RH560-WL Wireless CMS

User Manual

Content

1. Preface

1.1 **Welcome**

Welcome to use RONDS products. Before any operating, please read this manual carefully and keep it appropriately in case of any query.

1.2 **Statement**

When you read this manual, please pay attention at the following marked content, and make sure the equipment will be used properly.

【Notice】：Means the equipment may can't be worked normally if there is improper operating.

【Warning】：Means the equipment might be damaged or cause slight human injury if there is improper operating.

【Danger】：Means serious equipment accident or human injury might be occurred if there is improper operating.

2. Product introduction

2.1 **Summarize**

1) RH560-WL WIRELESS CMS is positioned on industrial enterprises, which is developed by RONDS Company for scattered measuring points and unavailable wiring work. It integrates vibration, temperature and speed signals.

2) System hardware includes RH560-WL wireless collection station, RH505 wireless vibration & temperature integrated sensor and RH509 wireless speed sensor. System software is MOS3000 data analysis software, which used to monitor machine real time condition, help users to learn machine's fault in advance and avoid unplanned downtime.

3) RH560-WL wireless collection station has two types of power supply: 100-240V AC power. The communication between RH560-WL and the server has two types: Zigbee and WIFI.

2.2 **General structure of system**
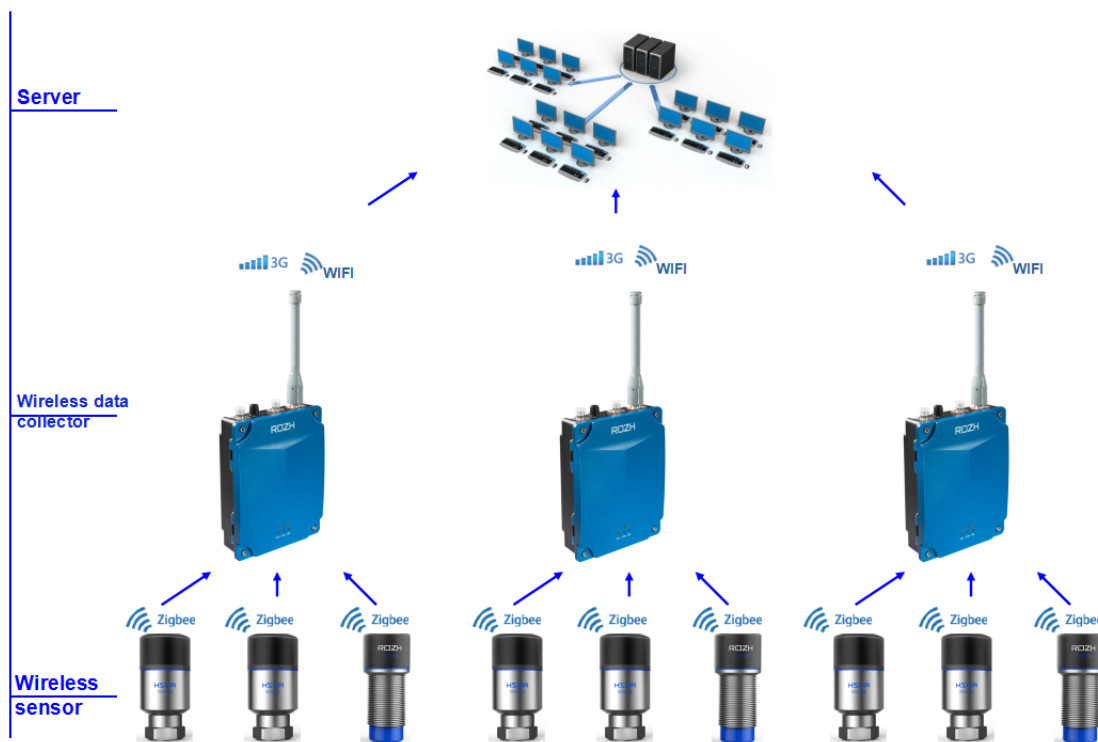
2.3 **System operating procedure**

1) In MOS3000 software of the server, configure relative organization, machine, measuring points, and data collection, alarm strategy, then send DAQ parameter. MOS3000 support for multiple DAQ parameter sending.

2) Wireless collection station will update the DAQ parameter after receiving from MOS3000 software.

