

**Test Limits and Methods of Measurement of Radio Disturbance Characteristics
of Vehicles and Devices, Broadband and Narrowband, 150 kHz to 1000 MHz**

Foreword—This SAE Standard is based on CISPR 25 which has been developed by CISPR Subcommittee D and has been approved to be published. The SAE Electromagnetic Radiation Standards Committee has been an active participant in Subcommittee D and in the development of CISPR 25.

This document provides test limits and procedures for the “protection of vehicle receivers from radio frequency (RF) emissions caused by on-board vehicle components.”

NOTE—Appendix B provides helpful methodology for resolution of interference problems.

TABLE OF CONTENTS

1.	Scope	2
1.1	Rationale	3
2.	References	3
2.1	Applicable Publications	3
2.1.1	SAE Publication	3
2.1.2	CISPR Publication	3
3.	Definitions	3
4.	Requirements Common to Vehicle and Component/Module Emissions Measurement	3
4.1	General Test Requirements and Test Plan	3
4.1.1	Test Plan Note	3
4.1.2	Determination of Conformance With Limits	3
4.1.3	Categories of Disturbance Sources (as applied in the test plan)	3
4.1.4	Examples of Broadband Disturbance Sources	5
4.1.5	Narrowband Disturbance Sources	5
4.1.6	Operating Conditions	5
4.1.7	Test Report	5
4.2	Measuring Equipment Requirements	5
4.3	Shielded Enclosure	5
4.4	Absorber-Lined Shielded Enclosure (ALSE)	5
4.4.1	Reflection Characteristics	5

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4.4.2	Objects in ALSE.....	5
4.5	Receiver.....	6
4.5.1	Minimum Scan Time.....	6
4.5.2	Measuring Instrument Bandwidth.....	6
5.	Antenna and Impedance Matching Requirements—Vehicle Test.....	7
5.1	Type of Antenna.....	7
5.2	Measurement System Requirements.....	7
5.2.1	Broadcast Bands.....	7
5.2.2	Communication Bands (30 to 1000 MHz).....	8
6.	Method of Measurement.....	8
7.	Limits for Vehicle Radiated Disturbances.....	8
Appendix A Antenna Matching Unit—Vehicle Test.....		11
Appendix B Notes on the Suppression of Interference.....		12
Figure 1	Method of Determination of Conformance of Radiated/Conducted Disturbance.....	4
Figure 2	Example Gain Curve.....	8
Figure 3	Vehicle Radiated Emissions—Example for Test Layout (End View With Monopole Antenna).....	9
Table 1	Examples of Broadband Disturbance Sources by Duration.....	5
Table 2	Minimum Scan Time.....	6
Table 3	Measuring Instrument Bandwidth (6 dB).....	6
Table 4	Antenna Types.....	7
Table 5	Limits of Disturbance—Complete Vehicle.....	10

- 1. Scope**—This SAE Standard contains test limit¹ and procedures for the measurement of radio disturbances in the frequency range of 150 kHz to 1000 MHz. The document applies to any electronic/electrical component intended for use in vehicles. Refer to International Telecommunications Union (ITU) Publications for details of frequency allocations. The test limits are intended to provide protection for receivers installed in a vehicle from disturbances produced by components/modules in the same vehicle.²

The receiver types to be protected are: broadcast radio and TV³, land-mobile radio, radio telephone, amateur and citizens' radio.

The limits in this document are recommended and subject to modification as agreed between the vehicle manufacturer and the component supplier. This document shall also be applied by manufacturers and suppliers of components and equipment which are to be added and connected to the vehicle harness or to an on-board power connector after delivery of the vehicle.

This document does not include protection of electronic control systems from RF emissions, or from transient or pulse type voltage fluctuations. These subjects are covered in other sections of SAE J551 and in SAE J1113.

The World Administrative Radiocommunications Conference (WARC) lower frequency limit in region 1 was reduced to 148.5 kHz in 1979. For vehicular purposes, tests at 150 kHz are considered adequate. For the purpose of this document, test frequency ranges have been generalized to cover radio services in various parts of the world. Protection of radio reception at adjacent frequencies can be expected in most cases.

1. Only a vehicle test can be used to determine the component compatibility to a vehicle limit.
 2. Adjacent vehicles can be expected to be protected in most situations.
 3. Adequate TV protection will result from compliance with the levels at the mobile service frequencies.

1.1 Rationale—This document is being cancelled in favor of using the technically identical international standards CISPR 12 and CISPR 25. The linkage to these documents is included in the revised SAE J551-1 and SAE J1113-1.

2. References

2.1 Applicable Publications—The following publications contain provisions which, through reference in this text, constitute provisions of this document. At the time of publication, the editions indicated were valid. All documents are subject to revision, and parties to agreements based on this document are encouraged to investigate the possibility of applying the most recent editions of the documents indicated. Members of IEC and ISO maintain registers of currently valid International Standards.

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

SAE J551-1 MAR94—Performance Levels and Methods of Measurement of Electromagnetic Compatibility of Vehicles and Devices (60 Hz to 18 GHz)

2.1.2 CISPR PUBLICATION—Available from ANSI, 25 West 43rd Street, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

CISPR 16-1:1993-08—Specification for radio disturbance and immunity measuring apparatus and methods. Part 1: Radio disturbance and immunity measuring apparatus.

