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Report On

Specific Absorption Rate Testing of the
Sharp Dual-band CDMA (BC0, BC6) & Quad-band GSM (GSM850/GSM900/DCS1800/PCS1900) & Dualband UMTS (FDDI, FDDV) & Tri-band LTE (B1, B11, B26) multi mode cellular phone with Bluetooth, WLAN, SRD (FeliCa) and GPS

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REPORT ON

Specific Absorption Rate Testing of the
Sharp Dual-band CDMA (BC0, BC6) & Quad-band GSM (GSM850/GSM900/DCS1800/PCS1900) & Dualband UMTS (FDDI, FDDV) & Tri-band LTE (B1, B11, B26) multi mode cellular phone with Bluetooth, WLAN, SRD (FeliCa) and GPS

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DATED 14 January 2015

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SECTION 1

REPORT SUMMARY

Specific Absorption Rate Testing of the
Sharp Dual-band CDMA (BC0, BC6) & Quad-band GSM
(GSM850/GSM900/DCS1800/PCS1900) & Dualband
UMTS (FDDI, FDDV) & Tri-band LTE (B1, B11, B26) multi mode cellular phone with Bluetooth,
WLAN, SRD (FeliCa) and GPS

1.1 INTRODUCTION

The information contained in this report is intended to show verification of the Specific Absorption Rate Testing of the Sharp Dual-band CDMA (BC0, BC6) & Quad-band GSM (GSM850/GSM900/DCS1800/PCS1900) & Dualband UMTS (FDDI, FDDV) & Tri-band LTE (B1, B11, B26) multi mode cellular phone with Bluetooth, WLAN, SRD (FeliCa) and GPS to the requirements of KDB 447498 – D01 v05 General RF Exposure Guidance.

Objective	To perform Specific Absorption Rate Testing to determine the Equipment Under Test's (EUT's) compliance with the requirements specified of KDB 447498 – D01 v05 General RF Exposure Guidance, for the series of tests carried out.
Applicant	Sharp Communication Compliance Ltd
Manufacturer	Sharp Corporation
Manufacturing Description	Mobile Handset
Serial/IMEI Number(s)	004401115348399 (SAR Test: GSM850&1900/WCDMA FDDV) 004401115348407(SAR Test: WCDMA 2000) 004401115348431 (SAR Test: WLAN 2.4 Head) 004401115348423 (SAR Test: WLAN 2.4 Body) 004401115346674 (Conducted: GSM850/1900) 004401115346682 (Conducted: WCDMA FDDV) 004401115346666 (Conducted: CDMA 2000) 004401115346641 (Conducted: Bluetooth) 004401115346633 (Conducted: WLAN – 2.4GHz)
Number of Samples Tested	4
Hardware Version	PP1
Software Version	CB172
Battery Cell Manufacturer	Sharp Corporation
Battery Model Number	SHF31UAA
Test Specification/Issue/Date	KDB 447498 – D01 v05 General RF Exposure Guidance
Start of Test	09 December 2014
Finish of Test	18 December 2014
Related Document(s)	FCC 47CFR 2.1093: 2013 KDB 248227 - v01r02 (Rev 1.2) KDB 865664 – D01 v01r03 KDB 865664 – D02 v01r01 KDB 648474 – D04 v01r02 KDB 941225 - D01 v03 KDB 941225 – D06 v02 KDB 941225 - D05 v02r03 IEEE 1528-2013
Name of Engineer(s)	Nigel Grigsby

1.2 BRIEF SUMMARY OF RESULTS

The measurements shown in this report were made in accordance with the procedures specified KDB 447498 – D01 v05r02.

The maximum 1g volume averaged SAR found during this Assessment

Max 1g SAR (W/kg) Body / Hotspot	1.23(Measured)	1.30(Scaled)
Max 1g SAR (W/kg) Head	0.49(Measured)	0.56(Scaled)
The maximum 1g volume averaged 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.		

The maximum 1g volume averaged Stand-alone Reported SAR found during this Assessment for each supported mode, including highest simultaneous transmission results;

Band	Test Configuration	Max Reported Scaled SAR (W/kg)	Highest Simultaneous Transmission Scaled SAR (W/kg)
GSM/GPRS 850	Head	0.45	1.51
	Body/Hotspot	1.30	
PCS/GPRS 1900	Head	0.40	
	Body/Hotspot	0.36	
WCDMA FDD V	Head	0.51	
	Body/Hotspot	1.22	
WCDMA 2000	Head	0.56	
	Body/Hotspot	1.28	
WLAN 2.4GHz	Head	0.11	
	Body/Hotspot	0.25	
The maximum 1g volume averaged SAR level measured for all the tests performed (including simultaneous transmission analysis results) did not exceed the limits for General Population/Uncontrolled Exposure (W/kg) Partial Body of 1.6 W/kg.			

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1.3 TEST RESULTS SUMMARY

1.3.1 System Performance / Validation Check Results

Prior to formal testing being performed a System Check was performed in accordance with KDB 865664 and the results were compared against published data in Standard IEEE 1528-2003. The following results were obtained: -

System performance / Validation results

Date	Dipole Used	Frequency (MHz)	Max 1g SAR (W/kg)*	Percentage Drift on Reference
09/12/2014	835	835	9.93	-2.18%
10/12/2014	835	835	10.10	-0.46%
15/12/2014	835	835	10.43	2.42%
08/12/2014	1900	1900	39.33	-1.95%
12/12/2014	1900	1900	37.12	-2.50%
10/12/2014	2450	2450	52.41	-1.85%
11/12/2014	2450	2450	52.13	-3.30%

*Normalised to a forward power of 1W

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1.3.2 Results Summary Tables

GSM 850MHz Head Specific Absorption Rate (Maximum SAR) 1g Results for the Sharp Dual-band CDMA (BC0, BC6) & Quad-band GSM (GSM850/GSM900/DCS1800/PCS1900) & Dualband UMTS (FDDI, FDDV) & Tri-band LTE (B1, B11, B26) multi mode cellular phone with Bluetooth, WLAN, SRD (FeliCa) and GPS.

Test Position	Channel Number	Frequency (MHz)	Measured Conducted Power (dBm)	Tune Up limit (dBm)	Measured 1g SAR (W/kg)	Scaled 1g SAR (W/kg)	Area scan (Figure number)
Left Cheek	189	836.4	32.06	32.9	0.36	0.44	Figure 6
Left 15°	189	836.4	32.06	32.9	0.12	0.15	Figure 7
Right Cheek	189	836.4	32.06	32.9	0.32	0.39	Figure 8
Right 15°	189	836.4	32.06	32.9	0.09	0.11	Figure 9
Limit for General Population (Uncontrolled Exposure) 1.6 W/kg (1g) KDB 447498 D01 - Testing of other required channels within the operation mode of a frequency band is not required when the reported 1g SAR for mid-band or highest output power channel is: ≤ 0.8W/kg when the transmission band is ≤ 100MHz ≤ 0.6W/kg when the transmission band is between 100MHz and 200MHz ≤ 0.4W/kg when the transmission band is ≥ 200MHz							

GSM 850MHz GPRS Head Specific Absorption Rate (Maximum SAR) 1g Results for the Sharp Dual-band CDMA (BC0, BC6) & Quad-band GSM (GSM850/GSM900/DCS1800/PCS1900) & Dualband UMTS (FDDI, FDDV) & Tri-band LTE (B1, B11, B26) multi mode cellular phone with Bluetooth, WLAN, SRD (FeliCa) and GPS.

Test Position	Channel Number	Frequency (MHz)	Measured Conducted Power (dBm)	Tune Up limit (dBm)	Measured 1g SAR (W/kg)	Scaled 1g SAR (W/kg)	Area scan (Figure number)
Left Cheek	251	848.8	26.18	27.5	0.43	0.45	Figure 10
Left 15°	251	848.8	26.18	27.5	0.18	0.19	Figure 11
Right Cheek	251	848.8	26.18	27.5	0.40	0.42	Figure 12
Right 15°	251	848.8	26.18	27.5	0.13	0.14	Figure 13
Limit for General Population (Uncontrolled Exposure) 1.6 W/kg (1g) KDB 447498 D01 - Testing of other required channels within the operation mode of a frequency band is not required when the reported 1g SAR for mid-band or highest output power channel is: ≤ 0.8W/kg when the transmission band is ≤ 100MHz ≤ 0.6W/kg when the transmission band is between 100MHz and 200MHz ≤ 0.4W/kg when the transmission band is ≥ 200MHz							

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GSM 850MHz GPRS Body & Hotspot Configuration Specific Absorption Rate (Maximum SAR) 1g Results for the Sharp Dual-band CDMA (BC0, BC6) & Quad-band GSM (GSM850/GSM900/DCS1800/PCS1900) & Dualband UMTS (FDDI, FDDV) & Tri-band LTE (B1, B11, B26) multi mode cellular phone with Bluetooth, WLAN, SRD (FeliCa) and GPS.

Position		Channel Number	Frequency (MHz)	Measured Conducted Power (dBm)	Tune Up limit (dBm)	Measured 1g SAR (W/kg)	Scaled 1g SAR (W/kg)	Area scan (Figure number)
Spacing	Position							
10mm	Front Facing	251	848.8	27.26	27.5	0.84	0.89	Figure 14
10mm	Rear Facing	251	848.8	27.26	27.5	1.23	**1.30***	Figure 15
10mm	Left Edge	251	848.8	27.26	27.5	0.65	0.69	Figure 16
10mm	Right Edge	251	848.8	27.26	27.5	0.54	0.57	Figure 17
10mm	Top Edge	251	848.8	27.26	27.5	0.06	0.06	Figure 18
10mm	Rear Facing	128	824.2	27.26	27.5	1.22	1.29	Figure 19
10mm	Rear Facing	189	836.4	27.26	27.5	1.19	1.26	Figure 20
10mm	Rear Facing	251	848.8	27.26	27.5	1.05	1.11*	Figure 21

Limit for General Population (Uncontrolled Exposure) 1.6 W/kg (1g)

KDB 447498 D01 - Testing of other required channels within the operation mode of a frequency band is not required when the reported 1g SAR for mid-band or highest output power channel is:

≤ 0.8W/kg when the transmission band is ≤ 100MHz
≤ 0.6W/kg when the transmission band is between 100MHz and 200MHz
≤ 0.4W/kg when the transmission band is ≥ 200MHz

Testing was carried out with a 10mm separation distance to meet the requirements of KDB 941225 D06

KDB – 648474 D04 - When the reported SAR for body-worn accessory, measured without a headset connected to the handset, is >1.2W/kg, the highest reported SAR configuration for that wireless mode and frequency band is repeated for that body worn accessory with a headset attached to the handset.

*Tested with Headset

WCDMA FDDV Head Specific Absorption Rate (Maximum SAR) 1g Results for the Sharp Dual-band CDMA (BC0, BC6) & Quad-band GSM (GSM850/GSM900/DCS1800/PCS1900) & Dualband UMTS (FDDI, FDDV) & Tri-band LTE (B1, B11, B26) multi mode cellular phone with Bluetooth, WLAN, SRD (FeliCa) and GPS.

Test Position	Channel Number	Frequency (MHz)	Measured Conducted Power (dBm)	Tune Up limit (dBm)	Measured 1g SAR (W/kg)	Scaled 1g SAR (W/kg)	Area scan (Figure number)
Left Cheek	4132	826.4	23.25	24.2	0.41	0.51	Figure 22
Left 15°	4132	826.4	23.25	24.2	0.17	0.21	Figure 23
Right Cheek	4132	826.4	23.25	24.2	0.34	0.42	Figure 24
Right 15°	4132	826.4	23.25	24.2	0.13	0.16	Figure 25
Limit for General Population (Uncontrolled Exposure) 1.6 W/kg (1g) KDB 447498 D01 - Testing of other required channels within the operation mode of a frequency band is not required when the reported 1g SAR for mid-band or highest output power channel is: ≤ 0.8W/kg when the transmission band is ≤ 100MHz ≤ 0.6W/kg when the transmission band is between 100MHz and 200MHz ≤ 0.4W/kg when the transmission band is ≥ 200MHz							

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WCDMA FDDV Body & Hotspot Configuration Specific Absorption Rate (Maximum SAR) 1g Results for the Sharp Dual-band CDMA (BC0, BC6) & Quad-band GSM (GSM850/GSM900/DCS1800/PCS1900) & Dualband UMTS (FDDI, FDDV) & Tri-band LTE (B1, B11, B26) multi mode cellular phone with Bluetooth, WLAN, SRD (FeliCa) and GPS.

Position		Channel Number	Frequency (MHz)	Measured Conducted Power (dBm)	Tune Up limit (dBm)	Measured 1g SAR (W/kg)	Scaled 1g SAR (W/kg)	Area scan (Figure number)
Spacing	Position							
10mm	Front Facing	4132	826.4	23.5	24.2	0.55	0.68	Figure 26
10mm	Rear Facing	4132	826.4	23.5	24.2	0.98	1.22*	Figure 27
10mm	Left Edge	4132	826.4	23.5	24.2	0.48	0.60	Figure 28
10mm	Right Edge	4132	826.4	23.5	24.2	0.39	0.49	Figure 29
10mm	Top Edge	4132	826.4	23.5	24.2	0.04	0.05	Figure 30
10mm	Rear Facing	4175	835.0	23.5	24.2	0.95	1.18	Figure 31
10mm	Rear Facing	4233	846.6	23.5	24.2	0.83	1.03	Figure 32
10mm	Rear Facing	4132	826.4	23.5	24.2	0.69	0.86*	Figure 33

Limit for General Population (Uncontrolled Exposure) 1.6 W/kg (1g)

KDB 447498 D01 - Testing of other required channels within the operation mode of a frequency band is not required when the reported 1g SAR for mid-band or highest output power channel is:

≤ 0.8W/kg when the transmission band is ≤ 100MHz
≤ 0.6W/kg when the transmission band is between 100MHz and 200MHz
≤ 0.4W/kg when the transmission band is ≥ 200MHz

Testing was carried out with a 10mm separation distance to meet the requirements of KDB 941225 D06

KDB – 648474 D04 – When the reported SAR for body-worn accessory, measured without a headset connected to the handset, is >1.2W/kg, the highest reported SAR configuration for that wireless mode and frequency band is repeated for that body worn accessory with a headset attached to the handset.

*Tested with Headset

CDMA 2000 Head Specific Absorption Rate (Maximum SAR) 1g Results for the Sharp Dual-band CDMA (BC0, BC6) & Quad-band GSM (GSM850/GSM900/DCS1800/PCS1900) & Dualband UMTS (FDDI, FDDV) & Tri-band LTE (B1, B11, B26) multi mode cellular phone with Bluetooth, WLAN, SRD (FeliCa) and GPS.

Test Position	Channel Number	Frequency (MHz)	Measured Conducted Power (dBm)	Tune Up limit (dBm)	Measured 1g SAR (W/kg)	Scaled 1g SAR (W/kg)	Area scan (Figure number)
Left Cheek	4132	826.4	24.33	24.9	0.49	**0.56**	Figure 34
Left 15°	4132	826.4	24.33	24.9	0.20	0.23	Figure 35
Right Cheek	4132	826.4	24.33	24.9	0.12	0.14	Figure 36
Right 15°	4132	826.4	24.33	24.9	0.31	0.35	Figure 37
Limit for General Population (Uncontrolled Exposure) 1.6 W/kg (1g) KDB 447498 D01 – Testing of other required channels within the operation mode of a frequency band is not required when the reported 1g SAR for mid-band or highest output power channel is: ≤ 0.8W/kg when the transmission band is ≤ 100MHz ≤ 0.6W/kg when the transmission band is between 100MHz and 200MHz ≤ 0.4W/kg when the transmission band is ≥ 200MHz							

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CDMA 2000 Body & Hotspot Configuration Specific Absorption Rate (Maximum SAR) 1g Results for the Sharp Dual-band CDMA (BC0, BC6) & Quad-band GSM (GSM850/GSM900/DCS1800/PCS1900) & Dualband UMTS (FDDI, FDDV) & Tri-band LTE (B1, B11, B26) multi mode cellular phone with Bluetooth, WLAN, SRD (FeliCa) and GPS.

Position		Channel Number	Frequency (MHz)	Measured Conducted Power (dBm)	Tune Up limit (dBm)	Measured 1g SAR (W/kg)	Scaled 1g SAR (W/kg)	Area scan (Figure number)
Spacing	Position							
10mm	Front Facing	136	829.08	24.34	24.9	0.71	0.81	Figure 38
10mm	Rear Facing	136	829.08	24.34	24.9	1.12	1.27*	Figure 39
10mm	Left Edge	136	829.08	24.34	24.9	0.61	0.69	Figure 40
10mm	Right Edge	136	829.08	24.34	24.9	0.72	0.82	Figure 41
10mm	Top Edge	136	829.08	24.34	24.9	0.05	0.06	Figure 42
10mm	Rear Facing	81	827.43	24.34	24.9	1.13	1.28	Figure 43
10mm	Rear Facing	26	825.78	24.34	24.9	1.13	1.28	Figure 44
10mm	Rear Facing	81	827.43	24.34	24.9	0.83	0.94*	Figure 45

Limit for General Population (Uncontrolled Exposure) 1.6 W/kg (1g)

KDB 447498 D01 - Testing of other required channels within the operation mode of a frequency band is not required when the reported 1g SAR for mid-band or highest output power channel is:

≤ 0.8W/kg when the transmission band is ≤ 100MHz
≤ 0.6W/kg when the transmission band is between 100MHz and 200MHz
≤ 0.4W/kg when the transmission band is ≥ 200MHz

Testing was carried out with a 10mm separation distance to meet the requirements of KDB 941225 D06

KDB – 648474 D04 - When the reported SAR for body-worn accessory, measured without a headset connected to the handset, is >1.2W/kg, the highest reported SAR configuration for that wireless mode and frequency band is repeated for that body worn accessory with a headset attached to the handset.

*Tested with Headset

PCS 1900MHz Head Specific Absorption Rate (Maximum SAR) 1g Results for the Sharp Dual-band CDMA (BC0, BC6) & Quad-band GSM (GSM850/GSM900/DCS1800/PCS1900) & Dualband UMTS (FDDI, FDDV) & Tri-band LTE (B1, B11, B26) multi mode cellular phone with Bluetooth, WLAN, SRD (FeliCa) and GPS.

Test Position	Channel Number	Frequency (MHz)	Measured Conducted Power (dBm)	Tune Up limit (dBm)	Measured 1g SAR (W/kg)	Scaled 1g SAR (W/kg)	Area scan (Figure number)
Left Cheek	512	1850.2	29.06	30.5	0.24	0.33	Figure 46
Left 15°	512	1850.2	29.06	30.5	0.10	0.14	Figure 47
Right Cheek	512	1850.2	29.06	30.5	0.29	0.40	Figure 48
Right 15°	512	1850.2	29.06	30.5	0.09	0.13	Figure 49
Limit for General Population (Uncontrolled Exposure) 1.6 W/kg (1g) KDB 447498 D01 - Testing of other required channels within the operation mode of a frequency band is not required when the reported 1g SAR for mid-band or highest output power channel is: ≤ 0.8W/kg when the transmission band is ≤ 100MHz ≤ 0.6W/kg when the transmission band is between 100MHz and 200MHz ≤ 0.4W/kg when the transmission band is ≥ 200MHz							

PCS 1900MHz GPRS Head Specific Absorption Rate (Maximum SAR) 1g Results for the Sharp Dual-band CDMA (BC0, BC6) & Quad-band GSM (GSM850/GSM900/DCS1800/PCS1900) & Dualband UMTS (FDDI, FDDV) & Tri-band LTE (B1, B11, B26) multi mode cellular phone with Bluetooth, WLAN, SRD (FeliCa) and GPS.

Test Position	Channel Number	Frequency (MHz)	Measured Conducted Power (dBm)	Tune Up limit (dBm)	Measured 1g SAR (W/kg)	Scaled 1g SAR (W/kg)	Area scan (Figure number)
Left Cheek	810	1909.8	23.34	24.9	0.24	0.34	Figure 50
Left 15°	810	1909.8	23.34	24.9	0.14	0.20	Figure 51
Right Cheek	810	1909.8	23.34	24.9	0.23	0.33	Figure 52
Right 15°	810	1909.8	23.34	24.9	0.10	0.14	Figure 53
Limit for General Population (Uncontrolled Exposure) 1.6 W/kg (1g) KDB 447498 D01 - Testing of other required channels within the operation mode of a frequency band is not required when the reported 1g SAR for mid-band or highest output power channel is: ≤ 0.8W/kg when the transmission band is ≤ 100MHz ≤ 0.6W/kg when the transmission band is between 100MHz and 200MHz ≤ 0.4W/kg when the transmission band is ≥ 200MHz							

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PCS 1900MHz GPRS Body & Hotspot Configuration Specific Absorption Rate (Maximum SAR) 1g Results for the Sharp Dual-band CDMA (BC0, BC6) & Quad-band GSM (GSM850/GSM900/DCS1800/PCS1900) & Dualband UMTS (FDDI, FDDV) & Tri-band LTE (B1, B11, B26) multi mode cellular phone with Bluetooth, WLAN, SRD (FeliCa) and GPS.

Position		Channel Number	Frequency (MHz)	Measured Conducted Power (dBm)	Tune Up limit (dBm)	Measured 1g SAR (W/kg)	Scaled 1g SAR (W/kg)	Area scan (Figure number)
Spacing	Position							
10mm	Front Facing	810	1909.8	23.34	24.9	0.19	0.27	Figure 54
10mm	Rear Facing	810	1909.8	23.34	24.9	0.25	0.36	Figure 55
10mm	Right Edge	810	1909.8	23.34	24.9	0.19	0.27	Figure 56
10mm	Top Edge	810	1909.8	23.34	24.9	0.21	0.30	Figure 57

Limit for General Population (Uncontrolled Exposure) 1.6 W/kg (1g)

KDB 447498 D01 - Testing of other required channels within the operation mode of a frequency band is not required when the reported 1g SAR for mid-band or highest output power channel is:

≤ 0.8W/kg when the transmission band is ≤ 100MHz
≤ 0.6W/kg when the transmission band is between 100MHz and 200MHz
≤ 0.4W/kg when the transmission band is ≥ 200MHz

Testing was carried out with a 10mm separation distance to meet the requirements of KDB 941225 D06

KDB – 648474 D04 - When the reported SAR for body-worn accessory, measured without a headset connected to the handset, is >1.2W/kg, the highest reported SAR configuration for that wireless mode and frequency band is repeated for that body worn accessory with a headset attached to the handset.

WLAN 2450MHz Head Specific Absorption Rate (Maximum SAR) 1g Results for the Sharp Dual-band CDMA (BC0, BC6) & Quad-band GSM (GSM850/GSM900/DCS1800/PCS1900) & Dualband UMTS (FDDI, FDDV) & Tri-band LTE (B1, B11, B26) multi mode cellular phone with Bluetooth, WLAN, SRD (FeliCa) and GPS.

Test Position	Channel Number	Frequency (MHz)	Measured Conducted Power (dBm)	Tune Up limit (dBm)	Measured 1g SAR (W/kg)	Scaled 1g SAR (W/kg)	Area scan (Figure number)
Left Cheek	1	2412.0	15.73	17.0	0.08	0.11	Figure 58
Left 15°	1	2412.0	15.73	17.0	0.03	0.04	Figure 59
Right Cheek	1	2412.0	15.73	17.0	0.08	0.11	Figure 60
Right 15°	1	2412.0	15.73	17.0	0.05	0.07	Figure 61

Limit for General Population (Uncontrolled Exposure) 1.6 W/kg (1g)

KDB 447498 D01 - Testing of other required channels within the operation mode of a frequency band is not required when the reported 1g SAR for mid-band or highest output power channel is:

≤ 0.8W/kg when the transmission band is ≤ 100MHz
≤ 0.6W/kg when the transmission band is between 100MHz and 200MHz
≤ 0.4W/kg when the transmission band is ≥ 200MHz

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WLAN 2450MHz Body & Hotspot Configuration Specific Absorption Rate (Maximum SAR) 1g Results for the Sharp Dual-band CDMA (BC0, BC6) & Quad-band GSM (GSM850/GSM900/DCS1800/PCS1900) & Dualband UMTS (FDDI, FDDV) & Tri-band LTE (B1, B11, B26) multi mode cellular phone with Bluetooth, WLAN, SRD (FeliCa) and GPS.

Position		Channel Number	Frequency (MHz)	Measured Conducted Power (dBm)	Tune Up limit (dBm)	Measured 1g SAR (W/kg)	Scaled 1g SAR (W/kg)	Area scan (Figure number)
Spacing	Position							
10mm	Front Facing	1	2412.0	15.73	17.0	0.08	0.11	Figure 62
10mm	Rear Facing	1	2412.0	15.73	17.0	0.16	0.21	Figure 63
10mm	Left Edge	1	2412.0	15.73	17.0	0.19	0.25	Figure 64
10mm	Top Edge	1	2412.0	15.73	17.0	0.07	0.09	Figure 65

Limit for General Population (Uncontrolled Exposure) 1.6 W/kg (1g)

KDB 447498 D01 - Testing of other required channels within the operation mode of a frequency band is not required when the reported 1g SAR for mid-band or highest output power channel is:

≤ 0.8W/kg when the transmission band is ≤ 100MHz
≤ 0.6W/kg when the transmission band is between 100MHz and 200MHz
≤ 0.4W/kg when the transmission band is ≥ 200MHz

Testing was carried out with a 10mm separation distance to meet the requirements of KDB 941225 D06

KDB – 648474 D04 - When the reported SAR for body-worn accessory, measured without a headset connected to the handset, is >1.2W/kg, the highest reported SAR configuration for that wireless mode and frequency band is repeated for that body worn accessory with a headset attached to the handset.

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1.3.3 Simultaneous Transmission

Position Head	GPRS 850MHz 1g SAR (W/kg) CH 251 (Scaled SAR values)	WLAN 2.4GHz 1g SAR (W/kg) CH 1 (Scaled SAR values)	∑ 1g SAR (W/kg)
Left Cheek	0.45	0.11	0.56
Left 15°	0.19	0.04	0.23
Right Cheek	0.42	0.11	0.53
Right 15°	0.14	0.07	0.21
Simultaneous Transmission KDB 447498 D01			

Simultaneous SAR measurements were not required as the sum of the 1g SAR measurements did not exceed 1.6 W/kg.

Position Body	GPRS 850MHz 1g SAR (W/kg) CH 251 (Scaled SAR values)	WLAN 2.4GHz 1g SAR (W/kg) CH 1 (Scaled SAR values)	∑ 1g SAR (W/kg)
Front Facing	0.89	0.11	1.00
Rear Facing	1.30	0.21	**1.51**
Left Edge	0.69	0.25	0.94
Right Edge	0.57	N/A	N/A
Top Edge	0.06	0.09	0.15
Rear Facing	1.29*	0.21	1.50
Rear Facing	1.26**	0.21	1.47
Rear Facing	1.11	0.21	1.32
Simultaneous Transmission KDB 447498 D01 Testing was carried out with a 10mm separation distance to meet the requirements of KDB 941225 D06 *Channel 128 **Channel 189			

Simultaneous SAR measurements were not required as the sum of the 1g SAR measurements did not exceed 1.6 W/kg.

Position Head	WCDMA FDDV 1g SAR (W/kg) CH 4132 (Scaled SAR values)	WLAN 2.4GHz 1g SAR (W/kg) CH 1 (Scaled SAR values)	∑ 1g SAR (W/kg)
Left Cheek	0.51	0.11	0.62
Left 15°	0.21	0.04	0.25
Right Cheek	0.42	0.11	0.53
Right 15°	0.16	0.07	0.23
Simultaneous Transmission KDB 447498 D01			

Simultaneous SAR measurements were not required as the sum of the 1g SAR measurements did not exceed 1.6 W/kg.

Position Body	WCDMA FDDV 1g SAR (W/kg) CH 4132 (Scaled SAR values)	WLAN 2.4GHz 1g SAR (W/kg) CH 1 (Scaled SAR values)	∑ 1g SAR (W/kg)
Front Facing	0.68	0.11	0.79
Rear Facing	1.22	0.21	1.43
Left Edge	0.60	0.25	0.85
Right Edge	0.49	N/A	N/A
Top Edge	0.05	0.09	0.14
Rear Facing	1.18*	0.21	1.39
Rear Facing	1.03**	0.21	1.24
Rear Facing	0.86	0.21	1.07
Simultaneous Transmission KDB 447498 D01 Testing was carried out with a 10mm separation distance to meet the requirements of KDB 941225 D06 *Channel 4175 *Channel 4233			

Simultaneous SAR measurements were not required as the sum of the 1g SAR measurements did not exceed 1.6 W/kg.

Position Head	CDMA 2000 1g SAR (W/kg) CH 136 (Scaled SAR values)	WLAN 2.4GHz 1g SAR (W/kg) CH 1 (Scaled SAR values)	∑ 1g SAR (W/kg)
Left Cheek	0.56	0.11	0.67
Left 15°	0.23	0.04	0.27
Right Cheek	0.14	0.11	0.25
Right 15°	0.35	0.07	0.42
Simultaneous Transmission KDB 447498 D01			

Simultaneous SAR measurements were not required as the sum of the 1g SAR measurements did not exceed 1.6 W/kg.

Position Body	CDMA 2000 1g SAR (W/kg) CH 136 (Scaled SAR values)	WLAN 2.4GHz 1g SAR (W/kg) CH 1 (Scaled SAR values)	∑ 1g SAR (W/kg)
Front Facing	0.81	0.11	0.92
Rear Facing	1.12	0.21	1.33
Left Edge	0.69	0.25	0.94
Right Edge	0.82	N/A	N/A
Top Edge	0.06	0.09	0.15
Rear Facing	1.28*	0.21	1.49
Rear Facing	1.28**	0.21	1.49
Rear Facing	0.94	0.21	1.15
Simultaneous Transmission KDB 447498 D01 Testing was carried out with a 10mm separation distance to meet the requirements of KDB 941225 D06 *Channel 81 **Channel 26			

Simultaneous SAR measurements were not required as the sum of the 1g SAR measurements did not exceed 1.6 W/kg.

Position Head	GPRS 1900MHz 1g SAR (W/kg) CH 810 (Scaled SAR values)	WLAN 2.4GHz 1g SAR (W/kg) CH 1 (Scaled SAR values)	∑ 1g SAR (W/kg)
Left Cheek	0.34	0.11	0.45
Left 15°	0.20	0.04	0.24
Right Cheek	0.33	0.11	0.44
Right 15°	0.14	0.07	0.21
Simultaneous Transmission KDB 447498 D01			

Simultaneous SAR measurements were not required as the sum of the 1g SAR measurements did not exceed 1.6 W/kg.

Position Body	GPRS 1900MHz 1g SAR (W/kg) CH 810 (Scaled SAR values)	WLAN 2.4GHz 1g SAR (W/kg) CH 1 (Scaled SAR values)	∑ 1g SAR (W/kg)
Front Face	0.27	0.11	0.38
Rear Face	0.36	0.21	0.57
Left Edge	N/A	0.25	N/A
Right Edge	0.27	N/A	N/A
Top Edge	0.30	0.09	0.39
Simultaneous Transmission KDB 447498 D01 Testing was carried out with a 10mm separation distance to meet the requirements of KDB 941225 D06			

Simultaneous SAR measurements were not required as the sum of the 1g SAR measurements did not exceed 1.6 W/kg.

Position Body	GPRS 850MHz 1g SAR (W/kg) CH 251 (Scaled SAR values)	Bluetooth 2.4GHz 1g SAR (W/kg) CH 39 (Estimated SAR values)	∑ 1g SAR (W/kg)
Front Facing	0.89	0.20	1.09
Rear Facing	1.30	0.20	1.5
Left Edge	0.69	0.20	0.89
Right Edge	0.57	N/A	N/A
Top Edge	0.06	0.20	0.26
Rear Facing	1.29*	0.20	1.49
Rear Facing	1.26**	0.20	1.46
Rear Facing	1.11	0.20	1.31
Simultaneous Transmission KDB 447498 D01 Testing was carried out with a 10mm separation distance to meet the requirements of KDB 941225 D06 *Channel 128 **Channel 189			

Simultaneous SAR measurements were not required as the sum of the 1g SAR measurements did not exceed 1.6 W/kg.

Position Body	WCDMA FDDV 1g SAR (W/kg) CH 41321 (Scaled SAR values)	Bluetooth 2.4GHz 1g SAR (W/kg) CH 39 (Estimated SAR values)	∑ 1g SAR (W/kg)
Front Facing	0.68	0.20	0.88
Rear Facing	1.22	0.20	1.42
Left Edge	0.60	0.20	0.8
Right Edge	0.49	N/A	N/A
Top Edge	0.05	0.20	0.25
Rear Facing	1.18*	0.20	1.38
Rear Facing	1.03**	0.20	1.23
Rear Facing	0.86	0.20	1.06
Simultaneous Transmission KDB 447498 D01 Testing was carried out with a 10mm separation distance to meet the requirements of KDB 941225 D06 *Channel 4175 **Channel 4233			

Simultaneous SAR measurements were not required as the sum of the 1g SAR measurements did not exceed 1.6 W/kg.

Position Body	CDMA 2000 1g SAR (W/kg) CH 4133 (Scaled SAR values)	Bluetooth 2.4GHz 1g SAR (W/kg) CH 39 (Estimated SAR values)	∑ 1g SAR (W/kg)
Front Facing	0.81	0.20	1.01
Rear Facing	1.12	0.20	1.32
Left Edge	0.69	0.20	0.89
Right Edge	0.82	N/A	N/A
Top Edge	0.06	0.20	0.26
Rear Facing	1.28*	0.20	1.48
Rear Facing	1.28**	0.20	1.48
Rear Facing	0.94	0.20	1.14
Simultaneous Transmission KDB 447498 D01 Testing was carried out with a 10mm separation distance to meet the requirements of KDB 941225 D06 *Channel 81 **Channel 26			

Simultaneous SAR measurements were not required as the sum of the 1g SAR measurements did not exceed 1.6 W/kg.

Position Body	GPRS 1900MHz 1g SAR (W/kg) CH 810 (Scaled SAR values)	Bluetooth 2.4GHz 1g SAR (W/kg) CH 39 (Estimated SAR values)	∑ 1g SAR (W/kg)
Front Face	0.27	0.20	0.47
Rear Face	0.36	0.20	0.56
Left Edge	N/A	0.20	N/A
Right Edge	0.27	N/A	N/A
Top Edge	0.30	0.20	0.50
Simultaneous Transmission KDB 447498 D01 Testing was carried out with a 10mm separation distance to meet the requirements of KDB 941225 D06			

Simultaneous SAR measurements were not required as the sum of the 1g SAR measurements did not exceed 1.6 W/kg.

Position Head	WLAN 2.4GHz 1g SAR (W/kg) CH 1 (Scaled SAR values)	Bluetooth 2.4GHz 1g SAR (W/kg) CH 39 (Estimated SAR values)	∑ 1g SAR (W/kg)
Left Cheek	0.11	0.20	0.31
Left 15°	0.04	0.20	0.24
Right Cheek	0.11	0.20	0.31
Right 15°	0.07	0.20	0.27
Simultaneous Transmission KDB 447498 D01			

Simultaneous SAR measurements were not required as the sum of the 1g SAR measurements did not exceed 1.6 W/kg.

Position Body	WLAN 2.4GHz 1g SAR (W/kg) CH 1 (Scaled SAR values)	Bluetooth 2.4GHz 1g SAR (W/kg) CH 39 (Estimated SAR values)	∑ 1g SAR (W/kg)
Front Face	0.11	0.20	0.31
Rear Face	0.21	0.20	0.41
Left Edge	0.25	0.20	0.45
Top Edge	0.09	0.20	0.29
Simultaneous Transmission KDB 447498 D01 Testing was carried out with a 10mm separation distance to meet the requirements of KDB 941225 D06			

Simultaneous SAR measurements were not required as the sum of the 1g SAR measurements did not exceed 1.6 W/kg.

Product Service

1.3.4 Standalone SAR Estimation

When the standalone SAR test exclusion of section 4.3.1 is applied to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to the following to determine simultaneous transmission SAR test exclusion. The estimated SAR is only used to determine simultaneous transmission SAR test exclusion; When SAR is estimated, it must be applied to determine the sum of 1-g SAR test exclusion. When SAR to peak location separation ratio test exclusion is applied, the highest reported SAR for simultaneous transmission can be an estimated standalone SAR if the estimated SAR is the highest among the simultaneously transmitting antennas (see KDB 690783).

(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]·[√f(GHz)/7.5] W/kg for test separation distances ≤ 50 mm;

where x = 7.5 for 1-g SAR, and x = 18.75 for 10-g SAR

when the minimum test separation distance is <5mm, a distance of 5mm is applied.

Bluetooth Head SAR Estimation

Frequency (MHz)	Maximum Power (mW)	Distance (mm)	Estimated SAR (W/kg)
2441	6.31	5	0.39

Bluetooth Body SAR Estimation

Frequency (MHz)	Maximum Power (mW)	Distance (mm)	Estimated SAR (W/kg)
2441	6.31	10	0.20

1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The equipment under test (EUT) was a Sharp Dual-band CDMA (BC0, BC6) & Quad-band GSM (GSM850/GSM900/DCS1800/PCS1900) & Dualband UMTS (FDDI, FDDV) & Tri-band LTE (B1, B11, B26) multi mode cellular phone with Bluetooth, WLAN, SRD (FeliCa) and GPS. A full technical description can be found in the manufacturer's documentation.

1.4.2 Test Configuration and Modes of Operation

The testing was performed with a battery SHF31UAA supplied and manufactured by Sharp Corporation.

For head SAR assessment, testing was performed with the device in the declared normal position of operation for GSM 850MHz, PCS 1900MHz, WCDMA FDDV, CDMA 2000, and WLAN 2.4GHz frequency bands at maximum power. The device was placed against a Specific Anthropomorphic Mannequin (SAM) phantom. The phantom was filled with simulant liquid appropriate to the frequency band. The dielectric properties were measured and found to be in accordance with the requirements for the dielectric properties specified in KDB 865665. Testing was performed at both the left and right ear of the phantom at both handset positions stated in the applied specification.

For body SAR assessment, testing was performed for GSM 850MHz, PCS 1900MHz, WCDMA FDDV, CDMA 2000, and WLAN 2.4GHz frequency bands at maximum power. The device was placed at a distance of 10 mm from the bottom of the flat phantom for all body testing. The Flat Phantom dimensions were 245mm x 195mm x 200mm with a sidewall thickness of 2.00mm. The phantom was filled to a minimum depth of 150mm with the appropriate Body simulant liquid. The dielectric properties were in accordance with the requirements specified in KDB 865665. As the device is capable of hotspot configuration a 10mm separation distance was used to meet the requirements of KDB 941225 D06 Hotspot.

Testing was performed in each position at the frequency that gave the highest output power for each band. Within the GSM850MHz, WCDMA FDDV and CDMA 2000 bands for various positions the scaled SAR was found to be >0.80 W/kg therefore the two remaining channels were also assessed for these bands. For all other bands all scaled SAR levels were found to be <0.80 W/kg (KDB 447498 D01) therefore no additional testing was required at the relevant frequencies / channels of the bands. WLAN testing was achieved using the devices internal software, customer supplied software and settings supplied by the customer. The worst case data rate for WLAN testing was obtained from data provided by TUV. The worst case was deemed as the data rate which produced the highest level of conducted average power. For 2.4GHz WLAN this was 5.5Mbps for 802.11b.

Included in this report are descriptions of the test method; the equipment used and an analysis of the test uncertainties applicable and diagrams indicating the locations of maximum SAR for each test position along with photographs indicating the positioning of the handset against the body as appropriate.

Product Service

1.5 FCC POWER MEASUREMENTS

1.5.1 Method

Conducted power measurements were made using a power meter.

