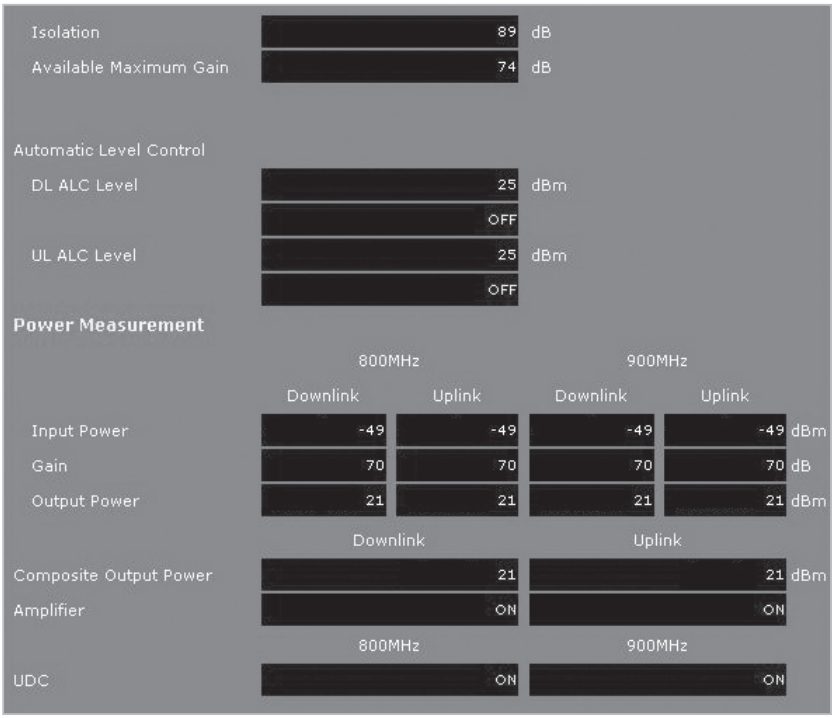
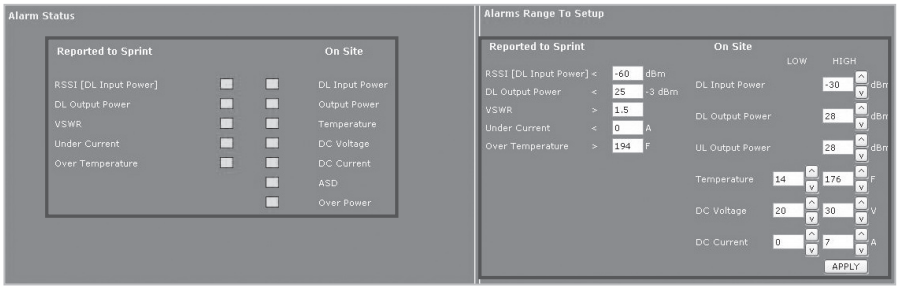
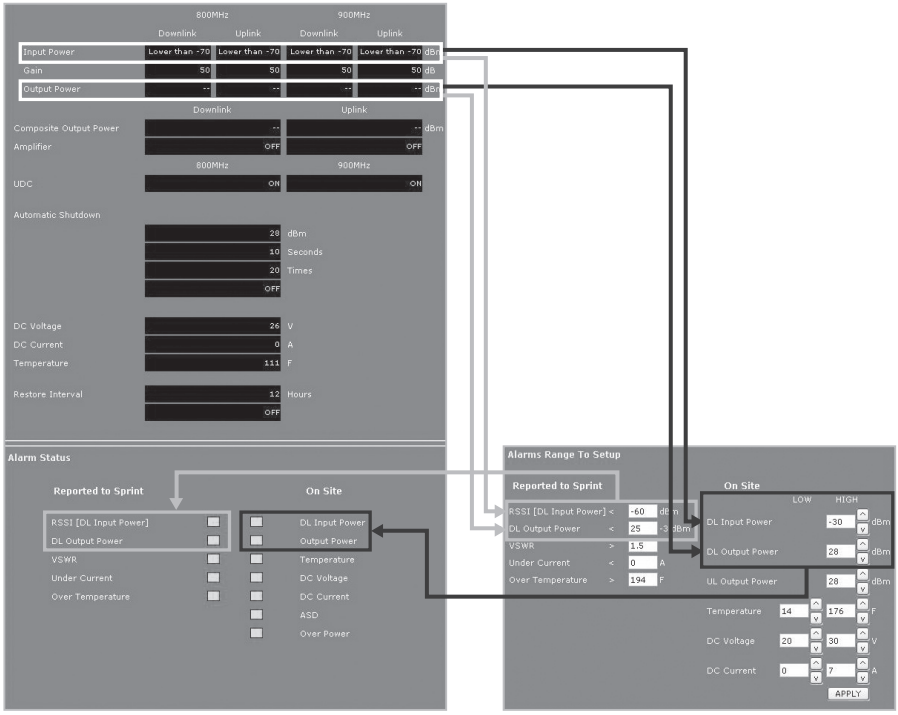

Isolation
89 dB
Available Maximum Gain
74 dB
Automatic Level Control
DL ALC Level
25 dBm
OFF
UL ALC Level
25 dBm
OFF
Power Measurement
800MHz
900MHz
Downlink
Uplink
Downlink
Uplink
Input Power
-49
-49
-49
-49 dBm
Gain
70
70
70
70 dB
Output Power
21
21
21
21 dBm
Downlink
Uplink
Composite Output Power
21
21 dBm
Amplifier
ON
ON
800MHz
900MHz
UDC
ON
ON

Alarms



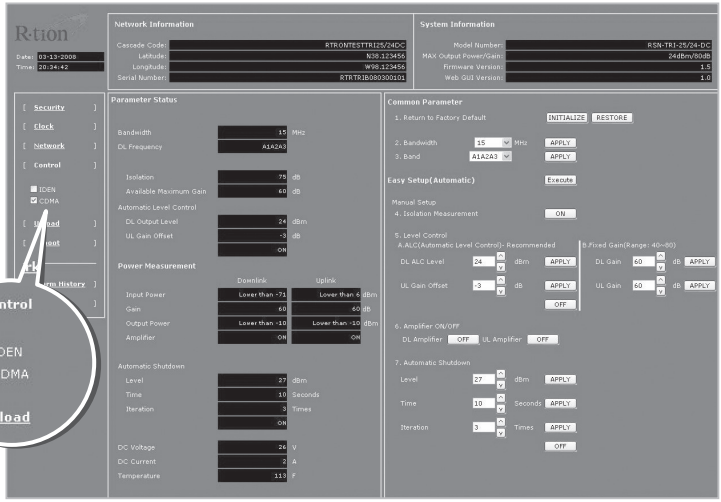
< Alarm Status > < Alarm Range >



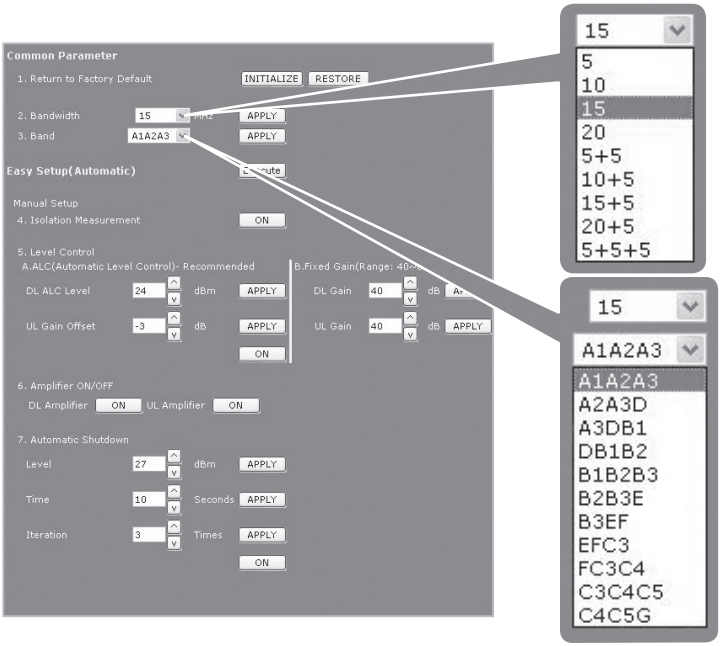
- **Reported to Sprint** : If an alarm occurs, the repeater will report directly to Sprint as a SNMP Trap so the LED of ALARM on the repeater does not blink.
- **On Site Alarm** : If an alarm occurs, the alarm LED on the repeater will turn on. Please refer to the troubleshooting section of this manual.
- No change of the values in the alarm range is recommended.

b. CDMA

Check **CDMA** in the left menu.



