



Bay Area Compliance Laboratories Corp.
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Verification of Calibration Report

Report Number: CAL 2010-07-19
Description: Dipole Antenna
Manufacturer: Schmid & Partner Engineering AG
Model Number: CD1880V3
Serial Number: SN: 1009
Date of Calibration: 19 July 2010
Condition Received: In Tolerance
Condition Returned: In Tolerance

Conditions and results of calibration: See attachment

This device has been instrumented, measured and calibrated in accordance with the Bay Area Compliance Laboratories Corp. ("BACL") Quality Assurance Manual procedures and the results being traceable to the National Institute of Standards and Technology (NIST). The BACL Quality System is accredited by NVLAP to ISO/IEC 17025:2005. Unless stated otherwise; Measurement Uncertainties are derived from ISO Guide to the Determination of Uncertainties with a Coverage Factor of $k = 2$ for a 95% level of confidence, no sampling plan or other process was used for this calibration (unless stated otherwise), the results reported herein apply only to the calibration of the item described above, and limitations of use (if any) shall be stated this Calibration Report.

Calibrated By:


Victor Zhang

07/19/2010
Date

Reviewed By:


Hans Mellberg

26 July 2010
Date

Quality Assurance:


Steve Hubbard

7-26-10
Date

Attachment

Ambient Environment of Calibration

Temperature	Relative Humidity	Pressure
22 ° C	42.5 %	102.1 k Pa

Equipment List

Description	Manufacturer	Model	Serial #	Cal Date
Signal Generator	Rohde & Schwarz	SMIQ	849192/0085/DE23746	2010-03-31
Network Analyzer	HP	8753D	3410A04346	2010-06-03
Power meter	Agilent	E4419B	MY41291511	2008-10-10
Power Sensor	Agilent	E9301A	MY41497252	2010-02-19
Reference Probe	SPEAG	ET3DV2	3019	2009-09-22

Measurement Conditions

DASY Version	DASY4	V4.7
Extrapolation	Advanced Extrapolation	
Phantom	Flat Phantom	
Distance Dipole Center-TSL	10 mm	
Area Scan resolution	dx,dy = 15 mm	
Zoom Scan resolution	dx,dy,dz = 15 mm	
Frequency	1900 MHz \pm 1MHz	

Calibration is performed According to the Following Standards:

1. IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
2. IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devise used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
3. DASY 4 System Handbook

Calibration Data:

Head TSL Parameters

The following parameters and calculations were applied

	Temperature	Permittivity	Conductivity
Nominal Head TSL Parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL Parameters	(22.0±0.3) °C	39.9	1.38 mho/m
Head TSL Temperature during test	(23.0±0.3) °C		

SAR result with Head TSL

SAR average over 1 cm3 (1g) of Head TSL	Condition	
SAR measured	500 mW input power	18.9 mW / g
SAR normalized	Normalized to 1 W	37.8 mW / g
SAR for nominal Head TSL parameters ¹	Normalized to 1 W	37.57mW / g ± 1.723% (k=2)

SAR average over 10 cm3 (10g) of Head TSL	Condition	
SAR measured	500 mW input power	10.2 mW / g
SAR normalized	Normalized to 1 W	20.4 mW / g
SAR for nominal Head TSL parameters ¹	Normalized to 1 W	20.36mW / g ± 0.84% (k=2)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.396 Ω
Return Loss	-31.427 dB

¹Correction to nominal TSL parameters according to DASY 4 System Handbook, chapter "SAR Sensitivities"

DASY4 Validation Report for Head TSL

Test Laboratory: Bay Area Compliance Lab Corp. (BACL)

DUT: Dipole 1900 MHz; Type: CD1880V3; Serial: SN: 1009

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.38$ mho/m; $\epsilon_r = 39.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV2 - SN3019; ConvF(4.82, 4.82, 4.82); Calibrated: 9/22/2009
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn456; Calibrated: 11/8/2007
- Phantom: SAM with CRP; Type: Twin SAM; Serial: TP-1032
- Measurement SW: DASY4, V4.6 Build 23; Post processing SW: SEMCAD, V1.8 Build 184

d = 10 mm, Pin = 0.5W/Area Scan (81x121x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 22.1 mW/g