1.5.2 Conducted Power Measurements

GSM 850

Modulation	Frequency (MHz)	Conducted Carrier Power (dBm)	
		Peak	Average
GMSK - Voice	824.2	32.07	31.88
	836.4	32.24	**32.06**
	848.8	32.23	32.03
GMSK - GPRS	824.2	26.04	27.11
	836.4	26.21	27.10
	848.8	26.26	**27.26**

PCS 1900

Modulation	Frequency (MHz)	Conducted Carrier Power (dBm)	
		Peak	Average
GMSK - Voice	1850.2	29.24	**29.06**
	1880.0	29.10	28.94
	1909.8	29.17	29.00
GMSK - GPRS	1850.2	23.53	23.30
	1880.0	23.60	23.28
	1909.8	23.64	**23.34**

Product Service

WCDMA FDD V

Modulation	Frequency (MHz)	Conducted Carrier Power (dBm)	
		Peak	Average
WCDMA - 12.2kbps RMC	826.4	26.85	**23.25**
	835.0	26.41	23.13
	846.6	26.39	23.10
WCDMA - 12.2kbps AMR with 3.4kbps SRB*	826.4	26.41	23.24
	835.0	26.38	23.18
	846.6	26.40	23.23
WCDMA - HSDPA (Subtest #1)	826.4	26.36	22.23
	835.0	26.37	22.17
	846.6	26.52	22.16
WCDMA - HSDPA (Subtest #2)	826.4	27.12	21.84
	835.0	26.62	21.68
	846.6	26.68	21.78
WCDMA - HSDPA (Subtest #3)	826.4	26.85	21.22
	835.0	26.45	21.07
	846.6	26.55	20.91
WCDMA - HSDPA (Subtest #4)	826.4	26.74	21.02
	835.0	26.31	20.94
	846.6	26.52	21.03
WCDMA - HSUPA (Subtest #1)	826.4	27.33	21.92
	835.0	26.77	21.81
	846.6	26.90	21.71
WCDMA - HSUPA (Subtest #2)	826.4	27.14	22.07
	835.0	26.68	21.92
	846.6	26.55	21.82

Modulation	Frequency (MHz)	Conducted Carrier Power (dBm)	
		Peak	Average
WCDMA - 12.2kbps RMC WCDMA - HSUPA (Subtest #3)	826.4	27.02	21.23
	835.0	26.48	21.01
	846.6	26.55	21.03
WCDMA - HSUPA (Subtest #4)	826.4	27.05	22.28
	835.0	26.23	22.20
	846.6	25.91	22.13
WCDMA - HSUPA (Subtest #5)	826.4	27.24	21.36
	835.0	26.62	21.14
	846.6	26.51	21.18
* The measured Conducted power for 12.2kbps AMR is <0.25dB higher than 12.2kbps RMC, therefore, testing was carried out using 12.2kbps RMC.			

CDMA 2000

Modulation	Frequency (MHz)	Conducted Carrier Power (dBm)	
		Peak	Average
S055 (Loopback)	825.78	28.65	24.23
	827.43	28.51	24.24
	829.08	28.36	**24.33**
S032 (FCH)	825.78	28.62	24.23
	827.43	28.45	24.24
	829.08	28.38	**24.34**

WLAN

Modulation	Frequency (MHz)	Conducted Carrier Power (dBm)	
		Peak	Average
802.11(b) - 2.4 GHz – 5.5Mbps	2412	18.34	**15.73**
	2437	18.17	15.63
	2462	18.2	15.48
802.11(g) - 2.4 GHz - 6Mbps	2412	20.01	10.38
	2437	19.77	10.18
	2462	20.74	10.29
802.11 (n) - 2.4 GHz – MCS0	2412	19.9	9.5
	2437	18.99	9.18
	2462	19.38	9.29

Bluetooth

Modulation	Frequency (MHz)	Conducted Carrier Power (dBm)	
		Peak	Average
DH1	2402	6.48	5.02
	2441	6.67	**5.20**
	2480	6.45	4.95

1.5.3 Standalone SAR Test Exclusion Considerations (KDB 447498 D01)

The 1g SAR Test exclusion thresholds for 100 MHz to 6 GHz *test separation distances* ≤ 50 mm are determined by:

[(*max power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] [√f (GHz)]* ≤ 3.0, where

- f ($_{GHz}$) is the RF channel transmit frequency in GHz.
- Power and distance are rounded to the nearest mW and mm before calculation.
- The result is rounded to one decimal place for comparison.
- When the maximum test separation distance is < 5 mm, a distance of 5 mm is applied.

Band	Frequency (MHz)	Max Power		Test Position	Distance (mm)	Threshold	Test Exclusion
		(dBm)	(mW)				
GSM 850MHz	836.4	32.9	1949.84	Head	< 5	356.6	No
GPRS 850MHz	848.8	27.5	562.34	Head	< 5	102.90	No
GPRS 850MHz	848.8	27.5	562.34	Body	10	51.40	No
FDD V	826.4	24.2	263.03	Head	< 5	47.80	No
				Body	10	23.90	No
CDMA 2000	829.08	24.9	309.03	Head	< 5	56.3	No
				Body	10	28.1	No
GSM 1900MHz	1850.2	30.5	1122.02	Head	< 5	96.5	No
GPRS 1900MHz	1909.8	24.9	309.03	Head	< 5	27.0	No
GPRS 1900MHz	1909.8	24.9	309.03	Body	10	13.5	No
WLAN 2.4 GHz	2412.0	17.0	50.12	Head	< 5	15.6	No
				Body	10	7.8	No
Bluetooth	2441	8.0	5.01	Head	< 5	2.0	Yes
				Body	10	1.0	Yes

Product Service

SECTION 2

TEST DETAILS

Specific Absorption Rate Testing of the
Sharp Dual-band CDMA (BC0, BC6) & Quad-band GSM
(GSM850/GSM900/DCS1800/PCS1900) & Dualband UMTS (FDDI, FDDV) & Tri-band LTE (B1, B11, B26) multi mode cellular phone with Bluetooth, WLAN, SRD (FeliCa) and GPS

2.1 SARA-C SAR MEASUREMENT SYSTEM

2.1.1 Robot System Specification

The SAR measurement system being used is the IndexSAR SARA-C system, which consists of a cartestian 6-axis robot jig, a dedicated robot controller, a straight IndexSAR probe, an L-shaped Indexsar probe, a fast amplifier, and two phantoms: an upside-down SAM phantom, and a rectangular box phantom,

Figure 1. The L-probe is used in connection with measurements on DUTs held against the SAM phantom, while the straight probe is used exclusively in the box phantom. The robot is used to articulate the probe to programmed positions inside the phantom head to obtain SAR readings from the DUT.

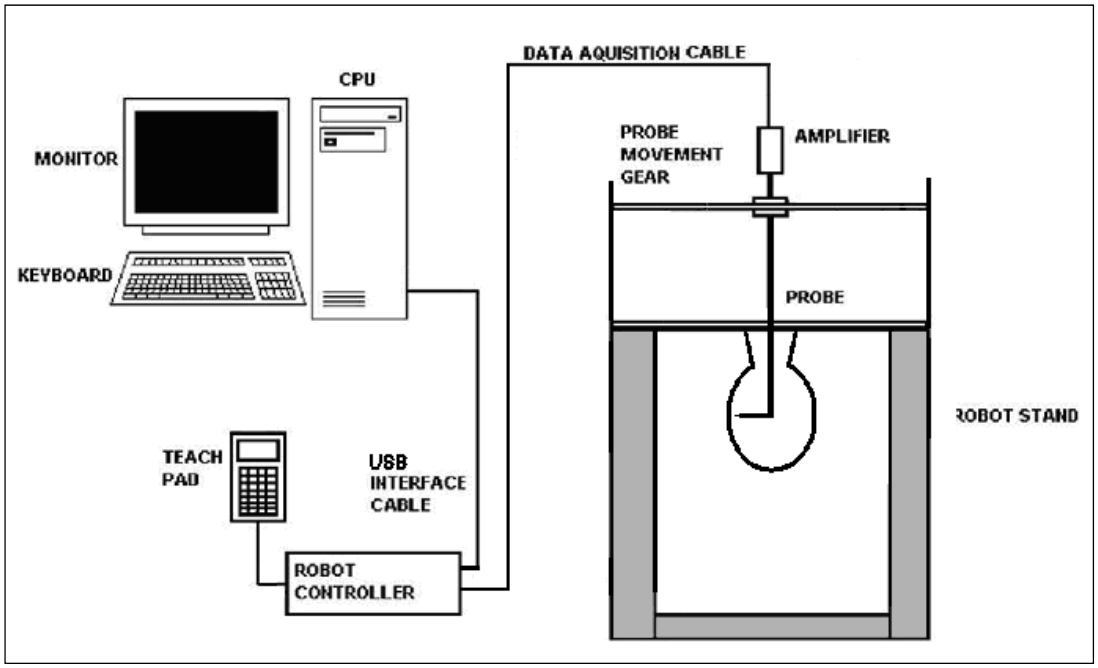

Figure 1 Schematic diagram of the SARA-C measurement system showing the L-probe and upside-down SAM phantom

The system is controlled remotely from a PC, which contains the software to drive the robot and data acquisition equipment. The software also displays the data obtained from test scans.

The position and digitised shape of the phantom heads are made available to the software for accurate positioning of the probe and reduction of set-up time. The SAM phantom heads are individually digitised using a Mitutoyo CMM machine to a precision of 0.001mm. The data is then converted into a shape format for the software, providing an accurate description of the phantom shell. Even with this accuracy, registration errors and deformation of the phantom when filled with 7 litres of fluid, can lead to probe placement errors of 1mm or more. For this reason, the L-probes house a 2-axis strain gauge unit, which allow the actual phantom wall position to be sensed to an accuracy of 0.3mm during probe movements.

In operation, the system first does an area (2D) scan within the liquid following the curve of the phantom wall at a fixed distance. When the maximum SAR point has been found, the system will then carry out a 3D scan centred at that point to determine volume averaged SAR level.

2.1.2 Probe and Amplifier Specification

IndexSAR isotropic immersible straight SAR probes

Straight probes are constructed using three orthogonal dipole sensors arranged on an interlocking, triangular prism core. The probes have built-in shielding against static charges and are contained within a PEEK cylindrical enclosure material at the tip. The tips come in either 5mm (typically for use up to 3GHz) or 2.5mm (above 3GHz) versions, model types IXP-050 and IXP-025 respectively.

Straight probes are calibrated by NPL in the UK.

Straight probes are used exclusively in the box phantom, to measure SAR from DUTs placed against the phantom base. In SARA2, straight probes were also used in the SAM phantom, but this is forbidden in SARA-C, where L-probes are demanded. NB the reverse is not true: L-probes can be used in the box phantom.

IndexSAR L-probes

The L-shaped probe is so designed to ensure the probe tip can remain perpendicular to the SAM phantom wall during scans. To allow for greater probe articulation freedom, the SAM phantom head has been turned upside down and the probe is inserted through the throat aperture, rather than through a small hole at the top of the head in the old SARA2 SAR measurement system.

Like the straight probes, L-probes also come in the same two tip sizes: IXP-020 (5mm) and IXP-021 (2.5mm).

L-probes are calibrated to national standards in-house by IndexSAR.

L-probes can be used either in the SAM head, or against the side wall of the box phantom.

IFA-020 Fast Amplifier

A block diagram of the fast probe amplifier electronics is shown below.

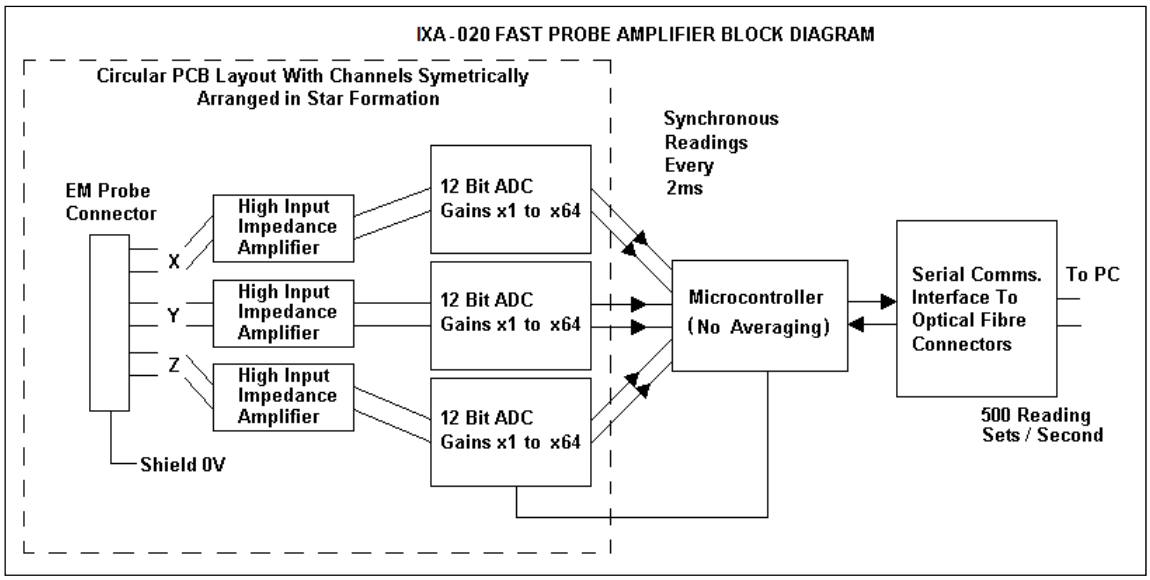

Figure 2 Schematic diagram of the fast amplifier

This amplifier has a time constant of approx. 50µs, which is much faster than the SAR probe response time. The overall system time constant is therefore that of the probe (<1ms) and a reading containing data for all three channels is returned to the PC every 2ms. The conversion period is approx. 1 µs at the start of each 2ms period. This enables the probe to follow pulse modulated signals of periods >>2ms. The PC software applies the linearisation procedure separately to each reading, so no linearisation corrections for the averaging of modulated signals are needed in this case.

The fast amplifier sampling rate can be adjusted via the SARA-C user interface from 1.7ms to 2.3ms. When not measuring CW signals, it is important to ensure that this probe reading rate and the modulated signal's pulse repetition rate are not unintentionally synchronised since this can lead to aliasing and a gross reduction in accuracy. For GSM signals, the default amplifier sampling rate of 2ms is entirely satisfactory, whereas changing it to 2.3ms (almost exactly half the GSM frame rate) could mean GSM bursts are always missed.

When aggregating 2ms samples to reduce the stochastic noise, it is equally important to match the number of samples with the longer-term timing structure of the modulation scheme. Taking GSM as an example again, since 120ms is the precise length of a GSM traffic channel multiframe, best practice would dictate that aggregated samples should cover exact multiples of this timescale. In this case, setting the number of samples to be aggregated to 120 (2 multiframes), or 240 samples (4 multiframes) should be ideal. Other signalling protocols would require changing these numbers as appropriate.

Product Service

Phantoms

The Flat phantom used is a rectangular Perspex Box IndexSAR item IXB-2HF, dimensions 240 x 190 x 195mm (w x d x h). The base and one side wall are made of FR4 material which has specific dielectric properties and a tightly-controlled thickness. The base is used in tandem with straight probes, measuring either a DUT or a validation dipole, while the side wall is for performing validations with the L-probe. It is also feasible to perform measurements on body-worn devices with the L-probe against the side window, but only if the L-probe is suitably calibrated (ie if the measurement standard demands body and head fluids have the same dielectric properties).

The Specific Anthropomorphic Mannequin (SAM) Upright Phantom is fabricated using moulds generated from the CAD files as specified by CENELEC EN 62209-1: 2006.

2.1.3 SAR Measurement Procedure

Detailed measurement procedures for SARA-C are set out in a separate IndexSAR technical document ("SARA-C Operational Procedures"

A test set and dipole antenna control the handset via an air link and a low-mass phone holder can position the phone at either ear. Graduated scales are provided to set the phone in the 15 degree position. The upright phantom head holds approx. 7 litres of simulant liquid. The phantom is filled and emptied through the 110mm diameter penetration hole in the neck.

An area scan is performed inside the head at a fixed distance of 5mm from the curved surface on the source side. An algorithm presents the user with the location of any local hotspots and allows one to be selected for a follow-up 3D scan, looking at how the signal absorption varies with depth. A comparison between the start and end readings at a fixed distance from the DUT also enables the power drift during measurement to be assessed.

SARA-C Interpolation and Extrapolation schemes

SARA-C software contains support for both 2D cubic B-spline interpolation as well as 3D cubic B-spline interpolation. In addition, for extrapolation purposes, a proprietary curve-fitting routine is implemented as a weighted average of 3 different polynomial fits. The polynomial fitting procedures have been extensively tested by comparing the fitting coefficients generated by the SARA-C procedures with those obtained using the polynomial fit functions of Microsoft Excel when applied to the same test input data.

Interpolation of 2D area scan

The 2D cubic B-spline interpolation is used after the initial area scan at fixed distance from the phantom shell wall. The initial scan data are collected with approx. 115mm spatial resolution and spline interpolation is used to find the location of the local maximum to within a 1mm resolution for positioning the subsequent 3D scanning.

Extrapolation of 3D scan

For the 3D scan, data are collected on a spatially regular, but conformal, 3D grid having (by default) 6.4 mm steps in the lateral dimensions and 3.5 mm steps in the depth direction (away from the source). SARA-C enables full control over the selection of alternative step sizes in all directions.

The overall accuracy of the 1g and 10g SAR volume average depends largely on the accuracy with which the probe can be re-positioned in the head. Although the digitised shape of the head is available to the SARA-C software, a better positioning solution is to use strain gauges attached to the L-probe to feel for the actual surface and to base all movements relative to this positive detection. An even more precise, but time-consuming, method is to place the probe tip in positive contact against the phantom wall, then step backwards 0.01mm at a time while monitoring the recorded SAR reading. At the exact moment that the probe detaches from contact, the SAR reading will suddenly fall.

After the data collection, the data are extrapolated up to the shell wall in the depth direction to assign values to points in the 3D array which cannot be measured in practice because of the finite size of the sensor tip. For automated measurements inside the head, the distance of the closest plane from the wall cannot be less than 2.7mm (for 5mm probes) and 1.39mm (for 2.5mm probes), this being the distance of the probe sensors behind the front edge of the probe tip.

Interpolation of 3D scan and volume averaging

The procedure used in SARA-C for defining the volumes used in SAR averaging follow the method of adapting the surface of the 'cube' to conform with the curved inner surface of the phantom (see Appendix C.2.2.1 in EN 62209-1: 2006). This is called, here, the conformal scheme.

For each row of data in the depth direction, the data are extrapolated to the phantom wall, and interpolated to less than 1mm spacing and average values are calculated from the phantom surface for the row of data over distances corresponding to the requisite depth for 10g and 1g cubes. This results in two 2D arrays of data, one for 1g and the other for 10g masses, which are then cubic B-spline interpolated to sub mm lateral resolution. A search routine then moves an averaging square around through the 2D array and records the maximum value of the corresponding 1g and 10g volume averages.

The default step size is 3.5mm, but this is under user-control. The compromise is with time of scan, so it is not practical to make it much smaller or scan times become long and power-drop influences become larger.
The robot positioning system specification for the repeatability of the positioning (**dss** in EN 62209-1: 2006) is +/- 0.04mm.

Product Service

2.1.4 Head Test Positions

This recommended practice specifies exactly two test positions for the handset against the head phantom, the “Cheek” position and the “tilted” position. The handset should be tested in both positions on the left and right sides of the SAM phantom. In each test position the centre of the earpiece of the device is placed directly at the entrance of the auditory canal. The angles mentioned in the test positions used are referenced to the line connecting both auditory canal openings. The plane this line is on is known as the reference plane. Testing is performed on the right and left-hand sides of the generic phantom head.

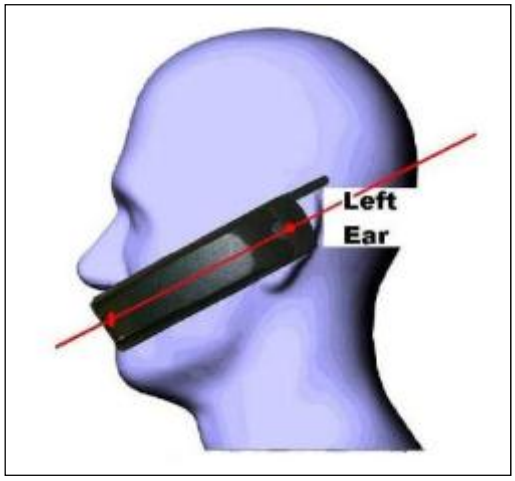

Figure 3 Side view of mobile next to head showing alignment

The Cheek Position

The Cheek Position is where the mobile is in the reference plane and the line between the mobile and the line connecting both auditory canal openings is reduced until any part of the mobile touches any part of the generic twin phantom head.

The 15° Position

The 15° Position is where the mobile is in the reference Cheek position and the phone is kept in contact with the auditory canal at the earpiece; the bottom of the phone is then tilted away from the phantom mouth by 15°.

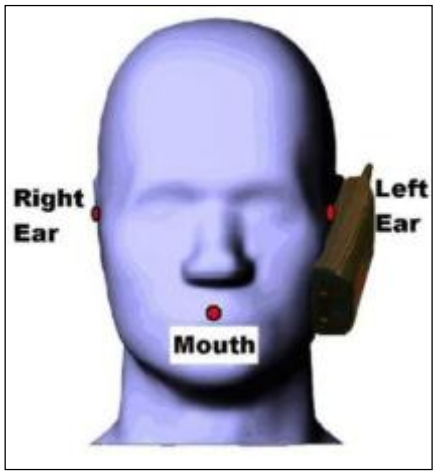

Figure 4 Cheek position

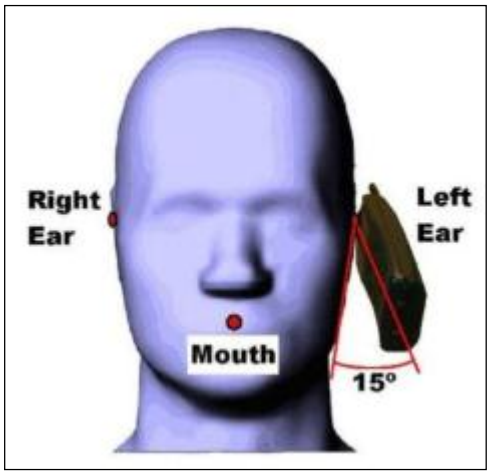

Figure 5 15º Tilt Position

2.2 GSM 850MHz HEAD SAR TEST RESULTS AND COURSE AREA SCANS – 2D

.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	09/12/2014-10:01:21	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.80°C	LIQUID SIMULANT:	850 Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	43.12
RELATIVE HUMIDITY:	23.10%	CONDUCTIVITY:	0.911
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	23.30°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	78.70mm
DUT POSITION:	Left-Cheek	MAX SAR Z-AXIS LOCATION:	-90.50mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	18.843
TEST FREQUENCY:	836.4MHz	SAR 1g:	0.36 W/kg
TYPE OF MODULATION:	GMSK (Voice Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	12.5%	SAR START:	0.341 W/kg
INPUT POWER LEVEL:	32.9dBm	SAR END:	0.320 W/kg
PROBE BATTERY LAST CHANGED:	09/12/2014	SAR DRIFT DURING SCAN:	-6.200 %

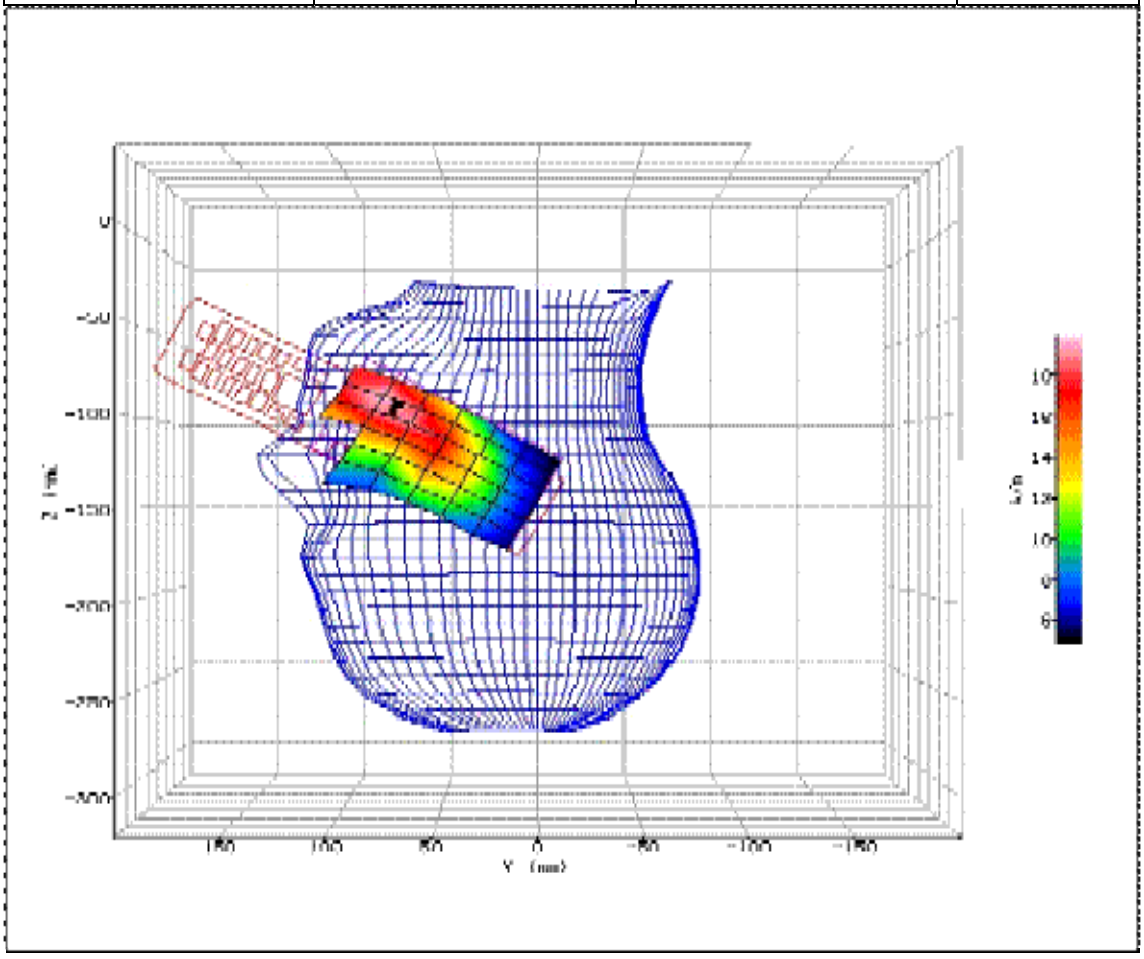

Figure 6: SAR Head Testing Results for the Sharp Mobile Handset at 836.4MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	09/12/2014-10:26:41	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.80°C	LIQUID SIMULANT:	850 Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	43.12
RELATIVE HUMIDITY:	23.10%	CONDUCTIVITY:	0.911
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	23.30°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	50.10mm
DUT POSITION:	Left-15°	MAX SAR Z-AXIS LOCATION:	-117.70mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	10.244
TEST FREQUENCY:	836.4MHz	SAR 1g:	0.12 W/kg
TYPE OF MODULATION:	GMSK (Voice Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	12.5%	SAR START:	0.105 W/kg
INPUT POWER LEVEL:	32.9dBm	SAR END:	0.103 W/kg
PROBE BATTERY LAST CHANGED:	09/12/2014	SAR DRIFT DURING SCAN:	-2.000 %

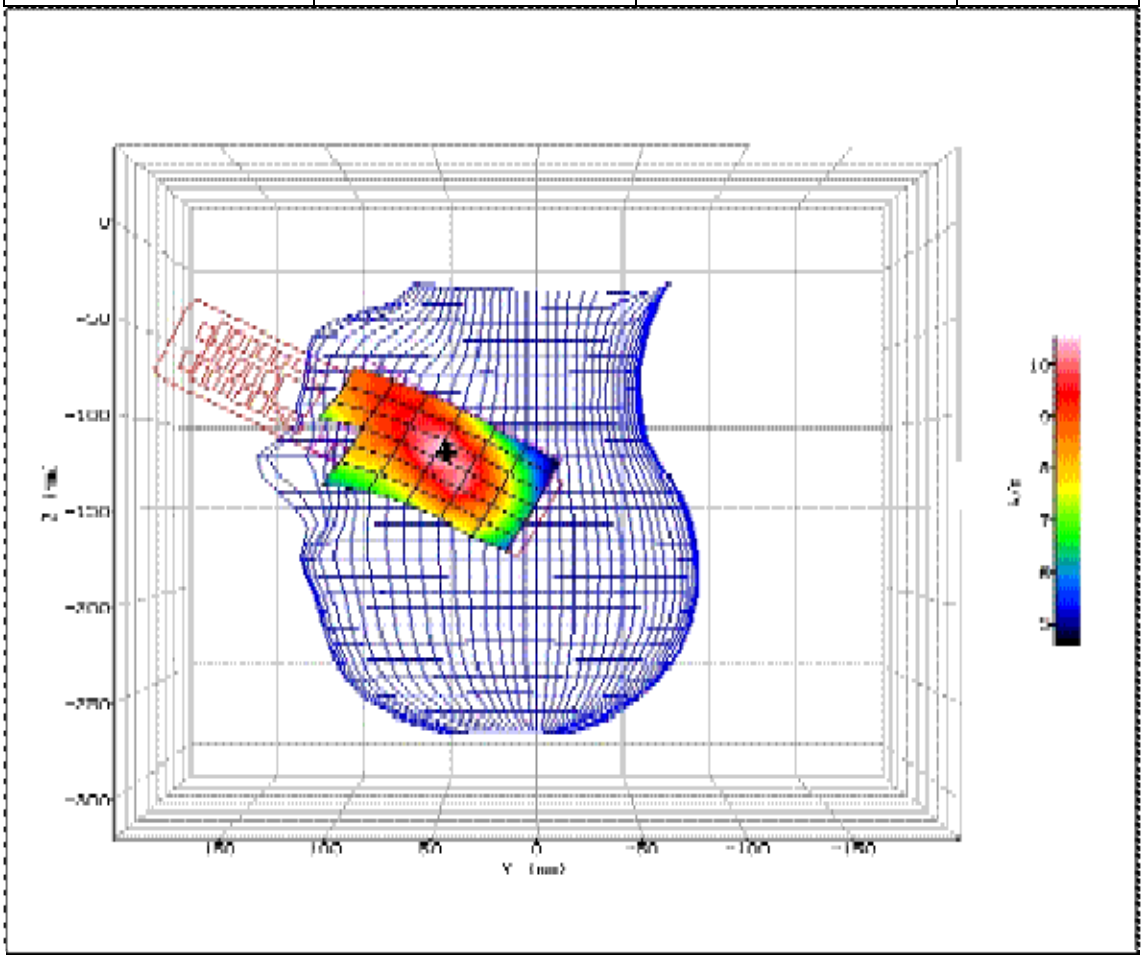

Figure 7: SAR Head Testing Results for the Sharp Mobile Handset at 836.4MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	09/12/2014-11:58:44	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.80°C	LIQUID SIMULANT:	850 Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	43.12
RELATIVE HUMIDITY:	23.10%	CONDUCTIVITY:	0.911
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	23.30°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	85.50mm
DUT POSITION:	Right-Cheek	MAX SAR Z-AXIS LOCATION:	-121.00mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	18.882
TEST FREQUENCY:	836.4MHz	SAR 1g:	0.32 W/kg
TYPE OF MODULATION:	GMSK (Voice Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	12.5%	SAR START:	0.388 W/kg
INPUT POWER LEVEL:	32.9dBm	SAR END:	0.372 W/kg
PROBE BATTERY LAST CHANGED:	09/12/2014	SAR DRIFT DURING SCAN:	-4.100 %

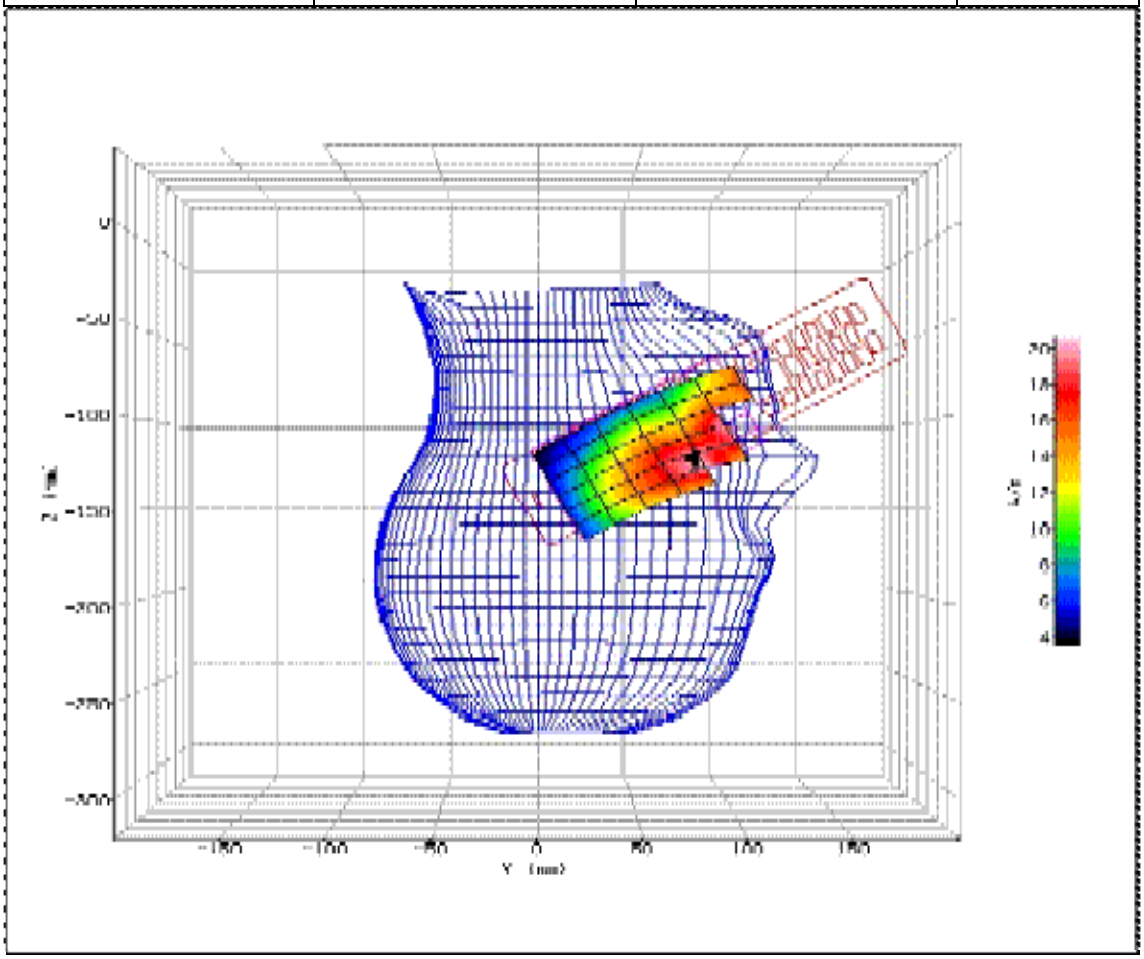

Figure 8: SAR Head Testing Results for the Sharp Mobile Handset at 836.4MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	09/12/2014-12:23:05	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.80°C	LIQUID SIMULANT:	850 Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	43.12
RELATIVE HUMIDITY:	23.10%	CONDUCTIVITY:	0.911
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	23.30°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	71.10mm
DUT POSITION:	Right-15°	MAX SAR Z-AXIS LOCATION:	-125.80mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	10.602
TEST FREQUENCY:	836.4MHz	SAR 1g:	0.09 W/kg
TYPE OF MODULATION:	GMSK (Voice Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	12.5%	SAR START:	0.101 W/kg
INPUT POWER LEVEL:	32.9dBm	SAR END:	0.102 W/kg
PROBE BATTERY LAST CHANGED:	09/12/2014	SAR DRIFT DURING SCAN:	1.200 %

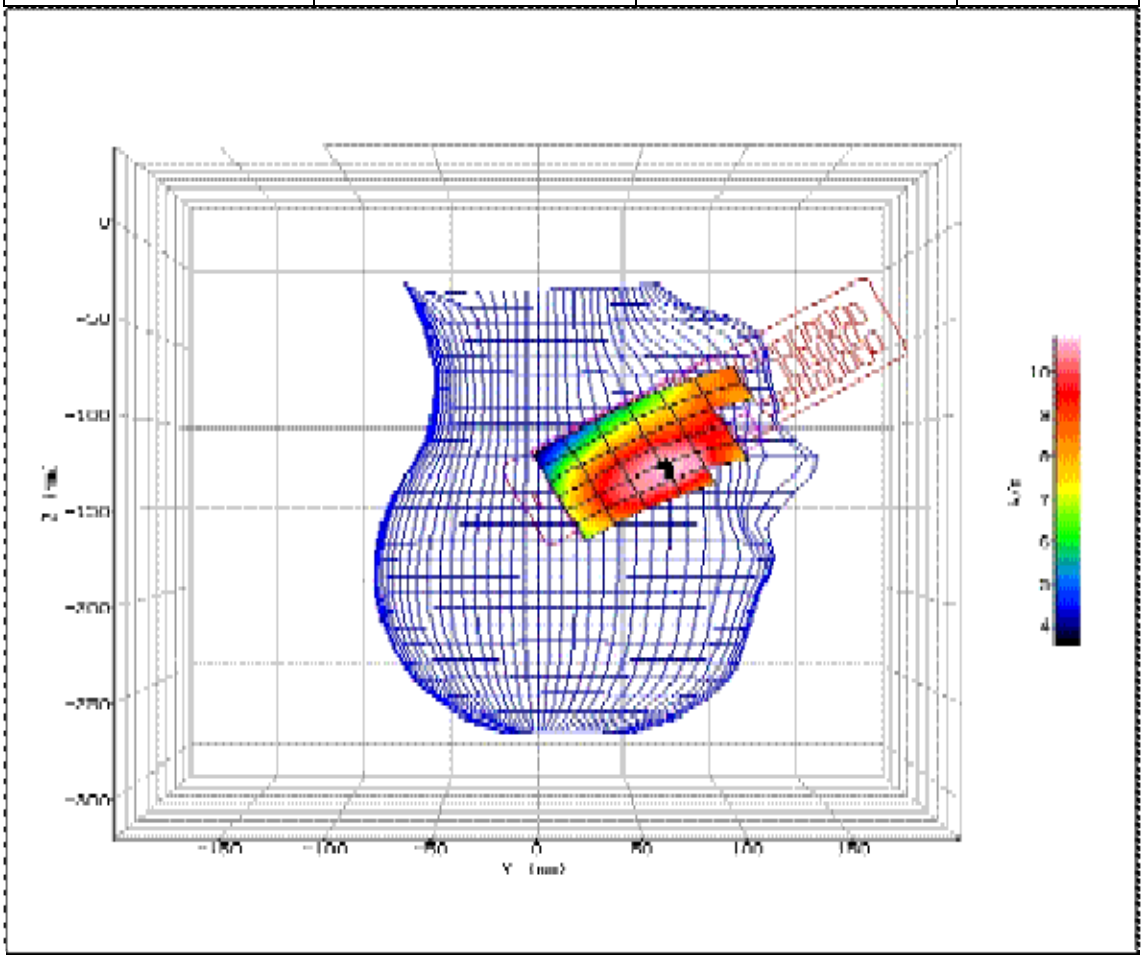

Figure 9: SAR Head Testing Results for the Sharp Mobile Handset at 836.4MHz.

