IDRO900V
USER’S MANUAL

V3.4.16

April 2013

Identification with Radio and Optical

■ Revision history

Version	Date	Revision page	Revision Description
V3.4.16	2013-04-16		Draft

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1. Overview and System block diagram

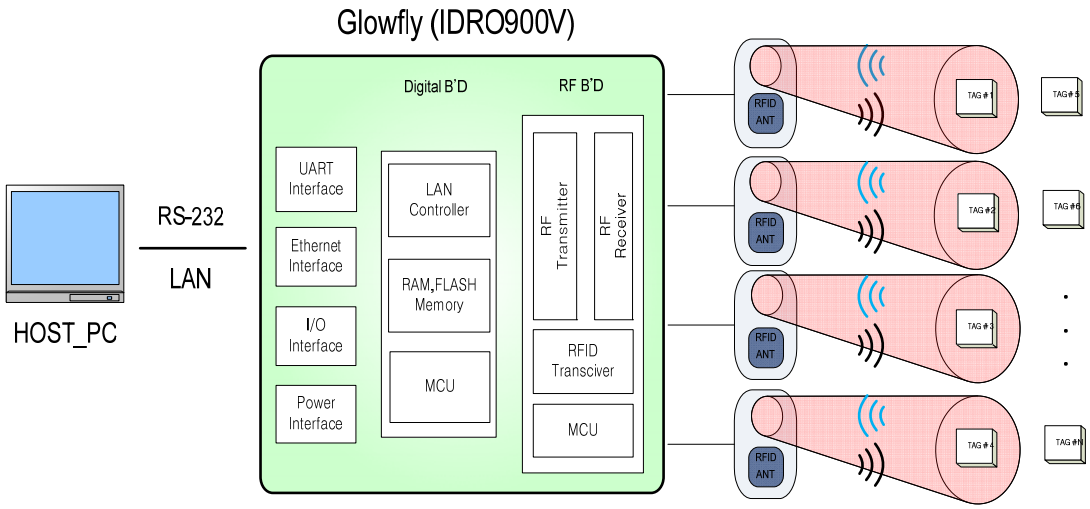
■ Overview

- This product concluding the Visible control function, as the UHF Fixed type 900MHz RFID Reader, was designed for only reading the wanted tag by using Visible Light. IDRO900V will be able to provide the sure alternative to the applications which have numerous tag collisions as like FA management and Conveyor systems with using RS232, Ethernet Interface. This is the product which can recognize in the wide area and deliver the long distance recognition by choosing the use of number of antenna from 1ea to 4ea. And also, It can provide the high performance and the convenience with users. IDRO900V delivers EPC C1G2, ISO 18000-6C and Visible communication RFID protocols, and the reader can recognize up to maximum 10m on the basis of passive tag.

- Target Application

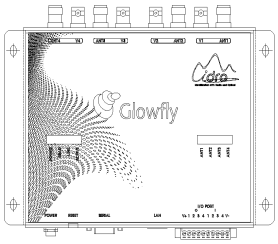
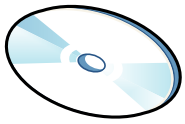
Factory Automation Control/Conveyor Application
Semiconductor Process Automation
Item Management/Asset Tracking
Vehicle security
Access Control
Parking management system
Other application

