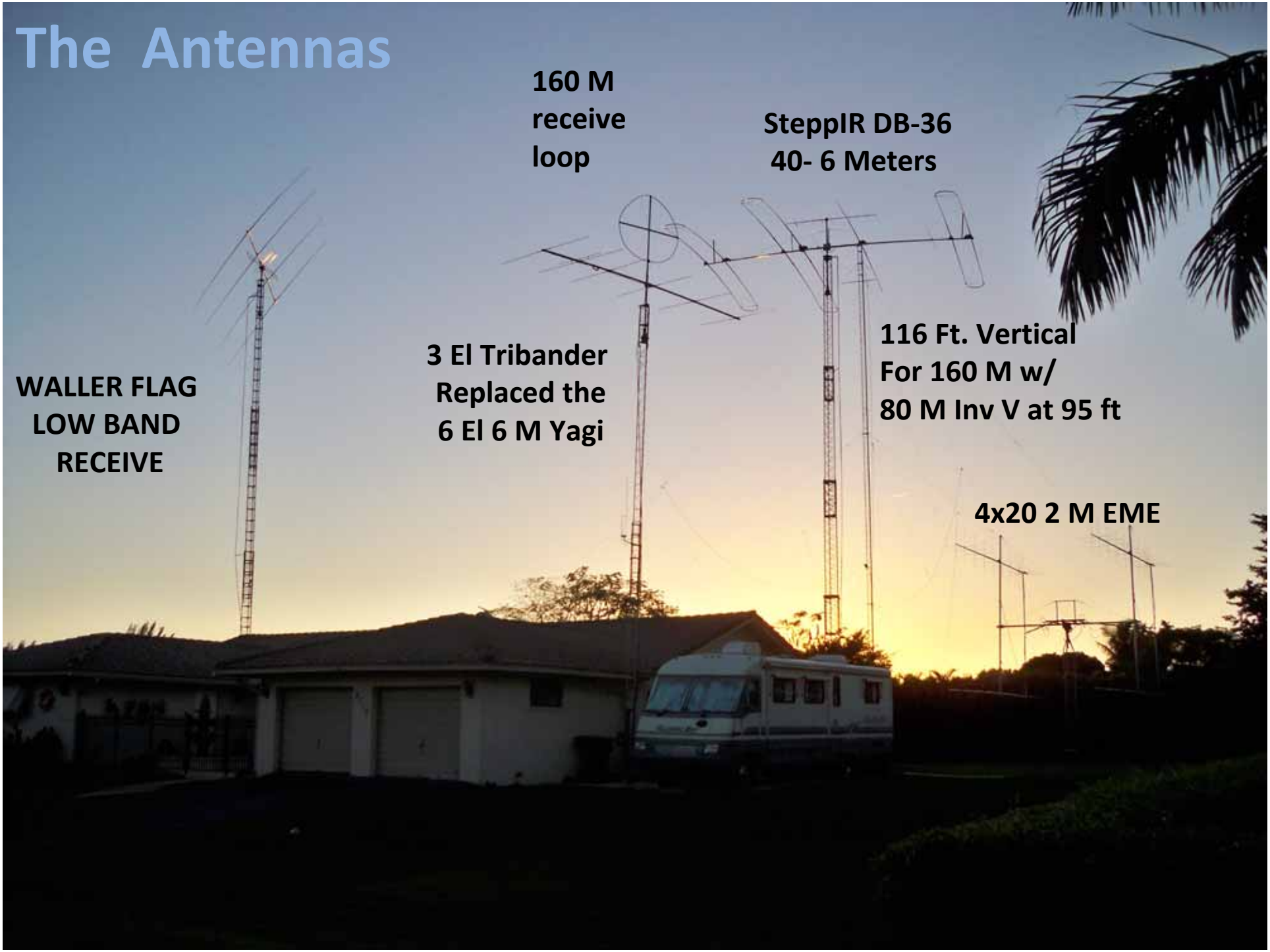

W1AW/4
At
N8PR
November, 2014
Station Tour and RTTY Operation

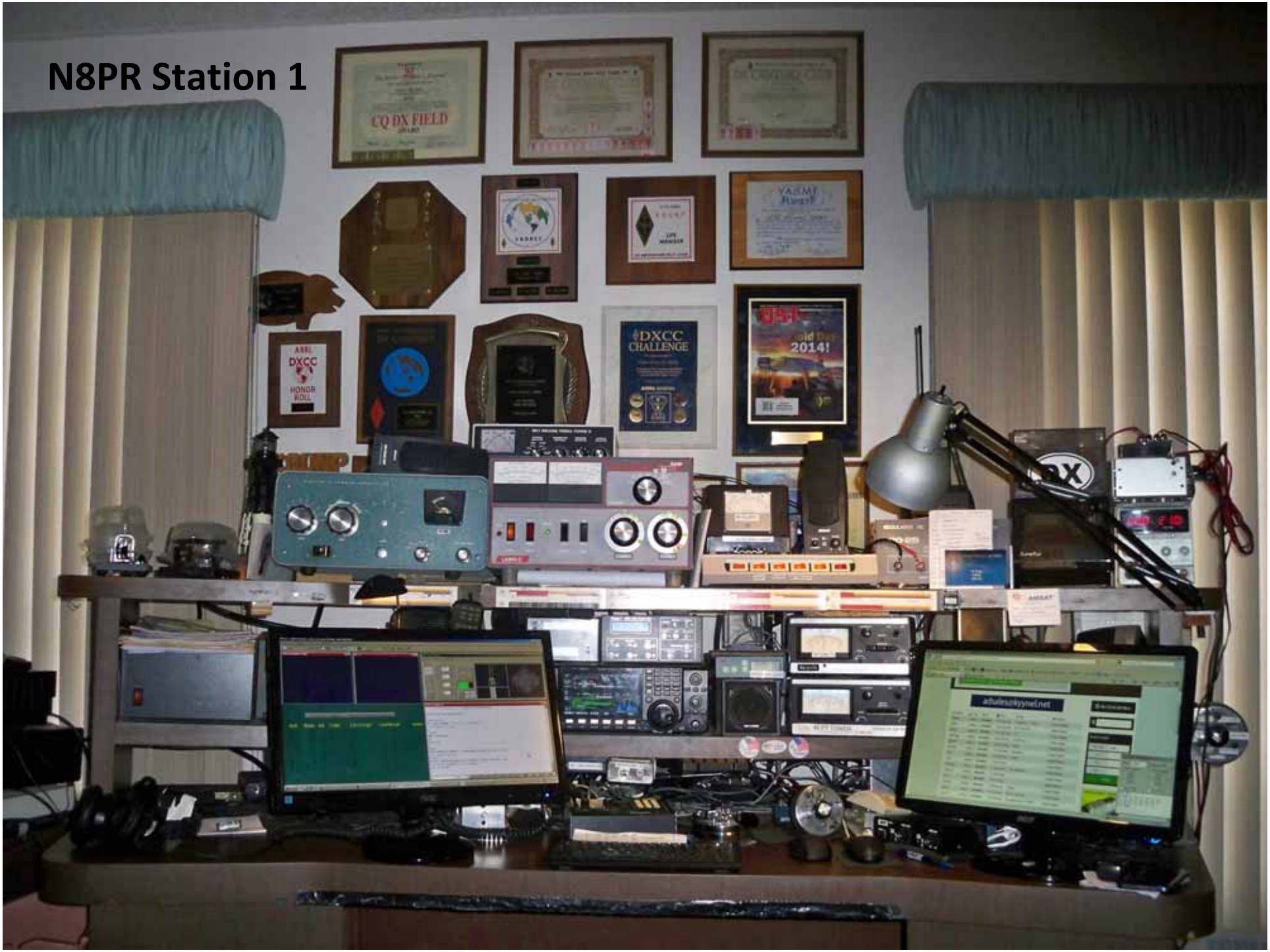
The Antennas




N8PR Station 2
ICOM 7100
Ameritron M-500
ICOM 7100

EME Station

N8PR Station 1




CO4HR
DXCC
LK600-C
