



Harwin Test Report Summary

HT01901

Frequency Testing in accordance
with EIA-364-108-2000 (2007)
on Datamate (M80 series) L-Tek

Datamate

A decorative graphic consisting of numerous thin, red, wavy lines that flow across the bottom half of the page, creating a sense of motion and depth.

1. Introduction.

1.1. Description and Purpose.

The Harwin Datamate (M80 Series) connector is manufactured to the requirements of BS9525-F0033. The following tests were carried out in accordance with EIA-364-108-2000(2007) to determine:

- Impedance
- Reflection coefficient
- Return loss
- Voltage Standing Wave Ratio measured in the frequency domain from 50MHz to 1GHz to determine the differential impedance
- Insertion loss between 50MHz and 2GHz

1.2. Conclusion.

The following data has been collated from Harwin test report 200. Results are representative of the Datamate range. These results show a very good frequency performance for a board-mounted connector, and are very close to meeting the requirements of USB2.0.

2. Test Method, Requirements and Results.

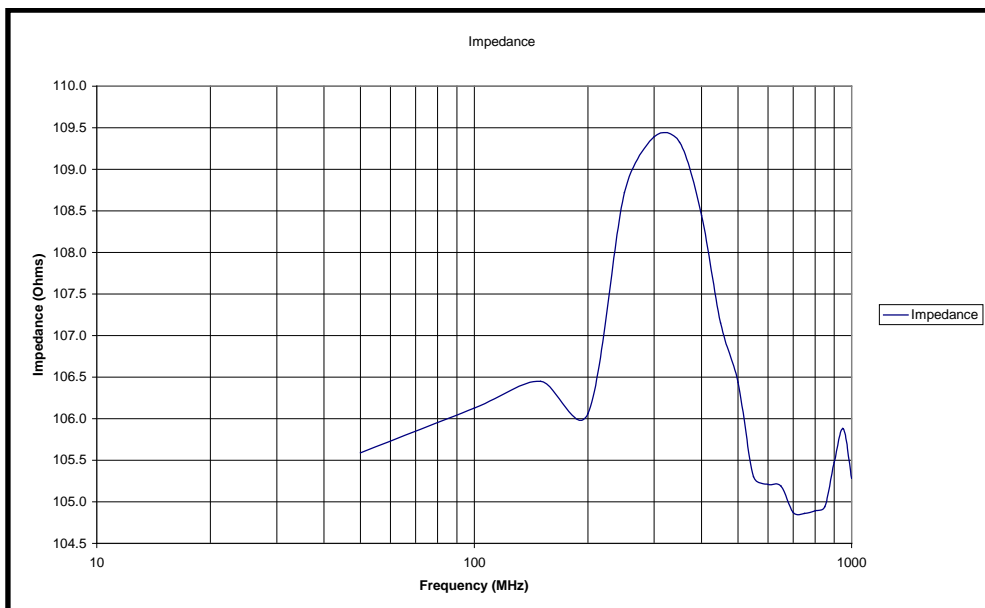
2.1. List of Test Samples.

- M80-8671005 – male L-Tek Latched PC-Tail connector
- M80-8871005 – female L-Tek PC-Tail connector

2.2. Test Method and Results.

Measurements were carried out in the frequency domain from 50MHz to 1GHz with the analyzer configured as 1% smoothing, 16 averages, 201 measurement points. The open and short method was used to determine the impedance characteristics with Reflection co-efficient, return loss and VSWR calculated against the USB 90 ohm requirements.

