ACCREDITED
CERTIFICATE #5473.01

Test Report No.:
GJW2023-0754-RF4

# TEST REPORT

| | | |
|---|---|---|
| **IC** | : | 24728-SKIWB921AU1 |
| **Applicant** | : | Guangzhou Shikun Electronics Co., Ltd |
| **Product Name** | : | Module |
| **Mode No.** | : | SKI.WB921AU.1 |

**CVC Testing Technology Co., Ltd.**

| | |
|---|---|
| **Applicant** | **Name:** Guangzhou Shikun Electronics Co., Ltd<br>**Address:** NO.6 Liankun Road,Huangpu District,Guangzhou,China |
| **Manufacturer** | **Name:** Guangzhou Shikun Electronics Co., Ltd<br>**Address:** NO.6 Liankun Road,Huangpu District,Guangzhou,China |
| **Equipment Under Test** | **Product Name :** Module<br>**Model No. :** SKI.WB921AU.1<br>**Trade mark :** /<br>**Serial no. :** B4ADA3CE77D8<br>**Sampling :** — |

| | | | |
|---|---|---|---|
| **Date of Receipt.** | 2023.03.10 | **Date of Testing** | 2023.03.10~2023.03.13 |

| **Test Specification** | **Test Result** |
|---|---|
| RSS-247 Issue 2<br>RSS-Gen Issue 5<br>ANSI C63.10 (2013) | PASS |
| Evaluation of Test Result | The equipment under test was found to comply with the requirements of the standards applied.<br>**Seal of CVC**<br>**Issue Date: 2023.06.07** |

| Tested by: | Reviewed by: | Approved by: |
|---|---|---|
| **Lu Weiji** | **Xu Zhenfei** | **Chen HuaWen** |

**Other Aspects: NONE.**

Abbreviations:OK, Pass= passed Fail = failed N/A= not applicable EUT= equipment, sample(s) under tested

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# 1. General Product Information

## 1.1 General information

| | | |
|---|---|---|
| Product Name | Module | |
| Model No. | SKI.WB921AU.1 | |
| Power Supply | DC 3.3V | |
| Serial Number(SN) | B4ADA3CE77D8 | |
| Power Supply | Adapter | / |
| | Battery | / |
| Antenna Type | External Antenna | |
| Antenna Connector | A detachable antenna | |
| Antenna Gain | 3.5 dBi (provided by client) | |
| Frequency Range | 2402MHz~2480MHz | |
| Bluetooth Version: | BT5.2 | |
| Channel Number | 79 | |
| Type of Modulation | GFSK, π/4DQPSK, 8DPSK | |
| Hopping Channel Type: | Adaptive Frequency Hopping systems | |
| Max. Conducted Power | 16.47 dBm | |
| Operate Temp.Range | -40°C to +125°C | |

Note：

1. The information of the EUT is declared by the manufacturer.
2. The laboratory is not responsible for the product technical specification provided by the client.
3. Note: This module (the module number is SKI.WB921AU.1) has passed the certification. The module plans to add five models of antennas, as shown in the table below. In the report, only the radiated emission is tested, and the antenna used is A100-0062. Other test items and test data will refer to the report of the module (IC ID:24728-SKIWB921AU1)

| Antennas | AG-011320-0679 | 3D0504BK07-001 | SLK-KG-B3DBS-SMA(P) | A100-0062 | SH-230317-0001 |
|---|---|---|---|---|---|
| Gain | 3.0dBi | 3.5dBi | 3.5dBi | 3.5dBi | 3.08dBi |

# 2. Test Sites

## 2.1 Test Facilities

The tests and measurements refer to this report were performed by RF testing Lab. of CVC Testing Technology Co., Ltd.

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Telephone : +86-20-32293888

Fax : +86-20-32293889

FCC(Test firm designation number：CN1282)

IC(Test firm CAB identifier number：CN0103)

## 2.2 Description of Non-standard Method and Deviations

The testing and measurement methods used in this report are applied by all standard methods. Not any non-standard method or deviation from the used standards was used.

## 2.3 List of Test and Measurement Instruments

Refer to **Appendix E**.

# 3. Test Configuration

## 3.1 Test Mode

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

| Test Mode | Antenna Delivery | Test Channel |
|---|---|---|
| DH5/2DH5/3DH5 | 2TX / 2RX | 0,39,78 |

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.

In order to find the worst case condition, Pre-tests are needed at the presence of different data rate and channel. Preliminary tests have been done on all the configuration for confirming worst case. Data rate below means worst-case rate of each test item.

Worst-case data rates are shown as following table.

| Test Mode | Test Antennas | Test Modes | Test Channels |
|---|---|---|---|
| Radiated Emissions | Antenna 1 | 3DH5 | 78 |
| Radiated Emissions(Band Edge) | Antenna 1 | 3DH5 | 0,78 |
| Peak Power Output -Conducted | Antenna 1<br>Antenna 2 | DH5/2DH5/3DH5 | 0,39,78 |

# 4. Summary of measurement results

| Summary of measurements of results | Clause in IC rules | Verdict | Note |
|---|---|---|---|
| Radiated Emissions | RSS-Gen 8.9 | PASS | / |
| Peak Power Output -Conducted | RSS-247-5.4(2) | PASS | / |

# 5. Measurement procedure

## 5.1 Radiated Emission

### Ambient condition:

| Temperature | Relative humidity | Pressure |
|---|---|---|
| 23°C ~25°C | 45%~50% | 101.5kPa |

### Method of Measurement:

The EUT was setup and tested according to ANSI C63.10, 2013.

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from Antenna to the EUT was 3 meters.

The Antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the Antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

The frequency range from 30MHz to 10th harmonic is checked.

Note: When doing emission measurement above 1GHz, the horn Antenna will be bended down a little (as horn

Antenna has the narrow beamwidth) in order to keeping the Antenna in the “cone of radiation” of EUT. The 3dB beamwidth is 10~60 degrees for H-plane and 10~90 degrees for E-plane.

### Limits:

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

| Frequency | Limit (dBμV/m @3m) | Remark |
|---|---|---|
| 30MHz-88MHz | 40.0 | Quasi-peak Level |
| 88MHz-216MHz | 43.5 | Quasi-peak Level |

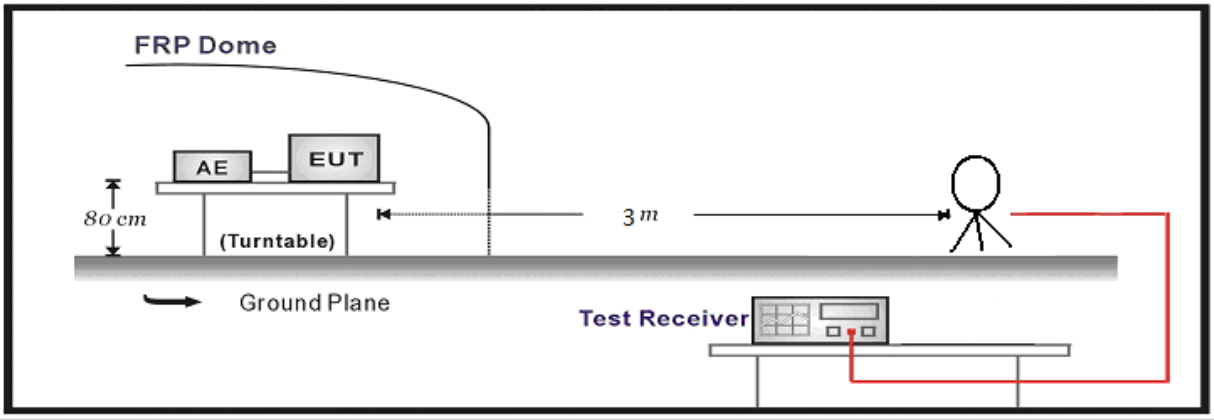
| | | |
|---|---|---|
| 216MHz-960MHz | 46.0 | Quasi-peak Level |
| 960MHz-1GHz | 54.0 | Quasi-peak Level |
| Above 1GHz | 54.0 | Average Level |
| | 74.0 | Peak Level |

Spurious Radiated Emissions are permitted in any of the frequency bands listed below:

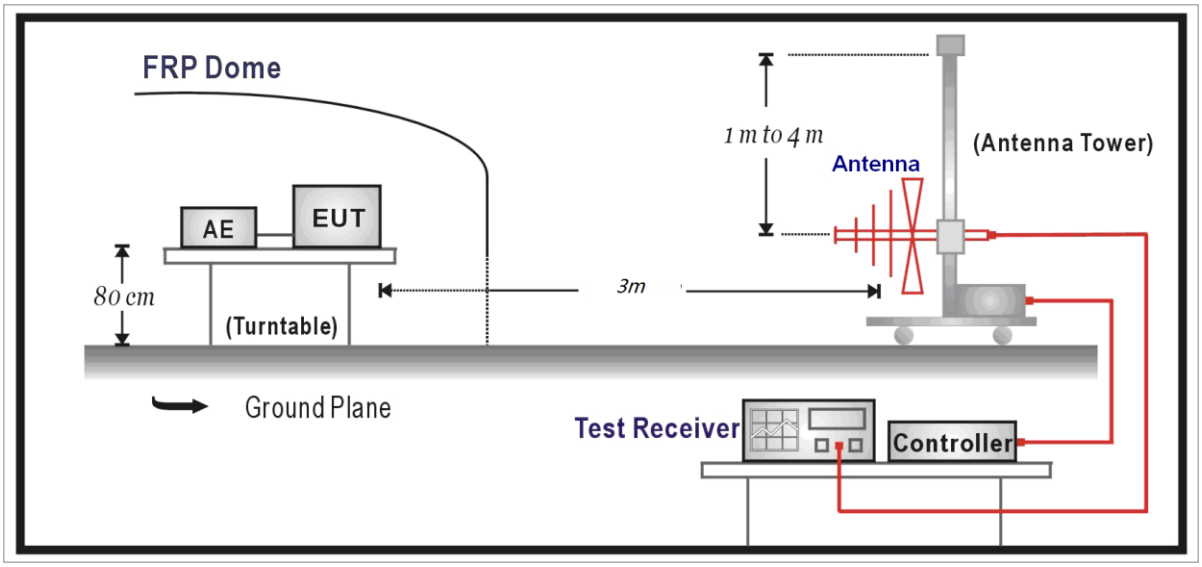
| MHz | MHz | MHz | GHz |
|---|---|---|---|
| 0.090-0.110 | 16.42-16.423 | 399.9-410 | 4.5-5.15 |
| 0.495-0.505 | 16.69475-16.69525 | 608-614 | 5.35-5.46 |
| 2.1735-2.1905 | 16.80425-16.80475 | 960-1240 | 7.25-7.75 |
| 4.125-4.128 | 25.5-25.67 | 1300-1427 | 8.025-8.5 |
| 4.17725-4.17775 | 37.5-38.25 | 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 | 108-121.94 | 1718.8-1722.2 | 13.25-13.4 |
| 6.31175-6.31225 | 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. |
| 12.57675-12.57725 | 322-335.4 | 3600-4400 | / |
| 13.36-13.41 | / | / | / |

