EMC Technologies Pty Ltd
A.C.N. 057 105 549
57 Assembly Drive
Tullamarine Victoria Australia 3043

Ph: + 613 9335 3333
Fax: + 613 9338 9260
email: melb@emctech.com.au

SAR Test Report

Report Number: M041206

Test Sample:	GSM Cellular Phone
Model Number:	VX750
Tested For:	Voxson Ltd.
FCC ID:	SSW-VX750
Date of Issue:	1st February 2005

Nata Accredited Laboratory
Number: 5292

CONTENTS

SAR EVALUATION
GSM Cellular Phone
Model: VX750
Report Number: M041206

1.0 GENERAL INFORMATION

Test Sample:	Cellular Phone
Device Category:	Portable Transmitter
Test Device:	Production Unit
Model Number:	VX750
RF exposure Category:	General Public/Unaware user
Manufacturer:	Voxson Ltd.
Test Standard/s:	Evaluating Compliance with FCC Guidelines For Human Exposure to Radiofrequency Electromagnetic Fields Supplement C (Edition 01-01) to OET Bulletin 65 (Edition 97-01)
Statement Of Compliance:	The Voxson Cellular Phone model VX750 Complied with the FCC General public/uncontrolled RF exposure limits of 1.6mW/g per requirements of 47CFR2.1093(d).
Test Dates:	7th to 11th December 2004
Tested for:	Voxson Ltd.
Address:	231 Holt Street, Pinkenba Qld 4008
Contact:	Tony Bennetts
Fax:	(07) 3868 1370
Email:	tonyb@Voxson.com.au
Test Officer:	**Peter Jakubiec** **Assoc Dip Elect Eng**
Authorised Signature:	**Aaron Sargent B.Eng** EMR Engineer

2.0 DESCRIPTION OF DEVICE

2.1 Description of Test Sample

The device tested was a Single Band Cellular Phone operating in the PCS frequency band. It has one External antenna. The test device was tested in the Touch, Tilted and Body Worn Positions

Table 1: EUT Parameters

Operating Mode during Testing	: See Table 2
Operating Mode production sample	: Standard GSM and GPRS Class 10
Modulation:	: Standard TDMA
Antenna type	: External
Applicable Head Configurations	: Touch and Tilted
Applicable Body Worn-Configurations	: Body Worn Position
Battery Options	: One Battery Type

2.2 Test sample Accessories

2.2.1 Battery Types

One type of battery can be used with Cellular Phone. SAR measurements were performed with the standard 3.7V battery.

2.3 Test Signal, Frequency and Output Power

The test was performed on Voxson, Single Band GSM Cellular Phone for this evaluation. The GSM Cellular Phone was put into operation using a Rhodes & Schwarz Radio Communication Tester CTS65 in the GSM mode, and using key codes supplied by Voxson in the GPRS mode. The channels utilised in the measurements were the traffic channels shown in the table below. The power level was set to Class 1 for 1900 MHz band. Communication between the tester and the GSM Cellular Phone was maintained by an air link.

Table 2: Test Frequencies

Band	Frequency Range	Traffic Channels	Band Power Class	Nominal Power (dBm)
1	1850.2 – 1909.8 MHz	512, 661 and 810	1	30

2.4 Conducted Power Measurements

The conducted power of the EUT was measured in the 1900 MHz frequency range. Table 3 lists the results of the conducted power measurements performed with a power meter. Please note that measurement of conducted power was not possible before and after each SAR test, because the battery obstructs the phone's RF output connector - see photo:

Table 3: Conducted Power Measurements

Frequency (MHz)	RF Channel	Measured Power GSM Mode (dBm)	Measured Power GPRS Mode (dBm)
1850.2	512	28.4	28.7
1880	661	28.7	28.8
1909.8	810	28.8	28.9

NOTE: The loss's due to cabling and attenuation has been taken into account.

2.5 Battery Status

The Cellular Phone battery was fully charged prior to commencement of each measurement. Each SAR test was completed within 30 minutes. The battery condition was monitored by measuring the RF power at a defined position inside the phantom before the commencement of each test and again after the completion of the test.

Table 4: Battery Details

Battery #1:	Li-ion 3.7V 620 mAh	**Battery #2:**	Li-ion 3.7V 620 mAh
Model No.:	VX-141006 REV AA	**Model No.:**	VX-141006 REV AA

2.6 Details of Test Laboratory

2.6.1 Location

EMC Technologies Pty Ltd
57 Assembly Drive
Tullamarine, (Melbourne) Victoria
Australia 3043

Telephone: +61 3 9335 3333
Facsimile: +61 3 9338 9260
email: melb@emctech.com.au
website: www.emctech.com.au

2.6.2 Accreditations

EMC Technologies Pty. Ltd. is accredited by the National Association of Testing Authorities, Australia (NATA).
NATA Accredited Laboratory Number: 5292

EMC Technologies Pty Ltd is NATA accredited for the following standards:

AS/NZS 2772.1:	RF and microwave radiation hazard measurement
ACA:	Radio communications (Electromagnetic Radiation - Human Exposure) Standard 2003
FCC:	Guidelines for Human Exposure to RF Electromagnetic Field OET65C 01/01
CENELEC:	ES59005: 1998
EN 50360: 2001	Product standard to demonstrate the compliance of Mobile phones with the basic restrictions related to human exposure to electromagnetic fields (300 MHz – 3 GHz)
EN 50361: 2001	Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from Mobile phones (300MHz – 3GHz)
IEEE 1528: 2003	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head Due to Wireless Communications Devices: Measurement Techniques.

Refer to NATA website www.nata.asn.au for the full scope of accreditation.

2.6.3 Environmental Factors

The measurements were performed in a shielded room with no background RF signals. The temperature in the laboratory was controlled to within 21± 1 °C, the humidity was in the range 62% to 64%. See section 3.5.1 for measured temperature and humidity. The liquid parameters were measured daily prior to the commencement of each test. Tests were performed to check that reflections within the environment did not influence the SAR measurements. The noise floor of the DASY4 SAR measurement system using the SN1377 probe is less than 5μV in both air and liquid mediums.

