Comprehensive base station test:
• Wireless direct connect measurements
• Over-air test measurements
• Backhaul measurements

Multiple wireless system testing:
• cdmaOne and cdma2000
• GSM, TDMA and analog systems
• W-CDMA (UMTS)
Technicians no longer need to carry armfuls of tools when they perform base station maintenance. All they need is one tool from Agilent Technologies. The Agilent E7495B base station test set:

- Performs all standard BTS and over-air measurements with the precision you need – more BTS wireless and wireline measurements than any other test set on the market.
- Increases each technician’s productivity, decreasing time spent per cell site visit.
- Minimizes the need for training because of its simple interface, simple procedures, and built-in measurement help.
- Stands up to rough field use and all weather conditions.
- Costs much less than all the tools it replaces.
Agilent E7495B Base Station Test Set

- Compact Flash and PCMCIA card slot provides for easy transfer of data to your PC.
- Rubber bumpers help protect the unit from rough environments.
- Large buttons enable easy navigation – even with gloves on.
- High resolution, transflective color display stays viewable even in direct sunlight and at wide viewing angles.
- Magnesium alloy case provides strong, lightweight protection for internal components.
- Inside the case, extensive RF shielding helps reduce interference that could impact measurement accuracy.
- Battery light changes color to indicate battery life.
- Backlit keys, protected by a water-resistant rubber membrane, make it easy to perform tests under all lighting and weather conditions.
Comprehensive Base Station Test:

- Power meter
- CW and cdmaOne/cdma2000 reverse link signal generator
- W-CDMA/cdmaOne/cdma2000 over-air test tool
- Antenna tester/cable fault analyzer
- Spectrum analyzer
- T1 or E1 tester

Now technicians will never have to worry, “Did I bring all the tools I need?” or have to deal with learning different user interfaces found in the various instruments.

With W-CDMA/CDMA over-air measurements, perform diagnostic tests without taking the base station off-the-air.

- TX RF tests for cdmaOne/cdma2000/W-CDMA (UMTS)/TDMA/GSM/EDGE/GPRS/AMPS/iDEN
- TX RF modulation analysis for cdmaOne/cdma2000/W-CDMA (UMTS)/GSM
- Internal GPS receiver

Interference Analyzer

CDMA Analyzer

GSM Transmitter Analyzer
Leverage Your Technicians’ Time, Improve Your Quality of Service

