



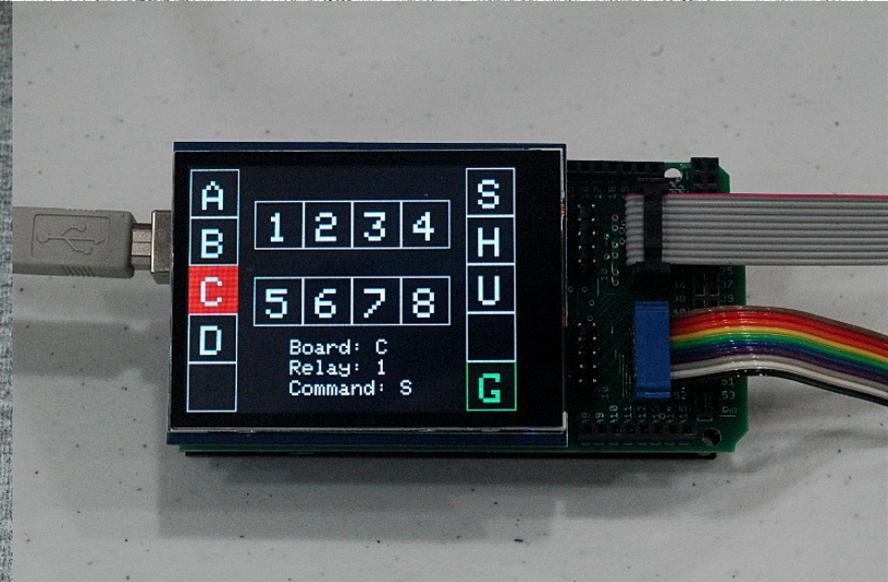
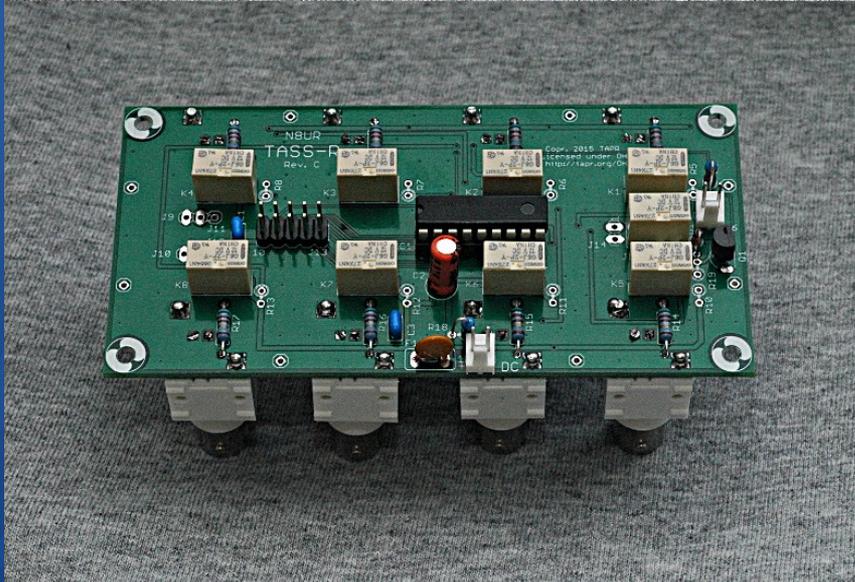
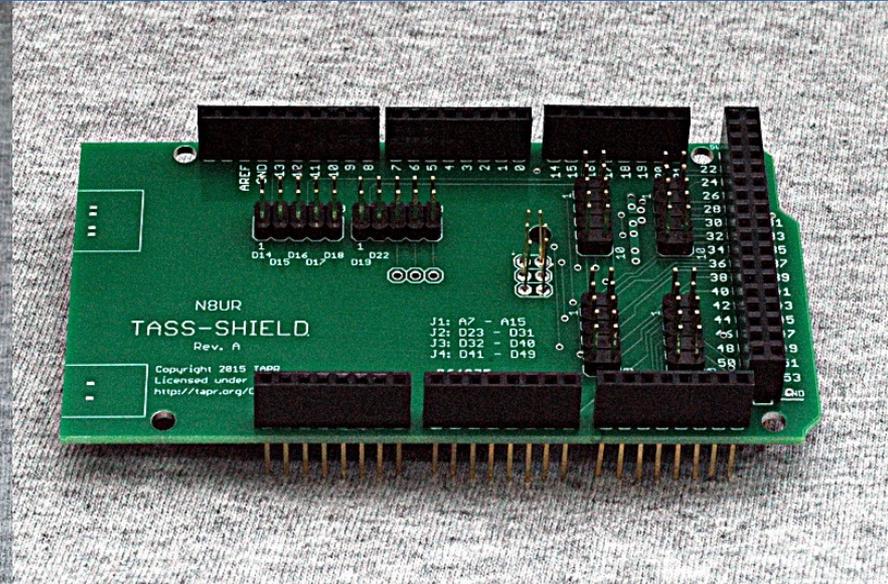
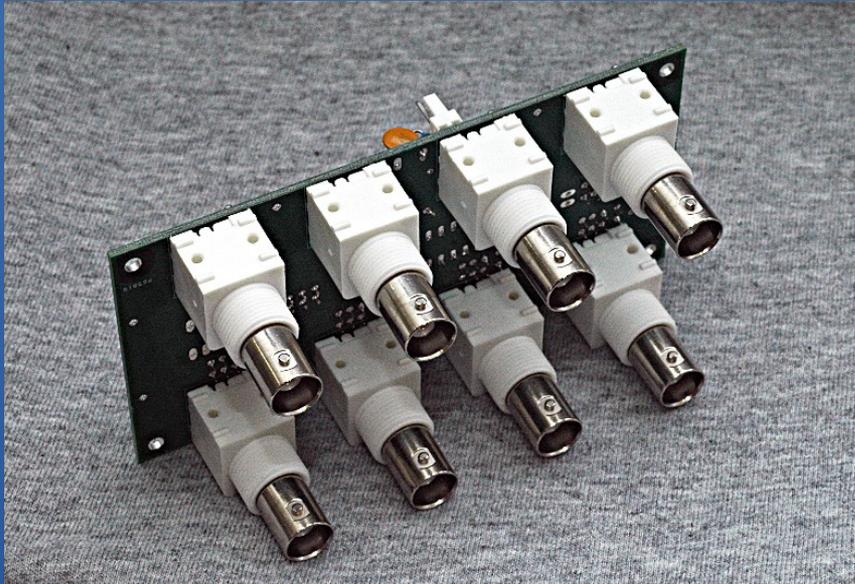
The TASS RF SWITCH