14.042.70

Wave Node SWR/Power Meter

SteppIR Antenna Control Box

Icom IC-7600 HF-6M Tranceiver

Amp Supply LK800-C 1500 Watt HF Amplifier

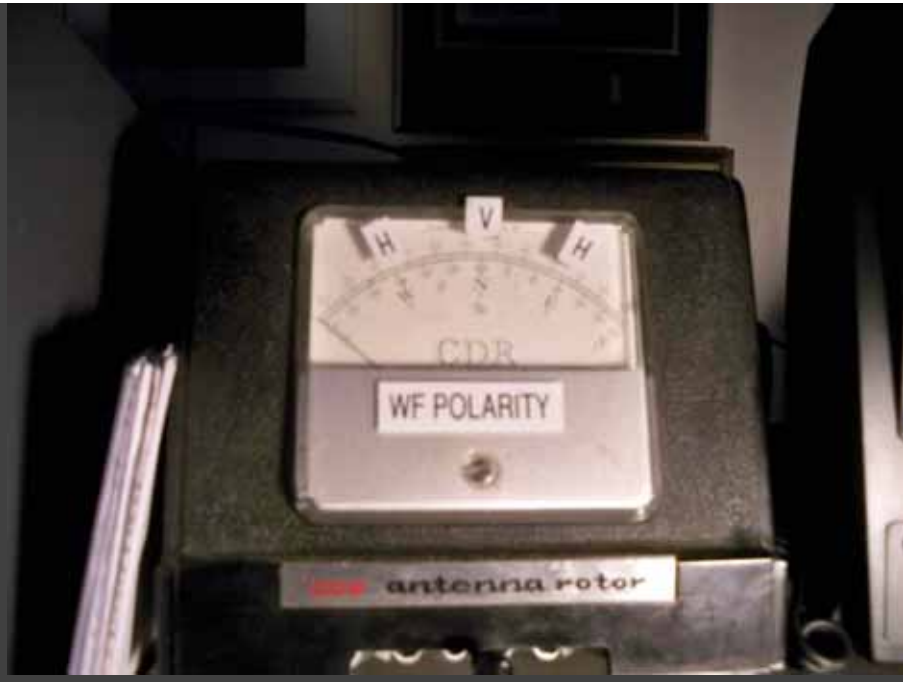
Notice that the LOAD and TUNE knobs are labeled for each band for quick bend changes

You should label everything in the shack:

Rotators, Switches, Controls and more.

When you are tired, in a contest or while working DX late at night, it helps to have labels on everything when something is not working right. The labels help you spot what is not set correctly!


