

Test Laboratory: EMC Technologies Pty Ltd

File Name: M030212R Techwall Electronics - Belt-Clip Position 24-Feb-03.da4

DUT: Techwall Portable Transceiver Type & Serial Number: 208S

Program: 450MHz Belt-Clip Position; Channel 1

Communication System: CW 450 MHz; Frequency: 450 MHz; Duty Cycle: 1:1

Medium: FCC 450MHz ($\sigma = 0.95$ mho/m, $\epsilon = 56.2$, $\rho = 1000$ kg/m³)

Phantom section: FlatSection

DASY4 Configuration:

- Probe: ET3DV6 - SN1377; ConvF(7.2, 7.2, 7.2); Calibrated: 6-Sep-2002
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn442; Calibrated: 23-Oct-2002
- Phantom: Flat Phantom - TP: P4.4
- Software: DASY4, V4.0 Build 51

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm

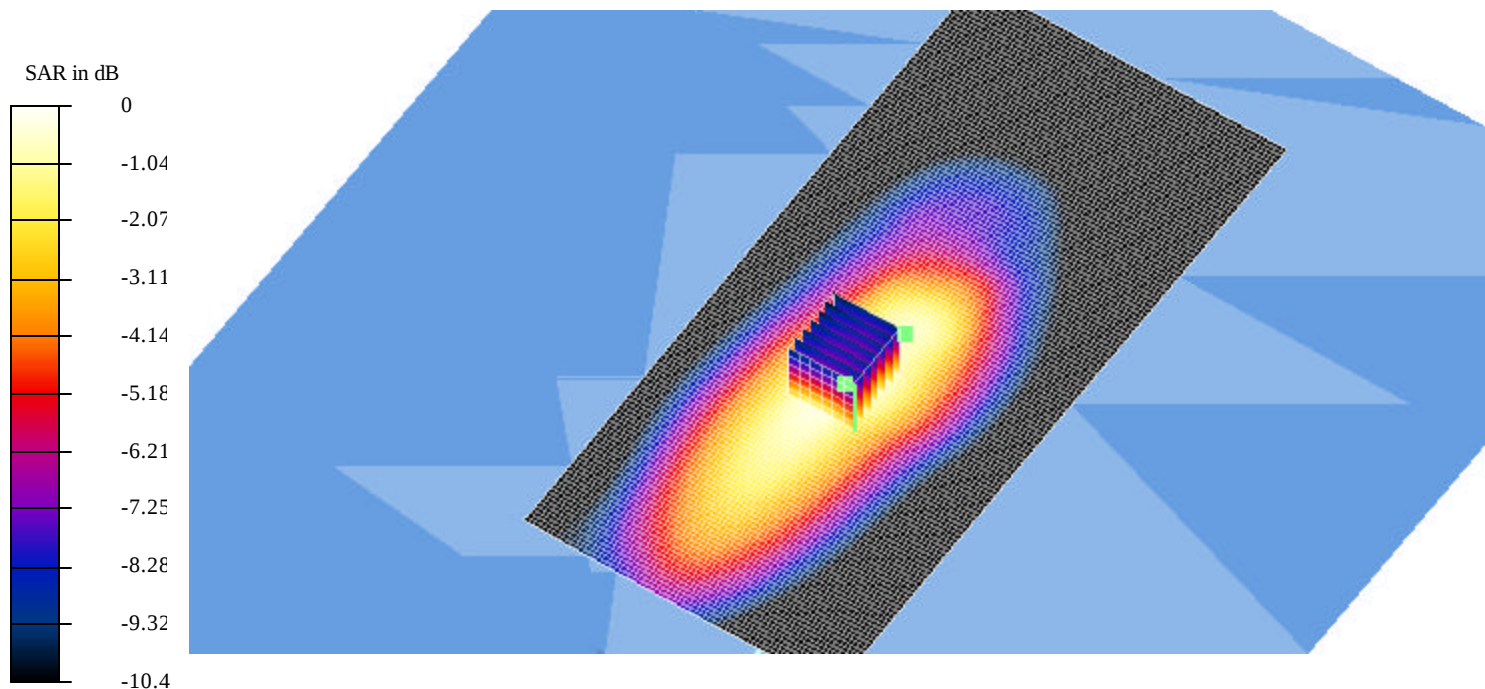
Reference Value = 7.76 V/m

Peak SAR = 10.4 mW/g

SAR(1 g) = 6.6 mW/g; SAR(10 g) = 4.26 mW/g

Power Drift = -0.3 dB

Area Scan (71x151x1): Measurement grid: dx=20mm, dy=20mm

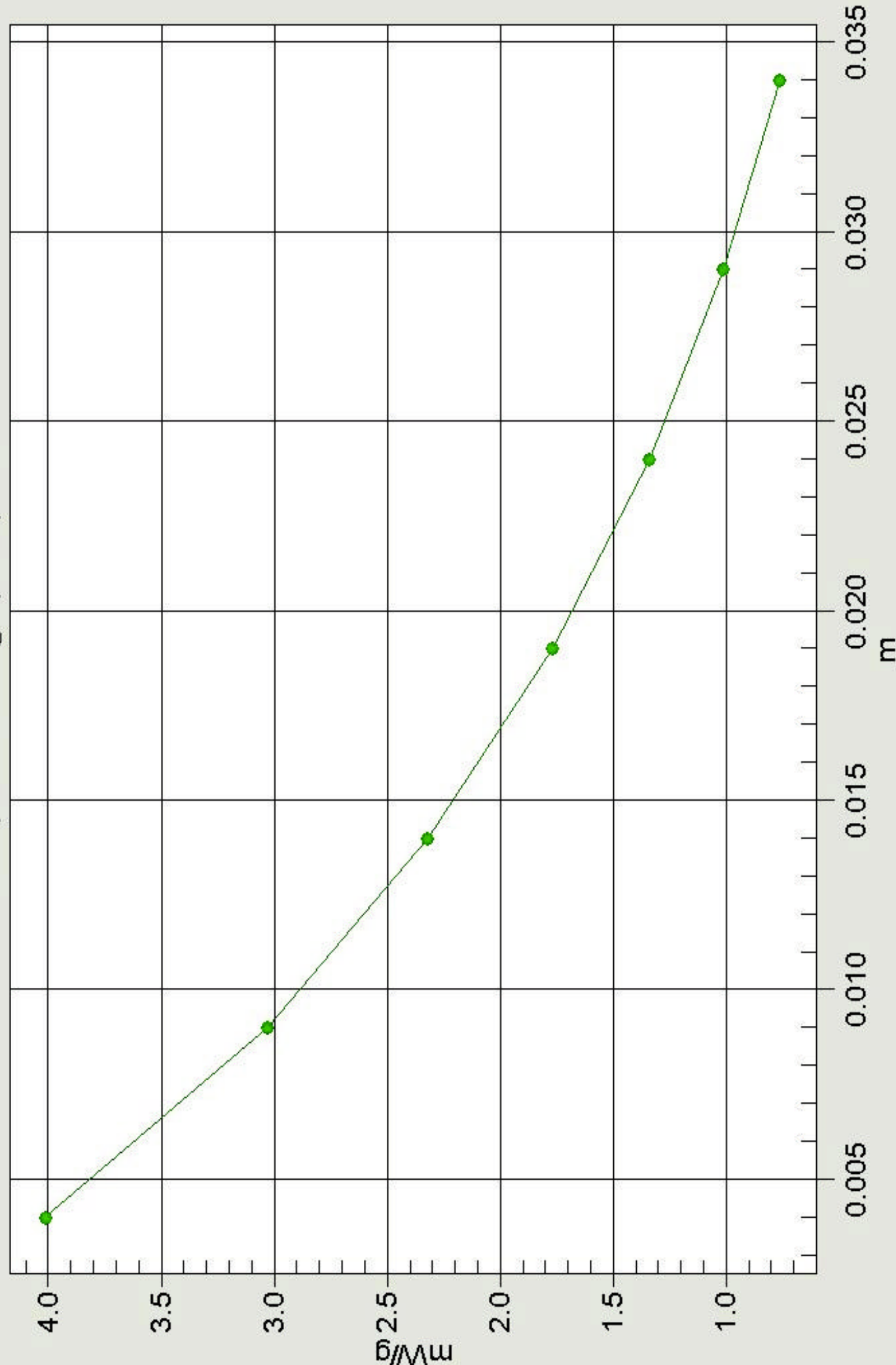


Temperature Ambient = 21.5 °C Liquid = 20.8 °C

Plot Number 1

Averaged SAR

SAR, Value Along Z, X=0, Y=0



Test Laboratory: EMC Technologies Pty Ltd

File Name: M030112 - Techwall Electronics - Belt-Clip Position.da4

DUT: Techwall Portable Tranceiver Type & Serial Number: 208S
Program: 450MHz Belt-Clip Position; Channel 2

Communication System: CW 450 MHz; Frequency: 460 MHz; Duty Cycle: 1:1

Medium: FCC 450MHz ($\sigma = 0.97$ mho/m, $\epsilon = 56.18$, $\rho = 1000$ kg/m³)

Phantom section: FlatSection

DASY4 Configuration:

- Probe: ET3DV6 - SN1377; ConvF(7.2, 7.2, 7.2); Calibrated: 6/09/2002
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn442; Calibrated: 23/10/2002
- Phantom: Flat Phantom 4.4 - TP: P 4.4
- Software: DASY4, V4.0 Build 51

