Duo-i6515/6525/8030NM
USER MANUAL

Version 1.6

Glossary

The following is a list of abbreviations and terms used throughout this document.

Abbreviation/Term	Definition
AGC	Automatic Gain Control
ALC	Automatic Level Control
AROMS	ADRF's Repeater Operation and Management System
BTS	Base Transceiver Station
CDMA	Code Division Multiple Access
CW	Continuous Wave (unmodulated signal)
DAS	Distributed Antenna System
DL	Downlink
Downlink	The path covered from the Base Transceiver Station (BTS) to the subscriber's service area via the Repeater
HPA	High Power Amplifier
HW	Hardware
iDEN	Integrated Digital Enhanced Network
IF	Intermediate Frequency
LNA	Low Noise Amplifier
MS	Mobile Station
PLL	Phased Locked Loop
PS	Power Supply
RF	Radio Frequency
SQE	Signal Quality Estimate
SW	Software
UL	Uplink
Uplink	The path covered from the subscriber's service area to the Base Transceiver Station(BTS) via the Repeater
VSWR	Voltage Standing Wave Ratio

Version 1.6 (Released March 31, 2008)

Information in this document is subject to change without notice.

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Revision History

Version	Author	Description	Date
1.0	Peter Son		March 15, 2007
1.1	B.C. Kim		March 22, 2007
1.2	Julie Song		April 2, 2007
1.3	Namchul Lee	Update for Duo-i8030NM	July 16, 2007
1.4	Namchul Lee	Update for UL approval	October 17, 2007
1.5	Julie Song	Update for external modem box	November 18, 2007
1.6	Namchul Lee	Update for FCC	March 31, 2008

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1. Duo-i6515/6525/8030NM

1.1. Introduction

The Duo-i6515/6525/8030NM is a dual band SMR (800 and 900 MHz) RF repeater which enhances in-building wireless coverage in the most effective and cost efficient way. For its intelligent design and versatility, the Duo-i6515/6525/8030NM is the ideal choice for wireless coverage problems indoors. The Duo-i6515/6525/8030NM can be used as a stand-alone repeater with passive antennas connected to it or it can also be used as a feeder repeater to a DAS (Distributed Antenna System).

1.1.1. Highlights

- Dual Band Repeater (800 & 900 MHz)
- 15/25/30 dBm Composite Output Power
- 65/80 dB gain
- 25 dB AGC Range @ 0.5 dB Step (for Duo-i6515/6525NM)
- 30 dB AGC Range @ 0.5 dB Step (for Duo-i8030NM)
- Excellent Out of Band Rejection Characteristics with Sharp Roll-Offs @ 65 dBc
- Re-Banding Capability via Digital Filtering
- Band Adjustable Option @ 200 kHz Step
- Automated installation
- Web GUI via DHCP
- Remote Monitoring Capability using External Modem Box (MBOX-DET1)

1.1.2. Parts List

Label	Qty	Description
A	1	iDEN Repeater
B	1	AC Power Cable
C	1	Ethernet Cable (cross over)
D	1	Ground Cable
E	4 (for Duo-i6515/6525NM) or 6 (for Duo-i8030NM)	Anchor Bolts
F	1	CD

Table 1 – Parts List

A

B C D E F

Figure 1 – Duo-i6515/6525/8030NM Repeater Parts List

** CD includes: (1) Duo-i6515/6525/8030NM User Manual & (2) Duo-i6515/6525/8030NM Quick Start Guide

1.1.3. Repeater Quick View

Power LED
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Soft Fail LED
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Hard Fail LED
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DC power port for
external modem box

Upper Guard Screw
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Bracket Screw
(Page15)

Lower Guard Screw
(Page15)

Ground Hole
(Page16)
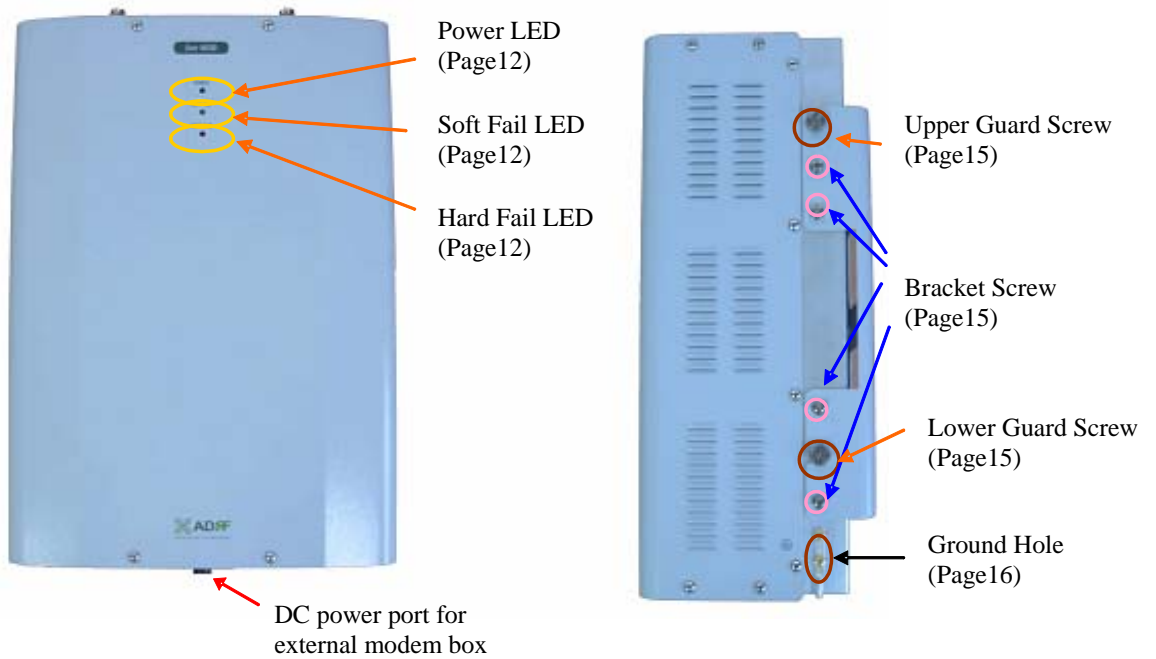
Figure 2 – Duo-i6515/6525/8030NM Front & Side Views

Donor Antenna Port
(Page17)

Server Antenna Port
(Page17)

DC power port for
external modem box

AC power switch (page13)

Anchor Bolt
Hole (page15)

Wall Mounting
Bracket (page15)

Mode Selection
Switch (page13)

Ethernet Port (page13)
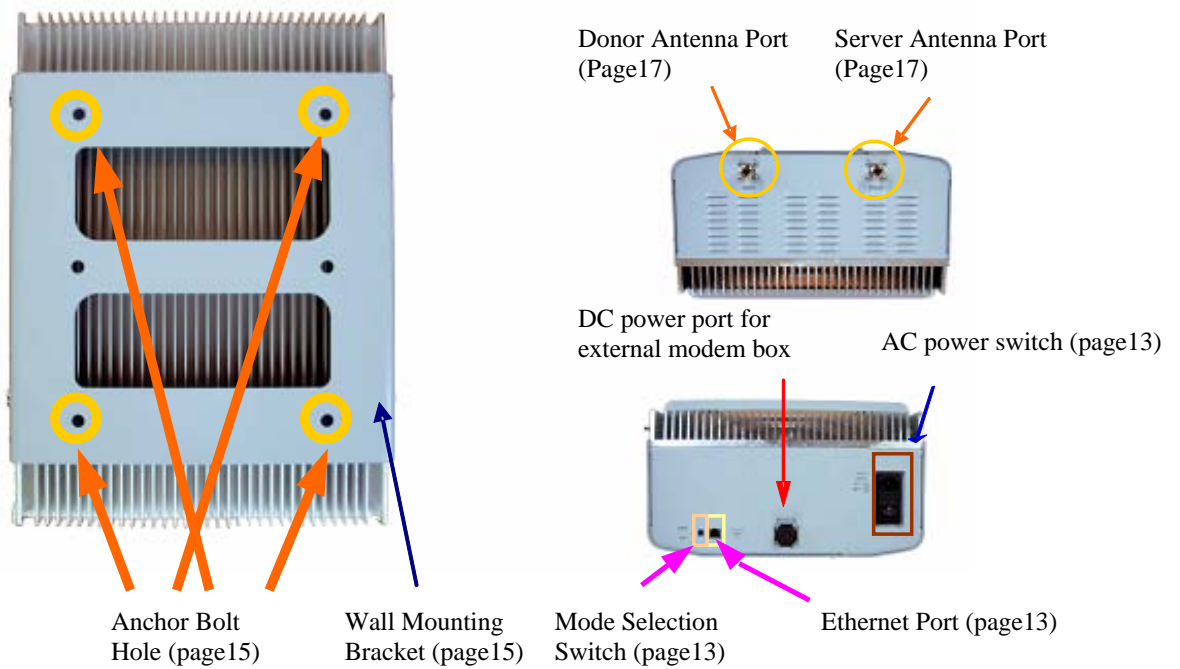
Figure 3 – Duo-i6515/6525/8030NM Back, Bottom & Top Views

1.2. Warnings and Hazards

WARNING! ELECTRIC SHOCK

Opening the Duo-i6515/6525/8030NM could result in electric shock and may cause severe injury.

