



February 12, 2002

Mr. Joe Dichoso
Federal Communications Commission
445 12th Street, N.W.
Washington, DC 20554

Re: Application for Permissive Change
FCC ID No. N7NACRD2
Correspondence Reference Number 21804
731 Confirmation Number EA102096

Dear Mr. Dichoso:

In response to your correspondence we offer the following information.

1) The conversion factors on the SAR plot are for head tissue parameters at 900 MHz. The tests require the proper factors for muscle tissue at 835 MHz. Please retest with the proper conversion factors.

Appendix 1 contains the response from our test laboratory. They have recomputed the results using the correct conversion factor for 835 Mhz and have provided a table of new values in Appendix 1 and new plots in Appendix 2.

** 2) The previous SAR tests were at a 2 cm distance. Redo the SAR test at the same 2 cm distance and correct the RF safety warning accordingly. Provide the user manual RF safety statement and include the prohibition of co-locating the transmitter with other transmitters.*

This version of the product has a manual that is unique and different from that used with previous versions. As advised in your email correspondence of February 6, 2002, you will accept our previously submitted SAR test results at 2.25 cm in this case. Our current safety warning requires the user to maintain a distance of 3 cm from the antenna. This distance is reasonable for this PDA application and the user is not expected to come within this distance in

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normal use. As allowed in your email of February 8, 2002, we choose to keep this distance in our safety statement. The updated pages of the user manual showing the addition of the prohibition of co-locating the transmitter with other transmitters is uploaded as a separate file "manual update Feb 12".

3) For the new test, provide z-scan plots to verify the liquid depth.

The response from our test lab is given in Appendices 1 and 2. A Z-scan plot is provided at the end of Appendix 2 (on page 13) for distance up to 35 mm. Their test system does not provide the capability to automatically scan the Z axis beyond this distance. The total depth of the liquid used was manually measured using a scale and found to be 14.7 cm as stated in Appendix 1.

4) Provide the fee for the confidential request. Contact Bette Taube at B-Taube@fcc.gov for any fee issues.

This fee has been submitted.

Very truly yours,

A handwritten signature in blue ink, appearing to read "R. Vanderhelm". The signature is fluid and cursive, with a large initial "R" and a long, sweeping underline.

Ron Vanderhelm, P.Eng.
Principal RF Engineer
Sierra Wireless Inc.

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Appendix 1

This document was provided by
Mr. David Chernomordik of
Intertek Testing Services ETL Semko,
1365 Adams Court
Menlo Park, CA 94025
Tel: 650-463-2900
Fax: 650-463-2910

From: DChernom@ETLSemko.com
Sent: Monday, February 11, 2002 11:52 AM
To: rvanderhelm@SierraWireless.com
Subject: RE: FCC SAR questions for N7NACRD2

Hello Ron,

I am sending the response to FCC question. We recalculate the SAR for the new Conversion Factor of the Probe and add the z-scan plot. See attached. About "prohibition of co-locating the transmitter with other transmitters", you can write "The device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter".

Thanks

David

In response to FCC info request.

Re: FCC ID N7NACRD2
Applicant: Sierra Wireless Inc.
Correspondence Reference Number: 21802
731 Confirmation Number: EA102096

1. The SAR test was performed with the probe calibrated for head tissue. Now we received from SPEAG the new probe Conversion Factor for muscle. For 835 MHz the Conversion Factor is 5.72 (instead of 5.83). We recalculated SAR using the new Conversion Factor. The test results are attached. As can be seen from the plots, the corrected SAR values are 1.6% - 2.2% higher than the values in the test report.
2. The previous SAR tests (on February 18, 2001) were performed at 2 cm and 2.25 cm. The highest SAR at 2 cm was 1.44 mW/g. As the new sample (tested in December 2001) has a slightly higher power, the SAR might have a very low margin or might exceed the limit. This is the reason why we did not do the test at 2 cm. According to the Warning Statement, the manufacturer declared the safe distance as 3 cm.

