Applicant:	Kyocera
FCC ID:	V65M6000
Report #:	CT-M6000 C2PC-9-0111-R0

Specific Absorption Rate (SAR)

FCC 47 CFR Part 2

Test Report

For

Kyocera Corporation
c/o Kyocera Communication, Inc.

Product:	Tri-Band CDMA Mobile Phone
Model:	M6000

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ATTESTATION

The tested device complies with the requirements in respect of all parameters subject to the test.

The test results and statements relate only to the items tested.

The test equipment used was suitable for the tests performed and within manufacturer's published specifications and operating parameters.

The test methods were consistent with the methods described in the relevant standards.

Product:	Tri-Band CDMA Mobile Phone with Bluetooth and WLAN
Model #:	M6000
FCC ID:	V65M6000
Tested in accordance with:	FCC §2.1093/OET-65 Supplement C IEEE P2528/D1.2 – 2003 FCC KDB 248227 D01 v01r02 FCC KDB 648474 D01 v01r05 FCC KDB 941225 v2
Test Requested by:	KYOCERA Communication Inc 9520 Town Centre Drive San Diego, CA 92121 United States
Test performed by:	CompTest Services LLC
Date of Test:	January 7 – January 24, 2011

Responsible Engineer

Benjamin Nguyen

Benjamin Nguyen
Test Engineer

Reviewed and approved by:

Tammy To
Quality Manager

1 SUMMARY OF TESTING

The equipment is deemed to fulfill the requirements if the measured values are less than or equal to the limit.

Mode-Band	Position	Measured SAR (mW/g)	Result
CDMA-800	Head	1.22	PASSED
	Body	0.46	PASSED
CDMA-1900	Head	1.19	PASSED
	Body	0.40	PASSED
CDMA-1700	Head	1.36	PASSED
	Body	0.55	PASSED
WLAN-2400	Head	N/A	N/A
	Body	0.04	PASSED

2 EQUIPMENT UNDER TEST INFORMATION

Product:	Tri-Band CDMA Mobile Phone with Bluetooth and WLAN				
FCC ID:	V65M6000				
Model Number:	M6000				
EUT Serial Number:	12001118				
Type:	[ ] Identical Prototype, [**X**] Pre-Production, [ ] Production				
Device Category:	Portable				
RF Exposure Environment:	General Population / Uncontrolled				
CDMA Antenna:	Internal			**Detachable:**	No
Bluetooth/WLan Antenna:	Internal, Bluetooth and WLAN share a common antenna			**Detachable:**	No
External Input:	Audio/Digital Data				
Quantity:	Quantity production is planned				
Modes:	800 CDMA	1700 CDMA	1900 CDMA	Bluetooth	802.11b/g
TX Frequency (MHz):	824 – 849	1710 – 1755	1850 - 1910	2400-2483.5	2412-2462
Rated RF Conducted Output Power (dBm)	24.0	24.0	24.0	1.0	20.0

3 ACCESSORIES

3.1 Body Worn Accessories

The device has been tested with the following body worn accessories that contains metal parts and separation distance between the device and the user's body is listed in the table below.

Accessory	Model	Separation (mm)
Air	N/A	22.0

3.2 Batteries

The device was tested with the following battery packs:

Battery	Model	Specifications
Standard	SCP-36LBPS	3.7V, 1130mAh

4 TEST CONDITIONS

4.1 Test Facilities

The test sites and measurement facilities used to collect data are located at 8611 Balboa Ave., San Diego, CA 92123, USA

4.2 Ambient Conditions

All tests were performed under the following environmental conditions:

Ambient Temperature:	22 $\pm$ 1 Degrees C
Tissue simulating liquid temperature:	22 $\pm$ 1 Degrees C
Humidity:	38 %
Pressure:	1015 mB

4.3 RF characteristics of the test site

All SAR measurements were performed inside a shielded room that provides isolation from external EM fields.

The E-field probes of the DASY 4 system are capable of detecting signals as low as 5mW/g in the liquid dielectric. External fields are minimizing by the shielded room, leaving the phone as the dominant radiation source. Two 2-foot square ferrite panels are placed on the floor of the room beneath the phantom area of the DASY system to minimize reflected energy that would otherwise re-enter the phantom and combine constructively or destructively with the desired fields. These ferrite panels provide roughly 12 to 13 dB of attenuation in the frequency range of 900 MHz, and 7 to 8 dB of attenuation in the frequency range of 1.9 GHz.

4.4 Test Signal, Frequencies and Output Power

In all operating bands, the measurements were performed on low, mid and high channels.
The phone was set to nominal maximum power level during all tests and at the beginning of each test.

DASY4 system measures power drift during SAR testing by comparing E-field in the same location at the beginning and at the end of measurement. These records were used to monitor stability of power output.

