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APPLICATION NOTE

MP1630B

Digital Data Analyzer


MEASUREMENT GROUP
ANRITSU CORPORATION

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The MP1630B is a general-purpose bit error measuring instrument that can perform simultaneous measurement of multiple channels at up to 200 Mb/s, as well as burst-signal measurement.




MP1630B Digital Data Analyzer

Application Note




The MP1630 can measure bit error rates of both continuous and burst signals. Consequently, it can be used for TDMA (Time Division Multiplex Access) methods as well as for packet and cell transmissions, neither of which were supported by earlier bit error measuring instruments.



Application

1. Production for Optical Digital Subscriber Modules of FTTx
2. Production for Digital BS/CATV Modules
3. R&D for General Digital ICs and Memory Equipment
4. R&D for Future Computer High-speed Interface.
5. R&D for Future Mobile Transmission (W-CDMA)



Communications traffic is increasing almost daily, requiring massive increases in the capacity of access networks. This is being achieved by converting access networks to optical technology.

Optical Access Network (1)

Linking the World

Why does Optical Access System Focus Now?

- ◆ Increase of the Traffic (Transmission Capacity) by Internet / Intranet.
- ◆ Contents of Communication remove from Telephone data to picture data.
- ◆ The Infrastructure removes from Core Network to Access Network.

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Several methods can be used for optical digital subscribers. Each method has specific requirements for the local telecommunications infrastructure.

Optical Access Network (2)

Linking the World

Optical Digital Access System Topology

| Access Method | Core Equipment | Distribution Equipment | User Equipment | Cable Type | Characteristics |
|---------------|----------------|------------------------|----------------|------------------------------------|--|
| Metallic | SLT | ADSL | DSU | Pair metallic cable | • Limitation of transmission speed and transmission cable length |
| HFC | SLT | MOD/DEMOD | MOD/DEMOD | Optical Fiber, Coaxial cable | • Cost effective when using established coaxial cable • Difficulty of interactive |
| FTTC | CT | CT/RT | DSU | Optical Fiber, Pair metallic cable | • Effective for longer span • Difficulty of upgrade for a new service |
| FTTH | SLT | PDS | ONU | Optical Fiber | • Higher transmission band width • Easy to upgrade a new service • Higher Cost |

Station Equipment (Core) | (Distribution) | (User)

HFC: Hybrid Fiber/Coax
 FTTC: Fiber To The Cabinet/Curb
 FTTH: Fiber To The Home
 CT/RT: Central Terminal/Remote Terminal
 SLT: Subscriber Line Terminal
 ADSL: Asymmetric Digital Subscriber Line
 PDS: Passive Double Star
 DSU: Digital Service Unit
 ONU: Optical Network Unit

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NTT is presently commercializing a new optical access network system called (π) System.

(π) System is a low-speed PDS (Passive Double Star) system based on TDMA.

Optical Access Network (3)

New Optical Access(π)System

Commercialized from ' 98/3 (by NTT)

- ◆ Low PDS System
- ◆ 1.5Mb/s x 32MUX
- ◆ TDMA (Upstream / Downstream both 1.31 μ m)

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ATM-PDS is a high-speed PDS system supporting ATM technology. It offers users various services such as telephone and video by multiplexing ATM cells.

Optical Access Network (4)

