April 11, 2003
Supplement to SAR Test Report for Motorola portable cellular phone (FCC ID IHDT56DC1)

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Summary of FCC request for additional information

There was a request for additional information regarding Motorola's SAR Test Report for Motorola portable cellular phone (FCC ID IHDT56DC1). The requested information is addressed below in the same numbering sequence received.

2) Please clarify the SAR test data for the PCS Head tilt mode. The SAR data for PCS mode shown on page 11 (Exhibit 11) do not agree with the SAR test plot provided.

An error has been identified in the SAR data shown for PCS band (right head tilt and left head tilt configurations). The SAR values provided on the test plot in appendix 2 of the original report are correct. The following table has the corrected SAR value.

f (MHz)	Description	Conducted Output Power (dBm)	Right Head (15° Tilt Position) Ant Fixed Measured (W/kg)	Drift (dB)	Extrapolated (W/kg)	Amb. Temp (°C)	Simulate Temp (°C)
Digital 1900MHz	Channel 25	24.90					
	Channel 600	24.95	0.114	0.00	0.07	21.20	21.40
	Channel 1175	24.96					

f (MHz)	Description	Conducted Output Power (dBm)	Left Head (15° Tilt Position) Ant Fixed Measured (W/kg)	Drift (dB)	Extrapolated (W/kg)	Amb. Temp (°C)	Simulate Temp (°C)
Digital 1900MHz	Channel 25	24.90					
	Channel 600	24.95	0.156	-0.19	0.16	21.20	21.40
	Channel 1175	24.96					

3) Please clarify the SAR test data for the PCS body. The SAR data for PCS Body shown on page 13 (Exhibit 11) do not agree with the SAR test plot provided.

An error has been identified in the SAR data shown for PCS band (Body worn configuration table). The SAR values provided on the test plot in appendix 3 of the original report are correct. The following table has the corrected SAR value.

f (MHz)	Description	Conducted Output Power (dBm)	Body Worn				
			Ant Fixed				
			Measured (W/kg)	Drift (dB)	Extrapolated (W/kg)	Amb. Temp (°C)	Simulate Temp (°C)
Digital 1900MHz	Channel 25	24.90					
	Channel 600	24.95	0.537	-0.16	0.56	20.70	20.50
	Channel 1175	24.96					

4) Please confirm the PCS calibration factors used for Probe S/N: 1513. The calibration factors shown on the SAR plots and on page 12 (Exhibit 11) do not agree with the calibration certificate. Please amend or retest, if necessary.

An error has been identified in the SAR report. The calibration factors shown on the plots on page 12 are taken from a new calibration certificate. Apparently the probe had to be recalibrated hence a new certificate was generated. Please view it in appendix 1 of this document.

Appendix 1 (Probe Calibration Certificate)

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

Client **Motorola MRO (Harvard)**

CALIBRATION CERTIFICATE

Object(s)	ET3DV6 - SN:1513
Calibration procedure(s)	QA CAL-01.v2 Calibration procedure for dosimetric E-field probes
Calibration date:	January 17, 2003
Condition of the calibrated item	In Tolerance (according to the specific calibration document)

This calibration statement documents traceability of M&TE used in the calibration procedures and conformity of the procedures with the ISO/IEC 17025 international standard.

All calibrations have been conducted in the closed laboratory facility: environment temperature 22 +/- 2 degrees Celsius and humidity < 75%.

Calibration Equipment used (M&TE critical for calibration)

Model Type	ID #	Cal Date	Scheduled Calibration
RF generator HP 8684C	US3642U01700	4-Aug-99 (in house check Aug-02)	In house check: Aug-05
Power sensor E4412A	MY41495277	8-Mar-02	Mar-03
Power sensor HP 8481A	MY41092180	18-Sep-02	Sep-03
Power meter EPM E4419B	GB41293874	13-Sep-02	Sep-03
Network Analyzer HP 8753E	US38432426	3-May-00	In house check: May 03
Fluke Process Calibrator Type 702	SN: 6295803	3-Sep-01	Sep-03

	Name	Function	Signature
Calibrated by:	Nico Vetterli	Technician	
Approved by:	Katja Pokovic	Laboratory Director	

Date issued: January 17, 2003

This calibration certificate is issued as an intermediate solution until the accreditation process (based on ISO/IEC 17025 International Standard) for Calibration Laboratory of Schmid & Partner Engineering AG is completed.

