Application Note

Ethernet Service Commissioning Test
Shorter Commissioning Times with ITU-T Y.1564

MT1000A   Network Master Pro   MT1100A   Network Master Flex

MU100010A   10G Multirate Module   MU110010A   10G Multirate Module
                                                     MU110011A   100G Multirate Module
                                                     MU110012A   40/100G Module CFP2

The rapid spread of smartphones 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.
The MT1000A Network Master Pro and MT1100A Network Master Flex 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 new test method for commissioning Ethernet services; the pre-release version was called Y.156sam and it has now been released by ITU-T as the Y.1564 stadard. Current Ethernet commissioning tests use 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

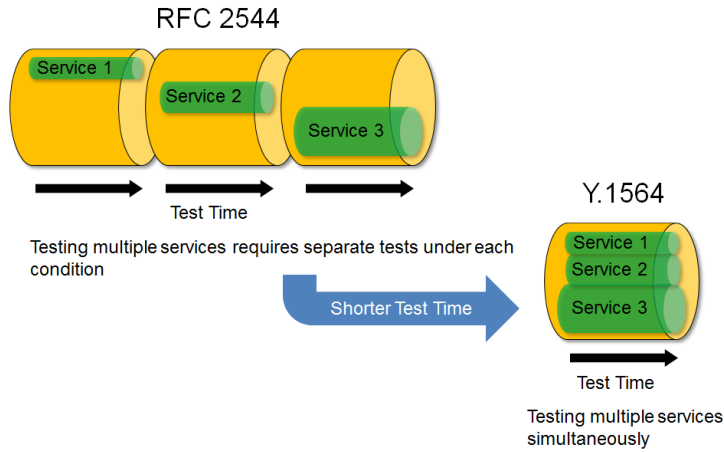| Item	ITU-T Y.1564	RFC 2544
Test Purpose	Commissioning Ethernet Service	Evaluating Ethernet Transmission Equipment Performance
No. of Simultaneous Test Services	Multiple	One
Emulation	Actual Services	Only One Service
Test Time	Shorter than RFC 2544	
Test Results	SLA based Pass/Fail	Network Performance 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 measures the following items for all configured service traffic:
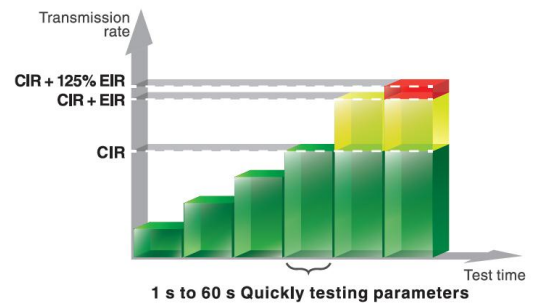
IR (Information Rate)
FTD (Frame Transfer Delay)
FDV (Frame Delay Variation)
FLR (Frame Loss Rate)

Fig.2. Service Configuration Test

- Service Performance Test

The time duration of this test is based on the 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.
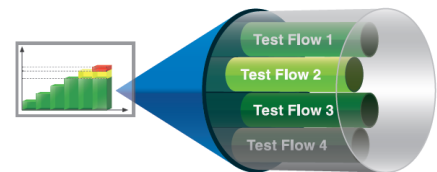

Fig. 3. Service Performance Test

Applications

The MT1000A and MT1100A 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.
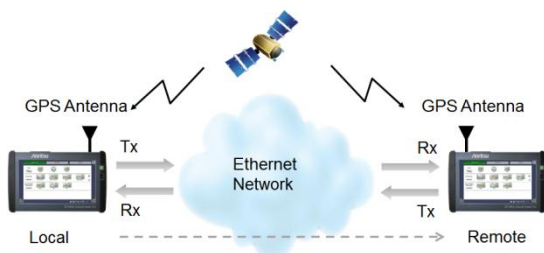Additionally, it can also be performed by one tester using a remote loopback device.

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

Fig. 5. Loopback Device Round-Trip Test

MT1000A-E-F-4

Test Parameter Settings

The service traffic profile is determined based on the service quality. Profiles are provided with preset voice, video and data settings to simplify parameter input.
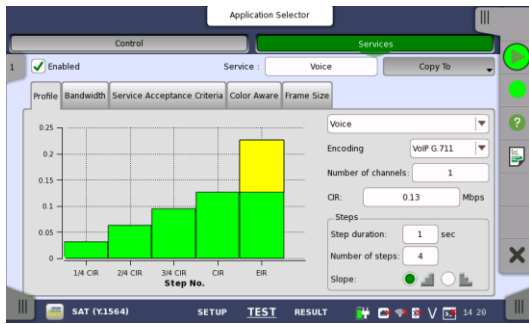

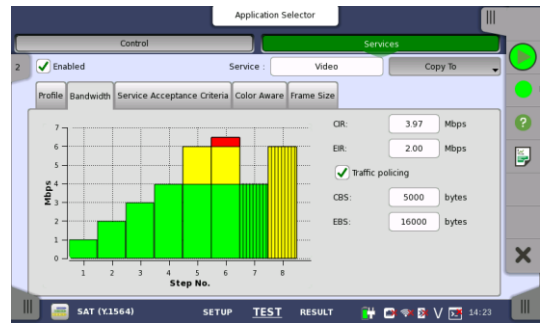Fig. 6. Profile Selection (Voice/Video/Data)

