Leaflet

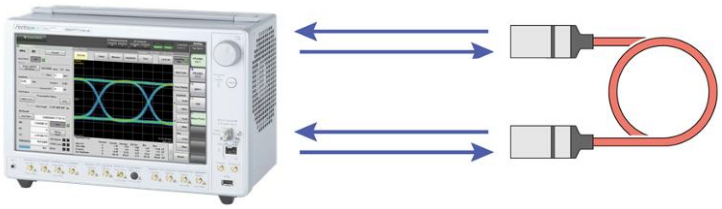
BERTWave

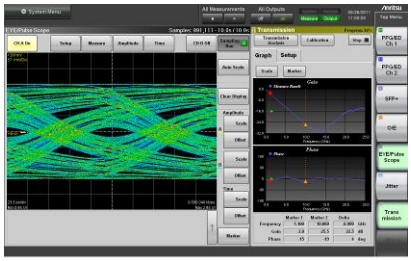
Anritsu

MX210002A Transmission Analysis Software

S21 Measurement, Linear Equalizer/Filter/Emphasis Waveform Simulation

MP2100A BERTWave Series



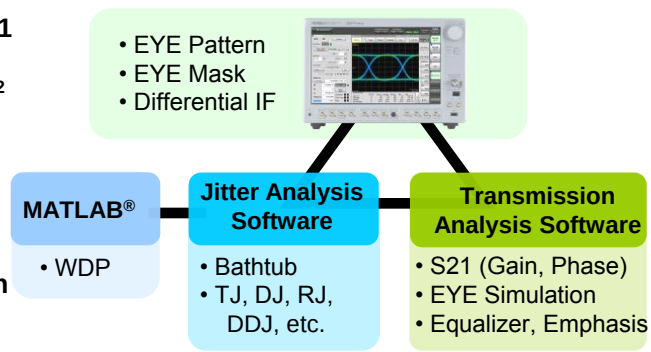


To meet rapid increases in data volumes, data centers are introducing high-speed interconnects, such as active optical cable (AOC) and direct attach cable (DAC), with transmission speeds faster than 10 Gbit/s between servers. However, in conflict with these speed increases, there is rising demand for lower power consumption as well as cost reductions. Dispersion at short optical wavelengths and high-frequency attenuation in copper cables causes problems with jitter and waveform degradation. Solving these problems and assuring BER quality requires using technologies such as emphasis at the Tx side and waveform equalization using an equalizer at the Rx side. However, a sequence of measuring the transmission line loss, calculating equalization factor for waveform and measuring EYE Pattern with equalization factor need several kinds of expensive measurement equipment and complex procedure.

Adding the MX210002A Transmission Analysis Software to the BERTWave supports Tx analyses (S21 Gain, Phase), and waveform simulation (de-embedded) using linear equalizer, filter, and emphasis operations; simultaneous waveform sampling and simulation support simultaneous EYE pattern and EYE mask measurements. Furthermore, combination with the MX210001A software permits simultaneous post-simulation waveform jitter measurement. These versatile functions provide the perfect environment for applications ranging from R&D to manufacturing of AOC and DAC.

Key Features

- **Transmission analysis (S21 measurements)**
  - ✓ **Measures transmission path and device S21 (Gain and Phase) characteristics*1**
  - ✓ **Single-end for differential IF measurement*2**
- **Waveform simulation (de-embedded)**
  - ✓ **Linear equalizer and filter**
  - ✓ **Emphasis (4 tap max.)**
- **Simultaneous measurements**
  - ✓ **Simultaneous measurements for BER, EYE pattern, EYE mask and jitter with simulation waveforms**
- **Jitter measurement collaboration**
  - ✓ **Tracked operation with MX210001A Jitter Analysis Software**
  - ✓ **Simultaneous measurements for simulated Eye pattern and jitter**



*1: MP2100A with PPG and sampling scope options
*2: MP2100A-001 with dual electrical interface option

