MT9080 Series
ACCESS Master-001
IP Network Connectivity
Check Function
Operation Manual

First Edition

- **Read this manual before using the equipment.**
- **To ensure that the equipment is used safely, read the "For Safety" in the MT9080 Series ACCESS Master Operation Manual first.**
- **Keep this manual with the equipment.**

ANRITSU CORPORATION

Document No.: M-W2546AE-1.0

Safety Symbols

To prevent the risk of personal injury or loss related to equipment malfunction, Anritsu Corporation uses the following safety symbols to indicate safety-related information. Insure that you clearly understand the meanings of the symbols BEFORE using the equipment. Some or all of the following five symbols may not be used on all Anritsu equipment. In addition, there may be other labels attached to products which are not shown in the diagrams in this manual.

Symbols used in manual

DANGER This indicates a very dangerous procedure that could result in serious injury or death if not performed properly.

WARNING This indicates a hazardous procedure that could result in serious injury or death if not performed properly.

CAUTION This indicates a hazardous procedure or danger that could result in light-to-severe injury, or loss related to equipment malfunction, if proper precautions are not taken.

Safety Symbols Used on Equipment and in Manual

The following safety symbols are used inside or on the equipment near operation locations to provide information about safety items and operation precautions. Insure that you clearly understand the meanings of the symbols and take the necessary precautions BEFORE using the equipment.

This indicates a prohibited operation. The prohibited operation is indicated symbolically in or near the barred circle.

This indicates an obligatory safety precaution. The obligatory operation is indicated symbolically in or near the circle.

This indicates warning or caution. The contents are indicated symbolically in or near the triangle.

This indicates a note. The contents are described in the box.

These indicate that the marked part should be recycled.

MT9080 Series
ACCESS Master-001 IP Network Connectivity Check Function
Operation Manual

26 January 2005 (First Edition)

Equipment Certificate

Anritsu Corporation certifies that this equipment was tested before shipment using calibrated measuring instruments with direct traceability to public testing organizations recognized by national research laboratories including the National Institute of Advanced Industrial Science and Technology, and the National Institute of Information and Communications Technology, and was found to meet the published specifications.

Anritsu Warranty

Anritsu Corporation will repair this equipment free-of-charge if a malfunction occurs within 1 year after shipment due to a manufacturing fault, provided that this warranty is rendered void under any or all of the following conditions.

- The fault is outside the scope of the warranty conditions described in the operation manual.
- The fault is due to mishandling, misuse, or unauthorized modification or repair of the equipment by the customer.
- The fault is due to severe usage clearly exceeding normal usage.
- The fault is due to improper or insufficient maintenance by the customer.
- The fault is due to natural disaster including fire, flooding, earthquake, etc.
- The fault is due to use of non-specified peripheral equipment, peripheral parts, consumables, etc.
- The fault is due to use of a non-specified power supply or in a non-specified installation location.

In addition, this warranty is valid only for the original equipment purchaser. It is not transferable if the equipment is resold.

Anritsu Corporation will not accept liability for equipment faults due to unforeseen and unusual circumstances, nor for faults due to mishandling by the customer.

Anritsu Corporation Contact

In the event that this equipment malfunctions, contact an Anritsu Service and Sales office. Contact information can be found on the last page of the printed version of this manual, and is available in a separate file on the CD version.

Notes On Export Management

This product and its manuals may require an Export License/Approval by the Government of the product's country of origin for re-export from your country.
Before re-exporting the product or manuals, please contact us to confirm whether they are export-controlled items or not.
When you dispose of export-controlled items, the products/manuals are needed to be broken/shredded so as not to be unlawfully used for military purpose.

Trademark and Registered Trademark

Windows® is a registered trademark of Microsoft Corporation in the United States and/or other countries.
Ethereal is a registered trademark of Ethereal Inc. in the United States and/or other countries.

Disposing of Product

This equipment incorporates a nickel-hydrogen battery.
When the battery no longer holds a charge and can no longer be used, do not discard it, recycle it at shops that support rechargeable battery recycling activities so that precious resources can be preserved.

CE Conformity marking

Anritsu affixes the CE Conformity marking on the following product (s) in accordance with the Council Directive 93/68/EEC to indicate that they conform to the EMC and LVD directive of the European Union (EU).

CE marking

CE

1. Product Model

Model: MT9080A/B/C/D/E/F ACCESS Master

2. Applied Directive

EMC: Council Directive 89/336/EEC
LVD: Council Directive 73/23/EEC

3. Applied Standards

- EMC: Emission: EN61326: 1997 / A2: 2001 (Class A)
  Immunity: EN61326: 1997 / A2: 2001 (Annex A)

	Performance Criteria*
IEC 61000-4-2 (ESD)	B
IEC 61000-4-3 (EMF)	A
IEC 61000-4-4 (Burst)	B
IEC 61000-4-5 (Surge)	B
IEC 61000-4-6 (CRF)	A
IEC 61000-4-11 (V dip/short)	B

*: Performance Criteria
A: During testing normal performance within the specification limits
B: During testing, temporary degradation, or loss of function or performance which is self-recovering

Harmonic current emissions:
EN61000-3-2: 2000 (Class A equipment)
: No limits apply for this equipment with an active input power under 75 W.

- LVD: EN61010-1: 2001 (Pollution Degree 2)

C-tick Conformity marking

Anritsu affixes the C-tick marking on the following product (s) in accordance with the regulation to indicate that they conform to the EMC framework of Australia/New Zealand.

C-tick marking

1. Product Model

Model: MT9080A/B/C/D/E/F ACCESS Master

2. Applied Standards

EMC: Emission:

AS/NZS 2064.1 / 2 (ISM, Group 1, Class A equipment)

About This Manual

The operation manuals for the MT9080 Series ACCESS Master (hereafter, also referred to as MT9080 Series or this equipment) are comprised of the operation manual for the MT9080 Series ACCESS Master main frame and that for the IP network connectivity check function. This operation manual describes the operations for the IP network connectivity check function of the MT9080 Series. To understand characteristic functions of the MT9080 Series IP network connectivity check function, thoroughly read Section 1 "Overview."

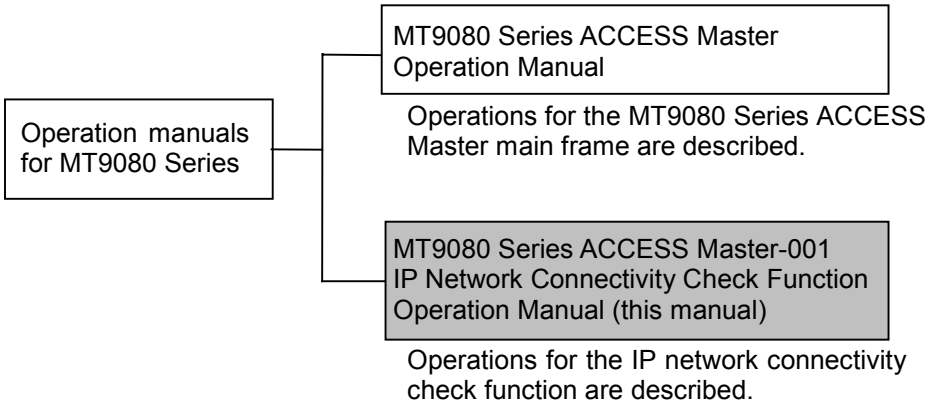


Table of Contents

IV.

Section 1 Overview

This section describes an overview of the MT9080 Series ACCESS Master. It describes the characteristics of the MT9080 Series and the basic operation flow.

The items displayed in the [ ] in this section indicate panel keys.

1.1 Functions of IP Network Connectivity Check Function Option

The MT9080 Series is a measuring instrument that is equipped with the functions required to perform diagnosis of optical fiber faults on optical fiber lines, specifically FTTH lines. In addition to the optical fiber test, it is also possible to test the connection with the IP network by installing the IP network connectivity check function option to the MT9080 Series.

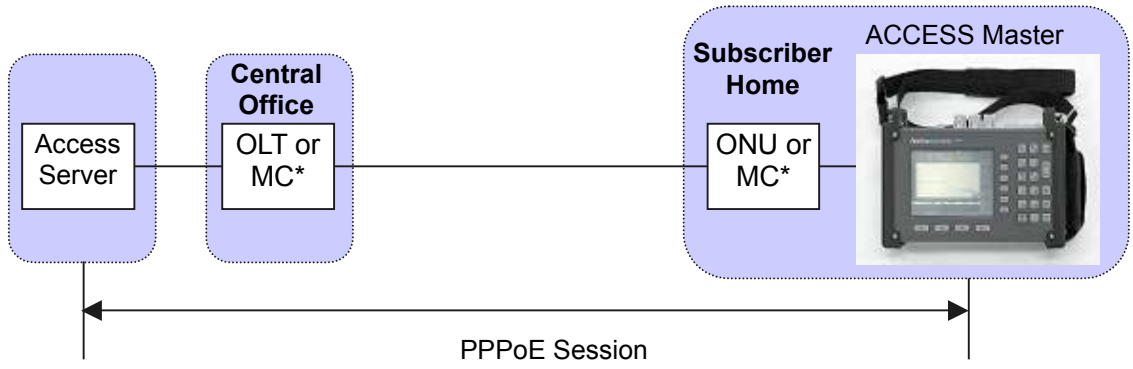
Table 1.1-1 Functions of IP Network Connectivity Check Function Option

	Function	Features	Usage
<1>	Connectivity Check	Checks the connectivity to the IP network via PPPoE or DHCP.	Checking PPPoE user authentication and acquisition of the IP addresses by DHCP
<2>	Connection Test	Executes Ping and/or trace route tests after connection to the IP network is established using the Connectivity Check function.	Testing the connection by Ping, and checking the route through Trace Route
<3>	Download Throughput Measurement	Measures the throughput at the time when downloading a file via HTTP after connection to the IP network is established using the connectivity check function.	Evaluating the download throughput speed
<4>	Throughput Measurement	Connects two MT9080 Series units via the network to measure the bi-directional throughput for interval between them.	Evaluating/checking the line band
<5>	Counter Measurement	Measures the number of packets, bytes, and errors that the MT9080 Series receives.	Examining the traffic on the line

<1> Connectivity Check

Checks the connectivity to the IP network via PPPoE or DHCP.

For PPPoE, the result is "OK" if the PPPoE session has been established and then the IP address was obtained by PPP.



*: MC: Media Converter

Fig. 1.1-1 Configuration for PPPoE

For DHCP, the result is "OK" if the IP has been obtained from the DHCP server by the DHCP configuration.

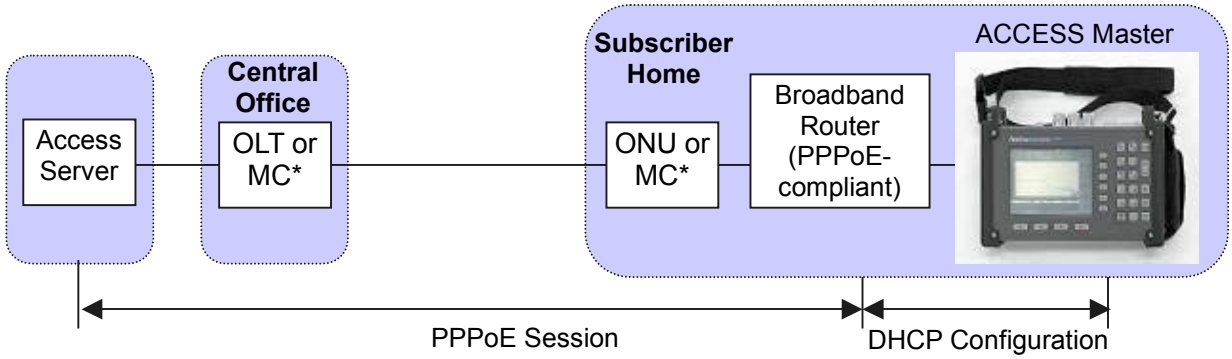


Fig. 1.1-2 Configuration for DHCP

Note:

This configuration is applicable if the broadband router supports PPPoE.

<2> Connection Test

Ping and/or trace route tests are executed on the specified target while the MT9080 Series is connected to the IP network by Connectivity Check.

(1) The Ping test checks whether the target is connected to the network. In addition, the Ping responsiveness (response count and time) can be checked since Ping can be executed specified times on the target.

(2) The trace route test lists the number of hops, i.e., routers, which have been passed before the target, or the response time beginning at the router.

<3> Download Throughput Measurement (DL throughput measurement)

The download throughput is calculated from the download time and file size when downloading the specified file from the specified WWW server (HTTP server) while the MT9080 Series is connected to the IP network by Connectivity Check.

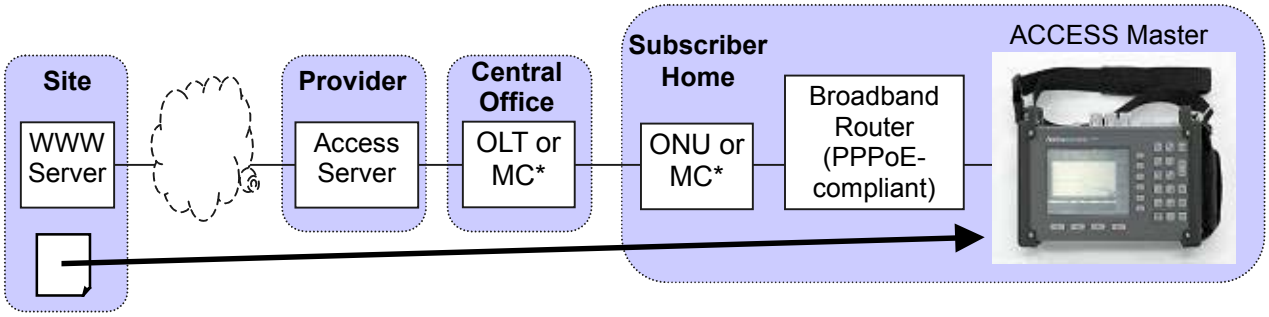


Fig. 1.1-3 Configuration of Download Throughput Measurement

<4> Throughput Measurement

The bi-directional throughput for the interval between two MT9080 Series units are measured while these two units are connected each other and connected to the IP network by Connectivity Check.

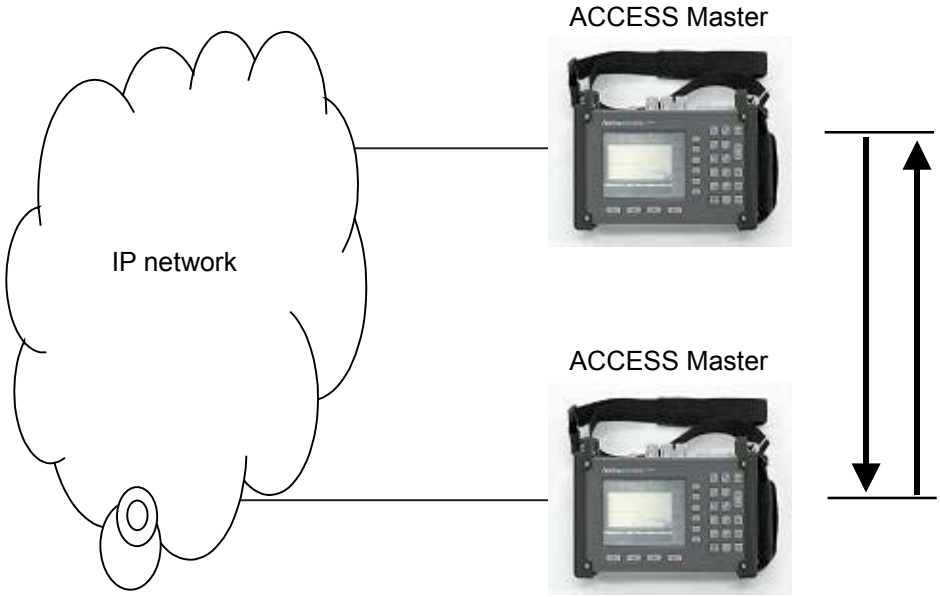


Fig. 1.1-4 Configuration of Throughput Measurement

<5> Counter Measurement

The number of packets and data that the MT9080 Series unit receives are counted. The count value per second and accumulated count value are updated in every second and displayed.

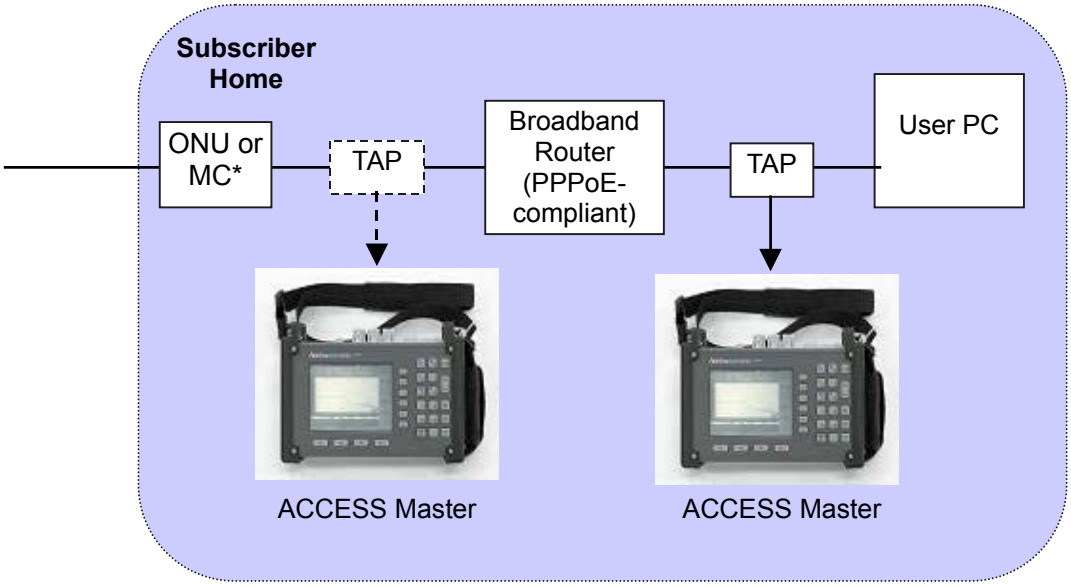


Fig. 1.1-5 Configuration of Counter Measurement

Note:

TAP is equipment used to output monitor signals.

1.2 Quick Operations Guide

1.2.1 Measurement interface

The measurement Ethernet interface for the IP network connectivity check function is located in the position shown in the figure below:

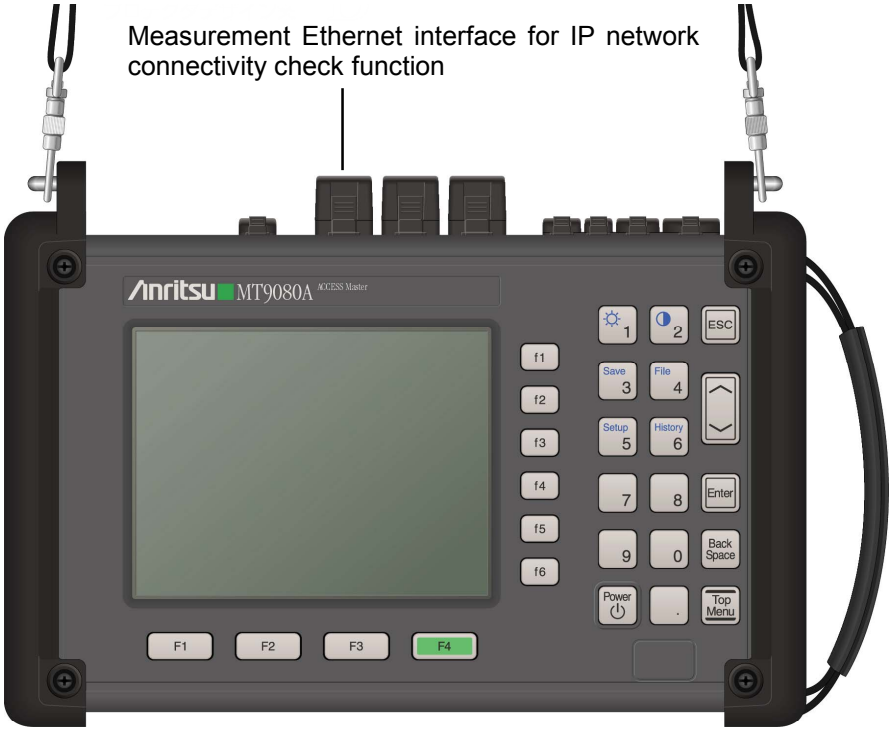


Fig. 1.2.1-1 Measurement interface connector position (front view)

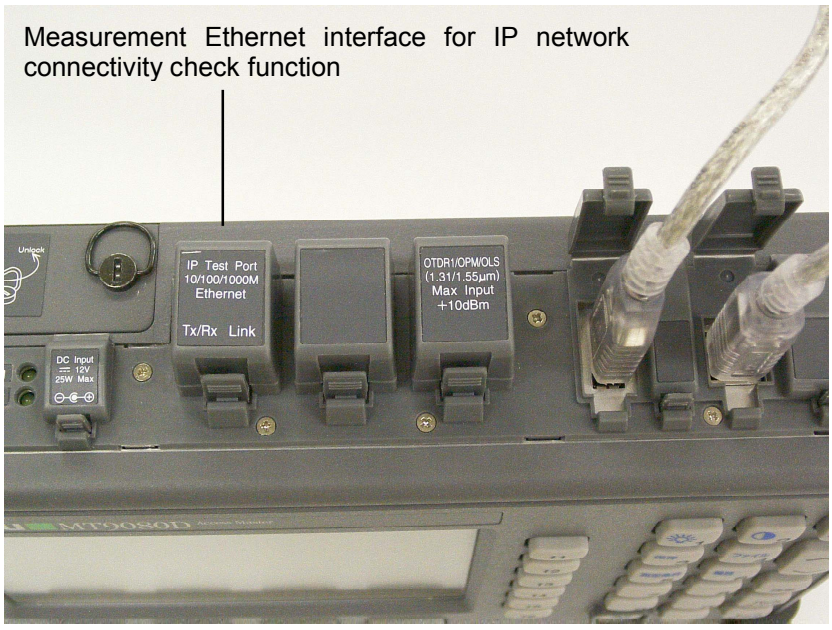


Fig. 1.2.1-2 Measurement interface connector position (top view)

Connect the measurement Ethernet interface for the IP network connectivity check function on the MT9080 Series with an ONU, media converter, or broadband access router using an Ethernet cable.

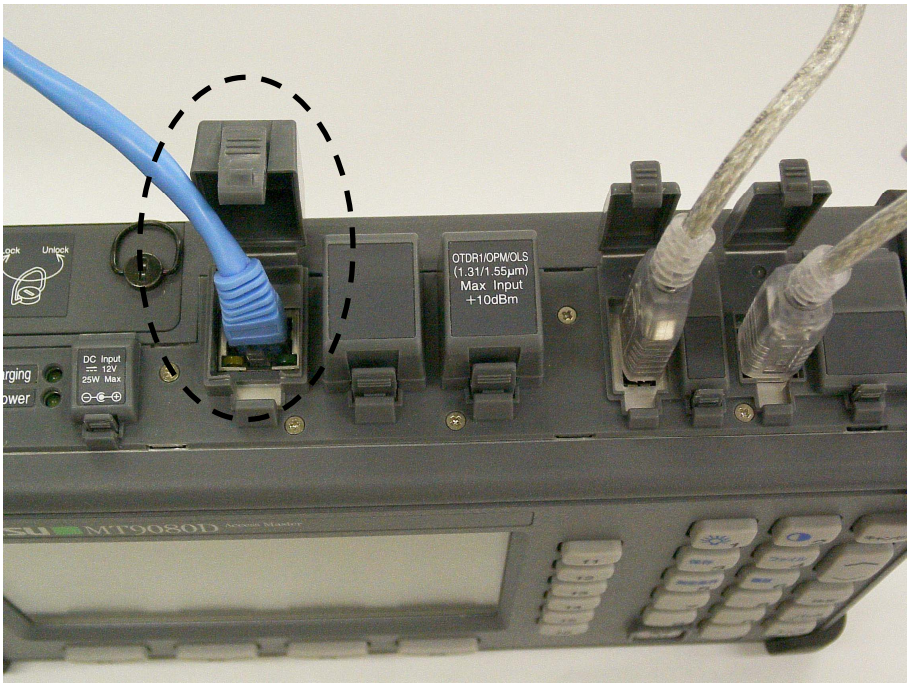


Fig. 1.2.1-3 Connecting Ethernet cross cable

Note:

An Ethernet cable of CAT5E or greater is required when operating the MT9080 Series with the link speed of 1000M (available when the Gigabit Ethernet Upgrade option is installed). Both a straight cable and cross cable can be used for connection regardless of whether the connection destination is MDI (network card, etc.) or MDI-X (hub, etc.), since the MT9080 Series is equipped with the AutoMDI/MDI-X function.

1.2.2 Top Menu and measurement function selection

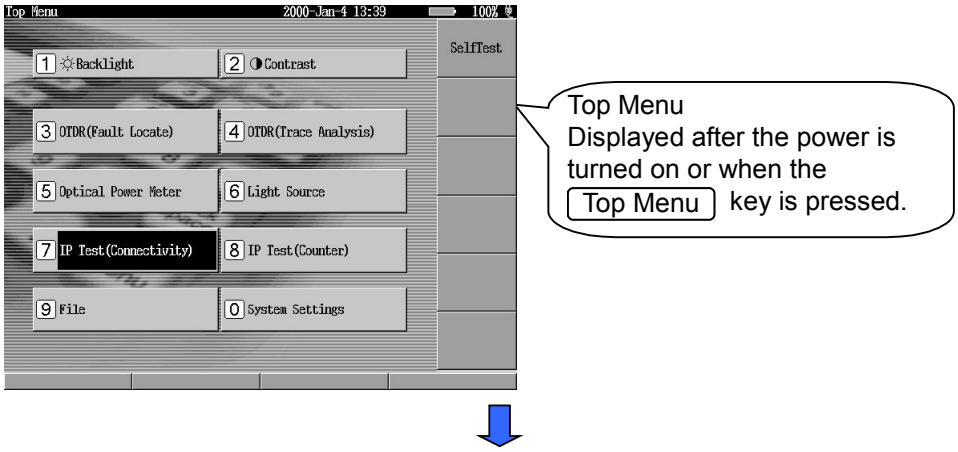


Table 1.2.2-1 Top Menu and measurement function selection keys

Objective	Function	Key operations		Remarks
Check connection of the PPPoE or DHCP	IP Test (Connectivity)	7	Or press the ∧ and ∨ keys to select the item and press the Enter key for finalization.	
Ping or trace route test	IP Test (Connectivity)	7		
Download throughput measurement	IP Test (Connectivity)	7		
Throughput measurement	IP Test (Connectivity)	7		
Counter measurement	IP Test (Counter)	8		
Set up the date/time or power saving	System Settings	0		

Connectivity Check

Refer to Section 1.2.4 “Checking whether connection can be established to network (Connectivity Check).”

Connection Test

Refer to Section 1.2.5 “Checking whether network access is enabled with obtained IP address (Connection Test).”

Download Throughput Measurement

Refer to Section 1.2.6 “Measuring download throughput (Download Throughput Measurement).”

Throughput Measurement

Refer to Section 1.2.7 “Measuring bi-directional throughput for interval between two MT9080 Series units (Throughput Measurement).”

Counter Measurement

Refer to Section 1.2.8 “Counting received packets (Counter Measurement).”

1.2.3 Screen transition

The IP network connectivity check function screens are switched as follows:

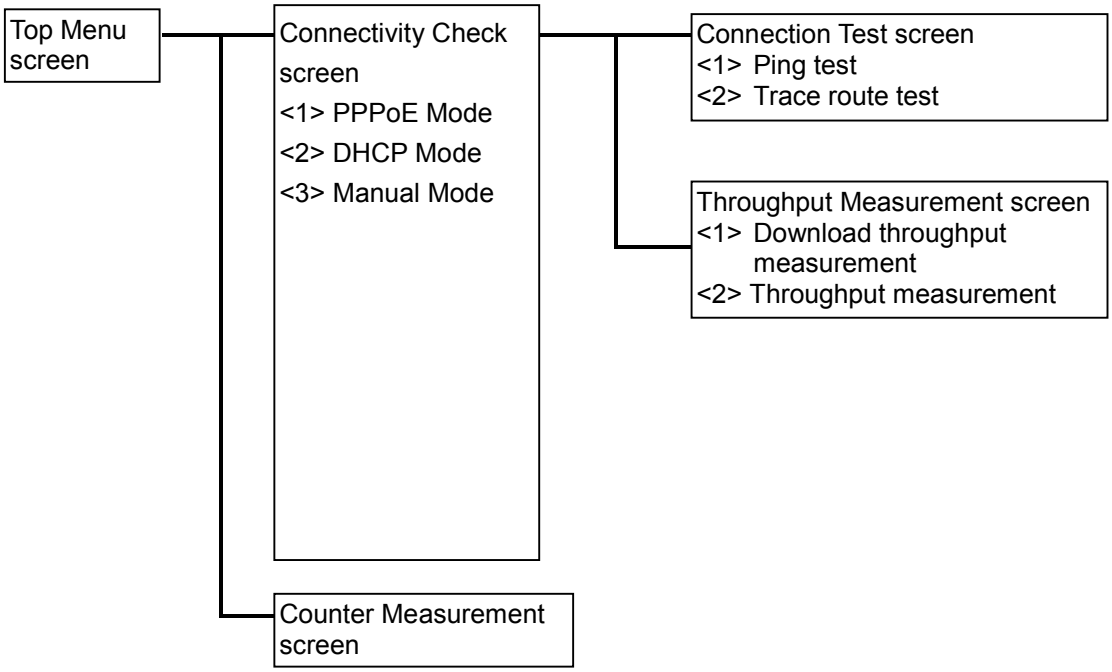


Fig. 1.2.3-1 Screen system diagram

1.2.4 Checking whether connection can be established to network (Connectivity Check)

Whether the connection to the IP network can be established from a subscriber home can be checked by using Connectivity Check.
The Connectivity Check connection modes include the PPPoE, DHCP, and Manual modes.

(1) PPPoE Mode
Used when the MT9080 Series has been connected directly to an ONU, media converter (MC), or a non PPPoE-compliant broadband router, including the case where PPPoE is disabled. The IP address is obtained by establishing a PPPoE session for the access server specified from the MT9080 Series.

(2) DHCP Mode
Used when the MT9080 Series has been connected to a PPPoE-compliant broadband router, (when the PPPoE function is enabled). The MT9080 Series requests the DHCP configuration, and obtains a private IP address from the broadband router.
This mode is also available for an Intranet that uses DHCP.

(3) Manual Mode
Used to specify the IP address manually for connecting to the IP network. Ping is sent to the gateway only when the default gateway has been set up. If no response returns, the connection is judged to fail.

Preparation

1. Turn on the MT9080 Series. (If it is already on, press the [Top Menu] key.)
2. Select "IP Test (Connectivity)" from the Top Menu. (Press the [7] key.) The Connectivity Check screen is displayed.
3. Connect an Ethernet cable to the measurement Ethernet interface of the MT9080 Series. Then, connect the other side of the cable to the network equipment (ONU, MC, or broadband router).

Operating Procedure

<Recalling the setting data from a setting file>

1. If you have a setting file for Connectivity Check, the setting data can be recalled from the setting file. Press [F1] (Menu) to display the short-cut menu. Using the [∧] [∨] keys or the numeric key, select "Recall File", and press the [Enter] key. The Recall screen is displayed. (The Recall screen can also be displayed by pressing the [4] key on the Connectivity Check screen.)
   When "Settings File" is currently displayed on the [f2] key, press the [f2] key to display the setting files on the screen.
   Using the [∧] [∨] keys, select a Connectivity Check setting file (extension: .CFCN.txt), and press the [Enter] key. The setting parameters on the screen change to the setting data in the recalled file.

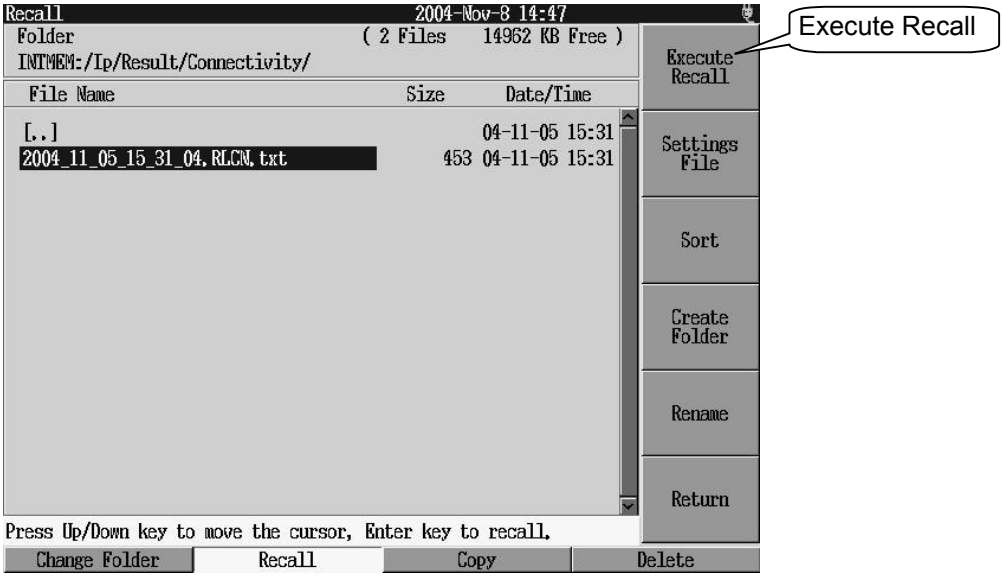


Fig. 1.2.4-1 Recall screen

<2> Before starting the measurement, check that the MT9080 Series has been linked to the destination equipment. Check the link speed and state. Check that the link is in the "Link UP" state. If not, retry to set the proper link speed. Using the [∧] [∨] keys, select "Link Speed", and press the [Enter] key to make the settings. After setting completion, check that the link is in the "Link UP" state. If the link state is not "Link UP" yet, there may be a problem about the connected Ethernet cable or the destination equipment.

3. Press [f1] (Connect) to start connection. After connection is completed, the connectivity check result (OK/NG) is displayed in the Connectivity display area.

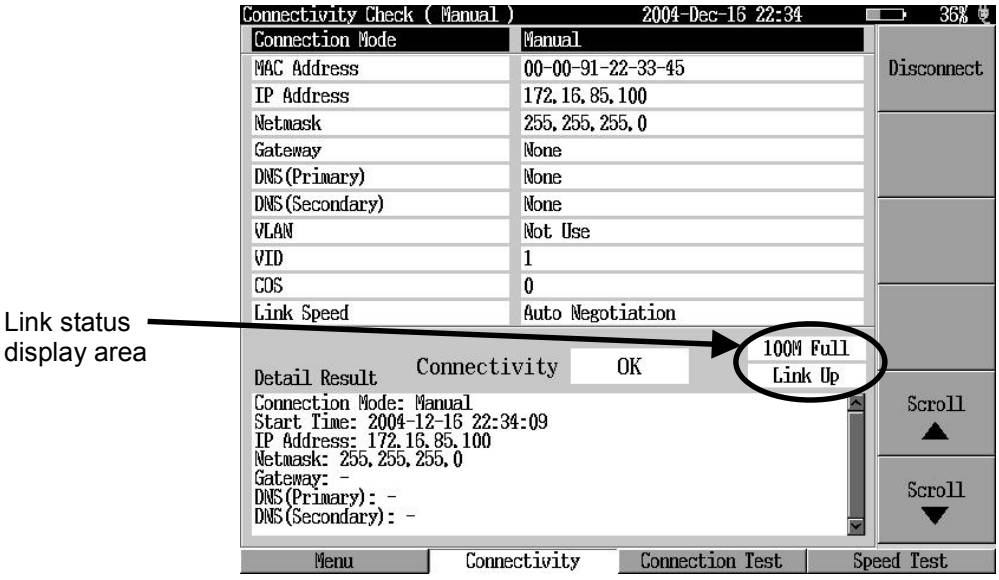


Fig. 1.2.4-2 Connectivity screen

Test Results	Judgment Condition
OK	1) In PPPoE mode Judged as "OK" when the authentication to the access server is accepted and the IP address is obtained. 2) In DHCP mode: Judged as "OK" when the IP address is obtained from the DHCP server. 3) In Manual mode: • When the default gateway is set, the connection result is judged as "OK" if a response is returned from the default gateway against the Ping that was executed to the gateway. • When the default gateway is not set, the connection result is judged as "OK" without executing anything.
NG	Judged as "NG" if the connection result is not judged "OK" in each connection mode. When the result is NG, "Cause Presumption" is displayed on the [f3] key. In this event, pressing [f3] (Cause Presumption) displays the Cause Presumption screen, in which the presumed causes can be checked.

<Setting the setting parameters to execute the connection>

1. Select the connection mode from among PPPoE, DHCP, and Manual. See the table below for checking which connection mode should be selected:

Table 1.2.4-1 Connection mode selection

Line service	MT9080 Series connection type	Connection mode		
		PPPoE	DHCP	Manual
B FLET'S	Direct connection to an ONU or media converter	√		
	Connection to a PPPoE-compliant broadband router (when the PPPoE connection is enabled)		√	√
	Connection to a non PPPoE-compliant broadband router (also when the PPPoE function is disabled although the router is compliant with PPPoE)	√		
Intranet, etc.	Connection to the intranet		√	√

Note:

The line service types listed above may be subject to change. The technical knowledge is required when using the Manual Mode.

