1. General Description

This section describes the general factors that affect the Peripheral RF Tag Module software.

1.1 Perspective

The DryView^{TM} 8100 and 8200 Laser Imager contains two major software subsystems: the Image Management System (IMS) and the Machine Control System (MCS).

The IMS is responsible for acquiring and formatting images and for supplying them to the MCS. The IMS and the MCS communicate over a serial interface.

The MCS also communicates with peripheral boards over a second serial interface using the MicroComm 9-bit protocol. These peripherals are known as Peripheral MicroController Electronic Modules. Each peripheral module consists of mechanical components, a microcontroller board, and the controlling software which resides on the board.

The RF Tag Module consists of two functional units: the MCS RF Tag Module and the Peripheral RF Tag Module. The MCS RF Tag Module consists of the MCS software used to communicate between the MCS and the Peripheral RF Tag Module. The MCS RF Tag Module is considered to be a part of the MCS software and is described in 96-0000-0217-8.

The Peripheral RF Tag Module consists of the mechanical components which scan the RF Tag, the electronics board, and the software. The Peripheral RF Tag Module is the part of the RF Tag Module that is located peripherally to the MCS and communicates with the MCS RF Tag Module using the MicroComm protocol on a serial interface. (Refer to 96-0000-0185-7 for more information on the serial communications.)

The Peripheral RF Tag Module consists of the following major components:

- Mechanical:
    - ◊ Texas Intruments (TI) MPRII PCB which communicates with the antenna.
    - ◊ Antenna – relays information to/from RF Tag located within the cartridge and the MPRII PCB.
- Electronic: Consists of the following major components mounted on the peripheral electronics board:
    - ◊ Microprocessor - Communicates with the MCS over the MicroComm interface, executes the software, and communicates with the MPRII.
- Software: Communicates with the MCS RF Tag Module software to read and report tag data; write data to the tag; resides on the RF Tag Peripheral Electronics Board.
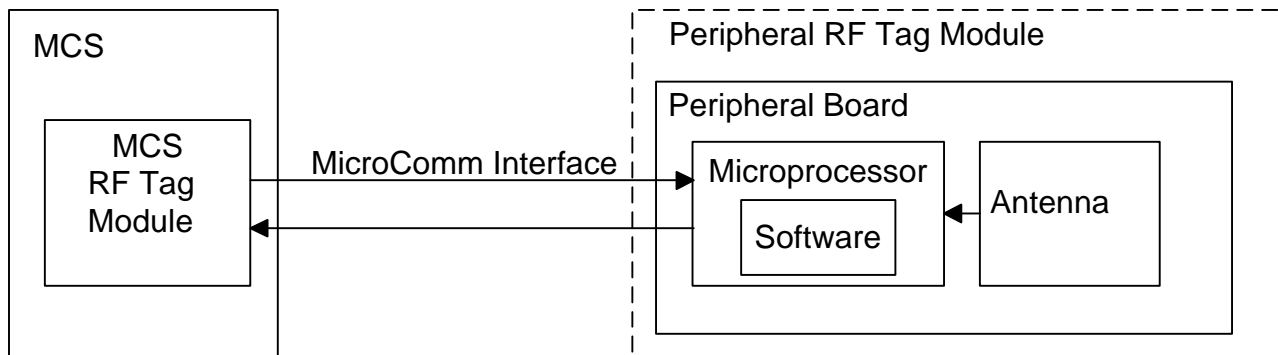
Perspective_a.vsd

Figure 1-1. RF Tag Module Components

2. Module Overview

2.1 Functional Overview

The main purpose of the RF Tag Peripheral Interface Module is to read the film cartridge data coded into the RF Tag attached to the liner sheet of the film cartridge and return the data to the MCS. The hardware necessary for the RF Tag system includes a RF Tag Interface card, a MPRII (TAGIT) Texas Instrument PCB, and an Antenna PCB, all of which are mounted under the film cartridge tray, and the RF Tag attached to the liner sheet of the film cartridge (see figure 2).
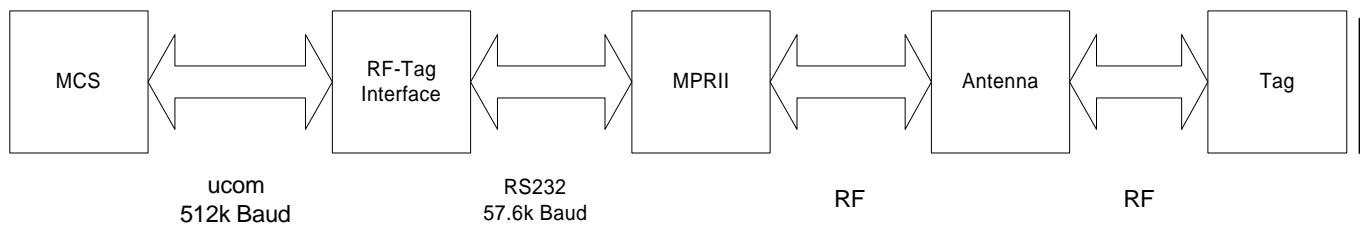

MCS		RF-Tag Interface		MPRII		Antenna		Tag
	ucom 512k Baud		RS232 57.6k Baud		RF		RF	

Figure 2

2.2 Process Descriptions

The RF Tag Interface Module is event driven software. The RF Tag Interface Module consists of four submodules:

- A MicroComm Serial Communications Module (9 bit serial protocol) - receives commands from the MCS and returns results to the MCS. The receive is interrupt driven and sets on the command event flag when a complete command has been received.

- A MPRII (RF TAG) Serial Communications Module (RS232 57.6k baud) - sends commands to the MPRII and receives responses from the MPRII. The receive is interrupt driven and sets on the response event flag when a complete response has been received. Channel 0 serial uses Timer 2.

- The Main Control Module - consists of the main loop, which polls for events and calls routines to handle the events. The startup initialization routine is part of this Module.

The Data Reformatter Module – it converts MicroComm information to RF Tag Information.

3. Communication Mechanisms

This section identifies the ways that the RF Tag Interface Module interacts and communicates with other modules and within itself.

3.1 External Interfaces

The external interfaces consist of two serial communication links and a connection to the Rollback Complete sensor. The link to the MCS is via the MicroComm Serial Interface, a 512k baud, 9 bit protocol link. The status register of the RF Tag interface is a important part of the communication. It has status bits that define when the RF Tag Interface is busy, done, passed, and failed. The link to the MPRII PCB is via the RF Tag (MPRII) link, a 57.6k baud RS232 interface, with a MPRII protocol.

3.2 Internal Interfaces

The internal interfaces are used to communicate within the module itself. These interfaces consist of event flags and data in buffers, function calls and interrupts.

3.3 Control Signals

The RF Tag Interface Module does not use any control signals.