4.4.1 CDMA2000/EVDO Test conditions

The device supports CDMA2000 in 1X (Phase I, Protocol revision 6) and 1x EvDo Rev O/A modes. CDMA2000 1X includes TIA/EIA-95B as a subset and was approved for publishing in July 1999. It provides voice and data capabilities within a standard 1.25 MHz CDMA channel. This RF bandwidth is identical to the legacy IS-95 B system standard.

4.4.1.1 SAR Test Reduction

When maximum output variation across channels of each band/mode is < ½ dB, either maximum output or middle channels may be used to determine test reduction for each mode in a cellphone; otherwise, the maximum output channel was used to determine test reduction for each band/mode.

If the SAR measured at the reduction tested channel is at least 3dB lower than the SAR limit, testing at other channels were optional.

4.4.1.2 Head SAR Measurements

SAR for head exposure configurations was measured in RC3 with the EUT configured to transmit at full rate using Loopback Service Option SO55. SAR for RC1 was not required when the maximum average output of each channel was less than ¼ dB higher than that measured in RC3. Otherwise, SAR was measured on the maximum output channel in RC1 using the exposure configuration that results in the highest SAR for that channel in RC3.

4.4.1.3 Body SAR Measurements

SAR for body exposure configurations was measured in RC3 with the DUT configured to transmit at full rate on FCH with all other code channels disabled using TDSO / SO32. SAR for multiple code channels (FCH + SCH_n) was not required when the maximum average output of each RF channel was less than ¼ dB higher than that measured with FCH only. Otherwise, SAR was measured on the maximum output channel (FCH + SCH_n) with FCH at full rate and SCH_0 enabled at 9600 bps using the exposure configuration that results in the highest SAR for that channel with FCH only. When multiple code channels were enabled, the DUT output may shift by more than 0.5 dB and lead to higher SAR drifts and SCH dropouts.

Body SAR in RC1 was not required when the maximum average output of each channel was less than ¼ dB higher than that measured in RC3. Otherwise, SAR was measured on the maximum output channel in RC1; with Loopback Service Option SO55, at full rate, using the body exposure configuration that resulted in the highest SAR for that channel in RC3.

4.4.1.4 Devices with Ev-Do

For devices with Ev-Do capabilities, when the maximum average output of each channel in Rev. 0 was less than ¼ dB higher than that measured in RC3 (1x RTT), body SAR for Ev-Do was not required. Otherwise, SAR for Rev. 0 was measured on the maximum output channel at 153.6 kbps using the body exposure configuration that resulted in the highest SAR for that channel in RC3. SAR for Rev. A was not required when the maximum average output of each channel was less than that measured in Rev. 0 or less than ¼ dB higher than that measured in RC3. Otherwise, SAR was measured on the maximum output channel for Rev. A using a Reverse Data Channel payload size of 4096 bits and a Termination Target of 16 slots defined for Subtype 2 Physical Layer configurations. A Forward Traffic Channel data rate corresponding to the 2-slot version of 307.2 kbps with the ACK Channel transmitting in all slots should be configured in the downlink for both Rev. 0 and Rev. A

4.4.1.5 RF Conducted Power Data

Table 4.4 below shows the maximum power level vs RCs:

CONFIGURATION (Full Rate)	CONDUCTED POWER (dBm)								
	CDMA 800			CDMA 1700			CDMA 1900		
	Ch 1013	Ch 383	Ch 777	Ch 25	Ch 450	Ch 875	Ch 25	Ch 600	Ch 1175
	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg	Avg
SO2, RC1 Full Rate	24.15	24.31	23.91	24.19	24.23	24.24	24.18	24.18	24.18
SO2, RC3 Full Rate	24.16	24.38	23.90	24.17	24.20	24.25	24.17	24.13	24.13
SO55, RC1 Full Rate	24.20	24.48	23.91	24.18	24.20	24.23	24.15	24.11	24.18
SO55, RC3 Full Rate	24.21	24.48	23.93	24.20	24.21	24.26	24.12	24.21	24.20
TDSO SO32, RC3 (+SCH) Full Rate	24.18	24.46	23.90	24.20	24.18	24.25	24.15	24.13	24.19
TDSO SO32, RC3 (+F-SCH) Full Rate	24.16	24.45	23.93	24.20	24.19	24.26	24.10	24.15	24.20

Table 4.4 RC Configuration tested at “all up” power control bit.

4.5 Device Test Conditions

The EUT was tested with a fully charged battery as supplied with the handset. Conducted RF power measurements were performed before and after each SAR measurements to confirm the output power.

4.6 Multiple Transmitters and Antennas SAR evaluations

Licensed transmitters required routine SAR evaluation as followed by IEEE 1528 Supplement C 3G FCC SAR Procedures.

For an unlicensed transmitter such as 802.11 a/b/g and Bluetooth devices that does not transmit simultaneously with other transmitters and its output conducted power is < $60/f_{(GHz)}$ mW, SAR evaluation is not required.

