

Anritsu envision : ensure

RF Regulatory Test System

ME7803NR



5G New Radio

Easy Testing for Latest Mobile Systems

For Correct Mobile Radio Use

With the advent of 5G, more people are using mobile devices, such as smartphones, for a wide range of applications. Modern society is now heavily dependent on spreading information using radio networks, but since radio frequencies are a limited resource forming a key part of our social infrastructure, efficient use requires conformance with rules and legal regulations. Consequently, different countries and regions have regulations and laws on radio frequencies, and radio equipment must be designed and tested based on these laws. Anritsu calls these tests the “Regulatory Test”.

The Anritsu RF Regulatory Test System ME7803NR is a 5G NR RF test solution based on these regulations and laws. With settings and scenarios for each test type plus easy operability, the ME7803NR can quickly check whether the performance of the UE under test meets the legal requirements.

Anritsu’s long experience in mobile testing, starting from 3G and 4G with base-station simulators and conformance test systems, is based on both long-term R&D as well as listening to customers’ voices, and forms the foundation for its stable, reliable, convenient, and effective test solution for today’s 5G rollout.





RF Regulatory Test System
ME7803NR

Features of RF Regulatory Test System ME7803NR

Tests in Compliance with National and Regional Radio Regulations

Supports ARIB*1/ETSI*2/FCC*3 5G RF Regulatory FR1 Tests

The 5G RF Regulatory Test System ME7803NR test solution is in compliance with the ARIB/ETSI/FCC-defined TRCC*4/RED*5/CFR*6 FR1 tests. Future test changes and updates will also be supported.

The ME7803NR system is composed of the Radio Communication Test Station MT8000A simulating a 5G NR base station, the Radio Communication Analyzer MT8821C operating as an LTE Anchor, and various other measuring instruments and dedicated software to execute the 5G RF Regulatory (TRCC/RED/CFR) Conducted*7 test for 5G NR Non-Standalone (NSA) call connections. It does not support 4G RF (LTE) tests. Currently unsupported 5G NR Standalone (SA) tests will be supported by a future upgrade.

- *1: ARIB (Association of Radio Industries and Businesses): Japan trade group promoting smartphone and digital broadcasting-related standards
- *2: ETSI (European Telecommunications Standards Institute): Standards organization for assuring compliance of European telecommunications technology with global information and communications technologies. Refer to RED for test rules.
- *3: FCC (Federal Communications Commission): Independent body of United States Federal government established and authorized by Congress to regulate US domestic broadcasting and telecommunications business. Refer to CFR for testing rules.
- *4: TRCC (Technical Regulations Conformity Certification): Japan standards certification system. Refer to Ordinance Regulating Radio Equipment for test rules.
- *5: RED (Radio Equipment Directive): EU organization certifying compliance of mobile devices and test platforms
- *6: CFR (Code of Federal Regulations): Collection of general rules and regulations promulgated in United States Federal government daily Gazette
- *7: Tests using wired connection

Supports Regional Frequency Bands

All certified frequency bands (5G NR and LTE band in 5G NSA mode) now deployed or about to be deployed in N. America, Europe, and Asia are supported. In addition, currently unsupported bands will be supported in future according to market requirements.

Maximizes Customers' Test Equipment Investment

The ME7803NR can be combined with customers' own test equipment, such as the MT8000A, MT8821C, MS2840A/MS2850A, MG3710E, and MG3694C to configure the Regulatory Test System by adding just the minimum required hardware, maximizing previous investments in Anritsu equipment.

Supports Other Regulatory Tests

Using the MT8000A and MT8821C with the ME7803NR supports other SAR/OTA/EMC tests. Contact our Business Section for more details.

Correction Function for Increased Reliability

Calibration when starting testing is recommended to improve measurement stability and measured-result reliability. Easy-to-understand procedure and execution navigation guides simplify calibration tasks.

