FireID

User Manual

RFID Reader for FireCR Dental

The RFID reader supports Direct Connection Mode for a single FireCR Dental reader with a single computer and Network Sharing Mode for multiple FireCR Dental readers with multiple computers. This manual describes Network Sharing Mode using .

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The device complies with Part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

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, may cause harmful interference to radio communication. 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.

Warnings and Used Symbols

To ensure the safety of patients, staff and other persons, any changes to software and hardware delivered by ***3D Imaging & Simulations Corp.*** may only be made with prior written permission from ***3D Imaging & Simulations Corp.***

Please read the respective manuals of the connected software, such as acquisition and diagnostic software, before starting to use the ***FireCR Dental*** system.

The following symbols will be used throughout this manual:

DANGER
This equipment is indoor use only and all the communication wirings are limited to inside of the building.

DANGER
Damage to the reader can occur if it is used incorrectly.
If unauthorized changes have been made to the delivered system and accessories, the warranty by ***3D Imaging & Simulations Corp.*** becomes void. ***3D Imaging & Simulations Corp.*** will not accept any responsibility or liability for the improper functioning of the product in such a case.

WARNING
The functionality of the system can be limited in the case of incorrect use. These directions require special attention.

NOTE
Notes represent information that is important to know, but which do not affect the functionality of the system.

General Safety Guidelines

All the safety and operating instructions should be read carefully before this device is operated.

This device has been designed and tested to meet strict safety requirements applicable to medical equipment, and has been supplied in a safe condition. To ensure personnel and patient safety, the device shall be operated and serviced in compliance with all procedures, warnings and precautions during all phases of operation and service of this device. Failure to comply to with safety guidelines may result in injury to service personnel, operator, or patient. ***3D Imaging & Simulations Corp.*** assumes no liability for failure to comply.

If this device is not used as specified, the protection provided by the device could be impaired. This device must be used in a normal condition only.

Installation, service and operation of this device should only be undertaken by qualified trained personnel. The operator should study instructions and precautions carefully before starting to use the device listed here and throughout the manual.

There are no user serviceable parts inside this device. The device should only be opened and serviced by qualified service personnel. Failure to heed this warning may result in injury to service personnel or damage to equipment, and void any and all warranties. If there is a service problem, please contact ***3D Imaging & Simulations Corp.*** or an authorized dealer.

- Do not spill liquids on the device, and never operate the device in a wet environment.
- Keep the device from radiators and heat sources.
- Use the device only with accessories supplied with this device.
- This device contains static sensitive components. Proper static handling procedures and equipment must be used when servicing this device.

If any of the following conditions occur, unplug the device from the electrical outlet and contact authorized service personnel.

- The USB cable is damaged.
- The device has been exposed to water.
- The device has been dropped or damaged.
- The device does not operate correctly when the operating instructions are followed.

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Chapter 1. Introduction

Dear Customer

Thank you for choosing the RFID Reader to complement your 3DISC Imaging FireCR Dental Reader.

The advanced technology of the RFID Reader provides quick and accurate registration of data relevant to each individual patient. By pre-registering the unique tag code and imaging plate on the , the scanned image, imaging plate size information and the serial number of the imaging plate are automatically assigned to the individual patient file.

Please read and follow the instructions given in this ‘User Manual’ carefully prior to using the RFID Reader and keep this manual within reach for future reference.

The purpose of this manual is to direct you through the main functions and interfaces of the RFID Reader. You will be guided through the procedures of ‘Unpacking’, ‘Setting Up’ and ‘Operating’ the . You can also learn about ‘Symbols’, ‘Warranty and Repair Service’ and ‘Technical Assistance’. It is important to observe all safety information to prevent potential personal injury or material damage.

Chapter 2. Unpacking

2.1. Inspection for Damage

is shipped in a custom designed container to protect the from external shock. Before unpacking the product, inspect the shipping container for damage. In case the container is damaged, notify the shipper immediately.

