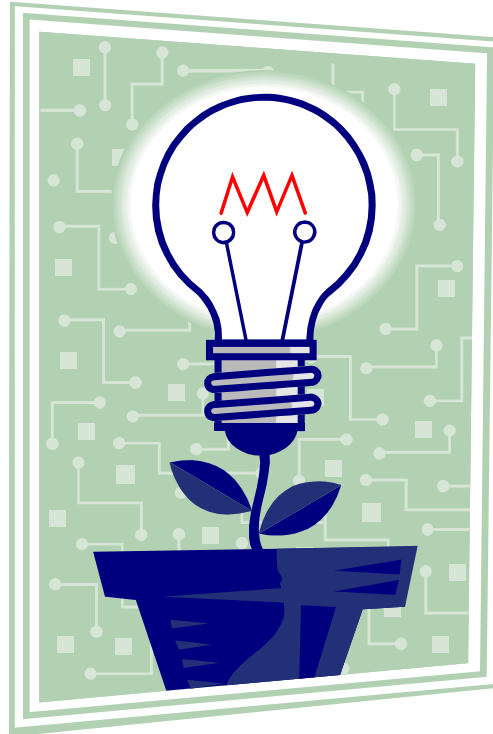


New Ways to Do It Yourself in D-STAR



Jim Moen – K6JM
Dayton
Hamvention
May 15, 2015

D-STAR® is a registered trademark used for communication equipment (repeaters and transceivers) for amateur radio communications, and owned by Icom Incorporated.

Homebrew? DIY?



- Experimentation is intrinsic to our hobby
- FCC Part 97: One purpose of Amateur Radio:
“Continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art”
- Homebrewing includes everything where the Ham participates in making it happen
- Antennas, kits, computers...
- D-STAR has a lot of this going on

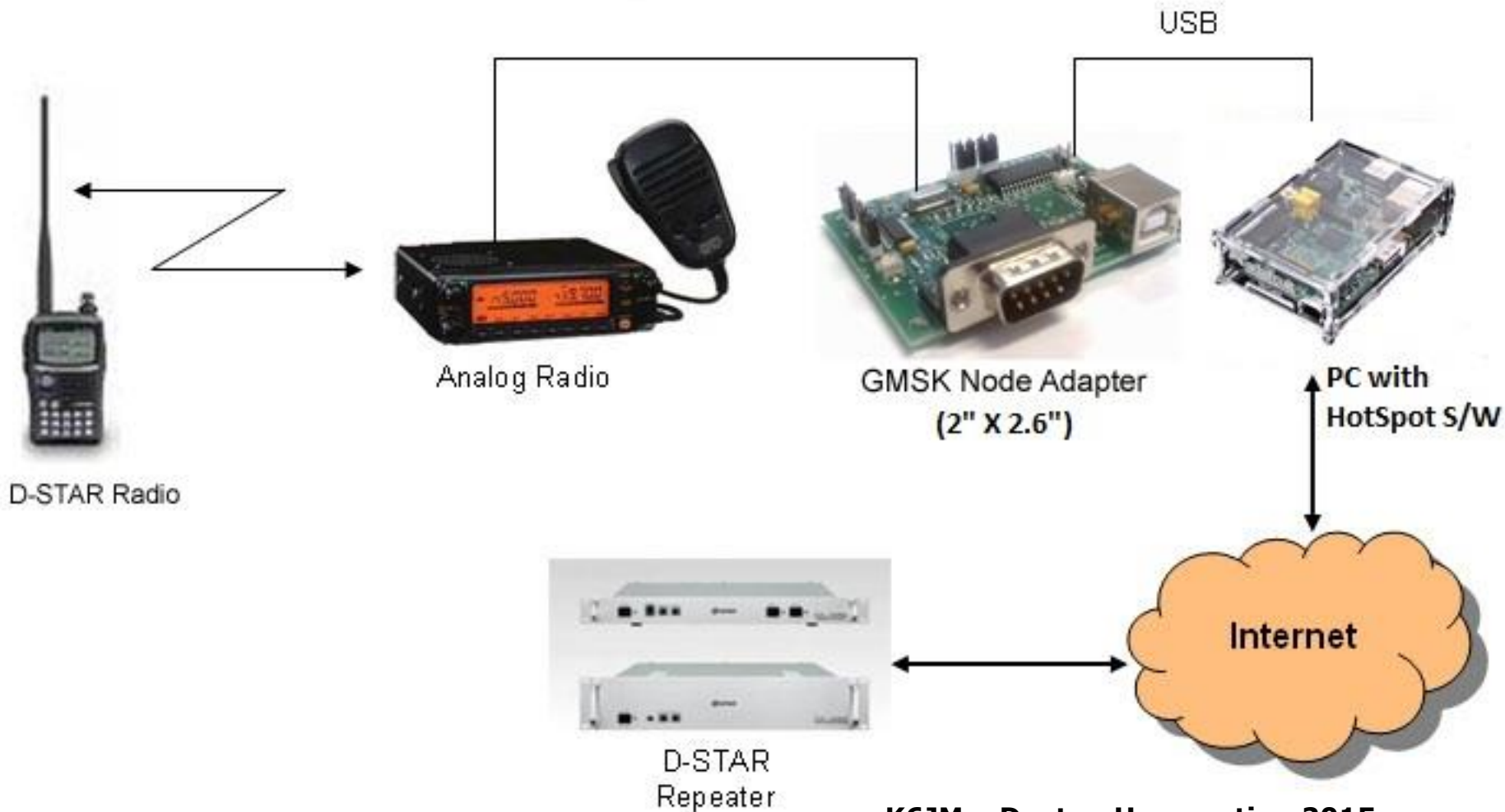
Does Homebrew compete with ICOM?



