DREADED R2D2

The “RST” Signal Reporting System

READABILITY

1-Unreadable.
2-Barely readable, occasional words distinguishable.
3-Readable with considerable difficulty.
4-Readable with practically no difficulty.
5-Perfectly readable.

SIGNAL STRENGTH

1-Faint signals barely perceptible.
2-Very weak signals.
3-Weak signals.
4-Fair signals.
5-Fairly good signals.
6-Good signals.
7-Moderately strong signals.
8-Strong signals.
9-Extremely strong signals.

Agenda

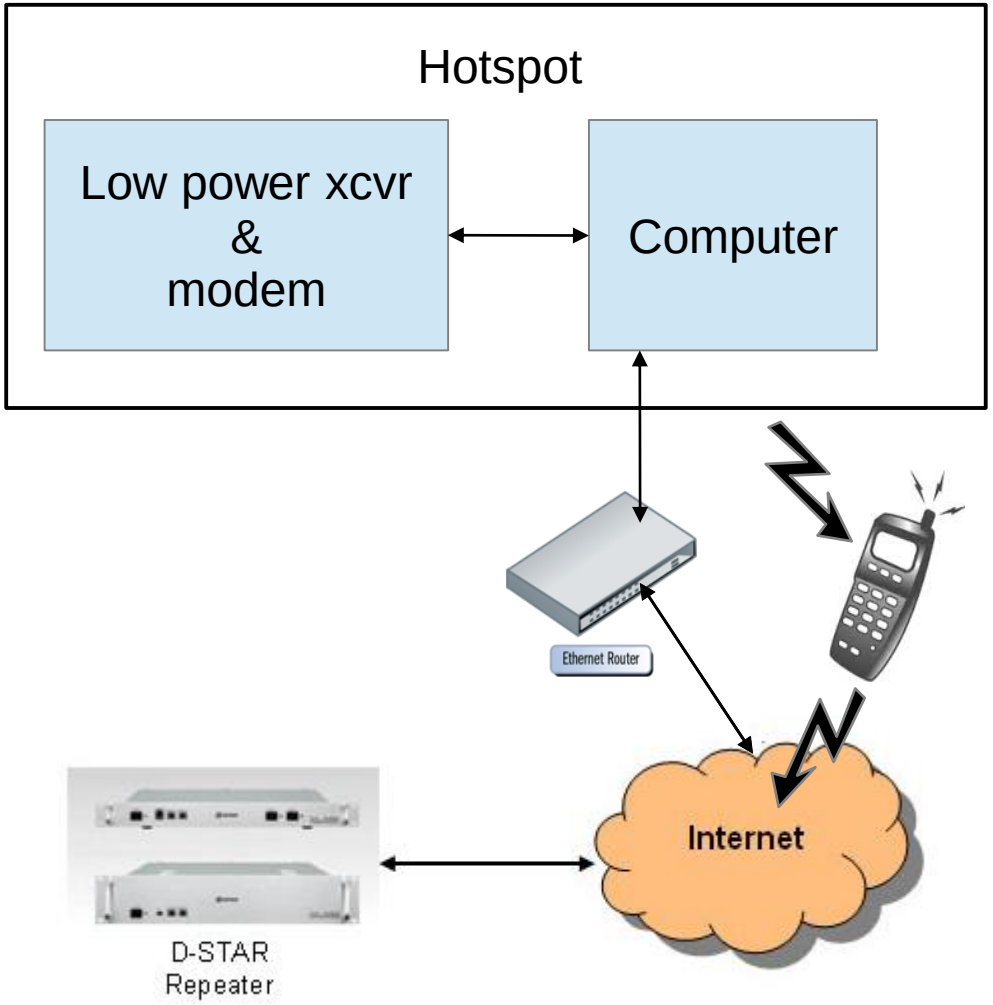
- DSTAR Hotspot
  - Why Hotspot
  - What is It and Alternatives
- Raspberry Pi and DVMega Hotspot
  - What is it?
  - Software
  - What do I need?
- More Info, where to get one
- Demo – creating a DVMega Hotspot
- DSTAR on HF

Why Hotspot?

