

MX210000A BERTWave Software

Release Notes

Thank you for choosing Anritsu products as your business solution. This document contains new functions added to the MX210000A BERTWave Control Software, as well as known problems, update procedure and usage precautions.

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1. Released Software Version and Update Procedure

These release notes apply to the products, software versions, and software installer files listed below.

Model	Version	File Name
MP2110A	7.04.04	MX210000A-v7.04.04-r13048.exe
MP2100B	4.01.27	MX210000A-v4.01.27-r12316.exe
MP2100A/MP2101A/MP2102A	3.03.03	MX210000A_VER_3_03_03.exe

Checking the software version compatible to your hardware

The available version is different depending on the hardware configuration of the product. Please refer to the table below to make sure that the software version is compatible with your hardware configuration.

The installed options can be checked by the option number label attached on the rear panel.

MP2110A		V5 to V7
	Option x32, x33, x35, x36	V5.02 or later
	Option x54 (CRU), x95 (PAM4)*, x96 (Jitter)	V6.00 or later
	Use of Option License for limited time	V6.01 or later
	Option x30, x39, x40, x49 (4ch Scope)	V7 or later
	Option x42, x43, x45, x46	
	Option x60	V7.00.13 or later
	Option x55	V7.01 or later
	Built-in OS: Windows 10	V7.02 or later
	Option x98 (Signal Processing)	V7.03 or later
	Option x59*	V7.04 or later

MP2100B	V4
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MP2100A/MP2101A/MP2102A		V1 to V3
	Option x90, x61 to x73, x76 to x85	V2.02.00 or later
	Optional software MX210001A, MX210002A	V3.00.00 or later
	Option x52, x91	V3.00.01 or later
	Option x07, x86, x76, x77, x78, x79, x80, x81, x82, x83, x84, x85	V3.01.05 or later

* The BERTWave may need to be returned to the factory for the additional adjustment if its serial number is smaller than the value below.

- x95 (PAM4): 6261844875
- x98 (Signal Processing): 6272280900
- x59 (25G Clock Recovery Range Extension): 6262201559

The hardware that needs additional adjustment, displays "UG195 is required" on the System Information screen when the x95 PAM4 option and software of V6.01 or later are installed. When the x98 Signal Processing option and V7.03 or later software are installed to the

BERTWave containing electrical channels (x21/x33/x43), the System Information screen displays the x98 Signal Processing option in red.

If the Option 054 is already installed, the retrofit option 159 or 359 can be ordered when one of the following conditions is met:

- MP2110A serial number: 6262201559 or greater
- Number that follows A25 at CRU in the System Information screen: 20 or greater

Scope Module: A21-00 03/06	
Options:	30(Quad Optical Scope for Singlemode Baseband Flat) 54(Clock Recovery (Electrical/Optical))
MAC Address:	00-00-91-07-d8-78
IP Address:	169.254.1.155
Scope1.FPGA:	1.02.03
Scope2.FPGA:	1.01.01
Scope1.syst:	2.01.26
Scope2.syst:	2.01.26
Version	
#1:	A22-00 03/06 2019.09.09 19:32:37
	A23-03 03/06 2019.09.09 19:32:37
#2:	A22-00 03/06 2019.09.09 19:32:37
	A23-03 03/06 2019.09.09 19:32:37
Trigger:	A21-00
CRU:	A25-01 03/06 2022-05-20 09:36:25

1.1 MP2110A

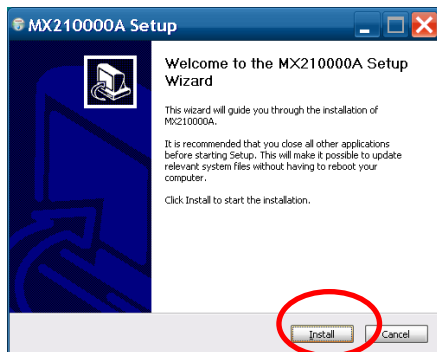
The software installer can be downloaded from the Downloads page at the Anritsu's website <https://www.anritsu.com/test-measurement/products/mp2110a>

Turn On the BERTWave and exit the application by clicking **Exit** on System Menu.



Copy the software installer on the Windows desktop of the BERTWave by using a USB memory stick.

Double-click the copied software installer to update the software.
Click **Install** on the displayed dialog box.



The firmware is updated automatically as needed. * Do not turn Off the MP2110A while updating the firmware. Otherwise, the MP2110A may not start up.

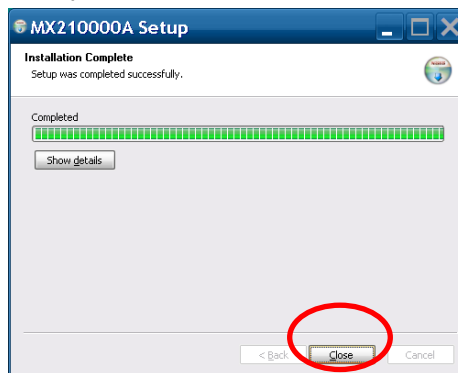
Scope Tool (MP2110A)

Module Name	File Name	Installed Version	New Version
Scope1	Scope1.fpga	01.00.02	01.00.03
Scope2	Scope2.fpga	01.00.07	01.00.07
Scope3	Scope3.fpga	01.00.02	01.00.02
BERT	BERT.syst	01.00.08	01.00.08
BERT	BERT.fpga	01.00.01	01.00.01

Upgrading Scope1.syst ... DO NOT CYCLE THE POWER OR CLOSE THE APPLICATION during this process.

Update Done

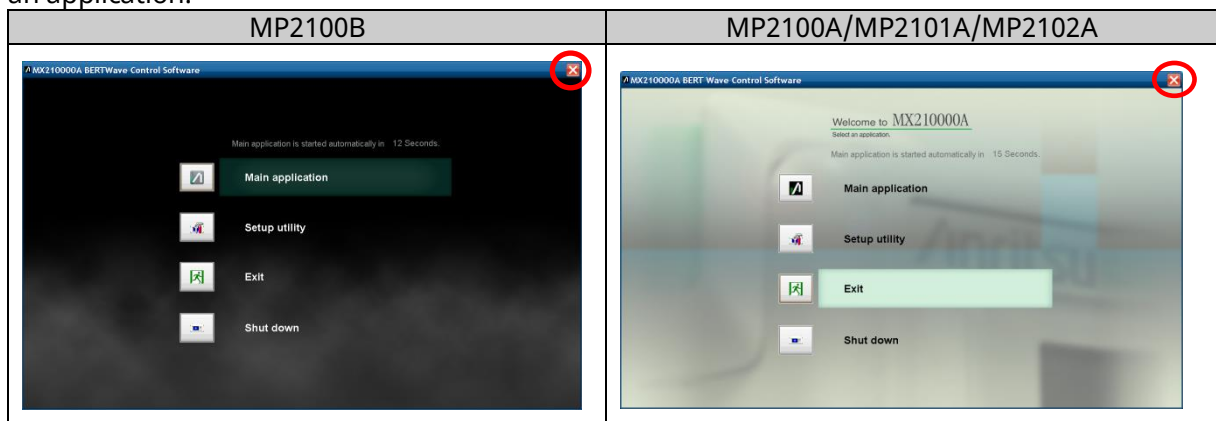
Click **Close** on the Installation Complete window.



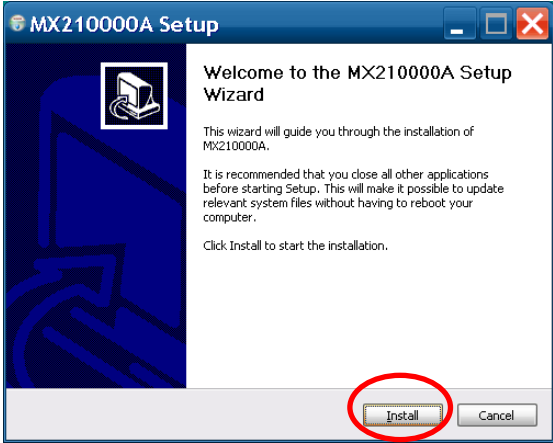
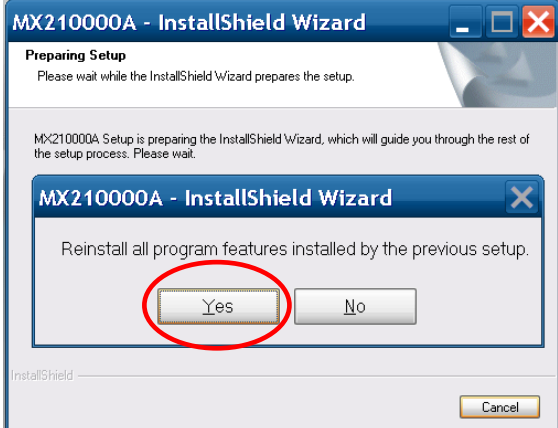
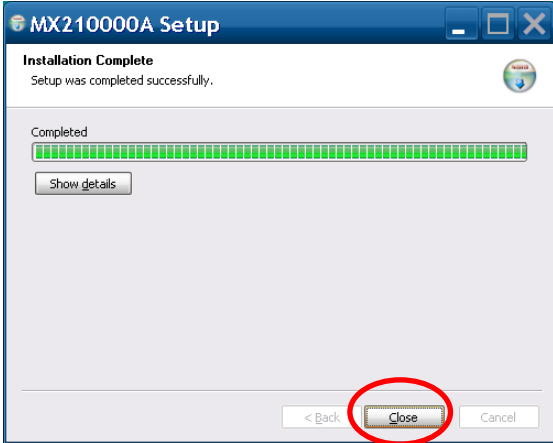
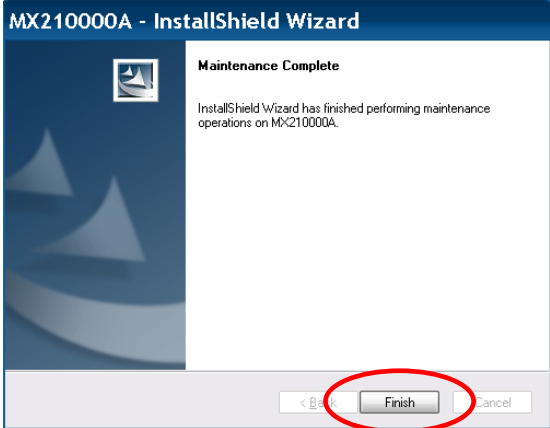
1.2 MP2100B/MP2100A/MP2101A/MP2102A

The software installer can be downloaded from the Downloads page at the Anritsu's website
<https://www.anritsu.com/test-measurement/products/mp2100b>
<https://www.anritsu.com/test-measurement/products/mp2100a>

Turn on the main power of the BERTWave and touch the [x] button of the window for selecting an application.

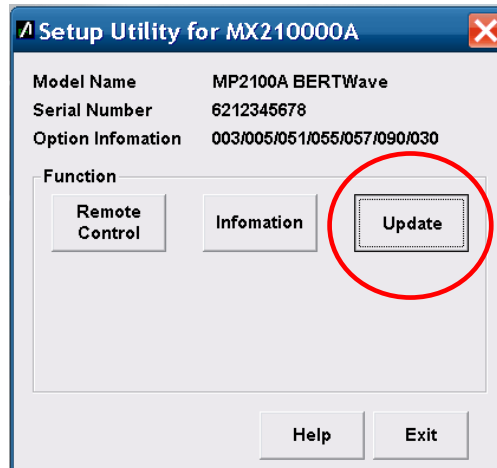


Using a USB memory stick, copy the installer to the Windows desktop. Double-click the copied installer to update the software.

MP2100B	MP2100A/MP2101A/MP2102A
<p>Touch [Yes] at the Welcome window.</p> 	<p>Touch [Yes] at the pop-up dialog.</p> 
<p>Touch [Finish] at the Installation Complete window.</p> 	<p>Touch [Finish] at the Maintenance Complete window.</p> 

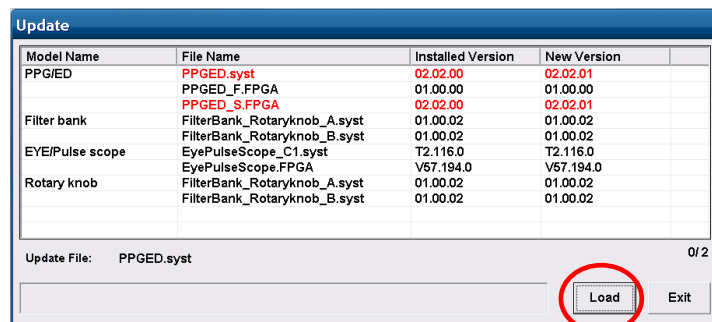
Update Firmware on the BERTWave by using Setup Utility.

- [1] Double-click the [MX210000A] shortcut icon on the Windows desktop.
- [2] After the screen changes to the window for selecting an application, touch [Setup utility].
- [3] After the window changes to [Setup Utility], touch [Update].

