

# RF TEST REPORT

Applicant GREENCHIPS (HONGKONG) LIMITED

FCC ID 2AK4U-GC4BT-X81

**Product** BLE Module

**Brand** GC

Model GC4BT-X81

Report No. RXA1701-0005RF03

Issue Date March 2, 2017

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 15C (2016)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Performed by: Xianqing Li

Approved by: Kai Xu

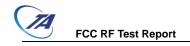
# TA Technology (Shanghai) Co., Ltd.

No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China TEL: +86-021-50791141/2/3 FAX: +86-021-50791141/2/3-8000



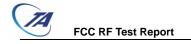
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| A.1 EUT Appearance                             |      |
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# Summary of measurement results

| Number | Summary of measurements of results | Clause in FCC rules     | Verdict |  |  |  |  |
|--------|------------------------------------|-------------------------|---------|--|--|--|--|
| 1      | Band Edge                          | 15.247(d)               | PASS    |  |  |  |  |
| 2      | Radiated Emissions                 | 15.247(d),15.205,15.209 | PASS    |  |  |  |  |
|        | Date of Testing: March 2, 2017     |                         |         |  |  |  |  |



1. Test Laboratory

1.1. Notes of the test report

This report shall not be reproduced in full or partial, without the written approval of TA technology

(shanghai) co., Ltd. The results documented in this report apply only to the tested sample, under

the conditions and modes of operation as described herein . Measurement Uncertainties were not

taken into account and are published for informational purposes only. This report is written to support

regulatory compliance of the applicable standards stated above. This report must not be used by the

client to claim product certification, approval, or endorsement by CNAS or any government agencies.

1.2. Test facility

CNAS (accreditation number: L2264)

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation

Service for Conformity Assessment (CNAS).

FCC (recognition number is 428261)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications

Commission list of test facilities recognized to perform electromagnetic emissions measurements.

IC (recognition number is 8510A)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic

emission measurement.

VCCI (recognition number is C-4595, T-2154, R-4113, G-766)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Japan to perform electromagnetic

emission measurement.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory

Accreditation to perform electromagnetic emission measurement.

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## 1.3. Testing Location

Company: TA Technology (Shanghai) Co., Ltd.

Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong

City: Shanghai

Post code: 201201

Country: P. R. China

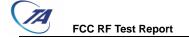
Contact: Xu Kai

Telephone: +86-021-50791141/2/3

Fax: +86-021-50791141/2/3-8000

Website: http://www.ta-shanghai.com

E-mail: xukai@ta-shanghai.com



2. General Description of Equipment under Test

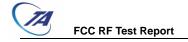
#### **Client Information**

| Applicant GREENCHIPS (HONGKONG) LIMITED      |   |  |  |
|--|---|--|--|
| Applicant address                            | Room 1401,Tower A,Jingang mansion,251 Heyan Road, |  |  |
| <b>,</b> , , , , , , , , , , , , , , , , , , | Nanjing, China                                    |  |  |
| Manufacturer                                 | GREENCHIPS (HONGKONG) LIMITED                     |  |  |
| Manufactura adduces                          | Room 1401,Tower A,Jingang mansion,251 Heyan Road, |  |  |
| Manufacturer address                         | Nanjing, China                                    |  |  |

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### **General information**

| EUT Description              |   |  |  |  |  |
|------------------------------|---|--|--|--|--|
| Model:                       | GC4BT-X81   |  |  |  |  |
| SN:                          | 1   |  |  |  |  |
| Hardware Version:            | V1.0  |  |  |  |  |
| Software Version:            | V1.0  |  |  |  |  |
| Power Supply:                | external power supply   |  |  |  |  |
| Antenna Type:                | Integrated antenna on PCB   |  |  |  |  |
| Antenna Connector:           | A permanently attached antenna (meet with the standard FCC Part 15.203 requirement) |  |  |  |  |
| Antenna Gain:                | Antenna: 0 dBi  |  |  |  |  |
| Test Mode:                   | Bluetooth(Low Energy)   |  |  |  |  |
| Modulation Type:             | BLE :GFSK   |  |  |  |  |
| Operating Frequency Range(s) | BLE: 2402 ~2480 MHz   |  |  |  |  |
|                              | HOST Description  |  |  |  |  |
| Product name:                | Wrist electronic blood pressure monitor   |  |  |  |  |
| Manufacturer:                | JIANGSU YUYUE MEDICAL EQUIPMENT & SUPPLYCO., LTD                                    |  |  |  |  |
|                              | Γ is declared by the manufacturer.<br>cations or user manual for details.           |  |  |  |  |



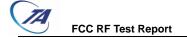
# 3. Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

#### **Test standards**

- FCC CFR47 Part 15C (2016) Radio Frequency Devices
- · ANSI C63.10 (2013)
- · KDB 558074 D01 DTS Meas Guidance v03r05

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# 4. Test Configuration

#### **Test Mode**

The EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98%.

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The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the worst case was recorded.

#### 5. Test Case Results

### 5.1. Band Edge

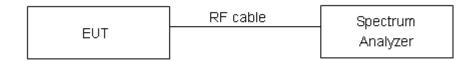
#### **Ambient condition**

| Temperature | Relative humidity | Pressure |
|-------------|-------------------|----------|
| 23°C ~25°C  | 45%~50%           | 101.5kPa |

#### **Method of Measurement**

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable the band edge of the lowest and highest channels were measured. The peak detector is used and RBW is set to 100 kHz and VBW is set to 300 kHz on spectrum analyzer. Spectrum analyzer plots are included on the following pages.

#### **Test Setup**



#### Limits

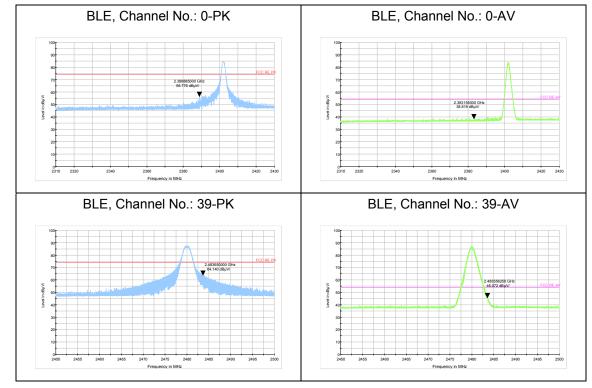
Rule Part 15.247(d) specifies that "In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits."

