

The Upper Rio FM Society, Inc.

PO Box 37007, Albuquerque, NM 87176

www.urfmsi.org

URFMSI REPEATER OPERATIONS GUIDE

www.URFMSI.org

October 2016

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PREFACE

The first "Repeater Operations Guide" was produced in 1996 by Dave Luz, WB9ERE and Don Fenstermacher, K5OWL. In 1999, Glenn Fowler, N5XYU produced an updated version while serving as Secretary for the URFMSI Board of Directors and was the editor of the 2004 update.

Revision Date June of 2011

Revision by Mike Eaton, K5MJE, while serving as the Membership Chairman. The principal changes in this revision have been to update the list of repeaters with changes since the 2009 guide, and revise all other information as necessary.

Revision date October of 2016

This revision includes the changes related to the HUB upgrade and updates to the repeater list.

NO GUARANTEE OF SERVICE

The Upper Rio FM Society repeaters are of good quality (thanks to your support) and are very reliable, but even the best of equipment or its power source can fail. Murphy's Law guarantees that if we have a failure, it will occur at the worst possible time.

If we have a failure, we will fix the problem as soon as possible so the repeater service is once again available to our members, but please realize that we cannot guarantee 100% continuous operation and cannot be liable for the consequences of a repeater not being operational.

In addition, we trust you are aware that most of the repeaters are on mountain tops and not easily accessible. Restoring service sometimes requires our volunteer repeater gurus to use snowshoes or snowmobiles to reach a site at the 9,000 or 10,000 foot level. In bad weather, it may be several days or even weeks before we can reach a site to repair or replace the equipment.

Nevertheless, you will find that your repeater service is available a very high percentage of the time. We ask for your understanding and patience when a repeater is out of service temporarily.

ABOUT THE UPPER RIO FM SOCIETY, INC.

On October 3, 1968, Phil Dater MD, WA5JDZ, and ten other amateurs interested in advancing the use of the two meter band formed a club that later became The Upper Rio FM Society, Inc. The club's first repeater used the 146.34/146.94 frequency pair and was installed on Sandia Crest. This site proved to have too much intermod so the repeater was relocated to Capilla Peak some months later. However, the Capilla Peak location did not allow access to the repeater from the NE Heights and the repeater was moved to the La Mosca Peak (Mt. Taylor) location where it still is located.

Note: The Navajos call this peak "dzil dotlizi" which is their ceremonial name for "Turquoise Mountain".

Hams monitoring 146.34/146.94 as they drove through northwest New Mexico were familiar with the female voice that announced "WA5JDZ...Repeater...Mt. Taylor". The voice had the characteristics of the sound track of the TV show "Star Trek"—which was the intended effect.

In 1972, Dr. Dater designed and installed a two-meter linking system connecting repeaters at Mt. Taylor, Alamo Peak near Alamogordo and Pinal Peak in Arizona. This system worked for a while but maintenance was high and reliability with the tube type equipment was poor.

On December 14, 1978, the FCC issued the repeater call "WR5ACM". The female voice was then changed to announce "WR5ACM...Repeater...Mt. Taylor". That call was in effect for several years until the FCC no longer licensed repeaters. The club then voted to change the call to honor the repeater trustee, Ken King, by using his call "WB5EKP". This repeater's present call sign is "K5URR" at La Mosca, (Mt. Taylor) and is one of the best repeaters in the world.

In 1974 Larry Scott, W5TIG, was elected Club President. He installed the first phone patch on the 146.31/146.91 repeater, which was located at his home. The 146.34/146.94 repeater on Mt. Taylor was linked to the 146.31/146.91 repeater.

