MP1900A
Signal Quality Analyzer-R
Operation Manual

16th Edition

For safety and warning information, please read this manual before attempting to use the equipment.
Keep this manual with the equipment.

ANRITSU CORPORATION

Document No.: M-W3911AE-16.0

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. Ensure that you clearly understand the meanings of the symbols BEFORE using the equipment. Some or all of the following symbols may be used on all Anritsu equipment. In addition, there may be other labels attached to products that 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 minor to moderate 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. Ensure 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 a 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.

MP1900A
Signal Quality Analyzer-R
Operation Manual

19 June 2017 (First Edition)
15 May 2024 (16th Edition)

Copyright © 2017-2024, ANRITSU CORPORATION.
All rights reserved. No part of this manual may be reproduced without the prior written permission of the publisher.
The operational instructions of this manual may be changed without prior notice.
Printed in Japan

For Safety

⚠ WARNING

- ALWAYS refer to the operation manual when working near locations at which the alert mark shown on the left is attached. If the advice in the operation manual is not followed, there is a risk of personal injury or reduced equipment performance. The alert mark shown on the left may also be used with other marks and descriptions to indicate other dangers.

- Overvoltage Category
  This equipment complies with overvoltage category II defined in IEC 61010. DO NOT connect this equipment to the power supply of overvoltage category III or IV.

Electric Shock

- To ensure that the equipment is grounded, always use the supplied 3-pin power cord, and insert the plug into an outlet with a ground terminal. If power is supplied without grounding the equipment, there is a risk of receiving a severe or fatal electric shock or causing damage to the internal components.

Repair

- Only qualified service personnel with a knowledge of electrical fire and shock hazards should service this equipment. This equipment cannot be repaired by the operator. DO NOT attempt to remove the equipment covers or unit covers or to disassemble internal components. There are high-voltage parts in this equipment presenting a risk of severe injury or fatal electric shock to untrained personnel. In addition, there is a risk of damage to precision components.

Calibration

- The performance-guarantee seal verifies the integrity of the equipment. To ensure the continued integrity of the equipment, only Anritsu service personnel, or service personnel of an Anritsu sales representative, should break this seal to repair or calibrate the equipment. Be careful not to break the seal by opening the equipment or unit covers. If the performance-guarantee seal is broken by you or a third party, the performance of the equipment cannot be guaranteed.

For Safety

⚠ WARNING

Falling Over

- This equipment should always be positioned in the correct manner. If the cabinet is turned on its side, etc., it will be unstable and may be damaged if it falls over as a result of receiving a slight mechanical shock.
  Always set up the equipment in a position where the power switch can be reached without difficulty.

LCD

- This equipment uses a Liquid Crystal Display (LCD). DO NOT subject the equipment to excessive force or drop it. If the LCD is subjected to strong mechanical shock, it may break and liquid may leak.
  This liquid is very caustic and poisonous.
  DO NOT touch it, ingest it, or get in your eyes. If it is ingested accidentally, spit it out immediately, rinse your mouth with water and seek medical help. If it enters your eyes accidentally, do not rub your eyes, rinse them with clean running water and seek medical help. If the liquid gets on your skin or clothes, wash it off carefully and thoroughly with soap and water.

For Safety

⚠ CAUTION

Cleaning

- Always remove the main power cable from the power outlet before cleaning dust around the power supply and fan.
  - Clean the power inlet regularly. If dust accumulates around the power pins, there is a risk of fire.
  - Keep the cooling fan clean so that the ventilation holes are not obstructed. If the ventilation is obstructed, the cabinet may overheat and catch fire.

Check Terminal

- Never input a signal of more than the indicated value between the measured terminal and ground. Input of an excessive signal may damage the equipment.

Static Sensitive

- Always take the following anti-static measures to prevent the internal circuit from being damaged when using a connector indicated by the symbol shown on the left.
  - Wear a wrist strap connected to the ground terminal of this equipment.
  - Connect the ground wires of this equipment, external measuring instruments and DUT before connecting a coaxial cable.
  - Eliminate static electricity charged between the cores and outer conductors of an external device and the coaxial cable, before connecting this equipment and the external device.

- This is a heavy object. When lifting and moving this equipment, always work in a group of two or more, or use a pushcart. There is a risk of back injury, if this equipment is lifted or moved by one person.

For Safety

⚠ CAUTION

External Storage Media

The MP1900A saves data and programs to an external storage media which has USB interface.
If this media is mishandled or becomes faulty, important data may be lost. It is recommended to periodically back up all important data and programs to protect them from being lost accidentally.
Anritsu will not be held responsible for lost data.

Pay careful attention to the following points.

- Never remove the memory card from the equipment while it is being accessed.
- The memory card may be damaged by static electric charges.
- Anritsu has thoroughly tested all external storage media shipped with this equipment. Users should note that external storage media not shipped with this equipment may not have been tested by Anritsu, thus Anritsu cannot guarantee the performance or suitability of such media.

SSD

The equipment is equipped with a SSD (Solid State Drive) from which, as with any hard disk, data may be lost under certain conditions. It is recommended to periodically back up all important data and programs to protect them from being lost accidentally.
Anritsu will not be held responsible for lost data.

To reduce the possibility of data loss, particular attention should be given to the following points.

- The equipment should only be used within the recommend temperature range, and should not be used in locations where the temperature may fluctuate suddenly.
- Always follow the guidelines to ensure that the equipment is set up in the specified manner.
- Always ensure that the fans at the rear and side of the equipment are not blocked or obstructed in any way.
- Exercise care not to bang or shake the equipment whilst the power is on.
- Never disconnect the mains power at the plug or cut the power at the breaker with the equipment turned on.

For Safety

⚠ CAUTION

Lifetime of Parts

The life span of certain parts used in this equipment is determined by the operating time or the power-on time. Due consideration should be given to the life spans of these parts when performing continuous operation over an extended period. The safety of the equipment cannot be guaranteed if component parts are used beyond their life spans. These parts must be replaced at the customer's expense even if within the guaranteed period described in Warranty at the beginning of this manual. For details on life-span, refer to the corresponding section in this manual.

Parts with operating time-dependent life span: LCD backlight (40,000 hours)

Use in a Residential Environment

This equipment is designed for an industrial environment.
In a residential environment, this equipment may cause radio interference in which case the user may be required to take adequate measures.

Use in Corrosive Atmospheres

Exposure to corrosive gases such as hydrogen sulfide, sulfurous acid, and hydrogen chloride will cause faults and failures.
Note that some organic solvents release corrosive gases.

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 one year after shipment due to a manufacturing fault, and software bug fixes will be performed in accordance with the separate Software End-User License Agreement, provide, however, that ANRITSU CORPORATION will deem this warranty void when:

- The fault is outside the scope of the warranty conditions separately 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, wind or flood, earthquake, lightning strike, or volcanic ash, etc.
- The fault is due to damage caused by acts of destruction, including civil disturbance, riot, or war, etc.
- The fault is due to explosion, accident, or breakdown of any other machinery, facility, or plant, etc.
- The fault is due to use of non-specified peripheral or applied equipment or parts, or consumables, etc.
- The fault is due to use of a non-specified power supply or in a non-specified installation location.
- The fault is due to use in unusual environments(Note).
- The fault is due to activities or ingress of living organisms, such as insects, spiders, fungus, pollen, or seeds.

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

ANRITSU CORPORATION shall assume no liability for damage or financial loss of the customer due to the use of or a failure to use this equipment, unless the damage or loss is caused due to ANRITSU CORPORATION's intentional or gross negligence.

Note:
For the purpose of this Warranty, "unusual environments" means use:

- In places of direct sunlight
- In dusty places
- Outdoors
- In liquids, such as water, oil, or organic solvents, and medical fluids, or places where these liquids may adhere
- In salty air or in place chemically active gases (sulfur dioxide, hydrogen sulfide, chlorine, ammonia, nitrogen dioxide, or hydrogen chloride etc.) are present
- In places where high-intensity static electric charges or electromagnetic fields are present
- In places where abnormal power voltages (high or low) or instantaneous power failures occur
- In places where condensation occurs
- In the presence of lubricating oil mists
- In places at an altitude of more than 2,000 m
- In the presence of frequent vibration or mechanical shock, such as in cars, ships, or airplanes

ANRITSU CORPORATION Contact

In the event of this equipment malfunctions, please contact an Anritsu Service and Sales office. Contact information can be found on the Anritsu website.

Notes On Export Management

- We assume no responsibility if this product and the attached power cord are re-exported and used without our approval since they may not comply with the safety standards, etc., of specific countries.
- 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.
  For more details, visit
  https://www.anritsu.com/support/export-procedures.
  When you dispose of the products or manuals subject to export control, they must be physically destroyed or shredded so as not to be unlawfully used for military purpose.

FOR CALIFORNIA USA ONLY

This product contains a CR Coin Lithium Battery which contains Perchlorate Material – special handling may apply; See
www.dtsc.ca.gov/hazardouswaste/perchlorate

Crossed-out Wheeled Bin Symbol

Equipment marked with the Crossed-out Wheeled Bin Symbol complies with council directive 2012/19/EU (the “WEEE Directive”) in European Union.

For Products placed on the EU market after August 13, 2005, please contact your local Anritsu representative at the end of the product's useful life to arrange disposal in accordance with your initial contract and the local law.

Software End-User License Agreement (EULA)

Please carefully read and accept this Software End-User License Agreement (hereafter this EULA) before using (includes executing, copying, installing, registering, etc.) this Software (includes programs, databases, scenarios, etc., used to operate, set, etc., Anritsu electronic equipment, etc.). By using this Software, you shall be deemed to have agreed to be bound by the terms of this EULA, and ANRITSU CORPORATION (hereafter Anritsu) hereby grants you the right to use this Software with the Anritsu specified equipment (hereafter Equipment) for the purposes set out in this EULA.

Article 1. Grant of License and Limitations

1. You may not sell, transfer, rent, lease, lend, disclose, sublicense, or otherwise distribute this Software to third parties, whether or not paid therefor.
2. You may make one copy of this Software for backup purposes only.
3. You are not permitted to reverse engineer, disassemble, decompile, modify or create derivative works of this Software.
4. This EULA allows you to install one copy of this Software on one piece of Equipment.

Article 2. Disclaimers

To the extent not prohibited by law, in no event shall Anritsu be liable for direct, or any incidental, special, indirect or consequential damages whatsoever, including, without limitation, damages for loss of profits, loss of data, business interruption or any other commercial damages or losses, and damages claimed by third parties, arising out of or related to your use or inability to use this Software, unless the damages are caused due to Anritsu's intentional or gross negligence.

Article 3. Limitation of Liability

1. If a fault (bug) is discovered in this Software, making this Software unable to operate as described in the operation manual or specifications even though you have used this Software as described in the manual, Anritsu shall at its own discretion, fix the bug, or replace the software, or suggest a workaround, free-of-charge, provided, however, that the faults caused by the following items and any of your lost or damaged data whatsoever shall be excluded from repair and the warranty.
   i) If this Software is deemed to be used for purposes not described in the operation manual or specifications.
   ii) If this Software has been used in conjunction with other non-Anritsu-approved software.
   iii) If this Software or the Equipment has been modified, repaired, or otherwise altered without Anritsu's prior approval.
   iv) For any other reasons out of Anritsu's direct control and responsibility, such as but not limited to, natural disasters, software virus infections, or any devices other than this Equipment, etc.
2. Expenses incurred for transport, hotel, daily allowance, etc., for on-site repairs or replacement by Anritsu engineers necessitated by the above faults shall be borne by you.
3. The warranty period for faults listed in Section 1 of this Article shall be either 6 months from the date of purchase of this Software or 30 days after the date of repair or replacement, whichever is longer.

Article 4. Export Restrictions

You shall not use or otherwise export or re-export directly or indirectly this Software except as authorized by the laws and regulations of Japan and the United States, etc. In particular, this Software shall not be exported or re-exported (a) into any Japan or US embargoed countries or (b) to anyone restricted by the Japanese export control regulations, or the US Treasury Department's list of Specially Designated Nationals or the US Department of Commerce Denied Persons List or Entity List. In using this Software, you warrant that you are not located in any such embargoed countries or on any such lists. You also agree that you will not use or otherwise export or re-export this Software for any purposes prohibited by the Japanese and US laws and regulations, including, without limitation, the development, design and manufacture or production of missiles or nuclear, chemical or biological weapons of mass destruction, and conventional weapons.

Article 5. Change of Terms

Anritsu may change without your approval the terms of this EULA if the changes are for the benefit of general customers, or are reasonable in light of the purpose of this EULA and circumstances of the changes. At the time of change, Anritsu will inform you of those changes and its effective date, as a general rule 45 days, in advance on its website, or in writing or by e-mail.

Article 6. Termination

1. Anritsu may terminate this EULA immediately if you violate any conditions described herein. This EULA shall also be terminated immediately by Anritsu if there is any good reason that it is deemed difficult to continue this EULA, such as your violation of Anritsu copyrights, patents, etc. or any laws and ordinances, or if it turns out that you belong to an antisocial organization or has a socially inappropriate relationship with members of such organization.
2. You and Anritsu may terminate this EULA by a written notice to the other party 30 days in advance.

Article 7. Damages

If Anritsu suffers any damages or loss, financial or otherwise, due to your violation of the terms of this EULA, Anritsu shall have the right to seek proportional damages from you.

Article 8. Responsibility after Termination

Upon termination of this EULA in accordance with Article 6, you shall cease all uses of this Software immediately and shall as directed by Anritsu either destroy or return this Software and any backup copies, full or partial, to Anritsu.

Article 9. Negotiation for Dispute Resolution

If matters of interpretational dispute or items not covered under this EULA arise, they shall be resolved by negotiations in good faith between you and Anritsu.

Article 10. Governing Law and Court of Jurisdiction

This EULA shall be governed by and interpreted in accordance with the laws of Japan without regard to the principles of the conflict of laws thereof, and any disputes arising from or in relation to this EULA that cannot be resolved by negotiation described in Article 9 shall be subject to and be settled by the exclusive agreed jurisdiction of the Tokyo District Court of Japan.

Revision History:

February 29th, 2020
December 17th, 2021
March 11th, 2024

Cautions Against Computer Virus Infection

- Copying files and data
  Only files that have been provided directly from Anritsu or generated using Anritsu equipment should be copied to the instrument.
  All other required files should be transferred by means of USB flash drive or CompactFlash media after undergoing a thorough virus check.
- Adding software
  Do not download or install software that has not been specifically recommended or licensed by Anritsu.
- Network connections
  Ensure that the network has sufficient anti-virus security protection in place.
- Protection against malware (malicious software such as viruses).
  This equipment runs on Windows Operating System.
- To connect This equipment to network, the following is advised.
  - Activate Firewall.
  - Install important updates of Windows.
  - Use antivirus software.

CE Conformity Marking

Anritsu affixes the CE conformity marking on the following product in accordance with the Decision 768/2008/EC to indicate that it conforms to the EMC, LVD, and RoHS directive of the European Union (EU).

CE marking

1. Product Model

Model: MP1900A Signal Quality Analyzer-R

2. Applied Directive

EMC: Directive 2014/30/EU
LVD: Directive 2014/35/EU
RoHS: Directive 2011/65/EU, (EU) 2015/863

3. Applied Standards

- EMC: Emission: EN 61326-1: 2013 (Class A)
  Immunity: EN 61326-1: 2013 (Table 2)

	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 61000-4-8 (RPFMF)	A
IEC 61000-4-11 (V dip/short)	B, C

*: Performance Criteria

A: The equipment shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the equipment is used as intended.
The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.

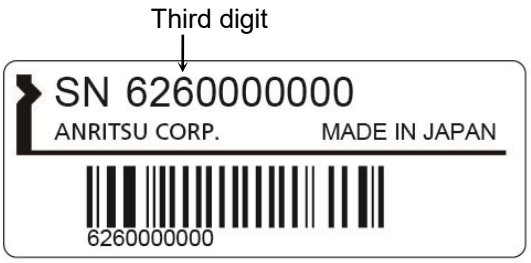
B: The equipment shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the equipment is used as intended.
The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.

C: Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

Harmonic current emissions:
EN 61000-3-2: 2014 (Class A equipment)
No limits apply to this equipment with an active input power under 75 W.

- LVD: EN 61010-1: 2010 +A1:2019 (Pollution Degree 2)
- RoHS: EN IEC 63000: 2018 (Category 9)

If the third digit of the serial number is "7", the product complies with Directive 2011/65/EU as amended by (EU) 2015/863.
(Pb,Cd,Cr6+,Hg,PBB,PBDE,DEHP,BBP,DBP,DIBP)
If the third digit of the serial number is "6", the product complies with Directive 2011/65/EU.
(Pb,Cd,Cr6+,Hg,PBB,PBDE)



Serial number example

4. Contact

Name:	Anritsu GmbH
Address, city:	Nemetschek Haus, Konrad-Zuse-Platz 1 81829 München,
Country:	Germany

UKCA Marking

Anritsu affixes the UKCA marking on the following product in accordance with the guidance to indicate that it conforms to the EMC, LVD, and RoHS regulations in the United Kingdom.

UKCA marking

1. Product Model

Model: MP1900A Signal Quality Analyzer-R

2. Applied Regulations

EMC: S.I. 2016 No. 1091
LVD: S.I. 2016 No. 1101
RoHS: S.I. 2012 No. 3032

3. Applied Standards

- EMC: Emission: EN 61326-1: 2013 (Class A)
  Immunity: EN 61326-1: 2013 (Table 2)
- LVD: EN 61010-1: 2010 +A1:2019 (Pollution Degree 2)
- RoHS: EN IEC 63000: 2018 (Category 9)

4. Contact

Name: ANRITSU EMEA Ltd.
Address, city: 200 Capability Green, Luton
Bedfordshire, LU1 3LU
Country: United Kingdom

RCM Conformity Marking

Anritsu affixes the RCM mark on the following product in accordance with the regulation to indicate that it conforms to the EMC framework of Australia/New Zealand.

RCM marking

1. Product Model

Model: MP1900A Signal Quality Analyzer-R

2. Applied Standards

EMC: Emission: EN 61326-1: 2013 (Class A equipment)

About Eco label

The label shown on the left is attached to Anritsu products meeting our environmental standards.

Details about this label and the environmental standards are available on the Anritsu website at https://www.anritsu.com

About This Manual

A testing system combining an MP1900A Signal Quality Analyzer-R, module(s), and control software is called the Signal Quality Analyzer-R Series. The operation manuals of the Signal Quality Analyzer-R Series consist of separate documents for MP1900A, module(s), and control software, as shown below.

Configuration of Signal Quality Analyzer-R Series Operation

indicates this document.

- MP1900A Signal Quality Analyzer-R Operation Manual

  Describes the basic operations, panel details, and maintenance of the MP1900A, as well as the steps from module installation to the start of use.

- Module Operation Manual
  - MU195020A 21G/32G bit/s SI PPG MU195040A 21G/32G bit/s SI ED MU195050A Noise Generator Operation Manual

    Describes the panel details, how to operate, performance test, maintenance, and troubleshooting of the module to be installed on the MP1900A.
  - MU196020A PAM4 PPG MU196040A PAM4 ED MU196040B PAM4 ED MU196060A 32 G baud NRZ/PAM4 Re-Driver Operation Manual

    Describes the panel details, performance test, maintenance, and troubleshooting of the MU196020A, MU196040A, MU196040B, and MU196060A.
  - MU181000A 12.5GHz Synthesizer MU181000B 12.5GHz 4 port Synthesizer Operation Manual

    Describes the panel details, how to operate, performance test, maintenance, and troubleshooting of the MU181000A and MU181000B.
  - MU181500B Jitter Modulation Source Operation Manual

    Describes the panel details, how to operate, performance test and maintenance of the MU181500B.
  - MU183020A 28G/32G bit/s PPG MU183021A 28G/32G bit/s 4ch PPG Operation Manual

    Describes the panel details, performance test, maintenance, and troubleshooting of the MU183020A and MU183021A.
  - MU183040A 28G/32G bit/s ED MU183041A 28G/32G bit/s 4ch ED MU183040B 28G/32G bit/s High Sensitivity ED MU183041B 28G/32G bit/s 4ch High Sensitivity ED Operation Manual

    Describes the panel details, how to operate, performance test, maintenance, and troubleshooting of the MU183040A, MU183041A, MU183040B, and MU183041B.

Configuration of Signal Quality Analyzer-R Series Operation (Cont'd)

indicates this document.

MX190000A Signal Quality Analyzer-R Control Software Operation Manual

Describes the operation of the software that controls the Signal Quality Analyzer-R Series.

Extended Application Operation Manual

Describes the operation of the extended application for the Signal Quality Analyzer-R Series.

MX183000A High-Speed Serial Data Test Software Operation Manual

Describes the setup and operating procedure of MX183000A.