3.0 DESCRIPTION OF SAR MEASUREMENT SYSTEM

3.1 Probe Positioning System

The measurements were performed with the state of the art automated near-field scanning system **DASY4 Version V4.4 Build 3** from Schmid & Partner Engineering AG (SPEAG). The system is based on a high precision 6-axis robot (working range greater that 1.1m), which positions the SAR measurement probes with a positional repeatability of better than ±0.02 mm. The DASY4 fully complies with the OET65 C (01-01), IEEE 1528 and EN50361 SAR measurement requirements.

3.2 E-Field Probe Type and Performance

The SAR measurements were conducted with the dosimetric probe ET3DV6 Serial: 1377 (manufactured by SPEAG) designed in the classical triangular configuration and optimised for dosimetric evaluation. The probe has been calibrated and found to be accurate to better than ±0.25 dB. The probe is suitable for measurements close to material discontinuity at the surface of the phantom.

3.3 Data Acquisition Electronics

The data acquisition electronics (DAE3) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. The input impedance of the DAE3 box is 200 MΩ; the inputs are symmetrical and floating. Common mode rejection is above 80dB.Transmission to the PC-card is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.

The mechanical probe-mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection.

3.4 Calibration and Validation Procedures and Data

Prior to the SAR assessment, the system validation kit was used to verify that the DASY4 was operating within its specifications. The validation was performed at 1800 MHz with the SPEAG calibrated dipole. The validation dipoles are highly symmetric and matched at the centre frequency for the specified liquid and distance to the phantom. The accurate distance between the liquid surface and the dipole centre is achieved with a distance holder that snaps onto the dipole. System validation is performed by feeding a known power level into a reference dipole, set at a known distance from the phantom. The measured SAR is compared to the theoretically derived level, and must be within 10%.

3.4.1 Validation Results (1800 MHz)

The following table lists the dielectric properties of the tissue simulating liquid measured prior to each SAR validation. The results of the validation for each day are listed in columns 5 and 6. The forward power into the reference dipole for each SAR validation was adjusted to 250 mW.

Table 5: Validation Results (SPEAG calibrated dipoles)

1. Validation Date	2. Frequency (MHz)	3. ϵ_r (measured)	4. σ (mho/m) (measured)	5. Measured SAR 1g	6. Measured SAR 10g
7th Dec. 2004	1800	39.1	1.39	9.93	5.24
8th Dec. 2004	1800	39.2	1.41	9.69	5.15
11th Dec. 2004	1800	39.0	1.40	9.83	5.20

3.4.2 Deviation from reference validation values

The reference SAR values are derived using a reference dipole and flat phantom suitable for centre frequency of 1800 MHz. This reference SAR value is obtained from the IEEE Std 1528-2003 and are normalized to 1W.

The SPEAG calibration reference SAR value is the SAR validation result obtained in a specific dielectric liquid using the validation dipole during calibration. The measured one-gram SAR should be within 10% of the expected target reference values shown in table 6 below.

Table 6: Deviation from reference validation values

Validation Frequency & Date	Measured SAR 1g (input power = 250mW)	Measured SAR 1g (Normalized to 1W)	SPEAG Calibration reference SAR Value 1g (mW/g)	Deviation From SPEAG 1g (%)	IEEE Std 1528 reference SAR value 1g (mW/g)	Deviation From IEEE 1g (%)
1800MHz 7th Dec. 2004	9.93	39.72	38.2	4.00	38.1	4.25
1800MHz 8th Dec. 2004	9.69	38.76	38.2	1.47	38.1	1.73
1800MHz 11th Dec. 2004	9.83	39.32	38.2	2.90	38.1	3.20

NOTE: All reference validation values are referenced to 1W input power.

3.4.3 Liquid Depth 15cm

During the SAR measurement process the liquid level was maintained to a level of a least 15cm with a tolerance of ± 0.5cm. The following photo shows the depth of the liquid maintained during the testing.

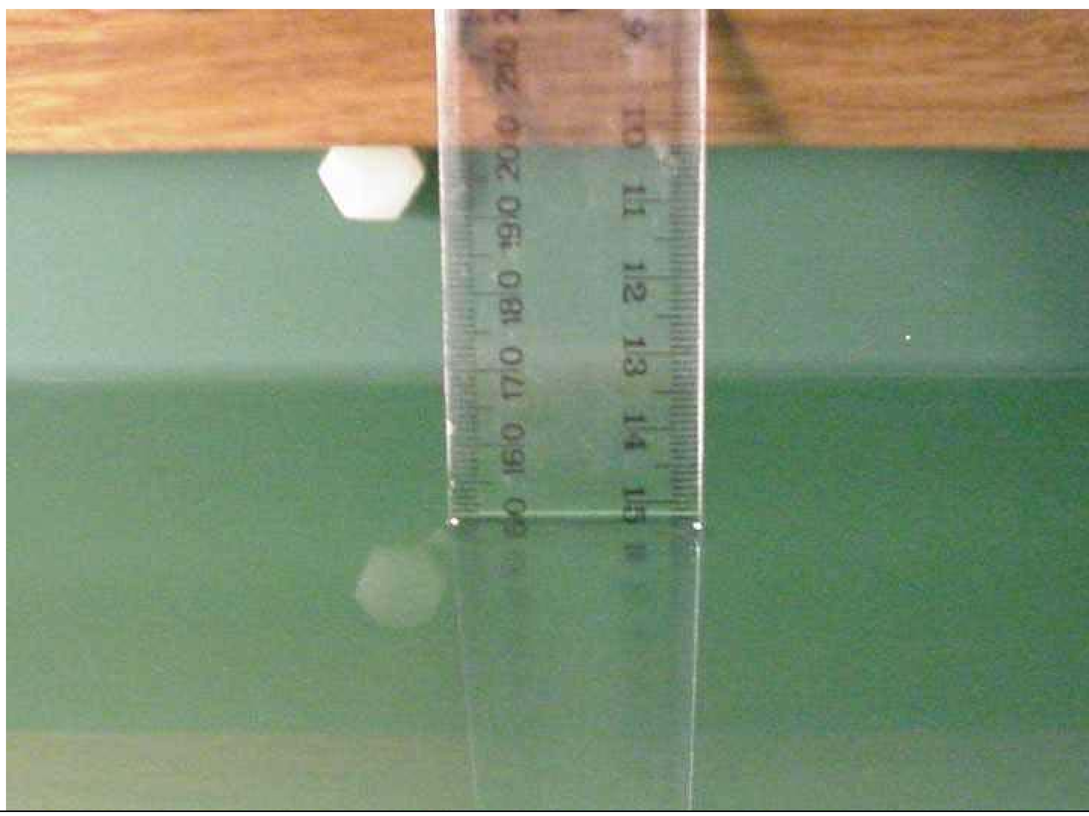


Photo of liquid Depth in Flat Phantom

3.5 Phantom Properties (Size, Shape, Shell Thickness, Tissue Material Properties)

The phantom used during the SAR testing and validation was the "SAM" phantom from SPEAG.The phantom thickness is 2.0mm+/-0.2 mm and was filled with the required tissue simulating liquid.

