Automated Inventory and Maintenance Management System

(AIMMS)

User Manual

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The AIMM system is a Radio Frequency Identification system that provides the customer with the ability to manage inventory control and maintenance management without manual intervention. The system operates using low frequency (LF) and Ultra-high frequency (UHF) to "talk" with the various components of the system.

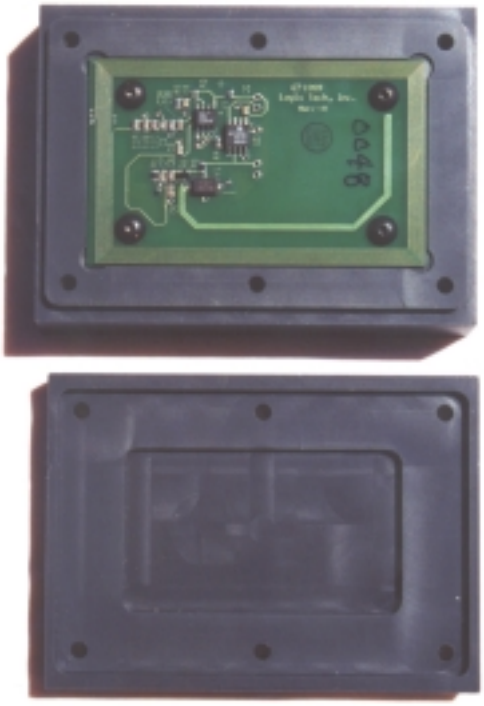
Assets to be tracked are identified and a transponder (Tag) is placed on the asset (whether a truck, armored vehicle, or other object). The tags contain a unique identification code that is linked in the database as a specific type of asset belonging to a unit, and assigned such items as an admin number, model number, etc. This data is normally extracted from the Unit Level Logistics System-Ground (ULLS-G) system or other application that is already operating at the activity.

The assets are tagged using the adhesive and the Type II nylon pad to the top area of the asset. This is to allow the greatest opportunity for the antennas to "read" the tag as the asset exits or enters the shelters. When the tag is read (interrogated by the LF signal from the portal antenna), it sends the unique ID code contained in the transponder. A receiving antenna embedded in the center of the Portal antenna receives this code. The code is then transmitted to the transceiver unit, which controls the antenna. Once the signal has been Received and processed for validity as an acceptable value, it is transmitted over a LON network to the server, normally located at the ULLS operators or site managers' area. The server processes the information received over the network, and displays the data in a graphical user interface using web-based technology.

The primary components of the AIMM system are shown below.

Transponder: (Tag)

Used to tag assets that are to be tracked. The tag will be placed on the top surface of an asset. Placement must consider heavy traffic areas for crew personnel, and clearance for maintenance operations. The ability to open hatches, install equipment and conduct normal operations must not be inhibited. The tags must be placed in areas that cannot be shielded by metal surfaces from the antenna interrogation. See exhibit 3 for a sample of placement on the M-1 Tank.



The transponder is secured into the nylon pad, with the battery down. The cover is secured with anti-tamper screws that can be removed to allow replacement of the battery. The unit is sealed against water intrusion prior to the cover being fastened down. The assembled pad and transponder circuit board are referred to as a tag. The unit has an operational range of +65 C. to –40 C. and a battery life of approximately 1.2 million reads. Under normal operational requirements, this represents 3-5 years of battery life.

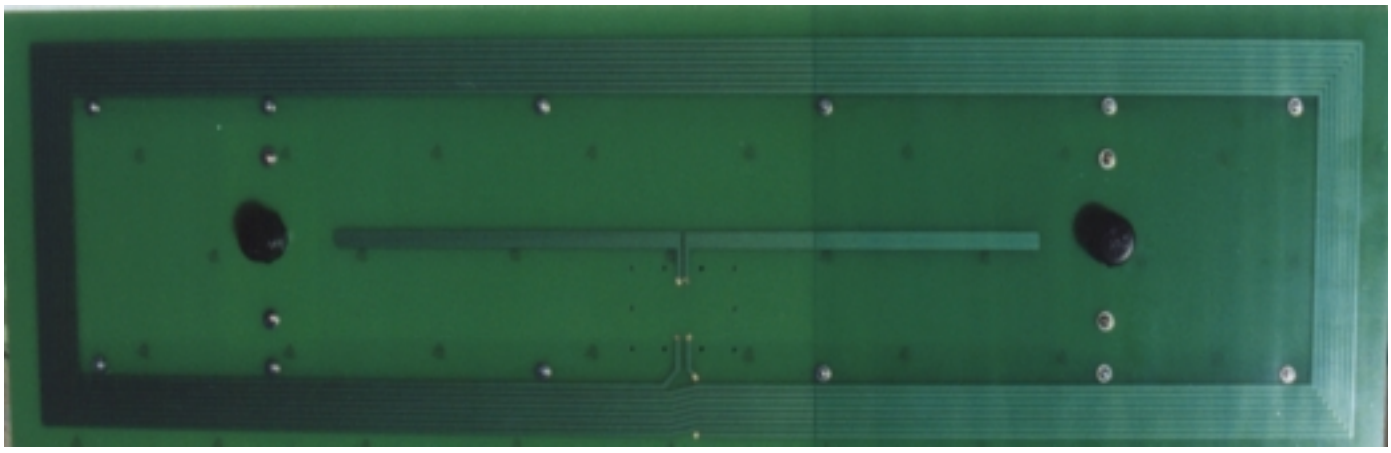
The battery can be disposed of locally and does not represent a hazardous material issue. The range of the transponder is approximately 22 feet.