Excellent Support System

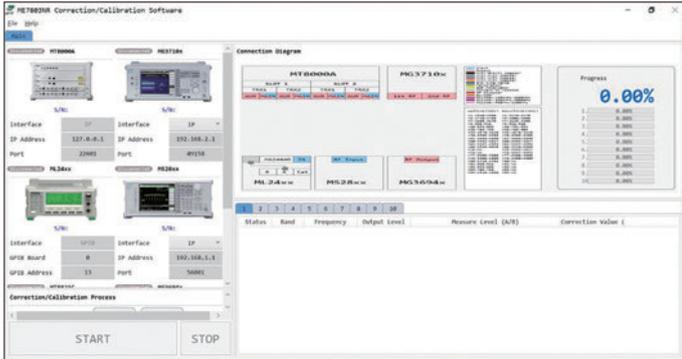
Anritsu's reasonably priced support services for Regulatory Test System customers helps assure efficient and effective testing by offering both timely software updates matching changes in standards, as well as technical support and advice about changes to standards and testing issues, ensuring customers' testing continues to progress smoothly.

Key Functions of RF Regulatory Test System ME7803NR

Useful RF Regulatory Test Functions

Main Correction/Calibration Screen Emphasizes Visual Confirmation and Easy Operability

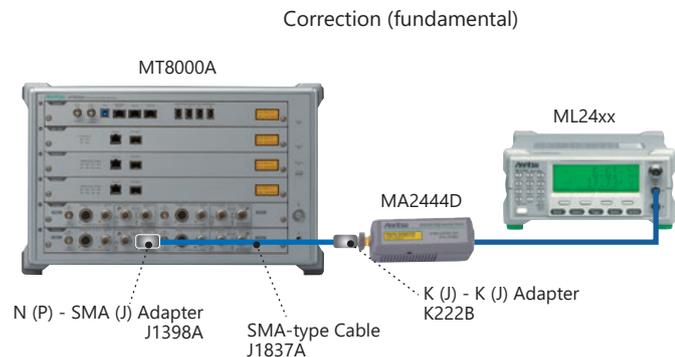
Operation is started by pressing [START] at the bottom left of the Main screen. The Connection Diagram at the right of the screen displays the execution status and obtained correction value.



Correction/Calibration Main Screen

Correction/Calibration Connection Switching Navigation Screen

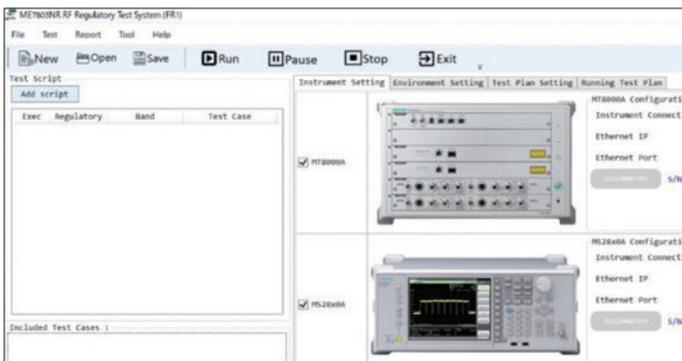
A navigation screen is displayed when switching during correction/calibration to simplify procedures for operators.



Correction/Calibration Navigation Screen

Measurement Software Main Screen Emphasizes Visual Confirmation and Easy Operability

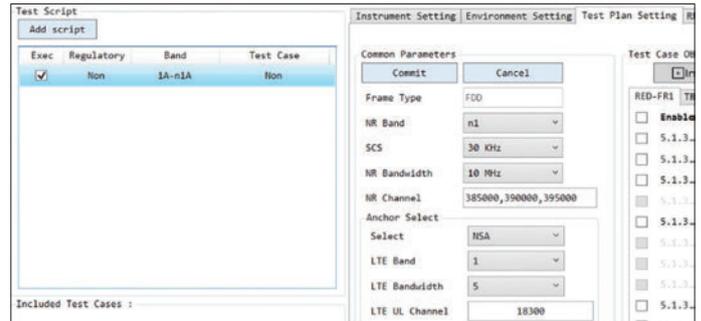
The icon-based top toolbar at the Main screen helps execute operations easily at-a-glance.