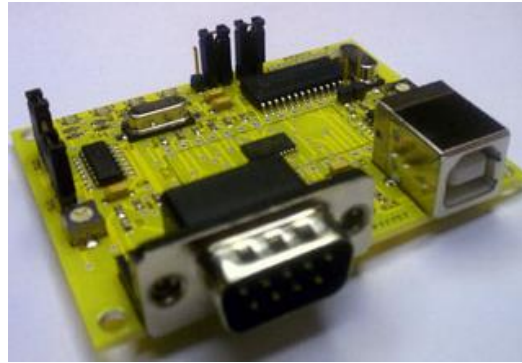
- Perhaps a little, but mostly it complements ICOM's activities
- We always recommend first getting a D-STAR radio to newbies
- Then if there's no nearby repeater, they can get a DVAP or build a Hotspot
- Bottom line:
 - Homebrewing often leads to D-Star radio purchases
 - Homebrewing is a fun way to learn
 - It increases participation in the hobby
 - There's a sense of accomplishment

An Example

Hotspots extend D-STAR Network to Your QTH



Why HotSpots?



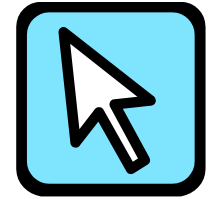
- **If your QTH has no RF access to a D-Star repeater**
- **Or (like my QTH) is in a multipath shadow**
- **Or you want to link to whatever reflector whenever you want**
- **Or you need extra power for extra range**
- **Analog Radio must provide access to discriminator and to direct FM modulator (9600 Data Port normally works)**
- **PC runs free software (DVAR, WinDV, G4KLX, SDV etc.)**
- **DV Modem interfaces the PC and the radio**