2.3 GSM 850MHz HEAD SAR TEST RESULTS AND COURSE AREA SCANS – 2D

.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	09/12/2014-14:39:10	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.80°C	LIQUID SIMULANT:	850 Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	43.12
RELATIVE HUMIDITY:	23.10%	CONDUCTIVITY:	0.911
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	23.30°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	80.90mm
DUT POSITION:	Left-Cheek	MAX SAR Z-AXIS LOCATION:	-87.80mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	16.301
TEST FREQUENCY:	848.8MHz	SAR 1g:	0.43 W/kg
TYPE OF MODULATION:	GMSK (GPRS Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	50%	SAR START:	0.386 W/kg
INPUT POWER LEVEL:	27.5dBm	SAR END:	0.396 W/kg
PROBE BATTERY LAST CHANGED:	09/12/2014	SAR DRIFT DURING SCAN:	2.600 %

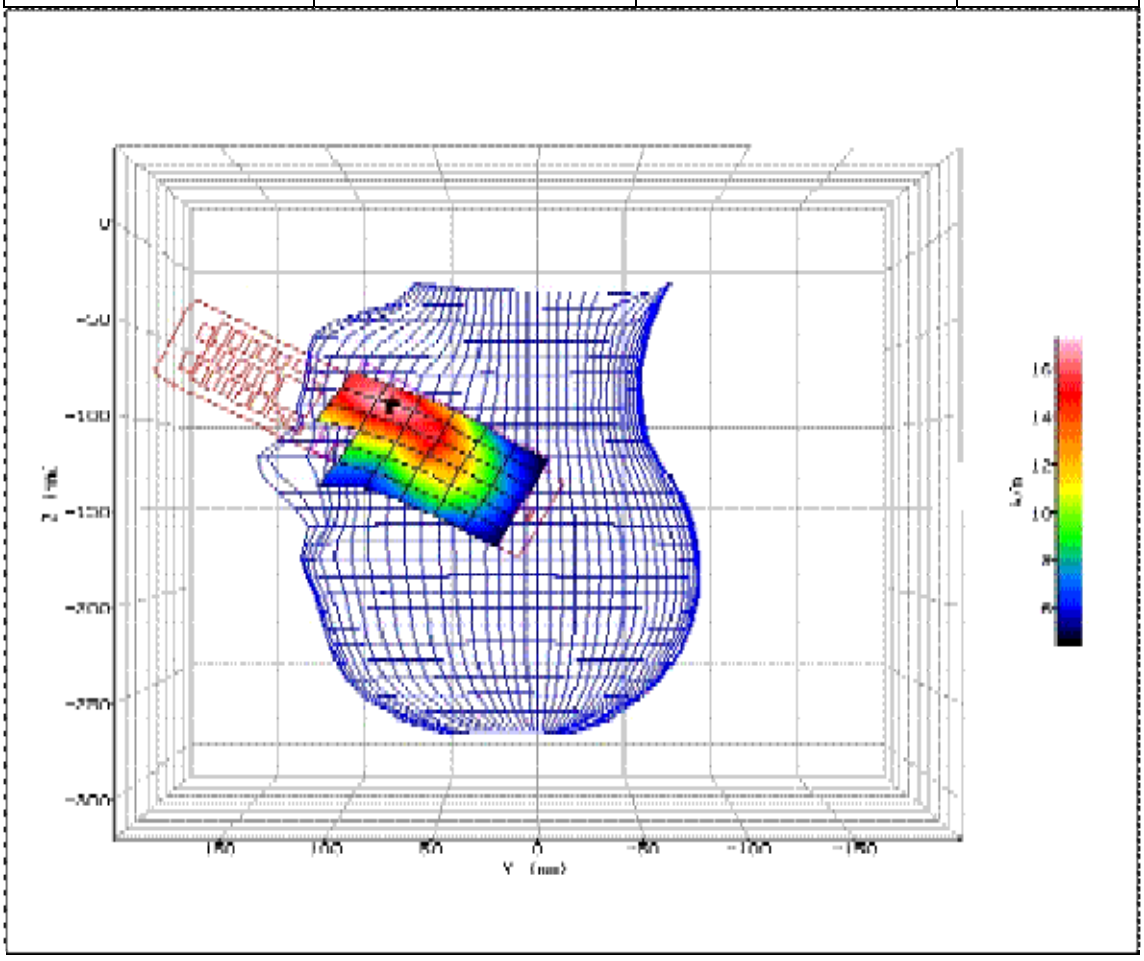

Figure 10: SAR Head Testing Results for the Sharp Mobile Handset at 848.8MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	09/12/2014-15:06:59	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.80°C	LIQUID SIMULANT:	850 Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	43.12
RELATIVE HUMIDITY:	23.10%	CONDUCTIVITY:	0.911
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	23.30°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	51.50mm
DUT POSITION:	Left-15°	MAX SAR Z-AXIS LOCATION:	-115.50mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	12.360
TEST FREQUENCY:	848.8MHz	SAR 1g:	0.18 W/kg
TYPE OF MODULATION:	GMSK (GPRS Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	50%	SAR START:	0.153 W/kg
INPUT POWER LEVEL:	27.5dBm	SAR END:	0.153 W/kg
PROBE BATTERY LAST CHANGED:	09/12/2014	SAR DRIFT DURING SCAN:	0.300 %

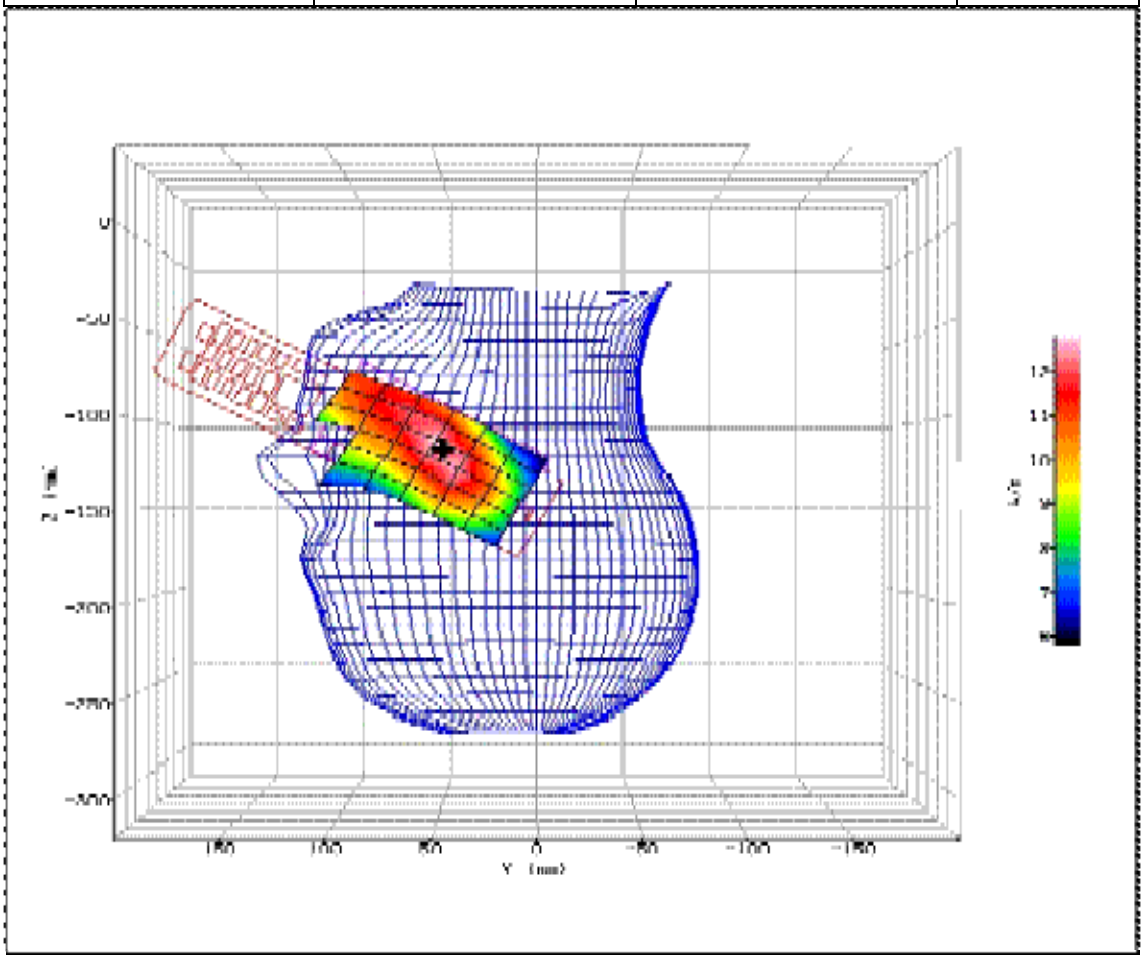

Figure 11: SAR Head Testing Results for the Sharp Mobile Handset at 848.8MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	09/12/2014-13:12:31	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.80°C	LIQUID SIMULANT:	850 Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	43.12
RELATIVE HUMIDITY:	23.10%	CONDUCTIVITY:	0.911
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	23.30°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	84.20mm
DUT POSITION:	Right-Cheek	MAX SAR Z-AXIS LOCATION:	-122.70mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	18.103
TEST FREQUENCY:	848.8MHz	SAR 1g:	0.40 W/kg
TYPE OF MODULATION:	GMSK (GPRS Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	50%	SAR START:	0.447 W/kg
INPUT POWER LEVEL:	27.5dBm	SAR END:	0.462 W/kg
PROBE BATTERY LAST CHANGED:	09/12/2014	SAR DRIFT DURING SCAN:	3.400 %

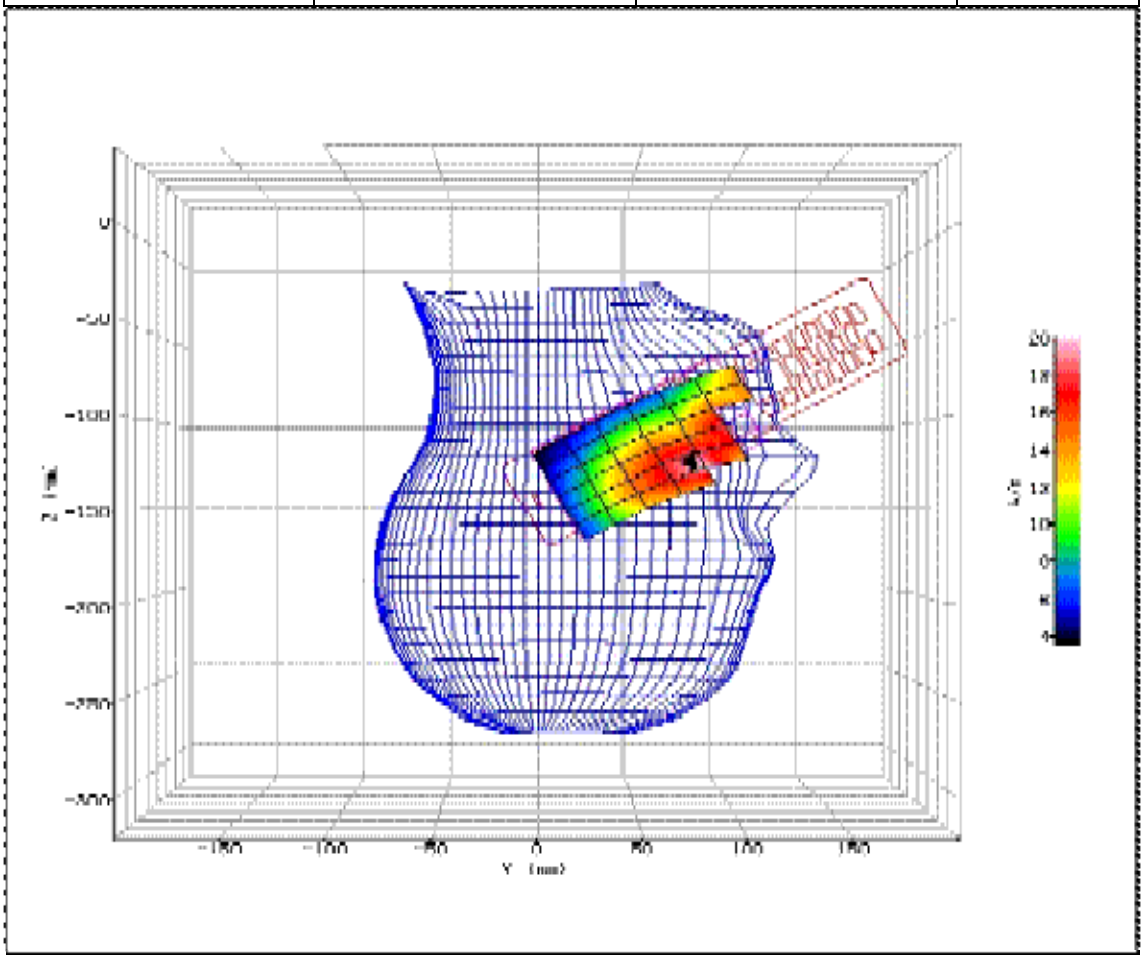

Figure 12: SAR Head Testing Results for the Sharp Mobile Handset at 848.8MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	09/12/2014-13:38:28	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.80°C	LIQUID SIMULANT:	850 Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	43.12
RELATIVE HUMIDITY:	23.10%	CONDUCTIVITY:	0.911
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	23.30°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	64.00mm
DUT POSITION:	Right-15°	MAX SAR Z-AXIS LOCATION:	-129.10mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	12.316
TEST FREQUENCY:	848.8MHz	SAR 1g:	0.13 W/kg
TYPE OF MODULATION:	GMSK (GPRS Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	50%	SAR START:	0.142 W/kg
INPUT POWER LEVEL:	27.5dBm	SAR END:	0.149 W/kg
PROBE BATTERY LAST CHANGED:	09/12/2014	SAR DRIFT DURING SCAN:	5.000 %

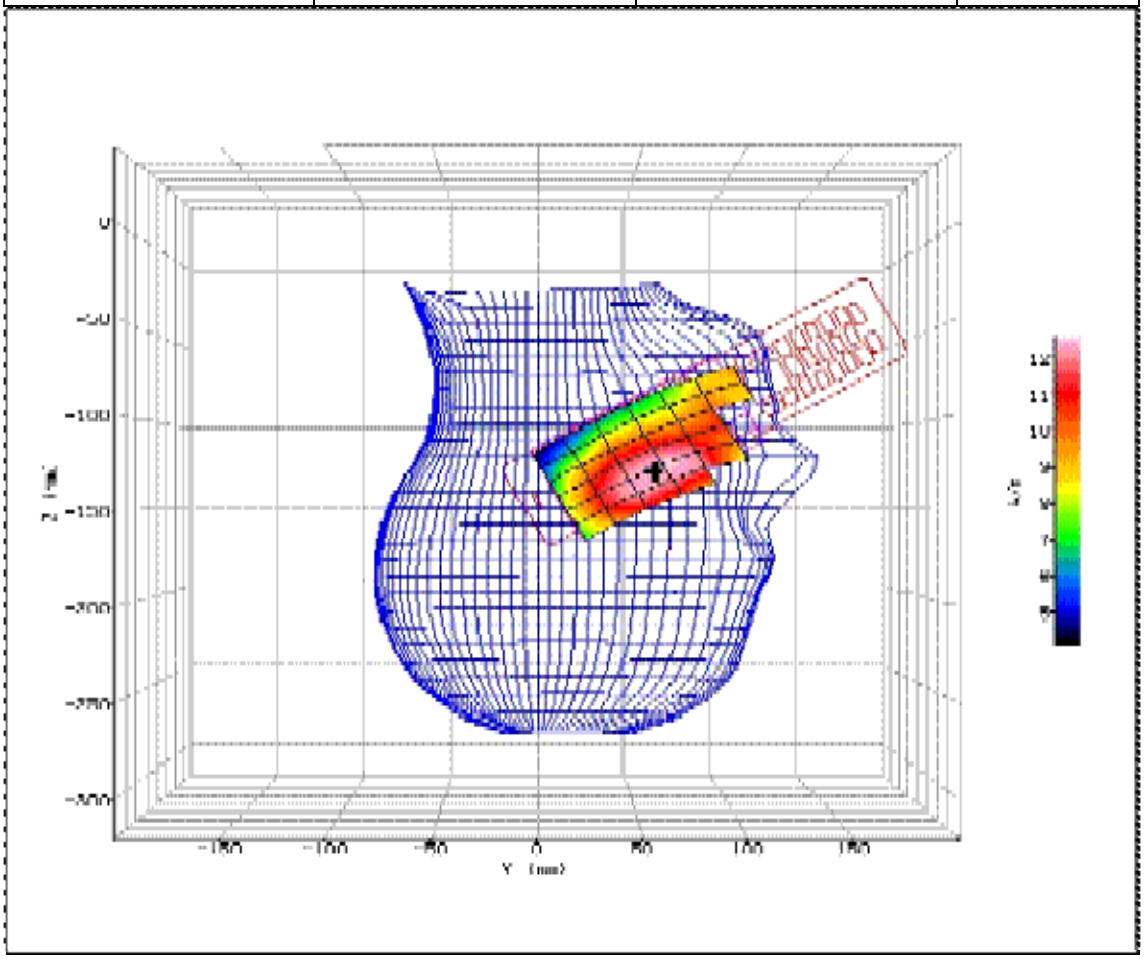

Figure 13: SAR Head Testing Results for the Sharp Mobile Handset at 848.8MHz.

2.4 GSM 850MHz BODY SAR TEST RESULTS AND COURSE AREA SCANS – 2D

.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	18/12/2014-12:06:10	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	850 Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	55.72
RELATIVE HUMIDITY:	45.90%	CONDUCTIVITY:	0.999
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.70°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	-1.30mm
DUT POSITION:	10mm-Front Facing	MAX SAR Y-AXIS LOCATION:	-2.50mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	26.899
TEST FREQUENCY:	848.8MHz	SAR 1g:	0.84 W/kg
TYPE OF MODULATION:	GMSK (GPRS Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	50%	SAR START:	0.900 W/kg
INPUT POWER LEVEL:	27.5dBm	SAR END:	0.880 W/kg
PROBE BATTERY LAST CHANGED:	18/12/2014	SAR DRIFT DURING SCAN:	-2.200 %

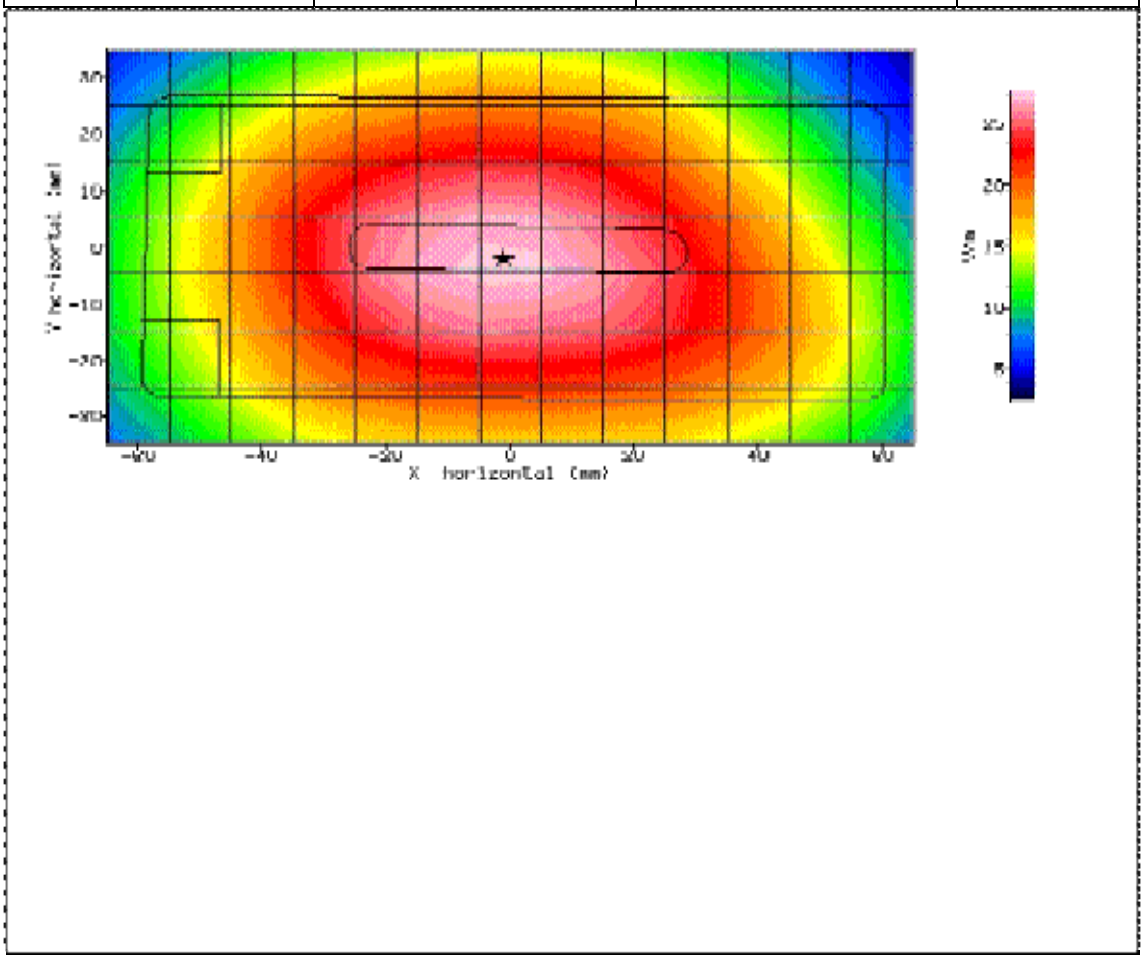

Figure 14: SAR Body Testing Results for the Sharp Mobile Handset at 848.8MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	19/12/2014-09:18:45	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	850 Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	55.72
RELATIVE HUMIDITY:	37.80%	CONDUCTIVITY:	0.999
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.90°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	-11.10mm
DUT POSITION:	10mm-Rear Facing	MAX SAR Y-AXIS LOCATION:	0.10mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	35.262
TEST FREQUENCY:	848.8MHz	SAR 1g:	1.23 W/kg
TYPE OF MODULATION:	GMSK (GPRS Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	50%	SAR START:	1.313 W/kg
INPUT POWER LEVEL:	27.5dBm	SAR END:	1.254 W/kg
PROBE BATTERY LAST CHANGED:	18/12/2014	SAR DRIFT DURING SCAN:	-4.500 %

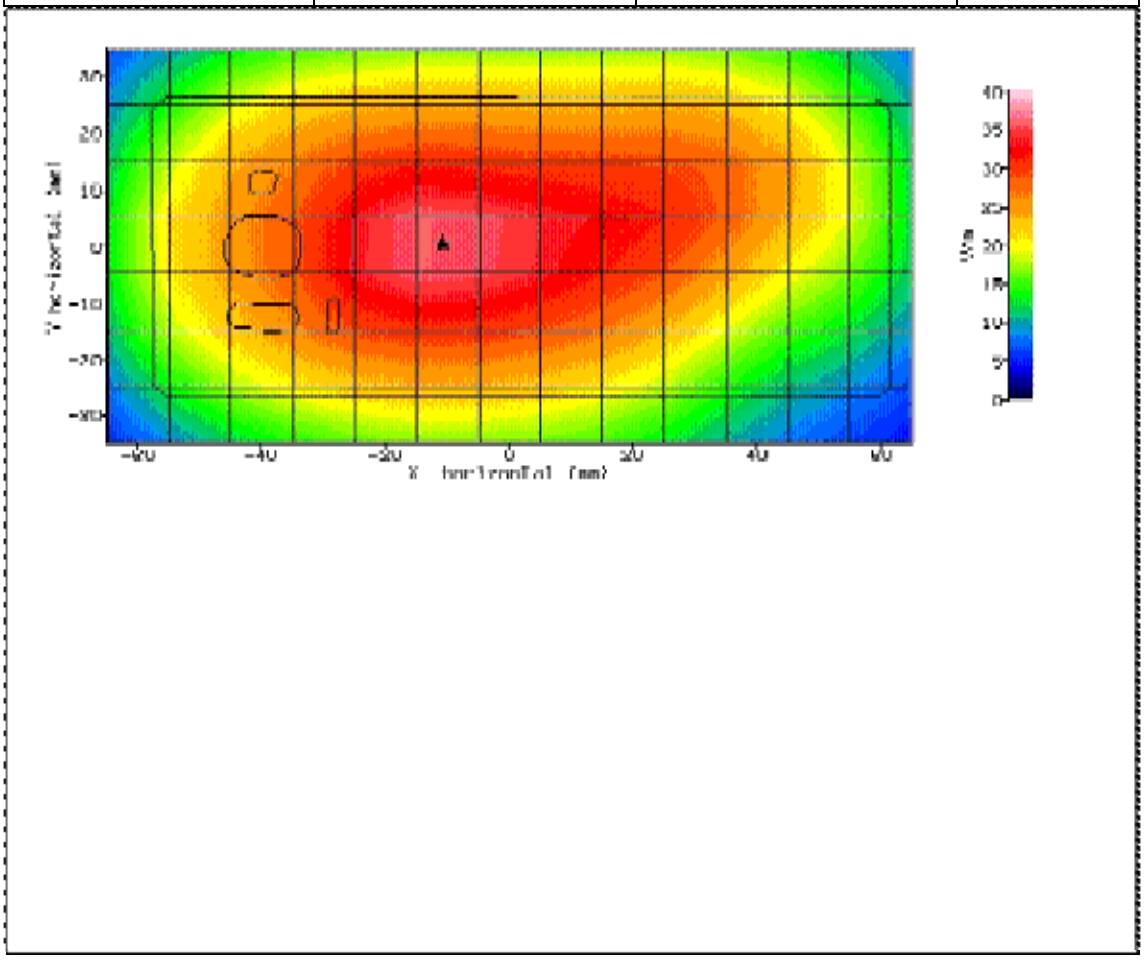

Figure 15: SAR Body Testing Results for the Sharp Mobile Handset at 848.8MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	19/12/2014-09:38:29	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	850 Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	55.72
RELATIVE HUMIDITY:	37.80%	CONDUCTIVITY:	0.999
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.90°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	-9.00mm
DUT POSITION:	10mm-Left Edge	MAX SAR Y-AXIS LOCATION:	-1.50mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	25.177
TEST FREQUENCY:	848.8MHz	SAR 1g:	0.65 W/kg
TYPE OF MODULATION:	GMSK (GPRS Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	50%	SAR START:	0.681 W/kg
INPUT POWER LEVEL:	27.5dBm	SAR END:	0.691 W/kg
PROBE BATTERY LAST CHANGED:	18/12/2014	SAR DRIFT DURING SCAN:	1.500 %

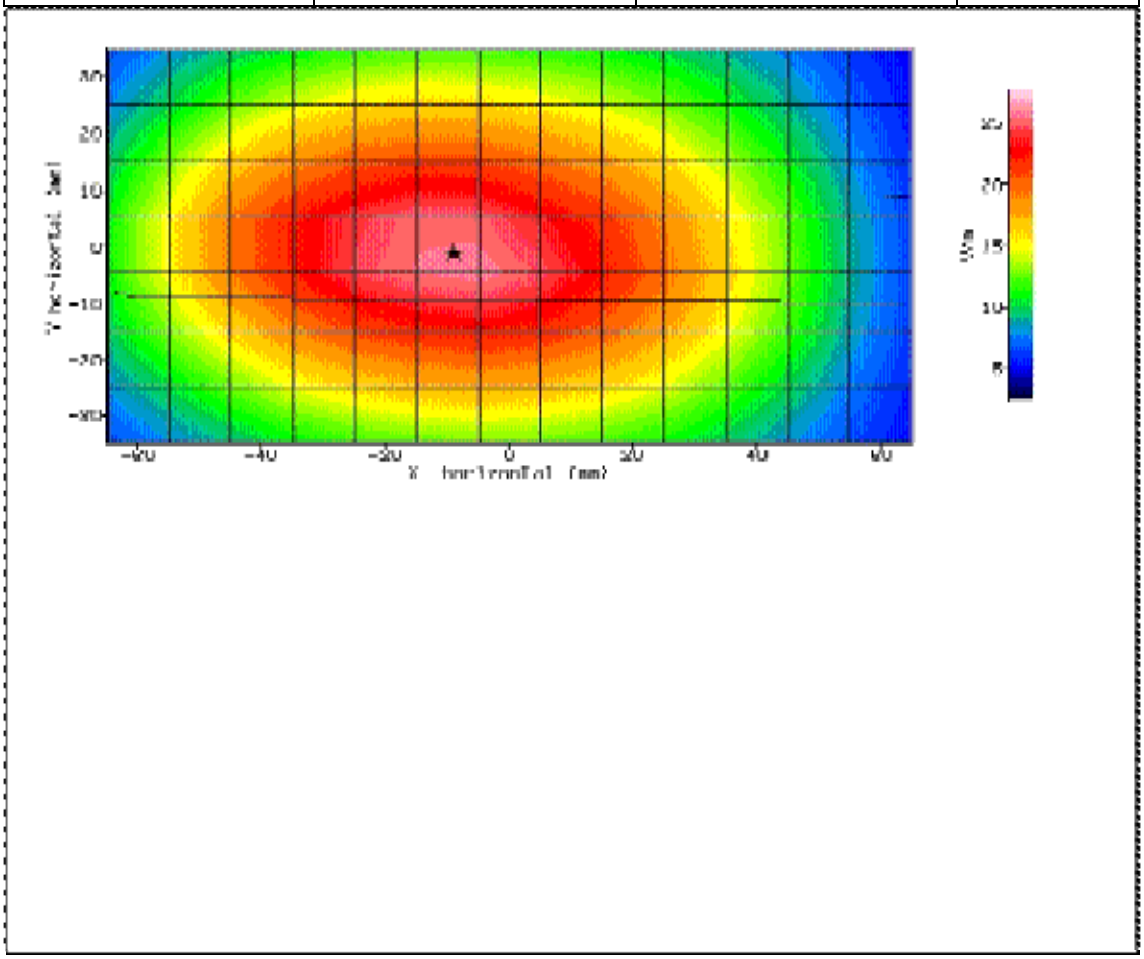

Figure 16: SAR Body Testing Results for the Sharp Mobile Handset at 848.8MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	19/12/2014-10:32:41	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	850 Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	55.72
RELATIVE HUMIDITY:	37.80%	CONDUCTIVITY:	0.999
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.90°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	2.80mm
DUT POSITION:	10mm-Right Edge	MAX SAR Y-AXIS LOCATION:	-0.50mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	23.092
TEST FREQUENCY:	848.8MHz	SAR 1g:	0.54 W/kg
TYPE OF MODULATION:	GMSK (GPRS Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	50%	SAR START:	0.562 W/kg
INPUT POWER LEVEL:	27.5dBm	SAR END:	0.572 W/kg
PROBE BATTERY LAST CHANGED:	18/12/2014	SAR DRIFT DURING SCAN:	1.800 %

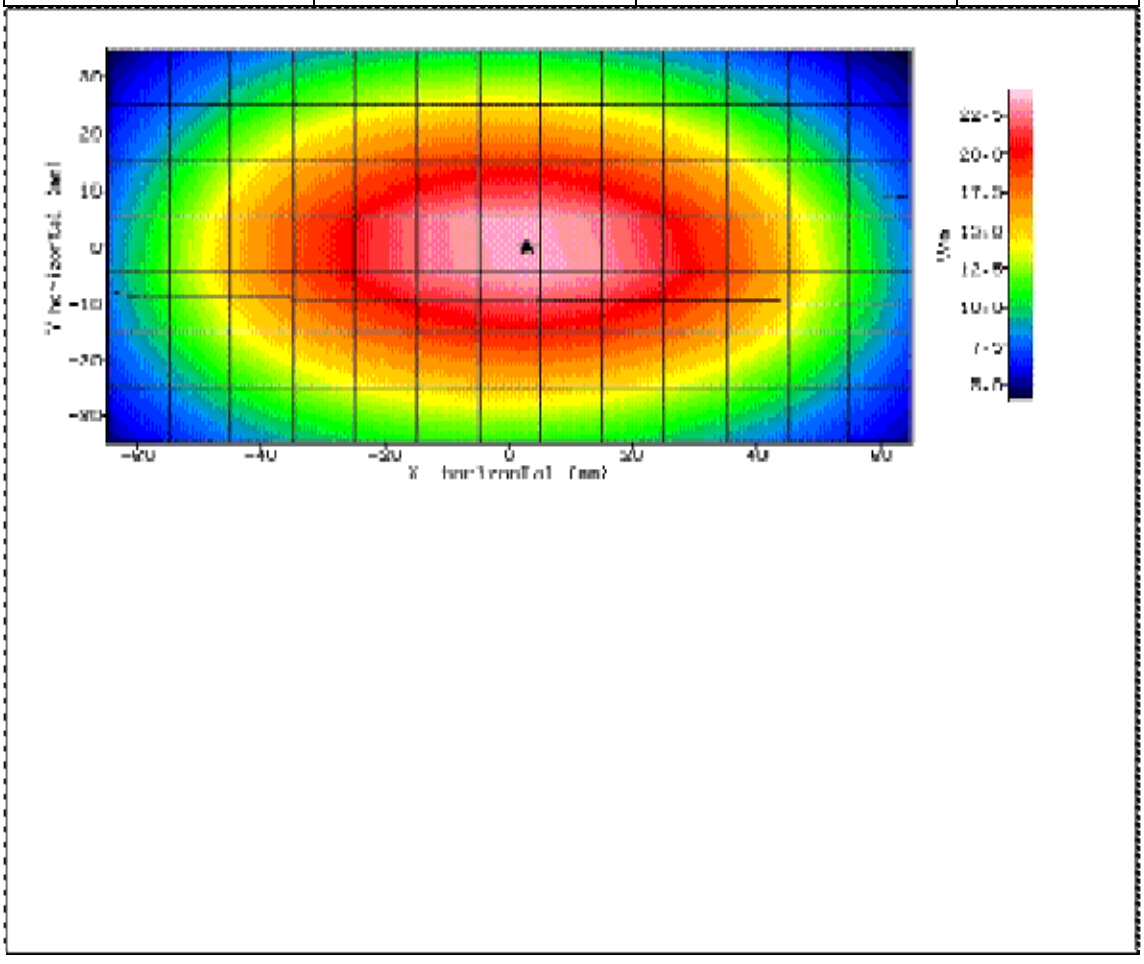

Figure 17: SAR Body Testing Results for the Sharp Mobile Handset at 848.8MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	19/12/2014-10:50:00	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	850 Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	55.72
RELATIVE HUMIDITY:	37.80%	CONDUCTIVITY:	0.999
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.90°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	1.20mm
DUT POSITION:	10mm-Top Edge	MAX SAR Y-AXIS LOCATION:	8.40mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	7.120
TEST FREQUENCY:	848.8MHz	SAR 1g:	0.06 W/kg
TYPE OF MODULATION:	GMSK (GPRS Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	50%	SAR START:	0.059 W/kg
INPUT POWER LEVEL:	27.5dBm	SAR END:	0.059 W/kg
PROBE BATTERY LAST CHANGED:	18/12/2014	SAR DRIFT DURING SCAN:	0.300 %

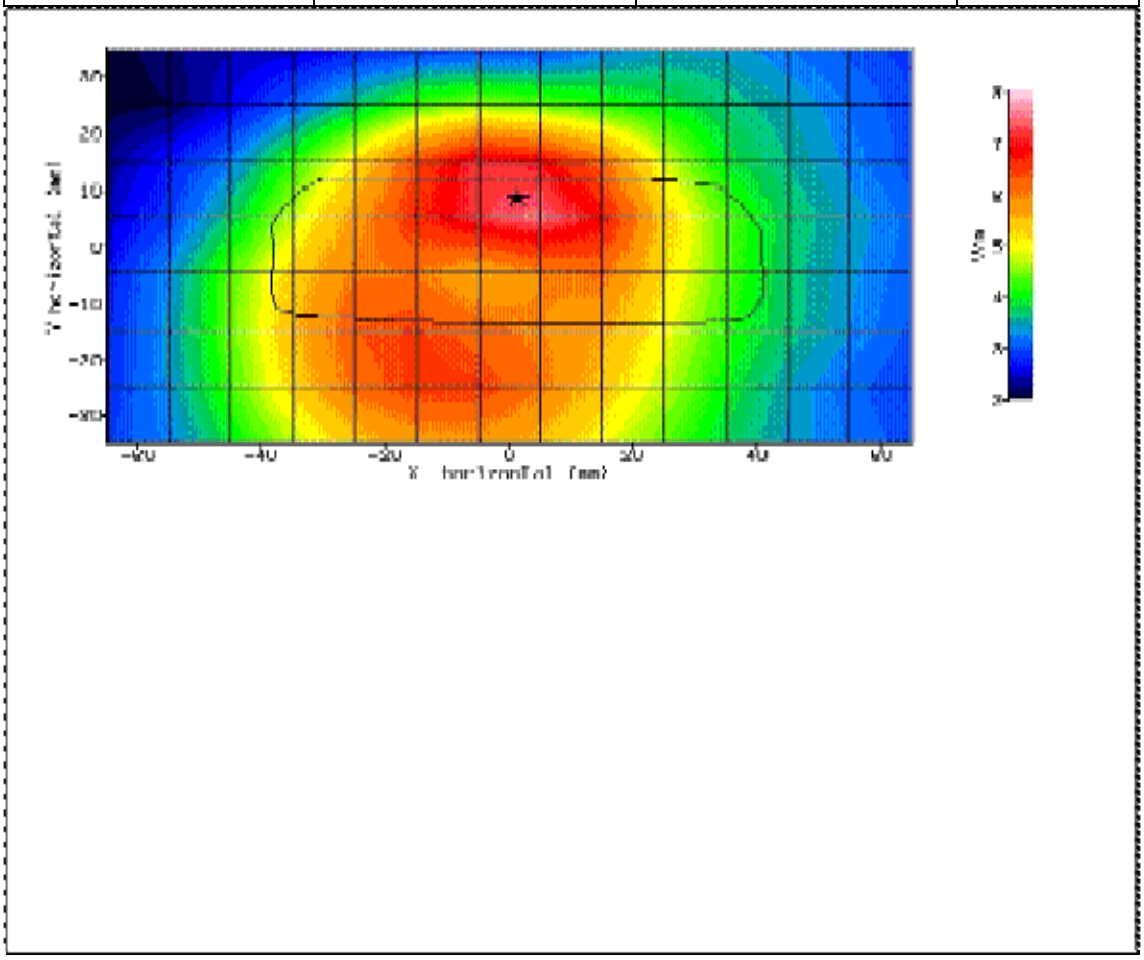

Figure 18: SAR Body Testing Results for the Sharp Mobile Handset at 848.8MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	19/12/2014-11:49:02	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	850 Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	55.72
RELATIVE HUMIDITY:	37.80%	CONDUCTIVITY:	0.999
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.90°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	-14.10mm
DUT POSITION:	10mm-Rear Facing	MAX SAR Y-AXIS LOCATION:	5.30mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	35.069
TEST FREQUENCY:	824.2MHz	SAR 1g:	1.22 W/kg
TYPE OF MODULATION:	GMSK (GPRS Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	50%	SAR START:	1.306 W/kg
INPUT POWER LEVEL:	27.5dBm	SAR END:	1.283 W/kg
PROBE BATTERY LAST CHANGED:	18/12/2014	SAR DRIFT DURING SCAN:	-1.800 %

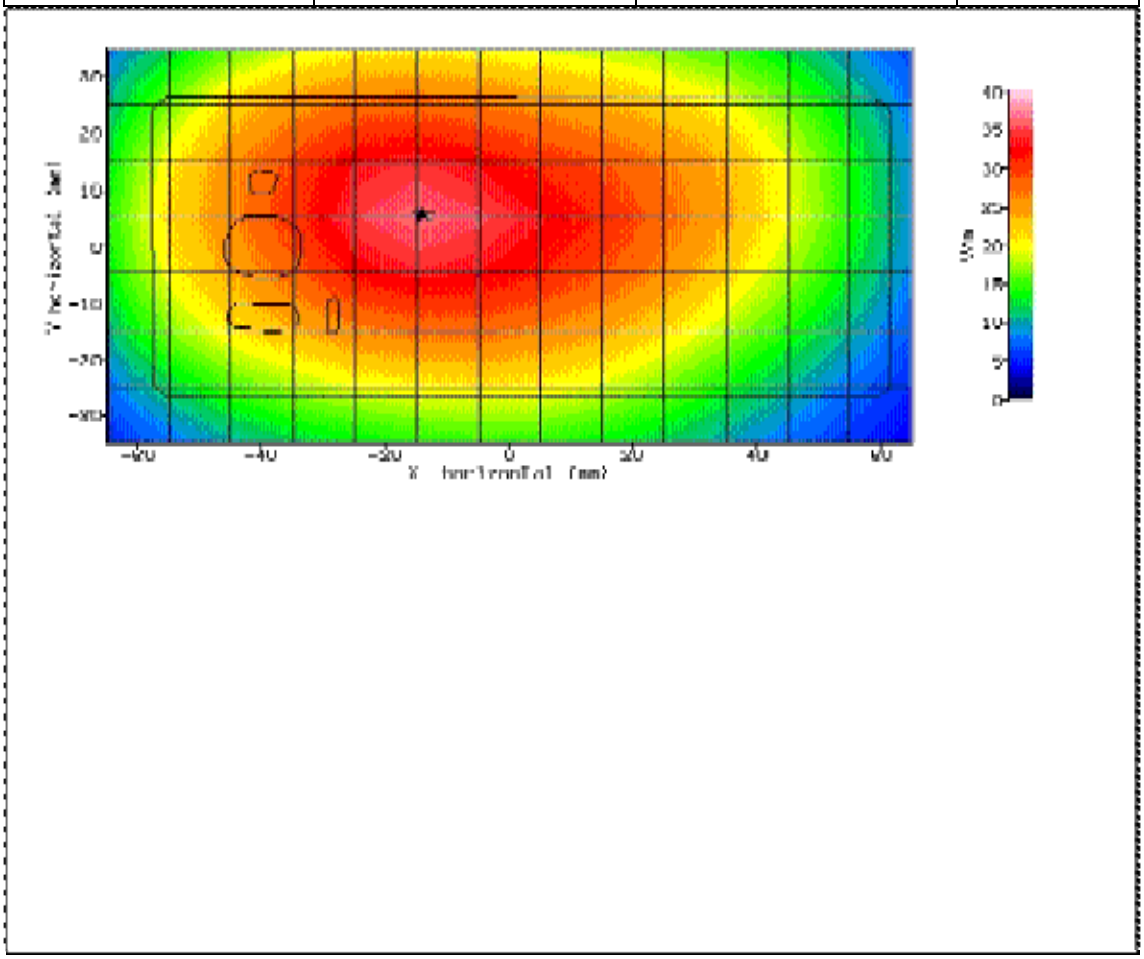

Figure 19: SAR Body Testing Results for the Sharp Mobile Handset at 824.2MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	19/12/2014-12:06:20	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	850 Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	55.72
RELATIVE HUMIDITY:	37.80%	CONDUCTIVITY:	0.999
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.90°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	-12.70mm
DUT POSITION:	10mm-Rear Facing	MAX SAR Y-AXIS LOCATION:	4.30mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	34.731
TEST FREQUENCY:	836.4MHz	SAR 1g:	1.19 W/kg
TYPE OF MODULATION:	GMSK (GPRS Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	50%	SAR START:	1.272 W/kg
INPUT POWER LEVEL:	27.5dBm	SAR END:	1.291 W/kg
PROBE BATTERY LAST CHANGED:	18/12/2014	SAR DRIFT DURING SCAN:	0.986 %

