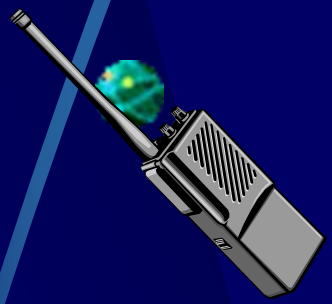
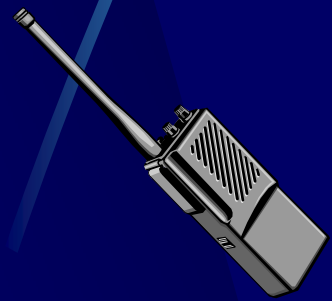
W6YX 1.2Ghz Repeater Project





Presented by Bob Warmke

W6CYX

to

Stanford Amateur Radio Club

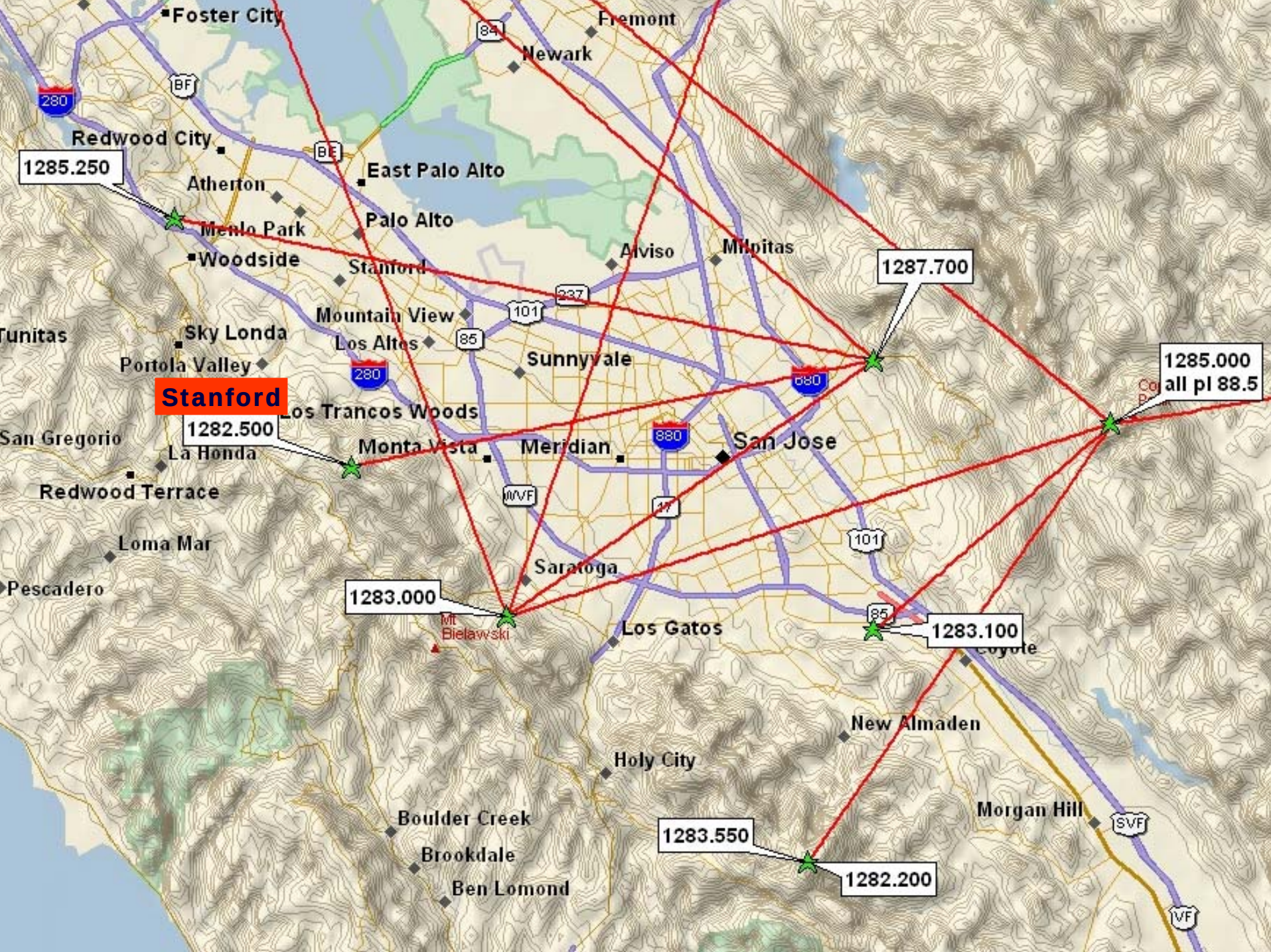
Stanford Repeater Site

Old Repeater

Old Repeater

New Repeater

- New ICOM 1220 repeater (modified)
- New Comet GP21 21 element colinear antenna and mast
- New LMR400 Feed line
- New Linkcom RLC-1 Plus controller
- New Kenwood TM-541A link transceiver and associated feed line and antenna
- New IRLP & Echolink connectivity
- New Connectivity to W6RLW Network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Fremont
Newark
Redwood City
1285.250
East Palo Alto
Atherton
Palo Alto
Menlo Park
Woodside
Stanford
Alviso
Milpitas
1287.700
Mountain View
Sky Londa
Los Altos
Portola Valley
Sunnyvale
1285.000
all pl 88.5
Stanford
Los Trancos Woods
1282.500
San Gregorio
La Honda
Monta Vista
Meridian
San Jose
Redwood Terrace
Loma Mar
Saratoga
