SAR Evaluation Report

IN ACCORDANCE WITH THE REQUIREMENTS OF
FCC REPORT AND ORDER:
ET DOCKET 93-62, AND OET BULLETIN 65 SUPPLEMENT C

FOR

PDA Phone

MODEL: WIZA100, WIZA110, WIZA200

FCC ID: NM8WZ

REPORT NUMBER: 05T3452-4

ISSUE DATE: June 22, 2005

Prepared for

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Prepared by

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LAB CODE:200065-0

Revision History

Rev.	Revisions	Revised By
A	Initial issue	MH

CERTIFICATE OF COMPLIANCE (SAR EVALUATION)

DATES OF TEST: June 1 - 9, 2005

APPLICANT:	High Tech Computer Corp.
ADDRESS:	23 Hsin Hua Road, Taoyuan 330, Taiwan, R. O. C
FCC ID:	NM8WZ
MODEL:	WIZA100, WIZA110 and WIZA200
DEVICE CATEGORY:	Portable Device
EXPOSURE CATEGORY:	General Population/Uncontrolled Explosure

PDA Phone (GSM850/1900 with WiFi 802.11bg and Bluetooth radio)

Test Sample is a: Production unit

FCC Rule Parts	Frequency Range [MHz]	The Highest SAR Values
22H	824.2 – 848.8	• The highest reported SAR values are: Head: 0.233 W/kg and Body-worn: 1.192 W/kg • The highest reported collocated SAR values are Head: 0.278 W/kg and body: 1.272 W/kg.
24E	1850.2 – 1909.8	• The highest reported SAR values are Head: 0.184 W/kg; Body-worn: 0.793 W/kg • The highest reported collocated SAR values are Head: 0.263 W/kg and body: 0.854 W/kg.
15C	2412 - 2462	• The highest reported SAR values are head: 0.079 W/kg and body: 0.08 W/kg

This wireless portable device has been shown to be capable of compliance for localized specific absorption rate (SAR) for General Population/Uncontrolled Explosure limits specified in ANSI/IEEE Std. C95.1-1992 and had been tested in accordance with the measurement procedures specified in FCC OET 65 Supplement C (Edition 01-01). And RSS-102 Issue 1 (Provisional) September 25, 1999.

The maximum 1g SAR level measured for all the tests performed did not exceed the limits for General Population/Uncontrolled Exposure (W/kg) Partial Body of 1.6 W/kg. Level defined in Supplement C (Edition 01-01) to OET Bulletin 65 (97-01).

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Released for CCS By:	Tested By:
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1 EQUIPMENT UNDER TEST (EUT) DESCRIPTION

PDA Phone (CDMA Transceiver with WLAN and Bluetooth)	
Normal operation:	Held to ear, worn on body and hand-held
Duty cycle of Transmitter:	12.5% for GSM only 25% for GSM+(E)GPRS 100% for WiFi (802.11bg) 100% for Bluetooth
Power supply:	**Rechargeable Li-ion Battery -** Manufactured by: Celxpert Energy Co., Ltd. model number: WIZA16, rating: 3.7Vdc, 1250mA/h (Only one type of battery to be used in the EUT)
Body worn Accessory:	Holster with belt clip (Pouch) - New Tech, P/N: HTC-125B-1 Headset - Merry, P/N: EMC147-012-01

2 FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

LAB CODE:200065-0

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://www.ccsemc.com.

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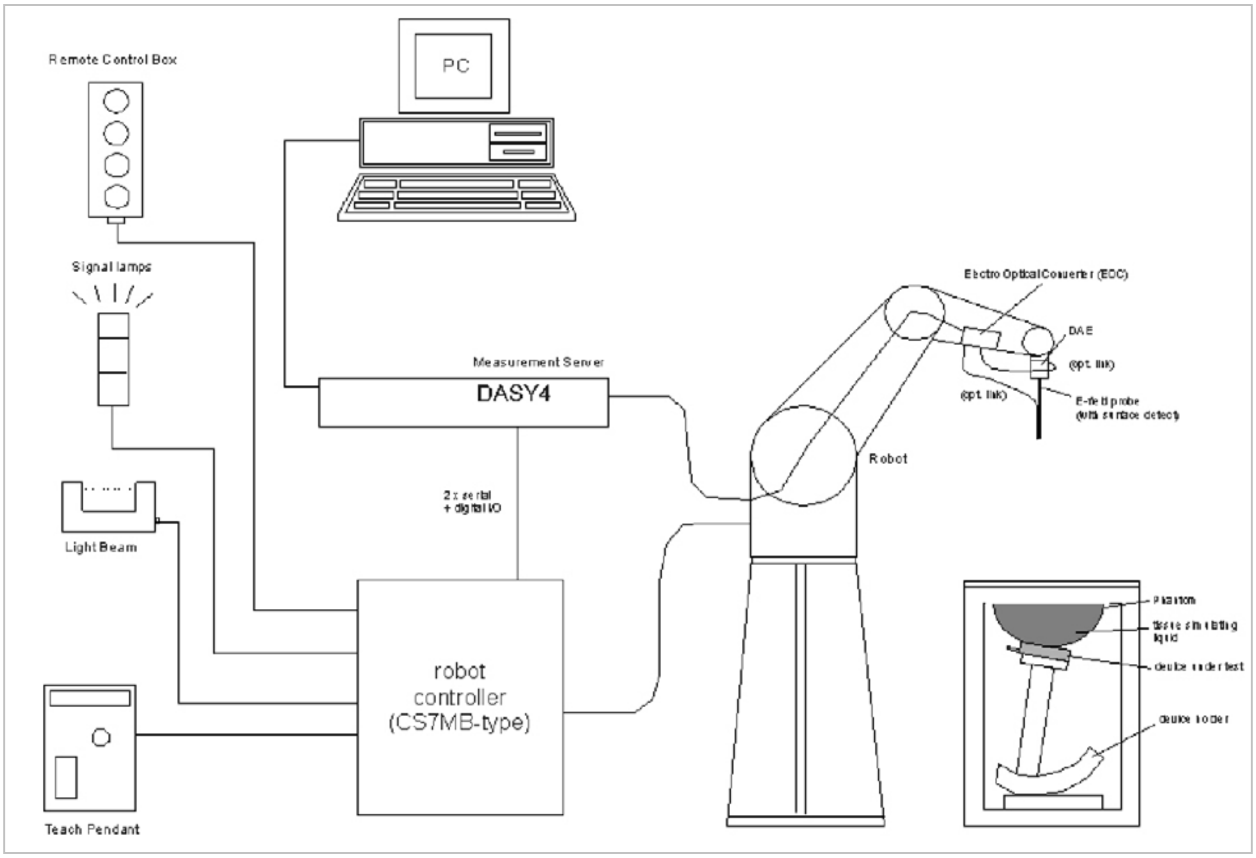
3 SYSTEM DESCRIPTION



The DASY4 system for performing compliance tests consists of the following items:

- A standard high precision 6-axis robot (Stäubli RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows 2000 or Windows XP.
- DASY4 software.
- Remote controls with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom enabling testing left-hand and right-hand usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- Validation dipole kits allowing to validate the proper functioning of the system.

4 SYSTEM COMPONENT

4.1 DASY4 MEASUREMENT SERVER

The DASY4 measurement server is based on a PC/104 CPU board with a 166MHz low-power Pentium, 32MB chip disk and 64MB RAM. The necessary circuits for communication with either the DAE3 electronic box as well as the 16-bit AD-converter system for optical detection and digital I/O interface are contained on the DASY4 I/O-board, which is directly connected to the PC/104 bus of the CPU board.

The measurement server performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation. The PC-operating system cannot interfere with these time critical processes. All connections are supervised by a watchdog, and disconnection of any of the cables to the measurement server will automatically disarm the robot and disable all program-controlled robot movements. Furthermore, the measurement server is equipped with two expansion slots which are reserved for future applications. Please note that the expansion slots do not have a standardized pinout and therefore only the expansion cards provided by SPEAG can be inserted. Expansion cards from any other supplier could seriously damage the measurement server. Calibration: No calibration required.

4.2 DATA ACQUISITION ELECTRONICS (DAE)

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. Transmission to the measurement server 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. The input impedance of the DAE3 box is 200MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

4.3 EX3DV3 ISOTROPIC E-FIELD PROBE FOR DOSIMETRIC MEASUREMENTS

Construction: Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)

Frequency: 10 MHz to > 6 GHz; Linearity: ± 0.2 dB (30 MHz to 3 GHz)

Directivity: ± 0.3 dB in HSL (rotation around probe axis);
± 0.5 dB in tissue material (rotation normal to probe axis)

Dynamic Range: 10 μW/g to > 100 mW/g; Linearity: ± 0.2 dB (noise: typically < 1 μW/g)

Dimensions: Overall length: 330 mm (Tip: 20 mm)
Tip diameter: 2.5 mm (Body: 12 mm)
Typical distance from probe tip to dipole centers: 1 mm

Application: High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.

4.4 LIGHT BEAM UNIT

The light beam switch allows automatic "tooling" of the probe. During the process, the actual position of the probe tip with respect to the robot arm is measured, as well as the probe length and the horizontal probe offset. The software then corrects all movements, so that the robot coordinates are valid for the probe tip. The repeatability of this process is better than 0.1 mm. If a position has been taught with an aligned probe, the same position will be reached with another aligned probe within 0.1 mm, even if the other probe has different dimensions. During probe rotations, the probe tip will keep its actual position.

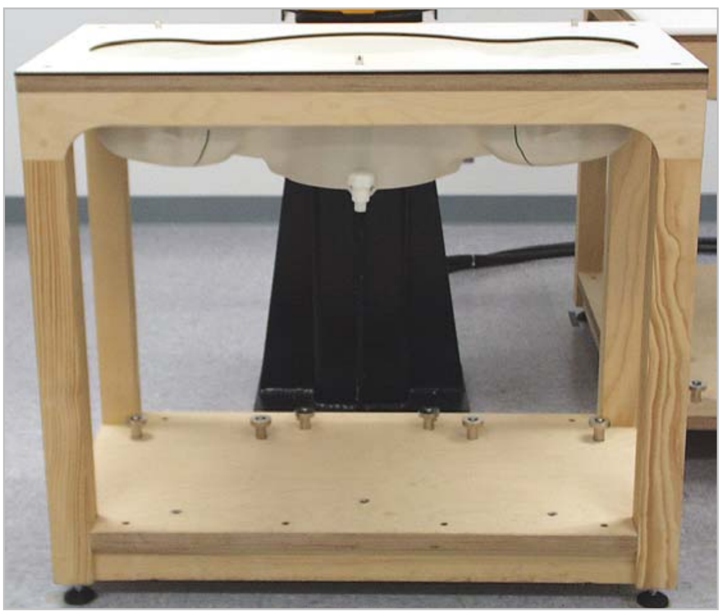
4.5 SAM PHANTOM (V4.0)

Construction: The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528-200X, CENELEC 50361 and IEC 62209. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points with the robot.

Shell Thickness: 2 ±0.2 mm

Filling Volume: Approx. 25 liters

Dimensions: Height: 810mm; Length: 1000mm; Width: 500mm



4.6 DEVICE HOLDER FOR SAM TWIN PHANTOM

Construction: In combination with the Twin SAM Phantom V4.0 or Twin SAM, the Mounting Device (made from POM) enables the rotation of the mounted transmitter in spherical coordinates, whereby the rotation point is the ear opening. The devices can be easily and accurately positioned according to IEC, IEEE, CENELEC, FCC or other specifications. The device holder can be locked at different phantom locations (left head, right head, flat phantom).

4.7 SYSTEM VALIDATION KITS

Construction: Symmetrical dipole with l/4 balun Enables measurement of feedpoint impedance with NWA Matched for use near flat phantoms filled with brain simulating solutions Includes distance holder and tripod adaptor.