2. Before starting the measurement, check that the MT9080 Series has been linked to the destination equipment. Check the link speed and state. Check that the link is in the "Link Up" state. If not, retry to set the proper link speed. Using the [∧] [∨] keys, select "Link Speed", and press the [Enter] key to make the settings. After setting completion, check that the link is in the "Link Up" state. If the link state is not "Link Up" yet, there may be a problem about the connected Ethernet cable or the destination equipment.
3. The setting parameters vary depending on the selected connection mode. To edit a setting parameter, use the [∧] [∨] keys to select the item, and press the [Enter] key. After edit, press the [Enter] key to determine the changed contents. See Tables 1.2.4-2 through 1.2.4-4 below for the setting parameters of each connection mode:

Table 1.2.4-2 PPPoE mode setting parameters

Setting parameter	Description	Mandatory
User Name	Used as the user name when PPP authentication is made to the access server.	√
Password	Used as the password when PPP authentication is made to the access server.	√
Authentication	Used to select the PPP authentication method. Note that the method varies depending on the access server. Usually set to "Auto."	
Service Name	Required to establish a PPPoE session. Do not set this parameter unless otherwise specified.	
IP Address	Used to specify the IP address to be used. Usually set to "Auto."	
DNS (Primary)	Used to specify the primary DNS server. Usually set to "Auto."	
DNS (Secondary)	Used to specify the secondary DNS server. Usually set to "Auto."	
Link Speed	Used to specify the physical Ethernet interface speed. Usually set this to "Auto Negotiation."	√

Table 1.2.4-3 DHCP mode setting parameters

Setting parameter	Description
VLAN	Used to select whether to use VLAN.
VID	Used to set the VID value when using VLAN.
COS	Used to specify the COS (priority) when using VLAN.
Link Speed	Used to specify the physical Ethernet interface speed. Usually set to "Auto Negotiation."

Table 1.2.4-4 Manual mode setting parameters

Setting parameter	Description
MAC Address	Required to be set when changing the MAC address. Usually, does not need to be set.
IP Address	Used to set the IP address.
Netmask	Used to set the subnet mask of your segment.
Gateway	Used to set the default gateway of your segment.
DNS (Primary)	Used to set the IP address of the primary DNS.
DNS (Secondary)	Used to set the IP address of the secondary DNS.
VLAN	Used to select whether to use VLAN.
VID	Used to set the VID value when using VLAN.
COS	Used to specify the COS (priority) when using VLAN.
Link Speed	Used to specify the physical Ethernet interface speed. Usually set this to "Auto Negotiation."

4. Press [f1] (Connect) to start connection. After connection is completed, the connectivity check result (OK/NG) is displayed in the Connectivity display area.

<Saving the measured result in a file>

1. After measurement is completed, press [F1] (Menu) to display the short-cut menu. Then, using the [∧] [∨] keys or the numeric key, select "Save", and press the [Enter] key. The Save-Save Result screen is displayed. (The Save-Save Result screen can also be displayed by pressing the [3] key on the Connectivity Check screen.)

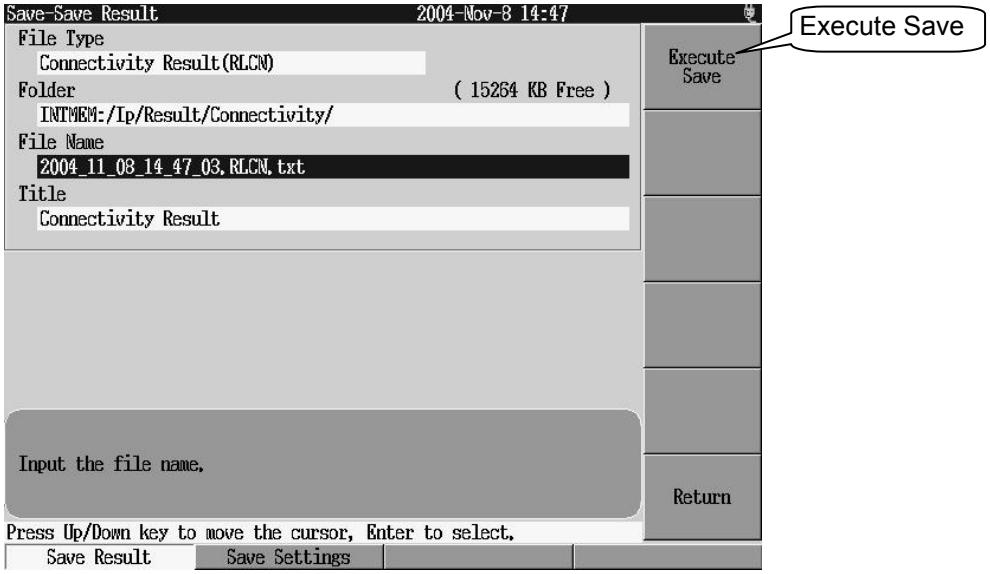


Fig. 1.2.4-3 Save-Save Result screen

Press [F1] (Save Result) on the Save-Save Result screen. Next, set the folder to save the file, file name, and title. Using the [∧] [∨] keys, select a setting area, and press the [Enter] key. A sub screen for setting each setting parameter is displayed.

2. Set the folder.
   Use the [∧], [∨] and [Enter] keys to select the storage media (internal memory or USB memory) in which to save the measured results. Then, press [f1] (Change Folder) for finalization.

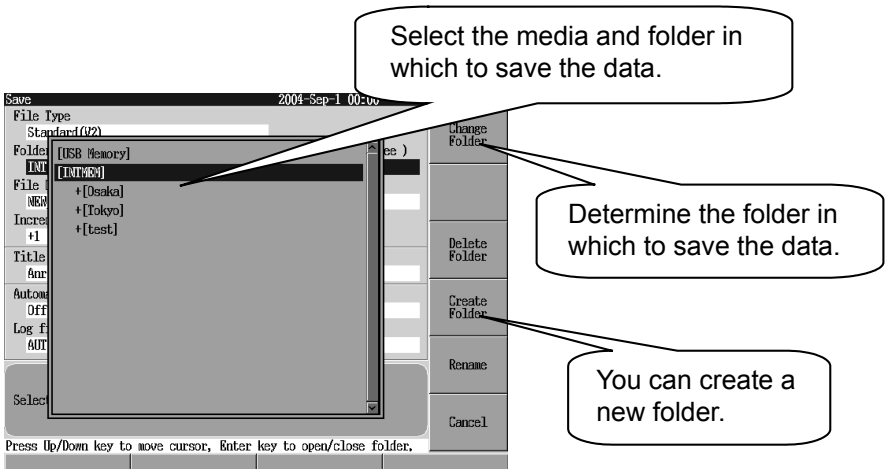


Fig. 1.2.4-4 Folder selection screen

3. Input the file name and title.
   Using the [∧] [∨] and [f1] to [f6] keys, select the desired characters to input.
   The input mode (character type) can be changed by pressing the [F1] and [F2] keys.

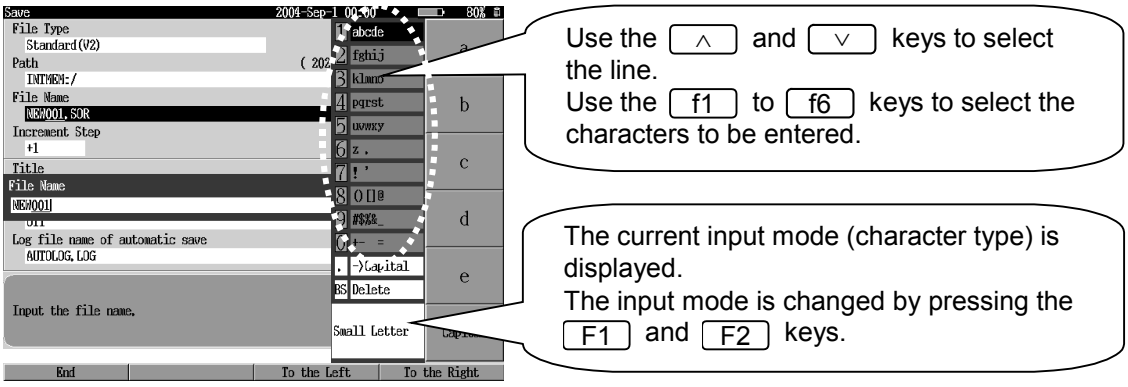


Fig. 1.2.4-5 Input screen

4. Execute Save
   After setting the folder, file name, and title, press [f1] (Execute Save) to save the file. It is saved under the name of xxxx.txt (extension txt). xxxx varies depending on the measurement item. Do not change the xxxx.txt field.

1.2.5 Checking whether network access is enabled with obtained IP address (Connection test)

A Ping or trace route test can be executed when the connection has been established using Connectivity Check.

Note:

To execute a connection test (Ping or trace route), the connection must have been established using Connectivity Check.

Table 1.2.5-1 Usage of connection tests

Function	Usage
Ping test	<1> Checks whether the MT9080 Series is connectable to the network after the IP address has been obtained using Connectivity Check. In this test, ICMP packets are transferred to/from the destination already connected to the network, in order to check whether the MT9080 Series has been able to be connected to the network. <2> Checks whether the destination is in connection to the network. <3> Checks the response times of responses returning from the destination.
Trace route test	<1> Examines the routes through which the packets transmitted by the MT9080 Series have passed before reaching the destination.

Operating Procedure

<Recalling the setting data from a setting file>

1. Check that the connection has been established using Connectivity Check. The connection test function is disabled until the connection establishment is completed.
2. Display the Connection Test screen. Press [F3] (Connection Test) to display the Connection Test screen.
3. If you have a setting file for Connectivity Check, the setting data can be recalled from the setting file. Press [F1] (Menu) to display the short-cut menu. Using the [∧] [∨] keys or the numeric key, select "Recall File", and press the [Enter] key. The Recall screen is displayed. (The Recall screen can also be displayed by pressing the [4] key on the Connection Test screen.)
   Using the [∧] [∨] keys, select a Connectivity Check setting file (extension: .CEPT.txt), and press the [Enter] key. The setting parameters on the screen change to the setting data in the recalled file.
4. Select whether the Ping or trace route test is to be executed. Pressing [f4] (Ping / Trace Route) toggles the screen display between the Ping Test screen and Trace Route Test screen.

5. Press [f1] (Start) to start the selected test. After the test is completed, the test result (OK/NG) is displayed in the Result display area.

6. Test result - Ping

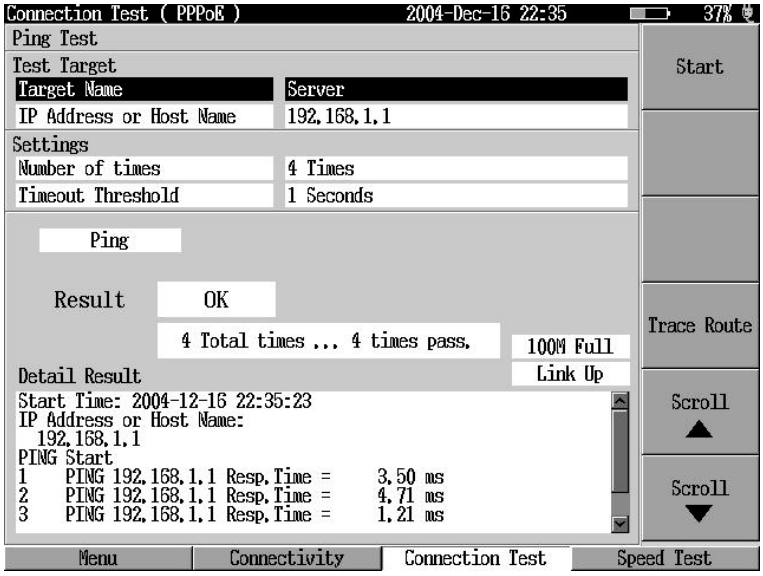


Fig. 1.2.5-1 Ping Test screen (test result)

The Ping Test screen displays either of the following test results as shown in Table 1.2.5-2 below:

Table 1.2.5-2 Test results (Ping test)

Result	Criterion
OK	The test executes Ping the preset number of times, and judges that the result is OK if all the responses have returned within the timeout threshold.
NG	The test executes Ping the preset number of times, and judges that the result is NG if the response has not returned even once, or has not returned within the timeout threshold. When the result is NG, "Cause Presumption" is displayed on the [f3] key. In this event, pressing [f3] (Cause Presumption) displays the Cause Presumption screen, in which the presumed causes can be checked.

Note:

If the timeout threshold is set to a small value in a network route where the packets pass through multiple hops, or routers, before reaching the test destination, the success rate of Ping may be lowered. In this case, set the timeout threshold to a sufficiently large value.

The Ping TTL setting is the fixed value 255.

7. Test result - Trace Route

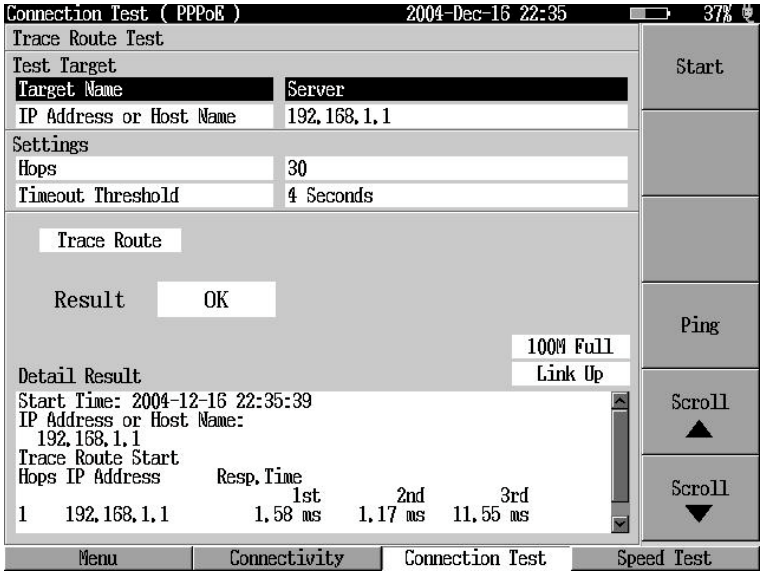


Fig. 1.2.5-2 Trace Route Test screen (test result)

The Trace Route Test displays either of the following test results as shown in Table 1.2.5-3 below:

Table 1.2.5-3 Test results (Trace route test)

Result	Criterion
OK	The test judges that the result is OK if the packets have been able to reach the destination within the specified number of hops, i.e., the number of routers existing on the path to the destination.
NG	The test judges that the result is NG if the packets have not been able to reach the destination within the specified number of hops, i.e., the number of routers existing on the path to the destination. The test judges that a packet has not reached the destination if no response has returned from there within the set timeout threshold. When the result is NG, "Cause Presumption" is displayed on the f3 key. In this event, pressing f3 (Cause Presumption) displays the Cause Presumption screen, in which the presumed causes can be checked.

Note:

If the timeout threshold is set to a small time, the packet may not reach the destination even when it may have transmitted the response, and the result may be NG. In this case, set the timeout threshold to a sufficiently large value.

<Setting the setting parameters to execute the connection>

1. Check that the connection has been established using Connectivity Check. The connection test function is disabled until the connection establishment is completed.
2. To edit a setting parameter, use the [∧] [∨] keys to select the item, and press the [Enter] key. After edit, press the [Enter] key to determine the changed contents. See Tables 1.2.5-4 and 1.2.5-5 below for the setting parameters of each test:

Table 1.2.5-4 Connection Test - Ping Test setting parameters

Setting item	Description
Test Target	
• Target Name	Sets the name of the test target name.
• IP Address or Host Name	Specifies the IP address or host name that identifies the target of the Ping Test.
Settings	
• Number of Times	Specifies the number of times of executing the Ping Test. Pressing [F1] (Start) starts the test. After Ping has been executed the specified number of times, the test ends automatically. The setting range is 1 to 999 (times).
• Timeout Threshold	Specifies the timeout threshold based on which each of the Ping Tests judges that no response has returned from the destination. The setting range is 1 to 60 (seconds).

Table 1.2.5-5 Connection Test - Trace Route Test setting parameters

Setting item	Description
Test Target	
• Target Name	Sets the name of the test target name.
• IP Address or Host Name	Specifies the IP address or host name that identifies the target of the trace route test.
Settings	
• Timeout Threshold	Specifies the timeout threshold based on which the reach test for each hop judges that no response has returned from the destination. The setting range is 2 to 60 (seconds).
• Hops	Specifies the maximum number of hops for which the test is executed.

3. Press [f1] (Start) to start the measurement. After the test is completed, the test result (OK/NG) is displayed in the Result display area.
4. The test result can be saved in a file. For saving the test result, refer to "<Saving the measured result in a file>" in Section 1.2.4.

1.2.6 Measuring download throughput (Download Throughput Measurement)

Download throughput measurement can be performed when the connection has been established using Connectivity Check.

Note:

To execute the download throughput measurement, the connection must have been established using Connectivity Check.

Table 1.2.6-1 Usage of Download Throughput Measurement

Function	Usage
Download Throughput Measurement	<1> Downloads the specified file using HTTP, and checks the normality of the network from whether the download is possible. <2> Because the throughput during download is measured by hardware, the throughput speed can be measured and evaluated regardless of the capability of the CPU at the measuring side. This allows you to define the criterion based on which to judge whether the bandwidth of line is normal or abnormal (the throughput speed varies depending on the CPU performance and load status on the WWW server, though).

Operating Procedure

<Recalling the setting data from a setting file>

1. Check that the connection has been established using Connectivity Check. The download throughput measurement function is disabled until the connection establishment is completed.
2. Display the Download Throughput Measurement screen. Press F4 (Speed Test) and then press the f4 key when "Download" is displayed on the f4 key to display the Download Throughput Measurement screen.
3. If you have a setting file for the download throughput measurement, the setting data can be recalled from the setting file. Press F1 (Menu) to display the short-cut menu. Using the ∧ ∨ keys or the numeric key, select "Recall File", and press the Enter key. The Recall screen is displayed. (The Recall screen can also be displayed by pressing the 4 key on the Download Throughput Measurement screen.)
   When "Settings File" is currently displayed on the f2 key, press the f2 key to display the setting files on the screen.
   Using the ∧ ∨ keys, select a desired download throughput measurement file (extension: .CFDL.txt), and press the Enter key. The setting parameters on the screen change to the setting data in the recalled file.

4. Press [f1] (Start) to start the selected measurement. After the measurement is completed, the measured results (OK/NG and throughput value) are displayed in the Result display area.

Note:

The download throughput measurement can be executed only when "Link Speed" is "Full." This is because the download throughput measurement may not be performed correctly if "Link Speed" is "Half." Set "Link Speed" to "Auto Negotiation" using the Connectivity Check function, and check that the speed of the link with the connection destination is "Full."

5. Measured results - Download throughput measurement

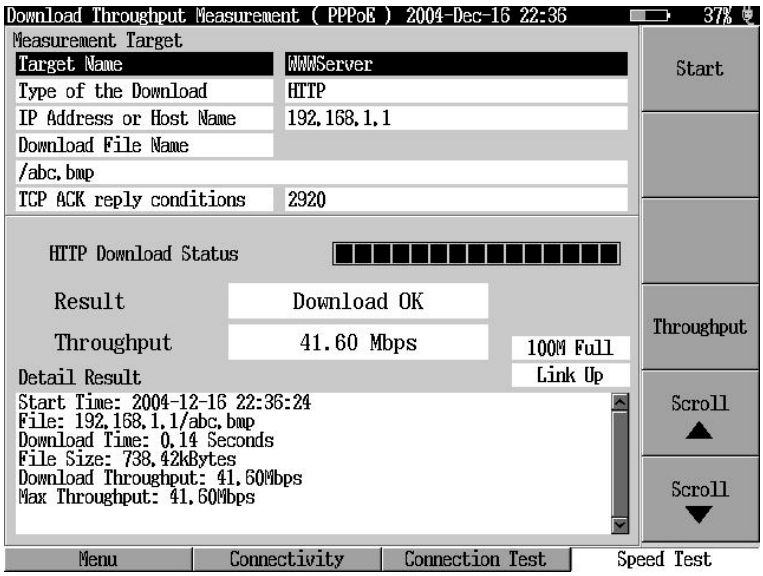


Fig. 1.2.6-1 Download Throughput Measurement screen - measured results

The Download Throughput Measurement screen displays either of the following measured results as shown in Table 1.2.6-2:

Table 1.2.6-2 Measured results

Result	Criterion
Download OK	The test judges that the result is OK if the specified file was completely downloaded.
Download NG	The test judges that the result is NG if download of the specified file resulted in failure. When the result is NG, "Cause Presumption" is displayed on the [f3] key. In this event, pressing [f3] (Cause Presumption) displays the Cause Presumption screen, in which the presumed causes can be checked.

Note:

Because the download throughput measurement is processed by hardware, it does not request retransmission even if a packet loss occurs.

<Setting the setting parameters to execute the connection>

1. Check that the connection has been established using Connectivity Check. The download throughput measurement function is disabled until the connection establishment is completed.
2. To edit a setting parameter, use the [∧] [∨] keys to select the item, and press the [Enter] key. After edit, press the [Enter] key to determine the changed contents. See Table 1.2.6-3 below for the setting parameters:

Table 1.2.6-3 Setting parameters for Download Throughput Measurement

Setting item	Description
Measurement Target	
• Target Name	Sets the name of the measurement target.
• Type of the Download	Indicates that HTTP is used for download. Uneditable.
• IP Address or Host Name	Specifies the IP address or host name that identifies the target of download throughput measurement.
• Download File Name	Sets the name of the file to download. Must include the directory (folder name).
• TCP ACK reply conditions	Sets the TCP ACK packet reply condition.

3. Press [f1] (Start) to start the measurement. After the measurement is completed, the measured results (OK/NG and throughput value) are displayed in the Result display area.
4. The measured result can be saved in a file. For saving the test result, refer to "<Saving the measured result in a file>" in Section 1.2.4.

1.2.7 Measuring bi-directional throughput for interval between two MT9080 Series units (Throughput Measurement)

Throughput measurement for interval between two MT9080 Series units can be performed when the connection has been established using Connectivity Check.

The bi-directional throughput measurement transmits a packet stream to the opposite side, and obtains the maximum transmission rate that was implemented when the packet reached the opposite side under the specified conditions. The measurement is repeatedly performed several times to obtain the maximum transmission rate.

Note:

To execute the throughput measurement, the connection must have been established using Connectivity Check.

Table 1.2.7-1 Usage of Throughput Measurement

Function	Usage
Throughput measurement	<1> Measures the bi-directional throughput for interval between two MT9080 Series units.

CAUTION

For the throughput measurement, a test packet for the throughput measurement must be transmitted to the network to which the MT9080 Series is connected at the full wire rate. When this measurement is performed for the operating line, therefore, the communication band of the connected network may be affected, resulting in a network failure. Do not perform the throughput measurement for the operating line.

Operating Procedure

<Recalling the setting data from a setting file>

1. Check that the connection has been established using Connectivity Check. The bi-directional throughput measurement function is disabled until the connection establishment is completed.
2. Display the Download Throughput Measurement screen. Press F4 (Speed Test) and then press the f4 key when "Throughput" is displayed on the f4 key to display the Throughput Measurement screen.
3. If you have a setting file for bi-directional throughput measurement, the setting data can be recalled from the setting file. Press F1 (Menu) to display the short-cut menu. Using the ∧ ∨ keys or the numeric key, select "Recall File", and press the Enter key. The Recall screen is displayed. (The Recall screen can also be displayed by pressing the 4 key on the Throughput Measurement screen.)
   When "Settings File" is currently displayed on the f2 key, press the f2 key to display the setting files on the screen.
   Using the ∧ ∨ keys or the numeric key, select a desired bi-directional throughput measurement file (extension xxx), and press the Enter key. The setting parameters on the screen change to the setting data in the recalled file.
4. Set the mode of the opposite side to Passive and then press f1 (Start).
5. Check that the opposite side has been set to the Passive Mode. Then, press f1 (Start) to start the measurement. After the measurement is completed, the measured results (OK/NG and throughput value) are displayed in the Result display area.

6. Measured results - Throughput measurement

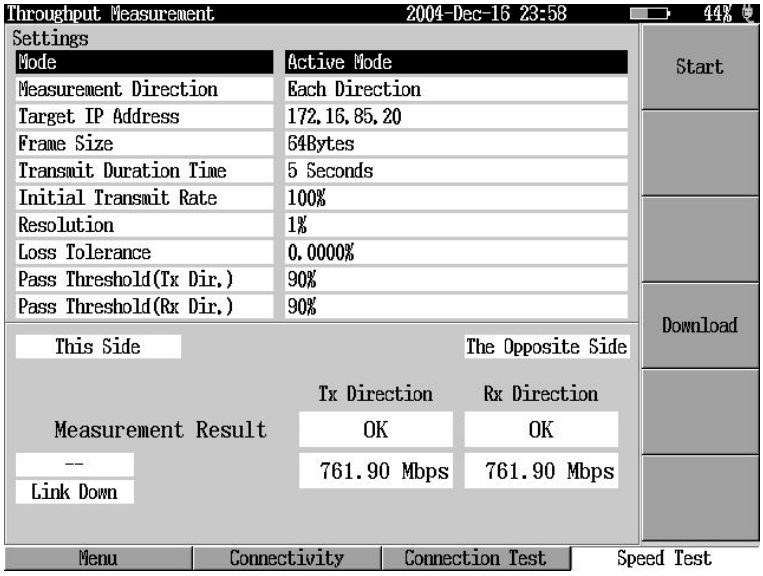


Fig. 1.2.7-1 Throughput Measurement screen - measured results

The Throughput Measurement screen displays either of the following measured results as shown in Table 1.2.7-2:

Table 1.2.7-2 Measured results

Result	Criterion
OK	The test judges that the result is OK when the measured throughput value is equal to or greater than the pass threshold set for each direction (Tx Dir./Rx Dir).
NG	The test judges that the result is NG when the measured throughput value is less than the pass threshold set for each direction (Tx Dir./Rx Dir) or the throughput cannot be determined. When the result is NG, "Cause Presumption" is displayed on the f3 key. In this event, pressing f3 (Cause Presumption) displays the Cause Presumption screen, in which the presumed causes can be checked.

Note:

Throughput measurement is used to measure the throughput between the two MT9080 Series ACCESS Master units connected each other via the network. Before starting the measurement, one ACCESS Master unit must be set in the Active Mode and the other in the Passive Mode. If both are in the same mode, the measurement will not work.

In addition, these ACCESS Master units must be synchronized with each other for this measurement.

<Setting the setting parameters to execute the connection>

1. Check that the connection has been established using Connectivity Check. The Throughput measurement function is disabled until the connection establishment is completed.
2. To edit a setting parameter, use the [∧] [∨] keys to select the item, and press the [Enter] key. After edit, press the [Enter] key to determine the changed contents. See Table 1.2.7-3 below for the setting parameters:

Table 1.2.7-3 Setting parameters for Throughput Measurement

Setting item	Description
Mode	Selects either of the following mode: <1> Active mode: Allows you to specify measurement parameters. <2> Passive mode: Awaits measurement control from the Active Mode side.
Measurement Direction	Selects one of the following measurement directions: <1> Each Direction: Executes bi-directional measurement. <2> Tx Direction: Measures the throughput in the transmitting direction from the Active Mode side. <3> Rx Direction: Measures the throughput in the receiving direction to the Active Mode side. <4> Transmitting the Stream: The Active Mode side only transmits a packet stream without performing measurement.
Target IP Address	Specifies the IP address of the destination that is used for the throughput measurement.
Frame Size	Specifies one of the following frame sizes for the throughput measurement: 64, 128, 256, 512, 768, 1024, 1280, 1518, 9018 (Note), and 9618 (Note) bytes.
Transmit Duration Time [seconds]	Specifies one of the following for the transmission time per stream transmission: 5, 10, 15, 20, 30, 60, 180, and 300 seconds
Initial Transmit Rate [%]	Sets the transmission rate for the initial stream transmission. Influences the time during which the throughput is focused. 1% to 100% of the IF bandwidth, in steps of 1%.
Resolution [%]	Sets the resolution at which the throughput is focused. Select 5% or 1% of the IF bandwidth.
Loss Tolerance [%]	When the transmitted packet stream is received, packet loss is checked. This setting specifies the maximum packet tolerance up to which packets are lost in regard to the number of transmitted packets. Select one of the following: 0, 0.01, 0.1, 1, 5, or 10% of the IF bandwidth.
Pass Threshold (Tx Dir.) [%]	Sets the threshold by which a judgment is made for whether the transmitting direction throughput value obtained by the measurement is OK or NG. 5% to 100% of the IF bandwidth, in steps of 5%.
Pass Threshold (Rx Dir.) [%]	Sets the threshold by which a judgment is made for whether the receiving direction throughput value obtained by the measurement is OK or NG. 5% to 100% of the IF bandwidth, in steps of 5%.

Note:

The frame size 9018 and 9618 can be selected only when the Gigabit Ethernet Upgrade option is installed and the link speed is 1000M.

3. Set the mode of the opposite side to Passive and then press f1 (Start).
4. Check that the opposite side has been set to the Passive Mode. Then, press f1 (Start) to start the measurement. After the measurement is completed, the measured results (OK/NG and throughput value) are displayed in the Result display area.
5. The measured result can be saved in a file. For saving the test result, refer to "<Saving the measured result in a file>" in Section 1.2.4.

1.2.8 Counting received packets (Counter Measurement)

This function executes the counter measurement for the packets received.

Table 1.2.8-1 Usage of Counter Measurement

Function	Usage
Counter Measurement	<1> Checks whether an error packet is transferred. <2> Examines the number of currently transferred packets.

Preparation

1. Select "IP Test (Counter)" from the Top Menu. (Press the 8 key.) The Counter Measurement screen is displayed.
2. Connect the MT9080 Series measurement Ethernet interface to the desired line to measure.

Operating Procedure

<Recalling the setting data from a setting file>

1. If you have a setting file for Counter measurement, the setting data can be recalled from the setting file. Press F1 (Menu) to display the short-cut menu. Using the ∧ ∨ keys or the numeric key, select "Recall File", and press the Enter key. The Recall screen is displayed. (The Recall screen can also be displayed by pressing the 4 key on the Counter Measurement screen.)
   When "Settings File" is currently displayed on the f2 key, press the f2 key to display the setting files on the screen.
   Using the ∧ ∨ keys, select a desired Counter measurement file (extension: .CFCT.txt), and press the Enter key. The setting parameters on the screen change to the setting data in the recalled file.
2. Press f1 (Start) to start the measurement. Before the measurement is executed, a link is established by auto negotiation. When the preset measurement time expires, the measurement ends. While the measurement is in progress, the current value for every second and the accumulated count value are displayed for each count item.

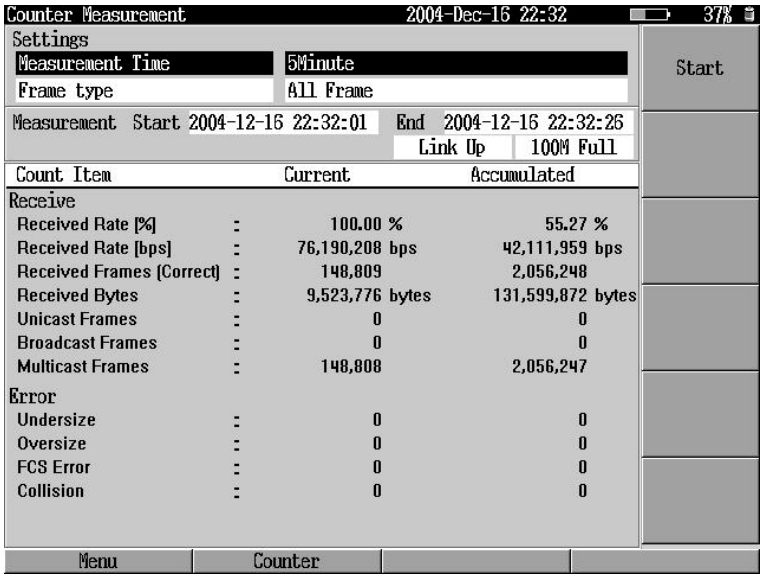


Fig. 1.2.8-1 Counter Measurement screen - measured results

<Setting the setting parameters to execute the connection>

1. To edit a setting parameter, use the [∧] [∨] keys to select the item, and press the [Enter] key. After edit, press the [Enter] key to determine the changed contents. See Table 1.2.8-2 below for the setting parameters:

Table 1.2.8-2 Setting parameters for Counter Measurement

Setting item	Description
Measurement Time	Sets the counter measurement time. 1 to 720 minutes, in steps of 1 minute.
Frame type	Selects one of the following for the target of the Counter measurement: <1> All Frame: All Ethernet frames (including the frames with VLAN tag and the PPPoE frames) are targeted. <2> VLAN: Only frames with VLAN tag are targeted. <3> PPPoE: Only PPPoE frames are targeted.

2. Press [f1] (Start) to start the measurement. Before the measurement is executed, a link is established by auto negotiation. When the preset measurement time expires, the measurement ends. While the measurement is in progress, the current value for every second and the accumulated count value are displayed for each count item.
3. The measured result can be saved in a file. For saving the test result, refer to "<Saving the measured result in a file>" in Section 1.2.4.

Section 2 Before Use

This section describes information you require before using the MT9080 Series. The section also describes how to set up the peripheral equipment.
The items displayed in the [ ] in this section indicate panel keys.

2.1 Components

2.1.1 IP network connectivity check function components

The table below lists the IP network connectivity check function components of the MT9080 Series ACCESS Master. After unpacking, check that all the components listed in the packing list are in the package. If you find any missing or broken components, swiftly contact Anritsu or our sales dealer.

Table 2.1.1-1 IP network connectivity check function components

	Product name	Qty.	Model or ordering No.	Remarks
IP network connectivity check function	IP network connectivity check function board	1	MT9080A/B/C/D/E/F-001	Attached to the access master main frame.
Accessories	Operation manual	1	W2546AE	The IP Test Function Operation Manual is contained in the MT9080 Series Access Master Operation Manual CD-ROM.

2.1.2 Options for IP network connectivity check function

The MT9080 Series-011 Gigabit Ethernet Upgrade option is prepared for the IP network connectivity check function. By adding option 011, measurement IF is expanded from 10/100M to 10/100/1000M.

2.2 Names and Functions of Each Part

This section shows the names and functions of each part.

2.2.1 Front panel

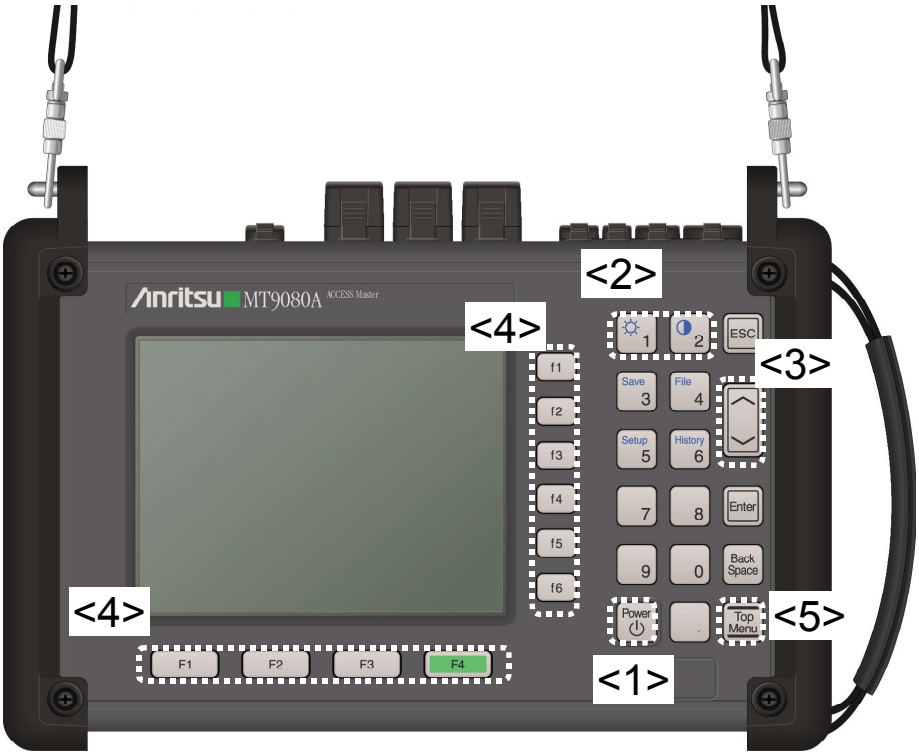


Fig. 2.2.1-1 Front panel

<1> [Power] key

Used to turn on/off the power.

<2> Backlight and contrast keys

The backlight key is used to adjust the brightness of the backlight, while the contrast key is used to adjust the contrast. Refer to Sections 3.3 “Adjusting Backlight” and 3.4 “Adjusting Contrast”.

<3> Arrow key set

A key set containing two key components: Up and Down arrows. These keys are represented by [∧] and [∨] in this manual.

<4> Function keys

These sections contain function keys [f1] to [f6] and [F1] to [F4]. The functions of the [f1] to [f6] keys are displayed on the right of the screen. The functions of the [F1] to [F4] are displayed at the bottom of the screen. Refer to Section 3.2.1 “Top menu”.

<5> Top Menu key

The Top Menu is displayed whenever the Top Menu key is pressed. In the Top Menu, the functions of the MT9080 Series are listed in a menu from which the desired menu item can be selected.

2.2.2 Top view

Battery charging lamp
Lights up while the battery pack is being charged.

DC input connector
Used to connect the supplied AC adapter.

External power lamp
Lights up while the external power is being supplied.

Fig. 2.2.2-1 Top view (left)

Measurement port for IP network connectivity check function
An Ethernet cable is connected.

