

FCC TEST REPORT



| | |
|-----------|---|
| Applicant | New Bright Industrial Co Ltd |
| Address | New Bright Bldg 11 Sheung Yuet Road Kowloon Bay Kowloon Hong Kong |

| | |
|-------------------------------------|---|
| Manufacturer ID or Supplier | New Bright Industrial Co Ltd |
| Address | New Bright Bldg 11 Sheung Yuet Road Kowloon Bay Kowloon Hong Kong |
| Product | TOY Receiver |
| Brand Name | N/A |
| Model | G6DRF4MRR |
| Additional Model & Model Difference | N/A |
| Date of tests | Nov. 25, 2018 ~ Dec. 03, 2018 |

The submitted sample of the above equipment has been tested for according to the requirements of the following standards:

☒ **FCC Part 15, Subpart B, Class B**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

| | |
|---|--|
| Tested by Ryan Lu Project Engineer/ EMC Department | Approved by Breeze Jiang Senior project engineer / EMC Department |
|  |  |
| | Date: Dec. 17, 2018 |

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Test Report No.: FS181125N034

RELEASE CONTROL RECORD

| ISSUE NO. | REASON FOR CHANGE | DATE ISSUED |
|--------------|-------------------|---------------|
| FS181125N034 | Original release | Dec. 17, 2018 |



1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

| APPLIED STANDARD: FCC Part 15, Subpart B | | | |
|--|--|--------|---|
| Standard Section | Test Item | Result | Remark |
| FCC Part 15, Subpart B, Class B | Radiated Emission Test (30MHz ~ 1GHz) | PASS | Meets limits minimum passing margin is -9.19 dB at 51.099 MHz |

1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

| MEASUREMENT | FREQUENCY | UNCERTAINTY |
|--------------------|--------------|-------------|
| Radiated emissions | 30MHz ~ 1GHz | + /- 4.04dB |



2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

| | |
|--|----------------------------------|
| PRODUCT | TOY Receiver |
| MODEL NO. | G6DRF4MRR |
| ADDITIONAL MODEL | N/A |
| FCC ID | G6DRF4MRR |
| POWER SUPPLY | DC 4.5V (1.5V*AA*3) from Battery |
| CABLE SUPPLIED | N/A |
| THE HIGHEST OPERATING FREQUENCY | 49MHz |

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. For the test results, the EUT had been tested with all conditions, but only the worst case was shown in test report.
3. Please refer to the EUT photo document (Reference No.: 181125N034) for detailed product photo.

2.2 DESCRIPTION OF TEST MODES

The EUT were tested under the **Receiving** mode for all tests.

2.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit without any other necessary accessories or support units.



3 EMISSION TEST

3.1 RADIATED EMISSION MEASUREMENT

3.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

TEST STANDARD: FCC Part 15, Subpart B (Section: 15.109)

Emissions radiated outside of the specified bands, shall be according to the general radiated limits as following:

| Radiated Emissions Limits at 10 meters (dBµV/m) | | | | |
|---|----------------------------|-----------------------------|-------------------|-------------------|
| Frequencies (MHz) | FCC 15B/ ICES-003, Class A | FCC 15B / ICES-003, Class B | CISPR 22, Class A | CISPR 22, Class B |
| 30-88 | 39 | 29.5 | 40 | 30 |
| 88-216 | 43.5 | 33.1 | | |
| 216-230 | 46.4 | 35.6 | | |
| 230-960 | | | | |
| 960-1000 | 49.5 | 43.5 | 47 | 37 |

| Radiated Emissions Limits at 3 meters (dB μ V/m) | | |
|--|-----------------------------|-----------------------------|
| Frequencies (MHz) | FCC 15B / ICES-003, Class A | FCC 15B / ICES-003, Class B |
| 30-88 | 49.5 | 40 |
| 88-216 | 54 | 43.5 |
| 216-230 | 56.9 | 46 |
| 230-960 | | |
| 960-1000 | 60 | 54 |
| 1000-3000 | Avg: 60 | Avg: 54 |
| Above 3000 | Peak: 80 | Peak: 74 |



FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

| Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz) | Range (MHz) |
|---|---|
| Below 1.705 | 30 |
| 1.705 – 108 | 1000 |
| 108 – 500 | 2000 |
| 500 – 1000 | 5000 |
| Above 1000 | 5th harmonic of the highest frequency or 40 GHz, whichever is lower |

- Note: (1) The lower limit shall apply at the transition frequencies.
(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).
(3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.