## Test Setup:

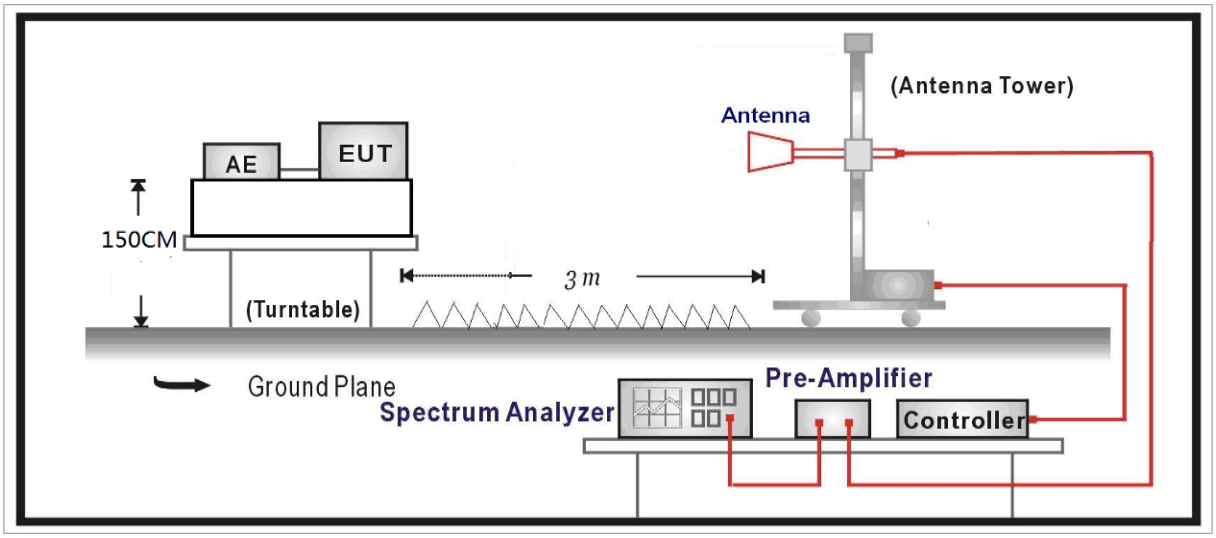
Below 30MHz Test Setup:




Below 1GHz Test Setup:




Above 1GHz Test Setup:



## Measurement Data：

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Level =Reading - Factor

Factor = Preamplifier Factor – Antenna Factor–Cable Loss

## Measurement Uncertainty：

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96.

| Frequency | Uncertainty |
|---|---|
| 9KHz-30MHz | 3.55 dB |
| 30MHz-200MHz | 4.19 dB |
| 200MHz-1GHz | 3.63 dB |
| Above 1GHz | 3.68 dB |

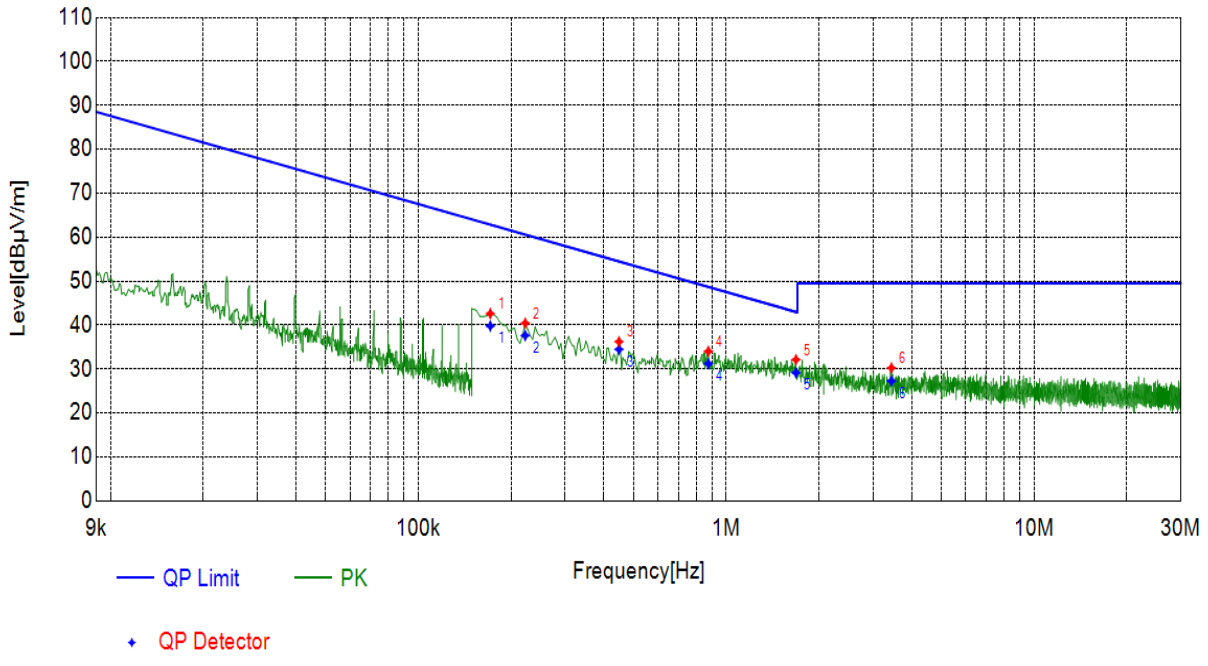
## Test Results:

During the test, the Radiates Emission from 9KHz to 40GHz was performed in all modes with all channels, and all antenna, BT 8DPSK Channel 78, antenna 1 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

SPURIOUS EMISSIONS：

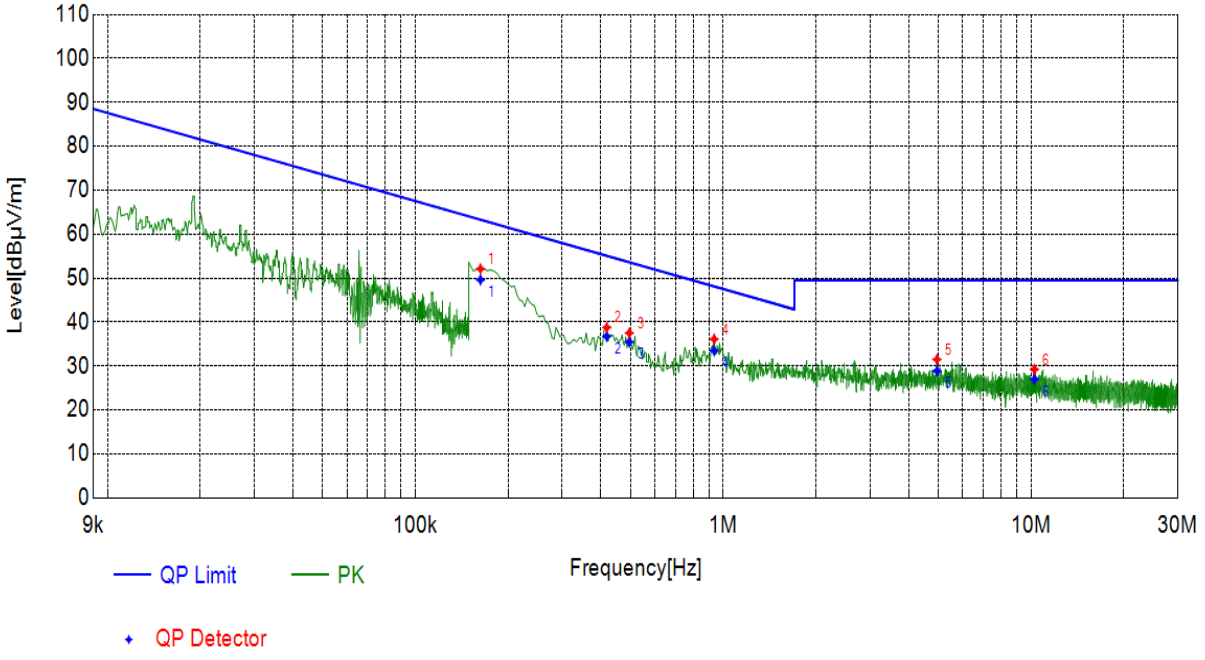
| | |
|---|---|
| Radiated Emission | 9KHz-30MHz |
| Polarity | X axis |
| Test channel | Worst-Case |

| **Final Data List** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Frequency [MHz] | Polarity | Factor [dB] | QP Value [dBμV/m] | QP Limit [dBμV/m] | QP Margin [dB] | Height [cm] | Angle [°] | Pass/Fail |
| 0.1713 | X axis | 20.40 | 39.78 | 62.85 | 23.07 | 100 | 150 | PASS |
| 0.2225 | X axis | 20.37 | 37.61 | 60.57 | 22.96 | 100 | 90 | PASS |
| 0.4485 | X axis | 20.41 | 34.47 | 54.47 | 20.00 | 100 | 250 | PASS |
| 0.8750 | X axis | 20.59 | 31.21 | 48.68 | 17.47 | 100 | 320 | PASS |
| 1.6854 | X axis | 20.73 | 29.14 | 43.00 | 13.86 | 100 | 40 | PASS |
| 3.4425 | X axis | 20.99 | 27.26 | 49.50 | 22.24 | 100 | 0 | PASS |



| | |
|---|---|
| Radiated Emission | 9KHz-30MHz |
| Polarity | Y axis |
| Test channel | Worst-Case |