By 1980, the club had grown to approximately 30 members. In November 1980, Dr. Bob Fugate, W8GY, was appointed head of the Technical Committee. He outlined plans for a great expansion of the system. These plans included a "Hub" at Kirtland Air Force Base, with repeaters at Mt. Taylor, Capilla Peak, Green's Peak in Arizona, and El Capitan near Roswell, an air-dropped remote for SAR activities, and some remote receiver sites for the repeater at Kirtland AFB. The proposed system included linking any combination of repeaters with all repeaters having a phone patch capability. There would be taped messages on all repeaters via touchtone, a voice clock and ID at the end of a QSO, with a fully synthesized two meter remote. There also would be interconnect status signals.

The proposed features were implemented along with many more in a system that was designed by Bob Rogers, KD5TU, and Dave Luz, WB9ERE, in 1986. More repeaters and features have been added since that time.

In 1989, Bob Rogers, KD5TU, left the club. Dave Luz, WB9ERE, and Bobby White, KG5VG, took over the job of maintaining and adding features to the linking system and software, and Dave Luz, WB9ERE, was elected chairman of the Technical Committee. This pair, with the help of many others, put together a system that is most likely one of the best amateur repeater systems in the world.

Although only a few amateurs have been mentioned here by name, it would take a book to list and describe all of the wonderful people who have worked to make the Upper Rio FM Society, Inc., what it is today. Our sincere thanks to all of the members and past members who have made this organization the success it is today.

Joe T. Knight W5PDY (SK)

During the 2014 – 2015 time frame new Kenwood linking and analog user repeaters were installed at Capilla Peak, La Mosca, Microwave Ridge and Tapia Mesa repeater sites. Plus, D-Star repeaters were installed at the Hub and Capilla Peak site.

In 2016, the URFMSI upgraded a large part of the equipment in the Hub. The upgrades included eight new analog repeaters. Two repeaters for the users in the Albuquerque area and six linking repeaters for the outlying sites. Plus a new computer server, a new ethernet switch, a new SIP server, new RTCMs to interface the repeaters to the ethernet switch and an upgrade to the grounding system. The club is very grateful for all the work that Conny Jonsson (N5HC) and Ronney Sluga (KB0PMY) did to make this upgrade occur.

MEMBERSHIP CLASSES AND PRIVILEGES

FULL MEMBER:

Use of URFMSI repeaters, including personal autodial code, linking privileges and the right to cast one vote on any motion at the quarterly membership meetings.

SENIOR MEMBER:

When a Full Member reaches the age of seventy, he/she automatically becomes a Senior Member with all the privileges of a Full Member and reduced annual dues.

STUDENT MEMBER:

A Student Member is a licensed amateur, under the age of 20 and is a full time student. The Student Member has the same privileges as the Full Member.

FAMILY MEMBER:

Member of the immediate family of a Full or Life Member must have the same mailing address and must meet one of the following conditions: (1) Spouse, (2) Under age eighteen, (3) Under age 25 and a full-time student, or (4) Any age if disabled or otherwise financially dependent upon and resident with the Full or Life Member. Family Members have the same privileges as the Full Member except no personal autodial code and no voting privileges.

LIFE MEMBER:

Honorary status conferred on a Full Member by two-thirds vote of the members present at an Annual Meeting of the membership after nomination by the Board of Directors.

MEMBERSHIP DUES

FULL MEMBER:

\$30/year

STUDENT MEMBER:

\$15/year

SENIOR MEMBER:

\$15/year

FAMILY MEMBER:

\$1/year for same dues period as the Full or Senior Member.

LIFE MEMBER:

No annual dues

DUES PAYMENTS

Each member's dues termination date is shown on each membership roster in the last column headed "THRU", on the mailing label of mail sent to members, and on each membership card. The bylaws require cancellation of membership at the end of the second month after the dues termination date.

MEETINGS

Quarterly meetings of the membership are normally held on the second Tuesday of January, April, July and October. The October meeting is the Annual Meeting of the membership at which time members are elected to the Board of Directors.

BOARD OF DIRECTORS

A ten member board (which must include one Repeater Trustee) elected by the membership manages the affairs of the corporation. They elect Board officers, and serve without compensation.

