

RM Contents



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Radio Mobile Web Page Contents

(A click on a Purple title will take you to the page)

These pages are set out in a suggested reading order, where the basic program features are shown in pages towards the top of the list.

*All pages have a link to a *.pdf version for download, and a set of navigation buttons.*

Quick Start

*This is the starting page where there is an introduction to **Radio Mobile** and details of the steps required to download and install the latest version on your computer.*


*The basic program concepts are described, followed by how to download and run **my** installer, which sets up the program on your computer with my **'Base Network'**.*

*The page also has a link to the **Installation** page which shows a **'Walk through'** of the sequence of panes which will be seen when running the installer.*

*My **'Base Network'** consists of a map of my local area with a **Base, Mobile** and **Hand Held** set of radio **Units** defined and placed as a working **VHF demonstrator**. The installer also generates all the height data files for the area enabling the program features to be explored.*

*The page ends with additional notes showing how to access the basic functions available, and a **trouble-shooting***

	table.
<p style="text-align: center;">Installation</p>	<p><i>This page shows a non-installing 'Walk Through' of the of the successive panes generated by the installer 'Radio Mobile Setup.exe'. The file is available from the Quick Start and RM Downloads pages, accessed via the control buttons at the bottom of the page, or the page names on the left.</i></p>
<p style="text-align: center;">Base Network Settings</p> <p style="text-align: center;">UPDATED</p>	<p><i>There are numerous screenshots showing the stages of setup procedure to enable modification of the program parameters to suit your individual requirements.</i></p> <p><i>The location and settings used to generate the Base Network are shown. These are the panes which require modification when you are changing Unit Names, locations and Radio Systems. The Map Properties pane is also shown which defines the centre location and area displayed by the map, plus the dimensions of the screen display in pixels.</i></p> <p><i>If you require to install the program files in an alternative location, notes in Blue are shown defining the entries which will require modification.</i></p>
<p style="text-align: center;">Network Radio Link and Route Styles</p>	<p><i>The action of the Network Properties Style pane is demonstrated on a Network, a Radio Link and a Route plot. By changing the settings, the displayed signal strength colour limits can be modified to suit requirements. These settings and colours can also be used in Polar and Combined Cartesian plots.</i></p>

<p>Once you get going</p>	<p>This next page moves on to show how to create Extra Units, Place them on the map, Move and Rename them.</p> <p>There are also additional links to the Changing map location, Radio Link and Radio Coverage pages.</p>
<p>Changing Location</p>	<p>A detailed description, with screenshots, of how to change the Base Network location from Central UK to any other part of the World to suit your own requirements.</p> <p>There is also a description of the use of the World Map and an Alternate world map for changing the map location. The Alternate World map shows the UK, but can be replaced by your own area map which can be generated by Radio Mobile.</p>
<p>Radio Link</p> <p>F2</p> 	<p>The Radio Link pane gives a visualisation of any selected Radio Link between selected a pair of Units. The Radio Link ground profile is displayed along with the Radio Link radio parameters and Fresnel zones.</p> <p>A cursor can be moved along the radio path with its position being reflected on the main display, path parameters and the elevation being indicated for the cursor position.</p> <p>Antenna heights can be incremented to immediately observe the effect on the Radio Path.</p> <p>Alternate displays can show tabular data or the view of one Unit from the other taken over an elevation map or aerial photograph.</p> <p>The additional data generated and changed representation, where Land cover is being used, is also shown.</p> <p>Link Data can be exported to :</p> <p>1) a .txt file for further analysis, or</p>



2) to *RMPath*, a stand alone link viewer with selectable Fresnel zone display, or

3) to *Google Earth*, where a visualisation of the Radio Link can be observed, and a display of Fresnel zones plotted for the path.

Land cover

This page describes the use of **Land cover** data, which indicates the type and height of foliage covering the ground.

First, the data can be used to merge with existing plots,

and second, this data can be added to the ground profile for propagation studies. In the propagation studies, the losses incurred by Land cover impinging on part of the Radio Link Path are calculated, and included in the final display.

