

# MP1800A Signal Quality Analyzer/ MT1810A 4 Slot Chassis Release Notes

Thank you for choosing Anritsu products for your business.

This release note provides the latest information about version 8.08.00 of the software for the Anritsu MP1800A/MT1810A and current known bugs.

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

Release Version Ver.8.08.00

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## 1 Release Information

The time required to upgrade from the old version to the new firmware version is listed below:

New version: 8.08.00

Old version: 8.07.05

Time required for version upgrade: 20 to 30 minutes

The required time is the total of the download time using Setup Utility and the install time.

The actual upgrade time depends on the number and type of installed modules.

**In addition, some remote commands are revised in this version upgrade.**

**Refer to Section 3 Added Functions for the revision contents.**

## 1.1 Supported Modules

### 1.1.1 Plug-in Modules

The following table shows the modules that can be installed in the MP1800A and MT1810A.

Module Code	Module Name
MU181000A	12.5 GHz Synthesizer
MU181000B	12.5 GHz 4 port Synthesizer
MU181020A	12.5 Gbit/s PPG
MU181020B	14 Gbit/s PPG
MU181040A	12.5 Gbit/s ED
MU181040B	14 Gbit/s ED
MU181600A	Optical Transceiver (XFP)
MU181601A	Optical Transceiver (SFP)
MU181620A	Stressed Eye Transmitter
MU181640A	Optical Receiver
MU181800A	12.5 GHz Clock Distributor
MU181800B	14 GHz Clock Distributor
MU182020A	25 Gbit/s 1ch MUX
MU182021A	25 Gbit/s 2ch DEMUX
MU182040A	25 Gbit/s 1ch MUX
MU182041A	25 Gbit/s 2ch DEMUX
MU181500B	Jitter Modulation Source
MU183020A	28G/32G bit/s PPG
MU183040A	28G/32G bit/s ED
MU183021A	28G/32G bit/s 4ch PPG
MU183041A	28G/32G bit/s 4ch ED
MU183040B	28G/32G bit/s High Sensitivity ED
MU183041B	28G/32G bit/s 4ch High Sensitivity ED

### 1.1.2 Connecting USB Equipment

Units that can be controlled by connecting to the MP1800A using a USB cable are listed below.

Model	Name
MP1825B	4Tap Emphasis
MP1861A	56G/64G bit/s MUX
MP1862A	56G/64G bit/s DEMUX

## 1.2 Slot Installation Position

This section explains the position for installing each module in the MP1800A and MT1810A slots.

### 1.2.1 Restrictions on PPG and ED Installation Slots

The optional MU181020A/B PPG and MU181040A/B ED modules are installed in different slots in the MP1800A or MT1810A-014/015 main frame as shown in the following tables 1.2.1-1, 1.2.1-2, and 1.2.1-3.

Table 1.2.1-1 PPG/ED Installation Slots for MP1800A/MT1810A-014

Slot No	A	B	C	D
Slot 1	—	—	—	—
Slot 2	—	—	—	—
Slot 3	PPG	—	PPG	PPG
Slot 4	—	ED	ED	PPG
Slot 5	—	—	—	—
Slot 6	—	—	—	—

Table 1.2.1-2 PPG/ED Installation Slots for MP1800A/MT1810A-015

	Slot No	A	B	C	D	E	F	G	H	I	J	K	L	
Independent / CH Sync	Slot 1	—	—	—	PPG	PPG	PPG	ED	ED	ED	PPG	PPG	PPG	
	Slot 2	—	—	—	PPG	PPG	PPG	ED	ED	ED	PPG	PPG	PPG	
	Slot 3	PPG	—	PPG	—	PPG	PPG	—	ED	ED	—	PPG	ED	
	Slot 4	—	ED	ED	—	—	PPG	—	—	ED	ED	ED	ED	
	Slot 5	—	—	—	—	—	—	—	—	—	—	—	—	
	Slot 6	—	—	—	—	—	—	—	—	—	—	—	—	
4ch Combination	Slot 1	—	—	—	—	—	4ch PPG	—	—	4ch ED	—	—	—	
	Slot 2	—	—	—	—	—		—	—		—	—	—	—
	Slot 3	—	—	—	—	—		—	—		—	—	—	—
	Slot 4	—	—	—	—	—		—	—		—	—	—	—
	Slot 5	—	—	—	—	—	—	—	—	—	—	—	—	
	Slot 6	—	—	—	—	—	—	—	—	—	—	—	—	
2ch Combination	Slot 1	—	—	—	2ch PPG	2ch PPG	2ch PPG	2ch ED	2ch ED	2ch ED	2ch PPG	2ch PPG	2ch PPG	
	Slot 2	—	—	—	PPG	PPG	PPG	ED	ED	ED	PPG	PPG	PPG	
	Slot 3	—	—	—	—	PPG	2ch PPG	—	ED	2ch ED	—	PPG	2ch ED	
	Slot 4	—	—	—	—	—	PPG	—	—	ED	ED	ED	ED	
	Slot 5	—	—	—	—	—	—	—	—	—	—	—	—	
	Slot 6	—	—	—	—	—	—	—	—	—	—	—	—	

Table 1.2.1-3 PPG/ED Installation Slots for MP1800A-016

	Slot No	A	B	C	D	E	F	G	H	I	J	K	
Independent / CH Sync	Slot 1	PPG	—	—	PPG	PPG	PPG	—	—	—	PPG	PPG	
	Slot 2	—	—	—	PPG	PPG	PPG	—	—	—	PPG	PPG	
	Slot 3	—	—	PPG	—	PPG	PPG	—	—	ED	—	PPG	
	Slot 4	—	ED	ED	—	—	PPG	—	ED	ED	—	—	
	Slot 5	—	—	—	—	—	—	ED	ED	ED	—	—	
	Slot 6	—	—	—	—	—	—	ED	ED	ED	ED	ED	
4ch Combination	Slot 1	—	—	—	—	—	4ch PPG	—	—	—	—	—	
	Slot 2	—	—	—	—	—		—	—	—	—	—	—
	Slot 3	—	—	—	—	—		—	—	—	4ch ED	—	—
	Slot 4	—	—	—	—	—		—	—	—		—	—
	Slot 5	—	—	—	—	—		—	—	—		—	—
	Slot 6	—	—	—	—	—		—	—	—		—	—
2ch Combination	Slot 1	—	—	—	2ch PPG	2ch PPG	2ch PPG	—	—	—	2ch PPG	2ch PPG	
	Slot 2	—	—	—				—	—	—			—
	Slot 3	—	—	—	—	PPG	2ch PPG	—	—	2ch ED	—	PPG	
	Slot 4	—	—	—	—			—	ED		—		
	Slot 5	—	—	—	—	—	—	2ch ED	2ch ED	2ch ED	—	—	
	Slot 6	—	—	—	—	—	—	—	—	—	ED	ED	

	Slot No	L	M	N	O	P	Q
Independent / CH Sync	Slot 1	PPG	PPG	PPG	PPG	PPG	PPG
	Slot 2	PPG	PPG	PPG	PPG	PPG	PPG
	Slot 3	PPG	—	PPG	PPG	—	ED
	Slot 4	PPG	—	—	PPG	ED	ED
	Slot 5	—	ED	ED	ED	ED	ED
	Slot 6	ED	ED	ED	ED	ED	ED
4ch Combination	Slot 1	4ch PPG	—	—	4ch PPG	—	PPG
	Slot 2		—	—		—	PPG
	Slot 3		—	—		—	4ch ED
	Slot 4		—	—		—	
	Slot 5	—	—	—	ED	—	—
	Slot 6	ED	—	—	ED	—	—
2ch Combination	Slot 1	2ch PPG	2ch PPG	2ch PPG	2ch PPG	2ch PPG	2ch PPG
	Slot 2		—	PPG	2ch PPG	—	2ch PPG
	Slot 3	PPG	—	—	PPG	ED	ED
	Slot 4		—	—			
	Slot 5	—	2ch ED	2ch ED	2ch ED	2ch ED	2ch ED
	Slot 6	ED	ED	ED	ED	ED	ED

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—	: Slots where PPG and ED cannot be installed
PPG	: Slots where MU181020A/B PPG can be installed
ED	: Slots where MU181040A/B ED can be installed
Dashed Line	: Slots where PPG/ED disabled at Combination

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

### 1.2.2 Restrictions on MUX and DEMUX Installation Slots

There are no restrictions when installing the MU182020A/21A (hereafter MUX) and MU182040A/41A (hereafter DEMUX) as single units in the main frame when the PPG and ED cannot be used together.

However, when installing the PPG and MUX in the main frame, in addition to restrictions on the number of PPG slots and positions (section 1.2.1), there are restrictions on the MUX installation slots as well. Tables 1.2.2-1 and 1.2.2-2 show the permutations for installing the PPG and MUX using the supplied accessory cables. The functions are only guaranteed for the PPG and MUX installation locations at shipment and using the supplied accessory cables so stickers are affixed to show that calibration has been completed and to prevent screws becoming loose. Note that the performance is not guaranteed if the position of the PPG and MUX with stickers are changed.

When installing the ED and DEMUX, follow the restrictions on the number of EDs installed and positions (section 1.2.1) and install the DEMUX in an empty slot.

Table 1.2.2-1 MUX/DEMUX Installation Slots for MP1800A/MT1810A-015

Slot No	A	B	C	D	E
Slot 1	PPG	PPG	PPG	ED	ED
Slot 2	PPG	PPG	PPG	ED	ED
Slot 3	PPG	PPG	1ch MUX	ED	ED
Slot 4	PPG	PPG		ED	ED
Slot 5	2ch MUX	1ch MUX		2ch DEMUX	1ch DEMUX
Slot 6	2ch MUX	1ch MUX		2ch DEMUX	1ch DEMUX

Slot No	F	G
Slot 1	ED	PPG
Slot 2	ED	PPG
Slot 3	1ch DEMUX	ED
Slot 4		ED
Slot 5		1ch MUX
Slot 6		1ch DEMUX

Table 1.2.2-2 MUX/DEMUX Installation Slots for MP1800A-016

Slot No	A	B	C	D	E
Slot 1	PPG	PPG	PPG	2ch DEMUX	1ch DEMUX
Slot 2	PPG	PPG	PPG	2ch DEMUX	1ch DEMUX
Slot 3	PPG	PPG	1ch MUX	ED	ED
Slot 4	PPG	PPG		ED	ED
Slot 5	2ch MUX	1ch MUX		ED	ED
Slot 6	2ch MUX	1ch MUX		ED	ED

Slot No	F	G
Slot 1		PPG
Slot 2		PPG
Slot 3		1ch MUX
Slot 4	1ch DEMUX	1ch DEMUX
Slot 5	ED	ED
Slot 6	ED	ED

- PPG : Slots where MU181020A/B PPG can be installed
- ED : Slots where MU181040A/B PPG can be installed
- 1ch MUX : Slots where MU182020A 1ch MUX can be installed
- 2ch MUX : Slots where MU182021A 2ch MUX can be installed
- 1ch DEMUX : Slots where MU182040A 1ch DEMUX can be installed
- 2ch DEMUX : Slots where MU182041A 2ch DEMUX can be installed



### 1.2.3 Restrictions on 32G PPG and ED Installation Slots

The optional MU183020A 32G PPG, MU183021A 32G 4ch PPG, MU183040A/B 32G ED and MU183041A/B 32G 4ch ED modules are installed in different slots in the MP1800A or MT1810A main frame as shown in the following tables 1.2.3-1, and 1.2.3-2.

