Agilent CDMA Base Station Over-Air Maintenance Tool

Product Overview

- reduce the cost of maintaining base stations
- improve CDMA network quality and increase customer retention
- proactively maintain hard to reach cdmaOne, IS-2000 (cdma2000 1x), and J-STD-008 CDMA base stations

Agilent Technologies

If you manage or maintain a wireless communications network, you know keeping and improving your market share is critical. To stay competitive, you have to continually improve quality of service to attract new customers, maintain your current base, and reduce operating costs at the same time. Proactive maintenance can help in both of these areas, but it typically requires more time than your technicians have.

The Agilent Technologies CDMA Over-Air Maintenance Tool saves time and makes proactive testing possible. Transmitter measurements are six times faster than the traditional base station tester and take on average only 5-10 minutes versus 60-75 minutes a sector. Fast over-air measurements increase RF technician efficiency – allowing technicians to proactively test more base stations, identify problem areas and quickly solve network problems before they become visible to your customers.

The ability to perform proactive maintenance with little impact on the technician's time is particularly important for maintaining difficult to access sites. Pole top base stations, for example, promise to reduce operating and deployment costs as well as deployment time. However, traditional testing methods are not practical for pole-top installations. With the Agilent CDMA Over-Air Maintenance Tool, maintaining pole-top base stations and other hard to reach base stations is now practical and convenient. Technicians can execute first-level diagnostics on CDMA base stations, including pole-tops, without getting out of their vehicle. Over-air measurements reduce the number of technicians required to maintain healthy networks, help reduce base station down time and reduce the cost of maintaining base stations.

System components

The Agilent CDMA Over-Air Maintenance Tool software runs on a PC that interfaces with an Agilent digital RF receiver or a CDMA mobile phone or both.

Key features

- **Code domain power trace –** This unique over-air measurement provides a dynamic view of the control and traffic channel activity without a direct connect to the base station.
- **Code domain power statistics –** A quick look at the statistics display provides information about timing, power, and excess noise in the measured signal. Measurements over time provide useful information about channel activity, capacity, and utilization.
- **Projects** – User-defined test scenarios remember all measurement and display configurations.
- **Automated report generator** – Two mouse clicks produce a complete report of the test.
- **Alarms** – Measurement thresholds and complex Boolean conditions can be defined to alert users of specific signal conditions.
- **Data recording and playback** – Data can be logged to the database and played back via "VCR-like" controls.
- **Scalability** – The system architecture is completely scalable with Agilent's drive test solutions. New functionality can be added as measurement requirements change.

Measurement functionality

Code domain power and statistics

The cdmaOne code domain power measurement displays each of the 64 Walsh channels in a color-coded bar graph. Key parameters are displayed in large, easy-to-see text:

Base station health parameters

- channel power
- pilot power
- PN offset number
- pilot delay (absolute delay with respect to GPS time)
- pilot-paging amplitude delta
- pilot-sync amplitude delta
- estimated Rho
- frequency error
- carrier feedthrough

Base station traffic parameters

- instantaneous number of active traffic channels
- average number of active traffic channels
- peak number of active traffic channels
- average power per active traffic channel
- peak power per active traffic channel
- percentage of amplifier capacity

