

MOBILE MEASUREMENTS

Computer predictions are effective in providing indicative coverage information for a Single Frequency Network. However, detailed survey measurements are required to define the exact nature of the coverage for expansion of a network. To determine the extent of deficiencies, it is necessary to consider the effect of interfering signals as well as the field strength of the wanted signal.

Traditional methods of field strength survey have used directional antennas at 10 m above ground level (comparable with the height of a domestic television antenna). For Digital Radio, which has been designed for reception in a mobile environment, measurements of field strength and quality are made using an antenna at car-roof height (1.5 m above ground level). Measurements can be made while the vehicle is moving at normal road speed, and this results in fast and comprehensive survey results.



The Digital Radio survey vehicle.



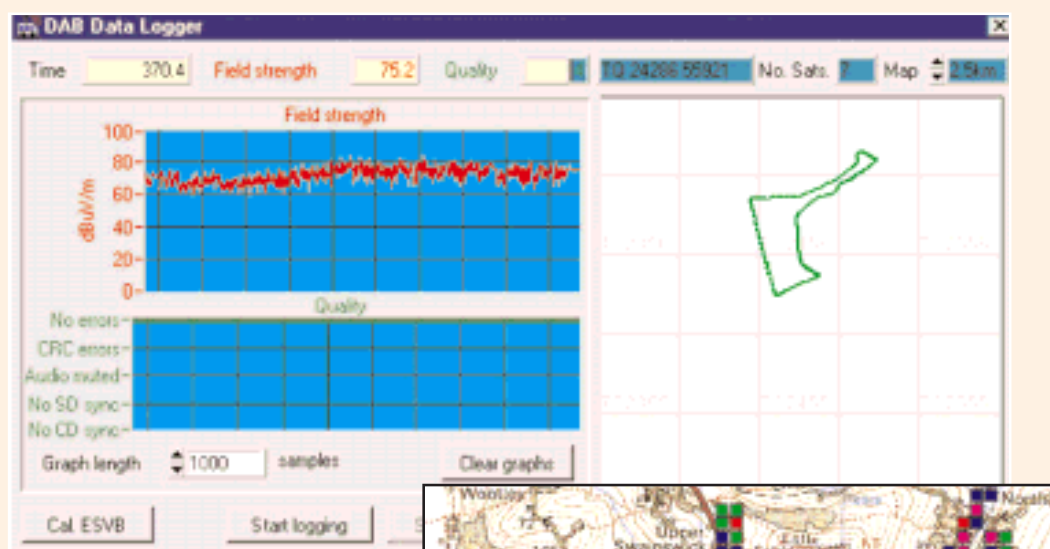
An extensive search for commercially available logging software showed that none of the commercial offerings met our requirements, almost regardless of price. Two programs have been written in-house, one to record and one to analyse the data from mobile surveys. These two programs allow a survey engineer to measure coverage in an area and to display the resulting coverage, superimposed on a map, on the logging PC.

LOGGING SOFTWARE

The logging software controls three devices: a measurement receiver from which it receives field strength data, a Digital Radio receiver from which it receives reception quality information, and a GPS receiver with an integral dead-reckoning computer from which it receives position information. The data is collected ten times per second for surveys of Digital Radio. The set-up parameters are software configurable to enable surveys of other types of transmission, for example Digital Television.

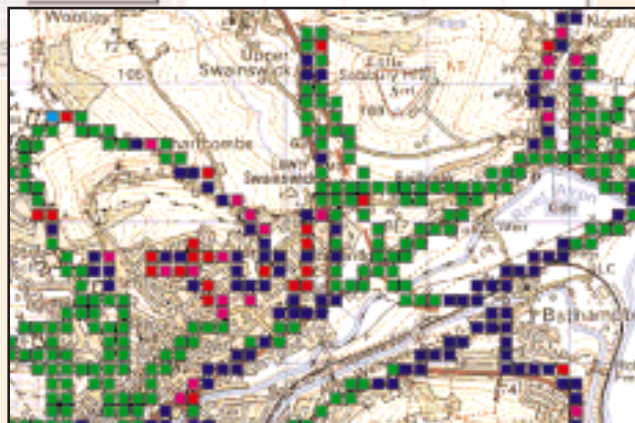
A real-time graph of field strength versus time is shown in the display window. There is also a map grid of the area travelled. The colour of this trace is dependent upon the error level reported by the Digital Radio receiver.

The data is output as a text file which may be analysed with the analysis software or viewed with a text editor.



Above:
The main window of the Digital Radio logging software.

Right:
A map showing part of a recent survey carried out in the area of Bath.



ANALYSIS SOFTWARE

The analysis software allows the user to link files together, to filter, to sort, and to perform statistical analysis on the data. Multiple analysis functions may be stored in a script file to enable similar analyses to be performed on many different input files. As with the logging software, the output file is in a text format that enables the data to be imported to a text editor or a spreadsheet.

A spreadsheet macro allows further analyses of survey data and provides an output that may be imported by a mapping tool. This enables the survey engineers to view the analysed data, superimposed on a map, at the time of the survey.