APPENDIX A: SAR DISTRIBUTION COMPARISON FOR THE ACCURACY VERIFICATION

Date/Time: 11/07/2005 10:10:16 AMDate/Time: 11/07/2005 10:27:12 AM   Page 1 of 1

Date/Time: 11/07/2005 10:27:12 AM

Lab: RIM Testing Services (RTS)

Dipole_Validation_835_MHz_Ambient Temp. 24.5 Deg. Cel._ Liquid Temp. 23.3 Deg. Cel._07-11-2005

DUT: Dipole 835 MHz; Type: D835V2
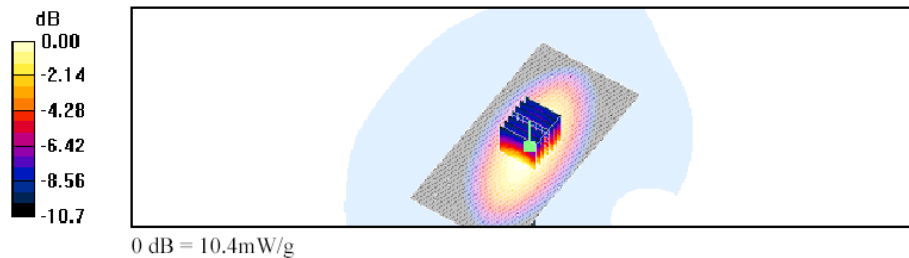
Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 MHz Head Medium parameters used: f = 835 MHz; σ = 0.92 mho/m; ε_r = 43; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.52, 6.52, 6.52); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (81x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 10.4 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 108.2 V/m; Power Drift = -0.043 dB
Peak SAR (extrapolated) = 14.5 W/kg
SAR(1 g) = 9.62 mW/g; SAR(10 g) = 6.25 mW/g
Maximum value of SAR (measured) = 10.4 mW/g

0 dB = 10.4mW/g

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Date/Time: 12/07/2005 3:08:30 PM

Lab: RIM Testing Services (RTS)

Dipole_Validation_835_MHz_Ambient Temp. 24.1 Deg. Cel._ Liquid Temp. 22.4 Deg. Cel._07-12-2005

DUT: Dipole 835 MHz; Type: D835V2

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: 835 MHz Head Medium parameters used: f = 835 MHz; σ = 0.92 mho/m; ε_r = 43; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.52, 6.52, 6.52); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (81x161x1): Measurement grid: dx=10mm, dy=10mm
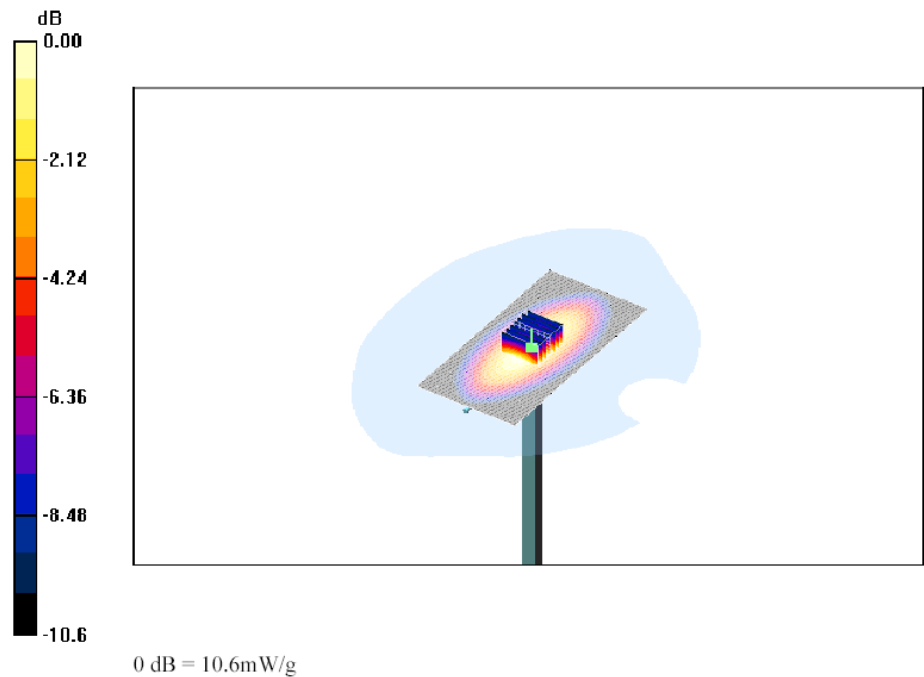Maximum value of SAR (interpolated) = 10.7 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 111.8 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 14.9 W/kg
SAR(1 g) = 9.81 mW/g; SAR(10 g) = 6.35 mW/g
Maximum value of SAR (measured) = 10.6 mW/g

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0 dB = 10.6mW/g

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Lab: RIM Testing Services (RTS)

Dipole_Validation_835_MHz_Ambient Temp. 23.3 Deg. Cel._ Liquid Temp. 22.0 Deg. Cel._07-13-2005
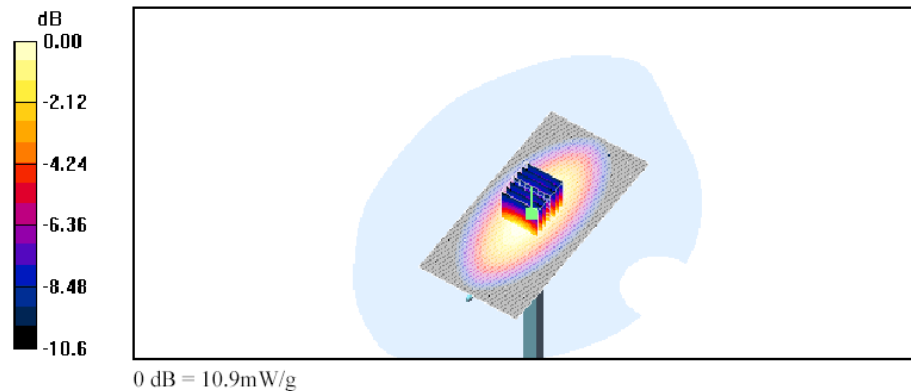
DUT: Dipole 835 MHz; Type: D835V2

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: 835 MHz Head Medium parameters used: f = 835 MHz; σ = 0.92 mho/m; ε_r = 43.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.52, 6.52, 6.52); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (81x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 11.1 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 113.6 V/m; Power Drift = -0.173 dB
Peak SAR (extrapolated) = 15.2 W/kg
SAR(1 g) = 10 mW/g; SAR(10 g) = 6.47 mW/g
Maximum value of SAR (measured) = 10.9 mW/g

0 dB = 10.9mW/g

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Date/Time: 14/07/2005 3:19:13 PMDate/Time: 14/07/2005 3:36:24 PM

Lab: RIM Testing Services (RTS)

Dipole_Validation_835_MHz_Ambient
Temp_23.5_Deg_Cel_Liquid_Temp_22.6_Deg_Cel_07-14-2005

DUT: Dipole 835 MHz; Type: D835V2

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: 835 MHz Head Medium parameters used: $f = 835$ MHz; $\sigma = 0.92$ mho/m; $\varepsilon_r = 43.5$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.52, 6.52, 6.52); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (81x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 10.6 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 99.0 V/m; Power Drift = -0.018 dB
Peak SAR (extrapolated) = 14.7 W/kg
SAR(1 g) = 9.81 mW/g; SAR(10 g) = 6.4 mW/g
Maximum value of SAR (measured) = 10.6 mW/g

0 dB = 10.6mW/g

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Date/Time: 15/07/2005 10:47:18 AMDate/Time: 15/07/2005 11:04:21 AM

Lab: RIM Testing Services (RTS)

**Dipole_Validation_835_MHz_Ambient
Temp_23.0_Deg_Cel_Liquid_Temp_22.0_Deg_Cel_07-15-2005**
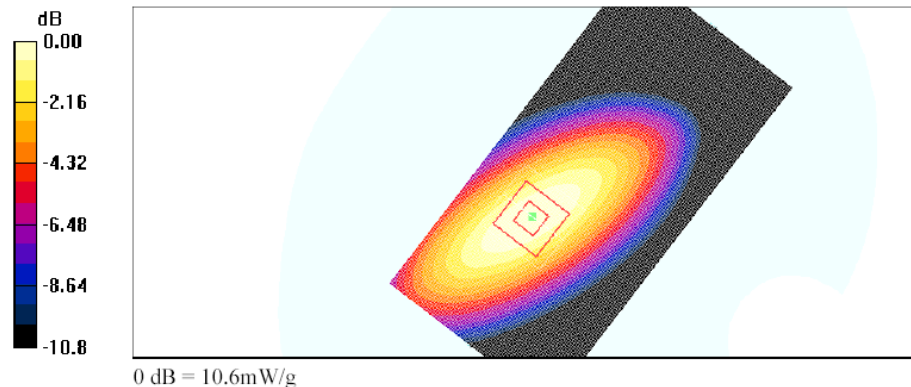
DUT: Dipole 835 MHz; Type: D835V2

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: 835 MHz Head Medium parameters used: f = 835 MHz; σ = 0.92 mho/m; ε_r = 43.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.52, 6.52, 6.52); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (81x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 10.7 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 112.8 V/m; Power Drift = -0.027 dB
Peak SAR (extrapolated) = 14.9 W/kg
SAR(1 g) = 9.9 mW/g; SAR(10 g) = 6.44 mW/g
Maximum value of SAR (measured) = 10.6 mW/g

0 dB = 10.6mW/g

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Date/Time: 18/07/2005 9:12:14 AMDate/Time: 18/07/2005 9:29:15 AM

Lab: RIM Testing Services (RTS)

**Dipole_Validation_835_MHz_Ambient
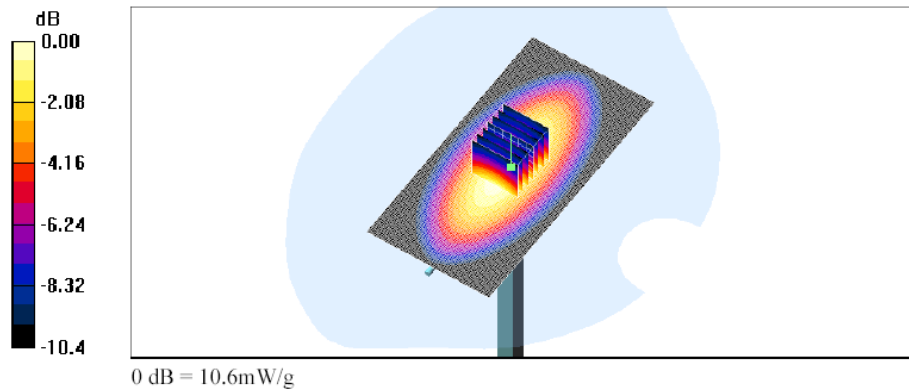Temp_22.2_Deg_Cel_Liquid_Temp_22.0_Deg_Cel_07-18-2005**
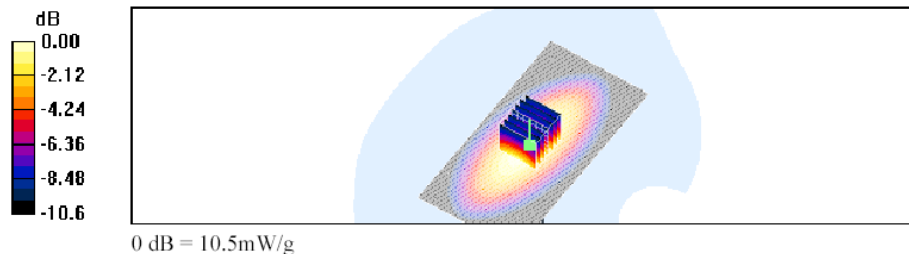
DUT: Dipole 835 MHz; Type: D835V2

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: 835 MHz Head Medium parameters used: f = 835 MHz; σ = 0.91 mho/m; ε_r = 42.8; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.52, 6.52, 6.52); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (81x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 10.6 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 111.4 V/m; Power Drift = -0.040 dB
Peak SAR (extrapolated) = 14.5 W/kg
SAR(1 g) = 9.69 mW/g; SAR(10 g) = 6.3 mW/g
Maximum value of SAR (measured) = 10.5 mW/g

