



TEST REPORT

APPLICANT : MiMOMax Wireless Limited
PRODUCT NAME : 900MHz TornadoX Transceiver
MODEL NAME : MWL-TORNADOX-*G*D/E
BRAND NAME : Ubiik Mimomax
FCC ID : XMK-MMXTRNXB006
STANDARD(S) : 47 CFR Part 15 Subpart A and B
RECEIPT DATE : 2024-02-01
TEST DATE : 2024-02-02 to 2024-02-28
ISSUE DATE : 2024-03-08



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| Change History | | |
|----------------|------------|-------------------|
| Version | Date | Reason for change |
| 1.0 | 2024-03-08 | First edition |
| | | |



1. Technical Information

Note: Provide by applicant

1.1. Applicant and Manufacturer Information

| | |
|------------------------------|---|
| Applicant: | MiMOMax Wireless Limited |
| Applicant Address: | 540 Wairakei Road, Christchurch 8053, New Zealand |
| Manufacturer: | MiMOMax Wireless Limited |
| Manufacturer Address: | 540 Wairakei Road, Christchurch 8053, New Zealand |

1.2. Equipment Under Test (EUT) Description

| | |
|---------------------------|--|
| Product Name: | 900MHz TornadoX Transceiver |
| EUT No.: | 1# |
| Hardware Version: | P001 |
| Software Version: | TRN_04.08.04 |
| Frequency Range: | 901 MHz ~ 902 MHz, 930 MHz ~ 931MHz, 940 MHz ~ 941 MHz |
| Operating Voltage: | 10.5 VDC to 60 VDC |

Note:

1. For a more detailed description, please refer to specification or user's manual supplied by the applicant and/or manufacturer.

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 | 2024.02.05 | Wang Deyong | PASS | No deviation |
| 4 | 15.109 | Radiated Emissions | 2024.02.02 | Zhang Bangyi | PASS | No deviation |
| 5 | 15.111 | Antenna Terminal Disturbance | 2024.02.28 | Wang Deyong | PASS | 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.



2.2. EUT Setup and Operating Conditions

| Test Item | |
|--|---|
| Conducted Emission | |
| Mode 1 | EUT + 24V DC Source + RJ45 + PC + PC Adapter + 901.5 MHz Idle + Ping Network |
| Mode 2 | EUT + 24V DC Source + RJ45 + PC + PC Adapter + 930.5 MHz Idle + Ping Network |
| Mode 3 | EUT + 24V DC Source + RJ45 + PC + PC Adapter + 940.5 MHz Idle + Ping Network |
| Radiated Emission | |
| Mode 1 | EUT + 24V DC Source + RJ45 + PC + PC Adapter + 901.5 MHz Idle + Ping Network |
| Mode 2 | EUT + 24V DC Source + RJ45 + PC + PC Adapter + 930.5 MHz Idle + Ping Network |
| Mode 3 | EUT + 24V DC Source + RJ45 + PC + PC Adapter + 940.5 MHz Idle + Ping Network |
| Antenna Terminal Disturbance | |
| Mode 1 | EUT + 24V DC Source + RJ45 + PC + PC Adapter + 901.5 MHz Idle + Ping Network |
| Mode 2 | EUT + 24V DC Source + RJ45 + PC + PC Adapter + 930.5 MHz Idle + Ping Network |
| Mode 3 | EUT + 24V DC Source + RJ45 + PC + PC Adapter + 940.5 MHz Idle + Ping Network |
| Remark: | |
| The above test mode in boldface (Mode 1) was the worst case of conducted emission test, only the test data of these modes were reported. The above test mode in boldface (Mode 1) was the worst case of 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 μ H/50 Ω line impedance stabilization network (LISN).

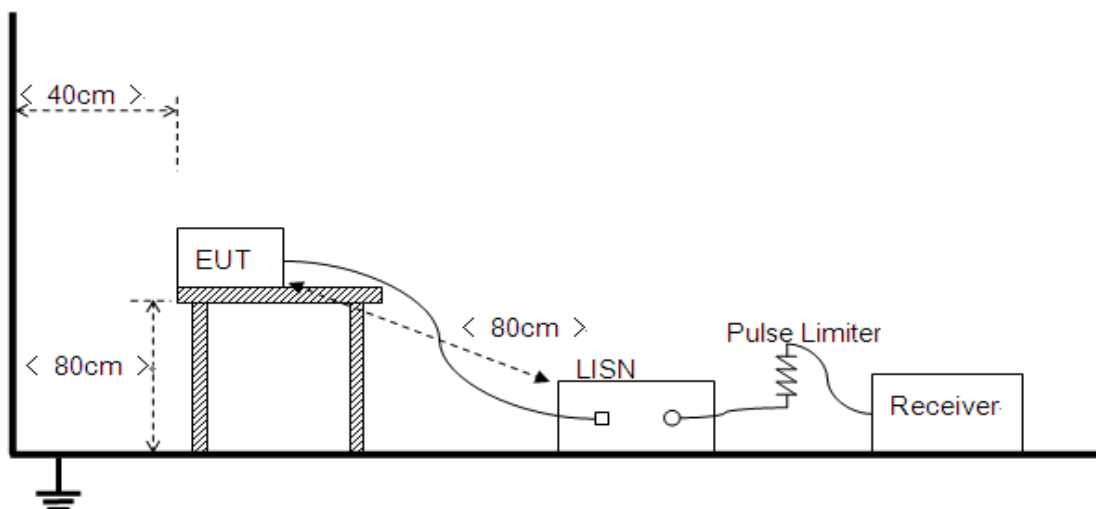
| Frequency Range (MHz) | Conducted Limit (dB μ V) | |
|-----------------------|------------------------------|----------|
| | Quasi-peak | Average |
| 0.15 - 0.50 | 66 to 56 | 56 to 46 |
| 0.50 - 5 | 56 | 46 |
| 5 - 30 | 60 | 50 |

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:

