SURFACE VEHICLE STANDARD

J2567™ MAY2021

Issued 2004-01
Reaffirmed 2009-01
Revised 2021-05

Superseding J2567 NOV2015

Measurement of Exhaust Sound Levels of Stationary Snowmobiles

RATIONALE

This document is converted from SAE Recommended Practice to SAE Standard.

1. SCOPE

This SAE Standard establishes the test procedure, environment, and instrumentation for determining the sound levels of snowmobiles in the stationary test mode. This test method is intended to provide an accurate measurement of exhaust and other engine noise and may be used to evaluate new and in-use snowmobiles to determine compliance with noise control regulations. Sound level measurements obtained with this test method are not intended as an engineering determination of overall machine noise. For this purpose, the use of SAE J192 is recommended.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 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.

SAE J33 Snowmobile Definitions and Nomenclature - General

SAE J192 Maximum Exterior Sound Level for Snowmobiles

2.1.2 ANSI Accredited Publications

Copies of these documents are available online at http://webstore.ansi.org/.

ANSI/ASA S1.4 Specification for Sound Level Meters

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
SAE WEB ADDRESS: **http://www.sae.org**

For more information on this standard, visit
https://www.sae.org/standards/content/J2567_202105

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 Publication

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.

SAE J47 Maximum Sound Level Potential for Motorcycles

SAE J2825 Measurement of Exhaust Sound Pressure Levels of Stationary On-Highway Motorcycles

3. DEFINITIONS

3.1 FIELD CALIBRATION

Calibration of the sound level meter using an external sound level calibrator that will ensure the accuracy of the microphone and sound level meter.

3.2 INTERNAL CALIBRATION

Calibration of the sound level meter by an internal oscillator or other means. The sound level meter internal calibration may be used, provided that the overall response of the sound level meter and microphone are evaluated by an external acoustic calibrator meeting the requirements of 4.3, at the start and at the end of each test day.

3.3 LONGITUDINAL PLANE OF SYMMETRY

The plane perpendicular to the horizon with the snowmobile sitting on a level surface which is parallel to the normal direction of travel and equidistant between the skis. Refer to SAE J33.

3.4 SNOWMOBILE

A self-propelled vehicle intended for off-road travel primarily on snow, having a curb weight of not more than 450 kg (1000 pounds), driven by a track or tracks in contact with the snow, steered by a ski or skis in contact with the snow.

4. INSTRUMENTATION

The following instrumentation shall be used:

4.1 A sound level meter that conforms to Type 1, Type S1A, Type 2, or Type S2A requirements of ANSI/ASA S1.4.

4.2 A microphone of the free-field type.

4.3 A sound level calibrator with an accuracy of ±0.2 dB.

4.4 A windscreen which does not affect microphone response more than ±1.0 dB for the frequency range of 63 to 4000 Hz and ±1.5 dB for frequencies ranging from 4000 to 10000 Hz.

4.5 An engine speed tachometer or other means of determining engine speed with a steady-state accuracy of ±3% at the prescribed test speed.

5. TEST SITE

5.1 The test site shall be a flat, open surface free of large sound-reflecting surfaces (other than the ground) such as parked vehicles, signboards, buildings, or hillsides located within 5 m (16 feet) of the snowmobile being tested and the location of the microphone.

5.2 The surface of the ground within the area described in 5.1 shall be grass or snow. Testing on a very hard packed snow condition is often unavoidable during enforcement test. Therefore, this ground condition is considered and taken into account in the definition of the sound pressure limit discussed in 9.1.

6. PROCEDURE

6.1 The snowmobile shall be parked at the test site with an operator seated in the normal operating position, and the forward traveling path of the snowmobile clear of obstructions as required in 5.1.

6.2 The brake shall be set throughout the test.

6.3 The engine shall be started and run until reaching normal operating temperature range, as specified by the manufacturer.

6.4 The operator shall slowly open the throttle until a steady 2500 rpm ± 250 rpm engine speed is achieved, while holding the snowmobile stationary by applying the brakes.

7. MEASUREMENTS

7.1 The sound level meter shall be set for A-weighting network and slow dynamic response.

7.2 The sound level meter shall be calibrated and adjusted, if necessary, so that the meter reads within 0.1 dB of the specified calibrator level at the microphone. Record measured value.

7.3 The microphone shall be located on the side of the snowmobile towards which the exhaust outlet(s) is (are) directed. This is generally on the right side. The longitudinal axis of the microphone shall be parallel to the ground plane and perpendicular to the snowmobile longitudinal plane of symmetry explained in 3.3. There shall be no physical attachment between the snowmobile and the microphone/ sound level meter.

7.4 The microphone shall be located at a distance of 4.00 m/157.5 inches from the longitudinal plane of symmetry and 1.22 m/48.0 inches above the ground plane in line with the exhaust outlet. If there is more than one exhaust outlet, it shall be located with reference to the centermost point of the multiple outlets.

7.5 It is recommended that no persons other than the snowmobile operator and the person performing the sound level measurements shall be within 3 m (10 feet) of the snowmobile or the microphone. If another observer is present, he shall remain in a fixed position behind the sound level meter so as to minimize his effect on the measurements.

7.6 With the snowmobile engine shut off, observe the overall ambient sound level at the measurement location. Record this level, including wind effects. In order for a test to be valid, the measured sound level of the snowmobile shall be at least 10 dB higher than the recorded ambient sound level.

7.7 Operate the snowmobile as specified in Section 6. Measure the sound level observed during steady-state operation at 2500 rpm ± 250 rpm over a period of not less than 4 seconds. Record the average reading. Immediately following the first test, repeat the test in an identical manner and record the reading.

7.8 For the test to be valid, the two readings shall be within 2 dB of one another. Report sound level as the average of the two readings. If the two readings are not within 2 dB, repeat the test procedure of 7.7 until two readings within 2 dB are obtained.