0 dB = 10.5mW/g

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Date/Time: 18/07/2005 3:47:46 PMDate/Time: 18/07/2005 4:04:51 PM

Lab: RIM Testing Services (RTS)

Dipole_Validation_900_MHz_Ambient
Temp_24.1_Deg_Cel_Liquid_Temp_21.8_Deg_Cel_07-18-2005

DUT: Dipole 900 MHz; Type: D900V2

Communication System: CW; Frequency: 900 MHz;Duty Cycle: 1:1
Medium: 835 MHz Head Medium parameters used: f = 900 MHz; σ = 0.97 mho/m; ε_r = 42.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.52, 6.52, 6.52); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (81x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 11.3 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 112.7 V/m; Power Drift = -0.038 dB
Peak SAR (extrapolated) = 16.1 W/kg
SAR(1 g) = 10.5 mW/g; SAR(10 g) = 6.69 mW/g
Maximum value of SAR (measured) = 11.3 mW/g

0 dB = 11.3mW/g

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Lab: RIM Testing Services (RTS)

Dipole_Validation_900_MHz_Ambient
Temp_23.9_Deg_Cel_Liquid_Temp_22.7_Deg_Cel_07-19-2005

DUT: Dipole 900 MHz; Type: D900V2
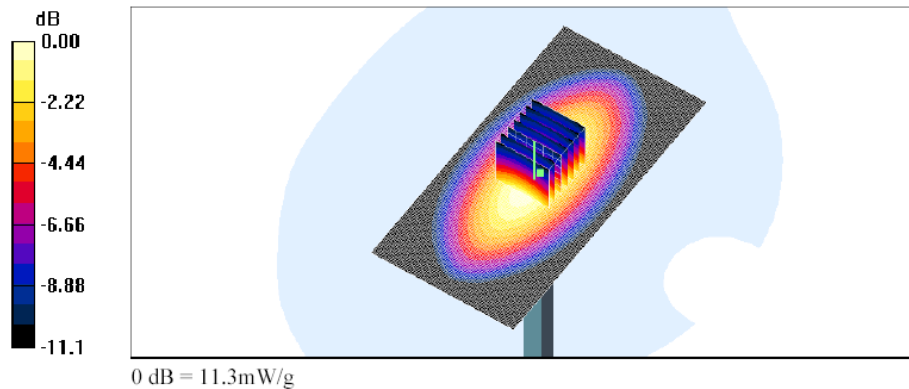
Communication System: CW; Frequency: 900 MHz;Duty Cycle: 1:1
Medium: 835 MHz Head Medium parameters used: f = 900 MHz; $\sigma = 0.98$ mho/m; $\varepsilon_r = 41.6$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.52, 6.52, 6.52); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (81x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 11.8 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 113.7 V/m; Power Drift = -0.019 dB
Peak SAR (extrapolated) = 16.5 W/kg
SAR(1 g) = 10.8 mW/g; SAR(10 g) = 6.92 mW/g
Maximum value of SAR (measured) = 11.7 mW/g

0 dB = 11.7mW/g
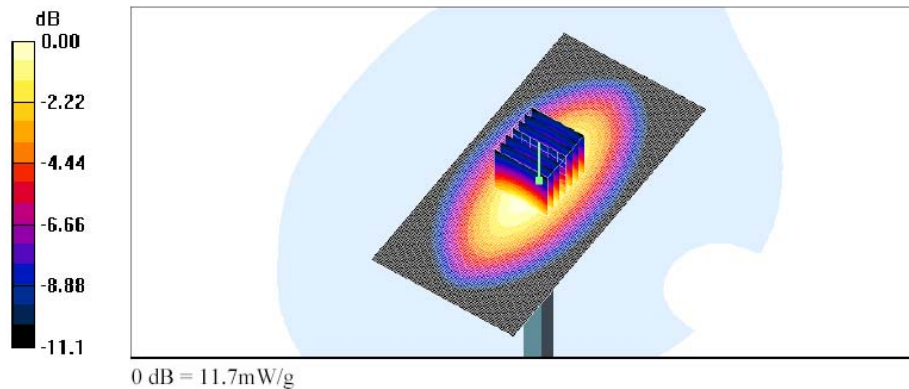
file://C:\Program%20Files\DASY4\Print_Templates\Dipole_Validation_900_MHz_Ambi... 19/07/2005

RTS	Document	Page
RIM Testing Services	Appendix to SAR Compliance Test Report for the BlackBerry 7100i Wireless Handheld Model RAW20IN	11(34)

Author Data	Dates of Test	Test Report No	FCC ID:
Daoud Attayi	**June 11 – 19, 2005**	**RTS-0184-0507-04**	**L6ARAW20IN**

APPENDIX B: SAR DISTRIBUTION PLOTS FOR HEAD CONFIGURATION

Date/Time: 12/07/2005 8:42:09 AMDate/Time: 12/07/2005 9:05:08 AM   Page 1 of 1

Date/Time: 12/07/2005 9:05:08 AM

Lab: RIM Testing Services (RTS)

Touch Right_iDEN 800 MHz_Low Channel_Extended Ant_Ambient Temp. 22.8 Deg. Cel._ Liquid Temp. 22.5 Deg. Cel._07-11-2005

DUT: BlackBerry Wireless Handheld; Type: Sample (Retracted Ant.)
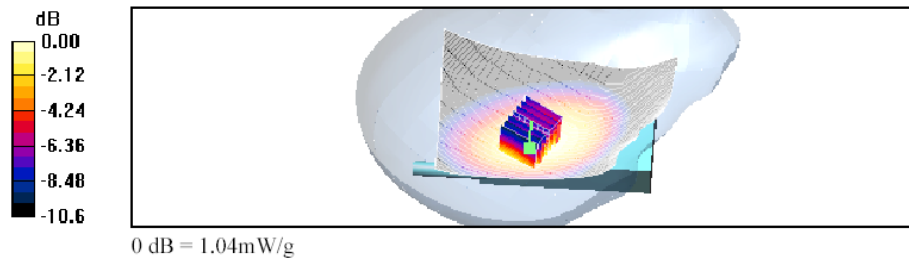
Communication System: IDEN ; Frequency: 806.013 MHz:Duty Cycle: 1:3
Medium: 835 MHz Head Medium parameters used: f = 806.013 MHz; σ = 0.92 mho/m; ε_r = 43; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.52, 6.52, 6.52); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (101x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.06 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 26.2 V/m; Power Drift = -0.228 dB
Peak SAR (extrapolated) = 1.49 W/kg
SAR(1 g) = 0.973 mW/g; SAR(10 g) = 0.681 mW/g
Maximum value of SAR (measured) = 1.04 mW/g

0 dB = 1.04mW/g

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Date/Time: 13/07/2005 8:37:41 AM

Lab: RIM Testing Services (RTS)

Tilted Right_iDEN 800 MHz_Low Channel_Extended Ant_Ambient Temp. 23.5 Deg. Cel._ Liquid Temp. 21.6 Deg. Cel._07-13-2005

DUT: BlackBerry Wireless Handheld; Type: Sample (Retracted Ant.)

Communication System: IDEN ; Frequency: 806.013 MHz;Duty Cycle: 1:3
Medium: 835 MHz Head Medium parameters used: f = 806.013 MHz; σ = 0.92 mho/m; ε_r = 43; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.52, 6.52, 6.52); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (101x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.903 mW/g

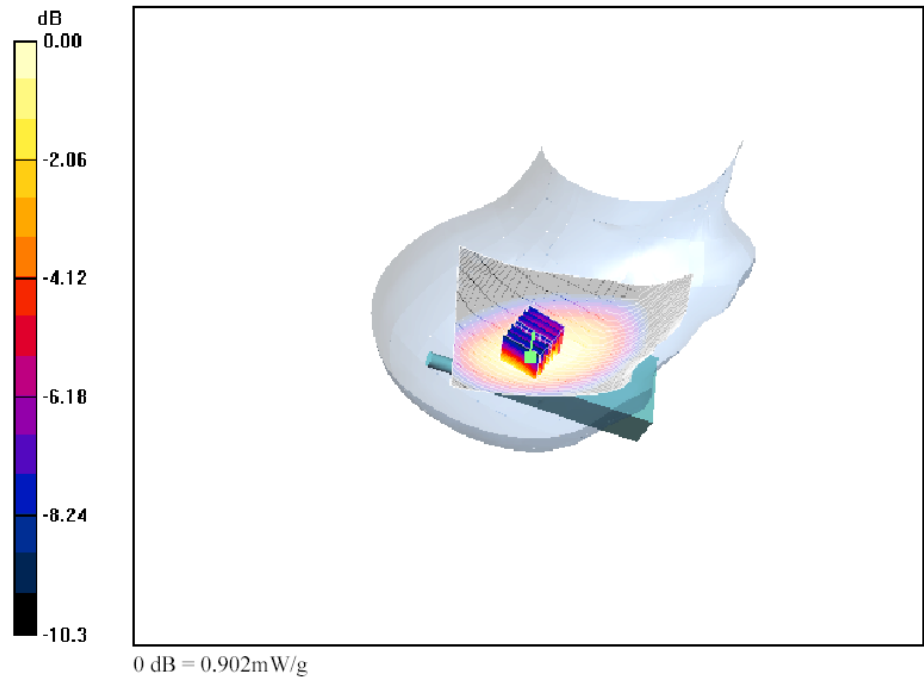**Unnamed procedure/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 28.4 V/m; Power Drift = -0.029 dB
Peak SAR (extrapolated) = 1.25 W/kg
SAR(1 g) = 0.843 mW/g; SAR(10 g) = 0.580 mW/g
Maximum value of SAR (measured) = 0.902 mW/g

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0 dB = 0.902mW/g

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Date/Time: 12/07/2005 3:58:12 PM

Lab: RIM Testing Services (RTS)

Touch Left_iDEN 800 MHz_Middle Channel_Ext. Ant._Ambient Temp. 23.8 Deg. Cel._ Liquid Temp. 22.3 Deg. Cel._07-12-2005

DUT: BlackBerry Wireless Handheld; Type: Sample (Retracted Ant.)

Communication System: IDEN ; Frequency: 815.5 MHz;Duty Cycle: 1:3
Medium: 835 MHz Head Medium parameters used: f = 815.5 MHz; σ = 0.92 mho/m; ε_r = 43; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.52, 6.52, 6.52); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (101x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.831 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 28.9 V/m; Power Drift = -0.177 dB
Peak SAR (extrapolated) = 1.03 W/kg
SAR(1 g) = 0.793 mW/g; SAR(10 g) = 0.583 mW/g
Maximum value of SAR (measured) = 0.847 mW/g

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0 dB = 0.847mW/g

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Date/Time: 12/07/2005 4:32:41 PMDate/Time: 12/07/2005 4:57:13 PM   Page 1 of 2

Date/Time: 12/07/2005 4:32:41 PMDate/Time: 12/07/2005 4:57:13 PM

Lab: RIM Testing Services (RTS)

Tilted Left_iDEN 800 MHz_Middle Channel_Ext. Ant._Ambient Temp. 24.5 Deg. Cel._ Liquid Temp. 22.4 Deg. Cel._07-12-2005

DUT: BlackBerry Wireless Handheld; Type: Sample (Retracted Ant.)