Schmid & Partner
Engineering AG

Zeughausstrasse 43, 8004 Zurich, Switzerland, Telephone +41 1 245 97 00, Fax +41 1 245 97 79

Probe ET3DV6R

SN:1513

Manufactured:	May 3, 2002
Last calibration:	May 8, 2002
Repaired:	December 16, 2002
Recalibrated:	January 17, 2003

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

DASY - Parameters of Probe: ET3DV6R SN:1513

Sensitivity in Free Space

NormX	**2.21**	$\mu V/(V/m)^2$	
NormY	**2.00**	$\mu V/(V/m)^2$	
NormZ	**2.02**	$\mu V/(V/m)^2$	

Diode Compression

DCP X	**94**	mV
DCP Y	**94**	mV
DCP Z	**94**	mV

Sensitivity in Tissue Simulating Liquid

Head	**900 MHz**	ε_r = **41.5 ± 5%**	σ = **0.97 ± 5% mho/m**	
Head	**835 MHz**	ε_r = **41.5 ± 5%**	σ = **0.90 ± 5% mho/m**	
	ConvF X	**6.0** ± 9.5% (k=2)	Boundary effect:	
	ConvF Y	**6.0** ± 9.5% (k=2)	Alpha	**0.56**
	ConvF Z	**6.0** ± 9.5% (k=2)	Depth	**1.95**
Head	**1800 MHz**	ε_r = **40.0 ± 5%**	σ = **1.40 ± 5% mho/m**	
Head	**1900 MHz**	ε_r = **40.0 ± 5%**	σ = **1.40 ± 5% mho/m**	
	ConvF X	**4.9** ± 9.5% (k=2)	Boundary effect:	
	ConvF Y	**4.9** ± 9.5% (k=2)	Alpha	**0.50**
	ConvF Z	**4.9** ± 9.5% (k=2)	Depth	**2.63**

Boundary Effect

Head **900 MHz** **Typical SAR gradient: 5 % per mm**

Probe Tip to Boundary		**1 mm**	**2 mm**
SAR_{be} [%]	Without Correction Algorithm	9.3	4.9
SAR_{be} [%]	With Correction Algorithm	0.2	0.4

Head **1800 MHz** **Typical SAR gradient: 10 % per mm**

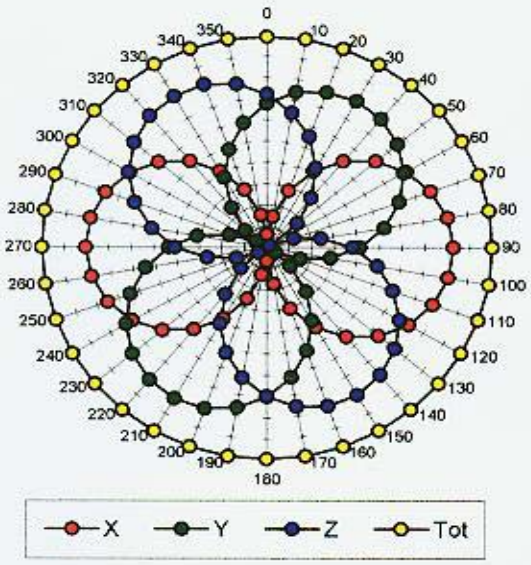
Probe Tip to Boundary		**1 mm**	**2 mm**
SAR_{be} [%]	Without Correction Algorithm	13.9	9.3
SAR_{be} [%]	With Correction Algorithm	0.2	0.1

