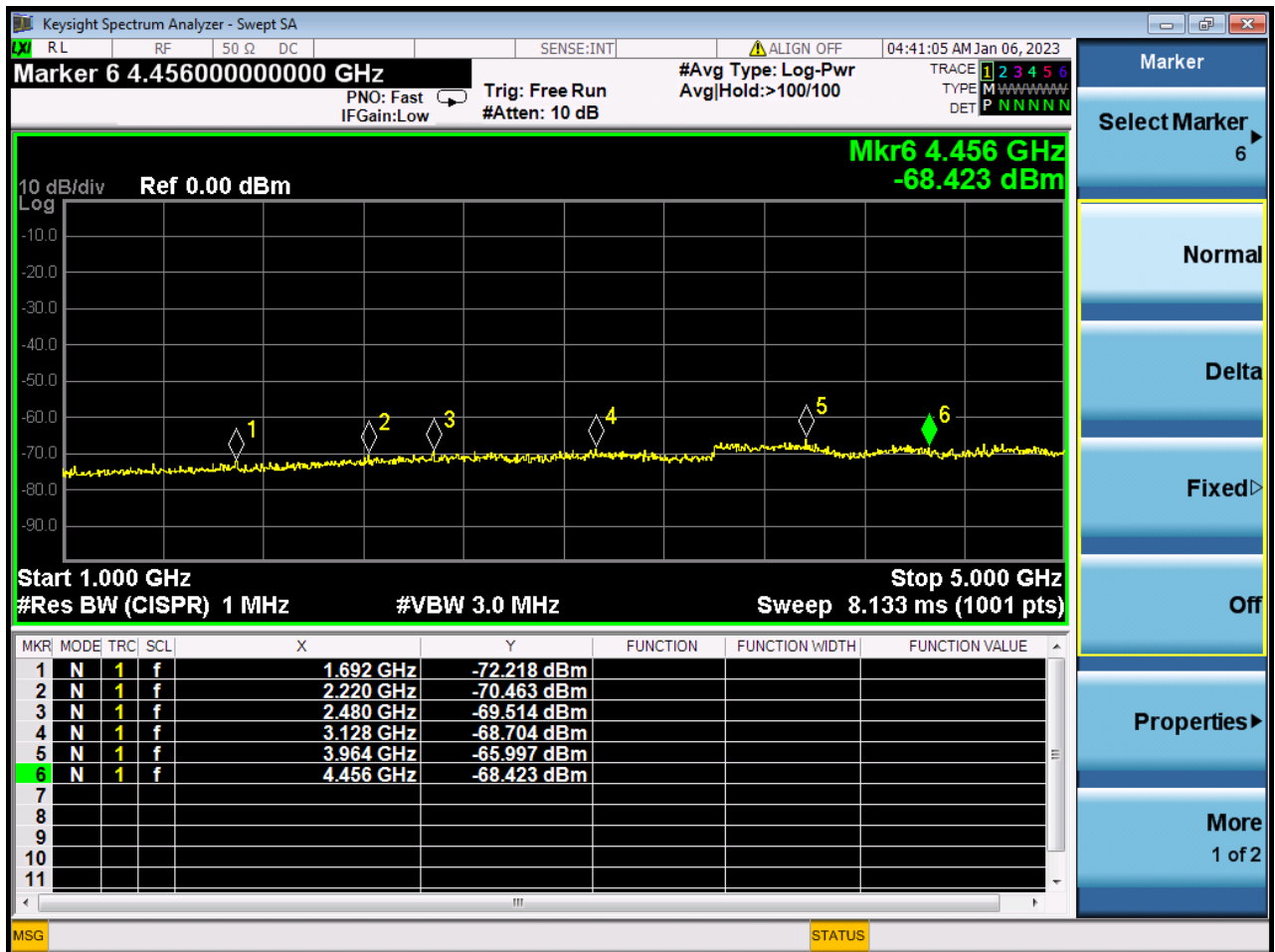




V port, Operate at 930.5MHz, 1GHz -5GHz

Fre. GHz	P <sub>Reading value</sub> dBm	Factor dB	P <sub>Final value</sub> dBm	Limit dBm	Verdict
1.692	-72.218	1.17	-71.048	-57	PASS
2.22	-70.463	1.53	-68.933	-57	PASS
2.48	-69.514	1.71	-67.804	-57	PASS
3.128	-68.704	2.16	-66.544	-57	PASS
3.964	-65.997	2.74	-63.257	-57	PASS
4.456	-68.423	3.07	-65.353	-57	PASS

Attach spectrum pictures of P<sub>Readingvalue</sub> for this test here:

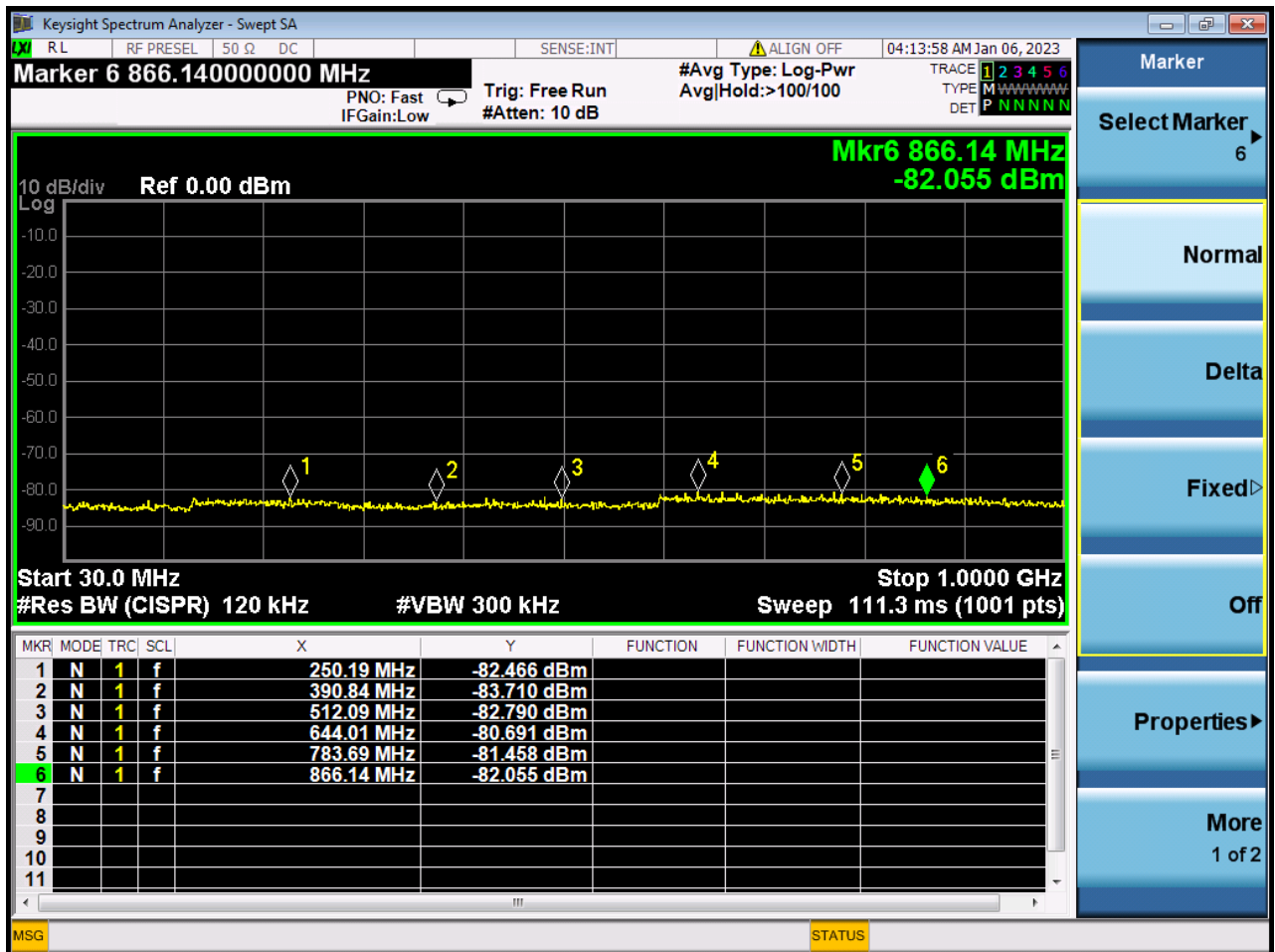




H port, Operate at 940.5MHz, 30MHz -1000MHz

Fre. MHz	P <sub>Reading value</sub> dBm	Factor dB	P <sub>Final value</sub> dBm	Limit dBm	Verdict
250.19	-82.466	0.2	-82.266	-57	PASS
390.84	-83.71	0.31	-83.4	-57	PASS
512.09	-82.79	0.4	-82.39	-57	PASS
644.01	-80.691	0.51	-80.181	-57	PASS
783.69	-81.458	0.62	-80.838	-57	PASS
866.14	-82.055	0.68	-81.375	-57	PASS

Attach spectrum pictures of P<sub>Reading value</sub> for this test here:

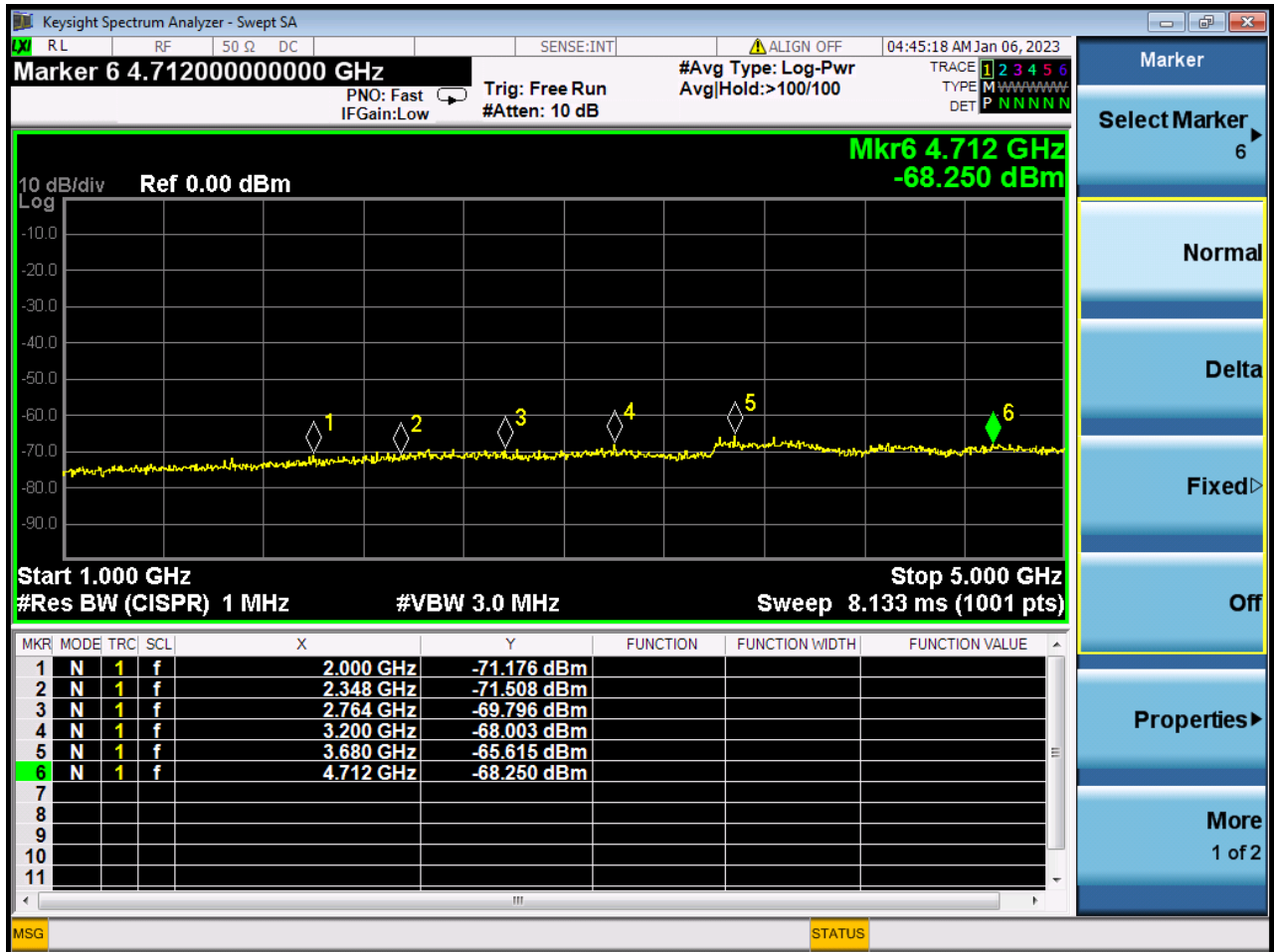




H port, Operate at 940.5MHz, 1GHz -5GHz

Fre. GHz	P <sub>Reading value</sub> dBm	Factor dB	P <sub>Final value</sub> dBm	Limit dBm	Verdict
2	-71.176	1.38	-69.796	-57	PASS
2.348	-71.508	1.62	-69.888	-57	PASS
2.764	-69.796	1.91	-67.886	-57	PASS
3.2	-68.003	2.21	-65.793	-57	PASS
3.68	-65.615	2.54	-63.075	-57	PASS
4.712	-68.25	3.25	-65	-57	PASS

Attach spectrum pictures of P<sub>Readingvalue</sub> for this test here:

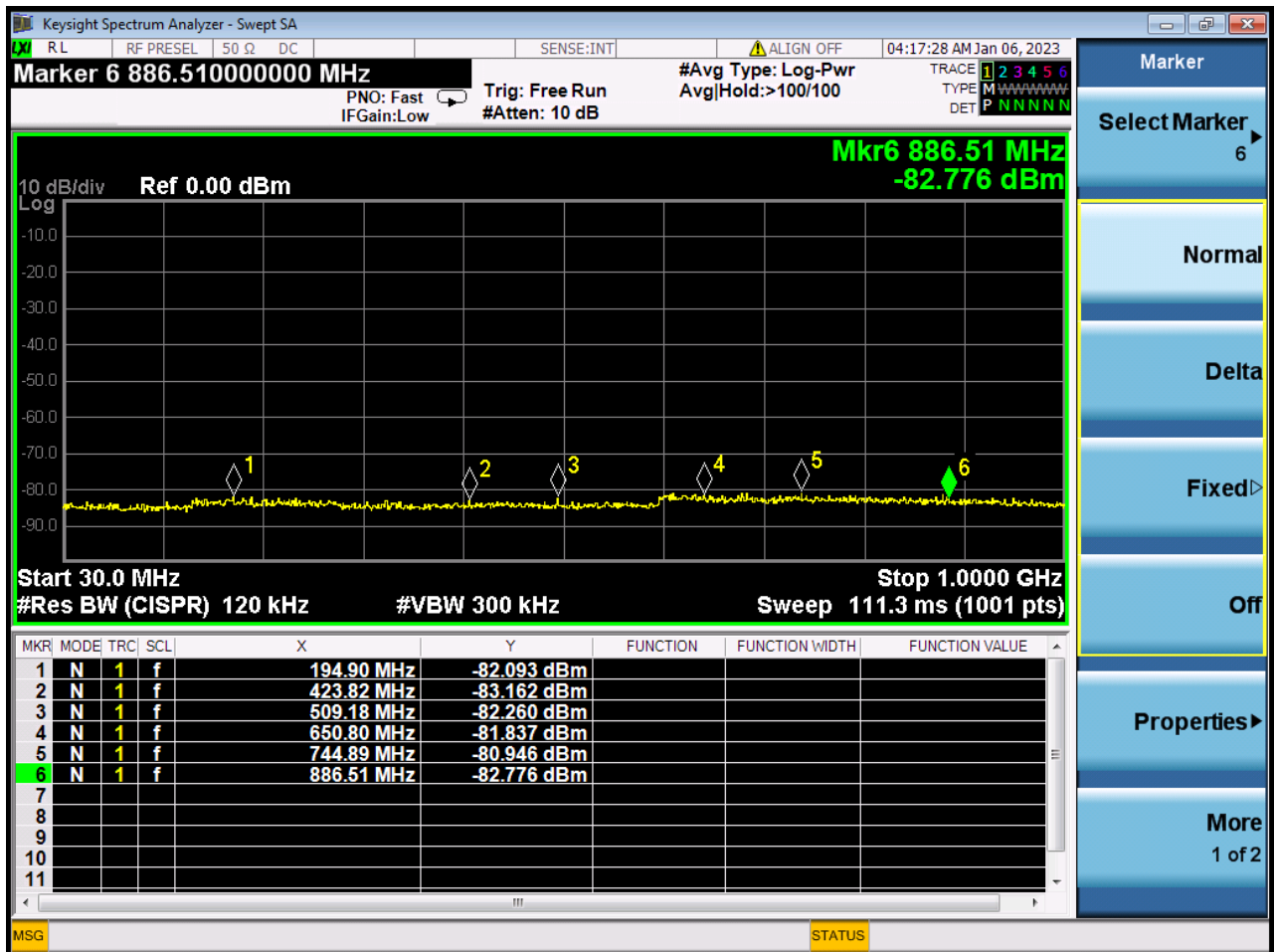




V port, Operate at 940.5MHz, 30MHz -1000MHz

Fre. MHz	P <sub>Reading value</sub> dBm	Factor dB	P <sub>Final value</sub> dBm	Limit dBm	Verdict
194.9	-82.093	0.15	-81.943	-57	PASS
423.82	-83.162	0.33	-82.832	-57	PASS
509.18	-82.26	0.4	-81.86	-57	PASS
650.8	-81.837	0.51	-81.327	-57	PASS
744.89	-80.946	0.59	-80.356	-57	PASS
886.51	-82.776	0.7	-82.076	-57	PASS

Attach spectrum pictures of P<sub>Readingvalue</sub> for this test here:



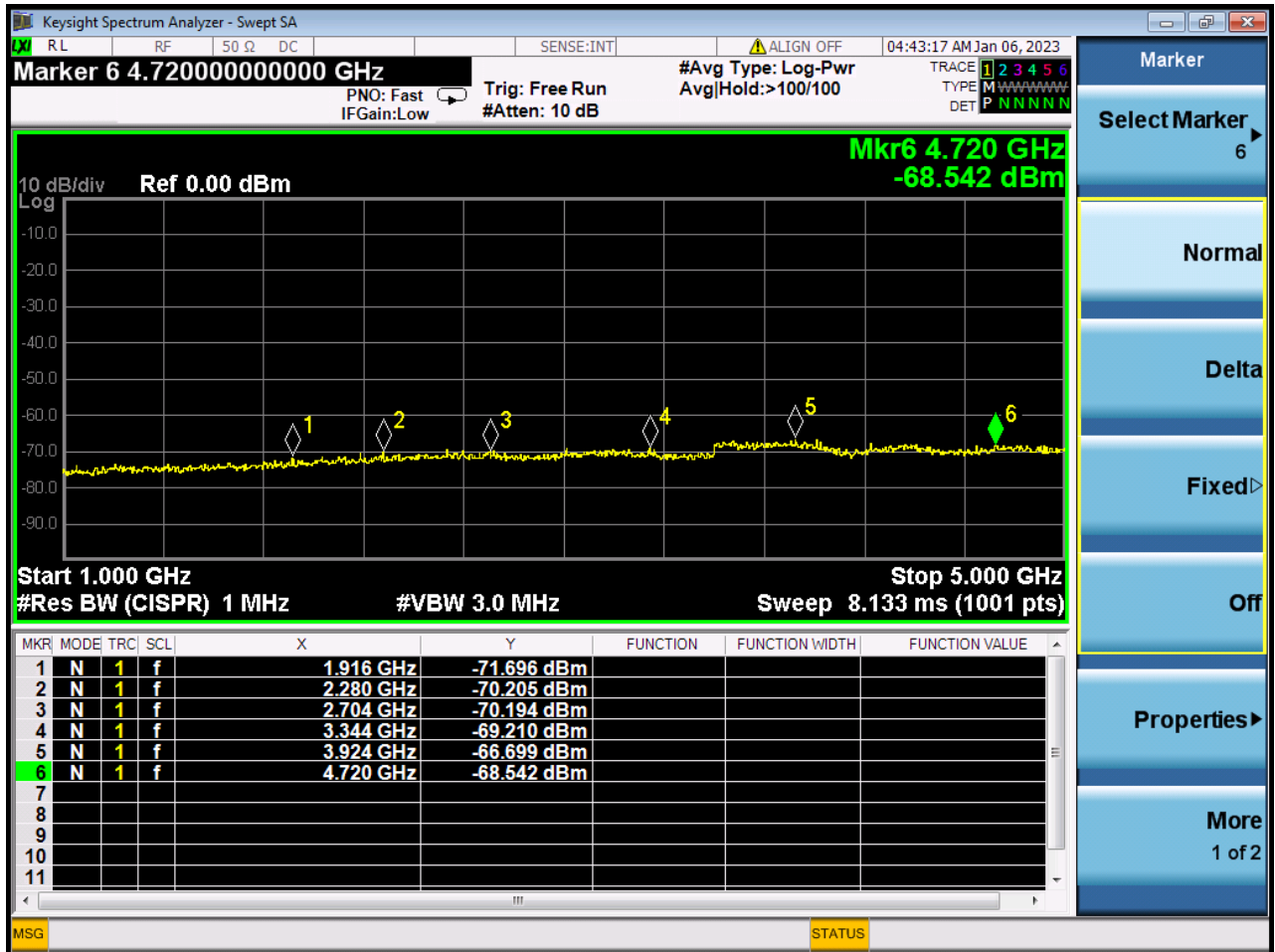




V port, Operate at 940.5MHz, 1GHz -5GHz

Fre. GHz	P <sub>Reading value</sub> dBm	Factor dB	P <sub>Final value</sub> dBm	Limit dBm	Verdict
1.916	-71.696	1.32	-70.376	-57	PASS
2.28	-70.205	1.57	-68.635	-57	PASS
2.704	-70.194	1.87	-68.324	-57	PASS
3.344	-69.21	2.31	-66.9	-57	PASS
3.924	-66.699	2.71	-63.989	-57	PASS
4.72	-68.542	3.26	-65.282	-57	PASS

Attach spectrum pictures of P<sub>Readingvalue</sub> for this test here:







## Annex A Test Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

### Uncertainty of Conducted Emission Measurement

Measuring Uncertainty for a Level of Confidence of 95%(U=2Uc(y))	9kHz-150kHz	±3.3dB
	150kHz-30MHz	±2.8dB