■ System block diagram



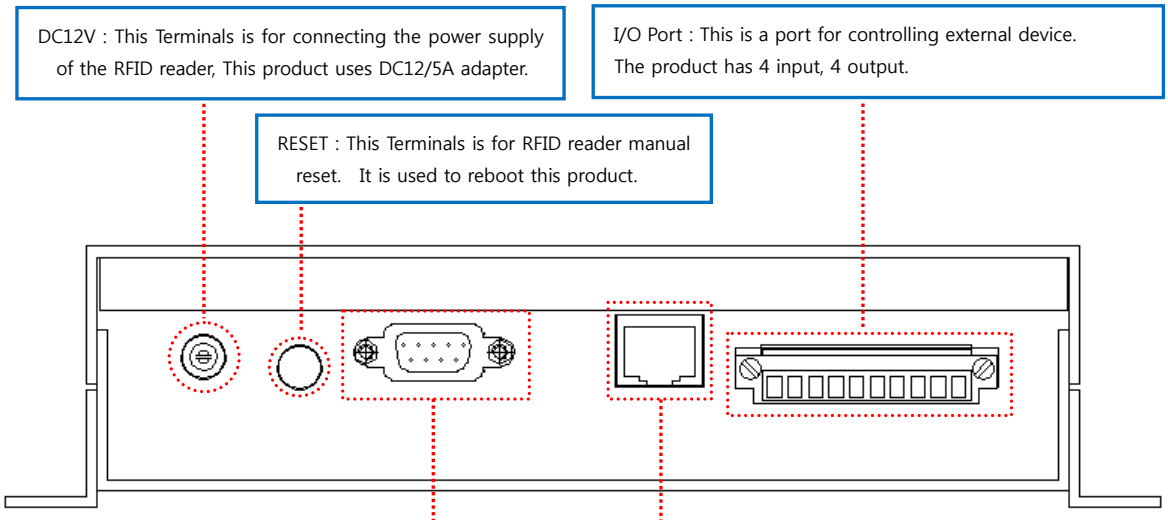
This device does not support simultaneous transmitting mode.

2. Components.

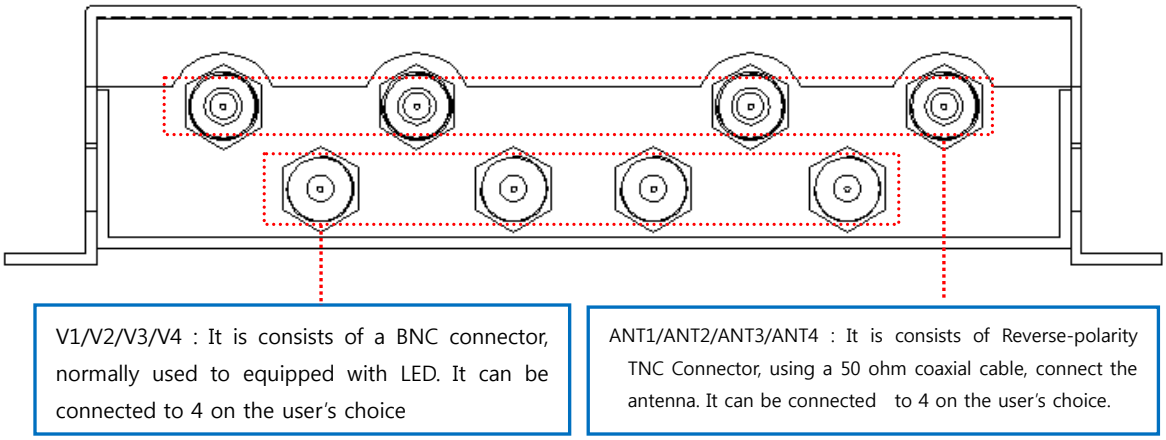
RFID Reader	
Antenna (option)	
Antenna cable (option)	
DC12V/5A Adaptor	
Ethernet cable	
Reader Software & User Document CD-ROM	

