**The answers to the information request from the FCC on November 03, 1998.**

## 1. SAR distributions

In the measurement of the SAR plots from No.1 to No.10, we had carried out "Coarse Scan" at first.
Coarse Scan was used for the measurement of the SAR distribution in a wider area and the determination for the interpolated maximum.

Step 1: Measurement of the SAR value at a fixed location above the ear point was used as a reference value for assessing the power drop.

Step 2: The SAR distribution at the exposed side of the head phantom was measured at a distance of 3.9 mm from the inner surface of the shell. The area covered the entire dimension of the head phantom and the horizontal grid spacing was 20 mm x 20 mm. Based on this data, the area of the maximum absorption was determined by Spline interpolation.
The result of Coarse Scan in the case of Plot No.1 is Plot No.1-B and the enlargement is Plot No.1-C.
The result of Coarse Scan in the case of Plot No.2 is Plot No.2-B and the enlargement is Plot No.2-C.
In the case of Plot No.1-C, the maximum intensity point is in the upper left side.
In the case of Plot No.2-C, the maximum intensity point is in the center.

Step 3: Around this point, a volume of 32 mm x 32 mm x 34 mm was assessed by measuring 5 x 5 x 7 points (Cube Scan). On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure.
A. The data at the surface were extrapolated, since the center of the dipoles is 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.2 mm. The extrapolation was based on a least square algorithm. A polynominal of the fourth order was calculated through the points in z-axes. This polynominal was then used to evaluate the points between the surface and the probe tip.
B. The maximum interpolated value was searched with a straight-forward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1g) were computed using the 3D-Spline interpolation algorithm. The 3D-Spline is composed of three one-dimensional splines with the "Not a knot"-condition (in x, y and z-directions). The volume was integrated with the trapezoidal-algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the average.
C. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

Step 4: Re-measurement of the SAR value at the same location as Step1. If the value changed by more than 5%, the evaluation was repeated.

**2. The location in the head phantom for the SAR plot shown in Plot No.1.**

Could you please refer Plot No.1-D with respect to the location in the head phantom?
The small spot is the position of right ear of the head phantom.
Could you please refer the photograph of Fig. 2 concerning the physical location between the head phantom and the handset used in Plot No.1?

Unfortunately we can not manually position the probe precisely to the top of the head along the vertical wall of the phantom in the current DASY3 measurement system. We have already asked to improve it to the manufacturer.

**3. The tissue properties in the write-up are different than those indicated on the SAR plots.**

We have used the conductivity of 1.38 at the frequency of 1500 MHz in the SAR calculation.
According to the tissue dielectric property data from Supplement C Edition 97-01 to OET Bulletin 65, the conductivity of Brain at 1900 MHz is 1.20 (S/m).
It is clear that we used the tissue simulating liquid with higher conductivity. to avoid underestimating SAR.
The conductivity of 1.38 indicated on the SAR plots is the interpolated conductivity value around the frequency of 1500 MHz.
It has been calculated under the assumption that there is a linear relation between the conductivity at the frequency of 900 MHz and the conductivity at the frequency of 1800 MHz.
The conductivity of the tissue simulating liquid is as follows according to the manufacturer's original value.
Recipe 1 Liquid : Conductivity at 900 MHz = 0.85 mho/m
Recipe 3 Liquid: Conductivity at 1800 MHz = 1.65 mho/m

We corrected the conductivity value at 1500 MHz by the difference between the measured conductivity value and the original conductivity value at 1800 MHz.

**4. Frequency of the dipole validation results and the original manufacturer dipole validation data**

The frequency of the dipole validation results was 900 MHz.
We are very sorry for the mistake.
Because we wrote the validation results at 900 MHz by mistake, we would like to submit the system verification results at 1800 MHz .