OFFICERS

Officers consist of a President, one or more Vice Presidents, Secretary and Treasurer. The officers are elected by the Board for two-year terms. No officer may serve more than two consecutive terms.

Present club officers and board members can be found on the club's web site: **www.urfmsi.org**.

WEB SITE

Club bylaws, repeater maps, news, notes and other information are available at the Upper Rio FM Society, Inc. web site: **www.urfmsi.org**.

THE URFMSI REPEATER NETWORK

Overview

The URFMSI network of repeaters covers the central part of New Mexico. This network includes seven analog and three D-Star repeaters. All URFMSI repeaters have emergency battery backup power, which allows them to continue operating for a limited amount of time in the event of commercial power failure. Visit the URFMSI web site for the map of the club's repeater locations and coverage area.

URFMSI Analog Repeaters

The seven analog repeaters are all linkable to each other, but for normal operation, the repeaters are not linked. URFMSI members may link any two or more repeaters as the need arises. Many of the radio nets hosted on the URFMSI network will link a number of these repeaters during the net. Information about how the linking system works and how a member can link/unlink the repeaters will be covered in a later section.

The seven linkable repeaters are:

<u>Frequency</u>	<u>Offset</u>	<u>PL Tone</u>	<u>Location</u>
146.900 MHz	-	67	Albuquerque
449.550 MHz	-	71.9	Albuquerque
442.600 MHz	+	100	Diamond Memorial (Sandia Crest)
146.960 MHz	-	100	Capilla Peak (Southeast of Albuquerque)
146.940 MHz	-	100	La Mosca (Just north of Mt. Taylor)
146.640 MHz	-	67	Microwave Ridge (Just south of Mt. Taylor)
147.060 MHz	+	67	Tapia Mesa (Northeast of Clines Corners)

In addition to being linkable, these repeaters have AllStar and autopatch capabilities.

