

Moon-Bounce Using The JAXA 18m Dish On 2m Through 23cm

– Another Big Dish Project In Japan



Presented by *Mike Watanabe, JH1KRC*
& *Project KDES 2008*



In 2007, Japanese EME'ers operated **8N1EME** from KDDI 32m dish



8N1EME

144MHz

432MHz

1296MHz

5760MHz

500 watts

QM06

2007

8N1EME



8N1EME



8N1EME



8N1EME



EME event was
broadcasted
through
NHK-TV world-
wide.



Where is another dish?

8N1EME

8J1AXA

QM05df

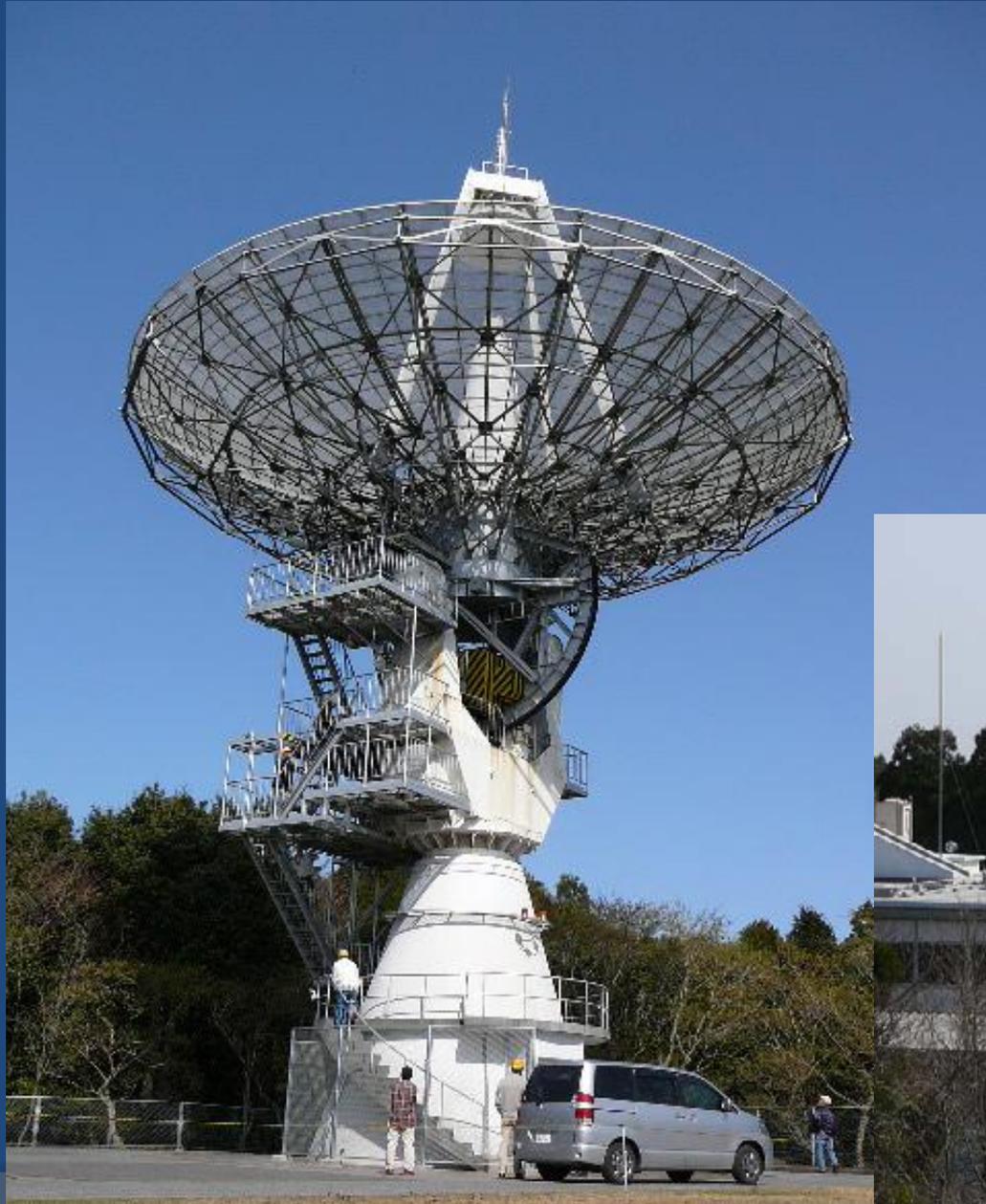




JAXA Katsuura Space
Communication Center
Katsuura, Chiba, Japan

- **140 deg. 18' 2.18" E.**
- **35 deg. 12' 38.13" N.**
- **Altitude at 197.9m. ASL.**
- **Grid locator: QM05df**

