

33 cm Worked All States

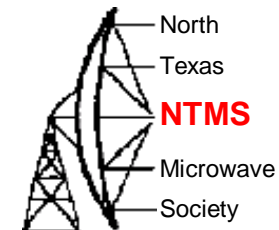
Al Ward

W5LUA

December 9, 2023

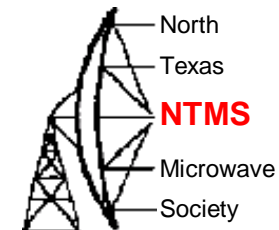
Rev A

The 33 cm Band



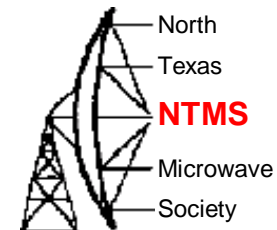
- In 1985, the FCC allocated the 902 to 928 MHz band to Part 18 ISM (Industrial, Scientific, and Medical) devices.
- The FCC also allocated the band to amateur radio on a secondary non-interfering basis, meaning amateurs must accept interference from primary users and not cause interference to primary users
- We also share the band with various Part 15 devices

Early days on 33 cm



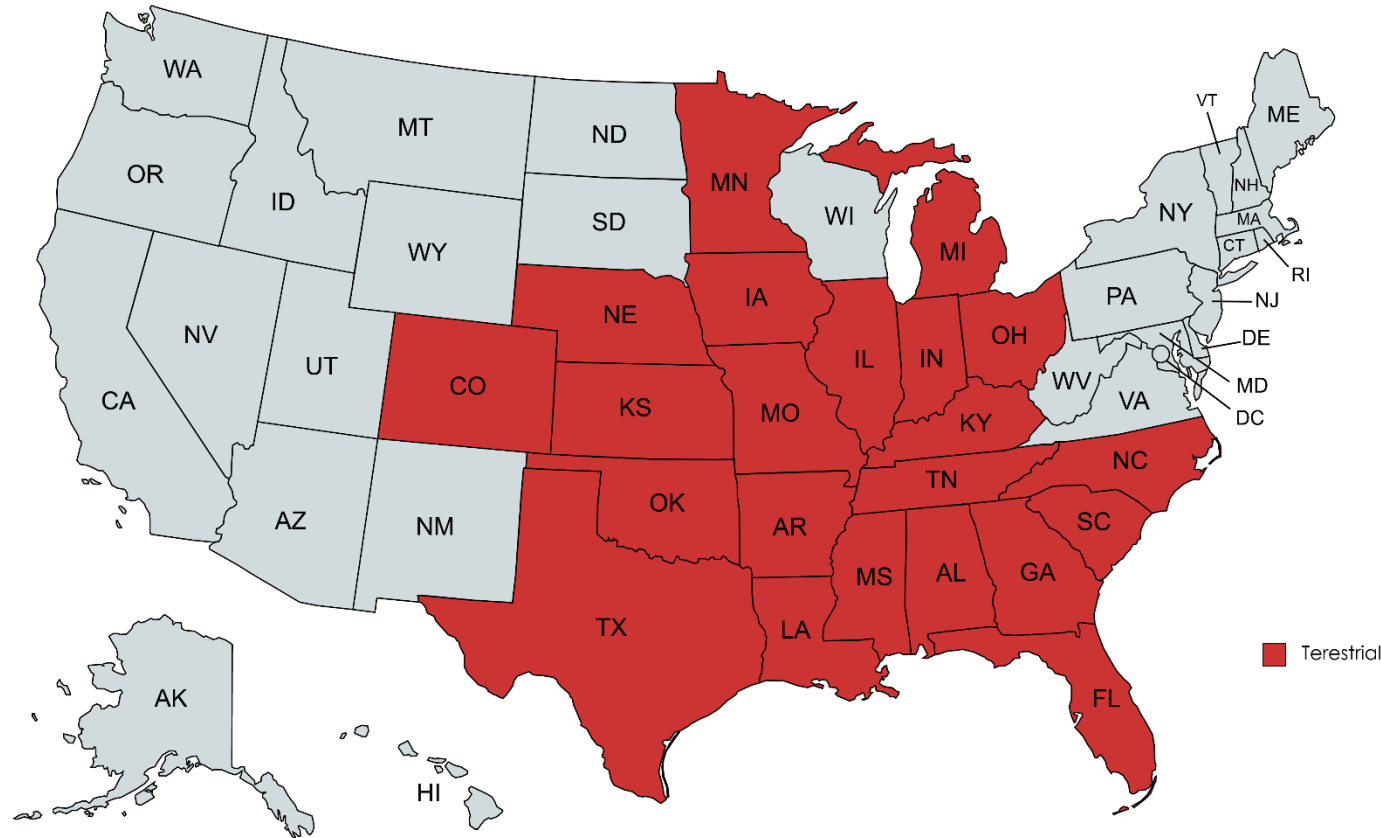
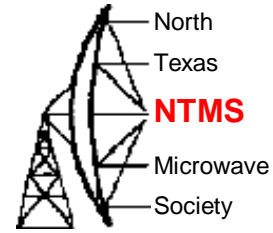
- My first contact on 33 cm was on 903 MHz with Dave then KD5RO EM13 Plano on June 30, 1987. Dave was running a 50 mW HB xvtr and I was running a 70 mW HB XVTR. I was using my 2m antenna on 903 MHz
- In Sept 1987 I worked K9MK on 902 MHz FM for a new grid EM12.
- In Nov 1987 I worked AA5C on 902 FM and SSB followed by WA5VJB in Dec and KF5N in Jan 1988.

Early DX



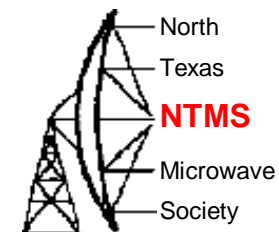
- My first real DX was Don W0PW/0 in Neosho, MO EM26 at 272 miles via aircraft scatter on Jan 3, 1988
- On Jan 25, I worked K5JL and WA5ETV in EM15 for the first known contacts between TX and OK.
- At this time, I was running my HB XVTR into an Eimac 3CX400U7 cavity at about 250 watts output to a 47 ele Loop Yagi at 80 ft

