



# TEST REPORT

No. 2013TAR169

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. 27<sup>th</sup>, 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**

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## **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: +86-10-62304633-2561  
Fax: +86-10-62304633-2504

### **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**

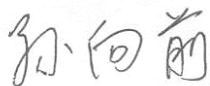
Receipt of Sample: Jan. 24<sup>th</sup>, 2013  
Testing Start Date: Feb. 5<sup>th</sup>, 2013  
Testing End Date: Feb. 23<sup>rd</sup>, 2013

### **1.4. Signature**



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**Qu Pengfei**  
**(Prepared this test report)**



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**Sun Xiangqian**  
**(Reviewed this test report)**



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**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  
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### **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, WCDMA FDD Band 1/5/8, HSDPA, HSUPA, LTE FDD Band 1/3/5/7/8/20, Bluetooth EDR & BLE, WLAN ( 802.11 a/b/g/n), 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 / 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**

<b>EUT ID*</b>	<b>SN</b>	<b>IMEI</b>	<b>HW Version</b>	<b>SW Version</b>
#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**

<b>AE ID*</b>	<b>Description</b>	<b>SN</b>	<b>Revision</b>
#22538	USB Cable	121607D70004DE	SP1

#22538

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

\*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: Inbuilt li-Polymer battery 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
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 °C, Max. = 30 °C
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 °C, Max. = 30 °C
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 °C, Max. = 35 °C
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
2	Conducted Emission	15.107(a)	B.2	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 USB memory 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	LISN	ESH2-Z5	829991/012	R&S	2013-04-16
5	Test Receiver	ESCI	100344	R&S	2013-03-28
6	PC	OPTIPLEX 755	3908243625	DELL	N/A
7	Monitor	E178FPc	CN-OWR979-641 80-7AJ-D2MS	DELL	N/A
8	Printer	DeskJet D2368	TH72E12G7Q	HP	N/A
9	Keyboard	L100	CN0RH65965890 7ATOI40	DELL	N/A
10	Mouse	M-BZ96C	810-000207	Logitech	N/A
11	Mouse	M-UAE119	LZ935220ZRC	Lenovo	N/A

**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**

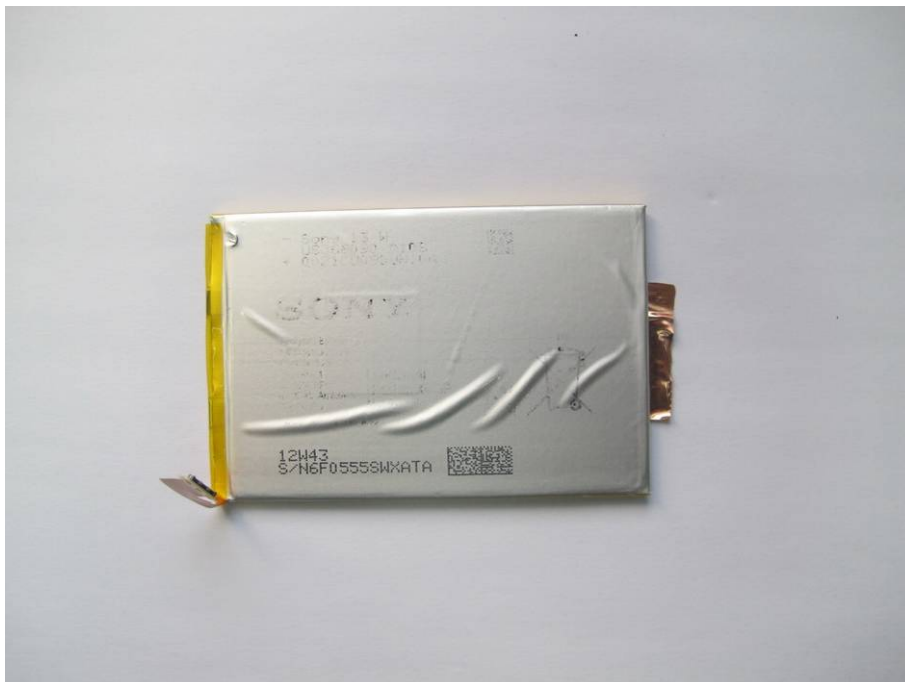


**Mobile Phone Disassembly**





**Mobile Phone Disassembly**



**Inbuilt Li-Polymer Battery**



**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 unintentional radiator (USB mode of MS and/or charging mode 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

The MS is operating under the USB mode. During the test MS is connected to a PC via a USB cable in the case of USB mode. The model of the PC is OPTIPLEX 755, and the serial number of the PC is 3908243625. A software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

