



TESTING LABORATORY  
CERTIFICATE #4820.01



## FCC PART 15B

## TEST REPORT

For

### **HENAN ESHOW ELECTRONIC COMMERCE CO., LTD.**

Room 722, Sanjiang Building, No.170 Nanyang Road, Huiji District, Zhengzhou, Henan, China

**FCC ID: 2AAR8RT22**

|                                        |                                                                                                                                                                                                                                                       |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Report Type:</b><br>Original Report | <b>Product Type:</b><br>Two Way Radio                                                                                                                                                                                                                 |
| <b>Report Number:</b>                  | RDG201109015-00B                                                                                                                                                                                                                                      |
| <b>Report Date:</b>                    | 2020-11-11                                                                                                                                                                                                                                            |
| <b>Reviewed By:</b>                    | Ivan Cao<br>Assistant Manager                                                                                                                                     |
| <b>Test Laboratory:</b>                | Bay Area Compliance Laboratories Corp. (Dongguan)<br>No.69 Pulongcun, Puxinhu Industry Area,<br>Tangxia, Dongguan, Guangdong, China<br>Tel: +86-769-86858888<br>Fax: +86-769-86858891<br><a href="http://www.baclcorp.com.cn">www.baclcorp.com.cn</a> |

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## GENERAL INFORMATION

### Product Description for Equipment under Test (EUT)

|                                     |                      |
|-------------------------------------|----------------------|
| <b>EUT Name:</b>                    | Two Way Radio        |
| <b>EUT Model:</b>                   | RT22                 |
| <b>Highest Operation Frequency:</b> | 462.7250 MHz         |
| <b>Rated Input Voltage:</b>         | DC 3.7V from battery |
| <b>Serial Number:</b>               | RDG201109015-RF-S9   |
| <b>EUT Received Date:</b>           | 2020.11.09           |
| <b>EUT Received Status:</b>         | Good                 |

### Objective

This report is prepared on behalf of **HENAN ESHOW ELECTRONIC COMMERCE CO., LTD.** in accordance with Part 2, Subpart J, and Part 15-Subparts A and B of the Federal Communications Commission's rules.

The objective is to determine the compliance of EUT with: FCC Part 15B Class B.

### Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Dongguan).

### Measurement Uncertainty

| Parameter                         | Measurement Uncertainty                                                                                              |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Unwanted Emissions, radiated      | 30M~200MHz: 4.55 dB, 200M~1GHz: 5.92 dB, 1G~6GHz: 4.98 dB, 6G~18GHz: 5.89 dB, 18G~26.5G: 5.47 dB, 26.5G~40G: 5.63 dB |
| Temperature                       | ±1°C                                                                                                                 |
| Humidity                          | ±5%                                                                                                                  |
| AC Power Lines Conducted Emission | 3.12 dB (150 kHz to 30 MHz)                                                                                          |

*Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.*

**Test Facility**

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 897218, the FCC Designation No. : CN1220.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0022.

**Declarations**

BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol “△”. Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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## SYSTEM TEST CONFIGURATION

### Description of Test Configuration

The system was configured for testing in Charging&Receiving mode.

### Equipment Modifications

No modification was made to the EUT.

### EUT Exercise Software

No Software was used in test.

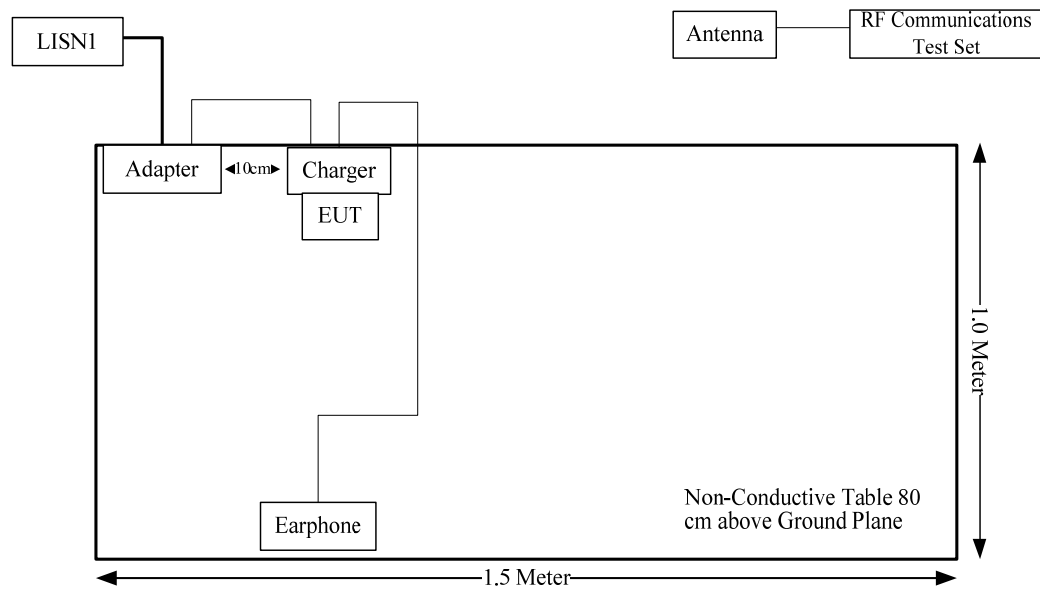
### Local Support Equipment List and Details

| Manufacturer | Description                | Model   | Serial Number |
|--------------|----------------------------|---------|---------------|
| HP           | RF Communications Test Set | 8920A   | 3438A05201    |
| Unknown      | Antenna                    | Unknown | Antenna-2     |

