

# CDMA MINI (RSN-CDMA-30-C) User's Manual



## R-tron Inc.

 **CAUTION**

This equipment is indoor use and all the communication

This document describes the specifications, installation and operation of CDMA MINI.

Hardware and software mentioned in this document are subject to continuous development and improvement. Consequently, there may be minor discrepancies between the information in the document and the performance and design of the product. Specifications, dimensions and other statements mentioned in this document are subject to change without notice.

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# Contents

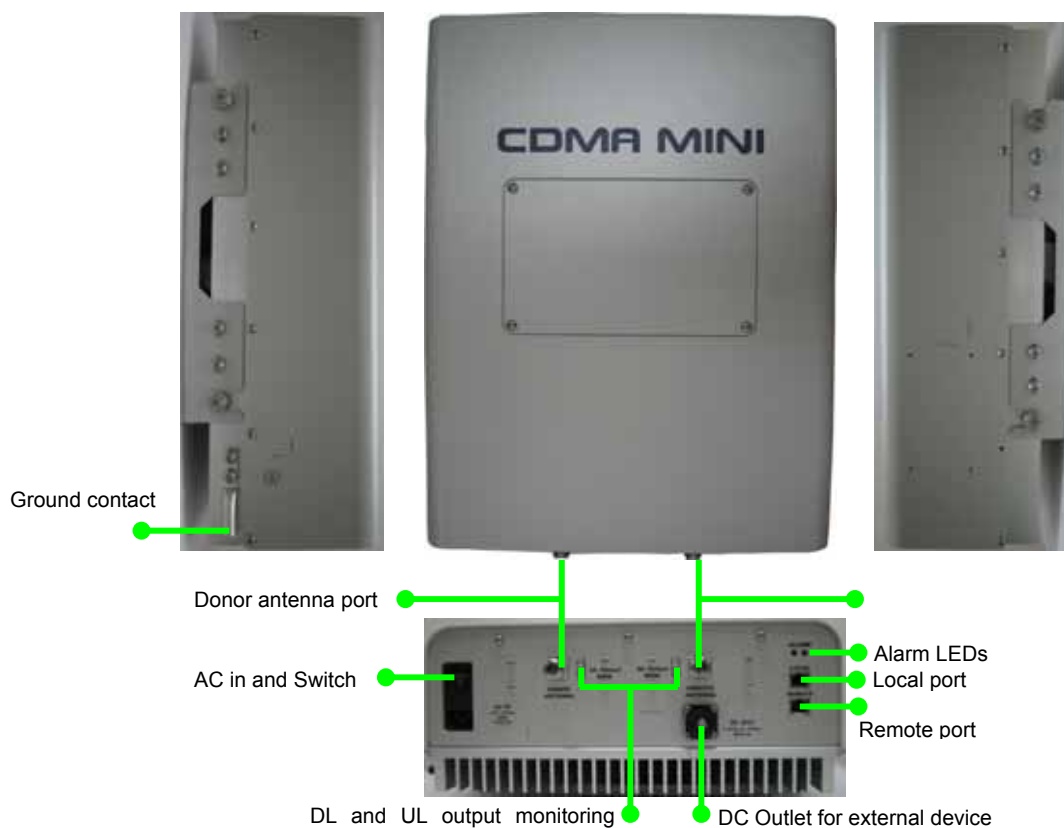
<b>Abbreviations</b> .....	5
<b>1. Introduction</b> .....	6
<b>2. Description</b> .....	8
2.1 System Specifications .....	8
2.1.1 Electrical Specifications .....	8
2.1.2 Mechanical Specifications.....	9
2.2 Sub Unit Overview .....	10
2.2.1 Block diagram .....	11
2.2.2 UDC Module .....	12
2.2.3 Duplexer.....	13
2.2.4 Main Control Unit (MCU) .....	14
2.2.5 Power Supply.....	15
2.2.6 High Power Amplifier (HPA).....	16
<b>3. Hardware Installation</b> .....	17
3.1 Check List of items.....	17
3.2 Mounting .....	18
3.3 Grounding .....	21
3.4 RF Cable Connection.....	22
3.5 Power Up .....	22
<b>4. Command and Control through the Hyper Terminal</b> .....	23
4.1 Setting for Command and Control through the Web GUI.....	23
<b>5. Command and Control on the Web GUI</b> .....	26
5.1 DL and UL Bandwidth Selection.....	27
5.2 DL and UL DL and UL gain setting.....	28
5.3 HPA On and OFF.....	29
<b>6. Troubleshooting</b> .....	30
6.1 RF Connection check.....	30
6.2 Power Connection.....	30
6.3 Red Light on the Alarm LED.....	30

## Abbreviations

Abbreviations used in this manual, in iDEN Add-On Filter Box.

AC	Alternating Current
ANT	Antenna
CDMA	Code Division Multiple Access
DC	Direct Current
GND	Grounding
GUI	Graphic User Interface
LED	Light Emitting Diode
PSU	Power Supply Unit
MCU	Main Control Unit
UDC	Up Down Converter
RF	Radio Frequency
TEMP	Temperature
VSWR	Voltage Standing Wave Ratio

## 1. Introduction



CDMA MINI repeater is used to fill out areas in CDMA mobile systems, such as base station fringe areas, business and industrial buildings, etc.

CDMA MINI receives signals from a base station, amplifies and retransmits the signals to mobile stations. Also it receives, amplifies and retransmits signals in the opposite direction. Both directions are served simultaneously with the following features:

- 65MHz bandwidth service
- Band Selection (5MHz , 10MHz , 15MHz , 20MHz , 5MHz+5MHz , 10MHz+5MHz, 15MHz+5MHz , 20MHz+5MHz , 5MHz+5MHz+5MHz) service
- Roll Offs: 65 dBc at 1 MHz outside pass-band

The RSN-CDMA-30-C Repeaters are controlled by powerful microprocessors. Operational status LEDs are visible on the bottom of the repeater.

The repeater works with convection cooling without fan because it has a radiator behind the

body of RSN-CDMA-30-C.

Operational parameters, such as gain, power levels, alarm condition, Automatic Gain Control condition, etc. are set using a desktop or notebook and the Hyper Terminal, which communicate, either locally or remotely via the UTP(Unshielded Twisted Pair Wire) cable, with the repeater.

## Caution

### RF EXPOSURE INFORMATION

Caution RF EXPOSURE INFORMATION a minimum separation distance of 7.9 inches (20cm) must be maintained between the user and the external antenna of repeater to satisfy FCC RF exposure requirements For more information about RF exposure, please visit the FCC

Website at [www.fcc.gov](http://www.fcc.gov)

