SIERRA WIRELESS

HEART OF THE WIRELESS MACHINE®

January 10, 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 21503
731 Confirmation Number EA102096

Dear Mr. Dichoso:

This letter refers to the pending application of Sierra Wireless, Inc. ("Sierra"), which requested the Commission's consent to a Class II permissive change to Sierra's existing certificated equipment, FCC ID No. N7NACRD2.

Our meeting with the Commission on January 3rd 2002 resulted in a suggestion by the Commission to submit three new pieces of information in order to permit the staff to complete its processing of this application. In that meeting, you suggested that we should re-state the output power rating and submit evidence of measured ERP, in a form (and using a method) that is consistent with the method used in the original application that Sierra Wireless filed for this ID. In addition, you requested clarification of the difference in equipment appearance between the photographs of the External Views of the product, and photographs of the test setups from our most recent submission. Also, you requested an analysis and attestation that the use of average versus peak antenna gain ratings has no affect on the validity of all SAR reports submitted under this ID. Our responses to each of these items are included in the appendices of this letter and are hereby submitted for your consideration.

In our meeting of January 3, 2002, you also clarified that the Commission would prefer not to revise previous grants to resolve the ERP questions that have been raised concerning this application, but that it would be acceptable for us to determine the ERP rating for this application in a manner consistent with the previous grants under this ID. In the original grant for this ID, and for subsequent permissive changes, Sierra Wireless determined the output power rating by summing the rated maximum conducted power with the average antenna gain. To be consistent, it is necessary to apply this procedure once again for this application. We therefore have re-measured the average antenna gain of the equipment configuration of this application. We have then calculated the ERP using this data. The measurement of antenna gain and calculation of

ERP are provided in Appendix 1. The resulting ERP is 26 dBm or 400 mW, which matches that of the original grant.

Appendix 2 explains the differences in the appearance of equipment seen between the equipment photographs (External Views) and the photographs included in the test reports. Appendix 3 provides the results of an analysis, and our conclusion that the use of average antenna gain rather than peak antenna gain has had no affect on the validity of SAR reports submitted under this ID.

I attest to the accuracy of the data presented and also to the conclusions in appendix 3. To the best of my knowledge, these measurements and analyses were performed following good engineering practice and using procedures consistent with industry standards.

We wish to thank the Commission for its assistance and patience in helping to clarify the ERP questions that have been raised concerning this application. As discussed above, Sierra has determined that the ERP rating for this application is the same as that for the original grant, and Sierra has provided the additional information requested by the Commission. We therefore respectfully request that a Class II permissive change be granted as promptly as possible.

If additional information is required, please contact me at my office number of 604 231 1120, or via email at helm@sierrawireless.com, or via fax at 604 231 1109. Alternatively you can contact Mr. James Blitz at Davis Wright Tremaine LLP, 202-508-6605 (ph), 202-508-6695 (fax), email: jimblitz@dwt.com.

Thank you for your assistance.

Very truly yours,

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

Appendix 1

This appendix provides additional information concerning Effective Radiated Power of the device.

Addendum to Product Description: Transmitter Power Rating

Conducted power	28 dBm max, adjustable in 4 dB steps down to 8 dBm.
Antenna gain	-2 dBd average
ERP rating	400 mW (26 dBm) average

Measurement of Effective Radiated Power

This is an addendum to previously submitted data. The previously submitted data ("Part 22 Test Report" uploaded Dec 17, 2001) presented measurement of peak ERP for purposes of showing compliance with section 22.913. Those results showed that peak ERP does not exceed 7 watts. This new measurement information is intended to show compliance with section 2.1043 which requires that no change be made to maximum power ratings to qualify for a Permissive Change.

Since the ERP of the original filing for this FCC ID, and for subsequent permissive changes for this ID, was determined using average gain of the antenna, these measurements are also done for average gain of the antenna to demonstrate that actual ERP is consistent with the ratings for the product.

Average ERP determined using Calculation of (Power+Antenna Gain)

To be consistent with previous filings in this FCC ID, average ERP is calculated by summing the rated transmitter output power (conducted) and the average antenna gain. We first measure the average antenna gain.

Measurement Method

Average antenna gain was measured with this procedure.

1) select an equipment orientation
2) place the equipment in the test apparatus,
3) measure the gain of the antenna in the reference direction identified as 0 degrees of DUT rotation
4) rotate the DUT a specific number of degrees (rotation is in the horizontal plane around the

vertical axis), then measure the gain again.
5) repeat step 4 until a full 360 degrees of rotation is completed. . The number of points measured in this case is 300, so the rotation increment is 360/300=1.2 degrees
6) calculate the average by converting all 300 values to watts, summing them, then dividing the sum by 300 and converting the result back to dB.

