

SDR Modular Repeater User Manual

Version 1.0





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Change List

Version	Change list	Contents



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Terms and Abbreviations

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' Repeater Operation and Management System
BTS	Base Transceiver Station
CDMA	Code Division Multiple Access
CFE	Compact Front End
CW	Continuous Wave (un-modulated signal)
DAS	Distributed Antenna System
DL	Downlink
Downlink	The path covered from the Base Transceiver Station (BTS) to the subscribers' service area
	via the repeater
НРА	High Power Amplifier
HW	Hardware
IF	Intermediate Frequency
LNA	Low Noise Amplifier
LTE	Long Term Evolution
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 subscribers' service area to the Base Transceiver Station (BTS)
	via the repeater
VSWR	Voltage Standing Wave Ratio



1. INTRODUCTION

Up to four technologies in one body: SDR is an over-the-air repeater system that can incorporate up to four (4) technologies in one body. Current supported technologies are SMR800, SMR900, PCS, BRS, Cellular, 700MHz, AWS and 600MHz.

1.1 Highlights

- Supports up to 4 frequency bands simultaneously
 - Available modules include:
 - > 600 MHz- Covers the 35MHz band
 - > 700 MHz- Covers any combination of Lower A, Lower B, and Upper C
 - > AWS- Covers DL 70MHz, UL 45MHz
 - 3 independent RF channels, each channel supports 1.25 to 18.75 MHz bandwidth
 - > BRS- Covers 196 MHz
 BRS 2.5GHz_Full Bandwidth Supports up to 100 MHz for 5G NR
 - > Cellular- Covers the 25 MHz band
 - > SMR800 (18 MHz) / SMR900 (5 MHz)
 - > PCS- Covers 65 MHz
 - 3 independent RF PCS channels, each channel supports 1.25 to 18.75 MHz bandwidth
- Composite Output Power of 24/30/33 dBm
- 30 dB AGC Range @ 0.5 dB Step for SMR
- 40 dB AGC Range @ 0.5dB Step for 700MHz, AWS, BRS, Cellular, PCS and 600MHz
- Adjustable AGC Output Power Level
- Adjustable ALC Level
- Band Selectable via Web-GUI
- Can Support up to 3 Non-Contiguous Bands on the PCS and AWS modules
- Can Support up to 2 Non-Contiguous Bands on the 600MHz
- Supports Network Management Monitoring System via SNMP
- Digital filtering
- Incremental Automatic Shutdown/Resumption Time: SDR gradually increases the time span between automatic shutdown and resumption before it permanently shuts itself down
- Versatility and Usability: SDR gives total control to the user. Most of the control parameters, e.g., gain, output power, alarm threshold, etc. can be changed using the Web-GUI so that the user can adjust the system perfectly to the given RF environment
- Web-GUI connectivity via DHCP
- Supports DHCP; No 3rd party GUI software required
- Automated installation
- Adjustable center frequencies by 1KHz step



1.2 Parts List

Label	Quantity	Description
SDR-NMS		
А	1	SDR Network Management System (NMS)
В	1	AC Power Cable
С	1	Ethernet Cable (Crossover)
D	1	NMS Power Cable
E	6	Anchor Bolt
F	1	Ground Cable
G	1	Documentation CD**
SDR-Modules		
J	Up to 4*	Optional SDR Modules*
К	Up to 4*	Module Data Cable
SDR-CHC		
L	1	SDR-CHC
М	6 or 8	RF Jumper Cables
N	1	50 Ohm Terminator (placed on Server Wifi port)
0	1	Chassis Mounting Kit











1.3 Repeater Quick View







1.4 Warnings and Hazards



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 their own expense.

CAUTION

Double Pole/Neutral Fusing.

FCC Part 20

WARNING. THIS is NOT a CONSUMER device. It is designed for installation by FCC LICENSEES and QUALIFIED INSTALLERS. You MUST have an FCC LICENSE or express consent of an FCC Licensee to operate this device. Unauthorized use may result in significant forfeiture penalties, including penalties in excess of \$100,000 for each continuing violation.

Preclude indications that Home/ personal use are prohibited. Use of unauthorized antennas, cables, and/or coupling devices not conforming with ERP/EIRP is prohibited.

Part 15.21

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

WARNING: This is NOT a CONSUMER device. It is designed for installation by an installer approved by an ISED licensee. You MUST have an ISED LICENCE or the express consent of an ISED licensee to operate this device.

RSS-GEN, Sec. 7.1.2 – (transmitters)

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionneravec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention desautres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotroperayonnée quivalente (p.i.r.e.) ne dépassepas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

RSS-GEN, Sec. 7.1.2 – (detachable antennas)

This radio transmitter (identify the device by certification number, or model number if Category II)has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio (identifier le dispositif par son numéro de certification ou son numéro de modèle s'il fait partie du matériel de catégorie I) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

RF Radiation Exposure

This equipment complies with RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 70 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. RF exposure will be addressed at time of installation and the use of higher gain antennas require larger separation distances.

L'antenne (ou les antennes) doit être installée de façon à maintenir à tout instant une distance minimum de au moins 70 cm entre la source de radiation (l'antenne) et toute personne physique. Cet appareil ne doit pas être installé ou utilisé en conjonction avec une autre antenne ou émetteur.



2. OVERVIEW FOR EACH MODULE

2.1 NMS

2.1.1 LEDs

SDR has LEDs on the front of the NMS as shown below in Figure 3.



Figure 3 NMS LED

Table 2-1	NMS LED Specifications
-----------	------------------------

SDR	NMS	Specifications
Power	Solid Green	NMS power is ON
	OFF	NMS is powered OFF
CH-1, CH-2,	Solid Green	Module has communication with NMS
CH-3, CH-4	Solid Red	Module has a communication failure with NMS
	OFF	Module is powered OFF

2.1.2 Ethernet Port and Host/Remote Switch

2.1.2.1 Ethernet Port

The Ethernet port can be used to communicate directly with the SDR using a RJ-45 crossover cable or can also be used to connect the SDR to an external modem box.

2.1.2.2 Host/Remote Switch

The Host/Remote Switch allows the user to switch the default Repeater IP, Subnet Mask, and Gateway of the repeater to an alternative setup. These settings can be adjusted by logging into the repeater in HOST mode and configuring the settings under the Modem Box Setting section on the Install Page (section 5.4.1.3).

Once the settings are set, flipping the switch to the REMOTE position will reboot the repeater with the new alternate settings. *Please note that when the repeater is set to the REMOTE position, DHCP is disabled and the repeater will not automatically assign an IP address to any device that connects directly to the repeater.*



Figure 4 Ethernet Port and Host/Remote Switch

- Host IP: 192.168.63.1 (Fixed IP, unable to modify this IP address)
- Remote IP: 192.168.63.5 (Default IP, but can be modified in Host mode)



2.1.3 DC Power Port & Debug Port.

- DC Power Port- The DC Power Port can be used to provide power to the optional External Modem Box (ADRF OmniBox, SymBox)
- Debug Port- The debug port is used for ADRF testing purposes only.



Figure 5 Debug Port

2.1.4 Communication Port & NMS Power Port

• Communication Port- These RJ-45 ports are used to connect the SDR-NMS to the SDR modules using the included RJ-45 cables.



Figure 6 Communication Port

Note: Each module must be plugged into the corresponding port number on the SDR-NMS in order for the NMS to properly detect the modules.



2.1.5 NMS Power Port & Power Outlet for Channel Card

- NMS-PWN-IN (NMS power input)- The NRS-PWN-IN port is used to power the SDR-NMS. The 2-pin cable connects to the any one of NMS-PWR-OUT ports on the SDR modules. The NMS power can be used to power on/off the SDR-NMS.
- Power for RF Module- Connect the AC power cables to the SDR modules



Figure 7 NMS Power Port & Power Outlet for Channel Card

2.1.6 Master AC outlet

Connect the Master AC In from the chassis to an AC Outlet.



- The socket-outlet shall be installed near the equipment and shall be easily accessible.
- This power of this system shall be supplied through wiring installed in a normal building.
- If powered directly from the mains distribution system, it shall be used additional protection, such as overvoltage protection device.



2.2 RF Module

2.2.1 LEDs

SDR has LEDs on the front of the RF module as shown below in Figure 9.



Figure 9 RF Module LED

Table 2-2	RF Module LED	Specifications
		opeenications

SDR-N	lodule	Specifications
Power	Solid Green	Module power is ON
	OFF	Module is powered OFF
Soft Fail	Solid Yellow	Soft Fail alarm exist in the system
	OFF	No Soft Fail alarm are present in the system
Hard Fail	Solid Red	Hard Fail alarm exist in the system
	OFF	No Hard Fail alarms are present in the system
RSSI	Input < -85dBm	Zero (0) bar On
	Input < -75dBm	One (1) bar On
	Input < -65dBm	Two (2) bars On
	Input < -55dBm	Three (3) bars On
	Input < -45dBm	Four (4) bars On
	Input >= -45dBm	Five (5) bars On

2.2.2 RF Ports

Donor and server antennas can be connected directly to the modules or the optional SDR-CHC (channel combiner) can be used to split or combine signals.



Figure 10 RF port



2.2.3 Power Switch

The AC Power on/off switch is located at the back of each individual module. Each module must be powered on separated. The switch should be powered on after the repeater has been installed properly.



Figure 11 SDR Repeater Power Switch View

2.2.4 Back Up Battery Port



Figure 12 Battery Backup Port

The SDR module can be connected to an ADRF-BBU (ADRF Battery Backup) to provide power during a power failure. If an ADRF-BBU is utilized, connect the ADRF-BBU to the SDR via the external battery port as shown in Figure 4.

(WARNING: The circuit switch on the ADRF-BBU must be set to OFF before connecting the ADRF-BBU to the SDR to prevent damage to the repeater or the ADRF-BBU and personal injury.)

Note: Please contact ADRF Technical Support for assistance if you are unfamiliar with the installation procedure of our battery box.

2.2.5 Communication Port & Mode Select Switch

- Communication Port- This port is used to communicate with the SDR-NMS. Connect the RJ-45 data cables that are included with the SDR modules to the NMS communication port.
- Master/Slave switch- The Master/Slave switch must be set to the slave position when the SDR modules are connected to a SDR-NMS. The Master/Save switch should only be set to the Master when troubleshooting the repeater with ADRF Technical Support.



Figure 13 Master/Slave Switch

2.2.6 AC Select Switch



Figure 14 AC Select Switch

• The AC select switch will let the user switch between 115V and 230V.



2.2.7 Communication Port & Mode Select Switch

- NMS-PWR-OUT- This port is used to power the SDR-NMS. If multiple modules are being used in a system, the SDR-NMS only requires power from only 1 module. This port will connect to the NMS-PWN-IN on the SDR-NMS.
- Debug Port- The debug port is used for ADRF testing purposes only.



Figure 15 NMS Power Port & Debug Port

2.3 Channel Combiner (SDR-CHC)

2.3.1 RF Ports

An optional channel combiner can be mounted directly above the SDR. There are 2 versions of the SDR-CHC. The SDR-CHC-V supports Cellular, AWS, PCS, and 700MHz. The SDR-CHC-S supports PCS, BRS, and SMR. The donor portion of the SDR-CHC can be used to split up a combine donor signal. The server portion of the SDR-CHC can be used to combine the server signals into the Server Sum port. Please contact <u>sales@adrftech.com</u> if you are interested in purchasing the SDR-CHC.



Figure 16 Channel Combiner RF ports

- Port Name Description
 - Donor PCS: Connects to the SDR PCS donor port
 - Donor Cell: Connects to the SDR Cell donor port
 - Donor AWS: Connects to the SDR AWS donor port
 - Donor 700: Connected to the SDR 700 MHz donor port
 - Donor BRS: Connects to the SDR BRS donor port
 - Donor Sum: Connects to the combined donor line
 - Donor SMR: Connects to the SDR SMR donor port
 - Donor Sum CPL: Expansion donor port with 18 dB ±3 coupling value [Connects to an external modem box]

- Server Sum 2: Expansion server port with 20 dB coupling value
- Server PCS: Connects to the SDR PCS server port
- Server Cell: Connects to the SDR Cell server port
- Server AWS: Connects to the SDR AWS server port
- Server 700: Connects to the 700 MHz server port
- Server BRS: Connects to the BRSPCS server port
- Server WiFi: Input port for Wifi AP
- Server Sum: Connects to the server antennas
- Server SMR: Connects to the SDR SMR server port

3. ALARMS



3.1 Message Board Alarms and Notification

Parameters	Remark
AC Fail	Power supply is not operating within specs
DC Fail	Power supply is not operating within specs
Fan Fail	System has detected an issue with the fan
Temperature	Module is above the normal operating temperature
Current	Power supply is not operating within specs
System Halt	System is in a shutdown state due to a hard fail alarm
DSP Fault	System has detected an issue with the internal DSP chip
Link Fail	Communication error between the module and NMS
BRS Out of Sync	Unable to perform TDD sync
OSC	Oscillation detected
DL Signal not detected	DL signal is below the specified level
DL Signal Low	DL signal is below the specified level
Input Overload	Incoming in-band DL or UL signal is too strong
Out of band Overload	Incoming out-band DL or UL signal is too strong
Synthesizer Lock Fail	Issue with internal PLL
DL RF Power	Input + gain does not match the output level (above delta of 6 dB)
Overpower	Output level is above the max output levels
VSWR	Power is being reflected back to the repeater
Heartbeat	Heartbeat
Reboot	Reboot
Factory setting	Factory setting

Table 3-1 Message Board Alarms and Notification



3.2 Alarms

Parameters	Remark
AC Fail	Power supply is not operating within specs. (4 seconds)
DC Fail	Power supply is not operating within specs. (4 seconds)
Fan Fail	System has detected an issue with the fan. (4 seconds)
Temperature	Module is above the normal operating temperature. (4 seconds)
	Over Temperature [Soft: 80~87 C, Hard: Above 87 C]
Current	Power supply is not operating within specs. (4 Second) Over Current [Hard: Above 10A]
System Halt	System is in a shutdown state due to a hard fail alarm. (10 times)
DSP Fault	System has detected an issue with the internal DSP chip. (Cannot communication with DSP)
Link Fail	Communication error between the module and NMS. (5 mins)
BRS Out of Sync	Unable to perform TDD sync (10 seconds)
OSC	Oscillation detected. Alarm is only present when one-time
	oscillation check is performed (4 seconds)
DL Signal not detected	DL signal is below the specified level. (default: -85dBm)
DL Signal Low	DL signal is below the specified level. (default: -90dBm)
Input Overload	Input signal is above the threshold.
	(Soft: -17dBm, Hard: -15dBm)
Out of band Overload	Out of band signal is above the threshold.
	(Soft: -17dBm, Hard: -15dBm)
Synthesizer Lock Fail	Issue with internal PLL
DL RF Power	Input + gain does not match the output level
	(default delta of 6 dB)
Overpower	Output level is above the max output levels
	(Soft: ALC or AGC + 1~2dB, Hard: ALC or AGC + >2dB)
VSWR	Power is being reflected back to the repeater. Threshold = output
	power - 8dB. For example, if the repeater is outputting 24dBm,
	then if the system detects 16dBm of return power, then the VSWR
	will be triggered.