Communication System: IDEN ; Frequency: 815.5 MHz;Duty Cycle: 1:3
Medium: 835 MHz Head Medium parameters used: f = 815.5 MHz; σ = 0.92 mho/m; ε_r = 43; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.52, 6.52, 6.52); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (101x161x1): Measurement grid: dx=10mm, dy=10mm
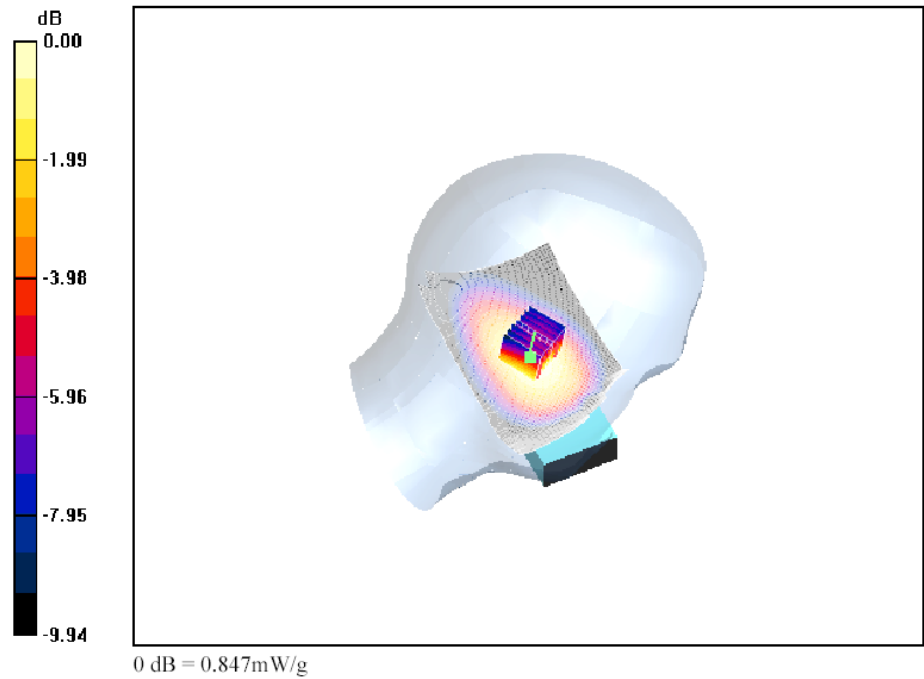Maximum value of SAR (interpolated) = 0.789 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 29.8 V/m; Power Drift = -0.445 dB
Peak SAR (extrapolated) = 0.990 W/kg
SAR(1 g) = 0.716 mW/g; SAR(10 g) = 0.515 mW/g

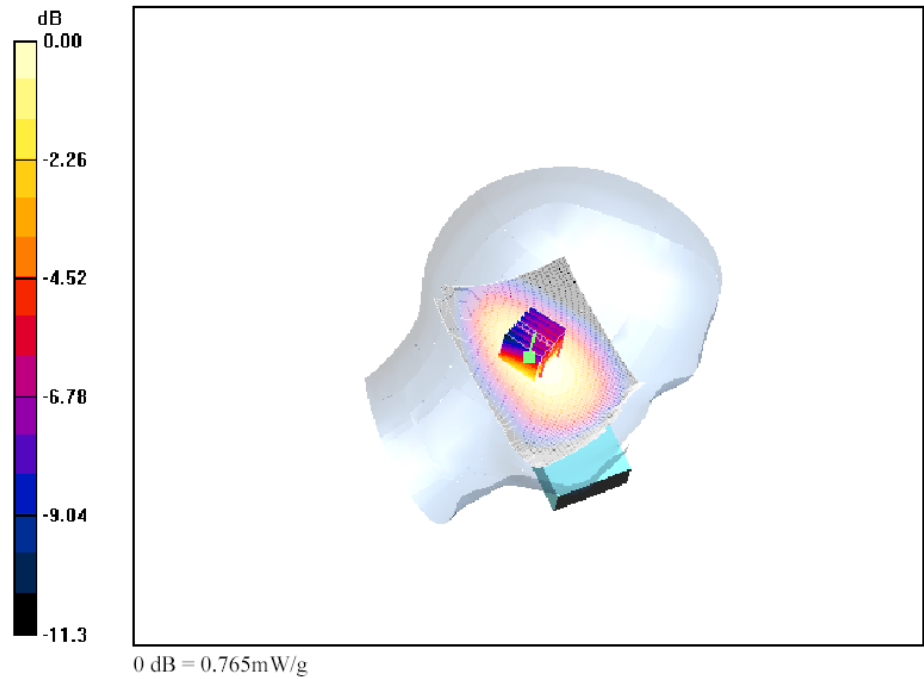Maximum value of SAR (measured) = 0.765 mW/g

file://C:\Program%20Files\DASY4\Print_Templates\Tilted%20Left_iDEN%20800%20M... 12/07/2005

Date/Time: 12/07/2005 4:32:41 PMDate/Time: 12/07/2005 4:57:13 PM   Page 2 of 2

0 dB = 0.765mW/g

file://C:\Program%20Files\DASY4\Print_Templates\Tilted%20Left_iDEN%20800%20M... 12/07/2005

Date/Time: 19/07/2005 10:53:02 AMDate/Time: 19/07/2005 11:17:26 AM

Lab: RIM Testing Services (RTS)

Touch_Left_iDEN_900MHz_Mid_Chan_Ret_Ant_Ambient_Temp_23.2_Deg_Cel_Liqu -19-2005

**DUT: BlackBerry Wireless Handheld; Type: Sample**

Communication System: IDEN 900; Frequency: 898.519 MHz;Duty Cycle: 1:3
Medium: HSL900 Medium parameters used: f = 898.519 MHz; σ = 0.97 mho/m; ε_r = 42.1; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.52, 6.52, 6.52); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (101x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.04 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 30.1 V/m; Power Drift = -0.313 dB
Peak SAR (extrapolated) = 1.29 W/kg
SAR(1 g) = 0.978 mW/g; SAR(10 g) = 0.707 mW/g
Maximum value of SAR (measured) = 1.04 mW/g

0 dB = 1.04mW/g
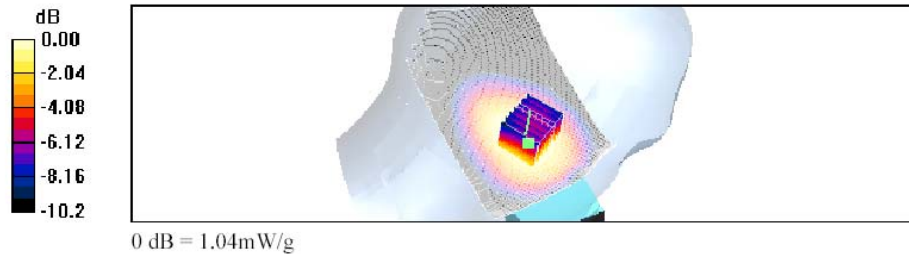
file://C:\Program%20Files\DASY4\Print_Templates\Touch_Left_iDEN_900MHz_Mid_...   19/07/2005

RTS	Document	Page
RIM Testing Services	Appendix to SAR Compliance Test Report for the BlackBerry 7100i Wireless Handheld Model RAW20IN	20(34)

Author Data	Dates of Test	Test Report No	FCC ID:
Daoud Attayi	**June 11 – 19, 2005**	**RTS-0184-0507-04**	**L6ARAW20IN**

Date/Time: 19/07/2005 12:01:28 PMDate/Time: 19/07/2005 12:28:00 PM

Lab: RIM Testing Services (RTS)

Tilted_Left_iDEN_900MHz_Mid_Chan_Ret_Ant_Ambient_Temp_23.4_Deg_Cel

Liquid_Temp_22.7_Deg_Cel_07-19-2005

DUT: BlackBerry Wireless Handheld; Type: Sample

Communication System: IDEN 900; Frequency: 898.519 MHz;Duty Cycle: 1:3
Medium: HSL900 Medium parameters used: f = 898.519 MHz; σ = 0.97 mho/m; ε_r = 42.1; ρ = 1000 kg/m^3
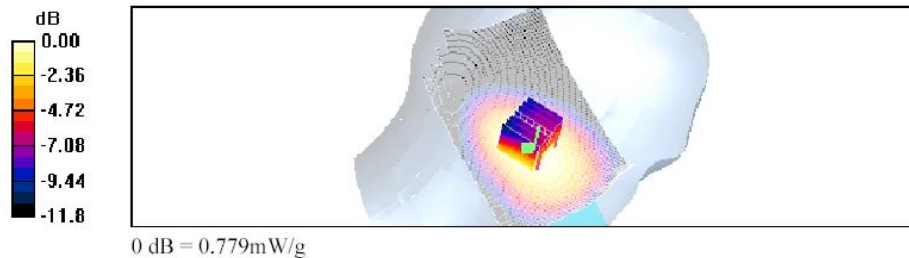Phantom section: Left Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.52, 6.52, 6.52); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (101x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.807 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 29.1 V/m; Power Drift = -0.775 dB
Peak SAR (extrapolated) = 0.962 W/kg
SAR(1 g) = 0.723 mW/g; SAR(10 g) = 0.513 mW/g

Maximum value of SAR (measured) = 0.779 mW/g

0 dB = 0.779mW/g

Date/Time: 18/07/2005 5:46:04 PMDate/Time: 18/07/2005 6:06:52 PM

Lab: RIM Testing Services (RTS)

Touch_Right_iDEN_900MHz_Mid_Chan_Retracted_Ant_Ambient_Temp_24.1_Deg_C

Liquid_Temp_22.1_Deg_Cel_07-18-2005

DUT: BlackBerry Wireless Handheld; Type: Sample

Communication System: IDEN 900; Frequency: 898.519 MHz;Duty Cycle: 1:3
Medium: HSL900 Medium parameters used: f = 898.519 MHz; σ = 0.97 mho/m; ε_r = 42.1; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.52, 6.52, 6.52); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (101x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.20 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 27.9 V/m; Power Drift = -0.453 dB
Peak SAR (extrapolated) = 1.51 W/kg
SAR(1 g) = 1.06 mW/g; SAR(10 g) = 0.747 mW/g
Maximum value of SAR (measured) = 1.13 mW/g

0 dB = 1.13mW/g

Date/Time: 19/07/2005 8:51:00 AMDate/Time: 19/07/2005 9:14:12 AM

Lab: RIM Testing Services (RTS)

Tilted_Right_iDEN_900MHz_Mid_Chan_Retracted_Ant_Ambient_Temp_23.1_Deg_C

Liquid_Temp_22.5_Deg_Cel_07-19-2005

DUT: BlackBerry Wireless Handheld; Type: Sample

Communication System: IDEN 900; Frequency: 898.519 MHz;Duty Cycle: 1:3
Medium: HSL900 Medium parameters used: f = 898.519 MHz; σ = 0.97 mho/m; $ε_r$ = 42.1; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.52, 6.52, 6.52); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (101x161x1): Measurement grid: dx=10mm, dy=10mm
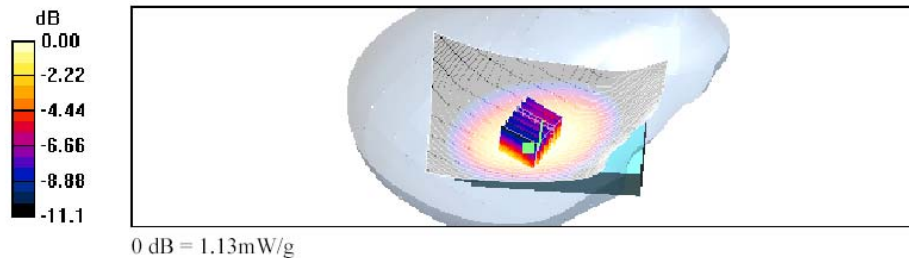Maximum value of SAR (interpolated) = 1.00 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 26.4 V/m; Power Drift = -0.442 dB
Peak SAR (extrapolated) = 1.33 W/kg
SAR(1 g) = 0.892 mW/g; SAR(10 g) = 0.599 mW/g

Maximum value of SAR (measured) = 0.943 mW/g

0 dB = 0.943mW/g

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RTS	Appendix to SAR Compliance Test Report for the	23(34)
RIM Testing Services	BlackBerry 7100i Wireless Handheld Model RAW20IN	

Author Data	Dates of Test	Test Report No	FCC ID:
Daoud Attayi	**June 11 – 19, 2005**	**RTS-0184-0507-04**	**L6ARAW20IN**

Z-Axis plot for the worst-case head SAR configuration:

APPENDIX C: SAR DISTRIBUTION PLOTS FOR BODY-WORN SAR CONFIGURATION

Date/Time: 14/07/2005 4:08:43 PMDate/Time: 14/07/2005 4:31:25 PM   Page 1 of 1

Lab: RIM Testing Services (RTS)

BodyWorn_KeychainHolster_back_iDEN_800MHz_Mid_Chan_Retracted_Ant_

Ambient_Temp_23.6_Deg_Cel_Liquid_Temp_22.4_Deg_Cel_07-14-2005

DUT: BlackBerry Wireless Handheld; Type: Sample (Retracted Ant.)