Measurement Main Screen

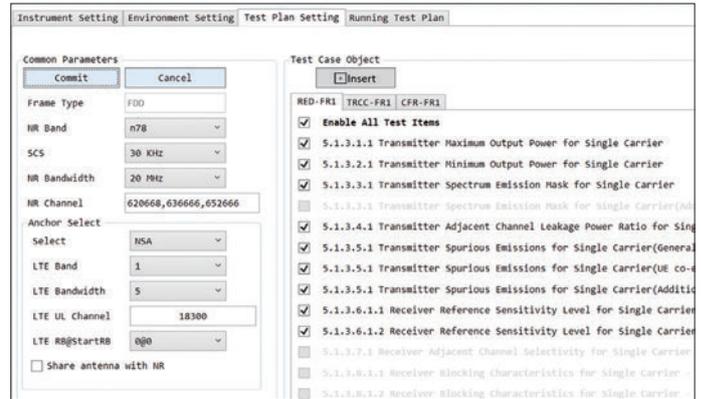
Simple Sequence Creation and Editing

Clicking [Add script] and selecting a script displays test-case Common Parameters at the Test Plan tab, where the measurement frequency, SCS, channel bandwidth, etc., can be changed.



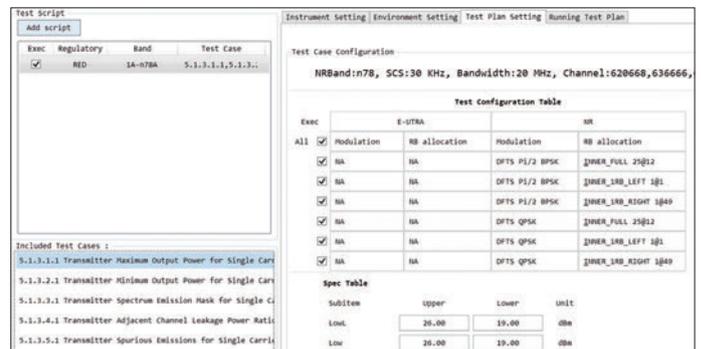
Change Common Parameters Screen

A sequence is created easily by selecting the test case to measure from Test Case Object at the right of screen and clicking the Insert button.



Create Test Case Object Screen

Selecting the created script and clicking Test Case in the Included Test Cases field at the bottom left of the screen displays the detailed test-case parameters at the Test Plan Setting tab, where the Test Configuration Table, Test Requirement, etc., can be changed.



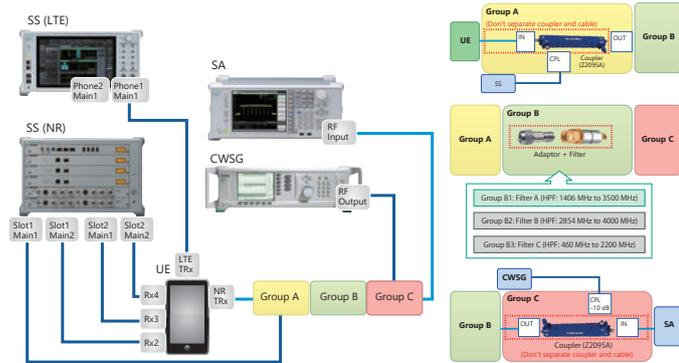
Change TC Parameter Screen

Key Functions of RF Regulatory Test System ME7803NR

Useful RF Regulatory Test Functions (continued)

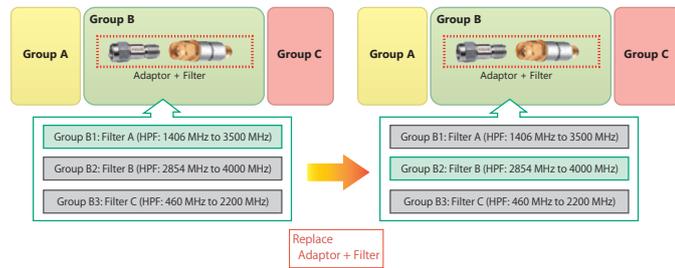
Confirming Connection Configuration/Switching

This configuration screen is displayed at the measurement start to help operators confirm the connection configuration by following navigation instructions.



