

CRIBS™ TETRA Walk-Test and Drive-Test Solution

Radio Coverage Measurement

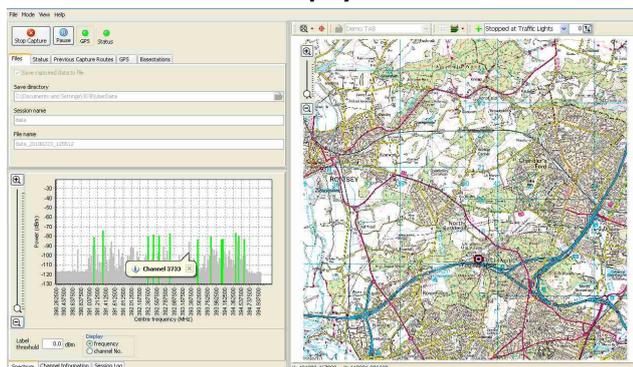
Increasingly important to users of public safety radio systems is good radio coverage within buildings and structures not accessible to drive testing. To satisfy this need MAC Ltd has combined its knowledge of designing and building accurate signal strength measurement receivers and signal processing techniques to produce CRIBS - a packaged TETRA walk-test and drive-test solution that requires the absolute minimum configuration and set up time.

The CRIBS turnkey system comprises MAC Ltd's CatchAll™-SE receiver, a high capacity battery, the capture and display software, a tablet PC, the TRAMPS analysis software and a backpack. The PC displays the data being captured, and the route being followed by the surveyor superimposed on the building plan or wide area map.

GPS Mode

In GPS mode the unit can be used for external walk-tests or drive-tests using the built in GPS receiver for positioning and displaying results on conventional maps (not supplied). The fast sampling capability of the CatchAll-SE is identical to that of the larger CatchAll unit so CRIBS measurements also meet the Lee Criterion for the accurate measurement of signal strength at normal road speeds.

Drive Test Measurement Display



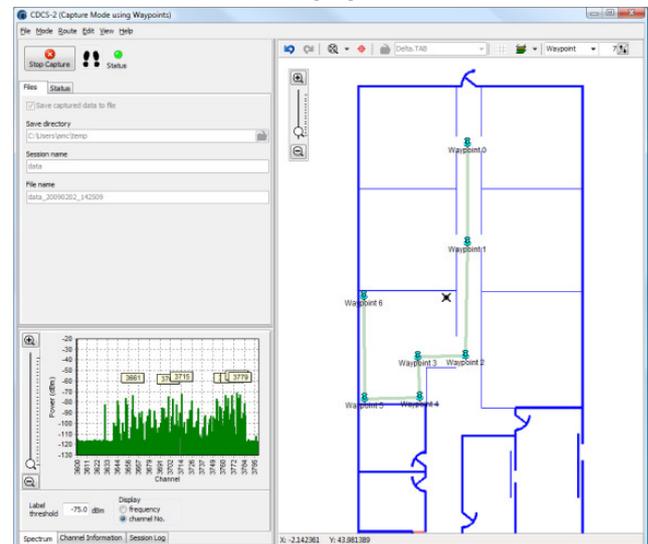
Walk-test Mode

In developing CRIBS, particular attention has been paid to its weight, form factor, power consumption and the positioning of the antenna. The system has been designed to be carried easily for lengthy periods in the backpack provided, and the battery provides up to seven hours of continuous receiver operation. If a longer period of continuous operation

is required an optional spare battery is available and a separate mains charger is included with CRIBS.

As there are no GPS signals within buildings a waypoint facility is incorporated as the principal means of recording a surveyor's precise location. CRIBS uses an accelerometer to determine that the surveyor is moving, which has the advantage of completely eliminating the need to estimate the surveyor's speed between waypoints, improving the accuracy of the recorded positional information.

Walk Test Measurement Display



Building Plans

CRIBS is able to import and manipulate building floor plans in a number of different formats. For multi-level buildings and spaces each level is imported as a separate scaled diagram. Each diagram can be displayed and used to guide the surveyor during the data capture process. If a building plan is not available a simple grid can be used as a substitute.

Tablet PC

As well as providing the user interface, the tablet PC drives the data capture process and runs the on-the-fly analysis. The screenshots above show typical displays for drive-test and walk-test measurements, with the windows divided into two principal areas. The larger area to the right shows the GPS or line diagram of the area being surveyed, while the smaller area to the left shows the spectrum display and information about the functional status of the CRIBS system.

CatchAll-SE Receiver

The CatchAll-SE receiver has the same performance as MAC Ltd's popular and proven CatchAll receiver, including the option to request a dual RF input version, but the CatchAll-SE has been engineered to have a small size and low power consumption to allow it to be repackaged in a backpack form factor, as shown in the figure below.

The CatchAll-SE receiver case includes the accelerometers required to measure movement for in-building surveys and the GPS module for outdoor surveys. The GPS antenna that is included as part of the GPS option is mounted internally at the top of the backpack.

Analysis

CRIBS undertakes real-time analysis during walk-tests or drive-tests to provide the surveyor with a view of the received signal spectrum. The spectrum view and the associated channel table provide instant feedback by displaying the channel numbers being

Complete CRIBS Turnkey Solution



monitored, the identity of the transmitting site and the carrier-to-interference ratio (C/I) of each of the received TETRA signals.

In addition, the display may be frozen at a particular location to enable a more detailed inspection of the channels received there while the data capture continues in background.

CRIBS continuously captures data as the surveyor walks through the building and saves the data for later in-depth analysis.

By using the CRIBS walk-test and drive-test solution surveyors can measure the RF coverage and obtain detailed information that will allow them to undertake a preliminary coverage assessment on site while the survey is in progress.

Technical Specification

Receiver frequency ranges	380 MHz to 480 MHz 805 MHz to 860 MHz Other ranges available
Antenna frequency ranges available	
Standard product	380 MHz to 400 MHz
Option 1	410 MHz to 430 MHz
Option 2	430 MHz to 472 MHz Other ranges available
Instantaneous scan bandwidth (BW)	5 MHz
Resolution BW (RBW)	25 kHz
Sampling rate (25 kHz RBW)	≤125 samples/s
RSSI accuracy	±1 dB
Input 1 dB compression point	-15 dBm
Dynamic range (25 kHz BW)	100 dB
Noise floor (25 kHz BW)	Better than -120 dBm
Operating temp range	0°C to +50°C
Power consumption	10 W
Power supply	Lithium Ion battery
Accelerometer	3-axis
Tablet PC	Windows XP, Vista, 7
Gross weight (without tablet PC)	4.5 kg
Wheel pulse input	
Pulse level	15 Volts maximum
Pulse rate	Up to 20 kHz

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