

## SHORELINE SOUND LEVEL MEASUREMENT PROCEDURE

**Foreword**—This Document has not changed other than to put it into the new SAE Technical Standards Board Format.

**1. Scope**—This SAE Recommended Practice establishes the procedure for measuring the sound level of pleasure motorboats at a position on the shore under conditions other than stationary mode operation. It is intended as a guide toward standard practice and is subject to change to keep pace with experience and technical advances.

**1.1 Purpose**—This document specifies guidelines for sound level measurements made from the shoreline of recreational boating areas and is intended for pleasure motorboats only.

## **2. References**

**2.1 Applicable Publications**—The following publications form a part of the specification to the extent specified herein. Unless otherwise indicated the latest revision of SAE publications shall apply.

**2.1.1 ANSI PUBLICATIONS**—Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002.

ANSI S1.4-1983 and S1.4A-1985—Specifications for Sound Level Meters

**2.2 Related Publications**—The following publications are provided for information purposes only and are not a required part of this document.

**2.2.1 SAE PUBLICATIONS**—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J34—Exterior Sound Level Measurement Procedure for Pleasure Motorboats

SAE J2005—Stationary Sound Level Measurement Procedure for Pleasure Motorboats

**2.2.2 ANSI PUBLICATIONS**—Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002.

ANSI S1.1-1960(1976)—Acoustical Terminology

ANSI S1.13-1971(R1986)—Methods for the Measurement of Sound Pressure Levels

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 reaffirmed, revised, or cancelled. SAE invites your written comments and suggestions.

**QUESTIONS REGARDING THIS DOCUMENT: (724) 772-8512 FAX: (724) 776-0243**  
**TO PLACE A DOCUMENT ORDER: (724) 776-4970 FAX: (724) 776-0790**  
**SAE WEB ADDRESS <http://www.sae.org>**

**3. Instrumentation**—The following instrumentation shall be used for the measurement required.

- 3.1** A sound level meter which meets ANSI Standard S1.4-1983 Type 1 or Type 2 specification for Sound Level Meters.
- 3.2** A microphone windscreen that does not affect the overall reading by more than  $\pm 0.5$  dB(A).
- 3.3** A sound level calibrator.

**4. Procedure**

**4.1 Measurement Site**—A suitable site is the shore of a body of water or dock projecting out from the shore into the body of water, or a raft or a boat moored to a dock or anchored so that the sound level meter or microphone is not more than 6 m (20 ft) from shore. If the measurement is made from a dock, the dock shall be of open construction so that it presents a minimum of reflecting surfaces. The area around the microphone and boat being measured shall be free of large obstructions or reflective surfaces, such as buildings, high embankments, sea walls, hills, large piers, or breakwaters, etc., for a minimum distance of 30 m (100 ft).

**4.2 Boat Operation**

- 4.2.1** The applicable reading does not require that the boat be at any specific distance from the shoreline or microphone.
- 4.2.2** This measurement procedure shall not be used during the 30 s time period following engine start-up and/or preceding engine shutdown.

**4.3 Measurements**

- 4.3.1** The microphone shall be placed 1.2 to 1.5 m (4 to 5 ft) above the water, and no less than 0.6 m (2 ft) above the curve of the shore, dock, or platform. If on a dock or platform, the microphone shall be placed near or beyond the end of the dock or platform. If the measurement is made from a boat, the microphone shall be held at a height of not less than 0.6 m (2 ft) above the surface of the water. A suitable boat for this purpose is of open hull construction.
- 4.3.2** The meter shall be set for slow response and the A-weighting network.
- 4.3.3** The observer reading the meter shall not be closer than arm's length from the microphone. Only one other person may be within 15 m (50 ft) of the microphone when measuring from the dock or shoreline, and that person shall be directly behind the observer reading the meter.
- 4.3.4** The applicable reading shall be the highest sound level measured during a period when the background sound level is at least 10 dB lower than the maximum allowable sound level. Background sound level includes wind effects, noise from boats other than the one being measured, wave action, boat wakes, and other extraneous noises. Readings due to hull slaps which create intermittent sound levels shall be disregarded.
- 4.3.5** The observer shall record the applicable reading and the background sound levels taken immediately before and immediately after the applicable reading.
- 4.3.6** When sound level readings are taken from inside a boat, 3 dB shall be subtracted from the reading to better correlate with shoreline readings.

**5. General Requirements**

- 5.1** The measurements shall be conducted only by persons qualified by training to perform these measurements.
- 5.2** Proper use of all test instrumentation is essential to obtain valid measurements. Operating manuals or other literature furnished by the instrument manufacturer should be consulted for both recommended operation of the instrument, and precautions to be observed.
- 5.3** Proper acoustical calibration shall comprise the complete measurement system including extension cables, etc. Field calibration shall be performed immediately before and after each test sequence.
- 5.4** A measurement shall be invalid if changes in the background sound level affect the applicable reading.
- 5.5** The use of the word "shall" in the procedure is to be understood to be mandatory. The use of the word "should" is to be understood as advisory. The use of the word "may" is to be understood as permissive.

PREPARED BY THE SAE MARINE SOUND LEVEL SUBCOMMITTEE  
OF THE SAE MARINE TECHNICAL COMMITTEE AND THE SAE SPECIALIZED VEHICLE  
AND EQUIPMENT SOUND LEVEL COMMITTEE

**APPENDIX A—**

This procedure may be used for the measurement of sound emitted by pleasure motorboats in use on waterways where sound level restrictions apply. Sound level is a function of the exhaust system, the boat hull, the manner of boat operation, e.g., distance from shore, engine speed and trim angle, and other factors. Background information is included in the SAE J1970 Rationale Statement.

SAENORM.COM : Click to view the full PDF of j1970\_199112