Communication System: IDEN ; Frequency: 815.5 MHz;Duty Cycle: 1:3
Medium: M 835 Medium parameters used: f = 815.5 MHz; σ = 0.97 mho/m; ε_r = 52.9; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.18, 6.18, 6.18); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (101x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.811 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm,
dz=5mm
Reference Value = 28.8 V/m; Power Drift = -0.233 dB
Peak SAR (extrapolated) = 0.970 W/kg
SAR(1 g) = 0.750 mW/g; SAR(10 g) = 0.559 mW/g
Maximum value of SAR (measured) = 0.800 mW/g

0 dB = 0.800mW/g

file://C:\Program%20Files\DASY4\Print_Templates\BodyWorn_KeychainHolster_back_... 14/07/2005

Date/Time: 15/07/2005 12:19:35 PMDate/Time: 15/07/2005 12:42:14 PM   Page 1 of 2

Date/Time: 15/07/2005 12:19:35 PMDate/Time: 15/07/2005 12:42:14 PM

Lab: RIM Testing Services (RTS)

BodyWorn_FabricHolster_back_iDEN_800MHz_Low_Chan_Retracted_Ant_

Ambient_Temp_23.4_Deg_Cel_Liquid_Temp_21.8_Deg_Cel_07-15-2005

DUT: BlackBerry Wireless Handheld; Type: Sample

Communication System: IDEN ; Frequency: 806.013 MHz;Duty Cycle: 1:3
Medium: M 835 Medium parameters used: f = 806.013 MHz; σ = 0.98 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.18, 6.18, 6.18); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (101x161x1): Measurement grid: dx=10mm, dy=10mm
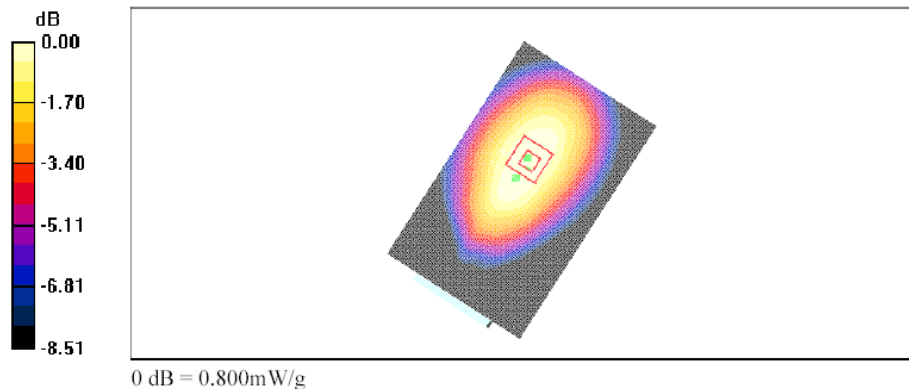Maximum value of SAR (interpolated) = 0.901 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 31.0 V/m; Power Drift = -0.345 dB
Peak SAR (extrapolated) = 1.08 W/kg
SAR(1 g) = 0.835 mW/g; SAR(10 g) = 0.631 mW/g

Maximum value of SAR (measured) = 0.889 mW/g

0 dB = 0.889mW/g

file://C:\Program%20Files\DASY4\Print_Templates\BodyWorn_FabricHolster_back_iD...   15/07/2005

Date/Time: 15/07/2005 11:30:35 AMDate/Time: 15/07/2005 11:54:52 AM   Page 1 of 1

Date/Time: 15/07/2005 11:30:35 AMDate/Time: 15/07/2005 11:54:52 AM

Lab: RIM Testing Services (RTS)

BodyWorn_FabricHolster_back_iDEN_800MHz_Mid_Chan_Retracted_Ant_

Ambient_Temp_23.5_Deg_Cel_Liquid_Temp_21.7_Deg_Cel_07-15-2005

DUT: BlackBerry Wireless Handheld; Type: Sample

Communication System: IDEN ; Frequency: 815.5 MHz;Duty Cycle: 1:3
Medium: M 835 Medium parameters used: f = 815.5 MHz; σ = 0.98 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
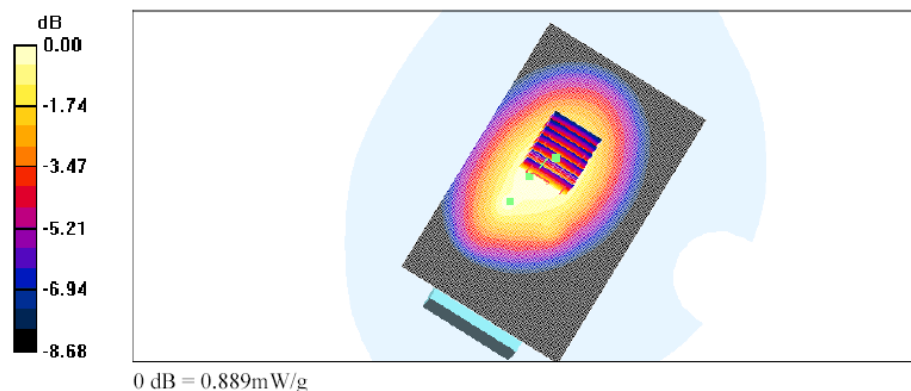Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.18, 6.18, 6.18); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (101x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.911 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm,
dz=5mm
Reference Value = 31.1 V/m; Power Drift = -0.262 dB
Peak SAR (extrapolated) = 1.07 W/kg
SAR(1 g) = 0.857 mW/g; SAR(10 g) = 0.645 mW/g

Maximum value of SAR (measured) = 0.905 mW/g

0 dB = 0.905mW/g

file://C:\Program%20Files\DASY4\Print_Templates\BodyWorn_FabricHolster_back_iD...   15/07/2005

Date/Time: 15/07/2005 3:09:36 PMDate/Time: 15/07/2005 3:32:16 PM   Page 1 of 1

Lab: RIM Testing Services (RTS)

BodyWorn_LeatherHolster_back_iDEN_800MHz_Mid_Chan_Retracted_Ant_

Ambient_Temp_23.9_Deg_Cel_Liquid_Temp_21.9_Deg_Cel_07-15-2005

DUT: BlackBerry Wireless Handheld; Type: Sample

Communication System: IDEN ; Frequency: 815.5 MHz;Duty Cycle: 1:3
Medium: M 835 Medium parameters used: f = 815.5 MHz; σ = 0.98 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.18, 6.18, 6.18); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (101x161x1): Measurement grid: dx=10mm, dy=10mm
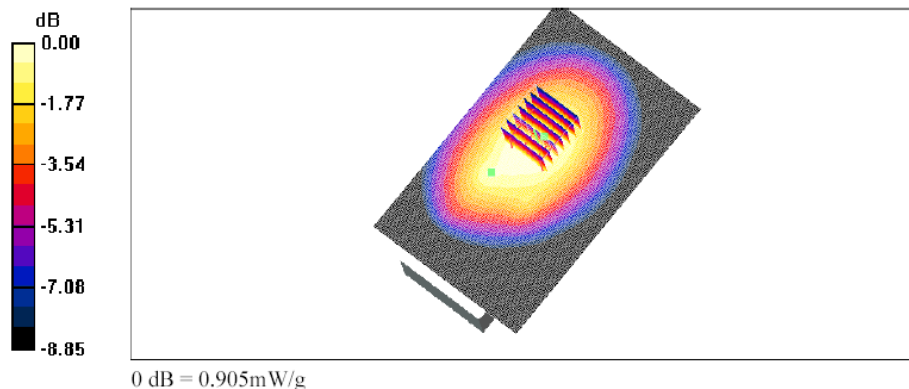Maximum value of SAR (interpolated) = 0.869 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 29.3 V/m; Power Drift = -0.341 dB
Peak SAR (extrapolated) = 1.04 W/kg
SAR(1 g) = 0.786 mW/g; SAR(10 g) = 0.594 mW/g

Maximum value of SAR (measured) = 0.850 mW/g

0 dB = 0.850mW/g

file://C:\Program%20Files\DASY4\Print_Templates\BodyWorn_LeatherHolster_back_i...   15/07/2005

Date/Time: 18/07/2005 2:33:24 PMDate/Time: 18/07/2005 2:56:19 PM   Page 1 of 1

Date/Time: 18/07/2005 2:33:24 PMDate/Time: 18/07/2005 2:56:19 PM

Lab: RIM Testing Services (RTS)

BodyWorn_15mm_NoHolster_back_iDEN_800MHz_Mid_Chan_Retracted_Ant_

Ambient_Temp_23.1_Deg_Cel_Liquid_Temp_22.0_Deg_Cel_07-18-2005

DUT: BlackBerry Wireless Handheld; Type: Sample

Communication System: IDEN ; Frequency: 815.5 MHz;Duty Cycle: 1:3
Medium: M 835 Medium parameters used: f = 815.5 MHz; σ = 0.97 mho/m; ε_r = 53.4; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.18, 6.18, 6.18); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (101x161x1): Measurement grid: dx=10mm, dy=10mm
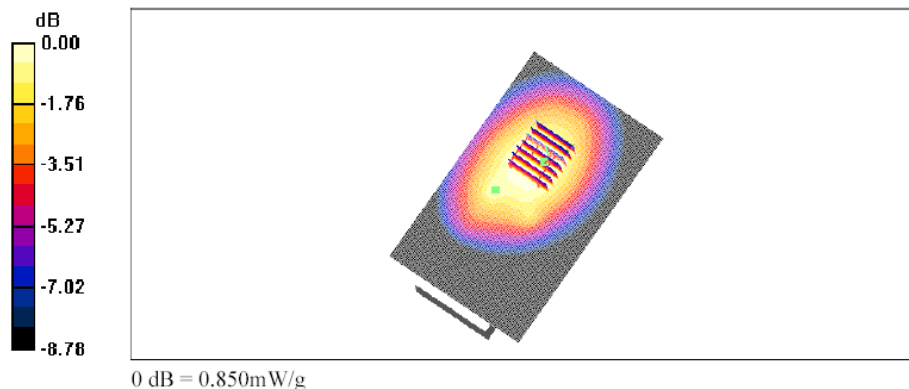Maximum value of SAR (interpolated) = 0.682 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 26.1 V/m; Power Drift = -0.068 dB
Peak SAR (extrapolated) = 0.854 W/kg
SAR(1 g) = 0.659 mW/g; SAR(10 g) = 0.492 mW/g
Maximum value of SAR (measured) = 0.706 mW/g

0 dB = 0.706mW/g

file://C:\Program%20Files\DASY4\Print_Templates\BodyWorn_15mm_NoHolster_back...   18/07/2005

Date/Time: 20/07/2005 11:00:26 AMDate/Time: 20/07/2005 11:23:21 AM

Lab: RIM Testing Services (RTS)

BodyWorn_Keychain_back_iDEN_900MHz_Mid_Chan_Retract
_Ant_Ambient_Temp_23.5_Deg_Cel_Liquid_Temp_23.0_Deg_Cel_07-20-2005

DUT: BlackBerry Wireless Handheld; Type: Sample

Communication System: IDEN 900; Frequency: 898.519 MHz;Duty Cycle: 1:3
Medium: M 835 Medium parameters used: f = 898.519 MHz; σ = 1.04 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.18, 6.18, 6.18); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (101x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.710 mW/g