Frequency: 450, 900, 1800, 2450, 5800 MHz

Return loss: > 20 dB at specified validation position

Power capability: > 100 W (f < 1GHz); > 40 W (f > 1GHz)

Dimensions: 450V2: dipole length: 270 mm; overall height: 330 mm
D900V2: dipole length: 149 mm; overall height: 330 mm
D1800V2: dipole length: 72 mm; overall height: 300 mm
D835V2: dipole length: 161; overall height: 330
D1900V2: dipole length: 68; overall height: 300
D2450V2: dipole length: 51.5 mm; overall height: 300 mm D5GHzV2: dipole length: 25.5 mm; overall height: 290 mm

4.8 COMPOSITION OF INGREDIENTS FOR TISSUE SIMULATING LIQUID

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

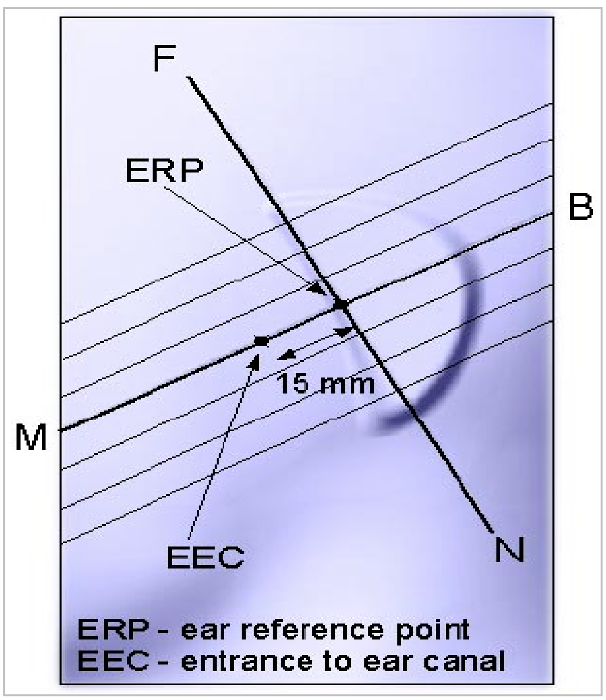
Ingredients (% by weight)	Frequency (MHz) 450		835		915		1900		2450	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	38.56	51.16	41.45	52.4	41.05	56.0	54.9	40.4	62.7	73.2
Salt (NaCl)	3.95	1.49	1.45	1.4	1.35	0.76	0.18	0.5	0.5	0.04
Sugar	56.32	46.78	56.0	45.0	56.5	41.76	0.0	58.0	0.0	0.0
HEC	0.98	0.52	1.0	1.0	1.0	1.21	0.0	1.0	0.0	0.0
Bactericide	0.19	0.05	0.1	0.1	0.1	0.27	0.0	0.1	0.0	0.0
Triton X-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0
DGBE	0.0	0.0	0.0	0.0	0.0	0.0	44.92	0.0	0.0	26.7
Dielectric Constant	43.42	58.0	42.54	56.1	42.0	56.8	39.9	54.0	39.8	52.5
Conductivity (S/m)	0.85	0.83	0.91	0.95	1.0	1.07	1.42	1.45	1.88	1.78

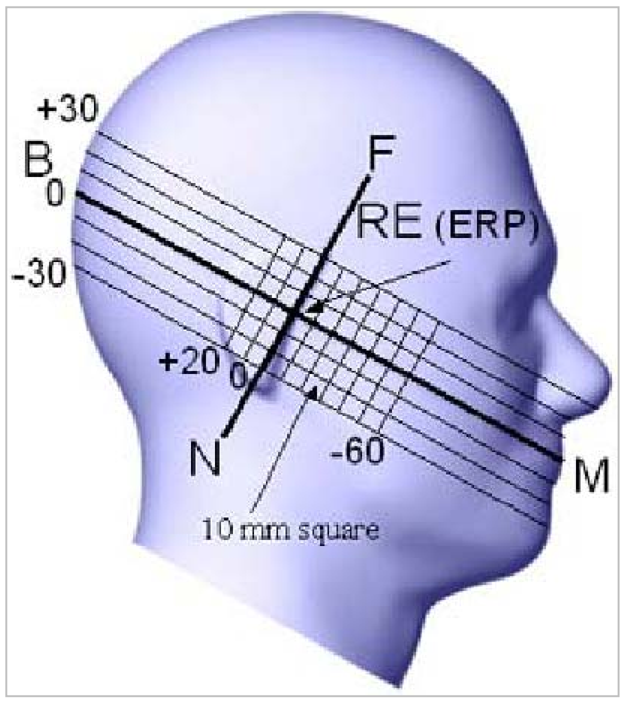
Salt: 99+% Pure Sodium Chloride Sugar: 98+% Pure Sucrose
Water: De-ionized, 16 MΩ+ resistivity HEC: Hydroxyethyl Cellulose
DGBE: 99+% Di(ethylene glycol) butyl ether, [2-(2-butoxyethoxy)ethanol]
Triton X-100 (ultra pure): Polyethylene glycol mono [4-(1,1, 3, 3-tetramethylbutyl)phenyl]ether

5 TEST POSITIONS FOR DEVICES OPERATING NEXT TO A PERSON'S EAR

This category includes most wireless handsets with fixed, retractable or internal antennas located toward the top half of the device, with or without a foldout, sliding or similar keypad cover. The handset should have its earpiece located within the upper ¼ of the device, either along the centerline or off-centered, as perceived by its users. This type of handset should be positioned in a normal operating position with the "test device reference point" located along the "vertical centerline" on the front of the device aligned to the "ear reference point". The "test device reference point" should be located at the same level as the center of the earpiece region. The "vertical centerline" should bisect the front surface of the handset at its top and bottom edges. A "ear reference point" is located on the outer surface of the head phantom on each ear spacer. It is located 1.5 cm above the center of the ear canal entrance in the "phantom reference plane" defined by the three lines joining the center of each "ear reference point" (left and right) and the tip of the mouth.

A handset should be initially positioned with the earpiece region pressed against the ear spacer of a head phantom. For the SCC-34/SC-2 head phantom, the device should be positioned parallel to the "N-F" line defined along the base of the ear spacer that contains the "ear reference point". For interim head phantoms, the device should be positioned parallel to the cheek for maximum RF energy coupling. The "test device reference point" is aligned to the "ear reference point" on the head phantom and the "vertical centerline" is aligned to the "phantom reference plane". This is called the "initial ear position". While maintaining these three alignments, the body of the handset is gradually adjusted to each of the following positions for evaluating SAR:





5.1 CHEEK/TOUCH POSITION

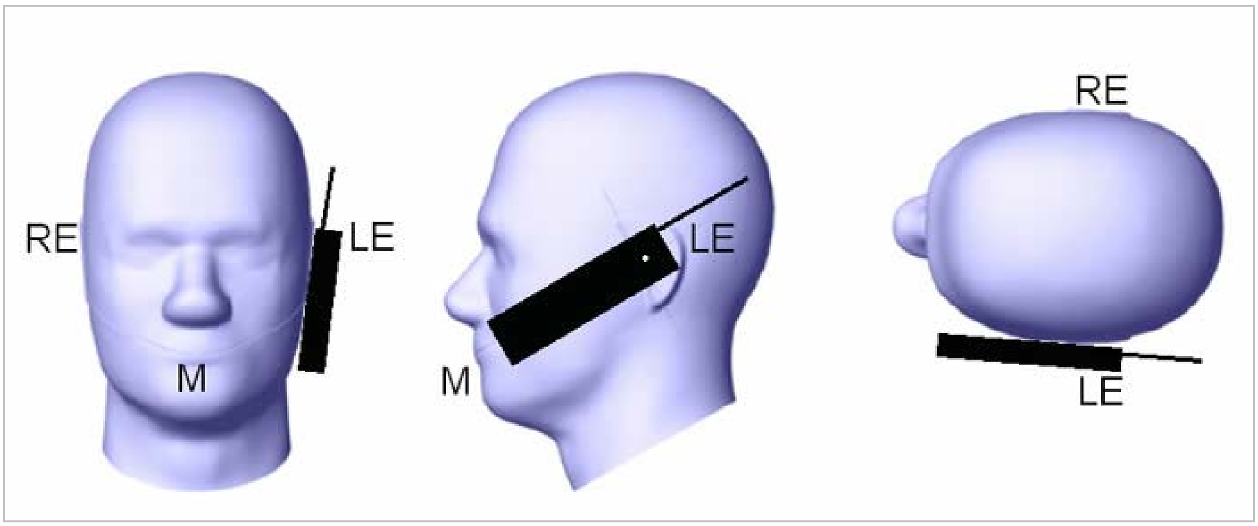
The device is brought toward the mouth of the head phantom by pivoting against the “ear reference point” or along the “N-F” line for the SCC-34/SC-2 head phantom.

This test position is established:

i. When any point on the display, keypad or mouthpiece portions of the handset is in contact with the phantom.
ii. (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.

For existing head phantoms – when the handset loses contact with the phantom at the pivoting point, rotation should continue until the device touches the cheek of the phantom or breaks its last contact from the ear spacer.

Cheek / Touch Position



5.2 EAR/TILT POSITION

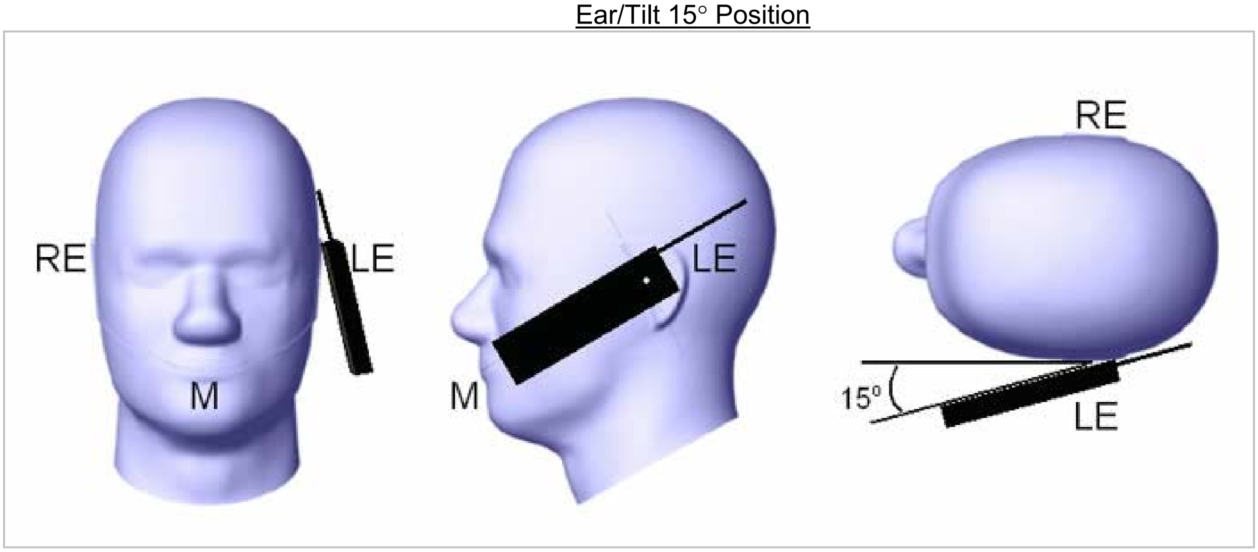
With the handset aligned in the "Cheek/Touch Position":

i. If the earpiece of the handset is not in full contact with the phantom's ear spacer (in the "Cheek/Touch position") and the peak SAR location for the "Cheek/Touch" position is located at the ear spacer region or corresponds to the earpiece region of the handset, the device should be returned to the "initial ear position" by rotating it away from the mouth until the earpiece is in full contact with the ear spacer.

ii. (otherwise) The handset should be moved (translated) away from the cheek perpendicular to the line passes through both "ear reference points" (note: one of these ear reference points may not physically exist on a split head model) for approximate 2-3 cm. While it is in this position, the device handset is tilted away from the mouth with respect to the "test device reference point" until the inside angle between the vertical centerline on the front surface of the phone and the horizontal line passing through the ear reference point is by 15°. After the tilt, it is then moved (translated) back toward the head perpendicular to the line passes through both "ear reference points" until the device touches the phantom or the ear spacer. If the antenna touches the head first, the positioning process should be repeated with a tilt angle less than 15° so that the device and its antenna would touch the phantom simultaneously. This test position may require a device holder or positioner to achieve the translation and tilting with acceptable positioning repeatability.

If a device is also designed to transmit with its keypad cover closed for operating in the head position, such positions should also be considered in the SAR evaluation. The device should be tested on the left and right side of the head phantom in the "Cheek/Touch" and "Ear/Tilt" positions. When applicable, each configuration should be tested with the antenna in its fully extended and fully retracted positions. These test configurations should be tested at the high, middle and low frequency channels of each operating mode; for example, AMPS, CDMA, and TDMA. If the SAR measured at the middle channel for each test configuration (left, right, Cheek/Touch, Tile/Ear, extended and retracted) is at least 3.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s). If the transmission band of the test device is less than 10 MHz, testing at the high and low frequency channels is optional.

Ear/Tilt 15° Position



6 TEST POSITIONS FOR BODY-WORN AND OTHER SIMILAR CONFIGURATIONS

☒ With the belt-clips or holsters

Body-worn operating configurations should be tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in normal use configurations. Devices with a headset output should be tested with a headset connected to the device. For purpose of determining test requirements, accessories may be divided into two categories: those that do not contain metallic components and those that do.

☐ When multiple accessories

When multiple accessories that do not contain metallic components are supplied with the device, the device may be tested with only the accessory that dictates the closest spacing to the body. When multiple accessories that contain metallic components are supplied with the device, the device must be tested with each accessory that contains a unique metallic component. If multiple accessories share an identical metallic component (e.g., the same metallic belt-clip used with different holsters with no other metallic components), only the accessory that dictates the closest spacing to the body must be tested.

☐ Without the belt-clips or holsters

Body-worn accessories may not always be supplied or available as options for some devices that are intended to be authorized for body-worn use. A separation distance of 1.5 cm between the back of the device and a flat phantom is recommended for testing body-worn SAR compliance under such circumstances. Other separation distances may be used, but they should not exceed 2.5 cm. In these cases, the device may use body-worn accessories that provide a separation distance greater than that tested for the device provided however that the accessory contains no metallic components.

☐ Transmitter that is designed to operate in front of a person’s face (face-held)

Transmitters that are designed to operate in front of a person’s face, in push-to-talk configurations, should be tested for SAR compliance with the front of the device positioned at 2.5 cm from a flat phantom. Frontal face-phantoms are typically not recommended because of the potential of higher E-field probe boundary-effects errors in the non-smooth regions of these face phantoms, such as the nose, lips and eyes etc. For devices that are carried next to the body, such as shoulder, waist or chest-worn transmitters, SAR compliance should be tested with the accessories, including headsets and microphones, attached to the device and positioned against a flat phantom in normal use configurations.