ATM-PDS Access System

FSAN Conference and joint members

Access Network

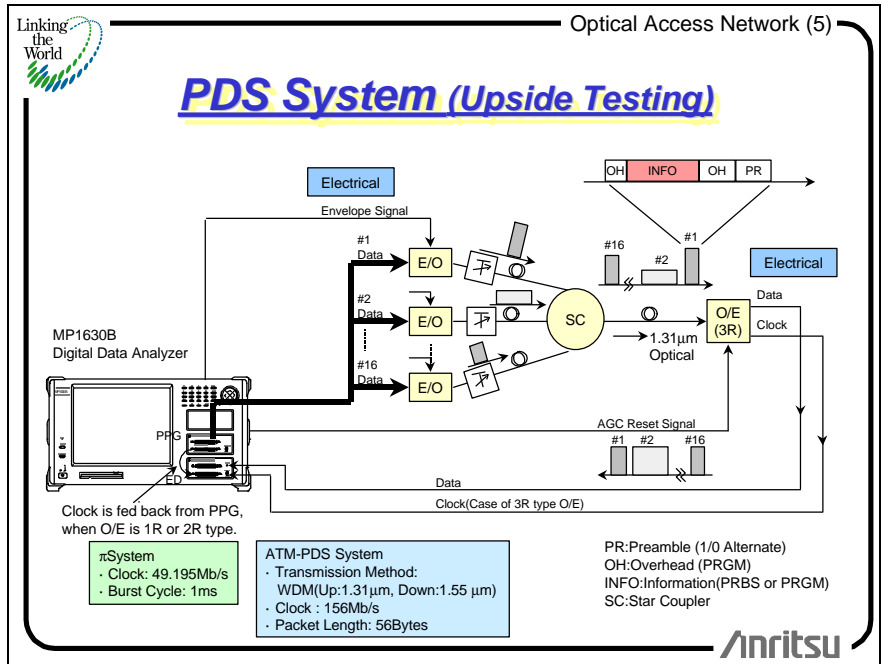
FSAN Conference

Manufactures

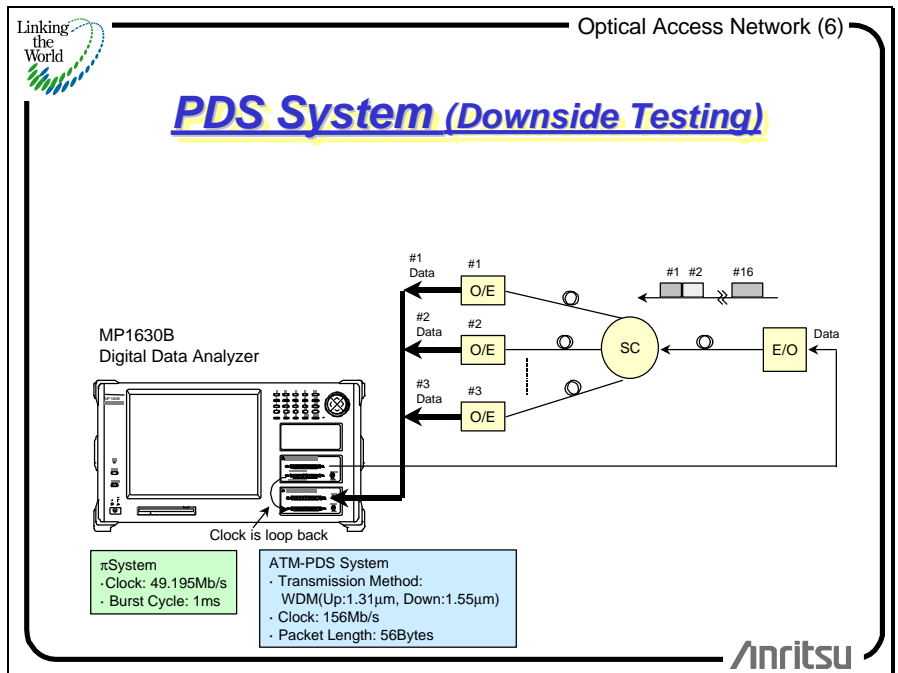
- ◆ FSAN(Full Service Access Networks)→ITU-T Recommendation G.983
- ◆ High Speed PDS(156Mb/s, 56bytes packet)
- ◆ WDM Access System(Up side : 1.31 μ m / Down side : 1.55 μ m)