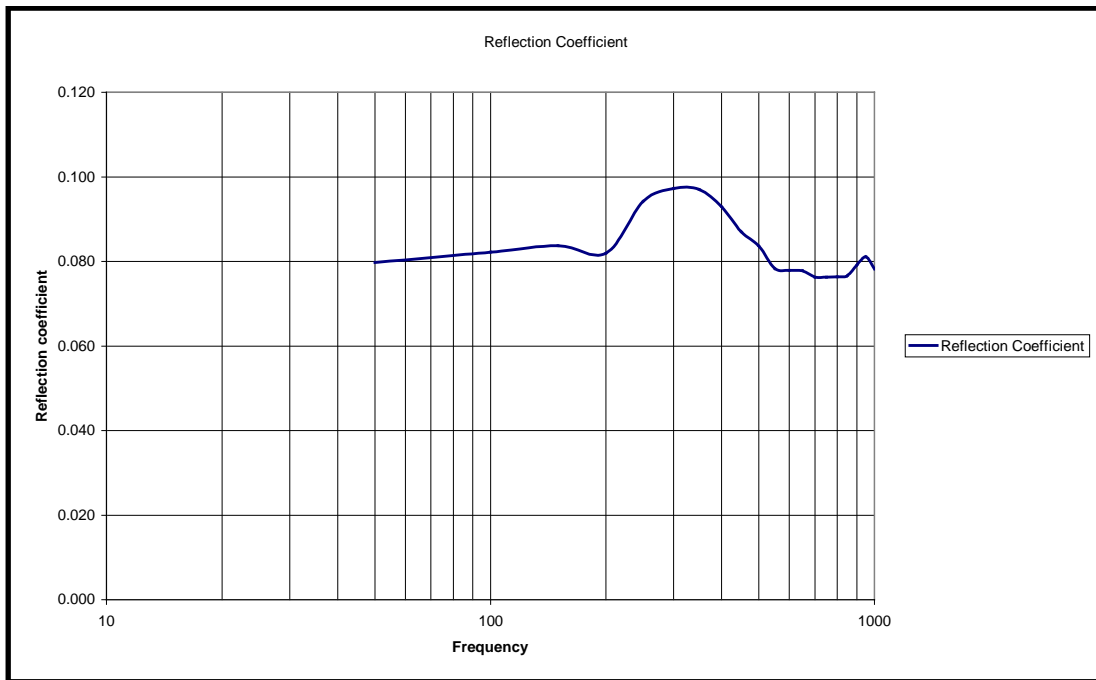
- Impedance (5 mating pairs, open and short method).



- Reflection Coefficient (5 mating pairs)

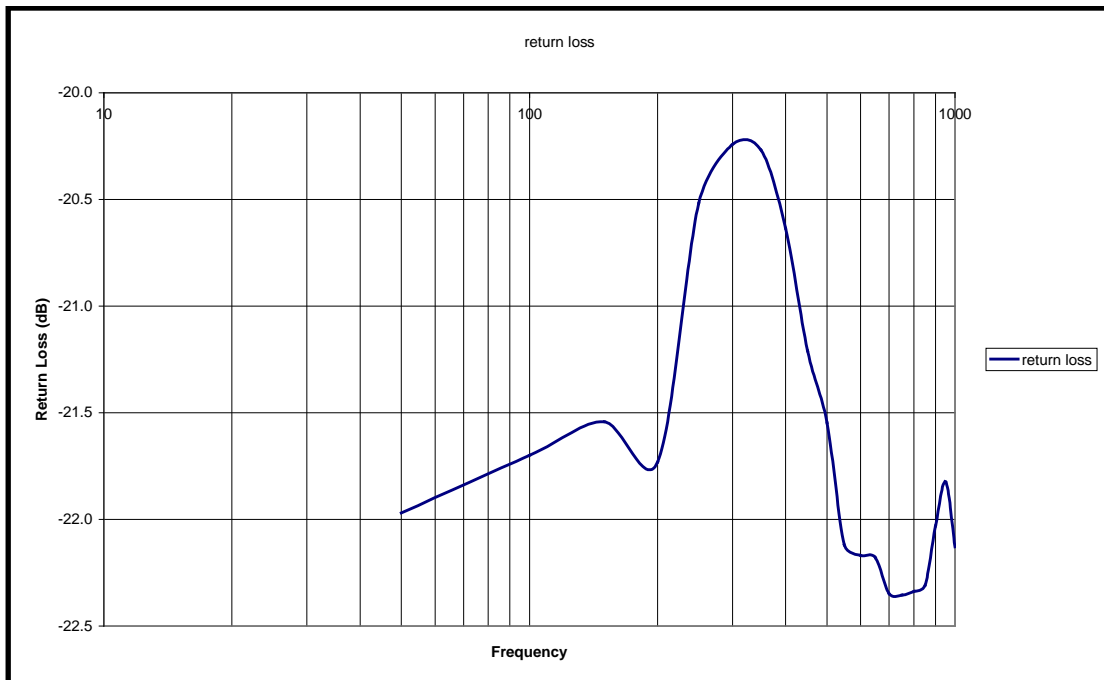
The reflection coefficient is stated against a predetermined reference impedance, 90 ohms has been used as required by the USB standard.

