

World's lowest-power IC for single-wavelength, 100Gbps transmission over SMF optical links

*DMT-based IC for datacenter interconnect and wireless infrastructure
doubles capacity over existing solutions*

Yokohama, March 14, 2016 --- Socionext Inc., a market-leading provider of CMOS solutions for high-speed, low-power optical transmission applications, announces the launch of the MB8AJ2060, its 100G per wavelength, fully-integrated transceiver based on Discrete-Multitone (DMT) modulation. With a power dissipation of less than 5W, this system-on-chip sets a new record for transmission of 100Gbps using a single wavelength.

Due to the proliferation of smart devices, expansion of cloud-computing and delivery of cloud-based services, network bandwidth demand continues to rise. Migration to 100G optical links between data centers has started and will grow very rapidly over the next few years. Distribution of 4G and 5G services through the network is also placing a burden on optical network capacity.



MB8AJ2060 [view larger image](#)

The need for low-cost, efficient transport at the physical layer is key to supporting growth in both these markets, in addition to the requirement to maximize fiber capacity by driving 100Gbps over a single wavelength. One way to do this is to use multi-level signaling to increase the symbol rate and run a higher bit rate for the same Baud rate. Using this technique (2 bits/symbol) to get from 25Gbps per wavelength, a standard binary signaling rate, to 50Gbps is a good step forward. But to get to 100Gbps, the next step is to double the Baud-rate to 56GBaud. This is challenging to achieve with low-performance optical

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components, particularly for distances greater than a couple of kilometers. Another alternative is DMT, a multi-carrier modulation format that inherently runs at a very low Baud rate.

DMT is a robust and proven technology, forming the basis for high-speed broadband delivery over millions of copper links since it was introduced over 15 years ago. With advances in mixed-signal technology over the last few years, particularly high-speed, low-power ADCs and DACs, Socionext is uniquely positioned to deliver DMT transmission at 100Gbps, several orders of magnitude faster than broadband delivery in the access network.

“OFDM-based communications technologies like DMT, using individually modulated, orthogonal carriers, have been successful in overcoming limitations of legacy modulation formats where low-cost, higher data capacity is the goal. DVB-T, xDSL and LTE were all enabled using OFDM” said Manfred Mettendorff, Senior Director Marketing & Business Management with Socionext. “Proven, leading-edge mixed signal IPs, designed by Socionext’s Network SoC BU in Europe and Japan, now take this approach a major step forward for fiber optic networks”.

For transport over fiber medium, at distances of a few tens of kilometers, the limiting factor is not fiber but the components at the each end of the link. Owing to the fundamental capability of DMT to adapt to channel characteristics and interferences, it is ideally suited to the challenge of using low-performance optical components to transport data over such links very efficiently. This, in turn, allows DMT to support the growing requirements for 100G optical links in datacenter interconnect and wireless back hauling and front hauling.

Socionext MB8AJ2060 100G DMT PHY

Fully-integrated DMT PHY for 100Gbps optical transmission over a single wavelength.

- For use with low-power, small-footprint optics and transmission over single-mode fiber (SMF)
- On-chip hardware for analog/digital conversion interface to optics, DMT modulation/demodulation, FEC processing and high-speed SerDes electrical interface
- Protocol agnostic (transparent pass-through of client data signals)
 - Supports multiple 100 Gbps-class clients (100GE, ODU4, OTU4, 128GFC)
 - CAUI-4/OTL4.4/CPRI supported on client-side interface

- Flexible data rates
 - Line side (25G, 50G, 100G)
 - Client-side sub-rates (4x25G, 2x50G, 1x75G)
- Selectable low latency on-chip FEC
- Link Communication Channel (LCC)
 - End-to-end link negotiation and management
 - Hitless, in-operation link diagnostics and reconfiguration
- Integrated CPU subsystem
 - Device initialization and link training
 - Link management and non-real time DMT algorithms
- On-chip, low-speed DAC for optics control

Customer Inquiry

Socionext Inc.

<http://www.socionext.com/en/contact>

About Socionext Inc.

Socionext is a new, innovative enterprise that designs, develops and delivers System-on-Chip products to customers worldwide. The company is focused on imaging, networking and other dynamic technologies that drive today's leading-edge applications. Socionext combines world-class expertise, experience, and an extensive IP portfolio to provide exceptional solutions and ensure a better quality of experience for customers. Founded in 2015, Socionext Inc. is headquartered in Yokohama, and has offices in Japan, Asia, United States and Europe to lead its product development and sales activities. For more information, visit [socionext.com](http://www.socionext.com)

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