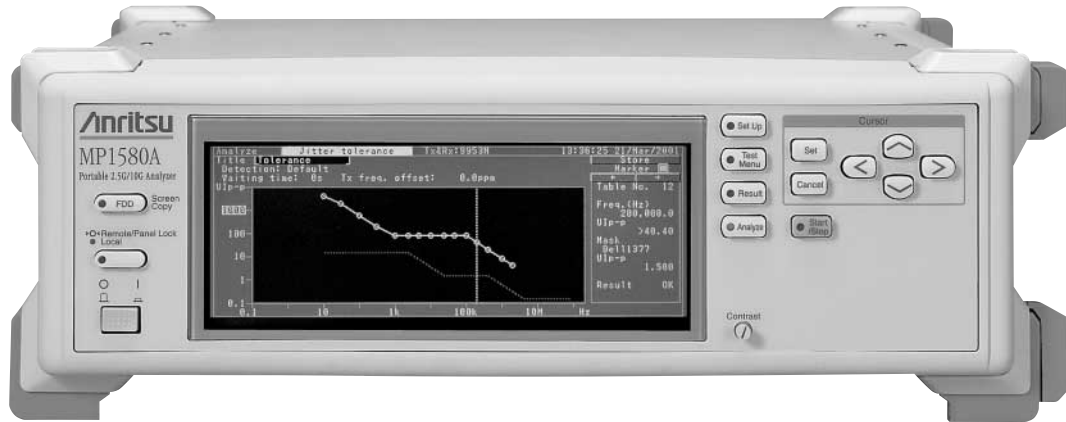


## PORTABLE 2.5G/10G ANALYZER MP1580A



### For 2.5G/10G Jitter/Wander Measurements



The MP1580A is a unique and powerful solution for analyzing jitter at the standard OC-48/192 or STM-16/64 bit rates. It can measure jitter of 2.5G/10G electrical interfaces (clock signal) with a simple operation. In addition, when used in combination with the MP1570A SONET/SDH/PDH/ATM Analyzer, evaluation of jitter characteristics in digital transmission lines, systems and devices, such as — jitter tolerance, jitter transfer, jitter generation, etc., can be performed easily.

### Functions

- Complies with the latest ITU-T O.172 and Bellcore GR-1377 standards

The MP1580A conforms to both the OC-192/STM-64 jitter measurement standards and supports required jitter modulation amplitude of 4000 Ulp-p and 80 MHz jitter bandwidth.

- Supports 10 GHz wander measurement according to the latest ITU-T G.813 standard (option)

The MP1580A can generate and measure various types of wander. It can generate wander in the frequency range of 10  $\mu$ Hz to 10 Hz at 400,000 Ulp-p max. In addition, MTIE/TDEV can be measured in real-time using an external PC and optional application software (MX150002A).

- Single cabinet support for both 2.5G and 10G jitter/wander measurements

Just one MP1580A is required for 2.5G and 10G jitter generation and analysis. When combined with the MP1570A and MU150000A, jitter can be added to SONET/SDH signals and measured.

- Differences from existing instrument (MP1777A)

Anritsu launched the MP1777A 10 GHz Jitter Analyzer in February of 1998, as a jitter measurement solution for OC-192/STM-64 (9953M). The new MP1580A Portable 2.5G/10G Jitter Analyzer is providing more convenience in measurement without the need for ancillary equipment (network analyzer, external E/O-O/E converter). Anritsu has also developed a Wide Band O/E Converter (MU150017A/B) for the MP1570A to support jitter measurement of 80 MHz at 9953.28 Mbit/s as required by ITU-T standard in conjunction with the MP1580A. Although it uses two cabinets, the compact size makes the system ideal for R&D, manufacturing, installation and maintenance. In addition, the MP1570A can be controlled from the MP1580A for performing automatic measurements, such as Jitter Tolerance and Jitter Transfer.

