

---

# FCC Test Report

---

Report No.: AGC16626250203FR01

**FCC ID** : 2AW3IM604

**APPLICATION PURPOSE** : Original Equipment

**PRODUCT DESIGNATION** : Module Programmer, IR Key Processing Unit

**BRAND NAME** : XTOOL

**MODEL NAME** : M604, X2MBIR

**APPLICANT** : Shenzhen Xtooltech Intelligent Co., Ltd.

**DATE OF ISSUE** : Apr. 21, 2025

**STANDARD(S)** : FCC Part 15 Subpart C

**REPORT VERSION** : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd



Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agccert.com Web: <http://www.agccert.com/>



**Report Revise Record**

| Report Version | Revise Time | Issued Date   | Valid Version | Notes           |
|----------------|-------------|---------------|---------------|-----------------|
| V1.0           | /           | Apr. 21, 2025 | Valid         | Initial Release |

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the “Dedicated Testing/Inspection Stamp” is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agccert.com Web: <http://www.agccert.com/>

## Table of Contents

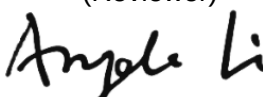
|                                                                 |           |
|-----------------------------------------------------------------|-----------|
| <b>1. General Information .....</b>                             | <b>4</b>  |
| <b>2. Product Information .....</b>                             | <b>5</b>  |
| 2.1 Product Technical Description .....                         | 5         |
| 2.2 Related Submittal(S) / Grant (S) .....                      | 6         |
| 2.3 Test Methodology .....                                      | 6         |
| 2.4 Special Accessories .....                                   | 6         |
| 2.5 Equipment Modifications .....                               | 6         |
| 2.6 Antenna Requirement.....                                    | 6         |
| <b>3. Test Environment .....</b>                                | <b>7</b>  |
| 3.1 Address of The Test Laboratory .....                        | 7         |
| 3.2 Test Facility .....                                         | 7         |
| 3.3 Environmental Conditions .....                              | 8         |
| 3.4 Measurement Uncertainty .....                               | 8         |
| 3.5 List of Equipment Used .....                                | 9         |
| <b>4. System Test Configuration.....</b>                        | <b>10</b> |
| 4.1 EUT Configuration.....                                      | 10        |
| 4.2 EUT Exercise.....                                           | 10        |
| 4.3 Configuration of Tested System .....                        | 10        |
| 4.4 Equipment Used in Tested System.....                        | 10        |
| 4.5 Summary of Test Results .....                               | 11        |
| <b>5. Description of Test Modes .....</b>                       | <b>12</b> |
| <b>6. Field Strength of Fundamental .....</b>                   | <b>13</b> |
| 6.1 Measurement Limits .....                                    | 13        |
| 6.2 Measurement Procedure.....                                  | 14        |
| 6.3 Field Strength Calculation .....                            | 15        |
| 6.4 Measurement Setup .....                                     | 16        |
| 6.5 Measurement Result .....                                    | 17        |
| <b>7. -20 dB Bandwidth Measurement .....</b>                    | <b>23</b> |
| 7.1 Provisions Applicable .....                                 | 23        |
| 7.2 Measurement Procedure.....                                  | 23        |
| 7.3 Measurement Setup .....                                     | 23        |
| 7.4 Measurement Result .....                                    | 23        |
| <b>8. AC Power Line Conducted Emission.....</b>                 | <b>25</b> |
| 8.1 Measurement Limits .....                                    | 25        |
| 8.2 Measurement Setup .....                                     | 25        |
| 8.3 Preliminary Procedure of Line Conducted Emission Test ..... | 26        |
| 8.4 Final Procedure of Line Conducted Emission Test.....        | 26        |
| 8.5 Measurement Result .....                                    | 27        |
| <b>Appendix I: Photographs of Test Setup.....</b>               | <b>29</b> |
| <b>Appendix II: Photographs of Test EUT .....</b>               | <b>29</b> |

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

## 1. General Information

|                              |                                                                                                                                                                                 |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Applicant                    | Shenzhen Xtooltech Intelligent Co., Ltd.                                                                                                                                        |
| Address                      | 17&18/F, A2 Building, Creative City, Liuxian Avenue, Nanshan District, Shenzhen, China                                                                                          |
| Manufacturer                 | Shenzhen Xtooltech Intelligent Co., Ltd.                                                                                                                                        |
| Address                      | 17&18/F, A2 Building, Creative City, Liuxian Avenue, Nanshan District, Shenzhen, China                                                                                          |
| Factory                      | Bao'an Branch of Shenzhen Xtooltech Intelligent Co., Ltd.                                                                                                                       |
| Address                      | 2,3,4/F, Building 12, Tangtou Third Industrial Zone, Shiyan street, Bao'an District, Shenzhen, China                                                                            |
| Product Designation          | Module Programmer, IR Key Processing Unit                                                                                                                                       |
| Brand Name                   | XTOOL                                                                                                                                                                           |
| Test Model                   | M604                                                                                                                                                                            |
| Series Model(s)              | X2MBIR                                                                                                                                                                          |
| Difference Description       | All the same except the model name (Online and offline sales channels are different, the series model is online (Amazon platform) sales, the main test model is offline sales.) |
| Date of receipt of test item | Feb. 25, 2025                                                                                                                                                                   |
| Date of Test                 | Apr. 12, 2025- Apr. 17, 2025                                                                                                                                                    |
| Deviation from Standard      | No any deviation from the test method                                                                                                                                           |
| Condition of Test Sample     | Normal                                                                                                                                                                          |
| Test Result                  | Pass                                                                                                                                                                            |
| Test Report Form No          | AGCER-FCC-RF ID-V1                                                                                                                                                              |

Note: The test results of this report relate only to the tested sample identified in this report.

|             |                                                                                     |               |
|-------------|-------------------------------------------------------------------------------------|---------------|
| Prepared By |  |               |
|             | Jack Gui<br>(Project Engineer)                                                      | Apr. 21, 2025 |
| Reviewed By |  |               |
|             | Calvin Liu<br>(Reviewer)                                                            | Apr. 21, 2025 |
| Approved By |  |               |
|             | Angela Li<br>(Authorized Officer)                                                   | Apr. 21, 2025 |

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

## 2. Product Information

### 2.1 Product Technical Description

|                               |                                       |
|-------------------------------|---------------------------------------|
| Equipment Type                | Radio Frequency Identification (RFID) |
| Operation Frequency           | 125KHz                                |
| Hardware Version              | V1.0                                  |
| Software Version              | V1.0                                  |
| Modulation Type               | ASK                                   |
| Field Strength of Fundamental | 60.05dB $\mu$ V/m (Max)               |
| Antenna Designation           | Coil Antenna                          |
| Antenna Gain                  | 0dBi                                  |
| Power Supply                  | DC 5V                                 |

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by [agc01@agccert.com](mailto:agc01@agccert.com).

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: [agc@agccert.com](mailto:agc@agccert.com) Web: <http://www.agccert.com/>

## 2.2 Related Submittal(S) / Grant (S)

This submittal(s) (test report) is intended for FCC ID: **2AW3IM604**, filing to comply with Part 2, Part 15 of the Federal Communication Commission rules.

## 2.3 Test Methodology

The tests were performed according to following standards:

| No. | Identity           | Document Title                                                                |
|-----|--------------------|-------------------------------------------------------------------------------|
| 1   | FCC 47 CFR Part 2  | Frequency allocations and radio treaty matters; general rules and regulations |
| 2   | FCC 47 CFR Part 15 | Radio Frequency Devices                                                       |
| 3   | ANSI C63.10-2013   | American National Standard for Testing Unlicensed Wireless Devices            |

## 2.4 Special Accessories

Not available for this EUT intended for grant.

## 2.5 Equipment Modifications

Not available for this EUT intended for grant.

## 2.6 Antenna Requirement

| Standard Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>15.203 requirement:</b><br/> An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</p> |
| <p><b>EUT Antenna:</b><br/> The non-detachable antenna inside the device cannot be replaced by the user at will. The gain of the antenna is 0dBi.</p>                                                                                                                                                                                                                                                                                                                                     |

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agccert.com Web: http://www.agccert.com/

### 3. Test Environment

#### 3.1 Address of The Test Laboratory

Laboratory: Attestation of Global Compliance (Shenzhen) Co., Ltd.