Table 1.2.3-1 PPG/ED Installation Slots for MP1800A/MT1810A-014

Slot No	A	B	C	D	E
Slot 1	—	—	—	—	—
Slot 2	—	—	—	—	—
Slot 3	PPG	—	PPG	4ch	4ch
Slot 4	—	ED	ED	PPG	ED
Slot 5	—	—	—	—	—
Slot 6	—	—	—	—	—

Table 1.2.3-2 PPG/ED Installation Slots for MP1800A-015/016 and MT1810A-015

	Slot No	A	B	C	D	E	F	G	H	I	J	K	L*
Independent	Slot 1	—	—	—	PPG	—	PPG	4ch	—	4ch	4ch	4ch	PPG
	Slot 2	—	—	—	PPG	—	PPG	PPG	—	PPG	PPG	ED	PPG
	Slot 3	PPG	—	PPG	—	ED	ED	—	4ch	4ch	4ch	4ch	PPG
	Slot 4	—	ED	ED	—	ED	ED	—	ED	ED	PPG	ED	PPG
	Slot 5	—	—	—	—	—	—	—	—	—	—	—	—
	Slot 6	—	—	—	—	—	—	—	—	—	—	—	—
Channel Synchronization	Slot 1	—	—	—	CH	—	CH	—	—	—	CH Sync	—	CH Sync
	Slot 2	—	—	—	Sync	—	Sync	—	—	—		—	
	Slot 3	—	—	—	—	—	—	—	—	—		—	
	Slot 4	—	—	—	—	—	—	—	—	—	—	—	—
	Slot 5	—	—	—	—	—	—	—	—	—	—	—	—
	Slot 6	—	—	—	—	—	—	—	—	—	—	—	—

- : Slots where 32G PPG and 32G ED cannot be installed
- PPG : Slots where MU183020A 32G PPG can be installed
- ED : Slots where MU183040A/B 32G ED can be installed
- 4ch PPG : Slots where MU183021A 32G 4ch PPG can be installed
- 4ch ED : Slots where MU183041A/B 32G 4ch ED can be installed
- CH Sync : Slots where two or four 32G 2ch/4ch PPG boards can be installed at Channel Synchronization. The 32G 1ch PPG cannot perform Channel Synchronization.
- \* : Only the MP1800A/MT1810A-015 is supported.

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

### 1.2.4 Restrictions on Simultaneous PPG and ED, or 32G PPG and ED Installations

The MP1800A and MT1810A (this equipment hereafter) support simultaneous installation of the optional MU181020A/B (PPG), MU182020A (MUX), MU181040A/B (ED), MU182040A (DEMUX), MU183020A (32G PPG), and MU183040A/B (32G ED) under the conditions described below.

Tables 1.2.4-1 and 1.2.4-2 show the number of slots and positions where the PPG and ED, or 32G PPD and 32G ED can be installed with this firmware version.

CH Sync and Combination are not supported for the PPG and 32 PPG, and nor is Combination for the ED and 32G ED. However, the 32G ED error buzzer does not sound when these options are installed simultaneously.

Table 1.2.4-1 MP1800A-015, MT1810A-015 PPG/ED Installation Slots

	Slot No	A	B	C	D	E
	Independent	Slot 1	PPG	ED	—	—
Slot 2		PPG	ED	—	—	32G ED
Slot 3		MUX	DEMUX	32G PPG	PPG	PPG
Slot 4		32G ED	32G PPG	ED	32G ED	ED
Slot 5		—	—	—	—	—
Slot 6		—	—	—	—	—
CH Synchronization Combination	Slot1	CH Sync 2ch Combi	2ch Combi	—	—	CH Sync 2ch Combi
	Slot 2			—	—	2ch Combi
	Slot 3	—	—	CH Sync 2ch Combi	—	—
	Slot 4	2ch Combi	CH Sync 2ch Combi	—	2ch Combi	—
	Slot 5	—	—	—	—	—
	Slot 6	—	—	—	—	—

	Slot No	F	G	H	I	J	K
	Independent	Slot 1	32G PPG	—	32G PPG	32G PPG	—
Slot 2		—	32G ED	32G ED	32G ED	—	—
Slot 3		PPG	PPG	PPG	—	PPG	32G ED
Slot 4		ED	ED	—	ED	32G PPG	ED
Slot 5		—	—	—	—	—	—
Slot 6		—	—	—	—	—	—
CH Synchronization Combination	Slot1	CH Sync 2ch Combi	—	CH Sync 2ch Combi	CH Sync 2ch Combi	—	—
	Slot 2	—	2ch Combi	2ch Combi	2ch Combi	—	—
	Slot 3	—	—	—	—	—	2ch Combi
	Slot 4	—	—	—	—	CH Sync 2ch Combi	—
	Slot 5	—	—	—	—	—	—
	Slot 6	—	—	—	—	—	—

Table 1.2.4-2 MP1800A-016 PPG/ED Installation Slots

	Slot No	A	B	C	D	E
	Independent	Slot 1	PPG	—	—	—
Slot 2		PPG	—	—	—	32G ED
Slot 3		MUX	32G PPG	32G PPG	PPG	PPG
Slot 4		32G ED	DEMUX	ED	32G ED	ED
Slot 5		—	ED	—	—	—
Slot 6		—	ED	—	—	—
CH Synchronization Combination	Slot1	CH Sync 2ch Combi	—	—	—	CH Sync 2ch Combi
	Slot 2	—	—	—	—	2ch Combi
	Slot 3	—	CH Sync 2ch Combi	CH Sync 2ch Combi	—	—
	Slot 4	2ch Combi	—	—	2ch Combi	—
	Slot 5	—	2ch Combi	—	—	—
	Slot 6	—	—	—	—	—

	Slot No	F	G	H	I	J	K
Independent	Slot 1	32G PPG	—	32G PPG	32G PPG	—	—
	Slot 2	—	32G ED	32G ED	32G ED	—	—
	Slot 3	PPG	PPG	PPG	—	PPG	32G ED
	Slot 4	ED	ED	—	ED	32G PPG	ED
	Slot 5	—	—	—	—	—	—
	Slot 6	—	—	—	—	—	—
CH Synchronization Combination	Slot1	CH Sync 2ch Combi	—	CH Sync 2ch Combi	CH Sync 2ch Combi	—	—
	Slot 2	—	2ch Combi	2ch Combi	2ch Combi	—	—
	Slot 3	—	—	—	—	—	2ch Combi
	Slot 4	—	—	—	—	CH Sync 2ch Combi	—
	Slot 5	—	—	—	—	—	—
	Slot 6	—	—	—	—	—	—

- : Slots where PPG/ED or 32G PPG/ED cannot be installed
- PPG : Slots where MU181020A/B 12.5G/14G PPG can be installed
- ED : Slots MU181040A/B 12.5G/14G ED can be installed
- 32G PPG : Slots where MU183020A 32G PPG can be installed
- 32G ED : Slots where MU183040A/B 32G ED can be installed
- MUX : Slot for MU182020A 1ch MUX
- DEMUX : Slot for MU182040A 1ch DEMUX
- CH Sync : Slots where either two 12.5G/14G PPG boards or 32G PPG 2ch Channel Synchronization can be installed
- 2ch Combi : Slots where either two 12.5G/14G PPG boards or 32G PPG 2ch Combination can be installed

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

## 1.3 Connecting via USB

This section explains connection of equipment (listed on section 1.1.2) to the MP1800A via USB cable.

### 1.3.1 Hot Swap

USB equipment is connected to the MP1800A using a USB cable. However, hot swapping is not supported, so take care not to hot swap connected equipment.

Read following manuals before use.

- Chapter 2.5 Connecting Controller in the MP1825B 4Tap Emphasis Operation Manual (Doc. No. M-W3482AE).
- Chapter 2.1.4 Usage Patterns of MP1861 in the MP1861A 56G/64G bit/s MUX Operation Manual (Doc. No. M-W3756AE)
- Chapter 2.1.4 Usage Patterns of MP1862 in the MP1862A 56G/64G bit/s DEMUX Operation Manual (Doc. No. M-W3757AE)

## 1.4 Improvements

Version	Item (Bug Mngt No.)	Phenomenon
Ver. 8.08.00	Sometimes, errors occur in the data output of the PPG when frequency changed (CM945:65)	Sometimes, errors occur in the data output of the MU183020A/21A 32G PPG when frequency changed.
Ver.8.07.05	Sometimes, application crashes when opening 64G x2ch Combi Quick Save file at Independent (CM945:47)	Application may crash when using Quick Open after setting to Independent when performing Quick Save with 64Gx2ch Combination set at MU183020A/21A 32G PPG. Bug occurs in versions 7.00.00 to 8.06.00
	PAM4 Auto Search fails due to Pattern Logic setting (CM945:49)	PAM4 Auto Search always fails when inputting PAM4 signal to Xdata Input of MU183040B and MU183041B 32G ED and setting Pattern Logic to NEG Bug occurs in versions 7.09.02 to 8.06.00
	Sometimes, PLL Unlock occurs at synthesizer (CM945:38)	With MU181000A/B synthesizer and MU181500B Jitter signal source linked and frequency offset set, sometimes PLL Unlock occurs at synthesizer after releasing synthesizer and Jitter source link, and restarting
Ver.8.06.00	Sometimes, bit drift occurs at Channel Sync with 32G PPG	Sometimes, bit drift occurs when changing the bit rate at Channel Sync with the MU183020A/21A 32G PPG. This bug occurs in software versions Ver.7.00.00 to 8.05.00.
Ver.8.05.00	Bug in error rate display of PAM BER measurement (CM943:44)	The error rate display is incorrect at PAM BER auto-measurement with the MU183040B and MU183041B 32G ED. The error rate incorrectly displays "0.0000E+000" when the error count is 0 error free. This bug occurs in software versions Ver.8.02.01 to 8.04.02.
	Incorrect OUT-4 bit rate (CM944:79)	The OUT-4 bit rate is incorrect for the MU183020A/21A 32G PPG, and MU183040A/B and MU183041A/B 32G ED. Incorrect: 28.000 000 Gbit/s Correct: 27.952493 Gbit/s The screen setting will be 27.952496 Gbit / s depending on the resolution. This bug occurs in Ver.7.00.00 to 8.04.02.
Ver.8.04.02	32G ED Block Window Remote Command Bug (CM944:87)	Sometimes the MU183040A/B and MU183041A/B 32G ED Block Window setting remote command does not operate normally and the correct Block Window is not set when the pattern length is longer than 2 Mbits. The remote command affected by this bug is :SENSe:PATTern:MASK:BLKWindow It occurs in versions 7.00.00 to 8.04.01
	Auto Search Fine mode sometimes fails when Block Window set to ON (CM944:80)	When the Block Window setting for the MU183040A/B and MU183041A/B 32G ED is ON, the Auto Search Fine mode may fail sometimes. Set Block Window to OFF when using the Auto Search Fine mode. It occurs in versions 7.00.00 to 8.04.01

