

# MX183000A

## High-Speed Serial Data Test Software

### Release Notes

25th Edition

Thank you for choosing Anritsu products for your business.

This document provides the latest information about version 4.03.15 of the software for the Anritsu MX183000A and current known bugs.

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

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## 1. Released Version

Ver. 4.03.15

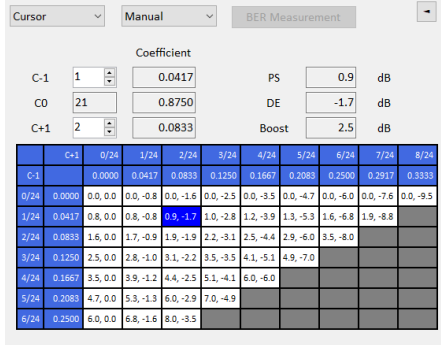
## 2. Peripheral Devices

The peripheral devices for the MX183000A are shown in the table below.

Model	Name
MP1900A	Signal Quality Analyzer-R
MP1800A	Signal Quality Analyzer
MT1810A	4 Slot Chassis
MU181000A	12.5GHz Synthesizer
MU181000B	12.5GHz 4port Synthesizer
MU181500B	Jitter Modulation Source
MU195020A	21G/32G bit/s SI PPG
MU183020A	28G/32G bit/s PPG
MU183021A	28G/32G bit/s 4ch PPG
MU195040A	21G/32G bit/s SI ED
MU183040A	28G/32G bit/s ED
MU183041A	28G/32G bit/s 4ch ED
MU183040B	28G/32G bit/s High Sensitivity ED
MU183041B	28G/32G bit/s 4ch High Sensitivity ED
MU195050A	Noise Generator
MP1825B	4Tap Emphasis
MU196020A	PAM4 PPG
MU196040A	PAM4 ED
MU196040B	PAM4 ED

For the installation position of the mainframe, refer to the Anritsu website (<http://www.anritsu.com>).

### 3. Added Functions

Version	Item	Function
Ver. 4.03.15	Added MX183000A-PL025 PCIe 5 Link Training function.	The PCIe 5 Link Training function enables link training with devices compliant with the PCI Express 5.0 standard and analysis of LTSSM transition log.  MX183000A-PL021 is required to use this function.
Ver. 4.00.08	Added the Matrix Scan function to the PCIe Link Training option.	The Matrix Scan function is added to the PCIe Link Training option.  Matrix Scan automatically performs the BER measurement of the cursor value in Loopback.Active state after it completes link training.
	Added a module that can be controlled by the MX183000A.	The following module can now be controlled in the Jitter Tolerance Test application:  MU196040B
Ver. 3.08.05	MX183000A-PL021 PCIe Link Training Added "Cursor" as an equalization mode of the SI PPG.	Added "Cursor" as an equalization mode for the signal output from the SI PPG. If, during link training, the DUT prompts for Equalization settings in Cursor mode, the signal output from the SI PPG is equalized by the coefficient specified by the cursor.  
		Due to this addition, the FS (Full Swing) and LF (Low Frequency) values that can be set for the SI PPG are fixed to 24 and 8, and the following remote commands become invalid.  :LTRaining:SEquence:FSWing :LTRaining:SEquence:LFRequency

Version	Item	Function
Ver. 3.08.05	MX183000A-PL021 PCIe Link Training Added the setting for PPG Electrical Idle Time.	The Electrical Idle time before the SI PPG changes the bit rate can be set to <1ms (less than 1 ms) or to ≥1ms (1 ms or more). Normally, it is recommended to use with set to <1ms as specified in the PCIe Base Specification. ≥1ms can be used for checking the DUT's receiver tolerance.
	MX183000A-PL021 PCIe Link Training Extended the upper limit for the waiting time after resetting the DUT via the CBB Controller.	The upper limit for the waiting time after resetting the DUT via the CBB Controller (Option screen - State Machine tab - Waiting Time) was extended to 300 s.
Ver. 3.07.12	Added MX183000A-PL031 DUT Error Counts Import Function.	The DUT Error Counts Import Function enables MX183000A to acquire measurement results from the DUT's internal counter. Also, this function enables jitter tolerance measurement using the DUT counter results when used in combination with the MX183000A-PL001 Jitter Tolerance Test.
	Added support for optimization of SJ setting sequence at JTOL measurement.	Optimized the set sequence to make it harder to unlock the CDR of the DUT during JTOL (Jitter Tolerance Test). Also, added a function that sets the number of steps to take in resetting the SJ value to zero.
	Added JTOL-related remote commands.	Added commands to query JTOL measurement results.
	Added a function to insert a waiting time during specific state transitions in USB Link Training.	Added a function that inserts a waiting time between Rx Detect and Polling State in USB Link Training.
	Added a function to automatically reset the power supply of CBB 4.0 in PCIe Link Training.	Added a function that automatically resets the power supply of CBB 4.0 in PCIe Link Training, and a jig for the function (ordering number: Z2025A). In order to use this function, you need to install the NI DAQmx software included with Z2025A.