2.2. Identify the Components

Open the shipping container and identify each of these components.

Part No.	Item
CR-FP-51-001	***FireID***
CR-FPA-02-004	Mini USB 2.0 Interface Cable (5 pin)
CR-FPM-54-001-EN	User Manual

Figure 1. Mini USB 2.0 Interface Cable (5pin)

Figure 2. Top view of

WARNING

If the ***FireID*** needs to be returned to manufacturer or one of its representatives, the reader must be repacked in the original container with all accessories.

WARNING

Improper disposal of this product may result in environmental contamination. When disposing of this equipment, contact ***3D Imaging & Simulations Corp.***'s representative or related government agencies. Do not dispose of any part of this equipment without consulting a ***3D Imaging & Simulations Corp.*** representative first.

3D Imaging & Simulations Corp. does not assume any responsibility for damage resulting from disposal of this equipment without consulting ***3D imaging & Simulations Corp***.

WARNING

Use only devices meeting the requirements of IEC60950-1 or IEC60601-1 when connecting to the FireID via the USB port.

Chapter 3. Setting Up

WARNING

Unsuitable Installation Sites

- Locations with excessive humidity or dust
- Locations subject to high temperature
- Locations subject to shaking or vibration
- Locations exposed to considerable electrical or magnetic noise, or other forms of electromagnetic energy
- Locations with poor heat radiation

3.1. *Connection*

The interfaces with the computer via the enclosed USB 2.0 Interface Cable.

1. Locate the USB 2.0 Interface Cable inside the shipping container.
2. Connect the cable to the ’s mini USB2.0 port, located on the rear of the .
3. Connect the other end of the cable to the USB2.0 port on the computer.

Figure 3. Mini USB connector on the rear of

3.2. *PC Driver Installation on the PC*

The Windows driver for will be located and installed automatically if the PC is connected to the internet. If internet is not available or the driver installation did not complete normally (see Figure 4), the driver for the will need to be installed manually with the driver file provided.

