

NL-RF2200 UHF RFID Reader

Hardware User's Manual

2014



www.nesslab.com

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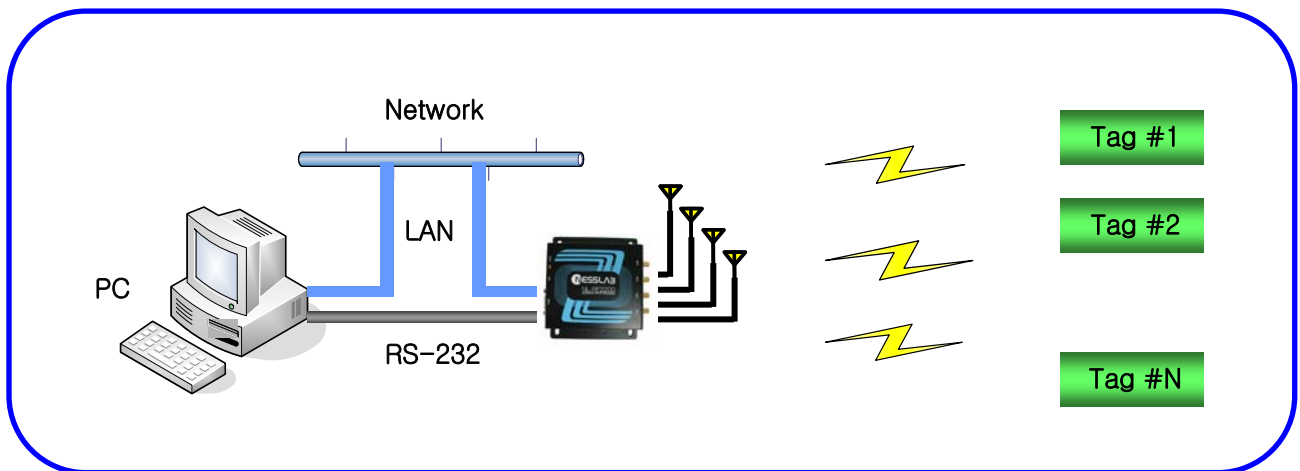
1. INTRODUCTION

1.1 Overview

NL-RF2200 is a Fixed Type 900MHz RFID Reader, enables user to use RS232 or Ethernet Interface for efficient and convenient use. It is suitable for various applications such as Logistic, Asset tracking, Stock management, Parking lot management, Healthcare, Security, Transportation and bank system.

User can use up to 4 antennas per one reader, perfect for wide range reading application than longer distance reading application.

◆ System configuration ◆



1.2 Composition



Reader main body



Antenna (Option)



DC5V/5A adapter



Antenna cable (Option)