JAXA Katsuura Space Communication Center



East

South

West

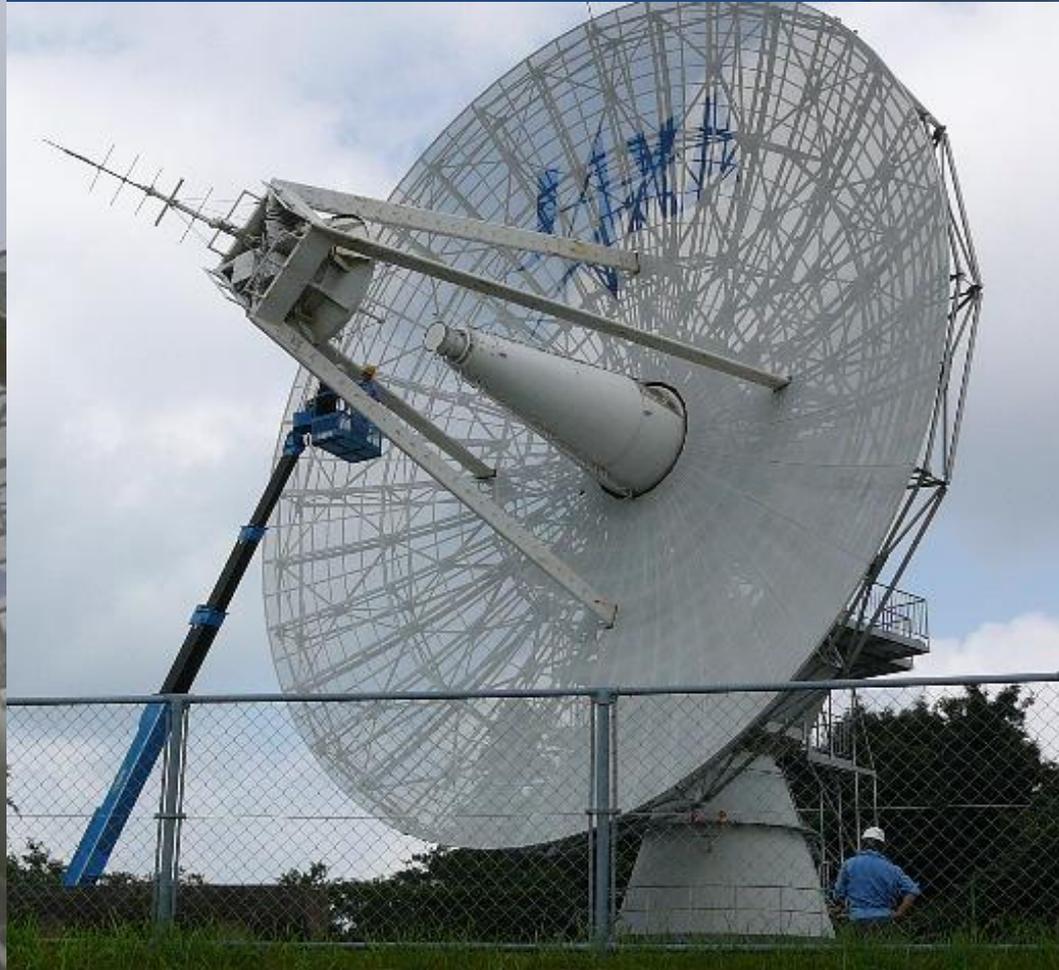


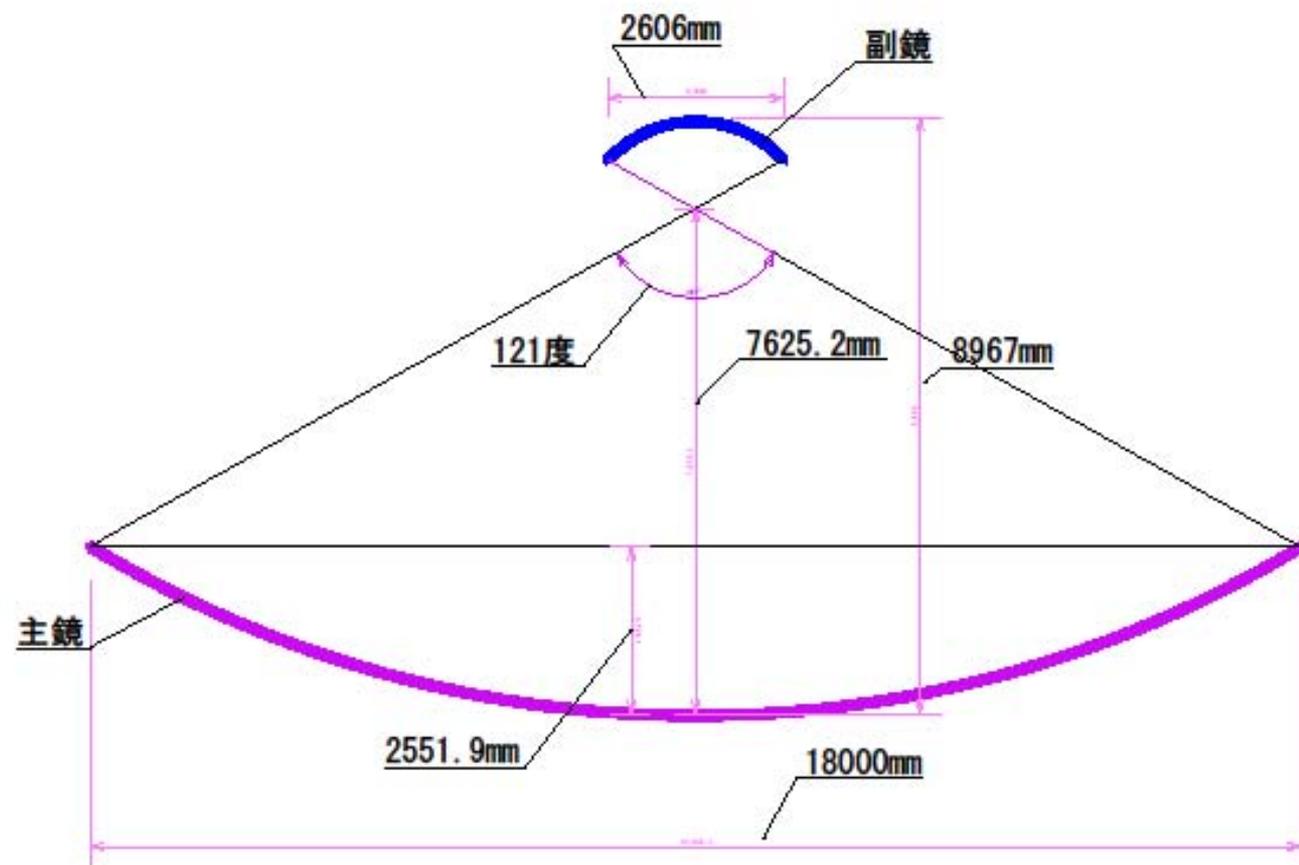
136MHz Turn-style Array





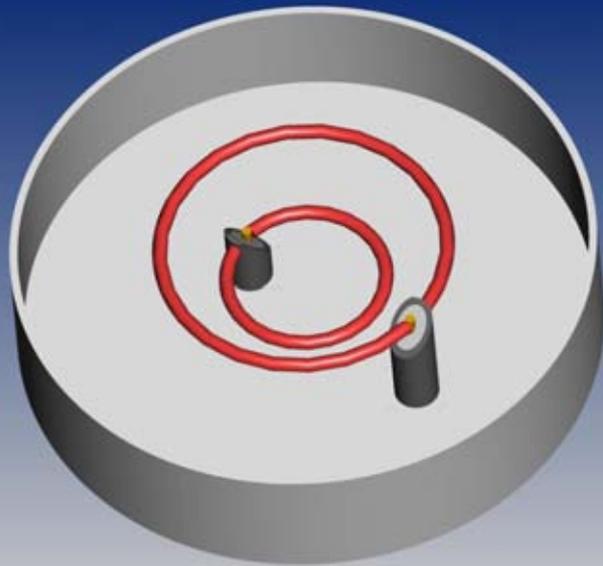
Antenna Feed Modification





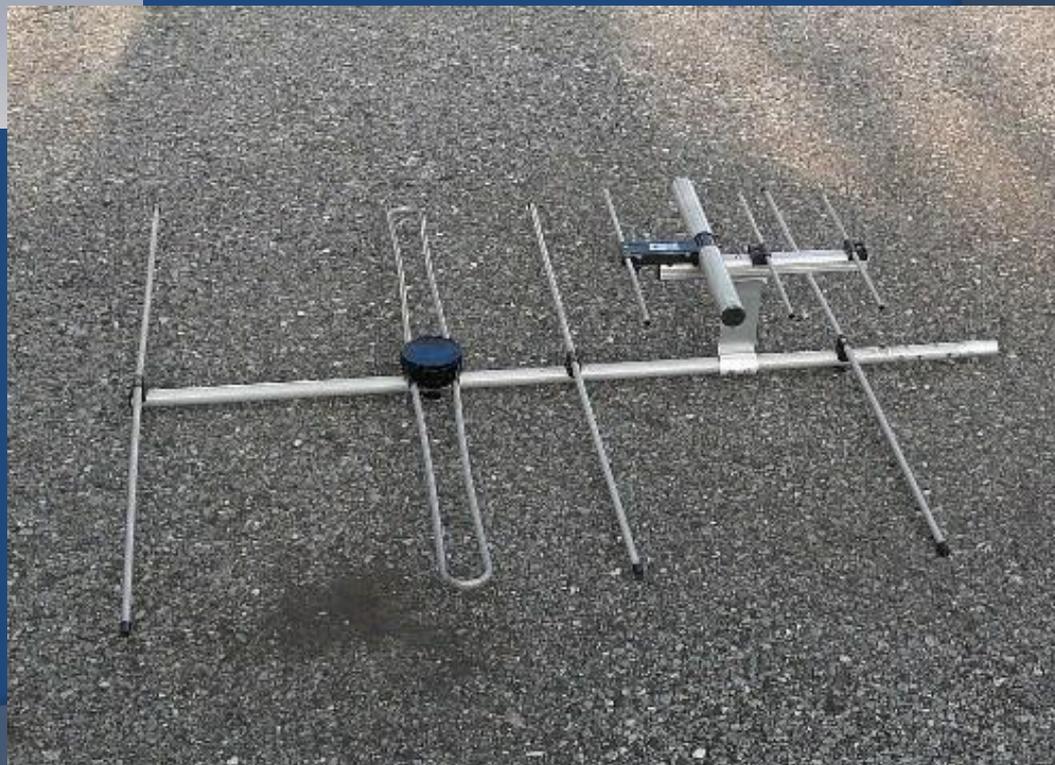
勝浦広報用アンテナ作図

Two-Band Feed Designs for 144MHz & 432MHz



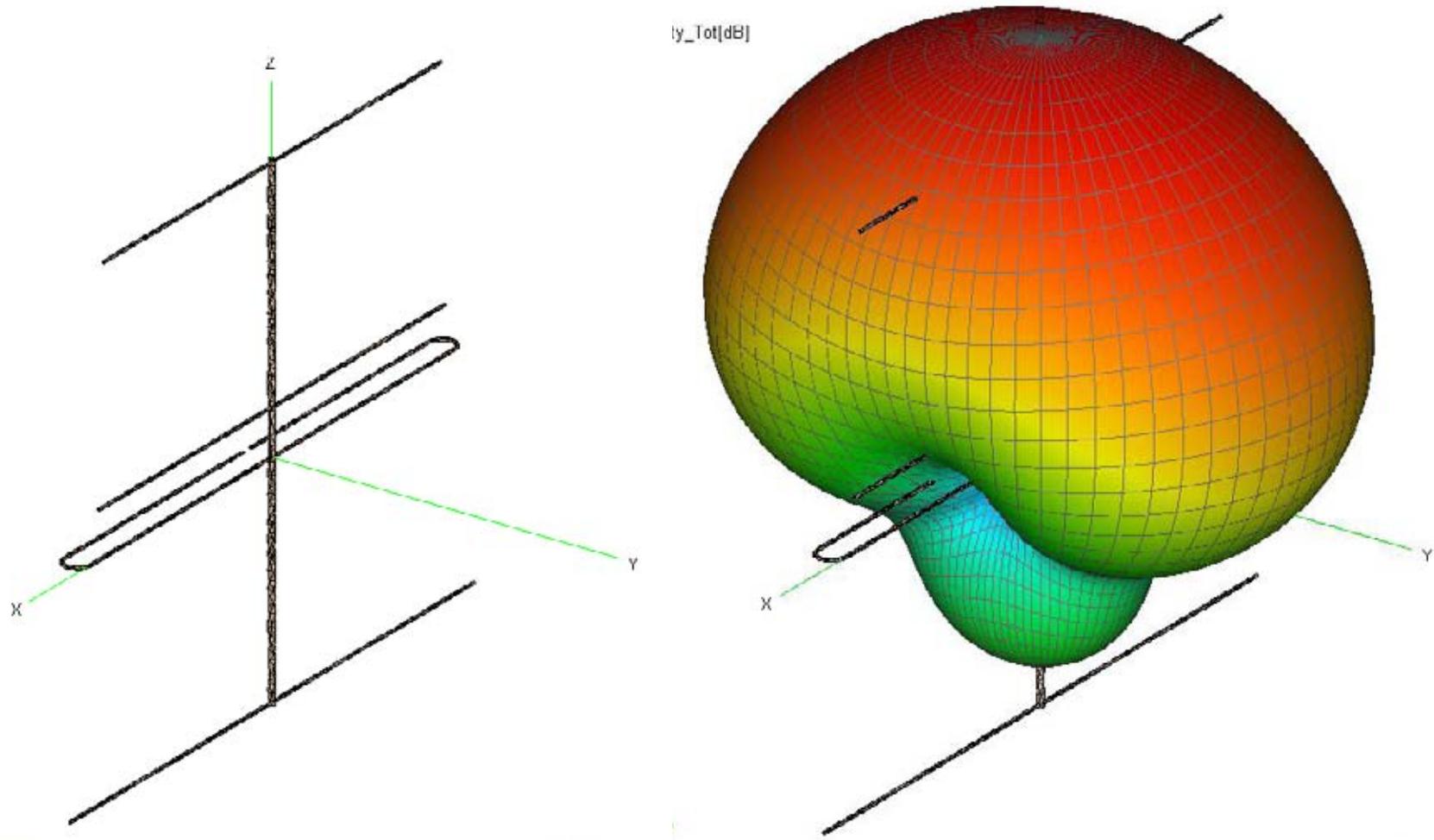
Loop Feed by OM6AA

Modified JA-Yagi Feed



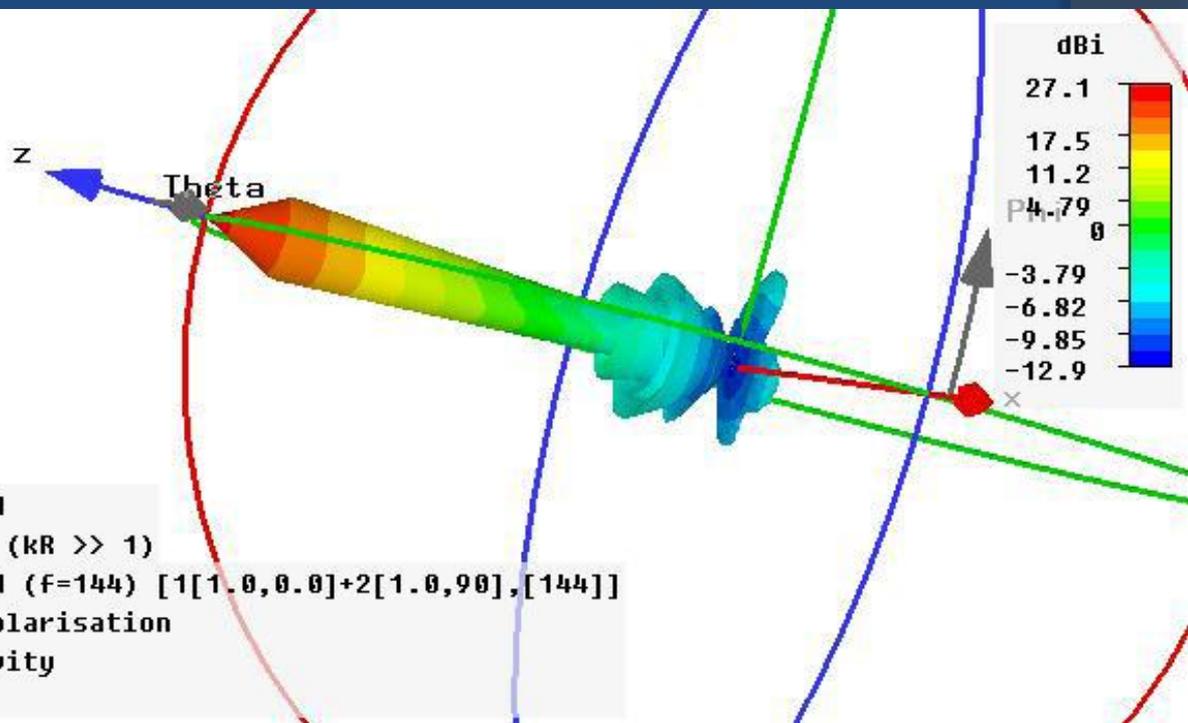
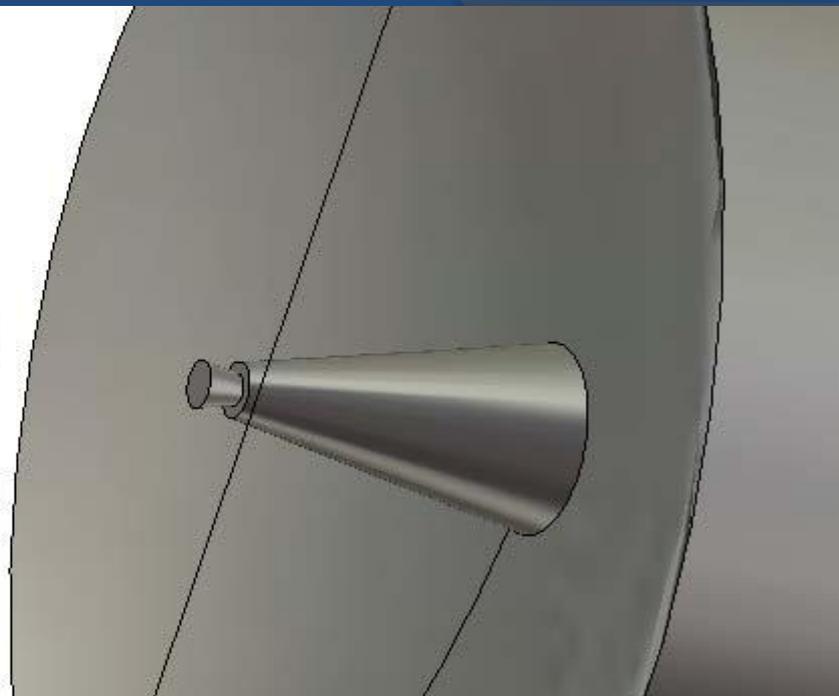
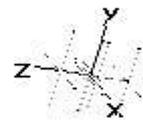
Antenna Simulation by OM6AA

Four Element Yagi Feed



Beam Pattern 144MHz

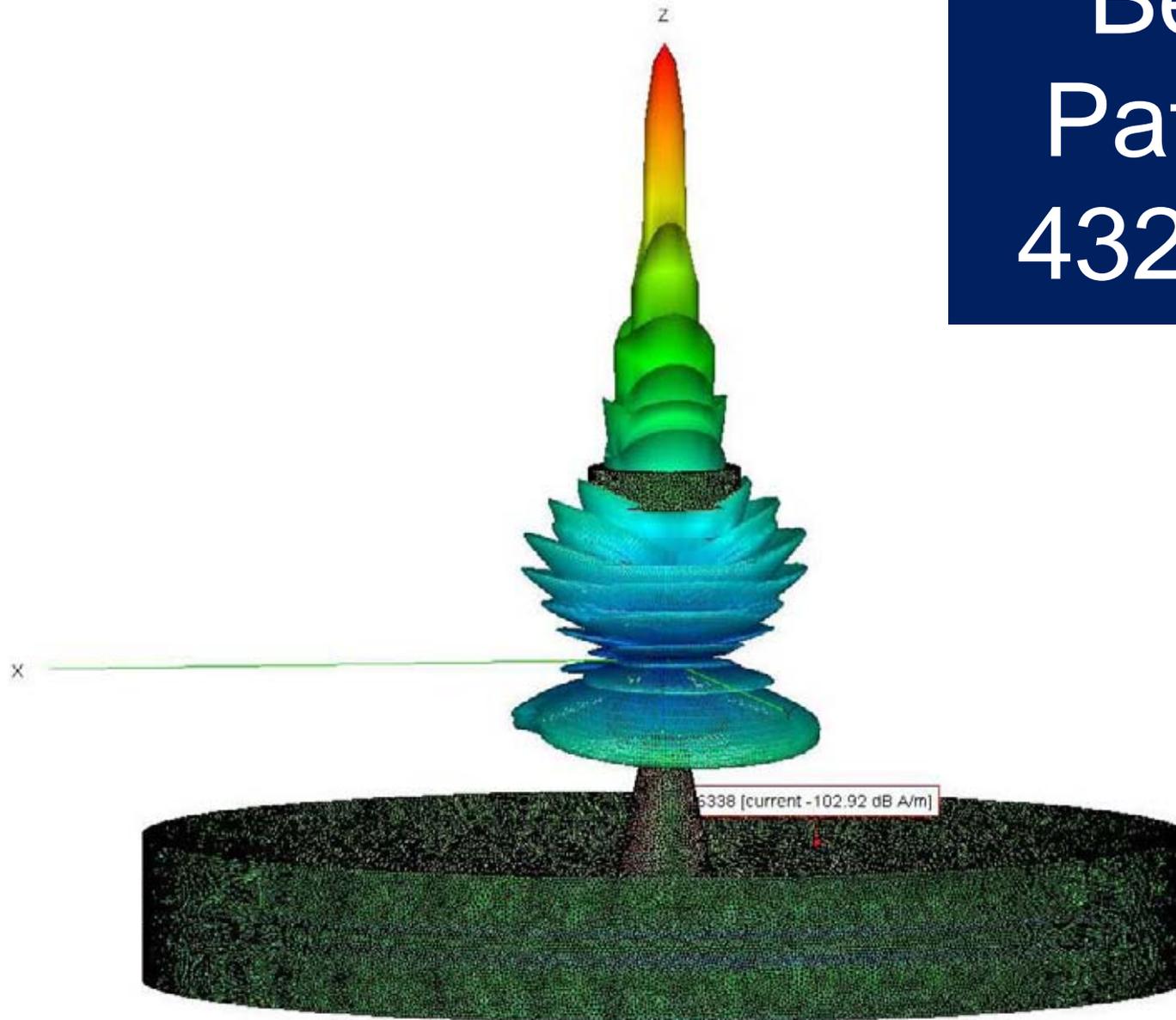
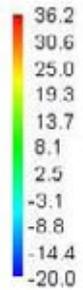
JAXA 18m



Type	Farfield
Approximation	enabled ($kR \gg 1$)
Monitor	farfield (f=144) [1[1.0,0.0]+2[1.0,90],[144]]
Component	Right Polarisation
Output	Directivity
Frequency	144

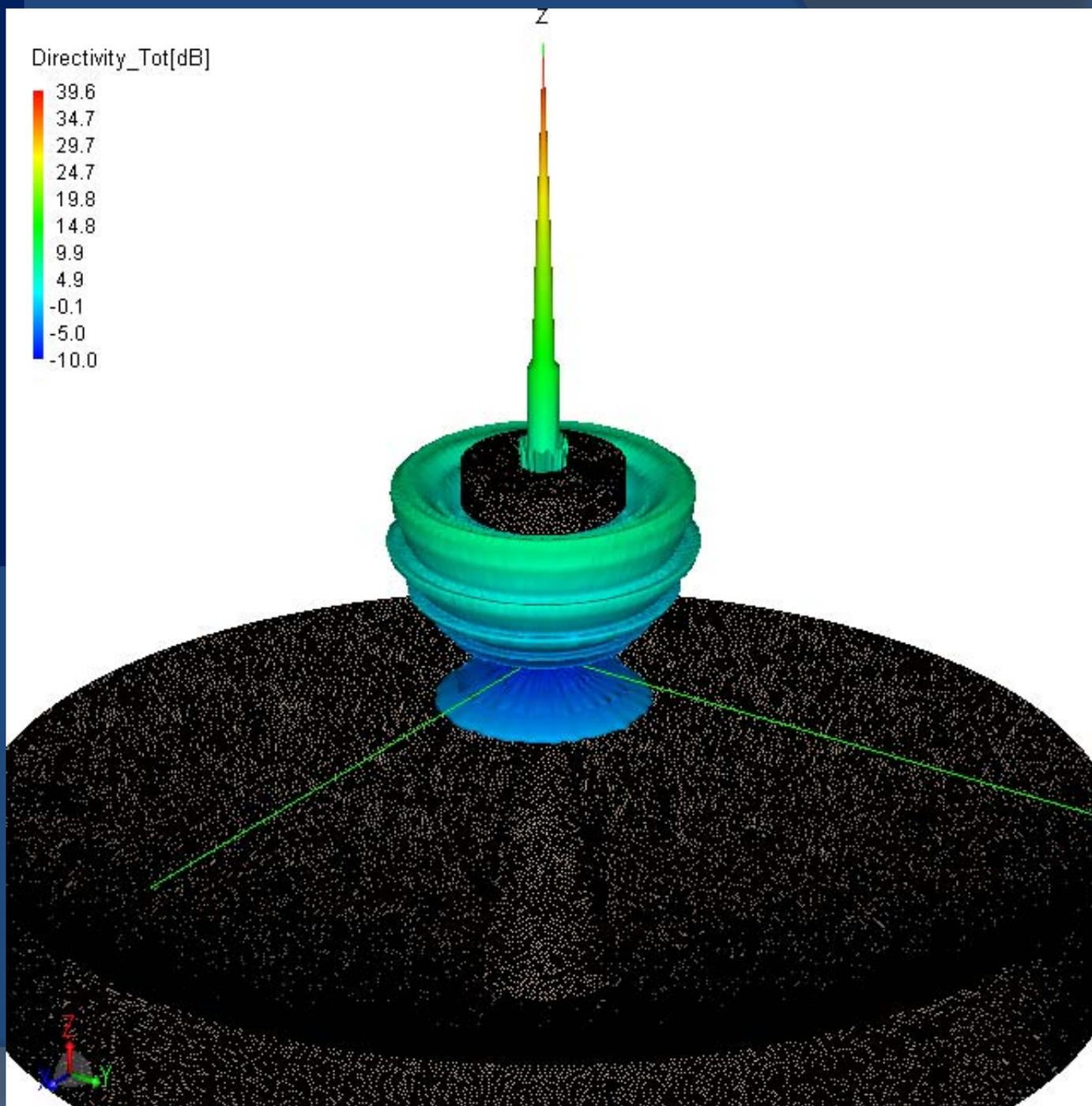
Beam Pattern 432MHz

Directivity_Tot[dB]

