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For Electrostatic Discharge Sensitivity Testing

Transmission Line Pulse (TLP) – User and Application Guide

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FOREWORD

This document was prepared by the EOS/ESD Association, Inc. Working Group 5.5, Transmission Line Pulse. It is intended as a compilation for the standard test method document describing the transmission line pulse (TLP) method: ANSI/ESD STM5.5.1.

This document consists of user guides and application guides.

The user guides are short sections dealing with a single aspect of the setup, configuration, or calibration of TLP equipment. Each section can be read and used on its own and serves as a clarification of the basics covered in the ANSI/ESD STM5.5.1.

The structure of each section is basically the same. The topic is introduced and discussed in more detail. Selected examples are provided to demonstrate the discussed subject. The section is closed by providing a list of the most relevant references for further study.

The application guides are short sections dealing with possible use cases of TLP and TLP data. Each section can be read and used on its own and serves as a clarification of how a TLP setup, following the best practices discussed in the user guides, can be used to answer several different questions.

The structure of each section generally follows the structure of the user guides. The topic is introduced and discussed in more detail. Selected examples are provided to demonstrate the discussed application, typically using published data. The section is closed by providing a list of the most relevant references for further study.

This technical report[1] was originally designated ESD TR5.5-01-18 and published on June 1, 2018. ESD TR5.5-04-21 is a revision of ESD TR5.5-01-18 and published on October 15, 2021.

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[1] **ESD Association Technical Report (TR):** A collection of technical data or test results published as an informational reference on a specific material, product, system, or process.

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ESD Association Technical Report for Electrostatic Discharge Sensitivity Testing – Transmission Line Pulse (TLP) – User and Application Guide

1.0 INTRODUCTION

1.1 Purpose

The information and procedures explained in this technical report are intended to help those performing transmission line pulse (TLP) testing as described in ANSI/ESD STM5.5.1 - ESD Association Standard Test Method for Electrostatic Discharge (ESD) Sensitivity Testing – Transmission Line Pulse (TLP) – Device Level[2].

1.2 Scope

The document is divided into two main sections: the user guide which focuses on setting up and calibrating the TLP system; and the application guide which focuses on possible methods of using TLP.

It is expected that subsequent versions of this document will be released that expand the coverage of the user and application guides. Since this document is a companion to ANSI/ESD STM5.5.1, it is limited to the quasi-static application of TLP. Other applications of TLP will be described in separate documents.

2.0 USER GUIDES

The user guides are short sections dealing with a single aspect of the setup, configuration, or calibration of TLP equipment. Each section can be read and used on its own and serves as a clarification of the basics covered in the ANSI/ESD STM5.5.1.

The structure of each section is basically the same. The topic is introduced and discussed in more detail. Selected examples are provided to demonstrate the discussed subject. The section is closed by providing a list of the most relevant references for further study.

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