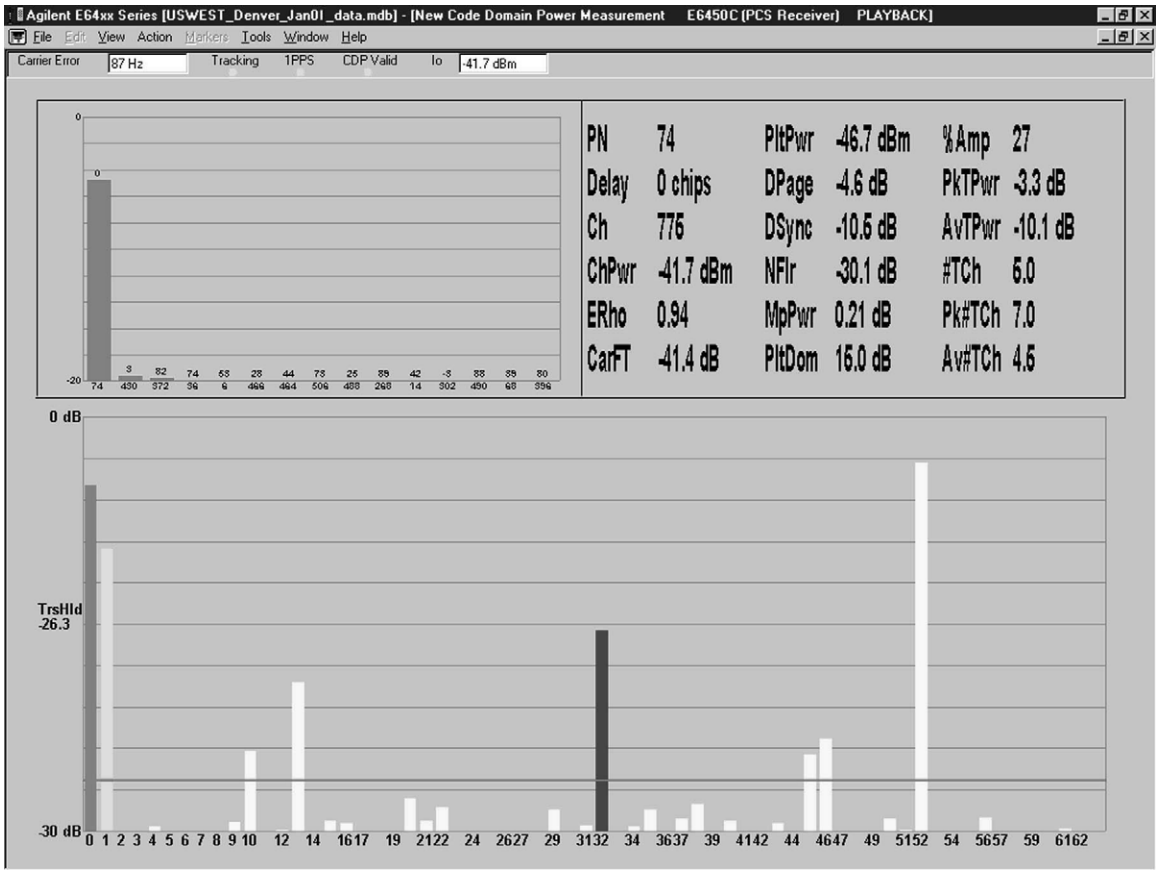

Figure 1. cdmaOne code domain power display

The cdma2000 1x code domain power measurement displays each of the 128 Walsh channels in a color-coded bar graph. cdma2000 channel data rates are displayed on the bar graph. The key parameters listed below are displayed in figure 2 and figure 3.

Base station health parameters

- PN offset number
- pilot delay (absolute delay with respect to GPS time)
- channel number
- channel power
- estimated rho
- carrier feedthrough
- noise floor
- pilot power
- pilot-paging channel amplitude delta
- pilot-sync channel amplitude delta
- pilot-quick paging channel amplitude delta

Base station traffic parameters

- percentage of amplifier capacity
- peak amplifier power
- average amplifier power
- peak power of active traffic channels
- average power of active traffic channels
- traffic channel utilization
- peak traffic channel utilization
- average traffic channel utilization
- number of active traffic channels
- peak number of active traffic channels
- average number of active traffic channels
- peak cdma2000 traffic channel data rate