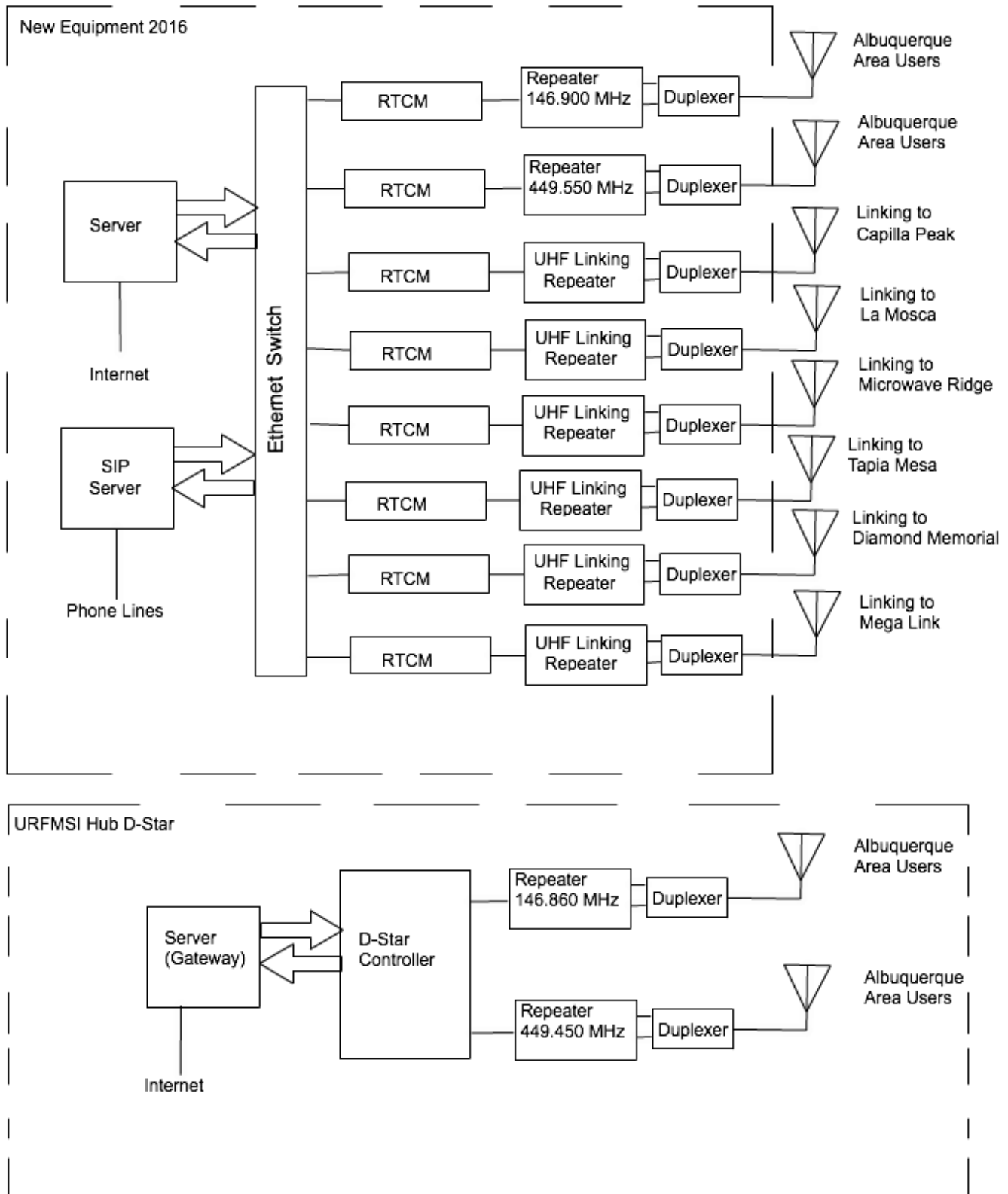
URFMSI D-Star Repeaters

There are three D-Star repeaters in the URFMSI network.

These repeaters are:

<u>Frequency</u>	<u>Offset</u>	<u>Location</u>
146.860 MHz	-	Albuquerque
449.450 MHz	-	Albuquerque
444.525 MHz	+	Capilla Peak

URFMSI Hub Block Diagram



GENERAL REPEATER USE GUIDE LINES

All FCC regulations will be followed, including:

- Operators will yield to emergency communications.
- ID with your complete call sign every 10 minutes and your final transmission must include your complete call sign.
- No political comments or discussion.
- No profanity of any type.
- No music during transmissions. Please turn your car radio down.

Additional URFMSI rules:

- **IMPORTANT:** If the phone patch is used to make a “911” emergency call, tell the “911” operator that this is a radio link call and the location of the emergency. This is the **ONLY** way the “911” operator can know the location.
- All licensed operators (Members and Non-members) are encouraged to use the repeaters.
- During QSOs, leave a 2-3 second space after the courtesy beep so that others may break in for emergency use or to make a contact.
- During extended QSOs, you are encouraged to yield to others needing the frequency. Periodically pause and inquire if any others need to use the repeater.
- There is currently no maximum time limit if this rule is followed.
- Avoid a stuck microphone. Place your mic where it is secure from accidental transmission and /or set a reasonable TOT on your radio.
- No kerchunking allowed. Always announce yourself as testing, with your call sign. Otherwise, we might think there is something wrong with the repeater.
- Always identify your self when Linking/Unlinking the repeaters.

URFMSI REPEATER LINKING INFORMATION

All the linking for the URFMSI repeaters occurs at the HUB (Operations Center) in Albuquerque. The Albuquerque area repeaters are located at the HUB and the outlying repeater locations have UHF links to the HUB. In 2016 a major up-grade of the HUB equipment occurred. The up-grade included the following:

- New 146.900 and 449.550 MHz repeaters (Albuquerque area repeaters)
- Six new UHF Linking repeaters
- New Radio Thin Client Modules (RTCM) to interface to the repeaters
- New Ethernet Switch (Interfaces the RTCMs to the Server)
- New Computer Server
- New Session Initiation Protocol (SIP) Server
- New UPS for network equipment
- New equipment racks
- Up-grades to the antenna and equipment grounds

Because of these HUB up-grades, there are new linking commands and procedures. Since the linking occurs in the HUB, the HUB can be thought of as a large switch matrix. This allows the HUB to link any two or more repeaters without affecting the other repeater's operation.

