



# TEST REPORT

No. 2010TAR351

for

**Sony Ericsson Mobile Communications AB**

**GSM quad bands and TD-SCDMA dual bands mobile phone**

**Type: AAK-7880001-BV**

**FCC ID: PY7A7880001**

**IC No.: 4170B- A7880001**

with

**Hardware Version: A**

**Software Version: R1AC002**

**Issued Date: Sep 17<sup>th</sup>, 2010**

**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:**

***DAR accreditation (DIN EN ISO/IEC 17025): No. DGA-PL-114/01-02***

***FCC 2.948 Listed: No.733176***

***IC O.A.T.S listed: No.6629A-1***

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## **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>4</b>
<b>3.1. ABOUT EUT .....</b>	<b>4</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>5</b>
<b>4. REFERENCE DOCUMENTS .....</b>	<b>6</b>
<b>4.1. REFERENCE DOCUMENTS FOR TESTING.....</b>	<b>6</b>
<b>5. LABORATORY ENVIRONMENT .....</b>	<b>7</b>
<b>6. SUMMARY OF TEST RESULTS.....</b>	<b>8</b>
<b>6.1. SUMMARY OF TEST RESULTS .....</b>	<b>8</b>
<b>6.2. STATEMENTS .....</b>	<b>8</b>
<b>7. TEST EQUIPMENTS UTILIZED.....</b>	<b>9</b>
<b>ANNEX A: EUT PHOTOGRAPH.....</b>	<b>10</b>
<b>ANNEX B: MEASUREMENT RESULTS.....</b>	<b>19</b>
<b>ANNEX C: TEST LAYOUT .....</b>	<b>24</b>

## 1. Test Laboratory

### 1.1. Testing Location

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT  
Address: No 52, Huayuan beilu, Haidian District, Beijing, P.R.China  
Postal Code: 100191  
Telephone: +86-10-62304633  
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### 1.2. Testing Environment

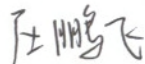
Normal Temperature: 15-35°C  
Relative Humidity: 20-75%  
Air pressure 990 - 1040 hPa

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

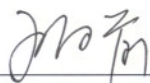
Testing Start Date: Aug 27<sup>th</sup>, 2010  
Testing End Date: Aug 28<sup>th</sup>, 2010

### 1.4. Signature



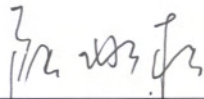
Qu Pengfei

(Prepared this test report)



Sun Xiangqian

(Reviewed this test report)



Lu Bingsong

Deputy Director of the laboratory

(Approved this test report)

## **2. Client Information**

### **2.1. Applicant Information**

Company Name:	Sony Ericsson Mobile Communications(China) Co., Ltd.
Address /Post:	Sony Ericsson Building, No.16, Guangshun South Street, Chaoyang District, Beijing
City:	Beijing
Postal Code:	100102
Country:	China
Contact Person:	Ma, Gang
Telephone:	+86-10-58656312
Fax:	+86-10-58656750

### **2.2. Manufacturer Information**

Company Name:	Sony Ericsson Mobile Communications AB
Address /Post:	Nya Vattentorget, 22188 Lund, Sweden
City:	Lund
Postal Code:	22188
Country:	Sweden
Contact Person:	Nordlof, Anders
Telephone:	+46-46-193919
Fax:	+46-46-193295

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

### **3.1. About EUT**

Description	GSM 850/900/1800/1900, GPRS, EDGE, TD-SCDMA 1880-1920MHz/2010-2025MHz, BT EDR2.0, WLAN, GPS, CMMB TV Receiver, FM-receiver mobile phone
Type	AAK-7880001-BV
FCC ID	PY7A7880001
IC No	4170B-A7880001
Frequency range	GSM 850: 824.2MHz-848.8MHz PCS 1900: 1850.2MHz-1909.8MHz
Antenna	Internal
Power supply	Battery or Charger (AC Adaptor)
Output power	28.35 dBm maximum ERP measured for GSM850 27.29 dBm maximum EIRP measured for PCS1900
Extreme vol. Limits	3.6VDC to 4.2VDC (nominal: 3.8VDC)
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
N17	CT5SB0004F	004402140218748	A	R1AC002

