RSN-iDEN-25-DC

Manual

R-tron Inc.

Warning ⚠

Opening the iDEN MINI could result in electric shock and may cause severe injury.

Warning ⚠

Connect the equipment frame ground to building ground.

Warning ⚠

Operating the iDEN MINI with antennas in very close proximity facing each other could lead to severe damage to the Booster.

Caution ⚠

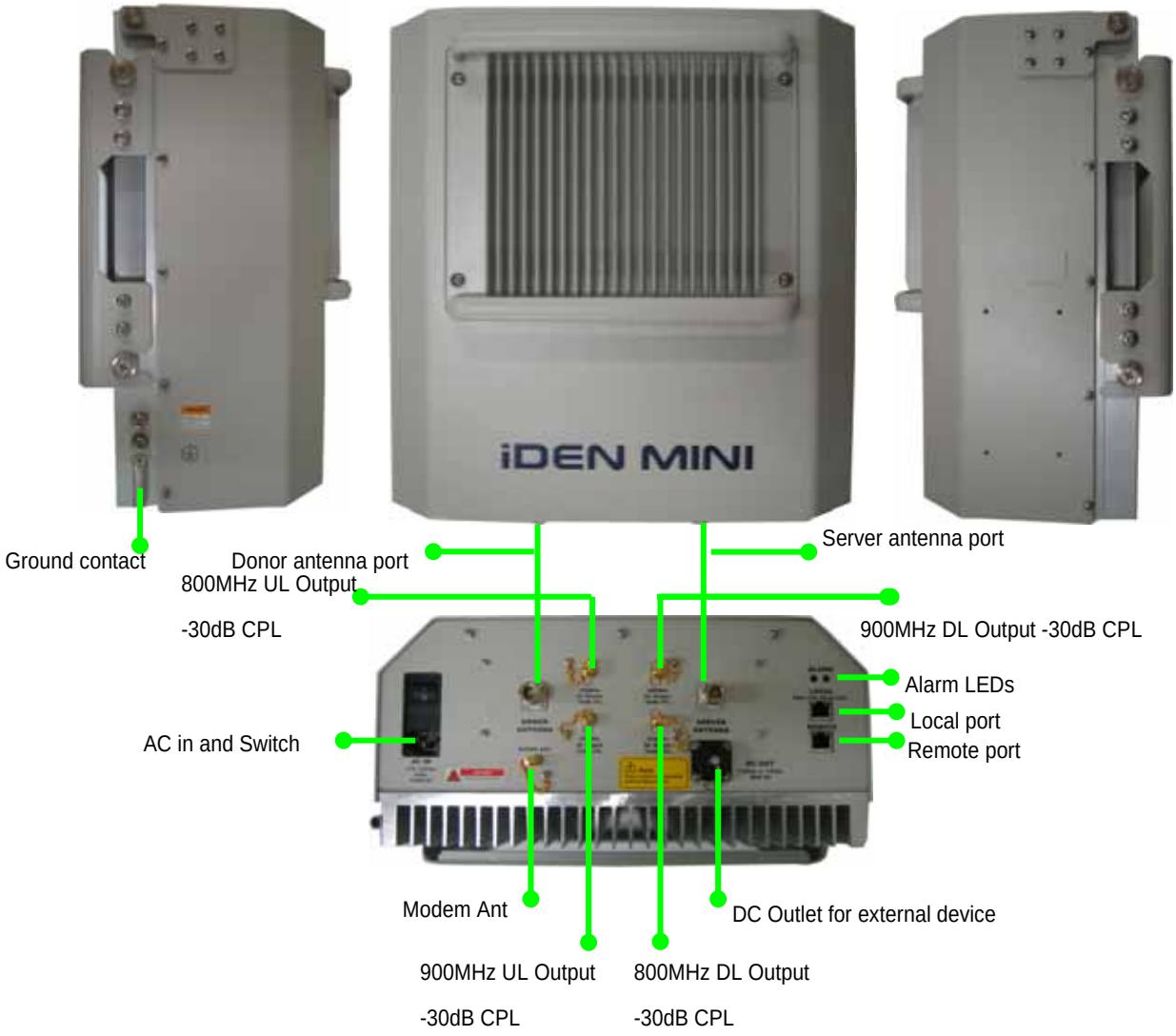
RF EXPOSURE INFORMATION

A minimum separation distance of 7.9 inches (20cm) must be maintained between the user and the external antenna of Booster to satisfy FCC RF exposure requirements. For more information about RF exposure, please visit the FCC website at www.fcc.gov

Caution ⚠

This equipment is for indoor use and enables the communication wiring to communicate only inside the building.

1. Introduction



RSN-iDEN-25-DC Booster is used to fill out uncovered areas in iDEN mobile systems, such as base station fringe areas, road tunnels, business and industrial buildings, etc.

An RSN-iDEN-25-DC Booster 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.

To be able to receive and transmit signals in both directions, the Booster is connected to a donor antenna directed towards the base station and to a service antenna directed towards the area to be covered.

Control of the Booster is performed using a desktop or notebook loaded through the RJ-45 Jack

which can communicate with the Booster. Remote operation can be performed.

RSN-iDEN-25-DC Booster work as bi-directional amplifiers.

A Booster receives, amplifies, and retransmits signals inbound and outbound simultaneously, i.e. from the base station via the Booster to the mobile stations and from the mobile stations via the Booster to the base station.

The Booster can be connected to a donor antenna directed towards the base station, and to a server antenna directed towards the area to be covered. The donor antenna is connected to the Booster with type-N connector. On the other hand, the server antenna is an external antenna.

The RSN-iDEN-25-DC Booster are controlled by powerful microprocessors. Operational status LEDs are visible on the bottom of the Booster.

The Booster works with convection cooling without fan because it has a radiator behind the body of RSN-iDEN-25-DC.

Operational parameters, such as gain, power levels, alarm condition, Automatic Gain Control condition, etc. are set using a desktop or notebook and the RJ-45 jack, which communicate, either locally or remotely via the UTP(Unshielded Twisted Pair Wire) cable, with the Booster.

