



TEST REPORT

No. 2013TAR171

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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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.

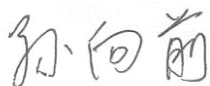
1.3. Project data

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

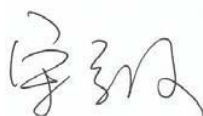
1.4. Signature



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, 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

EUT ID*	SN	IMEI	HW Version	SW Version
#23860	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
AE1	Portable Hands-Free	12460C13002940C	/
#22972	Travel Charger	8512W19100199	1
#22533	USB Cable	121607D30000D64	SP1

AE1

Type	CCA-0004017
Manufacturer	Sony Mobile
Length of cable	152cm

#22972

Type	AC-0400-EU
Manufacturer	SALCOMP
Length of cable	/

#22533

Commercial name	EC801
Type	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 option: lithium battery.

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 °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 Mobile High-Definition Link (MHL) 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	TFT Monitor	L197WA	3M04345B44D07 01	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



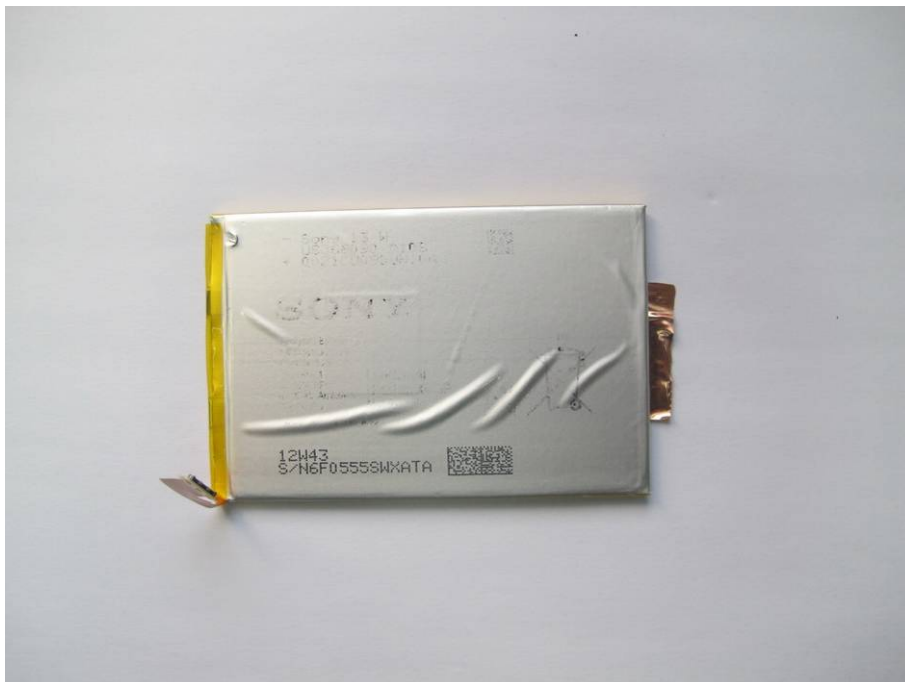
Mobile Phone Disassembly



Mobile Phone Disassembly



Mobile Phone Disassembly



Inbuilt Li-Polymer Battery



USB Cable



Travel Charger



Label of Travel Charger



Portable Hands-Free

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 (MHL function) 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: #23860+AE1

The MS is connected to a TFT monitor with a 1m HDMI cable. The MS is keeping on playing a video file of 1280*720 resolution. The video signal is transferred from MS to TFT monitor via the MS's MHL function. Meanwhile, the MS is operating under flight mode.