	Sometimes, Jitter settings not correctly returned when setting files opened (CM944:78)	Sometimes, when the Jitter Modulation Source MU181500B settings file has been opened, the Jitter settings are not returned correctly. When this happens, Jitter is not added to the signal irrespective of whether the GUI Jitter setting is ON. The workaround is to toggle all Jitter settings to OFF and ON. It occurs in versions 6.00.00 to 8.04.01
Ver.8.04.00	Remote commands sometimes timeout at 28G/64G DEMUX auto-measurement (CM943:95)	At auto-measurement with the MU182040A 25G/28G bit/s DEMUX and MP1862A 56G/64G bit/s DEMUX, remote commands may sometimes timeout. This bug occurs at the following measurements: At 25G DEMUX Bathtub, Eye Margin and Eye Diagram, and at 64G DEMUX Eye Margin and Eye Diagram measurements. It occurs in versions 5.00.00 to 8.02.04.
	Applications crash during remote operation (CM943:87)	Sometimes, when the remote interface is set to either GPIB or Ethernet Normal mode, the application may crash when sending/receiving remote commands continuously. This bug occurs in versions 8.00.00 to 8.02.04.
	Incorrect PAM4 patterns (CM943:89)	PAM4 patterns may be incorrect because the MSB and LSB bits are reversed. The affected patterns are PRQS10 and GrayPRBS13Q. This bug occurs in versions 8.02.01 to 8.02.04.
Ver.8.02.04	Syn Loss error occurs at 56.2 Gbit/s with MP1862A DEMUX (CM943:81)	When using the MP1862A 56G/64 Gbit/s DEMUX without Option-x01 64Gbit/s Extension installed, a Sync Loss occurs at a bit rate setting of 56.2G bit/s. This bug occurs in software versions 8.00.00 to 8.02.03.
Ver.8.02.03	No data output when using 32G 4ch PPG (CM943:23)	When using the MU183021A 32G 4ch PPG, when the Combination Setting is independent, 2ch Combination, or Channel Sync Data1-2, there is no data output at Data3 and Data4. When the Combination Setting is 4ch Combination, 64Gx2ch Combination, 2ch CH Sync, or Channel Sync Data1-4, there is no data output at all of Data1 to Data4. This bug does not occur with the MU183020A 32G PPG, and it can be used as normal. This bug occurs in software versions 8.02.01.
	Cannot open 4PAM pattern files (CM943:11)	The following pattern files for generating 4PAM patterns cannot be opened using the MU18302xA 32G PPG: <ul style="list-style-type: none"> <li>• JP03A</li> <li>• JP03B</li> <li>• Squarewave</li> </ul>
	MP1800A panel keys do not operate (CM941:17)	When software versions prior to V7.09.xx are installed in the main frame with Option-x07 installed, the MP1800A front-panel keys and rotary encoder fail to operate.
Ver.8.02.01	EOI not recognized at GPIB remote (CM940:69)	EOI is not recognized as terminate command at GPIB remote.
	Occasional application crash at Ethernet remote (CM940:67)	At Ethernet remote, sometimes the application crashes when switching alternately between Socket Open/Close and sending a query command.



Version	Item (Bug Mngt No.)	Phenomenon
Ver.8.00.05	Diagnostic tool test result is Fail when MP1861A/62A Opt-01 not installed (CM940:94)	The diagnostic result is Fail if the MP1861/62A Opt-01 64Gbit/s Extension is not installed when using the diagnostic tool with the MP1861A 56G/64Gbit/s MUX and MP1862A 56G/64Gbit/s DEMUX. This happens because the operation bit rate without the MP1861/62A Opt-01 installed is 56 Gbit/s while the diagnostic test is run at 64 Gbit/s. This bug occurs in software versions 8.00.00 to 8.00.04.
	Using MP1862A, Threshold Margin result halved incorrectly (CM940:86)	Sometimes, the Threshold Margin result of Eye Margin measurement using the MP1862A 64G DEMUX is half the actual true value. This bug occurs in software versions 8.00.00 to 8.00.04.
Ver.8.00.04	Sometimes, MP1825B Emphasis settings are not returned at file opening(CM940:77)	Sometimes, the MP1825B 4Tap Emphasis Input setting is not returned when the settings file is opened. This bug occurs in version 8.00.00,8.00.01,8.00.02 and 8.00.03.
Ver.8.00.03	The Jitter amount does not add correctly when the 32G PPG and Emphasis are linked (CM940:84)	When the MU18302xA 32G PPG and MP1825B 4Tap Emphasis are linked, there is an error in the amount of Jitter generated from the MU181500B Jitter Modulation Source and the Jitter amount does not add correctly. This phenomenon occurs when the MU18302xA, MP1825B, and MU181500B are linked, and the actual Jitter modulation amount is half the amount at the MU181500B screen setting. This bug occurs in version 8.00.00,8.00.01 and 8.00.02.
Ver.8.00.02	Sometimes during remote operation, opening a Quick Save file may cause the application to crash (CM089:91)	The main application may crash when using the :SYSTEM:MMEMory:QRECall remote command to read a Quick Save file. The frequency of this problem depends on the module configuration.
	There are some bit rates at which synchronization between 32G PPG modules may be abnormal (CM089:90)	At some bit rates, synchronization may not be performed normally between modules using multiple MU183020A 32G PPG units.Errors occur in the data output of the PPG
Ver.7.10.02	Sometimes, the application freezes on exiting with two or more of MU18302xA 32G PPG or MU18304x 32G ED modules installed (CM089:66)	When exiting the main application, sometimes the screen freezes and the main application cannot be terminated normally. This problem occurs when two or more of the following modules are installed simultaneously in the same main frame. MU183020A 28G/32Gbit/s PPG MU183021A 28G/32Gbit/s 4ch PPG MU183040A 28G/32Gbit/s ED MU183041A 28G/32Gbit/s 4ch ED MU183040B 28G/32Gbit/s High Sensitivity ED MU183041B 28G/32Gbit/s 4ch High Sensitivity ED

Version	Item (Bug Mngt No.)	Phenomenon
Ver.7.08.10	Sometimes, synthesizer module firmware update fails when using Setup Utility, leaving module unrecognized	Sometimes, after installing the MX180000A V7.08.09 software, when downloading the synthesizer firmware using the Setup Utility, the firmware does not update normally, leaving the synthesizer module unrecognized. This bug has been observed when the MU183020A/21A 32G PPG, MU183040A/B, 41A/B 32G ED and following modules are installed in the same main frame. MU181000A/B Synthesizer MU181600A XFP MU181601A SFP MU181800A Distributor
Ver.7.08.09	MU181000A/B not recognized by MT1810A sometimes (CM808:32)	Sometimes, the MU181000A/B Synthesizer module is not recognized when installed in the MT1810A 81000A/B and is not displayed on the screen. The following modules are affected by this bug. MU181000A/B Synthesizer MU181600A XFP MU181601A SFP MU181800A Distributor
	Self test fails some items for MU181040A/B (CM808:43)	When the MU181040A/B is installed, the following self-test items fail although the hardware modules are normal: Clock Recovery
Ver.7.08.07	Sometimes, data not output at power-on (CM160807:70)	Sometimes, the MU183020A/21A 32 PPG data is not output immediately after power-on. If this happens, switch the main frame power off and on again.
	An error occurs at continuous long-term measurement using the 32G PPG. (CM160808:20)	An error occurs at continuous long-term measurement using the 32G PPG. Errors occur in the data output when the PPG is operated continuously for long periods.
	Fixed bug in 32G ED Auto Search Coarse mode (CM160807:71)	When the input amplitude is large (2 Vp-p) in the Auto Search Mode of the MU183040A/41A 32G ED, sometimes the peak point cannot be searched in the Threshold direction.
	Fixed SJ bug in MU181500B (CM160808:10)	When the modulation frequency of the MU181500B SJ/SJ2 generation function is 100 MHz to 250 MHz, sometimes the actual modulation is about 10% smaller than the set modulation amount.
	Fixed bug in 12.5G ED Auto-Measurement (CM160808:05)	When the MU181040A/B Clock Recovery Opt-20 is installed, sometimes the Eye Diagram auto-measurement operation is abnormal when the recovered clock is used.

Version	Item (Bug Mngt No.)	Phenomenon
Ver.7.08.05	Fixed bug in 12.5G ED Auto Search Fine mode (CM160807:69)	When the MU181040A/B Clock Recovery Opt-20 is installed, sometimes the Auto Search Fine mode is abnormal when the recovered clock is used.
Ver.7.07.00	Fixed bug in 32G ED Auto Search Fine mode (CM160807:35)	Sometimes, search does not find the best point in the Phase direction when in the Auto Search Fine mode of the MU183040A/B and MU183041A/B 32G ED.
	Bug in MP1825B output amplitude (CM160807:40)	Sometimes, the output amplitude momentarily exceeds the setting when changing the MP1825B Waveform Format setting.
Ver.7.04.00	Corrected bug in formula for calculating Best Fit Line at Bathtub measurement (CM160804:79)	A bug in the Best Fit Line formula for Bathtub measurement was corrected.
Ver.7.03.00	Bug in Bathtub measurement (CM160805:05)	If Bathtub measurement is terminated halfway unexpectedly, sometimes the correct measurement results are not displayed.
Ver.7.02.00	SSC bug in MU181500B (CM160805:00)	When the MU181500B Pattern Generator setting is switched to Full-rate, the applied Spread Spectrum Clock (SSC) modulation deviation becomes twice the set value.
	Changed to add MU183020A/21A Single Error (CM160805:02)	The following change was made when clicking the Single button at the Error Addition tab when the MU183020A/21A Combination Setting is 2ch Combination or 4ch Combination: [Before change] Errors are added to all Combination interfaces (2 or 4 errors added with one click). [After change] An error is added to the clicked interface (1 error with one click).
	Sometimes, no response when repeating specific remote command (CM160805:07)	Sometimes there is no command response when repeating the remote command for the Auto Adjust operation.
Ver. 7.01.06	Sometimes, Emphasis cannot be added for specific waveform formats (CM160804:83)	When Waveform Format is set to 3Post-cursor or 2Pre-cursor, Emphasis cannot be added correctly to the output waveform when Cursor2 is set to minus (-).
	Sometimes, system freezes/crashes during long-term remote operation (CM160804:89)	During long-term remote operation, sometimes the application freezes or crashes. This problem can occur with the following module configurations: MU181020A/B 12.5G/14G PPG MU181040A/B 12.5G/14G ED MU183020A/21A 32G PPG MU183040A/41A 32G ED