### Test/Capability

<table>
<thead>
<tr>
<th>Power meter</th>
<th><strong>Technician Benefit</strong></th>
<th><strong>Subscriber Benefit</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Replaces the need to carry a separate power meter, simplifying maintenance and shortening site visits. Additionally, using an appropriate power sensor enables technicians to make power measurements of microwave links.</td>
<td>Accurate power settings help networks operate in full capacity — reducing coverage holes and minimizing the effects of interference.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CW and cdmaOne/cdma2000 reverse link signal generator</th>
<th><strong>Technician Benefit</strong></th>
<th><strong>Subscriber Benefit</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Provides the technician with a source to conduct RSSI or sensitivity measurements. Additionally, allows a technician to perform component level characterization utilizing simultaneous spectrum analysis and built-in RF and CDMA sources.</td>
<td>Reverse link testing helps to ensure network service quality.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>W-CDMA/cdmaOne/cdma2000 over-air test tool</th>
<th><strong>Technician Benefit</strong></th>
<th><strong>Subscriber Benefit</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Provides fast measurements in less than five minutes. Enables time for proactive maintenance and makes pole top testing practical.</td>
<td>Problem areas can be identified without interrupting service.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Antenna tester with vector network analysis capability</th>
<th><strong>Technician Benefit</strong></th>
<th><strong>Subscriber Benefit</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lets your technicians evaluate one of the primary BTS trouble spots in a matter of minutes. Dual port insertion loss allows technicians to sweep various components like filters, duplexers, amps and more.</td>
<td>A healthy antenna and feed line network yields improved voice quality, better system reliability and reduced dropped calls.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Spectrum analyzer</th>
<th><strong>Technician Benefit</strong></th>
<th><strong>Subscriber Benefit</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Provides necessary functionality so your technicians don’t need to carry a separate spectrum analyzer. Built-in masks and markers make it easy to use. Industry leading low noise figure receiver is capable of measuring down to –150 dBm, allowing technicians to identify and pull out low level, intermittent rogue interferers.</td>
<td>Quick interference detection leads to improved quality of service.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>T1 or E1</th>
<th><strong>Technician Benefit</strong></th>
<th><strong>Subscriber Benefit</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifies and diagnoses T1 or E1 problems. Dual channel capability allows “loop-back” measurements.</td>
<td>Fewer wireline problems mean reduced service problems and down time.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Channel scanner for cdmaOne/cdma2000/W-CDMA(UMTS)/TDMA/GSM/EDGE/GPRS/AMPS/iDEN</th>
<th><strong>Technician Benefit</strong></th>
<th><strong>Subscriber Benefit</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Provides easy to interpret bar graph display illustrating channel power versus frequency of user defined channels.</td>
<td>The channel scanner quickly identifies improper power levels that can adversely affect network performance.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Internal GPS receiver</th>
<th><strong>Technician Benefit</strong></th>
<th><strong>Subscriber Benefit</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Provides position location, highly accurate frequency measurements and enables independent verification of base station GPS receiver timing.</td>
<td>For CDMA networks, the internal GPS receiver helps reduce dropped calls by identifying the “island cell” effect – improving the quality of service.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interference analysis</th>
<th><strong>Technician Benefit</strong></th>
<th><strong>Subscriber Benefit</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Allows engineers and technicians to find intermittent, interfering signals using a spectrogram display, signal strength meter and signal ID capability.</td>
<td>Eliminating interfering signals from the network improves quality of service.</td>
<td></td>
</tr>
</tbody>
</table>

See Specification section for details.
The Agilent E7495B is the **most functional one-box tool** on the market, eliminating the need for your technicians to carry, manage and learn multiple test tools.

This helps reduce your asset costs, tracking costs, calibration and maintenance costs, and the training costs associated with learning the specifics of separate instruments.

The E7495B has a **remarkably short learning curve** because of its simple interface and accessible learning tools. So your engineers and technicians – even those with limited knowledge or experience – will be performing BTS measurements in less time. In turn, experienced engineers can devote more of their time resolving chronic coverage problems, planning new sites, and expanding into new services and technologies.

The simple procedures plus exceptionally usable hardware combine to produce **shorter net time per cell site visit**. Now each technician can handle more cell sites and have the time to conduct more proactive maintenance.

The field-rugged design means less downtime, more field time.

Engineered-in **extensibility** lets you do more today and tomorrow. Today, a variety of I/O ports permit data sharing with other tools and software. In the future, all feature upgrades will be done through hardware or firmware inside the case, preserving the single-case convenience and reliability.

**Dramatically Increase Technician Productivity and Maintain High Quality of Service**
The Agilent base station test set is so easy to use, it minimizes the need for training. Technicians will get up to speed fast – and get their work done quickly every day.

The intuitive hardkey/softkey interface, used for all measurements, means there’s less of a learning curve.

The built-in measurement help leads technicians through each measurement task step-by-step. Other learning tools include a user’s guide and an optional web-based tutorial.

Backlit hardkeys, protected by a water-resistant rubber membrane, make it easy to perform tests under all lighting and weather conditions. A **transflective color display** stays viewable even in direct sunlight and at wide viewing angles. Result: faster, more accurate readings.

Technicians can hand-carry the lightweight unit or use the ergonomically designed backpack to free up their hands. The backpack includes a comfort-contoured back panel, full padded hipbelt, plus extra pockets and tool loops for other hardware and supplies.

Snap-in battery packs provide up to three hours of performance. You can switch batteries in seconds.
A single-box measurement solution makes sense only if it can stand up to rough field use and unexpected weather. So we designed the Agilent base station test set to be rugged, durable and weather resistant.

