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TECHNICAL SPECIFICATION

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

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CONTENTS

FOREWORD 7
1 Scope 9
2 Normative references 9
3 Symbols interpretation 10
4 Electromagnetic phenomena 12
5 The intrinsic screening parameters of short cables 14
5.1 General 14
5.2 Surface transfer impedance, Z_T 14
5.3 Capacitive coupling admittance, Y_C 14
5.4 Injecting with arbitrary cross-sections 16
5.5 Reciprocity and symmetry 16
5.6 Arbitrary load conditions 16
6 Long cables – coupled transmission lines 16
7 Transfer impedance of a braided wire outer conductor or screen 24
8 Test possibilities 30
8.1 General 30
8.2 Measuring the transfer impedance of coaxial cables 30
8.3 Measuring the transfer impedance of cable assemblies 31
8.4 Measuring the transfer impedance of connectors 31
8.5 Calculated maximum screening level 31
9 Comparison of the frequency response of different triaxial test set-ups to measure the transfer impedance of cable screens 36
9.1 General 36
9.2 Physical basics 36
9.2.1 Triaxial set-up 36
9.2.2 Coupling equations 38
9.3 Simulations 40
9.3.1 General 40
9.3.2 Simulation of the standard and simplified methods according to EN 50289-1-6, IEC 61196-1 (method 1 and 2) and IEC 62153-4-3 (method A) 40
9.3.3 Simulation of the double short circuited methods 46
9.4 Conclusion 54
10 Background of the shielded screening attenuation test method (IEC 62153-4-4) 54
10.1 General 54
10.2 Objectives 55
10.3 Theory of the triaxial measuring method 55
10.4 Screening attenuation 60
10.5 Normalised screening attenuation 62
10.6 Measured results 63
10.7 Comparison with absorbing clamp method 65
10.8 Practical design of the test set-up 66
10.9 Influence of mismatches 67
10.9.1 Mismatch in the outer circuit 67
10.9.2 Mismatch in the inner circuit 69

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11 Background of the shielded screening attenuation test method for measuring the screening effectiveness of feed-throughs and electromagnetic gaskets (IEC 62153-4-10) 72
11.1 General 72
11.2 Theoretical background of the test Fixtures and their equivalent circuit 73
11.3 Pictures and measurement results 76
11.3.1 Characteristic impedance uniformity 76
11.3.2 Measurements of shielding effectiveness 78
11.3.3 Calculation of transfer impedance 80
11.4 Calculation of screening attenuation for feed-through when the transfer impedance Z_T is known 82
12 Background of the shielded screening attenuation test method for measuring the screening effectiveness of RF connectors and assemblies (IEC 62153-4-7) 83
12.1 Physical basics 83
12.1.1 Surface transfer impedance Z_T 83
12.1.2 Screening attenuation a_S 84
12.1.3 Coupling attenuation a_C 84
12.1.4 Coupling transfer function 84
12.1.5 Relationship between length and screening measurements 85
12.2 Tube in tube set-up (IEC 62153-4-7) 86
12.2.1 General 86
12.2.2 Procedure 86
12.2.3 Measurements and simulations 88
12.2.4 Influence of contact resistances 89
Bibliography 91