\*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	Battery	/	3
17526	USB Cable	09510D2E034045A	/

AE1

Type Number	CBA-0002012
Manufacturer	Sony Ericsson
Capacitance	1500mAh
Nominal Voltage	3.6V

17526

Type Number	EC700
Manufacturer	Sony Ericsson
Length of Cable	141cm

### 3.4. General Description

Equipment Under Test (EUT) is a model of GSM 850/900/1800/1900 quad bands and TD-SCDMA dual bands (1880-1920/2010-2025MHz)) mobile phone with integrated antenna. It has MP3, Camera, FM radio, USB memory, CMMB TV receiver, GPS receiver, Bluetooth (EDR) and WLAN (Wi-Fi and WAPI) functions. It also supports GPRS function with multi-slots class 10 and EGPRS function with multi-slots class 10 too.

It consists of normal options: Lithium 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	V 10.1.09
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
ICES-003	Spectrum Management and Telecommunications Policy Interference-Causing Equipment Standard Digital Apparatus	Issue 4, Feb. 2004

## 5. LABORATORY ENVIRONMENT

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

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
Normalised site attenuation (NSA)	< ±3.2 dB, 10 m distance, from 30 to 1000 MHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 2000 MHz

**Control room** did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. =30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω

**Conducted chamber** did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
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	Clause in IC rules	Section in this report	Verdict
1	Radiated Emission	15.109(a)	Section 6 Section 7.2.3	B.1	P
2	Conducted Emission	15.107(a)	Section 7.2.2	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.

TD-SCDMA and CMMB TV receiver functions are not within the scope of FCC certification.



## 7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTUR E	CAL DUE DATE
1	Test Receiver	ESCI	100344	R&S	2011-03-11
2	Test Receiver	ESI40	831564/002	R&S	2011-02-12
3	BiLog Antenna	VULB 9163	9163 301	Schwarzbeck	2011-04-29
4	Signal Generator	SMP04	100070	R&S	2011-04-19
5	LISN	ESH2-Z5	829991/012	R&S	2011-04-20
6	Dual-Ridge Waveguide Horn Antenna	3115	9906-5827	EMCO	2013-08-13
7	PC	9439-IAC	L3B4535	LENOVO	N/A
8	Monitor	9227-AE1	31/1033768/1/280 5	LENOVO	N/A
9	Printer	DeskJet D2368	TH72E12G7Q	HP	N/A
10	Keyboard	SK-8825(L)	00925776	LENOVO	N/A
11	Mouse	MO28UOL	23-115652	LENOVO	N/A

## **ANNEX B: MEASUREMENT RESULTS**

### **B.1 Radiated Emission**

#### **Reference**

FCC: CFR Part 15.109(a)

IC: ICES-003 Section 5.5.

#### **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:**

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 LENOVO 9439-IAC, and the serial number of the PC is L3B4535. 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

Limit from ICES-003 Section 5.5

Frequency range (MHz)	Field strength limits* (dB $\mu$ V/m)
30 to 230	40
230 to 1000	47

\*Note: The original limit is defined at 10m test distance. This limit is calculated according to CISPR requirements.

To comply with both CFR Part 15.109(a) and ICES-003 section 5.5, the following limit is used during the test.

Frequency range (MHz)	Field strength limits (dB $\mu$ V/m)
30 to 230	40
230 to 960	46
960-1000	47
Above 1000	54

