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Global Product Certification
EMC-EMF Safety Approvals

APPENDIX L
OF
TEST REPORT T150916

USER MANUAL

FCC ID:	2ACXQ-CL4NX-MR-1
Manufacturer:	Sato Vicinity Pty Ltd
Test Sample:	RFID Modular Read Write Reader
Model Number:	MR-1 Module
Serial Number:	Production Prototype
Date:	10th February 2016

Micro Reader MR-1

OEM Installation Manual

Document Number : 090-01-002-DOC Rev A1

Last Changed : 2 March 2016

Author : Tai Wai Pong

Table of Contents

FCC Radio Frequency Interference Statement (USA)

The FCC regards RFID equipment as low-power transmitting devices and, therefore, does not require users of RFID devices to obtain a license to operate them.

NOTE: 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 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 instruction manual, 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:

- Reorientation or relocation of 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

Any changes or modifications to the equipment that are not expressly approved by the party responsible for compliance could void the user's authority granted under FCC Rules to operate this equipment.

The following sentence has to be displayed on the outside of the device in which the transmitter module is installed: "Contains FCC ID: 2ACXQ-CL4NX-MR-1"

The following criteria shall be observed to comply with the regulation:

- Module is limited to OEM installation ONLY
- OEM integrators is responsible for ensuring that the end-user has no manual instructions to remove or install the module
- Module is limited to installation in mobile or fixed applications
- Separate approval is required for all other operating configurations

ISO/IEC 18000 – 3 Mode 2 (Air Interface at 13.56 MHz) Compliance

MR-1 module fully comply with the ISO/IEC18000 Part 3 Mode 2(Information technology – Radio frequency identification for item management. Part 3: Parameters for air interface communications at 13.56MHz) published in August, 2004.

1. Overview

The MR-1 is the smallest and simplest of Magellan's reader modules. It is intended for Original Equipment Manufacturer (OEM) applications where it is typically embedded in an RFID enabled product.

Examples include printers, hand held readers, data capture terminals, low cost desktop readers, identification and access controls.

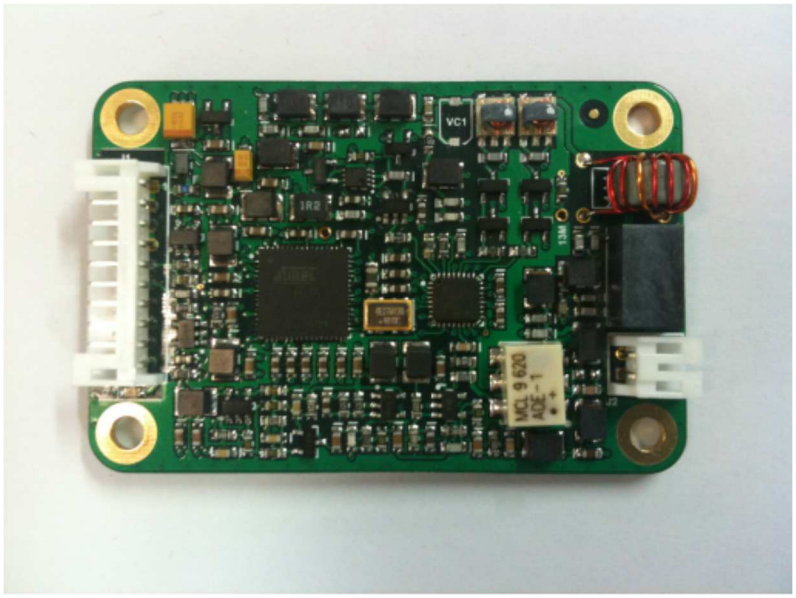

Figure 1: MR-1 Module Rev B1

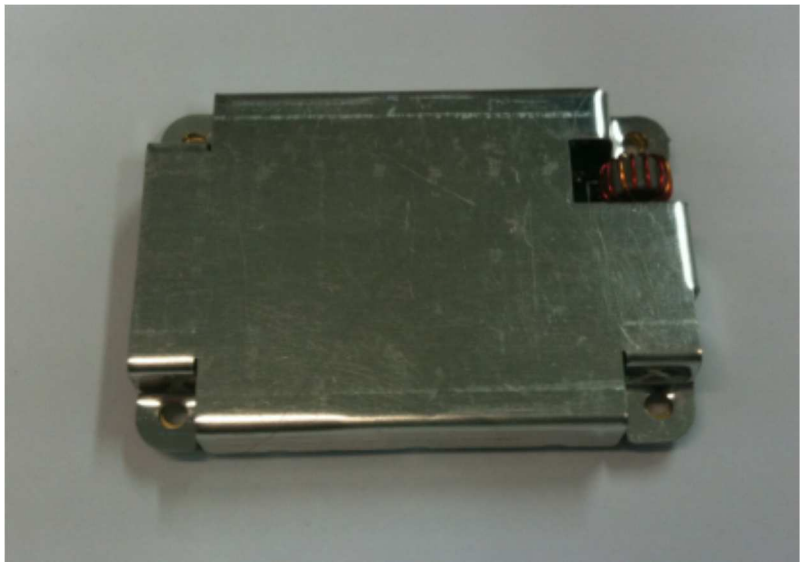

Figure 2: MR-1 Module Rev B1 with Shielding Can

2. Features and Benefits

- Low power module easy to build into RFID enabled equipment.
- Small footprint.
- Simple Serial UART interface.
- Simple Antenna connection.

