DECLARATION OF COMPLIANCE
SAR EVALUATION

Test Lab

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Applicant Information

ITRONIX CORPORATION
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Rule Part(s):	**FCC 47 CFR §2.1093; IC RSS-102 Issue 1 (Provisional)**
Test Procedure(s):	**FCC OET Bulletin 65, Supplement C (01-01)**
FCC Device Classification:	**Digital Transmission System (DTS)**
IC Device Classification:	**Low Power License-Exempt Radiocommunication Device**
FCC ID:	**KBCIX260AC750-MPI**
Model(s):	**IX260**
Device Type:	**Rugged Laptop PC with Cisco Systems MPI-350 Mini-PCI DSSS WLAN Card (Co-located with Sierra Wireless AirCard 750 PCS GSM/GPRS Modem)**
Tx Frequency Range:	**2412 - 2462 MHz**
RF Output Power Tested:	**21.2 dBm Peak Conducted (2412 MHz) 21.1 dBm Peak Conducted (2437 MHz) 21.1 dBm Peak Conducted (2462 MHz)**
Antenna Type(s):	**Dual Internal (DSSS WLAN Card) External Dipole (Co-located GSM/GPRS Modem)**
Battery Type:	**11.1V Lithium-Ion, 6.0Ah (Model: A2121-2)**
Max. SAR Measured:	**1.49 W/kg (1g average)**

Celltech Labs Inc. declares under its sole responsibility that this device was found to be in compliance with the Specific Absorption Rate (SAR) RF exposure requirements specified in FCC 47 CFR §2.1093 and Health Canada's Safety Code 6. The device was tested in accordance with the measurement standards and procedures specified in FCC OET Bulletin 65, Supplement C, Edition 01-01 and Industry Canada RSS-102 Issue 1 (Provisional) for the General Population / Uncontrolled Exposure environment.

I attest to the accuracy of data. All measurements were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Russell Pipe
Senior Compliance Technologist
Celltech Labs Inc.

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1.0 INTRODUCTION

This measurement report demonstrates that the ITRONIX CORPORATION Model: IX260 Rugged Laptop PC with internal Cisco Systems MPI-350 Mini-PCI DSSS WLAN Card (co-located with Sierra Wireless AirCard 750 PCS GSM/GPRS Modem) FCC ID: KBCIX260AC750-MPI complies with the RF exposure requirements specified in FCC 47 CFR §2.1093 (see reference [1]), and Health Canada Safety Code 6 (see reference [2]) for the General Population environment. The test procedures described in FCC OET Bulletin 65, Supplement C, Edition 01-01 (see reference [3]) and IC RSS-102 Issue 1 (Provisional) (see reference [4]) were employed. A description of the product, operating configuration, detailed summary of the test results, methodology and procedures used in the evaluation, equipment used, and the various provisions of the rules are included within this test report.

2.0 DESCRIPTION of Equipment Under Test (EUT)

FCC Rule Part(s)	47 CFR §2.1093
IC Rule Part(s)	IC RSS-102 Issue 1 (Provisional)
Test Procedure(s)	FCC OET Bulletin 65, Supplement C (01-01)
FCC Device Classification	Digital Transmission System (DTS)
IC Device Classification	Low Power License-Exempt Radiocommunication Device
Device Type	Rugged Laptop PC with Cisco MPI-350 Mini-PCI DSSS WLAN Card (co-located with Sierra Wireless AirCard 750 PCS GSM/GPRS Modem)
FCC ID	KBCIX260AC750-MPI
Model(s)	IX260
Serial No.	Pre-production
Tx Frequency Range	2412 - 2462 MHz
RF Output Power Tested	21.2 dBm Peak Conducted (2412 MHz) 21.1 dBm Peak Conducted (2437 MHz) 21.1 dBm Peak Conducted (2462 MHz)
Antenna Type	Dual Internal (DSSS WLAN Card) External Dipole (Co-located GSM/GPRS Modem)
Battery Type	11.1V Lithium-Ion, 6.0Ah (Model: A2121-2)

3.0 SAR MEASUREMENT SYSTEM

Celltech Labs SAR measurement facility utilizes the Dosimetric Assessment System (DASY™) manufactured by Schmid & Partner Engineering AG (SPEAG™) of Zurich, Switzerland. The DASY system is comprised of the robot controller, computer, near-field probe, probe alignment sensor, specific anthropomorphic mannequin (SAM) phantom, and various planar phantoms for brain and/or body SAR evaluations. The robot is a six-axis industrial robot performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF). A cell controller system contains the power supply, robot controller, teach pendant (Joystick), and remote control, is used to drive the robot motors. The Staubli robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the PC plug-in card. The DAE3 utilizes a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16-bit AD-converter and a command decoder and control logic unit. Transmission to the PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe-mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer.