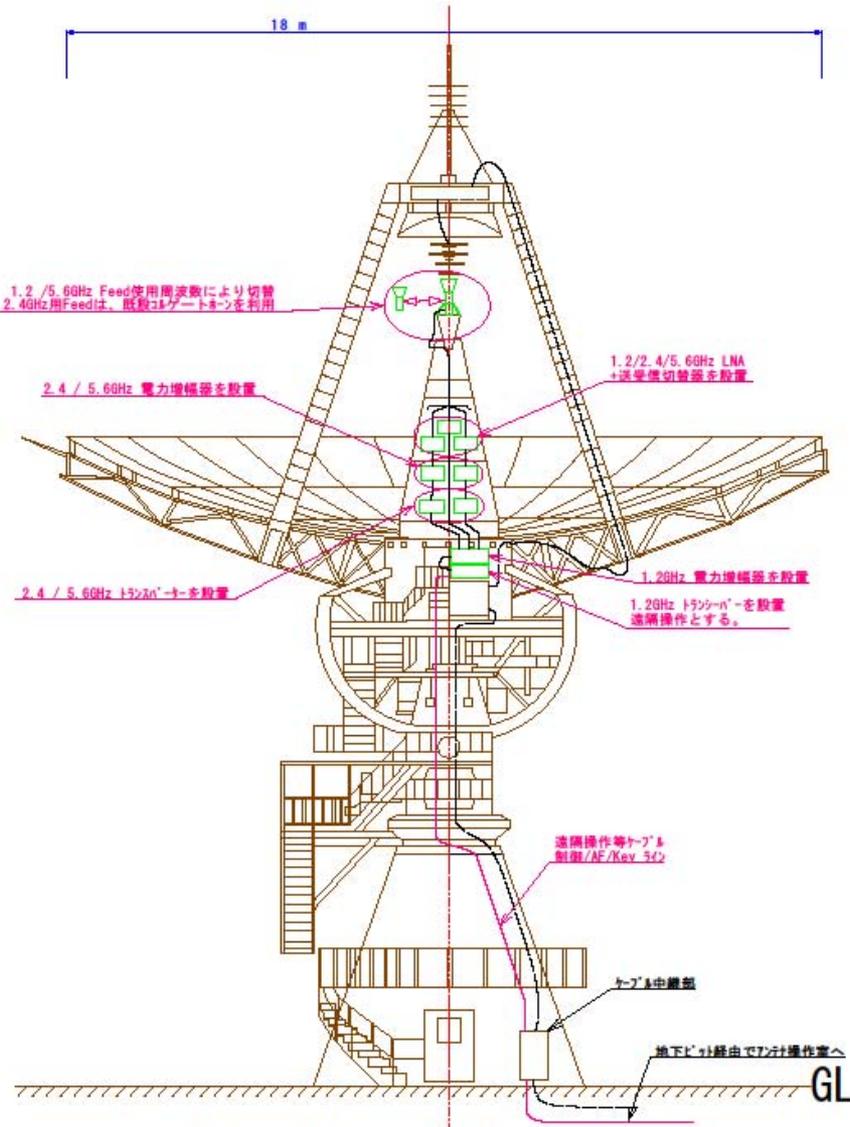


Beam Pattern 1296MHz

JAXA 18m



Total Modification Design For EME



寸法	尺度	SCALE	作成日	DATE	図面番号
			2008/09/30		FEES3008-012
Project Katsura Dish Experimental Station 2008					
設計	DESIGNED	検閲	APPROVED	審査	CHECKED
				作成	DRAWN
				高本	図名
				高本	φ18m グレゴリアンアンテナ 概観図

Construction



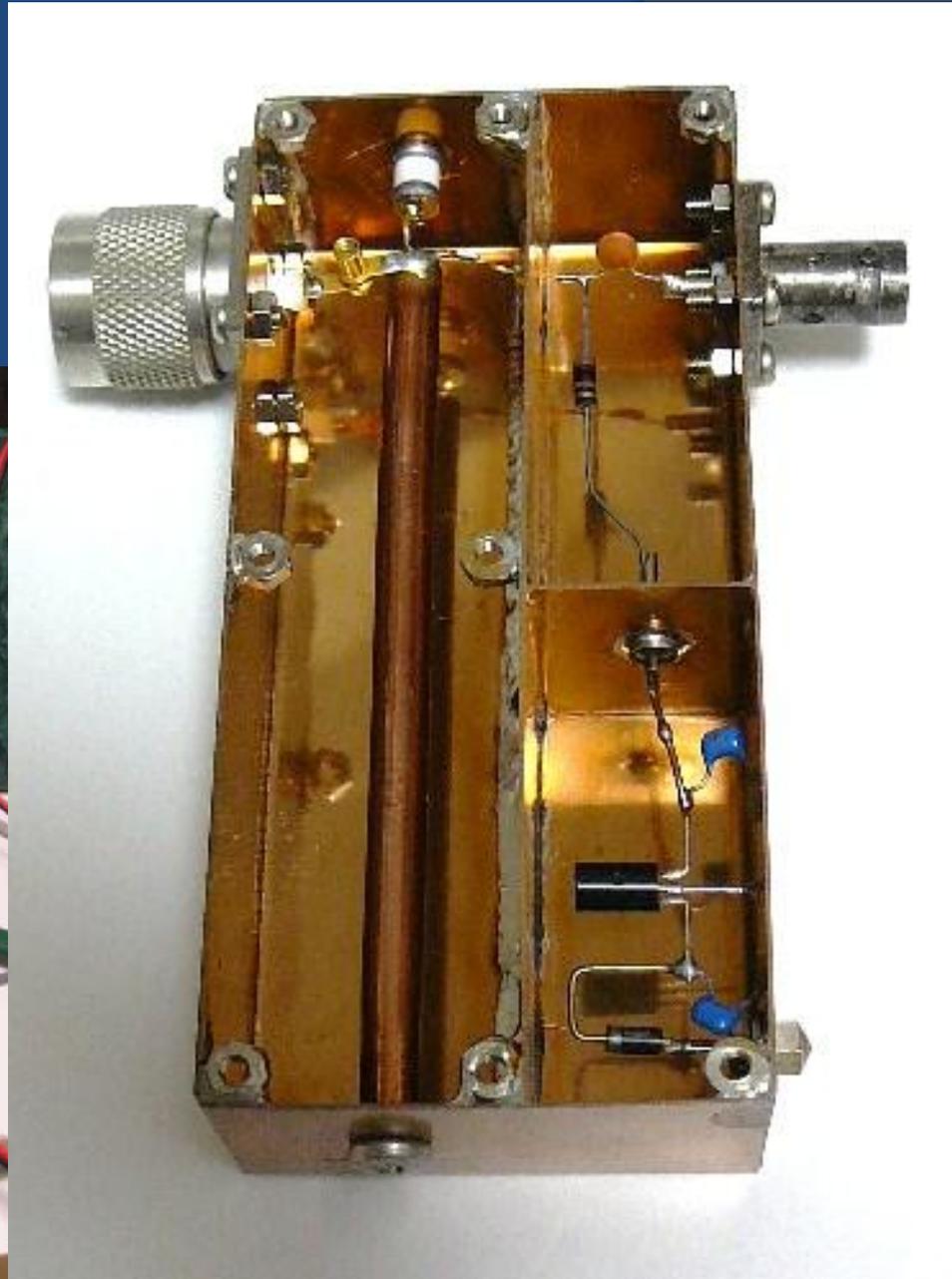
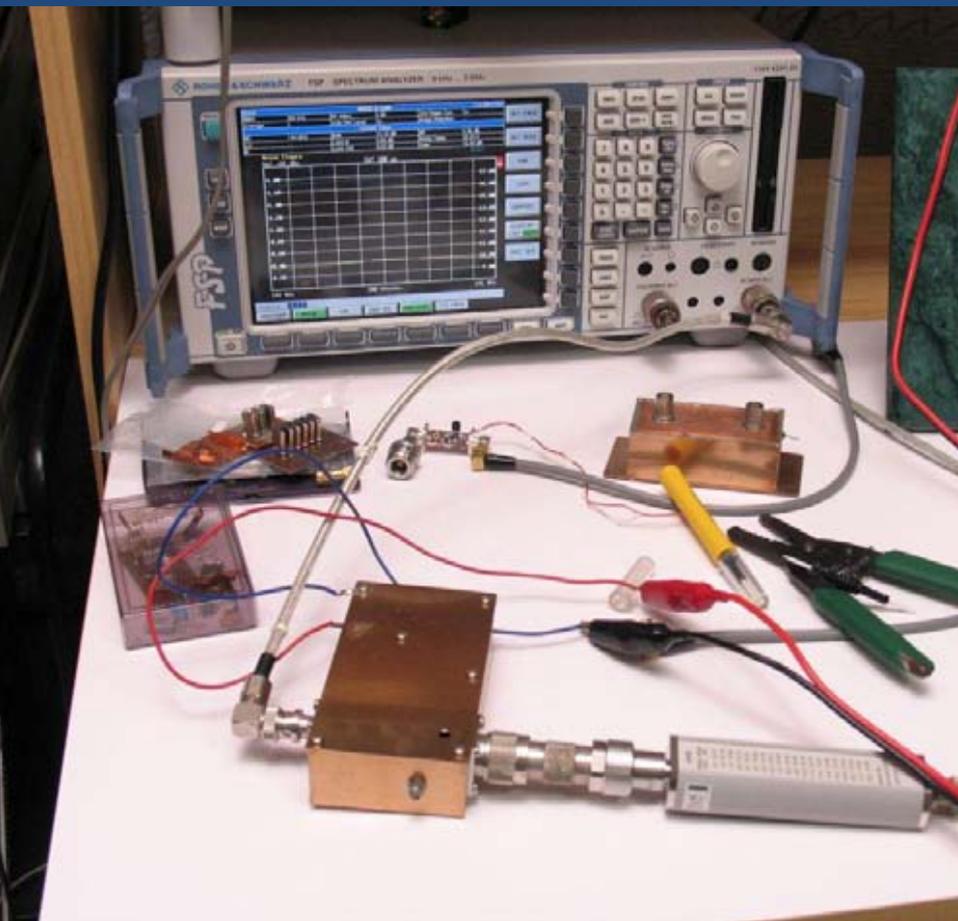


Feed
Alignment
is adjusted
by a rope



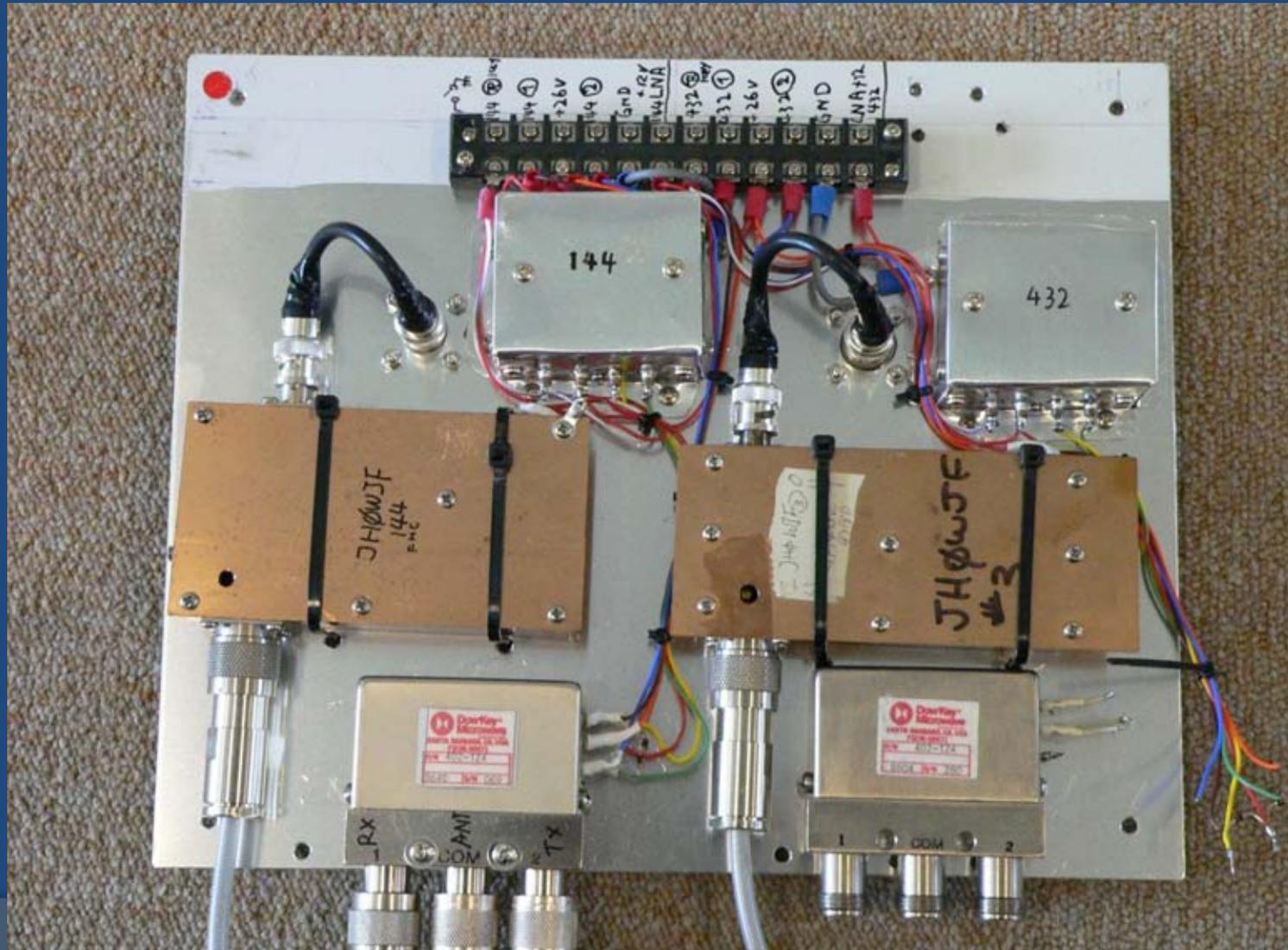


LNAs made by JH0WJF



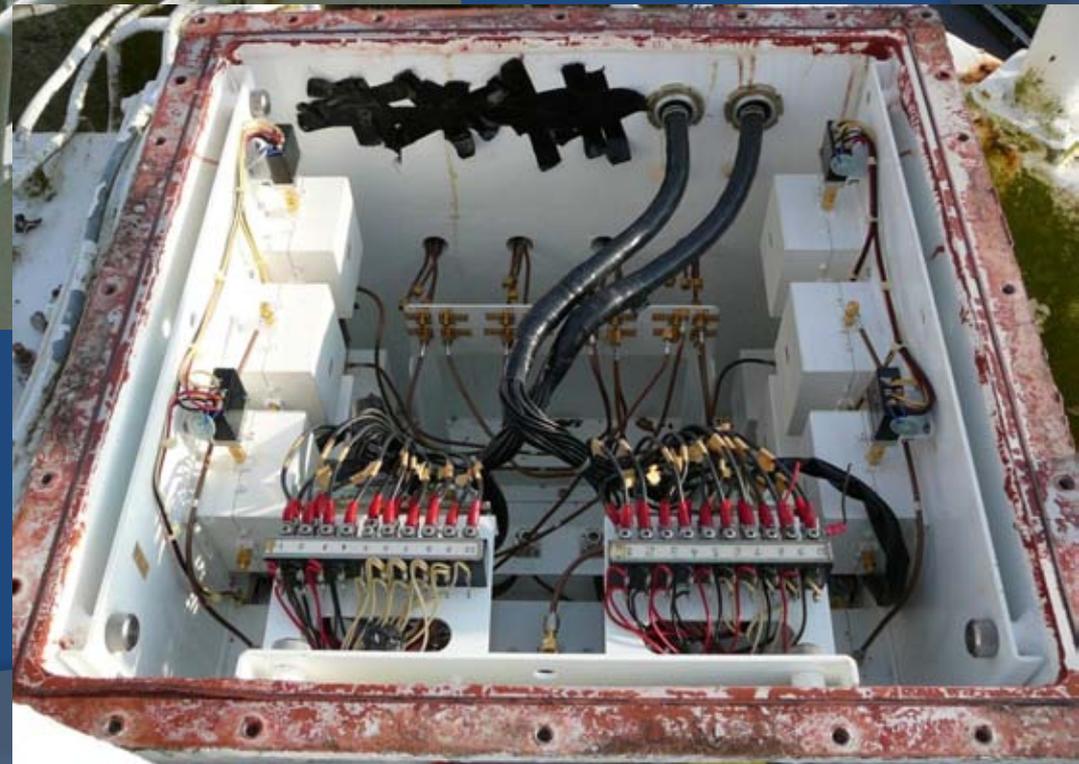
LNAs for 144 & 432MHz

The First stages





1st LNAs were installed in the metal box behind the sub-reflector.