*A High Performance
RF Switch for Lab
and Hamshack*

Now available from TAPR:
http://www.tapr.org/kits_tass

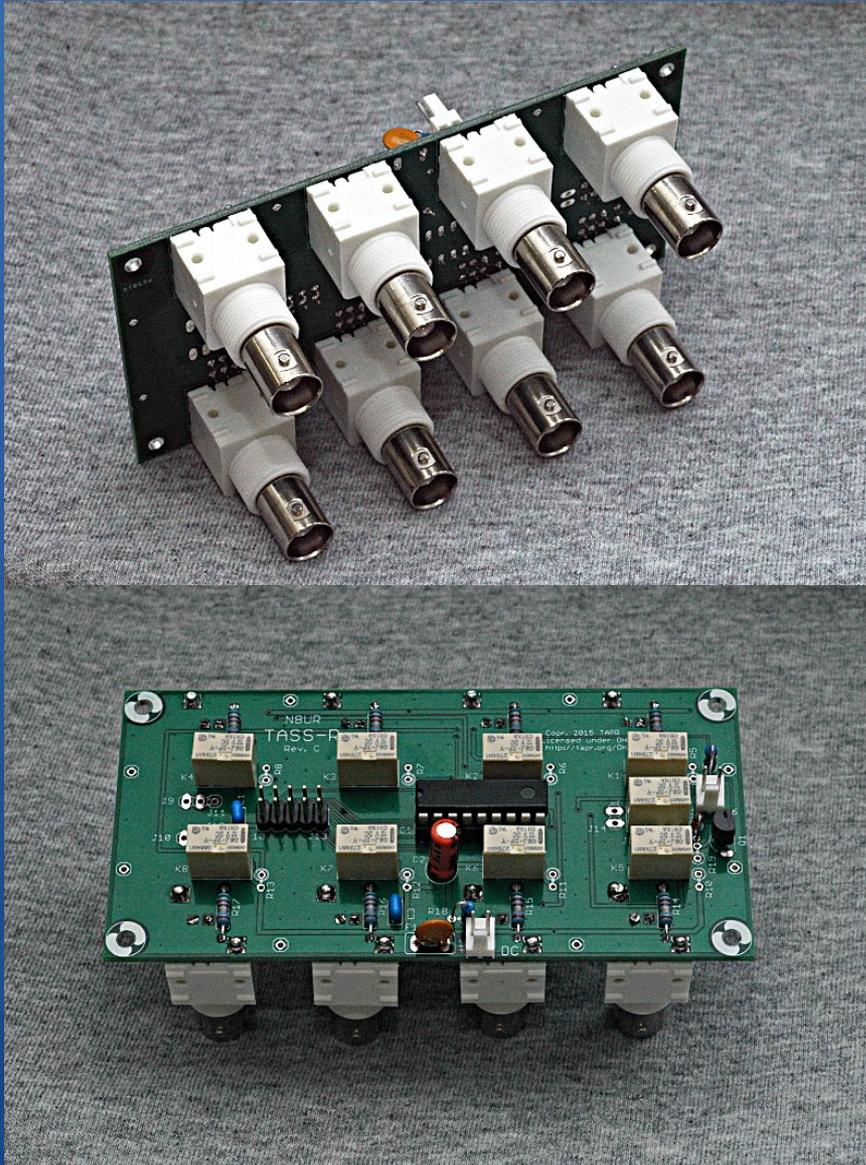