3. Specifications

Electrical	
Operating Frequency	13.56MHz
ISO/IEC Compliance	ISO/IEC 18000-3 Mode 2
Command Data Rate	424 kbit/s
Reply Data Rate	106 kbit/s
Number of Reply Channel	1 (Channel ‘G’)
Number of Axes	1
Power Supply	+5.0 ± 0.5Vdc
Power Supply Current	200mA max

Host	
Host Interface	Serial UART
Communications Protocol	
Baud Rate	Configurable (9600 default)
Parity	None
Data Bits	8
Stop Bits	1

Environmental	
Operating Environment	Indoor use – embedded applications
Temperature Range	0°C to +70°C ambient
Humidity	10% to 80% (non-condensing)

Mechanical	
External Dimensions: (L x W x H)	60 x 40 x 12.5 mm

Other Features	
Calibration and Tuning	No manual calibration or tuning required

4. Dimensions

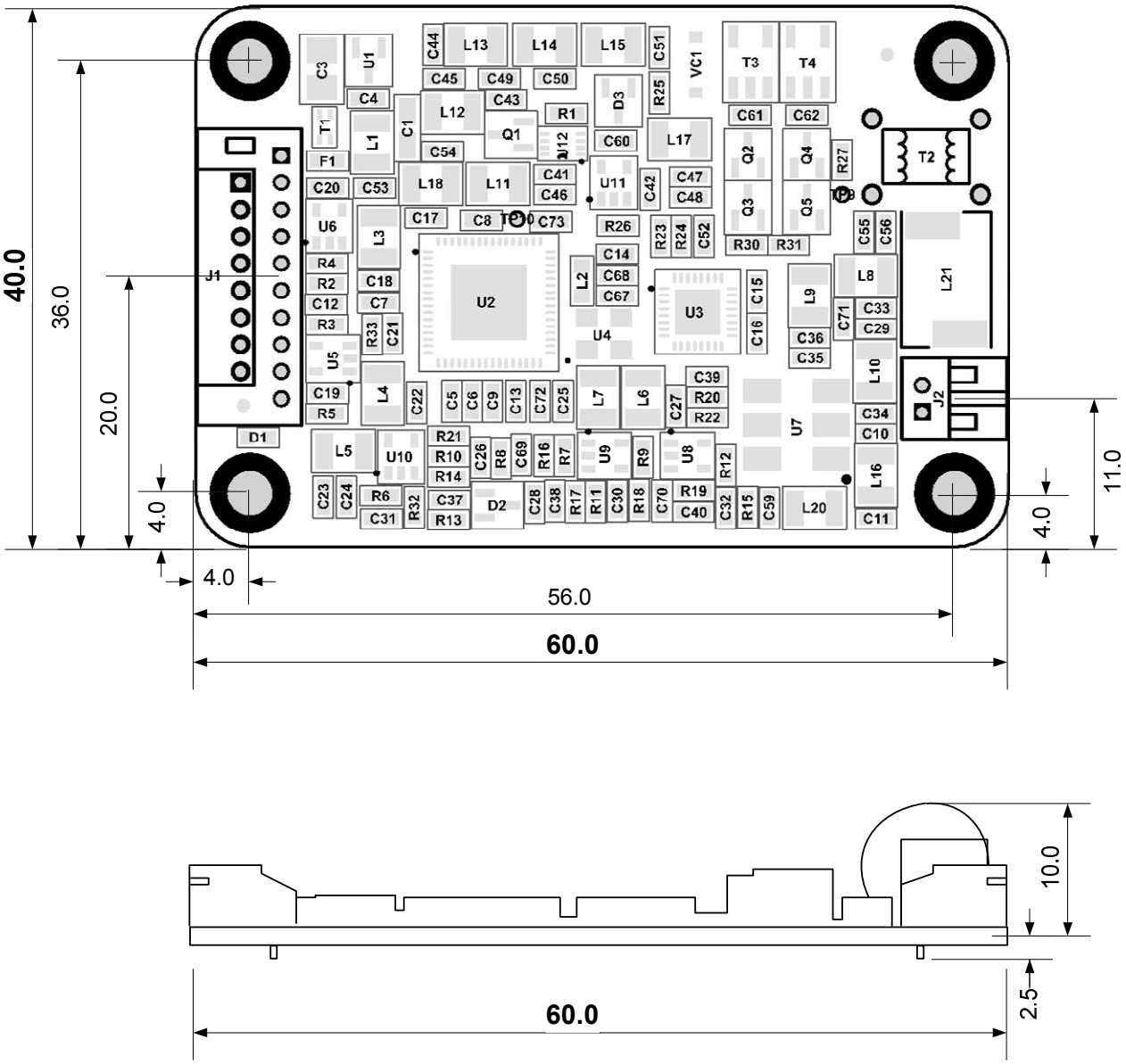

Figure 3 : Major Module Dimensions (mm)

Mounting Holes 4x 3.2 mm diameter

5. Connections

5.1 J1 - Host Connector

Connector Type 10 pin (JST Model S10B-PH-K-S)
Reference: http://www.jst-mfg.com/product/pdf/eng/ePH.pdf

Pin Number	Function
1	+5 Vdc
2	+5 Vdc
3	Ground
4	Ground
5	RxD UART Receive Signal (+5V TTL/ +3.3V LVCMOS) Input to module.
6	TxD UART Transmit Signal (+5V CMOS) Output from module.
7	Not Connected
8	Not Connected
9	Not Connected
10	Not Connected

5.2 J2 - Antenna Connector

Connector Type 2 pin (JST Model S2B-PH-K-S)
Reference: http://www.jst-mfg.com/product/pdf/eng/ePH.pdf

Pin Number	Function
1	RF
2	Ground

6. SATO CL4NX Printer PJM RFID Module Installation

TECHNICAL BULLETIN 0016 r1 – CONFIDENTIAL!

