

## 4. Operation ➤

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

Reported to Sprint	On Site
RSSI [DL Input Power]	<input type="checkbox"/> DL Input Power
DL Output Power	<input type="checkbox"/> Output Power
VSWR	<input type="checkbox"/> Temperature
Under Current	<input type="checkbox"/> DC Voltage
Over Temperature	<input type="checkbox"/> DC Current
	<input type="checkbox"/> ASD
	<input type="checkbox"/> Over Power

### Alarms Range To Setup

Reported to Sprint	On Site	LOW	HIGH
RSSI [DL Input Power] < -60 dBm	DL Input Power	-30	dBm
DL Output Power < 25 -3 dBm	DL Output Power	28	dBm
VSWR > 1.5	DL Output Power	28	dBm
Under Current < 0 A	UL Output Power	28	dBm
Over Temperature > 194 F	UL Output Power	28	dBm
	Temperature	14	176 F
	DC Voltage	20	30 V
	DC Current	0	7 A

APPLY

&lt; Alarm Status &gt;

&lt; Alarm Range &gt;

	800MHz		900MHz	
	Downlink	Uplink	Downlink	Uplink
Input Power	Lower than -70	Lower than -70	Lower than -70	Lower than -70 dBm
Gain	50	50	50	50 dB
Output Power	--	--	--	-- dBm
	Downlink		Uplink	
Composite Output Power	--		-- dBm	
Amplifier	OFF		OFF	
UDC	800MHz		900MHz	
	ON		ON	
Automatic Shutdown	28 dBm		10 Seconds	
	20 Times		OFF	
DC Voltage	26 V			
DC Current	0 A			
Temperature	113 F			
Restore Interval	12 Hours			
	OFF			

### Alarm Status

Reported to Sprint	On Site
RSSI [DL Input Power]	<input type="checkbox"/> DL Input Power
DL Output Power	<input type="checkbox"/> Output Power
VSWR	<input type="checkbox"/> Temperature
Under Current	<input type="checkbox"/> DC Voltage
Over Temperature	<input type="checkbox"/> DC Current
	<input type="checkbox"/> ASD
	<input type="checkbox"/> Over Power

### Alarms Range To Setup

Reported to Sprint	On Site	LOW	HIGH
RSSI [DL Input Power] < -60 dBm	DL Input Power	-30	dBm
DL Output Power < 25 -3 dBm	DL Output Power	28	dBm
VSWR > 1.5	DL Output Power	28	dBm
Under Current < 0 A	UL Output Power	28	dBm
Over Temperature > 194 F	UL Output Power	28	dBm
	Temperature	14	176 F
	DC Voltage	20	30 V
	DC Current	0	7 A

APPLY

- **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. Operation

## b. CDMA

Check **CDMA** in the left menu.

**R-Tool**

Date: 03-13-2008  
Time: 20:24:42

**Network Information**

Cascade Code: RTR0MTESTTR125/24DC  
Latitude: N30.123456  
Longitude: W90.123456  
Serial Number: RTR0MTEST00000001

**System Information**

Model Number: RSN-TM1-25/24-DC  
Max Output Power/Gain: 24dBm/50dB  
Firmware Version: 1.3  
Web GUI Version: 1.0

**Parameter Status**

Bandwidth: 15 MHz  
DL Frequency: A1A2A3  
Isolation: 70 dB  
Available Maximum Gain: 40 dB  
Automatic Level Control: ON  
DL ALC Level: 24 dBm  
UL Gain Offset: -3 dB  
UL Gain Offset: ON

**Power Measurement**

Download: Lower than -75 dBm  
Uplink: Lower than 6 dBm  
Gain: 60 dB  
Output Power: Lower than -10 dBm  
Amplifier: ON

**Automatic Shutdown**

Level: 27 dBm  
Time: 10 seconds  
Iteration: 3 Times  
ON

DC Voltage: 24 V  
DC Current: 2 A  
Temperature: 11.1 °C

**Common Parameter**

1. Return to Factory Default: INITIALIZE RESTORE  
2. Bandwidth: 15 MHz APPLY  
3. Band: A1A2A3 APPLY  
Easy Setup(Automatic): Execute  
Manual Setup  
4. Isolation Measurement: ON  
5. Level Control  
A. ALC(Automatic Level Control)- Recommended  
DL ALC Level: 24 dBm APPLY  
UL Gain Offset: -3 dB APPLY  
ON  
B. Fixed Gain(Range: 40~50)  
DL Gain: 40 dB APPLY  
UL Gain: 40 dB APPLY  
OFF  
6. Amplifier ON/OFF  
DL Amplifier: OFF UL Amplifier: OFF  
7. Automatic Shutdown  
Level: 27 dBm APPLY  
Time: 10 seconds APPLY  
Iteration: 3 Times APPLY  
OFF

