ASSOCIATION CONNECTING
ELECTRONICS INDUSTRIES®

IPC-9591

Performance Parameters (Mechanical, Electrical, Environmental and Quality/Reliability) for Air Moving Devices

Developed by the Air Moving Devices Standard Subcommitte (9-81) of the OEM Management Council Steering Committee (9-80) of IPC

Users of this publication are encouraged to participate in the development of future revisions.

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1 SCOPE

1.1 Statement of Scope This document will standardize the Performance Parameters for Air Moving Devices. The phrase ''Air Moving Device'' (or ''Air Mover'') refers to equipment such as, fans, blowers and other forced air movement technologies. This specification sets requirements for design, manufacture, and test application of Air Moving Devices, and is intended for use by the industry. The term ''end user'' as used in this document refers to the OEM or design/materials entity responsible for specifying the function and reliability of an Air Moving Device in a final product application.

1.2 Description Air Moving Devices addressed in this document are used in the electronics industry for the cooling of heat-producing components, and range from small devices mounted directly to hot components such as microprocessor air moving devices, to larger devices used to force air through a chassis containing many heat dissipating components.

Performance Parameters are comprised of **Mechanical, Electrical, Environmental,** and **Quality/Reliability** requirements.

Mechanical requirements include bearing design and grease, rotor balancing, self induced vibration, general airflow configuration, form factor (size, shape and wiring color), device orientation, air movement characteristics, acoustics, and materials used in fabrication of the device.

Electrical requirements define the electrical interface, including type of power (AC, DC, or Pulse Width Modulation), voltage, frequency and current needs, speed control and, where used, tachometer signal and any other electrical interfaces provided by the air moving device.

Environmental requirements entail both shipping and operating temperatures, humidity, shock and vibration limits.

Quality/Reliability Assurance requirements include definitions and requirements for testing the reliability of Air Moving Devices.

1.3 Purpose The purpose of this document is to create a set of consistent specifications of Air Moving Devices for the electronics industry. These specifications will apply to suppliers of air moving devices, including their design and testing, and will provide guidelines for the end user to ensure adequate specifications for use in their products. All of the specifications and requirements defined in this document are intended to be part of suppliers' Air Moving Devices Certifications outlined by the customers and will ship with first article and any design changes to the air moving device.

1.4 Terms and Definitions The definition of all terms used herein **shall** be as specified in IPC-T-50 and as defined below.

AABUS –

(As an Acronym): As Agreed Between User and Supplier.

(As a Term): Indicates additional or alternate requirements to be decided between the user and the supplier in the procurement documentation. Examples include contractual requirements, modifications to purchase documentation, and information on the drawing. Agreements can be used to define test methods, conditions, frequencies, categories or acceptance criteria within a test, if not already established.

2 APPLICABLE DOCUMENTS

2.1 International Organization for Standardization[1]

ISO 281,12-1 Rolling Bearings – Dynamic Load Ratings and Rating Life

ISO 1940-1 Mechanical Vibration – Balance Quality Requirements for Rotors in a Constant (Rigid) State

ISO 2953 Balancing Machines – Description and Evaluation

ISO 3741 Determination of Sound Power Levels of Noise Sources – Precision Methods for Broad-Band Sources in Reverberation Rooms (Equivalent to ANSI/NAIS S12.51)

ISO 3744 Determination of Sound Power Levels Noise Sources Using Sound Pressure – Engineering Method in an Essentially Free Field Over a Reflecting Plane (Equivalent to ANSI/NAIS S12.54)

ISO 9296 Declared Noise Emission Values of Computer and Business Equipment

ISO 10302 Method for the Measurement of Airborne Noise Emitted by Small Air-Moving Devices (Equivalent to ANSI S12.11)

1. www.iso.org