### Uncertainty of Radiated Emission Measurement

Measuring Uncertainty for a Level of Confidence of 95%(U=2Uc(y))	30MHz-200MHz	±5.06dB
	200MHz-1000MHz	±5.04dB
	1GHz-6GHz	±5.18dB
	6GHz-18GHz	±5.48dB



## Annex B Testing Laboratory Information

### 1. Identification of the Responsible Testing Laboratory

<b>Laboratory Name:</b>	Shenzhen Morlab Communications Technology Co., Ltd.
<b>Laboratory Address:</b>	FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen ,GuangDong Province, P. R. China
<b>Telephone:</b>	+86 755 36698555
<b>Facsimile:</b>	+86 755 36698525

### 2. Identification of the Responsible Testing Location

<b>Name:</b>	Shenzhen Morlab Communications Technology Co., Ltd.
<b>Address:</b>	FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen ,GuangDong Province, P. R. China

### 3. Accreditation Certificate

<b>Accredited Testing Laboratory:</b>	The FCC designation number is CN1192. Test firm registration number is 226174. (Shenzhen Morlab Communications Technology Co., Ltd.)
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### 4. Test Software Utilized

<b>Model</b>	<b>Version Number</b>	<b>Producer</b>
TS+ -[JS32-RE]	Version 2.5.0.6	Tonscend
TS+ -[JS32-CE]	Version 2.5.0.0	Tonscend

**5. Test Equipments Utilized**

Description	Model	Serial No.	Manufacturer	Cal. Date	Due. Date
Bi-Log Antenna	VULB 9163	9163-274	SCHWARZBEC K	2022/11/7	2025/11/6
Bi-Log Antenna	VULB 9163	9163-519	SCHWARZBEC K	2022/5/25	2025/5/24
Horn Antenna	BBHA 9120D	9120D-963	SCHWARZBEC K	2022/5/25	2025/5/24
Horn Antenna	BBHA 9120D	01774	SCHWARZBEC K	2022/7/13	2025/7/12
Horn Antenna	BBHA9170	BBHA9170 #773	SCHWARZBEC K	2022/7/14	2025/7/13
Receiver	N9038A	MY541300 16	Agilent	2022/7/7	2023/7/6
Receiver	N9038A	MY564000 93	KEYSIGHT	2022/3/3	2023/3/2
6db Attenuator	BW-N6W5+	E191001	Mini-circuits	2022/10/11	2023/10/10
Preamplifier	S020180L320 3	61171/6117 2	LUCIX CORP.	2022/7/8	2023/7/7
Preamplifier	S10M100L380 2	46732	LUCIX CORP.	2022/7/8	2023/7/7
Preamplifier	DCLNA0118-4 0C-S	DS77209	Decentest	2022/7/23	2023/7/22
RF Coaxial Cable	PE330	MRE001	Pasternack	N/A	N/A
RF Coaxial Cable	CLU18	MRE002	Pasternack	N/A	N/A
RF Coaxial Cable	CLU18	MRE003	Pasternack	N/A	N/A
RF Coaxial Cable	QA360-40-KK- 0.5	22290045	Qualwave	N/A	N/A
RF Coaxial Cable	QA360-40-KK F-2	22290046	Qualwave	N/A	N/A
RF Coaxial Cable	QA500-18-NN- 5	22120181	Qualwave	N/A	N/A
RF Coaxial Cable	BNC	MRE04	Qualwave	N/A	N/A
Receiver	ESPI	101052	R&S	2022/7/7	2023/7/6



LISN	NSLK 8127	8127449	Schwarzbeck	2022/3/3	2023/3/2
10dB Pulse Limiter	VTSD 9561-F	VTSD 9561 F-B #206	SCHWARZBEC K	2022/7/6	2023/7/5

## 6. Ancillary Equipment Utilized

Description	Manufacturer	Model	Serial No.
DC source	LINI-T	N/A	C2040182272
PC	APPLE	A1370	N/A
PC Adapter	APPLE	A1374	N/A

\_\_\_\_\_ END OF REPORT \_\_\_\_\_