Setup

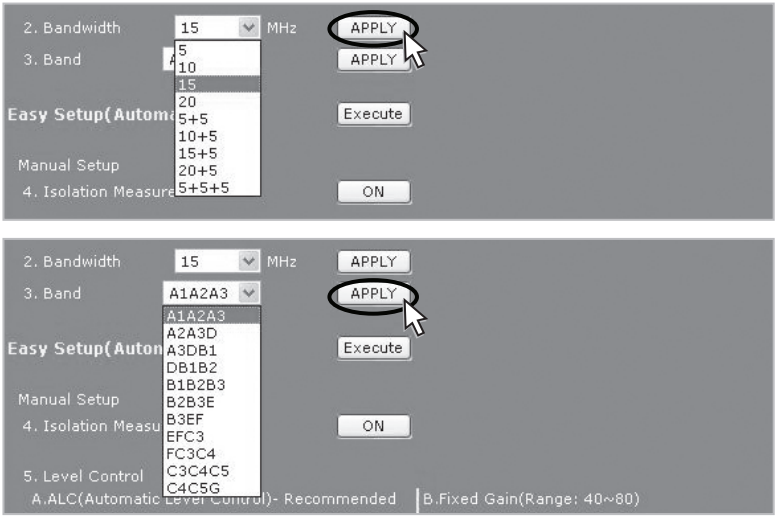


Solution 1. Easy Setup [Recommended]

Step 1 Return To Factory Defaults

- To reset to factory defaults, click **INITIALIZE**.
- To restore the previous settings, click **RESTORE**.

Step 2 Select Bandwidth and Band and click **APPLY**.

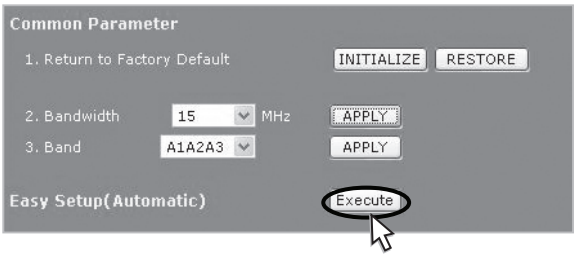


Step 3 Easy Setup

Easy Setup proceeds to:

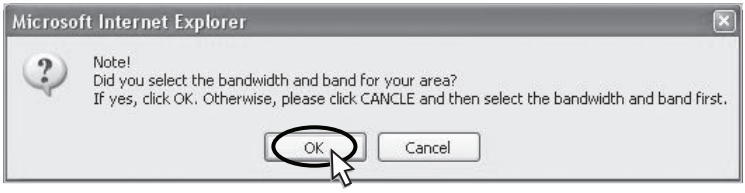
- Isolation measurement On
- Calculation of Available Maximum Gain by the isolation.
- ASD On
- **ALC On** to get Maximum DL Output Power 24dBm [Default] or Maximum Gain 80dB.

Click **Execute**.

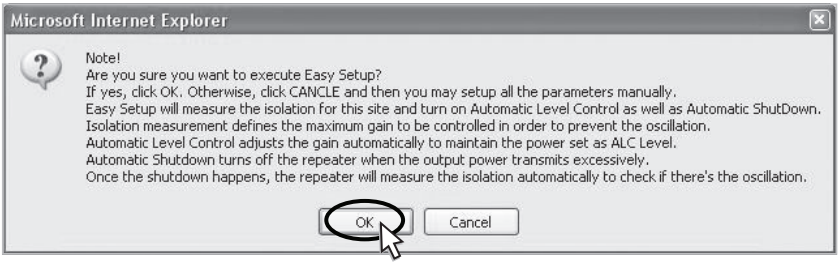


Easy setup feature will measure the isolation and limit the maximum gain accordingly. This will also enable Auto Level Control as well as Auto Shut Down. These two features are strongly recommended to prevent the uncontrolled power output, which could have an adverse impact on the RF network and the repeater. For example, ALC will apply attenuation automatically when the input signal strength is increased due to the new base station deployment near the repeater site.

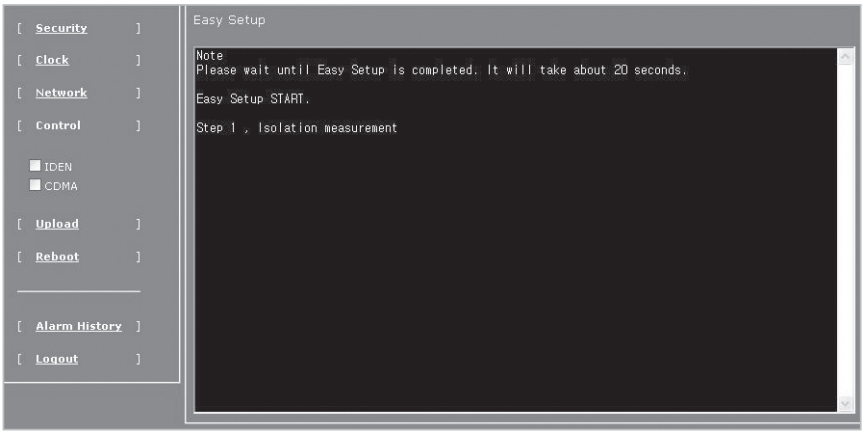
Step 4 Click **OK**.



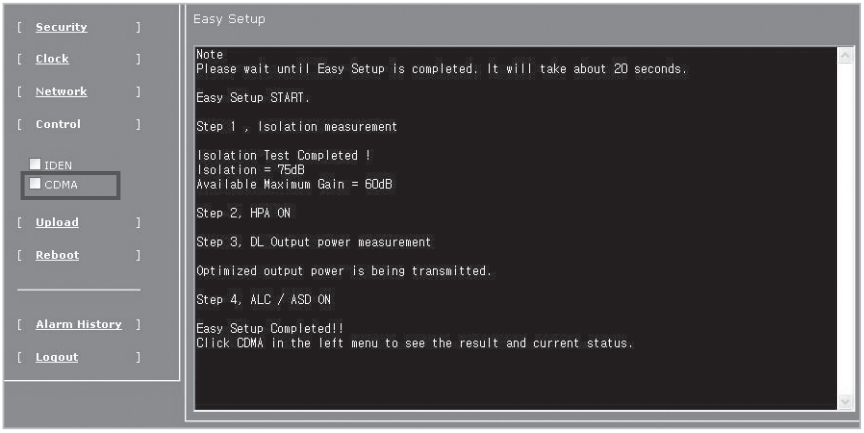
Step 5 Click **OK** again.



Step 6 Setup will automatically begin. This process will take approximately 20 seconds.