Sensor Offset

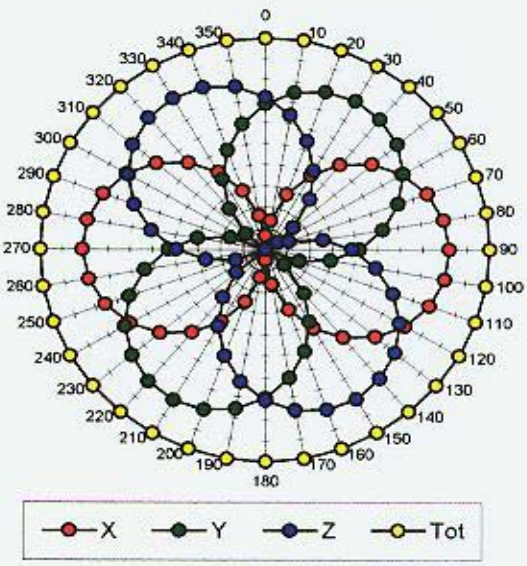
Probe Tip to Sensor Center	**2.7**	mm

Receiving Pattern (ϕ), θ = 0°

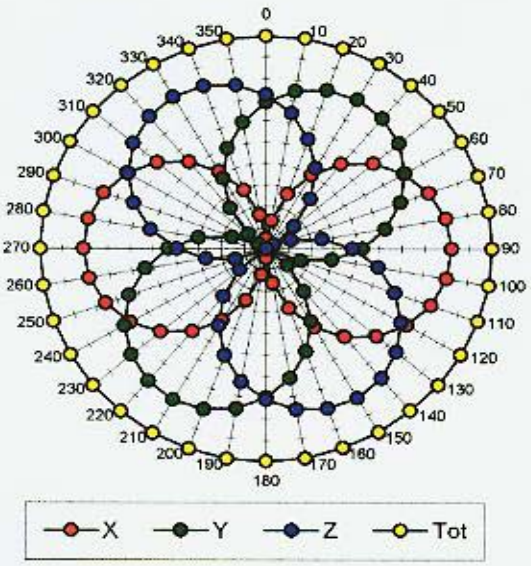
f = 30 MHz, TEM cell ifi110



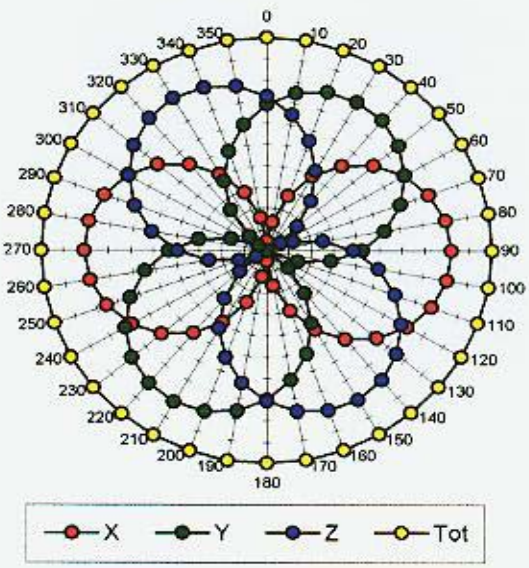
