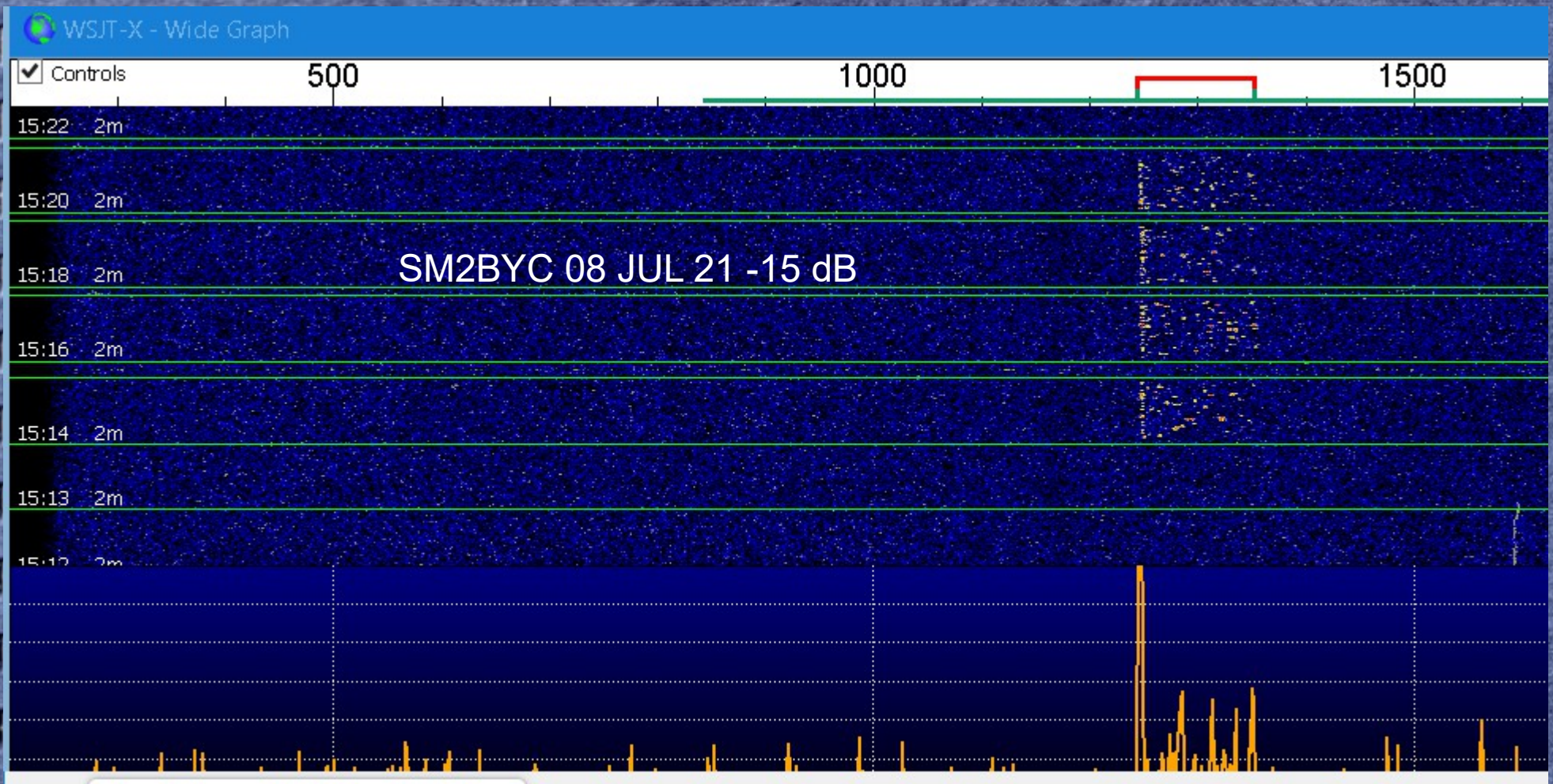
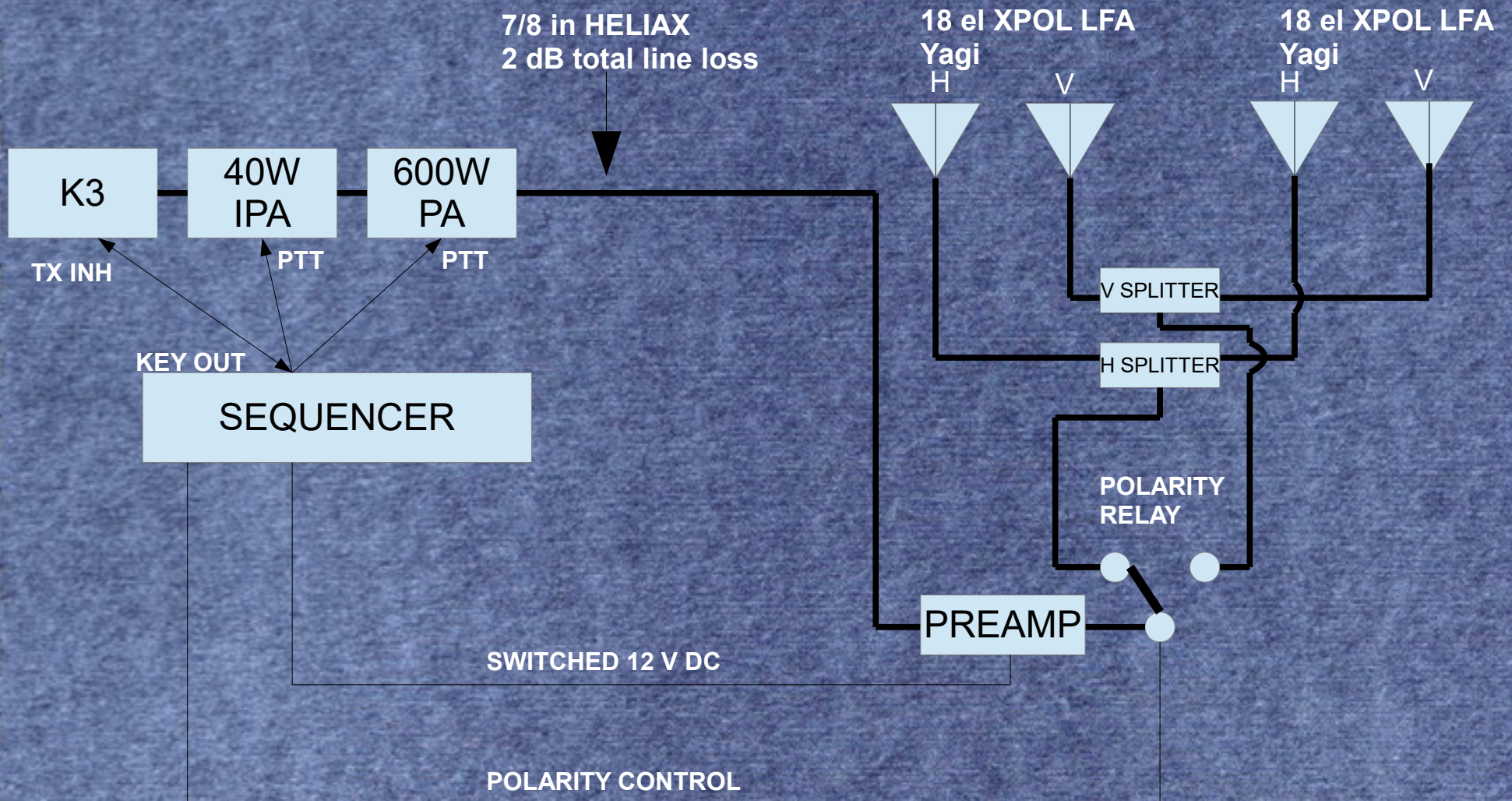