WARNING! EXPOSURE TO RF

Working with the repeater while in operation, may expose the technician to RF electromagnetic fields that exceed FCC rules for human exposure. Visit the FCC website at www.fcc.gov/oet/rfsafety to learn more about the effects of exposure to RF electromagnetic fields.
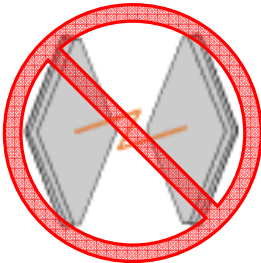
WARNING! DAMAGE TO REPEATER

Operating the Duo-i6515/6525/8030NM with antennas in very close proximity facing each other could lead to severe damage to the repeater.

RF EXPOSURE & ANTENNA PLACEMENT GUIDELINES

Actual separation distance is determined upon gain of antenna used.

Please maintain a minimum safe distance of at least 50 cm while operating near the donor and the server antennas. Also, the donor antenna needs to be mounted outdoors on a permanent structure.

WARRANTY

Opening or tampering the Duo-i6515/6525/8030NM will void all warranties.

Lithium Battery : CAUTION. RISK OF EXPLOSION IF BATTERY IS REPLACED BY INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO INSTRUCTIONS.

Ethernet Instructions : This equipment is for indoor use only. All cabling should be limited to inside the building.

FCC Part 15 Class A

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

2. Duo-i6515/6525/8030NM Overview

2.1 Operation Modes

2.1.1. Local Web GUI
Host Mode

This mode should be selected only if a Duo-i6515/6525/8030NM is used alone without being connected to any other device functioning as a host.

Simply connect one end of the ethernet cable on the repeater monitor port and the other end on the PC's LAN port. After doing so, launch the Microsoft Internet Browser (Internet Explorer) and the Local Web GUI will be launched through typing the IP address (**http://192.168.63.1/home.asp**)

2.1.2. Remote Web GUI
Remote Mode

This mode should be selected if an external modem box (MBOX-DET1) is being installed along with the Duo-i6515/6525/8030NM for monitoring purposes. In this case, the Duo-i6515/6525/8030NM works as a remote unit sending its information to the collocated external modem box.
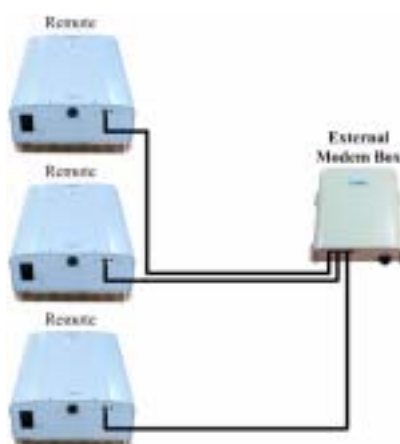
Note: ADRF's Web GUI has not been developed for Microsoft Internet Explorer and other web browsers (e.g. Netscape, FireFox, Mozilla, etc.) may not be compatible. ADRF's Web GUI has not been tested with Microsoft Internet Explorer versions higher than 6.0.

2.2 Switches & Indicators

2.2.1. LEDs

The Duo-i6515/6525/8030NM has three LEDs on the front panel of the repeater as show below in Figure 4.

Figure 4 – Duo-i6515/6525/8030NM Repeater LED View

POWER

If the LED is lit GREEN, it indicates that there is AC power to the repeater.

SOFT FAIL

If the LED is lit YELLOW, it indicates that there is a soft fail alarm in the system. The detailed alarm information can be viewed via the local web GUI. In the event of a soft fail alarm, the repeater will still function, but the alarm needs to be addressed promptly.

HARD FAIL

If the LED is lit RED, it indicates that there is a hard fail alarm in the system. The detailed alarm information can be viewed via the local web GUI. In the event of a hard fail alarm, the repeater will not function and immediate attention is required.

2.2.2. AC Power Switch & DC Power Port for External Modem Box

The AC Power on/off switch is located on the bottom of repeater (Figure 5). The switch should be powered on after the repeater has been installed properly.

The DC Power Port can be used to provide power to the optional External Modem Box (Figure 5).

Figure 5 – AC Power Switch & DC Power Port

2.2.3. Mode Selection Switch and Ethernet Port

The Ethernet port and the Mode Selection Switch for DHCP are located on bottom of the repeater as shown below in Figure 6. The mode selection switch has two modes: Host Mode & Remote Mode.

Figure 6 – Ethernet Port & Mode Selection Switch

2.3 Installation

2.3.1 Tools

No special tools or equipment are needed to install the Duo-i6515/6525/8030NM.

2.3.2 Procedure

Four (for Duo-i6515/6525NM) or six (for Duo-i8030NM) mounting holes are provided on the wall-mounting bracket to attach it to the wall. The wall bracket must be securely attached to sufficiently carry the weight of the Duo-i6515/6525/8030NM, which is bolted to the wall bracket through four or six aligned mounting holes.

The following steps should be followed while mounting the repeater:

Installation Procedure (Wall Mount)

Take the Duo-i6515/6525/8030NM out of the box
Using the four or six anchor bolts, mount the bracket on the wall
Make sure the bracket is securely mounted
Slightly tilt the repeater and mount the repeater onto the wall as shown in the picture. Hook the upper 2 guard screws first and then slide/push in the lower 2 guard screws into the place.
Make sure the Duo-i6515/6525/8030NM is securely placed onto the wall bracket
Fasten the 8 bracket screws back properly
Inspect that everything is secure

* Rack Mount option is also available. Please contact ADRF for additional information.
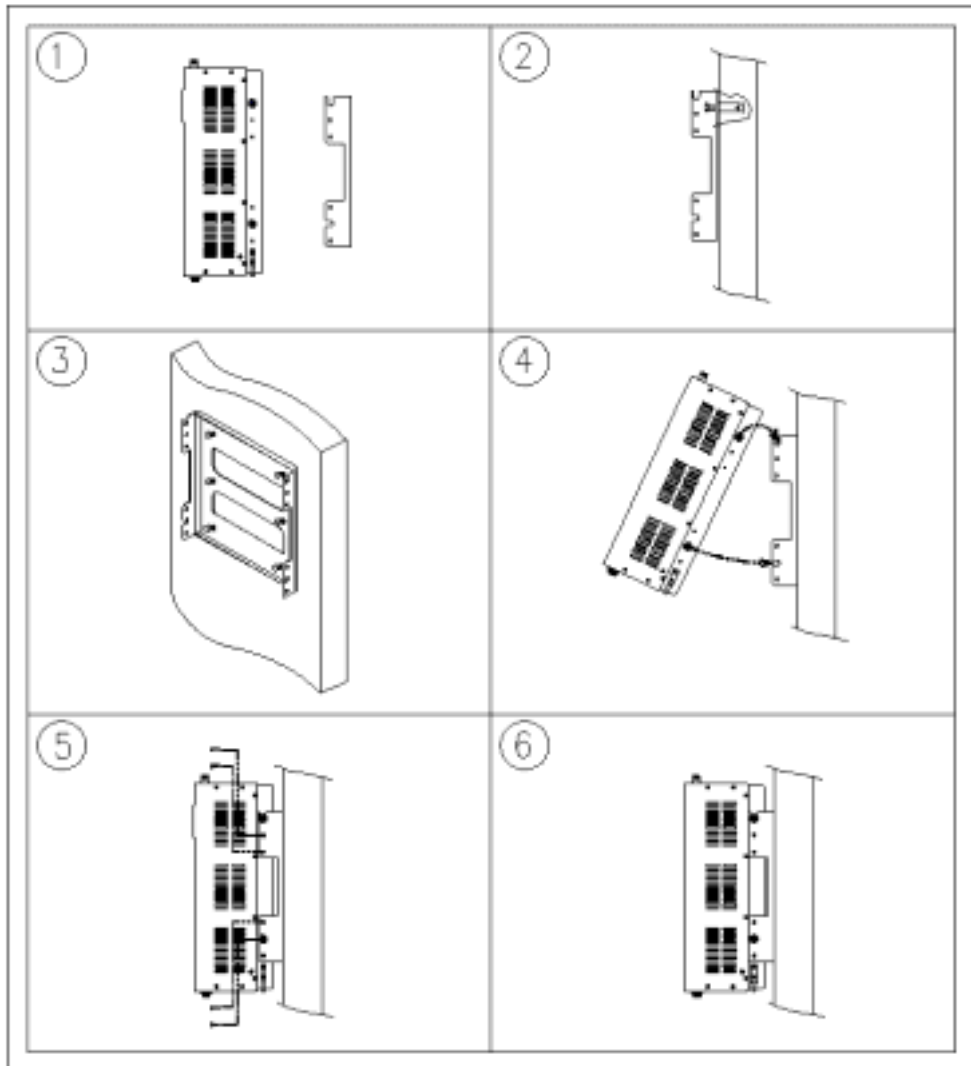
Figure 7 – Repeater Mounting Instructions

2.3.3 Grounding

A ground cable is included in the packaging and should be properly connected to the repeater as shown below.