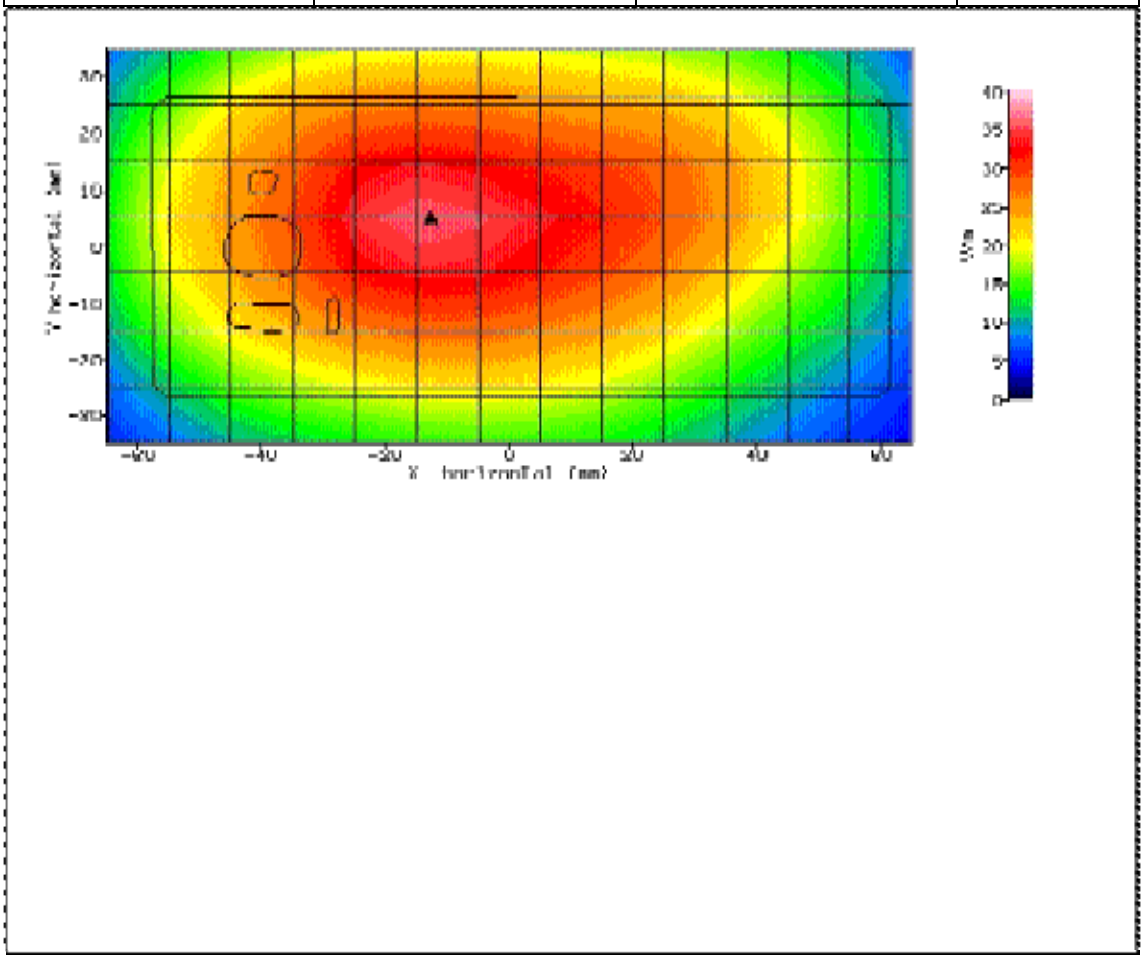

Figure 20: SAR Body Testing Results for the Sharp Mobile Handset at 836.4MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	19/12/2014-13:15:26	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	850 Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	55.72
RELATIVE HUMIDITY:	37.80%	CONDUCTIVITY:	0.999
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.90°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	-14.60mm
DUT POSITION:	10mm-Rear Facing	MAX SAR Y-AXIS LOCATION:	0.60mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	32.522
TEST FREQUENCY:	848.8MHz	SAR 1g:	1.05 W/kg
TYPE OF MODULATION:	GMSK (GPRS Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	50%	SAR START:	1.131 W/kg
INPUT POWER LEVEL:	27.5dBm	SAR END:	1.114 W/kg
PROBE BATTERY LAST CHANGED:	18/12/2014	SAR DRIFT DURING SCAN:	-1.600 %

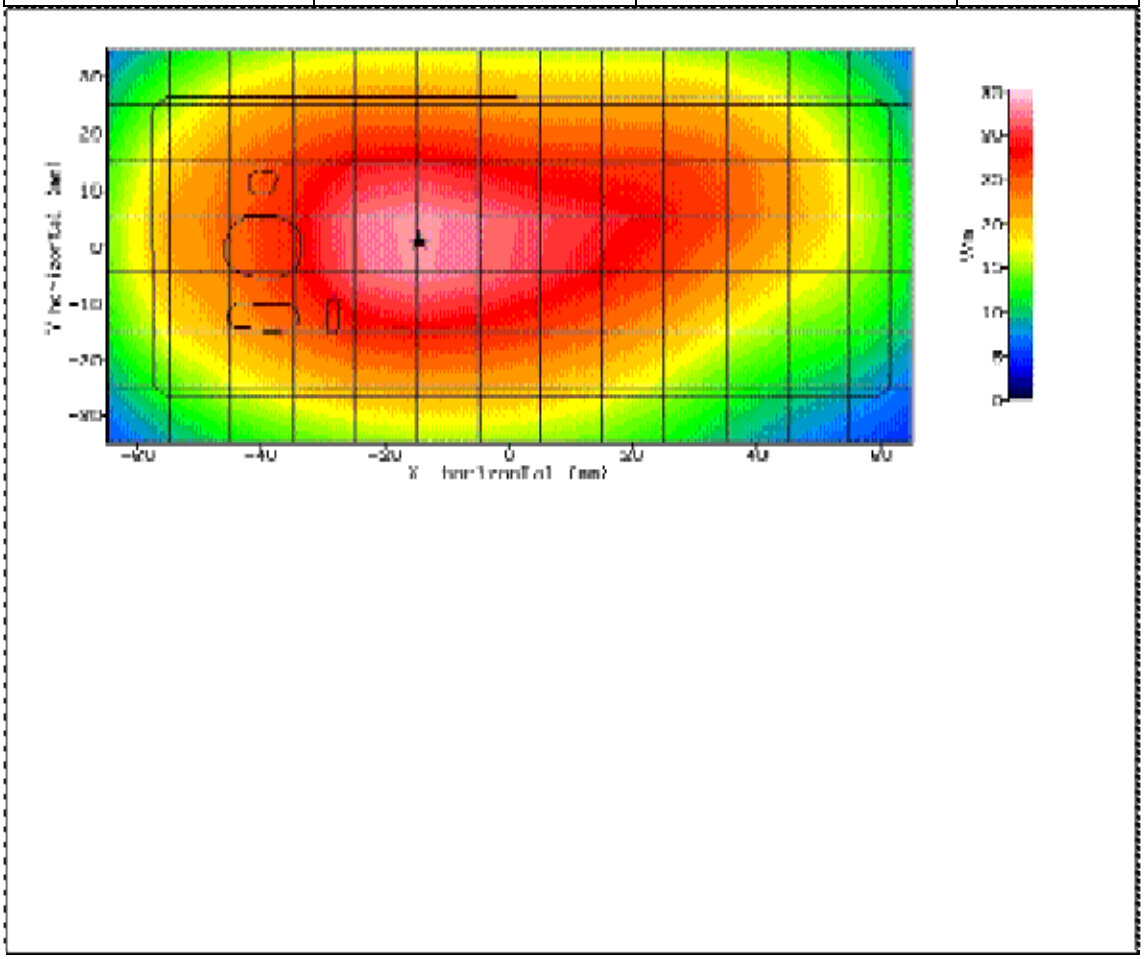

Figure 21: SAR Body Testing Results for the Sharp Mobile Handset at 848.8MHz.

2.5 WCDMA FDDV HEAD SAR TEST RESULTS AND COURSE AREA SCANS – 2D

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	09/12/2014-16:02:36	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.80°C	LIQUID SIMULANT:	850 Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	43.12
RELATIVE HUMIDITY:	32.30%	CONDUCTIVITY:	0.911
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	23.30°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	80.70mm
DUT POSITION:	Left-Cheek	MAX SAR Z-AXIS LOCATION:	-89.50mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	20.273
TEST FREQUENCY:	826.4MHz	SAR 1g:	0.41 W/kg
TYPE OF MODULATION:	QPSK (RMC Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.526 W/kg
INPUT POWER LEVEL:	24.2dBm	SAR END:	0.531 W/kg
PROBE BATTERY LAST CHANGED:	09/12/2014	SAR DRIFT DURING SCAN:	0.800 %

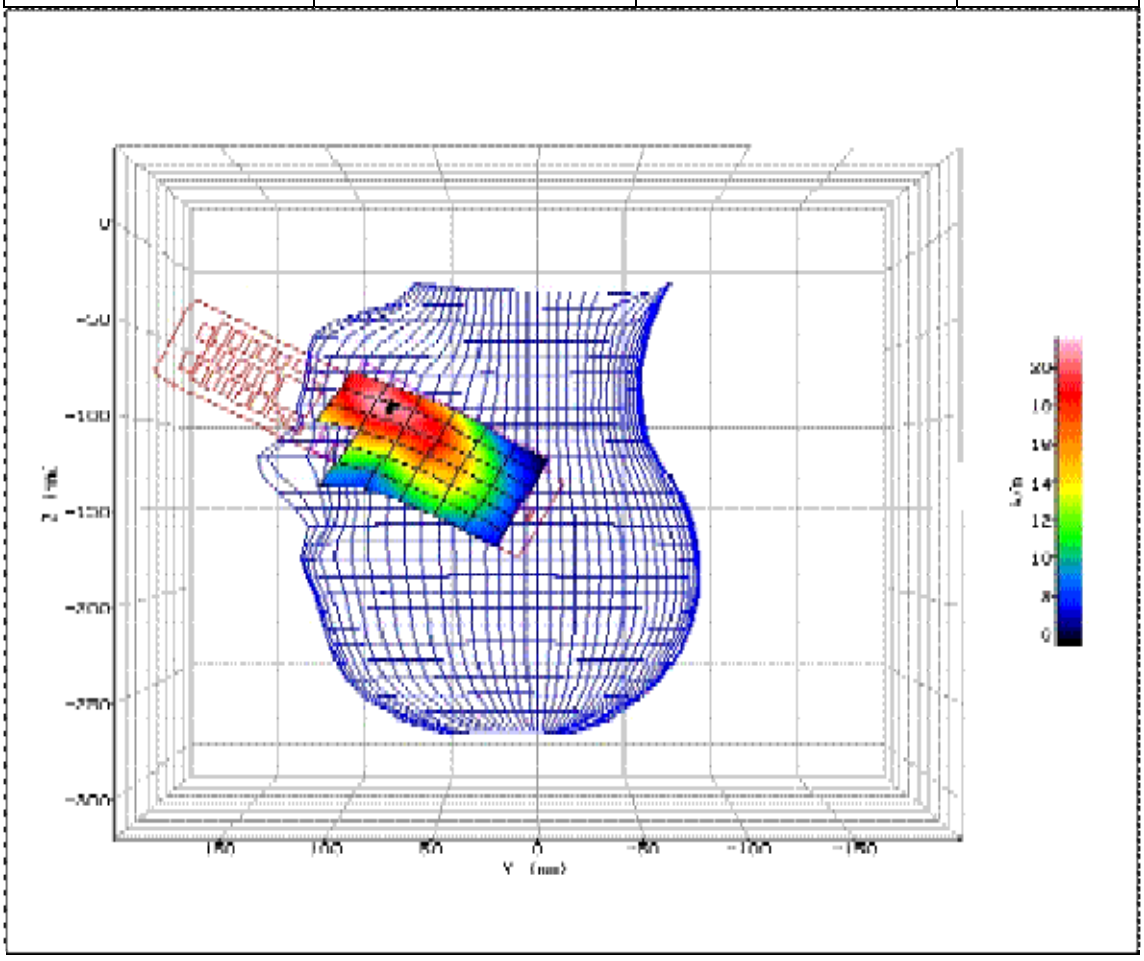

Figure 22: SAR Head Testing Results for the Sharp Mobile Handset at 826.4MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	09/12/2014-16:44:22	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.80°C	LIQUID SIMULANT:	850 Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	43.12
RELATIVE HUMIDITY:	32.30%	CONDUCTIVITY:	0.911
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	23.30°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	49.10mm
DUT POSITION:	Left-15°	MAX SAR Z-AXIS LOCATION:	-119.10mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	13.709
TEST FREQUENCY:	826.4MHz	SAR 1g:	0.17 W/kg
TYPE OF MODULATION:	QPSK (RMC Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.182 W/kg
INPUT POWER LEVEL:	24.2dBm	SAR END:	0.179 W/kg
PROBE BATTERY LAST CHANGED:	09/12/2014	SAR DRIFT DURING SCAN:	-1.900 %

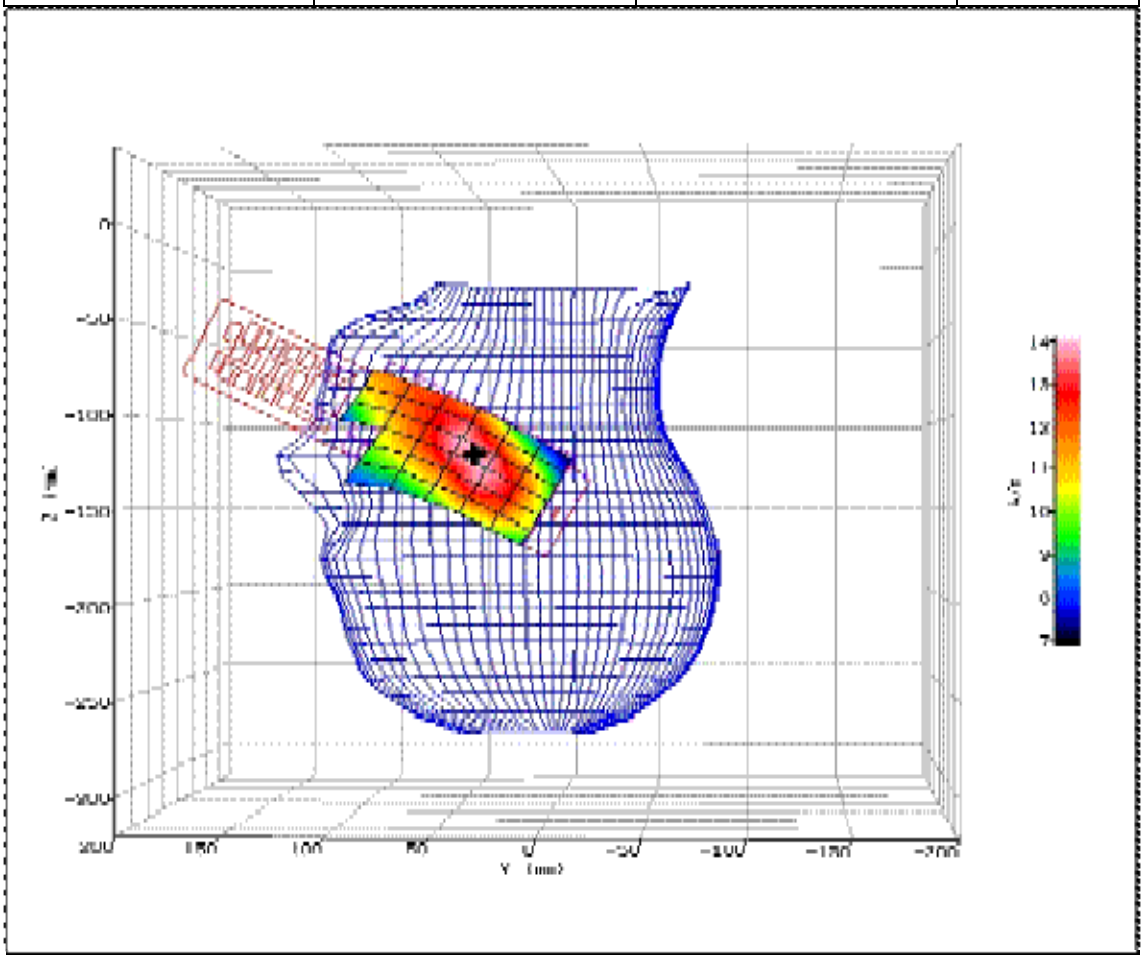

Figure 23: SAR Head Testing Results for the Sharp Mobile Handset at 826.4MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	10/12/2014-09:26:05	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	850 Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	43.12
RELATIVE HUMIDITY:	28.70%	CONDUCTIVITY:	0.911
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	23.00°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	85.20mm
DUT POSITION:	Right-Cheek	MAX SAR Z-AXIS LOCATION:	-119.90mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	20.475
TEST FREQUENCY:	826.4MHz	SAR 1g:	0.34 W/kg
TYPE OF MODULATION:	QPSK (RMC Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.477 W/kg
INPUT POWER LEVEL:	24.2dBm	SAR END:	0.479 W/kg
PROBE BATTERY LAST CHANGED:	10/12/2014	SAR DRIFT DURING SCAN:	0.400 %

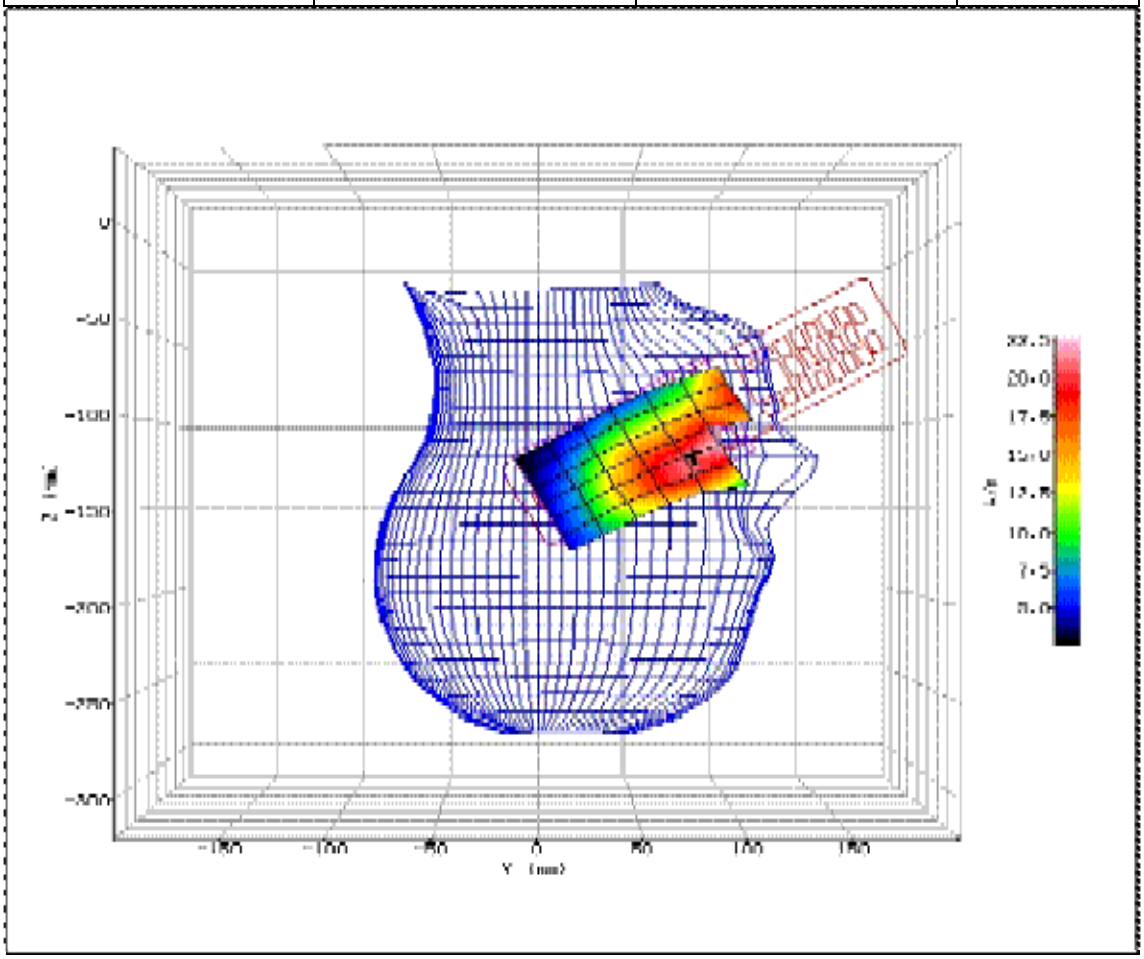

Figure 24: SAR Head Testing Results for the Sharp Mobile Handset at 826.4MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	10/12/2014-09:53:23	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	850 Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	43.12
RELATIVE HUMIDITY:	28.70%	CONDUCTIVITY:	0.911
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	23.00°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	66.80mm
DUT POSITION:	Right-15°	MAX SAR Z-AXIS LOCATION:	-128.30mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	11.846
TEST FREQUENCY:	826.4MHz	SAR 1g:	0.13 W/kg
TYPE OF MODULATION:	QPSK (RMC Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.130 W/kg
INPUT POWER LEVEL:	24.2dBm	SAR END:	0.131 W/kg
PROBE BATTERY LAST CHANGED:	10/12/2014	SAR DRIFT DURING SCAN:	0.800 %

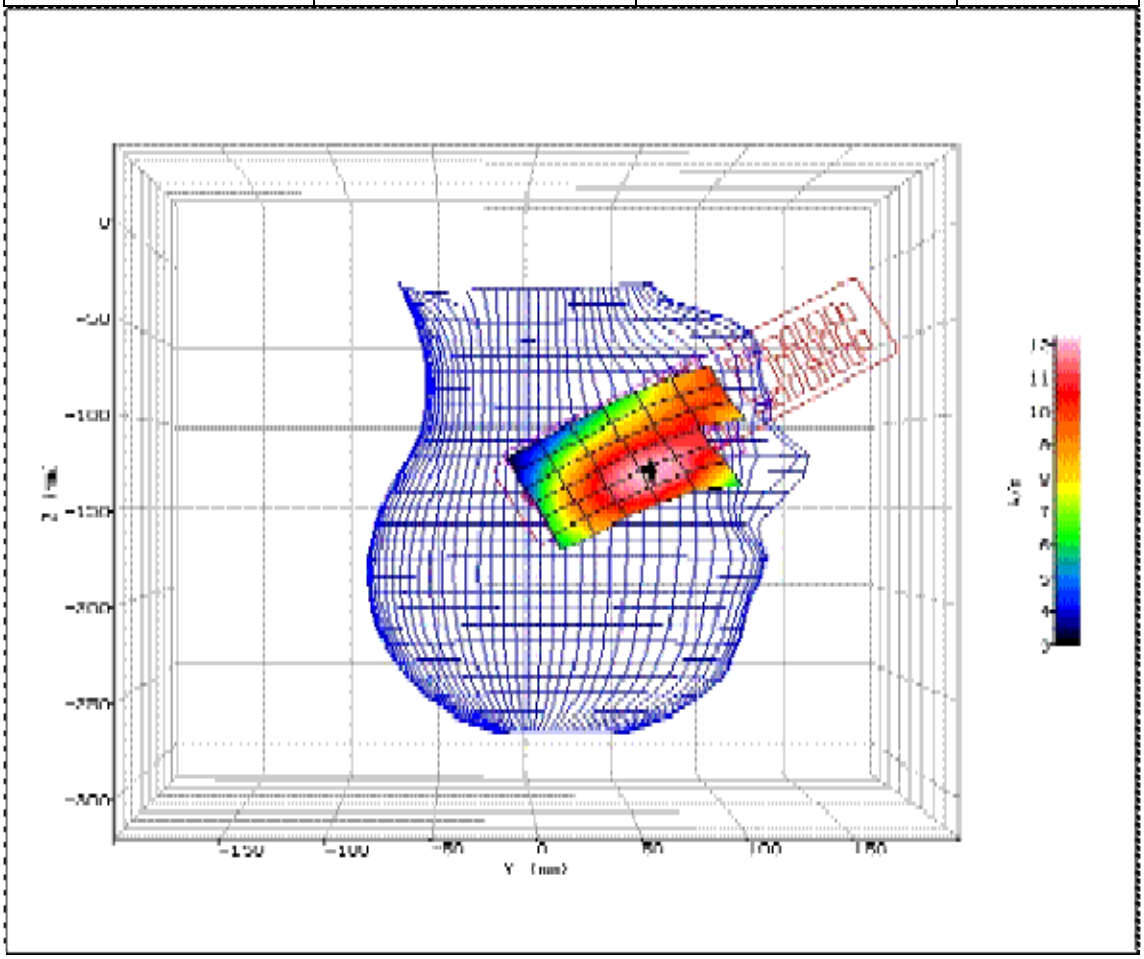

Figure 25: SAR Head Testing Results for the Sharp Mobile Handset at 826.4MHz.

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2.6 WCDMA FDDV BODY SAR TEST RESULTS AND COURSE AREA SCANS – 2D

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SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	15/12/2014-15:24:25	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.70°C	LIQUID SIMULANT:	850 Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	55.72
RELATIVE HUMIDITY:	36.00%	CONDUCTIVITY:	0.999
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.80°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	-7.60mm
DUT POSITION:	10mm-Front Facing	MAX SAR Y-AXIS LOCATION:	-3.60mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	23.791
TEST FREQUENCY:	826.4MHz	SAR 1g:	0.55 W/kg
TYPE OF MODULATION:	QPSK (RMC Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.589 W/kg
INPUT POWER LEVEL:	24.2dBm	SAR END:	0.591 W/kg
PROBE BATTERY LAST CHANGED:	15/12/2014	SAR DRIFT DURING SCAN:	0.300 %

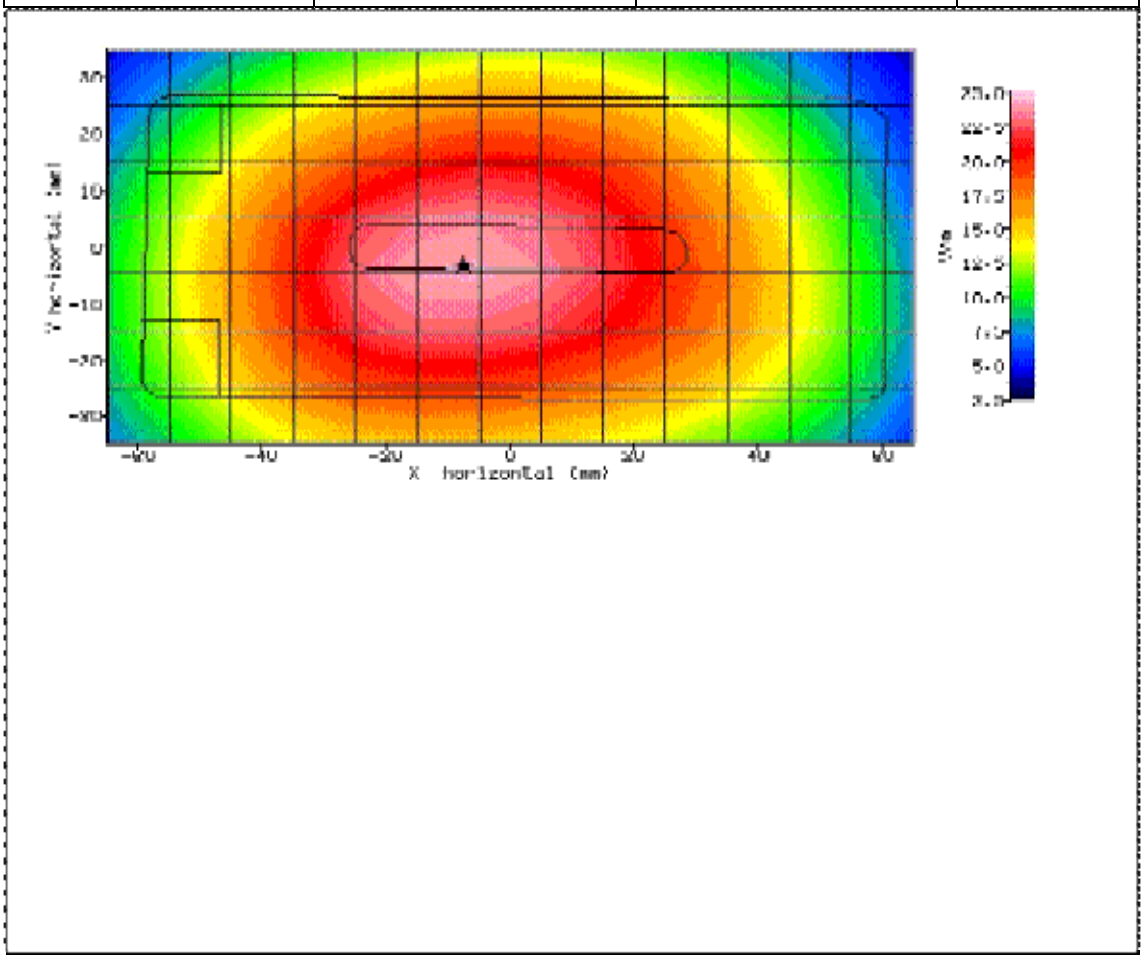

Figure 26: SAR Body Testing Results for the Sharp Mobile Handset at 826.4MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	15/12/2014-15:42:42	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.70°C	LIQUID SIMULANT:	850 Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	55.72
RELATIVE HUMIDITY:	36.00%	CONDUCTIVITY:	0.999
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.80°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	-13.80mm
DUT POSITION:	10mm-Rear Facing	MAX SAR Y-AXIS LOCATION:	6.30mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	31.195
TEST FREQUENCY:	826.4MHz	SAR 1g:	0.98 W/kg
TYPE OF MODULATION:	QPSK (RMC Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	1.042 W/kg
INPUT POWER LEVEL:	24.2dBm	SAR END:	1.063 W/kg
PROBE BATTERY LAST CHANGED:	15/12/2014	SAR DRIFT DURING SCAN:	2.100 %

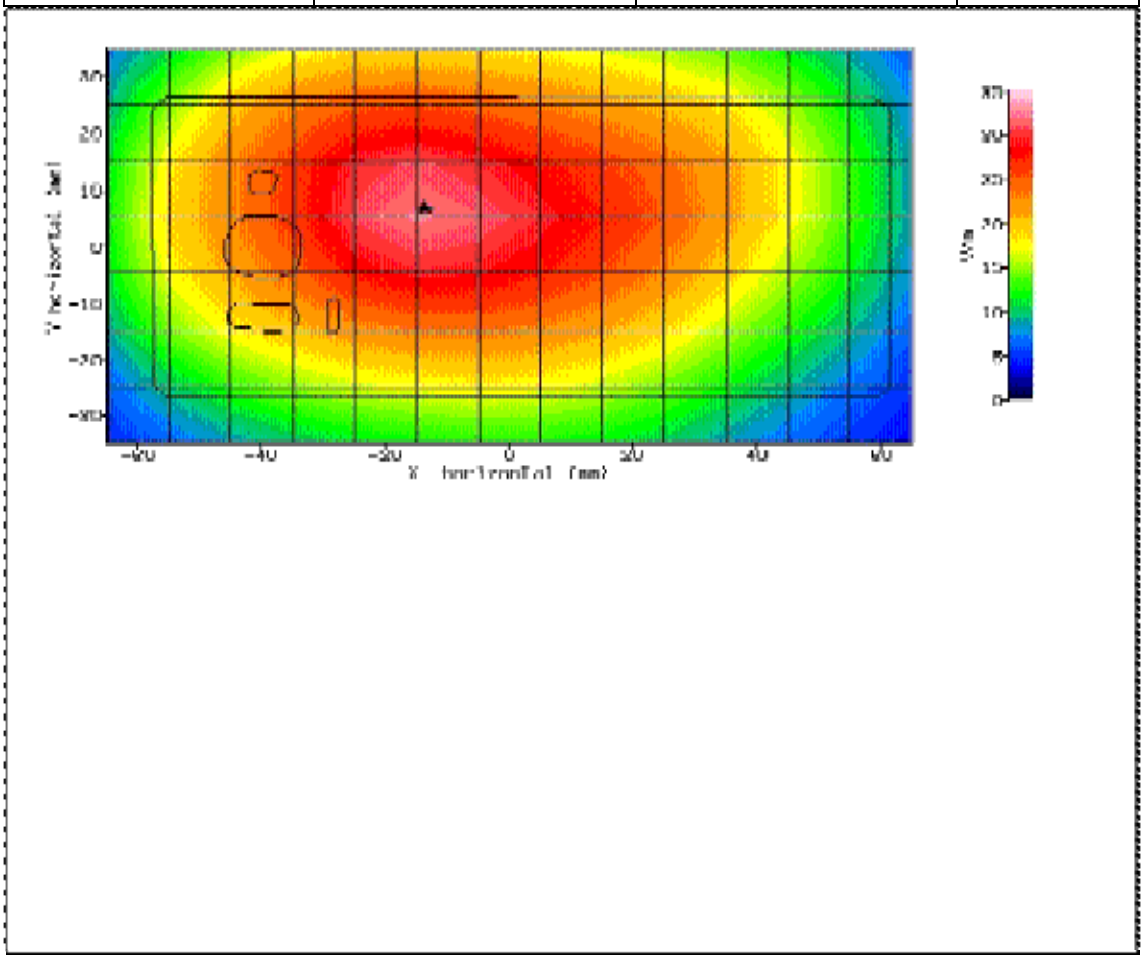

Figure 27: SAR Body Testing Results for the Sharp Mobile Handset at 826.4MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	15/12/2014-16:05:32	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.70°C	LIQUID SIMULANT:	850 Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	55.72
RELATIVE HUMIDITY:	36.00%	CONDUCTIVITY:	0.999
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.80°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	-9.70mm
DUT POSITION:	10mm-Left Edge	MAX SAR Y-AXIS LOCATION:	2.50mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	21.969
TEST FREQUENCY:	826.4MHz	SAR 1g:	0.48 W/kg
TYPE OF MODULATION:	QPSK (RMC Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.510 W/kg
INPUT POWER LEVEL:	24.2dBm	SAR END:	0.508 W/kg
PROBE BATTERY LAST CHANGED:	15/12/2014	SAR DRIFT DURING SCAN:	-0.400 %

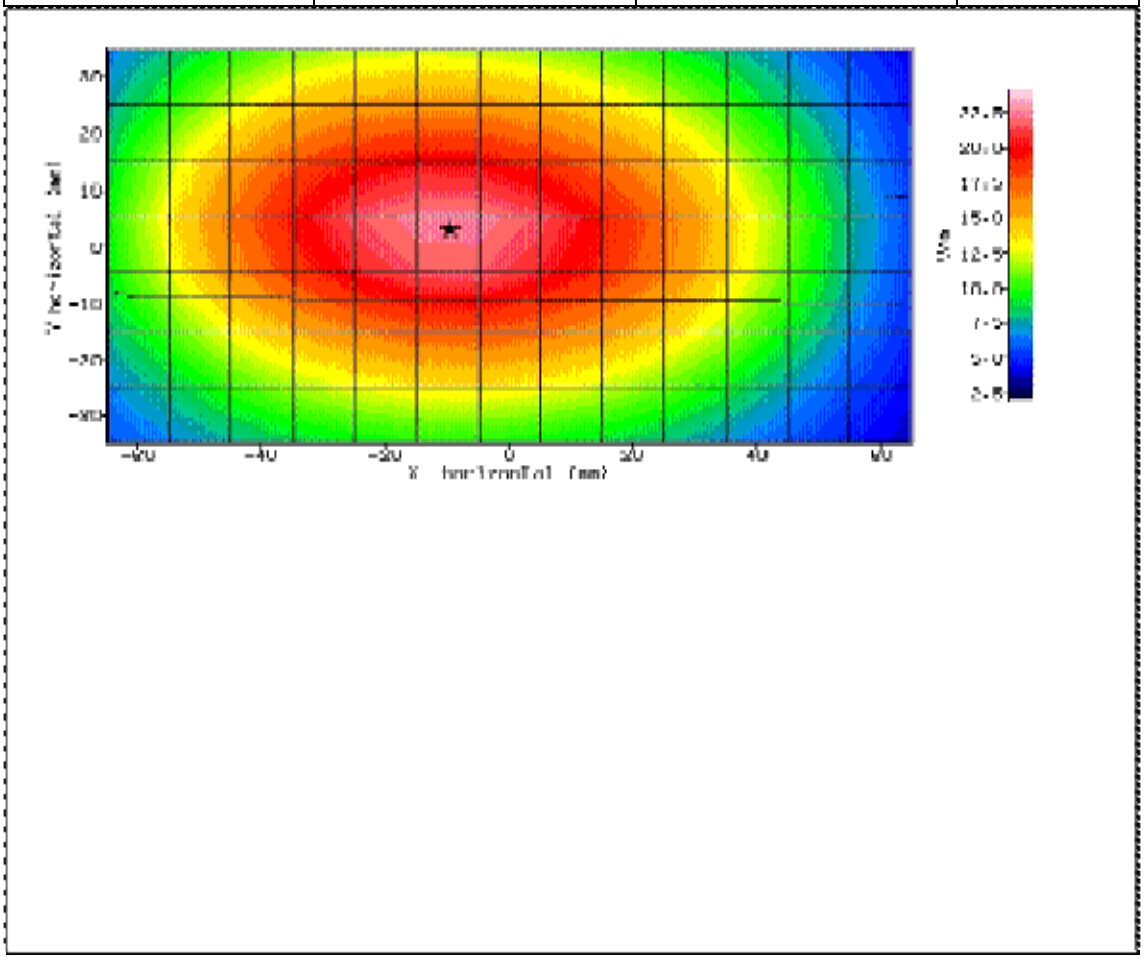

Figure 28: SAR Body Testing Results for the Sharp Mobile Handset at 826.4MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	15/12/2014-16:24:19	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.70°C	LIQUID SIMULANT:	850 Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	55.72
RELATIVE HUMIDITY:	36.00%	CONDUCTIVITY:	0.999
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.80°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	-4.70mm
DUT POSITION:	10mm-Right Edge	MAX SAR Y-AXIS LOCATION:	1.50mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	23.468
TEST FREQUENCY:	826.4MHz	SAR 1g:	0.39 W/kg
TYPE OF MODULATION:	QPSK (RMC Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.588 W/kg
INPUT POWER LEVEL:	24.2dBm	SAR END:	0.583 W/kg
PROBE BATTERY LAST CHANGED:	15/12/2014	SAR DRIFT DURING SCAN:	-0.800 %

