



AEROSPACE RECOMMENDED PRACTICE

ARP1801™

REV. A

Issued 1982-02
Revised 2012-07
Reaffirmed 2021-09

Superseding ARP1801

(R) Measurement of Exterior Sound Level of Specialized Aircraft Ground Support Equipment

RATIONALE

ARP1801A has been reaffirmed to comply with the SAE five-year review policy.

1. SCOPE

The scope of this SAE Recommended Practice covers specialized internal combustion engine powered equipment used in support of aircraft operations. The equipment may be self-propelled, truck mounted, trailer mounted, skid mounted or stationary. It does not include construction equipment or equipment designed primarily for operation on highways or within factories or building areas.

NOTE: Equivalent methodology is provided in (CEN) EN 1915-4, Aircraft ground support equipment - General requirements - Part 4: Noise measurement methods and reduction, to be used for measurements conforming to the EU Machinery Directive

1.1 Purpose

The purpose of this recommended practice is to establish test procedures, environment and instrumentation for determining the exterior sound level of specialized aircraft ground support equipment. The measured sound levels will be useful to equipment manufacturers and airline ground equipment engineers in development of equipment, comparison of equipment and determining sound level exposures of those working with the equipment.

2. REFERENCES

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

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Documents
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2.1 SAE Publications

Available from SAE International, 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 J184 Qualifying a Sound Data Acquisition System

2.2 ANSI Publications

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

ANSI S1.1 Acoustical Terminology

ANSI S1.2 Physical Measurement of Sound

ANSI S1.4 Specification for Sound Level Meters

3. INSTRUMENTATION

The following instrumentation shall be used, where applicable, for the measurement required:

3.1 A sound level meter which meets the Type 1 or SIA requirements of American Standard Specification for Sound Level Meters S1.4-1971.

3.1.1 As an alternative to making direct measurements using a sound level meter, a microphone or sound level meter may be used with a magnetic tape recorder and/or a graphic level recorder or indicating instrument, providing the system meets the requirements of SAE Recommended Practice J184.

3.2 A sound level calibrator with an accuracy of ± 0.5 dBA (see 7.4).

3.3 A microphone windscreen may be used provided its effect on the microphone response is not more than ± 1 dBA for frequencies of 20 to 4000 Hz or $\pm 1\frac{1}{2}$ dBA for frequencies of 4000 to 10 000 Hz.

3.4 An engine speed tachometer having an accuracy of $\pm 1.5\%$ full scale.

3.5 An anemometer having an accuracy within 10% at 12 mph (19 km/h).

4. TEST SITE

The following test site requirements shall be considered the minimum necessary to perform effective measurements:

4.1 A suitable test site shall consist of a level open space free of large reflecting surfaces such as parked vehicles, signboards, building, or hill sides, located within 100 ft (30 m) of either the equipment or the microphone.

4.2 Where possible the measurement area shall be surfaced with concrete, asphalt or other hard material and shall be free of snow, grass, soil, ashes or other sound absorbing materials.

4.3 If the conditions of 4.2 are not possible the type of surface and surface condition of the measurement area shall be documented in the test report.

4.4 The ambient sound level (including wind effects) due to sources other than the equipment being measured shall be 10 dBA or more lower than the level of the equipment being tested.

4.5 Measurements shall be made only when the wind speed is below 12 mph (19 km/h).