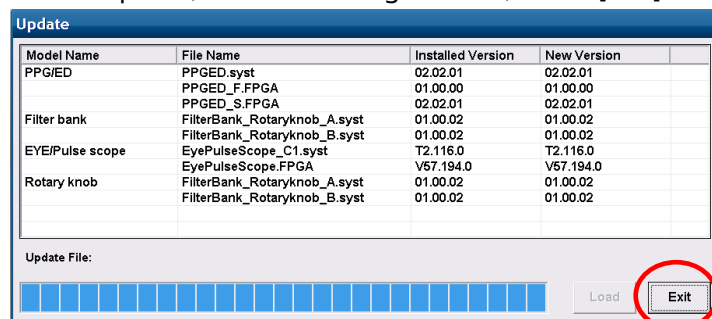


When file updating is required, the file is displayed in red and the [Load] button is enabled. Touch [Load] button.

* When updating the software, do not turn off the power to the BERTWave, otherwise the MP2100A unable to restart.



When file updating is not required, or after loading the files, touch [Exit] button.



*A restart may be required after file updating; if so, restart the BERTWave.

This completes the updating procedure.

2. MP2110A Changed Items

V7.04.04 (2022-03)

Bug Fixes/Updated Features (Scope)

- Fixed a bug that caused the :FILTER command to return a different string from V7.03.11 or earlier. (This bug occurred in V7.04.02 only.) (CM4471:0855)

V7.04.02 (2022-02)

New Features and Changes (Scope)

- Added support for the Option 059 (25G Clock Recovery Range Extension).
- Improved the resolution of Transition Time from 8 samples / UI to 128 samples / UI. (CM4471:0865)
- Added the following digital filters: (CM4471:0864)
 - 55.78125 Gbaud (27.890625 GHz)
 - 56.666 Gbaud (28.333 GHz)
 Remote Command (in blue letters):
 [:SCOPE]:FILTER:DIGital:BANDwidth:{CHx|ALL} {27.890625|28.333} [GHz]
- Added the following commands: (CM4471:0874, 0875)
 - Remote Command (in blue letters):
 [:SCOPE]:FETCH:AMPLitude[:TEQualizer]:LEVELx:CORRection[:CURRENT][[:CHx|ALL]]?
 [:SCOPE]:FETCH:AMPLitude[:TEQualizer]:OER:TUNing[:CURRENT][[:CHx|ALL]]?
- Added a C# SCPI sample program to the following folder:
 C:\Users\Public\Documents\Anritsu\MX210000A\UserData\Demo\Examples\C#.NET

Bug Fixes/Updated Features (Scope)

- Fixed an issue that may cause an error in the amount of noise correction when applying a digital filter. (CM4471:0876)

V7.03.11 (2021-11)

New Features and Changes (Scope)

- Added a software switch **Auto Scale + Calculate + Sampling**. In addition, by increasing the utilization efficiency of sample data, the TDECQ measurement time is improved when Pattern is specified in Limited measurement. By using the RUN, AUTOScale, and CALCulate commands added in V7.03.01, the time from the start of Auto Scale to the acquisition of the TDECQ value can be reduced by 20% to 30% compared to V7.02.26. (CM4471:0821)
- Added a measurement item **Amplitude P-P**. (CM4471:0822)
 - Remote Command (in blue letters):
 Added a remote command for display:
 [:SCOPE]:CONFigure:MEASure:DISPlay:ADD CHx|ALL, VPP
 Added a remote command for result query:
 [:SCOPE]:FETCh:AMPLitude[:TEQualizer]: VPP[:CURRENT][[:CHx|ALL]]?
- Added Optimize TDECQ Histogram that improves the reproducibility of TDECQ measurement. (CM4471:0847)
 - Remote Command:
 [:SCOPE]:CONFigure:MEASure:PAM:TDECQ:OHISistogram <enable>
- Added TDECQ Noise Coefficient that adjusts the correction amount of noise aliased by the digital filter. (CM4471:0853)
 - Remote Command:
 [:SCOPE]:CONFigure:MEASure:PAM:TDECQ:NCOefficient <numeric>
- Added a remote command that specifies a digital filter by bandwidth. (CM4471:0855)
 - Remote Command:

`[[:SCOPE]:FILTer:DIGital:BANDwidth[:CHx|ALL] <numeric> [GHz]
<numeric>`

- For optical channel:
{7.46|7.5|10.35|11.2|12.4|12.6|13.28125|14.45|19.34|26.5625|38.7}
- For electrical channel: 33

- Made changes so that averaging can be performed in Limited measurement. Averaging was previously one of the parameters for Accumulation Type, and Limit Type could not be specified. It can be set when, in Coherent Eye mode, Test Pattern is set to other than Variable. (CM4471:0844)

Remote Command:

`[[:SCOPE]:AVERaging[:CHx|ALL] <enable>`

The conventional command is `[[:SCOPE]:ACCUmulation:TYPE AVERaging`.

The number of averaging is specified with `[[:SCOPE]:ACCUmulation:AVERaging <integer>`.

- Made changes so that multiple (up to three) S parameter files can be set to be loaded by the Embedding / De-embedding function. File numbers can be specified in the remote command as `CONVolve[1] ~ CONVolve3`. (CM4471:0845)
- Added Antialiasing Filter to the Embedding / De-embedding function. This filter reduces noise outside the frequency range described in the s2p / s4p files. (CM4471:0844)

Remote Command:

`[[:SCOPE]:CONFigure:MEASure:CONVolve:AFILter <enable>`

- Changed the Eye (Middle) Skew measurement method for Sample Timing for PAM4 set to **Track to Middle Eye Timing** as follows: (CM4471:0828)

Before change: Measurement was performed with reference to the average of the center position of each eye.

After change: Measurement is performed with reference to the center of Middle Eye. (Eye (Middle) Skew always becomes 0.)

- Changed the option condition that the De-embedding function becomes available as follows: (CM4471:0858)

Before change: Available when the Option 098 is installed.

After change: For optical channel, it is available when the Option 095 or 098 is installed.

- Added the Far-end_TP4.S2P file to the Embedding / De-embedding function. (CM4471:0770)
- Made the following additions and changes to the TDECQ measurement tool (TDECQ Assistant):

- Added 400G LR4, 50G/100G/200G/400G ER, and 64GFC for DUT.
- Added PRBS11/9/7 and SSPRQx2 for Test Pattern. Added displays of Pattern Length and Number of Samples.
- Reduced the measurement time (using the RUN, AUTOscale, and CALCulate commands).
- Changed the command synchronization from `*OPC?` to `:SYSTem:ERRor?` so that it checks for errors.
- Fixed other problems.

- Added Python and LabVIEW SCPI sample programs to the following folder:
C:\Users\Public\Documents\Anritsu\MX210000A\UserData\Demo\Examples

Bug Fixes/Updated Features (Scope)

- Improved differences in TDECQ measurement among MP2110As. By suppressing the variation in the frequency response of the digital filter, the TDECQ value may be improved by about 1 dB at the maximum. (When TDECQ exceeding 3 dB with 53 Gband PAM4 signal. The degree of improvement depends on the combination of MP2110A channels and input signals.) (CM4471:0843)
- Fixed an issue that may coarsen the resolution during Average Power measurement. A

variation of 0.2 to 0.3 dB occurred when an optical signal with a power of around -1.5 dBm (or around -0.5 dBm in a 4-channel configuration) was input though the conditions of this issue were different depending on the calibration status. (CM4471:0842)

- Improved the PAM4's reproducibility of Eye Heights and Eye Widths measurement. (CM4471:0850)
- Fixed an issue that caused incorrect samples to be displayed when sampling at a Symbol Rate of less than 10 Gbaud if Test Pattern is set to other than Variable in Coherent Eye mode. (CM4471:0831)
- Fixed a version compatibility issue with the :FILTER command. Made changes so that v7.03 or later returns the same response to the query for the digital filter value as returned in versions earlier than 7.03. (CM4471:0855)

V7.03.01 (2021-08)

New Features and Changes (Scope)

- Added support for the Option 098 (Signal Processing Software).
- Added the following electrical channel measurement items:
NRZ measurement items:
VMA, VMA at Crossing, VECP, TDEC
PAM4 measurement items:
TDECQ, Outer VMA, Ceq, Partial TDECQ, Transition Time, Over/Under-shoot, Noise Margin, Partial Noise Margin
- Added an argument CALCulate to the :SCOPE:SAMPLing:STATus command. This can reduce the measurement time by performing Auto Scale, Tap calculation of TDECQ equalizer, and TDECQ measurement in a single step. Also, it improves performance during parallel measurements (measuring each channel asynchronously at the same time).
Remote Command (in blue letters):
[:SCOPE]:SAMPLing:STATus[:CHx|ALL] RUN[,AUTOscale[,CALCulate]]|HOLD

To use this command, follow the instruction below.

Step 1: If a sequence already exists, delete the following commands from it.

```
:DISPlay:WINDow:AUTOscale
:CONFigure:MEASure:PAM:TEQualizer:CALCulate
:CONFigure:MEASure:PAM:TEQualizer:CALCulate:RESult
:SAMPLing:STATus
```

Step 2: Add the following sequence:

1. :SCOPE:SAMPLing:STATus:CHx RUN, AUTOscale, CALCulate
2. :SCOPE:SAMPLing:STATus:CHx?
Wait until HOLD is returned.
3. :SCOPE:CONFigure:MEASure:PAM:TEQualizer:CALCulate:RESult:CHx?
Check if the response is Pass.

- Improved the performance of channel parallel measurements, reducing the response time of the :SCOPE:SAMPLing:STATus RUN,AUTOscale command. Previously, the command response was waiting for the Auto Scale process to complete.
- Changed the GUI of Filter Selection. The following remote command can now be specified with the bandwidth (GHz).

Remote Command (in blue letters):

```
[:SCOPE]::SENSe]:FILTer[:CHx|ALL] "<bandwidth>"
```

Specify "<bandwidth>" as follows.

Conventional Argument Values	New Argument Values
"10G_WAN"	"7.46 GHz"
"10G_LAN"	"7.5 GHz"
"400GE_8_MMF_10p35"	"10.35 GHz"
"400GE_8_MMF_D3"	"11.2 GHz"
"64G_FC_MMF"	"12.4 GHz"

"400GE_8_MMF"	"12.6 GHz"
"400GE_8_SMF"	"13.28125 GHz"
"64G_FC_SMF"	"14.45 GHz"
"400GE_8"	"19.34 GHz"
"400GE_4_SMF"	"26.5625 GHz"
"400GE_4"	"38.7 GHz"

- Changed to display the Taps value of the TDECQ equalizer in a comma-separated text, which can be edited, copied and pasted.
- Increased the maximum value for Tap Count of the TDECQ equalizer to 21.
- Changed the default value of Channel Math Define Function from CH A + CH B to CH A - CH B.

Bug Fixes/Updated Features (Scope)

- Fixed a bug that caused the waveform to scale out when External Attenuation was set during Channel Math. (CM4471:0772)
- Fixed a bug that may cause a freeze during the measurement when UI on Screen was 1. (CM4471:0820)

V7.02.26 (2021-05)

Bug Fixes/Updated Features (Scope)

- Fixed a bug that measurement could not be performed in Histogram when Y2 was greater than Y1. (This bug occurred in V7.02.24 or later.) (CM4471:0802)

V7.02.25 (2021-04)

Bug Fixes/Updated Features (Scope)

- Fixed a bug that could not work the Auto Scale correctly when the digital filter for 10GbE LAN/PHY (7.5GHz) or 10GbE WAN/PHY (7.46GHz) is used. (Only occurred in V7.02.24) (CM4471:0777)

V7.02.24 (2021-03)

New Features (Scope)

- Added the following measurement items: (CM4471:0724, 0750, 0753)
 - Transmitter Power Excursion (IEEE 802.3cu)
 - Noise Margin / Partial Noise Margin
 - Crossing Time

Remote Command (in blue letters):

Added a remote command for display:

```
[[:SCOPE]:CONFigure:MEASure:DISPlay:ADD CHx|ALL,<meas_item>
<meas_item>=TPEXcursion|NMArgin|PNMargin|CROSSing:TIME
```

Added a remote command for result query:

```
[[:SCOPE]:FETCh:AMPLitude[:TEQualizer]:<meas_item>[:CURRent][:CHx|ALL]?
<meas_item>=TPEXcursion|NMArgin|PNMargin
[:SCOPE]:FETCh:TIME:<meas_item>[:CURRent][:CHx|ALL]?
<meas_item>= CROSSing
```

- Added the display of the reason why the TDECQ value is not displayed (OMA? / SER?). (CM4471:0741)

Remote Command:

```
[[:SCOPE]:FETCh:AMPLitude:TEQualizer:TDECQ[:CURRent]:REASon[:CHx|ALL]?
```

- Added the Relock and Auto Relock functions to the Option 054. (CM4471:0756)

Remote Command (in blue letters):

```
[[:SCOPE]:TIME:CRU[{26G|53G}]:RELock
[:SCOPE]:TIME:CRU[{26G|53G}]:ARELock
```