Table of Contents

For Safety iii

About This Manual I

Chapter 1 Overview 1-1

1.1 Product Overview 1-2
1.2 Product Configuration 1-3
1.3 Specifications 1-6

Chapter 2 Panels and Connections 2-1

2.1 Front Panel 2-2
2.2 Rear Panel 2-3
2.3 Side Panel 2-4

Chapter 3 Preparation Before Use 3-1

3.1 Environmental Conditions of Installation Site 3-2
3.2 Distance from Fan 3-3
3.3 Installing and Removing Modules 3-4
3.4 Power Connection 3-9
3.5 Measures Against EOS and ESD 3-11
3.6 Connecting with Peripheral Devices 3-12
3.7 Connecting Network 3-14
3.8 Windows Security Measures 3-15

Chapter 4 Start/Stop Procedures 4-1

4.1 Start Procedure 4-2
4.2 Stop Procedure 4-4

Chapter 5 Remote Control..... 5-1

5.1 Remote Interface Settings 5-2
5.2 Using Ethernet 5-5
5.3 Using GPIB 5-8

Chapter 6 Installing MX190000A 6-1

6.1 Installing MX190000A 6-2

Chapter 7 Troubleshooting 7-1

7.1 Problems upon Power-on 7-2
7.2 Problem upon Module Replacement 7-3
7.3 Software Problems 7-4

Chapter 8 Maintenance..... 8-1

8.1 Daily Maintenance 8-2
8.2 Touch Panel Calibration 8-3
8.3 Touch Panel Setup When an External Display is Connected..... 8-7
8.4 System Recovery Function..... 8-8
8.5 Caution on Storage 8-28
8.6 Transportation..... 8-29
8.7 Calibration..... 8-30
8.8 Disposal 8-31

Chapter 1 Overview

This chapter provides an overview and the specifications of the MP1900A Signal Quality Analyzer-R (hereinafter, referred to as "MP1900A").

1.1 Product Overview.....1-2
1.2 Product Configuration 1-3
1.2.1 Standard Configuration 1-3
1.2.2 Optional Accessories.....1-5
1.3 Specifications.....1-6

1.1 Product Overview

By installing various plug-in modules (hereinafter, referred to as "module"), the MP1900A can support research, development and production of module devices for the optical communication market or high-speed bus interface such as PCI Express. The MP1900A is also useful for research and development for the next-generation communication market, including optical packet transmission.

Up to 8 modules can be installed into the MP1900A. The MP1900A is equipped with touchpanel LCDs, keys and a rotary encoder for easy operation. Remote control can also be performed by adding the GPIB or LAN.

The latest information on modules that can be installed to the MP1900A is available on the Anritsu website at https://www.anritsu.com.

1.2 Product Configuration

1.2.1 Standard Configuration

The MP1900A can operate alone, without an external control PC.

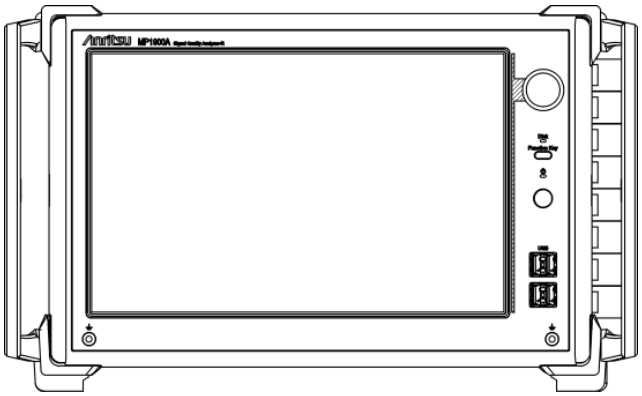


Figure 1.2.1-1 MP1900A appearance

Table 1.2.1-1 shows the standard configuration of the MP1900A. The latest information is available on the Anritsu website.

https://www.anritsu.com/en-us/test-measurement/products/mp1900a

Table 1.2.1-1 Standard Configuration

Item	Model	Product Name	Q'ty	Remarks
Main unit	MP1900A	Signal Quality Analyzer-R	1	
Accessories	G0342A	ESD Discharger	1	
		Power Cord, 3M	1	
	J1627A	GND connection cable	1	
	P0031A	USB Memory	1	Stores the latest set of the operation manuals, the MX190000A Software and MX183000A Software.
	Z0306A	Wrist strap	1	
	-	RJ45 Cap	1	Cap for "Internal" Ethernet port on rear panel

Table 1.2.1-2 Option

Model	Product Name	Q'ty	Remarks
MP1900A-110/210	Windows 10 Upgrade Retrofit	1	Hardware option Upgrade from Windows Embedded Standard 7 to Windows 10 IoT Enterprise 2019 LTS.

■ Module insertion slots

The MP1900A is equipped with slots for installing up to 8 modules into the side panel.

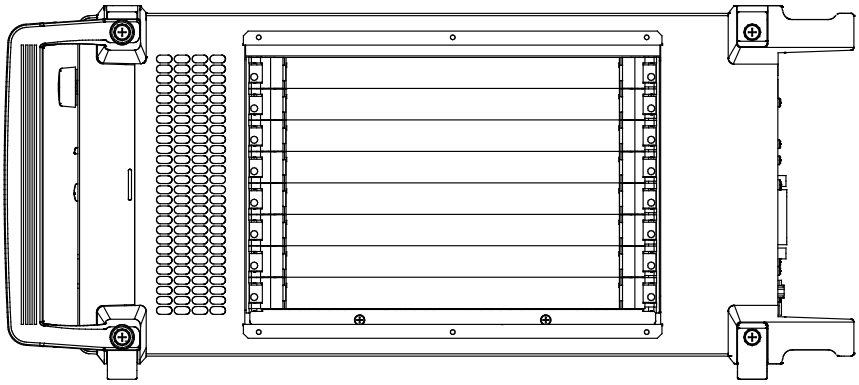


Figure 1.2.1-2 MP1900A Side Panel

The following modules are installable to the MP1900A.

Table 1.2.1-3 Installable Modules

Model	Product Name
MU195020A*	21G/32G bit/s SI PPG
MU195040A*	21G/32G bit/s SI ED
MU195050A*	Noise Generator
MU196020A*	PAM4 PPG
MU196040A*	PAM4 ED
MU196040B*	PAM4 ED
MU196060A*	32G baud NRZ/PAM4 Re-Driver
MU181000A	12.5GHz Synthesizer
MU181000B	12.5GHz 4port Synthesizer
MU181500B	Jitter Modulation Source
MU183020A*	28G/32G bit/s PPG
MU183021A*	28G/32G bit/s 4ch PPG
MU183040B*	28G/32G bit/s High Sensitivity ED
MU183041B*	28G/32G bit/s 4ch High Sensitivity ED

*: The module has restrictions on installation positions and a number to install.
For the latest information of the modules that are installable to the MP1900A, refer to the Anritsu web site (https://www.anritsu.com).

1.2.2 Optional Accessories

Table 1.2.2-1 shows the options for the MP1900A. All options are sold separately.

Table 1.2.2-1 Optional Accessories

Model	Product Name	Remarks
B0736A	Front Cover (For MP1900A)	Necessary to put the MP1900A into the carrying case.
B0737A	Carrying Case (For MP1900A)	
B0738A	Rack Mount Kit (For MP1900A)	
J0008	GPIB CABLE, 2.0 m	2 m
W3813AE	MX183000A Operation Manual	Printed version
W3911AE	MP1900A Operation Manual	Printed version
W3915AE	MU195020A/40A/50A Operation Manual	Printed version
W3976AE	MU196020A/40A/40B/60A Operation Manual	Printed version
W3913AE	MX190000A Operation Manual	Printed version
Z0541A	USB Mouse	
Z0917A	Shielded LAN Cable, 5m	Shielded LAN cable, 5 m
Z1746A	Stylus	
Z1953A	Gigabit Ethernet Switch (5Port)	5 ports
B0576A	Blank Panel	
Z1964A	Torque Wrench (Right Angle)	

1.3 Specifications

Table 1.3-1 MP1900A Specifications

No.	Item	Specifications
1	Functions	
1.1	Input device, button	Resistance film touch panel, Rotary encoder, Function button, Power button
1.2	LED	Power, Power Standby, Disk Access
1.3	LCD	12.1 inch WXGA (1280 × 800)
1.4	Ethernet	Rear panel 10/100/1000 Base-T RJ45 1 port (External: For remote control) Rear panel 10/100/1000 Base-T RJ45 1 port (Internal: Reserved for future use)
1.5	External Display VGA/HDMI	Rear panel D-Sub 15pin 1 port Rear panel HDMI Type A 1 port
1.6	USB	Front panel USB Type A 4 ports Rear panel USB Type A 2 ports
1.7	GPIB	Rear panel 1 port (For remote control)
1.8	Module slot	8 Slots (Slot1 to Slot8)
1.9	Functional earth terminal	Front panel 2 jacks Rear panel 1 terminal
1.10	OS	Windows 10 IoT Enterprise 2019 LTSC
1.11	Internal storage device	SATA 2.5-inch SSD 1 Unit (tray loading)*1
1.12	Function	System and measurement sound output Software-defined functions button
1.13	Remote interface	GPIB, Ethernet External (automatic switchover)
1.14	Internal reference clock	10 MHz ± 1 ppm (Accuracy at initial shipment)
2	Environmental performance	
	Power supply*2	AC 100 to 120 V, 200 to 240 V (automatic switching between 100 and 200 V systems), 50 to 60 Hz
	Power consumption	1350 VA
	Operating temperature range	+5 to +40 °C (without condensation)
	Storage temperature range	–20 to +60 °C (Recommended storage temperature range: +5 to +30 °C)
3	Mechanical measurements	
	Dimensions	222.5 mm (H) × 340 mm (W) × 451 mm (D) (Protrusions excluded)
	Mass	≤ 20 kg (excluding modules, blank panels, protective cover, power cord)

*1: Removing and replacing the SSD by Customer is outside the scope of warranty coverage.

*2: Operating voltage is –10 to +10 % of rated voltage

The information on options and application parts for the MP1900A is available on the Anritsu website at https://www.anritsu.com.

Chapter 2 Panels and Connections

This section describes panels and connections of the MP1900A

2.1 Front Panel 2-2
2.2 Rear Panel 2-3
2.3 Side Panel 2-4

2.1 Front Panel

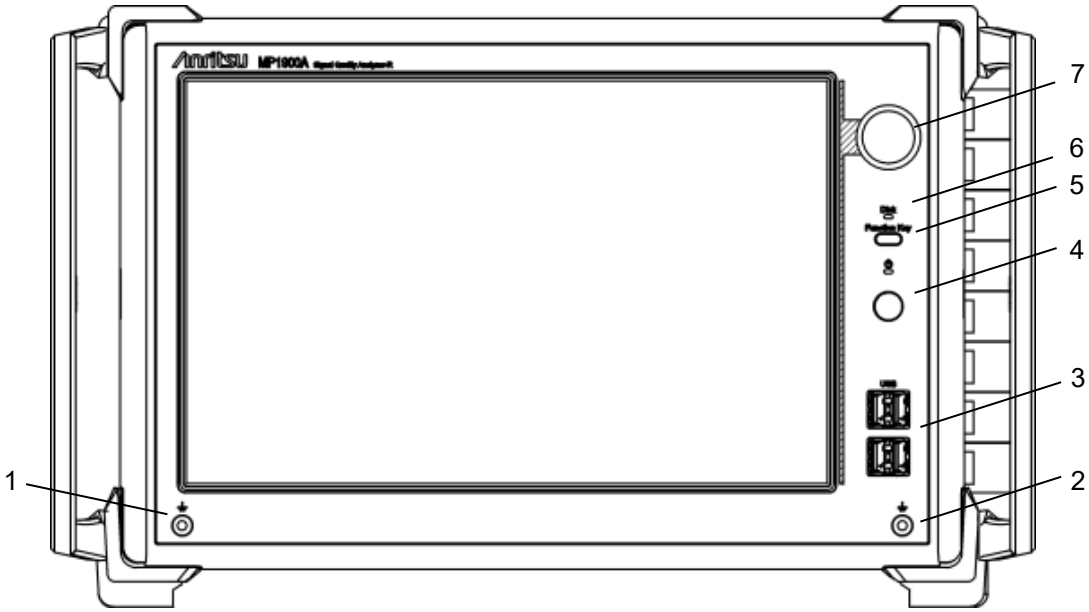


Figure 2.1-1 Front panel

Table 2.1-1 Front panel

No.	Name	Function
1	GND terminal	Connects to the wrist strap during operation, as a countermeasure against static electricity. Be sure to use the wrist strap when using the MP1900A.
2		
3	USB ports	Four USB ports are provided. Turn the connected peripherals off before turning off the MP1900A.
4	Power switch	Turns the power to the MP1900A on/off. When this switch is turned off while the power cord is connected, the Standby LED above the switch lights. When the power is automatically turned off because of the temperature abnormality, the Standby LED flashes. In this case, unplug the power cord to turn off the Standby LED entirely.
5	Function Key	Software-defined functionkey. For details, refer to Chapter 3 “Basic Operations” in the *MX190000A Signal Quality Analyzer-R Control Software Operation Manual*.
6	Storage device access LED	Flashes when the storage device is being accessed.
7	Rotary encoder	Rotate to increase/decrease the numeric value.

2.2 Rear Panel

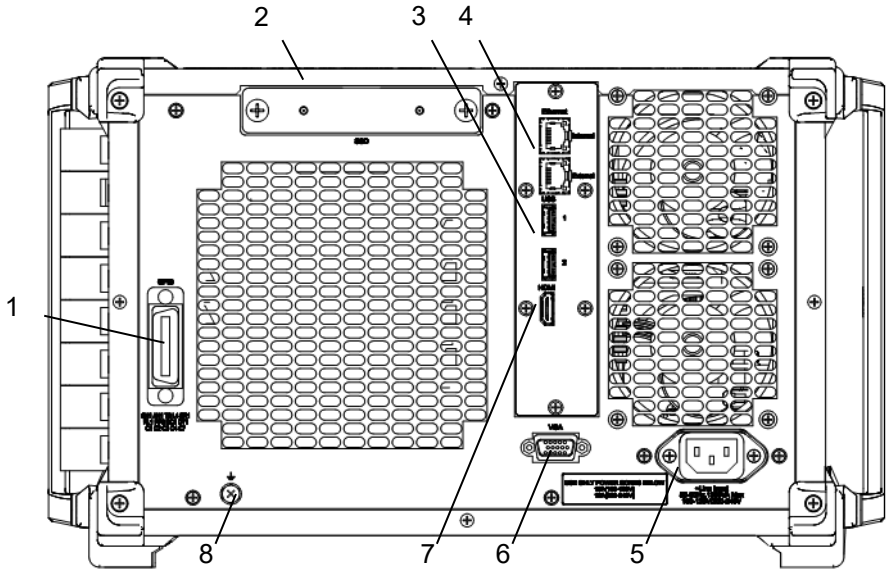


Figure 2.2-1 Rear panel

Table 2.2-1 Rear panel

No.	Name	Function
1	GPIB connector	The GPIB connector. Connect a cable to the GPIB connector on the rear panel before turning on the MP1900A. Connection after turning it on may cause failure.
2	SSD	Slot to install a storage device. Open the cover when replacing the storage device.
3	USB port	Two USB ports are provided. Turn off the connected peripherals before turning off the MP1900A.
4	Ethernet connector	RJ45 for Internal, RJ45 for External 10/100/1000BASE are supported. Internal: Reserved for future use. Currently unavailable. Do not connect to any network. External: Connectable to network This is an interface for remote control. Refer to 5.2 “Using Ethernet” for detail
5	Inlet	Connect to a 100 to 120 Vac or to a 200 to 240 Vac power supply via the 3-pin power cord.
6	VGA	VGA connector to display the screen to an external display device.
7	HDMI	HDMI connector to display the screen to an external display device.
8	Functional GND terminal	GND terminal for ESD (Electrostatic Discharge) Connect to Device under test with cables for common grounding.

2.3 Side Panel

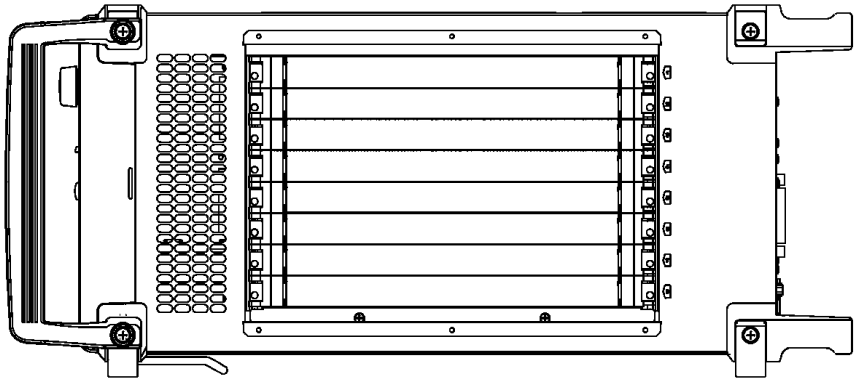


Figure 2.3-1 Side panel

Eight slots for installing modules are provided on the left side. See 3.3 “Installing and Removing Modules” for how to install/remove the module to/from the slots.

Chapter 3 Preparation Before Use

This chapter describes preparations required before starting measurements.

3.1 Environmental Conditions of Installation Site 3-2
3.2 Distance from Fan 3-3
3.3 Installing and Removing Modules..... 3-4
3.3.1 Installing modules..... 3-4
3.3.2 Removing modules..... 3-7
3.4 Power Connection 3-9
3.4.1 Power Requirements..... 3-9
3.4.2 Connecting the Power Cord 3-9
3.5 Measures Against EOS and ESD..... 3-11
3.5.1 How to use the GND connection cable 3-11
3.5.2 How to use the ESD Discharger..... 3-11
3.6 Connecting with Peripheral Devices..... 3-12
3.7 Connecting Network 3-14
3.8 Windows Security Measures 3-15
3.8.1 Activating Firewall..... 3-16
3.8.2 Installing Windows Important Update Programs (Windows Update)..... 3-19
3.8.3 Using Antivirus Software 3-22

3.1 Environmental Conditions of Installation Site

The MP1900A operates in the temperature range from 5 to 40°C. Avoid using it under any of the following environment conditions which may cause failure.

- Strong vibrations
- High humidity or dust
- Direct sunlight
- Chemically active gases
- Substantial temperature changes

Note:

Dew may form inside of the MP1900A if it is moved to a warm location after operating for a long time in a cool location. In such a case, be sure to wait until the MP1900A becomes completely dry before turning on the power switch. Doing so with condensation present may cause a short circuit and damage the MP1900A.

Install the MP1900A horizontally as shown in Figure 3.1-1.

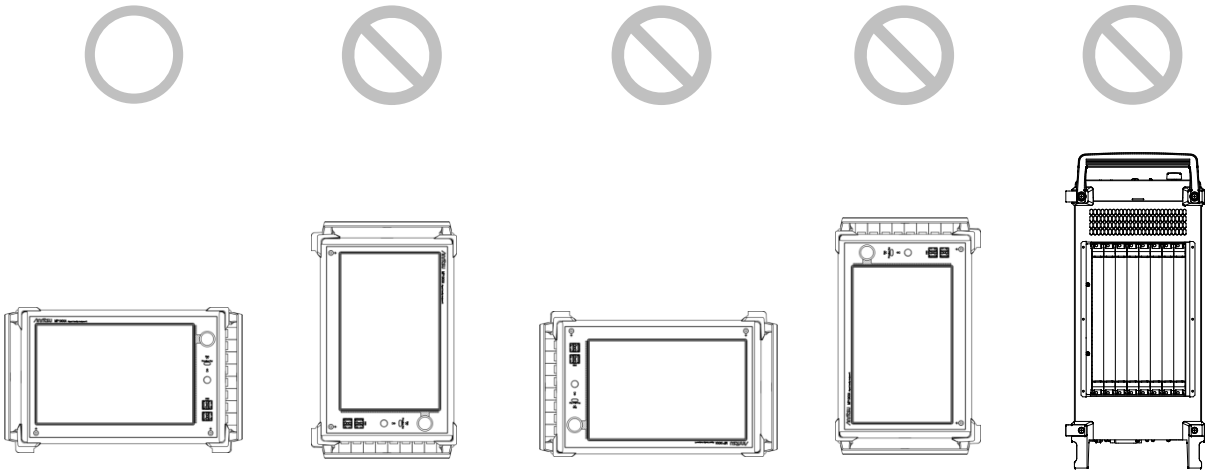


Figure 3.1-1 Installation Orientation

⚠ CAUTION

If the MP1900A is not installed in a "good" direction as above, a small shock may turn it over and harm the user.

3.2 Distance from Fan

A cooling fan is provided at the rear of the MP1900A. Install the MP1900A at least 10 cm away from walls, peripheral devices, or the like to prevent blockage of ventilation. Insufficient ventilation may cause the internal temperature to rise, resulting in failure.

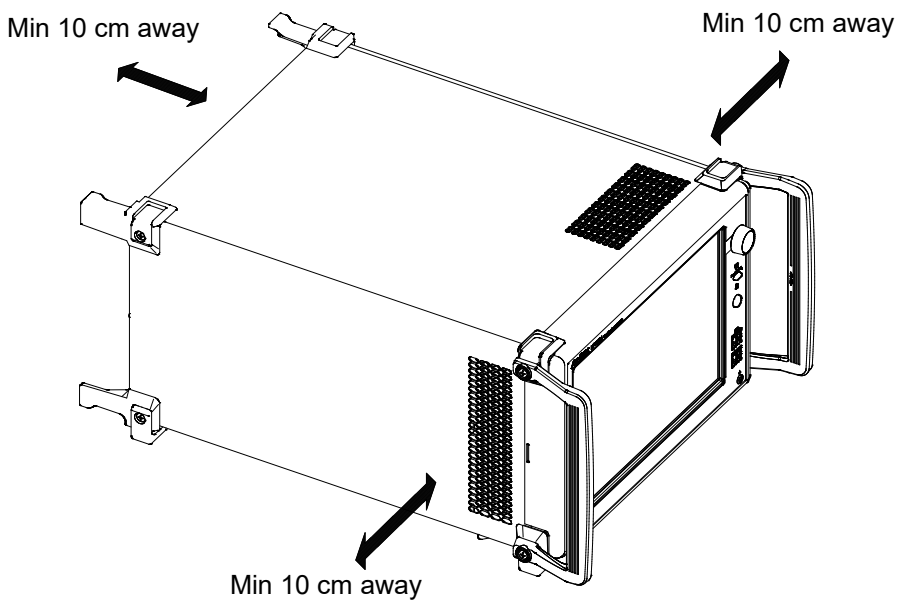


Figure 3.2-1 Distance from fan

3.3 Installing and Removing Modules

Slots from the module are Slot1, Slot2, Slot3, Slot4, Slot5, Slot6, Slot7, Slot8 from the top.