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm

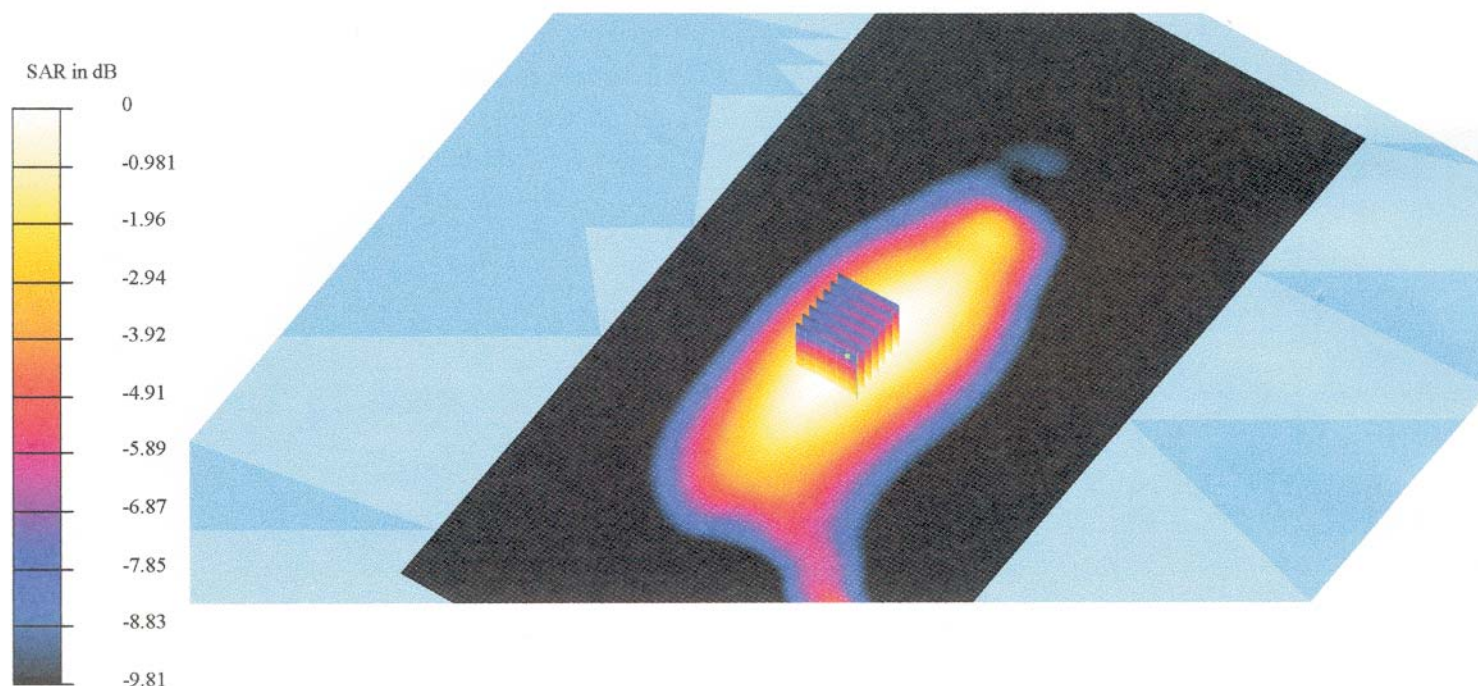
Reference Value = 1.84 V/m

Peak SAR = 10.9 mW/g

SAR(1 g) = 7.38 mW/g; SAR(10 g) = 5.1 mW/g

Power Drift = -0.7 dB

Area Scan (101x201x1): Measurement grid: dx=20mm, dy=20mm

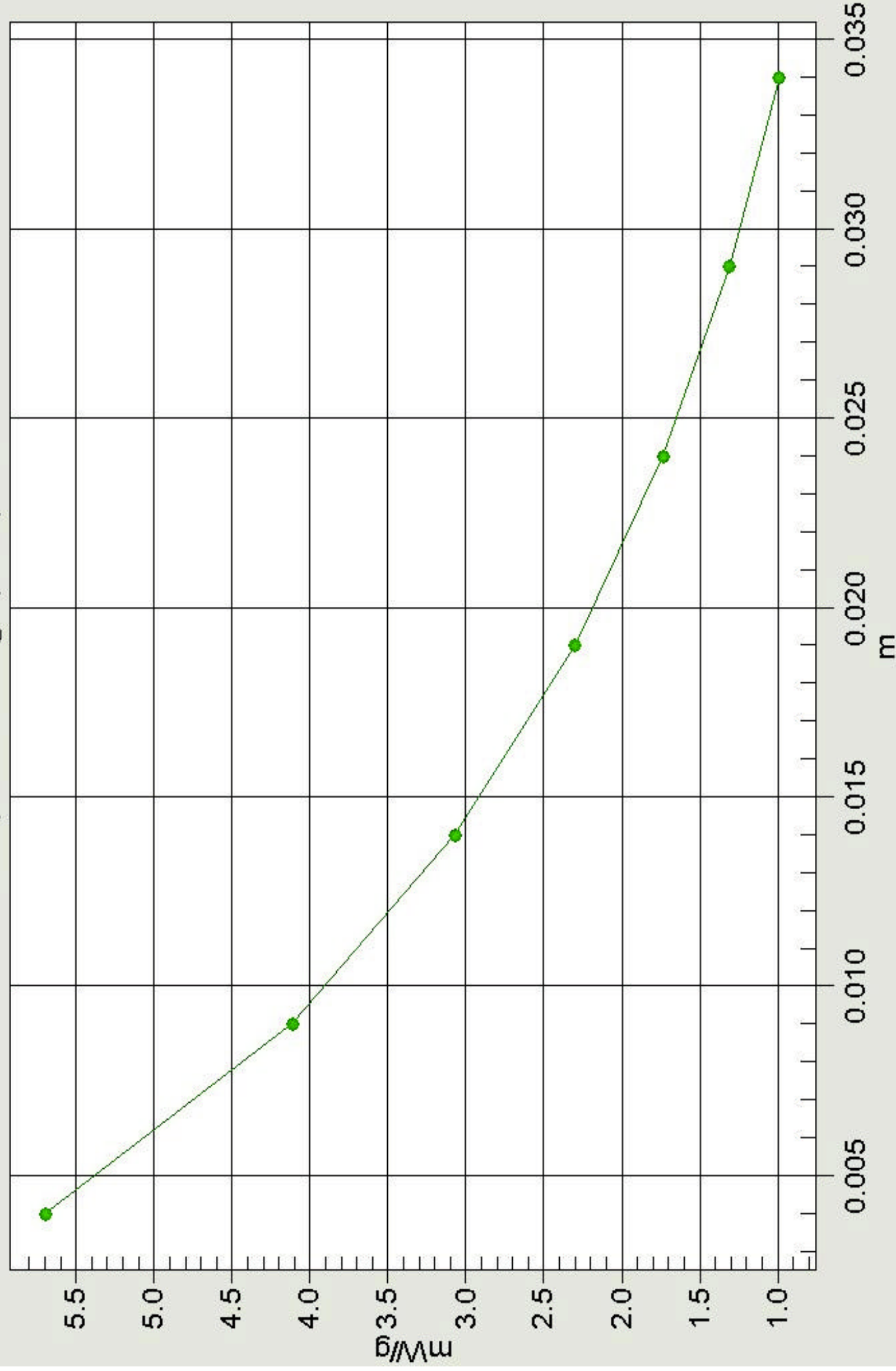


Temperature Ambient = 21.5 °C Liquid = 20.8 °C

Plot Number 2

Averaged SAR

SAR, Value Along Z, X=0, Y=0



Test Laboratory: EMC Technologies Pty Ltd

File Name: M030212R - Techwall Electronics - Belt-Clip Position 24-Feb-03.da4

DUT: Techwall Portable Transceiver Type & Serial Number: 208S

Program: 450MHz Belt-Clip Position; Channel 3

Communication System: CW 450 MHz; Frequency: 470 MHz; Duty Cycle: 1:1

Medium: FCC 450MHz ($\sigma = 0.97$ mho/m, $\epsilon = 56.07$, $\rho = 1000$ kg/m³)

Phantom section: FlatSection

DASY4 Configuration:

- Probe: ET3DV6 - SN1377; ConvF(7.2, 7.2, 7.2); Calibrated: 6-Sept-2002
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn442; Calibrated: 23-Oct-2002
- Phantom: Flat Phantom - TP: P 4.4
- Software: DASY4, V4.0 Build 51

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm

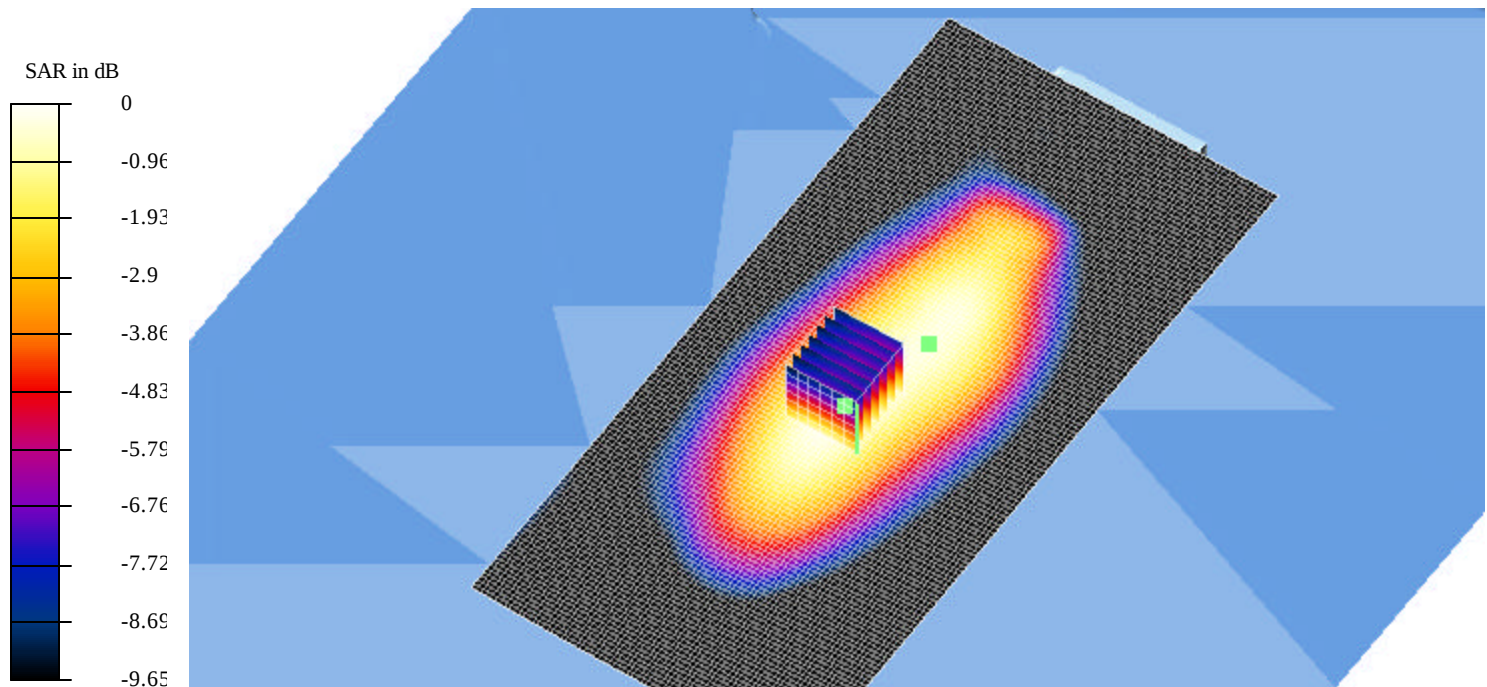
Reference Value = 11.5 V/m

Peak SAR = 10.9 mW/g

SAR(1 g) = 7.31 mW/g; SAR(10 g) = 4.94 mW/g

Power Drift = -0.8 dB

Area Scan (71x151x1): Measurement grid: dx=20mm, dy=20mm

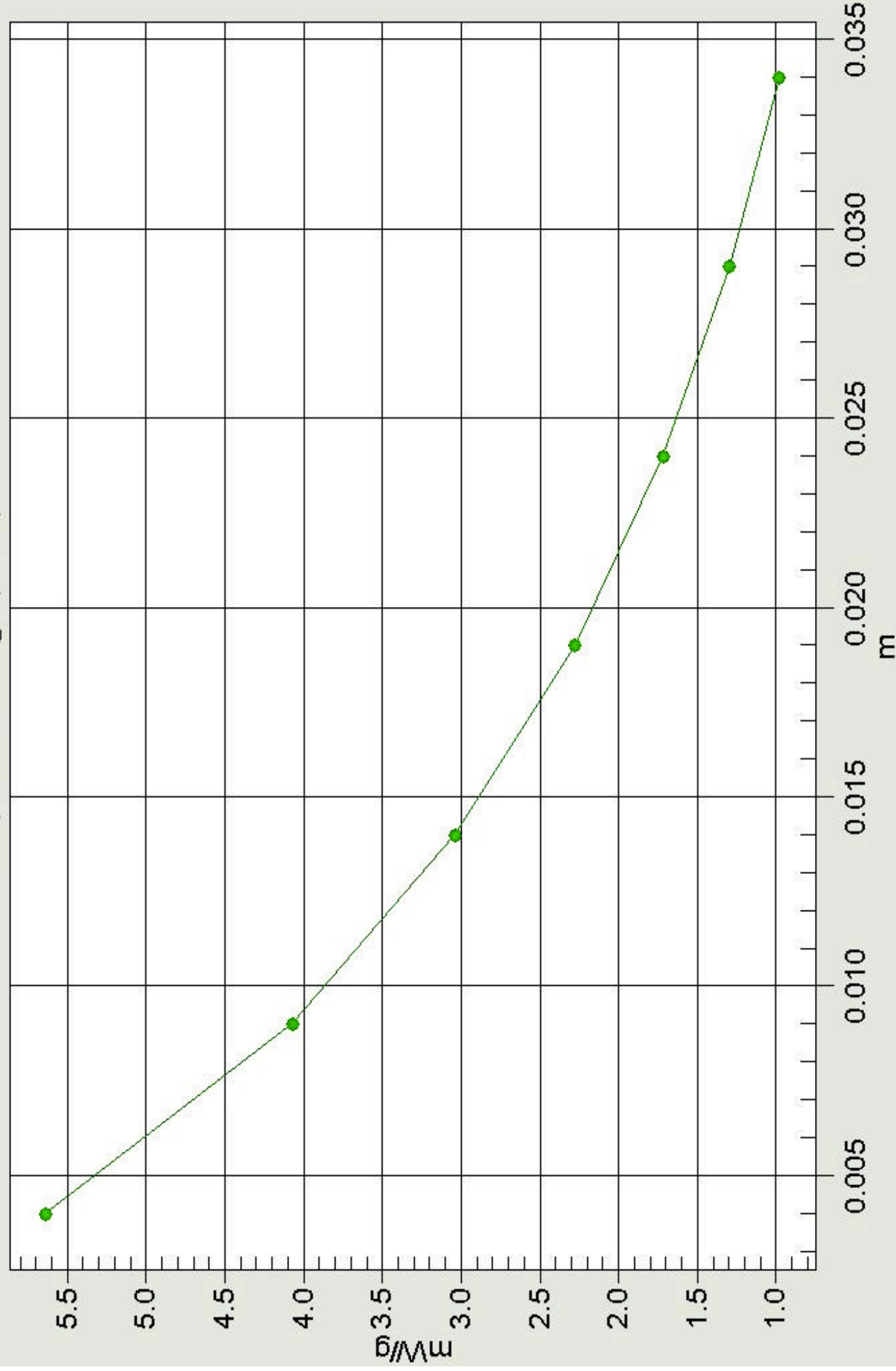


Temperature Ambient = 21.5 °C Liquid = 20.8 °C

Plot Number 3

Averaged SAR

SAR, Value Along Z, X=0, Y=0



Test Laboratory: EMC Technologies Pty Ltd

File Name: M030212R - Techwall Electronics - Belt-Clip Position 24-Feb-03.da4

DUT: Techwall Portable Transceiver Type & Serial Number: 208S

Program: 450MHz Belt-Clip Position; Channel 3 With TNB-15 (7.2V 1100mAh) Battery

Communication System: CW 450 MHz; Frequency: 470 MHz; Duty Cycle: 1:1

Medium: FCC 450MHz ($\sigma = 0.97$ mho/m, $\epsilon = 56.07$, $\rho = 1000$ kg/m³)