CALIBRATE
OFF
ON
BRAKE
RELEASE
CCW
CW
40 FT TOWER


H
V
H
WF POLARITY
antenna rotor


160 meter
Vertical
80 Meter
4 Square

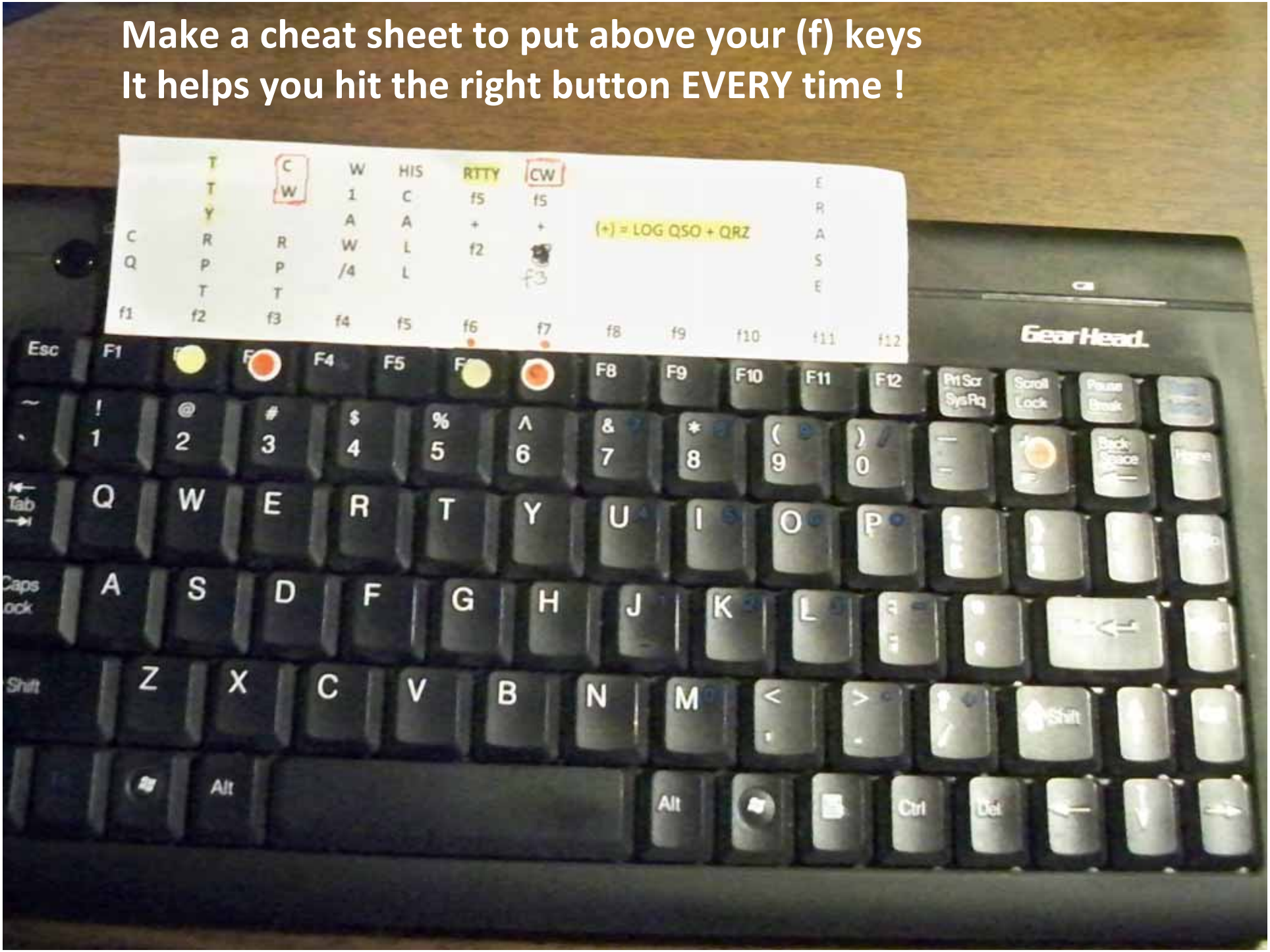

CALIBRATE
WF AZIMUTH
CCW
hy-gain
TAILTWISTER
CALIBRATE


WEST
EAST
STEPIR
evolution


Contester
POWER
REPEAT
LOAD


S
F
STEPIR ROTATOR


antenna rotor
ROTORS
ANT. SWITCHES


Make a cheat sheet to put above your (f) keys
It helps you hit the right button EVERY time !
T T Y R P T
C W R P T
W 1 A W /4
HIS C A L L
RTTY f5 + f2
CW f5 +
(+) = LOG QSO + QRZ
E R A S E
C Q
f1 f2 f3 f4 f5 f6 f7 f8 f9 f10 f11 f12
GearHead

