# TEST REPORT

## No. 2013TAR170

**for**

**Sony Mobile Communications (China) Co. Ltd**

**GSM/UMTS/LTE mobile phone**

**Type: PM-0350-BV**

**FCC ID: PY7PM-0350**

**with**

**Hardware Version: A**

**Software Version: 12.0.A.1.18**

**Issued Date: Apr 27th, 2013**

**Note:**

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of TMC Beijing.

**Test Laboratory:**

***DAkks accreditation (DIN EN ISO/IEC 17025): No. D-PL-12123-01-01***

***FCC 2.948 Listed: No.733176***

***IC O.A.T.S listed: No.6629B-1***

TMC Beijing, Telecommunication Metrology Center of Ministry of Industry and Information Technology

No. 52, Huayuan Bei Road, Haidian District, Beijing, P. R. China 100191.

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# CONTENTS

# 1. Test Laboratory

## 1.1. Testing Location

| | |
|---|---|
| Company Name: | TMC Beijing, Telecommunication Metrology Center of MIIT |
| Address: | No 52, Huayuan Bei Road, Haidian District, Beijing, P.R. China |
| Postal Code: | 100191 |
| Telephone: | +86-10-62304633-2678 |
| Fax: | +86-10-62304633-2504 |

## 1.2. Testing Environment

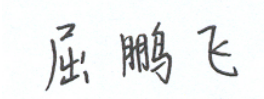
| | |
|---|---|
| Normal Temperature: | 15-35℃ |
| Relative Humidity: | 20-75% |
| Air pressure: | 980 - 1040 hPa |

The climatic requirements above are general exclude the special requirements for dedicated test environments listed in section 5 and some specific test cases in other parts of this report.

## 1.3. Project data

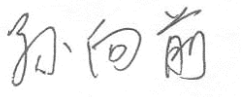
| | |
|---|---|
| Receipt of Sample: | Jan. 24th, 2013 |
| Testing Start Date: | Feb. 5th, 2013 |
| Testing End Date: | Feb. 23rd, 2013 |

## 1.4. Signature



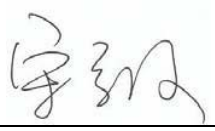
**Qu Pengfei**

**(Prepared this test report)**



**Sun Xiangqian**

**(Reviewed this test report)**



**Song Chongwen**

**(Approved this test report)**

# 2. Client Information

## 2.1. Applicant Information

| | |
|---|---|
| Company Name: | Sony Mobile Communications (China) Co. Ltd |
| Address /Post: | Sony Mobile R&D Center, No. 16, Guangshun South Street, Chaoyang District |
| City: | Beijing |
| Postal Code: | 100102 |
| Country: | China |
| Contact Person: | Ma, Gang |
| Telephone: | +86-10-58656312 |
| Fax: | +86-10-58659049 |

## 2.2. Manufacturer Information

| | |
|---|---|
| Company Name: | Sony Mobile Communications (China) Co. Ltd |
| Address /Post: | Sony Mobile R&D Center, No. 16, Guangshun South Street, Chaoyang District |
| City: | Beijing |
| Postal Code: | 100102 |
| Country: | China |
| Contact Person: | Ma, Gang |
| Telephone: | +86-10-58656312 |
| Fax: | +86-10-58659049 |

# 3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

## 3.1. About EUT

| | |
|---|---|
| Description | GSM 850/900/1800/1900, GPRS, EDGE,<br>WCDMA FDD Band 1/5/8, HSDPA, HSUPA,<br>LTE FDD Band 1/3/5/7/8/20,<br>Bluetooth EDR & BLE, WLAN ( 802.11 a/b/g/n),<br>FM, NFC, GPS receiver mobile phone |
| Type | PM-0350-BV |
| FCC ID | PY7PM-0350 |
| GSM Frequency Band | GSM 850/900/1800/1900 |
| UMTS Frequency Band | FDD Band 1 / FDD Band 5 / FDD Band 8 |
| LTE Frequency Band | FDD Band 1 / FDD Band 3 / FDD Band 5 / FDD Band 7 /<br>FDD Band 8 / FDD Band 20 |
| Antenna | Internal |
| Power supply | Battery, which is charged by the charger (travel adapter / vehicle adapter ) attached to the phone. |
| Extreme vol. Limits | 3.5VDC to 4.1VDC (nominal: 3.7VDC) |
| Extreme temp. Tolerance | -30°C to +50°C |

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of Telecommunication Metrology Center of MIIT of People's Republic of China.