Pescadero
1283.000
Mt Bielawski
Los Gatos
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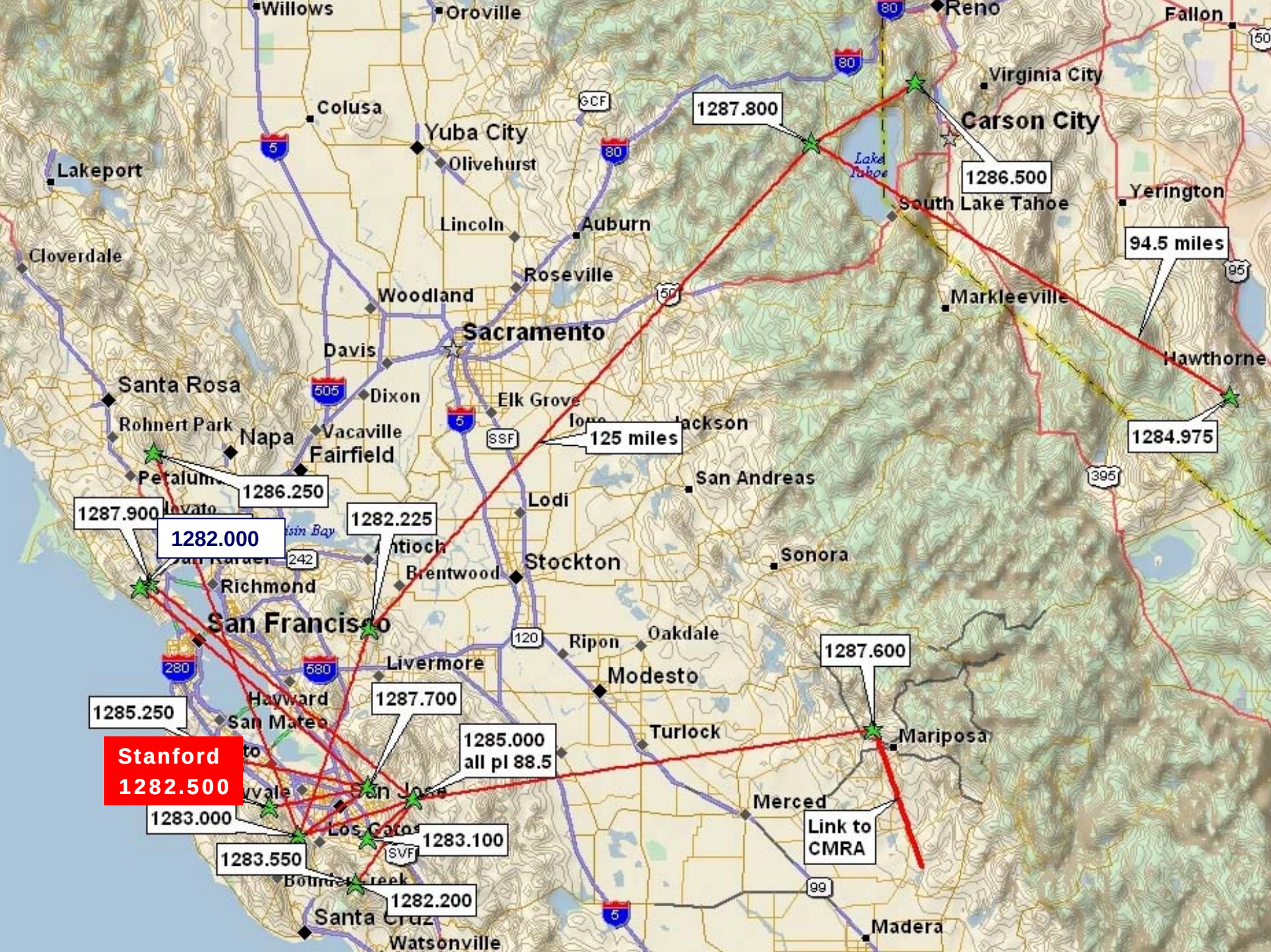
New Almaden
Holy City
Boulder Creek
Morgan Hill
1283.550
Brookdale
1282.200
Ben Lomond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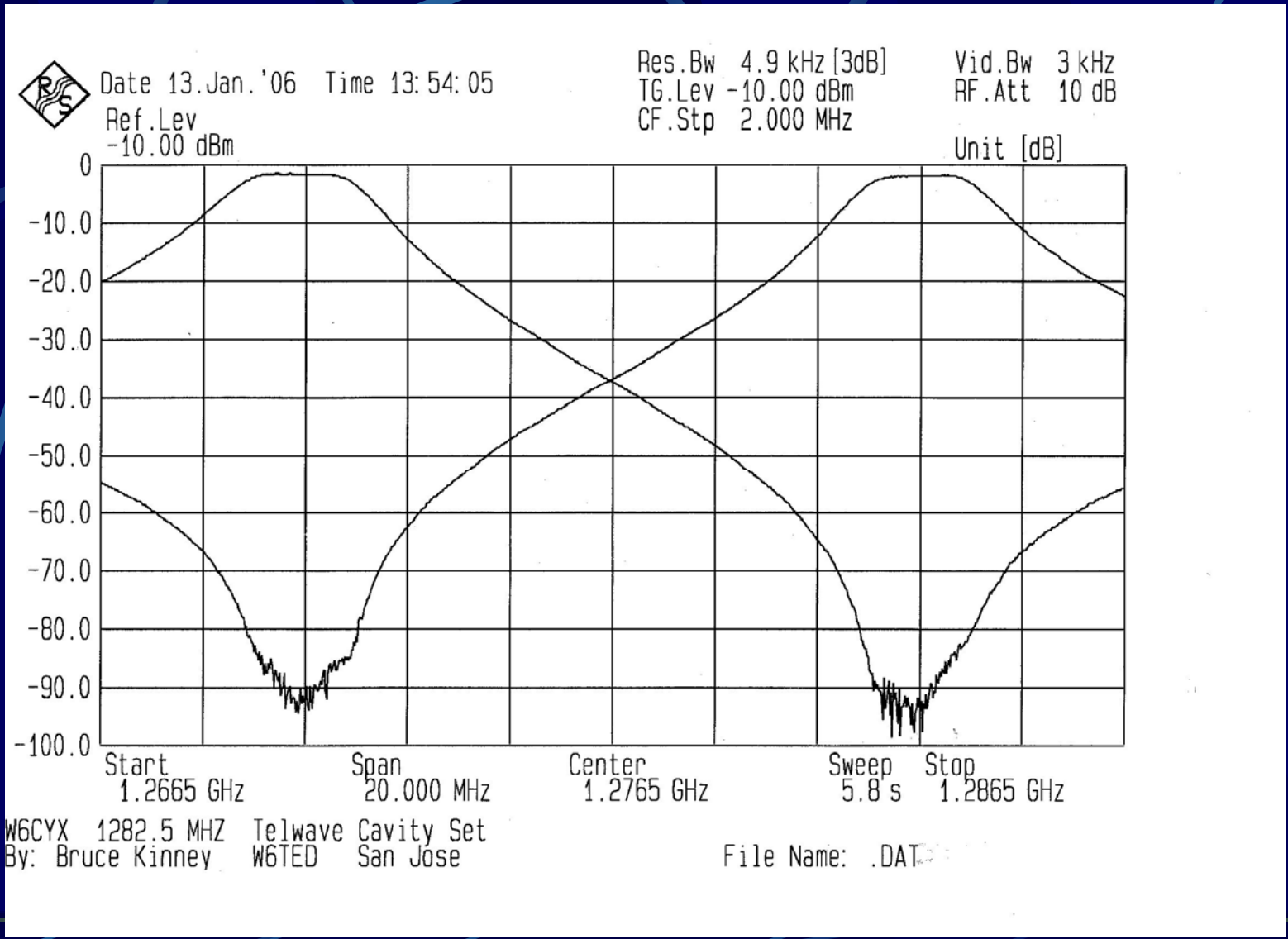
Reno
Fallon
Virginia City
Carson City
Colusa
Yuba City
Olivehurst
Lakeport
Lake Tahoe
South Lake Tahoe
Yerington
Lincoln
Auburn
Cloverdale
Roseville
Woodland
Markleeville
Sacramento
Davis
Hawthorne
Santa Rosa
Dixon
Elk Grove
Rohnert Park
Napa
Vacaville
Fairfield
San Andreas
Lodi
Stockton
Sonora
Richmond
Brentwood
San Francisco
Ripon
Oakdale
Livermore
Modesto
Hayward
San Mateo
Turlock
Mariposa
Merced
Los Gatos
Boulder Creek
Santa Cruz
Watsonville
Madera
1287.800
1286.500
94.5 miles
1284.975
125 miles
1286.250
1287.900
1282.000
1282.225
1287.600
1287.700
1285.250
Stanford
1282.500
1285.000
all pl 88.5
1283.000
1283.100
1283.550
1282.200
Link to
CMRA