For SAR testing in the Body Worn positions an AndreT Flat Phantom V10.1 was used. The phantom thickness is 2.0mm +/-0.2 mm and the phantom was filled with the required tissue simulating liquid. Table 4 provides a summary of the measured phantom properties

Table 7: Phantom Properties (300MHz-2500MHz)

Phantom Properties	Requirement for specific EUT	Measured
Depth of Phantom	N/A	200mm
Width of flat section	N/A	540mm
Length of flat section	N/A	620mm
Thickness of flat section	2.0mm +/-0.2mm (flat section)	2.08 – 2.20mm
Dielectric Constant	<5.0	4.603 @ 300MHz (worst-case frequency)
Loss Tangent	<0.05	0.0379 @ 2500MHz (worst-case frequency)

Photo 1: Flat Phantom V10.1 2mm

The dielectric parameters of the brain simulating liquid were measured prior to SAR assessment using the HP85070A dielectric probe kit and HP8714B Network Analyser. The actual dielectric parameters are shown in the following tables:

Table 8: Measured Brain Simulating Liquid Dielectric Values at 1900MHz

Frequency Band	∈r (measured range)	∈r (target)	σ (mho/m) (measured range)	σ (target)	ρ kg/m^3
1850.2 MHz Brain	38.9 to 39.0	40 ±5% (38 to 42)	1.42 to 1.43	1.40 ±5% (1.33 to 1.47)	1000
1880 MHz Brain	38.7 to 38.9	40 ±5% (38 to 42)	1.44 to 1.45	1.40 ±5% (1.33 to 1.47)	1000
1909.8 MHz Brain	38.6 to 38.8	40 ±5% (38 to 42)	1.45 to 1.47	1.40 ±5% (1.33 to 1.47)	1000

NOTE: The brain liquid parameters were within the required tolerances of ±5%.

Table 9: Measured Body Simulating Liquid Dielectric Values at 1900MHz

Frequency Band	∈r (measured range)	∈r (target)	σ (mho/m) (measured range)	σ (target)	ρ kg/m^3
1850.2 MHz Body	52.3 to 52.4	53.3 ±5% (50.6 to 56.0)	1.56	1.52 ±5% (1.44 to 1.60)	1000
1880 MHz Body	52.1 to 52.6	53.3 ±5% (50.6 to 56.0)	1.58	1.52 ±5% (1.44 to 1.60)	1000
1909.8 MHz Body	52.0 to 52.2	53.3 ±5% (50.6 to 56.0)	1.59	1.52 ±5% (1.44 to 1.60)	1000

NOTE: The body liquid parameters were within the required tolerances of ±5%.

3.5.1 Temperature and Humidity

The humidity and dielectric/ambient temperatures are recorded during the assessment of the tissue material dielectric parameters. The difference between the ambient temperature of the liquid during the dielectric measurement and the temperature during tests was less than |2|°C.

Table 10: Temperature and Humidity recorded for each day

Date	Ambient Temperature (°C)	Liquid Temperature (°C)	Humidity (%)
7th December 2004	21.8	21.0	64
8th December 2004	21.8	21.1	63
11th December 2004	21.8	21.1	62

3.6 Simulated Tissue Composition Used for SAR Test

The tissue simulating liquids are created prior to the SAR evaluation and often require slight modification each day to obtain the correct dielectric parameters.

Table 11:Tissue Type: Brain @ 1900Hz
Volume of Liquid: 30 Litres

Approximate Composition	% By Weight
Distilled Water	61.17
Salt	0.31
Bactericide	0.29
Triton X-100	38.23

Table 12: Tissue Type: Body @ 1900MHz
Volume of Liquid: 30 Litres

Approximate Composition	% By Weight
Distilled Water	40.4
Salt	0.5
Sugar	58
HEC	1
Bactericide	0.1

*Refer “OET Bulletin 65 97/01 P38”

3.7 Device Holder for DASY4

The DASY4 device holder supplied by SPEAG is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear openings). The rotation centres for both scales is the ear opening. Thus the device needs no repositioning when changing the angles.

The DASY4 device holder is made of low-loss material having the following dielectric parameters: relative permittivity ε=3 and loss tangent δ=0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, to reduce the influence on the clamp on the test results.

Refer to Appendix A2-A3 for photograph of device positioning.

4.0 SAR MEASUREMENT PROCEDURE USING DASY4

The SAR evaluation was performed with the SPEAG DASY4 System (Build 3, Software version 4.4). A summary of the procedure follows:

a) A measurement of the SAR value at a fixed location is used as a reference value for assessing the power drop of the EUT. The SAR at this point is measured at the start of the test and then again at the end of the test.

b) The SAR distribution at the exposed side of the head or the flat section of the flat phantom is measured at a distance of 3.9 mm from the inner surface of the shell. The area covers the entire dimension of the head and the horizontal grid spacing is 15 mm x 15 mm. The actual Area Scan has dimensions of 141 mm x 61 mm surrounding the test device. Based on this data, the area of the maximum absorption is determined by Spline interpolation.

c) Around this point, a volume of 30 mm x 30 mm x 30 mm is assessed by measuring 7 x 7 x 7 points. On the basis of this data set, the spatial peak SAR value is evaluated with the following procedure:

   (i) The data at the surface are extrapolated, since the centre of the dipoles is 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.2 mm. The extrapolation is based on a least square algorithm. A polynomial of the fourth order is calculated through the points in z-axes. This polynomial is then used to evaluate the points between the surface and the probe tip.

