Anritsu Advancing beyond

Single Box Solution for RF and Application Testing of 5G SA/NSA Devices

Radio Communication Test Station MT8000A
- NR TDD Measurement Software MX800010A
- LTE anchor call processing software MX800010A-070
- SmartStudio NR MX800070A
- LTE Control for MT8000A MX800070A-007

Essential test solution for 5G device R&D

Radio Communication Test Station MT8000A is the ideal test platform for 5G SA/NSA, FR1/FR2 devices. It is a globally accepted test solution, from R&D to QA, widely preferred by 5G Smartphone/IoT device/In-vehicle telecommunication unit vendors. Mobile network operators also choose the MT8000A for the device acceptance test phase.
Its base station simulating function enables users to easily establish the 5G call connection test environment without switching their devices to test mode. It supports not only the 3GPP compliance RF tests, but also several application tests as represented by data transfer + throughput test in IP layer etc. for the purpose of load test of the device by single box.

Radio Communication Test Station
MT8000A

Modular architecture delivers flexibility and scalability

Modular architecture allows users the flexibility to select multiple product configurations for different test purposes.
In addition, the advanced platform design provides scalability to enable long term product use to meet future testing needs.

Why is testing 5G devices so important?

5G device verification to assure reliable connectivity and stable operation at each step of the product design and development process, from R&D to QA and after market introduction, is directly connected to customer satisfaction. MT8000A helps address and solve the following challenges:

➢ Device connectivity
- Transmitter characteristics become unstable after firmware update from test version to commercial version
- Transmitter power becomes abnormal after software version (i.e., OS) update
- Transmitter characteristics degrade due to the antenna placement and the materials used on the outer frame of the device case.
- Transmitter characteristics degrade after a new wireless module is integrated
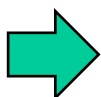
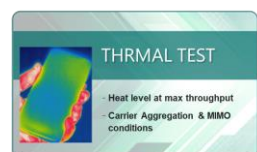**RF test** : TRx (transmitter/receiver), Connectivity
✓ 3GPP RF compliance (TS36.521-1 LTE, TS38.521-x NR)
  Maximum output power, Frequency error, OBW, EVM, Reference sensitivity level, and more.
✓ Antenna test (OTA: Over-The-Air)
  Call connection retention between BS and UE in a weak electric field, Stable throughput value, and more.
✓ Regulatory compliance
  Regulation in radio communication, SAR (Specific Absorption Rate: Quantity of average radio frequency energy which is absorbed by human body), and more.

➢ Operational stability of the device
- CPU processing is getting slower during high-speed communications
- Call connection error after changing SIM card
- Battery drains fast due to the abnormal heating of the device
- Call connection error during/after cell handover
- Lag, jitter and freeze occurring with high-resolution video streaming
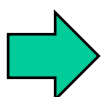
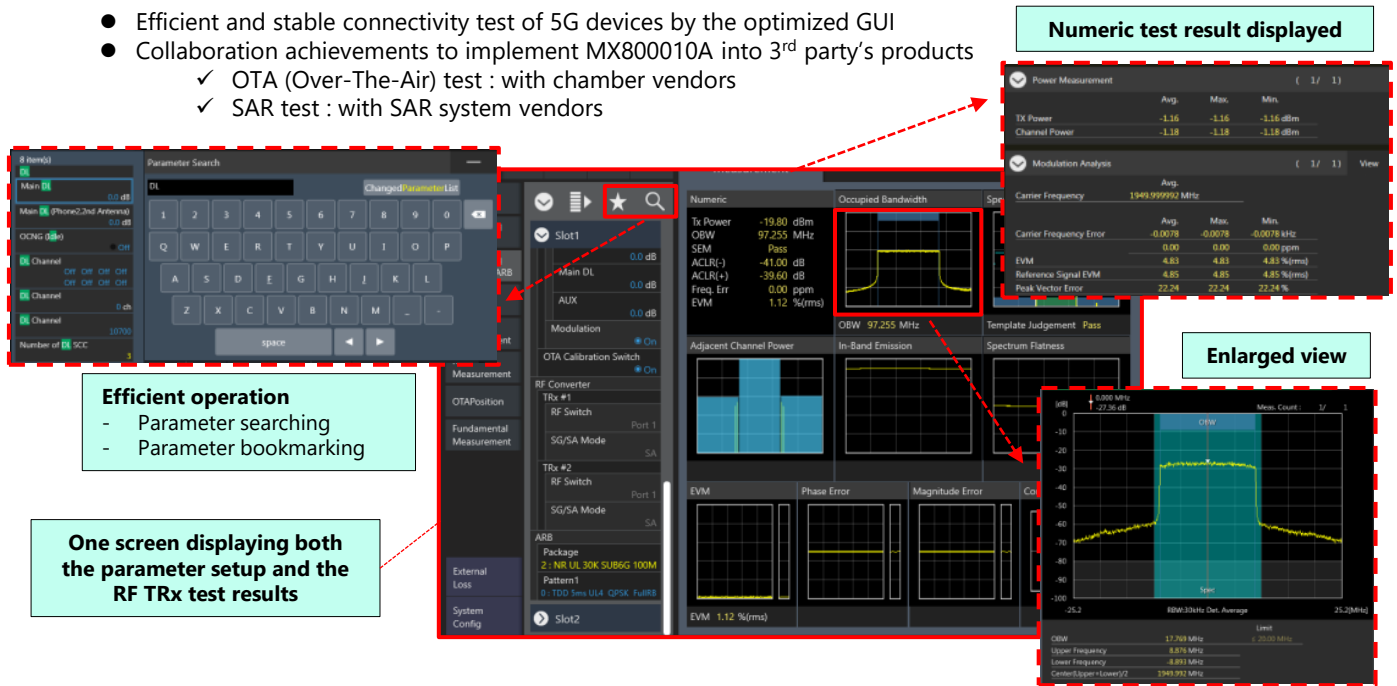**Application test** : Operation check, Performance check
✓ Authentication check for SIM free device
✓ Mobility
✓ Large size IP data transferring
✓ Power consumption and thermal test in the higher throughput state

