



Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon	No. REP 2005 007 Z520a 02
Approved SEM/CV/PF/P Gerard Hayes	Checked A X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

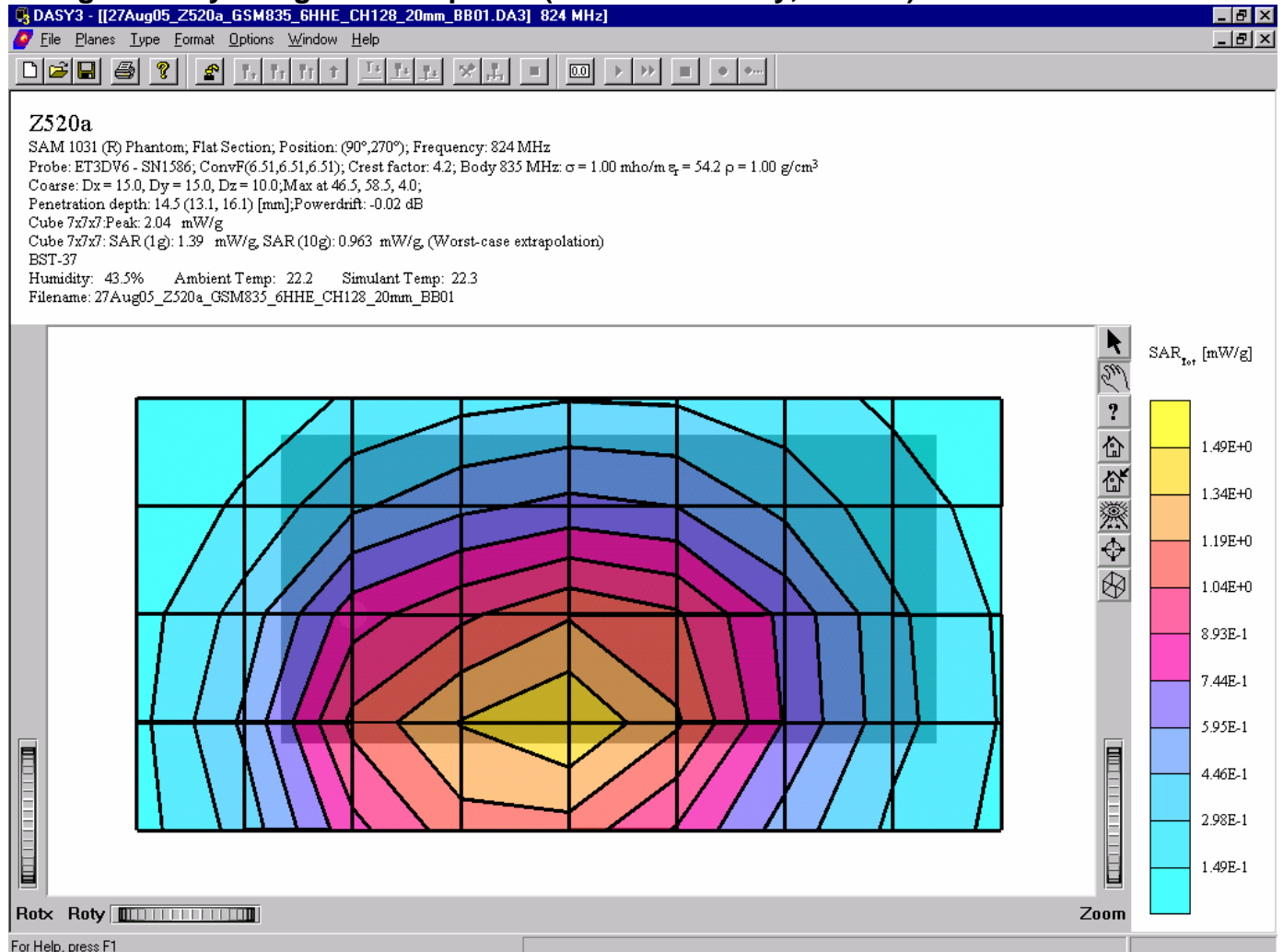
### Appendix 3

## SAR distribution plots for Body Worn Configuration



Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon	No. REP 2005 007 Z520a 02
Approved SEM/CV/PF/P Gerard Hayes	Checked A X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

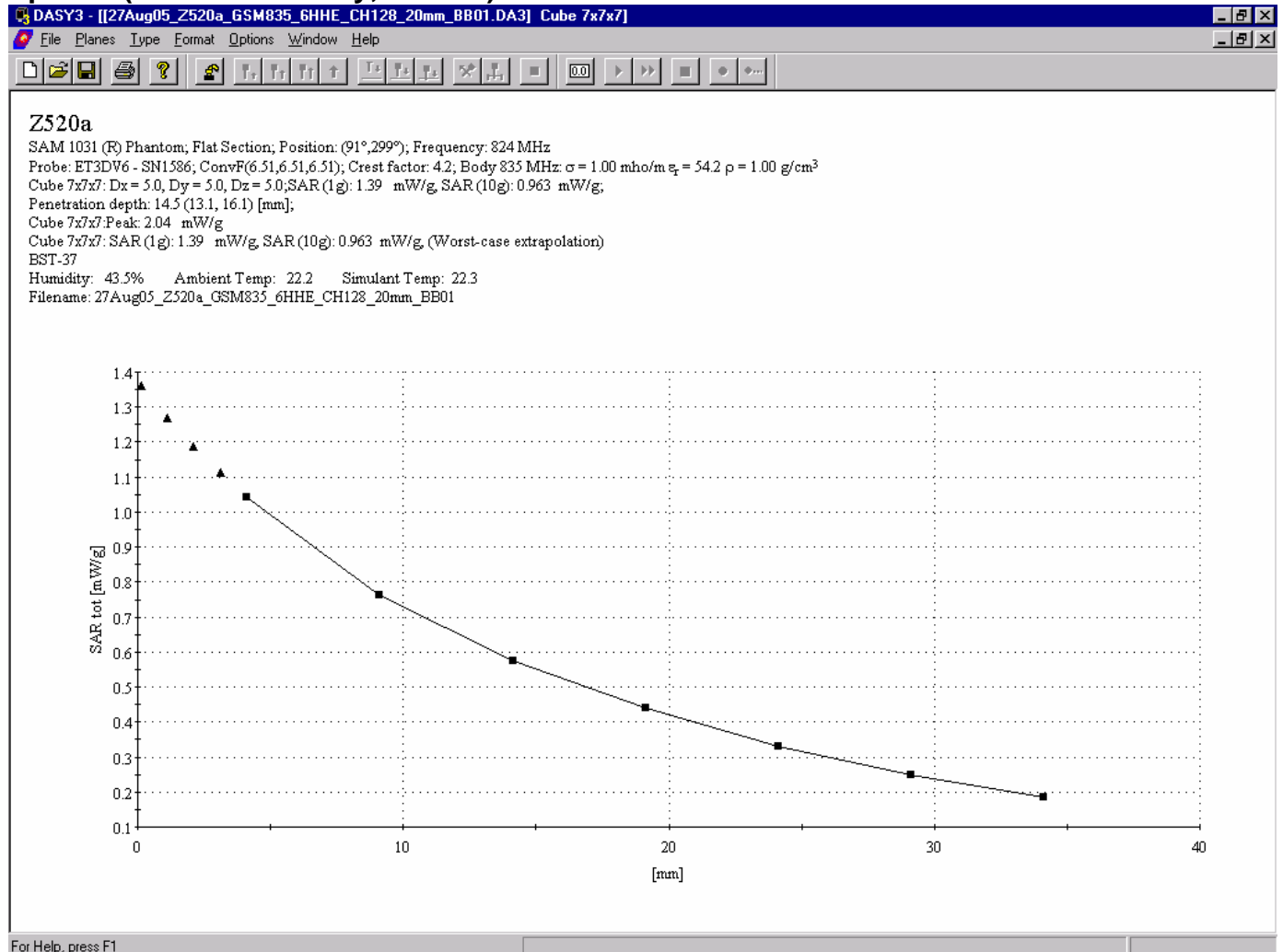
**Distribution of maximum SAR in 800 GSM band. Measured with back of device facing the body using a 20MM spacer. (Standard Battery, BST-37)**





Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon		No. REP 2005 007 Z520a 02	
Approved SEM/CV/PF/P Gerard Hayes	Checked	A	X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