Bulletin Number: 0016 r1

Issue: SATO CL4NX Printer PJM RFID Module Installation

Date: 16 October 2015

Author: Steve Antonio

Prerequisite: SATO CL4NX Printer, PJM RFID Module Kit a and PC with internet access

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Severity: General Guide Intended for SATO Qualified Technicians

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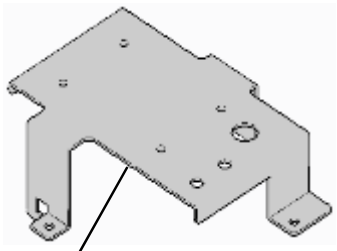
Affected Range: SATO CL4NX Printers Requiring PJM RFID

Notes:

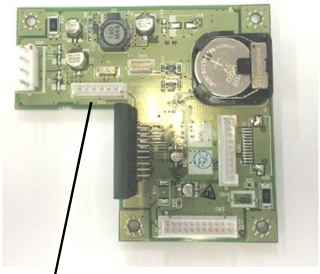
1. ***This bulletin is confidential and intended for internal use by SATO staff ONLY – DO NOT share this document externally!***
2. ***This bulletin is intended for SATO qualified technicians with a working knowledge of the CL4NX printer, as such rudimental steps like "Remove fixing screws" or "open print head" are implied & have been omitted from this document!***
3. ***Due to ongoing development/improvements some of the items/Versions listed in this bulletin may vary from those shown!***
4. ***Ensure your PJM RFID kit contains all parts listed on the "CL4NX + PJM RFID: PARTS LIST" on page 2 of this document.***
5. ***Ensure you read & fully understand this document prior to undertaking any installation work.***

Tools Required: Size 1 Philips Head Screwdriver, 5mm nut driver.

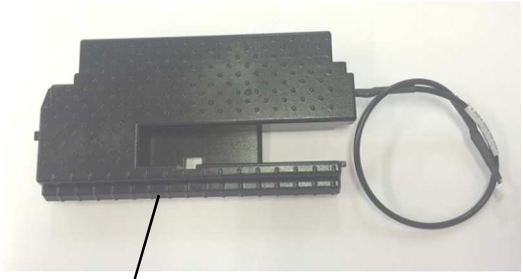
CL4NX + PJM RFID: PARTS LIST



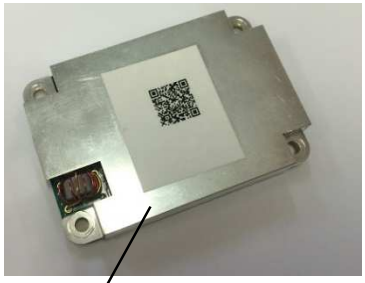
P55186000 RFID MODULE BR	**1**



R28518001 EXT PCB ASSY	**1**

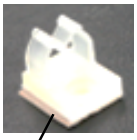


090-50-0001-ASY-1 CL4NX PJM ANTENNA ASSY	**1**

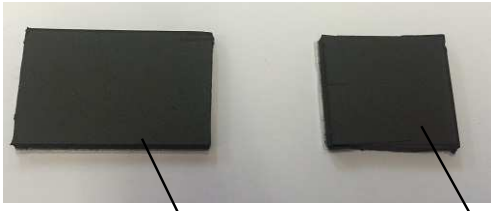


090-10-001-ASY MR-1 Module	**1**

098-02-056-FST SPACER M/F 3x6mm	**4**



JG100511A MINI CLAMP	**1**

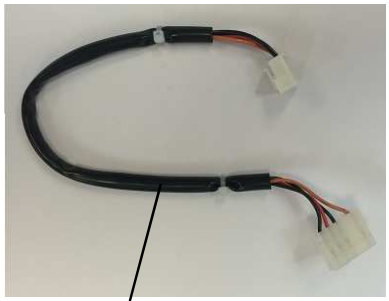


090-50-0002-HAW-1 FLEXIBLE FERRITE 28x17x2mm	**1**

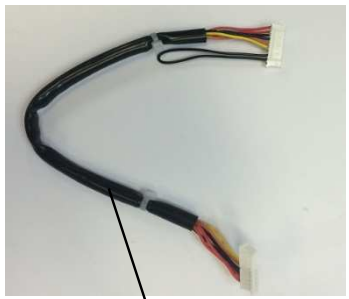
090-50-0003-HAW-1 FLEXIBLE FERRITE 17x17x2mm	**1**

098-01-052-FST SEMS M3x6mm S/W	**11**

R28824000 EXT SIGNAL CABLE SET	**1**



R28431000 EXT POWER CABLE SET	**1**



R29836001 RFID SIGNAL CABLE SET	**1**

Action:

1. Remove the 3 covers form the printer - these are the left side cover & the 2 front bottom covers (see Image 1), then open the Right side cover.