DASY3 SAR Measurement System with SAM phantom

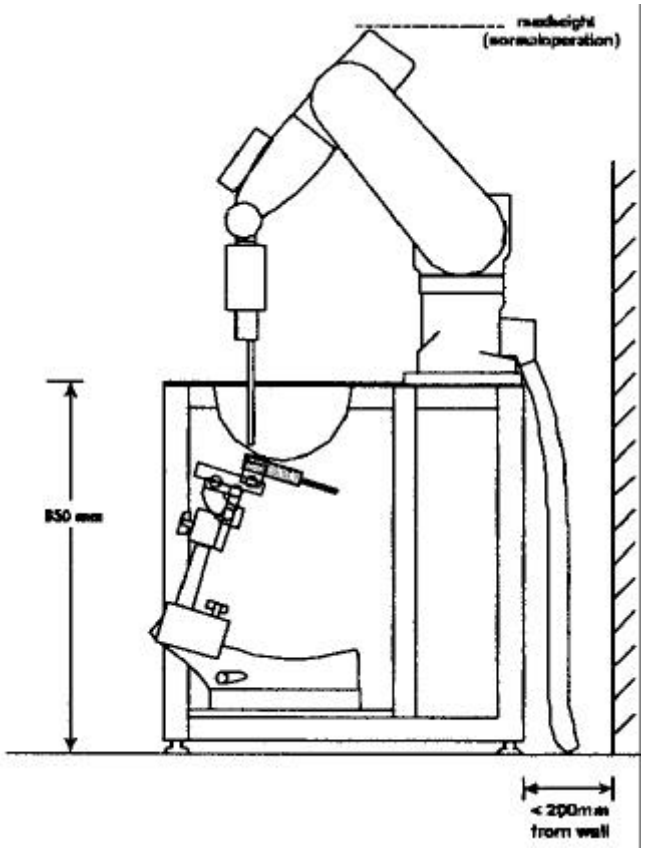


Figure 1. DASY3 Compact Version - Side View

4.0 MEASUREMENT SUMMARY

The measurement results were obtained with the EUT tested in the conditions described in this report. Detailed measurement data and plots showing the maximum SAR location of the EUT are reported in Appendix A.

BODY SAR MEASUREMENT RESULTS

Transmit Mode	Freq. (MHz)	Channel	Test Mode	Peak Conducted Power (dBm)		Phantom Section	Antenna	Laptop PC Position to Planar Phantom	Separation Distance (cm)	Measured SAR 1g (W/kg)
				Before	After					
WLAN	2437	Mid	CW	21.1	20.9	Planar	Left Side	Back of LCD (LCD Closed)	1.5	0.197
WLAN & GPRS	2437	Mid	CW	21.1	20.9	Planar	Left Side	Back of LCD (LCD Closed)	1.5	1.33
WLAN & GPRS	2412	Low	CW	21.2	21.0	Planar	Left Side	Back of LCD (LCD Closed)	1.5	1.49
WLAN & GPRS	2462	High	CW	21.1	20.9	Planar	Left Side	Back of LCD (LCD Closed)	1.5	1.22
WLAN	2437	Mid	CW	21.1	20.9	Planar	Right Side	Back of LCD (LCD Closed)	1.5	0.171
WLAN & GPRS	2437	Mid	CW	21.1	20.9	Planar	Right Side	Back of LCD (LCD Closed)	1.5	1.27
WLAN & GPRS	2412	Low	CW	21.2	21.0	Planar	Right Side	Back of LCD (LCD Closed)	1.5	1.05
WLAN & GPRS	2462	High	CW	21.1	20.9	Planar	Right Side	Back of LCD (LCD Closed)	1.5	1.23
WLAN	2437	Mid	CW	21.1	20.9	Planar	Left Side	Bottom of Laptop (LCD Closed)	0.0	0.0084
WLAN & GPRS	2437	Mid	CW	21.1	20.9	Planar	Left Side	Bottom of Laptop (LCD Closed)	0.0	0.0127
WLAN	2437	Mid	CW	21.1	20.9	Planar	Right Side	Bottom of Laptop (LCD Closed)	0.0	0.0095
WLAN & GPRS	2437	Mid	CW	21.1	20.9	Planar	Right Side	Bottom of Laptop (LCD Closed)	0.0	0.131

ANSI / IEEE C95.1 1992 - SAFETY LIMIT
BODY: 1.6 W/kg (averaged over 1 gram)
Spatial Peak - Uncontrolled Exposure / General Population

Test Date(s)	03/26/03		**Relative Humidity**	64 %
Measured Mixture Type	2450MHz Body		**Atmospheric Pressure**	101.4 kPa
Dielectric Constant ε_r	**IEEE Target**	**Measured**	**Ambient Temperature**	23.8 °C
	52.7 ±10%	48.1	**Fluid Temperature**	23.8 °C
Conductivity σ (mho/m)	**IEEE Target**	**Measured**	**Fluid Depth**	≥ 15 cm
	1.95 ±5%	1.98	**ρ (Kg/m^3)**	1000