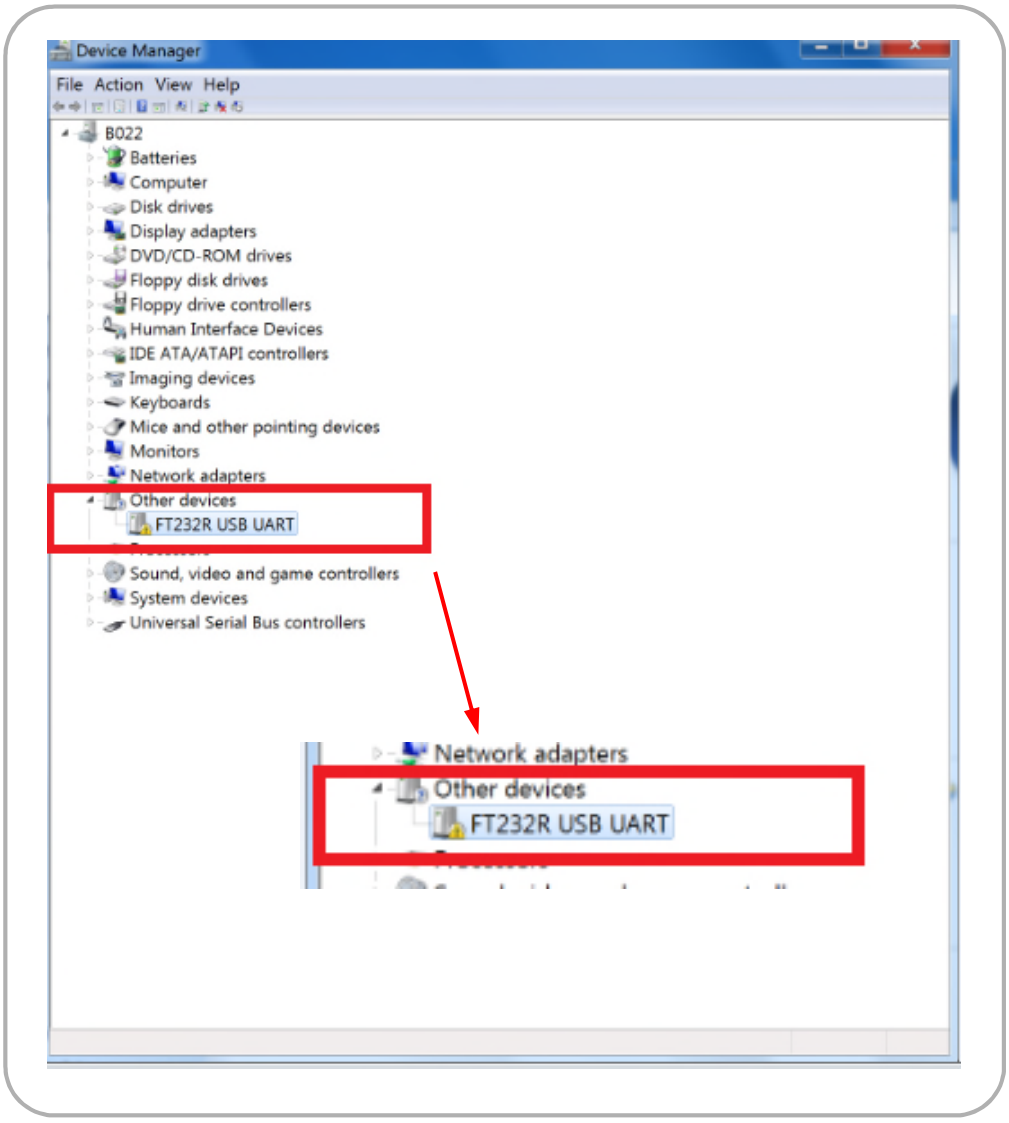

Figure 4. Driver is not installed normally

When the driver is installed correctly, a USB Serial Converter is added under Universal Serial Bus Controller category and a new USB Serial Port is displayed under Ports category.

