

NCDXF/IARU Beacon Network

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NCDXF/IARU Beacon Network

- Worldwide network of high-frequency radio beacons on 14.100, 18.110, 21.150, 24.930, and 28.200 MHz.
- The [NCDXF](#) (Northern California DX Foundation), in cooperation with the [IARU](#) (International Amateur Radio Union), constructed and operates the network.
- The entire system is designed, built and operated by volunteers at no cost to users.

Transmission Pattern

- Each beacon transmits once on each band once every three minutes, 24 hours a day.
- A transmission consists of the callsign of the beacon sent at 22 words per minute followed by four one-second dashes.
- The callsign and the first dash are sent at 100 watts. The remaining dashes are sent at 10 watts, 1 watt and 100 milliwatts.
- At the end of each 10 second transmission, the beacon steps to the next higher band and the next beacon in the sequence begins transmitting.
- See: <http://www.ncdxf.org/beacon/index.html> for real-time display of frequency, station location UTC time.

Real-Time Display

<http://www.ncdxf.org/beacon/index.html>

Repeats – 3 min.

Frequency	Beacon	Location
14.100	RR9O	Siberia
18.110	JA2IGY	Japan
21.150	VK6RBP	Australia
24.930	ZL6B	New Zealand
28.200	KH6RS ³	Hawaii

Clock compensation:

-

0

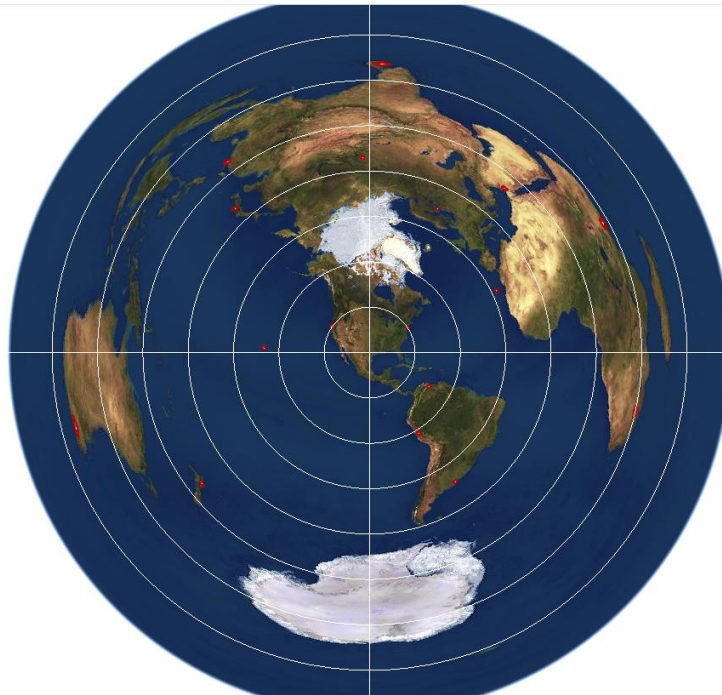
+

23:43:14 UTC

Additional Reception Aids

Beacon Headings:

- See: <http://www.ncdxf.org/beacon/AzMap/index.html>
- Drag map to place your location in the “bulls-eye”



Additional Reception Aids

Beacon Distances:

- See: <http://www.ncdxf.org/beacon/AzMap/index.html>
- Drag map to place your location in the “bulls-eye”

Beacon	Beam Heading	Distance
4U1UN	57°	2850 km
VE8AT	4°	5635 km
W6WX	300°	1968 km
KH6RS	273°	5453 km
ZL6B	230°	11509 km
VK6RBP	256°	16343 km
JA2IGY	315°	10542 km
RR9O	357°	10567 km
VR2B	322°	13021 km
4S7B	356°	15928 km
ZS6DN	97°	15198 km
5Z4B	61°	14683 km
4X6TU	37°	11796 km
OH2B	24°	8923 km
CS3B	62°	7915 km
LU4AA	144°	8527 km
OA4B	146°	5403 km
YV5B	115°	4280 km



4U1UN

Beacon Sounds



ZS6DN

- See: <http://www.ncdxf.org/beacon/beaconlocations.html>

Slot	DX Entity	Call	Location	Grid Square	Operator	Listen
1	United Nations	4U1UN	New York City	FN3Øas	UNRC	
2	Canada	VE8AT	Eureka, Nunavut	EQ79ax	RAC/NARC	
3	United States	W6WX	Mt. Umunhum	CM97bd	NCDXF	
4	Hawaii	KH6RS	Maui	BL10ts	Maui ARC	
5	New Zealand	ZL6B	Masterton	RE78tw	NZART	
6	Australia	VK6RBP	Rollystone	OF87av	WIA	
7	Japan	JA2IGY	Mt. Asama	PM84jk	JARL	
8	Russia	RR9O	Novosibirsk	NO14kx	SRR	
9	Hong Kong	VR2B	Hong Kong	OL72bg	HARTS	

