Getting started in Radio Mobile – VK4ZR (27/06/06)

Radio Mobile is a fantastic program for predicting links and radio coverage. However, it does take some time to get to know and the user documentation is not the best! So here is the VK4ZR how to get started guide.

Downloading the program

The program is located at http://www.cplus.org/rmw/english1.html.

Go to down load page and you need to down load and install the following:

<u>Radio Mobile Download Instructions</u>

Version 7.2.5 (English)
(For update: step 2 only)

1 - Download the **Visual Basic Runtime (Service pack 6)** File vbrun60sp6.exe from **Microsoft** . Install it on your PC before executing the next steps (you may have to reboot).

2 - Download the Zip file containing **Radio Mobile executables files (English)** File rmw725.zip , and extract them in a program directory (Example: c:\Program files\Radio Mobile\).

3 - Download the Zip file containing **Radio Mobile supplement files** File sup.zip , such as antenna patterns (*.ant), cities.dat, and radiosys.dat. Extract them in the program directory selected in step 2.

4 - Download the Zip file containing **Radio Mobile network example files** File net.zip . Extract them in a working directory. The first time you click on a *.net file, select Radio Mobile .exe file as the associated program.

Insure that no other instances of Rmwdlx32.dll exists on your system. If you want to put the program at more than one location, you should put Rmwdlx32.dll in c:\Windows\system (c:\Winnt\system32 for NT).

To be able to load and save pictures in JPEG TIFF and PNG format install also the DLL in File freeimage.zip tnx to freeimage.sourceforge.net

To be able to download zipped SRTM files install also the DLL in File unzip32.zip tnx to www.info-zip.org

To get Azimuth relative to Magnetic North install also the DLL in File geoStarsLib.zip tnx to geostarslib

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Run the Visual Basic Runtime service pack and unzip the program and other zips in to the same directory. You can't use it yet as you need the map data!

Get the mapping data

Create a folder on your computer so that any local data that is created will be saved to this folder.

I saved the radio Mobile program to a folder I had previously created called

C:\program files\Radio Mobile. I then made a sub folder called Data so I have a location to save any data that is downloaded from the internet. This folder is called C:\program files\Radio Mobile|data.

Preparing to Save Data

When you open the Radio Mobile program there is a tab called "Option" along the toolbar.

Select "Option" and then when the small window opens select "Internet". When the next window opens select "SRTM". There is a position on the window to insert the location on your computer where the SRTM data can be saved so you have to complete this section before selecting "Apply" Then the window will close.

Collecting Data

The next stage in collecting local data to be used with the Radio Mobile program is to gather bearings of stations that you wish to use in your locally created maps.

I made a list of a number of stations that I wished to examine and then used a program called "Multimap" which I downloaded from the internet. The program will produce a small map of any location showing Longitude and Latitude of the location which is the data needed to show the station's location on the map you choose to be drawn.

You will need exact details of the location of each station. I obtained the street number, Street, Suburb, Town, postcode of each station and use this information in conjunction with the Multimap program to obtain the Longitude and Latitude of each station.

If you do not know the address of the station you wish to plot on your map you may be able to go the ACMA website if the station is in Australia.

The website is :- http://web.acma.gov.au/pls/radcom/register_search.main_page

Go to the Multimap website of : http://www.multimap.com/ and you will be able to insert the necessary address details for the program to produce a small map of the location. Just below the map should be details of the Latitude and Longitude in Degrees, minutes, and seconds as well as in decimal notation.

Record either of these details for each station so that the information can be added into the drop down window of the section used to add Units and networks to a locally produced map.

Making a Local Map

Select This item to make Map

Select the item shown in the diagram

The next window will appear. You will have to insert the details for the centre of the map.

In the next diagram the coordinates are -27.5221 Latitude and 153.0357 Longitude.

The size of the map has been selected as width of 800 pixels and a height of 600 pixels. These dimensions can be determined depending on the resolution of your graphics so you can change the size to fit your requirements.

The height in Kms will determine the width in Kms of your map. The higher the height the greater the width of the map and the larger the area covered.

