Expository Statement: Item Description

INVOCON, Inc.
Remote Data Gathering Unit (RDGU)
FCC ID# NJM0929156

Description of Equipment

The **INVONET Wireless Data Gathering System** , designed and manufactured by **INVOCON, Inc.,** is a system used to provide remote monitoring of strain on road bridges. The system is comprised of a control data concentrator unit (CDCU) and a remote data gathering unit (RDGU). The RDGU is fastened to the bridge under test and measures strain on the bridge via a set of strain gauges mounted to the bridge. Data gathered by the RDGU is transmitted to the CDCU upon request from the CDCU. The CDCU is controlled by a standard PC using a parallel interface. The interface between the RDGU and the CDCU is a Proxim transceiver. The Proxim Transceiver is a direct sequence spread spectrum transceiver operating in the 902-928 MHz band. The RDGU and the CDCU can be powered from a 110 VAC/60 Hz source or from the internal battery.

The CDCU is comprised of a transceiver, a network card, and a power supply. The transceiver communicates between the RDGU and the CDCU. The network card is the interface between the external PC and the transceiver. The network card also provides protocol information to allow the CDCU to poll specific RDGU units and manage the data from these units. The power supply supports both units for the CDCU.

The RDGU is comprised of a transceiver, a network card , and analog interface section and a power supply. The transceiver performs the interface between the RDGU and the CDCU. The analog interface reads the outputs of the strain gauges and provides the data to the network card. The network card is the interface between the analog interface and the transceiver. This unit also performs the identity function for the RDGU, permitting it to respond to only polls with its specific ID code. The power supply supports both units for the CDCU.

The transceivers for both the RDGU and the CDCU are identical. The network cards for the RDGU and the CDCU have identical circuit boards, but are populated slightly differently from each other based on what the application is (RDGU vs. CDCU).

Separate verification reports pursuant to Part 15, Subpart B have been prepared for the **INVOCON, Inc., Remote Data Gathering Unit (RDGU)** as a Digital Device and for the receiver portion of the Remote Data Gathering Unit (RDGU) . A separate report has been filed for the CDCU portion of this system under FCC ID NJM0919156.

RF Module Operating Description

Data and data synchonization and control signals enter the RF module via the microprocessor bus interface. The synchronization signals are fed to the Phase Lock Loop (PLL) Module while the data is fed to the encryption/scrambler module. This module also integrates the clock into the data stream. The scrambled data signal is routed through spreader and conditioning modules and is then modulated by the PLL module. The final stages of the module amplify the composite signal and route the signal out the antenna.

For receive functions, the composite signal is received by the antenna, filtered then amplified. The signal is then downconverted to an IF signal and demodulated. The resulting baseband signal is fed through a despreader and the clock is extracted. The

extracted clock is used to descramble the encrypted data signal, producing the original pre-transmitted signal.