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CARDEROCK DIVISION

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IN REPLY REFER TO
9504
Ser 96315/06-008

OCT 3 1 2005

From: Commanding Officer, Naval Surface Warfare Center, Carderock Division, Naval Ship Systems Engineering Station
To: Commanding Officer, Naval Surface Warfare Center, Dahlgren Division (Code B35)

Subj: COTS FIBER OPTIC CONNECTOR CONVERSION ADAPTERS AT EQUIPMENT INTERFACES, NAVY SHIPBOARD USE

Ref: (a) NSWCCD-SSES LTR 9504 Ser 9542/09, Criteria For Shipboard Usage of Military Fiber Optic Components, Second Update, of 30 May 1997

1. Purpose.

This letter identifies a concern and recommends actions if considering the use of fiber optic, conversion adapters at the optic port interface of network equipment.

2. Background.

The ST connector is the type of single ferrule, fiber optic connector used to optical connect the backbone cabling to network equipment via a jumper (fiber optic, single fiber cable with a connector on each end). The use of the ST connector is specified by MIL-STD-2042, the Navy Shipboard Installation Standard. Optical port interfaces on commercial network equipment typically accept SC connectors or small form factor connectors (LC connector, MTRJ connector). Typically, the jumper has ST connectors on both ends. To interface with the network equipment having other than ST type optical interface ports, one end of the jumper may instead be terminated with a SC connector, LC connector or MTRJ connector. This is the preferred approach. This letter addresses an alternate approach proposed using a fiber optic connector, conversion adapter. One configuration for a conversion adapter is for an ST-to-SC type conversion. In this configuration, the male portion of the conversion adapter is configured as a SC connector to mate with the optical port interface on the network equipment. The other end of the conversion adapter is configured as a ST adapter (female connection) to mate with the end of a ST connector on the jumper.

3. Distribution statement

Distribution Statement A: Approved For Public Release, Distribution Is Unlimited.

4. Concerns.

Some conversion adapters have been found to be unstable over temperature and time as temperature in the network equipment rack cycles. Mechanical durability for multiple insertions and retention after pulls on the cable should be considered also.

5. Recommended actions.

a. Preferred approach. To interface with the network equipment having other than ST type optical interface ports, one end of the jumper may instead be terminated with a SC connector, LC connector or MTRJ connector.
b. Conversion adapter approach. At a minimum, temperature cycling tests should be done. More ideally, testing should be done to more fully simulate the environment in which the conversion adapter will be placed. Besides the ambient environment, network equipment influences should be considered. These considerations include optical port interfaces near optical (LD/LED) sources and heat sinks in which these optical sources are mounted.

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6. Constraints.

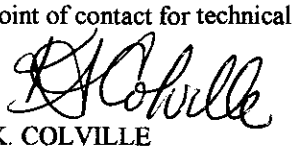
a. Location. Use of a conversion adapter is constrained to locations of the network equipment, optical port interface at the network equipment rack and at a workstation network interface card (NIC) where usage is in compliance with reference (a). This reference can be obtained at https://fiberoptics.nswc.navy.mil/.
b. Circumstance. Use of a conversion adapter should be constrained to situations in with network equipment is changed, the existing cabling terminated with ST connectors and the replacement network equipment contains a different type of optical port interface.

7. Addressees.

This letter is intended for NSWC and other Government agencies/activities, parties in direct support of the Navy shipboard network design and/or installations.

8. Point of contact.

NSWC DD is to be the initial point of contact for the design and installation issues/inquiries that pertain to this matter. Inquiries for fiber optic shipboard design and installations may be addressed to DLGR_NSWC_foweb@navy.mil. NSWCCD-SSES point of contact for technical support to NSWC DD on this matter is E. Bluebond.



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By direction

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