Table 3-2 Alarms Threshold



4. INSTALLATION

4.1 Installation Procedures

4.1.1 Wall Mount Procedure

- Verify that the SDR and mounting hole are in good condition
- Remove all SDR modules from the system
- Place the SDR chassis up against the wall so that that module's RF ports face the ceiling
- Mount the SDR chassis to wall use the six (6) mounting hold on the wall mount bracket
- Install the SDR modules into the chassis and secure the module by tightening the four (4) hand screws
- Connect the power and data cables at the bottom on the SDR
- Connect the GND cable
- Connect the Antenna cable
- Connect the Power cable



Figure 17 SDR Wall Mount



4.1.2 Rack Mount Procedure

- Verify that the SDR and mounting hole are in good condition
- Remove all SDR modules from the system
- Remove all SDR wall mount bracket from the system
- Install the SDR chassis into the 19" rack mount system
- Screw the SDR chassis into the 19" rack mount system using the eight (8) mounting holes
- Install the SDR modules into the chassis and secure the module by tightening the four (4) hand screws
- Connect the power and data cables at the back of the SDR
- Connect the GND cable
- Connect the Antenna cable
- Connect the Power cable



Figure 18 SDR Rack Mount



4.1.3 SDR CHC Mount Procedure

The SDR-CHC ships with a chassis mounting kit. The SDR-CHC can be directly mounted to the chassis using the chassis mounting kit. This kit is only needed when wall-mounting the SDR.



Figure 20 SDR CHC Front View

The SDR-CHC is to be placed on top the chassis. The mounting brackets should be installed in the position shown below in grey. Secure the mounting brackets in place with the screws.



Figure 21 SDR CHC Assembly



4.2 Grounding

Install the ground cable that is included in the package at the back of the repeater as show in the figure below.



Figure 22 Ground Cable Connection

• Round terminals located on the side of a 0.75 mm2 (18 AWG) or more wires Using permanently connected to earth.



4.3 Antenna Separation/Isolation

Separation between the 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.





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 $13 \sim 15$ dB greater than the maximum gain of the repeater. For example, if the gain of the repeater is 50 dB, then an isolation of $63 \sim 65$ dB or greater is required. In the same manner, because the SDR has a maximum gain of 90 dB in case of SDR-30, it requires an isolation of at least $103 \sim 105$ dB.



4.4 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 24 Direct Line of Sight to the BTS



5. SDR WEB-GUI SETUP

The Web-GUI allows the user to communicate with the repeater either locally or remotely. To connect to the repeater locally, you will need a laptop with an Ethernet port and a RJ-45 crossover cable. To connect to the repeater remotely, you will need to have an active internet connection and the repeater must have either an internal modem or an Omnibox (ADRF Modem Box) connected to the repeater.

5.1 Repeater/PC Connection Using Web-GUI

- Verify that your Local Area Connection is set to Obtain an IP address automatically under the Internet Protocol (TCP/IP) properties
- If you are connecting to the unit remotely (use of a modem), then skip steps A and B.
- Connect the RJ-45 crossover cable between the laptop's Ethernet port and the repeater's Ethernet port
- Launch an Internet Browser
- Type the following IP address into the address bar of Microsoft Internet Explorer: <u>http://192.168.63.1</u>
- If you are connecting to the unit remotely, then type the IP address of the modem to connect to the unit
 The following login screen will appear:

	Status Control Install System Help Logout
ADVANCED RF TECHNOLOGIES ADRF Site ID : ADRF	AROMS Login Username: Password:
	Login
	– Copyright © 1999-2010 Advanced RF Technologies, Inc. 3116 Vanowen St • Burbank, CA 91505 • U.S.A. Toll Free Number (1-800-313-9345) techsupport@adrftech.com http://www.adrftech.com
	Figure 25 Login screen

If you are not the Administrator, please type in your assigned username & password which you should have received from the Administrator.

The default username and password for the General User is adrf & adrf, respectively. The default Administrator login is admin & admin, respectively.



5.2 Status Tab

5.2.1 Status- NMS

					ADRF Remote Opera	ation & Management Sy
4		Connected Device	Alarm	Install Status	Repeater Inf	D
		[1] SDR-30-S8/9	- Normal	Not installed	Repeater S/N	TEST
	difference	[2] SDR-30-P	- Soft Fail	Not installed	Latitude	
					Longitude	
45	and a second	[3] SDR-30-B	- Hard Fail	Not installed	Firmware	26000F02003X006
IR-1	SYSTEM	[4] EMPTY	- E	mpty	Web GUI	X0.0.33
S-2			Message Board		Modem Info	
S-3 PTY			2011-08-12 10:21:27 [BR 2011-08-12 10:21:27 [BR 2011-08-12 10:21:13 [BR 2011-08-12 10:21:00 [M 2011-08-12 10:21:01 [PC 2011-08-10 11:49:27 [BR	S-3] Oscillation Shutdowr S-3] Downlink RSSI Alarm S-3] Service Initiated UJ Service Initiated S-2] Downlink Signal Low = S-3] Oscillation Shutdowr	Repeater Loc	ation
nced RF Technologies, Inc. ies innovative coverage ons to leading wireless service ders around the world.			2011-08-10 11:49:27 BR 2011-08-10 11:49:14 BR 2011-08-10 11:49:14 BR 2011-08-10 11:49:00 WC 2011-08-10 11:49:02 PC 2011-08-10 11:43:47 BR	S-3] Downlink RSSI Alarm S-3] Service Initiated CU] Service Initiated S-2] Downlink Signal Low S-3] Occillation Shutdowr	Phone: 1-800-31 E-mail: techsupp	99976 3-9345 ort@adrftech.com
less Coverage s Never Been So Easy			2011-08-10 11:43:47 (BR 2011-08-10 11:43:47 (BR 2011-08-10 11:43:33 (BR 2011-08-10 11:43:08 (SM 2011-08-10 11:43:08 (SM 2011-08-10 11:43:08 (SM 2011-08-10 11:43:05 (PC	5-3] Downlink RSSI Alarm S-3] Downlink RSSI Alarm S-3] Downlink Signal Low R-1] Service Initiated S-2] Downlink Signal Not De S-2] Service Initiated	Installer Con Company: Installer: Phone: E-mail:	tact Info
	Copyright @ 1993-2010 Advanc Toll Free Number (1-800-313-93 Status Control I	nstall System H	116 Vanowen St * Burbank, C com http://www.adrftech.co elp Logout	A 91505 • U.S.A. m	A	
						AROIVI
NOED RF TECHNOLOGIES		Connected Device	Alarm	Install Status	ADRF Remote Opera Repeater Info	tion & Management Sy
NOED RF TECHNOLOGIES		Connected Device	Alarm	Install Status	ADRF Remote Opera Repeater Info Repeater S/N	tion & Management Sy
NGED RF TECHNOLOGIES		Connected Device [1] SDR-24-P	Alarm - Normal	Install Status Not installed	ADRF Remote Opera Repeater Info Repeater S/N	N111.11111
NGED RF TECHNOLOBIES	ग्राम्य	Connected Device [1] SDR-24-P [2] SDR-30-C	Alarm - Normal - Normal	Install Status Not installed Not installed	ADRF Remote Opera Repeater Info Repeater S/N Latitude	N111.111111
AGED RF TECHNOLOGIES	AUDER	Connected Device [1] SDR-24-P [2] SDR-30-C [3] SDR-30-700	Alarm - Normal - Normal - Normal	Install Status Not installed Not installed Not installed	ADRF Remote Opera Repeater Info Repeater S/N Latitude Longitude	N111.111111 W333.333333
	SYSTEM	Connected Device [1] SDR-24-P [2] SDR-30-C [3] SDR-30-700 [4] SDR-24-A	Alarm Normal Normal Normal Normal Normal	Install Status Not installed Not installed Not installed Not installed	ADRF Remote Opera Repeater Info Repeater S/N Latitude Longitude Firmware Web GUI	N111.111111 W333.333333 26000F020030000 1.0.5
N N SS-1	SYSTEM	Connected Device [1] SDR-24-P [2] SDR-30-C [3] SDR-30-700 [4] SDR-24-A	Alarm - Normal - Normal - Normal - Normal - Normal	Install Status Not installed Not installed Not installed Not installed	ADRF Remote Opera Repeater Info Repeater 5/N Latitude Longitude Firmware Web GUI	N111.111111 W333.33333 26000F020030000 1.0.5
N S S S S S S S S S S S S S S S S S S S	SYSTEM	Connected Device [1] SDR-24-P [2] SDR-30-C [3] SDR-30-700 [4] SDR-24-A	Alarm - Normal - Normal - Normal - Normal - Message Board	Install Status Not installed Not installed Not installed	ABR Renete Open Repeater Info Repeater S/N Latitude Longitude Firmware Web GUI	N111.111111 W333,333333 26000F020030000 1.0.5
N N 25-1 ellular-2 10-3 WS-4	SYSTEM	Connected Device [1] SDR-24-P [2] SDR-30-C [3] SDR-30-700 [4] SDR-24-A	Alarm	Install Status Not installed Not installed Not installed Not installed Not installed Not installed Status 2 Service Initiated Status 2 Service Initiated Status 2 Service Initiated Status 2 Service Initiated	ADRF Remote Open Repeater Info Repeater S/N Lattude Longitude Firmware Web GUI Modem Info Repeater Loc	N111.11111 W33,3333 26000F020030000 1.0.5
N N N SS-1 Dota SS-4 N anced RF Technologies, Inc. Kes innovative coverage	SYSTEM	Connected Device [1] SDR-24-P [2] SDR-30-C [3] SDR-30-700 [4] SDR-24-A	Alarm	Not installed S-1 Service Initiated UJ Link Faul with PCS+1 1. UJ Service Initiated UJ Link Faul with PCS+1 1. UJ Service Initiated	ADRF Remote Open Repeater Info Repeater Info Longitude Firmware Web GUI Hodem Info Repeater Loco Technical Sup Phone: 1:600-31 E-mail: techsupp	N111.11111 W333.33333 2600F020030000 1.0.5 ation

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Figure 26 Status - NMS

The NMS Status page provides an overview of how the system is performing. From the NMS Status page, the user can see if there are any alarms present on any of the modules.

Log File



5.2.1.1 Navigation Bar

NMS	NMS
SMR-1	PCS-1
PCS-2	Cellular-2
BRS-3	700-3
EMPTY	AWS-4

Figure 27 Navigation Bar

The navigation bar located on the left hand side of the Web-GUI allows the user to switch between the various modules that are connected to the system.

5.2.1.2 System Summary





The system summary provides a snapshot of how the system is currently performing.

- **Connected Device** Displays what modules are connected to the SDR-NMS. Clicking on the buttons in the column will take you to the Status page of that module.
- Alarm- Displays the current alarm status of the individual modules
- Install Status- Displays the installation status of the module

5.2.1.3 Message Board

Displays the system events of all connected modules.

Message Board	
2011-01-19 08:34:00 [MCU] Serv 2011-01-19 07:13:00 [MCU] Serv	ice Initiated ice Initiated
	1.
Clear	Log File



5.2.1.4 Repeater Info / Modem Info / Technical Support / Installer Contact Info



Repeater S/N	P-SDR30-110001
Latitude	
Longitude	
Firmware	26100F01003X0038
Web GUI	0.0.21
1odem Info	
1odem Info Modem Type Repeater Loca	NONE
Modem Info Modem Type Repeater Loca	NONE
Modem Info Modem Type Repeater Loca	NONE ation
Modem Info Modem Type Repeater Loca Rechnical Supp Phone: 1-800-313 Frmail: techsuppo	NONE ation port 9345 port@adrftech.com
Modem Info Modem Type Repeater Loca Fechnical Sup Phone: 1-800-313 F-mail: techsuppo	NONE ation port 3346 ort@adrftech.com
Modem Info Modem Type Repeater Loca Fechnical Supp Phone: 1-800-313 C-mail: techsuppo	NONE ation port 3345 ort@adrftech.com act Info
Modem Info Modem Type Repeater Loca Fechnical Supp Phone: 1-800-313 F-mail: techsuppo installer Cont. Company:	NONE ation

Figure 30 Repeater Info / Modem Info / Technical Support / Installer Contact Info

- Repeater Info- Displays the serial number, latitude, longitude, and firmware version of the repeater
- Modem Info- If an internal modem is present, the modem information appears in this section
- Technical Support- Displays ADRF's Technical Support contact information
- Installer Contact Info- Displays the contact information of the installer



