

# TEST REPORT

Reference No..... : WTU21X11119191W-2  
FCC ID ..... : 2AGOFRC463A  
Applicant ..... : HCS (Suzhou) Limited  
Address ..... : 19F-20F, Building B-3rd, No.209 Zhuyuan Road, New District, Suzhou,  
P.R.China  
Product Name ..... : Remote Control  
Test Model. .... : RC4630501/01BR  
Standards ..... : **FCC PART15 SUBPART B**  
Date of Receipt sample .... : Nov. 04, 2021  
Date of Test..... : Nov. 04, 2021 to Nov. 08, 2021  
Date of Issue ..... : Nov. 08, 2021  
Test Result..... : **Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

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**Report version**

| Version No. | Date of issue | Description |
|-------------|---------------|-------------|
| Rev.00      | Nov. 08, 2021 | Original    |
| /           | /             | /           |

## 1. GENERAL INFORMATION

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### 1.1 Product Description for Equipment Under Test (EUT)

#### Client Information

Applicant: HCS (Suzhou) Limited  
Address of applicant: 19F-20F, Building B-3rd, No.209 Zhuyuan Road, New District, Suzhou, P.R.China

Manufacturer: HCS (Suzhou) Limited  
Address of manufacturer: 19F-20F, Building B-3rd, No.209 Zhuyuan Road, New District, Suzhou, P.R.China

| General Description of EUT                                                                                                                                                                                                                                                                         |                                                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Product Name:                                                                                                                                                                                                                                                                                      | Remote Control                                                                    |
| Trade Name:                                                                                                                                                                                                                                                                                        |  |
| Model No.:                                                                                                                                                                                                                                                                                         | RC4630501/01BR                                                                    |
| Adding Model(s):                                                                                                                                                                                                                                                                                   | RC463XXXX/XXR, RC463XXXX/XXBR,<br>("X"=0-9."B"means packed with battery)          |
| <i>Note: The test data is gathered from a production sample, provided by the manufacturer. The appearance of others models listed in the report is different from main-test model RC4630501/01BR, but the circuit and the electronic construction do not change, declared by the manufacturer.</i> |                                                                                   |

| Technical Characteristics of EUT |             |
|----------------------------------|-------------|
| Rated Voltage:                   | DC 3V       |
| Rated Current:                   | /           |
| Rated Power:                     | /           |
| Power Adapter Model:             | /           |
| Lowest Internal Frequency:       | /           |
| Highest Internal Frequency:      | Above108MHz |
| Classification of ITE:           | Class B     |

## 1.2 Test Standards

The tests were performed according to following standards:

**FCC Rules Part 15 Subpart B:**Unintentional Radiators.

**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.

**Maintenance of compliance** is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

## 1.3 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.

## 1.4 Test Facility

### Address of the test laboratory

Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Block 70 Bao'an District, Shenzhen, Guangdong, China

### FCC – Registration No.: 125990

Waltek Testing Group (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. The Designation Number is CN5010, and Test Firm Registration Number is 125990.

### Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

## 1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission. The test modes were adapted according to the operation manual for use, more detailed description as follows:

| Test Mode List |                |                        |                   |
|----------------|----------------|------------------------|-------------------|
| Test Mode      | Description    | Remark                 | Power Supply Mode |
| TM1            | Normal Working | Connect to the Battery | DC 3V             |

| EUT Cable List and Details |            |                     |                        |                     |
|----------------------------|------------|---------------------|------------------------|---------------------|
| Cable Description          | Length (m) | Shielded/Unshielded | With / Without Ferrite | With / Without Chip |
| /                          | /          | /                   | /                      | /                   |

| Special Cable List and Details |            |                     |                        |                     |
|--------------------------------|------------|---------------------|------------------------|---------------------|
| Cable Description              | Length (m) | Shielded/Unshielded | With / Without Ferrite | With / Without Chip |
| /                              | /          | /                   | /                      | /                   |

| Auxiliary Equipment List and Details |              |       |               |
|--------------------------------------|--------------|-------|---------------|
| Description                          | Manufacturer | Model | Serial Number |
| Notebook                             | Lenovo       | E445  | EB12648265    |