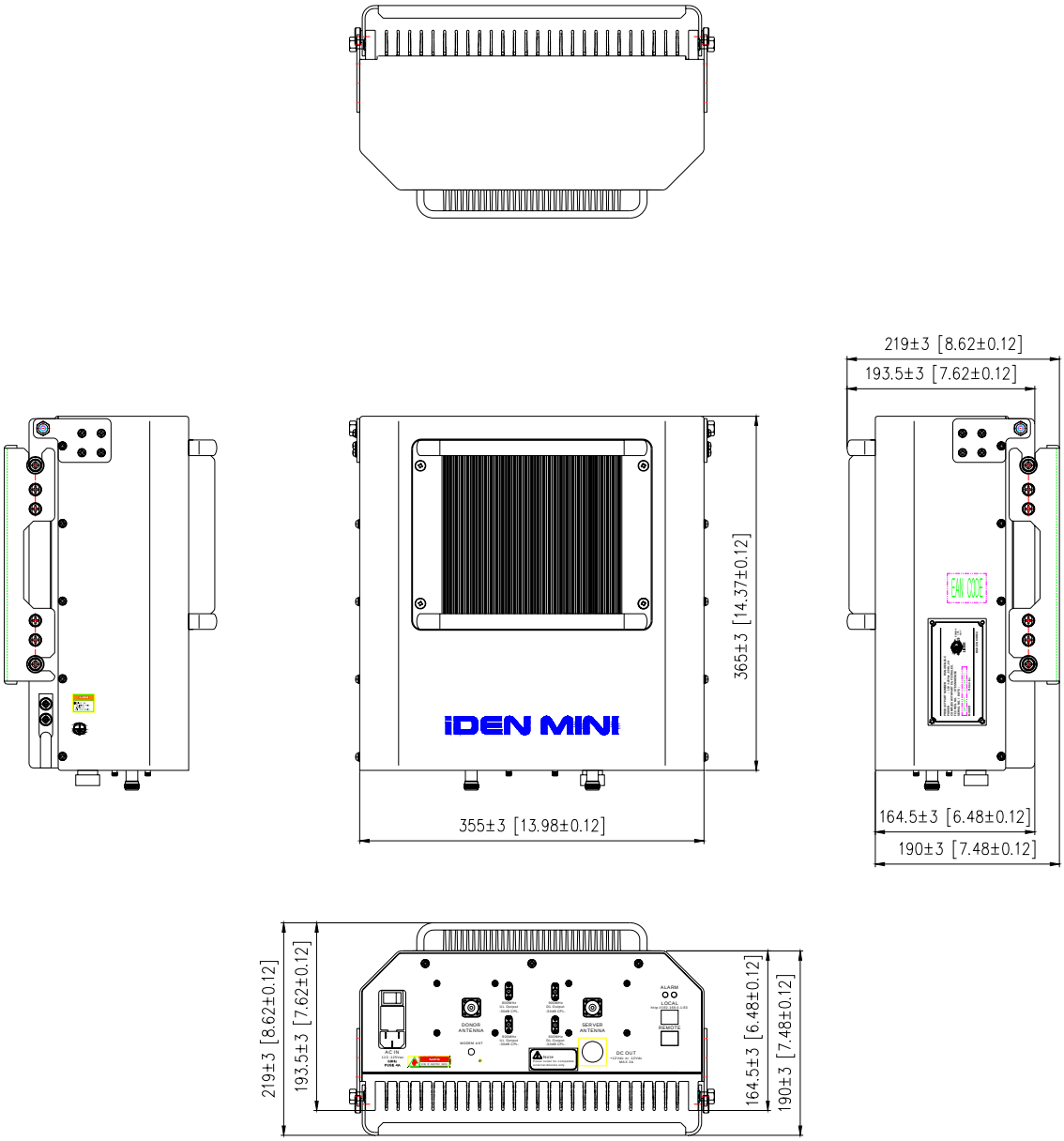
2. System Design

2.1 RSN-iDEN-25-DC Specification

2.1.1 Mechanical Specification

Parameter	Specification
RF Ports	N-female x 2, SMA-female x 5
Size	13.98 X 14.37 X 7.62(inch), 355 X 365 X 193.5(mm)
Weight	17.154Kg(37.82lbs)

<Table 2-1> Mechanical Specification



2.1.2 Electrical & Environmental Specification

A. Spectrum Characteristics

Parameter		iDEN 800	iDEN 900
Operating Frequency	DL	851MHz - 869MHz	935MHz ~ 940MHz
	UL	806MHz ~ 824MHz	896MHz ~ 901MHz
Roll off characteristics	DL & UL	≥ 65dBc @±500kHz from each edge of operating band (in all temperature)	
Flatness		≤ 2.5dB (in all temperature)	
Gain	DL & UL	50dB to 80dB(in all temperature)	
Delay	DL & UL	8.0μs Max.	
VSWR	DL & UL	1.5 Max.	
Composite Output Power	DL	25dBm	
	UL	25dBm	
UL Noise Figure		5dB Max. (@80dB Gain)	
		12dB Max. (@50dB Gain)	

<Table 2-2> RF Specification

B. Environmental specification

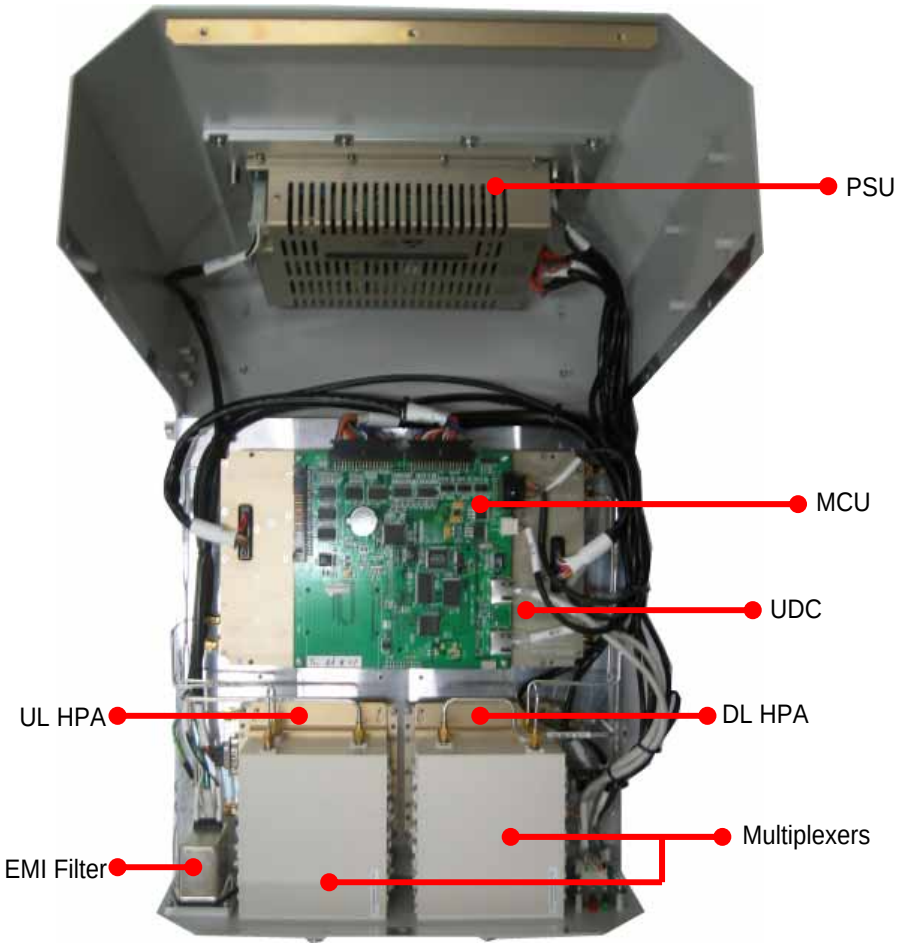
Item	Standard	Remark
Power supply	110V~125V, 60Hz	
Operating temperature	-10℃ ~ 50℃	
Humidity	95 %	