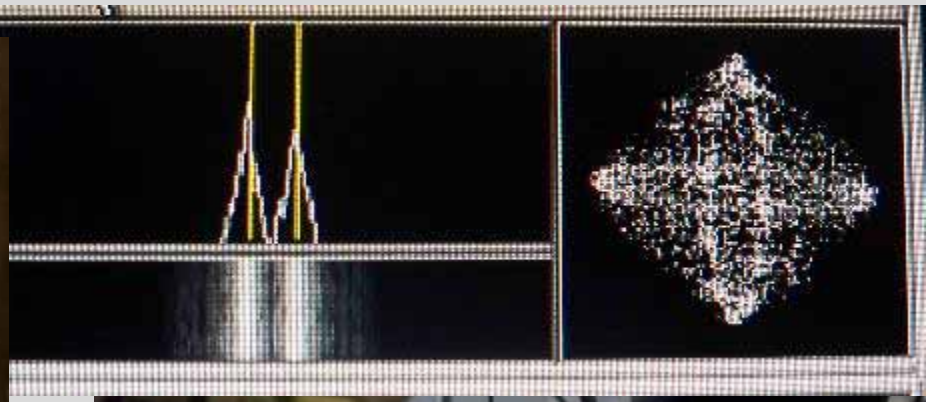
Let's talk about RTTY Operating

There are many ways to generate the RTTY (Baudot) code, both in the rig as in the Icom 7600 which can transmit RTTY and PSK directly … or

by using a computer and interface to send the baudot code to the rig for FSK – Frequency shift keying OR AFSK – Audio FSK in the SSB mode.

I use the SignalLink USB interface. It sends audio to the "Digital" audio input of the IC-7600 for audio digital modes BUT

I have modified it and added a circuit to send FSK directly to my rig in RTTY Mode. That way I can take advantage of the twin peak filter available in the Icom 7600 for RTTY.



I usually use the keyboard connected to the Icom 7600 for RTTY because I do not have to have a RTTY program open in my computer.

For operation as W1AW/4 I used the Win-Test contest program in DX-pedition mode so that I could log all 3 modes in one program for the week.

The Win-Test program uses the MMTTY engine for generating AFSK or FSK. I use my Signal Link Interface to send FSK to the rig so I can use the narrow RTTY filters and still log in Win-Test,

If the rig were in the AFSK mode, I could not access the narrow RTTY twin peak filter.

You may recall that our FM repeater is a capture mode… i.e. the strongest signal gets through. If two signals are the same strength, you usually hear only garbage.

RTTY Baudot and most other digital modes are exactly the same.
The strongest signal is usually captured.
other signals will either loose out or create garbage on the RTTY QRG.

More Power = More QSOs
More Power = being decoded !

RTTY is sent by shifting between two carriers 170 Hz apart. In FSK mode they are 2125 and 2295 Hz above the carrier frequency of the transmitter.

The lower tone is the SPACE and the upper tone is the MARK tone. One or the other tone is ALWAYS on.

With a computer you can place this 170 Hz shift in the middle of the SSB passband for AFSK operation. Usually this is set up to be 85 HZ +/- 1500 Hz. The advantage of AFSK is that you can click on a pair of tones anywhere on the waterfall and read a signal. No tuning is needed to shift a small amount.

ITA2 code of 1930.

