Anritsu

PRODUCT INTRODUCTION

MP1570A

SONET/SDH/PDH/ATM Analyzer

MEASUREMENT SOLUTIONS

ANRITSU CORPORATION

The MP1570A has been developed mainly for evaluating and maintaining PDH/SDH transmission equipment; its single-cabinet, portable construction makes it perfect as a PDH/SDH/ATM analyzer. Although the functions and performance of the MP1552B have been upgraded in the new MP1570A, it is still compatible with the older SDH plug-in units (both optical and electrical) for excellent cost performance.

Linking the World

MP1570A SONET/SDH/PDH/ATM Analyzer

Anritsu Corporation
Measurement Solutions

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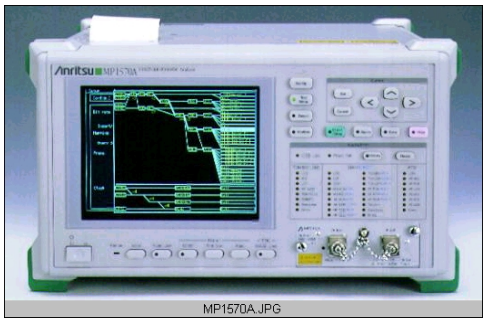
1570-1

Linking the World

External View of MP1570A



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1570-2

This shows the features of the MP1570A.

Features

- Plug-in Unit Method
- Supports SDH/SONET & PDH Tests
- Simple Operation
- Software Upgrade
- Built-in Printer and FDD
- Plug-in Construction
- Useful Features
- Other Functions

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The MP1570A configuration can be selected from a full lineup of functions plus three new types of optical interface unit.
It is an extremely cost effective measuring instrument because it can also use existing MP1552B interface units.

Plug-In Unit Method

- Full Line of Interface Units
  - Optical 1.31, 1.55, 1.31/1.55
  - Electrical NRZ, CMI
- Optical Units with Built-in Power Meter

- Optical 156/622M (1.31) **MP0111A**
- Optical 156/622M (1.55) **MP0112A**
- Optical 156/622M (1.31/1.55) **MP0113A**
- CMI **MP0105A**
- NRZ (156M/622M) **MP0108A**

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The MP1570A uses a plug-in method providing customers with flexible configuration options for various applications.
The units in red italics shown above are new units (for 2.5G).

Plug-in Unit Method

– **Supports Variety of Measurements using Plug-in Units**

MP1570A

Interface Units

2.5/10G	*MU150000A*
Optical 10G Tx	*MU150001A/B*
Optical 10G Rx	*MU150002A*
2.5G	*MU150008A/150009A/150010A*
2/8/34/139/156M	MP0121A
1.5/45/52M	MP0122A/B
ATM	MP0123A
Jitter/Wander	
•2/8/34/139M,156/622M	MP0124A
•1.5/45M,52/156/622M	MP0125A
•2/8/34/139M,1.5/45M, 52/156/622M	MP0126A
2.5G Jitter	MP0130A
Add/Drop	MP0131A

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1570-5

Not only can the MP1570A plug-in units be changed, but one instrument covers a wide range including SDH/SONET mapping and PDH. Of course, both out-of-service and in-service measurement are possible.

Supports SDH/SONET & PDH Tests

– In-service monitoring (G.772)
- 2.5G,10G
- 52M, 156M, 622M (G.703, G.958)
- 2M, 8M, 34M, 139M, 1.5M, 45M (G.703)
- SDH/SONET ⟷ PDH Measurement

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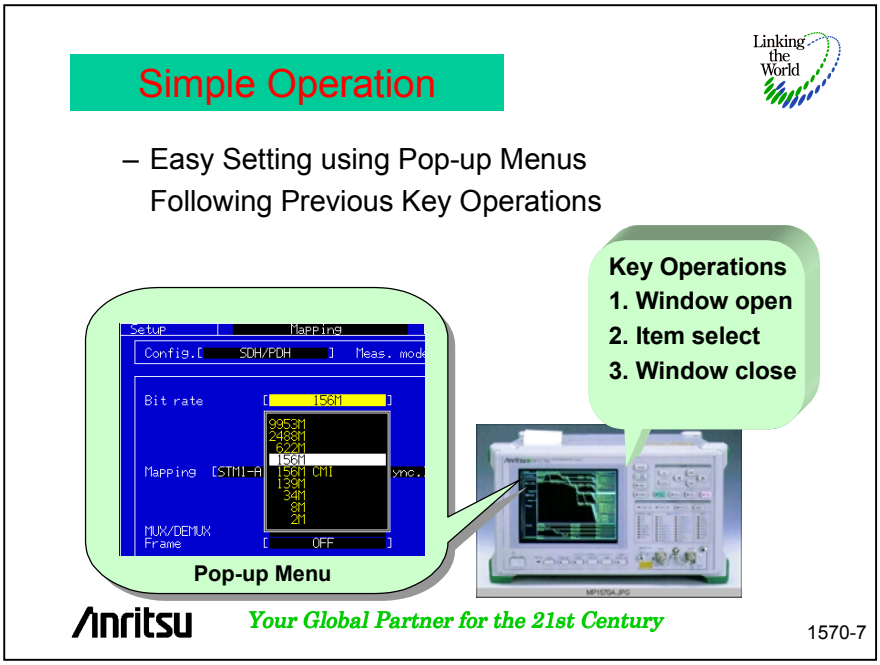
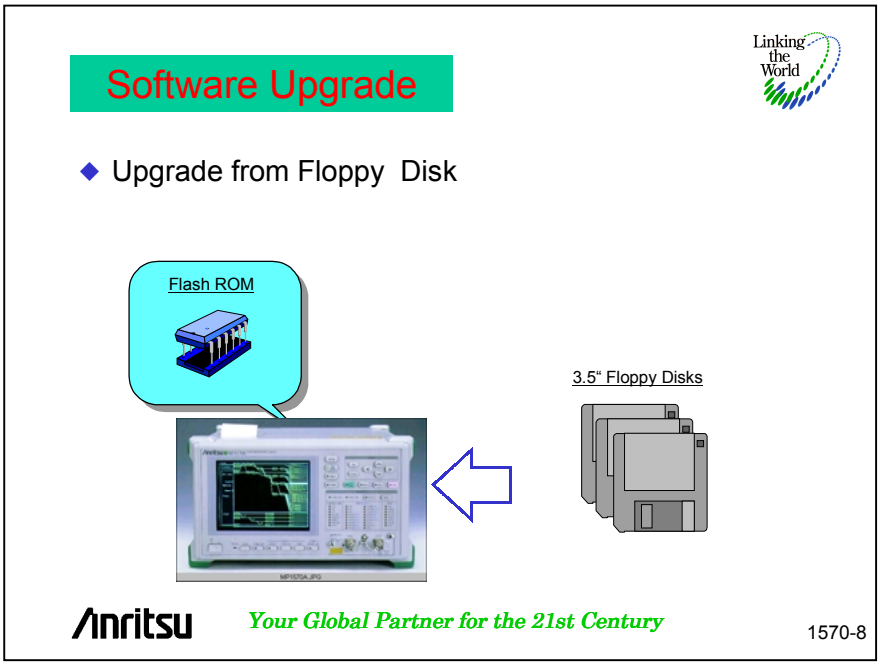
1570-6

The popular key functions of the MP1552B have been inherited in the MP1570A pop-up menus for easy operability and to save time on operation training.



The firmware can be upgraded easily using a floppy disk when upgrading the system hardware or when ITU-T specifications change, etc.



The MP1570A has a built-in printer (top edge) and floppy disk drive (right side) as standard equipment so measurement settings, results and analysis data can be either printed out directly or saved to disk and used for later analysis on a MP1570A or a PC (using graphing / spreadsheet software, etc.).

Built-in Printer and FDD

– For Recording and Saving Measurement Conditions & Results

Built-in Printer
- Measurement conditions
- Measurement results
- Screen hard copy

Floppy Disk 3.5”
- Measurement conditions
- Measurement results
- Analysis data
- Screen data (bit map)

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This is a side view of the MP1570A (with 2.5G Add/Drop unit installed).