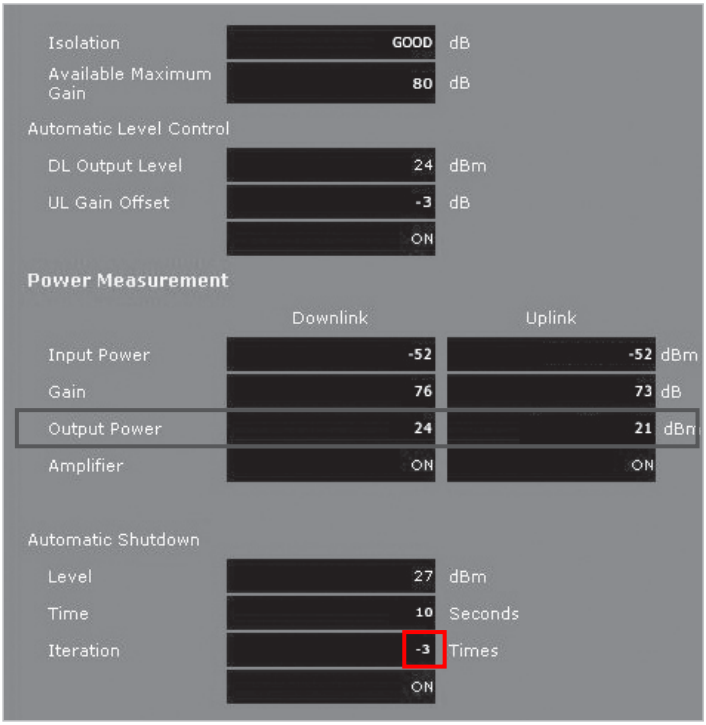


10~20 seconds

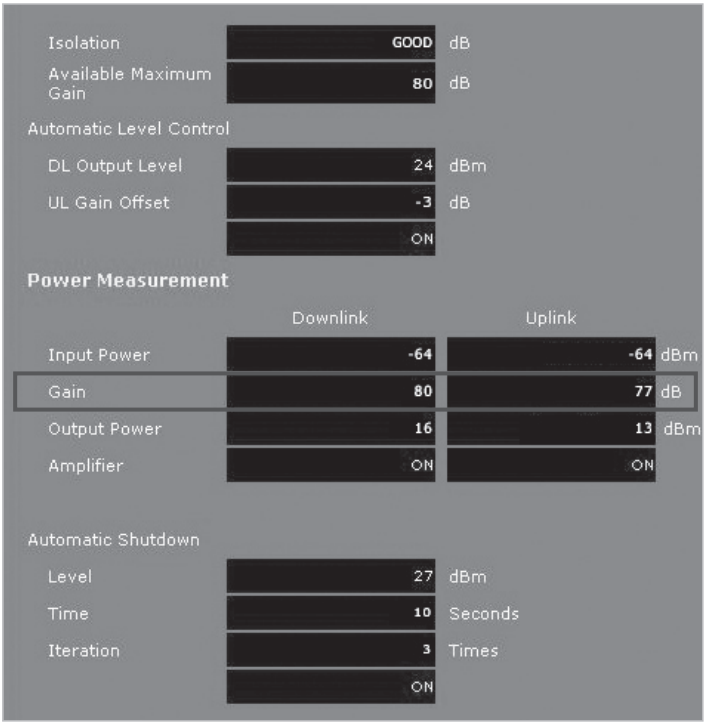


Click CDMA in the left menu.

Result 1 Constant Maximum DL Output Power 24dBm
if the DL Input Power >= -56dBm



Result 2 Maximum Gain 80dB if the DL Input Power < -56dBm.



After running **Easy Setup** or **Isolation Measurement**, **Isolation value** is displayed with “95” when the isolation is higher than 95dB, or it is displayed with the actual value when the isolation is lower than 95dB.

• **Automatic Level Control**: Type under 24 and then click **APPLY** and **ON**.
[Example]
For the repeater with 24dBm maximum output power, 80dB maximum gain/ 40dB gain control range, → If the signal -36dBm and the ALC is set as 24dBm, the gain will be 60dB to adjust to the output power.

If the input signal is -61dBm, the output power will be 19dBm by the limitation of the maximum gain even though the ALC is set as 24dBm.

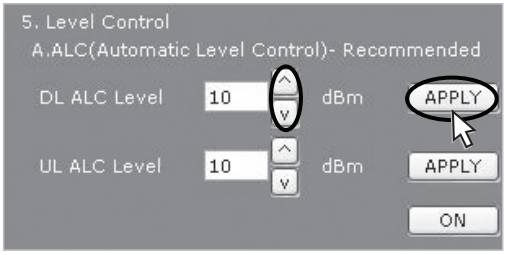
• **Automatic Shutdown**: Type the desired values for **dBm**, **seconds**, and **times** and then click **APPLY** and **ON**. (e.g. 27 dBm, 10 seconds, 3 times)
[Example]
For the repeater with 24dBm maximum output power, 80dB maximum gain/40dB gain control range, Assuming **ASD Level: 27dBm**, **ASD Time: 10seconds**, **ASD Count: 3**.

If the output power is 27dBm (ASD LEVEL) and higher, the repeater will shutdown for 10 seconds (ASD TIME). If shutdown occurs 3 times (ASD COUNT), the 4th shutdown will be permanent.

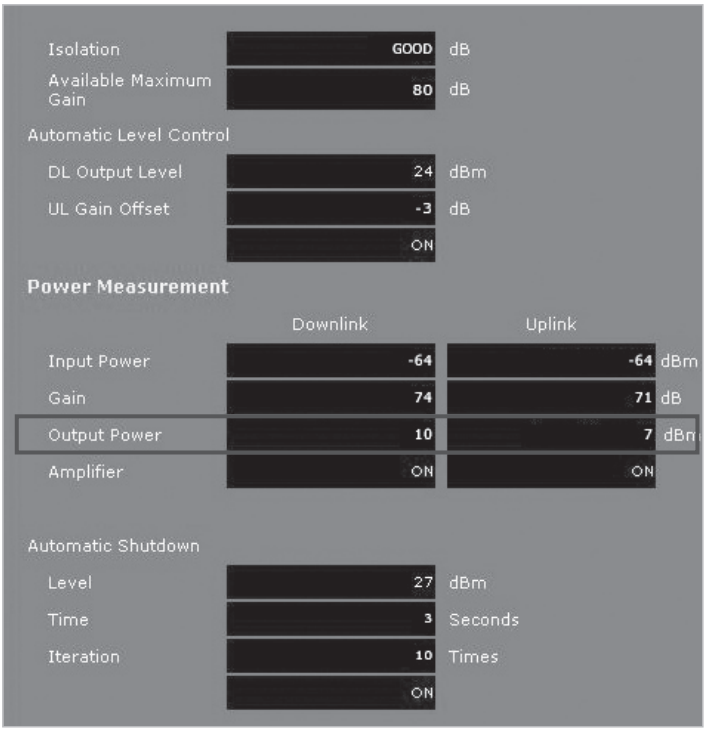
Solution 2. DL Output Power < Max. 24dBm

Step 1A Repeat **step 1** through **step 6**.

