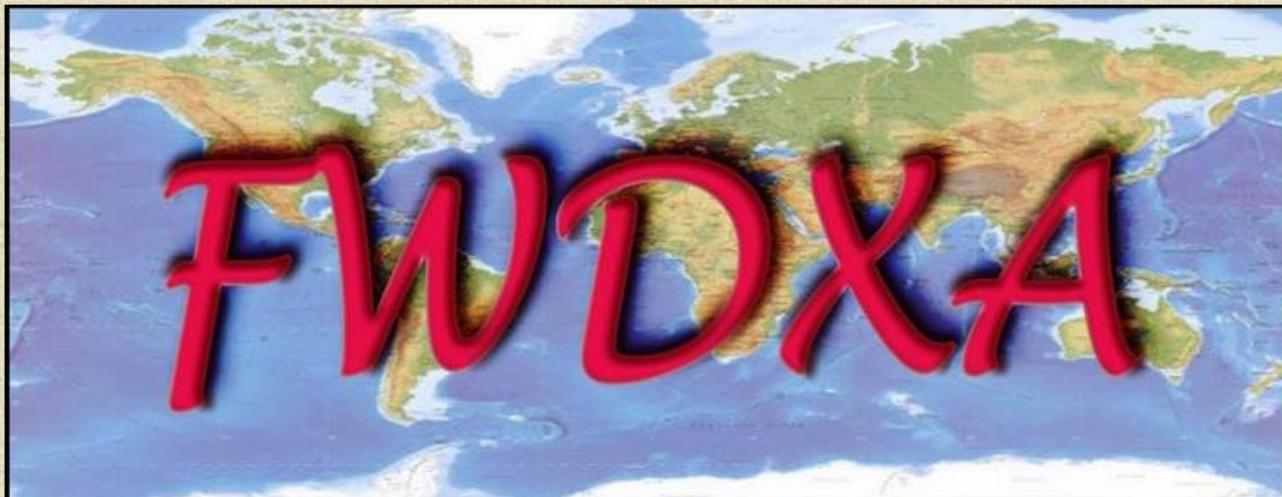




Fort Wayne DX Association



FLEX 1500 Demonstration

Charlie Hall, KC9LA

9 July 2014

Excitement to go!™



FLEX-1500™

HF-6m Transceiver

FLEX 1500 at KC9LA



What I Particularly Like About the FLEX

- Up to ~44 kHz instantaneous view of the band
 - All of the CW portion of most of the bands
- Zoom in on pileup
- Seeing where the DX station is calling and seeing where he's being called (and seeing how big the pile is)
 - Instant transmit QSY with a mouse click to where he is listening (split)
- Seeing your transmit frequency in the display (am I split?)
- Seeing short signal history in waterfall display
- Adjust receive passband instantly by dragging mouse
- Steep filters with no ringing
- Extremely effective automatic notch filter (kills the tuner-uppers on SSB)
- See who has clean signal and who does not (it is amazing how many really clean signals are on the bands!)
- AM broadcast DXing capability – cool!
- Poor man's spectrum analyzer

