IS Micro Reader, model: IGMA125IS

Hi-G-Tek's FRN Number: 0006699334

Handheld Data Terminal: IG-MA-31, FCC ID Number: OB6-IGMA125IS

Sections for Technical Compliance Report

1. General description

The Hi-G-Tek I.S Micro Reader is a component of Hi-G-Tek's wireless monitoring system designed to withstand hazardous locations such as fuel-atmosphere interactions and other harsh outdoor applications.

The Micro Reader is an ergonomic handheld sized RFID reader (Radio Frequency Identification) used for short-range wireless communication (up to 10cm)

The Micro Reader communicates over the low-frequency channel (125 KHz) with the Hi-G-Tek's RFID sensors (electronic lock/seal/ tag that provides automatic processing and real-time monitoring of secured cargoes/assets in transit and in storage)

It contains two command buttons used for two basic LF interrogation commands and two-colored LED as well as a beeper for status indication.

The Micro Reader performs two basic functions:

1) It verifies the lock/seal/tag status and provides the user with an indication as to whether the device has been tampered with since being set.

2) It can also reset the lock/seal/tag for a new use. It also leaves a "footprint" in the lock/seal/tag memory with the Micro Reader's ID, identifying the specific Micro Reader that performed a command or interrogation.

Description

μP : The μP(U1) is a Texas Instruments ultralow-power microcontroller (MSP430 family) with a 8MHz clock (piezoelectric ceramic resonator) is the heart of the Micro Reader, it generates the 125KHz carrier wave for the LF transceiver, synchronizes and manages the short range data communication.

LF Transceiver: This analog transmitter/receiver utilized for short range communication on-off keying modulation (OOK) based on 125KHz carrier wave with 4KHz data rate. The Tx interface modulates the data from the μP together with the 125Khz carrier wave, the modulated signal is transmitted through a SMT ferrite rod LF antenna .The Rx interface receive the data from the ferrite antenna, detect it and transfer it to the μP.

Buzzer: Standard piezo buzzer for audible notifications and alarms.

Keypad: Lexan keypad with two push buttons.

Antenna: Surface mount (SMD) ferrite 1.8mH inductor

Power: 3V replaceable Lithium battery (button cell) with rated capacity of 235mAH

Resonator(Y1) : 8MHz Piezoelectric ceramic resonator (manufactured by Murata) used for time base oscillator of the microcontroller.

3. Technical spec.

RF Characteristics

LF Tx/Rx Channel	125KHz
Modulation	Amplitude Modulation (OOK)
Range	Up to 10cm
Data rate	4KHz data rate

Power

Power supply type:	3V Replaceable battery powered

Physical Characteristics

Dimensions	90x40x25mm
Weight	150gr

Environmental

Operating Temperature	-10°C to +50°C
Storage Temperature	-20°C to +60°C
Protection Class	IP 54

3. System Test Configuration

Justification

To be determine with the test engineer (Ella Pitt)

4. EUT Exercise Software

Normally, the EUT transmits short messages in short periods. Therefore, in order to enable measurements of the transmitted signals, the EUT exercise program used during the RF testing was designed to transmit continuously random data or carrier wave (cw) according to test procedures.

5. Special Accessories

No special accessories were needed to achieved compliance

6. Equipment Modifications Section

No special modification of EUT were needed to achieved compliance