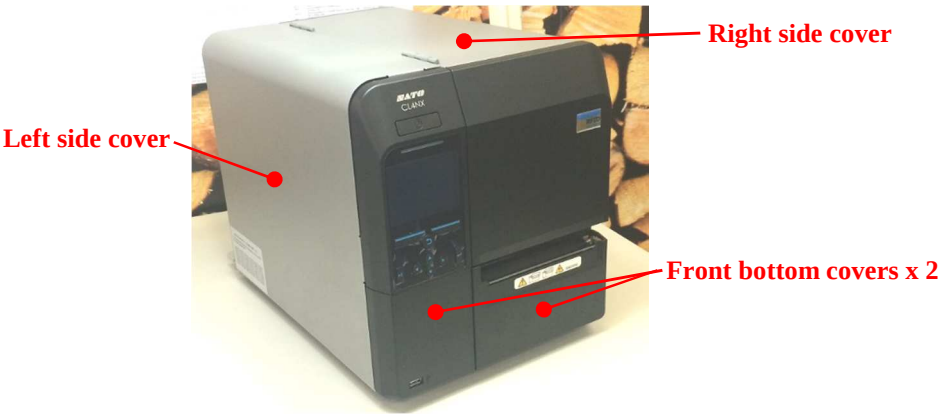


Image 1

2. Locate and remove the Label-sensor-guide-SUB (see Image 2).

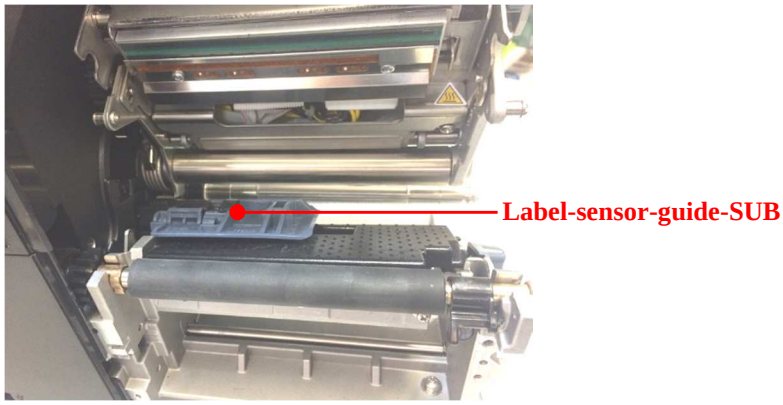


Image 2

3. Fit the two sections of flexible Ferrite (Part Numbers: 090-50-0002-HAW-1 & 090-50-0003-HAW-1) that are supplied in the kit to the Label-sensor-guide-SUB by peeling the backing paper and pasting them in place as shown in Image 3.

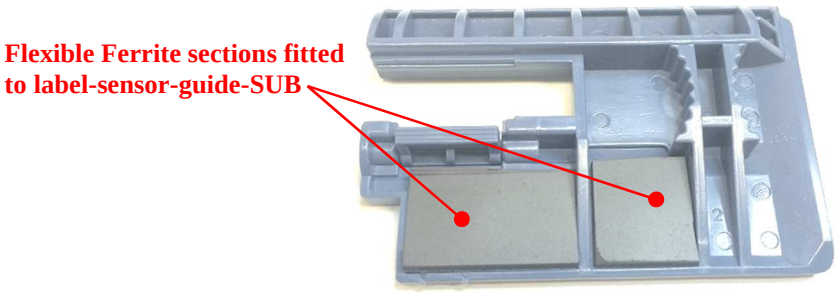


Image 3

4. Remove the original Media-guard in order to fit the replacement guard (PN: 090-50-0001-ASY-1) that is supplied in the kit.
5. Fit the new Media-guard paying particular attention to the routing on the Antenna cable as follows:-

   Step 1. Pass the antenna cable through the existing hole in the engine-frame as shown in Image 4

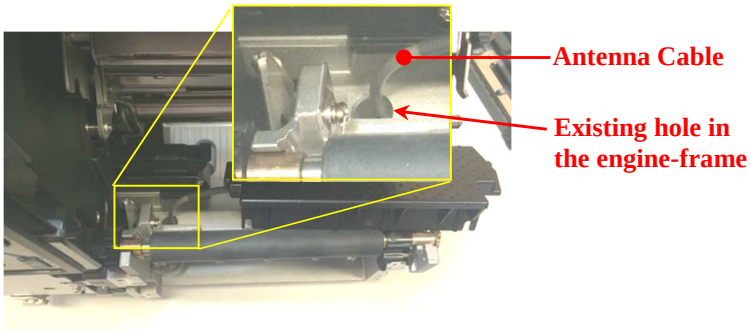


Image 4

Step 2. Route the antenna cable through the second existing “Square” hole in the side of the engine-frame as shown in Image 5

