November 28, 2001

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

SUBJECT: Datron World Communications, Inc.
FCC ID: B3TG25RPV100
731 Confirmation No.: EA102146
Correspondence Ref. No.: 21037

Dear Martin:

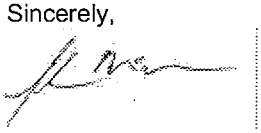
On behalf of Datron is our response to the SAR items 1-9 of your e-mail dated October 23, 2001 requesting additional information for the subject application.

1. Attached are the revised SAR data tables showing the "before and after" power measurements.
2. The date of the system validation was August 9, 2001 as reported on the validation plot in Appendix B - Dipole Validation.
3. The EUT was tested with the transmitter in continuous operation (100% duty cycle) throughout the SAR evaluation. Since this is a push-to-talk device, the 50% duty cycle compensation reported in Section 4.0 assumes a transmit/receive cycle of equal time base.
4. 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.
5. The determination of the E-field probe conversion numbers was performed by the system manufacturer's recommended linear extrapolation routine. The extrapolation and interpolation was based on the two calibrated data points of 900 and 1800MHz in head simulating tissue. Included in this response is an example of an identical calibrated E-probe from the same system manufacturer. The conversion numbers outside the two calibration reference points for this probe were determined 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 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.
6. Per the applicant, the accessories listed in the users manual are not available at this time and will be removed from the manual.
7. Per the applicant, there are no body-worn accessories available at this time containing metal.

8. Per the applicant, the broadband antenna referenced in the users manual is not available at this time and will be removed from the manual.
9. 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.

If you have any further questions regarding the above, please do not hesitate to contact me.

Sincerely,



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

cc: Datron World Communications, Inc.
M. Flom Associates, Inc.

4.0 MEASUREMENT SUMMARY

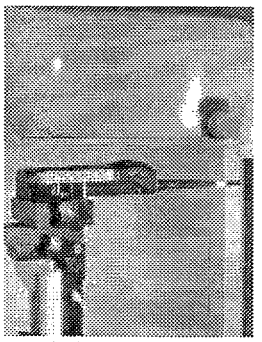
The measurement results were obtained with the EUT tested in the conditions described in this report. Detailed measurement data and plots showing the maximum SAR location of the EUT are reported in Appendix A.

Face-Held SAR Measurements

Freq. (MHz)	Channel	Mode	Conducted Power Before (W)	Conducted Power After (W)	Antenna Position	Separation Distance (cm)	SAR (w/kg) Measured SAR values with 3.2mm phantom	
							100% Duty Cycle	50% Duty Cycle
136.05	Low	CW	5.02	4.98	Fixed	2.5	0.216	0.108
156.75	Mid	CW	3.93	3.89	Fixed	2.5	0.541	0.271
173.84	High	CW	4.21	4.18	Fixed	2.5	0.224	0.112
Mixture Type: Brain Dielectric Constant: 59.9 Conductivity: 0.48				**ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Controlled Exposure / Occupational BRAIN: 8.0 W/kg (averaged over 1 gram)**				

Notes:

1. The SAR values found were below the maximum limit of 8.0 w/kg (controlled exposure).
2. The highest face-held SAR value found was 0.541 w/kg (100% duty cycle).
3. The EUT was tested for face-held SAR with a 2.5cm separation distance between the front of the EUT and the outer surface of the planar phantom.
4. See Appendix B for explanation of phantom thickness.
5. Ambient TEMPERATURE: 22.4 °C
   Relative HUMIDITY: 56.2 %
   Atmospheric PRESSURE: 95.3 kPa



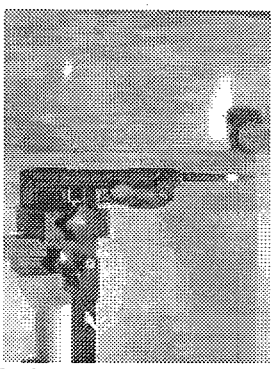
Face-held SAR Test Setup with 2.5cm spacing

Body-Worn SAR Measurements

Freq. (MHz)	Channel	Mode	Conducted Power Before (W)	Conducted Power After (W)	Antenna Position	Separation Distance (cm)	SAR (w/kg)	
							Measured SAR values with 3.2mm phantom	
							100% Duty Cycle	50% Duty Cycle
136.05	Low	CW	5.04	5.01	Fixed	1.5	4.94	2.47
156.75	Mid	CW	3.94	3.88	Fixed	1.5	0.441	0.221
173.84	High	CW	4.23	4.19	Fixed	1.5	0.523	0.262
Mixture Type: Muscle Dielectric Constant: 65.7 Conductivity: 0.75				ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Controlled Exposure / Occupational BODY: 8.0 W/kg (averaged over 1 gram)				