THROUGHPUT TEST
- IP Throughput performance
- TCP, UDP, FTP

THRMAL TEST
- Heat level at max throughput
- Carrier Aggregation & MIMO conditions

STRESS TEST
- CPU stress at max throughput
- CPU stress at DSDA

POWER CONSUMPTION
- Power Consumption at max throughput
- Specific application(s) running
- Power Consumption at Idle state

RF TRX measurement : NR TDD Measurement Software MX800010A

Complying with 3GPP RF TRx test specification by user-friendly GUI with the excellent operability and visibility. Base station simulating function enables users to easily establish SA/NSA call connection environment.
MX800010A has the largest installed base in leading-edge chipset vendors as RF tester, and abundant verification experience with them provides a stable call connection which will reduce the users' workload of parameter tuning before measurement.
The 3GPP-compliant automation software tool for RF measurements is available to shorten test time.
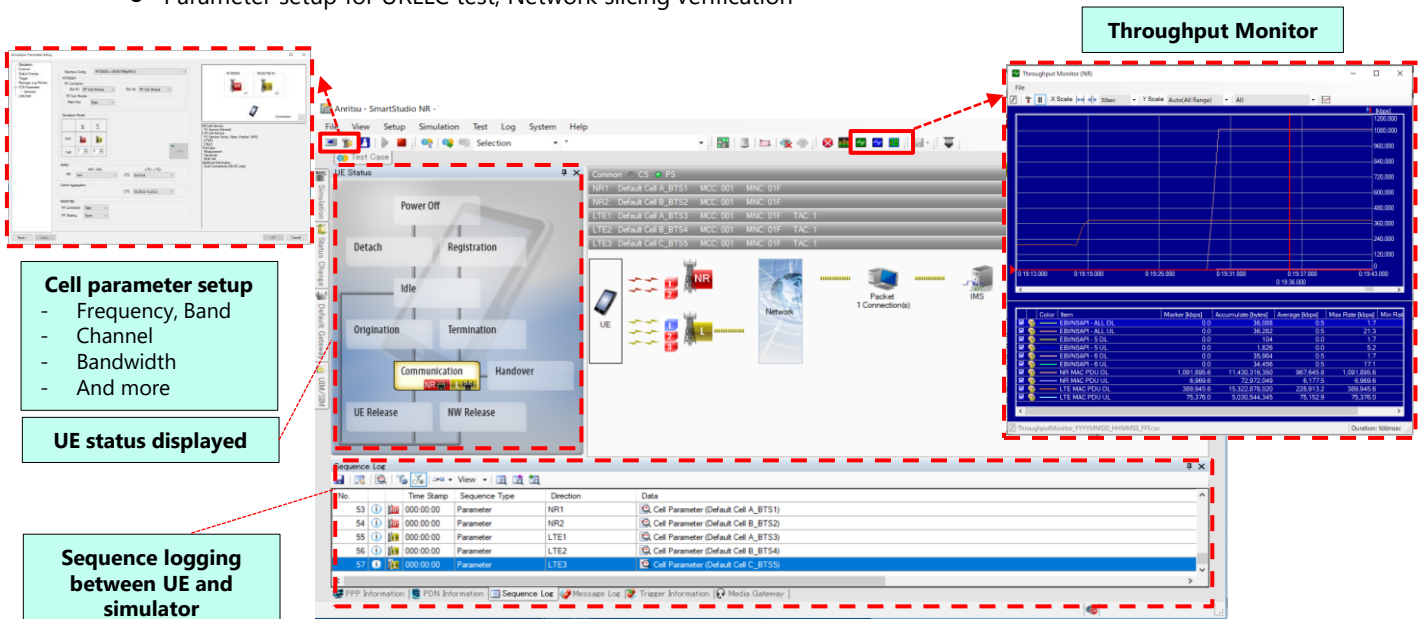
- Efficient and stable connectivity test of 5G devices by the optimized GUI
- Collaboration achievements to implement MX800010A into 3rd party's products
  - ✓ OTA (Over-The-Air) test : with chamber vendors
  - ✓ SAR test : with SAR system vendors

Numeric test result displayed

Efficient operation
- Parameter searching
- Parameter bookmarking

One screen displaying both the parameter setup and the RF TRx test results

Enlarged view

Application test : SmartStudio NR MX800070A

Easy setup of the application test environment for 5G devices with the unique and state machine-based GUI. The users are not required to possess in-depth knowledge of 3GPP protocol specification because SmartStudio NR can simulate 5G SA/NSA network with the simple and intuitive operation without any complicated test script editing.
Testing in the semi-normal and abnormal conditions which are difficult to reproduce in the real network is also possible. It is the optimal solution to test various network-related simulations such as handover, communication quality checking, throughput test with data transferring in IP layer, and more. Additionally, SIP-based internal IMS server for voice call (Voice over NR) test and SMS/PWS [1] test tool as a comprehensive test environment significantly reduces the field test workload.

- User experience test in terms of actual service being deployed
  Power consumption test via OTT (Over The Top) [2] applications, Thermal test in the higher throughput state
- Parameter setup for URLLC test, Network slicing verification

Throughput Monitor

Cell parameter setup
- Frequency, Band
- Channel
- Bandwidth
- And more

UE status displayed

Sequence logging between UE and simulator

[1] Public Warning System : Emergency warning for disaster occurrence
[2] General term of services provided for users via internet such as video streaming, voice, message, etc.