N9EP's Excellent EME Adventure



How to spend a lot of money for not many QSOs and
have a GREAT time doing it!

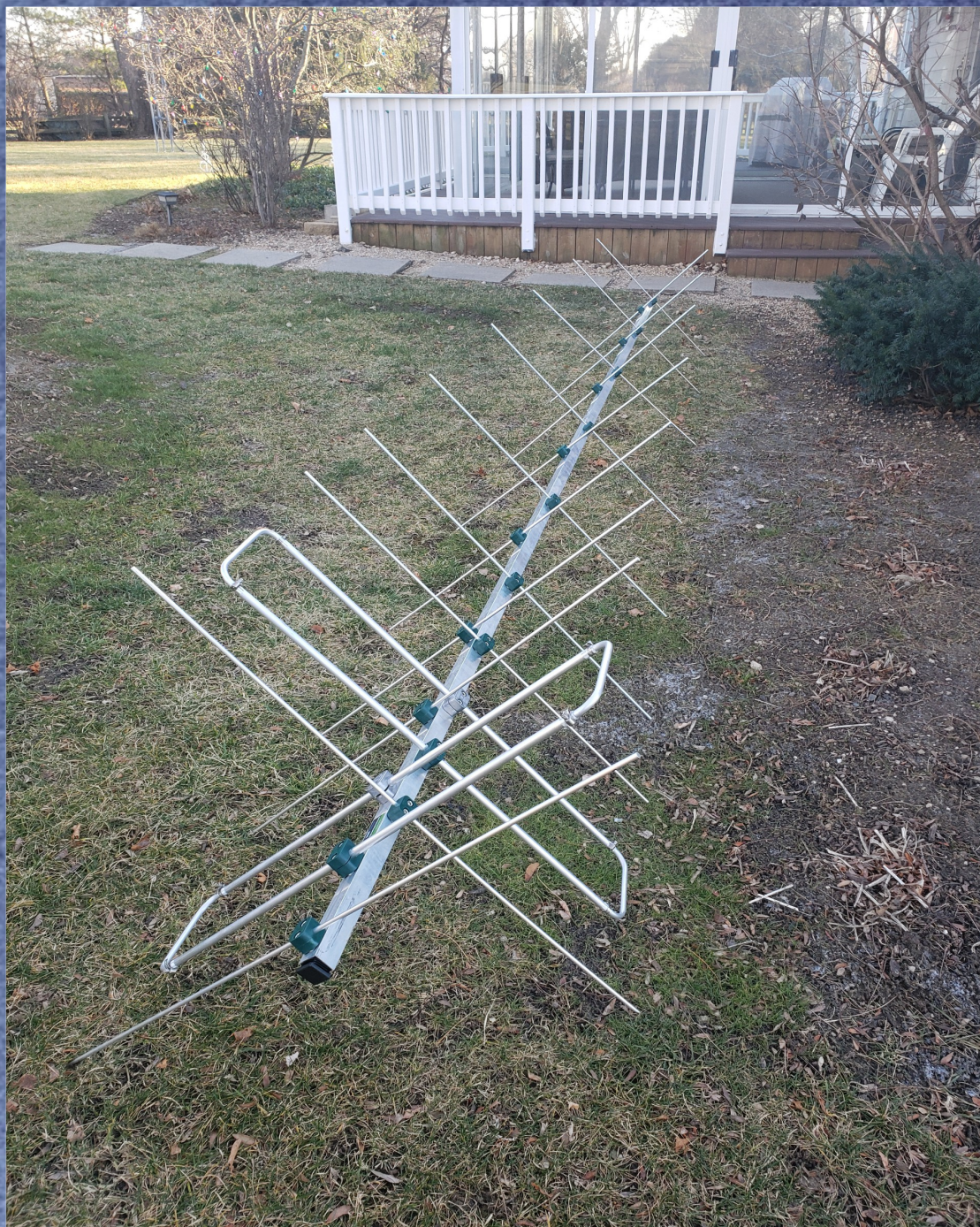
Block Diagram



Antennas

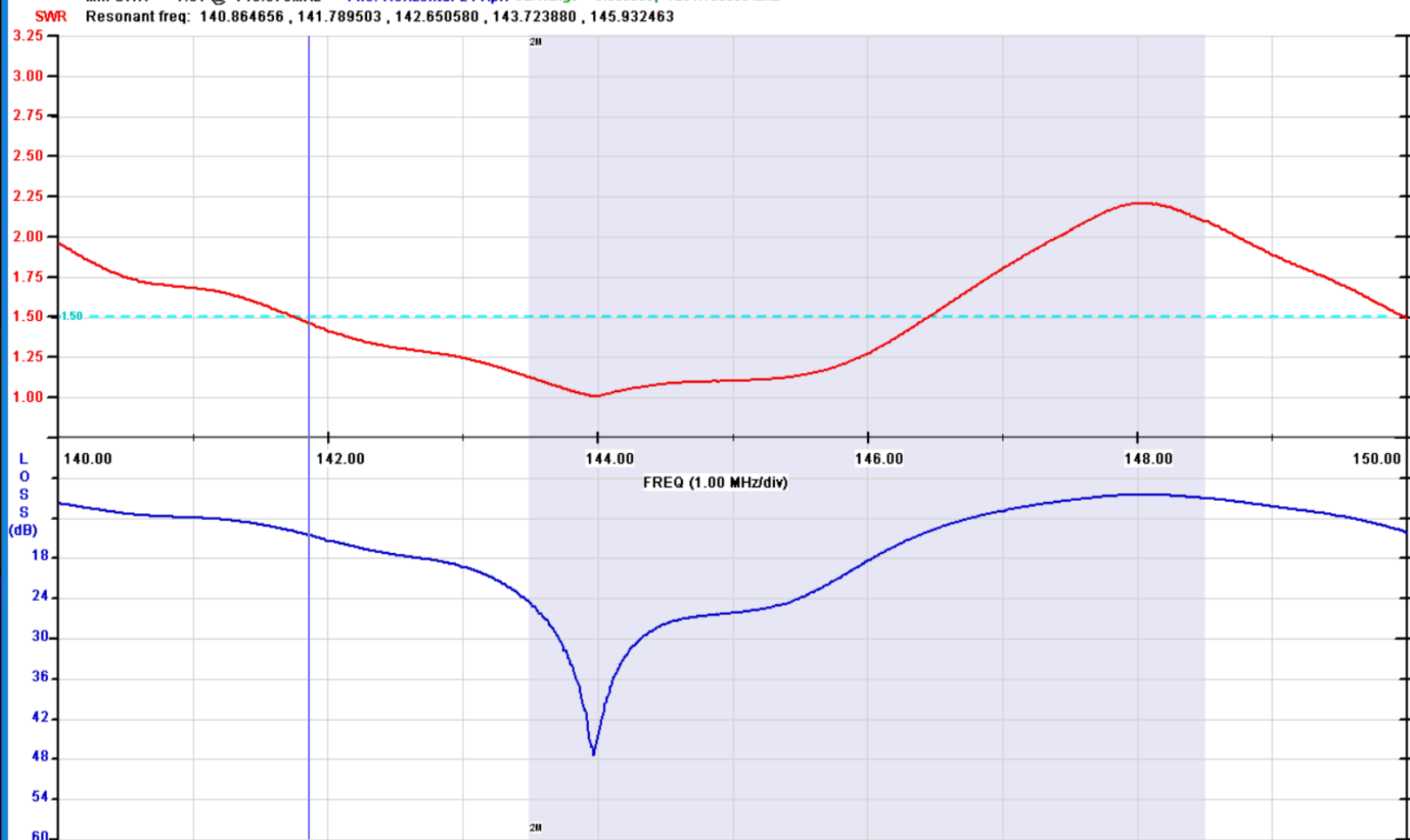
- Pair of Innovantennas LFA XPOL 18 element
- 14 dBi 26 dB F/B
- Very clean weather-stable pattern
- Mix 31 cores (10 each)





Min SWR = 1.01 @ 143.970MHz File: Horizontal 24 April Cal Range = 0.005000, 1204.150000 MHz

Resonant freq: 140.864656 , 141.789503 , 142.650580 , 143.723880 , 145.932463



Average= 4
Settling Time= 2 ms
Smoothing= 0
Line Extension= 0 cm
Zref= 50

Driver Amplitude = 100%

Freq = 141.849

Freq Step = 0.010

SWR = 1.465

Zmag = 72.562

Phase = -4.634

% refl power = 3.6

Return Loss= 14.49 dB

Short/Open Circuit:

Cable Loss= 7.25 dB

Equivalent Circuit:

Rs = 72.324

Xs = -5.862

Q = 0.1

Cs = 191.399 pF

Rp = 72.800

Xp = -898.173

Cp = 1.249 pF

FILES: (636A)

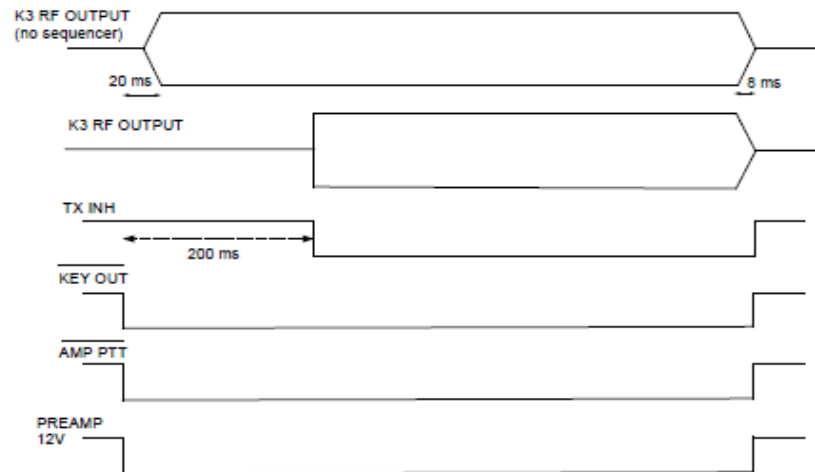
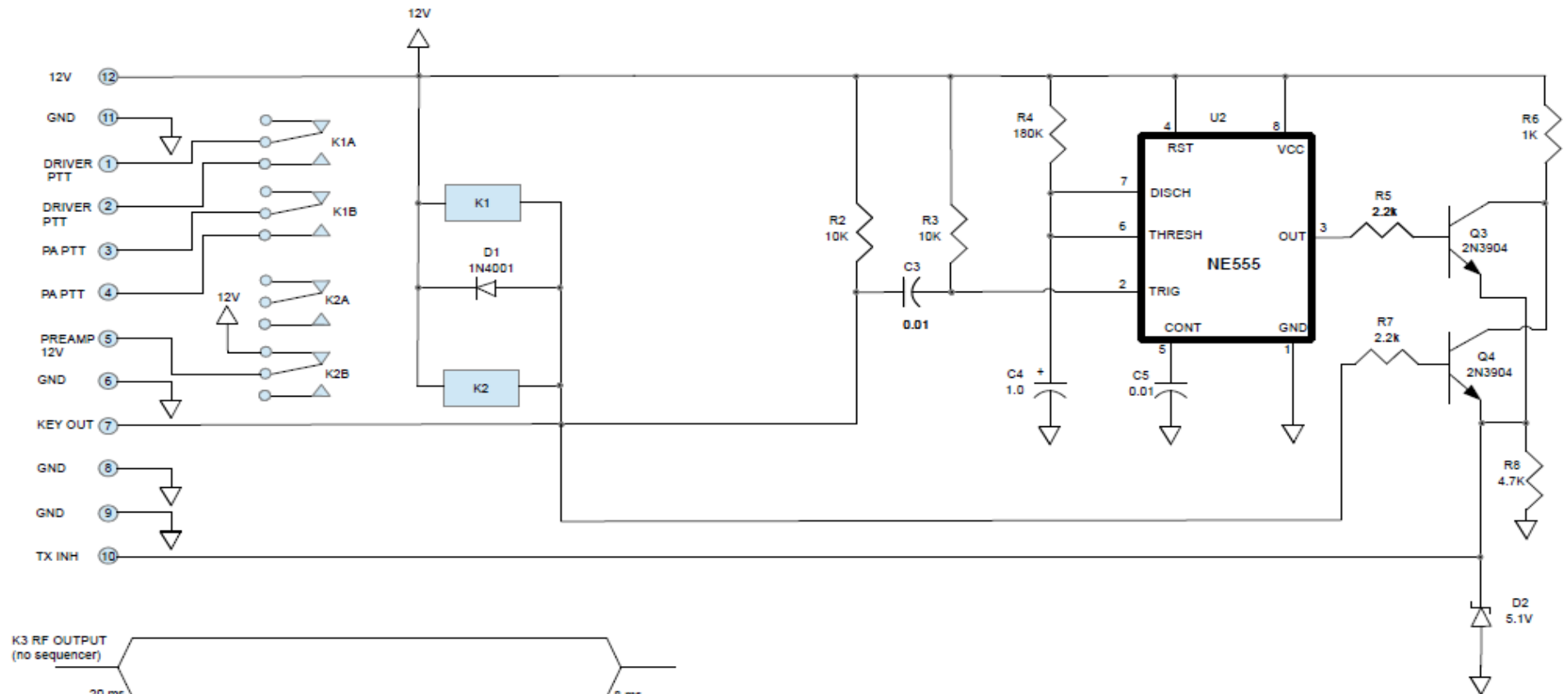
std cal N male 092421.vcal