W5LUA 33cm Terrestrial



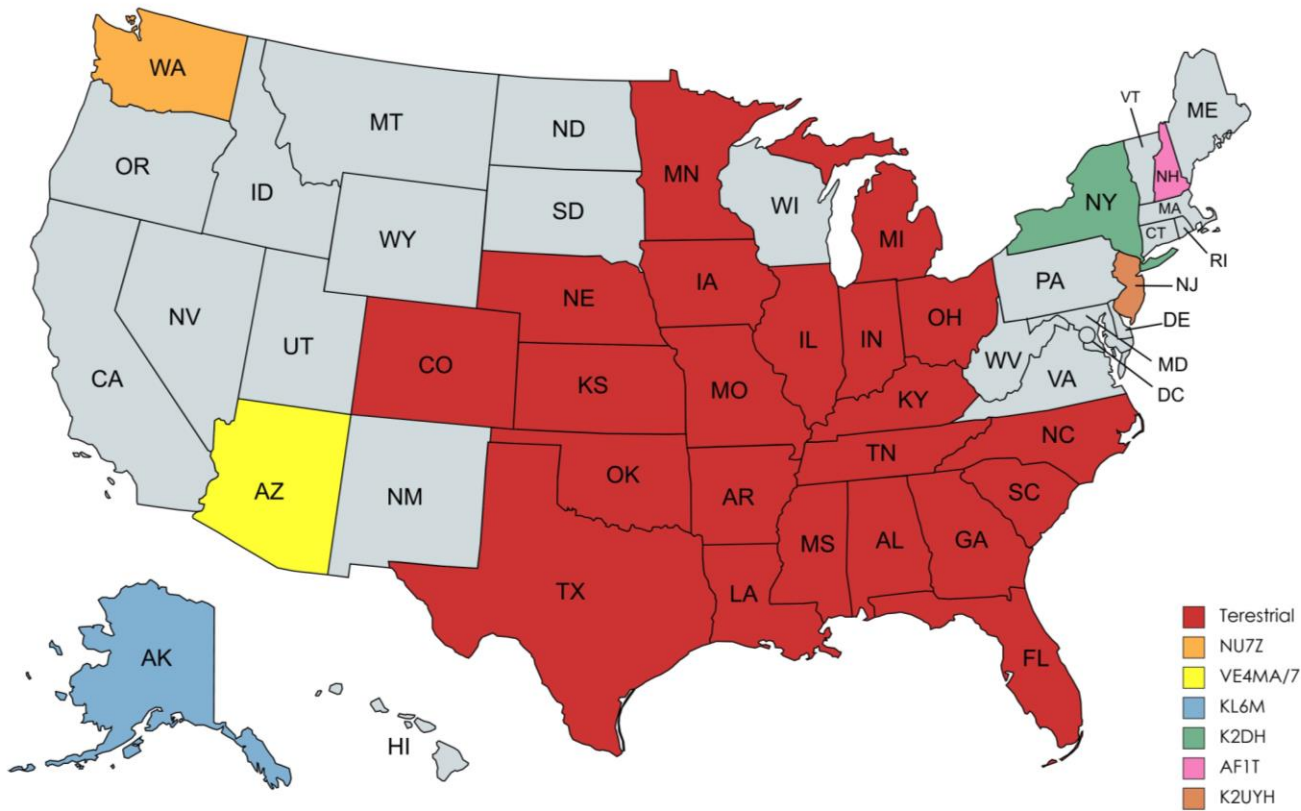
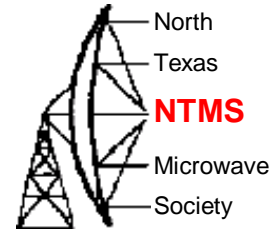
22 States worked via terrestrial means including KX00 CO via aircraft scatter on Pikes Peak

Early EME on 33 cm



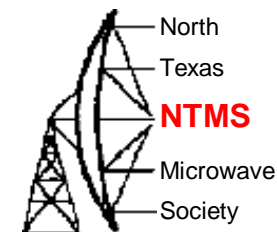
- The first 902 MHz EME contact took place on January 22, 1988 between K5JL and WA5ETV
- I worked both K5JL and WA5ETV on Feb 7, 1988 for my first 902 EME QSOs
- K5JL and WA5ETV were running 28 ft Kennedy dishes and I was running a HB 24 ft stressed dish. Power levels were typically 250 watts and all operation was on CW.
- The initial surge of activity included stations K5JL, WA5ETV, W5LUA, K2DH, W0RAP (sk), WB0TEM, VE4MA, NU7Z, WA8WZG (N7GP), AF1T, WA8RJF (K8ZR), WW2R, VE6TA, K2UYH, N8DJB, KL6M, and PY2BS Stations highlighted in yellow are still active
- Keep in mind that the 33cm allocation is only for Region 2.

W5LUA 33cm Terrestrial plus early EME – the first 35 years



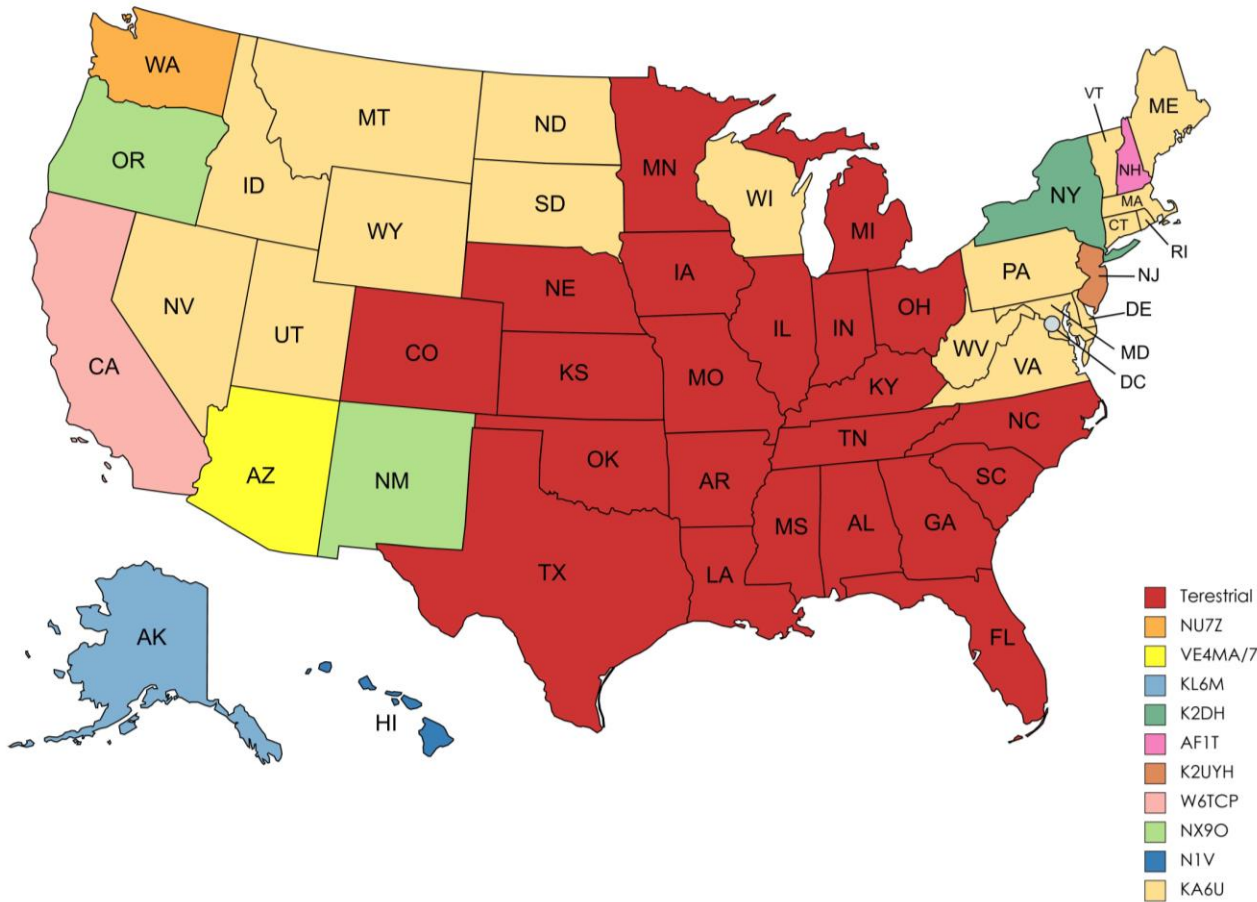
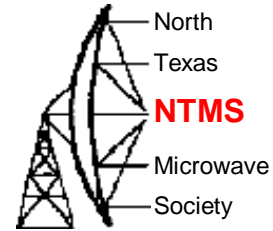
22 States Terrestrial
 6 States via EME
 28 States total in 35 years
 All via analog modes including CW and SSB

