CRIBS

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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 turn-key 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.

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 over six hours of continuous receiver operation. If more than six hours of continuous operation is required, an optional spare battery is available and a separate mains charger is included with CRIBS.

CatchAll-SE Receiver

The CatchAll-SE receiver has the same performance as MAC Ltd's popular and proven CatchAll receiver, but has been engineered to have a small size and low power consumption to allow it to be repackaged in a backpack form factor.

In addition, the CatchAll-SE receiver case includes the accelerometers required to measure movement for in-building surveys, and a GPS module.

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.

CRIBS In-Building Survey

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.

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.

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 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.

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

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 screenshot opposite shows a typical display for in-building measurements, with the window divided into two principal areas.

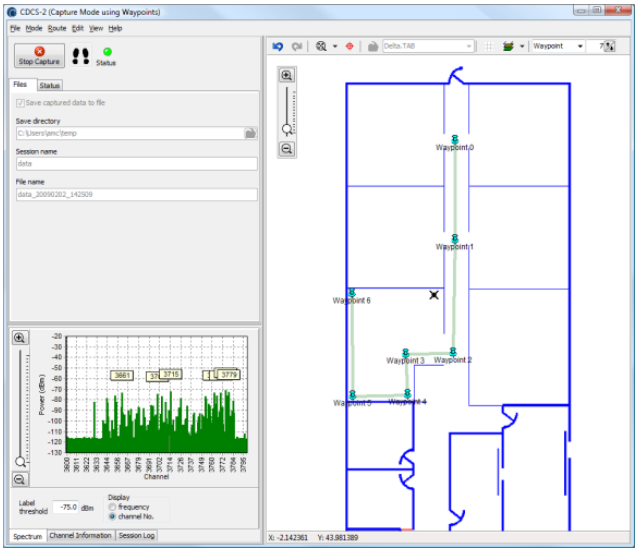
The larger area to the right shows the line diagram of the area being surveyed and the small green waypoints that have been added.

The smaller area to the left shows the spectrum display and information about the functional status of the system.

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.

CRIBS and Backpack

CRIBS Waypoint Capture Facility



Technical Specification

Frequency ranges	380 MHz to 480 MHz 805 MHz to 860 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 or Vista
Gross weight (without tablet PC)	4.5 kg
Wheel pulse input	
Pulse level	3 V to 6 V
Pulse rate	Up to 20 kHz

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