☐ With neck-strap or lanyard

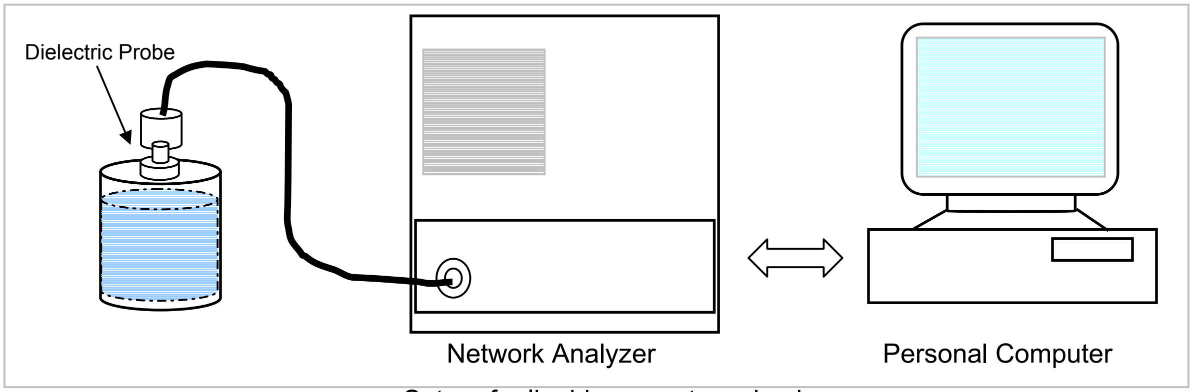
SAR data is requested for cell phones designed to be used with a headset while worn next to the body using a neck-strap or lanyard; device should be tested with front and back sides in contact with a flat phantom

☐ Lap-held

SAR is tested for a lap-held position with the bottom of the computer in direct contact against a flat phantom.

7 SIMULATING LIQUID PARAMETERS CHECK

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine of the dielectric parameters are within the tolerances of the specified target values. The relative permittivity and conductivity of the tissue material should be within ± 5% of the values given in the table below.



Set-up for liquid parameters check

Reference Values of Tissue Dielectric Parameters for Head and Body Phantom

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in IEEE Standard 1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations and extrapolated according to the head parameters specified in IEEE Standard 1528.

Target Frequency (MHz)	**Head**		**Body**	
	ε_r	σ (S/m)	ε_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 – 2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5800	35.3	5.27	48.2	6.00

(ε_r = relative permittivity, σ = conductivity and ρ = 1000 kg/m^3)

7.1 SIMULATING LIQUID PARAMETER CHECK RESULT

Simulating Liquid Parameter Check Result @ Head 835 MHz

Room Ambient Temperature = 24.0°C; Relative humidity = 40% Measured by: Sunny Shih

Simulating Liquid			Parameters		Target	Measured	Deviation (%)	Limit (%)
f (MHz)	Temp. (°C)	Depth (cm)						
835	23	15	e'	Relative Permittivity (e"):	41.5	41.6539	0.37	± 5
			20.0644	Conductivity (σ):	0.90	0.9320	3.56	± 5

Liquid Check
Ambient temperature: 24.0 deg. C, Liquid temperature: 23.0 deg. C
June 01, 2005 04:21 PM

Frequency	e'	e"
750000000.	42.7052	20.4240
755000000.	42.6439	20.3915
760000000.	42.5650	20.3754
765000000.	42.5434	20.3561
770000000.	42.4691	20.3057
775000000.	42.3755	20.3061
780000000.	42.3120	20.2876
785000000.	42.2627	20.2768
790000000.	42.2089	20.2453
795000000.	42.1485	20.2270
800000000.	42.0762	20.2014
805000000.	42.0179	20.1833
810000000.	41.9528	20.1565
815000000.	41.9108	20.1509
820000000.	41.8527	20.1229
825000000.	41.7851	20.0767
830000000.	41.7092	20.0547
835000000.	41.6539	20.0644
840000000.	41.6067	20.0246
845000000.	41.5631	19.9946
850000000.	41.4816	19.9758
855000000.	41.4110	19.9544
860000000.	41.3631	19.9372
865000000.	41.3092	19.8604
870000000.	41.2280	19.8638
875000000.	41.1358	19.8606
880000000.	41.1211	19.8756
885000000.	41.0694	19.8307
890000000.	40.9777	19.8182
895000000.	40.9607	19.7841
900000000.	40.9090	19.7655

The conductivity (σ) can be given as:

$$\sigma = \omega\varepsilon_0 e'' = 2\pi f \varepsilon_0 e''$$

where $f = \text{target } f * 10^6$

$\varepsilon_0 = 8.854 * 10^{-12}$

Simulating Liquid Parameter Check Result @ Head 835 MHz

Room Ambient Temperature = 24.0°C; Relative humidity = 40% Measured by: Sunny Shih

Simulating Liquid			Parameters		Target	Measured	Deviation (%)	Limit (%)
f (MHz)	Temp. (°C)	Depth (cm)						
835	23	15	e'	Relative Permittivity (e"):	41.5	42.1735	1.62	± 5
			20.3310	Conductivity (σ):	0.90	0.9444	4.94	± 5

Liquid Check
Ambient temperature: 24.0 deg. C, Liquid temperature: 23.0 deg. C
June 02, 2005 11:20 AM

Frequency	e'	e''
750000000.	43.2668	20.6715
755000000.	43.1996	20.6260
760000000.	43.1308	20.5702
765000000.	43.0552	20.5284
770000000.	42.9858	20.4629
775000000.	42.8951	20.4829
780000000.	42.8413	20.4259
785000000.	42.7658	20.4089
790000000.	42.6961	20.3685
795000000.	42.6509	20.3331
800000000.	42.5843	20.3369
805000000.	42.5420	20.3451
810000000.	42.4922	20.3227
815000000.	42.4481	20.3370
820000000.	42.3843	20.3351
825000000.	42.3075	20.3211
830000000.	42.2136	20.3176
835000000.	42.1735	20.3310
840000000.	42.1225	20.3212
845000000.	42.0460	20.2558
850000000.	41.9596	20.2255
855000000.	41.9087	20.2063
860000000.	41.8476	20.1491
865000000.	41.7764	20.0543
870000000.	41.7092	20.0414
875000000.	41.6590	20.0137
880000000.	41.6190	19.9834
885000000.	41.5676	19.9466
890000000.	41.5078	19.9129
895000000.	41.5031	19.8932
900000000.	41.4584	19.9055

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2 \pi f \varepsilon_0 e''$$

where $f = \text{target } f * 10^6$

$\varepsilon_0 = 8.854 * 10^{-12}$

Simulating Liquid Parameter Check Result @ Head 835 MHz

Room Ambient Temperature = 24.0°C; Relative humidity = 42% Measured by: Sunny Shih

Simulating Liquid			Parameters		Target	Measured	Deviation (%)	Limit (%)
f (MHz)	Temp. (°C)	Depth (cm)						
835	23	15	e'	Relative Permittivity (e"):	41.5	41.4790	-0.05	± 5
			20.0815	Conductivity (σ):	0.90	0.9328	3.65	± 5

Liquid Check
Ambient temperature: 24.0 deg. C, Liquid temperature: 23.0 deg. C
June 03, 2005 10:13 AM

Frequency	e'	e"
750000000.	42.5669	20.4250
755000000.	42.5414	20.3950
760000000.	42.4493	20.3256
765000000.	42.4042	20.3017
770000000.	42.3123	20.2678
775000000.	42.2406	20.2630
780000000.	42.1799	20.2109
785000000.	42.1050	20.1854
790000000.	42.0416	20.1574
795000000.	42.0053	20.1445
800000000.	41.9207	20.1121
805000000.	41.8742	20.1352
810000000.	41.8236	20.0997
815000000.	41.7712	20.1137
820000000.	41.7130	20.1024
825000000.	41.6403	20.0741
830000000.	41.5477	20.0465
835000000.	41.4790	20.0815
840000000.	41.4453	20.0488
845000000.	41.3901	20.0120
850000000.	41.2972	19.9863
855000000.	41.2206	19.9774
860000000.	41.1778	19.9385
865000000.	41.1250	19.8619
870000000.	41.0432	19.8251
875000000.	40.9774	19.8046
880000000.	40.9552	19.7922
885000000.	40.8884	19.7626
890000000.	40.8437	19.7371
895000000.	40.8245	19.6944
900000000.	40.7984	19.6939

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2 \pi f \varepsilon_0 e''$$

where $f = \text{target } f * 10^6$

$\varepsilon_0 = 8.854 * 10^{-12}$

Simulating Liquid Parameter Check Result @ Muscle 835 MHz

Room Ambient Temperature = 24.0 °C; Relative humidity = 42% Measured by: Sunny Shih

Simulating Liquid			Parameters		Target	Measured	Deviation (%)	Limit (%)
f (MHz)	Temp. (°C)	Depth (cm)						
835	23	15	e'	Relative Permittivity (e"):	55.2	56.2932	1.98	± 5
			21.3763	Conductivity (σ):	0.97	0.9930	2.37	± 5

Liquid Check
Ambient temperature: 24.0 deg. C, Liquid temperature: 23.0 deg. C
June 03, 2005 02:14 PM

Frequency	e'	e''
750000000.	57.1118	21.8390
755000000.	57.0780	21.7891
760000000.	57.0239	21.7466
765000000.	56.9753	21.7502
770000000.	56.9445	21.7001
775000000.	56.8765	21.6754
780000000.	56.8476	21.6254
785000000.	56.7924	21.5968
790000000.	56.7560	21.5850
795000000.	56.6992	21.5460
800000000.	56.6244	21.5486
805000000.	56.5912	21.5359
810000000.	56.5492	21.4811
815000000.	56.5042	21.4618
820000000.	56.4517	21.4343
825000000.	56.4039	21.4166
830000000.	56.3497	21.3790
835000000.	56.2932	21.3763
840000000.	56.2460	21.3368
845000000.	56.2131	21.3032
850000000.	56.1677	21.2637
855000000.	56.1306	21.2432
860000000.	56.0776	21.2073
865000000.	56.0443	21.1640
870000000.	55.9986	21.1692
875000000.	55.9262	21.1313
880000000.	55.9140	21.1341
885000000.	55.8767	21.1254
890000000.	55.8073	21.0873
895000000.	55.7992	21.0672
900000000.	55.7616	21.0379
905000000.	55.7304	21.0220

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2\,\pi f \varepsilon_0 e''$$

where $f = \text{target } f * 10^6$

$\varepsilon_0 = 8.854 * 10^{-12}$

Simulating Liquid Parameter Check Result @ Head 835 MHz

Room Ambient Temperature = 24.0°C; Relative humidity = 40% Measured by: Sunny Shih

Simulating Liquid			Parameters		Target	Measured	Deviation (%)	Limit (%)
f (MHz)	Temp. (°C)	Depth (cm)						
835	23	15	e'	Relative Permittivity (e"):	41.5	41.5625	0.15	± 5
			20.1534	Conductivity (σ):	0.90	0.9362	4.02	± 5

Liquid Check
Ambient temperature: 24.0 deg. C, Liquid temperature: 23.0 deg. C
June 04, 2005 02:25 PM

Frequency	e'	e''
750000000.	42.6486	20.4732
755000000.	42.5713	20.4217
760000000.	42.5008	20.3921
765000000.	42.4657	20.3197
770000000.	42.3757	20.2512
775000000.	42.2931	20.2492
780000000.	42.2217	20.1998
785000000.	42.1334	20.1668
790000000.	42.0829	20.1464
795000000.	42.0566	20.1308
800000000.	41.9772	20.1187
805000000.	41.9323	20.1085
810000000.	41.8896	20.1034
815000000.	41.8346	20.1286
820000000.	41.7829	20.1422
825000000.	41.7162	20.1171
830000000.	41.6413	20.1161
835000000.	41.5625	20.1534
840000000.	41.5311	20.1299
845000000.	41.4771	20.0608
850000000.	41.3645	20.0402
855000000.	41.2821	20.0117
860000000.	41.2650	19.9549
865000000.	41.1751	19.8578
870000000.	41.0958	19.8304
875000000.	41.0243	19.7911
880000000.	41.0004	19.7386
885000000.	40.9665	19.7197
890000000.	40.9040	19.6693
895000000.	40.9083	19.6398
900000000.	40.8666	19.6389
995000000.	39.7841	19.3477

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2 \pi f \varepsilon_0 e''$$

where $f = \text{target } f * 10^6$

$\varepsilon_0 = 8.854 * 10^{-12}$

Simulating Liquid Parameter Check Result @ Muscle 835 MHz

Room Ambient Temperature = 24.0 °C; Relative humidity = 40% Measured by: Sunny Shih

Simulating Liquid			Parameters		Target	Measured	Deviation (%)	Limit (%)
f (MHz)	Temp. (°C)	Depth (cm)						
835	23	15	e'	Relative Permittivity (e"):	55.2	55.9156	1.30	± 5
			21.3197	Conductivity (σ):	0.97	0.9903	2.10	± 5