## Setup

**Common Parameter**

1. Return to Factory Default: INITIALIZE RESTORE  
2. Bandwidth: 15 MHz APPLY  
3. Band: A1A2A3 APPLY  
Easy Setup(Automatic): Execute  
Manual Setup  
4. Isolation Measurement: ON  
5. Level Control  
A. ALC(Automatic Level Control)- Recommended  
DL ALC Level: 24 dBm APPLY  
UL Gain Offset: -3 dB APPLY  
ON  
B. Fixed Gain(Range: 40~50)  
DL Gain: 40 dB APPLY  
UL Gain: 40 dB APPLY  
OFF  
6. Amplifier ON/OFF  
DL Amplifier: ON UL Amplifier: ON  
7. Automatic Shutdown  
Level: 27 dBm APPLY  
Time: 10 seconds APPLY  
Iteration: 3 Times APPLY  
ON

15  
5  
10  
15  
20  
5+5  
10+5  
15+5  
20+5  
5+5+5

15  
A1A2A3  
A1A2A3  
A2A3D  
A3DB1  
DB1B2  
B1B2B3  
B2B3E  
B3EF  
EFC3  
FC3C4  
C3C4C5  
C4C5G

## Solution 1. Easy Setup [Recommended]

### Step 1 Return To Factory Defaults

1. Return to Factory Default

INITIALIZE

RESTORE

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

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

2. Bandwidth 15 MHz

3. Band 5

Easy Setup(Auto) 10

Manual Setup 15

4. Isolation Measure 20

5+5

10+5

15+5

20+5

5+5+5

Execute

ON

APPLY

APPLY

2. Bandwidth 15 MHz

3. Band A1A2A3

Easy Setup(Auto) A1A2A3

Manual Setup A2A3D

4. Isolation Measure A3DB1

5. Level Control DB1B2

A.ALC(Automatic Level Control)- Recommended

B.Fixed Gain(Range: 40~80)

Execute

ON

APPLY

APPLY

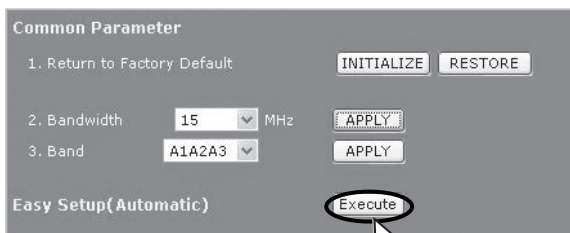
### Step 3 Easy Setup

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.

## 4. Operation >>

Click **Execute**.

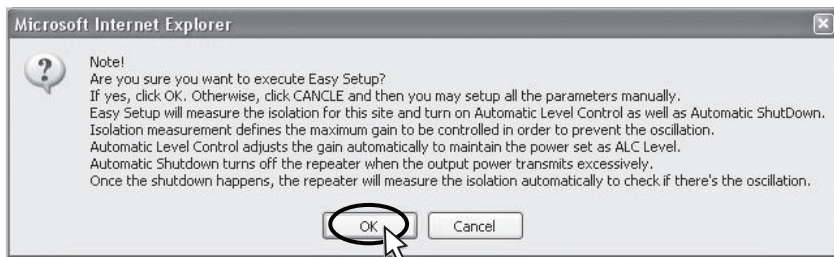


Easy setup feature will measure the isolation and limit the maximum gain accordingly. This will also enable Auto Level Control as well as Auto Shut Down. These two features are strongly recommended to prevent the uncontrolled power output, which could have an adverse impact on the RF network and the 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.

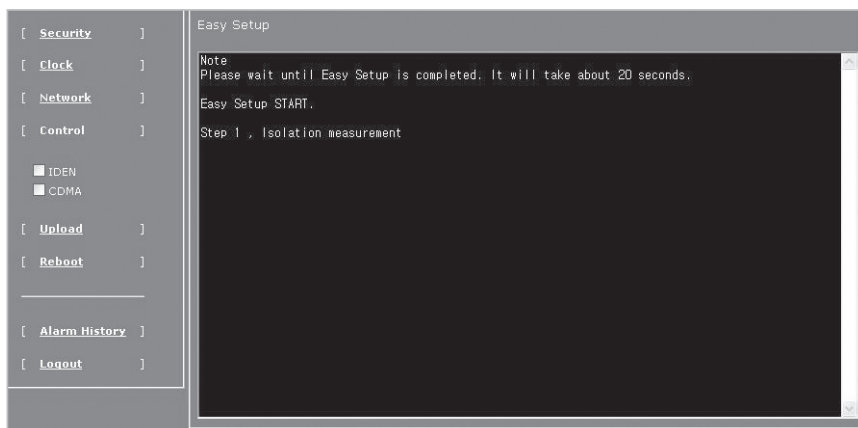
**Step 4** Click **OK**.