A magnesium alloy case with extensive internal RF shielding protects the components, reduces interference that could impact measurement accuracy, and makes the test set easy to handle and carry.

Gasketed ports, water-resistant rubber membrane, and dust-proof case design (no fan, no vents) add to the ongoing confidence you can have in the measurements. The backpack protects the unit on the way to and from the site. A built-in rain flap provides additional protection.

We know that you'll want to add new capabilities as your network evolves. So we made sure that all functionality upgrades will be implemented through firmware or hardware inside the case. The Agilent test set grows in functionality without growing in size. The field-rugged design is never compromised by awkward external modules.
## Features and Benefits Summary

### Multiple tools

<table>
<thead>
<tr>
<th>Tool</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power meter</strong></td>
<td>Helps ensure accurate power settings, so you can maximize network capacity while minimizing coverage problems.</td>
</tr>
<tr>
<td><strong>Fast cdmaOne/cdma2000 over-air measurements</strong></td>
<td>Provides first level diagnostics in less than five minutes without taking the base station off the air or leaving the vehicle. Enables time for proactive maintenance and makes pole top testing practical and convenient.</td>
</tr>
<tr>
<td><strong>CW and W-CDMA/cdmaOne/cdma2000 reverse link signal generator</strong></td>
<td>Helps examine the reverse link of the network.</td>
</tr>
<tr>
<td><strong>Reliable antenna measurements with vector network analysis capability and DC bias</strong></td>
<td>Quickly identifies antenna feedline and connector problems to provide a full picture of antenna health. The DC bias option eliminates the need for external power sources to power pole-top amplifiers.</td>
</tr>
<tr>
<td><strong>Full function dual port, T1 or E1 tests</strong></td>
<td>Reduces the amount of time needed to identify if problems are on the wireline or wireless side.</td>
</tr>
<tr>
<td><strong>Spectrum analyzer</strong></td>
<td>Enables quick identification of various signals.</td>
</tr>
<tr>
<td><strong>Channel scanner for cdmaOne/cdma2000 W-CDMA(UMTS)/TDMA/GSM/GPRS/AMPS/iDEN</strong></td>
<td>Measures power, frequency and bandwidth for multiple wireless systems.</td>
</tr>
<tr>
<td><strong>TX RF modulation analysis for cdmaOne/cdma2000/ W-CDMA (UMTS)/GSM</strong></td>
<td>Increases your technicians’ TX knowledge in real-time. For example, the CDMA test suite adds extensive transmitter analysis for both cdmaOne and cdma2000 (1x RC1-RC5). This CDMA option includes code domain power, time offset, tau, rho, and carrier feedthrough. For W-CDMA the tests include code domain power, error vector magnitude plus additional modulation quality metrics. GSM metrics include frequency error BSIC decode peak channel power, phase error and IQ offset.</td>
</tr>
<tr>
<td><strong>Built-in GPS receiver</strong></td>
<td>Provides position location, highly accurate frequency measurements and enables independent verification of base station GPS receiver timing.</td>
</tr>
<tr>
<td><strong>Interference analyzer</strong></td>
<td>Allows engineers and technicians to locate and identify intermittent, interfering signals that cause dropped calls and negatively influence quality of service.</td>
</tr>
<tr>
<td><strong>Transreflective color display</strong></td>
<td>Speeds up measurement readings because the display remains viewable in darkness, shade and direct sunlight.</td>
</tr>
<tr>
<td><strong>Single hardkey user interface</strong></td>
<td>Provides easy navigation to perform quick and accurate measurements – even with gloves on.</td>
</tr>
<tr>
<td><strong>Backlit keys</strong></td>
<td>Makes it easier to perform tests under all lighting and weather conditions.</td>
</tr>
<tr>
<td><strong>Built-in measurement help</strong></td>
<td>Provides step-by-step instructions for measurements.</td>
</tr>
</tbody>
</table>

See Specification section for more information.
### Features and Benefits Summary continued

