

Clipperton Island DXpedition 2013

TX5K – Station Configuration

Guideline

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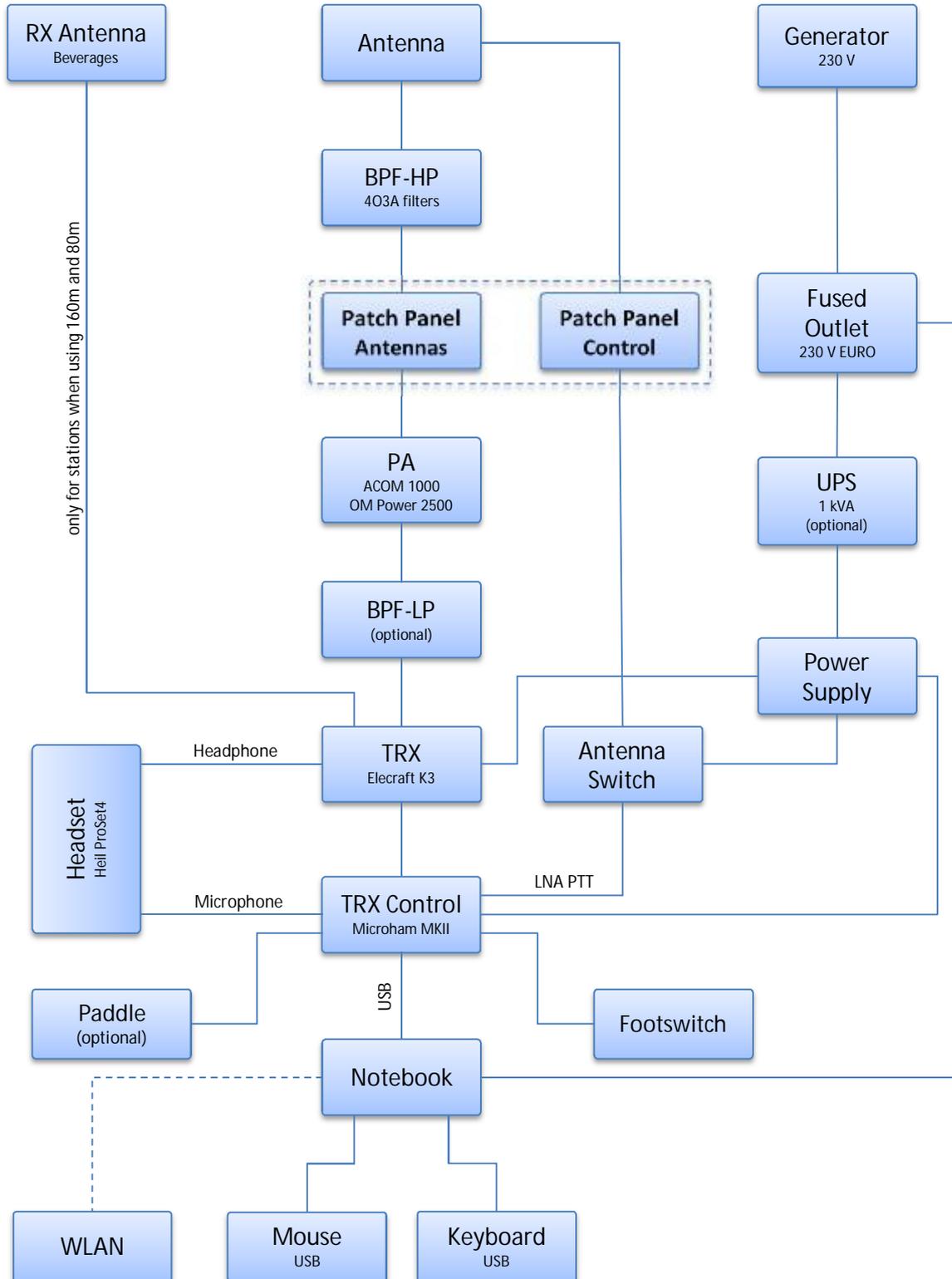
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Station Overview

We want to provide the same standard user interface as best as possible at all stations to minimize the operators learning efforts and provide CW, SSB and RTTY operation without limitations.