Liquid Check
Ambient temperature: 24.0 deg. C, Liquid temperature: 23.0 deg. C
June 04, 2005 03:34 PM

Frequency	e'	e"
750000000.	56.7357	21.7282
755000000.	56.6937	21.7191
760000000.	56.6522	21.6740
765000000.	56.6155	21.6395
770000000.	56.5445	21.6056
775000000.	56.4935	21.6238
780000000.	56.4563	21.5785
785000000.	56.4059	21.5266
790000000.	56.3473	21.5130
795000000.	56.3102	21.4918
800000000.	56.2474	21.4916
805000000.	56.2088	21.4598
810000000.	56.1386	21.4171
815000000.	56.1049	21.4238
820000000.	56.0667	21.3700
825000000.	55.9938	21.3410
830000000.	55.9179	21.3303
835000000.	55.9156	21.3197
840000000.	55.8725	21.2582
845000000.	55.8162	21.2463
850000000.	55.7669	21.2210
855000000.	55.7375	21.1883
860000000.	55.6958	21.1497
865000000.	55.6607	21.0980
870000000.	55.5943	21.1022
875000000.	55.5440	21.0894
880000000.	55.5242	21.0968
885000000.	55.4703	21.0963
890000000.	55.4156	21.0645
895000000.	55.3829	21.0453
900000000.	55.3436	21.0078

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2\pi f \varepsilon_0 e''$$

where $f = \text{target } f * 10^6$
$\varepsilon_0 = 8.854 * 10^{-12}$

Simulating Liquid Dielectric Parameters Check Result @ Head 1900 MHz

Room Ambient Temperature = 24°C; Relative humidity = 36% Measured by: James Lee

Simulating Liquid			Parameters		Target	Measured	Deviation (%)	Limit (%)
f (MHz)	Temp. (°C)	Depth (cm)						
1900	23	15	ε"	Relative Permittivity (ϵ_r):	40.0	40.9103	2.28	± 5
			13.6359	Conductivity (σ):	1.40	1.4413	2.95	± 5

Liquid Check
Ambient temperature: 24.0 deg. C, Liquid temperature: 23.0 deg. C
June 05, 2005 04:38 PM

Frequency	e'	e"
1710000000.	41.7134	13.1445
1720000000.	41.6815	13.1767
1730000000.	41.6260	13.2043
1740000000.	41.5808	13.2257
1750000000.	41.5356	13.2599
1760000000.	41.4779	13.3018
1770000000.	41.4340	13.3384
1780000000.	41.3896	13.3567
1790000000.	41.3378	13.3860
1800000000.	41.3081	13.4232
1810000000.	41.2661	13.4342
1820000000.	41.2269	13.4620
1830000000.	41.1728	13.4503
1840000000.	41.1299	13.4778
1850000000.	41.0821	13.5148
1860000000.	41.0397	13.5484
1870000000.	41.0084	13.5595
1880000000.	40.9722	13.5801
1890000000.	40.9384	13.6114
1900000000.	40.9103	13.6359
1910000000.	40.8615	13.6410

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2 \pi f \varepsilon_0 e''$$

where $f = target\ f * 10^6$

$\varepsilon_0 = 8.854 * 10^{-12}$

Simulating Liquid Dielectric Parameters Check Result @ Head 1900 MHz

Room Ambient Temperature = 24°C; Relative humidity = 34% Measured by: James Lee

Simulating Liquid			Parameters		Target	Measured	Deviation (%)	Limit (%)
f (MHz)	Temp. (°C)	Depth (cm)						
1900	23	15	є"	Relative Permittivity (ϵ_r):	40.0	41.2361	3.09	± 5
			13.5733	Conductivity (σ):	1.40	1.4347	2.48	± 5

Liquid Check
Ambient temperature: 24.0 deg. C, Liquid temperature: 23.0 deg. C
June 06, 2005 10:04 AM

Frequency	e'	e"
1710000000.	41.9908	13.1154
1720000000.	41.9651	13.1488
1730000000.	41.9132	13.1888
1740000000.	41.8672	13.1999
1750000000.	41.8191	13.2409
1760000000.	41.7850	13.2418
1770000000.	41.7491	13.2627
1780000000.	41.7019	13.2784
1790000000.	41.6400	13.3130
1800000000.	41.6025	13.3445
1810000000.	41.5581	13.3776
1820000000.	41.4887	13.4175
1830000000.	41.4532	13.4358
1840000000.	41.3847	13.4726
1850000000.	41.3605	13.4807
1860000000.	41.3499	13.4891
1870000000.	41.3528	13.4978
1880000000.	41.3287	13.5334
1890000000.	41.2759	13.5515
1900000000.	41.2361	13.5733
1910000000.	41.1880	13.5766

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2 \pi f \varepsilon_0 e''$$

where $f = target\ f * 10^6$

$\varepsilon_0 = 8.854 * 10^{-12}$

Simulating Liquid Dielectric Parameters Check Result @ Muscle 1900 MHz

Room Ambient Temperature = 22°C; Relative humidity = 34% Measured by: James Lee

Simulating Liquid			Parameters		Target	Measured	Deviation (%)	Limit (%)
f (MHz)	Temp. (°C)	Depth (cm)						
1900	23	15	ε"	Relative Permittivity (ϵ_r):	53.3	53.7872	0.91	± 5
			14.6749	Conductivity (σ):	1.52	1.55113	2.05	± 5

Liquid Check
Ambient temperature: 22.0 deg. C, Liquid temperature: 21.0 deg. C
June 06, 2005 09:30 PM

Frequency	e'	e"
1710000000.	54.4147	14.1927
1720000000.	54.3949	14.2206
1730000000.	54.3435	14.2527
1740000000.	54.3220	14.2822
1750000000.	54.2922	14.3039
1760000000.	54.2552	14.3321
1770000000.	54.2227	14.3715
1780000000.	54.1734	14.3849
1790000000.	54.1305	14.4116
1800000000.	54.0926	14.4418
1810000000.	54.0462	14.4724
1820000000.	53.9855	14.5013
1830000000.	53.9466	14.5149
1840000000.	53.9043	14.5432
1850000000.	53.8862	14.5794
1860000000.	53.8681	14.5973
1870000000.	53.8471	14.6180
1880000000.	53.8317	14.6227
1890000000.	53.7994	14.6470
1900000000.	53.7872	14.6749
1910000000.	53.7402	14.6951

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 \, e'' = 2 \pi f \varepsilon_0 \, e''$$

where f = target $f * 10^6$

$\varepsilon_0 = 8.854 * 10^{-12}$

Simulating Liquid Dielectric Parameters Check Result @ Head 1900 MHz

Room Ambient Temperature = 22°C; Relative humidity = 34% Measured by: James Lee

Simulating Liquid			Parameters		Target	Measured	Deviation (%)	Limit (%)
f (MHz)	Temp. (°C)	Depth (cm)						
1900	21	15	ε"	Relative Permittivity (ϵ_r):	40.0	40.4662	1.17	± 5
			13.4851	Conductivity (σ):	1.40	1.4254	1.81	± 5

Liquid Check
Ambient temperature: 24.0 deg. C, Liquid temperature: 23.0 deg. C
June 07, 2005 07:56 PM

Frequency	e'	e"
1710000000.	41.2649	13.0135
1720000000.	41.2490	13.0196
1730000000.	41.2120	13.0509
1740000000.	41.1832	13.0678
1750000000.	41.1364	13.0989
1760000000.	41.0826	13.1468
1770000000.	41.0108	13.1779
1780000000.	40.9484	13.2066
1790000000.	40.8872	13.2349
1800000000.	40.8305	13.2729
1810000000.	40.8033	13.3017
1820000000.	40.7532	13.3020
1830000000.	40.7299	13.3040
1840000000.	40.7067	13.3334
1850000000.	40.6829	13.3692
1860000000.	40.6409	13.3985
1870000000.	40.5986	13.4251
1880000000.	40.5593	13.4498
1890000000.	40.5106	13.4627
1900000000.	40.4662	13.4851
1910000000.	40.4250	13.4966

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2 \pi f \varepsilon_0 e''$$

where $f = target\ f * 10^6$

$\varepsilon_0 = 8.854 * 10^{-12}$

Simulating Liquid Dielectric Parameters Check Result @ Muscle 1900 MHz

Room Ambient Temperature = 22°C; Relative humidity = 34% Measured by: James Lee

Simulating Liquid			Parameters		Target	Measured	Deviation (%)	Limit (%)
f (MHz)	Temp. (°C)	Depth (cm)						
1900	21	15	ε"	Relative Permittivity (ϵ_r):	53.3	53.0406	-0.49	± 5
			14.6218	Conductivity (σ):	1.52	1.54552	1.68	± 5

Liquid Check
Ambient temperature: 22.0 deg. C, Liquid temperature: 21.0 deg. C
June 07, 2005 09:30 PM

Frequency	e'	e"
1710000000.	53.7435	14.1094
1720000000.	53.7338	14.1182
1730000000.	53.6947	14.1515
1740000000.	53.6764	14.1674
1750000000.	53.6220	14.2213
1760000000.	53.5643	14.2857
1770000000.	53.5022	14.3248
1780000000.	53.4426	14.3512
1790000000.	53.3996	14.3859
1800000000.	53.3619	14.4200
1810000000.	53.3336	14.4205
1820000000.	53.2893	14.4134
1830000000.	53.2945	14.4105
1840000000.	53.2771	14.4423
1850000000.	53.2475	14.5071
1860000000.	53.1987	14.5563
1870000000.	53.1343	14.5654
1880000000.	53.0937	14.5826
1890000000.	53.0681	14.5903
1900000000.	53.0406	14.6218
1910000000.	53.0124	14.6543

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2 \pi f \varepsilon_0 e''$$

where $f = \text{target } f * 10^6$

$\varepsilon_0 = 8.854 * 10^{-12}$

Simulating Liquid Parameter Check Result @ Head 2450 MHz Date: 06/08/05

Ambient Temperature = 24°C; Relative humidity = 43% Measured by: James Lee

Simulating Liquid			Parameters		Target	Measured	Deviation (%)	Limit (%)
f (MHz)	Temp. (°C)	Depth (cm)						
2450	23	15	є"	Relative Permittivity (ϵ_r):	39.2	39.2310	0.08	± 5
			13.7468	Conductivity (σ):	1.80	1.874	4.09	± 5

Liquid Check
Ambient temperature: 24.0 deg. C, Liquid temperature: 23.0 deg. C
June 09, 2005 12:10 AM

Frequency	e'	e"
2400000000.	39.4378	13.5949
2410000000.	39.3910	13.6271
2420000000.	39.3660	13.6607
2430000000.	39.3082	13.6943
2440000000.	39.2849	13.7242
2450000000.	39.2310	13.7468
2460000000.	39.2046	13.7743
2470000000.	39.1425	13.8047
2480000000.	39.1175	13.8315
2490000000.	39.0713	13.8685
2500000000.	39.0223	13.9139

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2 \pi f \varepsilon_0 e''$$

where f = target $f * 10^6$

$\varepsilon_0 = 8.854 * 10^{-12}$

Simulating Liquid Dielectric Parameter Check Result @ Muscle 2450 MHz

Room Ambient Temperature =24°C; Relative humidity = 45% Measured by: Sunny Shih

Simulating Liquid			Parameters		Target	Measured	Deviation (%)	Limit (%)
f (MHz)	Temp. (°C)	Depth (cm)						
2450	23	15	e"	Relative Permittivity (e'):	52.7	51.7005	-1.90	± 5
			13.8239	Conductivity (σ):	1.95	1.88415	-3.38	± 5

Liquid Check
Ambient temperature: 24.0 deg. C, Liquid temperature: 23.0 deg. C
June 09, 2005 11:41 AM

Frequency	e'	e"
2400000000.	51.8899	13.6517
2410000000.	51.8740	13.6558
2420000000.	51.8654	13.6882
2430000000.	51.8001	13.7482
2440000000.	51.7464	13.7719
2450000000.	51.7005	13.8239
2460000000.	51.6794	13.8561
2470000000.	51.6656	13.9509
2480000000.	51.6273	14.0253
2490000000.	51.5500	14.0799
2500000000.	51.5234	14.0882

The conductivity (σ) can be given as:

$$\sigma = \omega \varepsilon_0 e'' = 2 \pi f \varepsilon_0 e''$$

where $f = \text{target } f * 10^6$

$\varepsilon_0 = 8.854 * 10^{-12}$

8 SYSTEM PERFORMANCE CHECK

The system performance check is performed prior to any usage of the system in order to guarantee reproducible results. The system performance check verifies that the system operates within its specifications of ±10%.

System Performance Check Measurement Conditions

- The measurements were performed in the flat section of the SAM twin phantom filled with Head simulating liquid of the following parameters.
- The DASY4 system with an Isotropic E-Field Probe EX3DV3-SN: 3552 was used for the measurements.
- The dipole was mounted on the small tripod so that the dipole feed point was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10 mm (above 1 GHz) and f 15 mm (below 1 GHz) from dipole center to the simulating liquid surface.
- The coarse grid with a grid spacing of 15 mm was aligned with the dipole.
- Special 5 x 5 x 7 fine cube was chosen for cube integration(dx=dy=7.5mm; dz=5mm).
- Distance between probe sensors and phantom surface was set to 2.5 (below 3 G) mm.
- The dipole input power (forward power) was 250 mW±3%.
- The results are normalized to 1 W input power.