Address: 1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

#### 3.2 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

##### **CNAS-Lab Code: L5488**

Attestation of Global Compliance (Shenzhen) Co., Ltd. has been assessed and proved to follow CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories.)

##### **A2LA-Lab Cert. No.: 5054.02**

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to follow ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

##### **FCC-Registration No.: 975832**

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files with Registration 975832.

##### **IC-Registration No.: 24842(CAB identifier: CN0063)**

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the Certification and Engineering Bureau of Industry Canada. The acceptance letter from the IC is maintained in our files with Registration 24842.

### 3.3 Environmental Conditions

|                         | Normal Conditions |
|-------------------------|-------------------|
| Temperature range (°C)  | 15 - 35           |
| Relative humidity range | 20 % - 75 %       |
| Pressure range (kPa)    | 86 - 106          |
| Power supply            | DC 5V             |

### 3.4 Measurement Uncertainty

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95%.

| Item                                          | Measurement Uncertainty    |
|-----------------------------------------------|----------------------------|
| Uncertainty of Conducted Emission for AC Port | $U_c = \pm 2.9 \text{ dB}$ |
| Uncertainty of Radiated Emission below 1GHz   | $U_c = \pm 3.9 \text{ dB}$ |
| Uncertainty of Occupied Channel Bandwidth     | $U_c = \pm 2.7 \%$         |

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by [agc01@agccert.com](mailto:agc01@agccert.com).

### 3.5 List of Equipment Used

| ● Radiated Spurious Emission& RF Conducted Test |               |                   |              |            |            |                           |                           |
|-------------------------------------------------|---------------|-------------------|--------------|------------|------------|---------------------------|---------------------------|
| Used                                            | Equipment No. | Test Equipment    | Manufacturer | Model No.  | Serial No. | Last Cal. Date (YY-MM-DD) | Next Cal. Date (YY-MM-DD) |
| <input type="checkbox"/>                        | AGC-EM-E046   | EMI Test Receiver | R&S          | ESCI       | 10096      | 2025-01-14                | 2026-01-13                |
| <input checked="" type="checkbox"/>             | AGC-ER-E036   | Spectrum Analyzer | Agilent      | N9020A     | MY49100060 | 2024-05-24                | 2025-05-23                |
| <input checked="" type="checkbox"/>             | AGC-EM-E116   | EMI Test Receiver | R&S          | ESCI       | 100034     | 2024-05-24                | 2025-05-23                |
| <input checked="" type="checkbox"/>             | AGC-EM-E061   | Spectrum Analyzer | Agilent      | N9010A     | MY53470504 | 2024-05-28                | 2025-05-27                |
| <input checked="" type="checkbox"/>             | AGC-EM-E086   | Loop Antenna      | ZHINAN       | ZN30900C   | 18051      | 2024-03-05                | 2026-03-04                |
| <input checked="" type="checkbox"/>             | AGC-EM-E001   | Wideband Antenna  | SCHWARZBECK  | VULB9168   | D69250     | 2023-05-11                | 2025-05-10                |
| <input checked="" type="checkbox"/>             | AGC-EM-A138   | 6dB Attenuator    | Eeatsheep    | LM-XX-6-5W | N/A        | 2023-06-09                | 2025-06-08                |

| ● AC Power Line Conducted Emission  |               |                   |              |            |            |                           |                           |
|-------------------------------------|---------------|-------------------|--------------|------------|------------|---------------------------|---------------------------|
| Used                                | Equipment No. | Test Equipment    | Manufacturer | Model No.  | Serial No. | Last Cal. Date (YY-MM-DD) | Next Cal. Date (YY-MM-DD) |
| <input checked="" type="checkbox"/> | AGC-EM-E045   | EMI Test Receiver | R&S          | ESPI       | 101206     | 2024-05-28                | 2025-05-27                |
| <input checked="" type="checkbox"/> | AGC-EM-A130   | 6dB Attenuator    | Eeatsheep    | LM-XX-6-5W | DC-6GZ     | 2023-06-09                | 2025-06-08                |
| <input checked="" type="checkbox"/> | AGC-EM-E023   | AMN               | R&S          | 100086     | ESH2-Z5    | 2024-05-28                | 2025-05-27                |

| ● Test Software                     |               |                |              |           |                     |
|-------------------------------------|---------------|----------------|--------------|-----------|---------------------|
| Used                                | Equipment No. | Test Equipment | Manufacturer | Model No. | Version Information |
| <input checked="" type="checkbox"/> | AGC-EM-S001   | CE Test System | R&S          | ES-K1     | V1.71               |
| <input checked="" type="checkbox"/> | AGC-EM-S003   | RE Test System | FARA         | EZ-EMC    | VRA-03A             |

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agccert.com Web: <http://www.agccert.com/>

## 4. System Test Configuration

### 4.1 EUT Configuration

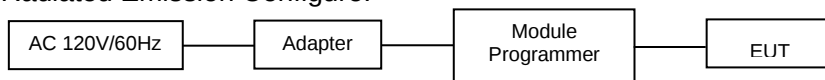
The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

### 4.2 EUT Exercise

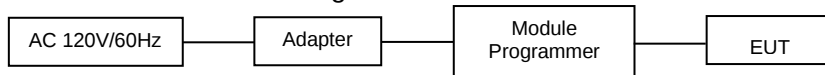
The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

### 4.3 Configuration of Tested System

Radiated Emission Configure:



Conducted Emission Configure:



### 4.4 Equipment Used in Tested System

The following peripheral devices and interface cables were connected during the measurement:

☐ Test Accessories Come from the Laboratory

| No. | Equipment | Manufacturer | Model No. | Specification Information | Cable |
|-----|-----------|--------------|-----------|---------------------------|-------|
| 1   | --        | --           | --        | --                        | --    |
| 2   | --        | --           | --        | --                        | --    |

☒ Test Accessories Come from The Manufacturer

| No. | Equipment         | Manufacturer                             | Model No.     | Specification Information                                                                                            | Cable |
|-----|-------------------|------------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------|-------|
| 1   | Adapter           | Shenzhen ABP Technology Co. Ltd.         | PD0302UC-0303 | INPUT: AC100-240V, 50-60Hz 0.8A Max<br>OUTPUT: 5.0V=3.0A, 9.0V=3.0A, 12.0V=2.5A, 15.0V=2.0A, 20.0V=1.5A (30.0W Max.) | --    |
| 2   | Module Programmer | Shenzhen Xtooltech Intelligent Co., Ltd. | X2Prog        | INPUT: AC100-240V, 50-60Hz 0.5A Max<br>OUTPUT: 5.0V=3.0A 15.0W/9.0V=2.22A 19.98W/ 12.0V=1.67A 20.04W                 | --    |

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

#### 4.5 Summary of Test Results

| Item | FCC Rules     | Description of Test              | Result |
|------|---------------|----------------------------------|--------|
| 1    | §15.203       | Antenna Equipment                | Pass   |
| 2    | §15.209(a)(f) | Field Strength of Fundamental    | Pass   |
| 3    | §15.209(a)(f) | Radiated Spurious Emission       | Pass   |
| 4    | §15.215(c)    | 20dB Bandwidth                   | Pass   |
| 5    | §15.205(a)    | Restricted Bands of Operation    | Pass   |
| 6    | §15.207       | AC Power Line Conducted Emission | Pass   |

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the “Dedicated Testing/Inspection Stamp” is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by [agc01@agccert.com](mailto:agc01@agccert.com).

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: [agc@agccert.com](mailto:agc@agccert.com) Web: <http://www.agccert.com/>

## 5. Description of Test Modes

| Summary Table of Test Cases     |                                                          |
|---------------------------------|----------------------------------------------------------|
| Test Item                       | Equipment type / Modulation                              |
|                                 | Radio Frequency Identification (RFID)/ASK                |
| Radiated & Conducted Test Cases | Mode 1: Normal identification transmission (RFID:125kHz) |
| AC Conducted Emission           | Mode 1: Normal identification transmission (RFID:125kHz) |

Note:

1. Only the result of the worst case was recorded in the report, if no other cases.
2. For Radiated Emission, 3axis were chosen for testing for each applicable mode.
3. For Conducted Test method, a temporary antenna connector is provided by the manufacture.