Plug-in Structure

Right Side Cover of MP1570A

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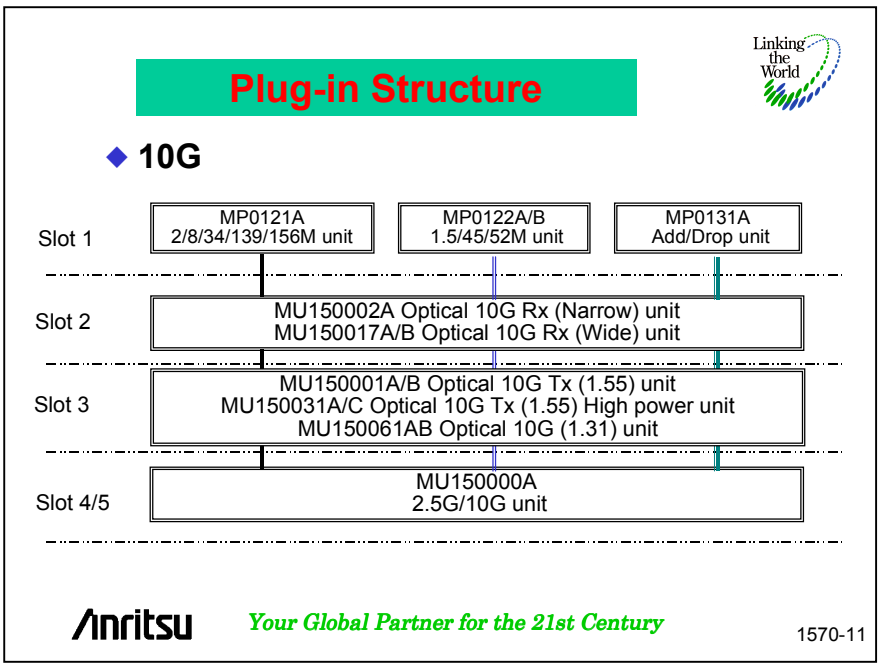
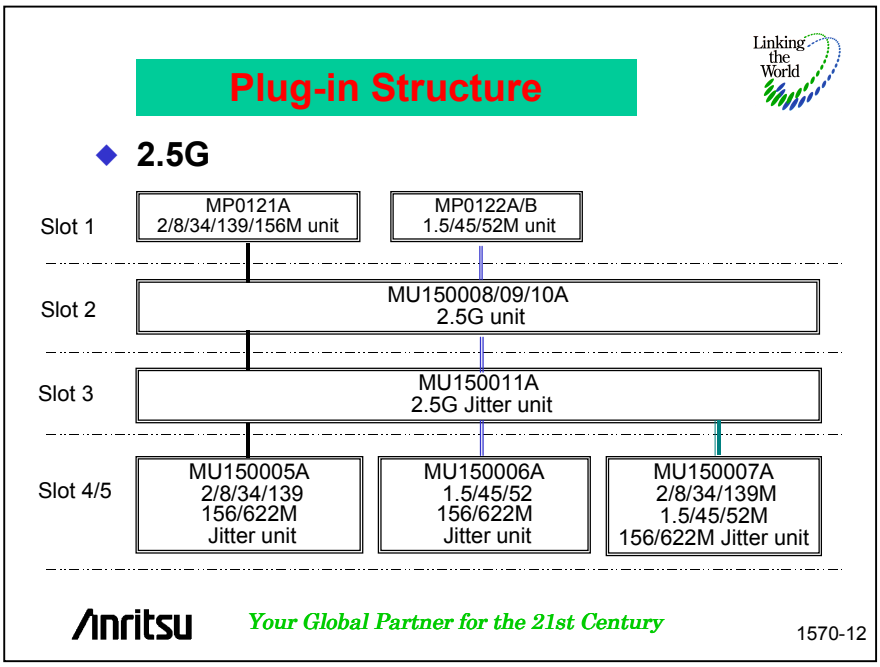
1570-10

This table shows the units that can be installed for running the Add/Drop function.



This table shows the units supported up to STM-16 (2488 Mb/s) classified by system and application.



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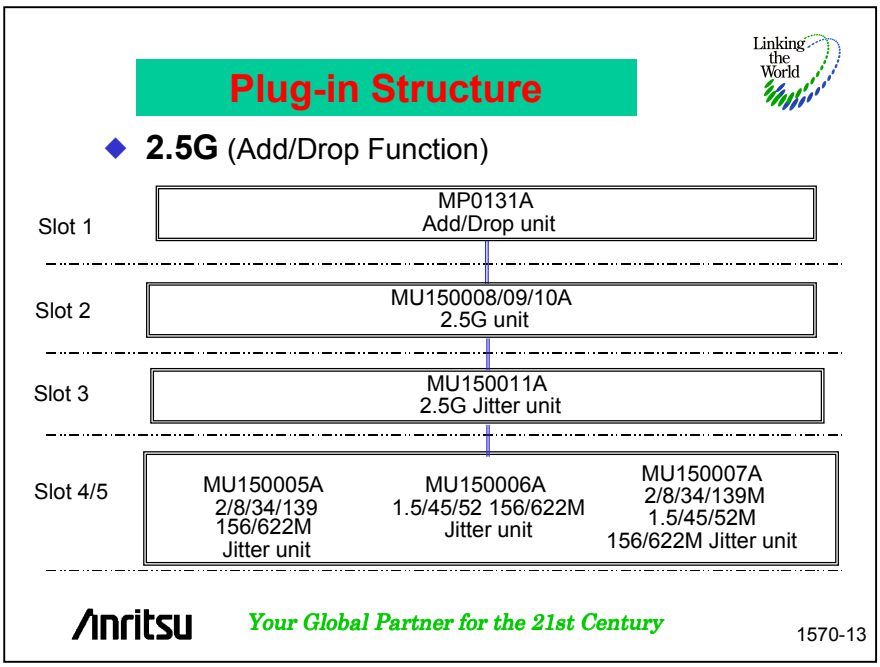
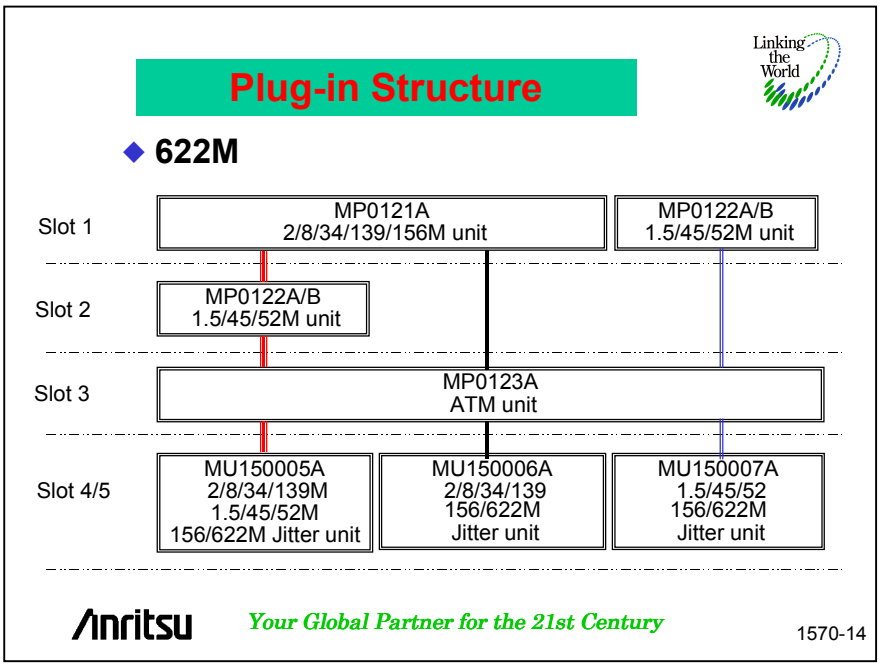
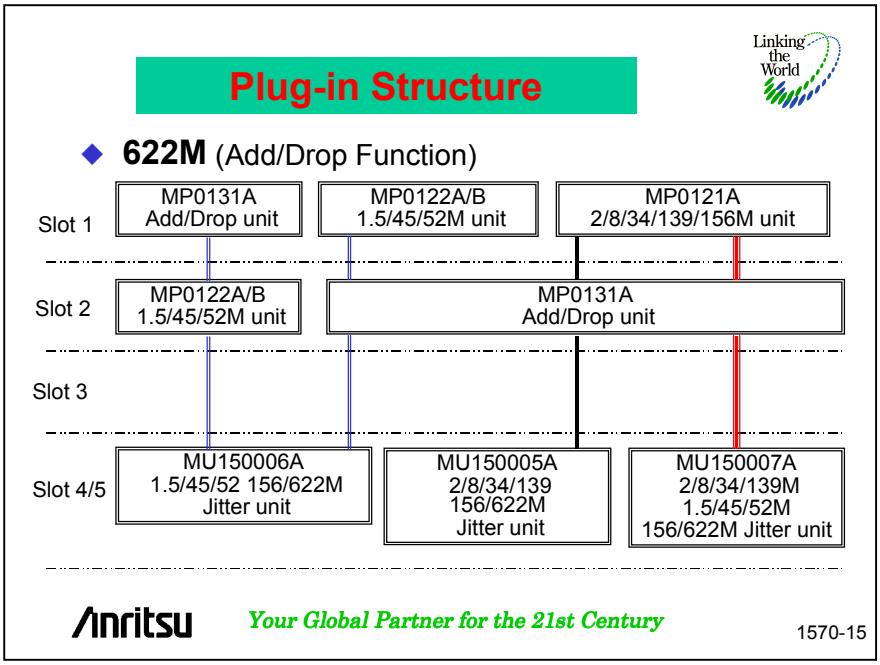


