

# MP1900A

## Signal Quality Analyzer-R

### Release Notes

26th Edition

Thank you for choosing Anritsu products for your business.

This document provides the latest information about version 4.03.12 of the software for the Anritsu MP1900A and current known bugs.

We look forward to continuing business with you in the future.

### Contents

Item	Content
1. Released Version ...P2	Describes information for this release
2. Peripheral Devices ...P2	Shows list of devices that can be controlled by MX190000A
3. Added Functions ...P3	Describes added functions for MX190000A
4. Bug Fixes ...P6	Describes bug fixes in released software version
5. Known Issues ...P10	Describes known software bugs in this version to be fixed by future releases
6. Specification Changes ...P11	Describes specification changes in released software version
7. Usage Notes ...P12	Describes precautions for using this equipment

## 1. Released Version

Ver. 4.03.12

## 2. Peripheral Devices

The peripheral devices for the MX190000A are listed in the table.

Code	Name
MP1900A	Signal Quality Analyzer-R
MU195020A	21G/32G bit/s SI PPG
MU195040A	21G/32G bit/s SI ED
MU195050A	Noise Generator
MU181000A	12.5GHz Synthesizer
MU181000B	12.5GHz 4port Synthesizer
MU181500B	Jitter Modulation Source
MU183020A	28G/32G bit/s PPG
MU183040B	28G/32G bit/s High Sensitivity ED
MU183021A	28G/32G bit/s 4ch PPG
MU183041B	28G/32G bit/s 4ch High Sensitivity ED
MU196020A	PAM4 PPG
MU196040A	PAM4 ED
MU196040B	PAM4 ED

For the installation position in the main unit, refer to the Anritsu website (<https://www.anritsu.com>).

For restrictions on slot installation positions, refer to the selection guide.

### 3. Added Functions

Version	Item	Function
Ver. 4.03.12	Added PCIe 5.0 Link Training function	Added support for the MX183000A PCIe 5.0 Link Training function from this version.
Ver. 4.02.10	Added a function to SI ED.	Added "SKP Ordered Set Filtering" function for PCIe to MU195040A SI ED. This function can absorb the operating frequency difference between MP1900A and DUT without using MX183000A. It is available only when MU195040A Option x22 is installed.
	Added parameters that support PCIe 5.0.	Added parameters that support PCIe 5.0. MU195020A SI PPG Operation Bitrate, Emphasis Preset MU195040A SI ED CR, CDR Bitrate, CTLE PCIe 5.0 Test Pattern Compliance Pattern (CP) Modified Compliance Pattern (MCP)
Ver. 4.01.32	Added a supported module.	Support for the following module has been added: MU196040B PAM4 ED
Ver. 3.08.16	Added the Unit Sync function.	This function synchronizes multiple MP1900A units to generate the same pattern and is available only when the MU196020A PAM4 PPG (Option x30/x50) is installed.
	Supported 400G BASE-FR8/LR8 specifications for FEC.	Added a test pattern "RS-FEC Scrambled Idle 400G 8Lanes" to the software option x42 FEC Pattern Generation for the MU196020A PAM4 PPG. This function is available on the <b>Pattern</b> tab. Also, added an error insertion mode "RS-FEC 400G 8Lanes". This function is available on the <b>Error Addition</b> tab.

Version	Item	Function
Ver. 3.01.07	Added PAM4 PPG Adjustable ISI function.	"MU196020A-x40 Adjustable ISI" was added to MU196020A PAM4 PPG. This function corrects the loss of the external ISI channel. A small amount of loss characteristic can be corrected with four taps.
	Added PAM4 PPG FEC Pattern Generation.	"MU196020A-x42 FEC Pattern Generation" was added to MU196020A PAM4 PPG. This function adds pattern generation and error addition for FEC evaluation.
	Added PAM4 PPG Inter-Module Synchronization.	"MU196020A-x50 Inter-Module Synchronization" was added to MU196020A PAM4 PPG. By using multiple modules of PAM4 PPG, data can be combined and synchronized.
Ver. 3.00.05	Added Supported modules	Support for the following modules has been added: MU196020A PAM4 PPG MU196040A PAM4 ED
Ver. 2.05.08	Added CH Sync function for syncing between 32G PPG modules	A Channel Synchronization function has been added for synchronizing the output signals between two to four MU183020A 2ch 32G PPG modules. This function is set at Menu Combination Setting → Inter module combination.
Ver. 2.03.06	Added PAM4 Patterns for use by SI PPG,SI ED and G0374A	Pattern files have been added for PAM4 signal generation and BER measurement using the MU18302xA 32G PPG, MU18304xB 32G High Sensitivity ED and G0374A. The added patterns are listed below: SSPRQ[D3_4]; IEEE802.3bs draft 3.4 To use the pattern files, refer to either Appendix G in the MU18302xA 32G PPG Operation Manual, or to Appendix F in the MU18304xB 32G High Sensitivity ED Operation Manual.
	Extended MU181500B SSC modulation	Extended MU181500B Jitter Modulation Source SSC modulation maximum from 5300 ppm to 7000 ppm

