

Abstract

The purpose of this document is to explain why we need an STA to cover more than 50 transmitters.

Overview

We are developing a system to help elderly people maintain their independence and stay in their home as opposed to moving to an assisted living center. This system is comprised of a small variety of sensors placed throughout the home and a central monitoring device. The sensors consist of a front end to perform the specific sensing task, a microprocessor circuit to control the sensor, and a simple transmitter designed to be compliant with part 15.231. Each sensor uses the same transmitter circuit and operates at 315.00MHz.

Why we need more than 50 transmitters

The design of the system is as complete as it can get with the information we can gain from bench testing. We plan to install one system at each of 15 test sites. The information gained through this testing will be critical to finalizing the design of the system. Design changes will be made as necessary during the field testing so that by the end of the 6-month period we will have a fully functional and thoroughly tested design.

The transmitters are an integral part of this system, and as such the system will not function without them. Each site will have approximately 10 sensors, therefore I have asked for a total of 150 devices to be covered under the STA. The Environmental Impact section below explains why this number is not a fair estimate of the noise pollution that may be caused by our testing.

It is not practical to try and assign an ID number to the sensors at this point because the design will be changing throughout the testing. It is likely that changes affecting the emissions of the transmitter will have to be made which would invalidate our application for the ID number. The changes that could affect the emissions may be to transmission times, durations, or sequence.

It is also not practical to remove the transmitter from the system during the testing. Doing so would involve altering so much of the system that the testing would become invalid.

Environmental Impact

The effect of our system on the local environment will be very small. A system of 10 transmitters will have an average of 1 transmission every minute. The duration of that transmission will typically be less than 2 seconds. This means that the emissions of an entire system are comparable to what would be allowed for a single part 15.231 device. In fact, anyone monitoring the system would not be able to tell that there was more than one transmitter involved unless they were actually decoding the ID numbers for the sensors.

The sensors will not leave the test site, and the test site will be confined to a single residence. The overall effective range of our system is about 40 feet beyond which the field strength is around 30db uV/m. Additionally the sensors all operate at 315.00MHz and consume only 6kHz of bandwidth. This means that our use of the spectrum will be confined to a total of 15 locations with a diameter of less than 120 feet and a consumption of around 6Khz of bandwidth centered at 315Mhz.

Control of Transmitters

Each sensor is permanently marked with an ID number. The location of each ID number will be recorded in a database along with information about a particular test site. At the end of the field test, all transmitters will be retrieved and the database will be updated accordingly. At any given time, it will be possible to determine the location of any transmitter. Upon collection at the end of testing, the transmitters will be destroyed.

The transmitters are an integral part of the sensor and completely enclosed within a housing. There are no adjustments, controls, or functions for the transmitters that can be changed or adjusted and the antenna is permanently fixed to the circuit board.

Manufacture of Transmitters

The transmitters are a specially designed circuit and will be assembled by hand in our facility using standard prototyping methods. These are simple devices with only 14 components and don't require much labor to build.