



Pioneer™ Data Collection Tool

Network Coverage Application for the 4301 platform

Pioneer is a software defined radio application for use with the 4301 radio platform. Pioneer enables the platform to perform network measurements in a mobile environment for use in network planning, optimization, and maintenance. Pioneer also provides an optional user interface to facilitate control and measurement recording for complete test system capability.

- Advanced physical measurements and data monitoring for field network testing.
- Simple configuration of radio units and measurements.
- Support for multiple 4301 units to enable flexible test solutions and configurations.
- User available application support through DRT4000 application programming interface (API).
- Variety of data display and logging capabilities.
- Remote to laptop PC as well as local to unit log file support.
- 100 Mbps Ethernet interface to the host allows for high throughput of logged test data and remote operation.
- Simultaneous measurement support.
- Full navigation capability for GPS support and map displays of collected measurement data.
- Utilities for data formatting and export.
- Measurement support for GSM, cdma2000, WCDMA, WiMAX, TD-SCDMA, and beyond.

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Overview

As wireless systems continue to evolve and expand, network test tools become necessary to ensure reliable and efficient coverage during all phases of technology deployment.

DRT software defines the 4301 platform, and provides advanced solutions for network testing requirements. The Pioneer set of tools, running with the software-defined measurement platforms, allows a user to address the test needs of network expansion, optimization, and maintenance.

Application

Configuration:

4301 units, running the Pioneer application, are set up through scan management facilities to perform measurement tasks tailored to the user's particular needs. The units are then programmed for what data to measure, filter, and record. Once configured, the Pioneer-enabled units can run in live mode to view and troubleshoot coverage in real time, or in logging mode to additionally record results for post-processing analysis.

High-speed Measurements:

The nature of the cellular environment, with signal fading and multipath, provides challenges for determining the actual coverage and performance of the cellular network. To accurately measure propagation, DRT's test platforms combine high-speed tuning, wideband radio, and advanced signal processing to provide the fast measurement rates required to get a complete picture of the network environment. High-rate Ethernet interfaces to the measurement units permit the full scanning capacity along with remote operation capability.

Spectral Analysis:

As an aid to standard measurements of conventional and spread-spectrum systems, the Pioneer tool set provides a spectrum analyzer view of the actual signals with high detail in the frequency domain. The user has great control over the frequency and resolution display, along with measurement assist markers and averaging modes to help troubleshoot RF problems within a network.

Supplemental Measurements:

In addition to standard RSSI and Pilot scan capabilities, Pioneer contains additional measurement types to provide more detail into the behavior of the wireless network. For traditional systems, time slot based measurement allows viewing of total channel activity. Likewise for spread-spectrum systems, capabilities such as code domain scanning and diversity channel support provide more information for use in network test results.

Interference and Distortion:

Advanced physical measurement techniques developed by DRT provide innovative ways to determine the presence and nature of signal impairments that cause problems with QoS in a wireless network. As more advanced measurement solutions become available, the software defined nature and digital radio performance of the Pioneer solution allow for re-use of equipment and an up-to-date solution for network performance testing.

Demodulation and Decoding:

DRT's inherently robust signal processing capabilities provide superior wireless interface decoding performance for reliable detection of signal information under harsh conditions. The Pioneer solution also contains extensive decoding abilities to gain the most information about the network and broadcast data to help in improving frequency planning and channel configurations.

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