Explanation of Experimental License Application

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1. Application purpose

I am applying for an Experimental license for the purposes of developing, testing and marketing (as defined in sections 5.4(g) and 5.3(f)) a new product that includes a transmitter that sends a coded ID to a set of matching receivers using amplitude shift keying (ASK). The transmitter will be a manually operated periodic transmitter as defined in section 15.231 with a design frequency of 390 MHz. The testing will include range testing and the effects of receiver design and error correction schemes on the effective range of the product. Marketing will include prototype demonstrations to prospective business partners.

2. Product Description

The product being developed is "kid finder" similar to the "key finder" products sold through Brookstone's and Sharper Image. Instead of a key fob, the receiver will be a wristwatch style device worn by a child, used to help keep track of him or her in a crowded environment like a mall or a playground. The unique features of the product as compared to the key finder products are that each transmitter will be identified by a unique sequence in the coded ID and each receiver can be "trained" to respond to a particular transmitter. It is also hoped that the effective range of the product can be increased through careful receiver design and through the use of a robust error correction scheme.

3. System Description

As stated above, the system consists of a single transmitter and one or more matched receivers. The transmitter will be a handheld device built using a Micrel MICRF102 controlled by a Microchip PIC micro-controller (model tbd). The transmit frequency will be 390 MHz with the frequency controlled by a +/- 50 ppm crystal oscillator. When the transmitter is activated, the PIC micro-controller will send an ASCII string (7 bit, odd parity) to the MICRF102 to be transmitted using amplitude shift keying at a speed of 1200 baud. The string will have the following format:

5 character preamble common to all the transmitters

8 character transmitter ID unique to the transmitter

3 character ID specific to one or more receivers

The string will be repeated from one to ten times, depending on the error correction scheme chosen, for a maximum transmit time of < 1sec when the transmitter is

activated. Specific receivers can be targeted by pressing different buttons on the hand-held transmitter.

4. **Tests to be performed**

   The purpose of the tests will be to determine the effective range of the receivers while the transmitter is operating under the restrictions of section 15.231. The variables in the test will be distance, environment (indoor vs. outdoor), receiver configuration (presence or absence pre-selection filter and/or preamplifier circuit in front of ASK decoder), and error correction scheme. Transmitter power will not be a variable, these tests will al be carried out with the transmitter ERP configured to 15 microwatts. In order to facilitate testing of multiple error correction schemes, up to 5 transmitter prototypes may be built during testing.