USB joint
Used to connect a USB memory card or a cable. Refer to Section 2.3 “Connecting Peripheral Devices”.

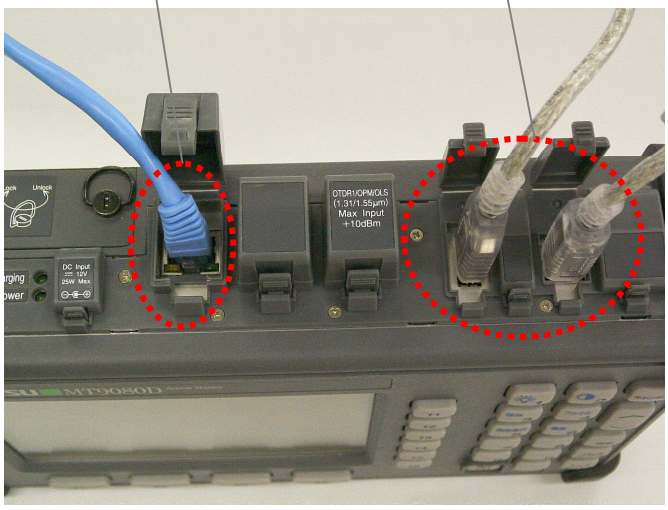


Fig. 2.2.2-2 Top view (right)

2.2.3 Rear panel

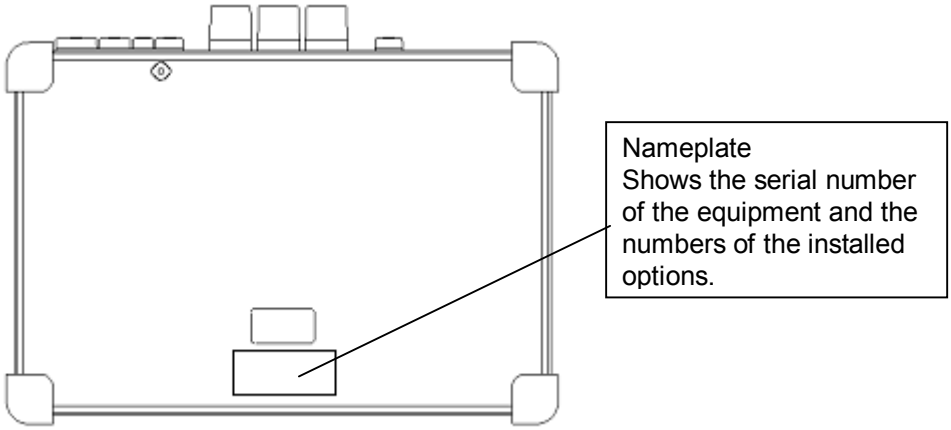


Fig. 2.2.3-1 Rear panel

Stand (Option 10: When the protector is installed)

To tilt the MT9080 Series, pull out the stand as shown below:

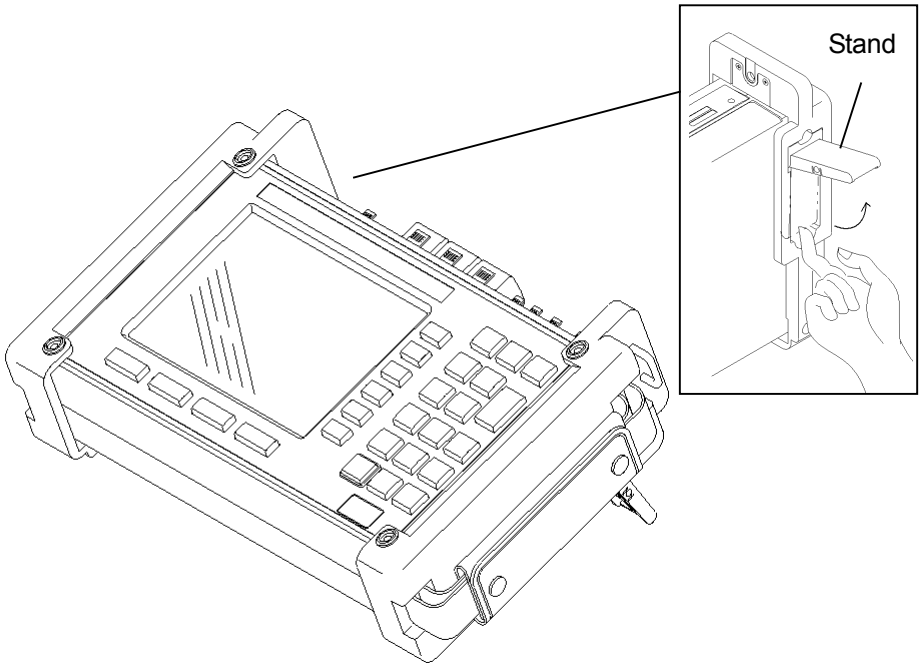


Fig. 2.2.3-2 Using stand

2.3 Connecting Peripheral Devices

The standard configuration of the MT9080 Series includes two USB ports, which allows a USB memory or personal computer to be connected.
For details, refer to Section 9 “Peripheral Interface”.

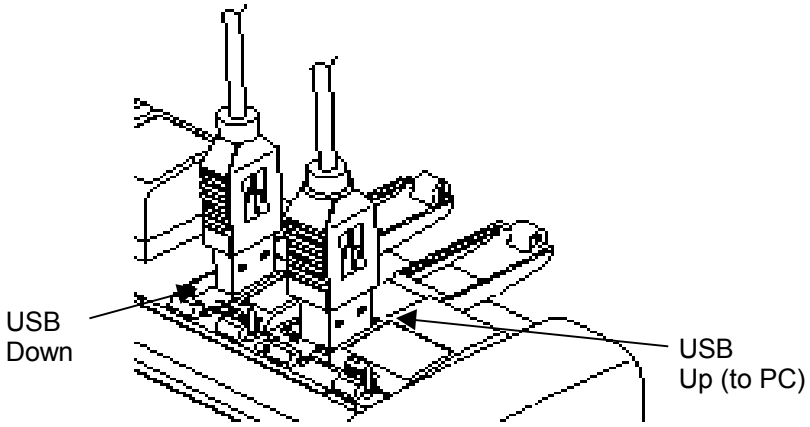


Fig. 2.3-1 Connecting USB cable

2.3.1 USB Up (to PC) port

By connecting the USB Up (to PC) port of the MT9080 Series to a personal computer via a USB cable, you can access the internal memory of the MT9080 Series directly from your computer. While a personal computer is connected to the MT9080 Series, accessing the internal memory from the MT9080 Series is disabled.

CAUTION

Before disconnecting the USB cable between the MT9080 Series and the personal computer, be sure to prepare the computer so that the hardware can be removed. Otherwise, the Internal memory may be damaged.

2.3.2 USB Down port

A USB memory can be connected to this port. Use a USB memory conforming to USB 1.1. Some of the commercially available USB memory may be unavailable for this port. For the validated USB memory, see the "Validated USB Memory" section in the attachment.

CAUTION

A mark during access is displayed on screen when recalling, saving, copying or deleting folders and/or files. Do not remove USB memory while accessing it. USB memory or files may be damaged.

2.4 Basic Notes on Use

Connector cover

A connector cover is installed on each of the connectors to prevent dust. Do not remove these connector covers except when connecting a cable to the connectors.

Condensation

Condensation may occur on the inside surface of the MT9080 Series when the MT9080 Series is carried into a room (high temperature) from an outdoor location (low temperature), etc. If this occurs, dry the MT9080 Series thoroughly before turning on the power to it.

Temperature range

Use the MT9080 Series within the operating temperature range (0 to +40°C) and storage temperature range (–20 to +60°C). If the MT9080 Series is placed in a car or other enclosed space for a long time, the ambient temperature may exceed the specified range, resulting in malfunction of the MT9080 Series.

Safety

Do not use any AC adapter or battery pack other than the one supplied. Otherwise, the MT9080 Series may be damaged due to nonconformity with the specifications.

Laser

Never look directly into the cable connector on the equipment nor into the end of a cable connected to the equipment. If laser radiation enters the eye, there is a risk of injury.

In addition, the MT9080 Series outputs high-power optical pulses. To prevent damage to the photo-receiving circuit of the communication device connected to the optical fiber to be measured, remove the communication device from the optical fiber before measurement. Anritsu will take no responsibility for damage to the communication or any other device.

For other notes on use, read the safety-related information in this manual thoroughly before use.

Section 3 Connectivity Check

This section describes operations of the Connectivity Check function. Connectivity Check checks whether the connectivity has been established in the preset connection mode (PPPoE or DHCP).
The items displayed in the [ ] in this section indicate panel keys.

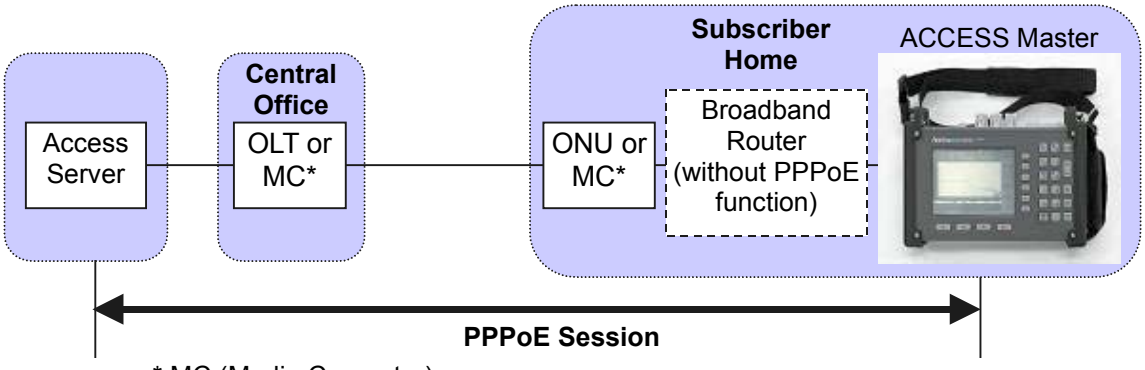
3.1 Connectivity Check - PPPoE

If an authentication method with PPPoE is being used for the line, a PPPoE (PPP) session must be established first.
In the Connectivity Check PPPoE Mode, the PPPoE session generation, authentication, and IP address to be obtained can be checked.

PPPoE (PPP over Ethernet) is a specification that has been defined to authenticate subscribers on Ethernet and standardized by RFC2516.

In the PPPoE Mode, connection can be established according to the following sequence:

<1> Establish the PPPoE session (Session ID is obtained.)	Establishes the PPPoE session, and obtains the session ID from the access server.
↓	
<2> PPP Configuration 1 (Data link is established by LCP)	Establishes the data link connected with the access server. The two parties negotiate with each other for the MRU (Maximum Receive Unit) value and the authentication method (PAP or CHAP).
↓	
<3> Authentication (PAP, CHAP)	Authenticates users using the authentication method that was determined by negotiation with the access server.
↓	
<4> PPP Configuration 2 (Configuration of the network layer is established by IPCP. Global IP address is obtained.)	Obtains the global IP address and other required information from the access server.
↓	
<5> IP Communication	Now the IP communication is available.



* MC (Media Converter):
An instrument used to execute conversion between signals available for the local media and those received from different type of transmission media.

Fig. 3.1-1 Configuration for connection in PPPoE Mode

Note:

To connect the ACCESS Master to equipment that terminates a PPPoE session (e.g., PPPoE-compliant broadband router), use the DHCP or Manual Mode. This connection cannot be established in PPPoE Mode.

3.1.1 Setting up setting parameters

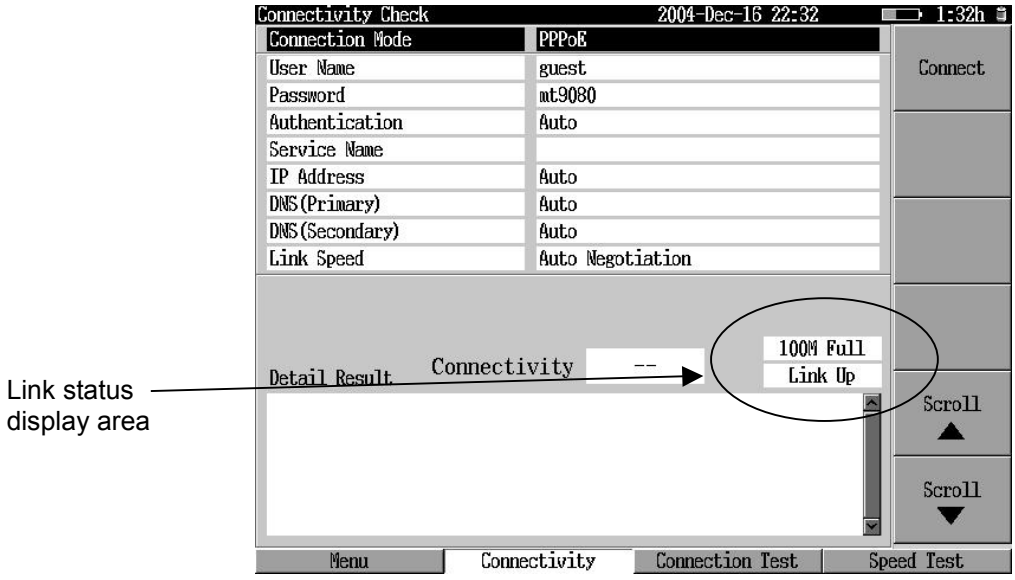


Fig. 3.1.1-1 Connectivity screen – PPPoE

On the Top Menu screen, select "IP Test (Connectivity)" using the [∧] [∨] keys, and press the [Enter] key. Alternatively, press the [7] key. The Connectivity screen is displayed.

To execute the connection in the PPPoE Mode, select the Connection Mode setting area using the [∧] [∨] keys. Then, press the [Enter] key to display the Select Connection Mode window. Select "PPPoE" on this window, and press the [Enter] key. The Connectivity Check can be now executed in the PPPoE Mode.

The following setting parameters can be set directly or can be set by re-calling the setting parameters from the previously saved setting file. It is also possible to save the set parameters in a file.

<1> User Name

Required to make PPP authentication to the access server. This parameter must always be set. The maximum input length is 40 in 1-byte alphanumeric characters.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "User Name."
2. Press the [Enter] key to display the Character Input screen.
   For details of character input, refer to Section 3.8 "Character Input Procedure."

<2> Password

Required to make PPP authentication to the access server. This parameter must always be set. The maximum input length is 40 in 1-byte alphanumeric characters.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Password."
2. Press the [Enter] key to display the Character Input screen.
   For details of character input, refer to Section 3.8 "Character Input Procedure."

<3> Authentication

Select the authentication method to be used for PPP authentication to the access server.

Auto: The same method as the server is used.

CHAP: Selects CHAP method.

PAP: Selects PAP method.

Usually set to "Auto" because the server specifies the authentication method.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Authentication."
2. Press the [Enter] key to display the Setting window. From the setting parameters listed, select the desired method using the [∧] [∨] keys.
3. After selecting the desired method, press the [Enter] key. The Setting window closes and the selected method is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

<4> Service Name

Required to establish a PPPoE session. The maximum input length is 31 in 1-byte alphanumeric characters.

Do not change this setting unless otherwise specified by the Provider.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Service Name."
2. Press the [Enter] key to display the Character Input screen.
   For details of character input, refer to Section 3.8 "Character Input Procedure."

<5> IP Address

Although the IP address is automatically obtained from the access server, it is also possible to specify the specific IP address here.

Auto: Obtains the IP address from the access server.

Manual: Requests to use the IP address specified from the MT9080 Series.

Set to "Auto" unless otherwise specified by the Provider.

When setting the IP address manually, it is prohibited to set a value with the fourth octet as 0 or 255, such as 0.0.0.0 and 255.255.255.255.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "IP Address."
2. Press the [Enter] key to display the Setting window.
3. Select "Auto" or "Manual."
4. When "Manual" is selected, input the numeric value directly using numeric keys, [F3] (Left), and [F4] (Right).
5. After setting, press the [Enter] key. The Setting window closes and the set IP address is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

<6> DNS (Primary), DNS (Secondary)

Although the DNS server name is automatically obtained from the access server, it is also possible to specify the DNS server here.

Auto: Obtains the DNS server IP address from the access server.

Manual: Requests to use the DNS server IP address specified from the MT9080 Series.

Normally set to "Auto" since the DNS server IP address is automatically obtained from the access server.

When setting the DNS IP address manually, it is prohibited to set a value with the fourth octet as 0 or 255, such as 0.0.0.0 and 255.255.255.255.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "DNS (Secondary)."
2. Press the [Enter] key to display the Setting window.
3. Select "Auto" or "Manual."
4. When "Manual" is selected, input the numeric value directly using numeric keys, [F3] (Left), and [F4] (Right).
5. After setting, press the [Enter] key. The Setting window closes and the set DNS IP address is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

<7> Link Speed

The link speed of the line can be selected.

Auto Negotiation:	Selects the link speed through negotiation with the connection destination.
10M Half:	10BASE-T half duplex
10M Full:	10BASE-T full duplex
100M Half:	100BASE-TX half duplex
100M Full:	100BASE-TX full duplex

Usually select "Auto Negotiation."

Note:

"1000M Full" cannot be selected even if the Gigabit Ethernet Upgrade (1000BASE-T) option is installed. To use 1000M IF, select "Auto Negotiation."

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Link Speed."
2. Press the [Enter] key to display the Setting window. From the setting parameters listed, select an item using the [∧] [∨] keys.
3. After selecting the item, press the [Enter] key. The Setting window closes and the link connection with the connection destination is established with the selected link speed. The result of establishing link connection is displayed in the Link State display area. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

Note:

Check that the link is in the "Link Up" state. Connectivity Check cannot be executed in the "Link Down" state. If the link with the connection destination has not been established (i.e., Link Down), the cause may be either of the following:

1 There is a problem about the cable that is used for connection with the destination.
→ For 10/100M IF: Use a cable of Category 3 or greater.
For 1000M IF: Use a cable of Category 5E or greater.

2 The MT9080 Series differs from the destination in link speed setting.
→ Check the link speed setting of the destination's equipment and that of the MT9080 Series. If they are different, set the MT9080 Series link speed to the same setting as the destination.

3.1.2 Executing connection

After executing connection, the executed results are displayed.

(1) Executing connection

<1> Executing connection

Press [f1] (Connect) to execute the connection. After the connection has been established, the [f1] key display changes to "Disconnect" and the executed results are displayed. Any setting parameters cannot be changed during a connection process.

Note:

If the link with the connection destination has not been established, the connection cannot be executed. A failure to establish the link may be caused by either of the following:

1) There is a problem about the cable that is used for connection with the destination.
   → For 10/100M IF: Use a cable of Category 3 or greater.
   For 1000M IF: Use a cable of Category 5E or greater.

2) The MT9080 Series differs from the destination in link speed setting.
   → Check the link speed setting of the destination's equipment and that of the MT9080 Series. If they are different, set the MT9080 Series link speed to the same setting as the destination.

<2> Aborting connection

When executing the connection, the [f1] key is displayed as "Abort" while the connecting process is in progress. Pressing [f1] (Abort) aborts the connecting process.

<3> Disconnecting connection

After the connection is completed, the [f1] key is displayed as "Disconnect". Pressing [f1] (Disconnect) disconnects the currently connected line.

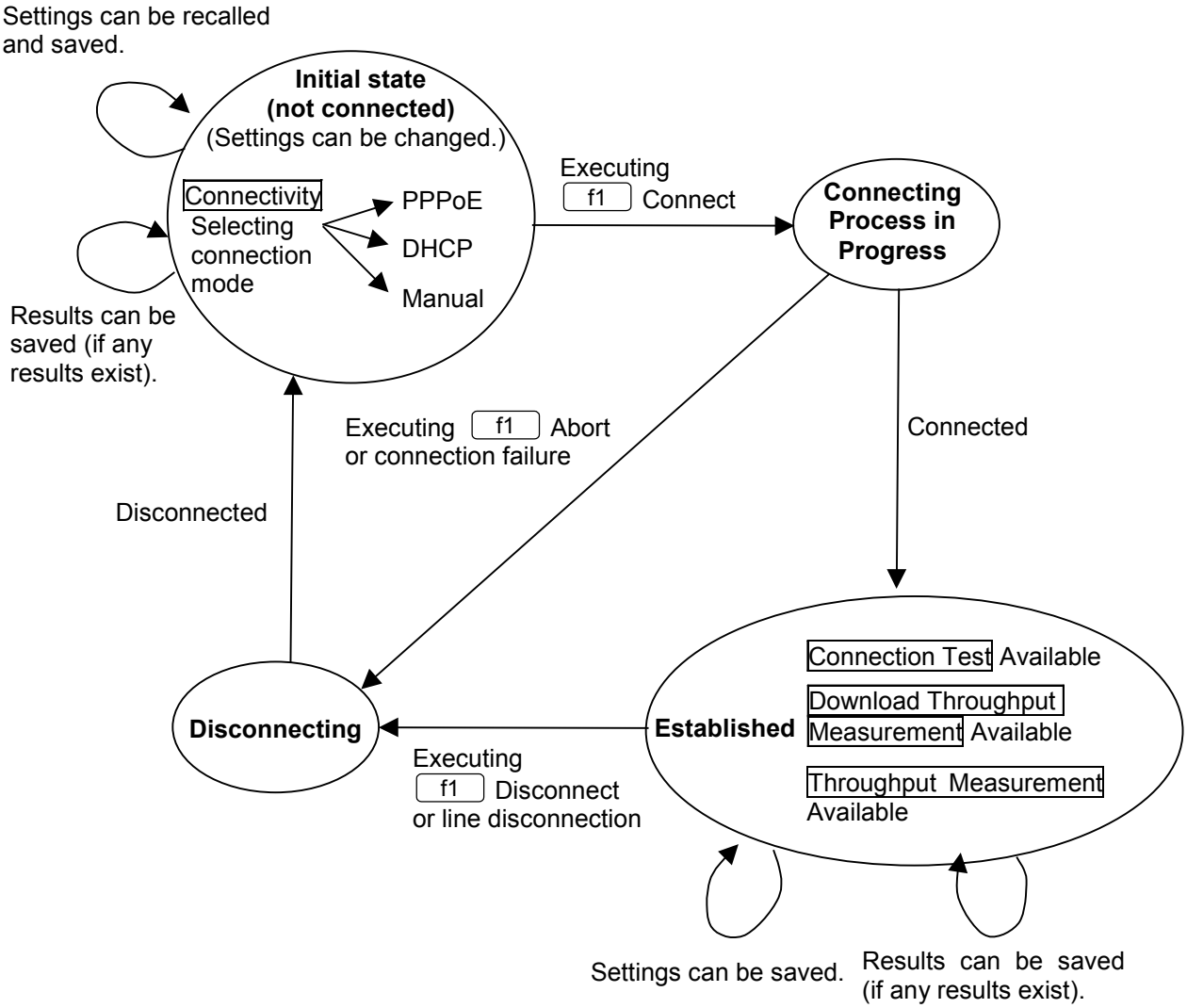


Fig. 3.1.2-1 State transition when executing connection

(2) Executed results display

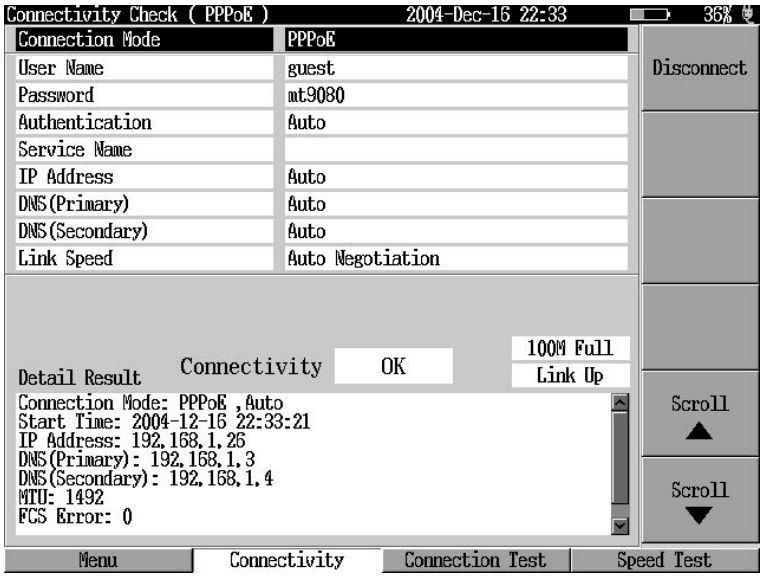


Fig. 3.1.2-2 PPPoE executed results

<1> Connectivity display area
Displays "OK" or "NG".

OK: Indicates that the connection succeeded and the IP address was obtained.

NG: Indicates that the IP address was unable to be obtained.
At this time, f3 (Cause Presumption) is displayed on the screen. Pressing f3 (Cause Presumption) displays the Cause Presumption screen, in which the presumed causes can be checked.

<2> Detail Result display area

(a) When the result is "OK", the following results are displayed in the Detail Result display area.

(1) Connection Mode
Displays the connection mode and authentication method you have set.

(2) Start Time (date/time of execution)

(3) IP Address

(4) DNS (Primary) and DNS (Secondary)

(5) MTU (Maximum Receive Unit)
Indicates the PPP payload field length in bytes. The MTU ranges from 38 to 1492 bytes.

Ethernet frame header	PPPoE frame header	PPP frame header	PPP payload	Ethernet frame FCS

(6) FCS Error
Indicates the number of FCS error frames that were detected during the period from the start of Connect to its completion.

(7) Collisions
Indicates the number of collisions that were detected during the period from the start of connection to its completion.
If the connection was made with the link speed "Half", collisions may occur depending on the line traffic status.

(b) If the result is "NG", the presumed causes can be checked on the Cause Presumption screen, which is displayed by pressing f3 (Cause Presumption).

Table 3.1.2-1 PPPoE error presumed causes

Major Errors	Major Presumed Causes
PPPoE discovery stage error	<1> A loopback address is set for the IP address. <2> There is no PPPoE server on the network. <3> A problem occurs on the PPPoE server. <4> An invalid service name is set.
LCP error	An LCP negotiation error occurs.
CHAP authentication error	<1> An invalid user name or password is set. <2> The CHAP authentication method is not supported by the access server.
PAP authentication error	<1> An invalid user name or password is set. <2> The PAP authentication method is not supported by the access server.
IPCP error	An IPCP negotiation error occurs.
Unable to obtain the specified IP address	<1> The specified IP address cannot be obtained. When connection is executed after setting the desired IP address to be used, this error occurs if a different IP address was assigned from the access server. The specified IP address is not available in this case. Execute the connection without setting any IP address.

Note:

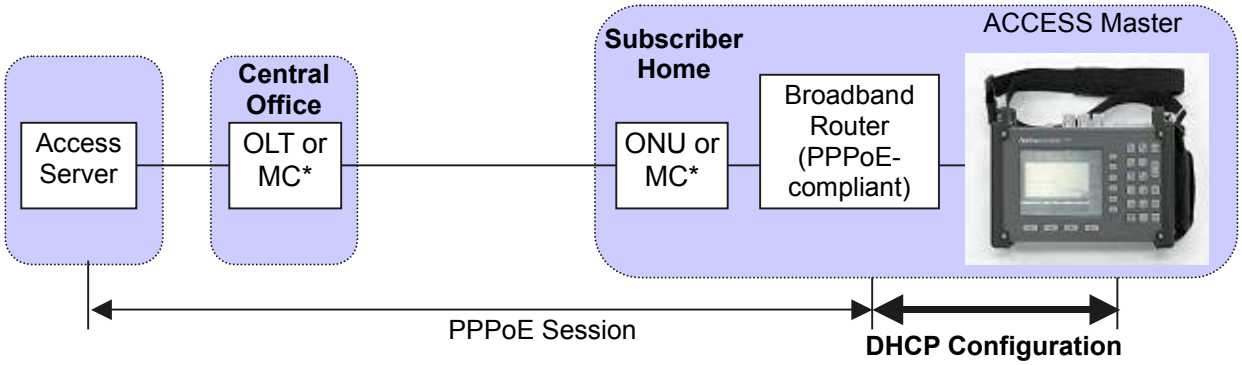
If the connection is executed after setting the IP addresses for the DNS server (Primary) and DNS server (secondary) manually, the IP addresses of the DNS servers cannot be obtained from the access server. If the set IP address of the DNS server is invalid, the host name cannot be converted into the IP address. Thus, the test or measurement specified by the host name cannot be executed in this case.

(c) When f1 (Disconnect) is pressed or the connection was disconnected from the access server, the disconnection date/time and cause are displayed.

3.2 Connectivity Check - DHCP

To obtain the IP address from the DHCP server, use the DHCP Mode. When connecting to a PPPoE-compliant broadband router, usually obtain the IP address with DHCP.
In the Connectivity Check DHCP Mode, it is possible to check whether the IP address can be obtained with DHCP.

DHCP (Dynamic Host Configuration Protocol) automatically assigns the required information (e.g., IP address) to the terminal.



* MC (Media Converter):
An instrument used to execute conversion between signals available for the local media and those received from different type of transmission media.

Fig. 3.2-1 Configuration for connection in DHCP Mode

Note:

DHCP is usually supported for any equipment that terminates a PPPoE session, e.g., a PPPoE-compliant broadband router. When connecting the ACCESS Master to this equipment, use the DHCP Mode.

3.2.1 Setting up setting parameters

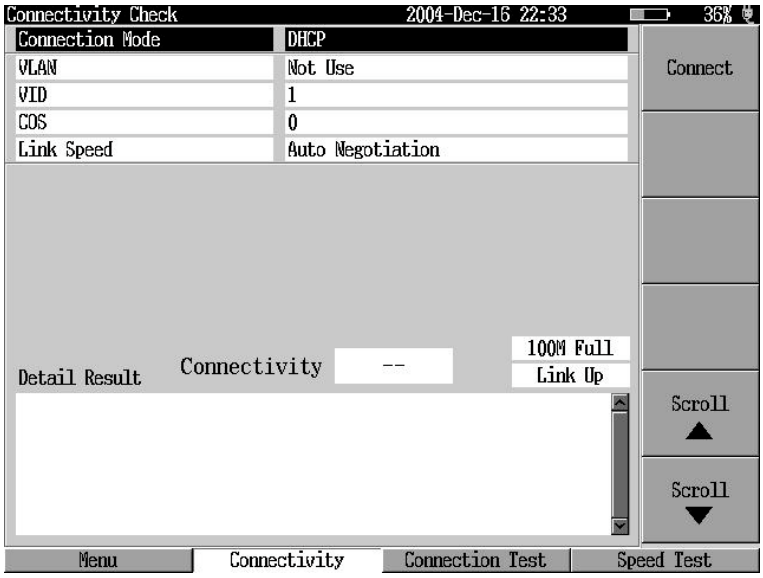


Fig. 3.2.1-1 Connectivity screen - DHCP Mode

On the Top Menu screen, select "IP Test (Connectivity)" using the [∧] [∨] keys, and press the [Enter] key. Alternatively, press the [7] key. The Connectivity screen is displayed.

To execute the connection in the DHCP Mode, select the Connection Mode setting area using the [∧] [∨] keys. Then, press the [Enter] key to display the Select Connection Mode window. Select "DHCP" on this window, and press the [Enter] key. The Connectivity Check can be now executed in the DHCP Mode.

The following setting parameters can be set directly or can be set by re-calling the setting parameters from the previously saved setting file. It is also possible to save the set parameters in a file.

<1> VLAN

A VLAN tag can be added to the frame.

Use: A VLAN tag is not added.

Not Use: A VLAN tag is added.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "VLAN."
2. Press the [Enter] key to display the Setting window. From the setting parameters listed, select an item using the [∧] [∨] keys.
3. After selecting the item, press the [Enter] key. The Setting window closes and the setting is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

<2> VID

Sets the VID of the VLAN tag. The VID is an ID identifying the VLAN network. An integer of 1 to 4094 may be input as the VID. VID can be set when "VLAN" is set to "Use."

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to the "VID."
2. Press the [Enter] key to display the Setting window. Using the [∧] [∨] keys, increment or decrement the VID in steps of 1. It is also possible to input the value directly using numeric keys.
3. After setting, press the [Enter] key. The Setting window closes and the set VID is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

Note:

Normal operations are not guaranteed if a VID different from that for the VLAN network to be connected is set. Be sure to set the VID same as that for the VLAN network to be connected.

<3> COS

Sets the priority for the VLAN tag. The COS is the priority field of the VLAN tag. A 0 to 7 integer may be input as the COS. The value 0 indicates the lowest priority, and the value 7 the highest. COS can be set when "VLAN" is set to "Use."

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "COS."
2. Press the [Enter] key to display the Setting window. Using the [∧] [∨] keys, increment or decrement the COS in steps of 1. It is also possible to input the value directly using numeric keys.
3. After setting, press the [Enter] key. The Setting window closes and the set COS value is applied. When the [ESC] key is pressed while

the Setting window is displayed, it closes without updating the settings.

<4> Link Speed

The link speed of the line can be selected.

Auto Negotiation:	Selects the link speed through negotiation with the connection destination.
10M Half:	10BASE-T half duplex
10M Full:	10BASE-T full duplex
100M Half:	100BASE-TX half duplex
100M Full:	100BASE-TX full duplex

Usually select "Auto Negotiation."

Note:

"1000M Full" cannot be selected even if the Gigabit Ethernet Upgrade (1000BASE-T) option is installed. To use 1000M IF, select "Auto Negotiation."

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Link Speed."
2. Press the [Enter] key to display the Setting window. From the setting parameters listed, select an item using the [∧] [∨] keys.
3. After selecting the item, press the [Enter] key. The Setting window closes and the link connection with the connection destination is established with the selected link speed. The result of establishing link connection is displayed in the Link State display area. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

Note:

Check that the link is in the "Link Up" state. Connectivity Check cannot be executed in the "Link Down" state. If the link with the connection destination has not been established (i.e., Link Down), the cause may be either of the following:

1 There is a problem about the cable that is used for connection with the destination.
→ For 10/100M IF: Use a cable of Category 3 or greater.
For 1000M IF: Use a cable of Category 5E or greater.

2 The MT9080 Series differs from the destination in link speed setting.
→ Check the link speed setting of the destination's equipment and that of the MT9080 Series. If they are different, set the MT9080 Series link speed to the same setting as the destination.

3.2.2 Executing connection

After executing connection, the executed results are displayed.

(1) Executing connection

<1> Executing connection

Press [f1] (Connect) to execute the connection. After the connection has been established, the [f1] key display changes to "Disconnect" and the executed results are displayed. Any setting parameters cannot be changed during a connection process.

Note:

If the link with the connection destination has not been established, the connection cannot be executed. A failure to establish the link may be caused by either of the following:

1) There is a problem about the cable that is used for connection with the destination.
   → For 10/100M IF: Use a cable of Category 3 or greater.
   For 1000M IF: Use a cable of Category 5E or greater.

2) The MT9080 Series differs from the destination in link speed setting.
   → Check the link speed setting of the destination's equipment and that of the MT9080 Series. If they are different, set the MT9080 Series link speed to the same setting as the destination.

<2> Aborting connection

When executing the connection, the [f1] key is displayed as "Abort" while the connecting process is in progress. Pressing [f1] (Abort) aborts the connecting process.

<3> Disconnecting connection

After the connection is completed, the [f1] key is displayed as "Disconnect". Pressing [f1] (Disconnect) disconnects the currently connected line.