For example, a member that is using the Albuquerque 146.900 MHz repeater can link (and unlink) the Capilla Peak 146.960 MHz and the La Mosca 146.940 MHz repeaters to the 146.900 MHz repeater. The linking of these three repeaters will not affect the operation of the other four repeaters.

The linking/command codes will allow URFMSI members to:

- Check to see if the repeater they are using is linked to any other repeater(s).

- Check to see globally (Network wide) which repeaters are linked.

- Link their present repeater to any of the other repeaters one at a time or link to ALL at once.

- Unlink their present repeater from the other repeaters linked one at a time or unlink present repeater from all the other repeaters.

- Make phone patches on repeater being used.

It is recommended that a member check to see which repeaters may be already linked before linking to another repeater.

The URFMSI network uses DTMF (Dual-tone multi-frequency) tones for the linking/commanding of the network. All codes start with an asterisk (*) followed by a numerical code of 2 to 4 numbers.

Example: “*1234”

Following the transmitted command, the system will respond with an audio message verifying the action. Below are a few examples of responses.

Example 1: A member using the Albuquerque 146.900 MHz repeater sends the command to link the Microwave Ridge 146.640 MHz repeater. Then the system would respond with “Microwave Ridge Transceive”.

Example 2: A member using the Albuquerque 146.900 MHz repeater sends the command to link all the repeaters (or a subset of repeaters). Then the system would respond by listing the linked repeaters i.e. “90 Transceive”, “55 Transceive”, “Diamond Memorial Transceive”, “Microwave Ridge Transceive”, and so on”.

Note that the two Albuquerque repeaters are called out by the KHz part of their frequency.

Example 3: A member using the Albuquerque 146.900 MHz repeater sends the command to link all the repeaters. However a member on the Capilla Peak repeater can still un-link the Capilla Peak repeater from the other repeaters. This would allow the Capilla Peak repeater to operate in a repeat only mode and would not affect the other linked repeaters. The system will respond that Capilla Peak is in Transceive mode and the other repeaters will receive indication that Capilla Peak repeater has been un-linked.

The linking system has a number of audio responses related to the commands and is not limited to those in the above examples. These audio responses may change if the need arises.

At the end of the communications on the linked repeaters, please unlink these repeaters. The network does not have an auto timeout unlink command at this time.

IMPORTANT NOTE: Generally if a URFMSI member uses a given repeater (for example the 146.900 MHz repeater) to link in other repeaters, the 146.900 MHz repeater must be used to unlink the other repeaters. Any other repeaters that are linked from a different repeater (not the 146.900 MHz repeater) will not be affected by the above linking or unlinking.

EMERGENCY OPERATION

If a repeater, or linked repeaters are being used in support of emergency communications, it is recommended that the net control station announce the emergency operation periodically. At present the repeater network does not have indications to show that it is being used in support of an emergency. An announcement by the emergency net control on a regular basis (say once an hour) to let other users know the status of the repeater(s) will help keep the repeaters clear for emergency traffic.

URFMSI PHONE PATCH

All the URFMSI analog repeaters have phone patch capabilities. The phone patch uses DTMF tones and all codes start with an asterisk (*) followed by the 2-digit command code. After the 2-digit command code, "unkey" your transmitter and wait for a dial tone. Once the dial tone is heard, key in the 7-digit phone number (for 505 area code). Or 11-digits for other area codes (Example 1-555-555-5555). Note that some area codes are restricted.