Fig. 7. Bandwidth Settings

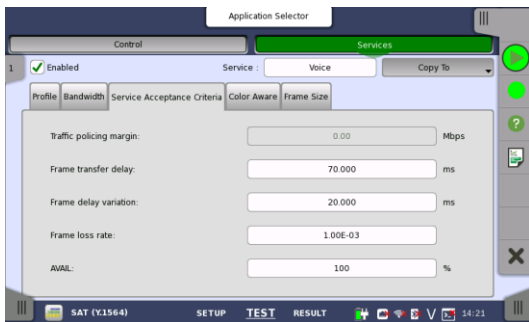The service acceptance criteria can be set based on the SLA requirements or expected test results.

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.
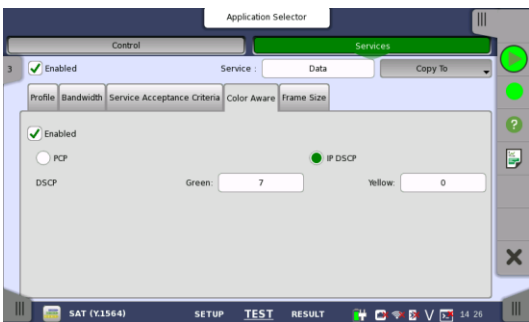

Fig. 9. Color Aware Settings

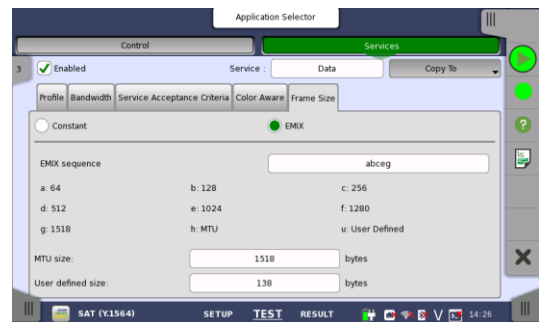Fig. 10. EMIX Pattern Settings

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.
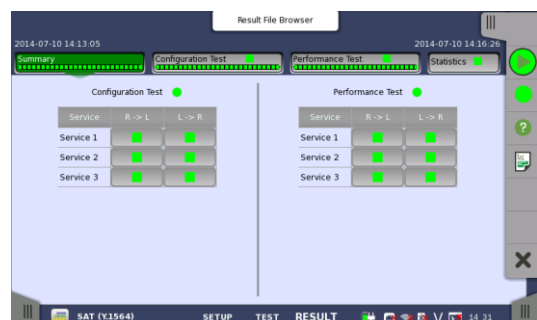

Fig. 11. Test Results Summary

MT1000A-E-F-4

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.
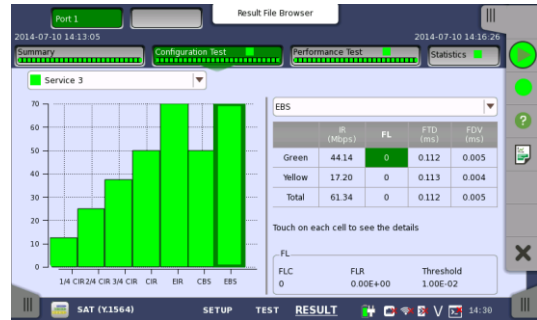

Fig. 12. Service Configuration Test Results

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

- Tests traffic for up to 8 services simultaneously
- Accurate one-way delay measurements using GPS
- Emulate voice, video and data profiles
- Supports up to 10 GigE (MT1000A) and up to 100 GigE (MT1100A) at full line rate
- Dual-port configuration supports two simultaneous Y.1564 tests to cut test times

Summary

Using the MT1000A or MT1100A Y.1564 test assures fast and efficient SLA network service quality tests to support the continuing evolution and expansion of high-service-quality networks.

Ordering Information MT1000A

Mainframe	
MT1000A	Network Master Pro
Test Module	
MU100010A	10G Multirate Module
Options	
MU100010A-001	Up to 2.7G Dual Channel
MU100010A-012	Ethernet 10G Dual Channel

Ordering Information MT1100A

Mainframe	
MT1100A	Network Master Flex
Test Modules	
MU110010A	10G Multirate Module
MU110011A	100G Multirate Module
MU110012A	40/100G Module CFP2
Power Supply Module	
MU110001A	Power Supply Module AC/DC
MU110002A	High Power Supply Module AC
Options	
MU110010A-001	Up to 2.7G Dual Channel
MU110010A-012	Ethernet 10G Dual Channel
MU110011A/12A-013	Ethernet 40G Single Channel
MU110011A/12A-014	Ethernet 40G Dual Channel
MU110011A/12A-015	Ethernet 100G Single Channel
MU110012A-016	Ethernet 100G Dual Channel

Note: Screen shots in this application note are made using the MT1000A. You can make similar screen shots with the MT1100A

Note

Anritsu

Specifications are subject to change without notice.