<Table 2-3> System Features

2.2 Sub Unit Overview

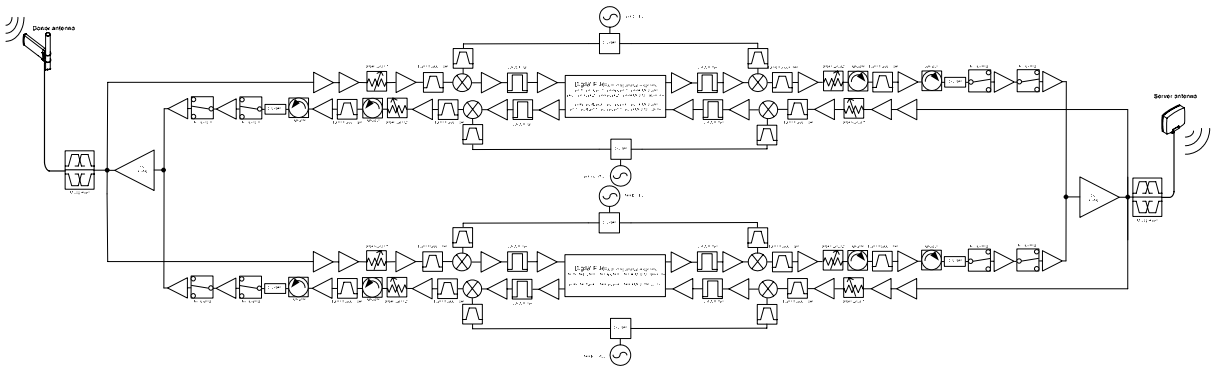
RSN-iDEN-25-DC is composed of the following sub units:

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



2.2.1 Block diagram

The following, *Figure* explains how the RSN-iDEN-25-DC serves signals.



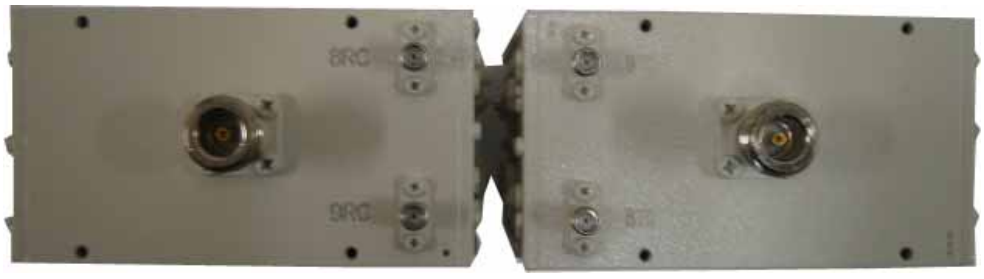
2.2.2 UDC Modules

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

2.2.3 Multiplexers

<Rear view>

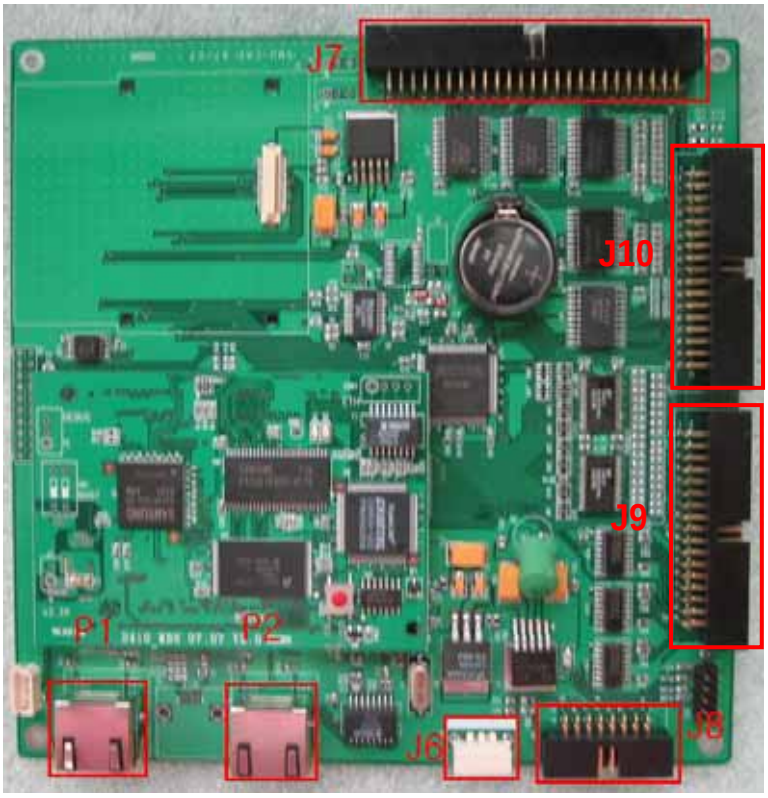
<Top view>



<Front view>

2.2.4 Main Control Unit (MCU)

MCU is the control unit of RSN-iDEN-25-DC. It controls and monitors operational parameters. It also generates alarms, an event log and many other functions of the RSN-iDEN-25-DC.



Pin Map

Port	Connected to
J6	MCU Vcc(+12V)
J7	-
J8	PSU Alarms / Status LEDs
J9	iDEN 900
J10	iDEN 800
P1	Local
P2	Remote

2.2.5 Power Supply

The Power Supply Unit (PSU) supplies a steady DC power to RSN-iDEN-25-DC by drawing power from the general in-wall AC outlets

Specification

Item		Specifications
Environmental	Operating Temp	-10℃~ 50℃
	Humidity	5%~95%
	Cooling method	Convection
Voltage		AC110~125V
Current		4A Max / 6.5V, 12V, -12V , 27VDC
Frequency		60Hz typ
Leakage Current		0.5mA max.@110V AC

2.2.6 High Power Amplifiers (HPAs)

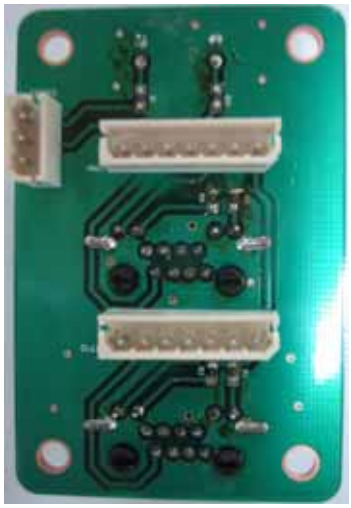
The High Power Amplifiers the transmitted signal from a base station at the final stage of the Booster and vice versa.