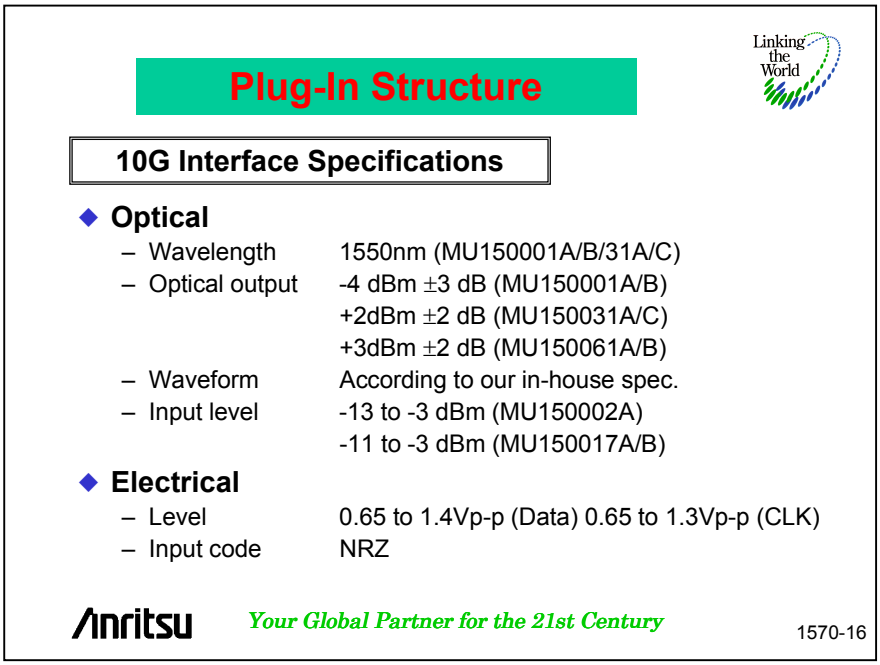
This table shows the units supporting up to STM-4 (622 Mb/s) classified by system and application.



This table shows the units that can be installed for running the Add/Drop function.



These are the specifications for the STM-64(10G) optical unit.



These are the specifications for the STM-16(2.5 G) optical unit.

Plug-in Structure

Linking the World

2.5G Interface Specifications

- **Optical**
  - Wavelength: 1310, 1550, 1310/1550 nm
  - Optical output: -4 dBm ± 3 dB
  - Waveform: ITU-T G.957
  - Input level: -28 to -9 dBm (MU150008A/150009A/150010A)
- **Electrical**
  - Level: ECL (send/receive)
  - Monitor input NRZ: (clock recovery)

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This table shows the functional features of the MP1570A.

Functional Features

Linking the World

- All SDH/SONET Mappings Supported
- Concatenation Mapping
- SONET/ITU-T Compliance Tests
- Full Through Mode Functions
- Error Performance Analysis
- Automatic Trouble Search
- SDH/SONET Pointer Generation
- PDH MUX/DEMUX Function (Option)
- Jitter/Wander Generation/Measurement at all Bit Rates
- ATM Pattern Generation/Measurement
- Auto-setup

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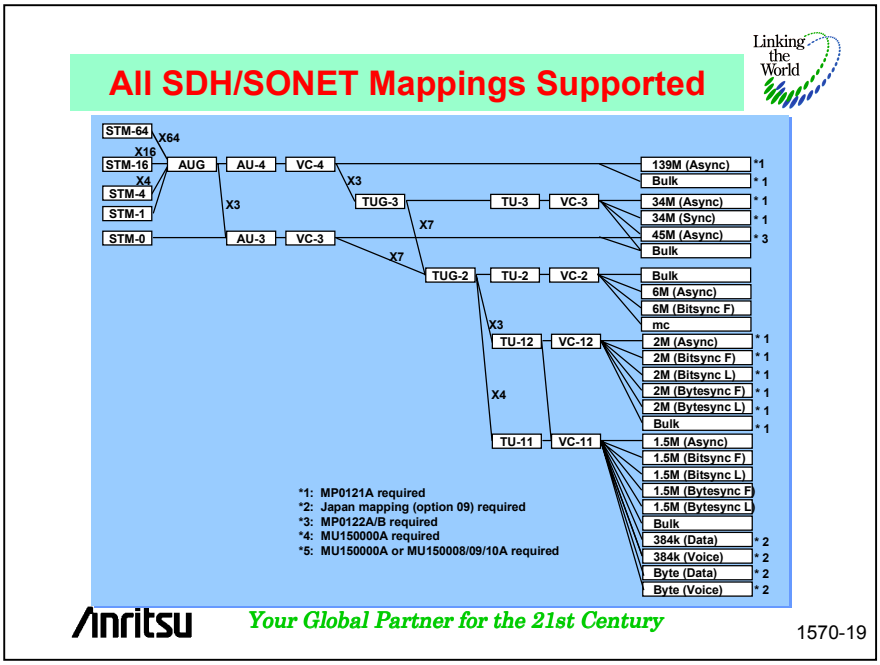
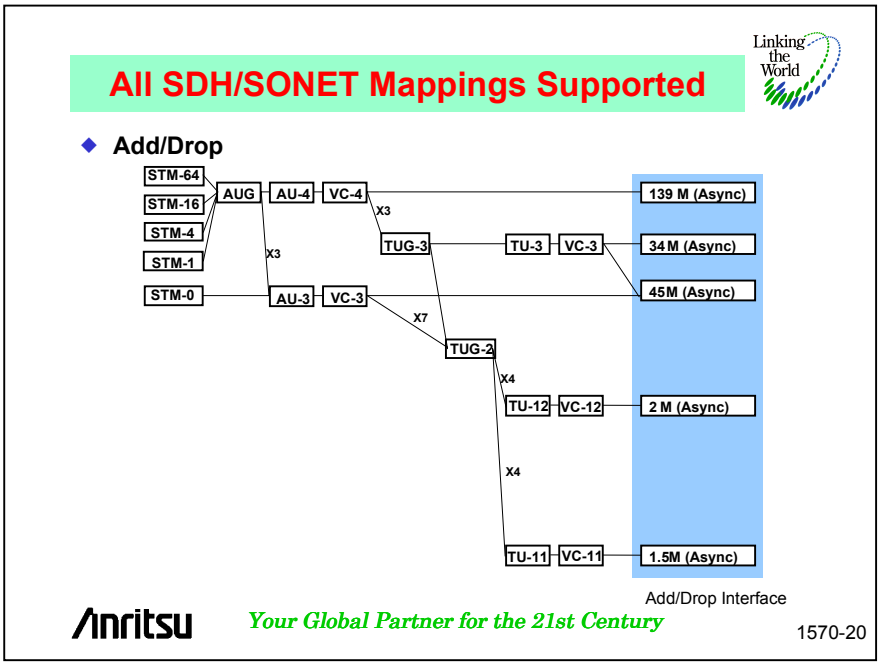
This shows the mapping of the MP1570A.



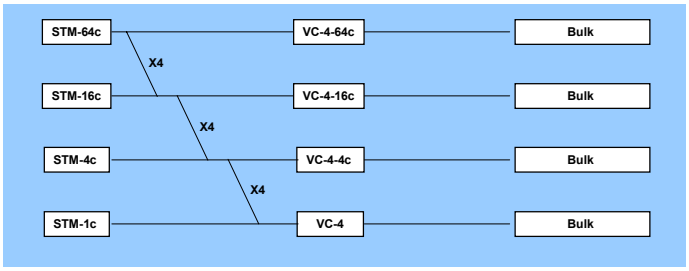
By installing an Add/Drop unit, a PDH signal can either be added to or dropped from an SDH signal.



This shows the concatenation mapping of the MP1570A.