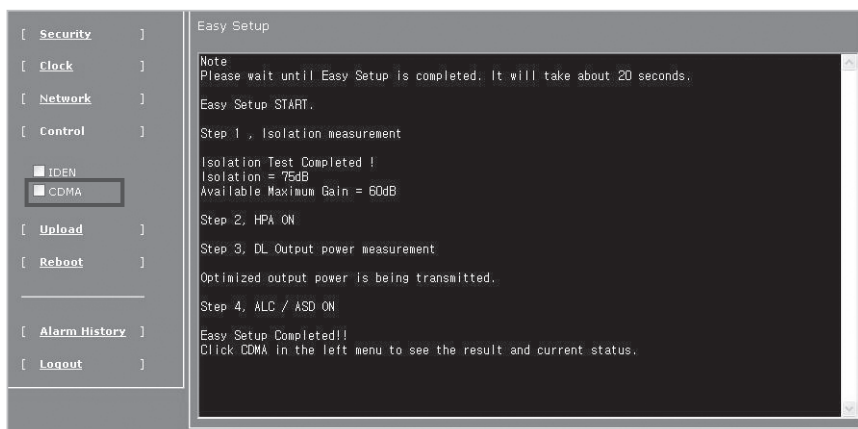
**Step 5** Click **OK** again.



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



10~20 seconds



Click CDMA in the left menu.

## 4. Operation >>

**Result 1** Constant Maximum DL Output Power 24dBm  
if the DL Input Power  $\geq$  -56dBm

Isolation	GOOD	dB
Available Maximum Gain	80	dB
Automatic Level Control		
DL Output Level	24	dBm
UL Gain Offset	-3	dB
	ON	
Power Measurement		
	Downlink	Uplink
Input Power	-52	-52 dBm
Gain	76	73 dB
Output Power	24	21 dBm
Amplifier	ON	ON
Automatic Shutdown		
Level	27	dBm
Time	10	Seconds
Iteration	-3	Times
	ON	

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

Isolation	GOOD	dB
Available Maximum Gain	80	dB
Automatic Level Control		
DL Output Level	24	dBm
UL Gain Offset	-3	dB
	ON	
<b>Power Measurement</b>		
	Downlink	Uplink
Input Power	-64	-64 dBm
Gain	80	77 dB
Output Power	16	13 dBm
Amplifier	ON	ON
Automatic Shutdown		
Level	27	dBm
Time	10	Seconds
Iteration	3	Times
	ON	



## 4. Operation >>

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]

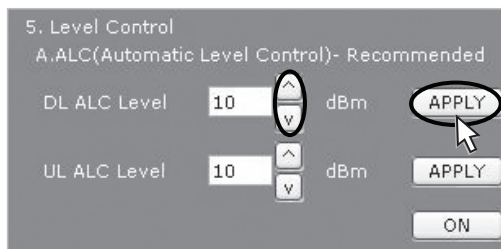
For the repeater with 24dBm maximum output power, 80dB maximum gain/40dB gain control range, Assuming **ASD Level: 27dBm**, **ASD Time: 10seconds**, **ASD Count: 3**.

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.

Isolation	GOOD	dB
Available Maximum Gain	80	dB
Automatic Level Control		
DL Output Level	24	dBm
UL Gain Offset	-3	dB
	ON	
Power Measurement		
	Downlink	Uplink
Input Power	-64	-64 dBm
Gain	74	71 dB
Output Power	10	7 dBm
Amplifier	ON	ON
Automatic Shutdown		
Level	27	dBm
Time	3	Seconds
Iteration	10	Times
	ON	

## 4. Operation >>

### 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.

4. Isolation Measurement	ON
Available Maximum Gain	60 dB



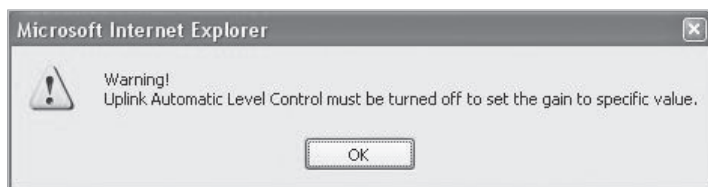
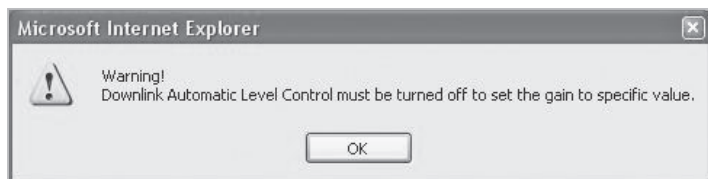
DO NOT setup the gain higher than the Available Maximum Gain.