#### **Measurement Uncertainty**

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96.

| Frequency | Uncertainty |
|-----------|-------------|
| 2GHz-3GHz | 1.407 dB    |

**Test Results: PASS** 



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#### 5.2. Radiates Emission

#### **Ambient condition**

| Temperature | Relative humidity | Pressure |
|-------------|-------------------|----------|
| 23°C ~25°C  | 45%~50%           | 102.5kPa |

#### **Method of Measurement**

The test set-up was made in accordance to the general provisions of ANSI C63.10-2013. The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna. The radiated emissions measurements were made in a typical installation configuration. Sweep the whole frequency band through the range from 9 kHz to the 10th harmonic of the carrier, and the emissions less than 20 dB below the permissible value are reported.

During the test, below 30MHz, the center of the loop shall be 1 meters; above 30MHz, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turntable shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing.

Set the spectrum analyzer in the following:

Below 1GHz (detector: Peak and Quasi-Peak) RBW=100 kHz / VBW=300 kHz / Sweep=AUTO

Above 1GHz (detector: Peak):

(a) PEAK: RBW=1MHz VBW=3MHz/ Sweep=AUTO

(b) AVERAGE: RBW=1MHz / VBW=3MHz / Sweep=AUTO

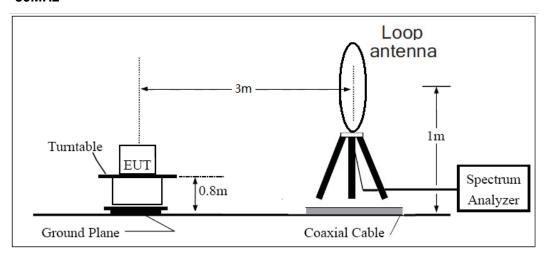
The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the worst case was recorded.

The test is in transmitting mode.

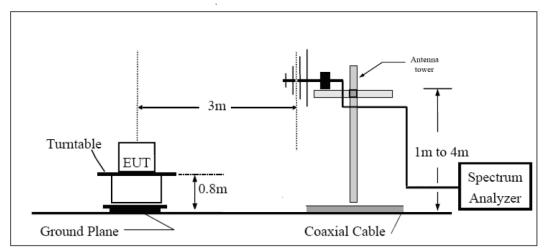


## Test setup

#### 9KHz ~ 30MHz



### 30MHz ~ 1GHz



#### **Above 1GHz**



Note: Area side:2.4mX3.6m

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Rule Part 15.247(d) specifies that "In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c))."

Limit in restricted band

| Frequency of emission (MHz) | Field strength(uV/m) | Field strength(dBuV/m) |
|-----------------------------|----------------------|------------------------|
| 0.009-0.490                 | 2400/F(kHz)          | 1                      |
| 0.490–1.705                 | 24000/F(kHz)         | 1                      |
| 1.705–30.0                  | 30                   | 1                      |
| 30-88                       | 100                  | 40                     |
| 88-216                      | 150                  | 43.5                   |
| 216-960                     | 200                  | 46                     |
| Above960                    | 500                  | 54                     |

§15.35(b)

There is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

### **Measurement Uncertainty**

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96.

| Frequency    | Uncertainty |
|--------------|-------------|
| 9KHz-30MHz   | 3.55 dB     |
| 30MHz-200MHz | 4.19 dB     |
| 200MHz-1GHz  | 3.63 dB     |
| Above 1GHz   | 3.68 dB     |

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#### Test result

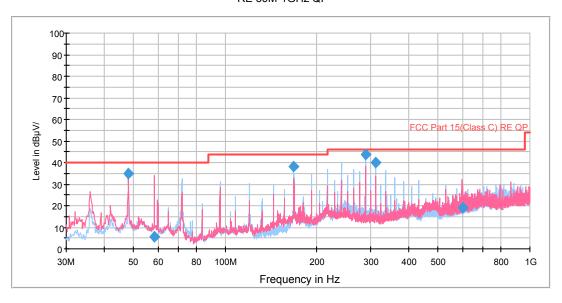
Sweep from 9 kHz to 30MHz, and the emissions more than 20 dB below the permissible value are not reported.

The following graphs display the maximum values of horizontal and vertical by software.

For above 1GHz, Blue trace uses the peak detection, Green trace uses the average detection.

#### **BLE-Channel 0**

RE 30M-1GHz QP



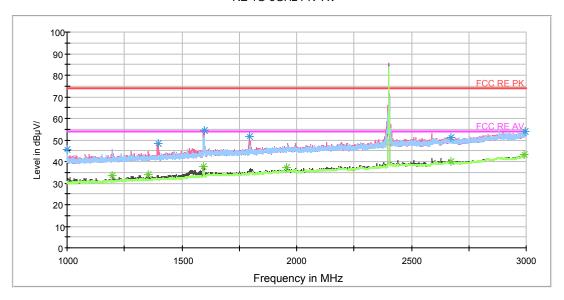
Note: The signal beyond the limit is carrier. Radiated Emission 30M-1GHz

| Frequency<br>(MHz) | Quasi-Peak<br>(dBuV/m) | Reading<br>value<br>(dBuV/m) | Height<br>(cm) | Polarization | Azimuth<br>(deg) | Correct<br>Factor<br>(dB) | Margin<br>(dB) | Limit<br>(dBuV/m) |
|--------------------|------------------------|------------------------------|----------------|--------------|------------------|---------------------------|----------------|-------------------|
| 47.985138          | 34.8                   | 55.0                         | 105.0          | V            | 67.0             | -20.2                     | 5.2            | 40.0              |
| 58.506569          | 5.4                    | 28.2                         | 121.0          | V            | 157.0            | -22.8                     | 34.6           | 40.0              |
| 168.002544         | 38.0                   | 66.3                         | 130.0          | Н            | 55.0             | -28.3                     | 5.5            | 43.5              |
| 288.020000         | 43.8                   | 67.2                         | 121.0          | Н            | 144.0            | -23.4                     | 2.2            | 46.0              |
| 312.007500         | 39.9                   | 63.0                         | 101.0          | Н            | 304.0            | -23.1                     | 6.1            | 46.0              |
| 599.974250         | 18.9                   | 35.8                         | 101.0          | V            | 356.0            | -16.9                     | 27.1           | 46.0              |

