Anritsu Advancing beyond

Ethernet Service Commissioning Test

10M to 400G, Shorter Commissioning Times with ITU-T Y.1564

Network Master Pro MT1000A/MT1040A

The rapid spread of DX (Digital transformation) and cloud services is increasing the importance of networked services. Offering better services requires both value-added services as well as better network service quality, so assured network service level agreements (SLA) are becoming a prerequisite contract condition especially for network slicing.
The MT1000A and MT1040A Network Master Pro are all-in-one transport testers for running commissioning tests, including evaluating the Ethernet service back to the SLA.

What is ITU-T Y.1564?

ITU-T Y.1564 is a test method for commissioning Ethernet services released by ITU-T as the Y.1564 stadard. Traditional Ethernet commissioning tests have been using RFC 2544, which was developed first to test the performance limits of transmission equipment. Using RFC 2544, only one type of Ethernet service can be tested simultaneously, so tests of multiple services require different tests under separate test conditions, which is time consuming. Using Y.1564, test times are greatly reduced because all areas can be measured simultaneously (in contrast to RFC 2544). Moreover, multiple services can be emulated simultaneously, supporting testing under near-to-real conditions from one-to-many services.

Anritsu is a member of the ITU-T Y.1564 standards working group and was actively involved in contributing to this standard.

Table 1. Comparison of Y.1564 and RFC 2544

Item	ITU-T Y.1564	RFC 2544
Test Purpose	Commissioning Ethernet Service	Evaluating Ethernet Transmission Equipment Performance
No. of Simultaneous Test Services	Multiple	One
Emulation	Actual Services	Only One Service
Test Time	Shorter than RFC 2544	
Test Results	SLA based Pass/Fail	Network Performance Limits

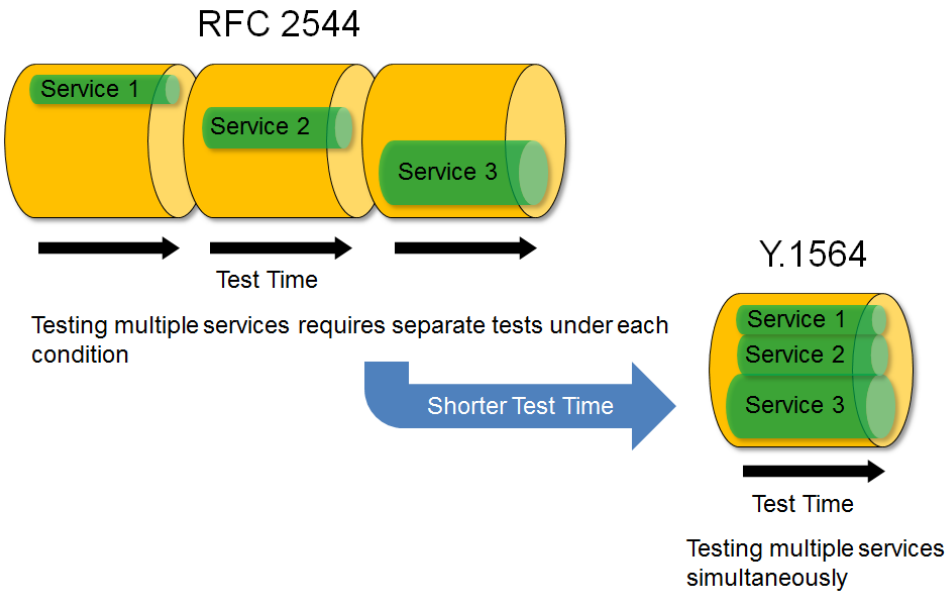

Fig. 1. Shorter Test Times

ITU-T Y.1564 consists of the following two tests.