   (ii) The maximum interpolated value is searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g and 10 g) are computed using the 3D-Spline interpolation algorithm. The 3D-Spline is composed of three one-dimensional splines with the "Not a knot"- condition (in x, y and z-direction). The volume is integrated with the trapezoidal – algorithm. One thousand points (10 x 10 x 10) are interpolated to calculate the averages.

   (iii) All neighbouring volumes are evaluated until no neighbouring volume with a higher average value is found.

   (iv) The SAR value at the same location as in Step (a) is again measured and the power drift is recorded.

5.0 MEASUREMENT UNCERTAINTY

The uncertainty analysis is based on the template listed in the IEEE Std 1528-2003 for both Handset SAR tests and Validation uncertainty. The measurement uncertainty of a specific device is evaluated independently and the total uncertainty for both evaluations (95% confidence level) must be less than 30%.

Table 13: Uncertainty Budget for DASY4 Version V4.4 Build 3 – EUT SAR test

a	b	c	d	e= f(d,k)	f	g	h=cxf/e	i=cxg/e	k
Uncertainty Component	Sec.	Tol. (%)	Prob. Dist.	Div.	C_i (1g)	C_i (10g)	1g u_i (%)	10g u_i (%)	v_i
Measurement System									
Probe Calibration (k=1) (standard calibration)	E.2.1	10	N	1	1	1	10.0	10.0	∞
Axial Isotropy	E.2.2	4.7	R	1.73	0.707	0.707	1.9	1.9	∞
Hemispherical Isotropy	E.2.2	9.6	R	1.73	0.707	0.707	3.9	3.9	∞
Boundary Effect	E.2.3	10	R	1.73	1	1	5.8	5.8	∞
Linearity	E.2.4	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	E.2.5	1	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	E.2.6	1	N	1	1	1	1.0	1.0	∞
Response Time	E.2.7	0.8	R	1.73	1	1	0.5	0.5	∞
Integration Time	E.2.8	2.6	R	1.73	1	1	1.5	1.5	∞
RF Ambient Conditions	E.6.1	0.05	R	1.73	1	1	0.0	0.0	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.4	R	1.73	1	1	0.2	0.2	∞
Probe Positioning with respect to Phantom Shell	E.6.3	2.9	R	1.73	1	1	1.7	1.7	∞
Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	E.5	1	R	1.73	1	1	0.6	0.6	∞
Test Sample Related									
Test Sample Positioning	E.4.2	1.61	N	1	1	1	1.6	1.6	11
Device Holder Uncertainty	E.4.1	3.34	N	1	1	1	3.3	3.3	7
Output Power Variation – SAR Drift Measurement	6.6.2	7.15	R	1.73	1	1	4.1	4.1	∞
Phantom and Tissue Parameters									
Phantom Uncertainty (shape and thickness tolerances)	E.3.1	4	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity – Deviation from target values	E.3.2	5	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity – Measurement uncertainty	E.3.3	2.5	N	1	0.64	0.43	1.6	1.1	5
Liquid Permittivity – Deviation from target values	E.3.2	5	R	1.73	0.6	0.49	1.7	1.4	∞
Liquid Permittivity – Measurement uncertainty	E.3.3	2.5	N	1	0.6	0.49	1.5	1.2	5
Combined standard Uncertainty			RSS				14.6	14.5	154
Expanded Uncertainty (95% CONFIDENCE LEVEL)			k=2				29.3	28.92	

Estimated total measurement uncertainty for the DASY4 measurement system was ± 14.6 %. The extended uncertainty (K = 2) was assessed to be ± 28.92 % based on 95% confidence level. The uncertainty is not added to the measurement result.

Table 14: Uncertainty Budget for DASY4 Version V4.4 Build 3 - Validation

a	b	c	d	e= f(d,k)	f	g	h=cxf/e	i=cxg/e	k
Uncertainty Component	Sec.	Tol. (%)	Prob. Dist.	Div.	C_i (1g)	C_i (10g)	1g u_i (%)	10g u_i (%)	v_i
Measurement System									
Probe Calibration (k=1) (standard calibration)	E.2.1	4.8	N	1	1	1	4.8	4.8	∞
Axial Isotropy	E.2.2	4.7	R	1.73	1	1	2.7	2.7	∞
Hemispherical Isotropy	E.2.2	0	R	1.73	1	1	0.0	0.0	∞
Boundary Effect	E.2.3	1	R	1.73	1	1	0.6	0.6	∞
Linearity	E.2.4	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	E.2.5	1	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	E.2.6	1	N	1	1	1	1.0	1.0	∞
Response Time	E.2.7	0	R	1.73	1	1	0.0	0.0	∞
Integration Time	E.2.8	0	R	1.73	1	1	0.0	0.0	∞
RF Ambient Conditions	E.6.1	0.05	R	1.73	1	1	0.0	0.0	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.4	R	1.73	1	1	0.2	0.2	∞
Probe Positioning with respect to Phantom Shell	E.6.3	2.9	R	1.73	1	1	1.7	1.7	∞
Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	E.5	1	R	1.73	1	1	0.6	0.6	∞
Test Sample Related									
Dipole Axis to Liquid Surface		2	R	1.73	1	1	1.2	1.2	∞
Power Drift		4.7	R	1.73	1	1	2.7	2.7	∞
Phantom and Tissue Parameters									
Phantom Uncertainty (shape and thickness tolerances)	E.3.1	4	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity – Deviation from target values	E.3.2	5	R	1.73	0.6	0.43	1.7	1.2	∞
Liquid Conductivity – Measurement uncertainty	E.3.3	2.5	N	1.73	0.6	0.43	0.9	0.6	5
Liquid Permittivity – Deviation from target values	E.3.2	5	R	1.73	0.6	0.49	1.7	1.4	∞
Liquid Permittivity – Measurement uncertainty	E.3.3	2.5	N	1.73	0.6	0.49	0.9	0.7	5
Combined standard Uncertainty			RSS				8.0	7.8	154
Expanded Uncertainty (95% CONFIDENCE LEVEL)			k=2				16.0	15.63	

Estimated total measurement uncertainty for the DASY4 measurement system was ±8.0%. The extended uncertainty (K = 2) was assessed to be ±16.0% based on 95% confidence level. The uncertainty is not added to the Validation measurement result.