Remark: 1. Quasi-Peak = Reading value + Correction factor

- 2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)
- 3. Margin = Limit Quasi-Peak

#### RE 1G-3GHz PK+AV

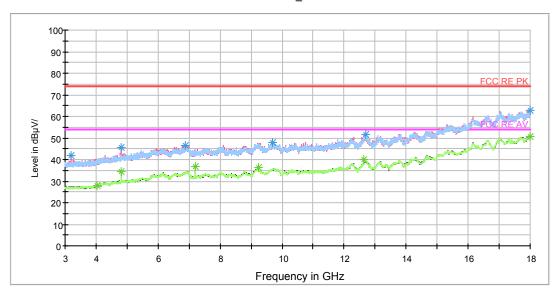


#### Radiated Emission 1G-3GHz

| Frequency<br>(MHz) | Peak<br>(dBuV/m) | Reading<br>value<br>(dBuV/m) | Height<br>(cm) | Polarization | Azimuth<br>(deg) | Correct<br>Factor<br>(dB) | Margin<br>(dB) | Limit<br>(dBuV/m) |
|--------------------|------------------|------------------------------|----------------|--------------|------------------|---------------------------|----------------|-------------------|
| 1000.250000        | 45.7             | 54.9                         | 102.0          | Н            | 178.0            | -9.2                      | 28.3           | 74                |
| 1398.250000        | 48.2             | 55.3                         | 102.0          | V            | 324.0            | -7.1                      | 25.8           | 74                |
| 1597.250000        | 54.2             | 60.6                         | 102.0          | V            | 351.0            | -6.4                      | 19.8           | 74                |
| 1792.750000        | 51.4             | 55.7                         | 102.0          | V            | 272.0            | -4.3                      | 22.6           | 74                |
| 2671.750000        | 51.4             | 51.1                         | 102.0          | V            | 282.0            | 0.3                       | 22.6           | 74                |
| 2995.750000        | 54.1             | 51.8                         | 102.0          | V            | 359.0            | 2.3                       | 19.9           | 74                |

| Frequency<br>(MHz) | Average<br>(dBuV/m) | Reading<br>value<br>(dBuV/m) | Height<br>(cm) | Polarization | Azimuth<br>(deg) | Correct<br>Factor<br>(dB) | Margin<br>(dB) | Limit<br>(dBuV/m) |
|--------------------|---------------------|------------------------------|----------------|--------------|------------------|---------------------------|----------------|-------------------|
| 1198.500000        | 33.4                | 41.6                         | 102.0          | V            | 0.0              | -8.2                      | 20.6           | 54                |
| 1353.500000        | 33.7                | 41.2                         | 102.0          | V            | 111.0            | -7.5                      | 20.3           | 54                |
| 1593.250000        | 37.9                | 44.3                         | 102.0          | V            | 351.0            | -6.4                      | 16.1           | 54                |
| 1956.500000        | 37.0                | 40.4                         | 102.0          | V            | 191.0            | -3.4                      | 17.0           | 54                |
| 2673.500000        | 39.9                | 39.7                         | 102.0          | V            | 282.0            | 0.2                       | 14.1           | 54                |
| 2990.000000        | 43.3                | 41.1                         | 102.0          | Н            | 0.0              | 2.2                       | 10.7           | 54                |

### RE 3-18GHz PK+AV\_BELL SWEEP

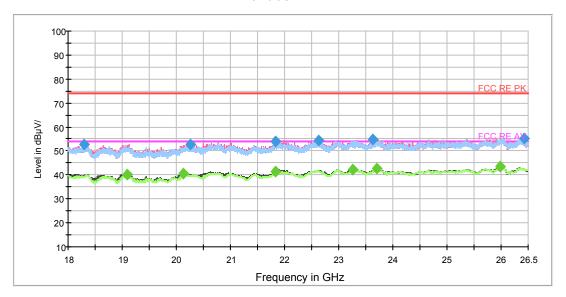


#### Radiated Emission 3G-18GHz

| Frequency<br>(MHz) | Peak<br>(dBuV/m) | Reading<br>value<br>(dBuV/m) | Height<br>(cm) | Polarization | Azimuth<br>(deg) | Correct<br>Factor<br>(dB) | Margin<br>(dB) | Limit<br>(dBuV/m) |  |  |  |
|--------------------|------------------|------------------------------|----------------|--------------|------------------|---------------------------|----------------|-------------------|--|--|--|
| 3193.125000        | 42.0             | 44.9                         | 105.0          | V            | 345.0            | -2.9                      | 32.0           | 74                |  |  |  |
| 4803.750000        | 45.5             | 44.2                         | 105.0          | V            | 0.0              | 1.3                       | 28.5           | 74                |  |  |  |
| 6868.125000        | 46.5             | 40.6                         | 105.0          | V            | 0.0              | 5.9                       | 27.5           | 74                |  |  |  |
| 9680.625000        | 47.8             | 38.3                         | 105.0          | Н            | 0.0              | 9.5                       | 26.2           | 74                |  |  |  |
| 12682.500000       | 51.7             | 37.5                         | 105.0          | V            | 0.0              | 14.2                      | 22.3           | 74                |  |  |  |
| 17992.500000       | 62.6             | 37.3                         | 105.0          | Н            | 177.0            | 25.3                      | 11.4           | 74                |  |  |  |

| Frequency<br>(MHz) | Average<br>(dBuV/m) | Reading<br>value<br>(dBuV/m) | Height<br>(cm) | Polarization | Azimuth<br>(deg) | Correct<br>Factor<br>(dB) | Margin<br>(dB) | Limit<br>(dBuV/m) |
|--------------------|---------------------|------------------------------|----------------|--------------|------------------|---------------------------|----------------|-------------------|
| 4042.500000        | 28.1                | 29.1                         | 105.0          | V            | 323.0            | -1.0                      | 25.9           | 54                |
| 4803.750000        | 34.5                | 33.2                         | 105.0          | V            | 0.0              | 1.3                       | 19.5           | 54                |
| 7205.625000        | 37.0                | 30.6                         | 105.0          | V            | 0.0              | 6.4                       | 17.0           | 54                |
| 9236.250000        | 36.1                | 26.2                         | 105.0          | V            | 91.0             | 9.9                       | 17.9           | 54                |
| 12641.250000       | 40.1                | 25.6                         | 105.0          | V            | 44.0             | 14.5                      | 13.9           | 54                |
| 18000.000000       | 50.7                | 25.2                         | 105.0          | V            | 206.0            | 25.5                      | 3.3            | 54                |