### Support Cable List and Details

| Cable Description | Shielding Type | Ferrite Core | Length (m) | From Port                  | To           |
|-------------------|----------------|--------------|------------|----------------------------|--------------|
| RF Cable          | Yes            | No           | 5.0        | RF Communications Test Set | Antenna      |
| Earphone          | No             | No           | 1.5        | EUT                        | Earphone     |
| DC Cable          | No             | No           | 1.2        | Adapter                    | Charger Base |

## Block Diagram of Test Setup



**Test Equipment List**

| Manufacturer               | Description       | Model      | Serial Number   | Calibration Date | Calibration Due Date |
|----------------------------|-------------------|------------|-----------------|------------------|----------------------|
| AC Line Conducted emission |                   |            |                 |                  |                      |
| R&S                        | LISN              | ENV 216    | 101614          | 2020-09-12       | 2021-09-12           |
| R&S                        | EMI Test Receiver | ESCI       | 101121          | 2020-07-07       | 2021-07-07           |
| MICRO-COAX                 | Coaxial Cable     | C-NJNJ-50  | C-0200-01       | 2020-09-05       | 2021-09-05           |
| R&S                        | Test Software     | EMC32      | Version 9.10.00 | N/A              | N/A                  |
| Radiated Emission          |                   |            |                 |                  |                      |
| Sunol Sciences             | Antenna           | JB3        | A060611-2       | 2020-08-25       | 2023-08-25           |
| R&S                        | EMI Test Receiver | ESCI       | 100224          | 2020-09-12       | 2021-09-12           |
| Unknown                    | Coaxial Cable     | C-NJNJ-50  | C-1000-01       | 2020-09-05       | 2021-09-05           |
| Unknown                    | Coaxial Cable     | C-NJNJ-50  | C-0400-02       | 2020-09-05       | 2021-09-05           |
| Unknown                    | Coaxial Cable     | C-NJNJ-50  | C-0530-01       | 2020-09-24       | 2021-09-24           |
| Sonoma                     | Amplifier         | 310N       | 185914          | 2020-10-13       | 2021-10-13           |
| Farad                      | Test Software     | EZ-EMC     | V1.1.4.2        | N/A              | N/A                  |
| ETS-Lindgren               | Horn Antenna      | 3115       | 000 527 35      | 2018-10-12       | 2021-10-12           |
| Agilent                    | Spectrum Analyzer | E4440A     | SG43360054      | 2020-07-07       | 2021-07-07           |
| Unknown                    | Coaxial Cable     | C-SJSJ-50  | C-0800-01       | 2020-09-05       | 2021-09-05           |
| Mini-Circuit               | Amplifier         | ZVA-213-S+ | 54201245        | 2020-09-05       | 2021-09-05           |

\* *Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

**Environmental Conditions**

| Test Item:         | Conducted emissions | Radiated emissions<br>(Below 1GHz) | Radiated emissions<br>(Above 1GHz) |
|--------------------|---------------------|------------------------------------|------------------------------------|
| Temperature:       | 24.6°C              | 28.6°C                             | 24.1°C                             |
| Relative Humidity: | 43 %                | 46%                                | 40 %                               |
| ATM Pressure:      | 101.6 kPa           | 101 kPa                            | 101 kPa                            |
| Tester:            | Barry Yang          | Leo Long                           | Bond Qin                           |
| Test Date:         | 2020-11-11          | 2020-11-10                         | 2020-11-10                         |

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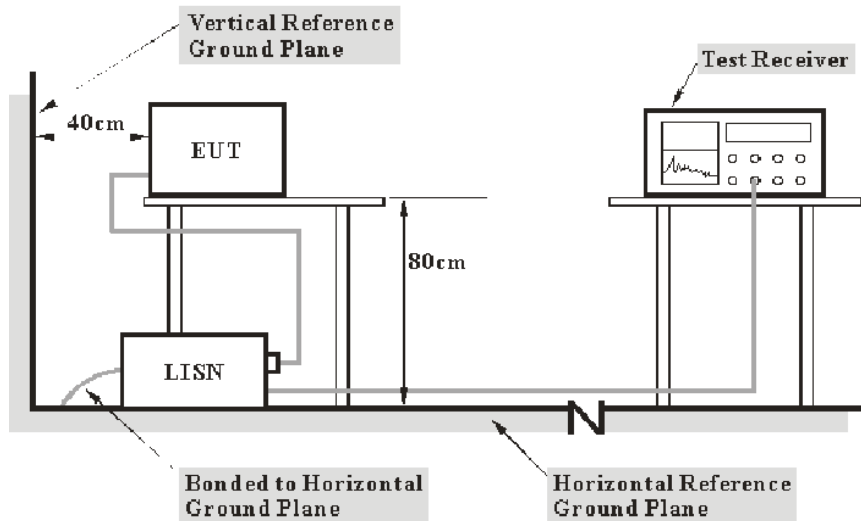
**SUMMARY OF TEST RESULTS**

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| Rule and Clause | Description of Test | Test Result |
|-----------------|---------------------|-------------|
| FCC §15.107     | Conducted emissions | Compliance  |
| FCC §15.109     | Radiated emissions  | Compliance  |

## CONDUCTED EMISSIONS

### EUT Setup



Note: 1. Support units were connected to second LISN.  
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15 B Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

### EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

| Frequency Range  | IF B/W |
|------------------|--------|
| 150 kHz – 30 MHz | 9 kHz  |

## Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the first LISN and the other support equipments were connected to the outlet of the second LISN.