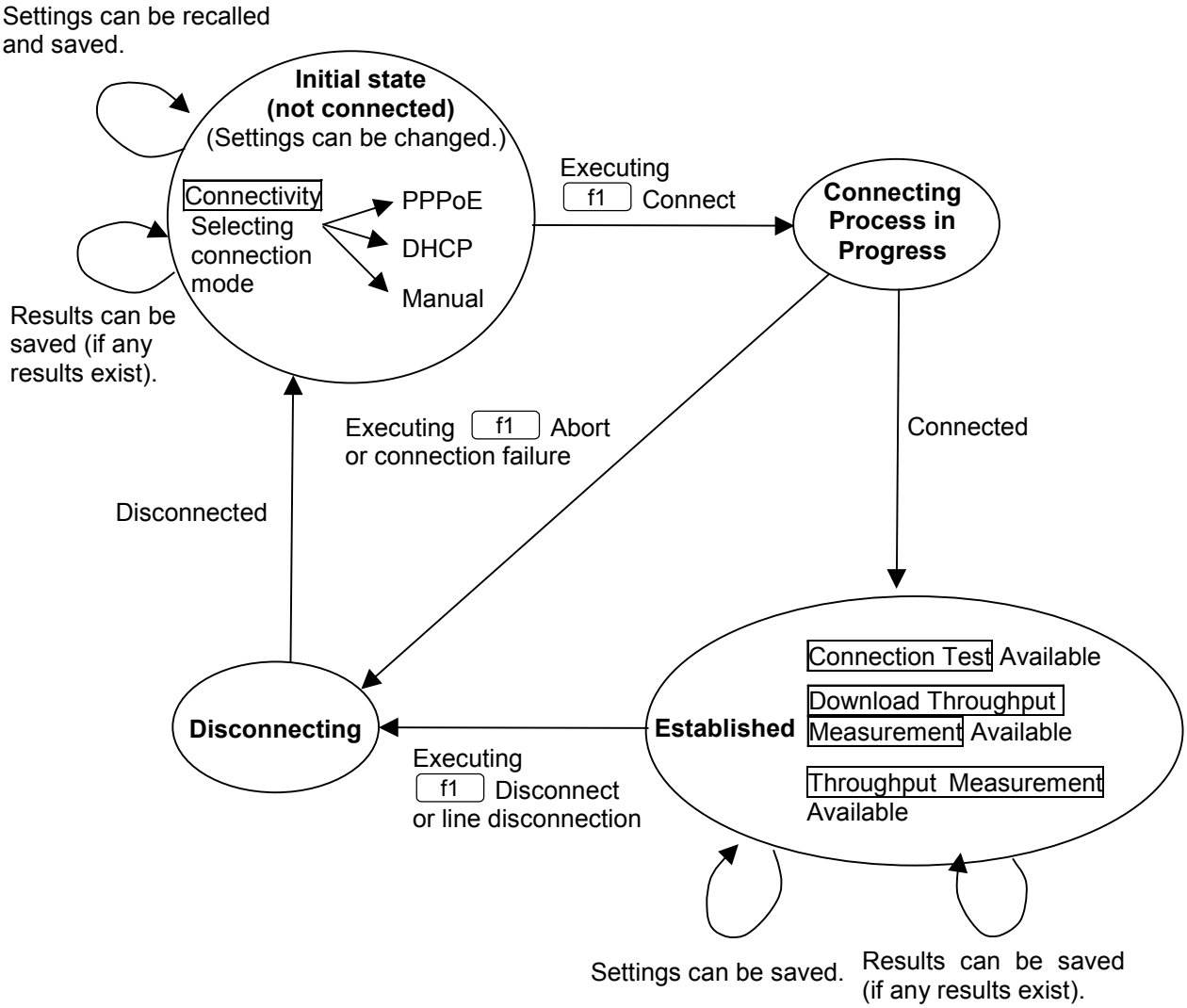


Fig. 3.2.2-1 State transition when executing connection

(2) Executed results display

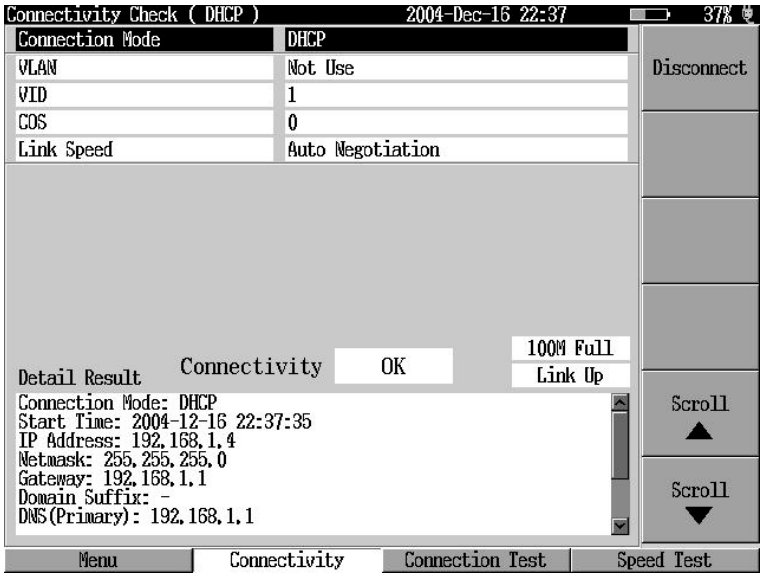


Fig. 3.2.2-2 DHCP executed results

<1> Connectivity display area
Displays "OK" or "NG".

OK: Indicates that the connection succeeded and the IP address was obtained.

NG: Indicates that the IP address was unable to be obtained.
At this time, f3 (Cause Presumption) is displayed on the screen. Pressing f3 (Cause Presumption) displays the Cause Presumption screen, in which the presumed causes can be checked.

<2> Detail Result display area

(a) If the result is "OK", the following results are displayed in the Detail Result display area.

(1) Connection Mode
Displays the set connection mode.

(2) Start Time (date/time of execution)

(3) IP Address (obtained IP address)

(4) Netmask (obtained subnet mask)

(5) Gateway (obtained default gateway)

(6) Domain Suffix (obtained domain)

(7) DNS (Primary) and DNS (Secondary) (obtained DNS Primary and Secondary addresses)

(8) DHCP server

(9) Start Date/Time of Assignment
Displays the date and time when the IP address was assigned from the DHCP server.

(10) End Date/Time of Assignment
Displays the date and time the IP address assignment from the DHCP server ended.

(b) If the result is "NG", the presumed causes can be checked on the Cause Presumption screen, which is displayed by pressing f3 (Cause Presumption).

Table 3.2.2-1 DHCP error presumed cause

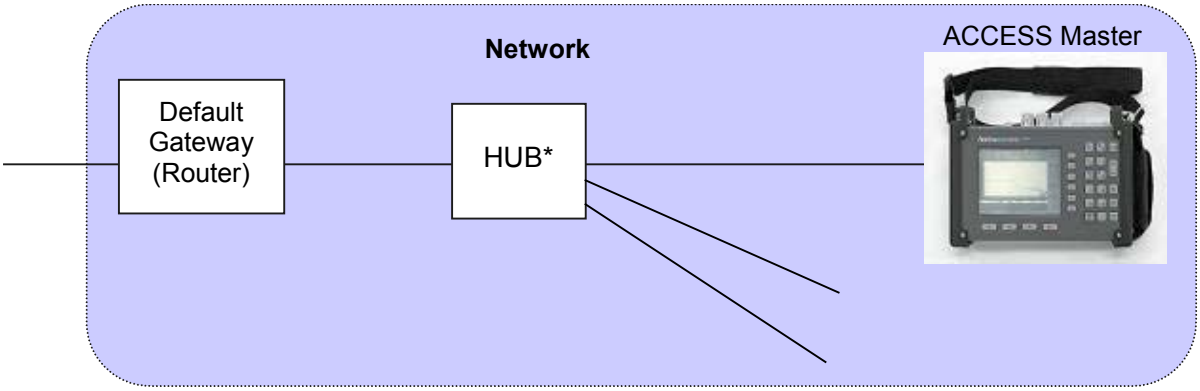
Error	Cause of Presumed
DHCP connection error	<1> There is no DHCP server on the network. <2> The DHCP server does not have an IP address that can be assigned.

(c) When f1 (Disconnect) is pressed or the connection was disconnected from the DHCP server, the disconnection date/time and cause are displayed.

3.3 Connectivity Check - Manual

When the line does not use the PPPoE authentication method and the equipment to be connected does not support DHCP, execute connection in the Manual Mode.

The IP address can be set in the Manual Mode.



* Hub:
A line concentrator used in the star LAN.

Fig. 3.3-1 Configuration for connection in Manual Mode

3.3.1 Setting up setting parameters

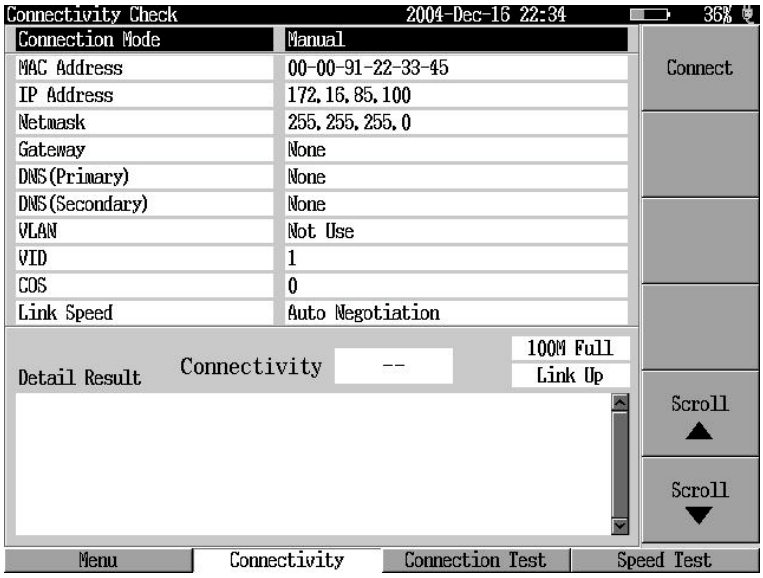


Fig. 3.3.1-1 Connectivity screen - DHCP Mode

On the Top Menu screen, select "IP Test (Connectivity)" using the [∧] [∨] keys, and press the [Enter] key. Alternatively, press the [7] key. The Connectivity screen is displayed.

To execute the connection in the Manual Mode, select the Connection Mode setting area using the [∧] [∨] keys. Then, press the [Enter] key to display the Select Connection Mode window. Select "Manual" on this window, and press the [Enter] key. The Connectivity Check can be now executed in the Manual Mode.

The following setting parameters can be set directly or can be set by re-calling the setting parameters from the previously saved setting file. It is also possible to save the set parameters in a file.

<1> MAC Address

A global MAC address is set by default, and this can be changed by a user. It is prohibited to set a MAC address with all 0s or all Fs.

CAUTION ⚠

Leave the MAC address unchanged for normal operations. Connecting to the network with the MAC address changed may influence the network. Follow the network administrator's instructions when changing the MAC address.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "MAC Address."
2. Press the [Enter] key to display the warning message. When changing the MAC address, press [f1] (OK). The Setting window is displayed.
3. Input the numeric value using numeric keys, [F3] (Left), and [F4] (Right).
4. After setting, press the [Enter] key. The Setting window closes and the set MAC address is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings. When [F1] (Default) is pressed, the settings return to the default, i.e., global MAC address.

Note:

When [f1] (Disconnect) is pressed after changing the MAC address, the default global MAC address is automatically restored.

<2> IP address

Set the IP address.

It is prohibited to set a value with the fourth octet as 0 or 255, such as 0.0.0.0 and 255.255.255.255.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "IP Address."
2. Press the [Enter] key to display the Setting window.
3. Input the numeric value using numeric keys, [F3] (Left), and [F4] (Right).
4. After setting, press the [Enter] key. The Setting window closes and the set IP address is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

<3> Netmask

Set the subnet mask.

When the IP address belongs to Class A, set 255.0.0.0 or greater. Set 255.255.0.0 or greater for the Class B IP address, and 255.255.255.0 or greater for the Class C IP address.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Netmask."
2. Press the [Enter] key to display the Setting window.
3. Input the numeric value using numeric keys, [F3] (Left), and [F4] (Right).

4. After setting, press the [Enter] key. The Setting window closes and the set subnet mask is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

<4> Gateway

Set the IP address of the default gateway.

It is prohibited to set a value with the fourth octet as 0 or 255, such as 0.0.0.0 and 255.255.255.255.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Default Gateway."
2. Press the [Enter] key to display the Setting screen.
3. Input the numeric value using numeric keys, [F3] (Left), and [F4] (Right). Press [f1] (None) when not setting the IP address.
4. After setting, press the [Enter] key. The Setting window closes and the set IP address of the default gateway is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

<5> DNS (Primary), DNS (Secondary)

Sets the DNS (primary) and (secondary) IP addresses.

It is prohibited to set a value with the fourth octet as 0 or 255, such as 0.0.0.0 and 255.255.255.255.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "DNS (Secondary)."
2. Press the [Enter] key to display the Setting window.
3. Input the numeric value using numeric keys, [F3] (Left), and [F4] (Right). Press [f1] (None) when not setting the IP addresses.
4. After setting, press the [Enter] key. The Setting window closes and the set DNS IP address is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

<6> VLAN

A VLAN tag can be added to the frame.

Use: A VLAN tag is not added.

Not Use: A VLAN tag is added.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "VLAN."
2. Press the [Enter] key to display the Setting window. From the setting parameters listed, select an item using the [∧] [∨] keys.
3. After selecting the item, press the [Enter] key. The Setting window closes and the setting is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

<7> VID

Sets the VID of the VLAN tag. The VID is an ID identifying the VLAN network. An integer of 1 to 4094 may be input as the VID. VID can be set when "VLAN" is set to "Use."

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "VID."
2. Press the [Enter] key to display the Setting window. Using the [∧] [∨] keys, increment or decrement the VID in steps of 1. It is also possible to input the value directly using numeric keys.
3. After setting, press the [Enter] key. The Setting window closes and the set VID is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

Note:

Normal operations are not guaranteed if a VID different from that for the VLAN network to be connected is set. Be sure to set the VID same as that for the VLAN network to be connected.

<8> COS

Sets the priority for the VLAN tag. The COS is the priority field of the VLAN tag. A 0 to 7 integer may be input as the COS. The value 0 indicates the lowest priority, and the value 7 the highest. COS can be set when "VLAN" is set to "Use."

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "COS."
2. Press the [Enter] key to display the Setting window. Using the [∧] [∨] keys, increment or decrement the COS in steps of 1. It is also possible to input the value directly using numeric keys.
3. After setting, press the [Enter] key. The Setting window closes and the set COS value is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

<9> Link Speed

The link speed of the line can be selected.

Auto Negotiation:	Selects the link speed through negotiation with the connection destination.
10M Half:	10BASE-T half duplex
10M Full:	10BASE-T full duplex
100M Half:	100BASE-TX half duplex
100M Full:	100BASE-TX full duplex

Usually select "Auto Negotiation."

Note:

"1000M Full" cannot be selected even if the Gigabit Ethernet Upgrade (1000BASE-T) option is installed. To use 1000M IF, select "Auto Negotiation."

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Link Speed."
2. Press the [Enter] key to display the Setting window. From the setting parameters listed, select an item using the [∧] [∨] keys.
3. After selecting the item, press the [Enter] key. The Setting window closes and the link connection with the connection destination is established with the selected link speed. The result of establishing link connection is displayed in the Link State display area. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

Note:

Check that the link is in the "Link Up" state. Connectivity Check cannot be executed in the "Link Down" state. If the link with the connection destination has not been established (i.e., Link Down), the cause may be either of the following:

1 There is a problem about the cable that is used for connection with the destination.
→ For 10/100M IF: Use a cable of Category 3 or greater.
For 1000M IF: Use a cable of Category 5E or greater.

2 The MT9080 Series differs from the destination in link speed setting.
→ Check the link speed setting of the destination's equipment and that of the MT9080 Series. If they are different, set the MT9080 Series link speed to the same setting as the destination.

3.3.2 Executing connection

After executing connection, the executed results are displayed.

(1) Executing connection

<1> Executing connection

Press [f1] (Connect) to execute the connection. After the connection has been established, the [f1] key display changes to "Disconnect" and the executed results are displayed. Any setting parameters cannot be changed during a connection process.

Note:

If the link with the connection destination has not been established, the connection cannot be executed. A failure to establish the link may be caused by either of the following:

1) There is a problem about the cable that is used for connection with the destination.
   → For 10/100M IF: Use a cable of Category 3 or greater.
   For 1000M IF: Use a cable of Category 5E or greater.

2) The MT9080 Series differs from the destination in link speed setting.
   → Check the link speed setting of the destination's equipment and that of the MT9080 Series. If they are different, set the MT9080 Series link speed to the same setting as the destination.

<2> Aborting connection

When executing the connection, the [f1] key is displayed as "Abort" while the connecting process is in progress. Pressing [f1] (Abort) aborts the connecting process.

<3> Disconnecting connection

After the connection is completed, the [f1] key is displayed as "Disconnect". Pressing [f1] (Disconnect) disconnects the currently connected line.

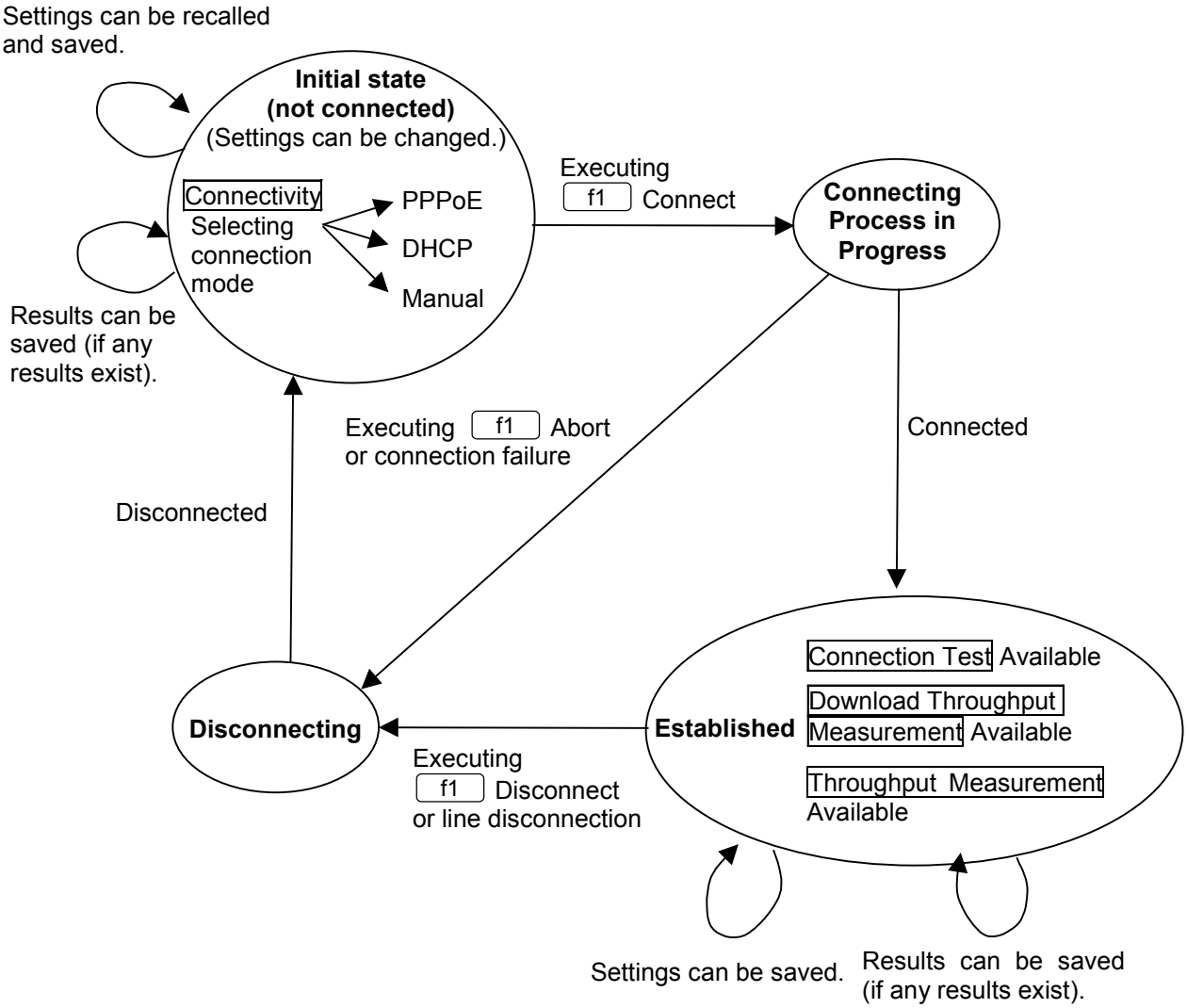


Fig. 3.3.2-1 State transition when executing connection

(2) Executed results display

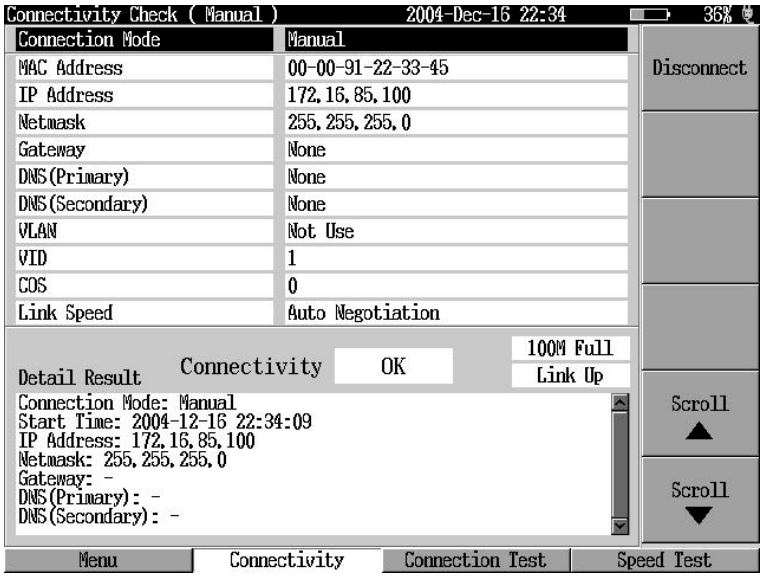


Fig. 3.3.2-2 Executed results of Manual

<1> Connectivity display area

Displays "OK" or "NG." The OK/NG judgment is executed according to the sequence below.

When the default gateway is set, a Ping test is executed for the default gateway. If no response is returned from the default gateway within the timeout (one second), a Ping test is retried up to three times. If no response is returned after executing a Ping for the default gateway four times, it is judged as "NG."

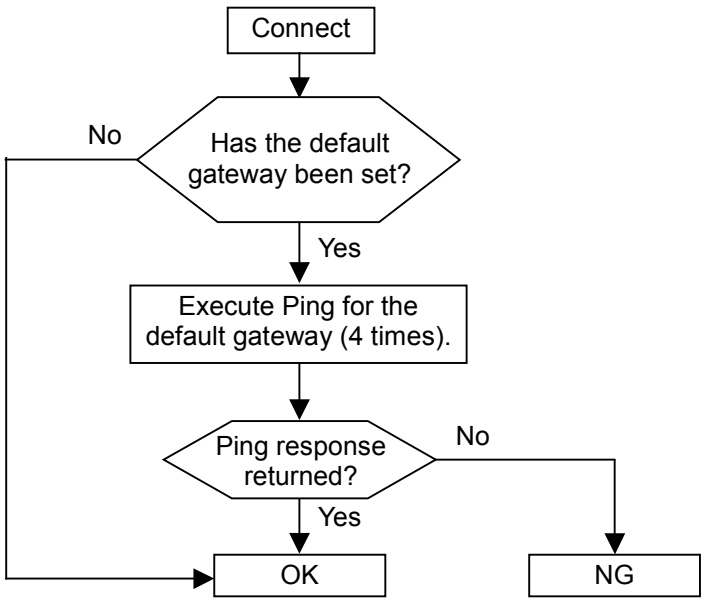


Fig. 3.3.2-3 OK/NG judgment for Manual

<2> Detail Result display area

(a) If the result is “OK”, the following results are displayed in the Detail Result display area.

(1) Connection Mode
Displays the set connection mode.

(2) Start Time (date/time of execution)

(3) IP Address

(4) Netmask

(5) Gateway

(6) DNS (Primary) and DNS (Secondary)

3.4 Saving Results

The executed results can be saved in a specified file in the internal memory of the MT9080 Series or external memory (USB).

<1> Check that the executed results are currently displayed.
Saving result is disabled if there are no executed results displayed.

<2> Press [F1] (Menu) to display the short-cut menu.

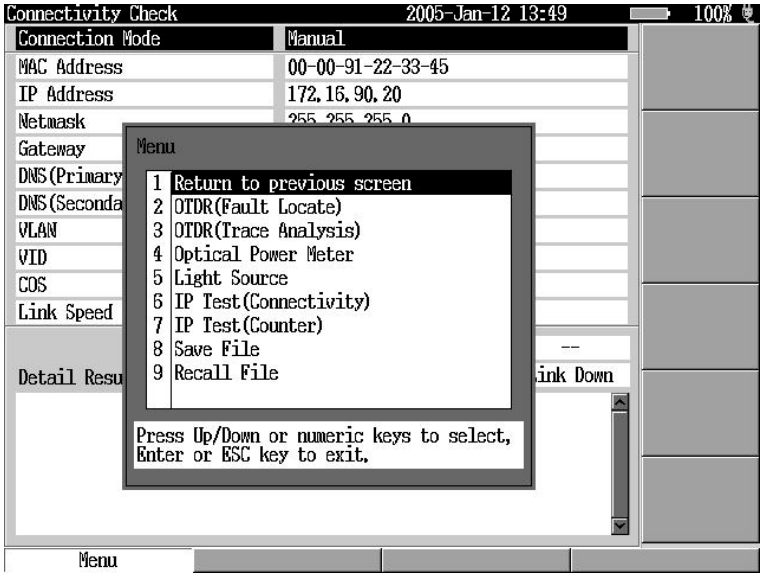


Fig. 3.4-1 Short-cut menu

<3> Using the [∧] [∨] keys or the numeric key, move the cursor to "Save File."

<4> Press the [Enter] key to display the Save-Save Result screen. The Save-Save Result screen can also be displayed by pressing the [3] key on the Connectivity Check screen.
Then press [F1] (Execute Save).

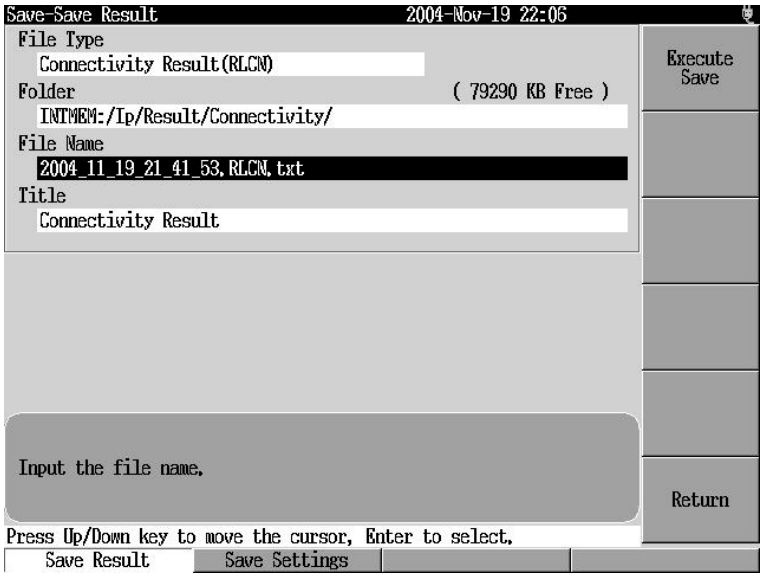


Fig. 3.4-2 Save-Save Result screen

<5> A folder to save the result file can be set.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Folder."
2. Press the [Enter] key to display the Select Folder window.

<6> The file name can be renamed.
The default file name is set as follows, based on the connection execution time:

Year (4 digits)_Month (2 digits)_Day (2 digits)_Hour (2 digits) [0 to 24]_Minutes (2 digits)_Seconds (2 digits).RLCN.txt
Example: 2004_10_10_17_09_42.RLCN.txt

The maximum input length is 50 in 1-byte alphanumeric characters.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "File Name."
2. Press the [Enter] key to display the Character Input screen.
For details of character input, refer to Section 3.8 "Character Input Procedure."

<7> The title can be changed. "Connectivity Result" is set by default. The maximum input length is 32 in 1-byte alphanumeric characters.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Title."
2. Press the [Enter] key to display the Character Input screen. For details of character input, refer to Section 3.8 "Character Input Procedure."

<8> Press [f1] (Execute Save) to save the executed results in the file and close the Save-Save Result screen.
The following two files are saved:

(1) Executed result file:
The setting parameters listed on the screen and the executed results are saved in a text-format file.

(2) Dump file:
This file is saved together with the executed result file when saving the results in the PPPoE Mode or DHCP Mode. A dump file contains the packet data that is transferred between the MT9080 Series and access server or DHCP server during the period from the start to completion of the connection. A dump file can be recalled using Ethereal. Since a dump file can also be displayed using Ethereal (Note), it is useful to identify the faulty location, for example, when the connection fails. A dump file is saved with a name in the following format:
Year (4 digits)_Month (2 digits)_Day (2 digits)_Hours (2 digits) [0 to 24]_Minutes (2 digits)_Seconds (2 digits).RLCN.dmp.

Note:

Ethereal, which is software operating on a PC, captures the protocol on the network to analyze and display it.

The executed results saved in the executed result file vary depending on the connection mode. The results saved in each connection mode are listed in the tables below:

Table 3.4-1 Results saved in the file in PPPoE Mode

Item		Description
Title		
File name		
Setting data	Connection Mode	
	User Name	
	Password	
	Authentication	
	Service Name	
	IP Address	
	DNS (Primary)	
	DNS (Secondary)	
	Link Speed	
Result data	Cause Presumption	Displays the presumed causes when the connection result is "NG."
	Start Time	
	Link Speed	
	Connection Test Result	Indicates "OK" or "NG."
	IP Address	Indicates the IP address obtained from the access server when set to "AUTO."
	Netmask	Indicates the subnet mask.
	DNS (Primary)	Indicates the DNS (primary) address obtained from the access server when set to "AUTO."
	DNS (Secondary)	Indicates the DNS (secondary) address obtained from the access server when set to "AUTO."
	MTU	Indicates the value of the determined MTU when a PPPoE session was established.
	FCS Error	Indicates the number of FCS error frames that occurred during the period from the start to completion of the connection.
	Collisions	Indicates the number of collisions that were detected during the period from the start to completion of the connection.
	Disconnect Time	Indicates the data and time of disconnection when the connection was disconnected.
	Cause of Disconnect	Indicates the cause of disconnection when the connection was disconnected.

Table 3.4-2 Results saved in the file in DHCP Mode

Item		Description
Title		
File name		
Setting data	Connection mode	
	VLAN	Indicates whether VLAN is added.
	VID	
	COS	
	Link Speed	
Result data	Cause Presumption	Displays the presumed causes when the connection result is "NG."
	Start Time	
	Link Speed	
	Connection Test Result	Indicates "OK" or "NG."
	IP Address	Indicates the IP address obtained from the DHCP server.
	Netmask	Indicates the subnet mask address obtained from the DHCP server.
	Gateway	Indicates the default gateway IP address obtained from the DHCP server.
	Domain Suffix	Indicates the domain obtained from the DHCP server.
	DNS (Primary)	Indicates the DNS (Primary) address obtained from the DHCP server.
	DNS (Secondary)	Indicates the DNS (secondary) address obtained from the DHCP server.
	DHCP Server	Indicates the DHCP server IP address.
	Lease Time	Indicates the date and time of starting the assignment of the IP address that was obtained from the DHCP server.
	Release Time	Indicates the date and time of ending the assignment of the IP address that was obtained from the DHCP server.
	Disconnect Time	Indicates the data and time of disconnection when the connection was disconnected.
	Cause of Disconnect	Indicates the cause of disconnection when the connection was disconnected.

Table 3.4-3 Results saved in the file in Manual Mode

Item		Description
Title		
File name		
Setting data	Connection Mode	
	MAC Address	
	IP Address	
	Netmask	
	Default Gateway	
	DNS (Primary)	
	DNS (Secondary)	
	VLAN	Indicates whether VLAN is added.
	VID	
	COS	
	Link Speed	
Result data	Cause Presumption	Displays the presumed causes when the connection result is "NG."
	Start Time	
	Link Speed	
	Connection Test Result	Indicates "OK" or "NG."

<9> When f6 (Return) is pressed, the Save-Save Result screen closes without saving the result in the file.

3.5 Saving Setting Parameters

The setting parameters can be saved in a specified file as a setting file. The setting files are independent by test or measurement function. Different file extensions are added to the names of the setting files as summarized in the table below:

Table 3.5-1 Setting file types

Function	Setting file extension	Save destination default folder
Connectivity Check	.CFCN.txt	INTMEM:/Ip/Settings/Connectivity/
Connection Test	.CFPT.txt	INTMEM:/Ip/Settings/Connection/
Download Throughput Measurement	.CFDL.txt	INTMEM:/Ip/Settings/DLThroughput Measurement/
Throughput Measurement	.CFTP.txt	INTMEM:/Ip/Settings/Throughput/
Counter Measurement	.CFCT.txt	INTMEM:/Ip/Settings/Counter/

Setting parameters can be saved in a setting file from each test or measurement screen. When saving the setting parameters on a screen, they are saved in the setting file corresponding to the function of the currently displayed screen. For example, when the setting parameters are saved from the Connectivity screen, they are saved in a Connectivity Check setting file.

<Setting Procedure>

1. Press [F1] (Menu) to display the menu screen.
2. Using the [∧] [∨] keys or the numeric key, move the cursor to "Save File." Press the [Enter] key to display the Save-Save Result screen.
3. Press [F2] (Settings Save). The screen changes to the Save Setting File screen.
4. Specify the folder.
   (1) Using the [∧] [∨] keys, move the cursor to "Folder." Press the [Enter] key to display the Select Folder screen.
   (2) Perform operations for folders, e.g., creating ([f4] key), deleting ([f3] key), and renaming ([f5] key) a folder in this window.
   (3) Using the [∧] [∨] keys, select the desired folder to save, and press the [Enter] key. Then, press [f1] (Change Folder) to determine the folder.

5. To rename the file, use the following procedure:
   The default file name is set depending on the current time as follows:

   Year (4 digits)_Month (2 digits)_Day (2 digits)_Hours (2 digits) [0 to 24]_Minutes (2 digits)_Seconds (2 digits).CFCN.txt
   Example: 2004_10_10_17_09_42.CFCN.txt

   The maximum input length is 50 in 1-byte alphanumeric characters.

   (1) Using the [∧] [∨] keys, move the cursor to "File Name."

   (2) Press the [Enter] key to display the Character Input screen.
   For details of character input, refer to Section 3.8 "Character Input Procedure."

6. To change the title, use the following procedure:
   The maximum input length is 32 in 1-byte alphanumeric characters.

   (1) Using the [∧] [∨] keys, move the cursor to "File Name."

   (2) Press the [Enter] key to display the Character Input screen.
   For details of character input, refer to Section 3.8 "Character Input Procedure."

7. Press [f1] (Execute Save) to execute the save. The setting parameters are saved in the specified file, and the Save-Save Result screen closes.

3.6 Recalling Setting Parameters

The setting parameters can be recalled and set from the setting file for each test or measurement. Only the setting files that are related to the currently-displayed test/measurement screen can be selected.

<Setting Procedure>

1. Press F1 (Menu) to display the menu screen.
2. Using the ∧ ∨ keys or the numeric key, move the cursor to "Recall." Press the Enter key to display the Recall screen.
3. When "Setting File" is displayed on the f2 key, press the f2 key to display the screen for recalling the setting file.
4. Specify the folder.
   (1) Press F1 (Change Folder) to display the Change Folder window.
   (2) Perform operations for folders, e.g., creating (f4 key), deleting (f3 key), and renaming (f5 key) a folder in this window.
   (3) Using the ∧ ∨ keys, select the folder to save the setting files, and press the Enter key. Then, press f1 (Change Folder) to display the setting files.
5. Select the setting file using the ∧ ∨ keys. Then, press the Enter or f1 (Execute Recall) to recall the setting parameters from the setting file. After the recall is completed, the Recall screen closes.

3.7 Displaying Result File

The saved test or measured results can be viewed. The file extension is different according to the test results and measured results as shown in the table below:

Table 3.7-1 Result file types

Function	Result file extension	Save destination default folder
Connectivity Check	.RLCN.txt	INTMEM:/Ip/Results/Connectivity/
Connection Test (Ping)	.RLPG.txt	INTMEM:/Ip/Results/Ping/
Connection Test (Trace route)	.RLTR.txt	INTMEM:/Ip/Results/Trace Route/
Download Throughput Measurement	.RLDL.txt	INTMEM:/Ip/Results/DLThroughput/
Throughput Measurement	.RLTP.txt	INTMEM:/Ip/Results/Throughput/
Counter Measurement	.RLCT.txt	INTMEM:/Ip/Results/Counter/

The result file is in text form. Therefore, it is possible to edit and print out easily on a PC by saving a result file to an external memory and loading it to the PC.

<Setting Procedure>

1. Press F1 (Menu) to display the menu screen.
2. Using the ∧ ∨ keys or the numeric key, move the cursor to "Recall." Press the Enter key to display the Recall screen.
3. When "Setting File" is displayed on the f2 key, press the f2 key to display the screen for recalling the result file.
4. Specify the folder.
   (1) Press F1 (Change Folder) to display the Change Folder window.
   (2) Perform operations for folders, e.g., creating (f4 key), deleting (f3 key), and renaming (f5 key) a folder in this window.
5. Select the result file using the ∧ ∨ keys. Then, press the Enter or f1 (Execute Recall) to display the test/measured results.

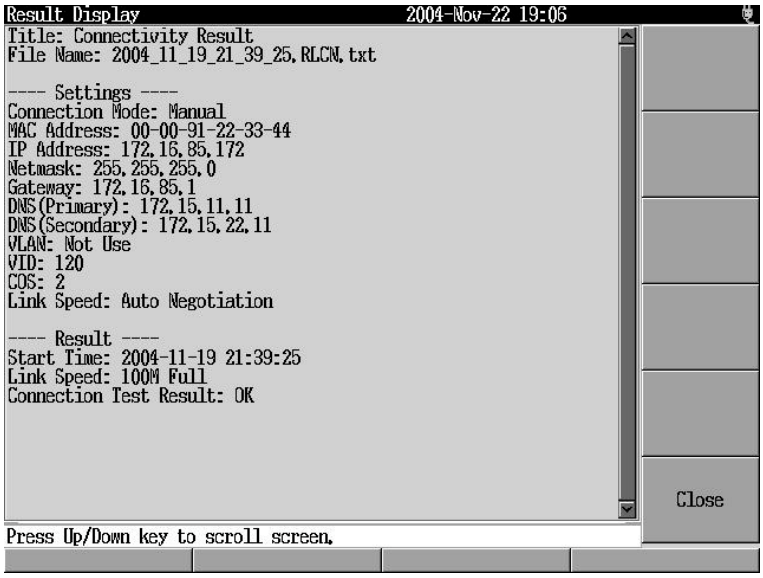


Fig. 3.7-1 Result Display screen

3.8 Character Input Procedure

Text characters can be input for some setting items. When a setting item for which characters can be input is selected, the screen shown in Fig. 3.8-1 is displayed.