## 2. Description

### 2.1 System Specifications

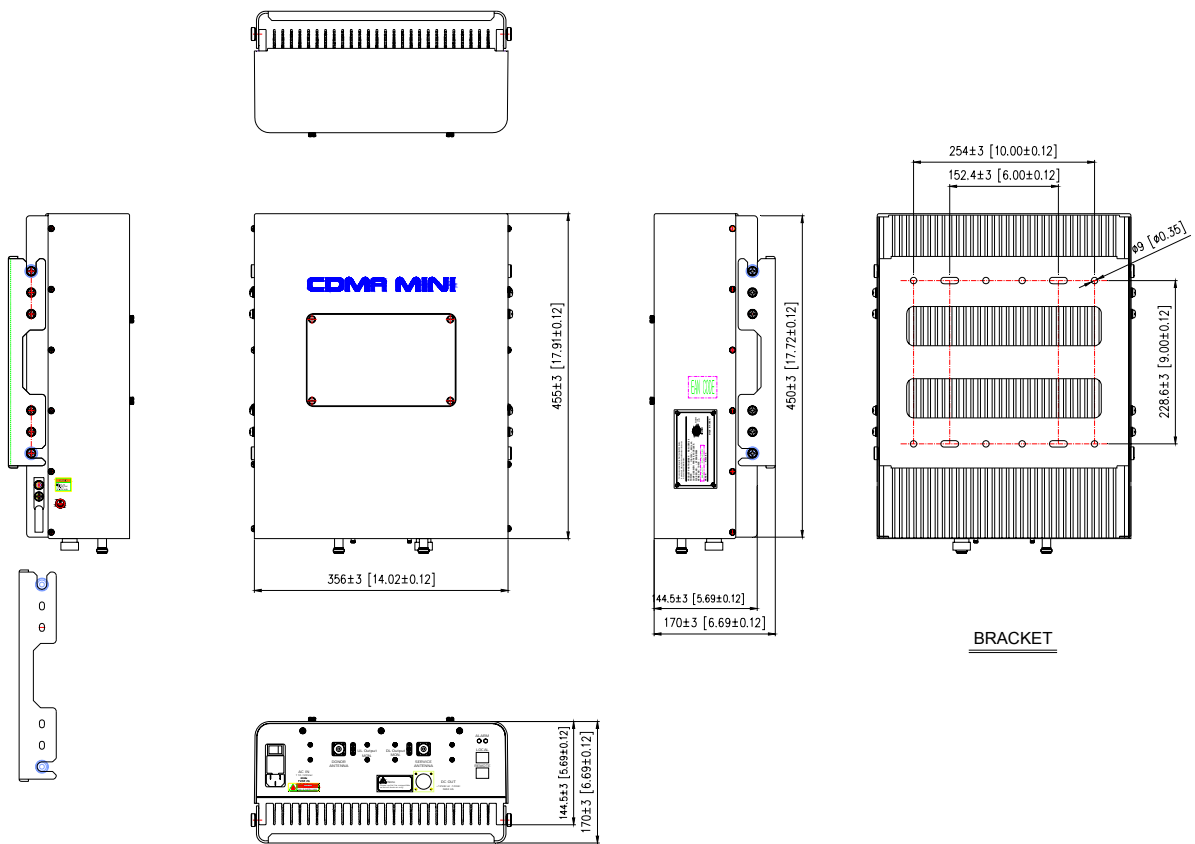
#### 2.1.1 Electrical Specifications

Parameter	Down Link	Up Link
Operating Frequency	1930MHz~1995MHz	1850MHz~1915MHz
Gain	50dB to 90dB	
Roll off	≤50dBc @Fedge+/-1MHz	
Gain ripple	±1.5dB	
Delay	5.0uS Max	
VSWR	1.5Max	
Rating(s)	Input: 110Vac ~ 125Vac, 60Hz, 2.0A Output: +12Vdc or -12Vdc / Max. 2.0A	
Operating temperature	-10 ~ 45	
Storage temperature	-20 ~ 60	
Band Selection	5MHz , 10MHz , 15MHz , 20MHz 5+5MHz , 10+5MHz , 15+5MHz , 20+5MHz 5+5+5MHz	



### 2.1.2 Mechanical Specifications

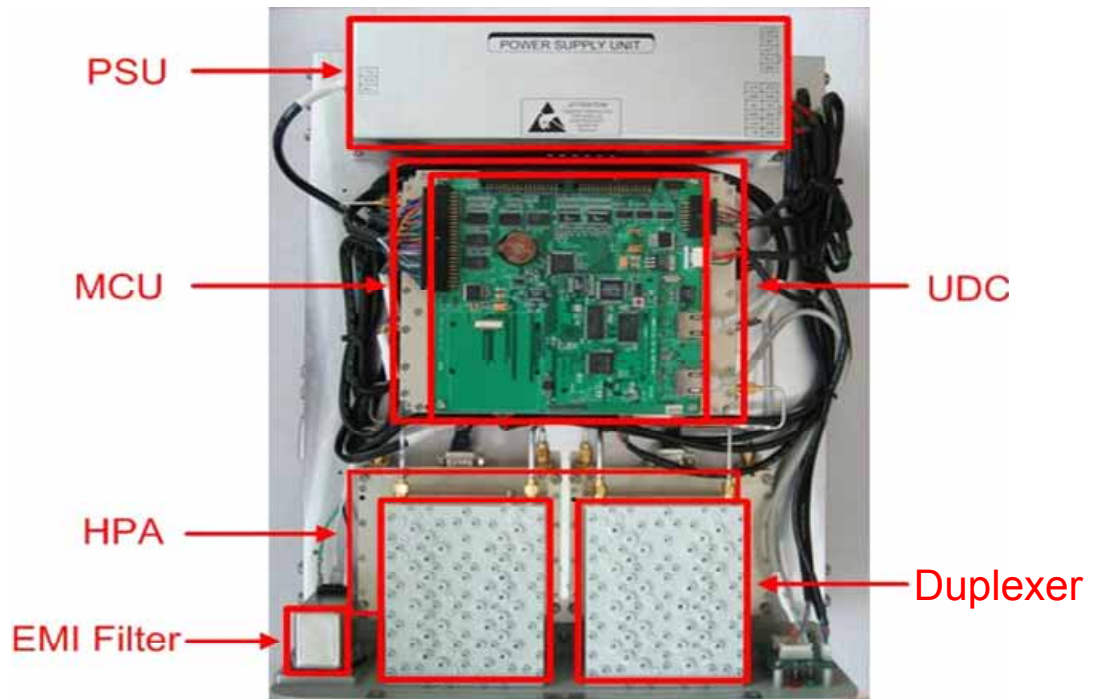
Parameter	Specification
RF connectors	N-female x 2, SMA-female x 2
Size	14 X 17.9 X 6.7(Inch), 356 X 455 X 170(mm)
Weight	20kg (44.1lbs)