6.0 EQUIPMENT LIST AND CALIBRATION DETAILS

Table 15: SPEAG DASY4 Version V4.4 Build 3

Equipment Type	Manufacturer	Model Number	Serial Number	Calibration Due	Used For this Test?
Robot - Six Axes	Staubli	RX90BL	N/A	Not applicable	Yes
Robot Remote Control	SPEAG	CS7MB	RX90B	Not applicable	Yes
SAM Phantom	SPEAG	N/A	1260	Not applicable	Yes
SAM Phantom	SPEAG	N/A	1060	Not applicable	No
Flat Phantom	AndreT	10.1	P 10.1	Not Applicable	Yes
Flat Phantom	AndreT	9.1	P 9.1	Not Applicable	No
Flat Phantom	SPEAG	PO1A 6mm	1003	Not Applicable	No
Data Acquisition Electronics	SPEAG	DAE3 V1	359	09-July-2005	No
Data Acquisition Electronics	SPEAG	DAE3 V1	442	06-Oct -05	No
Data Acquisition Electronics	SPEAG	DAE4	900	08-Sept-2005	Yes
Probe E-Field - Dummy	SPEAG	DP1	N/A	Not applicable	No
Probe E-Field	SPEAG	ET3DV6	1380	14-July-2005	No
Probe E-Field	SPEAG	ET3DV6	1377	29-Sept -05	Yes
Probe E-Field	SPEAG	ES3DV6	3029	1-Nov -2005	No
Antenna Dipole 300 MHz	SPEAG	D300V2	1005	27- Nov-2005	No
Antenna Dipole 450 MHz	SPEAG	D450V2	1009	24-Jan-05	No
Antenna Dipole 900 MHz	SPEAG	D900V2	047	12-July-2006	No
Antenna Dipole 1640 MHz	SPEAG	D1640V2	314	25-May-2006	No
Antenna Dipole 1800 MHz	SPEAG	D1800V2	242	13-July-2006	Yes
Antenna Dipole 2450 MHz	SPEAG	D2450V2	724	2-Nov-2006	No
Antenna Dipole 5600 MHz	SPEAG	D5GHzV2	1008	05-Oct-2005	No
RF Amplifier	EIN	603L	N/A	In test	No
RF Amplifier	Mini-Circuits	ZHL-42	N/A	In test	Yes
RF Amplifier	Mini-Circuits	ZVE-8G	N/A	In test	No
Synthesized signal generator	Hewlett Packard	ESG-D3000A	GB37420238	*Not Required	Yes
RF Power Meter Dual	Hewlett Packard	437B	3125012786	26-May-05	Yes
RF Power Sensor 0.01 - 18 GHz	Hewlett Packard	8481H	1545A01634	27-May-05	Yes
RF Power Meter Dual	Gigatronics	8542B	1830125	15-Jan-05	Yes
RF Power Sensor	Gigatronics	80301A	1828805	15-Jan-05	Yes
RF Power Meter Dual	Hewlett Packard	435A	1733A05847	*Not Required	Yes
RF Power Sensor	Hewlett Packard	8482A	2349A10114	*Not Required	Yes
Network Analyser	Hewlett Packard	8714B	GB3510035	10-Sept-05	Yes
Network Analyser	Hewlett Packard	8753ES	JP39240130	06-Aug-2006	No
Dual Directional Coupler	Hewlett Packard	778D	1144 04700	In test	No
Dual Directional Coupler	NARDA	3022	75453	In test	Yes

*NOTE: Reference power meter only.

7.0 SAR TEST METHOD

7.1 Description of the Test Positions (Head and Body Sections)

The SAR measurements are performed on the left and right sides of the head in the Touch/Tilted positions using the centre frequency of the operating band. The configuration giving the maximum mass-averaged SAR is used to test the low-end and high-end frequencies of the transmitting band. Additional SAR measurements were performed in the "Body worn position" at the low, middle and high frequencies of operation.
See Appendix A for photos of test positions.

7.1.1 "Touch Position"

The device was positioned with the vertical centre line of the body of the device and the horizontal line crossing the centre of the earpiece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, the vertical centre line was aligned with the reference plane containing the three ear and mouth reference points. (Left Ear, Right Ear and Mouth). The centre of the earpiece was then aligned with the Right Ear and Left Ear.

The Cellular Phone was then moved towards the phantom with the earpiece aligned with the line between the Left Ear and the Right Ear, until the Cellular Phone just touched the ear. With the device maintained in the reference plane, and the Cellular Phone in contact with the ear, the bottom of the Cellular Phone was moved until the front side of the Cellular Phone was in contact with the cheek of the phantom, or until contact with the ear was lost.

7.1.2 "Tilted Position"

The device was positioned in the "Touch" position described above. While maintaining the device in the reference plane describe above, and pivoting against the ear, the device was moved away from the mouth by an angle of 15 degrees or until contact with the ear was lost.

7.1.3 "Body Worn Position"

The device was tested in the (2.00 mm) flat section of the AndreT phantom for the "Body Worn" position.
The body-worn operating configuration was tested with a headset connected to the device and positioned against a flat phantom in normal use configuration. The "Body Worn Position" simulated the EUT placed against the body of a user. The EUT was tested with both the front (keypad) and the back of the phone facing the flat phantom. Spacing used between the Mobile Phone and the flat phantom was 15mm.

7.2 List of All Test Cases (Antenna In/Out, Test Frequencies, User Modes etc)

The SAR was measured at three test channels for each band of operation with the test sample operating as maximum power, as specified in section 2.3. The EUT has a fixed length (non-extendable) antenna.

7.3 FCC RF Exposure Limits for Occupational/ Controlled Exposure

Spatial Peak SAR Limits For:	
Partial-Body:	8.0 mW/g (averaged over any 1g cube of tissue)
Hands, Wrists, Feet and Ankles:	20.0 mW/g (averaged over 10g cube of tissue)

7.4 FCC RF Exposure Limits for Un-controlled/Non–occupational

Spatial Peak SAR Limits For:	
Partial-Body:	1.6 mW/g (averaged over any 1g cube of tissue)
Hands, Wrists, Feet and Ankles:	4.0 mW/g (averaged over 10g cube of tissue)

8.0 SAR EVALUATION RESULTS

The SAR values averaged over 1 g and 10 g tissue masses were determined for the sample device for the Left and Right ear configurations of the phantom. A “Body Worn position” was also assessed and the results for both head and body positions are given in Table 16.