- **There's no repeater in my neighborhood**
- **What to do when traveling? I'm visiting ??**
- **In vehicle with cell phone hotspot (coverage gap)**
- **Short range emergency communications**
- **I don't want to tie up the local repeater talking to ….**
- **My local repeater doesn't allow re-linking to REFxx**
- **My repeater doesn't allow linking!**

System Diagram

DSTAR Radio



DV Access Point Dongle

- Normal connection to DVAP is a PC, Laptop or Netbook (bulky) with Internet connection

144 or 440 MHz models
Available from ham suppliers
~$240 - $270

Needed

- PC or Mac with 1.6+GHz CPU
- MS Win,Mac OS, Linux
- 1GB RAM
- USB 2 port
- Internet (DSL, Cable, 3G)
- DVAPTool Software

Homebrew DVAP Package

Pelican 1050 or 1060 Case

USB Charger/5VDC Supply
Anker 10,000 mAH or
equivalent

USB Adapter
(120VAC to 5V USB)

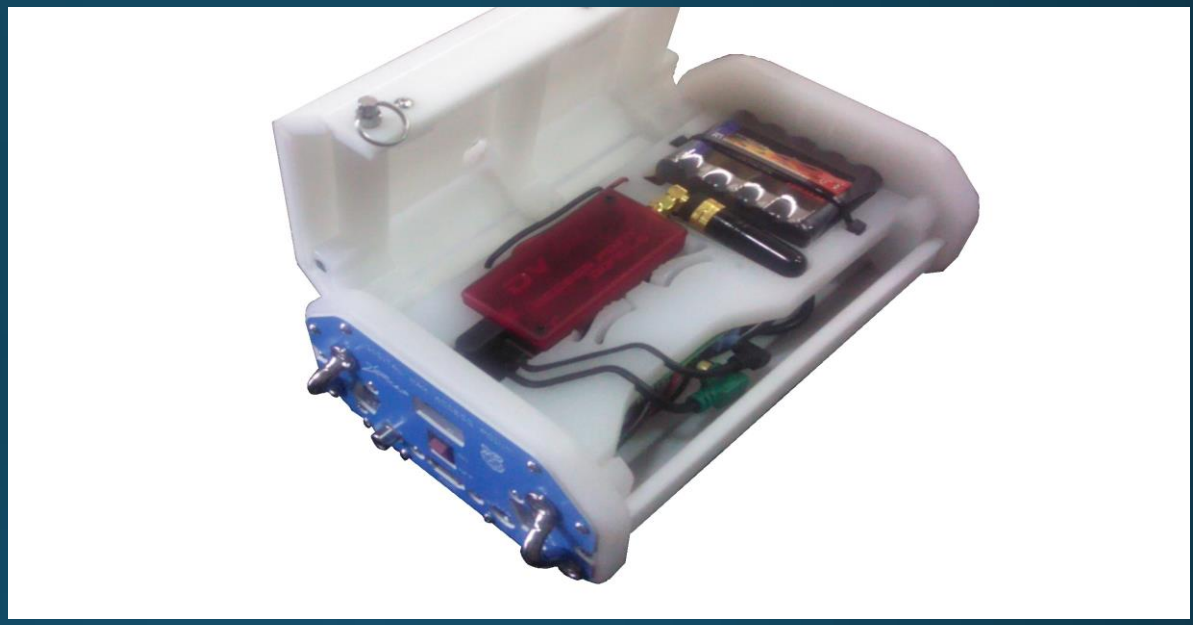
Micro-USB Cable

Raspberry Pi Model B

DV Access Point

USB CLA (12V to 5V USB)

Digital-Ham Access Point (D-HAP)

