

ENGINEERING PRACTICES STUDY

PROJECT NUMBER: 60GP-2008-003

TITLE:

Review of non-government standard (NGS) TIA-455-20 (revision B) to determine significant changes and develop recommendations for reference to TIA-455-20 in Government standardization documents.

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FINAL REPORT

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I. **OBJECTIVE:** The objective of this study was to develop specific reference(s) to the appropriate test methods contained in the new NGS (TIA-455-20 revision B) for inclusion in fiber optic government standardization documents. Information contained in this EPS will provide guidance in referencing TIA-455-20 in fiber optic government standardization documents.

II. **BACKGROUND:** TIA/EIA-455-20A, "Measurement of Change in Optical Transmittance" dated 19 October 1994 has been superseded by TIA-455-20B "Measurement Methods and Test Procedures – Monitoring of Changes in Optical Transmittance (IEC-60793-1-46 Optical Fibers Part 1-46)" dated 13 May 2004. With this supersession, a second test method was added. Also, the B revision test method was restricted to the testing of fiber and cable (devices, connectors, etc. are no longer addressed). Present references to TIA/EIA-455-20 in fiber optic government standardization documents need to be modified to provide adequate direction (specific test method/procedure to be used). Also, additional detail is needed for measurement of change in optical transmittance in fiber optic connectors.

III. **RESULTS:** A detailed review of both TIA/EIA-455-20A and TIA-455-20B was performed to determine significant changes. The following significant changes were identified:

- Addition of second test method
- Per the scope, this NGS addresses only fibers and cables.

The setup and test procedure specified in measurement 2102 of the initial draft of MIL-STD-1678-2, adequately addresses the measuring of the change in optical transmittance in devices using a modification to TIA-455-20.

IV. **CONCLUSIONS:** Based on a review of TIA-455-20 (revision B) and the Navy Optical Test Measurement Guide the following is provided:

- For reference in fiber and cable documents, specify "TIA-455-20, method A".
- For reference in other interconnection device documents (connectors, splices, cable assemblies, etc.), specify TIA-455-20 adhering strictly to the setup and test procedure specified in Measurement 2102 from MIL-STD-1678-2.

V. **RECOMMENDATIONS:** Change any references to EIA/TIA-455-20 for Change in Optical Transmittance to TIA-455-20 method A in the following fiber and cable documents,
MIL-PRF-49291 MIL-PRF-85045.

Upon dating of MIL-STD-1678-2, change any references to EIA/TIA-455-20 for Change in Optical Transmittance to TIA-455-20 adhering strictly to the setup and test procedure specified in Measurement 2102 from MIL-STD-1678-2 in fiber optic connectors, splices, termini and inter connection box documents,

MIL-DTL-83526	MIL-C-83522	MIL-PRF-24504
MIL-PRF-24623	MIL-I-24728	MIL-PRF-28876.

Additionally, because of the document number change, re-adopt TIA/EIA-455-20 as TIA-455-20.