

## 8x8 MIMO Analyzer

### Series E500

690 MHz to 6 GHz

WLAN, 4G, wearables and CA at your fingerprint

### Main Features

- MIMO Graphic User Interface (GUI) for Windows XP/2000/2003/2008/2012/Vista/7/8/10.
- Fully automated measurements with control of VNA, eNodeB, CE and AP.
- 2G/3G/4G/5G SISO/SIMO OTA.
- WLAN, 4G, M2M, W-IoT, wearables and CA MIMO OTA.
- Portable System.
- Easy Attachment algorithm and smart Attachment algorithm for overnight measurements without human intervention.
- Hierarchical levels of automated testing.
- Mains power: 100-240 VAC 50-60 Hz.
- Data interface: USB/GPIB-TCP/IP.
- Dimensions: 2750 mm (L) x 1545 mm (W) x 2000 mm (H).
- RF isolation (shielding): ~ 100 dB.
- DB9/RJ45/FO/USB/Waveguide penetrations (optional).
- AC/DC filters for DUT power supply (optional).
- Enhanced repeatability with autocalibration.
- Time-domain measurements.
- Integrated VNA, eNodeB, CE and AP control.
- SMA, USB and power supply on turntable.
- Can be served in pieces and re-assembled in-situ.



### Measurement system

The E500 Series is a multicavity mode-stirred source-stirred reverberation chamber that provides unique passive mode measurement capabilities [Efficiency, Correlation, Mutual Coupling, MIMO Capacity, Diversity Gain (ADG, EDG, IDG), loss effects (DGL, CL.MIMO), Mean Effective Gain (MEG), Effective MEG (EMEG), Branch Power Ration (BPR), active MIMO Over-The-Air (OTA) 3GPP/CTIA Figures of Merit for 2G, 3G, 4G cellular including CA and wireless LAN systems (Total Radiated Power (TRP), Total Isotropic Sensitivity (TIS), MIMO Throughput (TPUT), CQI, MIMO TIS and MIMO TRP), time-domain measurements [RMS Delay Spread (RMS DS), Power Delay Profile (PDP), TCP-Throughput and UDP-Throughput versus time or averaged received power] and channel parameters (PDF, CDF, Scatterplot, k-factor, eigenvalues) for a wide variety of Rayleigh, Rician, isotropic, non-isotropic, NIST Indoor-Urban, isotropic SCME Urban-Macro#, isotropic SCME Urban-Micro# and other fading environments, all united in one single and intuitive interface

The Easy Attachment and Smart Attachment embedded algorithms allow continuous overnight MIMO OTA campaign measurements without human intervention, something unheard-of at the testing arena. The one-shot calibration routines allow for a single measurement to be run to obtain the calibration files for all the licensed technologies and frequency bands.

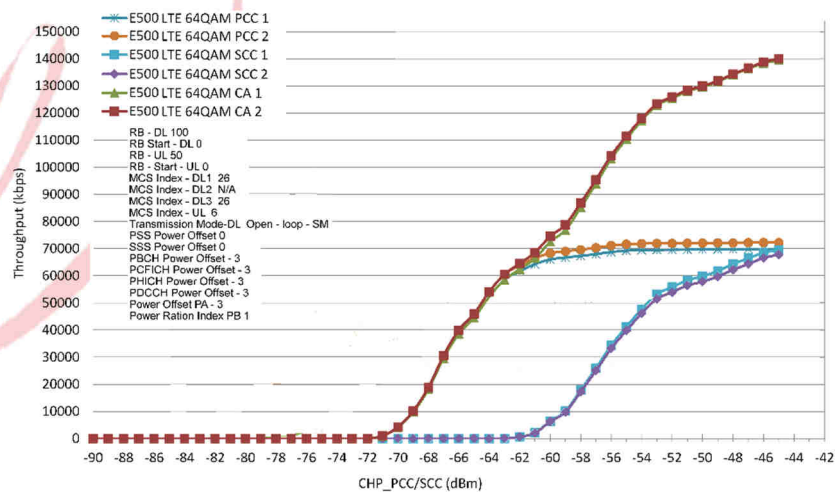
Typical testing times are under 1 minute for TRP and 8 minutes for TIS\*. Typical accuracies are under ±0.5 dB STD\*.

#### Cellular standards:

GSM/GPRS/EDGE/EDGE Evolution  
 WCDMA/HSDPA/HSUPA/HSPA+/DC- HSPA/  
 DC-HSPA+  
 CDMA2000 1xRTT/1xEV-DO  
 LTE FDD/TDD  
 LTE-A CA +1x2/2x2 MIMO + UMi/UMa

#### Wireless standards:

WiFi (IEEE802.11a/g/b)  
 WiFi (IEEE802.11n)  
 WiFi (IEEE802.11ac)  
 WiMAX (IEEE802.16)  
 Bluetooth (IEEE802.15.1)



LTE-A Carrier Aggregation measurement using E500 of a smartphone device with 64QAM on both components, exhibiting ~150 Mbps total Throughput and very good repeatability.

The E500 mode-stirred reverberation chamber has participated in the Round Robin MIMO LTE campaigns 3GPP and CTIA standardization bodies as pre-standardized approved test methodology. 3GPP has validated the MIMO Analyzer RC test platform from EMITE for MIMO OTA testing within 3GPP TR37.977 test standard.