Recent EME 902 to 928 MHz



- Starting in 2021 several additional stations entered the scene
- 2021 K5DOG, WA3RGQ
- 2022 N1V (KH6), N1AV, W2HRO, AC0RA (K0DAS, KC0SKM, N0LNO, KC0TYD)
- 2023 NX9O, W5AFY, K0DSP, W6TCP, KA6U, N5UC, KU4XO, N0AKC
- N8CQ working on system
- Stations on 902 MHz that are EME rover capable include KA6U, N1AV, NX9O, AC0RA, W6TCP, N5UC
- Station Requirements – 2.4m Dish with patch feed, 150/300/600 watt solid state amplifiers
- Recent migration from linear to circular polarity to help minimize effects of Faraday rotation and spatial offset.
- HB9Q logger used for sked coordination.

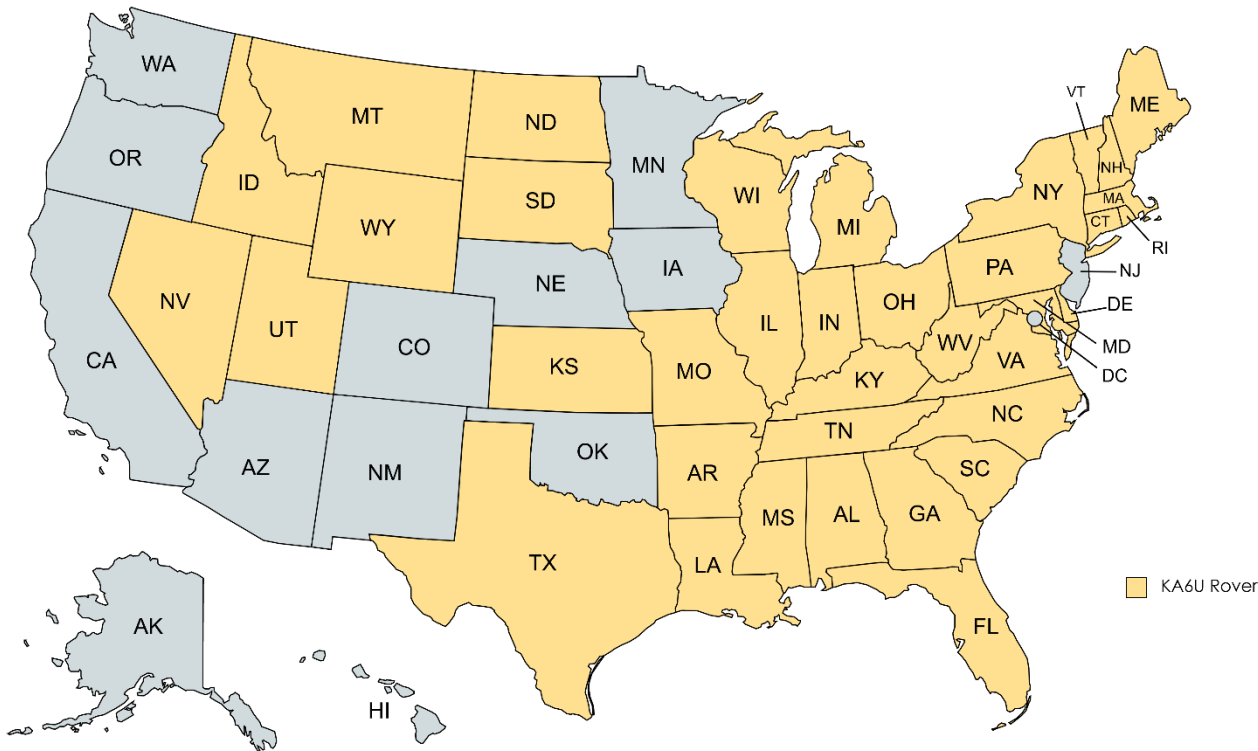
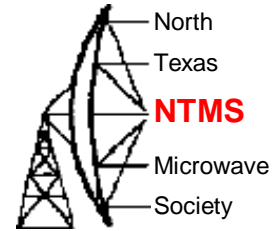
W5LUA 33cm W.A.S.



The last 22 States were achieved mostly due to a major roving primarily due to Peter KA6U efforts and NX9O and N1V. All recent contacts were using Q65-60C

Created with mapchart.net

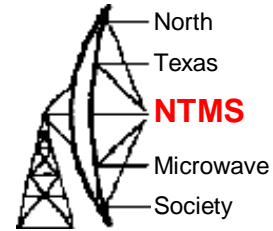
KA6U 902 MHz Rover



Peter KA6U has activated 37 States on 902 MHz EME since mid August 2023!