## 3.2. Internal Identification of EUT used during the test

| EUT ID* | SN | IMEI | HW Version | SW Version |
|---|---|---|---|---|
| #23588 | CB5123BN1T | 004402450616523 | A | 12.0.A.1.18 |

*EUT ID: is used to identify the test sample in the lab internally.

## 3.3. Internal Identification of AE used during the test

| AE ID* | Description | SN | Revision |
|---|---|---|---|
| #22538 | USB Cable | 121607D70004DE | SP1 |
| AE2 | Vehicle Charger | 1042140C004574E | / |

#22538

| | |
|---|---|
| Commercial name | EC801 |
| Type | AI-0401 |
| Manufacturer | Sony Mobile |
| Length of cable | 96.5cm |

AE2

| | |
|---|---|
| Type | CAA-0003013 |
| Manufacturer | Sony Mobile |
| Length of cable | / |

*AE ID: is used to identify the test sample in the lab internally.

## 3.4. General Description

The Equipment Under Test (EUT) is a model of GSM/UMTS/LTE mobile phone with integrated antenna and inbuilt Li-Polymer battery.

The EUT supports GSM 850/900/1800/1900MHz bands, WCDMA FDD bands 1/5/8 and LTE FDD bands 1/3/5/7/8/20. It also supports GPRS service with multi-slots class 33 and EGPRS service with multi-slots class 33 too. The HSDPA and HSUPA features are also supported.

It has MP3, camera, FM radio, USB memory, GPS receiver, NFC, Mobile High-Definition Link (MHL), Bluetooth (EDR and Bluetooth 4.0), WLAN (802.11 a/b/g/n) and Wi-Fi hotspot functions.

It consists of normal options: lithium battery and vehicle charger.

Manual and specifications of the EUT were provided to fulfil the test.

Samples undergoing test were selected by the client.

# 4. Reference Documents

## 4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

| Reference | Title | Version |
|---|---|---|
| FCC Part 15, Subpart B | Radio frequency devices | 10-1-12 Edition |
| ANSI C63.4 | Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz | 2003 |

## 5. LABORATORY ENVIRONMENT

**Semi-anechoic chamber SAC-2** (10 meters×6.7meters×6.1meters) did not exceed following limits along the EMC testing:

| | |
|---|---|
| Temperature | Min. = 15 ℃, Max. = 30 ℃ |
| Relative humidity | Min. = 35 %, Max. = 60 % |
| Shielding effectiveness | > 110 dB |
| Electrical insulation | > 2 MΩ |
| Ground system resistance | < 1Ω |
| Normalised site attenuation (NSA) | < ±3.5 dB, 3m distance, from 30 to 1000 MHz |
| Site voltage standing-wave ratio ($S_{VSWR}$) | Between 0 and 6 dB, from 1GHz to 18GHz |
| Uniformity of field strength | Between 0 and 6 dB, from 80 to 3000 MHz |

**Fully-anechoic chamber FAC-3** (9 meters×6.5 meters×4 meters) did not exceed following limits along the EMC testing:

| | |
|---|---|
| Temperature | Min. = 15 ℃, Max. = 30 ℃ |
| Relative humidity | Min. = 35 %, Max. = 60 % |
| Shielding effectiveness | > 110 dB |
| Electrical insulation | > 2 MΩ |
| Ground system resistance | < 1 Ω |
| Uniformity of field strength | Between 0 and 6 dB, from 80 to 4000 MHz |
| Site voltage standing-wave ratio ($S_{VSWR}$) | Between 0 and 6 dB, from 1GHz to 18GHz |

**Control room/ conducted chamber** did not exceed following limits along the EMC testing:

| | |
|---|---|
| Temperature | Min. = 15 ℃, Max. = 35 ℃ |
| Relative humidity | Min. =20 %, Max. = 80 % |
| Shielding effectiveness | > 110 dB |
| Electrical insulation | > 2 MΩ |
| Ground system resistance | < 0.5 Ω |

# 6. SUMMARY OF TEST RESULTS

## 6.1. Summary of test results

**Abbreviations used in this clause:**

| | |
|---|---|
| P | Pass |
| NA | Not applicable |
| F | Fail |

| Items | Test Name | Clause in FCC rules | Section in this report | Verdict |
|---|---|---|---|---|
| 1 | Radiated Emission | 15.109(a) | B.1 | P |

## 6.2. Statements

The test cases listed in section 6.1 of this report for the EUT specified in section 3 were performed by TMC according to the standards or reference documents in section 4.1

The EUT met all applicable requirements of the standards or reference documents in section 4.1.