The measurement were performed in the flat section of the new generic twin phantom (shell thickness 2 mm) filled with brain simulating sugar solution of the following electrical parameters at 1800 MHz.

| | |
|---|---|
| Relative Dielectricity | 40.2 +/- 5 % |
| Conductivity | 1.65 mho/m +/- 10 % |

The dipole feedpoint was positioned below the center marking and oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 20 mm from dipole center to the solution surface. The included distance holder was used during measurements for accurate distance positioning.
The coarse grid with a grid spacing of 15 mm was aligned with the dipole. The 5 x 5 x 7 fine cube was chosen for cube integration. Probe isotropy errors were cancelled by measuring the SAR with normal and 90 ° turned probe orientations and averaging. The dipole input power (forward power) was 1 W.
We confirmed that the system was operating within its specifications of +/-5 %.

| | |
|---|---|
| Averaged over 1 $cm^3$ (1g) of tissue: | 14.3 mW/g |
| Averaged over 10 $cm^3$ (10g) of tissue: | 7.83 mW/g |

The original manufacturer system verification data:

| | |
|---|---|
| Averaged over 1 $cm^3$ (1g) of tissue: | 14.2 mW/g |
| Averaged over 10 $cm^3$ (10g) of tissue: | 7.9 mW/g |

**5. The trouble of the latest uploaded SAR plots.**

Thank you very much for your information.

**6. The sketch indicating the relative location and the position of the handset with respect to the head phantom**

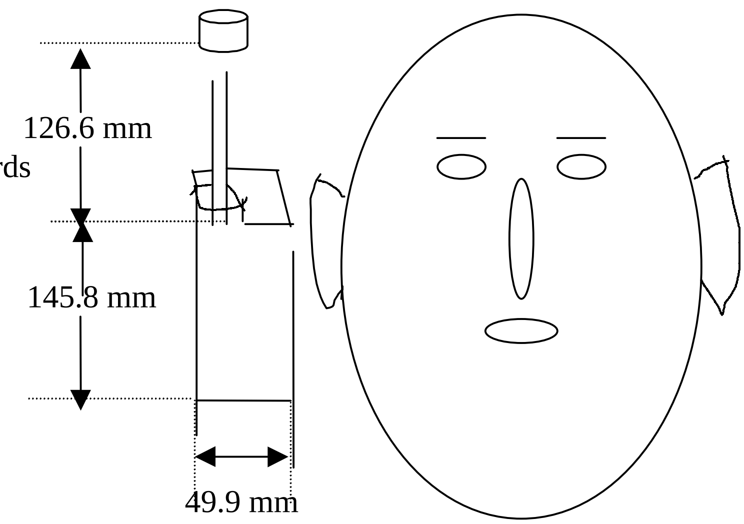
Could you please refer the photographs of Fig.1, Fig.2 and Fig.3?

The dimensions of the handset are as follows.

| | |
|---|---|
| Height: | 145.8 mm (5.74") (excluding antenna) |
| Width: | 56.5 mm (2.22") |
| Thickness: | 49.9 mm (1.96") |

| | |
|---|---|
| Non-extended Antenna height: | 45.6 mm (1.8") |
| Extended antenna height: | 126.6 mm (4.98") |
| Antenna Diameter (Max. part): | 33.5 mm ϕ (1.32"ϕ) |

The right figure is a rough sketch showing the location of the antenna. If the handset is placed on the right side of the head, the antenna is located towards the front of the head.



**7. The tissue density in the write-up has the wrong unit**
Thank you very much for your information.

**8. Information on E-field probe calibration indicating the average power or field intensity**
It is correct that many diode-detector probes behave like peak detectors for narrow pulsed fields with large duty cycles. The probes manufactured by Schmid & Partner Engineering AG, however, have been optimized to detect the rms-value for duty cycles of at least up to 100 (Figure 13 in "Automated E-Field Scanning System for Dosimetric Assessments" by T. Schmid, O.Egger and N. Kuster, MTT-Vol. 44,no.1.,pp.105-113). Could you please refer Figure 8 that is same as Figure 13? The duty factor on the transmit power is 9.2 %.
At every measurement point, the minimum averaging time was set to be larger than 500 ms, i.e., at least 5 pulses were measured and averaged. In addition, the system automatically compensates for diode compression also in case of pulse fields (see paper above).