Beacon Hardware

Beacon Controller Version 1



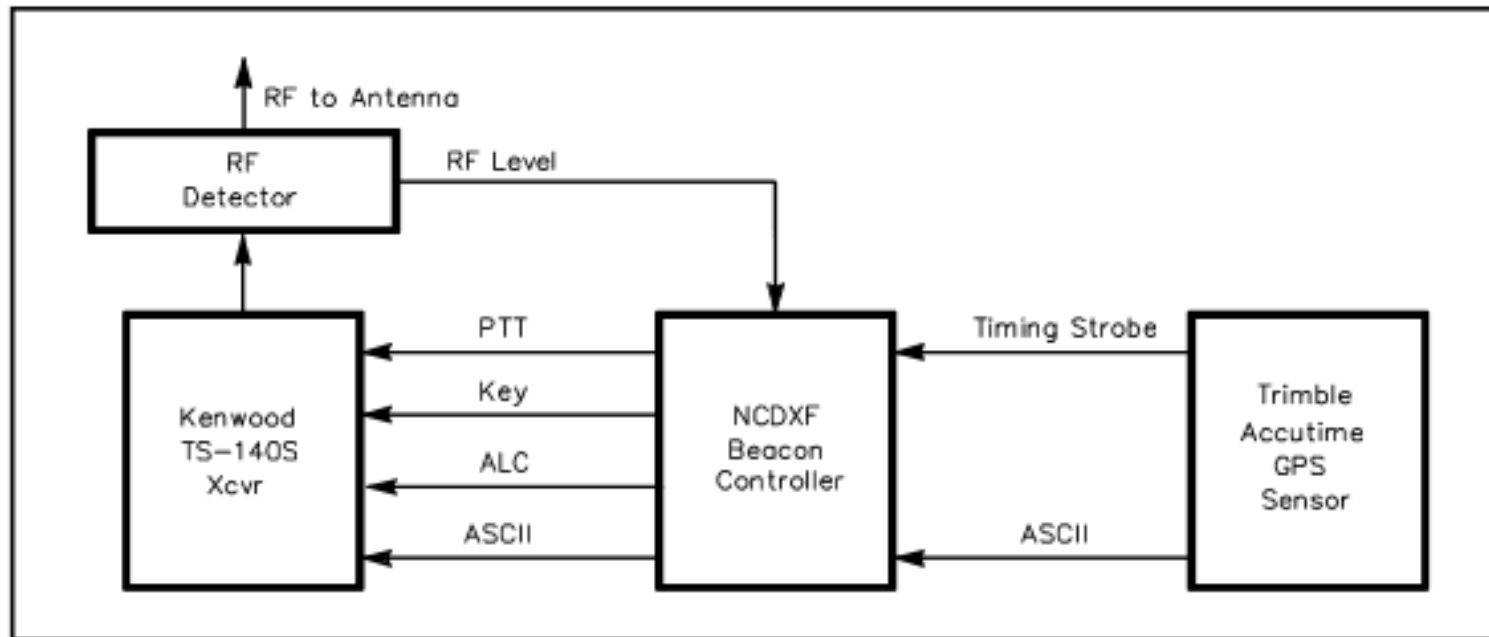
Kenwood – TS-50 and custom controller using 8748 microcontroller

Beacon Hardware



ICOM IC-7200 and custom controller using Arduino platform

Time Coordination (1998 Design)



Details : The NCDXF/IARU International Beacon Network—Part 2
by John G. Troster, W6ISQ and Robert S. Fabry, N6EK

Antennas

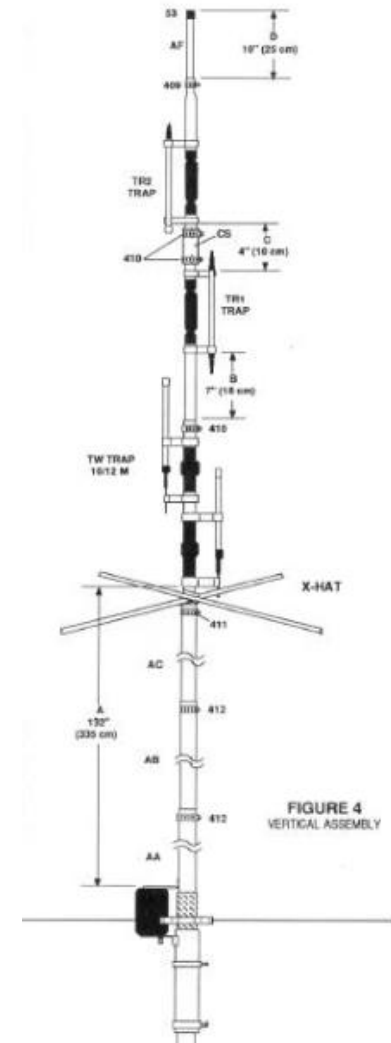


5-band trap verticals:
10, 12, 15, 17, 20 m

Replacement: R6000



Cushcraft MAV5



Cushcraft R5

Monitoring Software (\$25)

Faros 1.4

Automatic NCDXF beacon monitor for Radio Amateurs,
SWL'ers and HF communication engineers

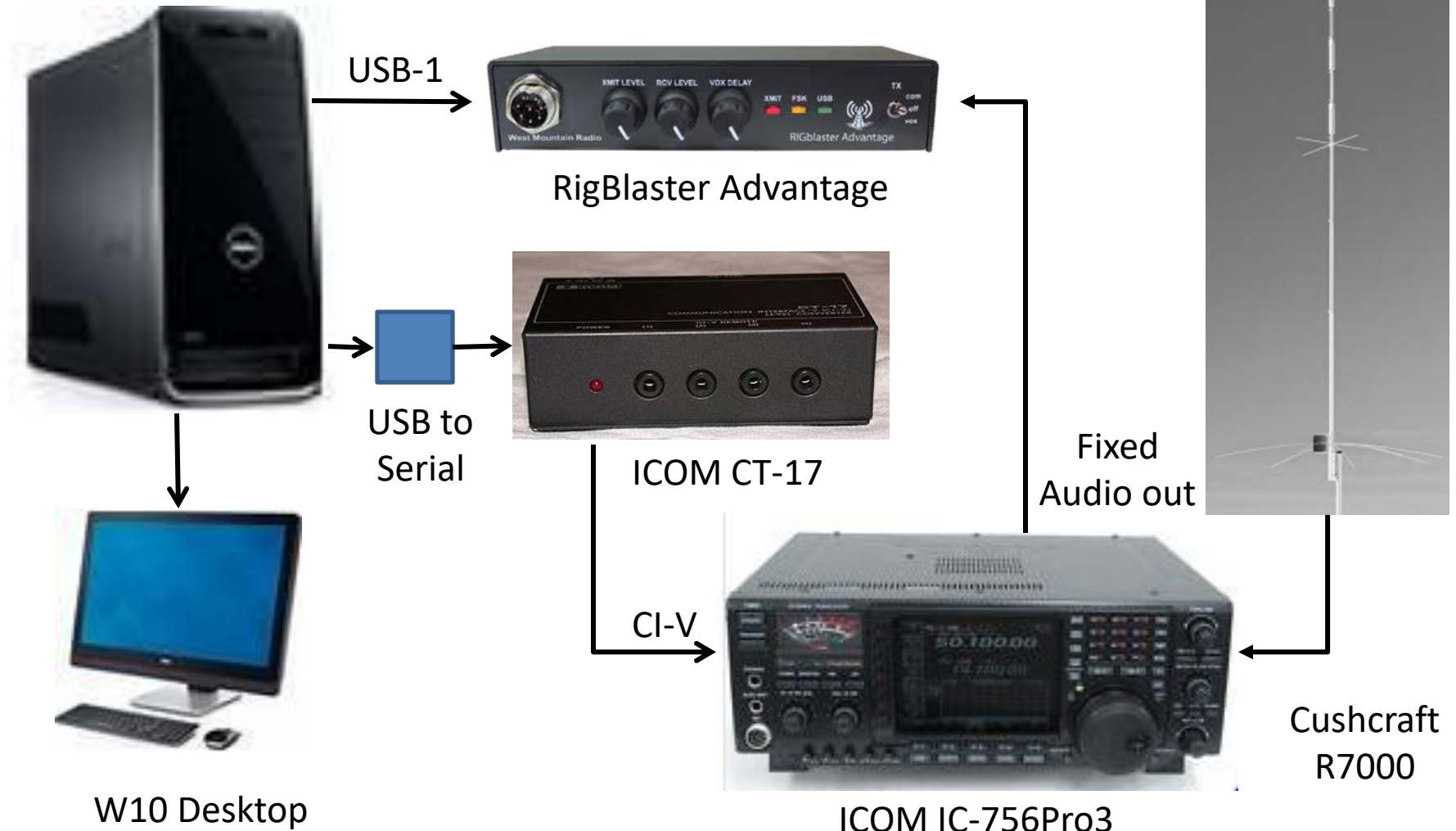
► Features:

- continuously monitors 18 NCDXF beacons on five bands;
- automatically detects the presence of the beacon signals, even in QRM and noise;
- measures the signal-to-noise ratio, the QSB index, and the propagation delay of the signal;
- automatically identifies long path openings based on the signal delay;
- has a real-time display of band conditions;
- maintains a long-term history of beacon observations;
- generates signal charts at regular intervals in a form suitable for Web publishing;
- generates observation logs optimized for automatic analysis.

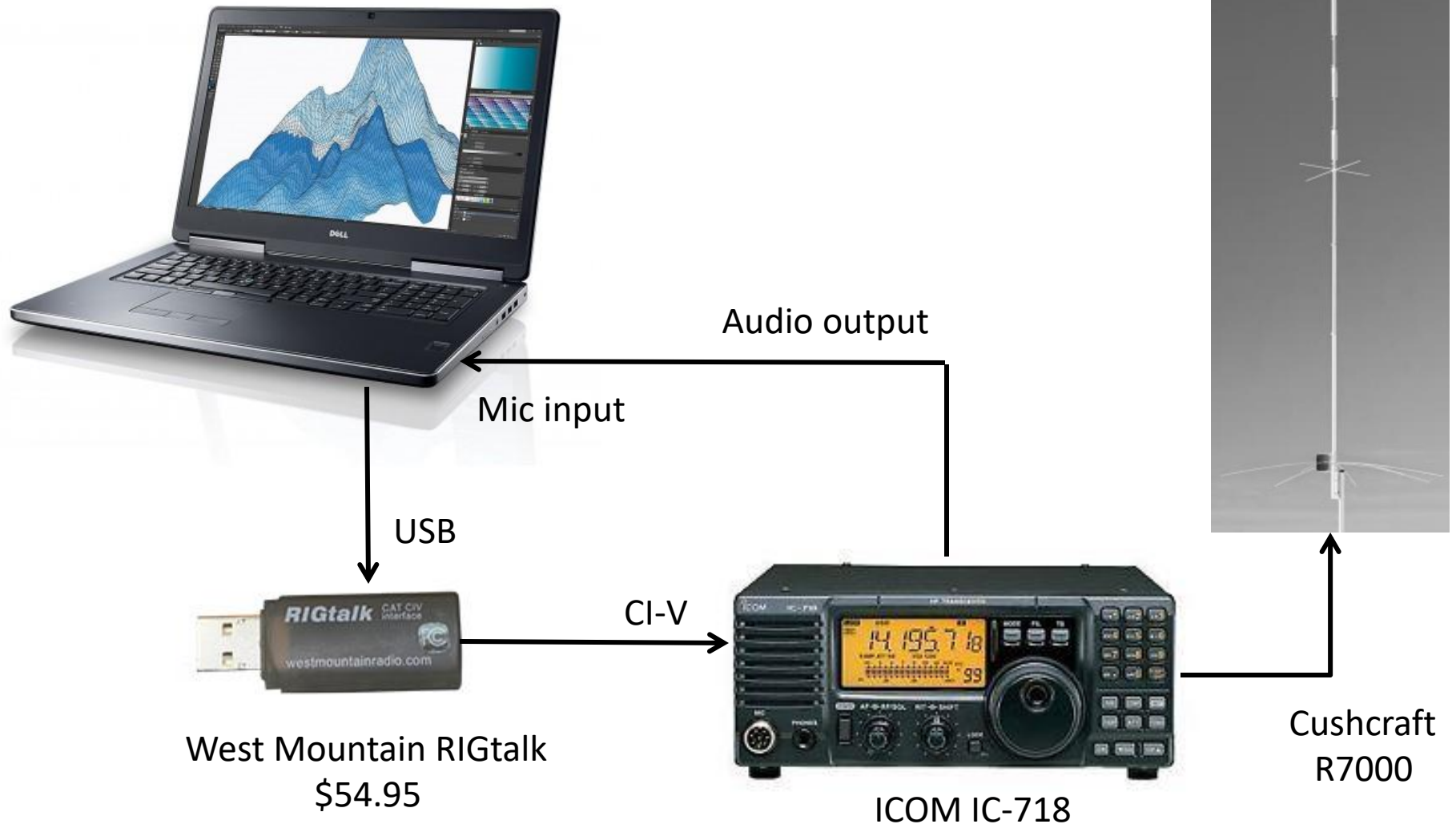
► System Requirements:

- **Operating system:** Windows ME, Windows 2000, Windows XP, Windows 7, Windows 8 or Windows 10;
- **CPU speed:** 1 GHz or higher is recommended;
- **Ports:** one COM port for radio control (optional);
- **Connection to the Internet:** direct (no proxies), 1 MBit/s or faster is recommended. Satellite connections cannot be used because of the propagation delay;
- **Receiver:** any CW or SSB receiver that covers at least one of the beacon bands (14, 18, 21, 24, 28 MHz), preferably a model that is supported by the [OmniRig](#) engine;
- **Antenna:** an omni-directional antenna is recommended;
- **Sound card:** the on-board one is OK;
- **Cables:** two cables are required for connecting the radio to the PC, a standard stereo cable for the audio signal and a CAT cable/adaptor for radio control.