If the handset contains unlicensed transmitters, which may simultaneously transmit with the licensed transmitter, then SAR evaluation procedures "FCC SAR Considerations for Handsets with Multiple Transmitters and antennas, February 2008" were followed. The antenna separation was determined by the closest distance between the antennas. The conducted output power of the unlicensed transmitter was measured and compared with the power reference (P_{ref}) as shown in table 6.5. Both criteria were evaluated to determine whether stand-alone SAR or simultaneous transmission SAR testing is required.

Freq. Band:	**2.45 GHz**	**5.15-5.35 GHz**	**5.47-5.85 GHz**
P_{ref} (mW):	12	6	5

Table 4.6aUnlicensed Transmitter Output Power Threshold

When there is simultaneous transmission -

Standalone SAR not required when	
Output Power	**Antenna Separation (cm)**
≤ P_{ref}	< 2.5 with other transmitters output power ≤ P_{ref} or 1g SAR <1.2 W/kg
≤ P_{ref}	≥ 2.5 and ≤ 5.0
≤ $2*P_{ref}$	≥ 5.0

Table 4.6b Standalone SAR requirements

When Stand-alone SAR measurements is required. SAR is tested on highest output channel for each wireless mode and exposure condition. If SAR for highest output channel is > 50% of SAR limit, all channels will be evaluated according to normal procedures.

Simultaneous SAR not required when	
Unlicensed only:	Standalone SAR is not required and antenna is > 5cm from other antennas
Licensed & Unlicensed:	Sum of SAR is < 1.6 W/kG for each pair of simultaneous transmitting antennas
	SAR to peak location separation ratio of simultaneous transmitting antenna pair is <0.3

Table 4.6c Simultaneous SAR requirements

4.6.1 Bluetooth/WLAN Test Conditions

4.6.1.1 Bluetooth/WLAN RF Conducted Power Data

Unlicensed transmitters are controlled by chipset based test mode software to establish maximum output power.

Mode	Data Rate (Mbps)	CONDUCTED POWER (dBm)		
		Ch 01 2412 MHz	Ch 06 2437 MHz	Ch 11 2462 MHz
802.11b	1	20.18	20.48	20.86
	11	20.92	21.22	21.78
802.11g	6	19.14	19.37	20.06
	54	14.18	14.42	14.85
☐ WLAN not supported				

Based on the Antenna separation and output power, Stand-Alone and Simultaneous Transmission SAR testing requirements are listed below:

MEASURED PARAMETERS (UNLICENSED TRANSMITTER)			
Transmitter:	**Bluetooth**	**802.11b**	**802.11g**
Antenna Separation	8.2 cm	8.2 cm	8.2 cm
Output Power[1)]	2 mW	100 mW	100 mW
Standalone SAR	No[2)]	Yes[2)]	No[2)]
Simultaneous TX SAR	No	No	N0
Highest 1g SAR value, Body[3)] (CDMA + BT)	--	0.59 mW/g	--

Note:
1) Rounded to the nearest mW
2) Only highest power transmitter was tested, if applicable.
3) Voice call in head configuration is not supported with Bluetooth mode.

4.7 SAR Tests in Mouth and Jaw Regions of the SAM Phantom

Antennas located near the bottom of a phone may require SAR measurements around the mouth and jaw regions of the SAM head phantom. This typically applies to clam-shell style phones that are generally longer in the unfolded normal use positions or to certain older style long rectangular phones. It has been known for some time that there are SAR measurement difficulties in these regions of the SAM phantom. SAR probes are calibrated in tissue-equivalent liquids with sufficient separation between the probe sensors and nearby physical boundaries to ensure scattering does not affect probe calibration. When the probe tip is moved into tight regions with multiple boundaries surrounding its sensors, probe calibration and measurement accuracy can become questionable. In addition, these measurement locations often require a probe to be tilted at steep angles, where it may no longer comply with calibration requirements and measurement protocols, or satisfy the required measurement uncertainty. In some situations it is not feasible to tilt the probe or rotate the phantom, as suggested by measurement standards, to conduct these measurements.

In order to ensure there is sufficient conservativeness for ensuring compliance until practical solutions are available, additional measurement considerations are necessary to address these technical difficulties. When measurements are required near the mouth, nose, jaw or similar tight regions of the SAM phantom, area or zoom scans are often unable to fully enclose the peak SAR location as required by IEEE 1528 and Supplement C, due to probe orientation and positioning difficulties. Even when limited measurements are possible, the test results could be questionable due to probe calibration and measurement uncertainty issues. Under these circumstances, the following procedures apply:

The SAR required in these regions of SAM should be measured using a flat phantom.