3) RH505 and RH509 sensor will receive DAQ parameters after power on, and then collect data accordingly; these data shall be sent to RH560-WL wireless collection station through Zigbee.

4) RH560-WL wireless collection station receives data from every wireless sensor and upload them to the database in the server.

2.4 **Product features and outlooking**

➢ Entirely wireless condition monitoring system, no cable laying, make the installation procedures be never so easy.

➢ Multiple communication types of Ethernet, Optical fiber, Wifi, 3G/4G, realize monitoring of both constant and variable speed rotating machines.

➢ Low consumption design, IP66 protection degree.

➢ EXIA intrinsic safety certified, can be sued for special industries like petrochemical and mining field.

➢ Internal antenna, more reliable in industrial field.

2.5 **Technical specifications**

RH560-WL Wireless data collector	
Input and output	
Communication with Sensor	2.4GHz IEEE 802.15.4
Indicator LED	Total 3 pieces (working, communication, abnormal status)
Maximum Number of RH505	60 unit

Electrical and Structure Parameter	
Power Supply	100-240V AC
Dimension	203 mm × 82 mm × 260 mm (Length * Width * Height)
Weight	3 kg
Mounting	Hanging or fixation through holder
Environmental Parameter	
Working Temperature	-40~70 ℃
IP grade	IP66

3. Security introduction

3.1 Summarize

This equipment passed electromagnetic compatibility and vibration impulse testing, it has sophisticated electrical safety design.

3.2 Operating regulations

➢ The operators need to have professional training before operating, and need to follow this manual.

➢ People without professional training is not allowed to disassemble and repair this equipment, RONDS is not responsible for the accidents that caused by this kind of operating.

➢ Correctly configure parameter with products and connect power supply.

➢ Make sure there is earth wiring for power supply and check the reliability.

➢ Please contact with RONDS if any problems.

【Notice】：Please contact RONDS company if any questions or suggestions.

4. Installation

4.1 Summarize

This online monitoring system is consists of several accessories, in order to reach the best working status, please read this manual carefully before installation.

4.2 Out of box audit

Make sure the package is complete before opening the box, then check the paper documents and accessories according to the packing list. If there is anything missing, please send

feedback to supplier and ask for replenishment. Then check the products performance, if there is any quality problem, please contact RONDS company as well.

4.3 **Installation announcements**

Please follow the security regulations strictly when installation, operate everything carefully in case of any equipment damage or human injury.

【Notice】：This equipment should be installed by RONDS application engineers or other people with professional training.

【Danger】：Please make sure the security when using 220V power supply in case of any human injury.

【Danger】：When install sensors on the surface of the machine, please make sure the machine is stopped.

4.4 **Installation**
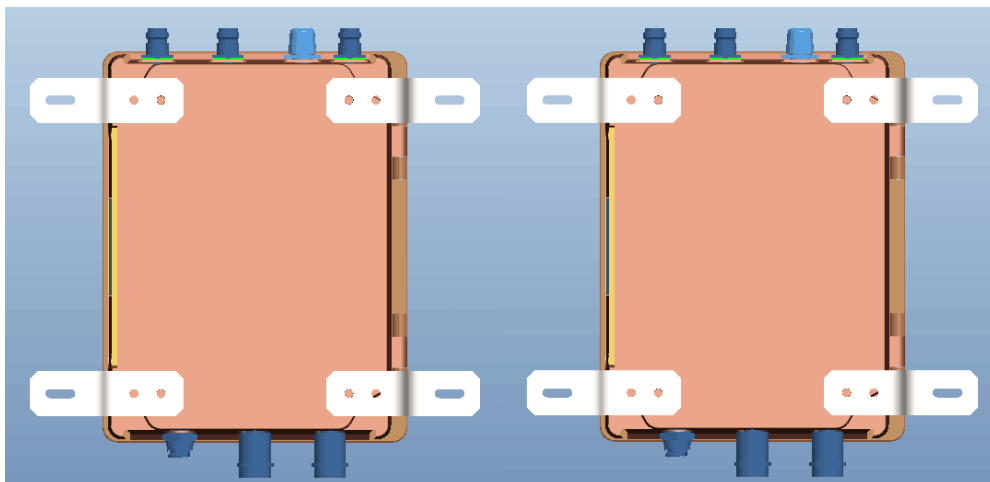
4.4.1 **RH560-WL Installation**