5.2.2 Status- SMR, PCS, BRS, Cellular, 700 MHz, AWS,600MHz



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Figure 31 Status - SMR



Figure 32 Status - PCS
ADVANCED RF TECHNOLOGIES	BRS Band			Message Board	ADRF Remote Oper Repeater Inf	ation & Management System
SDR-30-B	Band	Downlink	Uplink	2011-12-02 02:59:52 [PCS-2] Downlink Signal Low	Repeater S/N	TEST
SILE ID . ADRI_DRS	15.00 MHz	2,511.000 MHz	2,511.000 MHz	2011-12-02 02:59:48 [PCS-2] Downlink Signal Not E	Latitude	N111.333333
	D			2011-11-17 04:55:36 [SMR-1] Downlink Signal Low 2011-11-17 04:55:32 [SMR-1] Downlink Signal Not [Longitude	E222-222222
NMS	BRS	Downlink	Uplink	2011-11-02 09:01:21 [MCU] Link Fail with PCS-2 = 2011-11-02 09:01:19 [MCU] Link Fail with BRS-3 , 2011 11 02 09:01:00 [MCU] Link Fail with BRS-3 ,	Firmware	2610010100300006 3.2.1
SMR-1	Input [dBm]			2011-11-02 09:01:05 [MCU] Link Fail with BRS-3	Web GUI	1.0.2
PCS-2	Gain [dB]	90.0	90.0	2011-11-02 08:58:00 [MCU] Service Initiated 2011-11-02 08:26:00 [MCU] Service Initiated	Modem Info	
BRS-3	Output [dBm]	,-	-16.0	2011-10-28 16:29:41 [SMR-1] Default Factory Sett	Repeater Loo	ation
EMPTY	System	RF Alarm	Power Alarm	2011-10-27 01:16:27 [SMR-1] Repeater Installation 2011-10-27 01:16:27 [SMR-1] Repeater Installation 2011-10-20 01:04:14 [SMR-1] Repeater Installation		
Advanced RE Technologies, Inc.	Link Fai			2011-10-20 01:03:58 [SMR-1] Downlink Signal Not [2011-10-20 01:03:58 [SMR-1] Downlink Signal Low	Technical Cu	apost
supplies innovative coverage	Over Temper	ature		2011-10-20 01:03:57 [SMR-1] Repeater Installation 💌	Phone: 1-800-31	13-9345
solutions to leading wireless service	Under Tempe	rature			E-mail: techsupp	oort@adrftech.com
providers around the world.	Fan Fai			Clear Log File		
Wireless Coverage	System H	alt			Installer Con	tact Info
ing nere been or Las	Norma	Soft Fail	Hard Fail	Not Installed	Company: Installer: Phone:	

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Figure 33 Status- BRS



Figure 34 Sta

Status- Cellular

THE SIGNAL FOR SUCCESS

ADF	тне	SIGNAL	FOR	SUCCESS	
-----	-----	--------	-----	---------	--

	Status Con	trol Install	System H	lelp Logout	A	ROMS
ADVANCED RF TECHNOLOGIES	700 Band			Message Board	ADRF Remote Opera Repeater Info	tion & Management System >
SDR-30-700 Site ID + SDR SMR	Band			2011-11-30 06:41:37 [AWS-4] Service Initiated	Repeater S/N	TEST
Site in a solit_sitile	A+B	734.00 MHz	704.00 MHz	2011-11-30 06:41:26 [Cellular-2] Service Initiated	Latitude	N111.111111
	С	751.50 MHz	781.50 MHz	2011-11-30 06:41:11 [/00-3] Service Initiated 2011-11-30 06:41:08 [PCS-1] Service Initiated	Longitude	W333.333333
NMS				2011-11-30 06:41:00 [MCU] Service Initiated 2011-11-14 10:15:41 [MCU] Link Fail with PCS-1 ↓	Firmware	261007020030000A
	Power & Gain			2011-11-14 10:14:59 [MCU] Link Fail with PCS-1	Web GUI	1.0.5
PCS-1	700	Downlink	Uplink	2011-11-02 09:15:00 [MCU] Service Initiated		
Cellular-2	Input [dBm]			2011-10-14 09:30:11 [AWS-4] Service Initiated 2011-10-14 09:29:23 [Cellular-2] Service Initiated	Modem Info	
700-3	Gain [dB]	,-	,-	2011-10-14 09:29:07 [700-3] Service Initiated	Repeater Loc	ation
AWS-4	Output [dBm]			2011-10-14 09:29:02 [PCS-1] Service Initiated		
	and at family			2011-10-12 08:50:00 [MCU] Service Initiated		
				2011-09-27 14:34:48 [AWS-4] Service Initiated		
	System	RF Alarm	Power Alarm	2011-09-27 14:34:23 [Cellular-2] Service Initiated	Technical Sur	port
Advanced RF Technologies, Inc. supplies innovative coverage	Link Fail			2011-09-27 14:34:07 [700-3] Service Initiated 2011-09-27 14:34:02 [PCS-1] Service Initiated	Phone: 1-800-31	3-9345
solutions to leading wireless service	Over Tempera	ature		< <u>Ⅲ</u> ► //	E-mail: techsupp	ort@adritech.com
providers around the world.	Under Temper	ature		Log File		
Wireless Coverage	Fan Fail				Installer Cont	act Info
Has Never Been So Easy	System Ha	lt		Modem	Company: Installer:	
	Normal	Soft Fail	Hard Fail	Not Installed Disabled Power	Phone: E-mail:	

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Figure 35 Status- 700 MHz



Figure 36 St

Status- AWS



5.2.2.1 Band

This section displays the spectrum and technology that is being used. The band column displays the bandwidth or band that has been selected. The downlink column displays the center frequency of the selected band. The uplink column displays the center frequency of the selected band.



Figure 37 Band Display

5.2.2.2 **Power & Gain**

This section displays the Input, Gain, and Output for both downlink and uplink.

SMR	Downlink	Uplink
Input [dBm]		
Gain [dB]	80.0	80.0
Output [dBm]		

Figure 38 Power & Gain Display

- Input [dBm] Displays the incoming Downlink/Uplink signal level. The system will display "--.-" when the input level is < -90 dBm.
- Gain [dB] Displays the amount of gain that is currently be used.
- Output [dB] Diplays the Downlink/Uplink output power levels. The system will display "--.-" when the input level is < -10 dBm.



5.2.2.3 Alarm

This section displays the alarm status for System alarms, RF alarms, and Power alarms. If an alarm is present in the system, then the color of the alarm tab will change according to the type of failure.

System	Alarm Power Alarm	System RF 4	Alarm Power Alarm	System R	F Alarm Power Alarm
Link Fail		DL Signal not detected	DL Signal Low	AC Fail	
Over Temperature		Outband overload	Input overload	DC Fail	
Under Temperature		Synthesizer Lock Fail	DSP Fault	Over Current	
Fan Fail		DL RF Power	Over Power		
System Halt		DL Oscillation Alarm	VSWR		
Normal Soft Fail	Hard Fail Link Fail	Normal Soft Fail	Hard Fail Link Fail	Normal Soft Fai	Hard Fail Link Fail

Figure 39 Alarm Display

5.2.2.4 Message Board

Displays the 20 most recent events.

Message Board	
Message Board 2011-01-19 08:34:00 [MCU] Service Initi 2011-01-19 07:13:00 [MCU] Service Initi	iated iated
Clear	Log File

Figure 40 Message Board

- Clear: Clears the content that is currently being displayed on the Message Board
- Log File: Downloads the system Log File (events and alarms) to your computer

5.2.2.5 Install, Modem, and Power Status

Not Installed	Power
------------------	-------

Figure 41 Install, Modem, and Power Status

- Installation: Displays whether or not the installation routine has been run (Not Installed or Installed)
- Modem: Displays the status of the modem
 - Disabled- No internal modem is present
 - Not Connected- Internal modem is detected, but no connection to the network has been established
 - Connected- Internal modem is detected and a connection to the network has been established
- Power: Displays the power source that is currently being used



5.2.2.6 Repeater Info / Modem Info / Repeater Location / Technical Support / Installer Contact Info

Repeater Info	0				
Repeater S/N	P-SDR30-8110001				
Latitude					
Longitude					
Firmware	26100101003X0030 3.1.7				
Web GUI	0.0.21				
Modem Info					
Modern Type	Modem Type NONE				
Repeater Loc	ation				
Repeater Loc	ation				
Repeater Loc	ation				
Repeater Loc Technical Sup Phone: 1-000-31 E-mail: Inchese	ation port				
Repeater Loc Technical Sup Phone: 1-00-31 E-mail: techoupp	ation port 2-13-6 ort@edrRech.com				
Repeater Loc Technical Sup Phone: 1-000-31 E-mail: techoupp	ation port 2-13-6 ort@adrRech.com				
Repeater Loc Technical Sup Phone: 1-000-31 E-mail: technop Installer Cont	ation oport 0-10-6 ont@adritech.com tact Info				
Repeater Loc Technical Sup Phone: 1-000-01 E-mail: technop Installer Cont Company:	ation oport 0-10-6 ont@adritech.com tact Info				
Repeater Loc Technical Sup Phone: 1-000-01 E-mail: technopp Installer Cont Company: Englater: Discos:	ation port 0-10-6 ort@adrRech.com tact Info				
Repeater Loc Technical Sup Phone: 1-00-31 E-mail: technop Installer Cont Company: Installer: Phone: E-mail:	ation port 0-10-6 ort@adrRech.com tact Info				

Figure 42 Repeater Info / Modem Info / Repeater Location / Technical Support / Installer Contact Info

- Repeater Info: Displays the serial number, latitude, longitude, firmware version, Web-GUI version
- Modem Info: Displays the internal modem information (ESN, MDN, IP)
- Repeater Location: Displays the address where the repeater is installed
- Technical Support: Displays ADRF's Technical Support contact information
- Installer Contact Info: Displays 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 (except for the Main Window).



5.3 Control Tab

5.3.1 Control-NMS

Status Control Install System Help Logout	AROMS
Connected Device I SDR-30-S8/9 Factory Setting Reboot [2] SDR-30-P Factory Setting Reboot [3] SDR-30-B Factory Setting Reboot [4] EMPTY Factory Setting Reboot	ADRF Remote Operation & Management System
Copyright (© 1999-2010 Advanced RF Technologies, Inc. 3116 Vanowen St • Burbank, CA 91505 • U.S.A. Toll Free Number (1-800-313-9345) techsupport@adritech.com http://www.adritech.com	
Status Control Install System Help Logout Image: Connected Device Image: Connected Deviced Device Image: Connected Device <td< th=""><th>AROMS ADRF Remote Operation & Management System</th></td<>	AROMS ADRF Remote Operation & Management System
Copyright © 1999-2010 Advanced RF Technologies, Inc. 3116 Vanowen St • Burbank, CA 91505 • U.S.A. Toll Free Number (1-800-313-9345) techsupport@adritech.com http://www.adritech.com	
	<complex-block><complex-block></complex-block></complex-block>

5.3.1.1 Control Summary



Figure 44 Control Summary

This section allows the user to perform factory settings and reboot one module at a time.



5.3.1.2 Full System

This section allows the user to perform a full system reboot or full system factory settings.



5.3.2 Control- SMR, PCS, BRS, Cellular, 700, AWS

	Status Control Install System	Help Logout
ADVANCED RF TECHNOLOGIES	General Setting	Manual Gain Control
SDR-30-S8/9 Site ID : ADRF-SMR	AGC ON Downlink HPA ON	Downlink Gain [dB]
	Uplink HPA ON	Uplink Gain [dB]
NMS	Apply	Downlink AGC Level [dBm]
SMR-1		Uplink AGC Level [dBm] 30,0
PCS-2	System	DL Output ALC Level [dBm] 30.0
EMPTY	Reboot Factory Setting	DL Output ALC Offset [dB]
	Oscillation Check	DL /UL Gain Balance ON
Advanced RF Technologies, Inc. supplies innovative coverage	Sensitivity Level	Apply
solutions to leading wireless service providers around the world.	Progress : 0% (SMR)	Alarm Setting
Wireless Coverage	Check	Downlink Signal Low [dBm] -85.0
has never been 50 Lasy		Downlink Signal Not Detected [dBm]
	Heartbeat Time	Downlink RF Power [dB]
	Heartbeat ON	VSWR Alarm ON
	Periodic Time [min] 20,0	Auch
	Apply	Арргу
	Alarm Reporting Time	
	Over Current 5 mins ▼	
	• Over Temperature 5 mins -	
	● VSWR 5 mins ▼	
	 RSSI at Donor 	
	● RF Power	
	Apply	

Figure 46 Control- SMR, PCS, BRS, Cellular, 700, AWS

5.3.2.1 General Setting

1
Downlink HPA ON
Uplink HPA ON
Apply

Figure 47 General Setting

- AGC ON: Enables or disables AGC (Automatic Gain Control)
- **Downlink HPA ON**: Enables or disables the DL HPA (High Power Amplifier)
- **Uplink HPA ON**: Enables or disabled the UL HPA (High Power Amplifier) To enable any of the settings, click on the checkbox and click the Apply button.



5.3.2.2 **System**

Debeet	Frankrige Continu
Reboot	Factory Settin

Figure 48 System Command

• Reboot: Clicking the reboot button will have the following popup show up:

Message from webpage	E X
Reboot will restart the repeater's p To restart the repeater, click OK. To	rocessor. 'o quit, click Cancel.
ОК	Cancel



Click OK to reboot the repeater or click Cancel to exit out

• Factory Setting: Resets the repeater to the original factory settings



Figure 50

0 Pop-up message when Factory Setting button is pressed

5.3.2.3 Heartbeat Time

Heartbeat Time	
Heartbeat ON	
Periodic Time [min]	20.0 💌
	Apply



• Allows the user to enable or disable heartbeats from being sent out and also specify the time interval.



5.3.2.4 Alarm Reporting Time

Alarn	n Reporting Time	
	Over Current	5 mins 💌
۲	Over Temperature	5 mins 💌
۲	VSWR	5 mins 💌
۲	RSSI at Donor	5 mins 💌
۲	RF Power	5 mins 💌
		Apply

Figure 52 Alarm Reporting Time Setting

This section allows the user to specify the reporting time of the following alarms; Over Current, Over Temperature, VSWR, RSSI at Donor, and RF Power. If the alarm is set to 5 mins, then the system will send out a SNMP trap only if the alarm is continually present for a 5 minute period. If the alarm clears within this 5 minute period, then the SNMP trap will not be sent out. When the alarm reporting time is set to 0 min, the SNMP trap will be set out immediately once the alarm is triggered. The alarm should be set to 0 min, only when testing the monitoring function. Otherwise, all alarms should be set to 5 mins for normal operation.