## 2.2 Sub Unit Overview

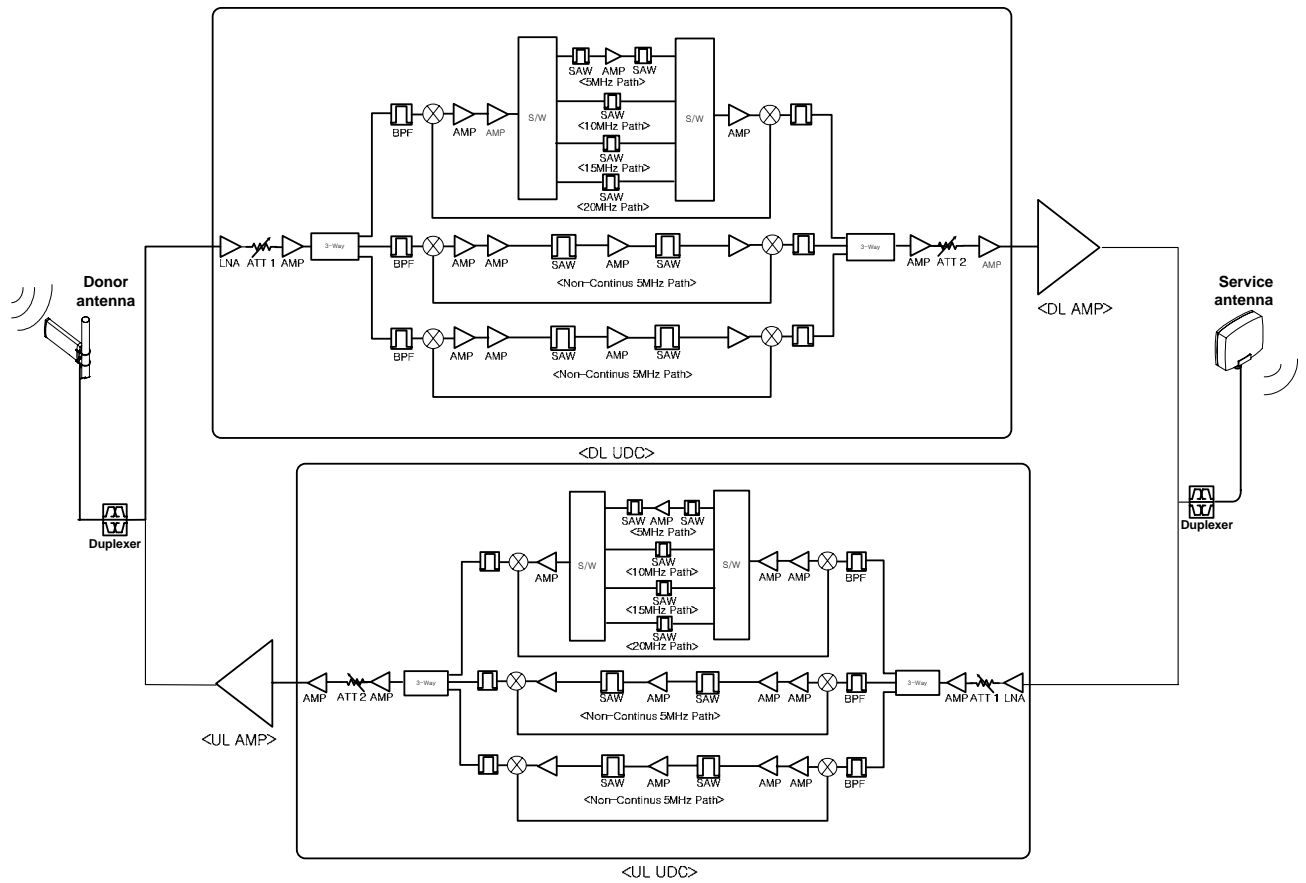
CDMA MINI is composed of the following sub units:

- UDC(Up Down Converter)
- HPAs(High Power Amplifiers)
- Duplexer
- Main Control Unit (MCU)
- Power Supply Unit (PSU)
- EMI Filter



### 2.2.1 Block diagram

The following, *Figure* explains how the CDMA MINI serves signals.



### 2.2.2 UDC Module

The UDC Module is basically a bi-directional amplifier that sharply filters out unwanted noise.



<UDC Module DL>



<UDC Module UL>

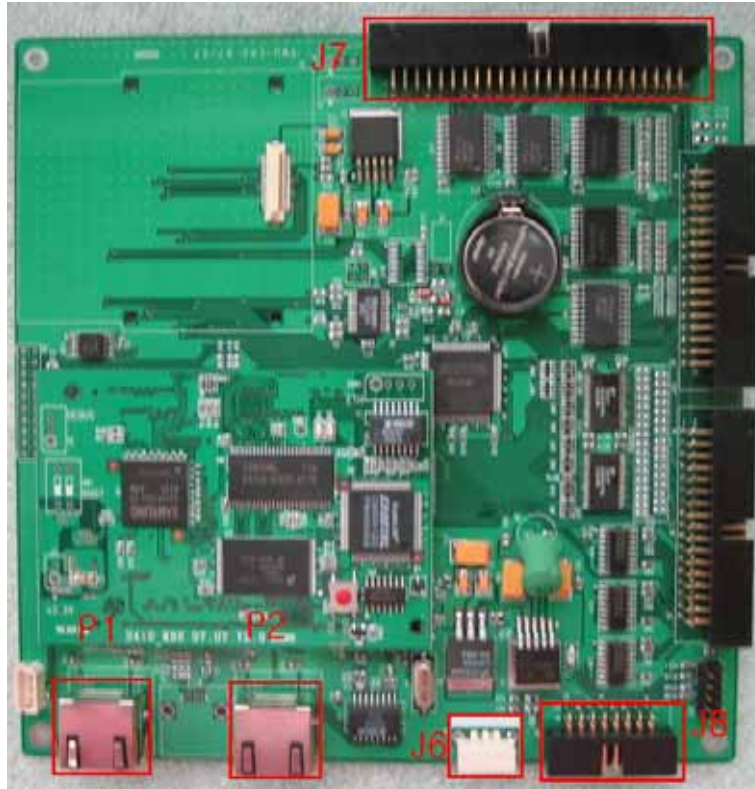
### 2.2.3 Duplexer

A multiplexer is a device that combines two or more signals onto a common channel or medium to increase its transmission efficiency.



## 2.2.4 Main Control Unit (MCU)

MCU is the control unit of CDMA MINI. It controls and monitors operational parameters. It also generates alarms, an event log and many other functions of the CDMA MINI.



### \*Pin Map\*

Port	Connected to
J6	MCU Vcc(+12V)
J7	CDMA DL,UL Control Pin
J8	PSU Alarms / Status LEDs
P1	Local
P2	Remote

## 2.2.5 Power Supply

The Power Supply Unit (PSU) supplies a steady DC power to CDMA MINI by drawing power from the general in-wall AC outlets

