



TEST REPORT

No. 2013TAR870

for

Sony Mobile Communications AB

GSM/WCDMA/LTE Mobile Phone

Type: PM-0762-BV

FCC ID: PY7PM-0762

with

Hardware Version: AP1

Software Version: 19.0.A.0.250

Issued Date: Jan. 14th, 2014

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.6629A-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.

Tel: +86(0) 10-62304633-2561, Fax:+86(0)10-62304633-2504 Email:welcome@emcite.com. www.emcite.com

CONTENTS

| | |
|--|-----------|
| 1. TEST LABORATORY..... | 3 |
| 1.1. TESTING LOCATION..... | 3 |
| 1.2. TESTING ENVIRONMENT..... | 3 |
| 1.3. PROJECT DATA..... | 3 |
| 1.4. SIGNATURE..... | 3 |
| 2. CLIENT INFORMATION..... | 4 |
| 2.1. APPLICANT INFORMATION..... | 4 |
| 2.2. MANUFACTURER INFORMATION..... | 4 |
| 3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE)..... | 5 |
| 3.1. ABOUT EUT..... | 5 |
| 3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST..... | 5 |
| 3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST..... | 5 |
| 3.4. GENERAL DESCRIPTION..... | 6 |
| 4. REFERENCE DOCUMENTS..... | 7 |
| 4.1. REFERENCE DOCUMENTS FOR TESTING..... | 7 |
| 5. LABORATORY ENVIRONMENT..... | 8 |
| 6. SUMMARY OF TEST RESULTS..... | 9 |
| 6.1. SUMMARY OF TEST RESULTS..... | 9 |
| 6.2. STATEMENTS..... | 9 |
| 7. TEST EQUIPMENTS UTILIZED..... | 10 |
| ANNEX A: MEASUREMENT RESULTS..... | 11 |
| ANNEX B: TEST LAYOUT..... | 14 |
| ANNEX C: EUT PHOTOGRAPH..... | 15 |

1. Test Laboratory

1.1. Testing Location

Location A

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT
Address: No 52, Huayuan Bei Road, Haidian District, Beijing, P.R. China
Postal Code: 100191

1.2. Testing Environment

Normal Temperature: 15-35°C
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.

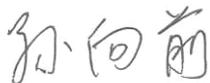
1.3. Project data

Receipt of Sample: Dec. 24th, 2013
Testing Start Date: Dec. 26th, 2013
Testing End Date: Jan. 10th, 2014

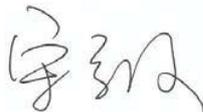
1.4. Signature



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 AB
Address /Post: Mobilvägen, 22188 Lund, Sweden
City: Lund
Postal Code: 22188
Country: Sweden
Contact Person: Nilsson, Mikael
Telephone: +46 703 227503
Fax: +46 706 127385

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

3.1. About EUT

| | |
|-------------------------|---|
| Description | GSM 850/900/1800/1900 quad bands, GPRS, EDGE, WCDMA FDD bands 1/5/8, HSDPA, HSUPA, LTE FDD bands 1/3/5/7/8/20, Bluetooth (EDR and 4.0), ANT+, WLAN (802.11 a/b/g/n), NFC, FM, GPS mobile phone |
| Type | PM-0762-BV |
| FCC ID | PY7PM-0762 |
| IC No. | 4170B-PM0762 |
| 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 / FDD Band 8 / FDD Band 20 |
| Antenna | Internal |
| Power supply | Battery (charged by travel adapter or vehicle charger) |
| Extreme vol. Limits | 3.5VDC to 4.1VDC (nominal: 3.7VDC) |
| Extreme temp. Tolerance | -20°C to +55°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 |
|----------------|------------|-----------------|-------------------|-------------------|
| EUT1 | CB512686PJ | 004402451819191 | AP1 | 19.0.A.0.250 |

*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 |
|---------------|--------------------|-----------------|-----------------|
| AE3 | USB Cable | 123307DE00365F2 | 1 |
| #23892 | Vehicle Charger | 122914030172794 | 1 |
| AE4 | Embedded Battery | / | 1C |

