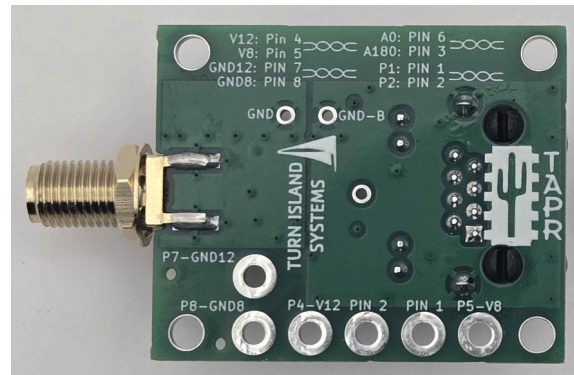
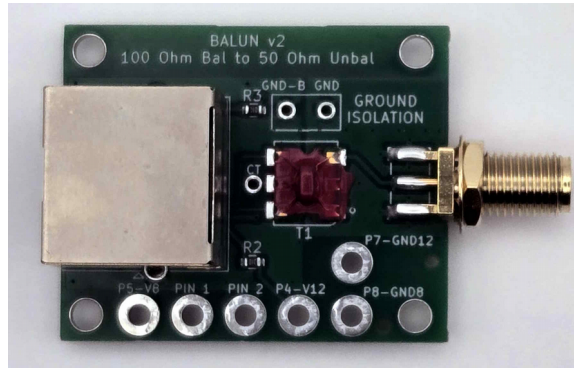


# TIS-B1

v2

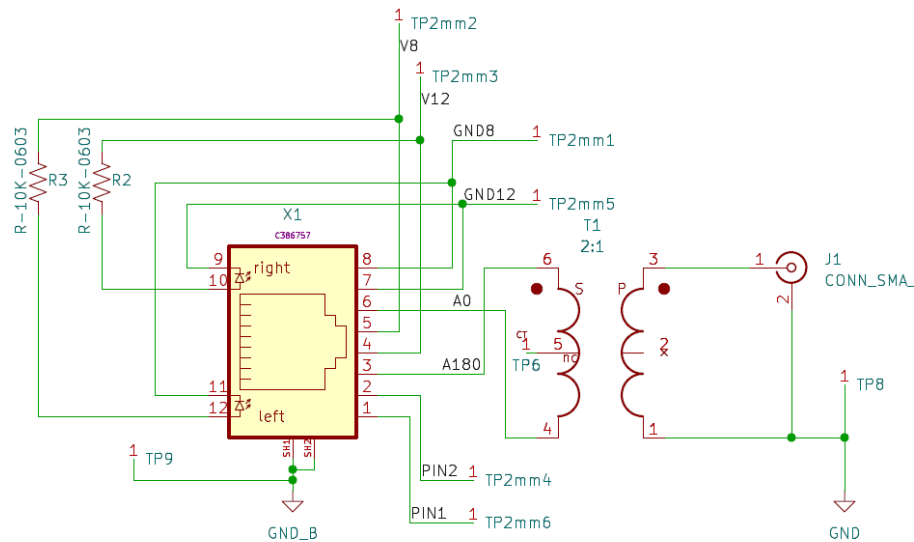
100 Ohm Balanced RJ45 to 50 Ohm SMA BALUN



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## Overview



The TIS-B1 uses a simple 2:1 transformer to convert a 100 Ohm balanced twisted pair impedance to an unbalanced 50 Ohm SMA connection.

In some receiver preamp applications the RJ45 connector pins 4 and 5 can be used to carry DC voltage, with pins 7 and 8 as DC return. Indicator LEDs built into the RJ45 connector show when voltage is applied between pins 7 and 4, and pins 8 and 5. These pins can also be used for other purposes as the 10K resistors R2 and R3 are large enough that they can be ignored in most applications.

The SMA connection is isolated from the RJ45 connector. Through-hole testpoints are available if a common ground connection is desired.

