



# TEST REPORT

No. 2013TAR903

for

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

**GSM/WCDMA/LTE Mobile Phone**

**Type: PM-0764-BV**

**FCC ID: PY7PM-0764**

with

**Hardware Version: A**

**Software Version: 19.0.B.0.228**

**Issued Date: Feb. 21<sup>st</sup>, 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**

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

## **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**

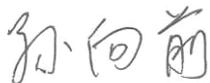
Receipt of Sample: Jan. 09<sup>th</sup>, 2014  
Testing Start Date: Jan. 28<sup>th</sup>, 2013  
Testing End Date: Jan. 28<sup>th</sup>, 2013

### **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 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 bands1/2/4/5, HSDPA, HSUPA, LTE FDD bands2/4/17, Bluetooth (EDR and 4.0), ANT+, WLAN ( 802.11 a/ac/b/g/n), NFC, FM, GPS mobile phone
Type	PM-0764-BV
FCC ID	PY7PM-0764
IC No.	4170B-PM0764
GSM Frequency Band	GSM 850/900/1800/1900
UMTS Frequency Band	FDD Band 1 / FDD Band 2 / FDD Band 4 / FDD Band 5
LTE Frequency Band	FDD Band 2 / FDD Band 4 / FDD Band 17
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**

<b>EUT ID*</b>	<b>SN</b>	<b>IMEI</b>	<b>HW Version</b>	<b>SW Version</b>
EUT2	/	004402451863389	A	19.0.B.0.228

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

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

<b>AE ID*</b>	<b>Description</b>	<b>SN</b>	<b>Revision</b>
AE2	USB Cable	132907DD00F432C	1
#23892	Vehicle Charger	122914030172794	1
AE4	Embedded Battery	/	1C

AE2

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.

<b>Reference</b>	<b>Title</b>	<b>Version</b>
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	FSV	101047	R&S	2014-06-30
2.	EMI Antenna	VULB 9163	9163-514	Schwarzbeck	2014-11-10
3.	EMI Antenna	3115	6914	ETS-Lindgren	2014-12-16
4.	Universal Radio Communication Tester	CMU200	102228	R&S	2014-06-23
5.	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:

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

Where

$G_A$ : Antenna factor of receive antenna

$G_{PL}$ : Path Loss

$P_{Mea}$ : Measurement result on receiver.