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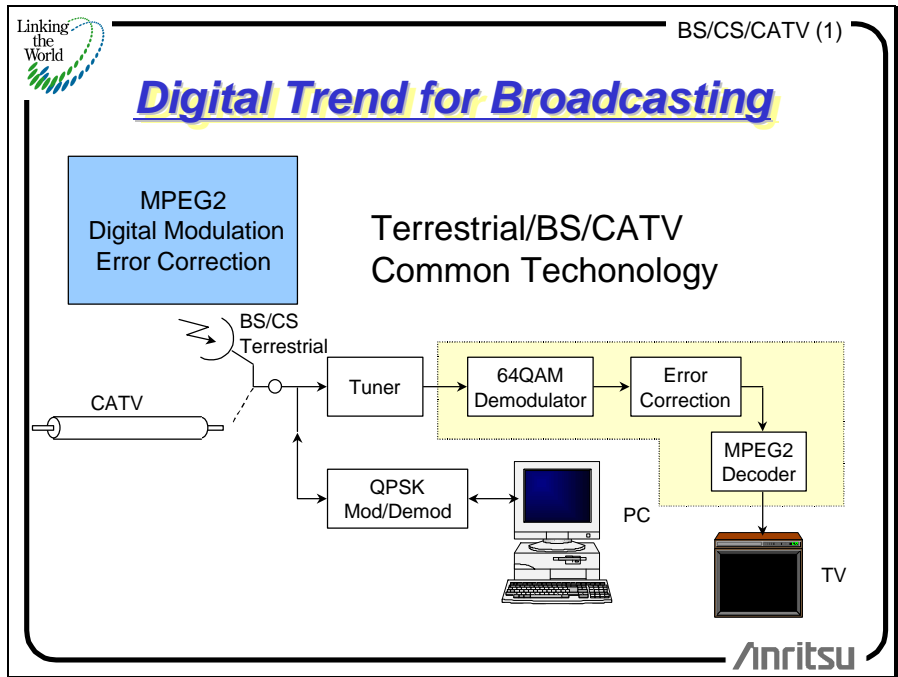
Here, in this PDS system, data is passing from the home to station and 16 channels can be measured simultaneously.



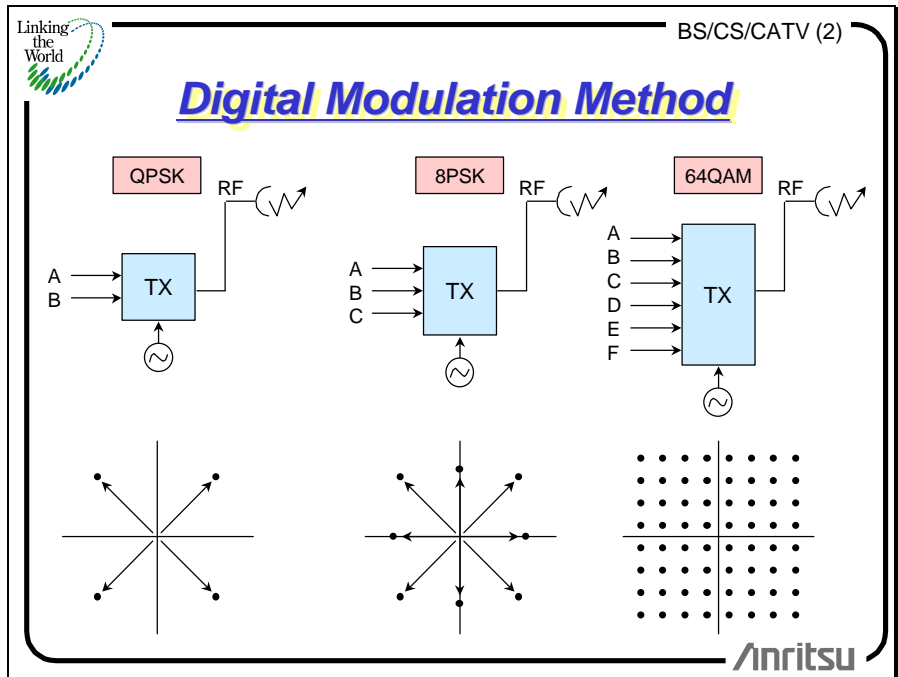
In this PDS system, data is flowing from the system to the home and 16 channels can also be measured simultaneously.



