Test Systems
Wireless OTA Reverb Test System

Model AMS-7000

FEATURES:

- SISO TRP, TIS and Throughput Measurements

- MIMO Throughput Measurements

- Direct Correlation to CATL Lab Results

- Faster Test Times

- Operates with EMQuest™ Software

- Freestanding Moveable Cart Configuration

Model AMS-7000 Wireless OTA ReverbTest System

ETS-LINDGREN'S AMS-7000 WIRELESS OTA REVERB TEST SYSTEM is designed to perform accurate and repeatable SISO TRP, TIS and Throughput measurements. The system is based on the company's long-standing line of SMART™ reverberation chambers, and proven EMQuest™ antenna measurement automation software.

FEATURES
SISO TRP, TIS and Throughput Measurements
TRP measurements made in a reverb chamber rely on a continuous sampling of the average power density in an over-moded environment, while the DUT is transmitting at its full power. The accuracy with which the average power can be measured, directly correlates with the number of independent samples that are available to be taken.

The TIS measurement is the converse of TRP: the power density in the chamber is controlled for the downlink path by the communication tester. The DUT responds to samples of this environment as it is moved to a series of different locations in the varying modal environment. The TIS value is then derived from the reported data validity threshold after chamber corrections are applied.

The reverb chamber's over-moded environment also means that the precise location of the DUT is not critical to achieve good measurement repeatability or accuracy, resulting in reduced setup time.

The AMS-7000 uses two Z fold tuners, a DUT turntable, and a measurement antenna turret to improve isotropicity and homogeneity. These features allow the system to make measurements at different speeds and levels of accuracy.

MIMO Throughput Measurements
MIMO throughput is ultimately a measure of the ability of the DUT to maximize its data throughput under different controlled environmental multi-path conditions. The reverb chamber is already a multi-path environment with path lengths limited by the chamber dimensions, exhibiting a signal decay profile dependent on the loss in the chamber.

For MIMO throughput measurements, a simplified representation of the real world environment can be created by duplicating how the averaging effect of the chamber would be seen by a MIMO device. Different delay profiles can be realized by changing the selection of small RF Absorber loading elements fitted to the chamber. Additional delays and more complex propagation models can be introduced with an optional channel emulator.

Direct Correlation to CATL Lab Results

Although reverb based measurements have not been accepted by CTIA at this time, the reverb chamber method is a fast, accurate and repeatable alternative to any facility using the well-established anechoic chamber methods. While the reverberation method cannot provide antenna pattern information, results for TRP and TIS measurements in the AMS-7000 correlate to within 0.5 dB SD of results measured in a full sized anechoic chamber (highest accuracy mode).

Faster Test Times

Measurement uncertainty is directly related to the number of measurement samples over time. By reducing the number of samples, faster TRP measurements can be achieved in as little as 0.5 minutes per channel. For TIS, measurement time can be reduced to as little as 1.5 minutes per channel.

The AMS-7000 is delivered with pre-configured options to measure at higher speed, higher accuracy, or a balance of the two at the user's discretion.

Operates with EMQuest Software

The AMS-7000 system utilizes ETS-Lindgren's EMQuest Software, a robust software suite which is used by antenna measurement labs world-wide. Most popular brands of instrumentation, communication testers, protocols etc. are supported by EMQuest, providing greater flexibility in configuring equipment. EMQuest also works equally well for reverb or RF anechoic-based systems. This eliminates a steep learning curve for operators and technicians working between systems, and assures consistency of processes.

Supported Measurements

■ Total Radiated Power (TRP)

■ Total Isotropic Sensitivity (TIS)

■ MIMO Data Throughput

■ Antenna Efficiency

■ Relative Gain

STANDARD CONFIGURATION

■ Reverberation Chamber with:
  -- DUT Positioner
  -- Z-fold Tuners
  -- Measurement Antennas
  -- RF Absorber Loading Elements
  -- Accessory Trays

■ EMQuest 200 Reverb Data Acquisition and Analysis Software

OPTIONS

■ VNA (For Chamber Calibration)

■ Spectrum Analyzer

■ EMCenter™ Switch Matrix Controller

■ Communication Testers for Additional Protocols LTE, WCDMA, TD-SCDMA, WiFi

■ Channel Emulator

■ Additional Antennas for 2 x 2 MIMO

■ SAM Phantom Head, Hands

■ EMQuest 108 MIMO

■ PC Package Pre-loaded with EMQuest 200 and 108

Electrical Specifications

MODEL	ELECTRICAL (VAC)	VOLTAGE (Hz)	VOLTAGE (AMPS)	PLUG TYPE
AMS-7000	208 to 230 VAC	50/60 Hz	15 A	NEMA OR Schuko (Select One)

Physical Specifications

	LENGTH	WIDTH	HEIGHT	WEIGHT (NOMINAL)
Test Volume	0.9 m / 35.4 in	0.9 m / 35.4 in	0.6 m / 23.6 in	n/a
Outside Dimensions	2.2 m / 83.6 in	1.5 m / 61.1 in	2.1 m / 82.7 in	500.0 kg / 1100.0 lbs
Chamber Dimensions	2.1 m / 81.7 in	1.3 m / 50.2 in	1.6 m / 63.9 in	n/a

Technical Specifications

MODEL	ANTENNA FREQUENCY RANGE	PATH LENGTH	POSITIONERS	SHIELD PERFORMANCE	SHIELD MATERIAL
AMS-7000	700 MHz to 18 GHz	Various Multi-path	DUT Turntable x 1 / Z Fold Turner x 2 / Antenna Turret x 1	> 100 dB 700 MHz to 18 GHz	Aluminum

Measurement Accuracy

	HIGHEST ACCURACY	FASTER TESTING
TRP	0.3 dB SD	0.5 dB SD
TIS	0.3 dB SD	0.5 dB SD
Repeatability	0.2 dB SD	0.3 dB SD

Test Times

	HIGHEST ACCURACY	FASTER TESTING
TRP	2.5 min/Channel	0.5 min/Channel
TIS	5.0 min/Channel	1.5 min/Channel