The TASS RF SWITCH





The TASS RF SWITCH

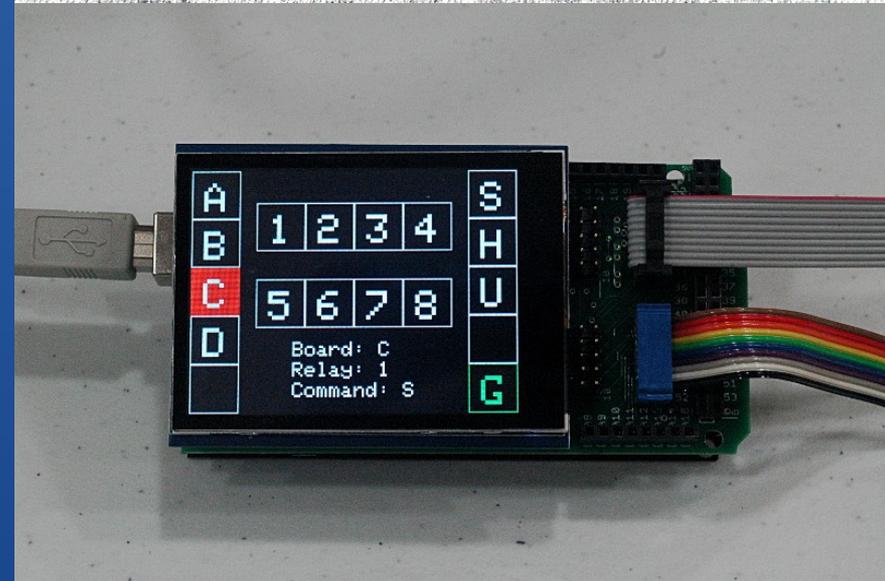
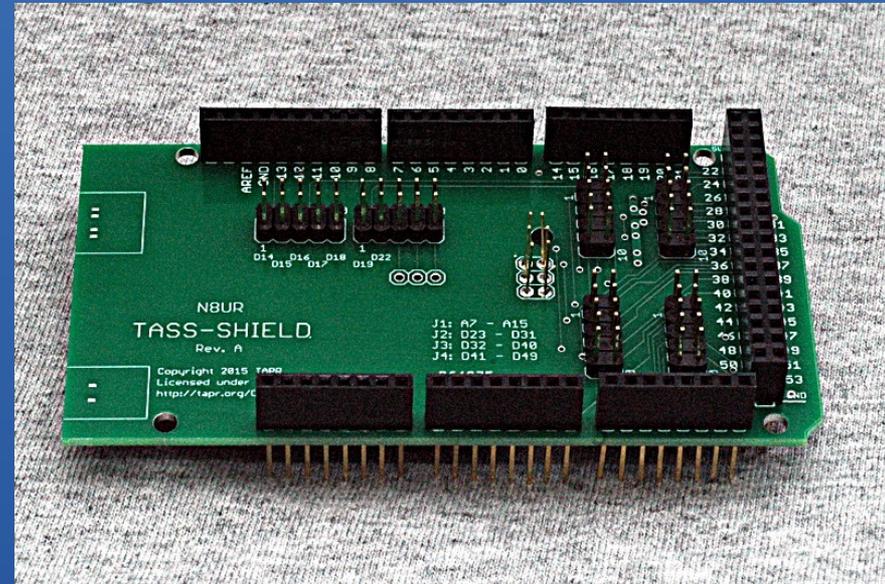