<iDEN UL HPA>

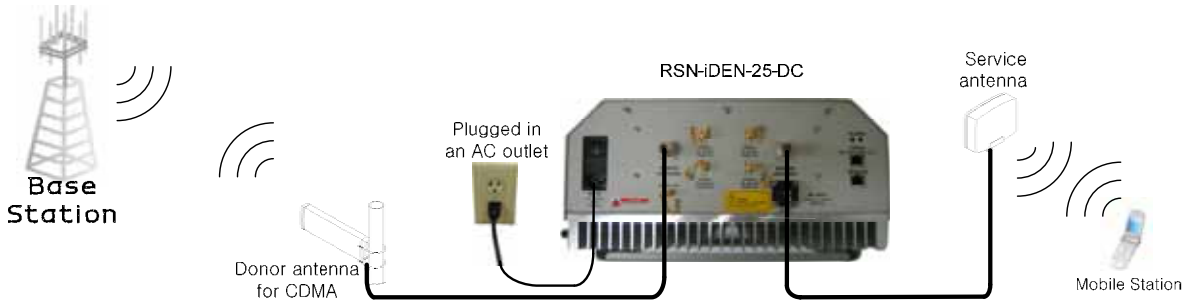
<iDEN DL HPA>

2.2.6 EMI Noise Filter

2.2.7 Communication & LED Board



* Hardware Installation



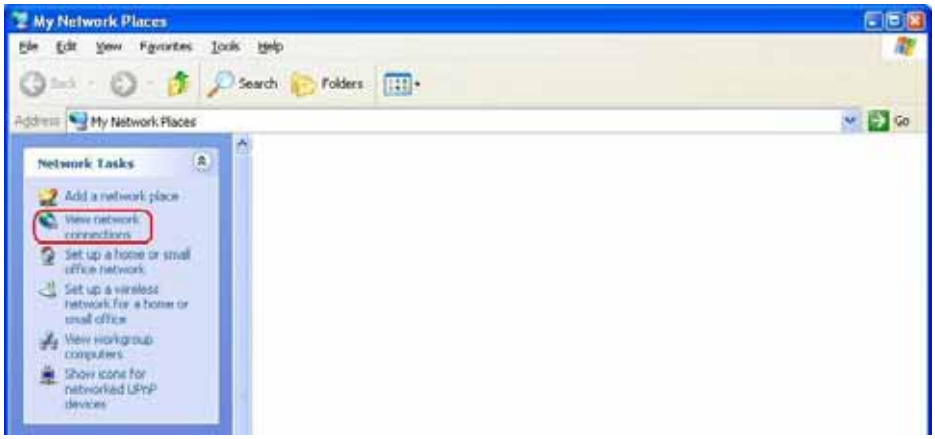
1. Setting for Command and Control

* iDEN 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	

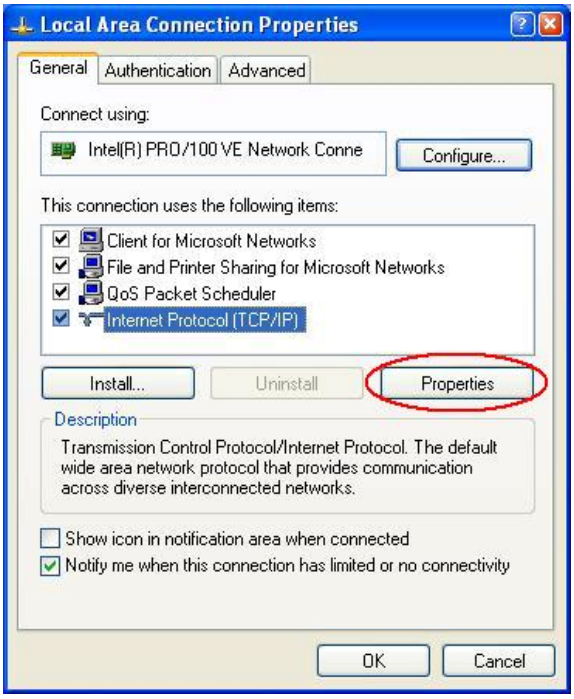
Step 1 Open My Network Places.

Step 2 Click the “View network connections”.

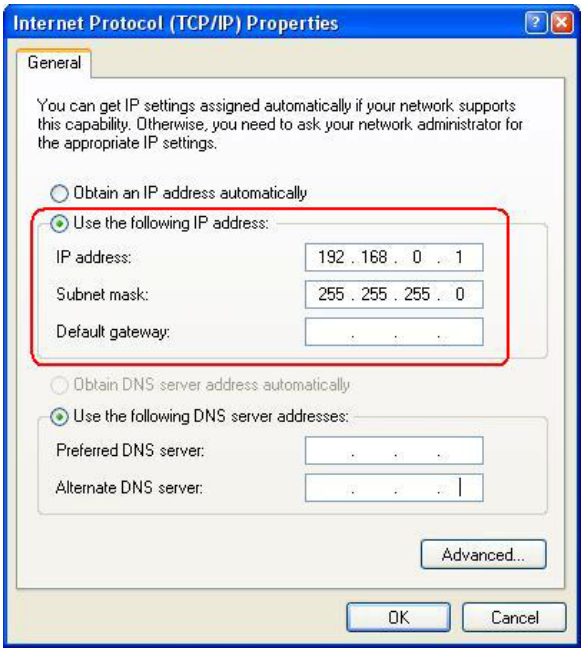


Step 3 Push the right button of mouse and select the properties.

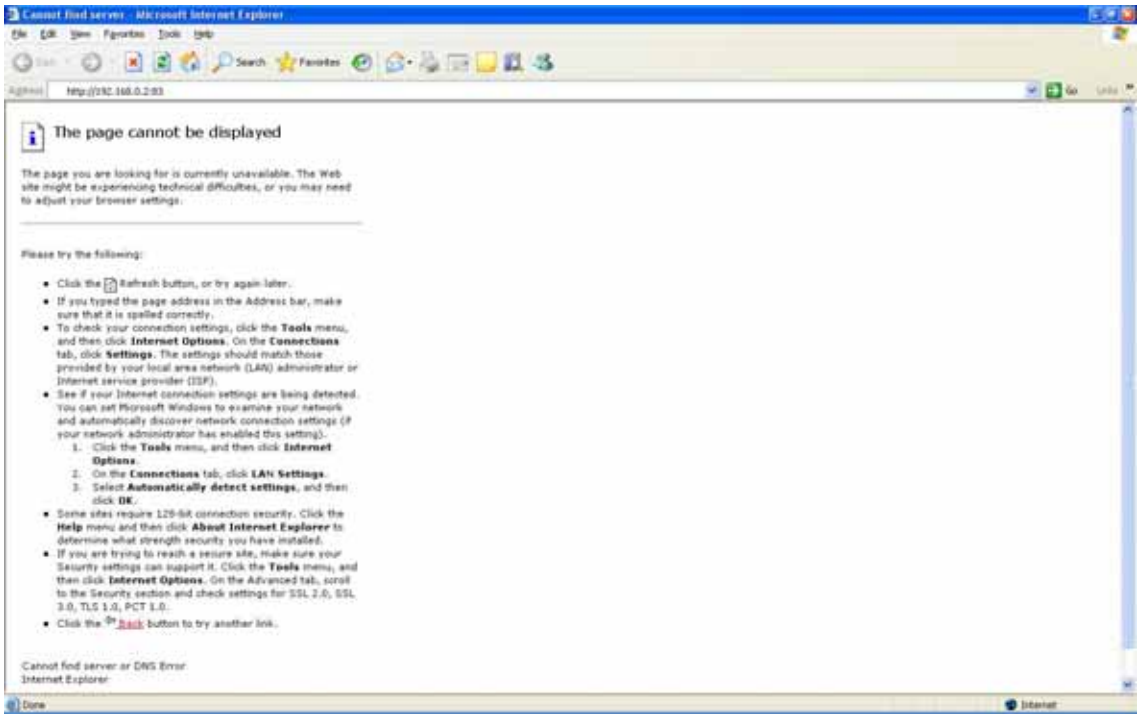
Step 4 Click the properties of TCP/IP.