Typical W6RLW Repeater

Standard Duplexer

Duplexer Pass / Reject



Advantages of 1.2 GHZ

- Low Noise
- Reduced intermod
- 249 pairs available – less than 10 use in Northern California
- Small size Repeater equipment
- Small antennas
- More high tech users

Disadvantages of 1.2 GHZ

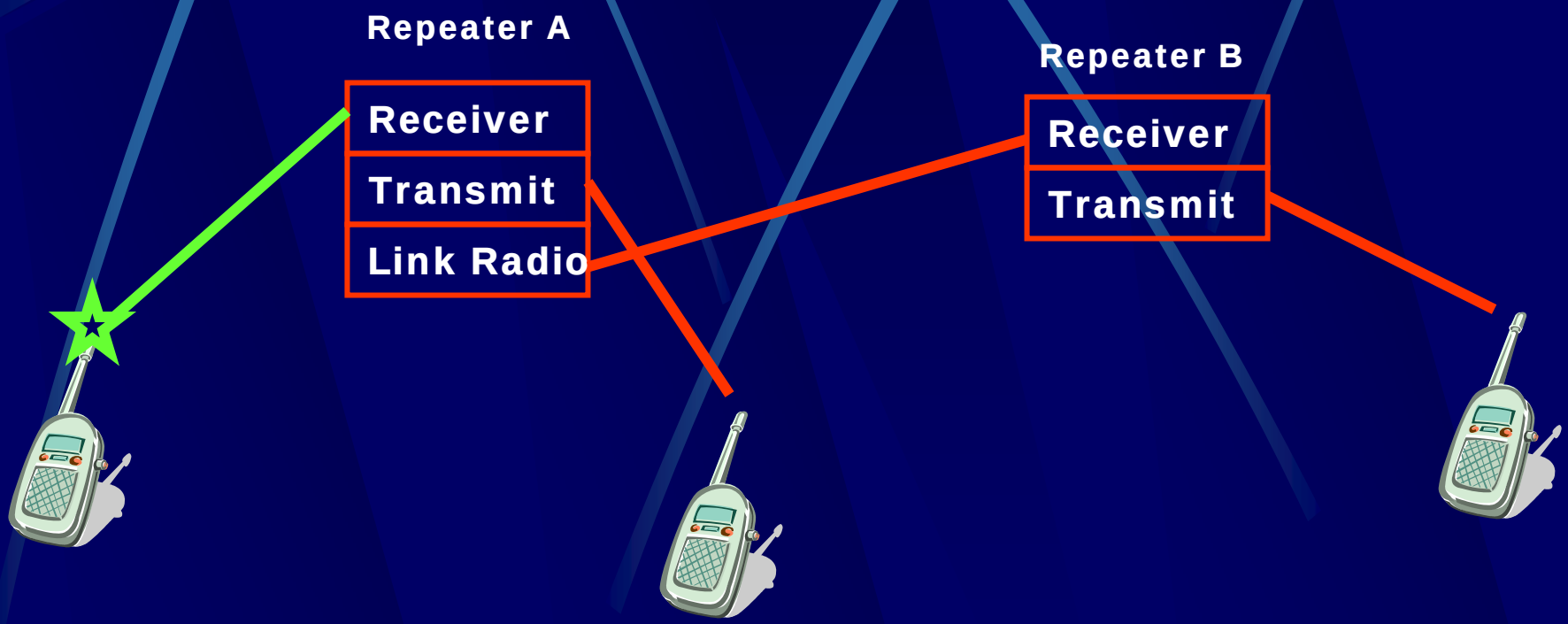
- Equipment expensive and scarce
- Feed line and connector losses
- Frequency stability and accuracy
- Propagation
- Radar Interference

Propogation Observations

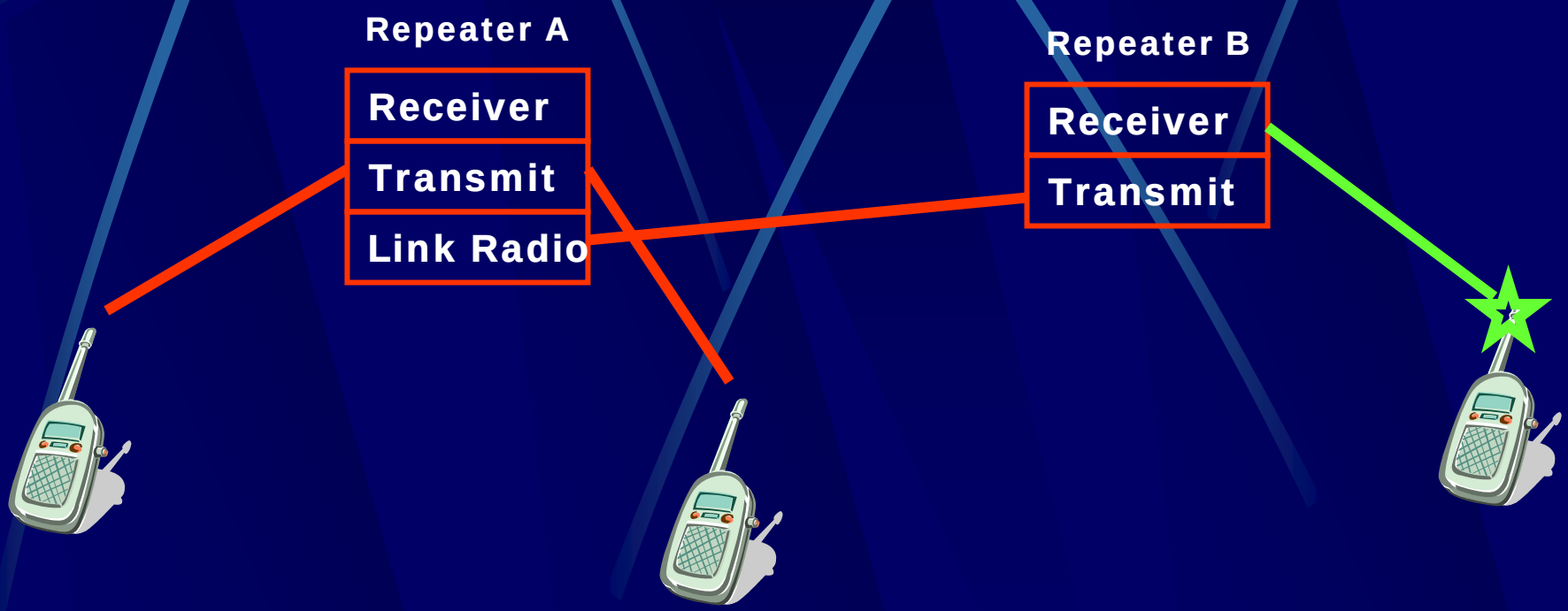
- Higher loss through foliage
- Multipath and Reflections are more obvious
- Terrestrial distance record greater on 1.2Ghz than on 440Mhz
- Knife edging (Refraction) or Reflection?

Refraction or Reflection ?