Version	Item	Function
Ver. 2.02.02	Added Supported modules	Support for the following modules has been added: MU183021A 28G/32G bit/s 4ch PPG MU183041B 28G/32G bit/s 4ch High Sensitivity ED
Ver. 2.00.00	Added SSC Extension function to MU181000B Synthesizer	This function adds the Option-x02 SSC Extension to the MU181000B Synthesizer. Installing this option supports SCC impression at the 8 GHz Clock output. In addition, it is also possible to output a clock that is synchronized to the 100 MHz Ref.Clock output from the DUT at PCIe Gen3/4/5 operation. This function can use all the MU195020A, MU181500B, and MU181000B at tracking operation.
	Added Built-in SJ2 function to MU181500B Jitter Modulation Source	This function adds the Built-in SJ2 function to the MU181500B Jitter Modulation Source. By using this function, SJ2 can be impressed solely using the MU181500B without tracking operation with the MU181000B Synthesizer.
	Added Variable ISI function to MU195020A SI PPG	This function adds the Opt-40/41 Variable ISI function to the MU195020A SI PPG. Installing this option supports output of waveforms simulating predetermined loss at the PPG output stage.
	Added Remote Log function	This function adds the ability to convert contents created using the GUI to SCPI commands and save them as text files. It is used by pressing the EZ SCPI Creator button at the lower screen.
	Added PRBS13Q and PRBS31Q pattern	Added PRBS13Q and PRBS31Q pattern for use by MU195020A and MU195040A. This function adds the pattern tab.
Ver. 1.01.03	Added 64Gx2ch Combination function	This function is added to support generation of a 64Gx2ch Combination signal using two units of the MU195020A 2ch SI PPG. It can be set from Combination Setting of Menu.
	Added Delay Calibration function	This function adds a Global Delay Calibration button to Menu. When the bit rate is known to have changed, this Calibration function can be used to batch calibrate delays for multiple channels of the SI PPG and SI ED.

#### 4. Bug Fixes

Version	Item (Management Number)	Fault
Ver. 4.03.12	Sometimes, The timeout error occur.	During startup of MX190000A, a timeout error may occur. If this phenomenon occurs, shut down MP1900A, and then power it on again.  This phenomenon occurs in V3.08.16 to V4.02.10 of MX190000A
Ver. 4.01.32	Setting a long data pattern to the PAM4 PPG may cause the application to exit. (CM4635:0320)	For the MU196020A PAM4 PPG, an attempt to edit Data Pattern may cause the MX190000A to exit during data loading.  This phenomenon occurs when setting Data Length to 60,000,000 bits or more.
Ver. 3.08.20	Sync Loss may occur in the SI ED. (CM4547: 0846)	Frequent changes to the bit rate of data input to the MU195040A SI ED may cause Sync Loss in the SI ED.  This phenomenon occurs in V3.08.16 of MX190000A.
Ver. 3.08.16	32G PPG and SI PPG always returned a parameter error in response to the :COMBination:OPERation:PPGChsync command. (CM4634:0031, 0790)	The MU183020A/21A 32G PPG and MU195020A SI PPG always returned a parameter error in response to the following remote command: :COMBination:OPERation:PPGChsync This command works normally when operating using the touch panel.  This phenomenon occurs in V3.01.07 to V3.01.15 of MX190000A.
	Registered PAM4 FEC patterns were found to be incorrect. (CM4547: 0776)	The following PAM4 FEC patterns for MU196020A were incorrect. RS-FEC Scrambled Idle 50G 1Lane RS-FEC Scrambled Idle 200G 4Lanes RS-FEC Scrambled Idle 400G 4Lanes  This phenomenon occurs in V3.00.07 to V3.01.15 of MX190000A.
	The USB ports on MP1900A occasionally did not work after powering on. (CM4547:0667)	In rare cases, the USB ports on MP1900A occasionally did not work after powering on. If this phenomenon occurs, shut down MP1900A, unplug the power cable, wait until the standby LED lamp on the front panel goes out, and then power it on again. This phenomenon occurs in V1.00.02 to V3.01.15 of MX190000A.
	The Bathtub measurement occasionally outputs a incorrectly-shaped result. (CM4547:0661)	During the Bathtub measurement, BERs become smaller only at specific points, and as a result, the slope of the approximate straight line occasionally differ from the measured BERs. This phenomenon occurs in V1.00.02 to V3.01.15 of MX190000A