5.3.2.5 Manual Gain Control

Dowplink Caip [dB]	50.0
	50.0
 Uplink Gain [dB] 	50.0 💌
 Downlink AGC Level [dBm] 	30.0 🔽
 Uplink AGC Level [dBm] 	30.0 💌
DL Output ALC Level [dBm]	30.0 💌
DL Output ALC Offset [dB]	7.0 💌
DL /UL Gain Balance ON	ON 💌
	Apply

Figure 53 Main Gain Control Setting

- Downlink Gain: Allows the DL gain to be adjusted manually when AGC is OFF
- Uplink Gain: Allows the UL gain to be adjusted manually when AGC is OFF
- Downlink AGC Level: Allows the user to set the DL output power level when AGC is enabled
 The system will automatically adjust the gain levels to output the specified AGC level
- Uplink AGC Level: Allows the user to set the UL output power level when AGC is enabled
 - The system will automatically adjust the gain levels to output the specified AGC level
- DL Output ALC Level: Allows the user to set the Max output level when AGC is OFF
- **DL Output ALC Offset**: The delta value at which the BDA will increase/decrease the gain levels to compensate for the decrease/increase in signal level
- **DL /UL Gain Balance ON**: When enabled, the system will keep the delta value between the Downlink and Uplink gain levels



5.3.2.6 Alarm Setting

Marm	Settina

💿 Downlink Signal Low [dBm]	-85.0 💌
 Downlink Signal Not Detected [dBm] 	-90.0 💌
Downlink RF Power [dB]	6.0 💌
💿 🗹 VSWR Alarm ON	
	Apply

Figure 54 Alarm Threshold Setting

- **Downlink Signal Low**: Allows the user to specify how low the signal can be before triggering a "Downlink Signal Low" soft-fail alarm
- **Downlink Signal Not Detected**: Allows the user to specify how low the signal can be before triggering a "Downlink Signal Not Detected" soft-fail alarm
- Downlink RF Power: Allows the user to set a maximum deviation value for the downlink RF power
 - For example, if the input signal is -50 dBm and the gain is set to 60 dB, the expected output power should be 10 dBm. If the Downlink RF Power alarm value is set to 6dB, then if the output power is below 4 dBm, then this will trigger a soft-fail alarm
- VSWR Alarm ON: Allows the user to enable/disable the VSWR alarm check



5.4 Install Tab

5.4.1 Install- NMS

ED RF TECHNOLOGIES		Co	onnected Device A	uto Installation			Repeater	Location Info
			[1] SDR-30-S8/9	Install			Company	
	drivite	1001	[2] SDR-30-P -	Install			Address1	
	and a lot		121 CDD 20 P	Install			Address2	
		and the second s	[3] 3DK-30-D	mstan			City	
-1	SYS	BTEM	[4] EMPTY -		Empty		State	Select one
-2							ZIP Code	
-3	ful con co	Device	Manager IP		Site ID			
ſY	[1] SDR-30	-28/9	192.168.63.10		ADRF-SMR		Repeater	Installer Info
	[2] 5DR-50	-P	192.160.63.10		ADRE-PCS		Company	
	[3] SDR-30	-D	192.166.63.10		ADKE-BKS		Name	
ed RF Technologies, Inc.	EMPTY		-		-		Phone	
is to leading wireless service	ation						E-mail	
rs around the world.	1000							
ss Coverage	atitude			Repeater IP	192.168.70.55			Se
L	ongitude.			Subnet Mask	255.255.255.0		Date & Ti	me
			Set	Gateway	192.168.70.254		Date	08/15/2011
					SI	et	Time	4 - 50 -
Copy Toll F	yright © 1999 Free Number	-2010 Advanced RF (1-800-313-9345) b	Technologies, Inc. 3116 V: echsupport@adrftech.com	nowen St. • Burba http://www.adrfte	nk, CA 91505 • U.S.A. :ch.com			
	vright © 1999 Free Number tatus Co	-2010 Advanced RF (1-800-313-9345) b ontrol Install	Technologies, Inc. 3116 V: echsupport@adrRech.com System Help	nowen St • Burba http://www.adrft/ Logout	nk, CA 91505 • U.S.A. ich.com		ADDE Domoio	ARO
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Figure 55 Install – NMS



5.4.1.1 Install Summary

The auto installation routine can be run from this page by clicking on the Install button under the Auto Installation column. This section also displays the Manager IP and Site ID for all the connected SDR modules.

	Connected Device	Auto	Installation	
1000	[1] SDR-30-S8/9	-	Install	
hicipin.	[2] SDR-30-P	-	Install	
And a state of the	[3] SDR-30-B	- 🗌	Install	
SYSTEM	[4] EMPTY	-		Empty
Device	Manager IF			Site ID
[1] SDR-30-58/9	192,168,63,1	10		ADRF-SMR
[2] SDR-30-P	192.168.63.3	0		ADRF-PCS
[3] SDR-30-B	192.168.63.3	10		ADRF-BRS
EMPTY	-			-
SYSTEM	Connected Device [1] SDR-24-P [2] SDR-30-C [3] SDR-30-700 [4] SDR-24-A	Auto 	Installation Install Install Install Install Install Install	
Device			Site ID	
[1] SDR-24-P			SDR_PCS	
[2] CDD, 20, C			ADDE2	



SDR_SMR

ADRF4

[3] SDR-30-700

[4] SDR-24-A



5.4.1.2 **Location**

This section allows the user to input the latitude and the longitude of the repeater.

ocation	
Latitude	
Longitude	
	Set

Figure 57 Location Setting

5.4.1.3 Modem Box Settings

This section allows the user to specify an alternative Repeater IP, Subnet Mask, and Gateway settings. These settings are enabled when the Host/Remote switch is set to the Remote position. When the Host/Remote switch is changed, the repeater will reboot and will result in a temporary loss in coverage.

Modem Box Setting	z
Repeater IP	192.168.63.5
Subnet Mask	255.255.255.0
Gateway	192.168.63.254
	Set

Figure 58 Modem Box Setting

5.4.1.4 Repeater Location Info / Repeater Installer Info

This section allows the user to specify the address of the repeater and also the information of the installer.

Repeater	Location Info
Company	
Address1	
Address2	
City	
State	Select one
ZIP Code	
Repeater	Installer Info
Company	
Name	
Phone	
E-mail	
	Set

Figure 59 Repeater Location Info / Repeater Installer Info



5.4.1.5 **Date & Time**

This section allows the user to specify the current date and time.

Date &	Time
Date	01/20/2011
Time	3 💌 38 💌 53 💌
	Set

Figure 60 Date & Time Setting



Status C							
nd Selection	n						
: SMI	R800			: SMR900			
851 MHz				-			869 MH:
1 2	3 4 5	6 7 8	8 9 10	11 12	13 14	15 16	17 18
806MHz							824MH:
935 MHz		94	0 MHz				
1	2 3	4	5				
896 MHz		90	1 MHz				
			Bandwidth		Downli	nk Frequenc	v (MHz)
Channel	Reference	Frequency	(MHz)	Set	Start	Center	End
SMR800	860.000	cente 💌	18.00 💌	Set	851.000	860.000	869.000
SMR800 SMR900	860.000 937.375	cente 💌	18.00 • 1.00 •	Set Set	851.000 936.875	860.000 937.375	869.000 937.875
SMR800 SMR900 MP Site ID	860.000 937.375	cente 💌	18.00 1.00 Moder	Set Set m Box Setting epeater IP	851.000 936.875 : 192.168.	860.000 937.375 Fn 70.55	869.000 937.875 equency Tab
SMR800 SMR900 MP Site ID Manager IP	ADRF-SMR 192,168,63	cente 💌	18.00 1.00	Set Set m Box Setting epeater IP ubnet Mask	851.000 936.875 : : 192.168. 255.255.	860.000 937.375 Fn 70.55 255.0	869.000 937.875 equency Tab
SMR800 SMR900 MP Site ID Manager IP	860.000 937.375 ADRF-SMR 192.168.63.	cente cente	18.00 1.00	Set Set m Box Setting epeater IP ubnet Mask ateway	851.000 936.875 255.255. 192.168. 192.168.	860.000 937.375 Fm 70.55 255.0 70.254	869.000 937.875 equency Tab
SMR800 SMR900 MP Site ID Manager IP	860.000 937.375 ADRF-SMR 192.168.63.	cente cente cente cente cente cente	18.00 × 1.00 × R G	Set Set m Box Settin epeater IP ubnet Mask ateway	851.000 936.875 255.255. 192.168.	860.000 937.375 Fr 70.55 255.0 70.254	869.000 937.875 equency Tab
SMR800 SMR900 Site ID Manager IP	860.000 937.375 ADRF-SMR 192.168.63	cente cente	18.00 × 1.00 × 8.00 × 1.00 × 9.00 × 1.00 × 1.00 × 1.00 ×	Set Set m Box Setting epeater IP ubnet Mask ateway	851.000 936.875 25 : 192.168. 255.255. 192.168.	860.000 937.375 Fn 70.55 255.0 70.254	869.000 937.875 equency Tab
SMR800 SMR900 Site ID Manager IP cation	860.000 937.375 ADRF-SMR 192.168.63	cente	18.00 × 1.00 × Mode S G G	Set Set m Box Setting epeater IP ubnet Mask ateway	851.000 936.875 255 : 192.168. 255.255. 192.168.	860.000 937.375 70.55 255.0 70.254	869.000 937.875 equency Tab
SMR800 SMR900 Site ID Manager IP cation Latitude	860.000 937.375 ADRF-SMR 192.168.63. N111.33333	cente 👻 cente 💌 10 Set	18.00 💌	Set Set m Box Setting epeater IP ubnet Mask ateway	851.000 936.875 255: 192.168. 192.168.	860.000 937.375 70.55 255.0 70.254	869.000 937.875 equency Tab

Figure 61 Install - SMR

The SMR Install page allows the user specify the desired frequncies by inputting the Reference Frequency and Bandwidth. The SMR module supports 1 channel on the SMR800 and 1 channel on the SMR900. SMR800 bandwidth selections range from 1.25 to 18 MHz and SMR900 bandwidth selections range from 1.25 to 5 MHz. The Web-GUI requires you to select the exact pass-bands that you will be using and exclude the guard bands when making your band selections.



5.4.2.1 Install- SMR Band Selection



Figure 62 Install- SMR Band Selection

To specify a frequency, input a DL reference frequency and select either start, center, or stop from the dropdown menu. Select the desired bandwidth from the dropdown menu under the Bandwidth column and then click Set.

• Start Frequency

If a start frequency is specifed, then this will be the beginning frequency of the band selection. Adding the bandwidth value that is selected from the Bandwidth column will give you the end frequency of your band selection.

• Center Frequency

Once a center frequency is specified and a bandwidth is selected, the system will split the bandwidth value in half and then add this to the center frequency to obtain your end frequency and also subtract this value to obtain your start frequency.

• Stop Frequency

If a stop frequency is specified, then this will be the ending frequency of the band selection. Subtracting the bandwidth value that is selected from the Bandwidth column will give you the start frequency of your band selection.

5.4.2.2 Install- Frequency Table



Figure 63 Install- Frequency Setting

By clicking on the Frequency Table button, the following screen will appear. You can use the frequency table as a reference to set the desired bands. Clicking on the Back button will take you back to the previous page.



			: SMR900	
851 MHz				869 Mi
1 2 3 4	4 5 6 7 8	9 10	11 12 13 14	15 16 17 18
806MHz				824M
935 MHz	94	0 MHz		
1 2	3 4	5		
896 MHz	90	1 MHz		
Channel Ref	erence Frequency	Bandwidth (MHz)	Set Dow	nlink Frequency (MHz)
SMR800 860.00	00 cente 🔻	18.00 💌	Set 851.00	0 860.000 869.000
SMR900 937.3	75 cente 💌	1.00 💌	Set 936.87	5 937.375 937.875
				Back
Channel	BandWidth		Downlink Frequen	cy (MHz)
Channel	BandWidth	Start	Downlink Frequen Center	cy (MHz) Stop
Channel	BandWidth 18.00 MHz	Start 851.0	Downlink Frequen Center 860.000	cy (MHz) Stop 869.00
Channel	BandWidth 18.00 MHz 17.75 MHz	Start 851.0 851.0	Downlink Frequen Center 860.000 859.875	cy (MHz) Stop 869.00 868.75
Channel SMR 800	BandWidth 18.00 MHz 17.75 MHz 17.50 MHz	Start 851.0 851.0 851.0	Downlink Frequen Center 860.000 859.875 859.750	cy (MHz) Stop 869.00 868.75 868.50 669.50
Channel SMR 800	BandWidth 18.00 MHz 17.75 MHz 17.50 MHz 7.00 MHz	Start 851.0 851.0 851.0 862.0	Downlink Frequen Center 860.000 859.875 859.750 865.750	cy (MHz) Stop 869.00 868.75 868.50 869.00 869.00
Channel SMR 800	BandWidth 18.00 MHz 17.75 MHz 17.50 MHz 7.00 MHz 6.75 MHz 6.75 MHz	Start 851.0 851.0 851.0 862.0 862.0	Downlink Frequen Center 860.000 859.875 859.750 865.500 865.375 865.375	cy (MHz) Stop 869.00 868.75 868.50 869.00 869.00 869.75
Channel SMR 800	BandWidth 18.00 MHz 17.75 MHz 17.50 MHz 7.00 MHz 6.75 MHz 6.50 MHz	Start 851.0 851.0 851.0 862.0 862.0 862.0	Downlink Frequen Center 860.000 859.875 859.750 865.500 865.375 865.250	cy (MHz) Stop 869.00 868.75 868.50 869.00 868.75 868.50
Channel SMR 800	BandWidth 18.00 MHz 17.75 MHz 17.50 MHz 6.75 MHz 6.50 MHz 5.00 MHz	Start 851.0 851.0 851.0 862.0 862.0 862.0 935.0	Downlink Frequen Center 860.000 859.875 859.750 865.500 865.375 865.250 937.500	cy (04-12) 869.00 868.75 868.50 869.00 868.75 868.50 940.00
Channel SMR 800 SMR 900	BandWidth 18.00 MHz 17.75 MHz 17.50 MHz 7.00 MHz 6.75 MHz 6.50 MHz 5.00 MHz 4.75 MHz	Start 851.0 851.0 851.0 862.0 862.0 862.0 935.0 935.0	Downlink Frequen 860.000 859.875 859.750 865.500 865.375 865.250 937.500 937.375	cy (%+b2) Stop 869.00 868.75 868.50 869.00 868.57 868.50 940.00 939.75

Figure 64 Install- Frequency Table

5.4.2.3 Install- SNMP

NMP	
Site ID	ADRF-SMR
Manager IP	192.168.63.10
	Set

Figure 65 Install - SNMP

The SNMP section allows you to specify the Site ID and Manager IP. The Site-ID is the code that is used to identify a particular module. The Manager IP field is where the user inputs the IP address of the NOC system that is being used to monitor the SNMP traps.

