X3T9.2/88-98

ENDL

August 5, 1988

Mr. John Lohmeyer
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MS 21
3718 N. Rock Road
Wichita
KN 67226

Dear John,

As you know, I have been actively working with Electronic Design on the multi-part series on SCSI which began in May. In that first issue was a survey, and I am taking a look at the responses.

Attached is one in particular which I found very interesting. If you recall, ICL submitted a technical report on the limitations of single-ended. There was some talk about whether something should be included in the standard on recommending a limit of 5-6 devices but nothing was done.

We should probably look at that question again in light of the increasing use of SCSI, and the larger configurations now being assembled.

Yours sincerely,

I. Dal Allan

14426 Black Walnut Court, Saratoga, California 95070 (408) 867 - 6630

TELL US ABOUT YOUR SCSI APPLICATIONS

By responding to this questionnaire, you can help us give you the information you need to design with the SCSI interface.

Note: All responses received by June 27, 1988 will be entered in a drawing for a free 20-Mbyte hard-disk SCSI subsystem based on a Seagate drive. The drive, compatible with the Apple Macintosh, is made by Apple Crate Inc., of North Hollywood, Calif.

Please use an extra sheet to give more detailed comments.

1. My company designs or purchases the following SCSI products to embed in systems we sell or use:

Design	Purchase	Type of product
☐	☒	SCSI protocol chip
☐	☒	SCSI transceiver
☐	☒	SCSI connector
☒	☐	SCSI cable
☐	☒	Host adapter from any standard bus to SCSI
☐	☐	Disk bridge controller
☐	☐	Multiple disk controller
☐	☐	Optical disk controller
☐	☐	Instrument controller
☐	☐	Communication device
☒	☐	Embedded disk
☒	☐	Embedded tape
☐	☐	Optical disk drive
☐	☐	Laser printer
☐	☐	Nonlaser printer
☐	☐	Document/image scanner
☐	☐	Processor board with SCSI port
☐	☐	Bus monitor/analyzer
☐	☐	Development system
☐	☐	Incoming test system
☐	☐	Manufacturing test system
☐	☐	Other _____

2. What sustained data-transfer rates (Mbytes/s) will the disk drives you purchase/manufacture support?

Asynchronous SCSI

Now: ☐ 0.6 ☐ 1.0 ☒ 1.5 ☐ 2.0 ☐ 3.0 ☐ 4.0 ☐ _____

Future (12 to 24 months): ☐ 0.6 ☐ 1.0 ☒ 1.5 ☐ 2.0 ☐ 3.0 ☐ 4.0 ☐ _____

Synchronous SCSI

Now: ☐ 1.0 ☐ 2.0 ☒ 4.0 ☐ 5.0 ☐ 6.0 ☐ 8.0 ☐ 10.0 ☐ _____

Future (12 to 24 months): ☐ 1.0 ☐ 2.0 ☒ 4.0 ☐ 5.0 ☐ 6.0 ☐ 8.0 ☐ 10.0 ☐ _____

Comments: _____

3. What burst data-transfer rate (max. speed for 32 1-kbyte transfers) will the preceding products support?

Now: _____ Future: _____

4. Which bus width and types will be used now and in the future?

Now: ☒ 8-bit ☐ 16-bit ☐ 32-bit ☐ mixed width _____ ; ☐ differential transceiver ☒ single-ended transceiver

Future: ☒ 8-bit ☐ 16-bit ☐ 32-bit ☐ mixed width _____ ; ☒ differential transceiver ☐ single-ended transceiver

Comment: _____

5. Which specifications are you using now and planning to use in the future?

Now	Future	Specification
☐	☐	SASI
☐	☐	Apple SCSI
☐	☐	SCSI
☒	☐	SCSI (with the Common Command Set — CCS)
☐	☒	SCSI-2
☐	☐	Other _____