**Portability**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Custom backpack (optional)</td>
<td>Protects the test set on the way to and from the site — and enables technicians to be hands-free to easily enter site.</td>
</tr>
<tr>
<td>Padded shoulder strap</td>
<td>Provides another convenient way to carry the unit.</td>
</tr>
<tr>
<td>Stainless steel stand</td>
<td>Props up the test set for better visibility.</td>
</tr>
<tr>
<td>Approximately 20 pounds</td>
<td>Easy to carry and move around in confined spaces — no additional modules or tools.</td>
</tr>
<tr>
<td>Battery life — up to three hours with two batteries</td>
<td>Allows extended measurement sessions without a restrictive power cord.</td>
</tr>
</tbody>
</table>

**Rugged design**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium alloy case</td>
<td>Provides a lightweight yet strong enclosure; enhances heat distribution and RF shielding.</td>
</tr>
<tr>
<td>Water-resistant rubber membrane key pad and sealed display</td>
<td>Enables technicians to go anywhere, anytime — regardless of the weather. Seals out water and dirt to help ensure measurement performance.</td>
</tr>
<tr>
<td>Dust-free case design (no vents or fan)</td>
<td>Keeps the unit free of moisture and dirt.</td>
</tr>
<tr>
<td>Gasketed ports</td>
<td>Protects components from moisture and harsh weather.</td>
</tr>
<tr>
<td>Wide operating temperature range –10 to 50 °C / 14 to 122 °F</td>
<td>Performs well even in extreme cold and hot conditions.</td>
</tr>
<tr>
<td>Internal RF shielding</td>
<td>Reduces RF interference that could impact measurement results.</td>
</tr>
<tr>
<td>Rubber bumpers</td>
<td>Protects the unit while in rugged field environments.</td>
</tr>
</tbody>
</table>

**Extensible**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexible architecture</td>
<td>Easily upgradeable to meet future network needs without growing in size.</td>
</tr>
<tr>
<td>Remote monitoring</td>
<td>Allows technicians to remotely monitor problematic base stations from the comfort of their own desk.</td>
</tr>
<tr>
<td>Upgradeable</td>
<td>Upgradeable as formats evolve.</td>
</tr>
<tr>
<td>Linux operating system</td>
<td>Provides a stable and efficient operation system.</td>
</tr>
<tr>
<td>Compact Flash and PCMCIA card slot connection</td>
<td>Makes saving and transferring measurement results to your PC or network quick and easy. Enables data to be easily captured and transmitted to your network.</td>
</tr>
<tr>
<td>USB connectors and RS-232</td>
<td>Allows easy hook-up for data transfers and I/O applications like printers, keyboards and mice.</td>
</tr>
<tr>
<td>File export</td>
<td>Allows you to easily save data to Excel files and images to PNG files for use with a PC.</td>
</tr>
</tbody>
</table>
E7495B Base Station Test Set Specifications

Specifications describe the instrument’s warranted performance and are valid over the entire operating/environmental range unless otherwise noted.

Supplemental characteristics are intended to provide additional information useful in applying the instrument by giving typical, but non-warranted performance parameters. These characteristics are shown in italics or labeled as “typical,” “usable to,” or “nominal.”

General specifications

Unless otherwise noted the following specifications apply to all measurements/tools using port 2.

Frequency accuracy:
- Using internal time base: \( \leq \pm 1 \text{ ppm with } > 15 \text{ minute warm-up} \)
- Internal time base aging: \( \pm 1 \text{ ppm aging/year} \)
- With GPS lock for > 15 minutes: \( \leq \pm 0.03 \text{ ppm} \)

Input frequency range:
- 10 MHz to 2700 MHz
- Usable to 500 KHz (specifications and typical values do not apply below 375 MHz unless otherwise noted)

Maximum input level: +20 dBm (.1 W), +50 dBm w/supplied attenuator

Maximum input power without damaging instrument: 100 W (without external attenuator)