LAN Cable



Instruction

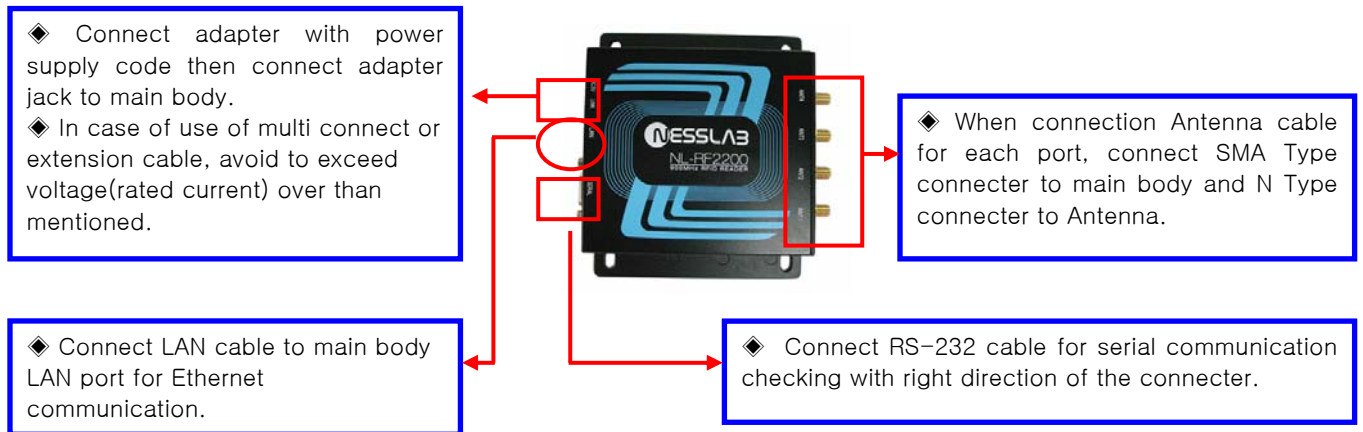
1.3 Reader Configuration



1.4 Reader Installation

◆ How to install or connect reader with antenna ◆

1. Make the reader stay still.
2. Connect each cable in the package.

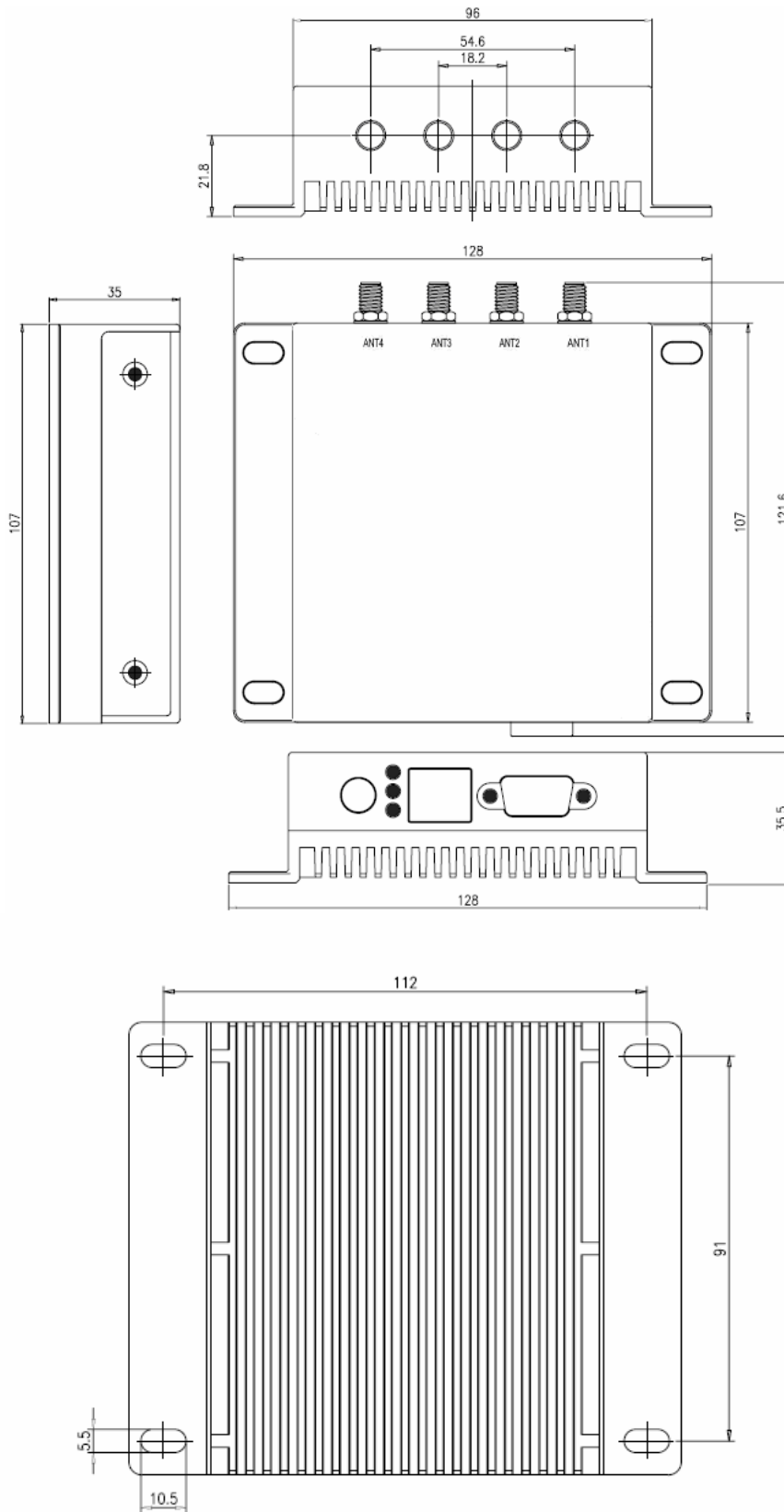


◆ How to install antenna correctly ◆

1. Avoid metal material the front side of antenna in 2M due to cause of low performance.
2. Make the antenna stay still.
3. Antenna Cable per each ports should be not tangled and tied up.

1.5 Reader Physical Size

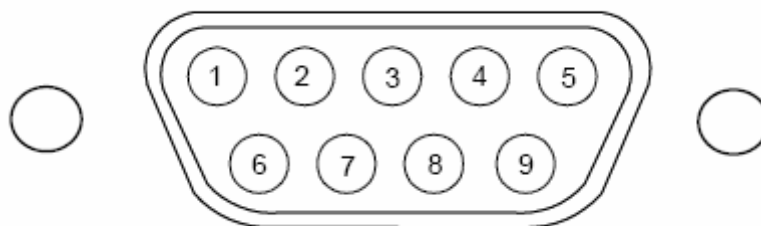
unit: mm



1.6 Specification

ITEM	SPECIFICATION
Model Number	NL-RF2200
Operating Frequency	902.75 MHz ~ 927.25 MHz
RF Output Port	4
Hopping Channels	50
Channel Spacing	500 KHz
Channel Dwell Time	< 0.4 seconds
Modulation	Phase Reversal-Amplitude Shift Keying (PR-ASK)
RF Transmitter	< 1W (+30 dBm)
Communication Interface	RS-232 (DB-9F), TCP/IP (RJ-45)
GPIO Support	2-Input / 2-Output