Service Configuration Test
This test is for quickly confirming the end-to-end configuration; it defines the CIR (Committed Information Rate), EIR (Excess Information Rate), Traffic policing, CBS (Committed Burst Size), and EBS (Excess Burst Size), and checks the configured parameters appropriately works or not

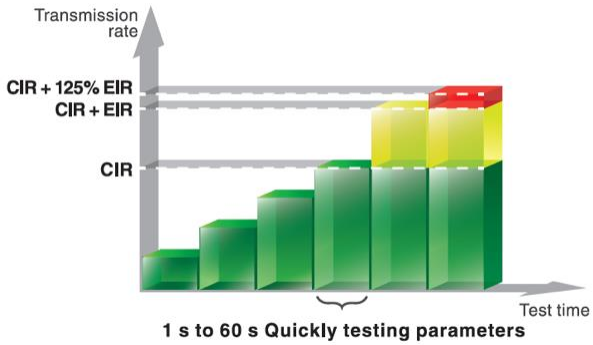

Fig.2. Service Configuration Test

Service Performance Test
The time duration of this test is based on the ITU-T M.2110 standard and it sends all configured service simultaneously at the CIR to confirm all traffic can be sent and checks IR, FTD, FDV, FLR, and AVAIL (Availability) simultaneously.

IR (Information Rate)
FTD (Frame Transfer Delay)
FDV (Frame Delay Variation)
FLR (Frame Loss Rate)

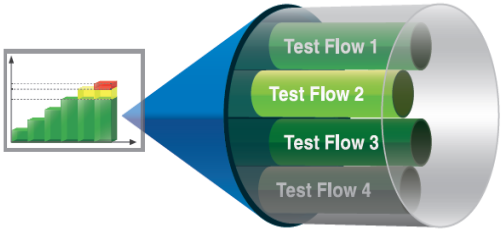

Fig. 3. Service Performance Test

Applications

The MT1000A and MT1040A Ethernet service commissioning test function supports up to 8 services in accordance with the Y.1564 standard.
The commissioning test is executed by two testers using the local unit to remotely control the far end unit. Additionally, it can also be performed by one tester using a remote loopback device.

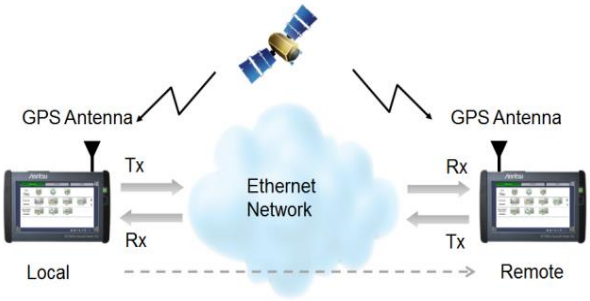

Fig. 4. Local/Remote Control One-Way Test

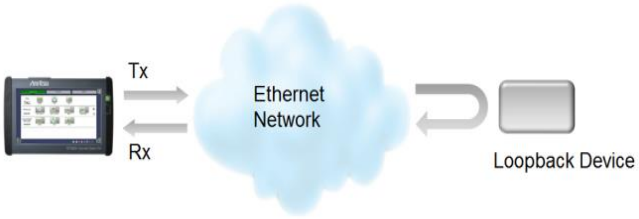

Fig. 5. Loopback Device Round-Trip Test

Test Parameter Settings

The service traffic profile is determined based on the service quality. Services for eMBB, URLLC, mMTC are typical ones. Traditional profiles are provided with preset voice, video and data settings to simplify parameter input.

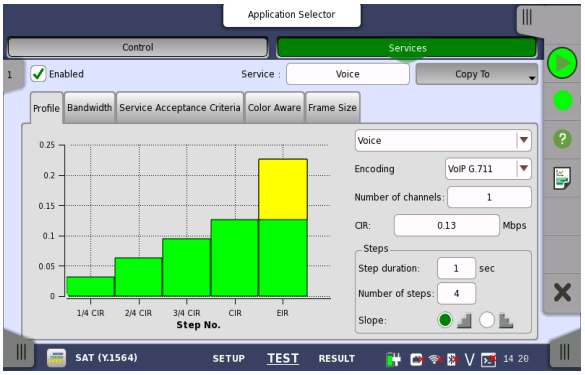

Fig. 6. Profile Selection (Voice/Video/Data)