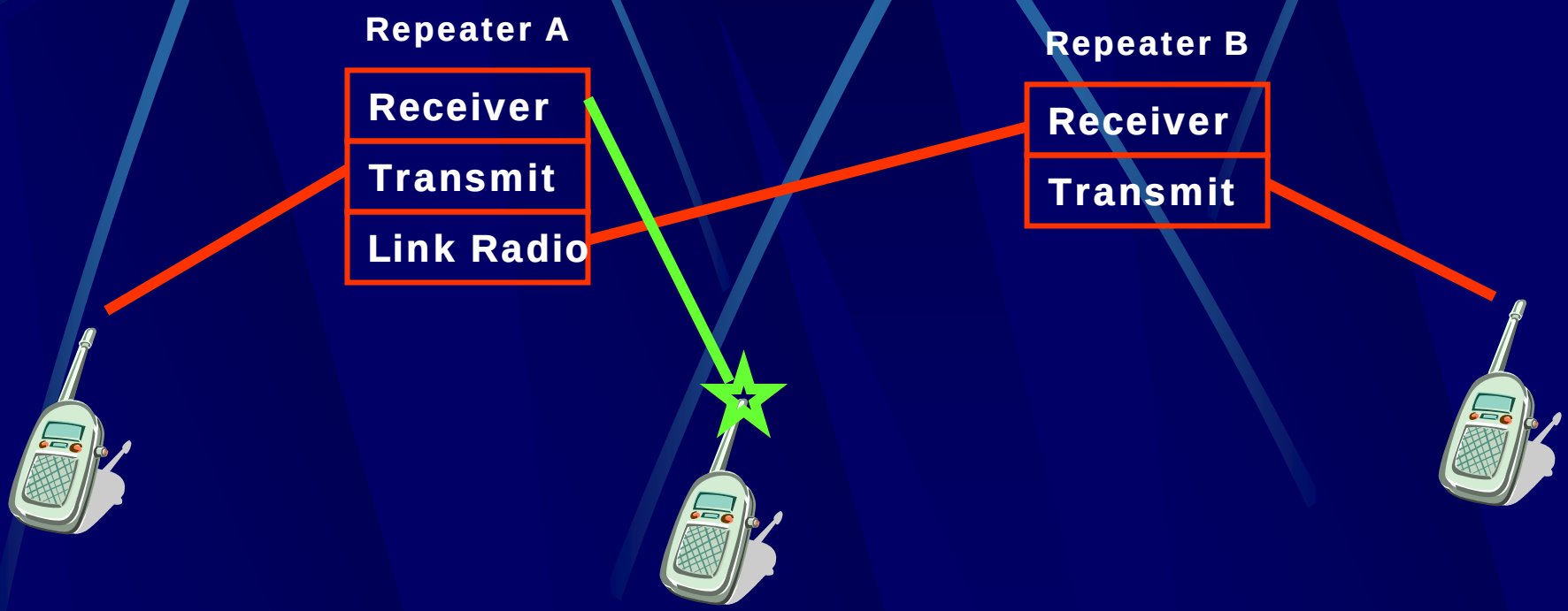
Repeater System Architecture

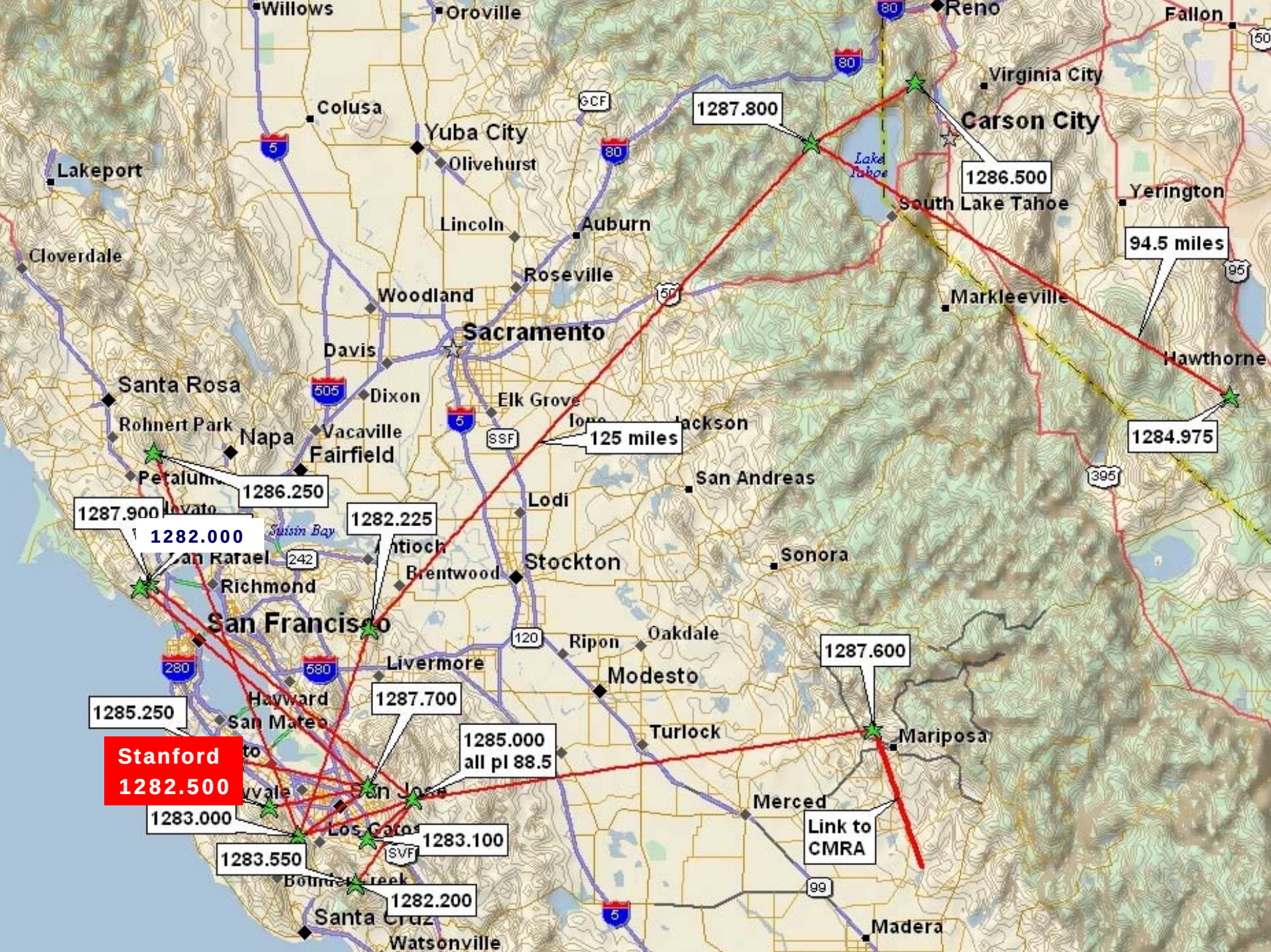


Repeater System Architecture



Repeater System Architecture

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Fairfield
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Lodi
Suisun Bay
San Rafael
Richmond
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Stockton
Sonora
San Francisco
Ripon
Oakdale
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Modesto
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Mariposa
Merced
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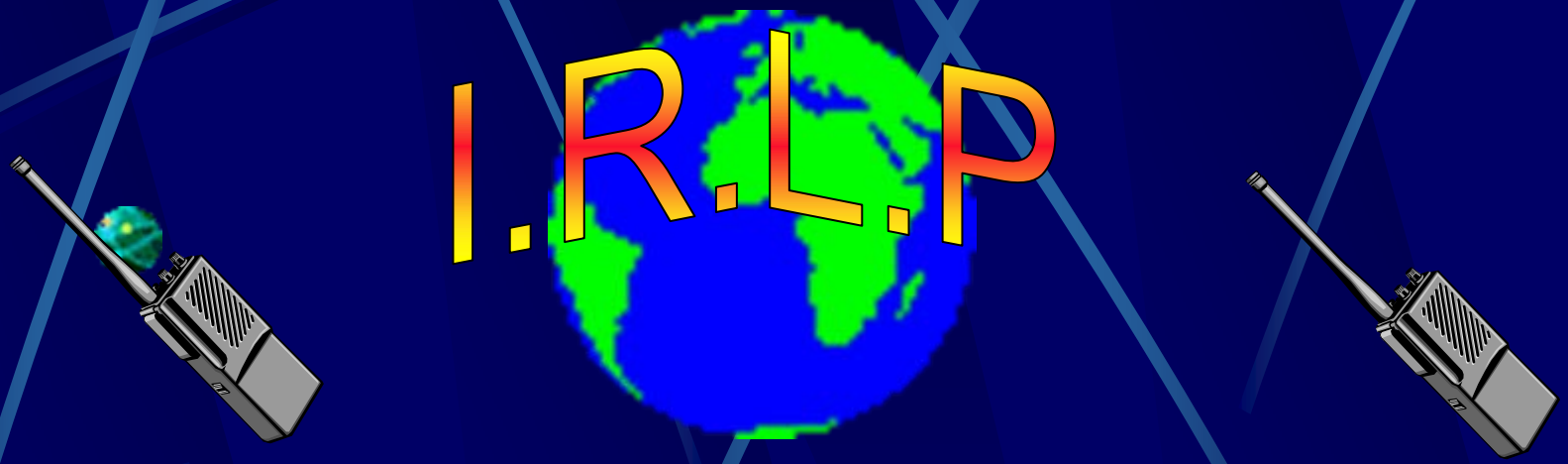
Link to
CMRA
GCF
SSF
SVF

Questions

Internet Radio Linking Project



Presented by Don Ferguson

KD6IRE

to

Stanford Amateur Radio Club

What's IRLP about ?

- **Use the Internet to link amateur repeaters.**
- **Allow links to be controlled by Repeater users**
- **Provide REFLECTORS to link multiple repeaters**
- **Make it affordable and dependable.?**
- **Keep it secure from unauthorized use.?? ***

Hardware

- The Custom Red Hat CD-ROM
- Red Hat Boot Floppy Diskette

- Custom PCB by VE2LTD
  - PCB Does COR, PTT & DTMF
  - DB9 IRLP to Repeater Interface
- LPT1 to IRLP Jumper Cable