LTRS	FIGS	1	2	3	4	5	LTRS	FIGS	1	2	3	4	5
A		●	●				Q	1	●	●	●		●
B	?	●			●	●	R	4		●		●	
C	(		●	●	●		S	'	●		●		
D	"	●			●		T	5					●
E	3	●					U	7	●	●	●		
F	½	●		●	●		V	)		●	●	●	●
G	¼		●		●	●	W	2	●	●			●
H	¾			●		●	X	/	●		●	●	●
I	8		●	●			Y	6	●		●		●
J	⅞	●	●		●		Z	+	●				●
K	%	●	●	●	●		FIG SPACE	FIG SPACE	●	●		●	●
L	/		●			●	LTR SPACE	LTR SPACE			●		
M	.			●	●	●	LINE SPACE	LINE SPACE				●	
N	—			●	●		WRU	BELL	●	●	●	●	●
O	9				●	●	COL	COL		●			
P	0		●	●		●							

The Baudot code is a 5 bit Code .

It sends all the letters, numbers and Punctuation by sending a shift code: Baudot is always in either “Letters” or “Figures”

You should always set USOS in your Program (unshift on space) to ON.

That way if you do not get the Unshift code you do not get a lot Of garbage – numbers and punctuation.

It is much easier to figure out a missed number than a missed letter.

When receiving Baudot RTTY you may see some unexpected groups of letters or numbers. This is because the keyboard is configured so that the numbers above the top row of letters use the same code, but with the FIGS shift.

Thus you may encounter a letter in place of a number if you do not receive the FIGS shift code between the two.

Notice that the top two rows of a keyboard are the following:

You may see a signal report such as 599 TOO

Or 73 UE

Your unshift on space sent the decoding back to LTRS for the second 599

1 2 3 4 5 6 7 8 9 0 and
Q W E R T Y U I O P

You may also see your call sign due to garbled reception As:

NIPR and not N8PR

or: N804 and not N8PR

What could the following calls be?

NRMEO AJ4:?

1 2 3 4 5 6 7 8 9 0 and
Q W E R T Y U I O P

You may also see your call sign due to garbled reception
As:

NIPR and not N8PR

or: N804 and not N8PR

What could the following calls be?

NRMEO AJ4 ?

N4MEO AJ4SB

THE BAUDOT KEYBOARD

1 2 3 4 5 6 7 8 9 0 = FIGS
Q W E R T Y U I O P = LTRS

\- Bell ! & # ‘ ( ) =FIGS
A S D F G H J K L = LTRS

“ / : ; ? , . =FIGS
Z X C V B N M =LTRS

11011 = SHIFT TO FIGS
11111 = SHIFT TO LTRS

Note that the 5 bit code for FIGS and LTRS is very close:

11011 and 11111

If this is not decoded properly because of a bit of QRM or QRN, (pun intended) you will not have perfect decode of the received signal.

There is only one bit difference between the two !

If you use macro buttons (shortcuts) to send canned messages, there are some interesting things that I learned while operating as W1AW/4 and making thousands of RTTY QSOs.

These are “tricks” to help your call be read when calling in a DX or contest pile-up, or when trying to work another station that has a group of callers.

First – listen or watch what the op is sending about where he is listening. He may say "UP" or "UP 1" or "UP 1-2"

Next -- Be sure your rig is in split mode so you are transmitting where he is listening.

IF you have a button that allows you to listen on your split transmit QRG (XIT), use it to hear the op he is working.

If you have a "big" signal you should try to tail end that last caller on his transmit QRG.

If you are QRP or have a "little" signal, try to figure out where the op is going to listen next and transmit there… OR find a "quiet" hole just above or below the pile and call there. When all the big guns are colliding in a pile the op will look outside the main pile for a clear signal.

NEXT – have your macros configured for maximum clarity so that your call will stand out from the pile.

Configure your call as follows:

(cr)(space) CALL CALL CALL (space)(cr)

OR: (cr)(cr)…CALL CALL CALL K(cr)

DO NOT END WITH MORE THAN ONE (cr) --- otherwise the station will have to chase your call sign up the page in order to click on it to put it into his log and macros.

You MUST send the part at the beginning so that the program at his end will sync up and decode your call.

You want the leading (cr) to clear the page at his end and put your call in a spot where he can easily click on it.

Sending the call 3 times allows him time to click on the call.