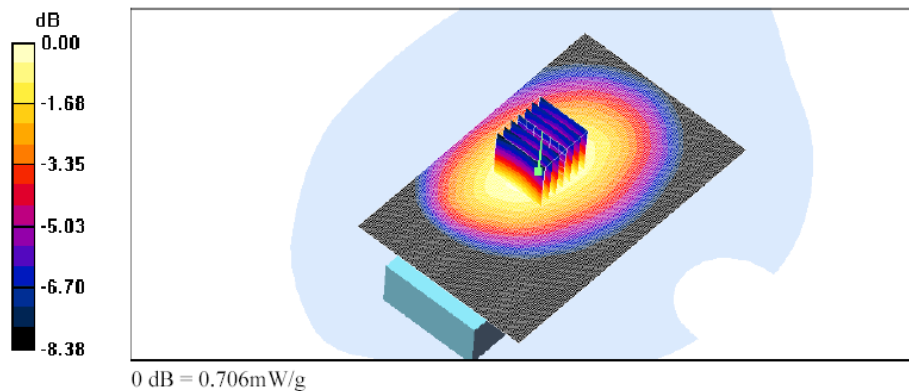**Unnamed procedure/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 24.2 V/m; Power Drift = -0.572 dB
Peak SAR (extrapolated) = 0.842 W/kg
SAR(1 g) = 0.639 mW/g; SAR(10 g) = 0.467 mW/g
Maximum value of SAR (measured) = 0.687 mW/g

dB
0.00
-1.77
-3.54
-5.32
-7.09
-8.86

0 dB = 0.687mW/g
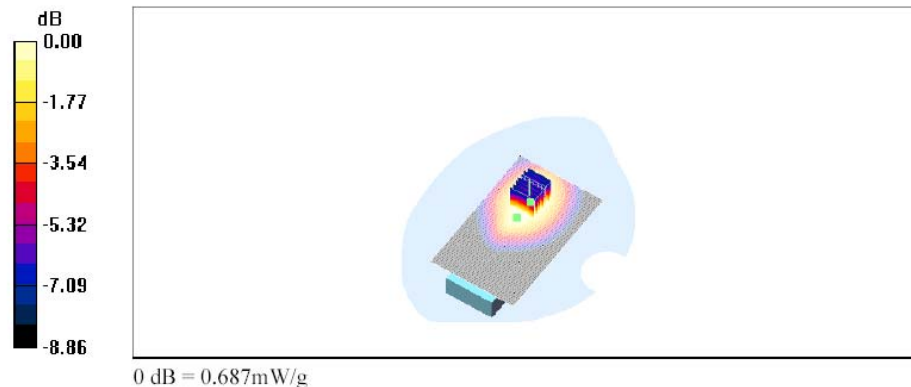
file://C:\Program%20Files\DASY4\Print_Templates\BodyWorn_Keychain_back_iDEN_... 20/07/2005

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RTS **RIM Testing Services**	Appendix to SAR Compliance Test Report for the BlackBerry 7100i Wireless Handheld Model RAW20IN	31(34)

Author Data	Dates of Test	Test Report No	FCC ID:
Daoud Attayi	**June 11 – 19, 2005**	**RTS-0184-0507-04**	**L6ARAW20IN**

Date/Time: 20/07/2005 9:13:18 AMDate/Time: 20/07/2005 9:36:04 AM

Lab: RIM Testing Services (RTS)

BodyWorn_FabricHolster_back_iDEN_900MHz_Mid_Chan_Retracted_Ant_Ambient_

Temp_24.3_Deg_Cel_Liquid_Temp_23.1_Deg_Cel_07-20-2005

DUT: BlackBerry Wireless Handheld; Type: Sample

Communication System: IDEN 900; Frequency: 898.519 MHz;Duty Cycle: 1:3
Medium: M 835 Medium parameters used: f = 898.519 MHz; σ = 1.04 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.18, 6.18, 6.18); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (101x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.881 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 28.6 V/m; Power Drift = -0.317 dB
Peak SAR (extrapolated) = 1.11 W/kg
SAR(1 g) = 0.797 mW/g; SAR(10 g) = 0.581 mW/g

Maximum value of SAR (measured) = 0.865 mW/g

0 dB = 0.865mW/g

Date/Time: 19/07/2005 7:23:58 PMDate/Time: 19/07/2005 7:46:45 PM

Lab: RIM Testing Services (RTS)

BodyWorn_LeatherHolster_back_iDEN_900MHz_Mid_Chan_Retracted_Ant_

Ambient_Temp_23.8_Deg_Cel_Liquid_Temp_22.7_Deg_Cel_07-19-2005

DUT: BlackBerry Wireless Handheld; Type: Sample

Communication System: IDEN 900; Frequency: 898.519 MHz;Duty Cycle: 1:3
Medium: M 835 Medium parameters used: f = 898.519 MHz; σ = 1.04 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.18, 6.18, 6.18); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (101x161x1): Measurement grid: dx=10mm, dy=10mm
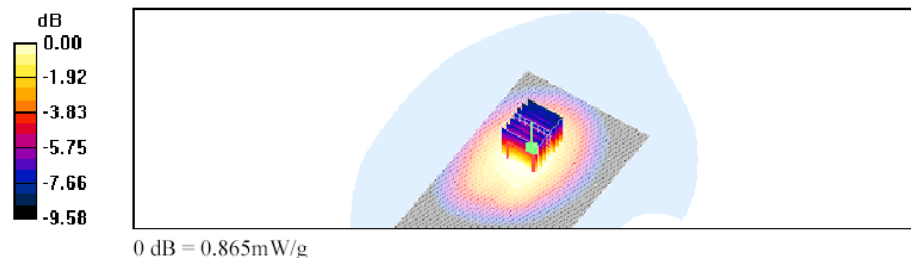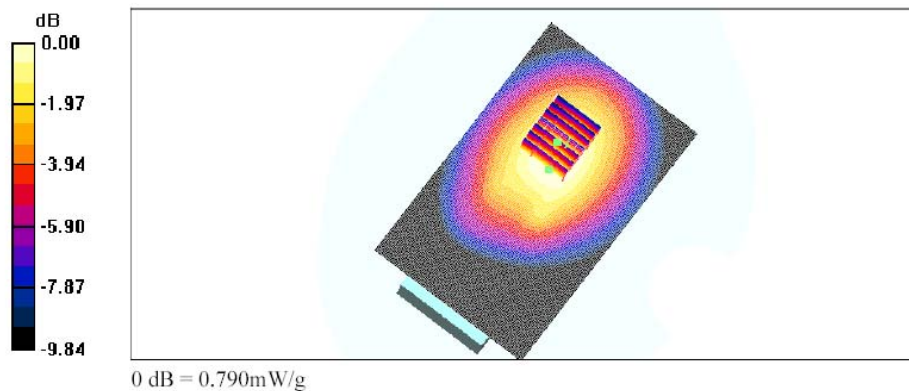Maximum value of SAR (interpolated) = 0.820 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 27.8 V/m; Power Drift = -0.294 dB
Peak SAR (extrapolated) = 0.949 W/kg
SAR(1 g) = 0.732 mW/g; SAR(10 g) = 0.540 mW/g

Maximum value of SAR (measured) = 0.790 mW/g

0 dB = 0.790mW/g

file://C:\Program%20Files\DASY4\Print_Templates\BodyWorn_LeatherHolster_back_i...   19/07/2005

Date/Time: 20/07/2005 12:42:39 PMDate/Time: 20/07/2005 1:05:32 PM

Lab: RIM Testing Services (RTS)

BodyWorn_15 mm space_back_iDEN_900MHz_Mid_Chan_Retract
_Ant_Ambient_Temp_23.9_Deg_Cel_Liquid_Temp_23.2_Deg_Cel_07-20-2005

DUT: BlackBerry Wireless Handheld; Type: Sample

Communication System: IDEN 900; Frequency: 898.519 MHz;Duty Cycle: 1:3
Medium: M 835 Medium parameters used: f = 898.519 MHz; σ = 1.04 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.18, 6.18, 6.18); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (101x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.620 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 23.7 V/m; Power Drift = -0.557 dB
Peak SAR (extrapolated) = 0.729 W/kg
SAR(1 g) = 0.559 mW/g; SAR(10 g) = 0.411 mW/g

Maximum value of SAR (measured) = 0.595 mW/g

0 dB = 0.595mW/g
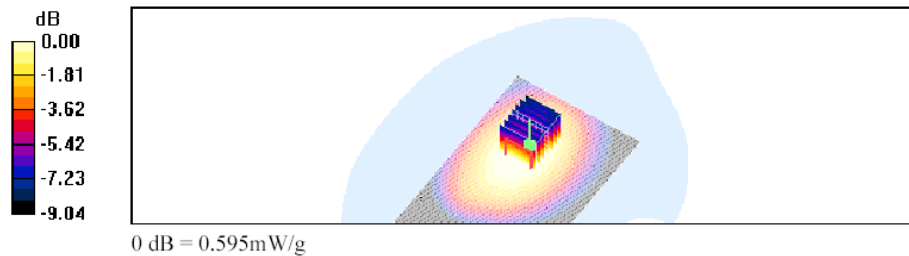
file://C:\Program%20Files\DASY4\Print_Templates\BodyWorn_15%20mm%20space_b...   20/07/2005

Z-Axis plot for the worst-case body worn SAR configuration:

APPENDIX D: SAR DISTRIBUTION PLOTS FOR PUSH-TO-TALK MODE CONFIGURATION

Date/Time: 13/07/2005 12:40:30 PMDate/Time: 13/07/2005 1:03:28 PM

Lab: RIM Testing Services (RTS)

Push_To_Talk_iDEN 800 MHz_Mid Channel_Retrac_ Ant_Ambient Temp. 23.2 Deg. Cel._

Liquid Temp. 22.0 Deg. Cel._07-13-2005

DUT: BlackBerry Wireless Handheld; Type: Sample (Retracted Ant.)

Communication System: IDEN ; Frequency: 815.5 MHz;Duty Cycle: 1:6
Medium: 835 MHz Head Medium parameters used: f = 815.5 MHz; σ = 0.92 mho/m; ε_r = 43; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.52, 6.52, 6.52); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (101x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.189 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.6 V/m; Power Drift = -0.473 dB
Peak SAR (extrapolated) = 0.239 W/kg
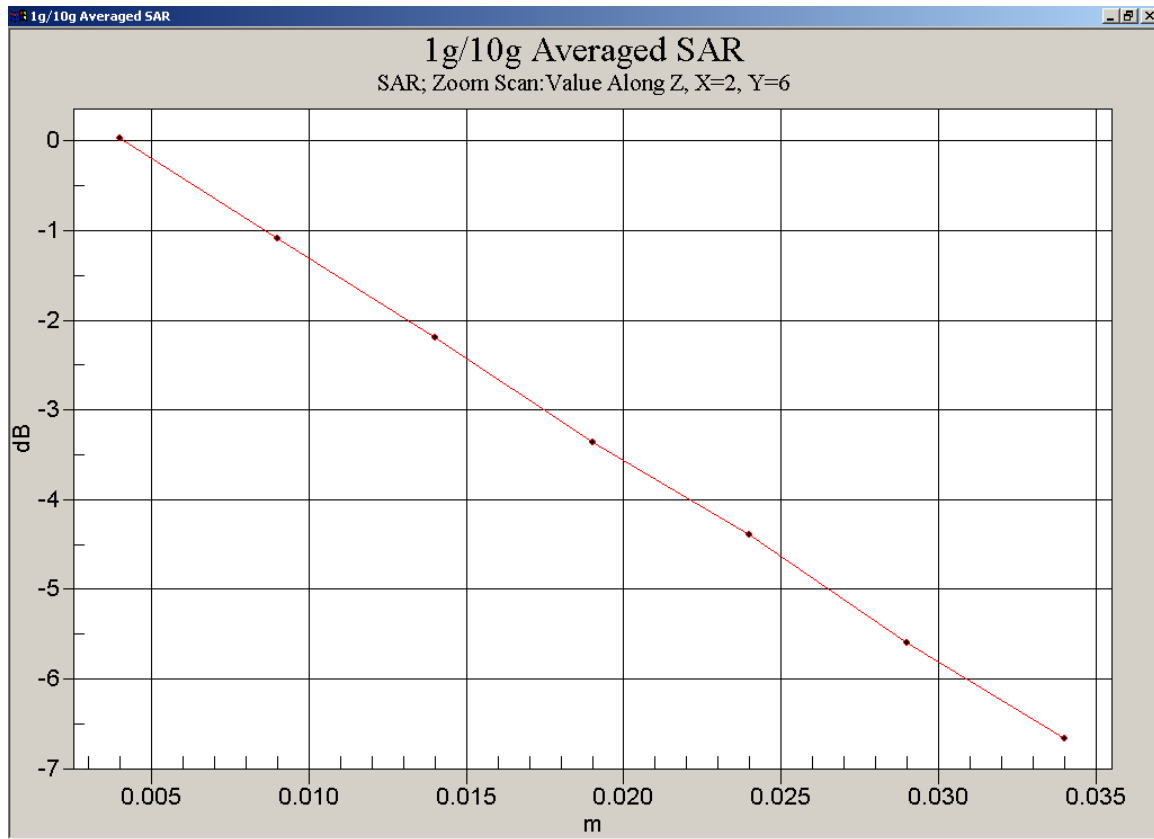**SAR(1 g) = 0.170 mW/g; SAR(10 g) = 0.125 mW/g**
Maximum value of SAR (measured) = 0.186 mW/g