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

Isolation	88	dB
Available Maximum Gain	73	dB
Automatic Level Control		
DL Output Level	24	dBm
UL Gain Offset	-3	dB
	ON	
Power Measurement		
	Downlink	Uplink
Input Power	-49	-49 dBm
Gain	73	70 dB
Output Power	24	21 dBm
Amplifier	ON	ON
Automatic Shutdown		
Level	27	dBm
Time	10	Seconds
Iteration	3	Times
	ON	

**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**.



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

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

## 4. Operation >>

### Result

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

Isolation	88	dB
Available Maximum Gain	73	dB
Automatic Level Control		
DL Output Level	24	dBm
UL Gain Offset	-3	dB
	ON	
Power Measurement		
	Downlink	Uplink
Input Power	-49	-49 dBm
Gain	73	70 dB
Output Power	24	21 dBm
Amplifier	ON	ON
Automatic Shutdown		
Level	27	dBm
Time	10	Seconds
Iteration	3	Times
	ON	



Isolation	88	dB
Available Maximum Gain	73	dB
Automatic Level Control		
DL Output Level	24	dBm
UL Gain Offset	-3	dB
	ON	
Power Measurement		
	Downlink	Uplink
Input Power	-49	-49 dBm
Gain	70	67 dB
Output Power	21	18 dBm
Amplifier	ON	ON
Automatic Shutdown		
Level	27	dBm
Time	10	Seconds
Iteration	3	Times
	ON	

### Tip

#### Applying Uplink Gain Offset



### 5. Level Control

#### A.ALC(Automatic Level Control)- Recommended

DL ALC Level	10	dBm	APPLY
UL Gain Offset	10	dB	APPLY
			ON

#### B.Fixed Gain(Range: 40~80)

DL Gain	80	dB	APPLY
UL Gain	77	dB	APPLY

## Result

Isolation	75	dB
Available Maximum Gain	60	dB
Automatic Level Control		
DL Output Level	10	dBm
UL Gain Offset	10	dB
	ON	
Power Measurement		
	Downlink	Uplink
Input Power	-69	Lower than -6
Gain	60	60
Output Power	-9	Lower than -10
Amplifier	ON	ON
Automatic Shutdown		
Level	27	dBm
Time	0	Seconds
Iteration	27	Times
	ON	

✖

**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**.

Temperature	<input type="text" value="80"/>	F	Restore Interval	<input type="text" value="12"/>	<input type="button" value="v"/> <input type="button" value="^"/>	Hours	<input type="button" value="APPLY"/>
Restore Interval	<input type="text" value="12"/>	Hours					<input type="button" value="ON"/>
	<input type="text" value="OFF"/>						

## Alarms

### Alarm Status

Reported to Sprint	On Site
RSSI [DL Input Power]	DL Input Power
DL Output Power	Output Power
VSWR	Temperature
Under Current	DC Voltage
Over Temperature	DC Current
	ASD

### Alarms Range To Setup

Reported to Sprint	On Site
RSSI [DL Input Power] <	-60 dBm
DL Output Power <	24 -3 dBm
VSWR >	1.5
Under Current <	26 A
Over Temperature >	194 F

< Alarm Status >

< Alarm Range >

## 4. Operation >>

**Power Measurement**

	Downlink	Uplink
Input Power	-68	-- dBm
Gain	60	60 dB
Output Power	-8	-- dBm
Amplifier	ON	OFF

**Automatic Shutdown**

Level	27 dBm
Time	0 Seconds
Iteration	27 Times
	ON

**DC Voltage** 26 V  
**DC Current** 2 A  
**Temperature** 114 F

**Alarm Status**

Reported to Sprint	On Site
<input type="checkbox"/> RSSI [DL Input Power]	<input type="checkbox"/> DL Input Power
<input type="checkbox"/> DL Output Power	<input type="checkbox"/> Output Power
<input type="checkbox"/> VSWR	<input type="checkbox"/> Temperature
<input type="checkbox"/> Under Current	<input type="checkbox"/> DC Voltage
<input type="checkbox"/> Over Temperature	<input type="checkbox"/> DC Current
	<input type="checkbox"/> ASD

**Alarms Range To Setup**

Reported to Sprint	On Site
RSSI [DL Input Power] < -60 dBm	DL Input Power 3 10 dBm
DL Output Power < 24 -3 dBm	DL Output Power 0 0 dBm
VSWR > 1.5	UL Output Power 27 dBm
Under Current < 26 A	Temperature 0 0 F
Over Temperature > 194 F	DC Voltage 5 46 V
	DC Current 26 0 A
	APPLY