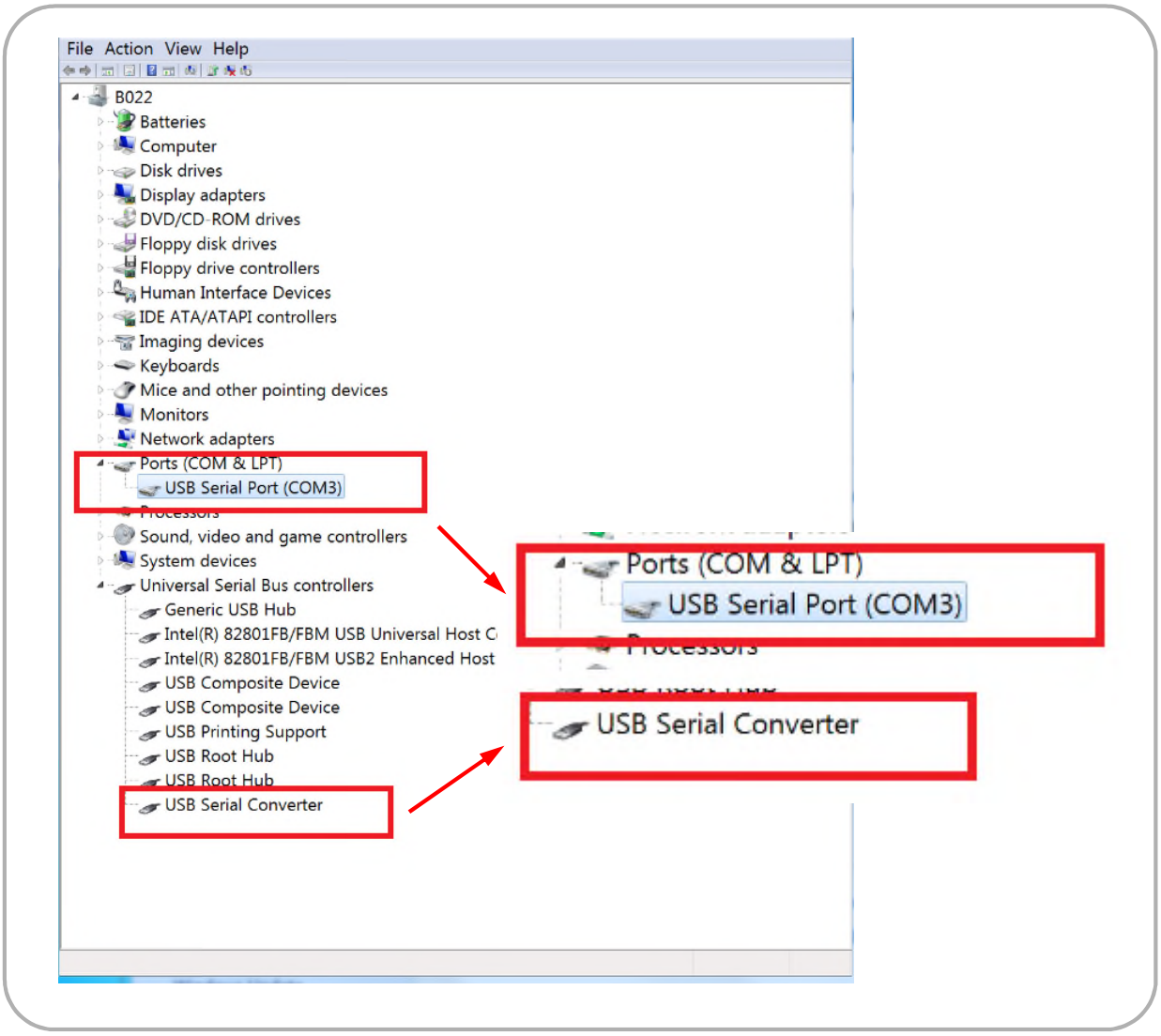

Figure 5. Driver is installed correctly.

3.3. *Computer Requirements*

3.3.1.*Recommended Requirement*

Operation System	Microsoft Windows 7 or Windows 8 (32 bit or 64 bit)
CPU	Core Duo / Core2 Processor
Memory	RAM 4GB or more
Hard Disk	300GB Free Hard Disk Space
Network	100Mbps Ethernet for Network Sharing Mode
USB	2.0 HighSpeed

3.3.2.*Minimum Requirement*

Operation System	Microsoft Windows 7 (32 bit or 64 bit)
CPU	Core Duo / Core2 Processor
Memory	RAM 2GB or more
Hard Disk	80GB Free Hard Disk Space
Network	100Mbps Ethernet for Network Sharing Mode
USB	2.0 HighSpeed

3.4. *Installation of Acquisition and Diagnostic Software*

Refer to the Acquisition and Diagnostic Software manual.

Chapter 4. Operation

4.1. System Specifications

Dimension	27 x 60 x 96 (H x L x W)
Weight	90g
Frequency	13.56MHz
Protocol	ISO 15693
Interface	Mini USB B
Power Supply	USB Power

* Specifications subject to change without notice.
** Specific results may vary since operating conditions fluctuate.