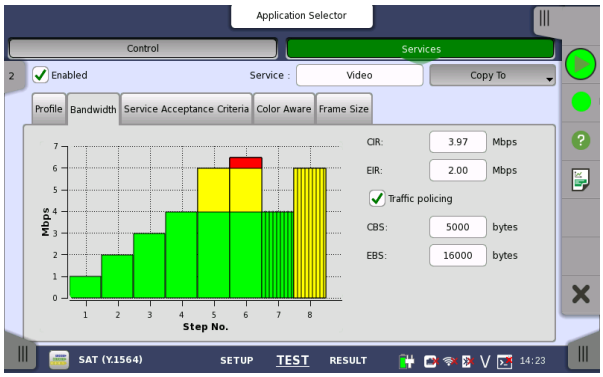

Fig. 7. Bandwidth Settings

The service acceptance criteria can be set based on the SLA requirements or expected test results.

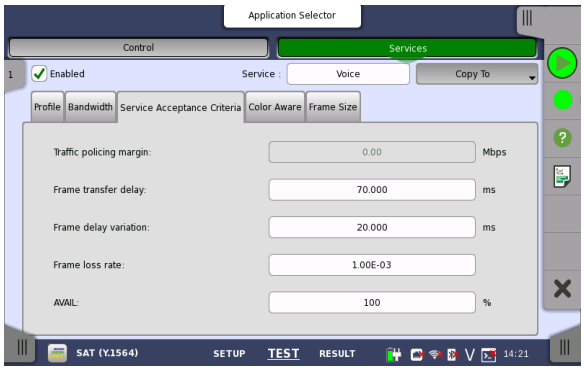

Fig. 8. Service Acceptance Criteria Settings

In addition, the Color Aware settings can be configured to confirm network priority control and the EMIX pattern with a mix of multiple frames can also be set per test stream.

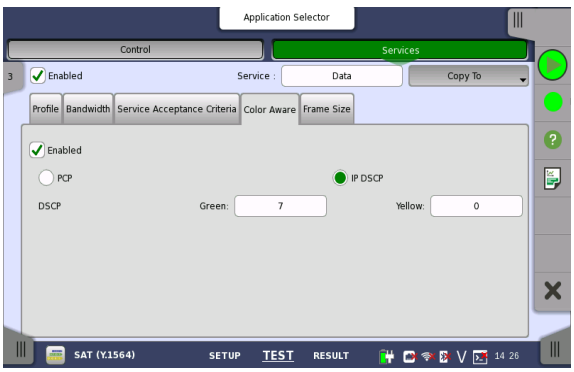

Fig. 9. Color Aware Settings

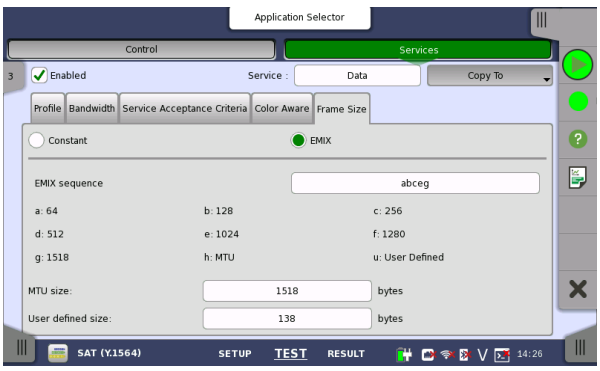

Fig. 10. EMIX Pattern Settings

Test Results Summary

Pressing the test Start button automatically executes the service configuration and service performance tests in sequence. The overall evaluation results are displayed when the tests are completed using easy to understand color coding. Detailed results screens are shown by selecting the desired button.