- **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

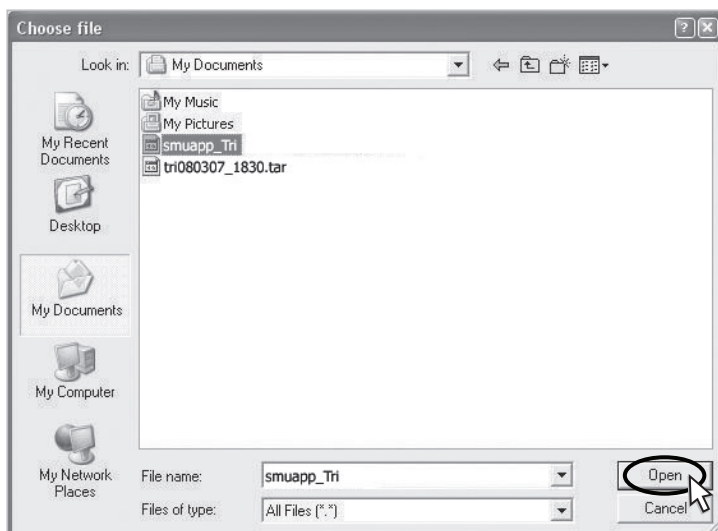
Click **Upload** in the left menu.

### 4.5.5.1 Update: System Firmware

**Step 1** Click **Browse**.



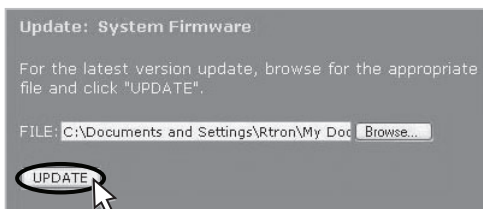
**Step 2** A pop-up window will appear. Select the **firmware file** and click **Open**.



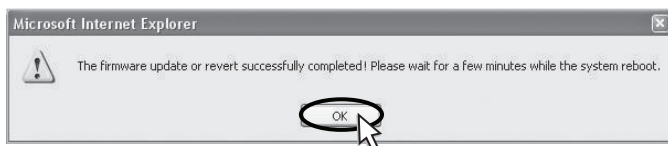


## 4. Operation ➤

### 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).

The system is restarting.

It takes a few minutes to completely update the new software and restart the repeater.

Please wait and re-login as follows:

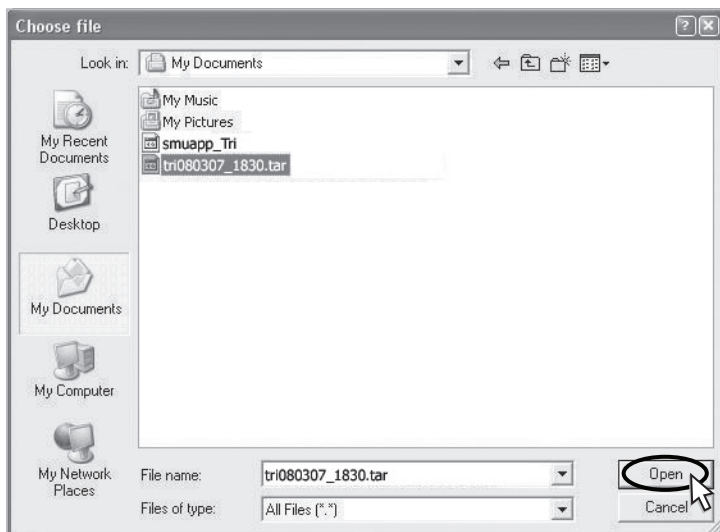
1. If you are connected to the LOCAL port, please type <http://192.168.0.1:83> in the web browser.
2. If you are connected remotely, please re-login on your application (i.e. Service Pro).

#### 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**.



## 4. Operation >>

- 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).

The system is restarting.

It takes a few minutes to completely update the new software and restart the repeater.

Please wait and re-login as follows:

1. If you are connected to the LOCAL port, please type <http://192.168.0.1:83> in the web browser.
2. If you are connected remotely, please re-login on your application (i.e. Service Pro).

### 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.

#### Reboot System

If you reboot system, cell phone service and this remote access will be disconnected.

System will take approximately 5 minutes to reboot.