# Performance

Return Loss, 100 Ohm load:

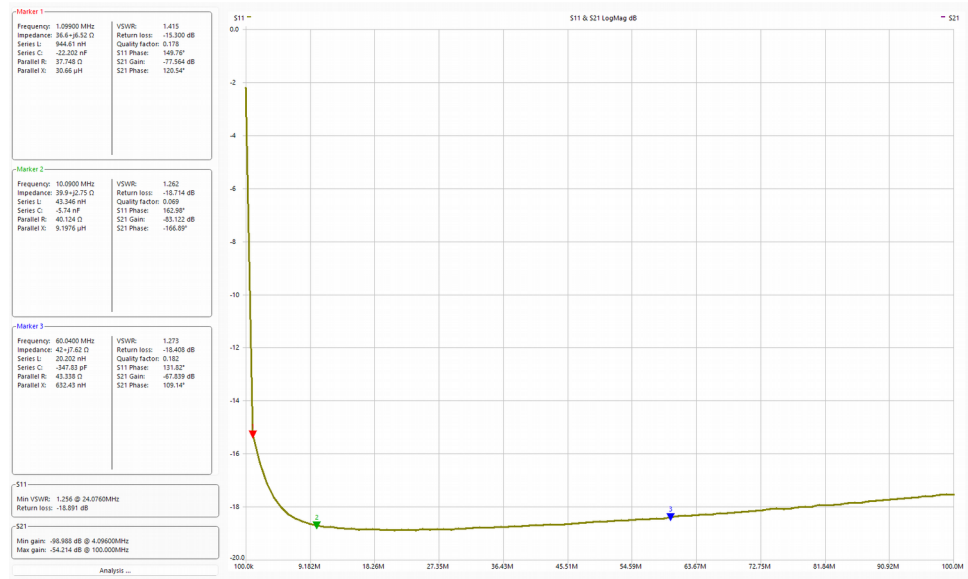


Illustration 1: Return Loss

## Back to Back Frequency Response

The transformer used in the TIS-B1 has a specified maximum loss of 1 dB from 1 to 200 MHz, and a typical insertion loss of 1.2 dB from 0.4 to 500 MHz.

Since these baluns will typically be used in pairs, the measurements below are for a pair of baluns connected back to back.