Figure 1 – Total electromagnetic field $(\vec{E}_t, \vec{H}_t)$ 12
Figure 2 – Defining and measuring screening parameters – A triaxial set-up 13
Figure 3 – Equivalent circuit for the testing of Z_T 15
Figure 4 – Equivalent circuit for the testing of $Y_C = j\,\omega C_T$ 15
Figure 5 – Electrical quantities in a set-up that is matched at both ends 16
Figure 6 – The summing function $S\{L \cdot f\}$ for near and far end coupling 20
Figure 7 – Transfer impedance of a typical single braid screen 20
Figure 8 – The effect of the summing function on the coupling transfer function of a typical single braid screen cable 21
Figure 9 – Calculated coupling transfer functions T_n and T_f for a single braid – $Z_F = 0$ 21
Figure 10 – Calculated coupling transfer functions T_n and T_f for a single braid – $\mathrm{Im}(Z_T)$ is positive and $Z_F = +0{,}5 \times \mathrm{Im}(Z_T)$ at high frequencies 22
Figure 11 – Calculated coupling transfer functions T_n and T_f for a single braid – $\mathrm{Im}(Z_T)$ is negative and $Z_F = -0{,}5 \times \mathrm{Im}(Z_T)$ at high frequencies 23
Figure 12 – $L \cdot S$: the complete length dependent factor in the coupling function T 24
Figure 13 – Transfer impedance of typical cables 25
Figure 14 – Magnetic coupling in the braid – Complete flux 26
Figure 15 – Magnetic coupling in the braid – Left-hand lay contribution 26
Figure 16 – Magnetic coupling in the braid – Right-hand lay contribution 26
Figure 17 – Complex plane, $Z_T = Re\ Z_T + j\ Im\ Z_T$, frequency f as parameter 27
Figure 18 – Magnitude (amplitude), $|\ Z_T\ (f)\ |$ 27

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Figure 19 – Typical Z_T (time) step response of an overbraided and underbraided single braided outer conductor of a coaxial cable 28
Figure 20 – Z_T equivalent circuits of a braided wire screen 29
Figure 21 – Comparison of signal levels in a generic test setup 32
Figure 22 – Triaxial set-up for the measurement of the transfer impedance Z_T 36
Figure 23 – Equivalent circuit of the triaxial set-up 37
Figure 24 – Simulation of the frequency response for g 41
Figure 25 – Simulation of the frequency response for g 41
Figure 26 – Simulation of the frequency response for g 42
Figure 27 – Simulation of the frequency response for g 42
Figure 28 – Simulation of the 3 dB cut off wavelength (L/λ_1) 43
Figure 29 – Interpolation of the simulated 3 dB cut off wavelength (L/λ_1) 43
Figure 30 – 3 dB cut-off frequency length product as a function of the dielectric permittivity of the inner circuit (cable) 44
Figure 31 – Measurement result of the normalised voltage drop of a single braid screen on a solid PE dielectric in the triaxial set-up 45
Figure 32 – Measurement result of the normalised voltage drop of a single braid screen on a foam PE dielectric in the triaxial set-up 46
Figure 33 – Triaxial set-up (measuring tube), double short circuited method 47
Figure 34 – Simulation of the frequency response for g of a cable having solid PE dielectric (ε_{r1}=2,3) 48
Figure 35 – Simulation of the frequency response for g of a cable having foamed PE dielectric (ε_{r1}=1,6) 48
Figure 36 – Simulation of the frequency response for g of a cable having foamed PE dielectric (ε_{r1}=1,3) 49
Figure 37 – Simulation of the frequency response for g of a cable having PVC dielectric (ε_{r1}=5) 49
Figure 38 – Interpolation of the simulated 3 dB cut off wavelength (L/λ_1) 50
Figure 39 – 3 dB cut-off frequency length product as a function of the dielectric permittivity of the inner circuit (cable) 51
Figure 40 – Simulation of the frequency response for g 52
Figure 41 – Interpolation of the simulated 3 dB cut off wavelength (L/λ_1) 53
Figure 42 – 3 dB cut-off frequency length product as a function of the dielectric permittivity of the inner circuit (cable) 53
Figure 43 – Definition of transfer impedance 55
Figure 44 – Definition of coupling admittance 55
Figure 45 – Triaxial measuring set-up for screening attenuation 56
Figure 46 – Equivalent circuit of the triaxial measuring set-up 56
Figure 47 – Calculated voltage ratio for a typical braided cable screen 58
Figure 48 – Calculated periodic functions for ε_{r1} = 2,3 and ε_{r2} = 1,1 59
Figure 49 – Calculated voltage ratio-typical braided cable screen 59
Figure 50 – Equivalent circuit for an electrical short part of the length Δl and negligible capacitive coupling 61
Figure 51 – a_S of single braid screen, cable type RG 58, L = 2 m 63
Figure 52 – a_S of single braid screen, cable type RG 58, L = 0,5 m 64
Figure 53 – a_S of cable type HF 75 0,7/4,8 2YCY (solid PE dielectric) 64