Step 2A Change the level at **Automatic Level Control** and click **APPLY.**



Result **Constant output power set as the ALC level.**



Solution 3. Fixed Gain [Not Recommended]

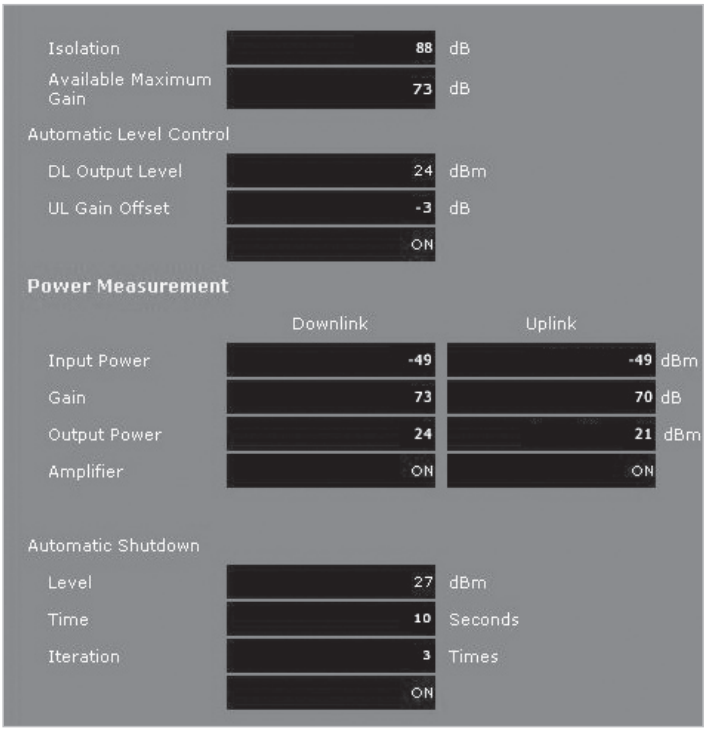
Step 1B Repeat **step 1** through **step 6**.

Easy Setup will calculate the **Available Maximum Gain** which defines the maximum gain to be setup.

Warning

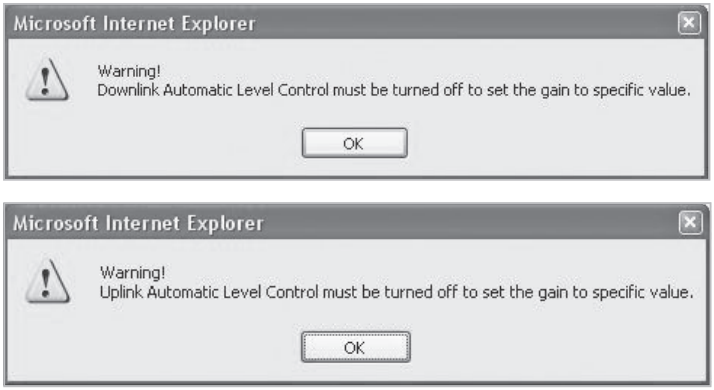
DO NOT setup the gain higher than the Available Maximum Gain.

Step 2B Read DL Input Power and the gain controlled by Easy Setup.



Step 3B Turn off **DL Amplifier** and **UL Amplifier**.

Step 4B **ALC** must be turned off; otherwise, the following message appears.

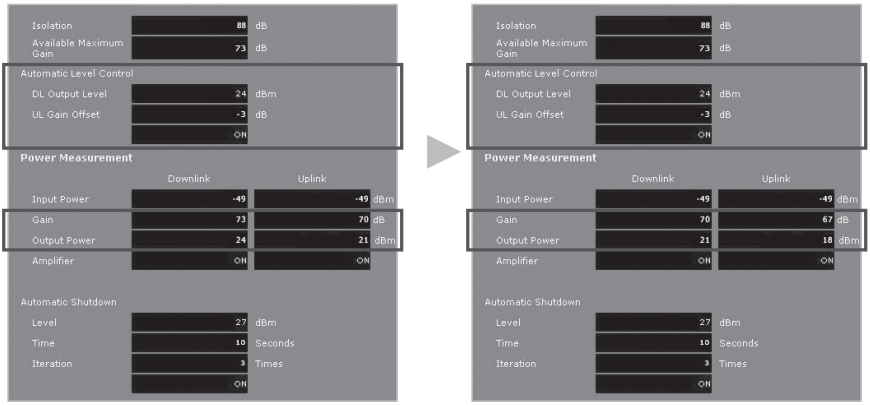


Step 5B Change **DL Gain** and **UL Gain**.

> **Warning** The gain must be lower than the current value and Available Maximum Gain.

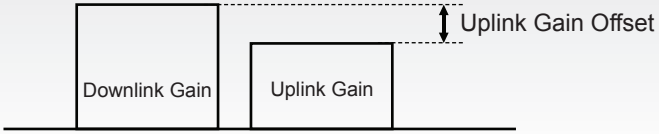
Step 6B Turn on **DL Amplifier** and **UL Amplifier**.

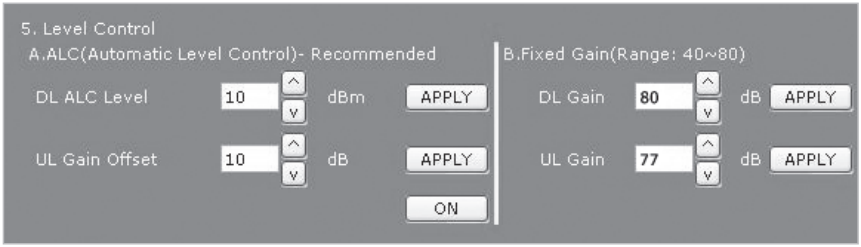
Result DL and UL gain are fixed and the output power depends on the input power.