The frequency and amplitude of the six highest ac power-line conducted emissions relative to the limit, measured over all the current-carrying conductors of the EUT power cords, and the operating frequency or frequency to which the EUT is tuned (if appropriate), should be reported, unless such emissions are more than 20 dB below the limit. AC power-line conducted emissions measurements are to be separately carried out only on each of the phase (“hot”) line(s) and (if used) on the neutral line(s), but not on the ground [protective earth] line(s). If less than six emission frequencies are within 20 dB of the limit, then the noise level of the measuring instrument at representative frequencies should be reported. The specific conductor of the power-line cord for each of the reported emissions should be identified. Measure the six highest emissions with respect to the limit on each current-carrying conductor of each power cord associated with the EUT (but not the power cords of associated or peripheral equipment that are part of the test configuration). Then, report the six highest emissions with respect to the limit from among all the measurements identifying the frequency and specific current-carrying conductor identified with the emission. The six highest emissions should be reported for each of the current-carrying conductors, or the six highest emissions may be reported over all the current-carrying conductors.

## Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result (QuasiPeak or Average) = Meter Reading + Corr.

Note:

Corr. = Cable loss + Factor of coupling device

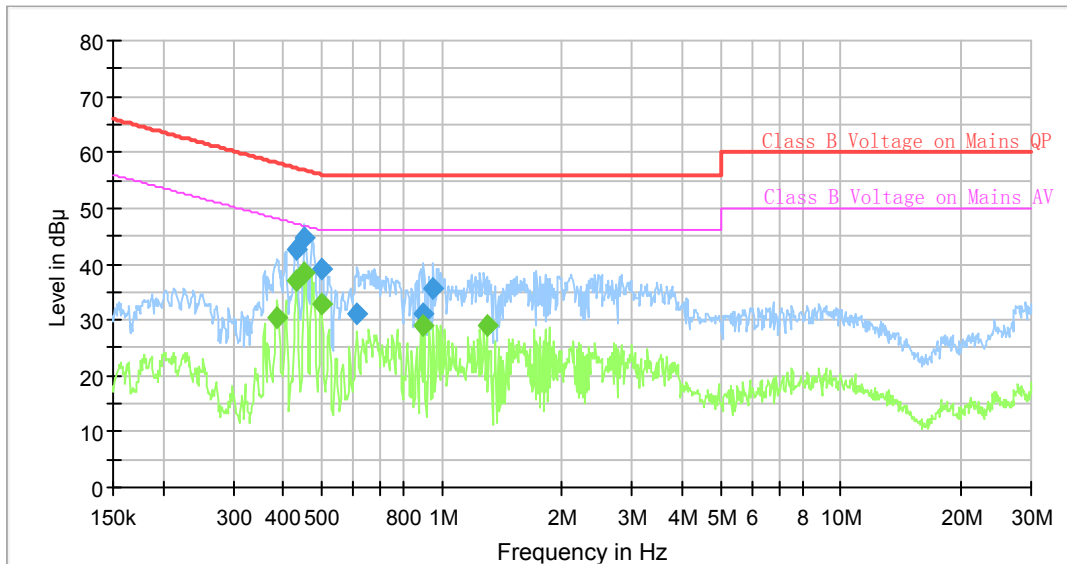
The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

Margin = Limit – Result

## Test Data

Please refer to following table and plots:

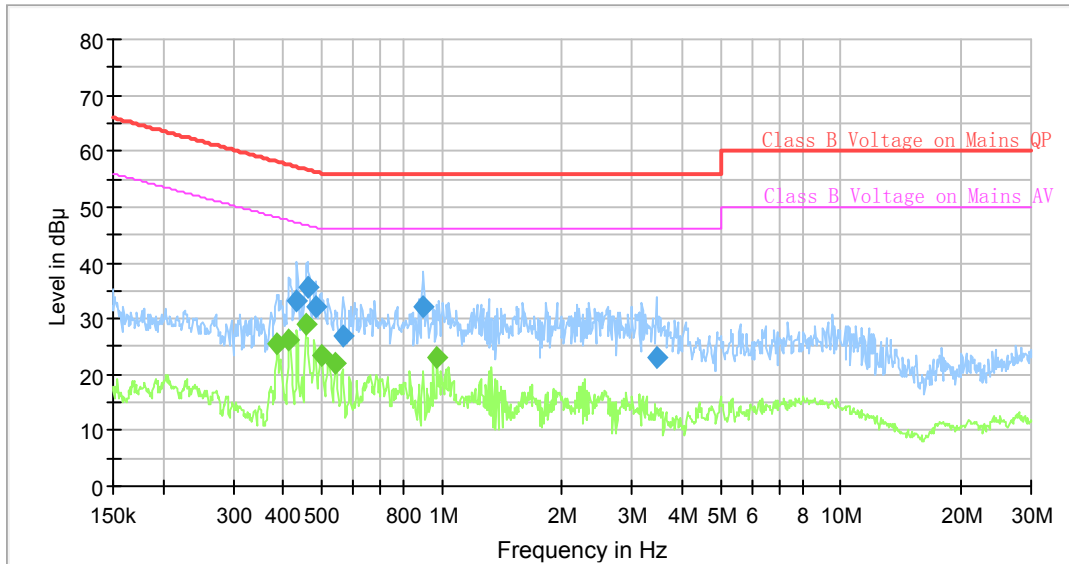
Port: L  
 Test Mode: Charging&Receiving  
 Power Source: AC 120V/60Hz