This report only deals with the GPS receiver function among the features described in section 3.

## 7. Test Equipments Utilized

| NO. | Description | TYPE | SERIES NUMBER | MANUFACTURE | CAL DUE DATE |
|---|---|---|---|---|---|
| 1 | Test Receiver | ESU26 | 100376 | R&S | 2013-11-07 |
| 2 | EMI Antenna | VULB 9163 | 514 | Schwarzbeck | 2014-11-10 |
| 3 | EMI Antenna | 3117 | 00139065 | ETS-Lindgren | 2014-07-31 |
| 4 | Universal Radio Communication Tester | E5515C | MY48363198 | Agilent | 2013-07-09 |
| 5 | Vector Signal Generator | SMU200A | 102082 | R&S | 2013-11-14 |

## ANNEX A: EUT photograph


**Mobile Phone**


**Mobile Phone**

**Mobile Phone**

**Mobile Phone**

**Mobile Phone**

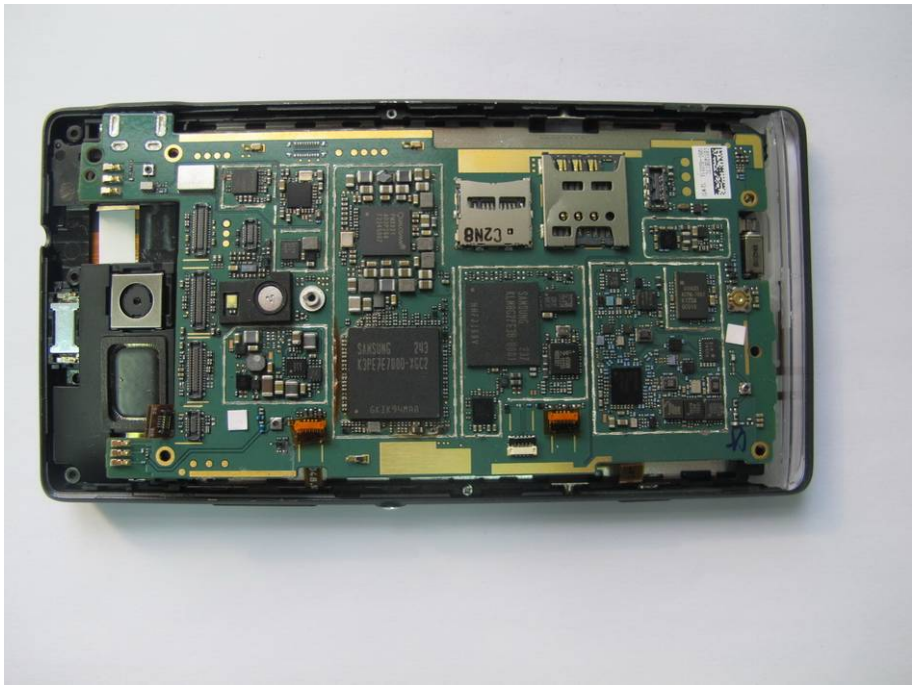
**Mobile Phone**

**Mobile Phone**


**Label of Mobile Phone**

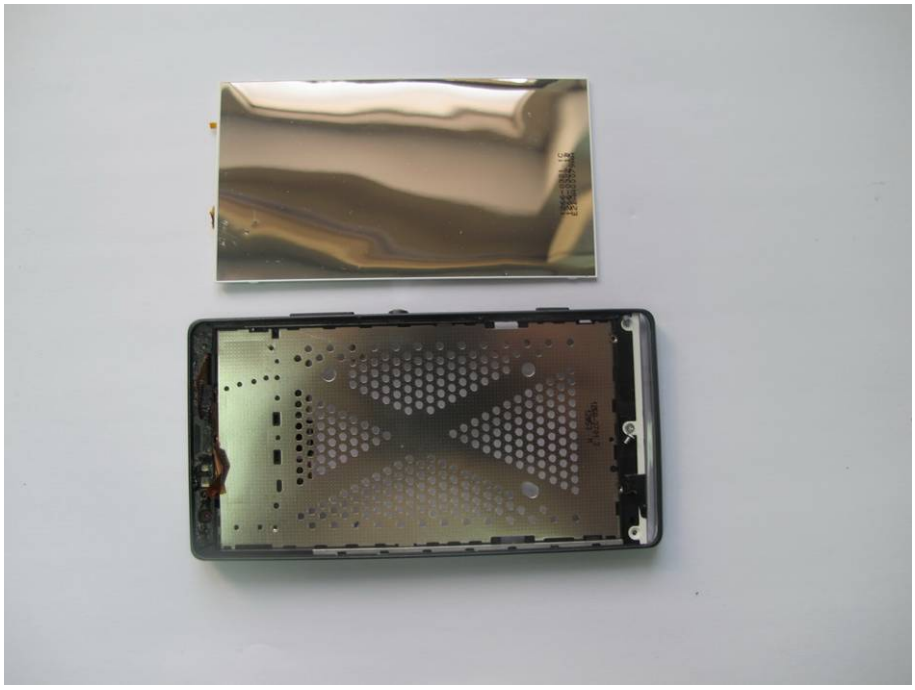