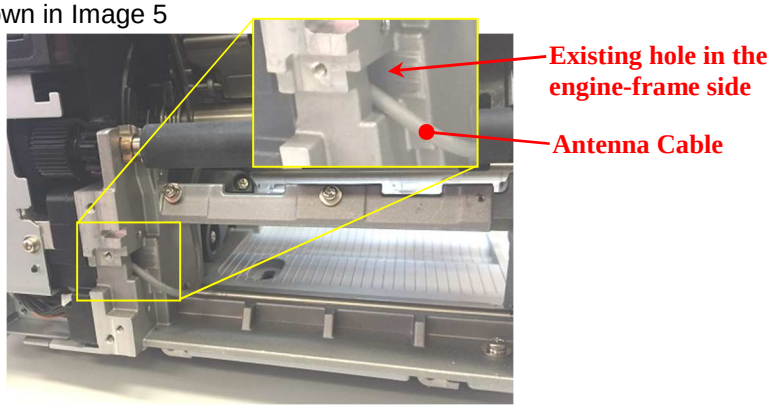


Image 5

Step 3. Pull the antenna cable through into the Electronics area of the printer as you lower the new Media-guard into place. See Image 6

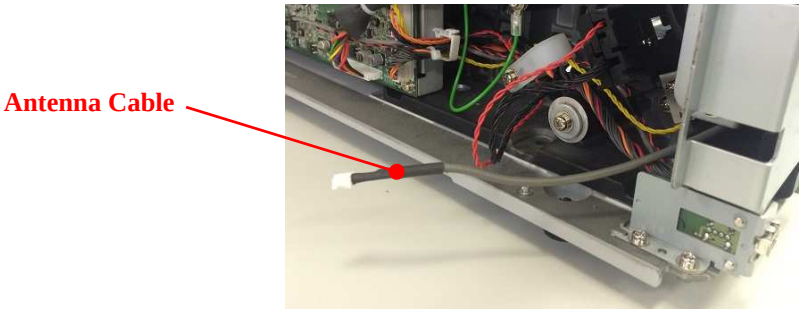


Image 6

6. Now secure the Media-guard back in place using the original 3 screws & re-fit the Label-sensor-guide-SUB. Ensure the Antenna cable is routed close to the engine-frame. See image 7

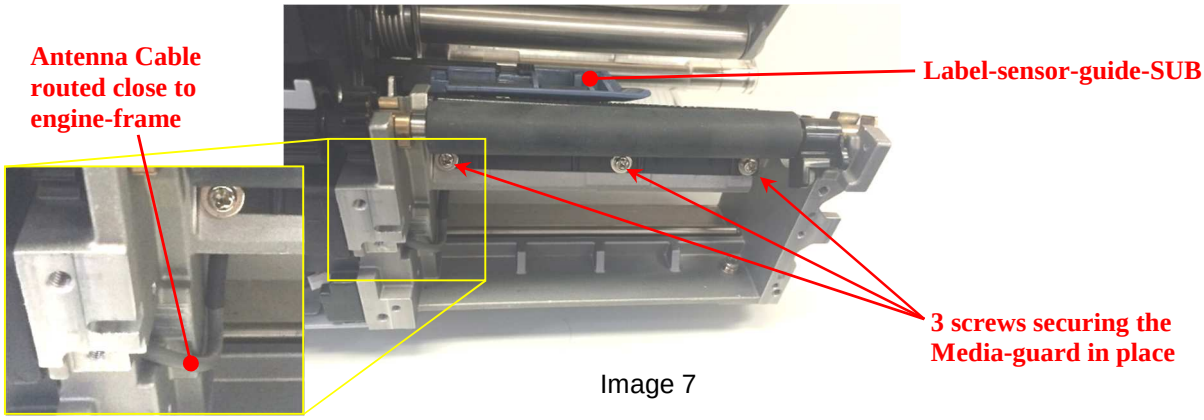


Image 7

7. Locate the RFID module bracket (PN: P55186000) and fit the 4 x 3x6mm spacers (PN: 098-02-056-FST) and the mini clamp (PN: JG100511A). As shown in Image 8

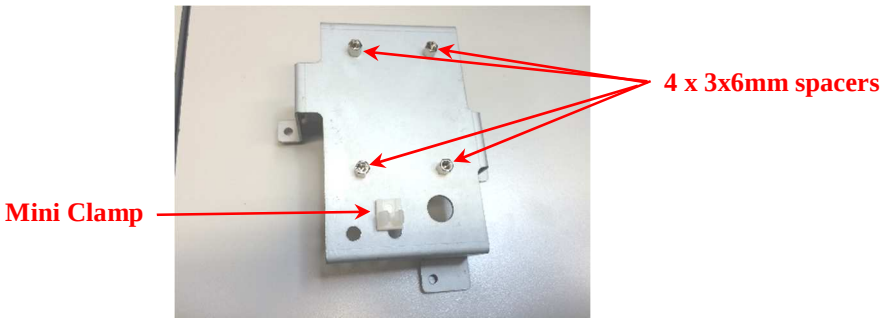


Image 8

8. Fit the RFID module (PN: 090-10-001-ASY) to the RFID module bracket using 4 of the 3x6mm screws provided (PN: 098-01-052-FST). The RFID module is fitted to the spacers you fitted at step 7. Note the orientation of the RFID module with the toroid transformer facing the mini clamp. See Image 9