Created with mapchart.net

KA6U 70 cm and 23 cm portable EME



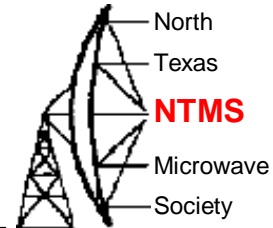
2.4m Folding Dish for
23 cm and 33 cm

<https://sub-lunar.com>

Yagi array on 70 cm

Check out
KA6U Blog

5m and 2.4m Dishes at W5LUA

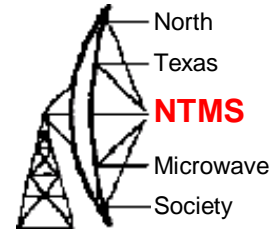


Used on 432 MHz through 10 GHz

Used on 24, 47 and 77 GHz



Multi-band Feed System



WD5AGO
Septum Feeds
for 2304 and
5760

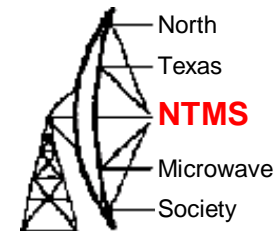


OK1DFC Septum Feed
For 1296

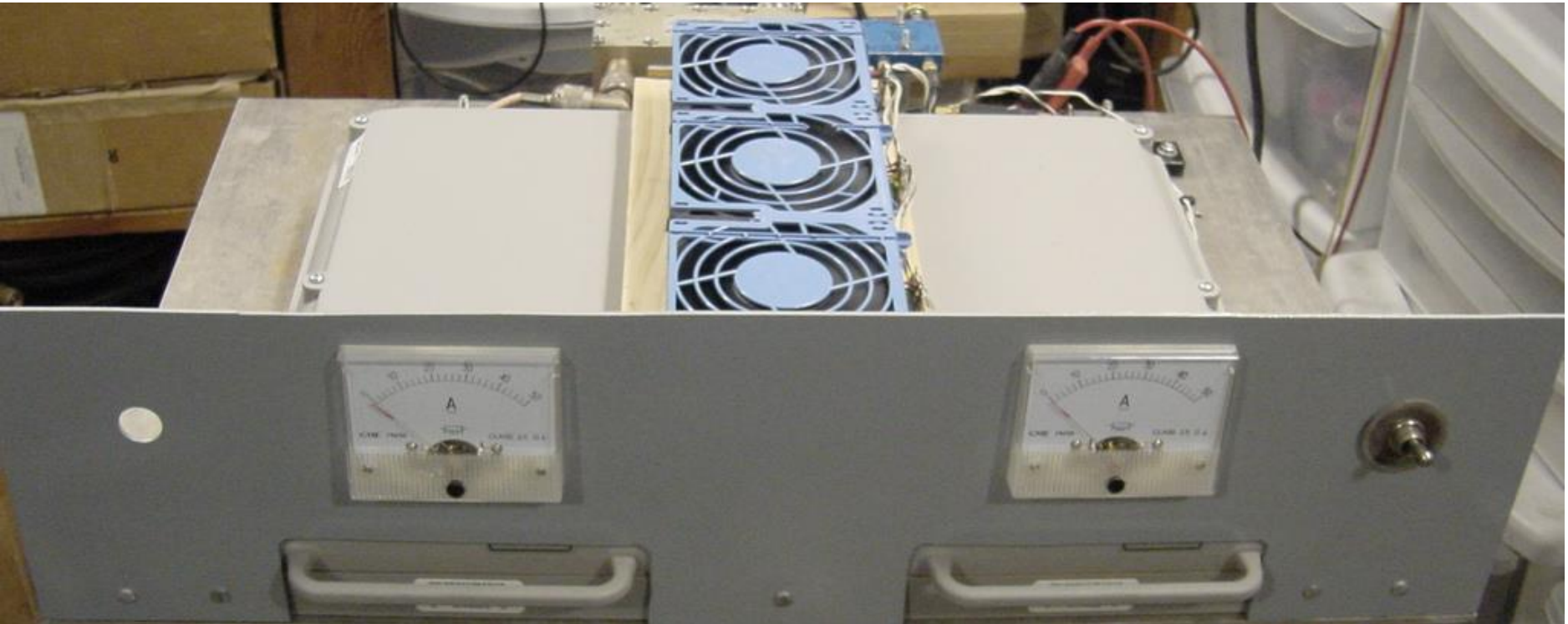
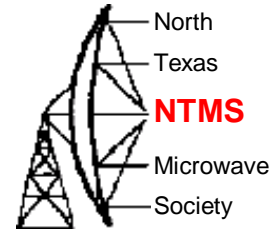
10 GHz Feed in Center

3400 and 432
Feeds slide in to
1296 feed

902 MHz Feed nestled into 1296 MHz Feed

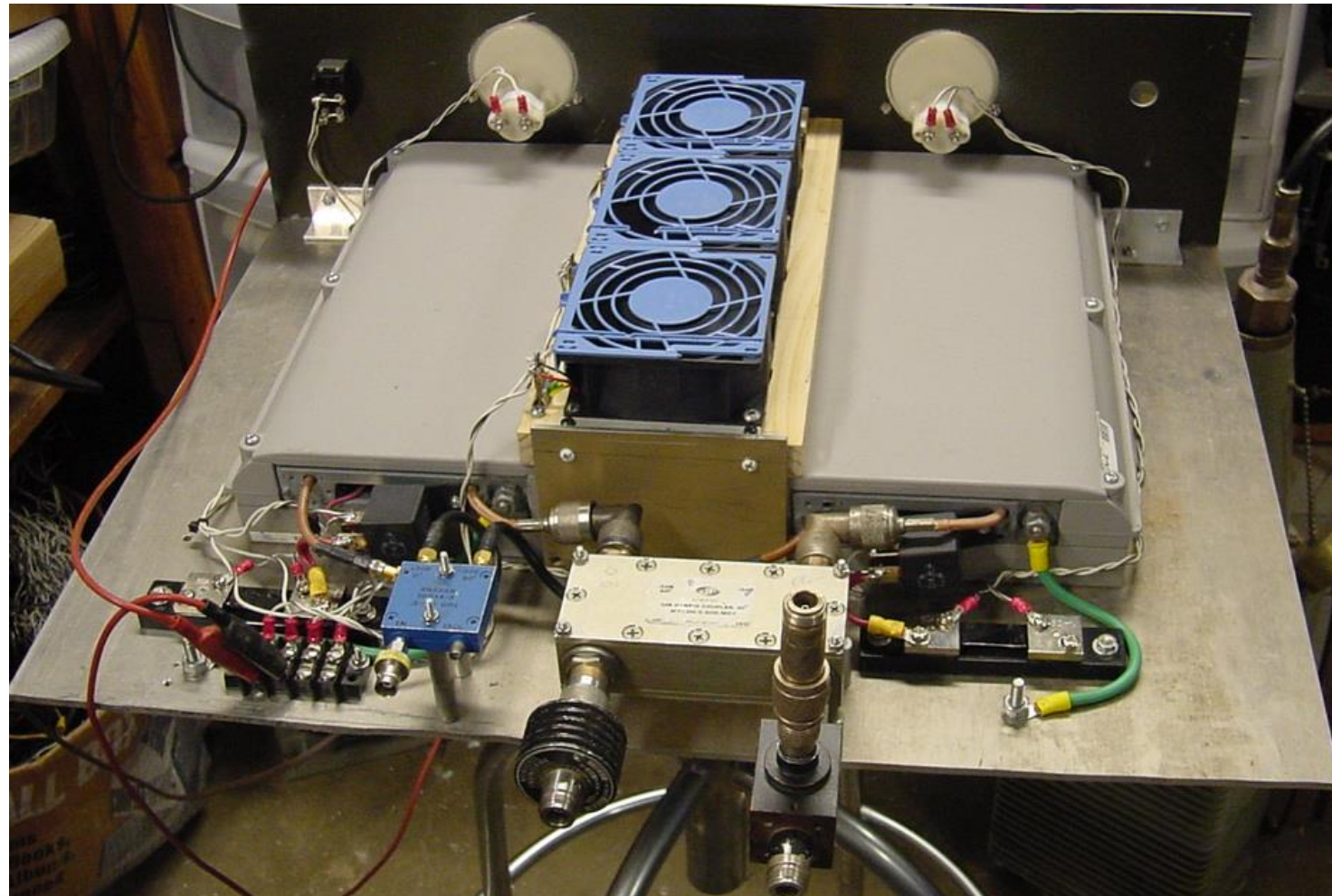
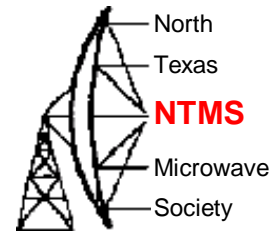