Concatenation Mapping

- **STM-1c to STM-64c Concatenation Mapping**



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SONET/ITU-T Compliance Tests

- Mixed Payload
- TC (Tandem Connection)
- Alarm Detection/Release Condition Setting
- CID Pattern, Non-frame Pattern Measurement
- APS(Auto-switching) Time Measurement
- OH Test (OH change, PTR 64 Frame, OH BERTS)
- Linear/Ring System K1, K2 Byte Setting
- Two Path Trace Types (16 Byte/64 Byte)

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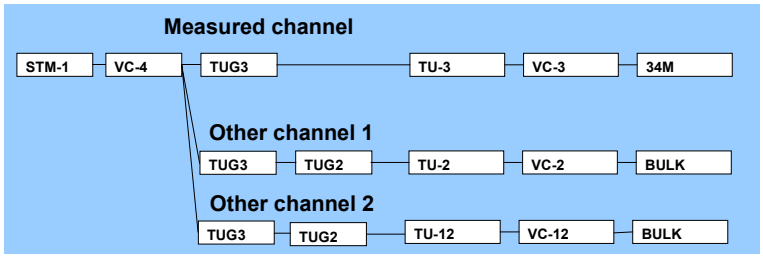
SONET/ITU-T Compliance Tests

Linking the World

- **Mixed Payload**
  At mapping measurement below TUG3, able to set two other channels in addition to measurement target channel



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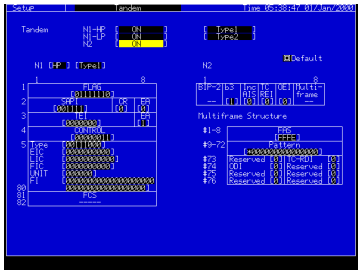
1570-23

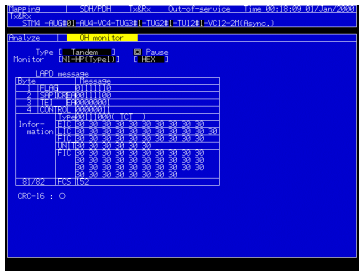
POH N1,N2 bytes can be set.
Errors/Alarms can be measured at tandem connection.

SONET/ITU-T Compliance Tests

Linking the World

- **Tandem Connection**
  - Able to set and measure N1 and N2 bytes





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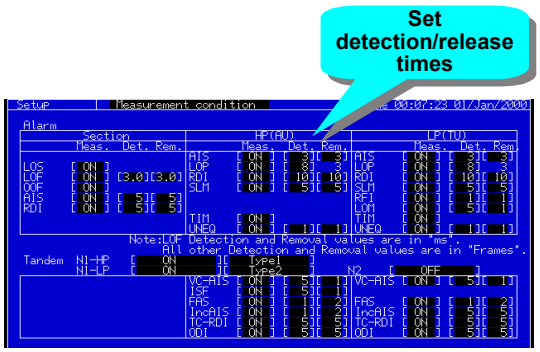
1570-24

The MP1570A can change alarm detection /release condition setting (except LOS, OOF and TIM).

SONET/ITU-T Compliance Tests

Linking the World

- Alarm Detection/Release Condition Setting



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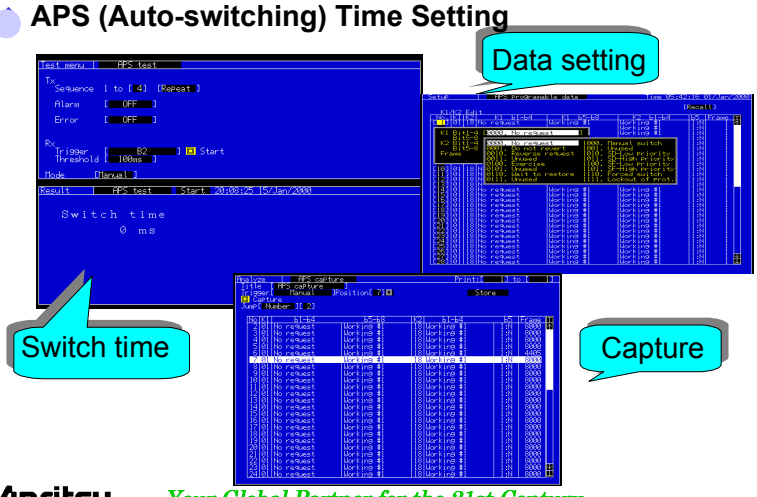
1570-25

The MP1570A can edit program and capture measurement data to measure APS switching time. This measurement complies to ITU-T Rec. G.783 and G.841.

SONET/ITU-T Compliance Tests

Linking the World

- **APS (Auto-switching) Time Setting**



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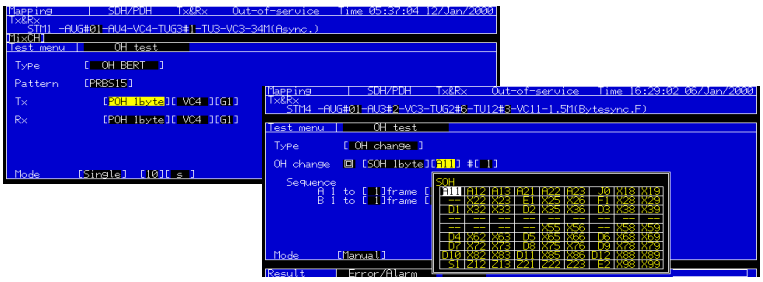
1570-26

For SDH, the defaults can be set for the SOH/POH bytes except the parity and K1/K2 bytes. In addition, section and path trace can also be set.
For PDH, the overhead can be set in compliance with ITU-T Rec. G.704 and G.832.

SONET/ITU-T Compliance Tests

Linking the World

- OH Test
  - **Able to select and test overhead type (OH change, PTR64 frame, OH BERTS, OH Add/Drop)**



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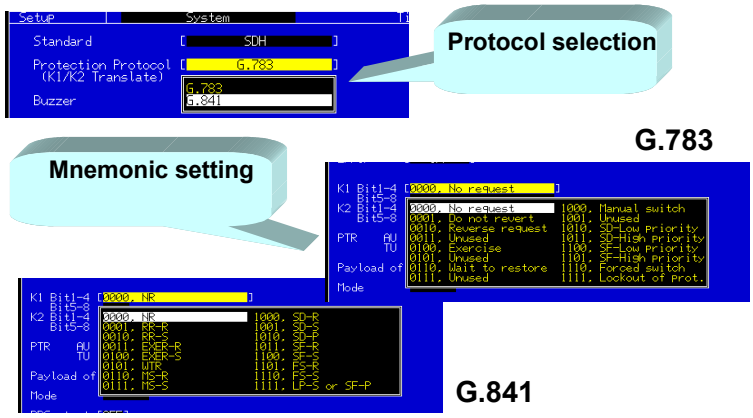
1570-27

SONET/ITU-T Compliance Tests

Linking the World

- Linear/Ring System K1 and K2 Byte Setting



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1570-28

Setting/Monitoring of section trace and path trace (J0, J1 and J2) can also be possible.

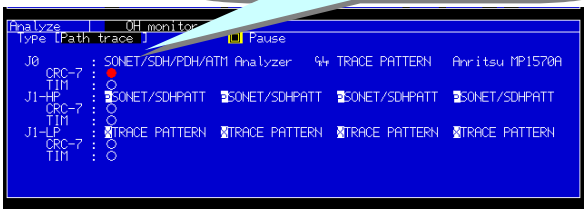
SONET/ITU-T Compliance Tests

Linking the World

- Two Path Trace Types (16 Byte/64 Byte)

Trace pattern setting

Trace pattern monitoring



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1570-29

Full Through Mode Functions

Linking the World

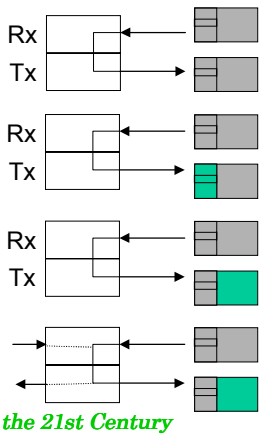
- Four Through Modes (~STM-64/OC-192)

1.Transparent
In-service monitoring

2. OH Overwrite
SOH, POH Change
Error/Alarm Add

3. Payload Overwrite
Test signal (internal) Add/Drop
VC-4, VC-2, VC-12, VC-11 signals

4. Add/Drop
External signal Add/Drop
DS1, DS3, PDH signals



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1570-30

Performance can be measured both in-service and out-of-service in accordance with G.821, G.826, M2100 and M2101. Moreover, measurements for G.821 analysis can be performed either in compliance or not in compliance with Annex-D.