Transceiver:

The transceiver unit controls the transmit and receive antennas and processes the data collected for input onto the network. The system requires local power 110VAC, and does the conversion to 12 volt internally. The system is well grounded and has internal filtering and a fuse to present damage to the unit against electrical surge. The system provides the interfaces for system components along the bottom of the Electro-Magnetic-Interference (EMI) insulated container. The external connection points allow for the system to be plugged in and connected to the network without opening the container. The connection points are AC Power, a 3- prong plug with polarity ground, and two BNC connectors to allow for antenna interface. The antennas are bi-directional, and transmit and receive over a single connection point. Two channels are provided for controlling two antennas allowing for multiple access point monitoring by a single unit. There is also a Light Emitting Diode to provide operator identification of AC power presence, and a RJ-45 (standard network connector) connection point for the network connection. The network connection can be daisy-chained for multiple devices on a network.

Portal Antenna:

The portal is a single layer antenna that has embedded a transmit and a receive antenna. The antenna is connected to the transceiver unit, which control the process. The connection is on the reverse side of the antenna, and is a BNC connector fitting. The antenna control circuitry is contained in the small sealed unit under the connection point. The antenna dimensions are 38 " X 10 ", and have insulated connection points for attachment brackets. The antenna has a solder-mask coating, and is ready for installation in all areas, including outside. The antenna can be painted but does not require any additional preparation.