5.4.2.4 Install- Auto Installation

Auto Installation	
Progress (SMR)	Install

Figure 66 Install – Auto Installation

The Auto Installation routine can be run by clicking on the Install button. The Auto Installation routine runs basic system checks to ensure proper functionality.



5.4.3 Install- PCS

	Status Co	ontrol In	stall Syste	m Help	Logou	t				ARO	MS
ADVANCED RF TECHNOLOGIES	Band Selection								ADRF Remote Repeater	Operation & Manag r Location Info	ement System
SDR-30-P			_			_			Company		
Site ID : ADRF-PCS	: Cha	nnel1		: Channel2		:	Channel3	1005 MHz	Address1		
	1700 1112							1775 1112	Addrore?		
	A1 A2	A3	D B1	B2 B3	E	F C3	C4 (C5 G	Audresse		
NMS									City		_
SMR-1	1850MHz							1915MHz	State	Select one	•
PCS-2				Bandwidth		Down	ink Erequency	(MHz)	ZIP Code		
BRS-3	Channel						Center	End			
EMPTY	Channel 1	1,957.500	cente 💌	13.75 💌	Set	1,950.625	1,957.500	1,964.375	Repeater	r Installer Info	,
	Channel2	1,937.500	cente 💌	13.75 💌	Set	1,930.625	1,937.500	1,944.375	Company		
	Channel3	1,992.500	cente 💌	5.00 💌	Set	1,990.000	1,992.500	1,995.000	Name		
Advanced RF Technologies, Inc.									Phone		
supplies innovative coverage solutions to leading wireless service									E-mail		
providers around the world.							F	requency Table			
Wireless Coverade	SNMP			h	lodem Box Se						
Has Never Been So Easy											et
	Site ID	ADRF-PCS				IP 192.16	8.70.55		Date & Ti	ime	
	Manager IP	192.168.63	.10			isk 255.25	5.255.0		Date	09/14/2011	
			Pat		Gateway	192.16	8.70.254		Time	0 🔻 4(🔻	2 🔻
			361					Set			
											at
	Location				uto Installat	00					iot.
	countrol				aco motalidi						
	Latitude	N111.33333	3			_					
	Longitude	E222.22222	2		Progress						
					(PCS)			Install			
			Set								
	Consulation (2000	2010 4 4	d pro Technologi			wheels on or	FOT - 11 C A				
	Toll Free Number	(1-800-313-934	5) techsupport	es, inc. 3116 V @adrftech.com	http://www.	urbank, CA 91 adrftech.com	505 ° 0.5.A.				

Figure 67 Install - PCS

The PCS Install page allows the user specify the desired frequencies by inputting the Reference Frequency and Bandwidth. The PCS module supports up to 3 non-contiguous bands. Bandwidth selection ranges from 1.25 to 18.75 MHz. The Web-GUI requires you to select the exact pass-bands that you will be using and exclude the guard bands when making your band selections.

5.4.3.1 Install- PCS Band Selection

Band Selecti	on						
: C	hannel1		: Channel2			Channel3	1995 MHz
A1	A2 A3	D B1	B2 B3	E	F C3	C4 (C5 G
1850MHz			a 1.14			1.5	1915MHz
Channel	Referen		Bandwidth (MHz)	Set	Start	nk Frequency Center	End
Channel 1	1,937.500	center 🗸	13.75 💌	Set	1,930.625	1,937.500	1,944.375
Channel2		center 💙	disable 🗸	Set			
Channel3		center 🗸	disable 🗸	Set			

Figure 68 Install- PCS Band Selection

To specify a frequency, input a DL reference frequency and select either start, center, or stop from the dropdown menu. Select the desired bandwidth from the dropdown menu under the Bandwidth column and then click Set.



• Start Frequency

If a start frequency is specifed, then this will be the beginning frequency of the band selection. Adding the bandwidth value that is selected from the Bandwidth column will give you the end frequency of your band selection.

Center Frequency

Once a center frequency is specified and a bandwidth is selected, the system will split the bandwidth value in half and then add this to the center frequency to obtain your end frequency and also subtract this value to obtain your start frequency.

• Stop Frequency

If a stop frequency is specified, then this will be the ending frequency of the band selection. Subtracting the bandwidth value that is selected from the Bandwidth column will give you the start frequency of your band selection.

5.4.3.2 Install- Frequency Table

Chapped	Deference	D-6		Sat	Downli	nk Frequency	(MHz)
Channel	Reference	Frequency	(MHz)	Set	Start	Center	End
Channel 1	1,957.500	cente 💌	13.75 💌	Set	1,950.625	1,957.500	1,964.375
Channel2	1,937.500	cente 💌	13.75 💌	Set	1,930.625	1,937.500	1,944.375
Channel3	1,992.500	cente 💌	5.00 💌	Set	1,990.000	1,992.500	1,995.000
						F	requency Tab

Figure 69 Install – Frequency Setting

By clicking on the Frequency Table button, the following screen will appear. You can use the frequency table as a reference to set the desired bands. Clicking on the Back button will take you back to the previous page.

and Selection								
: Channe 1930 MHz	11		: Cha	nnel2		:	Channel3	1995 MHz
A1 A2	A3 D	B1	B2	B3	E	F C3	C4 (25 G
1850MHz								1915MHz
Chappel P	afaranca Franıı	2001	Bandv	vidth	Sat	Downli	nk Frequency	(MHz)
Channer	ererence i requi	incy.	(MH	iz)		Start	Center	End
Channel1 1,9	57.500 cen	te 💌	13.75	-	Set	1,950.625	1,957.500	1,964.375
Channel2 1,9	37.500 cen	te 💌	13.75	•	Set	1,930.625	1,937.500	1,944.375
Channel3 1,9	92.500 cen	te 💌	5.00	•	Set	1,990.000	1,992.500	1,995.000

Back

Nerre	Descharf July	Do	z)	
		Start	Center	Stop
Α	13.75 MHz	1,930.625	1,937.5	1,944.375
A1	3.75 MHz	1,930.625	1,932.5	1,934.375
A2	3.75 MHz	1,935.625	1,937.5	1,939.375
A3	3.75 MHz	1,940.625	1,942.5	1,944.375
D	3.75 MHz	1,945.625	1,947.5	1,949.375
В	13.75 MHz	1,950.625	1,957.5	1,964.375
B1	3.75 MHz	1,950.625	1,952.5	1,954.375
B2	3.75 MHz	1,955.625	1,957.5	1,959.375
B3	3.75 MHz	1,960.625	1,962.5	1,964.375
E	3.75 MHz	1,965.625	1,967.5	1,969.375
F	3.75 MHz	1,970.625	1,972.5	1,974.375
С	13.75 MHz	1,975.625	1,982.5	1,989.375
C3	3.75 MHz	1,975.625	1,977.5	1,979.375
C4	3.75 MHz	1,980.625	1,982.5	1,984.375
C5	3.75 MHz	1,985.625	1,987.5	1,989.375
G	3.75 MHz	1,990.625	1,992.5	1,994.375



5.4.3.3 Install- SNMP



ADRF-SMR
192.168.63.10
Set

Figure 71 Install - SNMP

The SNMP section allows you to specify the Site ID and Manager IP. The Site-ID is the code that is used to identify a particular module. The Manager IP field is where the user inputs the IP address of the NOC system that is being used to monitor the SNMP traps.

5.4.3.4 Install- Auto Installation

Auto Installation	
Progress (SMR)	Install

Figure 72 Install – Auto Installation

The Auto Installation routine can be run by clicking on the Install button. The Auto Installation routine runs basic system checks to ensure proper functionality.



5.4.4 Install- BRS

	Status Control	System Hel	p Logout		Anolvia
NOED RF TECHNOLOGIES	Band Selection				ADRF Remote Operation & Management System Repeater Location Info
I-B					Company
DRF_BRS	: Channel1 2502 MHz			2568 MHz	Address1
					Address2
	A	В	С	D	City
					State Select one
	2624 MHz			2690 MHz	ZIR Code
				6	
	E.	r		G	
	Channel Reference	Bandwidt	h _{Set} Do	wnlink Frequency (MHz)	Repeater Installer Info
	Charmer Hererene	(MHz)	Start	Center End	Company
	Channel1 2,518.500	cente 7.5	Set 2,514.7	50 2,518.500 2,522.250	Name
nc.					Phone
s service					E-mail
				Frequency Table	
	SNMP		Modem Box Settings :		Set
			December 10		Date & Time
	Site ID ADRF_BRS		Subact Unal	.168.70.55	Date 09/14/2011
	Manager IP 192.168.6	3.10	Cataway 402	.255.255.0	Time 0 ¥ 4{ ¥ 1 ¥
		Set	Gateway 192	.168./0.254	
				Set	0.1
					Set
	Location		Auto Installation		
	Lablanda				
	Latitude N111.3333	33			
	Longitude E222.2222	22	(BRS)	Install	
		Set		matur	

Figure 73 Install - BRS

The BRS Install page allows the user to specify the desired frequncies by inputting the Reference Frequency and Bandwidth. The BRS module supports 1 contiguous bands. Bandwidth selection ranges from 2.5 to 30 MHz. The Web-GUI requires you to select the exact pass-bands that you will be using and exclude the guard bands when making your band selections.

5.4.4.1 Install- BRS Band Selection

Band Selection	on							
: C 2502 MHz	hannel1							2568 MHz
A		B		С			D	
2624 MHz								2690 MHz
Е		F		Н			G	
Channel	Deference	Fraguancy				Downli	nk Frequency	(MHz)
Charliner	Reference	riequency	(MHz)		JEL	Start	Center	End
Channel 1	2,518.500	center 🗸	30.0 🗸		Set	2,503.500	2,518.500	2,533.500

Figure 74 Install- BRS Band Selection

To specify a frequency, input a DL reference frequency and select either start, center, or stop from the dropdown menu. Select the desired bandwidth from the dropdown menu under the Bandwidth column and then click Set.

• Start Frequency

If a start frequency is specifed, then this will be the beginning frequency of the band selection. Adding the bandwidth value that is selected from the Bandwidth column will give you the end frequency of your band selection.



• Center Frequency:

Once a center frequency is specified and a bandwidth is selected, the system will split the bandwidth value in half and then add this to the center frequency to obtain your end frequency and also subtract this value to obtain your start frequency.

• Stop Frequency:

If a stop frequency is specified, then this will be the ending frequency of the band selection. Subtracting the bandwidth value that is selected from the Bandwidth column will give you the start frequency of your band selection.

5.4.4.2 Install- Frequency Table

	Peference Frequency		Cot	Downlink Frequency (MHz)				
Chariner	Reference inequelicy	(MHz)	Start	Center	End			
Channel 1	2,518.500 cente 💌	7.5 💌	Set	2,514.750	2,518.500	2,522.250		
					F	requency Tabl		
			_					

Figure 75 Install- Frequency Setting

By clicking on the Frequency Table button, the following screen will appear. You can use the frequency table as a reference to set the desired bands. Clicking on the Back button will take you back to the previous page.

and Selection						
: Channel1						
2502 MHz						2568 MHz
A	В		C		D)
2624 MHz						2690 MHz
E	F		н	G		
Channel Reference	Frequency	Bandwidth		Down	link Frequency	(MHz)
Channel Reference	requency	(MHz)	- Set	Start	Center	End
Channel1 2,518.500	cente 💌	7.5 🔻	Set	2,514.750	2,518.500	2,522.250

Back

			Frequency (MHz)							
AB	30.0 MHz	2,503.50	2,518.50	2,533.50						
BC	30.0 MHz	2,520.00	2,535.00	2,550.00						
CD	30.0 MHz	2,536.50	2,551.50	2,566.50						
EF	30.0 MHz	2,625.50	2,640.50	2,655.50						
FH	30.0 MHz	2,642.00	2,657.00	2,672.00						
HG	30.0 MHz	2,658.50	2,673.50	2,688.50						
Α	15.0 MHz	2,502.75	2,510.25	2,517.75						
в	15.0 MHz	2,519.25	2,526.75	2,534.25						
С	15.0 MHz	2,535.75	2,543.25	2,550.75						
D	15.0 MHz	2,552.25	2,559.75	2,567.25						
E	15.0 MHz	2,624.75	2,632.25	2,639.75						
F	15.0 MHz	2.641.25	2.648.75	2,656,25						

Figure 76 Install- Frequency Table



5.4.4.3 Install- SNMP

5NMP	
Site ID	ADRF-SMR
Manager IP	192.168.63.10
	Set

Figure 77 Install- SNMP

The SNMP section allows you to specify the Site ID and Manager IP. The Site-ID is the code that is used to identify a particular module. The Manager IP field is where the user inputs the IP address of the NOC system that is being used to monitor the SNMP traps.

5.4.4.4 Install- Auto Installation

Auto Installation	
Progress (SMR)	Install

Figure 78 Install- Auto Installation

The Auto Installation routine can be run by clicking on the Install button. The Auto Installation routine runs basic system checks for property functionality.

