



DEPARTMENT OF THE NAVY

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IN REPLY REFER TO

3910

Ser W23/006

JUN 8 2009

From: Commander, Dahlgren Division, Naval Surface Warfare Center
To: Defense Logistics Agency, Defense Supply Center Columbus
(Code VQP) P.O. Box 3990, Columbus, OH 43216-5000

Subj: POLICY TO INVOKE FOR GEOMETRY AND POLISHING, FIBER OPTIC
CONNECTOR FERRULE END FACE

Ref: (a) Military Standard MIL-STD-2042, Part 5, Fiber Optic Cable
Topology Installation, Standard Method for Naval Ships
(Connectors and Interconnections), of 25 July 02
(b) Guidance Document, Method to Measure ferrule End Faces,
Fiber Optic Connectors and Termini; 9504 Ser 96315/067 of
31 October 03

1. Purpose. This letter addresses the policy to implement for specifying the end face geometry and polish to be used for additions to and modifications of the existing fiber optic cable topology aboard Navy ships and for Qualified Products List (QPL) test samples.

2. Polish. Unless otherwise specified, the process used to obtain the post-polished ferrule shall be the "Domed end polish, enhanced procedure"; as specified in reference (a); for single mode cable and the "Domed end polish, standard procedure"; as specified in reference (a); for multimode cable. Final determination for the procedure used resides with the Program Manager.

3. Further elaboration on polish for communication systems/networks.

a. Flat end polish. The flat end polish was retained for use with older multimode legacy systems only. Even for these older systems, the "Domed end polish, standard procedure" is preferred for cable replacements or additions so that the cabling does not need to be upgraded if newer equipment is connected during refurbishments.

b. System requirements. Communication system requirements, for networks with single mode fiber, are the principle factor that determines if the "Domed end polish, standard procedure" or the "Domed end polish, enhanced procedure" must be used. For systems with single mode fiber in which the transmitter (optical source) requires a low optical return loss (greater than 30 dB), then the "Domed end polish, enhanced procedure" must be cited.

c. Anticipated future upgrades. In future upgrades, it is anticipated that some of the systems with single mode fiber will require a lower optical return loss than needed for current network/communication systems. The level of the optical return loss is determined principally at the

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connection(s) with most back reflections (lowest return loss values). This requires re-polishing or replacement of connectors and termini within the main cable topology in addition to the patch cords at the network equipment. Specifying the "Domed end polish, enhanced procedure" eliminates the necessity for connector end face rework as part of the applicable system upgrade.

d. High data rate systems (1 Gigabit and beyond). Communication system requirements, for networks with high data rates and single mode fiber, remain (see 3b) the principle factor that determines if the "Domed end polish, standard procedure" or the "Domed end polish, enhanced procedure" must be used. For systems with single mode fiber in which the transmitter (optical source) requires a low optical return loss (greater than 30 dB), then the "Domed end polish, enhanced procedure" must be cited.

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

5. Further elaboration on polish for test measurements and qualification.

a. Measurement Quality Jumper (MQJ). Connectors and termini on the ends of a MQJ for single mode fiber shall be fabricated with the "Domed end polish, enhanced procedure" and for multimode fiber shall be fabricated with the "Domed end polish, standard procedure".

b. QPL test samples. Connectors and termini on the ends of a QPL test sample for single mode fiber shall be fabricated with the "Domed end polish, enhanced procedure" and for multimode fiber shall be fabricated with the "Domed end polish, standard procedure".

6. End-face geometry. Unless otherwise specified, the post-polished ferrule end face geometry for a fiber optic connector or terminus shall have a domed end face with a physical contact polish. The parameters used to define the end face geometry and specify the acceptable range/limits shall be in accordance with reference (b).

7. Addressees. This letter is intended for government personnel and contractors involved in the design and installation of the fiber optic cable topology and networks/communication systems. In addition, this letter is intended for vendors and out-of-house (outside the component's vendor facilities or independent) test laboratories performing QPL testing. This letter is to be used by the Navy, Defense Supply Center Columbus and other government agencies/activities, parties in direct support of the government agencies/activities to clarify intent of requirements specified.

8. Point of contact. Technical inquires and clarifications on this Navy letter are to be placed in writing and sent by e-mail to Naval Surface Warfare Center, Dahlgren Division, Warfare Systems Department at DLGR_NSWC_Foweb@navy.mil. Defense Logistics Agency, Defense Supply Center Columbus, Code VQP is to be the initial point of contact for the

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qualification issues/inquiries that pertain to this matter. Principle point of contact is A. Baillieul. He can be contacted by telephone at (614) 692-2867 or e-mail at vqp.ab@dla.mil. Alternative point of contact is Richard Marbais. He can be contacted by telephone at (614) 692-0620 or e-mail at richard.marbais@dla.mil.



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