### CAT 6 cable, 4 inches:

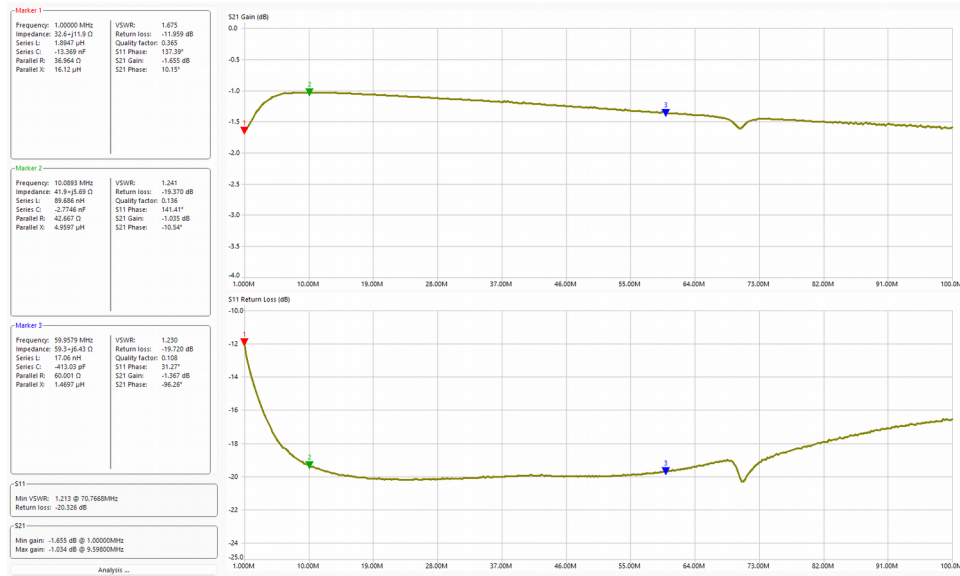


Illustration 2: 1-100 MHz

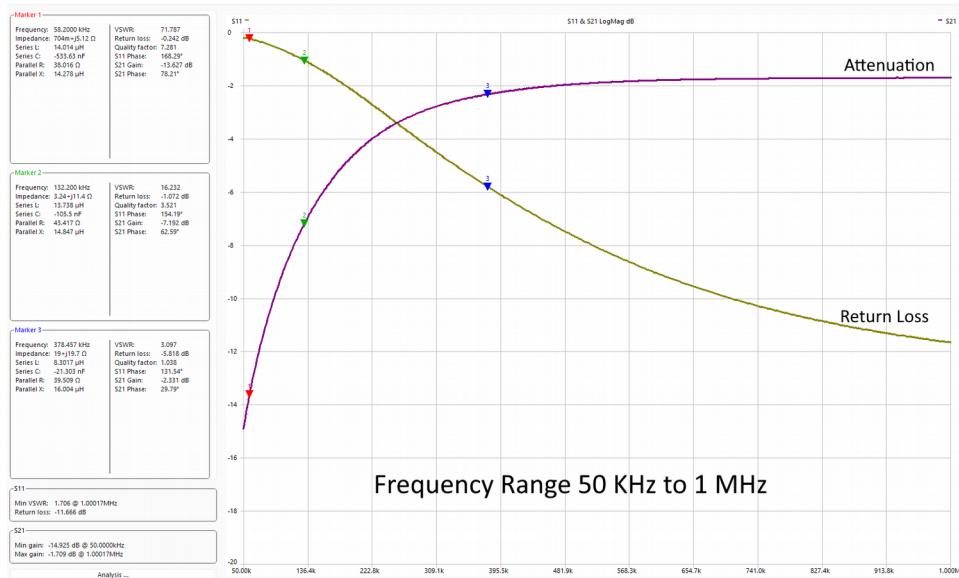


Illustration 3: 50 kHz - 1 MHz

## CAT 5e, CAT 6 Cable, 100 ft

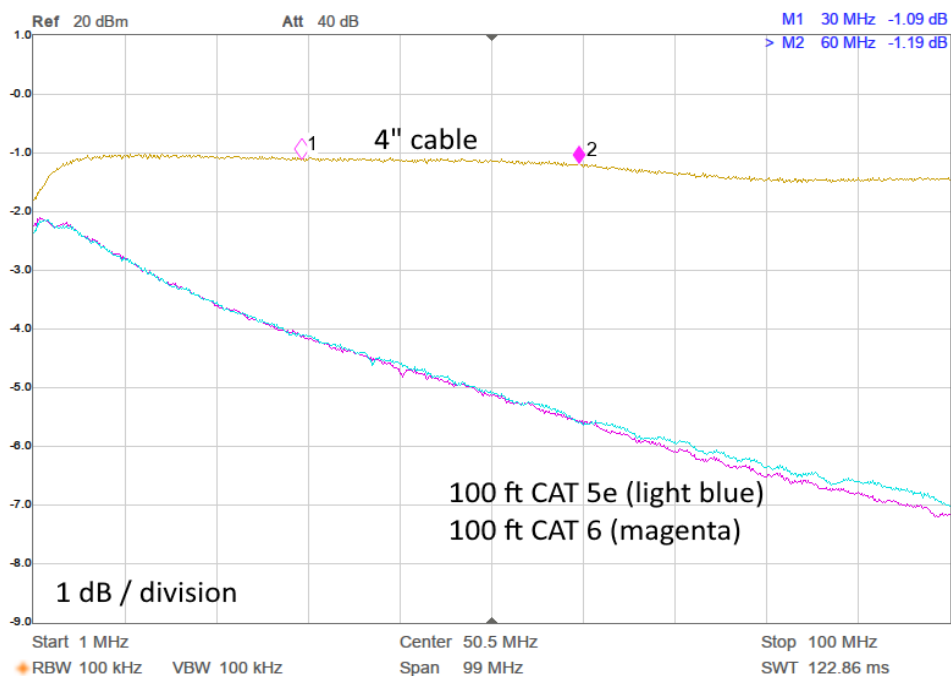


Illustration 4: 1 - 100 MHz, 100 ft CAT 5e, CAT 6

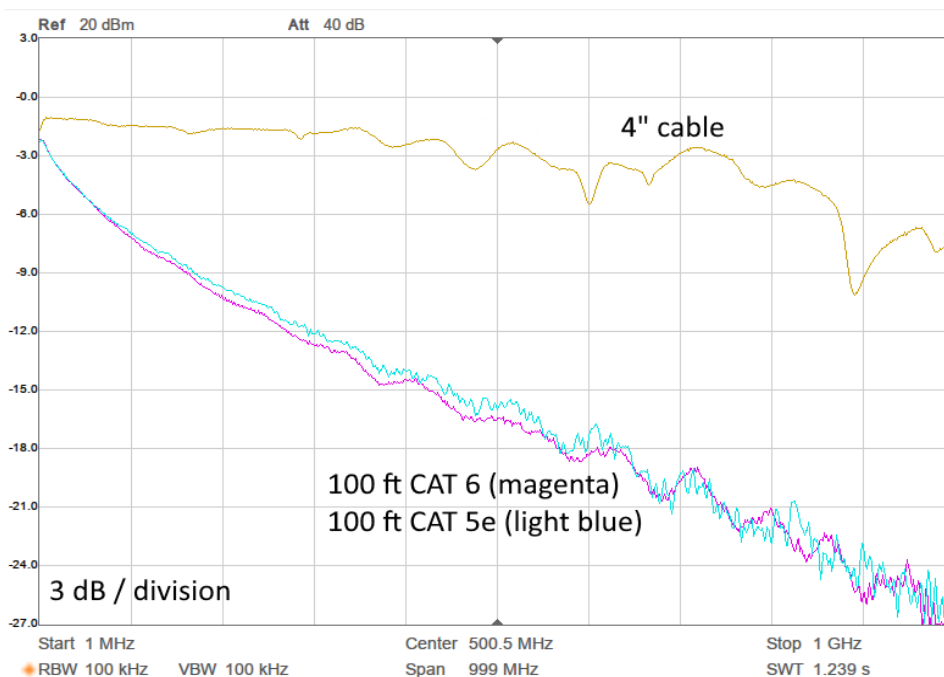


Illustration 5: 1 - 1000 MHz, 100 ft CAT 5e, CAT 6