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
MHL Mode

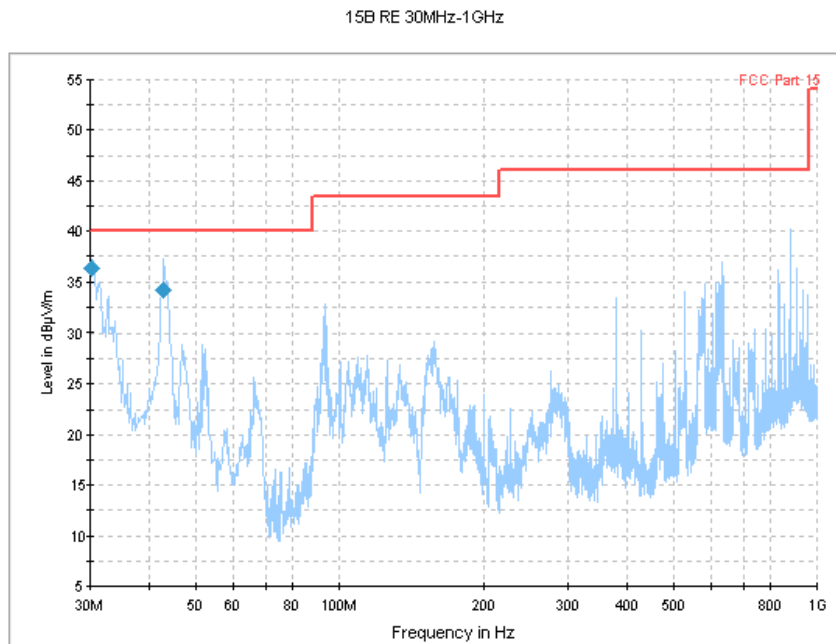


Figure B.1 Radiated Emission from 30MHz to 1GHz

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)
30.194000	36.3	100.0	V	-32.0	-23.9	3.7
42.804000	34.2	100.0	V	-44.0	-22.9	5.8

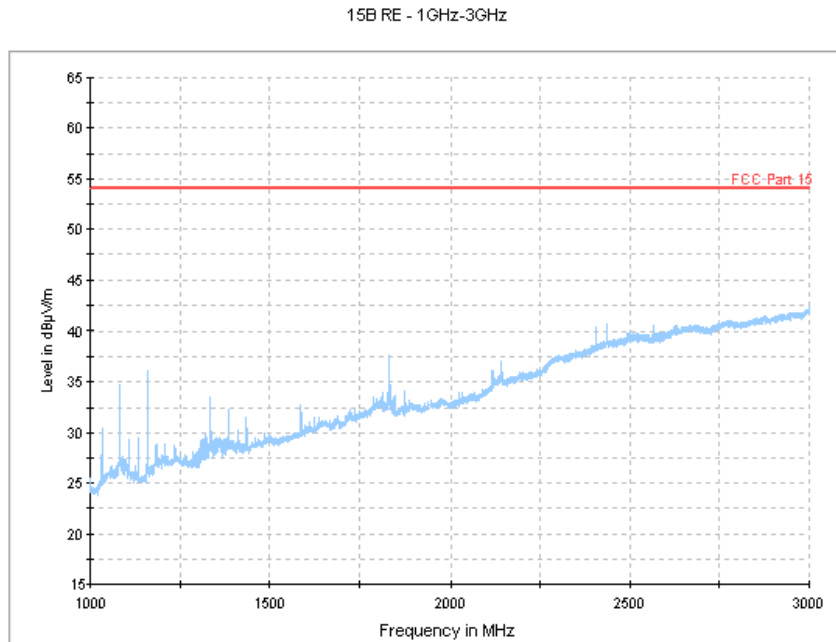


Figure B.2 Radiated Emission from 1GHz to 3GHz

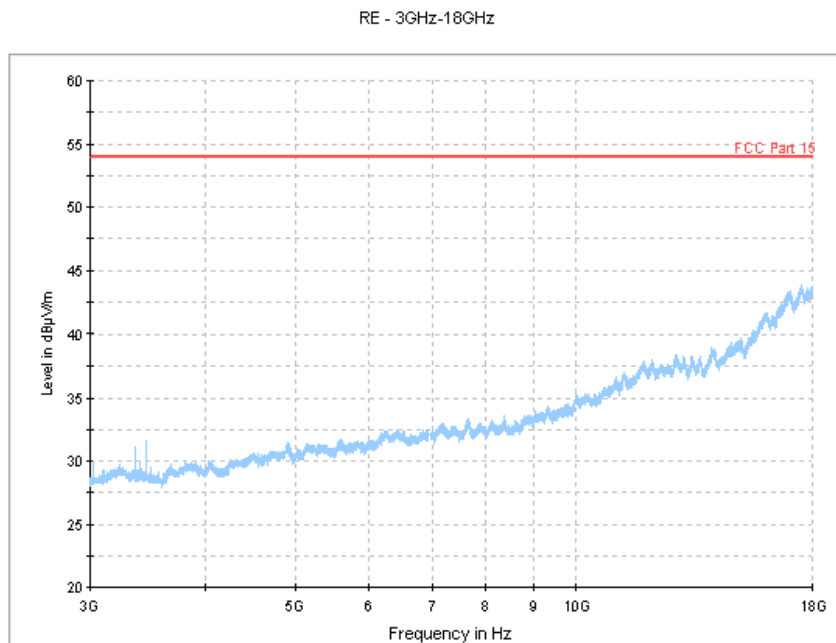


Figure B.3 Radiated Emission from 3GHz to 18GHz

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: #23860+AE1

The MS is connected to a TFT monitor with a 1m HDMI cable. The MS is keeping on playing a video file of 1280*720 resolution. The video signal is transferred from MS to TFT monitor via the MS's MHL function. Meanwhile, the MS is operating under flight mode.

