

Test of: GN Netcom A/S
A7010 *Bluetooth* Hub

To: OET Bulletin 65 Supplement C: (2001-01)

Appendix 2. Measurement Methods

A.2.1. Evaluation Procedure

The Specific Absorption Rate (SAR) evaluation was performed in the following manner:

- a) (i) The evaluation was performed in an applicable area of the phantom depending on the type of device being tested. For devices worn about the ear during normal operation, both the left and right ear positions were evaluated at the centre frequency of the band at maximum power. The side, which produced the greatest SAR, determined which side of the phantom would be used for the entire evaluation. The positioning of the head worn device relative to the phantom was dictated by the test specification identified in section 3.1 of this report.

(ii) For body worn devices or devices which can be operated within 20 cm of the body, the flat section of the phantom was used. The type of device being evaluated dictated the distance of the EUT to the outer surface of the phantom flat section.
- b) The SAR was determined by a pre-defined procedure within the DASY4 software. The exposed region of the phantom was scanned near the inner surface with a grid spacing of 20mm x 20mm or appropriate resolution.
- c) A 7x7x7 matrix was performed around the greatest spatial SAR distribution found during the area scan of the applicable exposed region. SAR values were then calculated using a 3-D spline interpolation algorithm and averaged over spatial volumes of 1 and 10 grams.
- d) If the EUT had any appreciable drift over the course of the evaluation, then the EUT was re-evaluated. Any unusual anomalies over the course of the test also warranted a re-evaluation.

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To: OET Bulletin 65 Supplement C: (2001-01)

A.2.2. Specific Absorption Rate (SAR) Measurements to OET Bulletin 65 Supplement C: (2001-01)

Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields

SAR measurements were performed in accordance with Appendix D of the standard FCC OET Bulletin 65 Supplement C: 2001, against appropriate limits for each measurement position in accordance with the standard.

The test was performed in a shielded enclosure with the temperature controlled to remain between +18.0°C and +25.0°C. The tissue equivalent material fluid temperature was controlled to give a maximum variation of $\pm 2.0^\circ\text{C}$

Prior to any SAR measurements on the EUT, system validation and material dielectric property measurements were conducted. In the absence of a detailed procedure within the specification, system validation and material dielectric property measurements were performed in accordance with Appendix C and Appendix D of FCC OET Bulletin 65 Supplement C: 2001.

Following the successful system validation and material dielectric property measurements, a SAR versus time sweep shall be performed within 10 mm of the phantom inner surface. If the EUT power output is stable after three minutes then the measurement probe will perform a coarse surface level scan at each test position in order to ascertain the location of the maximum local SAR level. Once this area had been established, a 7x7x7 cube of 343 points (5 mm spacing in each axis $\approx 27\text{g}$) will be centred at the area of concern. Extrapolation and interpolation will then be carried out on the 27g of tissue and the highest averaged SAR over a 10g cube determined.

Once the maximum interpolated SAR measurement is complete; the coarse scan is visually assessed to check for secondary peaks within 50% of the maximum SAR level. If there are any further SAR measurements required, extra 7x7x7 cubes shall be centred on each of these extra local SAR maxima.

At the end of each position test case a second time sweep shall be performed to check whether the EUT has remained stable throughout the test.

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A7010 *Bluetooth* Hub

To: OET Bulletin 65 Supplement C: (2001-01)