Figure 8 – Ground Cable Connection

2.3.4 Antenna Separation/Isolation

Separation between antennas is necessary to prevent oscillation. Oscillation occurs when the signal entering the system continually reenters, due to the lack of separation between the donor and server antennas. In other words, the signal is being fed back into the system. This creates a constant amplification of the same signal. As a result, the noise level rises above the signal level.
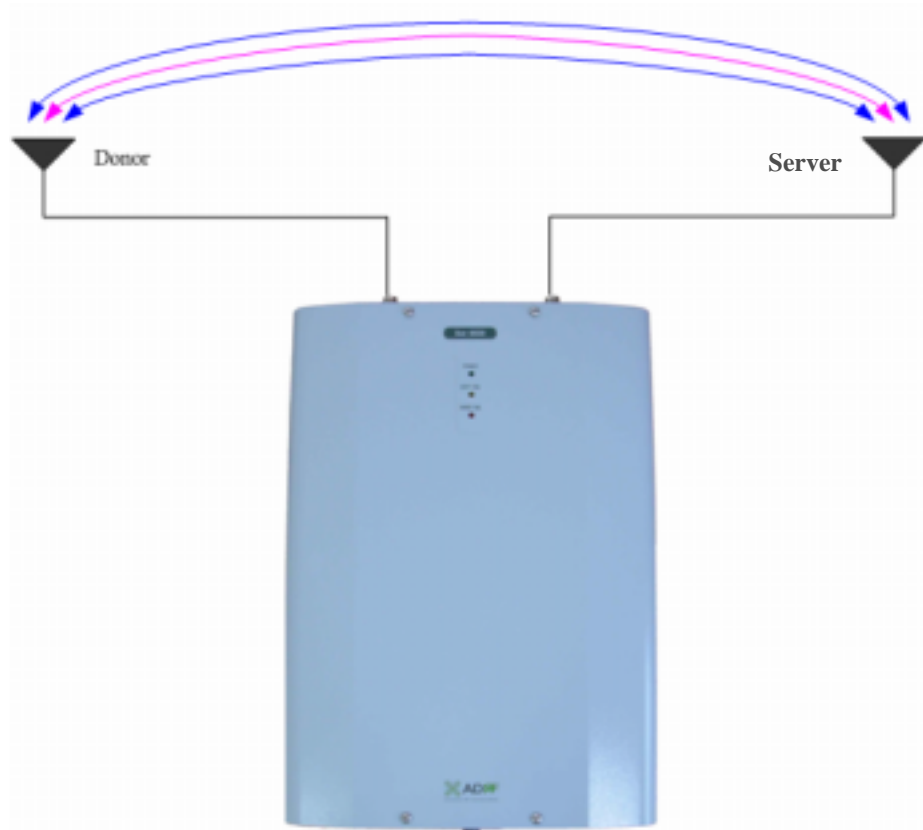

Figure 9 - RF Repeater Oscillation

To prevent feedback, the donor and server antennas must be separated by an appropriate distance to provide sufficient isolation. Isolation is attained by separating antennas a sufficient distance so that the output of one antenna does not reach the input of the other. This distance is dependent on the gain of the repeater.

A sufficient isolation value is 13 ~ 15 dB greater than the maximum gain of the repeater. For example, since the Duo-i8030NM has a maximum gain of 80 dB, it requires an isolation of at least 93 ~ 95 dB.

2.3.5 Line of Sight

The donor antenna which points towards the base station typically has a narrow beam antenna pattern. As a result, a slight deviation away from the direction of the BTS can lead to less than optimum results. In addition, obstacles between the repeater and the BTS may impair the repeater from obtaining any BTS signal. As a result, the repeater cannot transmit signal to the coverage area. Therefore, a direct line of sight to the BTS for the donor antenna is vital to the function of a repeater. For the same reason, placing the server antenna in direct line of sight of the coverage area is also necessary.
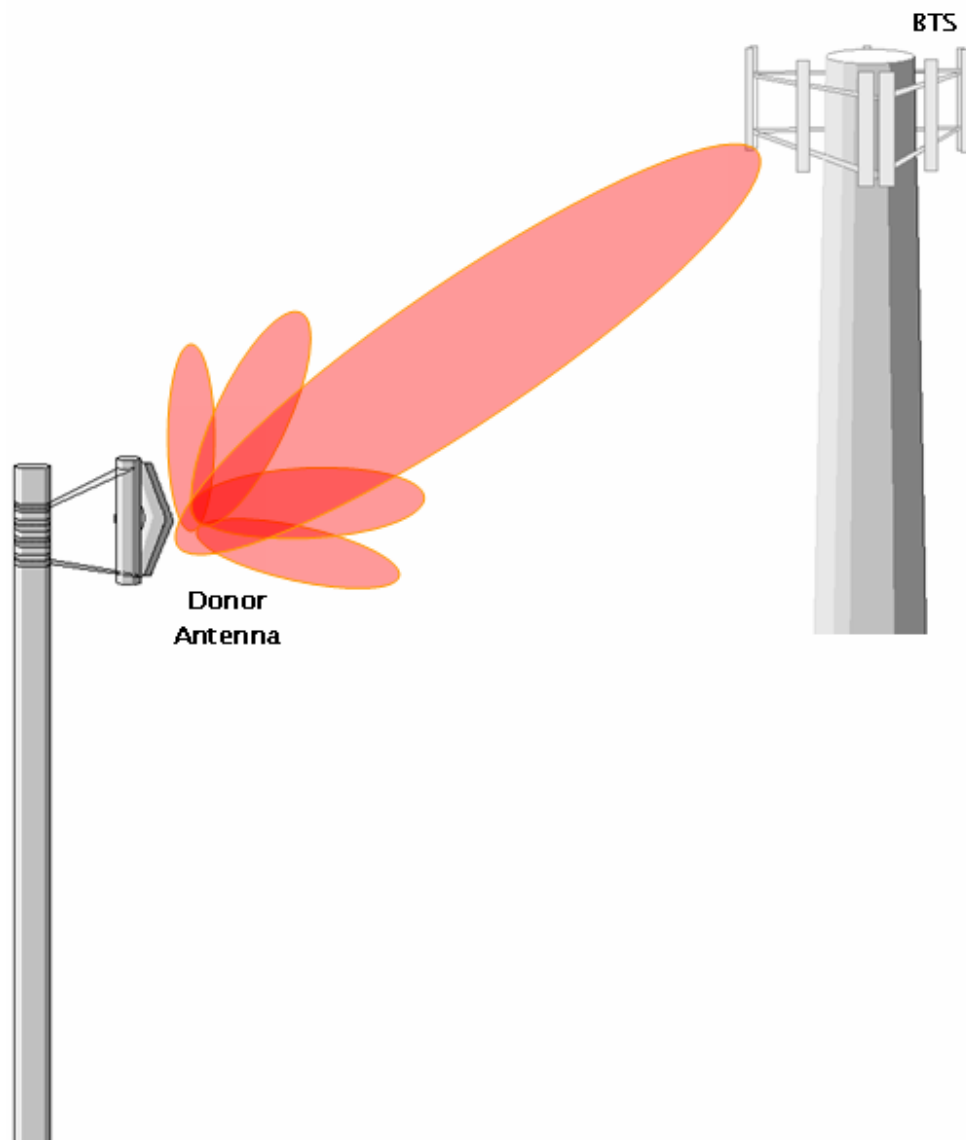

Figure 10 - Direct Line of Sight to the BTS

3. Duo-i6515/6525/8030NM AROMS Setup

3.1 Repeater/PC Connection

i) Wait until the Power LED is lit green. Connect the LAN cable between the laptop's Ethernet port and the repeater's Ethernet port.