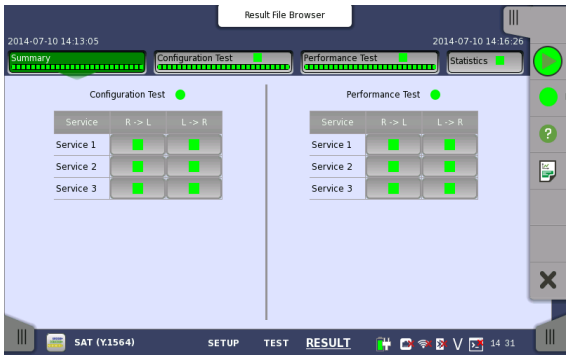

Fig. 11. Test Results Summary

Service Configuration Test Results

The service configuration test results are color-coded to highlight any concerns as Pass (green) and Fail (red) bar-graph and table displays. Detailed results are displayed by touching each relevant cell.

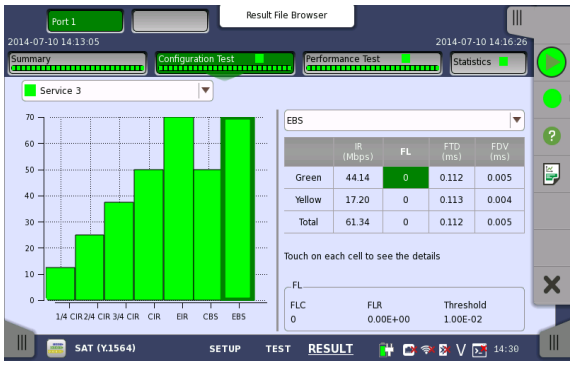

Fig. 12. Service Configuration Test Results

Service Performance Test Results

The service performance test results are also color-coded as a Pass (green) and Fail (red) within the table display. Detailed results are displayed by touching each relevant cell.

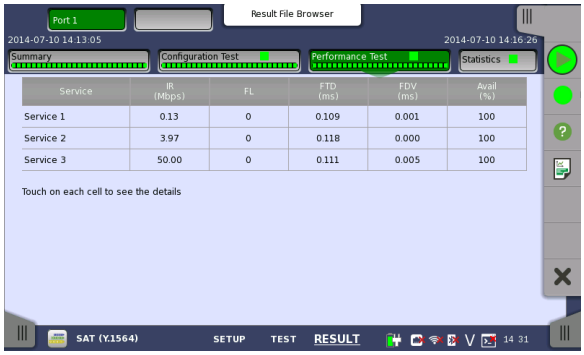

Fig. 13. Service Performance Test Results

Product Features

- Emulate various types of service profiles
- Tests traffic for up to 8 services simultaneously
- Accurate one-way delay measurements using GPS
- Dual-port or quadruple-port configuration supports two/four simultaneous Y.1564 tests to cut test times

Summary

Using the MT1000A or MT1040A, Y.1564 test assures fast and efficient SLA network service quality tests to support the continuing evolution and expansion of high-service-quality networks.

MT1000A Ordering Information

Mainframe	
MT1000A	Network Master Pro
Test Modules	
MU100010A	10G Multirate Module
MU100011A	100G Multirate Module
Options	
MU100010A-001	Up to 2.7G Dual Channel
MU100010A-012	Ethernet 10G Dual Channel
MU100011A-003	Up to 10G Dual Channel
MU100011A-017	Ethernet 25G Single Channel
MU100011A-013	Ethernet 40G Single Channel
MU100011A-015	Ethernet 100G Single Channel
G0325A	GPS Receiver

MT1040A Ordering Information

Mainframe	
MT1040A	Network Master Pro
Test Modules	
MU100010A	10G Multirate Module
MU100011A	100G Multirate Module
MU104014A	400G(QSFP-DD) Multirate Module
MU104015A	400G(OSFP) Multirate Module
MU104011A	100G Multirate Module
Options	
MT1040A-020	Activate for 400G Dual/100G Quad Option
MU104011/14/15A-012	Ethernet up to 25G Dual Channel
MU104011/14/15A-014	Ethernet 40G Dual Channel
MU104011/14/15A-016	Ethernet 100G Dual Channel
MU104014-031	Ethernet 200G Single Channel
MU104014/15A-033	Ethernet 400G Single Channel
G0325A	GPS Receiver

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