Note(s):
1. If the SAR measurements performed at the middle channel were ≥ 3dB below the SAR limit, SAR evaluation for the low and high channels was optional (per FCC OET Bulletin 65, Supplement C, Edition 01-01 (see reference [3]).
2. All secondary peak SAR locations within 3dB of the primary peak value were evaluated (See SAR Plots - Appendix A)
3. The simultaneous transmit tests were performed with the co-located Sierra Wireless AirCard 750 GSM/GPRS Modem set to the maximum conducted power level (27.9 dBm) at the mid channel (1880MHz), and transmitting continuously on 4 time slots in GPRS mode. This is the maximum output condition since the EUT is a Class 12 multi-slot GSM/GPRS modem.
4. The EUT was tested with the LCD display lid in the closed position and the external dipole antenna in the stowed position, which was determined to be the worst-case configuration based on both internal transmitters transmitting when the LCD display lid is closed.
5. The ambient and fluid temperatures were measured prior to, and during, the fluid dielectric parameter check and the SAR evaluation. The temperatures listed in the table above were consistent for all measurement periods.
6. The dielectric properties of the simulated body fluid were verified prior to the evaluation using an 85070C Dielectric Probe Kit and an 8753E Network Analyzer (see Appendix E for printout of measured fluid dielectric parameters).

5.0 DETAILS OF SAR EVALUATION

The ITRONIX CORPORATION Model: IX260 Rugged Laptop PC with internal Cisco Systems MPI-350 Mini-PCI DSSS WLAN Card (co-located with Sierra Wireless AirCard 750 PCS GSM/GPRS Modem) FCC ID: KBCIX260AC750-MPI was found to be compliant for localized Specific Absorption Rate based on the following test provisions and conditions described below. The detailed test setup photographs are shown in Appendix G.

1. The EUT was evaluated for body SAR with the LCD display closed and the back of the LCD display facing parallel to the outer surface of the SAM phantom (planar section). A 1.5 cm separation distance was maintained between the back of the LCD display and the outer surface of the SAM phantom (planar section). Both the left and right sides of the back of the LCD display were evaluated due to the dual antenna placement internal to the back of the LCD display. Please note that the right side antenna evaluations for the co-located simultaneous transmit tests produced a primary peak SAR location at the external dipole antenna (GSM/GPRS only) and a secondary peak SAR location at the right side internal antenna (WLAN only). Only the secondary peak SAR values are reported based on the fact that the primary SAR values are not representative of the true SAR values for the dipole antenna due to the 2450MHz tissue media and probe conversion factor, and the dipole antenna transmits at the 1900MHz frequency band. Please refer to the co-located simultaneous transmit evaluation with 1900MHz tissue media in the Part 24 GSM/GPRS modem SAR test report filed simultaneously with this composite application.
2. The EUT was evaluated for body SAR with the LCD display closed and the bottom of the Laptop PC facing parallel to, and touching, the outer surface of the SAM phantom (planar section). Both the left and right sides of the bottom of the Laptop PC were evaluated due to the dual antenna placement internal to the back of the LCD display.
3. A 1.3 dB cable offset was entered into the Gigatronics 8652A Universal Power Meter prior to the conducted power measurements. The peak conducted power levels were measured before and after each test according to the procedures described in FCC 47 CFR §2.1046. Any unusual anomalies over the course of the test warranted a re-evaluation.
4. The EUT was controlled via internal software and tested in unmodulated continuous transmit operation (Continuous Wave mode at 100% duty cycle).
5. The simultaneous transmit tests were performed with the co-located Sierra Wireless AirCard 750 GSM/GPRS Modem set to the maximum conducted power level (27.9 dBm) at the mid channel (1880MHz), and transmitting continuously on 4 time slots in GPRS mode. This is the maximum output condition since the EUT is a Class 12 multi-slot GSM/GPRS modem.
6. The planar section of the SAM phantom was used for the evaluation. Currently there is no approved flat phantom available that is twice the dimensions of the Laptop PC.
7. Due to the dimensions of the EUT, a stack of low-density, low-loss dielectric foamed polystyrene was used in place of the device holder.
8. The EUT was tested with a fully charged battery.