#### RE 18-26.5GHz PK+AV



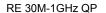
#### Radiated Emission 18G-26.5GHz

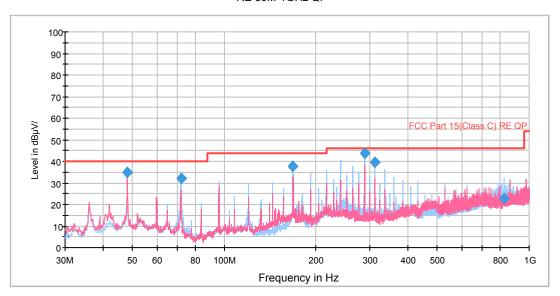
| Frequency<br>(MHz) | Peak<br>(dBuV/m) | Reading<br>value<br>(dBuV/m) | Height<br>(cm) | Polarization | Azimuth<br>(deg) | Correct<br>Factor<br>(dB) | Margin<br>(dB) | Limit<br>(dBuV/m) |
|--------------------|------------------|------------------------------|----------------|--------------|------------------|---------------------------|----------------|-------------------|
| 18294.312500       | 52.7             | 55.7                         | 101.0          | V            | 343.0            | -3.0                      | 21.3           | 74                |
| 20253.562500       | 52.6             | 58.5                         | 101.0          | Н            | 84.0             | -5.9                      | 21.4           | 74                |
| 21832.437500       | 53.8             | 61.8                         | 101.0          | Н            | 0.0              | -8.0                      | 20.2           | 74                |
| 22634.625000       | 54.4             | 61.1                         | 101.0          | Н            | 84.0             | -6.7                      | 19.6           | 74                |
| 23629.125000       | 54.7             | 60.6                         | 101.0          | V            | 138.0            | -5.9                      | 19.3           | 74                |
| 26417.125000       | 55.3             | 60.7                         | 101.0          | V            | 0.0              | -5.4                      | 18.7           | 74                |

| Frequency<br>(MHz) | Average<br>(dBuV/m) | Reading<br>value<br>(dBuV/m) | Height<br>(cm) | Polarization | Azimuth<br>(deg) | Correct<br>Factor<br>(dB) | Margin<br>(dB) | Limit<br>(dBuV/m) |
|--------------------|---------------------|------------------------------|----------------|--------------|------------------|---------------------------|----------------|-------------------|
| 19083.750000       | 40.3                | 45.5                         | 101.0          | V            | 234.0            | -5.2                      | 13.7           | 54                |
| 20134.562500       | 40.6                | 46.4                         | 101.0          | V            | 356.0            | -5.8                      | 13.4           | 54                |
| 21836.687500       | 41.3                | 49.3                         | 101.0          | V            | 329.0            | -8.0                      | 12.7           | 54                |
| 23250.875000       | 42.2                | 48.2                         | 101.0          | V            | 69.0             | -6.0                      | 11.8           | 54                |
| 23700.312500       | 42.6                | 48.5                         | 101.0          | V            | 179.0            | -5.9                      | 11.4           | 54                |
| 25977.250000       | 43.3                | 48.7                         | 101.0          | Н            | 84.0             | -5.4                      | 10.7           | 54                |

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#### **BLE-Channel 19**





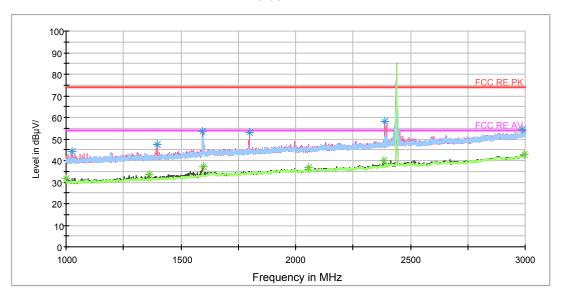
Radiated Emission 30M-1GHz

| Frequency<br>(MHz) | Quasi-Peak<br>(dBuV/m) | Reading<br>value<br>(dBuV/m) | Height<br>(cm) | Polarization | Azimuth<br>(deg) | Correct<br>Factor<br>(dB) | Margin<br>(dB) | Limit<br>(dBuV/m) |  |
|--------------------|------------------------|------------------------------|----------------|--------------|------------------|---------------------------|----------------|-------------------|--|
| 47.985138          | 35.1                   | 55.3                         | 105.0          | V            | 40.0             | -20.2                     | 4.9            | 40.0              |  |
| 72.012619          | 32.1                   | 59.6                         | 130.0          | Н            | 46.0             | -27.5                     | 7.9            | 40.0              |  |
| 168.002544         | 37.8                   | 66.1                         | 130.0          | Н            | 57.0             | -28.3                     | 5.7            | 43.5              |  |
| 288.020000         | 43.8                   | 67.2                         | 121.0          | Н            | 136.0            | -23.4                     | 2.2            | 46.0              |  |
| 312.007500         | 39.5                   | 62.6                         | 121.0          | Н            | 158.0            | -23.1                     | 6.5            | 46.0              |  |
| 828.022000         | 23.0                   | 36.8                         | 101.0          | Н            | 0.0              | -13.8                     | 23.0           | 46.0              |  |

Remark: 1. Quasi-Peak = Reading value + Correction factor

- 2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)
- 3. Margin = Limit Quasi-Peak

