# FCC Test Report

Report No: FCS202404276W02

Issued for

| | |
|---|---|
| Applicant: | Zhengzhou Chongfenghao International Trade Co. , Ltd. |
| Address: | Room B17, No. 9-3, Liudong Road, Zhengzhou (Jinshui) , Henan Pilot Free Trade Zone |
| Product Name: | Wireless CarPlay Adapter |
| Brand Name: | N/A |
| Model Name: | WL01-C-Black |
| Series Model: | WL01-C-White, WL01-C-Sierra Blue, WL01-C-Purple, WL01-C-Gun, WL01-C-Titanium, WL01-C-Navy, YYYY1-Black, YYYY1-Gunmetal Gray, YKCAA-Black, YKCAA-Blue, L-PP01-Black, L-PP01-Rose Gold, MYC-C-Black, MYC-C-Titanium, TK-XTT-Black, TK-XTT-Navy, CXX-00-Black, CXX-00-Gunmetal Gray |
| FCC ID: | 2BF5Y-WL01-C |

Issued By: Flux Compliance Service Laboratory
Add: Room 105 Floor Bao hao Technology Building 1 NO.15 Gong ye West Road Hi-Tech Industrial, Song shan lake Dongguan
Tel: 769-27280901 Fax:769-27280901 http://www.FCS-lab.com

# TEST RESULT CERTIFICATION

| | |
|---|---|
| Applicant's Name..... : | Zhengzhou Chongfenghao International Trade Co. , Ltd. |
| Address..... : | Room B17, No. 9-3, Liudong Road, Zhengzhou (Jinshui) , Henan Pilot Free Trade Zone |
| Manufacture's Name..... : | Zhengzhou Chongfenghao International Trade Co. , Ltd. |
| Address..... : | Room B17, No. 9-3, Liudong Road, Zhengzhou (Jinshui) , Henan Pilot Free Trade Zone |

**Product Description**

| | |
|---|---|
| Product Name..... : | Wireless CarPlay Adapter |
| Brand Name.....: | N/A |
| Model Name..... : | WL01-C-Black |
| Series Model.....: | WL01-C-White, WL01-C-Sierra Blue, WL01-C-Purple, WL01-C-Gun, WL01-C-Titanium, WL01-C-Navy, YYYY1-Black, YYYY1-Gunmetal Gray, YKCAA-Black, YKCAA-Blue, L-PP01-Black, L-PP01-Rose Gold, MYC-C-Black, MYC-C-Titanium, TK-XTT-Black, TK-XTT-Navy, CXX-00-Black, CXX-00-Gunmetal Gray |
| Test Standards..... : | FCC Rules and Regulations Part 15 Subpart C, Section 247 |
| Test Procedure..... : | ANSI C63.10:2013 |

This device described above has been tested by Flux Compliance Service Laboratory, the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.
This report shall not be reproduced except in full, without the written approval of Flux Compliance Service Laboratory, this document may be altered or revised by Flux Compliance Service Laboratory, personal only, and shall be noted in the revision of the document..

| | |
|---|---|
| Date (s) of performance of tests. : | Apr 26, 2024 ~ May 09, 2024 |
| Date of Issue.....: | May 09, 2024 |
| Test Result.....: | Pass |

Tested by : Scott Shen

(Scott Shen)

Reviewed by : Duke Qian

(Duke Qian)

Approved by : Jack Wang

(Jack Wang)

**Table of Contents** **Page**

**1. SUMMARY OF TEST RESULTS ..... 6**
1.1 TEST FACTORY ..... 7
1.2 MEASUREMENT UNCERTAINTY ..... 7
**2. GENERAL INFORMATION ..... 8**
2.1 GENERAL DESCRIPTION OF THE EUT ..... 8
2.2 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED ..... 10
2.3 TEST SOFTWARE: THE ..... 10
2.4 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS ..... 11
2.5 EQUIPMENTS LIST ..... 12
**3 CONDUCTED EMISSION MEASUREMENT ..... 13**
3.1 LIMIT ..... 13
3.2 TEST PROCEDURE ..... 13
3.3 TEST SETUP ..... 14
3.4 TEST RESULTS ..... 15
**4. 20 DB BANDWIDTH ..... 16**
4.1 Limit ..... 17
4.2 Test Procedure ..... 17
4.3 Test setup ..... 17
4.4 Test results ..... 17
4.5 Original Test Data ..... 18
**5. CONDUCTED OUTPUT POWER ..... 21**
5.1 LIMIT ..... 21
5.2 TEST PROCEDURE ..... 21
5.3 TEST SETUP ..... 21
5.4 TEST RESULTS ..... 21
**6 NUMBER OF HOPPING CHANNEL ..... 25**
6.1 LIMIT ..... 25
6.2 TEST PROCEDURE ..... 25
6.3 TEST SETUP ..... 25
6.4 EUT OPERATION CONDITIONS ..... 25
6.5 TEST RESULTS ..... 26