## Final Result

| Frequency (MHz) | QuasiPeak (dB μ V) | Average (dB μ V) | Limit (dB μ V) | Margin (dB) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|--------------------|------------------|----------------|-------------|-----------------|------|------------|
| 0.386939        | ---                | 30.56            | 48.13          | 17.57       | 9.000           | L1   | 9.6        |
| 0.431814        | ---                | 37.14            | 47.22          | 10.08       | 9.000           | L1   | 9.6        |
| 0.431814        | 42.46              | ---              | 57.22          | 14.76       | 9.000           | L1   | 9.6        |
| 0.453897        | ---                | 38.42            | 46.80          | 8.38        | 9.000           | L1   | 9.6        |
| 0.453897        | 44.88              | ---              | 56.80          | 11.92       | 9.000           | L1   | 9.6        |
| 0.499013        | 38.97              | ---              | 56.02          | 17.05       | 9.000           | L1   | 9.6        |
| 0.499013        | ---                | 32.67            | 46.02          | 13.35       | 9.000           | L1   | 9.6        |
| 0.615300        | 31.13              | ---              | 56.00          | 24.87       | 9.000           | L1   | 9.6        |
| 0.898892        | 31.25              | ---              | 56.00          | 24.75       | 9.000           | L1   | 9.7        |
| 0.898892        | ---                | 28.85            | 46.00          | 17.15       | 9.000           | L1   | 9.7        |
| 0.954334        | 35.75              | ---              | 56.00          | 20.25       | 9.000           | L1   | 9.7        |
| 1.293689        | ---                | 29.11            | 46.00          | 16.89       | 9.000           | L1   | 9.7        |

Port: N  
 Test Mode: Charging&Receiving  
 Power Source: AC 120V/60Hz



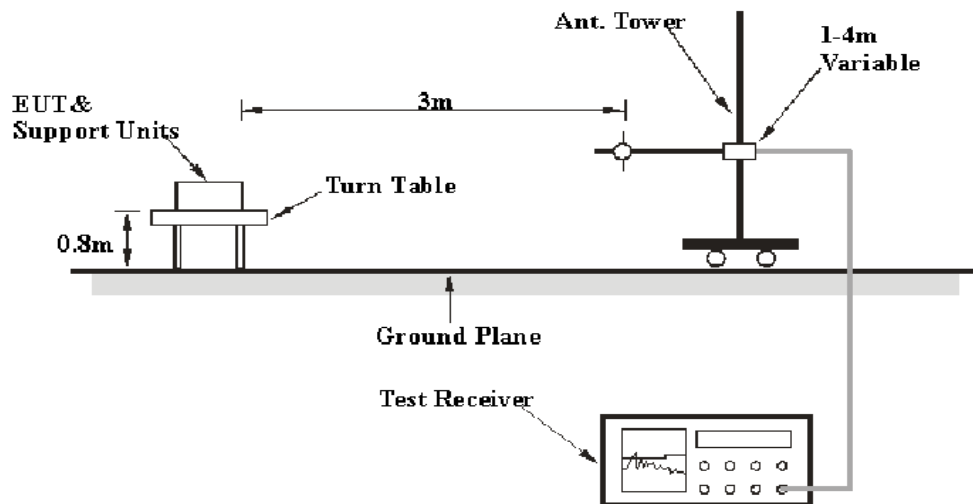
## Final Result

| Frequency (MHz) | QuasiPeak (dB $\mu$ V) | Average (dB $\mu$ V) | Limit (dB $\mu$ V) | Margin (dB) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------------|----------------------|--------------------|-------------|-----------------|------|------------|
| 0.386939        | ---                    | 25.46                | 48.13              | 22.67       | 9.000           | N    | 9.6        |
| 0.414923        | ---                    | 26.33                | 47.55              | 21.22       | 9.000           | N    | 9.6        |
| 0.431814        | 33.20                  | ---                  | 57.22              | 24.02       | 9.000           | N    | 9.6        |
| 0.456166        | ---                    | 28.87                | 46.76              | 17.89       | 9.000           | N    | 9.6        |
| 0.460739        | 35.54                  | ---                  | 56.68              | 21.14       | 9.000           | N    | 9.6        |
| 0.481892        | 32.09                  | ---                  | 56.31              | 24.22       | 9.000           | N    | 9.6        |
| 0.501508        | ---                    | 23.43                | 46.00              | 22.57       | 9.000           | N    | 9.6        |
| 0.540467        | ---                    | 22.08                | 46.00              | 23.92       | 9.000           | N    | 9.6        |
| 0.565280        | 26.92                  | ---                  | 56.00              | 29.08       | 9.000           | N    | 9.6        |
| 0.898892        | 32.08                  | ---                  | 56.00              | 23.92       | 9.000           | N    | 9.6        |
| 0.973564        | ---                    | 23.11                | 46.00              | 25.89       | 9.000           | N    | 9.6        |
| 3.455764        | 23.18                  | ---                  | 56.00              | 32.82       | 9.000           | N    | 9.6        |