Reference SAR Values

IEEE Standard 1528 Recommended Reference Value

Frequency (MHz)	1 g SAR	10 g SAR	Local SAR at surface (Above feed point)	Local SAR at surface (y=2cm offset from feed point)
300	3.0	2.0	4.4	2.1
450	4.9	3.3	7.2	3.2
835	9.5	6.2	14.1	4.9
900	10.8	6.9	16.4	5.4
1450	29.0	16.0	50.2	6.5
1800	38.1	19.8	69.5	6.8
1900	39.7	20.5	72.1	6.6
2450	52.4	24.0	104.2	7.7
3000	63.8	25.7	140.2	9.5

8.1 SYSTEM PERFORMANCE CHECK RESULT FOR 835 MHZ

@ System Validation Dipole: D835V2 SN:4d002

Date: June 1, 2005

Ambient Temperature = 24°C; Relative humidity = 40% Measured by: Sunny Shih

Head Simulating Liquid			Mrasured		$Target_{1g}$	Deviation[%]	Limit [%]
f (MHz)	Temp. [°C]	Depth [cm]	1g	Normalized to 1 W			
835	23	15	2.42	9.68	9.5	1.89	± 10

Date: June 2, 2005

Ambient Temperature = 24°C; Relative humidity = 40% Measured by: Sunny Shih

Head Simulating Liquid			Mrasured		$Target_{1g}$	Deviation[%]	Limit [%]
f (MHz)	Temp. [°C]	Depth [cm]	1g	Normalized to 1 W			
835	23	15	2.49	9.96	9.5	4.84	± 10

Date: June 3, 2005

Ambient Temperature = 24°C; Relative humidity = 42% Measured by: Sunny Shih

Head Simulating Liquid			Mrasured		$Target_{1g}$	Deviation[%]	Limit [%]
f (MHz)	Temp. [°C]	Depth [cm]	1g	Normalized to 1 W			
835	23	15	2.54	10.16	9.5	6.95	± 10

Date: June 4, 2005

Ambient Temperature = 24°C; Relative humidity = 40% Measured by: Sunny Shih

Head Simulating Liquid			Mrasured		$Target_{1g}$	Deviation[%]	Limit [%]
f (MHz)	Temp. [°C]	Depth [cm]	1g	Normalized to 1 W			
835	23	15	2.47	9.88	9.5	4.00	± 10

8.2 SYSTEM PERFORMANCE CHECK RESULT FOR 1900 MHZ

@ System Validation Dipole: D1900V2 SN:5d043

Date: June 5, 2005

Ambient Temperature = 24°C; Relative humidity = 36% Measured by: Sunny Shih

Head Simulating Liquid			Mrasured		$Target_{1g}$	Deviation[%]	Limit [%]
f (MHz)	Temp. [°C]	Depth [cm]	1g	Normalized to 1 W			
1900	23	15	10	40	39.7	0.76	± 10

Date: June 6, 2005

Ambient Temperature = 24°C; Relative humidity = 35% Measured by: Sunny Shih

Head Simulating Liquid			Mrasured		$Target_{1g}$	Deviation[%]	Limit [%]
f (MHz)	Temp. [°C]	Depth [cm]	1g	Normalized to 1 W			
1900	23	10	9.67	38.68	39.7	-2.57	± 10

Date: June 7, 2005

Ambient Temperature = 24°C; Relative humidity = 34% Measured by: James Lee

Head Simulating Liquid			Mrasured		Target_1g	Deviation[%]	Limit [%]
f (MHz)	Temp. [°C]	Depth [cm]	1g	Normalized to 1 W			
1900	23	15	9.48	37.92	39.7	-4.48	± 10

8.3 SYSTEM PERFORMANCE CHECK RESULT FOR 2450 MHZ

@ System Validation Dipole: D2450V2 SN: 748

Date: June 9, 2005

Ambient Temperature = 24°C, Relative humidity = 45% Measured by: James Lee

Body Simulating Liquid			Mrasured		Target_1g	Deviation[%]	Limit [%]
f (MHz)	Temp. [°C]	Depth [cm]	1g	Normalized to 1 W			
2450	23	15	12.6	50.4	52.4	-3.82	± 10

9 SAR MEASUREMENT PROCEDURE

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 flat section of the flat phantom is measured at a distance of 2.5 mm from the inner surface of the shell. The area covers the entire dimension of the EUT and the horizontal grid spacing is 15 mm x 15 mm. Based on this data, the area of the maximum absorption is determined by Spline interpolation. The first Area Scan covers the entire dimension of the EUT to ensure that the hotspot was correctly identified.

c) Around this point, a volume of X=Y=Z=30 mm is assessed by measuring 5 x 5 x 7 mm 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 1.2 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.3 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 to evaluate the actual power drift.

DASY4 SAR MEASUREMENT PROCEDURE

Step 1: Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The Minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. The minimum distance of probe sensors to surface is 2.1 mm. This distance cannot be smaller than the Distance of sensor calibration points to probe tip as defined in the probe properties (for example, 1.2 mm for an EX3DV3 probe type).

Step 2: Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY4 software can find the maximum locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE Standard 1528, EN 50361 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan). If only one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of Zoom Scans has to be increased accordingly.

Step 3: Zoom Scan

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The Zoom Scan measures 5 x 5 x 7 points within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the Zoom Scan evaluates the averaged SAR for 1 g and 10 g and displays these values next to the job's label.

Step 4: Power drift measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

Step 5: Z-Scan

The Z Scan measures points along a vertical straight line. The line runs along the Z-axis of a one-dimensional grid. In order to get a reasonable extrapolation, the extrapolated distance should not be larger than the step size in Z-direction.

10 PROCEDURES USED TO ESTABLISH TEST SIGNAL

The following settings were used to configure the Radio Communication Tester, R&S model CMU 200.

GSM850
Network Support: GSM only
Main Service: Circuit Switched
Power Setting: PCL: 5 (33 dBm) - for GSM850
GPRS/EGPRS mode
Service Selection: Test Mode A
Main Service: Packet Data
Network Support: GSM+GPRS (Power setting: 33 dBm)
Network Support: GSM+EGPRS (Power setting: 27 dBm)
Slot configurations: 2 slots (3 Dn/2 up/ 5 Sum)

Conducted power measured result

Ch. #	f (MHz)	Average Conducted Power (dBm)		
		GSM	GPRS	EGPRS
128	824.2	32.1	32.0	26.6
190	836.6	32.0	31.9	26.5
251	848.8	32.0	31.9	26.5

GSM1900
Network Support: GSM only
Main Service: Circuit Switched
Power Setting: PCL: 0 (30 dBm)
GPRS/EGPRS mode
Service Selection: Test Mode A
Main Service: Packet Data
Network Support: GSM+GPRS (Power setting: 30 dBm)
Network Support: GSM+EGPRS (Power setting: 26 dBm)
Slot configurations: 2 slots (3 Dn/2 up/ 5 Sum)

Conducted power measured result

Ch. #	f (MHz)	Average Conducted Power (dBm)		
		GSM	GPRS	EGPRS
512	1850.2	29.2	29.2	26.3
661	1880.0	29.0	29.0	26.2
810	1909.8	28.9	28.9	26.1

11 THE HIGHEST SAR VALUES FOR GSM850

The highest reported SAR values are: **Part 22H** - Head: 0.233 W/kg; Body-worn: 1.192 W/kg

The highest reported **collocated** SAR values are Head: 0.278 W/kg and body: 1.272 W/kg.

Test Position	Model	Modulation	Test Mode	Ch. #	f (MHz)	SAR_1g (mW/g)	
						Measured	Summation
		GSM850	GSM only	128	824.20	0.212	
Right Head - Touch	WIZA100	WiFi	802.11b	6	2437	0.039	0.251
		Bluetooth		78	2480	0.000	
		GSM850	GSM only	128	824.20	0.233	
Right Head - Touch	WIZA110	WiFi	802.11b	6	2437	0.044	0.277
		Bluetooth		78	2480	0.000	
		GSM850	GSM only	251	848.80	0.203	
Left Head - Touch	WIZA200	WiFi	802.11b	6	2437	0.075	0.278
		Bluetooth		78	2480	0.000	
		GSM850	GPRS	128	824.20	1.086	
Body	WIZA100	WiFi	802.11b	6	2437	0.046	1.132
		Bluetooth		78	2480	0.000	
		GSM850	GPRS	128	824.20	1.050	
Body	WIZA110	WiFi	802.11b	6	2437	0.062	1.112
		Bluetooth		78	2480	0.000	
		GSM850	GPRS	128	824.20	1.192	
Body	WIZA200	WiFi	802.11b	6	2437	0.080	1.272
		Bluetooth		78	2480	0.000	

12 THE HIGHEST SAR VALUES FOR GSM1900

The highest reported SAR values are: **Part 24E** - Head: 0.184 W/kg; Body-worn: 0.793 W/kg

The highest reported **collocated** SAR values are Head: 0.263 W/kg and body: 0.854 W/kg.

Test Position	Model	Modulation	Test Mode	Ch. #	f (MHz)	SAR_1g (mW/g)	
						Measured	Summation
		GSM1900	GSM only	512	1850.20	0.180	
Left Head - Tilt	WIZA100	WiFi	802.11b	6	2437	0.038	0.218
		Bluetooth		78	2480	0.000	
		GSM1900	GSM only	512	1850.20	0.167	
Left Head - Tilt	WIZA110	WiFi	802.11b	6	2437	0.041	0.208
		Bluetooth		78	2480	0.000	
		GSM1900	GSM only	512	1850.20	0.184	
Right Head - Tilt	WIZA200	WiFi	802.11b	6	2437	0.079	0.263
		Bluetooth		78	2480	0.000	
		GSM1900	GPRS	810	1909.80	0.793	
Body	WIZA100	WiFi	802.11b	6	2437	0.046	0.839
		Bluetooth		78	2480	0.000	
		GSM1900	GPRS	512	1850.20	0.591	
Body	WIZA110	WiFi	802.11b	6	2437	0.062	0.653
		Bluetooth		78	2480	0.000	
		GSM1900	GPRS	512	1850.20	0.774	
Body	WIZA200	WiFi	802.11b	6	2437	0.080	0.854
		Bluetooth		78	2480	0.000	

13 THE HIGHEST SAR VALUES FOR WLAN (WIFI)

The highest reported SAR values are: **Part 15** - WLAN head: 0.079 W/kg and body: 0.08 W/kg.

Test Position	Model	Mode	Channel	f (MHz)	SAR_1g (mW/g)
Right Head - Tilt	WIZA100	802.11b	6	2437	0.043
Right Head - Tilt	WIZA110	802.11b	6	2437	0.048
Right Head - Tilt	WIZA200	802.11b	6	2437	0.079
Body	WIZA100	802.11b	6	2437	0.046
Body	WIZA110	802.11b	6	2437	0.062
Body	WIZA200	802.11b	6	2437	0.080

14 SAR MEASUREMENT RESULT (GSM835)

14.1 Left Hand Side for model WIZA100

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

GSM850 (duty cycle:12.5%)						
Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	128	824.2				
Touch	190	836.6	0.196	-0.058	0.199	1.6
Touch	151	848.8				
Tilt	128	824.2				
Tilt	190	836.6	0.178	-0.044	0.180	1.6
Tilt	151	848.8				

Notes:

1) The exact method of extrapolation is *measured SAR x 10 ^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

14.1.1 Left Hand Side for model WIZA100 with keypad open

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

GSM850 (duty cycle:12.5%)						
			Measured	Power Drift	Extrapolated	
Test Position	Channel	f (MHz)	1g (mW/g)	(dBm)	1g (mW/g)	Limit (mW/g)
Touch	128	824.2				
Touch	190	836.6	0.107	-0.086	0.109	1.6
Touch	151	848.8				
Tilt	128	824.2				
Tilt	190	836.6	0.095	-0.050	0.096	1.6
Tilt	151	848.8				

Notes:

1) The exact method of extrapolation is *measured SAR x 10 ^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

14.1.2 Right Hand Side for model WIZA100

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

GSM850 (duty cycle: 12.5%)						
Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	128	824.2	0.212	0.000	0.212	1.6
Touch	190	836.6	0.204	-0.038	0.206	1.6
Touch	251	848.8	0.197	-0.021	0.198	1.6
Tilt	128	824.2				
Tilt	190	836.6	0.153	-0.184	0.160	1.6
Tilt	151	848.8				

Notes:

1) The exact method of extrapolation is *measured SAR x 10^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

14.1.3 Right Hand Side for model WIZA100 with keypad open

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

GSM850 (duty cycle: 12.5%)						
Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	128	824.2				
Touch	190	836.6	0.122	-0.175	0.127	1.6
Touch	251	848.8				
Tilt	128	824.2				
Tilt	190	836.6	0.135	-0.055	0.137	1.6
Tilt	151	848.8				

Notes:

1) The exact method of extrapolation is *measured SAR x 10^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

14.1.4 Body Worn 1 – for model WIZA100

Note: Setup photos on this page have been extracted under separate document.