- Rectangular shaped phones should be positioned with its bottom edge positioned from the flat phantom with the same distance provided by the cheek touching position using SAM. The ear reference point (ERP, as defined for SAM) of the phone should be positioned ½ cm from the flat phantom shell.
- Clam-shell phones should be positioned with the hinge against a smooth edge of the flat phantom where the upper half of the phone is unfolded and extended beyond the phantom side wall. The lower half of the phone is secured in the test device holder at a fixed distance below the flat phantom determined by the minimum separation along the lower edge of the phone in the cheek touching position using SAM. If there is substantial variation in separation distance along the lower edge of a clam- shell phone when placed in the cheek touching position using SAM, the FCC Laboratory may be contacted for additional guidance to position the phone for testing.

The flat phantom data should allow test results to be compared uniformly across measurement systems, until suitable solutions are available in measurement standards to address certain probe calibration and positioning issues, due to implementation differences between horizontal and up- right SAM configurations. These flat phantom procedures are only applicable to stand-alone SAR evaluation in tight regions of the SAM phantom, where measurement is not feasible or test results can be questionable due to probe calibration and accessibility issues. Details on device positioning and photos showing how separation distances are determined should be included in the SAR report. SAR for other regions of the head must be evaluated using SAM; therefore, a phone with antennas at different locations may require flat and SAM phantom evaluation for the different antennas. When simultaneous transmission SAR evaluation is necessary in these regions of SAM and until practical solutions are available, the FCC Laboratory should be contacted for interim guidance.

5 DESCRIPTION OF THE TEST EQUIPMENT

5.1 Dosimetric System

The measurements were performed with an automated near-field scanning system (as shown in Figure 5.1), DASY4, manufactured by Schmid & Partner Engineering AG (SPEAG) of Zurich, Switzerland. The system is comprised of high precision robot, robot controller, computer, near-field probe, probe alignment sensor and the SAM phantom containing brain or muscle equivalent material. The overall RSS uncertainty of the measurement system is ±10.46% with an expanded uncertainty of ±21.22% (K=2). The measurement uncertainty budget is given in section 10. Below is a list of the calibrated equipment used for the measurements:

Test Equipment	Serial Number	Cal. Due Date
DASY4 DAE4	530	04-23-11
DASY4 DAE4	602	07-14-11
DASY4 DAE4	675	04-21-11
E-field Probe ET3DV6	1618	08-11-11
E-field Probe ES3DV3	3035	09-09-11
E-field Probe ES3DV3	3078	07-14-11
Dipole Validation kit, D835V2	4d019	04-20-11
Dipole Validation kit, D1800V2	220	09-15-11
Dipole Validation kit, D1900V2	5d016	09-07-12
Dipole Validation kit, D2450V2	776	08-19-12

The calibration records of E-field probe and dipoles are attached in Appendix C and Appendix D respectively. Dipoles return-loss and input impedances are measured annually. (50824 DO2 Dipole SAR Validation Verification v01).

Figure 5.1 DASY 4 System

5.2 Additional equipment needed in validation

Test Equipment	Serial Number	Cal. Due Date
Communication Test Set Agilent 8960	US41070147	06-25-12
Signal Generator, Agilent E4438C	MY42081906	07-20-11
Power meter, Giga-tronics 8541C	1833762	03-29-11
Power Sensor, Giga-tronics 80601A	1831776	03-29-11
Network Analyzer, Agilent E5062A	MY44100250	03-29-11
Electronic Calibration Module, Agilent	1763	04-05-11
Thermometer	186700	06-22-11
Dielectric Probe, HP 85070E	--	No cal required

5.3 Tissue Stimulants

All dielectric parameters of tissue stimulants were measured within 24 hours of SAR measurements. The depth of the tissue stimulant in the ear reference point and flat reference point of the phantom were at least 15 cm. during all the tests. The depth of the liquid is measured by running a program that brings the probe to the bottom surface of the phantom then raise it up 15 centimeters. The operator at this point performs a visual inspection and makes sure that the liquid level is at or above the probe tip.

The list of ingredients and the percent composition used for the Head and Muscle tissue simulates are listed in the table below:

	835 MHz		1700 MHz		1900 MHz		2450 MHz	
INGREDIENT	***HEAD***	***MUSCLE***	***HEAD***	***MUSCLE***	***HEAD***	***MUSCLE***	***HEAD***	***MUSCLE***
Water	51.07%	65.45%	56.6%	68%	54%	69.91%	55 %	68.64%
Cellulose	0.23%	--	--	--	--	--	--	--
Glycol monobuthyl	--	--	43%	31.5%	44.91%	29.96%	45%	31.37%
Sugar	47.31%	34.31%	--	--	--	--	--	--
Preventol	0.24%	0.1%	--	--	--	--	--	--
Salt	1.15%	0.62%	0.4%	0.5%	0.21%	0.13%	--	--

The ingredients above are adopted from Application Note: Recipes for Head/Muscle Tissue Simulating Liquid by SPEAG.

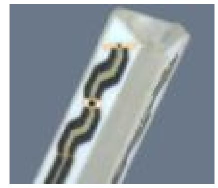
5.4 Phantoms Description

SAM v4.0 phantom, manufactured by SPEAG, was used during the measurement. It has fiberglass shell integrated in a wooden table. The shape of the shell corresponds to the phantom defined in IEEE 1528/D1.2. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. Reference markings on the phantom allow the complete set-up of all predefined phantom positions and measurement grids by manually teaching three points in the robot.