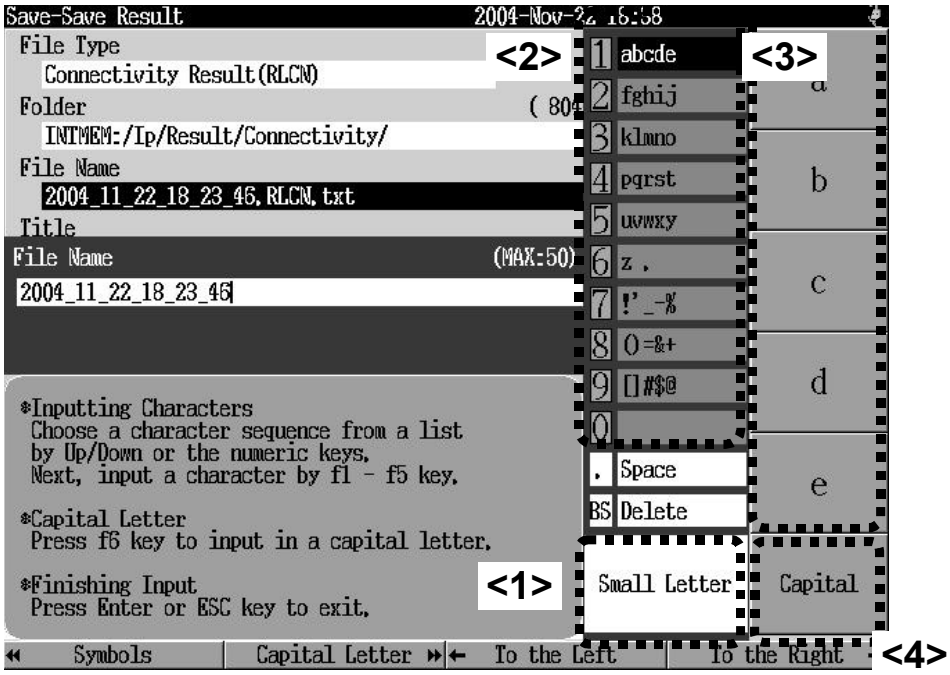


Fig. 3.8-1 Character Input screen

- Moving to the character input position:
  If a character has already been set, press F3 (To the Left) and F4 (To the Right) to move the cursor to the position to input the character.

- Deleting a character you input:
  To delete a character you input, move the cursor to the right of the desired character and press the Back Space key.

- Selecting the character input mode (type of characters to input):
  The currently selected character input mode is displayed in Area <1>.
  Select the character input mode by pressing the F1 and F2 keys.

  Character types: Numeric, Small letter, Capital letter, Symbols

- Inputting characters:
  When the character input mode is selected, select a character group from Area <2> using the [∧] and [∨] keys and numeric keys. Then, input one of the characters in Area <3> by pressing one of the [f1] to [f5] keys.

- Temporarily switching case between capital and small:
  The capital or small letters in the character group in Area <2> can be switched between the capital and small per character by pressing the [f6] key in Area <4>.

- Finalizing the input characters:
  The input characters are finalized by pressing the [Enter] key.

Note the following when inputting characters:

- The maximum character string length that can be input is fifty 1-byte characters. However, depending on the setting item, the maximum number of characters may be limited. So, confirm the maximum value displayed on the screen.

- The file name length must be up to fifty 1-byte characters, excluding the extension. The extension cannot be changed.

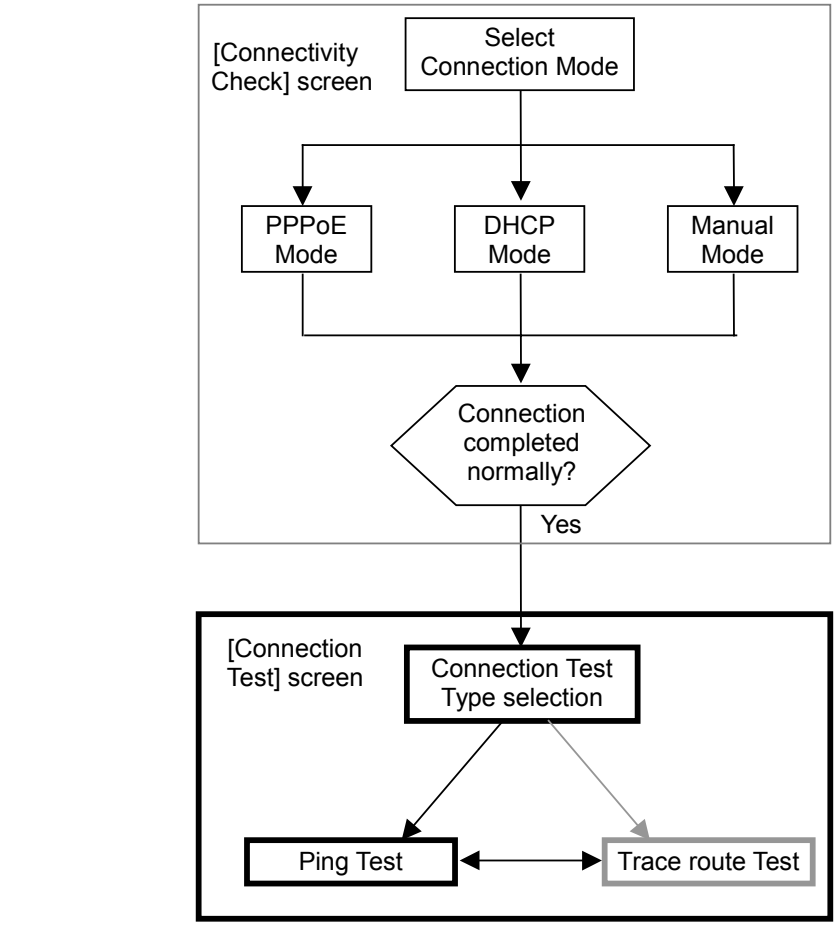
- When changing a folder or file name with a length of fifty-one 1-byte characters, characters can be deleted but not added. After the string length becomes less than fifty 1-byte characters, characters can be added.

Section 4 Connection Test

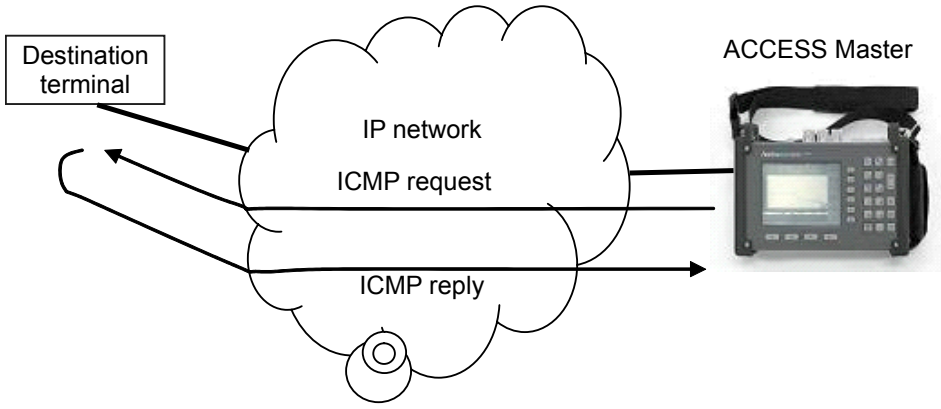
This section describes operations of the connection test function.
The connection test function can be executed after the connection is established by using Connectivity Check. A Ping or trace route test can be executed using the connection test function.
The items displayed in the [ ] in this section indicate panel keys.

4.1 Ping Test

A Ping test can be executed after the connection to the network is established using the Connectivity Check.



In a Ping test, it is checked whether the specified connection destination terminal exists on the network by using an ICMP packet.



4.1.1 Setting up setting parameters

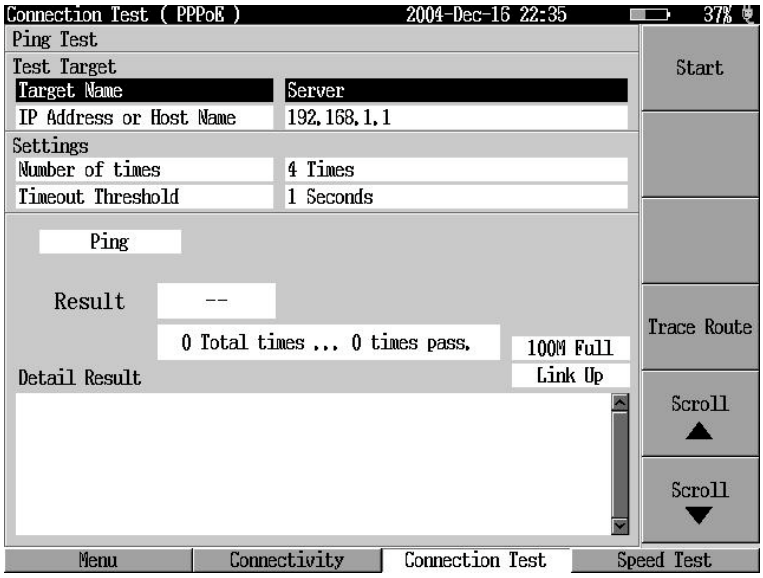


Fig. 4.1.1-1 Connection Test screen - Ping Test

Pressing F3 (Connection Test) on the Connectivity Check screen displays the Connection Test screen. Pressing f4 ("Trace Route" on the Ping Test screen and "Ping" on the Trace Route Test screen) on the Connectivity Check screen toggles between the Ping Test screen and the Trace Route Test screen. The according test (Ping or Trace route) can be executed from each screen. The test type is displayed on the top of the screen.

The following setting parameters can be set directly or can be set by recalling the setting parameters from the previously saved setting file. It is also possible to save the set parameters in a file.

<1> Target Name

The name of the test target (destination) can be set. The maximum input length is 31 in 1-byte characters. The name set here is commonly used with the Trace Route Test screen.

<Setting Procedure>

1. Using the ∧ ∨ keys, move the cursor to "Target Name."
2. Press the Enter key to display the Character Input screen.
   For details of character input, refer to Section 3.8 "Character Input Procedure."

<2> IP Address or Host Name

Specifies the IP address or host name of the test target (destination). When inputting the host name, up to 63 1-byte alphanumeric characters can be used. The IP address or host name set here is commonly used with the Trace Route Test screen.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "IP Address or Host Name."
2. Press the [Enter] key to display the Setting window. Using the [∧] [∨] keys, select "IP Address" or "Host Name." Then press the [Enter] key.
3. When "IP Address" is selected in Step 2, the Set IP Address window is displayed. Input the numeric value directly using numeric keys, [F3] (Left), and [F4] (Right).
4. When "Host Name" is selected in Step 2, the Character Input screen is displayed.
   For details of character input, refer to Section 3.8 "Character Input Procedure."

<3> Number of times

Specifies the number of times for executing the Ping Test from 1 to 999 (times).

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Number of times."
2. Press the [Enter] key to display the Setting window. Using the [∧] [∨] keys, increment or decrement the number of times in steps of 1. It is also possible to input the value directly using numeric keys.
3. After setting the number of Ping test execution times, press the [Enter] key. The Setting window closes and the set number is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

<4> Timeout Threshold

Specifies the timeout threshold used for judging the timeout if no response returns from the destination after executing Ping. The setting range is from 1 to 60 (seconds).

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Timeout Threshold."
2. Press the [Enter] key to display the Setting window. Using the [∧] [∨] keys, increment or decrement the timeout threshold in steps of 1 second. It is also possible to input the value directly using numeric keys.
3. After setting the timeout threshold, press the [Enter] key. The Setting window closes and the set timeout threshold is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

4.1.2 Executing test

After executing a Ping test, the executed results are displayed.

(1) Executing test

<1> Executing test

Press [f1] (Start) to execute a Ping test. "Abort" is displayed on the [f1] key during testing. After the test has completed, the executed results are displayed on the screen and the [f1] key display returns to "Start."

Note:

When the connection to the network has been established in the PPPoE Mode, the PPPoE session may be released due to a cause such as a network failure or connection equipment failure. The connection test function is disabled when the PPPoE session is released. In this case, execute the connection to the network through the Connectivity screen before retrying to start the test.

The test cannot be executed either if the link with the connection destination has not been established. A failure to establish the link may be caused by either of the following:

1 There is a problem about the cable that is used for connection with the destination.
→ For 10/100M IF: Use a cable of Category 3 or greater.
For 1000M IF: Use a cable of Category 5E or greater.

2 The MT9080 Series differs from the destination in link speed setting.
→ Check the link speed setting of the destination's equipment and that of the MT9080 Series. If they are different, return to the Connectivity screen and set the MT9080 Series link speed to the same setting as the destination.

<2> Aborting test

When executing a Ping test, the [f1] key is displayed as "Abort" during testing. Pressing [f1] (Abort) aborts the test process.

(2) Executed results

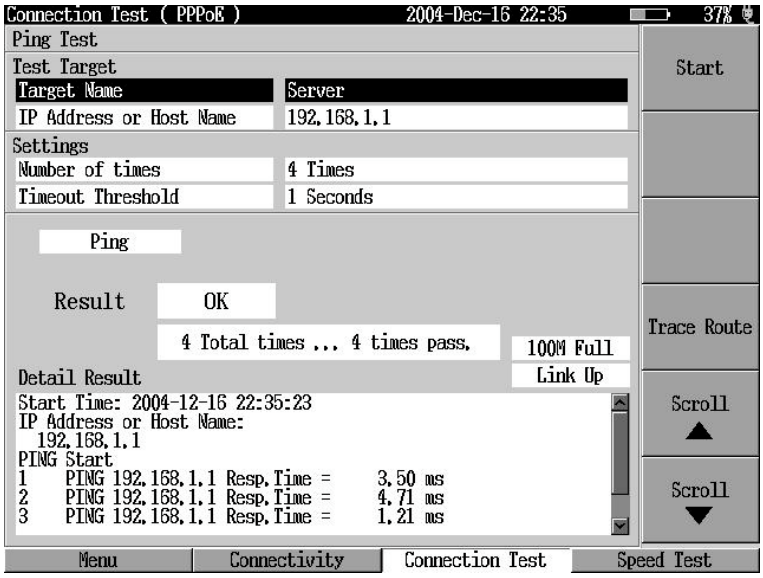


Fig. 4.1.2-1 Ping Test results

<1> Result display area

Displays the OK/NG judgment and the number of Ping response count.

(1) OK/NG judgment

OK: The test executes Ping the preset number of times, and displays the result as "OK" when the response is returned for every test.

NG: The test executes Ping the preset number of times, and displays the result as "NG" if the response did not return even once from the destination, or did not return within the timeout threshold.

(2) Ping response count

Displays the number of times the response is returned from the destination to the number of times of Ping.

<2> Detail Result display area

Displays the results for each Ping execution during execution of Ping test. The result of each individual Ping execution can be viewed by pressing f5 (Scroll ▲) or f6 (Scroll ▼) to scroll the Detail Result display area view.

The Detail Result area displays the following results:

(1) Start Time (date/time of execution)

(2) IP Address or Host Name

(3) Results for each Ping test execution

• If a normal response returned, the following are displayed:

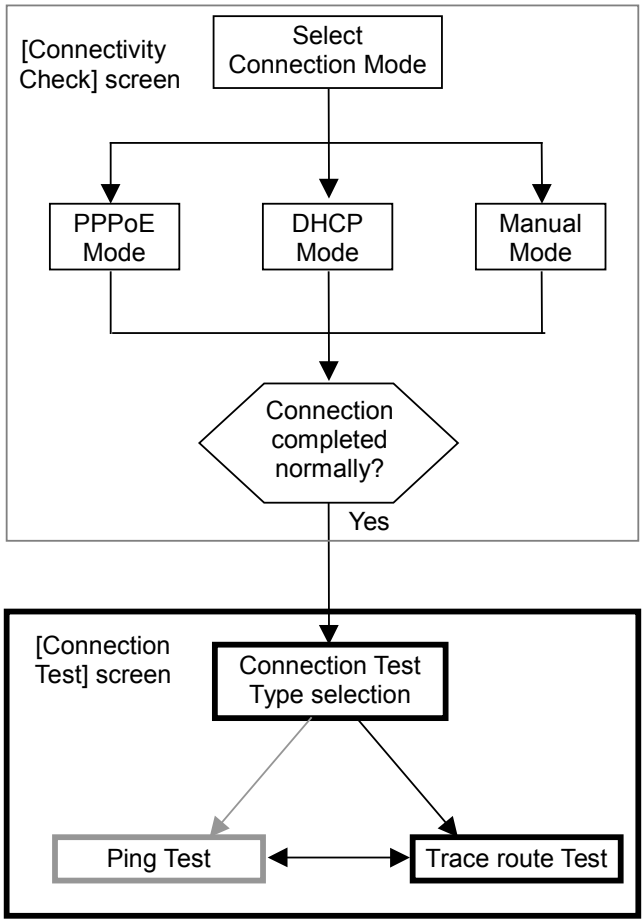
Item	Description
Counts	Indicates the current count of the Ping execution.
Destination IP address	Displays the IP address of the destination for which the Ping test was executed.
Response time	Displays the response time from when the ICMP request packet was transmitted to the destination, to when the ICMP reply packet was received from there.

• If a failure is detected, the cause may be one of the following:

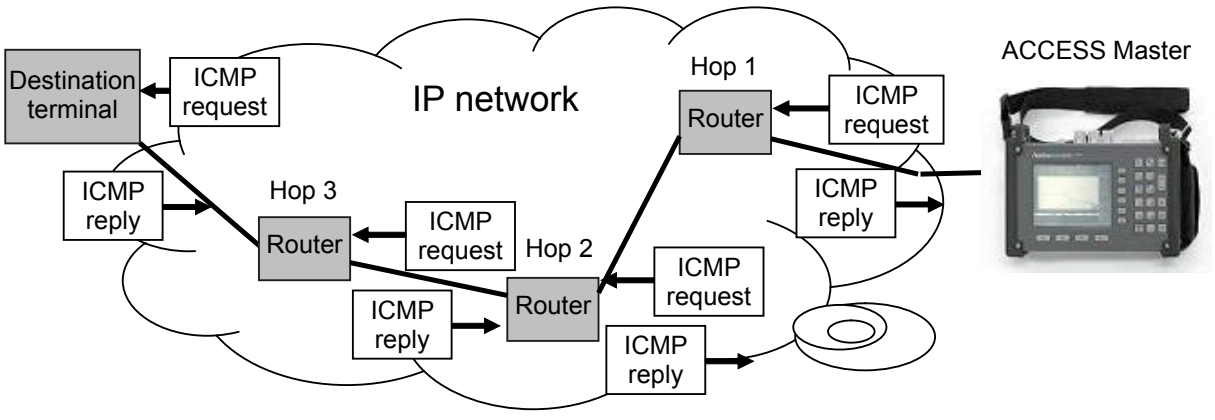
Message	Description
Network Unreachable	Displayed when the destination network may not exist, or Ping may be unable to be routed to the network due to occurrence of a fault.
Host Unreachable	Displayed when the destination terminal was not found. Check the IP address of the destination.
Protocol Unreachable	Displayed when the specified protocol is not available.
Port Unreachable	Displayed when the specified port is not available.
Unreachable (Fragmentation Needed)	Displayed when the packet was unable to be fragmented because it cannot be fragmented.
Unreachable (Source Route Failed)	Displayed when Ping was unable to be routed to the route even though the route through which to pass was specified.
Unreachable (Destination Network Unknown)	Displayed when the destination network was unable to be resolved.
Unreachable (Destination Host Unknown)	Displayed when the host name was unable to be resolved. The host name is not yet registered in the DNS server, or the DNS IP address or host name is invalid.
Unreachable (Source Host Isolated)	Displayed when the destination terminal is separated from the network.
Unreachable (Communication with Network Prohibited)	Displayed when communication with the destination network is currently inhibited.
Unreachable (Communication with Host Prohibited)	Displayed when communication with the destination terminal is currently inhibited.
Unreachable (Network Unreachable For Type Of Service)	Displayed when Ping cannot reach the destination network with the TOS value of the transmitted ICMP request.
Unreachable (Host Unreachable For Type Of Service)	Displayed when Ping cannot reach the destination terminal with the TOS value of the transmitted ICMP request.
Unreachable (Communication Administratively Prohibited)	Displayed when the communication is currently inhibited by the administrator.
Unreachable (Host Precedence Violation)	Displayed when a host priority violation occurred.
Unreachable (Precedence cutoff in effect)	Displayed when priority disconnection is enabled.
Unreachable (Invalid Code)	Displayed when a fault other than the above was detected.
Time Out	Displayed when no response was returned from the destination. The destination terminal may not exist, or a response was not returned from the destination within the timeout.

4.2 Trace Route Test

A trace route test can be executed after the connection to the network is established using the Connectivity Check.



In a trace route test, it is checked whether the connection destination terminal exists on the network within the specified number of hops by using an ICMP packet. The IP address of the equipment and the response time of the response from it are displayed for every hop.



4.2.1 Setting up setting parameters

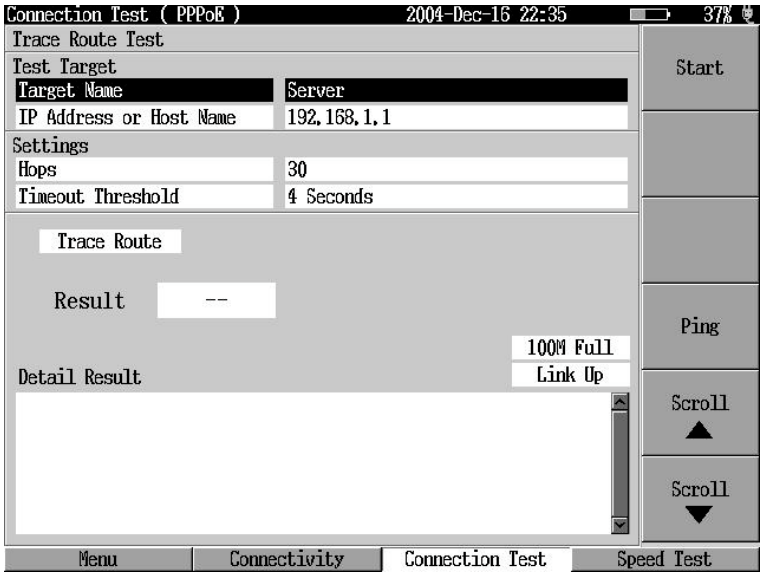


Fig. 4.2.1-1 Connection Test screen - Trace route Test

Pressing [F3] (Connection Test) on the Connectivity Check screen displays the Connection Test screen. Pressing [f4] ("Ping" on the Trace Route Test screen and "Trace Route" on the Ping Test screen) on the Connectivity Check screen toggles between the Trace Route Test screen and the Ping Test screen. The according test (Trace route or Ping) can be executed from each screen. The test type is displayed on the top of the screen.

The following setting parameters can be set directly or can be set by recalling the setting parameters from the previously saved setting file. It is also possible to save the set parameters in a file.

<1> Target Name

The name of the test target (destination) can be set. The maximum input length is 31 in 1-byte characters. The name set here is commonly used with the Ping Test screen.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Target Name."
2. Press the [Enter] key to display the Character Input screen.
   For details of character input, refer to Section 3.8 "Character Input Procedure."

<2> IP Address or Host Name

Specifies the IP address or host name of the test target (destination). When inputting the host name, up to 63 1-byte alphanumeric characters can be used. The IP address or host name set here is commonly used with the Ping Test screen.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "IP Address or Host Name."
2. Press the [Enter] key to display the Setting window. Using the [∧] [∨] keys, select "IP Address" or "Host Name." Then press the [Enter] key.
3. When "IP Address" is selected in Step 2, the Set IP Address window is displayed. Input the numeric value directly using numeric keys, [F3] (Left), and [F4] (Right).
4. When "Host Name" is selected in Step 2, the Character Input screen is displayed.
   For details of character input, refer to Section 3.8 "Character Input Procedure."

<3> Hops

In the trace route test, a test is executed for each hop while incrementing the number of hops in steps of 1. The maximum number of hops to test can be set by this parameter from 1 to 255 (times).

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Hops."
2. Press the [Enter] key to display the Setting window. Using the [∧] [∨] keys, increment or decrement the number of hops in steps of 1. It is also possible to input the value directly using numeric keys.
3. After setting the number of hops, press the [Enter] key. The Setting window closes and the set number is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

<4> Timeout Threshold

When a trace route test is executed, an ICMP request packet is transmitted to the destination and the MT9080 Series waits the response of the ICMP replay packet to the transmitted request packet. The timeout threshold used for judging the timeout if no response returns from the destination can be set by this parameter. The setting range is from 2 to 60 (seconds).

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Timeout Threshold."
2. Press the [Enter] key to display the Setting window. Using the [∧] [∨] keys, increment or decrement the timeout threshold in steps of 1. It is also possible to input the value directly using numeric keys.
3. After setting the timeout threshold, press the [Enter] key. The Setting window closes and the set timeout threshold is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

4.2.2 Executing test

After executing a trace route test, the executed results are displayed.

(1) Executing test

<1> Executing test

Press [f1] (Start) to execute a trace route test. "Abort" is displayed on the [f1] key during testing. After the test has completed, the executed results are displayed on the screen and the [f1] key display returns to "Start."

Note:

When the connection to the network has been established in the PPPoE Mode, the PPPoE session may be released due to a cause such as a network failure or connection equipment failure. The connection test function is disabled when the PPPoE session is released. In this case, execute the connection to the network through the Connectivity screen before retrying to start the test.

The test cannot be executed either if the link with the connection destination has not been established. A failure to establish the link may be caused by either of the following:

1 There is a problem about the cable that is used for connection with the destination.
→ For 10/100M IF: Use a cable of Category 3 or greater.
For 1000M IF: Use a cable of Category 5E or greater.

2 The MT9080 Series differs from the destination in link speed setting.
→ Check the link speed setting of the destination's equipment and that of the MT9080 Series. If they are different, return to the Connectivity screen and set the MT9080 Series link speed to the same setting as the destination.

<2> Aborting test

When executing a trace route test, the [f1] key is displayed as "Abort" during testing. Pressing [f1] (Abort) aborts the test process.

(2) Executed results

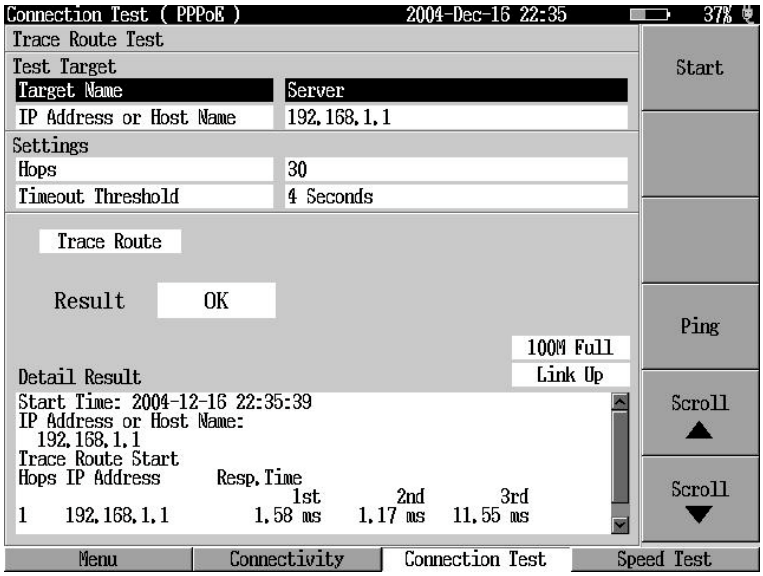


Fig. 4.2.2-1 Trace Route Test screen (test results)

<1> Result display area

Displays the [OK]/[NG] judgment.

OK: Displayed when a response is returned from the destination terminal within the interval up to the preset number of hops.

NG: Displayed when a response is not returned from the destination terminal within the interval up to the preset number of hops, or a response is not returned within the timeout threshold.

<2> Detail Result display area

A trace route test is executed three time for each hop. A trace route test is executed continuously for the specified number of hops, until a response is returned from the destination. The response results for each hop are displayed during execution of a trace route test. The response results of each hop can be viewed by pressing f5 (Scroll ▲) or f6 (Scroll ▼) to scroll the Detail Result display area view.

The Detail Result area displays the following results:

(1) Start Time (date/time of execution)

(2) IP Address or Host Name

(3) Results for each hop

• If a normal response returned, the following are displayed:

Item	Description
Hops	Indicates the ordinal number of the hop (router) from which the router returned.
IP Address of Responding Equipment	Indicates the IP address of the hop that transmitted the response.
Response Time	Displays the response time from when the ICMP request packet was transmitted to the destination, to when the ICMP reply packet was received from there. "*" is displayed if a response is not returned from the destination within the timeout. "!" is displayed if a response is not returned from the destination due to other causes.

• If a failure is detected, the cause may be one of the following:

Message	Description
Trace route test fails. Check the following.	
1) !N →A destination network does not exist.	Displayed when the destination network may not exist, or Ping may be unable to be routed to the network due to occurrence of a fault.
2) !H →The host who answers does not exist.	Displayed when the destination terminal was not found. Check the IP address of the destination.
3) !P →A protocol does not pass.	Displayed when the specified protocol is not available.
4) !F →Fragmentation is required.	Displayed when the packet was unable to be fragmented because it cannot be fragmented.
5) !S →The specified route cannot be reached.	Displayed when Ping was unable to be routed to the route even though the route through which to pass was specified.
6) !X →Communication is forbidden by the administrator for filtering.	Displayed when the communication is currently inhibited by the administrator.
7) !V →The violation of a priority of a host occurs.	Displayed when a host priority violation occurred.
8) !C →The cutoff by the priority occurs.	Displayed when priority disconnection is enabled.
9) !? →Other abnormalities occur.	Displayed when a failure other than 1) through 8) above was detected.
10) * →A timeout occurs.	Displayed when no response was returned from the destination. The destination terminal may not exist, or a response was not returned from the destination within the timeout.

4.3 Saving Results

The executed results can be saved in a specified file in the internal memory of the MT9080 Series or external memory (USB).

<1> Check that the executed results are currently displayed.
Saving result is disabled if there are no executed results displayed.

<2> Press F1 (Menu) to display the short-cut menu.

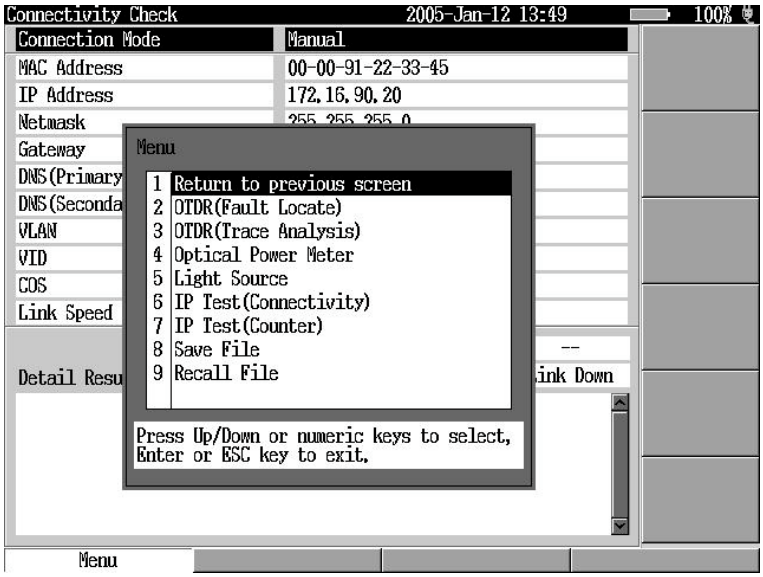


Fig. 4.3-1 Short-cut menu

<3> Using the ∧ ∨ keys or the numeric key, move the cursor to "Save File."

<4> Press the [Enter] key to display the Save-Save Result screen. The Save-Save Result screen can also be displayed by pressing the [3] key on the Connection Test screen.
Then press [F1] (Execute Save).

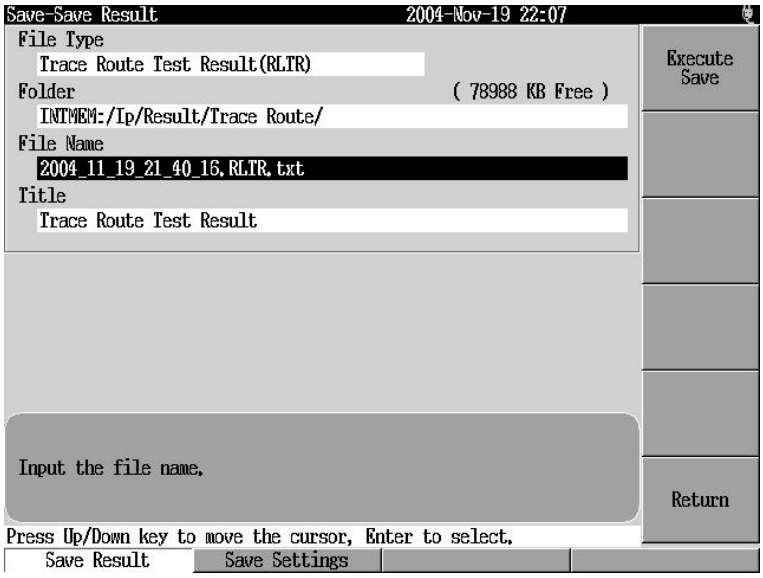


Fig. 4.3-2 Save-Save Result screen

<5> A folder to save the result file can be set.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Folder."
2. Press the [Enter] key to display the Setting window.

<6> The file name can be renamed.

(1) Ping test
The default file name is set as follows, based on the test execution time:
Year (4 digits)_Month (2 digits)_Day (2 digits)_Hours (2 digits) [0 to 24]_Minutes (2 digits)_Seconds (2 digits).RLPG.txt
Example: 2004_10_10_17_09_42.RLPG.txt
The maximum input length is 50 in 1-byte alphanumeric characters.

(2) Trace route test
The default file name is set as follows, based on the test execution time:
Year (4 digits)_Month (2 digits)_Day (2 digits)_Hours (2 digits) [0 to 24]_Minutes (2 digits)_Seconds (2 digits).RLTR.txt
Example: 2004_10_10_17_09_42.RLTR.txt
The maximum input length is 50 in 1-byte alphanumeric characters.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "File Name."
2. Press the [Enter] key to display the Character Input screen.
   For details of character input, refer to Section 3.8 "Character Input Procedure."

<7> The title can be changed. The maximum input length is 32 in 1-byte alphanumeric characters.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Title."
2. Press the [Enter] key to display the Character Input screen.
   For details of character input, refer to Section 3.8 "Character Input Procedure."

<8> Press [f1] (Execute Save) to save the executed results in the file and close the Save-Save Result screen.
The following file is saved:

(1) Executed result file
The setting parameters listed on the screen and the executed results are saved in a text-format file.

The executed results saved in the executed result file are as follows.
Refer to Section 3.7 "Displaying Result File" for how to display the result file.

Table 4.3-1 Connection Test - Saved contents in Ping test result file

Item		Description
Title		
File name		
Setting data	Target Name	
	IP Address or Host Name	
	Number of times	
	Timeout Threshold	
Result data	Cause Presumption	Displays the presumed causes when the test result is "NG."
	Start Time	
	Link Speed	
	OK/NG	Indicates "OK" or "NG."
	Results	Indicates the number of Ping executions and the number of times the response returned.
	Ping Execution Details	Displays the destination terminal's IP address and the response time from the destination, for each of the Ping executions.

Table 4.3-2 Connection Test - Saved contents in trace route test result file

Item		Description
Title		
File name		
Setting data	Target Name	
	IP Address or Host Name	
	Hops	
	Timeout Threshold	
Result data	Cause Presumption	Displays the presumed causes when the test result is “NG.”
	Start Time	
	Link Speed	
	OK/NG	Indicates “OK” or “NG.”
	Trace route Test Execution Details	Displays the responding equipment's IP address and the response for each of the hops.

<9> When f6 (Return) is pressed, the Save-Save Result screen closes without saving the results in the file.

For how to save and recall the setting parameters, refer to Sections 3.5 “Saving Setting Parameters” and 3.6 “Recalling Setting Parameters”, respectively.

Section 5 Download Throughput Measurement

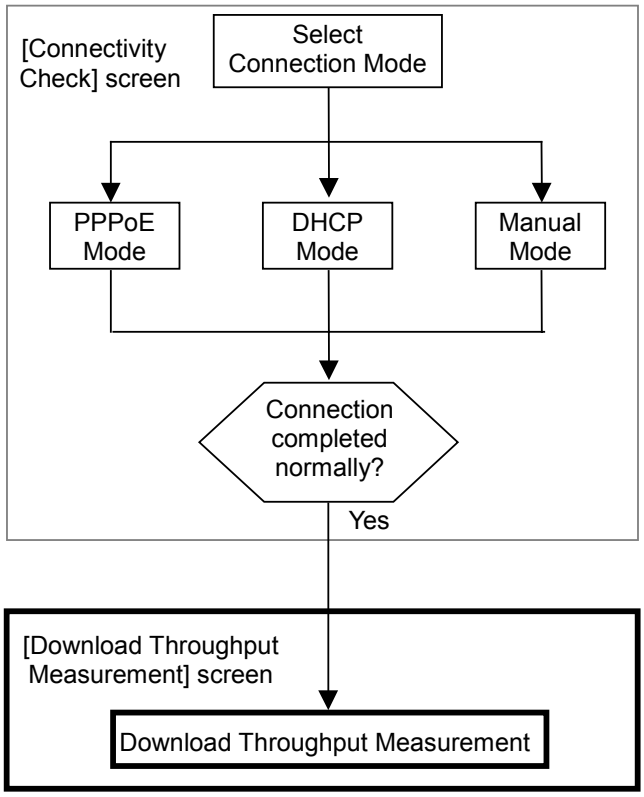
This section describes operations of the download throughput measurement function.