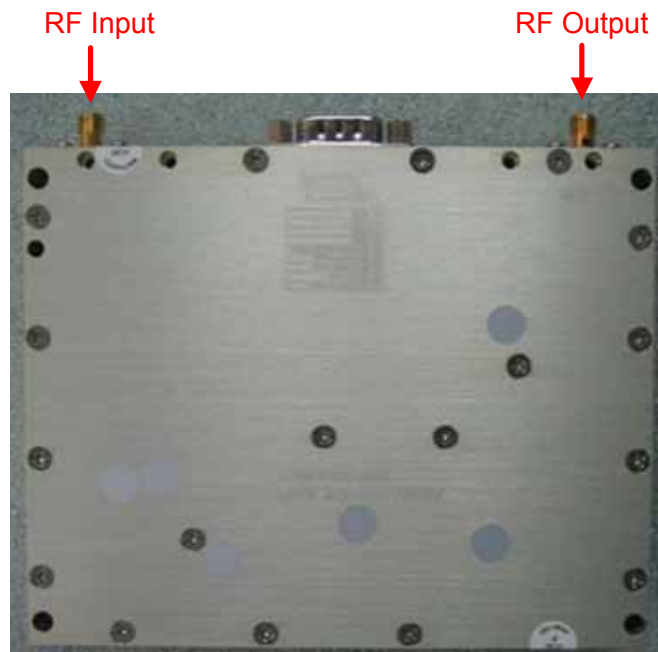


### \*Specification\*

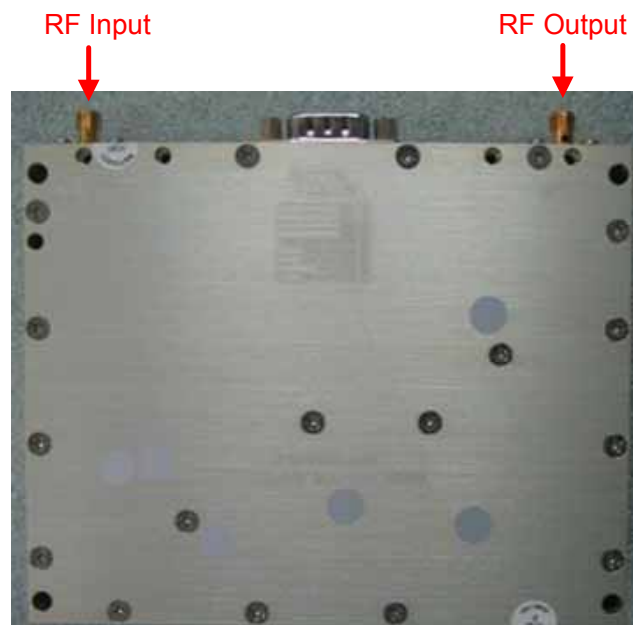
Item		Specifications
Environmental	Operating Temp	-10 °C~50 °C
	Humidity	20%~90%RH
	Cooling method	Natural air
Rating(s)		Rated Input: 110~125Vac, 60Hz, 2.0A Rated Output: +27Vdc, 2.0A / +6Vdc, 5.0A / +12Vdc, 3.0A / -12Vdc, 2.0A
Leakage Current		0.5mA max.@110V AC

### 2.2.6 High Power Amplifier (HPA)

The High Power Amplifiers the transmitted signal from a base station at the final stage of the repeater and vice versa.



<Tx HPA>



<Rx HPA>



### 3. Hardware Installation

The installation procedure is as follows:

- Check List of Items
- Mounting
- Grounding
- RF Connection
- Power up

#### 3.1 Check List of items

Index	Items	Q'ty
1	CDMA MINI	1
2	Power Cord	1
3	Screws for Mounting	4



1



2

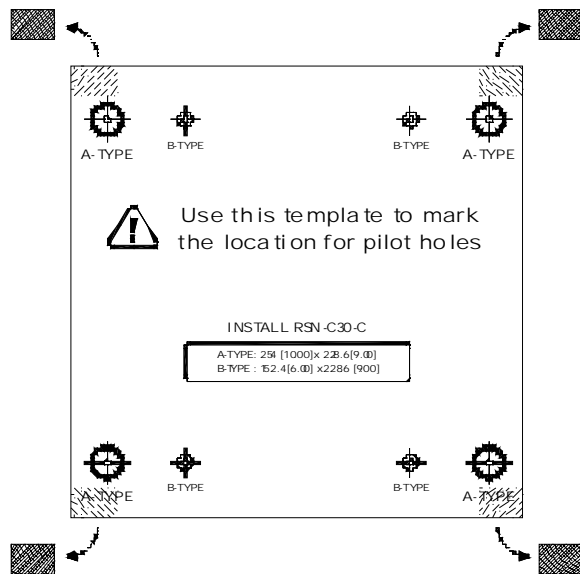


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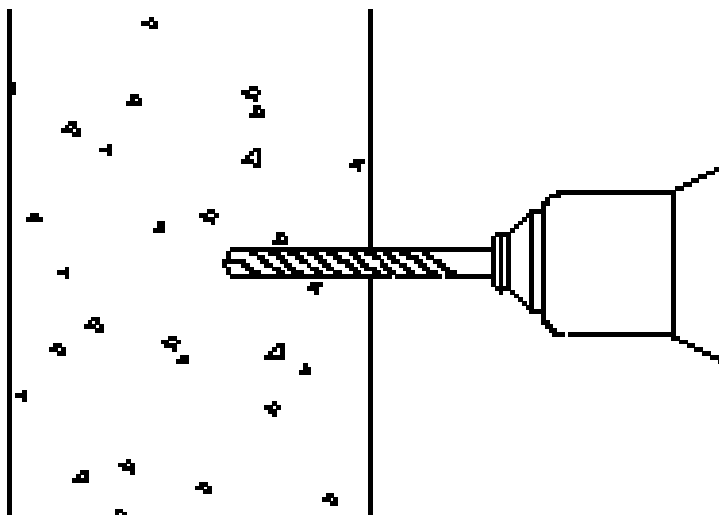
### 3.2 Mounting

CDMA MINI is easy to mount using the assembled mounting bracket, which has  $\varnothing 9$  holes for the provided 5/16" fixing screws.

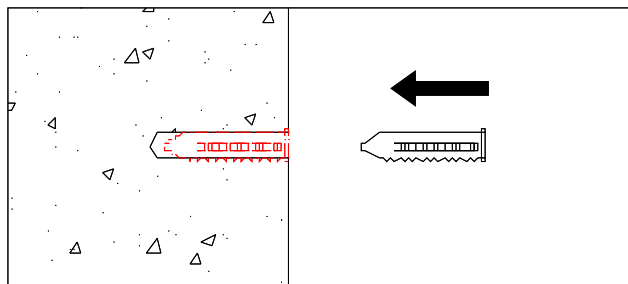
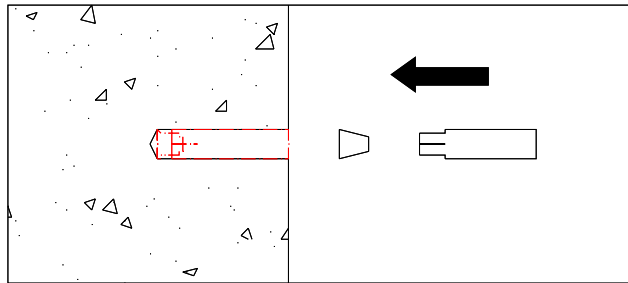
Step 1.



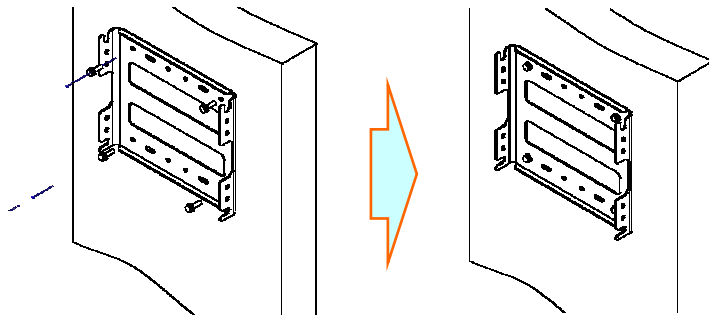
Step 2.



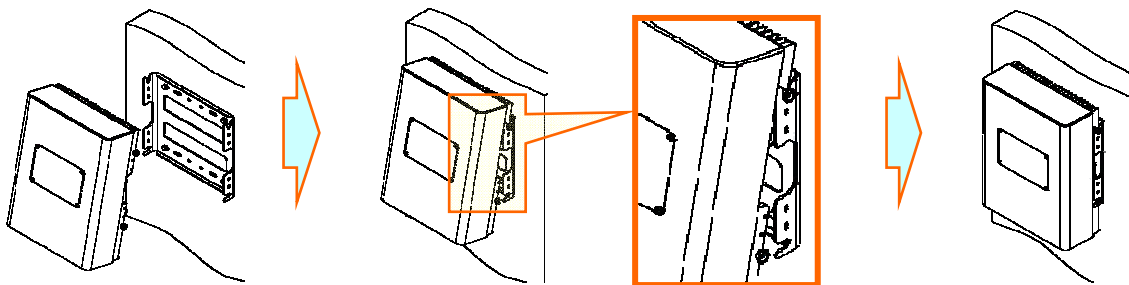
Step 3.