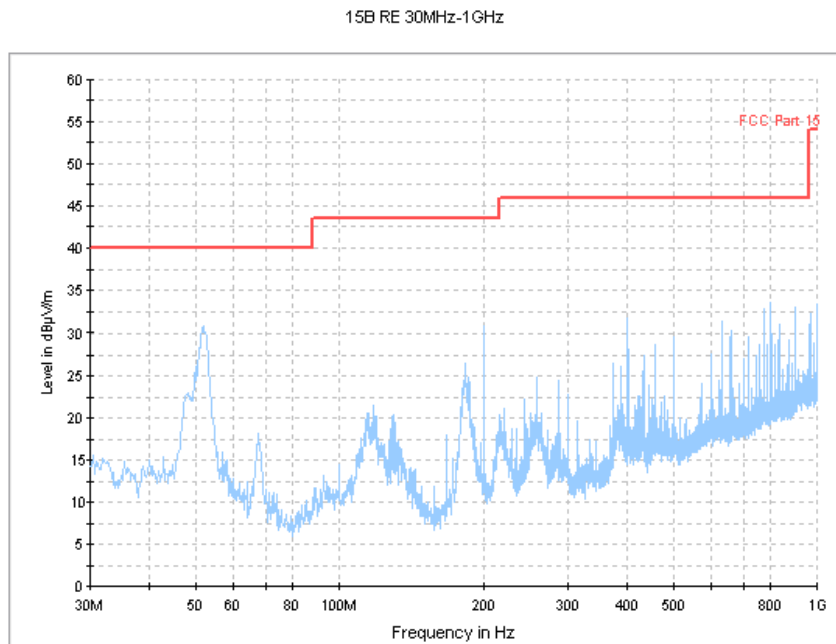
**B.1.3 Test layout:** see Pic.1 in ANNEX C.

#### **B.1.4 Measurement Limit**

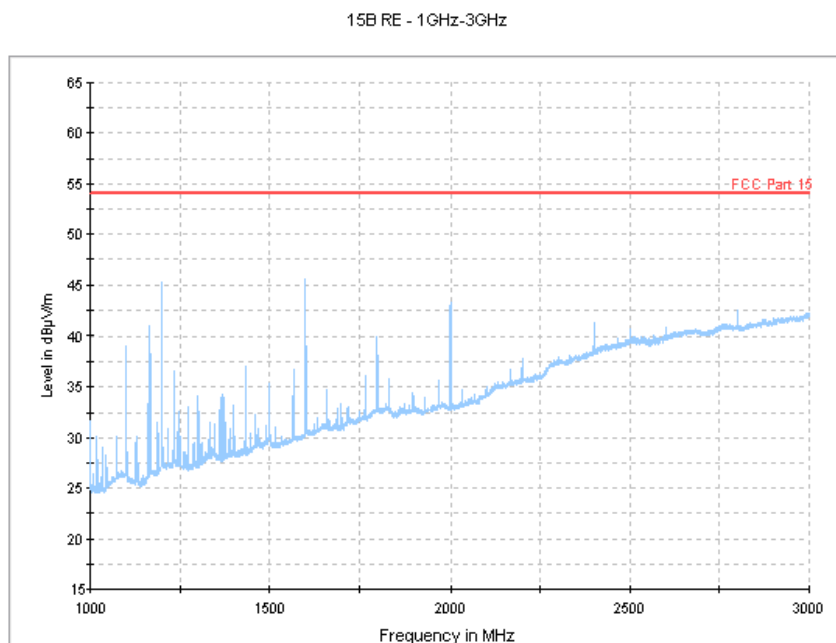
Limit from CFR Part 15.109(a)

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

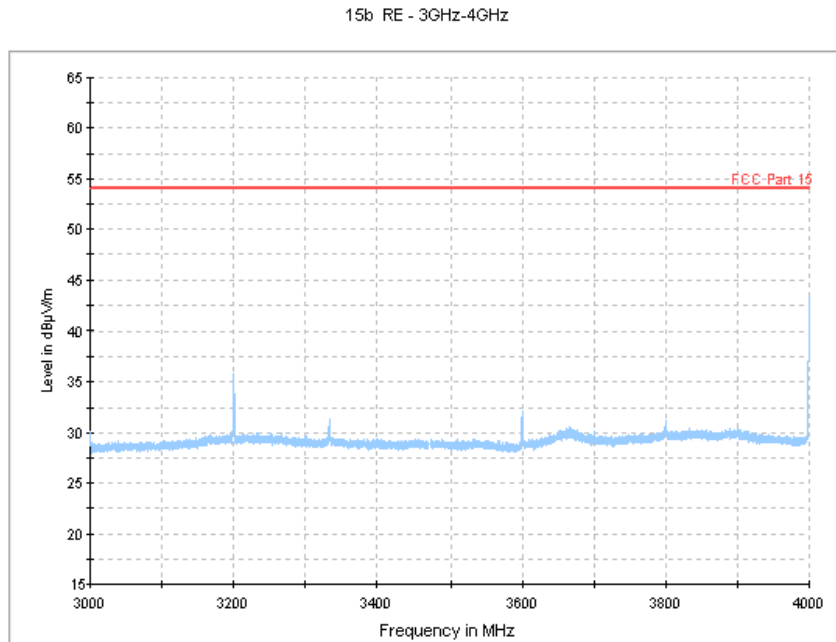
**B.1.5 Measurement Results**  
**USB Mode**