Version	Item (Bug Mngt No.)	Phenomenon
Ver. 7.01.01	MU181040A/B Frame OFF sync bug (CM160804:76)	Sometimes, normal synchronization is not achieved when the MU181040A/B Sync Control is set to Frame OFF.
	Auto Search Fine mode reproducibility bug (CM160804:66)	Sometimes, the measurements results are much bigger than the expected value at measurements that repeat the Auto Search Fine operation.
	MU181500B SJ Setting bug (CM160804:80)	Sometimes, when combined with the PPG and changing the MU181500B SJ/SJ2 Amplitude setting, a bit shift occurs in the PPG Data output.
Ver.6.03.01	Auto-measure ps units display bug (CM160804:59)	When Phase Units is set to [ps] at the Eye Margin, Bathtub, Q measurement and Auto Search screens, no value is displayed after the decimal point for the Phase measurement result.
Ver.6.03.00	Settings file compatibility bug (CM160803 :99)	PPG settings file saved with Ver. 3.00.0x cannot be opened with Ver. 6.00.0x.
Ver.6.02.00	Sometimes, there is a bug in Bathtub measurement reproducibility (CM160804 :23)	At repeated Bathtub measurements, sometimes the reference Threshold voltage changes. As a result, the measured value changes.
	Sometimes, the system crashes when executing Eye Diagram measurements with a particular configuration (CM160804 :22)	Sometimes, the system crashes when executing Eye Diagram measurements immediately after the configuration is changed to 2ch Combination.
Ver. 6.00.06	Sometimes, there is a bug at MU181500B BUJ LPF setting (CM160803 :90)	When the MU181500B Jitter Modulation Source BUJ Low Pass Filter is set, the 500 MHz filter settings may be displayed and not displayed repeatedly close to a carrier frequency of 4 GHz and normal selection is impossible.
Ver. 6.00.05	Sometimes, Bathtub measurement is not completed (CM160803 :56)	Sometimes, Bathtub measurement does not proceed and does not end even after a long time period has elapsed.
	Sometimes, the PPG output pattern is abnormal (CM160803 :69)	Sometimes, a normal pattern is not output from the MU181020A/B PPG for the F module configuration shown in Table 1.2.1-3.
	Sometimes, a pattern file read error occurs (CM160803 :68)	If the number of characters on one line of the pattern file (.txt file) exceeds 70, it cannot be read by the MU181020A/B PPG and the MU181040A/B ED.

Version	Item (Bug Mngt No.)	Phenomenon
Ver. 6.00.03	Sometimes, an error may occur in the output pattern (CM160803 :54)	When using non-PRBS pattern types, sometimes there may be an error in the output of the MU181020A/B PPG.
	Occasionally there may be random dispersion in Eye margin measurement results (CM160803 :53)	When repeating Eye margin measurements under the same conditions using the MU181040A/B ED or MU182040A/41A DEMUX, occasionally there may be large random dispersion in the measurement results.
Ver. 5.04.02	In some configurations, an error may sometimes occur in the output pattern	With the A, B, C, J and K modules listed in Table 1.2.1-2, sometimes there is an error in the MU181020A/B PPG output pattern.
	In Ch Sync mode, sometimes, pattern generation position may slip (CM160803 :42)	When the MU181020A/B PPG pattern type is set to Mixed Data or Mixed Alternate and the pattern type is switched to PRBS after pattern editing, sometimes the Channel Synchronization mode output pattern creation position may slip.
Ver. 5.04.00	Depending on configuration, sometimes Capture function does not operate normally (CM160803 :11)	With the module configuration L or O shown in Table 1.2.1-3, sometimes the ED capture function does not operate normally with 4ch Combination.
	Sometimes, system timeout occurs when executing ED Auto Search with specific configuration (CM160803:10)	With the module configuration L or O shown in Table 1.2.1-3, sometimes the system times out when executing Auto Search at the MU181040A with 4ch Combination.
Ver. 5.03.01	MX180000A-x01,x02 Pre-Code, De-Code DQPSK bug (CM160802:73)	Incorrect operation of the MX180000A-x01 Pre-Code, and MX180000A-x02 De-Code DQPSK causes incorrect Pre-Code/De-Code.
	Application causes system crash at Initialize (CM160801:90)	When the MU181040A/B is installed, sometimes the system crashes at Initialize, Combination switching, or Self Test.

Version	Item (Bug Mngt No.)	Phenomenon
Ver. 5.02.08	Bug causes DEMUX Eye margin results to be small (CM16080:33)	At Eye margin measurement using the MU182040A/41A DEMUX, the measurement results displayed in the Phase are direction are small. Depending on the input data phase, sometimes normal measurement is impossible because at measurement in the Phase direction, the movable Delay range appears to be exceeded.
	Bug causes incorrect operation of ED Auto Search Fine mode (CM16080:19)	When the MU181040A/B ED input data setting is Differential50 Ω/100 Ω, sometimes, operation is abnormal when Auto Search Fine is executed.
Ver. 5.02.07	Error in PPG output pattern (CM16080:88)	Sometimes, there may be errors in the MU181020A/B PPG output pattern.
Ver. 5.02.05	Bug in MU181020A/B-013 output (CM16080:63)	Sometimes, the Data/XData Output is not correct when using the MU181020A/B-013 and setting a larger Cross Point than 85.1%.
Ver. 5.02.04	Errors not added correctly at Mixed Data pattern setting (CM160801:158)	When the Mixed Data test pattern is set at the MU181020A/B, errors are added to the entire Area when Error Addition is set to ON irrespective of the Area setting for Error Addition at the Error Addition tab.
Ver. 5.01.00	Bug in MU182040A/41A Eye Margin Measurement (CM16080:47)	At Eye Margin measurement with the MU182040A/41A DEMUX, when starting measurement with Auto Search ON, sometimes an illegal error is detected and measurement aborts.
	Sometimes, EI Count performed at Error Free (CM16080:43)	With four MU181040A/B modules installed, when the Combination setting is set to Independent, sometimes EI is counted, irrespective of the error free status.
	Sometimes, measurement not restarted correctly at 2ch Combination setting (CM16080:39)	With four MU181040A/B modules installed, when the Combination setting is set to 2ch Combination, when the measurement cycle setting is changed during measurement, sometimes measurement is not restarted normally.
Ver. 5.00.04	Sometimes, Pattern Sync not output correctly (CM18430:70)	Sometimes, Pattern Sync is not output correctly when using the MU181020A and MU181040A and setting a large value for Pattern Sync Position when the test pattern is PRBS and then changing the test pattern to Mixed Data.
	Sometimes Defined Interface not set correctly (CM18430:20)	When Defined Interface is set to NECL at the MU181020A, sometimes the Amplitude is not set correctly.
	Errors when reading Data Input settings file (CM18430:19)	When reading a settings file at the MU181040A, sometimes the Data Input settings items are not set correctly. The settings at the application screen are correct but the internal settings are different from the screen settings, so operation is abnormal.
Ver. 4.01.01	Sometimes, Threshold value cannot be set correctly after executing Auto Adjust (CM160800:81)	Using the MU181040A, when a large change is made to the Offset value of the input signal data while the Auto Adjust function is executing and then Auto Adjust is set to Off, sometimes, the input Data Threshold value cannot be set correctly.

Version	Item (Bug Mngt No.)	Phenomenon
Ver. 4.00.01	Optimized Bathtub measurement point number (CM160800:63)	The number of phase direction measurement points for auto Bathtub measurement is optimized, shortening measurement times compared to previous versions. In addition, the TJ, DJ, and RJ calculation method has changed. When reading measurement results files created with Ver. 4.00.00 or earlier, although the TJ, DJ, and RJ values are calculated using the old calculation method and displayed, when the [Calculation Error Threshold] setting is changed, the displayed results are recalculated using the new Ver. 4.00.01 calculation method.
Ver. 4.00.00	When MU181020A inserted in Slot 3 or Slot 4, sometimes Gating Output abnormal (CM160800:55)	When the MU181020A is inserted in Slot 3 or Slot 4 of the MP1800A/MT1810A-015 and the frequency is set to 8.8 to 9.0 GHz, sometimes the Gating Output is abnormal. If this phenomenon occurs, insert the MU181020A in Slot 1 to obtain the normal Gating Output.
Ver. 3.00.02	Sometimes, error buzzer sounds in error-free condition (CM133800:76)	When the error buzzer is set to ON with only the MU181040A inserted in slot 1 and 2, or slot 1, 2 and 3 of the MP1800A-015/MT1810A-015, sometimes, the error buzzer sounds irrespective of whether there is an error or not.
	Sometimes, Jitter output abnormal at power-on (CM160800:04)	When the power is set to off and then on again while the MU181000A/B-x01 Jitter Output is ON and the Modulation Frequency is set to Hz or kHz, sometimes, the Jitter output is abnormal. If this phenomenon occurs, normal output can be recovered by toggling the Jitter Output ON/OFF.
	Self test fails some items for MT1810A Unit 2 to 4 (CM160800:07)	Sometimes, the following self-test items fail the hardware test when the MT1810A Main Frame ID is set to 2 to 4 although the hardware modules are normal: Frequency Coverage, Data Output, Pattern Test, Data Amplitude, Clock Recovery, Module Operation To prevent this phenomenon, set the Main Frame ID to 1 when running the MT1810A self test.
	Sometimes, MU181020A-001 Aux Output settings not backed-up correctly (CM160800:50)	When the MU181020A-001 CMU Bit Rate Frequency units are set to kHz, sometimes, the Aux Output 1/N Clock setting is not backed-up correctly. When 1/N Clock is set to 64 or more and the application is restarted, the setting is set incorrectly to 63; reset the correct value manually.
	MU181600A unable to identify XFP module correctly (CM160800:51)	The Anritsu-recommended 850 and 1550 nm XFP modules cannot be correctly identified by the MU181600A. As a result, the output optical wavelength is not displayed.