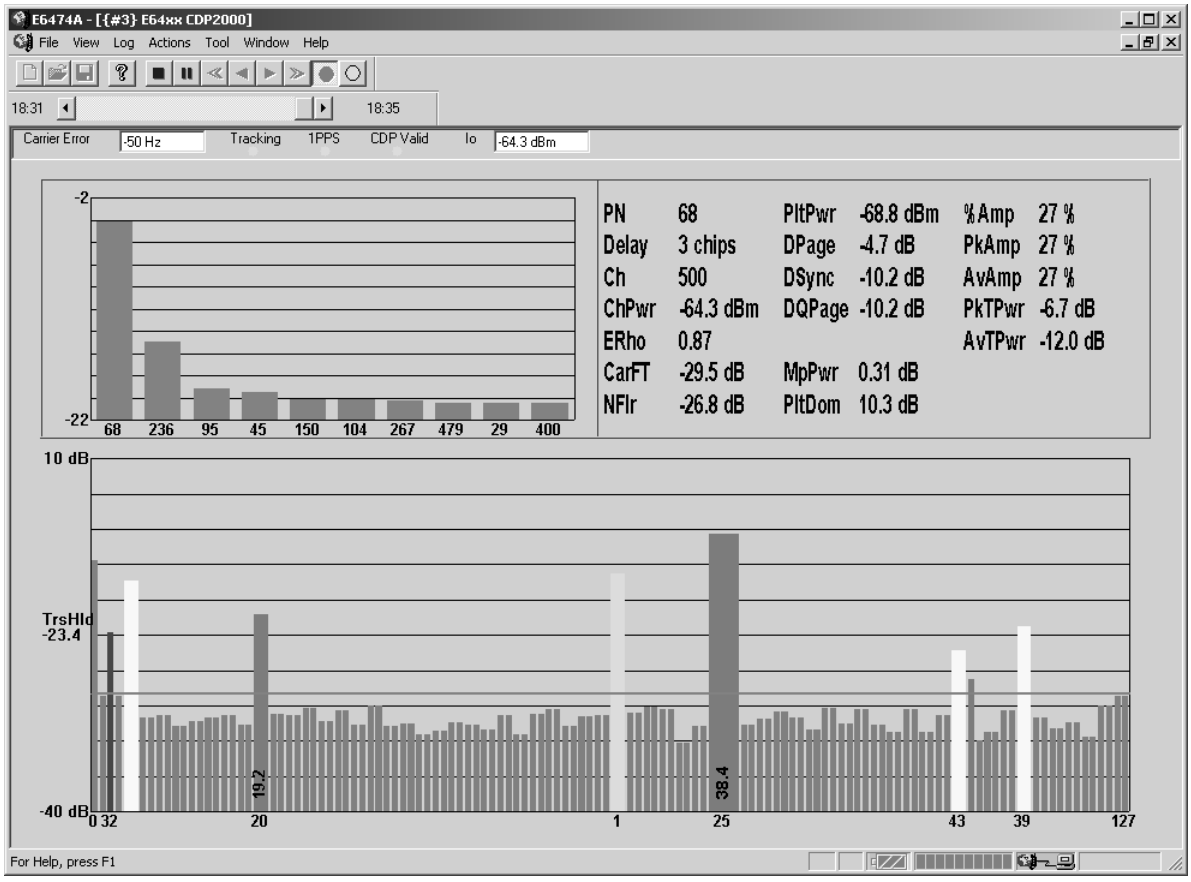

Figure 2. cdma2000 1x code domain power display (Walsh channels displayed in bit reverse order)

