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colour inside

Metallic communication cable test methods – Part 4-3: Electromagnetic compatibility (EMC) related test method for measuring surface transfer impedance – Triaxial method

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CONTENTS

FOREWORD 5
INTRODUCTION 7
1 Scope 9
2 Normative references 9
3 Terms and definitions 9
4 Principle 12
5 Test methods 12
5.1 General 12
5.2 Test equipment 12
5.3 Calibration procedure 13
5.4 Sample preparation 13
5.5 Test set-up 14
5.6 Test configurations 15
5.6.1 General 15
5.6.2 Vector network analyser with S-parameter test set 15
5.6.3 (Vector) network analyser with power splitter 16
5.6.4 Separate signal generator and receiver 16
5.7 Expression of test results 17
5.7.1 Expression 17
5.7.2 Test report 17
6 Test method A: Matched inner circuit with damping resistor in outer circuit 17
6.1 General 17
6.2 Damping resistor R_2 17
6.3 Cut-off frequency 18
6.4 Block diagram of the set-up 18
6.5 Measuring procedure 18
6.6 Evaluation of test results 19
7 Test method B: Inner circuit with load resistor and outer circuit without damping resistor 19
7.1 General 19
7.2 Cut-off frequency 19
7.3 Block diagram of the set-up 19
7.4 Measuring procedure 20
7.5 Evaluation of test results 21
8 Test method C: (Mismatched)-Short-Short without damping resistor 21
8.1 General 21
8.2 Cut-off frequency 21
8.3 Block diagram of the set-up 22
8.4 Measuring procedure 22
8.5 Evaluation of test results 22
Annex A (normative) Determination of the impedance of the inner circuit 24
A.1 Impedance of inner circuit 24
Annex B (normative) Impedance matching adapter 25
B.1 Design of the impedance matching circuit 25
B.1.1 General 25
B.1.2 Secondary impedance Z_2 lower than primary impedance Z_1 25

B.1.3 Secondary impedance Z_2 higher than primary impedance Z_1 26
B.2 Frequency response of the impedance matching circuit 26
B.2.1 General 26
B.2.2 Measurement using two identical impedance matching adapters 27
B.2.3 Measurement using the open/short method 27
B.2.4 Example of a coaxial 50 Ω to 75 Ω impedance matching adapter 27
Annex C (normative) Sample preparation for “milked on braid” method 29
C.1 General 29
C.2 Coaxial cables 30
C.3 Symmetrical and multiconductor cables 32
C.4 Verification of the sample preparation with TDR 35
Annex D (informative) Triaxial test set-up depicted as a T-circuit 36
D.1 General 36
D.2 Scattering parameter S_{21} of the T-circuit 36
Annex E (informative) Cut-off frequency of the triaxial set-up for the measurement of the transfer impedance 37
E.1 Equivalent circuit 37
E.2 Coupling equations 37
E.3 Cut-off frequency 38
E.4 Determination of the dielectric permittivity and impedance 40
Annex F (informative) Impact of ground loops on low frequency measurements 43
F.1 General 43
F.2 Analysis of the test set-up [3] 43
Annex G (normative) Single pair cables – Conversion of measured mixed mode scattering parameters to transfer impedance 46
G.1 General 46
G.2 Conversion formula for test method B: Inner circuit with load resistor and outer circuit without damping resistor 46
Bibliography 47

Figure 1 – Definition of Z_T 10
Figure 2 – Definition of Z_F 11
Figure 3 – Preparation of test sample for coaxial cables 14
Figure 4 – Preparation of test sample for symmetrical cables 14
Figure 5 – Connection to the tube 15
Figure 6 – Test set-up using a vector network analyser with the S-parameter test set 15
Figure 7 – 50 Ω power splitter, 2- and 3-resistor types 16
Figure 8 – Test set-up using a network analyser (NA) and a power splitter 16
Figure 9 – Test set-up using a signal generator and a receiver 16
Figure 10 – Test set-up using a signal generator and a receiver with feeding resistor 17
Figure 11 – Test set-up (principle) 18
Figure 12 – Test set-up (principle) 20
Figure 13 – Test set-up (principle) 22
Figure B.1 – Impedance matching for $Z_2 < Z_1$ 25
Figure B.2 – Impedance matching for $Z_2 > Z_1$ 26
Figure B.3 – Coaxial impedance matching adapters (50 Ω to 75 Ω) 27