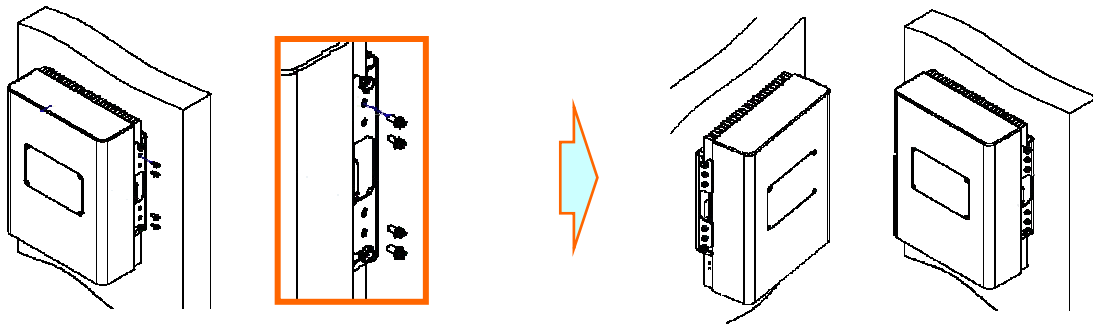
Step 4.



Step 5.



Step 6.



**⚠ CAUTION**

Firmly affix the equipment on the wall of a building and Check necessary.

### 3.3 Grounding

**⚠ WARNING**

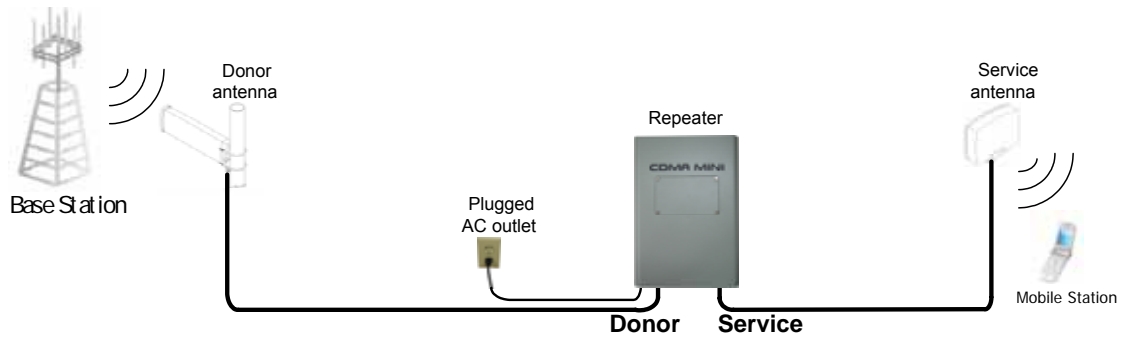
Dangerously high voltages may occur and damage the equipment if the equipment is not grounded properly.



A rod on the left side is intended for a building ground. Connect the ground cable to the rod.

### 3.4 RF Cable Connection

- a. Connect a cable from a donor antenna to the **DONOR ANTENNA Port**.
- b. Connect a cable from the **SERVICE ANTENNA Port** to a repeater's service antenna.



### 3.5 Power Up

- a. Connect the power cord.
- b. Plug the power cord into a wall outlet.



- c. Switch on.



- d. Check if the green LED at the bottom turns on.



## 4. Command and Control through the Hyper Terminal

### 4.1 Setting for Command and Control through the Web GUI

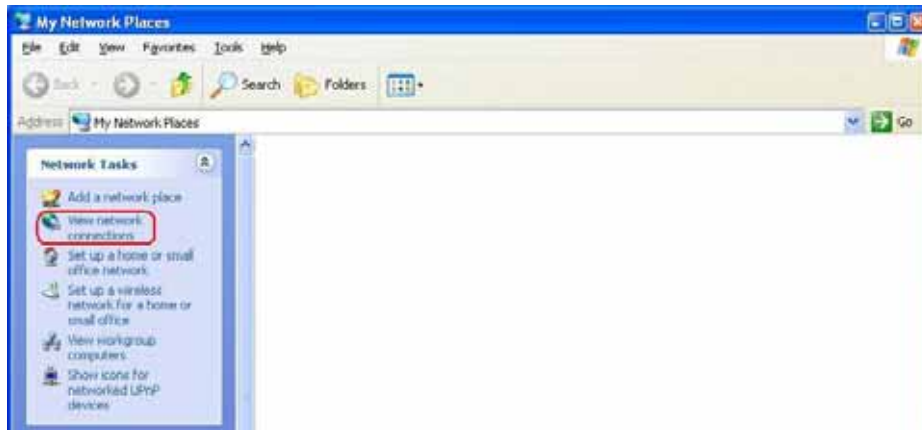
\* CDMA MINI operates on a customer provided PC based platform with the following system requirements.

Windows® XP	Strong recommended
128 MB RAM or more	
Pentium III processor or more	keyboard
RJ-45 jack	

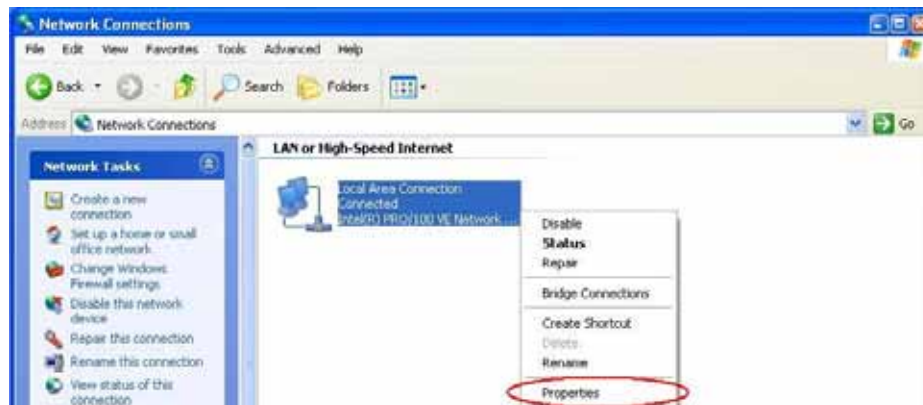
Step 1 Open My Network Places.



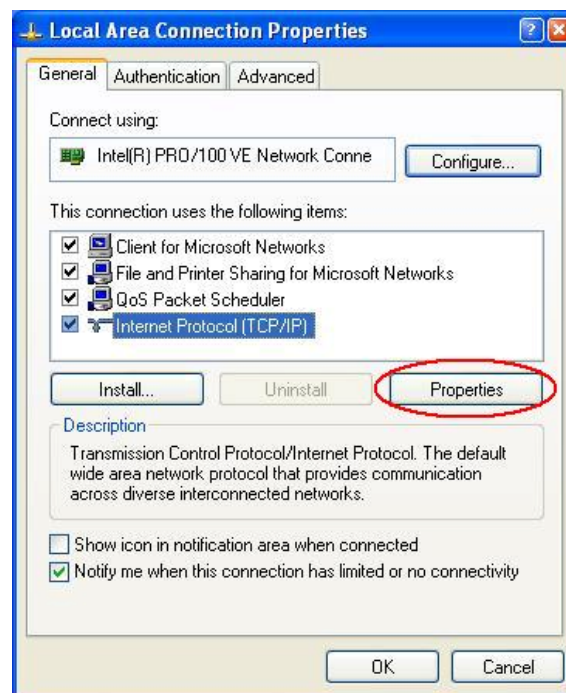
Step 2 Click the “View network connections”.