6.0 EVALUATION PROCEDURES

a. (i) The evaluation was performed in the applicable area of the phantom depending on the type of device being tested. For devices held to the ear during normal operation, both the left and right ear positions were evaluated in accordance with FCC OET Bulletin 65, Supplement C (Edition 01-01) using the SAM phantom.
(ii) For body-worn and face-held devices a planar phantom was used.
b. The SAR was determined by a pre-defined procedure within the DASY3 software. Upon completion of a reference and optical surface check, the exposed region of the phantom was scanned near the inner surface with a grid spacing of 20mm x 20mm.
c. Based on the area scan data, the area of maximum absorption was determined by spline interpolation. Around this point, a volume of 40 x 40 x 35 mm (fine resolution volume scan, zoom scan) was assessed by measuring 5 x 5 x 7 points.
d. The 1g and 10g spatial peak SAR was determined as follows:
1. The first step was an extrapolation to find the points between the dipole center of the probe and the surface of the phantom. This data cannot be measured, since the center of the dipoles is 2.7 mm away form the tip of the probe and the distance between the surface and the lowest measuring point is 1.3 mm (see probe calibration document in Appendix D). The extrapolation was based on a least square algorithm [W. Gander, Computermathematik, p.168-180] (see reference [6]). Through the points in the first 3 cm in all z-axis, polynomials of the fourth order were calculated. This polynomial was then used to evaluate the points between the surface and the probe tip.
2. The next step used 3D-spline interpolation to get all points within the measured volume in a 1mm grid (35000 points). The 3D-spline is composed of three one-dimensional splines with the "Not a knot" condition [W. Gander, Computermathematik, p.141-150] (x, y and z -direction) [Numerical Recipes in C, Second Edition, p.123ff] (see reference [6]).
3. The maximal interpolated value was searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1g or 10g) were computed using the 3D-spline interpolation algorithm. 8000 points (20x20x20) were interpolated to calculate the average.

EVALUATION PROCEDURES (Cont.)

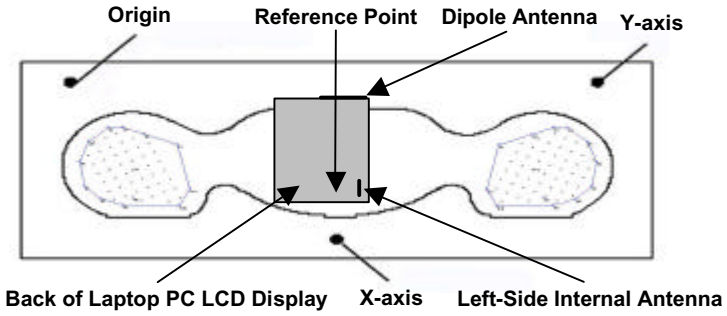


Figure 2. Phantom Reference Point & EUT Positioning
Back Left Side of LCD Display (Closed)- Left-Side Antenna

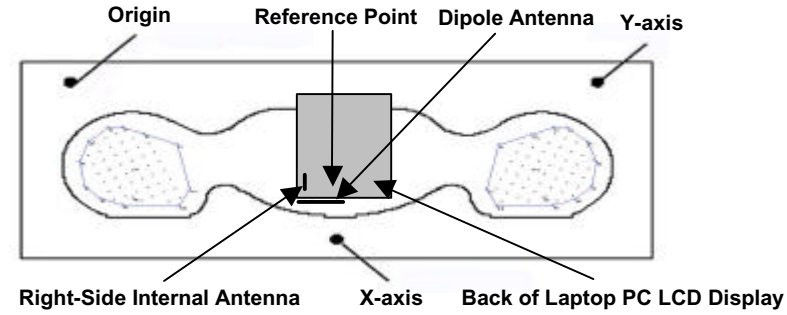


Figure 3. Phantom Reference Point & EUT Positioning
Back Right Side of LCD Display (Closed)- Right-Side Antenna

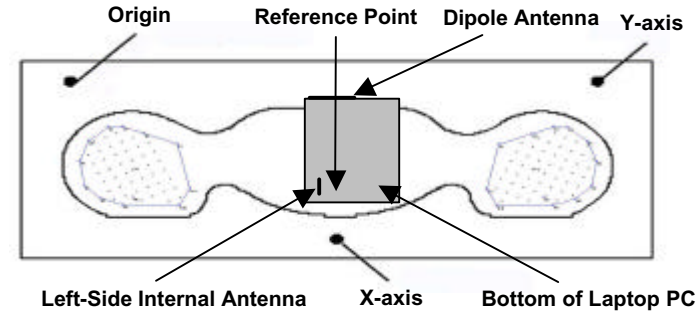


Figure 4. Phantom Reference Point & EUT Positioning
Bottom Left Side of Laptop PC (LCD Display Closed)- Left-Side Antenna

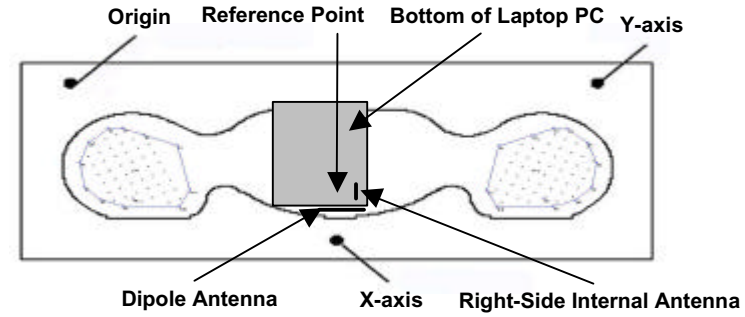


Figure 5. Phantom Reference Point & EUT Positioning
Bottom Right Side of Laptop PC (LCD Display Closed)- Right-Side Antenna

