NextNet Wireless, Inc.
1/6/2003

1) The block diagram should show the frequencies within the TX portion of the device (CFR 2.1033(a)(5)). Please provide an updated block diagram.

Updated block diagram submitted.

2) This device contains an Ethernet port and is therefore considered a PC peripheral under Part 15 for the Digital Device emissions from the device. Therefore this device is also subject to both the radiated and conducted emissions under Part 15 with the device in an idle mode of (either a Certification or DoC at the discretion of the manufactuer). Please note that for this test the device must be configured as part of a minimum configuration (including a PC + 2 additional I/O connections) as specified by ANSI C63.4. Please explain whether the device is to be subject to a DoC or Certification for the PC peripheral requirements. Please note that the device does not contain DoC labeling information or a statement of compliance (2.1077) as required for DoC authorizations nor has the digital device data been presented as part of this application as would be required for a certification.

The Part 15 Subpart B - Unintentional Radiators section lists the requirements for equipment authorization in Part 15.101(a). It is noted in Part 15.101(b) that the receiver for this product certification is excluded from the requirements of 15.101(a) because of the frequency of operation. Part 15.101(b) further states that if a DoC on a Part 15.101(a) receiver is required, but the product has a transmitter integral to the design, which requires certification, then a verification of the receiver is acceptable. Lastly Part 15.101(b) states that this receiver is categorically excluded from the unintentional radiator requirements because of the frequency range of operation. NextNet Wireless does test the receiver for Part 15 compliance (class B for CPEs and Class A for base stations) as a matter of due diligence to ensure that our products do not cause harmful interference as defined in the Part 15 standards. The NextNet Wireless transmitter submitted for this application is subject to a Type Certification as defined in parts 21.909(l) and 74.939(n) of Title 47 of the Code of Federal Regulations. The receiver verification measurement data collected for this product is on file at NextNet Wireless and was not submitted with the transmitter certification pursuant to Part 2.902(a) of Title 47 of the Code of Federal Regulations.

3) The users manual should also include the required information specified by 15.105 and 15.21.

The users manual has been updated to include class B digital device information and incorporate the information from 15.105 and 15.21. A new users manual is attached.

4) It is not clear if the device always contains one or two antennas. Please provide an additional photograph or information that shows the antenna(s) of the device and how they are integrated into the device.

The NextNet Wireless transceiver uses only one antenna that is either vertically polarized or horizontally polarized. Depending on the specific licensing of the system operator, the product antenna must be either vertically or horizontally polarized. The system operator would purchase the appropriate product model to ensure compatibility within their system. The certification includes the two antennas as required for the RF Radiation Exposure Evaluation compliance and EIRP verification. The connection of the antenna to the PC board is shown in Exhibit 9 Internal Photographs, pages 2 and 3, and the antenna coax is shown on pages 5 and 6.

5) Regarding the RF exposure measurements made, please comment on the measurement instrumentation. Note that diode detectors can underestimate field levels in high peak pulsed-signal fields due to diode saturation. Also, please provide information regarding the measurements uncertainty of the equipment used.

NextNet Wireless uses the General Microwave Model 3 Radiation Hazard Meter (RAHAM) for verification of the MPE limits. The Model 3 RAHAM probe design employs three orthogonally oriented thin-film thermoelectric arrays (not diode detectors). The thermocouple sensor absorbs RF/microwave energy thereby heating the thermocouple junction as a result, thermocouple sensors give the correct average (rms) power for all types of signal formats from continuous wave (CW) to pulsed to complex digital modulation, regardless of the harmonic content, waveshape or distortion of the signal.

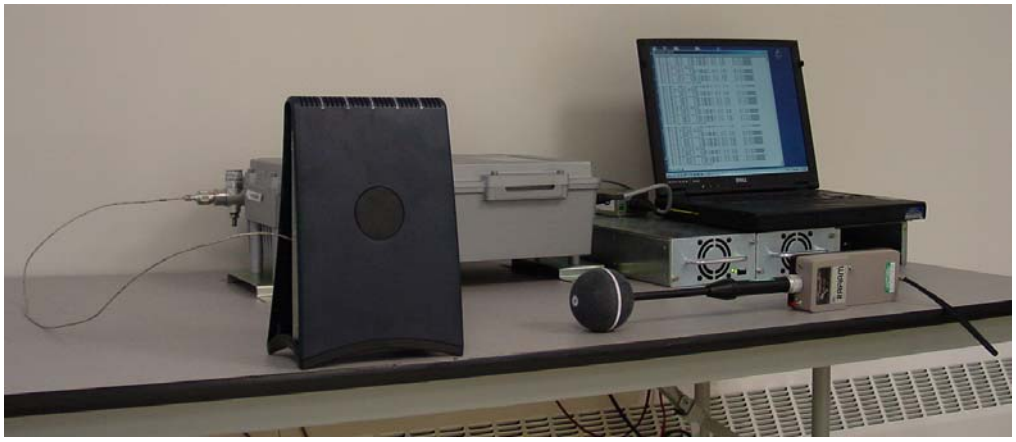
To verify the actual measurement performance of the General Microwave Radiation Hazard Meter Model 3, a test utilizing a NextNet Wireless base station and a previously certified NextNet Wireless customer modem with a vertically polarized antenna was performed for product certifications FCC ID:PHX-MMDS-CPE2 and FCC ID: PHX-MMDS-CPE3. The results of these tests are presented below.