Figure B.4 – Attenuation of 50 Ω to 75 Ω impedance matching adapter 28
Figure C.1 – Coaxial cables: preparation of cable end “A” *(1 of 2)* 30
Figure C.2 – Coaxial cables: preparation of cable end “B” 32
Figure C.3 – Symmetrical cables: preparation of cable end “A” *(1 of 2)* 33
Figure C.4 – Symmetrical cables: preparation of cable end “B” 34
Figure C.5 – Typical resonance of end “A” 35
Figure C.6 – Typical resonance of end “B” 35
Figure D.1 – Triaxial set-up depicted as a T-circuit 36
Figure E.1 – Equivalent circuit of the triaxial set-up 37
Figure E.2 – Frequency response of the triaxial set-up for different load conditions 39
Figure E.3 – Measurement of S_{11} of the outer circuit (tube) having a length of 50 cm 41
Figure F.1 – Triaxial test set-up 43
Figure F.2 – Equivalent circuits of the triaxial set-up 44
Figure F.3 – Example showing the impact of the measurement error 45

INTERNATIONAL ELECTROTECHNICAL COMMISSION

METALLIC COMMUNICATION CABLE TEST METHODS –

Part 4-3: Electromagnetic compatibility (EMC) – Surface transfer impedance – Triaxial method

FOREWORD

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International Standard IEC 62153-4-3 has been prepared by IEC technical committee 46: Cables, wires, waveguides, R.F. connectors, R.F. and microwave passive components and accessories.

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This edition includes the following significant technical changes with respect to the previous edition:

a) now three different test configurations are described;
b) formulas to calculate the maximum frequency up to which the different test configurations can be used are included (Annex E: Cut-off frequency of the triaxial set-up for the measurement of the transfer impedance);
c) the effect of ground loops is described (Annex F: impact of ground loops on low frequency measurements).

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Part 1-1: *Metallic communication cables test methods – Part 1-1: Electrical – Measurement of the pulse/step return loss in the frequency domain using the Inverse Discrete Fourier Transformation (IDFT)*

Part 1-2: *Metallic communication cables test methods – Part 1-2: Electrical – Reflection measurement correction*[1]

Part 4-0: *Metallic communication cable test methods – Part 4-0: Electromagnetic compatibility (EMC) – Relationship between surface transfer impedance and screening attenuation, recommended limits*

Part 4-1: *Metallic communication cable test methods – Part 4-1: Electromagnetic compatibility (EMC) – Introduction to electromagnetic (EMC) screening measurements*

Part 4-2: *Metallic communication cable test methods – Part 4-2: Electromagnetic compatibility (EMC) – Screening and coupling attenuation – Injection clamp method*

Part 4-3: *Metallic communication cable test methods – Part 4-3: Electromagnetic compatibility (EMC) – Surface transfer impedance – Triaxial method*

Part 4-4*: Metallic communication cable test methods – Part 4-4: Electromagnetic compatibility (EMC) – Shielded screening attenuation, test method for measuring of the screening attenuation as up to and above 3 GHz*

Part 4-5: *Metallic communication cables test methods – Part 4-5: Electromagnetic compatibility (EMC) – Coupling or screening attenuation – Absorbing clamp method*

Part 4-6: *Metallic communication cable test methods – Part 4-6: Electromagnetic compatibility (EMC) – Surface transfer impedance – Line injection method*

Part 4-7: *Metallic communication cable test methods – Part 4-7: Electromagnetic compatibility (EMC) – Test method for measuring the transfer impedance and the screening – or the coupling attenuation – Tube in tube method*