Version	Item (Bug Mngt No.)	Phenomenon
Ver. 2.00.00	Saving settings file (CMN001)	Although MU181020A and MU181040A settings can be saved to the specified folder using Save and Quick Save at the MX180000A File menu, required Save data is also saved outside the specified folder. This does not cause any problems in normal usage but when copying this saved settings data to another instrument, note that the other instrument is not able to read this settings data.
	Clock setting disabled for ED (CMN122037:43)	When the ED Clock Delay option (MU181040A-x30) is not installed, if remote command INPut:CLOCK:CALibration, which cannot be responded to without the Clock Delay option, is transmitted, the Clock setting screen is grayed out and operation is disabled.
Ver. 1.01.03	At continuous operation, sometimes, Connection Disconnect error occurs (CM122036:85)	At continuous operation with either only the MU181040A installed or both the MU181000A and MU181040A installed, sometimes a Connection Disconnect error occurs at around 12 hours of operation.
	At alarm, sometimes error buzzer sounds (CM122037:00)	At an alarm/error buzzer operation, sometimes, the error buzzer is masked at an alarm, and sometimes, the error buzzer sounds at an alarm.
	Sometimes, pattern file for existing MP1632C not read (CM122037:29)	Sometimes, a pattern file created using the existing MP1632C cannot be read.
	Sometimes, no Aux output at power-on (CM122036:89)	At power-on when the test pattern is Mixed pattern and Aux output is set to Pattern Sync, there is no output from Aux output. In this case, change the Aux output setting to 1/N Clock and then back to Pattern Sync to recover the Aux output.
	Sometimes, threshold setting slips at remote control (CM122036:94)	When a negative value is set using the remote command:INPut:DATA:THReshold, the set value slips by 0.001 V.
	Sometimes, application quits abnormally when querying capture status using remote command (CM122037:21)	After performing capture by remote command, sometimes the application quits abnormally when querying the capture status using the remote command :SENSe:CAPTure:ACQquisition:STATe?
	After starting main unit, sometimes unable to set Sequence Match Pattern by remote control (RMT001)	When restarting the MP1800A/MT1810A after initializing the MX180000A and then selecting Sequence at the ED Pattern screen Test Pattern setting, when Match Pattern is set using the remote control command without displaying the Match Pattern Condition screen, sometimes, the setting cannot be performed correctly. In this case, display the Match Pattern Condition screen again and perform remote control after closing the screen using the OK button. In addition, when a Sequence pattern Block is added, always perform Match Pattern setting for the added Block.



## 2 Known Software Bugs

Version	Item (Bug Mngt No.)	Phenomenon
Ver. 8.04.02	Main Application does not start when using three 14G PPG units with Combination Setting set to 2ch Combination	The MX180000A Main Application does not start normally when using three units of the MU181020B 14 Gbit/s Pulse Pattern Generator with Combination Setting set to 2ch Combination. This bug occurs at cases E and K shown in Table 1.2.1-2 in section 1.2.1 Restrictions on PPG and ED Installation Slots. When this bug occurs, workaround by starting the Setup Utility and clicking the [Initialize] button at the Help tab.
Ver. 7.04.00	Sometimes, output pattern bits drift when frequency changed	Sometimes, the output pattern bits drift between channels when using the MU183020A 32G PPG in the Inter-module Synchronization mode, the MU183021A 32G 4ch PPG in either the Combination or Channel Synchronization mode and changing the frequency. This bit drift can be removed by clicking the Data1~4 Delay Calibration button.
Ver. 7.03.00	Sometimes, synchronization not achieved when Combination and Mixed pattern set	Synchronization is not achieved sometimes when using the MU181040A/B ED and setting Mixed pattern at 2ch/4ch Combination.
Ver. 5.04.02	Sometimes, Sync Loss occurs at bit rates of 6 Gbit/s or less using MP1800A-14 option (CM160802 :90)	Sync Loss may occur sometimes when using the MP1800A-14 option at bit rates of 6 Gbit/s or less. Workaround by resynchronizing by toggling the MU181040A/B ED Auto Sync ON/OFF.

### 3 Added Functions

The following functions have been added to the relevant version.

Version	Item	Function
Ver.8.07.05	Extended MU181500B SSC modulation	Extended MU181500B Jitter Modulation Source SSC modulation maximum from 5300 ppm to 7000 ppm.
	Added PAM4 patterns for use by 32G PPG, 32G ED, and G0374A	<p>Pattern files have been added for PAM4 signal generation and BER measurement using the MU18302xA 32G PPG, MU18304xB 32G High Sensitivity ED and G0374A. The added patterns are listed below: SSPRQ[D3_4]; IEEE802.3bs draft 3.4</p> <p>To use the pattern files, refer to either Appendix G in the MU18302xA 32G PPG Operation Manual, or to Appendix F in the MU18304xB 32G High Sensitivity ED Operation Manual.</p>
Ver.8.05.00	Added command for querying 32G PPG Amplitude and Offset setting conditions	<p>A command has been added to query the MU18302xA 32G PPG Amplitude and Offset setting condition. The added command is listed below:</p> <ul style="list-style-type: none"> <li>•32G PPG Command</li> </ul> <pre>:OUTPut:CHANGe:CState?</pre> <p>"1" is returned when either the Amplitude or Offset hardware setting is being changed, and "0" is returned when the setting change is complete.</p>
Ver.8.04.01	Expanded setting ranges for remote commands for 32G PPG and 32G ED data pattern settings	<p>The setting ranges for the remote commands for setting the MU18302xA 32G PPG and MU18304xB 32G High Sensitivity ED Data and Mixed-Data patterns have been expanded from 16,384 bytes to 16,777,216 bytes. The expanded commands are listed below:</p> <ul style="list-style-type: none"> <li>•Commands for 32G PPG</li> </ul> <pre>:SOURce:PATtern:BDATa:WHOLe :SOURce:PATtern:BDATa:WHOLe? :SOURce:PATtern:MIXData:BDATa:WHOLe :SOURce:PATtern:MIXData:BDATa:WHOLe?</pre> <ul style="list-style-type: none"> <li>•Commands for 32G ED</li> </ul> <pre>:SENSe:PATtern:BDATa:WHOLe :SENSe:PATtern:BDATa:WHOLe? :SENSe:PATtern:MIXData:BDATa:WHOLe :SENSe:PATtern:MIXData:BDATa:WHOLe? :SENSe:PATtern:MASK:BDATa:WHOLe :SENSe:PATtern:MASK:BDATa:WHOLe?</pre>

Version	Item	Function
Ver.8.04.00	Added PAM4 patterns for use by 32G PPG, and 32G ED	<p>Pattern files have been added for PAM4 signal generation and BER measurement using the MU18302xA 32G PPG and MU18304xB 32G High Sensitivity ED. The added patterns are listed below:</p> <ul style="list-style-type: none"> <li>• Non-linear PAM4 signal generation patterns for use by 32G PPG: PRBS7, PRBS9, PRBS10, PRBS11, PRBS15, PRBS20, PRQS10, SSPR</li> <li>• PAM4 and non-linear PAM4 signal generation patterns for use by 32G PPG: QPRBS13-CEI, GrayQPRBS13-CEI, QPRBS13-IEEE100GBASE-KP4_Lane0-3, GrayQPRBS13-IEEE100GBASE-KP4_Lane0-3, GrayPreQPRBS13-IEEE100GBASE-KP4_Lane0-3, Transmitter_Linearity GrayPRBS7, GrayPRBS9, GrayPRBS10, GrayPRBS11 GrayPRBS15, GrayPRBS20, GrayPRQS10, GraySSPR</li> <li>• PAM4 BER Measurement patterns for use by 32G ED QPRBS13-CEI, GrayQPRBS13-CEI, QPRBS13-IEEE100GBASE-KP4_Lane0-3, GrayQPRBS13-IEEE100GBASE-KP4_Lane0-3 GrayPreQPRBS13-IEEE100GBASE-KP4_Lane0-3, Transmitter_Linearity GrayPRBS7, GrayPRBS9, GrayPRBS10, GrayPRBS11 GrayPRBS15, GrayPRBS20, GrayPRQS10, GraySSPR</li> </ul> <p>To use the pattern files, refer to either Appendix G in the MU18302xA 32G PPG Operation Manual, or to Appendix F in the MU18304xB 32G High Sensitivity ED Operation Manual.</p>
	Upgraded MP1825B Emphasis	<p>The following functions have been added to the MP1825B Emphasis.</p> <ul style="list-style-type: none"> <li>• Upgraded settings file Save function. Quick Save/Save functions have been added for the settings file Coefficient Preset Table.</li> <li>• Upgraded Adjust function, To optimize the Adjust function at Jitter Addition, Jitter settings can be set ON/OFF automatically.</li> </ul>
	Upgraded 32G ED PAM BER Measurement	<p>The following functions have been added to the MU18304xB 32G High Sensitivity ED PAM BER measurements:</p> <ul style="list-style-type: none"> <li>• Added Repeat measurement function to 3Eye Serial mode</li> <li>• Added measurement function with Middle Eye Phase value to 3Eye Serial mode</li> </ul>
	Added PAM4 mode to 32G ED Eye Contour measurement	<p>A PAM4 measurement mode has been added to the MU18304xB 32G High Sensitivity ED Eye Contour measurement. This supports simultaneous PAM4 signal 3Eye (Upper/Middle/Lower) measurements.</p>

Version	Item	Function
Ver.8.02.03	Added presettings file for using PCIe to MP1825B Emphasis	A presettings file for using PCIe Gen 3 has been added to the Co-efficient settings of the MP1825B.
	Added Mask evaluation function to 32G ED Eye Contour	A Mask evaluation function has been added to the Eye Contour settings of the MU183040A/B and MU183041A/B 32G ED.
	Upgraded 32G ED auto-measurement	The MU18304xA/B 32G ED auto-measurement function now supports Differential 100-Ω input. The upgraded auto-measurements are: <ul style="list-style-type: none"> <li>• Eye Margin</li> <li>• Eye Diagram</li> <li>• Bathtub</li> <li>• Q Analysis</li> <li>• Eye Contour</li> </ul>
	Upgraded 32G ED PAM BER measurement	A manual setting function for Threshold and Phase has been added to the MU18304xB 32G High-sensitivity ED PAM BER measurement function. As a result, each Eye BER measurement point can be fine-adjusted.
	Added ESD/EOS Video replay function	A function has been added for playing the video explaining ESD/EOS countermeasures at software start-up.