Hardware Connection at W5IFQ



Simplified Hardware



FAROS Setup – General & Radio

The screenshot shows the 'Settings' dialog box with the 'General' tab selected. The 'Home Location' section contains latitude and longitude input fields set to 30° 15' N and 97° 50' W. The 'Auto-Save' section has checkboxes for 'SNR History GIF' and 'SP/LP History GIF', both unchecked, and a frequency dropdown set to '2 hours'. At the bottom, there are checkboxes for 'Disable Windows Animation' (checked) and 'Run at Real Time Priority' (unchecked). 'OK' and 'Cancel' buttons are at the bottom right.

Settings

General | Radio | Audio | Map

Home Location

30 ° 15 ' N 97 ° 50 ' W

Auto-Save

☐ SNR History GIF

☐ SP/LP History GIF

Every 2 hours

☒ Disable Windows Animation

☐ Run at Real Time Priority

OK Cancel

The screenshot shows the 'Settings' dialog box with the 'Radio' tab selected. The 'Enable CAT Interface' checkbox is checked. Below it, the 'CAT Interface' section has two radio buttons: 'Use Radio 1' (selected) and 'Use Radio 2', with 'IC-756 Pro III' and 'NONE' respectively. A 'Configure...' button is next to the 'Use Radio 1' option. The 'Force CW Mode' checkbox is also checked. 'OK' and 'Cancel' buttons are at the bottom right.

Settings

General | Radio | Audio | Map

☒ Enable CAT Interface

CAT Interface

☒ Use Radio 1 IC-756 Pro III

☐ Use Radio 2 NONE

Configure...

☒ Force CW Mode

OK Cancel

The screenshot shows the 'Omni-Rig Settings' dialog box with the 'RIG 1' tab selected. It contains various configuration options for the radio interface, including 'Rig type' (IC-756 Pro III), 'Port' (COM 10), 'Baud rate' (9600), 'Data bits' (8), 'Parity' (None), 'Stop bits' (1), 'RTS' (Low), 'DTR' (Low), 'Poll int., ms' (500), and 'Timeout, ms' (4000). 'OK' and 'Cancel' buttons are at the bottom right.

Omni-Rig Settings

RIG 1 | RIG 2 | About

Rig type IC-756 Pro III

Port COM 10

Baud rate 9600

Data bits 8

Parity None

Stop bits 1

RTS Low

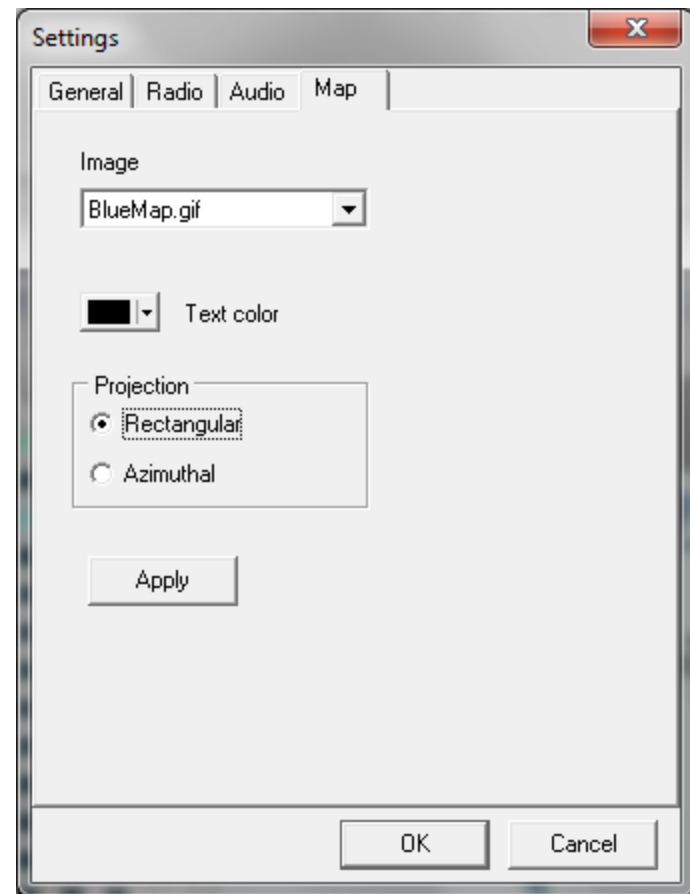
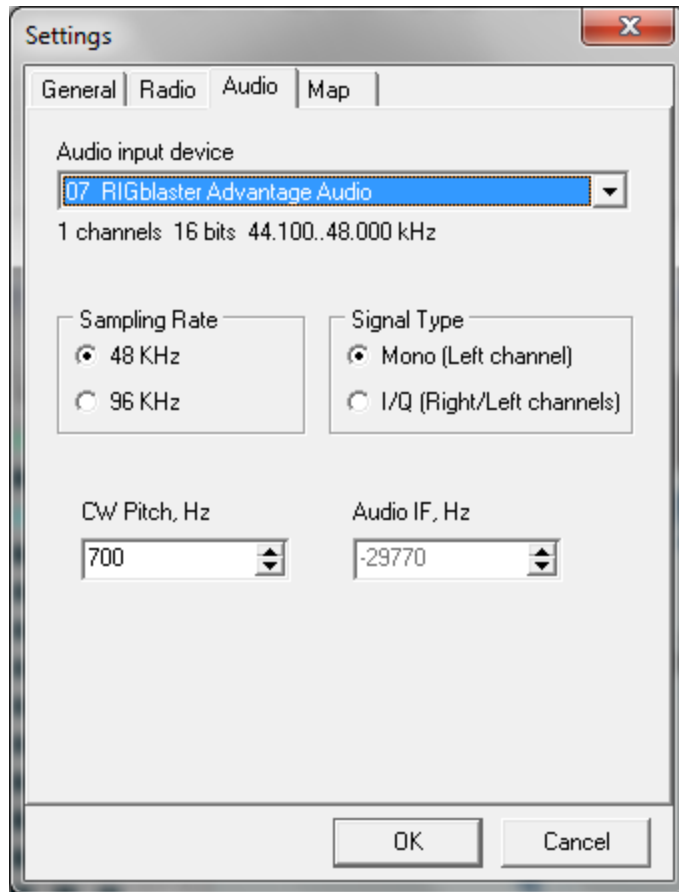
DTR Low

