Sony Ericsson

Company Internal
REPORT

Prepared (also subject responsible if other)		No.		
BA/SEMC/CCDAU *Jon Kenny*		*CCDA09: .*		
Approved	Checked	Date	Rev	Reference
LD/SEMC/CCDALEC *Peter Lindeborg*	PL	*090105*	A	File

Report issued by Accredited SAR Laboratory

for

FCC ID: PY7A3880016 (W508)

Date of test: January 21st to January 30th 2009

Laboratory:
Sony Ericsson SAR Test Laboratory
Sony Ericsson Mobile Communications AB
Maplewood, Chineham Business Park
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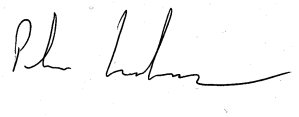

Statement of Compliance

Sony Ericsson Mobile Communications AB declares under its sole responsibility that the product

Sony Ericsson Type AAD-3880016-BV; FCC ID PY7A3880016; IC 4170B-A3880016

to which this declaration relates, is in conformity with the appropriate RF exposure standards recommendations and guidelines. It also declares that the product was tested in accordance with the appropriate measurement standards, guidelines and recommended practices. Any deviations from these standards, guidelines and recommended practices are noted below:

(None)

This laboratory is accredited to ISO/IEC 17025 (SWEDAC accreditation no. 1847).

SWEDAC ACKREDITERING 1847 ISO/IEC 17025

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1 Introduction

In this test report, compliance of the Sony Ericsson FCC ID: PY7A3880016 (W508) portable telephone with RF safety guidelines is demonstrated. The applicable RF safety guidelines and the SAR measurement specifications used for the test are described in the SAR Measurement Specifications of Wireless Handsets [1].

2 Customer details

Company Name:	Sony Ericsson Mobile Communications AB
Address:	2/F China Digital Kingdom Building, No.1 North, Beijing, 100102, China
Contact Name:	Roy Zhou

3 Device Under Test

3.1 Antenna Description

Type	Internal antenna	
Location	Bottom of phone	
Main and BT antennas distance	12.5mm	
Dimensions	Max length	46 mm
	Max width	14 mm
Configuration	Monopole	

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3.2 Device Description

Device model	AAD-3880016-BV					
Market name	W508					
Serial number (EUT #)	BX900GKJ0S (#14448)					
Mode	GSM 850			GSM 1900		
Crest factor	8.3			8.3		
Multiple access scheme	TDMA			TDMA		
Channel No.	128	190	251	512	661	885
Measured Power Level [dBm] [1] (#13877)	32.8	32.9	32.8	30.9	30.9	30.9
Product Maximum power Level [dBm][1]	33.0	33.0	33.0	31.0	31.0	31.0
Data mode	GPRS			GPRS		
Crest factor	4.15			4.15		
Measured Power Level [dBm] [1] (#13877)	29.9	29.9	29.9	28.0	27.8	27.9
Product Maximum power Level [dBm][1]	30.0	30.0	30.0	28.0	28.0	28.0
Data mode	EDGE			EDGE		
Crest factor	4.15			4.15		
Measured Power Level [dBm] [1] (#13877)	27.3	27.2	27.3	26.5	26.4	26.3
Product Maximum power Level [dBm][1]	27.5	27.5	27.5	26.5	26.5	26.5
Transmitting frequency range [MHz]	824.0 - 849.0			1850.0 - 1910.0		

GPRS Multislot class	10
EDGE class	10
GPRS Capability class	B
BT class and conducted power	Class 1, 4.5 dBm
Prototype or production unit	Preproduction
Hardware Version	AP2.1
Software version	R1DA017
Device category	Portable
RF exposure environment	General population / uncontrolled

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4 Test equipment

4.1 Dosimetric system

SAR measurements were made using the DASY4 professional system (software version 4.7, Build 55) with SAM twin phantom, manufactured by Schmid & Partner Engineering AG (SPEAG). The list of calibrated equipment is given below.

