

Spectrum Wireless, Inc.
Application for Experimental License
FCC Form 442
February 27, 1998
Exhibit 1

By this application, Spectrum Wireless, Inc. ("Spectrum Wireless") seeks Federal Communications Commission ("FCC") authorization to conduct radio equipment experimentation pursuant to Part 5 of the Commission's rules, 47 C.F.R. §§ 5.201 et seq. (1996). Specifically, Spectrum Wireless requests authorization to conduct field tests and equipment evaluation of non-type accepted Personal Communications Service ("PCS") equipment in the 1850-1910 MHz and 1930-1990 MHz band at various locations in the United States.

Spectrum Wireless's proposed program of experimentation consists of the development of radio technique, equipment and operational data and engineering data to determine the propagation characteristics of certain laboratory equipment. The experimental authorization will also enable Spectrum Wireless to verify equipment compliance and use certain laboratory equipment to simulate transmissions between base stations and mobile units in various real-world environments. The ultimate goal is to develop equipment that is suitable for production and to obtain the requisite FCC type-acceptance.

Further, Spectrum Wireless requests authorization to experiment and utilize non-type accepted PCS equipment with the following technical parameters (as

requested in item no. 4). The PCS 1900 digital cellular standard is a combined TDMA and FDMA system. It is an upbanded version of the GSM digital cellular standard. The modulation scheme is GMSK (Gaussian Minimum Shift Keying) with $BT = 0.3$. T is the time of one bit period, which is $1/(270833.3 \text{ bits per second})$ or 3.69 microseconds. B is the 3dB bandwidth of the Gaussian filter which is applied to the data prior to the MSK modulation (as distinct from the bandwidth of the transmit filter mask, as described below). In GSM and PCS 1900, $B = 81.25 \text{ kHz}$.

The transmit power mask for PCS 1900 base stations for each carrier is given in terms of dB relative to a Tx (transmit) reference power in dBm measured in a 30 kHz bandwidth centered around the carrier frequency. At $\pm 100\text{kHz}$ from the carrier the power output from the transmitter can be at most +0.5dB greater than the Tx reference level. At $\pm 200 \text{ kHz}$, the power can be at most -30 dB less than the reference power level.

PCS 1900 TDMA frames consist of 1250 bits, divided into 8 time slots, where each timeslot contains 156.25 bits. One PCS 1900 carrier can therefore accommodate 8 users, less the number of channels (timeslots) required for control information. The technology developed under the proposed program will significantly contribute to PCS technological advancement.

In addition, Spectrum Wireless believes that the equipment technology developed under the proposed program will allow for the deployment of wireless systems with far fewer sites. Not only would this substantially reduce the deployment costs of PCS providers, but it would also serve the public interest by reducing the number of towers required to offer PCS in a given area. The Applicant has received a Special Temporary Authority ("STA") to conduct the type of field and experimental testing requested in this application. Grant of this application will allow such testing to continue without further applications for STAs and expenditure of the Commission's resources.¹

For these foregoing reasons, Spectrum Wireless respectfully requests grant of this experimental authorization.

¹ The Applicant received an STA on November 25, 1996 (FCC File No. S-2712-EX-96). The Applicant also received a second STA on October 31, 1997 (FCC File No. S-3085-EX-97). The second STA expires on April 30, 1998.