- Added remote commands that query the sample data and the number of samples within the histogram area. (CM4471:0753)
Remote Command:
[:SCOPE]:FETCh:HISTogram:DATA?
[:SCOPE]:FETCh:HISTogram:POINts?
- Added a remote command that queries the center value of the time axis. (CM4471:0753)
Remote Command:
[:SCOPE]:DISPlay:WINDow:X:CENTer?
- Added the following digital filters: (CM4471:0770)
 - 10GbE LAN/PHY (7.5GHz)
 - 10GbE WAN/PHY (7.46GHz)
 Remote Command:
[:SCOPE]:FILTer[:CHx|ALL] "10G_LAN|10G_WAN"
- Added the following mask files: (CM4471:0755)
 - 25GbE-LR/ER (25GbE-LR_ER_Tx.txt)
 - CAUI-10/XLAUI Tx (CAUI-10_XLAUI_Tx.txt)
 - nPPI (XLPPI/CPPI) (nPPI_module_to_host.txt)
 - 10GbE LAN/PHY (10G_LAN.txt)
 - 10GbE WAN/PHY (10GbE_WAN.txt)
- Added the following functions to the TDECQ measurement tool (TDECQ Assistant).
 - 8-channel simultaneous measurement
 - Simultaneous display of multiple waveforms and results
 - Repeat measurement
 - Saving measurement results

Bug Fixes/Updated Features (Scope)

- Improved the accuracy of the TDECQ measurement. (CM4471:0670)
- Improved the Calculate accuracy of the TDECQ equalizer. (CM4471:0746)
- Improved the accuracy of the Over/Under-shoot measurement. (CM4471:0757)
- Improved the input power sensitivity performance of the TDECQ measurement by about 1 dB. (CM4471:0741)
- Improved the phase direction adjustment accuracy of Auto Scale. (CM4471:0752)
- Improved the measurement accuracy for Linearity (Annex 120D) at a low input optical power. (CM4471:0754)
- Fixed an issue that may cause Average, StdDev, Min, and Max values of Linearity to be abnormal. (CM4471:0754)
- Fixed a bug that could not display the waveform of results calculated by Channel Math correctly when Software Delay was set in Coherent Eye mode. (This bug occurred in V7.00.13 or later.) (CM4471:0747)
- Fixed a bug that HOLD was returned instead of RUN in response to
[:SCOPE]:SAMPLing:STATus? during Advanced Jitter analysis. (CM4471:0740)

V7.02.10 (2020-08)

New Features (Scope)

- Added the optical channel measurement items listed below. (CM4471:0686, 0687)
 - Transmitter Transition Time (Rise/Fall/Slowest) (IEEE 802.3cd)
 - Transmitter Over/Under-shoot (IEEE 802.3cu)
 - Transmitter Peak-to-Peak Power (IEEE 802.3cu)
 Remote Command (in blue letters):
 Added a remote command for display:
 [:SCOPE]:CONFigure:MEASure:DISPlay:ADD CHx|ALL,<meas_item>
 <meas_item>=TTIME:{RISEFALL|SLOWest}|OVERUNDER|PPPower
 Added a remote command for result query:
 [:SCOPE]:FETCh:TIME[:TEQualizer]:<meas_item>?

```
<meas_item>=:TTIME{:RISE:FALL|SLOWest}
[:SCOPE]:FETCh:AMPLitude[:TEQualizer]:<meas_item>?
<meas_item>=:OVERshoot|UNDershoot|PPPower
```

- Added a remote command that queries the date and time of the last calibration. (CM4471:0679)
Remote Command:
[:SCOPE]:CALibrate:TIME?
- Added a new feature that allows the user to query Average Power input to the optical channel with the unit specified (blue letters). (CM4471:0684)
Remote Command:
[:SCOPE]:FETCh:AMPLitude:AVEPower[:DBM|MW][:CURRent][:CHx|ALL]?
[:SCOPE]:MONitor:AVEPower[:DBM|MW][:CHx|ALL]?
- Added the mask file (100GbE-CWDM4_Rx.txt) for 100G CWDM4.

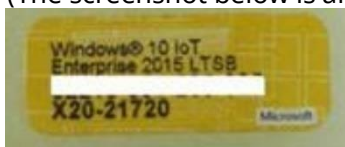
Bug Fixes/Updated Features (Scope)

- Fixed a bug that may detect an incorrect frequency if there was a change in the input trigger frequency while Acquire Clock Rate was executed. (CM4471:0678)
- Fixed a bug that may cause the Scope to freeze if Acquire Clock Rate, Auto Scale, Sampling Run, or Tap Calculation was executed when there was a Trigger Setting Wrong error. (CM4471:0677)
- Fixed a bug that may cause the Scope to freeze if viClear was executed immediately after sending a remote command when HiSLIP or VXI-11 was used for remote-command interface. (CM4471:0682)
- Improved the measurement accuracy for Linearity (Annex 120D) at a high input optical power. (CM4471:0689)
- Changed the measurement results to be displayed when Questionable Eye (PAM4?) was displayed. (CM4471:0685)
Before change: All results except Average Power were N/A.
After change: All results except Average Power, Outer OMA, and Outer ExR are N/A.

V7.02.02/V7.02.03 (2020-05)

New Features (Common)

- Added support for Windows 10. The installed OS is indicated on the label on the rear panel. (The screenshot below is an example for Windows 10.)



New Features (Scope)

- Added PRBS11 to Test Pattern of Coherent Eye and Pulse mode. (CM4471:0661)

Bug Fixes/Updated Features (Scope)

- Improved the sampling speed of Coherent Eye mode. When the test pattern is PRBS11, PRBS13, PRBS15, and SSPRQ, it is about 1.6 times faster than before. (CM4471:0672)
- Improved the accuracy and reproducibility of the TDECQ measurement with SSPRQ pattern. (CM4471:0659)
- Fixed a bug where the software may freeze immediately after changing from RUN to HOLD during remote control. (CM4471:0656, 0658)
- Fixed a bug where the setting may become abnormal if the remote command of Option055 (26/53 Gbaud clock recovery option) is continuously sent at intervals shorter than 200 ms. (CM4471:0643)
- Fixed a bug where the waveform is distorted when the digital filter for 53Gbaud is used with

- the signal of 26Gbaud. (CM4471:0644)
- Fixed a bug where Outer OMA or Outer ER may become N/A even though Questionable Eye (NRZ?/PAM4?) is not displayed. (CM4471:0639)
- The response of [:SCOPE]:SAMPLing:STATus? was changed as follows. (CM4471:0659)
Before change: Returns the RUN/HOLD status of the active channel.
After change: Returns RUN when any of the On channels is running, and returns HOLD when all channels are holding (same as when ALL is specified).
- Fixed a bug where the zip file saved in Support Information may be deleted on the mail server when it is attached by email. (CM4471:0663)
- Fixed a bug where the log may not be output to the correct location when the TDECQ measurement tool is started from the Start menu (MX210000A-PAM4 TDECQ Assistant).

V7.01.18 (2020-02)

New Features (Scope)

- Added a remote command that saves support information. (CM4471:0646)
Remote Command:
[:SCOPE]:SINformation:STORE
- Added a remote command that queries the Average Power input to the optical channel of Scope. Unlike [:SCOPE]:FETCh:AMPLitude:AVEPower[:CURRent][:CHx|ALL]?, this command retrieves results even if measurement is not in progress. (CM4471:0647)
Remote Command:
[:SCOPE]:MONitor:AVEPower[:{CHx|ALL}]?
- Added "dBm" as a display unit of Outer OMA. (Previously, μ W only) (CM4471:0310)
Remote Command (in blue letters, display unit is μ W when OOMA is specified):
":OOMA:DBM" can now be appended to the command as follows:
[:SCOPE]:CONFigure:MEASure:DISPlay:ADD CHx|ALL,{OOMA| OOMA:DBM}
":OOMA:DBM" can now be added to the query as follows:
[:SCOPE]:FETCh:AMPLitude[:TEQualizer]:{OOMA| OOMA:DBM}[:CURRent][:CHx|ALL]?
- Added the 10.35-GHz digital filter. (CM4471:0648)
Remote Command:
[:SCOPE]:FILTer[:CHx|ALL] "400GE_8_MMF_10p35"
- Added TDECQ measurement tool (TDECQ Assistant). Using this, you can easily perform waveform evaluation of the PAM4 optical signal according to the standard, even if you are not familiar with the MP2110A operation. You can execute it from the following path.
Desktop - UserData - Demo - TDECQ_Assistant - TDECQ_Assistant.exe
(C:\Users\Public\Documents\Anritsu\MX210000A\UserData\Demo\TDECQ_Assistant\TDECQ_Assistant.exe)

Bug Fixes/Updated Features (Scope)

- Improved the jitter performance of Recovered Clock of the Option 055 (26/53 Gbaud Clock Recovery Option). (CM4471:0650)
- Fixed a bug where MX210000A waiting for response to the remote command may freeze due to a large number of timeouts. (This bug occurred in V7.00.11 or later.) (CM4471:0638)
- Fixed a bug that would continue accumulating the number of samples even after elapse of Persistency time when measuring with Sampling Mode set to **Pulse**, Accumulation Type set to **Persistency**, and UI on Screen set to other than powers of 2. (CM4471:0629)

V7.01.15 (2020-01)

New Features (Scope)

- Supported the Option 055 (26/53 Gbaud Clock Recovery Option). (CM4471:0632)
- Added the function of turning on/off the Warning display. (CM4471:0633)
Remote Command:
[:SCOPE]:DISPlay:WARNIing:OVERload <enable>
[:SCOPE]:DISPlay:WARNIing:QUEStionableeye <enable>

- Added the mask files for 40G-SR4 and 100G-SR10. (CM4471:0615)

Bug Fixes/Updated Features (Scope)

- Fixed a bug where **Auto Scale** or **Acquire Clock Rate** may not work properly or freeze when the trigger clock input level is unstable. (CM4471:0618)
- Fixed a bug where PAM4? may not be displayed when the trigger clock is not input. (CM4471:0575)
- Fixed a bug where measurement could not be performed in Advanced Jitter mode when **Channel Math** was set to **On**. (This bug occurred in V7.00.15 Beta or later.) (CM4471:0573)
- Fixed a bug where **Attenuation** was set to twice the value given in the file when loading a V6 or earlier configuration file. (CM4471:0556)
- Reduced the processing time of the screen display switching command ([:SCOPE]:DISPlay:WINDow:MODE). (CM4471:0553)
- Fixed a bug where [:SCOPE]:TIME:TRACking:STATus? would return a state different from the current one. (CM4471:0550)
- Fixed a bug where [:SCOPE]:SAMPLing:STATus? returned HOLD immediately after execution of [:SCOPE]:SAMPLing:STATus RUN,AUTOscale. (CM4471:0545)
- Fixed a bug that caused the MX210000A to freeze at execution of **Calculate** for the equalizer when **UI On Screen** was **1 UI**. (CM4471:0534)
- Fixed minor issues with screen display. (CM4471:0518, 0524, 0529, 0539, 0552, 0561, 0564, 0565, 0577, 0578, 0580)
- Fixed minor issues with loading configuration files. (CM4471:0557, 0569, 0570)
- Changed the status display conditions as follows: (CM2234:2606)
 - Free Running: Displayed when no input trigger signal is detected.
 - Trigger Setting Wrong: Displayed when the input trigger signal does not match the Symbol Rate setting.
In V7.0 or earlier, "Trigger Setting Wrong" was displayed when both of the following conditions were met, even if the input trigger signal matched the Symbol Rate setting.
 - ✧ Tracking of Data Clock Rate is set to **Off**.
 - ✧ Lock Status of Clock Recovery is Unlock.
 - CRU Unlock: Displayed when the following three conditions are met:
 - ✧ Under the conditions where "Free Running" or "Trigger Setting Wrong" would be displayed.
 - ✧ Tracking of Data Clock Rate is set to **Symbol Rate: CRU**.
 - ✧ Lock Status of Clock Recovery is Unlock.
 In V7.0 or earlier, "Free Running" was displayed instead of "CRU Unlock" when the following three conditions were met:
 - ✧ Under the conditions where "Free Running" would be displayed.
 - ✧ Tracking of Data Clock Rate is set to **Symbol Rate: CRU**.
 - ✧ Lock Status of Clock Recovery is Unlock.
 Also, "CRU Unlock" was displayed even when the following three conditions were met:
 - ✧ Not under the conditions where "Free Running" or "Trigger Setting Wrong" would be displayed.
 - ✧ Tracking of Data Clock Rate is set to **Symbol Rate: CRU**.
 - ✧ Lock Status of Clock Recovery is Unlock.

