

AEROSPACE STANDARD

054	REV. A
1996-05	
2005-10	
2012-05	
	1996-05 2005-10

Superseding AS8054

Airborne Engine Vibration Monitoring (EVM) System, Guidelines for Performance Standard For

RATIONALE

This AS was raised at the request of the Regulatory authorities to provide a minimum performance standard for airborne vibration monitoring systems. Since its creation, these systems have greatly advanced in technology and application and AIR1839, shortly to be re-issued as ARP1839 now contains much more extensive and up-to-date information concerning such installations. Recent survey of the regulatory authorities by E-32 showed no further interest or usage of AS8054.

E-32 therefore voted for its cancellation.

CANCELLATION NOTICE

This document has been declared "CANCELLED" as of May 2012. By this action, this document will remain listed in the Numerical Section of the Aerospace Standards Index.

Cancelled specifications are available from SAE.

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be revised, reaffirmed, stabilized, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2012 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

TO PLACE A DOCUMENT ORDER: Tel: 877-606-7323 (inside USA and Canada)

Tel: +1 724-776-4970 (outside USA) Fax: 724-776-0790

Email: CustomerService@sae.org

http://www.sae.org

SAE values your input. To provide feedback on this Technical Report, please visit http://www.sae.org/technical/standards/AS8054A

SAE WEB ADDRESS:

TABLE OF CONTENTS

1	SCOPE	3
1.1	Purpose	3
2.	APPLICABLE DOCUMENTS	3
2.1	SAE Publications	
2.2	U.S. Government Publications	4
2.3	FAA Publications	
2.4	ANSI Publications	4
2.5	RTCA Publications	
2.6	Other Publications	4
2.7	Definitions	5
2.8	Abbreviations	6
3.	REQUIREMENTS	
3.1	General Design Requirements	
3.1.1	Workmanship	
3.1.2	Human Factors/Personnel Safety	
3.1.3	Interchangeability	
3.1.4	Dimensions and Tolerances	10
3.1.5	Identification	
3.1.6	Inspection Seals	10
3.1.7	Weight	10
3.1.8	Materials	10
3.1.9	Processes	1 [,]
3.1.10	Electrical/Electronic Design Requirements	
3.1.11	Environmental Requirements	12
3.1.12	Reliability	
3.2	Specific Design Requirements for the EVM Signal Conditioner	17
3.2.1	Input Requirements	17
3.2.2	Signal Processing	19
3.2.3	Output Requirements	21
3.2.4	Failure Indication	21

3.2.5	Software Requirements	21
3.2.6	Electrical Characteristics	
3.2.7	Physical Requirements	22
3.3	Specific Design Requirements for EVM Vibration Sensors	
3.3.1 3.3.2	Reference Frequency and Temperature Operating Ranges	
3.3.3	Vibration Measurement	23
3.3.4	Electrical Characteristics	
3.3.5	Environmental Requirements	
3.3.6	Physical Requirements	
3.4	Specific Design Requirements for Remote Converter Unit (RCU)	
3.4.1	Input Requirements	
3.4.2	Signal Processing	
3.4.3	Output Requirements	
3.4.4	Electrical Characteristics	
3.5	Specific Design Requirements for EVM Displays	
3.5.1	Indicating Methods	
3.5.2	Instrument Markings	27
3.5.3	Performance	
3.5.4	Environmental Requirements	. 27
4.	UNIT QUALIFICATION AND ACCEPTANCE	28
4.1	Performance Measurement and Display	28
4.2	Test Samples	28
4.3	Failure During Test	28
4.4	Hazard Analysis	29
4.5	Qualification Test Procedures	
4.5.1	Electrical Tests	
4.5.2	Environmental Tests	
4.6	Acceptance Test Procedures	
4.6.1	Signal Conditioner.	
4.6.2 4.6.3	Vibration Sensor	
4.6.4	Remote Converter Unit	34
4.0.4	EVM DisplaysReports and Declarations	. 31 37
4.7.1	Summary Report	37
4.7.2	Substantiating Test Data/Analysis	
7.7.2	Odbstartiating Fost Batan triarysis	00
5.	NOTES	38
5.1	Key Words	38
Figure 1	Broadband Filter Characteristics	5
Figure 2	Tracking Filter Characteristics	6
Figure 3	Typical EVM System Components	9
Figure 4	Anti-Aliasing Requirements	19
Figure 5	Remote Converter Unit Thermal Profile	36
Table 1	Minimum Crash Safety Load Factors	14