Impedance Tests of Meritec’s Laminated Flat Cable (FFC) and Teflon Ribbon Cable (FRC)

Purpose:
To determine the impedance of various pitches of FFC and FRC when used with and without shielding. The impedances were also measured using various combinations of side-by-side signal (S) and ground (G) conductors, namely S, SG, GSG, SS and GSSG. The shields were also connected to Ground (G) or left floating as noted in the Results.

Equipment:
Tektronix CSA-803/SD-24 TDR
Meritec Test Board 600773 with interconnecting pins to interface with cable conductors
Precision 50 ohm airlines and interconnecting cables

Samples:
All samples tested were 36 inches long. Cable insulation is laminated polyester (FFC) except where noted as Teflon (FRC).

Test Procedure:
The cables were connected in the various combinations of signal and ground using the Meritec Test PC board with interconnecting pins soldered to the conductors. The near end measurements were taken at 1nsec into the cable and the far end measurements were taken at 1 nsec from the far end. Near end is the end connected to the TDR. Far end is the opposite end, which was left unterminated.

Test Setup Schematic: see last page

Measured Results: see last page

<table>
<thead>
<tr>
<th>Configuration</th>
<th>SG</th>
<th>GSSG</th>
<th>GSSG</th>
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<tbody>
<tr>
<td>Pitch</td>
<td>Single ended Impedance (ohms)</td>
<td>Single ended Impedance (ohms)</td>
<td>Differential Impedance (ohms)</td>
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### Aluminum Foil Shield – Floating Shield

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### Aluminum Foil Shield – Shield Grounded at Near End

Impedance decreases over length of cable – average between near and far end is reported except for S. Here only the far end value is reported because of the large mismatch at the near end.

<table>
<thead>
<tr>
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### Aluminum Foil Shield – Shield Grounded at Far End

Impedance nearly constant over length of cable – average between near and far end is reported. S configuration is not reported because impedance is very high and varies a great deal from near to far end.

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### Aluminum Foil Shield – Shield Grounded at Both Ends

Impedance decreases over length of cable – average between near and far end is reported except for S. Here only the far end value is reported because of the large mismatch at the near end.

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### Silver Ink Shield – Shield Floating

Impedance increases over length of cable – average between near and far end is reported. S configuration is not reported because impedance is very high and varies a great deal from near to far end.

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Impedance increases over length of cable – average between near and far end is reported.

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JF Sawdy
2/13/02