Description	Serial Number	Due Date
DASY4 DAE3	448	2009-11
E-field probe ET3DV6	1610	2009-11
Dipole Validation Kit, D835V2	442	2009-12
Dipole Validation Kit, D1900V2	539	2009-12

4.2 Additional equipment

Description	Inventory Number	Due Date
Signal generator R&S SMY 02	3.094	2009-04
Directional coupler HP778D	15.233	None
Power meter R&S NRVD	4.073	2009-04
Power sensor R&S NRV-Z5	4.074	2009-04
Power sensor R&S NRV-Z5	4.076	2009-04
Network analyzer Agilent 8719D	2.022	2009-04
Dielectric probe kit HP8507C	14.046	Self Cal
R&S CMU200	20011270	2009-04

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5 Electrical parameters on the tissue simulating liquid

Prior to conducting SAR measurements, the relative permittivity, ε_r, and the conductivity σ, of the tissue simulating liquids were measured with the dielectric probe kit. These values are shown in the table below. The mass density, ρ, entered into the DASY4 software is also given. Recommended limits for permittivity ε_r, conductivity σ and mass density ρ are also shown.

f [MHz]	Tissue type	Measured / Recommended	Dielectric Parameters		Density
			ε_r	σ [S/m]	ρ [g/cm³]
835	Head	Measured, 2009-01-28	40.29	0.86	1.00
		Recommended	41.5	0.90	1.00
835	Body	Measured, 2009-01-28	53.19	0.97	1.00
		Recommended	55.2	0.97	1.00
1900	Head	Measured, 2009-01-21	38.02	1.47	1.00
		Recommended	40.0	1.40	1.00
1900	Body	Measured, 2009-01-29	50.66	1.54	1.00
		Recommended	53.3	1.52	1.00

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6 System accuracy verification

A system accuracy verification of the DASY4 was performed using the dipole validation kit listed in section 3.1. The system verification test was conducted on the same day as the measurement of the DUT. The ambient humidity and temperature of test facility were kept between the range 30-70% and 20.0-25.0 °C respectively.
RF noise had been measured in liquid when all RF equipment in lab was switched off. Measured value was 0.0002 mW/g in 1g mass.

f [MHz]	Tissue type	Measured / Reference	SAR [W/kg] 1g	Dielectric Parameters		Density	Liquid T[°C]
				ε_r	σ [S/m]	ρ [g/cm³]	
835	Head	Measured, 2009-01-28	9.84	40.29	0.86	1.00	21.9
		Reference	9.34	41.5	0.90	1.00	22.0
835	Body	Measured, 2009-01-28	10.16	53.19	0.97	1.00	22.6
		Reference	9.85	55.2	0.97	1.00	22.0
1900	Head	Measured, 2009-01-21	38.88	38.02	1.47	1.00	21.5
		Reference	41.3	40.0	1.40	1.00	22.0
1900	Body	Measured, 2009-01-29	40.4	50.66	1.54	1.00	21.6
		Reference	41.3	53.3	1.52	1.00	22.0

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7 SAR measurement uncertainty

SAR measurement uncertainty evaluation for Sony Ericsson PY7A3880016 (W508) phone According to IEEE 1528

Uncertainty Component	Uncer. (%)	Prob Dist.	Div.	C_i	1g mass
Measurement System					
Probe Calibration	±5.9	N	1	1	±5.9
Axial Isotropy	±4.7	R	√3	0.7	±1.9
Spherical Isotropy	±9.6	R	√3	0.7	±3.9
Boundary effect	±1.0	R	√3	1	±0.6
Probe linearity	±4.7	R	√3	1	±2.7
Detection limit	±1.0	R	√3	1	±0.6
Readout electronics	±0.3	N	1	1	±0.3
Response time	±0.8	R	√3	1	±0.5
Integration time	±2.6	R	√3	1	±1.5
RF Ambient Conditions	±3.0	R	√3	1	±1.7
Mech. Constraints of robot	±0.4	R	√3	1	±0.2
Probe positioning	±2.9	R	√3	1	±1.7
Extrap, interpolation and integration	±1.0	R	√3	1	±0.6
Measurement System Uncertainty					*±8.4*
Test Sample Related					
Device positioning	±3.5	N	1	1	±3.5
Device holder uncertainty	±3.5	N	1	1	±3.5
Power drift	±5.0	R	√3	1	±2.9
Test Sample Related Uncertainty					*±5.5*
Phantom and Tissue Parameters					
Phantom uncertainty	±4.0	R	√3	1	±2.3
Liquid conductivity (measured)	±2.5	R	1	0.64	±1.6
Liquid conductivity (target)	±5.0	R	√3	0.64	±1.8
Liquid Permittivity (measured)	±2.5	R	1	0.6	±1.5
Liquid Permittivity (target)	±5.0	R	√3	0.6	±1.7
Phantom and Tissue Parameters Uncertainty					*±4.1*
Combined standard uncertainty					*±10.8*
Extended standard uncertainty (k=2)					***±21.6***

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8 Test results

The ambient humidity and temperature of test facility were kept between the range 30-70% and 20.0-25.0 °C respectively. A base station simulator was used to control the device during the SAR measurement. The DUT was supplied with a fully charged battery for each measurement.