7.0 SYSTEM PERFORMANCE CHECK

Prior to the SAR evaluation a system check was performed in the planar section of the SAM phantom with a 2450MHz dipole (see Appendix C for detailed system validation procedures). The dielectric parameters of the simulated brain tissue fluid were measured using an 85070C Dielectric Probe Kit and an 8753E Network Analyzer prior to the system check (see Appendix E for printout of measured fluid dielectric parameters). A forward power of 250 mW was applied to the dipole and the system was verified to a tolerance of ±10% (see Appendix B for system check test plot).

SYSTEM PERFORMANCE CHECK											
Test Date	2450MHz Equiv. Tissue	SAR 1g (W/kg)		Dielectric Constant ε_r		Conductivity σ (mho/m)		ρ (Kg/m^3)	Ambient Temp.	Fluid Temp.	Fluid Depth
		IEEE Target	Measured	IEEE Target	Measured	IEEE Target	Measured				
03/26/03	Brain	13.1 ±10%	13.9	39.2 ±10%	37.8	1.80 ±5%	1.85	1000	23.8 °C	23.6 °C	≥ 15 cm

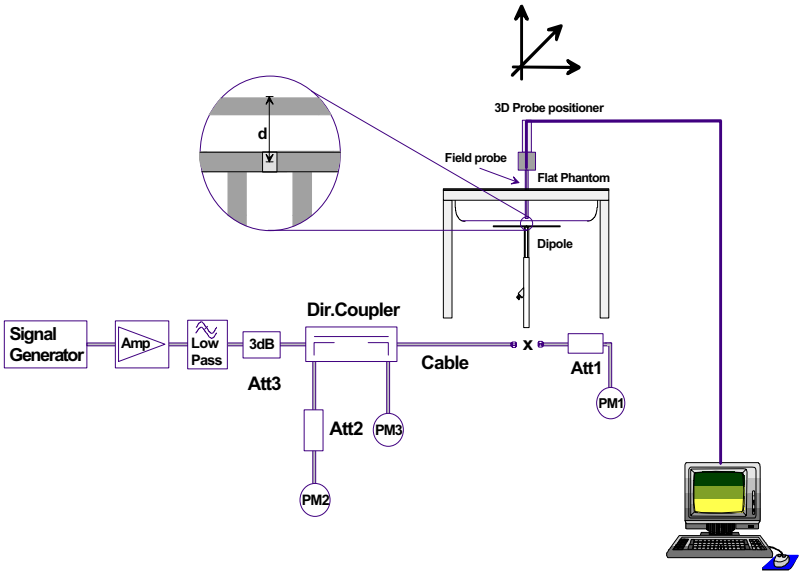


Figure 6. System Check Setup Diagram

2450MHz System Check Setup Photograph

8.0 EQUIVALENT TISSUES

The 2450MHz brain and body simulated tissue mixtures consist of Glycol-monobutyl, water, and salt (body mixture only). The fluid was prepared according to standardized procedures and measured for dielectric parameters (permittivity and conductivity).

SIMULATED TISSUE MIXTURES		
INGREDIENT	**2450MHz Brain (System Check)**	**2450MHz Body (EUT Evaluation)**
Water	55.20 %	69.95 %
Glycol Monobutyl	44.80 %	30.00 %
Salt	-	0.05 %

9.0 SAR SAFETY LIMITS

EXPOSURE LIMITS	SAR (W/kg)	
	(General Population / Uncontrolled Exposure Environment)	(Occupational / Controlled Exposure Environment)
Spatial Average (averaged over the whole body)	0.08	0.4
Spatial Peak (averaged over any 1 g of tissue)	1.60	8.0
Spatial Peak (hands/wrists/feet/ankles averaged over 10 g)	4.0	20.0

Notes:
1. Uncontrolled environments are defined as locations where there is potential exposure of individuals who have no knowledge or control of their potential exposure.
2. Controlled environments are defined as locations where there is potential exposure of individuals who have knowledge of their potential exposure and can exercise control over their exposure.