Reboot System CPU

### 4.5.7 Alarm History

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

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

#### Alarm History

Alarm Count: 300

0	Temperature	2007-09-09 10:25:05	CLEAR	IDEN 800
1	Temperature	2007-09-09 10:25:05	CLEAR	IDEN 900
2	Temperature	2007-09-09 10:25:05	SET	IDEN 800
3	Temperature	2007-09-09 10:25:05	SET	IDEN 900
4	Temperature	2007-09-09 10:25:08	CLEAR	IDEN 800
5	Temperature	2007-09-09 10:25:08	CLEAR	IDEN 900
6	Temperature	2007-09-09 10:25:11	SET	IDEN 800
7	Temperature	2007-09-09 10:25:11	SET	IDEN 900
8	Temperature	2007-09-09 10:25:11	CLEAR	IDEN 800
9	Temperature	2007-09-09 10:25:11	CLEAR	IDEN 900
10	Temperature	2007-09-09 10:25:16	SET	IDEN 800
11	Temperature	2007-09-09 10:25:16	SET	IDEN 900
12	VSWR	2007-09-09 11:20:19	SET	NMC
13	VSWR	2007-09-09 11:20:20	CLEAR	NMC
14	VSWR	2007-09-09 11:20:21	SET	NMC
15	VSWR	2007-09-09 11:20:23	CLEAR	NMC
16	VSWR	2007-09-09 11:20:24	SET	NMC
17	VSWR	2007-09-09 11:20:25	CLEAR	NMC
18	VSWR	2007-09-09 11:20:35	SET	NMC
19	VSWR	2007-09-09 11:20:37	CLEAR	NMC
20	VSWR	2007-09-09 11:20:48	SET	NMC
21	VSWR	2007-09-09 11:20:49	CLEAR	NMC
22	VSWR	2007-09-09 11:20:50	SET	NMC
23	VSWR	2007-09-09 11:20:52	CLEAR	NMC
24	Under Current	2007-09-09 11:21:07	SET	NMC
25	DC Current	2007-09-09 11:21:07	SET	IDEN 800
26	Under Current	2007-09-09 11:21:07	SET	NMC
27	DC Current	2007-09-09 11:21:07	SET	IDEN 900
28	DC Output Power	2007-09-09 11:22:51	CLEAR	IDEN 900

GET HISTORY

ERASE HISTORY

CLEAR

## 4. Operation >>

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.

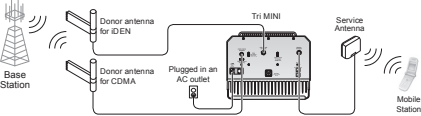
### 4.5.8 Logout

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

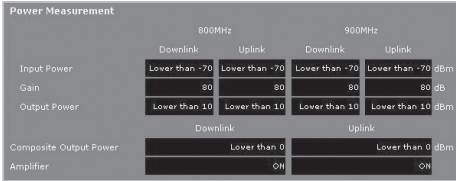
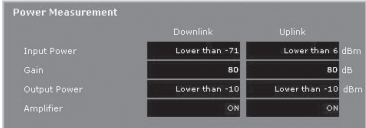
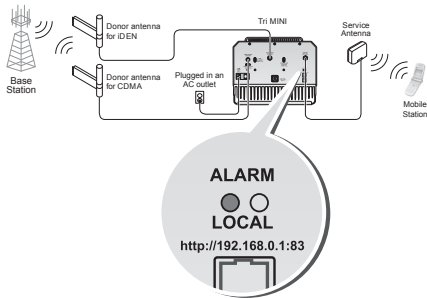
A warning pop-up window will appear and then click **OK** to logout.

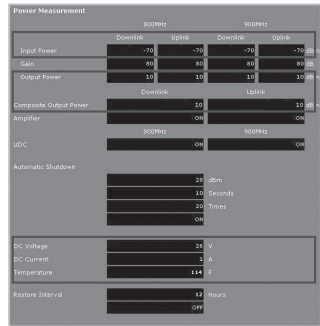
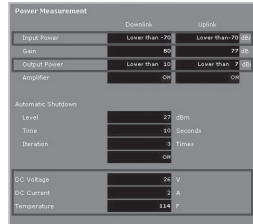


Before contacting your service dealer, please make sure you refer to the following guide. If the Tri MINI does not work normally after completing the following troubleshooting, please contact your local dealer or service center.

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.		<p>Turn on the power.</p>  <p>or</p> <p>&lt; a. iDEN &gt;</p> <table><tr><td>Amplifier</td><td>ON</td><td>ON</td></tr><tr><td>UDC</td><td>800MHz</td><td>900MHz</td></tr><tr><td></td><td>ON</td><td>ON</td></tr></table> <p>Check if the DL Amplifier, the UL Amplifier, iDEN 800 UDC and iDEN 900 UDC in Power Measurement are displayed ON.</p> <p>&lt; b. CDMA &gt;</p> <table><tr><td>Amplifier</td><td>ON</td><td>ON</td></tr></table> <p>Check if the DL Amplifier and the UL Amplifier of Parameter Status are displayed ON.</p>	Amplifier	ON	ON	UDC	800MHz	900MHz		ON	ON	Amplifier	ON	ON
Amplifier	ON	ON												
UDC	800MHz	900MHz												
	ON	ON												
Amplifier	ON	ON												