FLEX-1500 Transceiver Specifications

Table 5: Overview of FLEX-1500 Specifications

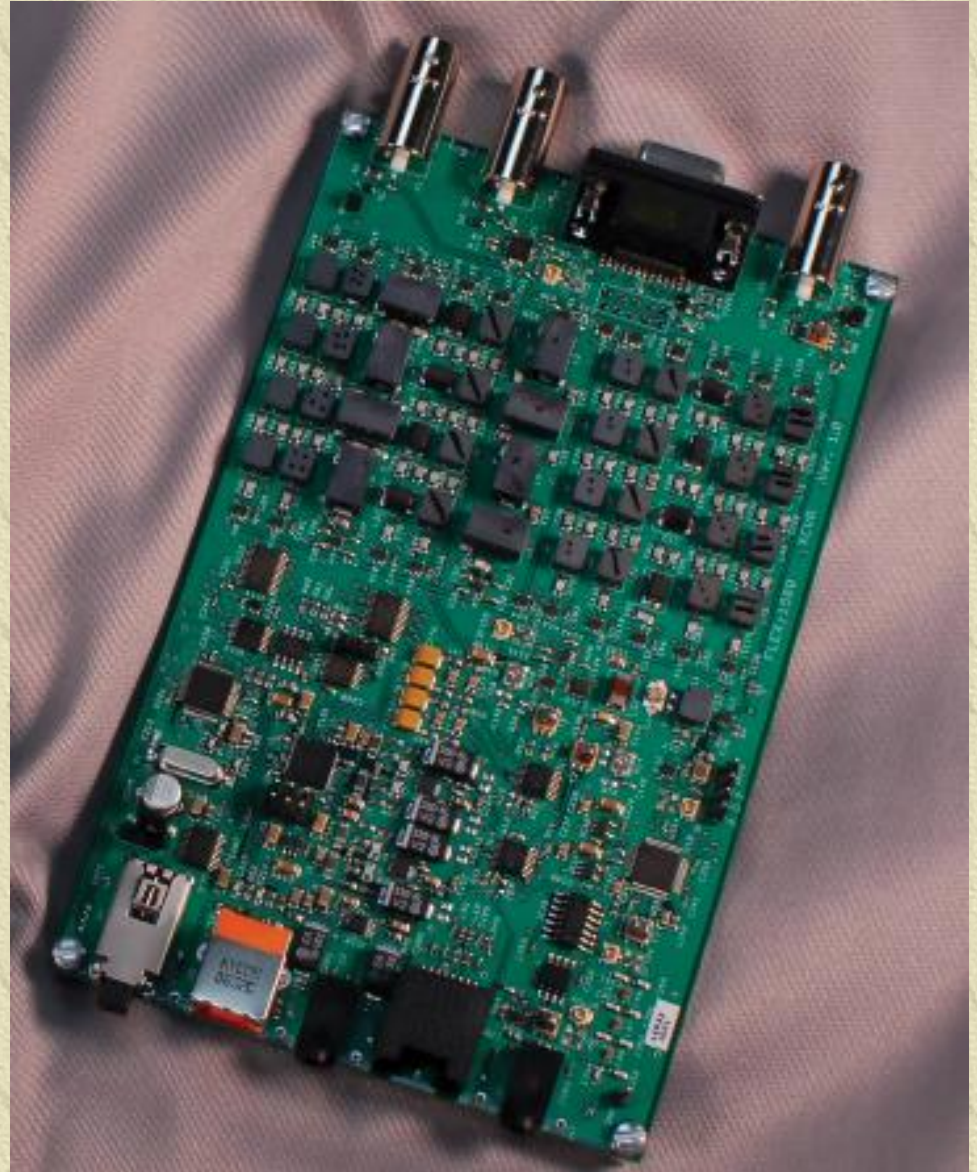
General	
Receiver Frequency Range	10 kHz – 60 MHz (operating – requires external, customer provided filters below 1.8 MHz to eliminate images); 160 m – 6 m (specified Amateur bands only)
Transmitter Frequency Range	160 m – 6 m (specified Amateur bands only)
Frequency Stability	± 2.5 ppm
Operating Temperature Range	14 °F to 122 °F (–10 °C to +50 °C)
Frequency Steps	1 Hz minimum
Antenna Impedance	50 Ohms, unbalanced
Max Rating PTT Out	30 VDC, 250 mA
Recommended Headphones	40 mW, 8 Ohms or higher
Power Consumption	Rx 400 mA (typ); Tx (5 W) 2.0 A (max.)
Supply Voltage	DC 13.8 V ± 10%
Maximum Interconnect Cable Length	10 feet (3 m), No restriction on DC cable within voltage tolerance limits under load.
Special EMI/RFI Requirements – CE Compliance Cable Requirements	1 snap on ferrite bead on USB cable (supplied)
Dimensions:	(WxHxD): 4.0" x 2.0" x 6.0" (10.2 cm x 5.1 cm x 15.2 cm)
Weight (approx.):	2 lbs (0.9 kg)

FLEX-1500 Transceiver Specifications

Receiver	
Circuit Type	Direct conversion, low IF
Intermediate Frequency	Software selectable from DC to 20kHz
MDS	50 MHz: -138 dBm in 500 Hz bandwidth (Preamp = +30) 14 MHz: -127 dBm in 500 Hz bandwidth (Preamp = +20) 14 MHz: -116 dBm in 500 Hz bandwidth (Preamp = 0)
IP3	+21 dBm at 14 MHz, Preamp = 0 (S5 IM3 Method)
Selectivity (-6/-60 dB)	CW: 500 Hz -6/-60 dB: 500/640 Hz SSB: 2.4 kHz -6/-60 dB: 2.39/2.54 kHz AM: 6.6 kHz -6/-60 dB: 6.60/6.74 kHz All measurements at 48 ksps/2048 Buffer Size
Image Rejection	>100 dB with Wide Band Image Reject active
Transmitter	
Power Output	0.05-5 W nominal
Emission Modes	A1A (CWU, CWL), J3E (USB, LSB), A3E (AM), F3E (FM), DIGITAL
Harmonic Radiation	Better than -48 dB (160 – 10 m Amateur bands) Better than -60 dB (6 m Amateur band)
SSB Carrier Suppression	At least 55 dB below peak output
Undesired Sideband Suppression	At least 55 dB below peak output
Audio Response	(SSB): Flat Response 10 Hz to 20 kHz, 3-band or 10-band Software EQ
3 rd Order IMD	Better than 32 dB below PEP @14.2 MHz 5 W PEP
Microphone Impedance	600 Ohms (200 to 10 kOhms)