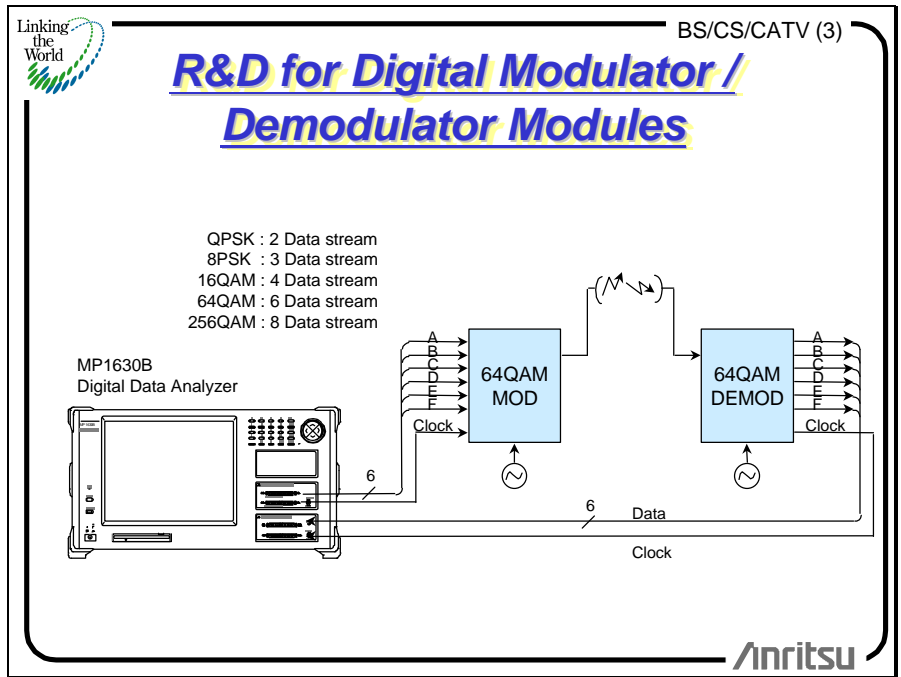
Viewers will be able to receive a huge variety of program contents due to the spread of digital broadcasting and shared technologies.



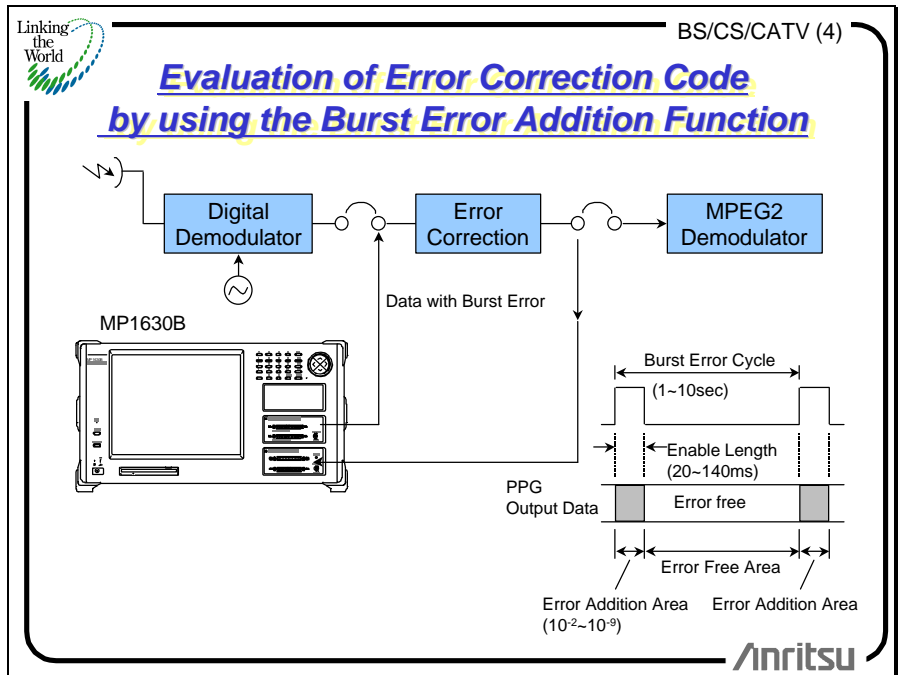
Digital broadcasting uses a variety of digital modulation methods.