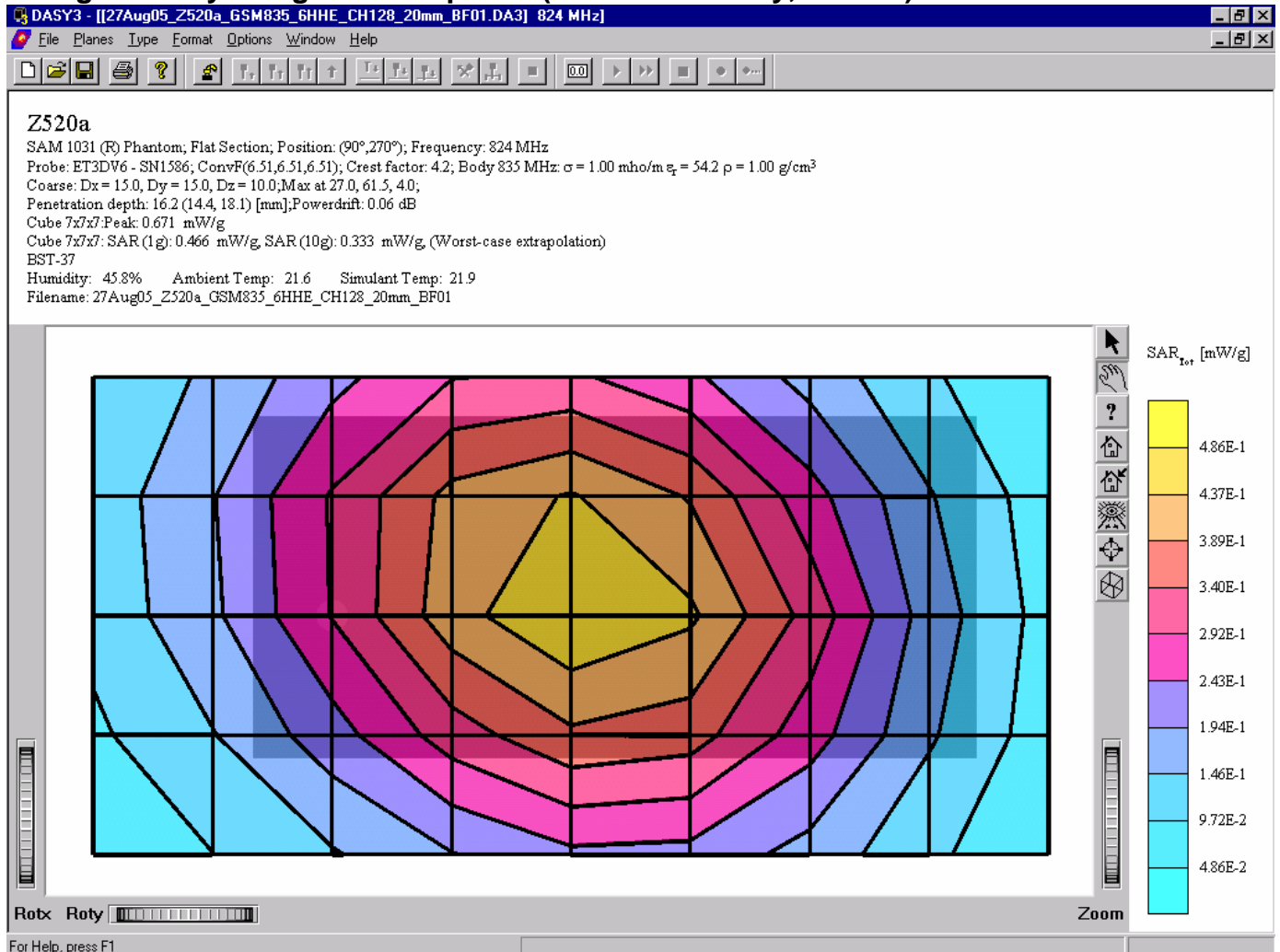
**SAR Extrapolation to the phantom inner surface. Measured for maximum SAR in 800 GSM band, while back of the phone is against the body using a 20MM Spacer. (Standard Battery, BST-37)**





Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon		No. REP 2005 007 Z520a 02	
Approved SEM/CV/PF/P Gerard Hayes	Checked	A	X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

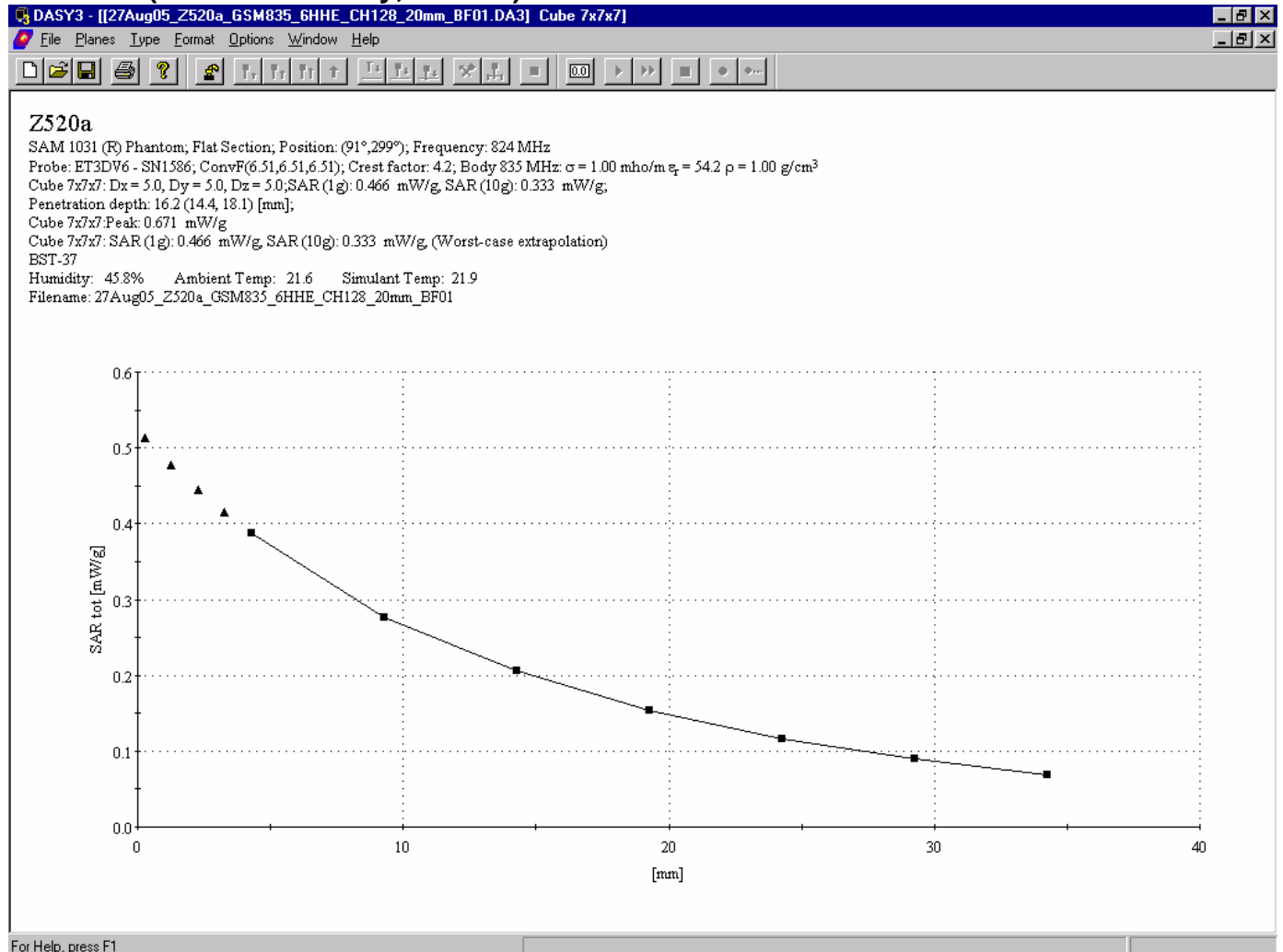
**Distribution of maximum SAR in 800 GSM band. Measured with front of device facing the body using a 20MM spacer. (Standard Battery, BST-37)**





Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon		No. REP 2005 007 Z520a 02	
Approved SEM/CV/PF/P Gerard Hayes	Checked	A	X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

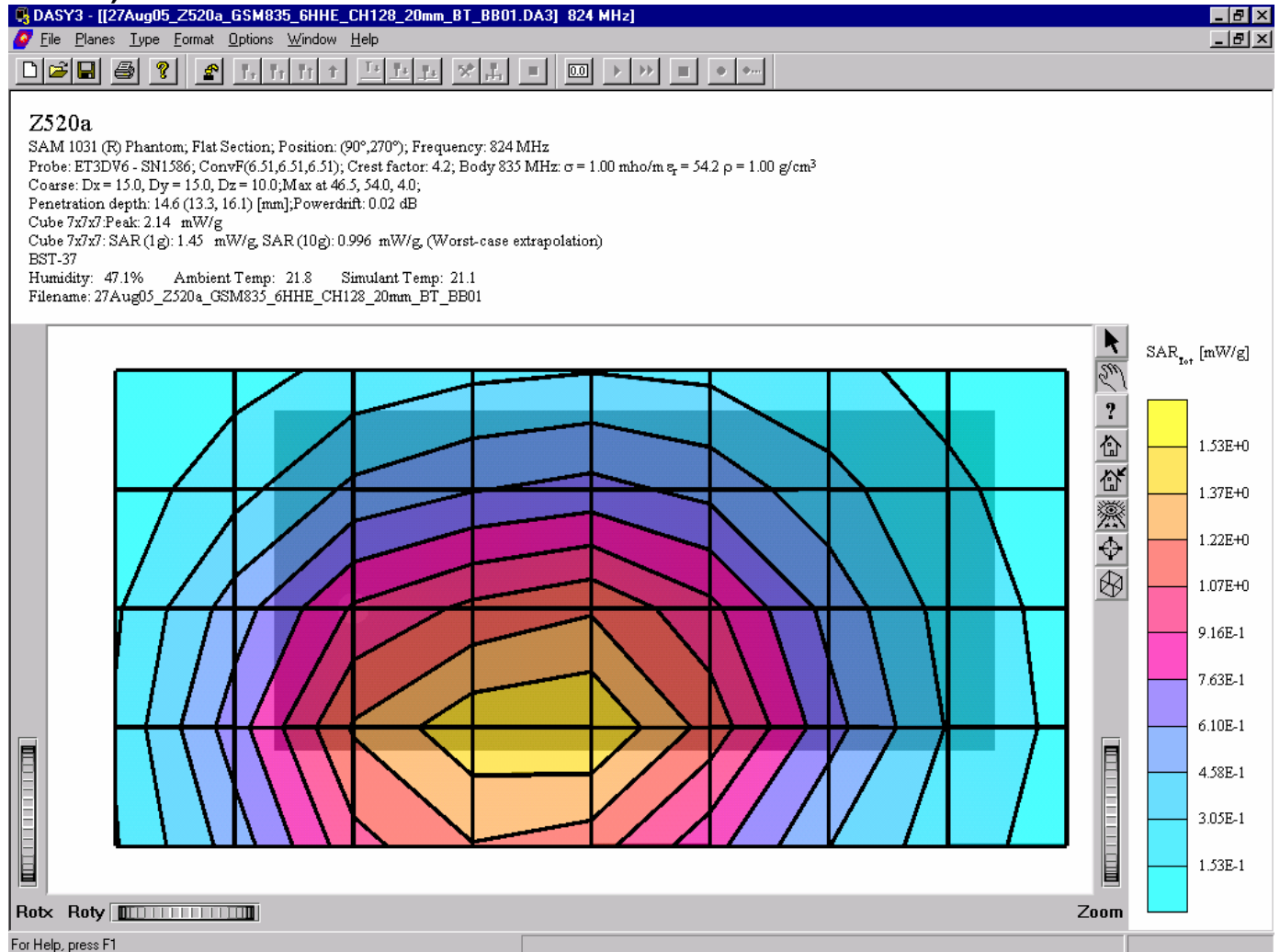
**SAR Extrapolation to the phantom inner surface. Measured for maximum SAR in 800 GSM band, while front of the phone is against the body using a 20MM SPACER. (Standard Battery, BST-37)**





Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon		No. REP 2005 007 Z520a 02	
Approved SEM/CV/PF/P Gerard Hayes	Checked	A	X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

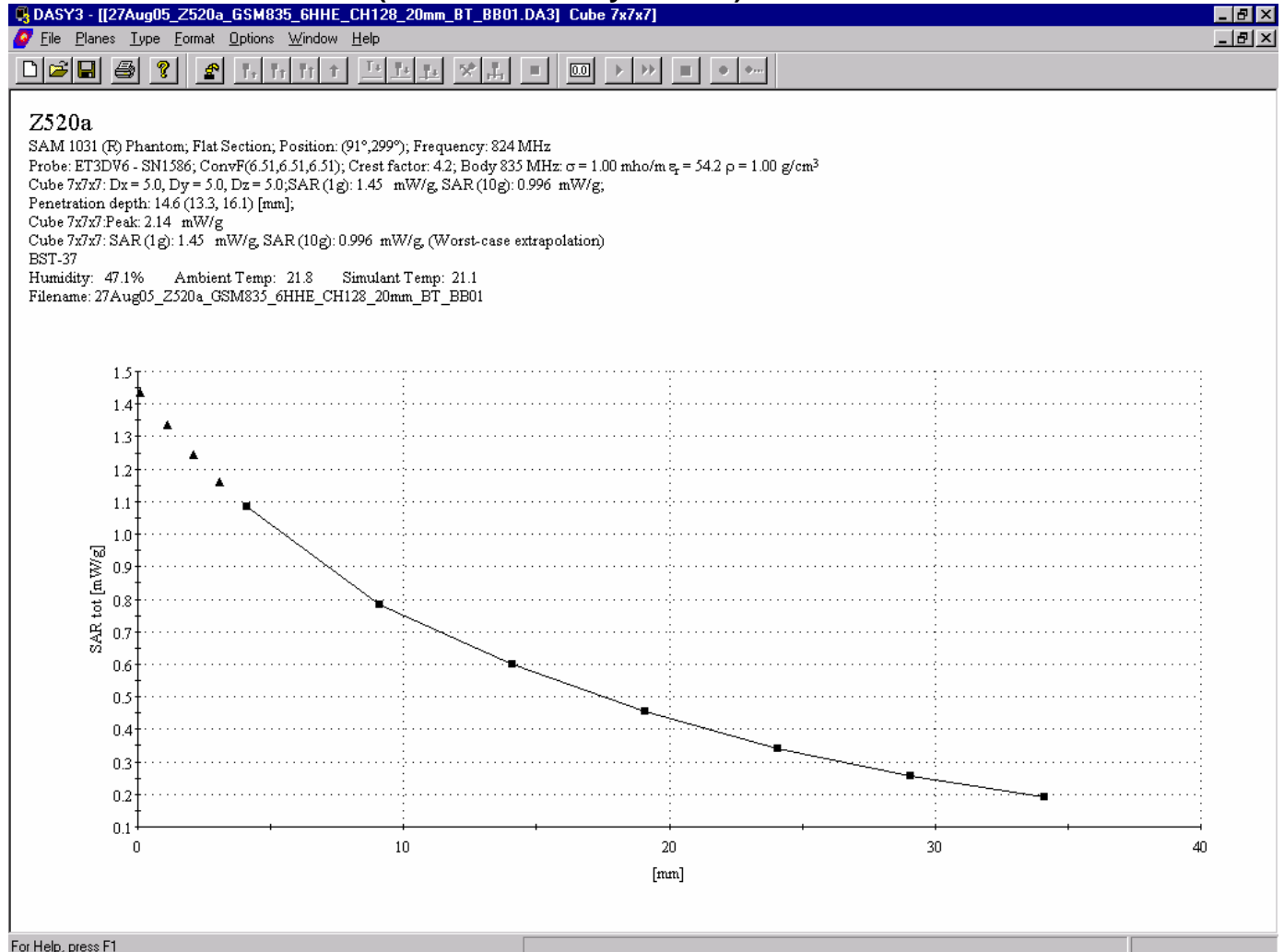
**Distribution of maximum SAR in 800 GSM band. Measured with back of device facing the body using a 20MM SPACER with Blue Tooth. (Standard Battery BST-37)**





Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon		No. REP 2005 007 Z520a 02	
Approved SEM/CV/PF/P Gerard Hayes	Checked	A	X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

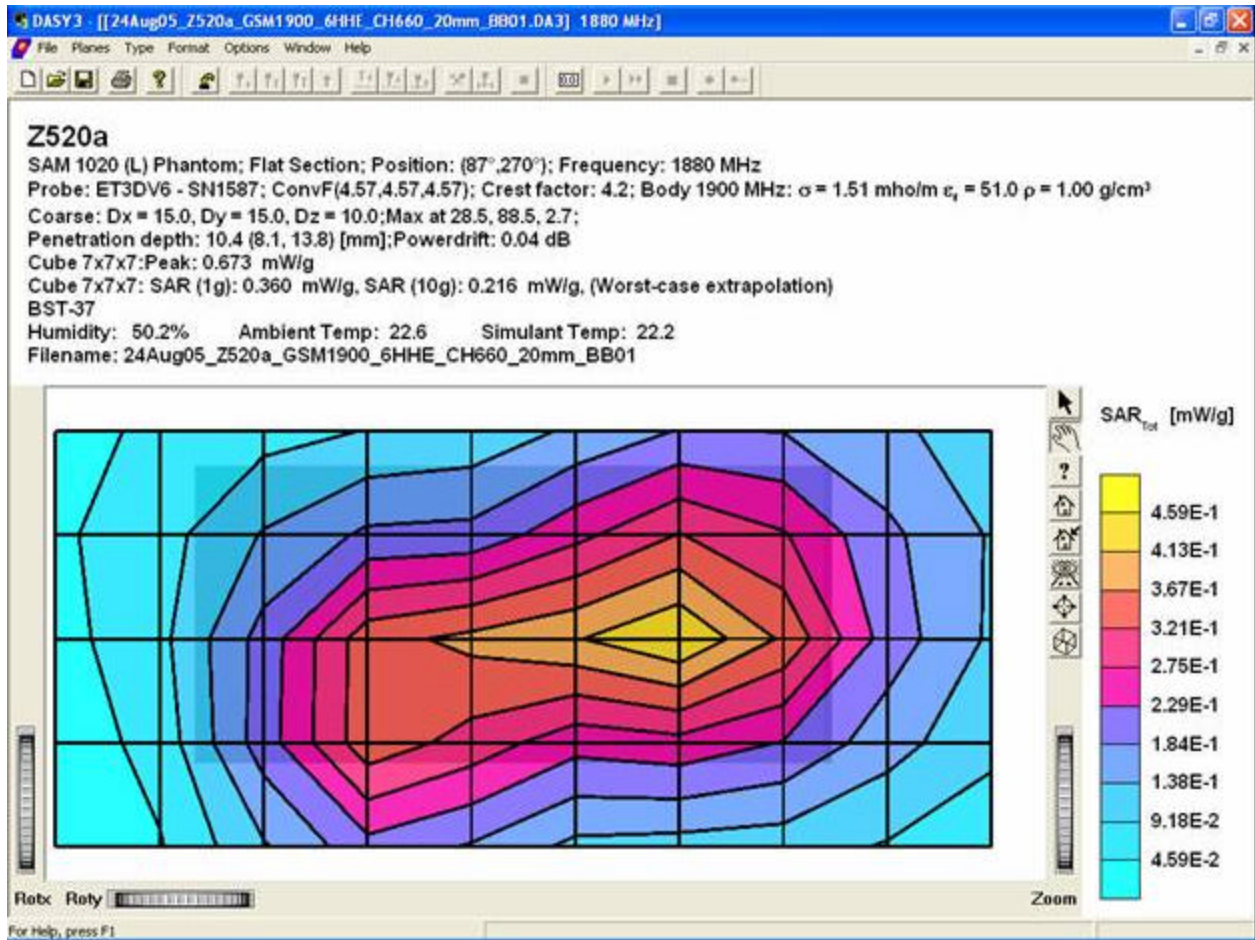
**SAR Extrapolation to the phantom inner surface. Measured for maximum SAR in 800 GSM band, while back of the phone is against the body using a 20MM SPACER with Blue Tooth. (Standard Battery BST-37)**





Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon	No. REP 2005 007 Z520a 02
Approved SEM/CV/PF/P Gerard Hayes	Checked A X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

**Distribution of maximum SAR in 1900 GSM band. Measured with back of device facing the body using a 20MM spacer. (Standard Battery, BST-37)**