Note: Under Local Area Connection in Network Settings, make sure to select **Obtain an IP address automatically** under Internet Protocol (TCP/IP) properties.
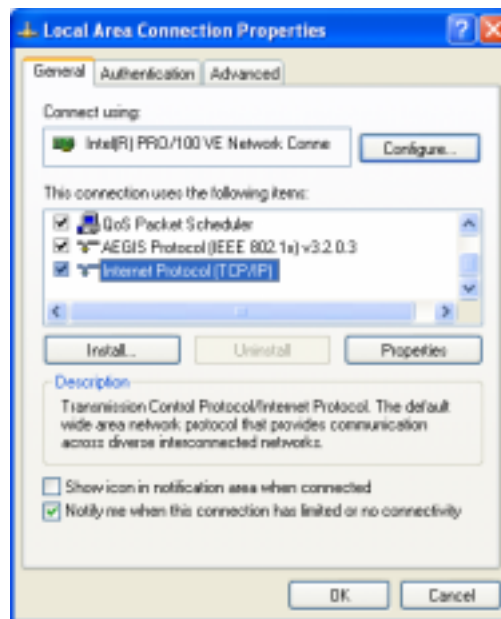
ii) Launch MS Internet Explorer (Version 6.0)

Note: ADRF's Web GUI has not been tested for compatibility with any other web browsers (e.g. Netscape, FireFox, Mozilla, etc.).

iii) Type the following IP address into the address bar of MS Internet Explorer:

http://192.168.63.1/home.asp

iv) The following login screen will appear:

If you are not the Super-User, please type in your assigned username & password which you should have received from the Super-User.
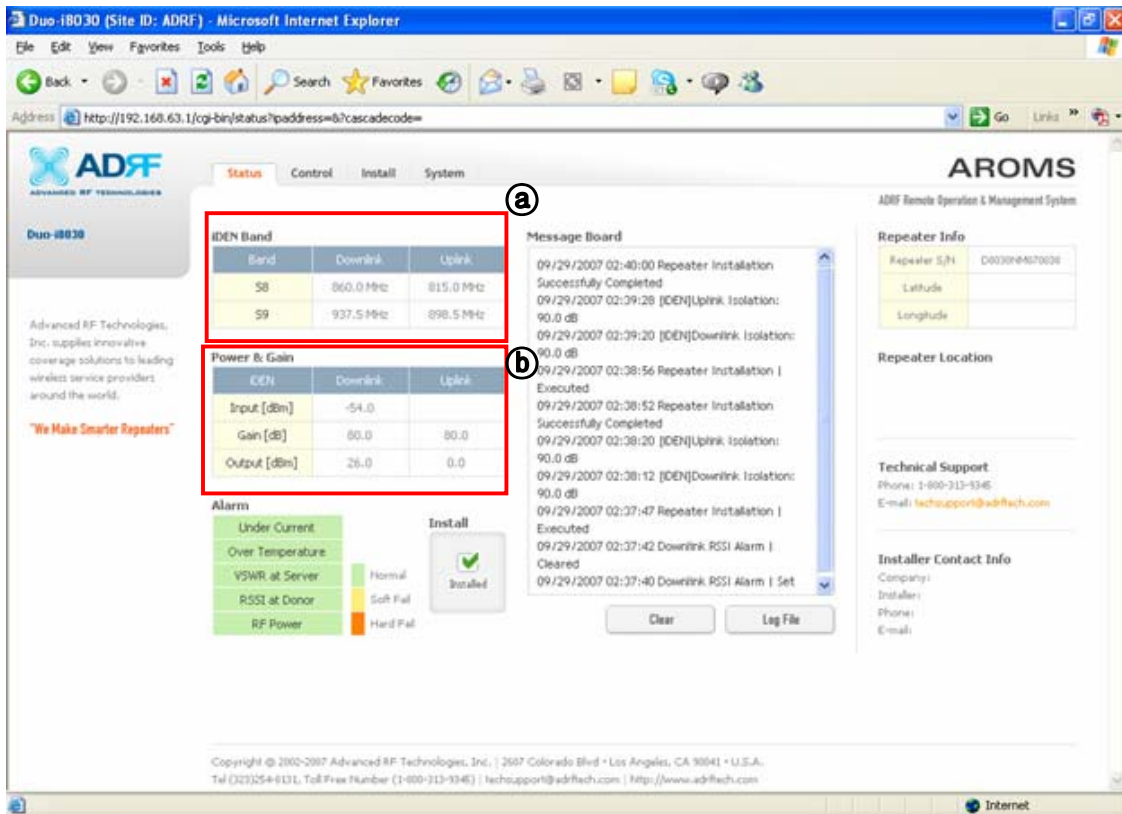
The default username and password for the General User is adrf & adrf, respectively.

If the username & password is typed in incorrectly, the following screen will appear:

3.2 Repeater Status

If you click on Status tab, the following window will appear:

In this window, the user can view the following:
(To **change** any parameters, e.g., iDEN Band, Gain Settings, you will need to go to the Install or Control window.)

- **iDEN Band**: Will display the center frequencies of the 800 and 900 MHz spectrums on the downlink and uplink respectively.

- **Power & Gain**: Will display the repeater input, gain and output power on the downlink and uplink. (Input is only displayed for Downlink)

ⓑ **Power & Gain**

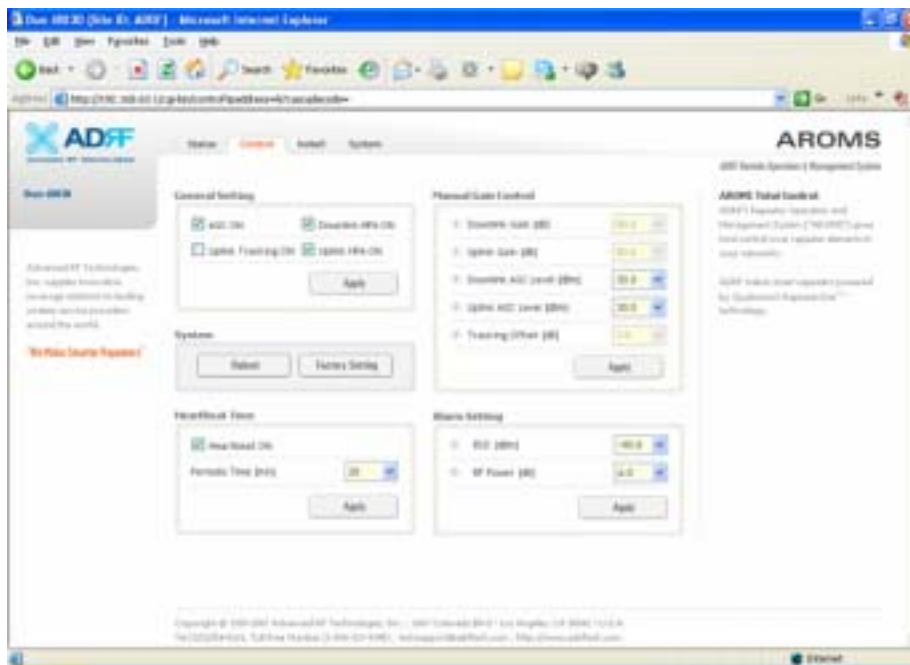| iDEN	DownLink	UpLink
Input [dBm]	-45.0	
Gain [dB]	65.0	65.0
Output [dBm]	19.9	-10.0

- **Alarm**: Will display five alarms with three different status conditions (Normal, Soft Fail or Hard Fail).
- **Message Board**: Will show up to recent 20 log messages (Alarms & Heartbeats).
- **Installation**: Will display repeater's installation status (Not Installed or Installed).
- **Repeater Info**: Will display repeater's serial number, and location information (latitude and longitude coordinates).
- **Repeater Location**: Will display the address where the repeater is installed
- **Technical Support**: Will display ADRF's technical support contact information.
- **Installer Contact Info**: Will display the installer's name, phone and e-mail address.

Note: Once successfully logged in, the repeater model name and the site/cascade ID will be displayed on the top of all the windows.