f = 100 MHz, TEM cell ifi110

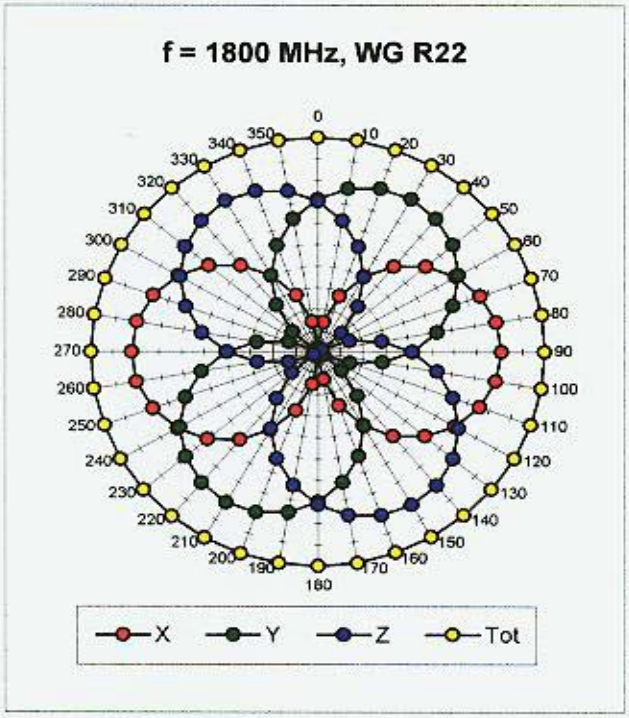


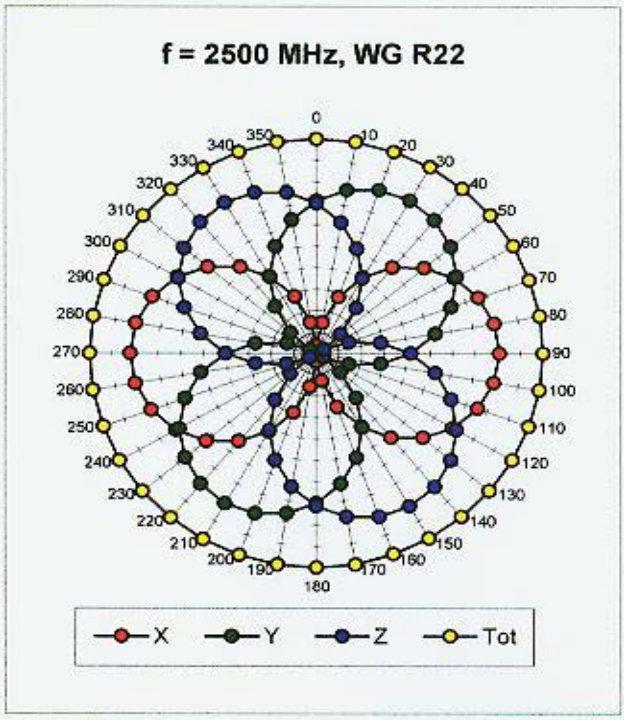
f = 300 MHz, TEM cell ifi110



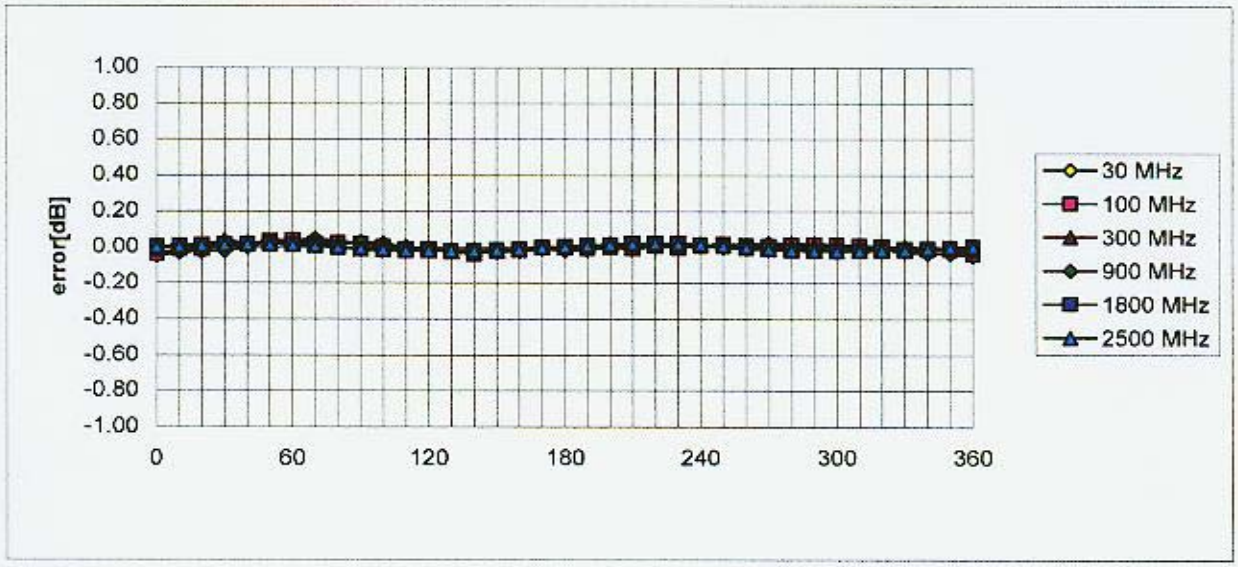
f = 900 MHz, TEM cell ifi110