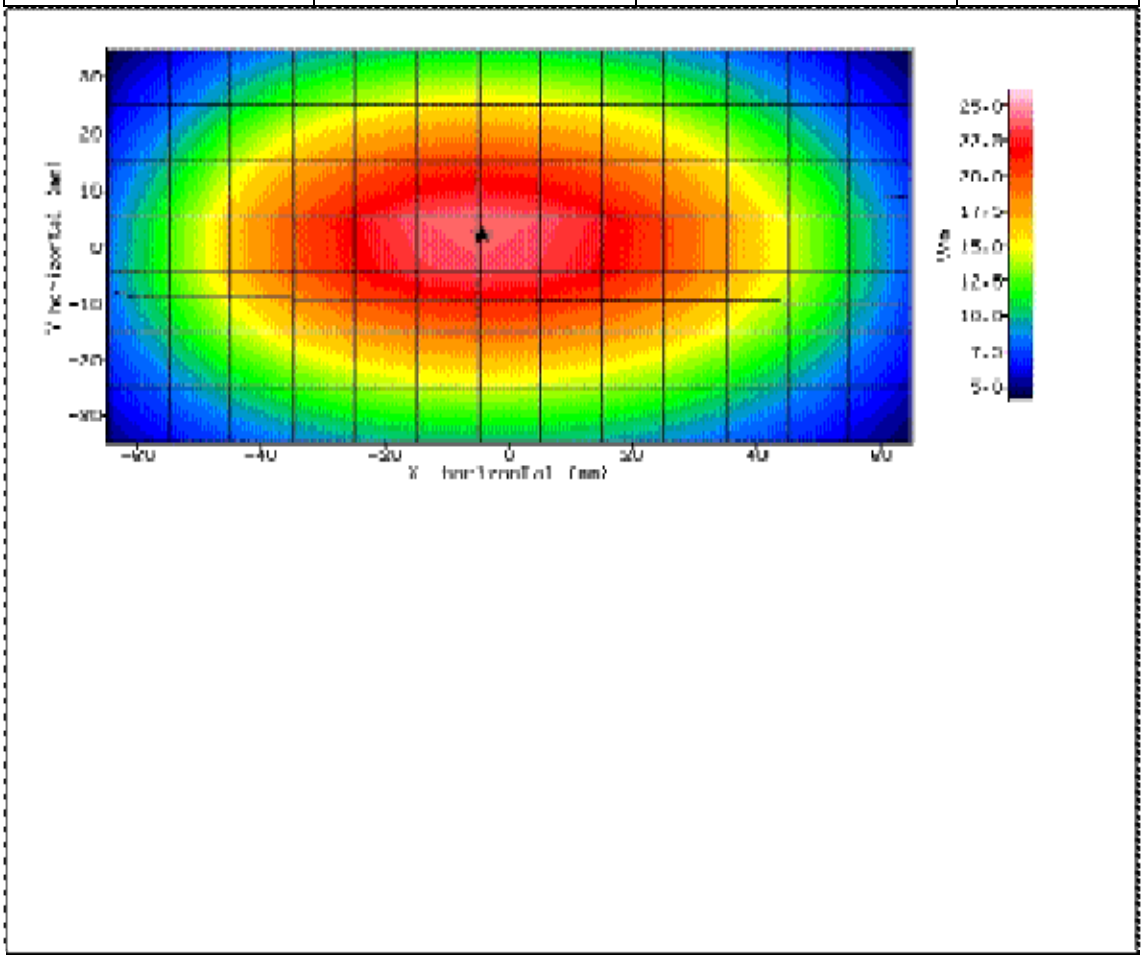

Figure 29: SAR Body Testing Results for the Sharp Mobile Handset at 826.4MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	15/12/2014-16:43:22	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.70°C	LIQUID SIMULANT:	850 Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	55.72
RELATIVE HUMIDITY:	36.00%	CONDUCTIVITY:	0.999
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.80°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	3.50mm
DUT POSITION:	10mm-Top Edge	MAX SAR Y-AXIS LOCATION:	6.20mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	6.281
TEST FREQUENCY:	826.4MHz	SAR 1g:	0.04 W/kg
TYPE OF MODULATION:	QPSK (RMC Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.045 W/kg
INPUT POWER LEVEL:	24.2dBm	SAR END:	0.046 W/kg
PROBE BATTERY LAST CHANGED:	15/12/2014	SAR DRIFT DURING SCAN:	1.900 %

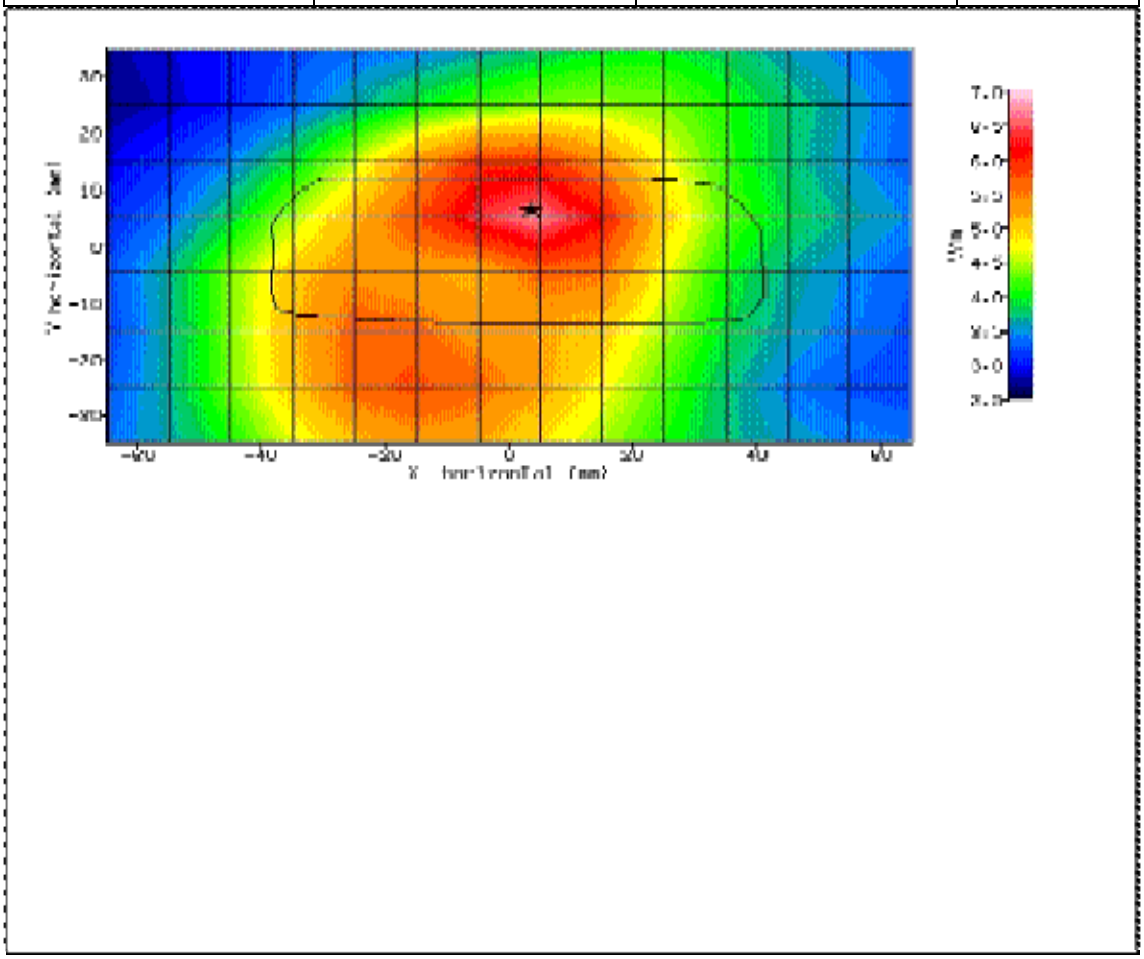

Figure 30: SAR Body Testing Results for the Sharp Mobile Handset at 826.4MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	15/12/2014-17:05:56	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.70°C	LIQUID SIMULANT:	850 Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	55.72
RELATIVE HUMIDITY:	36.00%	CONDUCTIVITY:	0.999
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.80°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	-12.10mm
DUT POSITION:	10mm-Rear Facing	MAX SAR Y-AXIS LOCATION:	5.20mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	30.812
TEST FREQUENCY:	835MHz	SAR 1g:	0.95 W/kg
TYPE OF MODULATION:	QPSK (RMC Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	1.018 W/kg
INPUT POWER LEVEL:	24.2dBm	SAR END:	1.018 W/kg
PROBE BATTERY LAST CHANGED:	15/12/2014	SAR DRIFT DURING SCAN:	-0.800 %

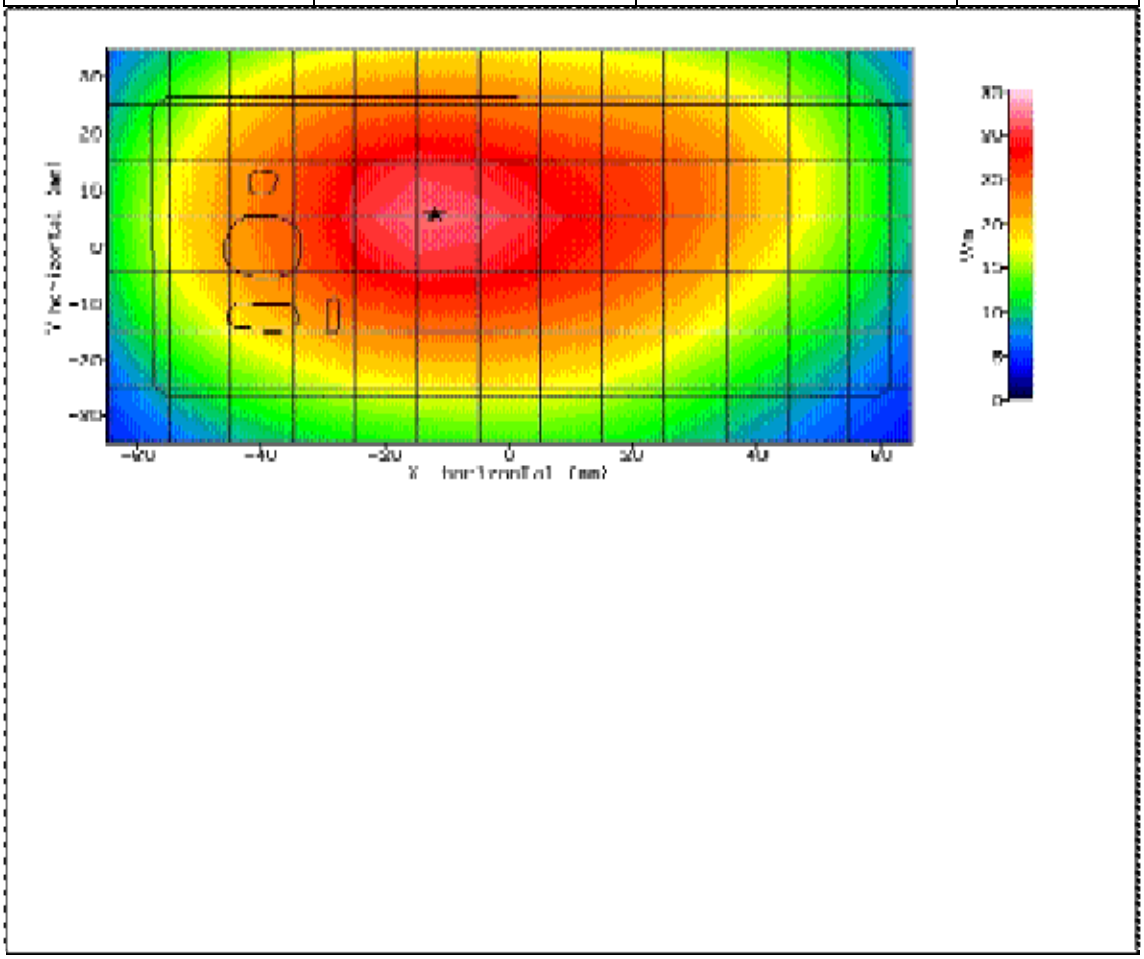

Figure 31: SAR Body Testing Results for the Sharp Mobile Handset at 835MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	15/12/2014-17:23:51	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.70°C	LIQUID SIMULANT:	850 Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	55.72
RELATIVE HUMIDITY:	36.00%	CONDUCTIVITY:	0.999
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.80°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	-11.00mm
DUT POSITION:	10mm-Rear Facing	MAX SAR Y-AXIS LOCATION:	3.40mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	29.093
TEST FREQUENCY:	846.6MHz	SAR 1g:	0.83 W/kg
TYPE OF MODULATION:	QPSK (RMC Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.896 W/kg
INPUT POWER LEVEL:	24.2dBm	SAR END:	0.891 W/kg
PROBE BATTERY LAST CHANGED:	15/12/2014	SAR DRIFT DURING SCAN:	-0.600 %

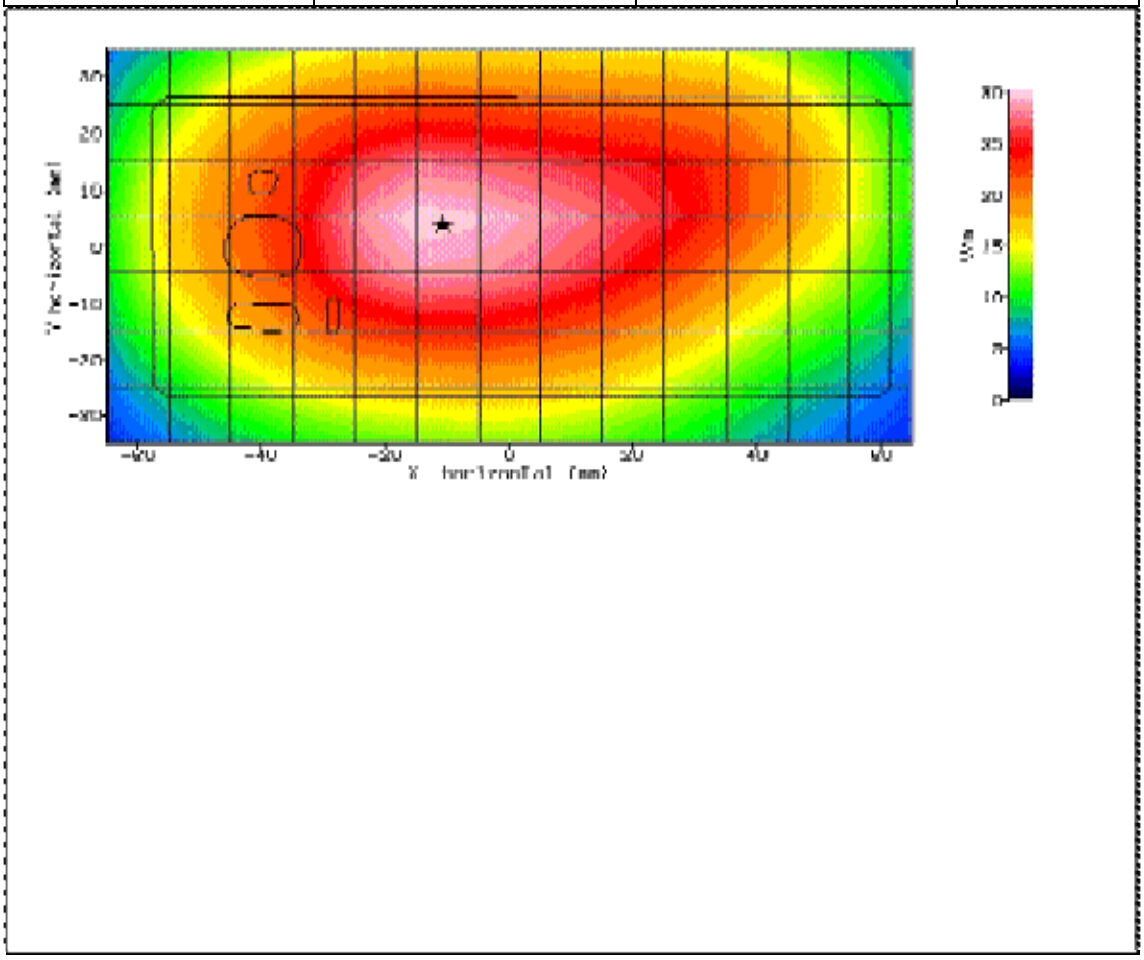

Figure 32: SAR Body Testing Results for the Sharp Mobile Handset at 846.6MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	16/12/2014-09:27:21	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	850 Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	55.72
RELATIVE HUMIDITY:	25.30%	CONDUCTIVITY:	0.999
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	23.00°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	-16.50mm
DUT POSITION:	10mm-Rear Facing	MAX SAR Y-AXIS LOCATION:	8.40mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	26.035
TEST FREQUENCY:	826.4MHz	SAR 1g:	0.69 W/kg
TYPE OF MODULATION:	QPSK (RMC Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.746 W/kg
INPUT POWER LEVEL:	24.2dBm	SAR END:	0.756 W/kg
PROBE BATTERY LAST CHANGED:	16/12/2014	SAR DRIFT DURING SCAN:	1.400 %

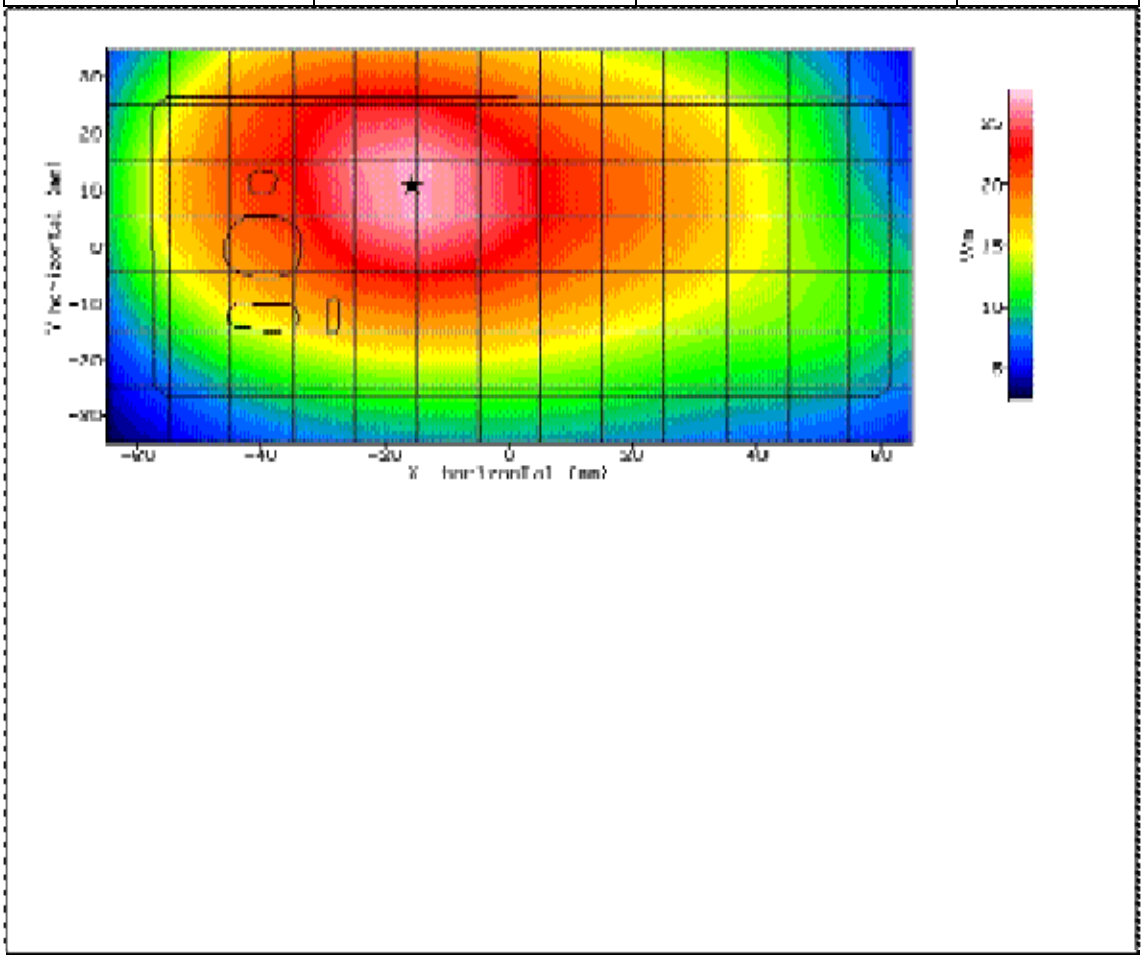

Figure 33: SAR Body Testing Results for the Sharp Mobile Handset at 826.4MHz.

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2.7 CDMA2000 850MHz BODY SAR TEST RESULTS AND COURSE AREA SCANS – 2D

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SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	10/12/2014-13:56:02	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	850 Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	43.12
RELATIVE HUMIDITY:	28.70%	CONDUCTIVITY:	0.911
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	23.00°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	75.80mm
DUT POSITION:	Left-Cheek	MAX SAR Z-AXIS LOCATION:	-89.60mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	21.475
TEST FREQUENCY:	829.08MHz	SAR 1g:	0.49 W/kg
TYPE OF MODULATION:	Loopback SO55	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.455 W/kg
INPUT POWER LEVEL:	24.9dBm	SAR END:	0.459 W/kg
PROBE BATTERY LAST CHANGED:	10/12/2014	SAR DRIFT DURING SCAN:	1.000 %

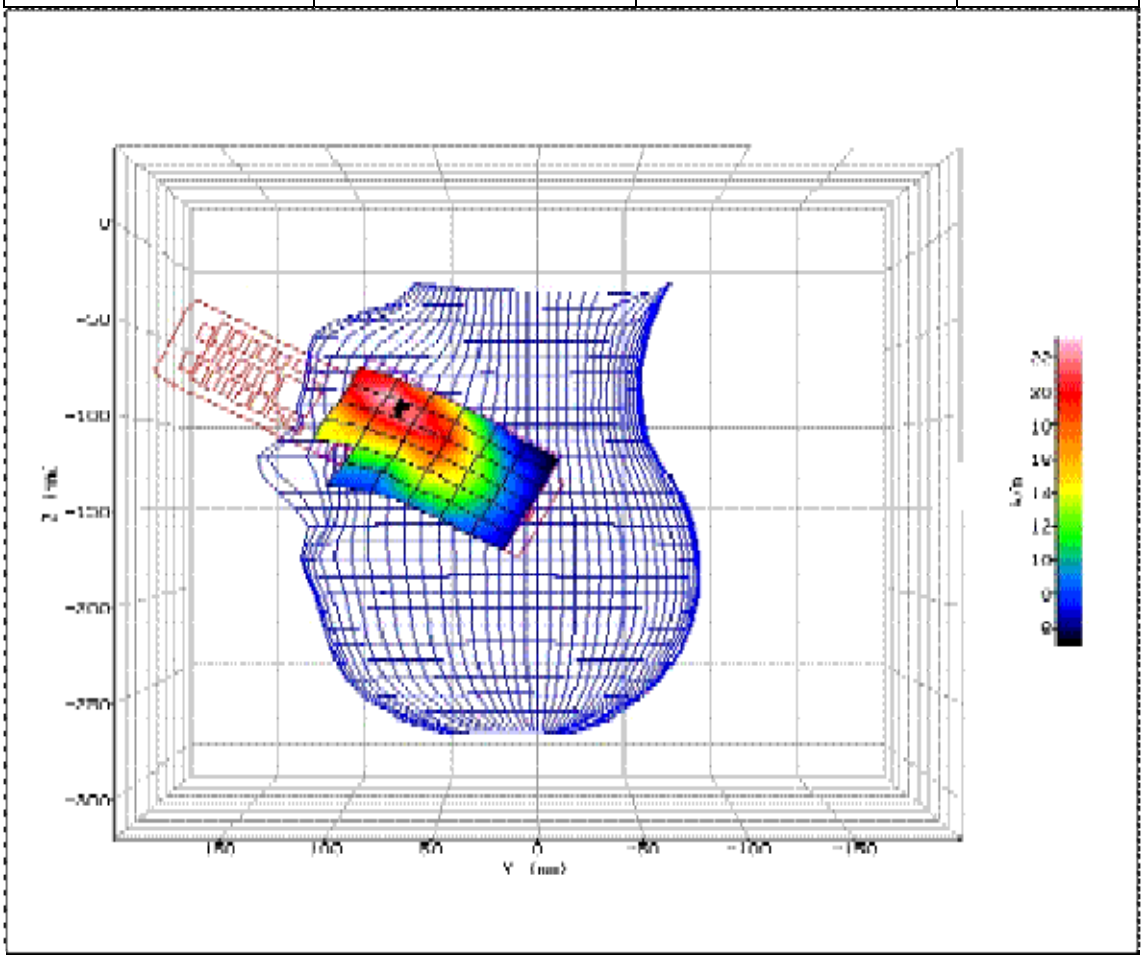

Figure 34: SAR Head Testing Results for the Sharp Mobile Handset at 829.08MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	10/12/2014-14:21:43	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	850 Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	43.12
RELATIVE HUMIDITY:	28.70%	CONDUCTIVITY:	0.911
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	23.00°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	50.90mm
DUT POSITION:	Left-15°	MAX SAR Z-AXIS LOCATION:	-116.70mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	13.722
TEST FREQUENCY:	829.08MHz	SAR 1g:	0.20 W/kg
TYPE OF MODULATION:	Loopback SO55	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.184 W/kg
INPUT POWER LEVEL:	24.9dBm	SAR END:	0.185 W/kg
PROBE BATTERY LAST CHANGED:	10/12/2014	SAR DRIFT DURING SCAN:	0.500 %

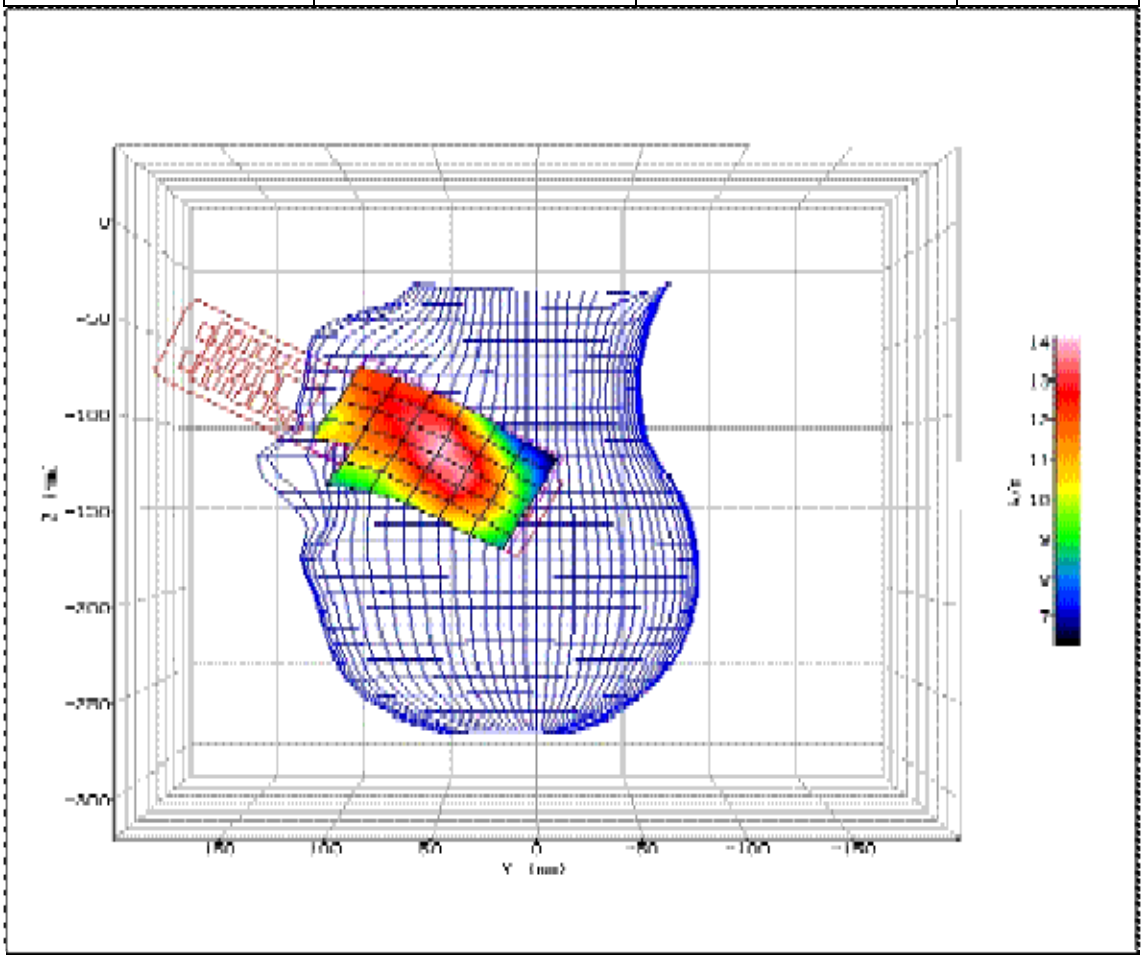

Figure 35: SAR Head Testing Results for the Sharp Mobile Handset at 829.08MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	10/12/2014-12:54:36	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	850 Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	43.12
RELATIVE HUMIDITY:	28.70%	CONDUCTIVITY:	0.911
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	23.00°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	85.50mm
DUT POSITION:	Right-Cheek	MAX SAR Z-AXIS LOCATION:	-58.90mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	12.029
TEST FREQUENCY:	829.08MHz	SAR 1g:	0.12 W/kg
TYPE OF MODULATION:	Loopback SO55	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.165 W/kg
INPUT POWER LEVEL:	24.9dBm	SAR END:	0.161 W/kg
PROBE BATTERY LAST CHANGED:	10/12/2014	SAR DRIFT DURING SCAN:	-2.700 %

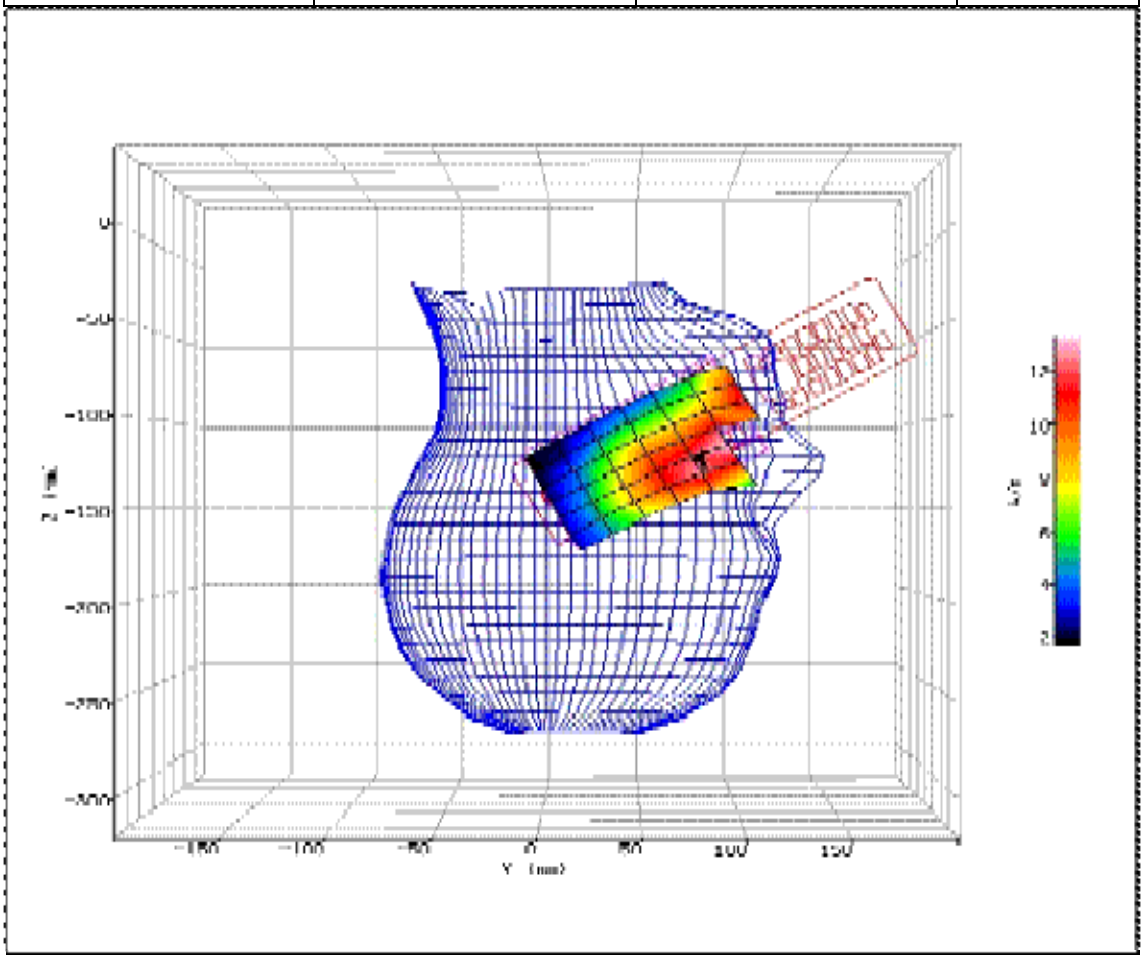

Figure 36: SAR Head Testing Results for the Sharp Mobile Handset at 829.08MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	10/12/2014-13:19:42	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	850 Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	43.12
RELATIVE HUMIDITY:	28.70%	CONDUCTIVITY:	0.911
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	23.00°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	71.30mm
DUT POSITION:	Right-15°	MAX SAR Z-AXIS LOCATION:	-128.10mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	5.868
TEST FREQUENCY:	829.08MHz	SAR 1g:	0.31 W/kg
TYPE OF MODULATION:	Loopback SO55	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.033 W/kg
INPUT POWER LEVEL:	24.9dBm	SAR END:	0.033 W/kg
PROBE BATTERY LAST CHANGED:	10/12/2014	SAR DRIFT DURING SCAN:	-1.300 %

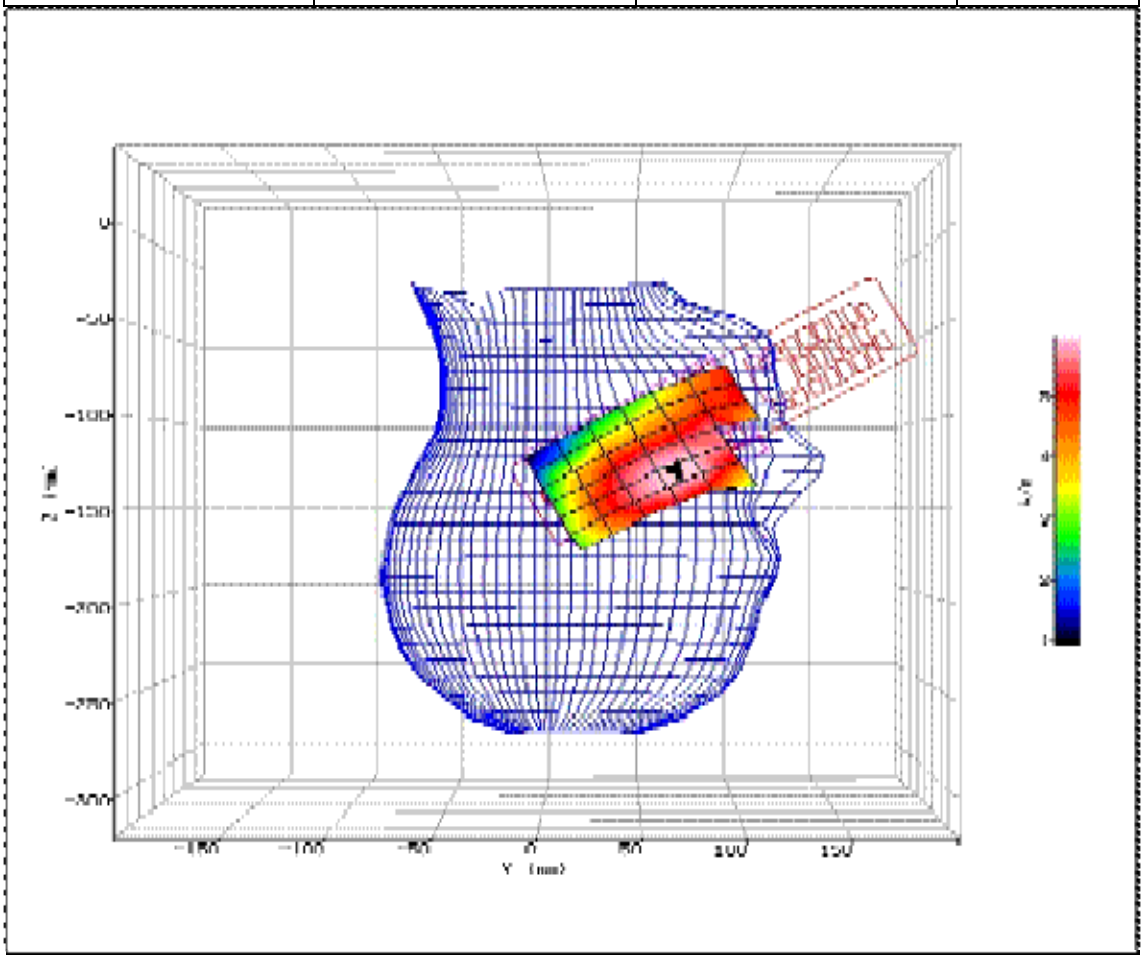

Figure 37: SAR Head Testing Results for the Sharp Mobile Handset at 829.08MHz.