GSM850 GSM only (duty cycle: 12.5%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	128	824.2				
18_w/Holster	190	836.6	0.240	-0.101	0.246	1.6
18_w/Holster	151	848.8				
GSM850 GSM+GPRS (duty cycle: 25%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	128	824.2				
18_w/Holster	190	836.6	0.443	-0.141	0.458	1.6
18_w/Holster	151	848.8				
GSM850 GSM+EGPRS (duty cycle: 25%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	128	824.2				
18_w/Holster	190	836.6	0.129	-0.213	0.135	1.6
18_w/Holster	151	848.8				

Notes:
1) The exact method of extrapolation is *measured SAR x 10^(-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The earphone wire connected to the EUT to simulate hand-free operation in a body worn configuration.
4) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
5) Please see attachment for the detailed measurement data and plots.

14.1.5 Body Worn 2 – for model WIZA100

Note: Setup photos on this page have been extracted under separate document.

GSM850 GSM only (duty cycle: 12.5%)

Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	128	824.2				
18_w/Holster	190	836.6	0.546	-0.093	0.558	1.6
18_w/Holster	151	848.8				

GSM850 GSM+GPRS (duty cycle: 25%)

Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	128	824.2	1.04	-0.189	1.086	1.6
18_w/Holster	190	836.6	1.03	-0.187	1.075	1.6
18_w/Holster	151	848.8	0.98	-0.022	0.985	1.6

GSM850 GSM+EGPRS (duty cycle: 25%)

Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	128	824.2				
18_w/Holster	190	836.6	0.162	-0.014	0.163	1.6
18_w/Holster	151	848.8				

Notes:

1) The exact method of extrapolation is *measured SAR x 10^(-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The earphone wire connected to the EUT to simulate hand-free operation in a body worn configuration.
4) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
5) Please see attachment for the detailed measurement data and plots.

14.2 Left Hand Side for WIZA110

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

GSM850 (duty cycle:12.5%)						
Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	128	824.2				
Touch	190	836.6	0.207	-0.195	0.217	1.6
Touch	151	848.8				
Tilt	128	824.2				
Tilt	190	836.6	0.203	-0.011	0.204	1.6
Tilt	151	848.8				

Notes:

1) The exact method of extrapolation is *measured SAR x 10 ^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

14.2.1 Left Hand Side for model WIZA110 with keypad open

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

GSM850 (duty cycle:12.5%)						
Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	128	824.2				
Touch	190	836.6	0.113	-0.078	0.115	1.6
Touch	251	848.8				
Tilt	128	824.2				
Tilt	190	836.6	0.099	-0.042	0.100	1.6
Tilt	151	848.8				

Notes:

1) The exact method of extrapolation is *measured SAR x 10^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

14.2.2 Right Hand Side for model WIZA110

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

GSM850 (duty cycle: 12.5%)

Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	128	824.2	0.232	-0.014	0.233	1.6
Touch	190	836.6	0.231	-0.017	0.232	1.6
Touch	251	848.8	0.228	-0.005	0.228	1.6
Tilt	128	824.2				
Tilt	190	836.6	0.167	-0.018	0.168	1.6
Tilt	151	848.8				

Notes:

1) The exact method of extrapolation is *measured SAR x 10^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

14.2.3 Right Hand Side for model WIZA110 with keypad open

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

GSM850 (duty cycle: 12.5%)

Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	128	824.2				
Touch	190	836.6	0.140	-0.044	0.141	1.6
Touch	251	848.8				
Tilt	128	824.2				
Tilt	190	836.6	0.142	-0.019	0.143	1.6
Tilt	151	848.8				

Notes:

1) The exact method of extrapolation is *measured SAR x 10^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

14.2.4 Body Worn 1 – for model WIZA110

Note: Setup photos on this page have been extracted under separate document.

GSM850 GSM only (duty cycle: 12.5%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	128	824.2				
18_w/Holster	190	836.6	0.228	-0.083	0.232	1.6
18_w/Holster	151	848.8				
GSM850 GSM+GPRS (duty cycle: 25%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	128	824.2				
18_w/Holster	190	836.6	0.437	-0.109	0.448	1.6
18_w/Holster	151	848.8				
GSM850 GSM+EGPRS (duty cycle: 25%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	128	824.2				
18_w/Holster	190	836.6	0.076	-0.108	0.078	1.6
18_w/Holster	151	848.8				

Notes:

1) The exact method of extrapolation is *measured SAR x 10^(-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The earphone wire connected to the EUT to simulate hand-free operation in a body worn configuration.
4) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
5) Please see attachment for the detailed measurement data and plots.

14.2.5 Body Worn 2 – for model WIZA110

Note: Setup photos on this page have been extracted under separate document.

GSM850 GSM only (duty cycle: 12.5%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	128	824.2				
18_w/Holster	190	836.6	0.535	-0.064	0.543	1.6
18_w/Holster	151	848.8				
GSM850 GSM+GPRS (duty cycle: 25%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	128	824.2	1.02	-0.125	1.050	1.6
18_w/Holster	190	836.6	0.976	0.000	0.976	1.6
18_w/Holster	151	848.8	0.937	-0.026	0.943	1.6
GSM850 GSM+EGPRS (duty cycle: 25%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	128	824.2				
18_w/Holster	190	836.6	0.142	-0.014	0.142	1.6
18_w/Holster	151	848.8				

Notes:

1) The exact method of extrapolation is *measured SAR x 10^(-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The earphone wire connected to the EUT to simulate hand-free operation in a body worn configuration.
4) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
5) Please see attachment for the detailed measurement data and plots.

14.3 Left Hand Side for model WIZA200

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

GSM850 (duty cycle:12.5%)						
Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	128	824.2	0.195	-0.014	0.196	1.6
Touch	190	836.6	0.189	-0.116	0.194	1.6
Touch	251	848.8	0.203	-0.010	0.203	1.6
Tilt	128	824.2				
Tilt	190	836.6	0.186	-0.010	0.186	1.6
Tilt	151	848.8				

Notes:
1) The exact method of extrapolation is *measured SAR x 10 ^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

14.3.1 Left Hand Side for model WIZA200 with keypad open

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

GSM850 (duty cycle: 12.5%)

Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	128	824.2				
Touch	190	836.6	0.111	-0.055	0.112	1.6
Touch	251	848.8				
Tilt	128	824.2				
Tilt	190	836.6	0.128	-0.085	0.131	1.6
Tilt	151	848.8				

Notes:
1) The exact method of extrapolation is *measured SAR x 10 ^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

14.3.2 Right Hand Side for model WIZA200

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

GSM850 (duty cycle: 12.5%)

Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	128	824.2				
Touch	190	836.6	0.178	0.000	0.178	1.6
Touch	251	848.8				
Tilt	128	824.2				
Tilt	190	836.6	0.164	-0.070	0.167	1.6
Tilt	151	848.8				

Notes:

1) The exact method of extrapolation is *measured SAR x 10^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

14.3.3 Right Hand Side for model WIZA200 with keypad open

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

GSM850 (duty cycle: 12.5%)

Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	128	824.2				
Touch	190	836.6	0.135	-0.158	0.140	1.6
Touch	251	848.8				
Tilt	128	824.2				
Tilt	190	836.6	0.150	0.000	0.150	1.6
Tilt	151	848.8				

Notes:

1) The exact method of extrapolation is *measured SAR x 10^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

14.3.4 Body Worn 1 – for model WIZA200

Note: Setup photos on this page have been extracted under separate document.

GSM850 GSM only (duty cycle: 12.5%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	128	824.2				
18_w/Holster	190	836.6	0.228	-0.127	0.235	1.6
18_w/Holster	151	848.8				
GSM850 GSM+GPRS (duty cycle: 25%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	128	824.2				
18_w/Holster	190	836.6	0.426	-0.204	0.446	1.6
18_w/Holster	151	848.8				
GSM850 GSM+EGPRS (duty cycle: 25%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	128	824.2				
18_w/Holster	190	836.6	0.143	-0.143	0.148	1.6
18_w/Holster	151	848.8				

Notes:

1) The exact method of extrapolation is *measured SAR x 10^(-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The earphone wire connected to the EUT to simulate hand-free operation in a body worn configuration.
4) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
5) Please see attachment for the detailed measurement data and plots.

14.3.5 Body Worn 2 – for model WIZA200

Note: Setup photos on this page have been extracted under separate document.

GSM850 GSM only (duty cycle: 12.5%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	128	824.2				
18_w/Holster	190	836.6	0.611	-0.029	0.615	1.6
18_w/Holster	151	848.8				
GSM850 GSM+GPRS (duty cycle: 25%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	128	824.2	1.14	-0.193	1.192	1.6
18_w/Holster	190	836.6	1.14	-0.037	1.150	1.6
18_w/Holster	151	848.8	1.13	-0.013	1.133	1.6
GSM850 GSM+EGPRS (duty cycle: 25%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	128	824.2				
18_w/Holster	190	836.6	0.253	-0.202	0.265	1.6
18_w/Holster	151	848.8				

Notes:

1) The exact method of extrapolation is *measured SAR x 10^(-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The earphone wire connected to the EUT to simulate hand-free operation in a body worn configuration.
4) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
5) Please see attachment for the detailed measurement data and plots.

15 SAR MEASUREMENT RESULT (GSM1900)

15.1 Left Hand Side for model WIZA100

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

GSM1900 (duty cycle:12.5%)						
			Measured	Power Drift	Extrapolated	
Test Position	Channel	f (MHz)	1g (mW/g)	(dBm)	1g (mW/g)	Limit (mW/g)
Touch	512	1850.20				
Touch	661	1880.00	0.147	-0.161	0.153	1.6
Touch	810	1909.80				
Tilt	512	1850.20	0.180	0.000	0.180	1.6
Tilt	661	1880.00	0.159	-0.087	0.162	1.6
Tilt	810	1909.80	0.164	-0.088	0.167	1.6

Notes:

1) The exact method of extrapolation is *measured SAR x 10 ^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

15.1.1 Left Hand Side for model WIZA100 with keypad open

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

GSM1900 (duty cycle:12.5%)						
			Measured	Power Drift	Extrapolated	
Test Position	Channel	f (MHz)	1g (mW/g)	(dBm)	1g (mW/g)	Limit (mW/g)
Touch	512	1850.20				
Touch	661	1880.00	0.033	-0.125	0.034	1.6
Touch	810	1909.80				
Tilt	512	1850.20				
Tilt	661	1880.00	0.027	0.000	0.027	1.6
Tilt	810	1909.80				

Notes:

1) The exact method of extrapolation is *measured SAR x 10 ^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

15.1.2 Right Hand Side for model WIZA100

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

GSM1900 (duty cycle:12.5%)

Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	512	1850.20				
Touch	661	1880.00	0.098	-0.064	0.099	1.6
Touch	810	1909.80				
Tilt	512	1850.20				
Tilt	661	1880.00	0.158	-0.023	0.159	1.6
Tilt	810	1909.80				

Notes:

1) The exact method of extrapolation is *measured SAR x 10^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

15.1.3 Right Hand Side for model WIZA100 with keypad open

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

GSM1900 (duty cycle:12.5%)

Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	512	1850.20				
Touch	661	1880.00	0.024	-0.091	0.025	1.6
Touch	810	1909.80				
Tilt	512	1850.20				
Tilt	661	1880.00	0.026	-0.161	0.027	1.6
Tilt	810	1909.80				

Notes:

1) The exact method of extrapolation is *measured SAR x 10^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

15.1.4 Body Worn 1 – for model WIZA100

Note: Setup photos on this page have been extracted under separate document.

Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
GSM1900 GSM only (duty cycle: 12.5%)						
18_w/Holster	512	1850.20				
18_w/Holster	661	1880.00	0.067	-0.102	0.069	1.6
18_w/Holster	810	1909.80				
GSM1900 GSM+GPRS (duty cycle: 25%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	512	1850.20				
18_w/Holster	661	1880.00	0.127	-0.047	0.128	1.6
18_w/Holster	810	1909.80				
GSM1900 GSM+EGPRS (duty cycle: 25%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	512	1850.20				
18_w/Holster	661	1880.00	0.024	-0.19	0.025	1.6
18_w/Holster	810	1909.80				

Notes:

1) The exact method of extrapolation is *measured SAR x 10^(-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The earphone wire connected to the EUT to simulate hand-free operation in a body worn configuration.
4) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
5) Please see attachment for the detailed measurement data and plots.

15.1.5 Body Worn 2 – for model WIZA100

Note: Setup photos on this page have been extracted under separate document.

GSM1900 GSM only (duty cycle: 12.5%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	512	1850.20				1.6
18_w/Holster	661	1880.00	0.423	-0.044	0.427	1.6
18_w/Holster	810	1909.80				1.6
GSM1900 GSM+GPRS (duty cycle: 25%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	512	1850.20	0.762	-0.025	0.766	1.6
18_w/Holster	661	1880.00	0.766	-0.082	0.781	1.6
18_w/Holster	810	1909.80	0.788	-0.027	0.793	1.6
GSM1900 GSM+EGPRS (duty cycle: 25%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	512	1850.20				
18_w/Holster	661	1880.00	0.155	-0.037	0.156	1.6
18_w/Holster	810	1909.80				

Notes:
1) The exact method of extrapolation is *measured SAR x 10^(-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The earphone wire connected to the EUT to simulate hand-free operation in a body worn configuration.
4) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
5) Please see attachment for the detailed measurement data and plots.