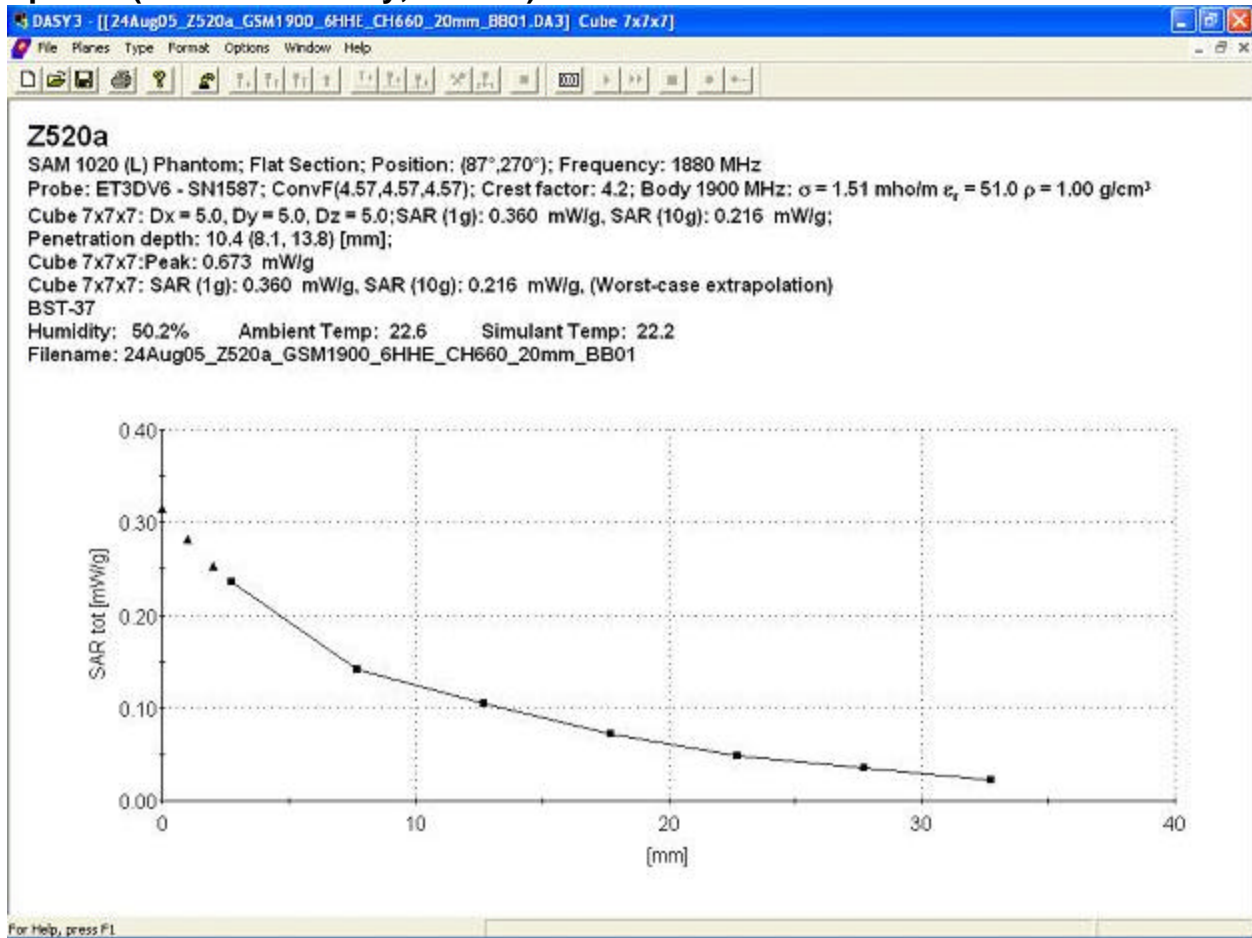






Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon	No. REP 2005 007 Z520a 02
Approved SEM/CV/PF/P Gerard Hayes	Checked A X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

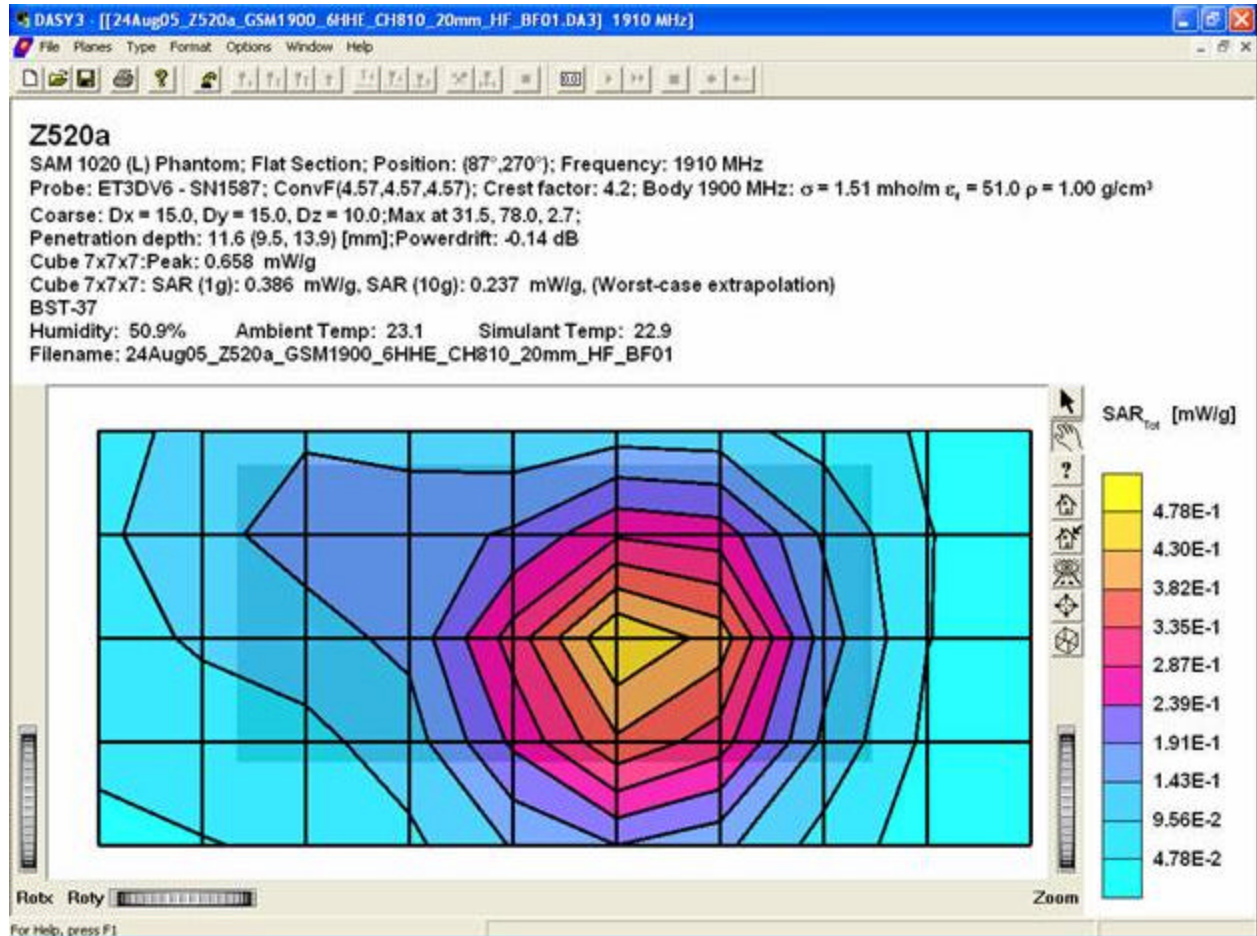
**SAR Extrapolation to the phantom inner surface. Measured for maximum SAR in 1900 GSM band, while back of the phone is against the body using a 20MM Spacer. (Standard Battery, BST-37)**





Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon	No. REP 2005 007 Z520a 02
Approved SEM/CV/PF/P Gerard Hayes	Checked A X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

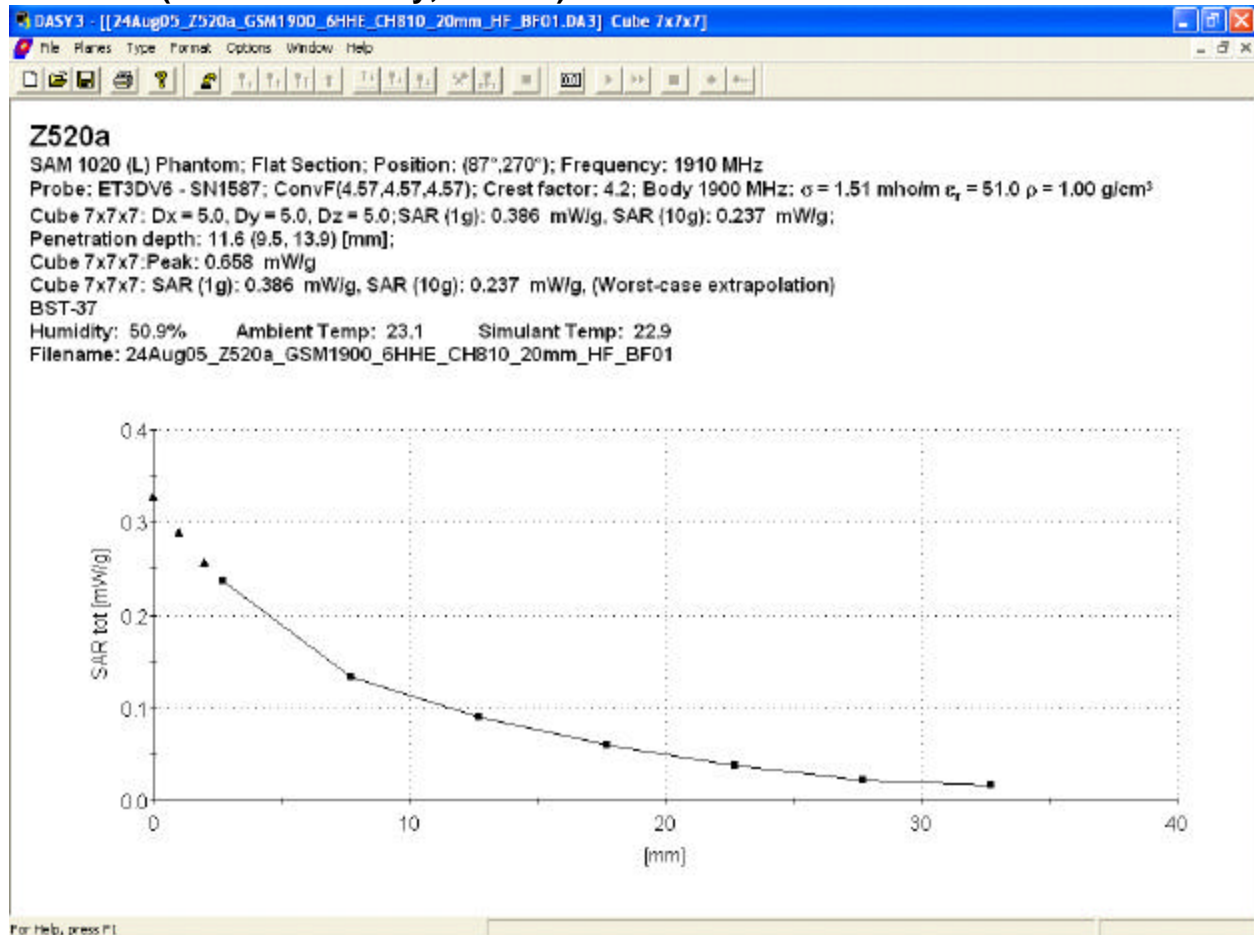
**Distribution of maximum SAR in 1900 GSM band. Measured with front of device facing the body using a 20MM spacer. (Standard Battery, BST-37)**





Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon	No. REP 2005 007 Z520a 02
Approved SEM/CV/PF/P Gerard Hayes	Checked A X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

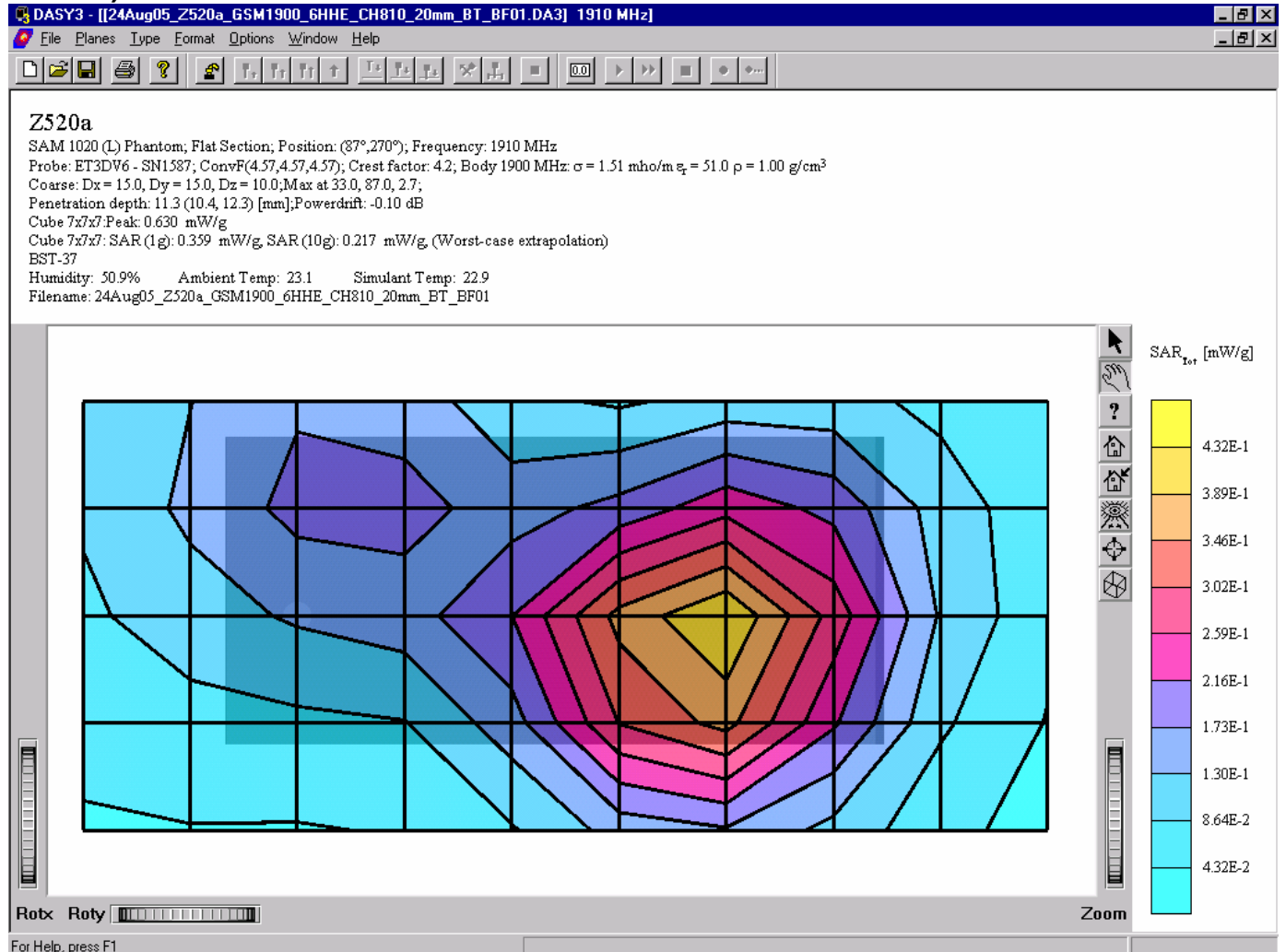
**SAR Extrapolation to the phantom inner surface. Measured for maximum SAR in 1900 GSM band, while front of the phone is against the body using a 20MM SPACER. (Standard Battery, BST-37)**





Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon		No. REP 2005 007 Z520a 02	
Approved SEM/CV/PF/P Gerard Hayes	Checked	A	X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

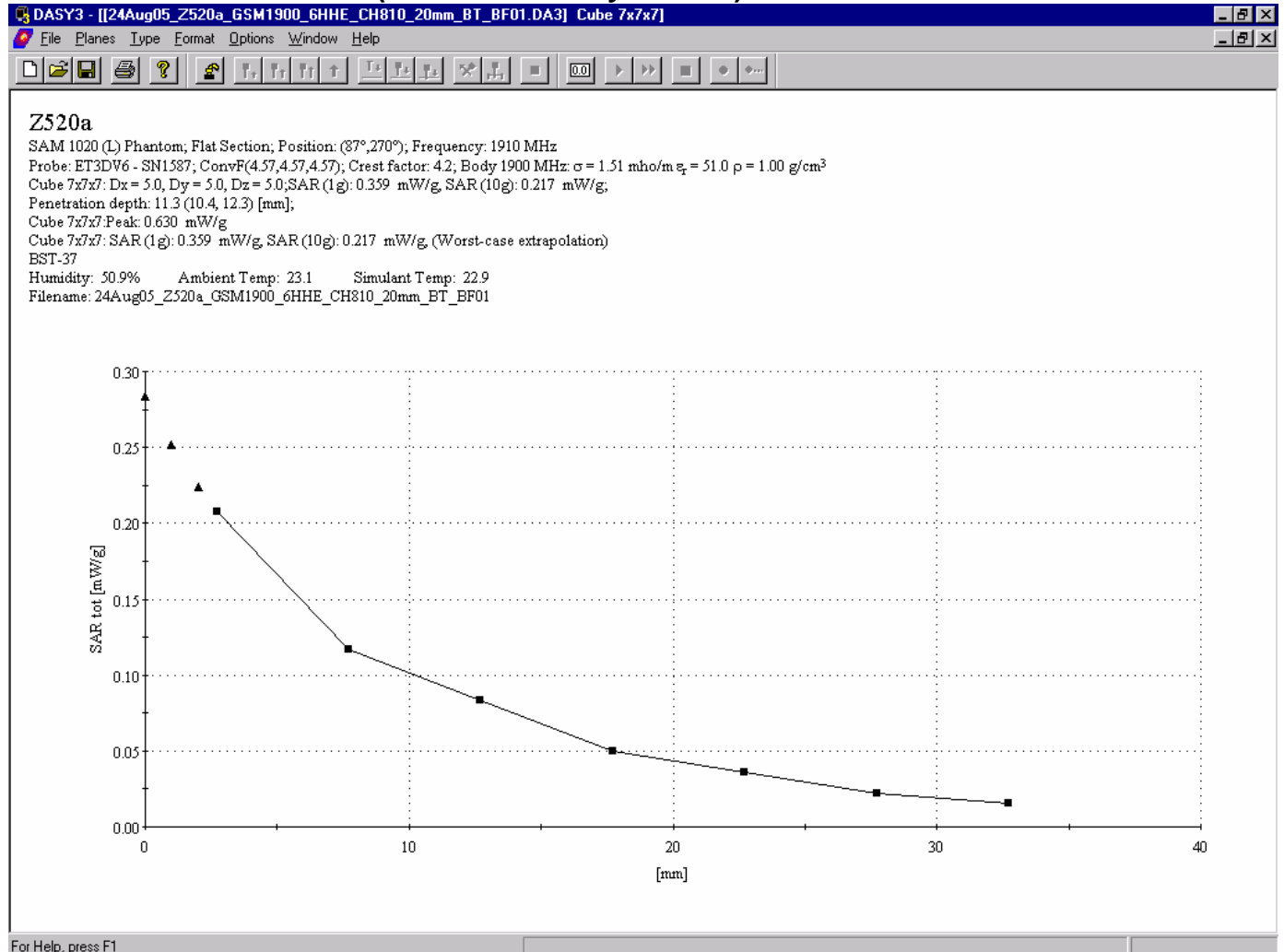
**Distribution of maximum SAR in 1900 GSM band. Measured with front of device facing the body using a 20MM SPACER with Blue Tooth. (Standard Battery BST-37)**





Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon		No. REP 2005 007 Z520a 02	
Approved SEM/CV/PF/P Gerard Hayes	Checked	A	X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

**SAR Extrapolation to the phantom inner surface. Measured for maximum SAR in 1900 GSM band, while front of the phone is against the body using a 20MM SPACER with Blue Tooth. (Standard Battery BST-37)**