The NextNet Wireless customer modem is hardware limited such that the maximum transmit duty cycle of 14.29% cannot be exceeded. Because of this, a base station which can operate at 100% transmit duty cycle in test mode will be used to transmit a 2 watt signal with the same signal modulation characteristics as used by the customer modem. The base station was calibrated to provide 2 watts at the coax input to the customer antenna. The customer antenna was inserted into an indoor modem case. At 20cm, the measured exposure was 4.3 mW/cm^2. Applying the customer modem 14.29% maximum transmitter duty cycle to the 4.3 mW/cm^2 yields the following result:

$$4.3\ mW/cm^2 * 0.1429 = .6145\ mW/cm^2$$

The CPE transmitter was calibrated to provide 2 watts at the coax input to the customer antenna with a 14.29% transmit duty cycle. The customer antenna was connected to the CPE transmitter and inserted into an indoor modem case. At 20cm, the measured exposure was 0.68 mW/cm^2.

NextNet Wireless believes that the General Microwave Radiation Hazard Meter Model 3 measures the MPE of the customer modem signal properly. The calibration certificate of the General Microwave Radiation Hazard Meter Model 3 indicates that a correction multiplier of 1.23 be applied to the measurement within the 2.5-2.686 GHz frequency band. Applying this correction to the measured data from Exhibit 11 would yield the following RF Exposure: 0.7*1.23 = .861 mW/cm^2, which is below the 1 mW/cm^2 limit.



6) Licensed bands have typically required EIRP measurements for the fundamental to be made using a substitution method. Please comment.

The industry standard method for determining the EIRP of a transmitted signal is to measure the matched output power with a calibrated power meter and then add the antenna gain to the result. In situations where the transmitter does not have a "known" output impedance, or the antenna is not detachable from the product, then a substitution method would be the preferred approach.

7) Part 21. 908(d) and 74.936(f) state that out of band emissions are required to meet 60 dB. This test report uses 43 + 10 log(2). Note that 60 dB below the EIRP is slightly more stringent than -13 dBm calculated using 43 + 10 log(2).

From the ITU-R SM.329-8 **SPURIOUS EMISSIONS RECOMMENDATION** the following definitions are found:

1.1 Spurious emission (Article S1, No. S1.145 of the RR)

Emission on a frequency, or frequencies, which are outside the necessary bandwidth and the level of which may be reduced without affecting the corresponding transmission of information. Spurious emissions include harmonic emissions, parasitic emissions, intermodulation products and frequency conversion products but exclude out-of-band emissions.

NOTE 1 – For the purpose of this Recommendation all emissions which fall at frequencies separated from the center frequency of the emission by 250% or more of the necessary bandwidth of the emission will generally be considered spurious emissions (see *further recommends* 1.4).

1.2 Out-of-band emission (Article S1, No. S1.144 of the RR)

Emission on a frequency or frequencies immediately outside the necessary bandwidth which results from the modulation process, but excluding spurious emissions.

NOTE 1 – For the purpose of this Recommendation, any unwanted emission which falls at frequencies separated from the centre frequency of the emission by less than 250% of the necessary bandwidth of the emission will generally be considered out-of-band emission (see *further recommends* 1.4).

From the ITU definitions, the –60 dB mask limit is expressed as an Out-of-band emission and transitions to a spurious emission at ±250%*Bn or 2.5*6MHz = ±15 MHz. The spurious emission limit is defined as 43+10LogP, or 70 dBc, whichever is less stringent. From this definition, the –13 dBm limit is imposed on the spurious emissions that fall outside the ±15 MHz bandwidth of the transmitted signal. The data presented in the Exhibit 6 test report shows that the NextNet Wireless CPE product submitted in this application for certification complies with the 60 dB specification for Out-of-band emissions, and meets the 43+10LogP requirements for spurious emissions.

8) Please comment on the 2 antennas. Are these considered to be phased-array or steered-beam antennas?

The antenna used by the NextNet Wireless CPE is a phased-array antenna that is either vertically polarized or horizontally polarized.