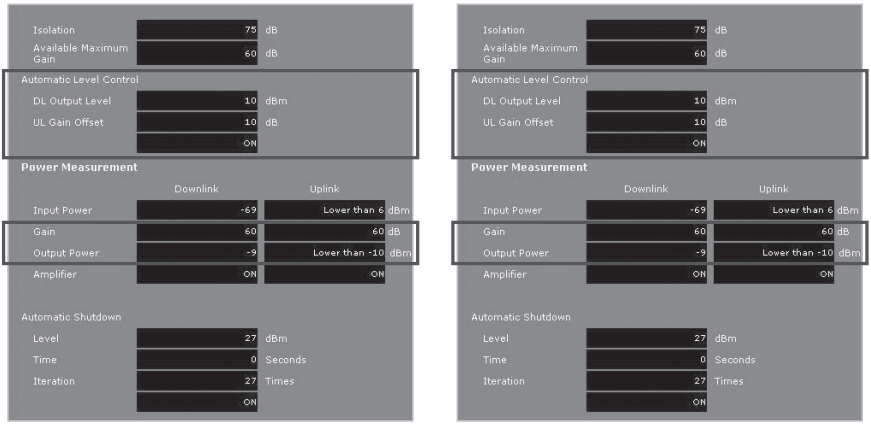
Tip

Applying Uplink Gain Offset





Result Uplink Gain Offset = -3dB

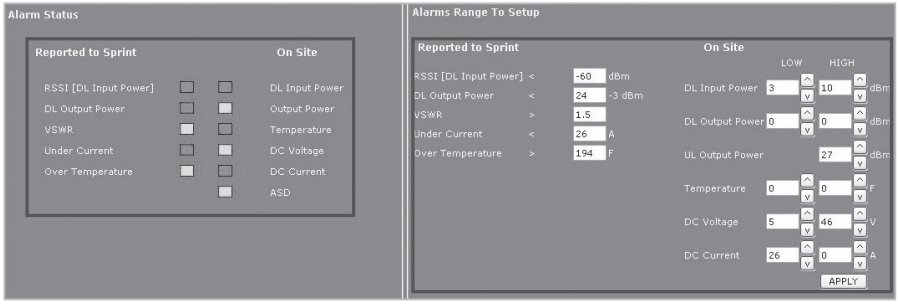


※ **Restore**

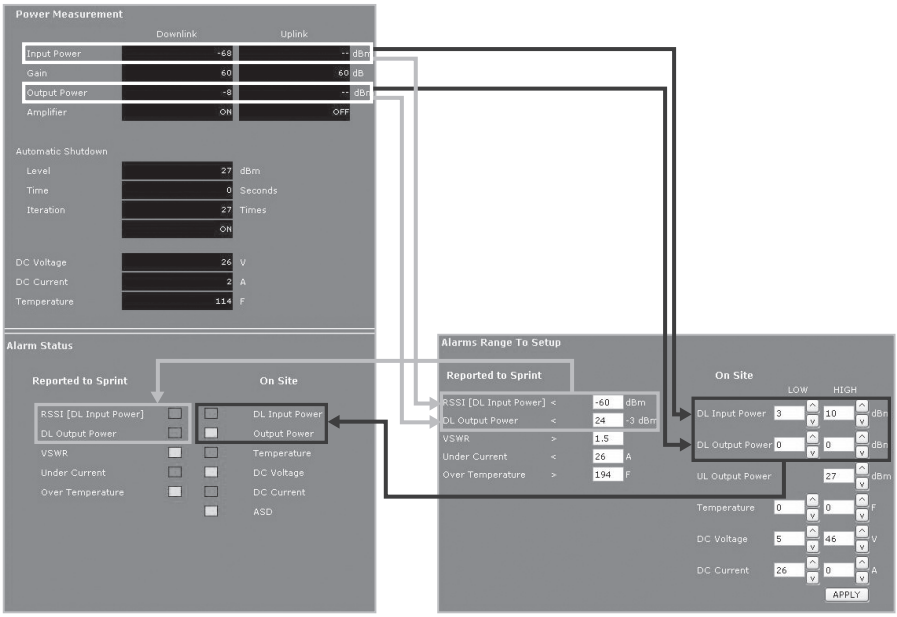
Restore recovers the service by turning on the amplifiers of repeater fundamentally.

After a permanent shutdown, the **Restore** turns on the amplifiers of the repeater with the period of **Restore Interval**.

Alarms



< Alarm Status > < Alarm Range >



- **Reported to Sprint** : If an alarm occurs, the repeater will report directly to Sprint as a SNMP Trap so the LED of ALARM on the repeater does not blink.

- **On Site Alarm** : If an alarm occurs, the alarm LED on the repeater will turn on. Please refer to the troubleshooting section of this manual.

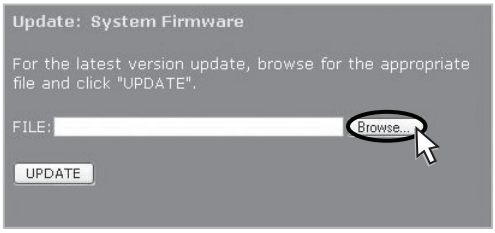
- No change of the values in the alarm range is recommended.

4.5.5 Upload

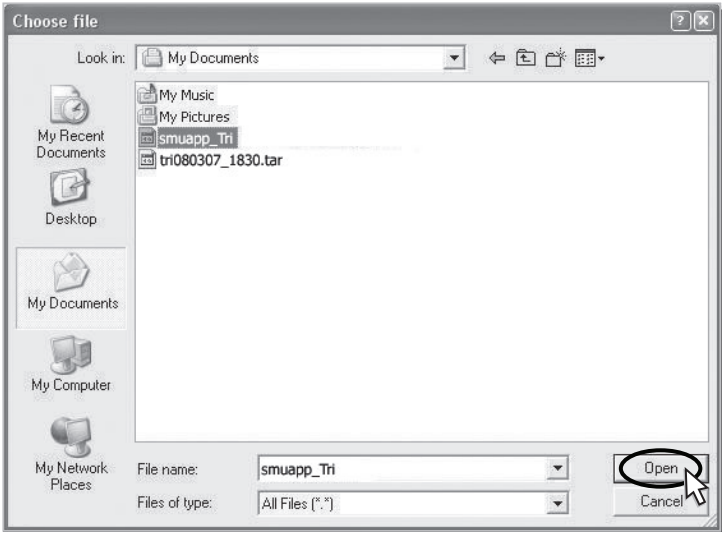
Click **Upload** in the left menu.

4.5.5.1 Update: System Firmware

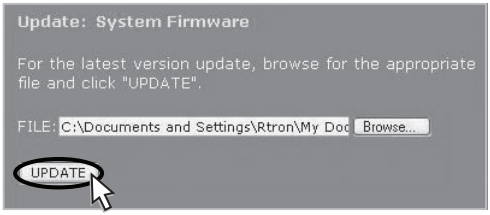
Step 1 Click **Browse**.



Step 2 A pop-up window will appear. Select the **firmware file** and click **Open**.

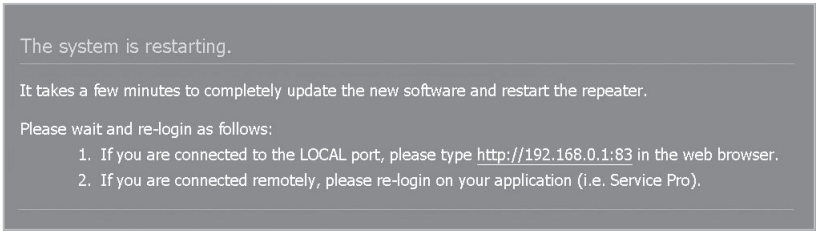


Step 3 Click **UPDATE**.



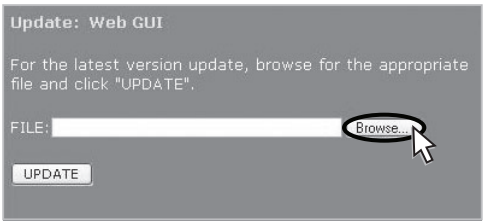
Step 4 A pop-up window will appear after completing all the update processes. Click **OK** to reboot the system.

Step 5 It will take a few minutes to update the new firmware.
If the system reboots, go to the login page and login again.
* Login page: http://192.168.0.1:83 (Local access)
A specified IP address on DHCP(Remote access).

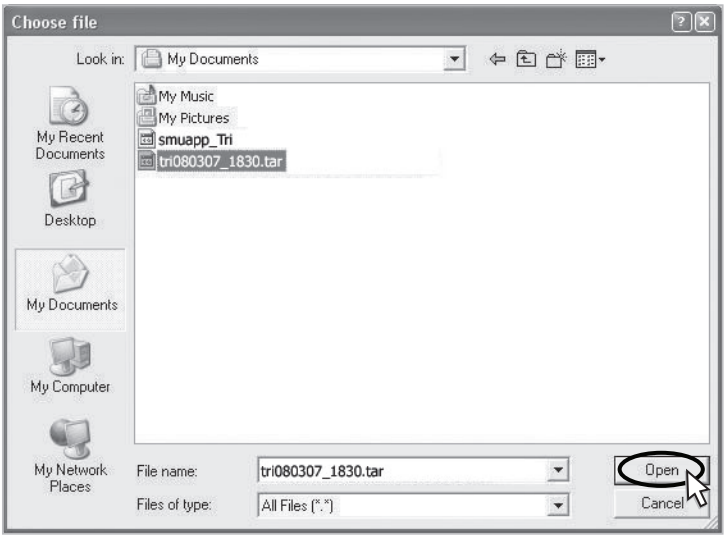


4.5.5.2 Update: Web GUI

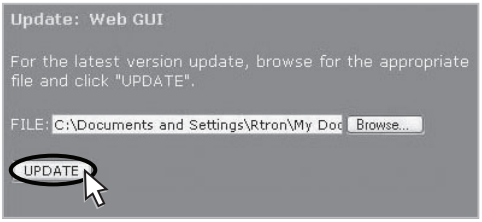
Step 1 Click **Browse**.



Step 2 A pop-up window will appear. Select the **GUI file** and click **Open**.