a. Fixing method：

RH560-WL has two methods of fixing: Hanging and fixation though holder. Users can choose one of them according to the actual situation.
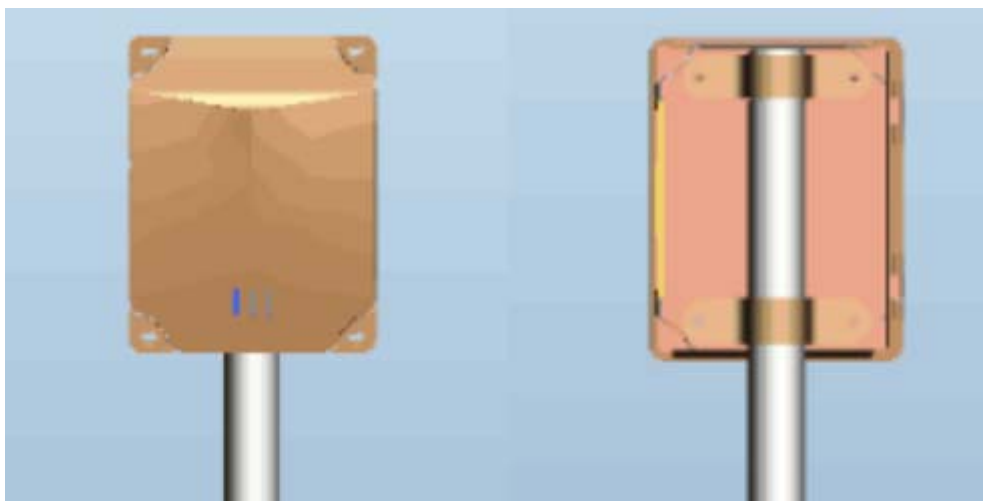
The following is the hanging fixing sketch, it can be fixed on the wall or other planar structure.

【Notice】：the height RH560-WL should be more than 1.6 meters against the floor.

【Notice】：Choose the area which has strong signal strength of your mobile phone as the installation position.

Fixation though holder：

b.　Antenna installation：

Install the HG-2404U gray antenna in RF port, connection type is N.

c.　System connection：

The power supply is go through the PWR port from RH560-WL bottom, and fixed with PG

screw.

【Notice】：If RH560-WL is installed outdoor, the lightning protection device should be installed additionally.

【Notice】：The socket head cap screw and PG screw should be fixed well.

4.4.2 **RH505 Installation**

RH505 is fixed through M6 screw and magnet base on the surface of machines, the torque of RH505 is 8N.

【Notice】: Before install the magnet base, please clean the measuring point position, greasy dirt or dust is not allowed.

【Notice】：RH505 should be fixed after the glue is solidified completely.

【Notice】：The cover of RH505 should be fixed well.

【Warning】：If the installation is improper, it will cause incorrect data diagnostic conclusion.

4.4.3 **RH509 Installation**

RH509 shall be fixed on the machine surface through holder by two screws, the holder can be

fixed by screws on the equipment. RH509 speed sensor is a kind of eddy current sensor, it use

hose clamp for triggering, the hose clamp is installed on the rotating shaft.

【Notice】：After installation, the distance between sensor front and hose clamp is 8-10mm.

【Warning】：The machine should be stopped during installation.

4.5 Announcement for the first time using

When received new equipment, please try to connect with software MOS3000, make sure the performance is good before installing on machine. Find a try area for installation, when chose the the position for RH560-WL, please check the wireless communication RSSI value for the farthest RH505, it requires that each sensor's RSSI value should not lower than 20.

5. Equipment operating

5.1 Summarize

This system belongs to professional equipment, it requires for basic skills of the operators, in order to ensure safe, correct and efficient using of this equipment, please read this manual carefully before operating.

5.2 Announcements

After installation and configuration, please pay attention to the following:

➢ Check the connection of power supply and earth wiring.
➢ Check each component parameter setting.
➢ Check the equipment fixing.
➢ Make sure the working environment is suitable for the equipment.

【Warning】：Please follow this manual strictly to operate this equipment, make sure all of the steps were finished correctly.

5.3 RH560-WL Switch and LED description

Open RH560-WL cabinet cover, there is a switch with ON and OFF mark on main board, it is power switch.