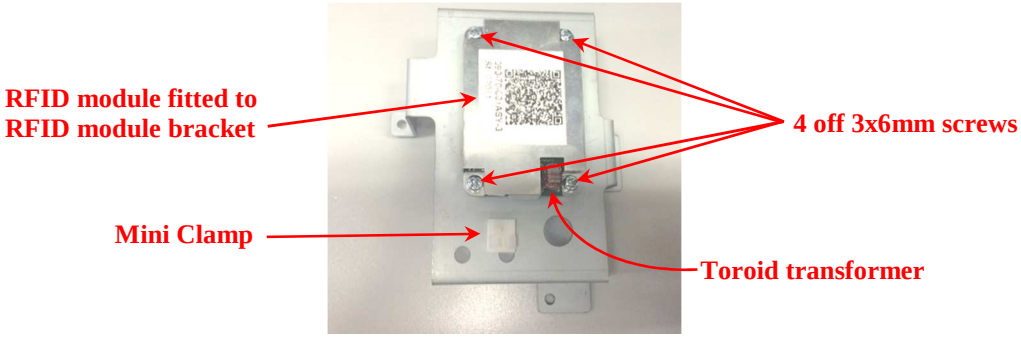


Image 9

9. In order to facilitate fitment of the RFID hardware in to the printer, carefully disconnect the harnesses from locations CN17 & CN6 on the printer main board, moving them aside temporarily. See image 10

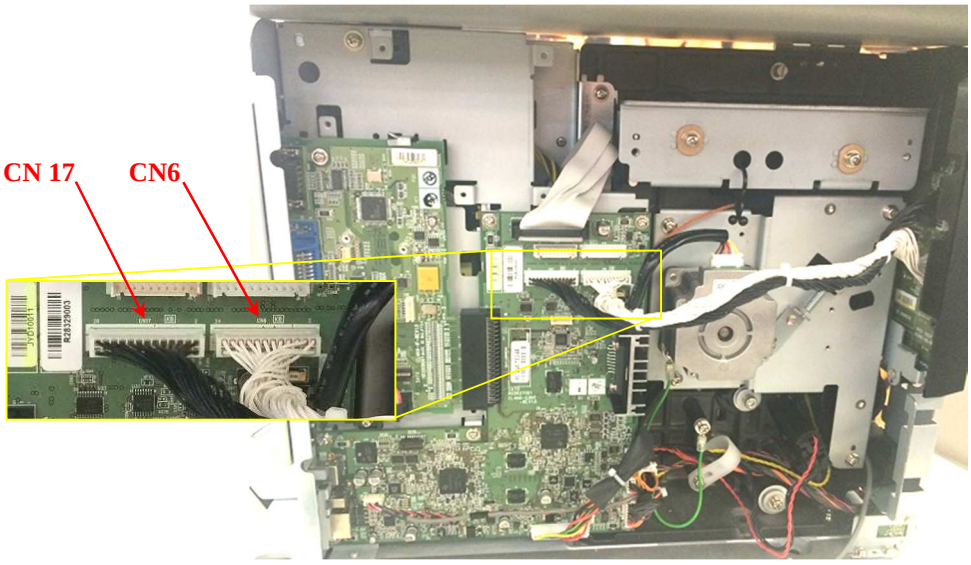


Image 10

10. Fit the RFID Module bracket to the printer using 3 of the 3x6mm screws provided (PN: 098-01-052-FST). See image 11

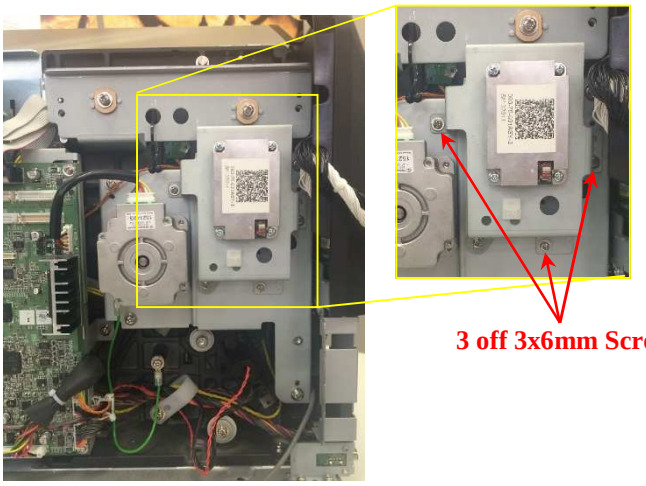


Image 11

11. Connect the Antenna cable to the RFID module clipping the cable into the mini clamp, note the cable is keyed & will only fit in one orientation. See Image 12