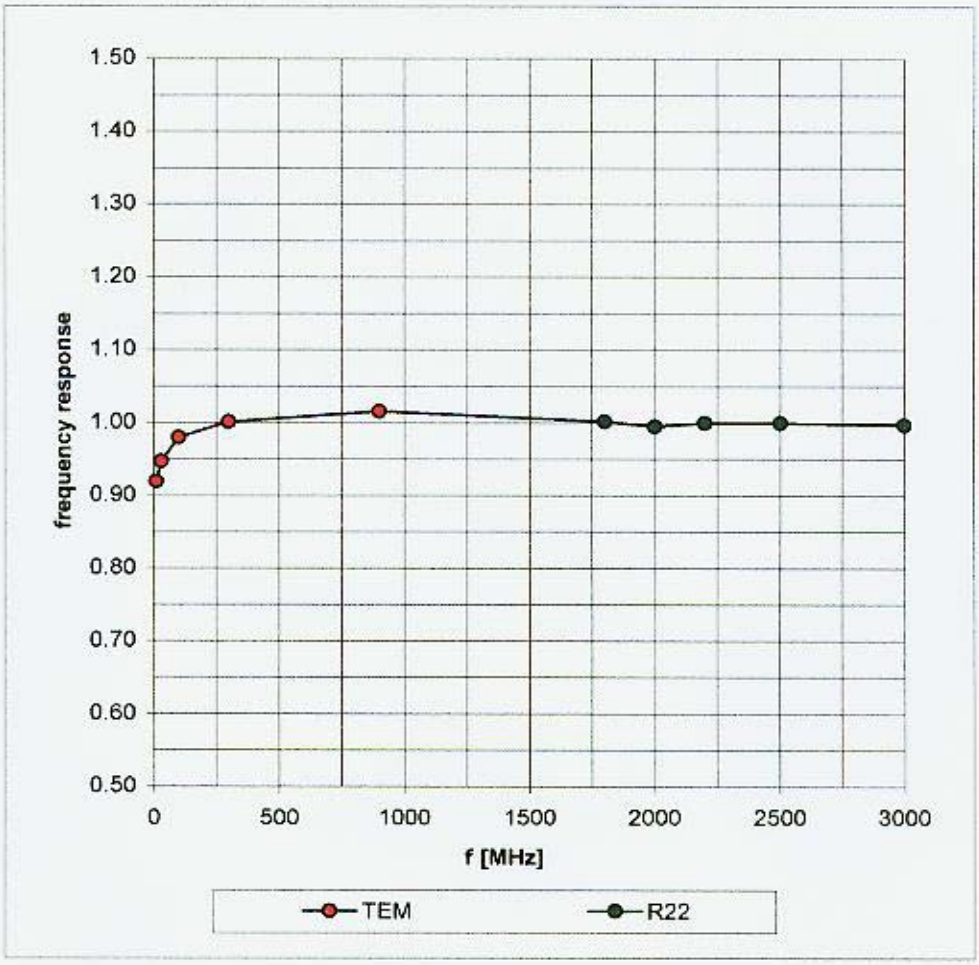


Isotropy Error (ϕ), θ = 0°



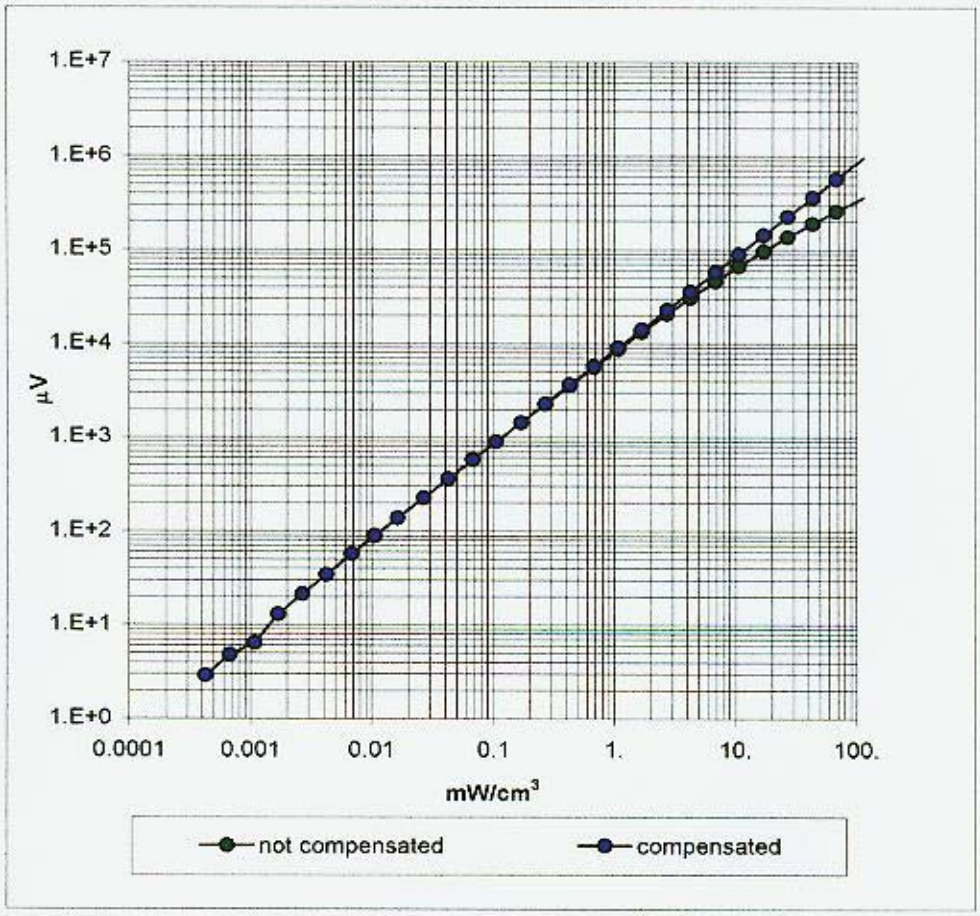
Frequency Response of E-Field

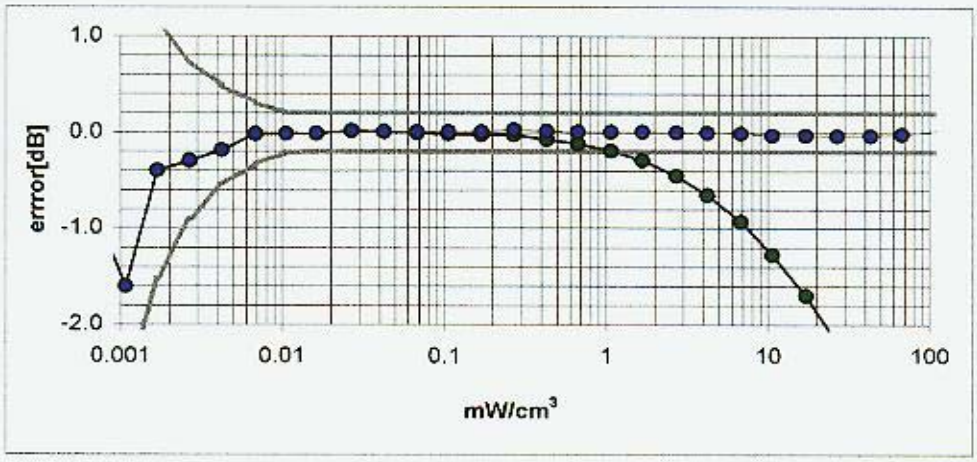
(TEM-Cell:ifi110, Waveguide R22)