3.1.2 TEST INSTRUMENTS

FREQUENCY RANGE BELOW 1GHz

| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|--------------------------|---------------|--------------------------|------------|-------------|------------|
| EMI Test Receiver | Rohde&Schwarz | ESU40 | 100449 | Mar. 11,18 | Mar. 10,19 |
| Bilog Antenna | Teseq | CBL 6111D | 30643 | Jul. 28, 18 | Jul. 27,19 |
| Amplifier | Burgeon | BPA-530 | 100220 | Apr. 05,18 | Apr. 04,19 |
| 3m Semi-anechoic Chamber | ETS-LINDGREN | 9m*6m*6m | NSEMC003 | Mar. 06,18 | Mar. 05,19 |
| Test software | ADT | ADT_Radiated_V7.6.15.9.2 | N/A | N/A | N/A |

- NOTES:** 1. The test was performed in 10 Chamber.
 2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
 3. The FCC Site Registration No. is 749762.

FREQUENCY RANGE ABOVE 1GHz

| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|-----------------------------|---------------|--------------------------|-------------|------------|------------|
| Horn Antenna | ETS-Lindgren | 3117 | 00062558 | Jul. 02,18 | Jul. 01,19 |
| Horn Antenna | SCHWARZBECK | BBHA 9170 | BBHA9170242 | Mar. 15,18 | Mar. 14,19 |
| EMI Test Receiver | Rohde&Schwarz | ESU40 | 100449 | Mar. 11,18 | Mar. 10,19 |
| Broadband Preamplifier | SCHWARZBECK | BBV9718 | 305 | Mar. 06,18 | Mar. 05,19 |
| Pre-Amplifier (18GHz-40GHz) | EMCI | EMC 184045 | 980102 | Nov. 08,18 | Nov. 07,19 |
| Test Software | ADT | ADT_Radiated_V7.6.15.9.2 | N/A | N/A | N/A |

- NOTES:** 1. The test was performed in 10 Chamber.
 2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
 3. The FCC Site Registration No. is 749762.



3.1.3 TEST PROCEDURE

The basic test procedure was in accordance with ANSI C63.4:2014 (section 12).

<Frequency Range below 1GHz>

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter semi-anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from 1 meter to 4 meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1GHz.

NOTE:

1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. $\text{Emission level(dBuV/m)} = \text{Raw Value(dBuV)} + \text{Correction Factor(dB/m)}$
3. $\text{Correction Factor(dB/m)} = \text{Antenna Factor (dB/m)} + \text{Cable Factor (dB)}$ (if the raw value not contains the amplifier)
4. $\text{Correction Factor (dB/m)} = \text{Antenna Factor (dB/m)} + \text{Cable Factor (dB)} - \text{Amplifier Gain(dB)}$ (if the raw value contains the amplifier)
5. $\text{Margin value} = \text{Emission level} - \text{Limit value}$

<Frequency Range above 1GHz>

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna can be varied from one meter-to four meters, the height of adjustment depends on the EUT height and the antenna 3dB beamwidth both, to detect the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. The bore sight should be used during the test above 1GHz.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test receiver/spectrum was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.

NOTE:

1. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Peak detection at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz for Average detection (AV) at frequency above 1GHz.
2. For measurement of frequency above 1000 MHz, the EUT was set 3 meters away from the receiver antenna.
3. $\text{Emission level(dBuV/m)} = \text{Raw Value(dBuV)} + \text{Correction Factor(dB/m)}$
4. $\text{Correction Factor(dB/m)} = \text{Antenna Factor (dB/m)} + \text{Cable Factor (dB)}$ (if the raw value not contains the amplifier)
5. $\text{Correction Factor (dB/m)} = \text{Antenna Factor (dB/m)} + \text{Cable Factor (dB)} - \text{Amplifier Gain(dB)}$ (if the raw value contains the amplifier).
6. $\text{Margin value} = \text{Emission level} - \text{Limit value}$