The thickness of phantom shell is 2mm except for the ear, where an integrated ear spacer provides 6mm spacing from the tissue boundary. Manufacturer reports tolerance in shell thickness to be ± 0.1mm**.**

Figure 5.4 SAM Twin Phantom

5.5 Isotropic E-Field Probe

Model:	• ET3DV6 
Construction:	• Symmetrical design with triangular core • Built-in optical fiber for surface detection system • Built-in shielding against static charges • PEEK enclosure material (resistant to organic solvents, e.g., glycol)
Calibration:	• Calibration certificate in Appendix C
Frequency:	• 10MHz to 3GHz (dosimetry); Linearity: ±0.2dB (30MHz to 3GHz)
Optical Surface:	• ±0.2mm repeatability in air and clear liquid over diffuse reflecting
Detection:	• Surface
Directivity:	• ±0.2dB in HSL (rotation around probe axis) • ±0.4dB in HSL (rotation normal to probe axis)
Dynamic Range:	• 5 uW/g to > 100 mW/g; Linearity: ±0.2dB
Dimensions:	• Overall length: 330mm • Tip length: 16mm • Body diameter: 12mm • Tip diameter: 6.8mm • Distance from probe tip to dipole centers: 2.7mm
Application:	• General dosimetry up to 3GHz • Compliance tests of mobile phones • Fast automatic scanning in arbitrary phantoms.

6 SYSTEM VALIDATION

The probes are calibrated annually by the manufacturer. Dielectric parameters of the stimulating liquids are measured with an automated Hewlett Packard 85070E dielectric probe in conjunction with an Agilent E5062A ENA serial network analyzer.

The SAR measurements of the device were done within 24 hours of system accuracy verification, which was done using the dipole validation kit. Power level of 20dBm was supplied to a dipole antenna placed under the flat section of SAM phantom. The validation results are in the table below and printouts of the validation test are attached in Appendix A. All the measured parameters are within the specification.

The system validation with head tissues was used for the device testing in muscle. Based on OET 65 Supplement C EAB Part 22/27/24 SAR review Reminder Sheet 01/2002, this is a valid test.

System/Tissue Verification - HEAD

Freq. (MHz)	Date	Description	Validation SAR (mW/g), 1g	Dielectric Parameters ε_r	Dielectric Parameters σ (S/m)	Temp. (°C)	Comments
835	FCC Reference*:			41.50	0.90	20-26	
	04/20/09	Target	0.942				From Speag Certificate
	01/07/11	Measured	0.970	40.5	0.89	22±1	For device testing in Head.
1800	FCC Reference*:			40.00	1.40	20-26	
	09/15/09	Target	3.82				From Speag Certificate
	01/10/11	Measured	3.99	38.2	1.46	22±1	For device testing in Head.
1900	FCC Reference*:			40.00	1.40	20-26	
	09/15/09	Target	4.06				From Speag Certificate
	01/07/11	Measured	4.05	38.8	1.44	22±1	For device testing in Head.

System/Tissue Verification - BODY							
Freq. (MHz)	Date	Description	Validation SAR (mW/g), 1g	Dielectric Parameters ε_r	Dielectric Parameters σ (S/m)	Temp. (^{o}C)	Comments
835		FCC Reference*:		55.2	0.97	20-26	
	04/20/09	Target	0.969				From Speag Certificate
	01/11/11	Measured	0.957	54.4	0.94	22±1	For device testing in Muscle
1800		FCC Reference*:		53.3	1.52	20-26	
	09/15/09	Target	3.90				From Speag Certificate
	01/11/11	Measured	3.91	51.4	1.57	22±1	For device testing in Muscle
1900		FCC Reference*:		53.3	1.52	20-26	
	09/15/08	Target	3.91				From Speag Certificate
	01/11/11	Measured	4.12	52.1	1.57	22±1	For device testing in Muscle
2450		FCC Reference*:		52.7	1.95	20-26	
	08/20/08	Target	4.90				From Speag Certificate
	01/24/11	Measured	5.46	50.3	2.04	22±1	For device testing in Muscle

*FCC reference values are adopted from OET Bulletin 65 (97-01) Supplement C (01-01).

7 DESCRIPTION OF THE TEST PROCEDURE

Measurements were made on both left hand side and right hand side of the phantom.

The device was position against phantom according to OET Bulletin 65 (97-01) Supplement C (01-01). Definitions of terms used in aligning the device to a head phantom are available in IEEE Standard P1528/D1.2 "Recommended Practice for Determining the Spatial-Peak Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques"

7.1 Test Positions

The device was placed in the holder. The bottom of the device aligns with the bottom of the holder clamp to provide a standard positioning and ensure enough free space for antenna.