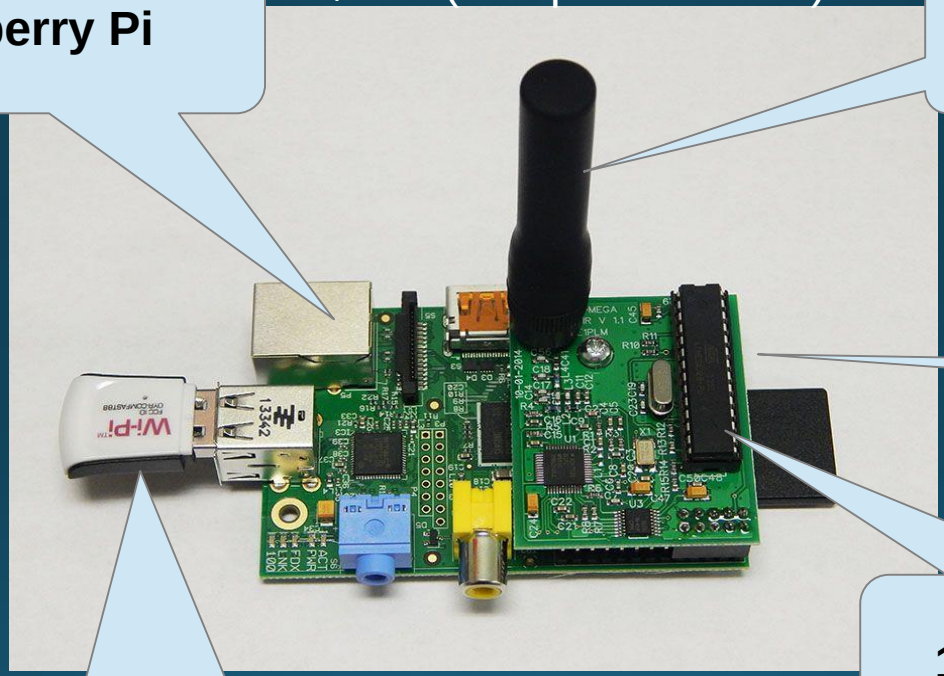


- Commercially available from Hardened Power Systems
  http://www.portableuniversalpower.com/DHAP.htm
- ***User supplies DVAP (2m or 70cm)***

Raspberry Pi
24Ah NiMH battery
DVAP Dongle USB/ Wifi
~$300-$365 + DVAP

DVMega Dstar Hotspot

$159 (board only)
$229 (complete bundle)



Raspberry Pi

UHF antenna

5 volt power

10 mw UHF xcvr

Wifi to cell phone or Ethernet for connection to reflector

Local:
KP2L-B
WB5NHL-B

Software

- Plain Raspberry Pi – Linux variants
  - Raspbian “wheezy” version of Debian linux

- DSTAR Hotspot SDcard Images
  - DSTAR Commander
  - Maryland DSTAR

What Else Do You Need

- **AC → 5v, 1 amp minimum USB charger OR**
  - **5v Li Ion/Polymer power pack**
- **SDcard > 4 Gb, bigger the better (µSDcard or SDcard)**
  - **Download & write DSTAR image**
- **UHF antenna with male SMA connector**
- **Ethernet or Wifi dongle??**
- **Software configuration only???**
  - **HDMI video (TV or computer terminal, HDMI ->DVI cable)**
  - **Component video, aka old TV**
  - **No VGA!**
  - **<u>AC-powered!!</u> USB hub - Keyboard, mouse, etc**

Radio Programming

- Nearly identical to normal repeater i.e. CQCQCQ, I,L,U
  - Simplex
- OTA commands for REBOOT, SHUTDOWN, others