10.0 ROBOT SYSTEM SPECIFICATIONS

Specifications

POSITIONER:	Stäubli Unimation Corp. Robot Model: RX60L
Repeatability:	0.02 mm
No. of axis:	6

Data Acquisition Electronic (DAE) System

Cell Controller

Processor:	Pentium III
Clock Speed:	450 MHz
Operating System:	Windows NT
Data Card:	DASY3 PC-Board

Data Converter

Features:	Signal Amplifier, multiplexer, A/D converter, and control logic
Software:	DASY3 software
Connecting Lines:	Optical downlink for data and status info. Optical uplink for commands and clock

PC Interface Card

Function:	24 bit (64 MHz) DSP for real time processing Link to DAE3 16-bit A/D converter for surface detection system serial link to robot direct emergency stop output for robot

E-Field Probe

Model:	ET3DV6
Serial No.:	1387
Construction:	Triangular core fiber optic detection system
Frequency:	10 MHz to 6 GHz
Linearity:	±0.2 dB (30 MHz to 3 GHz)

Phantom

Type:	SAM V4.0C
Shell Material:	Fiberglass
Thickness:	2.0 ±0.1 mm
Volume:	Approx. 20 liters

11.0 PROBE SPECIFICATION (ET3DV6)

Construction:	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g. glycol)
Calibration:	In air from 10 MHz to 2.5 GHz In brain simulating tissue at frequencies of 900 MHz and 1.8 GHz (accuracy ± 8%)
Frequency:	10 MHz to >6 GHz; Linearity: ±0.2 dB (30 MHz to 3 GHz)
Directivity:	±0.2 dB in brain tissue (rotation around probe axis) ±0.4 dB in brain tissue (rotation normal to probe axis)
Dynam. Rnge:	5 µW/g to >100 mW/g; Linearity: ±0.2 dB
Srfce. Detect.	±0.2 mm repeatability in air and clear liquids over diffuse reflecting surfaces
Dimensions:	Overall length: 330 mm Tip length: 16 mm Body diameter: 12 mm Tip diameter: 6.8 mm Distance from probe tip to dipole centers: 2.7 mm
Application:	General dosimetry up to 3 GHz Compliance tests of mobile phone

ET3DV6 E-Field Probe

12.0 SAM PHANTOM V4.0C

The SAM phantom V4.0C is a fiberglass shell phantom with a 2.0 mm shell thickness for left and right head and flat planar area integrated in a wooden table. The shape of the fiberglass shell corresponds to the phantom defined by SCC34-SC2. The device holder positions are adjusted to the standard measurement positions in the three sections.

SAM Phantom

13.0 DEVICE HOLDER

The DASY3 device holder has two scales for device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear openings). The plane between the ear openings and the mouth tip has a rotation angle of 65°. The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections.

Device Holder

14.0 TEST EQUIPMENT LIST

SAR MEASUREMENT SYSTEM		
EQUIPMENT	**SERIAL NO.**	**CALIBRATION DATE**
DASY3 System -Robot -ET3DV6 E-Field Probe -300MHz Validation Dipole -450MHz Validation Dipole -900MHz Validation Dipole -1800MHz Validation Dipole -2450MHz Validation Dipole -SAM Phantom V4.0C -Small Planar Phantom -Medium Planar Phantom -Large Planar Phantom	 599396-01 1387 135 136 054 247 150 N/A N/A N/A N/A	 N/A Feb 2003 Oct 2002 Oct 2002 June 2001 June 2001 Oct 2002 N/A N/A N/A N/A
85070C Dielectric Probe Kit	N/A	N/A
Gigatronics 8652A Power Meter -Power Sensor 80701A -Power Sensor 80701A	1835272 1833535 1833542	Feb 2003 Feb 2003 Feb 2003
E4408B Spectrum Analyzer	US39240170	Dec 2002
8594E Spectrum Analyzer	3543A02721	Feb 2003
8753E Network Analyzer	US38433013	Feb 2003
8648D Signal Generator	3847A00611	Feb 2003
5S1G4 Amplifier Research Power Amplifier	26235	N/A