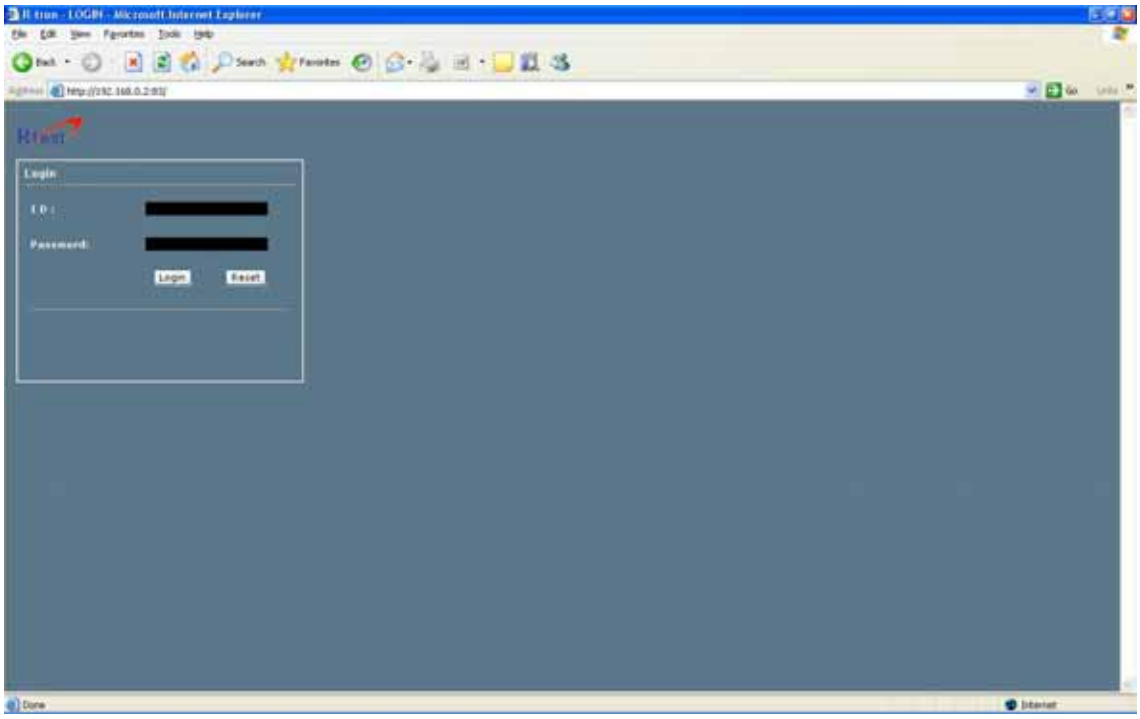
Step 5 Set the values and OK as the following. Close all windows.



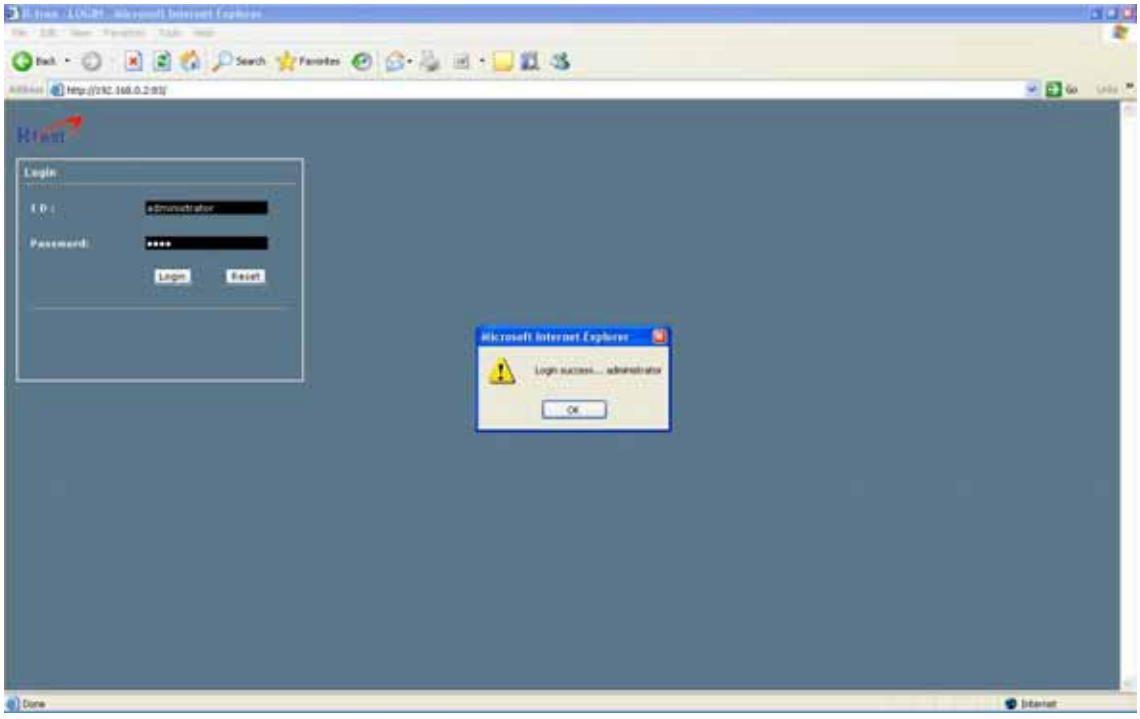
Step 6 Open a new explorer window.



Step 7 Type http://192.168.0.1:83 in the address box and press “Enter” key.