For head measurement, the DUT was tested with the flip open on the right-hand side, and the left-hand side of the phantom in two phone positions, cheek (touch) and tilt (cheek + 15°). The DUT was tested at the lowest, middle and highest frequencies in the transmission band. The measured 1-gram averaged SAR values of the DUT towards the head are provided in Table 1.

For body measurement the DUT was tested with the flip in the closed position with the back (antenna) and front(display) towards the phantom flat section with 15 mm distance in both speech and data mode. For all modes, the device was tested at the lowest, middle and highest frequencies in the transmission band. For portable hands free (PHF) usage the Sony Ericsson head set HPB-60 was connected to the DUT. The measured 1-gram averaged SAR values of the DUT towards the body are provided in Table 2.

Band	Channel	Measured output power[1] [dBm]	Position	Liquid T [°C]	Measured SAR [W/kg]	
					Left-hand 1g mass	Right-hand 1g mass
GSM 850	128	32.8	Cheek	23.9	0.53	0.63
			Tilt	23.9	-	-
	190	32.9	Cheek	23.9	0.58	0.66
			Tilt	23.9	0.40	0.39
	251	32.8	Cheek	23.9	**0.75**	0.74
			Tilt	23.9	-	-
GSM 1900	512	30.9	Cheek	22.7	0.59	0.51
			Tilt	22.7	-	-
	661	30.9	Cheek	22.7	0.60	0.52
			Tilt	22.7	0.22	0.29
	810	30.9	Cheek	22.7	**0.64**	0.56
			Tilt	22.7	-	-

Table 1: SAR measurement result for Sony Ericsson PY7A3880016 telephone at highest possible output power. Measured towards the head.

[1] Measured output values were provided by the customer.

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Band	Channel	Measured output power[1] [dBm]	Position / Mode	Liquid T [°C]	Measured SAR [W/kg] 1g mass
GSM 850	128	32.8	Back / CS	22.6	0.69
		29.9	Back / GPRS	22.6	0.61
	190	32.9	Back / CS	22.6	0.64
		29.9	Back / GPRS	22.6	0.73
	251	32.8	Back / CS	22.6	0.53
		32.8	Back / PHF	22.6	0.51
		29.9	Back / GPRS	22.6	**0.81**
		27.3	Back / EGPRS	22.6	0.44
		29.9	Front / GPRS	22.6	0.43
GSM 1900	512	30.9	Back / CS	24.7	0.65
		28.0	Back / GPRS	24.7	0.60
	661	30.9	Back / CS	24.7	0.71
		27.8	Back / GPRS	24.7	0.65
	810	30.9	Back / CS	24.7	**0.81**
		30.9	Back / PHF	24.7	0.47
		27.9	Back / GPRS	24.7	0.75
		26.3	Back / EGPRS	24.7	0.46
		27.9	Front / GPRS	24.7	0.25

Table 2: SAR measurement result for Sony Ericsson PY7A3880016 telephone at highest possible output power. Measured towards the body.

[1] Measured output values were provided by the customer.

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9 References

[1] R.Plicanic. “SAR Measurement Specification of Wireless Handsets”. Sony Ericsson SAR Test Laboratory internal document GUG/N 03:141

[2] FCC. “Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields: Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radio Frequency Emissions.” Supplement C (Edition 01-01) to OET Bulletin 65 (Edition 97- 01).

[3] IEEE. “Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques.” Std 1528-2003. June. 2003.

[4] IEC 62209-1. "Procedure to measure the Specific Absorption Rate (SAR) for hand-held mobile wireless devices in the frequency range of 300 MHz to 3 GHz". February 2005.

[5] FCC KDB648474. "SAR Evaluation Consideration for HANDSETS with Multiple Transmitters and Antenna", April 2008.