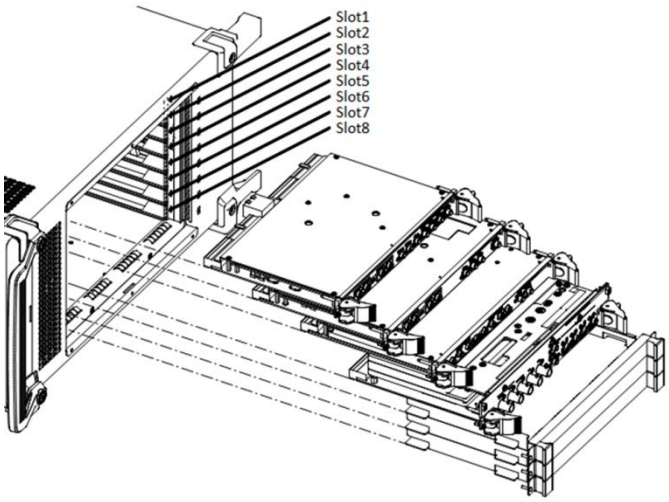


Figure 3.3-1 MP1900A modules

3.3.1 Installing modules

(1) Disconnect the power cord.

(2) Fully insert a module, sliding along the grooves.

(3) Check that the module ejectors are set facing out. Fit the hooks into holes on the chassis.

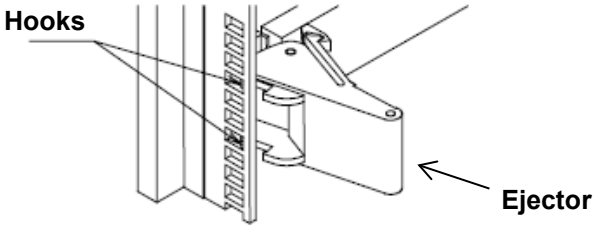


Figure 3.3.1-1 Module hooks

(4) Upon insertion, use a Phillips screwdriver to tighten the screws on both the left and right sides of the module.

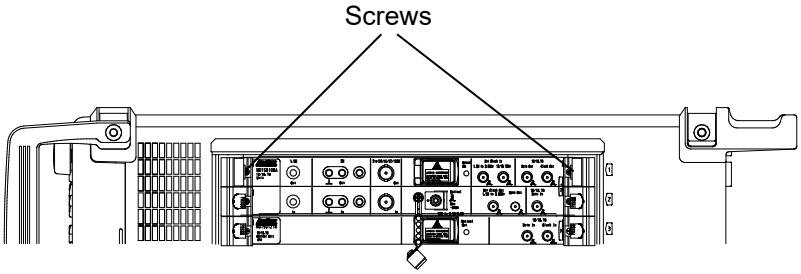
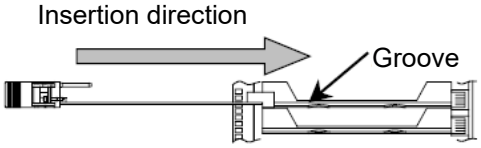


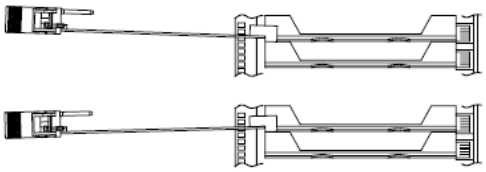
Figure 3.3.1-2 Module screws

⚠ CAUTION

- **Be sure to check that the power cord of the MP1900A is disconnected before installing the modules. Installing modules with the power cord connected may result in failure.**
- **Take countermeasures against static electricity (ESD) when installing modules. Failure to do so may result in failure.**
- **Make sure to insert the module completely horizontally into the groove (see the figure below). Failure to do so may deform the metal spring on top of the modules.**



Correct: plug-in module horizontal to grooves



Incorrect: plug-in module not horizontal to grooves

Figure 3.3.1-3 Module insertion

- **Do not touch any electric component mounting surface. Doing so may damage the components.**

⚠ CAUTION

- **Be careful not to catch your fingers when manipulating the ejector. Doing so may cause injury.**
- **Tighten the left and right screws after inserting a module. Failure to do so may cause malfunction or failure of the module, or allow it to drop out when transported.**
- **Attach a blank panel to every slot where no module is installed. Not attaching blank panels may result in failure due to air currents or internal temperature rise.**

3.3.2 Removing modules

(1) Disconnect the power cord.

(2) Loosen the left and right screws on the module to be removed.

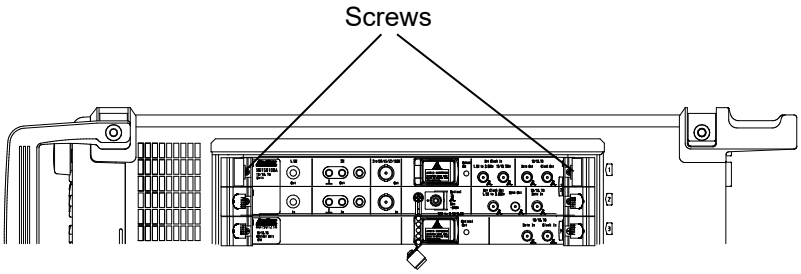


Figure 3.3.2-1 Modules screws

(3) Press the red ejector lock buttons on both sides of the module to unlock the ejector.

(4) Set the ejectors to the outside.

(5) Hold the ejectors and gently pull out the module.

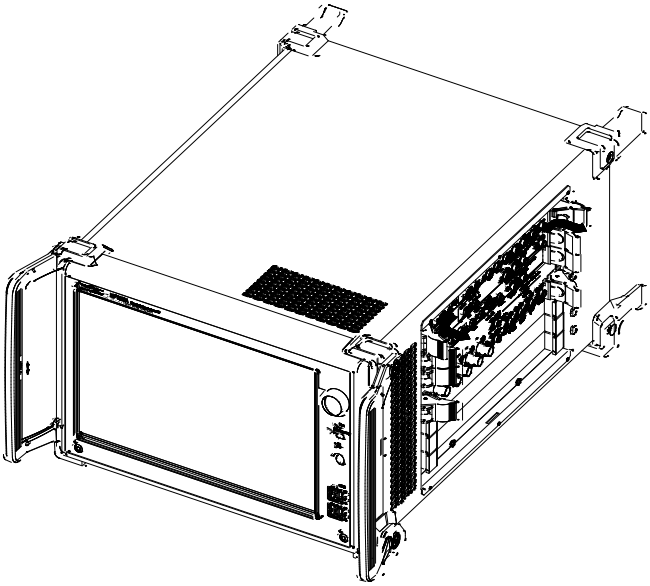
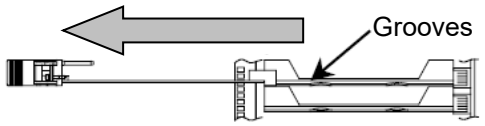


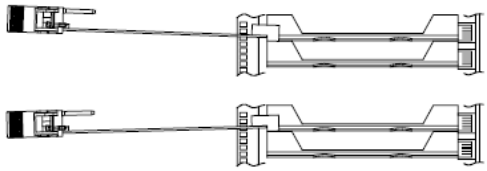
Figure 3.3.2-2 Modules ejectors

⚠ CAUTION

- **Be sure to check that the power cord of the MP1900A is disconnected before pulling out the modules. Pulling out modules with the power cord connected may result in failure.**
- **Take countermeasures against static electricity (ESD) when pulling out modules. Failure to do so may result in failure.**
- **Make sure to pull out the module completely horizontally from the grooves (see the figure below). Failure to do so may deform the metal spring on top of the modules.**



Correct: plug-in module horizontal to grooves



Incorrect: plug-in module not horizontal to grooves

Figure 3.3.2-3 Module pullout

- **Do not touch any electric component mounting surface. Doing so may damage the components.**
- **Be careful not to catch your fingers when manipulating the ejector. Doing so may cause injury.**
- **Be sure to loosen the left and right screws on the module and to release the ejector lock before setting the ejector outside. Failure to do so may damage the ejector.**

3.4 Power Connection

This section describes the procedures for supplying power.

3.4.1 Power Requirements

For normal operation of the MP1900A, observe the power voltage range described below.

Power source	Voltage range	Frequency
100 Vac system	100 to 120 V	50 to 60 Hz
200 Vac system	200 to 240 V	50 to 60 Hz

Changeover between 100 and 200 V systems is made automatically.

CAUTION

Supplying power exceeding the above range may result in electrical shock, fire, failure, or malfunction.

3.4.2 Connecting the Power Cord

Insert the power plug into an outlet, and connect the other end to the power inlet on the rear panel. To ensure that the MP1900A is grounded, always use the supplied 3-pin power cord, and insert the plug into an outlet with an GND terminal. When the power cord is connected, the Standby LED is lit and the MP1900A enters the standby status.

⚠ WARNING

If the MP1900A is connected to an ungrounded outlet, there is a risk of receiving a fatal electric shock. In addition, the peripheral devices connected to the instrument may be damaged.

Always connect the MP1900A to a properly grounded outlet. Do not use the instrument with an extension cord or transformer that does not have a ground wire.

Unless otherwise specified, the signal-connector ground terminal, like an external conductor of the coaxial connector, of the instrument is properly grounded when connecting the power cord to a grounded outlet. Connect the ground terminal of DUT to a ground having the same potential before connecting with the instrument. Failure to do so may result in an electric shock, fire, failure, or malfunction.

⚠ CAUTION

If an emergency arises causing the MP1900A to fail or malfunction, disconnect the MP1900A from the power supply by disconnecting either end of the power cord.

When installing the MP1900A, arrange the power inlet and outlet so that an operator may easily connect or disconnect the power cord. Moreover, DO NOT fix the power cord around the plug and the power inlet with a holding clamp or similar device.

If the MP1900A is mounted in a rack, a power switch for the rack or a circuit breaker may be used for power disconnection.

It should be noted that, the power switch on the front panel of the MP1900A is a standby switch, and cannot be used to cut the main power supply.

The MP1900A has a storage device. Do not remove the power cord during startup of the MP1900A, except for an emergency.

3.5 Measures Against EOS and ESD

This section describes how to prevent MP1900A from being damaged by electrical over-stress (EOS) or electrostatic discharge (ESD).

3.5.1 How to use the GND connection cable

There is a risk of damaging MP1900A due to EOS if MP1900A and other peripheral equipment (including experimental circuits) are not connected to the common ground.
When connecting MP1900A and other peripheral (including experimental circuits), connect other peripheral equipment to the ground terminal of MP1900A's chassis with the GND connection cable before connecting the I/O connectors.

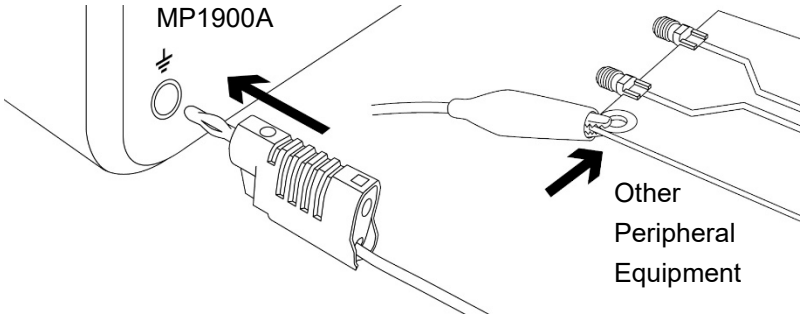


Figure 3.5.1-1 How to Use the GND Connection Cable

3.5.2 How to use the ESD Discharger

There is a risk of damaging MP1900A if the coaxial cable you connect to MP1900A is charged electrostatically.
To prevent MP1900A from being damaged by ESD, remove electrostatic charges from the cable by using the ESD Discharger before cabling the connectors.
The ESD Discharger can be used with one of SMA connector (and its compatible connector) and V connector (and its compatible connector).

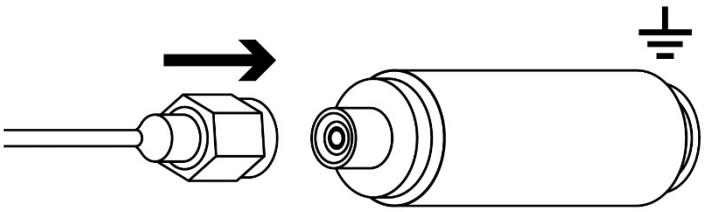


Figure 3.5.2-1 How to Use the ESD Discharger

3.6 Connecting with Peripheral Devices

(1) USB mouse, keyboard and other USB devices
Connect a cable with a Type A connector to the USB port on the front or rear panel. Turn off the connected devices before turning off the MP1900A.

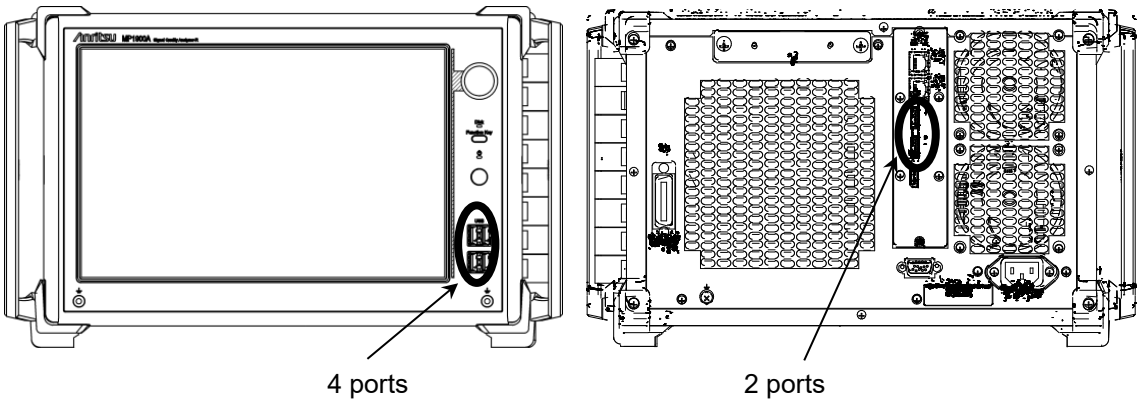


Figure 3.6-1 USB interface

(2) The MP1900A has four USB ports on the front panel and two USB ports on the rear panel as standard. Use the USB ports to connect the USB mouse or a keyboard.

(3) Ethernet
Connect the RJ modular plug of a 10 BASE-T, 100 BASE-TX or 1000BASE-TX cable to the RJ45 connector on the rear panel. Refer to 5.2 “Using Ethernet” for details.

(4) External display
Before turning on the MP1900A, connect the display cable to the HDMI or VGA connector on the rear panel. The external display can be used when the MP1900A is turned on. Connecting after the MP1900A has been turned on may cause failure. Turn off the display before turning off the MP1900A.

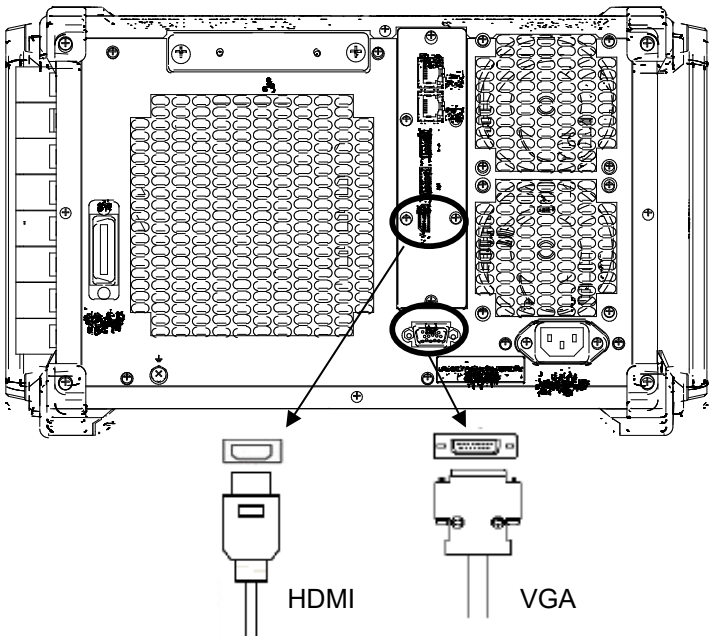


Figure 3.6-2 Display interface

(5) A D-SUB 15 pins connector and a HDMI Type A connector are provided on MP1900A's rear panel as a standard feature. When the resolution is set to 1280 × 800 pixels, simultaneous display on the external display and the built-in LCD of the MP1900A can be performed.

(6) GPIB
Connect a cable to the GPIB connector on the rear of the MP1900A before turning on the MP1900A. Connecting after the MP1900A has been turned on may cause failure. Refer to 5.3 "Using GPIB" for details.

3.7 Connecting Network

When connecting the MP1900A to a network, be sure to set the IP address using Network Connections on Windows, so as not to conflict with the IP address of any other device on the network. Consult your network administrator for available IP address. Refer to 5.2 “Using Ethernet” for the IP address setting procedure. Do not connect the MP1900A to a network which has possibly been invaded by a virus.

3.8 Windows Security Measures

MP1900A uses Windows Embedded Standard 7 (WES7) 64-bit version or Windows 10 IoT Enterprise (Win10) 64-bit version. When connecting MP1900A to a network, in addition to connecting to secure and virus-protected networks, the following procedures are recommended in order to add protection against malware (malicious software) and viruses.

- Activating firewall
- Installing Windows important update programs
- Using antivirus software

The security measure settings condition of this product can be confirmed from the Control Panel of Windows.

When the OS is WES7

1. Click **Start** → **Control Panel** from the Windows menu bar hidden in the lower part of the screen.
2. Click **System and Security** → **Action Center**.
3. Click **Security**, and confirm security measures settings condition.

When the OS is Win10

1. Click **Start** → **Windows System** → **Control Panel** from the Windows menu bar hidden in the lower part of the screen.
2. With View by: Category, click **System and Security** → **Security and Maintenance**.
3. Click **Security**, and confirm security measures settings condition.

Note:

Security warnings are not displayed by factory default.

CAUTION

When connecting MP1900A to the Internet or to an external network, there is a possibility an unpredictable problem or damage may occur. Anritsu Corporation does not recompense for any damage caused by connecting MP1900A to a network.

3.8.1 Activating Firewall

It is recommended to turn On the Windows firewall on MP1900A.

When the OS is WES7

1. Click **Start** → **Control Panel** from the Windows menu bar hidden in the lower part of the screen.
2. With View by: Category, click **System and Security** → **Windows Firewall** to show Windows Firewall window.

Note:

Windows Firewall is On when MP1900A is shipped from factory. The settings to allow external communications are already done so that MP1900A is operated properly by remote-control, etc. Thus, additional settings are unnecessary.

3. Click **Turn Windows Firewall on or off** found in left side of Windows Firewall window.

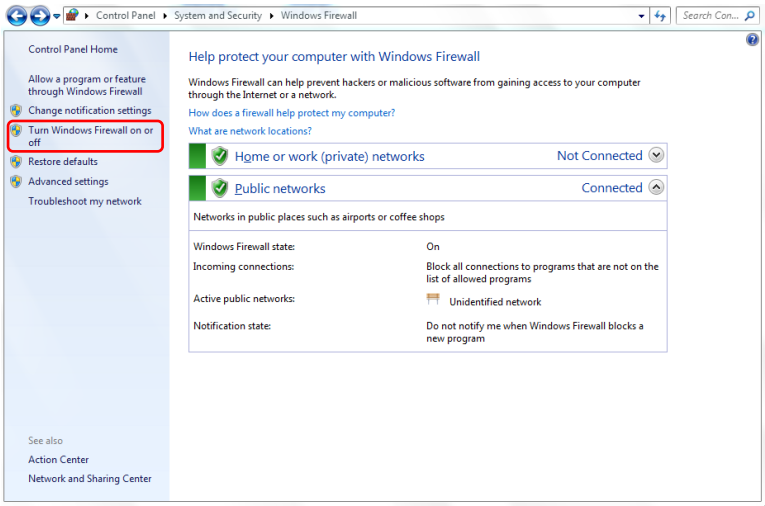


Figure 3.8.1-1 Windows Firewall Window

4. Customize Settings window will be shown where Windows firewall On/Off settings can be changed.
   Use MP1900A with the following checkboxes Off (unchecked).
   - Block all incoming connections, including those in the list of allowed programs
   - Notify me when Windows Firewall blocks a new program

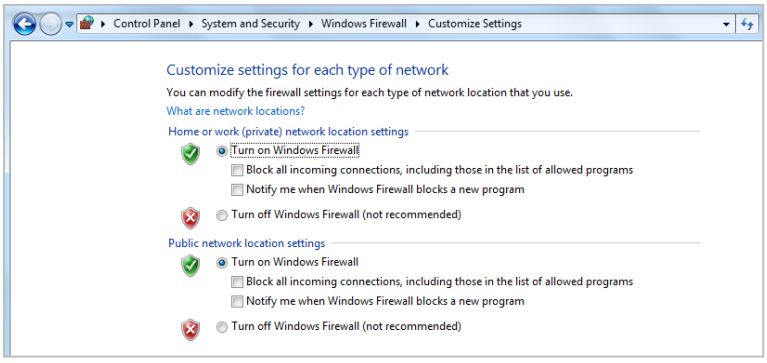


Figure 3.8.1-2 Customize Settings Window

When the OS is Win10

1. Click the **Start** icon to open the Start menu, and then click **Windows System** → **Control Panel** in the **W** column of the application list displayed.
2. With View by: Category, click **System and Security** → **Windows Defender Firewall** to show Windows Defender Firewall window.

