

Functional Description

1.0 Overview of Product Operation

This version of card reader implements data encryption to make the theft of credit card data difficult if not impossible to do. Briefly in terms of the intentional radiator characteristics, the customer presents a transponder, which may be in the form of a plastic credit card or key-fob, to the antenna of the Encrypted Card Reader. This Encrypted Card Reader is a hybrid magnetic stripe/RF card reader. The Encrypted Reader System functions as a Radio Frequency Identification (RFID) reader device. In a typical application, the customer's information (account number or ID, used to verify that credit should be approved) is passed from the transponder (card) to the RFID reader to the fuel dispenser electronics and then to the Point of Sale (POS) Terminal. From the POS, the customer's data is passed via network connection to a credit card host where credit is approved or denied.

2.0 Product Description

The Gilbarco Encrypted Card Reader System is a Radio Frequency Identification Device (RFID) that allows customers wishing to purchase products to interface directly with a Point-Of-Sale (POS) terminal via a handheld battery-less transponder. Several credit card products are suitable for use with this system. The system is designed for retail sales and the fuel-dispensing environment. The Encrypted Card Reader transmits at 13.56 MHz, which provides energy to a handheld tag (transponder). The term hybrid is used because the device reads magnetic stripe cards (via manual insertion) and reads RFID tags (via the RF circuitry and attached antenna). The 'hand-held' tags each contain a unique ID code and/or account number(s) so their individually registered tag or transponder can identify each customer. The high frequency antennas of the system create magnetic charge-up fields, known as "read-zones". As soon as a tag enters the "read-zone" (the magnetic charge-up field created by the antenna) the reader receives the unique ID code.

The transmitter portion of the HF Reader system operates at 13.563MHz and is subject to FCC Part 15, Subpart C, "Intentional Radiator," paragraph 15.225 (13.553-13.567MHz). Radiated emissions from the intentional radiator portion of the device is subject to the limits in Section 15.209 of the Rules outside of the 13.56 +/- 0.007 MHz band. The digital electronics portion of the HF Reader is subject to FCC Part 15, Subpart B, "Unintentional Radiator," paragraphs 15.107 and 15.109, under the Class A limits and as such, the reader is incorporated into an application that is subject to Class A limits. Conducted emissions from the AC power line are subject to FCC Part 15, Subpart C, Intentional Radiator, paragraph 15.207. Photos of the Encrypted Card Reader System are provided in Appendix D.

3.0 System Details

The Encrypted Card Reader System is mounted into a larger piece of equipment such as a fueling dispenser or other similar payment terminal. The system includes one Panasonic hybrid card reader assembly (ZU-1870CT221), and one 13.563MHz low 'Q' printed circuit board antennae (M05170A001) per fueling position or pay point. The system also circuitry that regulates input voltage, tightly governing the input power provided to the Reader System without specific dependence on the power source in the host equipment to which it is connected. The components of the Encrypted Card Reader System are listed in Table 1.

Each fueling position or pay point will have one antennae. The 'hand-held' tags (cards) each contain a unique ID code so their individually registered tag or transponder can identify each customer. The high frequency antennas of the system create magnetic charge-up fields, known as "read-zones". As soon as a tag enters the "read-zone" (the magnetic charge-up field created by the antenna) the reader receives the unique ID code.

The 13.563MHz signal originates on the Encrypted card reader and is sent to the bezel antennae where it is intentionally radiated. In a representative setup, the antenna is connected to the card reader/transmitter assembly with an RG-316 coaxial cable. A system functional block diagram is shown in Figure 1.