### B.1.5 Measurement Results

#### USB Mode

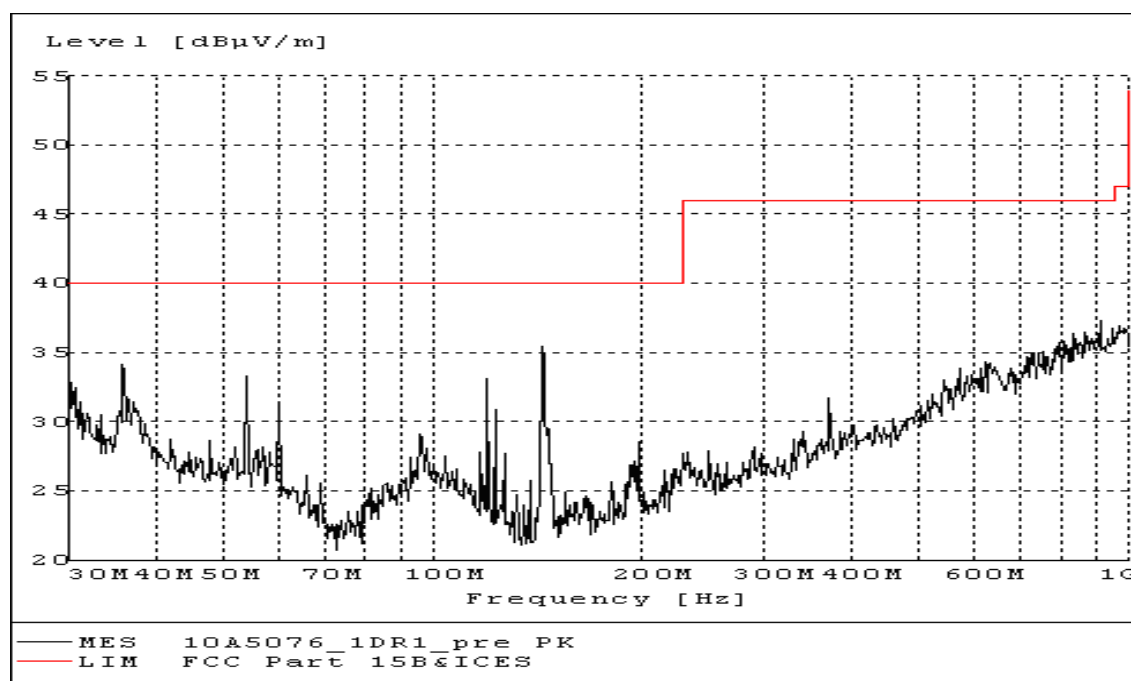


Figure B.1 Radiated Emission from 30MHz to 1GHz

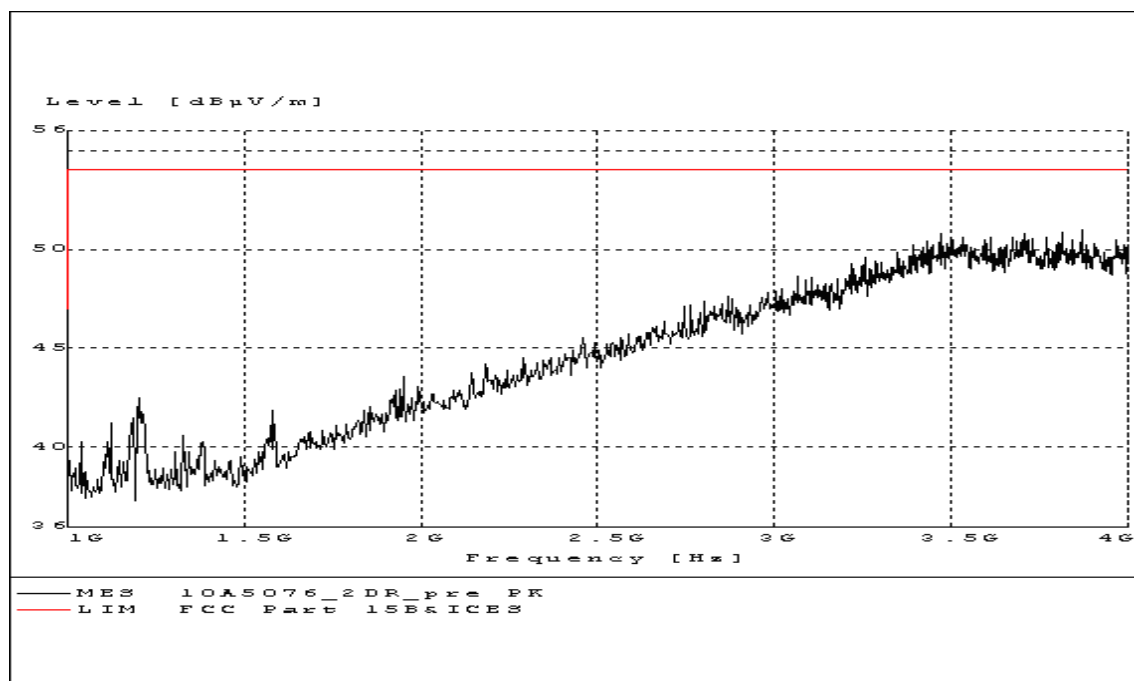


Figure B.2 Radiated Emission from 1GHz to 4GHz

## B.2 Conducted Emission

### Reference

FCC: CFR Part 15.107(a)

IC: ICES-003 Section 5.3.

