

**INTRODUCTION**

The EB9024 is an evaluation and reference design platform for the **GENLINX™ II** GS9024 Equalizer and the GS9028 Cable Driver.

**CIRCUIT DESCRIPTION**

A functional block diagram is shown below and illustrates the primary circuit functions. These include equalization and driving 75Ω co-axial cables. A complete schematic is also included.

The EB9024 accepts a serial digital data input signal which first goes into the GS9024 equalizer. Equalization of the input signal is completely automatic for signal attenuation due to cable length from 0dB to in excess of 30dB. The signal strength/carrier detect output of the equalizer, which is proportional to the amount of equalization taking place, is available via test point TP1. Also available as an output, is the equalizer "Output Eye Monitor" signal via a SMA connector (J2). The signal strength/carrier detect and Output Eye Monitor are useful diagnostic outputs.

After equalization, the differential data signal is supplied to the GS9028 cable driver which provides two complementary data outputs at BNC connectors J3 and J4. The GS9028 is configured to drive 75Ω co-axial cables with SMPTE defined 800mV levels.

**BOARD SET-UP AND TEST**

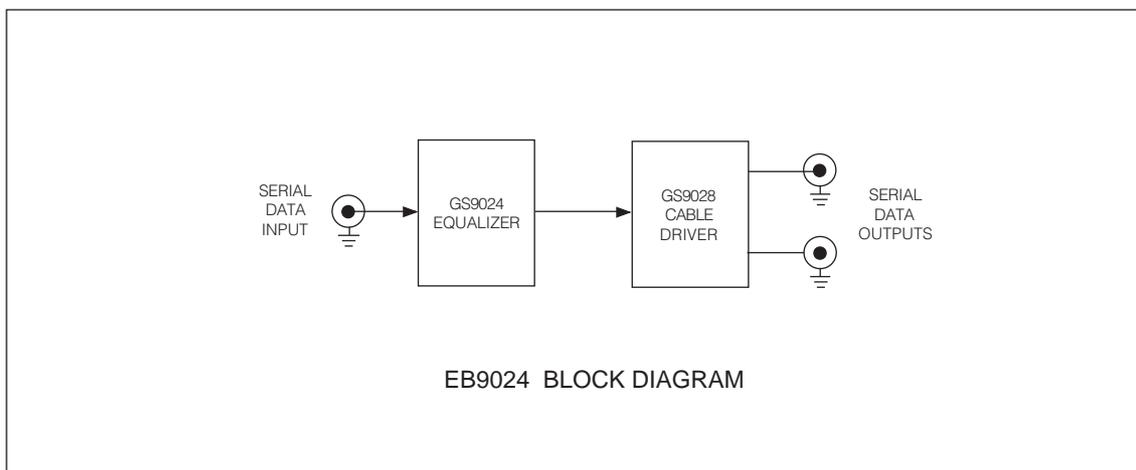
The CD\_ADJ input of the GS9024 is biased via a resistor network including a potentiometer allowing the user to adjust the level at which loss of carrier is detected. For a detailed description of the CD\_ADJ voltage level versus muting threshold refer to the GS9024 data sheet. Turning the potentiometer completely clockwise allows for maximum possible cable length equalization. In addition, the GS9024 outputs can be put in a HIGH-Z state by putting jumper JMP1 into the 1-2 position.

To verify operation of the EB9024, a source of serial digital video should be applied to the input BNC connector using 75Ω co-axial cable. Using a signal source that is not compliant to the SMPTE standards, can provide misleading results for equalizer cable length performance. The output data stream is available at the serial output and can be supplied to a D to A converter for verification via a monitor. Note that jumper JMP1 must be in the 2-3 position such that the equalizer outputs are enabled.

The power supply requirement for the EB9024 is +5V for VCC at a current rating of 86mA (nominally).

**PCB DETAILS**

The EB9024 is a four layer printed circuit board constructed of standard FR-4 material and measures approximately 3.5" by 3.25". Ground and power plane layers are internal to the board with signal layers on the top and



bottom of the board. Components are mounted both on the top and bottom sides. The silkscreen (top and bottom) and all four layers are shown on the following pages. Note the following special artwork features used to optimize performance:

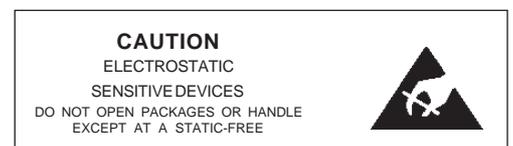
- A continuous ground plane is provided underneath all high speed traces avoiding impedance discontinuities and ensuring maximum signal integrity