DV Modem Sources



- **Fred van Kempen PA4YBR**
 - www.dutch-star.eu Provides “mini hotspot” kits, software, firmware and tools.
- **Matrix Circuits & MoenComm**
 - www.moencomm.com Provides built SMT boards based on PA4YBR’s design, comes with DUTCH*Star firmware and tools.
- **DVRPTR V1 North America**
 - www.dvrptr.net Popular DSP modem sold in Canada, designed by Jan Alte DO1FJN.
- **DV Mega GMSK DV Node Adapter**
 - <http://www.dvmega.auria.nl> Board attaches to Arduino Uno microcontroller, designed by Guus van Dooren PE1PLM
- **DVRPTR V2, V3 Germany**
 - <http://shop.dvrptr.de> Follow-on DSP modem to V1
- **Satoshi Yasuda 7M3TJZ/AD6GZ**
 - <http://d-star.dyndns.org/> Designed the first Node Adapter. Also produces firmware and tools.

HotSpot/Repeater Software



- **DVAR Hot Spot – Mark McGregor KB9KHM**
 - Easy to configure
 - Supports DPlus linking
- **WinDV – DUTCH*Star – Fred van Kempen PA4YBR**
 - DPlus, Dextra, DCS linking
 - ircDDB Gateway and Callsign Routing, APRS
 - Works with GMSK Modem, DVAP, DV Dongle
 - DTMF commands over RF and more...
- **ConDV – also from DUTCH*Star**
 - Command line version of WinDV
 - Runs on Windows, Linux, Android
 - GUI version is being developed
- **G4KLX DStarRepeater+ircDDBGateway**
 - Popular software by Jonathan Naylor
 - Windows and Linux
 - DPlus, DExtra, DCS, ircDDB, CCS callsign routing
- **DVRPTR Control Center**
 - Works only with German DSP board
 - DPlus, DExtra, DCS

New!

Star*DV AMBE device and SDV Software



A new way to have D-STAR QSOs
without a D-Star Radio

Matrix Circuits Star*DV

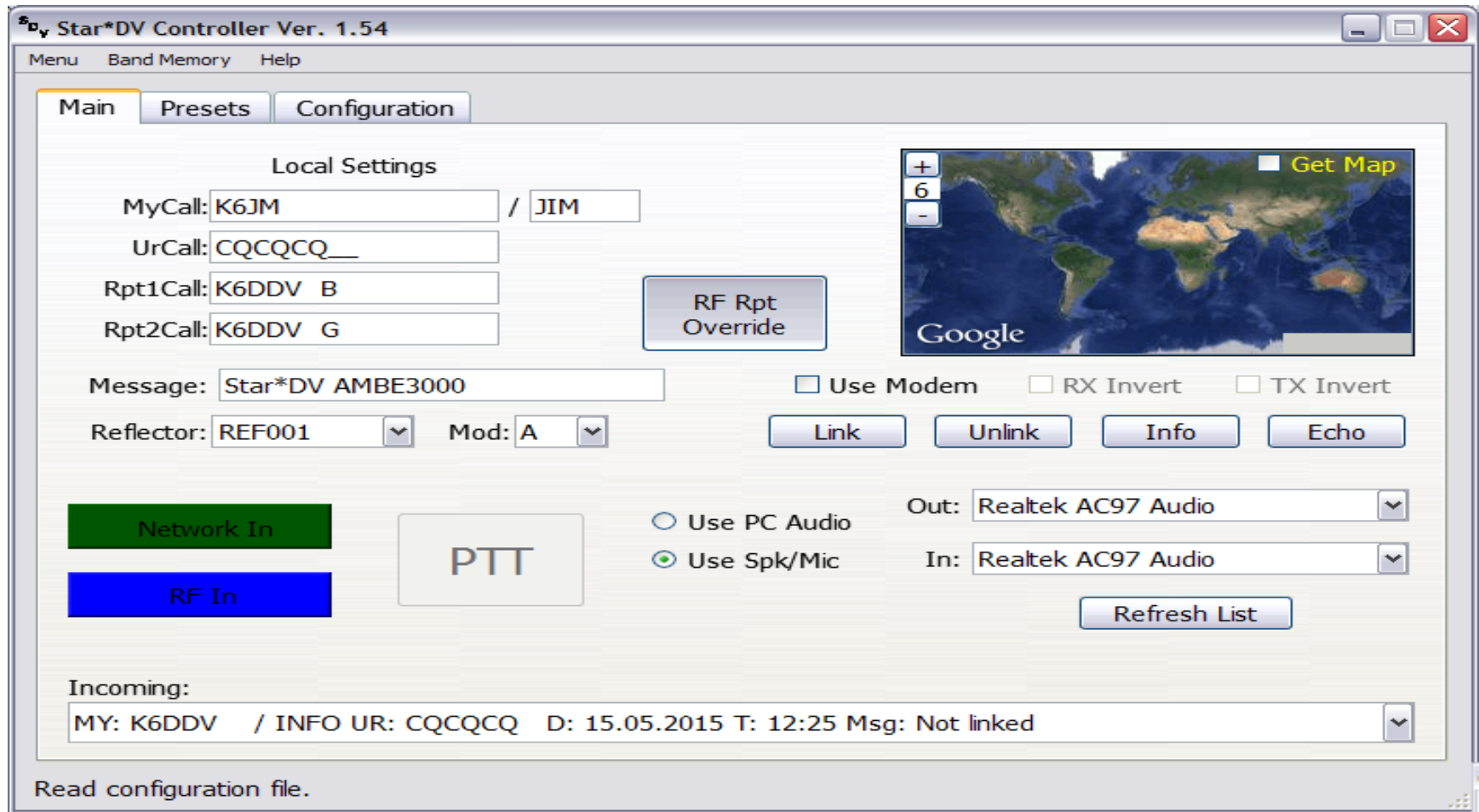
- Makers of Star*Board
- AMBE 3000 chip with built-in audio codec
- Speaker/mike QSOs
- Software also works with DV Modem