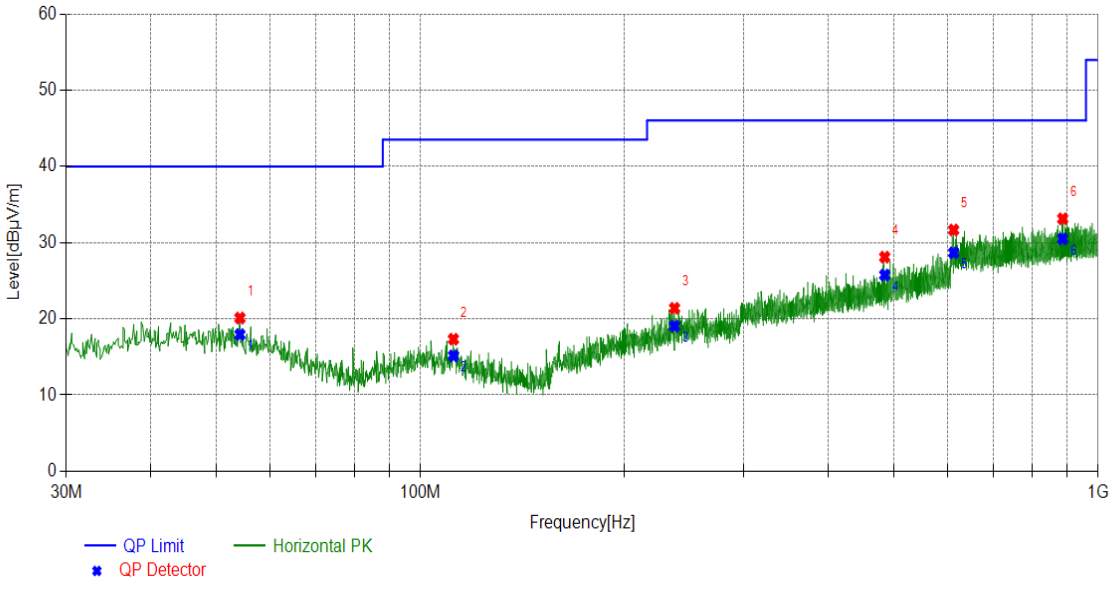
| Final Data List | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Frequency [MHz] | Polarity | Factor [dB] | QP Value [dBμV/m] | QP Limit [dBμV/m] | QP Margin [dB] | Height [cm] | Angle [°] | Pass/Fail |
| 0.1628 | Y axis | 20.41 | 49.61 | 63.29 | 13.68 | 100 | 270 | PASS |
| 0.4187 | Y axis | 20.32 | 36.75 | 55.07 | 18.32 | 100 | 300 | PASS |
| 0.4955 | Y axis | 20.56 | 35.47 | 53.60 | 18.13 | 100 | 320 | PASS |
| 0.9347 | Y axis | 20.56 | 33.49 | 48.11 | 14.62 | 100 | 90 | PASS |
| 4.9480 | Y axis | 21.13 | 28.87 | 49.50 | 20.63 | 100 | 270 | PASS |
| 10.2578 | Y axis | 20.95 | 26.98 | 49.50 | 22.52 | 100 | 230 | PASS |



| | |
|---|---|
| Radiates Emission | 30M~1G |
| Test channel | Worst-Case |

| Suspected List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Frequency [MHz] | Polarity | Factor [dB] | Reading [dBμV/m] | Level [dBμV/m] | Limit [dBμV/m] | Margin [dB] | Detector | Height [cm] | Angle deg | Pass/Fail |
| 54.1554 | Horizontal | 14.03 | 6.08 | 20.11 | 40.00 | 19.89 | PK | 100 | 60 | PASS |
| 111.8762 | Horizontal | 12.25 | 5.08 | 17.33 | 43.52 | 26.19 | PK | 100 | 30 | PASS |
| 237.2127 | Horizontal | 14.32 | 7.07 | 21.39 | 46.02 | 24.63 | PK | 100 | 30 | PASS |
| 484.4904 | Horizontal | 18.90 | 9.20 | 28.10 | 46.02 | 17.92 | PK | 100 | 70 | PASS |
| 612.3492 | Horizontal | 21.21 | 10.45 | 31.66 | 46.02 | 14.36 | PK | 100 | 20 | PASS |
| 887.1777 | Horizontal | 24.39 | 8.74 | 33.13 | 46.02 | 12.89 | PK | 100 | 40 | PASS |

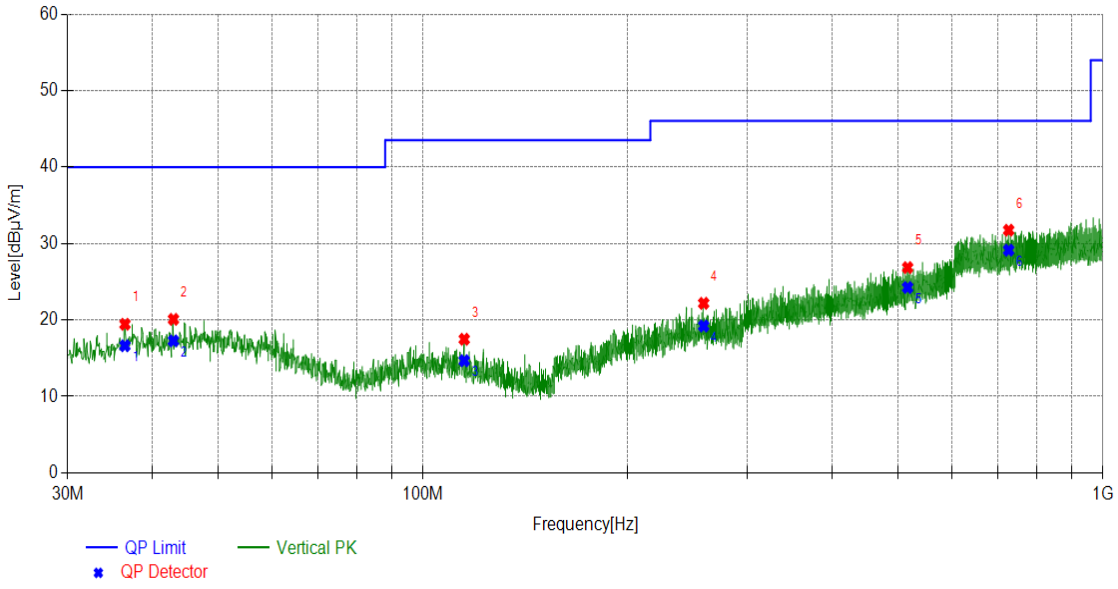
| Final Data List | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Frequency [MHz] | Polarity | Factor [dB] | QP Value [dBμV/m] | QP Limit [dBμV/m] | QP Margin [dB] | Height [cm] | Angle [°] | Pass/Fail |
| 54.1554 | Horizontal | 14.03 | 17.93 | 40.00 | 22.07 | 102 | 60 | PASS |
| 111.8762 | Horizontal | 12.25 | 15.15 | 43.52 | 28.37 | 130 | 30 | PASS |
| 237.2127 | Horizontal | 14.32 | 19.04 | 46.02 | 26.98 | 160 | 30 | PASS |
| 484.4904 | Horizontal | 18.90 | 25.75 | 46.02 | 20.27 | 230 | 70 | PASS |
| 612.3492 | Horizontal | 21.21 | 28.67 | 46.02 | 17.35 | 140 | 20 | PASS |
| 887.1777 | Horizontal | 24.39 | 30.50 | 46.02 | 15.52 | 302 | 40 | PASS |



