

# Near Field Communications Reader

## Technical Reference Information

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### Description

The Near Field Communications Reader (NCFR) module is a 13.56MHz transceiver designed to read Radio Frequency Identification (RFID) tags. This module is based on an ST Microelectronics CR95HF integrated transceiver that also embeds an Analog Front End (AFE) to provide the 13.56MHz air interface. The NCFR antenna is integrated into the circuit board so there is no external antenna required.

### Features

- Supports Write and Read
- 13.56MHz Integrated AFE
- Serial UART interface
- Integrated Antenna
- RoHS Compliant

## Absolute Maximum Ratings (1)

Rating	Notes	Min	Max	Units
Supply Voltage	P1 – Pin 1	-0.3	12	V
UART Voltage	P1 – Pin 2 and 3	-7	7	V
Storage Temperature		-25	85	°C
Operating Temperature		0	70	°C

(1) Stress beyond those listed under the Absolute Maximum Ratings may cause permanent damage to device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under Recommended Operating Conditions is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

## Recommended Operating Conditions

Rating	Notes	Min	Max	Units
Supply Voltage	P1 – Pin 1	4.5	5.5	V
$V_{IL}$	P1 – Pin 2 and 3 (UART)		0.8	V
$V_{IH}$	P1 – Pin 2 and 3 (UART)	2		V
Maximum Data Rate	Supply Voltage of 5V	1000		kbps

## Pin Descriptions

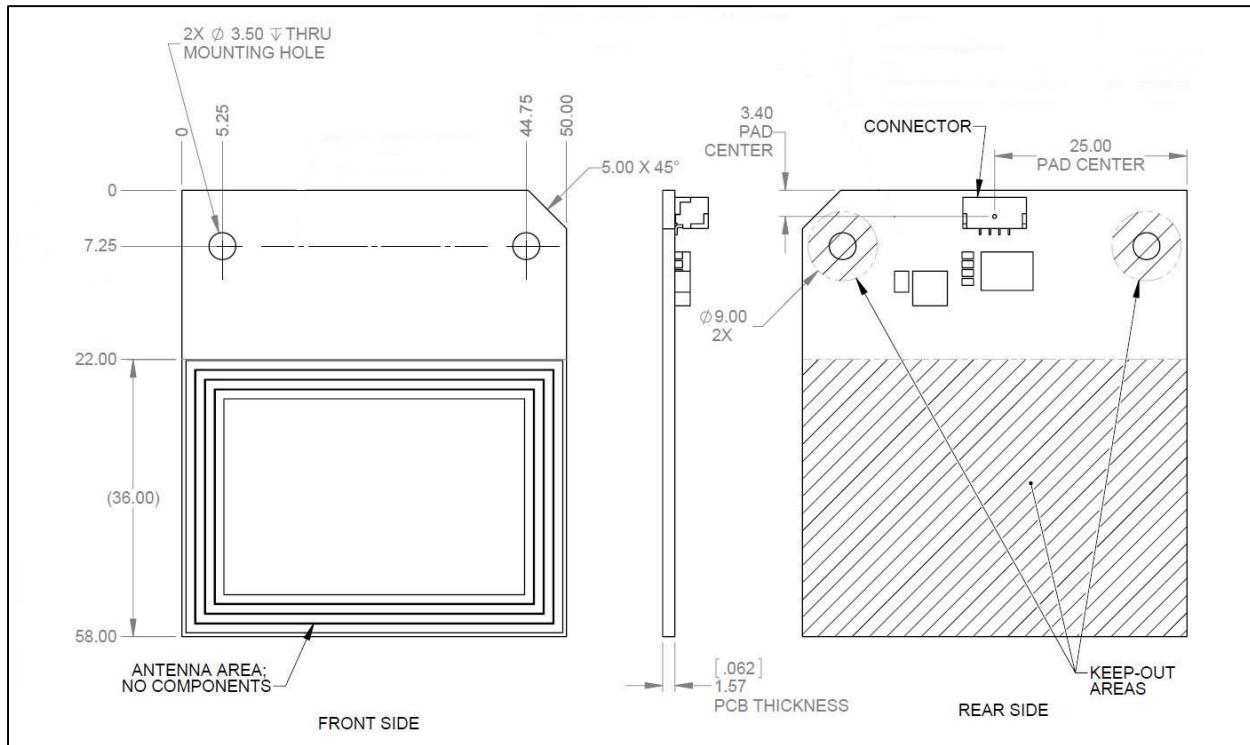
The NFCR board has a single four pin connector interface, identified by reference designator P1. Pin descriptions are given in the table below.

Pin	Name	Type	Description
1	PWR	Power	Supply Voltage
2	NFCR_TX	Input	RS-232 Receiver Input
3	NFCR_RX	Output	RS-232 Receiver Output
4	GND	Power	Ground

## Antenna

The integrated antenna is etched in the copper on the top side of the circuit board. The antenna consists of four loops of 0.045" wide copper with 0.005" spacing.

## Mechanical Dimensions



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## Notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC/IC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**Warning:** Changes or modifications not expressly approved by the Christie Digital Systems Canada Inc. could void the user's authority to operate the equipment.

**This device complies with Part 15 of the FCC/IC Rules. Operation is subject to the following two conditions:**

- (1) this device may not cause interference and
- (2) this device must accept any interference received, including interference that may cause undesired operation of the device.

### **Installation in end-user equipment**

This device has been modularly approved and is intended solely for use in Christie Digital Systems products. Christie Digital Systems will retain control over the final installation of the device, such that compliance in the end-user equipment is assured. The end-user equipment will be tested for spurious and radiated emissions to ensure the end device complies with FCC Part 15 limits.



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**Labeling of end-user equipment**

This device has been modularly approved. The manufacturer, product name, and FCC and Industry Canada identifiers of this product must appear on the outside label of the end-user equipment as follows:

**Contains:** FCC ID: XU6-NFCR  
IC: 8691A-NFCR