Version	Item	Function
Ver. 3.06.16	Added module for MX183000A control	The following equipment can be controlled by the Jitter Tolerance Test applications: MU196020A, MU196040A
Ver. 3.04.09	Added support to PAM4 Control for controlling four G0375A units	The maximum number of G0375A 32Gbaud Power PAM4 Converter units that can be controlled by PAM4 Control has been expanded to four. As a result, the GUI can be used to control 1 to 4 PAM4 signal channels.
Ver. 3.02.04	Added support for using numeric input using mouse operation	Switches to numeric input mode when right-clicking or clicking wheel on parameter to be changed. In this mode, any numeric value can be set using mouse.
	PAM4 Control Increased PAM4 Auto Search speed	Shortened PAM4 Auto Search time. The regular measurement time is shortened by up to 140 s.
Ver. 3.01.01	Added functions to MX183000A-PL021 PCIe Link Training	Added the ability to specify the cursor as the method for changing DUT Tx EQ at the PCIe LEQ Response test.
		Changing the time required for the MP1900A to change the bit rate during PCIe Link Training supports measurement of the DUT timeout tolerance. Although it is possible to measure a special DUT that does not meet the timeout specifications by setting the bit rate change to Fast, there are restrictions on the above function. Under normal conditions, set to Middle.
		The Full Swing, Low Frequency, Lane Number, and Link Number values received by the MP1900A from the DUT during PCIe Link Training can be displayed in the Result field. In addition, the Full Swing and Low Frequency values can be displayed in the LTSSM transition log. This function can be used to confirm Link Training results.

Version	Item	Function
Ver. 3.00.00	Added MX183000A-PL022 USB Link Training Function	This function supports Link Training and analysis of LTSSM transition logs for USB3.1 devices using the USB Link Training function. Use of this function requires the following models. MP1900A, MU195020A, MU195040A
	Added PCIe Link Training LEQ Measurement Function	This function supports the Link Equalization Test (Preset only) in the PCI Express® Architecture PHY Test Specification. Depending on the test item, this function requires a real-time oscilloscope.
	Added support for PCIe Link Training Common Ref. Clock Architecture (System Board)	Adding this function for synchronizing with the 100 MHz Ref. Clock output from the DUT supports the Common Refclk architecture (System Board) test. MU181000B Opt-02 is required to use this function.
	Added PCIe Link Training LTSSM Trigger Function	This function outputs a trigger signal from the MU195020A when transitioning to the LTSSM State specified by the measuring instrument. Using this function supports confirmation of Data waveforms at any LTSSM state by using an oscilloscope.
	Added support for control using PAM4 Control application remote command	The function performs PAM4 Control using remote commands. For details of the remote command specifications, refer to Chapter 5 of the operation manual for the High-Speed Serial Data Test Software MX183000A.