4.2. Operation Conditions

Indoor use only	
Operating Temperature	15°C ~ 30°C (59°F ~ 86°F)
Temperature Gradient	0.5°C / Min
Relative Humidity	15% ~ 95% (non-condensing)
Storage Temperature	- 10°C ~ 50°C (14°F ~ 122°F)
Storage Humidity	15% ~ 95% (non-condensing)
Storage Atmospheric Pressure	500 ~ 1,060 hPa
Transportation Temperature	- 10°C ~ 50°C (14°F ~ 122°F)
Transportation Humidity	15% ~ 95% (non-condensing)
Transportation Atmospheric Pressure	500 ~ 1,060 hPa
Pollution Degree	2
Ingress of Liquids	IPX0
Equipment Maintenance	No user maintenance is required and no user service is allowed. Please contact technical support if there is a problem.
Cleaning	Wipe the outside of the reader to remove dust, using a soft and dry cloth.

4.3. *Operating Instructions*

Before an imaging plate is scanned from a FireCR Dental reader that is connected to a router through an Ethernet cable, the imaging plate should be tagged on the in order to identify the target PC. If the imaging plate is not tagged on the , the scanner will not begin to scan. The imaging plate must be tagged. When a tagged imaging plate is scanned from a FireCR Dental reader, the target PC will receive the scanned image, imaging plate size information and the serial number of the imaging plate.

If the PC is connected to a new FireCR Dental reader or a new PC is added to an existing FireCR Dental reader, the PC will download the calibration data from the FireCR Dental reader automatically.

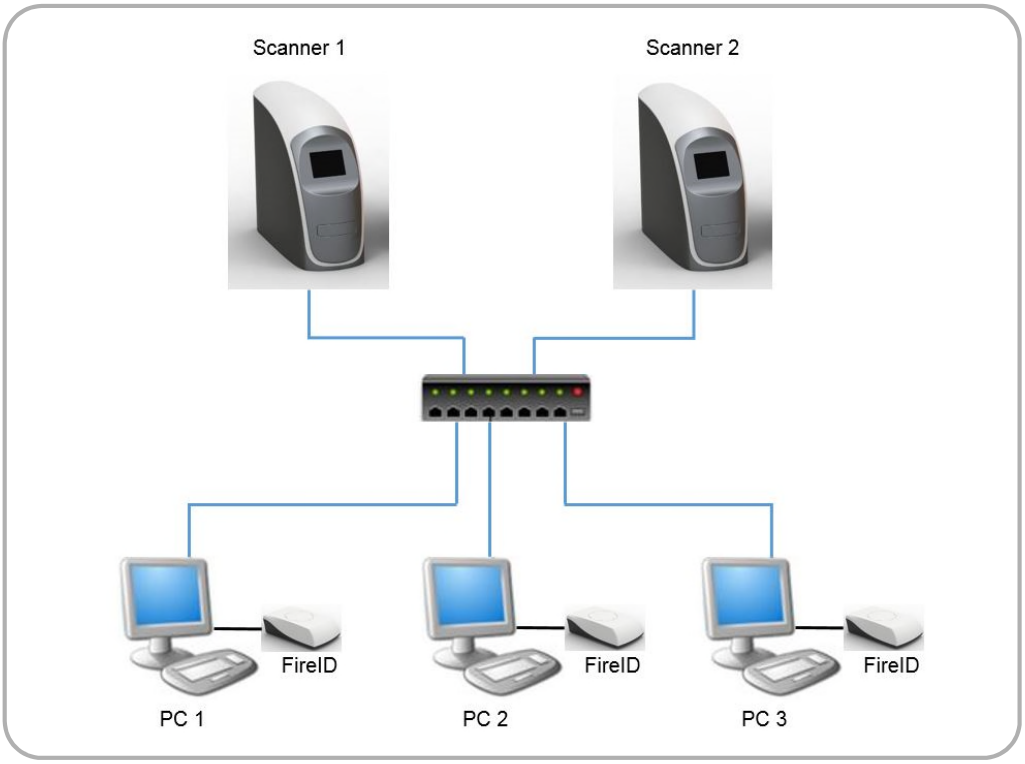

Figure 6. Typical configuration of Network Sharing Mode

Operating procedure:

1. Tag the image plate on the of the target PC by briefly touching the imaging plate onto the topside of the .
2. Put a protective cover on the imaging plate and insert both into a hygienic bag.
3. After exposing the plate, remove hygienic bag and protective cover and dispose of them.
4. Put the imaging plate on the tray of the FireCR Dental reader and push the tray in to scan.
5. The scanned image is transferred to the target PC along with the serial number of the imaging plate.