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

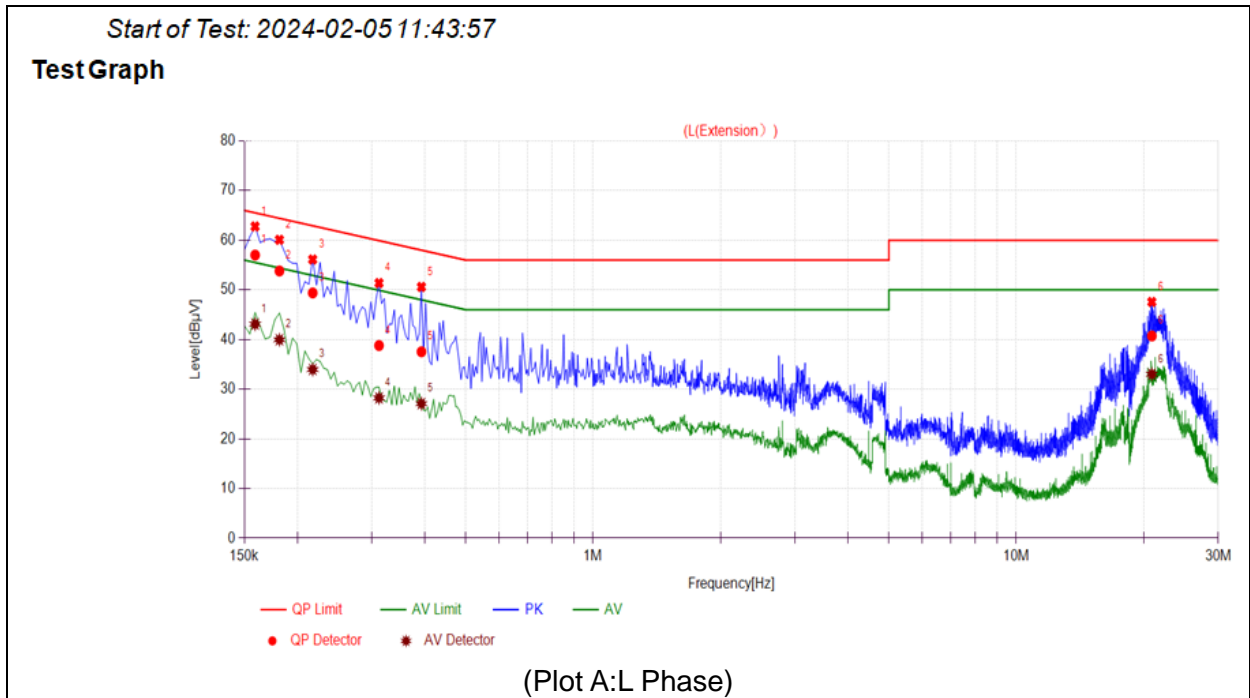
U_R : Receiver Reading

A_{Factor} : Voltage Division Factor of LISN

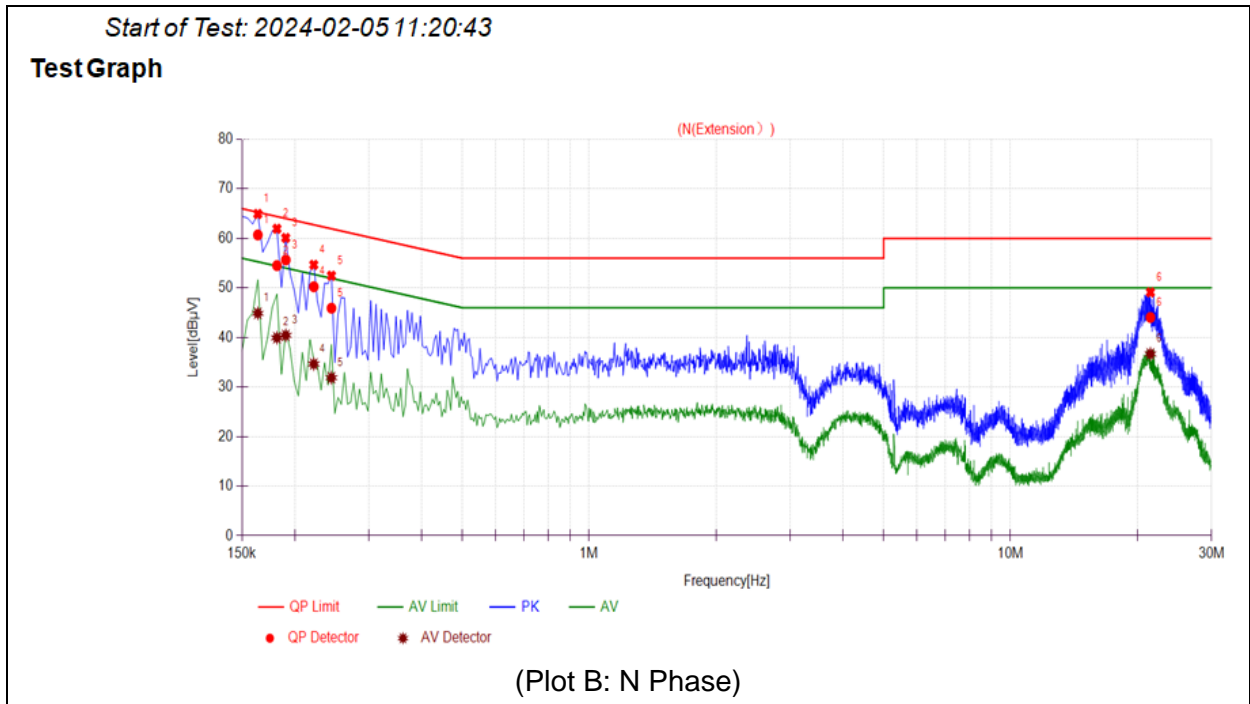
$L_{\text{Cable loss}}$: Correction Factor Contains Pulse Limiter and Cable

During the test, the total correction Factor $L_{\text{Cable loss}}$ and A_{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 | 0.1590 | 57.02 | 43.11 | 65.52 | 55.52 | Line | PASS |
| 2 | 0.1815 | 53.81 | 39.96 | 64.42 | 54.42 | | PASS |
| 3 | 0.2175 | 49.39 | 33.97 | 62.91 | 52.91 | | PASS |
| 4 | 0.3120 | 38.80 | 28.24 | 59.92 | 49.92 | | PASS |
| 5 | 0.3930 | 37.54 | 27.10 | 58.00 | 48.00 | | PASS |
| 6 | 20.9033 | 40.73 | 33.02 | 60.00 | 50.00 | | PASS |



| No. | Fre. (MHz) | Emission Level (dBµV) | | Limit (dBµV) | | Power-line | Verdict |
|-----|------------|-----------------------|---------|--------------|---------|------------|---------|
| | | Quasi-peak | Average | Quasi-peak | Average | | |
| 1 | 0.1635 | 60.70 | 44.88 | 65.28 | 55.28 | Neutral | PASS |
| 2 | 0.1815 | 54.52 | 39.95 | 64.42 | 54.42 | | PASS |
| 3 | 0.1905 | 55.66 | 40.44 | 64.02 | 54.02 | | PASS |
| 4 | 0.2220 | 50.25 | 34.65 | 62.74 | 52.74 | | PASS |
| 5 | 0.2445 | 45.92 | 31.88 | 61.94 | 51.94 | | PASS |
| 6 | 21.4798 | 44.05 | 36.68 | 60.00 | 50.00 | | 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($\mu\text{V/m}$).



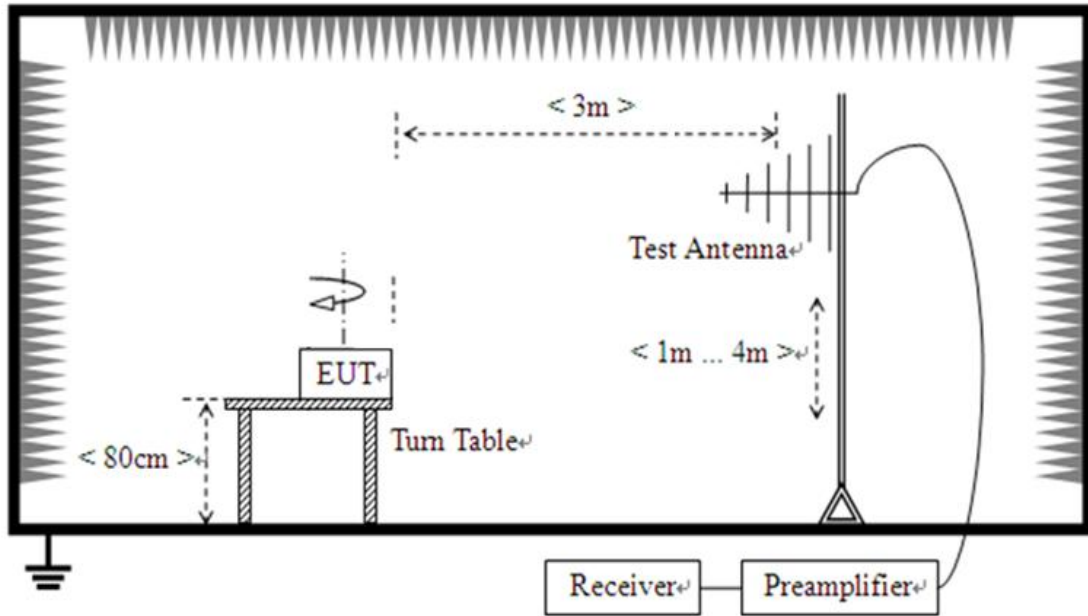
3.2.2. Frequency range of measurement

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

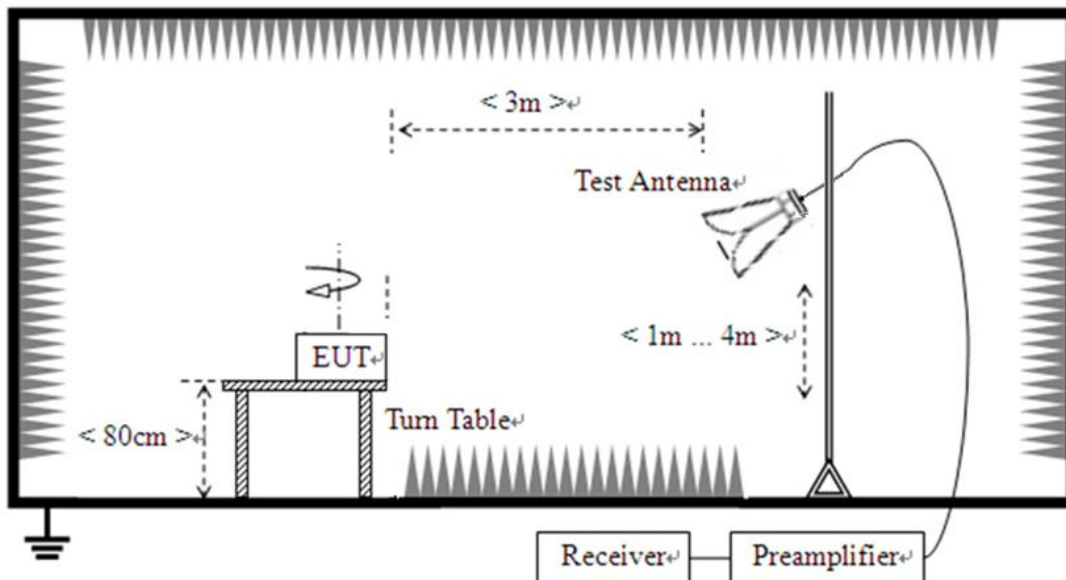
| Highest frequency generated or used in the device or on which the device operates or tunes (MHz) | Upper frequency of measurement range (MHz) |
|--|--|
| Below 1.705 | 30. |
| 1.705 – 108 | 1000. |
| 108 – 500 | 2000. |
| 500 – 1000 | 5000. |
| Above 1000 | 5 th harmonic of the highest frequency or 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