15.2 Left Hand Side for WIZA110

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

GSM1900 (duty cycle:12.5%)						
Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	512	1850.20				
Touch	661	1880.00	0.130	-0.059	0.132	1.6
Touch	810	1909.80				
Tilt	512	1850.20	0.165	-0.062	0.167	1.6
Tilt	661	1880.00	0.140	-0.010	0.140	1.6
Tilt	810	1909.80	0.125	-0.022	0.126	1.6

Notes:

1) The exact method of extrapolation is *measured SAR x 10 ^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

15.2.1 Left Hand Side for model WIZA110 with keypad open

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

GSM1900 (duty cycle:12.5%)

Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	512	1850.20				
Touch	661	1880.00	0.025	-0.157	0.026	1.6
Touch	810	1909.80				
Tilt	512	1850.20				
Tilt	661	1880.00	0.021	-0.129	0.022	1.6
Tilt	810	1909.80				

Notes:
1) The exact method of extrapolation is *measured SAR x 10^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

15.2.2 Right Hand Side for model WIZA110

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

GSM1900 (duty cycle:12.5%)						
Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	512	1850.20				
Touch	661	1880.00	0.088	0.000	0.088	1.6
Touch	810	1909.80				
Tilt	512	1850.20				
Tilt	661	1880.00	0.129	-0.058	0.131	1.6
Tilt	810	1909.80				

Notes:
1) The exact method of extrapolation is *measured SAR x 10^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

15.2.3 Right Hand Side for model WIZA110 with keypad open

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

GSM1900 (duty cycle:12.5%)						
			Measured	Power Drift	Extrapolated	
Test Position	Channel	f (MHz)	1g (mW/g)	(dBm)	1g (mW/g)	Limit (mW/g)
Touch	512	1850.20				
Touch	661	1880.00	0.019	-0.167	0.020	1.6
Touch	810	1909.80				
Tilt	512	1850.20				
Tilt	661	1880.00	0.021	-0.142	0.022	1.6
Tilt	810	1909.80				

Notes:

1) The exact method of extrapolation is *measured SAR x 10^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

15.2.4 Body Worn 1 – for model WIZA110

Note: Setup photos on this page have been extracted under separate document.

GSM1900 GSM only (duty cycle: 12.5%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	512	1850.20				
18_w/Holster	661	1880.00	0.061	-0.039	0.062	1.6
18_w/Holster	810	1909.80				
GSM1900 GSM+GPRS (duty cycle: 25%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	512	1850.20				
18_w/Holster	661	1880.00	0.118	-0.146	0.122	1.6
18_w/Holster	810	1909.80				
GSM1900 GSM+EGPRS (duty cycle: 25%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	512	1850.20				
18_w/Holster	661	1880.00	0.023	-0.128	0.024	1.6
18_w/Holster	810	1909.80				

Notes:

1) The exact method of extrapolation is *measured SAR x 10^(-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The earphone wire connected to the EUT to simulate hand-free operation in a body worn configuration.
4) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
5) Please see attachment for the detailed measurement data and plots.

15.2.5 Body Worn 2 – for model WIZA110

Note: Setup photos on this page have been extracted under separate document.

Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
GSM1900 GSM only (duty cycle: 12.5%)						
18_w/Holster	512	1850.20				
18_w/Holster	661	1880.00	0.271	-0.050	0.274	1.6
18_w/Holster	810	1909.80				
GSM1900 GSM+GPRS (duty cycle: 25%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	512	1850.20	0.577	-0.101	0.591	1.6
18_w/Holster	661	1880.00	0.507	-0.094	0.518	1.6
18_w/Holster	810	1909.80	0.465	-0.091	0.475	1.6
GSM1900 GSM+EGPRS (duty cycle: 25%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	512	1850.20				
18_w/Holster	661	1880.00	0.110	-0.145	0.114	1.6
18_w/Holster	810	1909.80				

Notes:

1) The exact method of extrapolation is *measured SAR x 10^(-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The earphone wire connected to the EUT to simulate hand-free operation in a body worn configuration.
4) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
5) Please see attachment for the detailed measurement data and plots.

15.3 Left Hand Side for model WIZA200

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

GSM1900 (duty cycle:12.5%)						
Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	512	1850.20				
Touch	661	1880.00	0.149	-0.118	0.153	1.6
Touch	810	1909.80				
Tilt	512	1850.20				
Tilt	661	1880.00	0.160	-0.033	0.161	1.6
Tilt	810	1909.80				

Notes:
1) The exact method of extrapolation is *measured SAR x 10 ^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

15.3.1 Left Hand Side for model WIZA200 with keypad open

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

GSM1900 (duty cycle:12.5%)						
			Measured	Power Drift	Extrapolated	
Test Position	Channel	f (MHz)	1g (mW/g)	(dBm)	1g (mW/g)	Limit (mW/g)
Touch	512	1850.20				
Touch	661	1880.00	0.034	-0.028	0.034	1.6
Touch	810	1909.80				
Tilt	512	1850.20				
Tilt	661	1880.00	0.023	-0.056	0.023	1.6
Tilt	810	1909.80				

Notes:
1) The exact method of extrapolation is *measured SAR x 10 ^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

15.3.2 Right Hand Side for model WIZA200

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

GSM1900 (duty cycle:12.5%)

Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	512	1850.20				
Touch	661	1880.00	0.107	-0.067	0.109	1.6
Touch	810	1909.80				
Tilt	512	1850.20	0.178	-0.149	0.184	
Tilt	661	1880.00	0.162	-0.074	0.165	1.6
Tilt	810	1909.80	0.165	-0.010	0.165	

Notes:

1) The exact method of extrapolation is *measured SAR x 10^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

15.3.3 Right Hand Side for model WIZA200 with keypad open

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

GSM1900 (duty cycle:12.5%)						
Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	512	1850.20				
Touch	661	1880.00	0.021	-0.166	0.022	1.6
Touch	810	1909.80				
Tilt	512	1850.20				
Tilt	661	1880.00	0.026	-0.028	0.026	1.6
Tilt	810	1909.80				

Notes:

1) The exact method of extrapolation is *measured SAR x 10^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

15.3.4 Body Worn 1 – for model WIZA200

Note: Setup photos on this page have been extracted under separate document.

GSM1900 GSM only (duty cycle: 12.5%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	512	1850.20				
18_w/Holster	661	1880.00	0.064	-0.057	0.065	1.6
18_w/Holster	810	1909.80				
GSM1900 GSM+GPRS (duty cycle: 25%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	512	1850.20				
18_w/Holster	661	1880.00	0.124	-0.071	0.126	1.6
18_w/Holster	810	1909.80				
GSM1900 GSM+EGPRS (duty cycle: 25%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	512	1850.20				
18_w/Holster	661	1880.00	0.057	-0.044	0.058	1.6
18_w/Holster	810	1909.80				

Notes:

1) The exact method of extrapolation is *measured SAR x 10^(-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The earphone wire connected to the EUT to simulate hand-free operation in a body worn configuration.
4) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
5) Please see attachment for the detailed measurement data and plots.

15.3.5 Body Worn 2 – for model WIZA200

Note: Setup photos on this page have been extracted under separate document.

GSM1900 GSM only (duty cycle: 12.5%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	512	1850.20				
18_w/Holster	661	1880.00	0.377	-0.047	0.381	1.6
18_w/Holster	810	1909.80				
GSM1900 GSM+GPRS (duty cycle: 25%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	512	1850.20	0.765	-0.053	0.774	1.6
18_w/Holster	661	1880.00	0.692	-0.111	0.710	1.6
18_w/Holster	810	1909.80	0.666	-0.126	0.686	1.6
GSM1900 GSM+EGPRS (duty cycle: 25%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	512	1850.20				
18_w/Holster	661	1880.00	0.284	-0.121	0.292	1.6
18_w/Holster	810	1909.80				

Notes:

1) The exact method of extrapolation is *measured SAR x 10^(-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The earphone wire connected to the EUT to simulate hand-free operation in a body worn configuration.
4) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
5) Please see attachment for the detailed measurement data and plots.

16 SAR MEASUREMENT RESULT (WIFI AND BLUETOOTH)

16.1 Left Hand Side for model WIZA100

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

802.11b (duty cycle: 100%)

Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	1	2412				
Touch	6	2437	0.031	-0.039	0.031	1.6
Touch	11	2462				
Tilt	1	2412				
Tilt	6	2437	0.037	-0.108	0.038	1.6
Tilt	11	2462				

802.11g (duty cycle: 100%)

Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	1	2412				
Touch	6	2437	0.024	-0.150	0.025	1.6
Touch	11	2462				
Tilt	1	2412				
Tilt	6	2437	0.029	-0.110	0.030	1.6
Tilt	11	2462				

Bluetooth

Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	78	2480	0	0	0.000	1.6
Tilt	78	2480	0	0	0.000	1.6

Notes:

1) The exact method of extrapolation is *measured SAR x 10 ^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

16.1.1 Left Hand Side for model WIZA100 with keypad open

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

802.11b (duty cycle: 100%)						
Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	1	2412				
Touch	6	2437	0.020	-0.160	0.021	1.6
Touch	11	2462				
Tilt	1	2412				
Tilt	6	2437	0.020	-0.118	0.021	1.6
Tilt	11	2462				
802.11g (duty cycle: 100%						
Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	1	2412				
Touch	6	2437	0.020	-0.111	0.021	1.6
Touch	11	2462				
Tilt	1	2412				
Tilt	6	2437	0.017	-0.188	0.018	1.6
Tilt	11	2462				
Bluetooth						
Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	78	2480	0	0	0.000	1.6
Tilt	78	2480	0	0	0.000	1.6

Notes:

1) The exact method of extrapolation is *measured SAR x 10 ^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

16.1.2 Right Hand Side for model WIZA100

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

802.11b (duty cycle: 100%)						
Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	1	2412				
Touch	6	2437	0.038	-0.136	0.039	1.6
Touch	11	2462				
Tilt	1	2412				
Tilt	6	2437	0.041	-0.197	0.0429	1.6
Tilt	11	2462				
802.11g (duty cycle: 100%						
Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	1	2412				
Touch	6	2437	0.037	-0.183	0.039	1.6
Touch	11	2462				
Tilt	1	2412				
Tilt	6	2437	0.042	-0.011	0.0421	1.6
Tilt	11	2462				
Bluetooth						
Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	78	2480	0	0	0.000	1.6
Tilt	78	2480	0	0	0.000	1.6

Notes:
1) The exact method of extrapolation is *measured SAR x 10^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

16.1.3 Right Hand Side for model WIZA100 with keypad open

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

802.11b (duty cycle: 100%)

Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	1	2412				
Touch	6	2437	0.031	-0.191	0.032	1.6
Touch	11	2462				
Tilt	1	2412				
Tilt	6	2437	0.039	-0.137	0.040	1.6
Tilt	11	2462				

802.11g (duty cycle: 100%

Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	1	2412				
Touch	6	2437	0.025	-0.165	0.026	1.6
Touch	11	2462				
Tilt	1	2412				
Tilt	6	2437	0.032	-0.063	0.032	1.6
Tilt	11	2462				

Bluetooth

Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	78	2480	0	0	0.000	1.6
Tilt	78	2480	0	0	0.000	1.6

Notes:

1) The exact method of extrapolation is *measured SAR x 10^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

16.1.4 Body Worn 1 – for model WIZA100

Note: Setup photos on this page have been extracted under separate document.

802.11b (duty cycle: 100%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	1	2412				
18_w/Holster	6	2437	0.00736	-0.107	0.008	1.6
18_w/Holster	11	2462				
802.11g (duty cycle: 100%						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	1	2412				
18_w/Holster	6	2437	0.00495	-0.205	0.0052	1.6
18_w/Holster	11	2462				
Bluetooth						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	0	2402				
18_w/Holster	39	2441	0.000	0.000	0.000	1.6
18_w/Holster	78	2480				

Notes:

1) The exact method of extrapolation is *measured SAR x 10^(-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The earphone wire connected to the EUT to simulate hand-free operation in a body worn configuration.
4) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
5) Please see attachment for the detailed measurement data and plots.

16.1.5 Body Worn 2 – for model WIZA100

Note: Setup photos on this page have been extracted under separate document.

802.11b (duty cycle: 100%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	1	2412				
18_w/Holster	6	2437	0.045	-0.095	0.046	1.6
18_w/Holster	11	2462				
802.11g (duty cycle: 100%						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	1	2412				
18_w/Holster	6	2437	0.037	-0.184	0.039	1.6
18_w/Holster	11	2462				
Bluetooth						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	0	2402				
18_w/Holster	39	2441	0.000	0.000	0.000	1.6
18_w/Holster	78	2480				

Notes:

1) The exact method of extrapolation is *measured SAR x 10^(-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The earphone wire connected to the EUT to simulate hand-free operation in a body worn configuration.
4) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
5) Please see attachment for the detailed measurement data and plots.