The download throughput measurement function can be executed after the connection is established by using Connectivity Check. In the download throughput measurement, a specified file is downloaded from the WWW server using the HTTP protocol, and the download throughput at this time is measured.

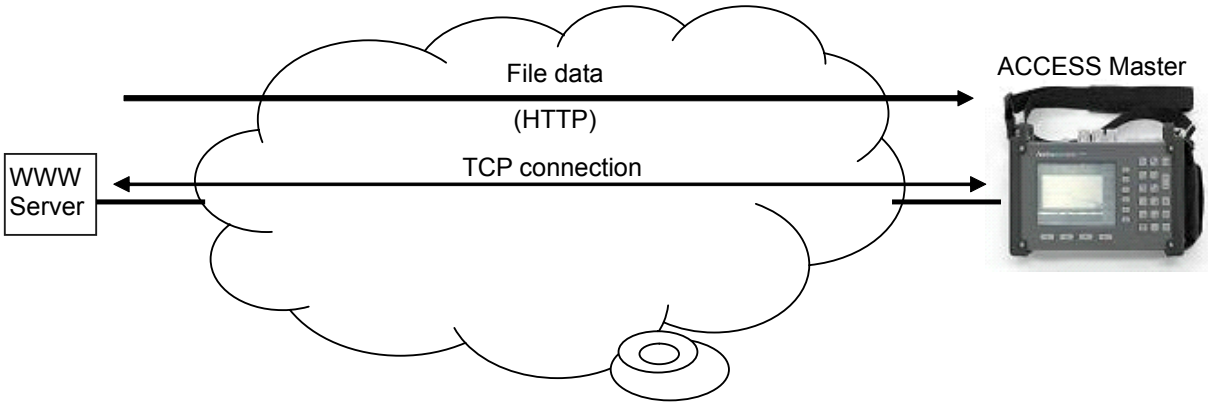
The items displayed in the [ ] in this section indicate panel keys.

5.1 Download Throughput Measurement

The download (DL) throughput measurement can be performed after the connection to the network is established by using Connectivity Check.



In the download throughput measurement, a specified file is downloaded from the WWW server using the HTTP protocol, and the download throughput at this time is measured. This download is performed in the connection-type communication that uses TCP, which is the same method used when displaying the contents of an image file on a PC via a browser.



The download throughput value is calculated by dividing the size of the file to be downloaded by the time spent in download. It is influenced by the processing time in the WWW server, the delay time in the IP network, and the processing time in the MT9080 Series ACCESS Master main unit. If these processing times or delay times increase, the download time increases and the download throughput value becomes smaller. The MT9080 Series implements the communication process by hardware, although it is generally processed by software (protocol stack). This minimizes the processing time in the MT9080 Series, and enables it to measure the download throughput value accurately without being influenced by the MT9080 Series CPU specification or load conditions.

5.1.1 Setting up setting parameters

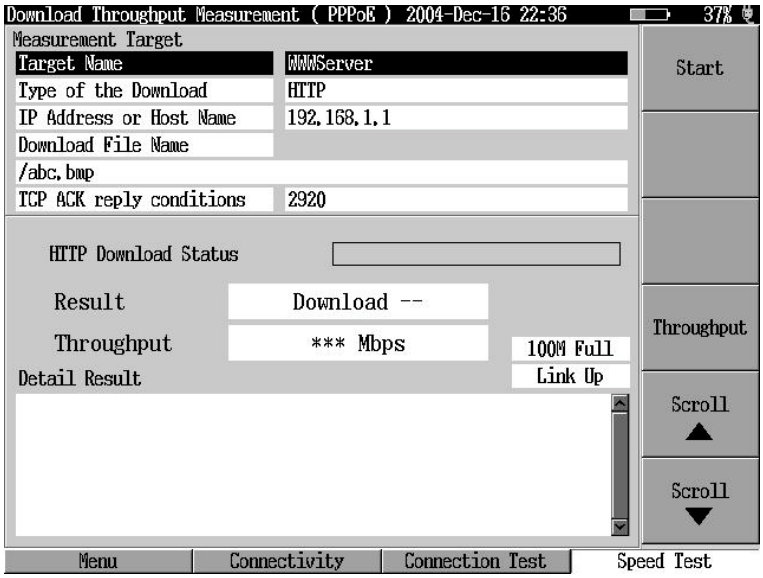


Fig. 5.1.1-1 Download Throughput Measurement screen

On the Connectivity screen, pressing [F4] (Speed Test) and then pressing the [f4] key when "Download" is displayed on the [f4] key displays the Download Throughput Measurement screen.

The following setting parameters can be set directly or can be set by re-calling the setting parameters from the previously saved setting file. It is also possible to save the set parameters in a file.

<1> Target Name

The name of the measurement target (destination) can be set. The maximum input length is 31 in 1-byte characters.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Target Name."
2. Press the [Enter] key to display the Character Input screen.
   For details of character input, refer to Section 3.8 "Character Input Procedure."

<2> IP Address or Host Name

Specifies the IP address or host name of the WWW server that contains the desired file to be downloaded. When inputting the host name, up to 63 1-byte alphanumeric characters can be used.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "IP Address or Host Name."
2. Press the [Enter] key to display the Setting window. Using the [∧] [∨] keys, select "IP Address" or "Host Name." Then press the [Enter] key.
3. When "IP Address" is selected in Step 2, the Set IP Address window is displayed. Input the numeric value directly using numeric keys, [F3] (Left), and [F4] (Right).
4. When "Host Name" is selected in Step 2, the Character Input screen is displayed.
   For details of character input, refer to Section 3.8 "Character Input Procedure."

<3> Download File Name

Specifies the file to be downloaded or the folder that contains the target file.

For example, when specifying the file in the following URL:
htttp://www.anritsu.co.jp/japan/abc.jpg
set "www.anritsu.co.jp" for the host name and set "/japan/abc.jpg" for the download file name.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Download File Name."
2. Press the [Enter] key to display the Character Input screen.
   For details of character input, refer to Section 3.8 "Character Input Procedure."

<4> TCP ACK reply conditions

Sets the TCP ACK packet reply condition. TCP ACK is returned when the data in the payload field in a TCP packet is received for the bytes set in this parameter. This setting has an affect on the download throughput value.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "TCP ACK reply conditions."
2. Press the [Enter] key to display the Setting window. Using the [∧] [∨] keys, increment or decrement the value (bytes) in steps of 1. It is also possible to input the value directly using numeric keys. The setting range is 1 to 1000000.
3. After setting the value, press the [Enter] key. The Setting window closes and the set value is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

5.1.2 Performing measurement

After performing the measurement, the measured results are displayed.

(1) Performing measurement

<1> Performing measurement

Press [f1] (Start) to start the measurement. "Abort" is displayed on the [f1] key while the measurement is in progress. After the measurement has completed, the measured results are displayed on the screen and the [f1] key display returns to "Start."

Note:

The download throughput measurement can be performed only when "Link Speed" is "Full." This is because the download throughput measurement may not be performed correctly if "Link Speed" is "Half." Set "Link Speed" to "Auto Negotiation" using the Connectivity Check function, and check that the speed of the link with the connection destination is "Full."

The download throughput measurement does not support TCP re-transmission processing. Measurement may be failed for poor quality lines.

When the connection to the network has been established in the PPPoE Mode, the PPPoE session may be released due to a cause such as a network failure or connection equipment failure. The download throughput measurement is disabled when the PPPoE session is released. In this case, execute the connection to the network through the Connectivity screen before retrying to start the measurement.

The download throughput measurement cannot be performed either if the link with the connection destination has not been established. A failure to establish the link may be caused by either of the following:

1 There is a problem about the cable that is used for connection with the destination.
→ For 10/100M IF: Use a cable of Category 3 or greater.
For 1000M IF: Use a cable of Category 5E or greater.

2 The MT9080 Series differs from the destination in link speed setting.
→ Check the link speed setting of the destination's equipment and that of the MT9080 Series. If they are different, return to the Connectivity screen and set the MT9080 Series link speed to the same setting as the destination.

<2> Aborting measurement

When performing the download throughput measurement, the f1 key is displayed as "Abort" during measuring. Pressing f1 (Abort) aborts the measuring process.

(2) Measured results

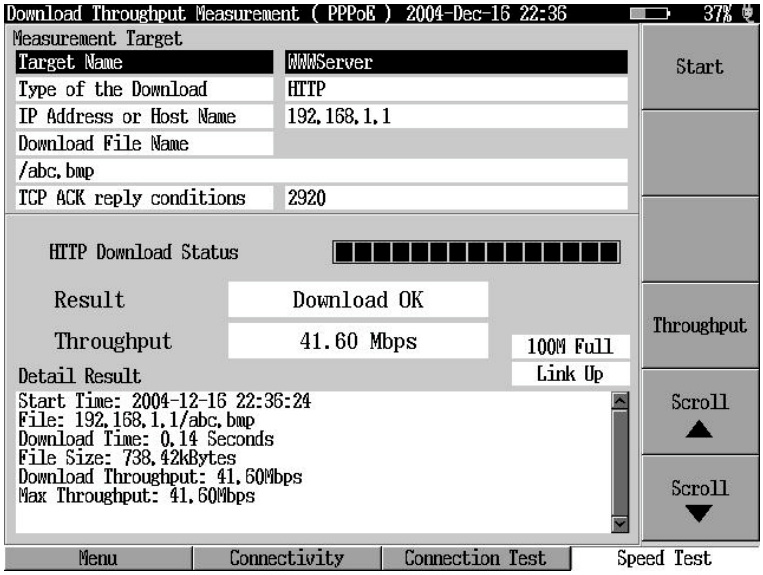


Fig. 5.1.2-1 Download throughput measured results

<1> Result display area

Displays the [OK]/[NG] judgment and the download throughput value.

(1) OK/NG judgment

OK: Displayed if the preset file was downloaded completely.

NG: Displayed if the preset file was not downloaded completely.

(2) Throughput (download throughput value)

Displays the download throughput value when the judgment result is "OK."

Note:

Since data is transferred using TCP in the download throughput measurement, the measured throughput value varies depending on many causes, such as the performance of the routers and network equipment located between the destination and the MT9080 Series ACCESS Master, the load status of the destination (e.g., ISP, WWW server), and the number of traffics on the network route. For this reason, the measured throughput value is the result of adding the causes on the route between the destination and MT9080 Series ACCESS Master, rather than the indication of the line throughput.

With the MT9080 Series, this measurement is implemented by hardware in order to achieve accurate measurement, although it is generally processed by software. The measurement may thus be performed in a method different from those for other measurement sites or measurement software, and the results from this measurement are not always identical with those obtained by other such measurement methods.

<2> Detail Result display area

Displays the detailed results of this measurement. If some of the detailed results below are hidden from the display area, press f5 (Scroll▲) or f6 (Scroll ▼) to scroll the Detail Result display area view.

The Detail Result area displays the following results:

(1) Start Time (date/time of measurement)

(2) File (location of the download file)

(3) Download Time (time required for download)

(4) File Size (size of the download file)

(5) Download Throughput (download throughput value)

(6) Max Throughput (maximum throughput value)

5.2 Saving Results

The measured results can be saved in a specified file in the internal memory of the MT9080 Series or external memory (USB).

<1> Check that the measured results are currently displayed.
Saving result is disabled if there are no measured results displayed.

<2> Press [F1] (Menu) to display the short-cut menu.

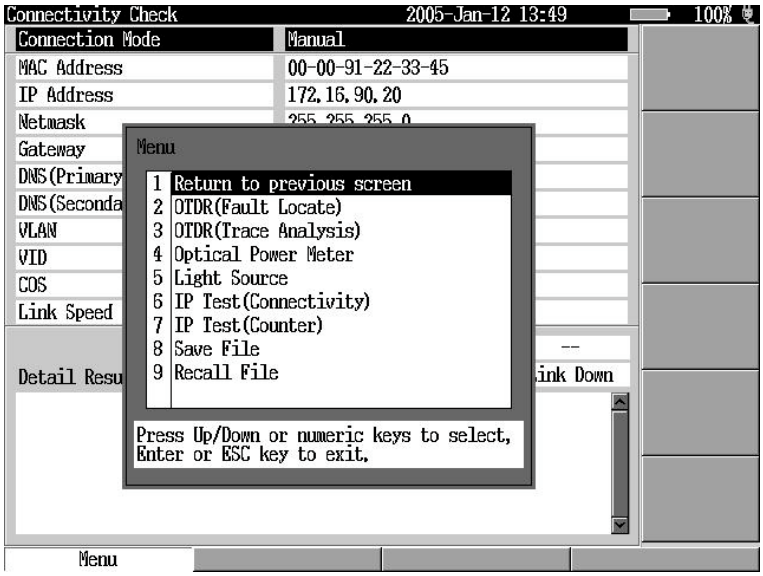


Fig. 5.2-1 Short-cut menu

<3> Using the [∧] [∨] keys or the numeric key, move the cursor to "Save File."

<4> Press the Enter key to display the Save-Save Result screen. The Save-Save Result screen can also be displayed by pressing the 3 key on the Download Throughput Measurement screen.

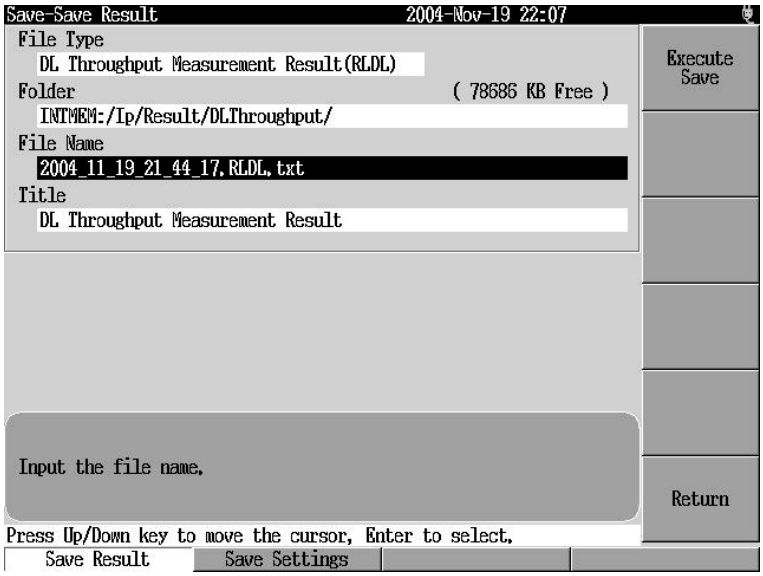


Fig. 5.2-2 Save-Save Result screen

<5> A folder to save the result file can be set.

<Setting Procedure>

1. Using the ∧ ∨ keys, move the cursor to "Folder."
2. Press the Enter key to display the Setting window.

<6> The file name can be renamed.

The default file name is set as follows, based on the measurement execution time:

Year (4 digits)_Month (2 digits)_Day (2 digits)_Hours (2 digits) [0 to 24]_Minutes (2 digits)_Seconds (2 digits).RLDL.txt

Example: 2004_10_10_17_09_42.RLDL.txt

The maximum input length is 50 in 1-byte characters.

<Setting Procedure>

1. Using the ∧ ∨ keys, move the cursor to "File Name."
2. Press the Enter key to display the Character Input screen.
   For details of character input, refer to Section 3.8 "Character Input Procedure."

<7> The title can be changed. "DL Throughput Measurement Result" is set by default. The maximum input length is 32 in 1-byte characters.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Title."
2. Press the [Enter] key to display the Character Input screen.
   For details of character input, refer to Section 3.8 "Character Input Procedure."

<8> Press [f1] (Execute Save) to save the measured results in the file and close the Save-Save Result screen.
The following file is saved:

(1) Measured result file:
The setting parameters listed on the screen and the measured results are saved in a text-format file.

The measured results saved in the measured result file are as follows.
Refer to Section 3.7 "Displaying Result File" for how to display the result file.

Table 5.2-1 Saved contents in download throughput measurement result file

Item		Description
Title		
File name		
Setting data	Target Name	
	Type of the Download	
	IP Address or Host Name	
	Download File Name	
	TCP ACK reply conditions	
Result data	Cause Presumption	
	Start Time	
	Link Speed	
	Download OK/NG	Indicates "OK" or "NG."
	Download Time	Indicates the time spent in download.
	File Size	Indicates the size of the download file.
	Download Throughput	Indicates the download throughput value.
	Max Throughput	Indicates the greatest throughput value per second during the download time.

<9> When f6 (Return) is pressed, the Save-Save Result screen closes without saving the results in the file.

For how to save and recall the setting parameters, refer to Sections 3.5 “Saving Setting Parameters” and 3.6 “Recalling Setting Parameters”, respectively.

Section 6 Throughput Measurement

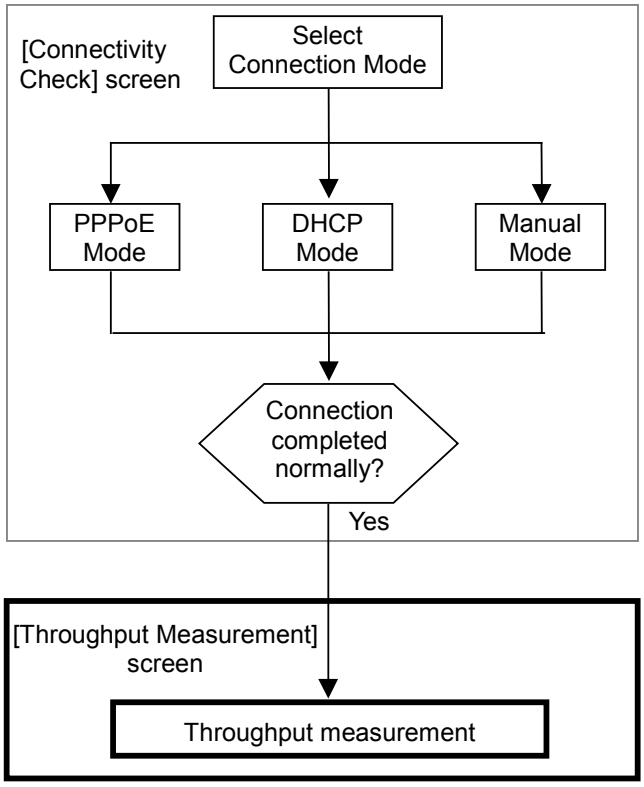
This section describes operations of the throughput measurement function.

The throughput measurement function can be executed after the connection is established by using the Connectivity Check. When two MT9080 Series ACCESS Master units are connected each other via the network, bi-directional throughput on the line can be measured in the throughput measurement by transmitting a packet stream from the local side MT9080 Series ACCESS Master unit and receiving it by the opposite side unit. It is also possible to transmit a packet stream without executing throughput measurement.

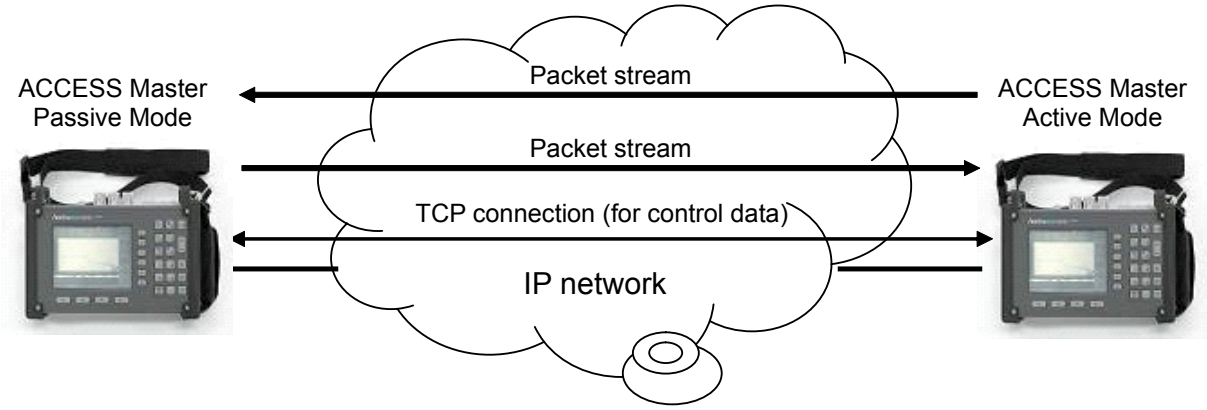
The items displayed in the [ ] in this section indicate panel keys.

6.1 Throughput Measurement

The throughput measurement can be performed after the connection to the network is established by using Connectivity Check.



When two MT9080 Series ACCESS Master units are connected each other via the network, whether the packet loss occurs or not can be checked in the throughput measurement by transmitting a packet stream from the local side MT9080 Series ACCESS Master unit to the opposite side unit and counting (measuring) the number of the packets received at the opposite side unit. This operation is repeated several times while varying the transmission rate so as to finally determine the throughput value of the line.

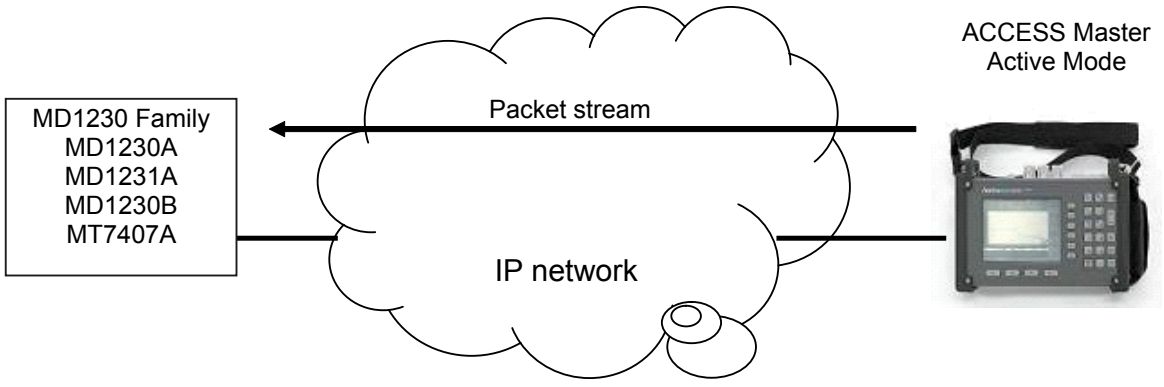


CAUTION ⚠

In the process of focusing and determining the throughput in the throughput measurement, it may be required to transmit a test packet at the full wire rate. When this measurement is performed for the operating line, therefore, the communication band of the connected network may be affected, resulting in a network failure. Do not perform the throughput measurement for the operating line.

When two MT9080 Series units are connected via the network, the throughput measurement is performed with one MT9080 Series unit in the Active Mode and the other in the Passive Mode. Measurement parameter settings and measurement control must be achieved at the Active Mode side. Neither such settings nor measurement control is required at the Passive Mode side.

A packet stream can be transmitted even if the MT9080 Series is not used for the opposite side as shown in the example figure below. In this example, the MD1230 Family is connected as the opposite side. Since the packet used for the packet stream is compatible with the test frame used for the MD1230 Family, any of the MD1230 Family measuring instruments is thus available for sequence error count or packet BER measurement.



6.1.1 Setting up setting parameters

On the Connectivity screen, pressing F4 (Speed Test) and then pressing the f4 key when "Throughput" is displayed on the f4 key displays the Throughput Measurement screen.

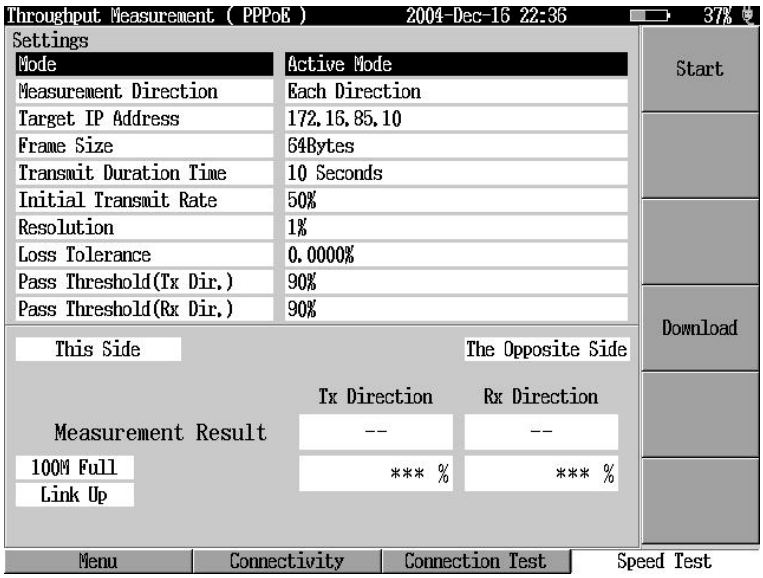


Fig. 6.1.1-1 Throughput Measurement screen - Active Mode

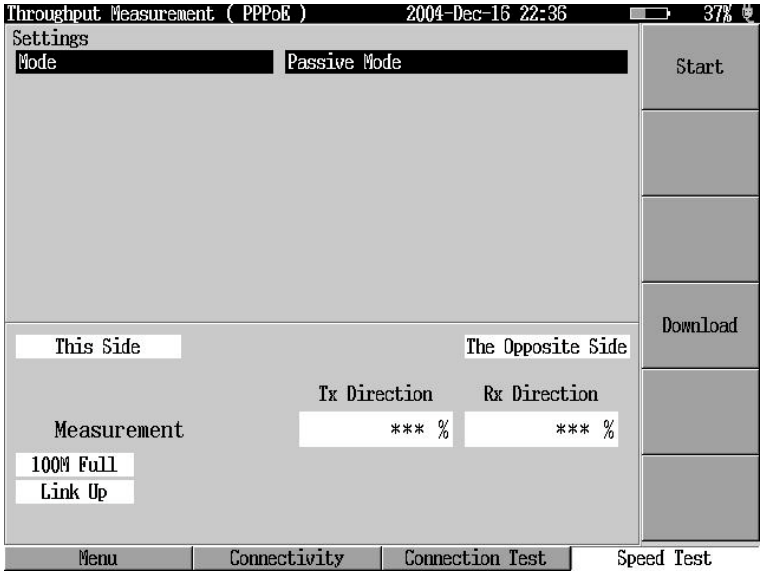


Fig. 6.1.1-2 Throughput Measurement screen - Passive Mode

The following setting parameters can be set directly or can be set by re-calling the setting parameters from the previously saved setting file. It is also possible to save the set parameters in a file.

<1> Mode

Set the MT9080 Series mode.

Active Mode: Enables measurement parameter setting and measurement control.

Passive Mode: Forces the MT9080 Series to await measurement control from the opposite Active Mode side. No measurement parameters need be set.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Mode."
2. Press the [Enter] key to display the Setting window. From the setting parameters listed, select the desired mode using the [∧] [∨] keys.
3. After selecting the mode, press the [Enter] key. The Setting window closes and the set mode is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

<2> Measurement Direction

This parameter can be set when "Active Mode" is set for the mode. Specifies the line direction to be measured.

Each Direction: Performs the throughput measurement for the line bi-directionally.

Tx Direction: Performs the throughput measurement only in the transmitting direction relative to the Active Mode side.

Rx Direction: Performs the throughput measurement only in the receiving direction relative to the Active Mode side.

Transmitting the Streams:

Transmits a packet stream in the transmitting direction relative to the Active Mode side. The throughput measurement is not performed.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Measurement Direction."
2. Press the [Enter] key to display the Setting window. From the setting parameters listed, select the direction using the [∧] [∨] keys.
3. After selecting the direction, press the [Enter] key. The Setting window closes and the set direction is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

<3> Target IP Address.

This parameter can be set when "Active Mode" is set for the mode. Sets the IP address of the opposite side.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Target IP Address."
2. Press the [Enter] key to display the Setting window.
3. Input the numeric value directly using numeric keys, [F3] (Left), and [F4] (Right).
4. After setting the IP address, press the [Enter] key. The Setting window closes and the set IP address is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

<4> Frame Size

This parameter can be set when "Active Mode" is set for the mode. Specifies the packet stream frame size (Ethernet frame length, including the FCS field) from the following:

64, 128, 256, 512, 768, 1024, 1280, 1518, 9018 (Note), and 9618 (Note) bytes.

Note:

The frame size 9018 and 9618 can be selected only when the Gigabit Ethernet Upgrade option is installed and the link speed is 1000M.

When a VLAN tag is set to be used (added) in Connectivity Check, the size of a frame actually transmitted is a sum of the specified frame size and four bytes of a VLAN tag.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Frame Size."
2. Press the [Enter] key to display the Setting window. From the setting parameters listed, select the desired frame size using the [∧] [∨] keys.
3. After selecting the frame size, press the [Enter] key. The Setting window closes and the set frame size is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

<5> Transmit Duration Time [seconds]

This parameter can be set when "Active Mode" is set for the mode. Sets the transmit duration for the packet stream that is transmitted at each transmission rate.

Setting range: 5, 10, 15, 20, 30, 60, 180, 300 (seconds)

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Transmit Duration Time."
2. Press the [Enter] key to display the Setting window. From the setting parameters listed, select the desired transmit duration time using the [∧] [∨] keys.
3. After selecting the transmit duration time, press the [Enter] key. The Setting window closes and the set transmit duration time is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

<6> Initial Transmit Rate

This parameter can be set when "Active Mode" is set for the mode. Sets the transmission rate of the stream that is transmitted first from the start of measurement. The throughput value measurement is repeatedly performed while changing the transmission rate for each measurement, and the throughput value is gradually focused using the binary search method. This setting is used as the initial value of this transmission rate. Since the binary search is executed beginning at this transmission rate, the total time up to determination of the throughput value depends on this setting.
Set to 100% for setting the full wire rate.

Setting range: 1 to 100%, in steps of 1%

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Initial Transmit Rate."
2. Press the [Enter] key to display the Setting window. From the setting parameters listed, select the desired initial transmission rate using the [∧] [∨] keys or the numeric key.
3. After selecting the initial transmission rate, press the [Enter] key. The Setting window closes and the set initial transmission rate is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

<7> Resolution

This parameter can be set when "Active Mode" is set for the mode. Sets the percentage (ratio to the bandwidth) that represents the throughput measurement resolution. Decreasing this resolution (i.e., increasing the setting value) reduces the measurement time required to determine the throughput value.

Select either of the following:

5%: The resolution will be lowered, but the measurement time will be shorter.

1%: The resolution will increase, but the measurement time will be longer.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Resolution."
2. Press the [Enter] key to display the Setting window. From the setting parameters listed, select the desired value using the [∧] [∨] keys.
3. After selecting the value, press the [Enter] key. The Setting window closes and the set value is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

<8> Loss Tolerance

This parameter can be set when "Active Mode" is set for the mode. The number of lost packets is calculated by subtracting the number of received packets from the number of transmitted packets. The loss tolerance is used as the threshold to specify the tolerance of the number of lost packets. This setting should be specified by the ratio of the number of lost packets to the number of transmitted packets. When the ratio of the number of lost packets is within the tolerance range, the packets are transmitted at a higher rate and measured. On the other hand, when the ratio of the number of packets is out of the tolerance range, the packets are transmitted at a lower rate and measured. The throughput on the line is adjusted by these operations.

Setting range: 0, 0.01, 0.1, 1, 5, 10 (%)

For example, when 1000 packets were transmitted and the receiving side received 988 packets, the ratio of the number of lost packets is: 2 packets / 1000 packets = 0.2%. Under this condition, the loss tolerance varies depending on this setting as follows:

When 0.1% is set: The loss is judged not to be allowable and the value is not regarded as a throughput value.

When 1% is set: The loss is judged to be allowable and the value is regarded as a throughput value.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Loss Tolerance."
2. Press the [Enter] key to display the Setting window. From the setting parameters listed, select the desired loss tolerance ratio using the [∧] [∨] keys.
3. After selecting the ratio, press the [Enter] key. The Setting window closes and the set loss tolerance ratio is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

<9> Pass Threshold (Tx Dir.) [%]

This parameter can be set when "Active Mode" is set for the mode. Sets the pass threshold of the transmitting direction throughput value. When a throughput value obtained in the throughput measurement in the transmitting direction is equal to or greater than this threshold, it is judged as "OK." Otherwise it is judged as "NG."
Set to 100% for setting the full wire rate.

Setting range: 5 to 100%, in steps of 5%

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Pass Threshold (Tx Dir.)."
2. Press the [Enter] key to display the Setting window. From the setting parameters listed, select the desired threshold using the [∧] [∨] keys or the numeric key.
3. After selecting the threshold, press the [Enter] key. The Setting window closes and the set threshold is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

<10> Pass Threshold (Rx Dir.) [%]

This parameter can be set when "Active Mode" is set for the mode. Sets the pass threshold of the receiving direction throughput value. When a throughput value obtained in the throughput measurement in the receiving direction is equal to or greater than this threshold, it is judged as "OK." Otherwise it is judged as "NG."
Set to 100% for setting the full wire rate.

Setting range: 5 to 100%, in steps of 5%

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Pass Threshold (Rx Dir.)."
2. Press the [Enter] key to display the Setting window. From the setting parameters listed, select the desired threshold using the [∧] [∨] keys or the numeric key.
3. After selecting the threshold, press the [Enter] key. The Setting window closes and the set threshold is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

6.1.2 Performing measurement

The two MT9080 Series units connected via the network transfers measurement information before starting throughput measurement. The measurement information is transmitted from the Active Mode side unit to the opposite Passive Mode side unit. Since the throughput measurement is performed while these two MT9080 Series units are synchronized each other, the following preparations are required for both the Active Mode side unit and the Passive Mode side unit before starting measurement:

SEQ	Active Mode side	Passive Mode side
1	Connect to the network using Connectivity Check.	Connect to the network using Connectivity Check.
2	Display the Throughput Measurement screen and set the measurement mode to "Active Mode."	Display the Throughput Measurement screen and set the measurement mode to "Passive Mode."
3	Set the measurement parameters.	Press [f1] (Start) to start the measurement. (Enters the standby state for control from the Active Mode side unit.)
4	Press [f1] (Start) to start the measurement.	Under measurement
5	Under measurement	Under measurement
6	The measured results are displayed.	

The important point in this sequence is that the measurement must be started first by the Passive Mode side.

(1) Performing measurement

<1> Performing measurement

Press [f1] (Start) to start the measurement. "Abort" is displayed on the [f1] key while the measurement is in progress. After the measurement has completed, the measured results are displayed on the screen and the [f1] key display returned to "Start."

Note:

When the connection to the network has been established in the PPPoE Mode, the PPPoE session may be released due to a cause such as a network failure or connection equipment failure. The throughput measurement is disabled when the PPPoE session is released. In this case, execute the connection to the network through the Connectivity screen before retrying to start the measurement.

The throughput measurement cannot be performed either if the link with the connection destination has not been established. A failure to establish the link may be caused by either of the following:

1 There is a problem about the cable that is used for connection with the destination.
→ For 10/100M IF: Use a cable of Category 3 or greater.
For 1000M IF: Use a cable of Category 5E or greater.

2 The MT9080 Series differs from the destination in link speed setting.
→ Check the link speed setting of the destination's equipment and that of the MT9080 Series. If they are different, return to the Connectivity Check screen and set the MT9080 Series link speed to the same setting as the destination.

<2> Aborting measurement

When performing the throughput measurement, the f1 key is displayed as “Abort” during measuring. Pressing f1 (Abort) aborts the measuring process.

(2) Measured results

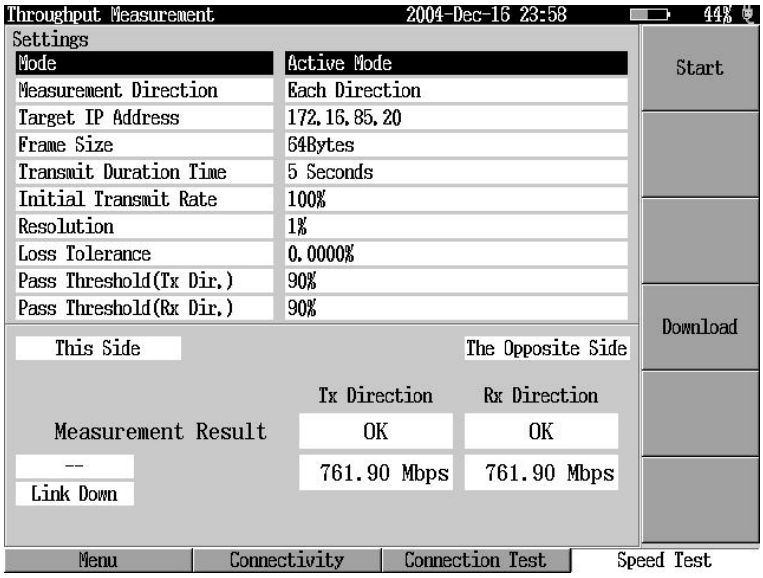


Fig. 6.1.2-1 Throughput measured results

<1> Result display area

Displays the [OK]/[NG] judgment and the throughput value.

(1) OK/NG judgment

OK: Indicates that the throughput value for the transmitting/receiving direction is equal to or greater than the preset pass threshold.

NG: Indicates that the throughput value for the transmitting/receiving direction is less than the preset pass threshold.

(2) Throughput

Displays the throughput value for each of the sending and receiving directions.

In any of the following cases, the measurement is aborted and "–" is displayed in the Result display area:

- f1 (Abort) was pressed during measuring process.
- The TCP connection between the opposing MT9080 Series units was disconnected for some cause.
- Measurement control information can no longer be transferred between the opposing MT9080 Series units fro some cause.

6.2 Saving Results

The measured results can be saved in a specified file in the internal memory of the MT9080 Series or external memory (USB).

<1> Check that the measured results are currently displayed.
Saving result is disabled if there are no measured results displayed.

<2> Press [F1] (Menu) to display the short-cut menu.