Poll int., ms 500

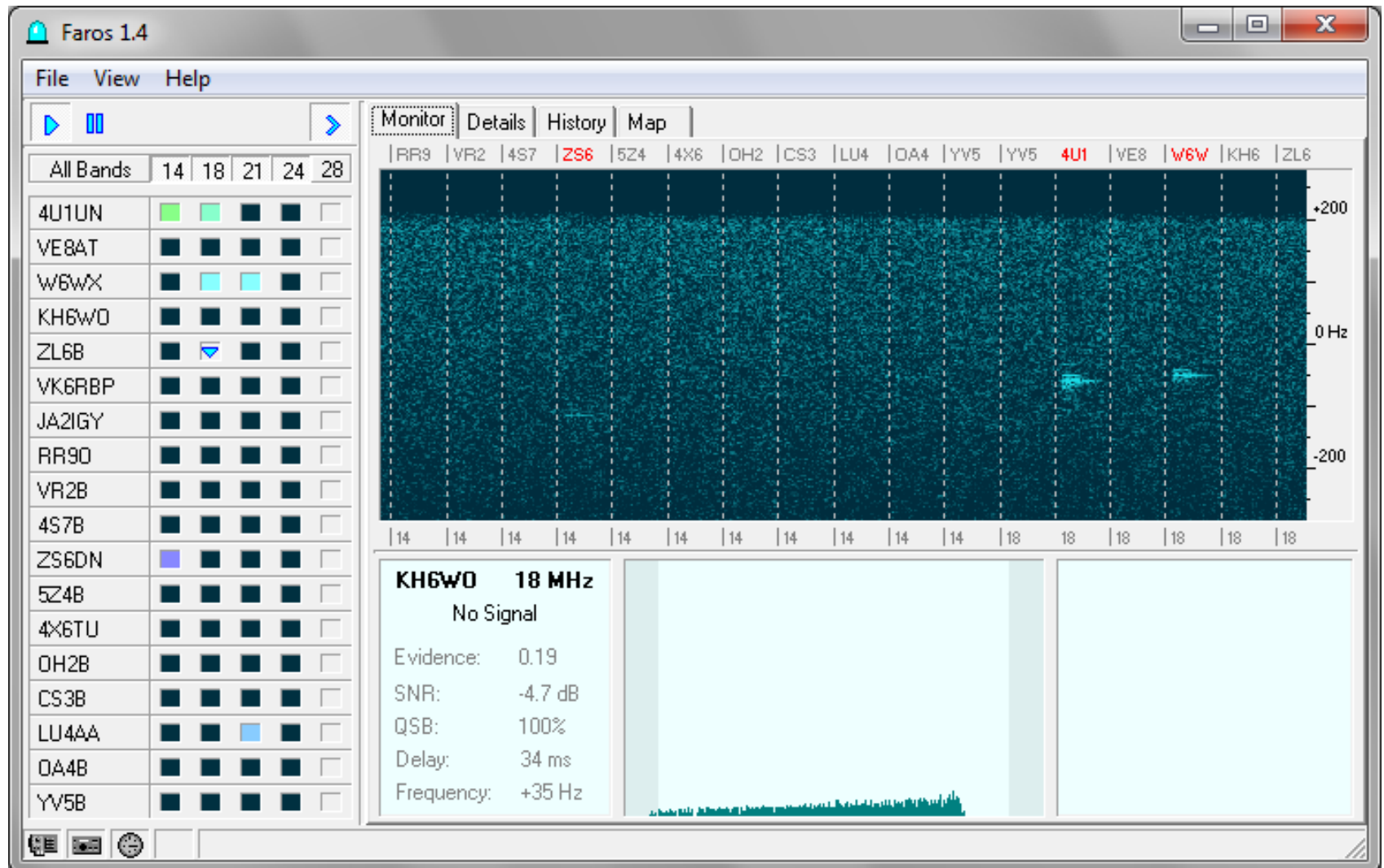
Timeout, ms 4000

OK Cancel

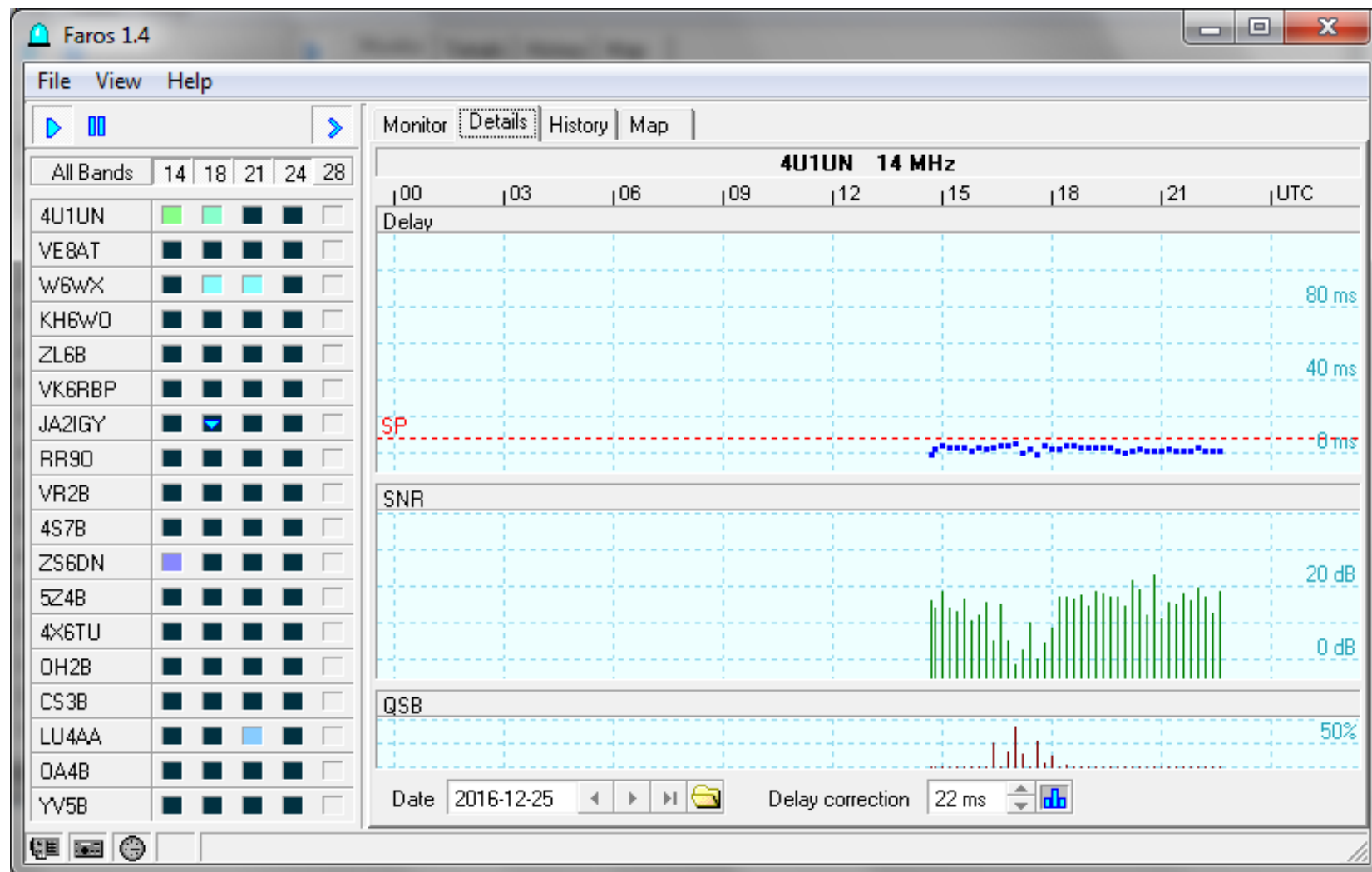
FAROS Setup – Audio & Map



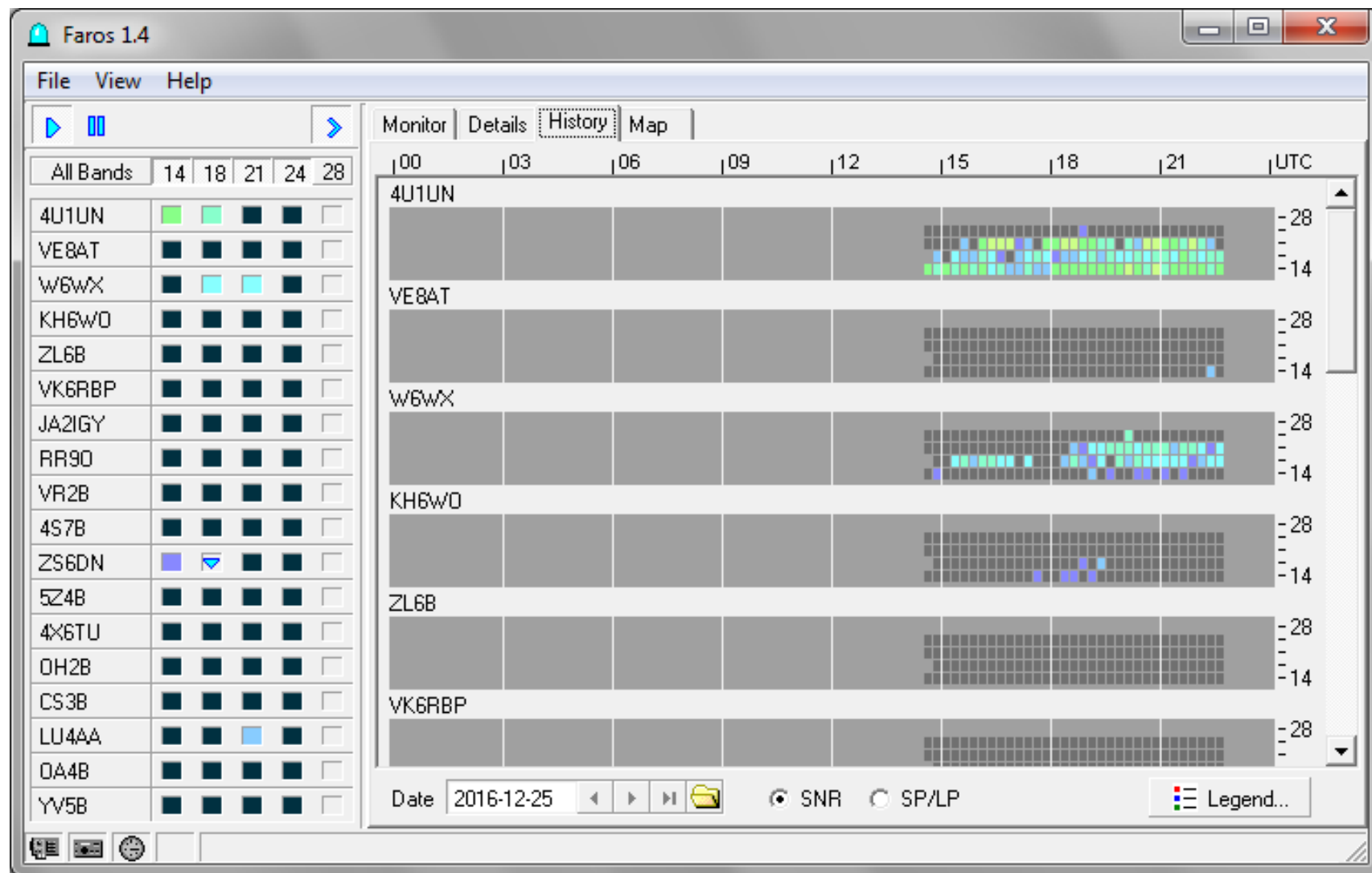