The average gain of the antenna was measured at several common orientations of the user equipment. The orientation that produced the highest value for average gain was identified and used to generate this data. This is consistent with the procedure used for the original filing under this ID.

Measurement Apparatus

The antenna gain was measured using the configuration in the block diagram of figure A1

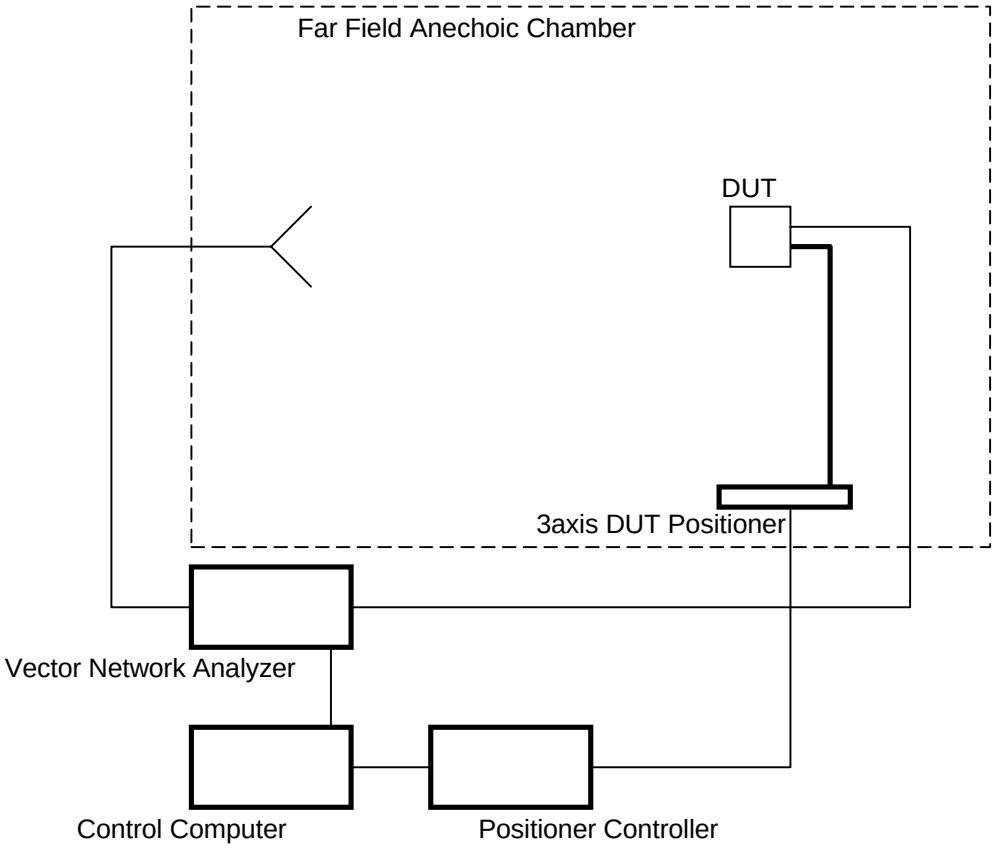

Figure A1 Block Diagram of Antenna Gain Measurement

This test uses a reference dipole as a calibration standard. DUT performance is measured relative to that reference standard. The system was calibrated prior to this test. Measurement equipment used all have valid current calibrations.

Equipment used:

Far Field Anechoic Chamber	ETS Far Field Chamber, SN 12520
3 Axis DUT Positioner	ETS MAP 2015
Reference Dipole	ETS-Lindgren model 3125-870 860 MHz, ser no. 1001
Vector Network Analyzer	Agilent model 8753ES, ser no. US39175229
Positioner Controller	ETS EMCO Model 2090, ser no. 1572

Photograph of Equipment in Test Setup

Photo 1 is a photograph of the equipment placed in the test apparatus for these measurements.

Photo 1 Equipment mounted in test apparatus.
The supporting structure shown in the photograph is part of a 3-axis positioner. It is constructed of non-conducting materials and does not significantly affect the radiation performance of the device.

Results

Frequency	Average gain
825 MHz	-2.01 dBd
837 MHz	-2.27 dBd
849 MHz	-2.10 dBd

The maximum of these values is assigned as the rated average gain of the antenna.