Error Performance Analysis

- Both In-service & Out-of-service
- G.821 ANNEX-D or G.821

Type	Error	Parameter
G.821	Bit, FAS, Code	EC, ES, EFS, SES, DM, US, Code ES
M.2100	Bit, FAS or CRC-4 or Parity or CRC-6, E-bit	ES, SES, US
G.826	Bit, FAS or CRC-4 or Parity or CRC-6, BIP, REI	ES, SES, BBE, ESR, SESR, BBER, SDP, US
M.2101	BIP, REI	ES, SES, US
M.2110	Same as M.2100, M2101	ES, SES, US (2-hour, 24-hour, 7-day)
M.2120	Same as M.2100, M2101	TR1-ES, TR1-SES, TR2-ES, TR2-SES, ES, SES, US

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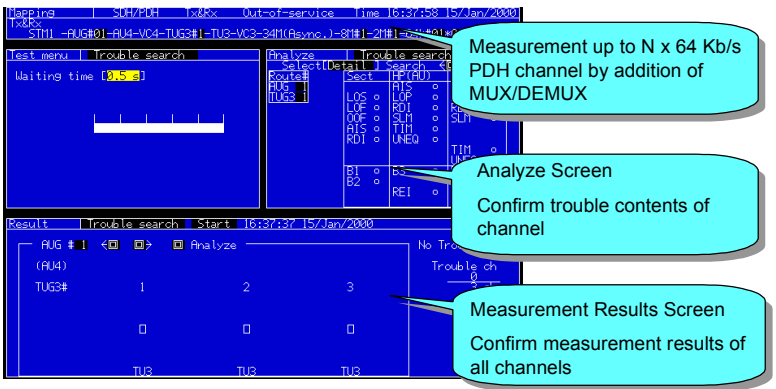
1570-31

The trouble search function automatically measures all channels (tributaries) of input signals set at the setting screen. If an error or alarm is detected during measurement, it is displayed on the analyze screen and the channel with the trouble can be examined manually when measurement is finished.
By installing the MUX/DEMUX function (option), all channels from N x 64 K to 622M (7860 channels—CEPT system) can be measured automatically, which demonstrates its usefulness by greatly shortening the measurement period at circuit installation, etc.

Automatic Trouble Search

- Auto-setting of All Channels



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1570-32

The MP1570A can perform four pointer sequence tests satisfying ITU-T G.783. Moreover, it can also perform three 87:3 pointer sequence tests to give a total of seven tests in all.

SDH/SONET Pointer Generation

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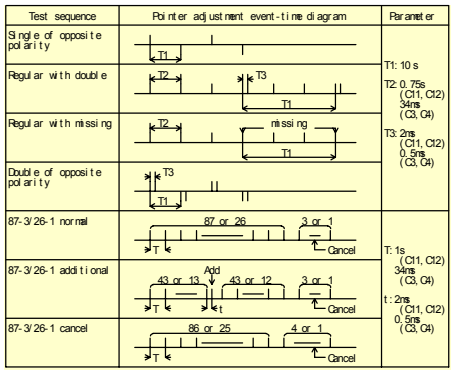
- Compliance with ITU-T G.783
  - Combined jitter measurement



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1570-33

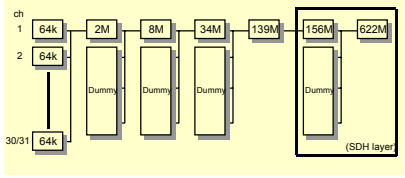
When the MUX/DEMUX function (option) is added, measurement can be performed from N x 64K to SDH for each of the Japanese, European and N. American systems.
Moreover, error/alarm addition can be performed for the selected tributary for evaluation testing of transmission equipment.

PDH MUX/DEMUX Function (Option)

Linking the World

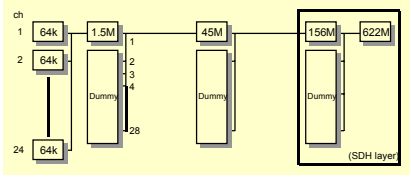
- Signal Generation and Measurement up to N x 64 Kb/s

1. EC



✦ MP0121A 2/8/34/139/156M unit

2. USA



✦ MP0122A 1.5/45/52M unit

✦Add/Drop error/alarm at set tributary
✦Simultaneous error/alarm detection for set channel

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1570-34

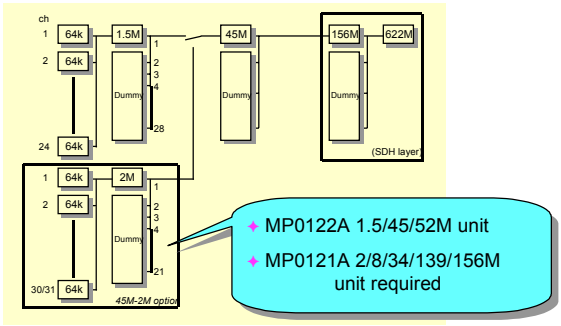
The same testing is also possible for international mappings.

PDH MUX/DEMUX Function (Option)

Linking the World

- Signal Generation and Measurement up to N x 64 Kb/s

3. International Mapping System (45M~2M)



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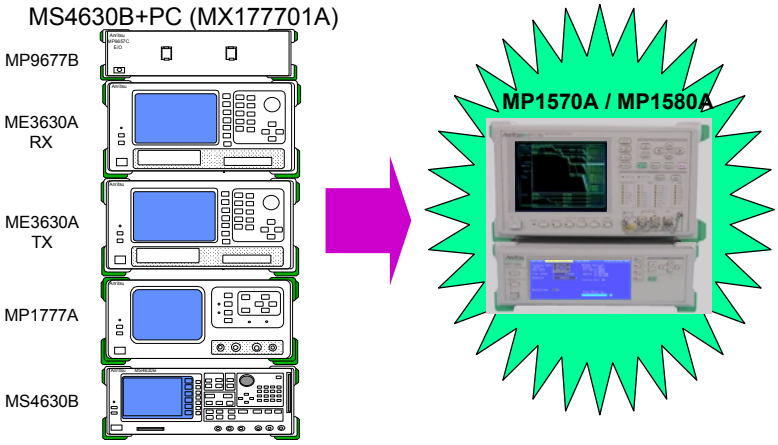
1570-35

Jitter/Wander Generation/Measurement at all Bit Rates

Linking the World

ME3630A+MP1777A+MP9677B
MS4630B+PC (MX177701A)



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These are the jitter specifications for STM-16 (2.5G).

Jitter/Wander Generation/Measurement at all Bit Rates

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MU150011A 2.5G Jitter Unit

- **Jitter Generation**
  - Modulation frequency: 0.1 Hz~20 MHz
  - Amplitude: 0 to 808 UIp-p
  - Jitter tolerance: ITU-T G.825,G.958 A,G.958 B, User
  - Offset: ± 70.0 ppm/0.1 ppm
- **Jitter Measurement**
  - Units: UI p-p, UI+p, UI-p/UI rms (opt-01)
  - Measurement range: 2UI 0.000 to 2.020 UIp-p; 32UI 0.00 to 32.20 UIp-p
  - Ref. signal: Internal/External
  - Jitter transfer char.: ITU-T G.958 A,G.958 B, User

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These are the STM-16 (2.5G) wander specifications.

Jitter/Wander Generation/Measurement at all Bit Rates

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MU150011A 2.5G Jitter Unit

- **Wander Generation**
  - Frequency: 10 µHz~0.2 Hz
  - Amplitude: 0 to 57600 UIp-p/10 step UIp-p
- **Wander Measurement**
  - Same as MU150005A/MU150006A/MU150007A option 02

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Wander measurement (option) can be performed by adding the relevant option. Measurement can be performed at all bit rates of 1.5M, 2M, 8M, 34M, 45M,139M, 52M, 156M, 622M and 2488M.
There are four measurement units: Peak-to-Peak, +Peak, -Peak and TIE.

Jitter/Wander Generation/Measurement at all Bit Rates

Linking the World

- Wander Measurement (option) (Rec. O.172)
  - Measurement Units
    Peak-to-Peak, +Peak/-Peak, TIE
    Resolution 0.5 ns
  - Filter
    DC to 0.01 Hz, DC to 10 Hz, 0.01 to 10 Hz
  - Reference Clock
    2 Mb/s (HDB3), 2 MHz,
    1.5 Mb/s (AMI/B8ZS), 1.5 MHz
  - MTIE/TDEV
    MX150001B Software (host PC)

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1570-39

Frequency offset and measurement can be performed by installing a jitter generation/measurement module.
Frequency offset can be measured at either jitter ON or jitter OFF.
The frequency of the signal input from the connector is measured with a resolution of 0.1 ppm in units of either ppm or Hz.

