LVD SCSI TEST RESULTS WITH ASYMMETRICAL DRIVERS AND REAL TERMINATORS (FAST 40)

• SOME DATA WAS ACQUIRED USING REAL LVD DEVICES AND TERMINATORS (POINT TO POINT ONLY)

• THESE LAB DEVICES HAD GROSSLY EXCESSIVE CAPACITANCE YET FULL PROTOCOL POINT TO POINT OPERATION WAS SUCCESSFUL AT 22 METERS

• THE USE OF ASYMMETRICAL DRIVERS APPEARS TO COMPENSATE FOR THE BIAS FROM THE TERMINATORS

• MISTERMINATION CAUSED BY EXCESSIVE CAPACITANCE APPEARS TO BE A LIMITING FACTOR (PRESENT SPECS ARE OK BUT NEED TO BE OBSERVED)

• OVERALL THIS DATA APPEARS TO CONFIRM THE ASSUMPTIONS USED FOR THE LVD STANDARD

• FULL SIGNAL TEST LOADS ARE BEING BUILT TO ENABLE FULL PROTOCOL TESTING FOR MULTIDROP CONDITIONS
**LVD SCSI TEST RESULTS WITH ASYMMETRICAL DRIVERS AND REAL TERMINATORS (FAST 40)**

<table>
<thead>
<tr>
<th>DRIVER</th>
<th>1 M</th>
<th>0 M</th>
<th>0 M</th>
<th>1 M</th>
<th>TERMINATOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEST POINT &quot;D&quot;</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>TEST POINT &quot;C&quot;</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>TEST POINT &quot;R&quot;</td>
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</tbody>
</table>

**POINT TO POINT CONFIGURATION**

These lab devices had excessive capacitance by a factor of more than 2X (approx 43/43/33)

"Legal" devices would have no problems

Note severe reflections caused by excessive termination capacitance

**PROBES AT TEST POINT "C"**

Bill Ham  Digital Equipment  SPI-2 Working Group Nov 4, 1996
LVD SCSI TEST RESULTS WITH ASYMMETRICAL DRIVERS AND REAL TERMINATORS (FAST 40)

<table>
<thead>
<tr>
<th>DRIVER</th>
<th>TEST POINT &quot;D&quot;</th>
<th>TEST POINT &quot;C&quot;</th>
<th>TEST POINT &quot;R&quot;</th>
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<td>1 M</td>
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</table>

POINT TO POINT CONFIGURATION

THESE LAB DEVICES HAD EXCESSIVE CAPACITANCE BY A FACTOR OF MORE THAN 2X (APPROX 43/43/33)

NOTE EXCELLENT SYMMETRY USING ASYMMETRICAL DRIVERS WITH ACTUAL LVD TERMINATORS

NOTE ABSENCE OF REFLECTIONS NEAR DRIVER (HIGH CAPACITANCE HELPS SLOW DOWN DRIVER EDGES AND LONG CABLE ATTENUATES TERMINATOR REFLECTION)

PROBES AT TEST POINT "D"
LVD SCSI TEST RESULTS WITH ASYMMETRICAL DRIVERS AND REAL TERMINATORS (FAST 40)

THESE LAB DEVICES HAD EXCESSIVE CAPACITANCE BY A FACTOR OF MORE THAN 2X (APPROX 43/43/33)

NOTE LONG RANGE SYMMETRY BUT SOME LOSS OF SHORT RANGE SYMMETRY CAUSED BY ISI

NOTE REFLECTIONS BEGINNING TO SHOW UP
LVD SCSI TEST RESULTS WITH ASYMMETRICAL DRIVERS AND REAL TERMINATORS (FAST 40)

<table>
<thead>
<tr>
<th>DRIVER</th>
<th>TEST POINT &quot;D&quot;</th>
<th>TEST POINT &quot;C&quot;</th>
<th>TEST POINT &quot;R&quot;</th>
<th>TERMINATOR</th>
</tr>
</thead>
</table>

POINT TO POINT CONFIGURATION

THESE LAB DEVICES HAD EXCESSIVE CAPACITANCE BY A FACTOR OF MORE THAN 2X (APPROX 43/43/33)

NOTE LONG RANGE SYMMETRY BUT SIGNIFICANT LOSS OF SHORT RANGE SYMMETRY CAUSED BY ISI (EXPECTED RESULT)

NOTE REFLECTIONS ARE BECOMING THE LIMITING FACTOR NEAR THE TERMINATOR

PROBES AT TEST POINT "R"
LVD SCSI TEST RESULTS WITH ASYMMETRICAL DRIVERS AND REAL TERMINATORS (FAST 40)

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<th>1 M</th>
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<td>TEST POINT &quot;R&quot;</td>
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</table>

POINT TO POINT CONFIGURATION

THESE LAB DEVICES HAD EXCESSIVE CAPACITANCE BY A FACTOR OF MORE THAN 2X (APPROX 43/43/33)

NOTE LESS ISI THAN FOR 22 METERS (EXPECTED RESULT)

NOTE REFLECTIONS STILL SEVERE NEAR THE TERMINATOR

PROBES AT TEST POINT "R"
LVD SCSI TEST RESULTS WITH ASYMMETRICAL DRIVERS AND REAL TERMINATORS (FAST 40)

<table>
<thead>
<tr>
<th>DRIVER</th>
<th>TEST POINT &quot;D&quot;</th>
<th>TEST POINT &quot;C&quot;</th>
<th>TEST POINT &quot;R&quot;</th>
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POINT TO POINT CONFIGURATION

THESE LAB DEVICES HAD EXCESSIVE CAPACITANCE BY A FACTOR OF MORE THAN 2X (APPROX 43/43/33)

NOTE ISI SMALLER YET (EXPECTED RESULT)

NOTE REFLECTIONS STILL SEVERE NEAR THE TERMINATOR
LVD SCSI TEST RESULTS WITH ASYMMETRICAL DRIVERS AND REAL TERMINATORS (FAST 40)

POINT TO POINT CONFIGURATION

THESE LAB DEVICES HAD EXCESSIVE CAPACITANCE BY A FACTOR OF MORE THAN 2X (APPROX 43/43/33)

NOTE ISI SMALLER YET (EXPECTED RESULT)

NOTE REFLECTIONS STILL SEvere (BUT SHORTER) NEAR THE TERMINATOR

PROBES AT TEST POINT "R" SYMLVD13

BILL HAM DIGITAL EQUIPMENT SPI-2 WORKING GROUP NOV 4, 1996
LVD SCSI TEST RESULTS WITH FULL PROTOCOL OPERATION (FAST 40)

POINT TO POINT CONFIGURATION

THESE LAB DEVICES HAD EXCESSIVE CAPACITANCE BY A FACTOR OF MORE THAN 2X (APPROX 43/43/33)

NOTE: REFLECTION HURTS DATA BIT MORE THAN THE REQ SIGNAL (TIMING COINCIDENCE)

PROBES AT TEST POINT "R"