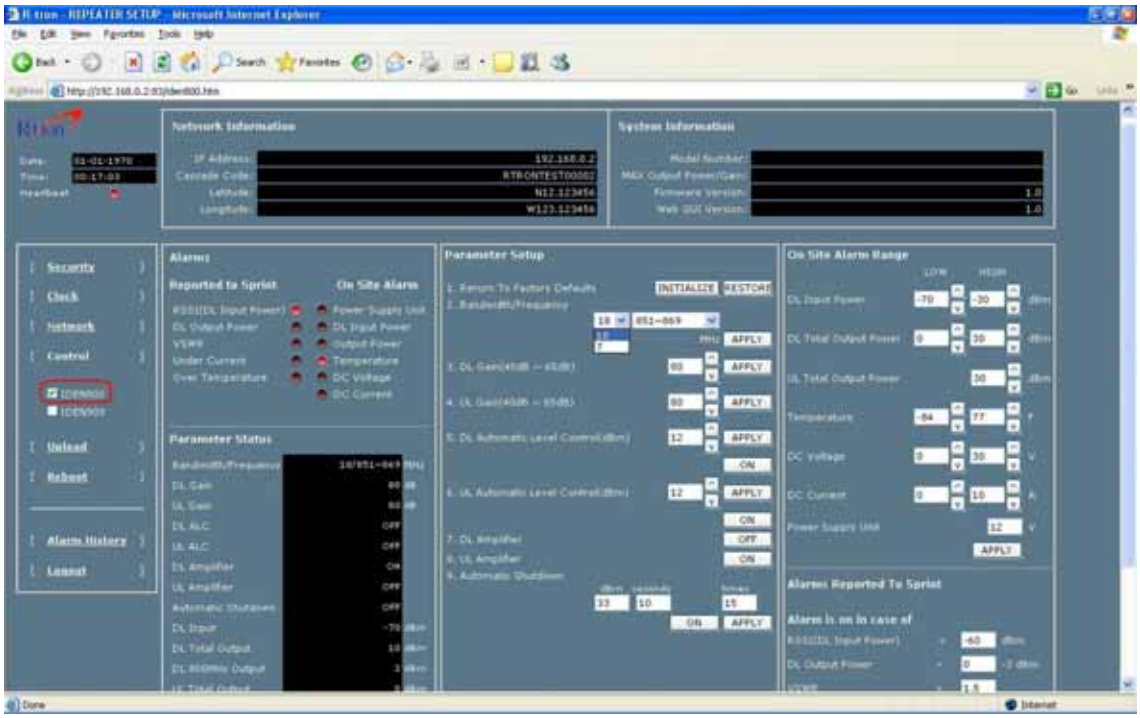
Step 8 Login with “administrator” of ID and “1234” of password and “OK”.



2. Command and Control on the Web GUI.

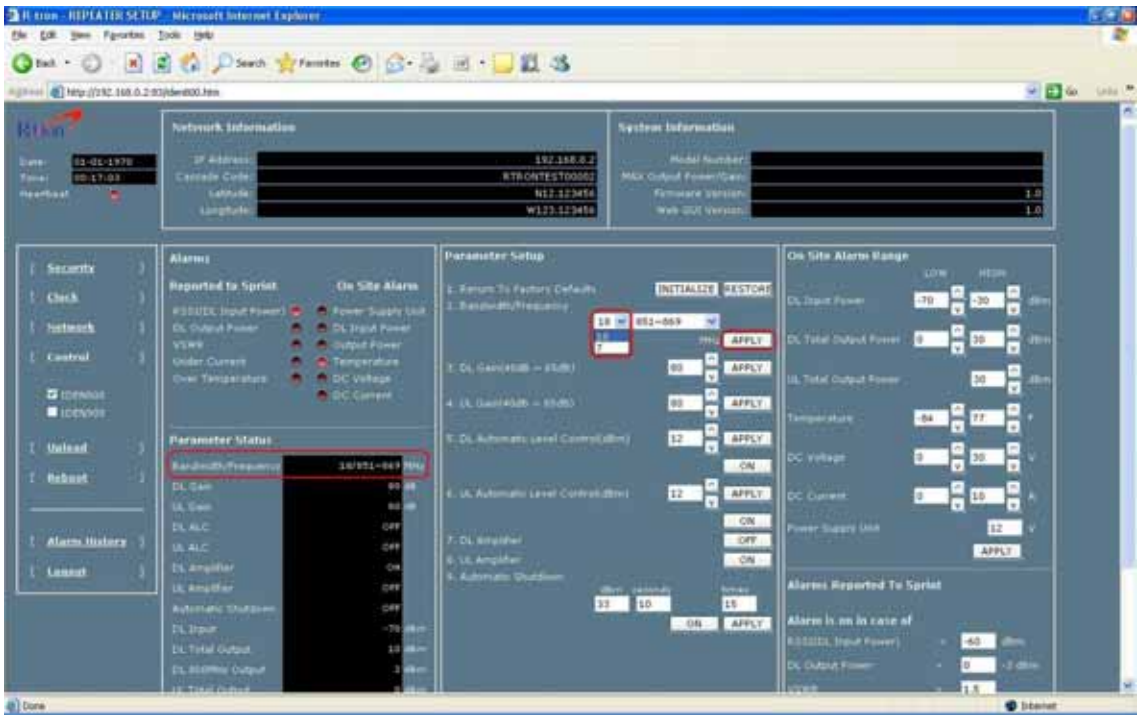
A. iDEN 800.

a. To control the iDEN 800, check the box of iDEN 800.