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- Since 3 cm is the declared safe distance, in our opinion it should not matter if the test was performed at 2 or 2.25 cm.
3. The z-scan plot at the central line is attached. The liquid depth during the test was 14.7 cm.

| | | | |
|--------------------|-----------------------|-----------------------|--------------|
| Trade Name: | Sierra Wireless, Inc. | Model No.: | AirPath 300 |
| Serial No.: | Not Labeled | Test Engineer: | Xi-Ming Yang |

| TEST CONDITIONS | | | |
|------------------------------|-----------|-----------------------------|------------|
| Ambient Temperature | 21.5 °C | Relative Humidity | 39 % |
| Test Signal Source | Test Mode | Signal Modulation | CW |
| Output Power Before SAR Test | 27.8 dBm | Output Power After SAR Test | 27.8 dBm |
| Test Duration | 23 Min. | Number of Battery Change | Every Scan |

| PDA Position: Face-up | | | | | |
|-----------------------|----------------|--------------|-------------------------------|-----------------------------------|-------------|
| Channel MHz | Operating Mode | Crest Factor | Antenna Position From Phantom | Measured SAR _{1g} (mW/g) | Plot Number |
| 824 | CW | 1 | 22.5 mm | 1.15 | 1 |
| 836 | CW | 1 | 22.5 mm | 1.02 | 2 |
| 849 | CW | 1 | 22.5 mm | 1.30 | 4 |

| PDA Position: upright | | | | | |
|-----------------------|----------------|--------------|-------------------------------|-----------------------------------|-------------|
| Channel MHz | Operating Mode | Crest Factor | Antenna Position From Phantom | Measured SAR _{1g} (mW/g) | Plot Number |
| 824 | CW | 1 | 22.5 mm | 1.30 | 5 |
| 836 | CW | 1 | 22.5 mm | 1.35 | 6 |
| 849 | CW | 1 | 22.5 mm | 1.37 | 3 |

Note: a) Worst case data were reported
 b) Uncertainty of the system is not included

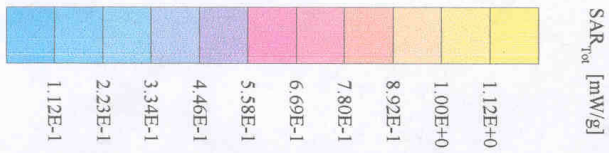
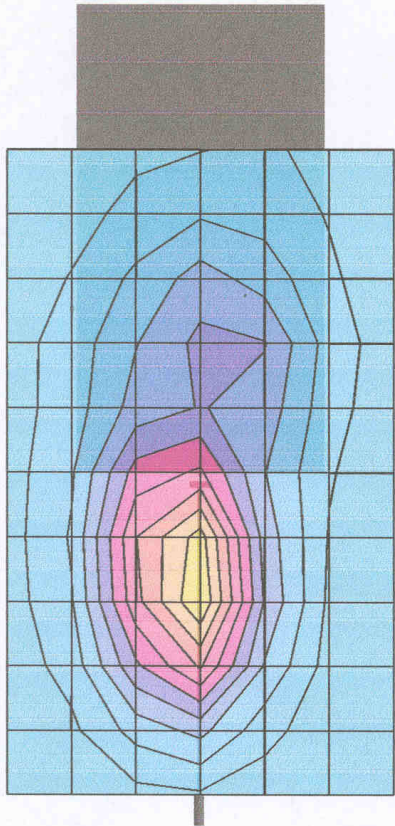
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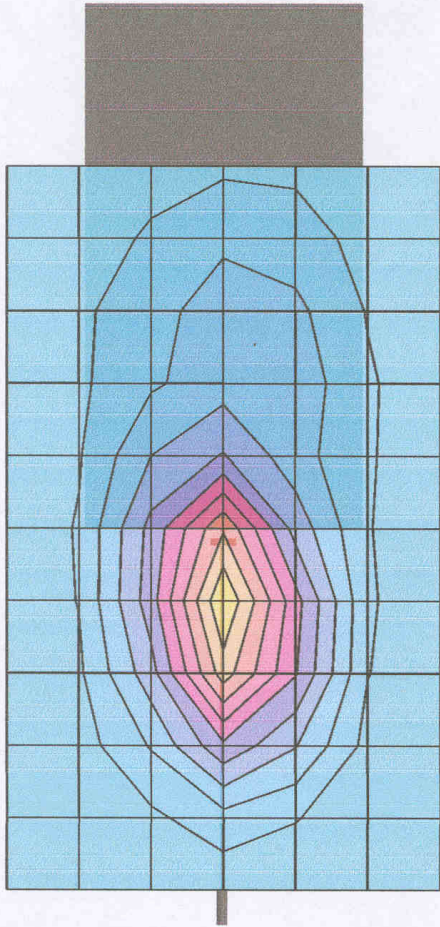
Appendix 2