## 1.6 Measurement Uncertainty

| Measurement uncertainty |            |                                |
|-------------------------|------------|--------------------------------|
| Parameter               | Conditions | Uncertainty                    |
| Conducted Emissions     | Conducted  | 9-150kHz $\pm 3.74\text{dB}$   |
|                         |            | 0.15-30MHz $\pm 3.34\text{dB}$ |
| Radiated Emissions      | Radiated   | 30-200MHz $\pm 4.52\text{dB}$  |
|                         |            | 0.2-1GHz $\pm 5.56\text{dB}$   |
|                         |            | 1-6GHz $\pm 3.84\text{dB}$     |
|                         |            | 6-18GHz $\pm 3.92\text{dB}$    |

### 1.7 Test Equipment List and Details

| Description              | Manufacturer    | Model       | Serial No. | Cal Date   | Due Date   |
|--------------------------|-----------------|-------------|------------|------------|------------|
| Spectrum Analyzer        | Rohde & Schwarz | FSP         | 836079/035 | 2021-03-30 | 2022-03-29 |
| EMI Test Receiver        | Rohde & Schwarz | ESVB        | 825471/005 | 2021-04-12 | 2022-04-11 |
| Amplifier                | Agilent         | 8447F       | 3113A06717 | 2021-04-12 | 2022-04-11 |
| Amplifier                | C&D             | PAP-1G18    | 2002       | 2021-04-12 | 2022-04-11 |
| Trilog Broadband Antenna | Schwarz beck    | VULB9163    | 9163-333   | 2021-03-20 | 2023-03-19 |
| Horn Antenna             | ETS             | 3117        | 00086197   | 2021-03-19 | 2023-03-18 |
| Loop Antenna             | Schwarz beck    | FMZB 1516   | 9773       | 2021-03-20 | 2023-03-19 |
| EMI Test Receiver        | Rohde & Schwarz | ESPI        | 101391     | 2021-05-06 | 2022-05-05 |
| Trilog Broadband Antenna | Schwarz beck    | VULB9163(B) | 9163-635   | 2021-04-09 | 2023-04-08 |
| Amplifier                | Agilent         | 8447D       | 2944A10179 | 2021-04-12 | 2022-04-11 |
| Pulse Limiter            | Rohde & Schwarz | ESH3-Z2     | 100911     | 2021-04-15 | 2022-04-14 |

| Software List                              |              |        |         |
|--------------------------------------------|--------------|--------|---------|
| Description                                | Manufacturer | Model  | Version |
| EMI Test Software<br>(Radiated Emission)*  | Farad        | EZ-EMC | RA-03A1 |
| EMI Test Software<br>(Conducted Emission)* | Farad        | EZ-EMC | RA-03A1 |

\*Remark: indicates software version used in the compliance certification testing.



2. SUMMARY OF TEST RESULTS

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| Description of Test           | Result    |
|-------------------------------|-----------|
| §15.107(a) Conducted Emission | N/A       |
| §15.109(a) Radiated Emission  | Compliant |

N/A: not applicable

### 3. RADIATED EMISSION

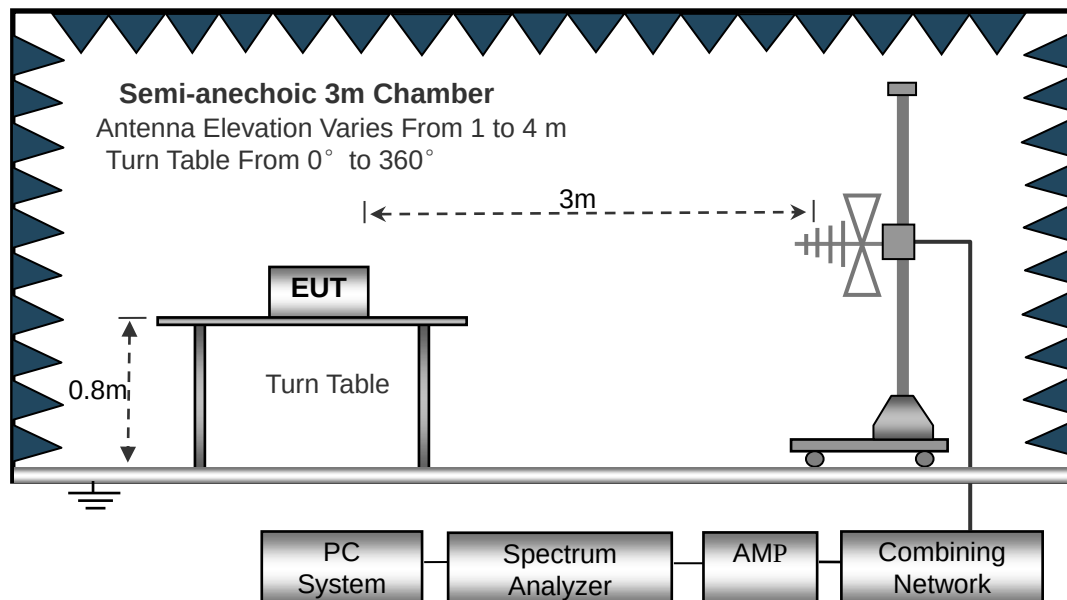
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#### 3.1 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15.109 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10 cm.