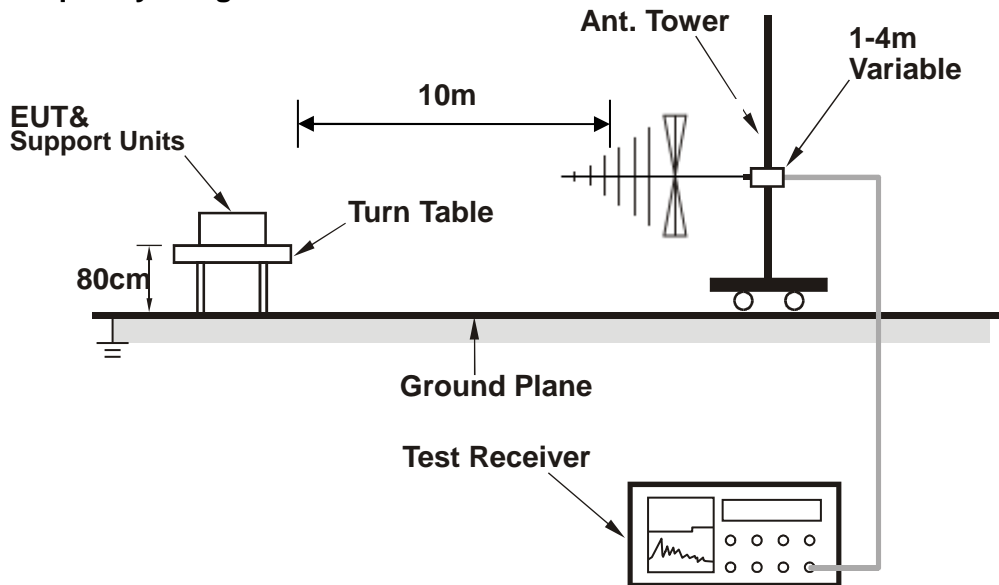
3.1.4 DEVIATION FROM TEST STANDARD

No deviation.

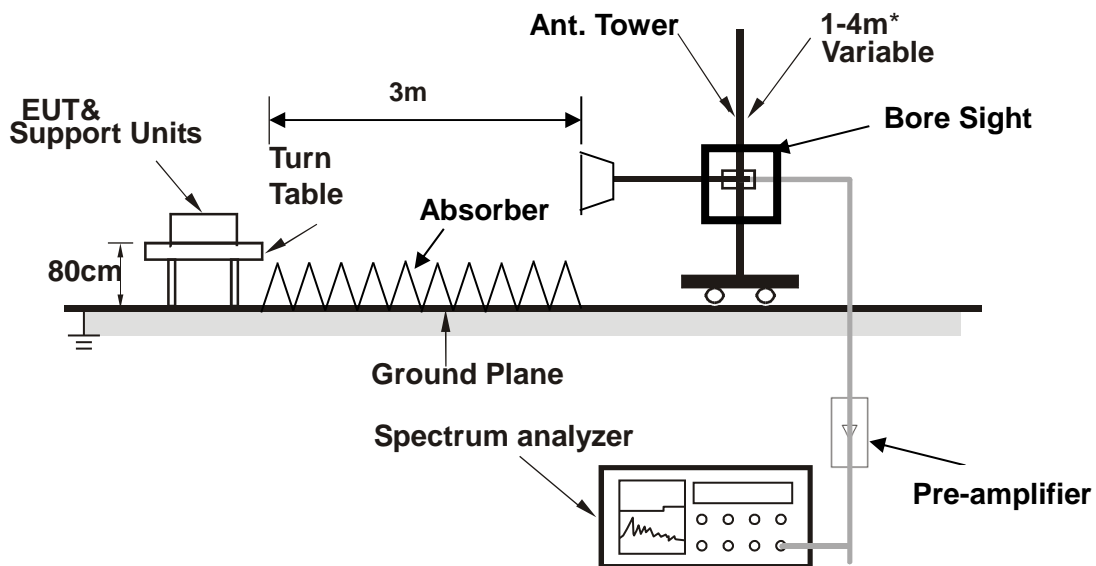


3.1.5 TEST SETUP

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



* : depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

3.1.6 EUT OPERATING CONDITIONS

- Turn on the power supply of the EUT.
- EUT was operated according to the type description in manufacturer's specifications or the User's Manual.