- 8 RF Ports
- Simple Interface
- DC – 150 MHz
- High Isolation
- Handles 10W
- 12 VDC power



The TASS RF SWITCH

- Uses simple micro
- TASS-SHIELD
 - Arduino Shield
 - Supports up to 4 TASS-R boards
- TASS Software
 - Open Source
 - USB and ethernet
 - Touchscreen





The TASS RF SWITCH

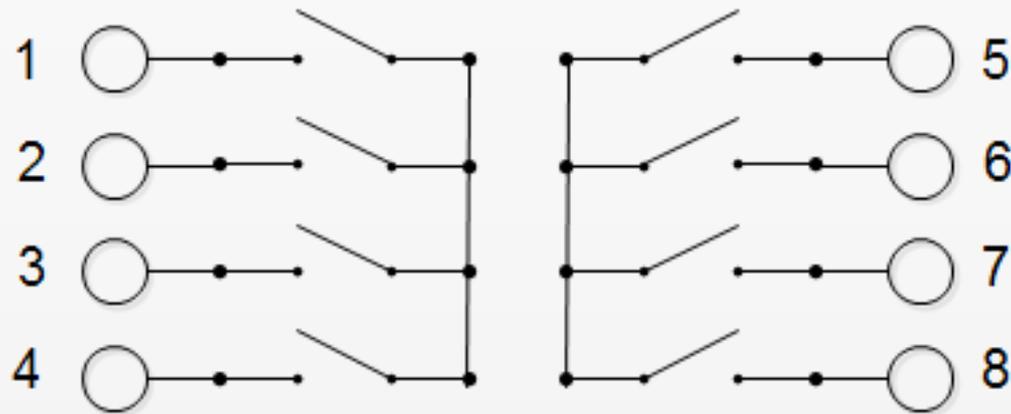
```
GtkTerm - /dev/ttyACM0 115200-8-N-1
File Edit Log Configuration Control signals View Help
TAPR TASS Control Software
v0.32 -- 24 Aug. 2015
Copyright 2015 John Ackermann N8UR
Licensed under MIT license

<A1H>
Board: A relay: 1 command: H
<A2S>
Board: A relay: 2 command: S
<A3S>
Board: A relay: 3 command: S
<A0U>
Board: A relay: 0 command: U -- Clear All
█

/dev/ttyACM0 115200-8-N-1 DTR RTS CTS CD DSR RI
```



The TASS RF SWITCH

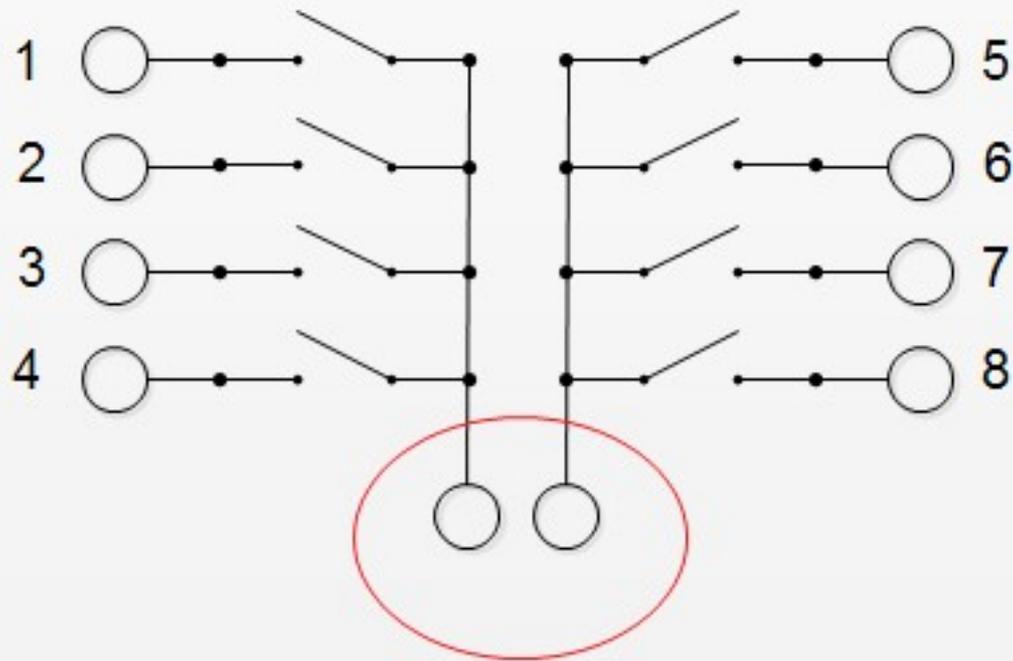


Two 4 pole "busses"