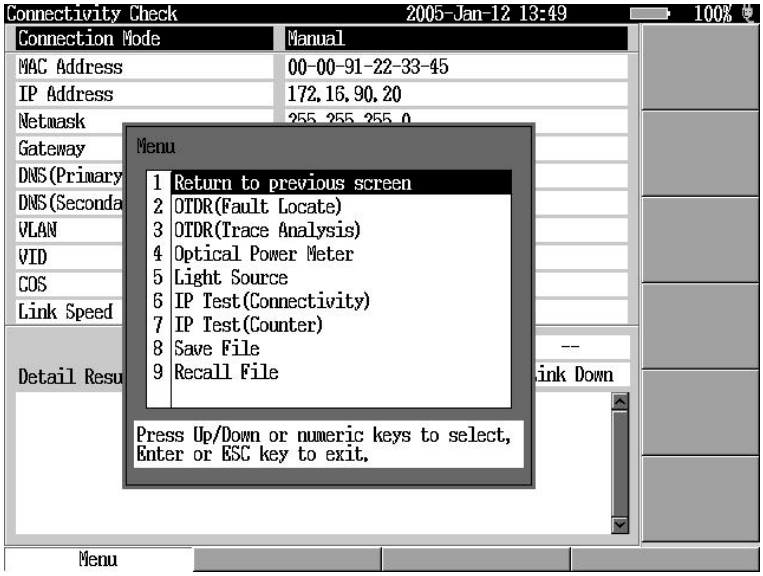


Fig. 6.2-1 Short-cut menu

<3> Using the [∧] [∨] keys or the numeric key, move the cursor to "Save File."

<4> Press the Enter key to display the Save-Save Result screen. The Save-Save Result screen can also be displayed by pressing the 3 key on the Throughput Measurement screen.

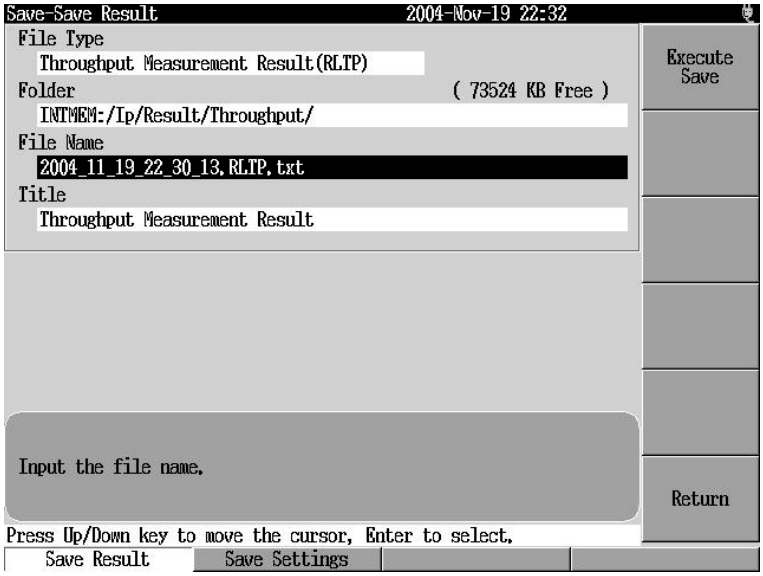


Fig. 6.2-2 Save-Save Result screen

<5> A folder to save the result file can be set.

<Setting Procedure>

1. Using the ∧ ∨ keys, move the cursor to "Folder."
2. Press the Enter key to display the Setting window.

<6> The file name can be renamed.
The default file name is set as follows, based on the measurement execution time:

Year (4 digits)_Month (2 digits)_Day (2 digits)_Hours (2 digits) [0 to 24]_Minutes (2 digits)_Seconds (2 digits).RLTP.txt

Example: 2004_10_10_17_09_42.RLTP.txt

The maximum input length is 50 in 1-byte characters.

<Setting Procedure>

1. Using the ∧ ∨ keys, move the cursor to "File Name."
2. Press the Enter key to display the Character Input screen.
For details of character input, refer to Section 3.8 "Character Input Procedure."

<7> The title can be changed. "Throughput Measurement Result" is set by default. The maximum input length is 32 in 1-byte characters.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Title."
2. Press the [Enter] key to display the Character Input screen.
   For details of character input, refer to Section 3.8 "Character Input Procedure."

<8> Press [f1] (Execute Save) to save the measured results in the specified file and close the Save-Save Result screen.
The following file is saved:

(1) Measured result file
The setting parameters listed on the screen and the measured results are saved in a text-format file.

The measured results saved in the measured result file are as follows:
Refer to Section 3.7 "Displaying Result File" for how to display the result file.

Table 6.2-1 Saved contents in throughput measurement result file

Item		Description
Title		
File name		
Setting data	Mode	
	Measurement Direction	
	Target IP Address	
	Frame Size [bytes]	
	Transmit Duration Time [seconds]	
	Initial Transmit Rate [%]	Set to 100% for setting the full wire rate.
	Resolution	
	Loss Tolerance [%]	
	Pass Threshold (Tx Dir.) [%]	Set to 100% for setting the full wire rate.
	Pass Threshold (Rx Dir.) [%]	Set to 100% for setting the full wire rate.

Table 6.2-1 Saved contents in throughput measurement result file (cont'd)

Item		Description
Result data	Cause Presumption	
	Start Time	
	Link Speed	
	Transmitting Direction	The transmitting direction relative to the Active Mode side (this side).
	(1) OK/NG	
	(2) Throughput	Indicates the percentage (%) and a value in bps units.
	(3) Transmitted Frame	Indicates the result measured with the value in Throughput.
	(4) Loss of Frame	Indicates the result measured with the value in Throughput.
	Receiving Direction	The receiving direction relative to the Active Mode side (this side).
	(1) OK/NG	
	(2) Throughput	
	(3) Transmitted Frame	Indicates the result measured with the value in Throughput.
	(4) Loss of Frame	Indicates the result measured with the value in Throughput.

<9> When f6 (Return) is pressed, the Save-Save Result screen closes without saving the results in the file.

For how to save and recall the setting parameters, refer to Sections 3.5 "Saving Setting Parameters" and 3.6 "Recalling Setting Parameters", respectively.

Section 7 Counter Measurement

This section describes operations of the counter measurement function.
The counter measurement function counts the received bytes, received frames, and error frame for each preset target frame.
The items displayed in the [ ] in this section indicate panel keys.

7.1 Counter Measurement

The counter measurement is used to count or monitor the bytes or frames that are transferred between the other sets of equipment as shown in the figure below. While the measurement is in progress, the count value for every second and the accumulated count value are displayed updating every second.

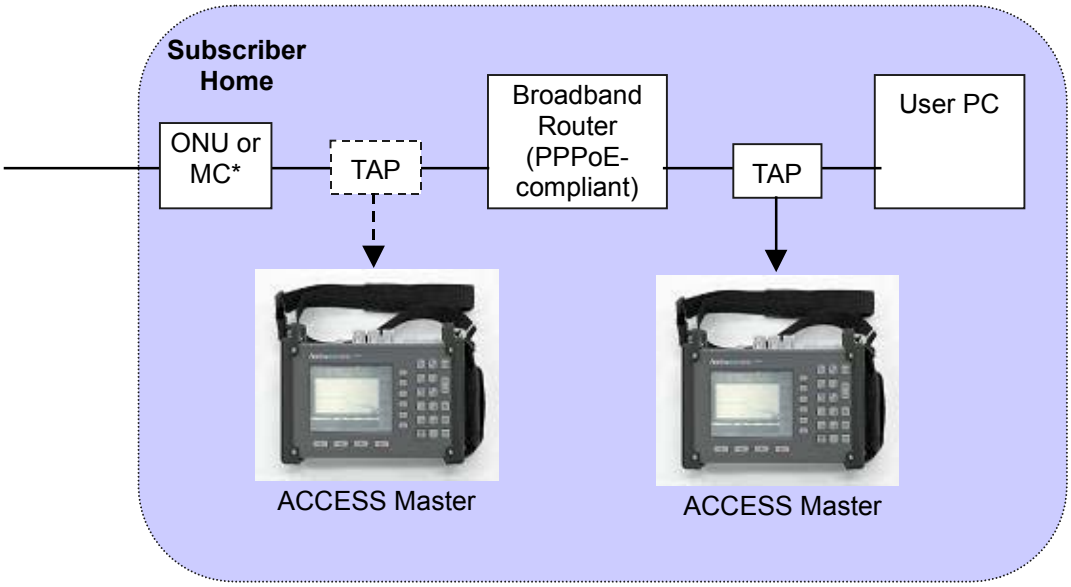


Fig. 7.1-1 Counter measurement configuration

Note:

To perform the counter measurement as shown in the figure above, equipment called the TAP that offers the MT9080 Series with monitoring interface is required.

7.1.1 Setting up setting parameters

On the Top Menu screen, select "IP Test (Counter)" using the [∧] [∨] keys, and press the [Enter] key. Alternatively, press the [8] key. The Counter Measurement screen is displayed.

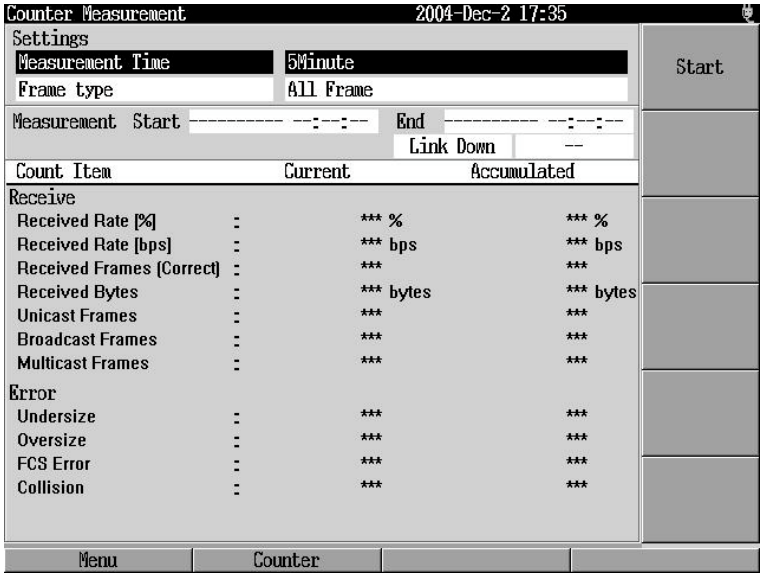


Fig. 7.1.1-1 Counter Measurement screen

The following setting parameters can be set directly or can be set by recalling the setting parameters from the previously saved setting file. It is also possible to save the set parameters in a file.

<1> Measurement Time

Sets the measurement time from 1 to 720 (minutes) in steps of 1 minute.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Measurement Time."
2. Press the [Enter] key to display the Setting screen. Using the [∧] [∨] keys, increment or decrement the measurement time in steps of 1. It is also possible to input the value directly using numeric keys.
3. After setting the measurement time, press the [Enter] key. The Setting window closes and the set measurement time is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

<2> Frame type

Selects the measurement target frame type.

All Frame: All the frames at the Ethernet frame level are counted.

VLAN: Only the frames with VLAN tag are counted.

PPPoE: Only the PPPoE frames are subjected to the measurement.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Frame type."
2. Press the [Enter] key to display the Setting window. From the setting parameters listed, select the desired frame type using the [∧] [∨] keys.
3. After selecting the measurement target frame type, press the [Enter] key. The Setting window closes and the set frame type is applied. When the [ESC] key is pressed while the Setting window is displayed, it closes without updating the settings.

7.1.2 Performing measurement

After performing the measurement, the measured results are displayed.

(1) Performing measurement

<1> Performing measurement

Press [f1] (Start) to start the measurement. When [f1] (Start) is pressed, the MT9080 Series links to the connection destination through auto negotiation. "Abort" is displayed on the [f1] key while the measurement is in progress. After the measurement has completed, the measured results are displayed on the screen and the [f1] key display returned to "Start."

Note:

The count measurement cannot be performed if the link with the connection destination has not been established. A failure to establish the link may be caused by either of the following:

1 There is a problem about the cable that is used for connection with the destination.
→ For 10/100M IF: Use a cable of Category 3 or greater.
For 1000M IF: Use a cable of Category 5E or greater.

2 The MT9080 Series differs from the destination in link speed setting.
→ Check the link speed setting of the destination's equipment and that of the MT9080 Series. If they are different, return to the Connectivity screen and set the MT9080 Series link speed to the same setting as the destination.

<2> Aborting measurement

When performing the count measurement, the [f1] key is displayed as "Abort" during measuring. Pressing [f1] (Abort) aborts the measuring process.

(2) Measured results

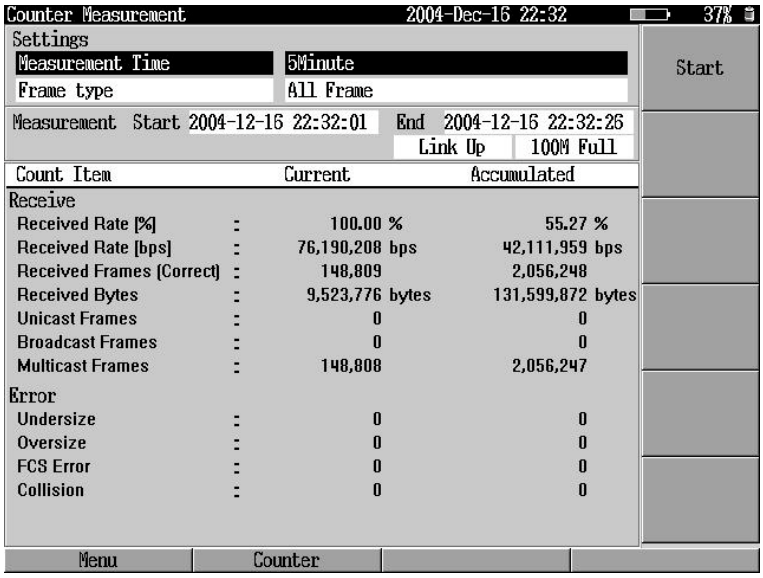


Fig. 7.1.2-1 Counter measurement results

<1> Counter measurement results

The result display area displays the count value for every second and the accumulated value from the start of the measurement for each count item as shown in the table below:

Count item		Description
Receive		
Received Rate [%]		Receiving rate in percentage based on the number of received bytes and frames (Indicates "100%" for the full-wire rate.)
	Current	Displays the receiving rate for every second in percentage.
	Accumulated	Displays the receiving rate averaged by measurement time.
Received Rate [bps]		Number of bytes that were received within 1 second
	Current	Displays the number of received bytes for every second.
	Accumulated	Displays the number of received bytes averaged by measurement time.
Received Frames [Correct]		Number of received normal frames that satisfy all the following conditions: (1) not oversized frame, (2) not undersized frame, and (3) not FCS error frame
	Current	Displays the number of received normal frames for every second.
	Accumulated	Displays the number of normal frames that were received within the measurement time.
Received Bytes		Number of bytes that were received
	Current	Displays the number of received bytes for every second.
	Accumulated	Displays the number of bytes that were received within the measurement time.

(Continued)

Count item		Description
Unicast Frames		Number of frames whose destination MAC address has a unicast address.
	Current	Displays the number of received unicast frames for every second.
	Accumulated	Displays the number of unicast frames that were received within the measurement time.
Broadcast Frames		Number of frames whose destination MAC address has a broadcast address.
	Current	Displays the number of received broadcast frames for every second.
	Accumulated	Displays the number of broadcast frames that were received within the measurement time.
Multicast Frames		Number of frames whose destination MAC address has a multicast address.
	Current	Displays the number of received multicast frames for every second.
	Accumulated	Displays the number of multicast frames that were received within the measurement time.
Error		
Undersize		Number of undersized frames, which are the received frames shorter than 64 bytes in frame length and are not an FCS error frame.
	Current	Displays the number of received undersized frames for every second.
	Accumulated	Displays the number of undersized frames that were received within the measurement time.
Oversize		Number of oversized frames, which are the received frames longer than 1518 bytes (1522 bytes for VLAN frames) in frame length and are not an FCS error frame.
	Current	Displays the number of received oversized frames for every second.
	Accumulated	Displays the number of oversized frames that were received within the measurement time.
FCS Error		Number of received frames that were detected as an FCS error frame regardless of the frame length.
	Current	Displays the number of received FCS error frames for every second.
	Accumulated	Displays the number of FCS error frames that were received within the measurement time.
Collision		Number of detected collisions.
	Current	Displays the number of detected collisions for every second.
	Accumulated	Displays the number of collisions that were received within the measurement time.

7.2 Saving Results

The measured results can be saved in a specified file in the internal memory of the MT9080 Series or external memory (USB).

<1> Check that the measured results are currently displayed.
Saving result is disabled if there are no measured results displayed.

<2> Press F1 (Menu) to display the short-cut menu.

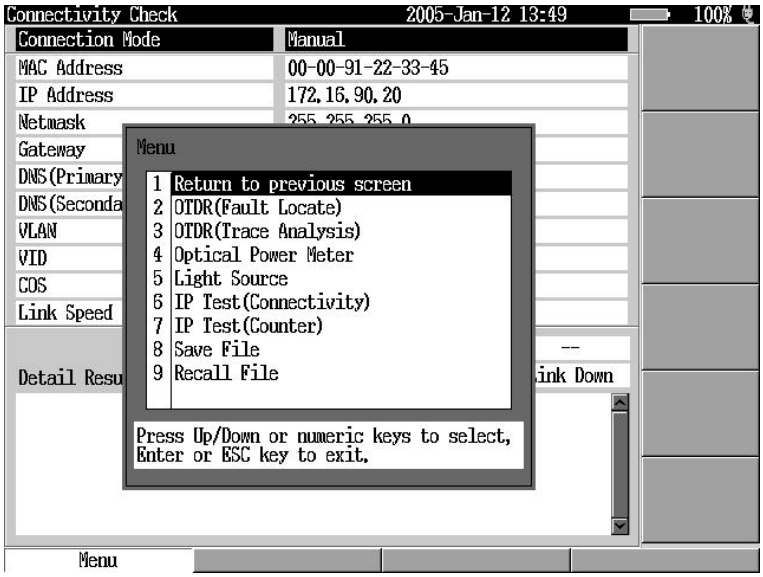


Fig. 7.2-1 Short-cut menu

<3> Using the ∧ ∨ keys or the numeric key, move the cursor to "Save File."

<4> Press the Enter key to display the Save-Save Result screen.

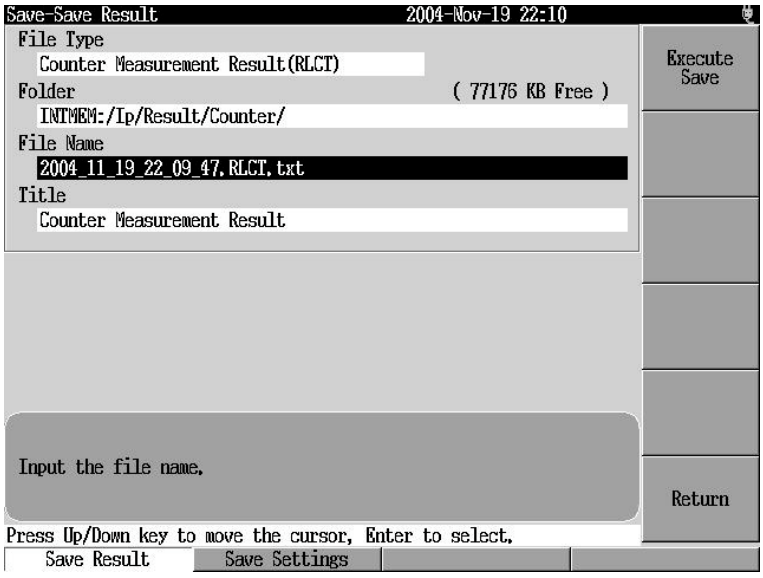


Fig. 7.2-2 Save-Save Result screen

<5> A folder to save the result file can be set.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Folder."
2. Press the [Enter] key to display the Setting window.

<6> The file name can be renamed.
The default file name is set as follows, based on the measurement execution time:

Year (4 digits)_Month (2 digits)_Day (2 digits)_Hours (2 digits) [0 to 24]_Minutes (2 digits)_Seconds (2 digits).RLCT.txt

Example: 2004_10_10_17_09_42.RLCT.txt

The maximum input length is 50 in 1-byte characters.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "File Name."
2. Press the [Enter] key to display the Character Input screen.
   For details of character input, refer to Section 3.8 "Character Input Procedure."

<7> The title can be changed. "Counter Measurement Result" is set by default. The maximum input length is 32 in 1-byte characters.

<Setting Procedure>

1. Using the [∧] [∨] keys, move the cursor to "Title."
2. Press the [Enter] key to display the Character Input screen.
   For details of character input, refer to Section 3.8 "Character Input Procedure."

<8> Press [f1] (Execute Save) to save the measured results in the file and close the Save-Save Result screen.
The following file is saved:

(1) Measured result file
The setting parameters listed on the screen and the measured results are saved in a text-format file.

The measured results saved in the measured result file are as follows:
Refer to Section 3.7 “Displaying Result File” for how to display the result file.

Table 7.2-1 Saved contents in count measurement result file

Item		Description
Title		
File name		
Setting data	Measurement Time	
	Frame type	
Result data	Measurement Start Date/Time	
	Measurement End Date/Time	
	Link Speed	
	Count Result	
	Received Rate [%]	Displays the accumulated value.
	Received Rate [bps]	Displays the accumulated value.
	Received Frames [Correct]	Displays the accumulated value.
	Received Bytes	Displays the accumulated value.
	Unicast Frames	Displays the accumulated value.
	Broadcast Frames	Displays the accumulated value.
	Multicast Frames	Displays the accumulated value.
	Undersized Error Frames	Displays the accumulated value.
	Oversized Error Frames	Displays the accumulated value.
	FCS Errors	Displays the accumulated value.
	Collision	Displays the accumulated value.

<9> When f6 (Return) is pressed, the Save-Save Result screen closes without saving the results in the file.

For how to save and recall the setting parameters, refer to Sections 3.5 “Saving Setting Parameters” and 3.6 “Recalling Setting Parameters”, respectively.

Section 8 Operating Functions Other Than Measurement

This section describes functions other than measurement such as file-related operations.
The items displayed in the [ ] in this section indicate panel keys.

8.1 Operating Files

The following shows methods to save and recall files.

8.1.1 Overview

The MT9080 Series enables the following operations for saved files.

(1) Recalling measured result files

(2) Copying files

(3) Deleting files

(4) Saving measured results in a file

The MT9080 Series can operate files for the internal memory and USB memory.

CAUTION ⚠

- **Folders and files cannot be restored to their original state when they are once deleted. Be careful when deleting folders and/or files.**
- **An accessing mark is displayed on the screen when recalling, saving, copying or deleting folders or files. Do not remove the USB memory while accessing it. Or the data in the USB memory or files may be damaged.**
- **Some subfolders or files are not displayed with folders that have more than 1,500 subfolders or files. Be careful not to exceed a total of 1,500 subfolders and/or files.**

8.1.2 Recalling file

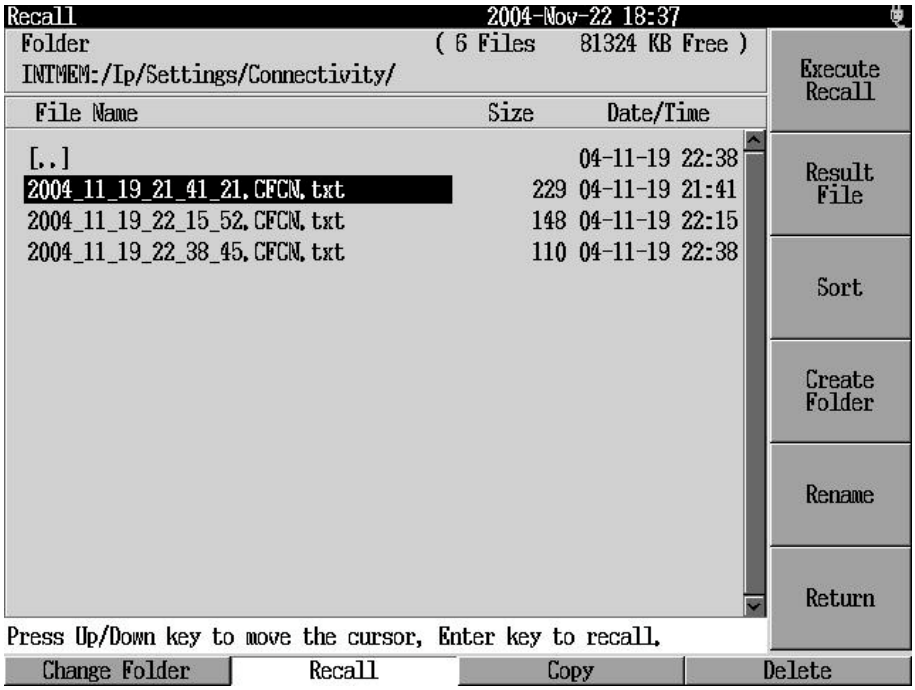


Fig. 8.1.2-1 Recall screen

The files that can be recalled by the MT9080 Series are displayed in this screen.

The cursor for selecting folders and files can be moved by using the [∧] and [∨] keys.

To open the contents of a folder, select the folder and press the [Enter] key. To return to the upper directory, select [..] and press the [Enter] key.

The folder is retained until changes are made. When there is no folder recorded while this screen is displayed, an error message will be displayed. Refer to Section 8.1.7 “Error messages” for details.

Folder

The total count of the folders and files in the currently-specified folder and media free space are displayed.

The following table shows the folder display format according to the media.

Media	Folder displayed
Internal Memory	INTMEM:/...
USB Memory	USB Memory:/...

For example, the Recall screen in Fig. 8.1.2-1 shows that the "Connectivity" folder under the directory "Ip/Settings/" in the internal memory is selected and the free space is 81,324 KB.

Folder: Similar to a box for saving files. A name should be added to each folder. Folders can be created within a folder, which are called subfolders.

Root directory: A directory that cannot be moved to an upper directory level any more.
For example, the directory "INTMEM:/" is the root directory for the internal memory, and "USB Memory:/" for the USB memory.

Media: Physical memory media where folders and/or files are saved. Internal memory and USB memory are the media used with the MT9080 Series.

File Name, Size, Date/Time

Folder names (displayed with [ ]), file names, file sizes (Units: byte), updated times & dates are displayed, respectively.

Function Key Details

f1 (Execute Recall)

Select a file using the ∧ and ∨ keys, and then press f1 (Execute Recall) or the Enter key to recall the selected file.

f2 (Result File or Setting File)

The display on the f2 key toggles between "Result File" and "Setting File" each time the f2 key is pressed. When checking the contents of the result files, press f2 (Result File) to display the result files only. When recalling setting data from a setting file, press f2 (Setting File) to display the setting files only. Select a file using the ∧ and ∨ keys, and then press f1 (Execute Recall) to recall the selected file.

f3 (Sort)

Press f3 (Sort) to display the sort screen shown in Fig. 8.1.2-2 below.

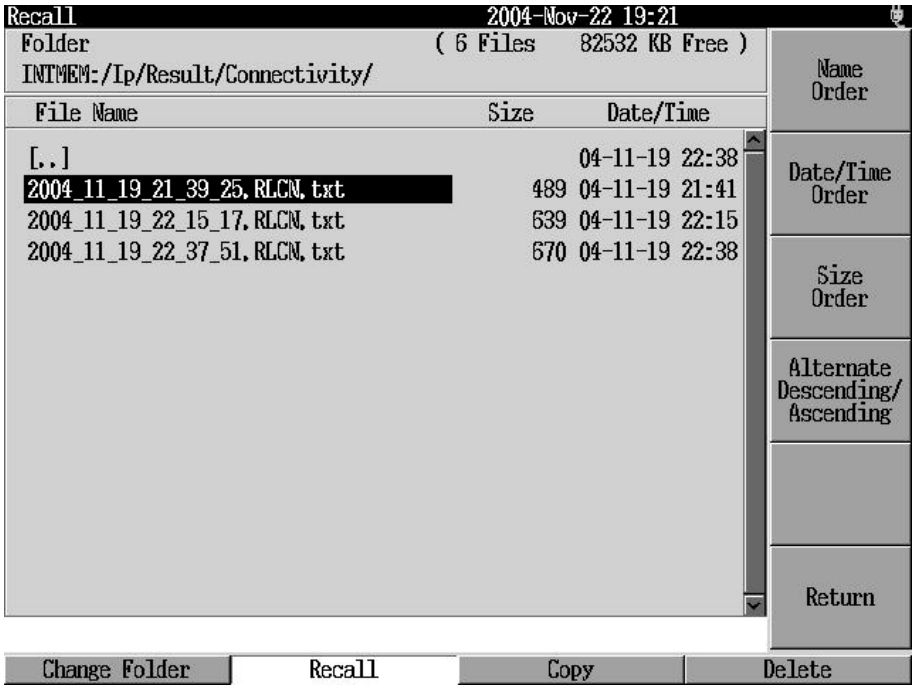


Fig. 8.1.2-2 Sort screen

Press f1 (Name Order) to arrange the display in order of file names.
Press f2 (Date/Time Order) to arrange the display in order of times and dates in which files are updated.
Press f3 (Size Order) to arrange the display in order of file sizes.
Press f4 (Alternate Descending/Ascending) to arrange the display by switching between normal order (ascending) and reverse order (descending).
Press f6 (Return) to return the function key to its original status.

f4 (Create Folder)

Press f4 (Create Folder) to create a folder.
The folder name can be input up to 50 1-byte characters.
Press the ESC key to cancel folder creation.
Refer to Section 3.8 “Character Input Procedure” for how to input characters.

f5 (Rename)

Press f5 (Rename) to change folder names and file names.
The folder name and file name can be input up to 50 1-byte characters.
A message is displayed when the same folder name or file name already exists, and rename is cancelled. Press any of the MT9080 Series keys to erase the message.
The following message appears when the same file name already exists.

File exists already.

Note that capitals and small letters are not distinguished (non-case sensitive) for alphabetical character input.
Press the ESC key to cancel rename.
Refer to Section 3.8 “Character Input Procedure” for how to input characters.

f6 (Return)

Press f6 (Return) to close the Recall screen (Fig. 8.1.2-1) and return to the previous screen.

F1 (Change Folder)

Press F1 (Change Folder) to change the folder.
Refer to Section 8.1.3 “Changing folder” for details.

F2 (Recall)

Press F2 (Recall) to recall saved files.
Refer to Section 8.1.2 “Recalling file” for details.

F3 (Copy)

Press F3 (Copy) to copy saved folders or files.
Refer to Section 8.1.4 “Copying file” for details.

F4 (Delete)

Press F4 (Delete) to delete saved folders or files.
Refer to Section 8.1.5 “Deleting file” for details.

8.1.3 Changing folder

Select [F1] (Change Folder) from the Recall screen (Fig. 8.1.2-1) to display the Change Folder screen shown in Fig. 8.1.3-1 below.

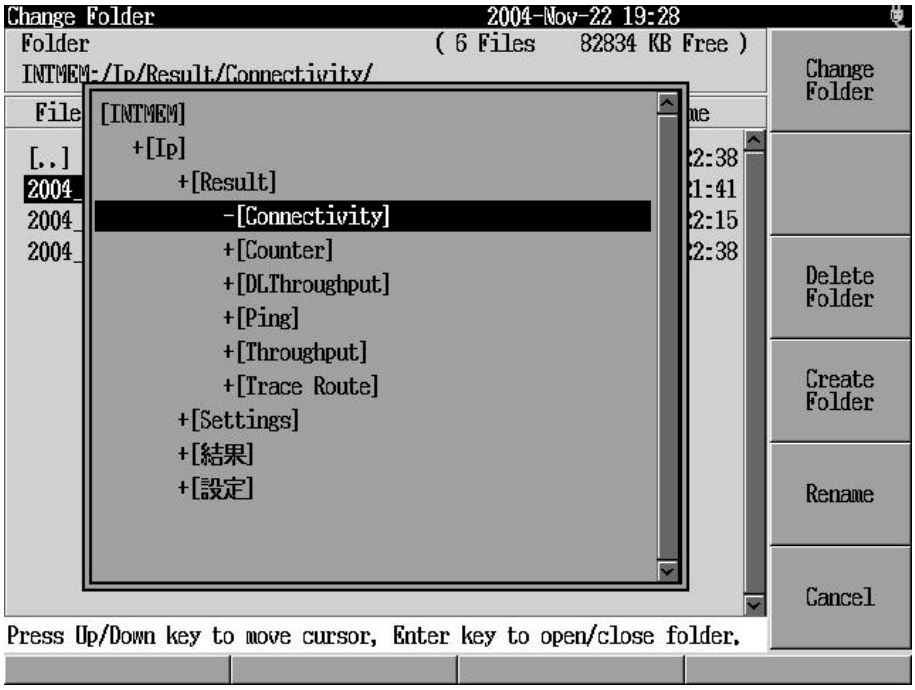


Fig. 8.1.3-1 Change Folder screen

Note that "USB Memory" is not displayed when USB memory is not connected.

The cursor for selecting media and folders can be moved by using the [∧] and [∨] keys.
Press the [Enter] key when there is a "+" mark to the left of the selected folder name to display subfolders. In contrast, the subfolder display will be hidden when there is a "–" mark. The "+" and "–" marks are simply switched when there is no subfolder.

Function Key Details

[f1] (Change Folder)
Press [f1] (Change Folder) to change the selected folder to the current folder and display subfolders and files saved within this folder.
When [f1] (Change Folder) is pressed, the specified directory is set as the current directory, and this setting is held until the MT9080 Series main frame is turned off. The current directory information is saved in each measurement/test screen, respectively.

f3 (Delete Folder)

Press f3 (Delete Folder) to delete the selected folder.

Press f1 (Yes) to allow deletion, and press f2 (No) to cancel deletion.

f4 (Create Folder)

Press f4 (Create Folder) to create a folder.

Refer to Section 8.1.2 “Recalling file” for details.

f5 (Rename)

Press f5 (Rename) to change folder names.

Refer to Section 8.1.2 “Recalling file” for details.

f6 (Cancel)

Press f6 (Cancel) to return to the previous screen.

8.1.4 Copying file

Select F3 (Copy) from the Recall screen (Fig. 8.1.2-1) to display the Copy screen shown in Fig. 8.1.4-1 below.

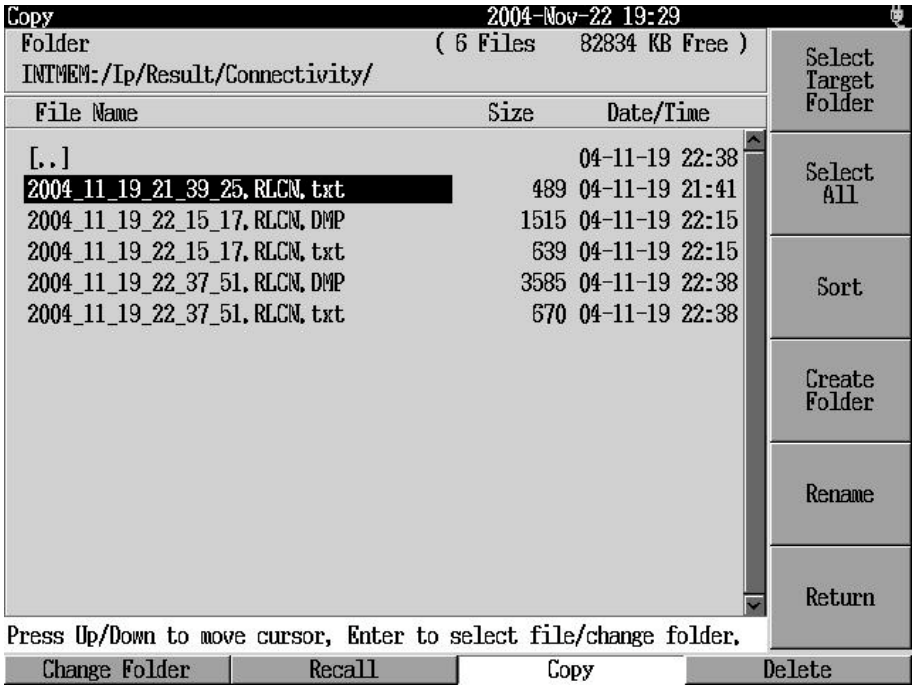


Fig. 8.1.4-1 Copy screen

The cursor for selecting folders and files can be moved by using the ∧ and ∨ keys

When a file is selected and then the Enter key is pressed, a “●” mark is added to the left of the selected file name, indicating that it is selected as a copy source file.

The selected files can be copied when the copy destination is selected in this state. This is useful when copying multiple files at once.
When the copy destination is selected while there are no files with "●" marks to the left of their names, the highlighted files and folders are copied. This is useful when copying files in folder units.

CAUTION ⚠

Be careful of overwriting and copy destination media free space when copying files.

Function Key Details

f1 (Select Target Folder)
Select a file or folder and press f1 (Select Target Folder) to display the Selecting Target Folder screen shown in Fig. 8.1.4-2 below.