# Common Mode Rejection

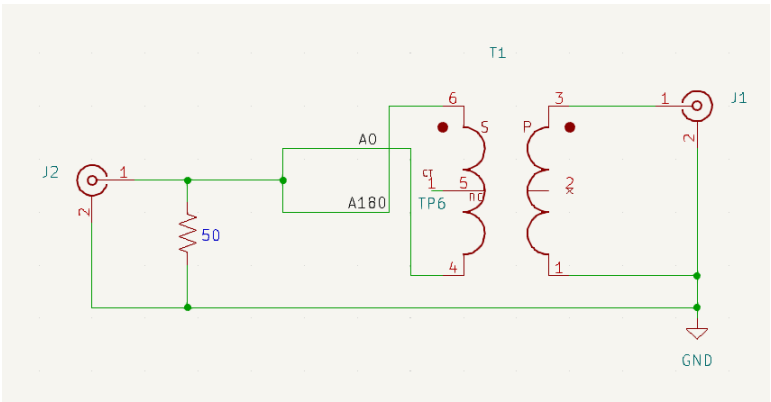


Illustration 6: Test Fixture Schematic

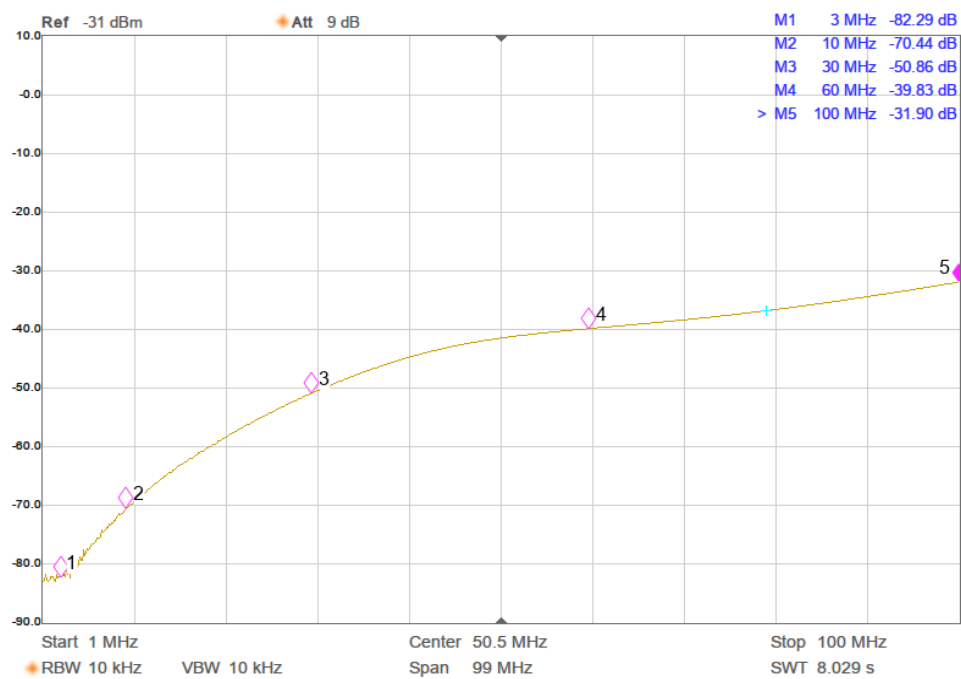


Illustration 7: Common-Mode Rejection

Here is a 10 MHz square wave, as launched (blue) and as seen at the end of 100 ft of CAT 5e cable (magenta). Note the approximately 38 ns of cable delay:

