www.directed.com

driven to excel
Directed®
ELECTRONICS, INC.

One Viper Way Vista, California 92083-7853 760 598 6200 760 598 6400

AMERICA'S LARGEST AUTO SECURITY COMPANY

Tuesday, July 01, 2003

TUV Product Services
10040 Mesa Rim Road
San Diego, CA 92121

RE: FCC ID EZSDEI472

Dear Sir or Madam,

This letter is to address the following for the 472 transmitter:

1. Learn routine for replacement transmitters
2. System transmission frequency range
3. Data transmission duty cycle description

1. The 472 transmitter will be programmed-in to work with automotive security / convenience systems. These systems all use the same learn routine to program-in the replacement transmitter. Using a momentary switch hidden in the vehicle (valet switch), the user will cycle the switch a given amount of times and hold it pressed. The alarm system will then sound a series of chirps to confirm the system is in learn mode. While in learn mode, the new transmitter can be programmed-in simply by transmitting a short time by pressing one of the keys momentarily. There are safeguards implemented to minimize the risk of other transmitters in the reception range of the system from being programmed-in. Immediately after receiving confirmation from the system that the replacement transmitter has been programmed-in through a series of chirps, the user can release the momentary switch and the system will immediately get out of the learn routine. The learn mode is also time limited, this means that the system will automatically time out after fifteen seconds preventing it from being vulnerable for an extended amount of time. Exiting the learn routine is confirmed by a series of chirps. Furthermore, directed electronics provides a tool called the "Bitwriter" to our authorized dealers. This tool allows to verify how many transmitters are programmed-in or to delete all currently programmed transmitters in the alarm system. This is accomplished through a temporary serial connection from the Bitwriter tool to the alarm system. And finally, Directed Electronics alarm systems will only learn Directed Electronics transmitters.

   Our systems provide interactive responses from the alarm system while programming replacement transmitters in. Tools provided from Directed Electronics to our authorized installers allow them to monitor what has been programmed-in the alarm system. Given these features and tools, the likelihood of having a transmitter get programmed-in unintentionally and not be known is very remote to impossible.

2. These transmitters are single frequency devices. They're crystal based and the transmission frequency is determined by the reference crystal. The 472 has a center frequency of 433.92 MHz. This means the single transmission frequency will always be locked at 433.92MHz. Furthermore, the receivers operated by these transmitters are single band receivers tuned to 433.92MHz and only capable of receiving this frequency.

3. The 472 is a data transmission device. Its protocol consists of 12 preamble bits (50us each) and 66 data bits (50us or 100us each, they are random) for a total of 78 bits. So the calculation for the duty cycle becomes:

   (24 x 50us)+(66x100us)= 7.8ms within a 100ms period

   The worst case scenario calculation is assured by the fact that we used 100us for all 66 data bits as they can be either 50us or 100us.

Sincerely,

Minas Minassian
RF Engineer