Now	Future	Specification
☐	☐	Fast SCSI (10 Mbytes/s option in SCSI-2)
☐	☐	Dual cable SCSI-2 (wide data transfer)

6. Which parts of these specifications aren't being implemented?

_____

_____

Why not? _____

_____

_____

7. What unique additions have you made to the SCSI command set or signal set?

_____

_____

_____

_____

8. Do you think SCSI functionality has been expanded too far by the ANSI committee?

☒ Yes ☐ No

Comments: _____

_____

9. Do you or will you implement these SCSI functions?

Functions:	Support/use now	Support/use future
Parity	☒	☐
Disconnect/reconnect	☐	☐
Search command	☐	☐
Copy command	☐	☐
Relative address bit	☐	☐
Link flag bit	☐	☐

10. What level of sense data do you support or require?

☐ Extended sense keys
☐ Sense key specific bytes
☐ Additional sense codes/qualifiers
☐ Information bytes

11. How extensive is the retry algorithm embedded in the device or system you are building?

☐ Extensive
☒ Moderate
☐ Minimal

Comments: _____

_____

12. Are additional test points that bypass SCSI "intelligence" required to adequately test the drive itself?

☐ yes ☐ no

What hardware and software test points do you use?

_____

What test features are needed?

_____

Mail completed form to:
Stephen E. Scrupski
Editor-in-Chief
Electronic Design
Ten Holland Drive
Hasbrouck Heights, NJ 07604

If we receive your response form by June 27, 1988, it will be entered in a drawing for a free Apple Crate 20-Mbyte hard disk subsystem (shown below).

Name D. MAUSSION

Address BULL

331 AV. PATTON

49005 ANGERS FRANCE

124 Time 13

that of an XT and the SCS adapter. Such hardware ences must be handled by MS DOS. At this spring's SCSI F rum, Jim Rubino, director marketing at Seagate Corp., Scotts Valley, Calif., propose making SCSI ubiquitous acro the PC market. He called for standard basic input-output o erating system (BIOS) th would interface with the oper ing system.

The BIOS would sit on t host bus adapter card contai ing the SCSI controller an work in a standard way with a peripheral. As a result, devi drivers would be device-ind pendent and only memory-d pendent. The goal is to sta dardize new systems introduc into the marketplace for univ sal plug-and-play. Seagate pursuing this effort with Micr soft.

Major work lies ahead tegrating and testing all o new device configurations. addition, isolating analog si nals from the interface h caused another design cha lenge: the development of board diagnostics. Inside a SC drive, analog testing can be p formed with embedded micr processors connected to analo to-digital converters.

The embedded control data separator lets the windo margin be adjusted on the fly better data accuracy. Such s test features are emerging a solution to the market ne Conners Peripherals and Mic polis have already designed the own diagnostic systems with e ternal connectors and accessi test points. ☐

How Valuable?	Circle
Highly	
Moderately	539
Slightly	540

When using recommanded electrical SCSI standard of the single-ended alternative, we have singing signals meaning that the