FlexRadio Systems®

Software Defined Radios



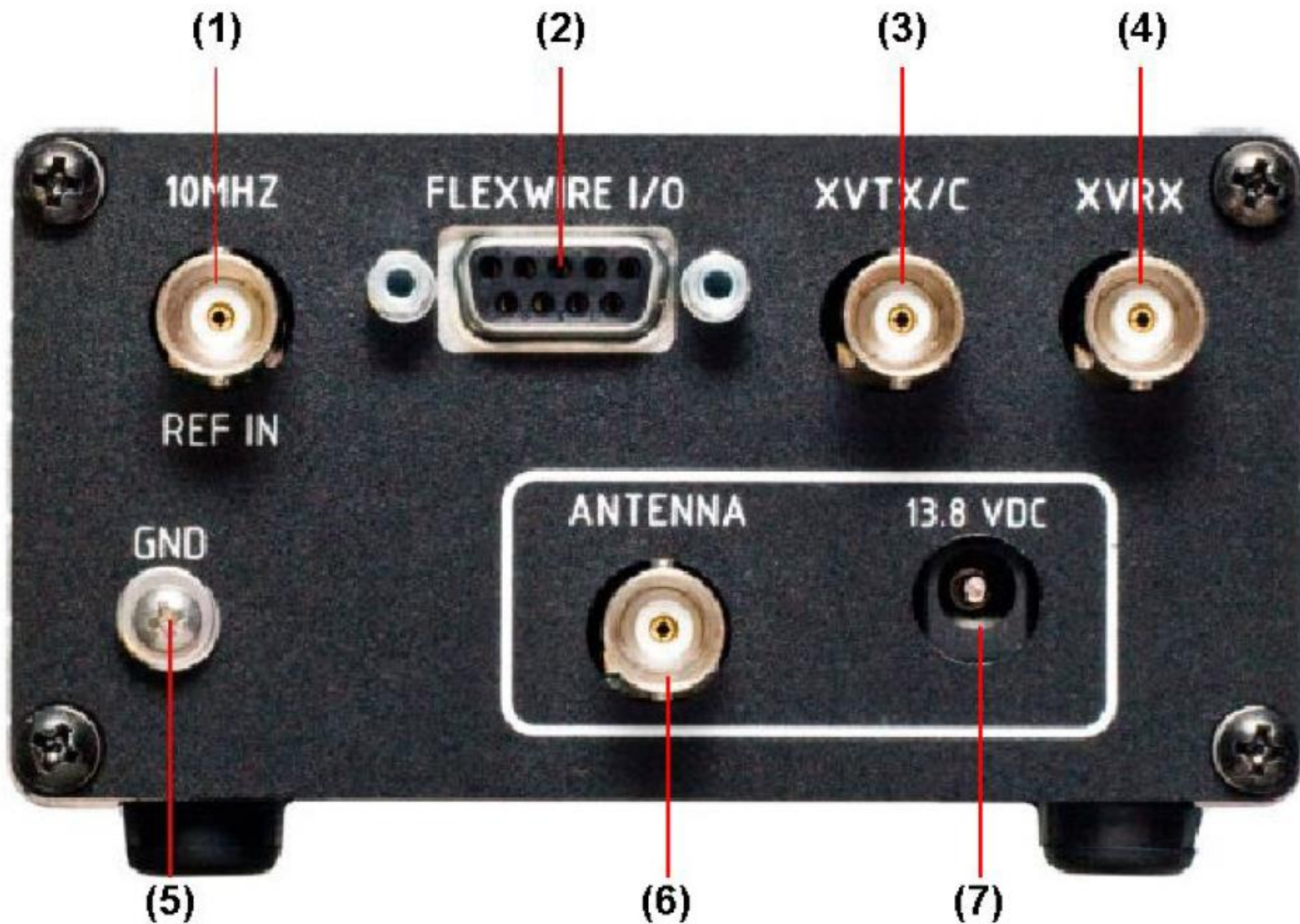


Figure 4: FLEX-1500 Back Panel

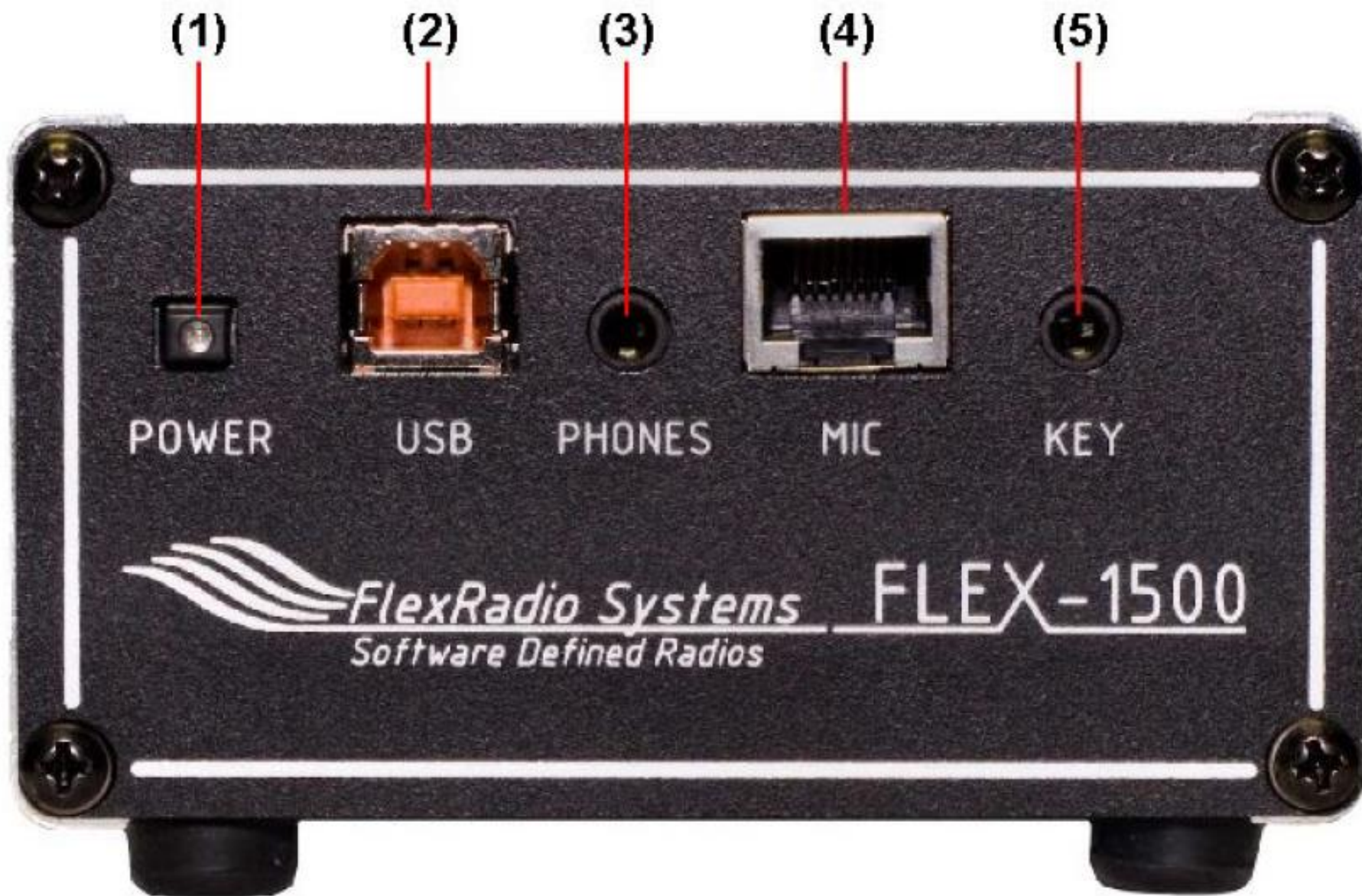


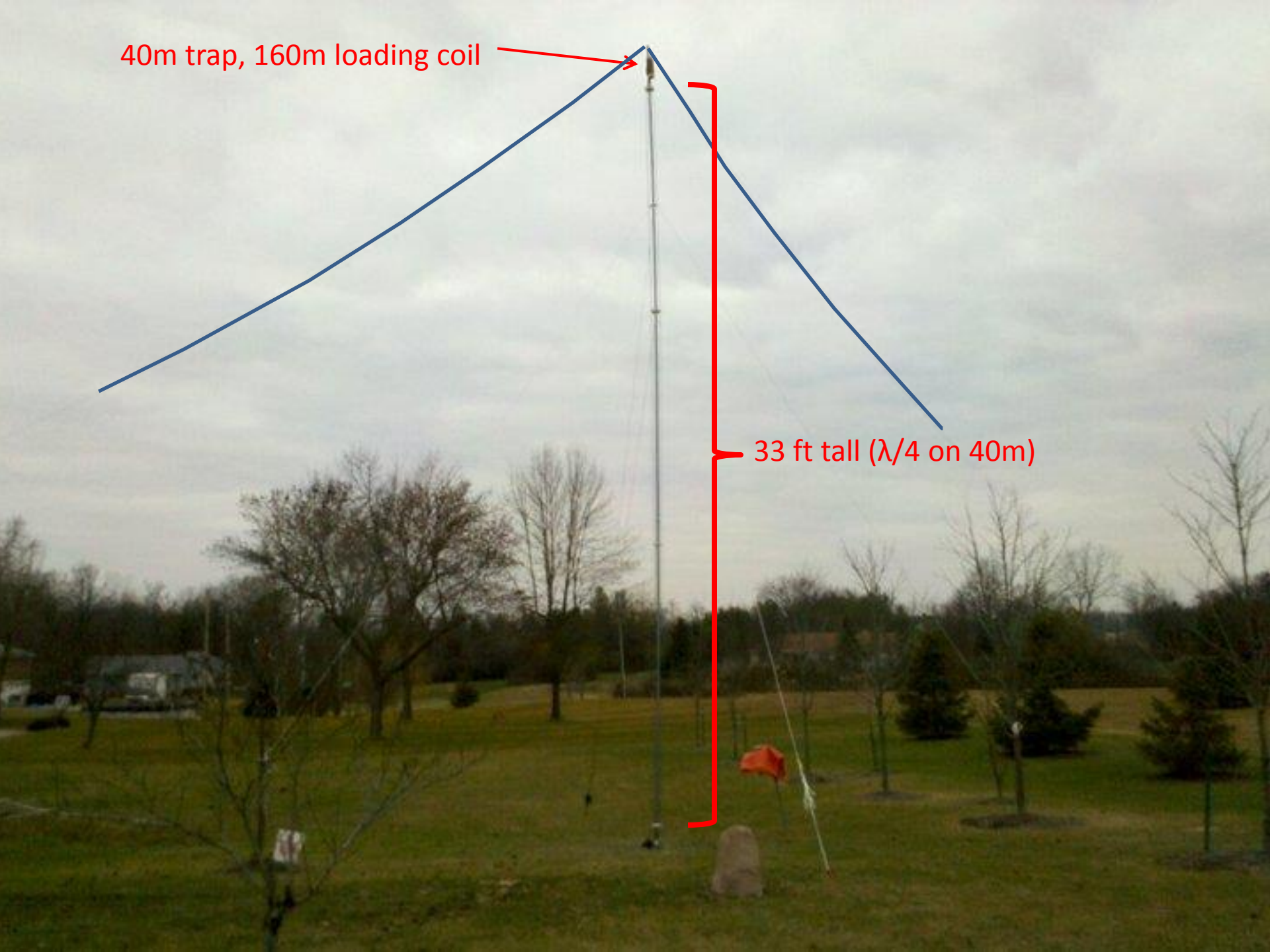
Figure 2: FLEX-1500 Front Panel

UTC		Callsign	His Freq	QSX	Mode	Report Rcvd	Report Sent	Location	Name	Comments
Date	Time									
01-Dec-13	1203Z	H70ORO	7.0096	-	CW	559	599	Nicaragua		QRP W/FLEX-1500
01-Dec-13	1209Z	C6AKQ	7.0222	-	CW	570	599	BAHAMAS		QRP W/FLEX-1500
02-Dec-13	2304Z	E77DX	7.00718	-	CW	559	599	Bosnia-Herzegovina		QRP W/FLEX-1500
03-Dec-13	2240Z	6V7D	7.01	7.011	CW	559	599	Senegal		QRP W/FLEX-1500
03-Dec-13	2304Z	FM/F5MCC	7.002	-	CW	559	599	Martinique		QRP W/FLEX-1500
04-Dec-13	0323Z	J6/W4QO	7.003	7.0041	CW	559	599	St. Lucia		QRP W/FLEX-1500
05-Dec-13	2300Z	C6AUM	7.02	7.021	CW	559	599	Bahamas		QRP W/FLEX-1500
08-Dec-13	1411Z	K3JT	1.8257	-	CW	599WVA	599 IN			ARRL 160M QRP W/FLEX-1500
08-Dec-13	1413Z	NONI	1.8257	-	CW	599IA	599 IN			ARRL 160M QRP W/FLEX-1500