Dimensions	107 x 98 x 32 mm
Weight	430g
Operating Temperature	-10 ~ + 50 °C
LED Indicators	Link, ACT, Power
Input Power	DC 5.0V
Power Consumption	12W
Protocols Support	ISO 18000-6 Type C/ EPC Class1-Gen2
Software Support	Reader Manager (API)
Compliance Certifications	-

1.7 RS-232 & GPIO Interface



Pin NO.	RS-232 Interface	GPIO Interface (Option)
1	Not Connected	+3.3V Output
2	Transmit Data	Not Connected
3	Receive Data	Not Connected
4	Not Connected	Input1
5	Ground	Ground
6	Not Connected	Output1
7	Not Connected	Output2
8	Not Connected	Input2
9	Not Connected	+5V or +12V Output

2. Antenna

2.1 Scope

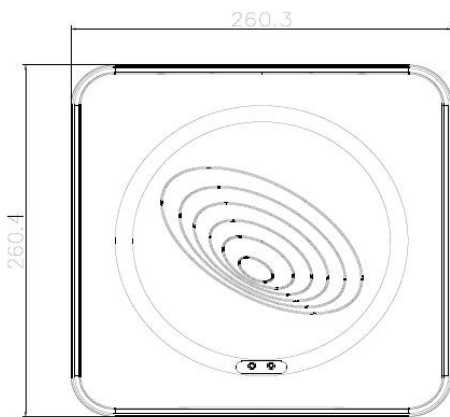
This specification covers the characteristics of the ceramic patch antenna element for the ISM band

2.2 Composition and Materials.

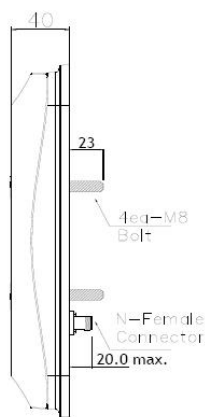
1. Substrate : Air & Insulator
2. Electrode Plating : Copper & Aluminum
3. Terminal pin : Heat-resisting ABS