Frequency and time reference:
- Can use internal timebase or external signal: GPS (external antenna supplied)
  - Even second; pulse
  - 1 MHz: \( \geq 0 \text{ dBm} \)
  - 2.048 MHz: \( \geq 0 \text{ dBm} \)
  - 4.95 MHz: \( \geq 0 \text{ dBm} \)
  - 10.0000 MHz: \( \geq 0 \text{ dBm} \)
  - 13.0 MHz: \( \geq 0 \text{ dBm} \)
  - 15.0 MHz: \( \geq 0 \text{ dBm} \)
  - 19.6608 MHz: \( \geq 0 \text{ dBm} \)

Display:
- Scale: 1 to 20 dB/div. settable in 1 dB increments
- Number of points: 256
- Number of divisions: 10

40 dB attenuator:
- Frequency range: 10 to 2500 MHz
- Attenuation accuracy: \( \pm 0.5 \text{ dB} \)
- Max power: 50 dBm (100 W)

Spectrum analyzer/tools

Input frequency range: 10 MHz to 2700 MHz (usable to 500 KHz)

Reference level range: −150 to +100 dBm

Dynamic range:
- +50 dBm to −150 dBm
- (with supplied 40 dB attenuator) (30 Hz RBW)

Input attenuation: 0 to 30 dB automatically selected, 10 dB controllable manually

Amplitude accuracy: \( \pm 1 \text{ dB} (100 \text{ to } 2500 \text{ MHz at } 25 \text{ °C}) \)

Resolution bandwidth:
- 10 Hz to 1 Hz, settable to 1 Hz precision
- 1 kHz to 2.6995 GHz

Trace update:
- Span: 2.48 GHz = 5.1 sec
- 60 MHz = 400 mS

Simultaneous dynamic range:
- > 90 dB (CW signals at 300 KHz separation, span 500 KHz, 30 Hz RBW)

SSB phase noise:
- ≤ −85 dBc (30 kHz offset)

Spurious responses:
- Range control set to auto, high sensitivity mode
- Internally generated, 50 ohm load on input: \( < −115 \text{ dBm} \)
- Crossing spurs: \( ≤ −50 \text{ dBc} \)

Displayed average noise level:
- \( −150 \text{ dBm (30 Hz RBW, 375 MHz to 1.5 GHz)} \)

Port 2 VSWR:
- \( < 2:1 \)

Antenna/cable¹

Frequency range: 375 to 2500 MHz

Frequency resolution: < 500 Hz

Immunity to interfering signals: +20 dBm (with interference rejection turned on)

Measurement speed:
- Full span: < 17 mS
- 60 MHz span: < 7 mS

Return loss (port1)
- With ≥ 16 averages:
  - 375 to 2200 MHz: > 40 dB
  - VSWR: < 1.02
  - Resolution: 0.1 dB
  - Display range: −5 to +150 dB
  - SWR range: 1 to 500

Distance to fault (port1)
- Range (m): 1 m to 300 m
- Resolution: \( [1.5 \times 10^7]/(Vf)/(f2-f1) \text{ Hz where } Vf \text{ is relative propagation velocity of cable. (typically 1% of measurement distance)} \)
- VSWR: 1 to 500

Insertion loss (port 1 to port 2)
- Measurement uses supplied 10 dB pads
- Usable range: > 100 dB wide range mode
- Accuracy: \( \pm 1 \text{ dB (over 0 to 60 dB, ≥ 16 averages)} \)
- Average insertion loss (readout) accuracy:
  - Range: 0 to 40 dB
  - Frequency: 824 to 960 MHz, 1710 to 2170 MHz
  - Mobile phone bands
  - Readout resolution: \( ± 0.1 \text{ dB} \)

¹ For antenna/cable measurements, a short self-calibration procedure must be run prior to making the measurement. For more information about the calibration procedures and when they are needed, see sections 2 and 3 in the users manual or use the online help.
Options

cdmaOne/cdma2000 analyzer Option 200
Waveform quality (rho) accuracy: ± .005 for 0.9 < p < 1.0
(min power @ RF input > –85 dBc)
Pilot time alignment (tau): ± 500 nSec
Code domain power accuracy: ± 1.5 dB absolute, ± 0.5 dB relative (> –20 dB)
Pilot power: ± 1.5 dB