This information was provided by
Mr. David Chernomordik of
Intertek Testing Services ETL Semko,
1365 Adams Court
Menlo Park, CA 94025
Tel: 650-463-2900
Fax: 650-463-2910

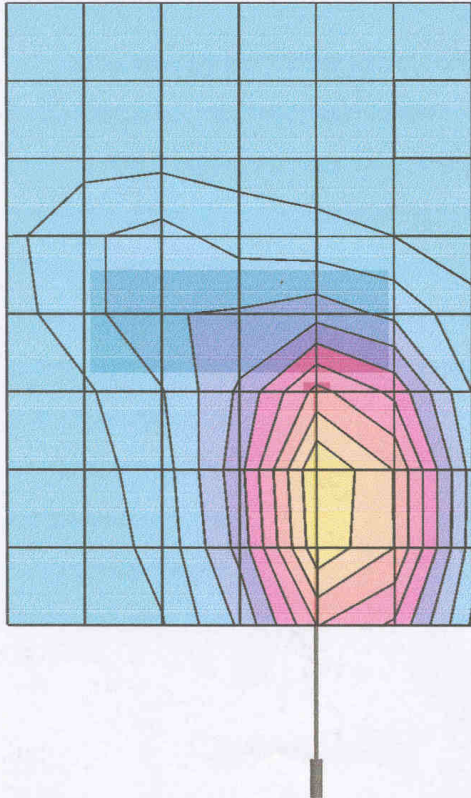
AirPath 300 #1
Generic Twin Phantom, Flat Section, Position: (90°, 90°), Frequency: 824 MHz
Probe: ET3DV5 - SN1333; ConvF(5 72.5 72.5 72); Crest factor: 1.0; Muscle 824MHz: $\sigma = 0.96 \text{ mho/m}$, $\epsilon_r = 56.2$, $\rho = 1.00 \text{ g/cm}^3$
Cube 5x5x7: SAR (1g): 1.15 mW/g, SAR (10g): 0.782 mW/g. (Worst-case extrapolation)
Course: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdirt: -0.03 dB



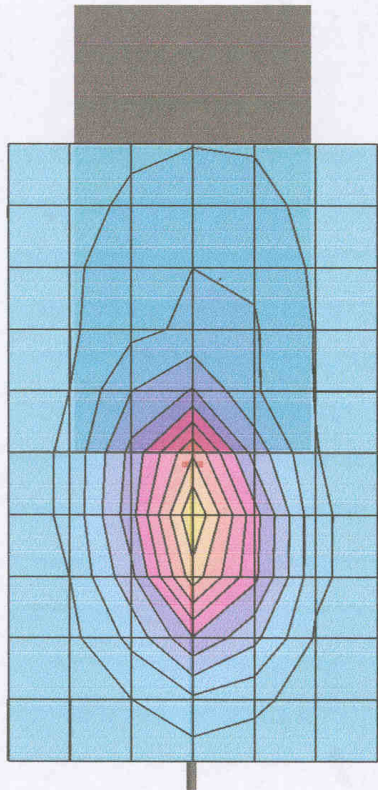
AirPath 300 # 2
Generic: Twin Phantom; Flat Section; Position: (90°, 90°); Frequency: 836 MHz
Probe: ET3DV5 - SN1333; ConvF(S: 72.5 72.5 72); Crest factor: 1.0; Muscle 83.5 MHz: $\sigma = 0.96$ mho/m $\epsilon_r = 56.2$ $\rho = 1.00$ g/cm³
Cube 5x5x7: SAR (1g): 1.02 mW/g; SAR (10g): 0.691 mW/g; (Worst-case extrapolation)
Course: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdirt: 0.01 dB