3. Names and description of the product

Interface

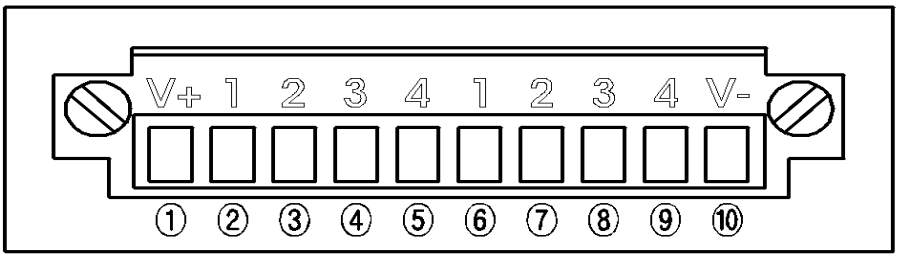


ANT Port & VLC Port



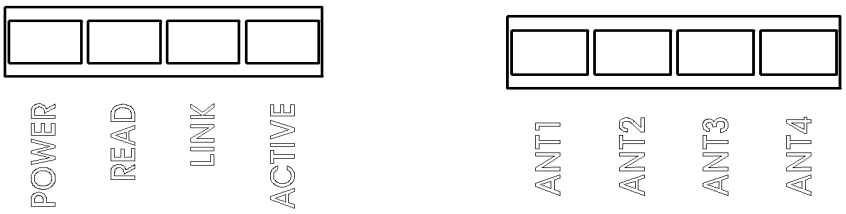
- **This product can be used to normal UHF RFID reader using ANT1~ANT4 (EPC Gen2 protocol)**
  - EPC Gen2(ISO 18000-6C) tag use
- **This product can only read tag which you want to using V1~V4 and ANT1~ANT4 (IDRO protocol)**
  - The tags receving LED light beam only transmit the data.
  - The tags which be produced by the IDRO are used only.

I/O Port



I/O PORT Terminal Block Connector		
Pin 1	V+	(3.3 ~ 24VDC)
Pin 2	Output 1	(1A max.)
Pin 3	Output 2	(1A max.)
Pin 4	Output 3	(1A max.)
Pin 5	Output 4	(1A max.)
Pin 6	Input 1	(3.3 ~ 24VDC)
Pin 7	Input 2	(3.3 ~ 24VDC)
Pin 8	Input 3	(3.3 ~ 24VDC)
Pin 9	Input 4	(3.3 ~ 24VDC)
Pin 10	V-	

Condition LED



Condition LED	
POWER(Green)	■ Light up when the reader power on
READ(Green)	● Light up when the reader receive tag data
LINK(Green)	● Light up when there connected to the network
ACTIVE(Green)	■ Light up when there running on the network
ANT1(Green)	● Light up when antenna 1 port action
ANT2(Green)	● Light up when antenna 2 port action
ANT3(Green)	● Light up when antenna 3 port action
ANT4(Green)	● Light up when antenna 4 port action

4. Reader Specification

■ Reader Performance

Description	Value
MODEL	IDRO900V
Architecture	UHF RFID Reader
Protocol	EPC Gen2(ISO 18000-6C) Visible RFID Protocol
Frequency	902.75MHz to 927.25MHz(FCC) 840MHz to 960MHz (Customizable)
Max Tx Power	29dBm±1dBm
Hopping Channels	50 (FCC)
Channel Spacing	500KHz (FCC)
Channel Dwell time	< 0.4 seconds
Modulation Method	PR-ASK
Supply voltage	12V±1V
Max Current (max power)	< 2A
Tag Read Distance(Max.)	>10m
Operating Temperature	-20℃ to +50℃
LED Indicators	POWER, READ, LINK, ACTIVE, ANT1, ANT2, ANT3, ANT4
Signaling	RS-232 : Baud rate(115200bps), LAN

■ Interface

Host connector	RS-232 : DB-9F LAN : RJ-45
ANT1~ANT4 Connector	TNC (Reverse Polarity)
V1~V4 Connector	BNC