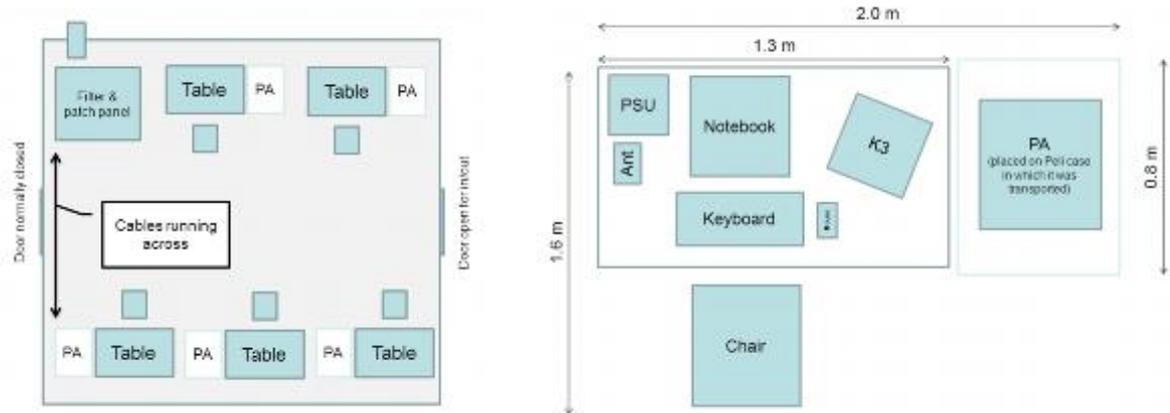
Hardware



The standard hardware configuration consists of 10 similar sets:

- Notebook with Win-Test software and connection to WLAN
- Keyboard and mouse
- Transceiver Elecraft K3 with Heil headset ProSet4 and low power bandpass filters (optional)
- Microham MKII interface
- Power amplifier ACOM 1000 or OM Power 2500
- High power 4O3A bandpass filters
- Antenna switching unit (VDAs and 4Squares)
- 13.8 V DC power supply
- UPS 1 kVA (optional) for continuous operation during generator refilling or maintenance