Since the MP1630B can measure multiple channels simultaneously, the performance of each type of digital modulator can be evaluated easily.



The MP1630 can add burst errors. The error rate and burst cycle can be varied, making it possible to evaluate the performance of error correction circuits at various setting conditions.



Just one MP1630B can handle evaluation of various digital devices performing multi-channel signal processing, for example the MUX/DEMUX.

Digital Devices (1)

General / Communication
Digital Devices

- ◆ Evaluation and Testing for Digital Communication ICs
 - MUX/DEMUX, Crosspoint Switch
 - Encoder/Decoder such as 8b/10b Converter
- ◆ Prototype Testing for FPGA, ASIC, DAC, High Speed RAM
- ◆ Reliable Testing for Recording Media Devices/Equipment (HDD, FDD, Optical Disk)
- ◆ Evaluation for CCD : Charge Couple Device
- ◆ Evaluation for High Speed Logic Board
- ◆ Crosstalk Evaluation for Future High Speed Bus

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A full range of functions is provided for general digital devices. The target pattern and level, data/clock phase, etc., can be set easily to simplify test evaluation.

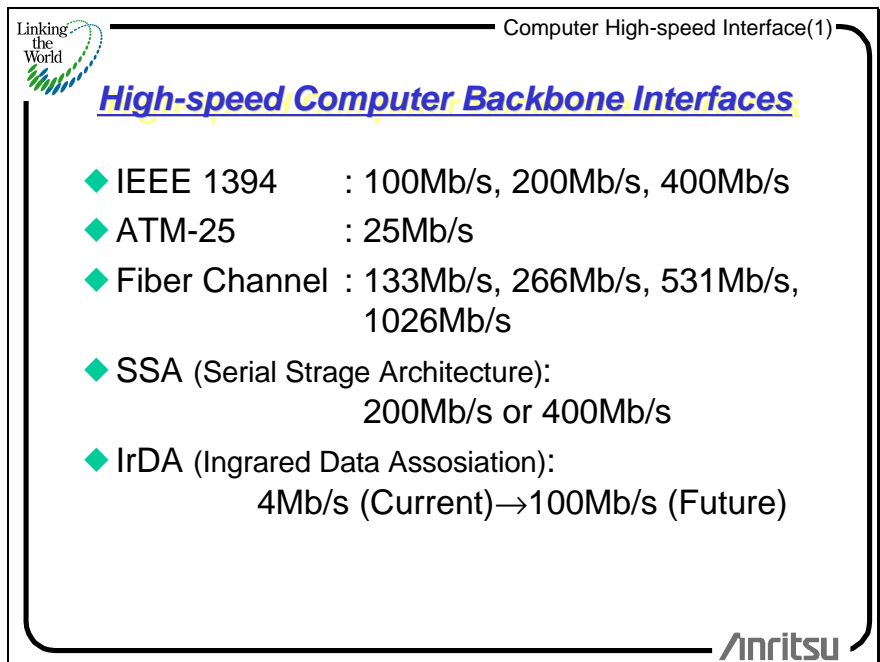
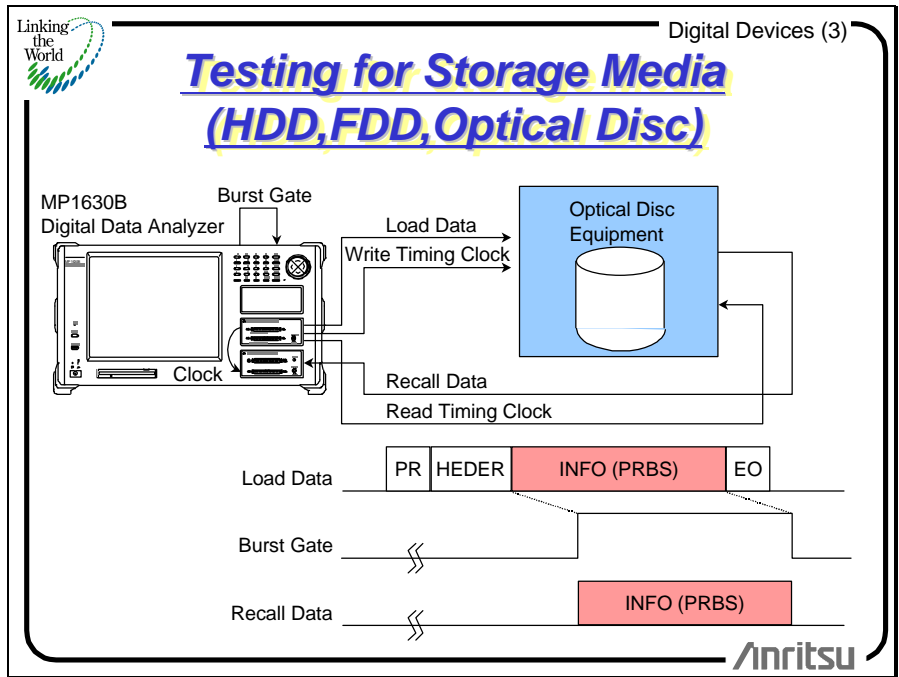
Digital Devices (2)