A Height of 50 Kms will produce a map covering Brisbane and outer suburbs.

If you look at the below diagram you should note that a height of 50 Kms produces a width of 66.67 Kms

Data has to be added in the section headed Elevation data source. Select SRTM and insert the location of your file you wish to use for the data.
If you are connected to the internet when you complete these details and select Apply the map details will be downloaded and a map will appear after the details are collected. This will depend on the speed of your internet connection.


Once you have the map it is time to add details of Units and Networks to show the stations you wish to examine.

Adding Unit Details

Select the fifth item along the tool bar. The one that looks like a red compass. It is the unit properties Icon.

You will get a drop down window which looks similar to the next picture.

Units I to 18 have been changed to represent each Amateur Callsign . The cursor is highlighting a unit called az which is the co-ordinates for VK4AZ. The details are added by selecting a unit number on the left hand side of the window. I suggest that you start with Unit 1. The Name of the unit will appear in the "Name" panel and can be changed to a suitable title. I selected the last two or three letters of the callsign. The Latitude and longitude can be changed by selecting the "Enter LAT LON or QRA" button. This will expose a small window that shows Latitude and Longitude in either decimal or Degrees, Minutes and seconds. Complete this table and the Maidenhead locator will appear on the window. Remember to select "S" and "E" for Australia otherwise the details will be for the Northern Hemisphere.
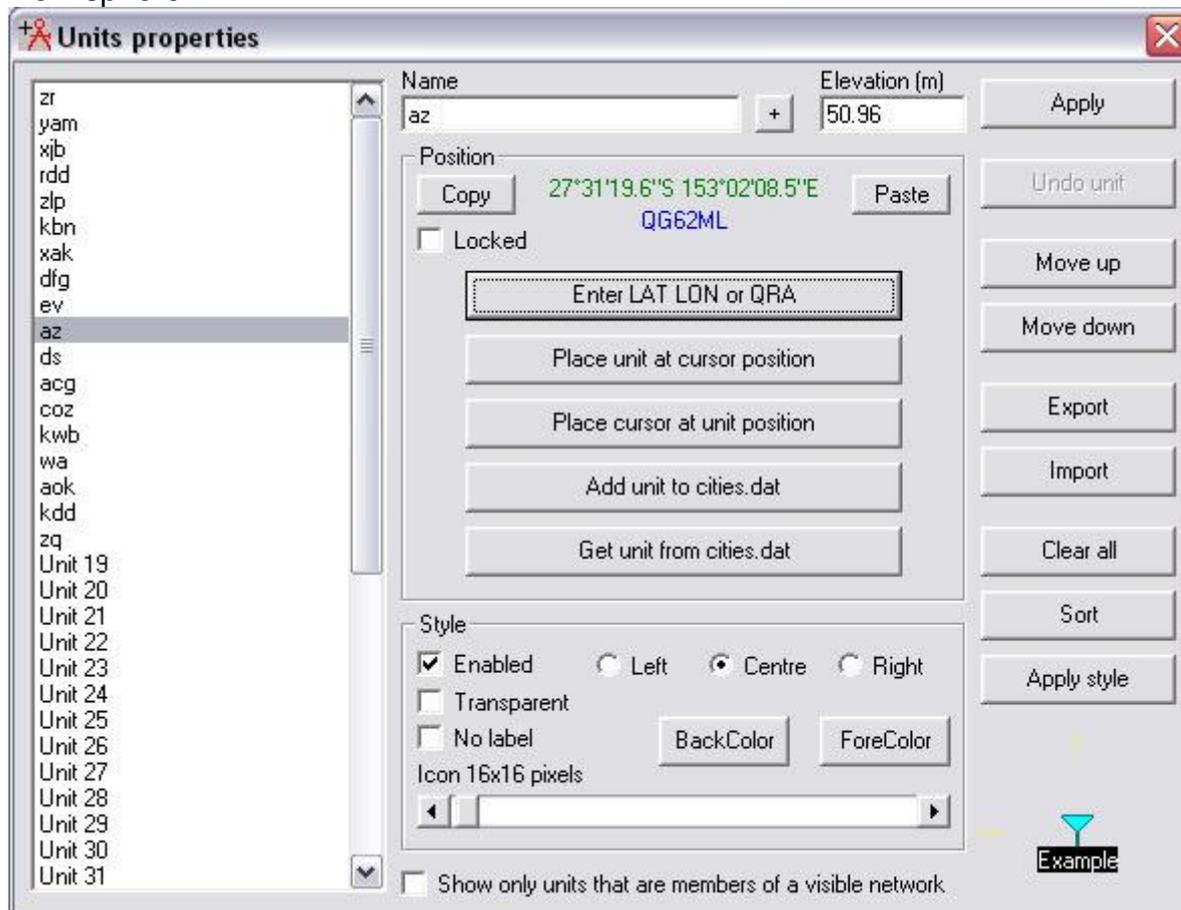
Your Map should now show the location of the Stations you have inserted into the Units Property Window. Make sure that all the other units have a location of zero.