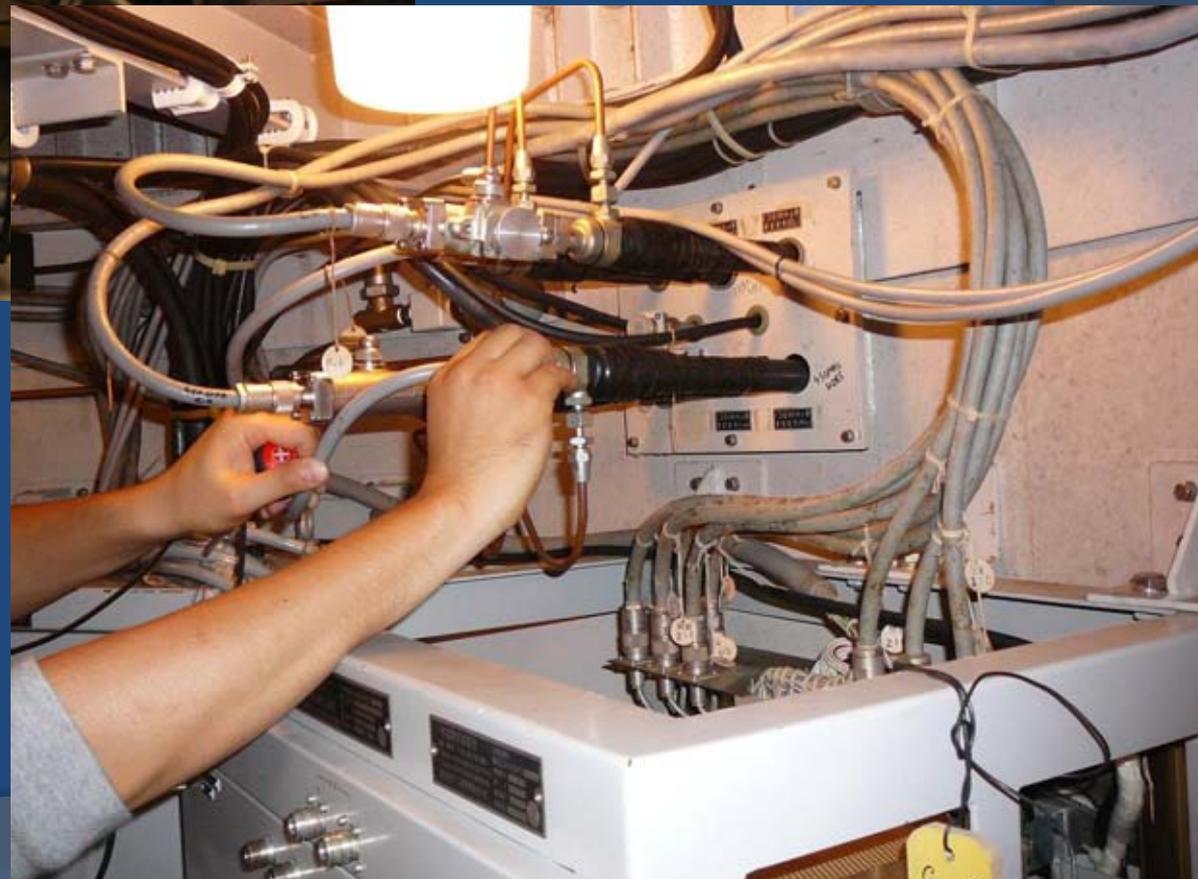
A Small cabin
behind the dish





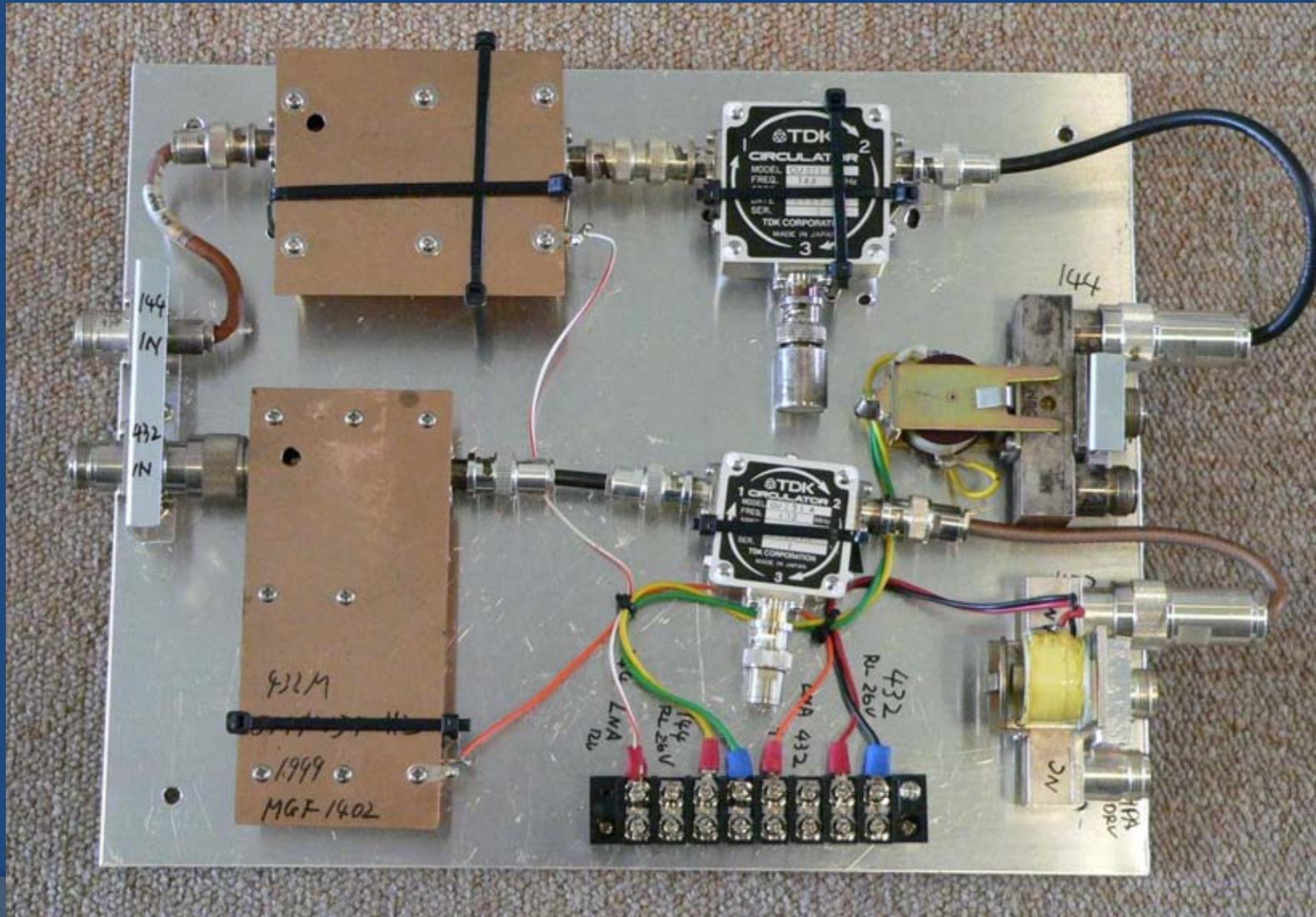
CABIN
has
23mm
coax
terminals

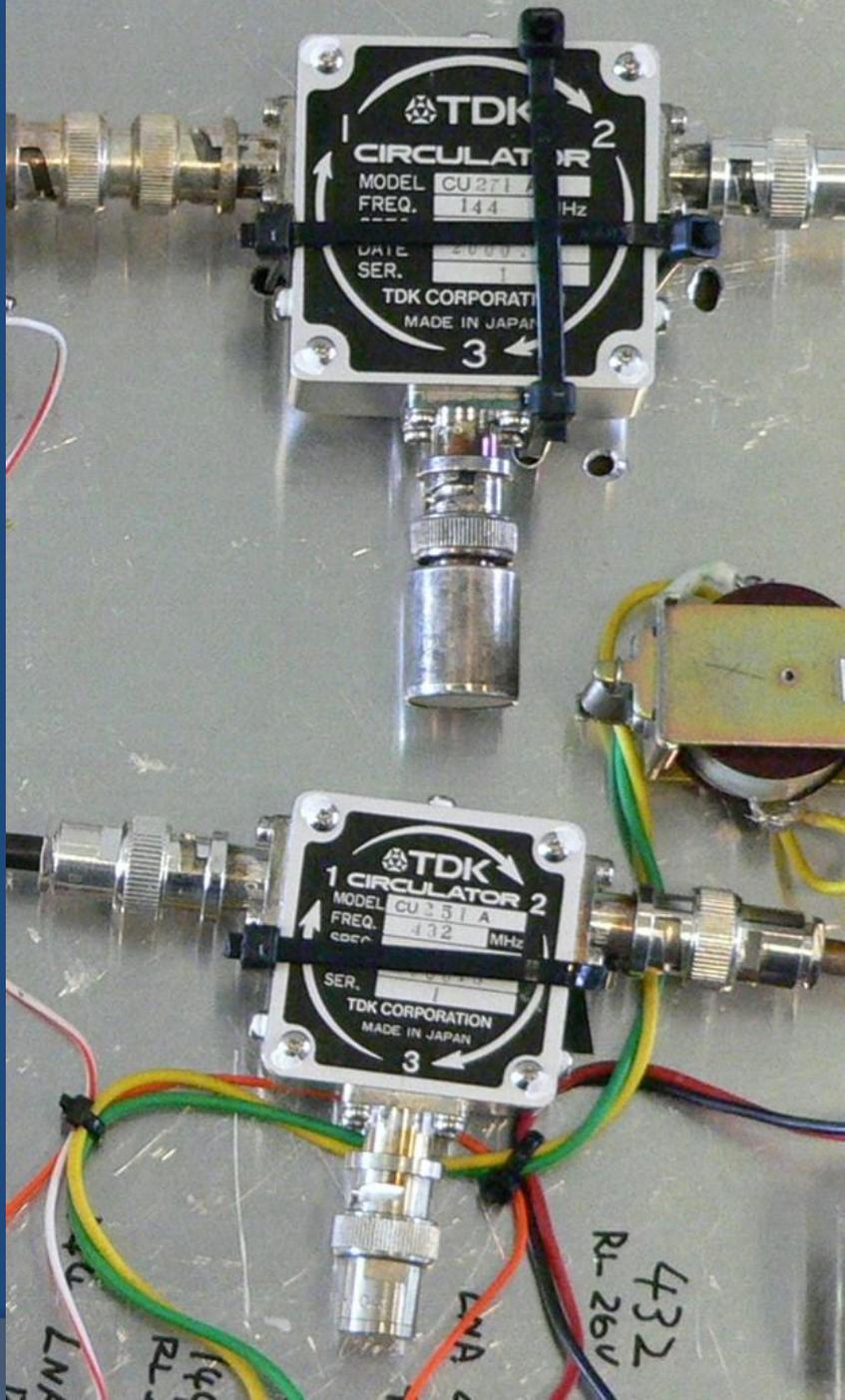
Many cables &
RG-8B/U coax
lines are ready
to use



LNAs for 144 & 432MHz

The Second Stages by JH0WJF

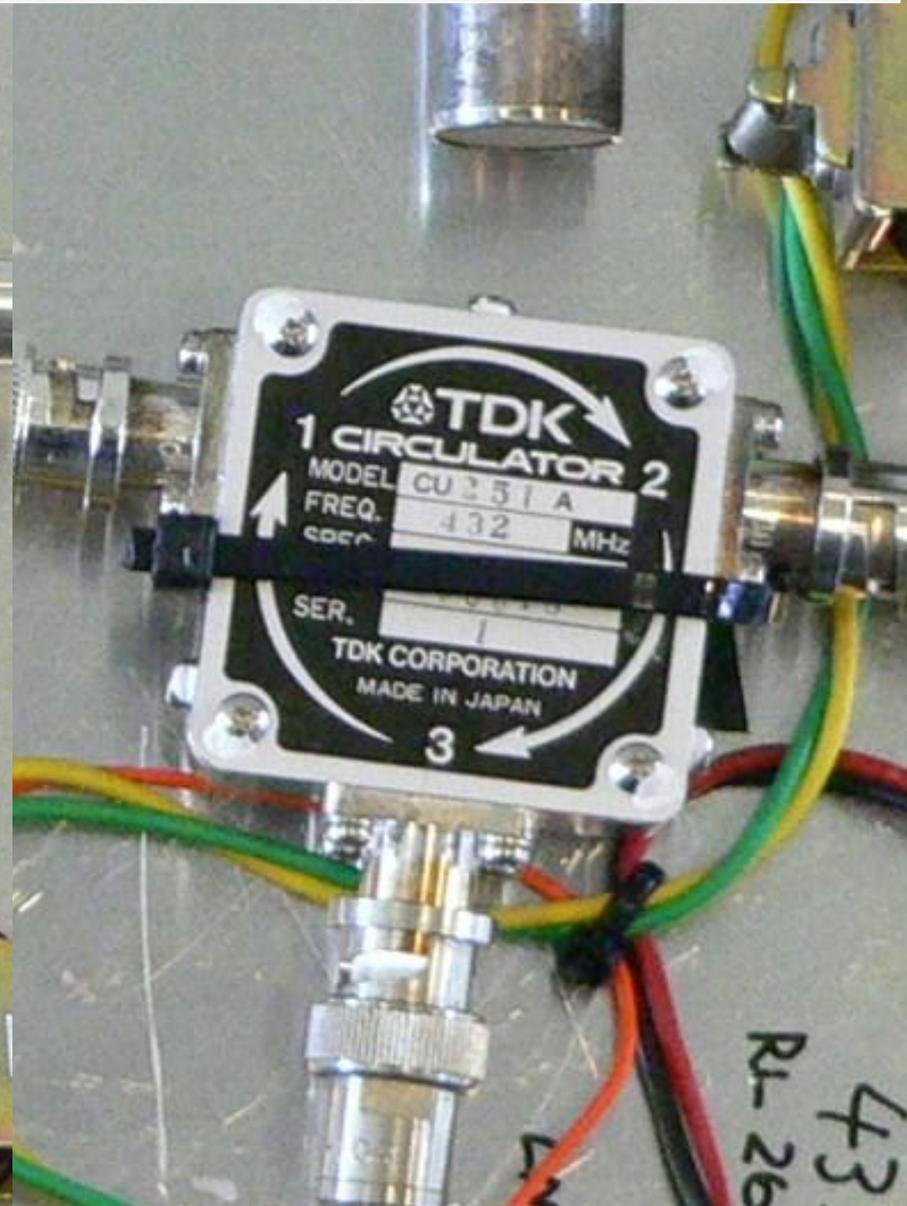




TDK Circulators for 144 & 432MHz

CU271A 144MHz Serial No. 1

CU251A 432MHz Serial No. 1



2nd Stage LNAs



W6PQL T/R & Band Selector Board

Rigs:

TS-2000

IC-910D

FT-790

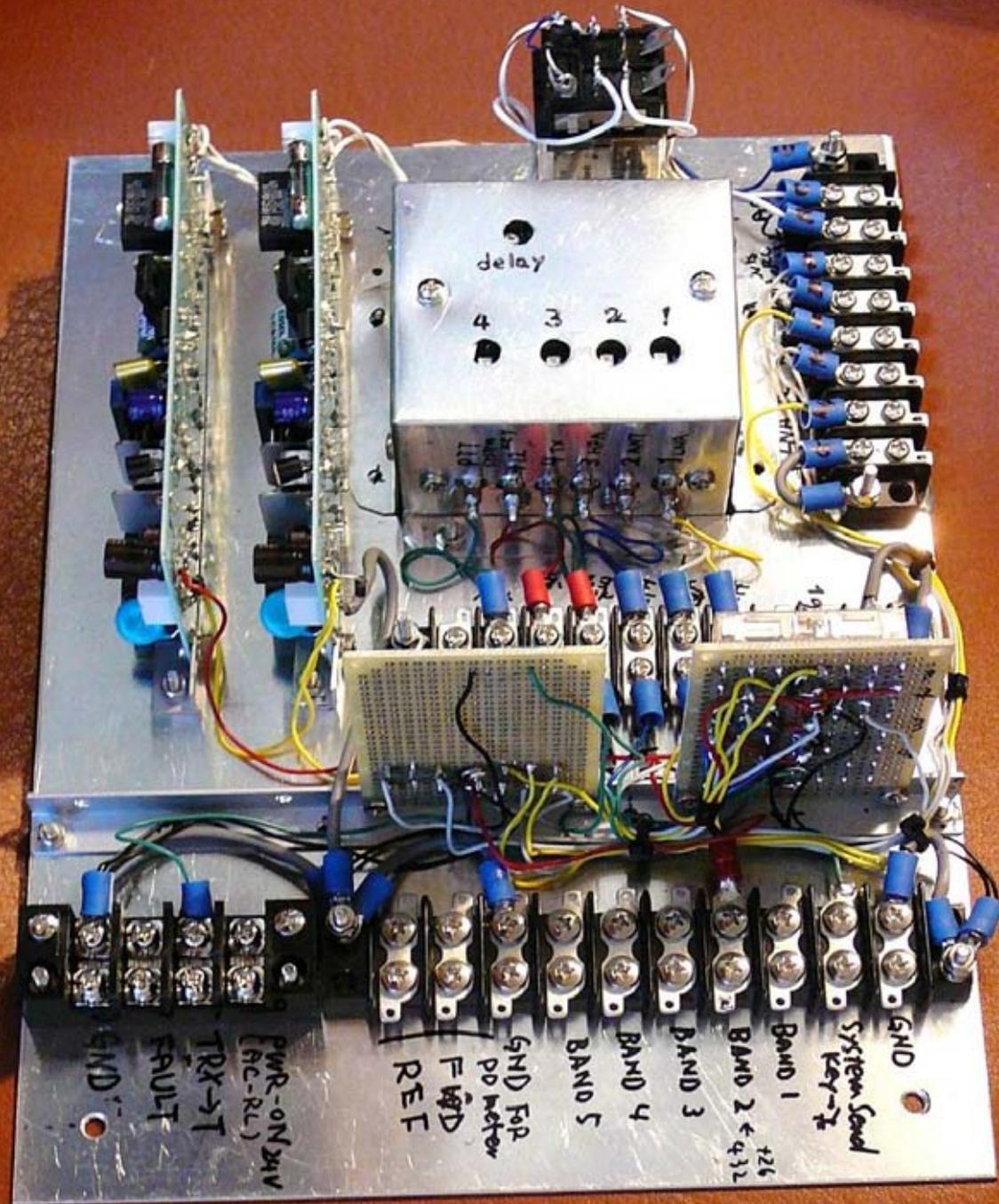
Bands:

144MHz

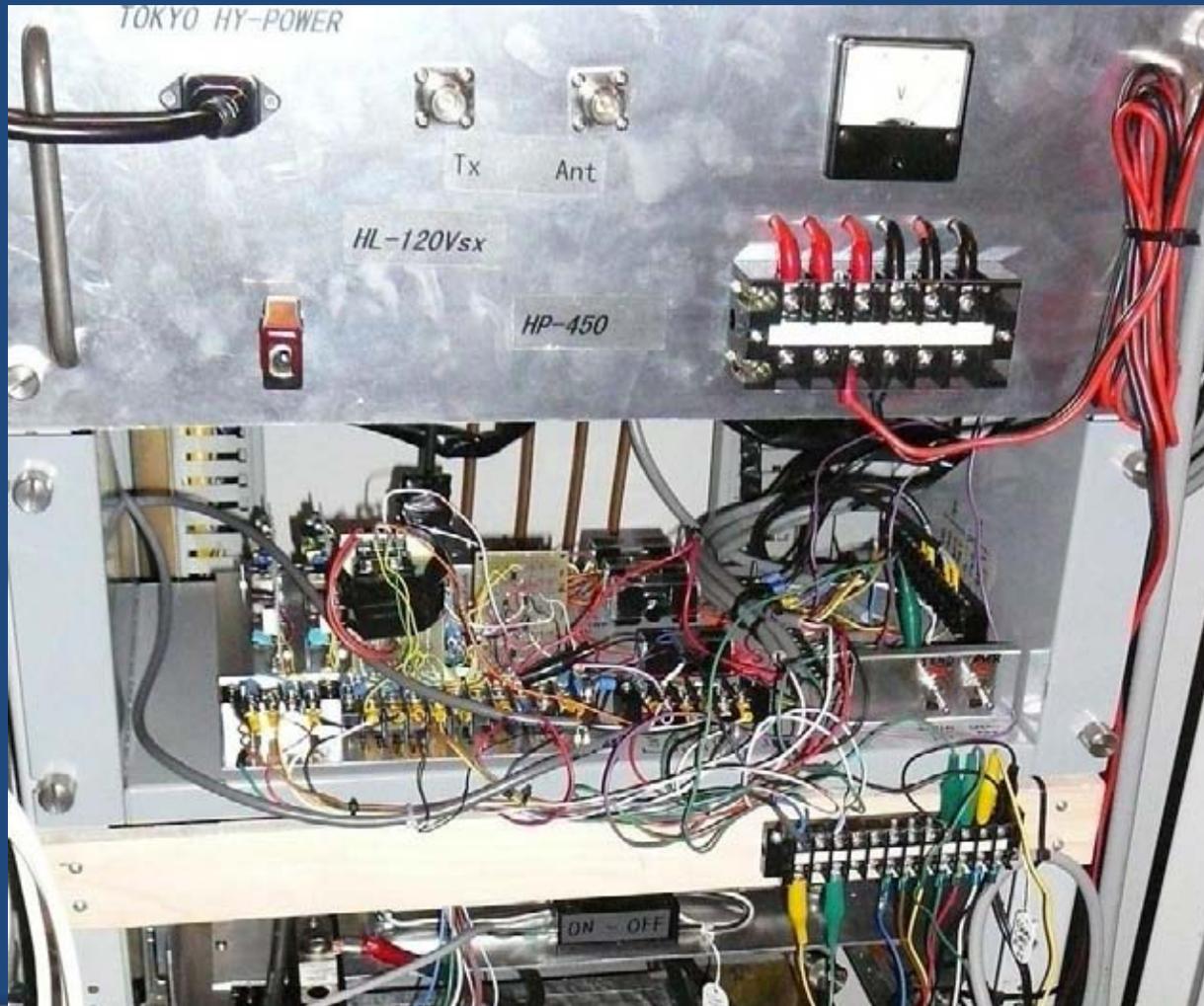
432MHz

1296MHz

5760MHz



T/R & BAND/RIG/LNA/HPA Selector





Working for
EME is often
continued
after dark...

...and often
after the day
breaks!

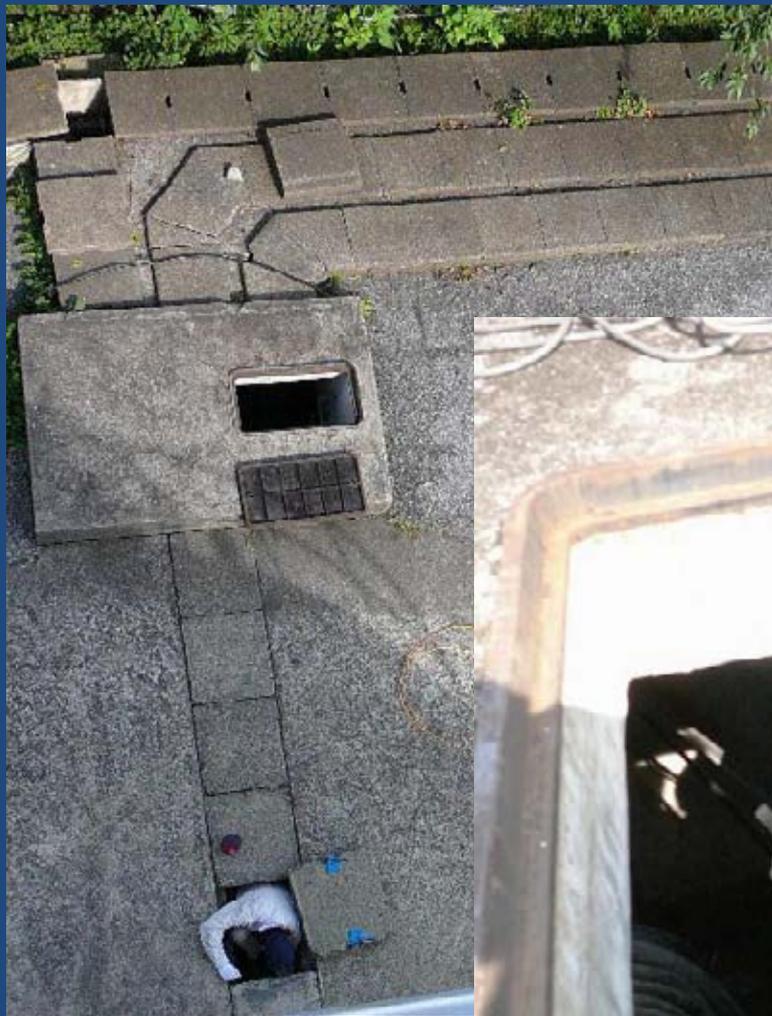
Wiring, wiring, and wiring...



Antenna & Shack



Coax Cable Wiring 60m in the ditch



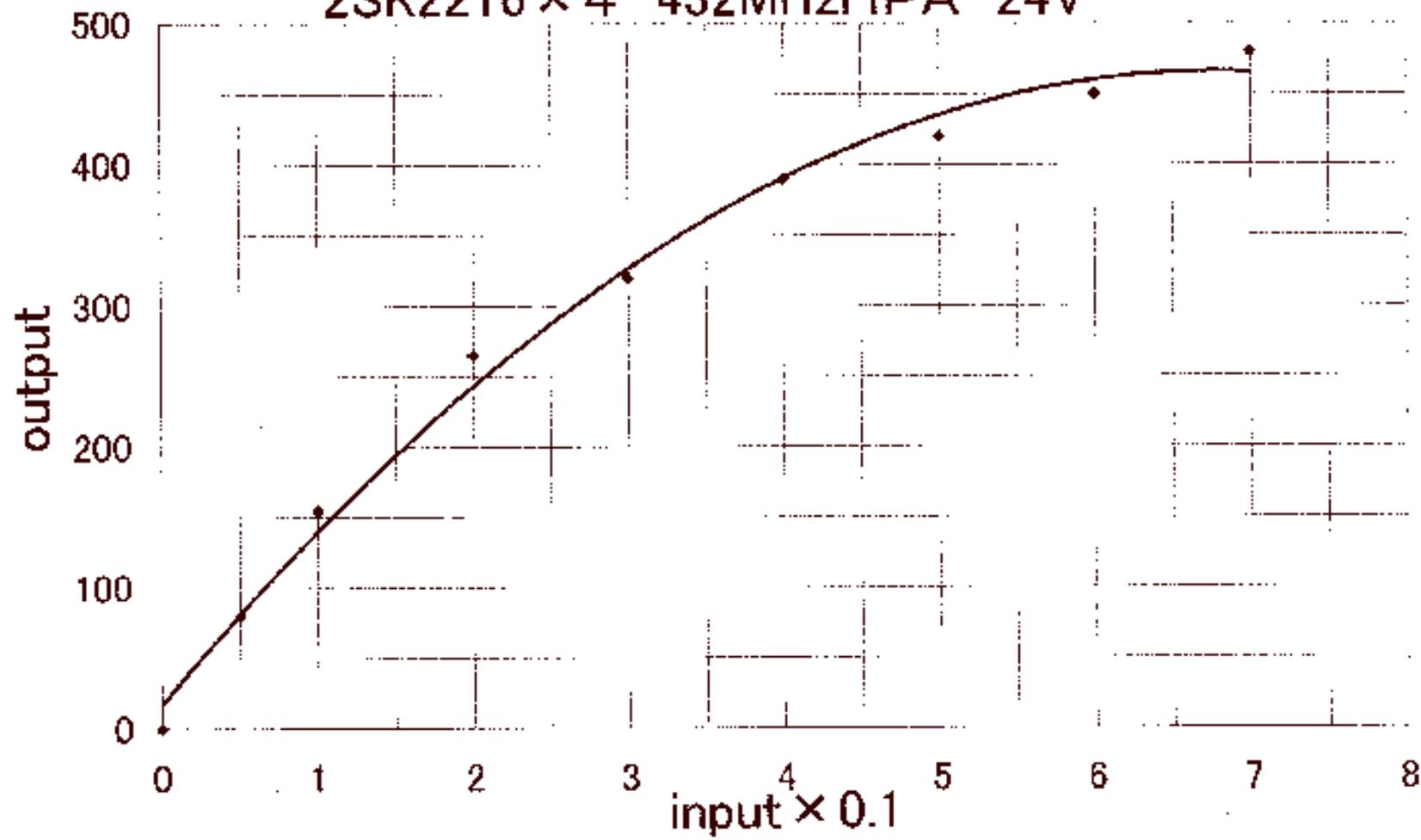
Precision Measurement



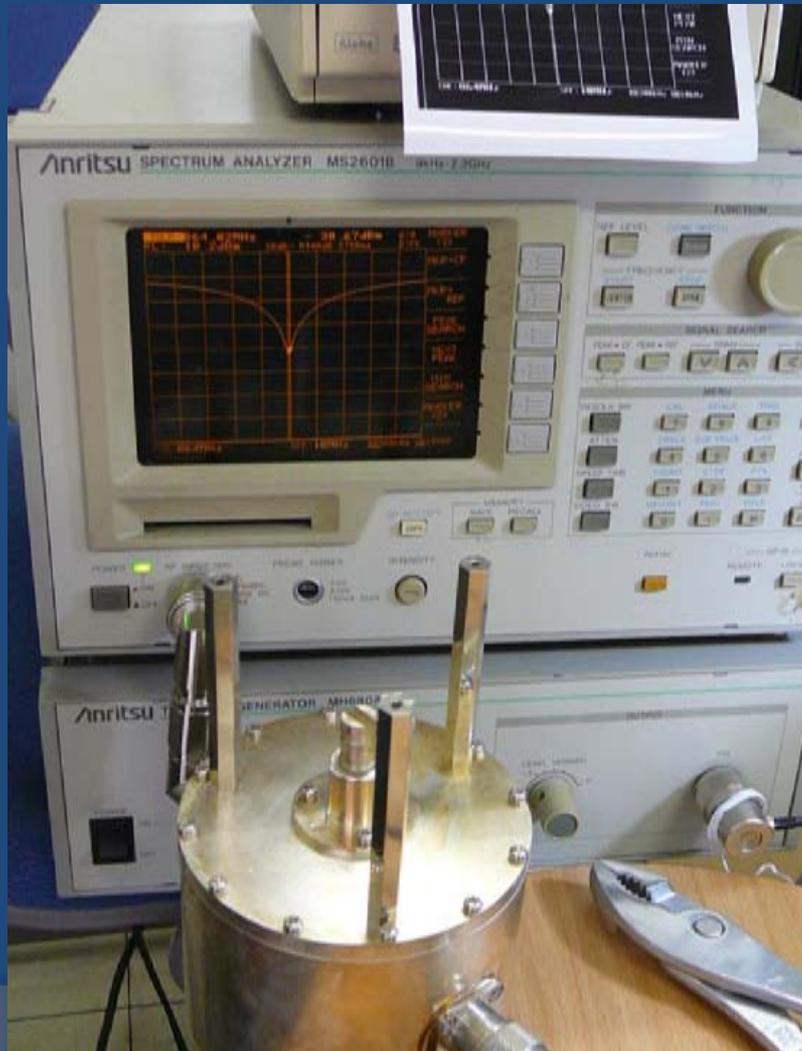


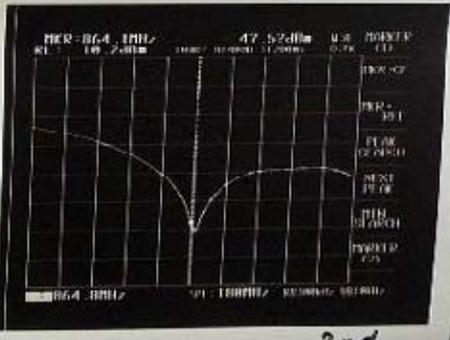
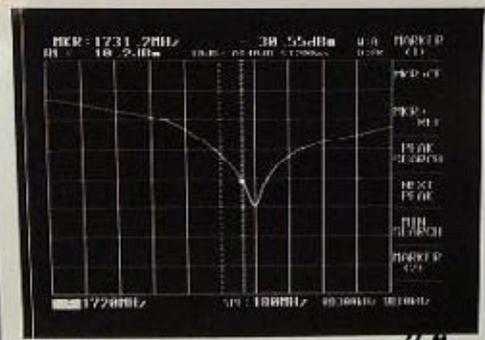
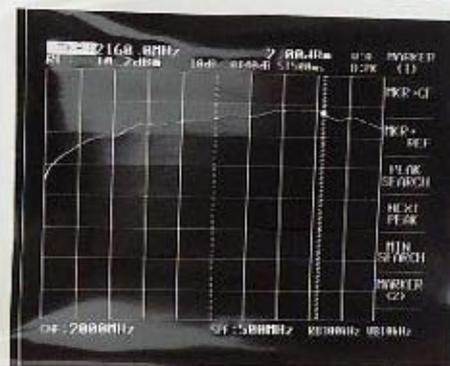
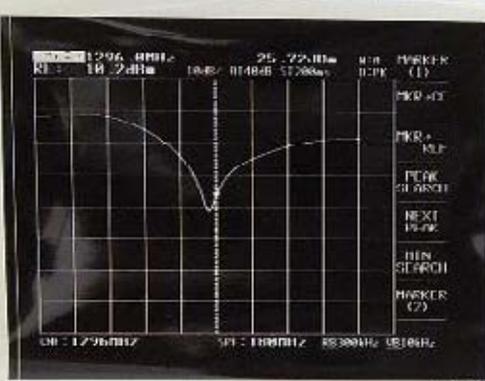
Power and Spurious Measurements