| | |
|---|---|
| Radiates Emission | 30M~1G |
| Test channel | Worst-Case |

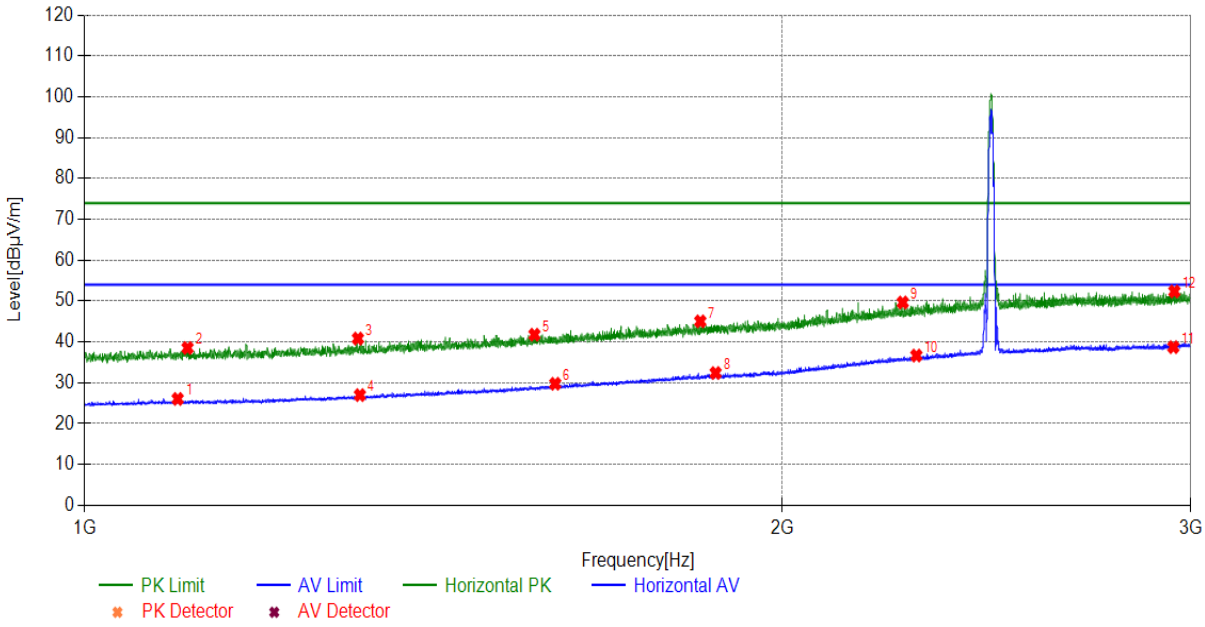
| Suspected List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Frequency [MHz] | Polarity | Factor [dB] | Reading [dBμV/m] | Level [dBμV/m] | Limit [dBμV/m] | Margin [dB] | Detector | Height [cm] | Angle deg | Pass/Fail |
| 36.4480 | Vertical | 13.18 | 6.26 | 19.44 | 40.00 | 20.56 | PK | 100 | 30 | PASS |
| 42.9531 | Vertical | 14.13 | 5.95 | 20.08 | 40.00 | 19.92 | PK | 100 | 30 | PASS |
| 115.0226 | Vertical | 11.94 | 5.54 | 17.48 | 43.52 | 26.04 | PK | 100 | 40 | PASS |
| 258.7623 | Vertical | 15.00 | 7.18 | 22.18 | 46.02 | 23.84 | PK | 100 | 30 | PASS |
| 516.3980 | Vertical | 19.48 | 7.37 | 26.85 | 46.02 | 19.17 | PK | 100 | 40 | PASS |
| 727.1857 | Vertical | 22.56 | 9.18 | 31.74 | 46.02 | 14.28 | PK | 100 | 30 | PASS |

| Final Data List | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Frequency [MHz] | Polarity | Factor [dB] | QP Value [dBμV/m] | QP Limit [dBμV/m] | QP Margin [dB] | Height [cm] | Angle [°] | Pass/Fail |
| 36.4480 | Vertical | 13.18 | 16.63 | 40.00 | 23.37 | 110 | 30 | PASS |
| 42.9531 | Vertical | 14.13 | 17.27 | 40.00 | 22.73 | 146 | 30 | PASS |
| 115.0226 | Vertical | 11.94 | 14.67 | 43.52 | 28.85 | 182 | 40 | PASS |
| 258.7623 | Vertical | 15.00 | 19.21 | 46.02 | 26.81 | 204 | 30 | PASS |
| 516.3980 | Vertical | 19.48 | 24.24 | 46.02 | 21.78 | 256 | 40 | PASS |
| 727.1857 | Vertical | 22.56 | 29.13 | 46.02 | 16.89 | 310 | 30 | PASS |



| | |
|---|---|
| Radiates Emission | 1G~3G |
| Test channel | Worst-Case |

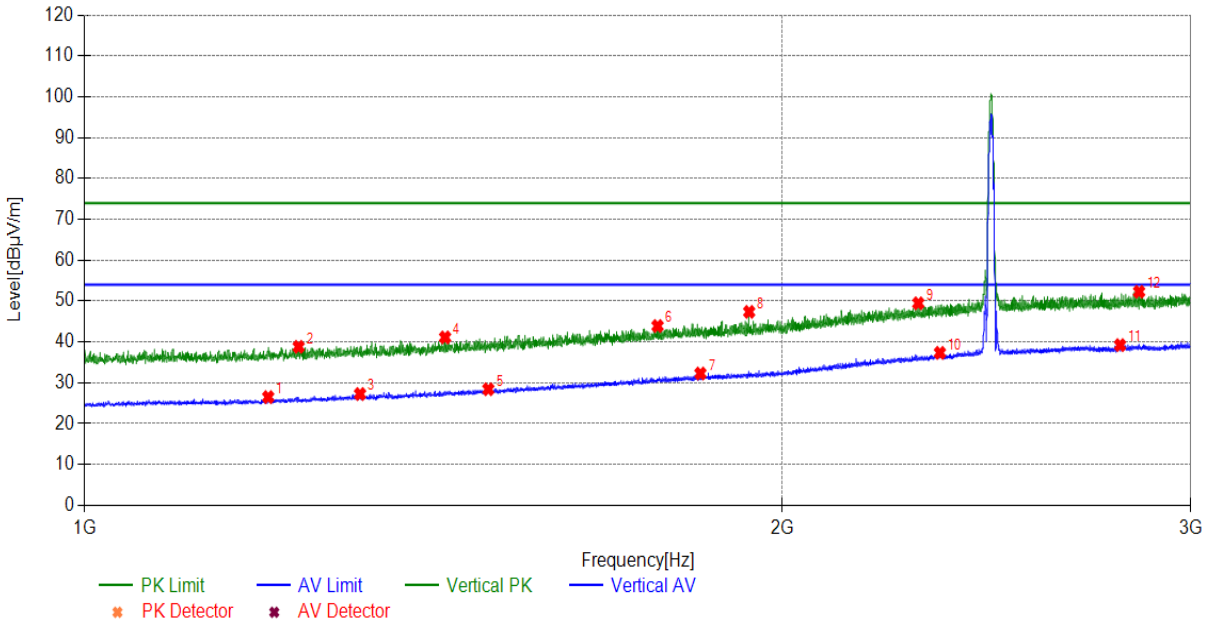
| Suspected List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Frequency [MHz] | Polarity | Factor [dB] | Reading [dBμV/m] | Level [dBμV/m] | Limit [dBμV/m] | Margin [dB] | Detector | Height [cm] | Angle deg | Pass/Fail |
| 2951.9952 | Horizontal | 37.80 | 14.56 | 52.36 | 74.00 | 21.64 | PK | 150 | 190 | PASS |
| 1312.0312 | Horizontal | 26.90 | 13.92 | 40.82 | 74.00 | 33.18 | PK | 150 | 180 | PASS |
| 1843.4843 | Horizontal | 31.15 | 13.88 | 45.03 | 74.00 | 28.97 | PK | 150 | 190 | PASS |
| 1107.8108 | Horizontal | 25.84 | 12.68 | 38.52 | 74.00 | 35.48 | PK | 150 | 40 | PASS |
| 2253.9254 | Horizontal | 34.70 | 14.96 | 49.66 | 74.00 | 24.34 | PK | 150 | 130 | PASS |
| 1563.4563 | Horizontal | 28.75 | 13.03 | 41.78 | 74.00 | 32.22 | PK | 150 | 40 | PASS |
| 1314.6315 | Horizontal | 26.91 | 0.08 | 26.99 | 54.00 | 27.01 | AV | 150 | 10 | PASS |
| 1596.0596 | Horizontal | 29.03 | 0.74 | 29.77 | 54.00 | 24.23 | AV | 150 | 10 | PASS |
| 2284.7285 | Horizontal | 34.95 | 1.72 | 36.67 | 54.00 | 17.33 | AV | 150 | 10 | PASS |
| 2948.9949 | Horizontal | 37.79 | 0.95 | 38.74 | 54.00 | 15.26 | AV | 150 | 180 | PASS |
| 1871.6872 | Horizontal | 31.30 | 1.10 | 32.40 | 54.00 | 21.60 | AV | 150 | 10 | PASS |
| 1097.0097 | Horizontal | 25.80 | 0.26 | 26.06 | 54.00 | 27.94 | AV | 150 | 10 | PASS |