AE3

| | |
|-----------------|-------------|
| Commercial name | EC801 |
| Type | AI-0401 |
| Manufacturer | Sony Mobile |
| Length of cable | 98.5 cm |

#23892

| | |
|-----------------|-----------------------------------|
| Type | CAA-0003013 |
| Manufacturer | Sony Mobile |
| Length of cable | 98.5 cm (the length of USB cable) |

AE4

| | |
|---------------------|-------------|
| Model name | 1277-4767 |
| Manufacturer | Sony Mobile |
| Minimum Capacitance | 3000mAh |
| Nominal Voltage | 3.8V |

*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/WCDMA/LTE Mobile Phone with integrated antenna and embedded 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 supports GPRS service with multi-slots class 33 and EGPRS service with multi-slots class 33. The HSDPA and HSUPA (Cat 6) features are also supported.

It has MP3, camera, USB memory, Mobile High-Definition Link (MHL), FM radio, GPS receiver, NFC, Bluetooth (EDR and Bluetooth 4.0), ANT+, WLAN (802.11 a/b/g/n) and Wi-Fi hotspot functions. For WLAN 802.11n, it supports 20MHz and 40MHz bandwidths on both 2.4GHz band and 5GHz/5.8GHz bands.

It includes normal options: vehicle charger and USB cable.

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 |
| ICES-003 | Information Technology Equipment (ITE) – Limits and methods of measurement | Issue 5 |
| 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 | 2009 |

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber SAC-1 (23 meters×17meters×10meters) did not exceed following limits along the EMC testing:

| | |
|---|---|
| Temperature | Min. = 15 °C, Max. = 35 °C |
| Relative humidity | Min. = 15 %, Max. = 75 % |
| Shielding effectiveness | 0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB. |
| Electrical insulation | > 2 MΩ |
| Ground system resistance | < 4Ω |
| Normalised site attenuation (NSA) | < ± 4 dB, 3m/10m 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 |

Shielded room did not exceed following limits along the EMC testing:

| | |
|--------------------------|---|
| Temperature | Min. = 15 °C, Max. = 35 °C |
| Relative humidity | Min. = 20 %, Max. = 75 % |
| Shielding effectiveness | 0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB. |
| Electrical insulation | > 2 MΩ |
| Ground system resistance | < 4 Ω |

6. SUMMARY OF TEST RESULTS

6.1. Summary of test results

| Abbreviations used in this clause: | | |
|------------------------------------|---------|---|
| Verdict Column | P | Pass |
| | F | Fail |
| | NA | Not applicable |
| | NM | Not measured |
| Location Column | A/B/C/D | The test is performed in test location A, B, C or D which are described in section 1.1 of this report |

| Items | Test Name | Clause in FCC rules | Clause in IC rules | Section in this report | Verdict | Test Location |
|-------|-------------------|---------------------|--------------------|------------------------|---------|---------------|
| 1 | Radiated Emission | 15.109(a) | 6.2 | B.1 | P | A |

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 | ESCI 7 | 100948 | R&S | 2014-07-18 |
| 2. | Spectrum Analyzer | FSU26 | 200278 | R&S | 2014-01-30 |
| 3. | EMI Antenna | VULB 9163 | 9163-483 | Schwarzbeck | 2014-02-17 |
| 4. | EMI Antenna | 3115 | 6914 | ETS-Lindgren | 2014-12-16 |
| 5. | Universal Radio Communication Tester | CMU200 | 109914 | R&S | 2014-04-18 |
| 6. | Vector Signal Generator | SMU200A | 102082 | R&S | 2014-11-01 |

ANNEX A: MEASUREMENT RESULTS

A.1 Radiated Emission

Reference

FCC: CFR Part 15.109(a)

IC: ICES-003 section 6.2

A.1.1 Method of measurement

The field strength of radiated emissions from the GPS receiver of MS at a distance of 10m (30MHz-1GHz) and 3 m (>1GHz) is tested. Tested in accordance with the procedures of ANSI C63.4 - 2009, section 8.3.