DANGER

This equipment is indoor use only and all the communication wirings are limited to inside of the building.

WARNING

Do not pull out the USB cable during tag information reading.

Chapter 5. Symbols

Symbol	Description

	Manufacturer
	Warning, Consult Accompanying Documents
	General mandatory action manual
	General prohibition indication
	User Manual Reference
	Keep Dry
	Fragile
	Handle with care
	This side up
	Non-ionizing electromagnetic radiation
	CE Mark

5.1. *Manufacturer's Declaration- Electromagnetic Emission*

*The **RFID reader** system is intended for use in the electromagnetic environment specified below. The customer or the user of **RFID reader** system should assure that it is used in such an environment*		
Emission test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR 11	Group 1 Class B	The RFID Reader uses RF energy only for its internal function. Therefore. Its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment

5.2. *Manufacturer's Declaration - Electromagnetic Immunity*

The system is intended for use in the electromagnetic environment specified below. The customer or the user of system should assure that it is used in such an environment			
Immunity test	**IEC 60601 Test level**	**Compliance level**	**Electromagnetic Environment -guidance**
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	3 Vrms 150 kHz to 80 MHz	Portable and mobile RF communications equipment should be used no closer to any part of the ***FireCR Dental*** system, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. **Recommended separation distance** $d = [\frac{3,5}{V_1}]\sqrt{P}$

Radiated RF IEC 61000-4-3	3 V/m 80.0 MHz to 2.5 GHz	3 V/m 80.0 MHz to 2.5 GHz	**Recommended separation distance** $d = [\frac{3,5}{E1}]\sqrt{P}$ 80 MHz to 800 MHz $d = [\frac{7}{E1}]\sqrt{P}$ 800 MHz to 2,5 GHz Where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and *d* is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, (a) Should be less than the compliance level in each frequency range (b). Interference may occur in the vicinity of equipment marked with the following symbol: 

Note 1) *U*T is the A.C. main voltage prior to application of the test level.

Note 2) At 80 MHz and 800 MHz, the higher frequency range applies.

Note 3) These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the EUT is used exceeds the applicable RF compliance level above, the EUT should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the EUT.

b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than [V1] V / m.

Recommended Separation Distances Between Portable and Mobile RF Communications Equipment and the system.

The system is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The user of the system can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the system as recommended below, according to the maximum output power of the communications equipment.			
Rated maximum output power (W) of transmitter	Separation distance (m) according to frequency of transmitter		
	150 kHz to 80 MHz	80 MHz to 800 MHz	800 MHz to 2.5 GHz
0.01	0.12	0.12	0.23
0.1	0.37	0.37	0.74
1	1.17	1.17	2.33
10	3.70	3.70	7.37
100	11.70	11.70	23.30
For transmitters rated at a maximum output power not listed above, the recommended separation distance (d) in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.			
Note 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies. **Note 2:** These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.			

Immunity and Compliance Level			
Immunity test	IEC 60601 Test Level	Actual Immunity Level	Compliance Level
Conducted RF IEC 61000-4-6	3 Vrms, 150 kHz to 80 MHz	3 Vrms, 150 kHz to 80 MHz	3 Vrms, 150 kHz to 80 MHz
Radiated RF IEC 61000-4-3	3 V/m, 80 MHz to 2.5 GHz	3 V/m, 80 MHz to 2.5 GHz	3 V/m, 80 MHz to 2.5 GHz

5.3. *Guidance and Manufacturer's Declaration*

Electromagnetic Immunity

The system is intended for use in the electromagnetic environment specified below. The customer or the user of system should assure that it is used in such an environment			
Immunity test	**IEC 60601 Test level**	**Compliance level**	**Electromagnetic environment - guidance**
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80MHz	3 Vrms 150 kHz to 80 MHz	system must only be used in a shielded location with the minimum RF shielding effectiveness and, each cable should have the minimum RF shielding effectiveness.