V7.00.24 (2019-11)

New Features

- Added **Support Information**. When **Save** is executed, "BERTWaveSupportInformation.zip" is saved to the desktop. This file includes information that may be useful for solving a problem. Please attach the file when you contact us for a problem with the product. (CM4471:0488)

Bug Fixes/Updated Features

- When **Calculate** for Equalizer is executed at Sampling Hold, the waveform of one pattern

and measurement results are now displayed at the completion of calculation.
(CM4471:0494)

- When the **Calculate** result for Equalizer turns out to be **Fail**, the Tap values are now initialized. The Tap value of Main Cursor is reset to 1 and other Tap values are reset to 0. (CM4471:0493)
- Fixed the pattern distinction accuracy and improved the accuracy and reproducibility of the TDECQ measurement result and the **Calculate** result for Equalizer. As a result, the 26G digital filters are also subject to UG195. (CM4471:0496, 0603)
- Improved the PAM4 prevention against Questionable Eye (PAM4?), so the Questionable Eye message does not appear easily now. (CM4471:0495)
- Fixed a bug where the **Calculate** result for Equalizer was **Fail** in some waveforms. (problem of V7.00.12Beta or later) (CM4471:0483)
- Fixed a bug where a part of waveform went outside of the graph area when **Auto Scale** was executed for a waveform with large overshoot. (CM4471:0498)
- When calibration is required by software upgrade, CAL(Red) status is now displayed. (CM4471:0513)
- Fixed a bug where the MP2110A froze occasionally due to handle leak when remote connection and disconnection are repeated. (CM4471:0604)
- Fixed a bug where TDECQ measurement results might be N/A even if Pass was displayed at Status when **Calculate** of Equalizer Tap was executed. (CM4471:0624)
- Fixed a bug that would display a stepped waveform when measuring with Sampling Mode set to **Pulse** and Accumulation Type set to **Averaging**. (CM4471:0585)

V7.00.15Beta (2019-06)

New Features

- Added **Pattern Capture**. It captures amplitude data of one cycle of test pattern from the waveform being displayed and saves the data to text file. The file is saved to the following folder.(CM4471:0492)
"C:\Users\Public\Documents\Anritsu\MX210000A\UserData\Result\TXT"
Remote Command:
Data acquisition TRACe[:DATA]:{CHANnelA|CHANnelB|CHANnelC|CHANnelD}:BINary?
Samples/UI change TRACe[:DATA]:SPUI {1|2|4|8|16|32}

V7.00.13 (2019-04)

- Fixed a bug where the files saved with version 6 could not be loaded. (Only occurred in V7.00.12Beta)
- Improved the stability of **Calculate** for Linear Equalizer. (CM4471:0453)
- Fixed a bug where the PPG Amplitude setting was not applied to the output signal even if the setting was loaded from the setup file when the PPG Output was On. (CM4471:0451)
- Supported the Option 060. (CM4471:0428)

V7.00.12Beta (2019-03)

- Added the following measurement items. (CM4471:0306, 0309, 0440)
 - Ceq (10*log10(Ceq))
 - RIN OMA
 - Partial TDECQ
 Remote Command:
 "=CEQ|RINoise|PTDcq" can now be appended to the command as follows.
 :CONFigure:MEASure:DISPlay:ADD CHx|ALL,<meas_item>
 <meas_item>=CEQ|RINoise|PTDcq
 " =:CEQ|RINoise|PTDeq:EYE[0|1|2]:{LEFT|RIGHT}" can now be appended to the query command as follows.

- :FETCh:AMPLitude[:TEQualizer]:<meas_item>?
<meas_item>=:CEQ|RINoise|PTDeq:EYE[0|1|2]:{LEFT|RIGHT}
- The following items can now be measured when **Sampling Mode** is **Pulse**:
 - Average Power (dBm, mW)
 - Linearity
 - Levels
 - Added **Noise Measure Area**. This allows specifying the position to measure noises of SNR.
Remote Command:
[:SCOPE]:CONFigure:MEASure:NOISe ZERO_ONE|ZERO|ONE
 - Improved **Calculate** for Equalizer so that the Tap for the waveforms without the EYE opening could be calculated. (CM4471:0439)
 - Added Linear Equalizer in addition to TDECQ Equalizer. The **Equalizer Type** setting allows specifying the equalizer to be used to automatically calculate the Tap for the Reference Equalizer. The default is TDECQ Equalizer as before.
Remote Command:
[:SCOPE]:CONFigure:MEASure:PAM:TEQualizer:ETYPe[:CHx|ALL]
TDECQ|LINEAR
 - Added **Linearity Definition**. This allows specifying the definition to measure the linearity.
Remote Command:
[:SCOPE]:CONFigure:MEASure:PAM:LINearity:DEFinition RLMC94|RLMA120
 - Tap Count can now be set in the range of 3 to 13 (previously 5, 7, and 9). (CM4471:0308)

V7.00.11 (2019-03)

Bug Fixes /New and Updated Features

Item	Description
■ Sampling Oscilloscope	
MP2110A-030 MP2110A-039 MP2110A-040 MP2110A-049	Added support for 4 channel scope option. (CM4471:0435)
MP2110A-042 MP2110A-043 MP2110A-045 MP2110A-046	Added support for 04x option. (CM4471:0435)
Improvement of Dynamic Range	Improved waveform response at high power optical input (improved dynamic range by +1 dB at extinction ratio of 4 dB) (CM4471:0324)
Waveform Layout	You can now select the layout of waveform display. Overlap displays overlapped waveforms of multiple channels. Single displays the waveform of the active channel. Tile displays four waveforms side-by-side. Remote command: [:SCOPE]:DISPlay:WINDow:MODE OVERlap SINGle TILE
Individual Channel Measurement	In addition to simultaneous measurement of multiple channels, a measurement can now be started and stopped for individual channels. If you set the added Control Ch to ALL , the operation is performed on all channels, and if set to Single , the operation is performed on the selected channel. For the remote command, refer to the table of Added/Changed Commands on the next page.
Mask Test	Mask test can now be performed on all channels simultaneously. Mask Test can be set to ON/OFF for individual channels. Remote command: [:SCOPE]:CONFigure:MASK[:CHx ALL] 0 1 OFF ON

Item	Description
Amplitude/Time	Added the following measurement items. <ul style="list-style-type: none"> ▪ Eye Height (Ratio) ▪ TDEC * ▪ J4 Jitter * 12.6 GHz Hardware Filter specified in IEEE is not supported.
PAM4 TDECQ	When Sampling Mode is Pulse or Coherent Eye , the pattern number can now be specified by Limit Type . Added Number of Precursors . The number of precursors can now be specified for calculating the tap of TDECQ. Remote command: [:SCOPE]:CONFigure:MEASure:PAM:TEQualizer:NPRecursors[:CH x ALL] <integer> Added 4 to Tap Count . Improved the execution time of equalizer's Calculate . Also, added support for simultaneous execution of multiple channels. (CM4471:0273) Abolished Reference Equalizer (turn ON/OFF equalizer).
Speed Improvement	Improved the execution time of Auto Scale. (CM4471:0228, 0366) Improved the application startup time. (CM4471:0104) Improved the initialize time. (CM4471:0082)
Calibration	Added the execution date and time to Last Calibration on the Utilities tab in the Setup dialog box. (CM4471:0320)
Skew	Changed the name to Software Delay and abolished Align During Auto Scale. From V 7.00.11, Software Delay can be set at Auto Scale to adjust the phase so that the waveform comes to the center.
Bug Fixes	Improved the detection accuracy of Divide Ratio Detect. (CM4471:0144) Fixed a bug where the mask margin was not measured correctly when the top or bottom of the mask was outside the screen at the Mask measurement. (CM4471:0436) Fixed a bug where the application had an abnormal end occasionally when the setup file was loaded after sending the :SAMPles:JUDGE:TYPE RATE command at the Mask measurement. (CM4471:0387) Fixed a bug where tracking was turned off when loading the tracked setup file to the CRU. (CM4471:0332) Fixed a bug where the MP2110A froze unless a normal clock signal pattern was input while executing Acquire Clock Rate or Auto Scale. (CM4471:0183) Fixed a bug where the average power value became abnormal when there was no input light with Option 026/036 installed (optical interface is MM only). (CM4471:0244) Fixed a bug where calibration failed when inputs of all channels were Off. (CM4471:0188) Fixed a bug where the response to the query to obtain the tap value of the PAM4 equalizer was returned in the reverse order of the setting. (CM4471:0070) [:SCOPE]:CONFigure:MEASure:PAM:TEQualizer:TAPS:CHx?

The additional change of remote command is as follows (in blue letters).

- CHx: Sets and operates individual channels. (x represents A|B|C|D)
- ALL: Operates all channels collectively.

Item	Added/Changed Commands (blue)
Basic Operation	:SCOPE:CONFigure:MEASure:CHANnel {A B C D}
	:SCOPE:INPut:{CHx ALL}
	:SCOPE:DISPlay:SIGNAL[:CHx ALL]
	:SCOPE:ACCUmulation:TYPe[:CHx ALL]
	:SCOPE:ACCUmulation:LIMit[:CHx ALL]
	:SCOPE:SAMPling:STATus[:CHx ALL] RUN[,AUTOscale] HOLD * When specifying AUTOscale, Auto Scale is performed with Sampling RUN simultaneously.
	:SCOPE:DISPlay:WINDow:GRAPHics:CLear[:CHx ALL]
Display Control	:SCOPE:DISPlay:WINDow:MODE OVERlap SINGLE TILE
	:SCOPE:DISPlay:WINDow:MODE?
	:SCOPE:DISPlay:WAVEform:COLor:GSCale[:TEQualizer][:CHx ALL]
	:SCOPE:DISPlay:LABel[:CHx ALL]
	:SCOPE:DISPlay:LABel:DALL[:CHx ALL]
	:SCOPE:CONFigure:MEASure:DISPlay:ADD CHx ALL, <meas_item>
	:SCOPE:CONFigure:MEASure:DISPlay:ADElete[:CHx ALL]
Optical Ch Configuration	:SCOPE:INPut:ATTenuation[:CHx ALL]
	:SCOPE:INPut:WAVLength[:CHx ALL]
	:SCOPE:FILTer[:CHx ALL]
	:SCOPE:CONFigure:EXRCorrection[:CHx ALL]
	:SCOPE:CONFigure:EXRCorrection:FACTor[:CHx ALL]
Mask Test	:SCOPE:CONFigure:MASK[:CHx ALL] 0 OFF 1 ON
	:SCOPE:CONFigure:MASK[:CHx ALL]?
	:SCOPE:MEASure:MASK:MARGin[:CHx ALL]?
	:SCOPE:CONFigure:MASK:MARGin[:CHx ALL]
Histogram	:SCOPE:CONFigure:HISTogram 0 OFF 1 ON
	:SCOPE:CONFigure:HISTogram?
TDECQ Equalizer	:SCOPE:CONFigure:MEASure:PAM:TEQualizer:DISPlay[:CHx ALL]
	:SCOPE:CONFigure:MEASure:PAM:TEQualizer:CALCulate[:CHx ALL]
	:SCOPE:CONFigure:MEASure:PAM:TEQualizer:TAPS:COUNt[:CHx ALL]
	:SCOPE:CONFigure:MEASure:PAM:TEQualizer:OPTimization[:CHx ALL]
Results	:SCOPE:FETCh:AMPLitude:QUESTionableeye[:CHx ALL]?
	:SCOPE:FETCh:AMPTime:QUESTionableeye:STATus[:CHx ALL]?
	:SCOPE:FETCh:AMPLitude: <meas_item> [:CURRent][:CHx ALL]?
	* When specifying CURRent, only the current value is returned.
	:SCOPE:FETCh:TIME: <meas_item> [:CURRent][:CHx ALL]?
Screen Copy	:SCOPE:FETCh:MASK: <meas_item> [:CHx]?
	:SCOPE:EYEPulse:PRINt:COPY[:CHx]
	:SCOPE:EYEPulse:PRINt:COPY[:CHx]?
	* When specifying CHx, you can take a screenshot of the specified channel. * The query obtains both screenshot and data.

