

# F200 Large Hybrid Reverberation/Anechoic Chamber

MIMO OTA, WIoT, MTC, WLAN, VDT-OTA, EMC, wearables, FF, SNF, eNodeB, pre-5G testing  
200 MHz to 40 GHz

The F200 large-size hybrid Reverberation/Anechoic Chamber represents the most versatile and advanced OTA test system in the market today. The F200 can test large form-factor DUTs of up to 2m and 500kg for up to 16x16 MIMO and 8DLCC, including full-body phantoms in a turntable, Test modes include SISO/MIMO, WIoT, MTC, WLAN, VDT-OTA, wearables and EMC in RC Mode and FF, SNF, eNodeB and pre-5G in AC Mode, for a unique frequency bandwidth with an unprecedented level of automation and report.



## Main Features

- Dimensions: 5.1 m (L) x 4.1 m (W) x 3.1 m (H)
- RC Mode 200 MHz to 6/18 GHz
- RC Test Volume: 1.5 m (L) x 1.5 m (W) x 2.0 m (H)
- RC DUT Weight: up to 300 kg (500kg optional)
- RC 2G/3G/4G/WLAN/W-IoT/EMC SISO/MIMO OTA
- RC silent operation of stirrer and turntable
- AC Mode 200/690 MHz to 6/18/40 GHz
- AC Test Sizes: AuTs up to 1m and 30kg with FF/SNF
- AC Far-Field and Spherical Near Field
- AC Manual inside operation through Tablet
- Graphic User Interface (GUI) for Windows OS
- Mains power: 100-240 VAC 50-60 Hz
- DUT plugged-in (100-240 v 16A AC)
- Data interface: USB, Ethernet, FO
- Best isotropy (0.5 dB STD) and repeatability (0.25 dB STD) on the market<sup>1</sup>
- Integrated Vector Network Analyzer and Base Station Emulator control (Anritsu, Rohde & Schwarz, Keysight, National Instruments)
- Compatible with Channel Emulators for enhanced fading emulation
- Installed and in operation in 1 week
- Penetration filters (USB, RJ45, FO, DB9, AC, DC)
- Waveguide trap-door
- RF isolation (shielding): ~100 dB



## Measurement system

The F200 Hybrid RC/AC is a large mode-, platform and source-stirred reverberation/anechoic chamber. The F200 has the same unique test features of its E-Series RC counterparts, and it is also reverse-convertible into an anechoic chamber, allowing Far Field (FF) and Spherical Near Field (SNF) radiation patterns, efficiency and gain measurements, as well as pre-5G testing of antennas, eNodeBs and devices. Conversion from RC to AC or vice versa can be performed within half a day.

In RC Mode, large form-factor devices under test (DUTs) like laptops, large TV sets, solar and trash compactors, drones, car cockpits, fridges or washing and vending machines can be tested, among others. With RC Test Volumes<sup>1</sup> up to 4.5 m<sup>3</sup>, the F200 is able to efficiently measure Efficiency, Correlation, Diversity Gain, MIMO Capacity, TRP, TIS, TPUT, COI, MTS, M2TxDT of antennas and devices with extreme accuracy, unheard-off repeatability and with the shortest signalling test times in the market using a single and intuitive Graphic User Interface. DUT AC-plugged-in (100-240 V AC) testing is also available. Wearables, W-IoT, MTC and EMC testing can also be made with F200 in RC Mode. Unique Smart-Attachment, Smart hand-over, Smart call-drop and Early-stop embedded EMITE algorithms allow for an unprecedented control and automation of your Active OTA measurements using F200, which can be run overnight without human supervision for up to 16x16 and 8DLCC. Coexistence test of 2G/3G/4G and real eNodeB testing or VDT-OTA is also possible. WLAN 802.11abgnac DL/UL TCP/UDP TPUT testing can be tested as an optional. Typical testing times are under 1 minute for TRP and 3 minutes for TIS<sup>2</sup>. In-house pre-calibrated isotropy of 0.5 dB and STD deviation of 0.25 dB are typical<sup>2</sup>.