### Application

- Output jitter measurement

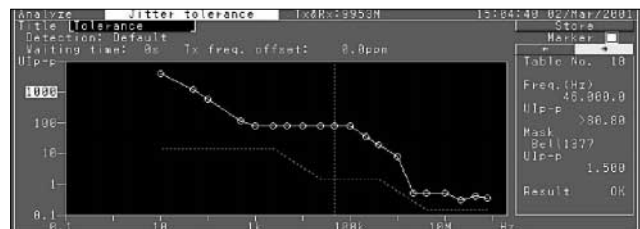
The MP1580A can easily measure the jitter clock signal (electrical interface only) by just inputting the output clock of DUT directly.



Optical signals can be measured easily by combining the MP1580A with the MP1570A, MU150000A, MU150001A and MU150017A/B.

- Jitter tolerance measurement

When the MP1580A is used with the MP1570A (send/receive jittered clock), jitter tolerance tests can be performed on OC-192/STM-64 and OC-48/STM-16 signals of electrical and optical interfaces.



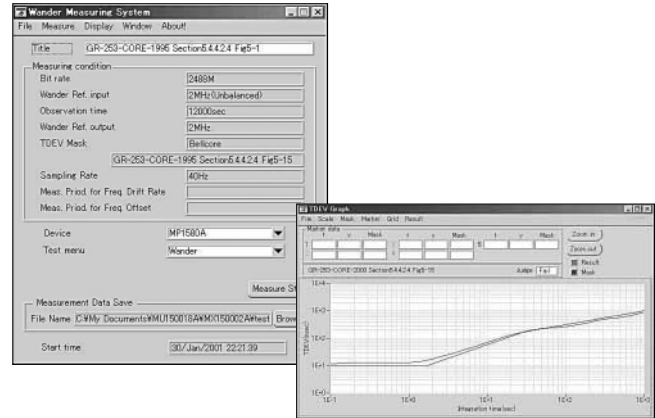
## • Jitter transfer measurement

When the MP1580A is used with the MP1570A (send/receive jittered clock), jitter transfer tests can be performed on OC-192/STM-64 and OC-48/STM-16 signals of electrical and optical interfaces.



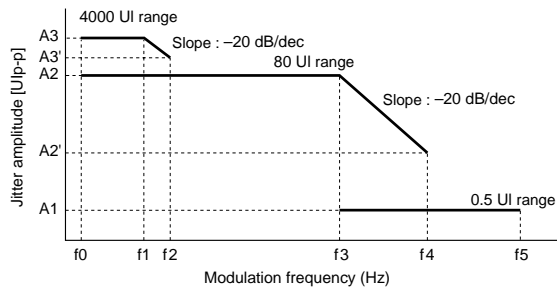
## • Wander generation and measurement

The MP1580A can generate and measure of wander conforming to ITU-T O.172 and also generation of TDEV conforming to ITU-T G.813. It also can measure TIE (Time Interval Error) by itself and measure MTIE and TDEV by connection of an external PC in which MX150002A is installed.



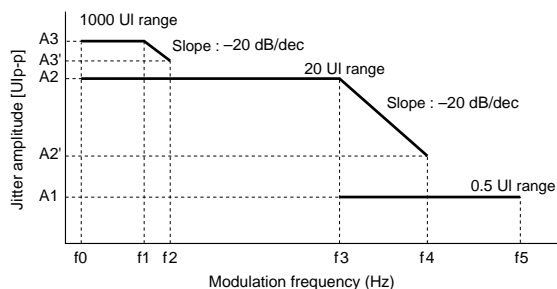
## Specifications

**Frequency**  
 Range: 9953.28, 2488.32 MHz  
 Offset range:  $\pm 100$  ppm  
 Resolution: 0.1 ppm  
 Accuracy:  $\pm 0.1$  ppm (calibrate after 60 min warm-up,  $23 \pm 5^\circ\text{C}$ )  
 Generation function: Clock signal output, data signal output (with MP1570A), jitter on, wander on/off  
 Modulation source: Internal (sine wave), external (for jitter generation function only)  
 Modulation frequency accuracy:  $\pm 100$  ppm (0.1 Hz to 80 MHz)  
 Jitter generation: Conform to ITU-T O.172



