

LASER MAGNETIC STORAGE
INTERNATIONAL COMPANY

MEMO

Optical Storage Division

17 August 1989

To: H. Iwata
CD-ROM Drive Division
Sony Corporation
Tokyo, Japan

Rita Lin
Sony Telecommunications Technology Center
Paramus, New Jersey 07653

Mike Yokoyama
Optical Memory Group
Sony Component Products Division
San Jose, California 95143

From: Paul Boulay
Optical Storage Division
Laser Magnetic Storage
Colorado Springs, Colorado 80907

Phone (719) 593-4323
Fax. (719) 599-8713

Subj: SCSI-2 CD-ROM Command Set Changes

Ref: X3T9.2/89-108R1, R. Lin and M. Yokoyama, August 10, 1989
CD-ROM Read Sub-channel Command
CD-ROM Read Error Recovery Parameters

This is my first response to the referenced Sony proposal.

1) Read Sub-channel.

In principle, I agree with the approach taken in your latest proposal. The only other substantive change that I intend to make in editing this into the format and style of the standard is to permit returning ISRC and MCN data that are current but not necessarily from the exact sector reported in the location data. This will be worded so that a drive would meet the standard if it did not provide data from any but the current sector.

2) Read Error Recovery Parameters.

I believe that the function of the RC bit as defined in the Direct Access section of the SCSI standard (paragraph 8.3.3.6) is appropriate for the uses listed in the Sony proposal.

The section 8 definition makes it clear that the RC bit function takes precedence over the other error recovery control bits (EER, DCR, DTE and PER). However the proposed wording (Table 13-37A.) defining the combinations of the RC bit and the other error recovery control bits contradicts this.

I plan to modify the descriptions to make it clear that error recovery procedures must not interfere with continuing data transfer as demanded by RC=1. The other bits will thus become advisory. One example of a possible conflict will bring this out. In the description of the 10h and 14h Error Recovery Parameter byte values, the Sony wording states that "the maximum error recovery procedures available are used". This means that a sector read with an error shall be delayed in order to perform 3rd level (L-ECC) procedures if the particular drive cannot keep up the full data transfer rate while doing this ECC. Clearly this delay is not permitted by the RC bit setting. Given a strict interpretation of the Standard, such a drive would reject such a mode selection because it might not be able to honor the RC bit and also do the 3rd layer error correction.

Given this contradiction, the standard must make it clear what is to be done. I believe that this should be handled by changing the first sentence to: "If the full data transfer rate can be maintained, the maximum error recovery procedures may be used."

On a similar issue, in the 11h and 15h value descriptions (Table 13-37A,) it states that: "Only retries of the read operation and CIRC are used... ". A retry of a CD-ROM read operation would almost certainly cause a data transfer interruption in conflict with the RC bit. Instead I propose: "If the full data transfer rate can be maintained, CIRC based error recovery procedures may be used... ".

3) Specification of which error to return. (Sony proposal 2-4.)

The SCSI committee previously took up the issue of adding the word last to the error reporting descriptions and decided that this was best left up to the target. As an example of where last might not be appropriate, consider the RC bit set to 1 cases. If a host does a transfer and there is an unrecoverable error, wouldn't the first such address be the one needed in an application where the host handles errors itself. Knowing the location of the first error would enable the host to do its own retries and to start the command over from that point. In short, there arguments for both approaches. At the time the committee took this up some years ago,

firms representing 3 points of view (first, last, and worst error) claimed to be shipping SCSI products. The compromise reached was to leave this unstated.

Please attempt to get some indication to me on the way that Sony Corp. feels about these matters by Monday evening. I will be at the SCSI committee meeting on Monday and Tuesday, August the 21st and 22nd. We must strive to reach agreement of all SCSI CD-ROM producers by the Tuesday morning session of the SCSI committee. I will check for phone messages and faxes received Monday by 9PM Mountain time.

Regards,



Paul R. Boulay
Principal Engineer
Laser Magnetic Storage