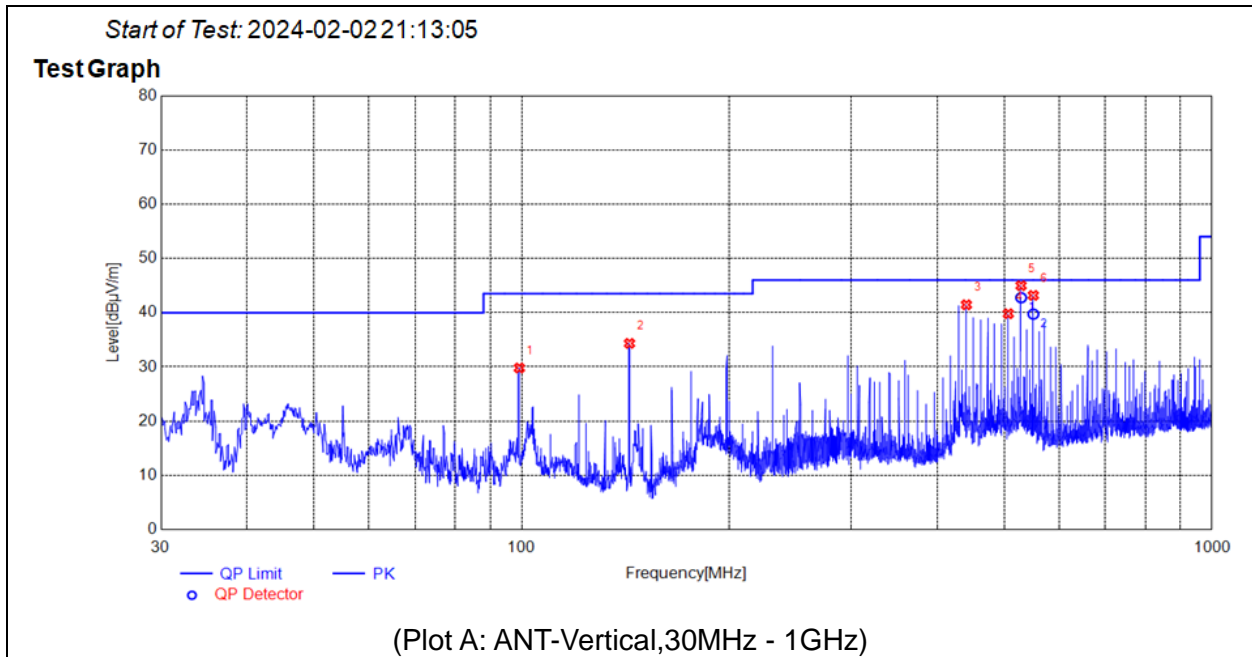
U_R : Receiver Reading

G_{preamp} : Preamplifier Gain

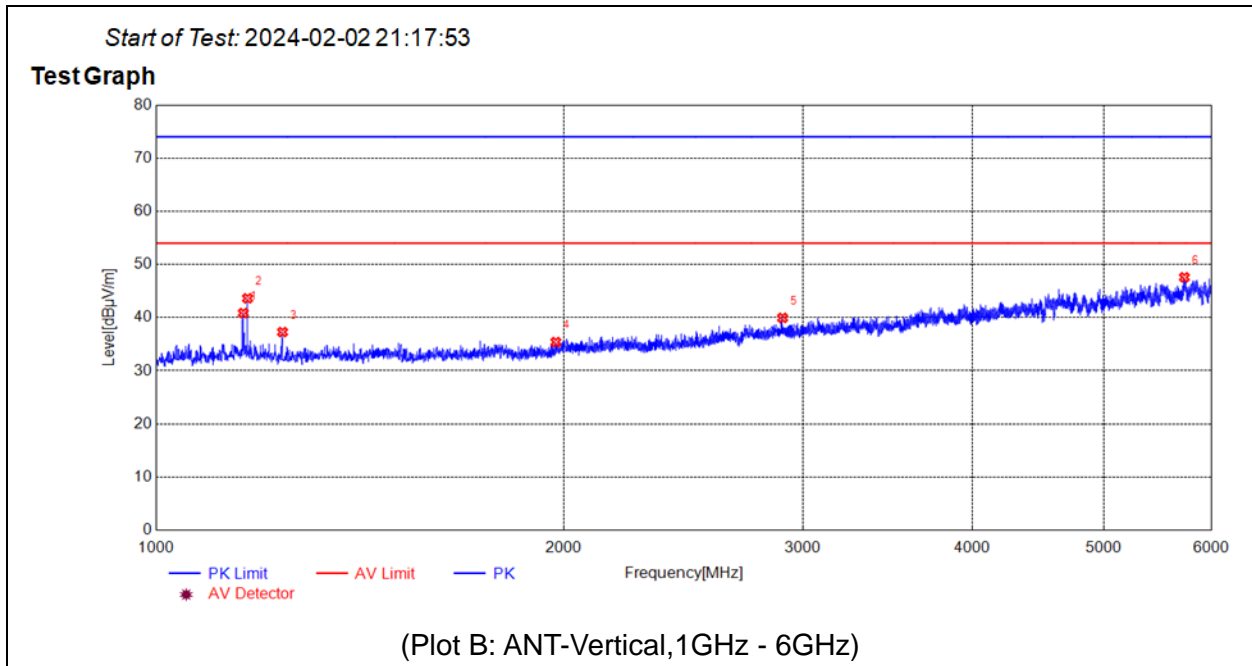
A_{Factor} : Antenna Factor at 3m

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

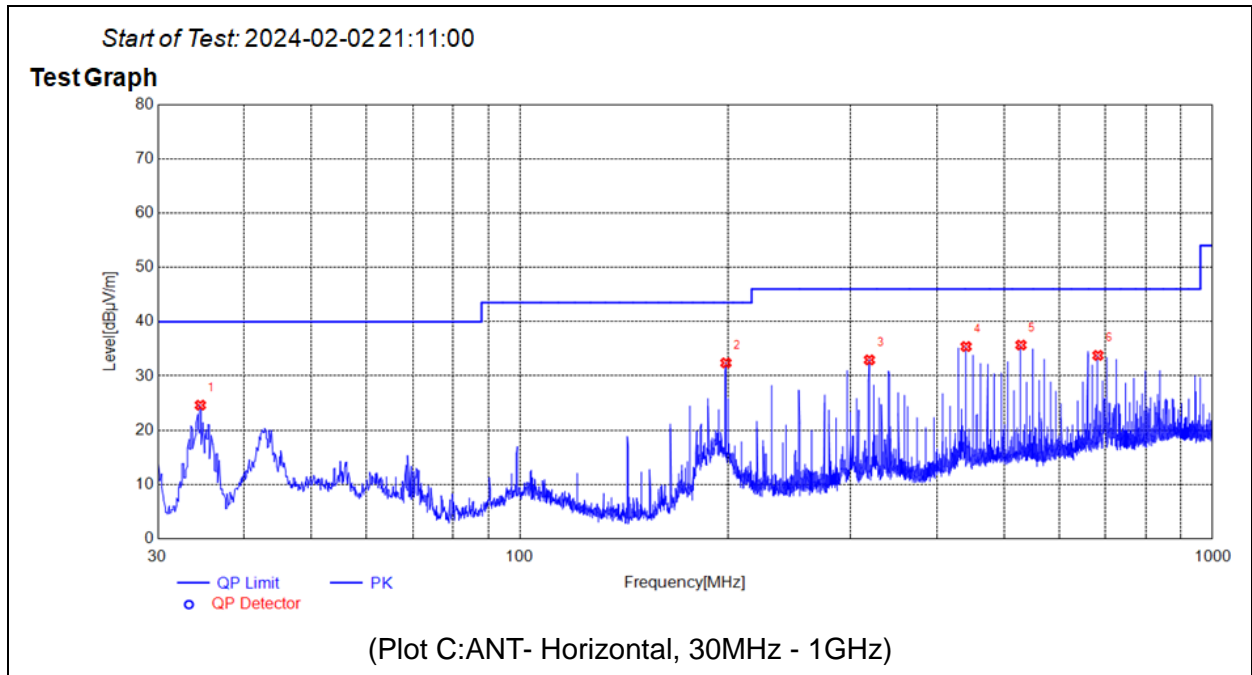
Note: All radiated emission tests were performed in X, Y, Z axis direction, and only the worst axis test condition was recorded in this test report.