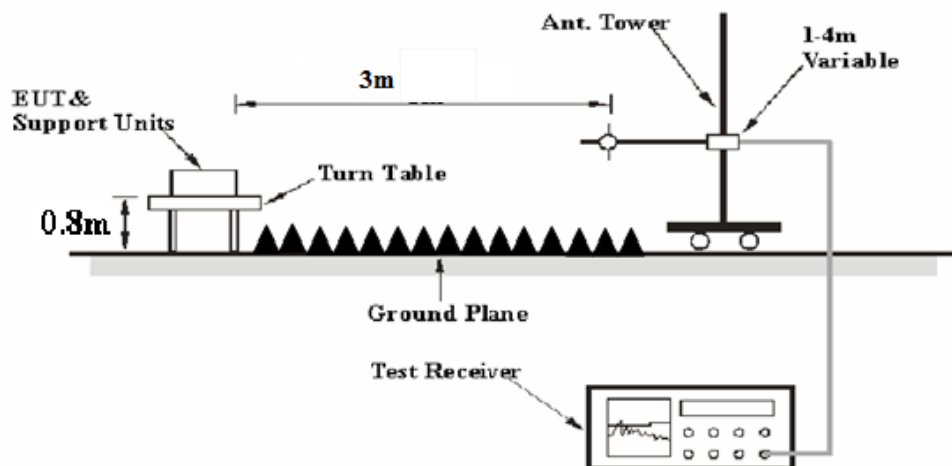
## RADIATED EMISSIONS

### EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission below 1GHz tests were performed in the 10 meters chamber test site, above 1GHz tests were performed in the 3 meters chamber test site B, using the setup accordance with the ANSI C63.4-2014. The specification used was the FCC Part 15.109 Class B limits.

## EMI Test Receiver Setup

The system was investigated from 30 MHz to 2 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

| Frequency Range   | RBW     | Video B/W | IF B/W  | Measurement |
|-------------------|---------|-----------|---------|-------------|
| 30 MHz – 1000 MHz | 120 kHz | 300 kHz   | 120 kHz | QP          |
| Above 1 GHz       | 1 MHz   | 3 MHz     | /       | Peak        |
|                   | 1 MHz   | 10Hz      | /       | AVG         |

If the maximized peak measured value complies with under the QP/Average limit more than 6dB, then it is unnecessary to perform an QP/Average measurement.

## Test Procedure

During the radiated emissions, the adapter was connected to the first AC floor outlet and the other support equipments were connected to the second AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

The data was recorded in the Quasi-peak detection mode for below 1 GHz, peak and average detection mode above 1 GHz.

All emissions under the average limit and under the noise floor have not recorded in the report.

## Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Meter Reading+ Corrected

Note:

Corrected = Antenna Factor + Cable Loss - Amplifier Gain

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

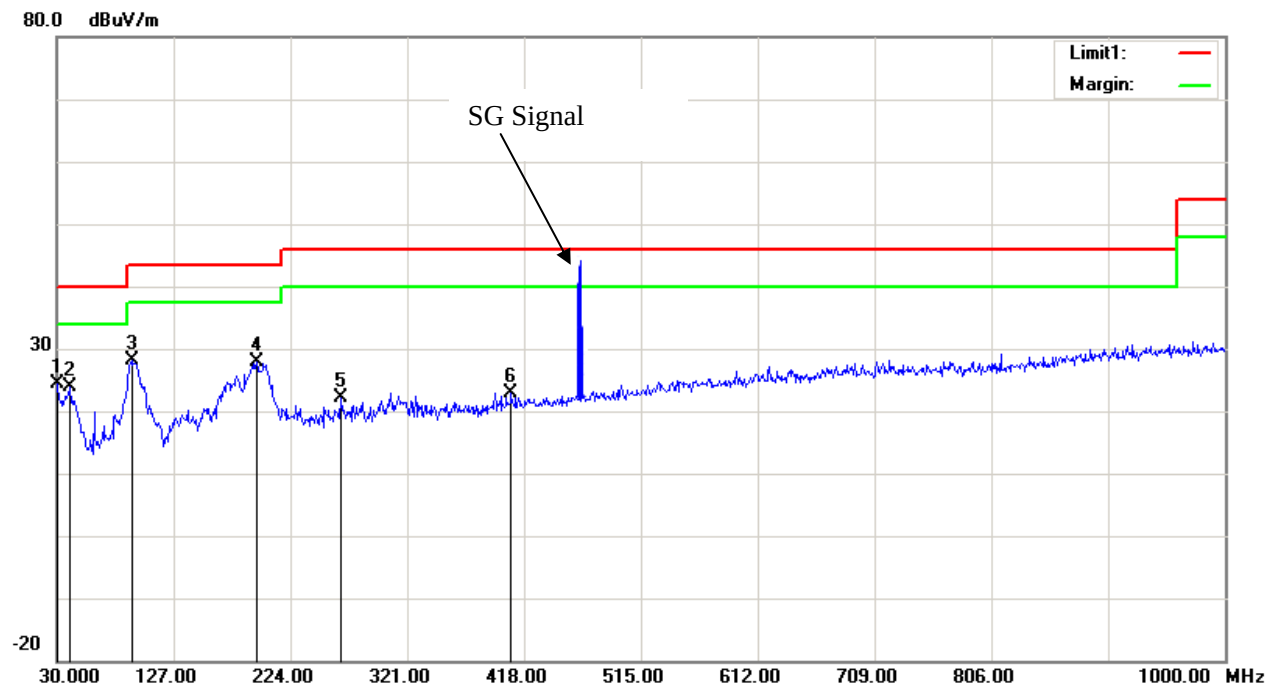
$$\text{Margin} = \text{Limit} - \text{Result}$$