Each switch controlled by logic signal

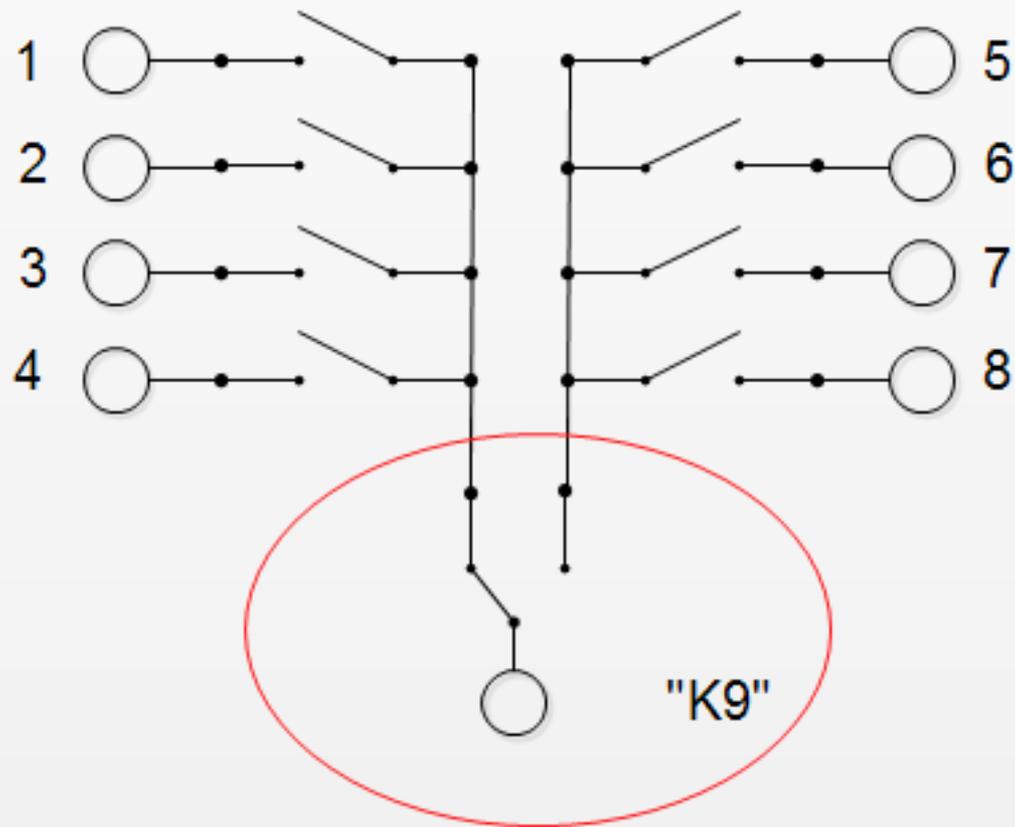


The TASS RF SWITCH





The TASS RF SWITCH





The TASS RF SWITCH

RADIO 1



RADIO 2

ANT 1



ANT 1

ANT 2



ANT 2

ANT 3

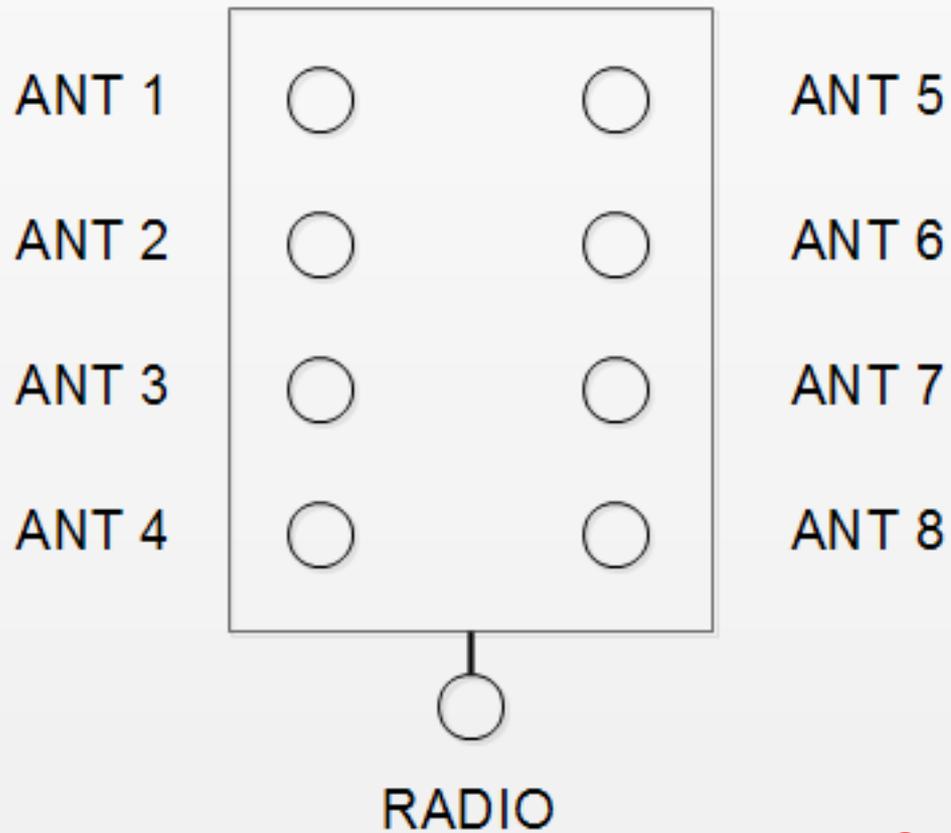


ANT 3

Two 3-pole switches



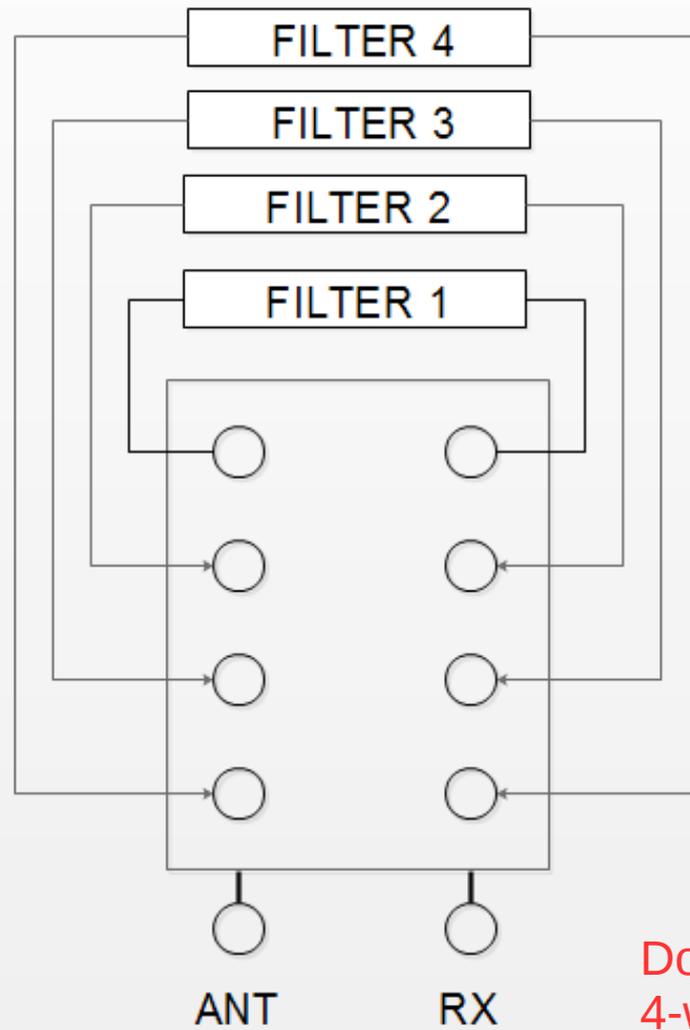
The TASS RF SWITCH



One 8-pole switch



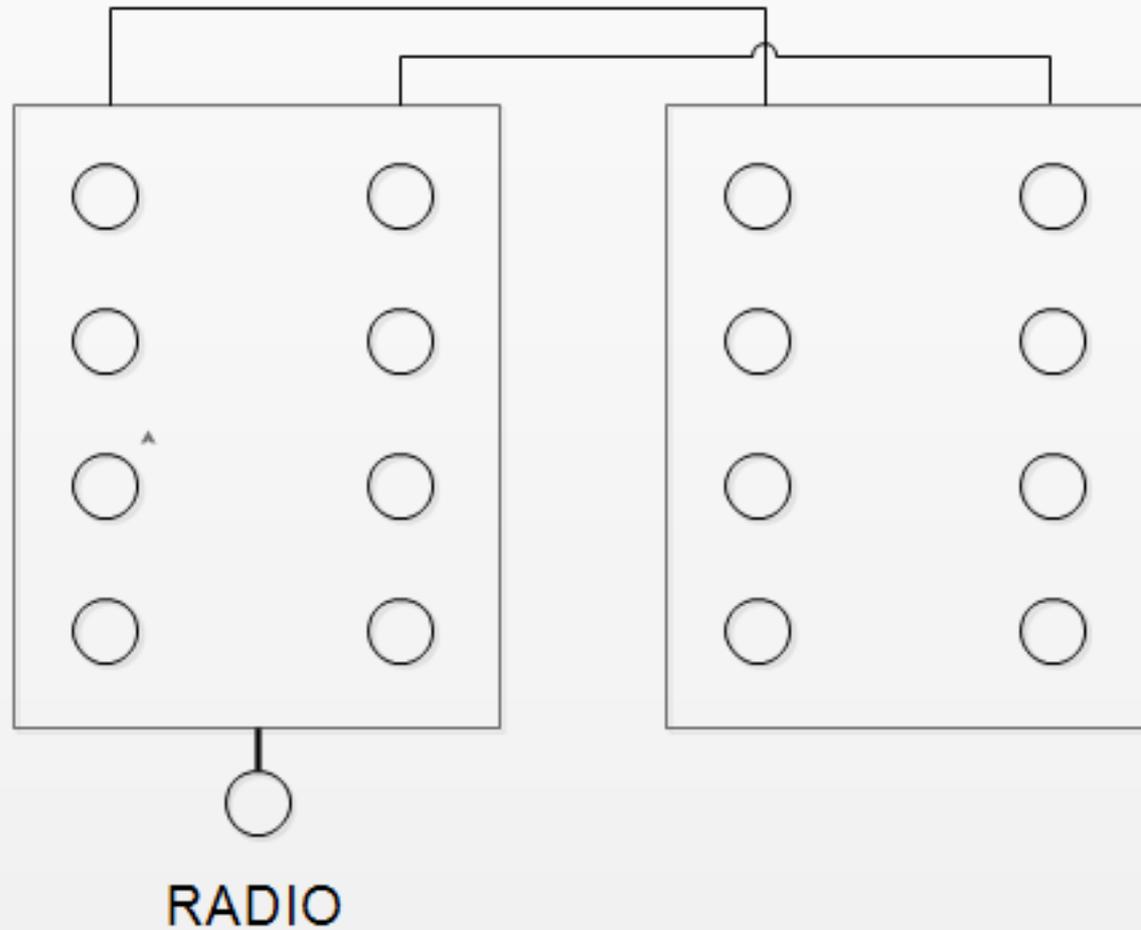
The TASS RF SWITCH



Double-pole,
4-way switch



The TASS RF SWITCH



Daisy-chained switches



The TASS RF SWITCH

TASS-R and TASS-SHIELD
are now available from TAPR:
http://www.tapr.org/kits_tass.html

Documentation and Software at:
<http://www.tapr.org/~n8ur/TASS>

John Ackermann N8UR
jra@febo.com

Some Thoughts About The Project

- Feeping Creaturism
 - There's always another neat idea!
 - Early decision to move logic off board was critical
 - Software's easier to change than hardware!
- RF is Hard
 - First design performed badly above ~50 MHz
 - Even though the longest RF trace is only about 3 inches, impedance matching was important
 - Ended up with 4 layer board and calculated 50 ohm striplines

Some Thoughts About The Project

- Feeping Creaturism
 - There's always another neat idea!
 - Early decision to move logic off board was critical
 - Software's easier to change than hardware!
- RF is Hard
 - First design performed badly above ~50 MHz
 - Even though the longest RF trace is only about 3 inches, impedance matching was important
 - Ended up with 4 layer board and calculated 50 ohm striplines

Some Thoughts About The Project

- Arduino is easy
 - IDE works well
 - Easy to get productive very quickly
 - All sorts of widgets with support libraries
 - Wrote touchscreen interface in a weekend, from never having done graphics before
 - Added ethernet in an afternoon
 - Wi-Fi? Why not?