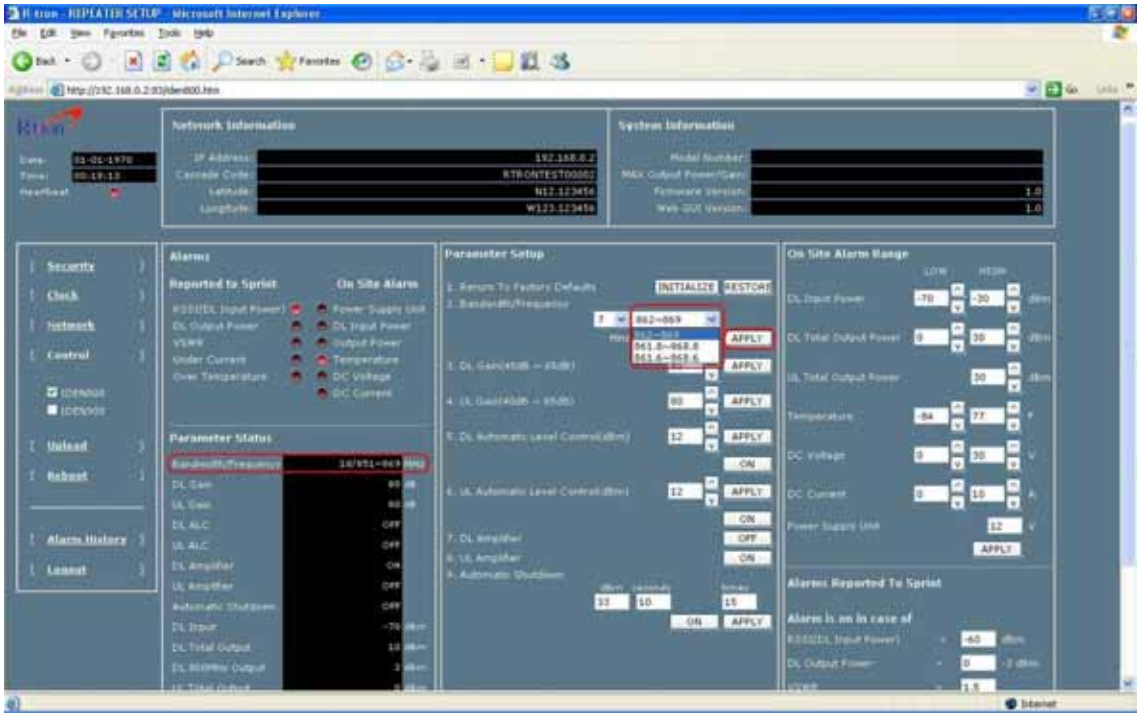


b. The operating bandwidth, 18MHz-bandwidth and 7MHz-bandwidth, is possibly selected.

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

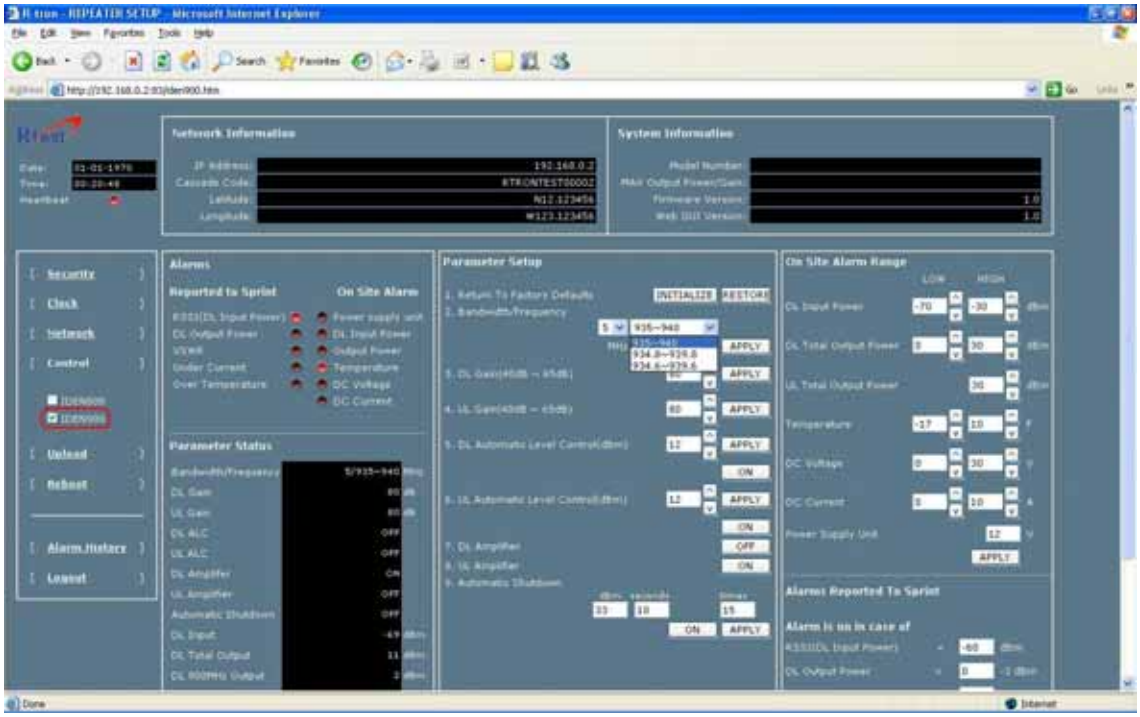


c. The operating frequency is able to be selected. Select the operating frequency and push the "APPLY" and check the bandwidth and frequency.



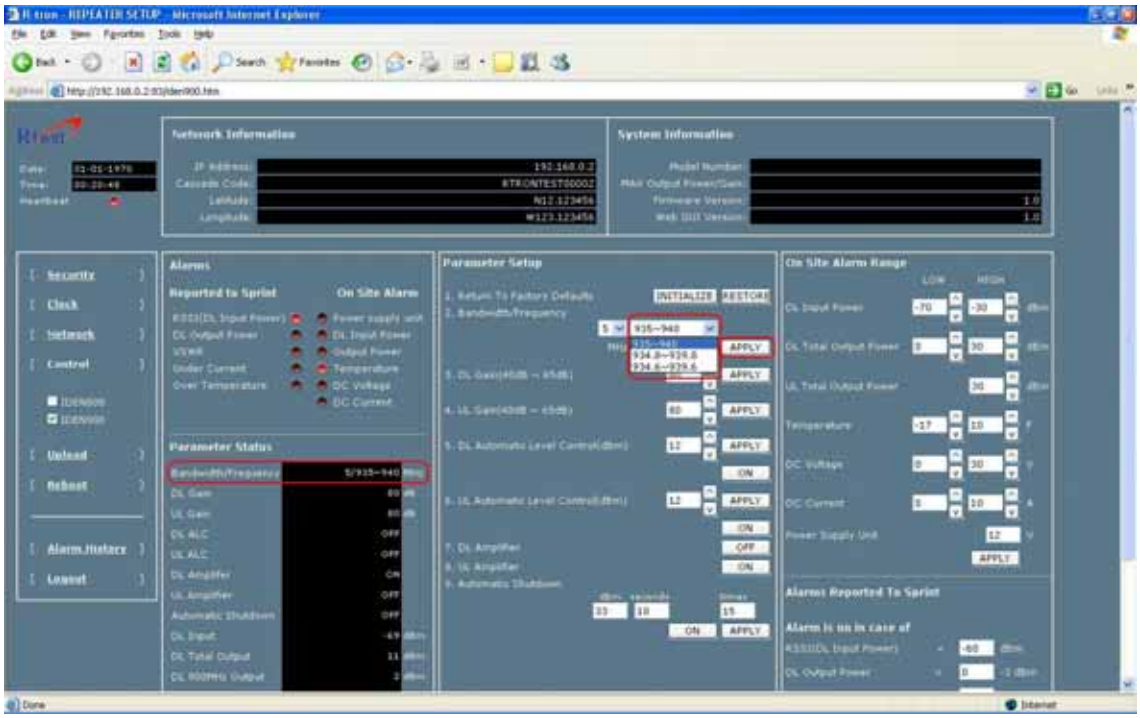
B. iDEN 900.

a. To control the iDEN 900, check the box of iDEN 900.