Average Gain = -2 dBd

Calculation of average ERP

Calculated average ERP = max conducted power rating + average antenna gain

= 28 dBm + (-2 dBd)

= 26 dBm (400 mW)

Appendix 2

This appendix is intended to eliminate any confusion that may have arisen as a result of the difference in appearance of the product between the previously submitted External Photos (EX 10 A EXTERNAL PHOTO, uploaded 8/23/2001) and those photos included in the test reports (Test Report Part 22, and SAR Report, both uploaded 12/17/2001).

This is a photo of our product, the subject of this application.

Here is a photo of the reverse side (2 screws to hold the metal panel in place are missing from this view).

These photos correspond to those provided previously as EX 10A External Photos, uploaded 08/23/2001.

This device cannot function by itself. To function, it must be plugged in to a PDA, the Handspring Visor. It can only function when plugged into this series of PDA and no other. There are three models in the Visor series that are have identical packaging and internal structure, (model numbers 1000E, 1001E, 1009NA) and differ only in logic circuit configuration and software features. In order to test for Part 22 radiated performance and for SAR, testing was carried out with our product plugged into a Handspring Visor Deluxe, model 1001E.

This next photograph shows our product placed above the Handspring Visor PDA in preparation for sliding the two together.

Our product plugs into an accessory slot on the rear of the PDA shown in the following photo.

In the above photo we see the rear view of the PDA by itself showing the accessory slot at the left in this view.

When our product is plugged in, the combined assembly appears as follows.

Front view of combined Airpath 300 and Handspring Visor PDA.

Side view of combined Airpath 300 and Handspring Visor PDA

Rear view of combined Airpath 300 and Handspring Visor PDA.

This combination of Airpath 300 and Handspring Visor PDA is what appears in the photographs in the Part 22 test report and in the SAR test report.

Appendix 3

This appendix presents the results of an analysis of the SAR determination procedures of the original filing and of subsequent Class II permissive change filings for FCC ID: N7NACRD2. This is meant to confirm that the use of average antenna gain ratings in those filings did not invalidate the SAR results.

The affected grants for FCC ID N7NACRD2 include:

Original Grant, issued 01/25/99
Class II permissive change, granted 06/28/99
Class II permissive change, granted 11/23/99
Class II permissive change, granted 07/03/2001

Original Grant

The original grant, dated Jan 25, 1999 provided evidence of SAR compliance in a report submitted 12/01/98 and supplemented by further information in an addendum submitted 01/11/99. This report included an analysis of SAR based on computer simulation of the device.

The simulation is provided with input data including the shape of the device and its host PDA, the internal assemblies of the PDA, material conductivities and dielectric properties, and details of the physical dimensions of the antenna. These are used to construct a computer model of the device which is then analyzed for its electromagnetic properties. Other data input into the simulation include the maximum transmit power of 600 mW and the type of signal (CW). Antenna gain is not used in this simulation. The fields radiated from the antenna and absorbed by the modeled human tissue are computed directly based on the input data.

Since this determination of SAR did not use rated or measured antenna gain figures, the SAR results cannot be affected by errors or misunderstandings in those figures. This SAR determination was therefore not affected by the use, in our other submissions, of average antenna gain ratings vs peak gain ratings.

Class II permissive change, granted 06/28/99

This permissive change introduces two different antennas for use with this product. The two SAR reports, submitted 06/04/99 describe SAR testing performed on each antenna. In each case the fields actually radiated from the antenna and absorbed by the simulated human tissue are measured directly using a probe. This procedure does not use rated or measured antenna gains. These SAR determinations were, therefore, not affected by the use, in our other submissions, of average antenna gain ratings vs peak gain ratings.

Class II permissive change, granted 11/23/99

This permissive change introduces a new antenna for use with this product. The SAR report, submitted 09/15/99 describes SAR testing performed with this new antenna. In each case the fields actually radiated from the antenna and absorbed by the simulated human tissue are measured directly using a probe. This procedure does not use rated or measured antenna gains. These SAR determinations were, therefore, not affected by the use, in our other submissions, of average antenna gain ratings vs peak gain ratings.

Class II permissive change, granted 07/03/2001

This permissive change introduces the transceiver embedded into two specific models of portable computer, each with their own antenna. The two SAR reports, submitted 06/04/99 describe SAR testing performed on each product configuration. In each case the fields actually radiated from the antenna and absorbed by the simulated human tissue are measured directly using a probe. This procedure does not use rated or measured antenna gains. These SAR determinations were, therefore, not affected by the use, in our other submissions, of average antenna gain ratings vs peak gain ratings.

Upon analysis of the SAR reports for the above mentioned filings I conclude that none used rated or measured antenna gains to determine SAR levels and so none are subject to error due to misunderstanding of average antenna gain vs peak antenna gain ratings or measurements.