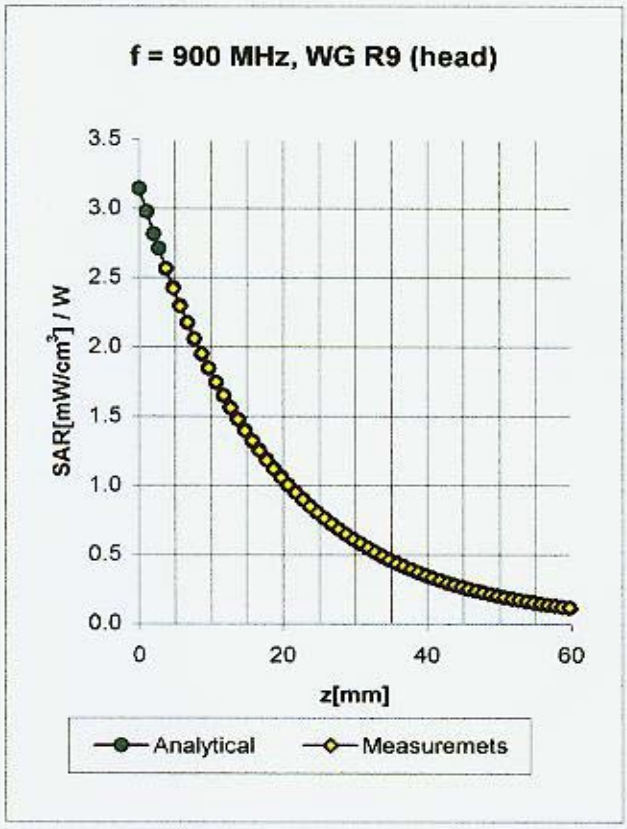
Dynamic Range f(SAR_{brain})

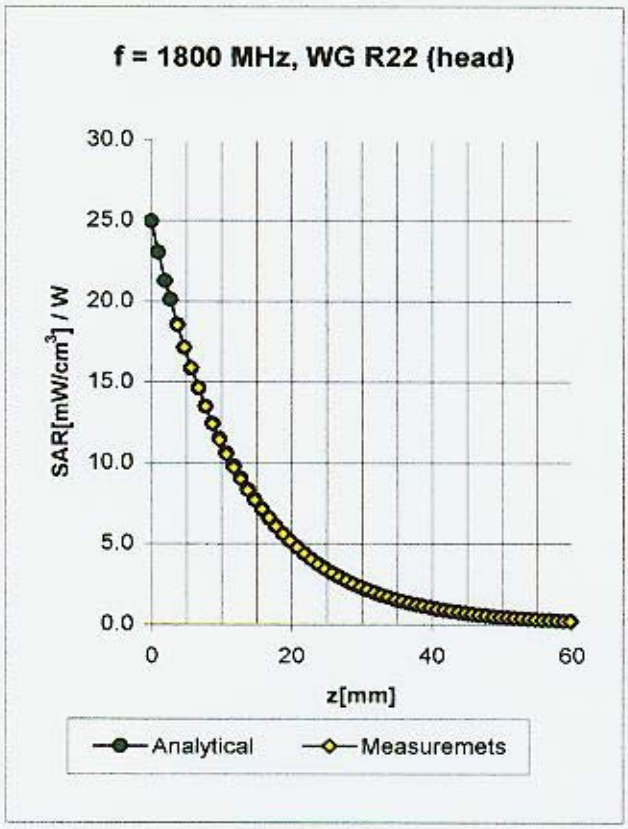
(Waveguide R22)