Bit rate (bit/s)	f0 (Hz)	f1 (Hz)	f2 (Hz)	f3 (kHz)	f4 (MHz)	f5 (MHz)	A1 (UIp-p)	A2' (UIp-p)	A2 (UIp-p)	A3' (UIp-p)	A3 (UIp-p)
9953.28M	0.1	15	600	100	2	80	0.5	4	80	100	4000

0.5 UI range: 0.000 to 0.505 UIp-p (0.001 UIp-p steps)  
 80 UI range: 0.00 to 80.80 UIp-p (0.05 UIp-p steps)  
 4000 UI range: 0 to 4040 UIp-p (2 UIp-p steps)



Bit rate (bit/s)	f0 (Hz)	f1 (Hz)	f2 (Hz)	f3 (kHz)	f4 (MHz)	f5 (MHz)	A1 (UIp-p)	A2' (UIp-p)	A2 (UIp-p)	A3' (UIp-p)	A3 (UIp-p)
2488.32M	0.1	15	600	100	2	20	0.5	1	20	25	1000

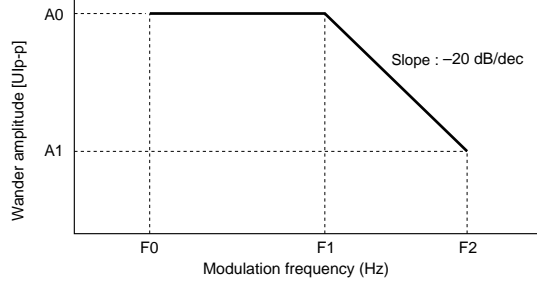
0.5 UI range: 0.000 to 0.505 UIp-p (0.001 UIp-p steps)  
 20 UI range: 0.00 to 20.20 UIp-p (0.01 UIp-p steps)  
 1000 UI range: 0 to 1010 UIp-p (1 UIp-p steps)

Jitter generation

Continued on next page

## Wander generation

Wander generation: 10  $\mu$ Hz to 10 Hz, 0 to 400,000 Ulp-p (1 Ulp-p steps), conform to ITU-T O.172



Bit rate (bit/s)	F0 ( $\mu$ Hz)	F1 (mHz)	F2 (Hz)	A0 (Ulp-p)	A1 (Ulp-p)	Steps (Ulp-p)
2488.32M	10	400	10	400,000	16,000	1
9953.28M	10	400	10	400,000	16,000	1

## Jitter measurement

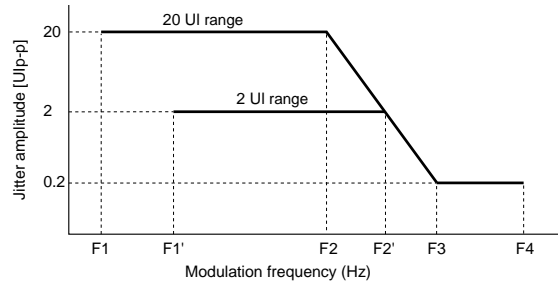
Measurement functions: Ulp-p, UI + peak, UI – peak, UIrms, hit count, hit second, %F second, peak jitter

Measurement mode: Repeat, single, manual

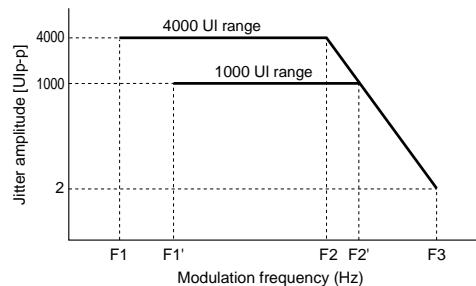
Display: Current, last

Measurement interval: 1 to 99 s, 1 to 99 min, 1 to 99 h, 1 to 99 day

Jitter measurement: Conform to ITU-T O.172



Bit rate (bit/s)	Range (UI)	F1 (Hz)	F1' (Hz)	F2 (kHz)	F2' (kHz)	F3 (MHz)	F4 (MHz)
2488.32M	2	—	100	—	100	1	20
	20	10	—	10	—	1	20
9953.28M	2	—	100	—	400	4	80
	20	10	—	40	—	4	80