Monitor Page



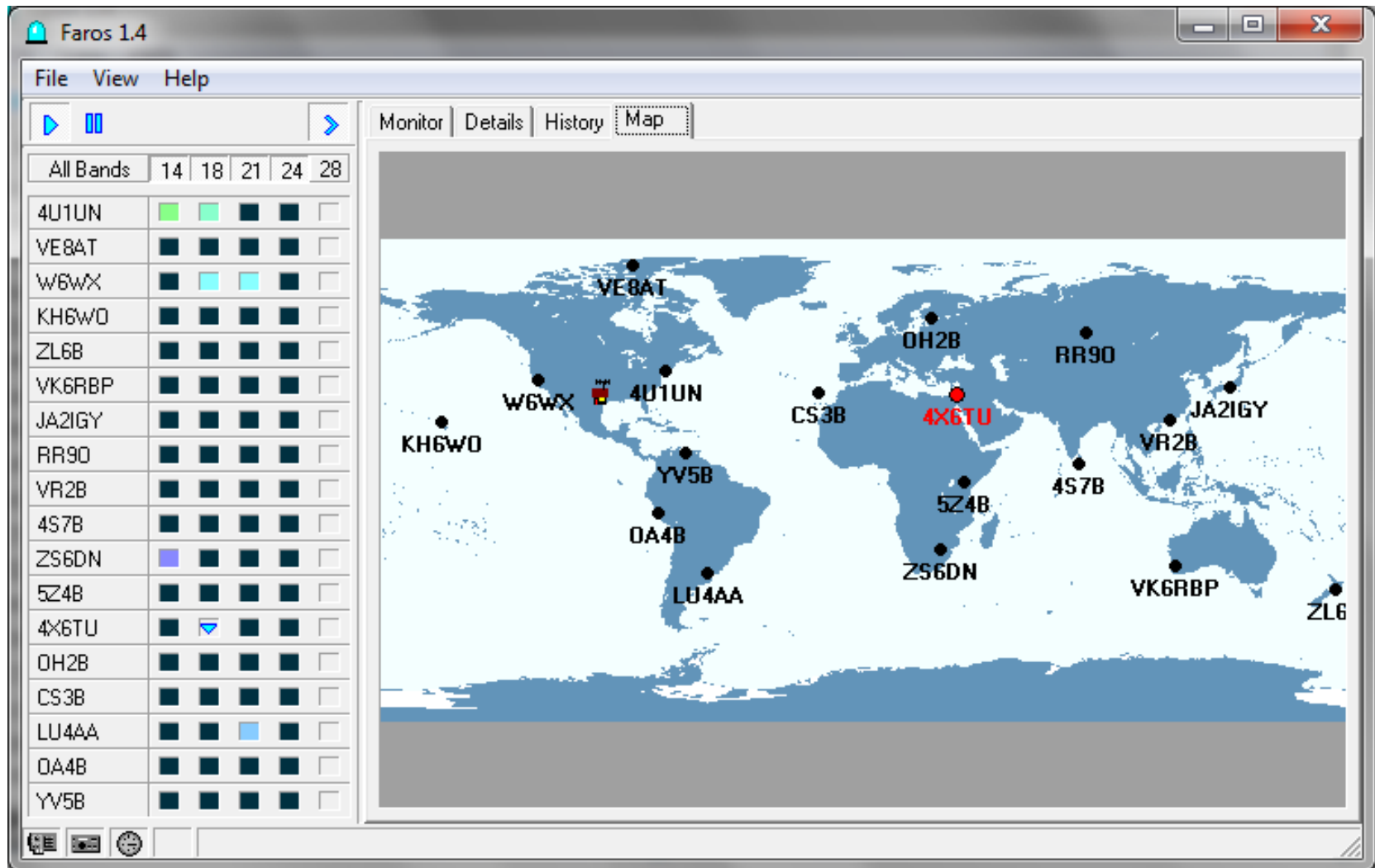
Individual Station Details Page



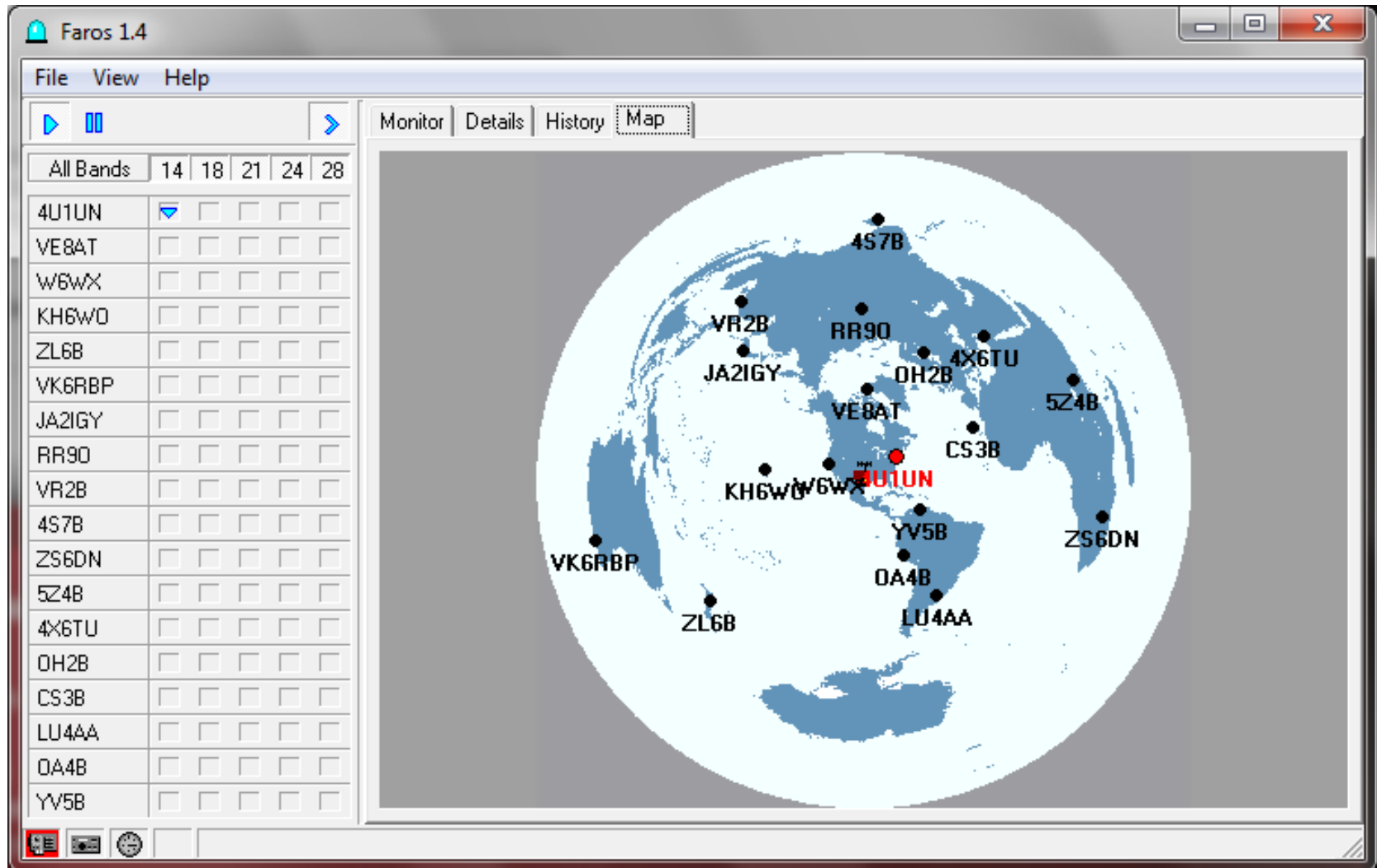
History of Reception Page



Map of Transmitting Stations (Rectangular)