Conversion Factor Assessment

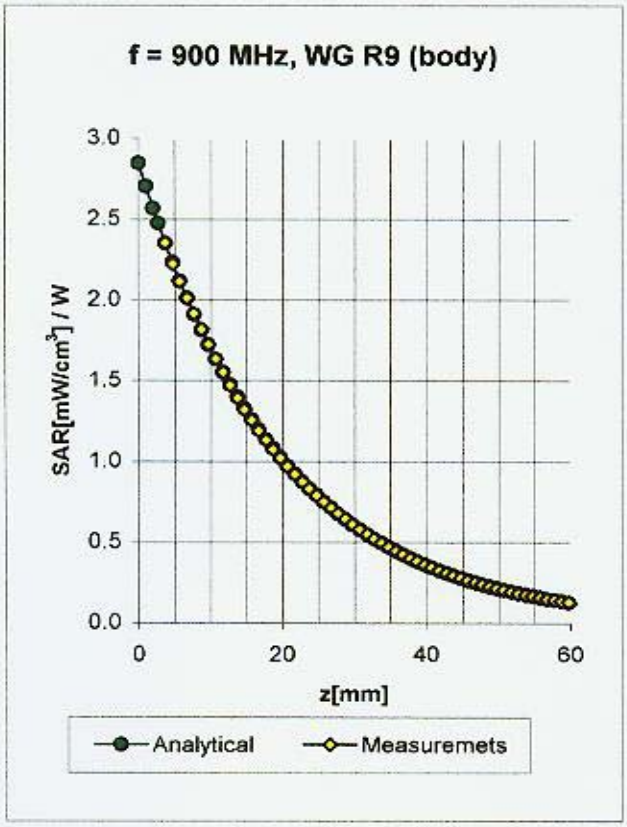


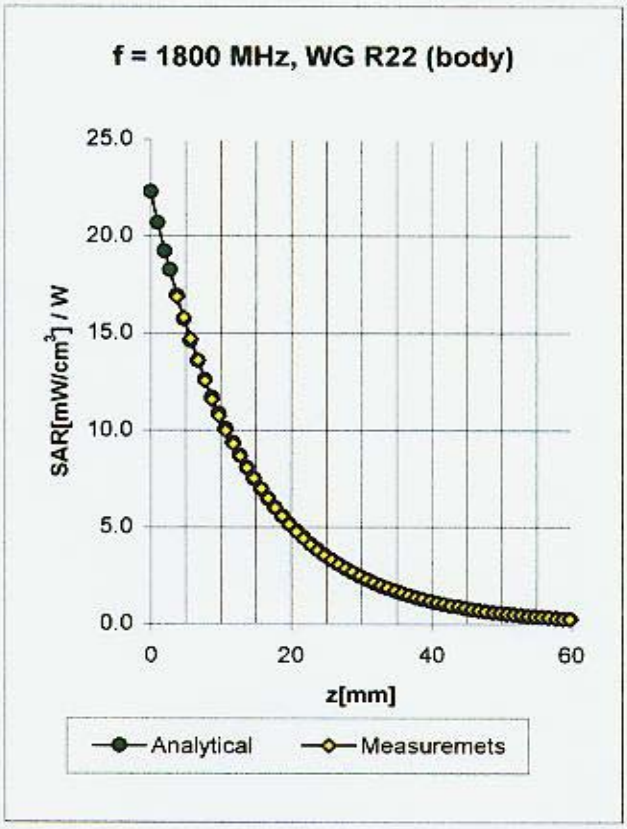


Head	**900 MHz**	ε_r **= 41.5 ± 5%**	σ **= 0.97 ± 5% mho/m**	
Head	**835 MHz**	ε_r **= 41.5 ± 5%**	σ **= 0.90 ± 5% mho/m**	
	ConvF X	**6.0** ± 9.5% (k=2)	Boundary effect:	
	ConvF Y	**6.0** ± 9.5% (k=2)	Alpha	**0.56**
	ConvF Z	**6.0** ± 9.5% (k=2)	Depth	**1.95**

Head	**1800 MHz**	ε_r **= 40.0 ± 5%**	σ **= 1.40 ± 5% mho/m**	
Head	**1900 MHz**	ε_r **= 40.0 ± 5%**	σ **= 1.40 ± 5% mho/m**	
	ConvF X	**4.9** ± 9.5% (k=2)	Boundary effect:	
	ConvF Y	**4.9** ± 9.5% (k=2)	Alpha	**0.50**
	ConvF Z	**4.9** ± 9.5% (k=2)	Depth	**2.63**