Prepared (also subject responsible if other)		No.	
SEM/CV/PF/P Gerard Hayes and Rodney Dixon		REP 2005 007 Z520a 02	
Approved	Checked		
SEM/CV/PF/P Gerard Hayes		A	X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

### Appendix 4

### Probe Calibration Certificates



Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon		No. REP 2005 007 Z520a 02	
Approved SEM/CV/PF/P Gerard Hayes	Checked	A	X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

ET3DV6 SN:1586

May 26, 2005

**DASY - Parameters of Probe: ET3DV6 SN:1586**

Sensitivity in Free Space<sup>A</sup>

Diode Compression<sup>B</sup>

NormX	1.90 ± 10.1%	μV/(V/m) <sup>2</sup>	DCP X	94 mV
NormY	1.84 ± 10.1%	μV/(V/m) <sup>2</sup>	DCP Y	94 mV
NormZ	1.89 ± 10.1%	μV/(V/m) <sup>2</sup>	DCP Z	94 mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

TSL 900 MHz Typical SAR gradient: 5 % per mm

Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR <sub>90</sub> [%]	Without Correction Algorithm	8.4	4.3
SAR <sub>90</sub> [%]	With Correction Algorithm	0.1	0.2

TSL 1750 MHz Typical SAR gradient: 10 % per mm

Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR <sub>90</sub> [%]	Without Correction Algorithm	12.2	8.2
SAR <sub>90</sub> [%]	With Correction Algorithm	0.8	0.1

Sensor Offset

Probe Tip to Sensor Center 2.7 mm

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

<sup>A</sup> The uncertainties of NormX,Y,Z do not affect the E<sup>2</sup>-field uncertainty inside TSL (see Page 8).

<sup>B</sup> Numerical linearization parameter: uncertainty not required.

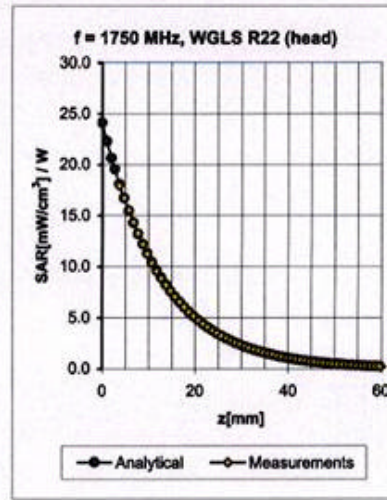
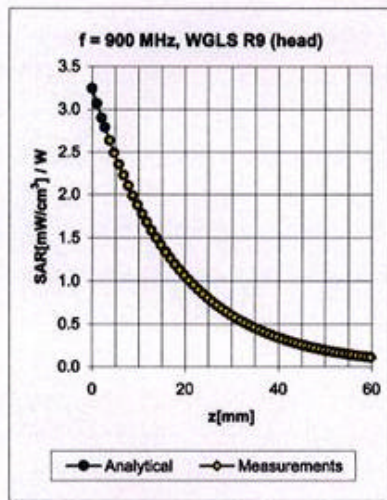


Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon		No. REP 2005 007 Z520a 02	
Approved SEM/CV/PF/P Gerard Hayes	Checked	A	X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

ET3DV6 SN:1586

May 26, 2005

### Conversion Factor Assessment



f [MHz]	Validity [MHz] <sup>c</sup>	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
835	± 50 / ± 100	Head	41.5 ± 5%	0.90 ± 5%	0.62	1.76	6.58 ± 11.0% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.61	1.78	6.46 ± 11.0% (k=2)
1750	± 50 / ± 100	Head	40.1 ± 5%	1.37 ± 5%	0.59	2.26	5.29 ± 11.0% (k=2)
1900	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.56	2.50	5.10 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.66	2.22	4.58 ± 11.8% (k=2)
835	± 50 / ± 100	Body	55.2 ± 5%	0.97 ± 5%	0.54	1.96	6.51 ± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.52	2.05	6.21 ± 11.0% (k=2)
1750	± 50 / ± 100	Body	53.4 ± 5%	1.49 ± 5%	0.55	2.76	4.71 ± 11.0% (k=2)
1900	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.56	2.76	4.61 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.68	2.13	4.26 ± 11.8% (k=2)

<sup>c</sup> The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.





Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon		No. REP 2005 007 Z520a 02	
Approved SEM/CV/PF/P Gerard Hayes	Checked	A	X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

ET3DV6 SN:1587

May 26, 2005

**DASY - Parameters of Probe: ET3DV6 SN:1587**

Sensitivity in Free Space<sup>A</sup>

Diode Compression<sup>B</sup>

NormX	2.05 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP X	95 mV
NormY	1.92 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP Y	95 mV
NormZ	1.79 ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP Z	95 mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

TSL 900 MHz Typical SAR gradient: 5 % per mm

Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR <sub>tip</sub> [%]	Without Correction Algorithm	8.1	4.4
SAR <sub>tip</sub> [%]	With Correction Algorithm	0.1	0.2

TSL 1750 MHz Typical SAR gradient: 10 % per mm

Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR <sub>tip</sub> [%]	Without Correction Algorithm	12.4	8.5
SAR <sub>tip</sub> [%]	With Correction Algorithm	0.5	0.1

Sensor Offset

Probe Tip to Sensor Center 2.7 mm

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

<sup>A</sup> The uncertainties of NormX,Y,Z do not affect the E<sup>2</sup>-field uncertainty inside TSL (see Page 8).

<sup>B</sup> Numerical linearization parameter: uncertainty not required.

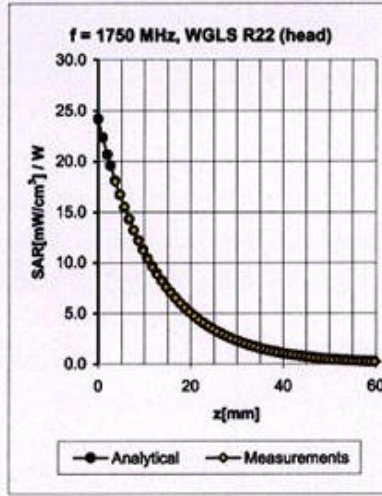
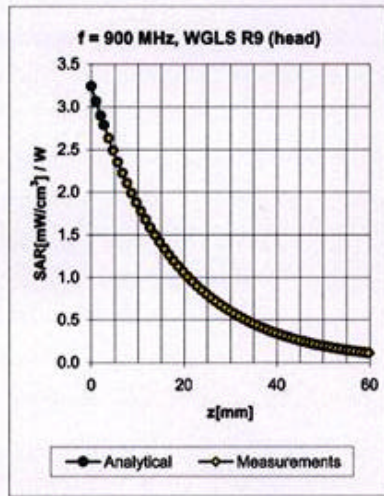


Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon		No. REP 2005 007 Z520a 02	
Approved SEM/CV/PF/P Gerard Hayes		Checked A	
		X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc	

ET3DV6 SN:1587

May 26, 2005

### Conversion Factor Assessment



f [MHz]	Validity [MHz] <sup>c</sup>	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
835	± 50 / ± 100	Head	41.5 ± 5%	0.90 ± 5%	0.60	1.76	6.78 ± 11.0% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.55	1.85	6.50 ± 11.0% (k=2)
1750	± 50 / ± 100	Head	40.1 ± 5%	1.37 ± 5%	0.50	2.53	5.45 ± 11.0% (k=2)
1900	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.47	2.71	5.05 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.58	2.40	4.55 ± 11.8% (k=2)
835	± 50 / ± 100	Body	55.2 ± 5%	0.97 ± 5%	0.51	1.97	6.65 ± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.51	2.03	6.37 ± 11.0% (k=2)
1750	± 50 / ± 100	Body	53.4 ± 5%	1.49 ± 5%	0.48	2.94	4.74 ± 11.0% (k=2)
1900	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.50	3.13	4.57 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.53	2.51	4.16 ± 11.8% (k=2)

<sup>c</sup> The validity of ± 100 MHz only applies for DASy v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.



Prepared (also subject responsible if other)		No.	
SEM/CV/PF/P Gerard Hayes and Rodney Dixon		REP 2005 007 Z520a 02	
Approved	Checked		
SEM/CV/PF/P Gerard Hayes		A	X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

## Appendix 5

### Measurement Uncertainty Budget



Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon		No. REP 2005 007 Z520a 02	
Approved SEM/CV/PF/P Gerard Hayes	Checked	A	X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

**Table 1a. Uncertainty Budget for System Performance Check (Dipole & flat phantom) DASY3 System**

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	$e = f(d,k)$	<i>f</i>	<i>g</i>	$h = c \times f / e$	$i = c \times g / e$	<i>k</i>
Uncertainty Component	Sec.	Tol. (± %)	Prob. Dist.	Div.	$c_i$ (1-g)	$c_i$ (10-g)	1-g $u_i$ (± %)	10-g $u_i$ (± %)	$v_i$
<b>Measurement System</b>									
Probe Calibration ( $k=1$ )	E2.1	4.8	N	1	1	1	4.8	4.8	$\infty$
Axial Isotropy	E.2.2	4.7	R	1.73	0.707	0.707	1.9	1.9	$\infty$
Hemispherical Isotropy	E.2.2	9.6	R	1.73	0.707	0.707	3.9	3.9	$\infty$
Boundary Effect	E.2.3	8.3	R	1.73	1	1	4.8	4.8	$\infty$
Linearity	E.2.4	4.7	R	1.73	1	1	2.7	2.7	$\infty$
System Detection Limits	E.2.5	1.0	R	1.73	1	1	0.6	0.6	$\infty$
Readout Electronics	E.2.6	1.0	N	1	1	1	1.0	1.0	$\infty$
Response Time	E.2.7	0.0	R	1.73	1	1	0.0	0.0	$\infty$
Integration Time	E.2.8	0.0	R	1.73	1	1	0.0	0.0	$\infty$
RF Ambient Conditions	E.6.1	3.0	R	1.73	1	1	1.7	1.7	$\infty$
Probe Positioner Mechanical Tolerance (corresponds to the mechanical constrains of the robot)	E.6.2	0.4	R	1.73	1	1	0.2	0.2	$\infty$
Probe Positioning with respect to Phantom Shell	E.6.3	2.9	R	1.73	1	1	1.7	1.7	$\infty$
Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	E.5	3.9	R	1.73	1	1	2.3	2.3	$\infty$
<b>Dipole</b>									
Dipole Axis to Liquid Distance	8, E.4.2	1.0	R	1.73	1	1	0.6	0.6	$\infty$
Input Power and SAR Drift Measurement	8, 6.6.2	5.0	R	1.73	1	1	2.9	2.9	$\infty$
<b>Phantom and Tissue Parameters</b>									
Phantom Uncertainty - shell thickness tolerance	E.3.1	4.0	R	1.73	1	1	2.3	2.3	$\infty$
Liquid Conductivity - deviation	E.3.2	4.3	R	1.73	0.64	0.43	1.59	1.07	$\infty$