SDV Software

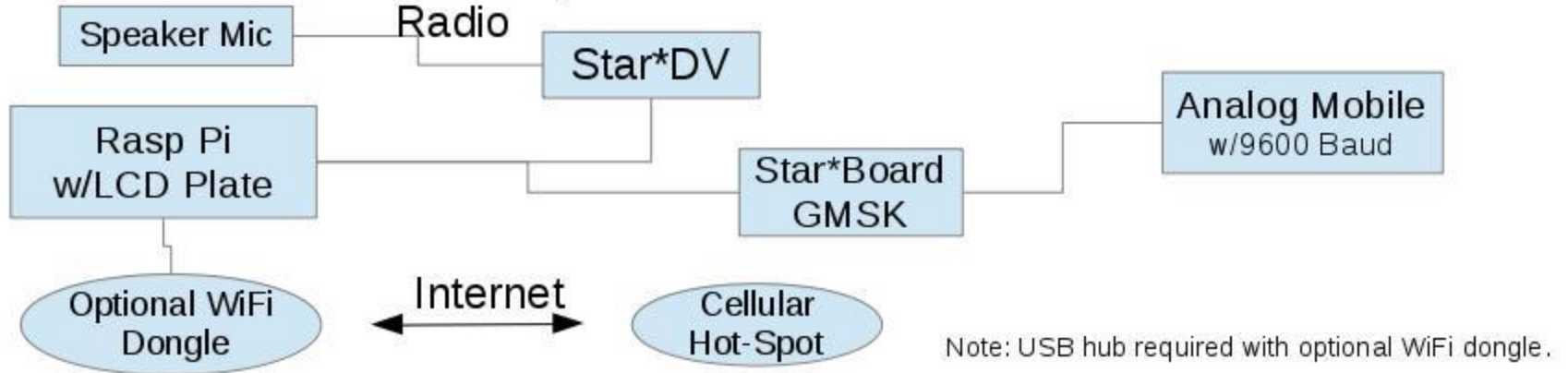
- Controls Star*DV
 - Linking
 - Configuration
- Talks to G4KLX ircDDBGateway
- Supports either direct Speaker/Mike or PC Audio
- Optionally supports GMSK Modem
 - Speaker/Mike user can talk to Hotspot RF users