08-Dec-13	1417Z	VE3ADQ	1.8257	-	CW	599ONT	599 IN			ARRL 160M QRP W/FLEX-1500
08-Dec-13	1425Z	K5ZQ	1.8XX	-	CW	599KY	599 IN			ARRL 160M QRP W/FLEX-1500
08-Dec-13	1427Z	KB8U	1.8XX	-	CW	599MI	599 IN			ARRL 160M QRP W/FLEX-1500
08-Dec-13	1431Z	K0PK	1.8XX	-	CW	599MI	599 IN			ARRL 160M QRP W/FLEX-1500
03-Jan-14	0427z	EA8DAO	7.1857	-	SSB	43	59	Canary Island		QRP W/FLEX-1500
12-Jan-14	0139Z	W1AW/4	1.855	-	SSB	59	59	South Carolina		QRP W/FLEX-1500
17-Jan-14	2354Z	W1AW/3	1.862	-	SSB	59	59	Delaware		QRP W/FLEX-1500
23-Jan-14	0128z	PJ2/W8WTS	1.88326	-	CW	559	599	Curacao		QRP W/FLEX-1500
24-Jan-14	0548z	6Y3M	1.9371	1.8383	CW	559	599	Jamaica		QRP W/FLEX-1500
27-Jan-14	1158Z	W1AW/5	7.18	-	SSB	59	59	OKLAHOMA		QRP W/FLEX-1500
28-Jan-14	0304z	SV1ENG	7.0055	-	CW	599	599	Greece		QRP W/FLEX-1500
30-Jan-14	1217z	W1AW/5	1.842	-	SSB	59	59	Texas		QRP W/FLEX-1500
05-Mar-14	0348z	W1AW/4	1.818	1.819	CW	599	599	KY		QRP W/FLEX-1500
05-Mar-14	2350z	ZD8D	7.024	7.0251	CW	599	599	ASCENSION ISLAND		QRP W/FLEX-1500