Version	Item (Management Number)	Fault
Ver. 3.01.14	Half Period Jitter of PAM4 PPG may not work properly. (CM4547: 0765)	Half Period Jitter of MU196020A may not be set correctly. Even if Half Period Jitter is set to 0, this bug may cause Eye cross points to shift in the time-axis direction.  This phenomenon occurs in V3.00.05 to V3.01.11 of MX190000A.
Ver. 3.01.11	When the MU196020A-x30 Data Delay is not installed, MX190000A fails to load a backup file at startup. (CM4547 : 0739)	When the MU196020A-x30 Data Delay is not installed, the following phenomena occurs each time MX190000A is started. <ul style="list-style-type: none"> <li>- An error message "Failed to load the backup file." is displayed.</li> <li>- The on-screen settings you made for the MU196020A PAM4 PPG are initialized.</li> </ul> <p>Even when <b>File Open</b> is touched, MX190000A fails to load the PAM4 PPG configuration file and displays an error message. Due to this phenomenon, the PAM4 PPG outputs an NRZ signal at MX190000A startup. The output signal differs from the setting (PAM4).</p> <p>This phenomenon occurs in V3.00.05 to V3.01.10 of MX190000A.</p>
Ver. 3.01.10	PAM4 ED measurement results may not be displayed properly. (CM4547 : 0589)	If in the Gating area of the <b>Measurement</b> tab for PAM4 ED, the <b>Current</b> button is set to <b>OFF</b> , measurement results will not be displayed properly. Also, the following remote query commands will always return "-----". :CALCulate:DATA:PAM4:EALarm? "LAST:FREquency" :CALCulate:DATA:PAM4:EALarm? "LAST:LSB:EC:TOTal" :CALCulate:DATA:PAM4:EALarm? "LAST:MSB:EC:TOTal" This phenomenon occurs in V3.01.07 to V3.01.08 of MX190000A.
	Bit shift may occur in the Inter-Module Synchronization function.(CM4547 : 0673)	With the MU196020A PAM4 PPGs installed in slot 1 to 4, the MU196020A-x50 Inter-Module Synchronization may cause the PAM4 PPG in slot 4 to generate a pattern having a bit shift of 1 bit or more when using at a baud rate of 32.1 Gbaud or less.  This phenomenon occurs in V3.01.07 to V3.01.08 of MX190000A.
Ver. 3.01.07	SI PPG's ISI function may not work properly. (CM4547 :0238)	When ISI function of SI PPG is in grouping operation, ISI waveform may not be reflected correctly.
	Emphasis waveform of SI PPG may not be output correctly. (CM4547 :0203)	When generating PAM4 waveform using SI PPG and G0375A, the waveform may not be output correctly when set to specific values.
Ver.2.04.00	Sometimes, errors occur in the data output of the PPG when frequency changed (CM4024:2369)	Sometimes, errors occur in the data output of the MU183020A/21A 32G PPG when frequency changed.