Parameters		Range	Step Size
DL/UL Output Power	Duo-i6515NM	-20 ~ 15 dBm	0.1 dB
	Duo-i6525NM	-10 ~ 25 dBm	
	Duo-i8030NM	0 ~ 30 dBm	
DL Input Power	Duo-i6515NM	-10 ~ -95 dBm	0.1 dB
	Duo-i6525NM	-10 ~ -95 dBm	
	Duo-i8030NM	-10 ~ -95 dBm	
Gain	Duo-i6515NM	40 ~ 65 dB	0.5 dB
	Duo-i6525NM	40 ~ 65 dB	
	Duo-i8030NM	50 ~ 80 dB	

3.3 Repeater Control

If you click on the **Control** tab, the following window will appear:

In this window, the user can adjust the following parameters:

General Setting
- Automatic Gain Control (Default mode is Off)
- Downlink HPA on/off (Default mode is On)
- Uplink HPA on/off (Default mode is On)
- Uplink Tracking Mode on/off (Default mode is Off)

Manual Gain Control
- Downlink Gain Control
Duo-i6515/6525NM: 40 to 65 dB @ 0.5 dB step
Duo-i8030NM: 50 to 80 dB @ 0.5 dB step

- Uplink Gain Control
Duo-i6515/6525NM: 40 to 65 dB @ 0.5 dB step
Duo-i8030NM: 50 to 80 dB @ 0.5 dB step

- Downlink AGC Level
Duo-i6515NM: 5 to 15 dBm @ 0.5 dB step, default value: 15 dBm
Duo-i6525NM: 15 to 25 dBm @ 0.5 dB step, default value: 25 dBm
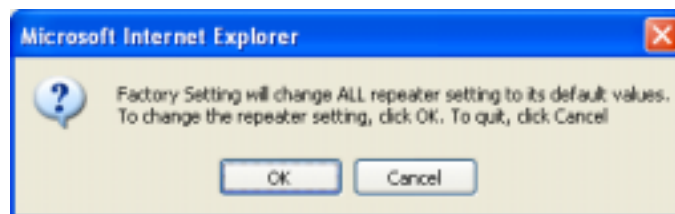Duo-i8030NM: 20 to 30 dBm @ 0.5 dB step, default value: 30 dBm

- Uplink AGC Level
Duo-i6515NM: 5 to 15 dBm @ 0.5 dB step, default value: 15 dBm
Duo-i6525NM: 15 to 25 dBm @ 0.5 dB step, default value: 25 dBm
Duo-i8030NM: 20 to 30 dBm @ 0.5 dB step, default value: 30 dBm

- Uplink Tracking Offset (0 to 10 dB @ 0.5 dB step, default value is 3 dB)

System
- If you click the **Reboot** button, the following message box will appear:
When the system reboots, the latest settings will be saved.
Please wait approximately 30 seconds to 1 minute for the system to reboot.
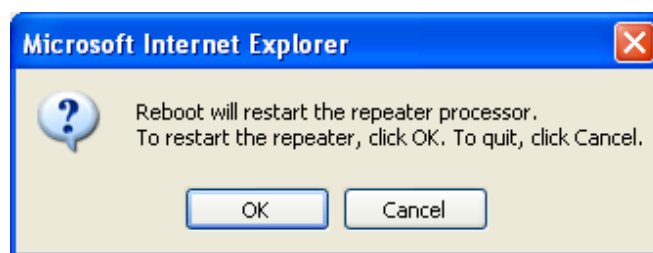
- If you click the **Factory Setting** button, the following message box will appear:
Factory setting will erase the settings saved by the user and change all the
parameters to the factory default settings.

Heartbeat Time
- Heartbeat on and off (Default mode is Off)
- Heartbeat periodic time (Range: 1 to 59 min @ 1 min step,
  default time is 20 min)

Alarm Setting
- RSSI Alarm at Donor (-95 ~ -50 dBm @ 0.5 dB step)
- Default value ;
    - Duo-i6515/6525NM : -75 dBm
    - Duo-i8030NM : -90 dBm
- RF Power Alarm (2 ~ 10 dB @ 0.5 dB step, default value: 6 dB)

3.4 Repeater Install

If you click on the **Install** tab, the following window will appear:
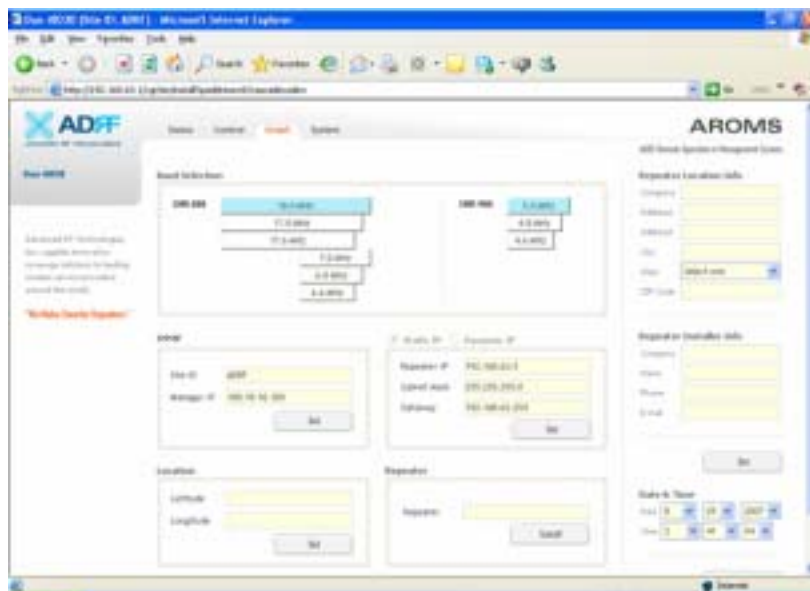
Band Selection

Simply click on the desired operating bandwidth.

SNMP

Type in the assigned Site/Cascade ID and Manager IP Address.
Default Site ID is ADRF.
Default Manager IP address 100.10.10.100

Repeater

Click the Install button to automatically setup the repeater.
It may take up to 3 minutes to complete the process. You will see a gradual
progress bar display. After the process is completed, a pop-up window will
display "*Installation Successfully Completed*" message.

Click on Status tab, the Installation box now changes from "Not Installed" to
"Installed."

If the Duo-i6515/6525/8030NM detects a problem during the installation process,
it will show a prompt message, e.g., "Low RSSI." Please follow the instructions
and address the problem to finish the installation process.
If the problem persists, please contact our technical support.

Repeater Location

Please type in the physical address where the repeater is installed.

Repeater Installer Info

Please type in the installer's name, phone number and e-mail address for technical support.

Repeater Static IP: Will display the Repeater's Static IP Address, Subnet Mask, and Gateway. This information is necessary when using the Repeater in conjunction with the External Modem Box. Default values are:
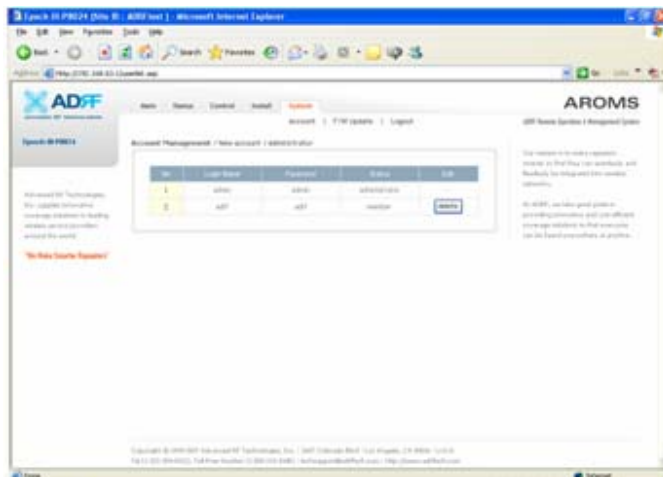
    Repeater IP: 192.168.63.5
    Subnet Mask: 255.255.255.0
    Gateway: 192.168.63.254

Date and Time: Sets the date and time for the internal clock (required for Log Messages)

3.5 Repeater System

If you click on **System** tab, the following window will appear:

Note: If you are the Super-User, you will see an account management section under the System Window. If you are a general user, you will not be able to see the account management portion.

Only the Super-User can add, delete and modify a user. The following window illustrates how a new user can be added by simply clicking on New Account.
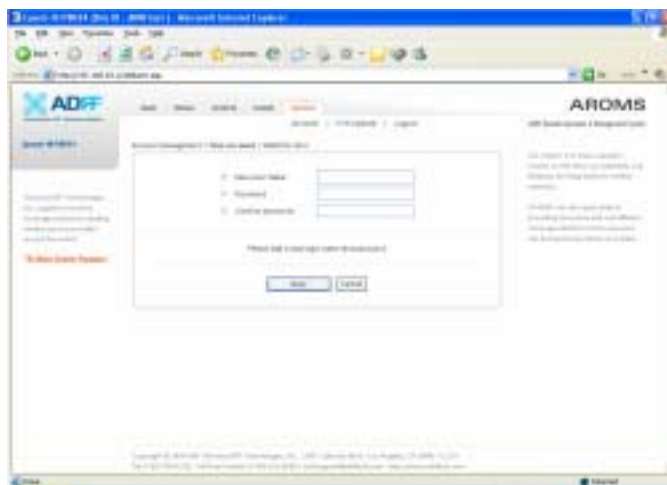
The following window illustrates how the administrator can be changed by simply clicking on Administrator.
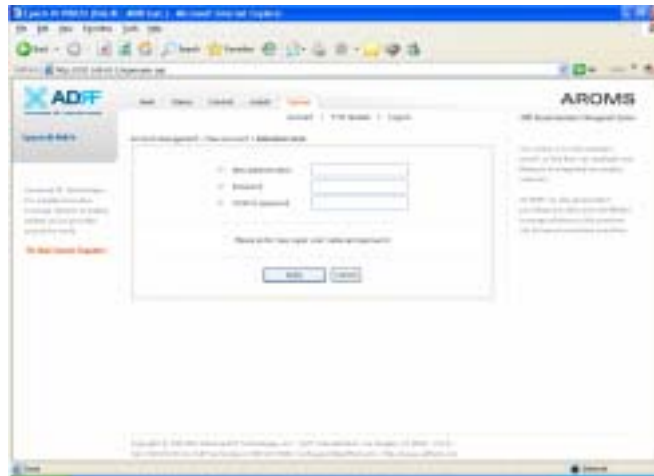
Firmware Upgrade