RF channel scanner (includes adjacent channel power) Option 220
Measurement range: +20 to –125 dBm (up to +50 dBm with external attenuator > 375 MHz, 10 KHz RBW)
Frequency readout accuracy: Time base accuracy +3 Hz + 1/(measurement time X duty cycle)
Frequency range: 10 MHz to 2.7 GHz (usable to 500 KHz)
RF channel power accuracy: ± 1 dB (100 to 2500 MHz)
Adjacent channel power accuracy: ± 0.75 dBc

GSM TX analyzer Option 230
Measurement range: +20 to –125 dBm (up to +50 dBm with external attenuator > 375 MHz, 10 KHz RBW)
Frequency readout accuracy: Time base accuracy +3 Hz + 1/(measurement time X duty cycle)
Frequency range: 10 MHz to 2.7 GHz (usable to 500 KHz)
RF channel power accuracy: ± 1 dB (100 to 2500 MHz)
Phase error: ± 1 degree RMS, ± 3 degrees peak

W-CDMA (UMTS) TX analyzer Option 240
Error vector magnitude: Resolution 0.1
Conditions: Min power at RF input > –65 dBm, 3GPP test model 4
Code domain power accuracy: ± 0.5 dB for code channel power > –25 dB relative to total power using test model 1 (with 16 DPCH, 32 DPCH, and 64 DPCH) test model 2, and test model 3 (with 16 DPCH an 32 DCPH) Scrambling code: 1 second (in auto mode)

DC bias Option 300
Frequency range: 375 to 2500 MHz
DC Voltage: +12.7 VDC max
DC Current: 800 mA max
Volt-Amps: 9.84 VA max

Signal generator (CW) Option 500 (port 1)
Frequency range: 375 to 2500 MHz
Output level: –23 to –90 dBm
Level accuracy: ± 1 dB
Phase error: at 3 KHz offset –90 dBc/Hz

cdmaOne/cdma2000 reverse link signal generator Option 510 (port 1)
Frequency range: 375 to 2500 MHz
Output level: –28 to –95 dBm
Level accuracy: ± 0.7 dB (at 25 °C, –44 dBm to –95 dBm)
± 1 dB (at 25 °C, –28 dBm to –43 dBm)

Power meter Option 600
Display
Range: –100 dBm to +100 dBm
Display limits: ± 100 dBm (user settable)
Resolution: Settable 1.0, 0.1, 0.01, 0.001 in logarithmic mode, or 1, 2, 3, or 4 significant digits in linear mode
Accuracy Instrumentation:
Absolute: ± 0.02 dB (log) or ± 0.5% (linear). Add the corresponding power sensor linearity percentage.
Relative: ± 0.04 dB (log) or ± 1.0% (linear). Add the corresponding power sensor linearity percentage.
Zero set:
Zero set is the digital zero with an 8482A sensor: ± 50 nW
Power reference:
Power output: 1.00 mW (0.0 dBm) traceable to the U.S. National Institute of Standards and Technology (NIST).
Accuracy: ± 1.2% worst case (± 0.9% rss) for one year.
SWR: < 1.08
External attenuator
Max power: 100 Watts
Attenuation: 40 dB ± 0.5 dB

Power meter Option 600 with Agilent 8482A power sensor (also supports Agilent 8481A power sensor)
Frequency range: 100 KHz to 4.2 GHz
VSWR:
100 KHz to 0.3 MHz < 1.60
0.3 MHz to 1 MHz < 1.20
1 MHz to 2 GHz < 1.10
2 GHz to 4.2 GHz < 1.3
Power linearity: +10 dBm to +20 dBm; ± 3%
Maximum power: 300 mW average, 1 W peak, 30 W-us per pulse
Measurement noise: < 93.5 nW (0.85 + 110 nW)
Averaging filter: Fixed at 32 in normal mode
Zero drift: < ± 10 nW