5.4.5 Install- BTF



-BTF	: Channe	el1	: C	hannel2		: Channel3		Repeater	Location Info
: ADRF	04 MH-			Section A			2400 MH-	Address1	
249	70 MFIZ			Section A			2090 MH2	Address2	
В	RS1	A	В		С		D	City	
249	96 MHz			Section B			2690 MHz	State	Select one
ed RF Technologies, Inc.								ZIP Code	
s innovative coverage is to leading wireless service									
rs around the world. Band S	election - Se	ction A						Repeater	Installer Info
ss Coverage								Company	
vever Been So Easy Fill	ter type	● 4G ● 5G		Bandwidth	F	Frequency (MH	z)	Name	
	Channel	Freque	ency	(MHz)	Start	Center	End	Phone	
•	Channel A-1	2,680.000	center 🔻	5.00 🔻	2,677.500	2,680.000	2,682.500	E-mail	
(Channel A-2	2,675.000	center 🔻	5.00 🔻	2,672.500	2,675.000	2,677.500		
C	Channel A-3	2,670.000	center 🔻	5.00 🔻	2,667.500	2,670.000	2,672.500		Set
							Set	Date & Ti	me
								Date	11/15/2019
Band S	election - Se	ction B						Time	16 v 57 v 52
Fil	ter Type	0 4G 0 5G							
	channel .	€ 40 ° 50		Bandwidth	F	Frequency (MH	z)		Set
	Criannei	Freque	ency	(MHz)	Start	Center	End		
(Channel B-1	2,540.000	center 🔻	10.00 ▼	2,535.000	2,540.000	2,545.000		
	channel B-2	2,560.000	center V	10.00 •	2,555.000	2,560.000	2,565.000		
	unannei b-3	2,560.500	center +	10.00 +	2,375.300	2,560.500	2,505.500		
							Jet		
SNMD				Modem R	v Settings ·				
Site	ID ADR	F		Remo	te Mode	Auto	9 Manual		
Mana	ager IP			Subre	at Mask 255	255 255 0			
			Set		vav 197	.168.100.254			
							Set		
location				Auto Insta	allation				
	atituda	N Y +							
	ongitude	F F +		Droove					
	ungruue	<u> </u>		(BTF)	55 1		Install		
			Set						

Figure 79 Install - BTF

The BTF Install page allows the user to specify the desired frequncies by inputting the Reference Frequency and Bandwidth. The BTF has 2 modules. The each BTF module supports each 3 non-contiguous bands in 4G, 1 contiguous band in 5G. Bandwidth selection ranges from 5 to 60 MHz in 4G, 20 to 100 MHz in 5G. The Web-GUI requires you to select the exact pass-bands that you will be using and exclude the guard bands when making your band selections.

5.4.5.1 Install- BTF Band Selection



	Status Contr	ol Install System	Help Lo	gout			AROMS
						ADRF Remo	te Operation & Management Syst
R-33-BTF	: Chan	el1	bannel?		: Channel3	Repeate	r Location Info
te ID : ADRF	· chan		and meta-		r chameto	Company	l.
	2496 MHz		Section A		2690 MHz	Address1	
						Address2	
	BRS1	AB		С	D	City	
	2496 MHz		Section B		2690 MHz	State	Select one
anced RF Technologies, Inc.						ZIP Code	
lies innovative coverage							
viders around the world.							
	Band Selection - S	ection A				Repeate	r Installer Info
reless Coverage as Never Reen So Fasy	Filter Type	● 4G ● 5G				Company	
		- 40 - 50	Bandwidth	F	requency (MHz)	Name	
	Channel	Frequency	(MHz)	Start	Center End	Phone	
	Channel A-1	2,680.000 center v	5.00 🔻	2,677.500	2,680.000 2,682.500	E-mail	
	Channel A-2	2,675.000 center T	5.00 🔻	2,672.500	2,675.000 2,677.500		
	Channel A-3	2,670.000 center v	5.00 🔻	2,667.500	2,670.000 2,672.500		Set
					Set		Jei
						Date & 1	lime
						Date	11/15/2019
	Band Selection - S	ection B				Time	16 V 57 V 52
	Filter Type	🖲 4G 🔍 5G					
	Channel		Bandwidth		requency (MHz)		Set
			(MHz)	Start	Center End		
	Channel B-1	2,540.000 center V	10.00 ¥	2,535.000	2,540.000 2,545.000		
	Channel B-2	2,560.000 center V	10.00 🔻	2,555.000	2,560.000 2,565.000		
	Channel B-3	2,580.500 center V	10.00 🔻	2,575.500	2,580.500 2,585.500		
					Set		

Figure 80 Install- BTF Band Selection

To specify a frequency, input a DL reference frequency and select either start, center, or stop from the dropdown menu. Select the desired bandwidth from the dropdown menu under the Bandwidth column and then click Set.

• Start Frequency

If a start frequency is specifed, then this will be the beginning frequency of the band selection. Adding the bandwidth value that is selected from the Bandwidth column will give you the end frequency of your band selection.

• Center Frequency:

Once a center frequency is specified and a bandwidth is selected, the system will split the bandwidth value in half and then add this to the center frequency to obtain your end frequency and also subtract this value to obtain your start frequency.

• Stop Frequency:

If a stop frequency is specified, then this will be the ending frequency of the band selection. Subtracting the bandwidth value that is selected from the Bandwidth column will give you the start frequency of your band selection.

5.4.5.2 Install- SNMP

5NMP	
Site ID	ADRF
Manager IP	
	Set

Figure 81 Install- SNMP

The SNMP section allows you to specify the Site ID and Manager IP. The Site-ID is the code that is used to identify a particular module. The Manager IP field is where the user inputs the IP address of the NOC system that is being used to monitor the SNMP traps.

5.4.5.3 Install- Auto Installation



Auto Installation	
Progress (BTF)	Install

Figure 82 Install- Auto Installation

The Auto Installation routine can be run by clicking on the Install button. The Auto Installation routine runs basic system checks for property functionality.

5.4.6 Install- Cellular

	Band Selection	n	an syste		Logou	L.			ADRF Remot	e Operation & Management Sys
-c	banu Selection			_					Company	F LOCALION INTO
: ADRF2	A1+A2+B	1+B2	A1	B		A1+A2	E	B1+B2	Address1	
	869 MHz							894 MHz	Address2	
									City	
		AI				51	A	2 02	Chata	Selectione
r-2	824MHz							849MHz	ZIP Code	
	Channel	Bandwidth	Down	link Frequenc	y (MHz)	Upin	k Frequency	(MHz)		
	Charner	(MHz)	Start	Center	End	Start	Center	End	Repeate	r Installer Info
	A1	11.00	869.000	874.500	880.000	824.000	829.500	835.000	Company	
									Name	
RF Technologies, Inc.									Phone	
iovative coverage									E-mail	
round the world.							F	Frequency Table	E-man	
overste	SNMP				Modem Box Se					
er Been So Easy										Set
	Site ID	ADRF2				192.16	8.70.58		Date & T	ïme
	Comment						5.255.0		Date	12/06/2011
			Set			192.16	8.70.254		Time	7 💌 5; 💌 4!
								Set		
										Set
	Location				Auto Installat	ion				
	Latitude	N111.111111								
	Longitude	W333.33333			Progress					
				_	(Cellular)			Install		
			Set							
	Copyright © 199	9-2010 Advanced	RF Technologi	es, Inc. 3116	Vanowen St • 8	lurbank, CA 9	1505 · U.S.A.			

Figure 83 Install - Cellular

The Cellular Install page allows the user specify the desired frequncies by clicking on the preset Cellular band. Preset choices include A1+A2+B1+B2, A1, B1, A1+A2, and B1+B2.



5.4.6.1 Install- Cellular Band Selection



Figure 84 Install- Cellular Band Selection

The selected preset bands will be highlighted in orange.

5.4.6.2 Install- Frequency Table





By clicking on the Frequency Table button, the following screen will appear. You can use the frequency table as a reference to set the desired bands. Clicking on the Back button will take you back to the previous page.

A1+A2+B	I+B2	A1	B1		A1+A2	E	1+B2	
869 MHz							894 M	
	A1				B1	A	2 B2	
824MHz							849M	
Channel	Bandwidth (MHz)	Down Start	link Frequency Center	((MHz) End	Uplin Start	k Frequency Center	(MHz) End	
A1	11.00	869.000	874.500	880.000	824.000	829.500	835.000	
							Back	
						(10.1-)		
					Cent	Pr		
A1+	B1+A2+B2	25.	25.0 MHz		881.	50	894.00	
	A1	11.	0 MHz	869.00	874.	50	880.00	
	B1	10.	0 MHz	880.00	885.	00	890.00	
A2 1.5 MHz			MHz	890.00	890.	75	891.50	
			MHz 891.50 892.75					





5.4.6.3 Install- SNMP

Site ID	ADRF-SMR
Manager IP	192.168.63.10
	Set

Figure 87 Install - SNMP

The SNMP section allows you to specify the Site ID and Manager IP. The Site-ID is the code that is used to identify a particular module. The Manager IP field is where the user inputs the IP address of the NOC system that is being used to monitor the SNMP traps.

5.4.6.4 Install- Auto Installation

Auto Installation	
Progress (Cellular)	Install

Figure 88 Install – Auto Installation

The Auto Installation routine can be run by clicking on the Install button. The Auto Installation routine runs basic system checks to ensure proper functionality.

Image: series Image: s	DF	Status	Control Inst	all Syste	m Help	Logou	t				ARON
A B C A+B A-C B-C B-C A-B A-C B-C A-B A-B A-B A-B A-B A-B A-B A-B A-B C (11M2) D-D-MARK C (11M2) D-D-MARK D-D-MARK A-B D-D-MARK <	TECHNOLOGIES	Band Selectio	n							ADRF Remote Repeater	Operation & Management Location Info
728 Mit: 70 Mit: 74 Mit: 70 Mit: 74 Mit: 70 Mit: 74 Mit: 728 Mit: 70 Mit: 74 Mit: 70 Mit: 74 Mit: 70 Mit: 74 Mit: 6-68 Mit: 70 Mit: 74 Mit: 70 Mit: 74 Mit: 70 Mit: 74 Mit: 6-68 Mit: 70 Mit: 74 Mit: 70 Mit: 74 Mit: 70 Mit: 74 Mit: 6-68 Mit: 70 Mit: 74 Mit: 70 Mit: 74 Mit: 70 Mit: 74 Mit: 6-68 Mit: 70 Mit: 74 Mit: 70 Mit: 74 Mit: 70 Mit: 74 Mit: 6-68 Mit: 70 Mit: 76	SMR		P	6			r I	840	Augur	Company	
1/2 Mrt 1/2 Mrt 1/2 Mrt 1/2 Mrt 1/2 Mrt 1/2 Mrt 1/2 Mrt 1/2 Mrt 4 (dwtrz) B (dwtrz) C (11 Mrtz) 678/Brtz 710 Mrtz 788/Brtz 678/Brtz 500 Mrtz 500 Mrtz 678/Brtz 552 355.55 0 60 drem 551 552 355.50 60 drem 551 552 355.50 60 drem 551 551 552 355.50 60 drem 551 551 552 552 550 60 drem 581 10 581 10 581 10 10 drem Ardo Instalation 10 drem 100 Instalation 10 drem 100 Instalation 10 drem 100 Instalation 10 drem 100 Instalation 10 drem<		700 1011-			7.0			U.C.	202.000	Address1	
A. (6M/E2) B. (6M/E2) C. (11 M/E2) C. (11 M/E2) 668/ME 700/ME 770/ME 787/ME 20 Code 668/ME 200 code Code 20 Code 20 Code 20 Code 1 648/D 728.500 751.500 765.500 765.500 765.500 1 1000 746.500 751.500 756.500 761.500 766.500 1 5100 766.500 751.500 765.500 761.500 766.500 1 5100 766.500 765.500 761.500 766.500 760.500 1 5100 766.500 761.500 765.500 761.500 766.500 1 5100 766.500 761.500 765.500 761.500 766.500 1 5100 5100 766.500 761.500 761.500 761.500 1 5100 5100 5100 5100 761.500 761.500 761.500 761.500 761.500 761.500 761.500 761.500		728 MHZ			740	MHZ 746 MHZ			757 MHz	Address2	
• ### 70 MHz 77 MHz 70 MHz		A	(6MHz)	В	(6MHz)		C (11MHz)		City	
Ordered Ordered <t< td=""><td></td><td>60800</td><td></td><td></td><td>74</td><td>11Ua 77611Ua</td><td></td><td></td><td>797444</td><td>State</td><td>Select one</td></t<>		60800			74	11Ua 77611Ua			797444	State	Select one
Channel Downrik Frequency (P42) Liske Frequency (P42) Repeater Installer Info A +B 11.00 728.500 734.500 739.500 698.500 734.500 739.500 736.500		070mm2			710	mnz 770mnz			7677612	ZIP Code	
United Office Start Center End Start Center End Start Center End Start Center End Start Expecter Installer Info Company Repeater Installer Info Repeater Info Repeater Installer Info Repeater Info <threpeater< td=""><td></td><td>Channel</td><td>Bandwidth</td><td>Down</td><td>link Frequenc</td><td>y (MHz)</td><td>Uplin</td><td>k Frequency</td><td>(MHz)</td><td></td><td></td></threpeater<>		Channel	Bandwidth	Down	link Frequenc	y (MHz)	Uplin	k Frequency	(MHz)		
A+8 11.00 726.500 774.500 795.500 785.500 785.500 c 10.00 746.500 751.500 785.500 785.500 785.500 ss. Inc. 358 Image: State of the state of		Charmer	(MHz)	Start	Center	End	Start	Center	End	Repeater	Installer Info
C 10.00 746.500 751.500 765.500 786.50		A+B	11.00	728.500	734.000	739.500	698.500	704.000	709.500	Company	
ns. Inc. spectrum service descriptions SHEP Stel D Soft Comment Latitude N111.11111 Latitude Set Set Set Set Set Set Set Se		С	10.00	746.500	751.500	756.500	776.500	781.500	786.500	Name	
visrage vis	logies, Inc.									Phone	
r vord. SNHP Ste ID SOP_SNR Comment Sat Location Lacitude N111.11111 Longitude N33.333333 Set Ste ID Ste ID Ste ID Sope SNR Comment Sat Ste ID Sope SNR Comment Sat Ste ID Ste ID Sope SNR Comment Sat Ste ID Ste I	overage vireless service							F	requency Table	E-mail	
SARFP Moders Ros Settings: Set Sary Set D SOP_SMA Comment Set Set Set Location Latitude N111.11111 Longitude W333.33333 Set	e world.										
So Easy Site ID SOR SAR Comment Sat Location Auto Instalation Lacitude W111.11111 Longitude W333.33333 Sot		SNMP				Modem Box Se					P+4
Site 10 Sold SMR Connent Sat Sat Sat Location Auto Installation Latitude N111.1111 Longitude W33.333333 Sat Frogress (700) Install	Easy	611 I.D.				Repeater	IP 192.16	8.70.58			Ust
Connect Set 12/06/2011 Content 1		Site ID	SDR_SMR			Subnet M	sk 255.25	5.255.0		Date & Ti	me
Location Auto Instalation Set		Comment				Gateway	192.16	8.70.254		Date	12/06/2011
Location Auto Installation Set			l	Set					Set	Time	8 💌 1(💌 3
Location Auto Installation Latitude N111.11111 Longitude W333.33333 Set											Set
Latitude N111.11111 Longitude W333.33333 Progress (700) Install		Location				Auto Installat	ion				
Longitude W133.33333 Progress (700) Install		Latitude	N111.111111								
(700) Install		Longitude	W333.33333	3		Progress					
Set						(700)			Install		
				Set							

5.4.7 Install- 700 MHz

Figure 89 Install – 700 MHz

The 700 MHz Install page allows the user specify the desired frequncies by clicking on the preset 700 MHz band. Available choices include any combination of Lower A, Lower B, and Upper C.