#### 3.2 Block Diagram of Test Setup



### 3.3 Test Receiver Setup

Frequency :9kHz-30MHz  
 RBW=10KHz,  
 VBW =30KHz  
 Sweep time= Auto  
 Trace = max hold  
 Detector function = peak

Frequency :30MHz-1GHz  
 RBW=120KHz,  
 VBW=300KHz  
 Sweep time= Auto  
 Trace = max hold  
 Detector function = peak, QP

Frequency :Above 1GHz  
 RBW=1MHz,  
 VBW=3MHz(Peak), 10Hz(AV)  
 Sweep time= Auto  
 Trace = max hold  
 Detector function = peak, AV

### 3.4 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\begin{aligned}\text{Corr. Ampl.} &= \text{Indicated Reading} + \text{Correct} \\ \text{Correct} &= \text{Ant. Factor} + \text{Cable Loss} - \text{Ampl. Gain}\end{aligned}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for a Class B device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15.109(a) Limit}$$

### 3.5 Environmental Conditions

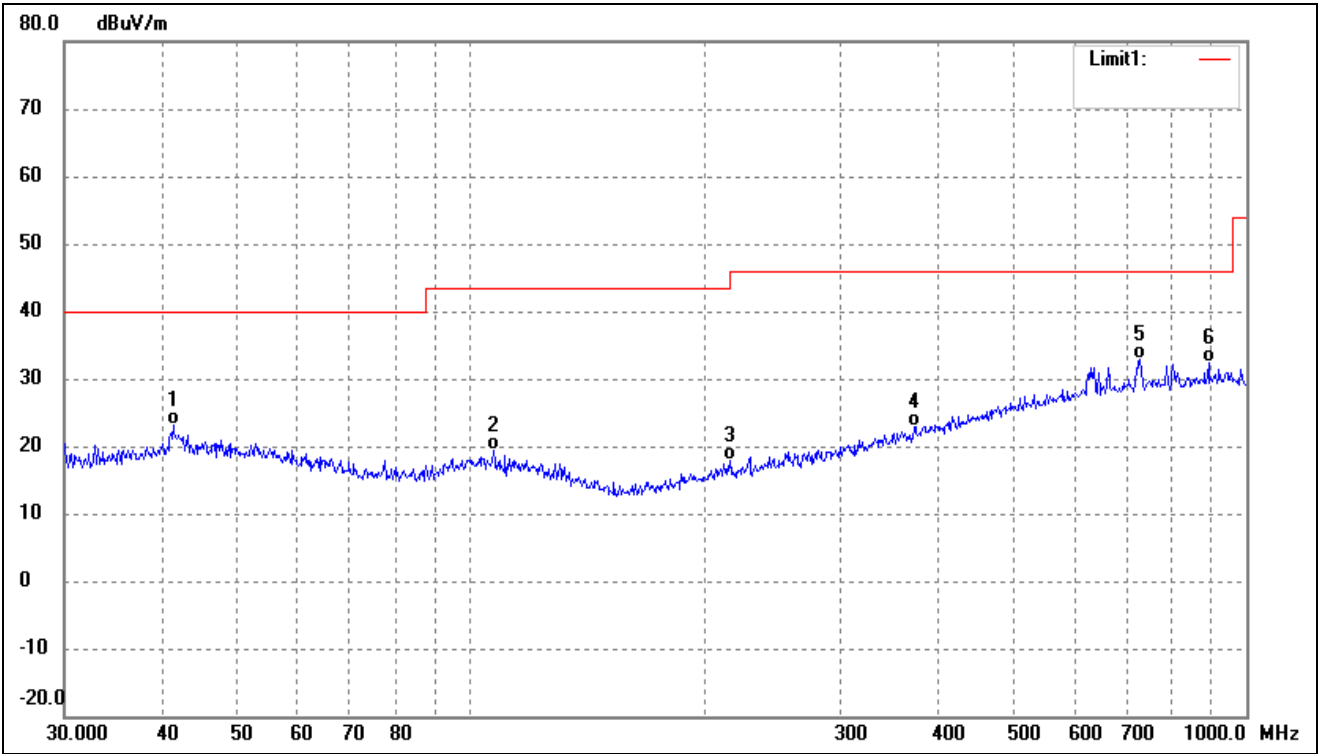
|                    |           |
|--------------------|-----------|
| Temperature:       | 22.5 °C   |
| Relative Humidity: | 54 %      |
| ATM Pressure:      | 1011 mbar |