15.0 MEASUREMENT UNCERTAINTIES

Error Description	Uncertainty Value ±%	Probability Distribution	Divisor	c_i 1g	Standard Uncertainty ±% (1g)	v_i or v_{eff}
Measurement System						
Probe calibration	± 4.8	Normal	1	1	± 4.8	∞
Axial isotropy of the probe	± 4.7	Rectangular	√3	$(1-c_p)$	± 1.9	∞
Spherical isotropy of the probe	± 9.6	Rectangular	√3	(c_p)	± 3.9	∞
Spatial resolution	± 0.0	Rectangular	√3	1	± 0.0	∞
Boundary effects	± 5.5	Rectangular	√3	1	± 3.2	∞
Probe linearity	± 4.7	Rectangular	√3	1	± 2.7	∞
Detection limit	± 1.0	Rectangular	√3	1	± 0.6	∞
Readout electronics	± 1.0	Normal	1	1	± 1.0	∞
Response time	± 0.8	Rectangular	√3	1	± 0.5	∞
Integration time	± 1.4	Rectangular	√3	1	± 0.8	∞
RF ambient conditions	± 3.0	Rectangular	√3	1	± 1.7	∞
Mech. constraints of robot	± 0.4	Rectangular	√3	1	± 0.2	∞
Probe positioning	± 2.9	Rectangular	√3	1	± 1.7	∞
Extrapolation & integration	± 3.9	Rectangular	√3	1	± 2.3	∞
Test Sample Related						
Device positioning	± 6.0	Normal	√3	1	± 6.7	12
Device holder uncertainty	± 5.0	Normal	√3	1	± 5.9	8
Power drift	± 5.0	Rectangular	√3		± 2.9	∞
Phantom and Setup						
Phantom uncertainty	± 4.0	Rectangular	√3	1	± 2.3	∞
Liquid conductivity (target)	± 5.0	Rectangular	√3	0.6	± 1.7	∞
Liquid conductivity (measured)	± 5.0	Rectangular	√3	0.6	± 1.7	∞
Liquid permittivity (target)	± 10.0	Rectangular	√3	0.6	± 3.5	∞
Liquid permittivity (measured)	± 5.0	Rectangular	√3	0.6	± 1.7	∞
Combined Standard Uncertainty					**± 13.7**	
Expanded Uncertainty (k=2)					**± 27.5**	

Measurement Uncertainty Table in accordance with IEEE Std 1528-200X (Draft - see reference [5])

16.0 REFERENCES

[1] Federal Communications Commission, “Radiofrequency radiation exposure evaluation: portable devices”, Rule Part 47 CFR §2.1093: 1999.

[2] Health Canada, “Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz”, Safety Code 6.

[3] Federal Communications Commission, “Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields”, OET Bulletin 65, Supplement C (Edition 01-01), FCC, Washington, D.C.: June 2001.

[4] Industry Canada, “Evaluation Procedure for Mobile and Portable Radio Transmitters with respect to Health Canada’s Safety Code 6 for Exposure of Humans to Radio Frequency Fields”, Radio Standards Specification RSS-102 Issue 1 (Provisional): September 1999.

[5] IEEE Standards Coordinating Committee 34, Std 1528-200X, “DRAFT Recommended Practice for Determining the Spatial-Peak Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques”.

[6] W. Gander, *Computermathematick*, Birkhaeuser, Basel: 1992.

APPENDIX B - SYSTEM CHECK DATA

System Performance Check - 2450MHz Dipole

SAM Phantom; Flat Section

Probe: ET3DV6 - SN1387; ConvF(5.00,5.00,5.00); Crest factor: 1.0; 2450 MHz Brain: σ = 1.85 mho/m ε_r = 37.8 ρ = 1.00 g/cm^3

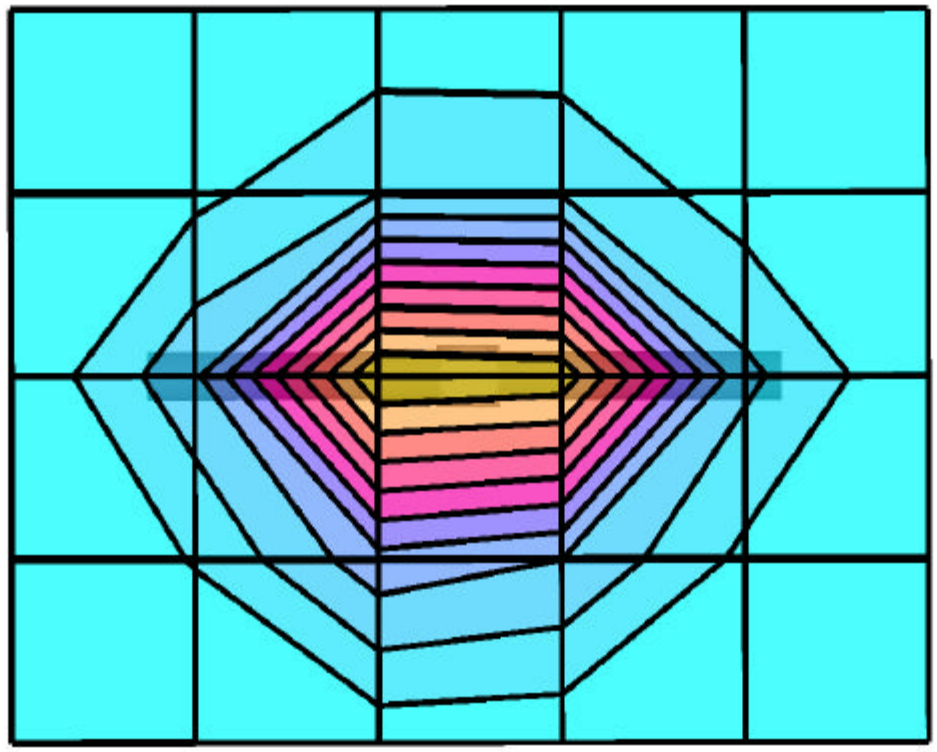
Cube 5x5x7: Peak: 29.2 mW/g, SAR (1g): 13.9 mW/g, SAR (10g): 6.27 mW/g, (Worst-case extrapolation)