Device holder was provided by SPEAG together with DASY4.

7.1.1 Initial Ear Position

The device was initially positioned with the earpiece region pressed against the ear spacer of a head phantom parallel to the "Neck-Front" (N-F) line defined along the base of the ear spacer that contains the "Ear Reference Point" (ERP). The "test device reference point" (point A) is aligned to the ERP on the head phantom and the "vertical centerline" is aligned to the "phantom reference plane".

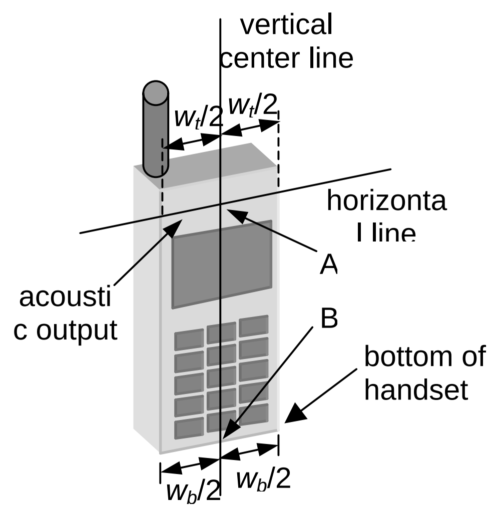


Figure 7-1 – Handset vertical and horizontal reference lines.

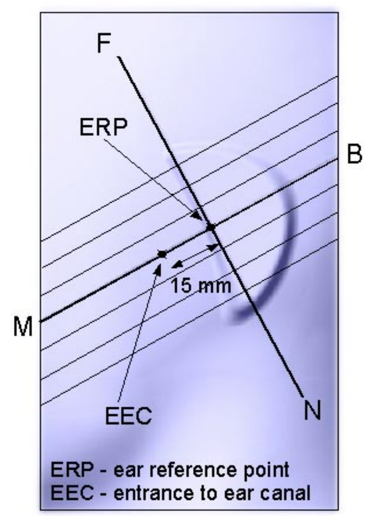


Figure 7-2 - Close up side view of phantom showing the ear region.

7.1.2 Cheek Position

"Initial ear position" alignments are maintained and the device is brought toward the mouth of the head phantom by pivoting along the "Neck-Front" line until any point on the display, keypad or mouthpiece portions of the handset is in contact with the phantom or when any portion of a foldout, sliding or similar keypad cover opened to its intended self-adjusting normal use position is in contact with the cheek or mouth of the phantom.

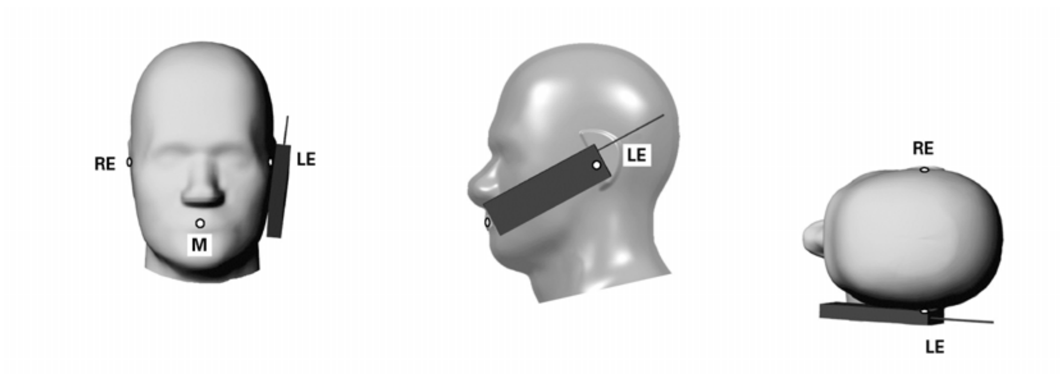


Figure 7.3 - Phone position 1, "cheek" or "touch" position.

7.1.3 Tilt Position

In the "cheek position", if the earpiece of the device is not in full contact with the phantom's ear spacer and the peak SAR location for the "cheek position" is located at the ear spacer region or corresponds to the earpiece region of the handset, the device is returned to the "initial ear position" by rotating it away from the mouth until the earpiece is in full contact with the ear spacer. Otherwise, the device is moved away from the cheek perpendicular to the line passes through both "ear reference points" for approximate 2-3cm. While it is in this position, the device is tilted away from the mouth with respect to the "test device reference point" by 15°. After the tilt, it is then moved back toward the head perpendicular to the line passes through both "ear reference point" until the device touches the phantom or the ear spacer. If the antenna touches the head first, the positioning process is repeated with a tilt angle less than 15° so that the device and its antenna would touch the phantom simultaneously.