### 3.6 Summary of Test Results

Please find the results below:

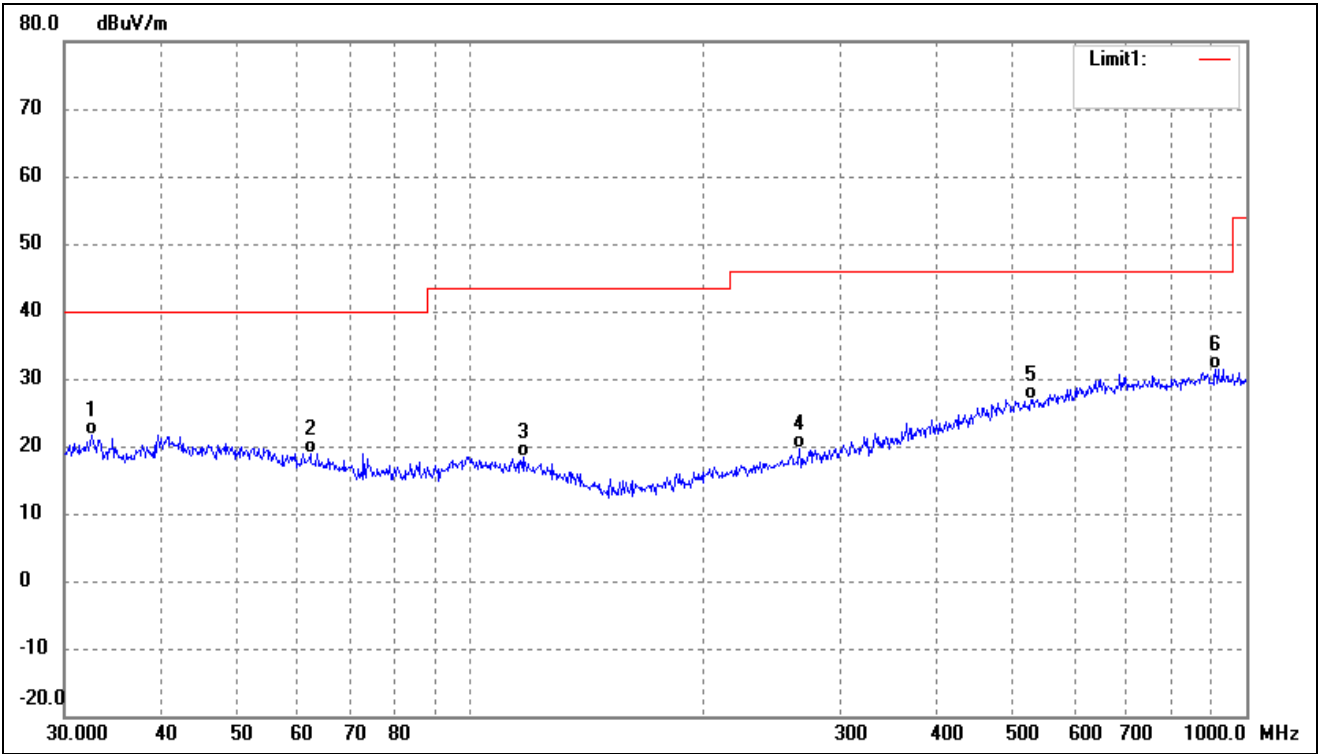
Below 1GHz

|            |     |           |            |
|------------|-----|-----------|------------|
| Test mode: | TM1 | Polarity: | Horizontal |
|------------|-----|-----------|------------|