1. Attenuator can be characterized to within 0.1dB in the mobile phone bands using the insertion loss measurement. This value can be stored for use with the power meter.
### T1 analyzer Option 700

**Features**

**Receive level:**

- (Line 1 and line 2) +6 dB DSC to –36 dB DSX or 100 mv p-to-p to 12 v p-to-p
- Receive frequency display receive frequency
- (5 ppm) “Loop-back” control
- Send CSU or NIU loop codes CSU/NIU emulation
- Respond to CSU or NIU loop codes

**Electrical interface**

- **Connectors, RX, TX:** Primary and secondary ports
- **Output:**
  - Conforms to TR-TSY-000499, CCITT Rec.G.703
  - AT&T Pubs CB113, CB119, CB132, CB143
  - PUB62508 and PUB62411 pulse shape specifications when terminated in 100 ohms and 0 dB line build-out is selected
- **Line build-out:**
  - 0 dB, –7.5 dB, –15 dB

**Transmitter and receiver**

- **Framing:** Unframed, D3/D4 & ESF
- **Channel formats:** Full T1, 64x1

**Test patterns:**

- QRSS, all Os, 1:7, 2 in 8, 3 in 24, all 1s, T-1-Daly, 55 OCTET
- Error injection
  - Type: BPV, frame, CRC, pattern (logic)
  - Error rate: Single
  - Alarm inject
  - Type: LOS, LOF, yellow, AIS, idle (CDI)

### E1 analyzer Option 710

**Features**

**Receive level:**

- +6 dB DSX to –36 dB DSX or 100 mv p-to-p to 12 v p-to-p
- Receive frequency (line 1):
  - Display receive frequency (± 5 ppm)

**Electrical interface**

- **Connectors, RX, TX:** Primary and secondary ports
- **Output:**
  - Conforms to ITU-T Rec.G.703
  - AMI, HDB3
- **Line code:**
  - Terminate: 75 ohms ± 5% bridge: > 1000 ohms
- **Impedance:**
  - Terminate: DSX +6 dB to DSX –36 dB
  - Bridge: DSX +6 dB to DSX –36 dB
- **Clock:**
  - 1.544 MHz
  - Internal: ± 5 ppm
  - External: ± 300 ppm
  - Recovered: ± 300 ppm

**Transmitter and receiver**

- **Framing:** Unframed, PCM-30, PCM-30 with CRC, PCM-31, PCM-31 with CRC
- **Channel formats:** Full E1, 64x1

**Test patterns:**

- (True or Inverse, ITU Rec) 26-1 (Q6&Q5), 29-1 (V.52), 211-1 (0.152), 215-1 (0.151) 220-1(V.57), QRSS, 223-1(0.151), all 0’s, 1:7, 1:3, 1:1, all 1’s
- Error injection
  - Type: Code (BPV), FAS, MFAS, CRC-4 with CRC
  - Error rate: Single
General

Display
Transflective VGA color LCD

Physical dimensions
Height: 11.6 in, 295 mm
Width: 14.5 in, 368 mm
Depth: 5.3 in, 135 mm
Weight (without batteries): 20 lbs, 9.1 kg

Power
Power supply
Internal: Lithium ion battery: 10.8 volts, 6.0 Ah
(1 NI2040AG shipped standard, will accept two batteries)
External DC input: +9 V to +25 V DC 4 amps
Battery life: Approximately 1.5 per battery (time varies dependent upon instrument mode)

Interface ports
Two RS 232 (DB-9) (reserved for future use)
Two USB 1.1 (reserved for future use)
One LAN port: 10 base T
Built-in speaker
PCMCIA card slot
Compact flash memory (type 1 & 2)
Stereo headphone jack
General purpose input/output: TTL level (reserved for future use)

Inputs
Port 2 RF in: 50 ohm, type N
External DC input: +9 V to +25 VDC 4 amps
Frequency reference:
Input power: –10 to + 10 dBm
Connector: 50 ohm BNC
Even second:
Connector: High impedance BNC
Level: TTL compatible
GPS antenna:
Connector: SMA
Output: 5 V at 50 mA