Some Thoughts About The Project

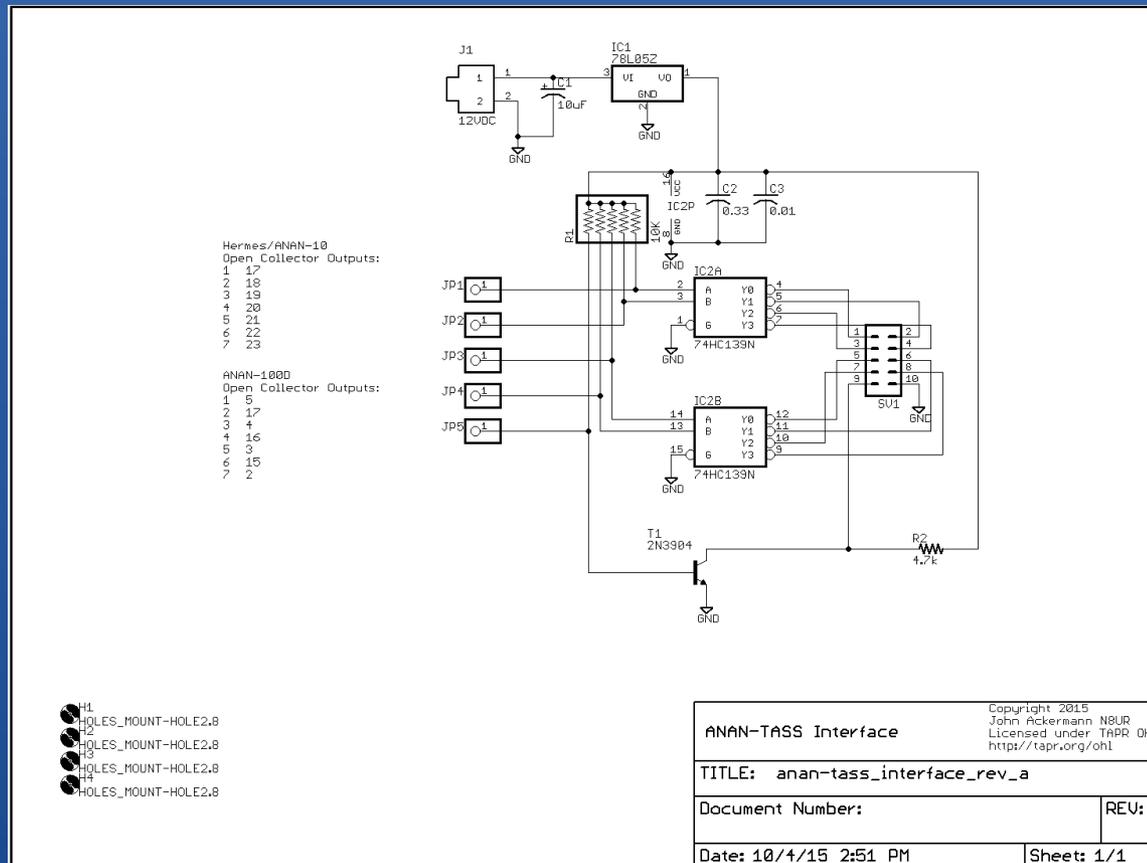
- But some “gotchas”
 - Weird examples and advice easy to find, useful ones not so much (for a C newbie, anyway)
 - Contradictory advice (e.g., character strings)
 - Surprisingly hard to find an example command parser
 - Build environment not quite standard C
 - Some preprocessor stuff different
 - Include file order magical
 - So web examples don't always work

Some Thoughts About The Project

- Arduino Hardware
 - So cheap!
 - R3 seems to have enough I/O, until you want to add stuff; serial, SPI, and I2C chew up pins
 - Mega 2560 has lots of I/O and avoids conflicts
 - It was cheaper to switch to Mega than put encoding logic on the TASS-SHIELD
 - Hugely variable build quality; everything's a counterfeit!

Some Thoughts about the Project: New Use Cases

- Direct interface to Hermes/ANAN radios



Some Thoughts about the Project: New Use Cases

- Rover Controller
 - Use 1 TASS board for IF switching
 - Use other TASS-SHIELD headers for rig control