Jitter/Wander Generation/Measurement at all Bit Rates

Linking the World

- Frequency Offset

  Frequency Offset at Jitter Generation
  - Two offset ranges
    ± 999.9 ppm/0.1 step (jitter off)
    ± 70.0 ppm/0.1 step (jitter on)
  - Accuracy 0.1 ppm
- Frequency Measurement
  - Resolution 0.1ppm
  - Display Hz or ppm

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1570-40

The MP1570A can generate jitter signals that comply with the ITU-T O.171 recommendation. Any of five jitter amplitude ranges can be selected: 2, 20, 50, 200 and 800 UIp-p.
The jitter frequency covers a wide range from 0.1 Hz~20 MHz.

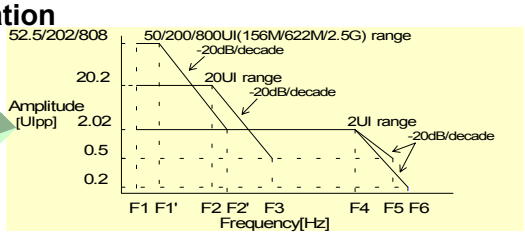
Jitter/Wander Generation/Measurement at all Bit Rates

Linking the World

◆ Jitter Generation

Range
- 2UI
- 20UI
- 50UI (156M) or 200UI (622M) or 800UI (2.5G)

Type
- Manual
- Auto amplitude



Bit rate [Mb/s]	F1 [Hz]	F1' [Hz]	F2*1 [kHz]	F2'*1 [kHz]	F3*1 [kHz]	F4*1 [kHz]	F5*1 [kHz]	F6*1 [kHz]	Remarks
1.544	0.1	—	0.125	—	8	12.5	50	—	
2.048	0.1	—	1	—	20	27.5	110	—	
8.448	0.1	—	2	—	20	105	420	—	
34.368	0.1	—	5	—	100	250	1,000	—	
44.736	0.1	—	12.5	—	100	250	1,000	—	
139.264	0.1	—	5	—	100	1,000	4,000	—	
51.84	0.1	—	2	—	80	50	—	500	
155.52	0.1	1,000	6.5	26	500	150	—	1,500	
622.08	0.1	500	25	50	500	600	—	6,000	
2488.32	0.1	30	25	12	500	2,000	—	20,000	

*1 :Typical value

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1570-41

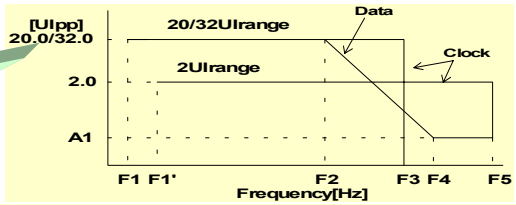
Jitter can also be measured in compliance with ITU-T O.171.
The jitter amplitude can be measured in two ranges; the maximum range is 20 (~622M)/32 UIp-p (2488M)
The jitter measurement frequency is 2 Hz~20 MHz, and the measurement units can be selected from Peak-to-Peak, +Peak/-Peak, RMS (option) and Hit Count.

Jitter/Wander Generation/Measurement at all Bit Rates

Linking the World

◆ Jitter Measurement

Measurement units
- Peak-to-Peak
- +Peak/-Peak
- Hit count
- RMS (optional)



Bit rate [Mb/s]	A1 UIp-p	F1 [Hz]	F1' [Hz]	F2 [Hz]	F3 [kHz]	F4 [kHz]	F5 [kHz]	Remarks
1.544	0.5	2	20	200	-	10	40	
2.048	0.5	2	20	450	-	25	100	
8.448	0.5	2	20	200	-	100	400	
34.368	0.5	2	20	500	-	500	800	
44.736	0.5	2	20	3k	-	200	400	
139.264	0.5	2	20	250	-	1,000	3,500	
51.84	0.2	2	20	200	400	100	400	
155.52	0.2	2	20	700	1,300	500	1,300	
622.08	0.2	2	20	20k	5,000	2,000	5,000	
2488.32	0.2	10	100	6.25k	100	1,000	20,000	

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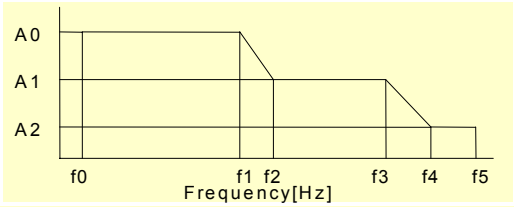
1570-42

By adding a jitter generation/measurement module, not only can a jitter signal be generated and measured, but a wander signal (option) can also be generated too in compliance with the ITU-T O.171 recommendations like the jitter signal.

Jitter/Wander Generation/Measurement at all Bit Rates

Linking the World

◆ **Wander Generation**



Bit rate [Mb/s]	Amplitude[UIp-p] A0	A1	A2	Frequency[Hz] f0	f1	f2	f3	f4	f5	Remarks
1.544	-	40	20	-	-	10u	50m	0.1	0.2	
2.048	-	40	20	-	-	10u	50m	0.1	0.2	
8.448	-	200	20	-	-	10u	10m	0.1	0.2	
34.368	1,000	110	20	10u	180u	1.6m	16m	0.1	0.2	
44.736	1,200	130	20	10u	180u	1.6m	16m	0.1	0.2	
139.264	3,400	380	50	10u	180u	1.6m	16m	0.1	0.2	
51.84	1,200	130	20	10u	180u	1.6m	16m	0.1	0.2	
155.52	3,600	400	50	10u	180u	1.6m	16m	0.1	0.2	
622.08	14, 400	1,600	200	10u	180u	1.6m	16m	0.1	0.2	
2488.32	57, 600	6,480	800	10u	180u	1.6m	16m	0.13	0.2	

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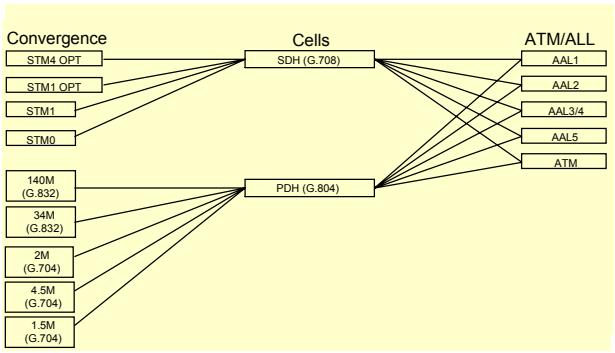
1570-43

Installing the MP0123A ATM unit permits generation and measurement of the following ATM signals:
2, 34, 139, 156M (with MP0121A 2/8/34/139/156M unit), 1.5, 45, 52M (with MP0122A 1.5/45/52M unit) and 156, 622M (with MP0111A/0112A/0113A Optical unit).

ATM Pattern Generation & Measurement

Linking the World

(1) ATM Mapping



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1570-44

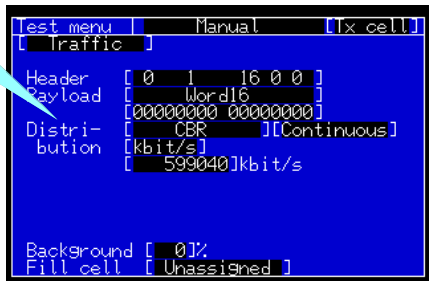
Various types such as CBR and burst can be used as the traffic pattern at cell sending and three types of setting method: cell/s, Kb/s and %, can be used. When burst or sawtooth is selected, the setting conditions are easy-to-understand because the send method is displayed on the screen.
In addition, 10 patterns can be edited as the background cell.
Each can be sent in the range of 0% to 100%. (The upper limit depends on the Distribution setting.)

ATM Pattern Generation & Measurement

Linking the World

(2) Traffic

Distribution
- Mode
  - CBR, Burst, PCR with CDV, Poisson, Sawtooth
- Timing
  - Single, Continuous
- Units
  - cell/s, Kb/s, %



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Each type of cell data can be edited.
The 65535 byte data of the AAL3/4 and AAL5 payload pattern can be edited on the screen or externally edited data can be read from floppy disk.
Edited 2016 cell data (header and payload) can be sent as memorized cells.
Furthermore, the 2106 cell data received by using the receive capture function can also be sent.

