ESD Association Standard

ANSI/ESD S1.1-2021

ANSI/ESD S1.1-2021

Revision of ANSI/ESD S1.1-2013

For the Protection of Electrostatic Discharge Susceptible Items

Wrist Straps

Electrostatic Discharge Association
218 West Court Street
Rome, NY 13440

An American National Standard
Approved November 2, 2021

ESD Association Standard for the Protection of Electrostatic Discharge Susceptible Items

Wrist Straps

Approved June 16, 2021
EOS/ESD Association, Inc.

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FOREWORD

This standard[1] has been developed to establish test methods for evaluating the electrical and mechanical attributes of wrist straps used in an electrostatic discharge control program. Wrist straps are intended to connect the user to a selected wrist strap grounding point, thus preventing electrostatic charge on a user's body from attaining a level that may damage ESD susceptible devices or assemblies.

Test methods and performance limits for evaluation, acceptance, and system tests are provided. Application and construction guidance are included in the annexes.

This document was originally designated ESD S1.1-1998 and approved on October 4, 1998. ESD S1.1-1998 was reaffirmed, redesignated ANSI/ESD S1.1-2006, and was approved on February 26, 2006. ANSI/ESD S1.1-2013 was a revision of ANSI/ESD S1.1-2006 and was approved on July 27, 2011. ANSI/ESD S1.1-2021 is a revision of ANSI/ESD S1.1-2013 and was approved on June 16, 2021.

At the time ANSI/ESD S1.1-2021 was prepared, the 1.0 Wrist Strap Subcommittee had the following members:

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[1] **ESD Association Standard (S):** A precise statement of a set of requirements to be satisfied by a material, product, system, or process that also specifies the procedures for determining whether each of the requirements is satisfied.

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1.0 PURPOSE AND SCOPE

1.1 Purpose

This document provides electrical and mechanical test methods and performance limits for product qualification, acceptance testing, and system testing of wrist straps.

1.2 Scope

This document is intended for testing wrist straps and wrist strap systems used to ground personnel engaged in working with ESD sensitive assemblies and devices. It does not address monitoring systems or garments.

2.0 REFERENCED PUBLICATIONS

ESD ADV1.0, Glossary of Terms[2]

ESD TR53, Compliance Verification of ESD Protective Equipment and Materials[2]

3.0 DEFINITION OF TERMS

The terms used in the body of this document are in accordance with the definitions found in ESD ADV1.0, ESD Association's Glossary of Terms available for complimentary download at www.esda.org. For the purposes of this standard, the following definitions apply:

breakaway force. The force required to disconnect the ground cord from the wristband.

ground cord. The portion of the wrist strap providing flexibility of movement while completing the electrical circuit between the wristband and ground.

strain relief. A construction feature designed to protect the connections and the cord from premature failure.

wristband. The portion of the wrist strap worn on the wrist. The wristband maintains electrical contact with a person's skin.

NOTE: Some earlier versions of the document referred to the wristband as a cuff.

wrist strap. An assembled device consisting of a wristband and ground cord that provides an electrical connection of a person's skin to ground.

NOTE: For illustration, see Figure 1.

wrist strap system. A wrist strap when properly worn by a person, where the electrical path includes the person, the wristband, and the ground cord.

[2] EOS/ESD Association, Inc., 218 West Court Street, Rome, NY 13440, +1 315-339-6937, www.esda.org