**Mobile Phone Disassembly**

**Mobile Phone Disassembly**

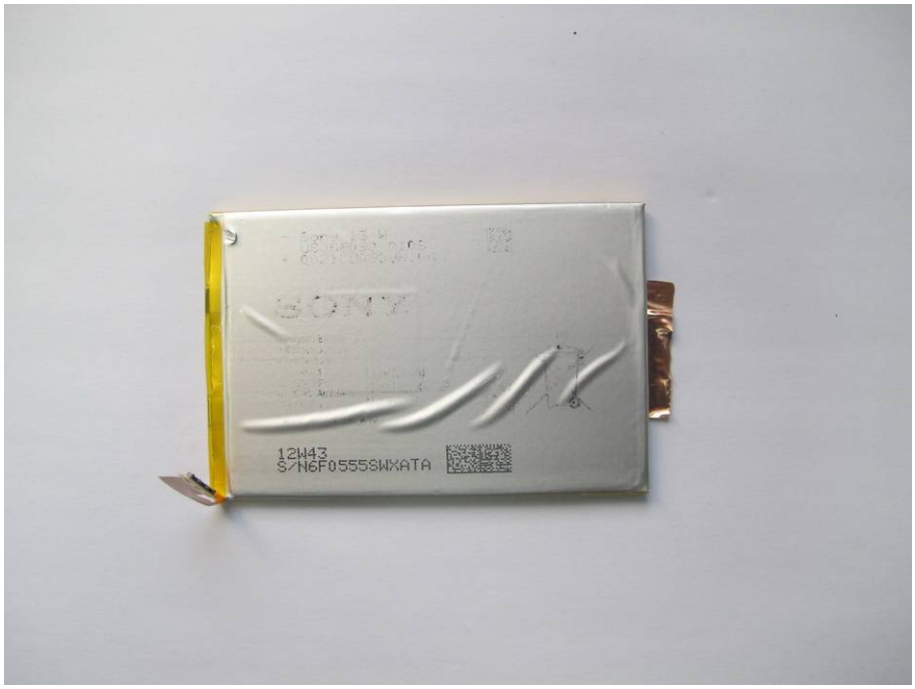


**Mobile Phone Disassembly**

**Mobile Phone Disassembly**



**Mobile Phone Disassembly**




**Li-Polymer Battery**

**Vehicle Charger**


**Label of Vehicle Charger**


**USB Cable**

# ANNEX B: MEASUREMENT RESULTS

**B.1 Radiated Emission**

**Reference**

FCC: CFR Part 15.109(a)

**B.1.1 Method of measurement**

The field strength of radiated emissions from the GPS receiver of MS at a distance of 3 meters is tested. Tested in accordance with the procedures of ANSI C63.4 - 2003, section 8.3.

**B.1.2 EUT Operating Mode:**

EUT Setup: #23588 + #22538 + AE2

A vector signal generator is used to provide the simulated GPS signal, and the frequency is set to 1575.42 MHz. Before the test starts, the integrated GPS application in MS is started up and locked to the simulated GPS signal.