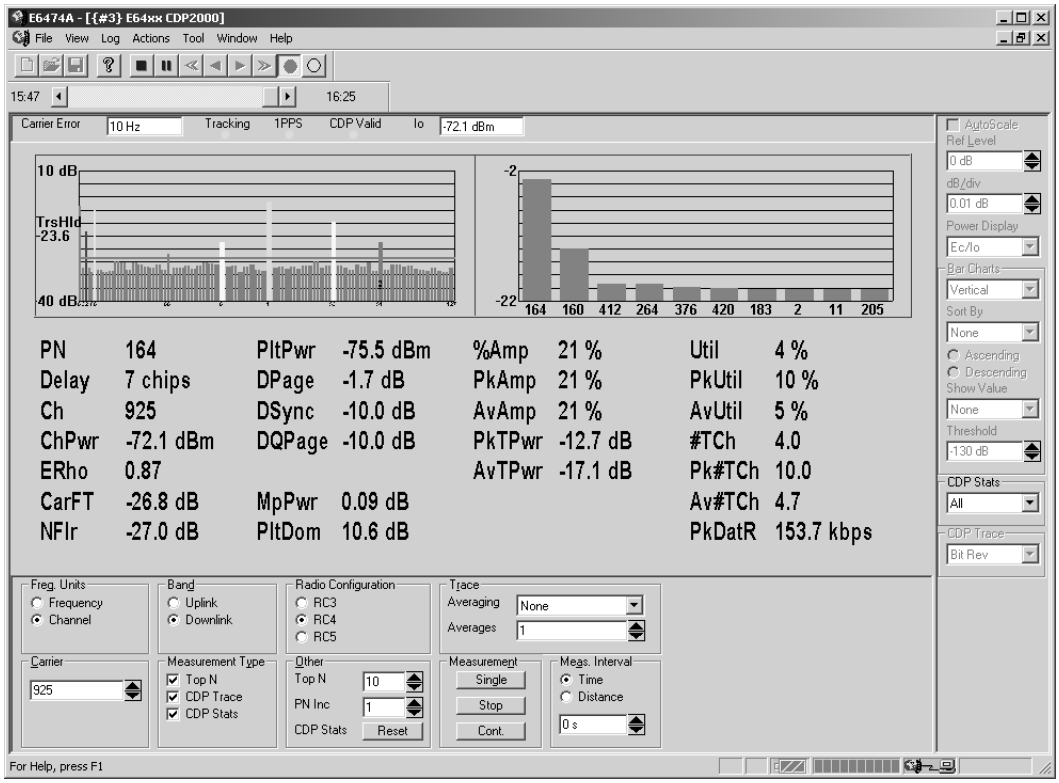

Figure 3. This display shows all the cdma2000 code domain power statistics

Spectrum measurement

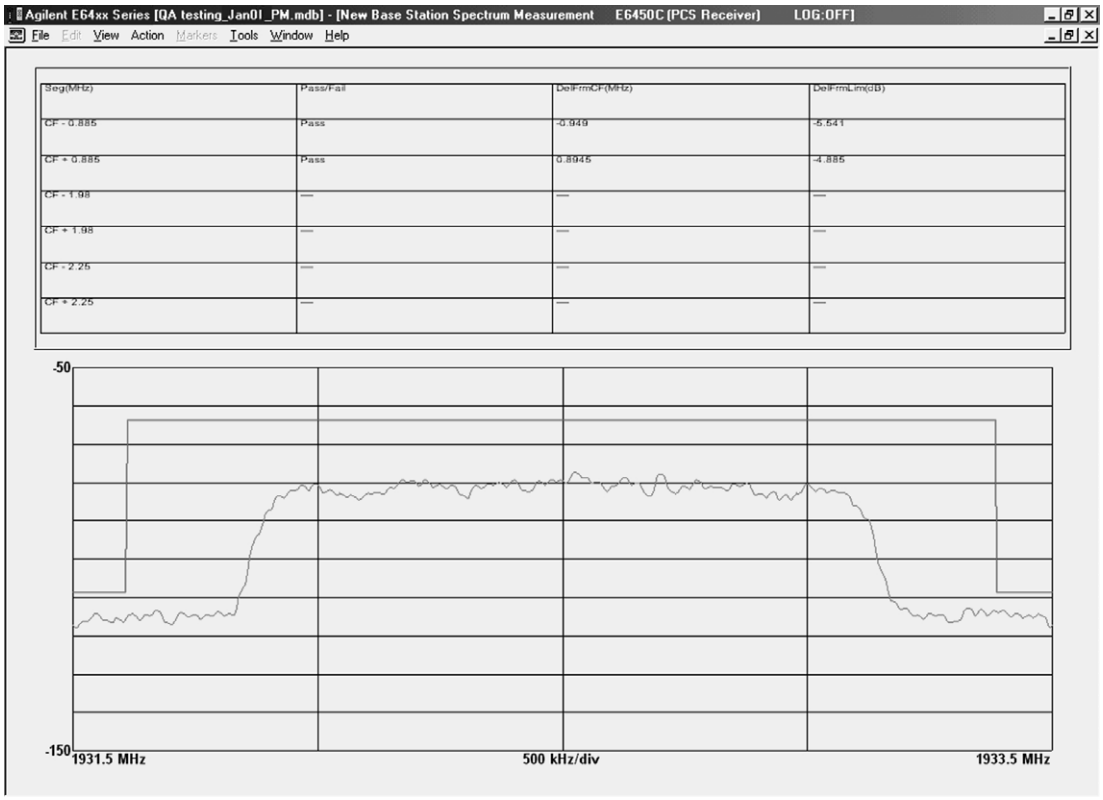

Figure 4. Spectrum display

The **spectrum** display includes the IS-97 spectrum mask.
The control functions are easy-to-use to support fast test execution.