Version	Item (Management Number)	Fault
Ver.2.03.05	Sometimes, module GUI not displayed when starting MX190000A (CM4024:2188)	With Expert BERT or Standard BERT selected when starting MX190000A, sometimes module control GUI either not displayed or freezes. Bug occurs in MX190000A version 1.00.02 to V2.02.00.
	Multi Ch Cal fails with configurations using 1ch SI PPG (CM4024:2092)	Calibration fails when attempting to execute Multi Channel Calibration with module configuration using MU195020A 1ch SI PPG not supporting Multi Channel function. Modifications made to exclude 1ch SI PPG as target for Multi Channel function. Bug occurs in MX190000A version 1.00.02 to V2.02.00.
	Multi Ch Cal recommendation message displayed repeatedly over (CM4024:1612)	Calibration recommendation message wrongly displayed over when restarting MP1900A after executing Multi Channel Calibration. Modifications made to prevent message display if module configuration unchanged after executing Multi Ch Cal. Bug occurs in MX190000A version 1.00.02 to V2.02.00.
Ver.2.02.02	Sometimes, PAM4 signal Auto Search does not operate normally when changing Pattern Logic at 32G ED (CM4024:1942)	Sometimes, the PAM4 signal Auto Search function does not operate normally when the Pattern Logic setting (Positive/Negative) at the MU183040B 32G ED is set to Negative. This bug occurs in MX190000A V1.00.02 to V2.00.00.
Ver.2.00.00	Sometimes, application run by :SYSTEM:CFUNCTION freezes (CM4024:1663)	Sometimes the application freezes when attempting to set :SYSTEM:CFUNCTION using a remote command. This bug occurs with MX190000A V1.00.02 to V1.02.04.
	No MX190000A GUI operation (CM4024:1549)	The GUI fails to start if the redistributed Visual Studio2013 library is not installed. The redistributed Visual Studio2013 library is included in the installer from this version. This bug occurs with MX190000A V1.00.02 to V1.02.04.
	Unable to set optimum value using PAM4 signal Auto Search (CM4024:1459)	Sometimes, the PAM4 signal Auto Search function sets a different value from the optimum value. This bug occurs with MX190000A V1.00.02 to V1.02.04.
	Version mis-match occurs at application start after power-on (CM4024 0601)	When the MX190000A control software is first started after powering-on the MP1900A, a version mismatch occurs because the MU183040B version information has not been correctly updated. After the MX190000A has been launched on a Standard BERT or Expert BERT and then quit, the correct version information is updated when it is next launched.



Version	Item (Management Number)	Fault
	MP1900A unable to recover from Remote status and freezes (CM4024:1979)	Sometime, the MP1900A fails to recover from the Remote status and operation freezes when the Return to Local button is pressed to return the MP1900A from remote operation to the local status. This bug occurs with MX190000A V1.00.02 to V1.02.04.
Ver.1.02.04	Sometimes, SI PPG Delay Busy lamp lights and error inserted (CM4024:1427)	Sometimes, the MU195020A SI PPG Delay Busy lamp lights at any bit rate and an error is inserted in the output pattern. This fault occurs in MX190000A V1.00.02 to V1.01.03.
	Sometimes, Lower Eye Search fails at SI ED PAM4 auto-search (CM4024:1413)	Sometimes, the Lower Eye search fails when executing auto-search and inputting a PAM4 signal at the MU195040A SI ED. This fault occurs in MX190000A V1.00.02 to V1.01.03.
	Sometimes, BER measurement does not become error free when using Zero- Substitution pattern at SI ED (CM4024 1430)	Sometimes, the BER measurement does not become error free when using a Zero-Substitution pattern at the MU195040 SI ED. This fault occurs when the Length setting is 2 <sup>9</sup> or 2 <sup>10</sup> .
Ver.1.01.03	Bug in Combination setting remote command causes error (CM4024:1331)	Sometimes a parameter error occurs when attempting to set Combination using the remote command :COMBination:OPERation:CHSetting

## 5. Known Issues

Version	Item (Management Number)	Fault
Ver.2.00.00	Object programming error in rare cases	During updating of a programmable object from the Module Setting screen, sometimes (very rarely) the update fails with a hang. In this case, quit the MX190000A and restart the update again after restarting.

## 6. Specification Changes

Version	Item (Management Number)	Description
The default setting of Output Clock Rate for PAM4 PPG has been changed to Halfrate. (CM4635: 0188)	New specification (V4.01.32 and later)	The default setting of <b>Output Clock Rate</b> on the <b>Misc2</b> tab for the MU196020A PAM4 PPG has been changed to <b>Halfrate</b> .
	Old specification (V3.00.05 to V3.08.20)	The default setting of <b>Output Clock Rate</b> on the <b>Misc2</b> tab for the MU196020A PAM4 PPG was <b>Fullrate</b> .
The default setting of Pre Coder for FEC pattern has been changed to OFF. (CM4547: 0772)	New specifications (V3.08.16 and later)	On the <b>Pattern</b> tab of the Option-x42 FEC Pattern Generation for MU196020A PAM4 PPG, the default setting of <b>Pre Coder</b> for RS-FEC pattern has been changed to <b>OFF</b> . Note that <b>Pre Coder</b> is available in PAM4 mode only.  Changes have been made to the following patterns: RS-FEC Scrambled Idle 50G 1Lane RS-FEC Scrambled Idle 200G 4Lanes RS-FEC Scrambled Idle 400G 4Lanes RS-FEC Scrambled Idle 400G 8Lanes
	Old specifications (V3.00.05 to V3.01.15)	On the <b>Pattern</b> tab of the Option-x42 FEC Pattern Generation for MU196020A PAM4 PPG, the default setting of <b>Pre Coder</b> for RS-FEC pattern was <b>ON</b> .
A change has been made to the error rate setting procedure for RS-FEC Symbol Error insertion by PAM4 PPG. (CM4547: 0774)	New specifications (V3.08.16 and later)	On the <b>Error Addition</b> tab of the Option-x42 FEC Pattern Generation for MU196020A PAM4 PPG, the definition of Total SER for All Lane has been changed. In this version and later, BER decoded into an NRZ signal is used as a reference. For details of the error rate inserted in each lane, see on-screen help.
	Old specifications (V3.00.05 to V3.01.15)	In MX190000A, the RS-FEC Symbol Error function for MU196020A inserted an error rate, referring to the symbol error of the PAM4 signal as a reference.