0 dB = 0.186mW/g

Date/Time: 13/07/2005 11:50:07 AMDate/Time: 13/07/2005 12:13:05 PM   Page 1 of 2

Date/Time: 13/07/2005 12:13:05 PM

Lab: RIM Testing Services (RTS)

Push_To_Talk_iDEN 800 MHz_Mid Channel_Extended Ant_Ambient Temp. 22.9 Deg. Cel._ Liquid Temp. 21.8 Deg. Cel._07-13-2005

DUT: BlackBerry Wireless Handheld; Type: Sample (Retracted Ant.)
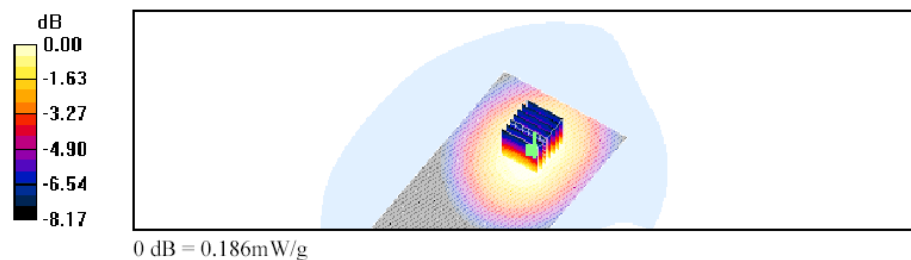
Communication System: IDEN ; Frequency: 815.5 MHz;Duty Cycle: 1:6
Medium: 835 MHz Head Medium parameters used: f = 815.5 MHz; σ = 0.92 mho/m; ε_r = 43; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.52, 6.52, 6.52); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (101x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.200 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.8 V/m; Power Drift = -0.038 dB
Peak SAR (extrapolated) = 0.254 W/kg
SAR(1 g) = 0.184 mW/g; SAR(10 g) = 0.137 mW/g

Maximum value of SAR (measured) = 0.195 mW/g

file://C:\Program%20Files\DASY4\Print_Templates\Push_To_Talk_iDEN%20800%20M... 13/07/2005

RTS	Document	Page
RIM Testing Services	Appendix to SAR Compliance Test Report for the BlackBerry 7100i Wireless Handheld Model RAW20IN	4(39)

Author Data	Dates of Test	Test Report No	FCC ID:
Daoud Attayi	**June 11 – 19, 2005**	**RTS-0184-0507-04**	**L6ARAW20IN**

Date/Time: 13/07/2005 11:50:07 AMDate/Time: 13/07/2005 12:13:05 PM   Page 2 of 2

0 dB = 0.195mW/g

file://C:\Program%20Files\DASY4\Print_Templates\Push_To_Talk_iDEN%20800%20M...   13/07/2005

Date/Time: 19/07/2005 2:49:46 PMDate/Time: 19/07/2005 3:10:59 PM

Lab: RIM Testing Services (RTS)

Push_To_Talk_25 mm space_iDEN_900MHz_Mid_Chan_Retracted_Ant_Ambient_Temp_23.5_Deg_Cel_

Liquid_Temp_22.8_Deg_Cel_07-19-2005

DUT: BlackBerry Wireless Handheld; Type: Sample

Communication System: IDEN 900; Frequency: 898.519 MHz;Duty Cycle: 1:6
Medium: HSL900 Medium parameters used: f = 898.519 MHz; σ = 0.97 mho/m; ε_r = 42.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1642; ConvF(6.52, 6.52, 6.52); Calibrated: 07/01/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 03/01/2005
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 146

Unnamed procedure/Area Scan (101x161x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.172 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.8 V/m; Power Drift = -0.173 dB
Peak SAR (extrapolated) = 0.226 W/kg
SAR(1 g) = 0.164 mW/g; SAR(10 g) = 0.119 mW/g
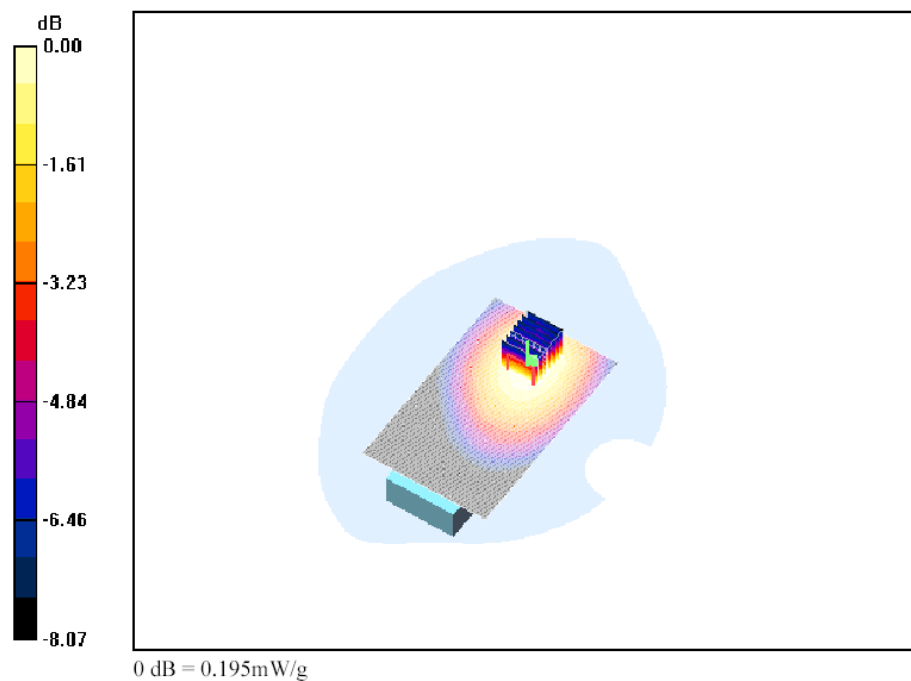Maximum value of SAR (measured) = 0.177 mW/g

dB
0.00
-1.79
-3.58
-5.37
-7.16
-8.95

0 dB = 0.177mW/g

Z-Axis plot for the worst case Push-to-talk mode:

APPENDIX E: PROBE AND VALIDATION DIPOLE CALIBRATION

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

S   Schweizerischer Kalibrierdienst
C   Service suisse d'étalonnage
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The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client   **RIM**

Certificate No: **ET3-1642_Jan05**

CALIBRATION CERTIFICATE

Object	ET3DV6 - SN:1642
Calibration procedure(s)	QA CAL-01.v5 Calibration procedure for dosimetric E-field probes
Calibration date:	January 7, 2005
Condition of the calibrated item	In Tolerance

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	5-May-04 (METAS, No. 251-00388)	May-05
Power sensor E4412A	MY41495277	5-May-04 (METAS, No. 251-00388)	May-05
Reference 3 dB Attenuator	SN: S5054 (3c)	10-Aug-04 (METAS, No. 251-00403)	Aug-05
Reference 20 dB Attenuator	SN: S5086 (20b)	3-May-04 (METAS, No. 251-00389)	May-05
Reference 30 dB Attenuator	SN: S5129 (30b)	10-Aug-04 (METAS, No. 251-00404)	Aug-05
Reference Probe ES3DV2	SN: 3013	7-Jan-05 (SPEAG, No. ES3-3013_Jan05)	Jan-06
DAE4	SN: 617	29-Sep-04 (SPEAG, No. DAE4-617_Sep04)	Sep-05

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter HP 8481A	MY41092180	18-Sep-02 (SPEAG, in house check Oct-03)	In house check: Oct 05
RF generator HP 8648C	US3642U01700	4-Aug-99 (SPEAG, in house check Dec-03)	In house check: Dec-05
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Nov-04)	In house check: Nov 05

	Name	Function	Signature
Calibrated by:	Nico Vetterli	Laboratory Technician	*D. Vetter*
Approved by:	Katja Pokovic	Technical Manager	*Katja Pokovic*

Issued: January 13, 2005

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Certificate No. ET3-1642_Jan05   Page 1 of 9

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    Swiss Calibration Service

Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis

Calibration is Performed According to the Following Standards:
   a) 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
   b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001

Methods Applied and Interpretation of Parameters:
   - *NORMx,y,z:* Assessed for E-field polarization $\vartheta = 0$ (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not effect the E²-field uncertainty inside TSL (see below *ConvF*).
   - *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
   - *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
   - *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORMx,y,z * ConvF whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
   - *Spherical isotropy (3D deviation from isotropy):* in a field of low gradients realized using a flat phantom exposed by a patch antenna.
   - *Sensor Offset:* The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Certificate No: ET3-1642_Jan05   Page 2 of 9

ET3DV6 SN:1642   **January 7, 2005**

Probe ET3DV6

SN:1642

Manufactured: November 7, 2001
Last calibrated: August 31, 2004
Recalibrated: January 7, 2005

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

ET3DV6 SN:1642   January 7, 2005

DASY - Parameters of Probe: ET3DV6 SN:1642

Sensitivity in Free Space[A]

NormX	$1.64 \pm 10.1\%$	$\mu V/(V/m)^2$		
NormY	$1.88 \pm 10.1\%$	$\mu V/(V/m)^2$		
NormZ	$1.62 \pm 10.1\%$	$\mu V/(V/m)^2$		

Diode Compression[B]

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

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

TSL	900 MHz	Typical SAR gradient: 5 % per mm		

		3.7 mm	4.7 mm
Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR_{be} [%]	Without Correction Algorithm	9.1	4.9
SAR_{be} [%]	With Correction Algorithm	0.0	0.2

TSL	1810 MHz	Typical SAR gradient: 10 % per mm		

		3.7 mm	4.7 mm
Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR_{be} [%]	Without Correction Algorithm	13.4	9.0
SAR_{be} [%]	With Correction Algorithm	1.0	0.0

Sensor Offset

Probe Tip to Sensor Center	2.7 mm

> The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Page 8).

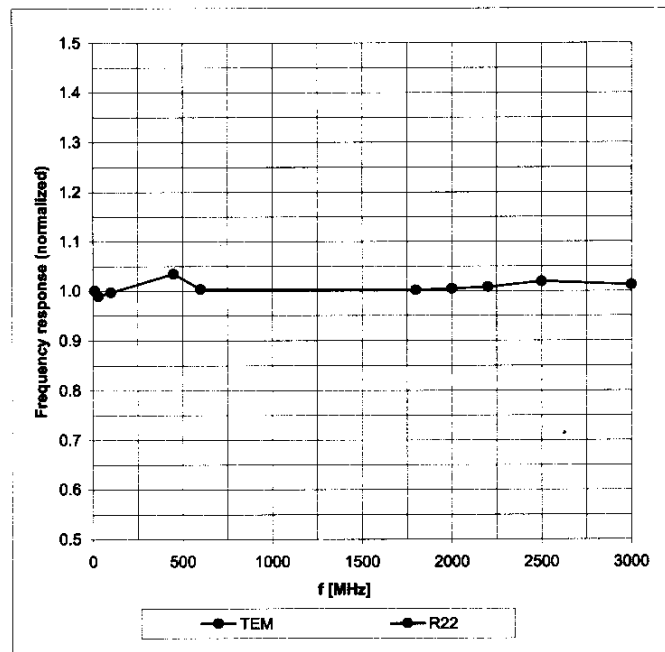[B] Numerical linearization parameter: uncertainty not required.

