signalsphere RECORDER

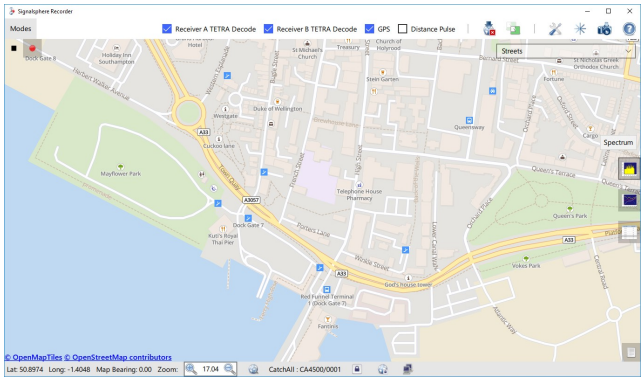
macltd MULTIPLE ACCESS COMMUNICATIONS

Network-independent portable radio recorder for survey and analysis

Deploying, developing and managing radio systems or networks requires reliable radio information so that informed and intelligent decisions can be made. Signalsphere Recorder is designed to record that information to enable the best results for your business. It focuses on reliably recording your radio environment, by giving clear user feedback from a streamlined control interface to ensure you gather the radio information you need.

Signalsphere includes the latest CatchAll software defined radio, the CatchAll-M2, that has continued MAC Ltd's established reputation for reliable and sensitive radio receivers. The CatchAll-M2 provides the right balance between size, performance and low power to enable a portable system that is capable of recording radio systems accurately.

Signalsphere Recorder captures location information using the CatchAll-M2's built-in GPS sensor or user input waypoints. Supplemental information from the CatchAll-M2's pedometer and distance pulse trigger are also recorded to aid in interpolating the position of radio measurements. This information is all accurately stored in a single recording file to be used with MAC Ltd's new analysis software, Signalsphere Explorer.



Signalsphere Recorder displaying a map and the easy to reach controls.

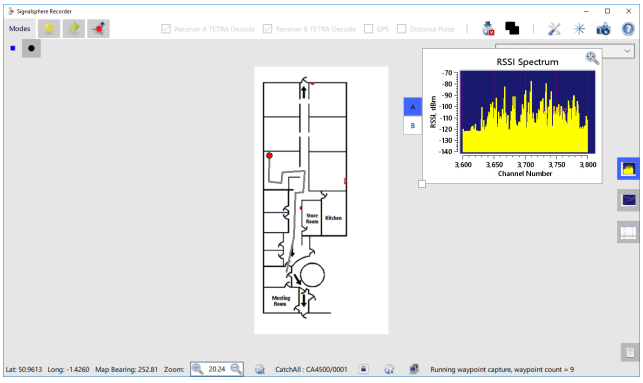
Clear User Feedback

Signalsphere Recorder gives clear user feedback so that users are able to see that their radio environment is being recorded as expected. This includes presenting the received radio data in multiple ways. Signalsphere Recorder has two graphs that a user can enable, the instantaneous RSSI spectrum and a RSSI time series. Users can interactively select channels to add and remove on the RSSI time series view.

Signalsphere Recorder records location data from GPS, and step counts from the pedometer or an externally driven distance signal. GPS data are presented directly on the map to assure the user that measurements will be geo-located correctly, whilst the pedometer and distance pulse data are displayed in the status bar. In locations where GPS is inaccurate or unavailable, location can be recorded by the user tapping or clicking their current location on the map. The user is regularly prompted to ensure location is recorded reliably.

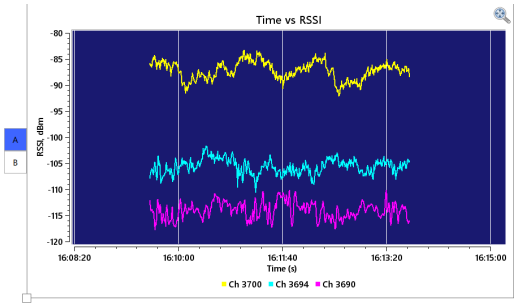
Streamlined Control Interface

Signalsphere Recorder can operate with minimal user input using well defined defaults and with all settings saved between sessions. Signalsphere Recorder is able to run on a tablet PC and operated using the touch interface making it ideal for on-the-go operation. The buttons, menus and other controls have been sized to work with touch input with many numeric controls being supported by buttons to increase or decrease their value.



Signalsphere Recorder during an recording using waypoint location input on a geolocated building plan with live RSSI data plotted.

