



DATE: 18 September 2002

TO: Kent Dorsey

FROM: J. Powder

SUBJECT: Response to FCC Form 442, Question 7

Please use the following information to answer the subject question in our license application:

- a. *The complete program of research and experimentation proposed including description of equipment and theory of operation.*

The authorization for an experimental license will be used to test and evaluate uplink and downlink transceiver performance of the nanoCell product. The nanoCell, which behaves as though multiple cellular base stations and mobile stations are contained within the same box, will transmit and receive an appropriately modulated waveform (GMSK) in order to interoperate with the InterWAVE base station equipment, Motorola and Nokia mobile stations (handsets) and other nanoCells. Functional testing will be used to verify and validate nanoCell capabilities, and will also be used to demonstrate the features to potential customers.

Typically, a base station signal will be broadcast from the Melbourne facility rooftop antenna to mobile stations and/or nanoCells within radio range. nanoCells will then receive and process the base station signal, and generate their own unique base station signals to communicate with nearby nanoCell equipment or with mobile stations.

- b. *The specific objectives sought to be accomplished*

It is the objective of this research and experimentation to develop and certify a new cellular infrastructure device that will significantly increase spectral efficiency of cellular communications. We intend to demonstrate in an open test range environment that a high quality of service may be maintained more efficiently than traditional base station to mobile station communication networks.

- c. *How the program of experimentation has a reasonable promise of contribution to the development, extension, or utilization of the radio art, or is along line not already investigated.*

Through simulation, modeling and analysis, we have already demonstrated that the nanoCell concept will significantly improve cellular network capacity as well as radio coverage within a given network. It does this through a novel auto-routing algorithm that will route communications in a very efficient manner to existing base station infrastructure equipment. Because of the basic nanoCell concept that uses "in-band backhaul" instead of traditional T1/E1 backhaul links, the implementation of networks will be more cost effective, will require less spectrum, and will generally improve the quality of service in these networks.