

# TEST SYSTEMS WIRELESS OVER-THE-AIR (OTA) REVERB TEST SYSTEM



**MODEL AMS-7000**

- **SISO TRP, TIS and Throughput Measurement**
- **MIMO Throughput Measurements**
- **Direct Correlation to CATL Lab Results**
- **Faster Test Times**
- **Operates with EMQuest™ Antenna Measurement Software**
- **Freestanding Movable Cart Configuration**

**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 ETS-Lindgren's long-standing line of SMART™ reverberation chambers, and proven EMQuest antenna measurement automation software.

### **SISO TRP, TIS and Throughput**

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 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.

### **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.

### **Operates with EMQuest Software**

The AMS-7000 system utilizes EMQuest Antenna Measurement Software, a software suite used by antenna measurement labs worldwide. 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

### **Standard Configuration**

- Shield and Cable Kit Including:
  - DUT Positioner
  - Z-fold Tuners
  - Measurement Antennas
  - RF Absorber Loading Elements
  - Accessory Trays
- One (1) DUT Turntable
- Two (2) Z-fold Tuners
- One (1) Reference Antenna Turret
- EMQuest EMQ-200 Reverb Data Acquisition and Analysis Software

### **Options**

- Vector Network Analyzer (For Chamber Calibration)
- Spectrum Analyzer
- EMCenter™ Switch Matrix Controller
- Communication Tester
- Channel Emulator
- Additional Antennas for MIMO Testing
- SAM Phantom Head, Hands
- EMQuest EMQ-108 MIMO
- PC Package Pre-loaded with EMQuest EMQ-200 and EMQuest EMQ-108

# TEST SYSTEMS WIRELESS OVER-THE-AIR (OTA) REVERB TEST SYSTEM

## Technical Specifications

### Electrical

Frequency Range	690 MHz to 10 GHz
Path Length	Various Multi-path
Electrical (VAC)	208 to 230 VAC
Voltage (Hz)	50/60 Hz
Voltage (AMPS)	15 A
Plug Type	NEMA or Schuko (Select One)

### Physical

Test Volume (L x W x H)	50 cm x 50 cm x 50 cm 20 in x 20 in x 20 in
Outside Dimensions (L x W x H)	2.2 m x 1.5 m x 2.1 m 83.6 in x 61.1 in x 82.7 in
Chamber Dimensions	2.1 m x 1.3 m x 1.6 m 81.7 in x 50.2 in x 63.9 in
Weight	500.0 kg 1100.0 lb
Shield Performance	> 100 dB, 700 MHz to 18 GHz
Shield Material	Aluminum

### Measurement Accuracy

TRP Highest Accuracy	0.3 dB SD
TIS Highest Accuracy	0.3 dB SD
Repeatability Highest Accuracy	0.2 dB SD
TRP Faster Testing	0.5 dB SD
TIS Faster Testing	0.5 dB SD
Repeatability Faster Testing	0.3 dB SD

### Test Times

TRP Highest Accuracy	2.5 min/Channel
TIS Highest Accuracy	5.0 min/Channel
TRP Faster Testing	0.5 min/Channel
TIS Faster Testing	1.5 min/Channel