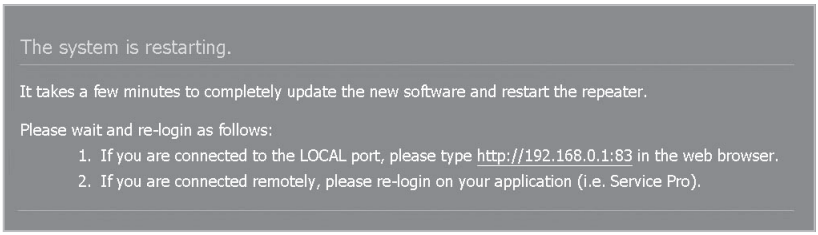


Step 3 Click **UPDATE**.



Step 4 A pop-up window will appear after completing all the update processes. Click **OK** to reboot the system.

Step 5 It will take a few minutes to update the new Web GUI.
If the system reboots, go to the login page and login again.
* Login page: http://192.168.0.1:83 (Local access)
A specified IP address on DHCP(Remote access).



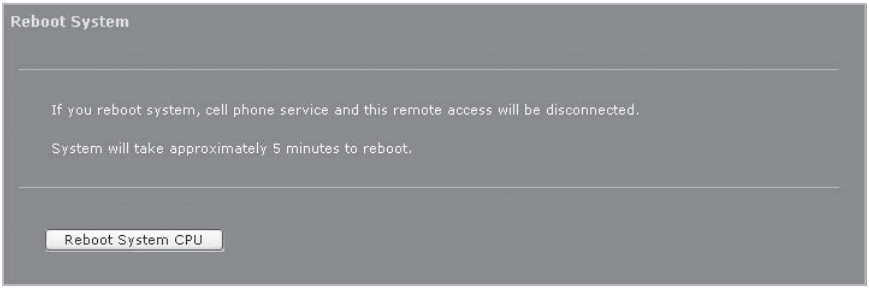
4.5.5.3 Restore

To restore the previous version, click **RESTORE**.

4.5.6 Reboot

Click **Reboot** in the left menu.

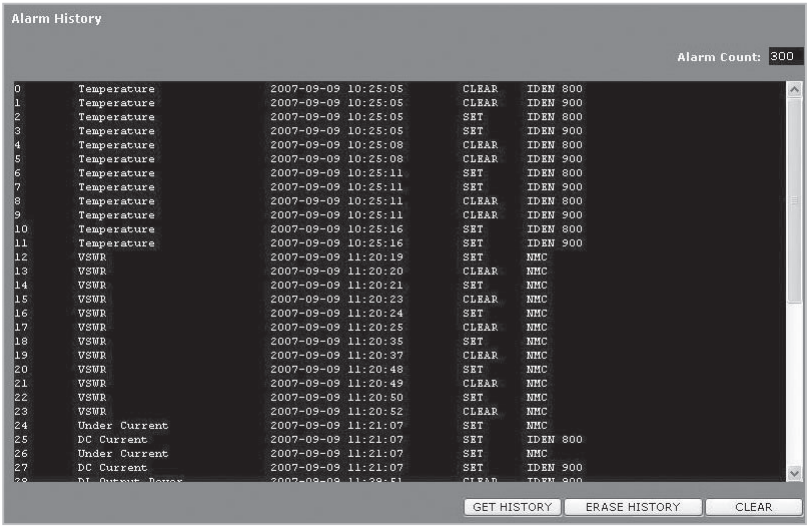
In this menu, you can reboot the system.



4.5.7 Alarm History

Click **Alarm History** in the left menu.

Click **GET HISTORY**, the history list of alarm issued will be displayed.



To erase the alarm history on the memory, click **ERASE HISTORY**.
A confirmation pop-up window will appear and click **OK**.

To clear the alarm history on the screen, click **CLEAR**.

Note

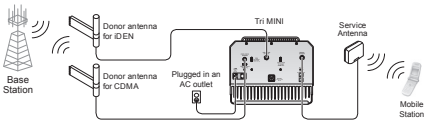
Up to 300 alarm lists can be stored in the memory.

4.5.8 Logout

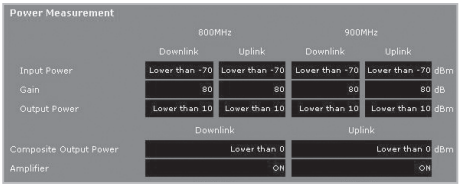
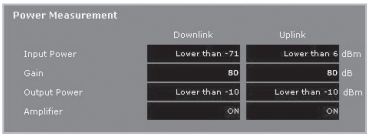
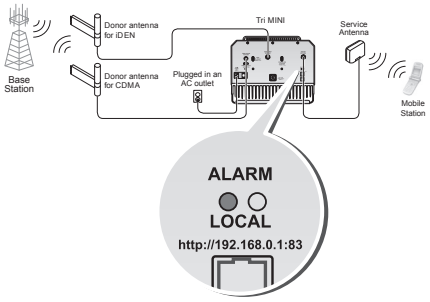
If you want to logout, click **Logout** in the left menu.

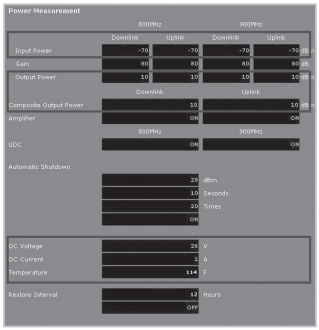
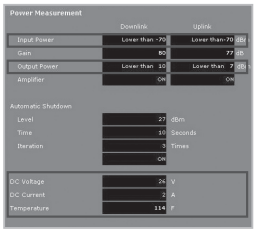
A warning pop-up window will appear and then click **OK** to logout.

Before contacting your service dealer, please make sure you refer to the following guide. If the Tri MINI does not work normally after completing the following troubleshooting, please contact your local dealer or service center.

Problem	Cause	Solution
No LED On		Check the power cord for secure connection.
Cannot communicate with the repeater.		Check if the LAN cable is connected to the repeater and your computer, or your computer to set IP address. Or please disable and enable the Local Area Connection.
The mobile phone is not working well.		Turn on the power.  or **< a. iDEN >**  Check if the DL Amplifier, the UL Amplifier, iDEN 800 UDC and iDEN 900 UDC in Power Measurement are displayed ON. **< b. CDMA >**  Check if the DL Amplifier and the UL Amplifier of Parameter Status are displayed ON.

5. Troubleshooting

Problem	Cause	Solution
Oscillation	**< a. iDEN >**  1. The values above are changed randomly under operating of DL ALC, UL ALC, and ASD. 2. DL Amplifier and UL Amplifier are on and off iteratively. **< b. CDMA >**  1. The values above are changed randomly under operating of DL ALC, UL ALC, and ASD. 2. DL Amplifier and UL Amplifier are on and off iteratively.	Turn off the repeater. Measure the isolation and verify if the isolation between the donor antenna and the server antenna is enough for the repeater. And then redo the easy set up or set up the repeater.
Green LED → steady Red LED → flashing	Donor antenna connection → Good Server antenna connection → Bad 	Check the cable connection to the server antenna and its VSWR.