Bit rate (bit/s)	Range (UI)	F1 (Hz)	F1' (Hz)	F2 (Hz)	F2' (Hz)	F3 (kHz)
2488.32M	1000	—	1	—	12.1	5
9953.28M	4000	1	—	12.1	—	20

### Ulp-p measurement

2 UI range: 0.000 to 2.020 Ulp-p (0.001 Ulp-p steps)

20 UI range: 0.00 to 20.20 Ulp-p (0.01 Ulp-p steps)

1000 UI range: 0 to 1010 Ulp-p (1 Ulp-p steps, 2488.32 Mbit/s only)

4000 UI range: 0 to 4040 Ulp-p (2 Ulp-p steps, 9953.28 Mbit/s only)

### UI rms measurement

2 UI range: 0.000 to 0.714 UIrms (0.001 UIrms steps)

20 UI range: 0.00 to 7.17 UIrms (0.01 UIrms steps)

### Filters:

Confirming to ITU-T O.172 and Bellcore GR1377

LP, HP0 + LP, HP1 + LP, HP1' + LP, HP2 + LP, HP + LP, HP' + LP, LP' (1000/4000 UI range only),

HP0 + LP' (1000/4000 UI range only)

Bit rate (bit/s)	HP0 (Hz)	HP1 (kHz)	HP1' (kHz)	HP2 (MHz)	HP' (kHz)	HP (kHz)	LP (MHz)	LP' (kHz)
2488.32M	10	5	—	1	—	12	20	5
9953.28M	10	10	20	4	50	12	80	20

Reference wander generation (Option 03)	Off: Able to set non-modulated status* TDEV mask: The 37 types of TDEV masks that are regulated by ITU-T, ETSI, ANSI, and Bellcore standards are available as default. It is possible to add the wander modulation on the user specified TDEV mask. Transient: It is possible to change the A (1 - e <sup>-63.7t</sup> ) phase by the timing of the start. Signal off: It is possible to disconnect the standard signal. Wander tolerance (TDEV) measurement: Evaluation by the various TDEV mask generations
Wander measurement (Option 02)	Conform to ITU-T O.172 Reference input: 2.048M (HDB3, clock), 1.544M (AMI/B8ZS, clock), 64k + 8 kHz, 5 MHz, 10 MHz Sampling frequency: 40 Hz, 1 Hz, 0.1 Hz (select by MX150002A) Measurement range P-P: 0.0 to 2E10 ns, +P/-P: 0.0 to 1E10 ns, TIE: 0.0 to ±1E10 ns Measurement time: 10 to 1 x 10 <sup>8</sup> s (max. 120,000 s; MP1570A only) Wander application (requires MX150002A Wander Application Software) TIE: Max. 1 x 10 <sup>8</sup> s, MTIE: Max. 1 x 10 <sup>8</sup> s, TDEV: Max. 1 x 10 <sup>6</sup> s Frequency offset: Measurement conforms to ANSI T1.105.09 Frequency drift rate: Measurement conforms to ANSI T1.105.09 Wander tolerance (TDEV) measurement: Evaluation by the various TDEV mask generations
Other measurement	Jitter transfer, frequency measurement, jitter tolerance, jitter sweep, frequency sweep, wander sweep (with MP1570A)
Dimensions and mass	320 (W) x 100 (H) x 350 (D) mm, ≤10 kg (with MU150018A)
Power	≤250 VA
Temperature range	0° to +40°C (operating), -20° to +60°C (storage)
EMC	EN61326: 1997/A1, 1998 (Class A) EN61000-3-2: 1995/A2, 1998 (Class A) EN61326: 1997/A1, 1998 (Annex A)
LVD	EN610101-1: 1993/A2, 1995 (Installation Category II, Pollution degree 2)

\*: Only non-modulated status can be set without this option.