12-Mar-14	1256z	W1AW/7	1.8237	-	CW	599	599	AZ		QRP W/FLEX-1500
05-Apr-14	2047z	ZL2IO	28.026	-	CW	599	599	New Zealand		QRP W/FLEX-1500
09-Apr-14	1029z	5J0X	10.116	10.1173	CW	599	599	San Andres & Providencia		QRP W/FLEX-1500
20-Apr-14	0940z	KH2L	7.0255	-	CW	599	599	GUAM		QRP W/FLEX-1500
21-Apr-14	0453Z	5J0T	14.001	-	CW	599	599	San Andres & Providencia		QRP W/FLEX-1500
25-Apr-14	0323z	EW7LO	7.0121	-	CW	599	599	Belarus		QRP W/FLEX-1500
23-May-14	0500z	IT9/LY5W	7.025	-	CW	599	599	Sicily		QRP W/FLEX-1500
30-May-14	1128z	E51JQY	18.088	18.08985	CW	599	599	South Cook Island		QRP W/FLEX-1500
06-Jun-14	0406z	HA8RM	10.108	-	CW	589	599	HUNGARY		QRP W/FLEX-1500
09-Jun-14	1104z	C6ATT	10.11	-	CW	589	599	BAHAMAS		QRP W/FLEX-1500
17-Jun-14	0326z	W1AW/5	7.0299	7.031	CW	599	599	AR		QRP W/FLEX-1500
25-Jun-14	0207z	W1AW/9	1.847	-	SSB	59	59	IL		QRP W/FLEX-1500
08-Jul-14	0548z	RF6	18.087	-	CW	559	599	Spain		Borbón as New King of Spain, Felipe VI QRP W/FLEX-1500