If you click on Firmware Upgrade, the following window will appear. You can browse through your PC and locate the firmware file. Once it is selected, simply click on Update and the latest firmware will be automatically uploaded and the session will close. You will need to re-login.
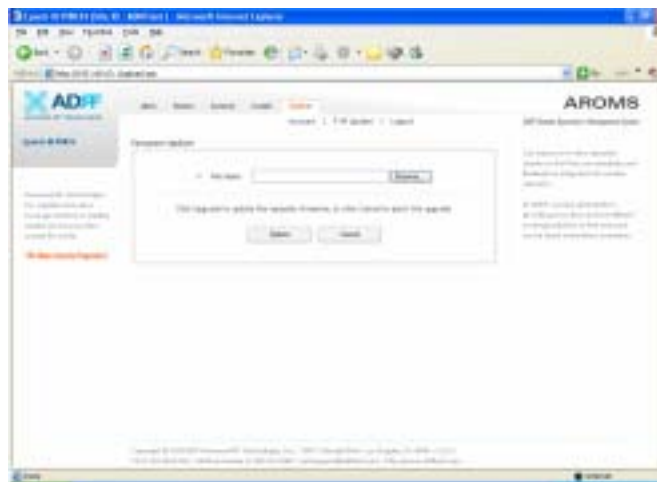
After the firmware update process in done, you will see the following pop-up window.

4. Maintenance Guide for Duo-i6515/6525/8030NM

4.1 Periodic Inspection Checklist

4.1.1 Check for loose connections to the repeater and antennas. If connections are loose, make sure that all connections are tightly fastened properly.

4.1.2 Check that cables and connectors are in good condition.

4.1.3 Ensure that the repeater brackets are in good condition and that the repeater is securely fastened.

4.2 Preventive Measures for Optimal Operation

4.2.1 Recommendations

Perform the *Periodic Inspection Checklist* quarterly or semiannually.

4.2.2 Precautions

- Do not operate the repeater with the antennas in extremely close proximity as this may cause damage to the repeater.

- Do not change parameters unless instructed to do so by an authorized supervisor.

- Do not move the repeater unless instructed to do so by an authorized supervisor.

- Do not detach any cables to the repeater unless repair of respective components are necessary.

5. Warranty and Repair Policy

5.1 General Warranty

The Duo-i6515/6525/8030NM carries a Standard Warranty period of five (5) years unless indicated otherwise on the package or in the acknowledgment of the purchase order.

5.2 Limitations of Warranty

Your exclusive remedy for any defective product is limited to the repair or replacement of the defective product. Advanced RF Technologies, Inc. may elect which remedy or combination of remedies to provide in its sole discretion. Advanced RF Technologies, Inc. shall have a reasonable time after determining that a defective product exists to repair or replace the problem unit. Advanced RF Technologies, Inc. warranty applies to repaired or replaced products for the balance of the applicable period of the original warranty or ninety days from the date of shipment of a repaired or replaced product, whichever is longer.

5.3 Limitation of Damages

The liability for any defective product shall in no event exceed the purchase price for the defective product.

5.4 No Consequential Damages

Advanced RF Technologies, Inc. has no liability for general, consequential, incidental or special damages.

5.5 Additional Limitation on Warranty

Advanced RF Technologies, Inc. standard warranty does not cover products which have been received improperly packaged, altered, or physically damaged. For example, broken warranty seal, labels exhibiting tampering, physically abused enclosure, broken pins on connectors, any modifications made without Advanced RF Technologies, Inc. authorization, will void all warranty.

5.6 Return Material Authorization (RMA)

No product may be returned directly to Advanced RF Technologies, Inc. without first getting an approval from Advanced RF Technologies, Inc. If it is determined that the product may be defective, you will be given an RMA number and instructions in how to return the product. An unauthorized return, i.e., one for which an RMA number has not been issued, will be returned to you at your expense. Authorized returns are to be shipped to the address on the RMA in an approved shipping container. You will be given our courier information. It is suggested that the original box and packaging materials should be kept if an occasion arises where a defective product needs to be shipped back to Advanced RF Technologies, Inc. To request an RMA, please call (323) 254-8131 or send an email to techsupport@adrftech.com.

Appendix A: Specifications

A.1 Electrical Specifications

Parameters		Specifications	Remark
Frequency	SMR800 DL	851 ~ 869 MHz or 862 ~ 869 MHz	
	SMR800 UL	806 ~ 824 MHz or 817 ~ 824 MHz	
	SMR900 DL	935 ~ 940 MHz	
	SMR900 UL	896 ~ 901 MHz	
Composite Output Power (DL/UL)	Duo-i6515NM	+15 dBm	
	Duo-i6525NM	+25 dBm	
	Duo-i8030NM	+30 dBm	
Gain Ripple	DL / UL	≤ ±1.25 dB p-p	800 + 900 MHz
Gain (DL / UL)	Maximum	65 dB (80 dB for Duo-i8030NM)	
	Range	25 dB (30 dB for Duo-i8030NM)	
	Step	0.5 dB	
	Tolerance	±0.5 dB	
Roll Offs	DL / UL	≥ 65 dBc	@ 0.5 MHz outside passband
900 MHz Inter-modulation	DL 2nd harmonic	≤ -105 dBm	At 1870 ~ 1880 MHz
Adjustable Band Edge	SMR800 DL	Default: 869 MHz Adjust: 868.8 MHz, 868.6 MHz	@ 200 kHz steps
	SMR900 DL	Default: 940 MHz Adjust: 939.8 MHz, 939.6 MHz	
ALC Range (SQE Degradation)	15 dB ALC	≤ 10%	
	25 dB ALC	≤ 20%	
OIP3 (DL / UL)	Duo-i6515NM	≥ 34 dBm	@ Gain 65 dB/40 dB
	Duo-i6525NM	≥ 45 dBm	@ Gain 65 dB/40 dB
	Duo-i8030NM	≥ 49 dBm	@ Gain 80 dB/50 dB
VSWR	DL / UL	≤ 1.5: 1	
RF Spurious Emission	DL / UL	≤ -13 dBm	
Noise Figure (DL / UL)	Duo-i6515NM	≤ 6 dB @max gain	
	Duo-i6525NM	≤ 8 dB @max gain	
	Duo-i8030NM	≤ 6 dB @max gain	
Delay	DL / UL	≤ 8 us	
Impedance		50 Ohms	

A.2 Mechanical Specifications

Parameters		Specifications	Remark
Dimension	Duo-i6515NM	14.13 x 18.88 x 6.42 inches	Mount bracket excluded
	Duo-i6525NM	14.13 x 18.88 x 6.42 inches	
	Duo-i8030NM	13.95 x 19.5 x 7.41 inches	
Weight	Duo-i6515NM	< 38 lbs	Mount bracket excluded
	Duo-i6525NM	< 38 lbs	
	Duo-i8030NM	< 53 lbs	
RF Ports		N-type (F)	Donor & Server Antenna Ports
Local Interface		RJ45 (DHCP)	
Cooling		Air Convection	
IP Class		IP 20	Indoor Type
Mounting Type		Wall Mounting	19" Rack Mounting Option Available

A.3 Environmental Specifications

Parameters	Specifications	Remark
Operating Temperature	-10 ~ +50	Ambient
Relative Humidity	5 ~ 95 %, non-condensing	
Dust	Industrial dust per Telcordia GR63 core	

### A.4 Power Specifications

Parameters		Specifications	Comments
AC Power		100 ~ 130 AC	
AC Frequency		45 ~ 65 Hz	
AC Supply Protection		Fuse	
DC Power Option		-40 ~ -60 V / +20 ~ 30 V	
Power Consumption	Duo-i6515NM	≤ 72 W	
	Duo-i6525NM	≤ 140 W	
	Duo-i8030NM	≤ 170 W	
Ground		External Threaded Stud	

A.5 Other Specifications

Parameters	Specifications	Remark
MTBF	> 100,000 Hours	
Certificates	UL 60950, FCC Part 90	
Warranty	5 Years	