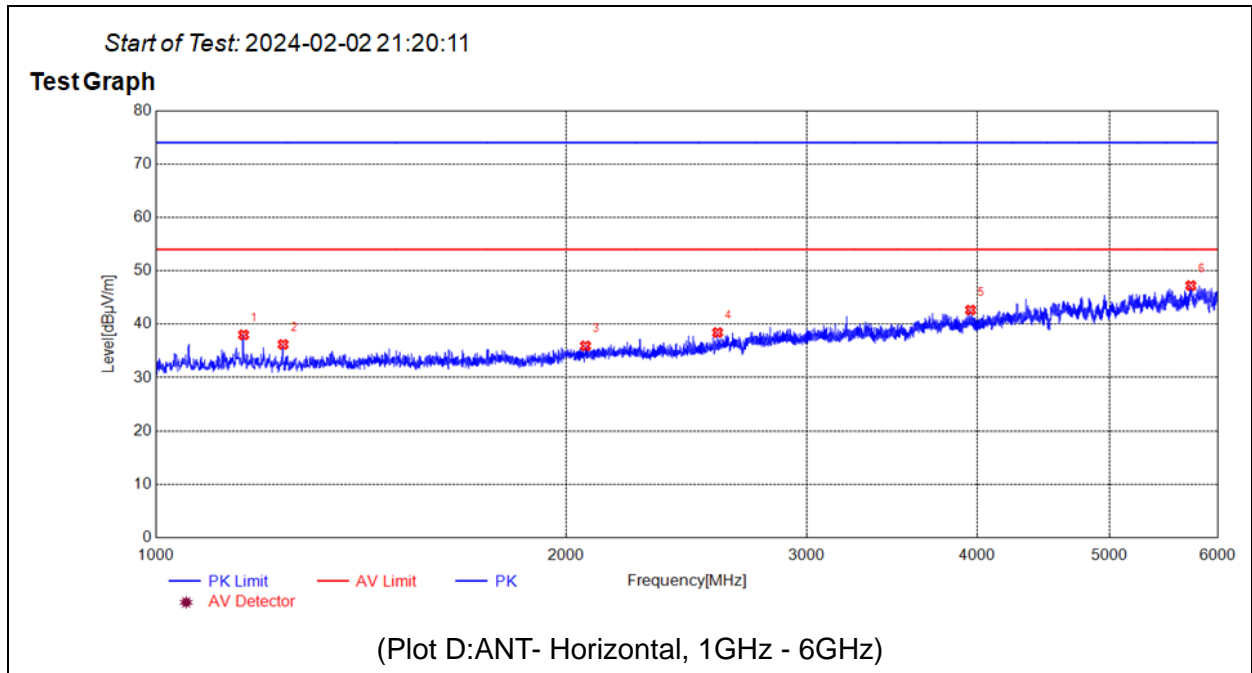
| No. | Fre. MHz | Pk dBµV/m | QP dBµV/m | AV dBµV/m | Limit-PK dBµV/m | Limit-QP dBµV/m | Limit-AV dBµV/m | ANT | Verdict |
|-----|----------|-----------|-----------|-----------|-----------------|-----------------|-----------------|-----|---------|
| 1 | 99.1679 | 29.79 | N.A. | N.A. | N.A. | 43.50 | N.A. | V | PASS |
| 2 | 143.2103 | 34.33 | N.A. | N.A. | N.A. | 43.50 | N.A. | V | PASS |
| 3 | 440.6421 | 41.45 | N.A. | N.A. | N.A. | 46.00 | N.A. | V | PASS |
| 4 | 506.8027 | 39.80 | N.A. | N.A. | N.A. | 46.00 | N.A. | V | PASS |
| 5 | 528.8239 | 44.97 | 42.75 | N.A. | N.A. | 46.00 | N.A. | V | PASS |
| 6 | 550.8451 | 43.18 | 39.73 | 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 | 1160.0000 | 40.85 | N.A. | N.A. | 74.00 | N.A. | 54.00 | V | PASS |
| 2 | 1168.5000 | 43.63 | N.A. | N.A. | 74.00 | N.A. | 54.00 | V | PASS |
| 3 | 1240.0000 | 37.28 | N.A. | N.A. | 74.00 | N.A. | 54.00 | V | PASS |
| 4 | 1972.5000 | 35.40 | N.A. | N.A. | 74.00 | N.A. | 54.00 | V | PASS |
| 5 | 2898.5000 | 39.95 | N.A. | N.A. | 74.00 | N.A. | 54.00 | V | PASS |
| 6 | 5734.5000 | 47.58 | 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 | 34.5595 | 24.62 | N.A. | N.A. | N.A. | 40.00 | N.A. | H | PASS |
| 2 | 198.3118 | 32.40 | N.A. | N.A. | N.A. | 43.50 | N.A. | H | PASS |
| 3 | 319.4769 | 32.95 | N.A. | N.A. | N.A. | 46.00 | N.A. | H | PASS |
| 4 | 440.6421 | 35.41 | N.A. | N.A. | N.A. | 46.00 | N.A. | H | PASS |
| 5 | 528.8239 | 35.69 | N.A. | N.A. | N.A. | 46.00 | N.A. | H | PASS |
| 6 | 683.0693 | 33.78 | 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 | 1160.0000 | 38.00 | N.A. | N.A. | 74.00 | N.A. | 54.00 | H | PASS |
| 2 | 1240.0000 | 36.21 | N.A. | N.A. | 74.00 | N.A. | 54.00 | H | PASS |
| 3 | 2065.5000 | 35.94 | N.A. | N.A. | 74.00 | N.A. | 54.00 | H | PASS |
| 4 | 2581.5000 | 38.44 | N.A. | N.A. | 74.00 | N.A. | 54.00 | H | PASS |
| 5 | 3955.5000 | 42.66 | N.A. | N.A. | 74.00 | N.A. | 54.00 | H | PASS |
| 6 | 5737.0000 | 47.22 | 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 μ V/m | Limit-QP dB μ V/m | ANT | Verdict |
|-----------|----------|-----------------|-----------------------|-----|---------|
| Mode 1 | 25.51 | 22.11 | 32.04 | V | PASS |
| | 25.46 | 25.96 | | | PASS |
| | 26.65 | 20.21 | | | PASS |
| | 27.55 | 21.84 | | | PASS |
| | 28.63 | 23.65 | | | PASS |
| | 29.88 | 20.76 | | | PASS |
| | 25.25 | 26.00 | 32.04 | H | PASS |
| | 26.67 | 25.88 | | | PASS |
| | 26.98 | 20.65 | | | PASS |
| | 27.47 | 21.52 | | | PASS |
| | 28.59 | 22.48 | | | PASS |
| | 29.56 | 21.58 | | | 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



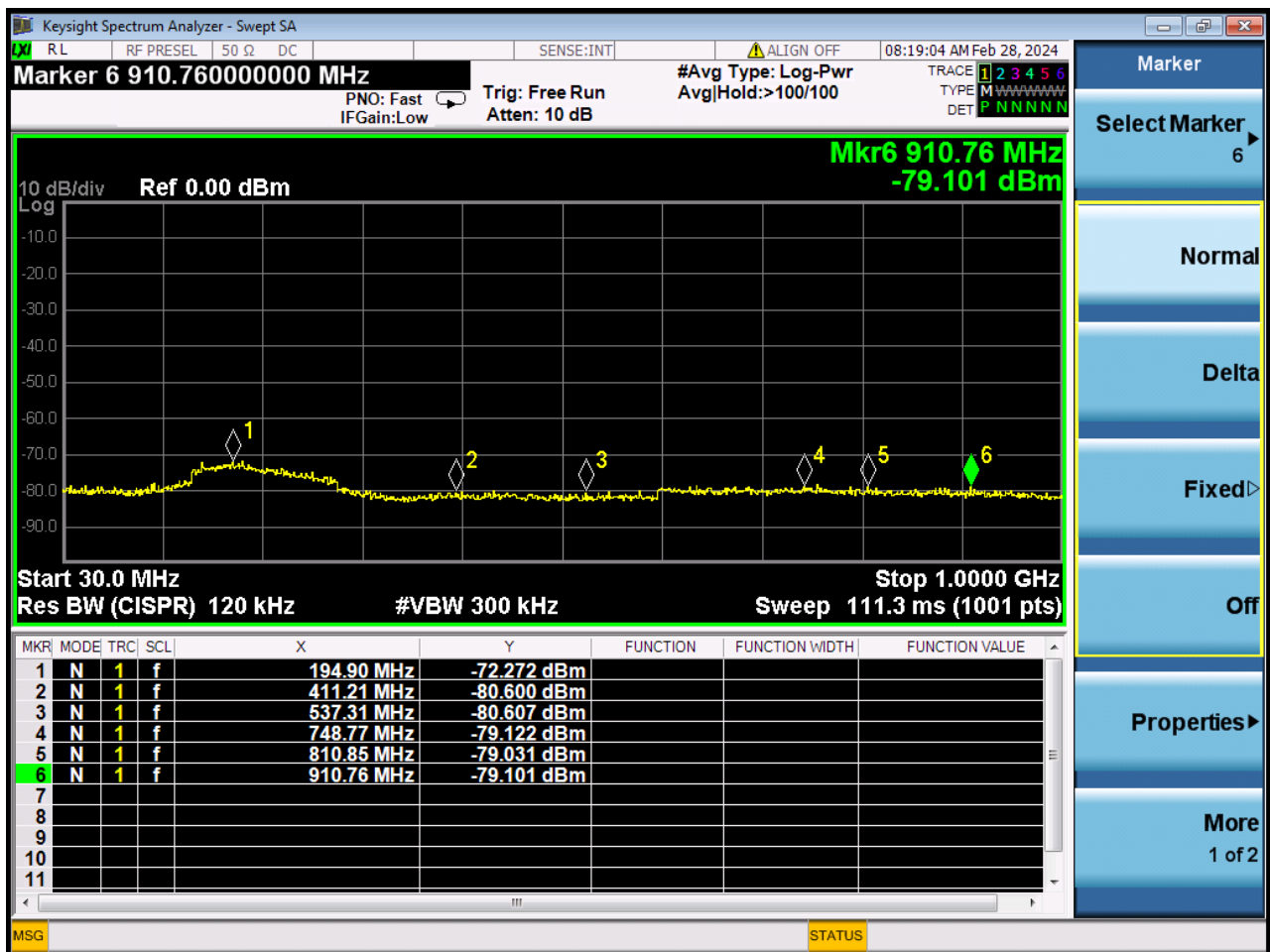
3.3.2. Test Result

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 _{Reading value} dBm | Factor dB | P _{Final value} dBm | Limit dBm | Verdict |
|----------|--------------------------------|-----------|------------------------------|-----------|---------|
| 194.9 | -72.272 | 0.18 | -72.092 | -57 | PASS |
| 411.21 | -80.6 | 0.32 | -80.280 | -57 | PASS |
| 537.31 | -80.607 | 0.42 | -80.187 | -57 | PASS |
| 748.77 | -79.122 | 0.62 | -78.502 | -57 | PASS |
| 810.85 | -79.031 | 0.73 | -78.301 | -57 | PASS |
| 910.76 | -79.101 | 0.80 | -78.301 | -57 | PASS |

Attach spectrum pictures of P_{Reading value} for this test here:

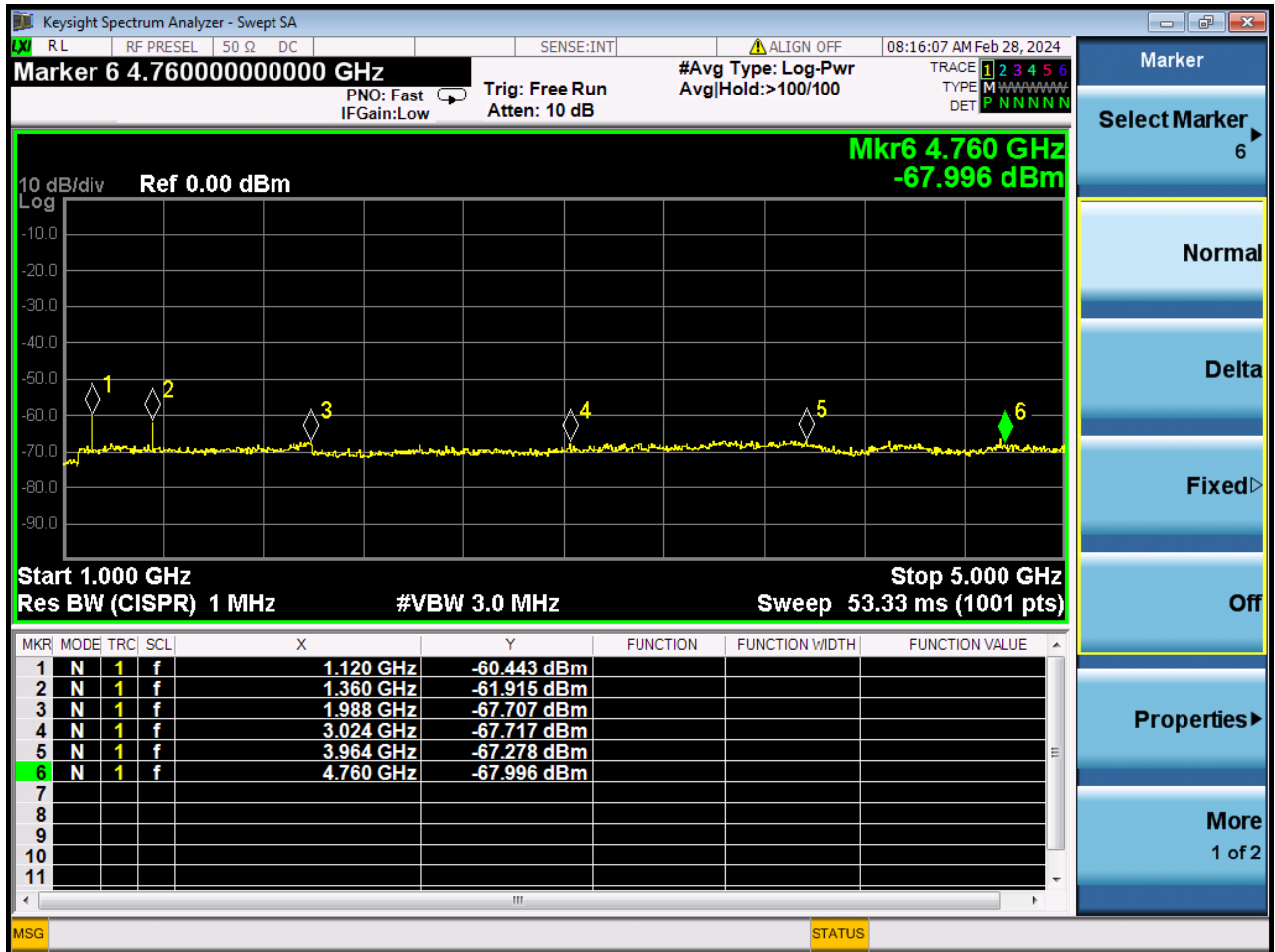




H port, Operate at 901.5MHz, 1GHz -5GHz

| Fre. GHz | P _{Reading value} dBm | Factor dB | P _{Final value} dBm | Limit dBm | Verdict |
|----------|--------------------------------|-----------|------------------------------|-----------|---------|
| 1.12 | -60.443 | 1.01 | -59.433 | -57 | PASS |
| 1.36 | -61.915 | 1.21 | -60.705 | -57 | PASS |
| 1.988 | -67.707 | 1.89 | -65.817 | -57 | PASS |
| 3.024 | -67.717 | 2.9 | -64.817 | -57 | PASS |
| 4.964 | -67.278 | 3.89 | -63.388 | -57 | PASS |
| 4.76 | -67.966 | 4.62 | -63.346 | -57 | PASS |

Attach spectrum pictures of P_{Readingvalue} for this test here:





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

| Fre. MHz | P _{Reading value} dBm | Factor dB | P _{Final value} dBm | Limit dBm | Verdict |
|----------|--------------------------------|-----------|------------------------------|-----------|---------|
| 176.47 | -73.029 | 0.16 | -72.869 | -57 | PASS |
| 392.78 | -80.814 | 0.3 | -80.514 | -57 | PASS |
| 499.48 | -80.738 | 0.48 | -80.258 | -57 | PASS |
| 743.92 | -78.176 | 0.63 | -77.546 | -57 | PASS |
| 834.13 | -79.811 | 71 | -8.811 | -57 | PASS |
| 890.39 | -79.5 | 0.79 | -78.71 | -57 | PASS |

Attach spectrum pictures of P_{Readingvalue} for this test here:

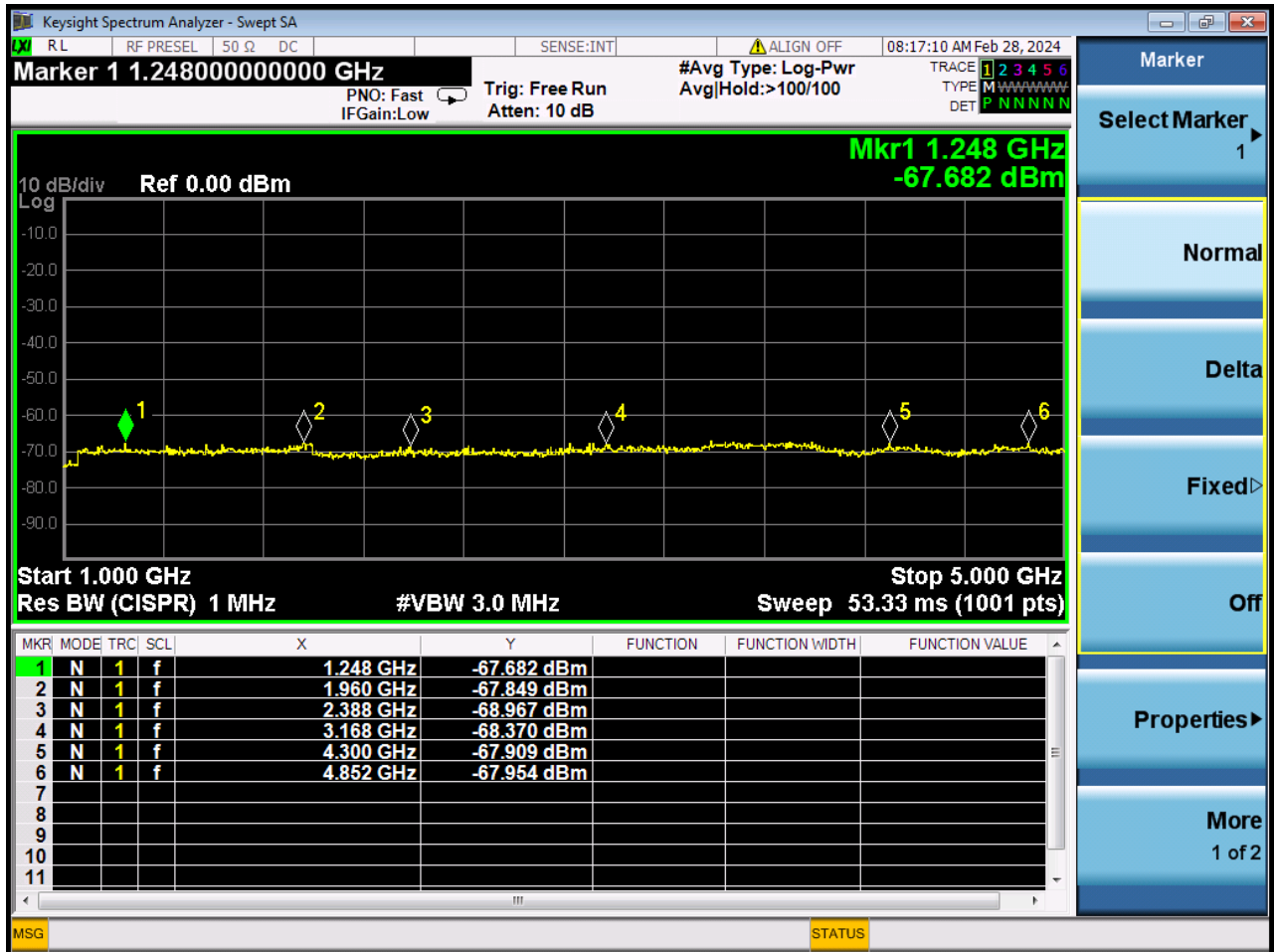




V port, Operate at 901.5MHz, 1GHz -5GHz

| Fre. GHz | P _{Reading value} dBm | Factor dB | P _{Final value} dBm | Limit dBm | Verdict |
|----------|--------------------------------|-----------|------------------------------|-----------|---------|
| 1.248 | -67.682 | 1.11 | -66.572 | -57 | PASS |
| 1.96 | -67.849 | 1.82 | -66.029 | -57 | PASS |
| 2.388 | -68.967 | 2.23 | -66.737 | -57 | PASS |
| 3.168 | -68.37 | 3.05 | -65.32 | -57 | PASS |
| 4.3 | -67.909 | 4.2 | -63.709 | -57 | PASS |
| 4.852 | -67.954 | 4.71 | -63.244 | -57 | PASS |