The plots with the corresponding SAR distributions, which reveal information about the location of the maximum SAR with respect to the devices, are contained in Appendix B of this report.

8.1 SAR Measurement Results for 1900 MHz

Table 16: SAR Measurement Results – 1900 MHz GSM Mode

Test Position	Plot Number	Test Channel	Test Freq. (MHz)	SAR Level for (1g) mW/g	DASY4 Measured Drift (dB)
Tilted Left	1	661	1880 MHz	0.060	0.0
Touch Left	2	661	1880 MHz	0.263	0.0
Tilted Right	3	661	1880 MHz	0.063	0.0
Touch Right	4	512	1850.2 MHz	0.333	-0.1
	5	661	1880 MHz	0.447	-0.1
	6	810	1909.8 MHz	0.688	-0.1
Body Worn Position Front	7	661	1880 MHz	0.545	-0.3
Body Worn Position Back	8	512	1850.2 MHz	0.184	-0.2
	9	661	1880 MHz	0.265	0.0
	10	810	1909.8 MHz	0.411	-0.1

Note: The uncertainty of the system (± 28.92%) has not been added to the result.

The maximum measured SAR level in the GSM Mode -1900MHz band was 0.688mW/g for a 1 gram cube this value was measured in the “Touch Right” position at a frequency of 1909.8 MHz (Channel 810).

The FCC SAR limit for Non-occupational exposure is 1.6 m W/g measurement in a 1g cube of tissue.

Table 17: SAR Measurement Results – 1900 MHz GPRS Mode

Test Position	Plot Number	Test Channel	Test Freq. (MHz)	SAR Level for (1g) mW/g	DASY4 Measured Drift (dB)
Tilted Left	11	661	1880 MHz	0.141	-0.1
Touch Left	12	661	1880 MHz	0.594	-0.1
Tilted Right	13	661	1880 MHz	0.130	0.0
Touch Right	14	512	1850.2 MHz	0.696	-0.3
	15	661	1880 MHz	0.690	-0.2
	16	810	1909.8 MHz	1.370	-0.2
Body Worn Position Front	17	512	1850.2 MHz	0.827	0.0
	18	661	1880 MHz	1.160	-0.3
	19	810	1909.8 MHz	1.560	-0.2
Body Worn Position Back	20	512	1850.2 MHz	0.336	-0.1
	21	661	1880 MHz	0.532	0.0
	22	810	1909.8 MHz	0.712	0.0

Note: The uncertainty of the system (± 28.92%) has not been added to the result.

The maximum measured SAR level in the GPRS Mode -1900MHz band was 1.56 mW/g for a 1 gram cube this value was measured in the “Body Worn Position Front” position at a frequency of 1909.8 MHz (Channel 810).

The FCC SAR limit for Non-occupational exposure is 1.6 m W/g measurement in a 1g cube of tissue.

9.0 COMPLIANCE STATEMENT

The Voxson, Single Band GSM Cellular Phone model VX750 was tested on behalf of Voxson Ltd. It complied with the FCC SAR requirements. The SAR levels listed in this report are conditional on 15 mm distance from the user in Body Worn Back Position.

The highest SAR level recorded was 1.56 mW/g for a 1g cube. This value was measured in “Body Worn Position Front” position in the GPRS Mode. This level is below the uncontrolled limit of 1.6 mW/g and is within the band of measurement uncertainty around the limit.