2.8 CDMA2000 850MHz BODY SAR TEST RESULTS AND COURSE AREA SCANS – 2D

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SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	16/12/2014-10:30:15	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	850 Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	55.72
RELATIVE HUMIDITY:	25.30%	CONDUCTIVITY:	0.999
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	23.00°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	-8.20mm
DUT POSITION:	10mm-Front Facing	MAX SAR Y-AXIS LOCATION:	-3.10mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	26.900
TEST FREQUENCY:	829.08MHz	SAR 1g:	0.71 W/kg
TYPE OF MODULATION:	TDSO / SO32 FCH	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.752 W/kg
INPUT POWER LEVEL:	24.9dBm	SAR END:	0.748 W/kg
PROBE BATTERY LAST CHANGED:	16/12/2014	SAR DRIFT DURING SCAN:	-0.600 %

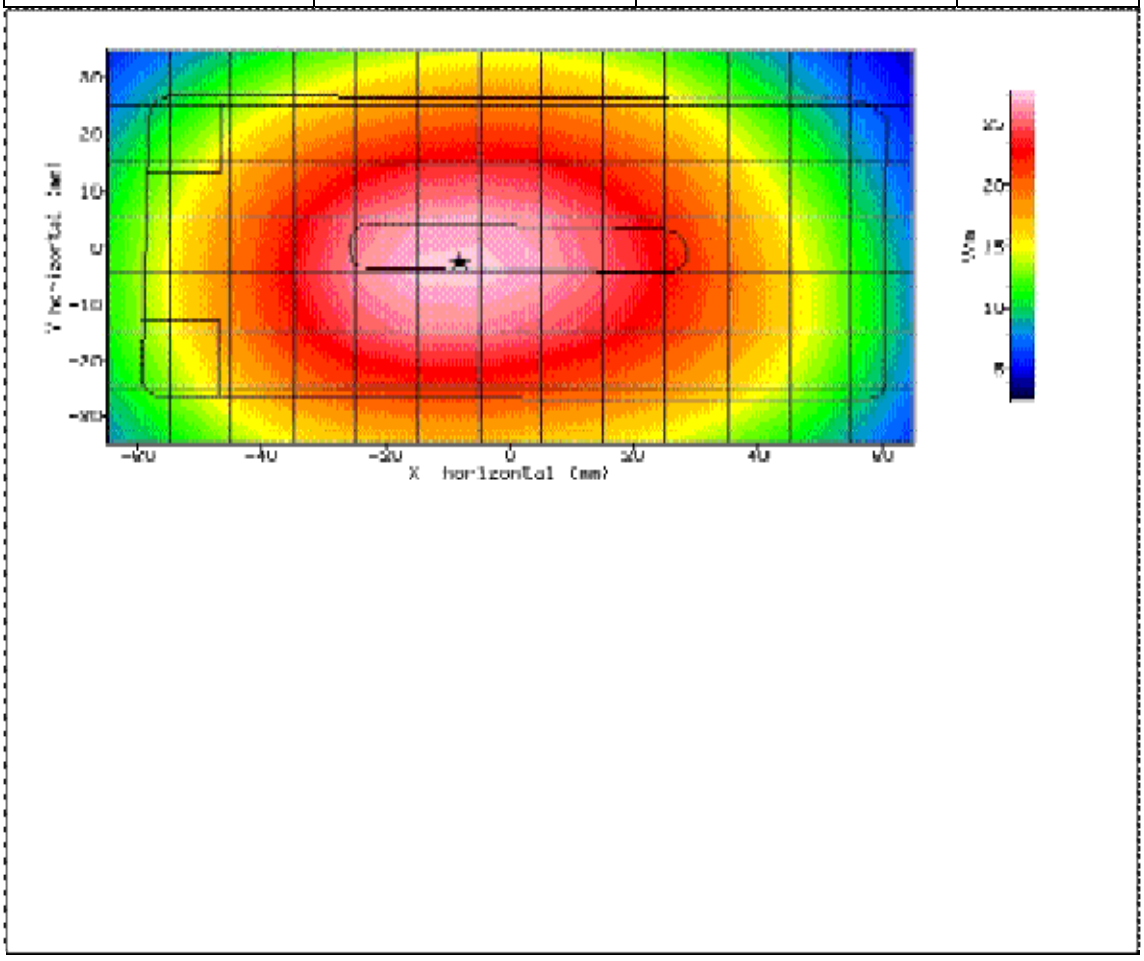

Figure 38: SAR Body Testing Results for the Sharp Mobile Handset at 829.08MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	16/12/2014-10:48:36	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	850 Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	55.72
RELATIVE HUMIDITY:	25.30%	CONDUCTIVITY:	0.999
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	23.00°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	-11.00mm
DUT POSITION:	10mm-Rear Facing	MAX SAR Y-AXIS LOCATION:	5.30mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	33.585
TEST FREQUENCY:	829.08MHz	SAR 1g:	1.12 W/kg
TYPE OF MODULATION:	TDSO / SO32 FCH	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	1.199 W/kg
INPUT POWER LEVEL:	24.9dBm	SAR END:	1.207 W/kg
PROBE BATTERY LAST CHANGED:	16/12/2014	SAR DRIFT DURING SCAN:	0.600%

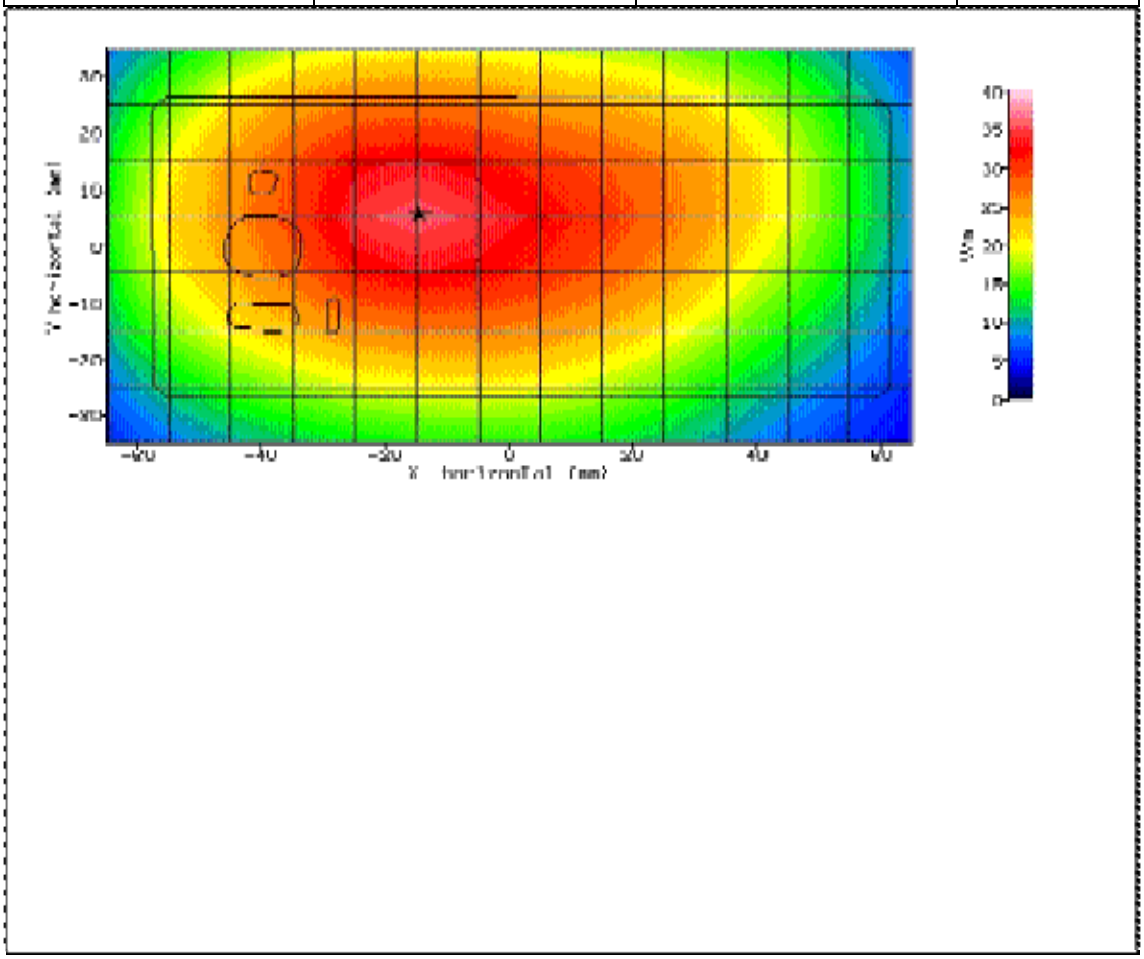

Figure 39: SAR Body Testing Results for the Sharp Mobile Handset at 829.08MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	16/12/2014-11:12:40	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	850 Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	55.72
RELATIVE HUMIDITY:	25.30%	CONDUCTIVITY:	0.999
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	23.00°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	-12.50mm
DUT POSITION:	10mm-Left Edge	MAX SAR Y-AXIS LOCATION:	3.60mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	24.626
TEST FREQUENCY:	829.08MHz	SAR 1g:	0.61 W/kg
TYPE OF MODULATION:	TDSO / SO32 FCH	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.647 W/kg
INPUT POWER LEVEL:	24.9dBm	SAR END:	0.645 W/kg
PROBE BATTERY LAST CHANGED:	16/12/2014	SAR DRIFT DURING SCAN:	-0.400 %

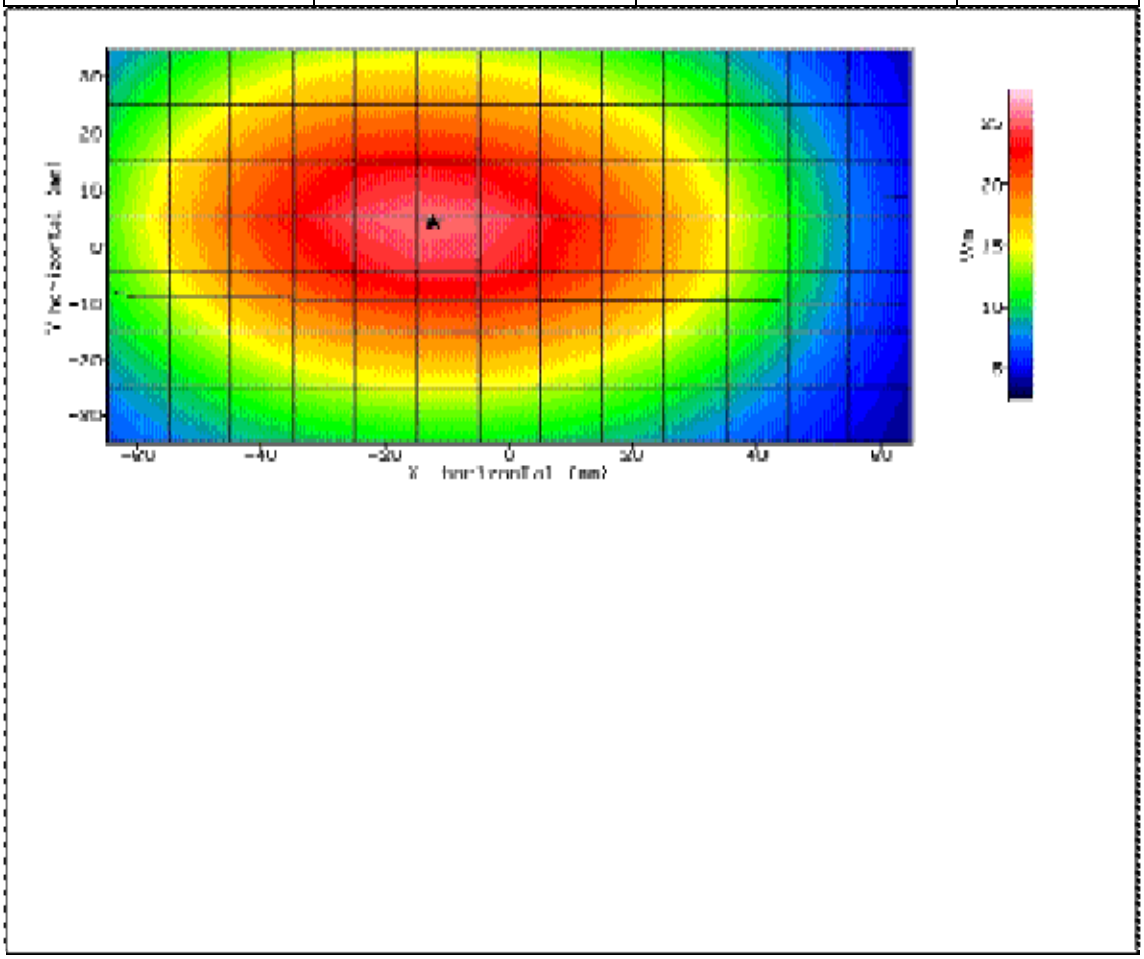

Figure 40: SAR Body Testing Results for the Sharp Mobile Handset at 829.08MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	16/12/2014-11:30:08	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	850 Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	55.72
RELATIVE HUMIDITY:	25.30%	CONDUCTIVITY:	0.999
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	23.00°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	-4.40mm
DUT POSITION:	10mm-Right Edge	MAX SAR Y-AXIS LOCATION:	2.60mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	26.739
TEST FREQUENCY:	829.08MHz	SAR 1g:	0.72 W/kg
TYPE OF MODULATION:	TDSO / SO32 FCH	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.765 W/kg
INPUT POWER LEVEL:	24.9dBm	SAR END:	0.765 W/kg
PROBE BATTERY LAST CHANGED:	16/12/2014	SAR DRIFT DURING SCAN:	0.000 %

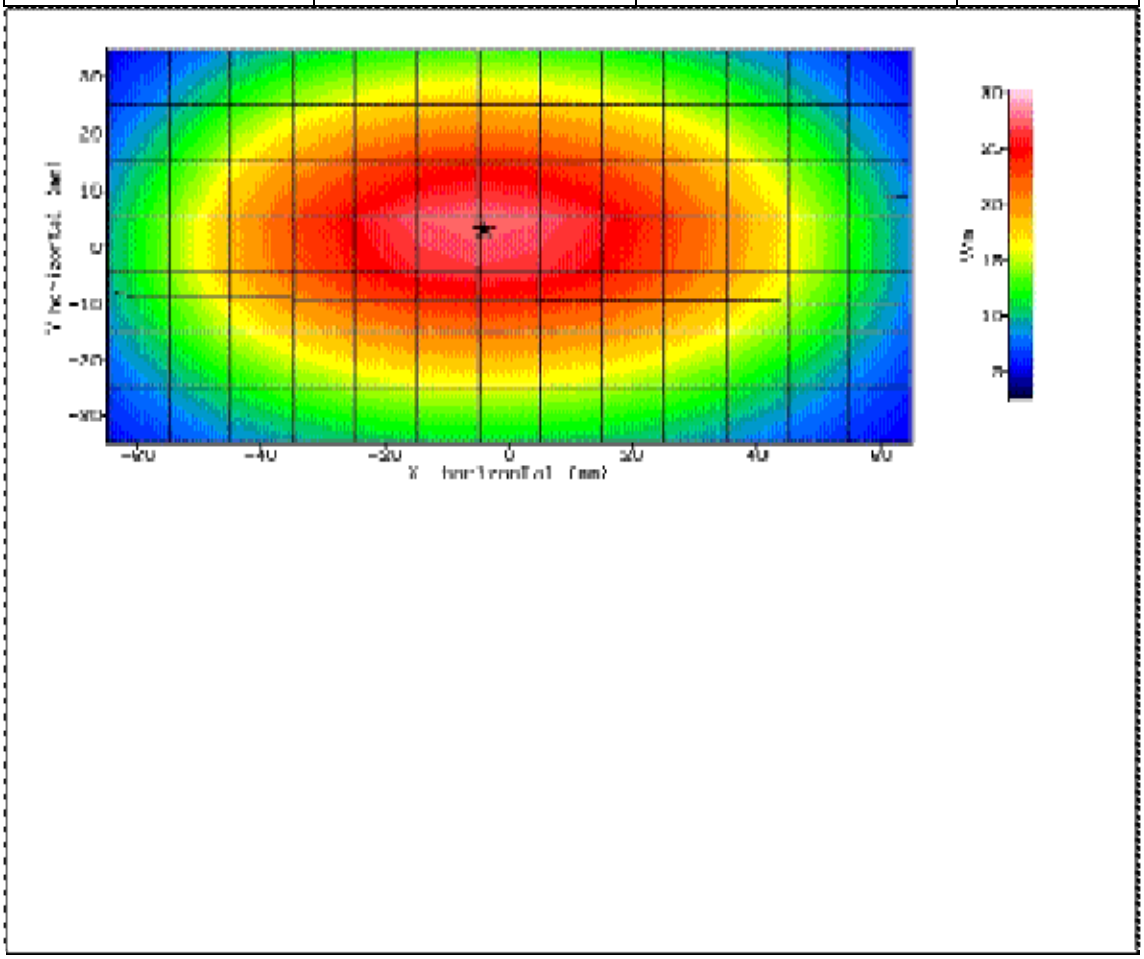

Figure 41: SAR Body Testing Results for the Sharp Mobile Handset at 829.08MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	16/12/2014-11:51:09	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	850 Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	55.72
RELATIVE HUMIDITY:	25.30%	CONDUCTIVITY:	0.999
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	23.00°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	3.00mm
DUT POSITION:	10mm-Top Edge	MAX SAR Y-AXIS LOCATION:	9.50mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	6.894
TEST FREQUENCY:	829.08MHz	SAR 1g:	0.05 W/kg
TYPE OF MODULATION:	TDSO / SO32 FCH	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.054 W/kg
INPUT POWER LEVEL:	24.9dBm	SAR END:	0.054 W/kg
PROBE BATTERY LAST CHANGED:	16/12/2014	SAR DRIFT DURING SCAN:	-0.100 %

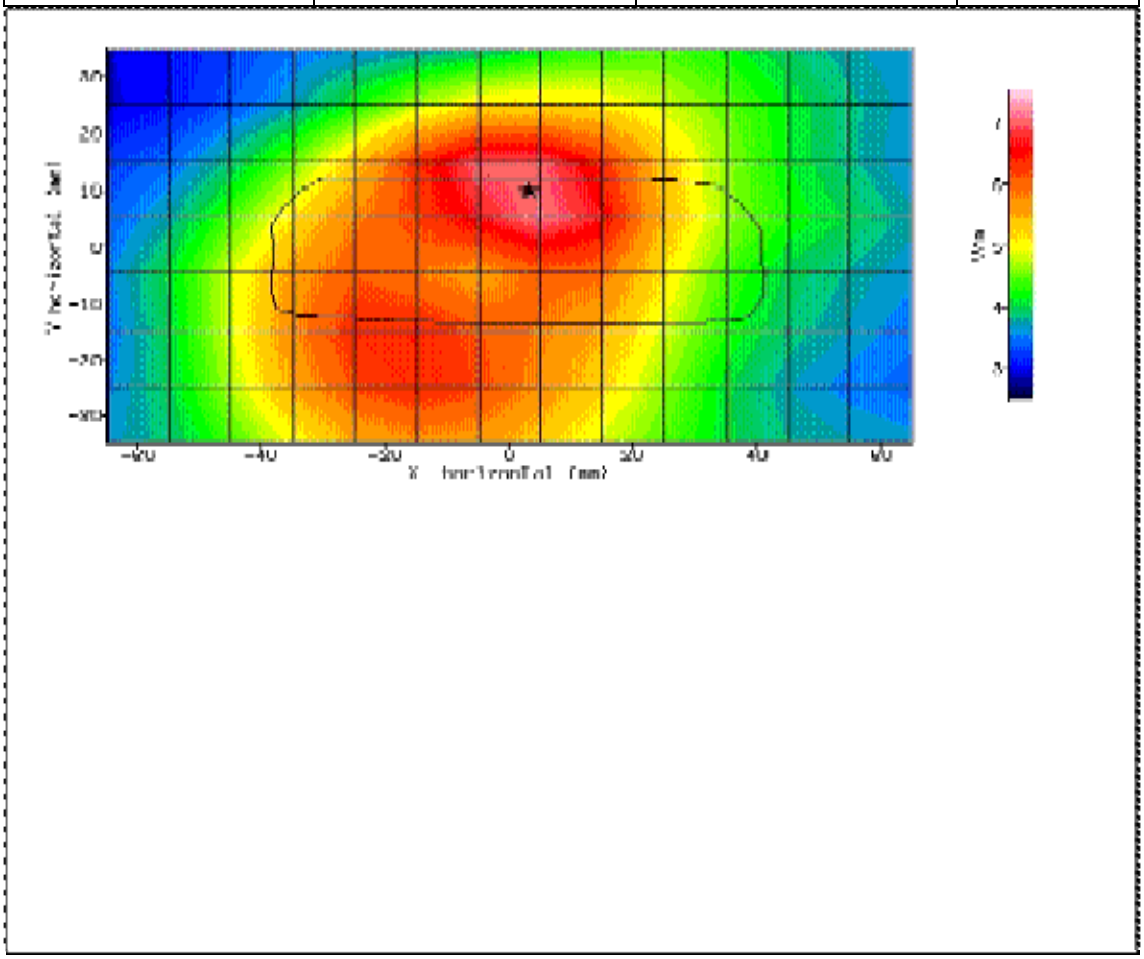

Figure 42: SAR Body Testing Results for the Sharp Mobile Handset at 829.08MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	16/12/2014-12:12:18	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	850 Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	55.72
RELATIVE HUMIDITY:	25.30%	CONDUCTIVITY:	0.999
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	23.00°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	-11.70mm
DUT POSITION:	10mm-Rear Facing	MAX SAR Y-AXIS LOCATION:	5.40mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	34.870
TEST FREQUENCY:	827.43MHz	SAR 1g:	1.13 W/kg
TYPE OF MODULATION:	TDSO / SO32 FCH	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	1.211 W/kg
INPUT POWER LEVEL:	24.9dBm	SAR END:	1.214 W/kg
PROBE BATTERY LAST CHANGED:	16/12/2014	SAR DRIFT DURING SCAN:	0.300 %

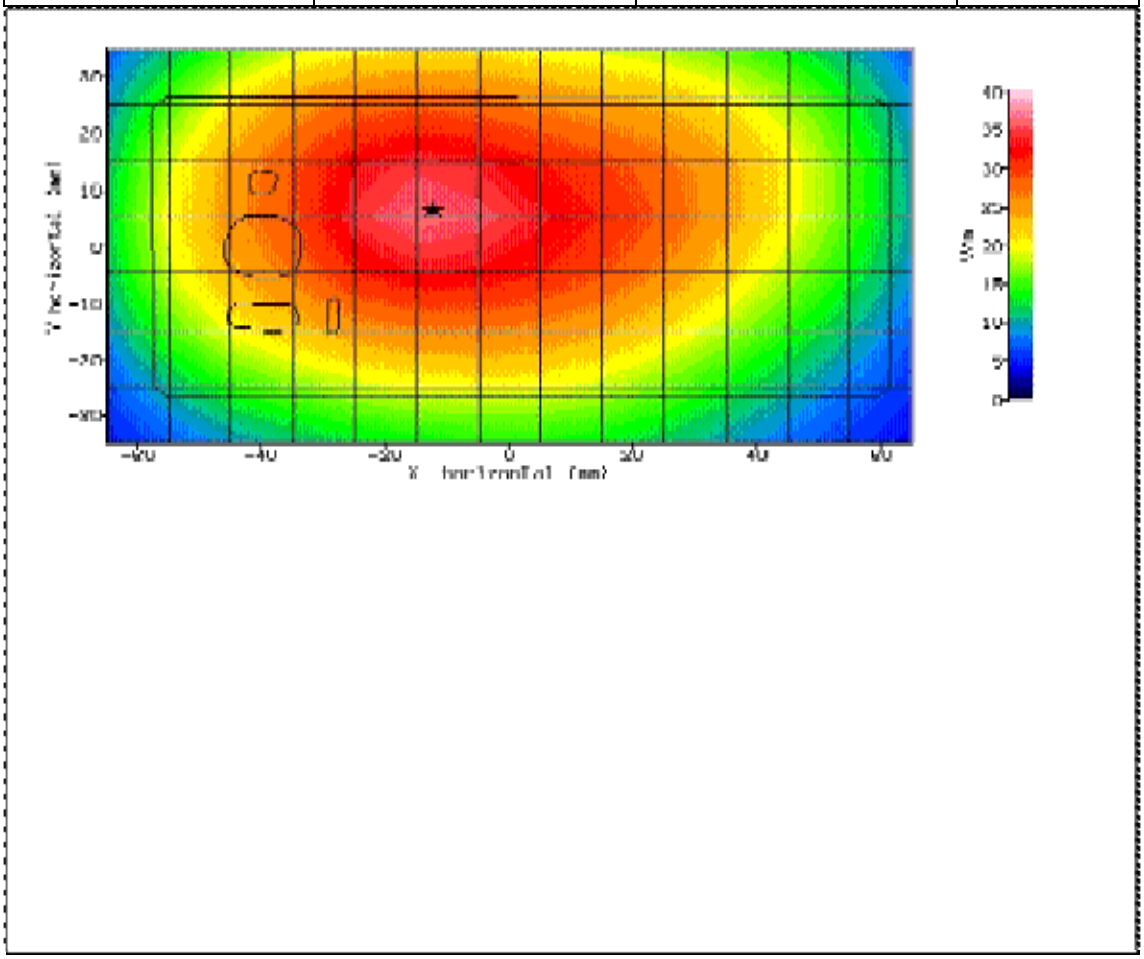

Figure 43: SAR Body Testing Results for the Sharp Mobile Handset at 827.43MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	16/12/2014-12:32:57	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	850 Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	55.72
RELATIVE HUMIDITY:	25.30%	CONDUCTIVITY:	0.999
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	23.00°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	-11.50mm
DUT POSITION:	10mm-Rear Facing	MAX SAR Y-AXIS LOCATION:	5.60mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	33.707
TEST FREQUENCY:	825.78MHz	SAR 1g:	1.13 W/kg
TYPE OF MODULATION:	TDSO / SO32 FCH	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	1.205 W/kg
INPUT POWER LEVEL:	24.9dBm	SAR END:	1.212 W/kg
PROBE BATTERY LAST CHANGED:	16/12/2014	SAR DRIFT DURING SCAN:	0.500 %

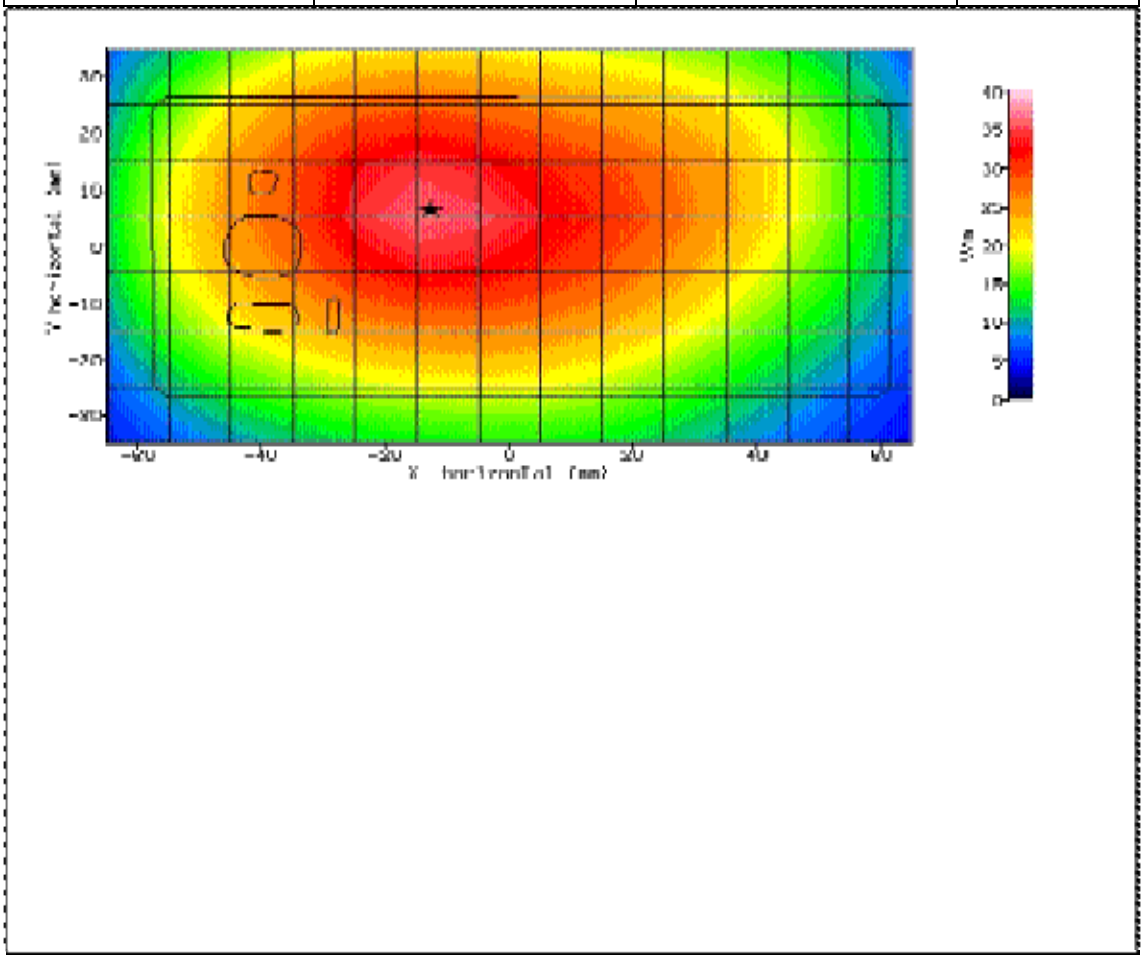

Figure 44: SAR Body Testing Results for the Sharp Mobile Handset at 825.78MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	16/12/2014-12:52:06	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	850 Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	55.72
RELATIVE HUMIDITY:	25.30%	CONDUCTIVITY:	0.999
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	23.00°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	-15.60mm
DUT POSITION:	10mm-Rear Facing	MAX SAR Y-AXIS LOCATION:	5.50mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	28.762
TEST FREQUENCY:	827.43MHz	SAR 1g:	0.83 W/kg
TYPE OF MODULATION:	TDSO / SO32 FCH	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.894 W/kg
INPUT POWER LEVEL:	24.9dBm	SAR END:	0.903 W/kg
PROBE BATTERY LAST CHANGED:	16/12/2014	SAR DRIFT DURING SCAN:	1.000 %

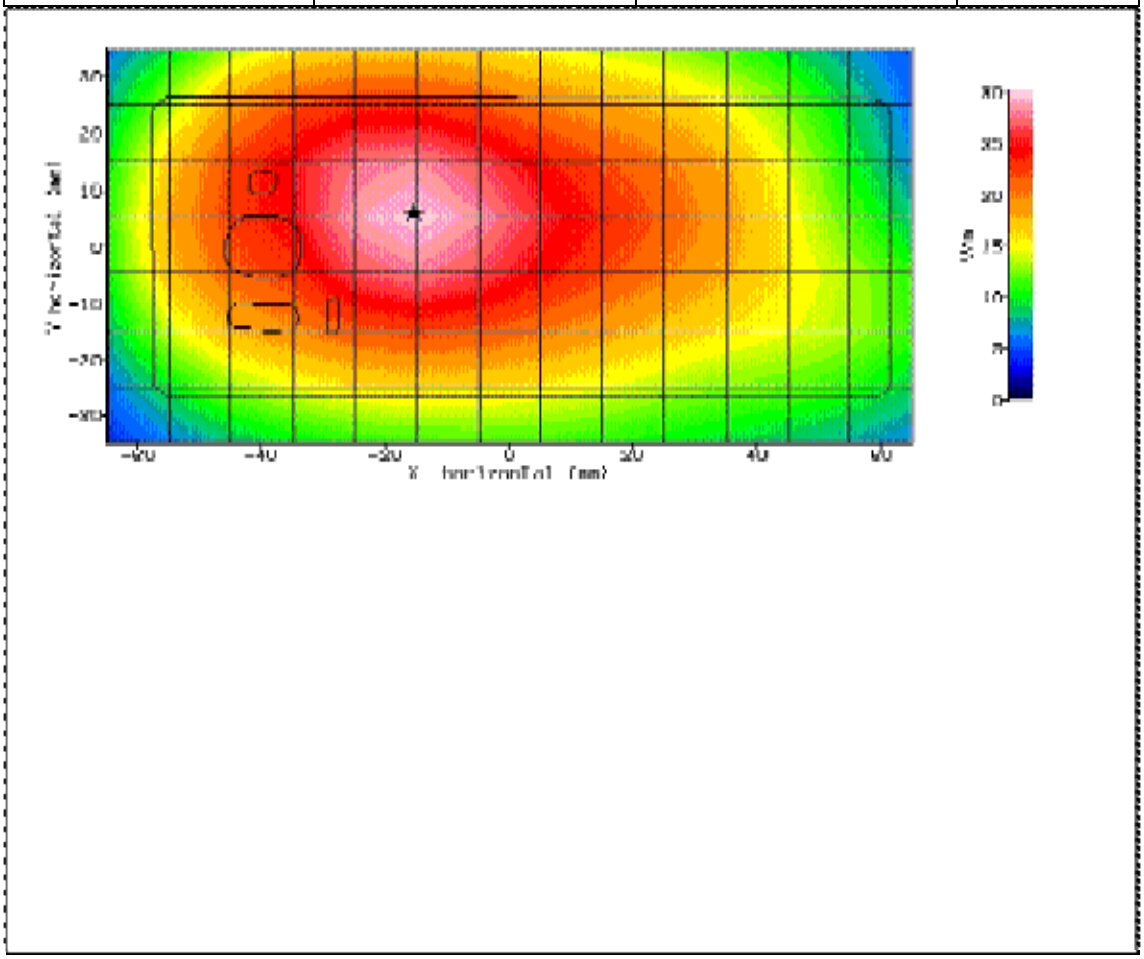

Figure 45: SAR Body Testing Results for the Sharp Mobile Handset at 827.43MHz.

2.9 PCS 1900MHz HEAD SAR TEST RESULTS AND COURSE AREA SCANS – 2D

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	08/12/2014-12:56:58	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	1900Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	41.17
RELATIVE HUMIDITY:	25.40%	CONDUCTIVITY:	1.450
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.50°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	74.20mm
DUT POSITION:	Left-Cheek	MAX SAR Z-AXIS LOCATION:	-99.10mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	11.499
TEST FREQUENCY:	1850.2MHz	SAR 1g:	0.24 W/kg
TYPE OF MODULATION:	GMSK (Voice Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	12.5%	SAR START:	0.163 W/kg
INPUT POWER LEVEL:	30.5dBm	SAR END:	0.165 W/kg
PROBE BATTERY LAST CHANGED:	08/12/2014	SAR DRIFT DURING SCAN:	1.300 %

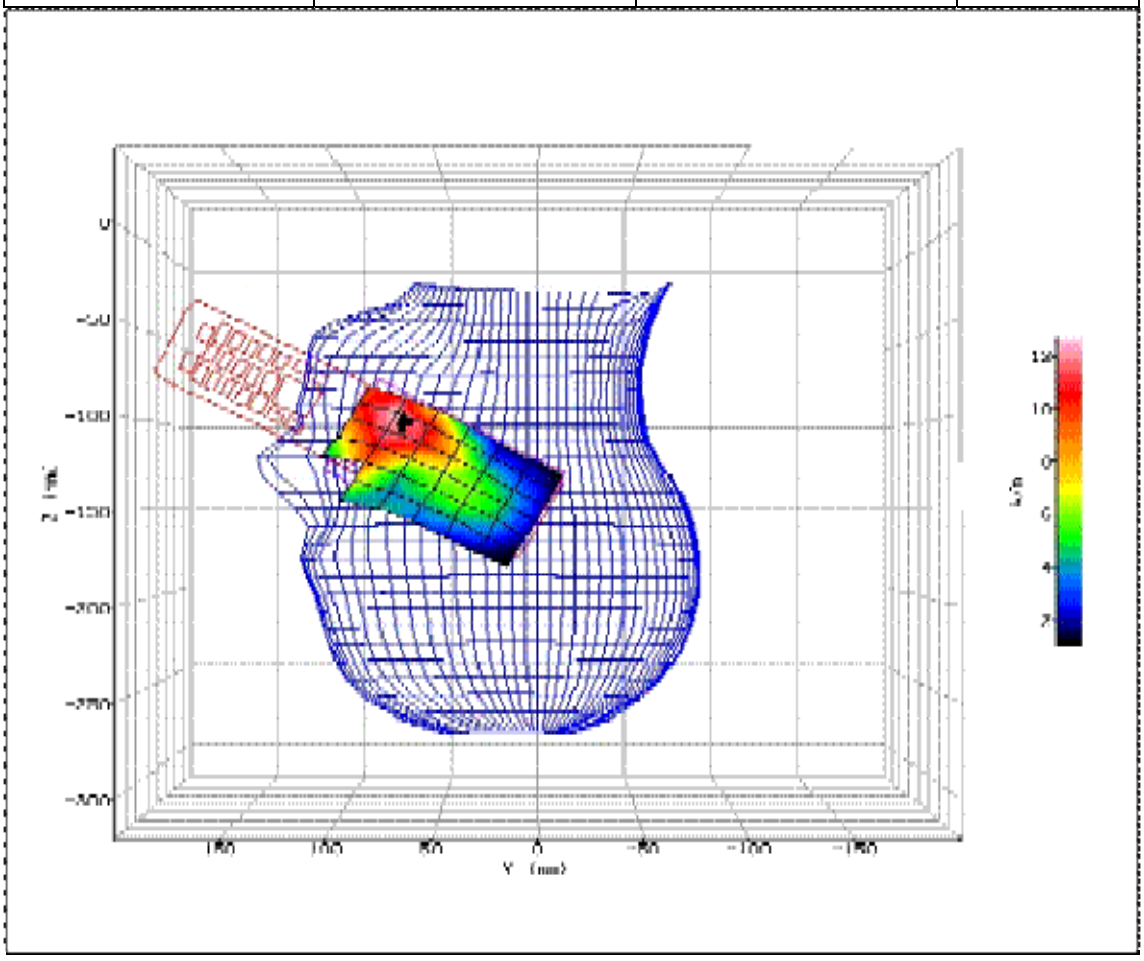

Figure 46: SAR Head Testing Results for the Sharp Mobile Handset at 1850.2MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	08/12/2014-13:24:44	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	1900Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	41.17
RELATIVE HUMIDITY:	25.40%	CONDUCTIVITY:	1.450
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.50°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	27.20mm
DUT POSITION:	Left-15°	MAX SAR Z-AXIS LOCATION:	-149.90mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	7.846
TEST FREQUENCY:	1850.2MHz	SAR 1g:	0.10 W/kg
TYPE OF MODULATION:	GMSK (Voice Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	12.5%	SAR START:	0.103 W/kg
INPUT POWER LEVEL:	30.5dBm	SAR END:	0.102 W/kg
PROBE BATTERY LAST CHANGED:	08/12/2014	SAR DRIFT DURING SCAN:	-0.400 %

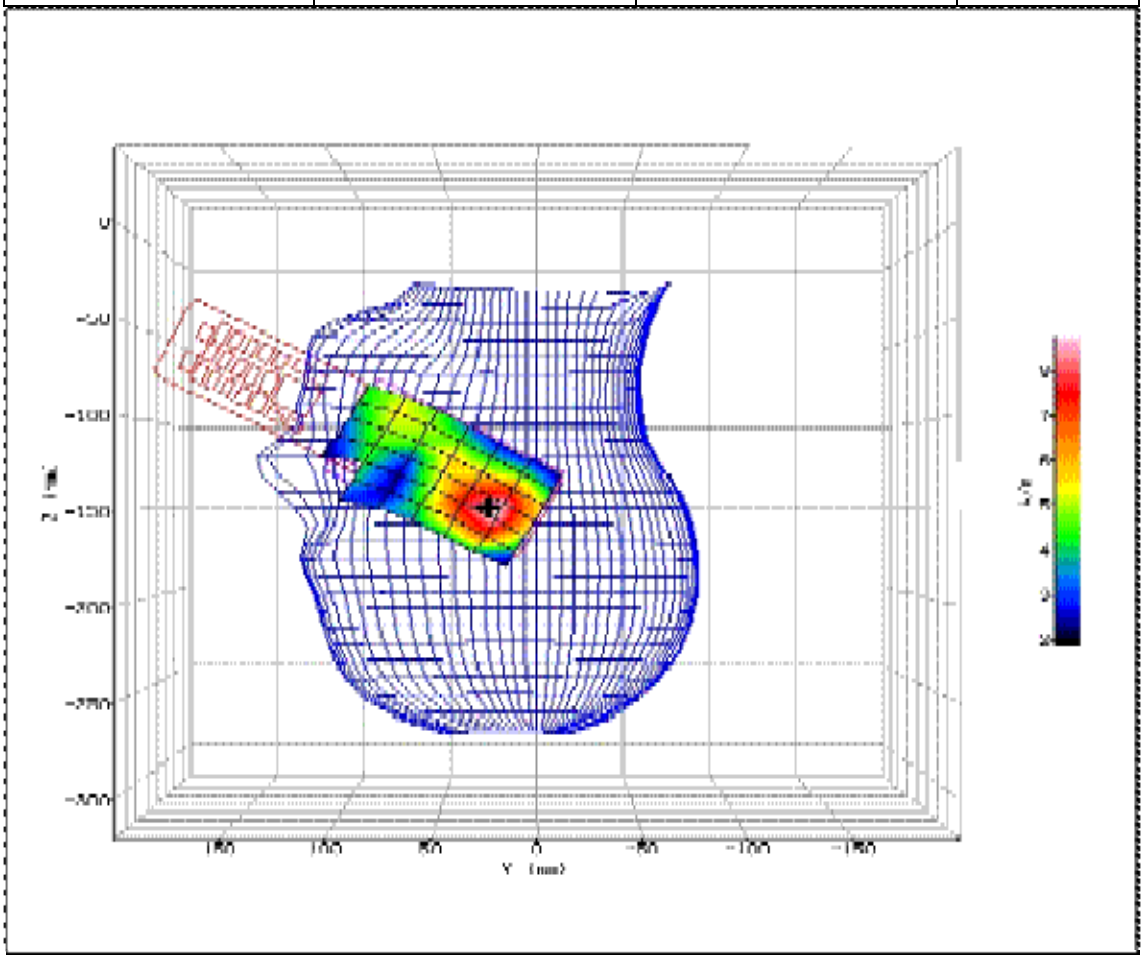

Figure 47: SAR Head Testing Results for the Sharp Mobile Handset at 1850.2MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	08/12/2014-14:37:44	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	1900Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	41.17
RELATIVE HUMIDITY:	25.40%	CONDUCTIVITY:	1.450
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.50°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	91.60mm
DUT POSITION:	Right-Cheek	MAX SAR Z-AXIS LOCATION:	-104.20mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	10.822
TEST FREQUENCY:	1850.2MHz	SAR 1g:	0.29 W/kg
TYPE OF MODULATION:	GMSK (Voice Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	12.5%	SAR START:	0.337 W/kg
INPUT POWER LEVEL:	30.5dBm	SAR END:	0.332 W/kg
PROBE BATTERY LAST CHANGED:	08/12/2014	SAR DRIFT DURING SCAN:	-1.400 %