Station layout



Manuals

Elecraft K3

<http://www.elecraft.com/manual/E740107%20K3%20Owner%27s%20man%20D10sm.pdf>

<https://itunes.apple.com/de/app/k3-micro-manual/id404879421?mt=8>

Microham MKII

http://www.microham.com/Downloads/MK2_English_Manual.pdf

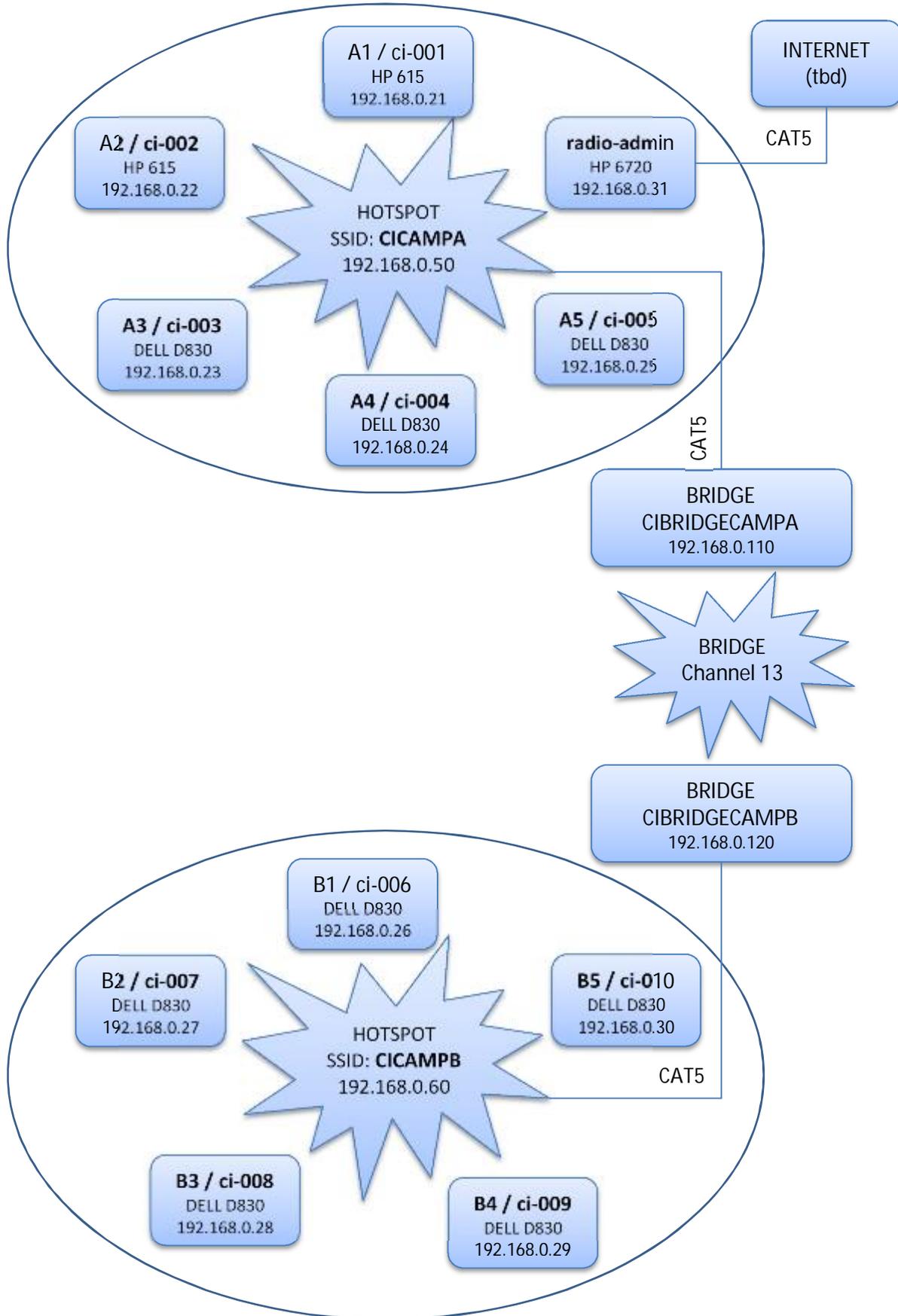
ACOM 1000

http://www.hfpower.com/new/manual/OPER_MAN%20A1000.pdf

OM Power 2500 HF

<http://www.om-power.com/pdf/eom2500hf.pdf>

Network



Note

The network for radio operations is a closed network with password protection. No other computer than shown here will be allowed to connect to this network. Each camp has its own WIFI access point (CICAMPA and CICAMPB) which can be connected by the station computers. The camps are connected with each other through a WIFI bridge. The radio-admin computer is connected as well to the radio network as to the external network (tbd). Its purpose is to provide log data for DXA and to have an internet connection for DX cluster access which will be available in the whole radio network. The computers at the radio stations will not have internet access!

Software

Each computer is equipped with Windows XP Professional SP3 operating system. The user names are ci-001 to ci-010, have administrator privileges and no password is needed for log-on.

The following applications are called essentials and are installed on all computers, licenses applied where needed:

- Win-Test v4.9.1, including wtDxTelnets with latest WtCom.dll, latest docs as well as latest available CTY data
- Microham USB router v8.2.3, including MKII documentation
- MMTTY engine v1.68 including optional extfsk.dll
- RecAllPro v1.9 for continuous audio recording

In addition there are several utilities available:

- DX Atlas v2.25 with latest data lists and extended topo maps
- HamCap v1.7 including latest VOACAP/ITSHFBC v120722
- IonoProbe v1.36
- Elecraft K3 Utility v1.12.9.22 with Prolific USB-to-Serial driver and all current Elecraft K3 manuals
- Adobe Acrobat Reader as PDF viewer
- MS Office 2003 Professional (German) as general-purpose office suite

Manuals

Win-Test

http://docs.win-test.com/wiki/Main_Page

MMTTY

<http://hamssoft.ca/media/Dload/mmtty/MMTTY%20Help%20v166G.pdf>

Hardware Configuration

Elecraft K3

The Elecraft K3 provides many configuration settings in the main and configuration menus (button MENU/CONFIG). Here you can find some of the more important configuration settings specific to our equipment.