APPENDIX A1 Test Sample Photographs

Battery 1

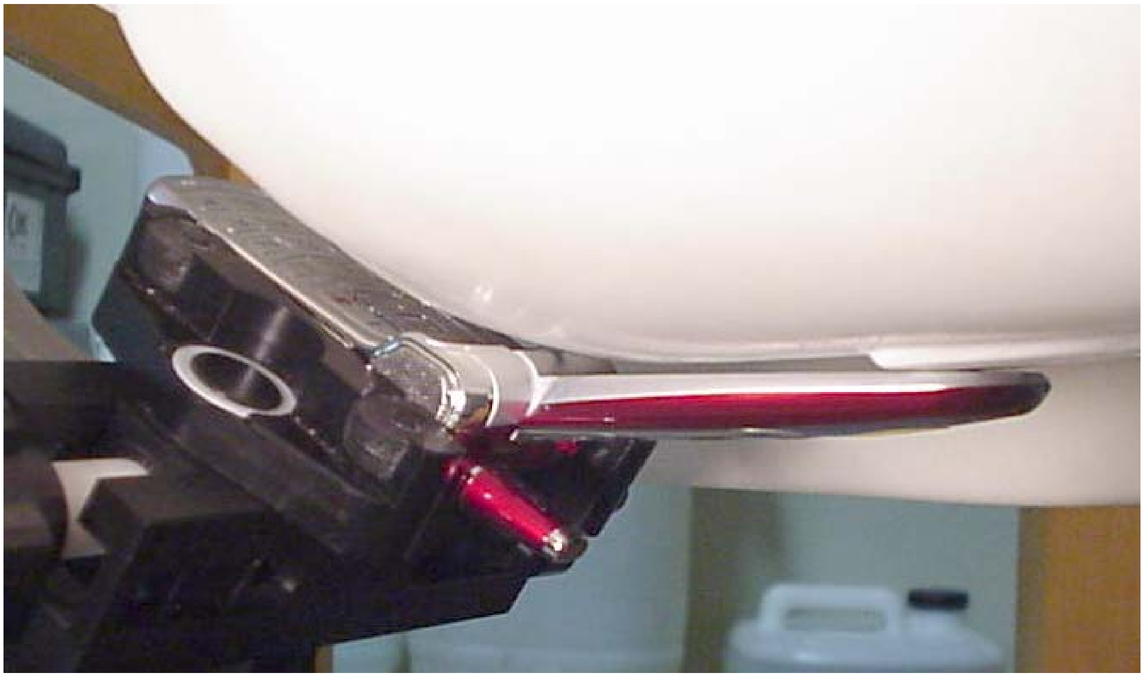
Battery 2

Voxson VX750

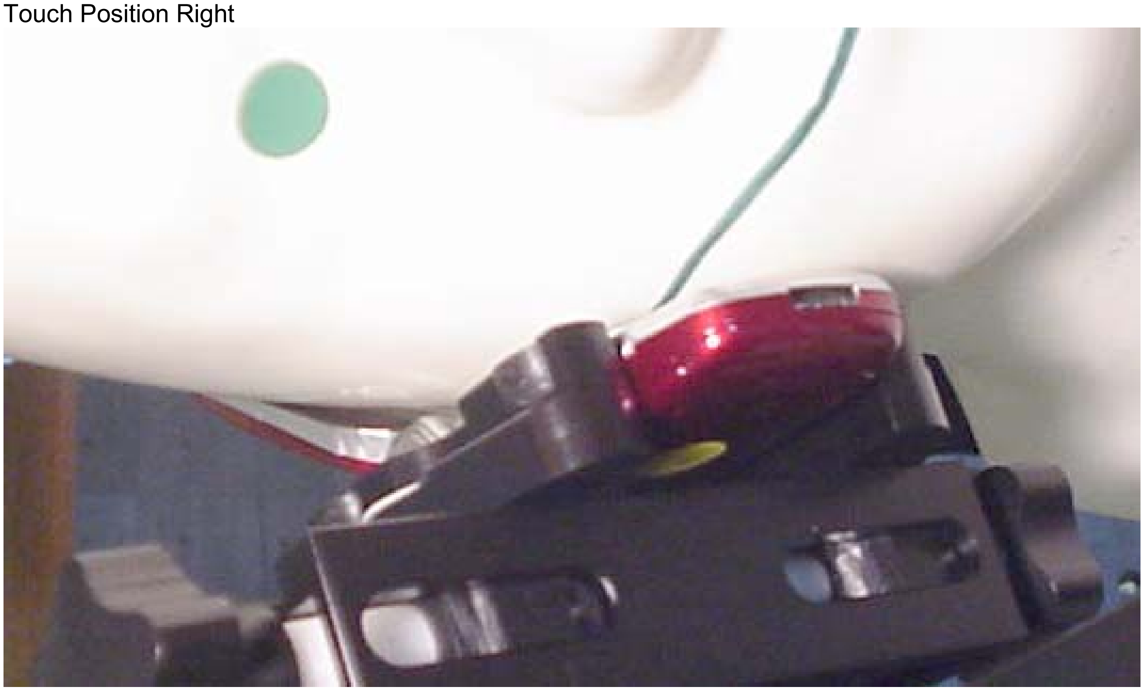
Voxson VX750

APPENDIX A2 Test Setup Photographs

Touch Position Left

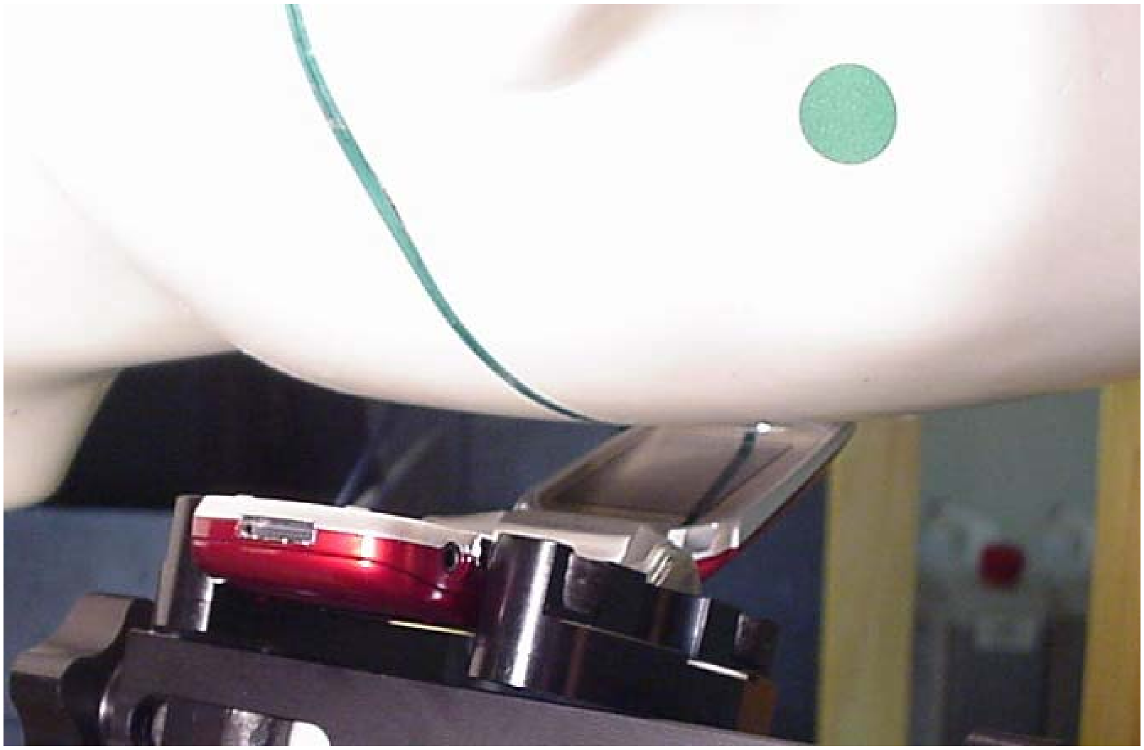


Touch Position Right



APPENDIX A3 Test Setup Photographs

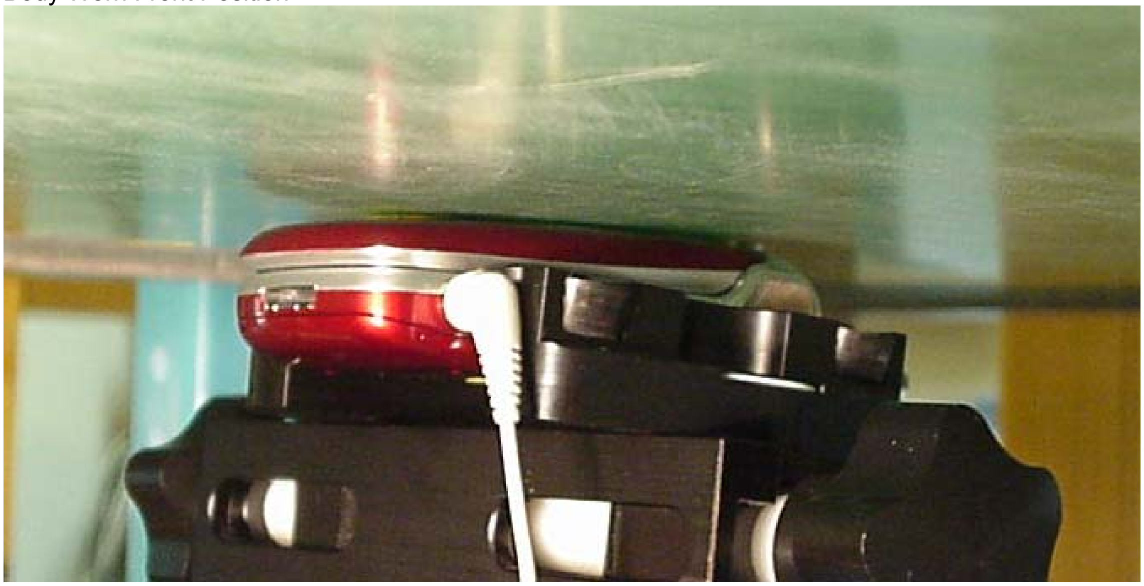
Tilted Position Left



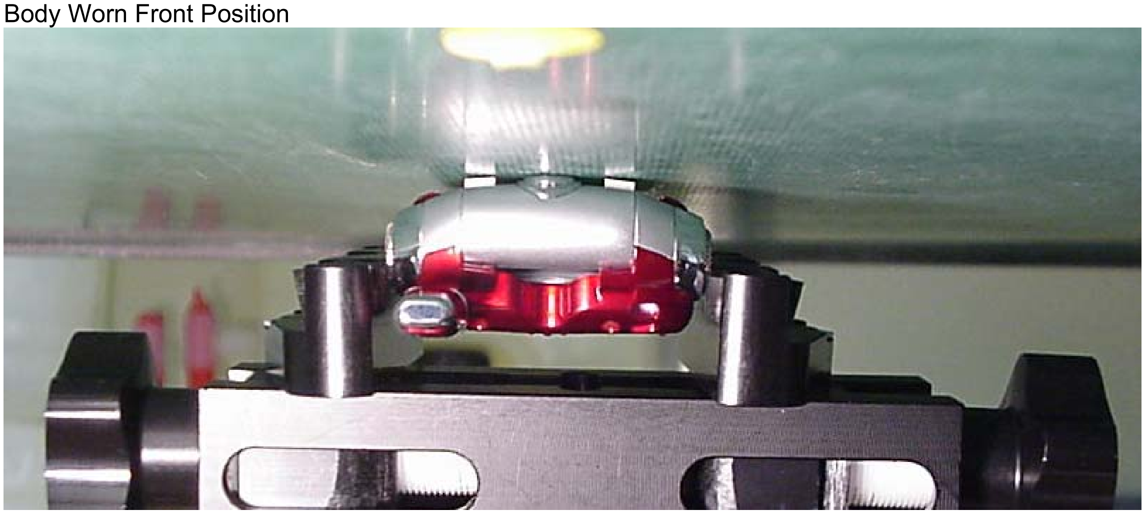
Tilted Position Right

APPENDIX A4 Test Setup Photographs

Body Worn Front Position

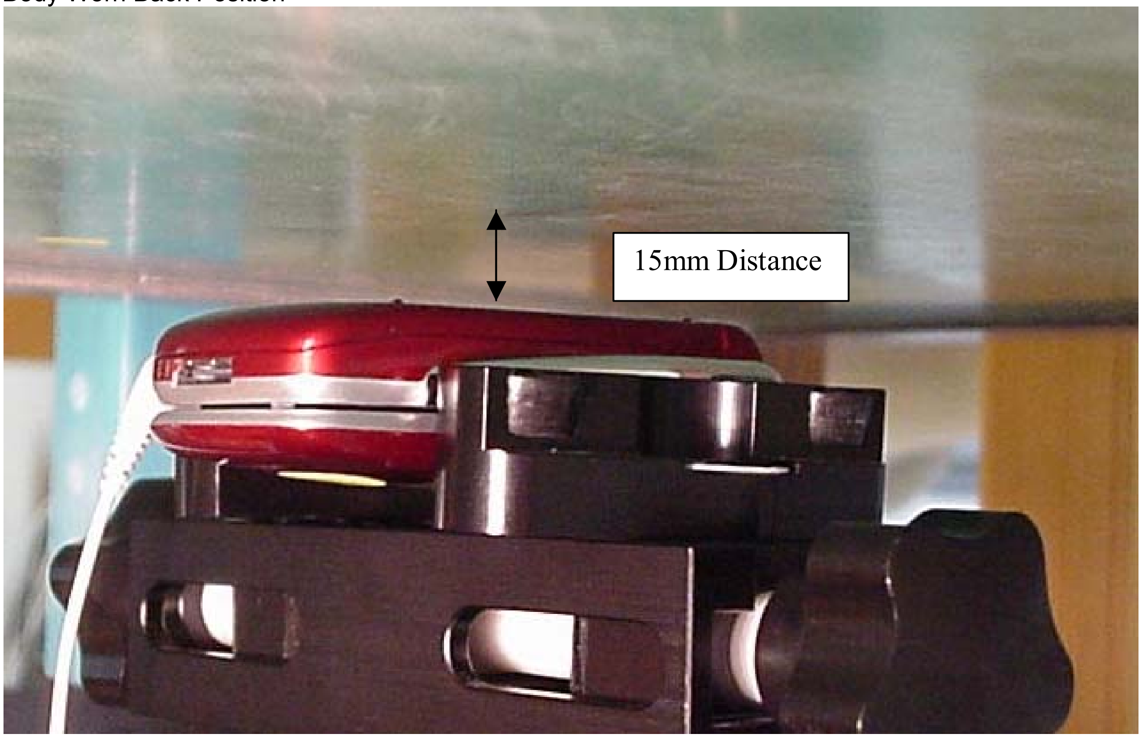


Body Worn Front Position



APPENDIX A5 Test Setup Photographs

Body Worn Back Position



Body Worn Back Position