Report No.: GTSE15110206703

# RF Exposure REPORT

| | |
|---|---|
| **Applicant:** | Dragino Technology Co., Limited. |
| **Address of Applicant:** | Room 7009, Zi'An Commercial Building, Qian Jin 1 Road, Xin'An 6thDistrict, Baoan, Shenzhen, China |
| **Equipment Under Test (EUT)** | |
| Product Name: | Wireless Sensor Node / ATA |
| Model No.: | DT01, MP2.0 Phone, MP2.0 Basic, MS14-P, MS14-S, MS14-HEV |
| **Applicable standards:** | EN 62311:2008 |
| **Date of sample receipt:** | December 01, 2015 |
| **Date of Test:** | December 02-14, 2015 |
| **Date of report issue:** | December 15, 2015 |
| **Test Result :** | PASS * |

* In the configuration tested, the EUT complied with the standards specified above.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives. The protection requirements with respect to electromagnetic compatibility contained in Directive 1999/5/EC are considered.

**Robinson Lo**
**Laboratory Manager**

## 2 Version

| Version No. | Date | Description |
|---|---|---|
| *00* | *December 15, 2015* | *Original* |
| | | |
| | | |
| | | |
| | | |

***Prepared By:*** Edward.Pan ***Date:*** *December 15, 2015*

***Project Engineer***

***Check By:*** hank.yan ***Date:*** *December 15, 2015*

***Reviewer***

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# 4 General Information

## 4.1 Client Information

| | |
|---|---|
| Applicant: | Dragino Technology Co., Limited. |
| Address of Applicant: | Room 7009, Zi'An Commercial Building, Qian Jin 1 Road, Xin'An 6thDistrict, Baoan, Shenzhen, China |
| Manufacturer/Factory: | Dragino Technology Co., Limited. |
| Address of Manufacturer/Factory: | Room 7009, Zi'An Commercial Building, Qian Jin 1 Road, Xin'An 6thDistrict, Baoan, Shenzhen, China |

## 4.2 General Description of EUT

| | |
|---|---|
| Product Name: | Wireless Sensor Node / ATA |
| Model No.: | DT01, MP2.0 Phone, MP2.0 Basic, MS14-P, MS14-S, MS14-HEV |
| Operation Frequency: | 2412MHz~2472MHz (802.11b/802.11g/802.11n(H20))<br>2422MHz~2462MHz (802.11n(H40)) |
| Channel numbers: | 13 for 802.11b/802.11g/802.11n(HT20)<br>9 for 802.11n(HT40) |
| Channel separation: | 5MHz |
| Modulation Technology:<br>(IEEE 802.11b) | Direct Sequence Spread Spectrum(DSSS) |
| Modulation Technology:<br>(IEEE 802.11g/802.11n) | Orthogonal Frequency Division Multiplexing(OFDM) |
| Antenna Type: | External antenna |
| Antenna Gain: | 2.0dBi (declare by Applicant) |
| Adaptor Information: | Adapter:<br>Model:F05W-120050SPAV<br>Input:AC100-240V~50/60Hz, 190mA<br>Output:DC 12V 0.5A |

## 4.3 Test Facility

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

● **FCC —Registration No.: 600491**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fuly described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 600491, June 28, 2013.

● **Industry Canada (IC) —Registration No.: 9079A-2**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. Has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-2, June 26, 2013.

## 4.4 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.
No. 301-309, 3/F., Jinyuan Business Building, No.2, Laodong Industrrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China
Tel: 0755-27798480
Fax: 0755-27798960

## 4.5 Description of Support Units

The EUT has been tested as an independent unit.

## 4.6 Deviation from Standards

None.

## 4.7 Abnormalities from Standard Conditions

None.

## 4.8 Other Information Requested by the Customer

None.