SDV (GUI)

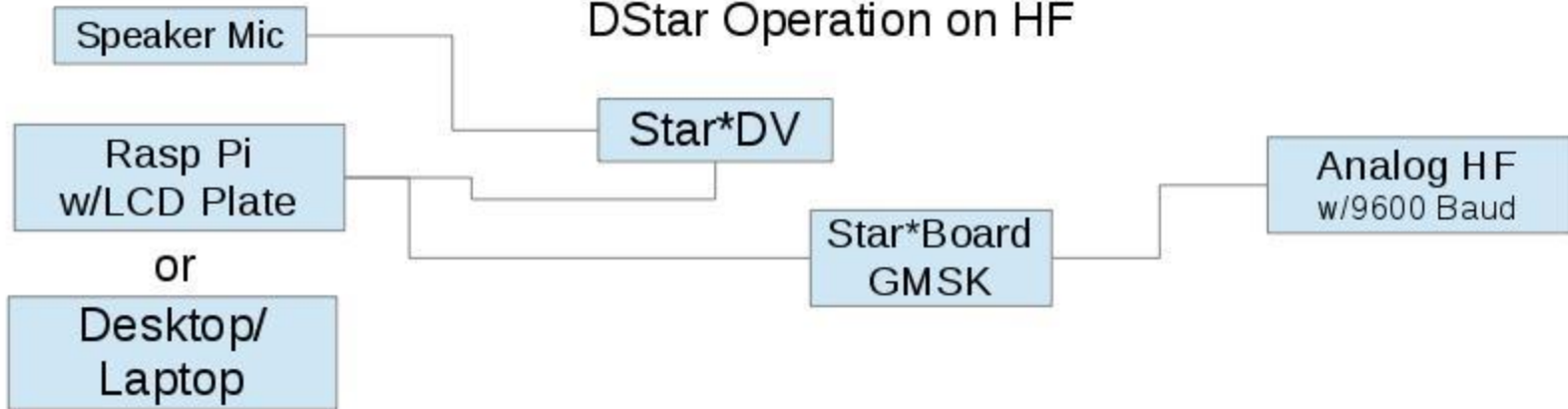


Star*DV Uses

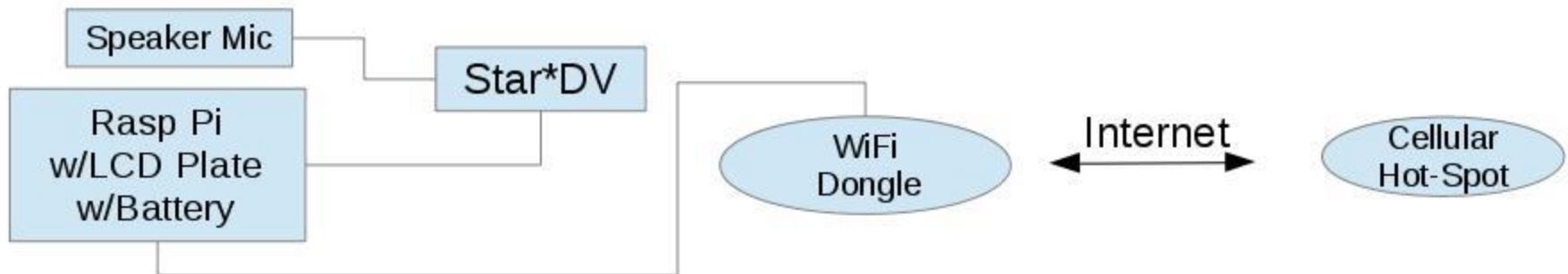
DStar Operation w/o DStar Radio



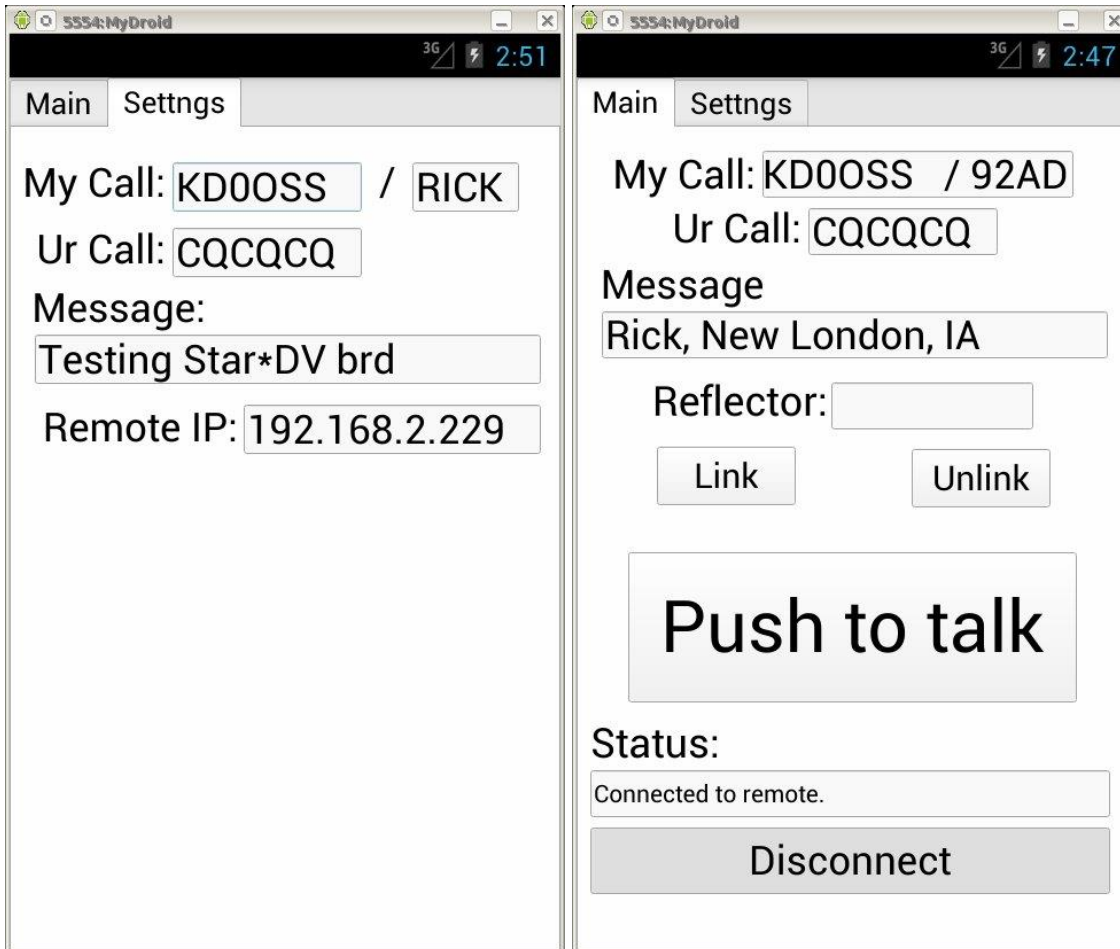
DStar Operation on HF



Portable DStar



Star*DV Android App



Android app to:

- Configure
- Link Reflectors
- Speaker/mike

Easy way to
remote control
SDV

More Information

- Soon! WinDV Support
- General Info - Nonpartisan
 - Menu of my D-Star pages as www.k6jm.com/dstar
 - Building a D-Star Compatible Hotspot
 - Configuring the Raspberry Pi using a GMSK Modem and G4KLX software
 - Yahoo Groups:
 - gmsk_dv_node
 - pcrepeatercontroller
 - ircDDBGateway
- Products from MoenComm LLC
 - Distributor of Star*Board and Star*DV
 - www.moencomm.com