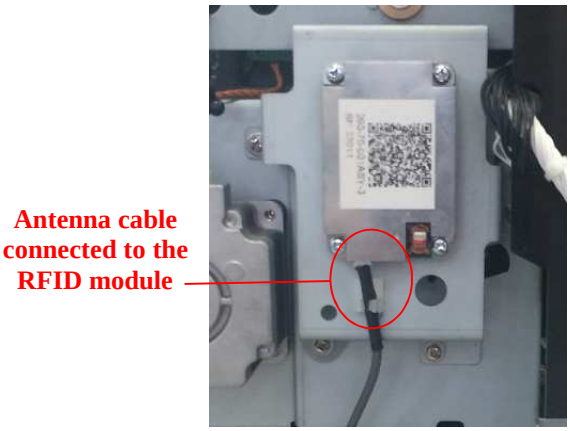


Image 12

12. Fit the EXT PCB ASSY board (PN R28518001) to the printer using 4 of the 3x6mm screws supplied. See image 13.

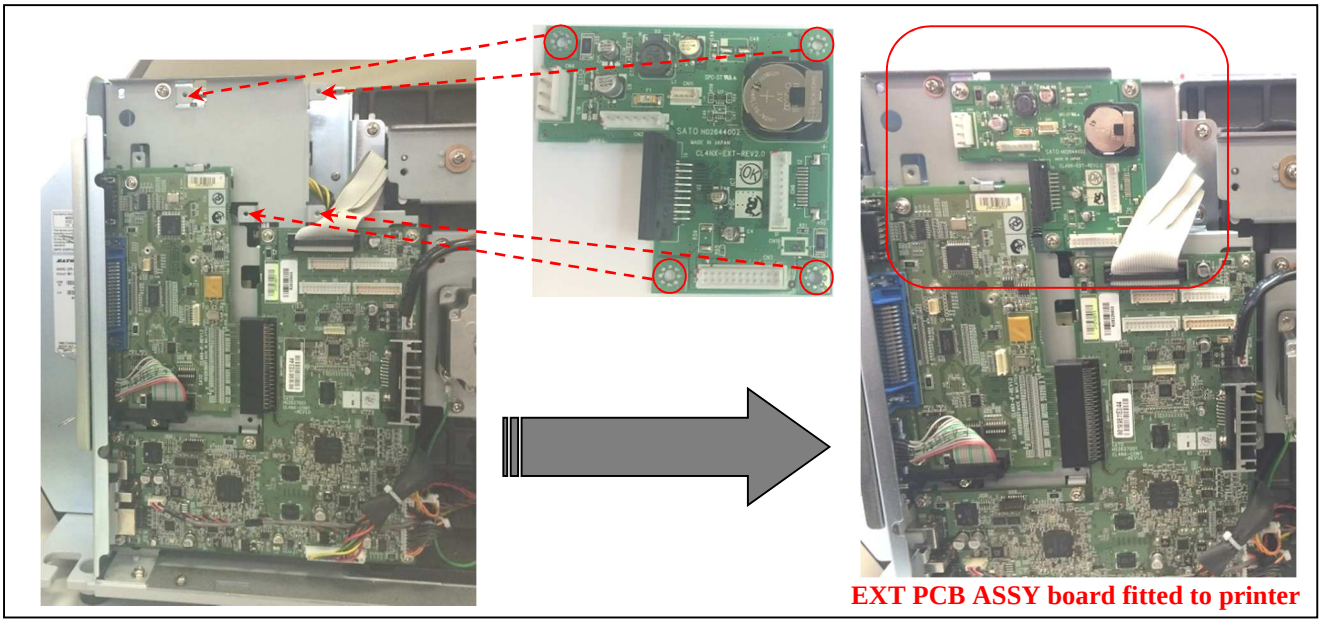


Image 13

13. Install the RFID Signal Cable set (PN:R29836001) from the RFID module to the EXT PCB ASSY board -location CN5. The cable connectors are keyed so please observe the connector orientation. NOTE: The connector with the loop wire is connected to the EXT PCB ASSY board. See Image 14

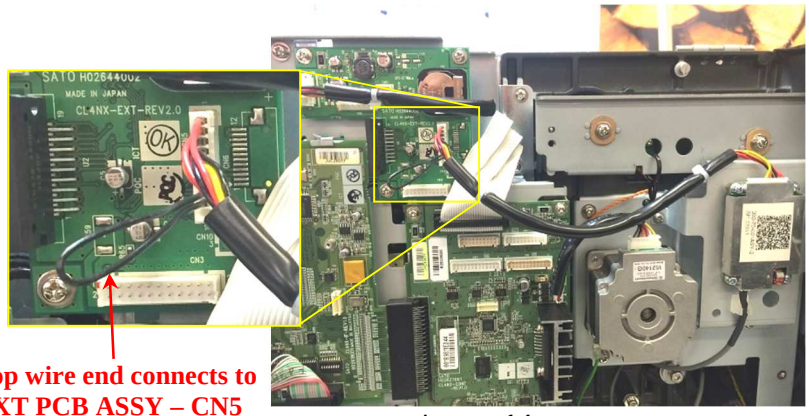


Image 14

14. Connect the EXT Power cable set (PN:R28431000) from the EXT PCB ASSY – CN4 to the power supply connector J4. See Image 15