Meanwhile, the EUT is synchronized to universal radio communication tester, and able to respond to paging messages and incoming call. An established call has been released.

**B.1.3 Test layout:** see Pic.1 in ANNEX C.

**B.1.4 Measurement Limit**

Limit from CFR Part 15.109(a)

| Frequency of emission (MHz) | Field strength (microvolts/meter) |
|---|---|
| 30-88 | 100 |
| 88-216 | 150 |
| 216-960 | 200 |
| Above 960 | 500 |

### B.1.5 Measurement Results

### GPS Mode

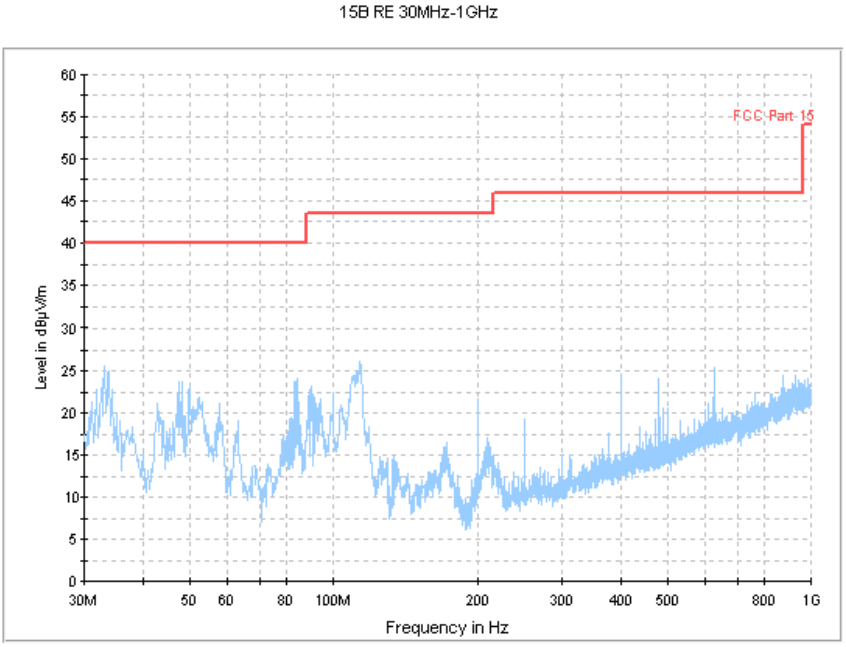



