Form 442
Question 7: Purpose of Experiment

Delphi Communication Systems, Inc.
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Delphi Communication Systems (Delphi) is a provider of Digital Signal Processing software for cellular and PCS communication systems. Delphi is undertaking a development program for radio equipment that could serve as a Base Transceiver Station (BTS) or Fixed Access Communications Terminal (FACT) for both North American (NA) and European cellular and PCS frequency allocation using both TIA-136 and GSM transmission protocols. These frequencies include:

- 824-849 MHz for NA cellular FACT transmissions
- 869-894 MHz for NA cellular BTS transmissions
- 890-915 MHz for European cellular FACT transmissions
- 935-960 MHz for European cellular BTS transmissions
- 1710-1785 MHz for European DCS FACT transmissions
- 1805-1880 MHz for European DCS BTS transmissions
- 1850-1910 MHz for NA PCS FACT transmissions
- 1930-1990 MHz for NA PCS BTS transmissions

Much of the development program will rely on wired connections between development boards and test equipment. However, as part of this development effort, Delphi will perform over-the-air testing and demonstrations of these radio equipments. These tests will be confined to Delphi's lab space at the above address in Maynard, MA using low power (10 mW, 100 mW ERP) settings. These transmit levels should be adequate for tests inside our lab facilities using a directional (patch array) antenna. The directional antennas will be oriented perpendicular to or away from outside walls. We will also sniff for use of channels by the local operators and choose channels with little (if any) detectable signal strength.

Several test setups are anticipated.
1. Delphi FACT radio with Communication Test Set (such as Agilent 8960 Series 10)
   a. Acquisition
   b. Delay compensation
   c. Tracking
   d. Power control
   e. Diversity reception
   f. Call origination
   g. Call termination
2. Delphi BTS radio with a variety of dual-band handsets
   a. Selection of DCCH
   b. Power control
   c. Delay compensation
   d. Call origination
   e. Call termination
   f. Handoff
   g. Interoperability
3. Delphi FACT radio with Delphi BTS radio
   a. Interoperability
   b. Demonstration