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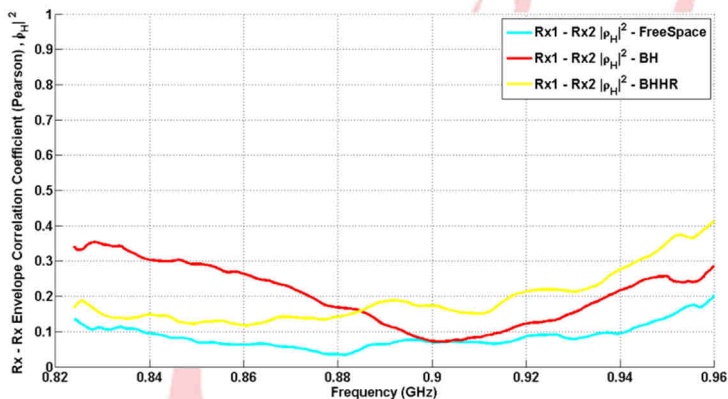
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### Key Features

- Testing overnight without human intervention.
- EMITE Software MIMO GUI v3.6
- One-shot calibration for all frequency bands and technologies with one single VNA measurement.
- No-VNA calibration method (without the need for a VNA) yielding  $\pm 0.1$  dB STD accuracies.
- Regular and Downlink power inverse averaging procedures.
- Automated configuration testing and automated operation and control of VNA, BSE and CE.
- Stepwise and continuous stirring.
- On-line assistance.
- Import/Export calibration files facilities.
- MIMO Throughput Sensitivity (MTS) search.

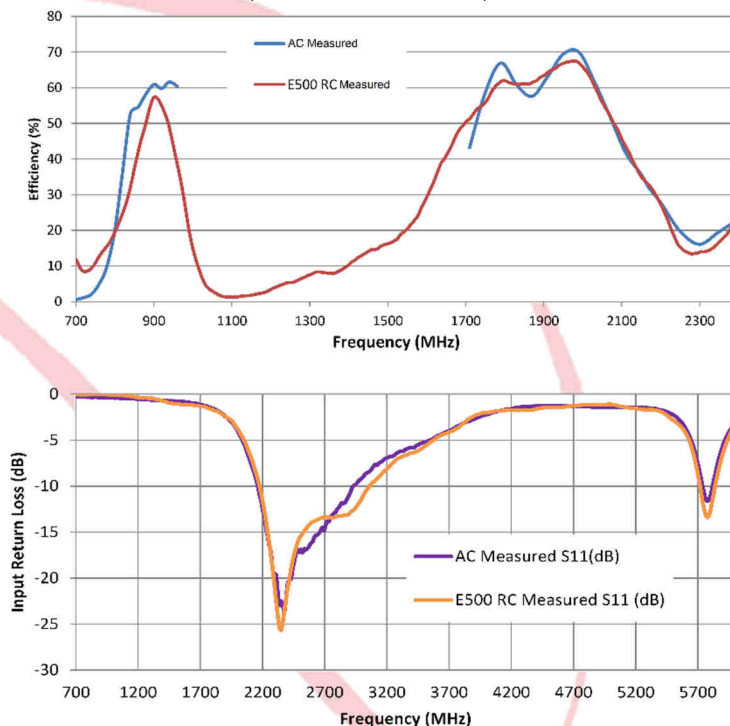
### Additional deliveries according to customer's specifications

- Programming drivers of user-selected auxiliary test equipment and Access Point.
- Installation of hardware and software.
- Full day course to operating personnel.
- Precision dipoles for specific frequency bands.
- Precision discone reference antennas
- SPEAG Phantom packages.
- Absorbers for chamber loading.
- Internal testing Cables.
- Chamber turntable with integrated SMA, USB and power supply connectors.
- Device Under Test Holders.
- 3.5mm Calibration kit.
- Wide variety of support and maintenance options.

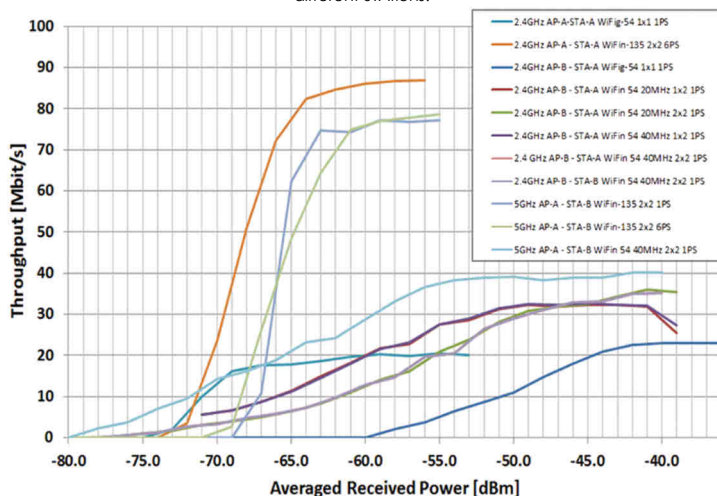


Envelope Correlation between two antennas embedded in a wireless device prototype measured with E500 and a VNA.

Radiation efficiency and Total radiation efficiency of two different antennas.



Different TCP throughputs versus averaged received power measured with E500 for IEEE 802.11g and 802.11n standards at 2.4 and 5 GHz with different MIMO antenna configurations and for two different Access Points and two different STATIONS.



This data sheet was correct at the time of going to print.  
The right is reserved to change specifications at any time.  
Data Sheet EMITE Ing E500 2016.3 ENG.  
Wise Waves is a registered trademark of EMITE Ing, Spain  
The products are patent protected  
\*Using novel source-stirring in LTE

#In combination with a channel emulator.  
Please note that ITU-R completed the assessment of true 4G technologies for LTE-Advanced and WirelessMAN-Advanced, which left 808.11n, WiMAX, HSPA+ and LTE as 3.99G, as reported