V6.01.04 (2018-11)

Bug Fixes /New and Updated Features

Item	Description
■ Sampling Oscilloscope	

Calibration	Fixed a bug that the calibration process may not work properly when trigger is not input (when Free Running is displayed). (CM4471:0279)
	Fixed a bug that calibration processing does not work properly if O/E Calibration is executed after SMF/MMF setting is changed. (CM4471:0341)
	Improved the O/E calibration accuracy in CRU configuration. (CM4471:0339)
PAM4	Fixed a bug that the TDECQ measurement value becomes abnormal when Skew setting is not 0. (CM4471:0271)
	Fixed a bug that looks like freezing when not inputting trigger during measurement in Coherent Eye mode and Test Pattern setting is other than Variable. (CM4471:0313)
External Attenuation	(V6.01.00 or later) Fixed a bug where Overload warning was displayed if Amplitude-Scale/Offset-Attenuation setting is other than 0. (CM2234:2602)

V6.01.02Beta (2018-09)

Bug Fixes /New and Updated Features

Item	Description
■ Sampling Oscilloscope	
PAM4	Improved TDECQ measurement accuracy when Target SER setting is other than IEEE (4.8E-04) (CM4471:0340)

V6.01.01Beta (2018-09)


Bug Fixes /New and Updated Features

Item	Description
■ Sampling Oscilloscope	
PAM4	Fixed a bug that TDECQ measurement value becomes N/A when Skew setting is not 0. (CM4471:0152)
Calibration	Fixed a bug that the calibration process does not work properly when 2 channel optical configuration. (CM2234:2600)

V6.01.00 (2018-08)

Bug Fixes /New and Updated Features

Item	Description
■ Sampling Oscilloscope	
PAM4 (Option 095)	Supports 53 Gbaud PAM4 analysis, the following digital filter was added. - 400GbE/4 SMF (26.56GHz) - 400GbE/4 (38.7GHz)
	Under the following conditions, It is no longer necessary to re-measure with digital filter change. Measurement results around 800k samples are saved. - Change between 400GbE/4 SMF (26.56 GHz) and 400GbE/4 (38.7 GHz) - Change between digital filters other than the above (CM2234:2584)
	Fixed update processing of TDECQ measurement value when Accumulation Type is Persistency . TDECQ value is no longer displayed at time less than one measurement pattern period.
	Fixed the bug where Average and StdDev result in PAM4 measurement were incorrect. (CM2234:2581)

Measurement	When an optical signal exceeding the recommended power is input, Overload warning is now displayed in the waveform display area. (CM2234:2579) 
	In the NRZ measurement item, the result is set to N/A at the time of Questionable Eye (when "NRZ?" Is displayed). (CM2234:2581)
GUI	Fixed the bug where the setting screen was not updated at executing :TIME:TRACking command in a certain configuration. (CM2234:2578)
■ BERT	
Main Application	Fixed the bug where a "BERT Transceiver Error" occurred at launching the application. (CM2234:2561)
PPG Amplitude	Updated the software to show four digits in Relative display. (CM2234:1634)
■ Common	
Add option licenses	Fixed the bug where the option license expiration date was sometimes not recognized correctly. (CM4471:0167, 0169) Improved the error message for adding the option license. (CM4471:0174)

V6.00.54Beta (2018-07)

Bug Fixes /New and Updated Features

Item	Description
■ Sampling Oscilloscope	
PAM4	Improved characteristics of following digital filters: - 400GbE/8 MMF D2 (12.6 GHz) - 400GbE/8 SMF (13.3 GHz) - 400GbE/8 (19.34 GHz) Added following digital filters: - 400GbE/8 MMF D3* (11.2 GHz) *IEEE 802.3 cd Draft 3 - 64GFC MMF (12.4 GHz) - 64GFC SMF (14.45 GHz)

V6.00.53Beta (2018-07)

Bug Fixes /New and Updated Features

Item	Description
■ Sampling Oscilloscope	
PAM4 TDECQ	Improvement of accuracy and repeatability of TDECQ measurement (update of measured results for each pattern cycle, etc.).

V6.00.49Beta (2018-07)

Bug Fixes /New and Updated Features

Item	Description
■ Sampling Oscilloscope	
PAM4 TDECQ	Improved the Tap Calculate accuracy when Optimization was Auto .

	<p>Added Optimize Threshold (IEEE802.3 cd). When it is On (default), the measurement threshold value is made fine tuning for TDECQ to be the optimal at calculating TDECQ. Remote command: :CONFigure:MEASure:PAM:TDECQ:OTHReshold 0 OFF 1 ON</p> <p>Added Target SER. It enables to set the target SER at TDECQ measurement (default is 4.8E-4 specified in IEEE802.3). Remote commands :CONFigure:MEASure:PAM:TDECQ:SER VARIable IEEE FC :CONFigure:MEASure:PAM:TDECQ:SER:VARIable E_<exponent>[,<mantissa>]</p>
Waveform Color	<p>When Waveform Color is Gray Scale, it is now possible to set the color of the waveform from 8 colors. Different colors can be specified before and after TDECQ Equalizer is applied. Remote command: :DISPlay:WAVEform:COLor:GSCale[:TEQualizer]:{CHA CHB} "{YELLOW BLUE GREEN PINK"} ORANGE LBLUE LGREEN RED}" (CM2234:2567)</p>
Symbol Rate	<p>Fixed the bug where the application was abnormally terminated when Symbol Rate was switched by :SCOpe:TIME:DAtRate command. (CM2234:2562)</p>

V6.00.45 (2018-03)

Bug Fixes /New and Updated Features

Item	Description
■ Sampling Oscilloscope	
Auto Scale	<p>Improved the stability of Auto Scale of NRZ signal. (CM2234:2558)</p> <p>Fixed a bug where executing Acquire Clock Rate or Auto Scale when trigger is not input causes application to freeze. (r9018, r9034)</p>
Align During Auto Scale	<p>Fixed a bug where Align During Auto Scale did not work correctly. (This problem occurred with V6.0 or later) (CM2234:2547)</p>
PAM4	<p>Fixed a bug that TDECQ and Outer OMA measurement result cannot be acquired correctly when specifying a channel with fetch command at Reference Equalizer On.</p>

V6.00.45Beta (2018-03)

Bug Fixes /New and Updated Features

Item	Description
■ Sampling Oscilloscope	
MP2110A-025/026 MP2110A-035/036	<p>Fixed a bug where abnormal samples were detected in Coherent Eye mode. (CM2234:2552, 2553)</p>
PAM4	<p>Changed Optimize Level to Optimization and changed the range from Low, Middle, High to [Auto], [Fast]. [Auto] executes all optimization processes. (It's default.) [Fast] executes the processes faster than [Auto] by omitting some parts of the processes. The remote command of the Optimization is :CONFigure:MEASure:PAM:TEQualizer:OPTimization:CHA CHB.</p> <p>Improved the reproducibility of TDECQ measurement. (CM2234:2554)</p> <p>Improved the stability of Auto Scale. (CM2234:2529)</p>

Calibration	Fixed a bug where the state became abnormal (The data is sampled with the display of Hold) if executing Setup-Utilities-Calibration at the sampling is RUN . (CM2234:2556)
Acquire Clock Rate	Fixed a bug where automatic 600 MHz Trigger Clock Rate detection failed. (CM2234:2549)
Preset Information	Fixed a bug where GND sometimes moved right and left unnaturally at Preset Information Off . (CM2234:2555)

V6.00.44Beta (2018-03)

Bug Fixes /New and Updated Features

Item	Description
■ Sampling Oscilloscope	
PAM4	Added Optimize Level . Specify the method of getting the optimum Tap coefficient at Calculate operation. The iteration count and Calculate execution time increase in order of Low, Middle, and High.

V6.00.43 (2018-02)

Bug Fixes /New and Updated Features

Item	Description
■ Sampling Oscilloscope	
Advanced Jitter	Improved the sensitivity to stress waveform. (CM2234:2541)
Extinction Ratio Measurement	(V6.00.39 or later) Fixed a bug where the Extinction Ratio Correction Factor was not work properly. (CM2234:2543)

V6.00.39 (2018-01)

Bug Fixes /New and Updated Features

Item	Description
■ Sampling Oscilloscope	
MP2110A-054	Added support for the Clock Recovery option.
MP2110A-095	Added support for the PAM4 Analysis Software option.
MP2110A-096	Added support for the Jitter Analysis Software option.
Measurement	<p>Added the following measurement functions.</p> <ul style="list-style-type: none"> • VECF • OMA at Crossing <p>The maximum number of measurement items to be displayed is increased from 4 to 32. The waveform display area can be expanded or reduced when the measurement items are 9 or more.</p> <p>Remote commands:</p> <pre>:CONFigure:MEASure:DISPlay:ADD :CONFigure:MEASure:DISPlay:ADElete :DISPlay:WINDow:ZOOM</pre> <p>Fixed a bug where the response to :MEASure:MASK? was occasionally abnormal. (CM2234:2500)</p>
Auto Scale	<p>Improved the Auto Scale performance. (When the trigger rate is low -- 1/40 for example, and the clock rate setting matches the actual rate.) (CM2234:2377)</p> <p>Fixed a bug where the scale value occasionally became abnormal when Auto Scale was executed while no signal was input to the electrical channel. (CM2234:2495)</p>
Sampling Mode	Fixed a bug where Sampling Mode was changed to Eye by itself. (CM2234:2419)
Measuring Area Marker	Fixed a bug where Area Marker(s) for the measurement item of the optical channel was displayed even for the electrical channel. (CM2234:2192)
Margin Type	Fixed a bug where Hit Count could not be set by the :SAMPles:JUDGe command when Margin Type was Hit Ratio. (CM2234:2429)
Histogram	<p>Fixed the settings of the Histogram Y1 and Y2 values when the setup file was opened. (CM2234:2471)</p> <p>Fixed a bug where the changes made to Symbol Rate were not reflected in Histogram X1 and X2 immediately. (CM2234:2488)</p>
Attenuation	Fixed a bug where Scale and Offset were miscalculated occasionally when setting Attenuation in the optical channel. (CM2234:2525)
Time Unit	Fixed a bug where the measurement was repeated when the unit was changed.
Precision Trigger	Fixed a bug where PT Phase Unlock was left displayed even if Precision Trigger was turned Off. (CM2234:2454)
Status LED	Fixed a bug where the display of Trigger Setting Wrong and the green or orange lamp of the Status LED blinked occasionally. (CM2234:2376)
■ Common	
Main Application	Fixed a bug where "Read Error" was displayed occasionally when failed to read a serial number on the System Information screen. (CM2234:2198)

Screen Copy	Fixed a bug where screen operations other than those on the dialog box were enabled when Drive was selected on the Screen Copy dialog box. (CM2234:2493)
Remote	Fixed a bug where the GPIB address and port number were allowed to exceed the upper limits. (CM2234:2340)
	Fixed a bug where the setting was not reflected by pressing Enter on the Remote Control Setup screen. (CM2234:2462)
Other	Fixed a bug where an error occurred occasionally by the operations other than those of the left button on the mouse. (CM2234:2468)
	Fixed a bug where the screen turned completely white depending on the operation. (CM2234:2482)

V5.02.03 (2017-07)

Bug Fixes /New and Updated Features

Item	Description
■ Sampling Oscilloscope	
MP2110A-032 MP2110A-033 MP2110A-035 MP2110A-036	Added support for baseband flat option of optical channels.
Auto Scale	Shortened execution time of Auto Scale. (CM2234:2118)
Align During Auto Scale	Eye waveforms of both Ch A and B are now aligned center automatically. The remote command is :CONFigure:SKEW:ALIGn. (CM2234:2119)
Mask Color	Mask color is made selectable from the conventional purple and gray. The remote command is :DISPlay:MASK:COLor (CM2234:2116).
Label	Label position can be now specified. Also, line breaking is made available for a label word string by "\n". The remote command is :DISPlay:LABel. (CM2234:2116)
	Fixed a bug where a label disappeared when closing the Label Addition dialog box by clicking the X button. (CM2234:2105)
Preset Information On/Off	The information display in the waveform display area can be now turned On or Off. The remote command is :DISPlay:INFormation. (CM2234:2115)
■ BERT	
Clk Out	Fixed a bug where Clk Out stayed displayed occasionally when Channel Tracking was Off. (CM2234:2099)

V5.01.06 (2017-04)

Bug Fixes/ New and Updated Features

Item	Description
■ Common	
Remote	Fixed a bug where GPIB address could not be changed. (CM2234:2098)
Mainframe	Added a function that turns On the power interlinked with AC power input. To switch the operation, display a dialog box by selecting Start Menu > Program > MX210000A > Power Configuration and edit the On follows AC power setting. (CM2234:2065)
Installer	Fixed a bug where an error occurred at the execution of the installer while the main application is starting. (CM2234:2083)
■ Sampling Oscilloscope	
Auto Scale	Fixed a bug where Auto Scale did not function properly when input light power was -11dBm or under. (CM2234:2094)
Amp/Time Result	The measured values of Average and Std Dev are now displayed even when Accumulation Type is Limited or Infinite . (CM2234:2087)
Mask Margin Test	The Mask Margin setting and results are now displayed up to the first decimal place. (CM2234:2086)
	Hit Ratio can be specified up to the first decimal place. (CM2234:2101)
	Fixed a bug where Hit Count/Hit Ratio display on the Result window were not switched occasionally. (CM2234:2093)
Clear Display	Waveform data is now undeletable by switching On or Off the ChA/B while holding sampling, which enables simultaneous measurement of the two channels. (CM2234:2088)
Waveform Color	Added the Waveform Color setting to enable displaying waveforms in gray scale. The remote command is :DISPlay:WAVEform:COLor. (CM2234:2085)
SMF/MMF	Input connector types (Electrical , SMF , MMF) are now displayed on the CH A and CH B buttons. When the input connectors include any optical connectors, O/E is displayed on the Amplitude button. (CM2234:2091)
Other	Changed management of adjusted value. (CM2234:2092)

V5.00.50 (2017-01), V5.00.52 (2017-02), V5.00.54 (2017-02)

New and Updated Features

Item	Description
MP2110A	Supports MP2110A.