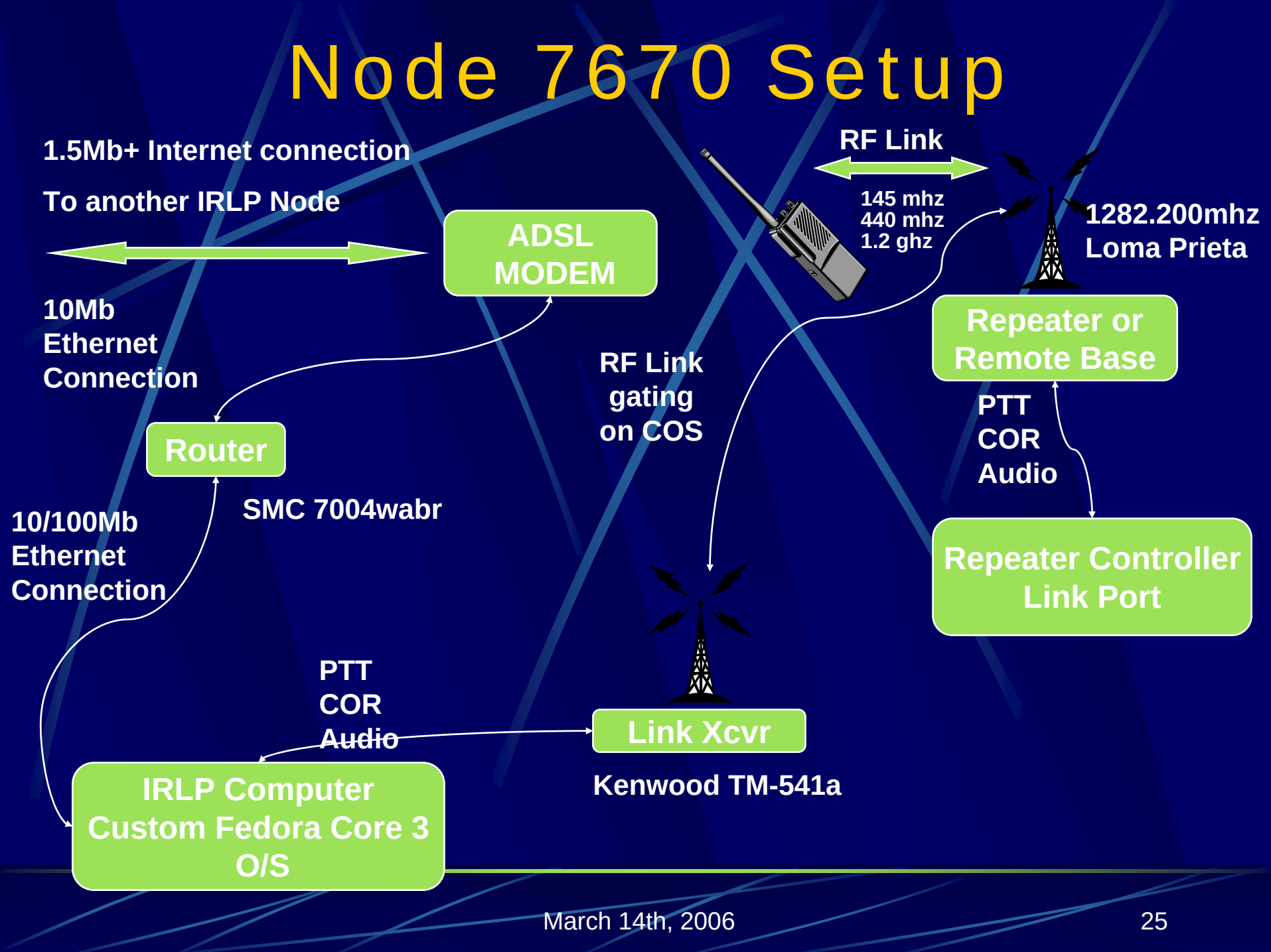
Node 7670

The W6CYX IRLP Node 7670

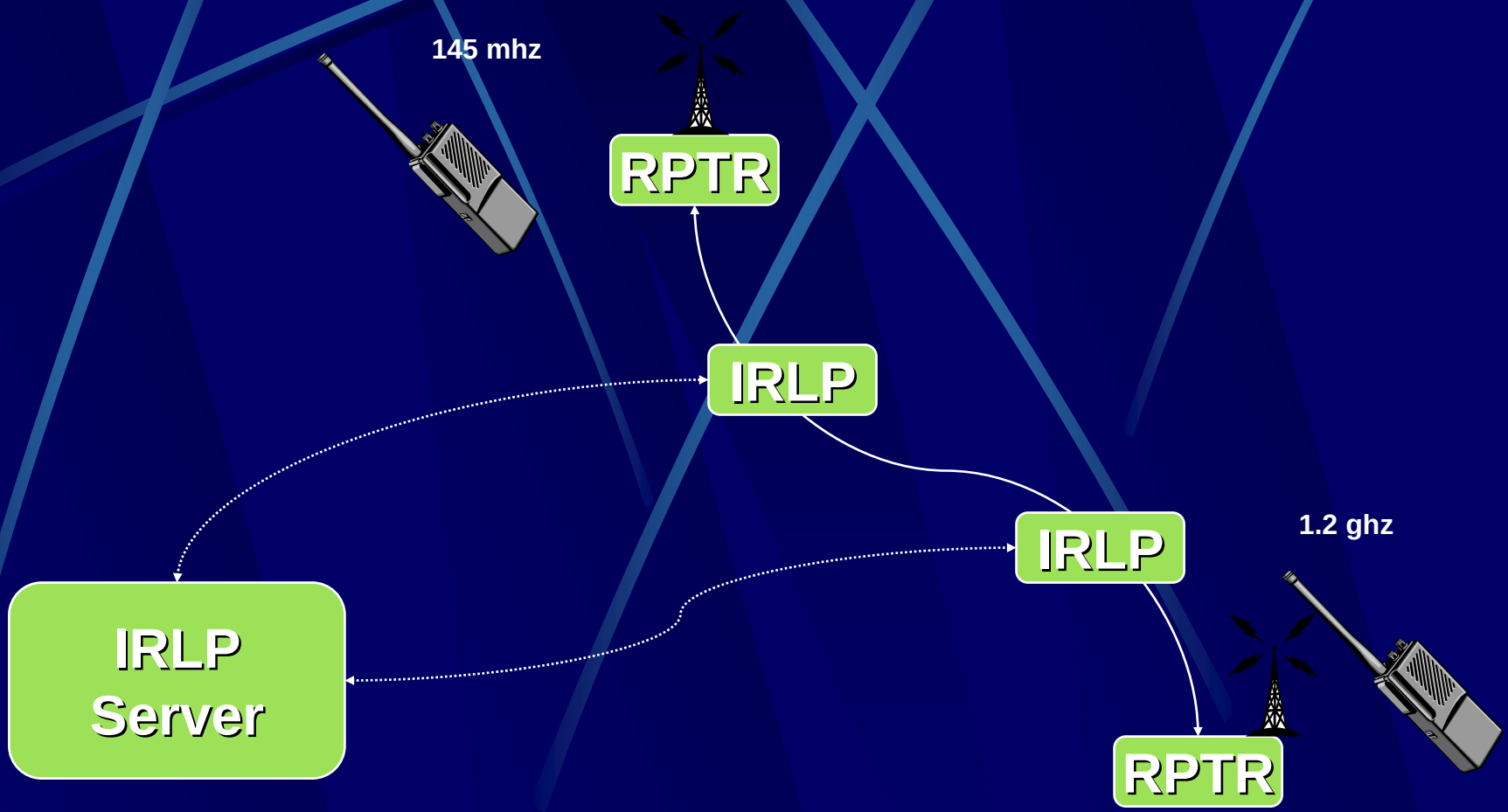
Link Antenna

The W6CYX IRLP Node 767

Node 7670 Setup



Point to Point IRLP



What does it sound like?

The underlying VoIP software is a program called **Speak Freely** it is digital and sounds GREAT!

In fact, unless you knew you where connected to a data link, you would never know!

Everyone sounds like locals!!

What a QSO Sound Like?

Direct - Point to Point Mode

This is an actual connection and QSO to the Bundaberg Australia.

It sounds like just another user of the repeater .

For More Information

For more information on NODE 7670 contact:
w6cyx@arrl.net or kd6ire@arrl.net

For General Information about IRLP, on the WWW see:
http://www.irlp.net