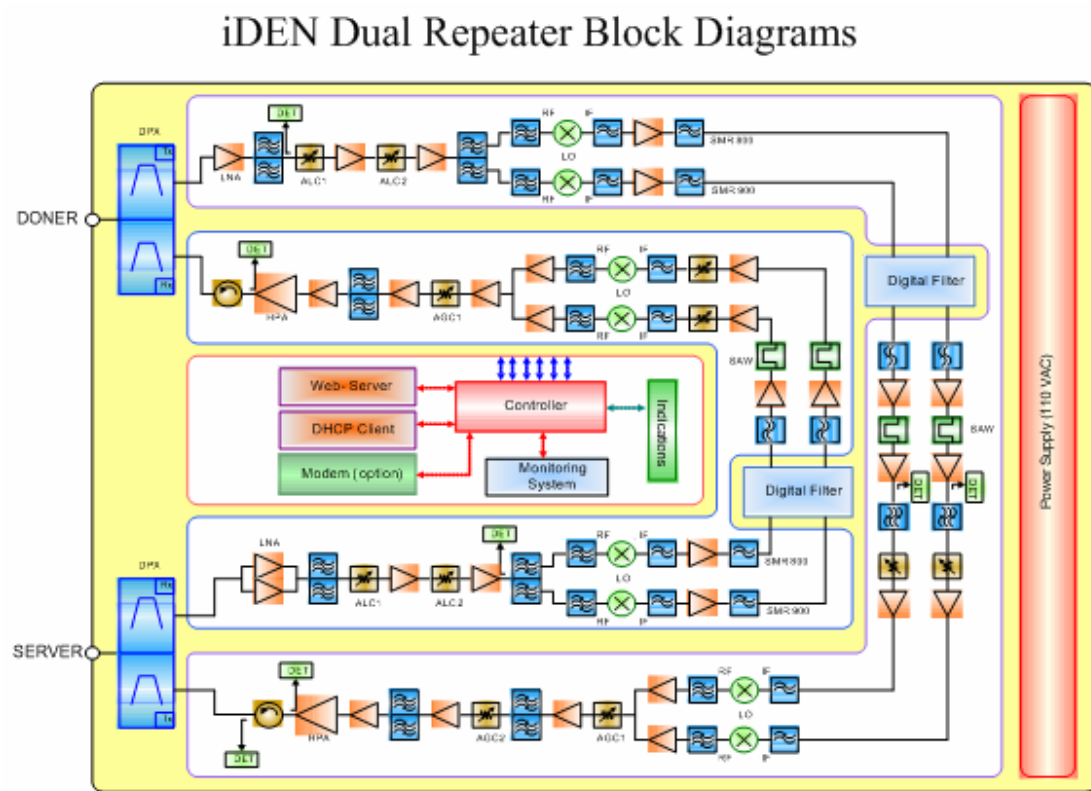## Appendix B: Mechanical Drawings

Duo-i6515/6525NM:
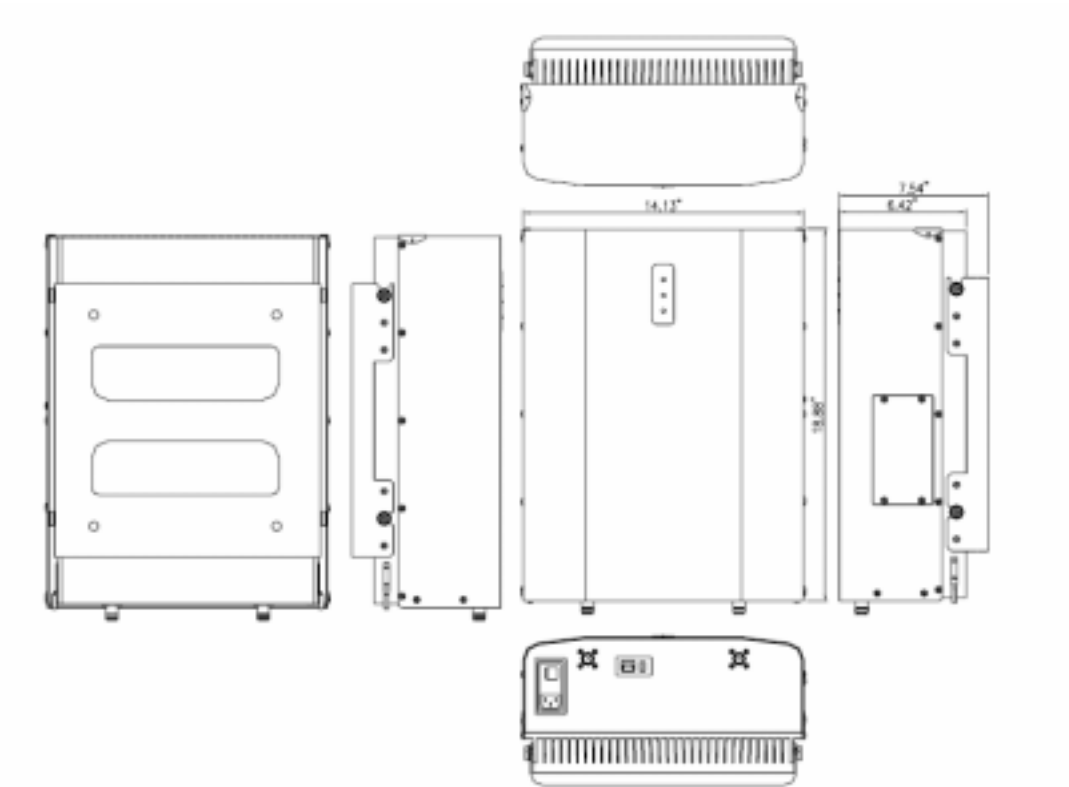
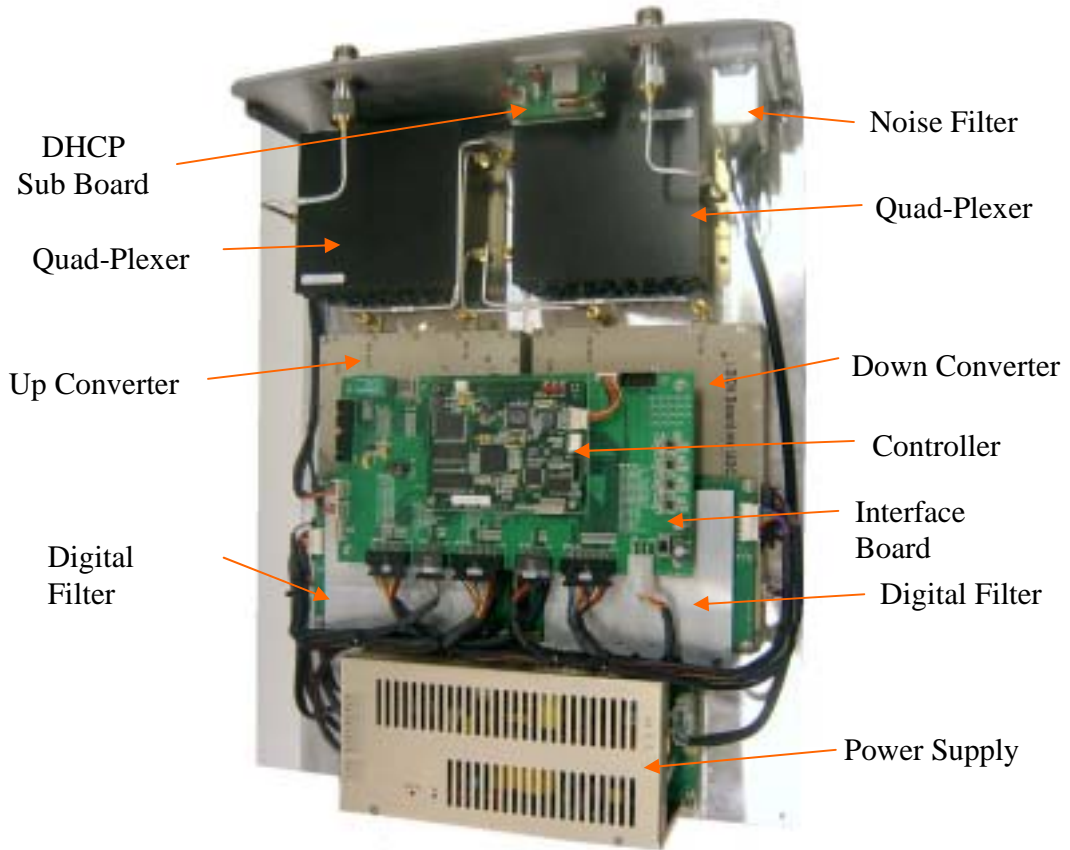Duo-i8030NM:
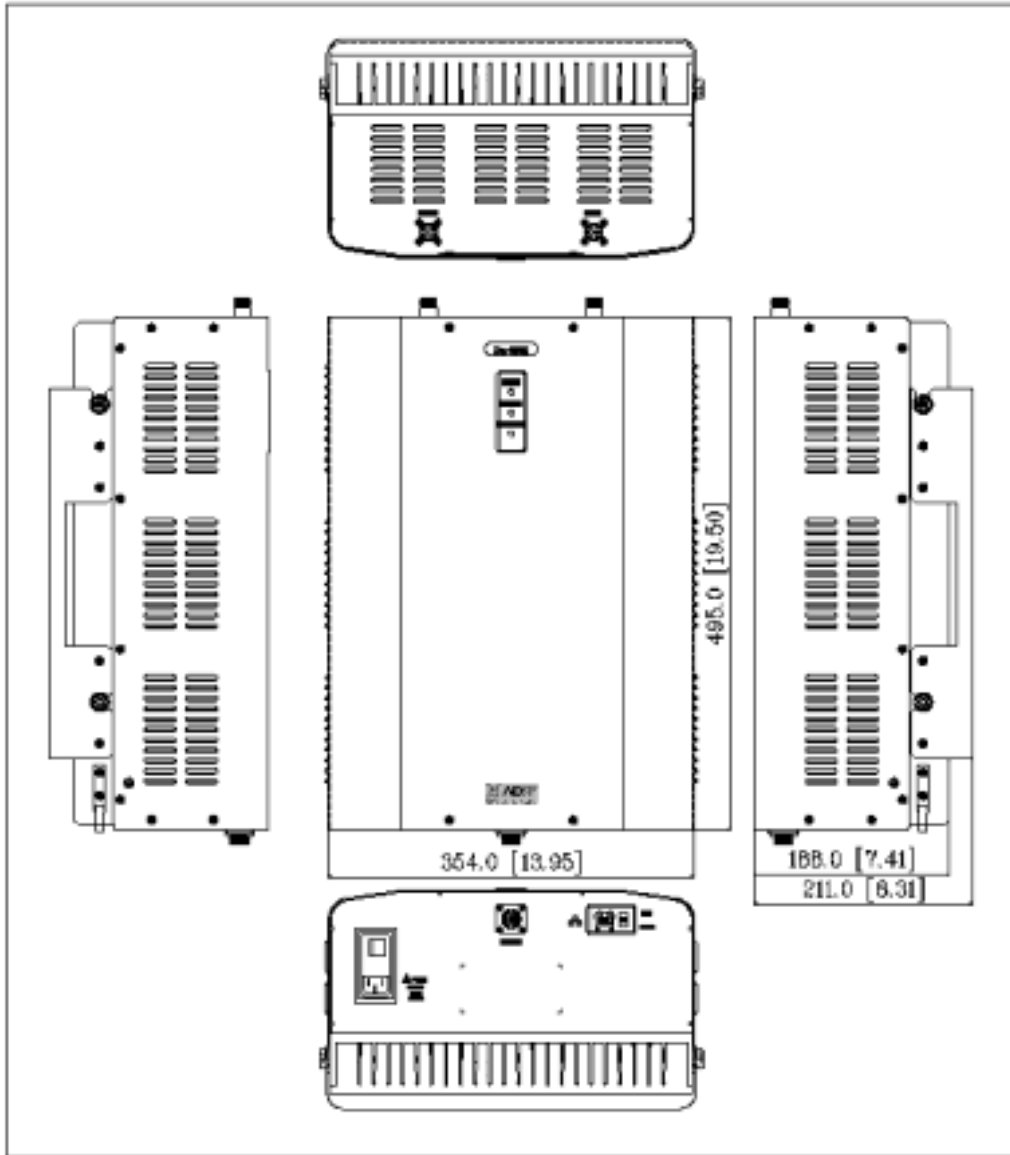
Appendix C Duo-i6515/6525/8030NM Overview