# F200 Large Hybrid Reverberation/Anechoic Chamber

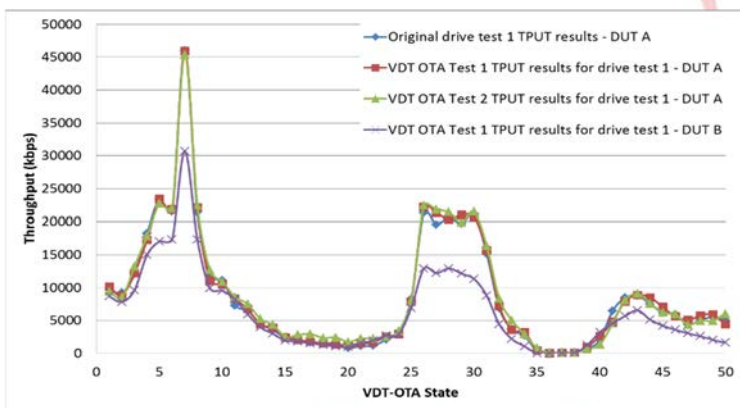
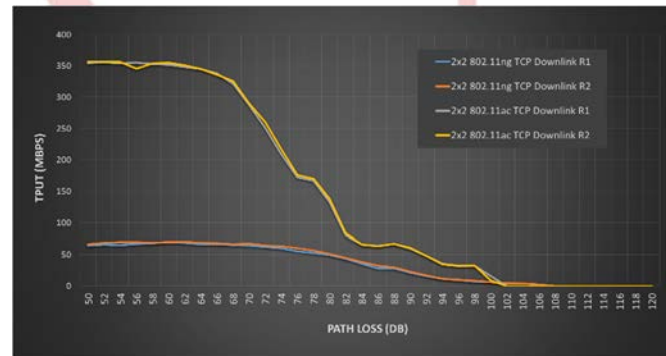
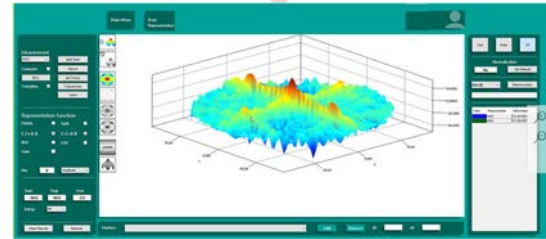
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Any device larger than a notebook (any one dimension larger than 42 cm) is classified as a large form factor device by CTIA, which includes all the W-IoT devices and any wireless device embedded in large notebooks, fridges, trash compactors, etc. The CTIA-approved Large Form Factor Test Plan can be used for the GSM, GPRS, EGPRS, WCDMA, CDMA 1xEV-DO, CDMA 1xEV-DO and LTE cellular standards. The selection of the RC test method is due to the capabilities of RCs to test large devices within their test zone, something impossible to be done today with existing anechoic chamber methods. Pre-characterization and automated tuning of RMS DS, Power Delay Profile (PDP), Coherence Bandwidth (CBW), Path Loss (PL) and STD for testing according to CTIA W-IoT standards through absorber loading is also offered.

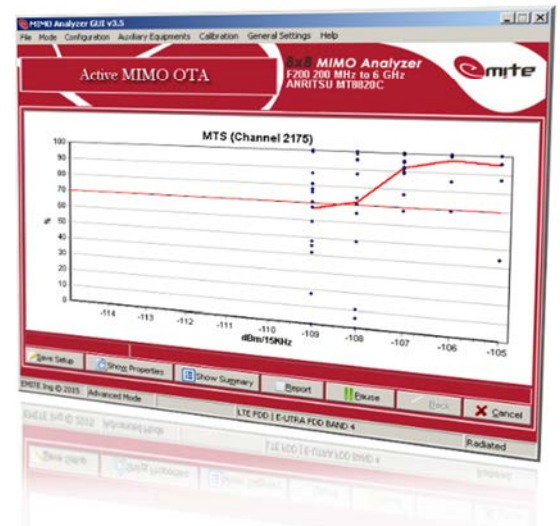
In AC Mode the F200 can test antennas under test (AuTs) up to 1m and 30kg, in both Far Field (FF) (with some restrictions on AuT size) and Spherical Near Field (SNF) to provide for efficiency, gain and radiation patterns measurements. FF/SNF equipment and absorbers can be installed for use up to 6/18/40 GHz.

## Key Features

- Friendly single Graphic User Interface (GUI) with full automated output monitoring and processing
- Control of user-specified Vector Network Analyzers, Base Station Emulators, Channel Emulators, Access Points, Motors, Rotors, sliding frames and RF components.
- RC Automated standards, Carrier Test Plans and html reporting
- RC User-defined PASS/FAIL criteria, including combinations for complex carrier test plan automated execution
- Smart-attachment algorithm to keep your device connected at all times
- Smart call-drop algorithm to automatically handle call-drops and recover disconnections
- Smart hand-over algorithm to include different figures of merit, different technologies and different frequency bands within the same test batch
- Overnight batch measurements without human supervision
- Import/Export calibration files facilities



VDT-OTA tests are capable of evaluating real performance of different devices in a lab using real-networks drive test files



MIMO OTA Throughput Sensitivity (MTS) for an LTE device

## Optionals

- Chamber length Extension up to 6,4m
- RC Frequency Extension up to 18 GHz
- RC AuT/DuT weight Extension up to 500kg
- RC Extension for EMC Testing (IEC 61000-4-21, RTCA DO-160)
- AC FF/SNF Frequency Extension up to 18/40 GHz and down to 200 MHz
- AC motorized floor/upper slide for SNR reduction
- AC AuT/DuT weight Extension up to 50kg
- Shielded window view (1.15m x 0.75m) / Video camera
- 8h-response Hotline Support
- ISO17025 certified

<sup>1</sup> Using novel source-stirring in LTE @ 751 MHz

F200 has been selected by CTIA for W-IoT standardization development and Round Robin campaign testing

This data sheet was correct at the time of going to print. The right is reserved to change specifications at any time.

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