Phantom section: FlatSection

DASY4 Configuration:

- Probe: ET3DV6 - SN1377; ConvF(7.2, 7.2, 7.2); Calibrated: 6-Sept-2002

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

- Electronics: DAE3 Sn442; Calibrated: 23-Oct-2002

- Phantom: Flat Phantom - TP: P 4.4

- Software: DASY4, V4.0 Build 51

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm

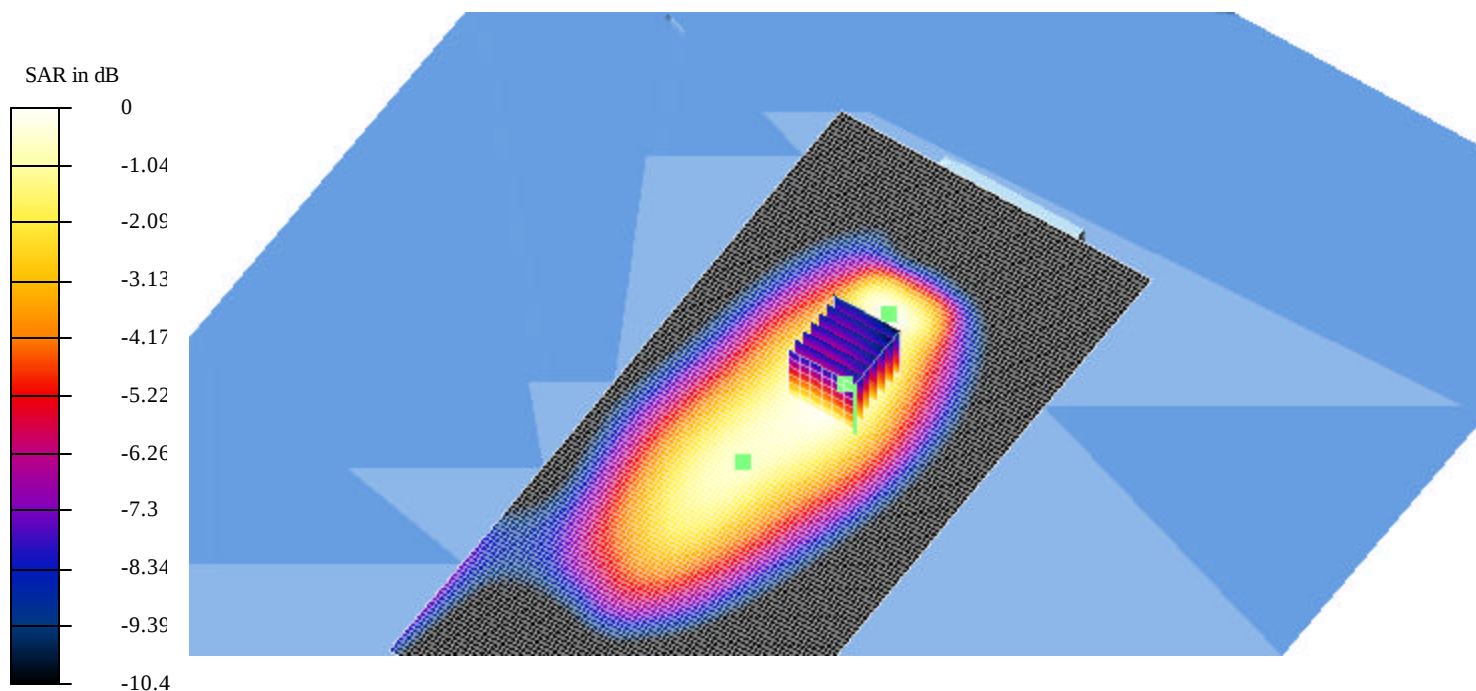
Reference Value = 6.4 V/m

Peak SAR = 6 mW/g

SAR(1 g) = 4.06 mW/g; SAR(10 g) = 2.77 mW/g

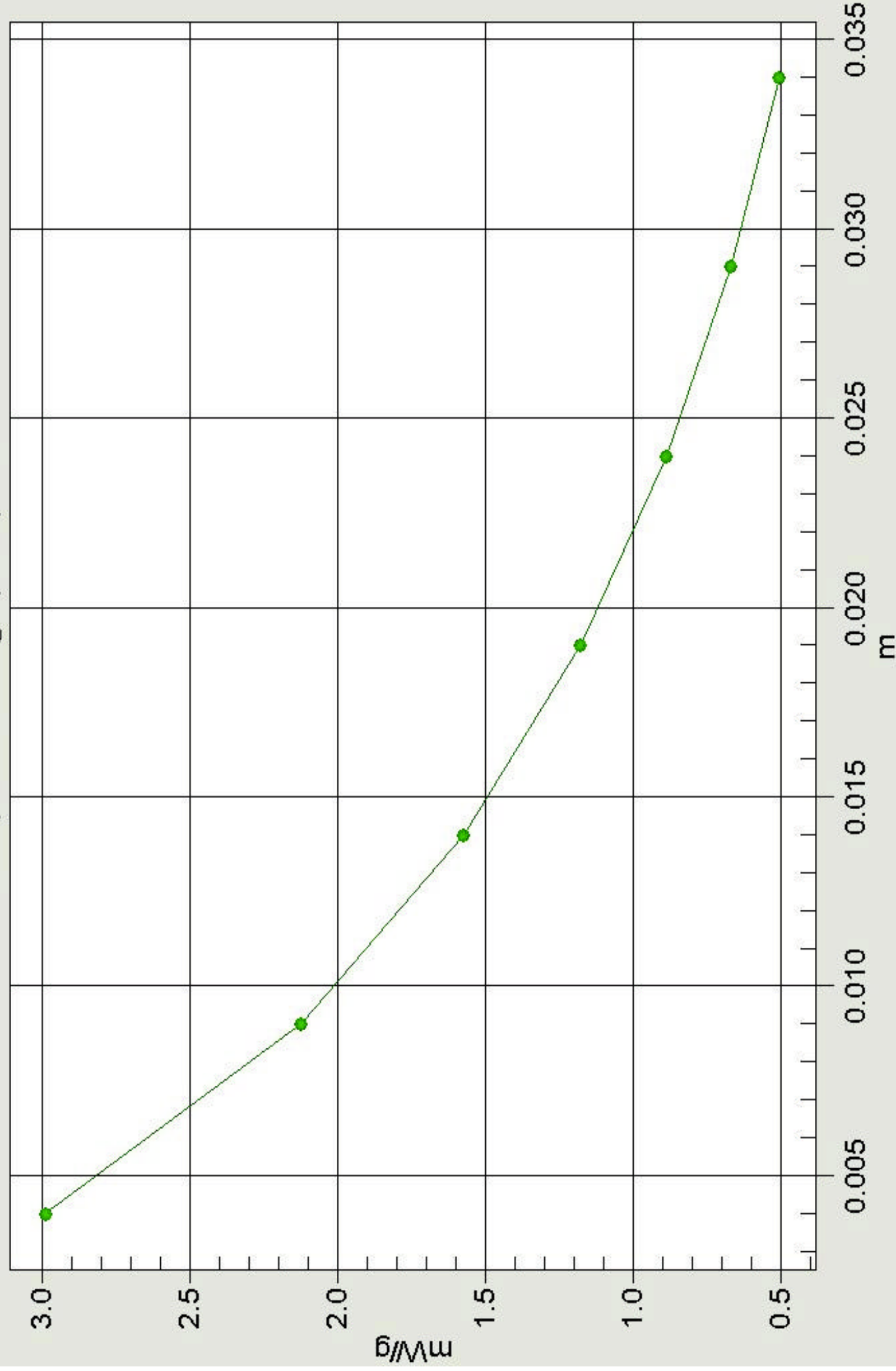
Power Drift = -0.6 dB

Area Scan (71x151x1): Measurement grid: dx=20mm, dy=20mm



Temperature Ambient = 21.5 °C Liquid = 20.8 °C

Plot Number 4



Test Laboratory: EMC Technologies Pty Ltd

File Name: M030212R - Techwall Electronics - Belt-Clip Position 24-Feb-03.da4

DUT: Techwall Portable Transceiver Type & Serial Number: 208S

Program: 450MHz Belt-Clip Position; Channel 3 With Battery Supplemented By 12V DC Supply

Communication System: CW 450 MHz; Frequency: 470 MHz; Duty Cycle: 1:1

Medium: FCC 450MHz ($\sigma = 0.97$ mho/m, $\epsilon = 56.07$, $\rho = 1000$ kg/m³)

Phantom section: FlatSection

DASY4 Configuration:

- Probe: ET3DV6 - SN1377; ConvF(7.2, 7.2, 7.2); Calibrated: 6-Sept-2002

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

- Electronics: DAE3 Sn442; Calibrated: 23-Oct-2002

- Phantom: Flat Phantom - TP: P 4.4

- Software: DASY4, V4.0 Build 51

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm

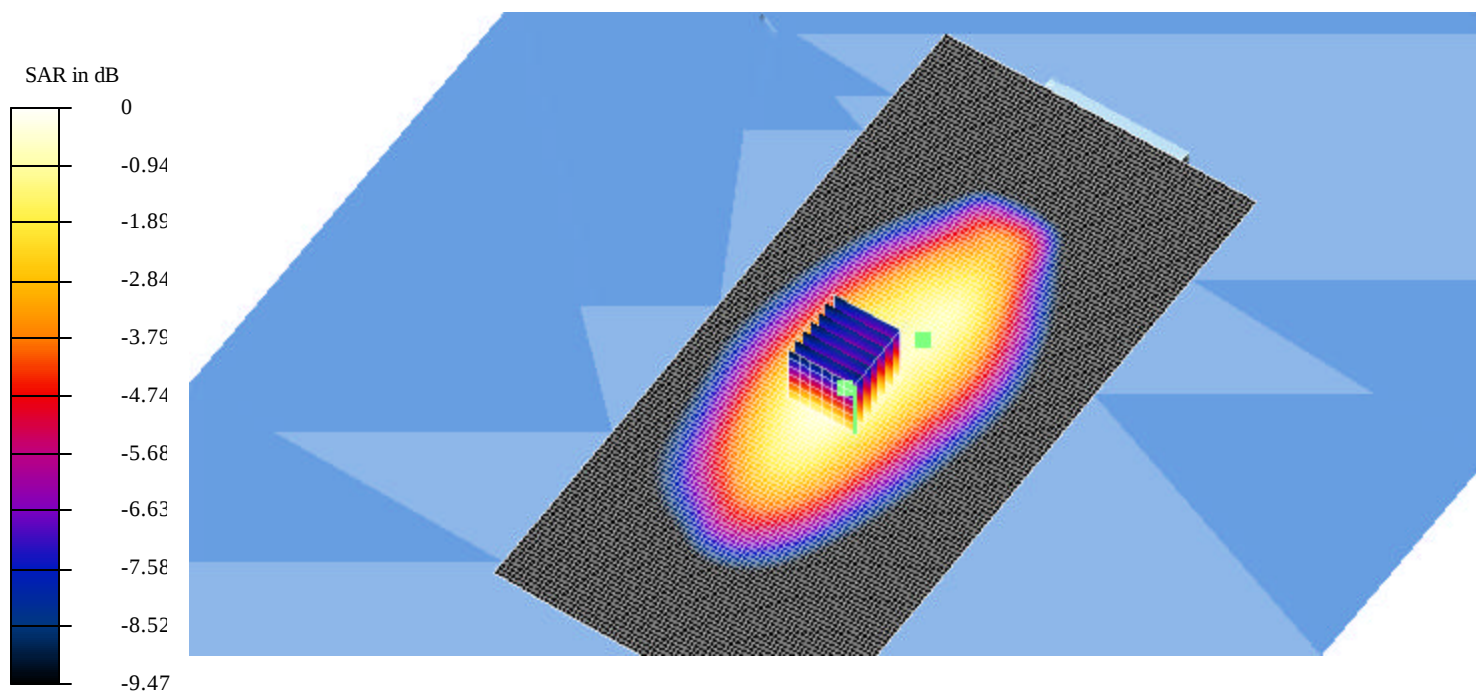
Reference Value = 11.6 V/m

Peak SAR = 15.9 mW/g

SAR(1 g) = 10.6 mW/g; SAR(10 g) = 7.16 mW/g

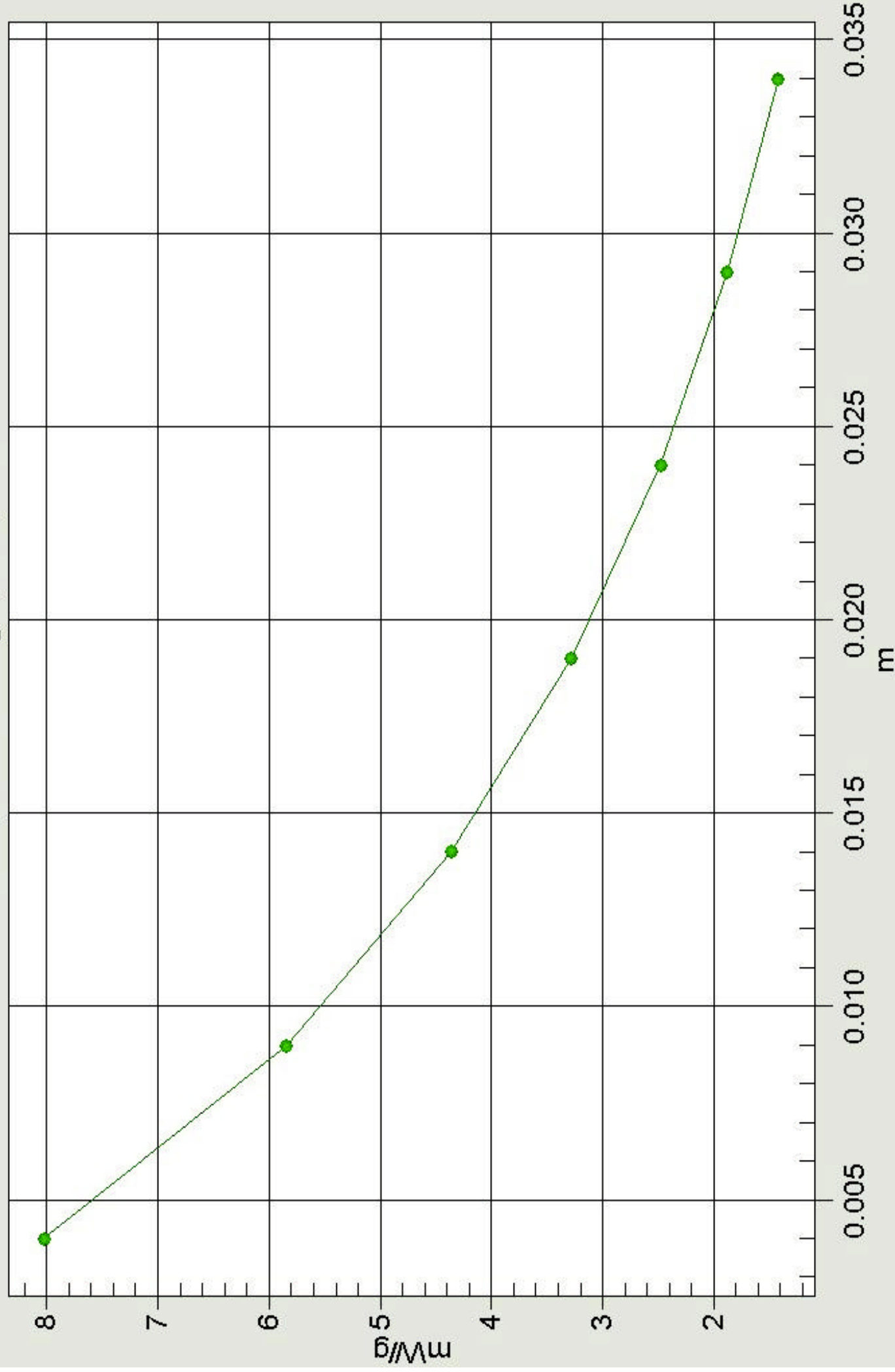
Power Drift = -0.3 dB

Area Scan (71x151x1): Measurement grid: dx=20mm, dy=20mm



Temperature Ambient = 21.5 °C Liquid = 20.8 °C

Plot Number 5



Test Laboratory: EMC Technologies Pty Ltd

File Name: M030212R - Techwall Electronics - Face Frontal Position 25-Feb-03.da4

DUT: Techwall Portable Transceiver Face Type & Serial Number: 208S
Program: 450MHz Face Frontal Position; Channel 1

Communication System: CW 450 MHz; Frequency: 450 MHz; Duty Cycle: 1:1
Medium: FCC 450MHz Head ($\sigma = 0.87$ mho/m, $\epsilon = 43.97$, $\rho = 1000$ kg/m³)
Phantom section: FlatSection

DASY4 Configuration:

- Probe: ET3DV6 - SN1377; ConvF(7.2, 7.2, 7.2); Calibrated: 6-Sept-2002
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn442; Calibrated: 23-Oct-2002
- Phantom: Flat Phantom - TP: P 4.4
- Software: DASY4, V4.0 Build 51

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm

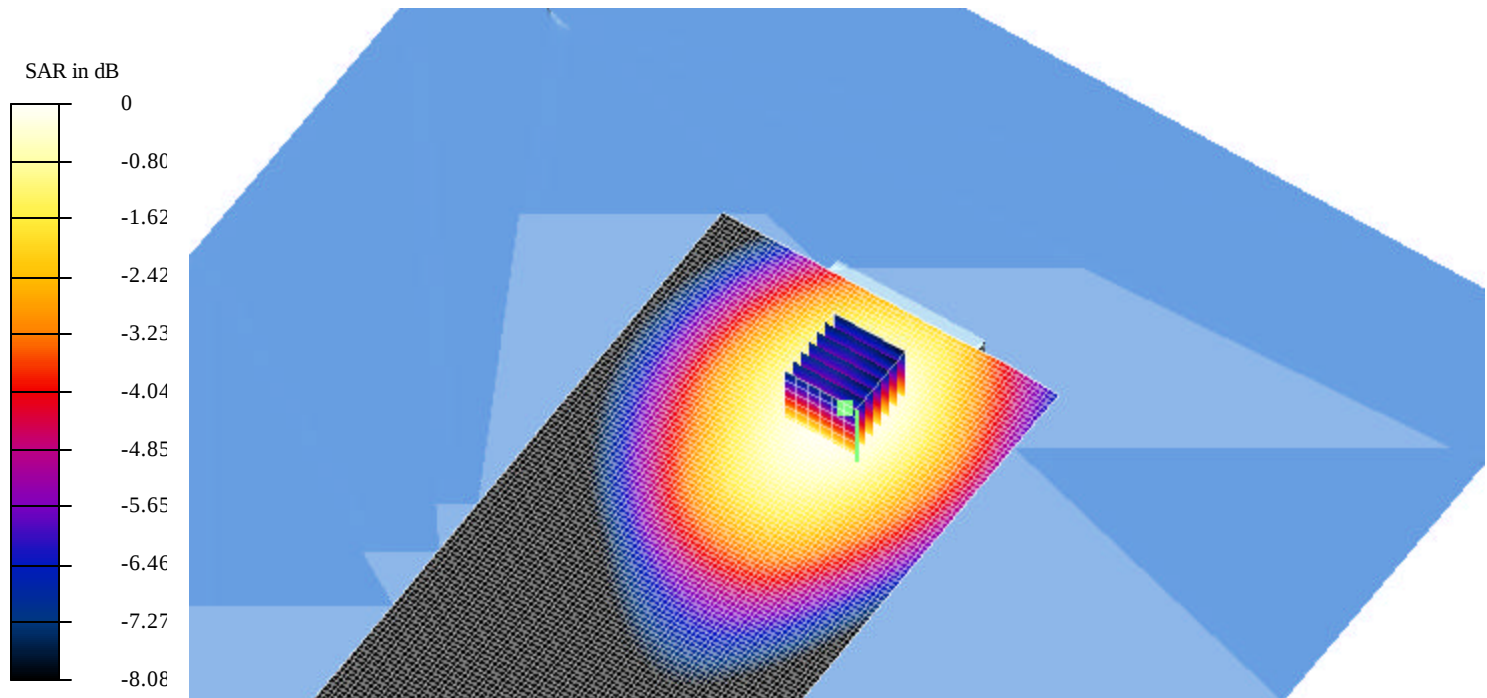
Reference Value = 2.86 V/m

Peak SAR = 2.84 mW/g

SAR(1 g) = 2.04 mW/g; SAR(10 g) = 1.48 mW/g

Power Drift = -0.2 dB

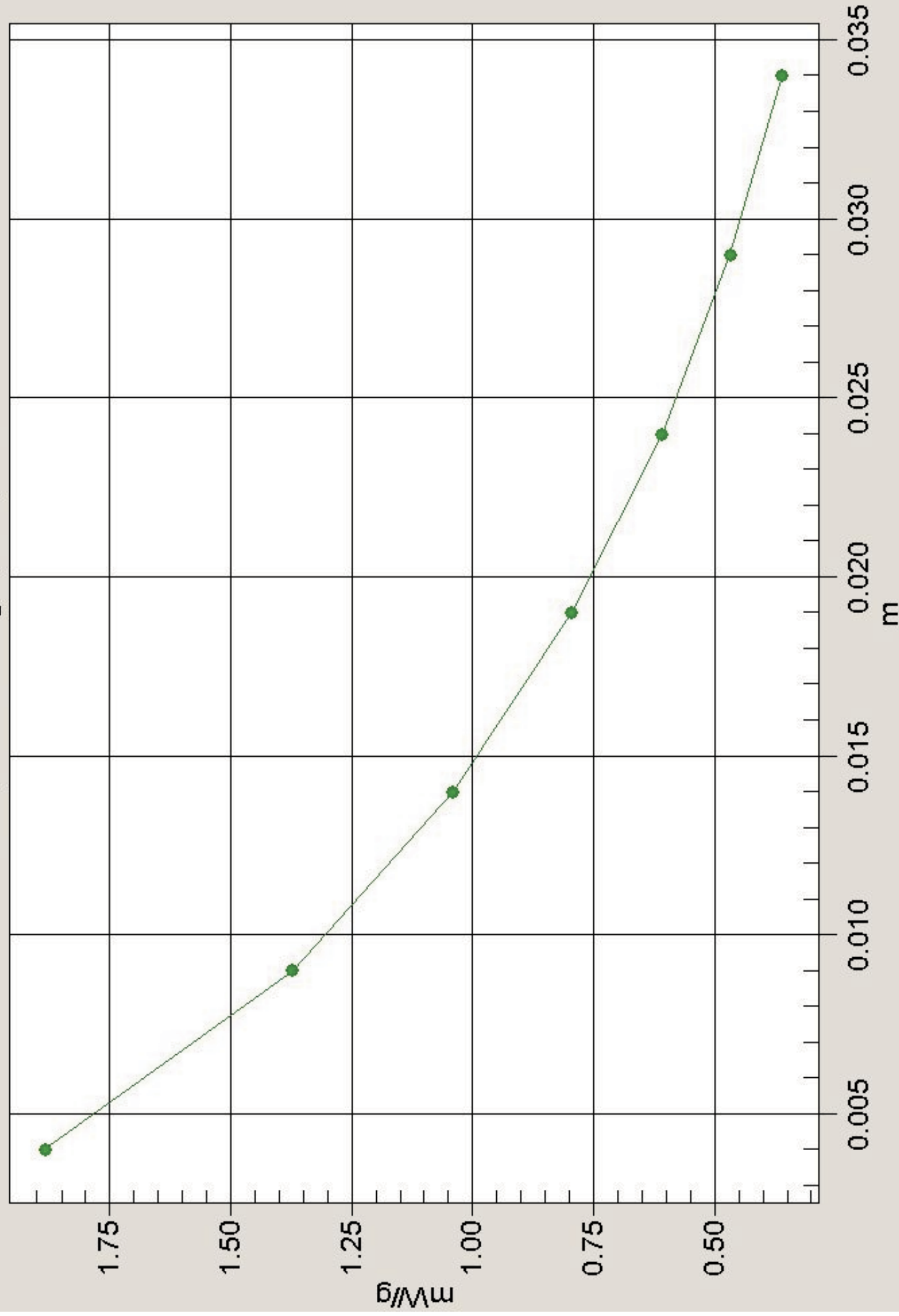
Area Scan (71x151x1): Measurement grid: dx=20mm, dy=20mm