W5LUA Pair 300W SSPA

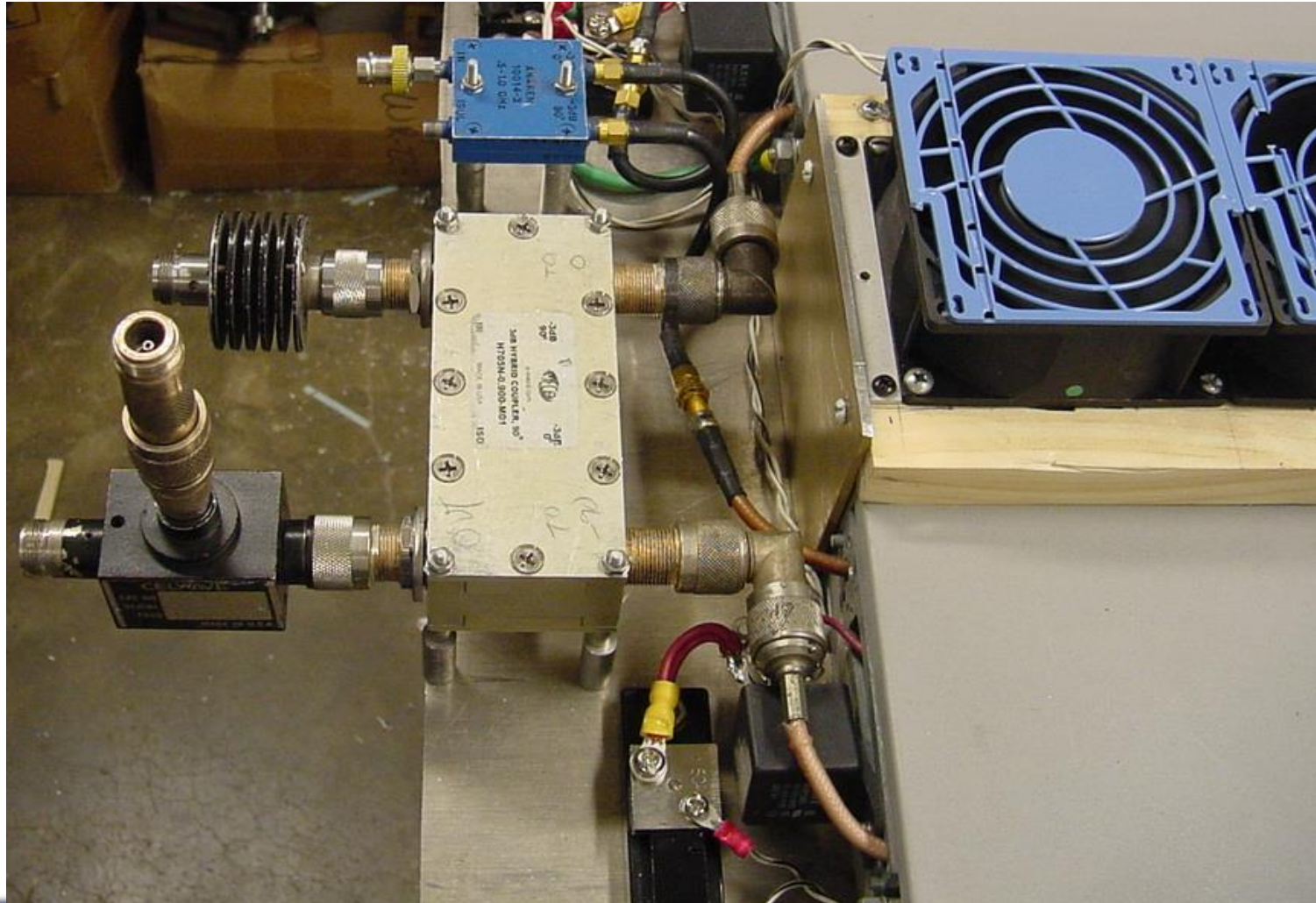
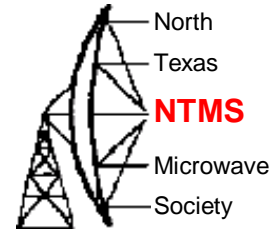