2SK2216 × 4 432MHzHPA 24V

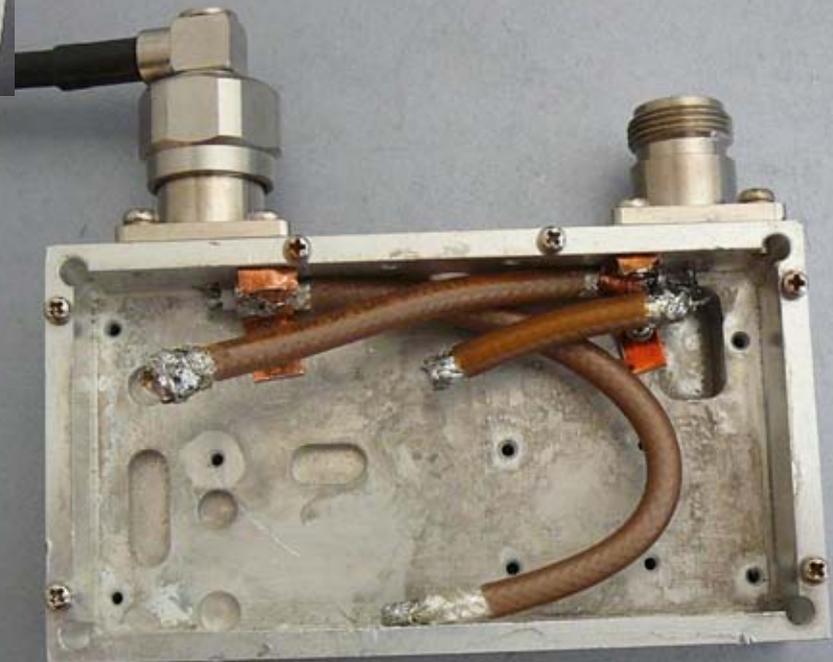
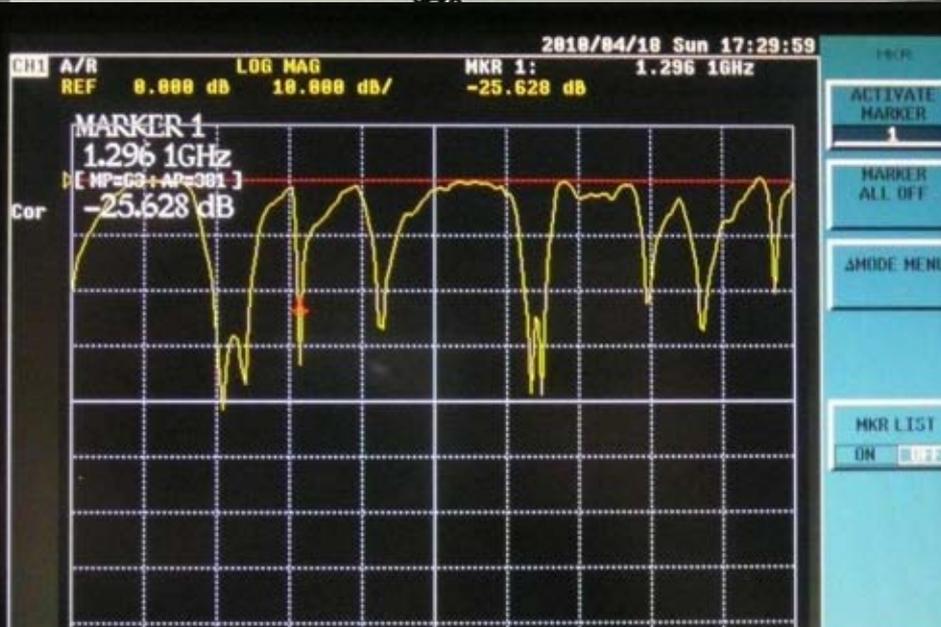


Stub Notch for 144MHz





Stub notch for 432MHz





KSM27 SHURE

8J1AXA
Accessories Electrical Interface

Trouble Theoretic UPS Dash

13.44

8J1AXA

8J1AXA

8J1AXA

440.50

8J1AXA

8J1AXA

8J1AXA

8J1AXA

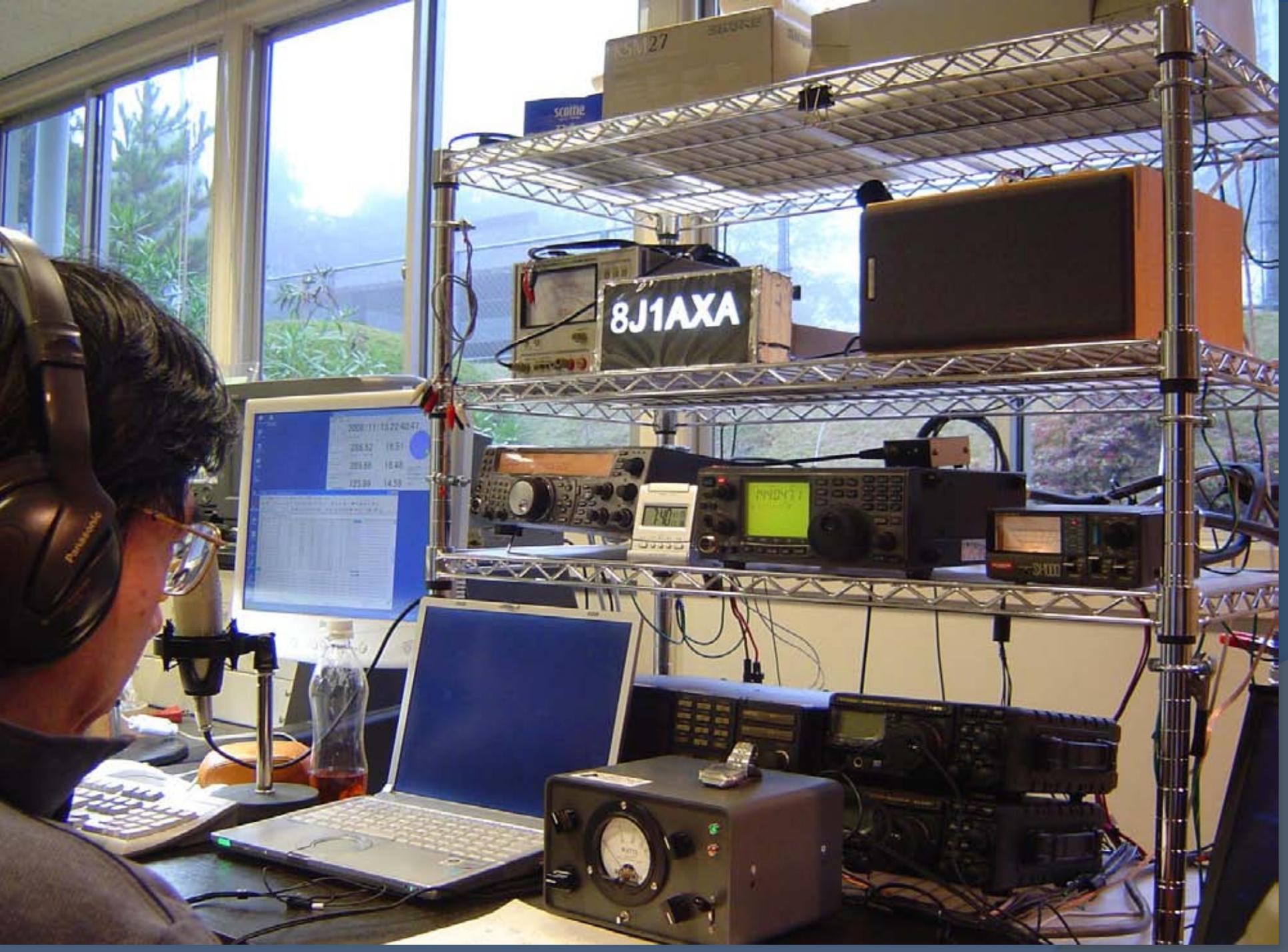
benq

Keyboard

Mouse

Printer

Power Supply



8J1AXA

2008-11-13 22:40:47	
208.52	18.51
208.88	18.48
125.30	14.53



Inspection for license



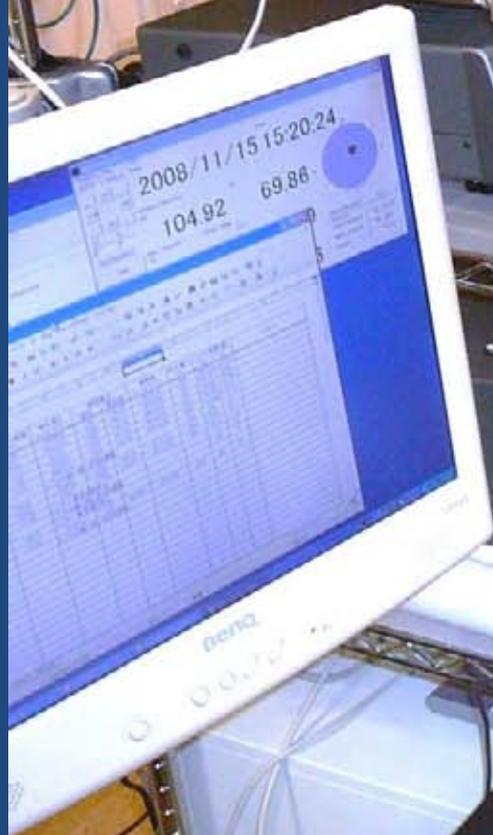
Demonstration
QSO with
JA6AHB

2008 ARRL EME Competition









立入禁止
KEEP OUT

8J1AXA HF/VHF Operation



Enjoy EME Contests!

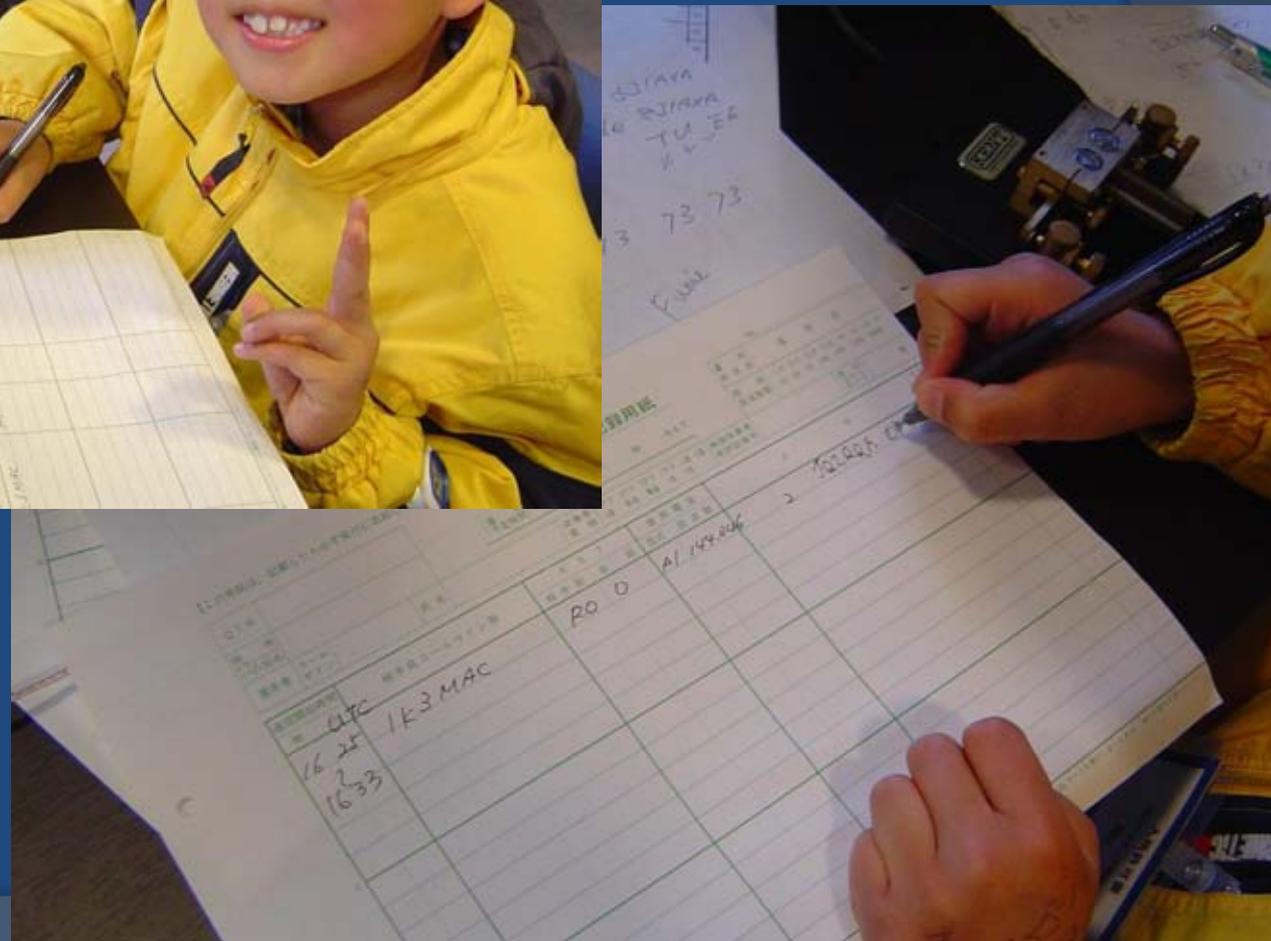


Possibly, the youngest EMEer...



JQ2QQA finally
works IK3MAC
144MHz CW

2009
DUBUS 2m
Contest



A special mobile shack

Originally a satellite relay car



WX
Rainy



A large white satellite dish antenna is the central focus, mounted on a white base. In front of the dish, a large group of people, including children and adults, are posing for a group photo on a grassy field. The background shows green trees and a clear blue sky. The text is overlaid on the left side of the image.