# 5. Troubleshooting ➤

Problem	Cause	Solution
Oscillation	<p>&lt; a. iDEN &gt;</p>  <p>1. The values above are changed randomly under operating of DL ALC, UL ALC, and ASD.</p> <p>2. DL Amplifier and UL Amplifier are on and off iteratively.</p> <p>&lt; b. CDMA &gt;</p>  <p>1. The values above are changed randomly under operating of DL ALC, UL ALC, and ASD.</p> <p>2. DL Amplifier and UL Amplifier are on and off iteratively.</p>	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.
<p>Green LED → steady</p> <p>Red LED → flashing</p>	<p>Donor antenna connection → Good</p> <p>Server antenna connection → Bad</p> 	Check the cable connection to the server antenna and its VSWR.

Problem	Cause	Solution																																										
The red light turns on.		<p>&lt; a. iDEN &gt;</p>  <table border="1"> <thead> <tr> <th>On Site Alarms Range</th><th>Lower</th><th>Upper</th></tr> </thead> <tbody> <tr> <td>DL Input Power</td><td>-</td><td>-30dBm</td></tr> <tr> <td>DL Output Power</td><td>-</td><td>28dBm</td></tr> <tr> <td>UL Output Power</td><td>-</td><td>28dBm</td></tr> <tr> <td>Temperature</td><td>14°F</td><td>176°F</td></tr> <tr> <td>DC Voltage</td><td>20V</td><td>30V</td></tr> <tr> <td>DC Current</td><td>0A</td><td>7A</td></tr> </tbody> </table> <p>&lt; b. CDMA &gt;</p>  <p>Check if the value above is out of range.</p> <table border="1"> <thead> <tr> <th>On Site Alarms Range</th><th>Lower</th><th>Upper</th></tr> </thead> <tbody> <tr> <td>DL Input Power</td><td>-90dBm</td><td>-20dBm</td></tr> <tr> <td>DL Output Power</td><td>-10dBm</td><td>27dBm</td></tr> <tr> <td>UL Output Power</td><td>-</td><td>27dBm</td></tr> <tr> <td>Temperature</td><td>-14°F</td><td>176°F</td></tr> <tr> <td>DC Voltage</td><td>20AV</td><td>30V</td></tr> <tr> <td>DC Current</td><td>0A</td><td>7A</td></tr> </tbody> </table> <p>If the Input Power or Output Power is out of range, please contact Technical Support.  Download site: <a href="http://www.r-tron.com">www.r-tron.com</a>  Toll Free: 888-31R-TRON</p>	On Site Alarms Range	Lower	Upper	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	On Site Alarms Range	Lower	Upper	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
On Site Alarms Range	Lower	Upper																																										
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DC Voltage	20AV	30V																																										
DC Current	0A	7A																																										
Red & green LEDs are flashing irregularly.	Malfunction of PSU.	Please contact Technical Support. Download site: <a href="http://www.r-tron.com">www.r-tron.com</a> 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		