16.2 Left Hand Side for WIZA110

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

802.11b (duty cycle: 100%)						
Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	1	2412				
Touch	6	2437	0.032	-0.180	0.033	1.6
Touch	11	2462				
Tilt	1	2412				
Tilt	6	2437	0.039	-0.165	0.041	1.6
Tilt	11	2462				
Bluetooth						
Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	78	2480	0	0	0.000	1.6
Tilt	78	2480	0	0	0.000	1.6

Notes:
1) The exact method of extrapolation is *measured SAR x 10 ^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

16.2.1 Right Hand Side for model WIZA110

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

802.11b (duty cycle: 100%)

Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	1	2412				
Touch	6	2437	0.042	-0.182	0.044	1.6
Touch	11	2462				
Tilt	1	2412				
Tilt	6	2437	0.047	-0.122	0.048	1.6
Tilt	11	2462				

Bluetooth

Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	78	2480	0	0	0.000	1.6
Tilt	78	2480	0	0	0.000	1.6

Notes:

1) The exact method of extrapolation is *measured SAR x 10^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

16.2.2 Body Worn 1 – for model WIZA110

Note: Setup photos on this page have been extracted under separate document.

802.11b (duty cycle: 100%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	1	2412				
18_w/Holster	6	2437	0.00904	-0.105	0.009	1.6
18_w/Holster	11	2462				
802.11g (duty cycle: 100%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	1	2412				
18_w/Holster	6	2437	0.00915	-0.203	0.010	1.6
18_w/Holster	11	2462				
Bluetooth						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	0	2402				
18_w/Holster	39	2441	0.000	0.000	0.000	1.6
18_w/Holster	78	2480				

Notes:

1) The exact method of extrapolation is *measured SAR x 10^(-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The earphone wire connected to the EUT to simulate hand-free operation in a body worn configuration.
4) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
5) Please see attachment for the detailed measurement data and plots.

16.2.3 Body Worn 2 – for model WIZA110

Note: Setup photos on this page have been extracted under separate document.

802.11b (duty cycle: 100%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	1	2412				
18_w/Holster	6	2437	0.060	-0.155	0.062	1.6
18_w/Holster	11	2462				
802.11g (duty cycle: 100%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	1	2412				
18_w/Holster	6	2437	0.054	-0.173	0.056	1.6
18_w/Holster	11	2462				
Bluetooth						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	0	2402				
18_w/Holster	39	2441	0.000	0.000	0.000	1.6
18_w/Holster	78	2480				

Notes:

1) The exact method of extrapolation is *measured SAR x 10^(-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The earphone wire connected to the EUT to simulate hand-free operation in a body worn configuration.
4) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
5) Please see attachment for the detailed measurement data and plots.

16.3 Left Hand Side for model WIZA200

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

802.11b (duty cycle: 100%)

Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	1	2412				
Touch	6	2437	0.057	-0.156	0.059	1.6
Touch	11	2462				
Tilt	1	2412				
Tilt	6	2437	0.074	-0.056	0.075	1.6
Tilt	11	2462				

Bluetooth

Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	78	2480	0	0	0.000	1.6
Tilt	78	2480	0	0	0.000	1.6

Notes:

1) The exact method of extrapolation is *measured SAR x 10 ^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

16.3.1 Right Hand Side for model WIZA200

Touch Position	Tilt (15°) Position

Note: Setup photos on this page have been extracted under separate document.

802.11b (duty cycle: 100%)

Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	1	2412				
Touch	6	2437	0.070	-0.149	0.072	1.6
Touch	11	2462				
Tilt	1	2412				
Tilt	6	2437	0.079	-0.019	0.079	1.6
Tilt	11	2462				

Bluetooth

Test Position	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
Touch	78	2480	0	0	0.000	1.6
Tilt	78	2480	0	0	0.000	1.6

Notes:
1) The exact method of extrapolation is *measured SAR x 10^ (-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
4) Please see attachment for the detailed measurement data and plots.

16.3.2 Body Worn 1 – for model WIZA200

Note: Setup photos on this page have been extracted under separate document.

802.11b (duty cycle: 100%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	1	2412				
18_w/Holster	6	2437	0.00931	-0.208	0.010	1.6
18_w/Holster	11	2462				
Bluetooth						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	0	2402				
18_w/Holster	39	2441	0.000	0.000	0.000	1.6
18_w/Holster	78	2480				

Notes:
1) The exact method of extrapolation is *measured SAR x 10^(-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The earphone wire connected to the EUT to simulate hand-free operation in a body worn configuration.
4) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
5) Please see attachment for the detailed measurement data and plots.

16.3.3 Body Worn 2 – for model WIZA200

Note: Setup photos on this page have been extracted under separate document.

802.11b (duty cycle: 100%)						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	1	2412	0.068	-0.202	0.071	1.6
18_w/Holster	6	2437	0.077	-0.161	0.080	1.6
18_w/Holster	11	2462	0.053	-0.126	0.055	1.6
802.11g (duty cycle: 100%						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	1	2412				
18_w/Holster	6	2437	0.051	-0.209	0.054	1.6
18_w/Holster	11	2462				
Bluetooth						
Separation. distance (mm)	Channel	f (MHz)	Measured 1g (mW/g)	Power Drift (dBm)	Extrapolated 1g (mW/g)	Limit (mW/g)
18_w/Holster	0	2402				
18_w/Holster	39	2441	0.000	0.000	0.000	1.6
18_w/Holster	78	2480				

Notes:
1) The exact method of extrapolation is *measured SAR x 10^(-drift/10)*. The SAR reported at the end of the measurement process by the DASY4 measurement system can be scaled up by the measured drift to determine the SAR at the beginning of the measurement process.
2) The SAR measured at the middle channel for this configuration is at least 3 dB lower than SAR limit, testing at low & high channel is optional.
3) The earphone wire connected to the EUT to simulate hand-free operation in a body worn configuration.
4) The battery was fully charged in accordance with manufacture's instructions prior to SAR measurements.
5) Please see attachment for the detailed measurement data and plots.

17 MEASUREMENT UNCERTAINTY

17.1 MEASUREMENT UNCERTAINTY FOR 300 MHZ – 3GHZ

Uncertainty component	Tol. (±%)	Probe Dist.	Div.	Ci (1g)	Ci (10g)	Std. Unc.(±%) Ui (1g)	Std. Unc.(±%) Ui(10g)
Measurement System							
Probe Calibration	4.80	N	1	1	1	4.80	4.80
Axial Isotropy	4.70	R	1.732	0.707	0.707	1.92	1.92
Hemispherical Isotropy	9.60	R	1.732	0.707	0.707	3.92	3.92
Boundary Effects	1.00	R	1.732	1	1	0.58	0.58
Linearity	4.70	R	1.732	1	1	2.71	2.71
System Detection Limits	1.00	R	1.732	1	1	0.58	0.58
Readout Electronics	1.00	N	1	1	1	1.00	1.00
Response Time	0.80	R	1.732	1	1	0.46	0.46
Integration Time	2.60	R	1.732	1	1	1.50	1.50
RF Ambient Conditions - Noise	1.59	R	1.732	1	1	0.92	0.92
RF Ambient Conditions - Reflections	0.00	R	1.732	1	1	0.00	0.00
Probe Positioner Mechnical Tolerance	0.40	R	1.732	1	1	0.23	0.23
Probe Positioning With Respect to Phantom Shell	2.90	R	1.732	1	1	1.67	1.67
Extrapolation, interpolation, and integration algorithms for max. SAR evaluation	3.90	R	1.732	1	1	2.25	2.25
Test sample Related							
Test Sample Positioning	1.10	N	1	1	1	1.10	1.10
Device Holder Uncertainty	3.60	N	1	1	1	3.60	3.60
Power and SAR Drift Measurement	5.00	R	1.732	1	1	2.89	2.89
Phantom and Tissue Parameters							
Phantom Uncertainty	4.00	R	1.732	1	1	2.31	2.31
Liquid Conductivity - Target	5.00	R	1.732	0.64	0.43	1.85	1.24
Liquid Conductivity - Meas.	8.60	N	1	0.64	0.43	5.50	3.70
Liquid Permittivity - Target	5.00	R	1.732	0.6	0.49	1.73	1.41
Liquid Permittivity - Meas.	3.30	N	1	0.6	0.49	1.98	1.62
Combined Standard Uncertainty	RSS					11.44	10.49
Expanded Uncertainty (95% Confidence Interval)	K=2					22.87	20.98

Notesfor table
1. Tol. - tolerance in influence quaitity
2. N - Nomal
3. R - Rectangular
4. Div. - Divisor used to obtain standard uncertainty
5. Ci - is te sensitivity coefficient

17.2 MEASUREMENT UNCERTAINTY 3 GHZ – 6 GHZ

Uncertainty component	Tol. (±%)	Probe Dist.	Div.	Ci (1g)	Ci (10g)	Std. Unc.(±%)	
						Ui (1g)	Ui(10g)
Measurement System							
Probe Calibration	4.80	N	1	1	1	4.80	4.80
Axial Isotropy	4.70	R	1.732	0.707	0.707	1.92	1.92
Hemispherical Isotropy	9.60	R	1.732	0.707	0.707	3.92	3.92
Boundary Effects	1.00	R	1.732	1	1	0.58	0.58
Linearity	4.70	R	1.732	1	1	2.71	2.71
System Detection Limits	1.00	R	1.732	1	1	0.58	0.58
Readout Electronics	1.00	N	1	1	1	1.00	1.00
Response Time	0.80	R	1.732	1	1	0.46	0.46
Integration Time	2.60	R	1.732	1	1	1.50	1.50
RF Ambient Conditions - Noise	3.00	R	1.732	1	1	1.73	1.73
RF Ambient Conditions - Reflections	3.00	R	1.732	1	1	1.73	1.73
Probe Positioner Mechnical Tolerance	0.40	R	1.732	1	1	0.23	0.23
Probe Positioning With Respect to Phantom Shell	2.90	R	1.732	1	1	1.67	1.67
Extrapolation, interpolation, and integration algorithms for max. SAR evaluation	3.90	R	1.732	1	1	2.25	2.25
Test sample Related							
Test Sample Positioning	1.10	N	1	1	1	1.10	1.10
Device Holder Uncertainty	3.60	N	1	1	1	3.60	3.60
Power and SAR Drift Measurement	5.00	R	1.732	1	1	2.89	2.89
Phantom and Tissue Parameters							
Phantom Uncertainty	4.00	R	1.732	1	1	2.31	2.31
Liquid Conductivity - Target	5.00	R	1.732	0.64	0.43	1.85	1.24
Liquid Conductivity - Meas.	8.60	N	1	0.64	0.43	5.50	3.70
Liquid Permittivity - Target	5.00	R	1.732	0.6	0.49	1.73	1.41
Liquid Permittivity - Meas.	3.30	N	1	0.6	0.49	1.98	1.62
Combined Standard Uncertainty	RSS					11.66	10.73
Expanded Uncertainty (95% Confidence Interval)	K=2					23.32	21.46

Notesfor table
1. Tol. - tolerance in influence quaitity
2. N - Nomal
3. R - Rectangular
4. Div. - Divisor used to obtain standard uncertainty
5. Ci - is te sensitivity coefficient

18 EQUIPMENT LIST

Name of Equipment	Manufacturer	Type/Model	Serial Number	Cal. Due date
Robot - Six Axes	Stäubli	RX90BL	N/A	N/A
Robot Remote Control	Stäubli	CS7MB	3403-91535	N/A
DASY4 Measurement Server	SPEAG	SEUMS001BA	1041	N/A
Probe Alignment Unit	SPEAG	LB (V2)	261	N/A
S-Parameter Network Analyzer	Agilent	8753ES-6	US39173569	8/19/05
Electronic Probe kit	Hewlett Packard	85070C	N/A	N/A
E-Field Probe	SPEAG	EX3DV3	3531	7/18/05
E-Field Probe	SPEAG	EX3DV4	3552	3/19/06
Thermometer	ERTCO	639-1	8402	10/13/2005
Thermometer	ERTCO	639-1	8404	10/21/2005
Thermometer	ERTCO	637-1	8661	10/21/2005
SAM Phantom (SAM1)	SPEAG	TP-1185	QD000P40CA	N/A
SAM Phantom (SAM2)	SPEAG	TP-1015	N/A	N/A
Data Acquisition Electronics	SPEAG	DAE3 V1	500	2/7/06
System Validation Dipole	SPEAG	D835V2	4d002	2/11/06
System Validation Dipole	SPEAG	D1900V2	5d043	2/16/06
System Validation Dipole	SPEAG	D2450V2	748	5/14/06
Signal General	R&H	SMP 04	DE34210	6/2/06
Power Meter	Giga-tronics	8651A	8651404	9/16/05
Power Sensor	Giga-tronics	80701A	1834588	9/16/05
Amplifier	Mini-Circuits	ZVE-8G	0360	N/A
Amplifier	Mini-Circuits	ZHL-42W	D072701-5	N/A
Radio Communication Tester	Rohde & Schwarz	CMU 200	838114/032	12/17/06
Simulating Liquid	CCS	H835	N/A	Within 24 hrs of first test
Simulating Liquid	CCS	H1900	N/A	Within 24 hrs of first test
Simulating Liquid	CCS	M835	N/A	Within 24 hrs of first test
Simulating Liquid	CCS	M1900	N/A	Within 24 hrs of first test
Simulating Liquid	CCS	M2450	N/A	Within 24 hrs of first test

19 ATTACHMENTS

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5	Certificate of E-filed Probe EX3DV4 SN 3552	10
6	Certificate of System Validation Dipole D835V2 SN 4d002	6
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END OF REPORT