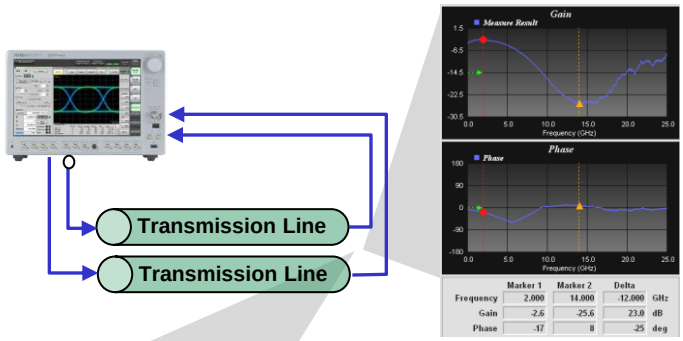
Target Applications

- **Fibre Channel, InfiniBand, USB, SAS/SATA, 10GbE, 40GbE, 100GbE**
- **Active Optical Cable (AOC), Direct Attach Cable (DAC), SFP+, QSFP+, CFP/2, CXP**
- **General-purpose Design Verification Test (DVT)**

Measurement Functions

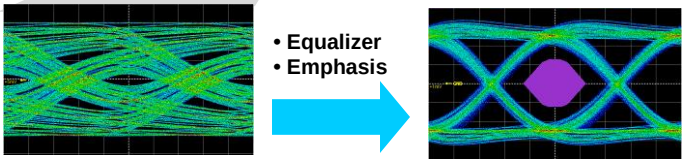
• Transmission Analyses (S21 Gain, Phase)

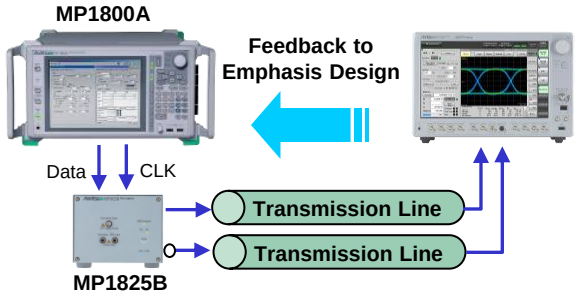
PPG and sampling oscilloscope tracking supports measurement of transmission path and device S21 characteristics (Gain, Phase). Since the MP2100A supports*2 differential-interface PPG and Sampling Scope options, true differential measurements no longer require an expensive VNA.



• Waveform Simulation (de-embedded)

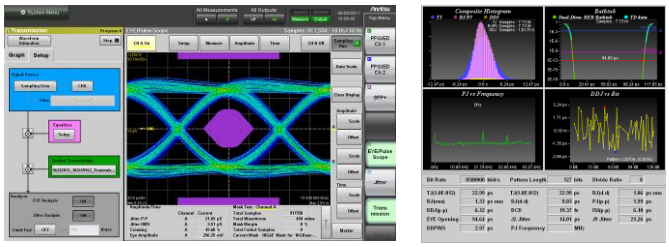
Waveform data can be sampled, simulated (linear-equalized, filtered, emphasized) and displayed simultaneously. Various EYE analyses, including EYE pattern (Tr/Tf, etc.), EYE mask margin, jitter separation, etc., can be applied to the displayed EYE waveform. Data lengths up to PRBS15 are supported. In addition to capturing standard S2P data files for transmission analyses, data capture by VNA and unique data creation by simulator can be implemented easily. Emphasis effects can be simulated too. Like the Anritsu MP1825B 4 Tap Emphasis Converter, emphasis can be set for a maximum of 4 taps.
EYE patterns with degraded waveforms caused by transmission path losses can be corrected using the equalizer and emphasis functions to create any EYE type and any required equalization and emphasis can be applied to support on-the-spot analyses.





• Jitter Analysis Software Tracking

Sometimes the EYE opening of DAC (copper), which is used for a short distance such as inter-server rack, must be, must be assured by applying an equalizer at the receiver side of server.
By tracking with the jitter analysis and transmission analysis software, the actual connection status can be simulated even for production lines to support full simultaneous measurements of cable EYE pattern, mask margin, jitter, etc.



Ordering Information

Model Number	Model Name
MX210001A	Jitter Analysis Software
MX210002A	Transmission Analysis Software

Model Number	Model Name
MP2100A	BERTWave
MP2100A-001	Dual Electrical Receiver
MP2100A-003	Optical/Single-end Electrical Receiver
MP2102A	BERTWave SS
MP2102A-021	Dual Electrical Receiver
MP2102A-023	Optical/Single-end Electrical Receiver

MATLAB® is a trademark of The MathWorks Inc.
The MX210001A supports MATLAB R2009a.
Operation is not guaranteed with other versions.

ANRITSU CORPORATION
http://www.anritsu.com

5-1-1 Onna, Atsugi-shi, Kanagawa, 243-8555
Phone : +81 46 223-1111

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