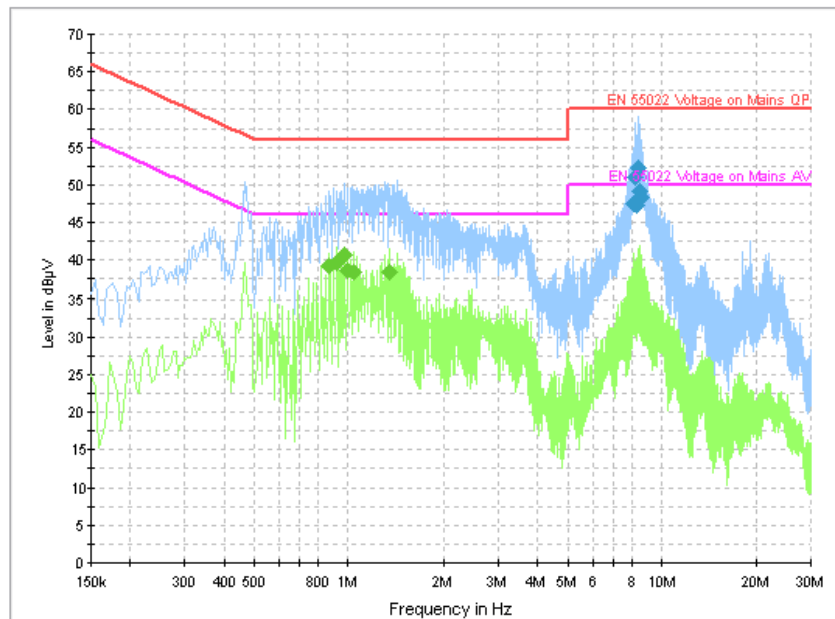
B.2.3 Test layout: see Pic.2 in ANNEX C.

B.2.4 Measurement Limit

Frequency of emission (MHz)	Conducted limit (dB μ 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
MHL 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

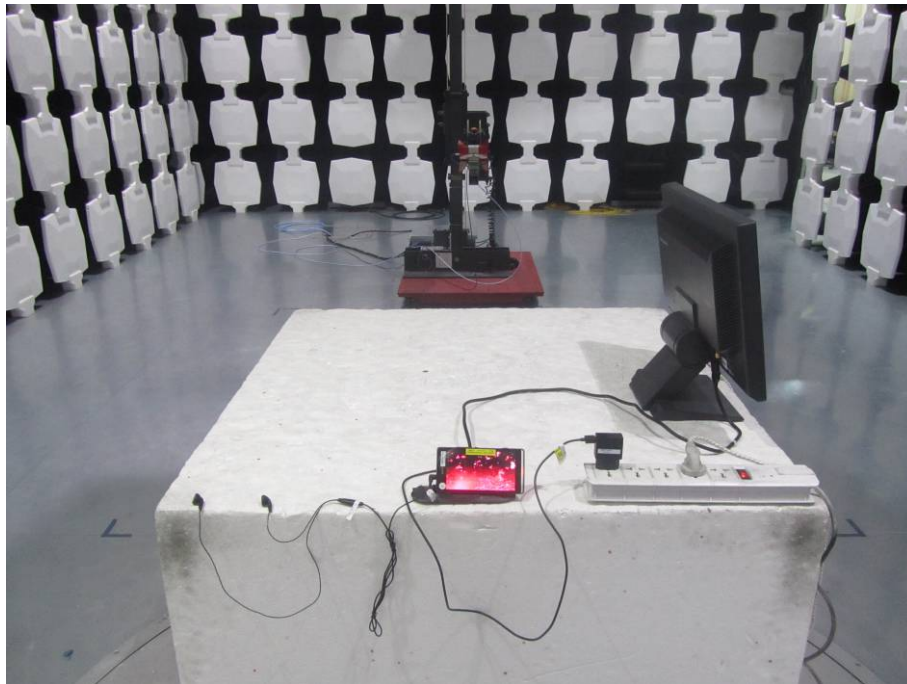
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
8.160000	47.4	GND	L1	9.9	12.6	60.0
8.254500	51.0	GND	N	9.9	9.0	60.0
8.281500	47.3	GND	N	9.9	12.7	60.0
8.353500	52.2	GND	N	9.9	7.8	60.0
8.457000	49.2	GND	L1	9.9	10.8	60.0
8.556000	48.2	GND	L1	9.9	11.8	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.870000	39.2	GND	L1	10.0	6.8	46.0
0.919500	39.7	GND	L1	10.0	6.3	46.0
0.969000	40.6	GND	L1	10.0	5.4	46.0
0.996000	38.6	GND	L1	10.0	7.4	46.0
1.045500	38.3	GND	L1	10.0	7.7	46.0
1.360500	38.4	GND	L1	10.0	7.6	46.0

Note: Maximum expanded measurement uncertainty for this test item is $U = 3.2\text{dB}$, $k=2$.

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