Sending 1 or 2 times is too short to get a good copy in a pile-up on his end. Your call may not sync up with his computer.

Sending 3 times allows for received errors to be corrected in the mind of the op there, and he can pick the correct call to click on. If he has good copy the call will not move up the page and will be easy to click on.

Sending 4 – 5 – 6 times is too long, and may be ignored by the op if he sees more than one call on his screen. He may opt to work the "better" operator and you may get lost in the shuffle.

When sending your call or report try to avoid FIGS/LTRS shifting where possible.

Example: 599-599 FL FL NOT 599 FL 599 FL

Notice the Hyphen between the two 599s

Your report should be 599-05-05 in CQWW RTTY contest

Always think about the extra time the "go to FIGS' and "go to LTRS" takes when configuring your macros for a contest. Also the chance of more errors if the shifts are not decoded correctly.

For general Ragchews this is not important.

For Working a DX pileup, it may create the clarity that gets you into the rare one's log !

Here are some examples of my decode pages showing good and bad macros, and some that collided with other stations and did not decode

NBKZZ

DE DL8UI DL8UI DL8UI K

VDL8UI 599 FL DL8UI
ZZ

QSL UR 599-599 TU BK

DL8UI TU W1AW/4 FL UP
GYABFNEJKSBEJGKDS
RB1QEI/
&CQ W1AW/4 FL UP
ORV
XVPVC

Background turns black when I Click on it to put on log page.

Turns red when I confirm QSO and Log him and go QRZ

Note good technique:599-599

←This is when I log him

← No one comes back so I call CQ

CQ W1AW/4 FL UP

ARCTGRW$KC2..$ KC2B/.8HAP,& BI W8HAPBI.,&

Partial call seen here

BJMJUWNSR

ILNQ MXK23-X

KC2B?? 599 FL KC2B??

XXGUODRPTW1AW/4 599 599 NY NY WOAW/4 KC2BBI KC2BBI QSL

Y

VKC2BBI KC2BBI TU TU W1AW/4 FL UP

MWPJSY TBKKVVDVIKZRVNJCVBXX LQRKKWJYPQRU SXEU

CQ W1AW/4 FL UP

IH

LQ;:12& W1BS W1BSPP?s N0GBCW

W1BS 599 FL W1BS

WS W..2X 599 599 MA WQBS TKS

X W1BS TU W1AW/4 FL UP

IV

K2LS 599 FL K2LS ← First call to K2LS

PDE K2LS XWFKM

MJCD

TK2LS 599 FL K2LS ← Lots of QRM had to call him 2 x

MLOO 599 NC NC 73 DE K2LS ← MLOO 599 (missed part of report)

K2LS TU W1AW/4 FL UP

K.9 E3/, ;338)s-7Hw0"OSXJGVMVE3XNVK;2?

