
TABLE OF CONTENTS

1.0 PURPOSE	1
2.0 SCOPE	1
3.0 REFERENCED PUBLICATIONS	1
4.0 DEFINITIONS	1
5.0 PERSONNEL SAFETY	2
6.0 EQUIPMENT	2
6.1 CURRENT MEASUREMENT SYSTEM.....	2
6.2 ESD PULSE SOURCE	3
6.3 OHMMETER	3
6.4 VOLTMETER.....	3
7.0 WAVEFORM AND PULSE GENERATION REQUIREMENTS	3
8.0 TEST SETUP	4
8.1 TEST SETUP OVERVIEW	4
8.1 Test Setup A	4
8.2 Test Setup B	5
8.3 Test Setup C (Closed Coupling Method)	6
9.0 TESTING AND WAVEFORM VERIFICATION	7
9.1 TEST PROCEDURE	7
9.2 WAVEFORM INTEGRITY MEASUREMENT PROCEDURE.....	8
9.2.1 Procedure for ESD Gun with Discharge Point Directly Connected to the Circuit Board Ground.....	8
9.2.2 Procedure for ESD Gun with Discharge Point Connected to Component Ground Pin 8	8
9.2.3 Procedure for Waveform Verification With Test Setup C.....	9
9.3 TEST BOARD DESCRIPTION	9
9.3.1 Circuit Board	9
9.3.2 HMM 50-ohm Test Board	11
9.4 UNPOWERED BOARD.....	11
9.5 POWERED BOARD AND TEST LEVELS	11
10.0 FAILURE CRITERIA AND DOCUMENTATION	12

ANNEXES

Annex A (Informative): HMM General Guidance 13
Annex B (Informative): Single Lab Testing Results 18
Annex C (Informative): Revision History for ESD WIP5.6-2018..... 20

TABLES

Table 1: General Waveform Parameters..... 3
Table 2: Human Metal Model Pulse Parameters..... 4

FIGURES

Figure 1: HMM Waveform Illustrating the Parameters Used to Define the Pulse 4
Figure 2: Schematic of HMM Test Setup (Powered Board) 5
Figure 3: Test Setup A Diagram 5
Figure 4: Test Setup B Diagram 5
Figure 5: Layout of IEC 50-ohm Coaxial Source Test Fixture Board 6
Figure 6: Example Layout of IEC 50-ohm Coaxial Source Test Fixture Board 6
Figure 7: Test Configuration for HMM 50-Ohm Coaxial Source for Stress between Two Pins on
DUT 7
Figure 8: Layout of Circuit Board Showing Ground Connections..... 10
Figure 9: Physical Arrangement 14
Figure 10: Resulting Waveforms 15
Figure 11: Simultaneous Measurement of Current Measurement using IEC Probe and F-65A.. 16
Figure 12: Comparison of Fischer F-65A Probe with IEC Current Probe 16
Figure 13: Comparison of the Obtained Failure Level During Pass-Fail Testing in Site 1 and 2
for (a) DUT1 and (b) DUT2 19
Figure 14: Overall Standard Deviation and the Standard Deviations for Each Type of Stress
Source and DUT1 and DUT2 20