Part 4-8: *Metallic communication cable test methods – Part 4-8: Electromagnetic compatibility (EMC) – Capacitive coupling admittance*

Part 4-9: *Metallic communication cable test methods – Part 4-9: Electromagnetic compatibility (EMC) – Coupling attenuation of screened balanced cables, triaxial method*

Part 4-10: *Metallic communication cable test methods – Part 4-10: Electromagnetic compatibility (EMC) – Shielded screening attenuation test method for measuring the screening effectiveness of feed-throughs and electromagnetic gaskets double coaxial method*

Part 4-11: *Metallic communication cable test methods – Part 4-11: Electromagnetic compatibility (EMC) – Coupling attenuation or screening attenuation of patch cords, coaxial cable assemblies, pre-connectorized cables – Absorbing clamp method*

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[1] Under consideration.

Part 4-12: *Metallic communication cable test methods – Part 4-12: Electromagnetic compatibility (EMC) – Coupling attenuation or screening attenuation of connecting hardware – Absorbing clamp method*

Part 4-13: *Metallic communication cable test methods – Part 4-13: Electromagnetic compatibility (EMC) – Coupling attenuation of links and channels (laboratory conditions) – Absorbing clamp method*

Part 4-14: *Metallic communication cable test methods – Part 4-14: Electromagnetic compatibility (EMC) – Coupling attenuation of cable assemblies (Field conditions) absorbing clamp method*

METALLIC COMMUNICATION CABLE TEST METHODS –

Part 4-3: Electromagnetic compatibility (EMC) – Surface transfer impedance – Triaxial method

1 Scope

This part of IEC 62153 determines the screening effectiveness of a cable shield by applying a well-defined current and voltage to the screen of the cable and measuring the induced voltage in order to determine the surface transfer impedance. This test measures only the magnetic component of the transfer impedance.

NOTE The measurement of the electrostatic component (the capacitance coupling impedance) is described in IEC 62153-4-8 [1][2].

The triaxial method of measurement is in general suitable in the frequency range up to 30 MHz for a 1 m sample length and up to 100 MHz for a 0,3 m sample length, which corresponds to an electrical length less than about 1/6 of the wavelength in the sample.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC/TR 62153-4-1:2010, *Metallic communication cable test methods – Part 4-1: Electromagnetic compatibility (EMC) – Introduction to electromagnetic (EMC) screening measurements*

IEC 60050 (all parts), *International Electrotechnical Vocabulary (IEV)* (available at <http://www.electropedia.org>)

2 Numbers in square brackets refer to the bibliography.

CONTENTS

FOREWORD 5
INTRODUCTION 7
1 Scope 9
2 Normative references 9
3 Terms and definitions 9
4 Principle 12
5 Test methods 12
5.1 General 12
5.2 Test equipment 12
5.3 Calibration procedure 13
5.4 Sample preparation 13
5.5 Test set-up 14
5.6 Test configurations 15
5.6.1 General 15
5.6.2 Vector network analyser with S-parameter test set 15
5.6.3 (Vector) network analyser with power splitter 16
5.6.4 Separate signal generator and receiver 16
5.7 Expression of test results 17
5.7.1 Expression 17
5.7.2 Test report 17
6 Test method A: Matched inner circuit with damping resistor in outer circuit 17
6.1 General 17
6.2 Damping resistor R_2 17
6.3 Cut-off frequency 18
6.4 Block diagram of the set-up 18
6.5 Measuring procedure 18
6.6 Evaluation of test results 19
7 Test method B: Inner circuit with load resistor and outer circuit without damping resistor 19
7.1 General 19
7.2 Cut-off frequency 19
7.3 Block diagram of the set-up 19
7.4 Measuring procedure 20
7.5 Evaluation of test results 21
8 Test method C: (Mismatched)-Short-Short without damping resistor 21
8.1 General 21
8.2 Cut-off frequency 21
8.3 Block diagram of the set-up 22
8.4 Measuring procedure 22
8.5 Evaluation of test results 22
Annex A (normative) Determination of the impedance of the inner circuit 24
A.1 Impedance of inner circuit 24
Annex B (normative) Impedance matching adapter 25
B.1 Design of the impedance matching circuit 25
B.1.1 General 25
B.1.2 Secondary impedance Z_2 lower than primary impedance Z_1 25