For Node Activity and connection Status, see:
http://status.irlp.net/static.html

For Node Information Web Pages, on the WWW see:
http://www.irlp.net/03-background/body.html

Even more exciting for Hams who own a computer

EchoLink

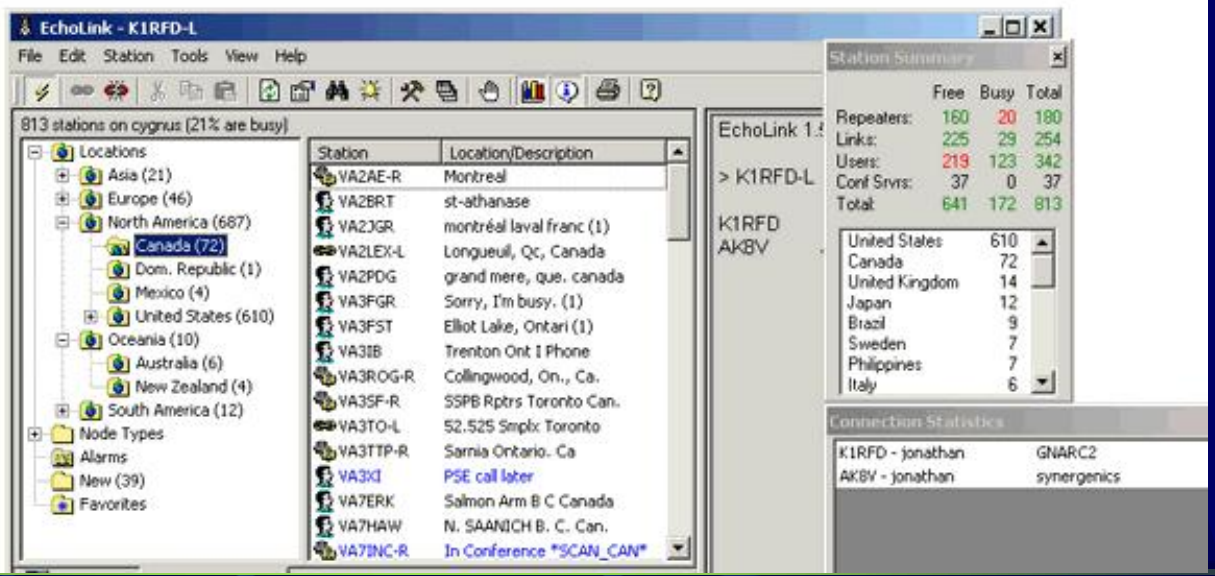
http://www.echolink.org/

Introducing EchoLink

Take a Tour
Download
Interfaces
Support and F
Help Files
News and Tips
Repeater Linking Tips
Current Logins
Link Status

EchoLink is software which allows Amateur Radio stations to communicate with one another over the Internet, using voice-over-IP (VoIP) technology. The program allows worldwide connections to be made between stations, from computer to station, or from computer to computer. There are more than 82,000 registered users in 131 countries worldwide!