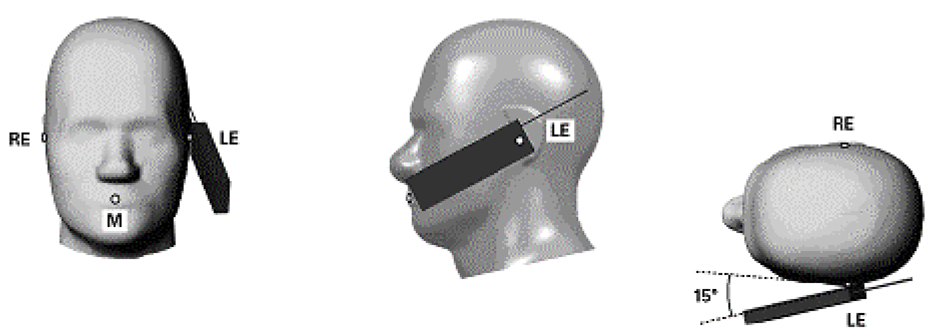


Figure 7.4 - Phone position 2, "tilted" position.

7.1.4 Body Worn Configuration

Body worn accessories were tested for the FCC RF exposure compliance. The device was positioned into the carrying case and placed below the flat phantom. Hands-free headset was connected during measurements.

The SAR levels were also measured with air space for the hands-free application, which allow user to use other body-worn accessories that contains no metal and provides at least specified separation from the closest point of the handset to the body.

7.2 Scan Procedures

First, coarse scans are used for a quick determination of the field distribution. Then an area scan measures all reachable points, it computes all of the field maxima found in the scanned area, within a range of 2dB as specified in IEEE P1528, (see the configuration below). For cases where multiple maxima were detected, the number of zoom scans could be increased accordingly.

Next a cube scan, 7x7x7 points (spacing between each point is 5x5x5mm), is performed around the highest E-field value to determine the averaged SAR-distribution over 1g. If two peaks are within 2dB of the highest one, two zoom scans are performed to provide the evaluations. A fine resolution volume scan determines the one-gram average SAR for both peaks.

7.3 SAR Averaging Methods

The maximum SAR value is average over its volume using interpolation and extrapolation.

The interpolation of the points is done with a 3d-Spline. The 3d-Spline is composed of three one-dimensional splines with the “Not a knot” –condition [W. Gander, Computermathematik, p. 141-150] (x, y and z – directions) [numerical Recipes in C, Second Edition, p 123].

The extrapolation is based on least square algorithm [W. Gander, Computermathematik, p. 168-180]. Through the points in the first 30mm in all z-axis, polynomials of order four are calculated. This polynomial is then used to evaluate the points between the surface and the probe tip. The points, calculated from the surface, have a distance of 1mm from one another.

8 MEASUREMENT UNCERTAINTY

Table 8.1 shows the uncertainty budget for SAR assessment according to IEEE P1528.

Uncertainty Description	Uncert. Value (± %)	Prob. Dist.	Div	C_i^1 1g	Stand. Uncert (1g) (±%)	V_i^2 or V_{eff}
Measurement system						
Probe calibration	4.8	N	1	1	4.8	∞
Axial isotropy	4.7	R	√3	0.7	1.9	∞
Hemispherical Isotropy	9.6	R	√3	0.7	3.9	∞
Boundary effects	1.0	R	√3	1	0.6	∞
Linearity	4.7	R	√3	1	1.0	∞
System Detection limit	1.0	R	√3	1	0.5	∞
Readout Electronics	1.0	N	1	1	1.0	∞
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. Constrains of robot	0.4	R	√3	1	0.2	∞
Probe positioning	2.9	R	√3	1	1.7	∞
Extrapolation, integration and Integration Algorithms for Max. SAR Evaluation	1.0	R	√3	1	0.6	∞
Test Sample Related						
Device positioning	3.0	N	1	1	3.0	∞
Device Holder	3.0	N	1	1	3.0	∞
Power drift	7.0	N	√3	1	4.0	∞
Phantom and setup						
Phantom uncertainty	4.0	R	√3	1	2.3	∞
Liquid conductivity (target)	5.0	R	√3	0.6	1.7	∞
Liquid conductivity (meas.)	5.0	N	1	0.6	3.0	∞
Liquid permittivity (target)	5.0	R	√3	0.6	1.7	∞
Liquid permittivity (meas.)	5.0	N	1	0.6	1.5	∞
Combined Standard Uncertainty:					**10.46**	
Extended Standard Uncertainty (k=2):					**21.22**	

N: Normal
R: Rectangular

Table 8.1 Worst-Case uncertainty budget for SAR assessment

9 TEST DATA

The following tables list the SAR results in each configuration and operating mode. The channels tested for each configuration have similar SAR distributions. Highest SAR (bold **blue** color) plots for each configuration is provided in Appendix B.