Table of Contents Page

**7. BAND EDGE AND SPURIOUS(CONDUCTED) ..... 27**
7.1 LIMIT ..... 27
7.2 TEST PROCEDURE ..... 27
7.3 TEST SETUP ..... 27
7.4 TEST RESULTS ..... 28
7.5 Original test data ..... 28
7.6 Spurious emissions ..... 30
7.6 For Hopping Band edge ..... 39
**8. RADIATED EMISSION MEASUREMENT ..... 41**
8.1 RADIATED EMISSION LIMITS ..... 41
8.2 TEST PROCEDURE ..... 42
8.3 TESTSETUP ..... 43
8.4. TEST RESULTS ..... 45
8.5 (30MHZ-1000MHZ) ..... 46
8.6 ABOVE 1GHZ ..... 48
8.7 RADIATED BAND EDGE DATA ..... 51
**9. AVERAGE TIME OF OCCUPANCY ..... 52**
9.1 LIMIT ..... 52
9.2 TEST PROCEDURE ..... 52
9.3 TEST SETUP ..... 52
9.4 TEST RESULTS ..... 53
9.5 ORIGINAL TEST DATA ..... 54
**10. HOPPING CHANNEL SEPARATION MEASUREMEN ..... 57**
10.1 LIMIT ..... 57
10.2 TEST PROCEDURE ..... 57
10.3 TEST SETUP ..... 57
10.4 EUT OPERATION CONDITIONS ..... 57
10.5 TEST RESULTS ..... 58
**11. ANTENNA REQUIREMENT ..... 61**
11.1 STANDARD REQUIREMENT ..... 61
11.2 RESULT ..... 61

## Revision History

| Rev. | Issue Date | Effect Page | Contents |
|---|---|---|---|
| 00 | May 09, 2024 | N/A | N/A |
| | | | |

# 1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:
KDB 558074 D01 15.247 Meas Guidance v05r02

| FCC Part 15.247,Subpart C | | | |
|---|---|---|---|
| Standard Section | Test Item | Judgment | Remark |
| 15.207 | Conducted Emission | PASS | -- |
| 15.247(a)(1) | Hopping Channel Separation | PASS | -- |
| 15.247 (b)(1) | Output Power | PASS | -- |
| 15.209 | Radiated Spurious Emission | PASS | -- |
| 15.247(d) | Conducted Spurious & Band Edge Emission | PASS | -- |
| 15.247(a)(1 )(i) | Number of Hopping Frequency | PASS | -- |
| 15.247(a)(1)(i) | Dwell Time | PASS | -- |
| 15.247(a)(1) | 20dB Bandwidth<br>99% Bandwidth | PASS | -- |
| 15.205 | Restricted bands of operation | PASS | -- |
| Part 15.247(d)/part 15.209(a) | Band Edge Emission | PASS | |
| 15.203 | Antenna Requirement | PASS | |

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

(2) All tests are according to ANSI C63.10-2013

## 1.1 TEST FACTORY

| | |
|---|---|
| Company Name: | Flux Compliance Service Laboratory |
| Address: | Room 105 Floor Bao hao Technology Building 1 NO.15 Gong ye West Road Hi-Tech Industrial, Song shan lake Dongguan |
| Telephone: | +86-769-27280901 |
| Fax: | +86-769-27280901 |
| Laboray Accreditations： | |
| FCC Test Firm Registration Number: | 514908 |
| CNAS Number: | L15566 |
| Designation number: | CN0127 |
| A2LA accreditation number: | 5545.01 |
| ISED Number: | 25801 |
| CAB ID： | CN0097 |