3. Definitions—See SAE J551-1.

4. Requirements Common to Vehicle and Component/Module Emissions Measurement

4.1 General Test Requirements and Test Plan

4.1.1 TEST PLAN NOTE—A test plan should be established for each item to be tested. The test plan should specify the frequency range to be tested, the emissions limits, the disturbance classification [broadband (long or short duration) or narrowband], antenna types and locations, test report requirements, supply voltage, and other relevant parameters.

4.1.2 DETERMINATION OF CONFORMANCE WITH LIMITS—If the type of disturbance is unknown, tests shall be made to determine whether measured emissions are narrowband and/or broadband to apply limits properly as specified in the test plan. Figure 1 outlines the procedure to be followed in determining conformance with limits.

4.1.3 CATEGORIES OF DISTURBANCE SOURCES (AS APPLIED IN THE TEST PLAN)—Electromagnetic disturbance sources can be divided into three types:

Electromagnetic disturbance sources can be divided into three types:⁴

- a. Continuous/long duration broadband and automatically actuated short duration devices
- b. Manually actuated short duration broadband
- c. Narrowband

4. For examples see 4.1.4 and 4.1.5 and Table 1.

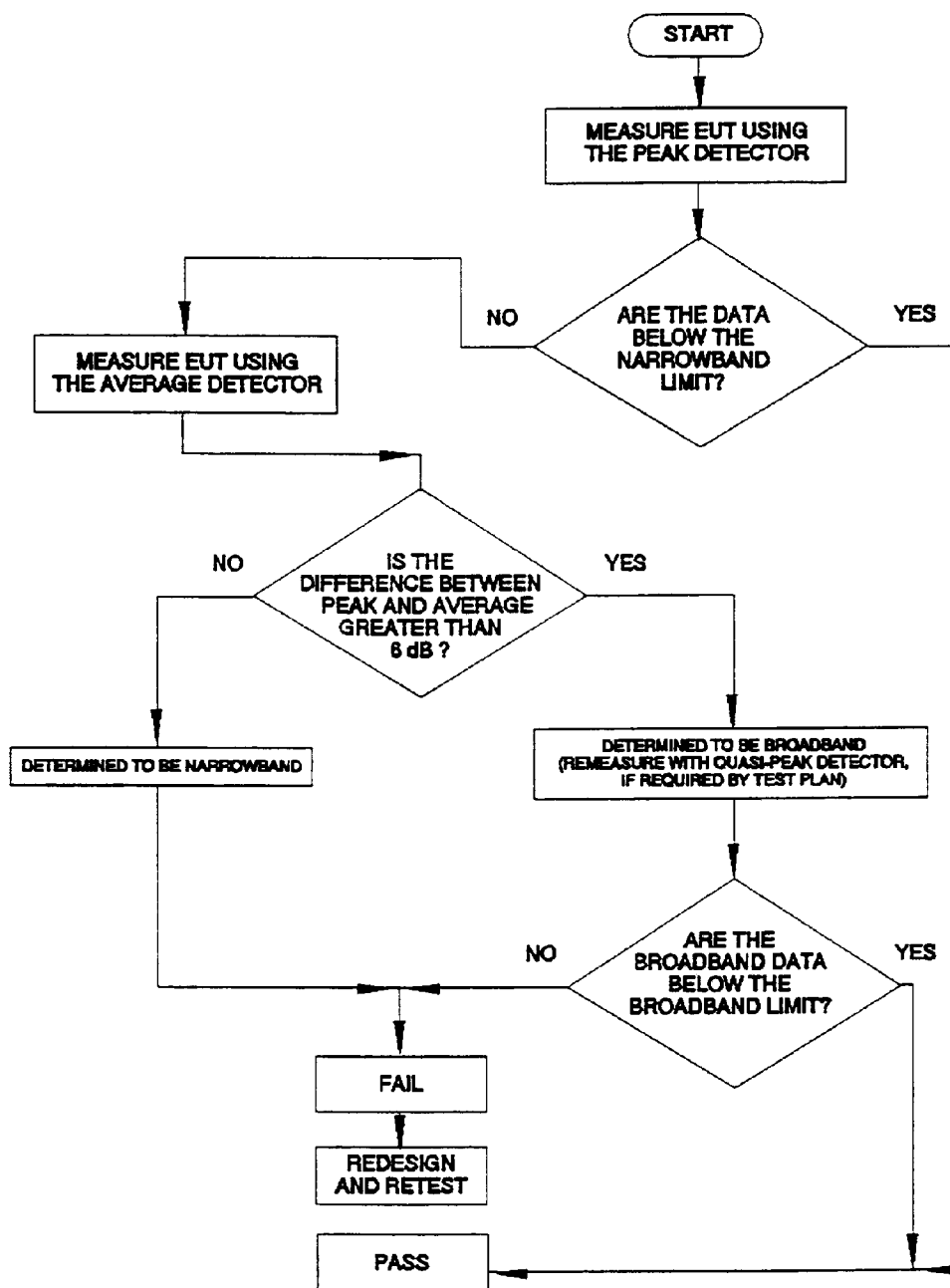


FIGURE 1—METHOD OF DETERMINATION OF CONFORMANCE OF RADIATED/CONDUCTED DISTURBANCE