50 Amp meters and shunts available from www.allelectronics.com
\$12 / meter and \$12 / shunt

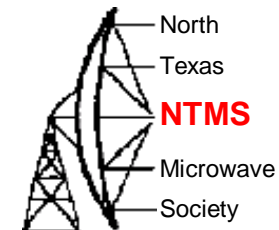
Back View SSPA



Close-Up Power Dividers

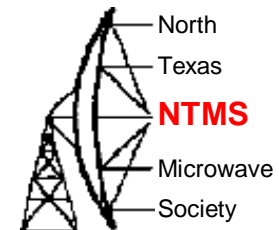


Recent Advances on the 33cm band



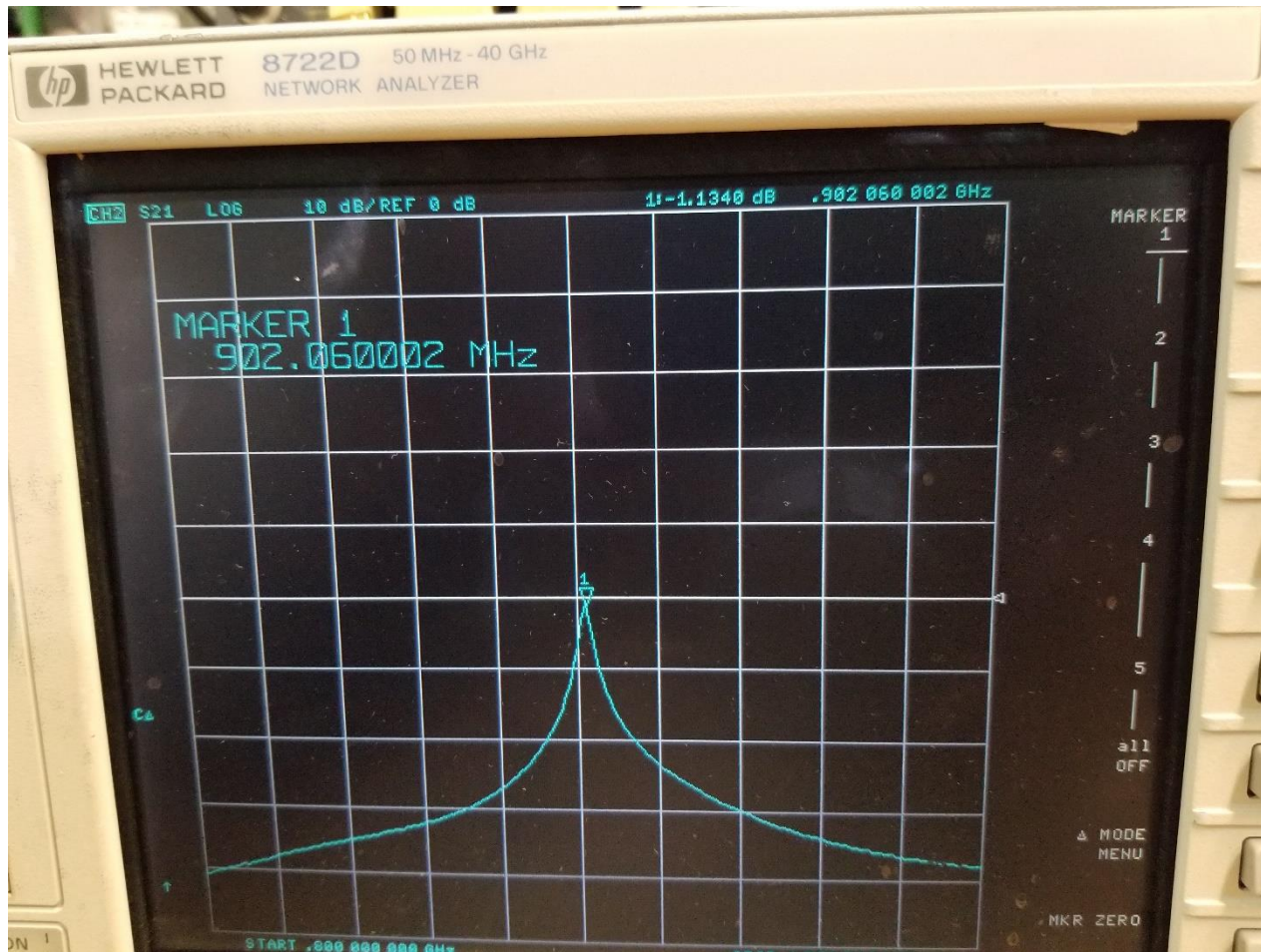
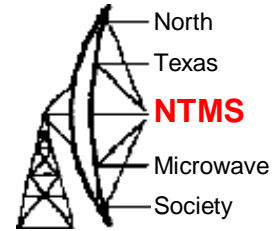
- High IP3 LNAs to help with IMD - WD5AGO, DEMI LNAs with SAW filtering
- High power devices/pallets by NXP – W6PQL working on complete SSPAs
- Migration from linear polarity to CP

Motorola 902 MHz filter

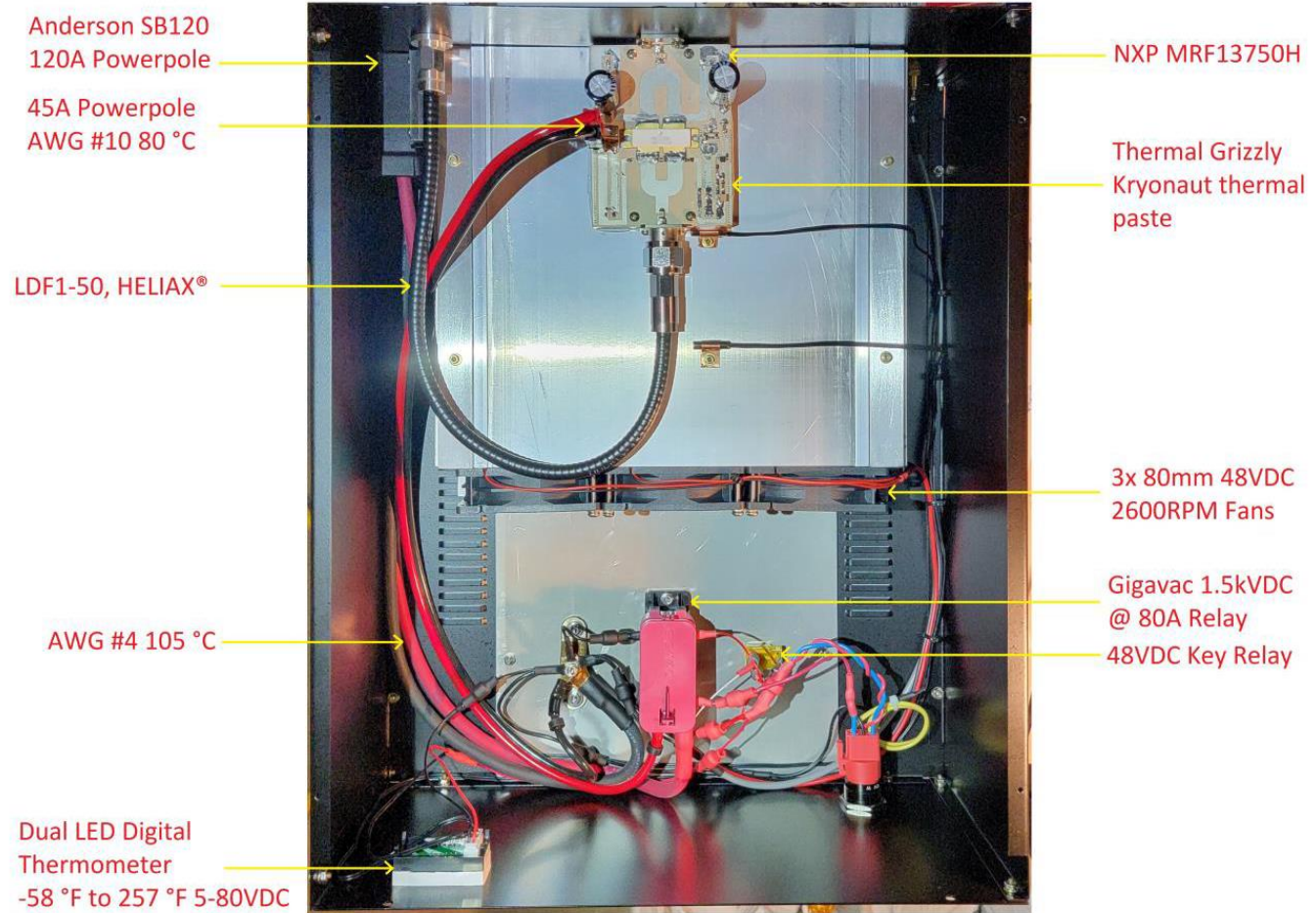
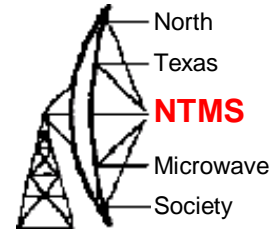