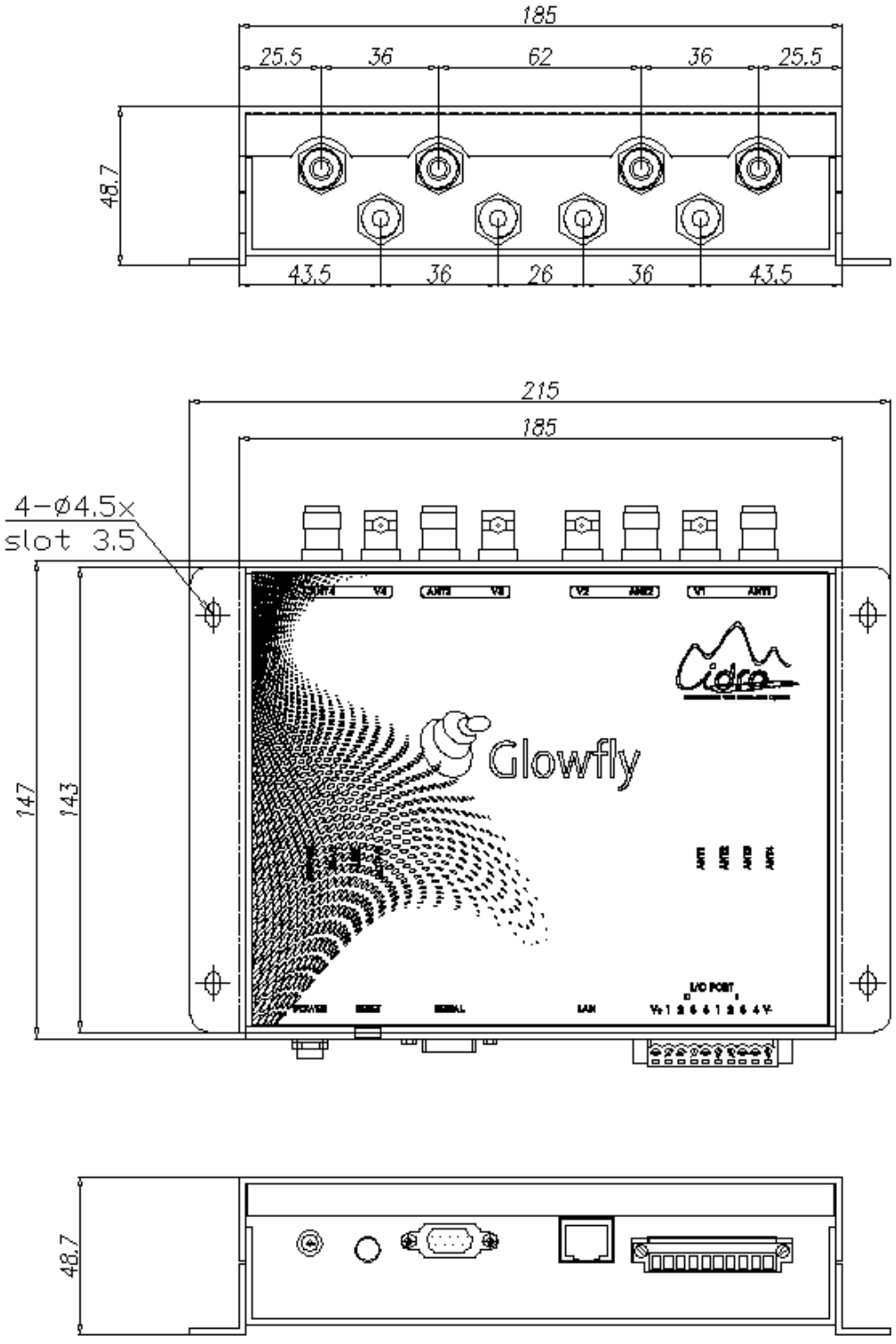
■ Physical Dimension

SIZE	215mm × 147mm × 48.7mm
Weight	g

■ Channel number & Frequency table

CHANNEL NO.	USA	CHANNEL NO.	USA
0	902.75	25	915.25
1	903.25	26	915.75
2	903.75	27	916.25
3	904.25	28	916.75
4	904.75	29	917.25
5	905.25	30	917.75
6	905.75	31	918.25
7	906.25	32	918.75
8	906.75	33	919.25
9	907.25	34	919.75
10	907.75	35	920.25
11	908.25	36	920.75
12	908.75	37	921.25
13	909.25	38	921.75
14	909.75	39	922.25
15	910.25	40	922.75
16	910.75	41	923.25
17	911.25	42	923.75
18	911.75	43	924.25
19	912.25	44	924.75
20	912.75	45	925.25
21	913.25	46	925.75
22	913.75	47	926.25
23	914.25	48	926.75
24	914.75	49	927.25

■ Mechanical Dimension



5. The method how to operate the reader

①. Put the reader on the table

②. Stick the RS232 or Ethernet cable into the reader and connect the reader with PC

- PC Setting value In case of using RS-232
  - Baud rate : 115200bits per second, Data : 8bit, parity : none, Stop : 1bit, Flow control : none
- PC Setting value In case of using Ethernet cable
  - IP Address : 192.168.9.100
  - Subnet Mask : 255.255.255.0