Changes on these settings can lead to a dysfunction of the station! They only should be done if you know what you are doing! Otherwise please ask an experienced user!

Don't be a macho! If you have misconfigured any setting and the station doesn't work anymore, please also ask an experienced user!

You may play with the radio at our onboard station we hopefully can install onboard the Shogun to get familiar with the radio.



CAT configuration

Being set to 38400 bit/s by default after startup, the speed on the CAT interface is somehow overkill. We should return to a completely sufficient, more robust and less resource consuming speed of 9600 bit/s. Use the *CONFIG->RS232* setting to set the speed. Remember that the baud rate setting in Win-Test has to be the same as in the radio.

Digital Mode TX

Using the button *DATA MD*, the data mode must be set to FSK D (only possible if the mode is set to DATA). This has to be done for all bands individually.

Use the button *PITCH* to change the tone height of mark to an acoustically better tone of 1275 Hz (must be equal to settings in the MMTTY program). The shift must be at 170 Hz.

SSB TX – Microphone Configuration

When using the MKII interface the setting should be

When connecting the headset directly to the K3,

SSB TX – Microphone Drive

The gain of the microphone driver (*MIC* potentiometer control) should be positioned somehow between level 20 and 40.

SSB TX – Equalizer

To produce a little bit more punch in the SSB output, for people having a darker voice it might be good to lift the audio spectrum at 1.6 kHz and 2.4 kHz by about 5 to 10 dB. This can be done in the *MENU* configuration, setting the parameters TX EQ and then button 6 (for 1.6 kHz) or 7 (for 2.4 kHz), adjust with main dial to +5...+10 dB.

SSB TX – Speech Compressor

The compression level of the speech compressor (*CMP* potentiometer control) should not be set to more than about level 22.

Audio Recorder – Line-Out Routing

To enable continuous recording of audio even during transmission, the audio routing to the Line-Out port has to be re-configured. Instead of providing a fixed level audio output during reception only, LINE-OUT should be configured to provide volume controllable audio output during reception AND transmission. To do so, we have to set the parameter *CONFIG->LIN OUT* to =*PHONES*.

RTTY operations

Please be advised that it is necessary to adopt the AF level according to the needs of MMTTY and to switch off any possible binaural or pseudo audio effect mode (AFX button).

Microham MKII

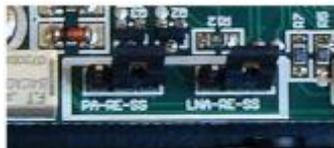
On its main board the MKII provides several jumpers, which must be configured properly. The top cover can be taken off after removing the two screws at the side.

Changes on these settings can lead to a dysfunction of the station! They only should be done if you know what you are doing! Otherwise please ask an experienced user!

Before firing up each station the MKII's have to be checked if they have set the proper settings!



PA / LNA PTT



Both PTT ports will be used (PA PTT for the power amplifiers and LNA PTT for beverages and hotswitching protection of antenna controllers) and can be configured for relay or solid-state operation. In our case we don't use the QSK capabilities and prefer the relay settings for security reasons and additional path decoupling. Thus, the related jumpers on the MKII board have to be set to RE.

Microphone

The microphone ports of the MKII can be configured for dynamic or electret microphones. There are two DYN-EL jumpers, one each for the front and for the back microphone connectors. In our case we will work with ...

<p>Jumper for mic (rear panel) DYN: open ELECTRET: closed</p>	<p>Jumper for mic (front panel; serial number < 900)</p>	<p>Jumper for mic (front panel; serial number > 900)</p>

RFI modification



If not already done this modification has to be done before start-up. It has to be done for devices with serial numbers smaller than 765. Just bypass the shield of the USB jack and the metal mounting bracket of the DB37 jack as shown in the picture by a 0.001-0.01 μ F high voltage capacitor.