Note:

Windows firewall is On when MP1900A is shipped from factory.

3. Click **Turn Windows Defender Firewall on or off** found in the left side of Windows Defender Firewall window.

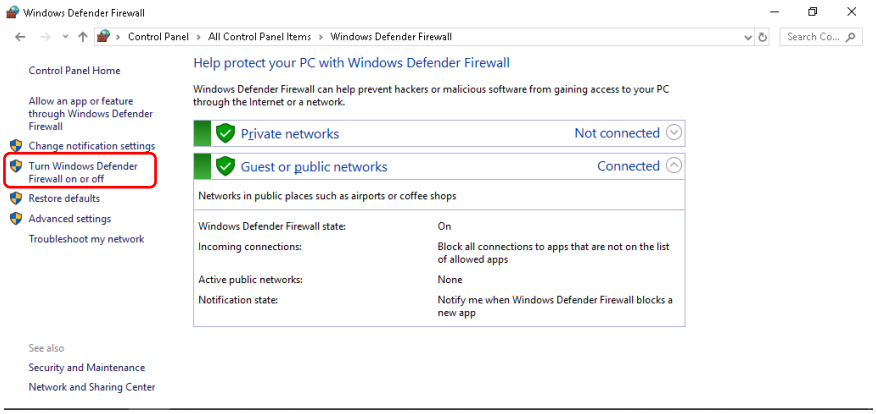


Figure 3.8.1-3 Windows Defender Firewall Window

4. Customize Settings window will be shown where Windows firewall On/Off settings can be changed.

   Use the MP1900A with the following checkboxes Off (unchecked).

   - **Block all incoming connections, including those in the list of allowed programs**
   - **Notify me when Windows Firewall blocks a new program**

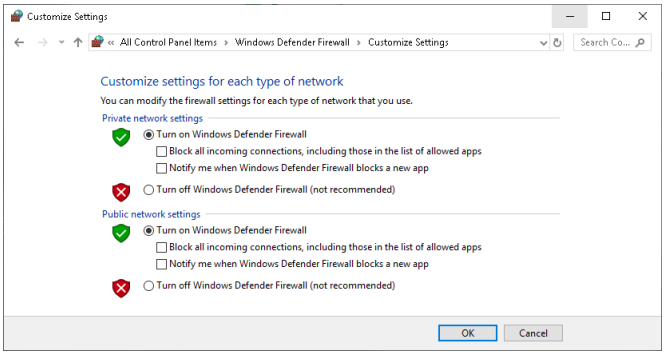


Figure 3.8.1-4 Customize Settings Window

3.8.2 Installing Windows Important Update Programs (Windows Update)

It is necessary to regularly check for important Windows update programs and keep them up-to-date. However, since executing update program downloads and installations will decrease the performance of MP1900A, deactivate automatic updates for Windows Update. Instead, it is recommended to check for new updates, execute downloads and installations periodically when MP1900A is not in use for measurement.

When the OS is WES7

1. Click **Start** → **Control Panel** from the Windows menu bar hidden in the lower part of the screen.
2. With View by: Category, click **System and Security** → **Windows Update** to show Windows Update window.
3. To deactivate automatic updates, click **Change settings** found in left side of Windows Update window.

Figure 3.8.2-1 Windows Update Window

4. Select **Never check for updates (not recommended)** in Important updates, then click **OK**.

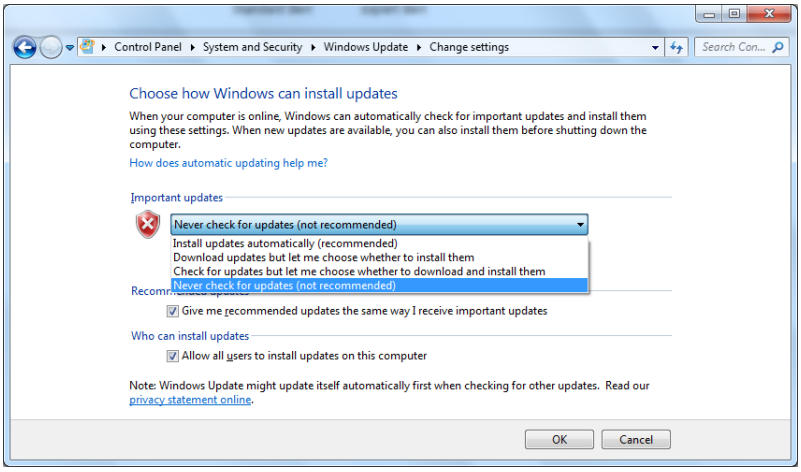


Figure 3.8.2-2 Change settings Window

5. To check for newly available update programs (manual update), click **Check for updates** in Windows Update window.

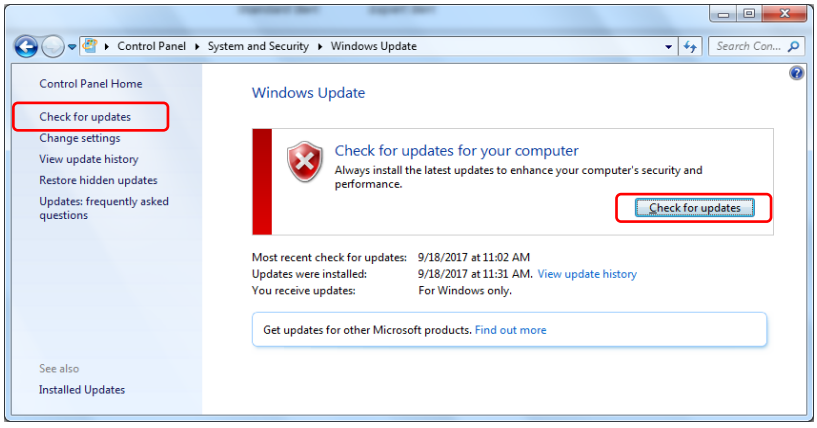


Figure 3.8.2-3 Windows Update Window (manual update)

6. When a new update program is found, download and install following the displayed instructions.

When the OS is Win10

1. Click the **Start** icon to open the Start menu, and then click **Settings** icon.
2. Click **Update & Security** to show Windows Update window.
3. To turn off automatic updates, select **Windows Update** found in left side of Windows Update window, and then click **Advanced options**.

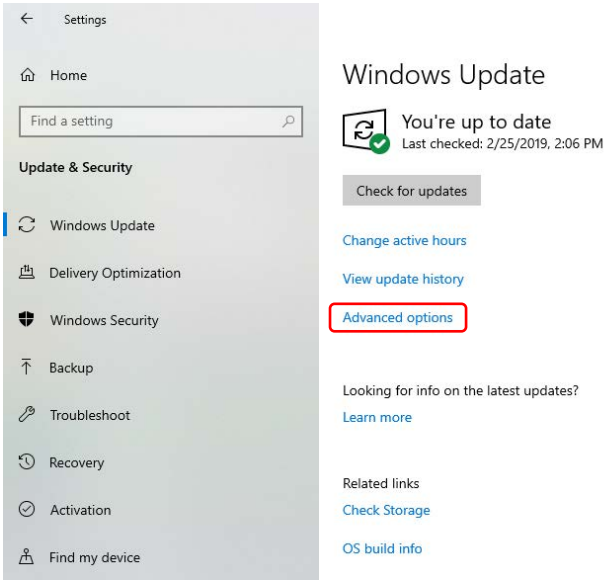


Figure 3.8.2-4 Windows Update Window

4. Advanced options window will be shown.
   Confirm if **Automatically download updates even over metered data connections (charges may apply)** is set to Off.

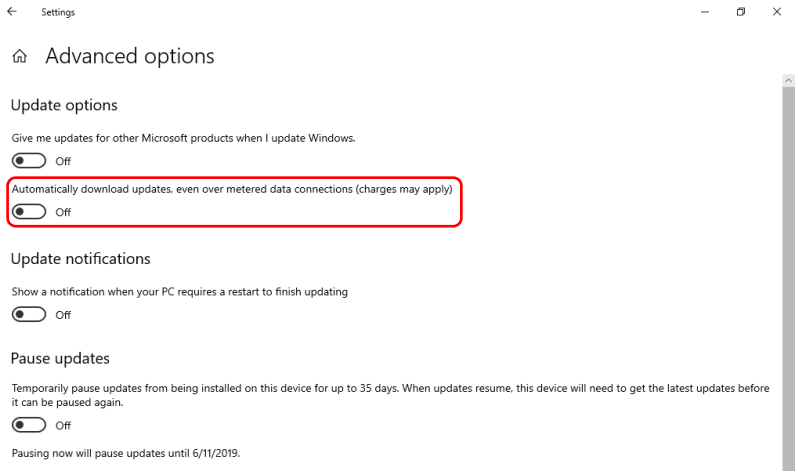


Figure 3.8.2-5 Advanced options Window

5. To check for newly available update programs (manual update), click **Check for updates** in Windows Update window.

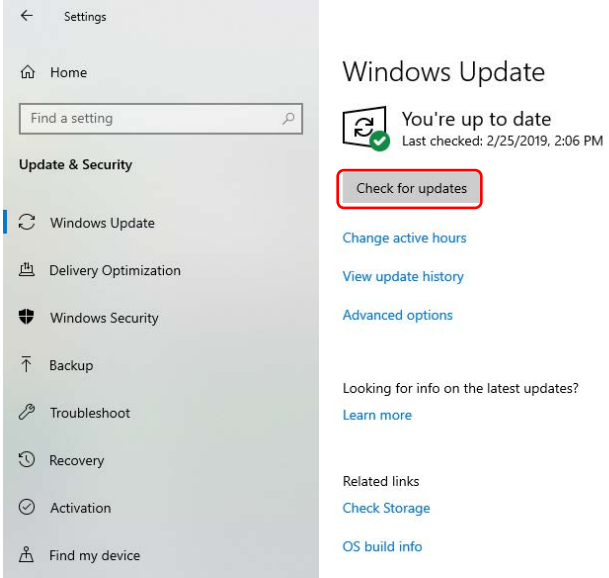


Figure 3.8.2-6 Windows Update Window (manual update)

6. When a new update program is found, download and install following the displayed instructions.

3.8.3 Using Antivirus Software

It is recommended to install antivirus software on MP1900A. However, since the automatic updates for virus data library and the full scans run in the background by the antivirus software will decrease the performance of MP1900A, do not execute them. Instead, it is recommended to run them periodically when MP1900A is not in use for measurement.
The antivirus software that checked operation in MP1900A is shown below.

- Trend Micro OfficeScan XG
- Norton Security Deluxe (confirmed by version 22.11.0.41)

Note:

Refer to the antivirus software operation manual for its installation and operation procedures. Although it is confirmed that no negative effects in the general usage of MP1900A are caused by using the software mentioned above, there is no guarantee for different software even if containing similar functions.

Chapter 4 Start/Stop Procedures

This chapter describes the start and stop procedures of the application software for using the MP1900A.

4.1 Start Procedure 4-2
4.2 Stop Procedure 4-4

4.1 Start Procedure

When in non-standby state (when Standby LED is off)

Connect the power cord to the inlet, and check that the Standby LED is lit. Now, the MP1900A is in the standby state.

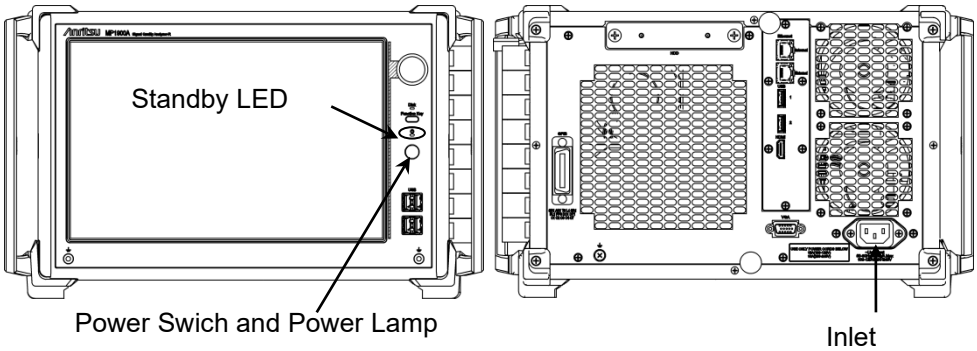


Figure 4.1-1 Front and rear panels

When in standby state (when Standby LED is on)

(1) Press and hold the power switch on the front panel.
The power lamp is lit and Windows starts.

(2) When Windows starts, wait until the Application Selector screen is displayed, and then touch the icon of the application you want to start. For details of the Application Selector screen, refer to the *MX190000A Signal Quality Analyzer-R Control Software Operation Manual*.

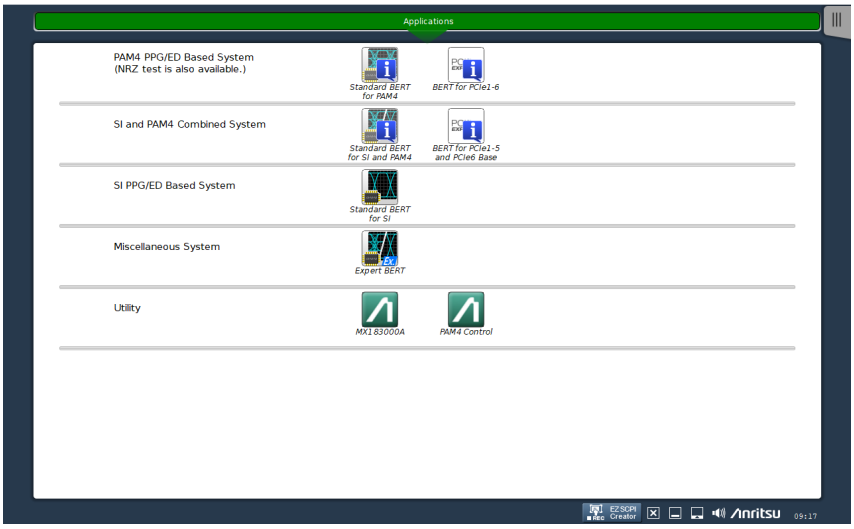


Figure 4.1-2 Application Selector screen

CAUTION

Except for emergencies, do not remove the power cord when the MP1900A is started. There is a risk of damaging the built-in storage device if the power cord is removed while the MP1900A is accessing it.

4.2 Stop Procedure

Press and hold the power switch on the front panel, and check that the Power lamp goes off and the Standby LED is lit. Now, the MP1900A is in the standby state.

Chapter 5 Remote Control

Remote control of the MP1900A can be performed via Ethernet or GPIB interface. This chapter describes the remote control procedure.

5.1 Remote Interface Settings 5-2
5.2 Using Ethernet 5-5
5.3 Using GPIB 5-8

5.1 Remote Interface Settings

To remote-control the MP1900A by using the remote interface, set the remote interface from **Remote Control**. Start the application after the MP1900A has started, and select **Remote Control** on the General Settings window.
Refer to *MX190000A Signal Quality Analyzer-R Control Software Operation Manual* for details of System Toolbar.

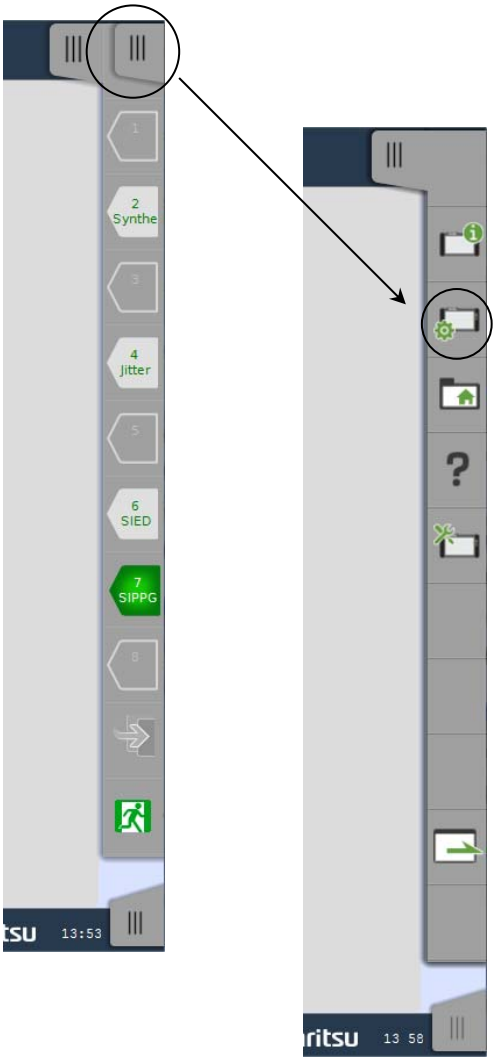


Figure 5.1-1 System Toolbar

Tap the Navigation Tab on the upper right corner of the screen to display the System Toolbar. Then Touch .

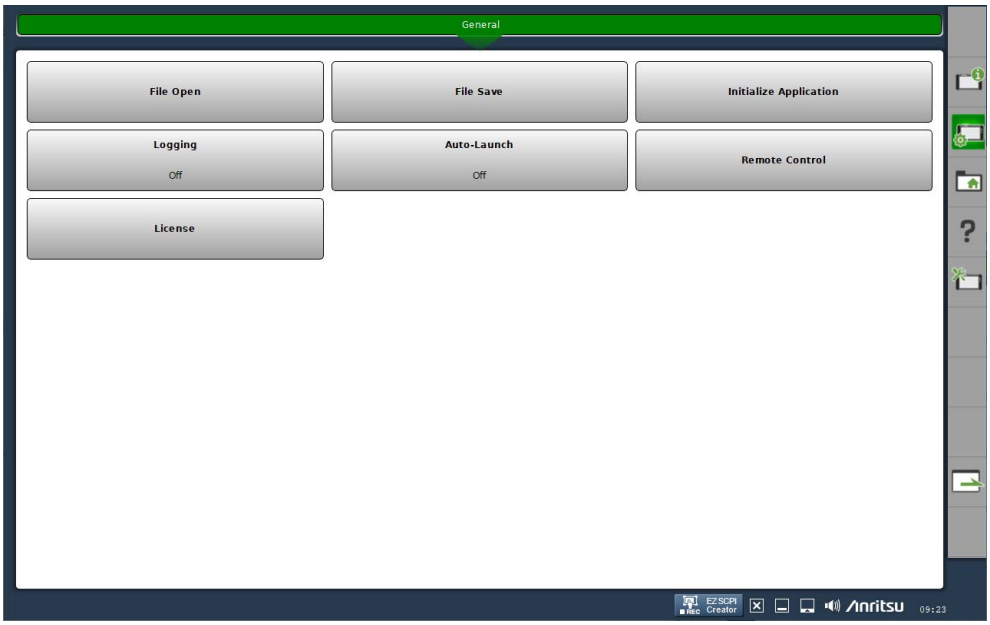


Figure 5.1-2 General Settings Window

Next, touch **Remote Control** to display a dialog box for setting remote control. Set TCP port number and GPIB address for the MP1900A.

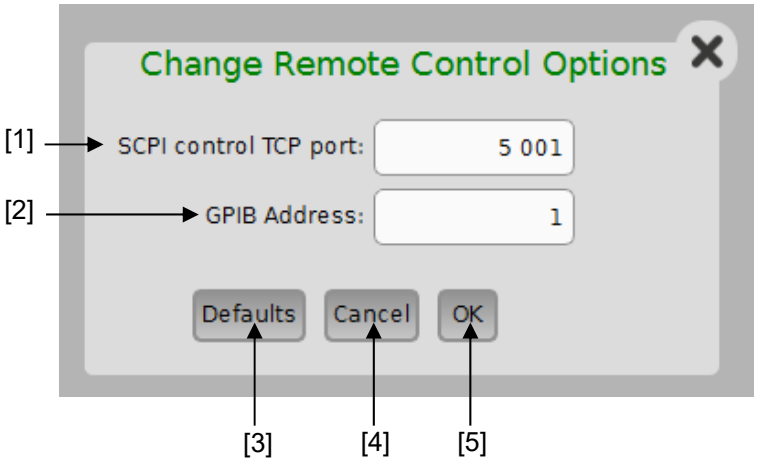


Figure 5.1-3 Remote Control Dialog Box

Table 5.1-1 Remote Control setting

No.	Type	Function/operation
[1]	SCPI control TCP port	Set the TCP/IP socket port number to remote-control MP1900A via Ethernet interface. Perform the settings according to the Control PC or other external controller. MX190000A Signal Quality Analyzer-R Control Software functions as the TCP server.
[2]	GPIB Address	Set the GPIB address of the MP1900A used when GPIB is selected for the active interface.
[3]	Defaults	Resets the settings to default. The default values are shown below. SCPI control TCP port: 5 001 GPIB Address: 1
[4]	Cancel	Close this dialog box.
[5]	OK	Save the setting and close this dialog box.

Refer to *MX190000A Signal Quality Analyzer-R Control Software Operation Manual* for details of remote control.

5.2 Using Ethernet

Specify IP Address, Subnet Mask, and Gateway for the MP1900A. Connect the controller to the IP Address displayed on the Remote Control tab.

(1) Click the Show Desktop icon at the right bottom of the screen. Windows desktop is displayed.