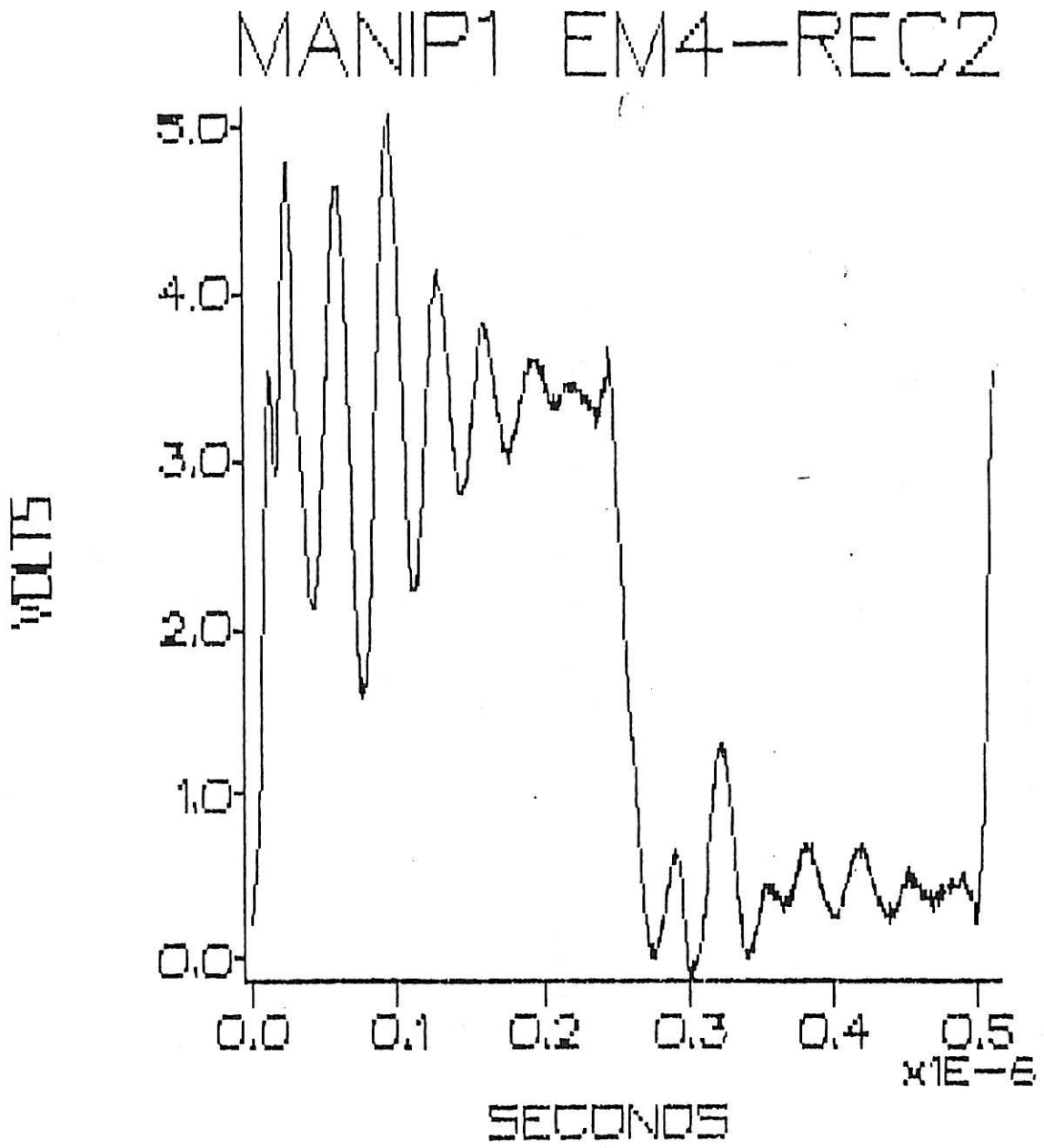
SCSI BUS IS NOT WELL TERMINATED.

For example 8 devices (target or initiator) equally placed on a 3 meter cable (with 100 Ω characteristic impedance).