; Note "Hidden call" in Garbage from many callers

H0QVRC W/QKMXAIE3XN VQMNSVANK

VE3XN 599 FL VE3XN IE3XN again in garbage… Probably VE3XN

7 ;3//, 5;,

25MNOTU VE3XN KD ← He confirmed his call with TU

VE3XN TU W1AW/4 FL UP

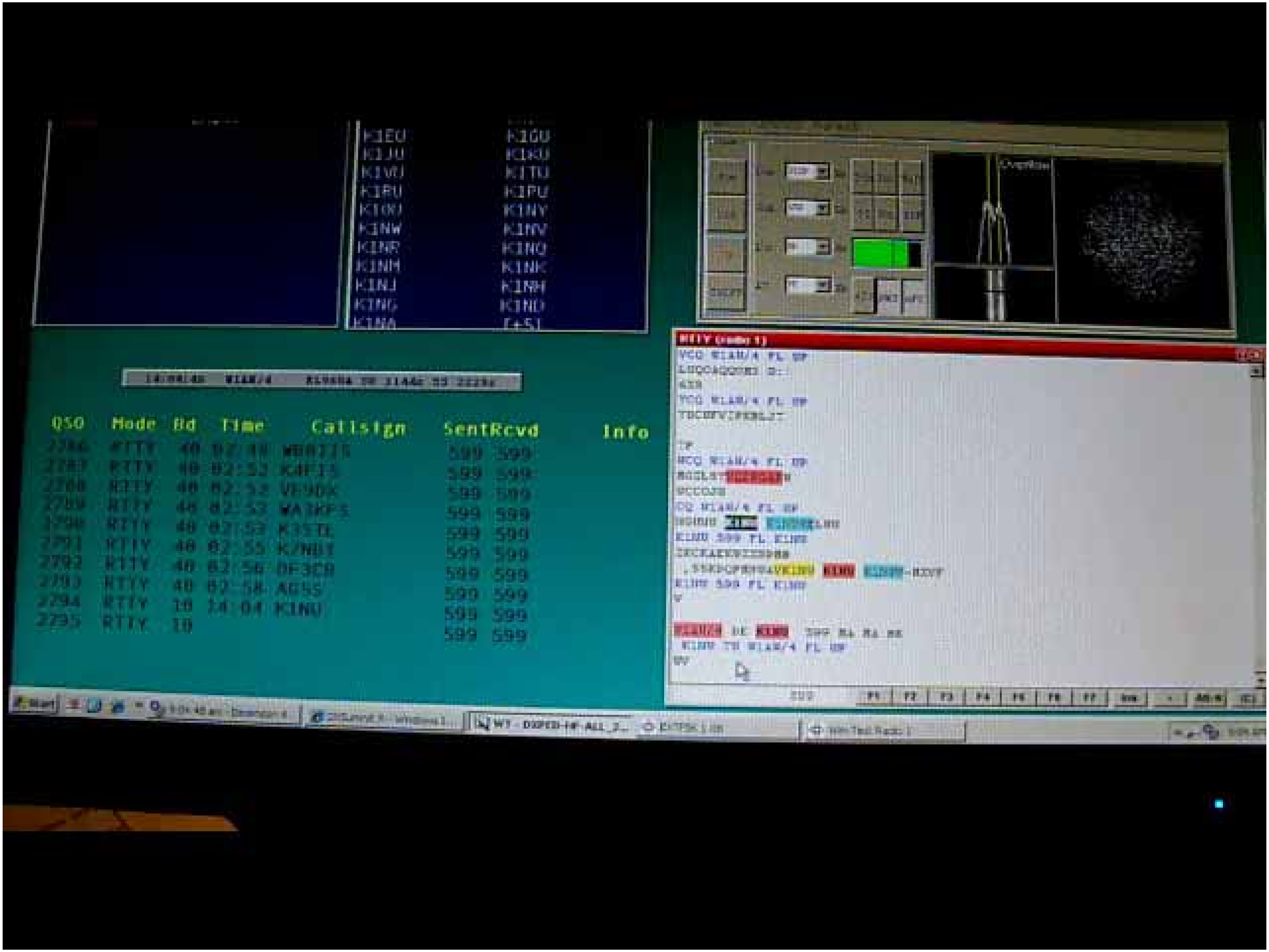
EK5JUC K5JN K5JUCMSVQ

K5JUC 599 FL K5JUC

BVPSL UR599—599 D5JUC ARTU

FLQ

K5JUC TU W1AW/4 FL UP


QSO
Mode
Bd
Time
Callsign
SentRcvd
Info
K1EU
K1GU
K1JU
K1KU
K1TU
K1PU
K1NY
K1NW
K1NV
K1NQ
K1NM
K1NK
K1NJ
K1NH
K1NG
K1ND
Overflow
RTTY
2794
KINU
2795
F1
F2
F3
F4
F5
F6
F7

Thank you for your attention.

73 and I hope to see you on my monitor.

NNNN

Any Questions?