RX and TX audio level adjustment

Cabling

The DB37 cable provided with the MKII should be wired completely to the K3 and the USB cable to the computer, except the 13.8 V cable. **The power for the MKII has to come from a separate 13.8 V power supply (not from the same power supply the transceiver is connected to)!**

In case the special Heil adapter for the ProSet4 and the K3 8-pin microphone jack is available it should be connected to the 8-pin jack of the MKII rear microphone adapter and wired to the microphone AND the footswitch. Otherwise the microphone should be connected to the EXT MIC port on the front panel of the MKII and the footswitch with a Cinch connector to the FOOTSW port on the rear panel of the MKII.

The headphones should be connected directly to the K3 PHONES front panel jack.

Antennas

160m



Camp A: n/a

Camp B: Titanex V160E, 27m long, with matching unit, radials



80m

Camp A: 4-Square, 4x 18m Spiderbeam fiberglass masts, Comtek controller, radials



Camp B: Titanex V80E, directly fed, radials

40m/30m

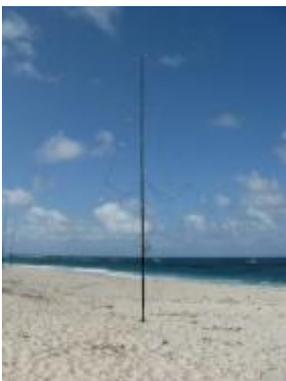
Camp A: 4ele VDA

Camp B: 4-Square, 4x 12m Spiderbeam fiberglass masts, Comtek controller, radials



20m to 10m

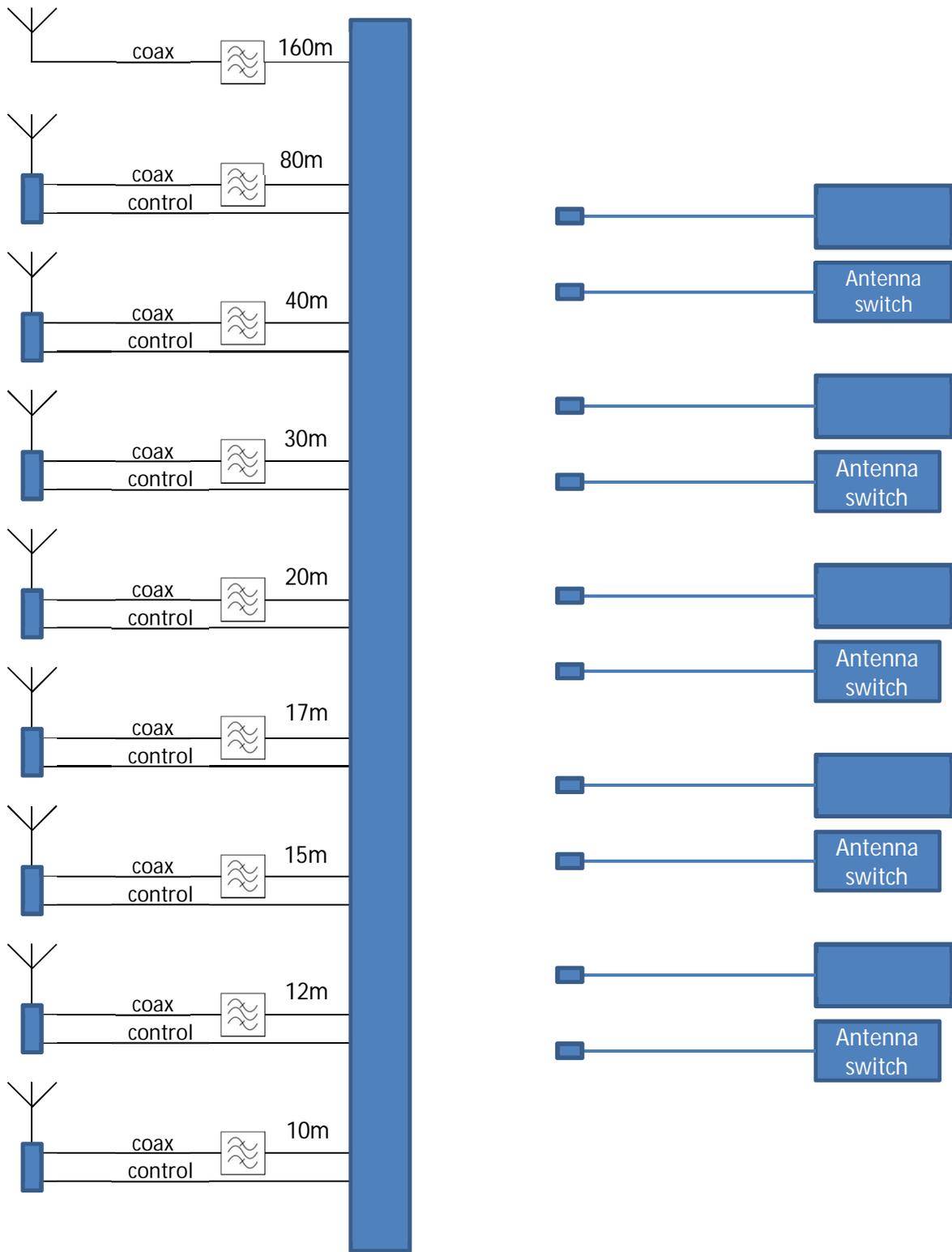
Camp A and B: 4ele VDA each



Antenna Selection

The radio shacks at each camp will have an antenna patch panel where all shortwave antennas (both coax and control cables) are connected. From each station table a coax cable and a control cable runs to the patch panel. For a band change you just have to change the coax and control cable at the patch panel. Behind the patch panel each band connector will have a monoband high power filter which is permanently connected to the patch panel one side and to the antenna coax cable on the other side. So there is no need to change any filters and cables at the power amplifier.

TX5K – Station Configuration





Antenna Switching

Each station will have an antenna switch which controls the direction of the vertical dipole arrays and the 4-squares. The switches contain a hot-switching protection, triggered by the PTT signal from the MKII.