Many Functions for Testing Digital LSIs

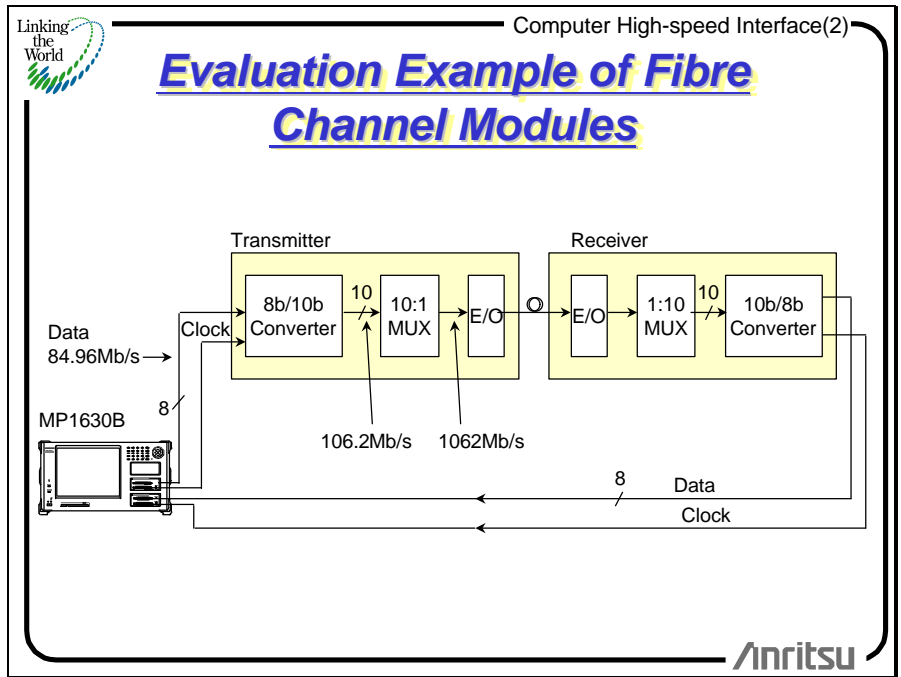
- Strong Pattern Editor (64K bit/ch)
- Output / Input
TTL, ECL, PECL, LVTTTL
VAR (0.5V~5V/High, 0.25~2.5V/50Ω)
- Delay
PPG: Data, Clock(-5~+5ns)
ED : Clock (-5~+5ns)