Note: The signal beyond the limit is carrier

| | |
|---|---|
| Radiates Emission | 1G~3G |
| Test channel | Worst-Case |

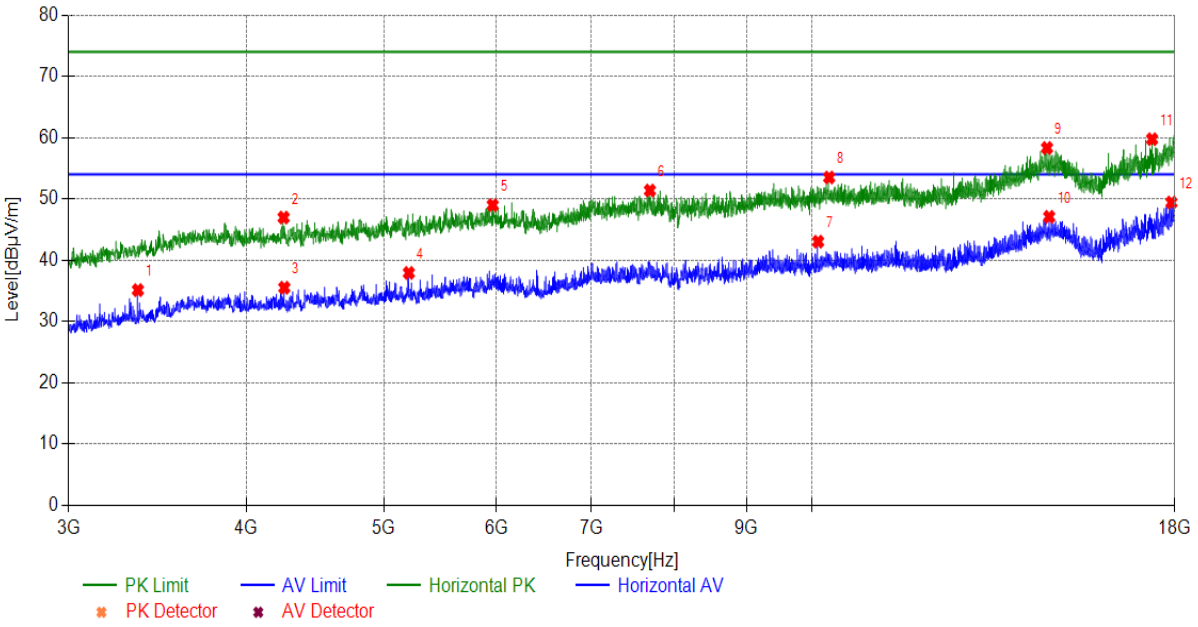
| Suspected List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Frequency [MHz] | Polarity | Factor [dB] | Reading [dBμV/m] | Level [dBμV/m] | Limit [dBμV/m] | Margin [dB] | Detector | Height [cm] | Angle deg | Pass/Fail |
| 2850.3850 | Vertical | 37.48 | 14.80 | 52.28 | 74.00 | 21.72 | PK | 150 | 10 | PASS |
| 1237.0237 | Vertical | 26.44 | 12.37 | 38.81 | 74.00 | 35.19 | PK | 150 | 20 | PASS |
| 1766.8767 | Vertical | 30.61 | 13.29 | 43.90 | 74.00 | 30.10 | PK | 150 | 30 | PASS |
| 1935.0935 | Vertical | 31.63 | 15.73 | 47.36 | 74.00 | 26.64 | PK | 150 | 70 | PASS |
| 2289.1289 | Vertical | 34.98 | 14.48 | 49.46 | 74.00 | 24.54 | PK | 150 | 60 | PASS |
| 1430.6431 | Vertical | 27.66 | 13.45 | 41.11 | 74.00 | 32.89 | PK | 150 | 40 | PASS |
| 2796.9797 | Vertical | 37.31 | 1.92 | 39.23 | 54.00 | 14.77 | AV | 150 | 10 | PASS |
| 1493.4493 | Vertical | 28.14 | 0.28 | 28.42 | 54.00 | 25.58 | AV | 150 | 10 | PASS |
| 1314.8315 | Vertical | 26.91 | 0.35 | 27.26 | 54.00 | 26.74 | AV | 150 | 10 | PASS |
| 1843.6844 | Vertical | 31.15 | 1.12 | 32.27 | 54.00 | 21.73 | AV | 150 | 10 | PASS |
| 2338.7339 | Vertical | 35.38 | 1.95 | 37.33 | 54.00 | 16.67 | AV | 150 | 10 | PASS |
| 1200.2200 | Vertical | 26.22 | 0.28 | 26.50 | 54.00 | 27.50 | AV | 150 | 10 | PASS |




Note: The signal beyond the limit is carrier

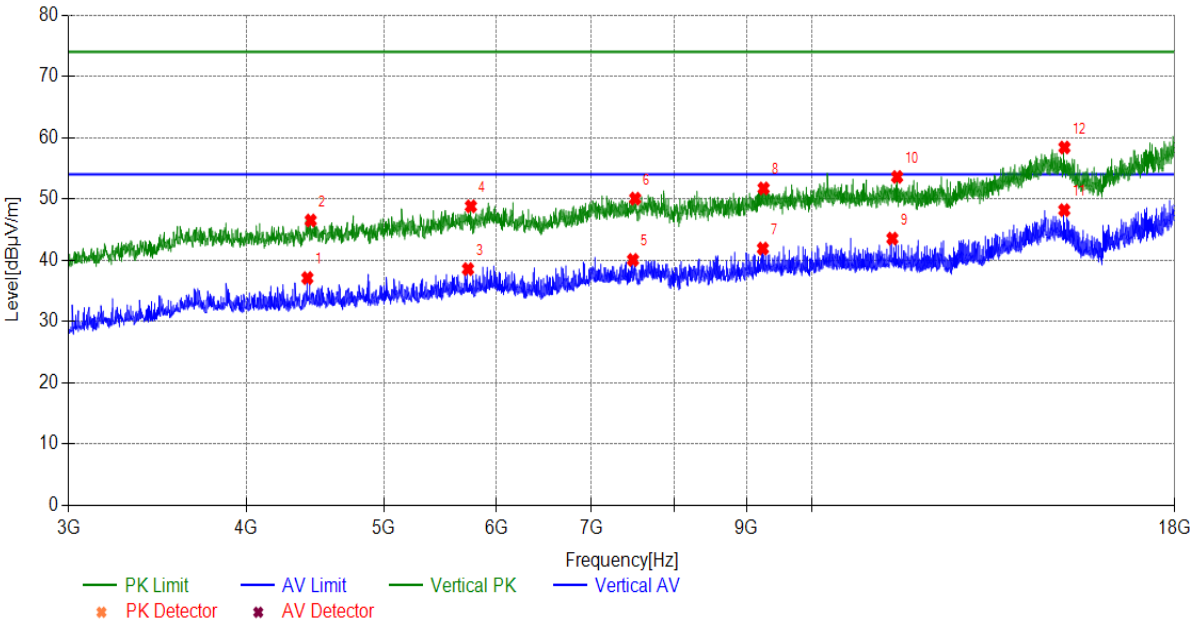
| | |
|---|---|
| Radiates Emission | 3G~18G |
| Test channel | Worst-Case |

| Suspected List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Frequency [MHz] | Polarity | Factor [dB] | Reading [dBμV/m] | Level [dBμV/m] | Limit [dBμV/m] | Margin [dB] | Detector | Height [cm] | Angle deg | Pass/ Fail |
| 7693.9694 | Horizontal | -0.26 | 51.63 | 51.37 | 74.00 | 22.63 | PK | 150 | 350 | PASS |
| 14638.1638 | Horizontal | 8.62 | 49.69 | 58.31 | 74.00 | 15.69 | PK | 150 | 40 | PASS |
| 17354.9355 | Horizontal | 12.07 | 47.67 | 59.74 | 74.00 | 14.26 | PK | 150 | 190 | PASS |
| 10286.2286 | Horizontal | 4.29 | 49.21 | 53.50 | 74.00 | 20.50 | PK | 150 | 260 | PASS |
| 4251.1251 | Horizontal | -6.36 | 53.32 | 46.96 | 74.00 | 27.04 | PK | 150 | 330 | PASS |
| 5964.2964 | Horizontal | -4.14 | 53.12 | 48.98 | 74.00 | 25.02 | PK | 150 | 320 | PASS |
| 5206.7207 | Horizontal | -5.60 | 43.53 | 37.93 | 54.00 | 16.07 | AV | 150 | 10 | PASS |
| 17908.4908 | Horizontal | 14.97 | 34.44 | 49.41 | 54.00 | 4.59 | AV | 150 | 10 | PASS |
| 4255.6256 | Horizontal | -6.36 | 41.87 | 35.51 | 54.00 | 18.49 | AV | 150 | 10 | PASS |
| 10103.2103 | Horizontal | 3.84 | 39.19 | 43.03 | 54.00 | 10.97 | AV | 150 | 10 | PASS |
| 14690.6691 | Horizontal | 8.62 | 38.46 | 47.08 | 54.00 | 6.92 | AV | 150 | 10 | PASS |
| 3357.0357 | Horizontal | -8.26 | 43.39 | 35.13 | 54.00 | 18.87 | AV | 150 | 10 | PASS |



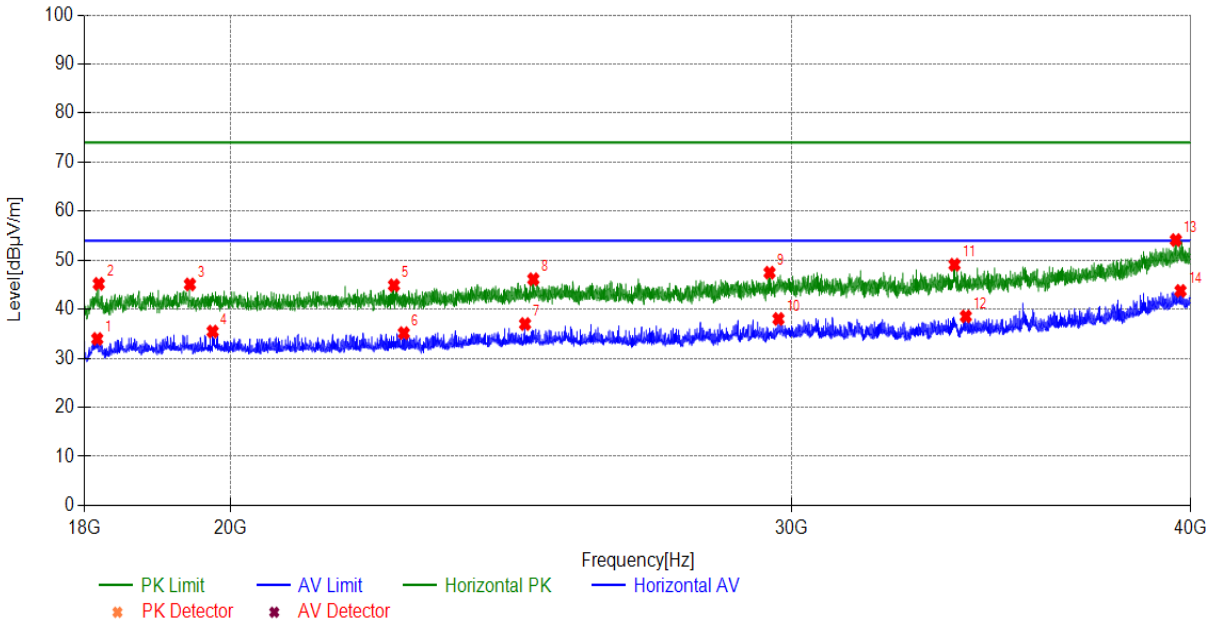
| | |
|---|---|
| Radiates Emission | 3G~18G |
| Test channel | Worst-Case |