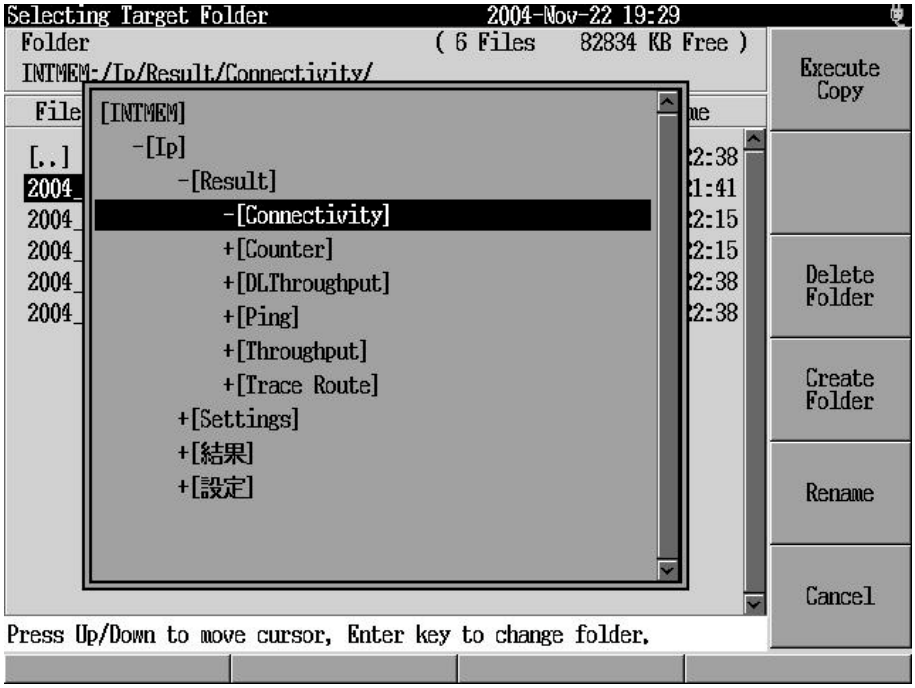


Fig. 8.1.4-2 Selecting Target Folder screen

The cursor for selecting folders can be moved by using the ∧ and ∨ keys.

When f1 (Execute Copy) is pressed, the selected folder is set to the copy destination and copying to the selected folder starts.

A message is displayed when same folder name or file name as the copy destination exists.
The following message appears when the same file name already exists:

File exists already.

Press f3 (All) to allow copying, and press f6 (Cancel) to cancel.

Note that capitals and small letters are not distinguished (non-case sensitive) for alphabetical character input.

Press f3 (Delete Folder) to delete the selected folder.
Refer to Section 8.1.3 "Changing folder" for details.

Press f4 (Create Folder) to create a folder.
Refer to Section 8.1.2 "Recalling file" for details.

Press f5 (Rename) to change the folder name.
Refer to Section 8.1.2 "Recalling file" for details.

Press f6 (Cancel) to return to the Copy screen (Fig. 8.1.4-1).

CAUTION ⚠

Some subfolders or files are not copied when copying folders with more than 1,500 subfolders or files. Copy with less than 1,500 total subfolders and/or files when copying in folder units.

f2 (Select All)
Press f2 (Select All) to select all the files within the displayed folder. A "●" mark is displayed on the left of all the file names. When all the files are selected, the display on the f2 key changes to "Clear All."

f3 (Sort)
Press f3 (Sort) to arrange files for display.
Refer to Section 8.1.2 "Recalling file" for details.

f4 (Create Folder)
Press f4 (Create Folder) to create a folder.
Refer to Section 8.1.2 "Recalling file" for details.

f5 (Rename)
Press f5 (Rename) to change the folder name or file name.
Refer to Section 8.1.2 "Recalling file" for details.

f6 (Return)
Press f6 (Return) to close the Copy screen (Fig. 8.1.4-1) and return to the previous screen.

8.1.5 Deleting file

Select [F4] (Delete) from the Recall screen (Fig. 8.1.2-1) to display the Delete screen shown in Fig. 8.1.5-1 below.

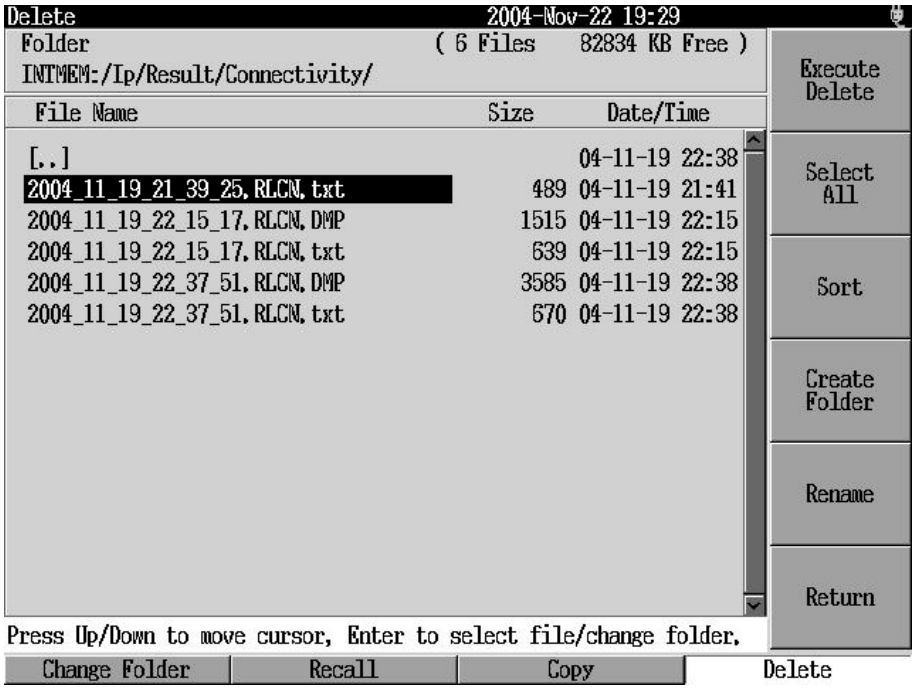


Fig. 8.1.5-1 Delete Screen

The cursor for selecting folders can be moved by using the [∧] and [∨] keys.

When a file is selected and then the [Enter] key is pressed, a "●" mark is added to the left of the selected file name, indicating that it is selected as a file to be deleted.

The selected files can be deleted when deletion is executed in this state. This is useful when deleting multiple files at once.

When deletion is executed while there are no files with "●" marks to the left of their names, the highlighted files and folders are deleted. This is useful when deleting files in folder units.

Function Key Details

f1 (Execute Delete)
When a file or folder is selected and f1 (Execute Delete) is pressed, a confirmation message will be displayed.
Press f1 (Yes) to allow deletion, and press f2 (No) to cancel.

f2 (Select All)
Press f2 (Select All) to select all the files within the displayed folder.
Refer to Section 8.1.4 “Copying file” for details.

f2 (Clear All)
Press f2 (Clear All) to unselect all the files within the displayed folder.
Refer to Section 8.1.4 “Copying file” for details.

f3 (Sort)
Press f3 (Sort) to arrange files for display.
Refer to Section 8.1.2 “Recalling file” for details.

f4 (Create Folder)
Press f4 (Create Folder) to create a folder
Refer to Section 8.1.2 “Recalling file” for details.

f5 (Rename)
Press f5 (Rename) to change the folder name or file name.
Refer to Section 8.1.2 “Recalling file” for details.

f6 (Return)
Press f6 (Return) to close the Delete screen (Fig. 8.1.5-1) and return to the previous screen.

8.1.6 Saving file

This section describes settings and header information for saving measured results to files.

(1) Save settings

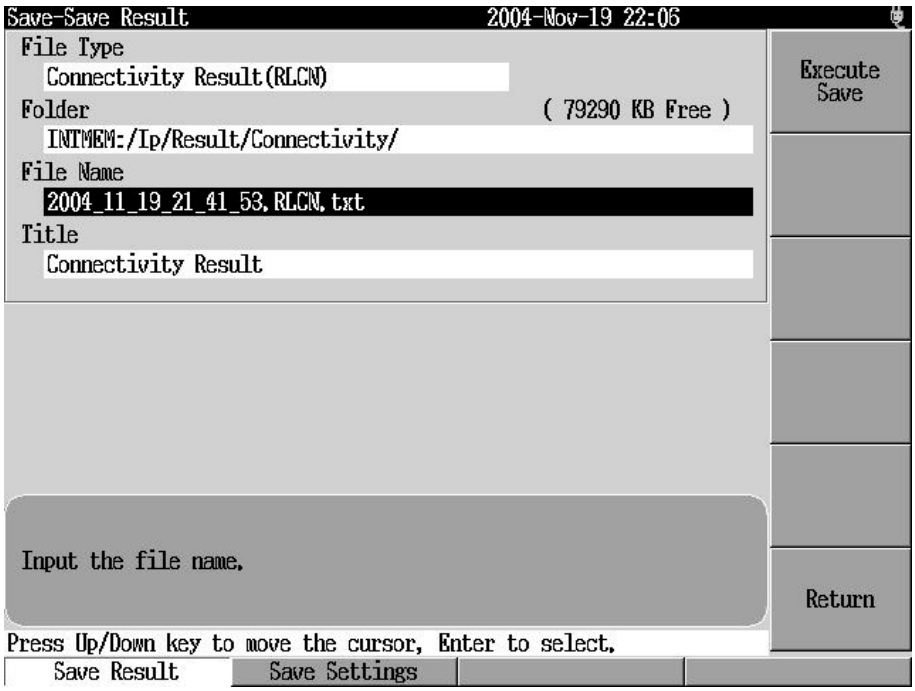


Fig. 8.1.6-1 Save screen

This section describes how to save the setting data or the measured results of each measurement to a file.
The cursor for selecting items can be moved by using the [∧] and [∨] keys.
Select the set item then press the [Enter] key to select the set values or input characters.
Press the [ESC] key to cancel the set item selection.
Refer to Section 3.8 “Character Input Procedure” for how to input characters.

File Type

The file format to save is displayed. The setting file and result file for IP network connectivity check function are text-based files. The file type cannot be changed.

Folder

Set the folder in which the created file to be saved.

The following table shows the folder display format according to the media.

Media	Folder displayed
Internal Memory	INTMEM:/...
USB Memory	USB Memory:/...

File Name

Set the name of the file to be saved.
The file name can be input up to 50 1-byte characters (excluding the extension).
Capitals and small letters are not distinguished for file name alphabets (non-case sensitive). Be careful of file overwriting.

Title

Set a title for the file.

Function Key Details

f1 (Execute Save)

Press f1 (Execute Save) to save measured results to a file.
When a file with the same name already exists in the save destination, the following message is displayed:

File exists already.

Press f1 (Yes) to allow saving, and press f2 (No) to cancel.

8.1.7 Error messages

An error message is displayed when a mistaken operation is performed or when a failure occurs in the MT9080 Series operations.

Error messages, potential causes, and response methods are shown in the Table 8.1.7-1 below.

Table 8.1.7-1 Error messages and their causes, response methods

No.	Error message : Potential causes → Response method
1	No directory exists. / No file exists. : Folder and file not existing were accessed. → Return to the Top Menu once then select an existing folder or file again.
2	Invalid file. : It was going to recall files other than IP network connectivity check function. → Select a file as a result file or e setting file of IP network connectivity check function.
3	Data reading may be failed because the data version does not match. Continue to execute data reading? : The data may not be applied correctly because it is attempted to recall a file that has a different version. → Select a setting file of IP network connectivity check function that has the same version.
4	Folder name is too long. : The file name length exceeds 59 characters, or the total character string length of the directory (folders) from the root directory ('/') exceeds 255 characters. → Change the file name so that the file name length is less than 59 characters. → Change the folder name so that the total character string length of the directory (folders) is less than 255 characters.
5	No folder exists. The selected folder has been changed. : The selected folder does not exist due to folder name change by a device other than the MT9080 Series. → The selected folder is restored to the initial directory folder (root directory: '/'). Set the target folder again.
6	No USB memory is inserted. : Accessed USB memory when USB memory was not connected. → Check that the USB memory is connected correctly. → Check the folder for saving.

Table 8.1.7-1 Error messages and their causes, response methods (Cont'd)

No.	Error message : Potential causes → Response method
7	The internal Memory is now used. Please disconnect the USB cable. : Attempted to access the internal memory when the MT9080 Series is connected to the PC, etc., via USB connection. → Disconnect the connection with the PC or other devices and remove the USB cable. (Refer to Section 9.2 "USB Storage" for how to remove the USB cable.)
8	The internal Memory may be broken. Please recover it by "INTMEM Recovery" in SelfTest. : Internal memory may be corrupted. → Recover the internal memory using the self test function. (Refer to Section 8.4 "Self Test Function" in the MT9080 Series Access Master Operation Manual for how to recover the internal memory.)
9	Same folder. Cannot copy. : Attempted to copy within the same folder. → Change the copy destination folder.
10	Too many files exist in this folder. : The total number of subfolders and files in the initial directory folder (root directory: '/') has exceeded the permissible number. Up to 1,024 files can be saved in the internal memory when each file name is within 8 characters (excluding the extension). However, the number of folders and files that can be saved will be reduced when a long file name is used. This restriction is applied to the root directory only. → Backup folders and files located in the root directory then delete the files, etc. → Save files in subfolders. → More files can be saved in the root directory by shortening the file name within 8 characters.
11	Too many files in a folder. : The total number of subfolders and files in the folder have exceeded the maximum number of 1,500. → Backup subfolders and files located in the folder then delete the file, etc.
12	Media is full. : Free space required for copying and saving is insufficient. → Backup folders and files then delete files, etc.
13	Media is write-protected. : The USB memory is write-protected. → Remove the USB memory from the MT9080 Series, and switch the lock switch to release write-protection.

Table 8.1.7-1 Error messages and their causes, response methods (Cont'd)

No.	Error message : Potential causes → Response method
14	The USB memory was not recognized normally. Insert the USB memory again. : The internal memory or USB memory is unformatted. → Format the internal memory using the self test function. → Format the USB memory from the PC, etc.
15	No save destination folder exists. : No save destination folder exists. → Check the save destination folder, and set it again.
16	Invalid name. : Unusable characters contained in the folder/file name. → Check the folder/file names.
17	File exists already. : Same folder or file name already exists when copying, saving or renaming the file. → Change the name of the copy destination folder/file. → Change the file name to be saved or change the copy destination file name. → Change the name to be changed or change the folder or file name already existing.
18	Operation is aborted. : A folder that contains more than 1,500 subfolders and files was deleted. : An unexpected error occurred. → There are subfolders or files that have not been deleted. Delete the folder again. → Contact Anritsu or our sales dealer if abnormal end continues.
19	The setting data is restored because a part or all of the settings were failed. : A part or all of the setting data were not applied correctly. : A file that has a different data version was recalled. : A file that had been edited directly on a PC was recalled.
20	Data reading is impossible because the line connection is now in progress. Shut down the connection to the line before reading data. : Attempted to read saved setting information while connecting the line. → When reading saved setting information, shut down the connection to the line by using Connectivity Check and then recall the file again.
21	File saving is impossible because the target data to be saved is not allowed to be saved. : The measured results or measurement settings to be saved are insufficient. → When saving measured results, perform and complete the measurement again. → When saving measurement settings, set the setting parameters again.

8.2 Self Test Function

Apart from the self-test function of a main frame, there is a self-test function for IP network connectivity check function. System information, such as a version of an IP network connectivity check functional board, can be checked, and also diagnosis of an IP network connectivity check function can be performed. The application of IP network connectivity check function can also be upgraded.

8.2.1 Overview

The self test function includes the following:

(1) Displaying system information
   1) The serial number of the IP network connectivity check function option
   2) The MAC address of the IP network connectivity check function option
   3) The FPGA version of the IP network connectivity check function option
   4) The option information of the IP network connectivity check function option
(2) Executing a self test and displaying test results
(3) Updating the firmware of the IP network connectivity check function option

It is recommended to execute a self test periodically.

8.2.2 Performing self test

Press f1 (SelfTest) on the Top Menu to display the Selftest screen shown in Fig. 8.2.2-1 below.

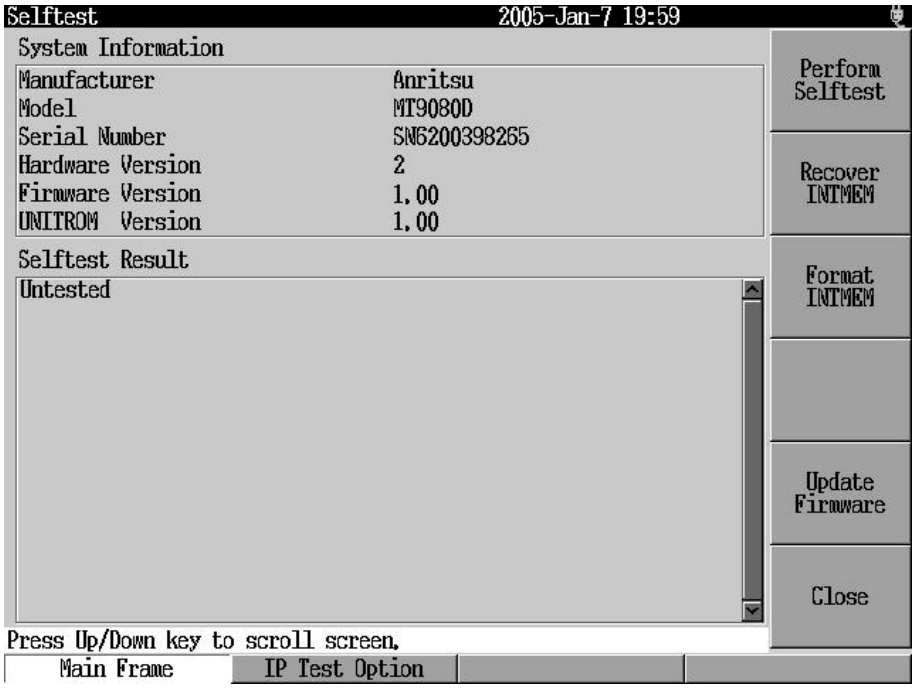


Fig. 8.2.2-1 Selftest screen

Press F2 (IP Test Option) to display the selftest screen of the IP network connectivity check function.
System information is displayed in the upper part of the screen.

Function Key Details

f1 (Perform Selftest)

Press f1 (Perform Selftest) to start a self test.

The Selftest Result screen shown in Fig. 8.2.2-2 below is displayed when the self test is completed.

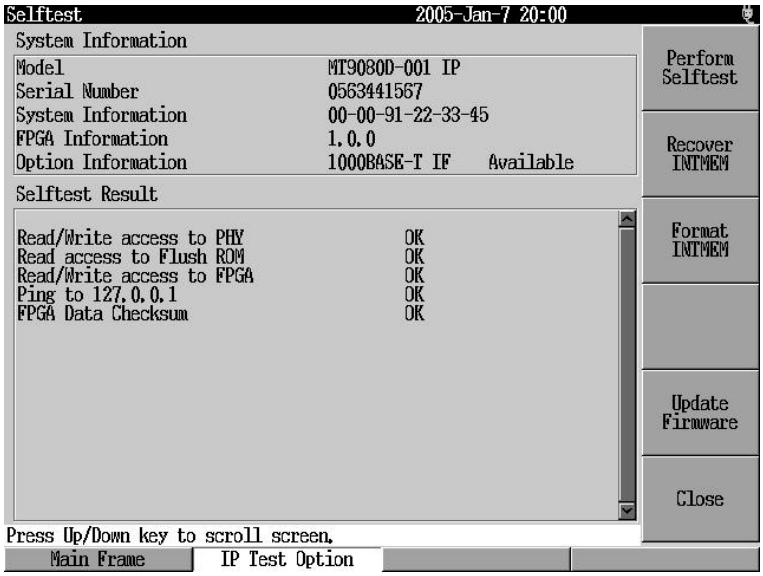


Fig. 8.2.2-2 Selftest Result screen

The following table shows the response method when abnormalities occur in the test items.

Table 8.2.2-1 Abnormal item and response method

Test item	Response method
Read/Write access to PHY	Judged as NG if an access in regards to the PHY IC on the IP option board failed. Turn off the MT9080 Series unit and restart it, then retry the self test. If it is still judged as NG, perform a self test for the MT9080 Series mainframe unit by referring to Section 8.4 “Self Test Function” in the MT9080 Series ACCESS Master Operation Manual. If all the results of the self test for the MT9080 Series mainframe are normal but an abnormality still occurs in the IP board, the IP board may be damaged. Request repairs from Anritsu or our sales dealer.
Read access to Flush ROM	Judged as NG if an access in regards to the flash ROM on the IP option board failed. Turn off the MT9080 Series unit and restart it, then retry the self test. If it is still judged as NG, perform a self test for the MT9080 Series mainframe unit by referring to Section 8.4 “Self Test Function” in the MT9080 Series ACCESS Master Operation Manual. If all the results of the self test for the MT9080 Series mainframe are normal but an abnormality still occurs in the IP board, the IP board may be damaged. Request repairs from Anritsu or our sales dealer.

Table 8.2.2-1 Abnormal item and response method (Cont'd)

Read/Write access to FPGA	Judged as NG if an access in regards to the FPGA on the IP option board failed. Turn off the MT9080 Series unit and restart it, then retry the self test. If it is still judged as NG, perform a self test for the MT9080 Series mainframe unit by referring to Section 8.4 "Self Test Function" in the MT9080 Series ACCESS Master Operation Manual. If all the results of the self test for the MT9080 Series mainframe are normal but an abnormality still occurs in the IP board, the IP board may be damaged. Request repairs from Anritsu or our sales dealer.
Ping to 127.0.0.1	Ping is executed via local loopback, and if no response is returned, this item is judged as NG. Turn off the MT9080 Series unit and restart it, then retry the self test. If it is still judged as NG, perform a self test for the MT9080 Series mainframe unit by referring to Section 8.4 "Self Test Function" in the MT9080 Series ACCESS Master Operation Manual. If all the results of the self test for the MT9080 Series mainframe are normal but an abnormality still occurs in the IP board, the IP board may be damaged. Request repairs from Anritsu or our sales dealer.
FPGA Data Checksum	The checksum of the FPGA data that is saved in the flash ROM on the IP board is calculated, and if the checksum does not match, this test item is judged as NG. Turn off the MT9080 Series unit and restart it, then retry the self test. If it is still judged as NG, perform a self test for the MT9080 Series mainframe unit by referring to Section 8.4 "Self Test Function" in the MT9080 Series ACCESS Master Operation Manual. If all the results of the self test for the MT9080 Series mainframe are normal but an abnormality still occurs in the IP board, the IP board may be damaged. Request repairs from Anritsu or our sales dealer.

f5 (Update Firmware)

Press f5 (Update Firmware) while F2 (IP Test Option) is depressed to update the firmware for the IP network connectivity check function.

Refer to Section 8.3 "Updating Firmware" for details.

8.3 Updating Firmware

The firmware for the IP network connectivity check function can be updated by recalling the update installation files released by Anritsu.

8.3.1 Overview

The MT9080 Series comes with a firmware update function to add new functions and resolve malfunctions.
The firmware can be updated by recalling the installation files released by the Anritsu.

The file to update the firmware for the MT9080 Series is as follows:

- .ipm (extension) file: Installation file for updating IP network connectivity check function

Contact the Anritsu or our sales dealer for details on the update installation file.

8.3.2 Recalling installation file

Press f5 (Update Firmware) on the Selftest screen (Fig. 8.2.2-1) to display the Update Firmware screen shown in Fig. 8.3.2-1 below.

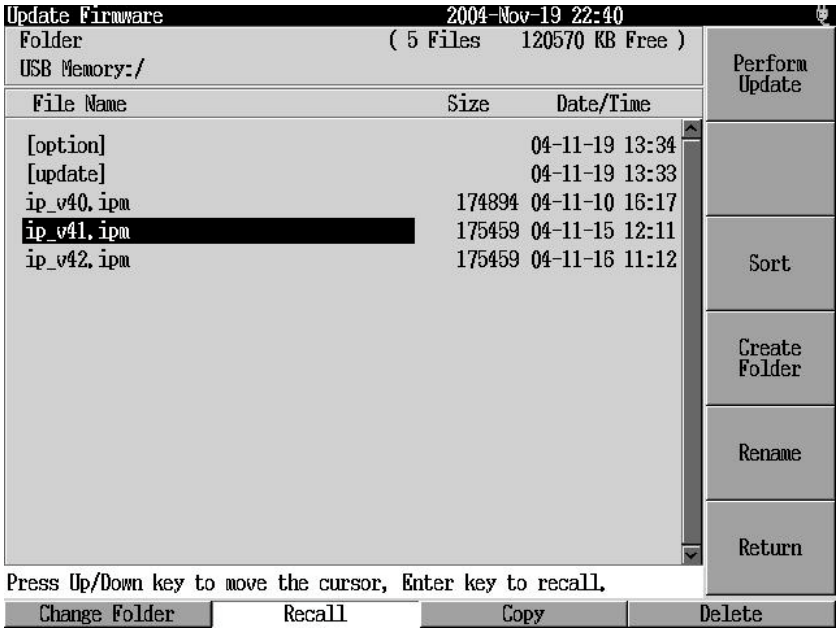


Fig. 8.3.2-1 Update Firmware screen

The file required for updating the firmware is displayed in this screen.
Refer to Section 8.1 “Operating Files” for file operation.

Select the installation file for updating the firmware, and then press f1 (Perform Update) to display the license key input screen shown in Fig. 8.3.2-2 below. If the license key is not required, the update start screen shown in Fig. 8.3.2-3 is displayed instead.

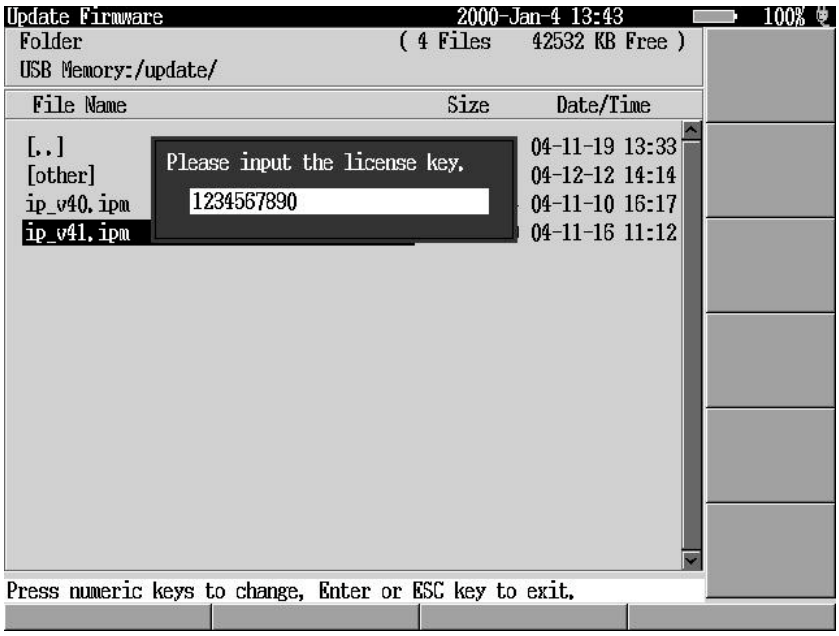


Fig. 8.3.2-2 License key input screen

Input the license key using the numerical keys, and then press the Enter key. The update start screen shown in Fig. 8.3.2-3 is displayed.

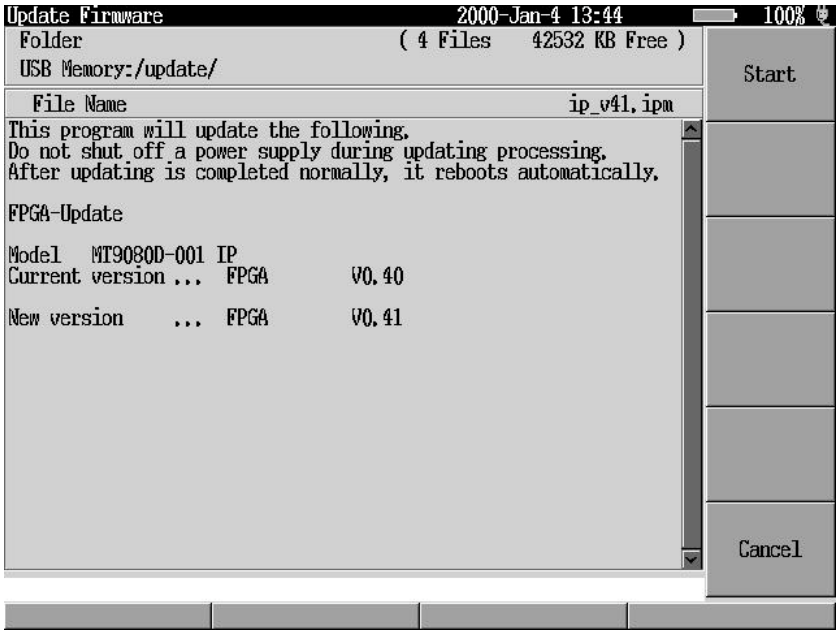


Fig. 8.3.2-3 Update start screen

The current environment and installation file firmware information are displayed on the screen.

Press [f1] (Start) if it is OK to start firmware update, and press [f6] (Cancel) to cancel the update.
When the firmware update is cancelled, the screen is returned to the returns to the Update Firmware screen shown in Fig. 8.3.2-1.

When firmware update starts and complete, the update completion screen shown in Fig. 8.3.2-4 below is displayed.

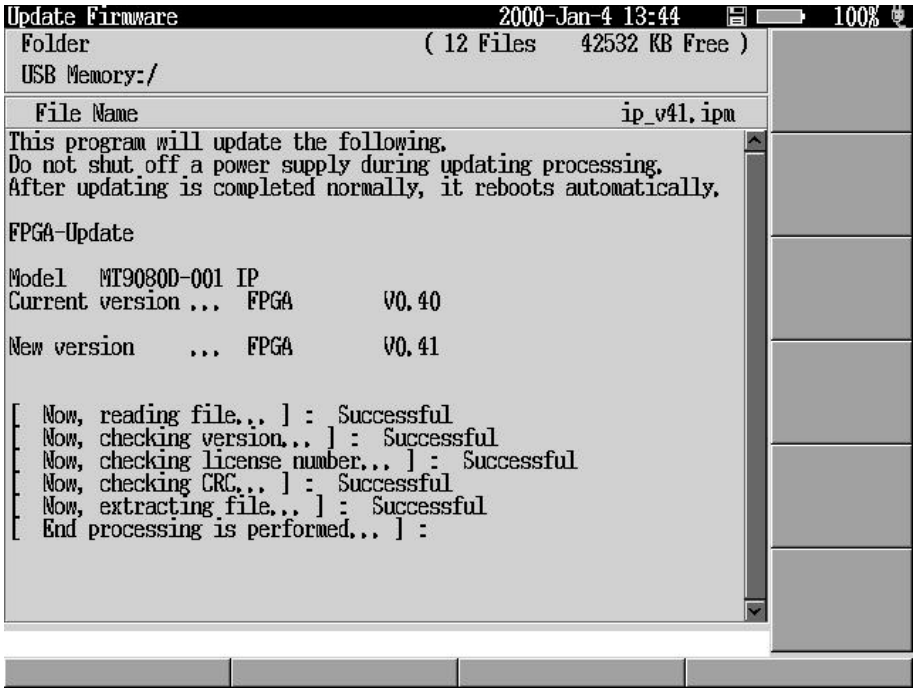


Fig. 8.3.2-4 Update completion screen

The MT9080 Series will be restarted automatically when firmware update is completed successfully. When the MT9080 Series is restarted, check that the firmware has been updated on the Selftest screen (Fig. 8.2.2-1).

CAUTION ⚠

Do not turn off the MT9080 Series during firmware update. Doing so may cause a failure.

When the license key is not input correctly, firmware update is failed and the update abortion screen shown in Fig. 8.3.2-5 below is displayed.

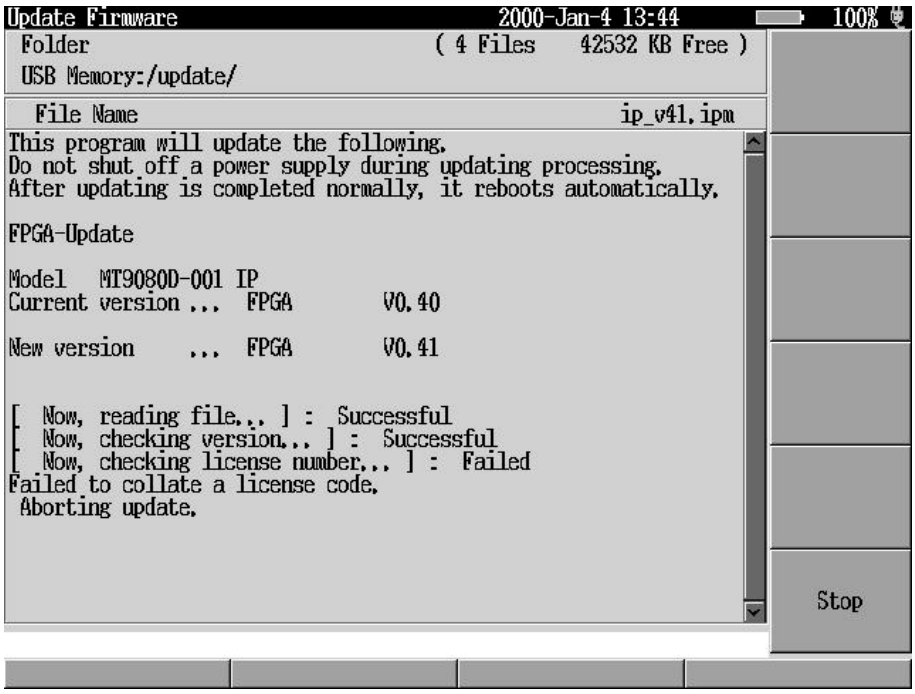


Fig. 8.3.2-5 Update abortion screen

Press f6 (Stop) to return to the Update Firmware screen shown in Fig. 8.3.2-1. Check the license key, and then perform firmware update again.

Note that firmware may not be updated when the remaining battery power is less than 10% in order to prevent the remaining battery power from running out during firmware update.

Appendix

Appendix A Specifications

Item	Specifications	Remarks
Model name, unit name	MT9080A-001 IP Network Connectivity Check Function MT9080B-001 IP Network Connectivity Check Function MT9080C-001 IP Network Connectivity Check Function MT9080D-001 IP Network Connectivity Check Function MT9080E-001 IP Network Connectivity Check Function MT9080F-001 IP Network Connectivity Check Function	
Options for IP network connectivity check function	MT9080A-011 Gigabit Ethernet Upgrade MT9080B-011 Gigabit Ethernet Upgrade MT9080C-011 Gigabit Ethernet Upgrade MT9080D-011 Gigabit Ethernet Upgrade MT9080E-011 Gigabit Ethernet Upgrade MT9080F-011 Gigabit Ethernet Upgrade	Enables to support 1000BASE-T.
Measurement IF	Standard: 10BASE-T/100BASE-TX: 1 port With Gigabit Ethernet Upgrade option installed: 10BASE-T/100BASE-TX/1000BASE-T: 1 port	
IF Speed	10M/100M Full, 10M/100M Half, Auto negotiation	
Others	Auto MDI/MDI-X	
Connectivity Check		
Connection mode	PPPoE, DHCP, Manual	
VLAN	VLAN setup is possible in the DHCP Mode and Manual Mode. Single VLAN tag is supported.	
VID	1 to 4094	
COS	0 to 7	
Check	OK/NG Judgment	
Connection Test		Can be executed after the connection is established by using the Connectivity Check function.
Ping Test		
Number of times	1 to 999	
Timeout Threshold	1 to 60 s	
Trace Route Test		
Timeout Threshold	2 to 60 s	
Hops	1 to 255	

Item	Specifications	Remarks
Download throughput measurement	The full wire rate is supported.	Can be performed after the connection is established by using the Connectivity Check function.
Download file size	Up to 1 GB	
Download throughput value	Download file size [bits] / Download time [s]	
Throughput measurement		Can be performed after the connection is established by using the Connectivity Check function. The frame size 9018 and 9618 can be selected when the link speed is 1000M.
Frame size	64, 128, 256, 512, 768, 1024, 1280, 1518, 9018, 9618	
Transmit Rate	1 to 100% of the line band (100% at full-wire rate), in steps of 1%	
Transmit Duration Time	5, 10, 15, 20, 30, 60, 180, 300 s	
Resolution	1% or 5% of the line band	
Loss Tolerance	0, 0.01, 0.1, 1, 5, 10%	
Counter measurement		
Measurement time	1 to 720 min, in steps of 1 min.	
Frame type	All frame, Only PPPoE frame, Only VLAN frame	

Appendix B Glossary

Abbreviation	Term	Description
PPPoE	Point-to-Point Protocol Over Ethernet	PPP is a physical layer/data link layer protocol for communications between two nodes. In addition to several functions including IP address automatic assignment and user authentication, PPP supports multiple upward protocols simultaneously. PPPoE is a protocol to implement PPP functions in Ethernet. Defined in RFC 2516.
HTTP	HyperText Transfer protocol	A communication protocol for moving hypertext files between the Web server and Web clients in Internet Web services.
DHCP	Dynamic Host Configuration Protocol	A protocol that lets network clients dynamically assign network information such as IP addresses and subnet masks.
ONU	Optical Network Unit	A subscriber line terminal located on the user side in the access network system (FTTH) that is based on optical fiber transmission. An ONU comes with a function that converts optical signals into electrical signals.
OLT	Optical Line Terminal	A subscriber line terminal located on the telephone station (central office) side in the access network system (FTTH) that is based on optical fiber transmission.
ICMP	Internet Control Message Protocol	A protocol for checking the existence of an IP address terminal to be used when executing Ping.
IPCP	Internet Protocol Control Protocol	This IP control protocol is a function that controls the network layer protocol in the upper level of PPP. It also executes IP address negotiations. Defined in RFC 1332.
PAP	Password Authentication Protocol	A user authentication method employed in the protocol for dial-up connection, Point-to-Point Protocol (PPP). In PAP, user IDs and passwords are transmitted as clear text.
CHAP	Challenge Handshake Authentication Protocol	A user authentication method employed in PPP that utilizes the challenge/response system. It is more secure than PAP since it does not transmit user names and passwords in text format.