North-West



North-East



South-West



South-East

Software Configuration

Inkl Warnhinweise

General port considerations

System / Boot settings

Make sure that following background programs are deactivated:

- Avira AntiVir (it should be only activated on the computer directly connected to the internet)
- HP Update
- Microsoft Update
- Adobe Update

The Windows firewall should allow traffic for the programs Win-Test and wtDxTelnet.

The following programs will be started automatically after reboot:

- microHAM USB router
- Win-Test
- MMTTY
- DXAtlas

Microham USB Router

Win-Test

Standard messages for CW RTTY

General

All logging will be done with the Win-Test software, generating CW through the WinKey feature of MKII and using the MMTTY plug-in for RTTY operation. For SSB operation a headset is connected through the MKII for recording TX audio. PTT signals for external equipment (LNA, PA and antenna switch) will be generated by the MKII.

Win-Test was properly configured to work without problems. If for some reason any function / setting should not work as expected, please don't try to fix the problem if you don't know what to do. Please ask an experienced user instead!

Don't be a macho! If you have misconfigured any setting and the station doesn't work anymore, please also ask an experienced user and do not keep it secret!

You may play with the radio and Win-Test at our onboard station we hopefully can install onboard the Shogun to get familiar with the station.

Why Win-Test?

At the moment there are four different applications which are mainly used for DXpeditions and contests: N1MM, StarLog, Win-Test and Writelog. All programs have advantages and disadvantages. Most of us grew up with CT in the 1990's. After the development of this great software for DOS was stopped and the switch from DOS to Windows was inevitable the search for the right software began. Here the argumentation which lead us to use Win-Test over the last eight years. The arguments given for the other software was valid years ago, it still can be the same or different today.