● **United States**
Anritsu Company
1155 East Collins Blvd., Suite 100, Richardson,
TX 75081, U.S.A.
Toll Free: 1-800-267-4878
Phone: +1-972-644-1777
Fax: +1-972-671-1877

● **Canada**
Anritsu Electronics Ltd.
700 Silver Seven Road, Suite 120, Kanata,
Ontario K2V 1C3, Canada
Phone: +1-613-591-2003
Fax: +1-613-591-1006

● **Brazil**
Anritsu Eletrônica Ltda.
Praça Amadeu Amaral, 27 - 1 Andar
01327-010 - Bela Vista - São Paulo - SP - Brazil
Phone: +55-11-3283-2511
Fax: +55-11-3288-6940

● **Mexico**
Anritsu Company, S.A. de C.V.
Av. Ejército Nacional No. 579 Piso 9, Col. Granada
11520 México, D.F., México
Phone: +52-55-1101-2370
Fax: +52-55-5254-3147

● **United Kingdom**
Anritsu EMEA Ltd.
200 Capability Green, Luton, Bedfordshire, LU1 3LU, U.K.
Phone: +44-1582-433200
Fax: +44-1582-731303

● **France**
Anritsu S.A.
12 avenue du Québec, Bâtiment Iris 1- Silic 612,
91140 VILLEBON SUR YVETTE, France
Phone: +33-1-60-92-15-50
Fax: +33-1-64-46-10-65

● **Germany**
Anritsu GmbH
Nemetschek Haus, Konrad-Zuse-Platz 1
81829 München, Germany
Phone: +49-89-442308-0
Fax: +49-89-442308-55

● **Italy**
Anritsu S.r.l.
Via Elio Vittorini 129, 00144 Roma, Italy
Phone: +39-6-509-9711
Fax: +39-6-502-2425

● **Sweden**
Anritsu AB
Kistagången 20B, 164 40 KISTA, Sweden
Phone: +46-8-534-707-00
Fax: +46-8-534-707-30

● **Finland**
Anritsu AB
Teknobulevardi 3-5, FI-01530 VANTAA, Finland
Phone: +358-20-741-8100
Fax: +358-20-741-8111

● **Denmark**
Anritsu A/S
Kay Fiskers Plads 9, 2300 Copenhagen S, Denmark
Phone: +45-7211-2200
Fax: +45-7211-2210

● **Russia**
Anritsu EMEA Ltd.
Representation Office in Russia
Tverskaya str. 16/2, bld. 1, 7th floor.
Russia, 125009, Moscow
Phone: +7-495-363-1694
Fax: +7-495-935-8962

● **United Arab Emirates**
Anritsu EMEA Ltd.
Dubai Liaison Office
P O Box 500413 - Dubai Internet City
Al Thuraya Building, Tower 1, Suit 701, 7th Floor
Dubai, United Arab Emirates
Phone: +971-4-3670352
Fax: +971-4-3688460

● **India**
Anritsu India Private Limited
2nd & 3rd Floor, #837/1, Binnamangla 1st Stage,
Indiranagar, 100ft Road, Bangalore - 560038, India
Phone: +91-80-4058-1300
Fax: +91-80-4058-1301

● **Singapore**
Anritsu Pte. Ltd.
11 Chang Charn Road, #04-01, Shriro House
Singapore 159640
Phone: +65-6282-2400
Fax: +65-6282-2533

● **P.R. China (Shanghai)**
Anritsu (China) Co., Ltd.
Room 2701-2705, Tower A,
New Caohejing International Business Center
No. 391 Gui Ping Road Shanghai, 200233, P.R. China
Phone: +86-21-6237-0898
Fax: +86-21-6237-0899

● **P.R. China (Hong Kong)**
Anritsu Company Ltd.
Unit 1006-7, 10/F., Greenfield Tower, Concordia Plaza,
No. 1 Science Museum Road, Tsim Sha Tsui East,
Kowloon, Hong Kong, P.R. China
Phone: +852-2301-4980
Fax: +852-2301-3545

● **Japan**
Anritsu Corporation
8-5, Tamura-cho, Atsugi-shi, Kanagawa, 243-0016 Japan
Phone: +81-46-296-1221
Fax: +81-46-296-1238

● **Korea**
Anritsu Corporation, Ltd.
5FL, 235 Pangyoyeok-ro, Bundang-gu, Seongnam-si,
Gyeonggi-do, 463-400 Korea
Phone: +82-31-696-7750
Fax: +82-31-696-7751

● **Australia**
Anritsu Pty. Ltd.
Unit 21/270 Ferntree Gully Road, Notting Hill,
Victoria 3168, Australia
Phone: +61-3-9558-8177
Fax: +61-3-9558-8255

● **Taiwan**
Anritsu Company Inc.
7F, No. 316, Sec. 1, NeiHu Rd., Taipei 114, Taiwan
Phone: +886-2-8751-1816
Fax: +886-2-8751-1817

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Please Contact:

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