## 1.2 MEASUREMENT UNCERTAINTY

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

| No. | Item | Uncertainty |
|---|---|---|
| 1 | RF output power, conducted | ±0.71dB |
| 2 | Unwanted Emissions, conducted | ±2.988 dB |
| 3 | Conducted Emission (9KHz-150KHz) | ±4.13 dB |
| 4 | All emissions radiated (9KHz -30MHz) | ±3.1 dB |
| 5 | Conducted Emission (150KHz-30MHz) | ±4.74 dB |
| 6 | All emissions,radiated(<1G) 30MHz-1000MHz | ±5.2 dB |
| 7 | All emissions,radiated 1GHz -18GHz | ±4.66 dB |
| 8 | All emissions,radiated 18GHz -40GHz | ±4.31 dB |
| 9 | Occupied bandwidth and PSD | ±0.3 dB |

# 2. GENERAL INFORMATION

## 2.1 GENERAL DESCRIPTION OF THE EUT

<table>
<tr><td>Product Name</td><td>Wireless CarPlay Adapter</td></tr>
<tr><td>Trade Name</td><td>N/A</td></tr>
<tr><td>Model Name</td><td>WL01-C-Black</td></tr>
<tr><td>Series Model</td><td>WL01-C-White, WL01-C-Sierra Blue, WL01-C-Purple, WL01-C-Gun, WL01-C-Titanium, WL01-C-Navy, YYYY1-Black, YYYY1-Gunmetal Gray, YKCAA-Black, YKCAA-Blue, L-PP01-Black, L-PP01-Rose Gold, MYC-C-Black, MYC-C-Titanium, TK-XTT-Black, TK-XTT-Navy, CXX-00-Black, CXX-00-Gunmetal Gray</td></tr>
<tr><td>Model Difference</td><td>The above product with same circuit, PCB layout, electrical parts, materials and wiring structures, Appearance shape, the materials of decorative accessories is same, the only difference is the model name and colour.</td></tr>
<tr><td>Product Description</td><td><table>
<tr><td>Operation Frequency:</td><td>☑2420-2480 MHz</td></tr>
<tr><td>Modulation Type:</td><td>☑GFSK ,☑π/4-DQPSK, ☑8-DPSK</td></tr>
<tr><td>Bluetooth Configuration:</td><td>BT</td></tr>
<tr><td>Bluetooth technology:</td><td>☑BR/EDR</td></tr>
<tr><td>Number Of Channel:</td><td>☑79 Channels</td></tr>
<tr><td>Antenna Type:</td><td>☑FPC Antenna</td></tr>
<tr><td>Antenna Gain (dBi)</td><td>0.62</td></tr>
</table></td></tr>
<tr><td>Report number</td><td>FCS202404276W02</td></tr>
<tr><td>Power Supply</td><td>DC 5V</td></tr>
<tr><td>Battery</td><td>N/A</td></tr>
<tr><td>Hardware version number</td><td>V1.0</td></tr>
<tr><td>Software version number</td><td>V1.0</td></tr>
<tr><td>Connecting I/O Port(s)</td><td>Please refer to the User's Manual</td></tr>
</table>

Note:

1. For a more detailed features description, please refer to the manufacturer’s specifications or the User's Manual.

2. The channel list

| Channel | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
|---|---|---|---|---|---|---|---|
| 1 | 2402MHz | 21 | 2422MHz | 41 | 2442MHz | 61 | 2462MHz |
| 2 | 2403MHz | 22 | 2423MHz | 42 | 2443MHz | 62 | 2463MHz |
| ⋮ | ⋮ | ⋮ | ⋮ | ⋮ | ⋮ | ⋮ | ⋮ |
| 19 | 2420MHz | 39 | 2440MHz | 59 | 2460MHz | 79 | 2480MHz |
| 20 | 2421MHz | 40 | 2441MHz | 60 | 2461MHz | | |

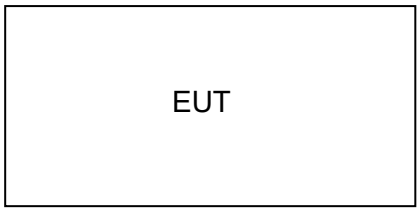
3. Table for Filed Antenna

| Ant. | Brand | Model Name | Antenna Type | Connector | Gain (dBi) | NOTE |
|---|---|---|---|---|---|---|
| 1 | N/A | N/A | FPC Antenna | N/A | 0.62 | 2.4G Antenna |