Figure 5.2-1 Show Desktop Icon

(2) Click the Settings icon ( ) on the Windows Start menu.

(3) Click **Network and Internet** to change the IP address, subnet mask, and gateway address. Click **Change adapter options** to display the Network Connection window.

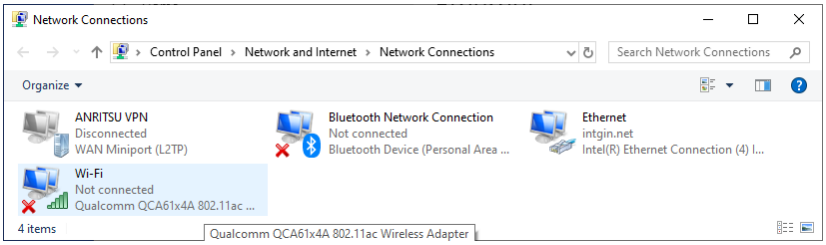


Figure 5.2-2 Network Connection Window

(4) Right-click the **Ethernet** icon, and then click **Properties**.

(5) Click Internal Protocol Version 4 (TCP IPv4), and then click **Properties**.

(6) Set the items in the Internal Protocol Version 4 (TCP/IPv4) Properties dialog box.

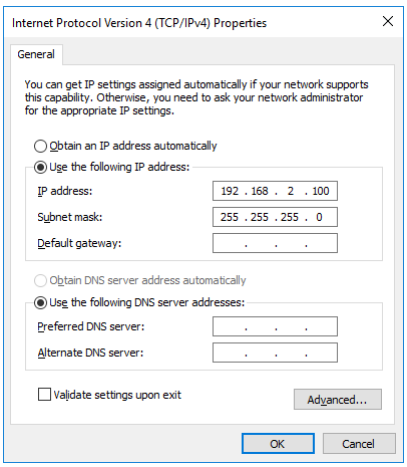


Figure 5.2-3 Internal Protocol Version 4 (TCP/IPv4) Properties dialog box

Notes:

- For the IP address of the remote interface, set the address other than “192.168.1.xxx”. The “192.168.1.xxx” address is used for the module address. If this address is set, the module may not operate properly.

- Do not change settings of **Ethernet 2 (Do Not Change)**. When the settings are changed, the application is not started normally. Set the following values if the settings are changed.

Table 5.2-1 Ethernet 2 (Do Not Change) Default Values

Item	Setting
IP address	192.168.1.101
Subnet mask	255.255.255.0
Default gateway	Blank (not set)

Refer to *MX190000A Signal Quality Analyzer-R Control Software Operation Manual* for details such as setup restrictions. Use the External connector installed on the rear panel to connect the 10 BASE-T/100 BASE-TX/1000 BASE-TX cable. The Internal connector is reserved for future use. Do not connect to any network.

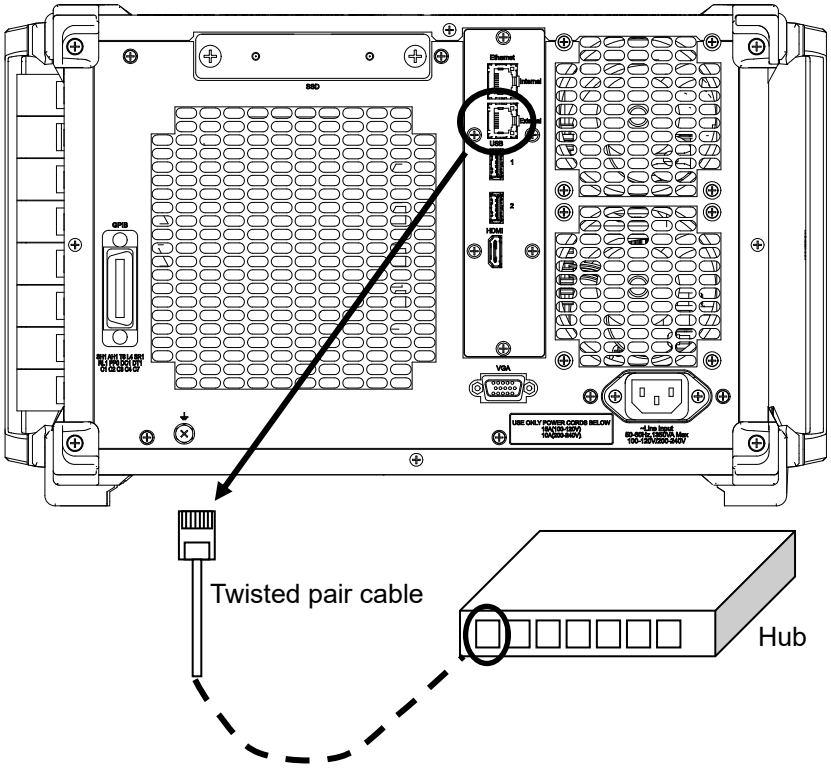


Figure 5.2-4 Ethernet Cable Connection

5.3 Using GPIB

The GPIB is available using the set GPIB address (refer to 5.1, “Remote Interface Settings”).
GPIB connector is located on the rear panel. Be sure to connect the GPIB cable before turning on the MP1900A. Up to 15 devices, including the controller, can be connected in one GPIB system. Note that the cable length is limited, as shown below.

- Total cable length: ≤20 m
- Cable length between devices: ≤4 m

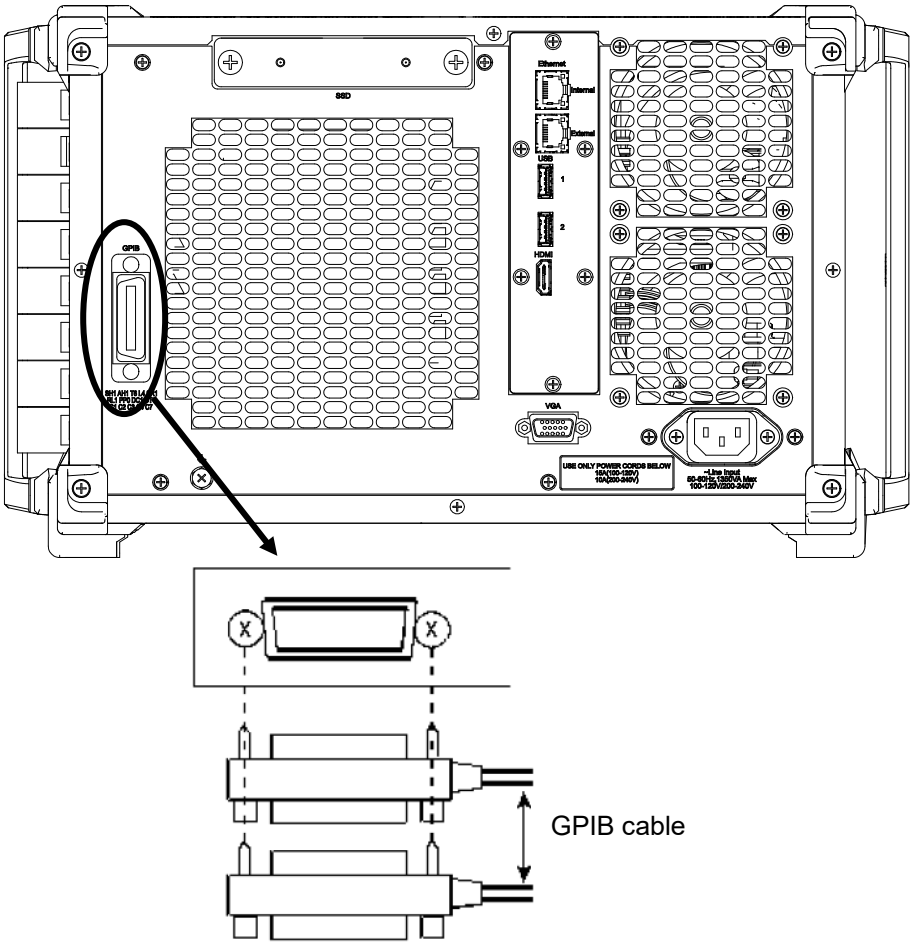


Figure 5.3-1 GPIB Cable Connection

Connect cables without forming loops.

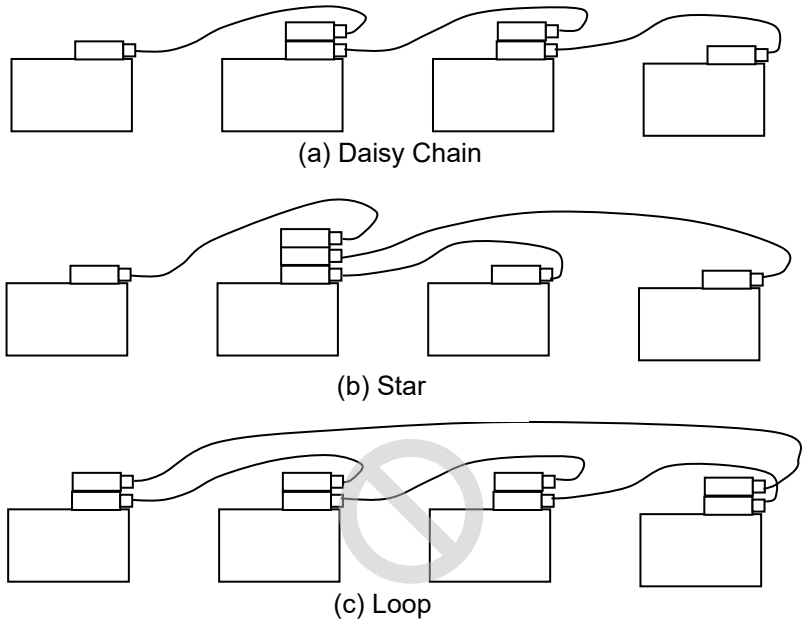


Figure 5.3-2 GPIB Cable Connection Methods

Chapter 6 Installing MX190000A

This chapter describes how to install the MX190000A Signal Quality Analyzer-R Control Software (hereinafter, referred to as "MX190000A"), when reinstalling or upgrading MX190000A is required.

6.1 Installing MX190000A 6-2

6.1 Installing MX190000A

The MP1900A comes with MX190000A. When reinstalling or upgrading MX190000A is required, follow the installation procedure described below.

To re-install the MX190000A, use the USB flash drive supplied with the MP1900A. If the MX190000A is updated, the firmware of the MP1900A and each module should also be updated.

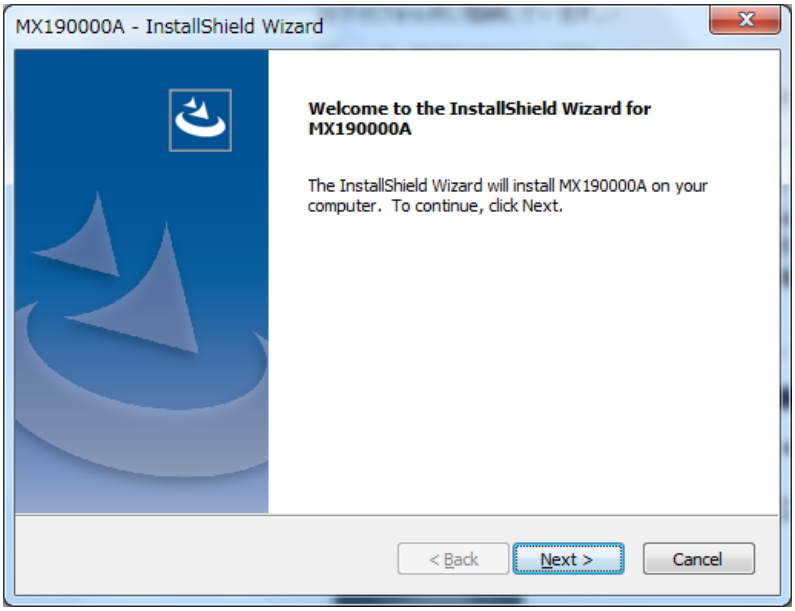
(1) Insert the USB flash drive into the MP1900A to copy the files to the storage device. Files to be copied are stored in the following folder as follows:
\Installer\MX190000A_VER_x_xx_xx.exe

x_xx_xx above indicates the software version.

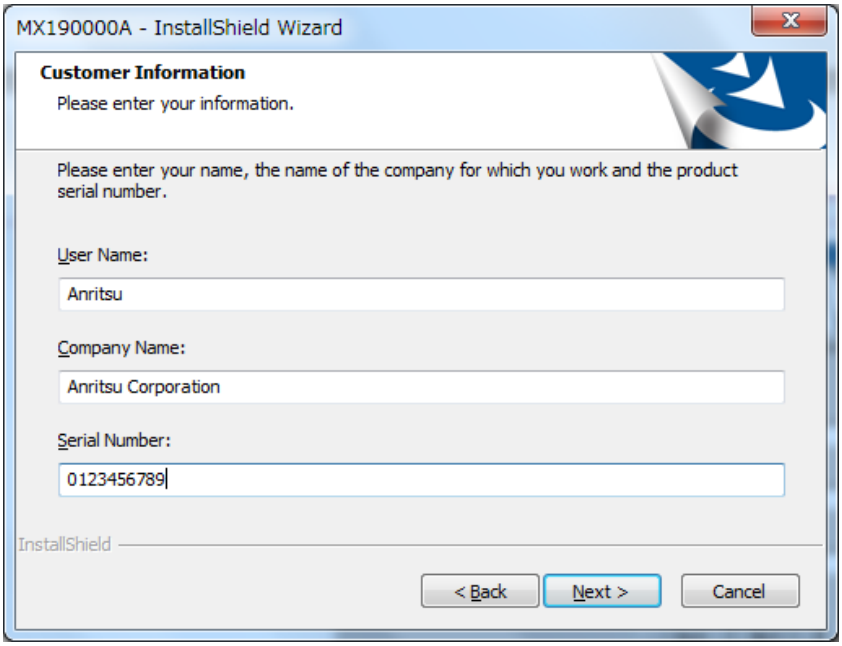
(2) Execute "MX190000A_VER_x_xx_xx.exe" to start installation.

When overwriting a version of MX190000A that has already been installed in the MP1900A (e.g., when upgrading the version), a message dialog box "Reinstall all program features installed by the previous setup." is displayed. Touch **Yes** to continue the installation. In this event, Steps 4 (this step) to 8 are omitted. Proceed with Step 9.

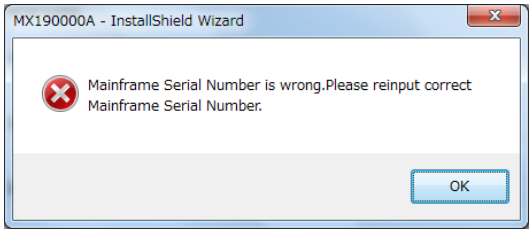
(3) The installer starts. Touch **Next**.



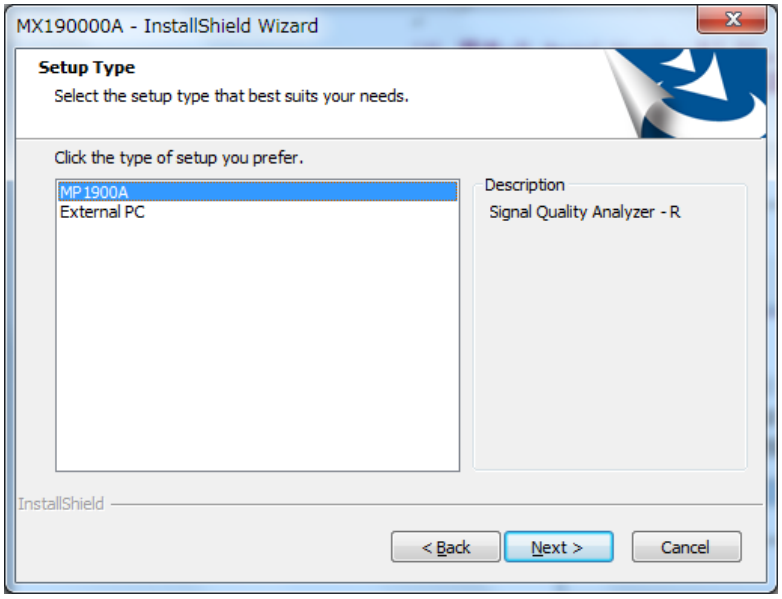
(4) Enter a user name, a company name, and the serial number into the respective textbox, and then touch **Next**.
For the serial number, enter the 10-digit serial number of the MP1900A that is to be controlled by MX190000A.



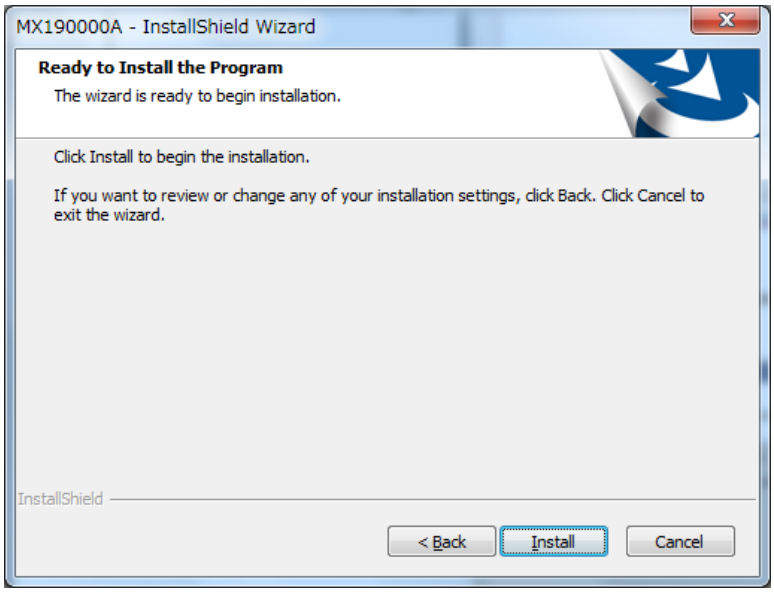
(5) The error message shown below will be displayed if an incorrect serial number is entered and **Next** is touched. Touch **OK** to close the error message, and then enter the correct serial number.



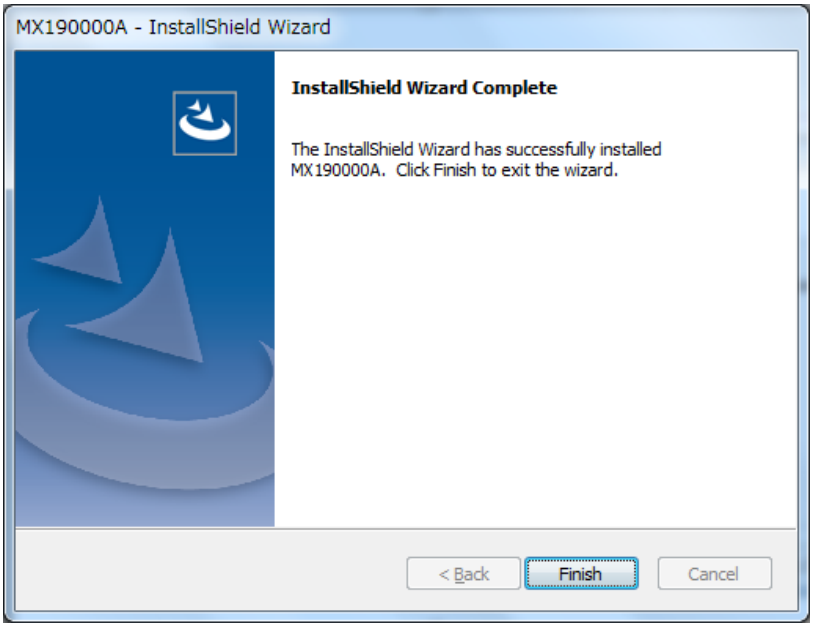
(6) Select **MP1900A** in the Setup Type and touch **Next**. When installing the application to a PC, select **External PC**. Refer to *MX190000A Signal Quality Analyzer-R Control Software Operation Manual* for details.



(7) When installation is ready (the following window is displayed), touch **Install** to start installation.



(8) The following window is displayed when the installation completes normally. Touch **Finish** to end the installation procedure.



(9) Be sure to check the software version of the MP1900A after installing MX190000A. If the firmware version is not the latest, necessary files must be downloaded. Refer to *MX190000A Signal Quality Analyzer-R Control Software Operation Manual* for details on how to check the version and how to upgrade the software.

Chapter 7 Troubleshooting

This chapter describes the procedures to check if a failure has occurred during abnormal operation of the MP1900A.

7.1 Problems upon Power-on 7-2
7.2 Problem upon Module Replacement 7-3
7.3 Software Problems 7-4

7.1 Problems upon Power-on

Table 7.1-1 Remedies for problems upon power-on

Symptom	Location to Check	Remedy
The MP1900A cannot be turned on.	Is the power cord loose?	Fully connect the cable.
	Is the Standby LED is turned on?	If the power cord is removed and inserted during startup of the MP1900A, the MP1900A may not be turned on by pressing the power switch on the front panel. In this event, take either of these actions: 1. Remove the power cord, leave the Standby LED turned off for at least 5 seconds, and then reconnect the power cord. 2. Press and hold the power switch for at least 5 seconds, release the power switch, and then press the power switch again.
		Check if the power is being supplied to the power cord. If the MP1900A cannot be turned on even when the power is being supplied, the MP1900A may have failed. 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 PDF version.
	Is the MP1900A powered on after shutting it down because of the temperature abnormality?	When the power is automatically turned off because of the temperature abnormality, the Standby LED flashes. In this case, unplug the power cord to turn off the Standby LED entirely.