You should now be ready to check out details of the path between a number of Stations. Before you can do this you must decide on some details for a typical radio Network. To do this it is necessary to select the Fourth Icon on the Toolbar. This one looks like a square block with a red square in it. It is called "Network Properties" When you select it you will see a drop down window similar to the next diagram.

Select Net 01 and press the Button marked "Membership" A list of the Units you have changed will appear. Simply select the stations you wish to examine. If you select more than two stations you will find Green interconnect lines drawn between the stations.

You are now ready to examine path details on your map.

One thing you may wish to do is change the default settings of the parameters of the transmission. While you have the "Networks Property" window open simply push the Button marked "Systems" And you will now have access to the Frequency Band to be used plus antenna and power figures etc.

When you are satisfied with your selection simply select "Apply" and the window will close and your map w\should be ready for you to obtain the path details you require.

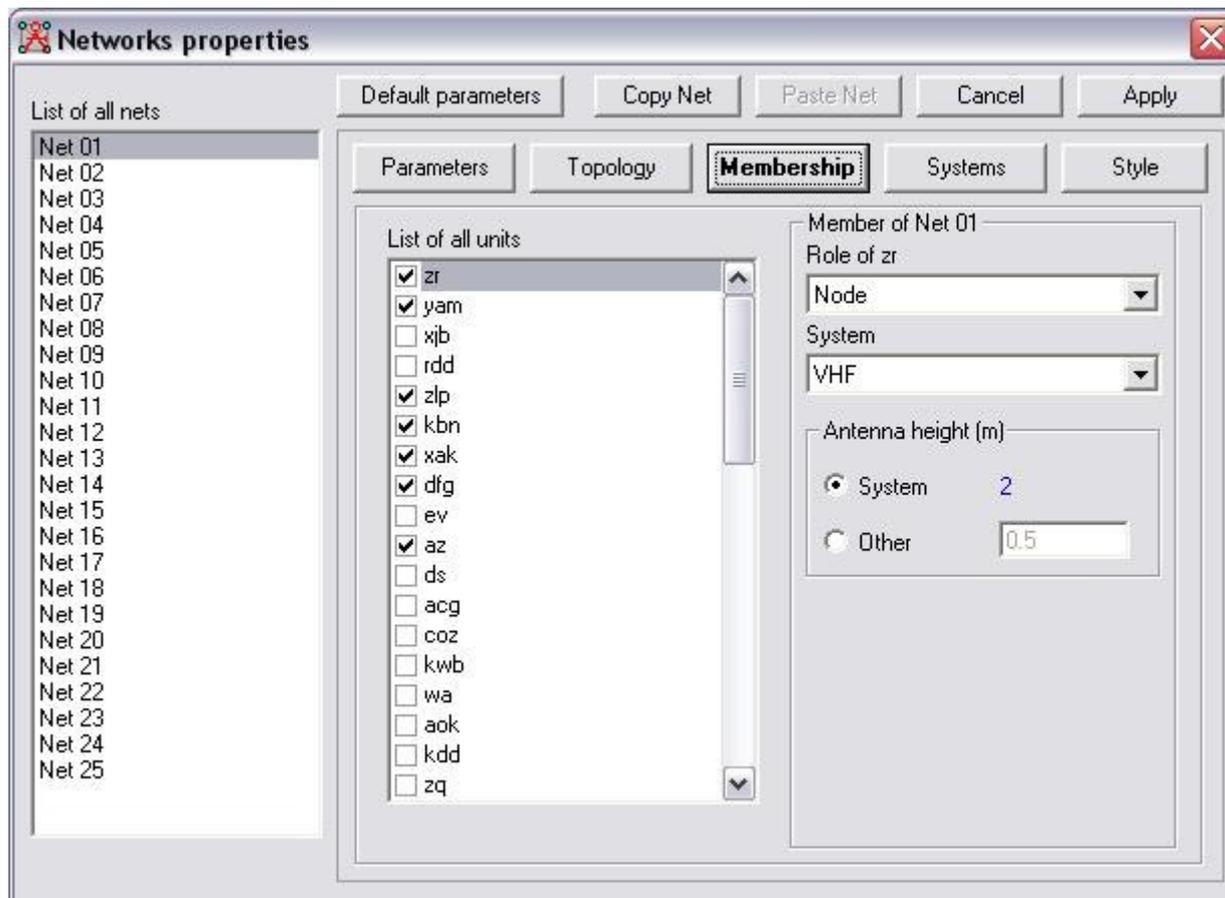Select the Icon shown above and you should have a diagram in which you can select the Transmit Station and the Receive Station.
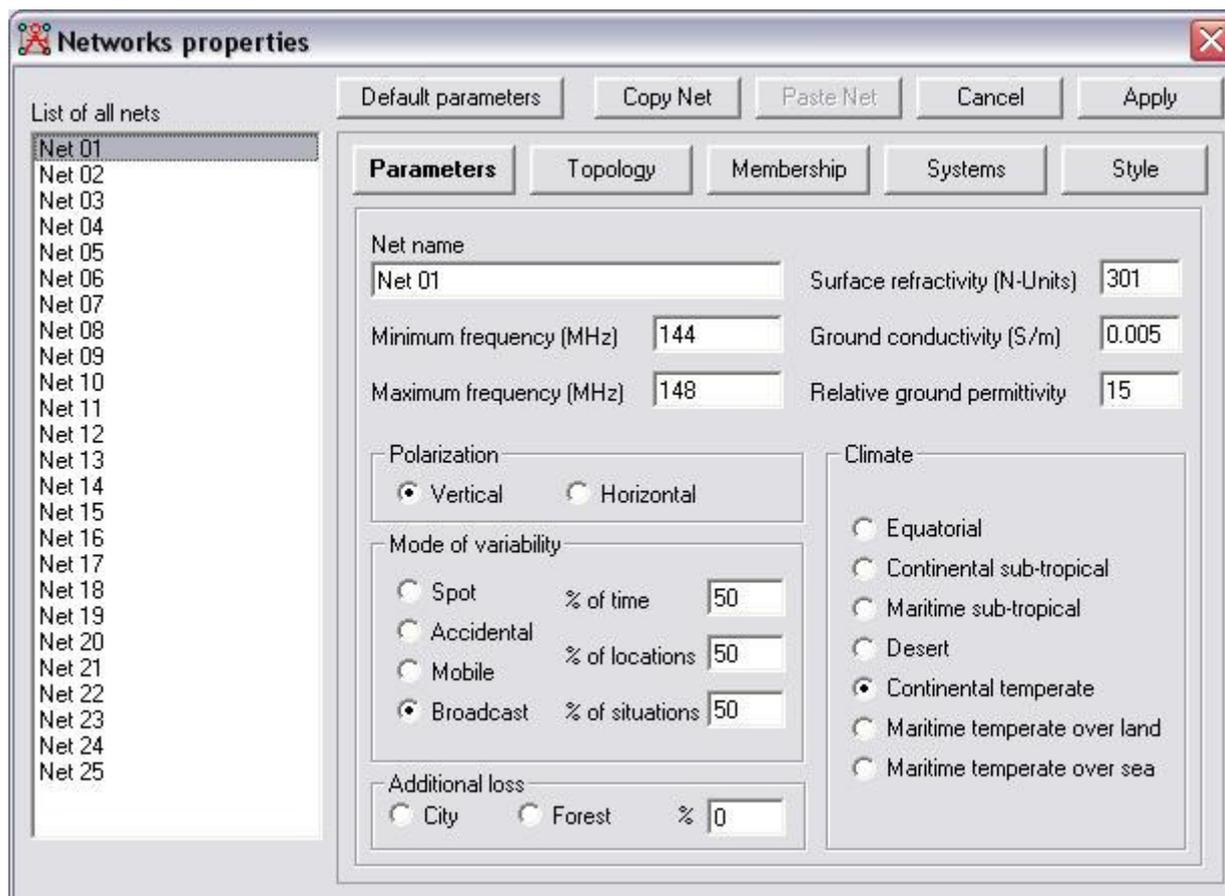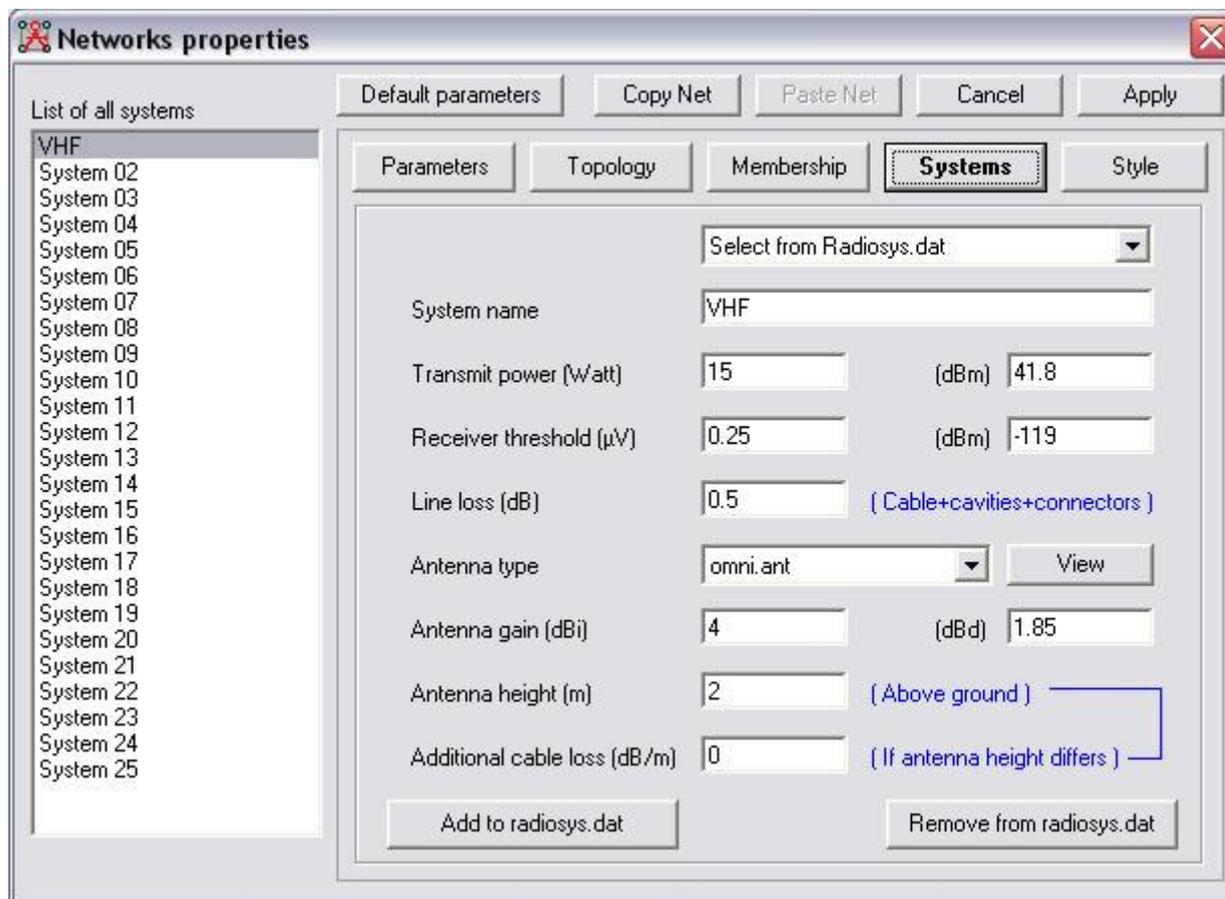