Temperature Ambient = 21.6 °C Liquid = 20.7 °C

Plot Number 6

SAR, Value Along Z, X=0, Y=0



Test Laboratory: EMC Technologies Pty Ltd

File Name: M030212R - Techwall Electronics - Face Frontal Position 25-Feb-03.da4

DUT: Techwall Portable Transceiver Face Type & Serial Number: 208S
Program: 450MHz Face Frontal Position; Channel 2

Communication System: CW 450 MHz; Frequency: 460 MHz; Duty Cycle: 1:1
Medium: FCC 450MHz Head ($\sigma = 0.88$ mho/m, $\epsilon = 43.82$, $\rho = 1000$ kg/m³)
Phantom section: FlatSection

DASY4 Configuration:

- Probe: ET3DV6 - SN1377; ConvF(7.2, 7.2, 7.2); Calibrated: 6-Sept-2002
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn442; Calibrated: 23-Oct-2002
- Phantom: Flat Phantom - TP: P 4.4
- Software: DASY4, V4.0 Build 51

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm

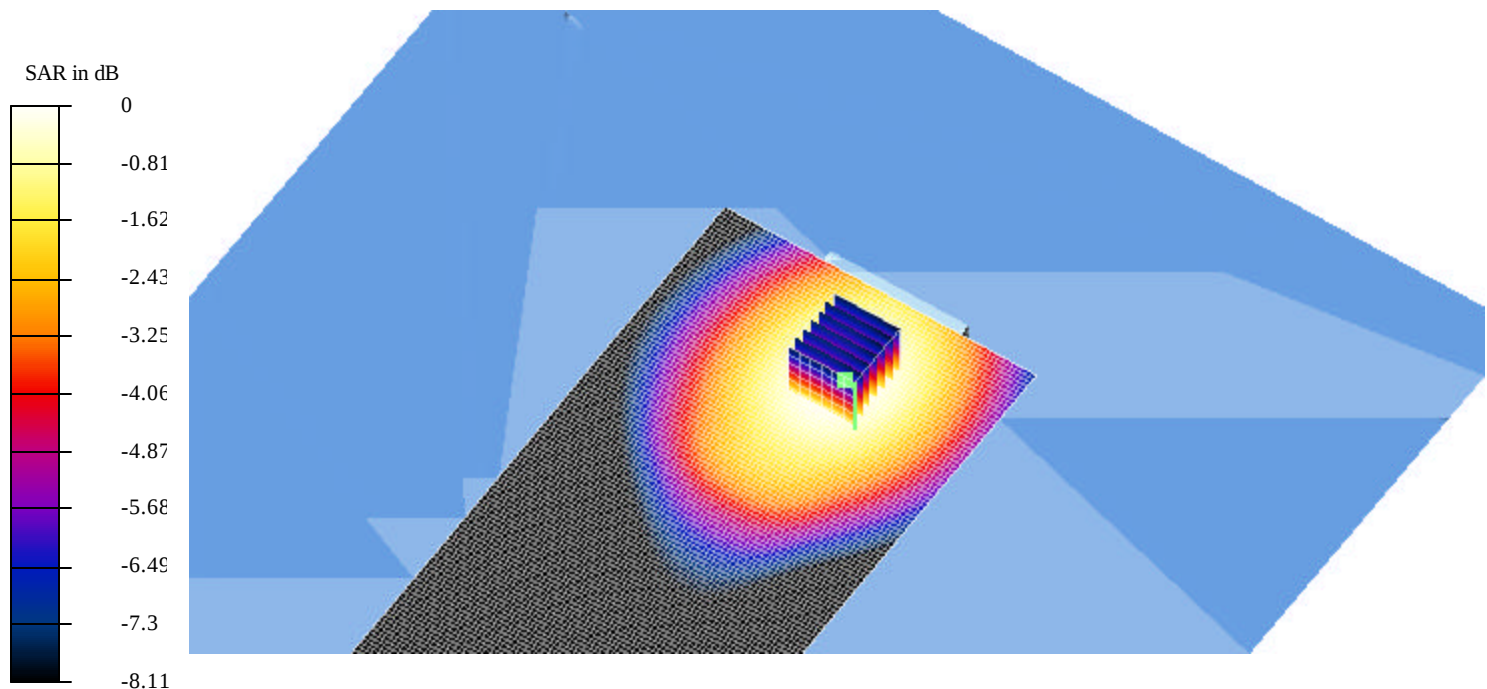
Reference Value = 3.47 V/m

Peak SAR = 2.27 mW/g

SAR(1 g) = 1.66 mW/g; SAR(10 g) = 1.2 mW/g

Power Drift = -0.3 dB

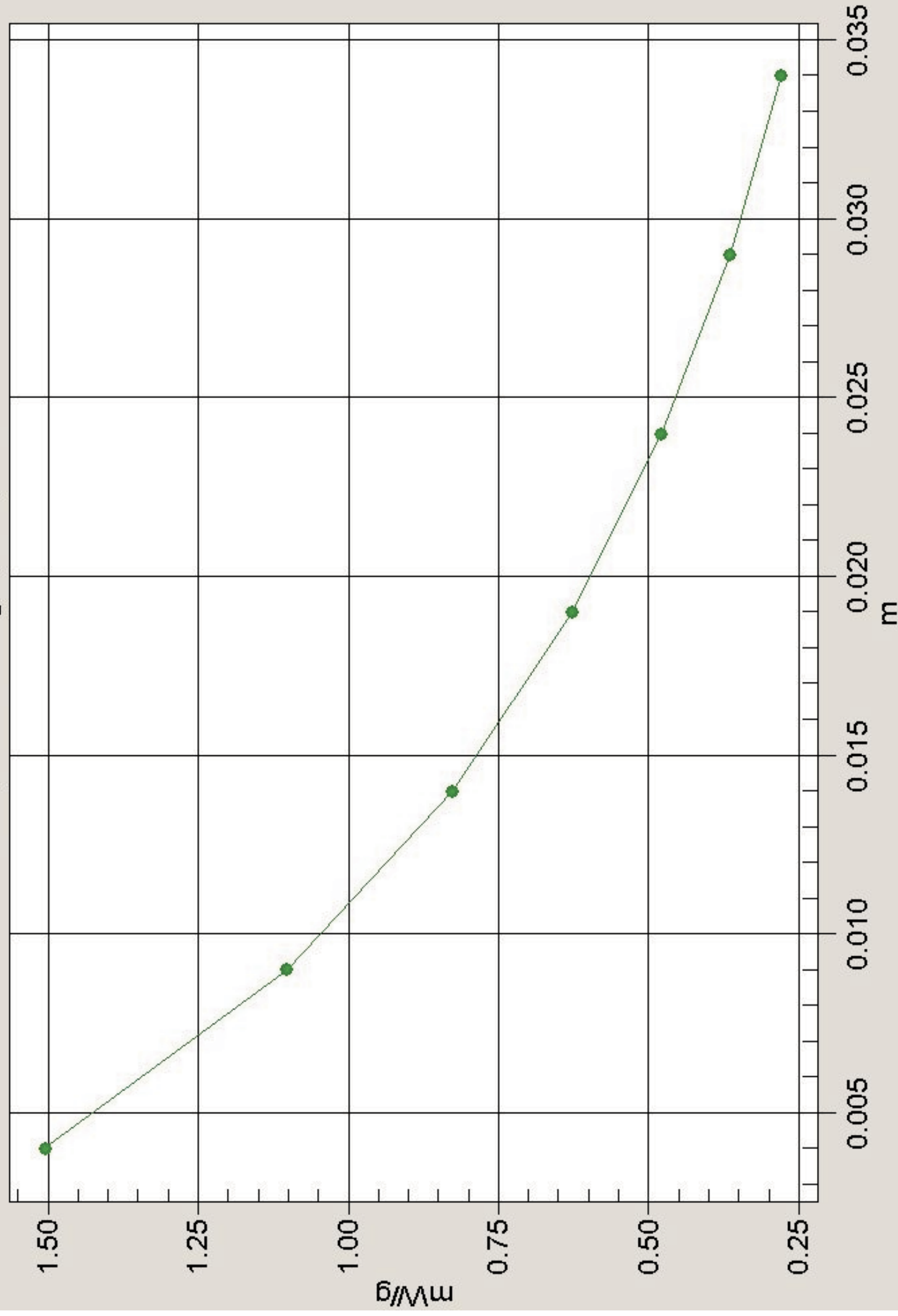
Area Scan (71x151x1): Measurement grid: dx=20mm, dy=20mm



Temperature Ambient = 21.6 °C Liquid = 20.7 °C

Plot Number 7

Face Frontal Position Channel 2



Test Laboratory: EMC Technologies Pty Ltd

File Name: M030212R - Techwall Electronics - Face Frontal Position 25-Feb-03.da4

DUT: Techwall Portable Transceiver Face Type & Serial Number: 208S
Program: 450MHz Face Frontal Position; Channel 3

Communication System: CW 450 MHz; Frequency: 470 MHz; Duty Cycle: 1:1

Medium: FCC 450MHz Head ($\sigma = 0.89$ mho/m, $\epsilon = 43.72$, $\rho = 1000$ kg/m³)

Phantom section: FlatSection

DASY4 Configuration:

- Probe: ET3DV6 - SN1377; ConvF(7.2, 7.2, 7.2); Calibrated: 6-Sept-2002
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn442; Calibrated: 23-Oct-2002
- Phantom: Flat Phantom - TP: P 4.4
- Software: DASY4, V4.0 Build 51