There are three indicators on RH560-WL, they are RUN (power indicator), COM (communication indicator) and ERR (error indicator):

Indicator	Status	Description
RUN	On	Power on
	Off	Power off

COM	Quick Flicker(0.2s each)	Abnormal communication with server
	Slow Flicker (1S)	Normal communication with server
ERR	Flicker	Network disconnected

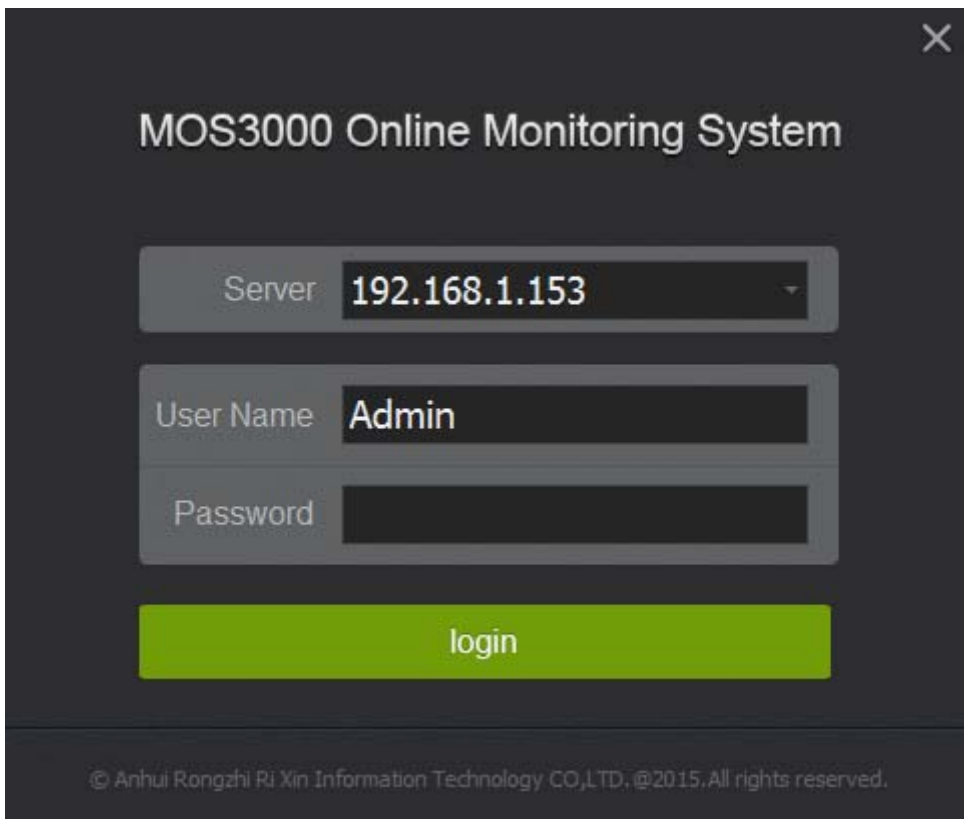# 6. Software user manual

6.1 Summarize

The wireless monitoring system should be used together with RONDSMOS3000 online monitoring software, this software shall be installed on server, users can visit it from browser or client program. The main function of MOS3000 software is monitor the data collected by RH560-WL, then provide detailed data analysis information.

Please install SQL database and MOS3000 online monitoring software at the same time, MOS3000 will generate 3 programs: MOS3000 Online monitoring system, MOS3000 System configuration tool and Online service.

【Notice】：When configure parameter of MOS3000 System configuration tool and online service, please make sure they are in the same database.

6.2 User login

Double click the "MOS3000 online monitoring system" icon on desktop appears the following window, input the server name (such as 192.168.1.153 ）, User name （Default as "Admin"）, password is blank, then click "login".

【Notice】：Make sure MOS3000 System configuration tool and Online service is started before login, there should be a "tick" mark.