| No. | Frequency | Reading  | Correct | Result   | Limit    | Margin | Degree | Height | Remark |
|-----|-----------|----------|---------|----------|----------|--------|--------|--------|--------|
|     | (MHz)     | (dBuV/m) | dB/m    | (dBuV/m) | (dBuV/m) | (dB)   | ( )    | (cm)   |        |
| 1   | 41.4215   | 30.00    | -6.99   | 23.01    | 40.00    | -16.99 | -      | -      | QP     |
| 2   | 107.1337  | 28.19    | -8.83   | 19.36    | 43.50    | -24.14 | -      | -      | QP     |
| 3   | 216.0240  | 27.06    | -9.26   | 17.80    | 46.00    | -28.20 | -      | -      | QP     |
| 4   | 373.3112  | 27.59    | -4.69   | 22.90    | 46.00    | -23.10 | -      | -      | QP     |
| 5   | 729.3583  | 31.35    | 1.63    | 32.98    | 46.00    | -13.02 | -      | -      | QP     |
| 6   | 893.8567  | 29.62    | 2.70    | 32.32    | 46.00    | -13.68 | -      | -      | QP     |

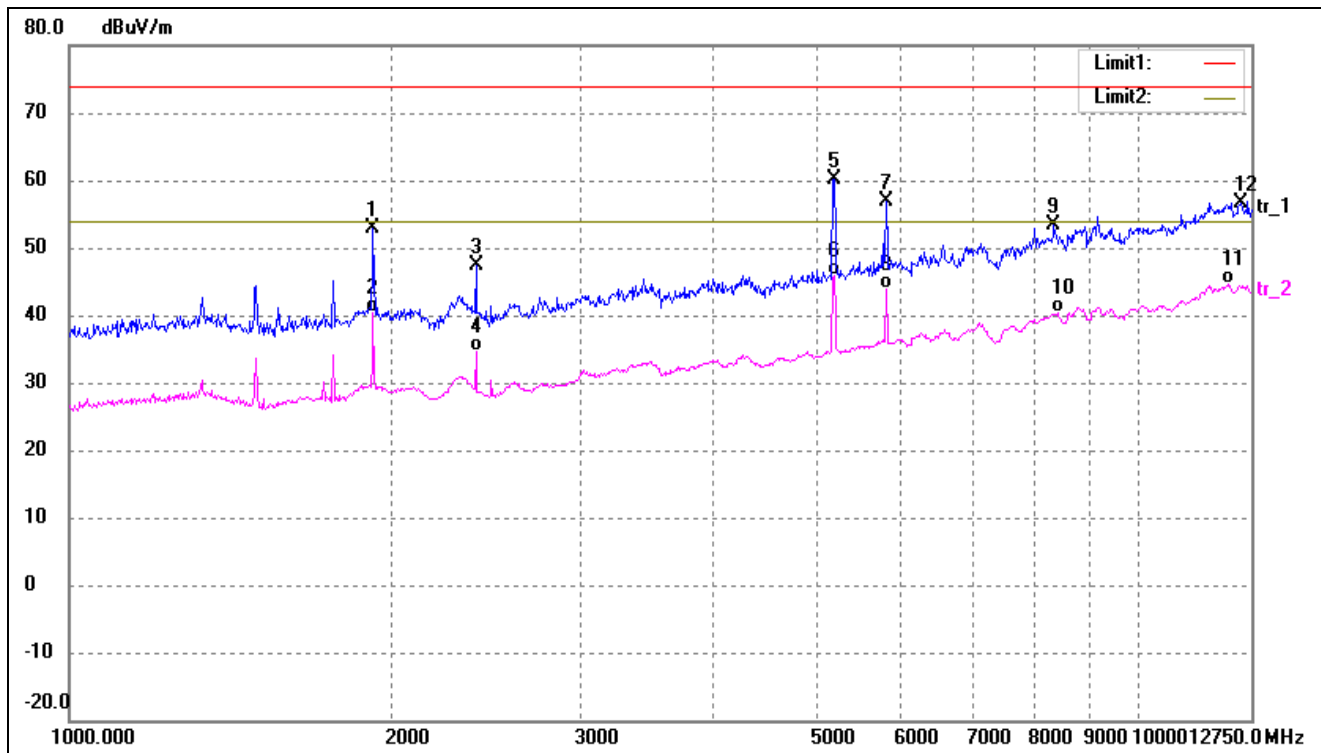
|            |     |           |          |
|------------|-----|-----------|----------|
| Test mode: | TM1 | Polarity: | Vertical |
|------------|-----|-----------|----------|