C.1 Block Diagram

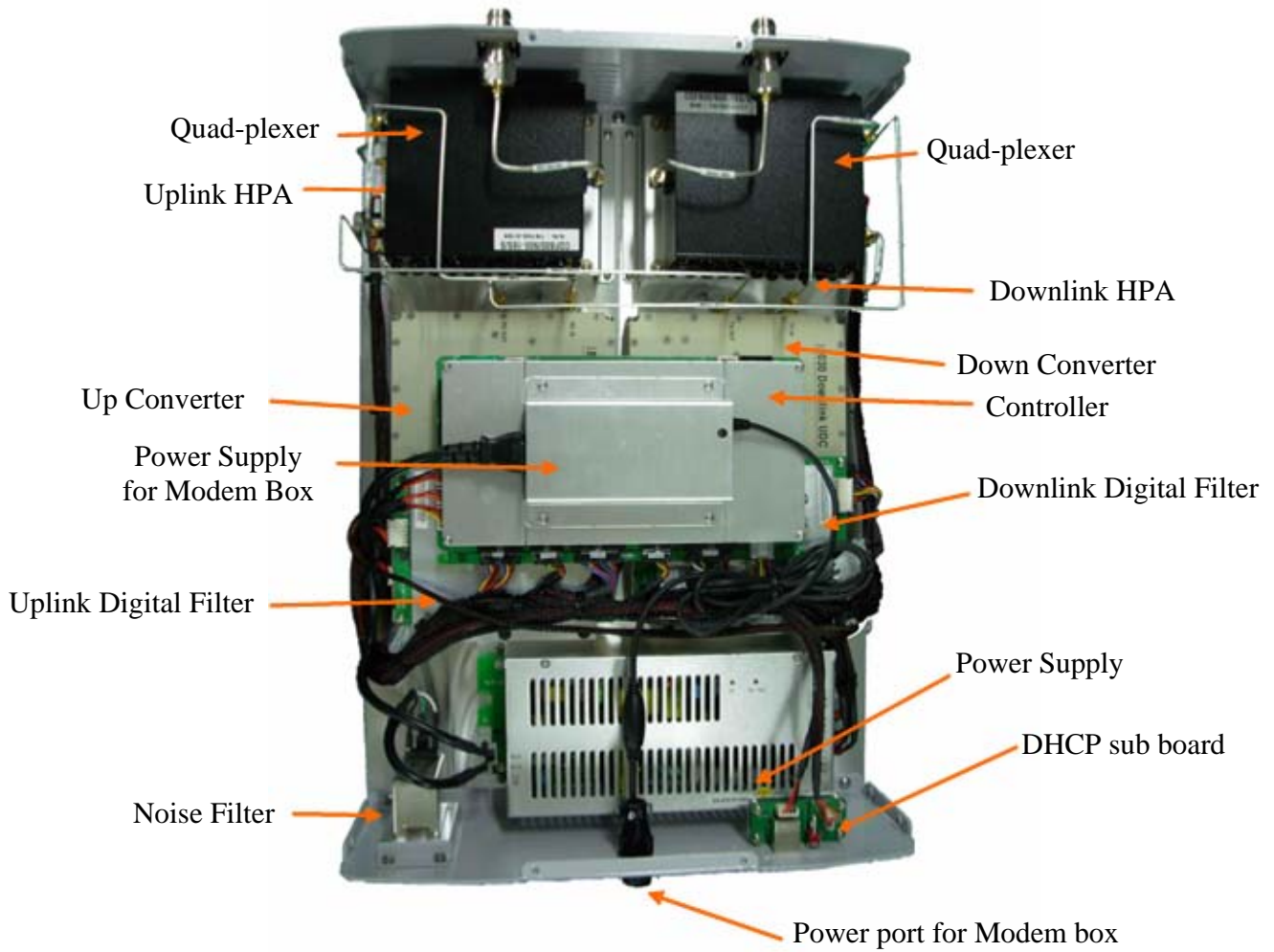Duo-i6515/6525/8030NM Repeater Block Diagram

C.2 Components

Duo-i6515/6525NM:

DHCP Sub Board
Noise Filter
Quad-Plexer
Quad-Plexer
Up Converter
Down Converter
Controller
Interface Board
Digital Filter
Digital Filter
Power Supply

Duo-i6515/6525 Repeater Internal Components Diagram

Duo-i8030NM

Power Supply

It provides DC power to each module within the repeater.

Controller

It is responsible for monitoring the status of each module and controls its parameters. Also it interfaces with PC through Ethernet port.

Down Converter Module

The downlink RF signal entered through the cavity filter is converted to IF frequency, which is later converted back to RF frequency again through digital filtering.

Up Converter Module

The uplink RF signal entered through the cavity filter is converted to IF frequency, which is later converted back to RF frequency again through digital filtering.

Quad-Plexer

It consists of four BPFs (band-pass filters) each of the four RF signal paths: SMR 800 (Tx & Rx) and SMR 900 (Tx & Rx)

Digital Filter

It is composed of A/D (analog to digital) and D/A (digital to analog) converters. It also has a FPGA (field programmable gate array) which has the capability for superior out-of- band rejection and re-banding.

Modem Box Adapter

Adapter for modem box