The map can be panned by dragging, pinched to control zoom, and even rotated by hand so that users can clearly be guided in their recording. This helps input accurate location during drive-testing or walk-testing. Signalsphere Recorder is also able to use geo-located maps from Signalsphere Explorer and has a dedicated building plan mode that hides the background map focusing the user on their chosen location.



Live RSSI traces for selected channels allow users to know the system is working and provides opportunity for on-the-go analysis.

Reliable Recording

Signalsphere Recorder stores receiver data to a single portable SQLite database file. Using a database enables each data type to be saved immediately rather than fusing the different data streams on-the-fly. The database contains all the settings used during the recording, including the software version, receiver information, frequencies and sampling settings. This allows a retrospective inspection of the configuration used in the measurement process.

Radio Technology Enhancements

Signalsphere Recorder provides support for capturing multi-channel RSSI measurements in multiple bands as supported by the selected CatchAll-M2 receiver. MAC Ltd's continued support for TETRA networks means that Signalsphere Recorder can be configured to perform live decoding of a single TETRA channel to extract the broadcast information, if the CatchAll-M2 receiver supports single TETRA channel recording. The selected channel can be rotated through a predefined list or dynamically selected from the channels with the greatest RSSI levels or dynamically selected from the predefined list.

QoS

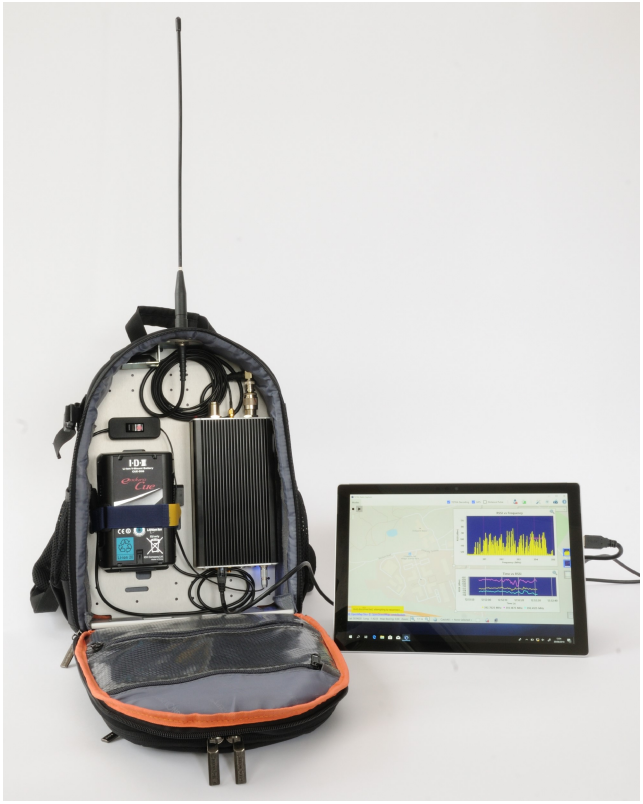
Filter

Channel Number	Frequency, MHz	Rssi, dBm	C/I, dB	Aach Decode Sucess Rate	MCC : MNC : LAC
3667	391.6875	-83.64	17.54	90 %	(234, 78, 3754)
3683	392.0875	-92.93	16.32	100 %	(234, 78, 3807)
3699	392.4875	-89.15	16.08	100 %	(234, 78, 664)
3700	392.5125	-86.69	15.92	100 %	(234, 78, 3754)
3709	392.7375	-79.60	17.69	100 %	(234, 78, 3811)
3732	393.3125	-88.93	12.54	100 %	(234, 78, 653)
3741	393.5375	-87.00	17.65	100 %	(234, 78, 3803)

Signalsphere Recorder's TETRA enhancement adds a "Quality of Service" table and decoded TETRA specific values.

Remote Operation

Signalsphere Recorder controls the CatchAll-M2 via its Ethernet network connection. This can enable remote control of the CatchAll-M2 receiver for static deployments or operator free roaming deployments on vehicles.



Signalsphere Recorder running on a Tablet PC connected to a CatchAll-M2 repackaged in a backpack

CatchAll-M2 Receiver

MAC Ltd's software defined radio, the CatchAll-M2, is able to support the recording of two separate RF bands up to 20MHz wide. This capability paired with its small size and low power consumption allow it to be repackaged in a backpack form factor, ideal for walk-testing.

The CatchAll-M2 receiver includes a GPS module, a pedometer and an external distance pulse input to support the effective recording of the location and speed.

macltd
MULTIPLE ACCESS COMMUNICATIONS

Multiple Access Communications Limited
Delta House, Southampton Science Park
Southampton, SO16 7NS
United Kingdom

web: www.macltd.com | e-mail: enquiries@macltd.com | tel: +44 23 8076 7808