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agccert.com Web: <http://www.agccert.com/>

## 6. Field Strength of Fundamental

### 6.1 Measurement Limits

|                       |                             |            |        |        |            |
|-----------------------|-----------------------------|------------|--------|--------|------------|
| Test Requirement:     | FCC Part15 C Section 15.209 |            |        |        |            |
| Test Method:          | ANSI C63.10:2013            |            |        |        |            |
| Test Frequency Range: | 9kHz to 1GHz                |            |        |        |            |
| Test site:            | Measurement Distance: 3m    |            |        |        |            |
| Receiver Setup:       | Frequency                   | Detector   | RBW    | VBW    | Value      |
|                       | 9kHz-90kHz                  | Average    | 200Hz  | 600Hz  | Average    |
|                       | 90 kHz-110kHz               | Quasi-peak | 200Hz  | 600Hz  | Quasi-peak |
|                       | 110kHz-150kHz               | Average    | 200Hz  | 600Hz  | Average    |
|                       | 150kHz-490kHz               | Average    | 9kHz   | 30kHz  | Average    |
|                       | 490kHz-30MHz                | Quasi-peak | 9kHz   | 30kHz  | Quasi-peak |
|                       | 30MHz-1GHz                  | Quasi-peak | 100kHz | 300kHz | Quasi-peak |
|                       | Above 1GHz                  | Peak       | 1MHz   | 3MHz   | Peak       |
|                       |                             | Peak       | 1MHz   | 10Hz   | Average    |

#### ■ Limits for frequency below 30MHz

| Frequency   | Limit (μV/m) | Measurement Distance(m) | Remark           |
|-------------|--------------|-------------------------|------------------|
| 0.009-0.490 | 2400/F(kHz)  | 300                     | Quasi-peak Value |
| 0.490-1.705 | 24000/F(kHz) | 30                      | Quasi-peak Value |
| 1.705-30    | 30           | 30                      | Quasi-peak Value |

#### ■ Limits for frequency Above 30MHz

| Frequency     | Limit (dBμV/m @3m) | Remark           |
|---------------|--------------------|------------------|
| 30MHz-88MHz   | 40.00              | Quasi-peak Value |
| 88MHz-216MHz  | 43.50              | Quasi-peak Value |
| 216MHz-960MHz | 46.00              | Quasi-peak Value |
| 960MHz-1GHz   | 54.00              | Quasi-peak Value |
| Above 1GHz    | 54.00              | Average Value    |
|               | 74.00              | Peak Value       |

Remark:

- 1) Emission level dBμV= 20 log Emission level μV/m
- 2) The smaller limit shall apply at the cross point between two frequency bands.
- 3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd

Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd

Tel: +86-755 2523 4088 E-mail: agc@agccert.com Web: http://www.agccert.com/

## 6.2 Measurement Procedure

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emission, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz RBW and 3MHz VBW for peak reading. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by [agc01@agccert.com](mailto:agc01@agccert.com).

### 6.3 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any), Average Factor (optional) from the measured reading. The basic equation with a sample calculation is as follows:

$$\blacklozenge \quad FS = RA + AF + CF - AG - AV$$

Where

- FS = Field Strength in dBμV/m
- RA = Receiver Amplitude (including preamplifier) in dBμV
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB/m
- AG = Amplifier Gain in dB
- AV = Average Factor in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:

$$\blacklozenge \quad FS = RR + LF$$

Where

- FS = Field Strength in dBμV/m
- RR = RA - AG - AV in dBμV
- LF = CF + AF in dB

Assume a receiver reading of 52.0dBμV is obtained.

- The antenna factor of 7.4dB/m and cable factor of 1.6dB are added.
- The amplifier gain of 29dB and average factor of 5dB are subtracted, giving a field strength of 27dBμV/m.
- This value in dBμV/m was converted to its corresponding level in μV/m.

- RA = 52.0 dBμV/m, AF = 7.4 dB/m
- RR = 18.0 dBμV, CF = 1.6 dB
- LF = 9.0 Db, AG = 29.0 dB
- AV = 5.0 dB, FS = RR + LF
- FS = 18 + 9 = 27 dBμV/m

➤ Level in μV/m = Common Antilogarithm [(27 dBμV/m)/20] = 22.4 μV/m

- Magnetic field strength calculation (9 kHz – 30 MHz)

When the limit is in terms of magnetic field, the following equation applies:

$$\blacklozenge \quad H[\text{dB}(\mu\text{A/m})] = V[\text{dB}(\mu\text{V})] + LC [\text{dB}] - GPA [\text{dB}] + AFH [\text{dB(S/m)}]$$

Where,

- H is the magnetic field strength (to be compared with the limit),
- V is the voltage level measured by the receiver or spectrum analyzer,
- LC is the cable loss,
- GPA is the gain of the preamplifier (if used), and
- AFH is the magnetic antenna factor.

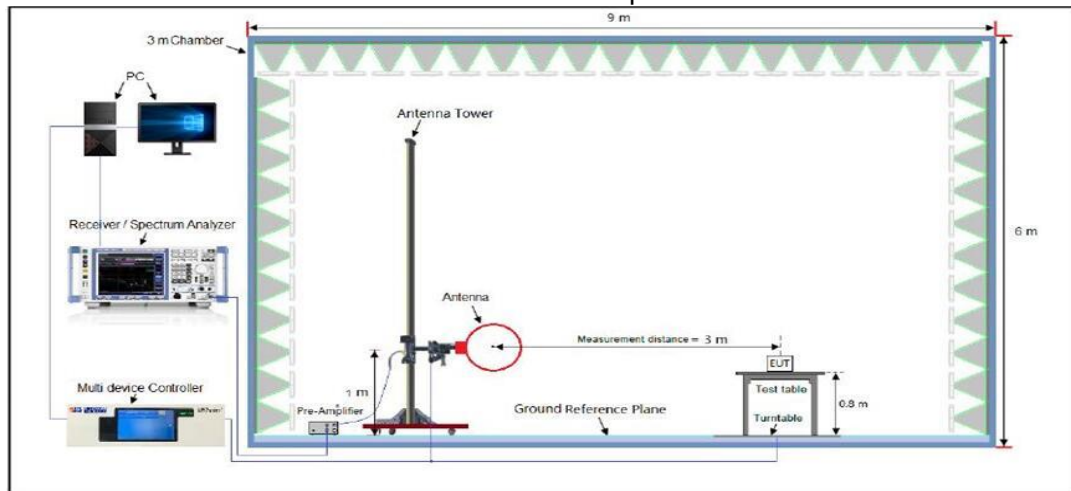
If the “electrical” antenna factor is used instead, the above equation becomes:

$$\blacklozenge \quad H[\text{dB}(\mu\text{A/m})] = V[\text{dB}(\mu\text{V})] + LC [\text{dB}] - GPA [\text{dB}] + AFE [\text{dB(m-1)}] - 51.5[\text{dB}\Omega]$$

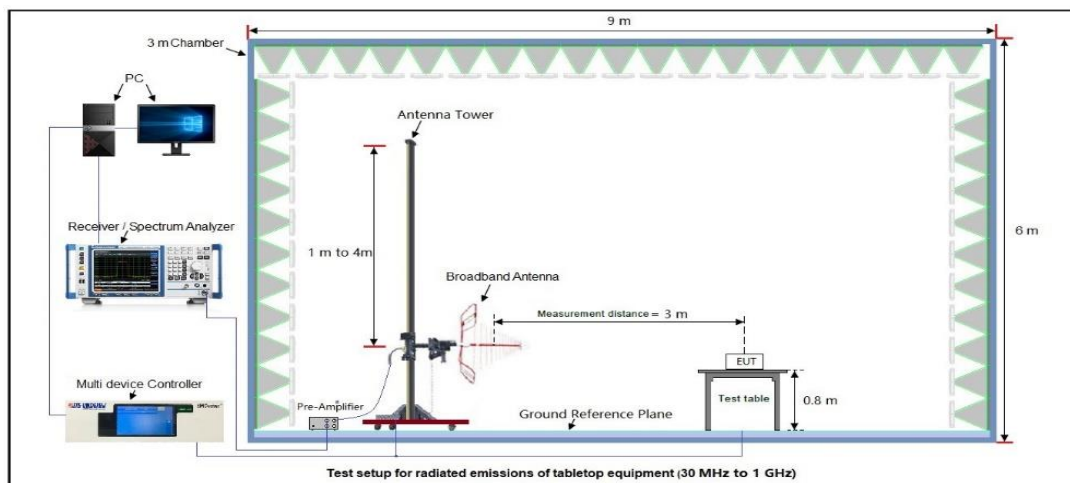
where AFE is the “electric” antenna factor, as provided by the antenna calibration laboratory.

