

Tissue Parameters

The recipes for the SAR liquids are not included in this report. The development of these liquids required significant time and expense from Cetecom Inc. We have experimented with some recipes that are being published and find that these are not valid recipes. Other companies are marketing 5 GHz SAR liquids, but will not divulge the recipes, even to their paying customers. Based on the competitiveness in this area we would prefer to keep our 5 GHz SAR liquid recipes confidential.

5200 MHz Head liquid:

Di-electric constants measured on 3/7/2005. SAR measurements were made within 24 hours of the measurement of liquid parameters.

Freq.	Rel.	Condy
(MHz)	Perm.	(S/m)
5250	36.30	5.01

5200 MHz Body liquid:

Di-electric constants measured on 3/7/2005. SAR measurements were made within 24 hours of the measurement of liquid parameters.

Freq.	Rel.	Condy
(MHz)	Perm.	(S/m)
5180	48.12	5.399
5260	47.71	5.459
5320	47.63	5.467

5800 MHz Head liquid:

Di-electric constants measured on 3/8/2005. SAR measurements were made within 24 hours of the measurement of liquid parameters.

Freq.	Rel.	Condy
(MHz)	Perm.	(S/m)
5775	35.31	5.32

5800 MHz Body liquid:

Di-electric constants measured on 3/8/2005. SAR measurements were made within 24 hours of the measurement of liquid parameters.

Freq.	Rel.	Condy
(MHz)	Perm.	(S/m)
5745	47.41	6.424
5805	46.97	6.427
5825	46.91	6.428

Dielectric measurement equipment verification

Prior to measuring the dielectric parameters of the SAR liquids, reference liquids were measured. The conductivity and permittivity of Propanol and De-ionized water was measured and compared to published data. All of these measurements were within $\pm 1.5\%$ of the published values.

Environment: 3/7/2005 & 3/8/2005:

Temperature: 20.1 °C – 23.9°C

Humidity: 45% _ 55 %

Date of Report: 3/16/2005

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Test Equipment

Instrument description	Supplier / Manufacturer	Model	Serial No.	Calibration (date)	Calibration Due (date)
Bench top Robot	Mitsubishi supplied by IndexSAR	RV-E2	EA1030108	N/A	N/A
SAM Phantom	Upright shell phantom made by Antennessa digitized and mounted by IndexSAR	SAM	03FT26	04/03	N/A
Flat Phantom	IndexSAR	HeadBox_Spout	N/A	N/A	N/A
Software	IndexSAR	SARA2 v0.420	N/A	N/A	N/A
5200 MHz Head Tissue Simulant	Cetecom Inc.	5200 Head	N/A	3/7/2005	N/A
5200 MHz Body Tissue Simulant	Cetecom Inc.	5200 Body	N/A	3/7/2005	N/A
5200 MHz Head Tissue Simulant	Cetecom Inc.	5200 Head	N/A	3/8/2005	N/A
5200 MHz Body Tissue Simulant	Cetecom Inc.	5200 Body	N/A	3/8/2005	N/A
5250 MHz Dipole	Cetecom Inc	5250 dipole	N/A	3/7/2005	3/7/2006
5775 MHz Dipole	Cetecom Inc	5775 dipole	N/A	3/7/2005	3/7/2006
Network Analyzer	Agilent	8753ES	US39172511	05/03/2004	05/03/2005
Directional coupler	Werlatone	C6529	11249	N/A	N/A
RF Amplifier	Vectawave	VTL5400	N/A	N/A	N/A
SAR Probe	IndexSAR	IXP-050	S/N 0123	10/07/2004	10/07/2005
Probe amplifier	IndexSAR	IXA-010	S/N 043	N/A	N/A
Thermometer	Control Company	4039	20410549	11/20/2001	11/20/2005
Dielectric Measurement Kit	IndexSAR	Di-Line	N/A	N/A	N/A

SAR Test Report No: SAR_831_2005_FCC_5000



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Equipment Calibration/Performance Documents:

Validation Dipoles Performance Measurements:

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Reference dipole antennas return loss measurements shown below. Measurements were made with the antennas 8 mm from the side of a flat phantom filled with SAR liquid for the frequency of the dipole.

5250 MHz Dipole S11 return loss:



5775 MHz Dipole S11 return loss:

