TEST REPORT

No. 2013TAR869

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. 15th, 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

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

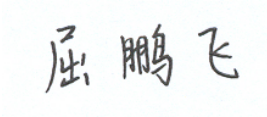
Normal Temperature:	15-35℃
Relative Humidity:	20-75%
Air pressure:	980 - 1040 hPa

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

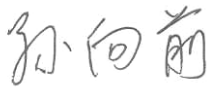
Receipt of Sample:	Dec. 24th, 2013
Testing Start Date:	Dec. 26th, 2013
Testing End Date:	Jan. 10th, 2014

1.4. Signature



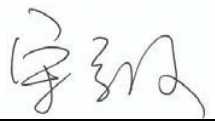
Qu Pengfei

(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
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	131307D20BE8904	1
AE4	Embedded Battery	/	1C

AE3

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

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 option: 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 ℃, Max. = 35 ℃
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 ℃, Max. = 35 ℃
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
2	Conducted Emission	15.107(a)	6.1	B.2	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 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	ESCI	100344	R&S	2014-03-28
2.	Test Receiver	ESCI 7	100948	R&S	2014-07-18
3.	Spectrum Analyzer	FSU26	200728	R&S	2014-01-30
4.	EMI Antenna	VULB 9163	9163-483	Schwarzbeck	2014-02-17
5.	EMI Antenna	3115	6914	ETS-Lindgren	2014-12-16
6.	LISN	ESH2-Z5	829991/012	R&S	2014-04-14
7.	Universal Radio Communication Tester	CMU200	109914	R&S	2014-04-18
8.	PC	OPTIPLEX 380	2X1YV2X	DELL	/
9.	Monitor	E1709Wc	CN-OJ672H-64180-9BF-1CRL	DELL	/
10.	Printer	P1606dn	VNC3L52122	HP	/
11.	Keyboard	L100	CN-ORH656-65890-03S-041Y	DELL	/
12.	Mouse	M-UAR	LZ013HC1YLV	DELL	/

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 unintentional radiator (USB mode of MS) at a distance of 10m (30MHz-1GHz) and 3m (>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 + AE4

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 380, and the serial number of the PC is 2X1YV2X. A software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

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 (μV/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:

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

Where

G_A: Antenna factor of receive antenna

G_{PL}: Path Loss

P_{Mea}: Measurement result on receiver.

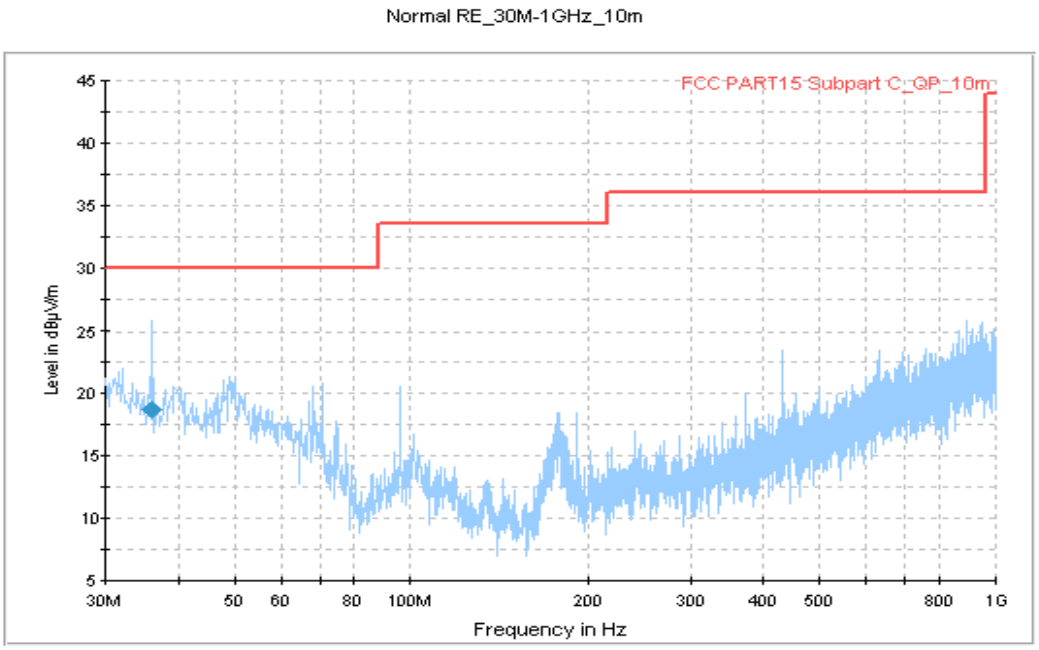
Measurement result for USB mode :

