October 31, 2001

Federal Communications Commission
Equipment Approval Services
7435 Oakland Mills Road
Columbia, MD 21046
Attn: Martin Perrine

SUBJECT: TOPAZ3, L.L.C.
FCC ID: O7KPL150
731 Confirmation No.: EA102136
Correspondence Ref. No.: 21028

Dear Martin:

On behalf of Topaz3, L.L.C. we hereby submit our response to your e-mail dated October 23, 2001 requesting additional information for the subject application.

1. The temperature of the fluid was not reported on the SAR evaluation report for the following reasons. The SAR evaluation was performed in a controlled environment in which the ambient temperature and humidity were maintained to within the specifications as prescribed in OET 65 Supplement C under "Tissue Dielectric Property Requirements". On pages 3 and 4 of the SAR evaluation report both the temperature and humidity were reported and both fall within the specified limit. It is assumed that since the fluid is exposed to this controlled environment on a continual basis that fluid temperature will stabilize to the surrounding ambient conditions. Due to the volume of fluid used in the evaluation, small fluctuations in the ambient conditions over the course of the evaluation period will not significantly change the temperature of the fluid. Prior to the evaluation of the device for SAR the fluid parameters are determined using a HP85070B dielectric probe kit. The distilled water used as the reference fluid was maintained in the same environment as the simulated tissue fluid used for the SAR system. In order to verify the accuracy of the simulated fluid, the temperature of both the reference fluid and the fluid for the SAR measurement system have to be within the specified limits.

2. The depth of the simulating tissue in the planar area of the Generic Twin phantom used in the SAR evaluation is no less than 15.0cm.

3. Please see attached sketch showing the positioning of the EUT in reference to the phantom reference points.

4. The probe calibration date is March 2001 as listed on page 10 of the SAR report and on the probe calibration in Appendix C.

5. The date of the system validation is August 10, 2001 as reported on the validation plot in Appendix B - Dipole Validation.

6. As reported in the "Details of SAR Evaluation" on page 5 of the SAR report, the device was operated for an appropriate period in order to minimize drift of the conducted power. The power level was checked before and after the SAR evaluation. If any appreciable drift in the conducted power occurred over the course of the SAR test, then a retest was warranted. Since no variances in the conducted power levels were detected to within an acceptable degree of accuracy, only one conducted power was reported for each channel tested and can be assumed to be equal to both the pre and post SAR test.

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7. The extrapolation between 2.0mm and 3.2mm for the phantom thickness is as follows: At 1800MHz with a separation distance of 10mm from the center of the dipole axis to the fluid, and at 900MHz with a separation distance of 15mm, the new target values are lower then expected by 12% and 8% respectively. Please find attached the extrapolated SAR values and reported increase in phantom thickness from the system manufacturer. As the frequency is reduced further, the error due to the increased phantom thickness becomes less significant. Since the manufacturer has not given target values for the lower frequencies, it is estimated by extrapolation that at 450MHz the actual measured SAR values will be approximately 5.4% lower than expected, and at 150MHz approximately 3.6% lower than expected. In this case both face-held and body-worn RF exposure evaluations are approximately 3.6% lower than reported since both were both performed in the planar section of the phantom. This device is intended for Controlled Exposure/Occupational Environment, and for both face-held and body-worn configurations there is sufficient margin for SAR at a 100% duty cycle with a spatial peak limit of 8.0 W/Kg.

8.The determination of the E-field conversion factors for frequencies outside the calibrated ones were performed using a common linear regression as prescribed by the manufacturer. The extrapolation and interpolation was based on the two calibrated data points of 900 and 1800MHz in head simulating tissue. Included in this reply is an example of an identical calibrated E-field probe from the system's manufacturer. In this example the conversion numbers, outside the calibrated 900 and 1800MHz points, were determined by the manufacturer using numerical methods. There exists at this time no other method by the manufacturer of determining probe conversion below 800MHz. The chart and tables attached indicate the linearity of this E-field probe across several frequency bands with the associated uncertainty. The graph also shows that for frequencies below 800MHz the slope of the derived conversion numbers is steeper. If an extrapolation is performed from the two data points, 900 and 1800MHz, in the absence of numerical modeling, the probe conversion numbers derived are less than those expected. Since the conversion number used in this system is inversely proportional to the total SAR value determined, a lower than expected conversion number will result in an over estimation of the actual SAR.

If you have any questions or comments concerning the above, please do not hesitate to contact me.