c:\ham\vnauhf\vnauhf_636\vnauhf_636\vnauhf_636.vna_c

Sequencer

EME SEQUENCER

V1.02 N9EP 30 OCT 2020

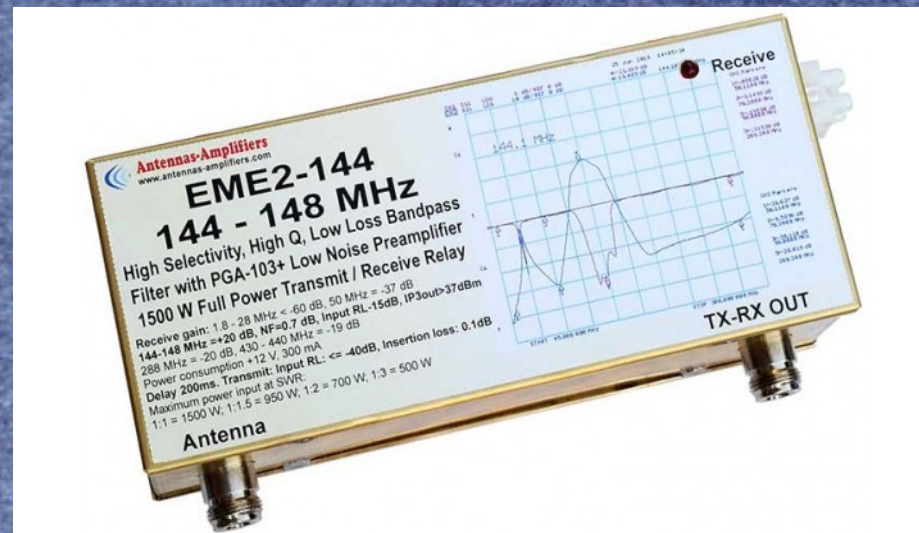
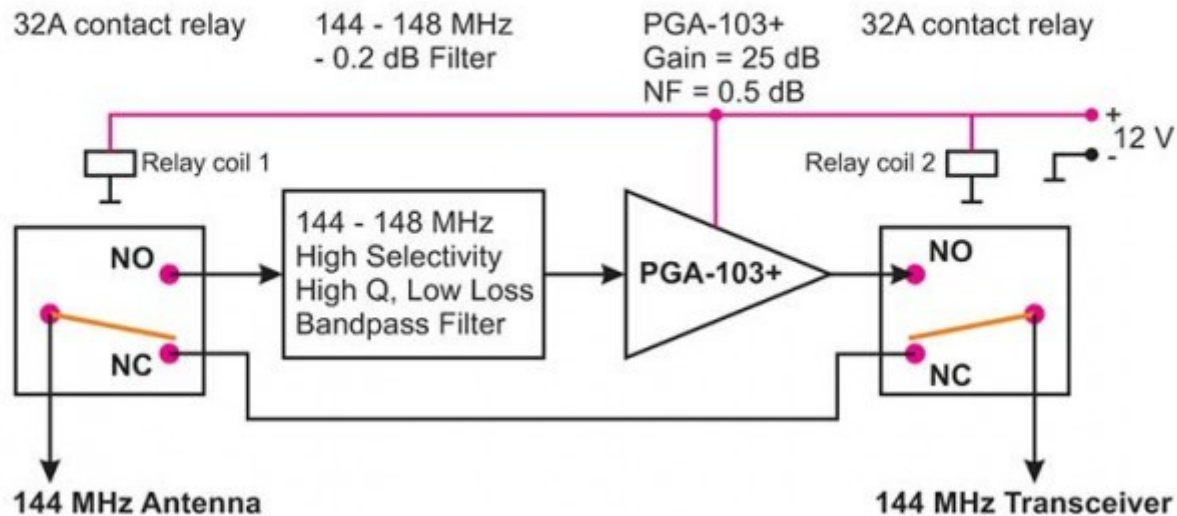


KEY OUT	555 OUT	TX INH
0	0	0
0	1	1
1	0	1
1	1	1

Preamp

- Antennas-Amplifiers EME-2

EME2-144 2m High Selectivity Low Loss Band-Pass Filter with PGA-103+ Low Noise Preamplifier 1500W T/R Relay



PA

- Intermediate stage takes 7W K3 output to 40W
- QUANTRO “350W” PA gives 600W out



Software

- WSJT-X
- F1EHN EME SYSTEM
- N0UK EME chat for 2m

1426	-21	2.8	941	:	CQ	IK2DDR	JN55	q3
1428	-19	2.8	950	:	CQ	IK2DDR	JN55	q3
1430	-19	2.8	958	:	CQ	IK2DDR	JN55	q3
1432	-21	3.0	970	:	CQ	IK2DDR	JN55	q3
1434	-20	2.8	981	:	CQ	IK2DDR	JN55	q3
1436	-18	2.8	993	:	CQ	IK2DDR	JN55	q3
1438	-20	2.6	1000	:	CQ	IK2DDR	JN55	q3
1440	-20	2.7	1011	:	CQ	IK2DDR	JN55	q3
1442	-26	2.7	1023	:	CQ	IK2DDR	JN55	q3
1444	-20	2.7	1031	:	CQ	IK2DDR	JN55	q3
1459	-21	2.9	1458	:	N9EP	SK5AA	-26	q3
1501	-21	2.9	1456	:	N9EP	SK5AA	-26	q3
1507	-21	2.9	1453	:	N9EP	SK5AA	73	q3
1514	-16	2.9	1248	:	CQ	SM2BYC	KP25	q3
1516	-15	2.9	1248	:	N9EP	SM2BYC	-25	q3
1518	-16	2.9	1248	:	N9EP	SM2BYC	RRR	q3
1520	-17	2.9	1246	:	N9EP	SM2BYC	73	q3