URFMSI members can also use the Mega-Link network to make phone patches. When using the Mega-Link network the member may not hear a dial tone, but the phone patch will be activated and the phone number can be entered. The Mega-Link interface requires 11-digits for all calls (Example 1-505-555-5555). Again note that some area codes are restricted.

URFMSI members can also set up speed dial commands.

URFMSI ALLSTAR LINKING

All the URFMSI analog repeaters have AllStar capabilities. The AllStar system allows linking to other repeaters or radios (NODES) across the country or world by use of the internet and VOIP.

The AllStar linking uses DTMF tones (like the URFMSI Linking) for the linking/commanding of the network. All Commands start with an asterisk (*) followed by a numerical command, then the node number.

A full listing of all the AllStar link nodes (locations) are on the AllStar web site (<https://allstarlink.org>). The web site requires a free registration to view the node numbers.

AllStar Command Code Description

- “*1node#” Disconnect Link
- “*2node#” Connect link in monitor mode
- “*3node#” Connect link in Transceive mode
- “*70” Local connection status

AllStar Command Notes

1. “Node#” is an AllStar link node number.
2. Node number zero (0) is shorthand for the last node operated on by a previous command.
3. Monitor mode means listen to a node, but do not send any audio to it.

URFMSI D-STAR REPEATERS

There are three D-Star repeaters in the URFMSI network.

These repeaters are:

<u>Frequency</u>	<u>Offset</u>	<u>Call Sign</u>	<u>Module</u>	<u>Location</u>
146.860 MHz	-	K5URR	“C”	Albuquerque
449.450 MHz	-	K5URR	“B”	Albuquerque
444.525 MHz	+	W5URD	“B”	Capilla Peak

All the URFMSI D-Star repeaters are connected to D-Star gateways for full D-Star network connectivity. Refer to the URFMSI web site for more information about the club’s D-Star repeaters.

APPENDIX A

URFMSI REPEATERS

Albuquerque Metro – VHF

Output/ Input: 146.900/146.300 MHz
Call: K5FIQ
Location: Albuquerque Operations Center
Lat/Lon: N 35° 03.45', W 106° 35.22'
Tone Required: 67 Hz
Power to Antenna: 25 watts
Power Source: AC with battery and propane generator backup
Antenna Type: 12 dB cardioid, north
Antenna Elevation: 100' AGL, 5,475' ASL
Coverage Area: Albuquerque and vicinity
Special Features: AllStar node = 42744

Albuquerque Metro – UHF

Output/ Input: 449.550/444.550 MHz
Call: K5FIQ
Location: Albuquerque Operations Center
Lat/Lon: N 35° 03.45', W 106° 35.22'
Tone Required: 71.9 Hz
Power to Antenna: 25 watts
Power Source: AC with battery and propane generator backup
Antenna Type: TX 3 element beam 9 dB east
Antenna Elevation: 45' AGL, 5420' ASL
Coverage Area: Albuquerque area
Special Features: AllStar node = 42745

Albuquerque Metro - D-Star - VHF

Output/ Input: 146.860/146.260 MHz
Call: K5URR C
Gateway: K5URR G
Location: Albuquerque Operations Center
Lat/Lon: N 35° 03.45', W 106° 35.22'
Tone Required: None
Power to Antenna: 25 watts
Power Source: AC with battery and propane generator backup
Antenna Type: 12 dB RX, 6 dB TX cardioid, north
Antenna Elevation: 20' AGL, 5,395' ASL
Coverage Area: Albuquerque and vicinity
Special Features: D-Star "C" Module

APPENDIX A (URFMSI REPEATERS)

Albuquerque Metro – D-Star - UHF

Output/ Input: 449.450/444.450 MHz
Call: K5URR B
Gateway: K5URR G
Location: Albuquerque Operations Center
Lat/Lon: N 35° 03.45', W 106° 35.22'
Tone Required: None
Power to Antenna: 25 watts
Power Source: AC with battery and propane generator backup
Antenna Type:
Antenna Elevation: 25' AGL, 5400' ASL
Coverage Area: Albuquerque area
Special Features: D-Star "B" Module