NEW Repeater Linking Tips



Download EchoLink

Home
Take a Tour
Download
Interfaces
Support and FAQs
Help Files
News and Tips
Repeater Linking Tips
Current Logins
Link Status

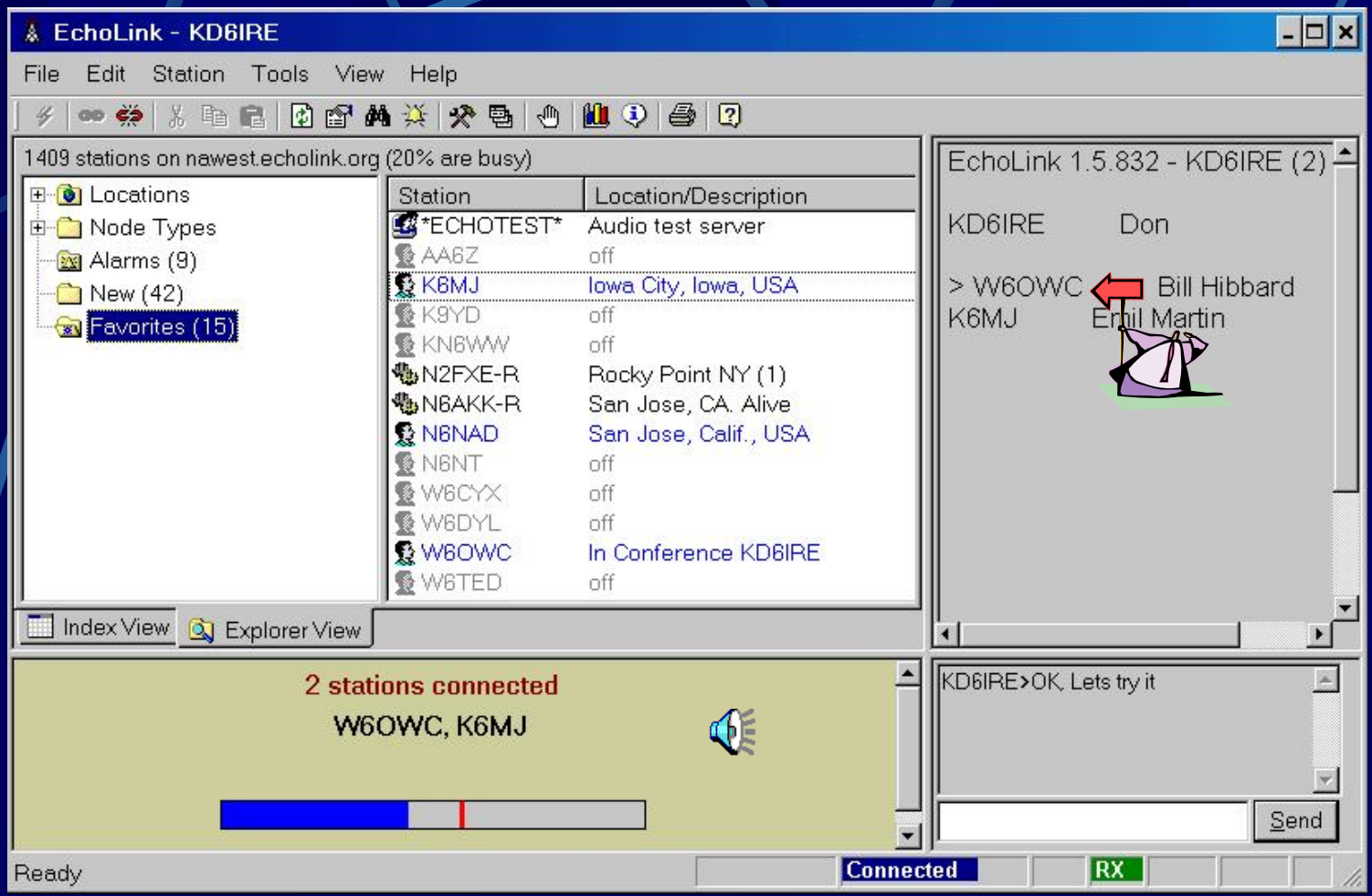
EchoLink is offered free of charge to licensed Amateur Radio operators worldwide. Please note that **you must hold a valid Amateur Radio license** in order to use EchoLink.

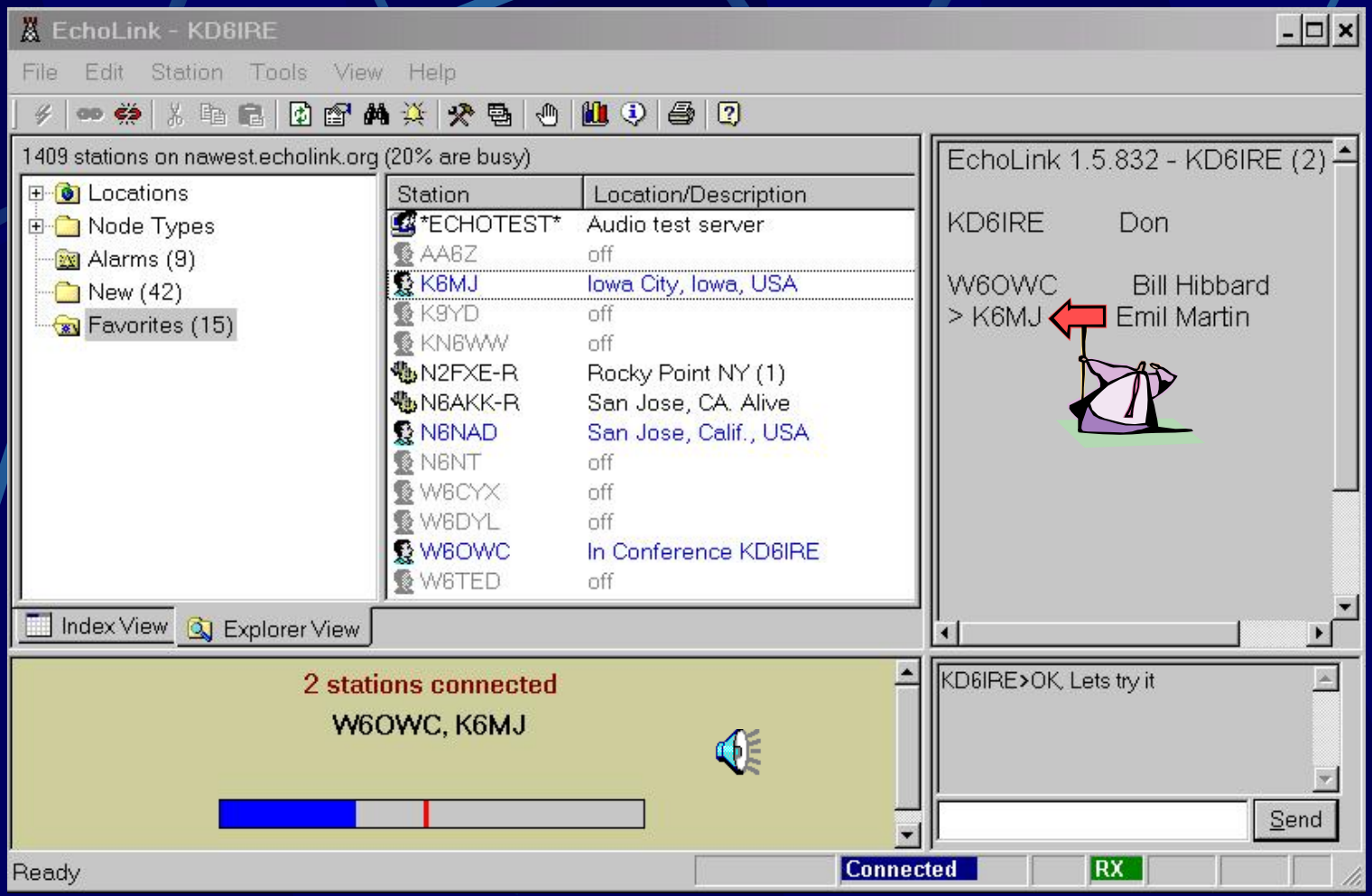
Please register by entering your callsign and e-mail address below. Then, choose Submit for instructions on how to download.