| Suspected List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Frequency [MHz] | Polarity | Factor [dB] | Reading [dBμV/m] | Level [dBμV/m] | Limit [dBμV/m] | Margin [dB] | Detector | Height [cm] | Angle deg | Pass/Fail |
| 15058.2058 | Vertical | 8.47 | 49.92 | 58.39 | 74.00 | 15.61 | PK | 150 | 220 | PASS |
| 11483.3483 | Vertical | 5.03 | 48.56 | 53.59 | 74.00 | 20.41 | PK | 150 | 180 | PASS |
| 7512.4512 | Vertical | -0.32 | 50.37 | 50.05 | 74.00 | 23.95 | PK | 150 | 210 | PASS |
| 9249.6250 | Vertical | 2.10 | 49.62 | 51.72 | 74.00 | 22.28 | PK | 150 | 320 | PASS |
| 4441.6442 | Vertical | -6.22 | 52.70 | 46.48 | 74.00 | 27.52 | PK | 150 | 170 | PASS |
| 5757.2757 | Vertical | -4.81 | 53.60 | 48.79 | 74.00 | 25.21 | PK | 150 | 120 | PASS |
| 15053.7054 | Vertical | 8.48 | 39.69 | 48.17 | 54.00 | 5.83 | AV | 150 | 10 | PASS |
| 7485.4485 | Vertical | -0.35 | 40.40 | 40.05 | 54.00 | 13.95 | AV | 150 | 10 | PASS |
| 5730.2730 | Vertical | -4.90 | 43.45 | 38.55 | 54.00 | 15.45 | AV | 150 | 10 | PASS |
| 9239.1239 | Vertical | 2.08 | 39.82 | 41.90 | 54.00 | 12.10 | AV | 150 | 10 | PASS |
| 11394.8395 | Vertical | 5.07 | 38.46 | 43.53 | 54.00 | 10.47 | AV | 150 | 10 | PASS |
| 4417.6418 | Vertical | -6.24 | 43.33 | 37.09 | 54.00 | 16.91 | AV | 150 | 10 | PASS |



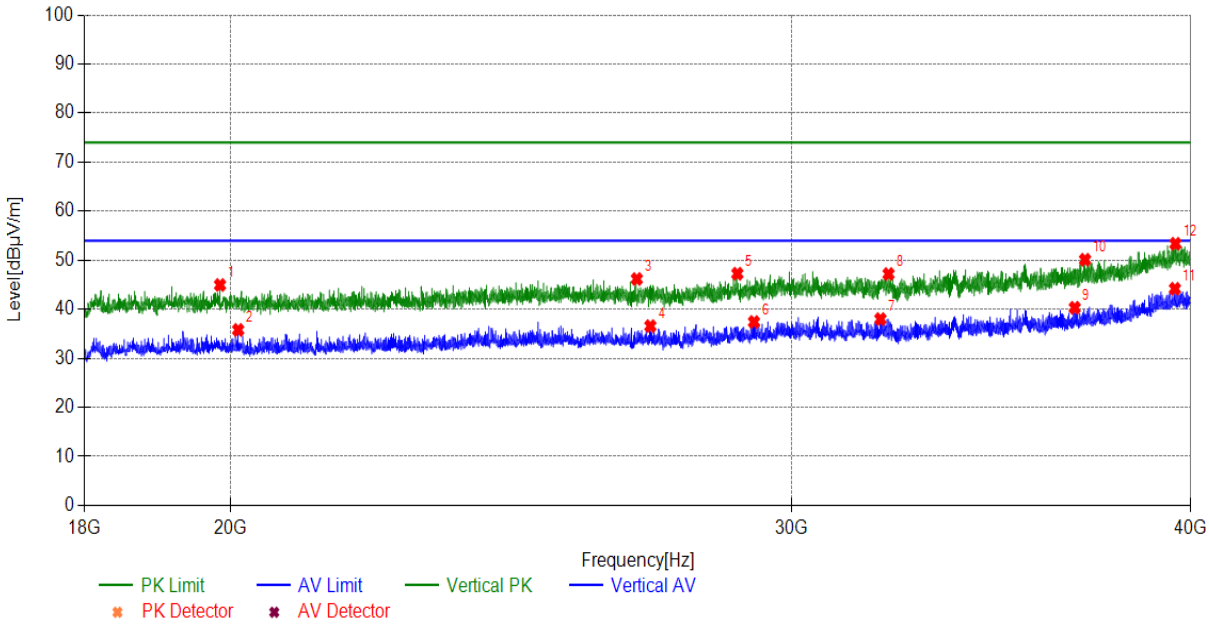
| | |
|---|---|
| Radiates Emission | 18G~40G |
| Test channel | Worst-Case |

| Suspected List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Frequency [MHz] | Polarity | Factor [dB] | Reading [dBμV/m] | Level [dBμV/m] | Limit [dBμV/m] | Margin [dB] | Detector | Height [cm] | Angle deg | Pass/Fail |
| 19423.5424 | Horizontal | 1.33 | 43.74 | 45.07 | 74.00 | 28.93 | PK | 150 | 100 | PASS |
| 24888.8889 | Horizontal | 4.06 | 42.06 | 46.12 | 74.00 | 27.88 | PK | 150 | 60 | PASS |
| 39575.3575 | Horizontal | 10.78 | 43.33 | 54.11 | 74.00 | 19.89 | PK | 150 | 150 | PASS |
| 18187.0187 | Horizontal | 1.15 | 44.03 | 45.18 | 74.00 | 28.82 | PK | 150 | 60 | PASS |
| 33731.5732 | Horizontal | 6.52 | 42.56 | 49.08 | 74.00 | 24.92 | PK | 150 | 180 | PASS |
| 22506.0506 | Horizontal | 2.41 | 42.47 | 44.88 | 74.00 | 29.12 | PK | 150 | 90 | PASS |
| 29515.9516 | Horizontal | 6.36 | 41.10 | 47.46 | 74.00 | 26.54 | PK | 150 | 170 | PASS |
| 19744.7745 | Horizontal | 1.31 | 34.14 | 35.45 | 54.00 | 18.55 | AV | 150 | 10 | PASS |
| 22666.6667 | Horizontal | 2.57 | 32.56 | 35.13 | 54.00 | 18.87 | AV | 150 | 10 | PASS |
| 24739.2739 | Horizontal | 4.00 | 32.99 | 36.99 | 54.00 | 17.01 | AV | 150 | 10 | PASS |
| 39709.5710 | Horizontal | 10.79 | 32.95 | 43.74 | 54.00 | 10.26 | AV | 150 | 10 | PASS |
| 29705.1705 | Horizontal | 6.49 | 31.53 | 38.02 | 54.00 | 15.98 | AV | 150 | 10 | PASS |
| 34008.8009 | Horizontal | 6.60 | 31.94 | 38.54 | 54.00 | 15.46 | AV | 150 | 10 | PASS |
| 18167.2167 | Horizontal | 1.14 | 32.82 | 33.96 | 54.00 | 20.04 | AV | 150 | 10 | PASS |



| | |
|---|---|
| Radiates Emission | 18G~40G |
| Test channel | Worst-Case |

| Suspected List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Frequency [MHz] | Polarity | Factor [dB] | Reading [dBμV/m] | Level [dBμV/m] | Limit [dBμV/m] | Margin [dB] | Detector | Height [cm] | Angle deg | Pass/Fail |
| 39564.3564 | Vertical | 10.78 | 42.57 | 53.35 | 74.00 | 20.65 | PK | 150 | 50 | PASS |
| 37064.9065 | Vertical | 7.93 | 42.16 | 50.09 | 74.00 | 23.91 | PK | 150 | 120 | PASS |
| 19850.3850 | Vertical | 1.31 | 43.64 | 44.95 | 74.00 | 29.05 | PK | 150 | 120 | PASS |
| 32162.8163 | Vertical | 5.97 | 41.22 | 47.19 | 74.00 | 26.81 | PK | 150 | 20 | PASS |
| 28838.2838 | Vertical | 5.90 | 41.35 | 47.25 | 74.00 | 26.75 | PK | 150 | 70 | PASS |
| 26818.4818 | Vertical | 4.83 | 41.34 | 46.17 | 74.00 | 27.83 | PK | 150 | 70 | PASS |
| 39548.9549 | Vertical | 10.78 | 33.39 | 44.17 | 54.00 | 9.83 | AV | 150 | 10 | PASS |
| 20112.2112 | Vertical | 1.34 | 34.44 | 35.78 | 54.00 | 18.22 | AV | 150 | 10 | PASS |
| 27082.5083 | Vertical | 4.94 | 31.62 | 36.56 | 54.00 | 17.44 | AV | 150 | 10 | PASS |
| 36789.8790 | Vertical | 7.72 | 32.59 | 40.31 | 54.00 | 13.69 | AV | 150 | 10 | PASS |
| 31975.7976 | Vertical | 5.91 | 32.08 | 37.99 | 54.00 | 16.01 | AV | 150 | 10 | PASS |
| 29185.9186 | Vertical | 6.13 | 31.27 | 37.40 | 54.00 | 16.60 | AV | 150 | 10 | PASS |