#### RE 1G-3GHz PK+AV

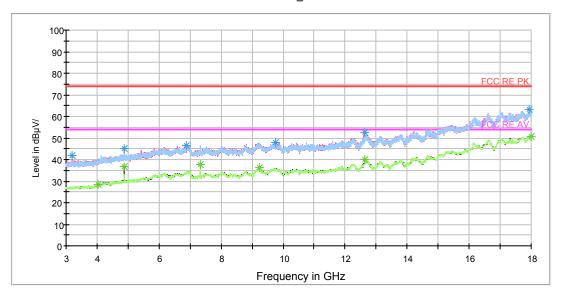


### Radiated Emission 1G-3GHz

| Frequency<br>(MHz) | Peak<br>(dBuV/m) | Reading<br>value<br>(dBuV/m) | Height<br>(cm) | Polarization | Azimuth<br>(deg) | Correct<br>Factor<br>(dB) | Margin<br>(dB) | Limit<br>(dBuV/m) |
|--------------------|------------------|------------------------------|----------------|--------------|------------------|---------------------------|----------------|-------------------|
| 1027.750000        | 44.3             | 53.4                         | 102.0          | V            | 148.0            | -9.1                      | 29.7           | 74                |
| 1397.500000        | 47.6             | 54.7                         | 102.0          | V            | 221.0            | -7.1                      | 26.4           | 74                |
| 1595.750000        | 53.7             | 60.1                         | 102.0          | V            | 337.0            | -6.4                      | 20.3           | 74                |
| 1799.500000        | 53.0             | 56.9                         | 102.0          | V            | 337.0            | -3.9                      | 21.0           | 74                |
| 2389.500000        | 57.9             | 59.3                         | 102.0          | V            | 0.0              | -1.4                      | 16.1           | 74                |
| 2986.250000        | 54.3             | 52.1                         | 102.0          | Н            | 101.0            | 2.2                       | 19.7           | 74                |

| Frequency<br>(MHz) | Average<br>(dBuV/m) | Reading<br>value<br>(dBuV/m) | Height<br>(cm) | Polarization | Azimuth<br>(deg) | Correct<br>Factor<br>(dB) | Margin<br>(dB) | Limit<br>(dBuV/m) |
|--------------------|---------------------|------------------------------|----------------|--------------|------------------|---------------------------|----------------|-------------------|
| 1000.250000        | 31.8                | 41.0                         | 102.0          | V            | 0.0              | -9.2                      | 22.2           | 54                |
| 1362.750000        | 33.5                | 40.9                         | 102.0          | V            | 355.0            | -7.4                      | 20.5           | 54                |
| 1597.500000        | 37.0                | 43.4                         | 102.0          | V            | 221.0            | -6.4                      | 17.0           | 54                |
| 2058.000000        | 36.6                | 39.8                         | 102.0          | V            | 195.0            | -3.2                      | 17.4           | 54                |
| 2383.000000        | 40.1                | 41.6                         | 102.0          | V            | 275.0            | -1.5                      | 13.9           | 54                |
| 2997.000000        | 42.7                | 40.4                         | 102.0          | Н            | 269.0            | 2.3                       | 11.3           | 54                |

### RE 3-18GHz PK+AV\_BELL SWEEP

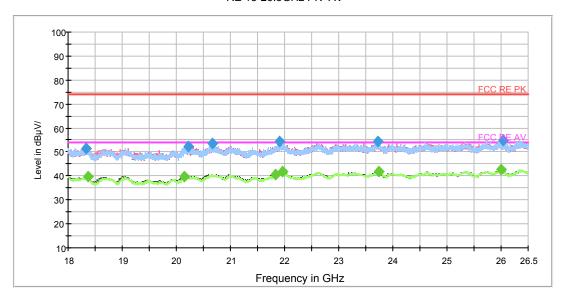


### Radiated Emission 3G-18GHz

| Frequency<br>(MHz) | Peak<br>(dBuV/m) | Reading<br>value<br>(dBuV/m) | Height<br>(cm) | Polarization | Azimuth<br>(deg) | Correct<br>Factor<br>(dB) | Margin<br>(dB) | Limit<br>(dBuV/m) |  |  |
|--------------------|------------------|------------------------------|----------------|--------------|------------------|---------------------------|----------------|-------------------|--|--|
| 3193.125000        | 41.8             | 44.7                         | 105.0          | V            | 343.0            | -2.9                      | 32.2           | 74                |  |  |
| 4878.750000        | 45.0             | 43.2                         | 105.0          | V            | 69.0             | 1.8                       | 29.0           | 74                |  |  |
| 6894.375000        | 46.4             | 40.2                         | 105.0          | Н            | 177.0            | 6.2                       | 27.6           | 74                |  |  |
| 9748.125000        | 48.1             | 38.3                         | 105.0          | Н            | 0.0              | 9.8                       | 25.9           | 74                |  |  |
| 12637.500000       | 52.4             | 38.1                         | 105.0          | V            | 0.0              | 14.3                      | 21.6           | 74                |  |  |
| 17936.250000       | 63.3             | 38.2                         | 105.0          | Н            | 0.0              | 25.1                      | 10.7           | 74                |  |  |

| Frequency<br>(MHz) | Average<br>(dBuV/m) | Reading<br>value<br>(dBuV/m) | Height<br>(cm) | Polarization | Azimuth<br>(deg) | Correct<br>Factor<br>(dB) | Margin<br>(dB) | Limit<br>(dBuV/m) |
|--------------------|---------------------|------------------------------|----------------|--------------|------------------|---------------------------|----------------|-------------------|
| 4035.000000        | 28.2                | 29.2                         | 105.0          | Н            | 0.0              | -1.0                      | 25.8           | 54                |
| 4878.750000        | 36.8                | 35.0                         | 105.0          | V            | 69.0             | 1.8                       | 17.2           | 54                |
| 7320.000000        | 37.7                | 30.8                         | 105.0          | Н            | 87.0             | 6.9                       | 16.3           | 54                |
| 9240.000000        | 36.1                | 26.2                         | 105.0          | Н            | 0.0              | 9.9                       | 17.9           | 54                |
| 12639.375000       | 40.0                | 25.5                         | 105.0          | V            | 69.0             | 14.5                      | 14.0           | 54                |
| 18000.000000       | 50.7                | 25.2                         | 105.0          | Н            | 270.0            | 25.5                      | 3.3            | 54                |