## 2.2 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

Block diagram of EUT configuration for test




## 2.3 TEST SOFTWARE: THE

Bluetooth RF Test Tool (RtlBluetoothMP.dll Version :5,2,2,24 RTLBTAPP Version :5.2.2,20)

The test softeware was used to control EUT work in continuous TX mode, and select test channel, Wireless mode as below table

| No. | Test model descrption |
|---|---|
| 1 | Low channel GFSK |
| 2 | Middle channel GFSK |
| 3 | High channel GFSK |
| 4 | Low channel π/4-DQPSK |
| 5 | Middle channel π/4-DQPSK |
| 6 | High channel π/4-DQPSK |
| 7 | Low channel 8DPSK |
| 8 | Middle channel 8DPSK |
| 9 | High channel 8DPSK |
| 10 | BT link |

Note:

1. All the test modes can be supply by adapter, only the result of the worst case recorded in the report. GFSK mode is worst mode.
2. For radiated emission, 3 axis were chosen for testing for each applicable mode.
3. The EUT used adapter when tested.
4. The test voltage was tuned from 85% to 115% of the Nominal rate supply votage, and found that the worst case was the nominal rated supply condition, So the report just shows that condition's data

## 2.4 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Necessary accessories

| Item | Equipment | Mfr/Brand | Model/Type No. | Serial No. | Note |
|---|---|---|---|---|---|
| 1 | Adapter | XIOAMI | MDY-11-EB | N/A | this adapter is for testing only in repor |
| | | | | | |

Support units

| Item | Equipment | Mfr/Brand | Model/Type No. | Serial No. | Note |
|---|---|---|---|---|---|
| N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | | |

Note:

(1) The support equipment was authorized by Declaration of Confirmation.

(2) For detachable type I/O cable should be specified the length in cm in『Length』column.

(3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.

## 2.5 EQUIPMENTS LIST

Radiation Test equipment

| Kind of Equipment | Manufacturer | Type No. | Company No. | Last calibration | Calibrated until |
|---|---|---|---|---|---|
| EMI Test Receiver | R&S | ESRP 3 | FCS-E001 | 2023.08.29 | 2024.08.28 |
| Signal Analyzer | R&S | FSV40-N | FCS-E012 | 2023.08.29 | 2024.08.28 |
| Active loop Antenna | ZHINAN | ZN30900C | FCS-E013 | 2023.08.29 | 2024.08.28 |
| Bilog Antenna | SCHWARZBECK | VULB 9168 | FCS-E002 | 2023.08.29 | 2024.08.28 |
| Horn Antenna | SCHWARZBECK | BBHA 9120D | FCS-E003 | 2023.08.29 | 2024.08.28 |
| SHF-EHF Horn Antenna (18G-40GHz) | A-INFO | LB-180400-KF | FCS-E018 | 2023.08.29 | 2024.08.28 |
| Pre-Amplifier(0.1M-3G Hz) | EMCI | EM330N | FCS-E004 | 2023.08.29 | 2024.08.28 |
| Pre-Amplifier (1G-18GHz) | N/A | TSAMP-0518SE | FCS-E014 | 2023.08.29 | 2024.08.28 |
| Pre-Amplifier (18G-40GHz) | TERA-MW | TRLA-0400 | FCS-E019 | 2023.08.29 | 2024.08.28 |
| Temperature & Humidity | HTC-1 | victor | FCS-E005 | 2023.08.29 | 2024.08.28 |
| Testing Software | EZ-EMC(Ver.STSLAB 03A1 RE) | | | | |

Conduction Test equipment

| Kind of Equipment | Manufacturer | Type No. | Company No. | Last calibration | Calibrated until |
|---|---|---|---|---|---|
| EMI Test Receiver | R&S | ESPI | FCS-E020 | 2023.08.29 | 2024.08.28 |
| LISN | R&S | ENV216 | FCS-E007 | 2023.08.29 | 2024.08.28 |
| LISN | ETS | 3810/2NM | FCS-E009 | 2023.08.29 | 2024.08.28 |
| Temperature & Humidity | HTC-1 | victor | FCS-E008 | 2023.08.29 | 2024.08.28 |
| Testing Software | EZ-EMC(Ver.EMC-CON 3A1.1) | | | | |