Version	Item	Function
Ver. 2.01.00	Added PAM4 Control function	<p>This function controls the PAM4 output level when using the combined PPG and G0375A system. It also controls the G0376A CTLE Gain and input threshold voltage.</p> <p>In addition, it also has a function for automatically searching for the optimum value for CTLE Gain, input threshold voltage, PPG Delay, and ED Delay.</p> <p>PAM4 Control is a free application.</p>
	Added foreground display function	<p>This function adds foreground display of the MX183000A to support operation of the MX183000A while checking the MX180000A and MX190000A screens.</p> <p>The foreground display function can be switched ON/OFF from the Menu bar.</p>
Ver. 2.00.00	Added MX183000A-PL021 PCIe Link Training function	<p>Using the PCIe Link Training function supports Link Training for PCIe-compliant devices and display of LTSSM transition logs. The following equipment are required to use this function:</p> <p>MP1900A, MU195020A, MU195040A</p>
	Added module for MX183000A control	<p>The following equipment can be controlled by the PCIe Link Sequence and Jitter Tolerance Test applications:</p> <p>MP1900A, MU195020A, MU195040A</p>
	Added 2ch Combination test mode to MX183000A-PL001 Jitter Tolerance Test	<p>2ch Combination tests are supported at the MX183000A-PL001 Jitter Tolerance Test.</p>

Version	Item	Function
Ver. 1.02.00	Added support for USB BER measurement using USB3.1 Receiver Test Adapter	The USB3.1 Receiver Test Adapter has been added to USB Link Sequence control devices. From this version, the USB Link Sequence operates with the connected USB3.1 Receiver Test Adapter as the basic configuration. For details of the USB3.1 Receiver Test Adapter G0373A, contact our business section.
	Added function for inserting errors into USB Compliance Pattern	A function has been added for inserting 1-bit errors into the Compliance Pattern used by the USB Link Sequence at BER measurement. The target Compliance Patterns are: Gen1 (5.0 GT/s), CP0 Gen2 (10.0 GT/s), CP9
	Added function for sending Compliance Pattern when connected DUT not detected	A function has been added for sending the Compliance Pattern to the USB Link Sequence. This function can send Compliance Pattern even when the connected DUT is not detected.
	Added support for Jitter Tolerance measurements of PAM4 signals	Support has been added for PAM4 signal measurements at the Jitter Tolerance test. This can perform total 3Eye (Upper/Middle/Lower) Jitter Tolerance tests for PAM4 signals.
Ver. 1.01.00	Added support for USB Test Adapter	Support for the USB Test Adapter has been added to the USB Test USB Link Sequence control function. Either the USB Test Adapter or the USB Measurement Kit can be selected as the connection setup. The USB Test Adapter is manufactured by ARTEK INC. and the model number is BSG4G.
	Added command to query Link status	The following command has been to query the Link status. :CALCulate:RESult:EMONitor?



#### 4. Bug Fixes

Version	Item (Management Number)	Fault
Ver.4.02.10	MX183000A-PL021 MP1900A occasionally did not return an appropriate cursor coefficient that corresponded to Preset when performing PCIe Link Training. (CM4634:0174)	Fixed a bug where MP1900A occasionally did not return an appropriate cursor coefficient that corresponded to Preset notified by DUT in Recovery.Equalization.Phase 2 or Phase 3 state when performing PCIe Link Training. This bug fix applies only to V4.02.10 or later of MX190000A.
Ver.3.08.05	An error message was displayed when, in the Equipment Setup screen for PAM4 Control, selecting two G0375As and clicking Connect. (CM4547:0790)	PAM4 Control failed to connect the equipment when selecting two G0375As. This bug fix applies only to V3.08.05 or later of MX190000A.
	MX183000A-PL021 When performing Link Start in PCIe Link Training, a DUT occasionally could not be in Loopback Active state. (CM4634:0052)	A specific DUT occasionally failed to enter in Loopback Active state when performing PCIe Link Training.
	MX183000A-PL021 In GRL or LeCroy application, PCIe Tx LEQ Response Time Test of a DUT occasionally resulted in Fail. (CM4634:0031, 0050)	In GRL or LeCroy application, PCIe Tx LEQ Response Time Test of a DUT occasionally resulted in Fail.
	MX183000A-PL021 Bug fix for remote commands (CM4634:0009, 0012)	Incorrect results were occasionally returned when sending the following commands: :LTRaining:SEquence:RESult? :LTRaining:SEquence:RESult:CSKP?
Ver.3.07.12	JTOL measurement result did not become Sync Loss. (CM4547:0134)	When JTOL measurement result was Sync Loss, Error Count was occasionally displayed as <b>1000000</b> . In this version or later, it is displayed as <b>Sync Loss</b> .
	In PCIe Link Training, the Electrical Idle time occasionally exceeded 1 ms. (CM4547:0395)	In PCIe Link Training, the Electrical Idle time occasionally exceeded 1 ms.