Callsign: KD6IRE

E-Mail Address: KD6IRE@sbcglobal.net

Submit


EchoLink - KD6IRE
File Edit Station Tools View Help
1409 stations on nawest.echolink.org (20% are busy)
Locations
Node Types
Alarms (9)
New (42)
Favorites (15)
Station
Location/Description
ECHOTEST Audio test server
AA6Z off
K6MJ Iowa City, Iowa, USA
K9YD off
KN6WW off
N2FXE-R Rocky Point NY (1)
N6AKK-R San Jose, CA. Alive
N6NAD San Jose, Calif., USA
N6NT off
W6CYX off
W6DYL off
W6OWC In Conference KD6IRE
W6TED off
Index View
Explorer View
EchoLink 1.5.832 - KD6IRE (2)
KD6IRE Don
> W6OWC Bill Hibbard
K6MJ Emil Martin
2 stations connected
W6OWC, K6MJ
KD6IRE>OK, Lets try it
Send
Ready
Connected
RX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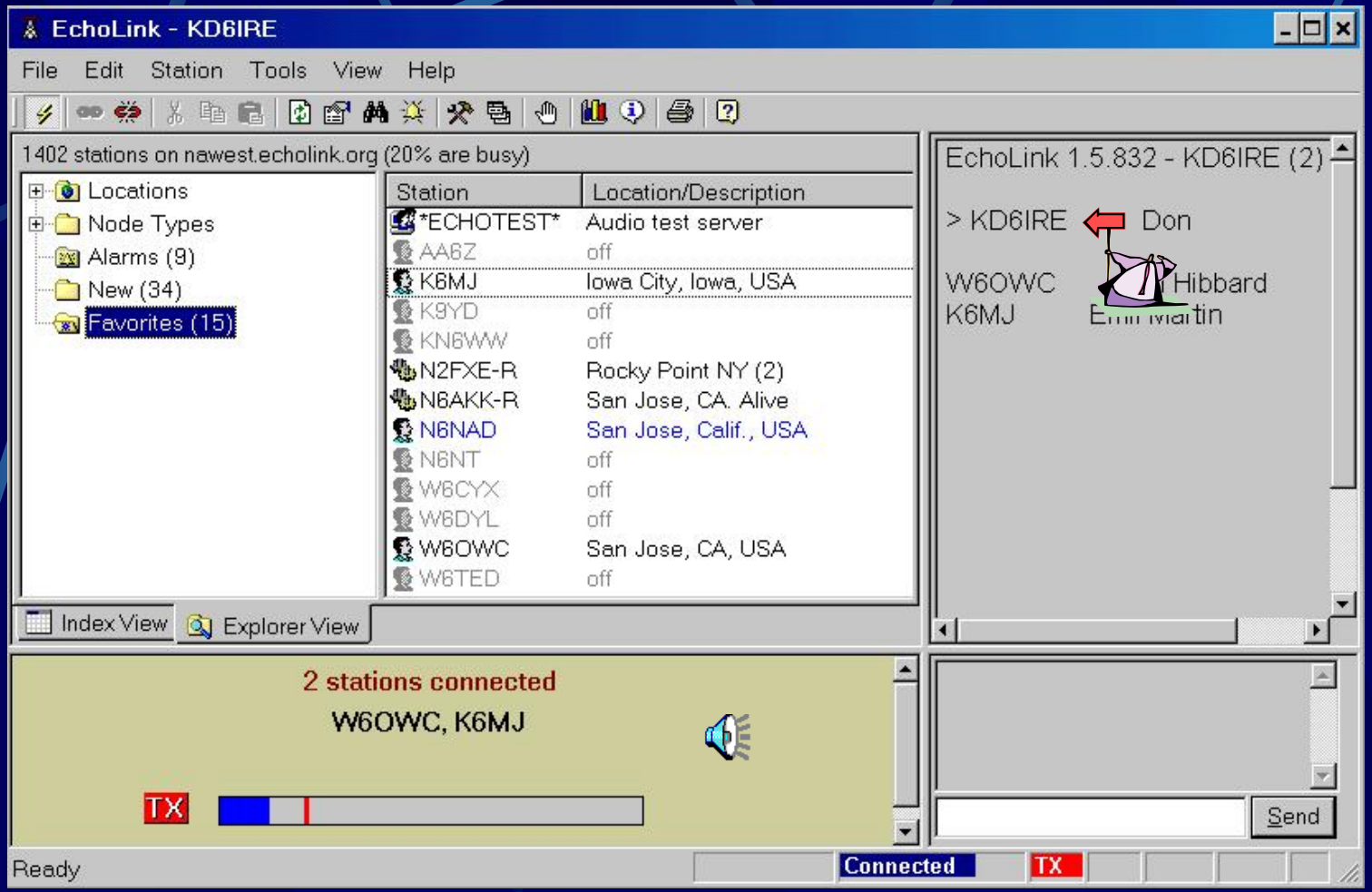
EchoLink - KD6IRE
File Edit Station Tools View Help
1402 stations on nawest.echolink.org (20% are busy)
Locations
Node Types
Alarms (9)
New (34)
Favorites (15)
Station
Location/Description
ECHOTEST Audio test server
AA6Z off
K6MJ Iowa City, Iowa, USA
K9YD off
KN6WW off
N2FXE-R Rocky Point NY (2)
N6AKK-R San Jose, CA. Alive
N6NAD San Jose, Calif., USA
N6NT off
W6CYX off
W6DYL off
W6OWC San Jose, CA, USA
W6TED off
Index View
Explorer View
EchoLink 1.5.832 - KD6IRE (2)
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W6OWC Hibbard
K6MJ
2 stations connected
W6OWC, K6MJ
TX
Send
Ready
Connected
TX

W6RLW-R

EchoIRLP

http://www.echolink.org/