## 7. Usage Notes

The precautions for using each version are described below.

### 7.1 Ver. 1.00.02 and Later

#### 7.1.1 Precautions when Creating PAM Waveforms with MU195020A-020

PAM4 signals can be generated using the MU195020A-020 and 32 Gbaud Power PAM4 Converter G0375A. When executing the PAM4 Jitter Tolerance test, test with the MU195020A Jitter Input set to ON. In this case, execute PAM4 waveform adjustment with Jitter Input set to ON. Sometimes, if Jitter Input is set to ON after having been set to OFF, the adjusted PAM4 waveform may change.

#### 7.1.2 Precautions when Generating SJ2 with MU181500B

SJ2 Jitter can be generated when the MU181500B and MU181000A/B are installed simultaneously in the MP1900A. To assure the SJ2 accuracy, the MU181500B and MU181000A/B installed simultaneously in the MP1900A must have been adjusted as a pair, so confirm the contents of the following calibration label attached to the MU181500B panel.

**SJ2 jitter is calibrated when used with  
the MU181000 S/N #####.**

If the MU181500B and MU181000A/B installed in the same MP1900A are not a matched calibrated pair, the SJ2 Jitter accuracy cannot be assured; contact our sales representative.

### 7.2 Ver. 2.00.00 and Later

#### 7.2.1 Precautions when using MU195040A

The 21G/32G bit/s SI ED MU195040A operates with software installer version 2.00.00 or newer. Function and performance specifications may not be satisfied if the installer version is older than version 2.00.00.

### 7.3 Precautions when recovering MP1900A

Executing a system recovery disables the activated MX183000A license. Before performing the system recovery, refer to 2.4 “License Key Activation” in the MX183000A High-Speed Serial Data Test Software Operation Manual and transfer the license to another PC temporarily. 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.

### 7.4 Ver. 3.08.16 and Later

Note that Microsoft released the symptoms that occur when installing this Windows Update. For details, refer to the following page:

<https://support.microsoft.com/en-us/help/4493472/windows-7-update-kb4493472>

If these symptoms occur on MP1900A, the following two phenomena will occur.

1. MX190000A will not start.
2. The network adapter settings are initialized, and as a result, remote connection becomes unavailable.

Follow the recovery actions below:

1. Reinstall MX190000A V3.08.16 or later, and start MX190000A again.
2. If the network settings were configured manually, go to Network and Sharing Center and configure the Local Area Connection settings again.  
If you want to restore the Local Area Connection settings to the factory default values, execute the mp1900a\_ip\_setting.bat file installed on the desktop of MX190000A V3.08.16 or later.

### 7.5 Software Version Compatibility List

When using the MX190000A and MX183000A high-speed serial data test software, it is necessary to combine those with compatible software versions for guaranteed performance. See the table below.

MX190000A	MX183000A	Windows Update Support No.
V1.00.02	V2.00.00	-
V1.01.03	V2.01.00	-
V2.00.00	V3.00.00	-
V2.02.00	V3.01.00	-
V2.03.00	V3.02.00	KB4093118
V2.05.00	V3.04.00	KB4093118
V3.00.05	V3.06.16	KB4467107
V3.01.07	V3.07.12	KB4467107
V3.08.16	V3.08.05	KB4499178
V4.01.32	V4.00.08	KB4499178
V4.02.10	V4.02.10	KB4499178
V4.03.12	V4.03.15	KB4536952