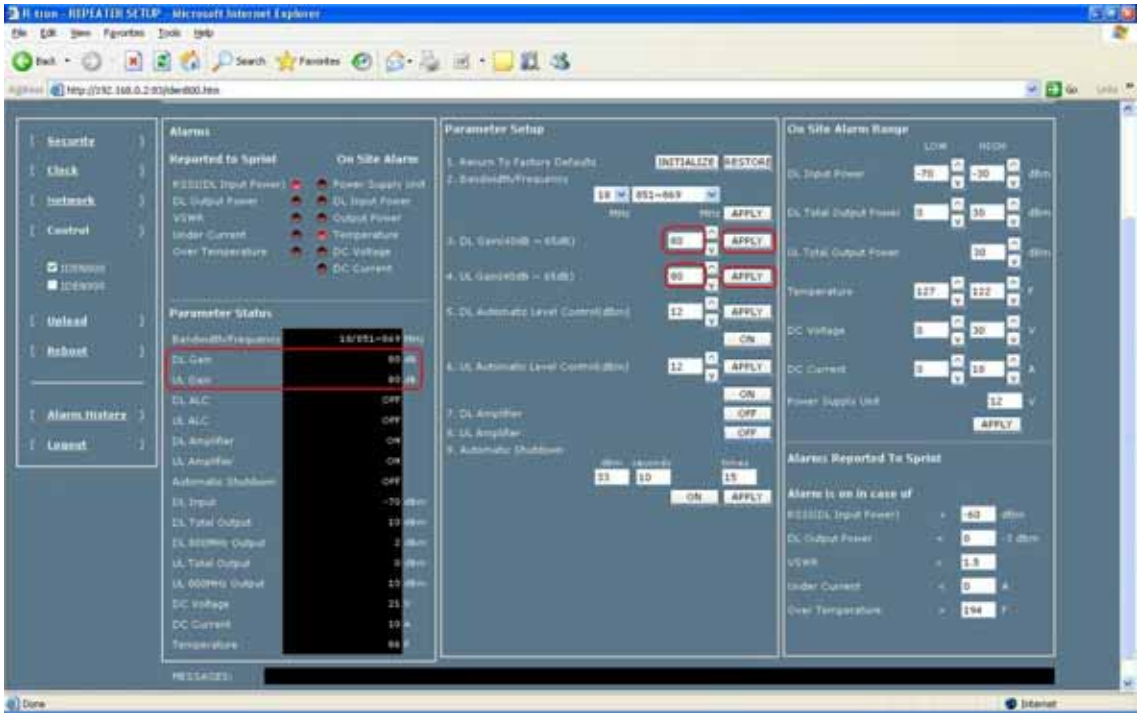
b. On the iDEN 900, 5MHz-bandwith is only available.

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



C. DL and UL gain setting.

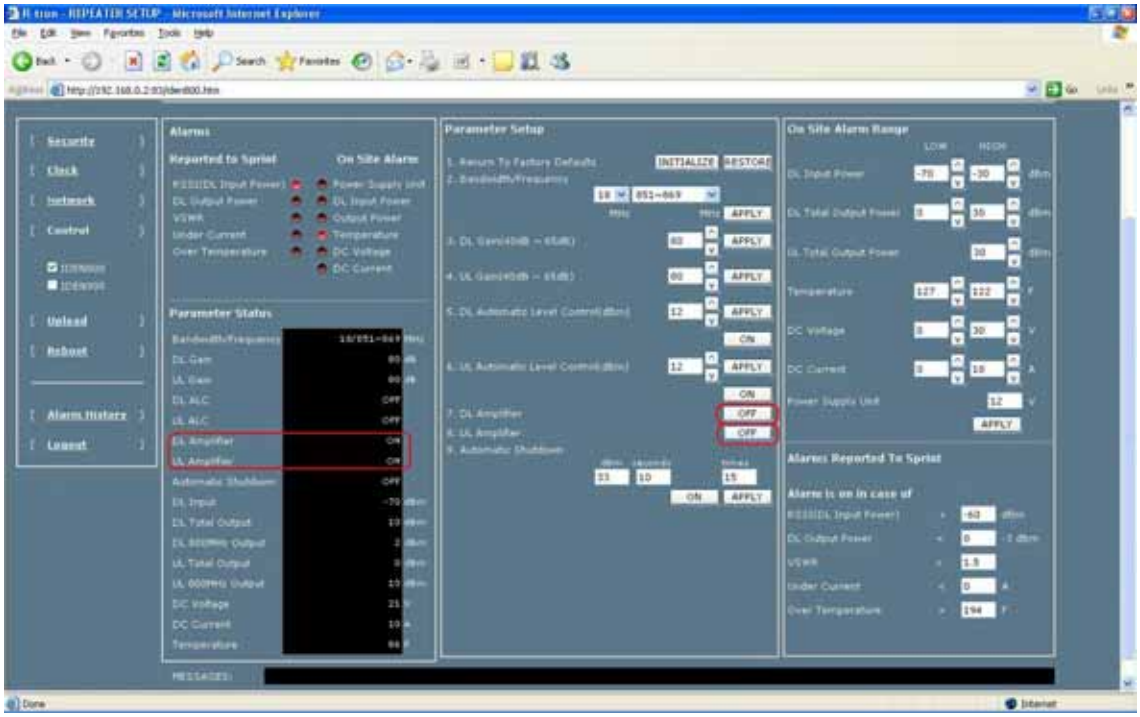
a. Set the DL gain and UL gain, 50dB to 80dB, and push the “APPLY” button.



* Set the gain of iDEN 900 as same as the iDEN 800 gain setting.

D. HPA on and off.

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

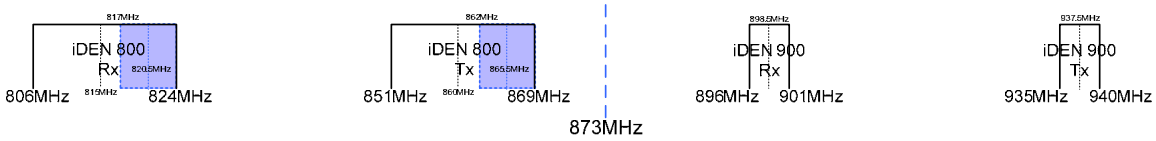


The maximum output power for operating is +25dBm on both DL and UL.

* Reference

The Operating Bandwidth & Frequencies

iDEN 800 & 900



	Bandwidth	Operating Frequency	
iDEN 800	18MHz-bandwidth	Downlink	851~869MHz 851~868.8MHz 851~868.6MHz
		Uplink	806~824MHz 806~823.8MHz 806~823.6MHz
	7MHz-bandwidth	Downlink	862~869MHz 862~868.8MHz 862~868.6MHz
		Uplink	817~824MHz 817~823.8MHz 817~823.6MHz
iDEN 900	5MHz-bandwidth	Downlink	935~940MHz 935~939.8MHz 935~939.6MHz
		Uplink	896~901MHz 896~900.8MHz 896~900.6MHz

Operating bandwidth and Frequencies of iDEN