



AEROSPACE INFORMATION REPORT

AIR6552™/1

Issued 2019-10
Reaffirmed 2024-10

Inline Optical Power Monitoring,
Network End-to-End Data Link Evaluation System

RATIONALE

There is a need for a robust optical performance monitoring system that is capable of detecting, localizing, and isolating impairments, as well as assisting in failure prediction of the physical layer of a fiber optic network. Inline power monitoring can be used to control optical power, measure optical power, anticipate failures, and detect fluctuations.

AIR6552/1 has been reaffirmed to comply with the SAE Five-Year Review policy.

TABLE OF CONTENTS

1.	SCOPE.....	3
2.	REFERENCES.....	3
2.1	Applicable Documents	3
2.2	Related Publications	3
2.2.1	SAE Publications.....	3
2.2.2	ANSI Accredited Publications	3
2.2.3	IEC Publications	3
2.2.4	NASA Publications	4
2.2.5	NAVAIR Publications	4
2.2.6	U.S. Government Publications	4
2.2.7	ARINC Publications.....	4
2.2.8	Other References	4
2.3	Abbreviations	4
2.4	Acronyms	5
3.	INTRODUCTION TO INLINE OPTICAL POWER MONITORING	5
4.	INLINE POWER TAP	6
4.1	Overview	6
4.2	Electrical Characteristics.....	7
4.3	Optical Characteristics	8
4.4	Wavelength and Temperature Dependence	9
4.5	Calibration	10
5.	INLINE OPTICAL POWER MONITOR	10
6.	INLINE NETWORK SENSORS	12
7.	NOTES	13
7.1	Revision Indicator.....	13

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Documents

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Figure 1	Inline power tap	6
Figure 2	Power taps in series measuring forward and reverse power	6
Figure 3	Power tap functional diagram	7
Figure 4	Equivalent circuit	8
Figure 5	Calibration set-up	10
Figure 6	Inline optical power monitor with pigtails	11
Figure 7	Inline optical power monitor with receptacles	11
Figure 8	Block diagram of an inline optical power monitor measuring amplifier gain	12
Figure 9	1u rack mount enclosure with three independently adjustable inline network sensors	12

1. SCOPE

This document establishes methods to obtain, store, and access data about the health of a fiber optic network using commercially available inline optical power monitoring sensors. This document is intended for:

- Managers
- Engineers
- Technicians
- Contracting officers
- Third party maintenance agencies
- Quality assurance

2. REFERENCES

2.1 Applicable Documents

There are no applicable documents.

2.2 Related Publications

The following publications are provided for information purposes only and are not a required part of this SAE Technical Report.

2.2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

ARP5061 Guidelines for Testing and Support of Aerospace, Fiber Optic, Inter-Connect Systems

2.2.2 ANSI Accredited Publications

Available from American National Standards Institute, 25 West 43rd Street, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

ANSI Z136.1-2007 American National Standard for Safe Use of Lasers

ANSI/TIA-440-B-2004 Fiber Optic Terminology

2.2.3 IEC Publications

Available from IEC Central Office, 3, rue de Varembe, P.O. Box 131, CH-1211 Geneva 20, Switzerland, Tel: +41 22 919 02 11, www.iec.ch.

IEC 60825-1 Laser Safety Equipment Classification (Safety of Laser Products)

IEC 60825-2 Safety of Optical Fiber Communication Systems

IEC 60825-4 Laser Guards

2.2.4 NASA Publications

Available from NASA Technical Services, NASA STI Program STI Support Services, Mail Stop 148, NASA Langley Research Center, Hampton, VA 23681-2199, 757-864-9658, Fax: 757-864-6500, <http://ntrs.nasa.gov/>.

NASA-STD-8739.5 Fiber Optic Terminations, Cable Assemblies, and Installation

2.2.5 NAVAIR Publications

Available from Commanding Officer, Naval Air Technical Data and Engineering Service Command, Naval Air Station, North Island, P.O. Box 357031, Building 90, Distribution, San Diego, CA 92135-7031.

NAVAIR 01-1A-505.4 Installation and Testing Practices Aircraft Fiber Optic Cabling

2.2.6 U.S. Government Publications

Copies of these documents are available online at <https://quicksearch.dla.mil>.

FED-STD-1037 Glossary of Telecommunications Terms

MIL-DTL-38999/20 Connectors, Electrical, Circular, Receptacle, Threaded, Wall Mounting Flange, Removable Crimp Contacts, Series III, Metric

MIL-DTL-38999/24 Connectors, Electrical, Circular, Receptacle, Threaded, Jam Nut Mounting, Removable Crimp Contacts, Series III, Metric

MIL-DTL-38999/26 Connectors, Electrical, Plug, Circular, Threaded, Straight, Removable Crimp Contacts, Series III, Metric

MIL-PRF-29504 Termini, Fiber Optic Connector, Removable, General Specification for

MIL-STD-1678 Fiber Optic Cabling Systems Requirements and Measurements

2.2.7 ARINC Publications

Available from ARINC, 2551 Riva Road, Annapolis, MD 21401-7435, Tel: 410-266-4000, www.arinc.com.

ARINC Report 806 Fiber Optic Installation and Maintenance

ARINC Report 807 Fiber Optic Training Requirements

2.2.8 Other References

Hecht, J., "Understanding Fiber Optics, Fifth Edition," ISBN 0-13-117429-0.

Woodward, B., "Cabling Part 2: Fiber-Optic Cabling and Components, Fifth Edition," ISBN: 978-1-118-80748-4.

Woodward, B., "Fiber Optics Installer (FOI) Certification Exam Guide," ISBN 978-1-119-01150-7.

2.3 Abbreviations

C Capacitance

D Directivity

dB Decibel

dBm Decibel-Milliwatt