3. MP2100B Changed Items

V4.01.26 (r12279*)/V4.01.27 (2020-12/2021-01)

New Features (Sampling Oscilloscope)

- Added the following mask files:(CM4471:0742)
 - 10GbE_WAN
 - GPON_UpStream
 - XGS-PON

Bug Fixes/Updated Features (Sampling Oscilloscope)

- Fixed a bug that may not trigger the Scope to capture a trace upon completion of calibration. (CM4471:0743)
- Fixed a bug that did not update the Scale/Offset value of the displayed waveform when the filter was switched during measurement. (CM4471:0676)
- Fixed a bug that may cause the application to end abnormally when the Jitter Analysis Software carried out Pattern Search measurement with Pattern Length set to 2. (CM4471:0674)

V4.01.26(r11990*) (2020-06)

Bug Fixes/Updated Features (Sampling Oscilloscope)

- Fixed a bug that did not update the Scale/Offset value of the displayed waveform when the filter was switched during measurement. (CM4471:0676)

*: There are two revisions for V4.01.26, r11990 and r12279. On the MP2100B, the revision number can be checked as follows:
Selector - Setup Utility - Information - Version: Firmware/FPGA - EyePulseScope_C1.syst - Version:
For T3.7.0, r11990.
For T3.8.0, r12279.

V4.01.24 (2020-02)

Bug Fixes/Updated Features (Sampling Oscilloscope)

- Fixed a bug where an error message may be displayed, depending on the settings for Accumulation Type and Limit Type, when calibration is performed. (CM4471:0637)

V4.01.23 (2019-03)

Bug Fixes

Item	Description
■ Sampling Oscilloscope	
Calibration	Fixed a bug where the MP2110A froze occasionally when Calibration or O/E Calibration was executed by trigger input with clock rate different from the setting. (CM2234:1599, 2605)
■ Jitter	
Pattern Search	Fixed a bug where pattern lost occurred when measuring with Pattern Search of Channel Math ON. (CM2234:2607)

V4.01.22Beta (2018-12)

Bug Fixes

Item	Description
■ Sampling Oscilloscope	
Mask Test	Fixed a bug where the application had an abnormal end occasionally when the update method of mask margin was Continuous . (CM2234:2604)

V4.01.21 (2018-11)

Bug Fixes

Item	Description
■ BERT	
Error Detector	Fixed a bug that may not return from SYNC Loss even if a normal pattern is input to ED. (CM2234:2601)
Main Application	Fixed the possibility of system error (PPG/ED Hardware Error) at application startup. (CM2234:2577)

V4.01.20Beta (2018-09)

Bug Fixes

Item	Description
■ BERT	
Error Detector	Fixed a bug that may not return from SYNC Loss even if a normal pattern is input to ED. (CM2234:2601)

V4.01.19 (2018-07)

Bug Fixes

Item	Description
■ BERT	
Main Application	Fixed a bug where a system error (PPG/ED Hardware Error) might occur at application startup. (CM2234:2577)

V4.01.17 (2018-05)

Bug Fixes

Item	Description
■ Sampling Oscilloscope	
Waveform	Fixed a bug that increased jitter when using trigger of around 2.3 GHz or 2 times and 4 times. (CM2234:2559)

V4.01.15Beta (2018-05)

Updated Features

Item	Description
■ Sampling Oscilloscope	
Main Application	Added event logs for system error. (This version only)

V4.01.14 (2018-03)

Bug Fixes

Item	Description
■ Sampling Oscilloscope	
Auto Scale	Fixed a bug that caused occasionally application crash when executing Auto Scale. (CM2234:2550)
	Fixed a bug that Amplitude Scale and Offset became occasionally abnormal values when executing Auto Scale just after switching the trigger frequency. (CM2234:2545)
Main Application	Added event logs for communication error.

V4.01.13 (2017-09)

Bug Fixes

Item	Description
■ Common	
Main Application	Fixed a problem that PPG/ED or Scope might not be displayed on Function Menu when MP2100B power is turned On. (CM2234:2127)
■ Selector	
Main Application	Fixed a bug where the Main Application button on the Selector was greyed out when the power was turned On. (CM2234:2127)

V4.01.09 (2017-05)

Bug Fixes

Item	Description
■ BERT	
Option 011 (1CH BERT)	(V4.01.07 or later) Fixed a bug that caused application crash when changing bit rate. (CM2234:2011)

V4.01.08 (2017-04)

Bug Fixes

Item	Description
■ Sampling Oscilloscope	
Attenuation	Fixed a bug where editing the attenuation value affected the ExR measurement value. (CM2234:1921)

V4.01.07 (2017-03)

Bug Fixes

Item	Description
■ Sampling Oscilloscope	
Main Application	Fixed a bug where the main application had a socket error and could not start normally when the power was turned On. (CM2234:2074)
Mask Test	Corrected a spelling mistake in the mask name. (OUT → OTU) (CM2234:2009)
■ BERT	
Main Application	Fixed a bug where unedited channels were measured again unnecessarily after a bit rate of one channel was edited. (CM2234:2011)

V4.01.06 (2016-09)

Bug Fixes

Item	Description
Main Application	Fixed a bug that prevented the application from starting.(When this error occurs, the dialog box: "Invalid version" appears.)(CM2234:1694)
Main Application	Added event logs for system error (CM2234:1747)

V4.01.05 (2016-07)

Bug Fixes

Item	Description
■ Sampling Oscilloscope	
Channel A	Fixed a bug that caused Channel A sampling rate to become slower than previous version. (V4.01.03 and later) (CM2234:1709)
Channel Math	Fixed a bug that prevented Channel Math measurement. (V4.01.03 and later) (CM2234:1709)

V4.01.04 (2016-06)

Bug Fixes

Item	Description
■ Sampling Oscilloscope	
Main Application	Fixed a bug that prevented the application from starting.(When this error occurs, the dialog box: "Invalid version" appears.)(CM2234:1682)

V4.01.03 beta (2016-05)

Bug Fixes

Item	Description
■ Sampling Oscilloscope	
Mask Test	Improved the stability of the mask margin measurement. (CM2234:1628)
Auto Scale	Fixed a bug that caused auto scale function error when fast sampling mode is enabled. (CM2234:1666)
Remote	Fixed a bug that caused "Undefined header" error when using :INPut:FILTer[:ENABLE]? query. (V4.01.01 and later) (CM2234:1670)
Remote	Fixed a bug that caused discrepancy between :TIME:DIVRatio command result and GUI when tracking is enabled (CM2234:1672)

V4.01.02 beta (2016-03)

Bug Fixes

Item	Description
■ Sampling Oscilloscope	
Channel Math	Fixed a bug that caused auto scale function error when channel math is enabled. (CM2234:1642)
Coherent Eye	Fixed a bug that caused application crash when using calibration with coherent eye mode. (CM2234:1639)

V4.01.01 (2015-12)

Bug Fixes

Item	Description
■ Common	
Main Application	Fixed a bug that the application may not start.(When this error occurs, the dialog box: "Invalid version" or "Invalid file" appears.) (CM2234:1596)
■ MX210002A Transmission Analysis Software	
Transmission Analysis	Fixed a bug that calibration for the Transmission Analysis measurement cannot be performed in the MX210002A installed in the MP2100B. (CM2234:1597)
■ O/E	
Calibration	Fixed a bug that the offset level fluctuates when changing the Filter setting after O/E calibration is executed. (CM2234:1598)
■ Sampling Oscilloscope	
Mask Test	Improved the stability of the mask margin measurement. (CM2234:1508)
Remote	Modified to restart, although an error occurs when sending SAMPLing:STATus RUN during Sampling RUN in Scope. (CM2234:1212)
Remote	Fixed a bug that specifying :MODule:ID 5 was required as it was not able to specify by the keyword of :SCOPE in the command of :EYEPulse:PRINT:COPY. (CM2234:1604)

New and Updated Features

Item	Description
■ O/E	
Conversion Gain/Responsivity	Enabled the edit of Conversion Gain/Responsivity even if the O/E Wavelength is set to other than User. (CM2234:1612)
GUI	Changed the layout of the O/E setting screen. (CM2234:1612)
■ Sampling Oscilloscope	
Mask Test	Enabled the threshold setting for the Mask Margin measurement in Hit Ratio. (CM2234:1183)
Remote	Added the following SCPI commands: (CM2234:1183) [:SENSe]:SAMPles:JUDGe:TYPE [:SENSe]:SAMPles:JUDGe:RATE
Remote	Added C# example program (CM2234:1623) C:\Program Files\Anritsu\MP2100A\MX210000A\Examples

V4.00.51 (2015-09), V4.00.52 (2015-11)

New and Updated Features

Item	Description
MP2100B	Added support for MP2100B.

4. MP2100A/MP2101A/MP2102A Changed Items

V3.03.03 (2018-07)

Bug Fixes

Item	Description
■ Sampling Oscilloscope	
Auto Scale	Fixed a bug that caused occasionally application crash when executing Auto Scale. (CM2234:2550)
	Fixed a bug that Amplitude Scale and Offset became occasionally abnormal values when executing Auto Scale just after switching the trigger frequency. (CM2234:2545)

V3.03.02 (2017-04)

Bug Fixes

Item	Description
■ Selector	
Main Application	Fixed a bug where the Main Application button on the Selector was greyed out when the power was turned On. (CM2234:1593)

V3.03.01 (2017-03)

Bug Fixes

Item	Description
■ Sampling Oscilloscope	
Attenuation	Fixed a bug where editing the attenuation value affected the ExR measurement value. (CM2234:1921)

V3.03.00 (2015-12)

Bug Fixes

Item	Description
■ Sampling Oscilloscope	
Remote	Modified to restart, although an error occurs when sending SAMPLing:STATus RUN during Sampling RUN in Scope. (CM2234:1212)
Remote	Fixed a bug that specifying :MODule:ID 5 was required as it was not able to specify by the keyword of :SCOpe in the command of :EYEPulse:PRINT:COPY. (CM2234:1604)

New and Updated Features

Item	Description
■ Sampling Oscilloscope	
Mask Test	Enabled the threshold setting for the Mask Margin measurement in Hit Ratio. (CM2234:1183)
Remote	Added the following SCPI commands: (CM2234:1183) [:SENSe]:SAMPles:JUDGe:TYPE [:SENSe]:SAMPles:JUDGe:RATE

V3.02.01 beta (2015-11)

Bug Fixes

Item	Description
■ Common	
Main Application	Fixed a bug that the application may not start.(When this error occurs, the dialog box: "Invalid version" or "Invalid file" appears.) (CM2234:1596)
■ O/E	
Calibration	Fixed a bug that the offset level fluctuates when changing the Filter setting after O/E calibration is executed. (CM2234:1598)
■ Sampling Oscilloscope	
Mask Test	Improved the stability of the Mask Margin measurement. (CM2234:1508)

New and Updated Features

Item	Description
■ O/E	
Conversion Gain/Responsivity	Enabled the edit of Conversion Gain/Responsivity even if the O/E Wavelength is set to other than User. (CM2234:1612)
GUI	Changed the layout of the O/E setting screen. (CM2234:1612)

V3.02.00 (2015-08)

Bug Fixes

Item	Description
■ Common	
Remote	Fixed a bug that remote mode could not be released while pressing Local button on GPIB (CM2234:1266, CM2234:1123)
Remote	Fixed a bug caused abnormal operation after sending command with no termination character (EOI only) on GPIB. (CM2234:1214, CM2234:1175, CM2234:1105)
Remote	Processing details of *RST command now have the same action as :SYSTem:MEMory:INITialize, and improved the processing time about 50%. (CM2234:1269, CM2234:1386)
Remote	Fixed a bug that set Event Status Register (*ESR) only when setting *ESE. (CM2234:1405)
Data Input	Fixed a bug that had been pressing ▼ button at Arrow Key Entry Panel. (CM2234:1513)
■ PPG/ED	
Remote	Improved a response time of :SENSe:MEASure:EALarm:STATe? command 500 msec max. (CM2234:1169)
Remote	Fixed a bug that caused "Parameter Error" when fetching results of :AEXecute? command by waiting status from :ASTate? or :CONDition?. (CM2234:1211)
Remote	Fixed a bug caused incorrect setting by changing possible parameter value condition of :AEXecute command. (CM2234:1252, CM2234:1399, CM2234:1488)
Programmable Test Pattern	Fixed a bug that did not set a PPG Test Pattern correctly when it is loaded from a text file. (CM2234:1504)
■ Sampling Oscilloscope	
Remote	Added :CALibrate:AMPLitude? has the same action as :CALibrate:AMPLitude. (CM2234:1136)

Remote	Fixed a bug caused freeze when sending setting command that effects mask operation just after sampling hold. (Occurrence from V3.01.13) (CM2234:1210)
Mask Measurement	Fixed a bug causing rare application crash when using Mask Area Restriction. (CM2234:1064)
■ MX210001A Jitter Analysis, MX210002A Transmission Analysis	
Start/Stop	Improved the operational stability of MX210001A/MX210002A. (CM2234:1421, CM2234:1202)
Calibration/Measurement	Fixed a calibration/measurement problem of MX210002A (Occurrence from V3.01.13) (CM2234:1509)
■ Setup Utility	
Remote	Fixed a bug that displays GPIB setting regardless of GPIB Option. (Occurrence from V3.01.13) (CM2234:1206)