6.3 **Software configuration**

1) Choose "System configuration", right click "Root" to create "Organization", "Machine", "Measuring point" and "DAQ definition". The information of "Organization", "Machine" and "Measuring point" can be edited. RH560-WL system support for 3 measurement definition maximally, data length and Fmax can reach to 256K and 20KHz respectively.
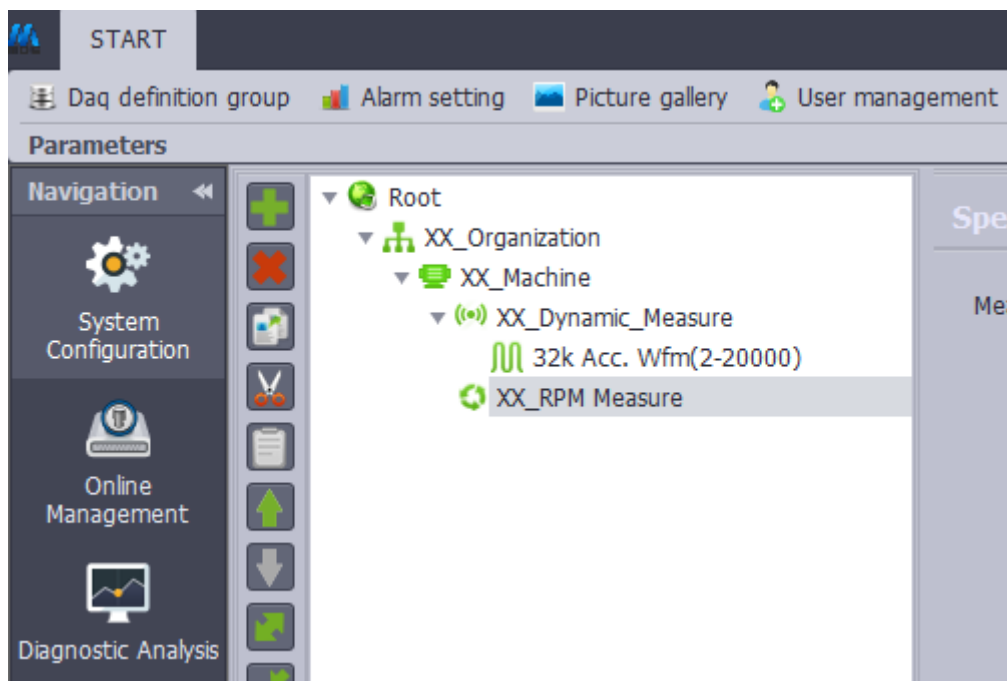
2) Click "Online management", create "collection station"
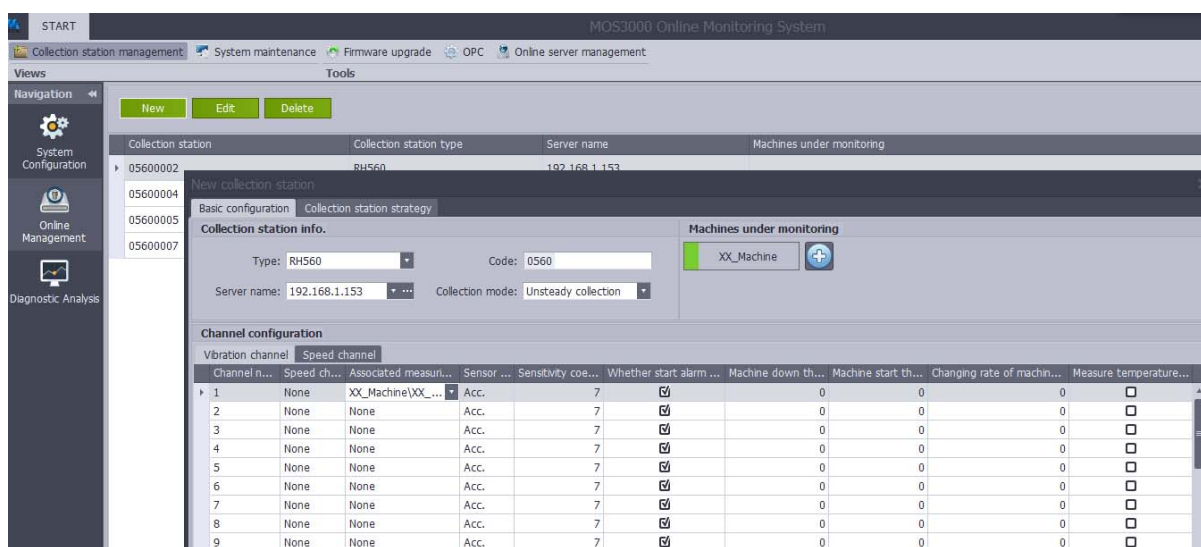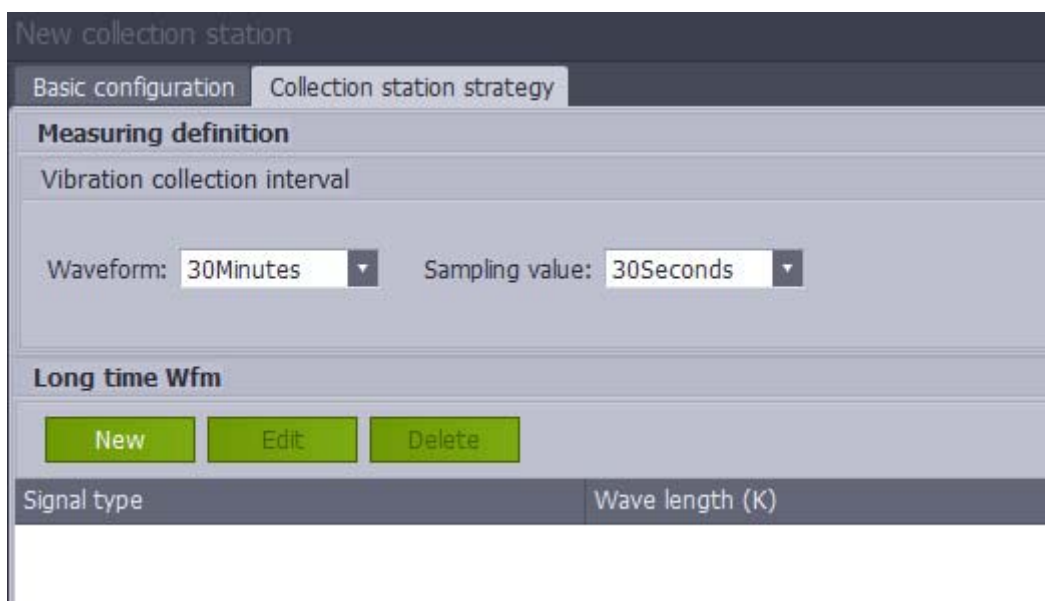