Version	Item	Function
Ver.8.02.01	Added remote commands to MP1825B Emphasis	Commands have been added to the MP1825B to switch the Clock rate when linked with the MP1825B. :SYSTem:INPut:CRATe :SYSTem:INPut:CRATe?
	Added 4PAM pattern files for 32G PPG and 32G ED	Pattern files have been added for 4PAM signal generation and BER measurement when using the MU18302xA 32G PPG and MU18304xB 32G High sensitivity ED as follows: PRBS13Q, GrayPRBS13Q, PRQS10, SSPR, JP03A, JP03B, Squarewave Refer to Appendix G of the MU18302xA 32G PPG operation manual and Appendix F of the MU18304xB 32G ED operation manual for use of the pattern files.
	Added quick settings for standard bit rates to 32G PPG	A quick setting function for standard bit rates has been added to the MU18302xA 32G PPG. The supported bit rate is set by selecting the standard.
	Added functions to customized screen	A setting file function has been added to the customized screen. The customized setting items can be saved/opened at the File menu. In addition, the following presets file has been added. Clock Setting (Jitter and 32G PPG tracking) Jitter_EmpHASis_BER (Jitter, Emp, 32G ED Result display)
	Added 4PAM signal BER measurement function to 32G ED	A 4PAM signal BER measurement function has been added to the MU18304xB 32G High sensitivity ED. The Total bit rate for the 4PAM signal can be measured using either ED 1ch or ED 3ch.
	Upgraded RJ modulation function for MU181500B Jitter Signal Source	A p-p/rms conversion coefficient setting has been added to the RJ modulation function of the MU181500B Jitter Signal Source.
	Added Eye Contour function to 32G ED	An Eye Contour function has been added to the MU183040A/B and MU183041A/B 32G ED. The measurement time is shortened in comparison to Eye Diagram, and the measurement accuracy is improved by upgrading the Estimate method.
	Upgraded 32G ED PAM Auto Search function	The MU18304xB 32G High sensitivity ED 4PAM Auto Search function has been upgraded to support Differential input.
	Added PAM Auto Search function to 32G ED Auto Measurement	The PAM Auto Search function has been added to each MU18304xB 32G High sensitivity ED Auto Measurement. PAM Auto Search can be set at each of the Eye Margin, Eye Diagram, Bathtub, and Q Analysis screens.

Version	Item	Function
Ver.8.00.02	Upgraded 32G PPG Multi-channel Calibration function	Part of the MU18302xA 32G PPG Multi-channel Calibration function has been changed and upgraded. When using an external synthesizer, previously a 16.05-GHz clock was required but calibration can now be performed using clocks up to 12.5 GHz.
	Upgraded 14G PPG Multi-channel Calibration function	Part of the MU181020B 14G PPG Multi-channel Calibration function has been changed and upgraded. When the 14G PPG and MU181000A/B 12.5G synthesizer are installed in the same main frame, calibration can be performed automatically up to 12.5 Gbit/s.
Ver.8.00.01	Added supported modules	Support for the following modules has been added: MP1861A 56G/64G bit/s MUX MP1862A 56G/64G bit/s DEMUX
Ver.7.10.01	Added MP1800A option	The MP1800A-x07 (OS Upgrade to Windows7) has been added.
Ver.7.09.02	Added MU181500B Jitter Signal Source function	Extended MU181500B SJ and SSC operation range. The maximum Jitter generation amounts are as follows: SJ (Linked operation with MU18202xA 32G PPG) 50UI -> 2000UI @ 10 Hz to 0.1 MHz 50UI -> 200UI @ 0.1 to 1 MHz 10UI -> 16UI @ 1 to 10 MHz 0.55UI -> 1UI @ 10 to 250 MHz SSC 5000 ppm -> 5300 ppm 34 kHz -> 37 kHz
	Added MP1825B 4 Tap Emphasis function	Added Coefficient setting. It is possible to output De-Emphasis waveform in conformance with each standard.
	Added MU183040A/B 32G ED function	Added PAM Auto-Search function to MU183040B and MU183041B 32G ED. This searches for optimum threshold for 4PAM signal and optimum phase. Added Auto-Measurement Q Analysis function to MU183040A/B and MU183041A/B 32G ED.
Ver.7.08.07	Added module combinations for installation in MP1800A and MT1810A	Added support for simultaneous installation of MU181020A/B, MU181040A/B, and MU183020A/40A modules in either MP1800A or MT1810A. Refer to section 1.2.3 for the restrictions on 32G PPG and ED Installation Slots and 1.2.4 for the restrictions on simultaneous installation of the PPG and ED, or 32G PPG and ED.
	Added MP1825B 4 Tap Emphasis function	Added function for setting negative value at Cursor1 to following Waveform Formats 1Post/1Pre-cursor  When MP1825B is linked with MU183020A/21A and the Delay (Option x30/31) is installed in the MU183020A/21A, the Data/Clock phase difference can be adjusted by Data/Clock Adjustment function. In this case MP1825B-04 Variable Data Delay and MP1825B-06 32.1Gbit/s Extension are not required.

Version	Item	Function
Ver.7.08.04	Added MU183040B/41B-2 2/23 options	The following options have been added to the MU183040B/41B 32G ED: MU183040B/41B-22 2.4G to 28.1G Clock Recovery MU183040B/41B-23 25.5G to 32.1G Clock Recovery
	Added function for 32G PPG, and 32G ED	The grouping function has been added to the MU183020A/21A 32G PPG, MU183040A/41A, and MU183040B/41B 32G ED. The grouping function supports batch setting of Output/Input and Pattern for multiple channels of the 32G PPG and 32G ED.
Ver.7.07.00	Added MP1825B 4 Tap Emphasis function	A De-Emphasis setting has been added. The 1Post/1Pre-cursor Waveform Format is supported. Switching with the existing Pre-Emphasis setting is supported.
		1Post/2Pre-cursor has been added to the Pre-Emphasis setting Waveform Format.
		A function for switching the Cursor setting units has been added. Setting Units: dB, Vp-p, %
	Added MU183020A/21A 32G PPG function	The Half Period Jitter function has been added. This function supports adjustment of the Half Period Jitter (width in EYE Pattern phase direction).
Added MU181500B Jitter Signal Source function	The SJ and SJ2 setting resolutions have been changed. The setting resolutions have been changed to 0.00xUI at the following modulation frequencies (Fm). 10 kHz $\leq$ Fm $\leq$ 1 MHz      0.xUI $\rightarrow$ 0.00xUI 1.000001 MHz $\leq$ Fm $\leq$ 10 MHz      0.0xUI $\rightarrow$ 0.00xUI x = 1, 2, or 4	
Ver.7.06.02	Added supported modules	Support for the following modules has been added: MU183040B 28G/32G bit/s High Sensitivity ED MU183041B 28G/32G bit/s 4ch High Sensitivity ED
	Added MP1825B option	The MP1825B-006 (32.1Gbit/s Extension) has been added. When MP1825B is linked with MU183020A/21A and the Delay (Option x30/31) is installed in the MU183020A/21A, the Data/Clock phase difference can be adjusted by Data/Clock Adjustment function. In this case MP1825B-04 Variable Data Delay is not required.
	Added 32G Unit Sync Function	Added function for synchronizing output pattern between multiple MP1800A units. It is possible to output up to 16 channels of synchronized signals when using four MP1800A units with installed MU183020A/MU183021A.

Version	Item	Function
Ver.7.04.00	Added Multi-Channel Calibration function (for 32G PPG)	Added Multi Channel Calibration function used by MU183020A/21A Multi Channel function and by synchronization function between modules under optimum conditions.
	Added module combinations for installation in MP1800A and MT1810A	Added support for simultaneous installation of MU181020A/B, MU181040A/B, and MU183020A/40A modules in either MP1800A or MT1810A. Refer to section 1.2.4 for the restrictions on simultaneous installation of the PPG and ED, or 32G PPG and ED.
	Added user-customizable modules	Added support for user customized operation of the following modules: MU181500B, MU183020A/21A/40A/41A
	Added Bathtub measurement function	Added function to Bathtub measurement results for displaying J2 and J9.
Ver. 7.03.00	Added MU183040A/41A functions	Added Capture function to MU183040A/41A to capture and analyze test patterns.
	Added MU183020A/21A functions	Added function to MU183020A/21A for driving at 1/4 Clock Frequency for output Data Bitrate. When Clock Source is set to External, this function supports driving at bit rates of 25.0 to 32.1 Gbit/s at input of a clock of 6.25 to 8.025 Gbit/s.
Ver. 7.02.00	Added 1/4 Clock Mode to MU181500B	Added 1/4 rate clock mode to MU181500B. As a result, can now add jitter to pattern generation source operating at 1/4 clock rate.
Ver. 7.01.01	Added supported modules	Support for the following modules has been added: MU183021A 28G/32G bit/s 4ch PPG MU183041A 28G/32G bit/s 4ch ED
Ver. 7.00.06	Added supported modules	Support for the following modules has been added: MU183020A 28G/32G bit/s PPG MU183040A 28G/32G bit/s ED
Ver. 6.03.00	Added MP1825B 4Tap Emphasis function	Added function for setting negative value at Cursor2 to following Waveform Formats 2Post/1Pre-cursor 3Post-cursor 2Post-cursor
		Added function for calculating optimum emphasis setting depending on DUT characteristics. Requires DUT S-parameter file to calculate settings.
		Adds 2Pre-cursor to Waveform Format.



Version	Item	Function
Ver. 6.02.00	Shorten auto-measure time	Reviewed MU181040A/B ED and MU182040A/41A DEMUX auto-measurement sequences (Eye Margin, Eye Diagram, Bathtub) and shortened measurement times.
	Support for Windows 7 PC operating system	Added support for Windows 7 OS for PC controller.
Ver. 6.00.00	Added supported modules	Support for the following modules has been added: MU181500B Jitter Modulation Source MP1825B 4Tap Emphasis
	Added MU182020A/21A and MU182040A/41A option	The MU182020A/21A-003 (28.1Gbit/s Extension) and the MU182040A/41A-003 (28.1Gbit/s Extension) have been added.
	Optimized measurement sequence for Auto Search Fine mode	Optimizing the measurement sequence of the Fine mode of the Auto Search function of the MU181040A/B Error Detector and MU182040A/41A DEMUX makes it possible to determine the optimum voltage threshold and phase even when the input data amplitude is small.
Ver. 5.04.00	Added Multi Channel Calibration Function	Added Calibration function to use Channel Synchronization and Combination functions under optimum conditions with multiple MU181020A/B PPG units.
Ver. 5.03.01	Added Unit Sync Function	Added function for synchronizing output pattern between multiple MP1800A units. It is possible to output up to 16 channels of synchronized signals when using four MP1800A units with installed MU181020A/B options.
	Added remote control commands	The following remote control commands have been added: Command for switching each module screen and tabs :DISPlay:ACTive Command for switching items displayed at Result tab of MU181040A/B and MU182040A/41A :SENSe:DISPlay:SETTing :DEMux:DISPlay:SETTing Refer to the MX180000A Control Software Remote Control Operation Manual (M-W2799AE) for the command usage method.