**Figure B.1 Radiated Emission from 30MHz to 1GHz**

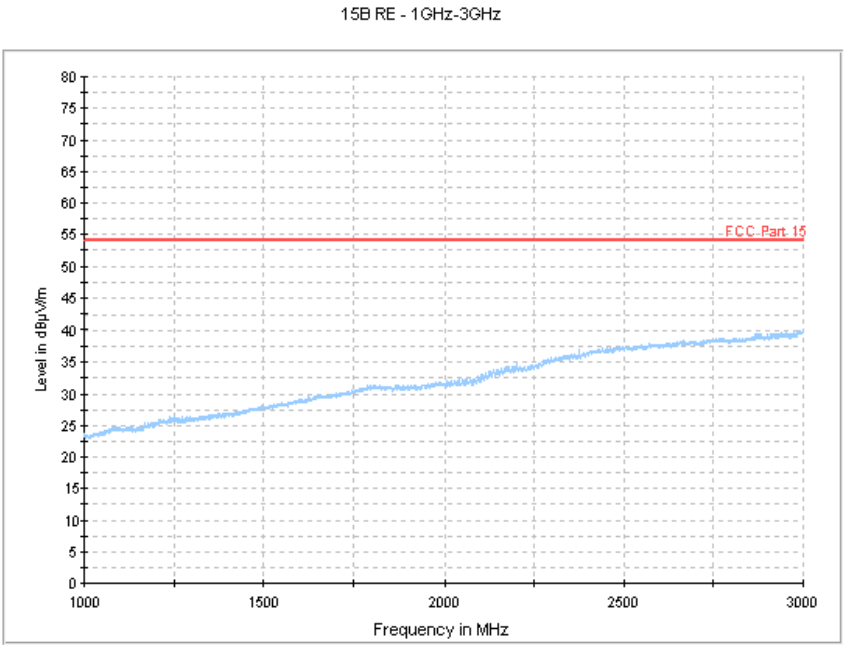



**Figure B.2 Radiated Emission from 1GHz to 3GHz**

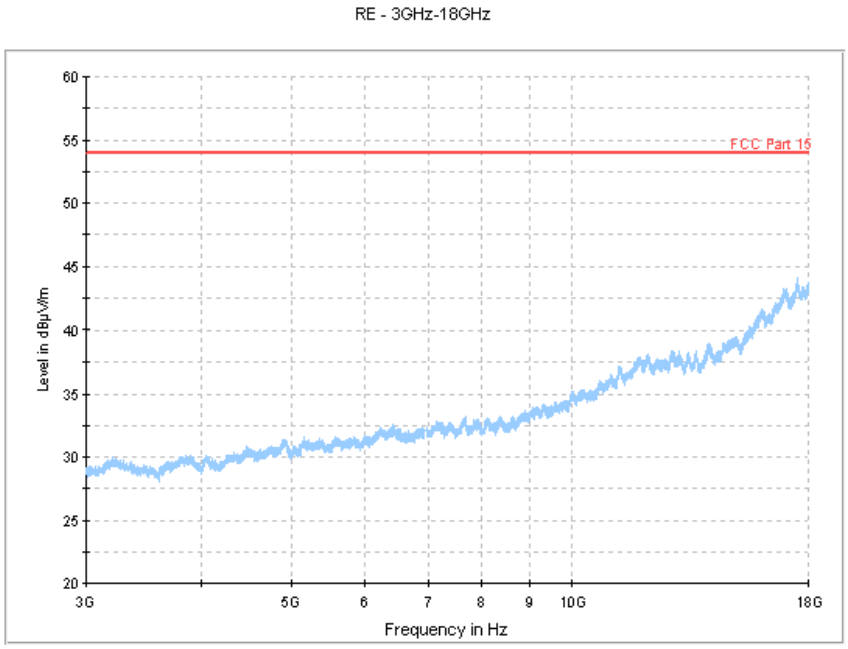
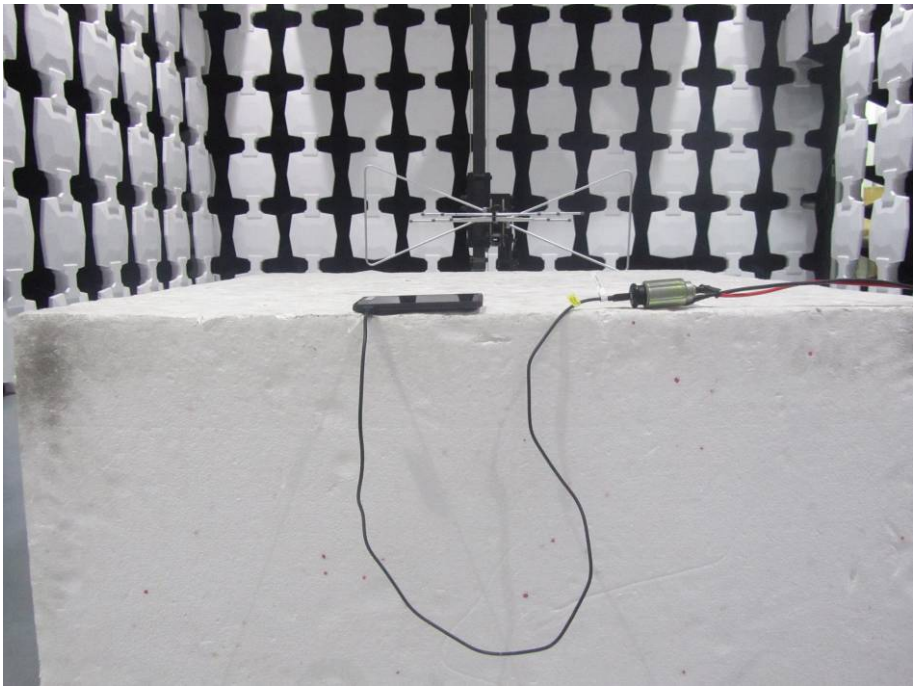



**Figure B.3 Radiated Emission from 3GHz to 18GHz**

Maximum expanded measurement uncertainty for this test item is *U* =3.9dB, k=2.

## ANNEX C: TEST LAYOUT



**Pic.1 Radiated emission**

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