Step 3 Push the right button of mouse and select the properties.

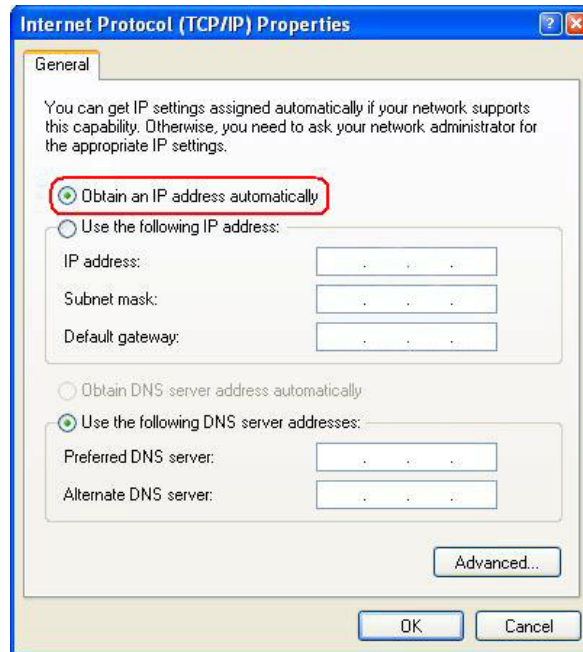


Step 4 Click the properties of TCP/IP.

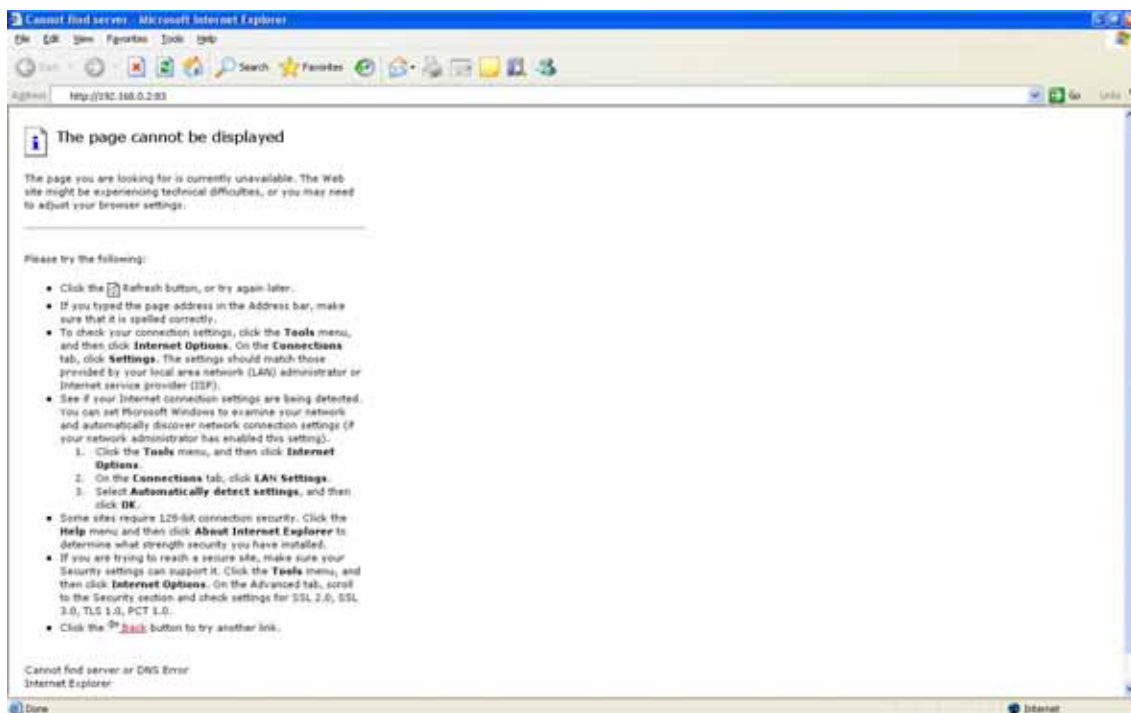




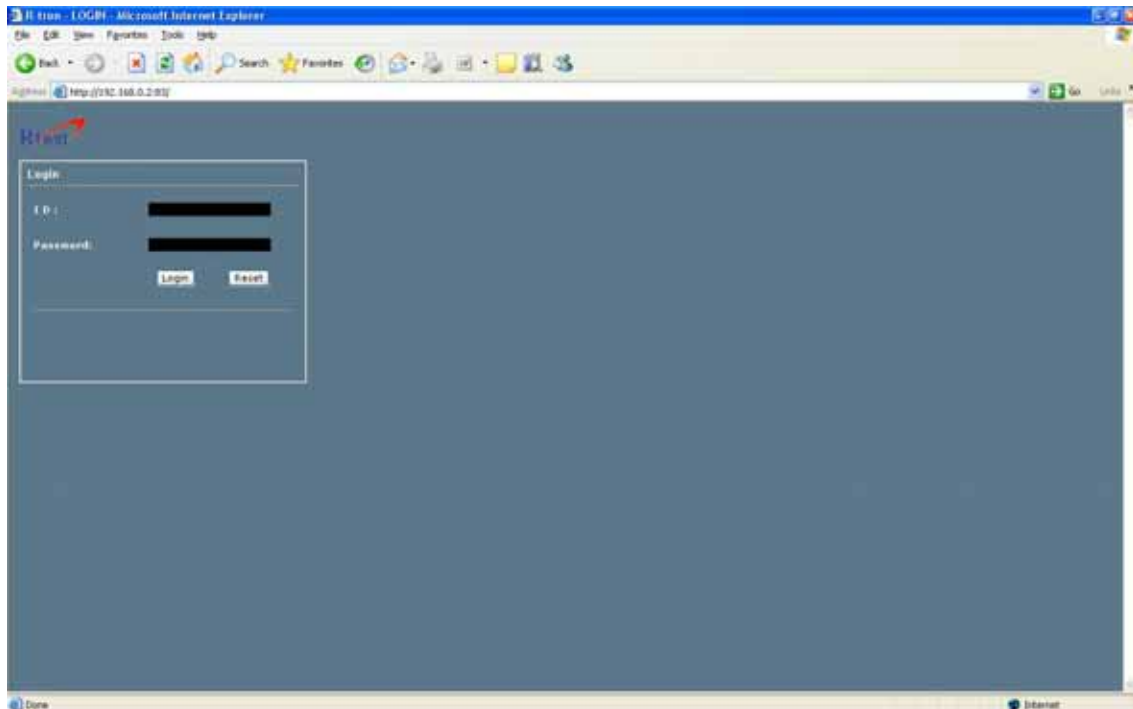
Step 5 Set the values and OK as the following. Close all windows.