Radio Link Details

The Radio Link details will allow you to examine the terrain between two stations and indicate if the path can be used. A green trace indicated that the path is workable. A red trace indicates that it is not workable. Path obstructions can be examined .

Selecting Members for your Radio Network

Networks properties

| Default parameters | Copy Net | Paste Net | Cancel | Apply |

List of all nets

Net 01
Net 02
Net 03
Net 04
Net 05
Net 06
Net 07
Net 08
Net 09
Net 10
Net 11
Net 12
Net 13
Net 14
Net 15
Net 16
Net 17
Net 18
Net 19
Net 20
Net 21
Net 22
Net 23
Net 24
Net 25

| Parameters | Topology | **Membership** | Systems | Style |

List of all units

- ☑ zr
- ☑ yam
- ☐ xjb
- ☐ rdd
- ☑ zlp
- ☑ kbn
- ☑ xak
- ☑ dfg
- ☐ ev
- ☑ az
- ☐ ds
- ☐ acg
- ☐ coz
- ☐ kwb
- ☐ wa
- ☐ aok
- ☐ kdd
- ☐ zq

Member of Net 01

Role of zr

Node ▼

System

VHF ▼

Antenna height (m)

◉ System   2

○ Other   0.5

How to change the system Details

Networks properties

| Default parameters | Copy Net | Paste Net | Cancel | Apply |

List of all systems

VHF
System 02
System 03
System 04
System 05
System 06
System 07
System 08
System 09
System 10
System 11
System 12
System 13
System 14
System 15
System 16
System 17
System 18
System 19
System 20
System 21
System 22
System 23
System 24
System 25

| Parameters | Topology | Membership | **Systems** | Style |

Select from Radiosys.dat ▼

System name	VHF
Transmit power (Watt)	15	(dBm)	41.8
Receiver threshold (µV)	0.25	(dBm)	-119
Line loss (dB)	0.5	(Cable+cavities+connectors)
Antenna type	omni.ant ▼	View
Antenna gain (dBi)	4	(dBd)	1.85
Antenna height (m)	2	(Above ground)
Additional cable loss (dB/m)	0	(If antenna height differs)

| Add to radiosys.dat | Remove from radiosys.dat |

Radio Link

Edit   View   Swap

| Azimuth=215.8° | Elev. angle=-0.210° | Obstruction at 7.26km | Worst Fresnel=-0.4F1 | Distance=8.38km |
| PathLoss=113.4dB | E field=52.4dBµV/m | Rx level=-64.6dBm | Rx level=131.80µV | Rx Relative=54.4dB |

Transmitter

S9+30

zr

Role	Node	
Tx system name	VHF	
Tx power	15 W	41.76 dBm
Line loss	0.5 dB	
Antenna gain	4 dBi	1.85 dBd	+
Radiated power	EIRP=33.58 W	ERP=20.48 W

Antenna height (m) [2]   [Apply]

Receiver

S9+30

yam

Role	Node	
Rx system name	VHF	
Required E Field	-2.04 dBµV/m	
Antenna gain	4 dBi	1.85 dBd	+
Line loss	0.5 dB	
Rx sensitivity	0.25 µV	-119.04 dBm

Antenna height (m) [2]   [Apply]

Net

Net 01

Frequency (MHz)

| Minimum | Maximum | |
| 144 | 148 | [Apply] |