2.3 Mechanical Dimensions.

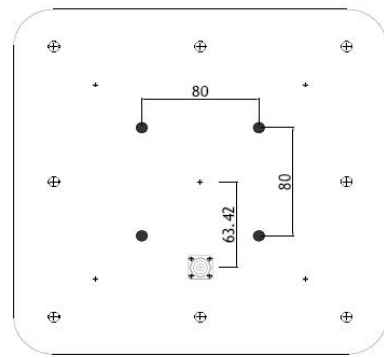
unit: mm



TOP

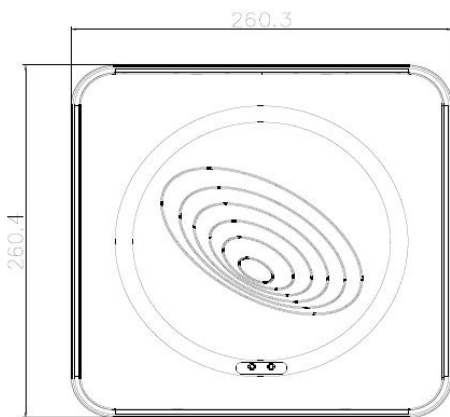


SIDE

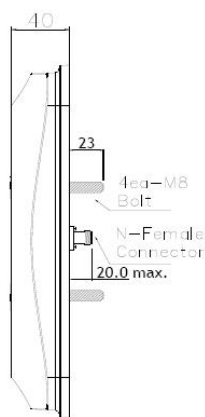


BOTTOM

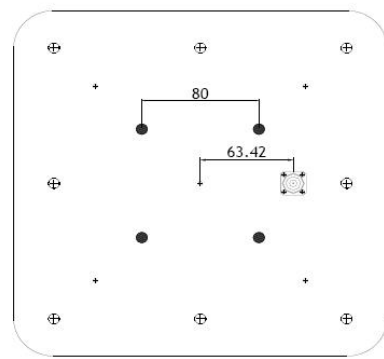
Tolerance Unless
Otherwise Specified : ±2.0
Unit : mm



TOP



SIDE



BOTTOM

Tolerance Unless
Otherwise Specified : ±2.0
Unit : mm

2.4. Electrical specifications.

NO.	Parameters	Spec.	Typical value	Unit	Remark
1	Center Frequency	919		MHz	
2	Band Width @ - 10 dB R.L.	60 min.	80	MHz	
3	VSWR	2.0 : 1 max.	1.1 : 1	Ratio	@919 MHz
4	Gain @ Zenith	5.0 min.	5.0~6.0	dBiL	@919 MHz
5	Axial Ratio	3.0	1.5~2.0	dB	@919 MHz
6	Impedance		50	Ohms	
7	Polarization	RHCP			

3. FCC Information to User

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

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. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This device complies with Part 15 of FCC Rules.

Operation is subject to the following two conditions:

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

4. WARNING TO USER

- Change or modifications not expressly approved the manufacturer can void the user's authority to operate this equipment.
- This equipment must not be co-located or operated in conjunction with any other antenna or transmitter.

This equipment complies with FCC radiation exposure limits set forth for uncontrolled equipment and meets the FCC radio frequency (RF) Exposure Guidelines in Supplement C to OET65. This equipment must be installed and operated with at least 20cm and more between the radiator and person's body (excluding extremities: hands, wrists, feet and ankles).

5.Reader, Antenna Troubleshoot Guide

5.1 Fixed Reader and Antenna Troubleshoot

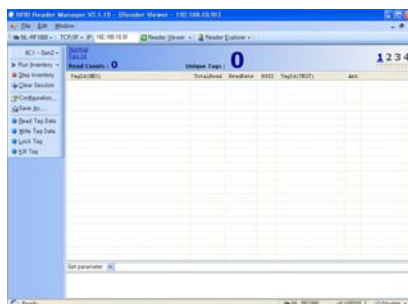
1. Confirm the damage of the out case and the inundation.
 - 1) check the external connector .



- 2) check the inundation .(Check the clearance of the reader)



2. Confirm the reader setup program.
 - 1) The reader setup is the execution of the reader manager program



3. Confirm the error of the power.
 - 1) Check the adaptor
(The output power is 5v dc)



2) Check the connection of the ac adapter to the reader.



3) Confirm the red LED of the reader



4) If the red LED is off, the power is not supplied.