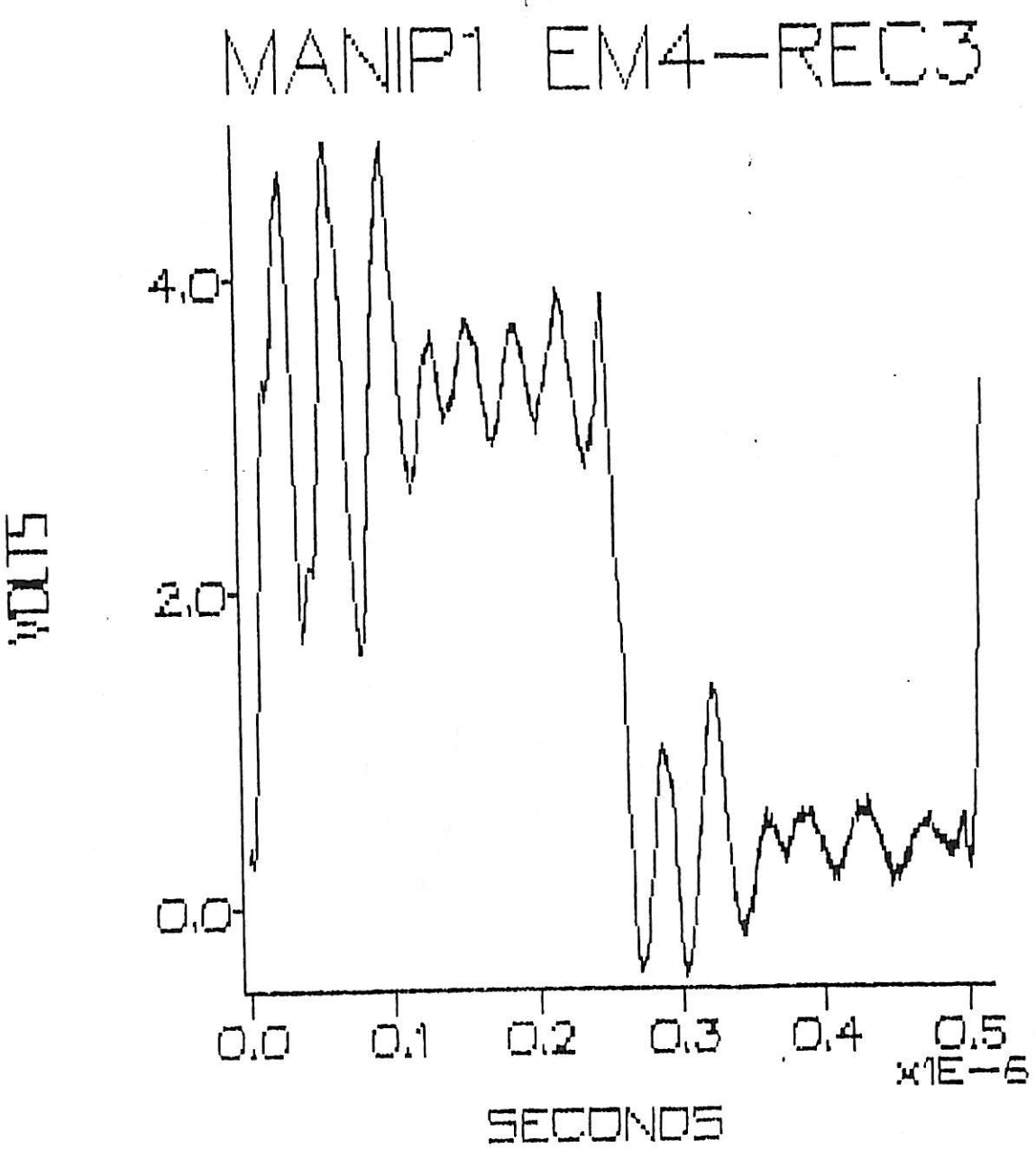
Please find some hard copies of some signals observed with an oscilloscope on a SCSI bus with this configuration.