Version	Item (Management Number)	Fault
	The Output Clock setting was changed unintentionally when connected from the Jitter Tolerance Test or PAM 4 Control application.(CM4547:0142)	The PPG's Output Clock setting was occasionally changed to a value not intended by the user when connected from the Jitter Tolerance Test or PAM 4 Control application. In this version or later, the Jitter Tolerance Test and PAM4 Control option do not control the PPG's Output Clock Rate setting from MX183000A.
Ver.3.05.00	MX183000A Screen does not display normally	When installing the MX183000A to the MP1800A, part of the screen is cut off and it does not display normally. This bug occurs in MX183000A Version 3.04.09.
Ver.3.04.09	Bugs in USB Link Training PAM4 Control remote commands (CM2424:20)	Fixed bug in following remote commands: USB Link Training Command :CALCulate:DATA:EALarm? Added following "CLOS" and "PSL" arguments PAM4 Control Command OUTPut:DATA:EAMplitude? Fixed bug causing return of incorrect query when PERCent specified at second argument
	Delayed response at remote control (CM2424:07)	The remote operation response is delayed when repeatedly starting and stopping each application from Selector. When this occurs, the Query response is not returned within the normal Timeout time.
	Attempts to display unsupported patterns with MX183000A in non-linear mode (CM24:2365)	Unsupported patterns are wrongly displayed when MX183000A PAM4 Control is in the non-linear PAM4 mode. A non-linear PAM4 signal is not output when a selecting pattern the following Not supported patterns. JP03A, JP03B, SSPRQ, SSPRQ[D3_4], Transmitter_Linearity, PRBS13Q, PRBS31Q
Ver.3.03.01	Occasional application crash at remote (CM4024:2351)	At remote, sometimes the application crashes when switching alternately between Connect/Disconnect.

Version	Item (Management Number)	Fault
Ver.3.01.01	Sometimes, not Error Free at PCIe Link Training System measurement (CM4024:2080)	Sometimes, after the Link Training is established, the Loop.back Active state is not error free at the MX183000A PL-021 PCIe Link Training software. This bug has been fixed for V3.01.00 and later.
Ver.3.00.00	Sometimes, not Error Free at PCIe/USB Link Training (CM4024:1637)	Sometimes, Link Training fails either at PCIe Link Training or USB Link Training, or the status does become error-free after Link Training. This bug has been fixed by the Calibration function added at V3.00.00 and later. Refer to Chapter 6 Usage Precautions for more details.
	Improved PAM4 Control application Auto-search function (CM4177:0221)	Sometimes the function for searching for the optimum value for CTLE Gain, Input Threshold Voltage, PPG Delay, and ED Delay fails. This bug has been fixed for V3.00.00 and later.
	Link fails at USB Link Sequence (CM3794:0529)	The Link Sequence fails to start when starting the USB Link Sequence when using a combination of the MX183000A V2.01.04 and MX180000A V8.05.00 software. The workaround for this bug is to install MX183000A V3.00.00 and MX180000A V8.06.00.
Ver.2.01.04	MX183000A fails to start (CM4177: 0202)	When installing the MX183000A V2.01.02 software, an error message is displayed and the application fails to start. This problem is fixed by installing V2.01.04.
Ver.2.01.02	Sometimes, MX190000A not error-free at completion of PCIe Link Training (CM4024: 1409)	Sometimes, when quitting the MX183000A after using the MX183000A PCIe Link Training, BER measurement using the MX190000A is not error-free. This bug occurs in MX183000A Version 2.01.00.
Ver.1.01.00	Application may terminate abnormally if Close (x) icon clicked during measurement (CM383604:17)	The application may terminate abnormally if the Close (x) icon is clicked either when the PCIe application is sending the Link Sequence or at JTOL measurement.

## 5. Remaining Known Bugs

None

## 6. Precautions for Use

The precautions for using each version are described below.