A.1.2 EUT Operating Mode:

EUT Setup: EUT1 + AE3 + #23892

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.

A.1.3 Test layout: see Pic.1 in ANNEX B.

A.1.4 Measurement Limit

Limit from CFR Part 15.109(a)

| Frequency range (MHz) | Field strength limit ($\mu\text{V}/\text{m}$) | | |
|-----------------------|---|---------|------|
| | Quasi-peak | Average | Peak |
| 30-88 | 100 | | |
| 88-216 | 150 | | |
| 216-960 | 200 | | |
| 960-1000 | 500 | | |
| >1000 | | 500 | 5000 |

A.1.5 Test Condition

| Frequency range (MHz) | RBW/VBW | Sweep Time (s) | Detector |
|-----------------------|-----------------------|----------------|-----------------|
| 30-1000 | 120kHz (IF Bandwidth) | 5 | Peak/Quasi-peak |
| Above 1000 | 1MHz/1MHz | 15 | Peak, Average |

A.1.6 Measurement Results

A "reference path loss" is established and the A_{Rpl} is the attenuation of "reference path loss". It includes the antenna factor of receive antenna and the path loss.

The measurement results are obtained as described below:

$$\text{Result} = P_{\text{Mea}} + A_{\text{Rpl}} = P_{\text{Mea}} + G_{\text{A}} + G_{\text{PL}}$$

Where

G_A : Antenna factor of receive antenna

G_{PL} : Path Loss

P_{Mea} : Measurement result on receiver.

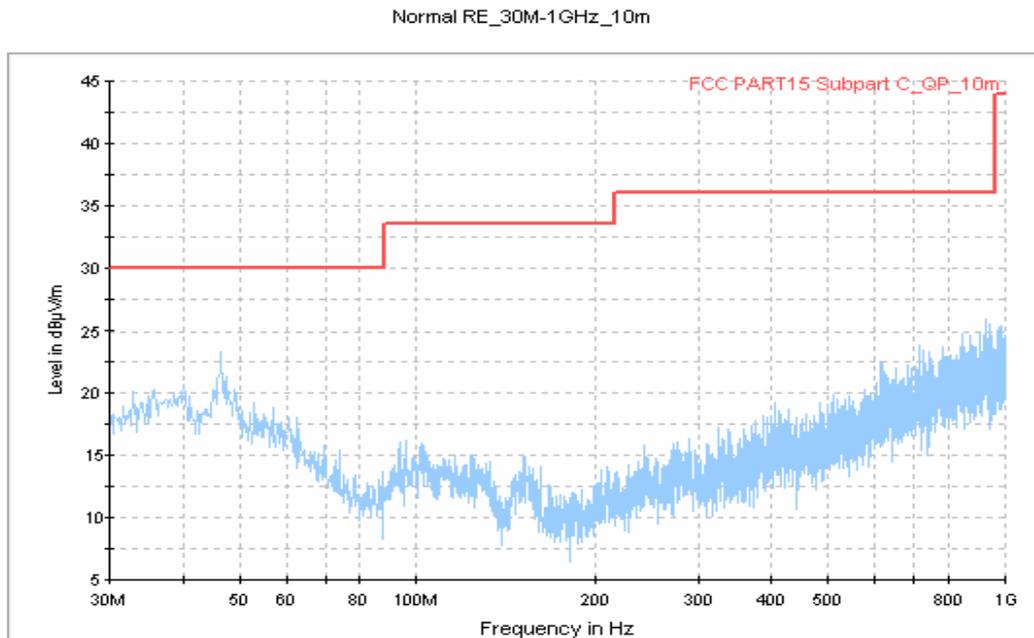
Measurement result for GPS mode:

Peak detector

| Frequency(MHz) | Result(dB μ V/m) | G_{PL} (dB) | G_A (dB/m) | P_{Mea} (dB μ V) | Polarity |
|----------------|----------------------|---------------|--------------|------------------------|------------|
| 17994.050 | 60.9 | -17.7 | 45.6 | 33.0 | Vertical |
| 17967.700 | 60.6 | -17.7 | 45.6 | 32.7 | Vertical |
| 17950.700 | 60.2 | -17.7 | 45.6 | 32.3 | Vertical |
| 17898.000 | 60.2 | -18.5 | 45.6 | 33.1 | Horizontal |
| 17981.300 | 60.1 | -17.7 | 45.6 | 32.2 | Vertical |
| 17996.600 | 59.9 | -17.7 | 45.6 | 32.0 | Horizontal |

Average detector

| Frequency(MHz) | Result(dB μ V/m) | G_{PL} (dB) | G_A (dB/m) | P_{Mea} (dB μ V) | Polarity |
|----------------|----------------------|---------------|--------------|------------------------|------------|
| 17988.100 | 48.9 | -17.7 | 45.6 | 21.0 | Horizontal |
| 17990.650 | 48.7 | -17.7 | 45.6 | 20.8 | Vertical |
| 17982.150 | 48.7 | -17.7 | 45.6 | 20.8 | Horizontal |
| 17966.850 | 48.7 | -17.7 | 45.6 | 20.8 | Vertical |
| 17999.150 | 48.7 | -17.7 | 45.6 | 20.8 | Vertical |
| 17998.300 | 48.7 | -17.7 | 45.6 | 20.8 | Vertical |



Note: The test distance for 30MHz-1GHz is 10 m, so the limit line used is 10 dB below the limit in A.1.4.

Figure A.1 Radiated Emission from 30MHz to 1GHz

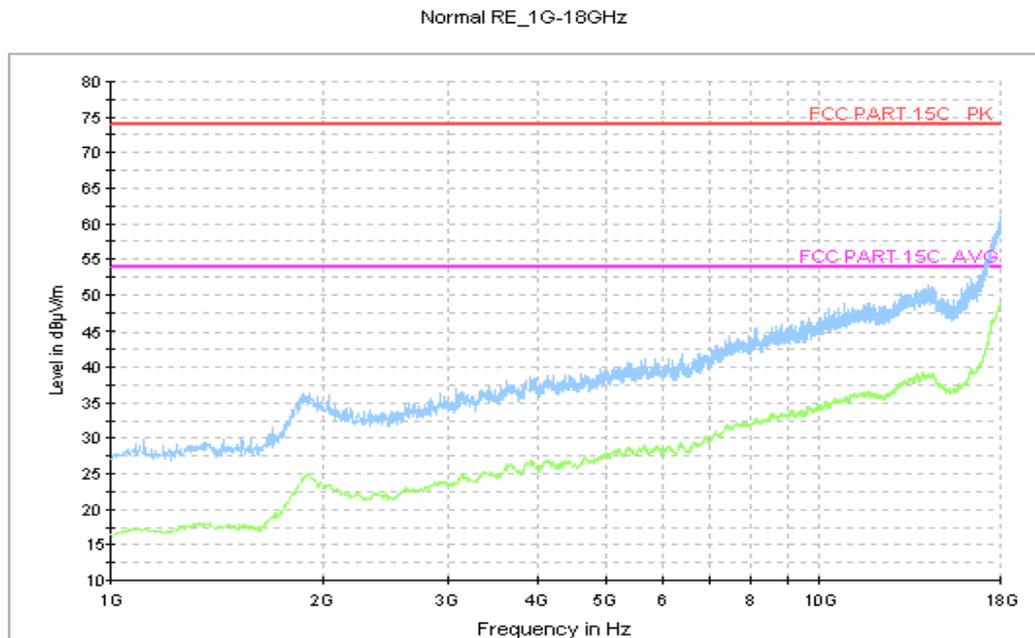


Figure A.2 Radiated Emission from 1GHz to 18GHz

Maximum expanded measurement uncertainty (30MHz - 1GHz): $U = 3.9$ dB, $k = 2$.

Maximum expanded measurement uncertainty (>1GHz): $U = 4.2$ dB, $k = 2$