Writelog

- Wasting a lot of computer resources
- Complicated network configuration
- Not clearly arranged user interface

N1MM

- Didn't have the functionality of Win-Test in that time
- Complicated network configuration
- Not clearly arranged user interface
- Too many people wanting too many features; and authors wanted to fulfill all wishes

StarLog

- Maybe the best software for DXpeditions only
- Not available to the public, only used by FSDXA

Win-Test

- Look-and feel from CT
- Same commands as CT
- Easy to configure
- Doesn't need much computer resources

Of course it is only fair to mention the disadvantages of Win-Test:

- No user profiles
- No separate messages for CW and RTTY (→ see also chapter)

Knowing the disadvantages we can easily find the workarounds. Having no user profiles means that the arrangement of windows or saved messages for CW and RTTY can be different when coming back to the station after a shift break. So the aim for ALL operators should be not to play not too much with window arrangement / colors / fonts to minimize the time for re-arrangement when changing the operators.

First Steps

If you are already familiar with Win-Test and already use it for DXpedition or contests, then you may skip this chapter. If you are new to Win-Test there are two ways to explore it: install it on your computer and run it. Or ask someone who already uses Win-Test to operate from his place. The Win-Test website offers two different downloads:

Test version

<http://download.win-test.com/v4/demo/wt-4.8.0-demo.exe>

This version has full functionality for 15 days with the exceptions that the program shuts down randomly between 30 minutes to 2 hours after starting the program and that output files (CAB, ADIF, TXT) cannot be saved. By purchasing on http://www.win-test.com/rubrique.php?id_rubrique=1840 you can turn it into a full version.