## Ordering information

Please specify model/order number, name and quantity when ordering.

Model/Order No.	Name
MP1580A	<b>Main frame</b> Portable 2.5G/10G Analyzer
	<b>Standard accessories</b>
	AC power cord: 1 pc
F0093A	Fuse, 6.3 A: 1 pc
B0489	Front cover: 1 pc
W1889AE	MP1580A operation manual (Vol 1 Jitter/wander): 1 copy
W1890AE	MP1580A operation manual (Vol 2 Remote control): 1 copy
MX150002A	Wander Measurement Application Software (MTIE/TDEV) *Supplied with MU150018A-02: 1 pc
W1892AE	MX150002A operation manual (wander application) *Supplied with MX150002A: 1 copy
J1074	Semirigid cable Tx (for connection to MP1570A): 1 pc
J1075	Semirigid cable Rx (for connection to MP1570A): 1 pc
MU150018A	<b>Plug-in unit</b> 2.5G/10G Jitter Unit
	<b>Options</b>
MP1580A-01	RS-232C
MP1580A-02	GPIB
MP1580A-04	VGA
MU150018A-02	Wander measurement
MU150018A-03	Wander reference output phase modulation
	<b>Maintenance service</b>
MP1580A-90	Extended three year warranty service
MU150018A-90	Extended three year warranty service
	<b>Peripherals</b>
MP1570A	SONET/SDH/PDH/ATM Analyzer
MP1570A-02	GPIB (requires to combine with MP1580A)
MP1570A-10*	SDH
MP1570A-11*	SONET
MU150000A	2.5G/10G Unit (electrical for MP1570A)
MU150001A	Optical 10G Tx (1.55) Unit *2 km, for MP1570A
MU150001B	Optical 10G Tx (1.55) Unit *40 km, for MP1570A
MU150001A/B-01	2.5G (1.31, option for MP1570A)
MU150001A/B-02	2.5G (1.55, option for MP1570A)
MU150001A/B-03	2.5G (1.31/1.55, option for MP1570A)
MU150017A	Optical 10G Rx (Wide) Unit *For MP1570A
MU150017B	Optical 2.5G/10G Rx (Wide) Unit *For MP1570A
MP9677B	E/O, O/E Converter
MU967701A	Clock Recovery Unit (9953.28 MHz) *For MP9677B
MP35A	Matching Transformer (BNC-J/Siemence, C42334-A282, 75/120 Ω)

Model/Order No.	Name
	<b>Optical accessories</b>
J0661A	RS232C cable (cross cable with D-sub 9 pin connector at both ends), 2 m
J0006	GPIB cable, 0.5 m
J0007	GPIB cable, 1 m
J0008	GPIB cable, 2 m
J0696A	Coaxial cord (AA-165-500), 0.5 m
J0696C	Coaxial cord (AA-165-1000), 1 m
J0900E	Coaxial cord (AA-165-1500), 1.5 m
J0162A	Balanced cord (Siemence 3P · Siemence 3P), 1 m
J0162C	Balanced cord (Siemence 3P · Siemence 3P), 2 m
J0845A	Balanced cord, (Bantam 3P · Bantam 3P), 6 ft
J0775D	Coaxial cord (BNC-P620 · 3C-2WS · BNC-P620, 75 Ω), 2 m
J0776D	Coaxial cord (BNC-P-3W · 3D-2W · BNC-P-3W, 50 Ω), 2 m
B0490	Joint plate (to mount MP1580A and MP1570A in a stack)
B0491	Soft case
B0492	Hard carrying case

\*: Must specify SDH (Option 10) or SONET (Option 11) when ordering depends on your systems. The option price is included in the MP1570A. These two options can be installed simultaneously. But in this case, one option is charged.