Certificate No: ET3-1642_Jan05   Page 4 of 9

ET3DV6 SN:1642   January 7, 2005

Frequency Response of E-Field
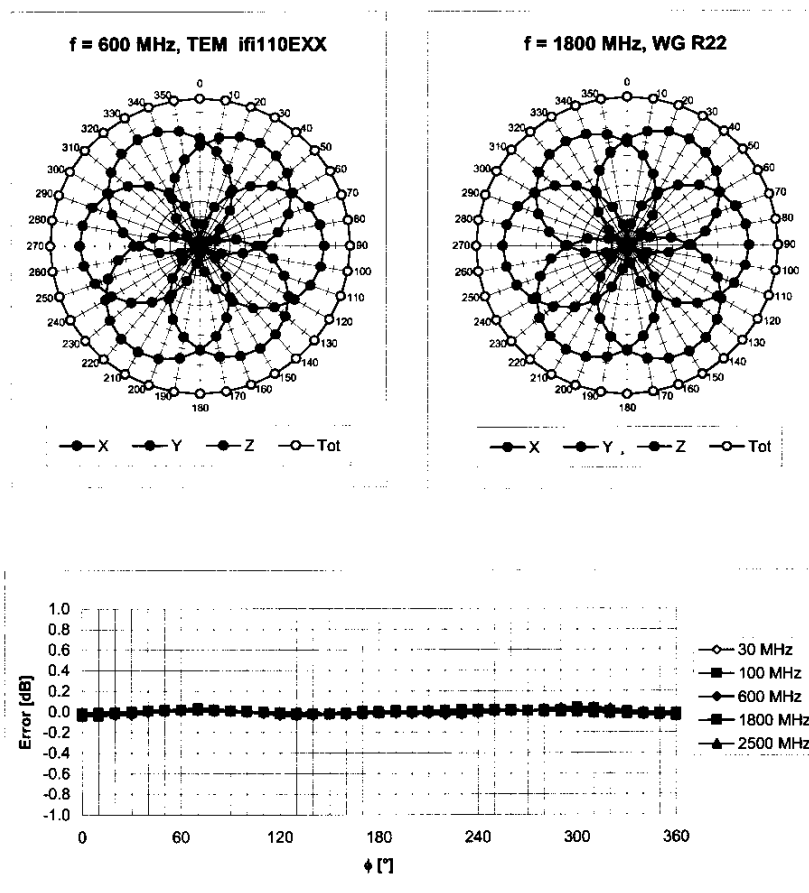
(TEM-Cell:ifi110 EXX, Waveguide: R22)

Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Certificate No: ET3-1642_Jan05   Page 5 of 9

ET3DV6 SN:1642   **January 7, 2005**

Receiving Pattern (ϕ), $\vartheta = 0°$

f = 600 MHz, TEM ifi110EXX

—●—X   —●—Y   —●—Z   —○—Tot

f = 1800 MHz, WG R22

—●—X   —●—Y , —●—Z   —○—Tot

—○—30 MHz
—■—100 MHz
—◆—600 MHz
—■—1800 MHz
—▲—2500 MHz

Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Certificate No: ET3-1642_Jan05   Page 6 of 9

ET3DV6 SN:1642   **January 7, 2005**

Dynamic Range f(SAR$_{head}$)
(Waveguide R22, f = 1800 MHz)

— not compensated   — compensated
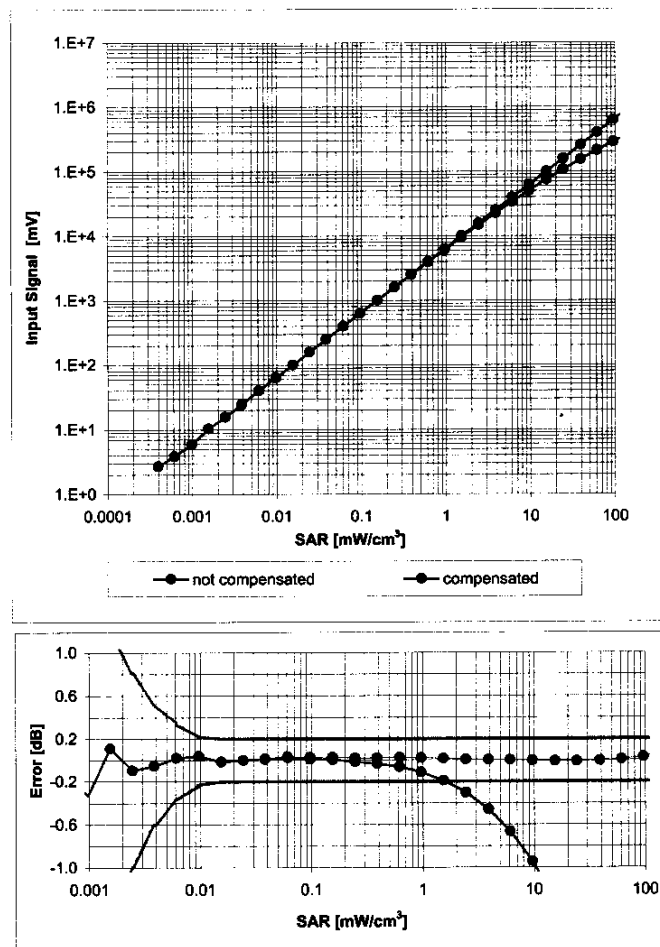
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Certificate No: ET3-1642_Jan05   Page 7 of 9

ET3DV6 SN:1642   **January 7, 2005**

Conversion Factor Assessment
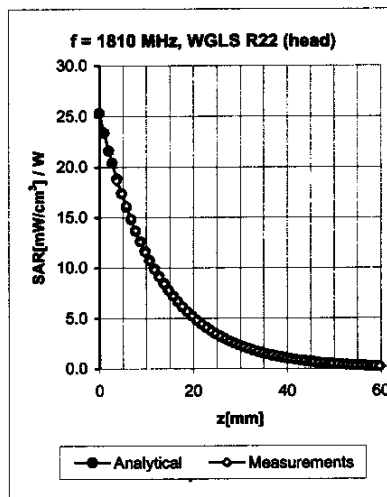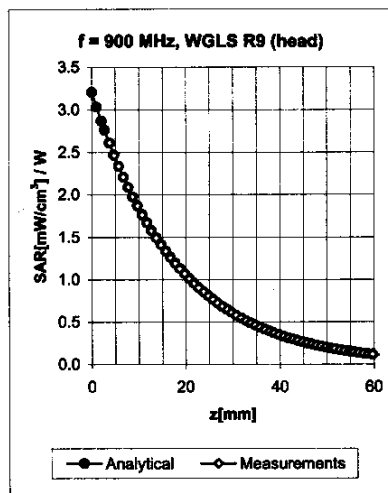
f [MHz]	Validity [MHz]ᶜ	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF	Uncertainty
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.65	1.81	6.52	± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.62	2.32	5.29	± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.53	2.11	6.18	± 11.0% (k=2)
1810	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.58	2.76	4.78	± 11.0% (k=2)

ᶜ The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
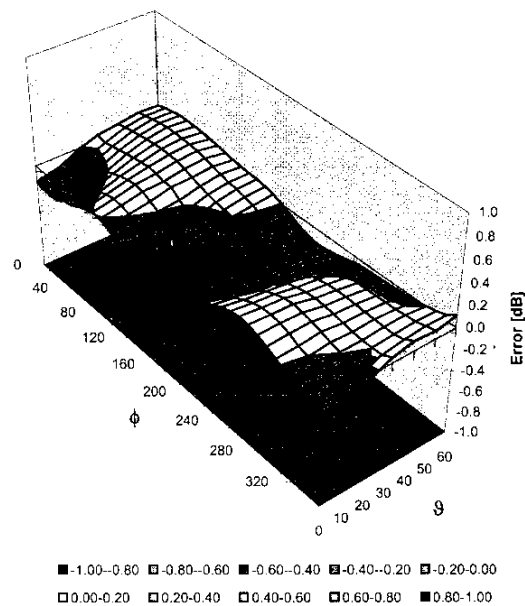
Certificate No: ET3-1642_Jan05   Page 8 of 9

ET3DV6 SN:1642   January 7, 2005

Deviation from Isotropy in HSL
Error (φ, ϑ), f = 900 MHz

■ -1.00--0.80 ▨ -0.80--0.60 ■ -0.60--0.40 ▨ -0.40--0.20 ▨ -0.20-0.00
□ 0.00-0.20 □ 0.20-0.40 □ 0.40-0.60 □ 0.60-0.80 ■ 0.80-1.00

Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

Certificate No: ET3-1642_Jan05   Page 9 of 9

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Accreditation No.: **SCS 108**

Client   **RIM**

Certificate No: **D835V2-446_Jan05**

CALIBRATION CERTIFICATE

Object	D835V2 - SN: 446
Calibration procedure(s)	QA CAL-05.v6 Calibration procedure for dipole validation kits
Calibration date:	January 7, 2005
Condition of the calibrated item	In Tolerance

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM E442	GB37480704	12-Oct-04 (METAS, No. 251-00412)	Oct-05
Power sensor HP 8481A	US37292783	12-Oct-04 (METAS, No. 251-00412)	Oct-05
Reference 20 dB Attenuator	SN: 5086 (20g)	10-Aug-04 (METAS, No 251-00402)	Aug-05
Reference 10 dB Attenuator	SN: 5047.2 (10r)	10-Aug-04 (METAS, No 251-00402)	Aug-05
Reference Probe ET3DV6	SN 1507	26-Oct-04 (SPEAG, No. ET3-1507_Oct04)	Oct-05
DAE4	SN 907	03-May-04 (SPEAG, No. DAE4-907_MayI04)	May-05

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-03)	In house check: Oct-05
RF generator R&S SML-03	100698	27-Mar-02 (SPEAG, in house check Dec-03)	In house check: Dec-05
Network Analyzer HP 8753E	US37390585 S4206	Oct-01 (SPEAG, in house check Nov-04)	In house check: Nov-05

	Name	Function	Signature
Calibrated by:	Judith Müller	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 13, 2005

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Certificate No: D835V2-446_Jan05   Page 1 of 6

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Accreditation No.: **SCS 108**

Glossary:
TSL   tissue simulating liquid
ConvF   sensitivity in TSL / NORM x,y,z
N/A   not applicable or not measured

Calibration is Performed According to the Following Standards:
  a) 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
  b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001
  c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:
  d) DASY4 System Handbook

Methods Applied and Interpretation of Parameters:
  • *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.

  • *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.

  • *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.

  • *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.

  • *SAR measured:* SAR measured at the stated antenna input power.

  • *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.