AGENCY NOTICE

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

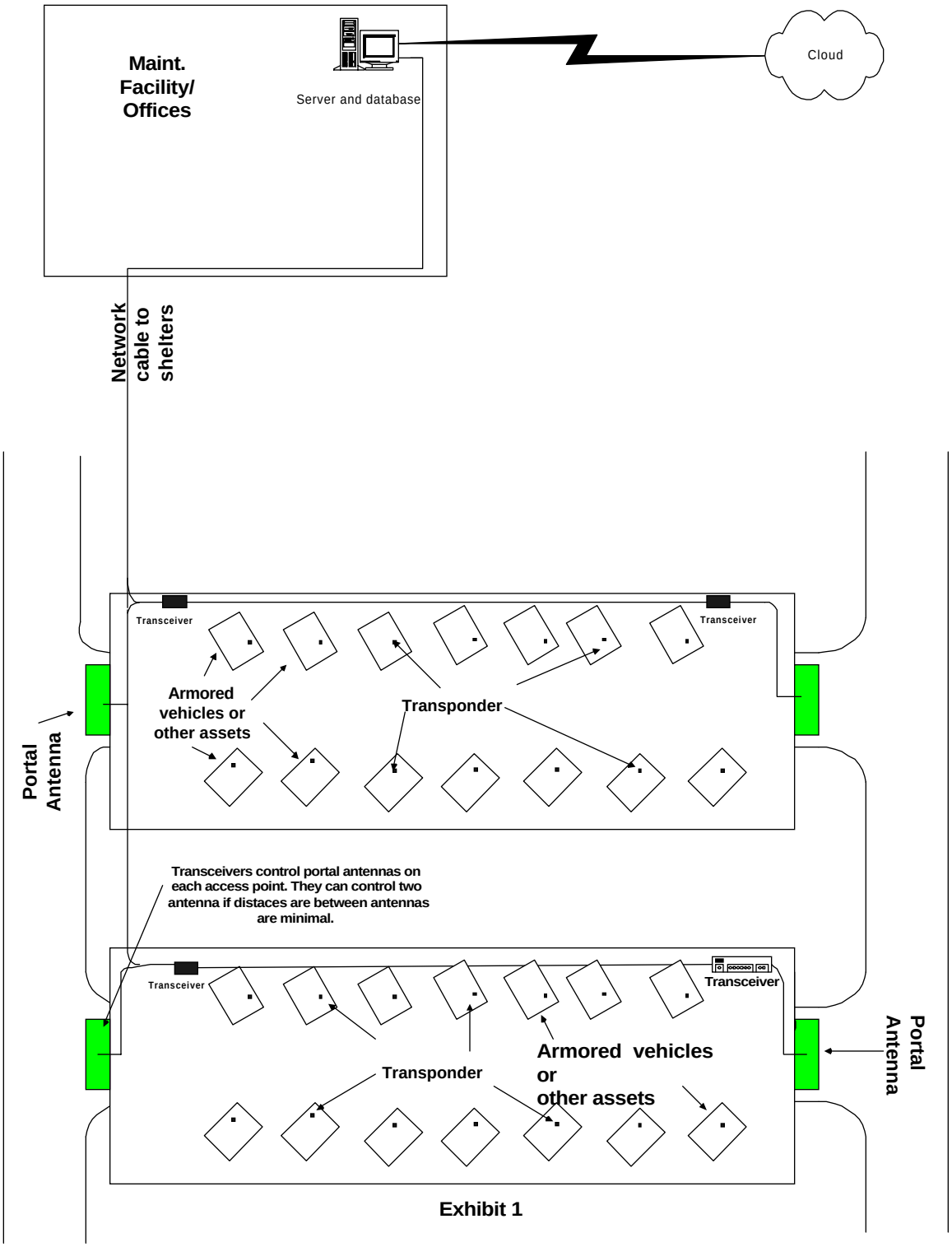

Maint.
Facility/
Offices
Server and database
Cloud
Network
cable to
shelters
Transceiver
Transceiver
Armored
vehicles or
other assets
Transponder
Portal
Antenna
Transceivers control portal antennas on each access point. They can control two antenna if distaces are between antennas are minimal.
Transceiver
Transceiver
Transponder
Armored vehicles
or
other assets
Portal
Antenna

Exhibit 1

AIMMS Transceiver Unit, front (Connector side) view

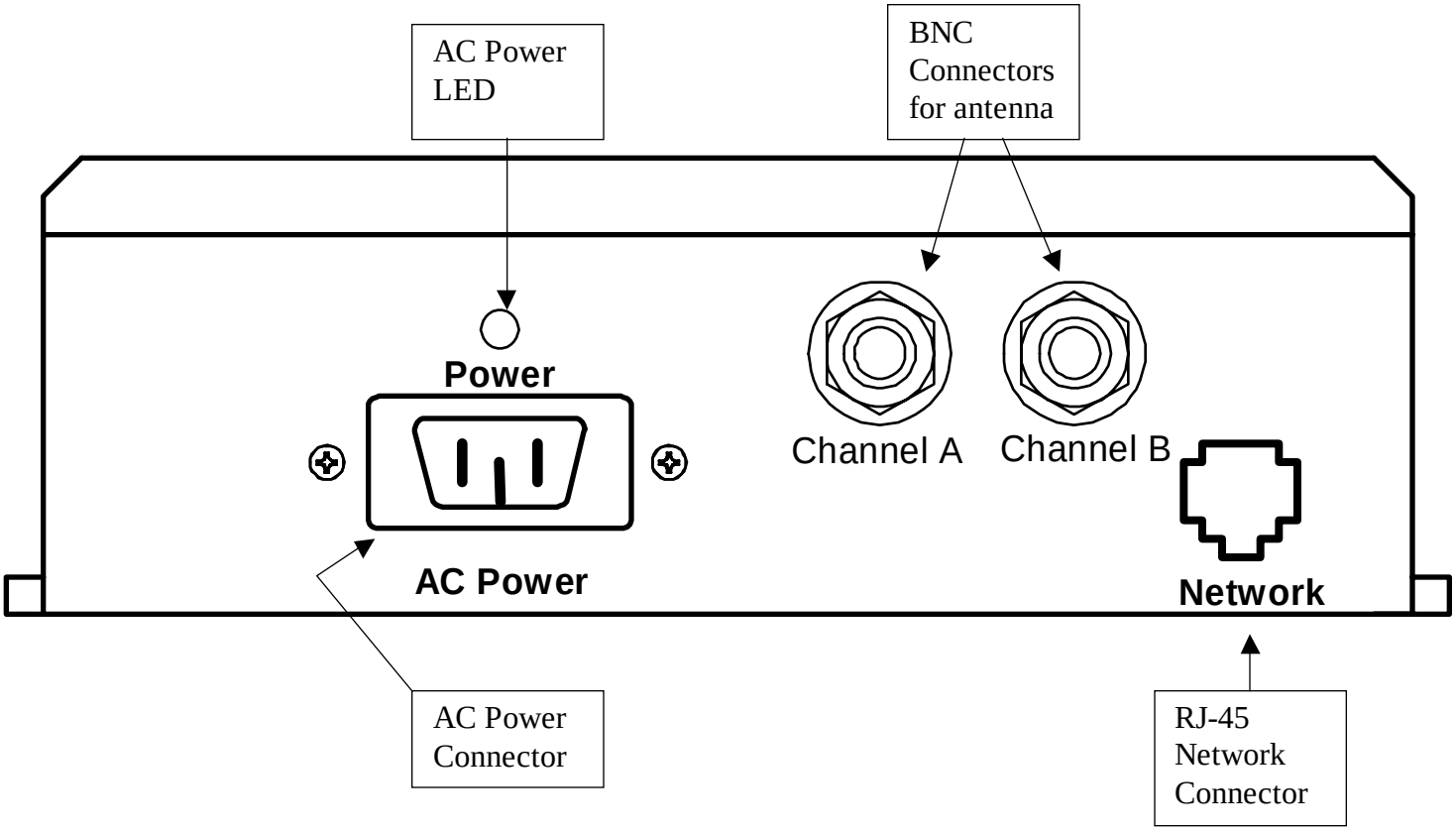


Exhibit 2