#### RE 18-26.5GHz PK+AV



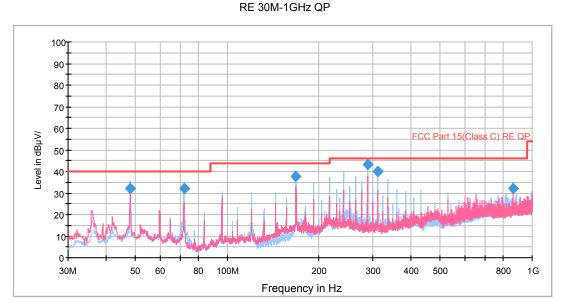
#### Radiated Emission 18G-26.5GHz

| Frequency<br>(MHz) | Peak<br>(dBuV/m) | Reading<br>value<br>(dBuV/m) | Height<br>(cm) | Polarization | Azimuth<br>(deg) | Correct<br>Factor<br>(dB) | Margin<br>(dB) | Limit<br>(dBuV/m) |
|--------------------|------------------|------------------------------|----------------|--------------|------------------|---------------------------|----------------|-------------------|
| 18340.000000       | 51.6             | 54.8                         | 101.0          | Н            | 0.0              | -3.2                      | 22.4           | 74                |
| 20219.562500       | 52.2             | 58.1                         | 101.0          | V            | 314.0            | -5.9                      | 21.8           | 74                |
| 20667.937500       | 53.4             | 60.0                         | 101.0          | V            | 183.0            | -6.6                      | 20.6           | 74                |
| 21898.312500       | 54.4             | 62.4                         | 101.0          | V            | 0.0              | -8.0                      | 19.6           | 74                |
| 23722.625000       | 54.3             | 60.2                         | 101.0          | V            | 209.0            | -5.9                      | 19.7           | 74                |
| 26044.187500       | 54.9             | 60.3                         | 101.0          | V            | 0.0              | -5.4                      | 19.1           | 74                |

| Frequency<br>(MHz) | Average<br>(dBuV/m) | Reading<br>value<br>(dBuV/m) | Height<br>(cm) | Polarization | Azimuth<br>(deg) | Correct<br>Factor<br>(dB) | Margin<br>(dB) | Limit<br>(dBuV/m) |
|--------------------|---------------------|------------------------------|----------------|--------------|------------------|---------------------------|----------------|-------------------|
| 18368.687500       | 39.7                | 43.1                         | 101.0          | V            | 314.0            | -3.4                      | 14.3           | 54                |
| 20155.812500       | 39.9                | 45.7                         | 101.0          | Н            | 70.0             | -5.8                      | 14.1           | 54                |
| 21838.812500       | 40.8                | 48.8                         | 101.0          | V            | 0.0              | -8.0                      | 13.2           | 54                |
| 21962.062500       | 41.8                | 49.8                         | 101.0          | V            | 75.0             | -8.0                      | 12.2           | 54                |
| 23739.625000       | 41.7                | 47.6                         | 101.0          | V            | 157.0            | -5.9                      | 12.3           | 54                |
| 25998.500000       | 42.7                | 48.1                         | 101.0          | Н            | 42.0             | -5.4                      | 11.3           | 54                |

**BLE-Channel 39** 

Report No: RXA1701-0005RF03



Radiated Emission 30M-1GHz

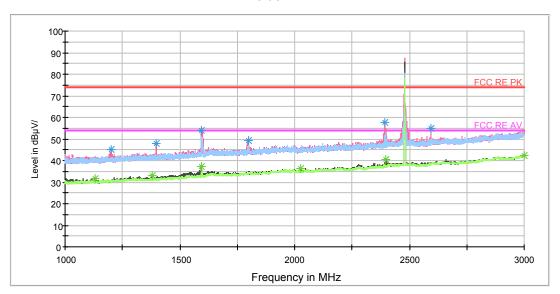
| Frequency<br>(MHz) | Quasi-Peak<br>(dBuV/m) | Reading<br>value<br>(dBuV/m) | Height (cm) | Polarization | Azimuth<br>(deg) | Correct<br>Factor<br>(dB) | Margin<br>(dB) | Limit<br>(dBuV/m) |
|--------------------|------------------------|------------------------------|-------------|--------------|------------------|---------------------------|----------------|-------------------|
| 47.985138          | 32.1                   | 52.3                         | 105.0       | V            | 47.0             | -20.2                     | 7.9            | 40.0              |
| 72.012619          | 32.0                   | 59.5                         | 130.0       | Н            | 46.0             | -27.5                     | 8.0            | 40.0              |
| 168.002544         | 37.6                   | 65.9                         | 130.0       | Н            | 58.0             | -28.3                     | 5.9            | 43.5              |
| 288.020000         | 43.2                   | 66.6                         | 125.0       | Н            | 144.0            | -23.4                     | 2.8            | 46.0              |
| 312.007500         | 39.9                   | 63.0                         | 105.0       | Н            | 144.0            | -23.1                     | 6.1            | 46.0              |
| 864.038750         | 32.1                   | 45.0                         | 130.0       | Н            | 212.0            | -12.9                     | 13.9           | 46.0              |

Remark: 1. Quasi-Peak = Reading value + Correction factor

- 2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)
- 3. Margin = Limit Quasi-Peak

#### RE 1G-3GHz PK+AV

Report No: RXA1701-0005RF03

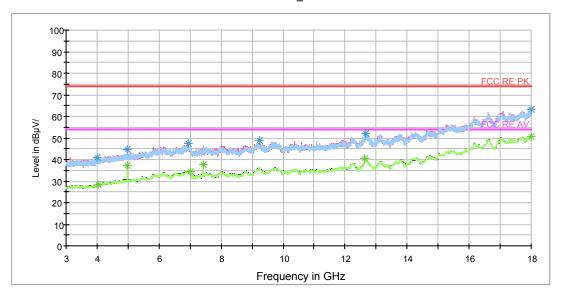


#### Radiated Emission 1G-3GHz

| Frequency<br>(MHz) | Peak<br>(dBuV/m) | Reading<br>value<br>(dBuV/m) | Height<br>(cm) | Polarization | Azimuth<br>(deg) | Correct<br>Factor<br>(dB) | Margin<br>(dB) | Limit<br>(dBuV/m) |
|--------------------|------------------|------------------------------|----------------|--------------|------------------|---------------------------|----------------|-------------------|
| 1200.250000        | 45.1             | 53.3                         | 102.0          | V            | 83.0             | -8.2                      | 28.9           | 74                |
| 1398.750000        | 47.7             | 54.8                         | 102.0          | V            | 311.0            | -7.1                      | 26.3           | 74                |
| 1593.250000        | 54.1             | 60.5                         | 102.0          | V            | 221.0            | -6.4                      | 19.9           | 74                |
| 1799.000000        | 49.5             | 53.5                         | 102.0          | Н            | 0.0              | -4.0                      | 24.5           | 74                |
| 2394.250000        | 57.5             | 58.8                         | 102.0          | V            | 356.0            | -1.3                      | 16.5           | 74                |
| 2595.750000        | 54.8             | 54.6                         | 102.0          | V            | 303.0            | 0.2                       | 19.2           | 74                |