# 5 Technical Requirements Specification in EN 62311

| | |
|---|---|
| Test Requirement: | EN 62311 |
| Test Method: | EN 62311 |
| General Description of Applied Standards | EN 62311 Generic standard to demonstrate the compliance of electronic and electrical apparatus with the basic restrictions related to human exposure to electromagnetic fields (0 Hz–300 GHz) is to demonstrate the compliance of apparatus with the basic restrictions or reference levels on exposure of the general public related to electric, magnetic, electromagnetic fields as well as induced and contact current. |
| Limit: | According to EN 62311, the criteria listed in the below table shall be used to evalouate the environmental inpact of human exposure to radio-frequency (RF) radiation as specified table 2 of Council Recommendation 1999/519/EC.<br><br>**Reference levels for electric, magnetic and electromagnetic fields (0 Hz to 300 GHz, unperturbed rms values)**<br><br>Frequency range / E-field strength (V/m) / H-field strength (A/m) / B-field (μT) / Equivalent plane wave power density $S_{eq}$ (W/m²)<br>0-1 Hz / — / $3,2 \times 10^4$ / $4 \times 10^4$ / —<br>1-8 Hz / 10 000 / $3,2 \times 10^4/f^2$ / $4 \times 10^4/f^2$ / —<br>8-25 Hz / 10 000 / 4 000/f / 5 000/f / —<br>0,025-0,8 kHz / 250/f / 4/f / 5/f / —<br>0,8-3 kHz / 250/f / 5 / 6,25 / —<br>3-150 kHz / 87 / 5 / 6,25 / —<br>0,15-1 MHz / 87 / 0,73/f / 0,92/f / —<br>1-10 MHz / $87/f^{1/2}$ / 0,73/f / 0,92/f / —<br>10-400 MHz / 28 / 0,073 / 0,092 / 2<br>400-2 000 MHz / $1,375\ f^{1/2}$ / $0,0037\ f^{1/2}$ / $0,0046\ f^{1/2}$ / f/200<br>2-300 GHz / 61 / 0,16 / 0,20 / 10<br><br>Notes:<br>1. $f$ as indicated in the frequency range column. |
| Test method: | According to the Far field calculation formula:<br>**Far Field Calculation Formula**<br>$E = \frac{\sqrt{30PG(\theta,\phi)}}{r}$<br>G = antenna gain relative to an isotropic antenna<br>$\theta, \phi$ = elevation and azimuth angles to point of investigation<br>r = distance from observation point to the antenna<br><br>The antenna of the product, under normal use condition is at least 20cm away from the body of the user. Warning statement ot the user for keeing 20cm separation distance and the prohibition of operating to a person has been printed on the user manual. So, this product under normal use is located on electromagnetic far field between the human body. |
| Result: | Pass |

**Measurement Data**:

| 802.11b mode | | | | | |
|---|---|---|---|---|---|
| Frequency (MHz) | Output Power (dBm) | Output Power (mW) | E Field Strength (V/m) | Limit (V/m) | Result |
| 2412 | 17.22 | 52.72 | 7.92 | 61.00 | Pass |
| 2442 | 17.75 | 59.57 | 8.41 | | |
| 2472 | 17.96 | 62.52 | 8.62 | | |
| **802.11g mode** | | | | | |
| Frequency (MHz) | Output Power (dBm) | Output Power (mW) | E Field Strength (V/m) | Limit (V/m) | Result |
| 2412 | 13.41 | 21.93 | 5.11 | 61.00 | Pass |
| 2442 | 13.41 | 21.93 | 5.11 | | |
| 2472 | 13.96 | 24.89 | 5.44 | | |
| **802.11n(H20) mode** | | | | | |
| Frequency (MHz) | Output Power (dBm) | Output Power (mW) | E Field Strength (V/m) | Limit (V/m) | Result |
| 2412 | 14.08 | 25.59 | 5.51 | 61.00 | Pass |
| 2442 | 13.59 | 22.86 | 5.21 | | |
| 2472 | 14.14 | 25.94 | 5.55 | | |
| **802.11n(H40) mode** | | | | | |
| Frequency (MHz) | Output Power (dBm) | Output Power (mW) | E Field Strength (V/m) | Limit (V/m) | Result |
| 2422 | 12.81 | 19.10 | 4.76 | 61.00 | Pass |
| 2442 | 12.40 | 17.38 | 4.54 | | |
| 2462 | 12.55 | 17.99 | 4.62 | | |

------End------