| No. | Frequency<br>(MHz) | Reading<br>(dBuV/m) | Correct<br>dB/m | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Degree<br>( ) | Height<br>(cm) | Remark |
|-----|--------------------|---------------------|-----------------|--------------------|-------------------|----------------|---------------|----------------|--------|
| 1   | 32.5198            | 30.41               | -8.83           | 21.58              | 40.00             | -18.42         | -             | -              | QP     |
| 2   | 62.2128            | 27.79               | -8.81           | 18.98              | 40.00             | -21.02         | -             | -              | QP     |
| 3   | 116.9495           | 27.81               | -9.38           | 18.43              | 43.50             | -25.07         | -             | -              | QP     |
| 4   | 265.6757           | 27.58               | -7.88           | 19.70              | 46.00             | -26.30         | -             | -              | QP     |
| 5   | 528.2458           | 27.82               | -0.83           | 26.99              | 46.00             | -19.01         | -             | -              | QP     |
| 6   | 912.8620           | 28.78               | 2.70            | 31.48              | 46.00             | -14.52         | -             | -              | QP     |

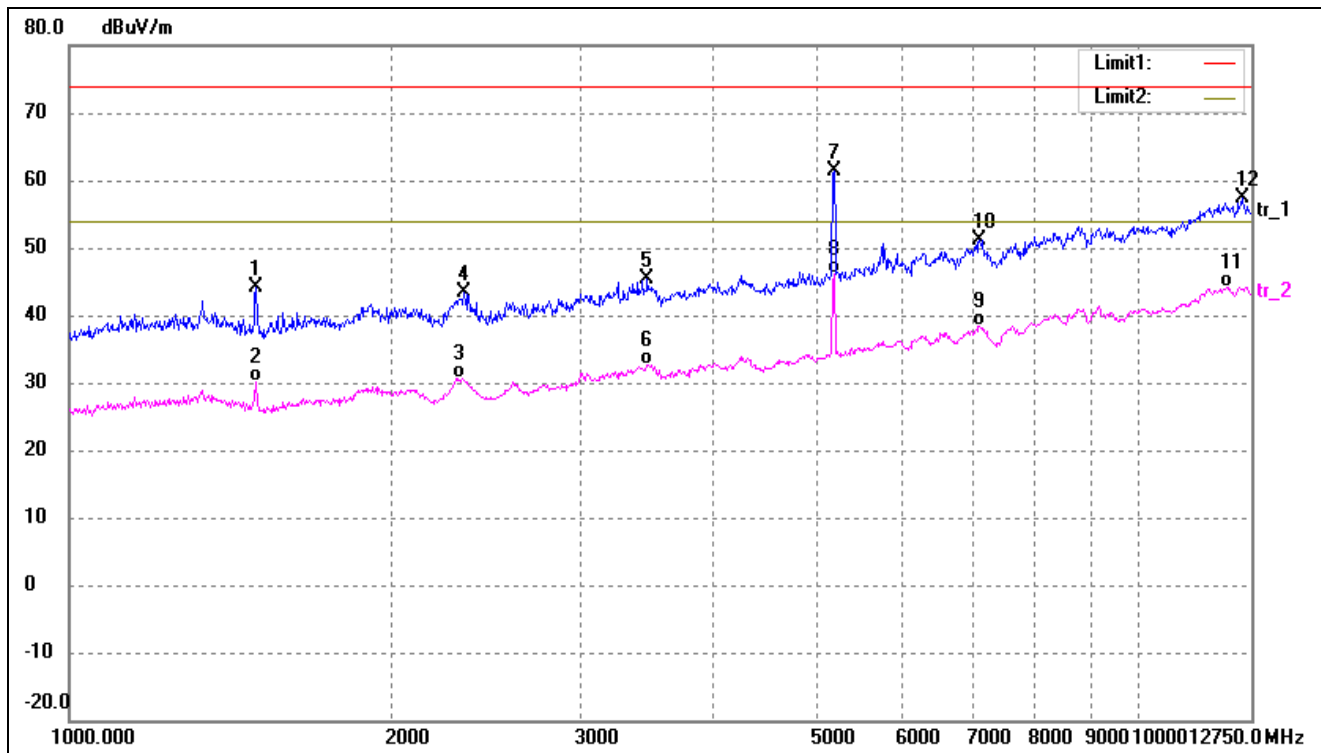
**Above 1GHz**

|            |     |           |            |
|------------|-----|-----------|------------|
| Test mode: | TM1 | Polarity: | Horizontal |
|------------|-----|-----------|------------|