	Receive Frequency	Transmit Frequency	Offset Frequency	Offset Direction	Operating Mode	Name	Tone Mode	CTCSS	Rx CTCSS	DCS	DCS Polarity	Skip	Step	Digital Squelch	Digital Code	Your Callsign
100	441.35000	441.35000		Simplex	DV	CQ-DVMega	None	88.5 Hz	88.5 Hz	023	Both N	Off	25 kHz	Off	0	CQCQCQ
101	441.35000	441.35000		Simplex	DV	UNLINK-DVMega	None	88.5 Hz	88.5 Hz	023	Both N	Off	25 kHz	Off	0	U
102	441.35000	441.35000		Simplex	DV	INFO-DVMega	None	88.5 Hz	88.5 Hz	023	Both N	Off	25 kHz	Off	0	I
103	441.35000	441.35000		Simplex	DV	ECHO-DVMega	None	88.5 Hz	88.5 Hz	023	Both N	Off	25 kHz	Off	0	E
104	441.35000	441.35000		Simplex	DV	Link-REF1C	None	88.5 Hz	88.5 Hz	023	Both N	Off	25 kHz	Off	0	REF001CL
105	441.35000	441.35000		Simplex	DV	Link-REF2A	None	88.5 Hz	88.5 Hz	023	Both N	Off	25 kHz	Off	0	REF002AL
106	441.35000	441.35000		Simplex	DV	Link-REF2B	None	88.5 Hz	88.5 Hz	023	Both N	Off	25 kHz	Off	0	REF002BL
107	441.35000	441.35000		Simplex	DV	Link-REF25A	None	88.5 Hz	88.5 Hz	023	Both N	Off	25 kHz	Off	0	REF025AL
108	441.35000	441.35000		Simplex	DV	Link-REF25B	None	88.5 Hz	88.5 Hz	023	Both N	Off	25 kHz	Off	0	REF025BL
109	441.35000	441.35000		Simplex	DV	Link-REF25C	None	88.5 Hz	88.5 Hz	023	Both N	Off	25 kHz	Off	0	REF025CL
110	441.35000	441.35000		Simplex	DV	Link-REF30A	None	88.5 Hz	88.5 Hz	023	Both N	Off	25 kHz	Off	0	REF030AL
111	441.35000	441.35000		Simplex	DV	Link-REF30B	None	88.5 Hz	88.5 Hz	023	Both N	Off	25 kHz	Off	0	REF030BL
112	441.35000	441.35000		Simplex	DV	Link-REF30C	None	88.5 Hz	88.5 Hz	023	Both N	Off	25 kHz	Off	0	REF030CL
113	441.35000	441.35000		Simplex	DV	HALT-DVMega	None	88.5 Hz	88.5 Hz	023	Both N	Off	25 kHz	Off	0	SHUTDOWN
114	441.35000	441.35000		Simplex	DV	REBOOT-DVMega	None	88.5 Hz	88.5 Hz	023	Both N	Off	25 kHz	Off	0	REBOOT

ircDDB Remote Control – Android App

How Can I Get One (Hotspot)?

- DVAP Dongle ~$250 (DX Engr, HRO, Gigaparts, AES)
- D-HAP ~$300 + DVAP Dongle (Hardened Power Systems Inc.)
- Gigaparts ~$229 (DV Mega bundle, ready for s/w install)
- Raspberry Pi and Accessories (both B and B+ versions)
  - Adafruit ($39.95) -good site for prototyping
  - MCM Electronics ($35.00)

More Info?

Raspberry Pi Books

- Getting Started with Raspberry Pi
- Raspberry Pi User Guide

Raspberry Pi on the Web

http://www.raspberrypi.org/quick-start-guide	Quick Start Guide
http://www.scoop.it/t/raspberry-pi	Raspberry Pi News
http://www.themagpi.com/	Great Free Mag On-line!!

Win32DiskImager

http://sourceforge.net/projects/win32diskimager/

DSTAR Info

Everything DSTAR

http://proficia.com/tampadstar/Newbies_Guide_to_D-Star.pdf *

http://arvideonews.com/otherstuff/Repeaters_from_A_to_D_by_KN4AQ.pdf

http://proficia.com/tampadstar/Gateway_cert_training.pdf *

http://www.dstarinfo.com/

DV Mega

DSTAR Cdr

http://w6kd.boards.net/board/4/dstar-commander-g4klx-support-discussion

Maryland DSTAR

http://maryland-dstar.org/html/raspiberry.html

*Thanks Tampa DSTAR

Demo

- DSTAR Commander
  - SDcard image downloaded from DX Commander site
  - Written to SDcard with Win32DiskImager
  - Use “traditional image setup”
    - Easier to see configuration items
    - Nearly identical to Maryland DSTAR
- Questions:
  - WB5NHL@ARRL.NET
  - KP2L@ARRL.NET

D-STAR on HF

- Icom IC-7100 and IC-9100 are both DV capable on HF
- Other ICOM, YAESU AND KENWOODs with 6 pin DATA ports can be made DV capable with STAR board and DVDongle
- Operates at similar bandwidth to AM – 6.2khz
- D-STAR HF net now operating six times a week
- Net info at http://www.dstarinfo.com/DSTARHFNet.aspx