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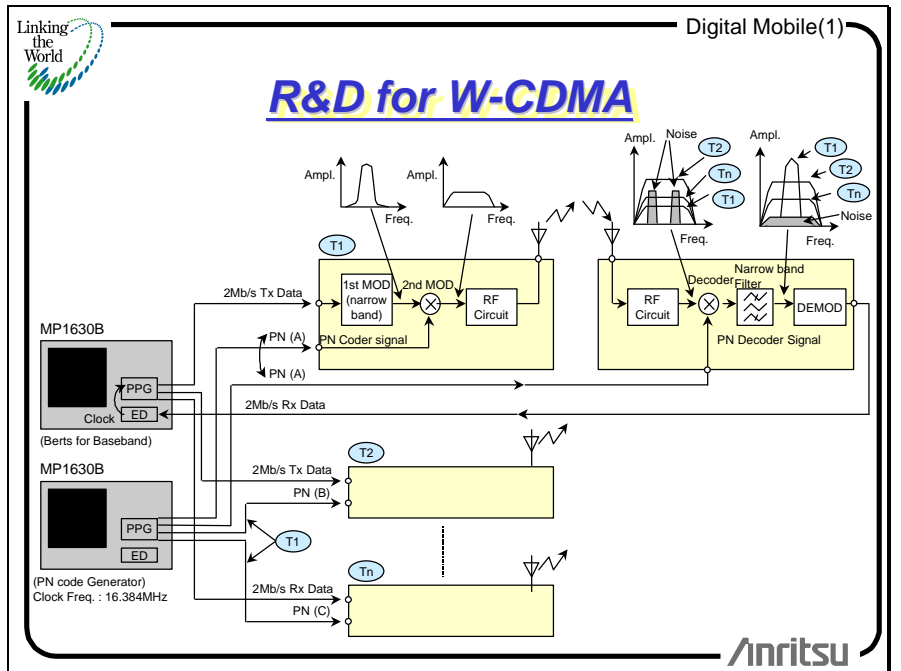
Framed patterns can be measured by using mixed patterns.



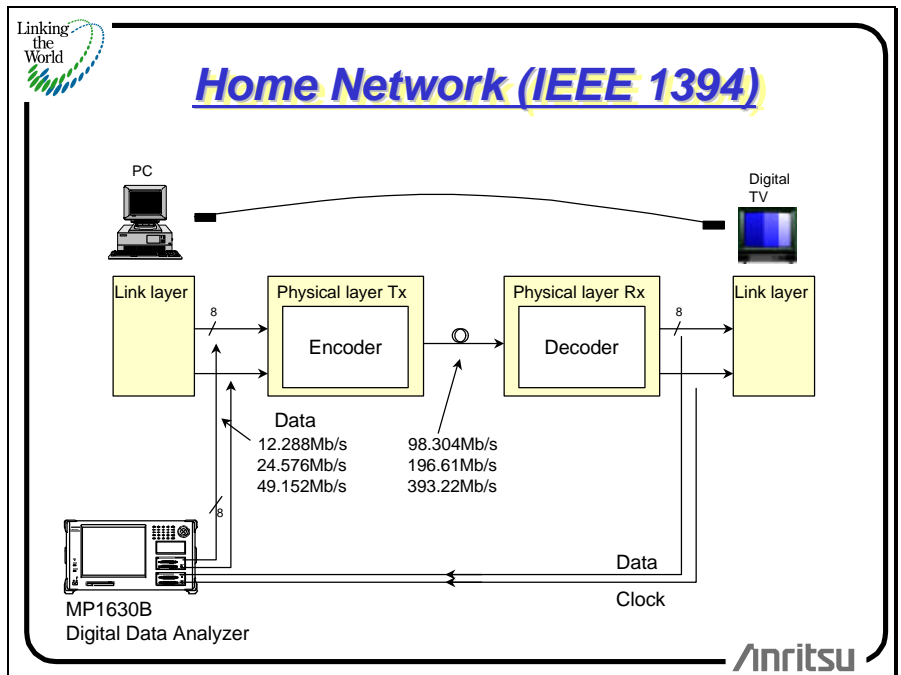
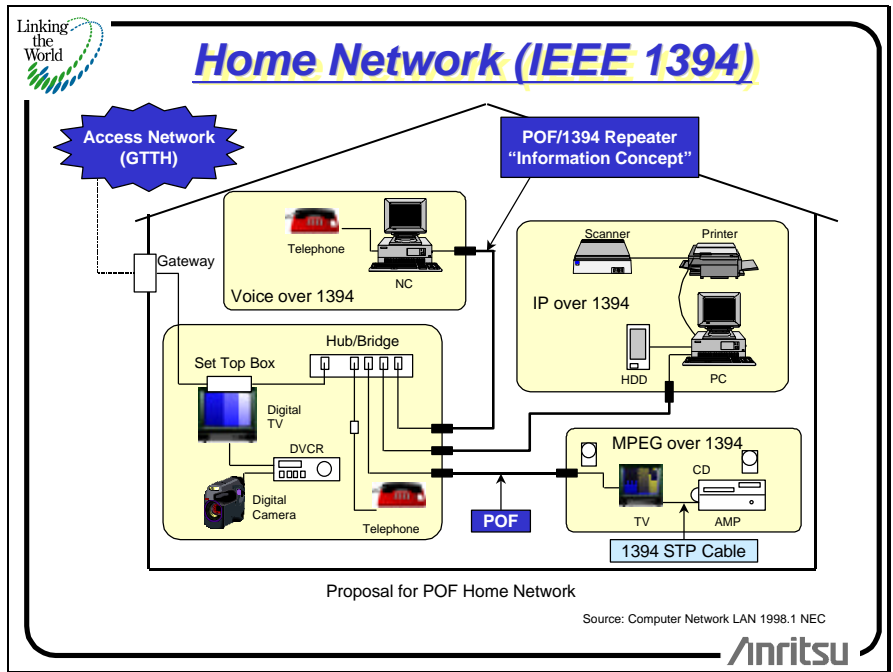
The performance of the fibre channel MUX/DEMUX IC and 8b/10b converter can be tested using multi-channel signals.