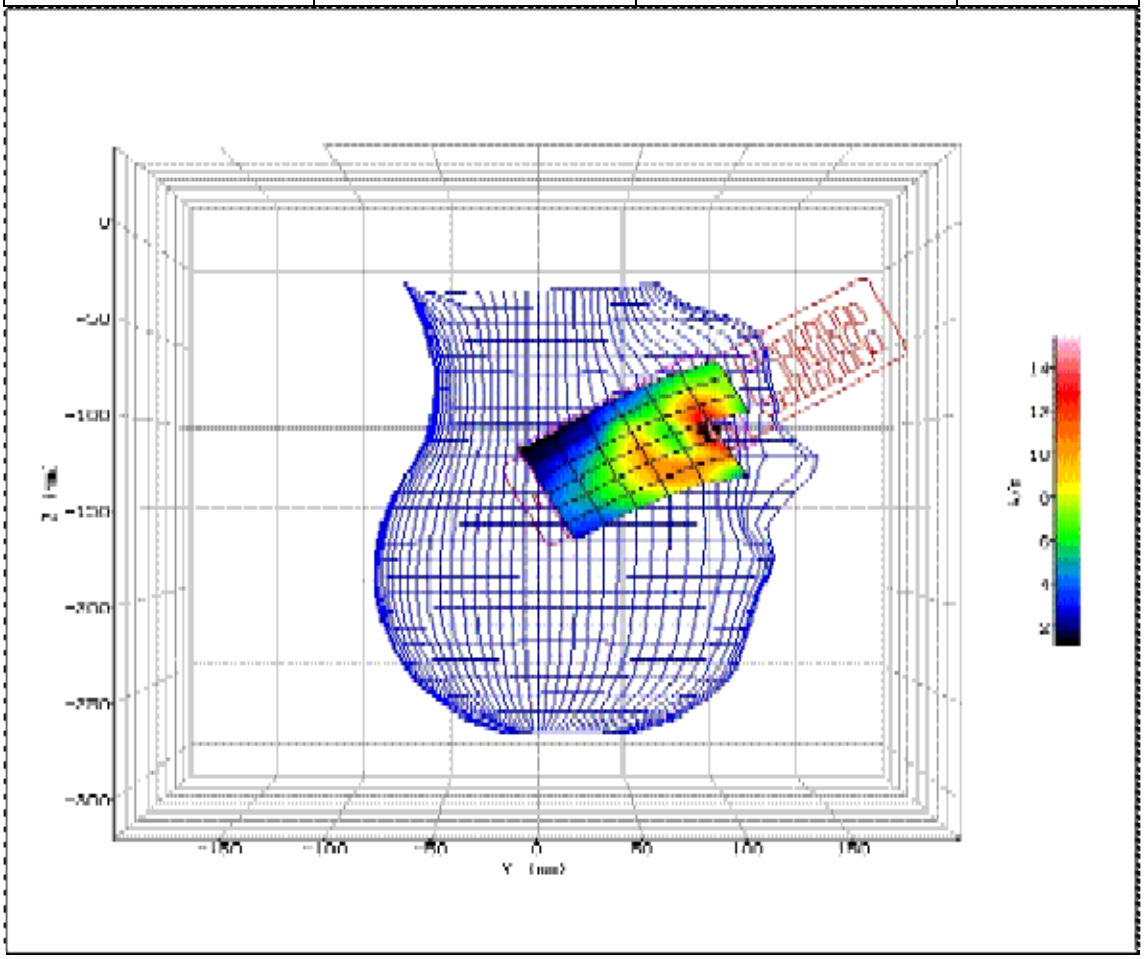

Figure 48: SAR Head Testing Results for the Sharp Mobile Handset at 1850.2MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	08/12/2014-15:07:57	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	1900Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	41.17
RELATIVE HUMIDITY:	25.40%	CONDUCTIVITY:	1.450
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.50°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	18.20mm
DUT POSITION:	Right-15°	MAX SAR Z-AXIS LOCATION:	-141.70mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	6.982
TEST FREQUENCY:	1850.2MHz	SAR 1g:	0.09 W/kg
TYPE OF MODULATION:	GMSK (Voice Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	12.5%	SAR START:	0.087 W/kg
INPUT POWER LEVEL:	30.5dBm	SAR END:	0.086 W/kg
PROBE BATTERY LAST CHANGED:	08/12/2014	SAR DRIFT DURING SCAN:	-0.800 %

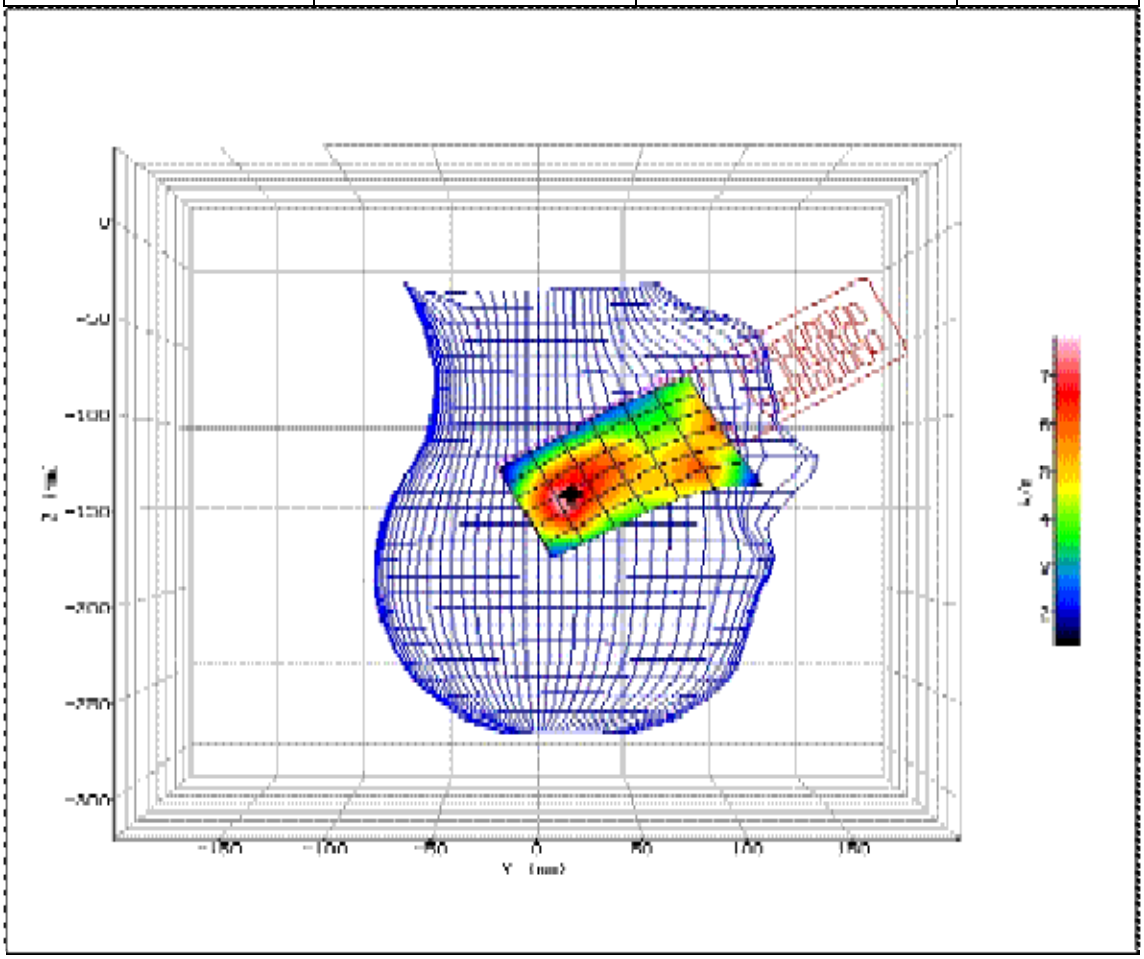

Figure 49: SAR Head Testing Results for the Sharp Mobile Handset at 1850.2MHz.

2.10 PCS 1900MHz HEAD SAR TEST RESULTS AND COURSE AREA SCANS – 2D

.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	08/12/2014-16:51:07	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	1900Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	41.17
RELATIVE HUMIDITY:	25.40%	CONDUCTIVITY:	1.450
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.50°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	81.40mm
DUT POSITION:	Left-Cheek	MAX SAR Z-AXIS LOCATION:	-98.50mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	12.500
TEST FREQUENCY:	1909.8MHz	SAR 1g:	0.24 W/kg
TYPE OF MODULATION:	GMSK (GPRS Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	50%	SAR START:	0.241 W/kg
INPUT POWER LEVEL:	24.9dBm	SAR END:	0.221 W/kg
PROBE BATTERY LAST CHANGED:	08/12/2014	SAR DRIFT DURING SCAN:	-8.600 %

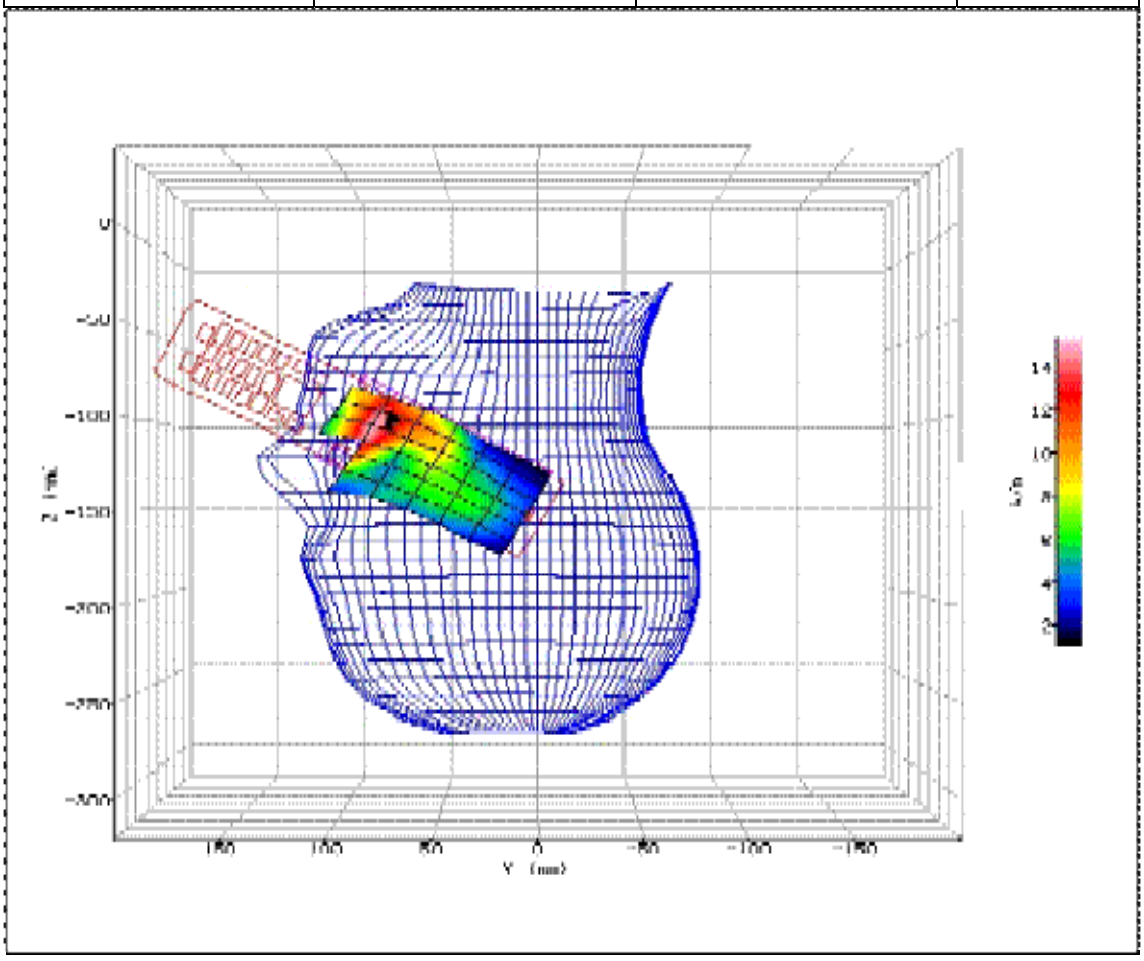

Figure 50: SAR Head Testing Results for the Sharp Mobile Handset at 1909.8MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	08/12/2014-17:16:30	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	1900Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	41.17
RELATIVE HUMIDITY:	25.40%	CONDUCTIVITY:	1.450
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.50°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	24.30mm
DUT POSITION:	Left-15°	MAX SAR Z-AXIS LOCATION:	-152.20mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	8.426
TEST FREQUENCY:	1909.8MHz	SAR 1g:	0.14 W/kg
TYPE OF MODULATION:	GMSK (GPRS Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	50%	SAR START:	0.127 W/kg
INPUT POWER LEVEL:	24.9dBm	SAR END:	0.128 W/kg
PROBE BATTERY LAST CHANGED:	08/12/2014	SAR DRIFT DURING SCAN:	1.200 %

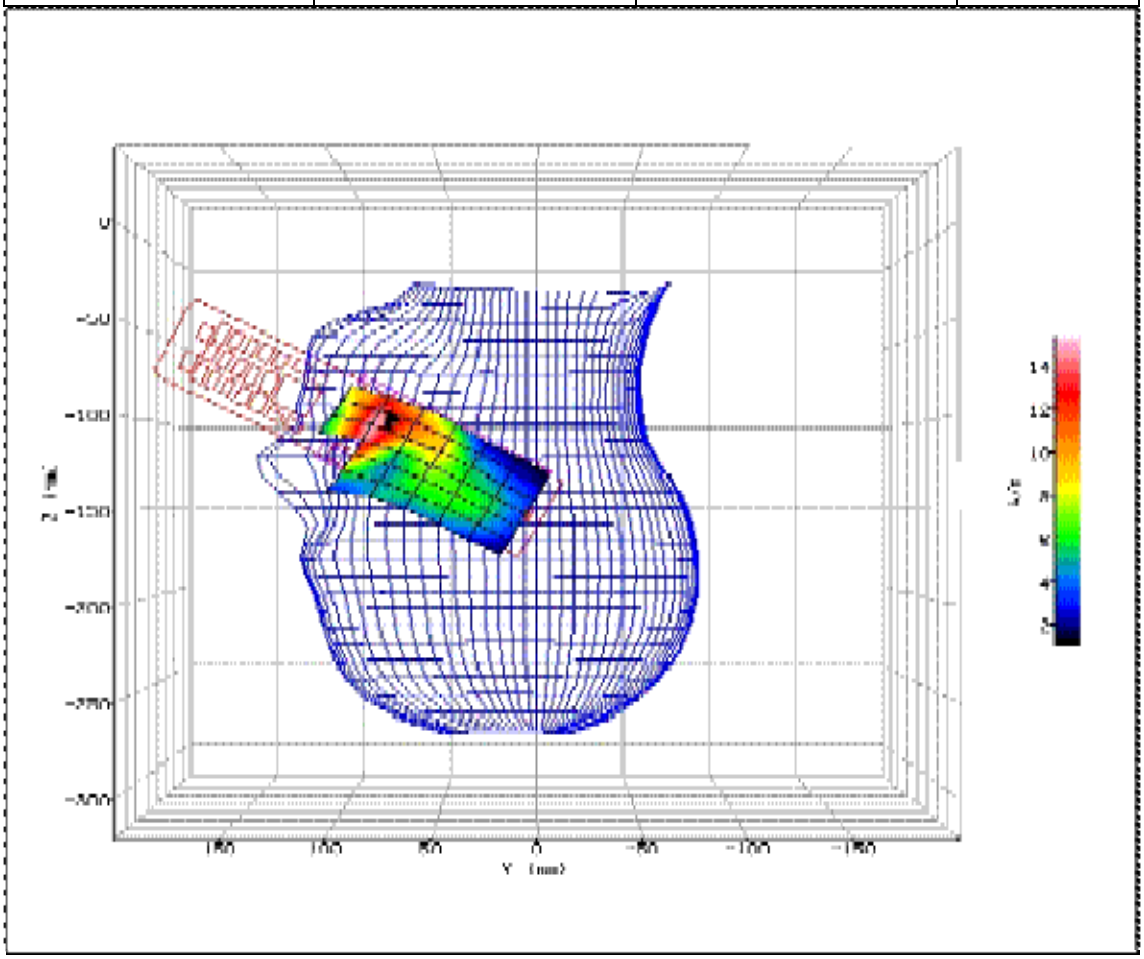

Figure 51: SAR Head Testing Results for the Sharp Mobile Handset at 1909.8MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	08/12/2014-15:47:36	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	1900Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	41.17
RELATIVE HUMIDITY:	25.40%	CONDUCTIVITY:	1.450
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.50°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	89.90mm
DUT POSITION:	Right-Cheek	MAX SAR Z-AXIS LOCATION:	-109.50mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	11.686
TEST FREQUENCY:	1909.8MHz	SAR 1g:	0.23 W/kg
TYPE OF MODULATION:	GMSK (GPRS Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	50%	SAR START:	0.281 W/kg
INPUT POWER LEVEL:	24.9dBm	SAR END:	0.710 W/kg
PROBE BATTERY LAST CHANGED:	08/12/2014	SAR DRIFT DURING SCAN:	-3.400 %

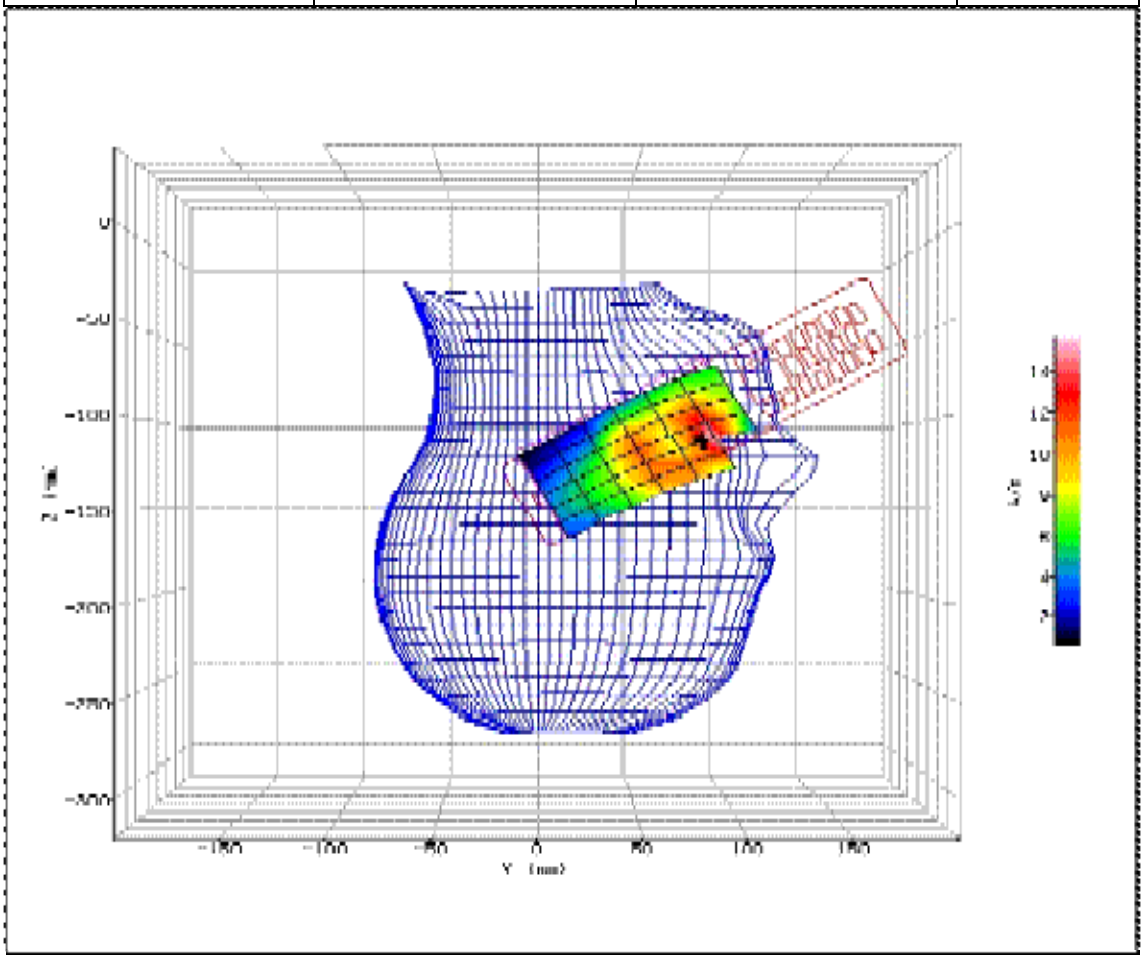

Figure 52: SAR Head Testing Results for the Sharp Mobile Handset at 1909.8MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	08/12/2014-16:15:44	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	1900Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	41.17
RELATIVE HUMIDITY:	25.40%	CONDUCTIVITY:	1.450
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.50°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	20.30mm
DUT POSITION:	Right-15°	MAX SAR Z-AXIS LOCATION:	-140.40mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	7.671
TEST FREQUENCY:	1909.8MHz	SAR 1g:	0.10 W/kg
TYPE OF MODULATION:	GMSK (GPRS Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	50%	SAR START:	0.102 W/kg
INPUT POWER LEVEL:	24.9dBm	SAR END:	0.099 W/kg
PROBE BATTERY LAST CHANGED:	08/12/2014	SAR DRIFT DURING SCAN:	-3.100 %

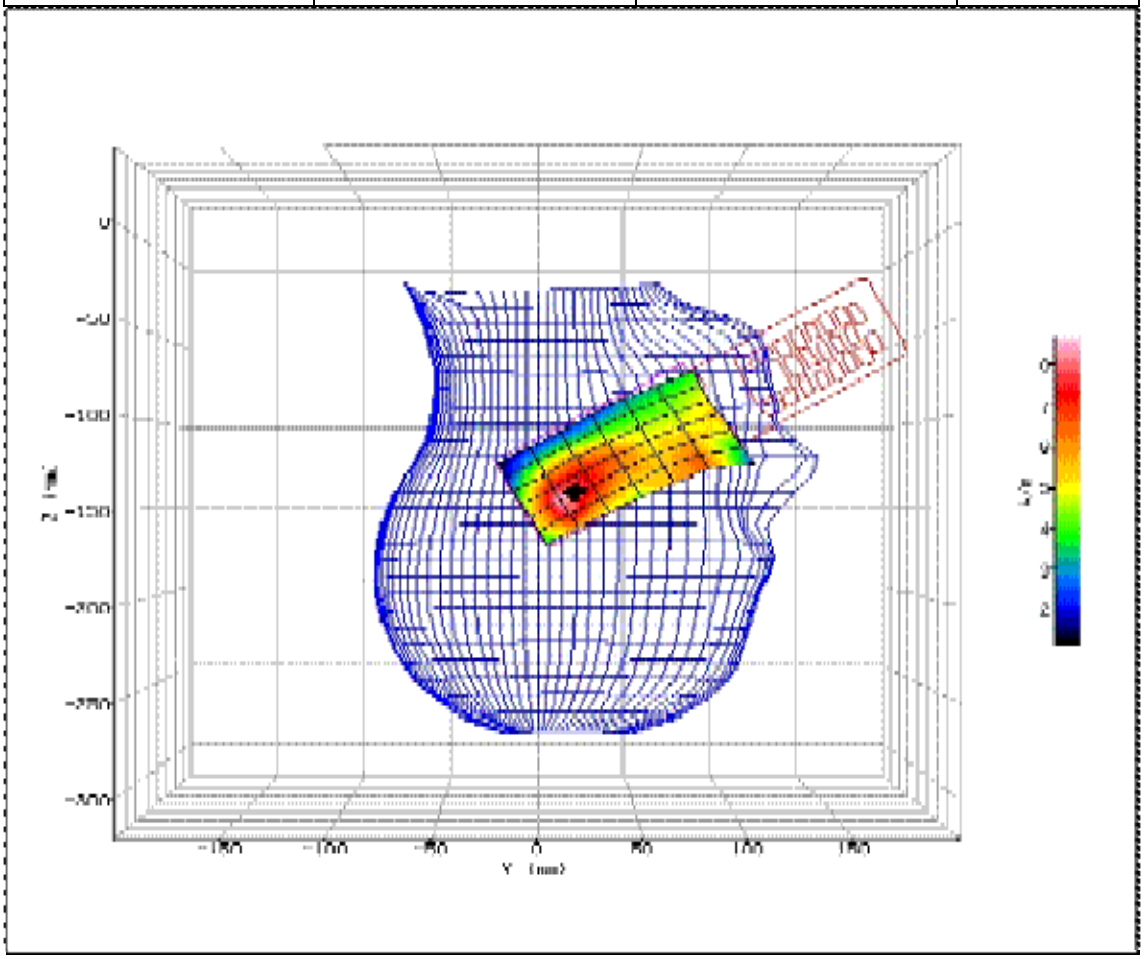

Figure 53: SAR Head Testing Results for the Sharp Mobile Handset at 1909.8MHz.

2.11 PCS 1900MHz BODY SAR TEST RESULTS AND COURSE AREA SCANS – 2D

.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	12/12/2014-10:06:50	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.70°C	LIQUID SIMULANT:	1900Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	52.64
RELATIVE HUMIDITY:	38.90%	CONDUCTIVITY:	1.594
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.60°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	-27.00mm
DUT POSITION:	10mm-Front Facing	MAX SAR Y-AXIS LOCATION:	-6.00mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	11.051
TEST FREQUENCY:	1909.8MHz	SAR 1g:	0.19 W/kg
TYPE OF MODULATION:	GMSK (GPRS Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	50%	SAR START:	0.206 W/kg
INPUT POWER LEVEL:	24.9dBm	SAR END:	0.194 W/kg
PROBE BATTERY LAST CHANGED:	12/12/2014	SAR DRIFT DURING SCAN:	-5.600 %

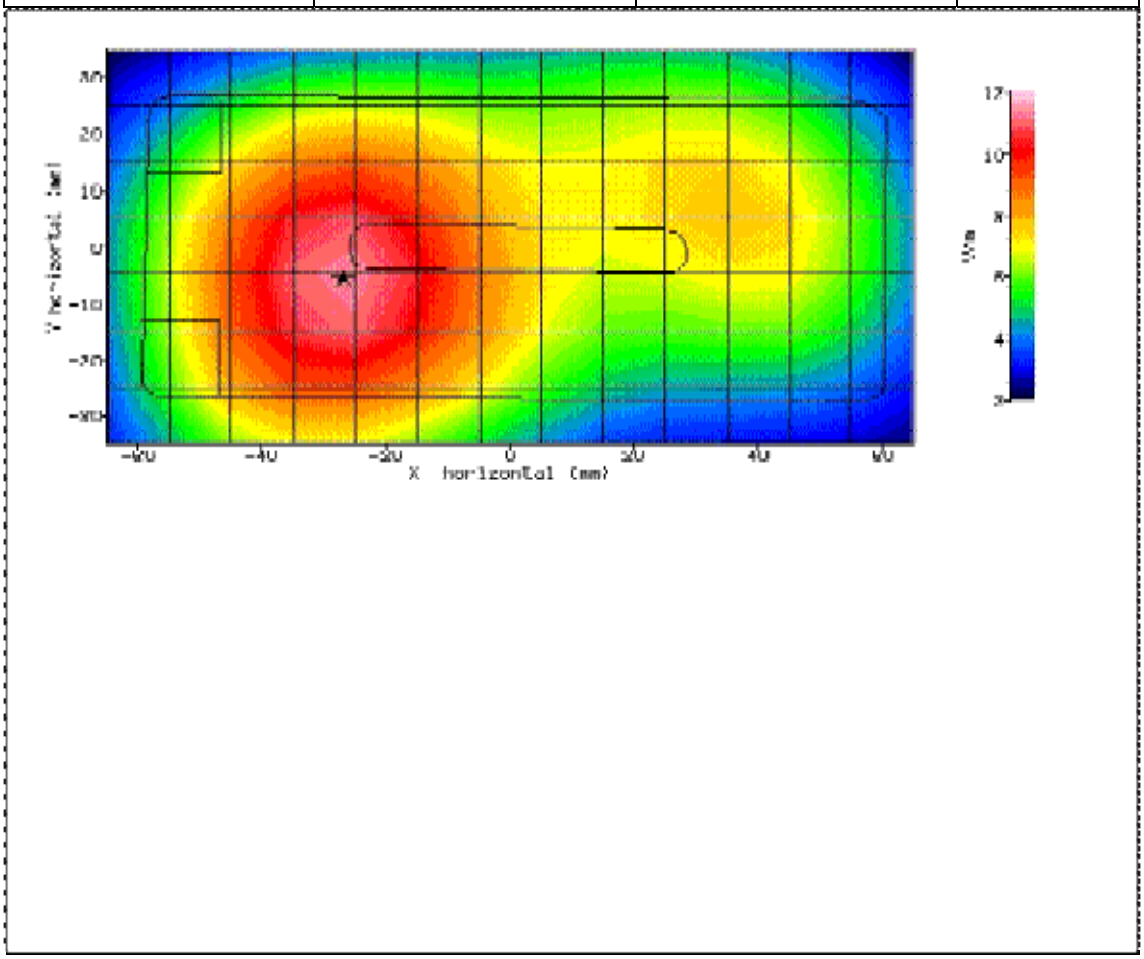

Figure 54: SAR Body Testing Results for the Sharp Mobile Handset at 1909.8MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	12/12/2014-10:27:02	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.70°C	LIQUID SIMULANT:	1900Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	52.64
RELATIVE HUMIDITY:	38.90%	CONDUCTIVITY:	1.594
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.60°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	31.40mm
DUT POSITION:	10mm-Rear Facing	MAX SAR Y-AXIS LOCATION:	18.90mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	12.512
TEST FREQUENCY:	1909.8MHz	SAR 1g:	0.25 W/kg
TYPE OF MODULATION:	GMSK (GPRS Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	50%	SAR START:	0.262 W/kg
INPUT POWER LEVEL:	24.9dBm	SAR END:	0.259 W/kg
PROBE BATTERY LAST CHANGED:	12/12/2014	SAR DRIFT DURING SCAN:	-1.400 %

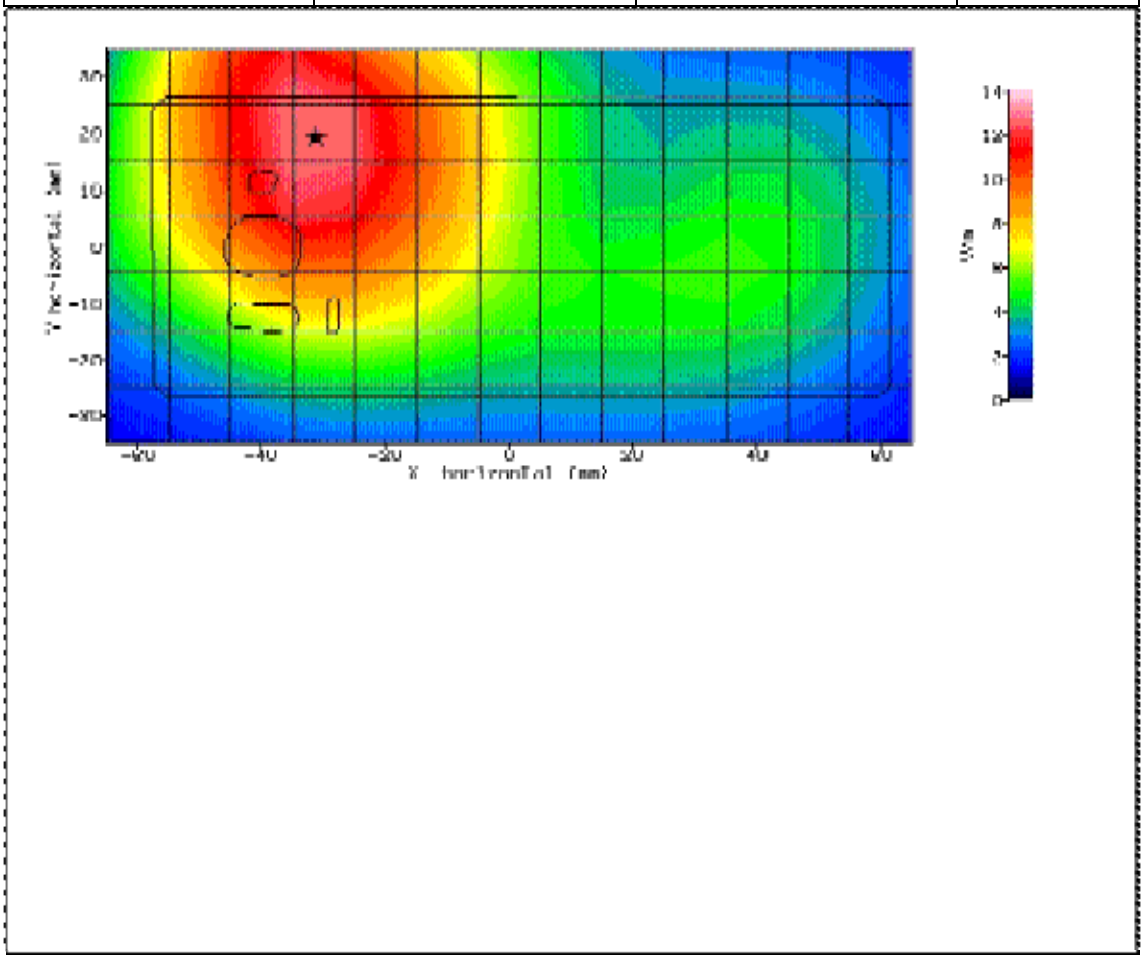

Figure 55: SAR Body Testing Results for the Sharp Mobile Handset at 1909.8MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	12/12/2014-10:51:22	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.70°C	LIQUID SIMULANT:	1900Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	52.64
RELATIVE HUMIDITY:	38.90%	CONDUCTIVITY:	1.594
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.60°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	-36.30mm
DUT POSITION:	10mm-Right Edge	MAX SAR Y-AXIS LOCATION:	0.70mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	10.083
TEST FREQUENCY:	1909.8MHz	SAR 1g:	0.19 W/kg
TYPE OF MODULATION:	GMSK (GPRS Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	50%	SAR START:	0.209 W/kg
INPUT POWER LEVEL:	24.9dBm	SAR END:	0.201 W/kg
PROBE BATTERY LAST CHANGED:	12/12/2014	SAR DRIFT DURING SCAN:	-3.700 %

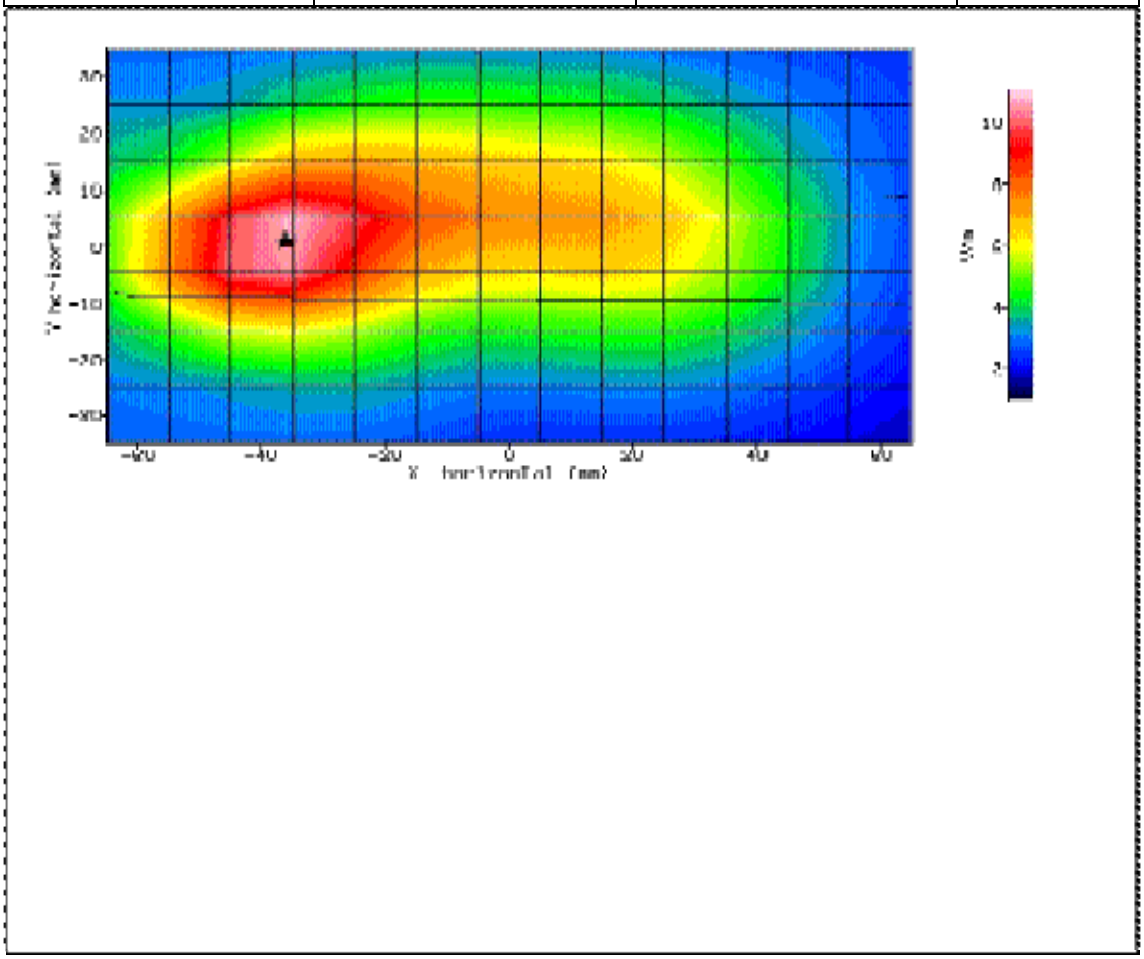

Figure 56: SAR Body Testing Results for the Sharp Mobile Handset at 1909.8MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	12/12/2014-11:12:36	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.70°C	LIQUID SIMULANT:	1900Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	52.64
RELATIVE HUMIDITY:	38.90%	CONDUCTIVITY:	1.594
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.60°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	-8.30mm
DUT POSITION:	10mm-Top Edge	MAX SAR Y-AXIS LOCATION:	7.90mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	11.026
TEST FREQUENCY:	1909.8MHz	SAR 1g:	0.21 W/kg
TYPE OF MODULATION:	GMSK (GPRS Mode)	SAR 10g:	N/A
MODN. DUTY CYCLE:	50%	SAR START:	0.225 W/kg
INPUT POWER LEVEL:	24.9dBm	SAR END:	0.222 W/kg
PROBE BATTERY LAST CHANGED:	12/12/2014	SAR DRIFT DURING SCAN:	-1.600 %

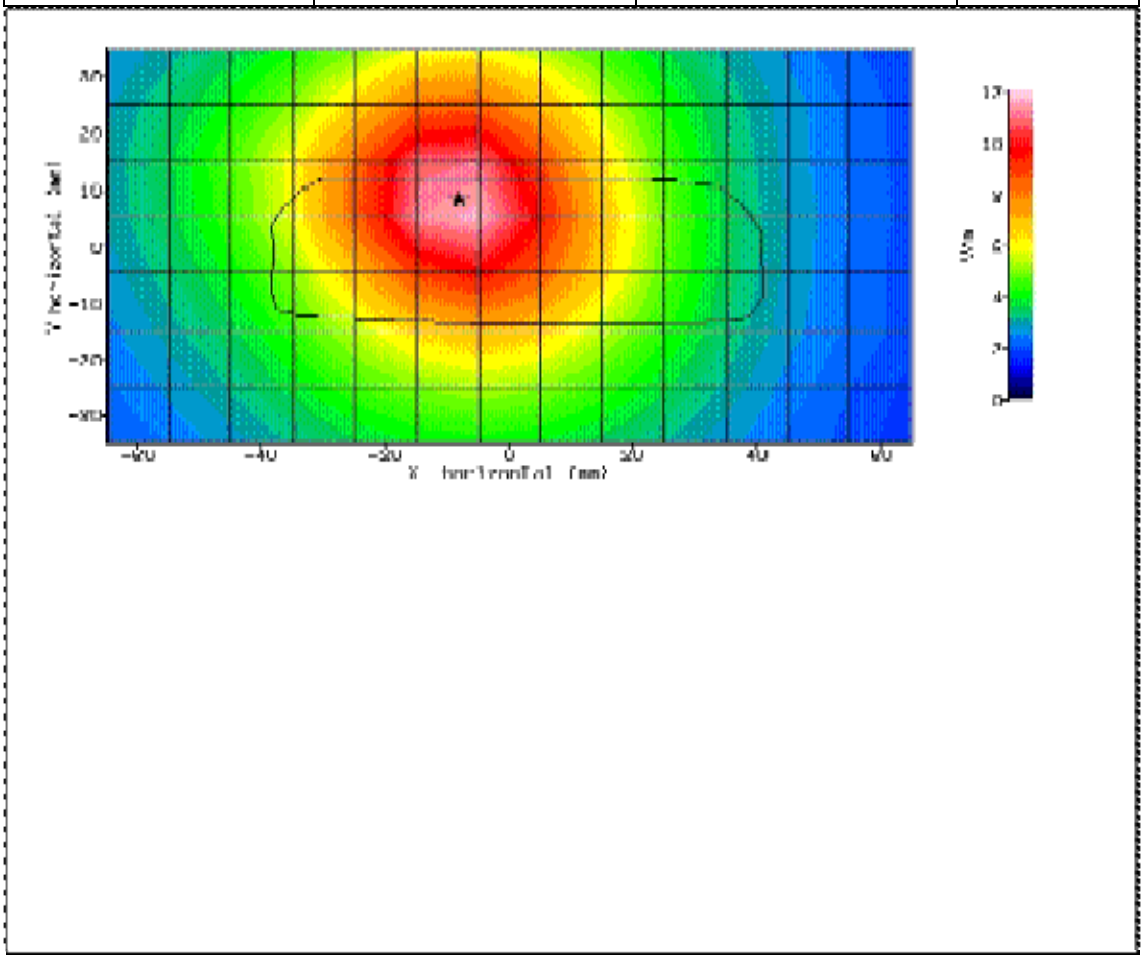

Figure 57: SAR Body Testing Results for the Sharp Mobile Handset at 1909.8MHz.