7.2 Problem upon Module Replacement

Table 7.2-1 Remedies for problems upon module replacement

Symptom	Location to Check	Remedy
A module is not recognized after starting application.	Is the module installed properly?	Install the module again by referring to 3.3 “Installing and Removing Modules”.
	Are the appropriate modules installed?	Confirm the MP1900A software version and the supported modules by visiting the MP1900A Series Signal Quality Analyzers-R product information page in the Anritsu web site (https://www.anritsu.com). If the appropriate modulus are not recognized, it may have failed. 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 PDF version.

7.3 Software Problems

Table 7.3-1 Remedies for software problems

Symptom	Location to Check	Remedy
The MX190000A application is not installed.	Is the MX190000A application registered in the Windows start menu?	Refer to Chapter 6 “Installing MX190000A” to re-install the MX190000A Control Software.
Windows does not start.	–	The storage device in MP1900A may have failed. 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 PDF version.
The module is not recognized after starting the application.	Have the settings of **Ethernet 2 (Do Not Change)** been changed?	Referring to 5.2, Using Ethernet”, make sure that **Ethernet 2 (Do Not Change)** settings are configured to the default values.
Touch panel does not function properly.	–	Calibrate the touch panel by referring to 8.2 “Touch Panel Calibration”.
The touch panel of the MP1900A does not work correctly with an external display connected.	–	Set up the touch panel of the MP1900A by referring to 8.3 “Touch Panel Setup When an External Display is Connected”.
An error occurs in MX190000A due to memory leaks of MP1900A WES7.	–	If a commercial USB Wi-Fi adapter is connected to the MP1900A installed with WES7 as OS, an application error may occur in the MX190000A due to memory leaks between WES7 and the USB Wi-Fi adapter. To solve this problem, stop using the USB Wi-Fi adapter and uninstall the USB Wi-Fi adapter driver. ***Notes:*** It is not recommended to connect the MP1900A installed with WES7 OS to the network because Windows 7 security updates are no longer be provided. To use the MP1900A with WES7 OS in the environment connected to the network, add the MP1900A-x10, and upgrade the OS to Windows 10 that can receive security updates.

Table 7.3-1 Remedies for software problems (Cont'd)

Symptom	Location to Check	Remedy
After the power is turned on, the following pop-up message is displayed. "Windows cannot find '.bat'. Make sure you typed the name correctly, and then try again."	1. Have you changed the Ethernet 2 (Do Not Change) settings? 2. Are there any network devices whose IP address conflicts with the MP1900A modules? 3. Is the LAN adapter faulty?	There is a possibity that the MP1900A or the modules connected to it could not be recognized for some reason. 1. Referring to 5.2, Using Ethernet", make sure that **Ethernet 2 (Do Not Change)** settings are set to the default values. 2. Reset the IP address of the device on the same network as the MP1900A to an address other than 192.168.1.xxx used by the MP1900A. 3. Ensure that the LAN adapter of the MP1900A is recognized. If the ping does not work even though it is recognized, it may possibly be faulty. 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 PDF version.
Though the application has been launced, tab operations cannot be accepted on the GUI.	—	When the application is selected and "Initializing Application..." is displayed, this symptom may occur by attempting certain operations such as minimizing the application. If the symptom occurs, follow the steps below. 1. Restart the application. 2. Go to the Application Selector screen, and then go back to the previously displayed screen.

If a problem cannot be solved using any of the items listed above, perform initialization and check the items again. If the problem still occurs, 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 PDF version. Also, the Anritsu website provides you with contact information and a contact form.

Chapter 8 Maintenance

This section describes the maintenance of the MP1900A.

8.1 Daily Maintenance 8-2
8.2 Touch Panel Calibration 8-3
8.2.1 When the operating system is WES7.....8-3
8.2.2 When the operating system is Win10.....8-5
8.3 Touch Panel Setup When an External Display is Connected 8-7
8.4 System Recovery Function 8-8
8.4.1 When the operating system is WES7.....8-9
8.4.2 When the operating system is Win10.....8-17
8.5 Caution on Storage 8-28
8.6 Transportation.....8-29
8.7 Calibration 8-30
8.8 Disposal.....8-31

8.1 Daily Maintenance

- Wipe off any external stains with a cloth damped with diluted mild detergent.
- Vacuum away any accumulated dust or dirt with a vacuum cleaner.
- Tighten any loose parts fixed with screws, using the specified tools.

8.2 Touch Panel Calibration

If the touch panel of the MP1900A cannot correctly recognize the touched position, calibrate it according to the following procedure. The procedure is different, depending on the operating system installed on the MP1900A,

8.2.1 When the operating system is WES7

<Procedure>

1. Touch **All Programs → DMC Touch Panel Configuration**. (Figure 8.2.1-1) from the start menu of Windows.
2. When the tool starts, touch **Calibration**.
3. Touch the center of + displayed at five locations on the screen with your finger or stylus. (Figure 8.2.1-3)
4. Touch or click **OK**. The Calibration window is closed. (Figure 8.2.1-4)

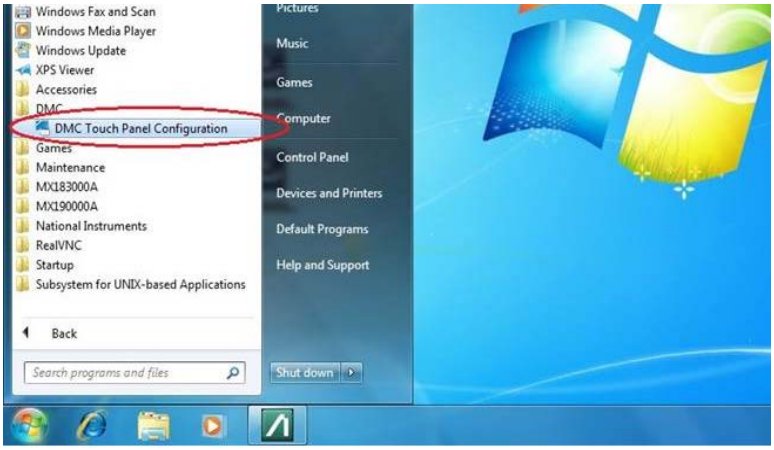


Figure 8.2.1-1 Touch Panel Calibration Procedure 1

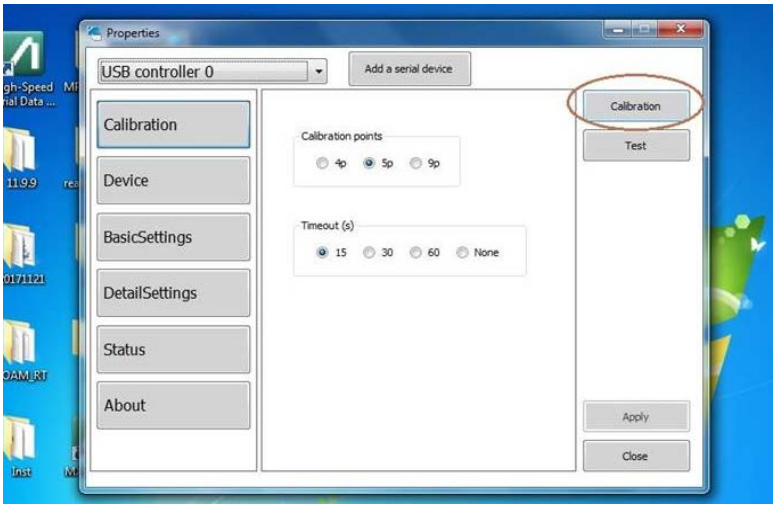


Figure 8.2.1-2 Touch Panel Calibration Procedure 2

Figure 8.2.1-3 Touch Panel Calibration Procedure 3

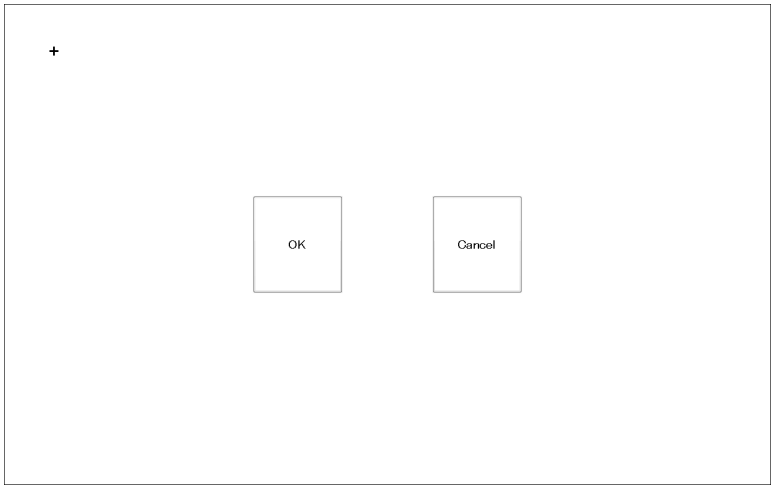
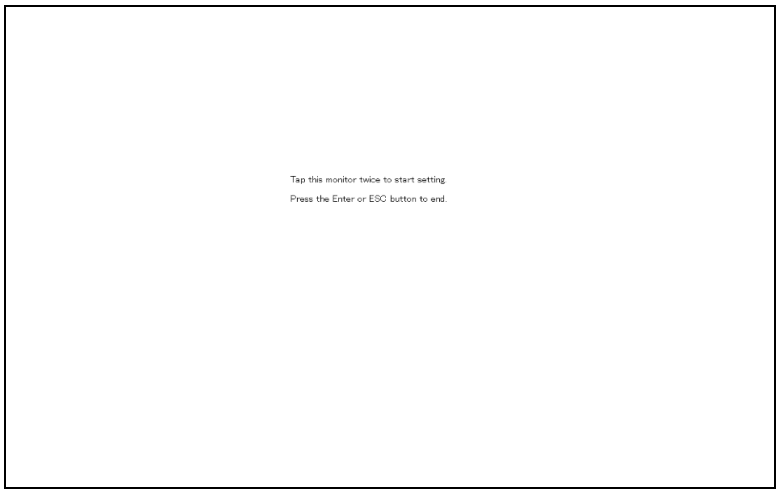


Figure 8.2.1-4 Touch Panel Calibration Procedure 4

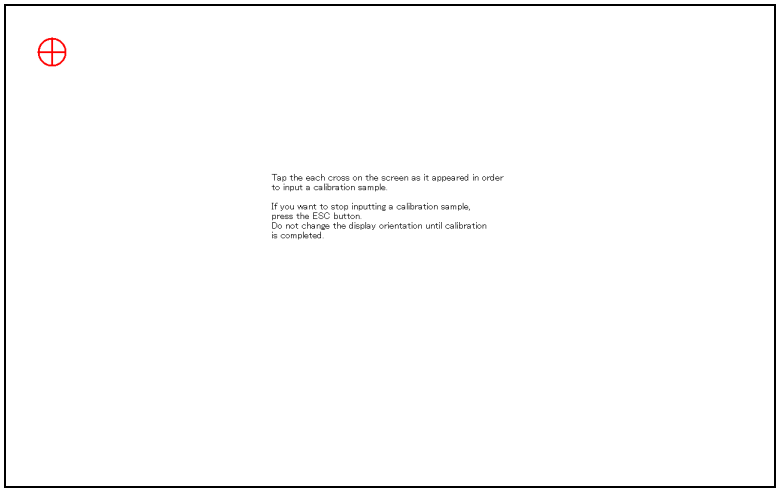
8.2.2 When the operating system is Win10

<Procedure>

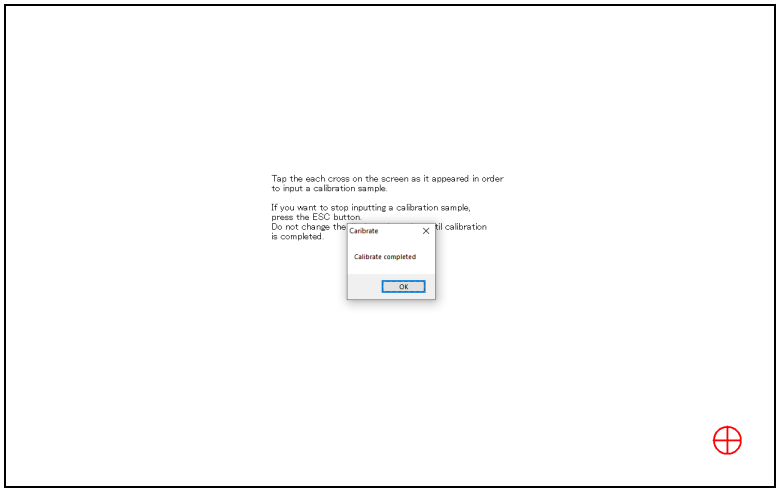
1. Touch **Start** ( ) → **DMC** → **ExecuteCalibration**.
2. When the following screen appears, touch on it twice with your finger or stylus.



3. Touch the center of each of the four markers displayed on the screen with your finger or stylus.



4. When the calibration is completed, the following dialog box appears. Touch or click **OK**. The Calibration window is closed.



8.3 Touch Panel Setup When an External Display is Connected

When an external display is connected, if the touch panel of the MP1900A cannot correctly recognize the touched position, calibarate it according to the following procedure.

<Procedure>

1. Before turning on the MP1900A, connect the display cable to the HDMI or VGA connector on the rear panel. The external display can be used when the MP1900A is turned on. Connecting after the MP1900A has been turned on may cause failure. Turn off the display before turning off the MP1900A.
2. Click **Start** ( ) > **Settings** ( ) > **System**.
3. At the Display settings, under **Multiple displays**, select **Extend these displays**.
4. Click **Start** > **Windows System** > **Control Panel** > **Tablet PC Settings**.
5. In the **Configure** area, click **Setup**.
6. When the following screen appears, touch on it with your finger or stylus.

Once this touch panel is set up, you do not need to set it up again even if the setting for **Multiple displays** is changed.

8.4 System Recovery Function

The MP1900A has system recovery function to restore data on the hard disk to the factory shipment status. The procedure to use this function is different, depending on the operating system installed on the MP1900A, These function can be used in the event of system instability.

⚠ CAUTION

Fully understand the following and back up all necessary data before performing a system recovery.

- **Executing system recovery restores the original Windows factory settings, and reverts the data stored on the C drive to the original factory state. All data such as applications and updates subsequently added, measurement conditions saved, measurement results, and screen captures will therefore be deleted.**
- **Data deleted by these functions cannot be restored.**
- **The MX190000A must be re-installed if system recovery is performed. Before performing system recovery, prepare the MX190000A software installer for the version you are using.**
- **Executing a system recovery disables the activated MX183000A license. To hold these licenses, recover the system according to the recovery procedure on the following pages. The recovery procedure varies depending on the version of Windows OS.**

  If the system is recovered in an inappropriate procedure, the license keys are revoked and no longer available. Please note that once disabled, the license key cannot be used anymore. In case you have disabled the license key, 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 PDF version.

8.4.1 When the operating system is WES7

Note:

If both of the following conditions apply, be sure to preserve the licenses temporarily before system recovery according to 2.4 "License Key Activation" in the *MX183000A High-Speed Serial Data Test Software Operation Manual*.

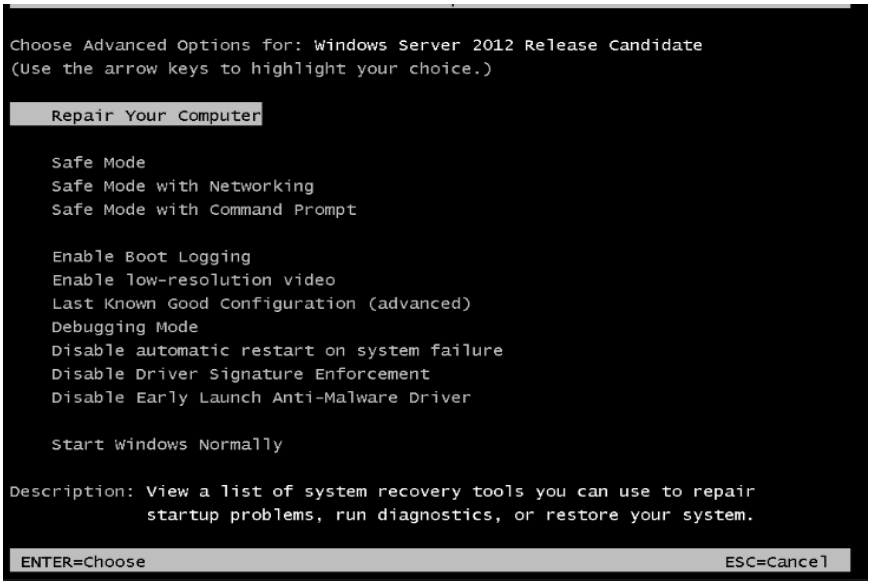
- You are using the MX183000A of version earlier than 3.07.00.
- The MX183000A license has been activated.

If the operating system and the MX183000A you are using are WES7 and version earlier than 3.07.00 respectively, , the MX183000A licenses are cleared by a system recovery unless the licenses are preserved temporarily in advance. In this case, contact an Anritsu Service and Sales office. Contact information can be found on the last page of the printed version and in a separate file of the PDF version of this manual.

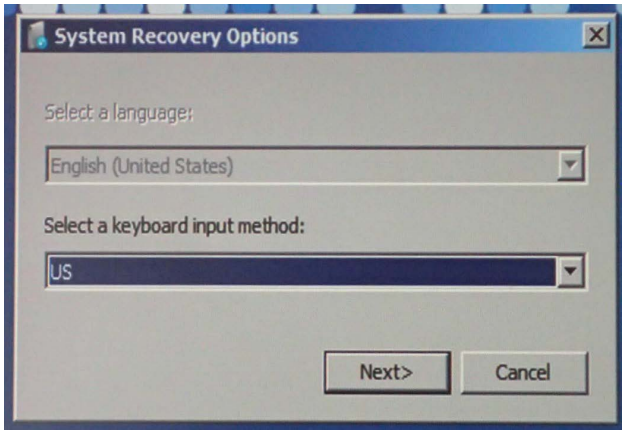
If the operating system and the MX183000A you are using are WES7 and 3.07.00 or later version respectively, you do not need to temporarily preserve the licenses because the MX183000A is newly equipped with a function that automatically restores the MX183000A licenses after a system recovery. To keep the MX183000A licenses activated after a system recovery, run a system recovery according to the following procedure:

<Procedure>

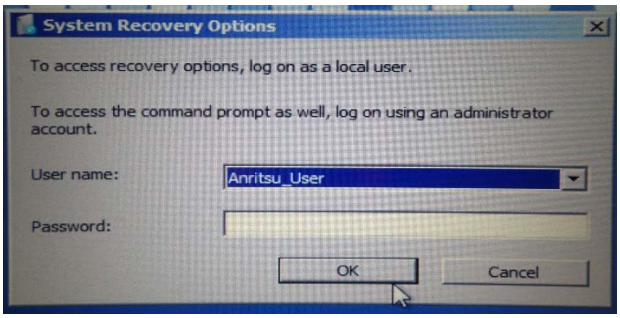
7. Disconnect the MP1900A from the network if connected.
8. Connect the keyboard and mouse to the mainframe, and then turn the MP1900A power On.
9. Press the **F8** key on the keyboard. The following screen will appear.



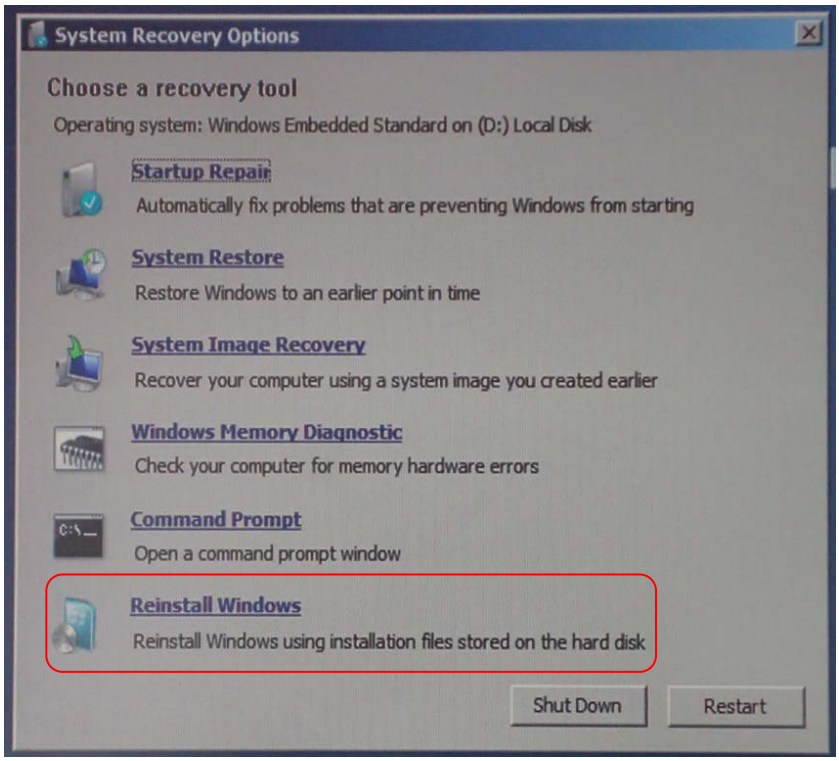
10. Use the keyboard cursor keys to select **Repair Your Computer**, and then press **Enter**.
11. Click **Next**.



12. Click **OK**. Leave the Password box blank.

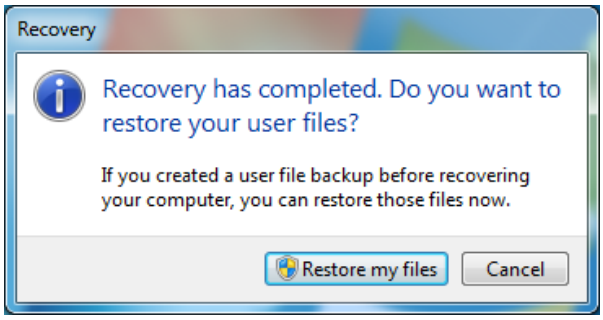


13. Click **Reinstall Windows**.

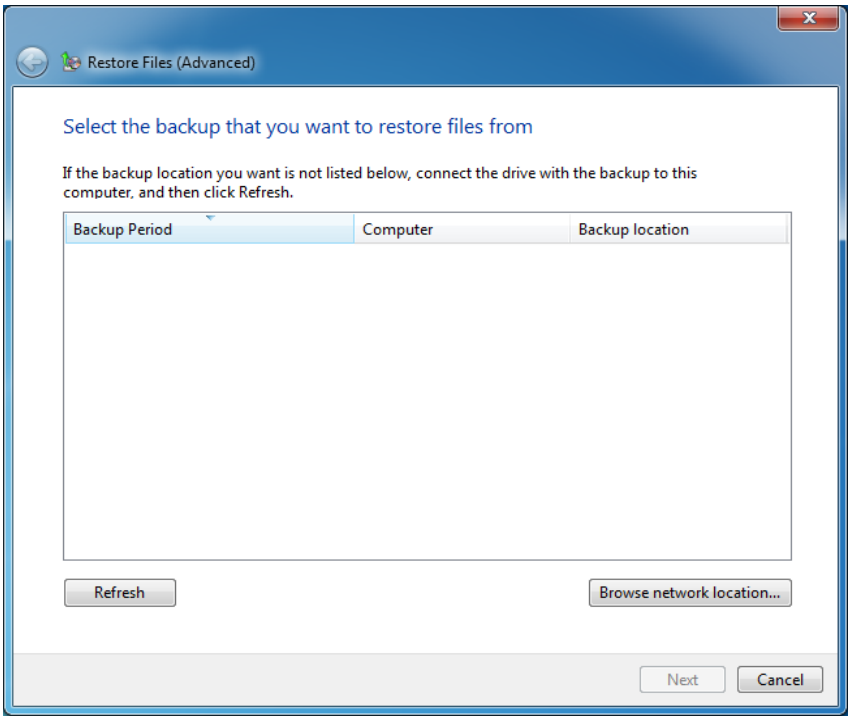


14. Click **Yes**.

15. The Recovery Processing window of Windows is displayed. The recovery processing requires 10 to 30 minutes. The Recovery dialog box is displayed after restarting MP1900A several times.
Click **Restore my files**.

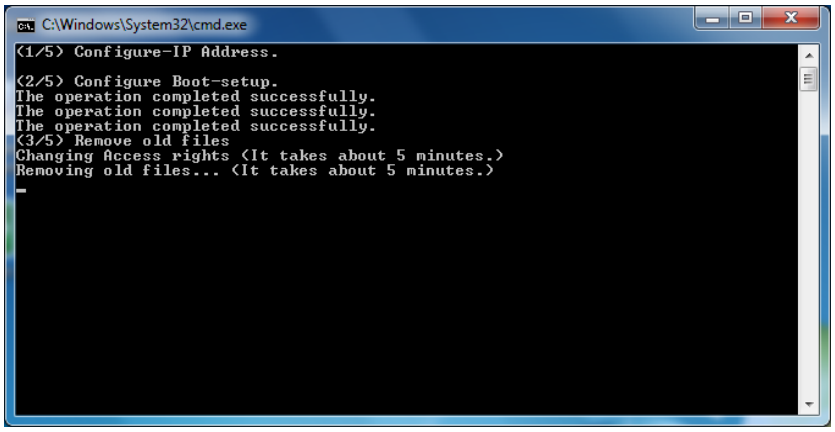


16. Click **Cancel**.

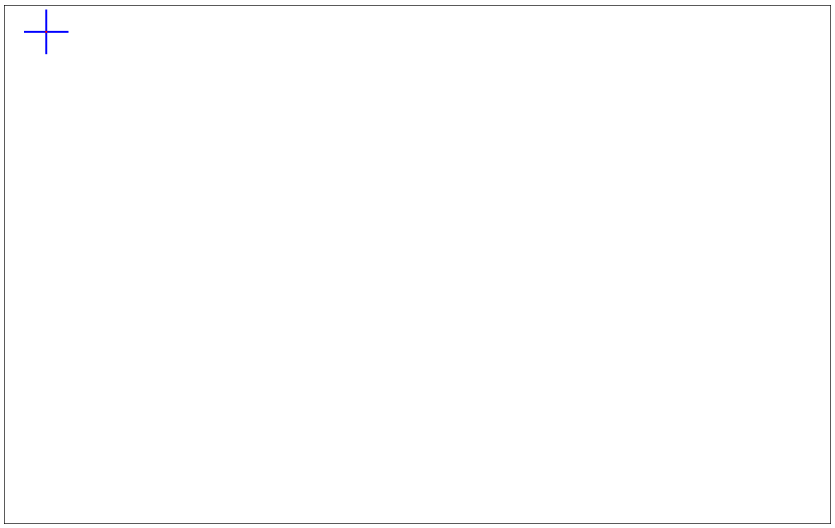


17. Install the MX190000A according to 2.1.1 "Installing" of the *MX190000A Signal Quality Analyzer-R Control Software Operation Manual*.
18. Install the MX183000A High-Speed Serial Data Test Software according to 2.3 "Installation/Uninstallation" of the *MX183000A High-Speed Serial Data Test Software Operation Manual*.
19. Double-click the Do First icon on the desktop.

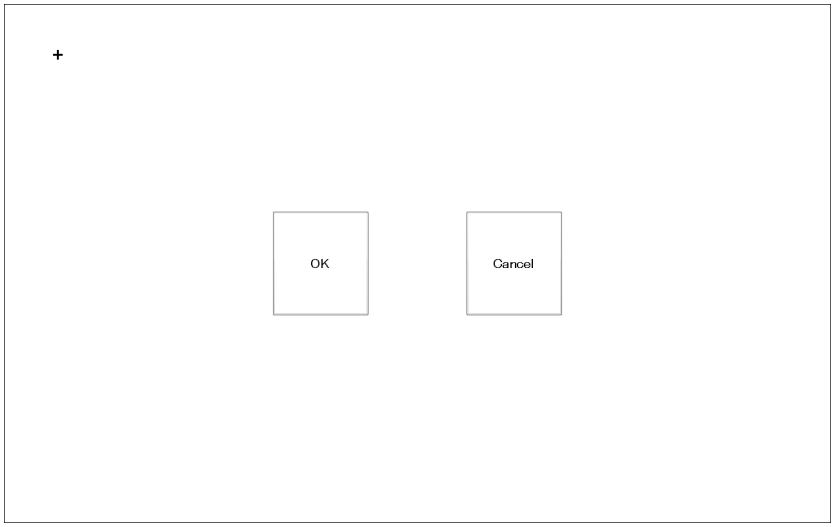
20. The batch processing is executed.



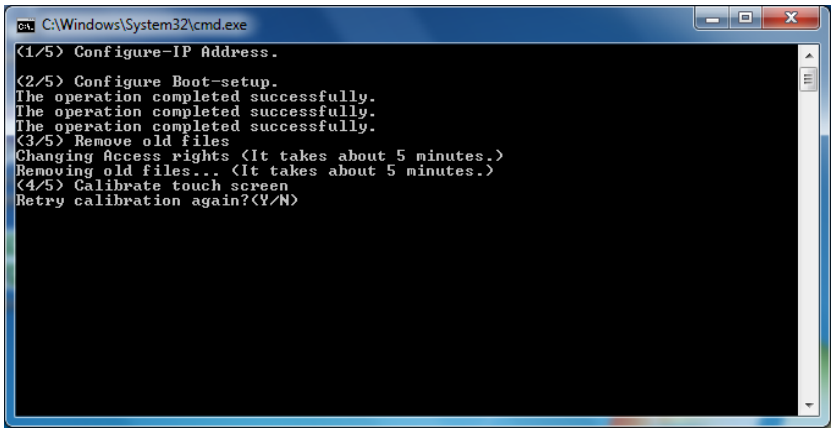
21. After 10 minutes have passed, the screen to calibrate the touch panel is displayed.
Touch the center of displayed at the five locations in the screen with your finger or stylus.



22. When the calibration is finished, the following screen is displayed.
    If the calibration failed, touch or click **Cancel**.
    If the calibration succeeded, touch or click **OK**.
    Then, the calibration screen is closed.



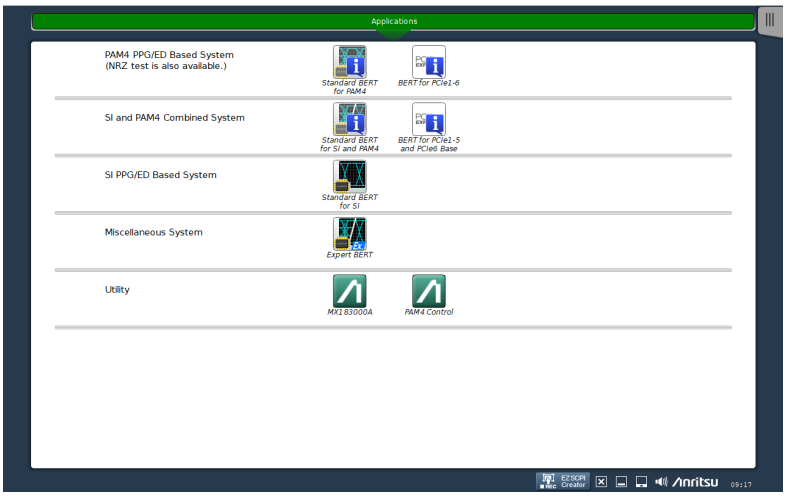
23. **[Retry calibration again?(Y/N)]** is shown in the command prompt.
    If the calibration failed, press **y** or **Y** and press **Enter** on the keyboard. As the calibration screen is shown, retry the calibration.
    If the calibration succeeded, press **n** or **N** and press **Enter** on the keyboard. Then, the MP1900A will automatically reboot.



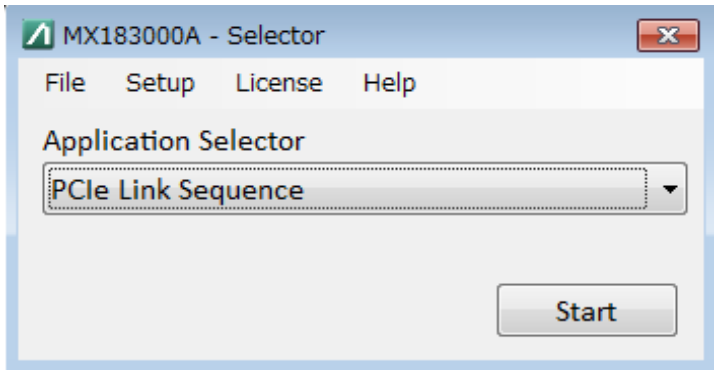
Checking operation

Check the operation using the following procedure after recovering the system.

1. Touch **All Programs** → **MX190000A** → **MX190000A** from the start menu of Windows.
   Confirm that the following Application Selector screen is displayed.



2. Touch **All Programs** → **MX183000A** → **High Speed Serial Data Test Software** from the Windows start menu.
   Confirm that the following Selector window is displayed.



3. Activate the license that was moved to another PC before the system recovery. For details, refer to 2.4 “License Key Activation” in the *MX183000A High-Speed Serial Data Test Software Operation Manual*.

   When using the MX183000A version 3.07.xx or later, check that the license is **Active** here.

8.4.2 When the operating system is Win10

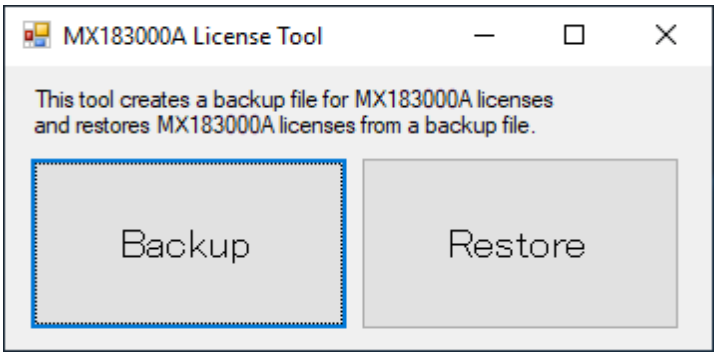
Note:

If the MX183000A license is active, be sure to perform the following procedure before performing system recovery.

If the system recovery is performed without performing the procedure, the MX183000A license will be cleared. In that case, contact an Anritsu Service and Sales office described in this manual (at the end of the printed manual or in a separate file of the electronic manual) "

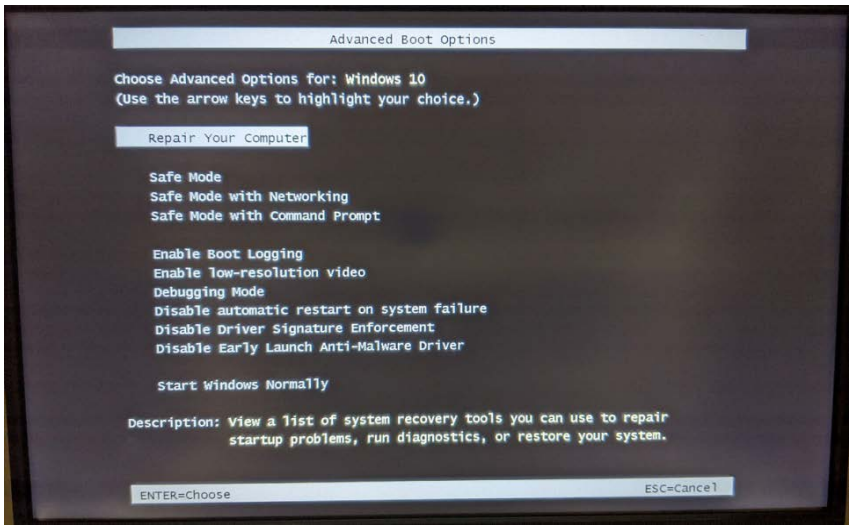
<Procedure>

1. In the C:\Anritsu\MX183000A\Tools folder on the MP1900A, double-click the MX183000_LicenseTools.exe file, and you will see the following screen.



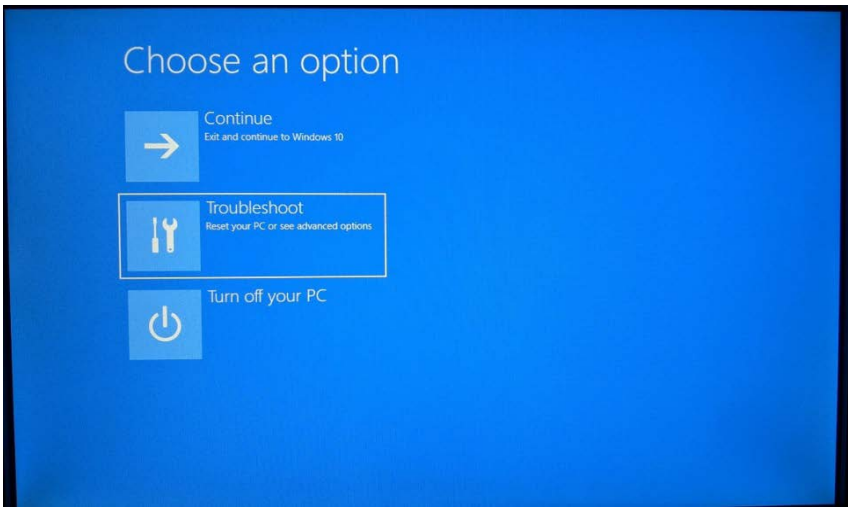
2. Click **Backup**. Specify an external storage medium, for example the USB flash drive that came with the MX183000A as a standard accessory, and save a backup file to it. Check that the MX183000A_opt file is saved to the specified external storage medium.
3. Disconnect the MP1900A from the network if connected.
4. Connect the keyboard and mouse to the mainframe, and then turn the MP1900A power On.

5. Press the **F8** key on the keyboard. The following screen will appear.

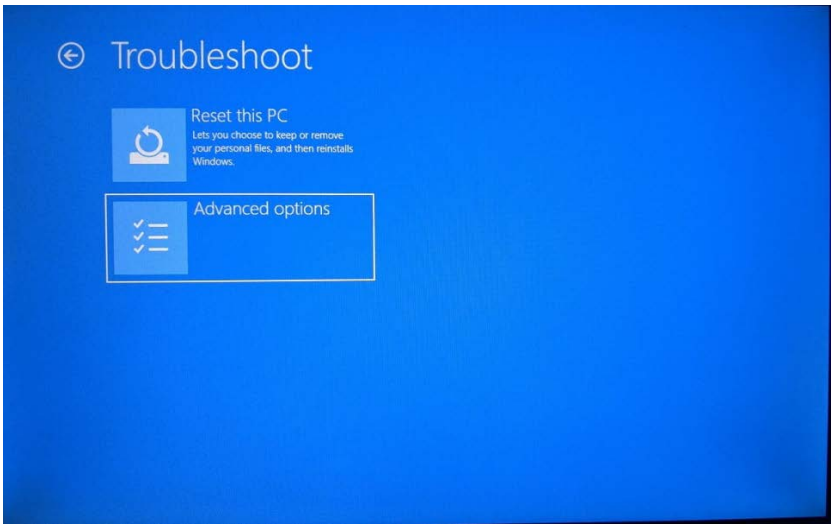


6. Use the keyboard cursor keys to select **Repair Your Computer**, and then press **Enter**.

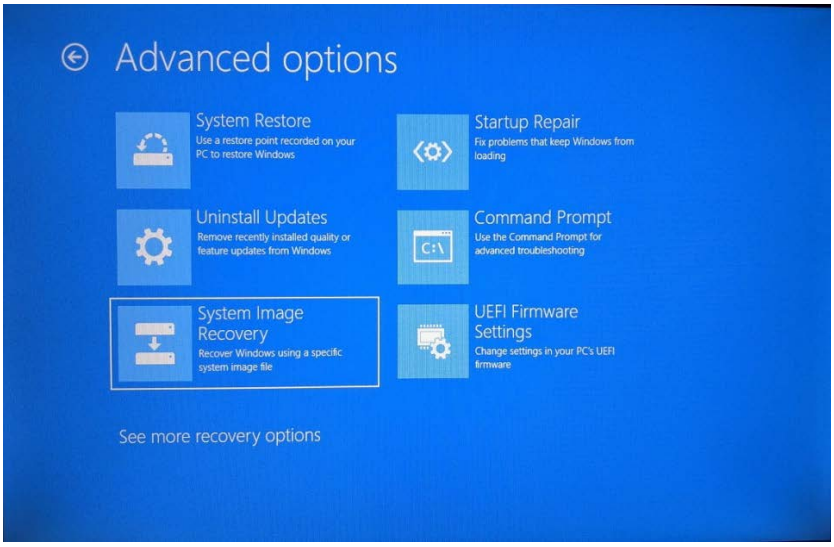
7. Click **Troubleshoot**.