40m trap, 160m loading coil

33 ft tall ($\lambda/4$ on 40m)



Radiator is TV mast with wire cage:
6 wires on 6" diameter with Polycarbonate spacers

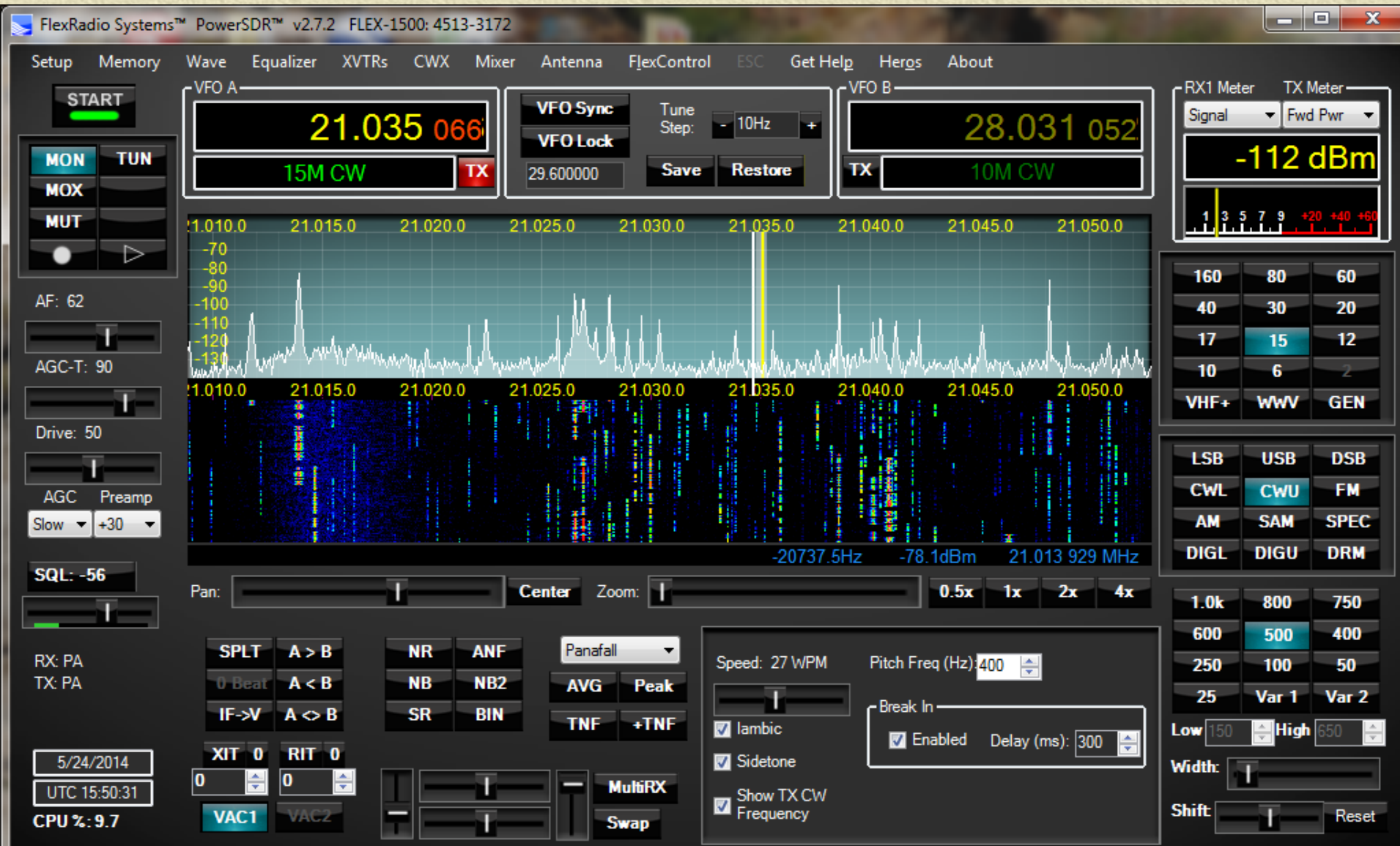
40m trap /
160m loading
coil



32 radials



CQWW WPX CW 24May14



CQWW WPX CW 24May14

FlexRadio Systems™ PowerSDR™ v2.7.2 FLEX-1500: 4513-3172

Setup Memory Wave Equalizer XVTRs CWX Mixer Antenna FlexControl ESC Get Help Hergs About