Penetration depth: 6.2 (6.0, 7.1) [mm]; Powerdrift: -0.03 dB

Ambient Temp: 23.8°C; Fluid Temp: 23.6°C

Conducted Power: 250mW

Date Tested: March 26, 2003



APPENDIX E - MEASURED FLUID DIELECTRIC PARAMETERS

2450MHz System Performance Check

Measured Fluid Dielectric Parameters (Brain)

March 26, 2003

Frequency	e'	e''
2.300000000 GHz	38.1728	13.2651
2.310000000 GHz	38.1216	13.2959
2.320000000 GHz	38.0539	13.3397
2.330000000 GHz	38.0101	13.3846
2.340000000 GHz	37.9779	13.4288
2.350000000 GHz	37.9417	13.4738
2.360000000 GHz	37.9214	13.5202
2.370000000 GHz	37.9002	13.5538
2.380000000 GHz	37.8761	13.5788
2.390000000 GHz	37.8517	13.5852
2.400000000 GHz	37.8149	13.5986
2.410000000 GHz	37.7444	13.6205
2.420000000 GHz	37.6925	13.6711
2.430000000 GHz	37.6106	13.7135
2.440000000 GHz	37.5653	13.7595
2.450000000 GHz	37.5076	13.7888
2.460000000 GHz	37.4621	13.8491
2.470000000 GHz	37.4381	13.8709
2.480000000 GHz	37.4074	13.9035
2.490000000 GHz	37.3866	13.9338
2.500000000 GHz	37.3608	13.9306

2450MHz EUT Evaluation (Body)

Measured Fluid Dielectric Parameters (Muscle)

March 26, 2003

Frequency	e'	e''
2.350000000 GHz	48.4738	14.1770
2.360000000 GHz	48.4450	14.2353
2.370000000 GHz	48.4307	14.2679
2.380000000 GHz	48.4074	14.2972
2.390000000 GHz	48.3607	14.3319
2.400000000 GHz	48.3295	14.3639
2.410000000 GHz	48.2716	14.3953
2.420000000 GHz	48.2107	14.4443
2.430000000 GHz	48.1651	14.4873
2.440000000 GHz	48.1032	14.5389
2.450000000 GHz	48.0693	14.5563
2.460000000 GHz	48.0340	14.6137
2.470000000 GHz	47.9932	14.6469
2.480000000 GHz	47.9715	14.6865
2.490000000 GHz	47.9319	14.7094
2.500000000 GHz	47.9102	14.7258
2.510000000 GHz	47.8519	14.7542
2.520000000 GHz	47.8169	14.7837
2.530000000 GHz	47.7466	14.8204
2.540000000 GHz	47.7036	14.8675
2.550000000 GHz	47.6566	14.8924

APPENDIX F - SAM PHANTOM CERTIFICATE OF CONFORMITY

Schmid & Partner Engineering AG

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

Certificate of conformity / First Article Inspection

Item	SAM Twin Phantom V4.0
Type No	QD 000 P40 BA
Series No	TP-1002 and higher
Manufacturer / Origin	Untersee Composites Hauptstr. 69 CH-8559 Fruthwilen Switzerland

Tests

The series production process used allows the limitation to test of first articles.
Complete tests were made on the pre-series Type No. QD 000 P40 AA, Serial No. TP-1001 and on the series first article Type No. QD 000 P40 BA, Serial No. TP-1006. Certain parameters have been retested using further series units (called samples).

Test	Requirement	Details	Units tested
Shape	Compliance with the geometry according to the CAD model.	IT'IS CAD File (*)	First article, Samples
Material thickness	Compliant with the requirements according to the standards	2mm +/- 0.2mm in specific areas	First article, Samples
Material parameters	Dielectric parameters for required frequencies	200 MHz – 3 GHz Relative permittivity < 5 Loss tangent < 0.05.	Material sample TP 104-5
Material resistivity	The material has been tested to be compatible with the liquids defined in the standards	Liquid type HSL 1800 and others according to the standard.	Pre-series, First article

Standards

[1] CENELEC EN 50361
[2] IEEE P1528-200x draft 6.5
[3] IEC PT 62209 draft 0.9
(*) The IT'IS CAD file is derived from [2] and is also within the tolerance requirements of the shapes of [1] and [3].

Conformity

Based on the sample tests above, we certify that this item is in compliance with the uncertainty requirements of SAR measurements specified in standard [1] and draft standards [2] and [3].

Date 18.11.2001

Signature / Stamp Schmid & Partner Engineering AG
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