Version	Item	Function
Ver. 5.02.08	Added Enhanced (high-speed processing) mode to Ethernet interface for remote control	The Enhanced (high-speed processing) mode has been added to the Ethernet interface for remote control. When Ethernet is selected at the Remote Control tab of the Setup Utility, either the Normal mode (previous mode) or Enhanced mode (high-speed processing mode) can be selected. When the Enhanced mode is selected and the Apply button is clicked, the Enhanced mode is enabled when the Application is started, speeding up remote control processing over the Ethernet interface.
	Added MU181020B and MU181040B option	The MU181020B-003 (14.05Gbit/s Extension) and the MU181040B-003 (14.05Gbit/s Extension) have been added.
Ver. 5.02.04	Added MX180000A-x01 and -x02 Pre-Code and De-Code options	The MX180000A-x01 Pre-Code and -x02 De-Code options plus supporting remote commands have been added to the product line. As a result, precode data can be generated and precoded data can be decoded.
Ver. 5.01.01	Expanded MU181020A/B-x13 option cross point setting range	The upper limit of the cross point setting range for the MU181020A/B-x13 option has been increased from 85% to 90%.
	Changed output ON/OFF control when MU181020A Data Output option not installed	The ON/OFF output control when there is no MU181020A Data Output option has been changed as follows: Before change: No ON/OFF function After change: Added ON/OFF control (However, ALL0s pattern output at OFF)
Ver. 5.00.04	Added supported modules	Support for the following modules has been added: MU181020B 14 Gbit/s PPG MU181040B 14 Gbit/s ED MU182020A 25 Gbit/s 1ch MUX MU182021A 25 Gbit/s 2ch MUX MU182040A 25 Gbit/s 1ch DEMUX MU182041A 25 Gbit/s 2ch DEMUX MU181800B 14 GHz Clock Distributor

Version	Item	Function
Ver. 4.01.00	Added MU181020A Data Output option	The MU181020A-x13 (Variable Data Output (0.5 to 3.5Vp-p)) has been added along with supported remote commands.
	Changed setting resolution for ED clock recovery frequency	The clock recovery frequency setting resolution for the MU181040A-001 and MU181040A-x20 is changed from 2 MHz to 1 kHz. In addition, the setting frequency for a specified resolution can be displayed in kHz. Refer to item 4. Usage Precautions.
Ver. 4.00.00	Added MU181620A and MU181640A to supported modules	The MU181620A Stressed Eye Transmitter module and the MU181640A Optical Receiver module have been added to the supported modules.
Ver. 3.00.00	Added MU181000B to supported modules	The MU181000B 4-port Synthesizer module has been added to the supported modules.
	Added MU181000A/B Jitter Modulation option	The MU181000A/B-x01 (Jitter Modulation) has been added along with supported remote commands. As a result, Jitter generation is supported.
	Added Jitter Input On/Off to PPG and ED	Along with adding a synthesizer Jitter generation function, both a Jitter Input On/Off function and related remote commands have been added to the PPG and ED. These functions are only enabled when the MU181020A-x30/MU181040A-x30(Data/Clock Delay options) is installed.
	Added FPGA download function for PPG and ED to Setup Utility	An FPGA download function for the PPG and ED has been added to the Setup Utility, supporting FPGA downloads at version upgrades.
Ver. 2.00.00	Mounting of multiple PPG and ED modules supported	Two or more PPG and/or ED modules can be mounted, enabling the Channel Synchronization and 4Ch Combination functions.
Ver. 1.01.03 Ver. 1.01.02	Added Frequency Coverage Test to Self Test	The Frequency Coverage Test checks that there are no errors in all frequency bands at the Self Test.
Ver. 1.01.01	Added Enhanced (high-speed processing) mode to GPIB interface for remote control	The Enhanced (high-speed processing) mode has been added to the GPIB interface for remote control. When GPIB is selected at the Remote Control tab of the Setup Utility, either the Normal mode (previous mode) or Enhanced mode (high-speed processing mode) can be selected. When the Enhanced mode is selected and the Apply button is clicked, the Enhanced mode is enabled when the Application is started, speeding up remote control processing over the GPIB interface.

## 4 Usage Notes

The precautions for using each version are described below.

### 4.1 Ver. 1.00.00 and Later

#### 4.1.1 Compatibility of Ver. 1.00.00 and Ver. 0.00.xx Settings Files

Note the following restrictions when using Version 1.00.00 to read settings files saved with Version 0.00.xx of the MX180000A control software version for the MP1800A/MT1810A.

- 1 When reading settings files saved with Version 0.00.19 and earlier using Version 1.00.00.

	Readable	Remarks
<b>1. Normal Save Setting File</b>		
MU181000A	Yes	
MU181020A	No	
MU181040A	No	
MU181600A	Yes	
MU181601A	Yes	
<b>2. Quick Save Setting File</b>	No	
<b>3. Test Pattern File</b>		The test pattern file is saved from each Pattern Editor screen of the PPG and ED.
Data Pattern	Yes	
Alternate Pattern	Yes	Only PPG
Mixed – Data Pattern	Yes	When Row Length is less than 768 bits, it is changed to 768 bits. In addition, when the difference of Row Length and Data Length is less than 256 bits, Row Length and Data Length are adjusted so that the difference becomes 256 bits.
Mixed – Alternate Pattern	Yes	Only PPG When Row Length is less than 768 bits, it is changed to 768 bits. In addition, when the difference of Row Length and Data Length is less than 256 bits, Row Length and Data Length are adjusted so that the difference becomes 256 bits.
Sequence Pattern	Unsupported	Versions earlier than 1.00.00 do not support the Sequence pattern function.

## 2 When reading settings files saved with Version 0.00.20 or later using Version 1.00.00

	Readable	Remarks
1. Normal Save File	—	
MU181000A	Yes	
MU181020A	Yes	1. Note that when upgrading to Version 1.00.00, if an uninstall is executed instead of installing over, it is not possible to read settings files because all files are deleted. 2. If the difference between the Enable Period and Burst Cycle set in the Burst mode of the Pattern Sequence at the Misc. screen is less than 512 bits, it is changed to 512 bits.
MU181040A	Yes	
MU181600A	Yes	
MU181601A	Yes	
2. Quick Save File	Yes	1. Unable to read if there is not a complete match between modules and options configurations. 2. Note that when upgrading to Version 1.00.00, if an uninstall is executed instead of installing over, it is not possible to read settings files because all files are deleted. 3. If the difference between the Enable Period and Burst Cycle set in the Burst mode of the Pattern Sequence at the Misc. screen is less than 512 bits, it is changed to 512 bits.
3. Test Pattern File		The test pattern file is saved from each Pattern Editor screen of the PPG and ED.
Data Pattern	Yes	
Alternate Pattern	Yes	Only PPG
Mixed – Data Pattern	Yes	When Row Length is less than 768 bits, it is changed to 768 bits. In addition, when the difference of Row Length and Data Length is less than 256 bits, Row Length and Data Length are adjusted so that the difference becomes 256 bits.
Mixed – Alternate Pattern	Yes	Only PPG When Row Length is less than 768 bits, it is changed to 768 bits. In addition, when the difference of Row Length and Data Length is less than 256 bits, Row Length and Data Length are adjusted so that the difference becomes 256 bits.
Sequence Pattern	Unsupported	Versions earlier than 1.00.00 do not support the Sequence pattern function.

#### 4.1.2 Precautions when using Q Analysis Measurement Function

When performing Phase vs Q measurement using the Q Analysis function with Auto Search OFF, measurement starts from the center of the area specified by Measurement Range. When measurement starts, the internal processing starts Eye Margin measurement from the first measurement point but if an error exceeding the specified Error Threshold is detected at this measurement point, it is determined as an Eye Measurement failure. If Eye Margin measurement fails, change the Start position at Measurement Range and start the measurement again.

#### 4.1.3 Note on Changing File Names

If the names of setting and pattern files saved by the MP1800A/MT1810A are changed, the files will become unreadable. DO NOT change the names of files.

#### 4.1.4 Note on Disconnecting LAN Cable during Remote Operation

If the LAN cable between the MT1800A and controller PC (or to a hub between them) is unintentionally disconnected while the MP1800A is being remotely controlled over Ethernet, sometimes remote control will be disabled when the cable is reconnected. In this case, press the Remote/Local button on the front panel of the MP1800A and if the connection is not re-established, quit the main application and restart from the Selector screen.

#### 4.1.5 Notes When Connecting Two or More Main Frames via GPIB

When two or more MP1800A units are connected via GPIB, these connected units may not be recognized, depending on the version of the GPIB card used. In this event, change the settings for each MP1800A unit using the following procedure.

- 1) From the Start menu of Windows XP on the MP1800A, select Programs → National Instruments → Measurement & Automation.
- 2) The MAX screen is displayed. On this screen, right-click GPIB1 (AT-GPIB/TNT) in a tree display of Devices and Interfaces, then select [Properties...].
- 3) The GPIB Configuration screen is displayed. On this screen, click GPIB1 from GPIB Board, then click the Configure button.
- 4) The Configure screen is displayed. Click the Software>> button and clear the System Controller checkbox on the screen. Then, click the OK button to close the screen.

#### 4.1.6 Notes When Turning Off MP1800A

When the Power button is pressed to shutdown the MP1800A, normally, Windows should terminate, the screen should go dark and the back-panel fan should stop, but sometimes the front-panel Power button lamp remains lit and the back-panel fan continues turning. When this happens, forcibly stop by pressing the front-panel Power button for more than 4 seconds.

#### 4.1.7 Updating by Downloading FPGA for PPG and ED using Setup Utility

Version 3.00.00 supports downloading of the FPGA for the PPG and ED. When upgrading to Version 3.00.00 from an earlier version, when running the FPGA download for the PPG and ED from Setup Utility, first download MP1800A\_Logic.syst to V3.00.00 and when that download is completed, then download the FPGA for the PPG and ED (MU181020A\_PPG\_MAIN.FPGA; MU181020A\_PPG\_opt\_Delay.FPGA; MU181040A\_ED\_MAIN.FPGA; and MU181020A\_ED\_opt\_Delay.FPGA).

Downloading is not possible if the version of MP1800A\_Logic.syst is earlier than V3.00.00. Downloading as one object takes about 10 minutes. After downloading the FPGA for the PPG and ED, ALWAYS switch the MP1800A and MT1810A power off and on.

#### 4.1.8 Note on Auto Adjust Function of MU181040A ED

When using the Auto Adjust function of MU181040A 12.5 Gbit/s ED, use it not only according to the specifications given in the operation manual, but also within the following range:

As for Input Format, the number of rising/falling edge ratio relative to Pattern Length is 1:5 or more.

#### 4.1.9 Note on MU181040A ED Settings File and Command Compatibility

From Version 4.01.00, there are two restrictions as follows on the compatibility of MU181040A 12.5 Gbit/s ED settings files and remote commands.