1500	Tx	1200	:	SK5AA	N9EP	-21	
1501	-21	2.9	1456	:	N9EP	SK5AA	-26 q3
1502	Tx	1200	:	SK5AA	N9EP	R-21	
1504	Tx	1200	:	SK5AA	N9EP	R-21	
1506	Tx	1200	:	SK5AA	N9EP	R-21	
1507	-21	2.9	1453	:	N9EP	SK5AA	73 q3
1508	Tx	1200	:	SK5AA	N9EP	RRR	
1508	Tx	1200	:	SK5AA	N9EP	73	
1514	-16	2.9	1248	:	CQ	SM2BYC	KP25 q3
1515	Tx	1243	:	SM2BYC	N9EP	EN52	
1516	-15	2.9	1248	:	N9EP	SM2BYC	-25 q3
1517	Tx	1243	:	SM2BYC	N9EP	EN52	
1517	Tx	1243	:	SM2BYC	N9EP	R-17	
1518	-16	2.9	1248	:	N9EP	SM2BYC	RRR q3
1519	Tx	1243	:	SM2BYC	N9EP	RRR	
1520	-17	2.9	1246	:	N9EP	SM2BYC	73 q3
1521	Tx	1243	:	SM2BYC	N9EP	73	

Log QSO

Stop

Monitor

Erase

Clear Avg

Decode

Enable Tx

Halt Tx

Tune

✓ Mon

2m

S

144.130 000

☐ Tx even/1st

Tx 1243 Hz

▲ F Tol 400 ▼

Rx 1243 Hz

Report -17

T/R 60 s

☐ Sh ☐ Auto Seq ☐ Call 1st ☐ Tx6

Submode A

DX Call

DX Grid

SM2BYC

KP25AW

A2: 26

4161 mi

Lookup

Add

2021 Jul 08
15:23:59

Generate Std Msgs

Next

Now

SM2BYC N9EP EN52

☐

Tx 1

SM2BYC N9EP -17

☐

Tx 2

SM2BYC N9EP R-17

☐

Tx 3

SM2BYC N9EP RRR

☐

Tx 4

SM2BYC N9EP 73

☒

Tx 5

CQ N9EP EN52

☐

Tx 6

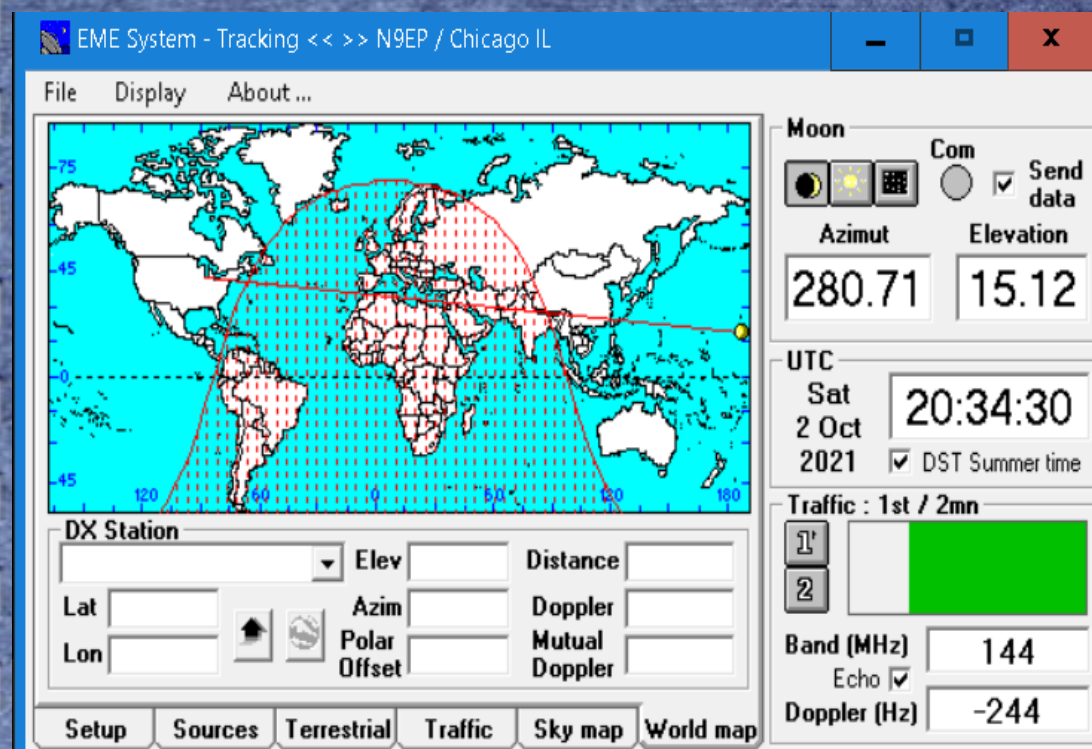
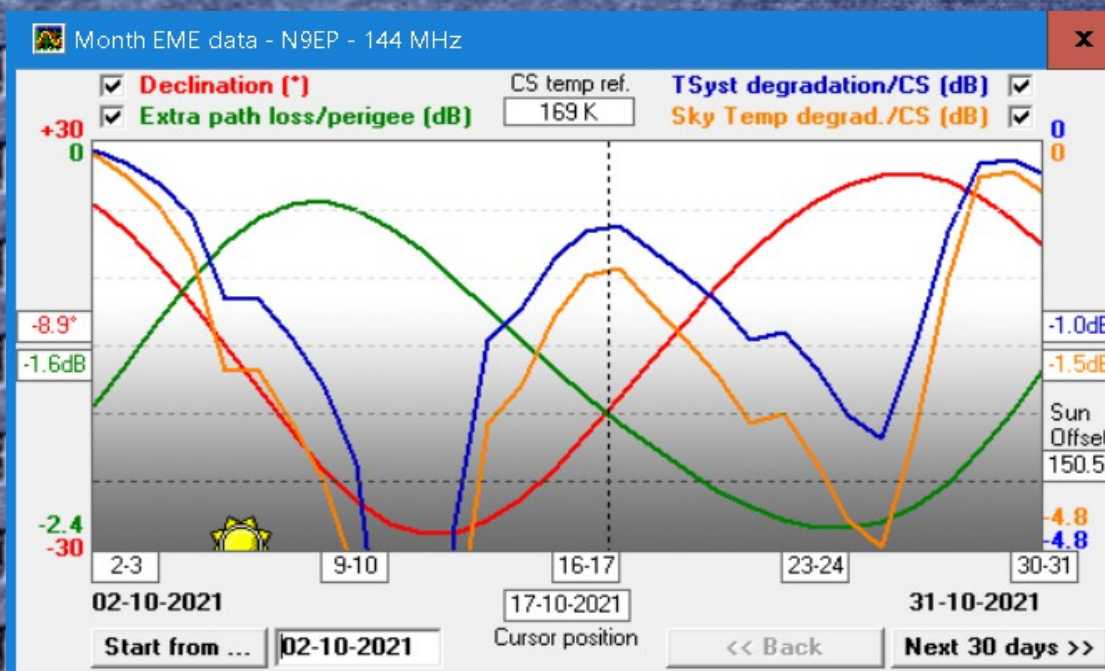
Receiving