New and Updated Features

Item	Description
Remote	Added keywords that indicate module class for SCPI command header: :BERT[<ch>], :SCOPE, :OE, :PMODule, :JITTer and :VNA. These keywords eliminate the need for MODule:ID. (CM2234:1368)

V3.01.13 (2014-09)

Bug Fixes

Item	Description
■ PPG/ED	
Remote	Fixed a bug that prevented the ED from detecting a CR Unlock alarm from :AEXecute? (10ms Gating) query results. (CM2234:1187)
■ Common	
Remote	Fixed a bug that caused the main application to hang if the socket of the measuring instrument was frequently opened and closed by Ethernet remote control from the control PC. (CM2234:1165)
■ Sampling Oscilloscope	
Mask Measurement	Fixed a bug that caused an error when loading a specific user mask. (CM2234:1186, CM2234:1059)
Mask Measurement	Fixed a bug that caused on-screen digits of the number of Total Samples to drop. (CM2234:1154)
Tr/Tf Measurement	Made modifications to the Tr/Tf measurement algorithm so that the Tr/Tf measurement can be performed if ringing occurs. (CM2234:1157)
Remote	(Known remaining bug) Fixed a bug that prevented the Amplitude axis of the Histogram Marker from being set by :HISTogram:Y1 Y2 command. (CM2234:1104)
Histogram Area	Fixed a bug that prevented the specified area from being set. (CM2234:1101)
Mask Margin	Fixed a bug that, in rare cases, displayed values in the Measure dialog box conflicting with results of measurement. (CM2234:1098)

New and Updated Features

Item	Description
■ Setup Utility	
GPIB/Ethernet	Added a function that prevents IP and GPIB addresses from being edited. (CM2234:1167)

■ O/E	
Filter On/Off	Added the Filter OFF function that is available only when installing the Option 086. (CM2234:1164)
Conversion Gain/Responsivity	Added "User" as a new option for Wavelength . By using "User", System Conversion Gain, Conversion Gain and Responsivity can be set to values that are optimum for an optical signal of an arbitrary wavelength. Added a function that automatically determines values for System Conversion Gain, Conversion Gain and Conversion Responsivity . (CM2234:1143, CM2234:1159)
■ Sampling Oscilloscope	
Number of Samples	Added 1350 as a new option for Number of Samples . (CM2234:1155)
Divide Ratio Detect	Added a function that can automatically detect the Divide Ratio value. This is by default set to ON that slows down the execution of Auto Scale . Switch the setting to OFF as required. Note that when setting the Tracking function to ON or adding an argument to the Auto Scale command, the Divide Ratio Detect function does not work as ever. (CM2234:1140)
Limited	Added a function that updates the Mask position when Sampling is set to Hold during Limited measurement. (CM2234:1095)
Clock Synchronization	Improved the function so as to reduce the time required when synchronizing the displayed waveform to the trigger clock in response to changes in the input Trigger clock frequency. (CM2234:1188)
Calibration	Improved the Calibration algorithm so that the measurement can also be performed even if the extinction ratio is high.
■ MX210002A Transmission Analysis Software	
Device Characteristics	Expanded the function so that S4P files can be read. (CM2234:1141)

V3.01.12 (2014-02)

Bug Fixes

Item	Description
■ MX210002A Transmission Analysis Software	
Waveform Estimate	Fixed a bug that caused a measurement result error when performing the Amp/Time measurement after waveform simulation on the CHB (Optical) side of the MP2100A or MP2102A (Opt003/007,023). (CM2234:1158)
Waveform Estimate	Fixed a bug that prevented the MP2102A (OPT021) from performing the waveform simulation in the CH Math state. (CM2234:1153)
■ Sampling Oscilloscope	
Calibration	(Known remaining bug) Fixed a bug that caused a few application hang-ups when a faint signal is input during calibration. New response data is added to the Calibration command after fixing the bug. Refer to the <i>Remote Control Operation Manual</i> for details. (CM2234:1109)

New and Updated Features

Item	Description
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■ Sampling Oscilloscope	
Label	Added the function that allows entry of comments in the waveform plotting area. (CM2234:1120)
Screen Copy	Added the function that captures only the screenshot of the waveform plotting area. (CM2234:1121)
Eye Mask	Added the Mask to the User Data. For details, refer to the operation manual. (CM2234:0583)

V3.01.11 (2013-11)

Bug Fixes

Item	Description
■ O/E	
Filter	Fixed a bug that selected a hardware filter not conforming to the latest standard specifications (FC-PI-5 and MSQS) for 8GFC when Filter was set to 8GFC. As a result, when Filter is set to 8GFC, the hardware filter to be used is changed from "8.5Gbit/s Filter installed to Option 056/057/083" to "10Gbit/s Filter installed to Option 084/086". The hardware filter (8.5Gbit/s Filter) installed to Option 056/057/083 can be selected by selecting fc = 6.3GHz in the Filter Select screen. According to the change, remote command descriptions are added and corrected. For details, refer to the operation manual. (CM2234:1132)
■ Sampling Oscilloscope	
Amplitude/Time Measurement	Fixed a bug that caused a few application hang-ups during Amplitude/Time measurement. (CM2234:1122)
Number of samples	Fixed a bug that extremely slowed down the sampling data acquisition. (CM2234:1108)
Trigger Clk In	Fixed a bug that unlocked the Trigger signal when the signal having "a frequency of 12.5 GHz or more" and "the other division ratio than 1/1" was input to the Trigger Clk In terminal. (CM2234:1086)
■ MX210001A Jitter Analysis Software	
Histogram	Fixed a bug that did not count the number of samples when performing the Histogram measurement on the CH B. (CM2234:1096)

New and Updated Features

Item	Description
■ PPG/ED	
Result	Improved the recognizability of the BER measurement by adding the bar graph display to the BER measurement. (CM2234:1126)
■ Sampling Oscilloscope	
Extinction Ratio	Improved the internal calculation accuracy of the extinction ratio. (CM2234:1115)

Reduction of Noise	Reduced the noise by adjusting the band of the sampler inside BERTWave. (Only the optical input side) Noise reduction can be achieved by adjusting the band only when one of the following filters is selected: Option070: OC-3/STM-1 Option071: OC-12/STM-4, CPRI Option072: 1GFC Option073: 1GbE, OC-24, CPRI×2 Option076: 2GFC Option077: CPRI×4, OC-48/STM-16, 2GbE, InfiniBand Optical Option078: OTU-1 Option079: CPRI×5, 10GBASE-LX4, 10GFC-LX4 Option080: 4GFC (CM2234:1127)
Calibration	Improved the calibration accuracy. As a result, it takes about twice (60 s) as long to perform calibration in comparison with the older version. (In the Eye mode)
■ O/E	
O/E Calibration	Improved the 0 Level calibration accuracy for O/E Calibration.
■ MX210001A Jitter Analysis Software	
Pattern Search	Modified to use the number of samples used for internal calculation. There was a difference between the number of samples used for internal calculation and the actual number of samples. (CM2234:1097)

V3.01.10 (2013-03)

Bug Fixes

Item	Description
■ PPG/ED	
Remote	Fixed a bug that the main application freezes while executing remote sequence of repeating a query to the status register and a test pattern change for a long time. (CM2234:1088, CM2234:1089)
■ Sampling Oscilloscope	
Remote	Added the Scale/Offset command for only CH Math. (CM2234:1085)

New and Updated Features

Item	Description
■ O/E	
Remote	Added the Judge Function to O/E Calibration execution command. (CM2234:1093)
■ Common	
Remote	Added the function of creating a specified folder to Screen Copy command. (CM2234:1074)

V3.01.07 (2012-12)

New and Updated Features

Item	Description
■ Sampling Oscilloscope	
Average Power	Modified the wavelength sensitivity characteristics for optical signals at the wavelength of 850nm. (CM2234:1091)

Amp/Time Measurement	Changed the algorithm so that the overshoot waveform can be measured in the Rise/Fall Time measurement. (CM2234:1090)
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V3.01.06 (2012-11)

Bug Fixes

Item	Description
■ Common	
Installer	Fixed a problem on our production process. (CM2234:1082)

V3.01.05 (2012-10)

Bug Fixes

Item	Description
■ MX210001A Jitter Analysis Software	
Histogram	Fixed a bug that does not perform a Jitter Histogram analysis when Differential measurement is performed. (Occurrence from V3.01.04) (CM2234:1078)
■ Sampling Oscilloscope	
Clear Display	Fixed a bug that cannot clear the cumulative count of the persistency time in the Persistency Mode when Clear Display is pressed. (CM2234:1076)

New and Updated Features

Item	Description
■ Common	
Remote	Changed the response *OPT? and :SYSTem:INFormation as described below when purchasing optional product and adding it. Example: *OPT? >OPT001,OPT050,OPT130,OPT191 (V3.01.04 or earlier) >OPT001,OPT050,OPT030,OPT091 (V3.01.05 or later)
■ Sampling Oscilloscope	
Mask Margin	Reviewed the mask position for executing the Mask Alignment Update.
Remote	Newly added the Mask Alignment Update command.
■ New options	
MP2100A-007/107	Supported the MP2100A-007/107 1ch Electrical BERT and Optical/Single-ended Electrical Scope. To use the option, the MX210000A software of this version or later is required.
MP2100A-086/186 MP2102A-086/186	Supported the MP2100A/02A-086/186 LPF for Multi-10G. To use the option, the MX210000A software of this version or later is required.
MP2100A/02A-176 MP2100A/02A-177 MP2100A/02A-178 MP2100A/02A-179 MP2100A/02A-180 MP2100A/02A-181 MP2100A/02A-182 MP2100A/02A-183 MP2100A/02A-184 MP2100A/02A-185	Supported the optional products (at left) that can be added.

V3.01.04 (2012-07)

Bug Fixes

Item	Description
■ Addition (Addition to the V3.01.05 release notes)	
■ Sampling Oscilloscope	
Average Power	Modified the wavelength sensitivity characteristics for optical signals at the wavelength of 850nm. (CM2234:1067)
■ Common	

Remote	Fixed a bug that hangs the application when the Remote receives a long string. (CM2234:1052)
■ PPG/ED	
Reference CLK	Fixed a bug that does not allow the 2ch PPG to output after performing a specific operation and using the Synchronized function when the MP2100A-052/152 and MP2101A-052/152 are installed. (CM2234:1070)
■ Sampling Oscilloscope	
Mask Alignment	Fixed a bug that cannot automatically align the mask when an update is executed after performing a specific operation. (CM2234:1066)
Clear Display	Fixed a bug that hangs the application when the Clear Display is executed if there is a conflict between the Data Clock Rate setting and the Trigger signal. (CM2234:1051)
Mask Measurement	(Known remaining bug) Modified the application so that Active Channel is fixed to CHA when Channel Math is ON. (CM2234:1056)
MX210001A Jitter Analysis Software	
Histogram	Fixed a bug that does not display analysis results when executing the CHB Histogram measurement with the "Active Channel" set to A. (CM2234:1050)
PDJ Measurement	Fixed a bug that causes incorrect PDJ analysis results when differential signals are analyzed. (CM2234:0992)
Pattern Search	Fixed a bug that causes the measurement to result in an error when the Pattern Search measurement is operated for a long time. (CM2234:0982)
■ MX210002A Transmission Analysis Software	
Waveform Estimation	Fixed a bug that causes a measurement error when the "Bit on Screen" setting of the Scope is increased. (CM2234:1033)
Analog Equalizer	Fixed a bug that causes an application error when loading a specific file. (CM2234:1032)
Waveform Estimation	Fixed a bug that allows the Time Offset function of the Scope to be used. (CM2234:0987)
Device Characteristics	Fixed a bug that causes the measurement of transmission characteristics to result in an error when loading a Transmission Analysis measurement file to execute the measurement. (CM2234:0993)

New and Updated Features

Item	Description
■ Common	

Startup Speed	Reviewed the main application processing and improved the execution speed of the software. (CM2234:1035)
■ Extension of Application	
■ MX210002A Transmission Analysis Software	Improved so that the MP2102A can use only the Waveform Estimation function. MX210000A software of the current version or later is required. (CM2234: 0947, CM2234:1057)
■ PPG/ED	
Result Display Method	Added a new mode "ED Result All" that displays all measurement results of ED. (CM2234:0999)

V3.01.03 (2012-04)

Bug Fixes

Item	Description
■ Setup Utility	
Filter Bank Option	Fixed bug in internal management information of Filter Bank Option (CM2234:1045)
Update	Fixed bug causing rare failure at Eye Pulse Scope Update (CM2234:1049, CM2234:1026)
■ Common	
Windows	(Known bug) Fixed bug disabling use of ping and ipconfig commands at Command Prompt. Restart Windows after installing. (CM2234:1003)
Remote	Fixed so response to *IDN? meets IEEE488.2 requirements. Additionally, prepared SYSTem:INformation? with pre-*IDN? bugfix compatibility. (CM2234:0998)

V3.01.01 (2012-03)