Notes:

1. The SAR values found were below the maximum limit of 8.0 w/kg (controlled exposure).
2. The highest body-worn SAR value found was 4.94 w/kg (100% duty cycle).
3. The EUT was tested for body-worn SAR with a 1.5cm separation distance between the back of the EUT and the outer surface of the planar phantom.
4. See Appendix B for explanation of phantom thickness.
5. Ambient TEMPERATURE: 22.4 °C
   Relative HUMIDITY: 56.2 %
   Atmospheric PRESSURE: 95.3 kPa



Body-worn SAR Test Setup
with 1.5cm separation distance

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: Schmid Katja

Approved on: 16.04.2000 by:

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 **EXAMPLE**

Head Tissue Conversion Factor (± standard deviation)

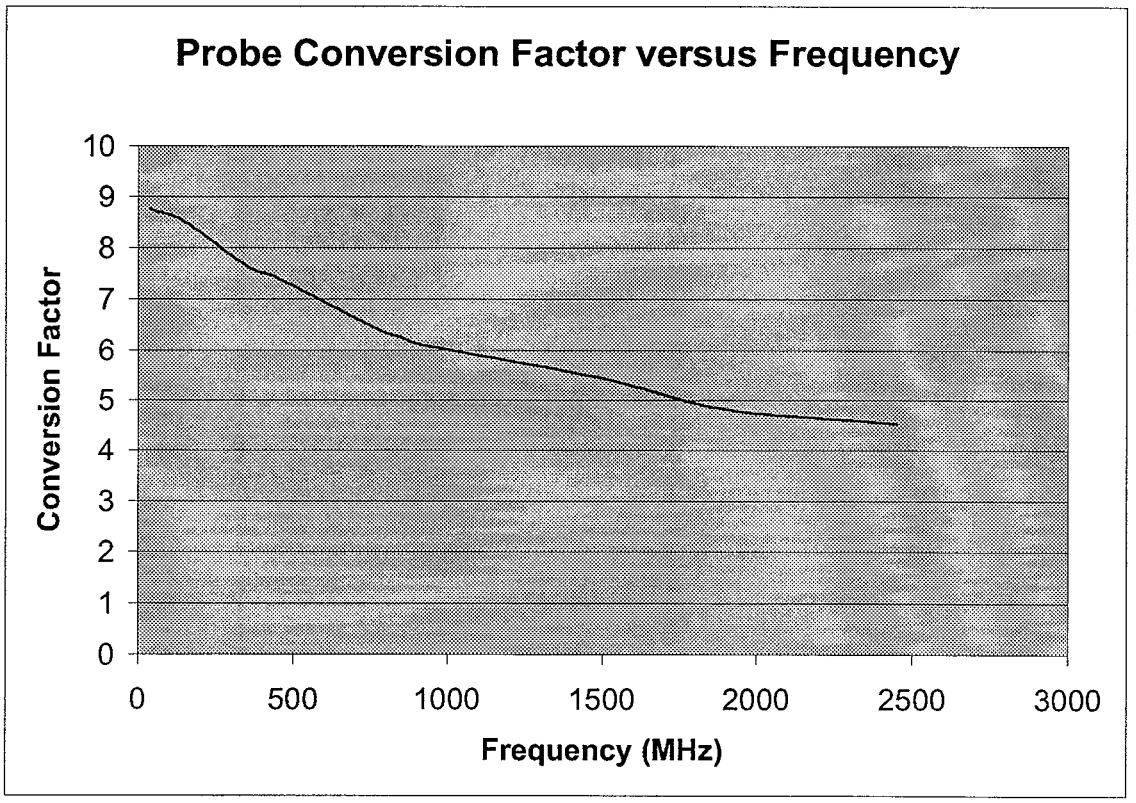
400 MHz	ConvF	7.64 ± 8%	ε_r = 44.4 σ = 0.87 mho/m CENELEC Head Tissue
835 MHz	ConvF	6.54 ± 8%	ε_r = 42.5 σ = 0.98 mho/m CENELEC Head Tissue
900 MHz	ConvF	6.41 ± 8%	ε_r = 42.3 σ = 0.99 mho/m CENELEC Head Tissue
350 MHz	ConvF	7.76 ± 8%	ε_r = 44.7 σ = 0.87 mho/m IEEE Head Tissue
450 MHz	ConvF	7.52 ± 8%	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 \ **EXAMPLE**

Body Tissue Conversion Factor (± standard deviation)

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

EXAMPLE


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