## 6.4 Measurement Setup

Radiated Emission Test Setup 9kHz-30MHz



Radiated Emission Test Setup 30MHz-1000MHz



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209 and FCC 15.205 limits.

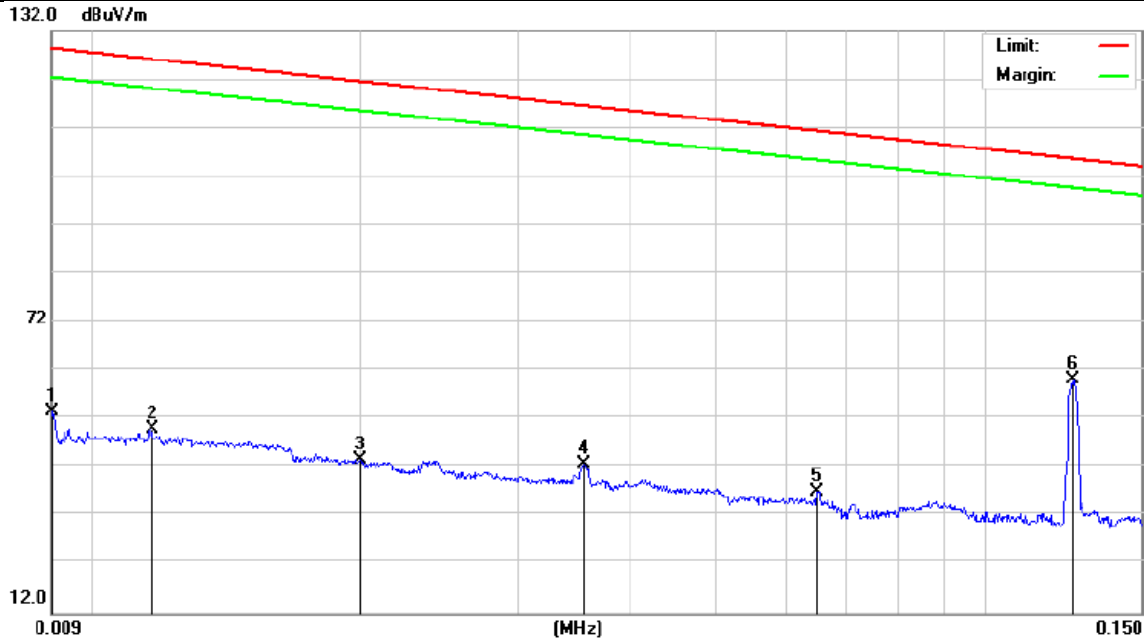
Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by [agc01@agccert.com](mailto:agc01@agccert.com).

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: [agc@agccert.com](mailto:agc@agccert.com) Web: <http://www.agccert.com/>

## 6.5 Measurement Result

### The Magnetic Field from 9kHz-150kHz

|                    |                                           |                          |        |
|--------------------|-------------------------------------------|--------------------------|--------|
| <b>EUT Name</b>    | Module Programmer, IR Key Processing Unit | <b>Model Name</b>        | M604   |
| <b>Temperature</b> | 18.5°C                                    | <b>Relative Humidity</b> | 55.6 % |
| <b>Pressure</b>    | 960hPa                                    | <b>Test Voltage</b>      | DC 5V  |
| <b>Test Mode</b>   | Mode 1                                    | <b>Antenna</b>           | Face   |



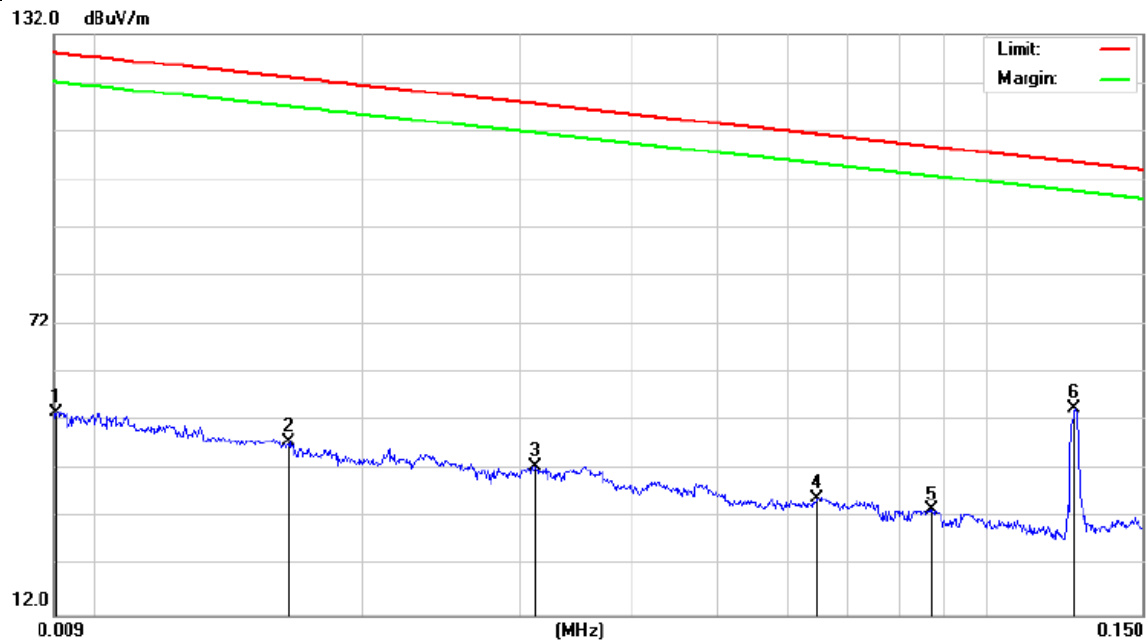
| Frequency (MHz) | Reading (dBμV) | Corr. Factor (dB/m) | Net at 3m loop Antenna (dBμV/m) | Conversion Factor (dBΩ) | Calculated at 3m loop Antenna (dBμA/m) | Limit at 3m loop Antenna (dBμA/m) | Margin (dB) | Polarization |
|-----------------|----------------|---------------------|---------------------------------|-------------------------|----------------------------------------|-----------------------------------|-------------|--------------|
| 0.0090          | 9.35           | 44.22               | 53.57                           | 51.5                    | 2.07                                   | 76.9                              | -74.83      | Face         |
| 0.0116          | 7.34           | 42.75               | 50.09                           | 51.5                    | -1.41                                  | 74.71                             | -76.12      | Face         |
| 0.0200          | 5.70           | 37.98               | 43.68                           | 51.5                    | -7.82                                  | 69.99                             | -77.81      | Face         |
| 0.0355          | 7.60           | 34.95               | 42.55                           | 51.5                    | -8.95                                  | 64.82                             | -73.77      | Face         |
| 0.0649          | 4.15           | 32.88               | 37.03                           | 51.5                    | -14.47                                 | -88.74                            | -74.27      | Face         |
| 0.1250          | 27.79          | 32.79               | 60.58                           | 51.5                    | 9.08                                   | 54.65                             | -45.57      | Face         |

## RESULT: PASS

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

### The Magnetic Field from 9kHz-150kHz

|             |                                           |                   |        |
|-------------|-------------------------------------------|-------------------|--------|
| EUT Name    | Module Programmer, IR Key Processing Unit | Model Name        | M604   |
| Temperature | 18.5°C                                    | Relative Humidity | 55.6 % |
| Pressure    | 985 Mbar                                  | Test Voltage      | DC 5V  |
| Test Mode   | Mode 1                                    | Antenna           | Side   |



| Frequency (MHz) | Reading (dBμV) | Corr. Factor (dB/m) | Net at 3m loop Antenna (dBμV/m) | Conversion Factor (dBΩ) | Calculated at 3m loop Antenna (dBμA/m) | Limit at 3m loop Antenna (dBμA/m) | Margin (dB) | Polarization |
|-----------------|----------------|---------------------|---------------------------------|-------------------------|----------------------------------------|-----------------------------------|-------------|--------------|
| 0.0091          | 9.80           | 44.11               | 53.91                           | 51.5                    | 2.41                                   | 76.71                             | -74.30      | Side         |
| 0.0165          | 8.00           | 39.95               | 47.95                           | 51.5                    | -3.55                                  | 71.57                             | -75.12      | Side         |
| 0.0312          | 7.19           | 35.50               | 42.69                           | 51.5                    | -8.81                                  | 66.07                             | -74.88      | Side         |
| 0.0646          | 3.31           | 32.89               | 36.2                            | 51.5                    | -15.3                                  | 59.79                             | -75.09      | Side         |
| 0.0868          | 1.38           | 32.30               | 33.68                           | 51.5                    | -17.82                                 | 57.24                             | -75.06      | Side         |
| 0.1250          | 22.45          | 32.26               | 54.71                           | 51.5                    | 3.21                                   | 54.09                             | -50.88      | Side         |