RF Connected Test

| Kind of Equipment | Manufacturer | Type No. | Company No. | Last calibration | Calibrated until |
|---|---|---|---|---|---|
| MXA SIGNAL Analyzer | Keysight | N9020A | FCS-E015 | 2023.08.29 | 2024.08.28 |
| Spectrum Analyzer | Agilent | E4447A | MY50180039 | 2023.08.29 | 2024.08.28 |
| Spectrum Analyzer | R&S | FSV-40 | 101499 | 2023.08.29 | 2024.08.28 |
| Power Sensor | Agilent | UX2021XA | FCS-E021 | 2023.08.29 | 2024.08.28 |
| Testing Software | EZ-EMC(Ver.STSLAB 03A1 RE) | | | | |

# 3 CONDUCTED EMISSION MEASUREMENT

## 3.1 LIMIT

Operating frequency band. In case the emission fall within the restricted band specified on Part 207(a) limit in the table below has to be followed.

| FREQUENCY (MHz) | Conducted Emissionlimit (dBuV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15 -0.5 | 66 - 56 * | 56 - 46 * |
| 0.50 -5.0 | 56.00 | 46.00 |
| 5.0 -30.0 | 60.00 | 50.00 |

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

## 3.2 TEST PROCEDURE

The following table is the setting of the receiver

| Receiver Parameters | Setting |
|---|---|
| Attenuation | 10 dB |
| Start Frequency | 0.15 MHz |
| Stop Frequency | 30 MHz |
| IF Bandwidth | 9 kHz |

a. The EUT was 0.8 meters from the horizontal ground plane and 0.4 meters from the vertical ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

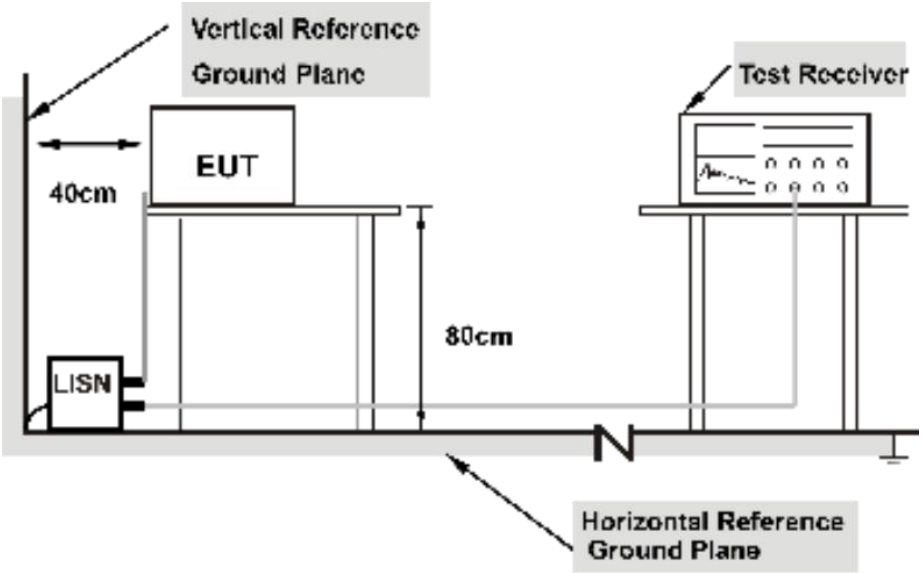
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

d. LISN at least 80 cm from nearest part of EUT chassis.