Sincerely,

Shawn McMillen
General Manager
Celltech Research Inc.
Testing & Engineering Lab

cc: Topaz3 L.L.C.
Rhein Tech Labs

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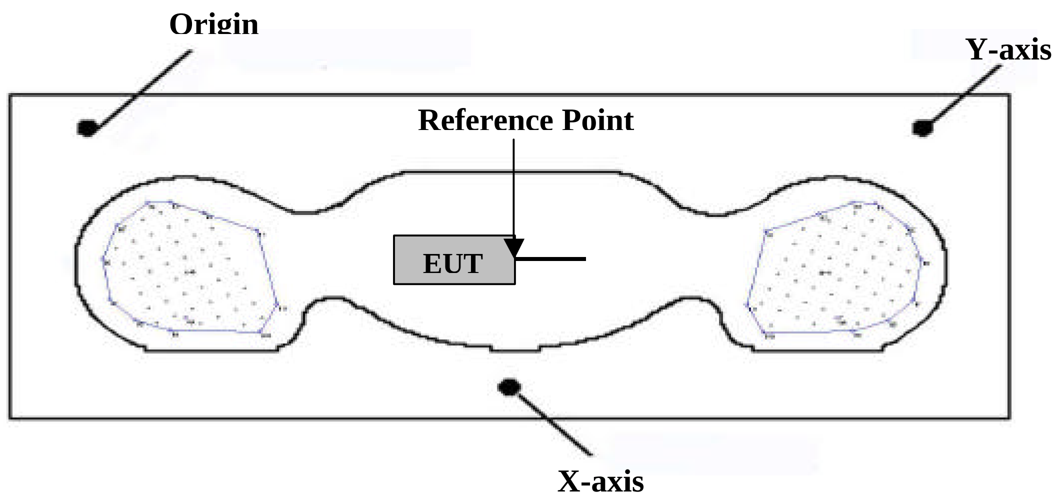

Phantom Measurement Points & EUT Positioning

MC0300: Change in Procedure of Dipole Calibration

Procedure Before February 2000

The distance between the dipole axis and head tissue simulating liquid was based on the specifications given by the vendor manufacturing the generic twin phantom. The specifications for the shell thickness were 2 ± 0.2 mm at the location where the phone touches the head as well as at the location of dipole validation in the flat phantom area. The thickness of the first phantom was carefully verified using the robot, which is a very tedious and time consuming procedure. Afterward, Schmid & Partner Engineering AG (SPEAG) relied on the manufacturer's specifications, since suitable equipment for routine validation of the shell thickness was not available before January 2000.

Rationale for Change of Procedure

During the course of closing the remaining gaps of quality control of our products and production, SPEAG purchased the hall effect wall thickness gauge MINITEST FH4100 of ElektroPhysik in January 2000. This instrumentation enables measurement of the shell thickness with a precision of better than ±0.1 mm. Verification of the phantoms revealed that the production variability in the regions of validation is considerably larger, i.e., about 2.8 ± 0.4 mm, which is due to an unnotified change in the production method of the vendor. The mean and deviation were estimated thereafter based on a limited number of samples.

The thickness of the phantom used for dipole calibration has a thickness of 3.2 ± 0.1 mm. In other words, the distances between the dipole axis and the liquid were 16.2 mm and not 15 mm below 1 GHz and 11.2 instead of 10 mm above 1 GHz. Therefore, an incorrect distance is stated in all calibration documents issued before February 2000. This does not effect laboratories using the generic twin phantom, only those groups which use other phantoms.

Changes in Procedure (effective February 2000)

1) Rigorous quality control of the new phantoms and conduct of the calibration at the correct distances of 15 mm and 10 mm respectively.

2) Provision of the corrected calibration distance as well as of extrapolated values for the distances 15, 15.5 and 16 mm for customers using phantoms other than the generic twin phantom. The latter are extrapolated values based on a series of measurements conducted with different dipoles which therefore have slightly enhanced uncertainties.

Suggested on: 15. 04. 2000 by: [signature]

Approved on: 16. 04. 2000 by: [signature]

Schmid & Partner
Engineering AG

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D900V2 – SN:054 Summary of Dipole Data (June 20, 2001)

SAR Measurement

In the Table 1 averaged measured and extrapolated SAR values are normalized to a dipole input power of 1W (forward power). The dipole was position below the flat phantom filled with head-tissue simulating liquid (ε=42.4, σ=0.97).

Distance (mm)	SAR (1g) mW/g	SAR (10g) mW/g	Validation Repeatability (Standard deviation)	Method
15.0	**11.12**	**7.04**	**± 4%**	**Calibrated**
15.5	10.76	6.86	± 5%	Extrapolated
16.0	10.43	6.69	± 5%	Extrapolated
16.2 [1]	10.30	6.62	± 5%	Extrapolated

In the Table 2 averaged measured and extrapolated SAR values are normalized to a dipole input power of 1W (forward power). The dipole was position below the flat phantom filled with head-tissue simulating liquid (ε=41.0, σ=0.86).