Motorola 902 MHz Filter

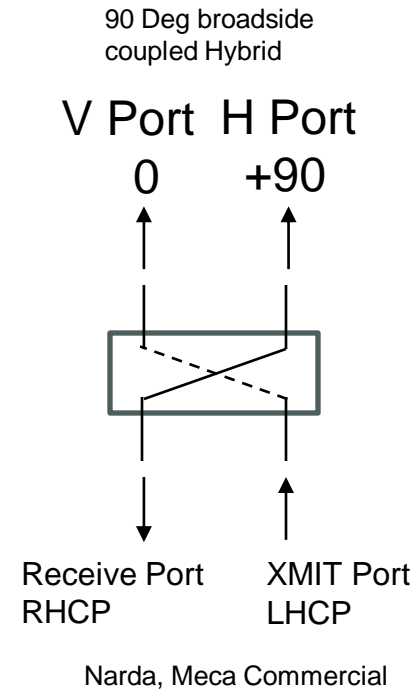
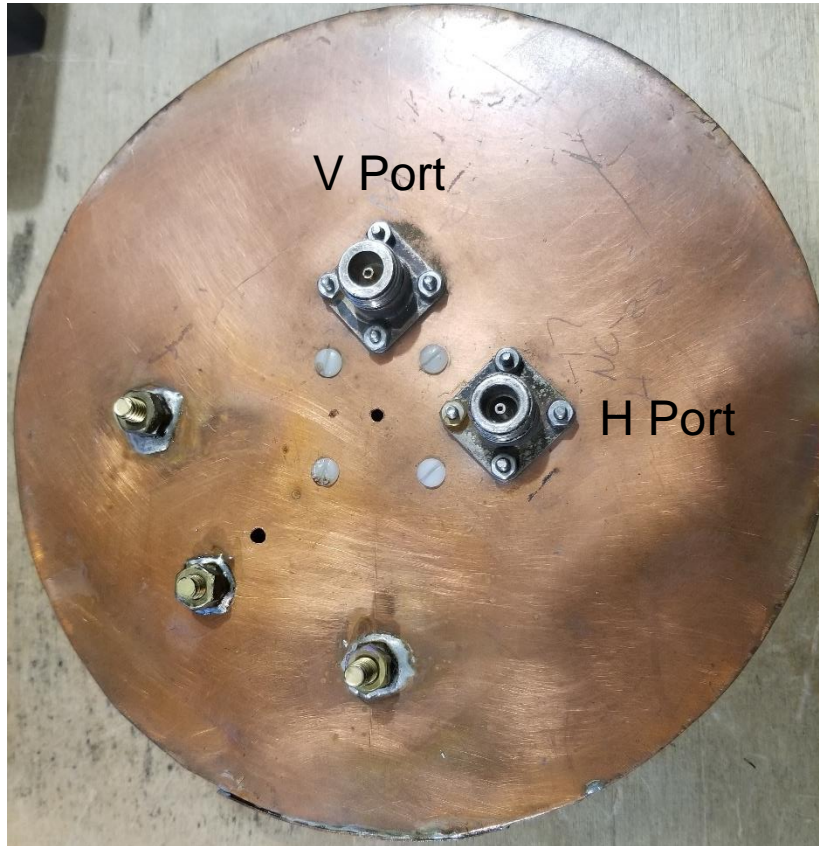
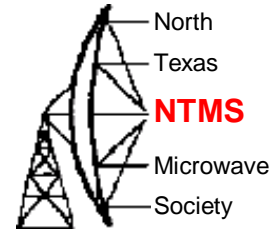
Span from 800 MHz to 1 GHz



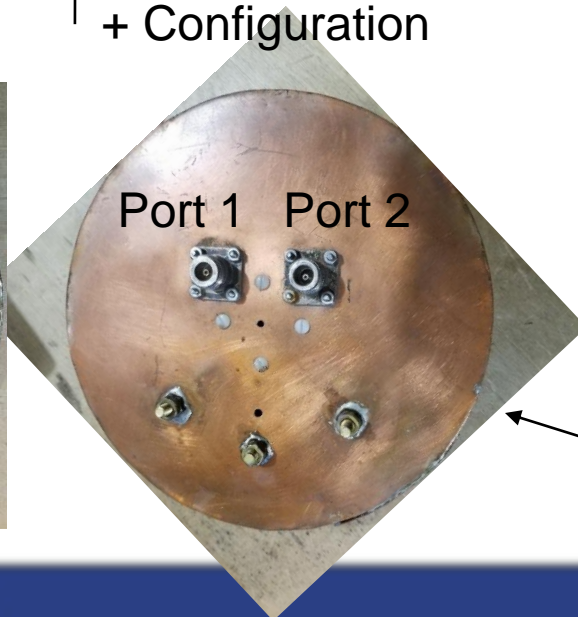
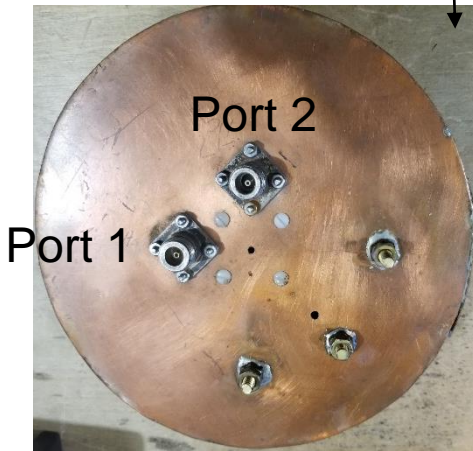
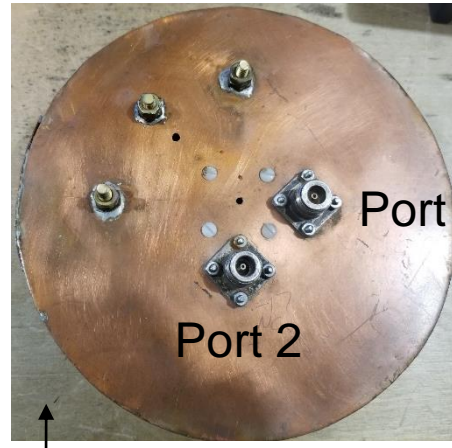
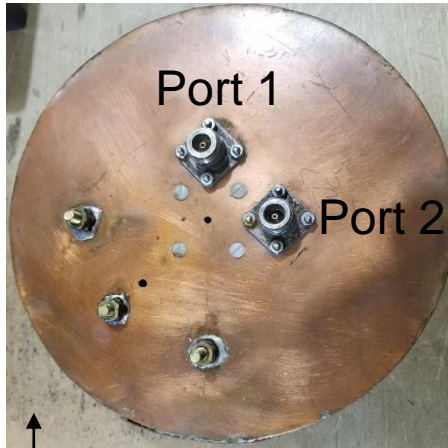
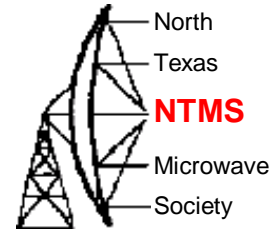
KU4XO 800W 902 MHz SSPA



Generating CP on 902 MHz with a Dual Polarity Patch Feed



Generating CP on 902 MHz with a Dual Polarity Patch Feed



90 Deg broadside coupled Hybrid

Port 1 Port 2

0 +90



Receive Port XMIT Port

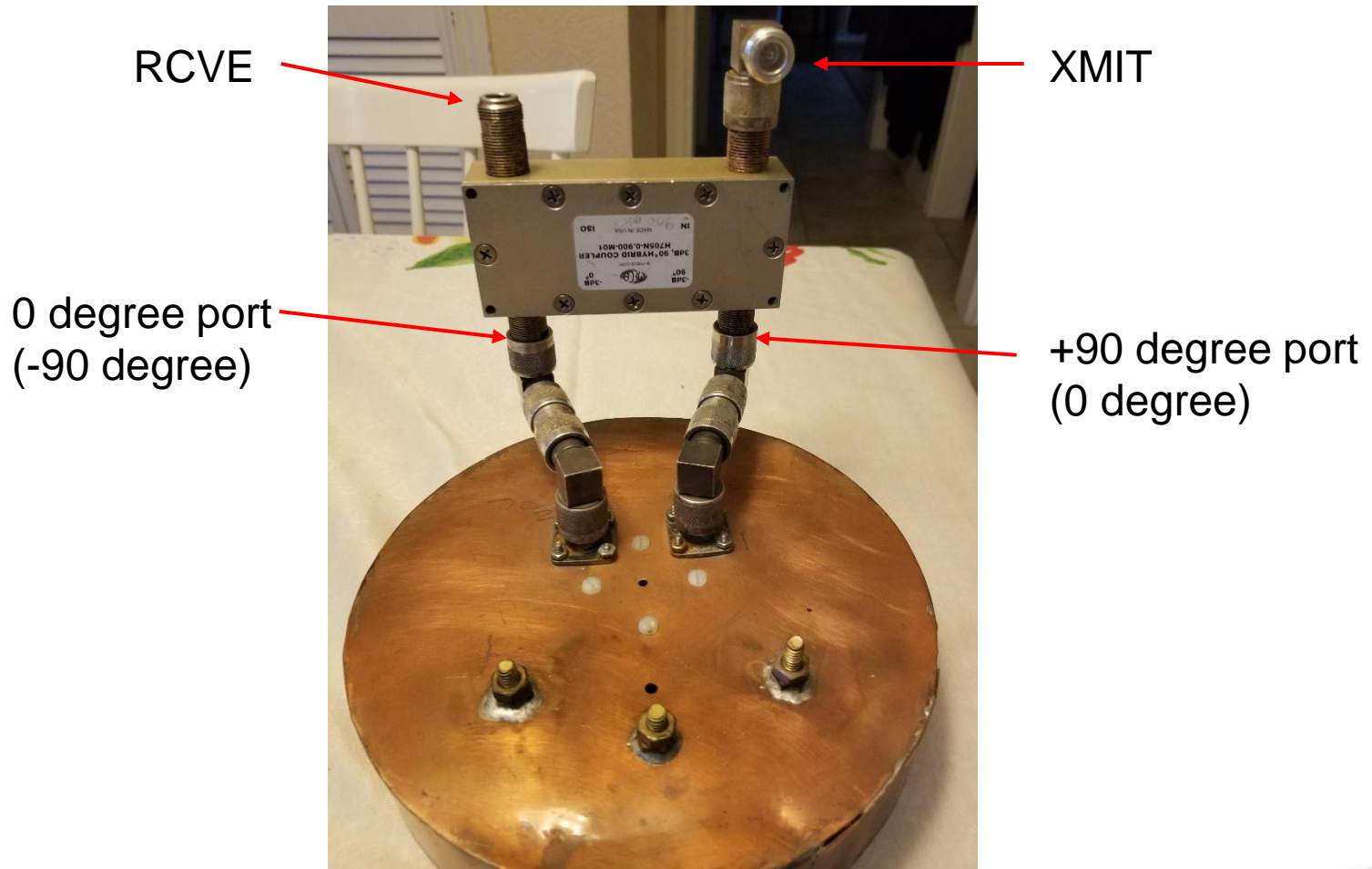
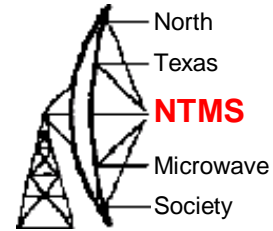
Port 2 is always the most CW port as viewed from the back of the feed

+ Configuration

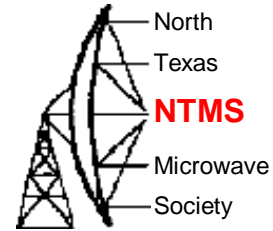
+ Configuration

X configuration +/- 45 degrees from vertical

Generating Circular Polarity



HB9Q Logger



File Edit View History Bookmarks Tools Help

HB9Q | LOGGER

https://logger.hb9q.ch

50 144 222 432 902 1296 23xx 3400 5760 10xxx 24048 47088 76032

@call write your message here...

02:12	@KA6U: Thanks Peter	@ W5LUA	AI	
02:11	0210 -19 2.6 1704 : KA6U W5LUA RR73	@ KA6U	Peter	
02:10	@KA6U: WOW! That was a tough one. Thx for hanging in there for me Peter	@ K0DSP	Doug (NE)	
02:09	@W2HRO: GN and 73 Paul	@ K0DSP	Doug (NE)	
02:09	@W2HRO: 73 Paul	@ W5LUA	AI	
02:09	0208 -28 2.7 1012 : KA6U K0DSP RR73	@ KA6U	Peter	
02:08	GN All. Safe travel Peter.	@ W2HRO	Paul	
02:07	calling now	@ K0DSP	Doug (NE)	
02:07	@W5LUA: Go ahead AI	@ KA6U	Peter	
02:07	@K0DSP: Doug..Call Peter	@ W5LUA	AI	
02:06	@KA6U: standing by	@ W5LUA	AI	
02:03	@K0DSP: Continuing	@ KA6U	Peter	
02:02	@K0DSP: I saw you every sequence down at 1000 Hz	@ W5LUA	AI	
02:01	@KA6U: I shall	@ W5LUA	AI	
02:01	@W5LUA: AI would you like to call?	@ KA6U	Peter	
02:00	@KA6U: corn field tnx you for the qs tonight. #49 for me and #48+49 for rod	@ ACORA	Wyatt	
02:00	I think Doug gave up....	@ W5LUA	AI	
02:00	@KA6U: I think I will have to call this. I have not seen you for a while now. Thanks for the try.	@ K0DSP	Doug (NE)	
01:59	@K0DSP: Dont see you still looking	@ KA6U	Peter	
01:59	0158 -21 2.6 1526 : KA6U KC0TYD RRR	@ KA6U	Peter	

Who is online **HB9Q eme**

W5LUA (ME)
last seen on logger >1h

@ KU4XO - Matt

Remove all highlight Hide all Show all

www.hb9q.ch

You must log in with a password

Very cordial group

Always interested in helping people out

Don't hesitate to ask a question

Left click on a call sign to see what the other station is running