### 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 C63.4–2009, section 7.2.

### B.2.2 EUT Operating Mode:

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 LENOVO 9439-IAC, and the serial number of the PC is L3B4535. A software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

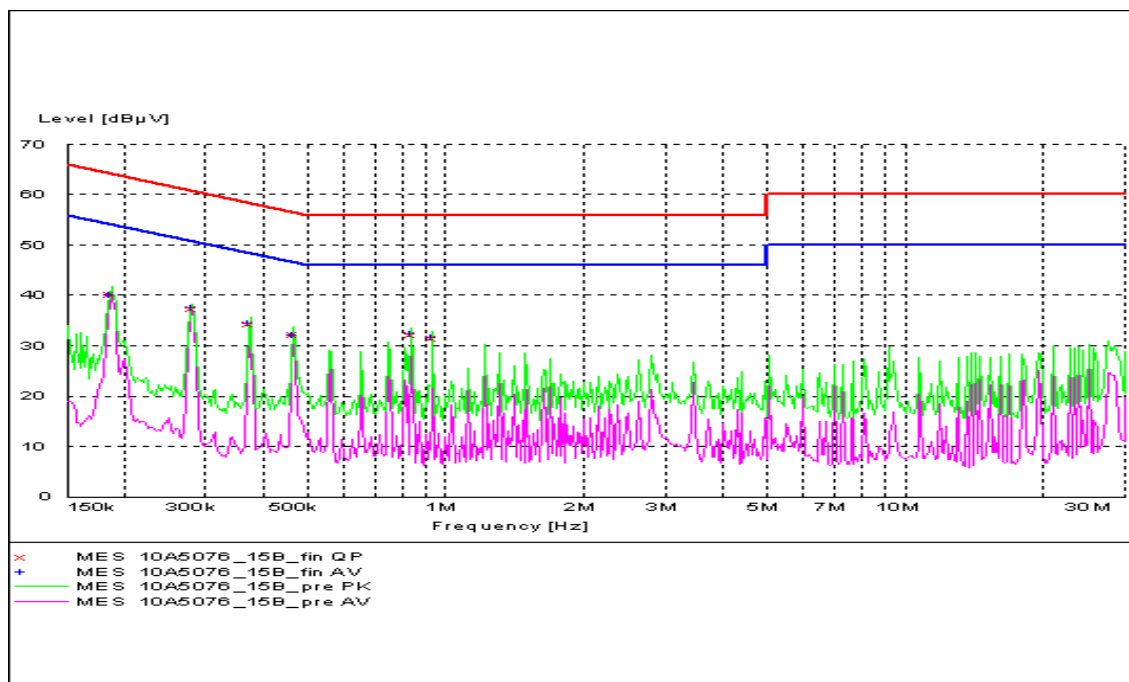
**B.2.3 Test layout:** see Pic.2 in ANNEX C.

### B.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		

## 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.3 Conducted Continuous Emission from 150 kHz to 30 MHz**

#### MEASUREMENT RESULT: "10A5076\_15B\_fin QP"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.186707	40.30	10.1	64	23.9	L1	FLO
0.280762	37.40	10.1	61	23.4	L1	GND
0.374678	34.40	10.1	58	24.0	L1	GND
0.466367	32.30	10.1	57	24.3	L1	FLO
0.838859	32.40	10.1	56	23.6	L1	GND
0.935888	31.60	10.1	56	24.4	N	GND

#### MEASUREMENT RESULT: "10A5076\_15B\_fin AV"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.186707	40.20	10.1	54	14.0	L1	FLO
0.280762	37.50	10.1	51	13.3	L1	FLO
0.374678	34.50	10.1	48	13.9	L1	FLO
0.466367	32.00	10.1	47	14.6	N	GND
0.838859	32.40	10.1	46	13.6	N	GND
0.935888	31.50	10.1	46	14.5	L1	GND