Radiated RF IEC 61000-4-3	3 V/m 80.0 MHz to 2.5GHz	3 V/m 80.0 MHz to 2.5GHz	Field strengths outside the shielded location from fixed RF transmitters, as determined by an electromagnetic site survey, should be less than 3V/m.**a** Interference may occur in the vicinity of equipment marked with the following symbol: 
Note 1) These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people. **Note 2)** It is essential that the actual shielding effectiveness and filter attenuation of the shielded location be verified to assure that they meet the minimum specification.			
a- Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength outside the shielded location in which the EUT is used exceeds 3V/m, the EUT should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as relocating the EUT or using a shielded location with a higher RF shielding effectiveness and filter attenuation.			

Chapter 6. Warranty and Repair Service

6.1. Standard Warranty

3D Imaging & Simulations Corp. warrants its non-consumable hardware products to be free from defects in materials and workmanship. The warranty covers the cost of parts and labor to repair the product. Please keep the shipping container for future use. Products returned to the factory for repair should be properly packaged. To obtain warranty service, follow the procedure described in the Repair Service section. Failure to do so will cause long delays and additional expense to the customer.

The warranty is valid when the product is used for its intended purpose and does not cover products which have been modified without written permission from ***3D Imaging & Simulations Corp.***, or which have been damaged by abuse, accident or connection to incompatible equipment.

This warranty is in lieu of all other warranties, expressed or implied.

6.2. Repair Service

The company reserves the right to cease providing repair maintenance, parts and technical support for its non-consumable hardware products five years after a product is discontinued. Technical support for old versions of software products will cease 12 months after they are upgraded or discontinued.

6.3. Out of Warranty Repair Service

Out of warranty repair service is available in selected geographical locations. Contact the supplier for current terms and rates.

6.4. *Shipping*

The ***RFID Reader*** is a solidly built accessory designed to survive shipping around the world. However, in order to avoid damage during shipping, the ***RFID Reader*** must be properly packaged.

In general, the best way to package the ***RFID Reader*** is in the original factory container. If this is no longer available, we recommend that user carefully wraps the ***RFID Reader*** in at least 25 mm (1 inch) of foam or bubble pack sheeting. The wrapped device should then be placed in a sturdy cardboard carton. Mark the outside of the box with the word ***FRAGILE*** and an arrow showing which way is up.

We do not recommend using loose foam pellets to protect the . If the carton is dropped by the shipper, there is a good chance that the device will shift within the loose pellet packing and be damaged.

If the user needs to ship the RFID Reader to another location, or back to the factory, it is the user's responsibility to package the system properly before shipping. If the packaging is inadequate, and the system is damaged during shipping, the shipper will not honor the user's claim for compensation. If the user does not have a means to adequately package it, additional shipping containers may be purchased from ***3D Imaging & Simulations Corp.***

Chapter 7. Technical Assistance

If a user has any questions about installing or using the device, please contact your ***3D Imaging & Simulations Corp*** representative or your local dealer.

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Appendix I

Installation Report

Please complete this report at the time of installation and submit the completed form signed by customer to:

- **Fax : +82-42-931-2299**
- **E-mail : support@3DISCimaging.com**

Date of Installation :

Customer Information

Hospital / Institute	
Name	
Address	
Tel	
Fax	
E-mail	

Installer Information

Company	
Name	
Address	
Tel	
Fax	
E-mail	

System Information

Model	***FireID Reader***
System S/N	

Installer's Signature: **Date:**

Customer's Signature: **Date:**