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm

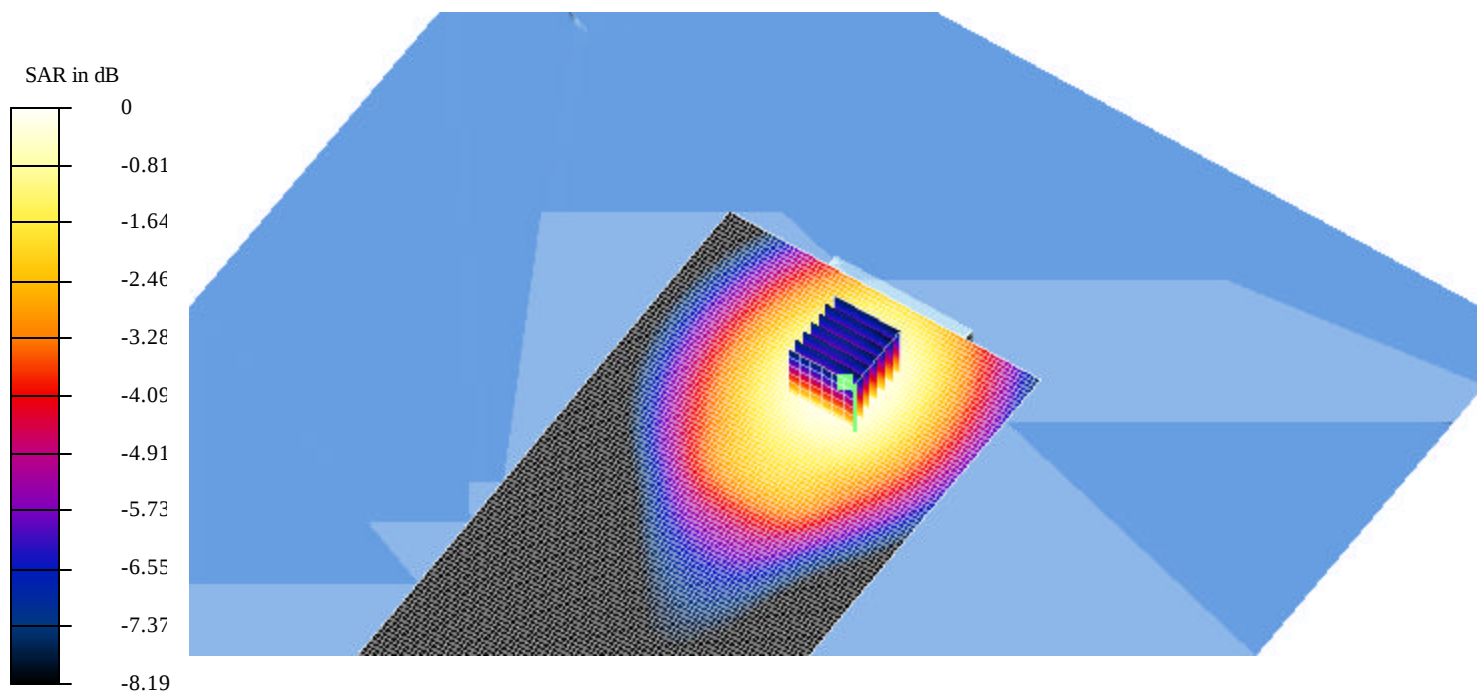
Reference Value = 3.97 V/m

Peak SAR = 2.39 mW/g

SAR(1 g) = 1.74 mW/g; SAR(10 g) = 1.25 mW/g

Power Drift = -0.2 dB

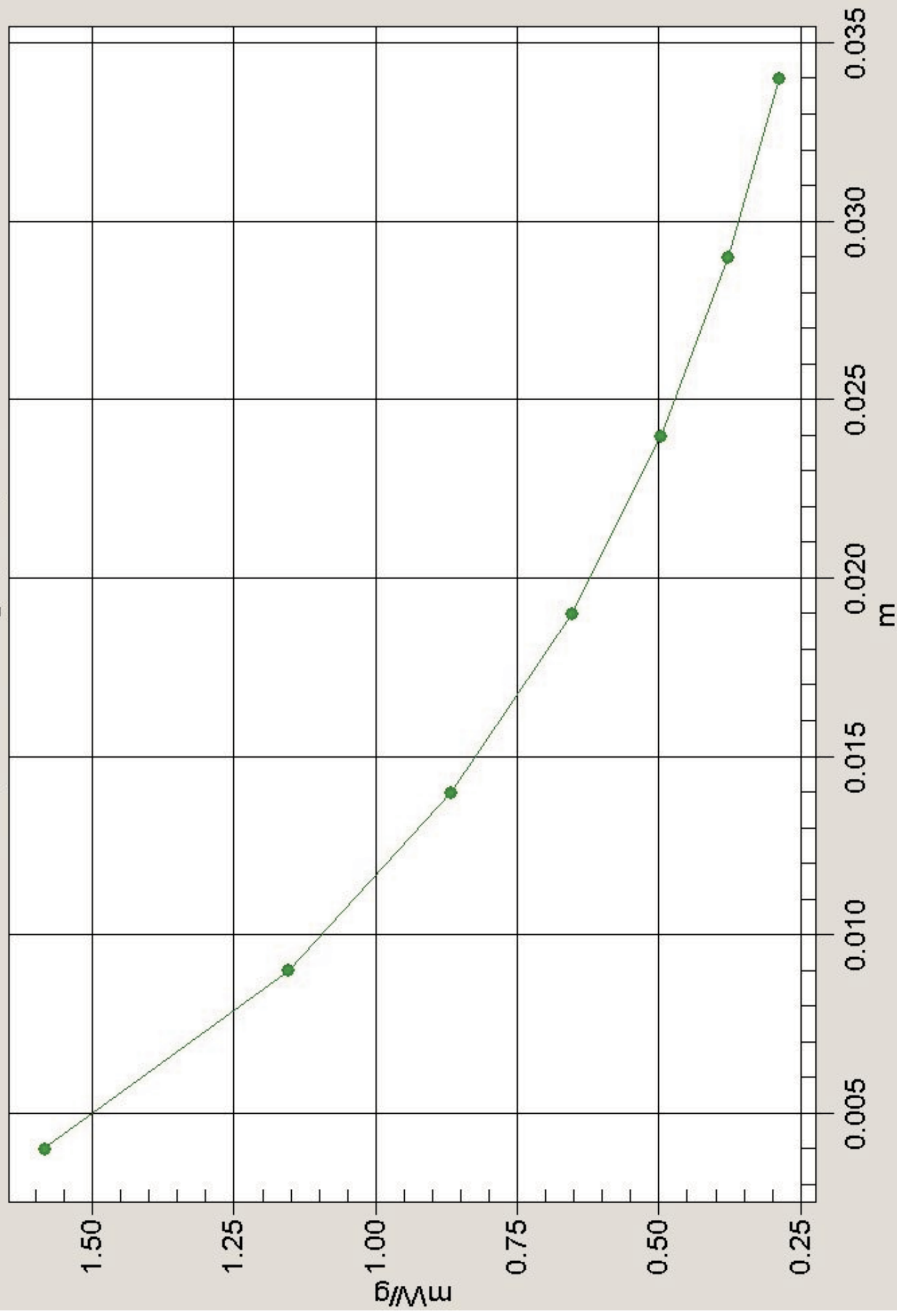
Area Scan (71x151x1): Measurement grid: dx=20mm, dy=20mm



Temperature Ambient = 21.6 °C Liquid = 20.7 °C

Plot Number 8

SAR, Value Along Z, X=0, Y=0



Test Laboratory: EMC Technologies Pty Ltd

File Name: M030212R - Techwall Electronics - Face Frontal Position 25-Feb-03.da4

DUT: Techwall Portable Tranceiver Face Type & Serial Number: 208S

Program: 450MHz Face Frontal Position; Channel 1 With TBN-15 (7.2V 1100mAh) Battery

Communication System: CW 450 MHz; Frequency: 450 MHz; Duty Cycle: 1:1

Medium: FCC 450MHz Head ($\sigma = 0.87$ mho/m, $\epsilon = 43.97$, $\rho = 1000$ kg/m³)

Phantom section: FlatSection

DASY4 Configuration:

- Probe: ET3DV6 - SN1377; ConvF(7.2, 7.2, 7.2); Calibrated: 6-Sept2002

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

- Electronics: DAE3 Sn442; Calibrated: 23-Oct-2002

- Phantom: Flat Phantom - TP: P 4.4

- Software: DASY4, V4.0 Build 51

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm

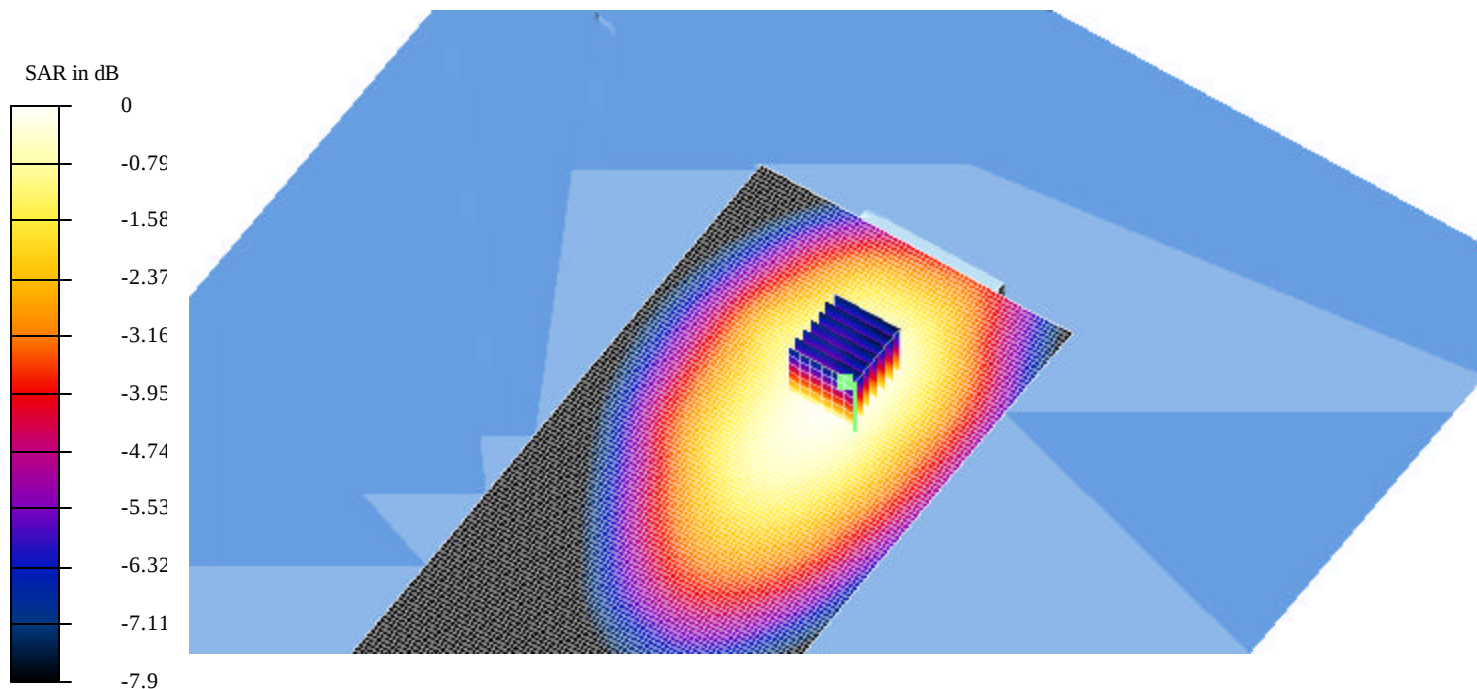
Reference Value = 4.78 V/m

Peak SAR = 2.17 mW/g

SAR(1 g) = 1.58 mW/g; SAR(10 g) = 1.16 mW/g

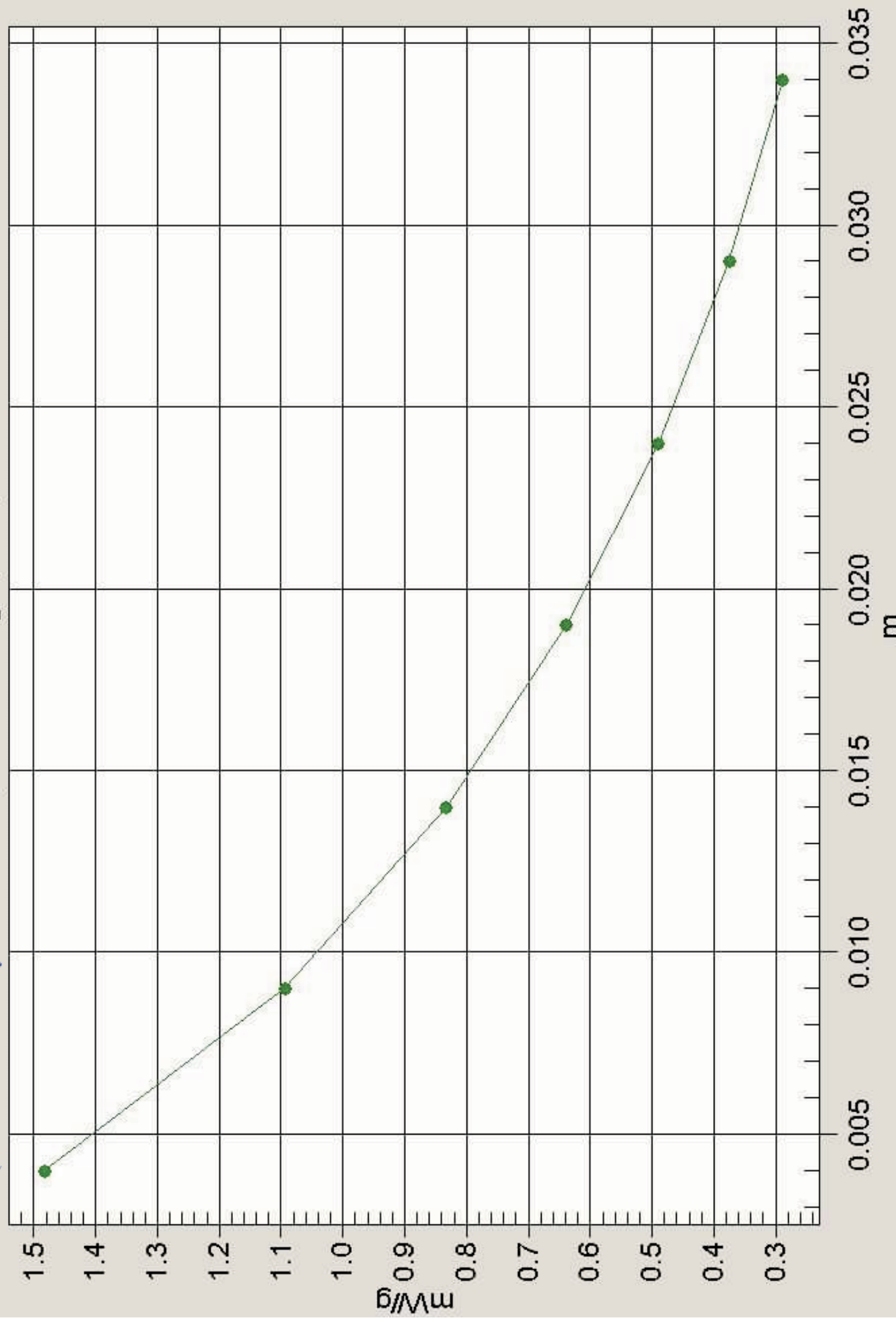
Power Drift = -0.4 dB

Area Scan (71x151x1): Measurement grid: dx=20mm, dy=20mm



Temperature Ambient = 21.6 °C Liquid = 20.7 °C

Plot Number 9



Test Laboratory: EMC Technologies Pty Ltd

File Name: M030212R - Techwall Electronics - Face Frontal Position 25-Feb-03.da4

DUT: Techwall Portable Tranceiver Face Type & Serial Number: 208S

Program: 450MHz Face Frontal Position; Channel 1 With Battery Supplemented By 12 DC Supply

