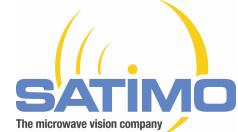


COMOSAR Head liquid 900 MHz Calibration Report



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Date: 2008/10/06

HEAD LIQUID 900 MHZ CALIBRATION REPORT

Prepared By: LUC Jérôme, SATIMO

Project Description: SAR TEST BENCH

Prepared For (End User): Shenzhen Morlab Communication Technology

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COMOSAR Head liquid 900 MHz Calibration Report



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Issue: A

Date: 2008/10/06

HEAD LIQUID 900 MHz CALIBRATION REPORT

DATE: 14/11/2008

REFERENCE: SN 36/08 HLD123

OBJECT: HEAD LIQUID 900 MHz

MANUFACTURER: SATIMO

SERIAL NUMBER: SN 36/08 HLD123

CUSTOMER: Shenzhen Morlab Communication Technology

CONTRACT: PF2130108b_SAR_Morlab

DATE OF CALIBRATION: 24/09/2008

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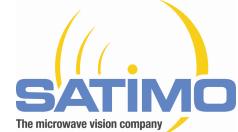
Date

2008 / 10 / 06

SAR TEAM MANAGER

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COMOSAR Head liquid 900 MHz Calibration Report



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PRODUCT DESCRIPTION

Components :

De-ionised water
Sodium chloride
1,2 - Propanediol

CALIBRATION TEST EQUIPMENT

TYPE	IDENTIFICATION
Network analyser.	HP8753D
Dielectric probe kit	ANTENNESSA OCP

IEEE RECOMMENDED REFERENCE VALUES

Frequency (MHz)	Relative Dielectric Constant (ϵ_r)	Conductivity (σ) (S/m)
300	45.3	0.87
450	43.5	0.87
835	41.5	0.90
900	41.5	0.97
1450	40.5	1.20
1800	40.0	1.40
1900	40.0	1.40
2000	40.0	1.40
2450	39.2	1.80
3000	38.5	2.40

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DIELECTRIC PARAMETERS MEASURED

Measurement of liquid permittivity				
Frequency (MHz)	Epsilon'	Epsilon''	Sigma (S/m)	IEC/IEEE Standard (Head Liquid)
800.00	42.00	18.83	0.84	Epsilon': 0.76 % Epsilon'': -5.71 %
810.00	41.90	18.70	0.84	Epsilon': 0.64 % Epsilon'': -6.27 %
820.00	41.93	18.90	0.86	Epsilon': 0.93 % Epsilon'': -4.19 %
830.00	41.86	18.85	0.87	Epsilon': 0.91 % Epsilon'': -3.38 %
840.00	41.62	19.02	0.89	Epsilon': 0.90 % Epsilon'': -1.95 %
850.00	41.56	18.92	0.89	Epsilon': 0.15 % Epsilon'': -2.49 %
860.00	41.39	18.93	0.90	Epsilon': -0.27 % Epsilon'': -2.44 %
870.00	41.29	19.05	0.92	Epsilon': -0.51 % Epsilon'': -1.81 %
880.00	40.98	19.13	0.94	Epsilon': -1.25 % Epsilon'': -1.39 %
890.00	41.01	19.04	0.94	Epsilon': -1.17 % Epsilon'': -1.86 %
900.00	40.89	19.15	0.96	Epsilon': -1.47 % Epsilon'': -1.31 %
910.00	40.74	19.08	0.96	Epsilon': -1.78 % Epsilon'': -1.01 %
920.00	40.69	19.20	0.98	Epsilon': -1.87 % Epsilon'': -0.28 %
930.00	40.60	19.42	1.00	Epsilon': -2.04 % Epsilon'': -2.11 %
940.00	40.52	19.28	1.01	Epsilon': -2.20 % Epsilon'': -2.04 %
950.00	40.38	19.34	1.02	Epsilon': -2.48 % Epsilon'': -3.00 %
960.00	40.26	19.25	1.03	Epsilon': -2.73 %

Freq (MHz)	Parameters	Liquid Temp (°C)	Target Value	Measured Values	Deviation (%)	Limits (%)
835	ϵ_r	21.0	41.5	41.74	+0.6	± 5
	σ (S/m)	21.0	0.90	0.88	-2.2	± 5
900	ϵ_r	21.0	41.5	40.89	-1.5	± 5
	σ (S/m)	21.0	0.97	0.96	-1.3	± 5

ϵ_r = relative permittivity, σ = conductivity.