Peak detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
17974.500	59.9	-17.7	45.6	32.0	Horizontal
17948.150	59.8	-17.7	45.6	31.9	Horizontal
17897.150	59.7	-18.5	45.6	32.6	Vertical
17960.050	59.7	-17.7	45.6	31.8	Vertical
17988.100	59.7	-17.7	45.6	31.8	Horizontal
17860.600	59.7	-18.5	45.6	32.6	Vertical

Average detector

Frequency(MHz)	Result(dBμV/m)	G_{PL} (dB)	G_A (dB/m)	P_{Mea}(dBμV)	Polarity
17991.500	48.9	-17.7	45.6	21.0	Vertical
17994.050	48.8	-17.7	45.6	20.9	Horizontal
17949.850	48.5	-17.7	45.6	20.6	Horizontal
17988.100	48.5	-17.7	45.6	20.6	Vertical
17936.250	48.4	-17.7	45.6	20.5	Vertical
17974.500	48.4	-17.7	45.6	20.5	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 (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
36.122500	18.8	107.0	V	67.0	-20.2	11.2	30.0

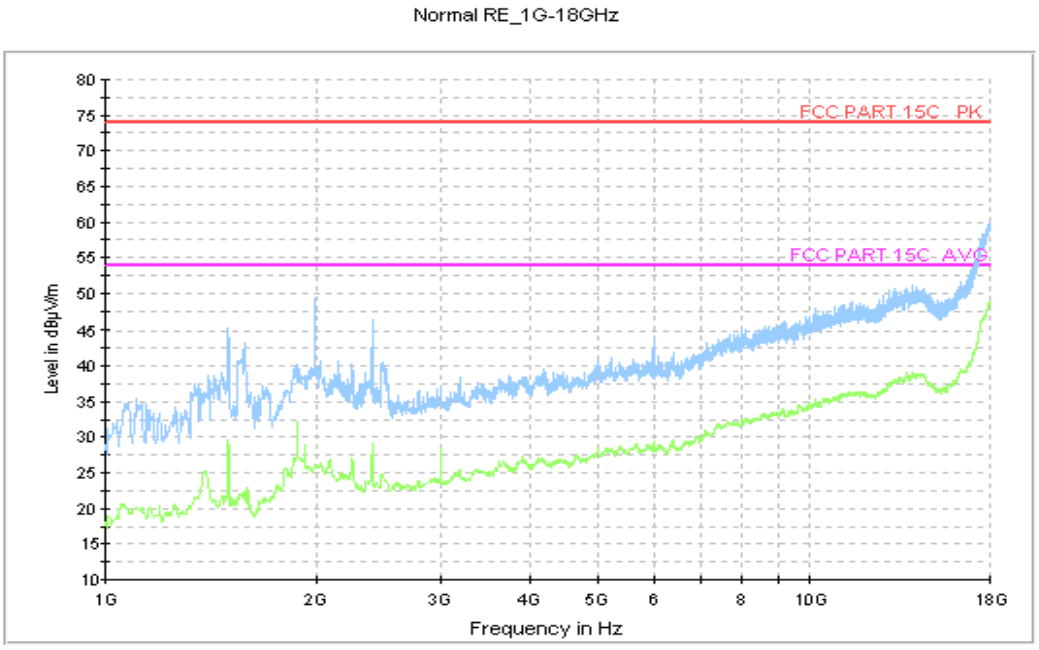


Figure A.2 Radiated Emission from 1GHz to 18GHz

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

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

A.2 Conducted Emission

Reference

FCC: CFR Part 15.107(a)

IC: ICES-003 section 6.1

A.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 C63.4-2009, section 7.3.