Communication System: CW 450 MHz; Frequency: 450 MHz; Duty Cycle: 1:1

Medium: FCC 450MHz Head ($\sigma = 0.87$ mho/m, $\epsilon = 43.97$, $\rho = 1000$ kg/m³)

Phantom section: FlatSection

DASY4 Configuration:

- Probe: ET3DV6 - SN1377; ConvF(7.2, 7.2, 7.2); Calibrated: 6-Sept-2002

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

- Electronics: DAE3 Sn442; Calibrated: 23-Oct-2002

- Phantom: Flat Phantom - TP: P 4.4

- Software: DASY4, V4.0 Build 51

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm

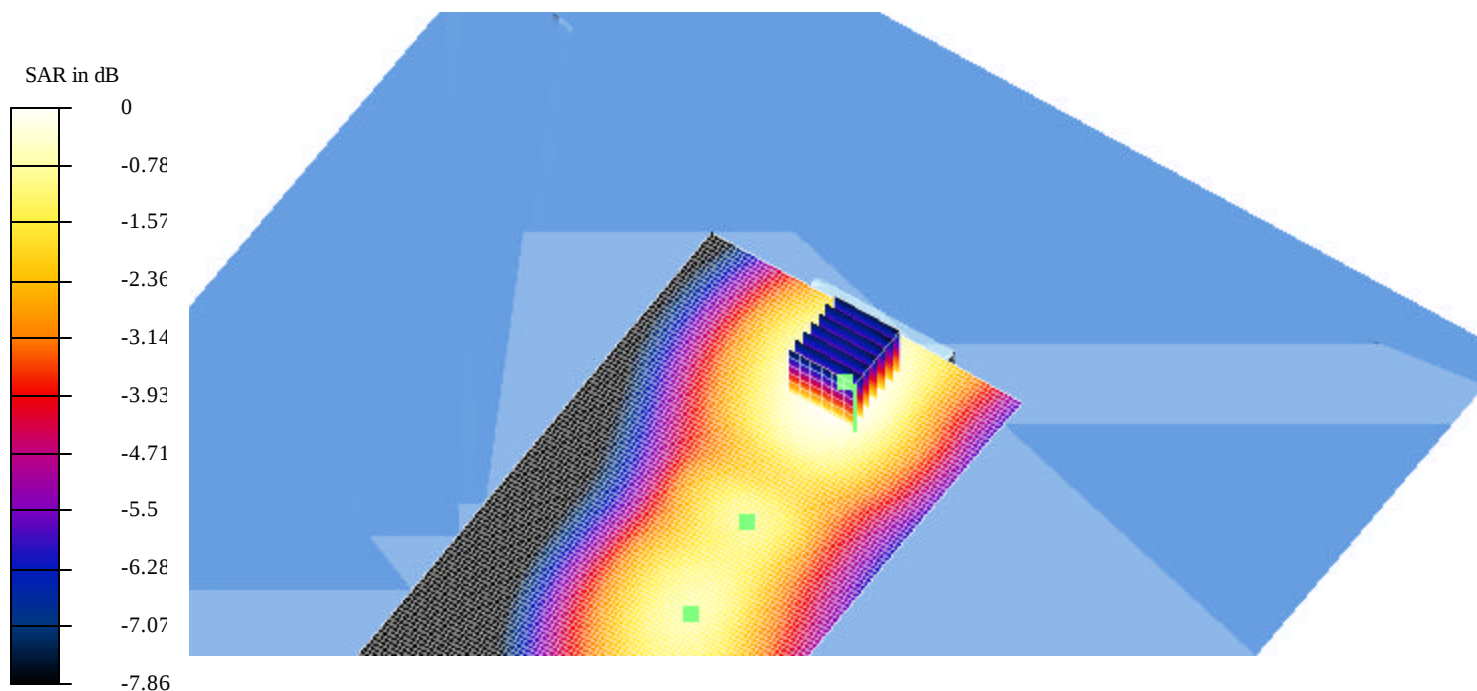
Reference Value = 5.37 V/m

Peak SAR = 1.46 mW/g

SAR(1 g) = 1.06 mW/g; SAR(10 g) = 0.77 mW/g

Power Drift = 0.2 dB

Area Scan (71x151x1): Measurement grid: dx=20mm, dy=20mm



Temperature Ambient = 21.6 °C Liquid = 20.7 °C

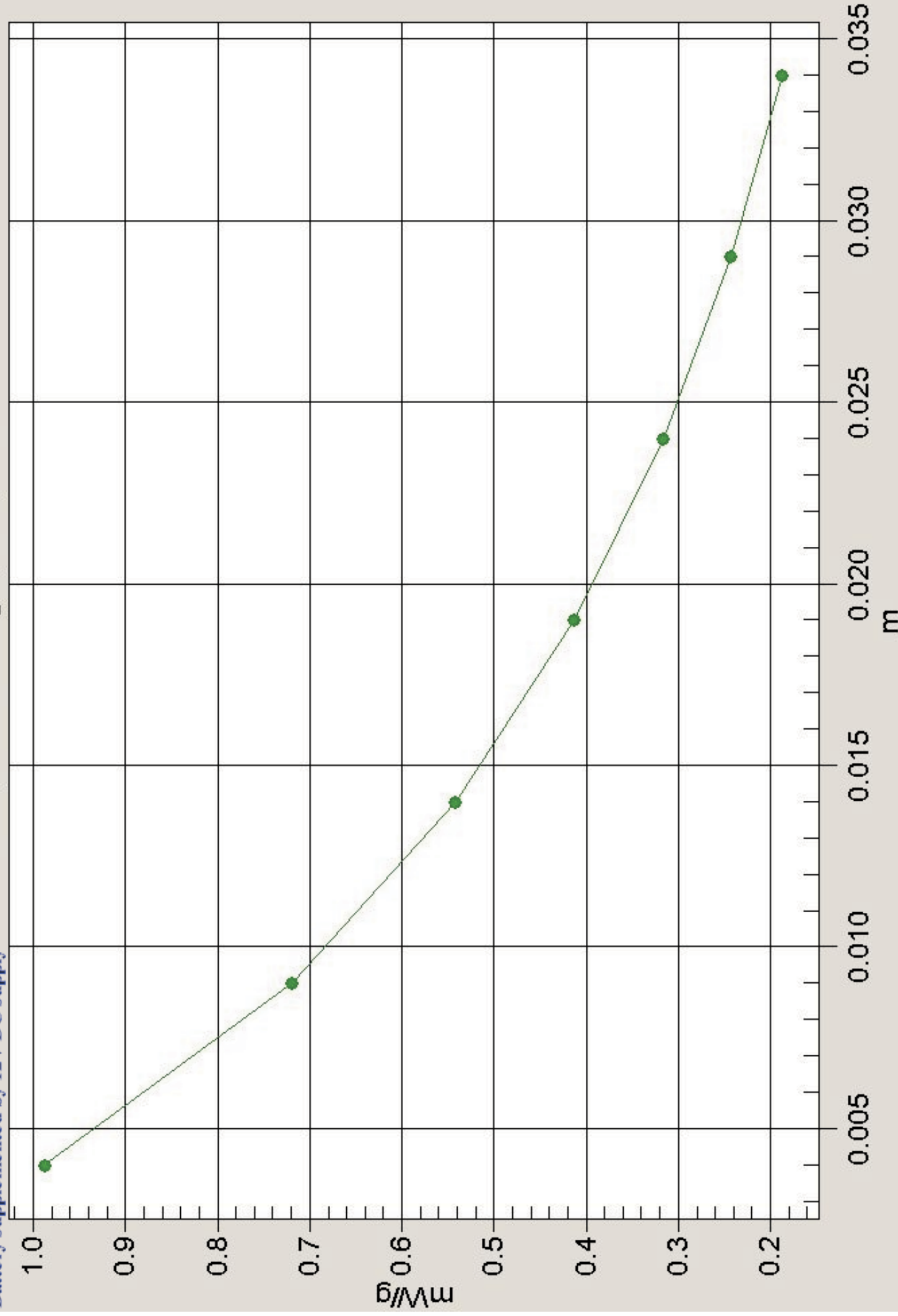
Plot Number 10

Averaged SAR

SAR, Value Along Z, X=0, Y=0

Face Frontal Position Channel 1

Battery supplemented by 12V DC supply



Test Laboratory: EMC Technologies Pty Ltd

File Name: Validation 450 MHz (DAE442 Probe1377) 24-Feb-03.da4

DUT: Dipole 450 MHz Type & Serial Number: D450V2, S/N:1009

Program: Validation 450 MHz; Validation 450 MHz FP

Communication System: CW 450 MHz; Frequency: 450 MHz; Duty Cycle: 1:1

Medium: FCC 450MHz ($\sigma = 0.96$ mho/m, $\epsilon = 56.2$, $\rho = 1000$ kg/m³)

Phantom section: FlatSection

DASY4 Configuration:

- Probe: ET3DV6 - SN1377; ConvF(7.2, 7.2, 7.2); Calibrated: 6-Sept-2002
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn442; Calibrated: 23-Oct-2002
- Phantom: Flat Phantom - TP: P4.4
- Software: DASY4, V4.0 Build 51

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm

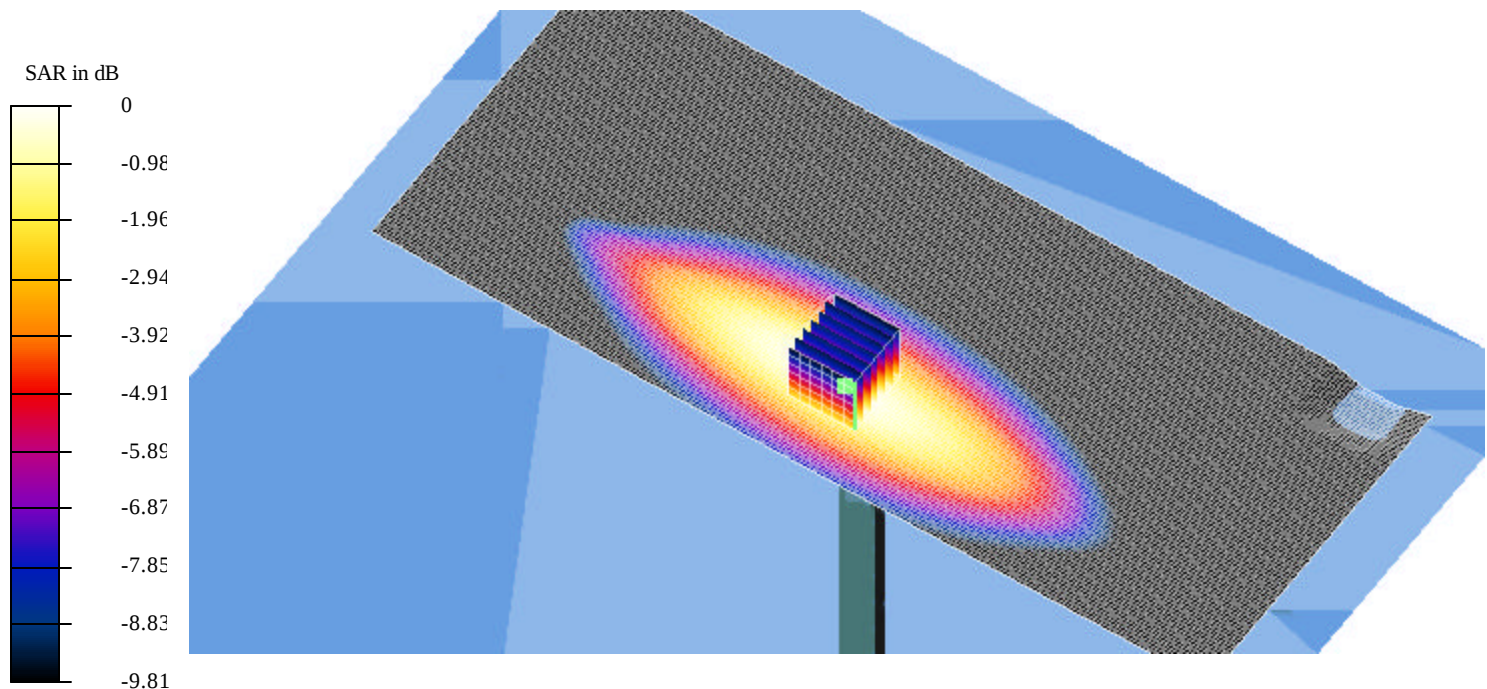
Reference Value = 0.512 V/m

Peak SAR = 2.04 mW/g

SAR(1 g) = 1.31 mW/g; SAR(10 g) = 0.85 mW/g

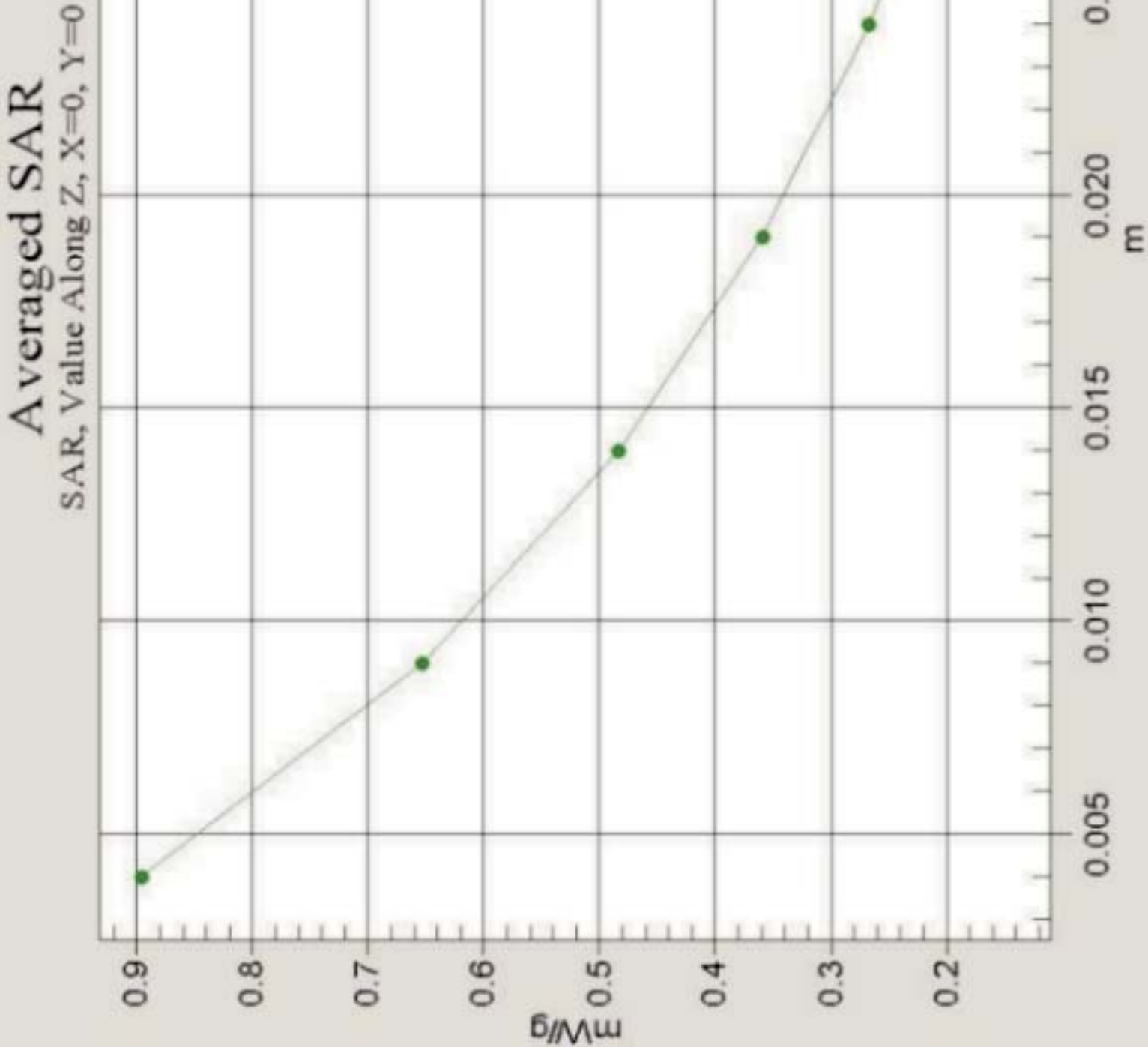
Power Drift = 0.2 dB

Area Scan (251x101x1): Measurement grid: dx=15mm, dy=15mm



Temperature Ambient = 21.6 °C Liquid = 20.8 °C

Plot Number 11



Test Laboratory: EMC Technologies Pty Ltd

File Name: Validation 450 MHz (DAE442 Probe1377) 25-Feb-03.da4

DUT: Dipole 450 MHz Type & Serial Number: D450V2, S/N:1009

Program: Validation 450 MHz; Validation 450 MHz FP

Communication System: CW 450 MHz; Frequency: 450 MHz; Duty Cycle: 1:1

Medium: FCC 450MHz Head ($\sigma = 0.87$ mho/m, $\epsilon = 43.97$, $\rho = 1000$ kg/m³)

Phantom section: FlatSection

DASY4 Configuration:

- Probe: ET3DV6 - SN1377; ConvF(7.2, 7.2, 7.2); Calibrated: 6-Sept-2002

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

- Electronics: DAE3 Sn442; Calibrated: 23-Oct-2002

- Phantom: Flat Phantom - TP: P4.4

- Software: DASY4, V4.0 Build 51

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm

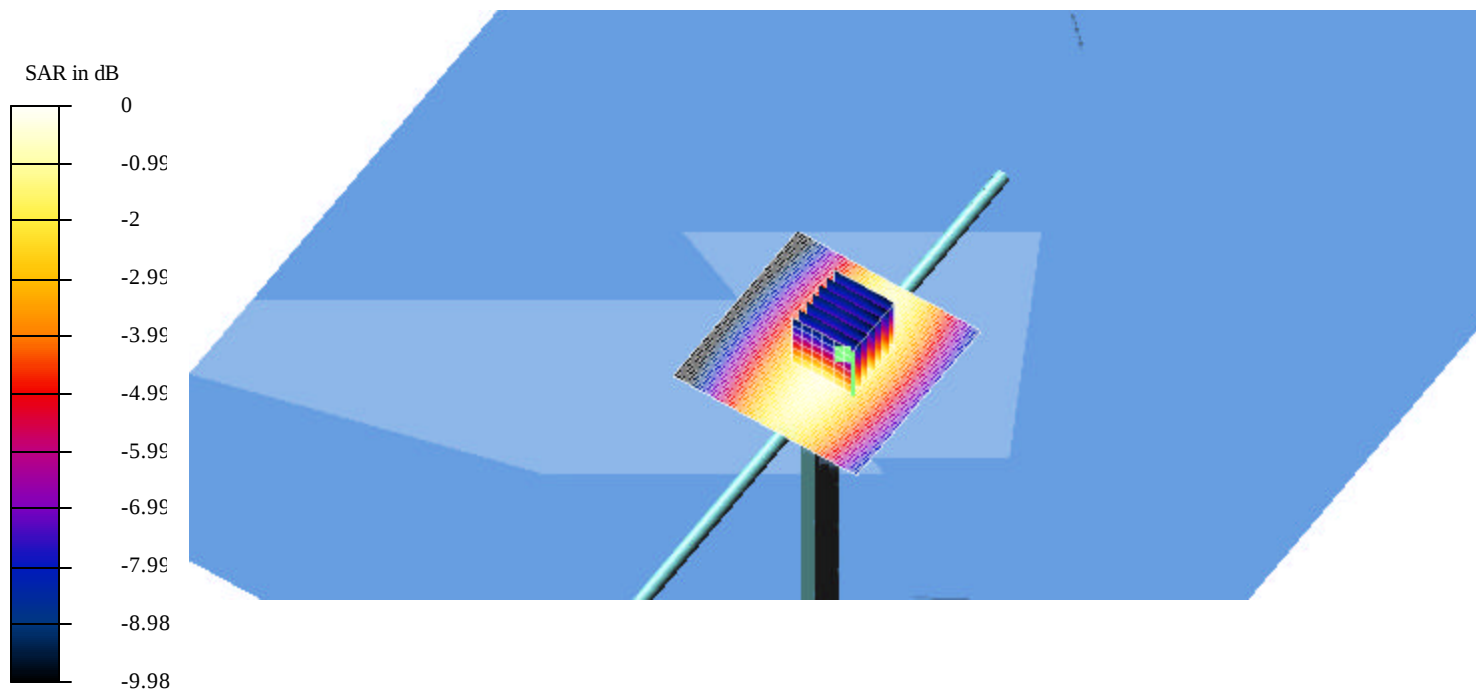
Reference Value = 0.85 V/m

Peak SAR = 1.7 mW/g

SAR(1 g) = 1.14 mW/g; SAR(10 g) = 0.743 mW/g

Power Drift = 0.4 dB

Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm

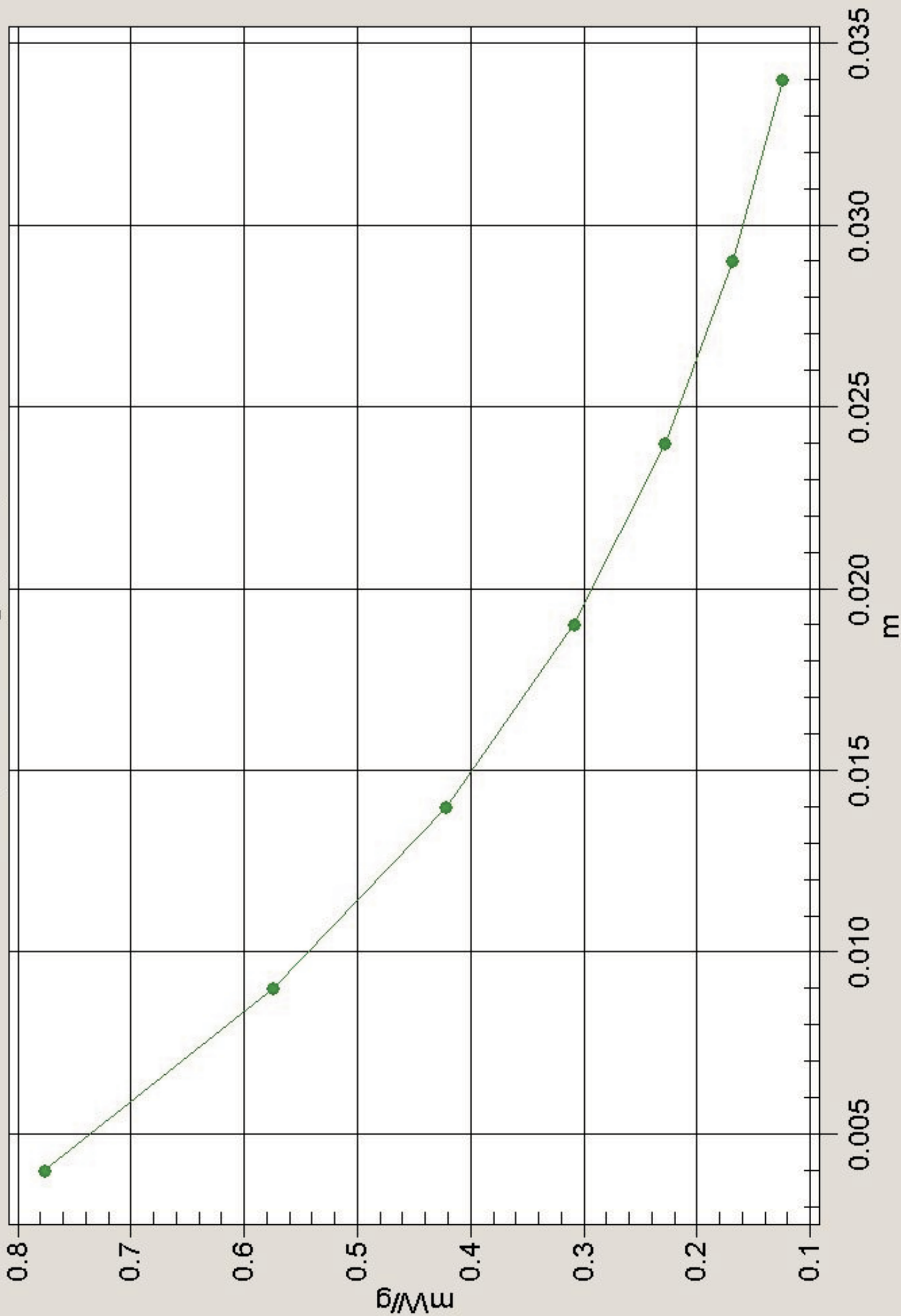


Temperature Ambient = 21.5 °C Liquid = 20.7 °C

Plot Number 12

Averaged SAR

SAR, Value Along Z, X=0, Y=0



Appendix C - Power Vs Time Plot with 12V battery, channel 3

