

# DESIGNER'S NOTEBOOK

## HDMP16x6A –vs- TNETE2201B



### **Design Problem**

Can I replace the Agilent HDMP-1636A in my design with a Texas Instruments TNETE2201B to reduce costs?

### **Solution**

Yes, many of our customers have done this with success. There are only a couple of differences between the devices to note.

The first item of note is that the TNETE2201B does not have a LOS output. If your MAC ASIC monitors the LOS pin, then you probably can not use the TNETE2201B in your application.

The second item of note is mechanical specifications. The Texas Instruments TNETE2201BPJW should drop into the HDMP1636A footprint and the Texas Instruments TNETE2201BPHD should drop into the HDMP1646A footprint. The Texas Instruments device has a power pad package with an exposed thermal pad on the top of the package. The thermal pad is electrically and thermally connected to the backside of the die.

The third item of note is the PLL capacitor value. On the HDMP-1636A device a 0.1uF cap is called out and on the TNETE2201B a value of 0.002uF is typically called out. You may use a 0.1uF cap on the Texas Instruments transceiver if you do not wish to change the component values on your BOM. However the data acquisition lock time will increase from 500uS with a Cpll of 0.002uF to about 10mS with a Cpll of 0.1uF. Also, the tracking ability of the PLL will be reduced with a 0.1uF capacitor. This reduction will lessen the PLL's ability to reject low frequency noise or wander in the voltage supply or datastream. Care must be taken with the VCC\_RX, pin 50, and the VCC\_TX, pin 18, supply filtering.

The fourth item of note is the parallel TD input setup times. The HDMP-1636A specification says 1.5nS Tsetup and the TNETE2201B specification says 2.0nS Tsetup minimum. This difference may not be a problem, but it depends on the quality of the MAC-ASIC.

The fifth item of difference is the device latency specifications. These numbers are different for both the receive and the transmit sections. In an EtherNET device, device latency is not an issue and any difference should be transparent to the user.

The sixth item is the serial differential voltage ratings. Both the receive sensitivity and the transmit drive levels are difference between the devices. Texas Instruments has specified the TNETE2201B to meet the IEEE802.3z specifications for these parameters.

By review of these items you should be able to exchange the HDMP-1636A for a TNETE2201B in your design and achieve equivalent performance at a lower cost.

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