Appendix 3. SAR Distribution Scans

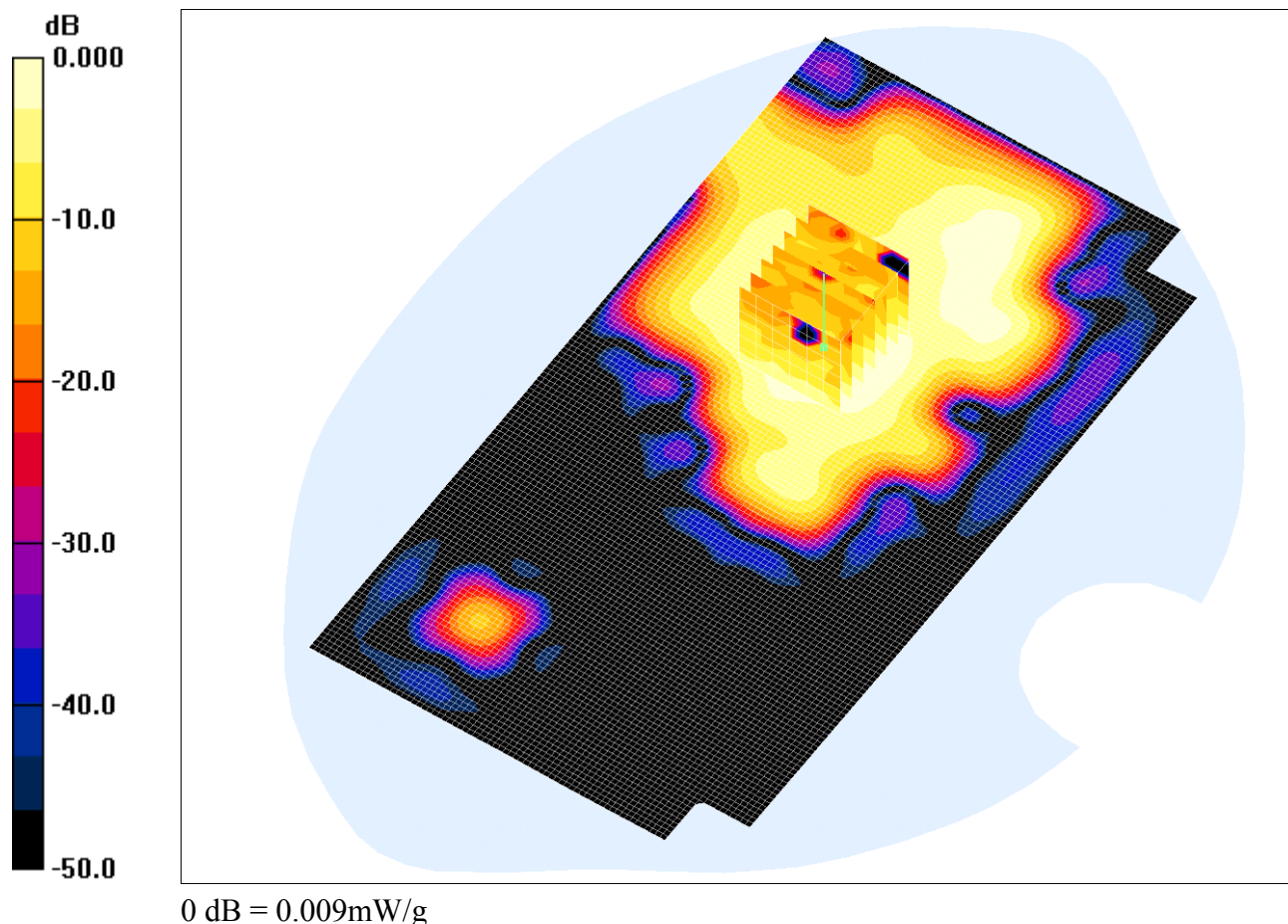
This appendix contains SAR distribution scans which are not included in the total number of pages for this report.

Scan Reference Number	Title
SCN/48143JD05/001	Front_Of_EUT_Facing_Phantom_With_Accessories_CH39
SCN/48143JD05/002	Rear_Of_EUT_Facing_Phantom_With_Accessories_CH39
SCN/48143JD05/003	Validation_001

Date: 27/10/2006

48143_JD05_001

Test Laboratory: RFI GLOBAL SERVICES LTD.

48143_JD05_001_Front_Of_EUT_Facing_Phantom_With_Accessories_CH39**DUT: GN Netcom A/S; Type: A7010 Bluetooth Hub; Serial: 035**

Communication System: Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1

Medium: 2450 MHz MSL Medium parameters used (interpolated): $f = 2441$ MHz; $\sigma = 2.04$ mho/m; $\epsilon_r =$ 52.4; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.27, 4.27, 4.27); Calibrated: 12/07/2006

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

- Electronics: DAE3 Sn394; Calibrated: 19/05/2006

- Phantom: SAM 12b; Type: SAM 4.0; Serial: TP:1207

- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Front of EUT Facing Phantom With Accessories - Middle/Area Scan (81x151x1):

Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.008 mW/g

Front of EUT Facing Phantom With Accessories - Middle/Zoom Scan (7x7x7)