Bug Fixes

Item	Description
■ Sampling Oscilloscope	
File Open	Fixed bugs causing abnormal status of Sampling Oscilloscope when reading Setting File during Sampling RUN. (CM2234:0973)
Averaging Function	Fixed bugs preventing from using Accumulation Type "Averaging" function when selecting Pulse Mode. (Occurrence from V3.00.01) (CM2234:0972)
Popup Window Display	Fixed bugs preventing from displaying screen when minimizing the screen from System Menu and recovering the screen with Popup Window such as Setup for GUI of EYE/Pulse Scope displayed. (CM2234:0970)
Operate	Fixed bugs causing abnormal pop-up display when changing Measure Item while running Sampling. (CM2234:0969)
Calibration	Fixed bugs preventing from displaying "Calibration Failed" when setting measurement mode to "Pulse" without other operation after initializing measurement and executing Amplitude Calibration. (CM2234:0968)
Ext ATT Tracking	Fixed bugs preventing from tracking value when selecting External ATT Tracking. (CM2234:0934)
Remote	Fixed bugs preventing from returning response during remote control.
Data Rate Tracking	Fixed bugs preventing from tracking data rate when using CRU. (CM2234:0976)
■ Common	

Item	Description
Key Driver Error	Fixed bugs preventing from displayed "Key Driver Error" pop-up on power-on.
File Open	Fixed bugs preventing from reading out old version file. (CM2234:0963)
■ Setup Utility	
Update	Fixed bugs preventing from updating. (CM2234:0939)
■ MX210001A Jitter Analysis Software	
WDP	Fixed bugs preventing from setting Environment variables after installing MATLAB R2010bSP1 when performing WDP measurement. (CM2234:0971)
Pattern Search	Fixed bugs causing abnormal DDJ measurement result under specific measurement condition (CM2234:0959, CM2234:0958, CM2234:0919) In addition, fixed bugs preventing from performing measurement when adding Skew and measuring Differential.(CM2234:0957)
■ MX210002A Transmission Analysis Software	
Waveform Estimation	Fixed bugs causing phase error when executing Clear Display while measuring conjunction with EYE. (CM2234:0960) In addition, fixed bugs preventing from performing conjunction measurement when adding Skew and measuring Differential. (CM2234:0924)

V3.01.01 (2012-03)

New and Updated Features

Item	Description
■ Sampling Oscilloscope	
Remote	Added Both/Horizontal/Vertical function in the Auto Scale command. This can be used only when selecting EYE mode.
CAL Indicator	Added warning CAL types for level calibration. (CM2234:0932)
Remote/GUI Operation	Improved remote control speed and response time of a part of operation. (CM2234:0975)
Screen Copy	Inverted captured items other than waveform when using Inverse. (CM2234:0940)
Amplitude/Time & Mask	Changed measurement algorithm to measure Amp/Time and Mask for the displayed EYE waveform. (CM2234:0974)
Waveform Display	Improved interference fringe display occurred by the influence of quantization error when measuring over an extended period. (CM2234:0921)
■ PPG/ED	
Start/Stop button	Changed Start/Stop button display. (CM2234:0946)
■ Common	
Remote	Added application switching command. (CM2234:0943)

V3.00.05 (2012-02)

Bug Fixes

Item	Description
■ Sampling Oscilloscope	
Remote	Fixed bug causing N/A returned when querying measurement results at the specific timing.
■ MX210001A Jitter Analysis Software	
Pattern Search	Fixed bug preventing from displaying the proper result when using 1/16 and 1/64 Clock.

Item	Description
■ MX210002A Transmission Analysis Software	
Transmission Analysis	Fixed bug preventing from using Transmission Analysis Mode. (Occurrence from V3.00.04)
Reading WFE File	Fixed bug preventing from measuring after reading the specific WFE file. (Occurrence from V3.00.04)

New and Updated Features

Item	Description
■ MX210001A Jitter Analysis Software	
Start/Stop Button	Changed Start/Stop button display
■ MX210002A Transmission Analysis Software	
S2P File Format	Changed to use not only space-delimited but also tab-delimited S2P file format.
Start/Stop Button	Changed Start/Stop button display

V3.00.04 (2012-01)

Bug Fixes

Item	Description
■ Common	
System Menu All Measurements All Outputs	Fixed bug causing rare application crash when using common functions.
■ PPG/ED	
PPG	Fixed bug causing increased 2ch PPG jitter for specific units.
■ Sampling Oscilloscope	
Remote	Fixed bug causing reduced software operation speed due to memory leak when using Sampling Oscilloscope and specific remote sequence for long periods.
Remote	Fixed bug causing software hang when querying measurement results using remote command.
Remote	Fixed rare bug causing failure to return latest value when querying measurement results using remote command.
■ MX210001A Jitter Analysis Software	
Pattern Search	Fixed bug causing abnormal measured value when DUT signal jitter very large.

New and Updated Features

Item	Description
■ Common	
Screen Copy	Added JPEG format to saved image formats.
■ PPG/ED	
1/2Rate Operation	Upgraded Rx sensitivity at 1/2Rate operation.
■ Sampling Oscilloscope	
Operation Speed Upgrade	Re-examined processing and upgraded software execution speed.
External ATT	Changed External ATT resolution from 1-dB steps to 0.01-dB steps.
Screen Copy	Added JPEG format to saved screen copy formats
Calibration	Added Calibration Running dialog to screen display when executing Calibration by remote control.
■ MX210002A Transmission Analysis Software	
Waveform Estimate	Changed operation organization to save measurement results on screen when Waveform Estimate measurement cancelled.

V3.00.02 (2011-10)

Bug Fixes

Item	Description
■ Sampling Oscilloscope	
Internal communications fault	Fixed bug causing application to stall (*) when communication between hardware and software occasionally interrupted while executing EYE/Pulse Scope application *Displays following status when application stalls: -Displays PLL Unlock -Displays Calibration Temperature during Setup as 0°C -Unable to shift to Sampling RUN status and perform Sampling normally
Remote	Fixed bug preventing correct screen saving when executing Screen Copy command [:SENSe]:EYEPulse:PRINT:COPY when EYE/Pulse Scope screen has not been displayed once after starting application

V3.00.01 (2011-10)

Bug Fixes

Item	Description
■ Sampling Oscilloscope	
Average Power	Fixed the bug not considering the External ATT item when measuring the average optical power inputting the equipment using the Measure function.
■ MX210001A Jitter Analysis Software	
Measurement result display	Fixed the bug displaying the DDPWS measurement results for Histogram Mode.

New and Updated Features

Item	Description
■ New options	
MP2100A-052/152 MP2101A-052/152	The MP2100A-052/152 and MP2101A-052/152 Full Rate Clock Output option are now supported. To use these options, install this or later versions of the MX210000A software.
MP2100A-091/191 MP2101A-091/191	The MP2100A-091/191 and MP2101A-091/191 ED High Sensitivity option are now supported. To use these options, install this or later versions of the MX210000A software.
■ PPG/ED	
Improved Rx characteristics at 1/2 Rate	The algorithm at 1/2 Rate operation is changed to improve the Rx characteristics at 1/2 Rate.
■ MX210002A Transmission Analysis Software	
Emphasis Optimize	When performing Emphasis Optimize with the Waveform Estimate function, the algorithm is changed to set the optimal Tap corresponding to the set Emphasis Format.

V3.00.00 (2011-08)

Bug Fixes

Item	Description
■ PPG/ED	
Initial Value of Test Pattern	The initial value of the test pattern at PPG/ED 1ch/2ch is changed from PRBS 2 ¹⁵ -1 to PRBS 2 ⁹ -1.
■ Sampling Oscilloscope	
Mask Test	Fixed the wrong Mask range at Y-axis when selecting Fixed at Mask type.
Sampling Data	Fixed the bug generating error samples when performing the measurement of both Channel A and B with Dual Electrical Receiver option.
Initial Value of Pattern Length	The initial value of the pattern length is changed from 127 to 511.
Remote	Changed The usage method of :TRACe[:DATA]:CHANnelA CHANnelB CHANnels?. :TRACe[:DATA]:PREPare and :TRACe[:DATA]:END are not required when using this command. For changed details, refer to the operation manual.

New and Updated Features

Item	Description
■ New application	
MX210001A	The MX210001A Jitter Analysis Software is now supported. To use this application, install this or later Ver.3.00.00 of the MX210000A software.
MX210002A	The MX210002A Transmission Analysis Software is now supported. To use this application, install this or later ver.3.00.00 of the MX210000A software.

V2.02.03 (2011-06)

Bug Fixes

Item	Description
■ Common	
Shared Functions	Fixed bug causing error message pop-up dialog and preventing correct file loading when reading Setting File created using version earlier than V2.02.02 when using Installer Version 2.02.02.

V2.02.02 (2011-01)

Bug Fixes

Item	Description
■ Common	
Shared Functions	Fixed a bug that caused the following message to appear when starting Selector, Main Application, or Setup Utility. MP2100A "illegal Model Name.[]" MP2102A "Error Code: 0x00081", "Model name and Option Information were not stored. Enter model name and Option information using maintenance software."

V2.02.00 (2010-10)

Bug Fixes

Item	Description
■ Common	
Remote	Fixed Remote command parameter line count limitation
■ Sampling Oscilloscope	
O/E correction value	Fixed internal correction of O/E correction value

New and Updated Features

Item	Description
■ New options	
MP2100A-090 MP2101A-090	The MP2100A-090 and MP2101A-090 PPG/ED Extended Bit Rate options are now supported. To use these options, install this or later versions of the MX210000A software.
MP2100A-061~073, 076~085 MP2102A-061~073, 076~085	The new filter options are supported.
■ Common	
Screen Copy File name	A function for specifying the Screen Copy save destination directory and file name has been added.
■ BERT	
Insertion/Omission Error Function	A function has been added for separate Insertion/Omission Error measurement at the ED.
Zoom Function of Total EC/ER	A function has been added for zoom display of Total EC/ER at the ED.
Sampling Oscilloscope	
Averaging Function	A function has been added for performing averaging processing of waveforms in the Pulse mode. It can display pulse patterns from which noise has been removed.
Inter-channel Skew Function	A function has been added for adjusting Inter-channel Skew. This makes it possible to measure differential signals accurately by matching the phase between differential signal channels.
Coherent Eye Function	A function has been added for displaying the EYE pattern produced by over-drawing the pattern synchronized pulse pattern waveform. Usually this is used in combination with the Inter-channel Skew Function. When the Skew between channels is changed to measure the differential signal and the Amplitude Math is enabled, the correct EYE waveform cannot be displayed due to the measurement principle used in the EYE mode. However, the correct EYE pattern can be displayed using the Coherent EYE mode.

Trace Memory Function	A function has been added for saving the waveform data on the screen. This can be used for comparing saved and measured waveforms, as well as for identifying phase and waveform changes visually by comparison with a reference waveform.
Eye Boundary Function	This function determines the 0 and 1 levels of the EYE waveform and can be set on the time axis.
Measuring Area Marker Function	A function has been added for displaying measurement area, such as Jitter, and 0 and 1 levels.
Mask Position Adjustment Function	A function has been added for adjusting the compliance mask position. It makes threshold adjustment easy for standards that are unlimited on the horizontal axis.
Continuous Mask Margin Measurement Function	A function has been added for adding changes in the input waveform in real time by automatically calculating the compliance mask waveform margin.
Mask Area Restriction Function	A function has been added for changing the mask measurement area according to the measurement mask. This makes it easy to edit the measurement area at points where the EYE opening is inadequate, such as the top right and bottom left of the central area.
Increased Screen Drawing Refresh Speed	The screen drawing refresh speed has been increased when Number of Samples is 2039 or less.
Simultaneous Measurement	Multiple measurements can now be executed simultaneously. Amplitude/Time & Mask: Amplitude/Time measurement and Mask measurement Amplitude/Time & Histogram: Amplitude/Time measurement and Histogram measurement
Waveform Screen Copy Function	A function has been added for copying only the waveform and measurement results. The save destination directory and file name can be specified.
Invert Color Function	A function has been added for inverting the colors when copying the waveform screen.
Tr/Tf Correction Function	A correction function has been added for deducting the specified transition time from the Tr/Tf measurement results.
OMA Measurement Function	A function has been added for calculating OMA from the displayed EYE waveform. Either dBm or mW units can be selected.
Inter-channel Amplitude Tracking Function	A function has been added for changing the synchronization so that the Amplitude Scale and Offset are the same values at both CH A and B.

Limit Type Waveforms Setting	When Accumulation type is "Limited", the number of waveforms can be set as the condition for stopping measurement.
Change Measurement Algorithm	A function has been added to change the algorithm at Amplitude/Time measurement to improve the tracking when the waveform changes.
Other Screen Display Additions and Changes	<ul style="list-style-type: none"> • Added time offset and GND level display • Added corrected Extinction Ratio display • Added Eye? error display • Added Auto Scale algorithm for Pulse mode • Added temperature display at Last Cal and Current Cal • Changed to execute linked O/E calibration when Amplitude Cal executed • Added various measurement results descriptions to Result File

V1.00.02 (2010-04)

Bug Fixes

Item	Description
■ PPG/ED	
BERT	Fixed internal Clk signal purity