START

MON **TUN**
MOX
MUT

AF: 62
AGC-T: 90
Drive: 50
AGC Preamp
Slow +30
SQL: -56

RX: PA
TX: PA

5/24/2014
UTC 15:51:20
CPU %: 5.4

VFO A
21.035 066
15M CW TX
VFO Sync
VFO Lock
29.600000
Tune Step: -10Hz +
Save Restore

VFO B
28.031 052
TX 10M CW

RX1 Meter TX Meter
Signal Fwd Pwr
-120 dBm

160 80 60
40 30 20
17 15 12
10 6 2
VHF+ WWV GEN

LSB USB DSB
CWL CWU FM
AM SAM SPEC
DIGL DIGU DRM

1.0k 800 750
600 500 400
250 100 50
25 Var 1 Var 2
Low 150 High 650
Width: Shift: Reset

1.010.0 21.015.0 21.020.0 21.025.0 21.030.0 21.035.0 21.040.0 21.045.0 21.050.0
-70 -80 -90 -100 -110 -120 -130
-8175.0Hz -85.8dBm 21.026 491 MHz

Pan: Center Zoom: 0.5x 1x 2x 4x

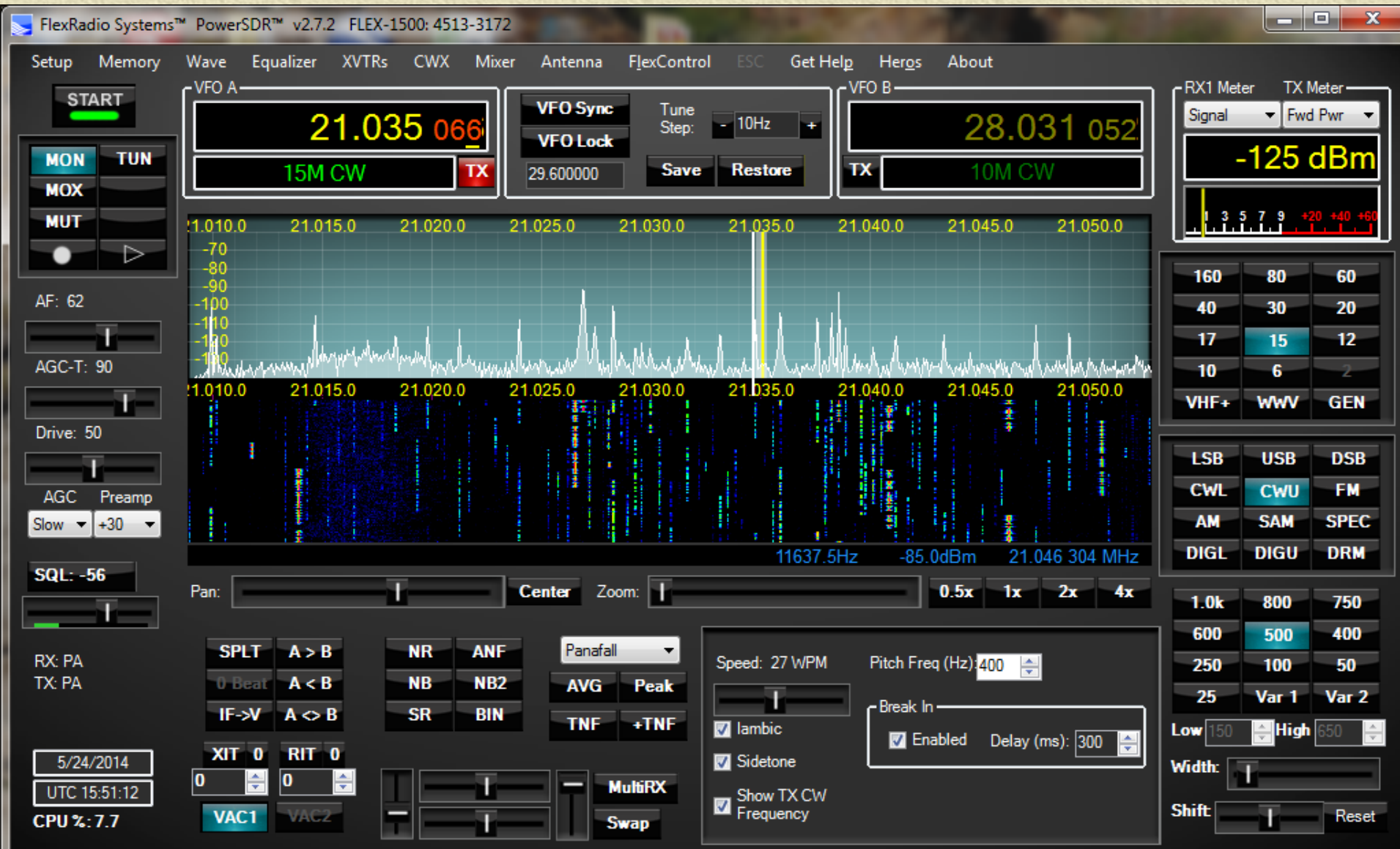
SPLT A > B NR ANF Panafall
0 Beat A < B NB NB2 AVG Peak
IF->V A <> B SR BIN TNF +TNF