**Test Data**

Please refer to following table and plots:

**Condition:** FCC Part 15B Class B  
**Test Mode:** Charging&Receiving

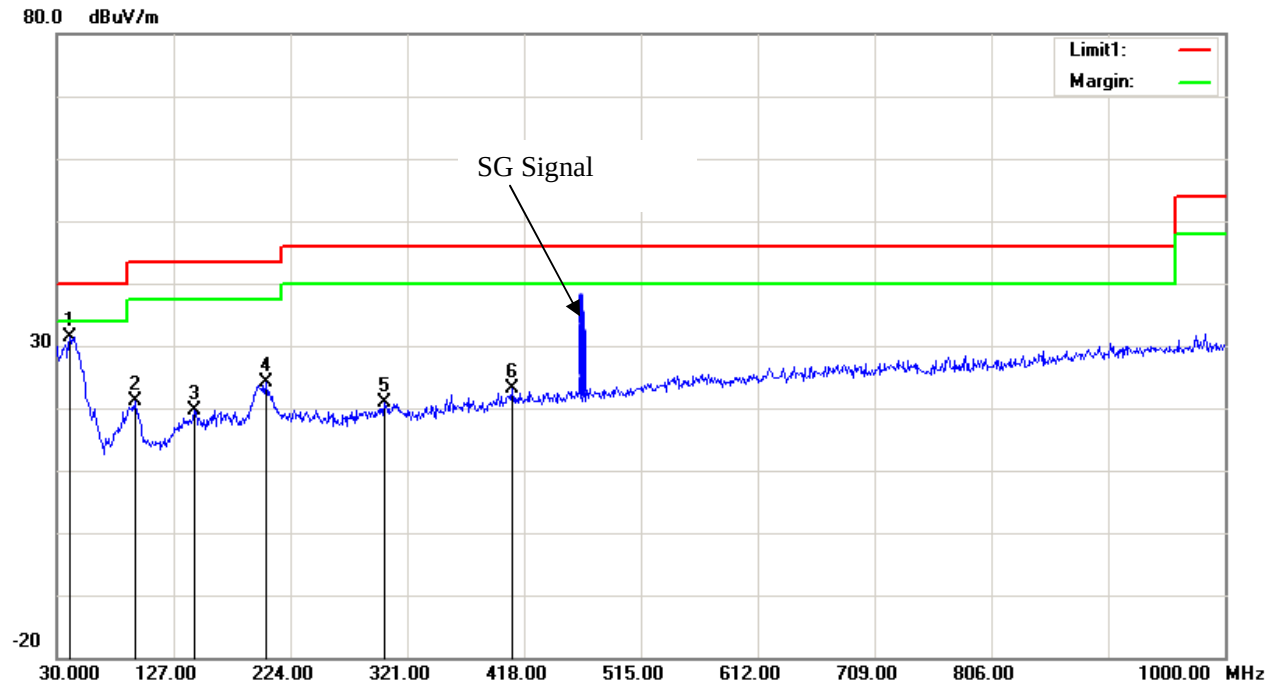
**Polarization:** Horizontal  
**Power:** AC 120V/60Hz  
**Distance:** 3m



| No. | Frequency<br>(MHz) | Reading<br>(dBμV) | Detector | Corrected<br>(dB/m) | Result<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) |
|-----|--------------------|-------------------|----------|---------------------|--------------------|-------------------|----------------|
| 1   | 30.0000            | 27.10             | peak     | -4.10               | 23.00              | 40.00             | 17.00          |
| 2   | 93.0500            | 39.40             | peak     | -14.82              | 24.58              | 43.50             | 18.92          |
| 3   | 192.9600           | 32.40             | peak     | -10.22              | 22.18              | 43.50             | 21.32          |
| 4   | 305.4800           | 30.74             | peak     | -7.16               | 23.58              | 46.00             | 22.42          |
| 5   | 352.0400           | 29.03             | peak     | -6.40               | 22.63              | 46.00             | 23.37          |
| 6   | 571.2600           | 27.42             | peak     | -1.49               | 25.93              | 46.00             | 20.07          |