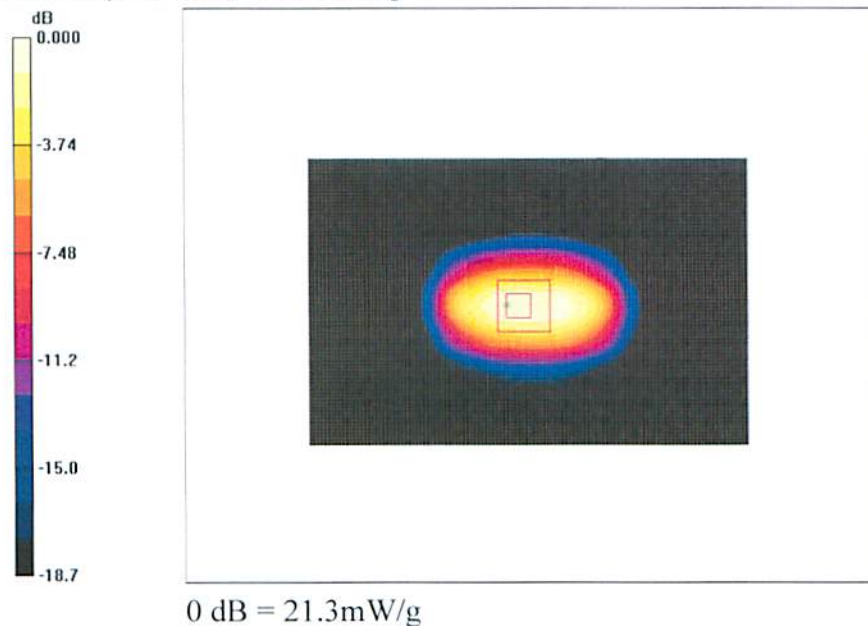
d = 10 mm, Pin = 0.5W/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 124.3 V/m; Power Drift = -0.137 dB

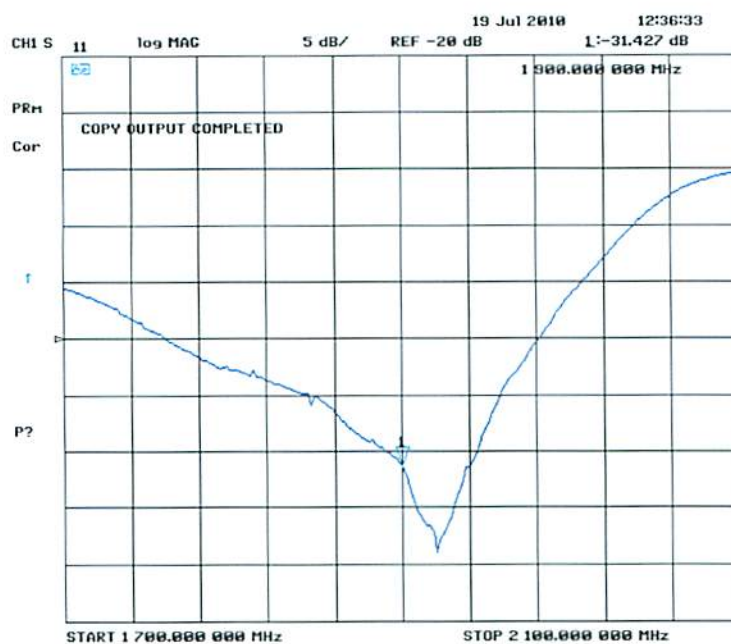
Peak SAR (extrapolated) = 35.1 W/kg

SAR(1 g) = 18.9 mW/g; SAR(10 g) = 10.2 mW/g

Maximum value of SAR (measured) = 21.3 mW/g



Impedance Measurement Plot for Head TSL



Return Loss Measurement Plot for Head TSL