Distance (mm)	SAR (1g) mW/g	SAR (10g) mW/g	Validation Repeatability (Standard deviation)	Method
15.0	**10.12**	**6.52**	**± 4%**	**Calibrated**
15.5	9.79	6.35	± 5%	Extrapolated
16.0	9.49	6.19	± 5%	Extrapolated
16.2 [1]	9.37	6.13	± 5%	Extrapolated

Dipole Impedance and Return Loss

The transformation parameters from the SMA-connector to the dipole feedpoint are:

Electrical delay:	**1.413 ns**	(one direction)
Transmission factor:	**0.989**	(voltage transmission, one direction)

[1] As explained in the document "MC0300: Change in Procedure of Dipole Calibration" of April 15th, 2000, the distance between the dipole axis and liquid was 1.2 mm more than stated in the original documents issued before February 2000. The extrapolated values and the given uncertainties have been carefully evaluated and have been validated by measurements and computations.

Schmid & Partner Engineering AG

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D1800V2 – SN:247 Summary of Dipole Data (June 20, 2001)

SAR Measurement

In the Table 1 averaged measured and extrapolated SAR values are normalized to a dipole input power of 1W (forward power). The dipole was position below the flat phantom filled with head-tissue simulating liquid (ε=40.0, σ=1.36).

Distance (mm)	SAR (1g) mW/g	SAR (10g) mW/g	Validation Repeatability (Standard deviation)	Method
10.0	**38.7**	**20.1**	**± 4%**	**Calibrated**
10.5	36.8	19.3	± 5%	Extrapolated
11.0	35.1	18.6	± 5%	Extrapolated
11.2 [1]	34.5	18.3	± 5%	Extrapolated

In the Table 2 averaged measured and extrapolated SAR values are normalized to a dipole input power of 1W (forward power). The dipole was position below the flat phantom filled with head-tissue simulating liquid (ε=40.1, σ=1.71).

Distance (mm)	SAR (1g) mW/g	SAR (10g) mW/g	Validation Repeatability (Standard deviation)	Method
10.0	**43.6**	**21.6**	**± 4%**	**Calibrated**
10.5	41.5	20.8	± 5%	Extrapolated
11.0	39.6	20.1	± 5%	Extrapolated
11.2 [1]	38.9	19.8	± 5%	Extrapolated

Dipole Impedance and Return Loss

The transformation parameters from the SMA-connector to the dipole feedpoint are:

Electrical delay:	**1.208 ns**	(one direction)
Transmission factor:	**0.995**	(voltage transmission, one direction)

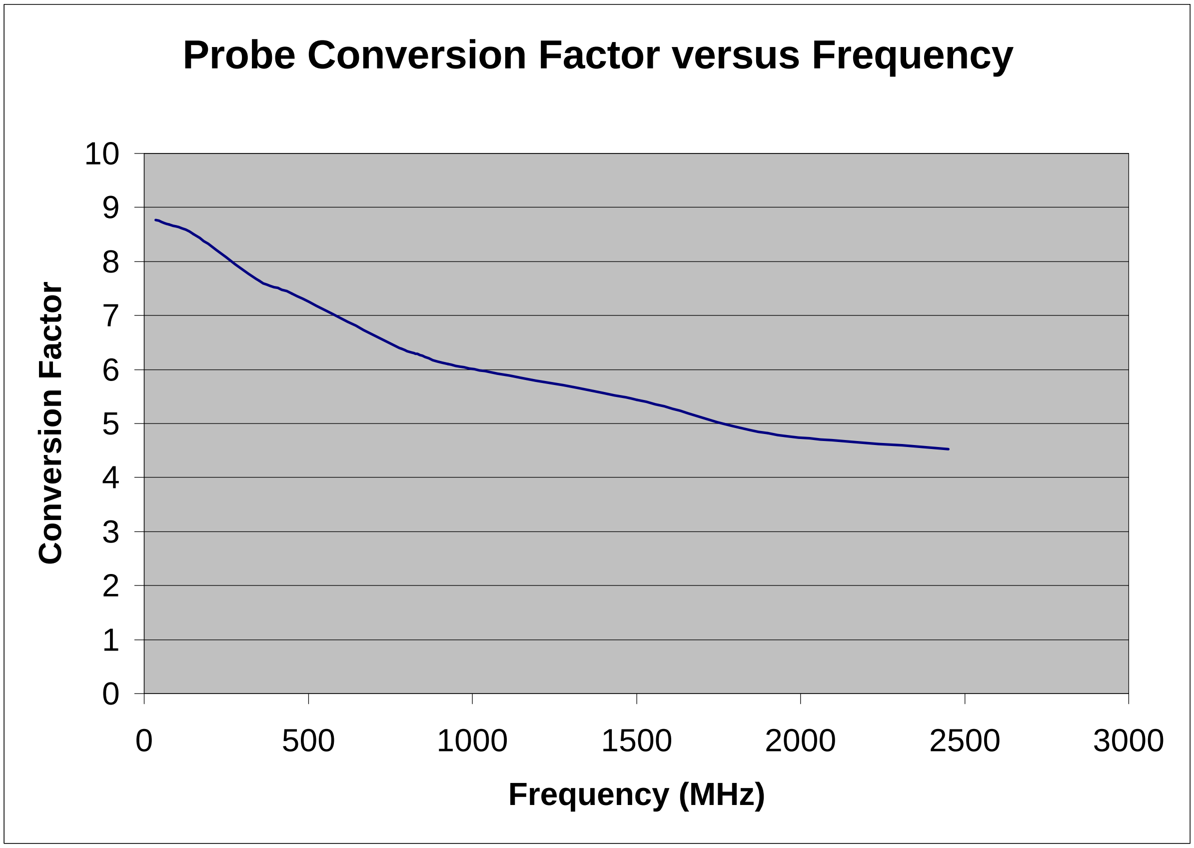
[1] As explained in the document "MC0300: Change in Procedure of Dipole Calibration" of April 15th, 2000, the distance between the dipole axis and liquid was 1.2 mm more than stated in the original documents issued before February 2000. The extrapolated values and the given uncertainties have been carefully evaluated and have been validated by measurements and computations.