Radio Coverage

Radio Coverage Plots can be performed in **Single Polar** or **Combined Cartesian** form. The working units displayed being selected from **S-Unit, dBm, μ V or dB μ V/m** over an automatic or defined range.

See this page for a description of the operating panes, and details of how to use the features which are common to the plots, with links to the separate plot pages.

Single Polar Coverage

F3



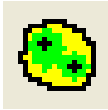
Single Polar plots are performed in a **Radial** manner, where plot areas may be defined by azimuth and radial range. The plot resolution reduces towards the edge of the area, as it is defined in degree wedges.



'Network Style' plots have been added from Version 10.0.4 of the program.

Combined Cartesian plots

F4



With a **Combined Cartesian** plot, the plot is performed in an **X-Y** mode with a defined pixel resolution over the whole plot area. There is also an option for selected rectangular area plots, and also zoomed area plots to be performed.



Note that from Version 9.7.4, after a plot has been performed, the actual signal level at the cross wire cursor can be reported in the data area at the bottom of the pane if required.

Using the **Combined Cartesian** Plots, the following different functions can be performed, but see the [Cartesian pane](#) page for a description of the controls available.

Combined Cartesian Plot Features

Single Unit Coverage

Where a single fixed Unit is selected, and the radio coverage to a defined mobile Unit is plotted over the map area.

Multiple Unit Coverage

Where a number of fixed Units are selected, and the combined Best Coverage signal to a defined mobile Unit is plotted over the map area.

Network Style coverage

Plots using this feature display signal levels in colour bands determined by the Network 'Style' pane settings.



Best Unit for Coverage

Where a number of fixed Units are selected, and the one giving best signal coverage to a defined mobile unit is plotted over the map area. The **'Best Unit'** being shown using the Unit label background colour.

Detailed Area Coverage

A signal plot is performed over a full screen, zoomed area of the map, using any of the methods shown.



Interference coverage

Plots are performed showing areas of a map where a defined signal margin between the Wanted and Interfering Unit are achievable.



Fresnel Zone Coverage

*Plots of areas of the map indicating selected **Fresnel zone clearance** regions.*

Coverage tools and notes

Coverage tools and notes.

The page also has notes on:

- mouse click shortcuts
- signal plot legend location
- single colour plots with level customisation
- notes on gain antenna patterns
- how to produce a 'blank' white screen for plots
- the Unit description pane
- measuring selected Unit to cursor location azimuth and distance

Route Radio Coverage

F6



Using the **Object Editor**, Route lines can be drawn on the map using waypoints and saved for future use. The **Route Radio Coverage** feature is described, where the Radio Performance between:

a) a specified fixed Unit,

with

b) a mobile Unit traversing the Route on the map in defined distance step increments,

may be evaluated.

At any point on the Route, the **Radio Link path profile** and parameters can be examined in detail using the **Radio Link** pane.

The **Route Radio Coverage** pane shows a linear representation of the **Route** with a plot of signal strength, and elevation, at every point with an indication of **Line of Sight** paths.

Moving the cursor along the route gives an indication of Linear distance, Radio Path length and azimuth, Elevation and signal strength at the cursor location. The Radio Link Path Profile to the cursor position is also shown at the bottom of the pane.

Split Route Radio Coverage

F6



A second ability of the **Object Editor** is to generate a sequence of unconnected **Route segments** on the map. This page describes how to use the **Object Editor** to generate segmented multiple Routes and evaluate the **Radio Performance** along a sequence of **Split Routes**.

Find Best Sites in a Network

F5



Where it is required to locate a **Control Unit**, capable of communicating with a number of **fixed subordinate Units** within a network, at a suitable position on a map, the **Find Best Sites** function can be invoked.

The resultant plot displays areas where communication is achievable with a specified percentage of subordinate Units, allowing a choice of location to be made for the Control Unit with consideration to site accessibility.

Find Best Sites using Waypoints

F5



Waypoints can be placed on a map using the **Object Editor**, and the Best Site for a **Control Unit** to communicate with these locations found.