5.4.7.1 Install- 700 MHz Band Selection

Band Selection	n						
A	В	с	A+B	A+	c	B+C	A+B+C
728 MHz			740	MHz 746 MHz			757 MHz
A	(6MHz)	В	(6MHz)		C ((11MHz)	
698MHz			710	MHz 776MHz			787MHz
Channel	Bandwidth (MHz)	Downi Start	ink Frequency Center	(MHz) End	Uplir Start	k Frequency Center	(MHz) End
A+B	11.00	728.500	734.000	739.500	698.500	704.000	709.500
С	10.00	746.500	751.500	756.500	776.500	781.500	786.500

Figure 90 Install- Cellular Band Selection

The selected preset bands will be highlighted in orange.

5.4.7.2 Install- Frequency Table

Channel Band		Down	ink Frequency	(MHz)	Uplink Frequency (MHz)				
Channel	(MHz)	Start	Center	End	Start	Center	End		
A+B	11.00	728.500	734.000	739.500	698.500	704.000	709.500		
С	10.00	746.500	751.500	756.500	776.500	781.500	786.500		
						F	requency Tal		

Figure 91 Install- Frequency Setting

By clicking on the Frequency Table button, the following screen will appear. You can use the frequency table as a reference to set the desired bands. Clicking on the Back button will take you back to the previous page.

					_			
Α	В	C	A+B	A	+C	B+C	A+B+C	
28 MHz			740	757 MH				
A (6MHz)			(6MHz)		6	(11MHz)		
	(0////2)		(0////12)			(117012)		
98MHz			710	MHz 776MHz			787MH	
Channel	Bandwidth	Downli	nk Frequency	(MHz)	Upli	nk Frequency	(MHz)	
Charmer	(MHz)	Start	Center End		Start	Center	End	
A+B	11.00	728.500	728.500 734.000		698.500	704.000	709.500	
С	10.00	746.500	751.500	756.500	776.500	781.500	786.500	
							Back	
Namo	Randu	ridth	Downlink Frequency (MHz)					
Name	Banuvi		Start		Center		Stop	
Α	5.0 N	1Hz	728.50)	731.00		733.50	
В	5.0 N	1Hz	734.50)	737.00	5	739.50	
	10.0 MHz				751.50 75		100 00	
С	10.0	MHZ	746.50	,	/51.50		56.50	

Figure 92 Install- Frequency Table



5.4.7.3 Install- SNMP

SNMP	
Site ID	ADRF-SMR
Manager IP	192.168.63.10
	Set
	Set

Figure 93 Install - SNMP

The SNMP section allows you to specify the Site ID and Manager IP. The Site-ID is the code that is used to identify a particular module. The Manager IP field is where the user inputs the IP address of the NOC system that is being used to monitor the SNMP traps.

5.4.7.4 Install- Auto Installation

Auto Installation	
Progress (Cellular)	Install

Figure 94 Install – Auto Installation

The Auto Installation routine can be run by clicking on the Install button. The Auto Installation routine runs basic system checks to ensure proper functionality.

5.4.8 Install- AWS

	Status	Control	nstall System	m Help	Logout					ARO	MS
DVANGED RF TECHNOLOGIES	Band Selection	n							ADRF Remot Repeate	le Operation & Manager er Location Info	nent Syster
2-24-A			_			_			Company		
U:AURF4	2110 MH7	nannel1		: Channel2		:	Channel3	2155 MHz	Address1		
									Address2		
_	/	A	В	C	D	E		F	Chu		
	1710MHz							1755MHz	State	Select one	•
				Develop 101		Dent	1.5	(151)	ZIP Code		
	Channel			Bandwidth (MHz)		Start	Center	Fnd			
	Channel 1	2,120,000	cente 💌	18.75 💌	Set	2,110,625	2.120.000	2,129,375			
	Channel	2,1201000	conto 💌	10 75		2,125,625	2,145,000	0.154.075	Repeate	er Installer Info	
	Channelz	2,145.000	cente •	10.75	Set	2,135.625	2,145.000	2,104.375	Company		
	Channel3		cente 💌	disabl 💌	Set				Name		
gies, inc. erage									Phone		
s service							F	requency Table	E-mail		
	SNMP			M	odem Box Set					Se	t
n So Easy						IP 192.16	8.70.58				
	Site ID	ADRF4				sk 255.25	5 255 0		Date & 1	lime	-
	Comment					402.44	9 70 254		Date	12/06/2011	11 ²⁰
			Set			192.10	0.70.254		Time	8 🔻 19 🔻	50 💌
								Set			
										Se	t
	Location			A	uto Installati	on					
	Latitude	N111.1111	11			_					
	Longitude	W333.333	333		Progress						
					(AWS)			Install			
			Set								
	Copyright © 19	99-2010 Advan	ced RF Technologi	es, Inc. 3116 V	anowen St • B	urbank, CA 9:	1505 • U.S.A.				
	Toll Free Numbe	r (1-800-313-93	345) techsupport(@adrftech.com	http://www.a	drftech.com					
			Figure	95	Inst	all - A	AWS				



The AWS Install page allows the user specify the desired frequencies by inputting the Reference Frequency and Bandwidth. The AWS module supports up to 3 non-contiguous bands. Bandwidth selection ranges from 1.25 to 18.75 MHz. The Web-GUI requires you to select the exact pass-bands that you will be using and exclude the guard bands when making your band selections.

5.4.8.1 Install- AWS Band Selection

Band Selection

: CI	hannel1		: Channel2			:	Channel3	
110 MHz								2155 MH
4	4	В	С		D	E		F
710MHz								475514
a second time								1755M
								1755MI
Channel	Deference	Frequency	Bandwidth	54	at	Downli	nk Frequency	1755Mi (MHz)
Channel	Reference	Frequency	Bandwidth (MHz)	Se	≥t	Downli Start	nk Frequency Center	(MHz) End
Channel	Reference	Frequency	Bandwidth (MHz) 18.75	Se	et	Downli Start 2,110.625	nk Frequency Center 2,120.000	1755M (MHz) End 2,129.375
Channel Channel 1 Channel 2	Reference 2,120.000 2,145.000	Frequency cente 💌 cente 💌	Bandwidth (MHz) 18.75 💌 18.75 💌	Se Si Si	≘t et et	Downli Start 2,110.625 2,135.625	nk Frequency Center 2, 120.000 2, 145.000	(MHz) End 2,129.375 2,154.375

Figure 96 Install- AWS Band Selection

To specify a frequency, input a DL reference frequency and select either start, center, or stop from the dropdown menu. Select the desired bandwidth from the dropdown menu under the Bandwidth column and then click Set.

• Start Frequency

If a start frequency is specifed, then this will be the beginning frequency of the band selection. Adding the bandwidth value that is selected from the Bandwidth column will give you the end frequency of your band selection.

• Center Frequency

Once a center frequency is specified and a bandwidth is selected, the system will split the bandwidth value in half and then add this to the center frequency to obtain your end frequency and also subtract this value to obtain your start frequency.

• Stop Frequency

If a stop frequency is specified, then this will be the ending frequency of the band selection. Subtracting the bandwidth value that is selected from the Bandwidth column will give you the start frequency of your band selection.

5.4.8.2 Install- Frequency Table



Channel		nce Frequency	Bandwidth (MHz)	Cat	Downlink Frequency (MHz)			
Channel	Reference	Frequency		JEL	Start	Center	End	
Channel 1	2,120.000	cente 💌	18.75 💌	Set	2,110.625	2,120.000	2,129.375	
Channel2	2,145.000	cente 💌	18.75 💌	Set	2,135.625	2,145.000	2,154.375	
Channel3		cente 💌	disabl 💌	Set				
						F	requency Tabl	

Figure 97 Install – Frequency Setting

By clicking on the Frequency Table button, the following screen will appear. You can use the frequency table as a reference to set the desired bands. Clicking on the Back button will take you back to the previous page.

110 MH7	hannel1		: Channel2		:	Channel3	2155 MH
I TO MHZ							2155 MR
,	4	В	с	D	E		F
710MHz							1755MH
Channel	Deference	Frequency	Bandwidth	Set	Downli	ink Frequency	(MHz)
Charmer	Kererence	requercy	(MHz)	500	Start	Center	End
Channel1	2,120.000	cente 💌	18.75 💌	Set	2,110.625	2,120.000	2,129.375
Channel2	2,145.000	cente 💌	18.75 💌	Set	2,135.625	2,145.000	2,154.375
Channel3		cente 💌	disabl 💌	Set			
							Back
				Downlink I	Frequency (Mi	Hz)	Back
Name	BandWi	dth	Start	Downlink I	Frequency (Mi Center	Hz)	Back
Name	BandWi 8.75 M	dth Hz	Start 2,110.625	Downlink I	Frequency (Mł Center 115.000	Hz)	Back Stop 19.375
Name A A1	BandWi 8.75 M 3.75 M	dth Hz Hz	Start 2,110.625 2,110.625	Downlink I	Frequency (Mi Center 115.000 112.500	Hz) 2,1 2,1	Back Stop 19.375 14.375
Name A A1 A2	BandWi 8.75 M 3.75 M 3.75 M	dth Hz Hz Hz	Start 2,110.625 2,110.625 2,115.625	Downlink I 2, 2, 2, 2,	Frequency (Mi Center 115.000 112.500 117.500	Hz) 2,1 2,1 2,1 2,1	Back Stop 19.375 14.375 19.375
Name A A1 A2 B	BandWi 8.75 M 3.75 M 3.75 M 8.75 M	dth Hz Hz Hz Hz	Start 2,110.625 2,110.625 2,115.625 2,120.625	Downlink I 2, 2, 2, 2, 2, 2,	Frequency (Mł Center 115.000 112.500 117.500 125.000	Hz) 2,1 2,1 2,1 2,1 2,1 2,1	Back Stop 19.375 14.375 19.375 29.375
Name A A1 A2 B B1	BandWi 8.75 M 3.75 M 3.75 M 8.75 M 3.75 M	dth Hz Hz Hz Hz	Start 2,110.625 2,110.625 2,115.625 2,120.625 2,120.625	Downlink I 2, 2, 2, 2, 2, 2, 2, 2,	Frequency (M Center 115.000 112.500 117.500 125.000 122.500	+z) 2,1 2,1 2,1 2,1 2,1 2,1 2,1	Back Stop 19.375 14.375 19.375 29.375 24.375
Name A A1 A2 B B1 B1 B2	BandWi 8.75 M 3.75 M 3.75 M 8.75 M 3.75 M 3.75 M	dth Hz Hz Hz Hz Hz	Start 2,110.625 2,110.625 2,115.625 2,120.625 2,120.625 2,120.625 2,125.625	Downlink I 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,	Frequency (M) Center 115.000 112.500 117.500 125.000 122.500 127.500	+z) 2,1 2,1 2,1 2,1 2,1 2,1 2,1 2,1	Back Stop 19.375 14.375 19.375 29.375 24.375 29.375
Name A A1 A2 B B1 B2 C	BandWi 8.75 M 3.75 M 8.75 M 8.75 M 3.75 M 3.75 M 3.75 M	dth Hz Hz Hz Hz Hz Hz Hz	Start 2,110.625 2,110.625 2,115.625 2,120.625 2,120.625 2,125.625 2,130.625	Downlink I 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,	Frequency (Mi Center 115.000 112.500 117.500 125.000 122.500 127.500 132.500	Hz) 2,1 2,1 2,1 2,1 2,1 2,1 2,1 2,1 2,1 2,1	Back 5top 19.375 14.375 19.375 29.375 24.375 29.375 34.375
Name A A1 A2 B B1 B2 C D	BandWi 8.75 M 3.75 M 3.75 M 3.75 M 3.75 M 3.75 M 3.75 M 3.75 M	dth Hz Hz Hz Hz Hz Hz Hz	Start 2,110.625 2,110.625 2,115.625 2,120.625 2,120.625 2,125.625 2,135.625 2,135.625	Downlink I 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,	Frequency (Mi Center 115.000 112.500 125.000 122.500 122.500 132.500 137.500	+z) 2,1 2,1 2,1 2,1 2,1 2,1 2,1 2,1 2,1 2,1	Back Stop 19.375 14.375 19.375 29.375 24.375 29.375 34.375 39.375
Name A A1 A2 B B1 B2 C D E	BandWi 8.75 M 3.75 M 8.75 M 3.75 M 3.75 M 3.75 M 3.75 M 3.75 M 3.75 M	dth Hz	Start 2,110.625 2,110.625 2,110.625 2,120.625 2,120.625 2,125.625 2,135.625 2,135.625 2,140.625	Downlink 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,	Frequency (Mi Center 115.000 112.500 112.500 122.500 132.500 132.500 137.500 142.500	+z) 2,1 2,1 2,1 2,1 2,1 2,1 2,1 2,1 2,1 2,1	Back 5top 19.375 14.375 19.375 29.375 24.375 29.375 34.375 39.375 39.375
Name A A1 A2 B B1 B2 C D E F	BandWi 8.75 M 3.75 M 8.75 M 3.75 M 3.75 M 3.75 M 3.75 M 3.75 M 3.75 M 3.75 M	dth Hz	Start 2,110.625 2,110.625 2,120.625 2,120.625 2,120.625 2,125.625 2,130.625 2,135.625 2,140.625 2,145.625	Downlink!	Frequency (M Center 115.000 112.500 125.000 122.500 122.500 132.500 132.500 137.500 137.500	+iz) 2,1 2,1 2,1 2,1 2,1 2,1 2,1 2,1 2,1 2,1	Back Stop 19.375 14.375 29.375 24.375 24.375 39.375 39.375 54.375
Name A A1 A2 B B1 B2 C D C D E F F 1	BandWi 8, 75 M 3, 75 M	dth Hz	Start 2,110.625 2,110.625 2,115.625 2,120.625 2,120.625 2,125.625 2,130.625 2,130.625 2,145.625 2,145.625	Downlink I 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,	Frequency (M Center 115.000 112.500 112.500 122.500 132.500 132.500 132.500 132.500 132.500 132.500 142.500	+iz) 2,1 2,1 2,1 2,1 2,1 2,1 2,1 2,1	Back 19.375 19.375 19.375 29.375 29.375 24.375 39.375 39.375 54.375 54.375

Figure 98 Install- Frequency Table

5.4.8.3 Install- SNMP

SNMP	
Site ID	ADRF-SMR
Manager IP	192.168.63.10
	Set

Figure 99 Install - SNMP

The SNMP section allows you to specify the Site ID and Manager IP. The Site-ID is the code that is used to identify a particular module. The Manager IP field is where the user inputs the IP address of the NOC system that is being used to monitor the SNMP traps.