Problem	Cause	Solution
The red light turns on.		**< a. iDEN >**  **On Site Alarms Range** **DL Input Power** - -30dBm **DL Output Power** - 28dBm **UL Output Power** - 28dBm **Temperature** 14°F 176°F **DC Voltage** 20V 30V **DC Current** 0A 7A **< b. CDMA >**  Check if the value above is out of range. **On Site Alarms Range** **DL Input Power** -90dBm -20dBm **DL Output Power** -10dBm 27dBm **UL Output Power** - 27dBm **Temperature** -14°F 176°F **DC Voltage** 20AV 30V **DC Current** 0A 7A If the Input Power or Output Power is out of range, please contact Technical Support. Download site: www.r-tron.com Toll Free: 888-31R-TRON
Red & green LEDs are flashing irregularly.	Malfunction of PSU.	Please contact Technical Support. Download site: www.r-tron.com Toll Free: 888-31R-TRON

6. Specifications

RF Characteristics

a. iDEN

Parameter			iDEN 800	iDEN 900
Selectable Bandwidth		DL & UL	In-band BW:18MHz In-band BW:7.0MHz	In-band BW:5MHz
Frequency Selection	DL	18MHz-bandwidth	851~869MHz 851~868.8MHz 851~868.6MHz	
		7MHz-bandwidth	862~869MHz 862~868.8MHz 862~868.6MHz	
		5MHz-bandwidth		935~940MHz 935~939.8MHz 935~939.6MHz
	UL	18MHz-bandwidth	806~824MHz 806~823.8MHz 806~823.6MHz	
		7MHz-bandwidth	817~824MHz 817~823.8MHz 817~823.6MHz	
		5MHz-bandwidth		896~901MHz 896~900.8MHz 896~900.6MHz
Roll off		DL & UL	≤65dBc @Fedge+ / -500KHz	≤65dBc @Fedge+ / -500KHz
Ripple			2.5dB (Typical)	
Gain		DL & UL	50dB to 80dB	
Output Power		DL & UL	25dBm	
Delay		DL & UL	8.0μs Max.	
VSWR		DL & UL	1.5Max.	
UL Noise Figure		80dB Gain	5dB Max.	
		50dB Gain	12dB Max.	
Input Range		DL	-25dBm Max.	
		UL	-35dBm Max.	

b. CDMA

Parameter	Specification		Remarks
Frequency	DL	1930~1995MHz	
	UL	1850~1915MHz	
Normal Input	DL/UL	-56dBm	
Output Power Level	24dBm		
Gain	40dB ~ 80dB ± 2dB		
Attenuator	DL	Range: 0~40dB Accuracy: ±0.7dB	
	UL	Range: 0~40dB Accuracy: ±0.7dB	
	VVA	±3dB	Temperature Compensation
Spurious	Min 29dB @±885KHz		Discontinuous 3FA / Continuous 7FA
	Min 39dB @±1.98MHz		
	Min -13dBm@±2.25MHz		
Roll Off	Min 50dBc @±1MHz		5 / 10 / 15 / 20MHz-bandwidth, 5+5 / 10+5 / 15+5 / 20+5MHz, 5+5+5MHz.
Gain Flatness	3.0dB (P-P)		BW : 65MHz
Group Delay	Max 5us		
Noise Figure	Max 4.5dB		ATT: 0dB
	Max 12dB		ATT: 40dB
VSWR	Max 1.5:1		BW : 65MHz
Isolation DET Level	26dBm ± 1dB		BW : UL_65MHz
Isolation DET Range	-75dBm ~ -50dBm,		REF: -50dBm / 4.7V
Consumption power	≤100W		
Operating Temp	-10°C~ 50°C		
Storage temperature	-20°C~ 60°C		
Band Selection	5MHz, 10MHz, 15MHz, 20MHz 5+5MHz, 10+5MHz, 15+5MHz, 20+5MHz, 5+5+5MHz		

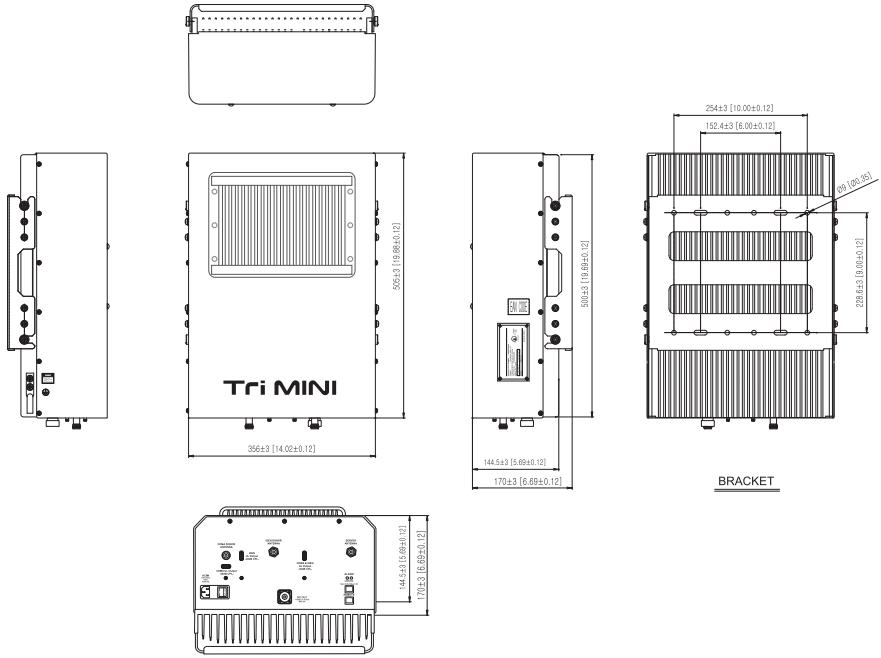
6. Specifications

Electrical & Environmental Specification

Parameter	iDEN 800 | iDEN 900
Power supply	110V~125V AC, 60Hz typical
Operating temperature	*-10˚C~50˚C (14˚F~122˚F)
Storage temperature	-20˚C~60˚C (-4˚F~140˚F)
Consumption power	≤192.5W, (additional 24W)

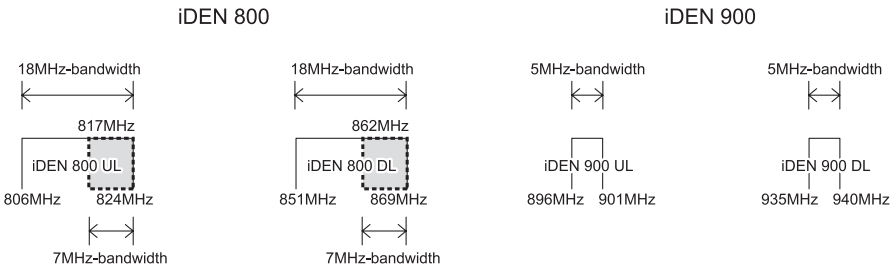
Mechanical Specifications

Parameter	Specification
RF connectors	N-female x 3, SMA-female x 3
Size	14.48 X16.73 X 11.37(Inch), 368 X 425 X 289(mm)
Weight	31.7kg (69.88lbs)



The specifications are subject to change without any prior notification.