D. MAUSSION

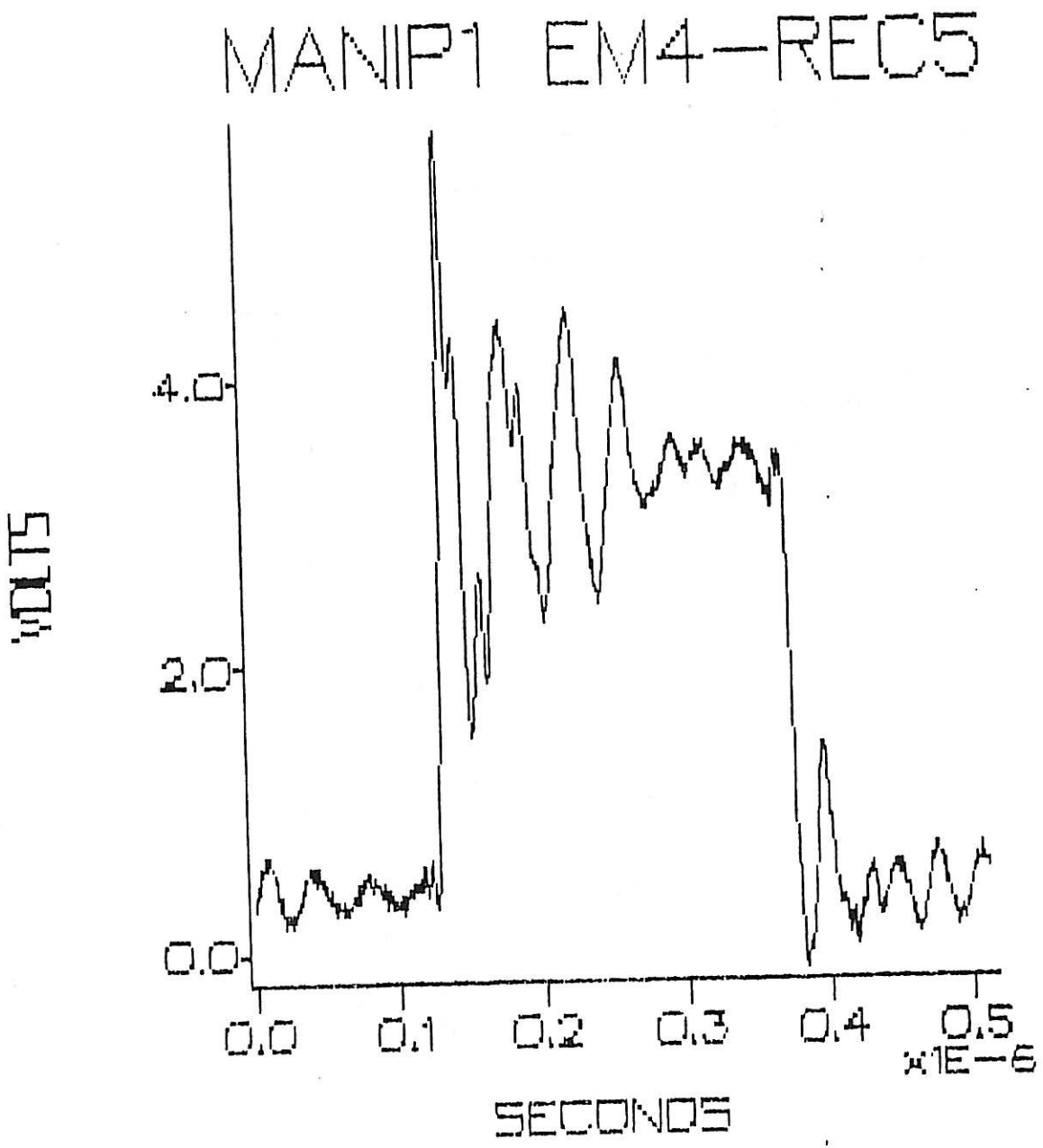
CH4	
min	-0.09
min l	3.01e-007
max	5.05
max l	9.55e-008
mean	1.883643
s dev	1.518848
rms	2.419713
var	2.3069



CH4	
min	-0.42
min l	3.025e-007
max	4.89
max l	5.85e-008
mean	1.871533
s dev	1.552991
rms	2.431958
var	2.411782



CH4	
min	-0.13
min l	3.83e-007
max	5.73
max l	1.35e-007
mean	1.84877
s dev	1.535574
rms	2.403318
var	2.357987



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