8. Click **Advanced option**.

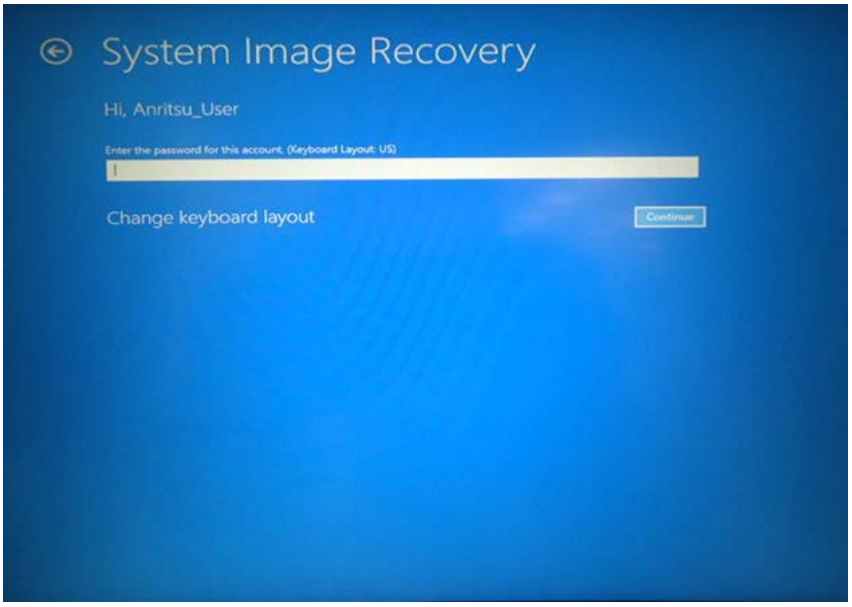


9. Click **System Image Recovery**.

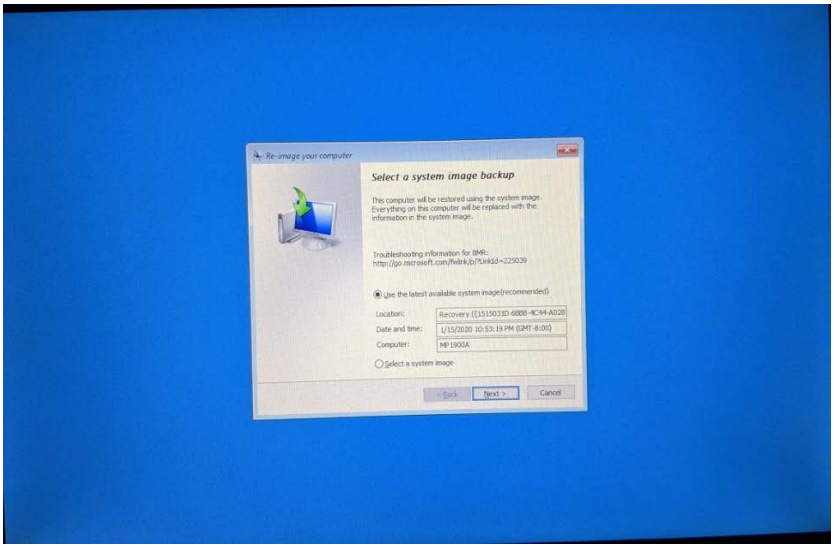


10. Click **Anritsu_User**.

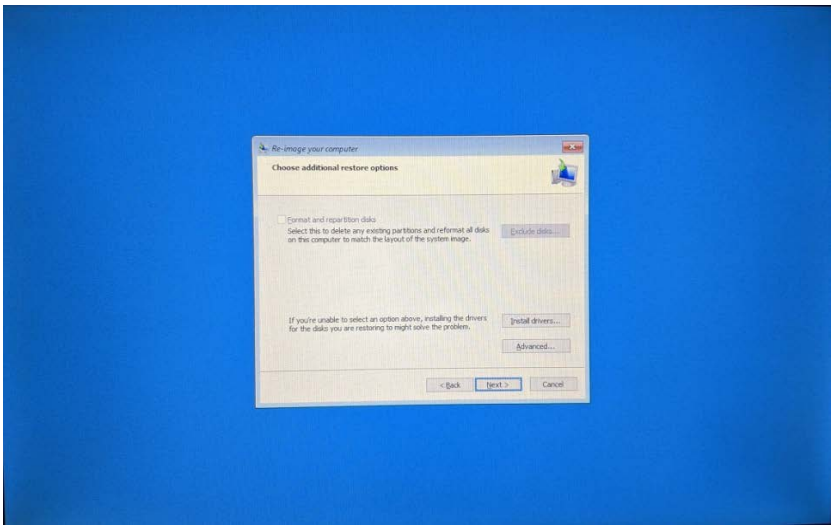
11. When you are prompted to enter a password, enter "Anritsu_User", and then click **Continue**.



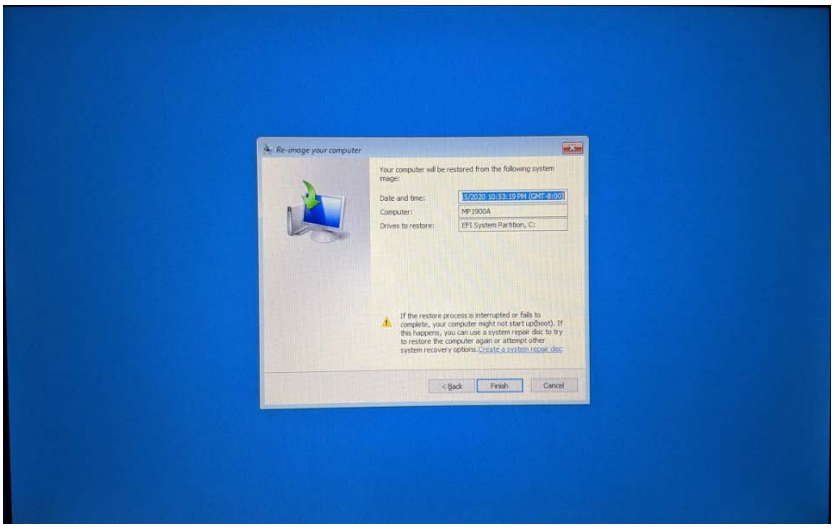
12. Select **Use the latest available system image (recommended)**, and click **Next**.



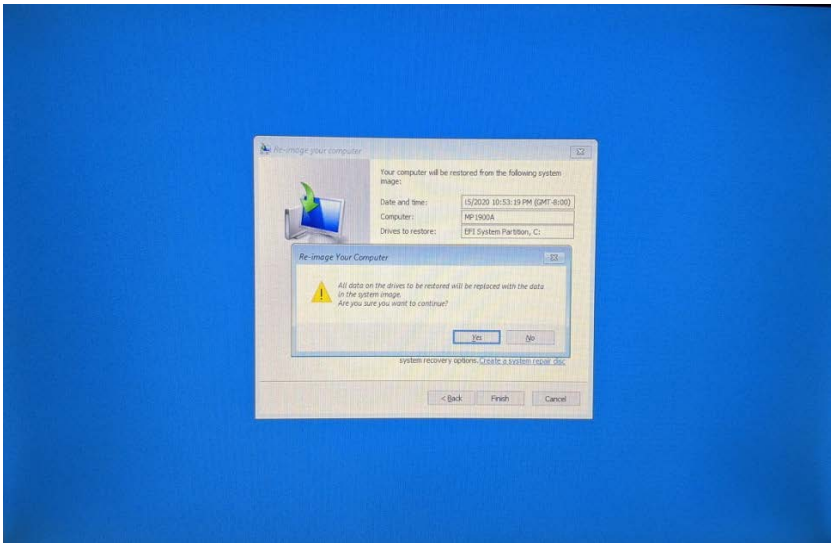
13. Click **Next** without any changes.



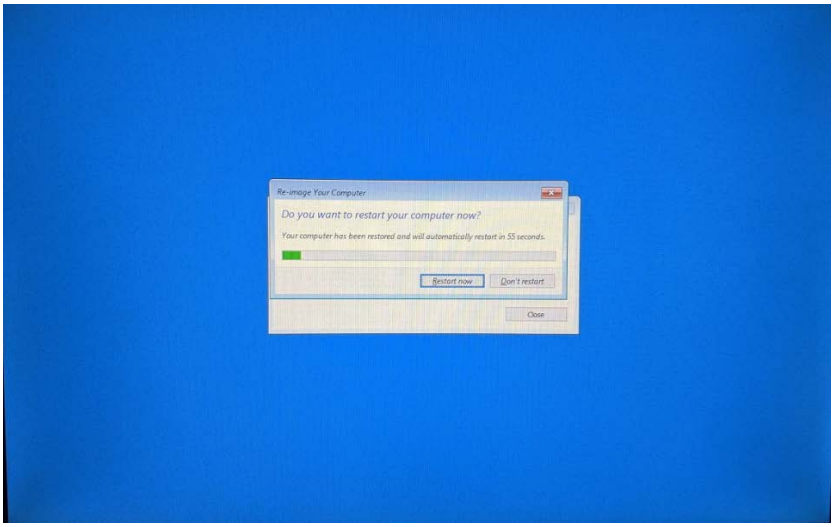
14. Click **Finish**.



15. Click **Yes**.

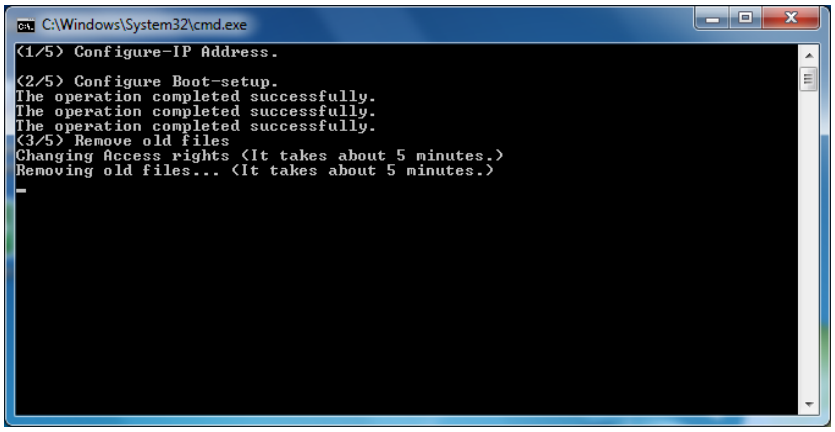


16. After system recovery is completed, the following message is displayed.
    Click **Restart now**. If the MP1900A does not restart here, it will automatically restart after a certain period of time.

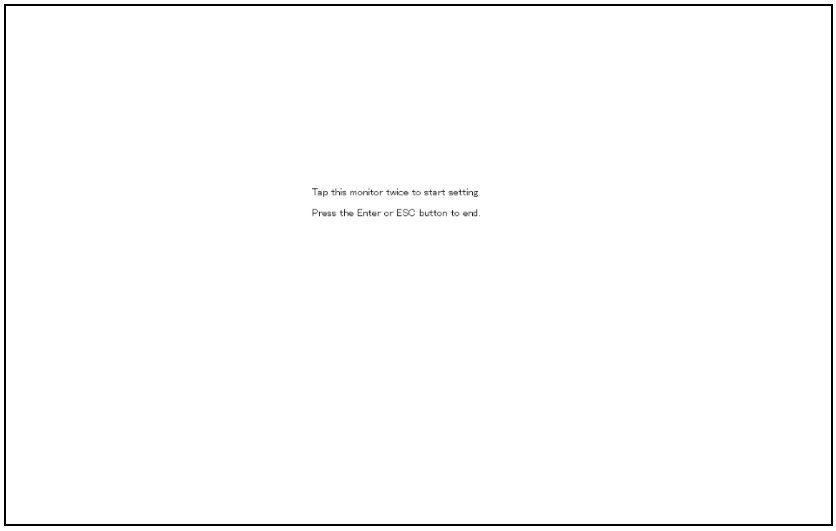


17. Install the MX190000A according to 2.1.1 “Installing” of the *MX190000A Signal Quality Analyzer-R Control Software Operation Manual*.
18. Install the MX183000A High-Speed Serial Data Test Software according to 2.3 “Installation/Uninstallation” of the *MX183000A High-Speed Serial Data Test Software Operation Manual*.
19. Double-click the Do First icon on the desktop.

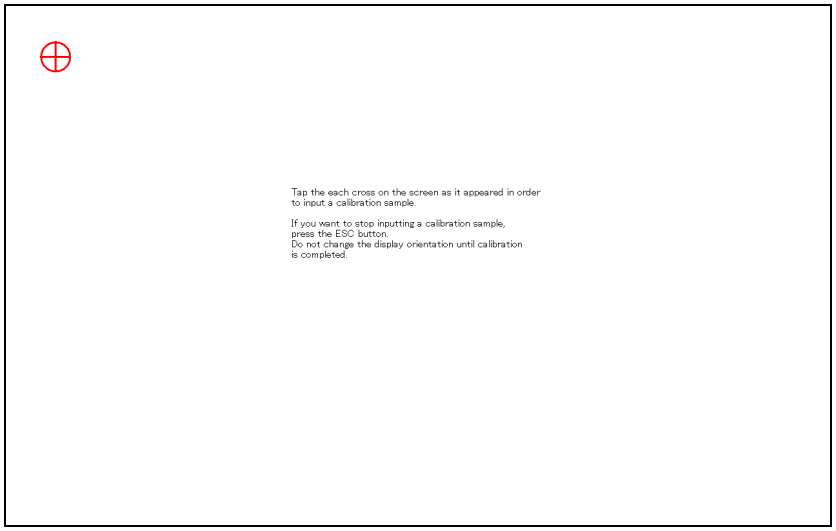
20. The batch processing is executed.



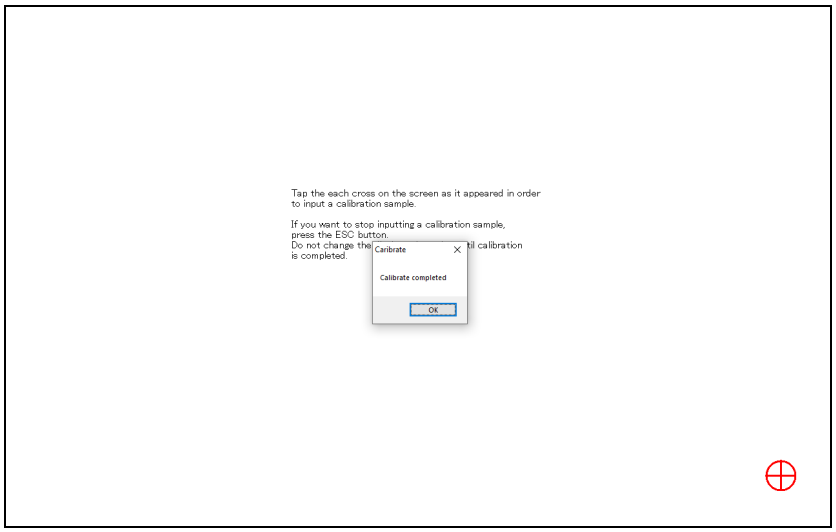
21. When the following screen appears, touch on it twice with your finger or stylus.



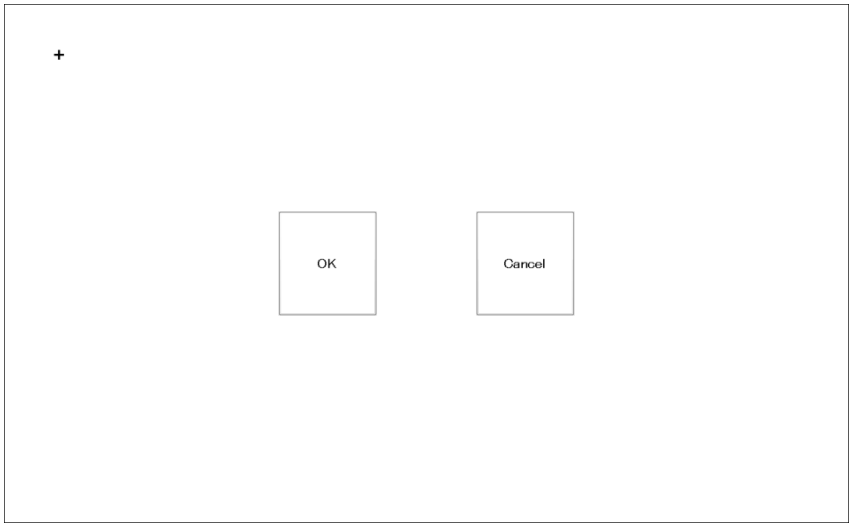
22. Touch the center of each of the four markers ⊕ displayed on the screen with your finger or stylus.



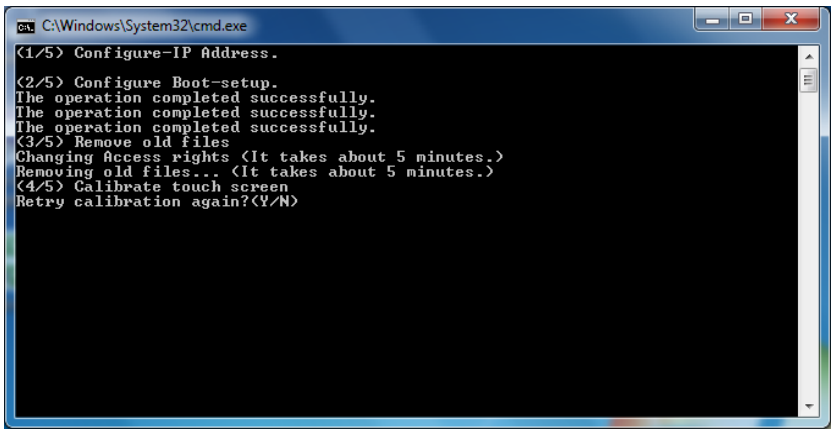
23. When the calibration is completed, the following dialog box appears. Touch or click **OK**. The Calibration window is closed.



24. When the calibration is completed, the following dialog box appears. Touch or click **OK**. The Calibration window is closed.



25. **[Retry calibration again?(Y/N)]** is shown in the command prompt. To retry calibration, press **y** or **Y** and press **Enter** on the keyboard. As the calibration screen is shown, retry the calibration. To end calibration, press **n** or **N** and press **Enter** on the keyboard. Then, the MP1900A will shut down.

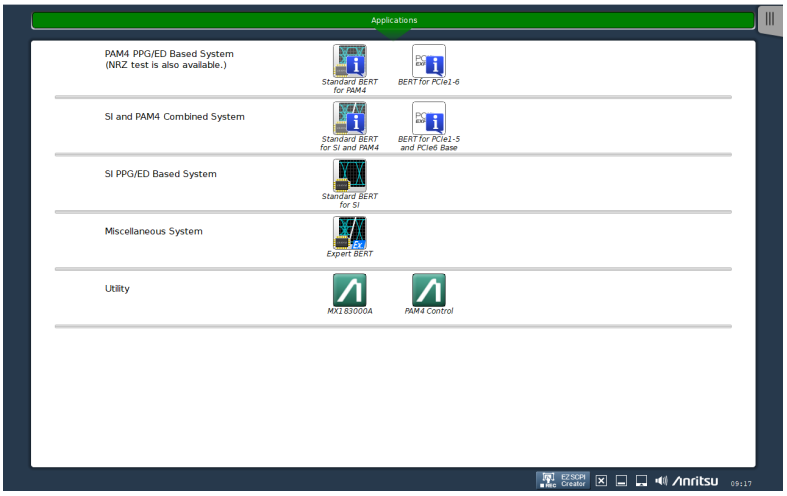


26. Power on the MP1900A, and then double-click the MX183000_LicenseTools.exe file shown in step 1.
27. Click **Restore** and specify the external storage medium specified in step 2. Upon completion of system recovery, you will receive the message "Licenses have been restored successfully."
28. Delete the MX183000A_opt file saved in step 2.

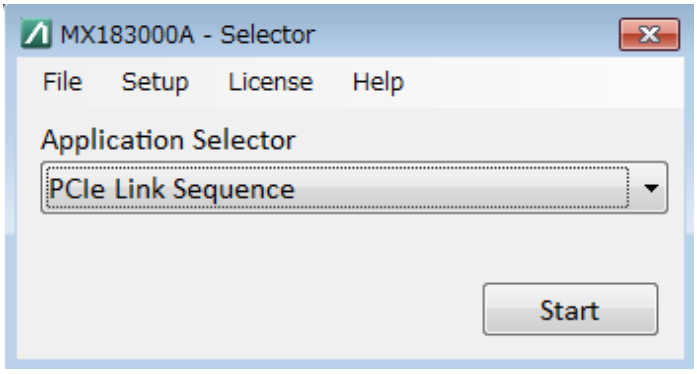
Checking operation

Check the operation using the following procedure after recovering the system.

1. Touch **Start** ( ) → **All Programs** → **MX190000A** → **MX190000A**.
   Confirm that the following Application Selector screen is displayed.



2. Touch **Start** ( ) →**All Programs** → **MX183000A** → **High Speed Serial Data Test Software**.
   Confirm that the following Selector window is displayed.



3. Touch **License** on the menu bar, and confirm that the license before system recovery is valid.

   If not, perform Step 26 in <Procedure>.

8.5 Caution on Storage

Wipe off any dust, soil, or stain on the device prior to storage. Avoid storing the device in any of the following locations:

- In direct sunlight for extended periods
- In excessively dusty locations
- Outdoors
- Where condensation may occur
- In liquids, such as water, oil, or organic solvents, and medical fluids, or places where these liquids may adhere
- In salty air or in place chemically active gases (sulfur dioxide, hydrogen sulfide, chlorine, ammonia, nitrogen dioxide, or hydrogen chloride etc.) are present
- Where toppling over may occur
- In the presence of lubricating oil mists
- At low atmospheric pressure
- In the presence of frequent vibration or mechanical shock, such as in cars, ships, or airplanes
- Under the following condition:
  Temperature range of ≤–20ºC or ≥60ºC

Recommended storage conditions

In addition to the abovementioned storage cautions, the following environment conditions are recommended for long-term storage.

- Temperature range of 5 to 30ºC
- Slight daily fluctuation in temperature and humidity

8.6 Transportation

Use the original packing materials, if possible, when packing the MP1900A for transport. If you do not have the original packing materials, pack the MP1900A according to the following procedure. When handling the MP1900A, always wear clean gloves, and handle it gently so as not to damage it.

<Procedure>

1. Use a dry cloth to wipe off any stain or dust on the exterior of the MP1900A.
2. Check for loose or missing screws.
3. Provide protection for structural protrusions and parts that can easily be deformed, and wrap the MP1900A with a sheet of polyethylene. Finally, cover with moisture-proof paper.
4. Place the wrapped MP1900A into a cardboard box, and tape the flaps with adhesive tape. Furthermore, store it in a wooden box as required by the transportation distance or method.

During transportation, place it under an environment that meets the conditions described in 8.5 “Caution on Storage”.

8.7 Calibration

Regular maintenance such as periodic inspections and calibration is essential for the Signal Quality Analyzer-R Series for long-term stable performance. Regular inspection and calibration are recommended for using the Signal Quality Analyzer-R Series in its prime condition at all times. The recommended calibration cycle after delivery of the Signal Quality Analyzer-R Series is twelve months.

If you require support after delivery, 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 PDF version.

We may not provide calibration or repair if any of the following cases apply.

- Seven or more years have elapsed after production and parts for the instrument are difficult to obtain, or it is determined that reliability cannot be maintained after calibration and repair due to significant wear.
- Circuit changes, repair, or modifications are done without our approval.
- It is determined that the repair cost would be higher than the price of a new item.

8.8 Disposal

Observe national and local regulations when disposing of the MP1900A.

Before disposal, dismantle or physically destroy any non-volatile memory media in the MP1900A to ensure that data in memory cannot be recovered by third parties.