Capilla Peak - VHF

Output/ Input: 146.960/146.360 MHz
Call: K5URR
Location: Capilla Peak in the Manzano Mountains SE of Albuquerque
Lat/Lon: N 34° 41.73', W 106° 24.31'
Tone Required: 100 Hz
Power to Antenna: 40 watts
Power Source: AC with battery and propane generator backup
Antenna Type: 12 dB cardioid to East
Antenna Elevation: 70' AGL, 9,390' ASL
Coverage Area: East toward Cline's Corners and Rio Grande Valley from Albuquerque to Socorro.
Special Features: AllStar node = 42746

Capilla Peak –D-Star

Output/ Input: 444.525/449.525 MHz
Call: W5URD B
Gateway: W5URD G
Location: Capilla Peak in the Manzano Mountains SE of Albuquerque
Lat/Lon: N 34° 41.73', W 106° 24.31'
Tone Required: None
Power to Antenna: 25 watts
Power Source: AC with battery and propane generator backup
Antenna Type:
Antenna Elevation: 60' AGL, 9,380' ASL
Coverage Area: East toward Cline's Corners and Rio Grande Valley from Albuquerque to Socorro.
Special Features: D-Star "B" Module

APPENDIX A (URFMSI REPEATERS)

Diamond Memorial (Sandia Crest) - UHF

Output/ Input: 442.600/447.600 MHz
Call: K5FSB
Location: Sandia Crest
Lat/Lon: N 35° 12.92', W 106° 27.0'
Tone Required: 100 Hz
Power to Antenna: 20 watts
Power Source: AC with battery backup
Antenna Type: See Special Features
Antenna Elevation: 35' AGL, 10,680' ASL
Coverage Area: Albuquerque and area around Sandia Mountains
Special Features: AllStar node = 42750
 The repeater includes a voting receiver with four inputs to a voting controller. Three of the antennas are Yagis pointed to the South Valley, Bernalillo and Santa Fe respectively. The fourth antenna is a vertical monopole.

La Mosca (Just north of Mt. Taylor) - VHF

Output/ Input: 146.940/146.340 MHz
Call: K5URR
Location: La Mosca, 15 miles NE Grants
Lat/Lon: N 35° 15.14', W 107° 35.80'
Tone Required: 100 Hz
Power to Antenna: 35 watts
Power Source: AC with battery backup
Antenna Type: 12 dB cardioid North
Antenna Elevation: 80' AGL, 11,081' ASL
Coverage Area: West to state line, East to ABQ, North to southern Colorado and Utah
Special Features: Very wide area coverage
 AllStar node = 42747

Microwave Ridge (Just south of Mt. Taylor) - VHF

Output/ Input: 146.640/146.040 MHz
Call: K5URR
Location: Microwave Ridge, 15 miles NE of Grants
Lat/Lon: N 35° 11.32', W 107° 35.97'
Tone Required: 67 Hz
Power to Antenna: 30 watts
Power Source: AC with battery and propane generator backup
Antenna Type: 12 dB cardioid South
Antenna Elevation: 80' AGL, 9,332' ASL
Coverage Area: West to Gallup, East to ABQ, South to highway 60
Special Features: AllStar node = 42748

APPENDIX A (URFMSI REPEATERS)

Tapia Mesa (North of Clines Corners) - VHF

Output/ Input: 147.060/147.660 MHz
Call: K5FIQ
Location: Tapia Mesa, 5 mi N of Clines Corners
Lat/Lon: N 35° 06.22', W 105° 37.27'
Tone Required: 67 Hz
Power to Antenna: 25 watts
Power Source: AC with battery backup
Antenna Type: 9 dB cardioid to west
Antenna Elevation: 100' AGL, 7,528 ASL
Coverage Area: Estancia Valley and East slopes of Sandia & Manzano Mtns & East to Santa Rosa
Special Features: AllStar node = 42749