Where it is required to locate a **Control Unit**, capable of communicating with a **mobile** subordinate Unit as it **traverses a Route**, at a suitable accessible position on a map, the **Find Best Sites** function can be invoked, but using **Waypoints**.

The **Waypoints** are generated using the **Object Editor**, and this procedure is also suitable for **Split Routes**.

Visual Coverage

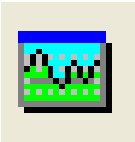


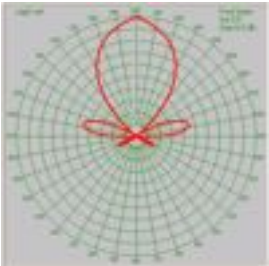
F11



A **Visual Coverage** plot is performed on the **Base Network**, with a demonstration of the use of the **Visual Horizon** pane.

The Observer location and height can be selected, with the Azimuth and Elevation angle ranges of the observation.

The Observed Target height and range are also selectable.

<p>Visual Horizon</p> <p>F12</p> 	<p>Using the Visual Horizon pane, the location of the optical Horizon from a location at a particular selected azimuth is reflected by the main screen cursor, with Azimuth and distance to the point displayed on the status bar.</p> <p>The height of the Observer and Target can be set, and the Elevation angle viewed may be generated automatically or selected.</p>
<p>Merging Pictures</p> <p>F7</p> 	<p>Screenshots are shown of the effects of the various Merge options on the resultant picture. The use of Merge after a zoom on a screen area is shown, which produces a high resolution picture of the smaller area.</p> <p>Access to external Data Sources is also demonstrated, with pictures of Road and Aerial photograph merges.</p>
<p>Antenna Alignment</p> 	<p>Screenshots of the various control panes, with descriptions of the operation and alignment of Gain Antennas.</p>
<p>Antenna Plots</p>  <p>UPDATED</p>	<p>A description of the operation of a new '3D-360 degree gain plot' spreadsheet which allows the self generation of radiation patterns at 5° or 10° increments for use in Radio Mobile. In this version the antenna gain is entered directly in dB.</p> <p>This new spreadsheet enables Azimuth or 'Azimuth + Elevation' data to be generated at 5° or 10° intervals for use in antenna.ant files. and works for full 360° plots.</p> <p>The same procedure is used with AntDiag.xls where 10° entries are used, but antenna gain is entered as -ve dB from maximum gain.</p>

The spreadsheets are available from the '**RM Downloads**' page.

Antenna Pattern Viewer



This page shows the **3D Antenna Pattern Viewer**, and the effect of its use with the **Network Properties, Polar plots, Cartesian Plots** and **Radio Link pane**. The viewer can also explore the patterns in a '**stand alone**' mode.



and

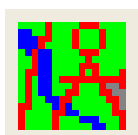


Large Maps and Pictures




A look at the use of **larger maps and pictures** which are **over screen size** for better resolution when using the **Base network**, and a description of the features available with these. This includes the **automatic self-centring** of large pictures to the area of interest when using both the **Radio Link** and **Route** features. This function generates **Rolling Maps** under the cursor point of interest.

Object Editor



Use of the **Object Editor** in generating **Waypoints for Routes** is shown. In particular, how to generate routes over zoomed segments of the maps to improve precision of placement.

The Object editor can also edit previously generated route waypoint locations by deletion and insertion.