**Condition:** FCC Part 15B Class B  
**Test Mode:** Charging&Receiving

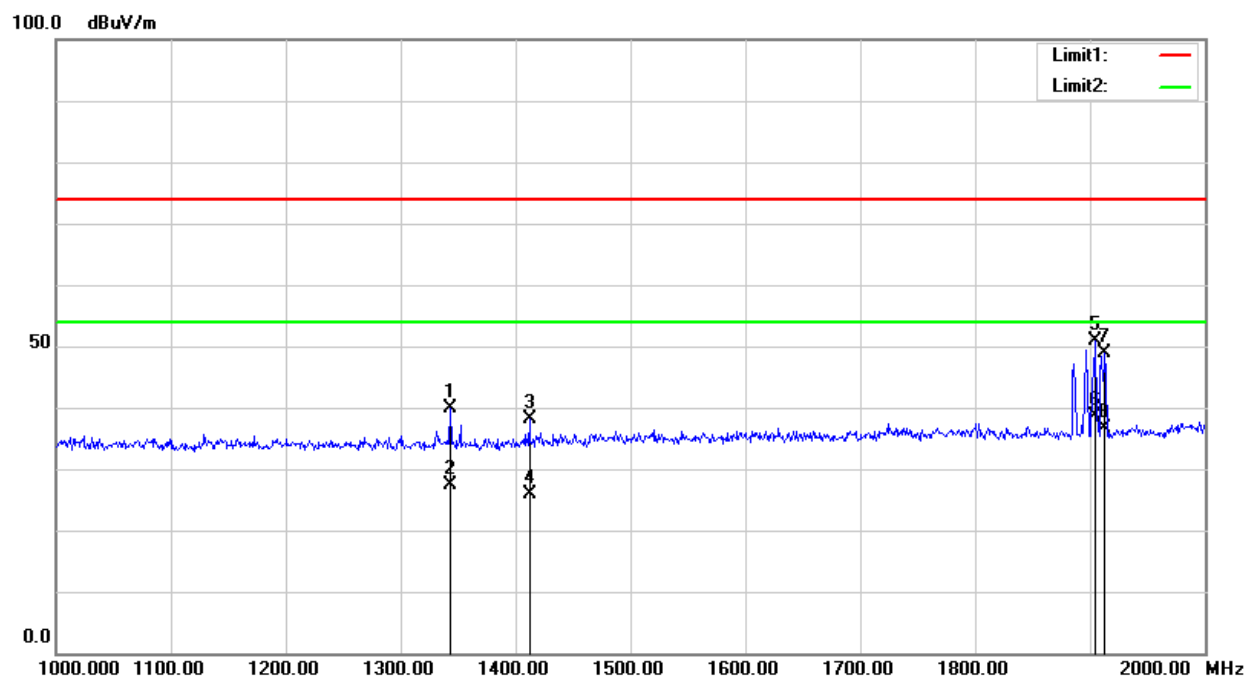
**Polarization:** Vertical  
**Power:** AC 120V/60Hz  
**Distance:** 3m



| No. | Frequency (MHz) | Reading (dB $\mu$ V) | Detector | Corrected (dB/m) | Result (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Margin (dB) |
|-----|-----------------|----------------------|----------|------------------|-----------------------|----------------------|-------------|
| 1   | 40.6700         | 41.10                | peak     | -9.67            | 31.43                 | 40.00                | 8.57        |
| 2   | 94.9900         | 35.62                | peak     | -14.58           | 21.04                 | 43.50                | 22.46       |
| 3   | 144.4600        | 28.70                | peak     | -9.03            | 19.67                 | 43.50                | 23.83       |
| 4   | 203.6300        | 34.03                | peak     | -9.95            | 24.08                 | 43.50                | 19.42       |
| 5   | 301.6000        | 28.20                | peak     | -7.30            | 20.90                 | 46.00                | 25.10       |
| 6   | 408.3000        | 28.03                | peak     | -4.92            | 23.11                 | 46.00                | 22.89       |