APPENDIX B

MEGA-LINK REPEATERS (AFFILIATED REPEATERS)

Northern New Mexico	Elevation	Freq & Offset	PL
Elk Mountain (N of Pecos)	11,600	147.260+	67
Eureka Mesa (E of Cuba)	9,667	147.240+	67
Harris Mesa (SE of Bloomfield)	6,949	147.280+	67
Iron Mountain (N of Eagle Nest)	11,732	444.350+	100
San Antonio Mountain (N of Tres Piedras)	10,908	147.220+	100
Sierra Grande (E of Raton)	8,720	147.280+	100
Taos Ski Valley (NE of Taos)	11,900	147.140+	67
Turkey Mountain (W of Wagon Mound)	8,480	147.200+	67
Central New Mexico	Elevation	Freq & Offset	PL
Cedro Peak (SE of Tijeras)	7,767	147.340+	67
Clovis (Downtown)	4,295	442.525+	67
Ft. Sumner (W of Fort Sumner)	4,580	147.140+	100
Gallinas Lookout (W of Corona)	8,730	147.280+	100
La Mosca (NE of Grants)	10,991	444.800+	67
Melrose (W of Clovis)	4,560	147.280+	67
Mesa Rica (S of Conchas Dam Lake)	5,390	147.360+	100
Microwave Ridge (E of Grants)	9,332	146.660-	100
Sandia Crest (E of Albuquerque)	10,680	444.325+	100
Sandia Crest (E of Albuquerque)	10,680	145.290-	100
Tucumcari Mountain (S of Tucumcari)	4,975	147.220+	100
Southern New Mexico	Elevation	Freq & Offset	PL
Caballo (SE of Truth or Consequences)	7,550	147.260+	100
Capitan Peak (NW of Roswell)	10,450	146.660-	67
Buck Mountain (NW of Ruidoso)	10,752	444.375+	67
Las Cruces (E of Las Cruces)	5,270	147.180+	100
Little Florida Mountain (SE of Deming)	5,260	147.020+	100
Long Ridge (E of Alamogordo)	7,782	145.350-	67
"M" Mountain (W of Socorro)	7,201	147.240+	100
Maljamar (NW of Hobbs)	4,300	147.140+	67
Roswell (E of Roswell)	3,971	147.260+	100

APPENDIX B (MEGA-LINK REPEATERS)

<u>Western New Mexico</u>	<u>Elevation</u>	<u>Freq & Offset</u>	<u>PL</u>
Davenport Lookout (N of Datil)	9,300	147.040+	100
Deza Bluff (N of Gallup)	9,000	147.220+	67
Frisco Divide (WNW of Reserve)	8,419	147.360+	67
Jacks Peak (NE of Lordsburg)	7,986	145.170-	100
Luera Mountain (S of Datil)	9,420	147.140+	100
Pinos Altos (N of Silver City)	8,163	145.115-	67
<u>Southwest Texas</u>	<u>Elevation</u>	<u>Freq & Offset</u>	<u>PL</u>
Mt. Franklin (N of El Paso)	5,470	147.200+	67
North Park (NE of El Paso)	3,950	442.250+	100
North Park (NE of El Paso)	3,950	147.140+	67

APPENDIX C

TAOS AMATEUR RADIO CLUB (AFFILIATED REPEATERS)

<u>Northern New Mexico</u>	<u>Elevation</u>	<u>Freq & Offset</u>	<u>PL</u>
Angel Fire	10,675	147.340+	100
High Valley (San Antonio Mountain)	10,908	146.760-	67
Picuris Mountain	10,885	147.120+	67
Picuris Mountain (220 MHz)	10,885	224.400-	225.7
Red River	9,820	145.390-	100
San Antonio Mountain ARES (N of Tres Piedras)	10,900	145.175-	141.3
Taos (Holy Cross)	7,059	449.875-	123
Taos Ski Valley UHF (NE of Taos)	11,900	444.975+	123