REPORT

60(75)

Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon		No. REP 2005 007 Z520a 02	
Approved SEM/CV/PF/P Gerard Hayes	Checked	A	X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

from target values (5)									
Liquid Conductivity - measurement uncertainty (6)	E.3.3	6.20	R	1.73	0.64	0.43	2.29	1.54	∞
Liquid Permittivity - deviation from target values (5)	E.3.2	3.7	R	1.73	0.6	0.49	1.28	1.05	∞
Liquid Permittivity - measurement uncertainty (6)	E.3.3	6.08	R	1.73	0.6	0.49	2.11	1.72	∞
<b>Combined Standard Uncertainty</b>			RSS				10.61	10.31	
<b>Expanded Uncertainty (95% C.L.)</b>							21.22	20.62	



Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon		No. REP 2005 007 Z520a 02	
Approved SEM/CV/PF/P Gerard Hayes	Checked	A	X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

**Table 1b. Uncertainty Budget for System Performance Check (Dipole & flat phantom) DASY4 System**

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	$e = f(d,k)$	<i>f</i>	<i>g</i>	$h = c \times f / e$	$i = c \times g / e$	<i>k</i>
Uncertainty Component	Sec.	Tol. (± %)	Prob. Dist.	Div.	$c_i$ (1-g)	$c_i$ (10-g)	1-g $u_i$ (±%)	10-g $u_i$ (±%)	$v_i$
<b>Measurement System</b>									
Probe Calibration ( $k=1$ )	E2.1	4.7	R	1.73	0.707	0.707	1.9	1.9	∞
Axial Isotropy	E.2.2	9.6	R	1.73	0.707	0.707	3.9	3.9	∞
Hemispherical Isotropy	E.2.2	1.0	R	1.73	1	1	0.6	0.6	∞
Boundary Effect	E.2.3	4.7	R	1.73	1	1	2.7	2.7	∞
Linearity	E.2.4	1.0	R	1.73	1	1	0.6	0.6	∞
System Detection Limits	E.2.5	1.0	N	1	1	1	1.0	1.0	∞
Readout Electronics	E.2.6	0.8	R	1.73	1	1	0.5	0.5	∞
Response Time	E.2.7	2.6	R	1.73	1	1	1.5	1.5	∞
Integration Time	E.2.8	4.7	R	1.73	0.707	0.707	1.9	1.9	∞
RF Ambient Conditions	E.6.1	3.0	R	1.73	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance (corresponds to the mechanical constrains of the robot)	E.6.2	0.4	R	1.73	1	1	0.2	0.2	∞
Probe Positioning with respect to Phantom Shell	E.6.3	2.9	R	1.73	1	1	1.7	1.7	∞
Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	E.5	1.0	R	1.73	1	1	0.6	0.6	∞
<b>Dipole</b>									
Dipole Axis to Liquid Distance	8, E.4.2	1.0	R	1.73	1	1	0.6	0.6	∞
Input Power and SAR Drift Measurement	8, 6.6.2	5.0	R	1.73	1	1	2.9	2.9	∞
<b>Phantom and Tissue Parameters</b>									
Phantom Uncertainty - shell thickness tolerance	E.3.1	4.0	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity - deviation	E.3.2	4.3	R	1.73	0.64	0.43	1.59	1.07	∞



REPORT

62(75)

Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon		No. REP 2005 007 Z520a 02	
Approved SEM/CV/PF/P Gerard Hayes	Checked	A	X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

from target values (5)									
Liquid Conductivity - measurement uncertainty (6)	E.3.3	6.20	R	1.73	0.64	0.43	2.29	1.54	∞
Liquid Permittivity - deviation from target values (5)	E.3.2	3.7	R	1.73	0.6	0.49	1.28	1.05	∞
Liquid Permittivity - measurement uncertainty (6)	E.3.3	6.08	R	1.73	0.6	0.49	2.11	1.72	∞
<b>Combined Standard Uncertainty</b>			RSS				9.37	9.03	
<b>Expanded Uncertainty (95% C.L.)</b>							18.74	18.05	



Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon		No. REP 2005 007 Z520a 02	
Approved SEM/CV/PF/P Gerard Hayes	Checked	A	X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

**Table 2a: Uncertainty Budget for the Device Under Test with DASY3 System**

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	$e = f(d,k)$	<i>f</i>	<i>g</i>	$h = c \times f / e$	$i = c \times g / e$	<i>k</i>
Uncertainty Component	Sec.	Tol. (± %)	Prob. Dist.	Div.	$c_i (1-g)$	$c_i (10-g)$	1-g $u_i$ (±%)	10-g $u_i$ (±%)	$v_i$
<b>Measurement System</b>									
Probe Calibration ( <i>k</i> =1)	E.2.1	4.8	N	1	1	1	4.8	4.8	∞
Axial Isotropy	E.2.2	4.7	R	1.73	0.707	0.707	1.9	1.9	∞
Hemispherical Isotropy	E.2.2	9.6	R	1.73	0.707	0.707	3.9	3.9	∞
Boundary Effect	E.2.3	8.3	R	1.73	1	1	4.8	4.8	∞
Linearity	E.2.4	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	E.2.5	1.0	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	E.2.6	1.0	N	1	1	1	1.0	1.0	∞
Response Time	E.2.7	0.8	R	1.73	1	1	0.5	0.5	∞
Integration Time	E.2.8	1.4	R	1.73	1	1	0.8	0.8	∞
RF Ambient Conditions	E.6.1	3.0	R	1.73	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance (corresponds to the mechanical constrains of the robot)	E.6.2	0.4	R	1.73	1	1	0.2	0.2	∞
Probe Positioning with respect to Phantom Shell	E.6.3	2.9	R	1.73	1	1	1.7	1.7	∞
Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	E.5	3.9	R	1.73	1	1	2.3	2.3	∞
<b>Test sample Related</b>									
Test Sample Positioning	E.4.2	1.3	N	1	1	1	1.3	1.3	4
Device Holder Uncertainty	E.4.1	1.9	R	1.73	1	1	1.1	1.1	4
Output Power Variation - SAR drift measurement (4)	6.6.2	5.0	R	1.73	1	1	2.9	2.9	∞
Phantom and Tissue Parameters									





REPORT

64(75)

Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon		No. REP 2005 007 Z520a 02	
Approved SEM/CV/PF/P Gerard Hayes	Checked	A	X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

Phantom Uncertainty (shape and thickness tolerances)	E.3.1	4.0	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity - deviation from target values (5)	E.3.2	4.3	R	1.73	0.64	0.43	1.6	1.1	∞
Liquid Conductivity - measurement uncertainty (6)	E.3.3	6.20	R	1.73	0.64	0.43	2.3	1.5	∞
Liquid Permittivity - deviation from target values (5)	E.3.2	3.7	R	1.73	0.6	0.49	1.3	1.0	∞
Liquid Permittivity - measurement uncertainty (6)	E.3.3	6.08	R	1.73	0.6	0.49	2.1	1.7	∞
<b>Combined Standard Uncertainty</b>			RSS				10.77	10.46	
<b>Expanded Uncertainty</b> (95% CONFIDENCE LEVEL)			K=2				21.55	20.93	



Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon		No. REP 2005 007 Z520a 02	
Approved SEM/CV/PF/P Gerard Hayes	Checked	A	X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

**Table 2b: Uncertainty Budget for the Device Under Test with DASY4 System**

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	$e = f(d,k)$	<i>f</i>	<i>g</i>	$h = c \times f / e$	$i = c \times g / e$	<i>k</i>
Uncertainty Component	Sec.	Tol. (± %)	Prob. Dist.	Div.	$c_i (1-g)$	$c_i (10-g)$	1-g $u_i (±\%)$	10-g $u_i (±\%)$	$v_i$
<b>Measurement System</b>									
Probe Calibration ( <i>k</i> =1)	E.2.1	4.8	N	1	1	1	4.8	4.8	∞
Axial Isotropy	E.2.2	4.7	R	1.73	0.707	0.707	1.9	1.9	∞
Hemispherical Isotropy	E.2.2	9.6	R	1.73	0.707	0.707	3.9	3.9	∞
Boundary Effect	E.2.3	1.0	R	1.73	1	1	0.6	0.6	∞
Linearity	E.2.4	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	E.2.5	1.0	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	E.2.6	1.0	N	1	1	1	1.0	1.0	∞
Response Time	E.2.7	0.8	R	1.73	1	1	0.5	0.5	∞
Integration Time	E.2.8	2.6	R	1.73	1	1	1.5	1.5	∞
RF Ambient Conditions	E.6.1	3.0	R	1.73	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance (corresponds to the mechanical constrains of the robot)	E.6.2	0.4	R	1.73	1	1	0.2	0.2	∞
Probe Positioning with respect to Phantom Shell	E.6.3	2.9	R	1.73	1	1	1.7	1.7	∞
Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	E.5	1.0	R	1.73	1	1	0.6	0.6	∞
<b>Test sample Related</b>									
Test Sample Positioning	E.4.2	1.3	N	1	1	1	1.3	1.3	4
Device Holder Uncertainty	E.4.1	1.9	R	1.73	1	1	1.1	1.1	4
Output Power Variation - SAR drift measurement (4)	6.6.2	5.0	R	1.73	1	1	2.9	2.9	∞
Phantom and Tissue Parameters									