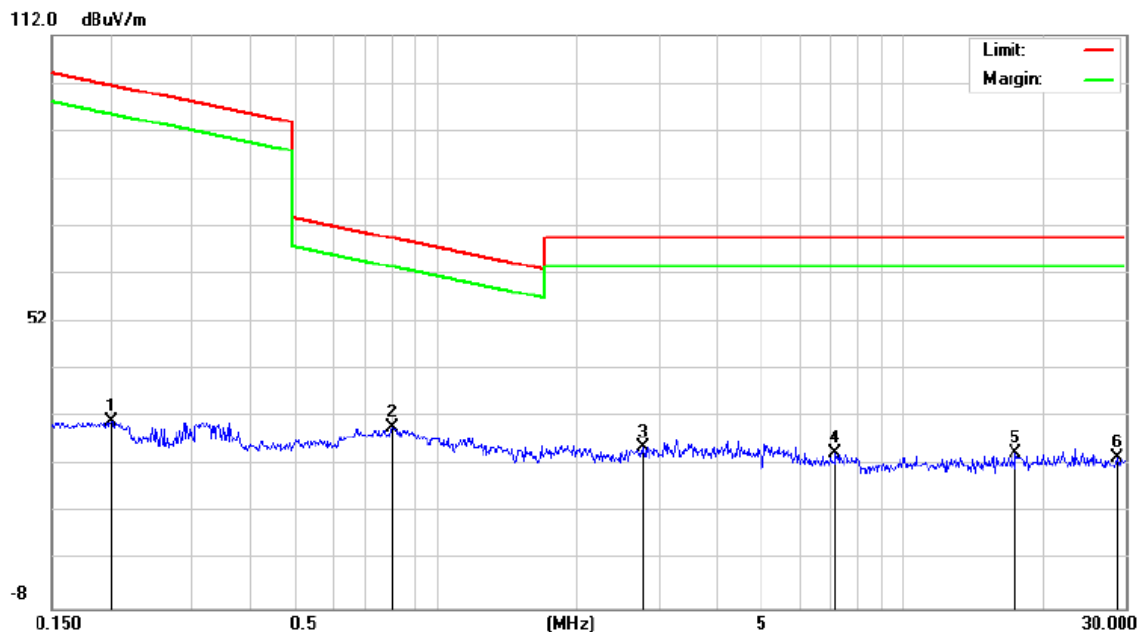
**RESULT: PASS**

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agccert.com Web: http://www.agccert.com/

### The Magnetic Field from 150kHz-30MHz

|                    |                                           |                          |        |
|--------------------|-------------------------------------------|--------------------------|--------|
| <b>EUT Name</b>    | Module Programmer, IR Key Processing Unit | <b>Model Name</b>        | M604   |
| <b>Temperature</b> | 18.5℃                                     | <b>Relative Humidity</b> | 55.6 % |
| <b>Pressure</b>    | 960hPa                                    | <b>Test Voltage</b>      | DC 5V  |
| <b>Test Mode</b>   | Mode 1                                    | <b>Antenna</b>           | Face   |



| Frequency (MHz) | Reading (dBμV) | Corr. Factor (dB/m) | Net at 3m loop Antenna (dBμV/m) | Conversion Factor (dBΩ) | Calculated at 3m loop Antenna (dBμA/m) | Limit at 3m loop Antenna (dBμA/m) | Margin (dB) | Polarization |
|-----------------|----------------|---------------------|---------------------------------|-------------------------|----------------------------------------|-----------------------------------|-------------|--------------|
| 0.2007          | -1.44          | 32.66               | 31.22                           | 51.5                    | -20.28                                 | 50                                | -70.28      | Face         |
| 0.8002          | -2.24          | 32.14               | 29.9                            | 51.5                    | -21.6                                  | 18.04                             | -39.64      | Face         |
| 2.7648          | -5.66          | 31.30               | 25.64                           | 51.5                    | -25.86                                 | 18.04                             | -43.90      | Face         |
| 7.1374          | -3.64          | 28.22               | 24.58                           | 51.5                    | -26.92                                 | 18.04                             | -44.96      | Face         |
| 17.3826         | -5.56          | 29.99               | 24.43                           | 51.5                    | -27.07                                 | 18.04                             | -45.11      | Face         |
| 28.6030         | -5.63          | 29.38               | 23.75                           | 51.5                    | -27.75                                 | 18.04                             | -45.79      | Face         |

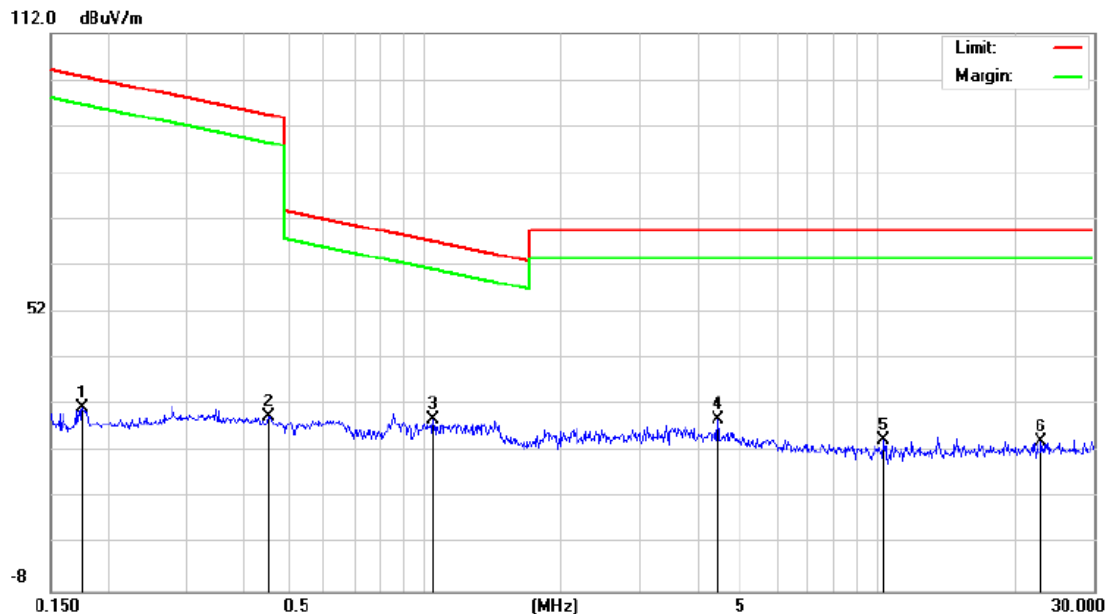
**RESULT: PASS**

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agccert.com Web: http://www.agccert.com/

### The Magnetic Field from 150kHz-30MHz

|                    |                                           |                          |        |
|--------------------|-------------------------------------------|--------------------------|--------|
| <b>EUT Name</b>    | Module Programmer, IR Key Processing Unit | <b>Model Name</b>        | M604   |
| <b>Temperature</b> | 18.5°C                                    | <b>Relative Humidity</b> | 55.6 % |
| <b>Pressure</b>    | 985 Mbar                                  | <b>Test Voltage</b>      | DC 5V  |
| <b>Test Mode</b>   | Mode 1                                    | <b>Antenna</b>           | Side   |



| Frequency (MHz) | Reading (dBμV) | Corr. Factor (dB/m) | Net at 3m loop Antenna (dBμV/m) | Conversion Factor (dBΩ) | Calculated at 3m loop Antenna (dBμA/m) | Limit at 3m loop Antenna (dBμA/m) | Margin (dB) | Polarization |
|-----------------|----------------|---------------------|---------------------------------|-------------------------|----------------------------------------|-----------------------------------|-------------|--------------|
| 0.1758          | -1.07          | 32.53               | 31.46                           | 51.5                    | -20.04                                 | 51.17                             | -71.21      | Side         |
| 0.4539          | -2.58          | 32.26               | 29.68                           | 51.5                    | -21.82                                 | 42.96                             | -64.78      | Side         |
| 1.0430          | -2.98          | 31.98               | 29                              | 51.5                    | -22.5                                  | 15.74                             | -38.24      | Side         |
| 4.4305          | -1.08          | 30.01               | 28.93                           | 51.5                    | -22.57                                 | 18.04                             | -40.61      | Side         |
| 10.2876         | -5.29          | 29.81               | 24.52                           | 51.5                    | -26.98                                 | 18.04                             | -45.02      | Side         |
| 22.8965         | -5.63          | 29.86               | 24.23                           | 51.5                    | -27.27                                 | 18.04                             | -45.31      | Side         |