This is calculated as $\frac{Z_l - Z_o}{Z_l + Z_o}$



c) Return Loss (5 mating pairs)

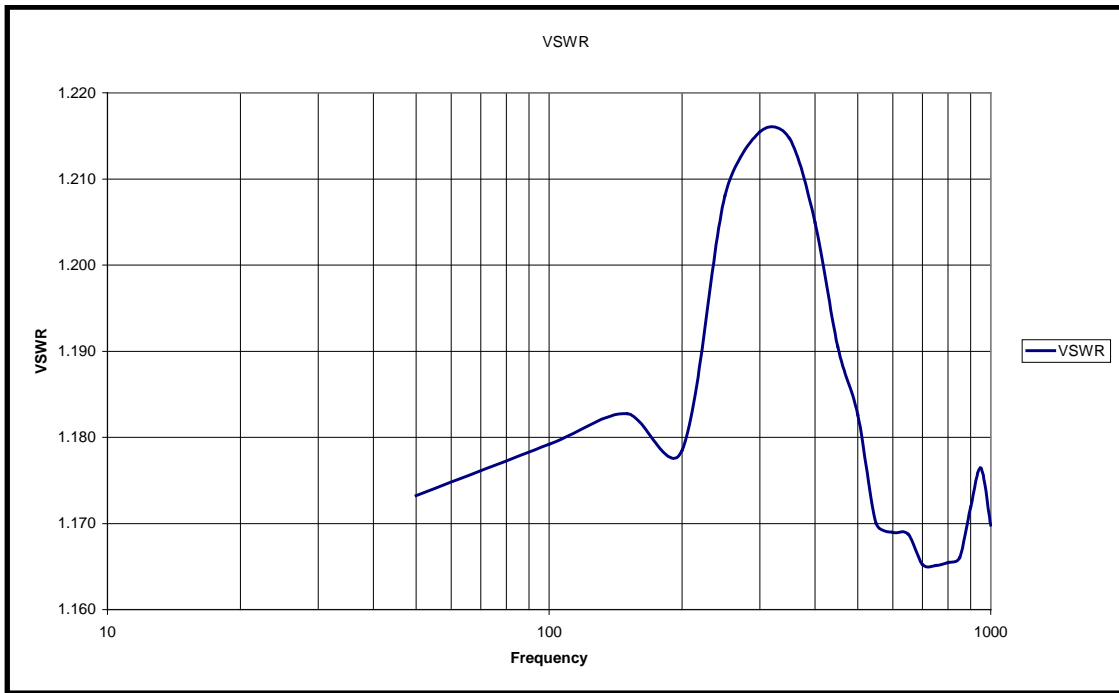
Return loss is calculated by $20\log(abs(\Gamma))$ where Γ is the reflection coefficient. These results have been calculated against the USB 90 ohm requirements.



d) Voltage Standing Wave Ratio – VSWR (5 mating pairs)

The VSWR has been calculated against the USB 90 ohm requirements.

The VSWR is given by $\frac{1 + (abs(\Gamma))}{1 - (abs(\Gamma))}$



e) Insertion Loss

Measurements were carried out in the frequency domain from 50MHz to 2GHz with the analyzer configured as 1% smoothing, 16 averages and 201 measurement points. The measured -3dB point of the connector was between 1750 and 1800MHz.