B.1.3 Secondary impedance Z_2 higher than primary impedance Z_1 26
B.2 Frequency response of the impedance matching circuit 26
B.2.1 General 26
B.2.2 Measurement using two identical impedance matching adapters 27
B.2.3 Measurement using the open/short method 27
B.2.4 Example of a coaxial 50 Ω to 75 Ω impedance matching adapter 27
Annex C (normative) Sample preparation for “milked on braid” method 29
C.1 General 29
C.2 Coaxial cables 30
C.3 Symmetrical and multiconductor cables 32
C.4 Verification of the sample preparation with TDR 35
Annex D (informative) Triaxial test set-up depicted as a T-circuit 36
D.1 General 36
D.2 Scattering parameter S_{21} of the T-circuit 36
Annex E (informative) Cut-off frequency of the triaxial set-up for the measurement of the transfer impedance 37
E.1 Equivalent circuit 37
E.2 Coupling equations 37
E.3 Cut-off frequency 38
E.4 Determination of the dielectric permittivity and impedance 40
Annex F (informative) Impact of ground loops on low frequency measurements 43
F.1 General 43
F.2 Analysis of the test set-up [3] 43
Annex G (normative) Single pair cables – Conversion of measured mixed mode scattering parameters to transfer impedance 46
G.1 General 46
G.2 Conversion formula for test method B: Inner circuit with load resistor and outer circuit without damping resistor 46
Bibliography 47

Figure 1 – Definition of Z_T 10
Figure 2 – Definition of Z_F 11
Figure 3 – Preparation of test sample for coaxial cables 14
Figure 4 – Preparation of test sample for symmetrical cables 14
Figure 5 – Connection to the tube 15
Figure 6 – Test set-up using a vector network analyser with the S-parameter test set 15
Figure 7 – 50 Ω power splitter, 2- and 3-resistor types 16
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Figure 9 – Test set-up using a signal generator and a receiver 16
Figure 10 – Test set-up using a signal generator and a receiver with feeding resistor 17
Figure 11 – Test set-up (principle) 18
Figure 12 – Test set-up (principle) 20
Figure 13 – Test set-up (principle) 22
Figure B.1 – Impedance matching for $Z_2 < Z_1$ 25
Figure B.2 – Impedance matching for $Z_2 > Z_1$ 26
Figure B.3 – Coaxial impedance matching adapters (50 Ω to 75 Ω) 27

Figure B.4 – Attenuation of 50 Ω to 75 Ω impedance matching adapter 28
Figure C.1 – Coaxial cables: preparation of cable end “A” *(1 of 2)* 30
Figure C.2 – Coaxial cables: preparation of cable end “B” 32
Figure C.3 – Symmetrical cables: preparation of cable end “A” *(1 of 2)* 33
Figure C.4 – Symmetrical cables: preparation of cable end “B” 34
Figure C.5 – Typical resonance of end “A” 35
Figure C.6 – Typical resonance of end “B” 35
Figure D.1 – Triaxial set-up depicted as a T-circuit 36
Figure E.1 – Equivalent circuit of the triaxial set-up 37
Figure E.2 – Frequency response of the triaxial set-up for different load conditions 39
Figure E.3 – Measurement of S_{11} of the outer circuit (tube) having a length of 50 cm 41
Figure F.1 – Triaxial test set-up 43
Figure F.2 – Equivalent circuits of the triaxial set-up 44
Figure F.3 – Example showing the impact of the measurement error 45

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METALLIC COMMUNICATION CABLE TEST METHODS –

Part 4-3: Electromagnetic compatibility (EMC) – Surface transfer impedance – Triaxial method

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METALLIC COMMUNICATION CABLE TEST METHODS –

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