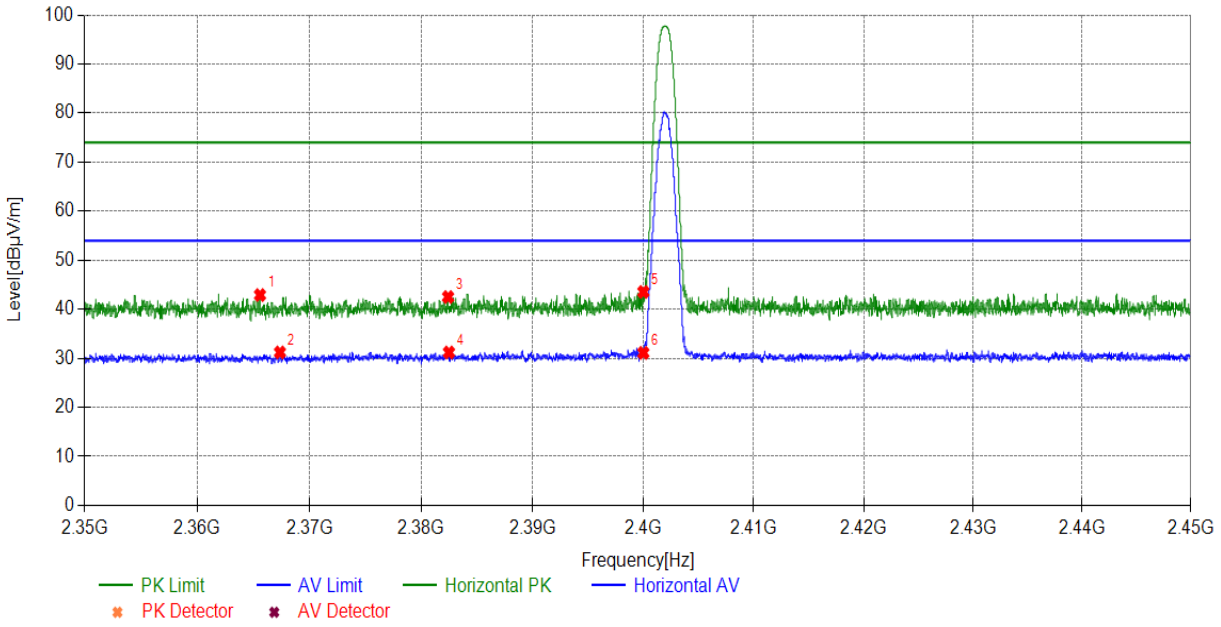


Band Edge：

| Test mode | 3DH5 |
|---|---|
| Test channel | LOW channel |

**Suspected List**

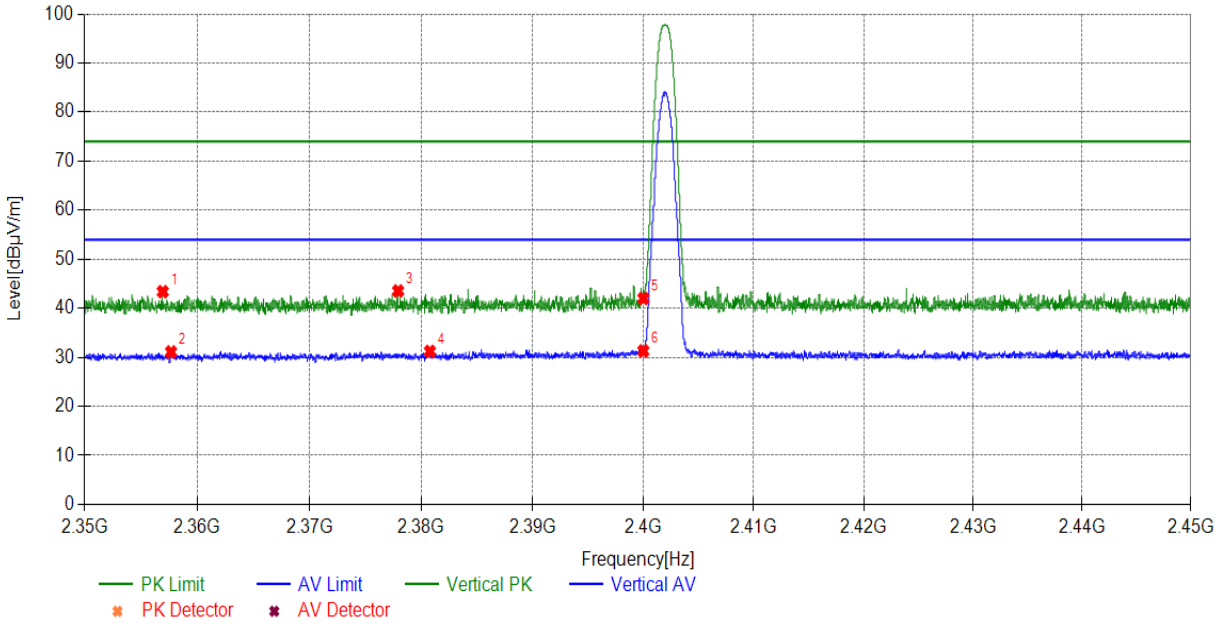
| Frequency [MHz] | Polarity | Factor [dB] | Reading [dBμV/m] | Level [dBμV/m] | Limit [dBμV/m] | Margin [dB] | Detector | Height [cm] | Angle deg | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|---|
| 2365.5916 | Horizontal | 29.58 | 13.32 | 42.90 | 74.00 | 31.10 | PK | 150 | 10 | PASS |
| 2382.4132 | Horizontal | 29.62 | 12.88 | 42.50 | 74.00 | 31.50 | PK | 150 | 20 | PASS |
| 2400.0050 | Horizontal | 29.67 | 13.86 | 43.53 | 74.00 | 30.47 | PK | 150 | 20 | PASS |
| 2367.3717 | Horizontal | 29.58 | 1.62 | 31.20 | 54.00 | 22.80 | AV | 150 | 10 | PASS |
| 2382.4932 | Horizontal | 29.62 | 1.57 | 31.19 | 54.00 | 22.81 | AV | 150 | 10 | PASS |
| 2400.0050 | Horizontal | 29.67 | 1.43 | 31.10 | 54.00 | 22.90 | AV | 150 | 20 | PASS |



| Test mode | 3DH5 |
|---|---|
| Test channel | LOW channel |

**Suspected List**

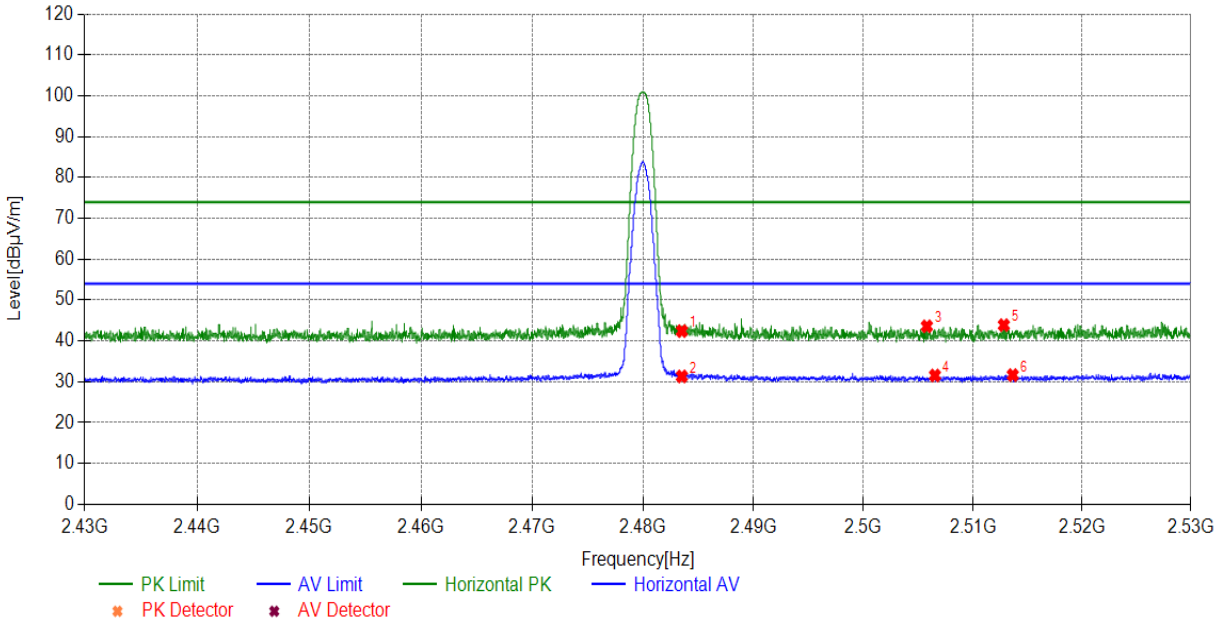
| Frequency [MHz] | Polarity | Factor [dB] | Reading [dBµV/m] | Level [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Detector | Height [cm] | Angle deg | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|---|
| 2356.9407 | Vertical | 29.55 | 13.83 | 43.38 | 74.00 | 30.62 | PK | 150 | 30 | PASS |
| 2377.9328 | Vertical | 29.61 | 13.91 | 43.52 | 74.00 | 30.48 | PK | 150 | 20 | PASS |
| 2400.0050 | Vertical | 29.67 | 12.32 | 41.99 | 74.00 | 32.01 | PK | 150 | 20 | PASS |
| 2357.6808 | Vertical | 29.55 | 1.54 | 31.09 | 54.00 | 22.91 | AV | 150 | 20 | PASS |
| 2380.7831 | Vertical | 29.62 | 1.58 | 31.20 | 54.00 | 22.80 | AV | 150 | 20 | PASS |
| 2400.0050 | Vertical | 29.67 | 1.62 | 31.29 | 54.00 | 22.71 | AV | 150 | 20 | PASS |