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Figure 54 – a_S of cable type HF 75 1,0/4,8 02YCY (foam PE dielectric) 65
Figure 55 – a_S of double braid screen, cable type RG 223 65
Figure 56 – Schematic for the measurement of the screening attenuation a_S 67
Figure 57 – Short circuit between tube and cable screen of the CUT 67
Figure 58 – Triaxial set-up, impedance mismatches 68
Figure 59 – Calculated voltage ratio including multiple reflections caused by the screening case 69
Figure 60 – Calculated voltage ratio including multiple reflections caused by the screening case 69
Figure 61 – Attenuation and return loss of a self-made 50 Ω to 5 Ω impedance matching adapter 70
Figure 62 – equivalent circuit of a load resistance connected to a source 71
Figure 63 – Cross-sectional sketch of a typical feed-through configuration 72
Figure 64 – Cross-sectional sketch of the test fixture with a feed-through connector (a) and EMI gasket (b) under test 73
Figure 65 – Equivalent circuit of the test fixture 74
Figure 66 –Two-port network 74
Figure 67 – TDR measurement of the text-fixture with inserted “Teflon-through” sample 76
Figure 68 – TDR step response from A (Input)-port of test fixture with inserted “Teflon-through” sample 77
Figure 69 – TDR step response from B (Output)-port of test fixture with inserted “Teflon-through” sample 77
Figure 70 – S-parameter measurement (linear sweep): “Teflon-through” sample 78
Figure 71 – S-parameter measurement (logarithmic sweep): “Teflon-through” sample 78
Figure 72 – *S* parameter test setup 79
Figure 73 – TDR test setup 79
Figure 74 – Test fixture assembled 79
Figure 75 – Detailed views of the contact area the test fixture and the secondary side of side opened 80
Figure 76 – S_{21} measurements 80
Figure 77 – S_{21} measurements of “Teflon-through” and “Sonnenscheibe” feed-through 81
Figure 78 – Transfer impedance ZT of a “Sonnenscheibe” feed-through based on the S_{21} measurement in Figure 77 81
Figure 79 – measurements of a conducting plastic gasket 82
Figure 80 – Z_T of the conducting plastic gasket based on the S_{21} measurement in Figure 79 82
Figure 81 – equivalent circuit of the set-up without DUT 82
Figure 82 – equivalent circuit of the set-up with inserted DUT 83
Figure 83 – Definition of Z_T 84
Figure 84 – Calculated coupling transfer function 85
Figure 85 – Principle test set-up for measuring the screening attenuation of a connector with the tube in tube procedure 86
Figure 86 – Principle test set-up for measuring the coupling attenuation of screened balanced or multipin connectors 87
Figure 87 – Principle preparation of balanced or multiconductor connectors for coupling attenuation 87

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Figure 88 – Comparison of simulation and measurement, linear frequency scale 88
Figure 89 – Comparison of simulation and measurement, logarithmic frequency scale 89
Figure 90 – Measurement of the coupling attenuation of a CAT6 connector 89
Figure 91 – Contact resistances of the test set-up 90
Figure 92 – Equivalent circuit of the test set-up with contact resistances 90

Table 1 – The coupling transfer function *T* (coupling function)[a] 18
Table 2 – Screening effectiveness of cable test methods for surface transfer impedance Z_T 34
Table 3 – Load conditions of the different set-ups 38
Table 4 – Parameters of the different set-ups 40
Table 5 – Cut-off frequency length product 44
Table 6 – Typical values for the factor *v*, for an inner tube diameter of 40 mm and a generator output impedance of 50 Ω 47
Table 7 – Cut-off frequency length product 50
Table 8 – Material combinations and the factor *n* 52
Table 9 – Cut-off frequency length product 53
Table 10 – Cut-off frequency length product for some typical cables in the different set-ups 54
Table 11 – Δa in dB for typical cable dielectrics 63
Table 12 – Comparison of results of some coaxial cables 66
Table 13 – Cable parameters used for simulation 88