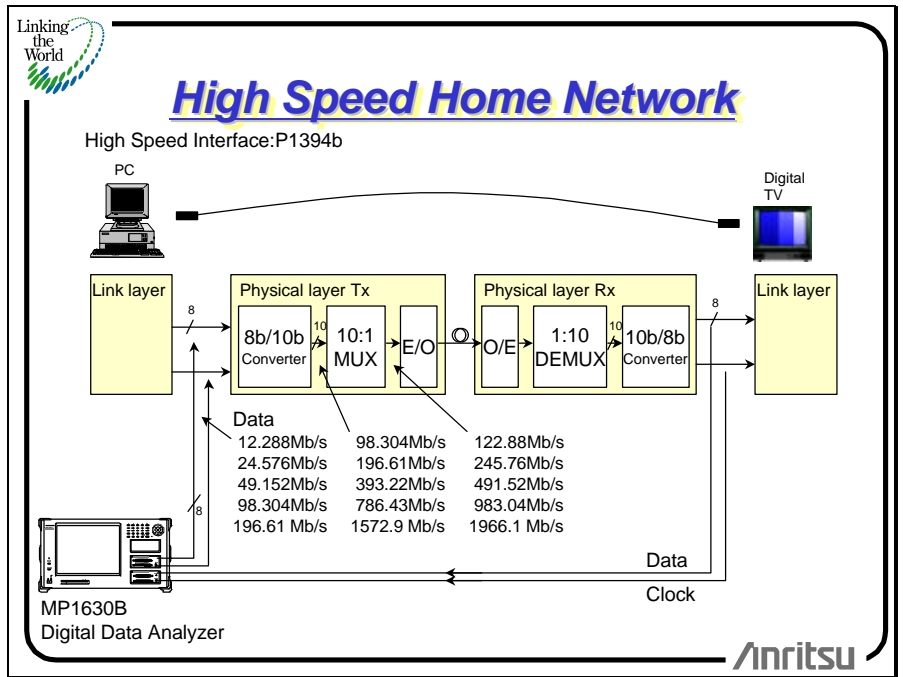
The MP1630B shows its impressive strengths in W-CDMA R&D such as verification of spread code strings by using multi-channels and a full range of built in PRBS and programmable patterns.



Due to increases in PC processing speed and digitization of AV equipment, even general households require unified high-speed interfaces for video, audio and data communications.



The performance of the P1394b MUX/DEMUX ICs and 8b/10b converters can be tested using multi-channel signals.



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Specifications are subject to change without notice.

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