| Test mode | 3DH5 |
|---|---|
| Test channel | HIGH channel |

**Suspected List**

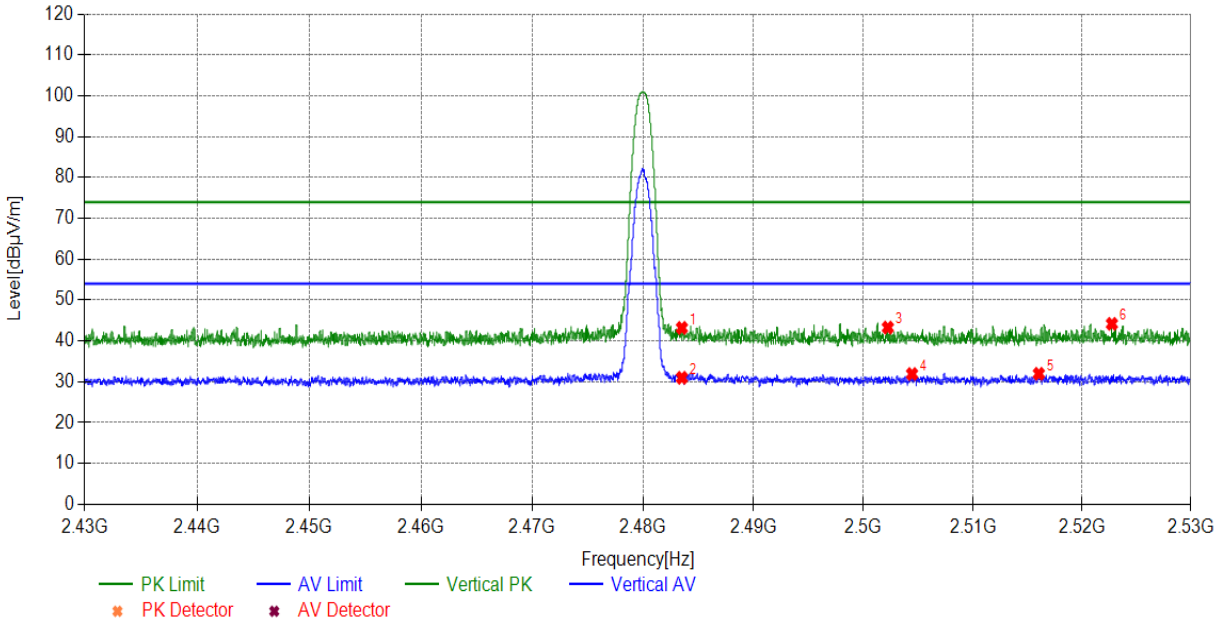
| Frequency [MHz] | Polarity | Factor [dB] | Reading [dBμV/m] | Level [dBμV/m] | Limit [dBμV/m] | Margin [dB] | Detector | Height [cm] | Angle deg | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|---|
| 2483.5054 | Horizontal | 29.91 | 12.50 | 42.41 | 74.00 | 31.59 | PK | 150 | 30 | PASS |
| 2505.7876 | Horizontal | 29.98 | 13.60 | 43.58 | 74.00 | 30.42 | PK | 150 | 50 | PASS |
| 2512.8283 | Horizontal | 30.01 | 13.86 | 43.87 | 74.00 | 30.13 | PK | 150 | 20 | PASS |
| 2483.5054 | Horizontal | 29.91 | 1.41 | 31.32 | 54.00 | 22.68 | AV | 150 | 40 | PASS |
| 2506.5277 | Horizontal | 29.99 | 1.57 | 31.56 | 54.00 | 22.44 | AV | 150 | 30 | PASS |
| 2513.6484 | Horizontal | 30.02 | 1.63 | 31.65 | 54.00 | 22.35 | AV | 150 | 20 | PASS |



| Test mode | 3DH5 |
|---|---|
| Test channel | HIGH channel |

**Suspected List**

| Frequency [MHz] | Polarity | Factor [dB] | Reading [dBµV/m] | Level [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Detector | Height [cm] | Angle deg | Pass/Fail |
|---|---|---|---|---|---|---|---|---|---|---|
| 2522.7493 | Vertical | 30.05 | 14.14 | 44.19 | 74.00 | 29.81 | PK | 150 | 20 | PASS |
| 2483.5054 | Vertical | 29.91 | 13.28 | 43.19 | 74.00 | 30.81 | PK | 150 | 20 | PASS |
| 2502.2272 | Vertical | 29.97 | 13.30 | 43.27 | 74.00 | 30.73 | PK | 150 | 20 | PASS |
| 2504.4374 | Vertical | 29.98 | 1.93 | 31.91 | 54.00 | 22.09 | AV | 150 | 10 | PASS |
| 2516.0386 | Vertical | 30.03 | 1.93 | 31.96 | 54.00 | 22.04 | AV | 150 | 10 | PASS |
| 2483.5054 | Vertical | 29.91 | 1.08 | 30.99 | 54.00 | 23.01 | AV | 150 | 10 | PASS |



## 5.2 Peak Power Output -Conducted

### Ambient condition:

| Temperature | Relative humidity | Pressure |
|---|---|---|
| 23°C ~25°C | 45%~50% | 101.5kPa |

### Method of Measurement:

During the process of the testing, The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss. The EUT is controlled by the Bluetooth test set to ensure max power transmission with proper modulation. The peak detector is used.

### Limits:

Rule Part 15.247 (b) (1)specifies that " For frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725–5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 watts."

| Peak Output Power | ⩽ 0.125W (21dBm) |
|---|---|

### Test Setup:


### Measurement Uncertainty：

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 0.44 dB.

## Test Results:

| TestMode | Antenna | Channel | Result[dBm] | Limit[dBm] | Verdict |
|---|---|---|---|---|---|
| DH5 | Ant1 | 2402 | 16.31 | <=30 | PASS |
| | Ant2 | 2402 | 16.08 | <=30 | PASS |
| | Ant1 | 2441 | 16.47 | <=30 | PASS |
| | Ant2 | 2441 | 15.17 | <=30 | PASS |
| | Ant1 | 2480 | 15.05 | <=30 | PASS |
| | Ant2 | 2480 | 15.12 | <=30 | PASS |
| 2DH5 | Ant1 | 2402 | 15.11 | <=20.97 | PASS |
| | Ant2 | 2402 | 14.84 | <=20.97 | PASS |
| | Ant1 | 2441 | 16.32 | <=20.97 | PASS |
| | Ant2 | 2441 | 14.99 | <=20.97 | PASS |
| | Ant1 | 2480 | 14.92 | <=20.97 | PASS |
| | Ant2 | 2480 | 13.96 | <=20.97 | PASS |
| 3DH5 | Ant1 | 2402 | 15.39 | <=20.97 | PASS |
| | Ant2 | 2402 | 14.09 | <=20.97 | PASS |
| | Ant1 | 2441 | 15.76 | <=20.97 | PASS |
| | Ant2 | 2441 | 13.16 | <=20.97 | PASS |
| | Ant1 | 2480 | 15.03 | <=20.97 | PASS |
| | Ant2 | 2480 | 14.06 | <=20.97 | PASS |

# 6. Appendix E

| Test Equipment | Type/Mode | SERIAL NO. | Equipment No. | Manufacturer | Cal. Due |
|---|---|---|---|---|---|
| 3m Semi-Anechoic Chamber | FACT-4 | ST08035 | WKNA-0024 | ETS | 2024-12-12 |
| Semi-Anechoic Chamber(5m) | SAC-5 | SAC-5-2.0 | EM-000557 | COMTEST | 2024-11-02 |
| Spectrum Analyzer | N9010B | MY57470323 | DZ-000174 | KEYSIGHT | 2024-02-22 |
| EMI Test Receiver | N9038A-508 | MY532290079 | EM-000397 | Agilent | 2024-02-22 |
| EMI Test Receiver | ESR7 | 102235 | VGDY-0956 | R&S | 2024-02-22 |
| Broadband Antenna | VULB 9163 | 9163-530 | EM-000342 | SCHWARZBECK | 2023-06-26 |
| Waveguide Horn Antenna | HF906 | 360306/008 | WKNA-0024-8 | R&S | 2024-02-25 |
| Waveguide Horn Antenna | BBHA9170 | 00949 | EM-000383 | SCHWARZBECK | 2023-07-31 |
| Loop Antenna | HLA 6121 | 540046 | EM-000546 | TESEQ | 2024-06-06 |
| Loop Antenna | FMZB1513 | 1513-170 | EM-000384 | SCHWARZBECK | 2024-02-22 |
| Broadband Antenna(5m) | VULB 9163 | 9163-676 | EM-000382 | SCHWARZBECK | 2024-05-05 |
| Bandstop Filters | SW-BSF-2400-100-7-A1 | / | EM-000495 | / | 2023-09-04 |
| 5G Bandstop Filters | WRCJV12-4900-5100-5900-6100-50EE | 1 | DZ-000186 | WI | 2023-12-06 |
| Spectrum Analyzer | FSV40 | 101580 | DZ-000238-3 | R&S | 2024-06-04 |
| RF Radio Frequency Switch | JS0806-2 | 19H9080187 | / | Tonscend | 2024-06-06 |

The End