***HELLO MOON EVENT, June 29,
2009***

With Amateur Radio Club Members
Of Aoyama Gakuin Institute
Elementary School, Tokyo

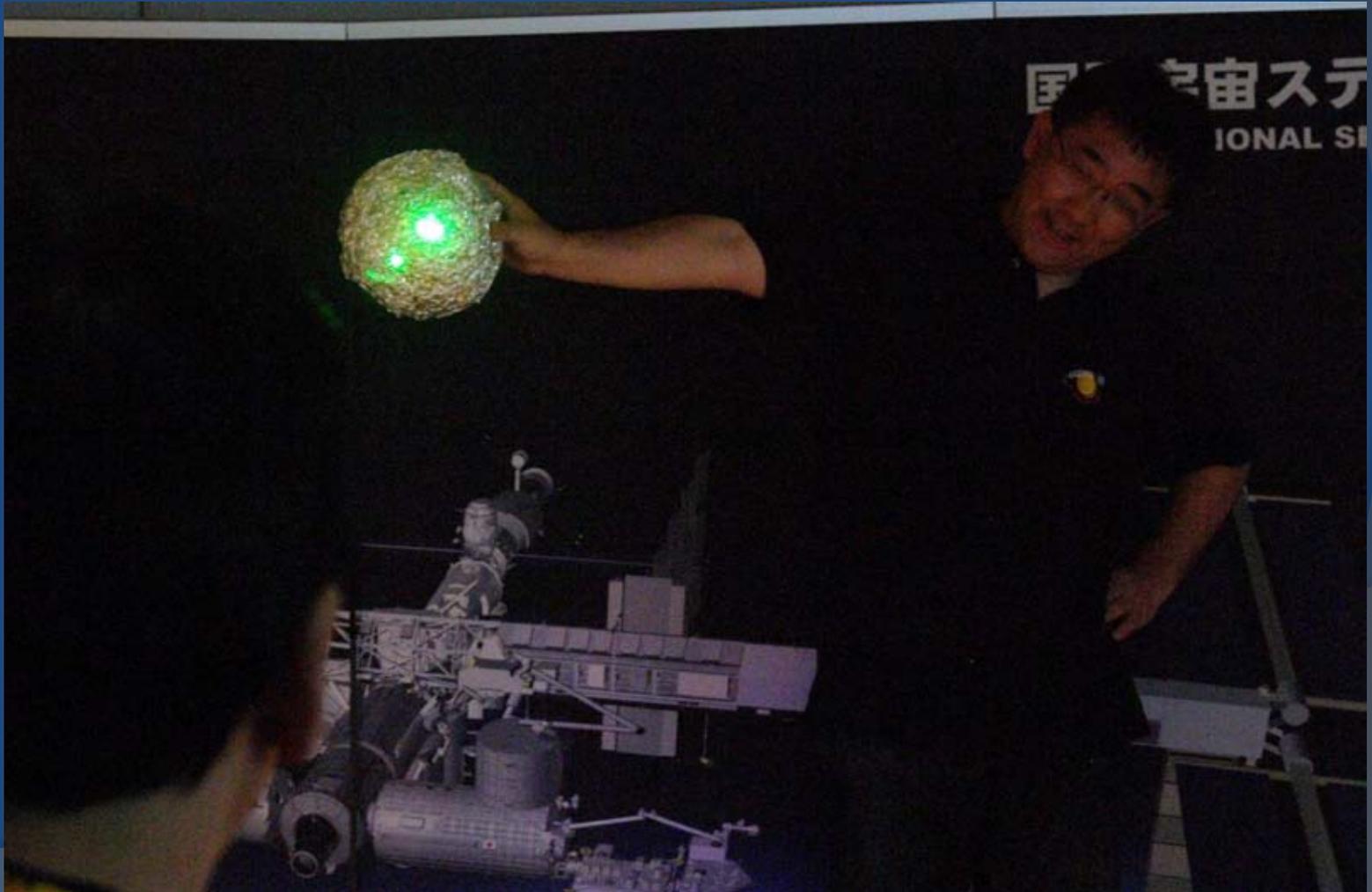
K1RQG & K2UYH 432MHz SSB



Lecture: Yasu JH2COZ explains what the EME contacts are.



Lecture: A simulation using a glistening ball made of aluminium foil and a razor light



Lecture: EME calculation (for children and the parents)

To travel 380,000km,
it takes:

By bus, 80km/hr

... 4750 hours

driving 24 hr/day

... 197,97 days

... 6.6 months!

By walk, 4km/hr

... 95,000 hours

... 3958.3 days

... 131.9 months

... 10.84 years!

Sight-Seeing to the dish & HF/VHF Operation



License holders operate 8J1AXA on HF/VHF



Dish moves
up/down,
and around....

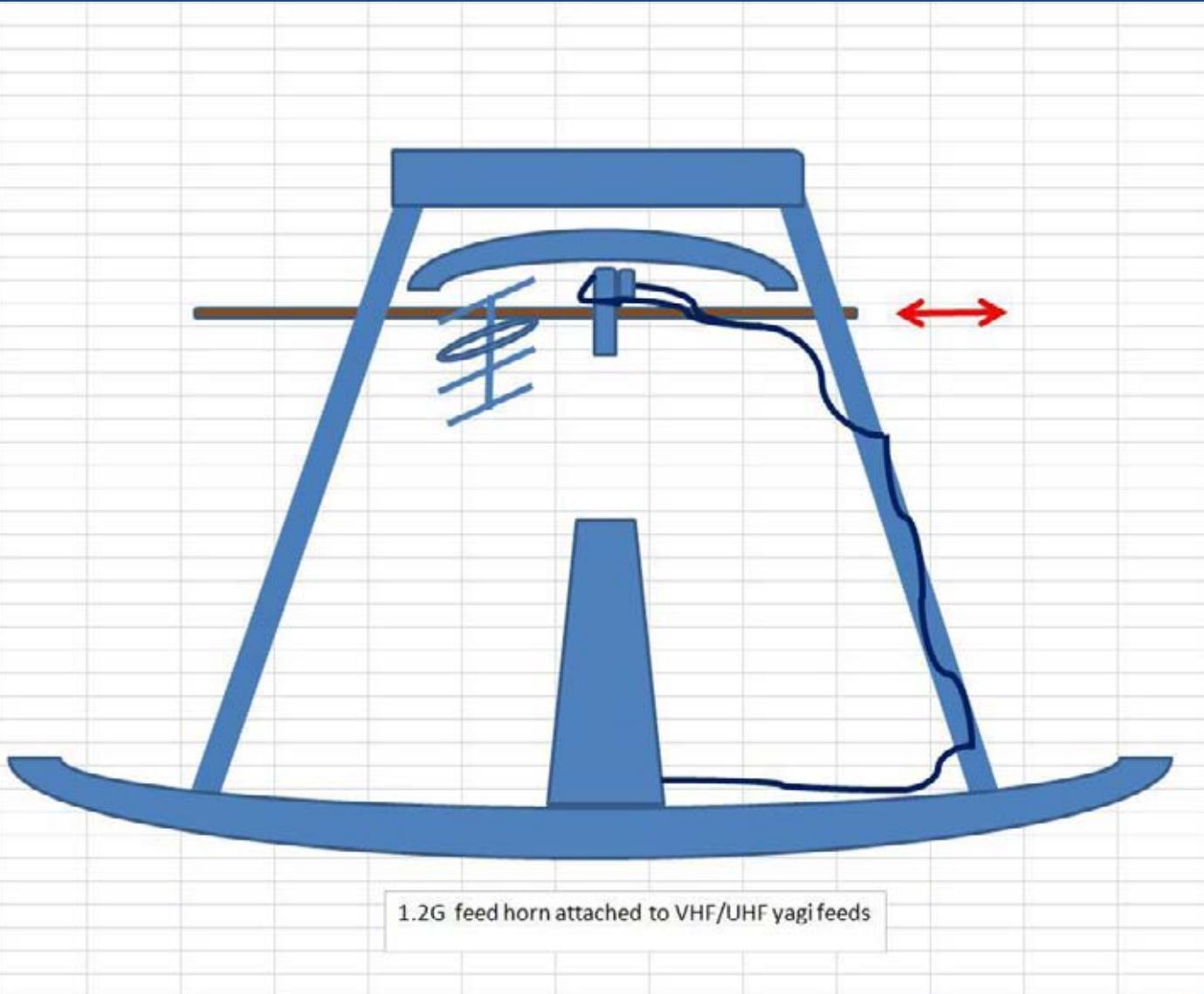
School children, their
parents, and teachers
watches it, sitting on
the lawn.



RHCP



1296MHz operation



1296MHz Feed-horn & LNA





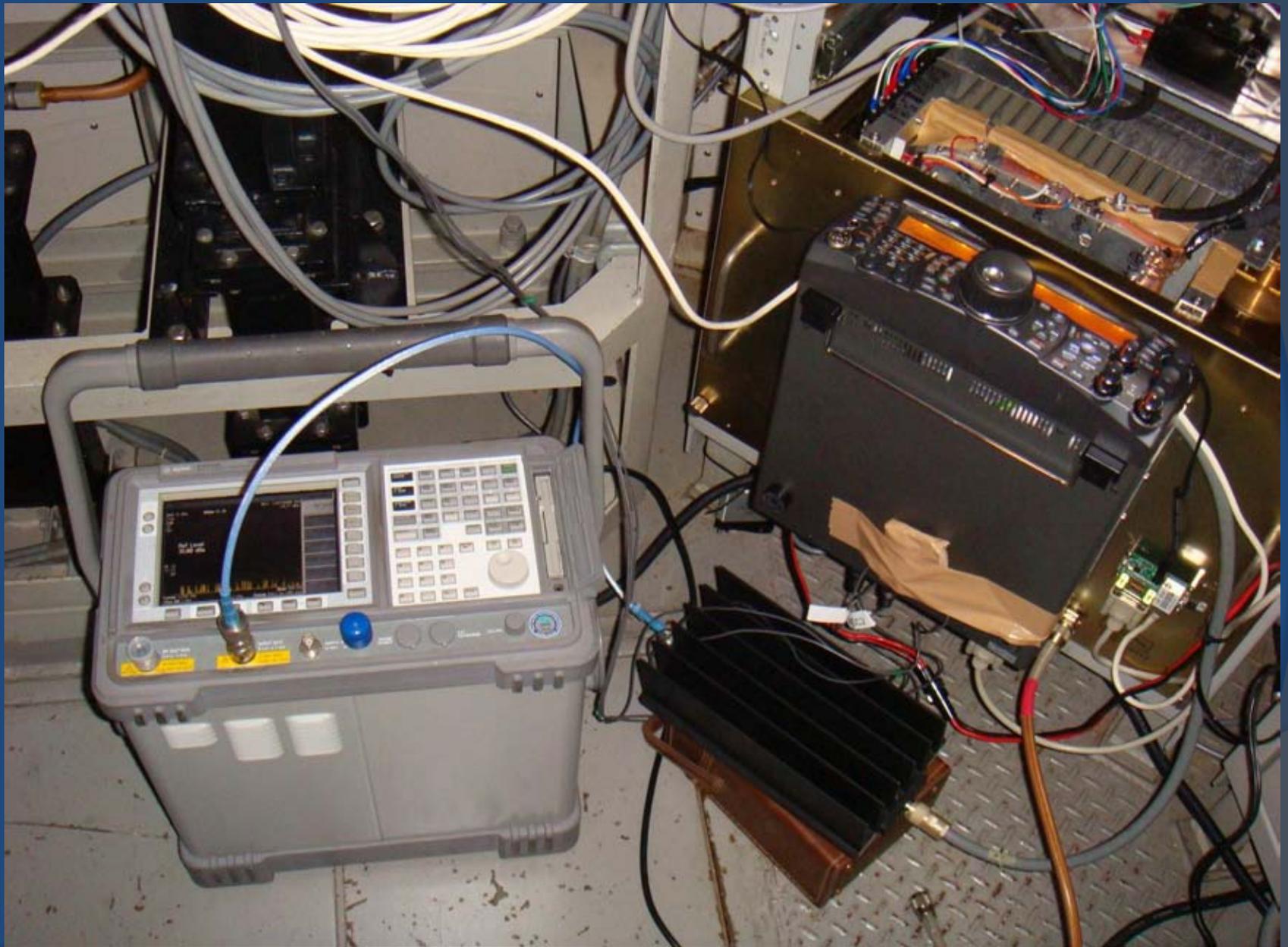


WX use to be fine
in winter on the
Pacific coast area.