2.12 WLAN 2450MHz HEAD SAR TEST RESULTS AND COURSE AREA SCANS – 2D

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	10/12/2014-16:35:18	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.80°C	LIQUID SIMULANT:	2450Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	37.97
RELATIVE HUMIDITY:	28.20%	CONDUCTIVITY:	1.791
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.80°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	55.50mm
DUT POSITION:	Left-Cheek	MAX SAR Z-AXIS LOCATION:	-112.80mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	5.513
TEST FREQUENCY:	2412.0MHz	SAR 1g:	0.08 W/kg
TYPE OF MODULATION:	DSSS (WLAN)	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.074 W/kg
INPUT POWER LEVEL:	17dBm	SAR END:	0.071 W/kg
PROBE BATTERY LAST CHANGED:	10/12/2014	SAR DRIFT DURING SCAN:	-4.400 %

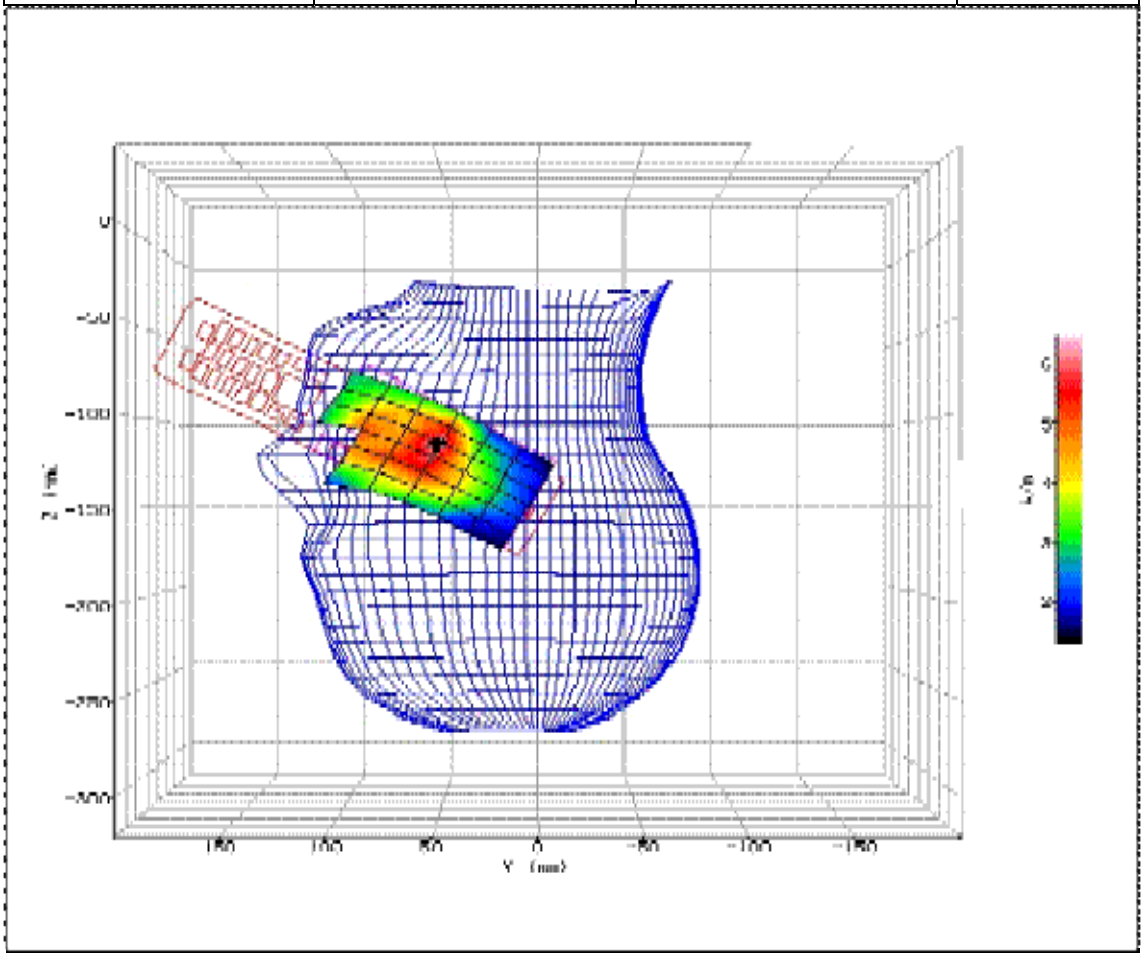

Figure 58: SAR Head Testing Results for the Sharp Mobile Handset at 2412.0MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	10/12/2014-17:01:02	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.80°C	LIQUID SIMULANT:	2450Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	37.97
RELATIVE HUMIDITY:	28.20%	CONDUCTIVITY:	1.791
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.80°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	20.50mm
DUT POSITION:	Left-15°	MAX SAR Z-AXIS LOCATION:	-136.20mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	3.579
TEST FREQUENCY:	2412.0MHz	SAR 1g:	0.03 W/kg
TYPE OF MODULATION:	DSSS (WLAN)	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.030 W/kg
INPUT POWER LEVEL:	17dBm	SAR END:	0.028 W/kg
PROBE BATTERY LAST CHANGED:	10/12/2014	SAR DRIFT DURING SCAN:	-6.000 %

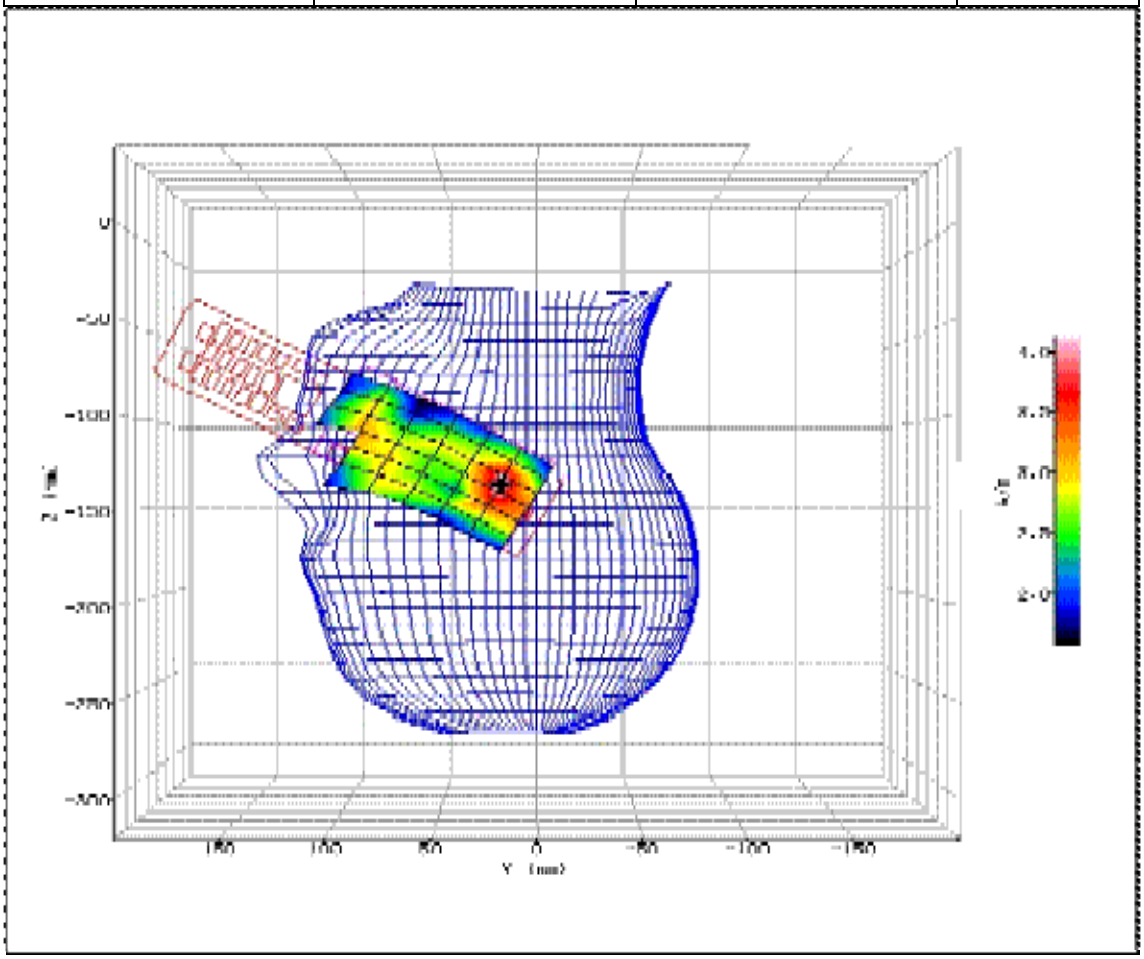

Figure 59: SAR Head Testing Results for the Sharp Mobile Handset at 2412.0MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	10/12/2014-17:32:22	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.80°C	LIQUID SIMULANT:	2450Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	37.97
RELATIVE HUMIDITY:	28.20%	CONDUCTIVITY:	1.791
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.80°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	74.80mm
DUT POSITION:	Right-Cheek	MAX SAR Z-AXIS LOCATION:	-103.30mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	6.606
TEST FREQUENCY:	2412.0MHz	SAR 1g:	0.08 W/kg
TYPE OF MODULATION:	DSSS (WLAN)	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.103 W/kg
INPUT POWER LEVEL:	17dBm	SAR END:	0.100 W/kg
PROBE BATTERY LAST CHANGED:	10/12/2014	SAR DRIFT DURING SCAN:	-2.100 %

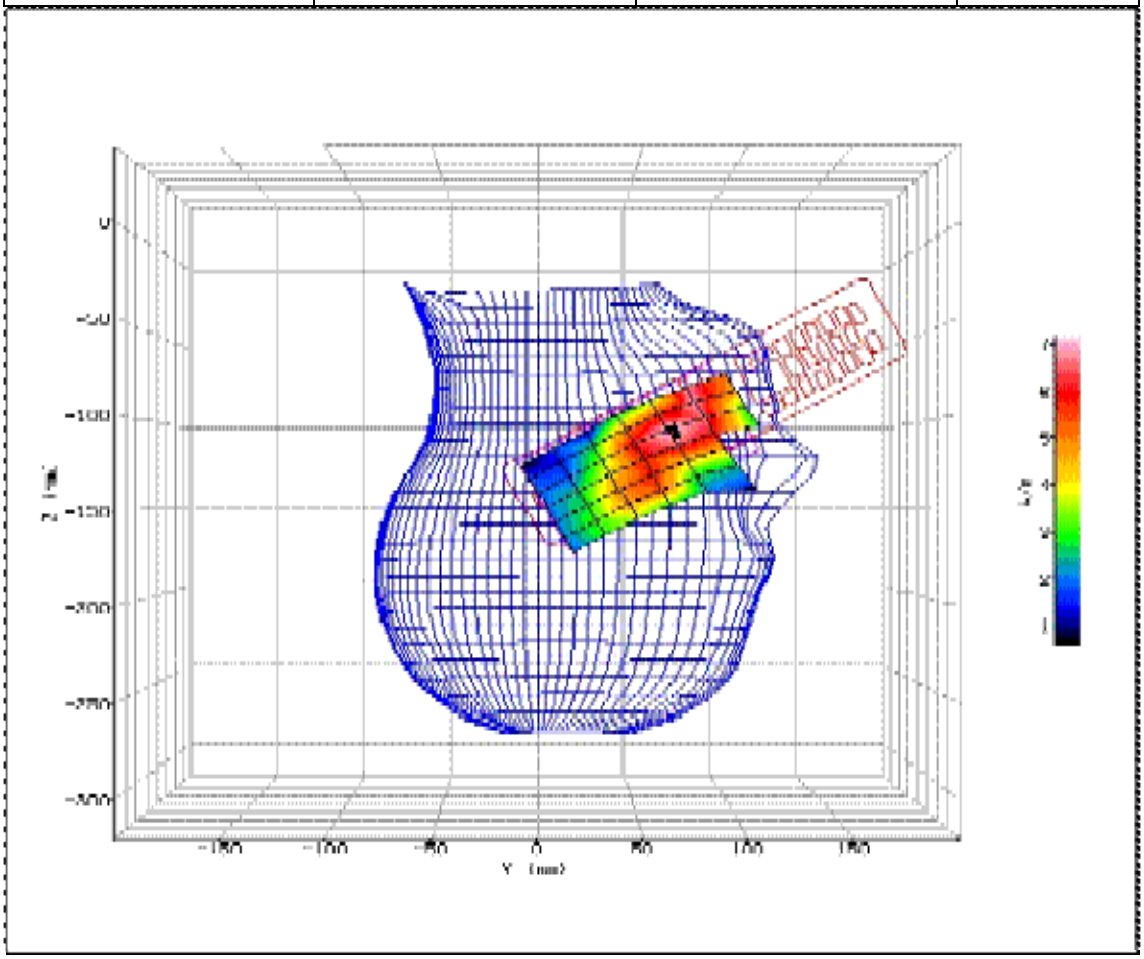

Figure 60: SAR Head Testing Results for the Sharp Mobile Handset at 2412.0MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	10/12/2014-17:56:52	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.80°C	LIQUID SIMULANT:	2450Head
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	37.97
RELATIVE HUMIDITY:	28.20%	CONDUCTIVITY:	1.791
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.80°C
PHANTOM ROTATION:	N/A	MAX SAR Y-AXIS LOCATION:	31.10mm
DUT POSITION:	Right-15°	MAX SAR Z-AXIS LOCATION:	-150.90mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	4.385
TEST FREQUENCY:	2412.0MHz	SAR 1g:	0.05 W/kg
TYPE OF MODULATION:	DSSS (WLAN)	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.049 W/kg
INPUT POWER LEVEL:	17dBm	SAR END:	0.050 W/kg
PROBE BATTERY LAST CHANGED:	10/12/2014	SAR DRIFT DURING SCAN:	2.900 %

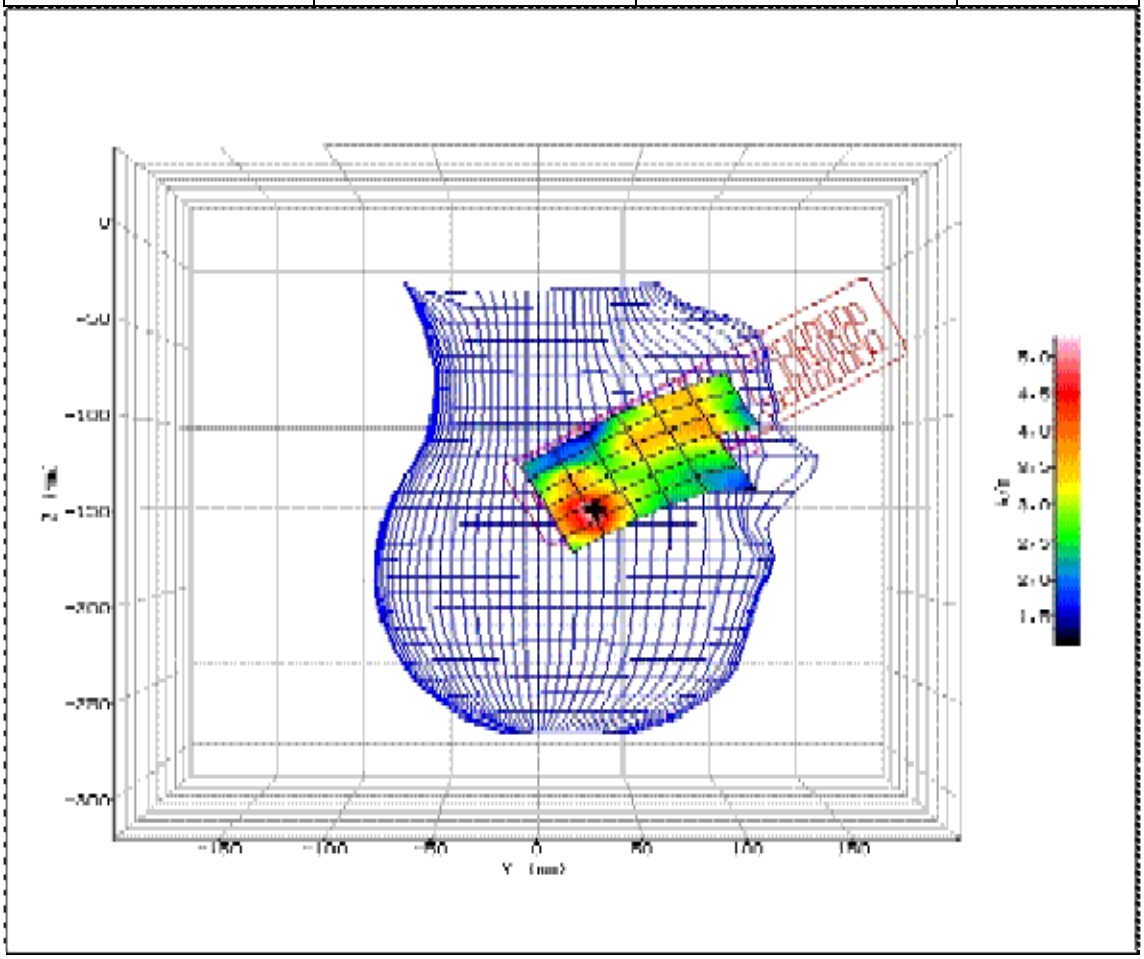

Figure 61: SAR Head Testing Results for the Sharp Mobile Handset at 2412.0MHz.

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2.13 WLAN 2450MHz BODY SAR TEST RESULTS AND COURSE AREA SCANS – 2D

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SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	11/12/2014-14:38:52	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	2450Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	50.53
RELATIVE HUMIDITY:	30.40%	CONDUCTIVITY:	2.000
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.70°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	-30.900mm
DUT POSITION:	10mm-Front Facing	MAX SAR Y-AXIS LOCATION:	15.200mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	6.199
TEST FREQUENCY:	2412.0MHz	SAR 1g:	0.08 W/kg
TYPE OF MODULATION:	DSSS (WLAN)	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.083 W/kg
INPUT POWER LEVEL:	17dBm	SAR END:	0.085 W/kg
PROBE BATTERY LAST CHANGED:	11/12/2014	SAR DRIFT DURING SCAN:	2.400 %

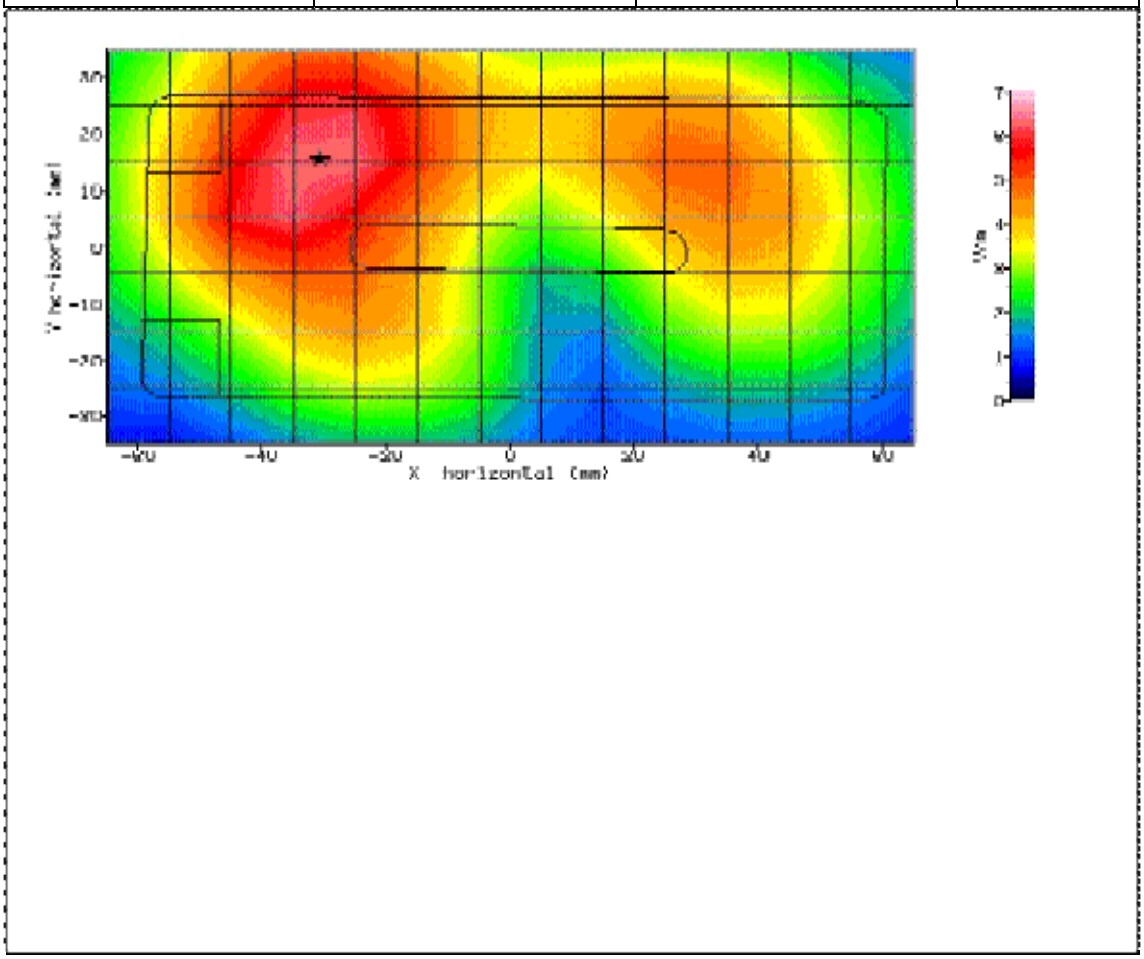

Figure 62: SAR Body Testing Results for the Sharp Mobile Handset at 2412.0MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	11/12/2014-14:56:50	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	2450Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	50.53
RELATIVE HUMIDITY:	30.40%	CONDUCTIVITY:	2.000
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.70°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	-19.200mm
DUT POSITION:	10mm-Rear Facing	MAX SAR Y-AXIS LOCATION:	-19.200mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	8.383
TEST FREQUENCY:	2412.0MHz	SAR 1g:	0.16 W/kg
TYPE OF MODULATION:	DSSS (WLAN)	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.166 W/kg
INPUT POWER LEVEL:	17dBm	SAR END:	0.171 W/kg
PROBE BATTERY LAST CHANGED:	11/12/2014	SAR DRIFT DURING SCAN:	3.500 %

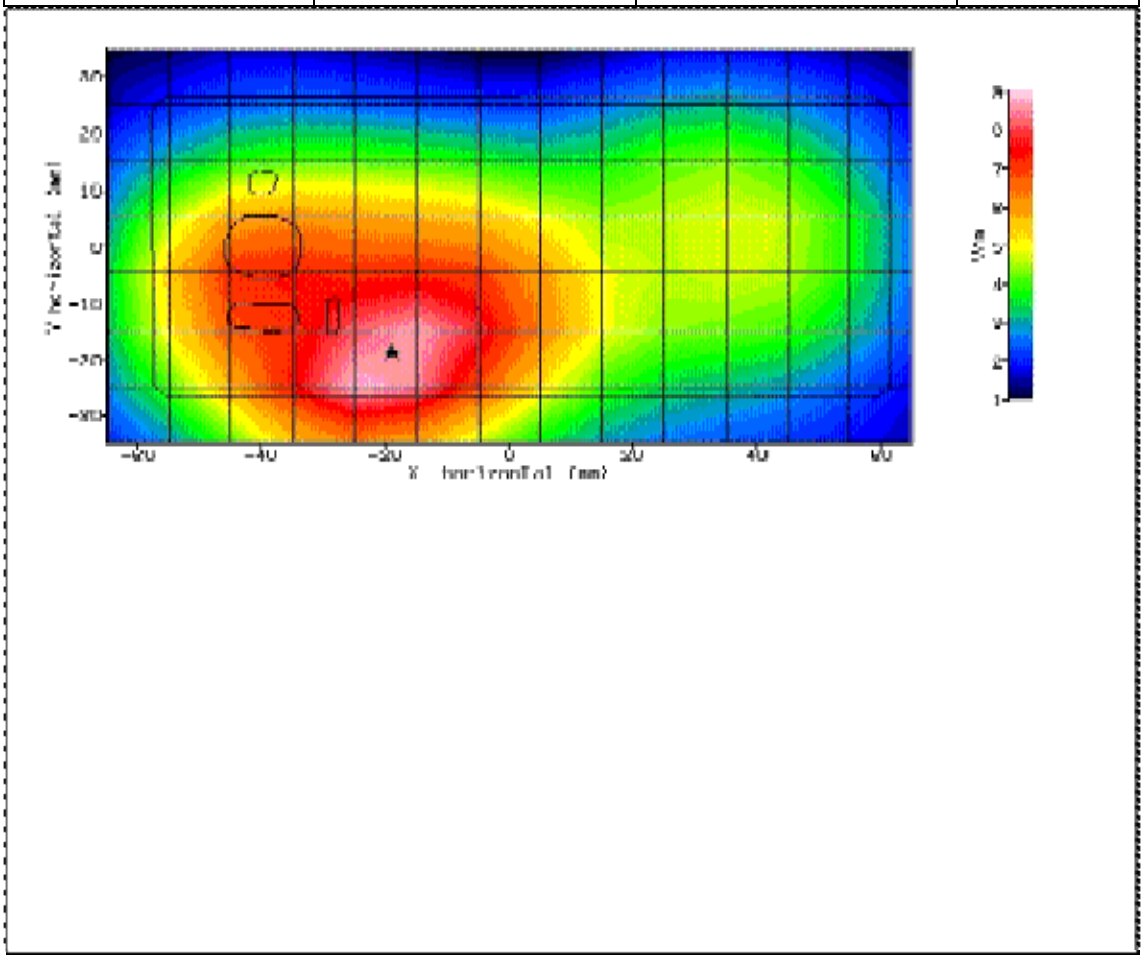

Figure 63: SAR Body Testing Results for the Sharp Mobile Handset at 2412.0MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	11/12/2014-15:19:33	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	2450Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	50.53
RELATIVE HUMIDITY:	30.40%	CONDUCTIVITY:	2.000
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.70°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	-25.500mm
DUT POSITION:	10mm-Left Edge	MAX SAR Y-AXIS LOCATION:	3.300mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	8.855
TEST FREQUENCY:	2412.0MHz	SAR 1g:	0.19 W/kg
TYPE OF MODULATION:	DSSS (WLAN)	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.208 W/kg
INPUT POWER LEVEL:	17dBm	SAR END:	0.217 W/kg
PROBE BATTERY LAST CHANGED:	11/12/2014	SAR DRIFT DURING SCAN:	4.500 %

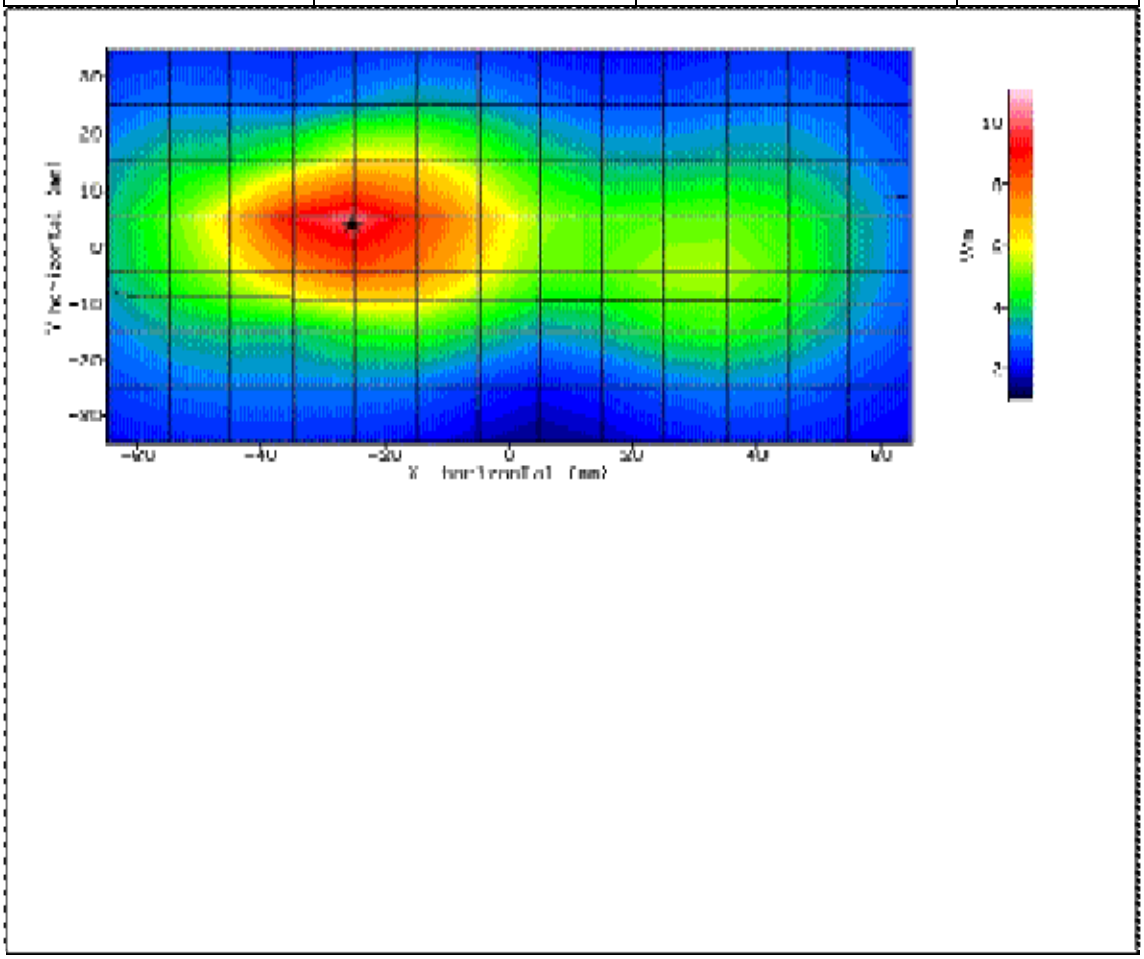

Figure 64: SAR Body Testing Results for the Sharp Mobile Handset at 2412.0MHz.

SYSTEM / SOFTWARE:	SARA-C / v6.09.08	INPUT POWER DRIFT:	0 dB
DATE / TIME:	11/12/2014-15:37:30	DUT BATTERY MODEL/NO:	SHF31UAA
AMBIENT TEMPERATURE:	22.90°C	LIQUID SIMULANT:	2450Body
DEVICE UNDER TEST:	Sharp Mobile Handset	RELATIVE PERMITTIVITY:	50.53
RELATIVE HUMIDITY:	30.40%	CONDUCTIVITY:	2.000
PHANTOM S/NO:	IXB-2HF	LIQUID TEMPERATURE:	22.70°C
PHANTOM ROTATION:	N/A	MAX SAR X-AXIS LOCATION:	14.100mm
DUT POSITION:	10mm-Top Edge	MAX SAR Y-AXIS LOCATION:	2.500mm
ANTENNA CONFIGURATION:	N/A	MAX E FIELD:	5.717
TEST FREQUENCY:	2412.0MHz	SAR 1g:	0.07 W/kg
TYPE OF MODULATION:	DSSS (WLAN)	SAR 10g:	N/A
MODN. DUTY CYCLE:	100%	SAR START:	0.077 W/kg
INPUT POWER LEVEL:	17dBm	SAR END:	0.076 W/kg
PROBE BATTERY LAST CHANGED:	11/12/2014	SAR DRIFT DURING SCAN:	-0.700 %

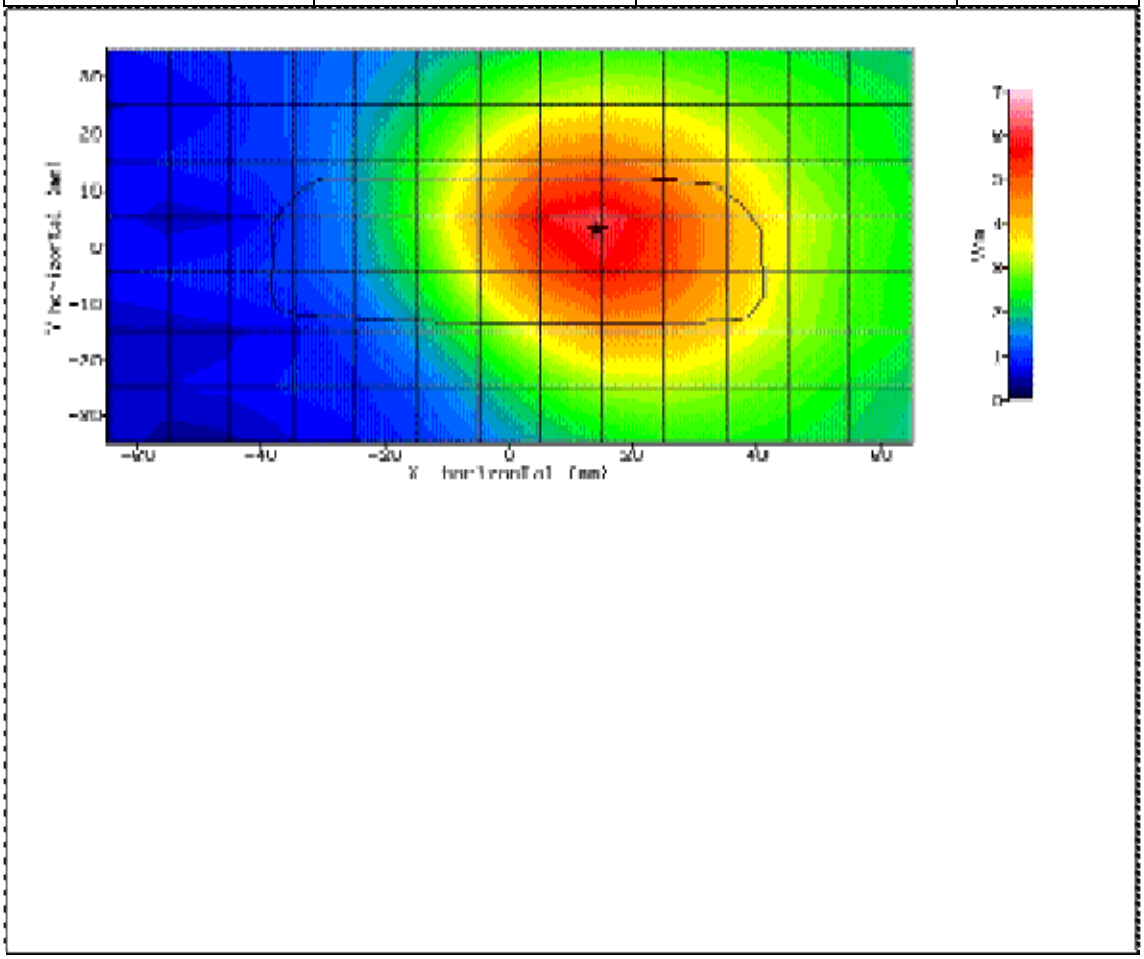

Figure 65: SAR Body Testing Results for the Sharp Mobile Handset at 2412.0MHz.

Product Service

SECTION 3

TEST EQUIPMENT USED

Product Service

3.1 TEST EQUIPMENT USED

The following Test equipment used at TÜV SÜD Product Service:

Instrument Description	Manufacturer	Model Type	TE Number	Cal Period (months)	Calibration Due Date
Signal Generator	Hewlett Packard	ESG4000A	38	12	21-May-2015
10MHz - 2.5GHz, 3W, Amplifier	Vectawave Technology	VTL5400	51	-	TU
Directional Coupler	Krytar	1850	58	-	TU
Communications Tester	Rohde & Schwarz	CMU 200	442	12	TU
Attenuator (20dB, 20W)	Narda	766F-20	483	12	4-Jun-2015
Dipole Positioner/Support (plastic)	IndexSar Ltd	IXH-020	1585	-	TU
Bi-directional Coupler	IndexSar Ltd	7401 (VDC0830-20)	2414	-	TU
Antenna (Omnidirectional)	Katherin Scala Division	OG-890/1990/DC	2906	-	TU
Power Meter	Rohde & Schwarz	NRVD	2979	12	20-May-2015
Radio Communications Test Set	Rohde & Schwarz	CMU 200	3035	12	6-Nov-2015
Hygrometer	Rotronic	I-1000	3068	12	10-Apr-2015
Power Sensor	Rohde & Schwarz	NRV-Z1	3563	12	20-May-2015
Meter & T/C	R.S Components	Meter 615-8206 & Type K T/C	3612	12	24-Sep-2015
SAR 1800 MHz dipole	Speag	D1800V2	3855	36	19-Feb-2017
SAR 900 MHz dipole	Speag	D900V2	3856	36	19-Feb-2017
SAR 2450 MHz dipole	Speag	D2450V2	3875	36	19-Feb-2017
SAR 1900 MHz dipole	Speag	D1900V2	3876	36	19-Feb-2017
Head Phantom	IndexSar Ltd	IXB-040 Inverted SAM phantom	4075	-	TU
Part of SARAC System	IndexSar Ltd	Robot Controller	4076	-	TU
Head Phantom	IndexSar Ltd	IXB-040 Inverted SAM phantom	4254	-	TU
hold handsets against SAM Phantom during testing	IndexSar Ltd	Handset Holder	4257	-	TU
Spacer used to raise body phantom	IndexSar Ltd	Body Phantom Spacer	4258	-	TU
hold handsets against SAM Phantom	IndexSar Ltd	Handset Holder	4265	-	TU
Part of SARAC System	IndexSar Ltd	Wooden Bench	4266	-	TU
Part of SARAC System	IndexSar Ltd	Robot Controller	4267	-	TU
Cartesian 4-axis Robot	IndexSar Ltd	SARAC	4269	-	TU
Part of SARAC System	IndexSar Ltd	White Benchtop	4270	-	TU
Immersible SAR Probe	IndexSar Ltd	IPX-050	4312	24	7-Mar-2015
Flat Phantom	IndexSar Ltd	IXB-2HF 700-6000MHz	4399	-	TU
Flat Phantom	IndexSar Ltd	IXB-2HF 700-6000MHz	4400	-	TU

Product Service

Instrument Description	Manufacturer	Model Type	TE Number	Cal Period (months)	Calibration Due Date
SAR Probe	IndexSar Ltd	IPX-020	4443	24	23-Apr-2015
835MHz Head Fluid	IndexSar Ltd	Batch 20	N/A	1	06-Jan-2014
835MHz Body Fluid	IndexSar Ltd	Batch 13	N/A	1	06-Jan-2014
1900MHz Head Fluid	IndexSar Ltd	Batch 8	N/A	1	06-Jan-2014
1900MHz Body Fluid	IndexSar Ltd	Batch 4	N/A	1	06-Jan-2014
2450MHz Head Fluid	IndexSar Ltd	Batch 11	N/A	1	06-Jan-2014
2450MHz Body Fluid	IndexSar Ltd	Batch 7	N/A	1	06-Jan-2014

Traceability Unscheduled

Product Service

3.2 TEST SOFTWARE

The following software was used to control the TÜV SÜD Product Service SARAC System.

Instrument	Version Number	Date
SARA-C system	v.6.09.08	23 July 2014
IFA-10 Probe amplifier	Version 2	-