Screen for Confirming Connection Configuration

Additionally, there is also a screen to help operators switching connections during measurement by following navigation instructions.



Switching Connection (During Measurement)

Measurement Progress Status

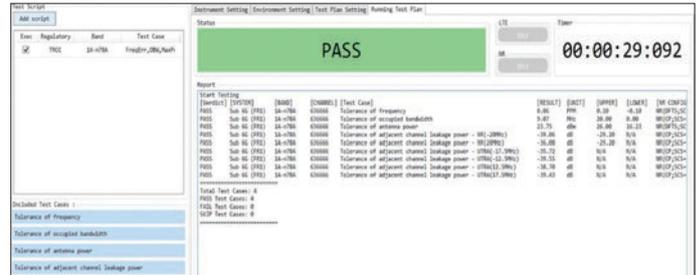
Displaying the measurement status at the Running Test Plan tab helps confirm current progress. In addition, the saved log of the messages exchanged between the tester and the UE, including failed results, etc., is a useful tool for troubleshooting measurement issues.



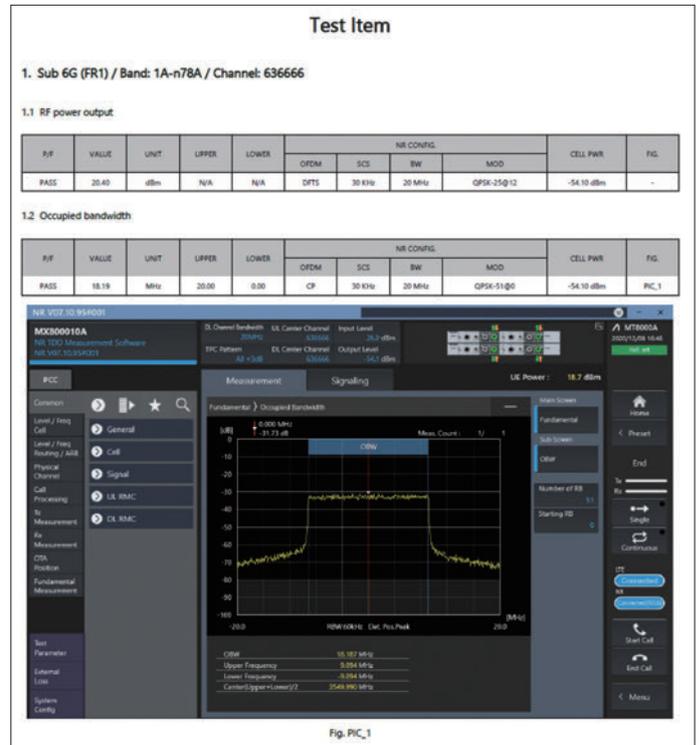
Current Progress Display

Measured Data Management Function

In addition to confirming ME7803NR measurement results at the Measurement Results screen, results can also be saved either as easy-to-read PDF files or as CSV files for management using the customer's database software.



Measurement Results Screen



Measurement Report (PDF)

RF Regulatory Test System ME7803NR Specifications



- ① **PC Controller**
Controls overall system
- ② **Vector Signal Generator MG3710E**
Outputs interference waveforms and adjacent-channel signals
- ③ **Signal Analyzer MS2840A/MS2850A**
Analyzes UE-under-test signal
- ④ **2 GHz - 40 GHz Signal Generator MG3694C**
Outputs CW signal for calibrating interference waveforms and system
- ⑤ **Radio Communication Analyzer MT8821C**
Operates as base station simulating LTE Anchor
- ⑥ **Radio Communication Test Station MT8000A**
Operates as simulated 5G NR base station

In addition to these equipment, a power sensor and power meter are required to assure system measurement accuracy, along with an Ethernet HUB, cables, couplers, and test SIM card.

RF Regulatory Test System ME7803NR Specifications

Electrical Performance

This depends on the performance of each piece of equipment in the configured system. Read the equipment catalogs.