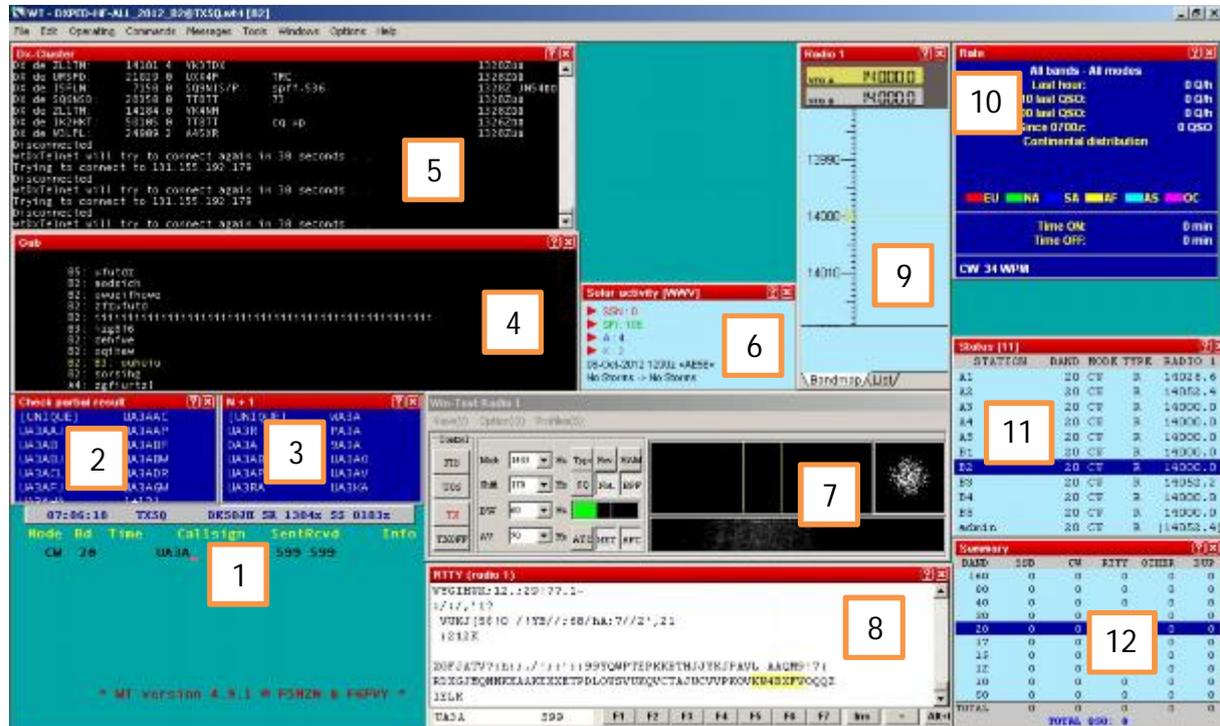
Free DXpedition version

<http://download.win-test.com/v4/freeware/wt-4.8.0-dxped.exe>

This is a full version of Win-Test with the only limitation that it only contains the DXpedition mode for logging on 160m to 6m. No contests are supported in this version. But this might be the better version to get trained for the DXpedition.

If you used CT in the good old DOS times you will have fewer problems to get used to Win-Test. Most of the commands from CT are implemented in Win-Test. Also the look and feel was adapted to CT. The documentation can be found here: http://docs.win-test.com/wiki/Main_Page. It is also offered a daily snapshot which can be downloaded as PDF.

Main window



Shown above a sample screenshot of Win-Test in action. This windows arrangement is set as default on each computer and should not be changed too much to have a similar setup at each station for each operator. Just as a short overview here the explanation of the windows:

1. Log window: Here you enter the callsign of the stations you work.
2. Check Partial [F12]: When entering at least 3 characters, Win-Test looks in the master database and the log for the callsigns including the 3-character string.
3. N+1 [F8]: When entering at least 3 characters, Win-Test looks in the master database and the log for the callsigns differing from the partial callsign by one character
4. Gab window [Alt-I]: Shows the internal gab traffic.
5. DX-Cluster window [Alt-O]: Shows the DX cluster monitoring window.
6. Solar activity: Shows the solar activity, extracted by the WWV reports on the DX cluster
7. MMTTY window: Tuning window for RTTY operation
8. RTTY (radio 1) window: Shows the RX/TX messages sent through RTTY
9. Bandmap: When connected to the DX cluster it can give a very useful overview what's around your frequency or split range
10. Rate window [Alt-R]: Statistics
11. Status window [Alt-J]: Shows the other stations in the network with band, mode and frequency
12. Summary window [Alt-S]: Shows the band-mode summary of all logged QSOs in the local network

Operator Identification

Starting their term at the station all operators should log-on themselves in Win-Test using the OPON text command. It should be a preventive measure helping to sort out any kind of queries arising after the DXpedition during post-processing and QSLing.

After entering the command OPON in the callsign field of the log, a mask will pop-up where you can enter a nickname or just select your callsign to log-on as operator in Win-Test.

How to "opon":

1. If you login for the first time just enter OPON in the callsign field

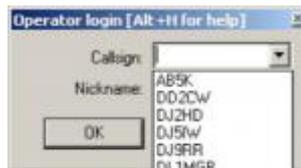
```

40 23:57 K9RIE 59
40 23:57 N3QXC 59
40 23:58 N4XX0 59
40 23:58 VO1BBN 59
80 23:58 OPON_ 59
  
```

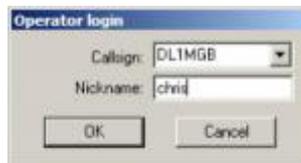
and press ENTER. Following window will appear:



2. Select your callsign from the dropdown menu:



3. Enter a nickname (limited to 13 characters; your own callsign is not allowed) of your choice and confirm with OK:



4. You can see your login status now in the head line of Win-Test:



5. The login information is distributed over the whole network. From now on when you start your term on any station just enter your nickname you entered before into the operator login window into the callsign field and press ENTER:

```

11:47:59 TX5Q DK50JH SR 1306z SS 0056z
Mode Bd Time Callsign SentRcvd I
SSB 20 CHRIS 59 59
  
```

6. You may log off when your shift is over with the text command OPOFF. But it is also OK when your successor logs-on himself; you will be logged out automatically.
7. If you see any log with no operator in the head line



or the login doesn't match with the operator sitting in front of the radio please advise him to change the login.

Audio Recording

To be written when details are known (which software, which settings,...)

MMTTY