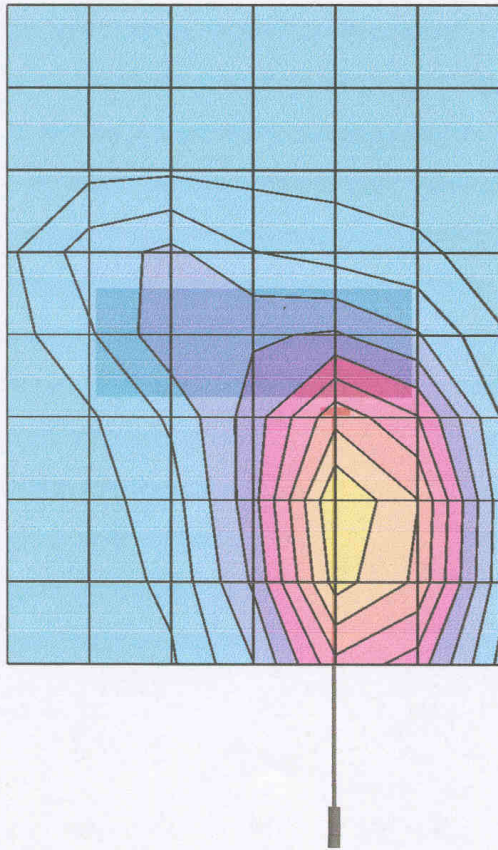
AirPath 300 # 3
Generic Twin Phantom; Flat Section; Position: (90°, 90°); Frequency: 849 MHz
Probe: ET3DV5 - SN1333; ConvF(5 72, 5 72); Crest factor: 1.0; Muscle 849MHz: $\sigma = 0.96$ mho/m; $\epsilon_r = 56.2$ $\rho = 1.00$ g/cm³
Cube 5x5x7; SAR (1g) 1.37 mW/g; SAR (10g) 0.951 mW/g; (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdift: -0.00 dB



AirPath 300 # 4
Generic Twin Phantom; Flat Section; Position: (90°, 90°); Frequency: 849 MHz
Probe: ET3DV5 - SN1333; ConvF(5: 72.5, 72.5, 72); Crest factor: 1.0; Muscle 849MHz: $\sigma = 0.96 \text{ mho/m}$, $\epsilon_r = 56.2$, $\rho = 1.00 \text{ g/cm}^3$
Cube 5x5x7; SAR (1g): 1.30 mW/g, SAR (10g): 0.889 mW/g, (Worst-case extrapolation)
Course: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdrit: 0.00 dB