### 6.1 About SI ED Calibration at PCIe/USB Link Training

The SI ED MU195040A requires calibration when using the PCIe Link Training or USB Link Training MX183000A application. Always perform calibration if the equipment configuration is changed or the software version is upgraded. Perform calibration by clicking the [Calibration] button at the Equipment setup tab after starting the above-described application (MX183000A V3.00.00 or later). For details of the procedure, refer to section 4.3.2 Connecting Measurement Equipment in the High-Speed Serial Data Test Software MX183000A operation manual.

If calibration is not performed correctly, linking with the DUT may not be performed normally or the status may not be error-free.

### 6.2 Ver. 1.00.01 and Later

#### 6.2.1 Operating Environment Precautions

NI-VISA must be installed to use the MX183000A. Refer to section 2.2 Operating Environment, and section 2.3 Installing/Uninstalling in the MX183000A Operation Manual for details about the operation environment for this software.

#### 6.2.2 License Precautions

The paid MX183000A option uses a license key to enable functionality. Refer to the License\_Install\_E.pdf file stored on the USB memory stick standard accessory provided with this software.

## 6.3 Ver. 1.01.00 and Later

### 6.3.1 Version Precautions when Download Installer

The Ver. 1.00.01 installer cannot be installed over MX183000A Ver. 1.01.00. To install Ver. 1.00.01, first uninstall the MX183000A software.

## 6.4 Precautions When Recovering MP1900A

This software license key becomes invalid if a system recovery is performed on the MP1900A where the software is installed. For details on the system recovery, refer to 8.2 “System Recovery Function” in the MP1900A Signal Quality Analyzer-R Operation Manual.

Be sure to transfer the license on the MP1900A to a PC or another MP1900A refer to 2.4 “License Key Activation” in the MX183000A High-Speed Serial Data Test Software Operation Manual before performing the system recovery. If you perform the system recovery without transferring the license, contact an Anritsu Service and Sales office.

## 6.5 Ver. 3.08.05 and Later

According to the addition of “Cursor” as an Equalization signal output mode, the FS (Full Swing) and LF (Low Frequency) values that can be set for SI PPG are fixed to 24 and 8, and the following remote commands become invalid.

:LTRaining:SEQuence:FSWing

:LTRaining:SEQuence:LFRequency

## 6.6 Downgrading the Installer

If you want to downgrade the MX183000A installer version, take the following steps.

If your version is 4.03.00 or later:

1. Uninstall MX183000A.exe from Add/Remove Programs (Apps & features) in Windows.
2. Install the desired version of MX183000A.

If your version was V.4.03.00 or later, but overwritten by a version older than V4.03.00:

1. Uninstall MX183000A.exe from Add/Remove Programs (Apps & features) in Windows.
2. Delete the MX183000A folder from the Anritsu folder in C drive.
3. Install the desired version of MX183000A.

### 6.7 Installing MX183000A on External PC

When you install MX183000A on an external PC and control the MX190000A installed on the MP1900A, the firewall or virus security software of the external PC may block the communication of MX183000A.exe and obstruct normal use of the MX183000A. In that case, allow the communication of MX1830000A.exe on the setting screen of the security software.

### 6.8 Software Version Compatibility List

When using MX183000A in combination with MX180000A and MX190000A, there are some restrictions on their software versions. Refer to the table below to check the compatible versions.

MX180000A	MX190000A	MX183000A	Windows Update Support No.
V8.02.01	-	V1.00.00	-
V8.02.03	-	V1.01.00	-
V8.04.00	-	V1.02.00	-
V8.05.00	V1.00.02	V2.00.00	-
	V1.01.03	V2.01.00	-
V8.06.00 or later	V2.00.00	V3.00.00	-
	V2.02.00	V3.01.00	-
	V2.03.00	V3.02.00	KB4093118
	V2.05.00	V3.04.00	KB4093118
	-	V3.05.00	KB4093118
-	V3.00.05	V3.06.16	KB4467107
	V3.01.07	V3.07.12	KB4467107
	V3.08.16	V3.08.05	KB4499178
	V4.01.32	V4.00.08	KB4499178
	V4.02.10	V4.02.10	KB4499178
	V4.03.12	V4.03.15	KB4536952