Power Supply (rating)

Voltage: 100 VAC to 120 VAC, or 200 VAC to 240 VAC

Frequency: 50 Hz/60 Hz

Power Consumption: ≤4500 VA (max configuration)*

*: Read the catalog for the power consumption of each piece of test equipment.

Temperature Range

Operating: 18°C to 28°C

Storage: 10°C to 60°C

*: These conditions must be satisfied at calibration. For stable measurement, we recommend calibration in an air-conditioned room.

Test Standards

TRCC (Japan Regulatory): Article 2-1-11-30

RED (ETSI): ETSI EN 301 908-25

CFR (FCC): Title 47 CFR part 2 (common), Part 22, Part 24, Part 27 (FR1)

* Contact our Business Section for details about versions supporting each standard.

Frequency Range

TRCC: NR Band

| Operating Band | UL Frequencies (MHz) | DL Frequencies (MHz) |
|----------------|----------------------|----------------------|
| 77 | 3300 to 4200 | 3300 to 4200 |
| 78 | 3300 to 3800 | 3300 to 3800 |
| 79 | 4400 to 5000 | 4400 to 5000 |

RED: NR Band

| Operating Band | UL Frequencies (MHz) | DL Frequencies (MHz) |
|----------------|----------------------|----------------------|
| 1 | 1920 to 1980 | 2110 to 2170 |
| 3 | 1710 to 1785 | 1805 to 1880 |
| 7 | 2500 to 2570 | 2620 to 2690 |
| 8 | 880 to 915 | 925 to 960 |
| 20 | 832 to 862 | 791 to 821 |
| 28 | 703 to 748 | 758 to 803 |
| 38 | 2570 to 2620 | 2570 to 2620 |
| 40 | 2300 to 2400 | 2300 to 2400 |
| 41 | 2496 to 2690 | 2496 to 2690 |
| 50 | 1432 to 1517 | 1432 to 1517 |
| 51 | 1427 to 1432 | 1427 to 1432 |
| 65 | 1920 to 2010 | 2110 to 2200 |
| 77 | 3300 to 4200 | 3300 to 4200 |
| 78 | 3300 to 3800 | 3300 to 3800 |

CFR: NR Band

| Operating Band | UL Frequencies (MHz) | DL Frequencies (MHz) |
|----------------|----------------------|----------------------|
| 5 | 824 to 849 | 869 to 894 |
| 41 | 2496 to 2690 | 2496 to 2690 |
| 71 | 663 to 698 | 617 to 652 |

Shared: LTE Band for LTE Anchor

| Operating Band | UL Frequencies (MHz) | DL Frequencies (MHz) |
|----------------|----------------------|----------------------|
| 1 | 1920 to 1980 | 2110 to 2170 |
| 2 | 1850 to 1910 | 1930 to 1990 |
| 3 | 1710 to 1785 | 1805 to 1880 |
| 4 | 1710 to 1755 | 2110 to 2155 |
| 5 | 824 to 849 | 869 to 894 |
| 6 | 830 to 840 | 875 to 885 |
| 7 | 2500 to 2570 | 2620 to 2690 |
| 8 | 880 to 915 | 925 to 960 |
| 9 | 1749.9 to 1784.9 | 1844.9 to 1879.9 |
| 10 | 1710 to 1770 | 2110 to 2170 |
| 11 | 1427.9 to 1447.9 | 1475.9 to 1495.9 |
| 12 | 698 to 716 | 728 to 746 |
| 13 | 777 to 787 | 746 to 756 |
| 14 | 788 to 798 | 758 to 768 |
| 17 | 704 to 716 | 734 to 746 |
| 18 | 815 to 830 | 860 to 875 |
| 19 | 830 to 845 | 875 to 890 |
| 20 | 832 to 862 | 791 to 821 |
| 21 | 1447.9 to 1462.9 | 1495.9 to 1510.9 |
| 24 | 1626.5 to 1660.5 | 1525 to 1559 |
| 25 | 1850 to 1915 | 1930 to 1995 |
| 26 | 814 to 849 | 859 to 894 |
| 27 | 807 to 824 | 852 to 869 |
| 28 | 703 to 748 | 758 to 803 |
| 30 | 2305 to 2315 | 2350 to 2360 |
| 31 | 452.5 to 457.5 | 462.4 to 467.5 |
| 33 | 1900 to 1920 | 1900 to 1920 |
| 34 | 2010 to 2025 | 2010 to 2025 |
| 35 | 1850 to 1910 | 1850 to 1910 |
| 36 | 1930 to 1990 | 1930 to 1990 |
| 37 | 1910 to 1930 | 1910 to 1930 |
| 38 | 2570 to 2620 | 2570 to 2620 |
| 39 | 1880 to 1920 | 1880 to 1920 |
| 40 | 2300 to 2400 | 2300 to 2400 |
| 41 | 2496 to 2690 | 2496 to 2690 |
| 42 | 3400 to 3600 | 3400 to 3600 |
| 66 | 1710 to 1780 | 2110 to 2200 |
| 71 | 663 to 698 | 617 to 652 |