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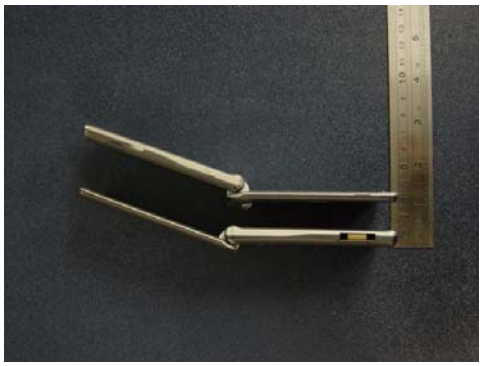
Appendix

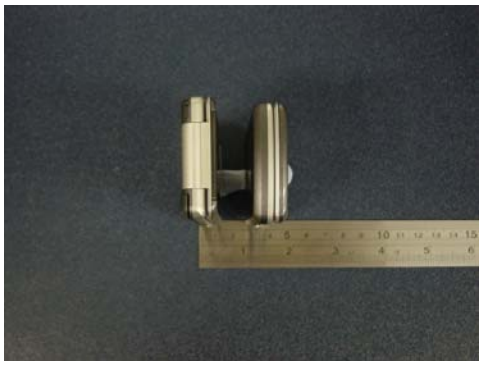
9.1 Photographs of the device under test

Front & Back Open



Sides Open

Front & Back Closed



Top & Bottom Closed

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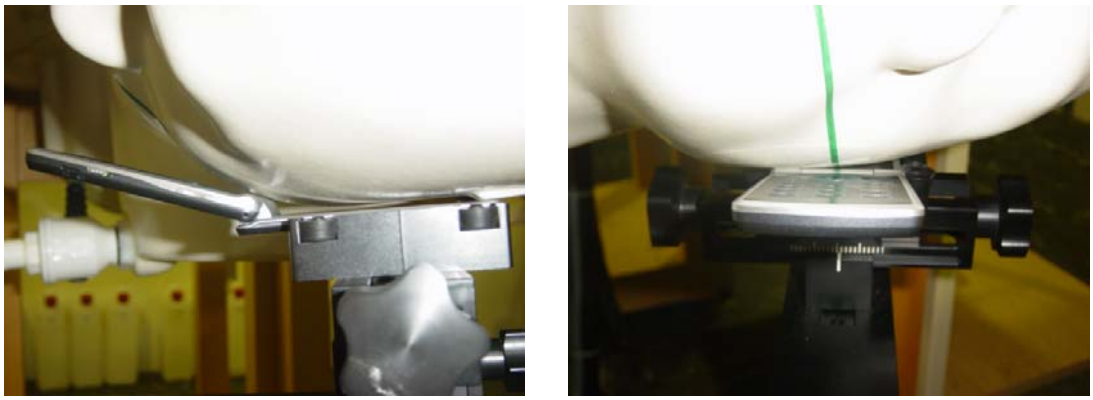
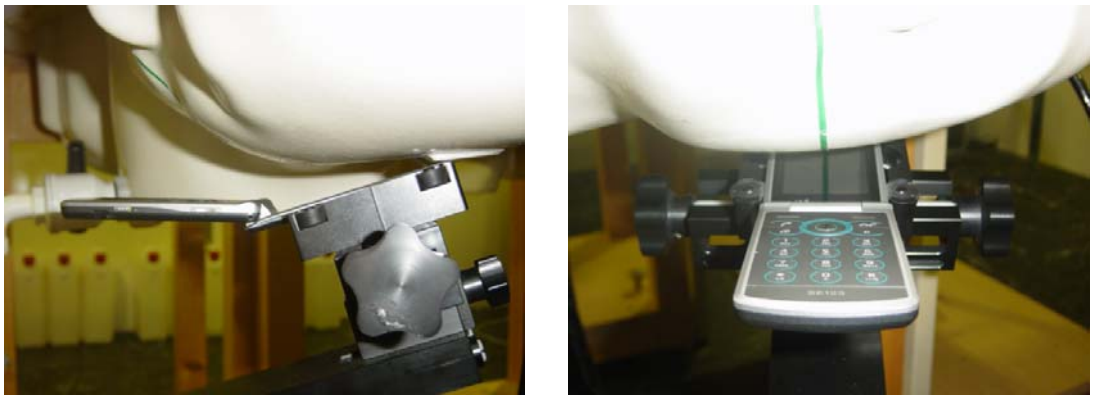
9.2 Device position at SAM Twin Phantom



DUT position towards the head Flip Open: Cheek (touch) position



DUT position towards the head Flip Open: Tilt (touch + 15°) position

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DUT position towards the body with Flip Closed and 15 mm distance

9.3 Attachments

- System validation
- Measurement plots for head and body position
- Probe calibration
- Dipole calibration