Attach spectrum pictures of P_{Readingvalue} for this test here:





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

| Fre. MHz | P _{Reading value} dBm | Factor dB | P _{Final value} dBm | Limit dBm | Verdict |
|----------|--------------------------------|-----------|------------------------------|-----------|---------|
| 158.04 | -73.25 | 0.09 | -73.16 | -57 | PASS |
| 192.96 | -72.235 | 0.18 | -72.055 | -57 | PASS |
| 403.45 | -79.902 | 0.39 | -79.512 | -57 | PASS |
| 610.06 | -79.309 | 0.51 | -78.799 | -57 | PASS |
| 833.16 | -81.342 | 0.73 | -80.612 | -57 | PASS |
| 930.16 | -79.111 | 0.83 | -78.281 | -57 | PASS |

Attach spectrum pictures of P_{Readingvalue} for this test here:

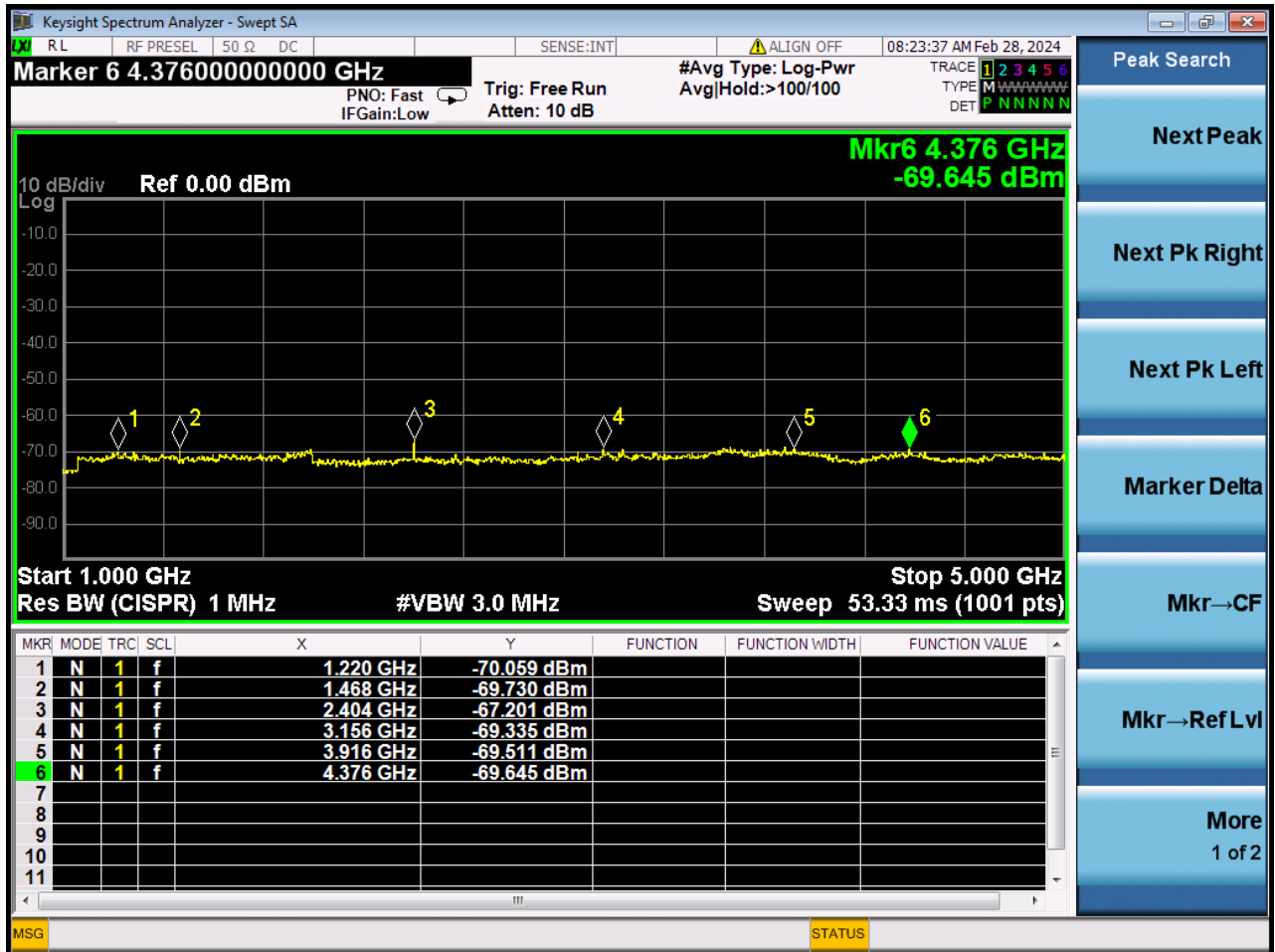




H port, Operate at 930.5MHz, 1GHz -5GHz

| Fre. GHz | P _{Reading value} dBm | Factor dB | P _{Final value} dBm | Limit dBm | Verdict |
|----------|--------------------------------|-----------|------------------------------|-----------|---------|
| 1.22 | -70.059 | 1.11 | -68.949 | -57 | PASS |
| 1.468 | -69.73 | 1.35 | -68.38 | -57 | PASS |
| 2.404 | -67.201 | 2.31 | -64.891 | -57 | PASS |
| 3.156 | -69.335 | 3.05 | -66.285 | -57 | PASS |
| 3.916 | -69.511 | 3.81 | -65.701 | -57 | PASS |
| 4.376 | -69.645 | 4.28 | -65.365 | -57 | PASS |

Attach spectrum pictures of P_{Readingvalue} for this test here:





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

| Fre. MHz | P _{Reading value} dBm | Factor dB | P _{Final value} dBm | Limit dBm | Verdict |
|----------|--------------------------------|-----------|------------------------------|-----------|---------|
| 188.11 | -72.779 | 0.17 | -72.609 | -57 | PASS |
| 236.61 | -74.054 | 0.21 | -73.844 | -57 | PASS |
| 452.92 | -80.395 | 0.35 | -80.045 | -57 | PASS |
| 610.06 | -79.222 | 0.55 | -78.672 | -57 | PASS |
| 773.02 | -78.976 | 0.68 | -78.296 | -57 | PASS |
| 935.98 | -80.101 | 0.85 | -79.251 | -57 | PASS |

Attach spectrum pictures of P_{Readingvalue} for this test here:

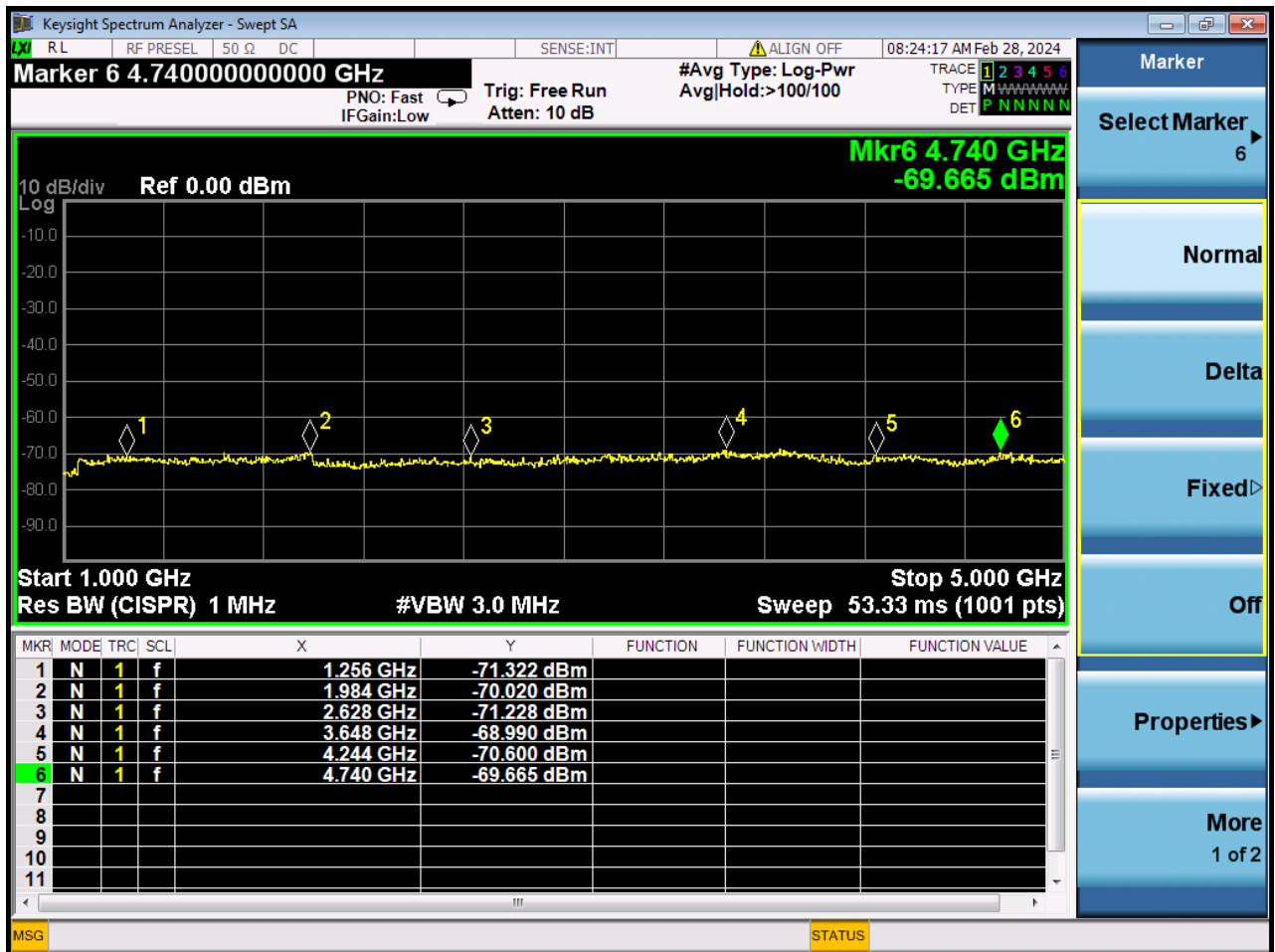




V port, Operate at 930.5MHz, 1GHz -5GHz

| Fre. GHz | P _{Reading value} dBm | Factor dB | P _{Final value} dBm | Limit dBm | Verdict |
|----------|--------------------------------|-----------|------------------------------|-----------|---------|
| 1.256 | -71.322 | 1.15 | -70.172 | -57 | PASS |
| 1.984 | -70.02 | 1.8 | -68.22 | -57 | PASS |
| 2.628 | -71.228 | 2.52 | -68.708 | -57 | PASS |
| 3.648 | -68.99 | 3.51 | -65.48 | -57 | PASS |
| 4.244 | -70.6 | 4.11 | -66.49 | -57 | PASS |
| 4.74 | -69.665 | 4.61 | -65.055 | -57 | PASS |

Attach spectrum pictures of P_{Readingvalue} for this test here:

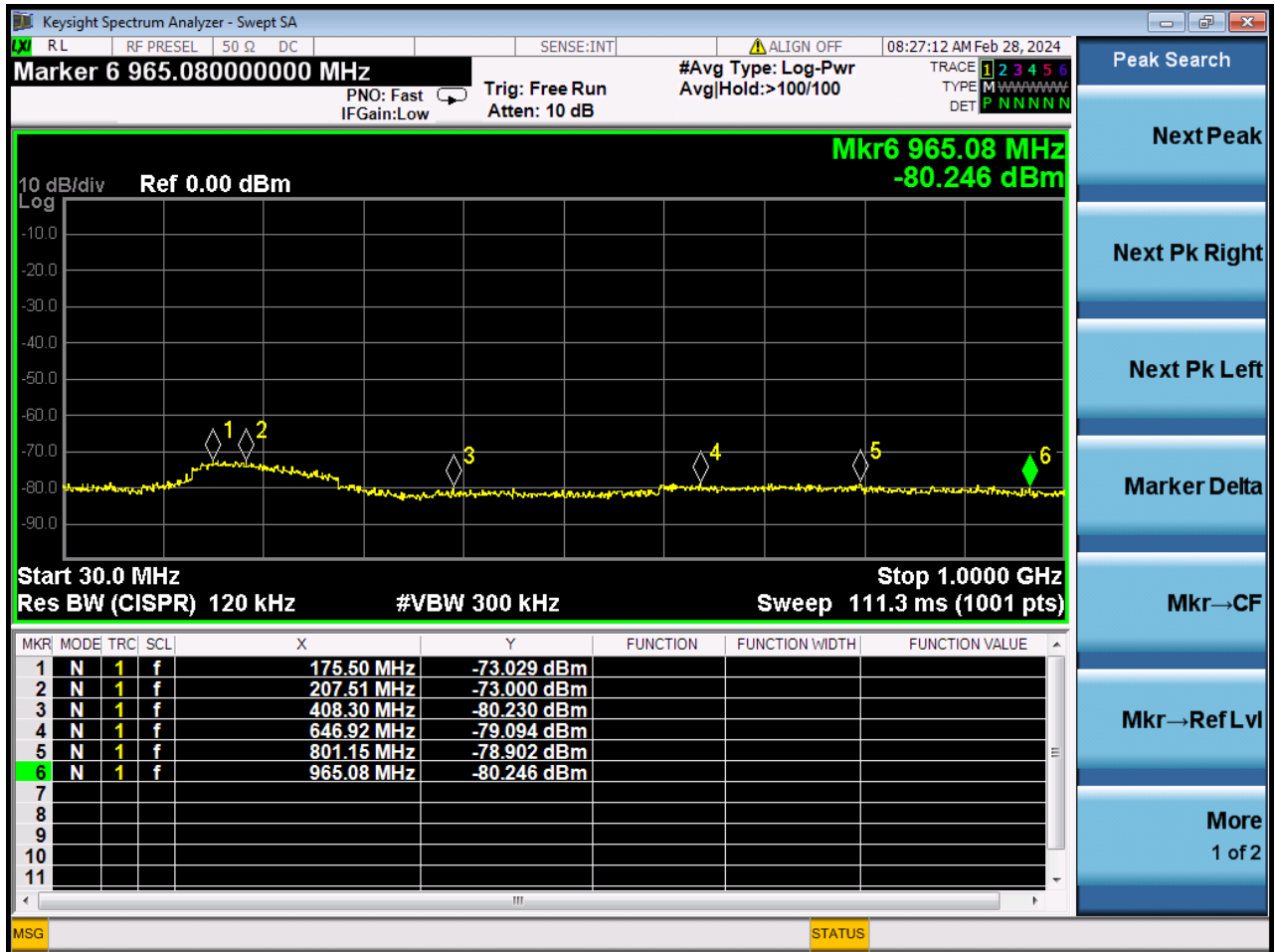




H port, Operate at 940.5MHz, 30MHz -1000MHz

| Fre. MHz | P _{Reading} value dBm | Factor dB | P _{Final} value dBm | Limit dBm | Verdict |
|----------|--------------------------------|-----------|------------------------------|-----------|---------|
| 175.5 | -73.029 | 0.16 | -72.869 | -57 | PASS |
| 207.51 | -73 | 0.19 | -72.81 | -57 | PASS |
| 408.3 | -80.23 | 0.35 | -79.88 | -57 | PASS |
| 646.92 | -79.094 | 0.51 | -78.584 | -57 | PASS |
| 801.15 | -78.902 | 0.7 | -78.202 | -57 | PASS |
| 966.08 | -80.246 | 0.82 | -79.426 | -57 | PASS |

Attach spectrum pictures of P_{Reading} value for this test here:

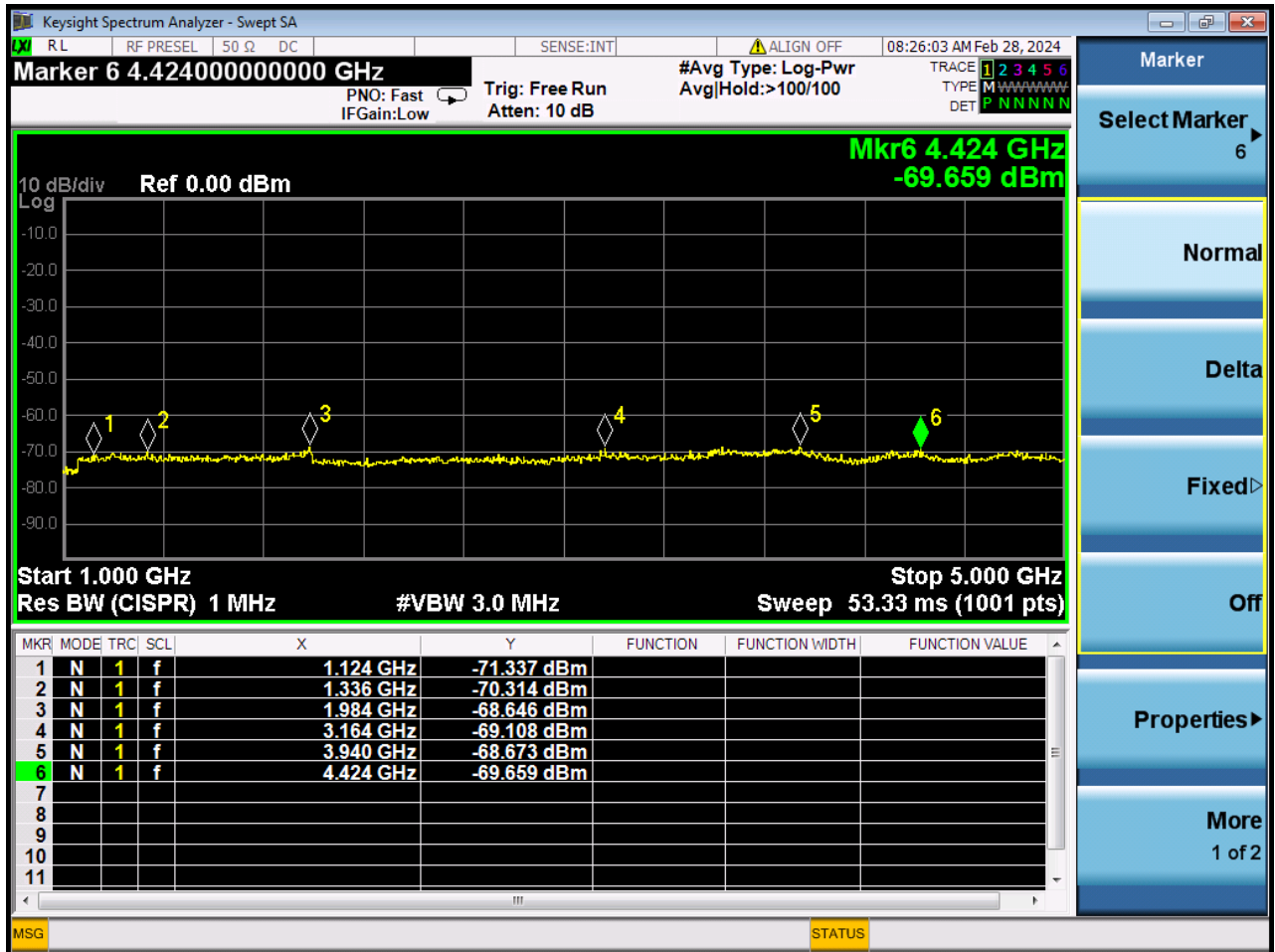




H port, Operate at 940.5MHz, 1GHz -5GHz

| Fre. GHz | P _{Reading value} dBm | Factor dB | P _{Final value} dBm | Limit dBm | Verdict |
|----------|--------------------------------|-----------|------------------------------|-----------|---------|
| 1.124 | -71.337 | 1.01 | -70.327 | -57 | PASS |
| 1.336 | -70.314 | 1.22 | -69.094 | -57 | PASS |
| 1.984 | -68.646 | 1.81 | -66.836 | -57 | PASS |
| 3.164 | -69.108 | 3.02 | -66.088 | -57 | PASS |
| 3.94 | -68.673 | 3.81 | -64.863 | -57 | PASS |
| 4.424 | -69.659 | 4.32 | -65.339 | -57 | PASS |

Attach spectrum pictures of P_{Readingvalue} for this test here:





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

| Fre. MHz | P _{Reading value} dBm | Factor dB | P _{Final value} dBm | Limit dBm | Verdict |
|----------|--------------------------------|-----------|------------------------------|-----------|---------|
| 65.89 | -79.747 | 0.05 | -79.697 | -57 | PASS |
| 196.84 | -72.524 | 0.18 | -81.976 | -57 | PASS |
| 370.47 | -81.278 | 0.25 | -81.028 | -57 | PASS |
| 611.03 | -78.923 | 0.51 | -78.413 | -57 | PASS |
| 707.06 | -77.066 | 0.61 | -76.456 | -57 | PASS |
| 922.4 | -79.797 | 0.82 | -78.977 | -57 | PASS |

Attach spectrum pictures of P_{Readingvalue} for this test here:

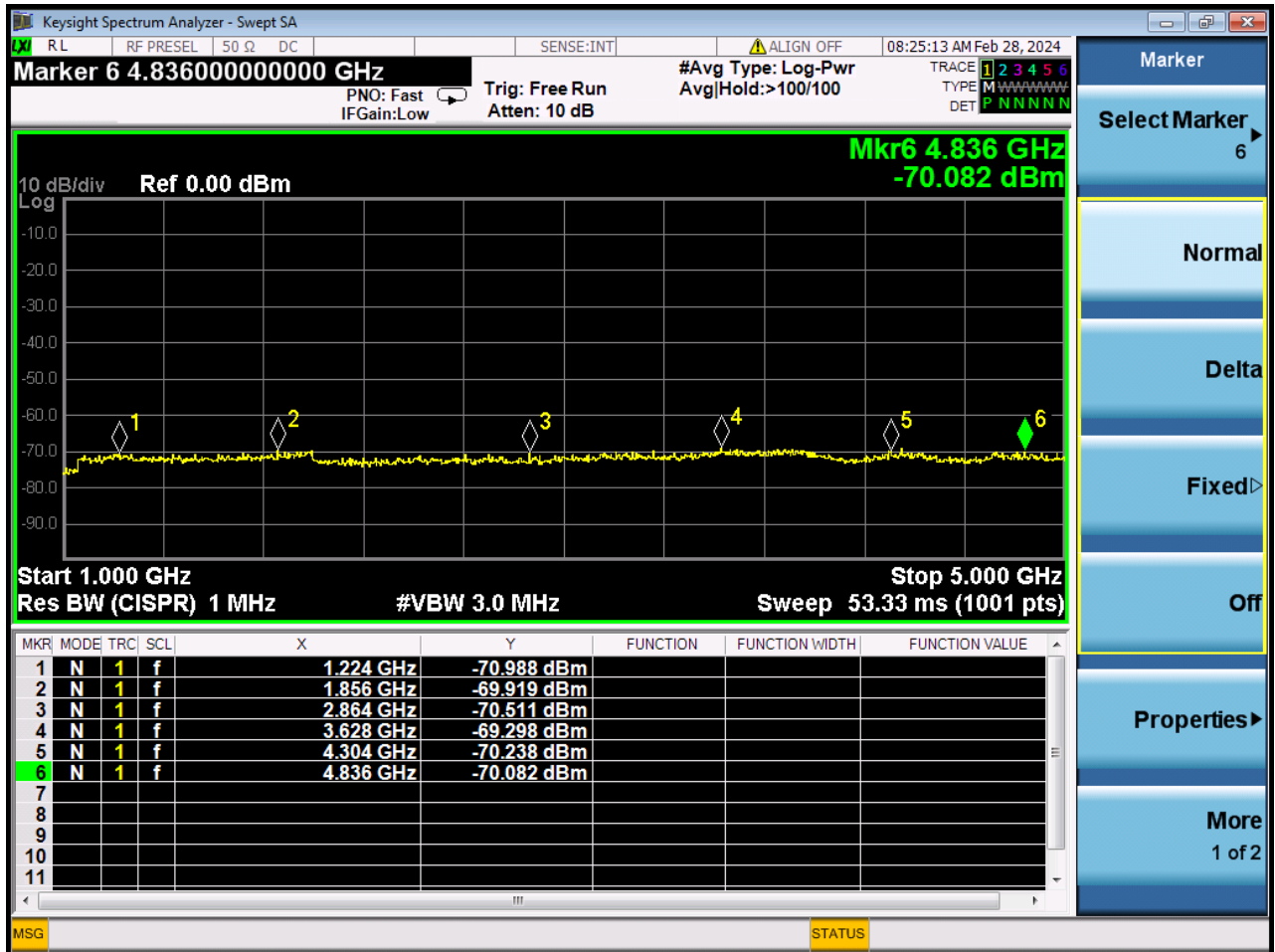




V port, Operate at 940.5MHz, 1GHz -5GHz

| Fre. GHz | P _{Reading value} dBm | Factor dB | P _{Final value} dBm | Limit dBm | Verdict |
|----------|--------------------------------|-----------|------------------------------|-----------|---------|
| 1.224 | -70.988 | 1.12 | -69.868 | -57 | PASS |
| 1.856 | -69.919 | 1.74 | -68.179 | -57 | PASS |
| 2.864 | -70.511 | 2.73 | -67.781 | -57 | PASS |
| 3.628 | -69.298 | 3.51 | -65.788 | -57 | PASS |
| 4.304 | -70.238 | 4.21 | -66.028 | -57 | PASS |
| 4.836 | -70.082 | 4.73 | -65.352 | -57 | PASS |

Attach spectrum pictures of P_{Readingvalue} 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

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

2. Identification of the Responsible Testing Location

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

3. Accreditation Certificate

| | |
|---------------------------------------|--|
| Accredited Testing Laboratory: | The FCC designation number is CN1192. Test firm registration number is 226174. (Shenzhen Morlab Communications Technology Co., Ltd.) |
|---------------------------------------|--|

4. Test Software Utilized

| Model | Version Number | Producer |
|----------------|-----------------------|-----------------|
| 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 | SCHWARZBECK | 2023/6/27 | 2024/6/26 |
| Bi-Log Antenna | VULB 9163 | 9163-519 | SCHWARZBECK | 2023/7/1 | 2024/6/30 |
| Horn Antenna | BBHA 9120D | 9120D-963 | SCHWARZBECK | 2023/6/27 | 2024/6/26 |
| Horn Antenna | BBHA 9120D | 01774 | SCHWARZBECK | 2023/7/1 | 2024/6/30 |
| Receiver | N9038A | MY541300 16 | Agilent | 2023/6/21 | 2024/6/20 |
| Receiver | N9038A | MY564000 93 | KEYSIGHT | 2024/1/25 | 2025/1/24 |
| 6db Attenuator | BW-N6W5+ | E191001 | Mini-circuits | 2023/9/19 | 2024/9/18 |
| Preamplifier | S020180L3203 | 61171/611 72 | LUCIX CORP. | 2023/6/27 | 2024/6/26 |
| Preamplifier | S10M100L3802 | 46732 | LUCIX CORP. | 2023/6/27 | 2024/6/26 |
| 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-KKF-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 | 2023/6/21 | 2024/6/20 |
| LISN | NSLK 8127 | 8127449 | Schwarzbeck | 2024/2/2 | 2025/2/1 |
| 10dB Pulse Limiter | VTSD 9561-F | VTSD 9561 F-B #206 | SCHWARZBECK | 2023/6/27 | 2024/6/26 |
| System Simulator | CMW500 | 152038 | R&S | 2023/9/19 | 2024/9/18 |

6. Ancillary Equipment Utilized

| Description | Manufacturer | Model | Serial No. |
|-------------|--------------|-------|-------------|
| DC source | LINI-T | N/A | C2040182272 |



REPORT No.: SZ24010200E01

| | | | |
|------------|-------|-------|-----|
| PC | APPLE | A1370 | N/A |
| PC Adapter | APPLE | A1374 | N/A |
| RJ45 Cable | N/A | N/A | N/A |

_____ END OF REPORT _____