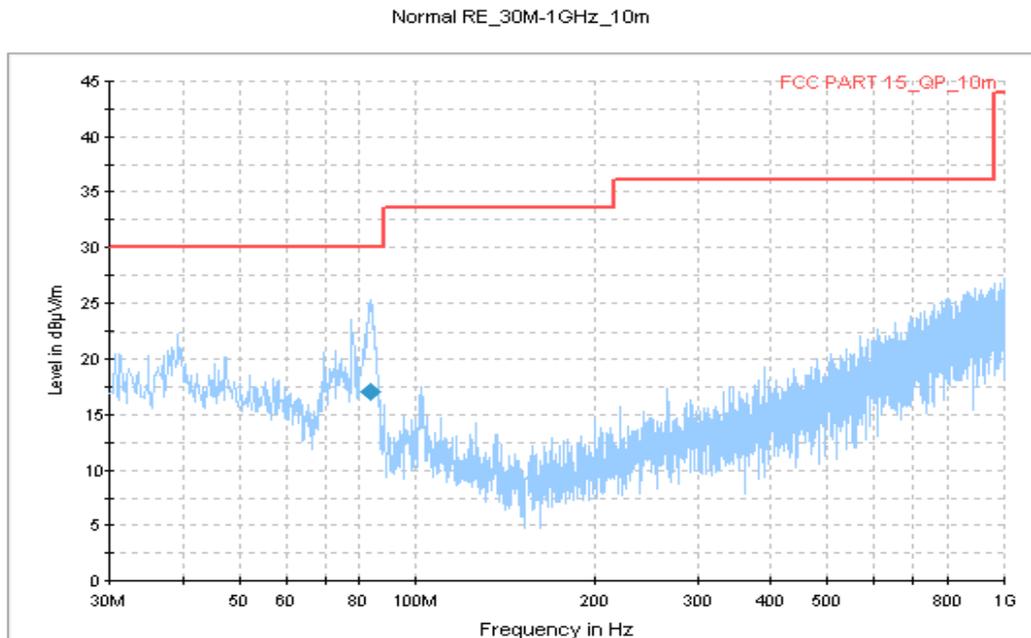
**Measurement result for GPS mode:**

**Peak detector**

Frequency(MHz)	Result(dB $\mu$ V/m)	$G_{PL}$ (dB)	$G_A$ (dB/m)	$P_{Mea}$ (dB $\mu$ V)	Polarity
17913.406	63.5	-18.5	45.6	36.4	Vertical
17903.313	63.2	-18.5	45.6	36.100	Horizontal
17891.625	63.2	-18.5	45.6	36.100	Horizontal
17879.938	63.1	-18.5	45.6	36.000	Vertical
17875.156	63.1	-18.5	45.6	36.000	Vertical
17950.063	63.0	-17.7	45.6	35.100	Horizontal

**Average detector**

Frequency(MHz)	Result(dB $\mu$ V/m)	$G_{PL}$ (dB)	$G_A$ (dB/m)	$P_{Mea}$ (dB $\mu$ V)	Polarity
17907.563	52.2	-18.5	45.6	25.100	Horizontal
17892.156	52.0	-18.5	45.6	24.900	Vertical
17898.531	52.0	-18.5	45.6	24.900	Horizontal
17885.250	51.9	-18.5	45.6	24.800	Vertical
17891.625	51.9	-18.5	45.6	24.800	Vertical
17889.500	51.9	-18.5	45.6	24.800	Horizontal

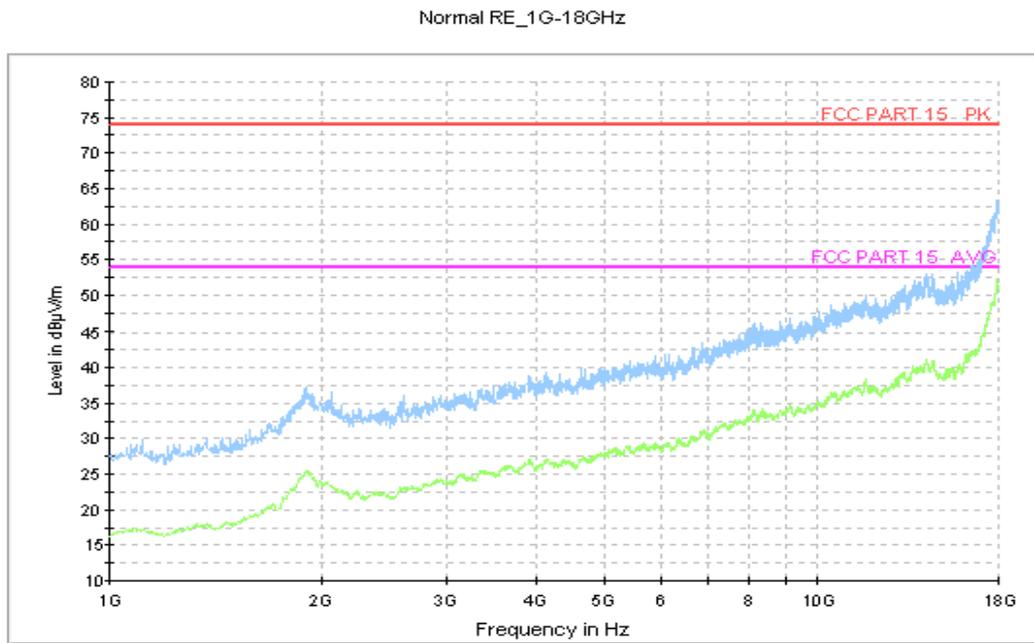


Note: The test distance for 30MHz-1GHz is 10 m, so the limit line used is 10 dB below the limit in A.1.4.

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

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBμ/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμ/m)
83.651250	17.1	211.0	V	151.0	-24.4	12.9	30.0



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

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

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

**ANNEX B: TEST LAYOUT**

No Display.

**Pic.1 Radiated emission**

**ANNEX C: EUT photograph**

No Display.

**Mobile Phone**

No Display.

**Mobile Phone Disassembly and Inbuilt Battery**

No Display.

**Mobile Phone Disassembly and Inbuilt Battery**

No Display.

**Mobile Phone Disassembly**

No Display.

**Vehicle Charger**

No Display.

**Label of Vehicle Charger**

No Display.

**USB Cable**

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