**Condition:** FCC Part 15B Class B  
**Test Mode:** Charging&Receiving

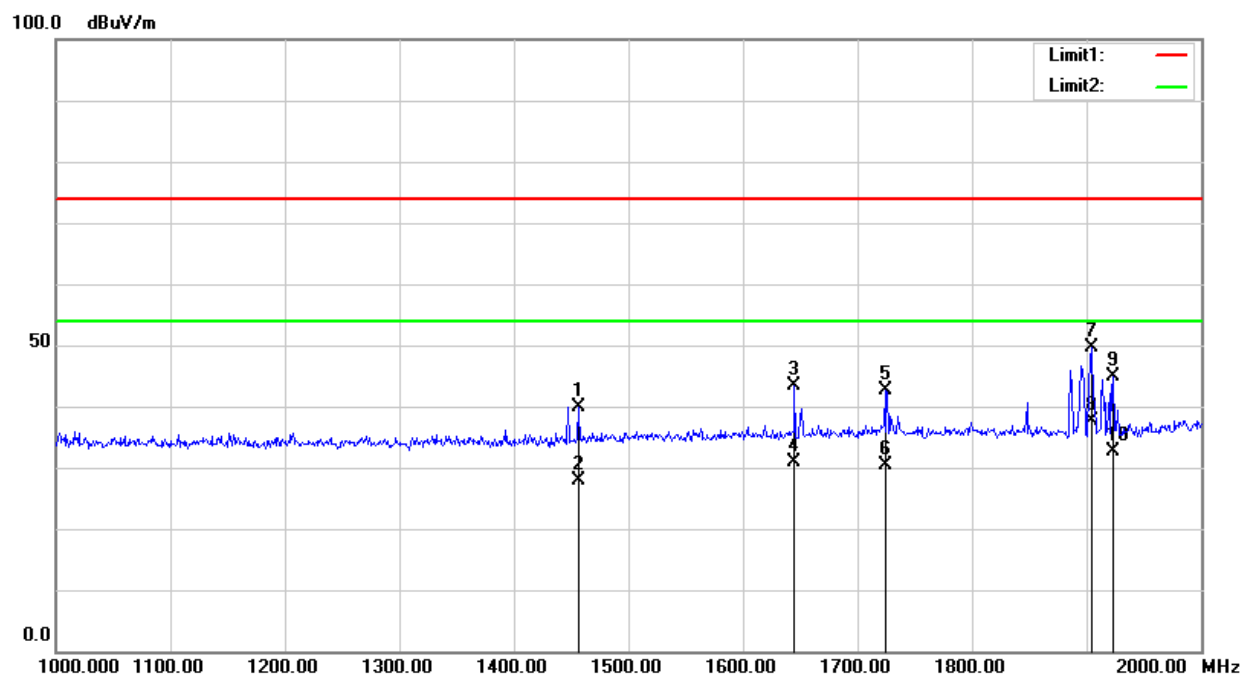
**Polarization:** Horizontal  
**Power:** AC 120V/60Hz  
**Distance:** 3m



| No. | Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Detector | Corrected<br>(dB/m) | Result<br>(dB $\mu$ V/m) | Limit<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|-----|--------------------|-------------------------|----------|---------------------|--------------------------|-------------------------|----------------|
| 1   | 1343.500           | 39.79                   | peak     | 0.09                | 39.88                    | 74.00                   | 34.12          |
| 2   | 1343.500           | 27.25                   | AVG      | 0.09                | 27.34                    | 54.00                   | 26.66          |
| 3   | 1412.500           | 37.61                   | peak     | 0.40                | 38.01                    | 74.00                   | 35.99          |
| 4   | 1412.500           | 25.36                   | AVG      | 0.40                | 25.76                    | 54.00                   | 28.24          |
| 5   | 1905.000           | 48.43                   | peak     | 2.40                | 50.83                    | 74.00                   | 23.17          |
| 6   | 1905.000           | 36.20                   | AVG      | 2.40                | 38.60                    | 54.00                   | 15.40          |
| 7   | 1913.000           | 46.30                   | peak     | 2.51                | 48.81                    | 74.00                   | 25.19          |
| 8   | 1913.000           | 34.02                   | AVG      | 2.51                | 36.53                    | 54.00                   | 17.47          |

**Condition:** FCC Part 15B Class B  
**Test Mode:** Charging&Receiving

**Polarization:** Vertical  
**Power:** AC 120V/60Hz  
**Distance:** 3m



| No. | Frequency<br>(MHz) | Reading<br>(dB $\mu$ V) | Detector | Corrected<br>(dB/m) | Result<br>(dB $\mu$ V/m) | Limit<br>(dB $\mu$ V/m) | Margin<br>(dB) |
|-----|--------------------|-------------------------|----------|---------------------|--------------------------|-------------------------|----------------|
| 1   | 1456.500           | 39.18                   | peak     | 0.82                | 40.00                    | 74.00                   | 34.00          |
| 2   | 1456.500           | 27.02                   | AVG      | 0.82                | 27.84                    | 54.00                   | 26.16          |
| 3   | 1645.500           | 41.63                   | peak     | 1.63                | 43.26                    | 74.00                   | 30.74          |
| 4   | 1645.500           | 29.36                   | AVG      | 1.63                | 30.99                    | 54.00                   | 23.01          |
| 5   | 1724.000           | 40.63                   | peak     | 1.96                | 42.59                    | 74.00                   | 31.41          |
| 6   | 1724.000           | 28.36                   | AVG      | 1.96                | 30.32                    | 54.00                   | 23.68          |
| 7   | 1904.000           | 47.20                   | peak     | 2.39                | 49.59                    | 74.00                   | 24.41          |
| 8   | 1904.000           | 35.20                   | AVG      | 2.39                | 37.59                    | 54.00                   | 16.41          |
| 9   | 1923.000           | 42.20                   | peak     | 2.66                | 44.86                    | 74.00                   | 29.14          |
| 10  | 1923.000           | 30.02                   | AVG      | 2.66                | 32.68                    | 54.00                   | 21.32          |

\*\*\*\*\*END OF REPORT\*\*\*\*\*