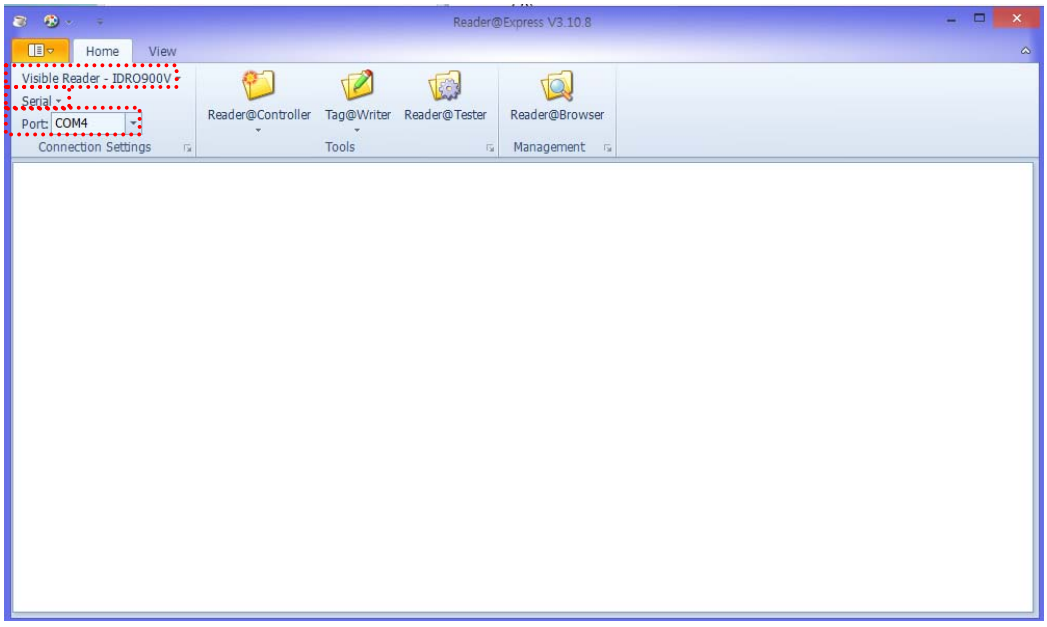
③. Connect the antenna port & Visible port with the antenna & LED by using Coaxial cable

④. Supply DC12V to the reader

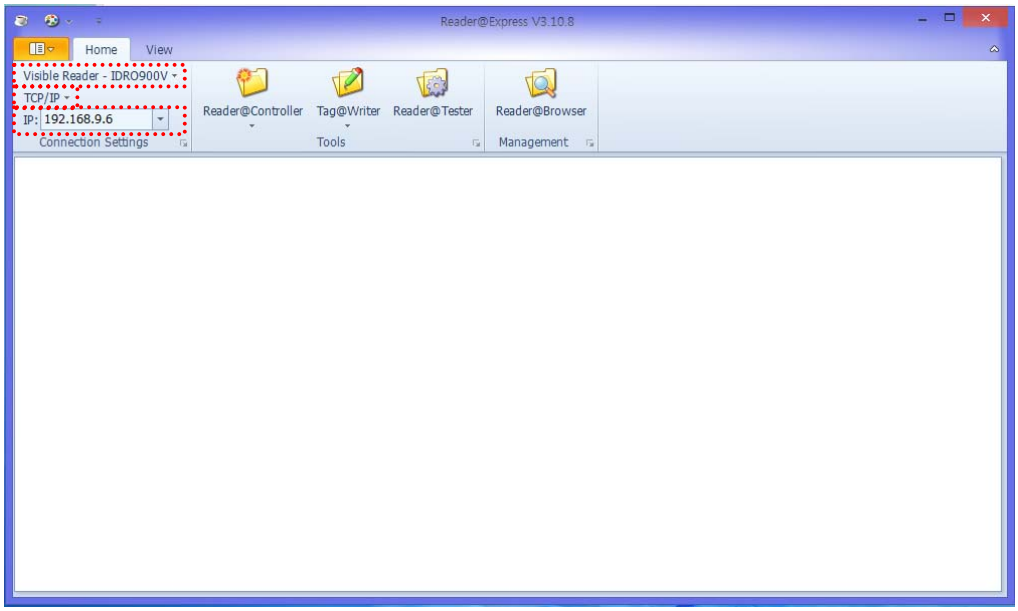
⑤. Run the Test program(Reader@Express.exe) distributed from IDRO.(Windows XP, 7, 8)

⑥. Firstly, Check the setting of Reader@Express

- Choose the setting as follows in case of using RS-232 cable
  - Visible Reader-IDRO900V, Serial, COM?