Table 1 System Components

Component Description	Supplier Part No.	Gilbarco Part No.
Encrypted Card Reader (1)	ZU-1870CT221	M07577B001
13.56 MHz Bezel Antenna (1)	-----	M05170A001
Shielded Antenna to Card Reader Interconnection Cable (1), 12 – 60 inches	-----	M07703A00X
Cable, ECR/SmartPad Interface	-----	M07702B00X
Ground /ESD Cable Assembly	-----	M07709A00X

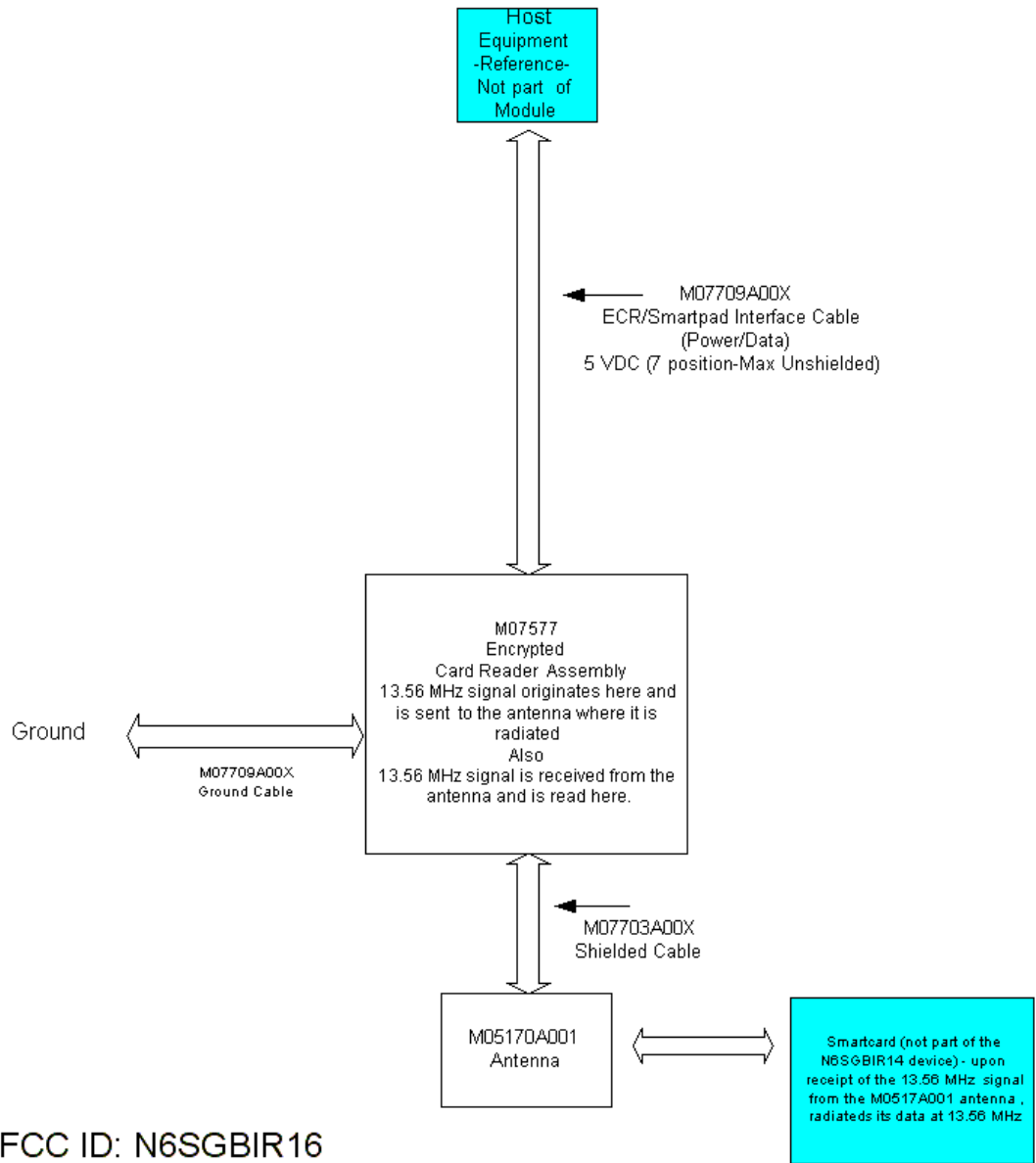


Figure 1: Block Diagram of the Encrypted Card Reader System