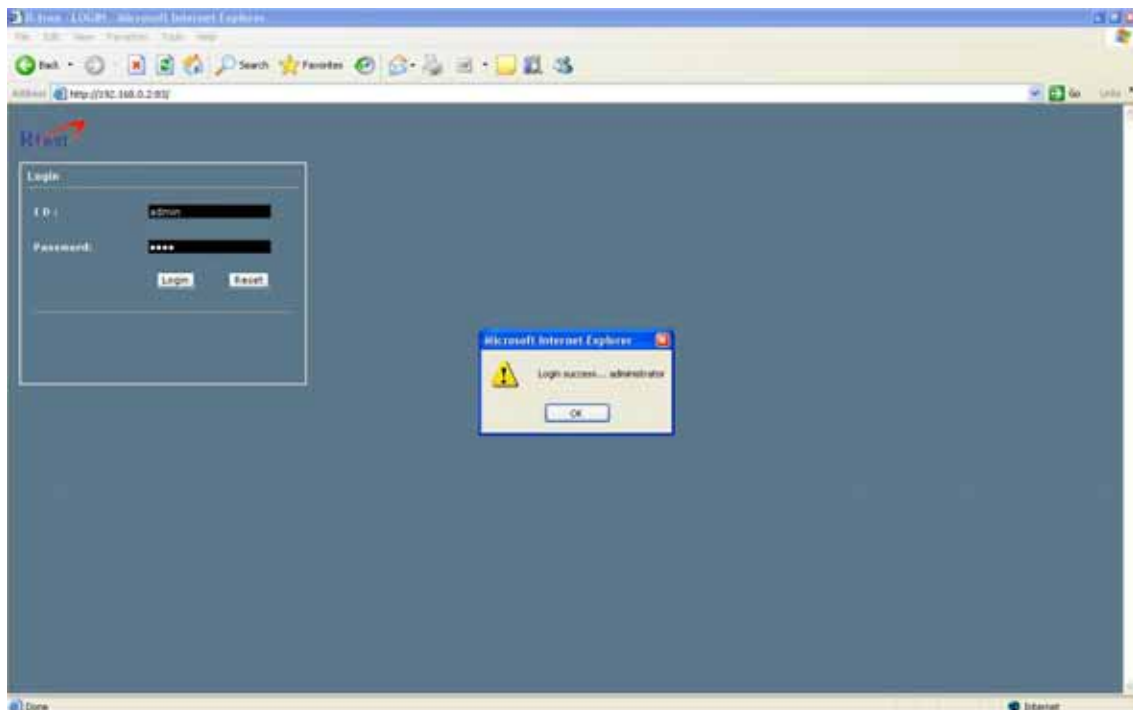
Step 6 Open a new explorer window.



Step 7 Type <http://192.168.0.2:83> in the address box and press “Enter” key.



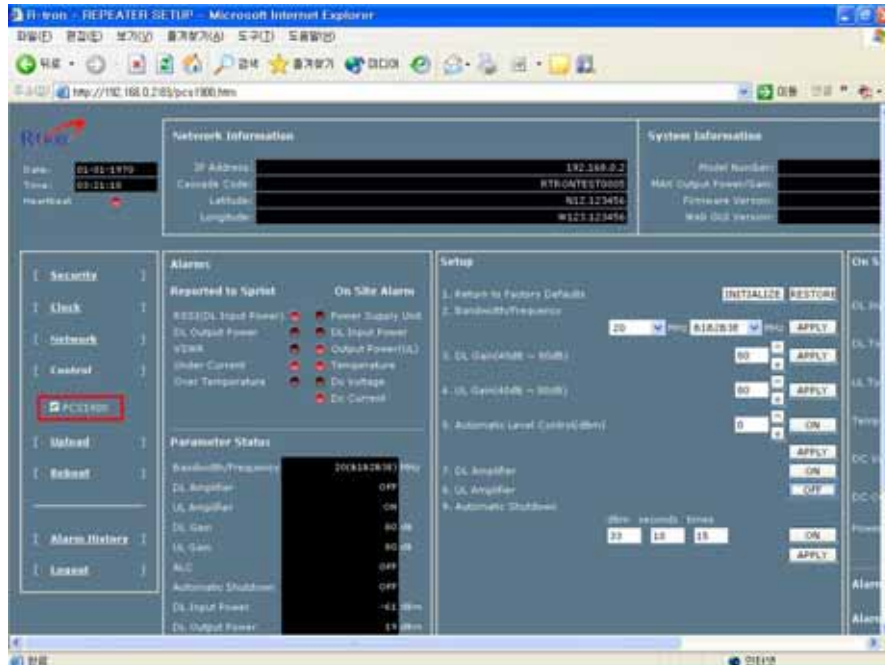
Step 8 Login with “admin” of ID and “1234” of password and “OK”.



## 5. Command and Control on the Web GUI

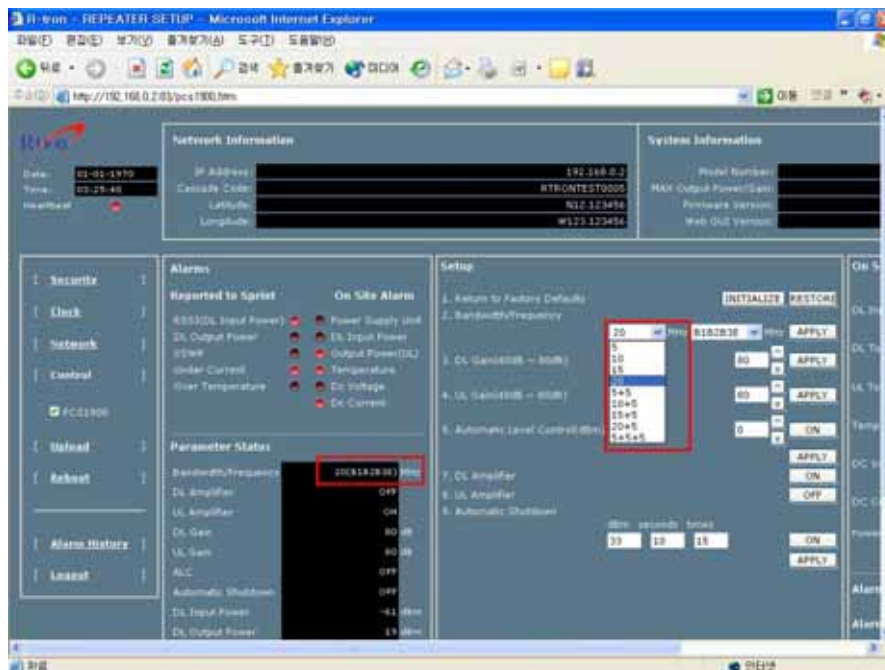
### 5.1 DL and UL Bandwidth Selection

a. To control the CDMA MINI, check the box of PCS 1900.