<p>Fox Hunt</p> 	<p><i>This feature was added in version 7.8.9, and provides the facility to plot azimuth bearing lines from up to six Units on a map for use in Radio Direction Finding 'Fox Hunts'. It is now possible to produce bearing uncertainty coloured 'wedge' plots along the azimuth bearing, and also up to six different 'angle coverage' display plots for gain antennas from a single unit.</i></p>
<p>Importing Pictures</p>	<p><i>A description, and example, of how a picture can be imported and calibrated for use in Radio Mobile. This takes a scanned UK Ordnance Survey map portion and imports it into the Base Network. Coordinate conversion to WGS-84 datum is also shown.</i></p> <p><i>Pictures generated in Radio Mobile can also be imported into Google Earth. User pictures can be taking from Radio Mobile and calibrated as an Overlay.</i></p> <p><i>Coverage plots may be saved in .png format, where their background is made transparent by Radio Mobile, and a corresponding .kml file generated for direct import into Google Earth.</i></p> <p><i>During import, the opacity of the picture overlay can be adjusted in Google Earth.</i></p>
<p>Exporting and Importing Units</p>	<p><i>Units may be exported from Radio Mobile as Text or Google Earth klm files. The klm files can then be imported into Google Earth to show Unit locations as placemarks.</i></p> <p><i>It is also possible to generate a set of placemarks in Google Earth, which when saved as a klm file, can then be imported into Radio Mobile as Unit locations.</i></p>

<i>RM Program Help Files</i>	<p>An index to the Program help files as web pages.</p> <p>(F1 opens the help files in the program)</p>
<i>RM Downloads</i>	<p>Location of links to</p> <ol style="list-style-type: none">1) .pdf versions of all the web pages.2) <i>Radio Mobile Setup.zip</i>, my Installation file in zip format.3) <i>Introduction to Radio Mobile</i> a Radio Communication article.4) <i>Application of Radio Mobile to Fox Hunts</i> a Radio Communication article.5) Additional useful files including an Antenna Pattern file generator.6) A .pdf version of the Program Help Files.7) G8HUL's UK & Irish NGR add-ons for RM and Stand-alone UK NGR to/from WGS-84 converter.8) UK Alternate World Map - (unzip into RM folder).9) Links to alternative additional Documentation sources.

<p><i>Toolbar Icons</i></p>	<p><i>Description of the Icon shortcuts on the main window toolbar,</i></p> <p><i>and how to customise them to your own requirements.</i></p>
<p><i>How to...</i></p> <p>UPDATED</p>	<p><i>Pieces of information without a home:-</i></p> <p><i>Keyboard and Mouse Shortcuts. UPDATED</i></p> <p><i>Antenna alignment.</i></p> <p><i>Antenna radiation pattern generation.</i></p> <p><i>Program Help Files.</i></p> <p><i>UK National Grid Reference coordinate Converter.</i></p> <p><i>Positioning the Elevation and other Legends.</i></p> <p><i>Changing signal threshold colours for Radio Link and Route displays.</i></p> <p><i>Using the New Multiple Unit icons at one location.</i></p> <p><i>Plus links to all other pages.</i></p>

Walk Best Site	<i>A description of my initial use of Radio Mobile to find the Best Site for a Radio Relay Unit required to provide coverage of an 18 mile charity walking event in the Derbyshire Peak District.</i>
Radio Mobile Screenshots	<i>A selection of screenshots from my Base Network - located in the UK Derbyshire Peak District - showing some of the features available from the program.</i>

Quick Start Installer

My '**Quick Start**' installation file, '**Radio Mobile Setup.exe**', is available here and from the **Quick Start** and **RM Download** pages which generates this network. The maps can easily be changed to your area as on my '**Changing Location**' page, and '**Once you get going**' shows how the Unit parameters can be modified to your own requirements.

It is also useful to visit the **Base Network Settings** page,

to find out where all the Base Network control panes are located.

All pages have the following set of navigation buttons.

- ▶ Quick Start
- ▶ Base Network Settings
- ▶ Once you get Going
- ▶ Radio Link
- ▶ Radio Coverage
- ▶ Route Radio Coverage
- ▶ Split Route Coverage
- ▶ Best Sites - Network
- ▶ Best Sites - Waypoints
- ▶ Changing Location
- ▶ Merging Pictures
- ▶ Antenna Alignment
- ▶ Object Editor
- ▶ Fox Hunt
- ▶ Importing Pictures
- ▶ Export/Import Units
- ▶ Large Maps
- ▶ Antenna Plots
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[This page is available in .pdf format here.](#)

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