A.2.2 EUT Operating Mode:

EUT Setup: EUT1 + AE3 + AE4

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 380, and the serial number of the PC is 2X1YV2X. A software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

A.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 B.

A.2.4 Measurement Limit

Frequency of emission (MHz)	Conducted limit (dBμV)	
	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		

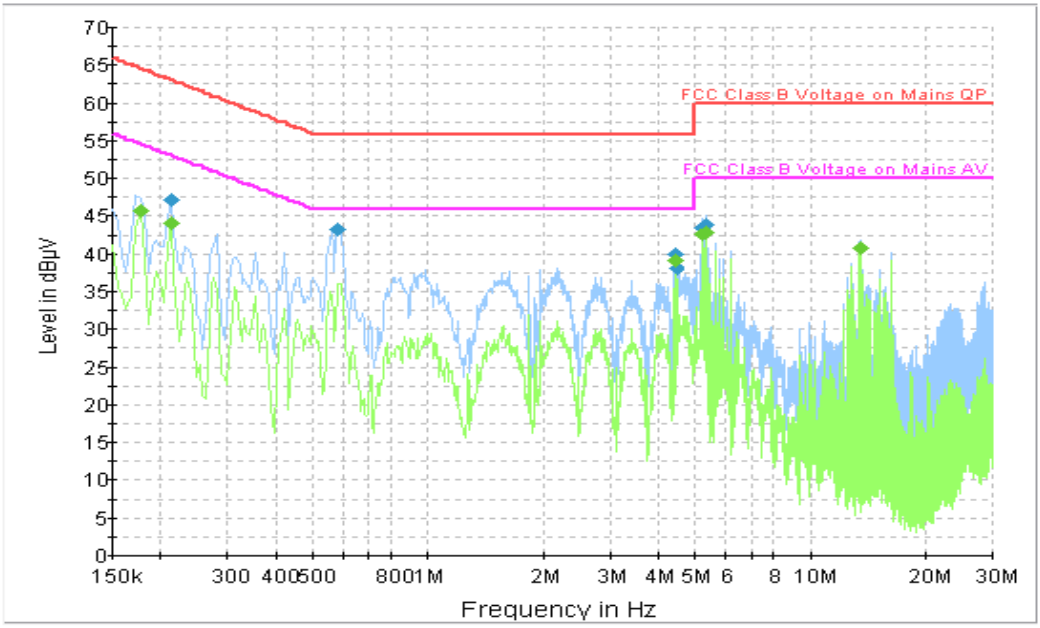
A.2.5 Test Condition in charging mode

Voltage（V）	Frequency（Hz）
120	60

RBW/IF bandwidth	Sweep Time(s)
9kHz	1

A.2.6 Measurement Results

USB Mode



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

Fig A.3 Conducted Continuous Emission from 150 kHz to 30 MHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.213000	47.2	GND	N	9.8	15.8	63.1
0.577500	43.2	GND	L1	9.8	12.8	56.0
4.411500	39.9	GND	N	9.7	16.1	56.0
4.474500	38.1	GND	N	9.7	17.9	56.0
5.235000	43.6	GND	L1	9.7	16.4	60.0
5.298000	43.9	GND	N	9.7	16.1	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.177000	45.7	GND	N	9.8	9.0	54.6
0.213000	44.1	GND	N	9.8	9.0	53.1
4.411500	39.1	GND	N	9.7	6.9	46.0
5.235000	42.6	GND	N	9.7	7.4	50.0
5.298000	42.9	GND	N	9.7	7.1	50.0
13.420500	40.8	GND	N	9.5	9.2	50.0

Maximum expanded measurement uncertainty: U= 2.9 dB, k=2.

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