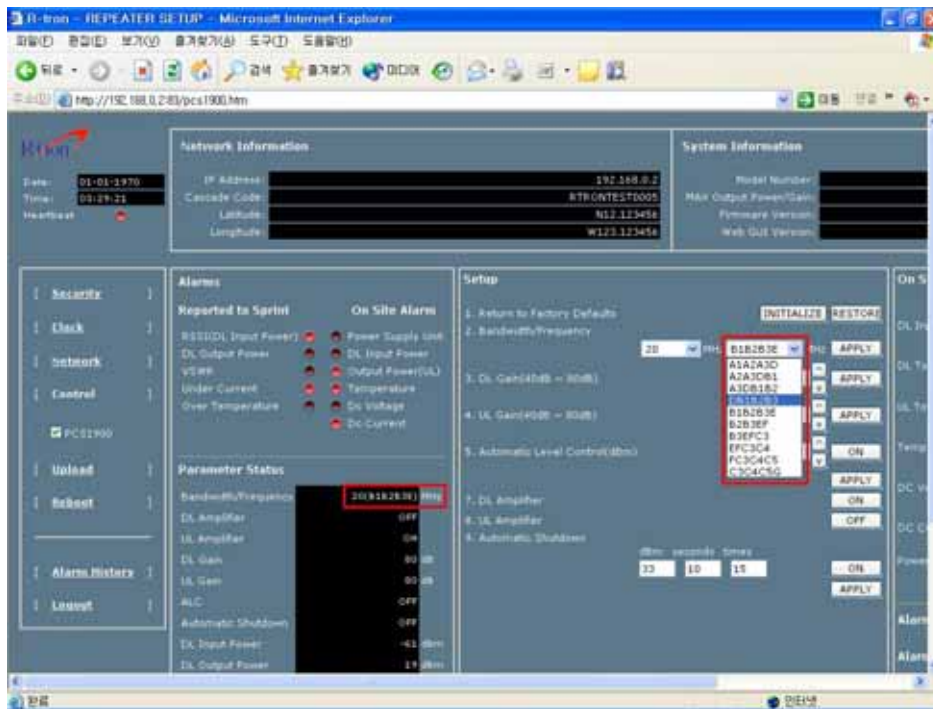


b. The operating bandwidth, 5MHz, 10MHz, 15MHz, 20MHz, 5+5MHz, 10+5MHz, 15+5MHz, 20+5MHz, 5+5+5MHz bandwidth is possibly selected.

Select the operating bandwidth and push the “APPLY” and check the bandwidth.

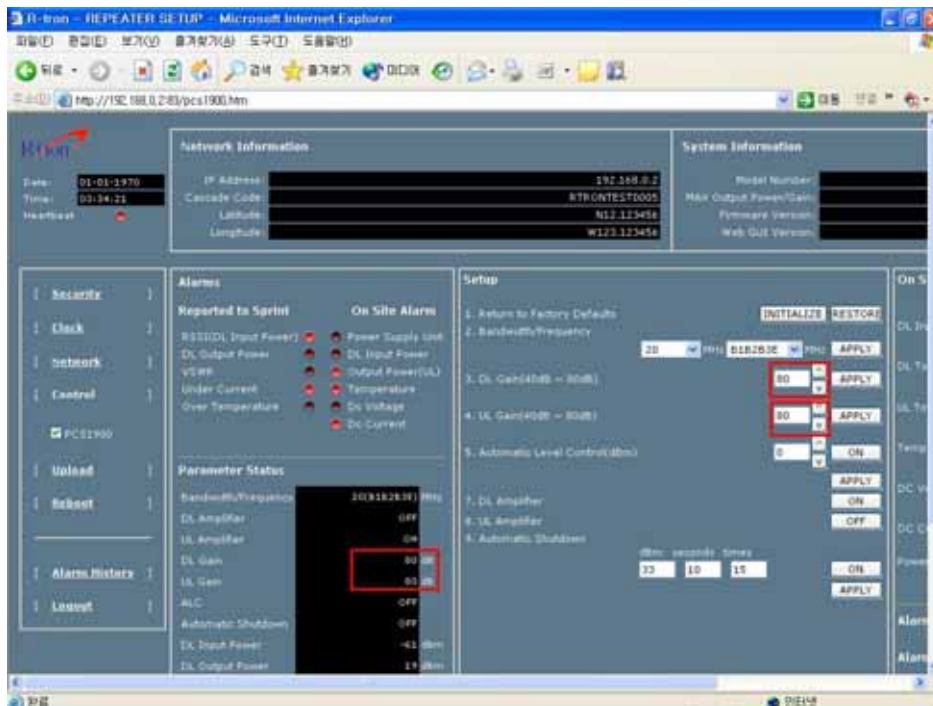


- c. The operating frequency is able to be selected. Select the operating frequency and push the “APPLY” and check the bandwidth and frequency.



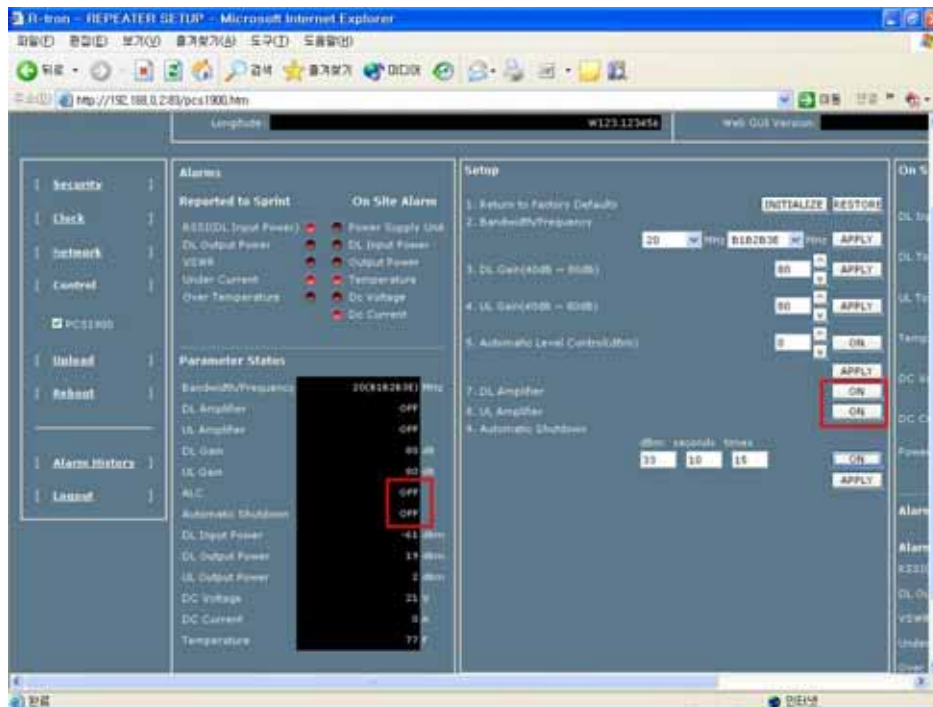
## 5.2 DL and UL DL and UL gain setting

- a. Set the DL gain and UL gain, 50dB to 90dB, and push the “APPLY” button.



### 5.3 HPA On and OFF

a. Press the “ON” and “OFF” and check the status.



**The maximum output power for operating is +30dBm on both DL and UL.**

## 6. Troubleshooting

### 6.1 RF Connection check

#### <Problem>

Either the downlink output power or the uplink output power (=Input Power to the repeater) is too weak.

#### <Solution>

Check if the following RF connections are loose:

1. The cable connection from the donor antenna to the donor antenna port
2. The cable connection from the service antenna port to the service antenna

### 6.2 Power Connection

#### <Problem>

All LED's at the bottom are turned off.



#### <Solution>

Check if the power cord is connected correctly and the green LED at the bottom turns on.

### 6.3 Red Light on the Alarm LED

#### <Problem>

Red light LED turns on the Alarm LED after applying AC power.

#### <Solution>

Request a technical support.

## CDMA MINI

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