Dosimetric E-Field Probe ET3DV6
Head Tissue Conversion Factor (± standard deviation)

400 MHz	ConvF	7.64 ± 8%	ε_r = 44.4 σ = 0.87 mho/m CENELEC Head Tissue
835 MHz	ConvF	6.54 ± 8%	ε_r = 42.5 σ = 0.98 mho/m CENELEC Head Tissue
900 MHz	ConvF	6.41 ± 8%	ε_r = 42.3 σ = 0.99 mho/m CENELEC Head Tissue
350 MHz	ConvF	7.76 ± 8%	ε_r = 44.7 σ = 0.87 mho/m IEEE Head Tissue
450 MHz	ConvF	7.52 ± 8%	ε_r = 43.5 σ = 0.87 mho/m IEEE Head Tissue
835 MHz	ConvF	6.53 ± 8%	ε_r = 41.5 σ = 0.90 mho/m IEEE Head Tissue
925 MHz	ConvF	6.37 ± 8%	ε_r = 41.45 σ = 0.98 mho/m IEEE Head Tissue
1500 MHz	ConvF	6.04 ± 8%	ε_r = 40.43 σ = 1.23 mho/m IEEE Head Tissue
1900 MHz	ConvF	5.41 ± 8%	ε_r = 40.0 σ = 1.40 mho/m IEEE Head Tissue
2450 MHz	ConvF	5.18 ± 8%	ε_r = 39.2 σ = 1.8 mho/m IEEE Head Tissue
2450 MHz	ConvF	5.40 ± 8%	ε_r = 37.2 σ = 2.09 mho/m H1800 at 2450 MHz

Dosimetric E-Field Probe ET3DV6
Muscle Tissue Conversion Factor (± standard deviation)

35 MHz	ConvF	8.77 ± 15%	ε_r = 85.19 σ = 0.69 mho/m FCC Muscle Tissue
75 MHz	ConvF	8.68 ± 10%	ε_r = 69.93 σ = 0.72 mho/m FCC Muscle Tissue
150 MHz	ConvF	8.51 ± 8%	ε_r = 62.68 σ = 0.75 mho/m FCC Muscle Tissue
350 MHz	ConvF	7.64 ± 8%	ε_r = 58.41 σ = 0.80 mho/m FCC Muscle Tissue
450 MHz	ConvF	7.40 ± 8%	ε_r = 57.62 σ = 0.83 mho/m FCC Muscle Tissue
784 MHz	ConvF	6.38 ± 8%	ε_r = 56.25 σ = 0.93 mho/m FCC Muscle Tissue
835 MHz	ConvF	6.28 ± 8%	ε_r = 56.11 σ = 0.95 mho/m FCC Muscle Tissue
925 MHz	ConvF	6.10 ± 8%	ε_r = 55.9 σ = 0.98 mho/m FCC Muscle Tissue
1500 MHz	ConvF	5.44 ± 8%	ε_r = 54.87 σ = 1.23 mho/m FCC Muscle Tissue
1900 MHz	ConvF	4.82 ± 8%	ε_r = 54.3 σ = 1.45 mho/m FCC Muscle Tissue
2450 MHz	ConvF	4.53 ± 8%	ε_r = 53.57 σ = 1.81 mho/m FCC Muscle Tissue


Probe Conversion Factor versus Frequency
Conversion Factor
0
1
2
3
4
5
6
7
8
9
10
0
500
1000
1500
2000
2500
3000
Frequency (MHz)