9.1 Cellular Band Head SAR Test Results

CDMA 800 HEAD						
			Channel:	1013	383	777
			Frequency (MHz):	824.70	836.49	848.31
Mode	**Test Position**	**Battery**	**Phone Configuration**	**SAR, 1g (W/kg)**		
RC3-SO55	**Left** Cheek	Standard	Open	1.0	0.94	0.83
	Left Tilt	Standard	Open	--	0.42	--
	Right Cheek	Standard	Open	1.13	**1.22**	0.88
	Right Tilt	Standard	Open	--	0.47	--

Note:
1. Battery used: ☒ Standard ☐ Extended
2. Tested due to unable to fully enclose the peak SAR location.
3. ☒ SAR Test Reduction procedures applied, marking "--"

9.2 AWS Band Head SAR Test Results

CDMA 1700 HEAD			**Channel:**	25	450	875
			Frequency (MHz):	1711.25	1732.50	1753.75
Mode	**Test Position**	**Battery**	**Antenna Position**	**SAR, 1g (W/kg)**		
RC3-SO55	**Left** Cheek	Standard	Fixed	0.55	1.00	0.96
	Left Tilt	Standard	Fixed	--	0.69	--
	Right Cheek	Standard	Fixed	0.79	**1.36**	1.32
	Right Tilt	Standard	Fixed	--	0.61	--

Note:
1. Battery used: ☒ Standard ☐ Extended
2. Tested due to unable to fully enclose the peak SAR location.
3. ☒ SAR Test Reduction procedures applied, marking "--"

9.3 PCS Band Head SAR Test Results

CDMA 1900 HEAD			**Channel:**	25	600	1175
			Frequency (MHz):	1851.25	1880	1908.75
Mode	**Test Position**	**Battery**	**Phone Configuration**	**SAR, 1g (W/kg)**		
RC3-SO55	**Left** Cheek	Standard	Open	--	0.76	--
	Left Tilt	Standard	Open	--	0.57	--
	Right Cheek	Standard	Open	1.13	**1.19**	0.98
	Right Tilt	Standard	Open	--	0.43	--

Note:
1. Battery used: ☒ Standard ☐ Extended
2. Tested due to unable to fully enclose the peak SAR location.
3. ☒ SAR Test Reduction procedures applied, marking "--"

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9.4 Cellular Band Body SAR Test Results

CDMA 800 BODY				Channel:	1013	383	777
				Frequency (MHz):	824.70	836.49	848.31
Mode	**Accessory**	**Spacing (mm)**	**Phone Flip**	**Side**	**SAR, 1g (W/kg)**		
RC3 – SO32	Air	22	N/A	Back	--	0.36	--
				Front	--	**0.46**	--

Note:
1. Battery used: ☒ Standard ☐ Extended
2. All modes of operation were evaluated and the worst case results are reported.
3. ☒ SAR Test Reduction procedures applied, marking “--“

9.5 AWS Band Body SAR Test Results

CDMA 1700 BODY				Channel:	25	450	875
				Frequency (MHz):	1711.25	1732.50	1753.75
Mode	**Accessory**	**Spacing (mm)**	**Phone Flip**	**Side**	**SAR, 1g (W/kg)**		
RC3-SO32	Air	22	N/A	Back	--	**0.55**	--
				Front	--	0.41	--

Note:
1. Battery used: ☒ Standard ☐ Extended
2. All modes of operation were evaluated and the worst case results are reported.
3. ☒ SAR Test Reduction procedures applied, marking “--“

9.6 PCS Band Body SAR Test Results

CDMA 1900 BODY		Channel:			25	600	1175
		Frequency (MHz):			1851.25	1880	1908.75
Mode	**Accessory**	**Spacing (mm)**	**Phone Flip**	**Side**	**SAR, 1g (W/kg)**		
RC3 – SO32	Air	22	N/A	Back	--	**0.40**	--
				Front	--	0.27	--

Note:
1. Battery used: ☒ Standard ☐ Extended
2. All modes of operation were evaluated and the worst case results are reported.
3. ☒ SAR Test Reduction procedures applied, marking "--"

9.7 WLAN/BT Band Body SAR Test Results

WLAN/BT BODY		Channel:			1	6	11
		Frequency (MHz):			2412	2437	2462
Mode	**Accessory**	**Spacing (mm)**	**Phone Flip**	**Side**	**SAR, 1g (W/kg)**		
802.11b	Air	22	N/A	Back	--	--	**0.04**
				Front	--	--	0.03

Note:
1. Battery used: ☒ Standard ☐ Extended
2. All modes of operation were evaluated and the worst case results are reported.
3. WLAN mode with highest TX power channel were selected for testing
4. The device does not support held-to-ear operation in WLAN/BT mode. Only Body-worn conditions apply.

10 LIST OF APPENDIX

Appendix	Description	Note
A	Validation Test Plots	*Please see separate attachment*
B	SAR Distribution Plots	*Please see separate attachment*
C	Probe Calibration Certificate	*Please see separate attachment*
D	Dipole Calibration Certificate	*Please see separate attachment*
E	EUT Setup Photos	*Please see separate attachment*