a. iDEN

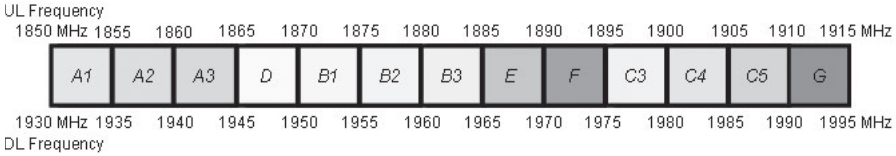


The Operating Bandwidth and Frequencies of iDEN

Mode	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

b. CDMA

• **Bandwidth/Frequency:**



The values of the bandwidth and frequency of CDMA

Bandwidth	Operating Frequency
5	A1, A2, A3, D, B1, B2, B3, E, F, C3, C4, C5, G
10	A1A2, A2A3, A3D, DB1, B1B2, B2B3, B3E, EF, FC3, C3C4, C4C5, C5G
15	A1A2A3, A2A3D, A3DB1, DB1B2, B1B2B3, B2B3E, B3EF, EFC3, FC3C4, C3C4C5, C4C5G
20	A1A2A3D, A2A3DB1, A3DB1B2, DB1B2B3, B1B2B3E, B2B3EF, B3EFC3, EFC3C4, FC3C4C5, C3C4C5G
5+5	A1+A3, A1+D, A1+B1, A1+B2, A1+B3, A1+E, A1+F, A1+C3, A1+C4, A1+C5, A1+G, A2+D, A2+B1, A2+B2, A2+B3, A2+E, A2+F, A2+C3, A2+C4, A2+C5, A2+G, A3+B1, A3+B2, A3+B3, A3+E, A3+F, A3+C3, A3+C4, A3+C5, A3+G, D+B2, D+B3, D+E, D+F, D+C3, D+C4, D+C5, D+G, B1+B3, B1+E, 1+F, B1+C3, B1+C4, B1+C5, B1+G, B2+E, B2+F, B2+C3, B2+C4, B2+C5, B2+G, B3+F, B3+C3, B3+C4, B3+C5, B3+G, E+C3, E+C4, E+C5, E+G, F+C4, F+C5, F+G, C3+C5, C3+G
10+5	A1A2+D, A1A2+B1, A1A2+B2, A1A2+B3, A1A2+E, A1A2+F, A1A2+C3, A1A2+C4, A1A2+C5, A2A3+G, A2A3+B1, A2A3+B2, A2A3+B3, A2A3+E, A2A3+F, A2A3+C3, A2A3+C4, A2A3+C5, A2A3+G, A3D+B2, A3D+B3, A3D+E, A3D+F, A3D+C3, A3D+C4, A3D+C5, A3D+G, DB1+B3, DB1+E, DB1+F, DB1+C3, DB1+C4, DB1+C5, DB1+G, B1B2+E, B1B2+F, B1B2+C3, B1B2+C4, B1B2+C5, B1B2+G, B2B3+F, B2B3+C3, B2B3+C4, B2B3+C5, B2B3+G, B3E+C3, B3E+C4, B3E+C5, B3E+G, EF+C4, EF+C5, EF+G, FC3+C5, FC3+G, C3C4+G
15+5	A1A2A3+B1, A1A2A3+B2, A1A2A3+B3, A1A2A3+E, A1A2A3+F, A1A2A3+C3, A1A2A3+C4, A1A2A3+C5, A1A2A3+G, A2A3D+B2, A2A3D+B3, A2A3D+E, A2A3D+F, A2A3D+C3, A2A3D+C4, A2A3D+C5, A2A3D+G, A3DB1+B3, A3DB1+E, A3DB1+F, A3DB1+C3, A3DB1+C4, A3DB1+C5, A3DB1+G, DB1B2+E, DB1B2+F, DB1B2+C3, DB1B2+C4, DB1B2+C5, DB1B2+G, B1B2B3+F, B1B2B3+C3, B1B2B3+C4, B1B2B3+C5, B1B2B3+G, B2B3E+C3, B2B3E+C4, B2B3E+C5, B2B3E+G, B3EF+C4, B3EF+C5, B3EF+G, EFC3+C5, EFC3+G, FC3C4+G

Bandwidth	Operating Frequency
20+5	A1A2A3D+B2, A1A2A3D+B3, A1A2A3D+E, A1A2A3D+F, A1A2A3D+C3, A1A2A3D+C4, A1A2A3D+C5, A1A2A3D+G, A2A3DB1+B3, A2A3DB1+E, A2A3DB1+F, A2A3DB1+C3, A2A3DB1+C4, A2A3DB1+C5, A2A3DB1+G, A3DB1B2+E, A3DB1B2+F, A3DB1B2+C3, A3DB1B2+C4, A3DB1B2+C5, A3DB1B2+G, DB1B2B3+F, DB1B2B3+C3, DB1B2B3+C4, DB1B2B3+C5, DB1B2B3+G, B1B2B3E+C3, B1B2B3E+C4, B1B2B3E+C5, B1B2B3E+G, B2B3EF+C4, B2B3EF+C5, B2B3EF+G, B3EFC3+C5, B3EFC3+G, EFC4+G
5+5+5	A1+A3+B1, A1+A3+B2, A1+A3+B3, A1+A3+E, A1+A3+F, A1+A3+C3, A1+A3+C4, A1+A3+C5, A1+A3+G, A1+D+B2, A1+D+B3, A1+D+E, A1+D+F, A1+D+C3, A1+D+C4, A1+D+C5, A1+D+G, A1+B1+B3, A1+B1+E, A1+B1+F, A1+B1+C3, A1+B1+C4, A1+B1+C5, A1+B1+G, A1+B2+E, A1+B2+F, A1+B2+C3, A1+B2+C4, A1+B2+C5, A1+B2+G, A1+B3+F, A1+B3+C3, A1+B3+C4, A1+B3+C5, A1+B3+G, A1+E+C3, A1+E+C4, A1+E+C5, A1+E+G, A1+F+C4, A1+F+C5, A1+F+G, A1+C3+C5, A1+C3+G, A1+C4+G, A2+D+B2, A2+D+B3, A2+D+E, A2+D+F, A2+D+C3, A2+D+C4, A2+D+C5, A2+D+G, A2+B1+B3, A2+B1+E, A2+B1+F, A2+B1+C3, A2+B1+C4, A2+B1+C5, A2+B1+G, A2+B2+E, A2+B2+F, A2+B2+C3, A2+B2+C4, A2+B2+C5, A2+B2+G, A2+B3+F, A2+B3+C3, A2+B3+C4, A2+B3+C5, A2+B3+G, A2+E+C3, A2+E+C4, A2+E+C5, A2+E+G, A2+F+C4, A2+F+C5, A2+F+G, A2+C3+C5, A2+C3+G, A2+C4+G, A3+B1+B3, A3+B1+E, A3+B1+F, A3+B1+C3, A3+B1+C4, A3+B1+C5, A3+B1+G, A3+B2+E, A3+B2+F, A3+B2+C3, A3+B2+C4, A3+B2+C5, A3+B2+G, A3+B3+F, A3+B3+C3, A3+B3+C4, A3+B3+C5, A3+B3+G, A3+E+C3, A3+E+C4, A3+E+C5, A3+E+G, A3+F+C4, A3+F+C5, A3+F+G, A3+C3+C5, A3+C3+G, A3+C4+G, D+B2+E, D+B2+F, D+B2+C3, D+B2+C4, D+B2+C5, D+B2+G, D+B3+F, D+B3+C3, D+B3+C4, D+B3+C5, D+B3+G, D+E+C3, D+E+C4, D+E+C5, D+E+G, D+F+C4, D+F+C5, D+F+G, D+C3+C5, D+C3+G, D+C4+G, B1+B3+F, B1+B3+C3, B1+B3+C4, B1+B3+C5, B1+B3+G, B1+E+C3, B1+E+C4, B1+E+C5, B1+E+G, B1+F+C4, B1+F+C5, B1+F+G, B1+C3+C5, B1+C3+G, B1+C4+G, B2+E+C3, B2+E+C4, B2+E+C5, B2+E+G, B2+F+C4, B2+F+C5, B2+F+G, B2+C3+C5, B2+C3+G, B2+C4+G, B3+F+C4, B3+F+C5, B3+F+G, B3+C3+C5, B3+C3+G, B3+C4+G, E+C3+C5, E+C3+G, E+C4+G, F+C4+G

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Please follow the exchange procedure below.

1. Call Tech Support for troubleshooting.
2. If the device has a hardware problem, R-tron will replace it if it is within warranty.
   A RMA number will be issued for the return.
3. R-tron will ship the replacement and a return label will be provided.
4. The customer must return the product using the original packaging, including accessories.