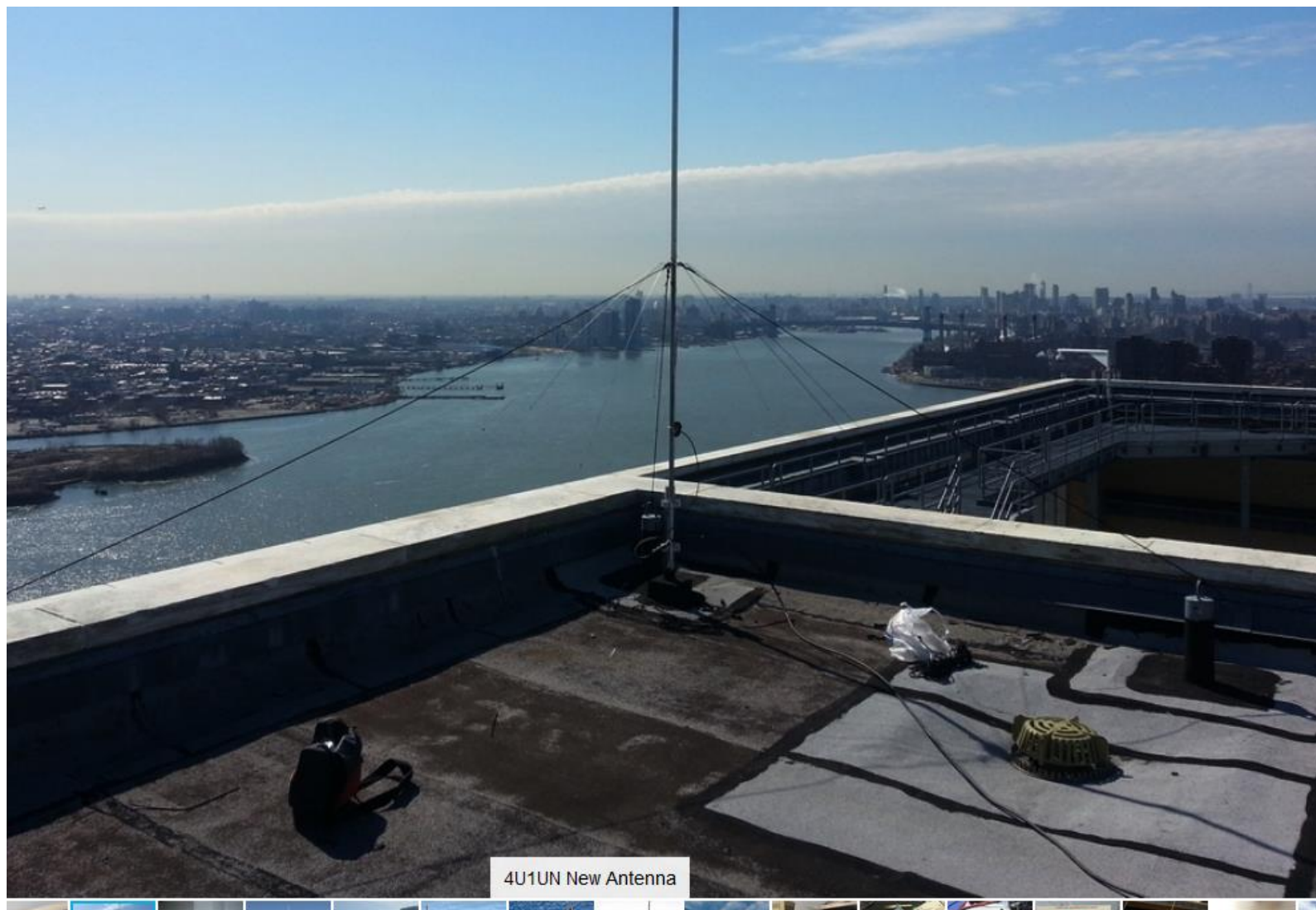
Map of Transmitting Stations (Azimuthal)



Station Pictures



Station Pictures



4U1UN New Antenna

Station Pictures



KH6RS - MA5V Antenna

Station Pictures



OH2B

Station Pictures



VE8AT antenna

Station Pictures



VK6RBP - R5 Antenna on 10 meter tower

Station Pictures



W6WX winter weather April 5, 1999

Station Pictures