New Radio RF Conformance Test System ME7873NR Ordering Information

Please specify the model/order number, name and quantity when ordering.

Names in this list may differ slightly from names on the actual equipment.

Choose any required Anritsu parts , ancillaries, accessories, etc. For more details, contact our Business Section.

| Model/Order No. | Name |
|-----------------|--|
| | Main Unit |
| ME7803NR | RF Regulatory Test System |
| | Ancillary Equipment |
| MT8000A | Radio Communication Test Station |
| MT8821C | Radio Communication Analyzer |
| MG3694C | 2 GHz - 40 GHz Signal Generator |
| MG3710E | Vector Signal Generator |
| MS2840A*1 | Signal Analyzer |
| MS2850A*1 | Signal Analyzer |
| ML2437A | POWER METER |
| MA2444D | High Accuracy Sensor |
| | Other Accessories and Application Parts |
| ME7803NR-AK001 | Accessory Kit for FR1 (In-band) |
| ME7803NR-AK002 | Accessory Kit for FR1 (spurious) |
| ME7803NR-AK011 | Accessory Kit for FR1 Correction (In-band) |
| ME7803NR-AK012 | Accessory Kit for FR1 Correction (spurious/interferer) |
| Z2102A | HPF (1700 MHz to 5000 MHz) |
| Z2103A | HPF (3000 MHz to 7000 MHz) |
| Z2104A | LPF (DC to 2200 MHz) |
| J1839A | Coaxial Adapter (K-P, K-J) |
| Z2091A | GPIB-Ethernet Converter |
| Z2114A | Control PC (EN) |
| Z2090A | Ethernet Hub |
| | Standard Parts |
| | ME7803NR Instruction Manual (DVD-ROM) |
| | Options |
| MX780300NR*2 | Platform Functionality |
| MX780302NR | RED Test Software for CE |
| MX780303NR | CFR Test Software for FCC |
| MX780304NR | TRCC Test Software for Japan Regulatory |

*1: Choose any one item.

*2: No order required because built-in as standard

RF Regulatory Test System ME7803NR Related Products

New Radio RF Conformance Test System ME7873NR

The ME7873NR is a test system for automated RF and RRM tests of the latest 5G NR 3GPP-compliant mobile terminals.



Features

- Supports GCF/PTCRB 5G NR test cases
- Complies with latest 3GPP standards
- Supports FR1 (Sub-6 GHz) to FR2 (mmWave) regional frequency bands
- Supports automatic Spurious tests for both FR1 and FR2
- Provides various correction functions for improving measurement-result reliability

5G NR Mobile Device Test Platform ME7834NR

The ME7834NR is a protocol test system for mobile terminal R&D tests, conformance tests, and carrier Multi-RAT terminal acceptance tests.



Features

- Supports all-in-one 5G NR protocol conformance and carrier acceptance tests
- Supports FR1 (Sub-6 GHz) to FR2 (mmWave) regional frequency bands
- Supports 5G upgrade from previous ME7834 systems

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