D-STAR on HF

International DSTAR HF Testing Net –

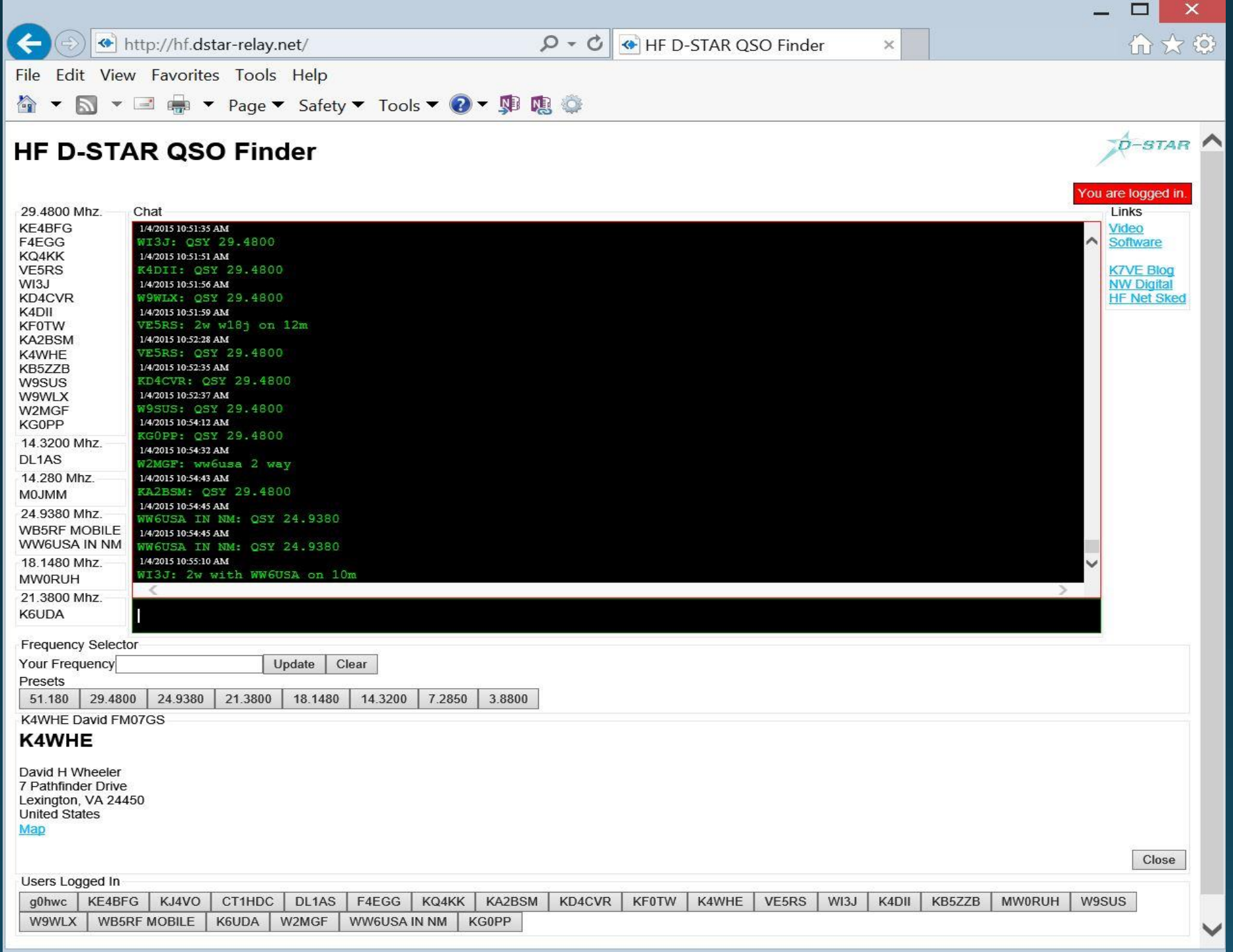
- Routinely have two way communications coast to coast, to Canada, Europe and Australia. We have had two way contacts to Japan. And have been heard in South Africa
- We are on each band only for 5 min
- MONITOR REF030C to coordinate
- Do not want to step on any AM or SSB activity
- Use web page to keep track - http://hf.dstar-relay.net/
- Check-in to this web site anytime 24/7 to find a DSTAR HF Ham
- FREE FORM **PRENET** for 30 min. before the start of the scheduled NET.
- See hw to do DSTAR HF with an ICOM at- http://www.youtube.com/watch?v=oGF-qkdoid4