XIT 0 RIT 0
0 0
VAC1 VAC2

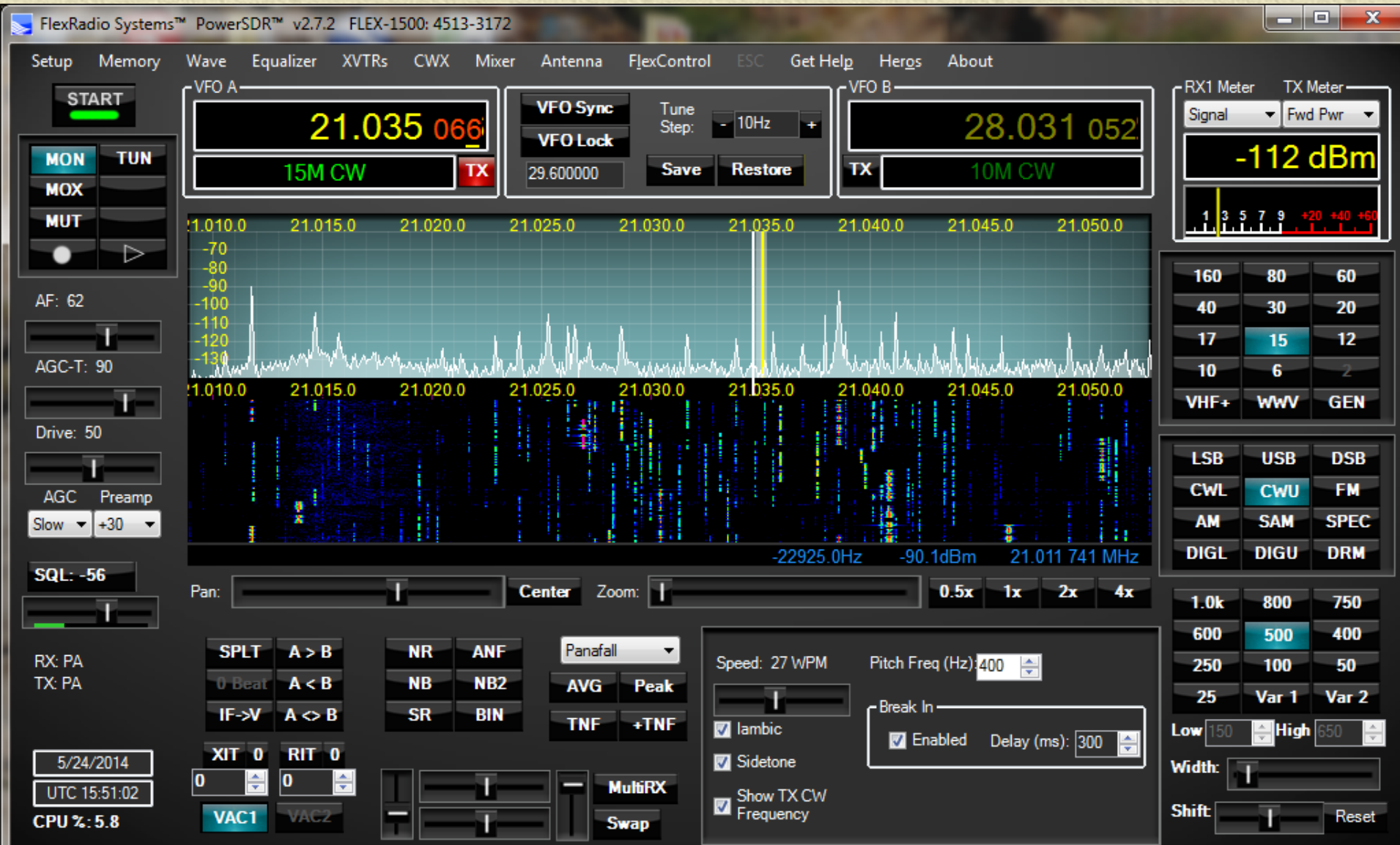
MultiRX Swap

Speed: 27 WPM Pitch Freq (Hz): 400
Break In
[x] Iambic [x] Sidetone [x] Show TX CW Frequency
[x] Enabled Delay (ms): 300

CQWW WPX CW 24May14



CQWW WPX CW 24May14



Digging Out WTAM 1100 Cleveland in the Presence of Local Strong Adjacent Channel Signal Using USB Mode