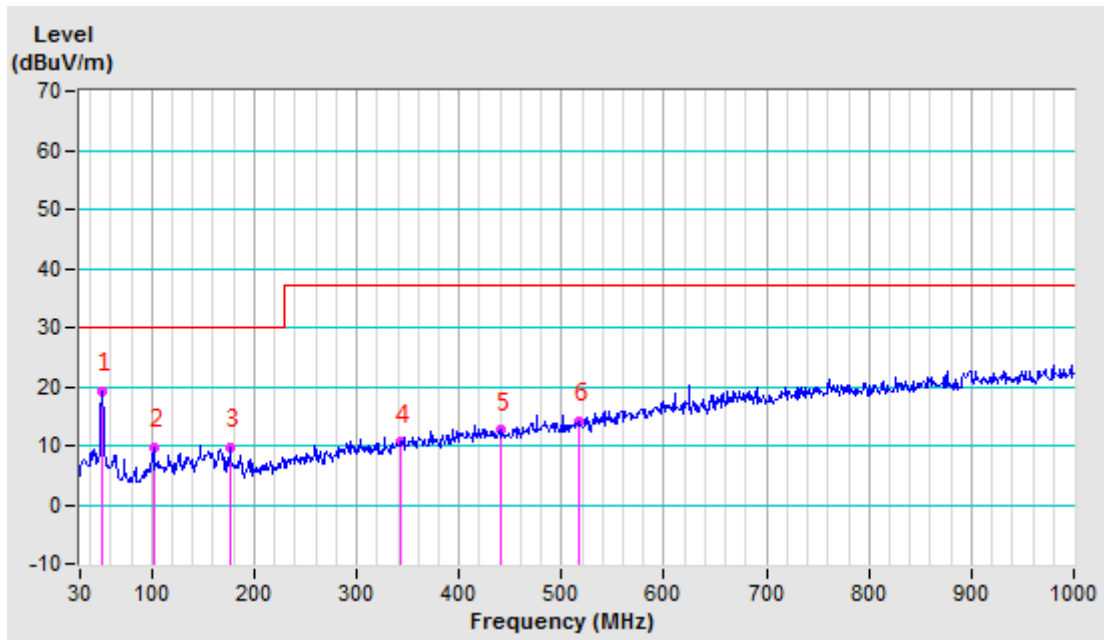


3.1.7 TEST RESULTS

| | | | |
|--------------------------|----------------------|--|--------------------|
| TEST MODE | Receiving | FREQUENCY RANGE | 30-1000MHz |
| TEST VOLTAGE | DC 4.5V from Battery | DETECTOR FUNCTION & RESOLUTION BANDWIDTH | Quasi-Peak, 120kHz |
| ENVIRONMENTAL CONDITIONS | 22deg. C, 55% RH | TESTED BY: Daniel | |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | | | | | | |
|---|-------------|--------------------------|------------------|-------------------------|----------------|-------------|---------------------|----------------------|
| No. | Freq. (MHz) | Correction Factor (dB/m) | Raw Value (dBuV) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) |
| 1 | 50.976 | -22.52 | 41.71 | 19.19 | 30.00 | -10.81 | 200 | 35 |
| 2 | 101.901 | -24.97 | 34.60 | 9.63 | 30.00 | -20.37 | 200 | 51 |
| 3 | 175.985 | -23.05 | 32.63 | 9.58 | 30.00 | -20.42 | 200 | 337 |
| 4 | 342.704 | -19.64 | 30.21 | 10.57 | 37.00 | -26.43 | 200 | 213 |
| 5 | 440.553 | -17.92 | 30.47 | 12.55 | 37.00 | -24.45 | 200 | 27 |
| 6 | 516.698 | -15.97 | 30.06 | 14.09 | 37.00 | -22.91 | 200 | 44 |

- REMARKS:**
1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
 2. Negative sign (-) in the margin column signify levels below the limit.
 3. Frequency range scanned: 30MHz to 1000MHz.
 4. Only emissions significantly above equipment noise floor are reported.