- Choose the Reader@Express setting as follows in case of using Ethernet cable.
  - Visible Reader-IDRO900V, TCP/IP, IP : 192.168.9.6



⑦. Click Reader@Controller. → When the Inventory@Multiple are generated, PC and the reader will be connected.

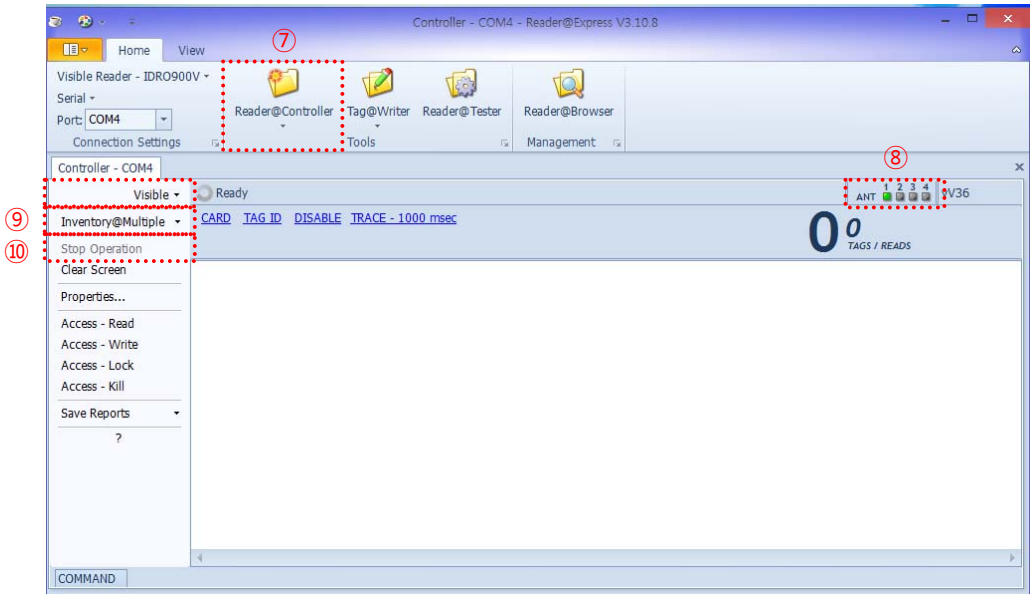
- Please check the PC setting value as well as the COM port number or IP Address if "Inventory@Mutiple" are not generated.

⑧. Revitalize the Antenna port want to use.

⑨ Check it whether the reader is reading the tag data or not by clicking "Inventory@Multiple"

⑩ Stop the operation by clicking "Stop operation"

<Reader@Express_RS-232 example>



➢ to know the specific operations of Reader@Express, refer to the Reader@Express User's manual

Appendix : FCC Certification Requirements

1) Caution

Any changed or modifications not expressly approved by the party responsible for compliance could void the user`s authority to operate this equipment.

2) FCC RF exposure requirements

The antenna used with this module must be installed to provide a separation distance of at least 20cm from all persons, and must not transmit simultaneously with any other antenna or transmitter except in accordance with FCC multi-transmitter product procedures.

3) User Information

This device complies with Part 15 of the FCC`s Rule. Operation is subject to the following to conditions;

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesirable operation.

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 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.

Section 15.247 (a) The EUT contains a transmitter that modulates a carrier with data, changes carrier frequency in a pseudo-random pattern with a dwell time, channel separation, and hop count that meets the requirements of 15.247. In addition, the receiver tracks the transmitter's pseudo-random hopping sequence and demodulates the signal. The order of channels in the hop sequence is pseudo random list. Frequency-hopping proceeds in order through the list. Equal Hopping Frequency Use [Section 15.247 (g)] Each Frequency is specified only once in the list and the list is completed before looping back to the beginning. Section 15.247 (h) Since the device is programmed to follow a set hopping sequence, regardless of potential interference and it is not programmed to scan the channels for interference, it does not have the ability to coordinate with other FHSS systems in an effort to avoid the simultaneous occupancy of individual frequencies.