### RESULT: PASS

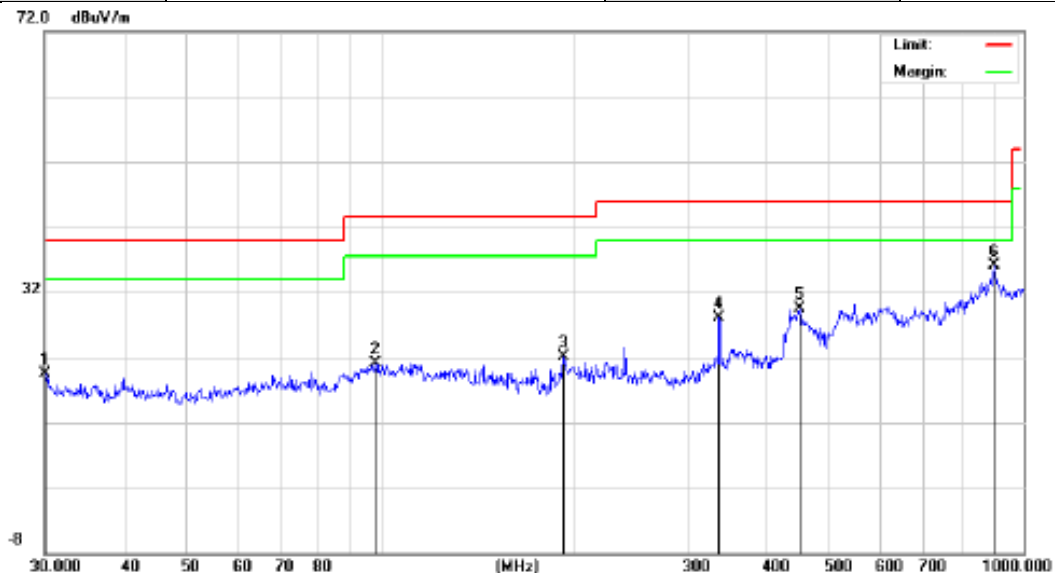
#### Note:

1. Quasi-Peak detector is used for frequency below 30MHz.
2. Negative value in the margin column shows emission below limit.
3. All measurements were made with 0.6m loop antenna at 3m distance. All emissions are below the QP limit.
4. Corr. Factor= Antenna Factor (dB/m) + Cable Loss (dB)
5. Loop antenna is used for the emission under 30MHz.

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

### Radiated Emission From 30MHz to 1000MHz

|             |                                           |                   |        |
|-------------|-------------------------------------------|-------------------|--------|
| EUT Name    | Module Programmer, IR Key Processing Unit | Model Name        | M604   |
| Temperature | 18.5°C                                    | Relative Humidity | 55.6 % |
| Pressure    | 960hPa                                    | Test Voltage      | DC 5V  |
| Test Mode   | Mode 1                                    | Antenna           | Face   |



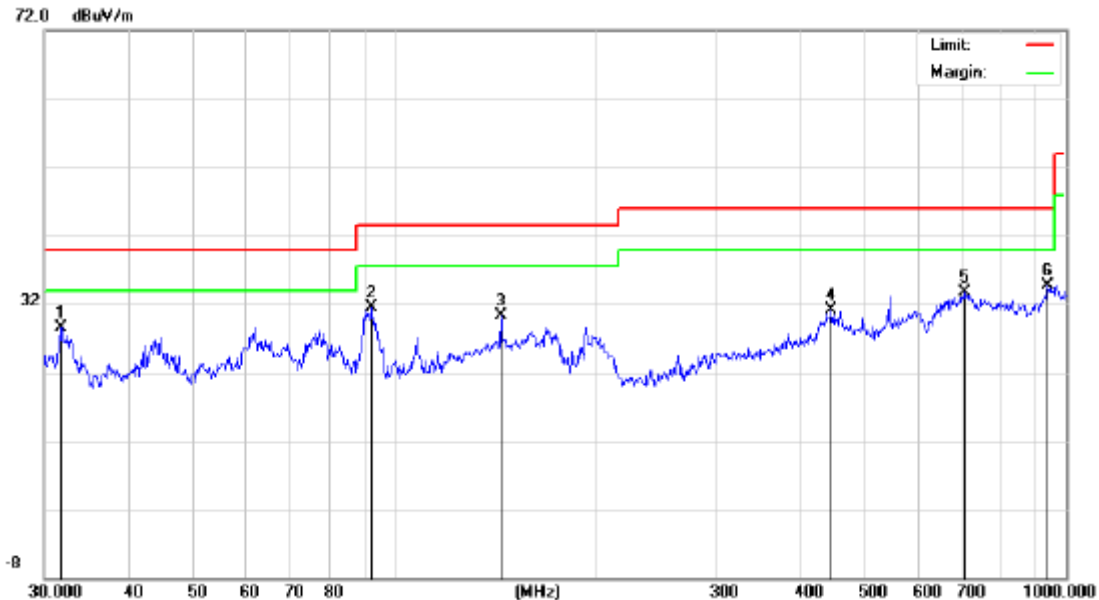
| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV/m | Limit<br>dBuV/m | Over<br>dB | Detector |
|-----|-----|--------------|--------------------------|-------------------------|----------------------------|-----------------|------------|----------|
| 1   |     | 30.1053      | 9.76                     | 9.65                    | 19.41                      | 40.00           | -20.59     | peak     |
| 2   |     | 98.1419      | 5.10                     | 15.91                   | 21.01                      | 43.50           | -22.49     | peak     |
| 3   |     | 192.4185     | 8.41                     | 13.63                   | 22.04                      | 43.50           | -21.46     | peak     |
| 4   |     | 336.0351     | 11.12                    | 16.98                   | 28.10                      | 46.00           | -17.90     | peak     |
| 5   |     | 447.9821     | 4.64                     | 24.82                   | 29.46                      | 46.00           | -16.54     | peak     |
| 6   | *   | 900.1473     | 4.38                     | 31.78                   | 36.16                      | 46.00           | -9.84      | peak     |

**Result: Pass**

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agccert.com Web: http://www.agccert.com/

|             |                                           |                   |        |
|-------------|-------------------------------------------|-------------------|--------|
| EUT Name    | Module Programmer, IR Key Processing Unit | Model Name        | M604   |
| Temperature | 18.5℃                                     | Relative Humidity | 55.6 % |
| Pressure    | 985 Mbar                                  | Test Voltage      | DC 5V  |
| Test Mode   | Mode 1                                    | Antenna           | Side   |



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV/m | Limit<br>dBuV/m | Over<br>dB | Detector |
|-----|-----|--------------|--------------------------|-------------------------|----------------------------|-----------------|------------|----------|
| 1   |     | 31.7313      | 14.31                    | 14.17                   | 28.48                      | 40.00           | -11.52     | peak     |
| 2   |     | 92.4624      | 16.25                    | 15.22                   | 31.47                      | 43.50           | -12.03     | peak     |
| 3   |     | 143.8294     | 12.01                    | 18.20                   | 30.21                      | 43.50           | -13.29     | peak     |
| 4   |     | 446.4141     | 5.31                     | 25.81                   | 31.12                      | 46.00           | -14.88     | peak     |
| 5   |     | 704.2260     | 5.41                     | 28.25                   | 33.66                      | 46.00           | -12.34     | peak     |
| 6   | *   | 938.8325     | 3.91                     | 30.84                   | 34.75                      | 46.00           | -11.25     | peak     |

### Result: Pass

- Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.
- The "Factor" value can be calculated automatically by software of measurement system.