K3 EME

Q65-60A

Last Tx: SM2BYC N9EP 73 1 3

59/60 WD



N9EP		Chicago IL		Lat : 42.174 N Long : 88.091 W					
Frequency : 144 MHz		Radio sky temp : 191 to 198 K							
Extra loss/perigee : -1.1 dB		Moon Decl. : 16.2 to 14.0 deg							
 Time	 Moon	Doppler (Hz)		 Sun	 Leo (cs)				
UTC	Local	Azim	Elev	Echo	Azim	Elev	Azim	Elev	^
08:40	03:40	71.48	3.11	361	58.88	-35.01	58.86	26.36	
09:00	04:00	74.68	6.39	365	63.43	-31.77	61.24	29.58	
09:20	04:20	77.84	9.79	367	67.68	-28.40	63.57	32.87	
09:40	04:40	80.99	13.25	366	71.69	-24.93	65.84	36.23	
10:00	05:00	84.16	16.75	363	75.50	-21.38	68.07	39.65	
10:20	05:20	87.36	20.26	358	79.15	-17.77	70.28	43.13	
10:40	05:40	90.64	23.82	351	82.68	-14.11	72.46	46.65	
11:00	06:00	94.02	27.38	342	86.12	-10.43	74.64	50.21	
11:20	06:20	97.53	30.93	331	89.51	-6.73	76.84	53.81	
11:40	06:40	101.22	34.45	318	92.86	-2.13	79.07	57.45	
12:00	07:00	105.15	37.93	303	96.22	1.11	81.38	61.11	
12:20	07:20	109.36	41.34	286	99.60	4.52	83.80	64.79	
12:40	07:40	113.94	44.66	267	103.04	8.07	86.44	68.49	

NOUK EME Chat

02Oct 20:38 who gives CQ? ===== {UC8Y Alex xx NO13ui }

02Oct 20:38 aii HI ===== {UC8Y Alex xx NO13ui }

02Oct 20:32 73 All BB tomorrow K8EB ===== {K8EB/2X14/VH/KW Erwin MI EN73cb }

02Oct 20:28 Last call anyone ????? before I park ===== {K8EB/2X14/VH/KW Erwin MI EN73cb }

02Oct 19:31 VE1KG Hello Serge! Today was nice echoes... I will QRV tmrw again, look for You! 73&GL ===== {HA2NP Robert xx JN97sg }

02Oct 18:51 K8EB y ou still on? ===== {N7NW/4XP2O/1K5 Hal WA CN87qf }

02Oct 18:20 anyone want to play ?????????????? ===== {K8EB/2X14/VH/KW Erwin MI EN73cb }

02Oct 16:56 VE1KG stopped CQ looking around ===== {VE1KG/4X17/K Serge NS FN84cm }

02Oct 16:54 73 and GL ===== {AB2VI/2X12XP/3H Ed NJ FM29ma }

02Oct 16:52 SWR still fine but wenr from RX to NILL ... vry strange ===== {AB2VI/2X12XP/3H Ed NJ FM29ma }

02Oct 16:51 Can't copy anyone for some reason. I may have taken the LNA out but it still appears to work but my RX is real bad for some reason ===== {AB2VI/2X12XP/3H Ed NJ FM29ma }

02Oct 16:50 Yes Ed ===== {VE1KG/4X17/K Serge NS FN84cm }

02Oct 16:50 David i was very fortunate to work you when we did ===== {VE1KG/4X17/K Serge NS FN84cm }