Conversion Factor Assessment

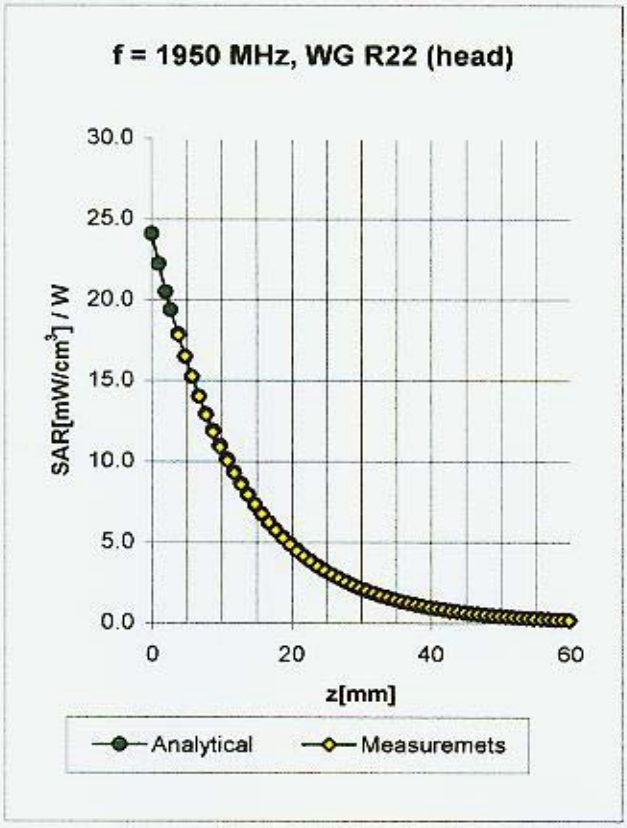


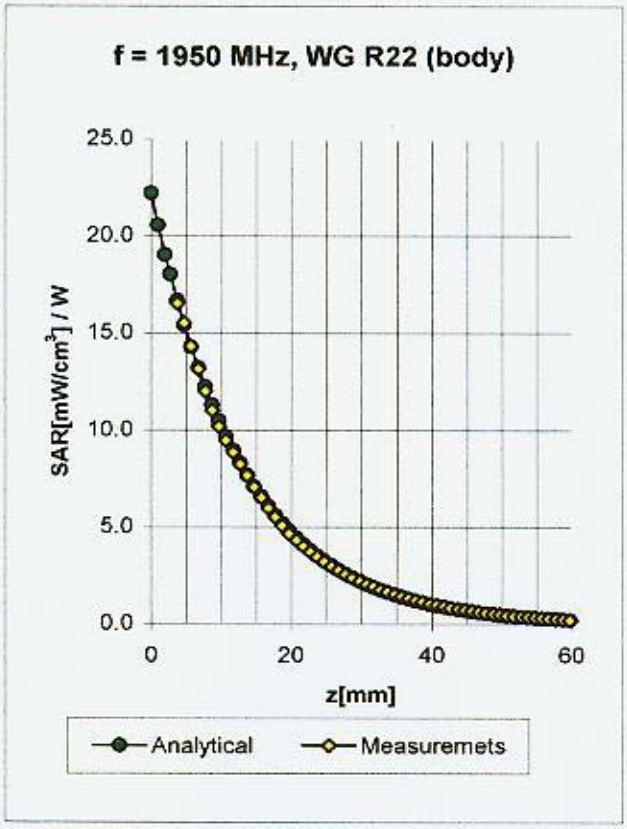


Body	**900 MHz**		ε_r = **55.0 ± 5%**	σ = **1.05 ± 5% mho/m**	
Body	**835 MHz**		ε_r = **55.2 ± 5%**	σ = **0.97 ± 5% mho/m**	
	ConvF X	**5.8** ± 9.5% (k=2)		Boundary effect:	
	ConvF Y	**5.8** ± 9.5% (k=2)		Alpha	**0.45**
	ConvF Z	**5.8** ± 9.5% (k=2)		Depth	**2.35**

Body	**1800 MHz**		ε_r = **53.3 ± 5%**	σ = **1.52 ± 5% mho/m**	
Body	**1900 MHz**		ε_r = **53.3 ± 5%**	σ = **1.52 ± 5% mho/m**	
	ConvF X	**4.4** ± 9.5% (k=2)		Boundary effect:	
	ConvF Y	**4.4** ± 9.5% (k=2)		Alpha	**0.57**
	ConvF Z	**4.4** ± 9.5% (k=2)		Depth	**2.66**

Conversion Factor Assessment





Head **1950** **MHz** ε_r = **40.0 ± 5%** σ = **1.40 ± 5% mho/m**

ConvF X	**4.6** ± 8.9% (k=2)	Boundary effect:	
ConvF Y	**4.6** ± 8.9% (k=2)	Alpha	**0.55**
ConvF Z	**4.6** ± 8.9% (k=2)	Depth	**2.57**

Body **1950** **MHz** ε_r = **53.3 ± 5%** σ = **1.52 ± 5% mho/m**

ConvF X	**4.2** ± 8.9% (k=2)	Boundary effect:	
ConvF Y	**4.2** ± 8.9% (k=2)	Alpha	**0.80**
ConvF Z	**4.2** ± 8.9% (k=2)	Depth	**2.14**

Deviation from Isotropy in HSL

Error (θ,φ), f = 900 MHz