ATM Pattern Generation & Measurement

Linking the World

(3) Cell Editing
- Foreground cell
  - O.191, AAL1,AAL2, AAL3/4, AAL5
- OAM Cell
  - AIS, RDI, CC, loopback, PM
- Background cell (10 ch)
- Memorize cell
  - 1 to 2016 cell
  - Able to recall data in cell memory

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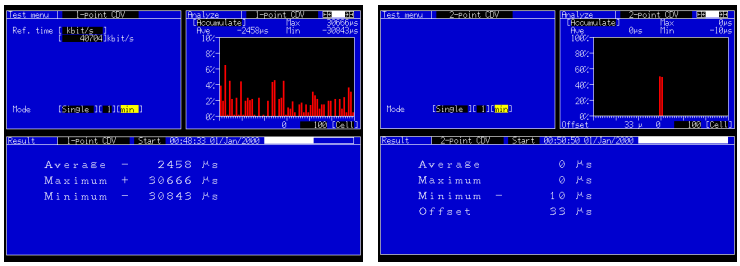
Two delay times can be measured: 1-point CDV (the variance in the receive cell arrival time) and 2-point CDV (the randomness in the time from cell sending to receiving).
Since 1-point CDV and 2-point CDV measurements both have an independent measurement structure, measurement is very easy. In addition, the measurement results can be displayed either numerically or graphically for easy reading.

ATM Pattern Generation & Measurement

Linking the World

(4) Delay Measurement
- Rx cell deviation — 1-point CDV
- Tx & Rx cell deviation — 2-point CDV



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1570-47

This function detects the receive signal condition and sets the MP1570A measurement conditions automatically.
It can be executed at both out-of-service and in-service; at in-service, mappings and frames can be both detected, but at out-of-service, pattern detection is also possible too.
However, this function does not detect ATM patterns.

Auto-setup

Linking the World

- **Auto-detection of Input Signal**

Measurement Conditions (1)
Tx/Rx: Rx Setting only
Tx&Rx: Tx and Rx setting

Measurement Conditions (2)
In-service
Out-of-service

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1570-48

Other Functions

- Overhead Setting
- Dummy Channel
- Signaling Preset (Option 09)
- Full Error/Alarm Generation & Measurement
- Data Capture
- Complete Monitoring Functions
- Self Test

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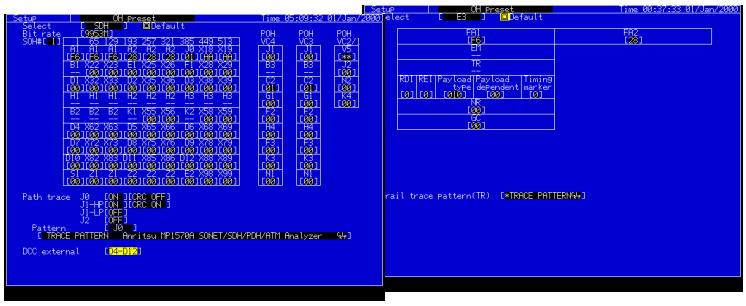
For SDH, the defaults can be set for the SOH/POH bytes except the parity and K1/K2 bytes. In addition, section and path trace can also be set.
For PDH, the overhead can be set in compliance with ITU-T Rec. G.704 and G.832.

Overhead Setting

- OH Preset
  - SDH SOH/POH Pattern (inc. path trace pattern)
  - PDH E3, E4, DS3 PLCP Pattern (ATM) (inc. trail trace pattern)



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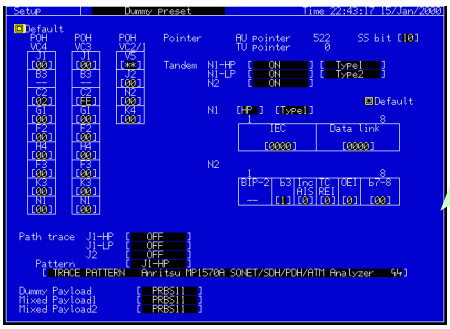
The MP1570A can copy and preset the measurement channel
data to the dummy channel.

Dummy Channel

Linking the World

Copy: Copy measurement channel setting
Dummy: Dummy preset setting



Set OH send data at dummy selection

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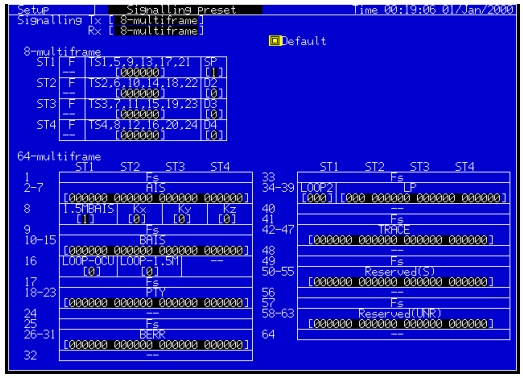
1570-51

Setting or monitoring the signaling bit (ST1~ST4) can be performed
by installing option 09 in the MP1570A.

Signaling Preset (Option09)

Linking the World

- **Signaling bit (ST1~ST4) setting and monitoring, 8 multiframe, 64 multiframe**



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1570-52

This shows the error measurement and addition items.

Full Error/Alarm Generation & Measurement

Linking the World

(1) Error measurement and Add

- Error detection

Type		Errors
PDH		Bit, FAS, CRC-4, E-bit, Code, Parity, CRC-6, C-bit, REI
SDH		Bit, B1, B2, B3, BIP-2, MS-REI, HP-REI, LP-REI
ATM	Cells	Cell count, Correctable HEC, Uncorrectable HEC, Non-conforming cell
	O.191	Errored cell, Lost cell, Misinserted cell
	AAL1	SAR-PDU count, Lost cell, SNP, Uncorrectable SNP, PRBS, Word
	AAL2	SAR-PDU count, P, OSF, SN, CPS-packet count, HEC, LI, PRBS, Word
	AAL3/4	SAR-PDU count, CRC10, MID, SN, Discarded PDU, Segment type, Length, Abort CPCS-PDU count, Undelivered PDU, CPI, Btag/Etag mismatch, BAsize, AL, Length, PRBS, Word
	AAL5	CPCS-PDU count, Discarded PDU, Frame size, Length, CRC32, Abort, PRBS, Word
	PM	Lost cell, Misinserted cell, BIPV, SECB

- Error Add

type		Errors
PDH		Bit all, Bit info, FAS, E-bit, Code, Parity, CRC-6, C-bit, REI
SDH		Bit all, Bit info, FAS, B1, B2, B3, BIP-2, MS-REI, HP-REI, LP-REI
ATM	Cells	HEC, User programmable
	O.191	Lost cell, Misinserted cell, Errored cell, SECB
	AAL1	Lost cell, SNP, PRBS, Word
	AAL2	P, OSF, SN, HEC, LI, PRBS, Word
	AAL3/4	SN, CRC10, Segment type, LI, Abort CPI, Btag/Etag mismatch, BAsize, AL, Length, PRBS, Word
	AAL5	Frame size, Length, CRC32, Abort, PRBS, Word
	PM	Lost cell, Misinserted cell, BIPV, SECB

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1570-53

This shows the alarm measurement and addition items.
For ATM, AIS, RDI and continuity check cells supporting F4 and F5 can be added and measured for OAM testing.

Full Error/Alarm Generation & Measurement

Linking the World

(2) Alarm measurement and Add

- Alarm detection

Type	Alarms
PDH	LOS, AIS, LOF, MF loss, RDI, RDI(MF), Sync loss
SDH	LOS, LOF, OOF, MS-AIS, MS-RDI, AU-AIS, AU-LOP, HP-RDI, HP-SLM, TU-AIS, TU-LOP, LP-RDI, LP-RFI, LP-SLM, Sync loss ,HP-UNEQ,LP-UNEQ,HP-TIM,LP-TIM
ATM	LCD, VP/VC segment AIS, VP/VC segment RDI, VP/VC segment LCC, VP/VC end-to-end AIS, VP/VC end-to-end RDI, VP/VC end-to-end LCC, Sync loss

- Alarm Add

Type	Alarms
PDH	LOS, AIS, RDI, RDI(MF)
SDH	LOS, LOF, MS-AIS, MS-RDI, AU-AIS, AU-LOP, HP-RDI, TU-AIS, TU-LOM, TU-LOP, LP-RDI, LP-RFI ,HP-SLM,LP-SLM,HP-UNEQ,LP-UNEQ,HP-TIM,LP-TIM
ATM	LCD, VP/VC AIS, VP/VC RDI, VP/VC CC, VP/VC Loopback cell

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1570-54

Full Error/Alarm Generation & Measurement

(3) Tandem Connection Errors/Alarms

- Alarms

  VC-AIS, ISF, FAS, HP-Incoming AIS, HP-TC-RDI, HP-ODI, LP-Incoming AIS, LP-TC-RDI, LP-ODI

- Errors

  N2 BIP-2, TC-REI, OEI, HP-IEC

Anritsu *Your Global Partner for the 21st Century* 1570-55

Any 1 byte of SOH or the K1/K2 bytes can be captured in 64 frames according to specified trigger conditions.
The captured data is displayed in either ASCII, hexadecimal or binary.
2016 ATM cells can be captured by specified trigger conditions and the captured cells are displayed in hexa-decimal, ASCII or mnemonic.
In addition, the captured cells can be sent as memorized cells.