| Frequency<br>(MHz) | Average<br>(dBuV/m) | Reading<br>value<br>(dBuV/m) | Height<br>(cm) | Polarization | Azimuth<br>(deg) | Correct<br>Factor<br>(dB) | Margin<br>(dB) | Limit<br>(dBuV/m) |
|--------------------|---------------------|------------------------------|----------------|--------------|------------------|---------------------------|----------------|-------------------|
| 1130.250000        | 31.7                | 40.0                         | 102.0          | V            | 311.0            | -8.3                      | 22.3           | 54                |
| 1380.750000        | 32.8                | 39.8                         | 102.0          | V            | 338.0            | -7.0                      | 21.2           | 54                |
| 1595.500000        | 37.1                | 43.5                         | 102.0          | V            | 338.0            | -6.4                      | 16.9           | 54                |
| 2024.750000        | 36.4                | 39.9                         | 102.0          | V            | 338.0            | -3.5                      | 17.6           | 54                |
| 2399.500000        | 40.2                | 41.5                         | 102.0          | V            | 285.0            | -1.3                      | 13.8           | 54                |
| 2999.500000        | 42.4                | 40.1                         | 102.0          | V            | 139.0            | 2.3                       | 11.6           | 54                |

### RE 3-18GHz PK+AV\_BELL SWEEP

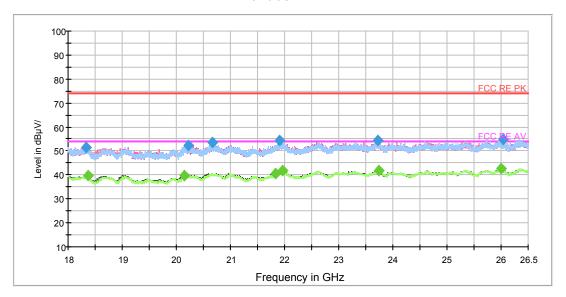


### Radiated Emission 3G-18GHz

| Frequency<br>(MHz) | Peak<br>(dBuV/m) | Reading<br>value<br>(dBuV/m) | Height<br>(cm) | Polarization | Azimuth<br>(deg) | Correct<br>Factor<br>(dB) | Margin<br>(dB) | Limit<br>(dBuV/m) |
|--------------------|------------------|------------------------------|----------------|--------------|------------------|---------------------------|----------------|-------------------|
| 3993.750000        | 40.9             | 42.0                         | 105.0          | Н            | 106.0            | -1.1                      | 33.1           | 74                |
| 4959.375000        | 44.8             | 43.0                         | 105.0          | Н            | 0.0              | 1.8                       | 29.2           | 74                |
| 6941.250000        | 47.3             | 41.2                         | 105.0          | V            | 207.0            | 6.1                       | 26.7           | 74                |
| 9240.000000        | 48.6             | 38.7                         | 105.0          | V            | 161.0            | 9.9                       | 25.4           | 74                |
| 12680.625000       | 52.2             | 37.9                         | 105.0          | V            | 0.0              | 14.3                      | 21.8           | 74                |
| 17998.125000       | 63.1             | 37.7                         | 105.0          | Н            | 0.0              | 25.4                      | 10.9           | 74                |

| Frequency<br>(MHz) | Average<br>(dBuV/m) | Reading<br>value<br>(dBuV/m) | Height<br>(cm) | Polarization | Azimuth<br>(deg) | Correct<br>Factor<br>(dB) | Margin<br>(dB) | Limit<br>(dBuV/m) |
|--------------------|---------------------|------------------------------|----------------|--------------|------------------|---------------------------|----------------|-------------------|
| 4036.875000        | 28.5                | 29.5                         | 105.0          | Н            | 16.0             | -1.0                      | 25.5           | 54                |
| 4959.375000        | 37.1                | 35.3                         | 105.0          | V            | 19.0             | 1.8                       | 16.9           | 54                |
| 6997.500000        | 34.6                | 28.1                         | 105.0          | V            | 0.0              | 6.5                       | 19.4           | 54                |
| 7440.000000        | 37.8                | 31.2                         | 105.0          | Н            | 106.0            | 6.6                       | 16.2           | 54                |
| 12641.250000       | 40.6                | 26.1                         | 105.0          | Н            | 224.0            | 14.5                      | 13.4           | 54                |
| 18000.000000       | 50.7                | 25.2                         | 105.0          | V            | 0.0              | 25.5                      | 3.3            | 54                |

#### RE 18-26.5GHz PK+AV



#### Radiated Emission 18G-26.5GHz

| Frequency<br>(MHz) | Peak<br>(dBuV/m) | Reading<br>value<br>(dBuV/m) | Height (cm) | Polarization | Azimuth (deg) | Correct<br>Factor<br>(dB) | Margin<br>(dB) | Limit<br>(dBuV/m) |
|--------------------|------------------|------------------------------|-------------|--------------|---------------|---------------------------|----------------|-------------------|
| 18340.000000       | 51.6             | 54.8                         | 101.0       | Н            | 0.0           | -3.2                      | 22.4           | 74                |
| 20219.562500       | 52.2             | 58.1                         | 101.0       | V            | 314.0         | -5.9                      | 21.8           | 74                |
| 20667.937500       | 53.4             | 60.0                         | 101.0       | V            | 183.0         | -6.6                      | 20.6           | 74                |
| 21898.312500       | 54.4             | 62.4                         | 101.0       | V            | 0.0           | -8.0                      | 19.6           | 74                |
| 23722.625000       | 54.3             | 60.2                         | 101.0       | V            | 209.0         | -5.9                      | 19.7           | 74                |
| 26044.187500       | 54.9             | 60.3                         | 101.0       | V            | 0.0           | -5.4                      | 19.1           | 74                |