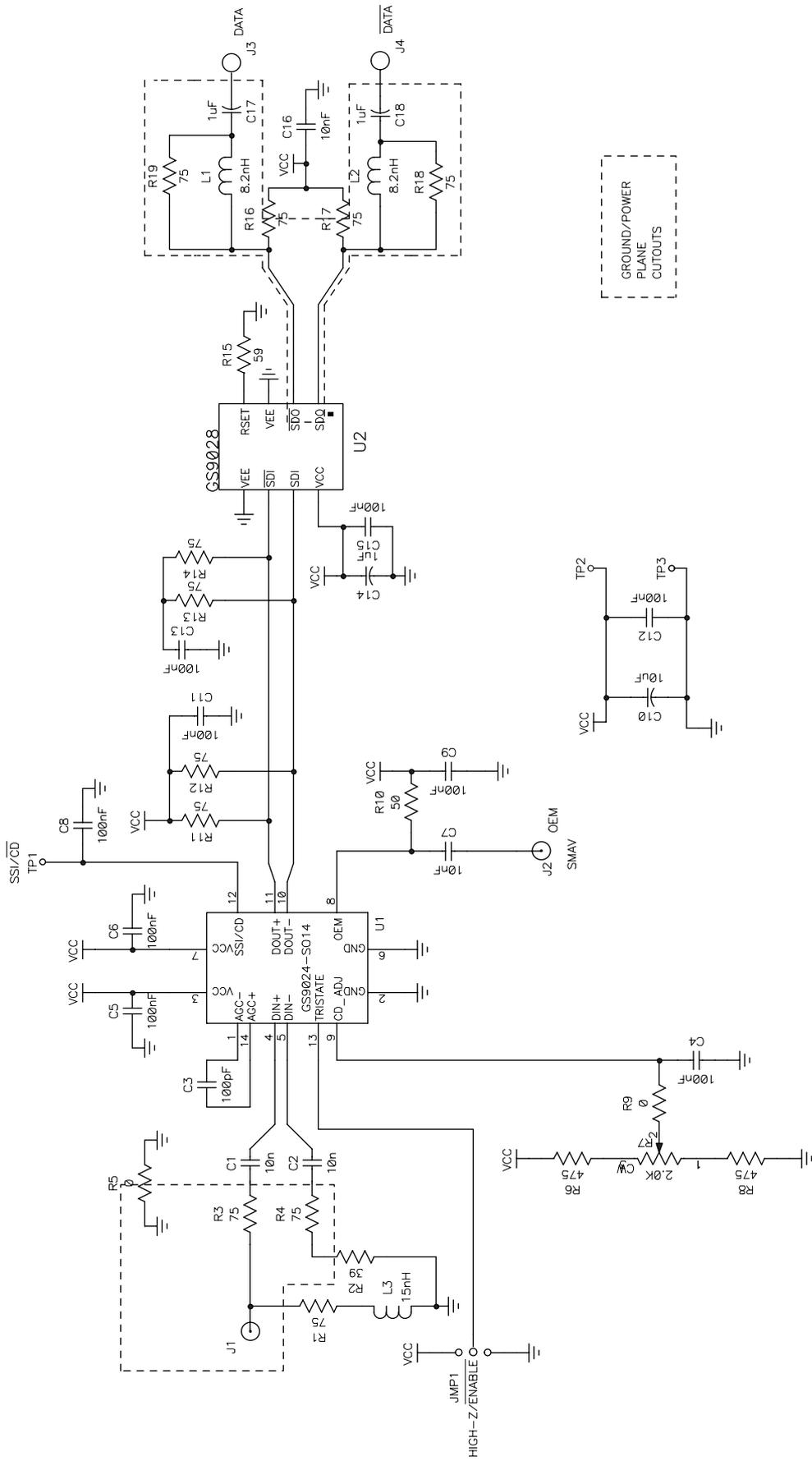
- Copper on the power and ground planes has been removed from the area surrounding the center pin of the output BNC connectors and from underneath the output components of the GS9028 cable driver. The purpose of these cutouts is to reduce the effect of the capacitance added by the connector and the pads of the components.

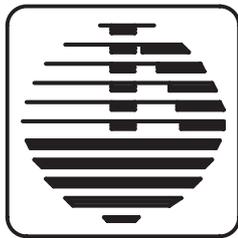
- The ground plane associated with the input BNC connector and input components is isolated from the main board ground. The purpose of this is to provide a differential input signal to the equalizer.

## APPLICATIONS

The EB9024 evaluation board is designed to show the characteristics of the GS9024 Equalizer and the GS9028 Cable Driver. This board can also be used as a stand alone non-reclocking distribution amplifier for serial digital video signals.







GENNUM  
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# EB9024 GENLINX™ II CABLE EQUALIZER REV 1.1

