signalsphere

macltd
MULTIPLE ACCESS COMMUNICATIONS

The network-independent portable radio survey and analysis solution

The Signalsphere suite is a portable multi-channel radio survey solution.

Signalsphere makes it easy to capture radio measurement data and share these for analysis in a central repository.

Signalsphere has been developed to work with MAC Ltd's latest generation of software defined receiver, the CatchAll-M2, but also with a view to working with measurement data captured using other receiver systems.

The suite is comprised of:

- *CatchAll-M2 Receiver*. Is a dual-receiver, multi-band radio frequency front-end device (FED) designed for operation in the commonly used mobile radio frequency bands between 160 MHz and 4 GHz. The desired frequency bands can be chosen at the time of manufacture.

- *Signalsphere Recorder*. Records your radio environment during drive and walk tests. The data for each captured session is stored as a set of easily accessible tables in an SQLite database file. Signalsphere recorder acts as the user interface for the CatchAll-M2 and is supplied with the receiver.

- *Signalsphere Explorer*. Is a geographical information system built around a high quality, open source database system, PostgreSQL. It collates and presents the results of data capture sessions for display and analysis. Several instances of Signalsphere Explorer can access a single Signalsphere Database.


CatchAll-M2 Receiver

The Signalsphere system uses the CatchAll-M2 receiver and is suitable for both outdoor and in-building measurements:

- Outdoor positioning uses the built-in GPS receiver.

- In-building measurements are located using waypoint positioning and step detection.

- Fast sample rate ensures that measurements meet the Lee Criterion for the accurate measurement of signal strength, even at fast road speeds.

- Data weighting using vehicle distance pulse or step detection information to avoid skewing of RSSI averages when stationary or changing speed.

- Map data supplied from online map data services, or from an offline map tile server.

- Geo-location of building plans allows outdoor and in-building measurement data to be combined and displayed as a single data set.

- Optional CatchAll-M2 backpack installation (shown above) for walk-testing, with integral battery, RF antenna and GPS antenna.
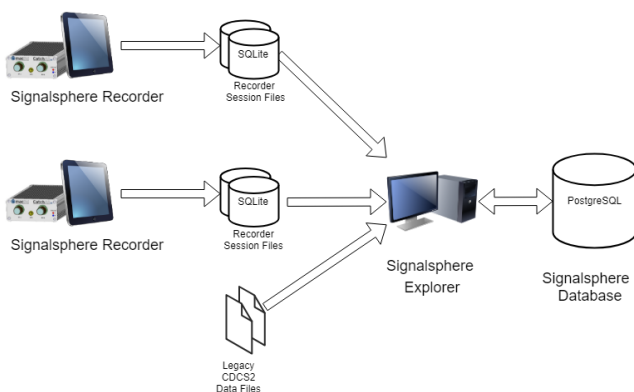
Signalsphere Recorder

Supplied with the CatchAll-M2.
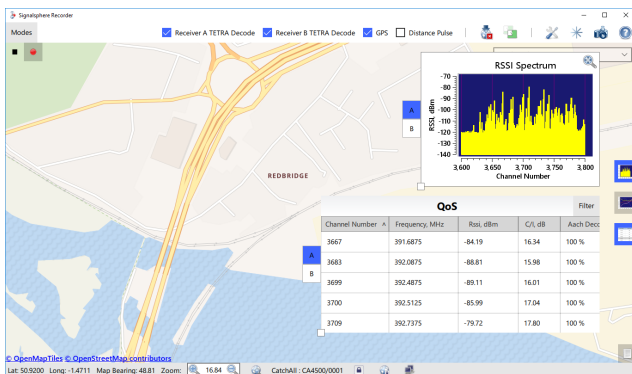
- Capture two separate bands, up to 20 MHz each, using a CatchAll-M2.

- Standard 25kHz RSSI measurement channel raster. (Custom rasters available.)

- Measures RSSI on every channel within the capture bandwidths simultaneously with sample rates greater than 125 captures/s.

- Controllable single channel IQ-data capture. for radio technology specific analysis.
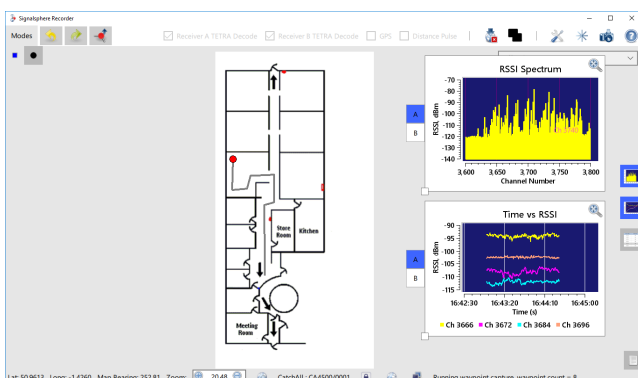
- Building plan display mode for indoor measurement capture.

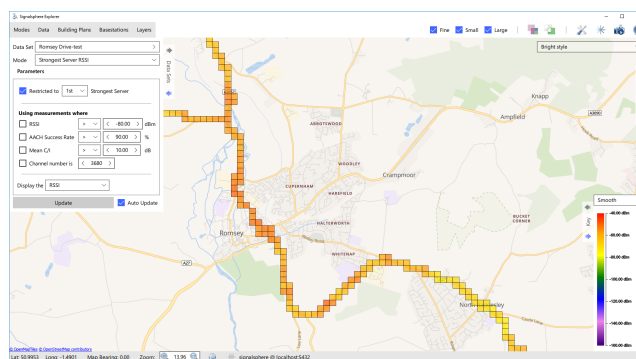- View the instantaneous radio spectrum and changes in RSSI of selected channels over time.

Specific Radio Technology Enhancements

- *TETRA*. Adds support for C/I, AACH decode success rate, and decoded MCC, MNC and LAC from decoded broadcast information. Advanced filtering using slot activity estimation to improve data reliability and accuracy.

Signalsphere Explorer

Signalsphere Explorer is an optional, separately licensed application. Its features include:

- Geographic representation of radio survey results.

- Managed data sets collate data from multiple data capture sessions.

- Large, small and fine tile layers allow large-scale overview and small-scale detail.

- Building plan geo-location and management.

- Pre-configured analysis views including:
    Strongest Server RSSI.
    Strongest Server Channel Number.
    Strongest Server RSSI Above Threshold.
    Single Channel RSSI.
    Number of Channels Above RSSI Threshold.

- Custom analysis views can include N^{th} strongest server analysis and filtering by parameter thresholds.

- Detailed view of data in a single tile.

- Highlight coverage from individual base-stations.

Specific Radio Technology Enhancements

- *TETRA*. Adds support for C/I, AACH decode success rate, and decoded MCC, MNC and LAC from decoded broadcast information in the analysis views and presented data.

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