**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 4GHz**

Note: Maximum expanded measurement uncertainty for this test item is  $U=3.9\text{dB}$ ,  $k=2$ .

## B.2 Conducted Emission

### Reference

FCC: CFR Part 15.107(a)

### B.2.1 Method of measurement

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30MHz shall not exceed the limits. Test is performed in accordance with the procedures of ANSI C63.4-2003, section 7.2.

### B.2.2 EUT Operating Mode:

EUT Setup: #23588 + #22538

The MS is operating in the USB mode. During the test MS is connected to a PC via a USB cable in the case of USB mode. The model of the PC is OPTIPLEX 755, and the serial number of the PC is 3908243625. A software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

### B.2.3 Test layout:

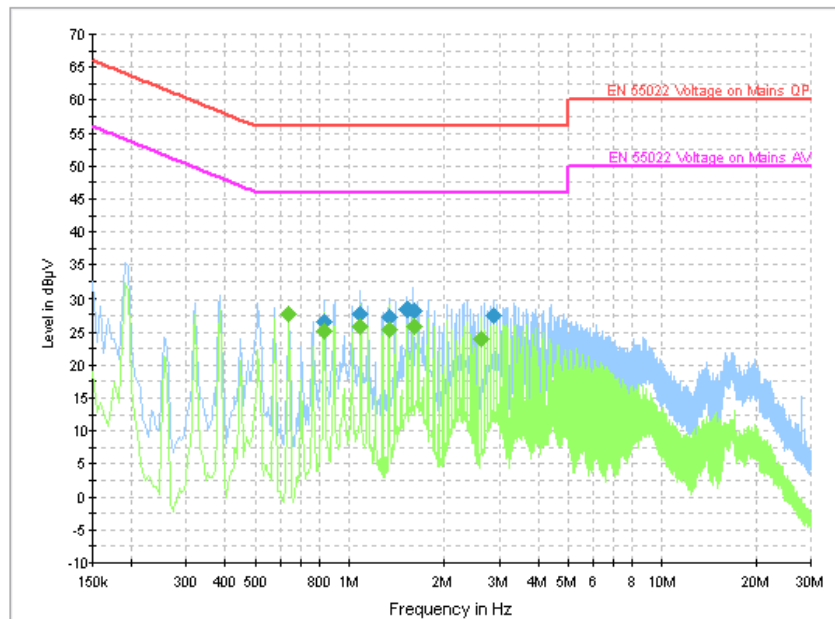
The AC line of PC is connected to LISN. This conducted emission measurement is performed on the AC mains port of the PC with mobile phone attached. See Pic.2 in ANNEX C.

### B.2.4 Measurement Limit

Frequency of emission (MHz)	Conducted limit (dB $\mu$ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

\*Decreases with the logarithm of the frequency

**B.2.5 Measurement Results**  
**USB Mode**



IF bandwidth 9 kHz

Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

**Fig B.4 Conducted Continuous Emission from 150 kHz to 30 MHz**

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.829500	26.5	GND	L1	10.0	29.5	56.0
1.086000	27.7	GND	L1	10.0	28.3	56.0
1.342500	27.3	GND	L1	10.0	28.7	56.0
1.536000	28.4	GND	L1	10.0	27.6	56.0
1.599000	28.2	GND	L1	10.0	27.8	56.0
2.881500	27.4	GND	N	10.0	28.6	56.0

**Final Result 2**

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.640500	27.7	GND	L1	10.0	18.3	46.0
0.829500	25.2	GND	L1	10.0	20.8	46.0
1.086000	25.8	GND	L1	10.0	20.2	46.0
1.342500	25.5	GND	L1	10.0	20.5	46.0
1.599000	25.9	GND	L1	10.0	20.1	46.0
2.625000	24.0	GND	N	10.0	22.0	46.0

Note: Expanded measurement uncertainty for this test item is U =3.2dB, k=2.

**ANNEX C: TEST LAYOUT****Pic.1 Radiated emission****Pic.2 Conducted emission****\*\*\*END OF REPORT\*\*\***