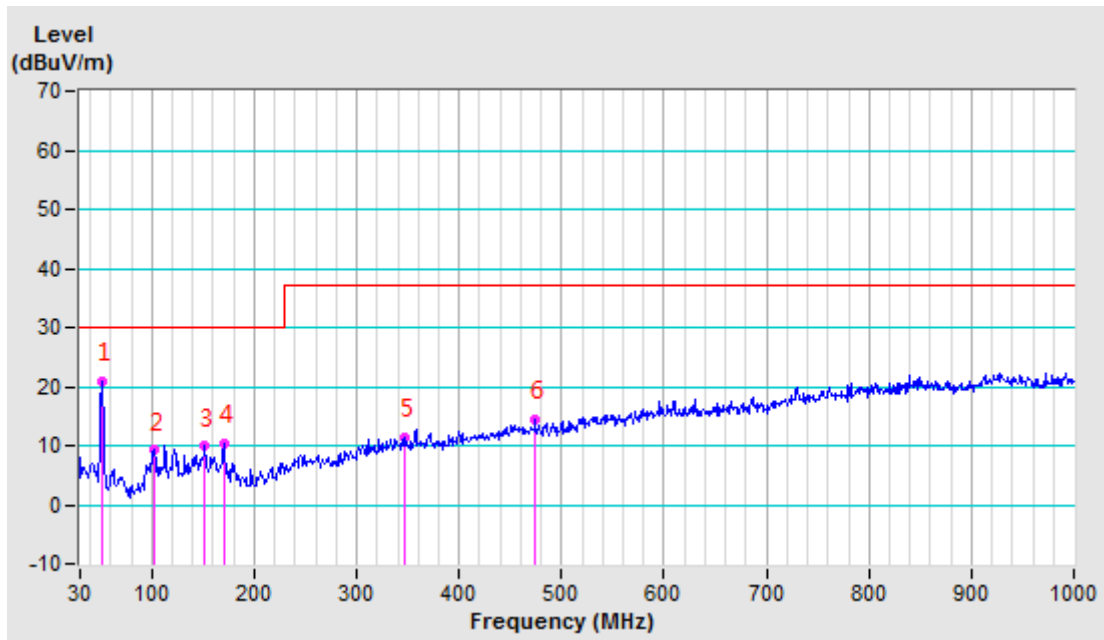




| | | | |
|---------------------------------|----------------------|---|--------------------|
| TEST MODE | Receiving | FREQUENCY RANGE | 30-1000MHz |
| TEST VOLTAGE | DC 4.5V from Battery | DETECTOR FUNCTION & RESOLUTION BANDWIDTH | Quasi-Peak, 120kHz |
| ENVIRONMENTAL CONDITIONS | 22deg. C, 55% RH | TESTED BY: Daniel | |

| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | | | | | | |
|--|-------------|--------------------------|------------------|-------------------------|----------------|-------------|---------------------|----------------------|
| No. | Freq. (MHz) | Correction Factor (dB/m) | Raw Value (dBuV) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) |
| 1 | 51.099 | -23.18 | 43.99 | 20.81 | 30.00 | -9.19 | 100 | 36 |
| 2 | 102.075 | -24.75 | 33.91 | 9.16 | 30.00 | -20.84 | 100 | 92 |
| 3 | 151.499 | -20.97 | 30.85 | 9.88 | 30.00 | -20.12 | 100 | 349 |
| 4 | 170.221 | -21.70 | 32.06 | 10.36 | 30.00 | -19.64 | 100 | 324 |
| 5 | 346.963 | -18.08 | 29.52 | 11.44 | 37.00 | -25.56 | 100 | 291 |
| 6 | 473.555 | -15.58 | 30.05 | 14.47 | 37.00 | -22.53 | 100 | 241 |

- REMARKS:**
1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
 2. Negative sign (-) in the margin column signify levels below the limit.
 3. Frequency range scanned: 30MHz to 1000MHz.
 4. Only emissions significantly above equipment noise floor are reported.





Test Report No.: FS181125N034

4 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).



Test Report No.: FS181125N034

5 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications were made to the EUT by the lab during the test.

---END---