| Frequency<br>(MHz) | Average<br>(dBuV/m) | Reading<br>value<br>(dBuV/m) | Height<br>(cm) | Polarization | Azimuth<br>(deg) | Correct<br>Factor<br>(dB) | Margin<br>(dB) | Limit<br>(dBuV/m) |
|--------------------|---------------------|------------------------------|----------------|--------------|------------------|---------------------------|----------------|-------------------|
| 18368.687500       | 39.7                | 43.1                         | 101.0          | V            | 314.0            | -3.4                      | 14.3           | 54                |
| 20155.812500       | 39.9                | 45.7                         | 101.0          | Н            | 70.0             | -5.8                      | 14.1           | 54                |
| 21838.812500       | 40.8                | 48.8                         | 101.0          | V            | 0.0              | -8.0                      | 13.2           | 54                |
| 21962.062500       | 41.8                | 49.8                         | 101.0          | V            | 75.0             | -8.0                      | 12.2           | 54                |
| 23739.625000       | 41.7                | 47.6                         | 101.0          | V            | 157.0            | -5.9                      | 12.3           | 54                |
| 25998.500000       | 42.7                | 48.1                         | 101.0          | Н            | 42.0             | -5.4                      | 11.3           | 54                |

## 6. Main Test Instruments

| Name                                       | Туре      | Manufacturer    | Serial<br>Number | Calibration<br>Date | Expiration<br>Time |
|--|-----------|-----------------|------------------|---------------------|--------------------|
| Spectrum Analyzer                          | FSV30     | R&S             | 100815           | 2016-12-16          | 2017-12-15         |
| EMI Test Receiver                          | ESCI      | R&S             | 100948           | 2016-06-01          | 2017-05-31         |
| TRILOG Broadband<br>Antenna                | VULB 9163 | Schwarzbeck     | 9163-201         | 2014-12-06          | 2017-12-05         |
| Double Ridged<br>Waveguide Horn<br>Antenna | HF907     | R&S             | 100126           | 2014-12-06          | 2017-12-05         |
| Loop Antenna                               | FMZB1519  | SCHWARZBE<br>CK | 1519-047         | 2014-02-19          | 2017-02-18         |
| Standard Gain Horn                         | 3160-09   | ETS-Lindgren    | 00102644         | 2015-01-30          | 2018-01-29         |
| EMI Test Receiver                          | ESCS30    | R&S             | 100138           | 2016-12-16          | 2017-12-15         |
| LISN                                       | ENV216    | R&S             | 101171           | 2016-12-17          | 2019-12-16         |
| Spectrum Analyzer                          | N9010A    | Agilent         | MY47191109       | 2016-05-21          | 2017-05-20         |
| MOB COMMS<br>DC SUPPLY                     | 66319D    | Agilent         | MY43004105       | 2016-05-21          | 2017-05-20         |
| Peak Power Meter                           | U2021XA   | Keysight        | MY55240003       | 2016-06-26          | 2017-06-25         |
| RF Cable                                   | SMA 15cm  | Agilent         | 0001             | 2017-02-06          | 2017-08-05         |

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



# **ANNEX A: EUT Appearance and Test Setup**

## A.1 EUT Appearance





TA Technology (Shanghai) Co., Ltd.





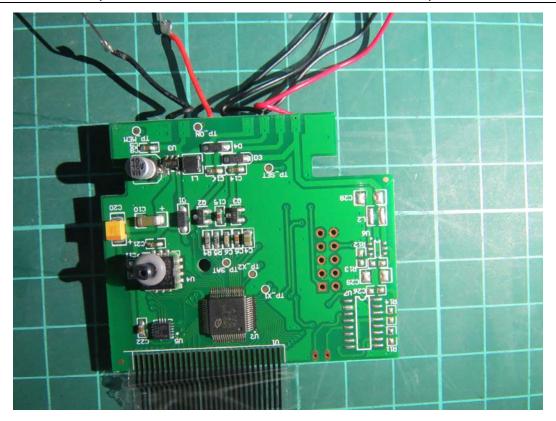


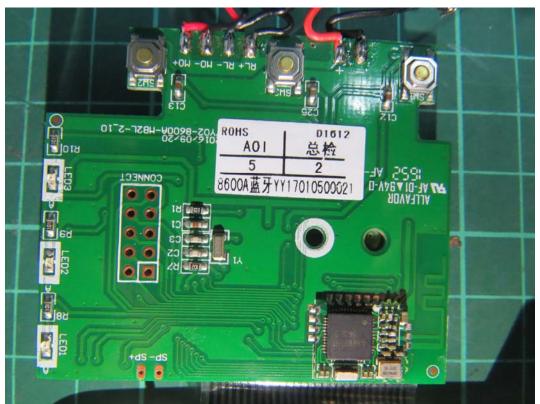






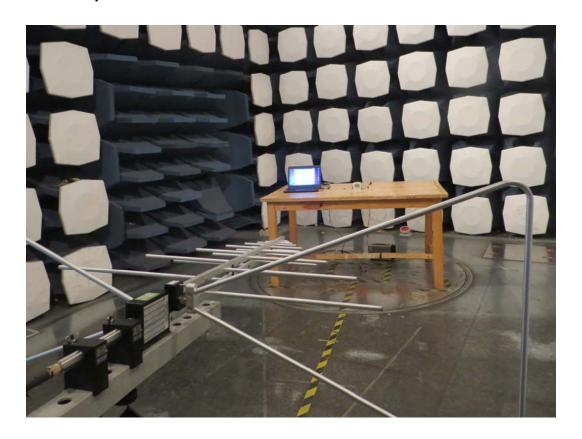






**Picture 1 EUT and Accessory** 

# A.2 Test Setup

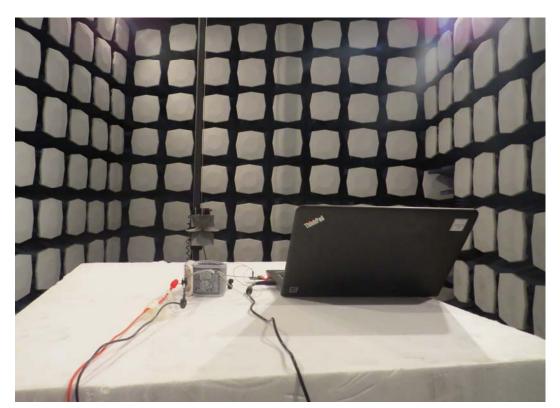




30M Hz-1GHz







Above 1GHz

Picture 2 Radiated Emission Test Setup