| No. | Frequency<br>(MHz) | Reading<br>(dBuV/m) | Correct<br>dB/m | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Degree<br>( ) | Height<br>(cm) | Remark |
|-----|--------------------|---------------------|-----------------|--------------------|-------------------|----------------|---------------|----------------|--------|
| 1   | 1923.606           | 64.28               | -11.46          | 52.82              | 74.00             | -21.18         | -             | -              | peak   |
| 2   | 1923.606           | 51.77               | -11.46          | 40.31              | 54.00             | -13.69         | -             | -              | AVG    |
| 3   | 2400.466           | 58.14               | -10.69          | 47.45              | 74.00             | -26.55         | -             | -              | peak   |
| 4   | 2400.466           | 45.41               | -10.69          | 34.72              | 54.00             | -19.28         | -             | -              | AVG    |
| 5   | 5191.168           | 65.48               | -5.26           | 60.22              | 74.00             | -13.78         | -             | -              | peak   |
| 6   | 5191.168           | 51.21               | -5.26           | 45.95              | 54.00             | -8.05          | -             | -              | AVG    |
| 7   | 5806.408           | 60.89               | -4.03           | 56.86              | 74.00             | -17.14         | -             | -              | peak   |
| 8   | 5806.408           | 47.95               | -4.03           | 43.92              | 54.00             | -10.08         | -             | -              | AVG    |
| 9   | 8334.700           | 53.12               | 0.31            | 53.43              | 74.00             | -20.57         | -             | -              | peak   |
| 10  | 8398.593           | 39.86               | 0.42            | 40.28              | 54.00             | -13.72         | -             | -              | AVG    |
| 11  | 12148.020          | 38.34               | 6.21            | 44.55              | 54.00             | -9.45          | -             | -              | AVG    |
| 12  | 12461.221          | 50.13               | 6.58            | 56.71              | 74.00             | -17.29         | -             | -              | peak   |

|            |     |           |          |
|------------|-----|-----------|----------|
| Test mode: | TM1 | Polarity: | Vertical |
|------------|-----|-----------|----------|



| No. | Frequency<br>(MHz) | Reading<br>(dBuV/m) | Correct<br>dB/m | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Degree<br>( ) | Height<br>(cm) | Remark |
|-----|--------------------|---------------------|-----------------|--------------------|-------------------|----------------|---------------|----------------|--------|
| 1   | 1495.101           | 56.87               | -12.69          | 44.18              | 74.00             | -29.82         | -             | -              | peak   |
| 2   | 1495.101           | 42.82               | -12.69          | 30.13              | 54.00             | -23.87         | -             | -              | AVG    |
| 3   | 2310.537           | 41.57               | -10.82          | 30.75              | 54.00             | -23.25         | -             | -              | AVG    |
| 4   | 2340.132           | 54.19               | -10.77          | 43.42              | 74.00             | -30.58         | -             | -              | peak   |
| 5   | 3472.118           | 53.82               | -8.39           | 45.43              | 74.00             | -28.57         | -             | -              | peak   |
| 6   | 3472.118           | 41.11               | -8.39           | 32.72              | 54.00             | -21.28         | -             | -              | AVG    |
| 7   | 5191.168           | 66.68               | -5.26           | 61.42              | 74.00             | -12.58         | -             | -              | peak   |
| 8   | 5191.168           | 51.47               | -5.26           | 46.21              | 54.00             | -7.79          | -             | -              | AVG    |
| 9   | 7081.697           | 40.03               | -1.70           | 38.33              | 54.00             | -15.67         | -             | -              | AVG    |
| 10  | 7099.747           | 52.89               | -1.69           | 51.20              | 74.00             | -22.80         | -             | -              | peak   |
| 11  | 12086.331          | 38.01               | 6.15            | 44.16              | 54.00             | -9.84          | -             | -              | AVG    |
| 12  | 12492.982          | 50.74               | 6.62            | 57.36              | 74.00             | -16.64         | -             | -              | peak   |

Remark: ‘-’ Means the test Degree and Height are not recorded by the test software and only show the worst case in the test report.

## **APPENDIX PHOTOGRAPHS**

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**Please refer to “ANNEX”**

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