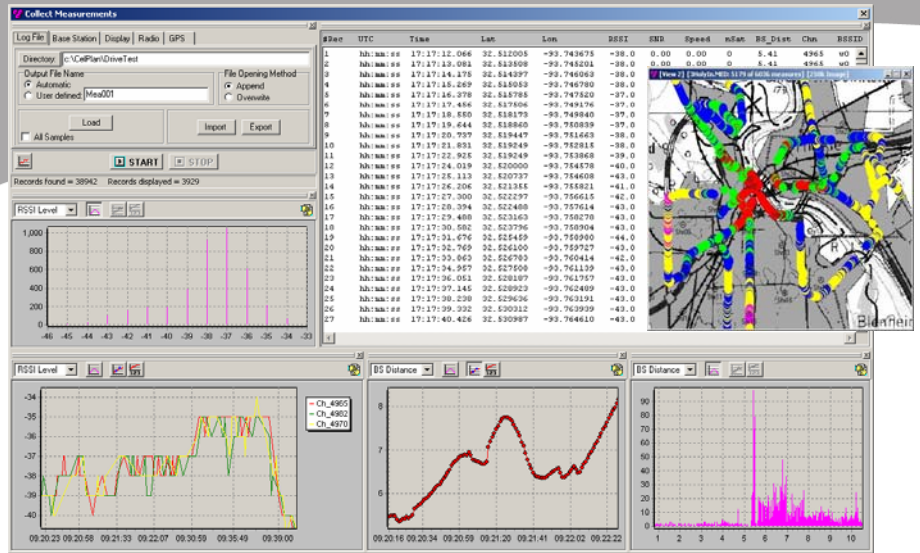
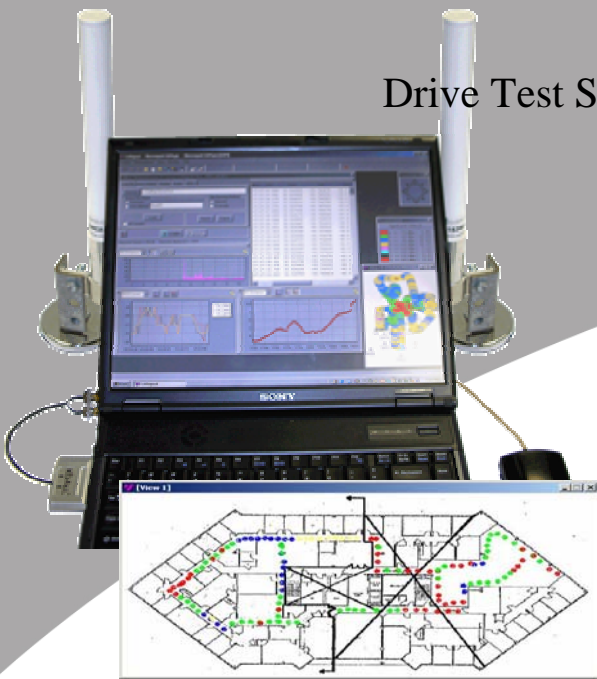


Drive Test Solution for WIFI and WIMAX Networks



- OFDM propagation analysis
- Typical measurements
 - Data rate, throughput
 - S and S/N
- Outdoor and Indoor drive tests
- Multi floors characterization

- GPS or user input location reference
- Collects data from
 - Wi4Net FlexiRadio
 - Redline RedMax
 - Spectrum Analyzer
- Correlates measure parameters (S/N to PER)
- Powerful averaging and filtering capabilities

The design of broadband networks using OFDM technology is very difficult as it varies drastically with the environment and radio locations. It is fundamental to characterize each environment with radios installed in typical network configurations so the network can be designed with confidence.

CelSignal™ is the ideal tool to characterize the environment for WIMAX and WIFI deployments and provides data to calibrate propagation models.

Measurement of CW signals does not reflect the intricacies of OFDM signal propagation, its behavior in fading environments and says nothing about interference distributions and error correction techniques used in existing systems. CelSignal™ uses actual radios to measure the environmental effects on the signal transmission, considering all the signal processing effects provided by the radio.

Measured Parameters

CelSignal™ provides network information such as:

- Received signal strength
- Received signal to noise ratio
- Data rate and modulation scheme
- Speed, Antenna height and Distance to transmitter and other parameters (radio dependent)

This data allows not only for the calibration of the propagation parameters for different models using signal strength information, but also for the correlation between the different network characteristics.

CelSignal™ provides valuable and reliable results that allow the design of OFDM networks with confidence.

CelSignal™ has an open interface and connects to the following radios today:

- Wi4Net FlexiRadio
- Redline RedMax
- Spectrum Analyzer

Other OFDM radios will be added as required by customers, including DVB-H radios. Non OFDM radios will be added in the near future.

Outdoor and Indoor

CelSignal™ allows measurements to be performed indoor and outdoor. GPS coordinates can be collected during outdoor measurements, while indoor location can be input by the user with simple mouse clicks during measurements.

CelSignal™ can collect data from one or multiple channels (Redline only), at user programmable intervals, fully exploring the radio capabilities. It provides powerful utilities that classify, filter and average measurements. Filtering and averaging can be done by distance, time or angle basis. It has a powerful graphical user interface with on the fly visualization of measurements, geographically and statistically.

Model Calibration

CelSignal™ data can be used directly by the propagation model calibration engine CelTools. This procedure will provide propagation parameters matched to the topographical and morphological data bases used with OFDM technology.

Radio Equipment

CelSignal™ requires the receivers specified below to operate and is compatible with commercially available transmitters. We recommend the transmitters below to match the receivers' licensed and unlicensed bands: 2.4 GHz to 2.6 GHz; 3.4 to 3.6 GHz and 4.9 GHz to 5.95 GHz.

- | | |
|--------------------------|---------------------------------------|
| Transmitters: | Receivers |
| Wi4Net FlexiRadio family | Wi4Net FlexiRadio CardBus (FR200/210) |
| Redline RedMAX BS | Redline RedMAX Subscriber Unit |
| | R&S FS300 Spectrum Analyzer |

Utilities

WiTest™ is a software utility that controls the FlexiRadio family of radios and allows the user to use special test working modes as:

- continuous transmission / continuous reception
- link test -transmits packets at all data rates and measures received PER
- Measures throughput test-transmits user defined packets.