- Check the connection of the ac power cord.
- Change the output of the ac/dc adapter.

4. Confirm the LAN connection.

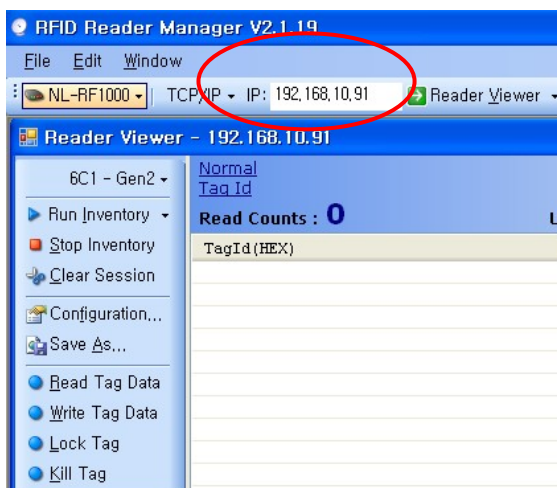
1) Confirm the yellow LED.



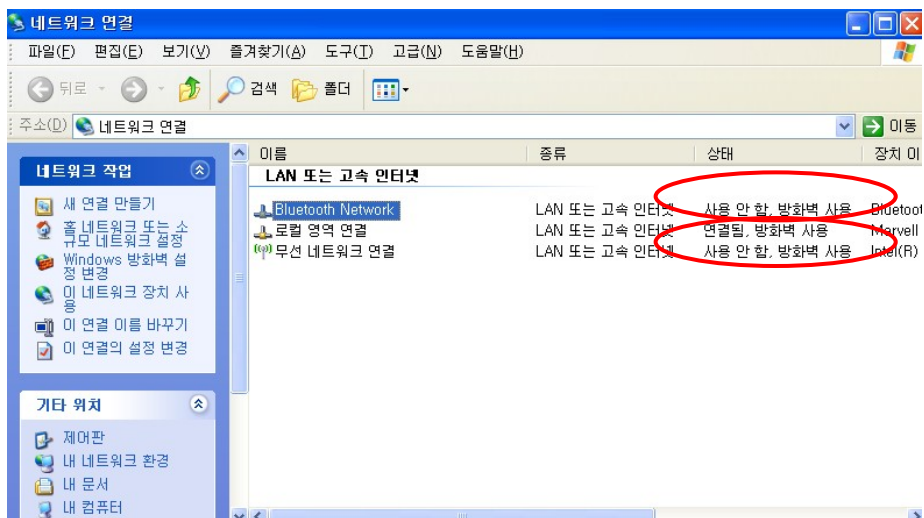
2) If the yellow LED is off, the ethernet is not connected to the host PC.



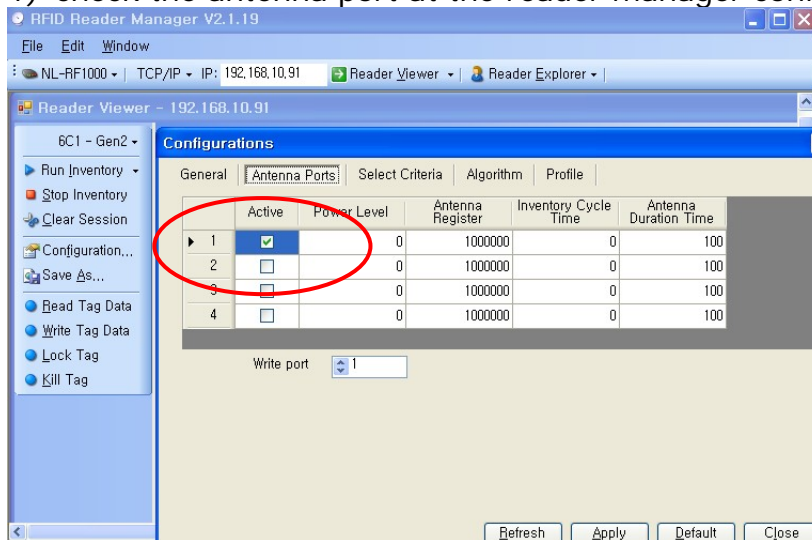
3) Confirm the reader IP (The default IP of the reader is 192.168.10.91)