Data Capture

- OH Capture
  - Type: Any 1 byte of SOH/POH, H1/H2, K1/K2
  - Trigger: Manual, Error/Alarm, K1/K2 mismatch, K1/K2 match, NDF, +PJC, -PJC, 3 cons
  - Display: ASCII/HEX, Binary
- Cell Capture
  - 1 to 2016 cells
  - Trigger: Manual, Error, Alarm
  - Display: HEX, ASCII, Translate

Anritsu *Your Global Partner for the 21st Century* 1570-56

Any 1 byte of SOH or the K1/K2 bytes can be captured in 64 frames according to specified trigger conditions.
The captured data is displayed in either ASCII, hexadecimal or binary.
2016 ATM cells can be captured by specified trigger conditions and the captured cells are displayed in hexa-decimal, ASCII or mnemonic.
In addition, the captured cells can be sent as memorized cells.

Data Capture

Linking the World

– Frame capture (Option13)

✦ Memory size	64 frames (156M, 622M, 2.5G), 26 frames (10G)
✦ Trigger	Manual, Error, Alarm, K1/K2 mismatch, K1/K2 match, NDF, +PJC, -PJC, 3 cons, External
✦ Display	HEX, ASCII

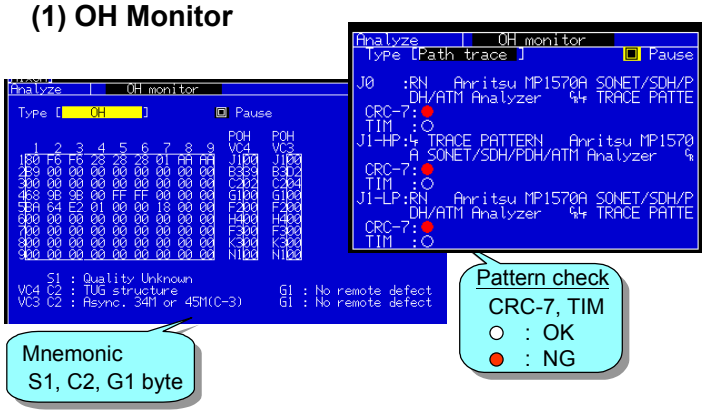
Anritsu *Your Global Partner for the 21st Century* 1570-57

In comparison to the MP1552B, more powerful functions have been added, such as an S1 and C2 byte mnemonic display, TIM alarm detection at path trace, and a display update stop function.

Complete Monitoring Functions

Linking the World

(1) OH Monitor



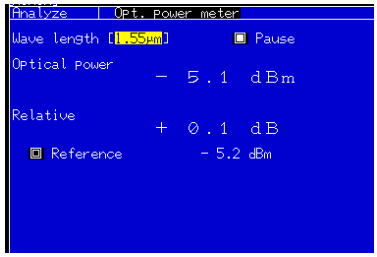
Anritsu *Your Global Partner for the 21st Century* 1570-58

Optical power can be measured easily by installing the current MP0111A/MP0112A/MP0113A, new MU150008A/MU150009A/MU150010 A 2.5G Optical units and MU150002A 10G Optical unit, etc. They have a measurement range of 0 to -30 dBm (~622M), -9 to -30 dBm (2.5G) and 0 to -16 dBm (10G) at 0.1-dB resolution, and the measurement results can be displayed as either relative or absolute values.

Complete Monitoring Functions

Linking the World

(2) Optical Power Meter



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1570-59

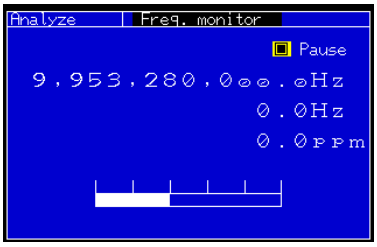
The input signal frequency can be measured. The resolution has a measurement range of 0.1ppm ±1000 ppm and the measurement results can be displayed as either Hz or ppm. In addition, the frequency synchronized to error/alarm measurement can be displayed as a graph, which is useful for monitoring long-term frequency deviation.

Complete Monitoring Functions

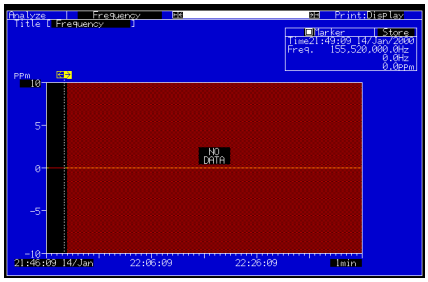
Linking the World

(3) Frequency Monitoring

Numeric display



Graph display



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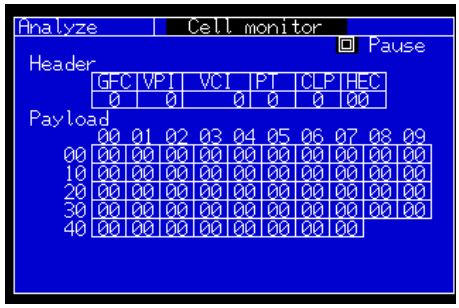
1570-60

Receive cells can be monitored by installing the MP0123A ATM unit.
The 53 byte cell data header can be displayed as either hexadecimal or decimal; the payload is displayed in hexadecimal.

Complete Monitoring Functions

Linking the World

(4) Cell Monitoring



- With MP0123A ATM Unit installed

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1570-61

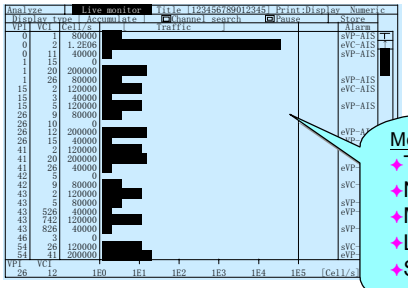
By installing the MP0123A ATM unit, 1023 channels of an in-service circuit can be auto-detected and the conditions displayed as a graph. The contents are cell traffic, UPC non-conforming cells, misinserted cells, and SECB. The circuit usage conditions can be obtained easily in this manner.

Complete Monitoring Functions

Linking the World

(5) Live Monitoring

- Multi-channel monitoring (1023 ch)



Any traffic monitoring channel

Measurement type
- Traffic
- Non-conforming
- Mis-inserted cell
- Lost cell
- SECB

Units
- Cell/s
- bit/s
- %

Channel No.
Max. 1023

- With MP0123A ATM Unit installed

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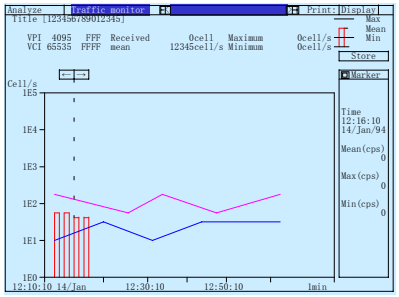
1570-62

The long-term changes in an in-service channel can be displayed by installing the MP0123A ATM Unit, making it simple to monitor the conditions of a specific channel.

Complete Monitoring Functions

(6) Traffic monitoring

- Long-term monitoring of any channel



✦ With MP0123A ATM Unit installed

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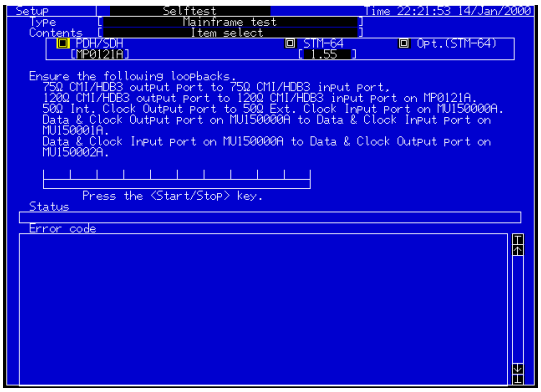
1570-63

The MP1570A has a self-test function for checking that it is operating correctly.
If there is no fault, PASS is displayed on the screen after the test is completed.
If a fault is found by the self test, FAIL is displayed and an error code is displayed at the bottom of the screen.
The details of each error code are explained in the appendix of the operation manual.

Self Test

– Improved measurement reliability



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1570-64

Anritsu

Specifications are subject to change without notice.

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