  • *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

Certificate No: D835V2-446_Jan05   Page 2 of 6

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY4	V4.4
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V4.9	
Distance Dipole Center - TSL	15 mm	with Spacer
Area Scan resolution	dx, dy = 15 mm	
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	42.2 ± 6 %	0.91 mho/m ± 6 %
Head TSL temperature during test	(22.0 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	condition	
SAR measured	250 mW input power	2.27 mW / g
SAR normalized	normalized to 1W	9.08 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	9.10 mW / g ± 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.48 mW / g
SAR normalized	normalized to 1W	5.92 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	5.93 mW / g ± 16.5 % (k=2)

---

[1] Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

Certificate No: D835V2-446_Jan05   Page 3 of 6

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.1 Ω - 7.1 jΩ
Return Loss	- 22.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.385 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	October 24, 2001

DASY4 Validation Report for Head TSL

Date/Time: 01/07/05 15:08:43

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN446

Communication System: CW-835; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL 900 MHz;
Medium parameters used: f = 835 MHz; $\sigma = 0.91$ mho/m; $\varepsilon_r = 42.2$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507; ConvF(6.24, 6.24, 6.24); Calibrated: 26.10.2004

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE4 Sn907; Calibrated: 03.05.2004

- Phantom: Flat Phantom 4.9L; Type: QD000P50AA; Serial: SN:1001;

- Measurement SW: DASY4, V4.4 Build 10; Postprocessing SW: SEMCAD, V1.8 Build 133

Pin = 250 mW; d = 15 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm
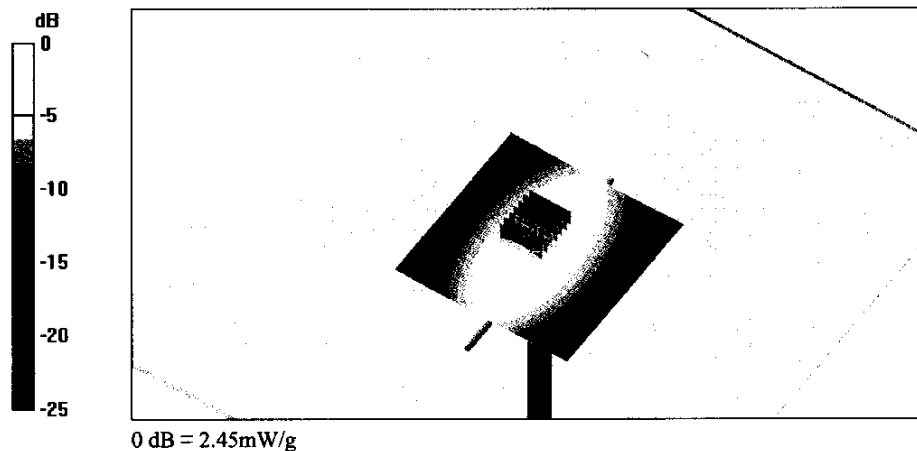Maximum value of SAR (interpolated) = 2.44 mW/g

Pin = 250 mW; d = 15 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.2 V/m; Power Drift = 0.0 dB
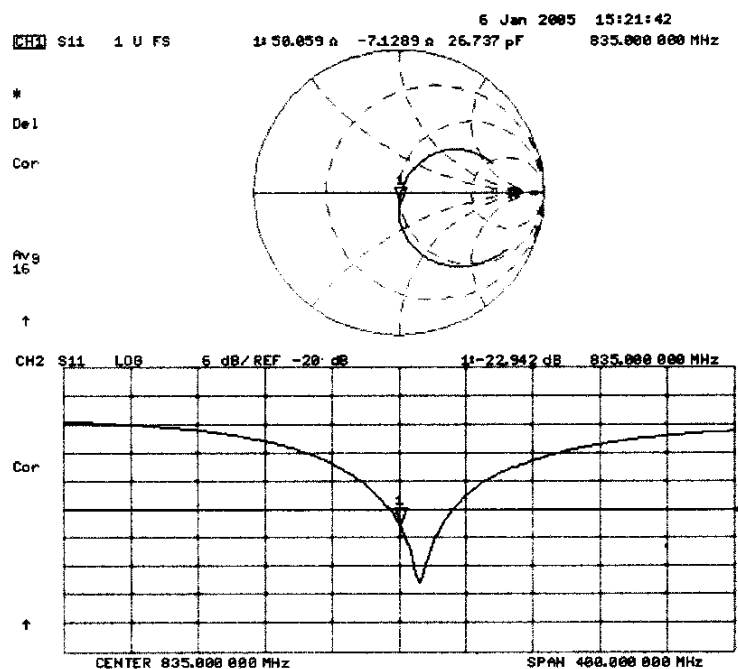Peak SAR (extrapolated) = 3.36 W/kg
SAR(1 g) = 2.27 mW/g; SAR(10 g) = 1.48 mW/g
Maximum value of SAR (measured) = 2.45 mW/g

0 dB = 2.45mW/g

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Impedance Measurement Plot for Head TSL

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

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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **RIM**

Certificate No: **D900V2-133_Jan05**

CALIBRATION CERTIFICATE

Object	**D900V2 - SN: 133**
Calibration procedure(s)	**QA CAL-05.v6** **Calibration procedure for dipole validation kits**
Calibration date:	**January 07, 2005**
Condition of the calibrated item	**In Tolerance**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM E442	GB37480704	12-Oct-04 (METAS, No. 251-00412)	Oct-05
Power sensor HP 8481A	US37292783	12-Oct-04 (METAS, No. 251-00412)	Oct-05
Reference 20 dB Attenuator	SN: 5086 (20g)	10-Aug-04 (METAS, No 251-00402)	Aug-05
Reference 10 dB Attenuator	SN: 5047.2 (10r)	10-Aug-04 (METAS, No 251-00402)	Aug-05
Reference Probe ET3DV6	SN 1507	26-Oct-04 (SPEAG, No. ET3-1507_Oct04)	Oct-05
DAE4	SN 907	03-May-04 (SPEAG, No. DAE4-907_May04)	May-05

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-03)	In house check: Oct-05
RF generator R&S SML-03	100698	27-Mar-02 (SPEAG, in house check Dec-03)	In house check: Dec-05
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Nov-04)	In house check: Nov-05

	Name	Function	Signature
Calibrated by:	Judith Müller	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 12, 2005

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

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Accreditation No.: **SCS 108**

Glossary:
TSL   tissue simulating liquid
ConvF   sensitivity in TSL / NORM x,y,z
N/A   not applicable or not measured

Calibration is Performed According to the Following Standards:
a) 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
b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:
d) DASY4 System Handbook

Methods Applied and Interpretation of Parameters:
- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

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Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY4	V4.4
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	15 mm	with Spacer
Area Scan resolution	dx, dy = 15 mm	
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.97 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	41.4 ± 6 %	0.97 mho/m ± 6 %
Head TSL temperature during test	(22.0 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	condition	
SAR measured	250 mW input power	2.74 mW / g
SAR normalized	normalized to 1W	11.0 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	10.9 mW / g ± 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.76 mW / g
SAR normalized	normalized to 1W	7.04 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	7.03 mW / g ± 16.5 % (k=2)

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[1] Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

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Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	48.5 Ω - 10.6 jΩ
Return Loss	- 19.3 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.399 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	October 25, 2001

Certificate No: D900V2-133_Jan05   Page 4 of 6

FCC ID:
L6ARAW20IN

DASY4 Validation Report for Head TSL

Date/Time: 01/07/05 16:17:49

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN:133

Communication System: CW-900; Frequency: 900 MHz;Duty Cycle: 1:1
Medium: HSL 900 MHz;
Medium parameters used: f = 900 MHz; $\sigma = 0.97$ mho/m; $\varepsilon_r = 41.4$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507; ConvF(5.95, 5.95, 5.95); Calibrated: 26.10.2004

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE4 Sn907; Calibrated: 03.05.2004

- Phantom: Flat Phantom 4.9L; Type: QD000P4.9AA; Serial: 1001;

- Measurement SW: DASY4, V4.4 Build 10; Postprocessing SW: SEMCAD, V1.8 Build 133

Pin = 250 mW; d = 15 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.96 mW/g

Pin = 250 mW; d = 15 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 58.2 V/m; Power Drift = 0.005 dB
Peak SAR (extrapolated) = 4.09 W/kg
SAR(1 g) = 2.74 mW/g; SAR(10 g) = 1.76 mW/g
Maximum value of SAR (measured) = 2.97 mW/g

0 dB = 2.97mW/g

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	Appendix to SAR Compliance Test Report for the BlackBerry 7100i Wireless Handheld Model RAW20IN	28(39)
RIM Testing Services		

Author Data	Dates of Test	Test Report No	FCC ID:
Daoud Attayi	**June 11 – 19, 2005**	**RTS-0184-0507-04**	**L6ARAW20IN**

Impedance Measurement Plot for Head TSL

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APPENDIX F: SAR SET UP PHOTOS

Figure E1. Left ear touch configuration

Figure E2. Left ear tilted configuration

Figure E3. Right ear touch configuration

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RIM Testing Services	BlackBerry 7100i Wireless Handheld Model RAW20IN	

Author Data	Dates of Test	Test Report No	FCC ID:
Daoud Attayi	**June 11 – 19, 2005**	**RTS-0184-0507-04**	**L6ARAW20IN**

Figure E4. Right ear tilted configuration

Figure E5. Body worn configuration with keychain holster (Handheld back side towards phantom

Figure E6. Body worn configuration with keychain holster (Handheld front side towards phantom)

Figure E7. Body worn configuration with leather holster

Figure E8. Body worn configuration with fabric holster

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RIM Testing Services	BlackBerry 7100i Wireless Handheld Model RAW20IN		

Author Data	Dates of Test	Test Report No	FCC ID:
Daoud Attayi	**June 11 – 19, 2005**	**RTS-0184-0507-04**	**L6ARAW20IN**

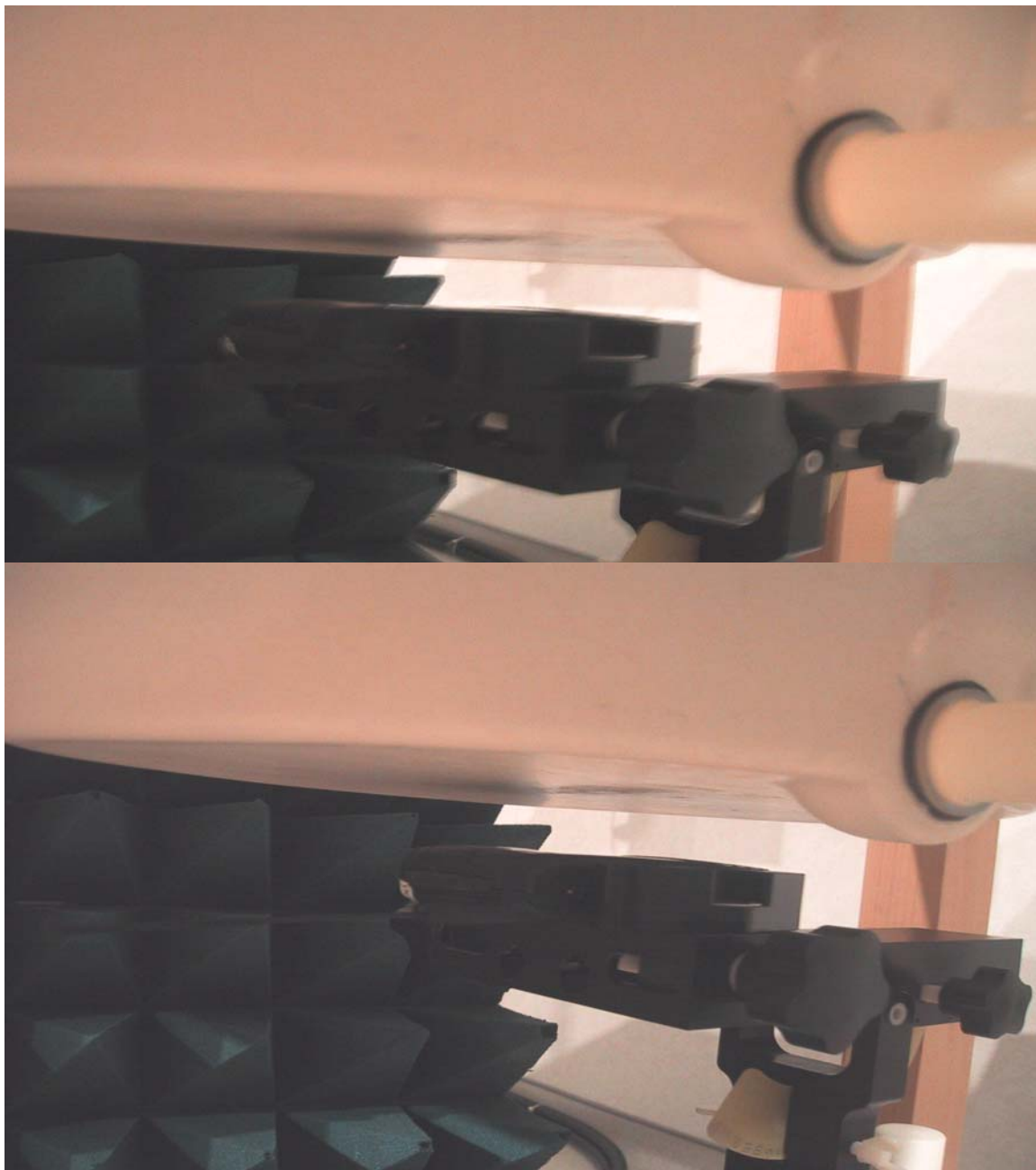**Figure E9. Body worn configuration with 15 mm separation distance**

Figure E10. Push-To-Talk mode configuration with 2.5 cm separation distance