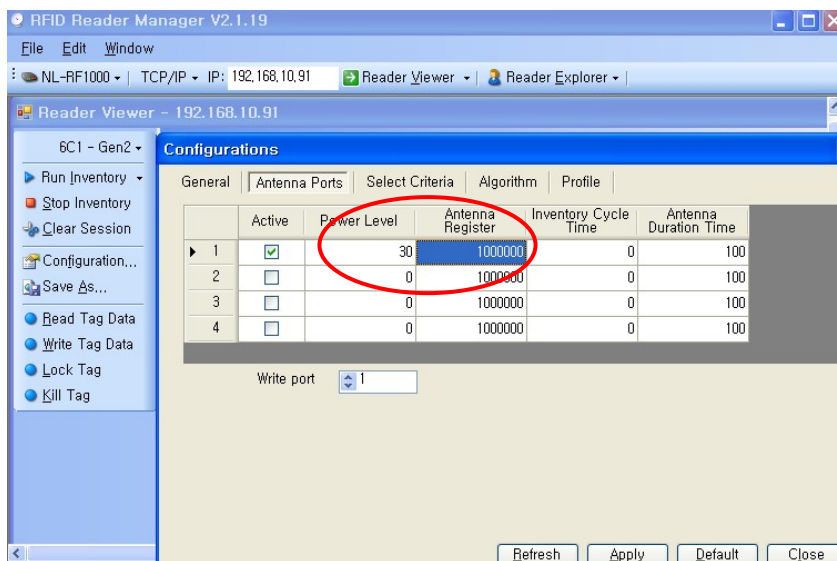
4) Confirm the host PC setting (disable the other connection)



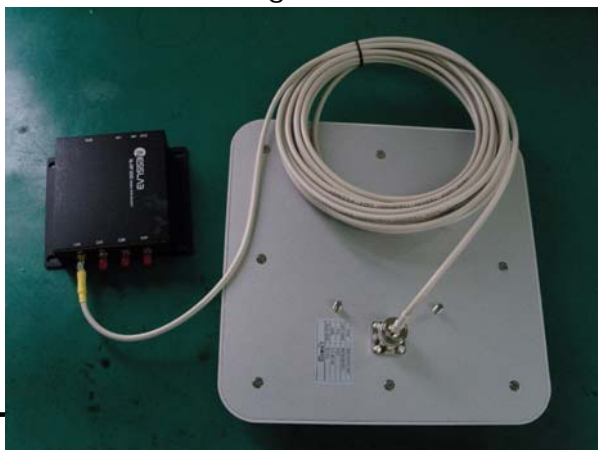
5. check the configuration of the reader.
 - 1) check the antenna port at the reader manager configuration.



- 2) check the antenna power level and the antenna register.
The antenna power level is 15dBm ~ 30dBm.
The antenna register is 1000000



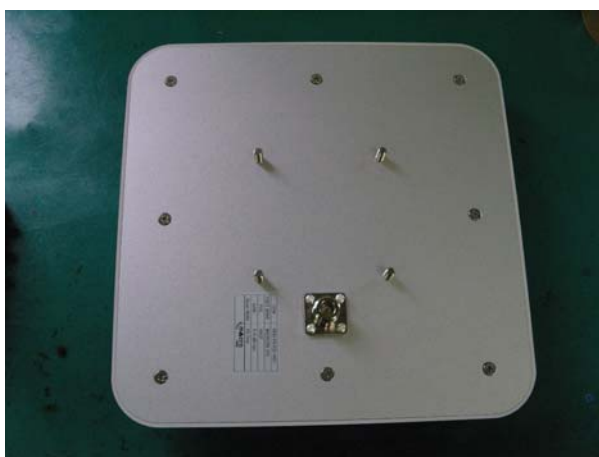
6. Check the antenna connection and the antenna operation.
 - 1) Check the antenna setting



2) Check the antenna cable damages



3) Check the antenna damages.



7. Then ask the A/S center(+82-31-206-1774), if the reader is out of order after all that