5.4.8.4 Install- Auto Installation



Auto Installation	
Progress (SMR)	Install

Figure 100 Install – Auto Installation

The Auto Installation routine can be run by clicking on the Install button. The Auto Installation routine runs basic system checks to ensure proper functionality.

5.4.9 Install- 600MHz

	Status Control Install System Help Logout	AROMS
DR-30-600	Band Selection	ADRF Remote Operation & Management System Repeater Location Info
ite ID : ADRF	: Channel1 : Channel2	Company
	617 MHz 652 MHz	Address1
	A B C D E F G	Address2
		City
	663MHz 698MHz	State Select one
vanced RF Technologies, Inc. plies innovative coverage	Bandwidth Downlink Frequency (MHz)	ZIP Code
itions to leading wireless service	Channel Reference Frequency (MHz) Set Start Center End	
viders around the world.	Channel1 624.500 center V 15.00 V Set 617.000 624.500 632.000	Repeater Installer Info
eless Coverage	Channel2 644.500 center V 15.00 V Set 637.000 644.500 652.000	Company
as Never Been So Easy		Name
	Custom Bandwidth Setting	Phone
		E-mail
	Custom Bandwidth Upload	
	File Name 찾아보기	
	Description	Set
	Upload	Date & Time
	There are no Custom Bandwidths.	Date 07/03/2020
		Time 13 🗸 25 🗸 42 🗸
	Frequency Table	
	Band Equalization	Set
	O Auto 🖲 Manual	
	Channel Reference DI Equalization DI Band Input Band Gain DI Band Output	

Figure 101 Install – 600MHz

The 600MHz Install page allows the user specify the desired frequencies by inputting the Reference Frequency and Bandwidth. The 600MHz module supports up to 2 non-contiguous bands. Bandwidth selection ranges from 5/10/15/20 MHz. The Web-GUI requires you to select the exact pass-bands that you will be using and exclude the guard bands when making your band selections.

5.4.9.1 Install- 600MHz Band Selection







To specify a frequency, input a DL reference frequency and select either start, center, or stop from the dropdown menu. Select the desired bandwidth from the dropdown menu under the Bandwidth column and then click Set.

• Start Frequency

If a start frequency is specifed, then this will be the beginning frequency of the band selection. Adding the bandwidth value that is selected from the Bandwidth column will give you the end frequency of your band selection.

Center Frequency

Once a center frequency is specified and a bandwidth is selected, the system will split the bandwidth value in half and then add this to the center frequency to obtain your end frequency and also subtract this value to obtain your start frequency.

• Stop Frequency

If a stop frequency is specified, then this will be the ending frequency of the band selection. Subtracting the bandwidth value that is selected from the Bandwidth column will give you the start frequency of your band selection.

5.4.9.2 Install- Frequency Table



Figure 103 Install – Frequency Setting

By clicking on the Frequency Table button, the following screen will appear. You can use the frequency table as a reference to set the desired bands. Clicking on the Back button will take you back to the previous page.

5.4.9.3 Install- SNMP



MP	
Site ID	ADRF-SMR
Manager IP	192.168.63.10
	Set

Figure 104 Install - SNMP

The SNMP section allows you to specify the Site ID and Manager IP. The Site-ID is the code that is used to identify a particular module. The Manager IP field is where the user inputs the IP address of the NOC system that is being used to monitor the SNMP traps.

5.4.9.4 Install- Auto Installation

Auto Installation	
Progress (SMR)	Install

Figure 105 Install – Auto Installation

The Auto Installation routine can be run by clicking on the Install button. The Auto Installation routine runs basic system checks to ensure proper functionality.



5.5 System

The System tab allows the user to perform firmware updates, upload closeout packages, view any changes to the system, backup existing configuration, and add/remove user accounts, and change the login credentials of the Administrator.

5.5.1 System-Account

5.5.1.1 System: Account- Account Management

The Account Management section allows the Administrator to delete any user account. Please note that the Account Management section is only available if you are logged into the system as the Administrator. To delete a user account click on the Account Management link and under the Delete column, click on the delete button.

Update / Account Management / New Account / New Administrator / Modify Login

	Login Name			Delete
1	admin	admin	administrator	-
2	adrf	adrf	user	delete



5.5.1.2 System: Account- New Account

The New account section allows the Administrator to create a new user account. Please note that the New account section is only available if you are logged into the system as the Administrator. To create a new user account click on the New account link and fill in the fields highlighted in yellow as shown below.

Status Control Install System Help Logout
Account Management / New account / Administrator / Change Password
New User Name Password Confirm password
Please add a new login name and password
Apply Cancel

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Figure 107 System: Account- New Account


5.5.1.3 System: Account- Administrator

The Administrator section allows the Administrator to create additional Administrator accounts. Please note that the Administrator section is only available if you are logged into the system as the Administrator.

New Administrator
Password
 Confirm password
Please enter new administrator name and password.
Apply Cancel

Figure 108 System: Account- Administrator

5.5.1.4 System: Account- Change Password

The Change Password section allows the current user who is logged into the system to change their login credentials.

Status Control Install System He	lp Logout
Account Management / New account / Administrator /	Change Password
 User Name Password 	admin
Confirm password	
Please enter	new password.
Apply	Cancel

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Figure 109 System: Account- Change Password



5.5.2 System- Closeout Package

The closeout package section will allow the user to upload documents to the module. The maximum file size for each upload is limited to 10 MB. The total amount of space available for uploading document is 100 MB. Please do not use this section as the primary storage location of your documents. Documents may become unavailable if the system goes down.

File Name Che	oose File No file (chosen		
Description				
Maximum file size is 10 MB				
Add File Cancel				
File Name File Size Description				
0.0 M / 100 MB (0.0%)				

Figure 110 System- Closeout Package

To upload documents to the module, click on the "Choose File" or "Browse" button and locate the file that you would like to upload, then enter in a Description of the file being uploaded. Afterwards, click on the "Add File" button to upload the file. Below is what you will see after the file upload. To delete the file, click on the delete button located in the last column.

Description					
	Maximum file size is 1	0 MB			
Ad	Id File	Cancel			
File Name	File Size	Description			
File Name test.txt	File Size	Description testing	dele		
File Name test.txt Audax-24_Rev1_NONE_NO	File Size 252 Bytes 12.5 KB	Description testing xxxxxx	dele		

Figure 111 System- Closeout Package after the file upload



5.5.3 System-User Log

This section displays system events that have taken place. The User Log displays who has made the changes, the time and date of when the event took place, and what changes were made to the system.

ţ	User Log					
	Number	Date	Username	Log Message		
	1	07/19/2011 20:43:17	admin	Logged-In		
	2	07/19/2011 19:34:09	admin	Logged-In		
	3	08/18/2011 13:31:08	adrf	[SMR-1] System Time Change to 7/19/2011 7:19:52		
	4	08/18/2011 13:21:42	adrf	Logged-In		
	5	08/18/2011 05:11:57	adrf	Logged-In		
	6	08/18/2011 01:45:25	admin	[SMR-1] Change Longitude to E222.222222		
	7	08/18/2011 01:45:25	admin	[SMR-1] Change Latitude to N111.111111		
	8	08/18/2011 01:43:59	admin	[SMR-1] UL HPA Set On		
	9	08/18/2011 01:43:59	admin	[SMR-1] DL HPA Set On		
	10	08/18/2011 01:43:59	admin	[SMR-1] AGC Set On		
	11	08/18/2011 00:12:06	admin	Logged-In		

Figure 112 System – User Log

5.5.4 System: Update

• To perform a firmware update, click on the System tab and the following screen will appear.

status control	install system netp Logout
stem Update	
	File Name Choose File No file chosen
Click Upg	ade to update the repeater firmware, or click Cancel to abort the upgrade

Figure 113 System update

- Click on the Choose File... button and locate the firmware file
- Click on the Upload button to perform the firmware update
- Once the firmware update is complete, the following popup message will appear:

<u> </u>	Firmware upgrade successfully completed! Web browser will be closed automatically! Please relogin the repeater after a few minutes.
	ОК

Figure 114 Pop-up message after System update is complete



5.5.5 System-Backup

The backup section allows the user to save the settings of the module. To perform the backup, click on the Backup button and you will be prompted to save the backup file. To restore the settings to the system, perform an update using this file.

congs backup	
Exports the curren which can be resto update function.	it settings of this module ired using the system

Figure 115 System backup

5.6 Help

If an internet connection is available, clicking on the Help Tab will redirect the user to our Technical Support page.



5.7 Logout

Clicking the Logout button will log the current user off the system.



6. MAINTENANCE GUIDE FOR SDR REPEATER

6.1 Periodic Inspection Checklist

- Check for loose connections between the repeater and antennas. If connections are loose, make sure that all connections are tightly fastened properly.
- Cables and connectors are in good condition.
- Ensure that the repeater brackets are in good. condition and that the repeater is securely fastened

6.2 Preventive Measures for Optimal Operation

6.2.1 Recommendations

• Perform the *Periodic Inspection Checklist* quarterly or semi-annually.

6.2.2 Precautions

- Do not operate the repeater with the antennas in extremely close proximity to one another as this may cause damage to the repeater.
- Do not change the 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 is necessary.



7. WARRANTY AND REPAIR POLICY

7.1 General Warranty

The SDR carries a Standard Warranty period of two (2) years unless indicated otherwise on the package or in the acknowledgment of the purchase order.

7.2 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.

7.3 Limitation of Damages

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

7.4 No Consequential Damages

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

7.5 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.

7.6 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 (800) 313-9345 or send an email to techsupport@adrftech.com.



8. SPECIFICATIONS

8.1 Electrical Specifications

Parameters		Specifications	
Param	leters	SDR-30-600	
Frequency	DL	617~652 MHz	
Range	UL	663~698 MHz	
Frequency Error		≤ ±0.05ppm	
Band Selection		LTE_20MHz 5GNR_20MHz	
Gain Elathors	Full band	≤ ±1.5dB	
Gain Flatness	Each band	≤ ±1.5dB	
	Maximum	90B	
Cain	Step	0.5dB	
Gain	Range	40dB	
	Tolerance	≤ ±0.5dB	
Composite Outp	out power	30dBm (SDR-30) tolerance : +/- 0.5 dBm	
Delay		5us	
Roll offs		1MHz@ 50dBc	
Noise Figure(U	olink Only)	5dB@ Max Gain	
VSWR (Input Or	ıly)	1.5:1	

8.2 Mechanical Specifications

Table 8-1	Mechanical Specification
-----------	--------------------------

Para	ameters	Specifications	Remarks
	Module	18.2 x 11.6 x 4.2 in	
Size	NMS	17 x 16.7 x 2.3 in	
	Chassis	19 x 19.1 x 14 in	
	Module	24 lbs	
Weight	NMS	7 lbs	
	Chassis	26 lbs	
	Input / Output	N Female	
Connector	Sum Port		
Туре	Ethernet	RJ45 Female	
	Frame ground	M5 Screw	
Mount type		Wall mount or 19" rack mount	
Security		Physical Cabinet	



8.3 Power Specifications

Table 8-2 Power Specifications

Parameters	Specifications	Remarks
AC Power	110~130V AC / 210~240V AC	AC Select

8.4 Environment Specifications

Table 8-3 Environment Specifications

Parameters	Specifications	Remarks
Operating Temperature	+14 ~ +122°F	
	-10 ~ +50°C	
Relative Humidity	+5 ~ +90%	
Industrial dust	Telcordia GR63-core	

8.5 Warranty & Certificates

Table 8-4Warranty & Certificates

Parameters	Specifications	Remarks
MTBF	> 100,000 hours	
Certificates	UL 60950	
	FCC CFR47 part 24	
	FCC CFR47 part 15	
	FCC CFR47 part 90	



APPENDIX A: MECHANICAL DRAWING



Figure 117 SDR Mechanical Drawing



APPENDIX B: SHUTDOWN RETRY LOGIC

The function of the built-in shutdown routine is to protect the repeater from any further damage from a hard-fail that the system may be experiencing.

Within 5 seconds of a hard-fail alarm being detected, the repeater will start the shutdown routine. The repeater will shut down by powering of the HPAs (high-powered amplifiers) for 30 seconds.

After 30 seconds have elapsed, the repeater will power on the HPAs and check to see if the hard-fail alarm still exist. If the hard-fail alarm still exists, then the repeater will shut down for 1 minute (double the time of the previous shutdown time).

After 1 minute has elapsed, the repeater will power on the HPAs and check to see if the hard-fail alarm still exist. If the hard-fail alarm still exists, then the repeater will shut down for 2 minutes (double the time of the previous shutdown time).

The shutdown routine will repeat itself a total of 10 times. If the hard-fail alarm still exists after the 10th retry, then the repeater will turn off its HPAs permanently until a reset is performed or factory set is executed.



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