1. Settings files (.ED and .CND) created using Version 4.01.00 cannot be read using Version 4.00.xx and earlier. However, settings files created using Version 4.00.xx and earlier can be read using Version Ver.4.01.00.
2. The number of digits in the response to a query command has changed for remote commands :INPut:CLOCK:CRFReq? And CFQ?.

#### 4.1.10 Precautions about Remote Control Performance Setting

From Ver. 5.02.08, it is possible to select two modes (Normal and Enhanced) at the GPIB and Ethernet interfaces.

1. Select either the Normal or Enhanced mode at the [Remote Control] tab of the Setup Utility. Refer to the MX180000A operation manual for details about each mode.
2. When the Enhanced mode is selected, the following command supporting increased speed is enabled at Remote control.

Refer to the MX180000A Remote Command operation manual for details about the command.

:SYSTem:DISPlay:RESult / :SYSTem:DISPlay:RESult?

3. When changing the setting between Normal and Enhanced, sometimes it may be necessary to adjust the wait times for each process of customer-created remote scenario programs.

Example: If a remote program that runs without problems in the Normal mode stops in the Enhanced mode, optimize the wait time of the process that occurs before the command that stops.

#### 4.1.11 Notes on MU181020B and MU181040B-003 Option Model Display

The model and name of the MU181020B-003 and MU181040B-003 options are recorded on the front panel of each module. Although the screen displaying the option details using software indicates MU181020B-02 (0.1 to 14 Gbit/s) and MU181040B-02 (0.1 to 14 Gbit/s) the assured operating bit rates are actually 0.1 to 14.05 Gbit/s.

#### 4.1.12 Notes on MU182020A/21A and MU182040A/41A-003 Option Model Display

The model and name of the MU182020A/21A-003 and MU182040A/41A-003 options are recorded on the ejector of each module. Although the screen displaying the option details using software indicates MU182020A/21A-01 (28 Gbit/s Extension) and MU182040A/41A-01 (28 Gbit/s Extension) the assured operating bit rates are actually 8.0 to 28.1 Gbit/s.



## 4.2 Notes on Ver. 6.02.00 and Later

### 4.2.1 Precautions when using Windows 7 OS on external controller PC

When installing the MX180000A of the MT1810A control software in a PC running the Windows 7 OS, the onscreen keyboard cannot be used at the first start immediately after the install. This is caused by program compatibility.

Use the program compatibility assistant function (PCA) to optimize the settings and then restart to enable the onscreen keyboard.

### 4.2.2 Differences in operation between Windows 7 and Windows XP OS on external controller PC

Using the MX180000A with a Windows XP install, the USB driver required to run the module is deleted at the same time as uninstalling the MX180000A using the control panel. However, with Windows 7, the USB driver is not uninstalled simply by uninstalling the MX180000A using the control panel. To manually uninstall the driver, select "Anritsu USB Device Driver" at the control panel.

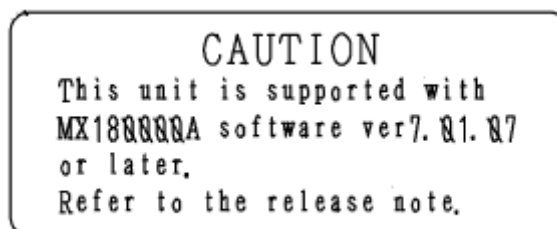
## 4.3 Notes on Ver. 7.00.06 and Later

### 4.3.1 Precautions when 32G PPG/ED and 12.5G/14G PPG/ED installed simultaneously

When using the MU183020A 28G/32G bit/s PPG and MU183040A 28G/32G bit/s ED, note that the MU181020A/B 12.5G/14Gbit/s PPG and MU181040A/B 12.5G/14Gbit/s ED are disabled and cannot be used simultaneously when installed in the same main frame.

### 4.3.2 Precautions when using MU181020A/B

Customers using MU181020A/B: If you find following label on front panel, software version of proper operation is 7.01.07 or later.



#### 4.4 Ver. 7.04.00 and Newer

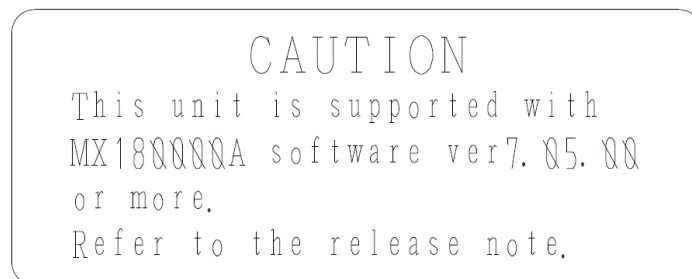
##### 4.4.1 Precautions when 32G PPG/ED and 12.5G/14G PPG/ED installed simultaneously

From software Version 7.04.00 and onwards, the MU181020A/B, MU181040A/B, and MU183020A or MU183040A can be installed simultaneously. For more details, refer to section 1.2.4 for the restrictions on simultaneous installation of the PPG and ED, or 32G PPG and ED.

#### 4.5 Ver. 7.05.00 and Newer

##### 4.5.1 Precautions when using MU183020A and MU183040A/B

Customers using MU183020A and MU183040A/B: If you find following label on front panel, software version of proper operation is 7.05.00 or later.



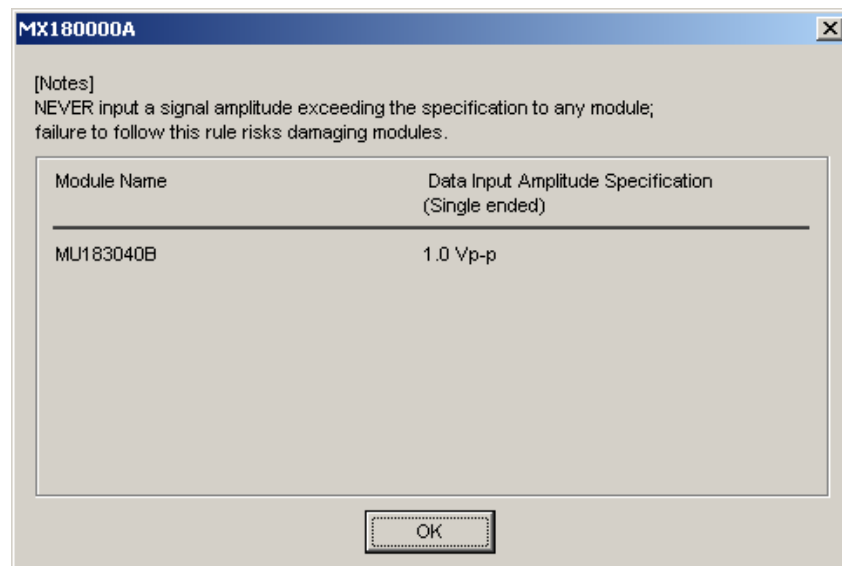
## 4.6 Ver. 7.06.02 and Newer Versions

### 4.6.1 Warning dialog about ED and DEMUX maximum input rating

When using ED and DEMUX modules with software Version 7.06.02 or later, a warning dialog is displayed when the application starts. This dialog displays a warning message about excessive input and the maximum rating for the target module data input; it is not a module fault.

Target modules and maximum ratings are shown below.

Module Name	Data Input Amplitude Specification (Single-ended)
MU181040A When Opt-001 installed	0.9 Vp-p
MU181040A When Opt-002 installed	2.0 Vp-p
MU181040B	2.0 Vp-p
MU182040A/41A	2.0 Vp-p
MU183040A/41A	2.0 Vp-p
MU183040B/41B	1.0 Vp-p
MP1822A	0.5 Vp-p
MP1862A	1.0 Vp-p



## 4.7 Ver. 7.09.00 and Newer

### 4.7.1 Notes on Supported MX181500A Versions

Use the MX181500A Jitter Tolerance Test software Ver. 2.04.00 or later when using MX180000A Ver. 7.09.00 or later. The MX181500A does not operate correctly with other software versions.

## 4.8 Ver. 7.10.00 and Newer

### 4.8.1 Notes on Supported MP1800A-x07 Versions

When the MP1800A-x07 option is installed to your MP1800A, make sure to use the MX180000A Signal Quality Analyzer Control Software whose version is V7.10.00 or later.

## 4.9 Ver. 8.00.02 and Newer

### 4.9.1 Precautions about re-execute the Multi-Channel Calibration

After Ver.8.00.02 upgrading, it is required to re-execute the Multi-Channel Calibration function of 32G PPG. When you are prompted to execute the Multi-Channel Calibration function, follow the on-screen instructions to execute calibration.

### 4.9.2 Precautions when using MU181000A and MU181000B

When the label shown below is attached to either the MU181000A or the MU181000B synthesizer, the supported software installer version is 8.00.02 or newer. If firmware including an installer version older than 8.00.02 is downloaded, the synthesizer will not operate correctly.

**CAUTION**

This unit is supported with MX180000A softwarever 8.00.02 or more.  
Refer to the release note.

## 4.10 Ver. 8.02.01 and Newer

### 4.10.1 Notes on Supported MX183000A Versions

Use the MX183000A High-Speed Serial Data Test Software Ver. 1.00.01 or later when using MX180000A Ver. 8.02.01 or later. The MX183000A does not operate correctly with other software versions.

## **4.11 Ver. 8.04.00 and Newer**

### **4.11.1 Notes on Supported MX183000A Versions**

Use the MX183000A High-Speed Serial Data Test Software Ver. 1.02.00 or later when using MX180000A Ver. 8.04.00 or later. The MX183000A does not operate correctly with other software versions.

### **4.11.2 Notes on Supported MX180014A Versions**

Use the MX180014A 100G EPON Application Software Ver. 1.00.02 or later when using MX180000A Ver. 8.04.02 or later. The MX180014A does not operate correctly with other software versions.

## **4.12 Ver. 8.05.00 and Newer**

### **4.12.1 Notes on Supported MX183000A Versions**

Use the MX183000A High-Speed Serial Data Test Software Ver. 2.01.00 or later when using MX180000A Ver. 8.05.00 or later. The MX183000A does not operate correctly with other software versions.

## **4.13 Ver. 8.06.00 and Newer**

### **4.13.1 Notes on Supported MX183000A Versions**

Use the MX183000A High-Speed Serial Data Test Software Ver. 3.00.00 or later when using MX180000A Ver. 8.06.00 or later. The MX183000A does not operate correctly with other software versions.

## **4.14 Ver. 8.07.00 and Newer**

### **4.14.1 Notes on Supported MX183000A Versions**

Use the MX183000A High-Speed Serial Data Test Software Ver. 3.02.00 or later when using MX180000A Ver. 8.07.00 or later. The MX183000A does not operate correctly with other software versions.