International DSTAR HF DV Testing Net –

Saturday PM 7:00 E (2400Z)
Sunday AM 10:00 E (1500Z Sunday)(Spend more time on each open band, and start on 80 m)
Sunday PM 7:00 E (2400Z)
Tuesday and Thurs night at 8:30pm E (0130Z Wed and Fri)
WED nite, at 8:00pm E (0100Z Thursday)<<<NEW START TIME

h:00 - h:05 6 mtrs 51.180 DV for 5 mins
h:05 - h:10 10 mtrs 29.480 DV for 5 mins
h:10 - h:15 12 mtrs 24.938 DV for 5 mins
h:15 - h:20 15 mtrs 21.380 DV for 5 mins
h:20 - h:25 17 mtrs 18.148 DV for 5 mins
h:25 - h:30 20 mtrs 14.320 DV for 5 mins
h:30 - h:35 40 mtrs 7.285 (or another open freq)
h:35 - h:40 75 mtrs 3.880 DV for 5 mins Backup is around 3.730

NCS check the freq ahead of time, don't step on anyone 3KC up/down


http://hf.dstar-relay.net/
HF D-STAR QSO Finder
File Edit View Favorites Tools Help
Page Safety Tools
HF D-STAR QSO Finder
D-STAR
You are logged in.
29.4800 Mhz.
KE4BFG
F4EGG
KQ4KK
VE5RS
WI3J
KD4CVR
K4DII
KF0TW
KA2BSM
K4WHE
KB5ZZB
W9SUS
W9WLX
W2MGF
KG0PP
14.3200 Mhz.
DL1AS
14.280 Mhz.
M0JMM
24.9380 Mhz.
WB5RF MOBILE
WW6USA IN NM
18.1480 Mhz.
MW0RUH
21.3800 Mhz.
K6UDA
Chat
1/4/2015 10:51:35 AM
WI3J: QSY 29.4800
1/4/2015 10:51:51 AM
K4DII: QSY 29.4800
1/4/2015 10:51:56 AM
W9WLX: QSY 29.4800
1/4/2015 10:51:59 AM
VE5RS: 2w w18j on 12m
1/4/2015 10:52:28 AM
VE5RS: QSY 29.4800
1/4/2015 10:52:35 AM
KD4CVR: QSY 29.4800
1/4/2015 10:52:37 AM
W9SUS: QSY 29.4800
1/4/2015 10:54:12 AM
KG0PP: QSY 29.4800
1/4/2015 10:54:32 AM
W2MGF: ww6usa 2 way
1/4/2015 10:54:43 AM
KA2BSM: QSY 29.4800
1/4/2015 10:54:45 AM
WW6USA IN NM: QSY 24.9380
1/4/2015 10:54:45 AM
WW6USA IN NM: QSY 24.9380
1/4/2015 10:55:10 AM
WI3J: 2w with WW6USA on 10m
Links
Video
Software
K7VE Blog
NW Digital
HF Net Sked
Frequency Selector
Your Frequency
Update
Clear
Presets
51.180
29.4800
24.9380
21.3800
18.1480
14.3200
7.2850
3.8800
K4WHE David FM07GS
K4WHE
David H Wheeler
7 Pathfinder Drive
Lexington, VA 24450
United States
Map
Close
Users Logged In
g0hwc
KE4BFG
KJ4VO
CT1HDC
DL1AS
F4EGG
KQ4KK
KA2BSM
KD4CVR
KF0TW
K4WHE
VE5RS
WI3J
K4DII
KB5ZZB
MW0RUH
W9SUS
W9WLX
WB5RF MOBILE
K6UDA
W2MGF
WW6USA IN NM
KG0PP