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

## 7. -20 dB Bandwidth Measurement

### 7.1 Provisions Applicable

N/A

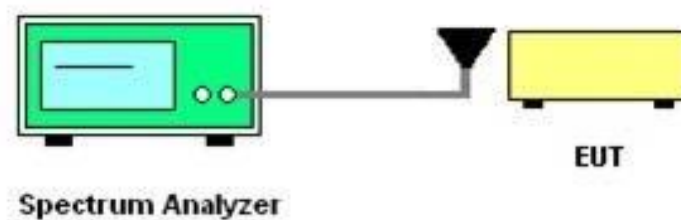
### 7.2 Measurement Procedure

Set the parameters of SPA as below:

1. The spectrum analyzer connected via a receive antenna placed near the EUT in peak Max hold mode.
2. Centre frequency = Operation Frequency
3. The resolution bandwidth of 300 Hz and the video bandwidth of 1 kHz were used.
4. Span: 3kHz, Sweep time: Auto
5. Set the EUT to continue transmitting mode. Allow the trace to stabilize. Use the “N dB down” function of SPA to define the bandwidth.
6. Measured the spectrum width with power higher than 20dB below carrier.
7. Measured the 99% OBW.
8. Record the plots and Reported.

**Note:** Since the measured signal is CW-like, it is not practical to adjust the RBW according to C63.10, as the measured bandwidth will always follow the RBW, resulting in approximately twice the RBW.

### 7.3 Measurement Setup



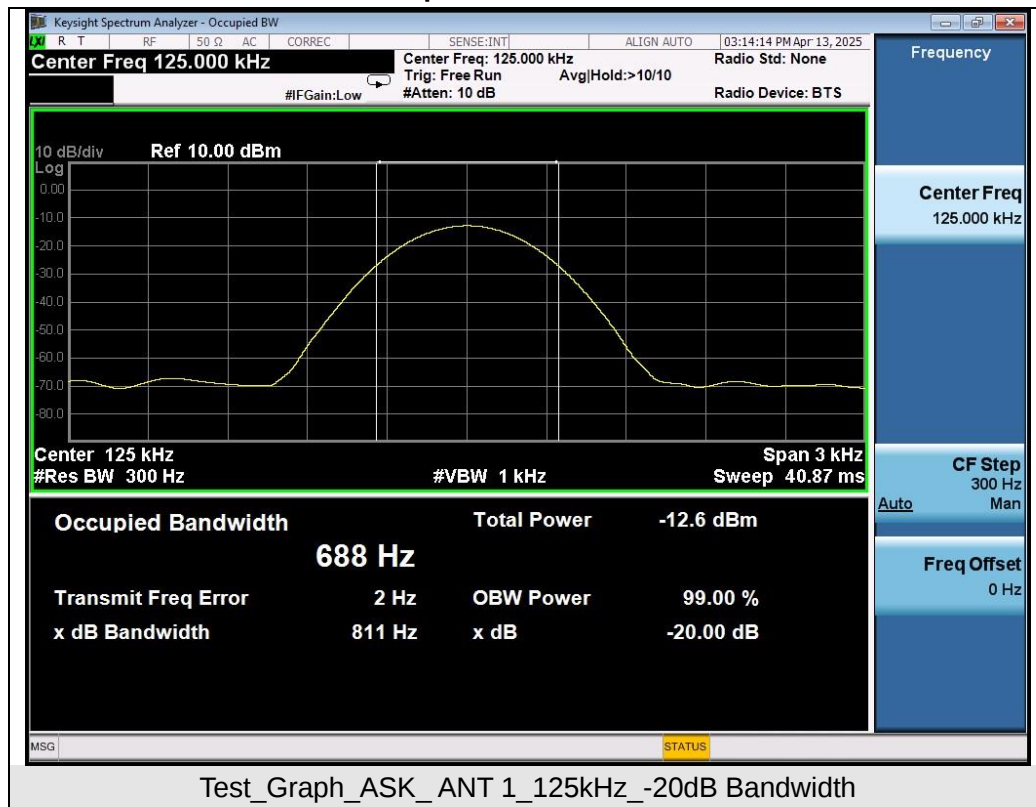
### 7.4 Measurement Result

| Test Data of Occupied Bandwidth and -20dB Bandwidth |                 |                   |                      |             |        |
|-----------------------------------------------------|-----------------|-------------------|----------------------|-------------|--------|
| Configuration                                       | Frequency (kHz) | 99%Bandwidth (Hz) | -20dB Bandwidth (Hz) | Limits (Hz) | Result |
| 1                                                   | 125             | 688               | 811                  | N/A         | Pass   |

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the “Dedicated Testing/Inspection Stamp” is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agccert.com Web: <http://www.agccert.com/>

### Test Graphs of -20dB Bandwidth



Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the “Dedicated Testing/Inspection Stamp” is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

Attestation of Global Compliance(Shenzhen)Co., Ltd  
Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd  
Tel: +86-755 2523 4088 E-mail: agc@agccert.com Web: <http://www.agccert.com/>

## 8. AC Power Line Conducted Emission

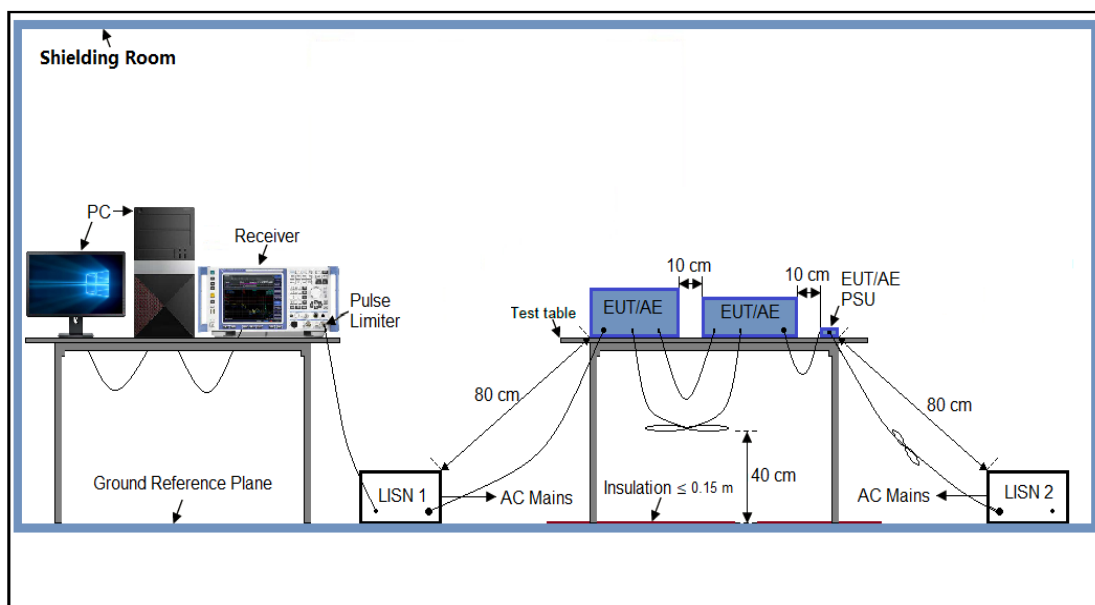
### 8.1 Measurement Limits

| Frequency Range | Maximum RF Line Voltage |                      |
|-----------------|-------------------------|----------------------|
|                 | Q.P. (dB $\mu$ V)       | Average (dB $\mu$ V) |
| 150kHz~500kHz   | 66-56                   | 56-46                |
| 500kHz~5MHz     | 56                      | 46                   |
| 5MHz~30MHz      | 60                      | 50                   |

Note:

1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

### 8.2 Measurement Setup



Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

### 8.3 Preliminary Procedure of Line Conducted Emission Test

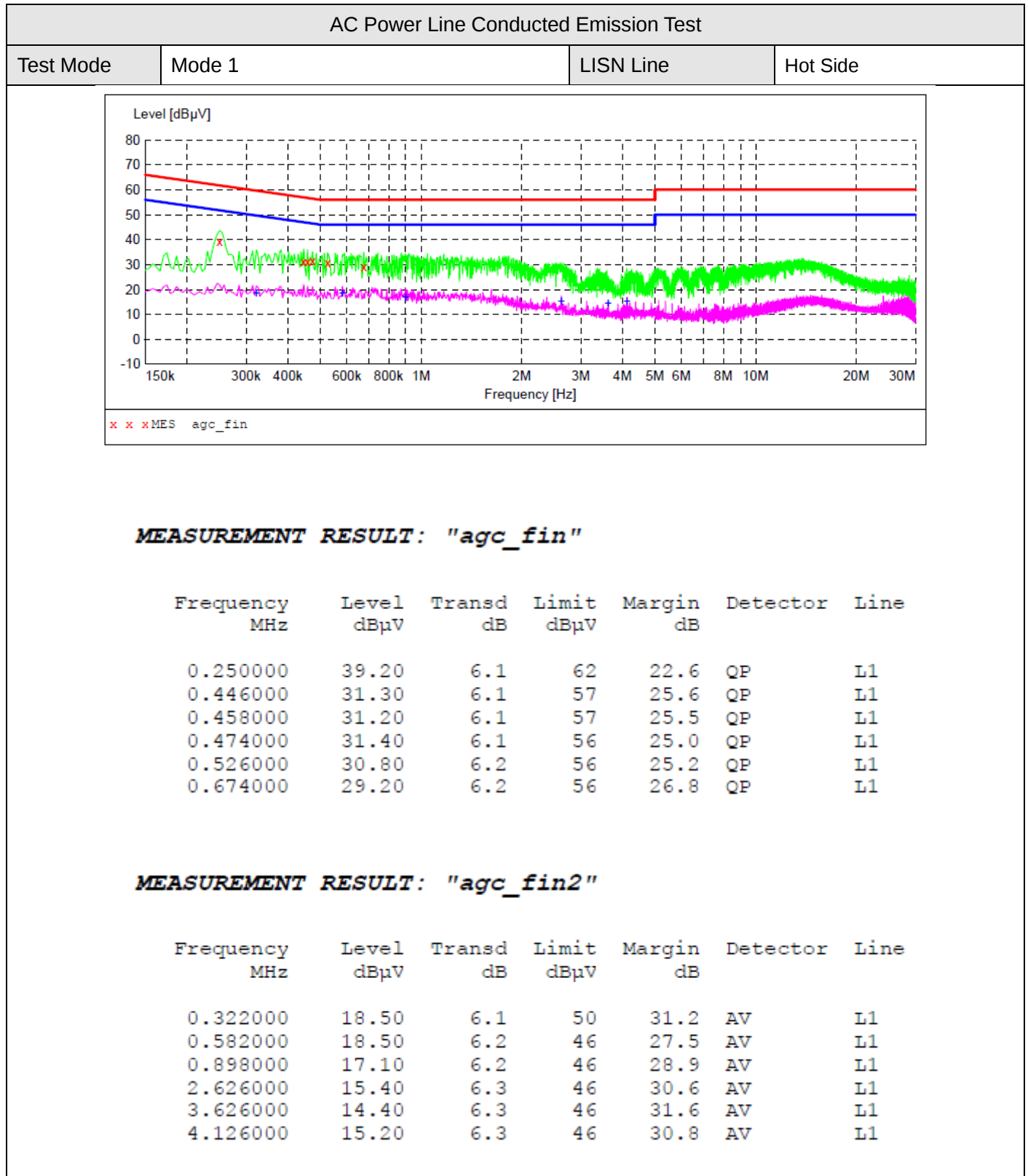
1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2. Support equipment, if needed, was placed as per ANSI C63.10.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4. All support equipment received AC120V/60Hz power from a LISN, if any.
5. The EUT received DC 5V power from adapter which received AC120V/60Hz power from a LISN.
6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.
9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

### 8.4 Final Procedure of Line Conducted Emission Test

1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less – 2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
3. The test data of the worst case condition(s) was reported on the Summary Data page.

## 8.5 Measurement Result

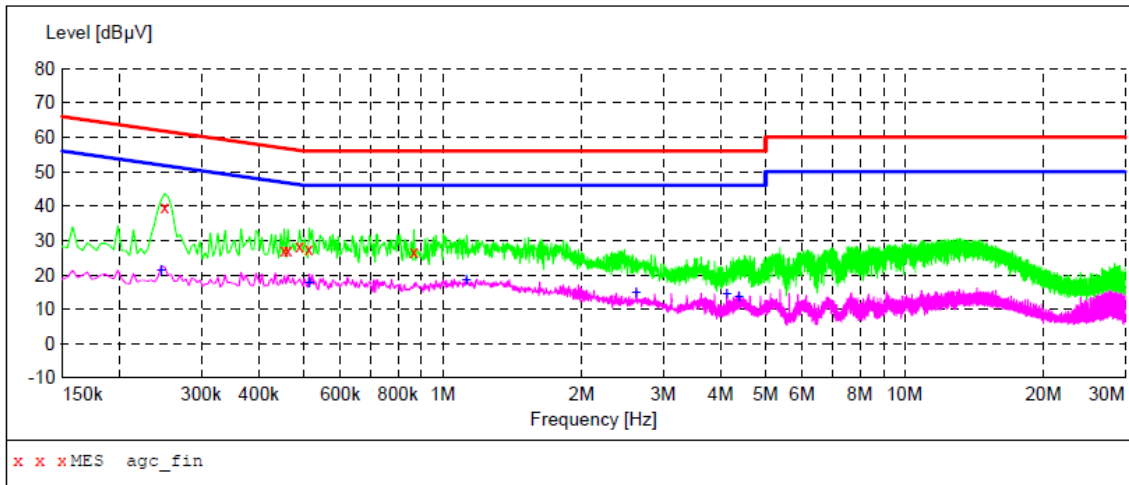


### Result: Pass

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

### AC Power Line Conducted Emission Test

|           |        |           |              |
|-----------|--------|-----------|--------------|
| Test Mode | Mode 1 | LISN Line | Neutral Side |
|-----------|--------|-----------|--------------|



#### MEASUREMENT RESULT: "agc\_fin"

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line |
|------------------|---------------|--------------|---------------|--------------|----------|------|
| 0.250000         | 39.50         | 6.1          | 62            | 22.3         | QP       | N    |
| 0.454000         | 27.20         | 6.1          | 57            | 29.6         | QP       | N    |
| 0.462000         | 27.10         | 6.1          | 57            | 29.6         | QP       | N    |
| 0.490000         | 28.20         | 6.1          | 56            | 28.0         | QP       | N    |
| 0.514000         | 27.40         | 6.2          | 56            | 28.6         | QP       | N    |
| 0.866000         | 26.60         | 6.2          | 56            | 29.4         | QP       | N    |

#### MEASUREMENT RESULT: "agc\_fin2"

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line |
|------------------|---------------|--------------|---------------|--------------|----------|------|
| 0.246000         | 21.50         | 6.1          | 52            | 30.4         | AV       | N    |
| 0.514000         | 17.90         | 6.2          | 46            | 28.1         | AV       | N    |
| 1.126000         | 18.50         | 6.2          | 46            | 27.5         | AV       | N    |
| 2.626000         | 14.90         | 6.3          | 46            | 31.1         | AV       | N    |
| 4.126000         | 14.40         | 6.3          | 46            | 31.6         | AV       | N    |
| 4.378000         | 13.80         | 6.3          | 46            | 32.2         | AV       | N    |

**Result: Pass**

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

**Appendix I: Photographs of Test Setup**

Refer to the Report No.: AGC16626250203AP01

**Appendix II: Photographs of Test EUT**

Refer to the Report No.: AGC16626250203AP02

**-----End of Report-----**

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the “Dedicated Testing/Inspection Stamp” is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by [agc01@agccert.com](mailto:agc01@agccert.com).

Attestation of Global Compliance(Shenzhen)Co., Ltd

Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd

Tel: +86-755 2523 4088 E-mail: [agc@agccert.com](mailto:agc@agccert.com) Web: <http://www.agccert.com/>



## Conditions of Issuance of Test Reports

1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the “Company”) solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the “Clients”).
2. Any report issued by Company as a result of this application for testing services (the “Report”) shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.
3. The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.
4. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.
5. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.
6. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.
7. Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.
8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.
9. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the “Dedicated Testing/Inspection Stamp” is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15 days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by [agc01@agccert.com](mailto:agc01@agccert.com).

Attestation of Global Compliance(Shenzhen)Co., Ltd

Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd

Tel: +86-755 2523 4088 E-mail: [agc@agccert.com](mailto:agc@agccert.com) Web: <http://www.agccert.com/>