Report generator

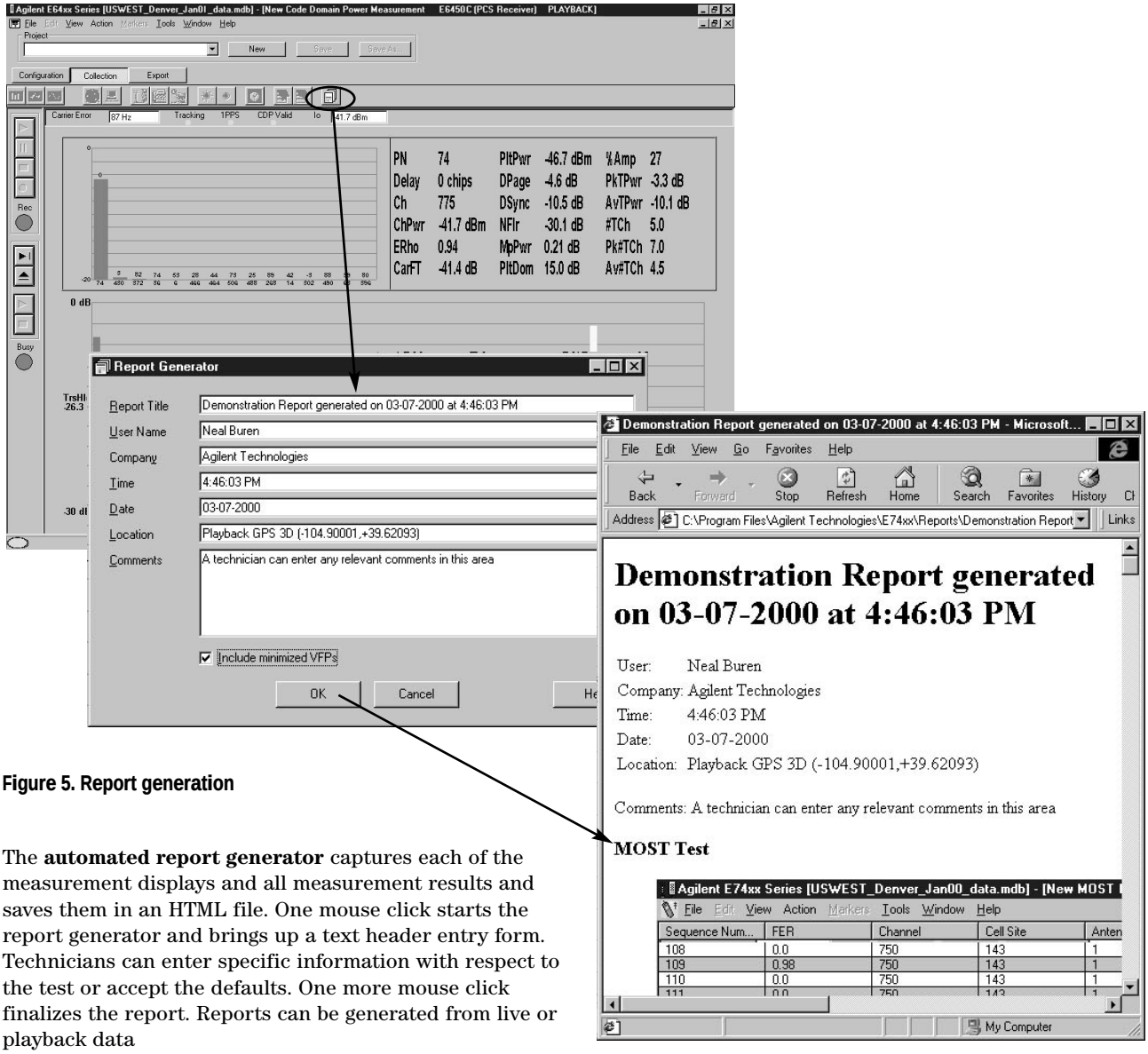

Figure 5. Report generation

The **automated report generator** captures each of the measurement displays and all measurement results and saves them in an HTML file. One mouse click starts the report generator and brings up a text header entry form. Technicians can enter specific information with respect to the test or accept the defaults. One more mouse click finalizes the report. Reports can be generated from live or playback data

Ordering Information

For detailed ordering information, please refer to the *Agilent CDMA Over-Air Maintenance Tool Data Sheet* (literature number 5968-8687E) and the *Agilent CDMA Over-Air Maintenance Tool Configuration Guide* (literature number 5968-8696E).

Software option:

- Option 150: code domain power and spectrum mask

Receiver hardware options:

- E6452C: cellular band receiver
- E6450C: PCS band receiver
- E6457C: Japan cellular band receiver
- E6453C: Korea PCS band receiver
- E6454C: PCS band CDMA/GSM receiver
- E6456C: PCS band cdma2000/UMTS receiver

Accessory options:

- laptop PC
- external GPS receiver with dead reckoning
- carrying case
- phone interface cables

Additional literature

Product overviews

E6474A Wireless Network Optimization Platform Product Overview 5988-3558EN

OPAS32 Engineering Information Management and Analysis Software Product Overview.....5988-0247EN

Direct Connect Hub Product Overview 5988-3176EN

Configuration guides

CDMA Over-Air Maintenance Tool Configuration Guide 5968-8696E

E6474A Wireless Network Optimization Platform Configuration Guide 5988-2396EN

OPAS32 Engineering Information Management and Analysis Software Configuration Guide 5988-1589EN

Data sheets

CDMA Over-Air Maintenance Tool Data Sheet 5968-8687E

E7473A CDMA Drive Test System.....5968-5555E

Product Notes

CDMA Drive Test Product Note.....5968-5554E

Using the Agilent E7473A CDMA Drive Test System Product Note 5988-0896EN

Application Notes

Optimizing your CDMA Wireless Network Today and Tomorrow Using Drive Test Solutions Application Note – 1345 .....5968-9916E

For the latest news,product and support information and application literature, visit our Web site at:

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