REPORT

66(75)

Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon		No. REP 2005 007 Z520a 02	
Approved SEM/CV/PF/P Gerard Hayes	Checked	A	X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

Phantom Uncertainty (shape and thickness tolerances)	E.3.1	4.0	R	1.73	1	1	2.3	2.3	∞
Liquid Conductivity - deviation from target values (5)	E.3.2	4.3	R	1.73	0.64	0.43	1.6	1.1	∞
Liquid Conductivity - measurement uncertainty (6)	E.3.3	6.20	R	1.73	0.64	0.43	2.3	1.5	∞
Liquid Permittivity - deviation from target values (5)	E.3.2	3.7	R	1.73	0.6	0.49	1.3	1.0	∞
Liquid Permittivity - measurement uncertainty (6)	E.3.3	6.08	R	1.73	0.6	0.49	2.1	1.7	∞
<b>Combined Standard Uncertainty</b>			RSS				<b>9.49</b>	<b>9.14</b>	
<b>Expanded Uncertainty</b> (95% CONFIDENCE LEVEL)			K=2				<b>18.98</b>	<b>18.28</b>	



Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon		No. REP 2005 007 Z520a 02	
Approved SEM/CV/PF/P Gerard Hayes	Checked	A	X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

**Table 3a. Values for e'**

Uncertainty Component	Tolerance (±%)	Probability Distribution	Divisor	c <sub>i</sub>	Standard Uncertainty (±%)	v <sub>i</sub> or v <sub>eff</sub>
Repeatability (n repeats)	0.97	N	1	1	0.97	4
Network analyzer uncertainty sources	8.38	R	1.73	1	4.83	∞
Dielectric Error Sources	5.93	R	1.73	1	3.42	∞
<b>Combined standard uncertainty</b>					<b>6.08</b>	

**Table 3b. Values for s**

Uncertainty Component	Tolerance (±%)	Probability Distribution	Divisor	c <sub>i</sub>	Standard Uncertainty (±%)	v <sub>i</sub> or v <sub>eff</sub>
Repeatability (n repeats)	1.85	N	1	1	1.85	4
Network analyzer uncertainty sources	8.38	R	1.73	1	4.83	∞
Dielectric Error Sources	5.93	R	1.73	1	3.42	∞
<b>Combined standard uncertainty</b>					<b>6.20</b>	



Prepared (also subject responsible if other)		No.	
SEM/CV/PF/P Gerard Hayes and Rodney Dixon		REP 2005 007 Z520a 02	
Approved	Checked		
SEM/CV/PF/P Gerard Hayes		A	X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

### Appendix 6

### Photographs of the Device Under Test



REPORT

69(75)

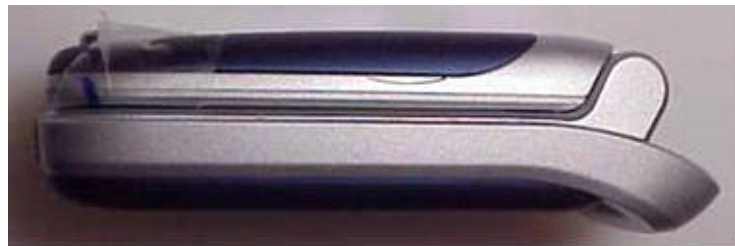
Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon		No. REP 2005 007 Z520a 02	
Approved SEM/CV/PF/P Gerard Hayes	Checked	A	X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc



a. Front



b. Back

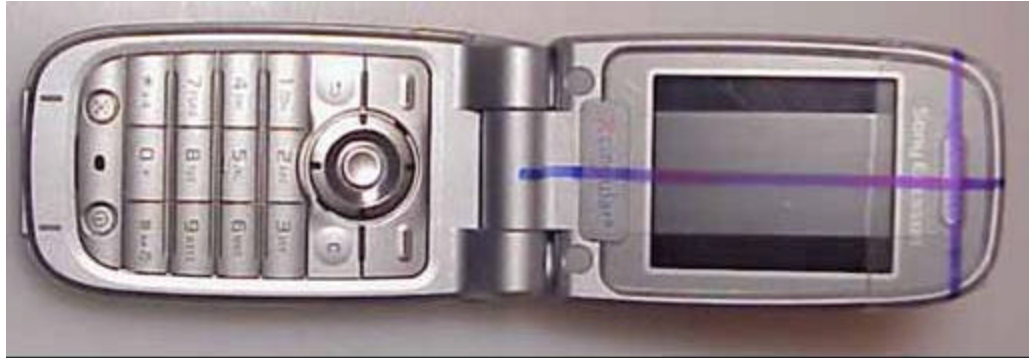


c. Side

**View of Device (Closed)**



Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon	No. REP 2005 007 Z520a 02	
Approved SEM/CV/PF/P Gerard Hayes	Checked	A X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc



a. Front  
b.



c. Back



c. Side

**View of Device (Open)**



Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon	No. REP 2005 007 Z520a 02
Approved SEM/CV/PF/P Gerard Hayes	Checked A X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc

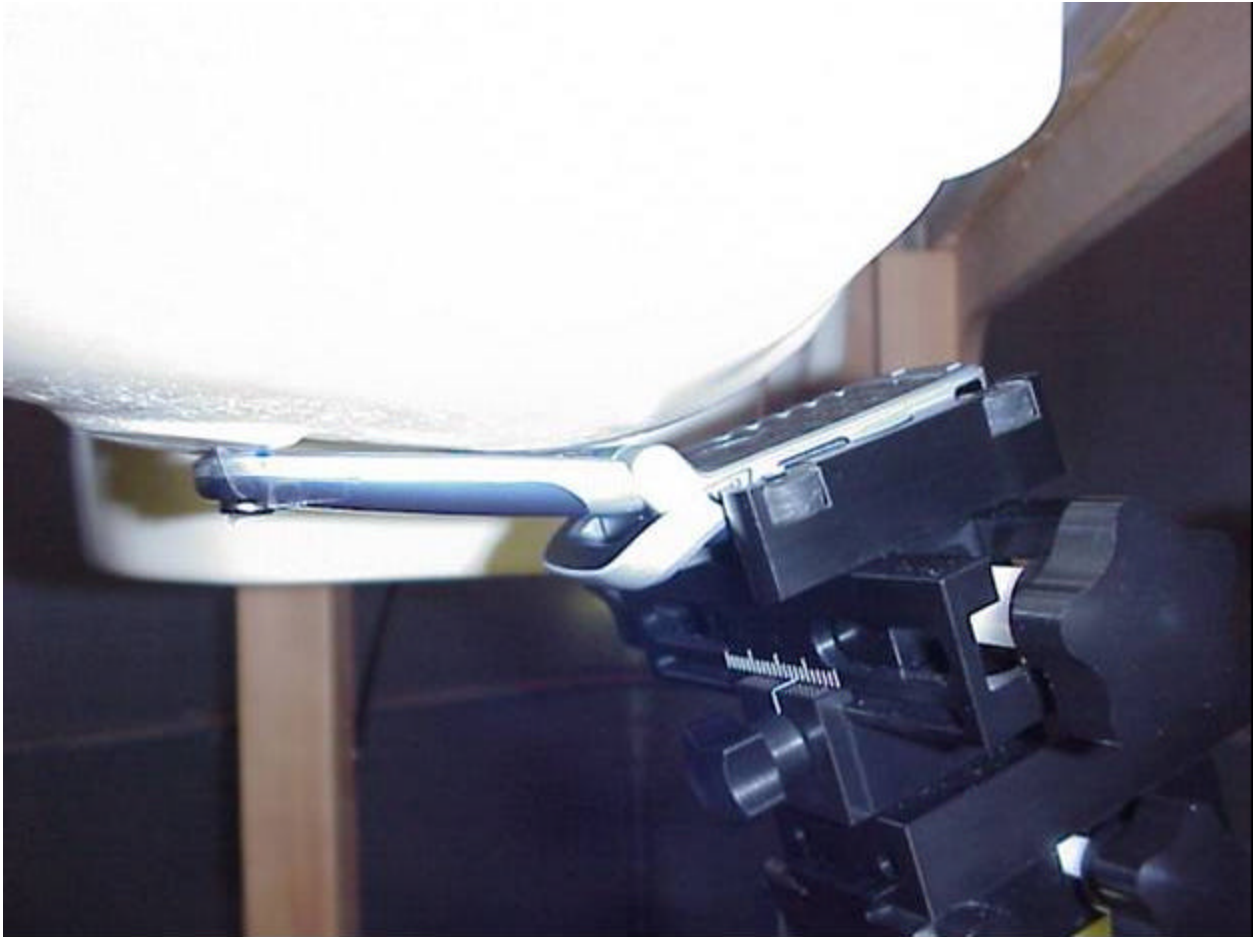


**View of Hands-free Accessory**





Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon	No. REP 2005 007 Z520a 02
Approved SEM/CV/PF/P Gerard Hayes	Checked A X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc



**Position of device against head phantom using the “cheek” position**



Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon	No. REP 2005 007 Z520a 02
Approved SEM/CV/PF/P Gerard Hayes	Checked A X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc



**Position of device against head phantom using the “tilt” position**



Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon	No. REP 2005 007 Z520a 02
Approved SEM/CV/PF/P Gerard Hayes	Checked A X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc



**Position with front of device against flat phantom using a 20MM SPACER with hands free accessory.**



Prepared (also subject responsible if other) SEM/CV/PF/P Gerard Hayes and Rodney Dixon	No. REP 2005 007 Z520a 02
Approved SEM/CV/PF/P Gerard Hayes	Checked A X:\SAR Chamber\FCC reports\Z520A\Final Reports\FCCZ520A.doc



**Position with back of device against flat phantom using a 20MM SPACER with hands free accessory.**