Outputs
Port 1 RF out/SWR:
Connector: 50 ohm, type N
Power reference:
50 ohm type N; SWR < 1.06

Optional connectors
Option 600 power meter
Inputs: Type N 50 ohm power reference
Outputs: Sensor input for 8480 series sensors
Option 700 T1 analyzer
Outputs: (2) Bantam outputs; TX primary and secondary
Inputs: (2) Bantam inputs; RX primary and secondary
Option 710 E1 analyzer
Outputs: (2) 75 ohm BNC outputs; TX primary and secondary
Inputs: (2) 75 ohm BNC inputs; RX primary and secondary

Operating temperature
Specified temperature range: –10 to 50 °C; 14 to 122 °F

Storage temperature
–40 to 70 °C; –40 to 158 °F

Calibration
Cycle: one year

Warranty
Duration: one year

Ordering information – E7495B base station test set
Standard test set functionality includes spectrum analysis and antenna measurements
Standard accessories include:
• PCMCIA 64 MB flash memory card
• AC/DC converter
• Ni2040AG lithium ion battery
• GPS antenna
• 10 dB Coaxial attenuator (Q2)
• Coax 50 ohm terminated N-male
• Open/short M type N
• Adapter storage box
• Shoulder strap
• Documentation (CD ROM)A
• 2’ M-N to M-N cables (Q2)
• 10’ M-N to M-N cable
• N-female to N-female barrel
• Adapters

Ordering information – options
E7495B-200 cdmaOne/cdma2000 TX analyzer
E7495B-210 cdmaOne/cdma2000 over-the-air test (requires Option 200, recommend 810/811/812 or equivalent)
E7495B-220 Channel scanner (includes adjacent channel power)
E7495B-230 GSM TX analyzer
E7495B-240 W-CDMA (UMTS) TX analyzer
E7495B-250 W-CDMA (UMTS) over-the-air test (requires Option 240, recommend 813 or equivalent)
E7495B-270 Interference analyzer
E7495B-300 DC Bias
E7495B-500 CW signal generator
E7495B-510 CW/cdmaOne/cdma2000 reverse link generator
E7495B-600 Power meter (requires 8481A or 8492A power sensors)
E7495B-700 T1 analyzer
E7495B-710 E1 analyzer
E7495B-800 40 dB 100 W attenuator, soft carry case (backpack), backpack loading diagram, E7495A/B measurement guide
E7495B-810 Cellular antenna and pre-selector filter for Option 210
E7495B-811 PCS antenna and pre-selector filter for Option 210
E7495B-812 Korean PCS antenna and pre-selector filter (required for Option 210)
E7495B-813 European antenna and pre-selector filter (required for Option 250)
E7495B-820 Battery pack, external battery charger, DC car adaptor
E7495B-840 Transit case
E7495B-51B Return to Agilent repair
E7495B-50C Return to Agilent calibration
8482A/8481A Power sensor
Additional Agilent Literature

**Brochure**  
*Accelerate cdma2000 Performance with Agilent's Wireless Network Solutions*  
literature number 5988-4423EN

**CD**  
*Agilent Base Station Test Set*  
literature number 5988-7189EN

**Photo Card**  
*Agilent E7495B Base Station Test Set*  
literature number 5988-5560EN

*Agilent E7495B Base Station Test Set: Option 250 W-CDMA (UMTS) Over-the-Air Test, Option 230 GSM Transmitter Analysis, Option 270 Interference Analysis*  
literature number 5989-1171EN

**Poster**  
*Why are power measurements so important?*  
literature number 5988-7188EN

For More Information

For more information about Agilent's solutions for the communications industry, visit our Web site at [www.agilent.com](http://www.agilent.com).

For more information about the Agilent E7495B Base Station Test Set, go to: [www.agilent.com/find/E7495B](http://www.agilent.com/find/E7495B)
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