e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.3 TEST SETUP

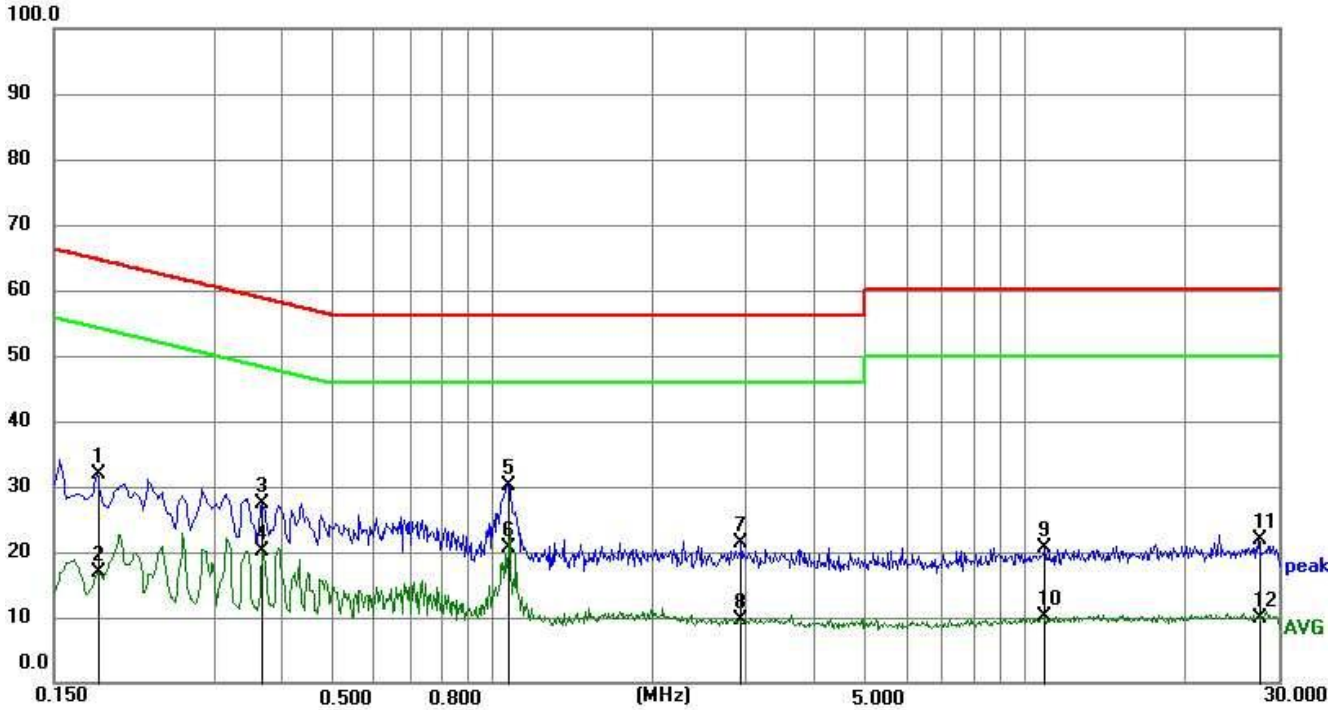



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

## 3.4 TEST RESULTS

| | | | |
|---|---|---|---|
| Temperature: | 25℃ | Relative Humidity: | 50% |
| Test Mode: | GFSK(worst mode) | Test Voltage: | DC 5V from adapter AC 120V/60Hz |
| Result: | L | Result: | Pass |




| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB) | Result (dBuV) | Limit (dBuV) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|
| 1 | 0.1815 | 21.88 | 10.10 | 31.98 | 64.42 | 32.44 | QP |
| 2 | 0.1815 | 6.88 | 10.10 | 16.98 | 54.42 | 37.44 | AVG |
| 3 | 0.3704 | 17.40 | 10.02 | 27.42 | 58.49 | 31.07 | QP |
| 4 | 0.3704 | 10.17 | 10.02 | 20.19 | 48.49 | 28.30 | AVG |
| 5 | 1.0723 | 20.23 | 10.00 | 30.23 | 56.00 | 25.77 | QP |
| 6 | 1.0723 | 10.72 | 10.00 | 20.72 | 46.00 | 25.28 | AVG |
| 7 | 2.9445 | 11.45 | 9.94 | 21.39 | 56.00 | 34.61 | QP |
| 8 | 2.9445 | -0.43 | 9.94 | 9.51 | 46.00 | 36.49 | AVG |
| 9 | 10.9500 | 10.77 | 9.80 | 20.57 | 60.00 | 39.43 | QP |
| 10 | 10.9500 | 0.29 | 9.80 | 10.09 | 50.00 | 39.91 | AVG |
| 11 | 27.5235 | 11.93 | 9.90 | 21.83 | 60.00 | 38.17 | QP |
| 12 | 27.5235 | -0.09 | 9.90 | 9.81 | 50.00 | 40.19 | AVG |