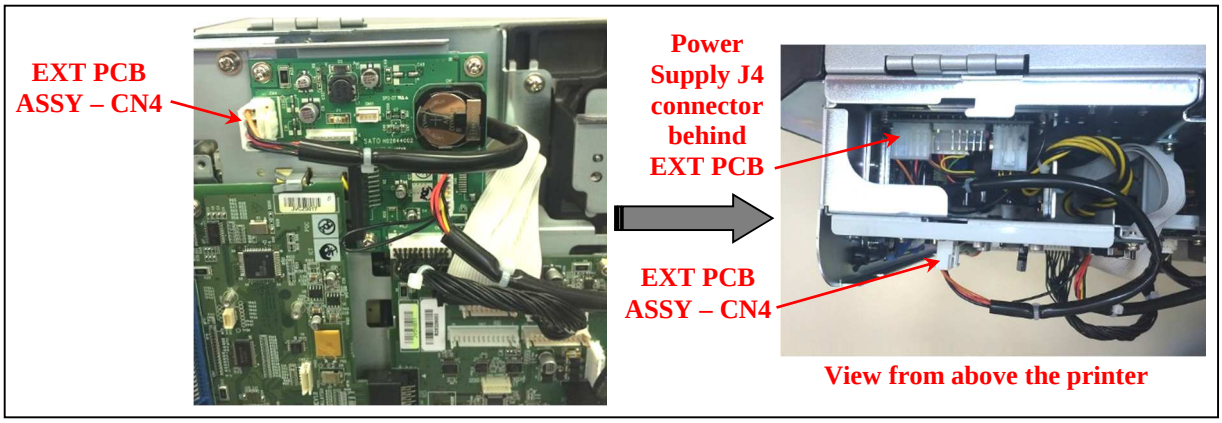


Image 15

15. Fit the EXT SIGNAL CABLE SET (PN:R28824000) from the EXT PCB ASSY – CN3 to the printer main board CN4. See Image 16

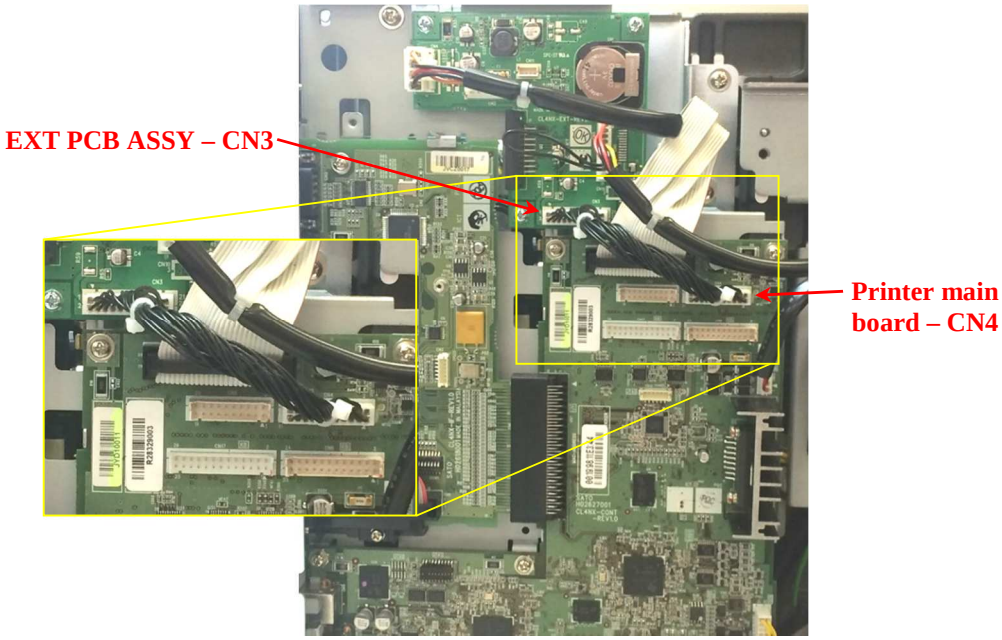


Image 16

16. Reconnect the 2 harnesses to locations CN17 & CN6 on the printer main board that were disconnected at step 9. See Image 17

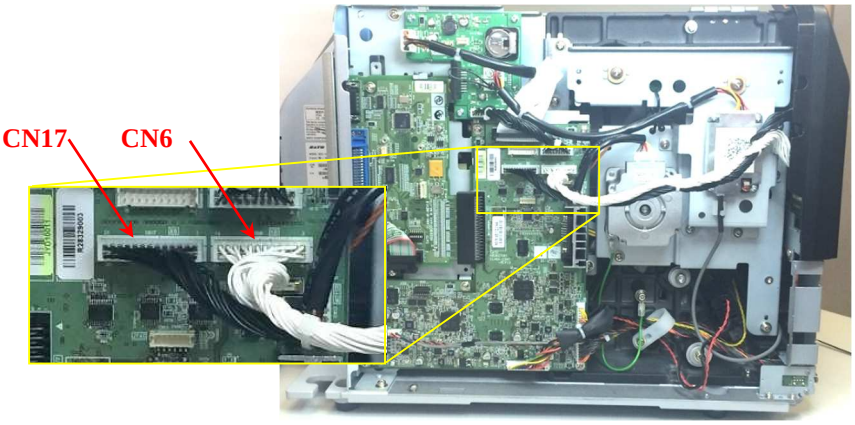


Image 17

17. Re-fit the left side cover & the 2 front bottom covers to the printer.

Printer Firmware update:

The printer firmware will need to be updated to the current PJM RFID compatible version. The firmware update process is a two step process as follows:-

Step 1) Update the printer base firmware to Version 1.4.1-r1 following the instructions found in SATO document “STL00191PA5_FWアップデート手順書Firmware update manual”

Step 2) The second step is to upgrade the base printer firmware using the PJM firmware package “update_s01_PJM_01A” again following the instructions found in SATO document “STL00191PA5_FWアップデート手順書Firmware update manual”

The SATO firmware update manual as well as the firmware installation files (1.4.1-r1 & update_s01_PJM_01A) are available for download from the following link: -

https://drive.google.com/a/sato-global.com/folderview?id=0B7okyWbH6BrNc1J1U1dMS2VvYzQ&usp=sharing