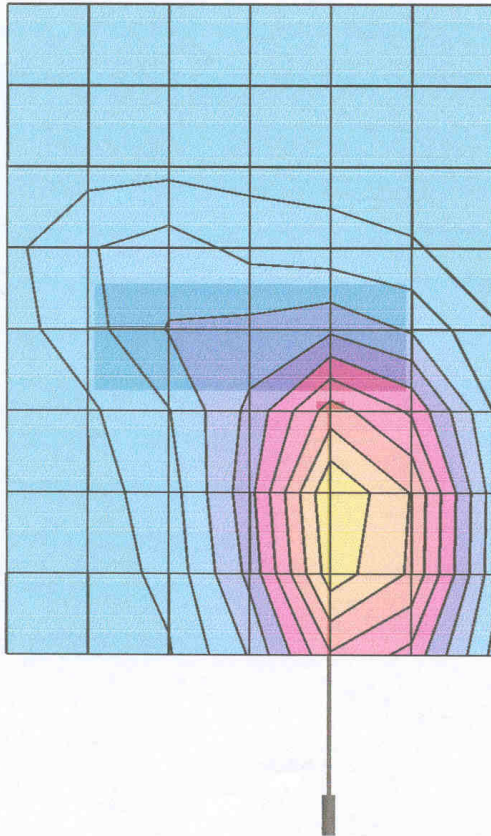


AirPath 300 #5
Generic: Twin Phantom; Flat Section; Position: (90°, 90°); Frequency: 824 MHz
Probe: ET3DV5 - SNI333; ConvF(5 72.5 72.5 72); Crest factor: 1.0; Muscle 824MHz; $\sigma = 0.96$ mho/m $\epsilon_r = 56.2$ $\rho = 1.00$ g/cm³
Cube 5x5x7; SAR (1g): 1.30 mW/g; SAR (10g): 0.911 mW/g; (Worst-case extrapolation)
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdift: -0.08 dB

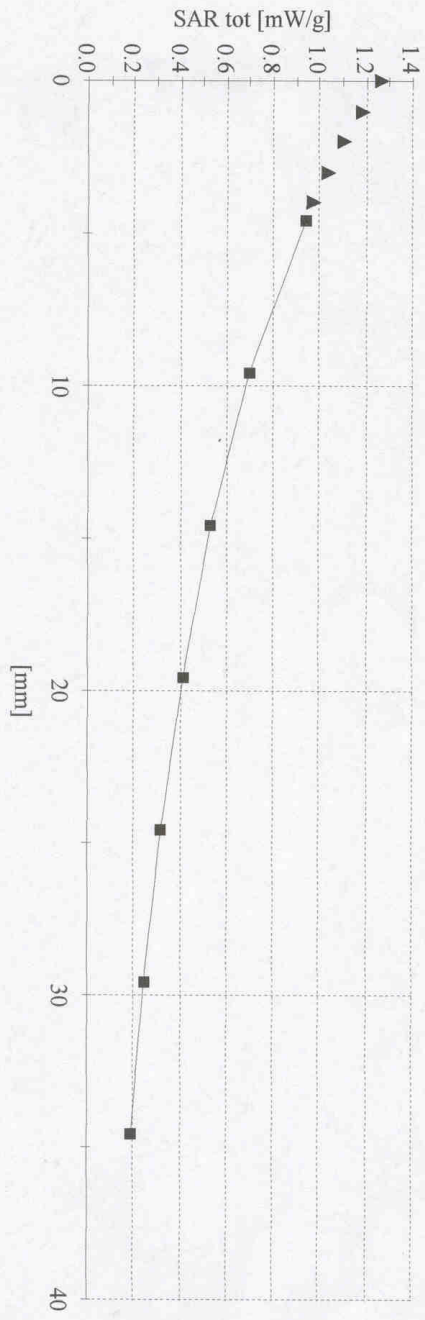


AirPath 300 #6

Generic Twin Phantom; Flat Section; Position: (90°, 90°); Frequency: 836 MHz
Probe: ET3DV5 - SN1333; ConvF(5 72, 5 72); Crest factor: 1.0; Muscle 835 MHz; $\sigma = 0.96$ mho/m; $\epsilon_r = 56.2$ $\rho = 1.00$ g/cm³
Cube 5x5x7; SAR (1g) 1.35 mW/g; SAR (10g) 0.938 mW/g; (Worst-case extrapolation)
Course: Dx = 20.0, Dy = 20.0, Dz = 10.0
Powerdirt: -0.03 dB



AirPath 300
Generic Twin Phantom; Flat Section; Position: (80°, 65°); Frequency: 836 MHz
Probe: ET3DV5 - SN1333; ConvF(5 72.5 72.5 72); Crest factor: 1.0; Muscle 835 MHz; $\sigma = 0.96 \text{ mho/m}$; $\epsilon_r = 56.2$; $\rho = 1.100 \text{ g/cm}^3$
Cube 5x5x7; SAR (1g): 1.35 mW/g; SAR (10g): 0.938 mW/g; (Worst-case extrapolation)
Cube 5x5x7; Dx = 8.0, Dy = 8.0, Dz = 5.0



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