① Collection station type: RH560-WL

② Server name: choose the right database to store data; or create new database in the popup windows

③ Collection station code: input the last four number

④ Collection method: variable speed or constant speed, test mode is forbidden.

⑤ Monitoring machine: click it to add relative machines

⑥ Associate measuring point

① Time waveform: time interval to collect normal time waveform

② Sampling value: time interval to collect RMS value

③ Long time waveform: the longest wave can reach to 2M

④ Speed strategy: associate speed measuring point in speed channel

3). This system support for multiple DAQ definition sending.

6.4 Data diagnosis and analysis

Data viewing and analysis can be done in the software, for detailed information please refer to 《MOS3000 Online monitoring software user manual》.

6.5 Software abnormal processing

1). Can't login software:
a. please check the SQL database and local server is working normally or not
b.Please check the online service and configuration service is started or not
2). Failed to send DAQ definition:
Please check if the data collector is displayed in the online service.
3). No collected data display:
Stop service of MOS3000 configuration tool and online service, configure the parameter again to make sure the database configuration is correct to each other.
If there is unexpected error, please try to restart the software.

7. Product maintenance and fault elimination

7.1 Maintenance

We suggest to have dust elimination, anti-corrosion inspection and other operations every 3 months. If the equipment is not be used for long time, please power off and keep it in dry and no corrosive gas environment.

7.2 Fault analysis and elimination

When there is problem with the equipment, please check it according to the following table, if the problem still can't be solved, please contact technical department of RONDS company.

Fault type	Possible reason	solution
RH560-WL RUN LED is not light	Power disconnected or switched off	Check power supply and switch
Normal communication but now data collector displayed in online service	RH560-WL or server IP setting is not associated with each other	Check configuration info.
All sensors have no data	RH560-WL disconnected with server	Check RH560-WL power supply and configuration info.
Some sensors have no data	RH505 switched off or error configuration info.	Check RH505 switch, PANID, frequency band and IP info.
Some sensors data is not correct	Low battery voltage of RH505	Check battery condition from online service

FCC STATEMENT :

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

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

Warning: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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 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.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.