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

Reference Value = 0.904 V/m; Power Drift = 0.382 dB

Peak SAR (extrapolated) = 0.018 W/kg

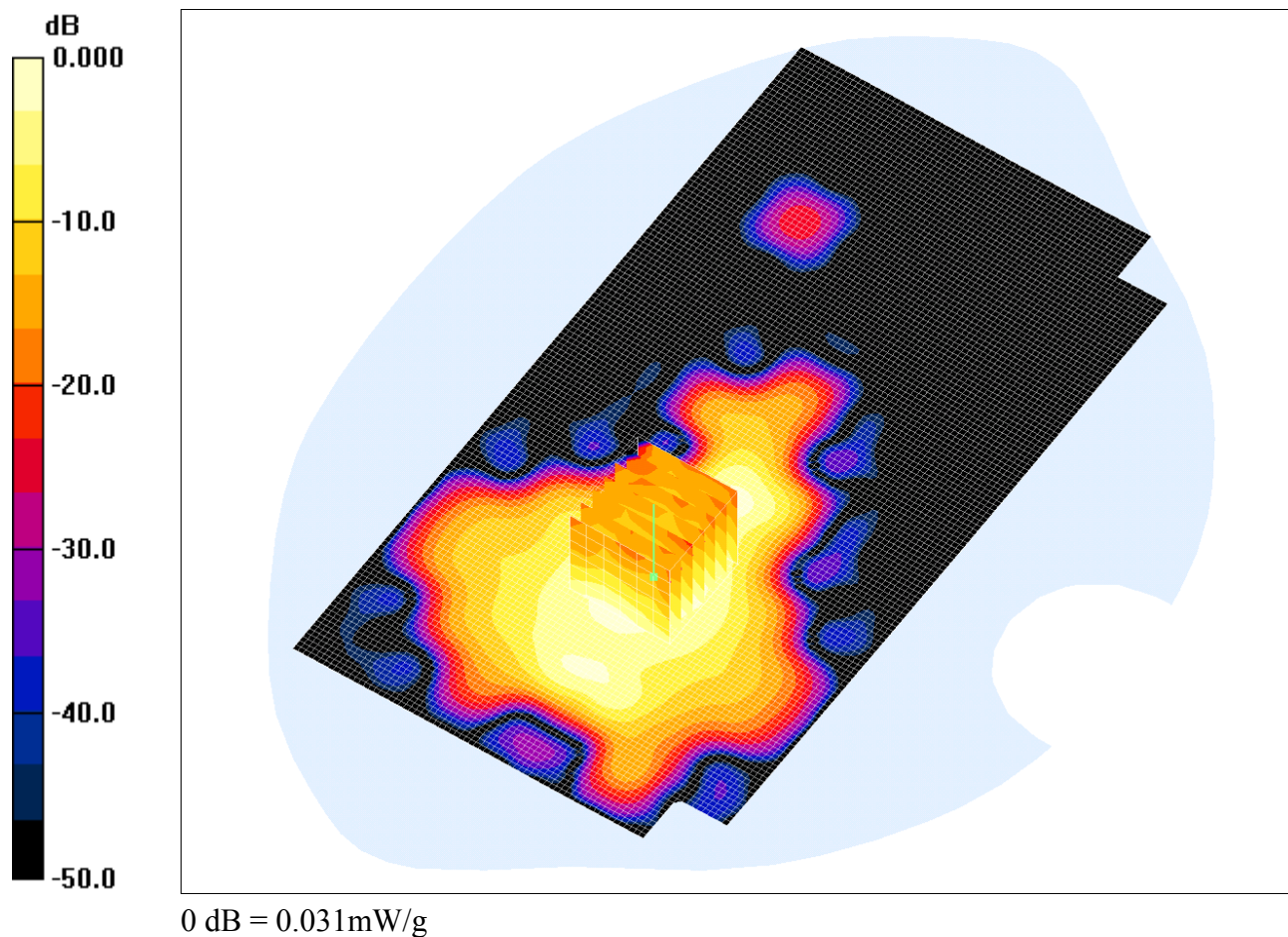
SAR(1 g) = 0.00827 mW/g; SAR(10 g) = 0.00382 mW/g

Maximum value of SAR (measured) = 0.009 mW/g

Date: 27/10/2006

48143_JD05_002

Test Laboratory: RFI GLOBAL SERVICES LTD.

48143_JD05_002_Rear_Of_EUT_Facing_Phantom_With_Accessories_CH39**DUT: GN Netcom A/S; Type: A7010 Bluetooth Hub; Serial: 035**

Communication System: Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1

Medium: 2450 MHz MSL Medium parameters used (interpolated): $f = 2441$ MHz; $\sigma = 2.04$ mho/m; $\epsilon_r =$ 52.4; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.27, 4.27, 4.27); Calibrated: 12/07/2006

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

- Electronics: DAE3 Sn394; Calibrated: 19/05/2006

- Phantom: SAM 12b; Type: SAM 4.0; Serial: TP:1207

- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Rear of EUT Facing Phantom With Accessories - Middle/Area Scan (81x151x1):

Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.029 mW/g

Rear of EUT Facing Phantom With Accessories - Middle/Zoom Scan (7x7x7) (7x7x7)/Cube

0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.52 V/m; Power Drift = -0.170 dB

Peak SAR (extrapolated) = 0.069 W/kg

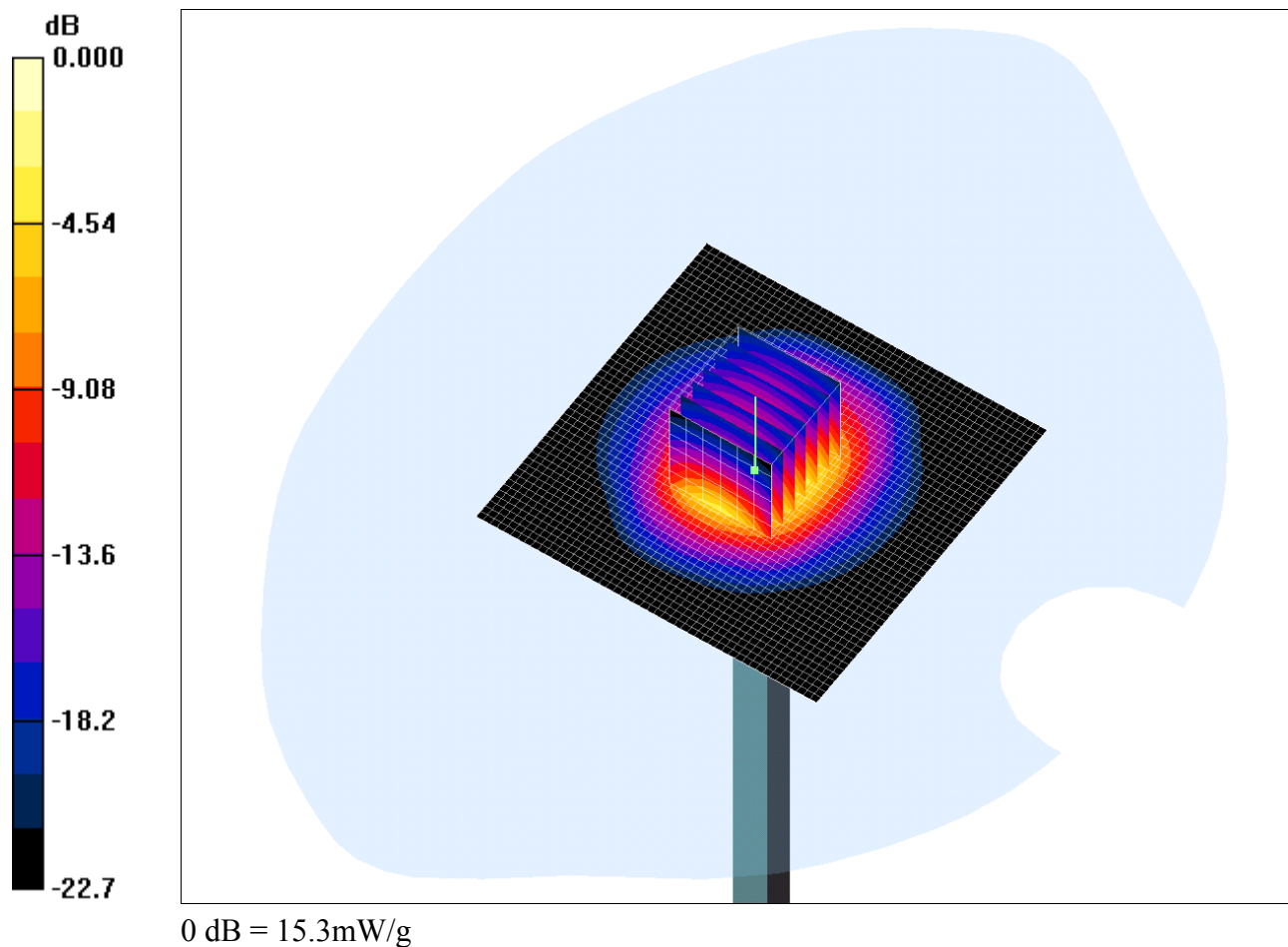
SAR(1 g) = 0.029 mW/g; SAR(10 g) = 0.014 mW/g

Maximum value of SAR (measured) = 0.031 mW/g

Date: 27/10/2006

48143_JD05_Validation_001

Test Laboratory: RFI GLOBAL SERVICES LTD.

System Performance Check_27_10_06**DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:725**

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 MHz MSL Medium parameters used: $f = 2450$ MHz; $\sigma = 2.05$ mho/m; $\epsilon_r = 52.3$; $\rho = 1000$ kg/m^3

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.27, 4.27, 4.27); Calibrated: 12/07/2006

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

- Electronics: DAE3 Sn394; Calibrated: 19/05/2006

- Phantom: SAM 12b; Type: SAM 4.0; Serial: TP:1207

- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

d=10mm, Pin=250mW/Area Scan (51x51x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (interpolated) = 20.1 mW/g

d=10mm, Pin=250mW/Zoom Scan 7x7x7 (7x7x7)/Cube 0: Measurement grid: dx=5mm,
dy=5mm, dz=5mm

Reference Value = 89.8 V/m; Power Drift = 0.060 dB

Peak SAR (extrapolated) = 31.0 W/kg

SAR(1 g) = 13.8 mW/g; SAR(10 g) = 6.34 mW/g

Maximum value of SAR (measured) = 15.3 mW/g

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To: OET Bulletin 65 Supplement C: (2001-01)

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