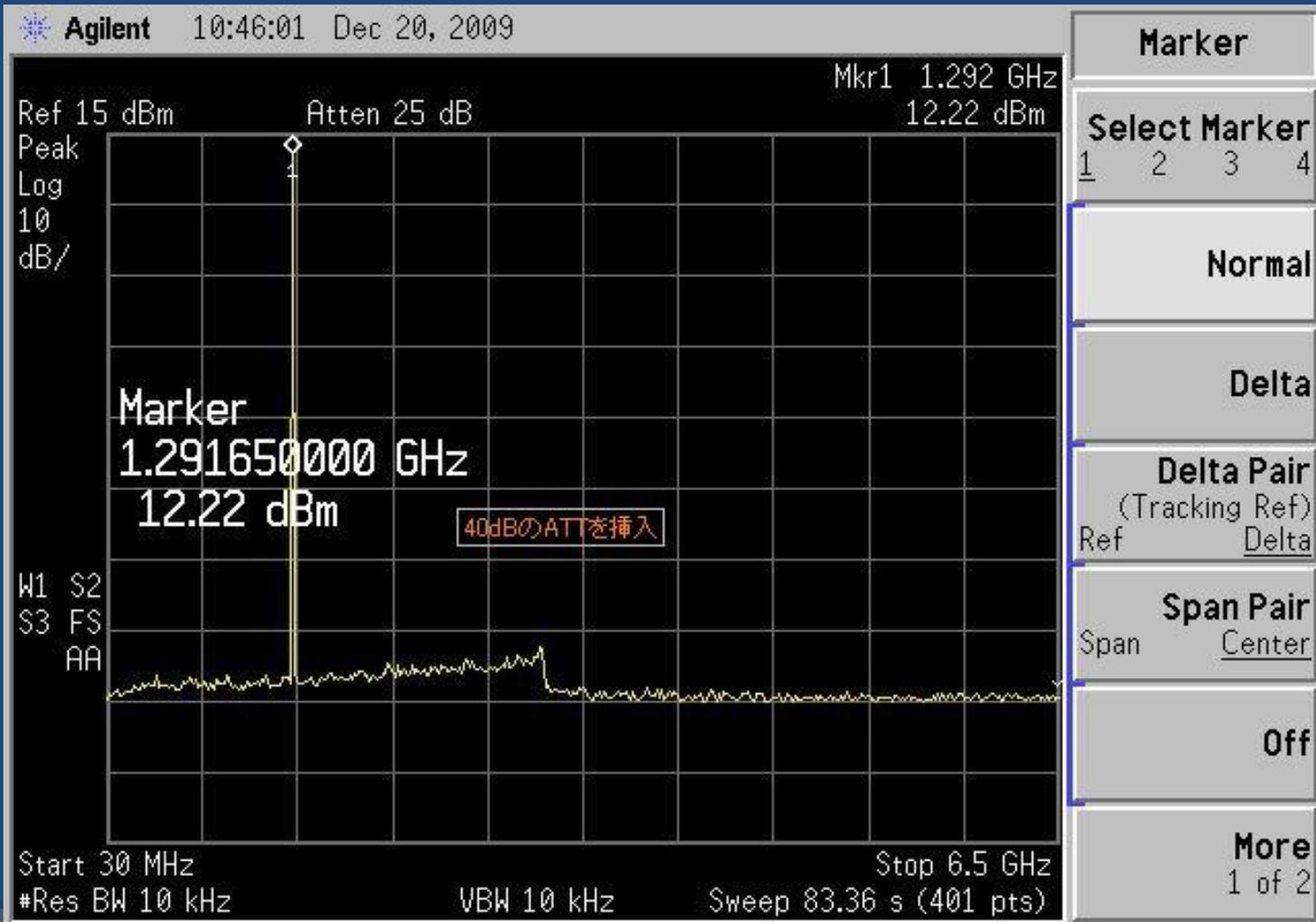




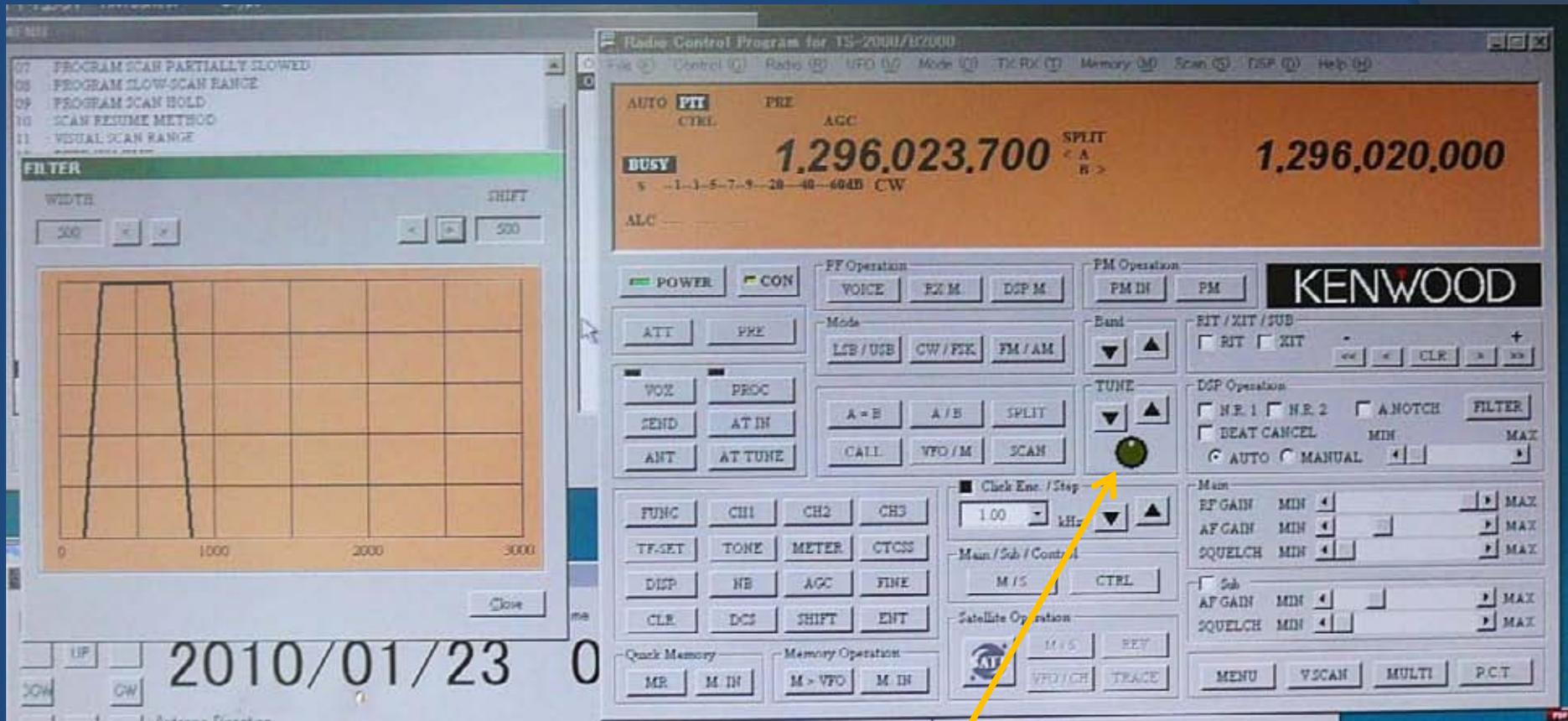




1296MHz 200W Output with Harmonics Level < -70dB

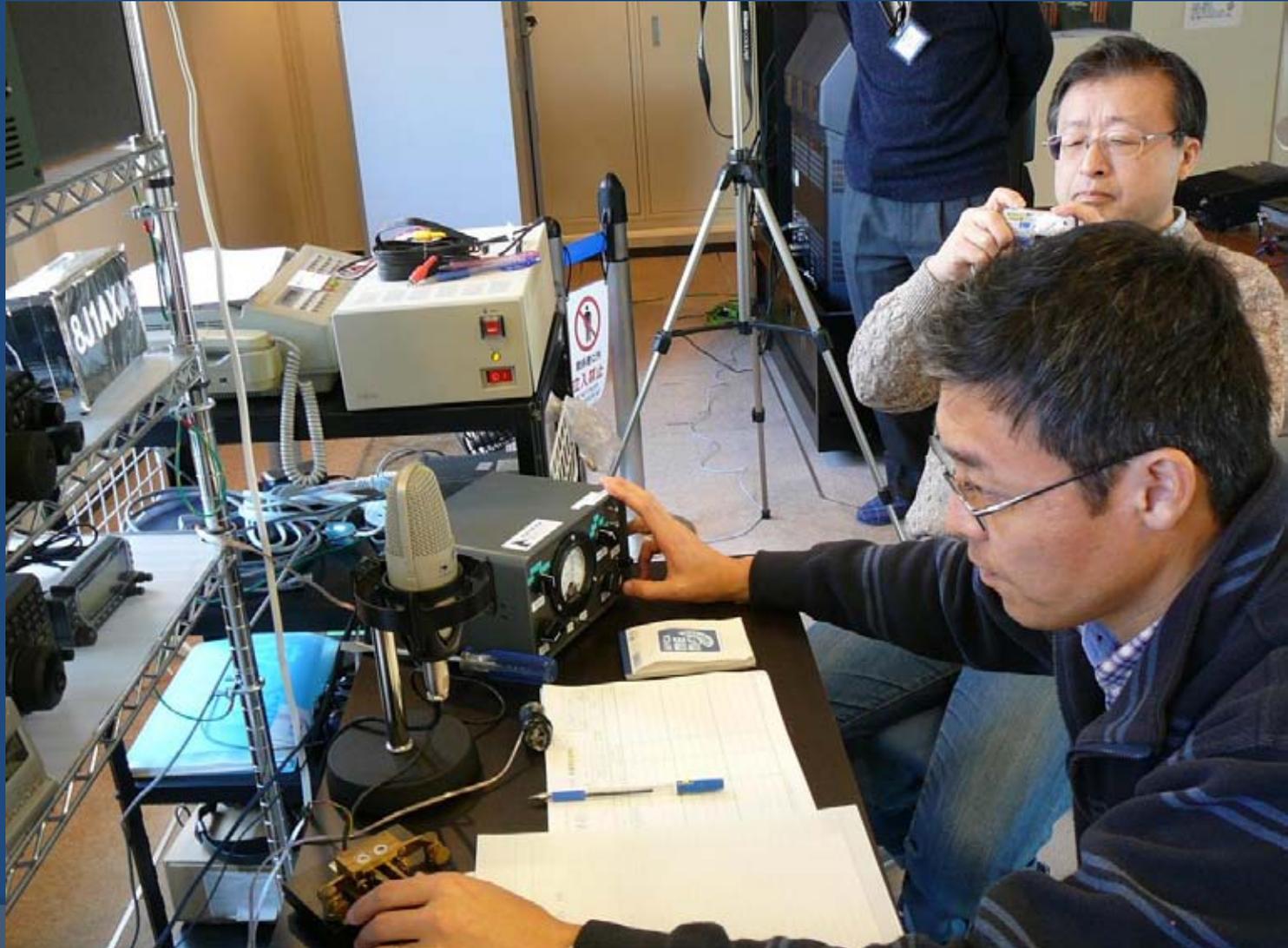


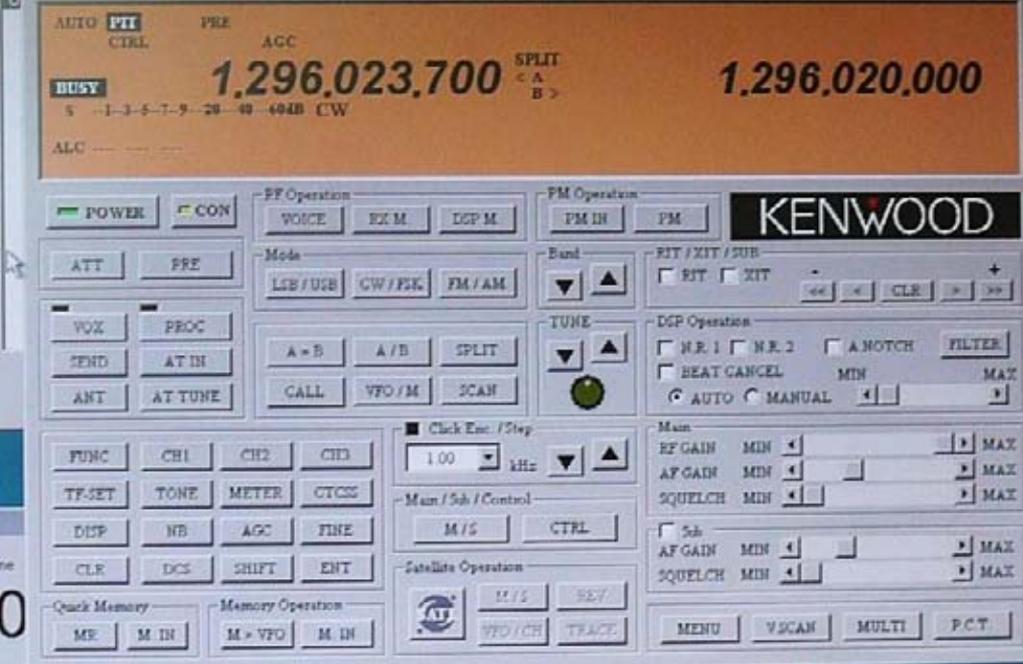
Remote Control of TS-2000



A small knob is not easy for watching!

RIG isn't in front of you!





QSOs with
LX1DB and
his XYL LX1WB



By Operator
Naomi/YL



Pleasant QSOs on 1296MHz were logged in.

【この用紙は、記載したらず受けに送附してください。】

EME

8J1AXA 局運用記録用紙

QTH 千葉県勝浦市
 局名 TS-2000
 運用者 コールサイン 氏名

運用日時 2010年1月23日
 運用時間 11:00 - 23:28

通信開始時刻	相手局コールサイン等	R S T	使用電波
02 03	JABERE	0 5 5 9	R 5 5 9 CW 1296.000
11	JABIAE	0 5 4 9	R 5 7 8 " " RST?
03 2	AZ offset -3.2 deg, Z2 +0.5		1296.000 CW 1296.000 (EAD) dip 23E
04 12	JA4LJB	5 6 9	5 5 9 CW 1296.2
04 21	JA6AHB	5 5 9	5 8 9 CW
04 53	SSB echo R4		WPT
05 19	JA6AHD	0	R 1296.000 -9 (R-17)
05 53	JA4ALC	5 2 9	3 3 SSB 1296.200 +20Hz
	5/sin -9db	0 2	-21EL 0.2 A2 -2.10.2 -150/60
	24372 A2 4.5 EL -0.1	2 2 7	4 5 140.4
10 17	OK1DFC	5 5 9	R 5 7 9 CW 1296.000 ZJonek
25	OK1DFC	5 5	5 5 SSB 1296.000 (offset -3.6 / -0.3)
11 11	VK4CDI	0	-11 RO JHLC 1296.000 GG12 -16
24	JAINQF	0	-17 RO-13 " 1296.000 QM05 -16

10-5 50-1 236w 20204-1 (20000)

EME

8J1AXA 局運用記録用紙

QTH 千葉県勝浦市
 局名 TS-2000
 運用者 コールサイン 氏名

運用日時 2010年1月23日
 運用時間 11:00 - 23:28

NAOMI LX1WB JN39CO KATHY

QM05

10/23

通信開始時刻	相手局コールサイン等	R S T	使用電波
11 28	UA3PTW	R 0	-13 0 JT6C 1296.000 K093 -13dB
38	G4CCH	0	-12 RO " " IO93 -12dB
48	RW3BP	0	-13 RO " " K093 -13dB RW3BP
76	OK1DFC	0	-5 R-6 " " JN79 -16dB
12 18	PA3CSG	0	-12 RO-6 " 1296.000 J021 -12dB
28	RD3DA	0	-13 RO " " K085 -13dB
46	G4CCH 12462	5 7 9	5 8 9 CW 1296.000 "ヨイ!
51	OK1 KIR	5 6 9	R 5 6 9 " "
59	LA9NEA 12572	5 6 9	5 7 9 " "
13 07	LA8LF	5 6 9	R 5 7 9 " "
13 12	HB9IZ HB9IZ	5 7 9	5 7 9 " "
13 20	LX1WB	5 7 9	R 5 7 9 " "
26	LX1WB	5 7	5 8 SSB " Willy; 後1759 JN39CO
34	OH2DG (CW 1296.000)	5 6 9	- CW/SSB " SSB 1296.000 1296.000
42	OH2DG	5 5 9	5 7 9 CW 1296.000 CW 1296.000 ok!
14 12	F5VHX	5 3 9	5 3 CW/SSB L JN39CO KATHY - 1296.000
22	LA8LF	5 6	5 6 SSB
28	LX1WB	5 8	5 8 SSB

CW-7 JT-6 SSB-3 CW/SSB-2 (7022.5) (F5VHX)

【この用紙は、記載したらず受けに送附してください。】

EME

8J1AXA 局運用記録用紙

QTH 千葉県勝浦市
 局名 TS-2000
 運用者 コールサイン 氏名

運用日時 2010年1月23日
 運用時間 11:00 - 23:28

14 45 G4CCH

1/2 EME

$$CW-6+7 = 12$$

$$SSB-1+1+1 = 5$$

$$JT-2+6 = 8$$

$$CW/SSB 2022.5-1+1 = 2$$

JT-8
 CW/SSB-2 (7022.5)
 JT-8
 CW/SSB-2 (7022.5)

G4CCH
 F5VHX

EME on 1296MHz
 CW-12 12
 SSB-5 1
 JT-8 6
 CW/SSB-2 (7022.5) 2
 計 14 27990 21 stations

*MY-SMALL-DISH
PROJECT*

JHΦTOG
1.8m Dish

1296MHz
10W
JT65C

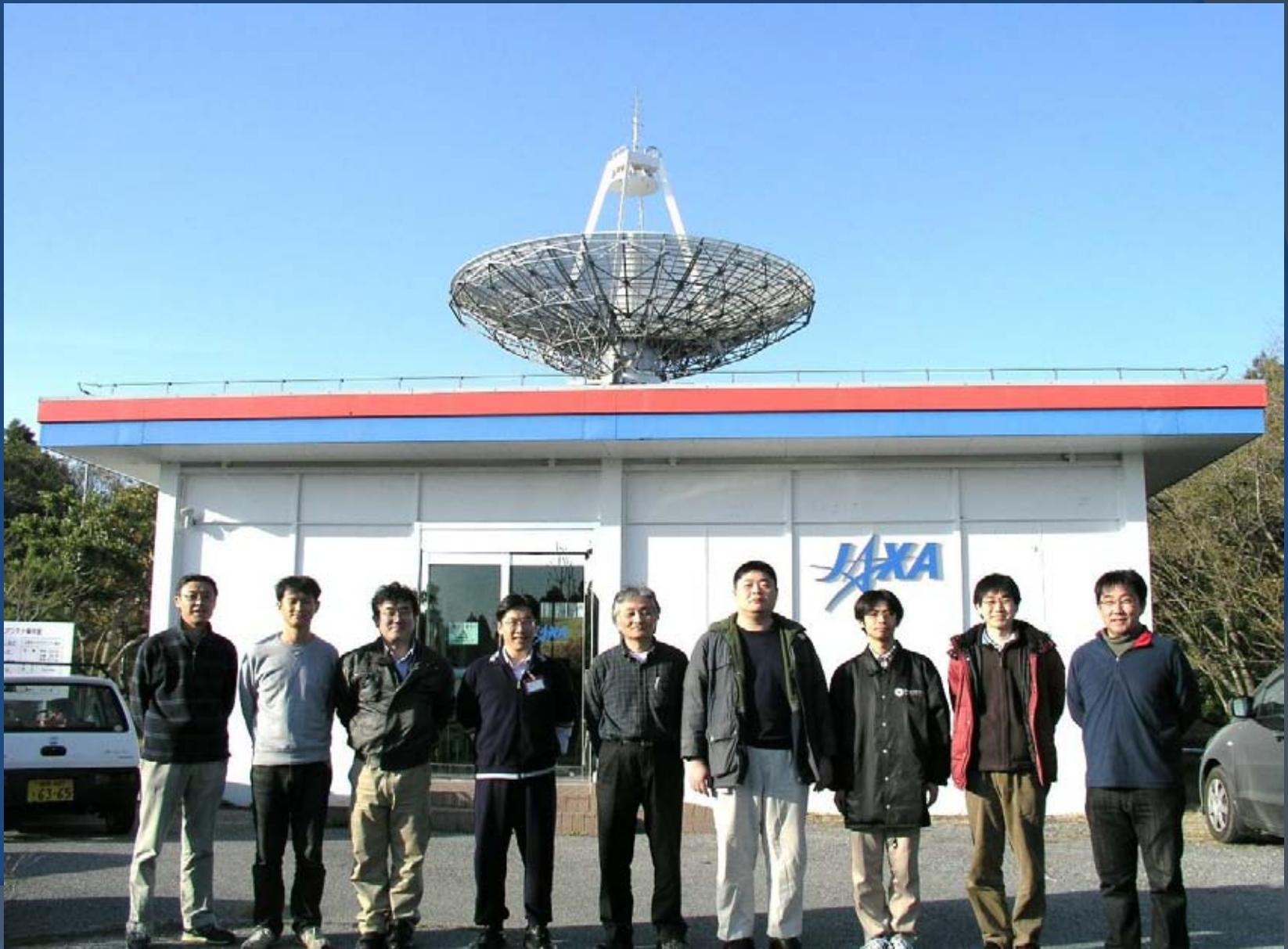


JF2AGB
3m Dish

1296MHz
10W
JT65C



8J1AXA went QRT Mach 24, 2010





“8J1AXA, Moon-Bounce Using
The JAXA 18m Dish on 2m
through 23cm – Another Big Dish
Project in Japan“

Presented by Mike JH1KRC
& Project KDES 2008

... *WHAT'S NEXT??*

THE END