# CHAMBER AMS-5709 FR2 MIMO ANTENNA MEASUREMENT SYSTEM


**MODEL AMS-5709**

- **Suitable for 3GPP TS 38.151 FR2 MIMO OTA Testing**
- **Suitable for Evaluation of Receive Diversity**
- **Supports SA and NSA devices**
- **Complete RF Environment Simulation**
- **Supports Single Cluster, Multiple Cluster, Uniform and customer-defined Models**
- **Supports Variable Angles of Arrival, Doppler, and Delay Spread**

**ETS-Lindgren's AMS-5709** is a 5G FR2 MIMO transceiver performance validation system for CTIA test methods. It houses a measurement antenna array cluster, multi-axis 3D device positioner, and laser-alignment tool to accurately position the device. This compact reach-in design is portable and specially designed to move through common hallway and door openings, making it ideal for R&D, as well as certification labs. The 20 cm QZ and device positioner are accessible through a wide-opening door, allowing easy administration of the DUT. FR1 and FR2 communication antennas are placed to ensure a stable link communication in stand-alone (SA) and non-standalone modes (NSA). When combined with EMQuest Software and FR2 signaling instrumentation, this high-accuracy system fulfills the CTIA FR2 MIMO OTA requirements using a direct far-field test method.

## Product Features:

### Chamber

The system acts as an RF environment simulator that can generate spatial field structures similar to those seen in a wide range of real-world scenarios. Standard conducted channel models can be adapted to equivalent radiated spatial channel models for evaluation of the entire device signal chain, including antennas, and device platform impact on device performance. The simulated environment is suitable for evaluation of downlink MIMO performance as well as receive diversity performance for millimeter wave NR.

### Antenna Array System

The multi-antenna array includes dual-polarized antennas mounted to the interior of the MIMO antenna structure via custom fixtures. The array is configured with RF-cables routed from the antennas back to the connector panel. RF-cables are also provided outside the chamber to connect each probe within the chamber to the frequency converters and communication test equipment through a radio channel emulator(s).

Via the channel emulator the antenna array transmits downlink signals from a range of Angles of Arrival (AoA), simulating the scattered reflections seen by a wireless device in normal operation. The channel emulator(s) uses specially-modified spatial channel models to feed each antenna in the array with a statistical sampling of the source signal(s) with appropriate doppler and delay spreads to emulate the scattering effect of fixed and moving objects within the simulated environment.

### Positioning System

A dual axis positioning system allows the DUT to be rotated through the generated field structure to determine its relative performance in different orientations within the simulated environment.

### EMQuest Data Acquisition Software

EMQuest FR2 MIMO OTA Test Option adds a suite of test capabilities to the EMQuest EMQ-100 Antenna Measurement Software. These include specialized tests for evaluating the throughput of a wireless device in the simulated environment, as well as R&D tests to allow evaluation of antenna correlation and system calibration and validation tests.

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**Standard Configuration**

- Design and Fabricate RF-shielded Enclosure
- Installation of the Enclosure, Absorber, and System Components
- Manually Operated RF-shielded Personnel Door
- LED Light System
- Connector Panels with Data, Communication Antenna, DUT and Aux connectors
- Microwave Absorber on Convex CX-3CL
- FR2 MIMO Antenna Structure with 6 Dual-polarized Environment Simulation Antennas
- Two wideband communication antennas
- 12 DL and 2 UL frequency converters
- Multi-Axis Positioner System MAPS
- 3GPP Validation Antenna Mount Kit
- EMQuest EMQ-100 Antenna Pattern Measurement Software
- EMQuest EMQ-108 MIMO OTA Test Package
- System Control PC with Windows Software
- Integration of the Test System Components and Training of Lab Personnel on the Use of System

**Technical Specifications**

| | |
|---|---|
| **Electrical** | |
| Measurement Frequency Range | 24 GHz to 50 GHz Standard |
| Device Positioner | Accuracy: 0.1 deg<br>Resolution: 0.02 deg |
| Quiet Zone Size | 20 cm Diameter Sphere |
| Typical RF Isolation | 80 dB @ 40 GHz |
| **Physical** | |
| Overall Dimensions | 0.9 m x 1.3 m x 1.8 m (2.9 ft x 4.3 ft x 6.0 ft) |
| Maximum Load Capacity | 2 kg (4.4 lb) |

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Information presented is subject to change as product enhancements are made.
Contact ETS-Lindgren Sales Department for current specifications.

07/25 PDF/OW © 2025 ETS-Lindgren v1.0