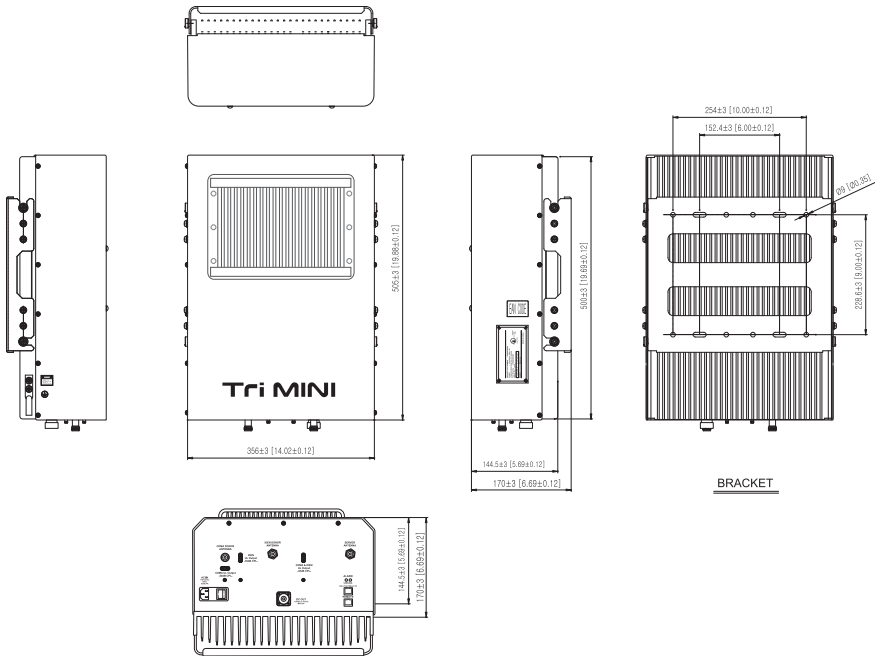
# 6. Specifications

## 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)	

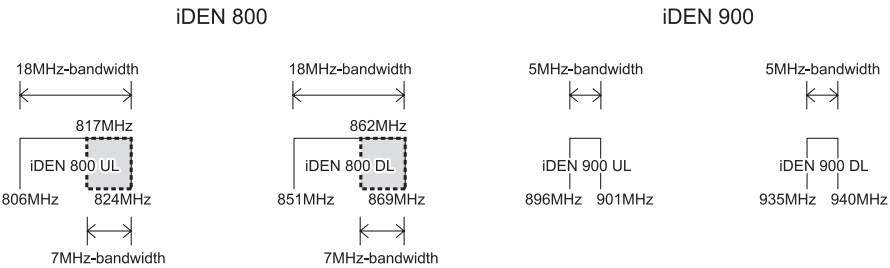
## Mechanical Specifications

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



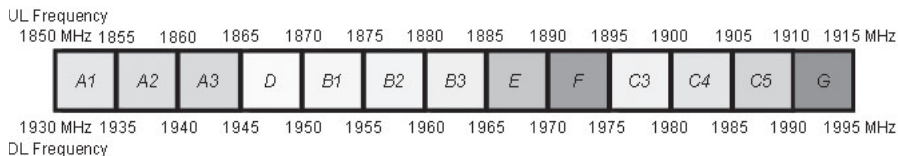
The Operating Bandwidth and Frequencies of iDEN

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

# 7. Appendix

## 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

## LIMITED WARRANTY

This product, as supplied and distributed by R-tron, in the original carton, is warranted by R-tron against manufacturing defects in materials and workmanship for a limited warranty period of:

### Five (5) Year Parts and Labor

This limited warranty begins on the original date of purchase, and is valid only on products purchased and used in the United States. R-tron will repair or replace this product, at our option and at no charge as stipulated herein, with new or reconditioned parts or products if found to be defective during the limited warranty period specified above. All replaced parts and products become the property of R-tron and must be returned to R-tron. Replacement parts and products assume the remaining original warranty.

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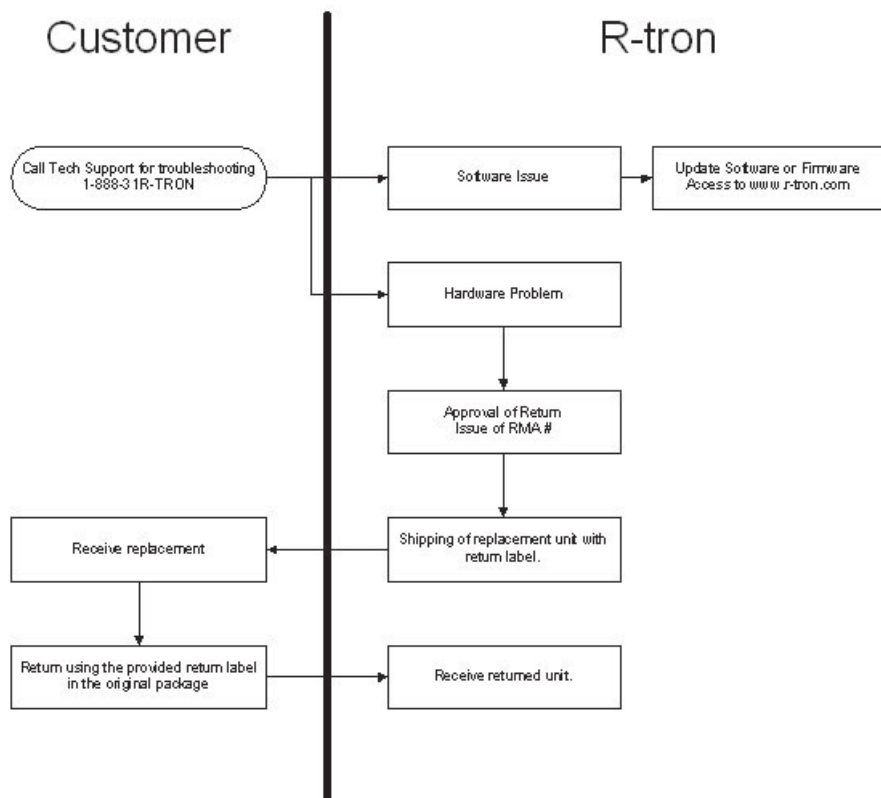
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## Return Material Authorization(RMA) Procedure

The return and exchange of products are not allowed without prior approval from R-tron America, Inc.

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.





Tri MINI