02Oct 16:50 VE1KG are you still TX? ===== {AB2VI/2X12XP/3H Ed NJ FM29ma }

02Oct 16:49 VE1KG Serge called several times, am horizontal too ===== {HI8DL/4X9H/KW David FL FK58al }

02Oct 16:48 David i am horizontal & i have ALWAYS trouble working the antilles

Techniques and modes

- JT65B is king BUT Q65-60A is a game changer
- Schedules are fine
- Look for contests and activity days
- Pay attention to “conditions” BUT don't be QRT just because it looks like a “bad day” condition-wise
-

Results

- 55 Initial QSOs, 70 total QSOs
- 19 DXCC entities (DXCC is a L O N G way off)
- Lots of interesting QSOs, every QSO is a big one

Observations

- Band selection based on activity, but think about noise too
- A small (single Yagi 150W) station CAN do it, but will only work the BIG stations
- You can do it for relatively low cost but it will limit your fun
- Visit an active EMEer to see what success looks like and then set your expectations

QSLs

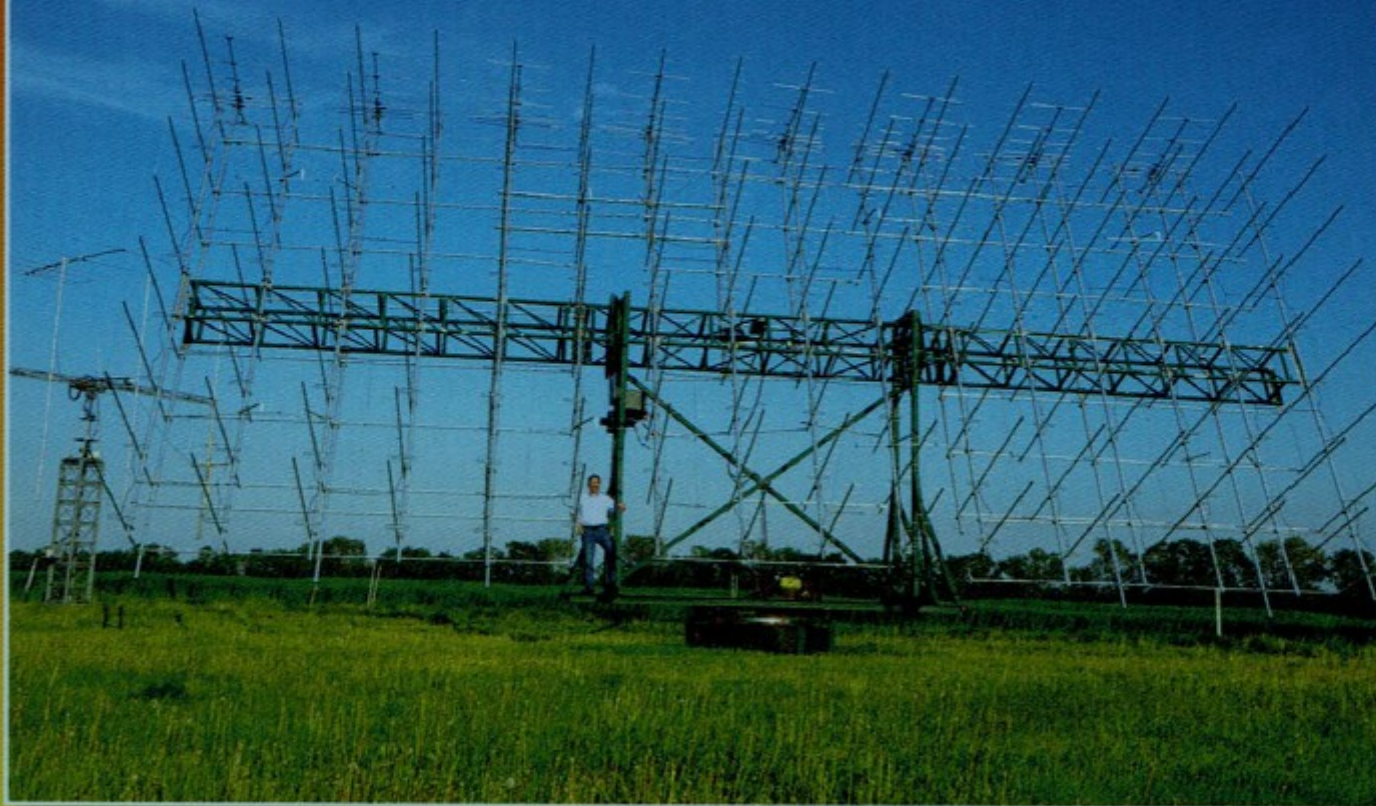
48 17 element Msquared 5 WL Yagis, estimated 30.75 dB gain

W5UN circa 1990



128 11 element Yagi array, 33.7 dB gain

GERMAN AMATEUR RADIO STATION



**D
L
7
A
P
V**



RUSSELL PILLSBURY
K2TXB

1203 Perkins Lane
Edgewater Park, NJ 08010

RX1AS

EUROPEAN RUSSIA

Serge Spiridonov



Moon Bounce

Italian EME Amateur Radio Station

I2FAK



4 13 element H/V Yagi



Links

- <http://flehn.org/>
- <https://www.g4zlp.co.uk/unified/G-5500.htm>
- <https://www.chris.org/cgi-bin/jt65emeA>
- <https://innovantennas.com/en/>
- <https://www.antennas-amplifiers.com/>
- <https://www.physics.princeton.edu/pulsar/k1jt/wsjsx.html>

Questions?