Motorola AIEG

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April 11, 2001

George Tannahill
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FCC Application Processing Branch

Re: FCC ID IDILJU-03P
Applicant: LoJack Corporation
Correspondence Reference Number: 12276
731 Confirmation Number: EA96118
Date of Original E-Mail: 02/22/2000

Dear Mr. Tannahill:

This letter should provide the information that you requested for the IDILJU-03P filing. Mike Nicolay of Carl T. Jones will be addressing the issues relevant to the information already submitted that you were having problems with.

The LJU employs a phase continuous Fast Frequency Shift keyed subcarrier at 1200 bps data rate. The subcarrier data modulation method complies to the following specifications:

Subcarrier modulation: Phase continuous FSK
Bit rate: 1200 bits per second
Modulation rate: 1200 baud
Binary "0": One and one half cycles of 1800 Hz sine wave
Binary "1": One cycle of 1200 Hz sine wave
The transmitter modulation is adjusted to between 3.9 and 4.2 kHz deviation in the factory.

The transmitter uses a digital to analog circuit from the microprocessor through a low pass filter to generate the subcarrier signals. Filter characteristics are provided with the submitted documentation. An emission designator of 13K2F2D is being requested for the device. The necessary bandwidth was calculated according to the formula B = 2M + 2DK given for frequency modulated digital signals. This calculation was based on the system's rated maximum modulating frequency of 1800 Hz and frequency deviation of 4 kHz.

The modulation that was used to generate the occupied bandwidth plot was a ten second zero – one pattern. The module was commanded to enter a special test mode where it outputs a string of 0101… for ten seconds. This pattern is a good representation of what the unit would normally transmit, except that nominally the unit will occupy slightly less bandwidth since the worst case bandwidth is during a transition from one state (0 or 1) to the other. Since a normal message would be more random than the continuous pattern, it would have less transitions.

The LJU transceiver is shipped with out an antenna to LoJack. The unit is installed, hidden, in a vehicle with an antenna attached. The typical LoJack antenna is 50 Ohms, passive, and omni-directional. The installation of the unit in the vehicle tends to reduce the effectiveness of the omni-directional radiation pattern.

If you have any questions please feel free to contact me at (830) 372-7189 or via email. Thanks for your help.

Sincerely,

Tom Chase
Design Engineering Department
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