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METALLIC COMMUNICATION CABLE TEST METHODS –

Part 4-1: Electromagnetic compatibility (EMC) – Introduction to electromagnetic screening measurements

FOREWORD

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- the required support cannot be obtained for the publication of an International Standard, despite repeated efforts, or
- the subject is still under technical development or where, for any other reason, there is the future but no immediate possibility of an agreement on an International Standard.

Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC/TS 62153-4-1, which is a technical specification, 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 first edition of technical specification IEC/TS 62153-4-1 cancels and replaces the second edition of the technical report IEC/TR 62153-4-1 published in 2010. This edition constitutes a technical revision. This edition includes the following significant technical changes with respect to IEC/TR 62153-4-1:

a) comparison of the frequency response of different triaxial test set-ups to measure the transfer impedance of cable screens;

b) background of the shielded screening attenuation test method (IEC 62153-4-4);

c) background of the shielded screening attenuation test method for measuring the screening effectiveness of feed-throughs and electromagnetic gaskets (IEC 62153-4-10);

d) background of the shielded screening attenuation test method for measuring the screening effectiveness of RF connectors and assemblies (IEC 62153-4-7).

The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
46/465/DTS	46/492/RVC

Full information on the voting for the approval of this technical specification can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the IEC 62153 series, under the general title: *Metallic communication cable test methods*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- transformed into an International standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

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METALLIC COMMUNICATION CABLE TEST METHODS –

Part 4-1: Electromagnetic compatibility (EMC) – Introduction to electromagnetic (EMC) screening measurements

1 Scope

This part of IEC 62153 deals with screening measurements. Screening (or shielding) is one basic way of achieving electromagnetic compatibility (EMC). However, a confusingly large number of methods and concepts is available to test for the screening quality of cables and related components, and for defining their quality. This technical specification gives a brief introduction to basic concepts and terms trying to reveal the common features of apparently different test methods. It is intended to assist in correct interpretation of test data, and in the better understanding of screening (or shielding) and related specifications and standards.

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 60096-1:1986, *Radio-frequency cables – Part 1: General requirements and measuring methods*[1]

IEC 60096-4-1, *Radio-frequency cables – Part 4: Specification for superscreened cables – Section 1: General requirements and test methods*[1]

IEC 60169-1-3, *Radio-frequency connectors - Part 1: General requirements and measuring methods - Section Three: Electrical tests and measuring procedures: Screening effectiveness*

IEC 61196-1:2005, *Coaxial communication cables - Part 1: Generic specification - General, definitions and requirements*

IEC 61726, *Cable assemblies, cables, connectors and passive microwave components - Screening attenuation measurement by the reverberation chamber method*

IEC 62153-4-2, *Metallic communication cable test methods - Part 4-2: Electromagnetic compatibility (EMC) - Screening and coupling attenuation - Injection clamp method*

IEC 62153-4-3, *Metallic communication cable test methods - Part 4-3: Electromagnetic compatibility (EMC) - Surface transfer impedance - Triaxial method*

IEC 62153-4-4, *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*

IEC 62153-4-5, *Metallic communication cables test methods - Part 4-5: Electromagnetic compatibility (EMC) - Coupling or screening attenuation - Absorbing clamp method*

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[1] This publication has been withdrawn.

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IEC 62153-4-6, *Metallic communication cable test methods - Part 4-6: Electromagnetic compatibility (EMC) - Surface transfer impedance - Line injection method*

IEC 62153-4-7, *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*

IEC 62153-4-10, *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*

IEC/TR 62152:2009, *Transmission properties of cascaded two-ports or quadripols – Background of terms and definitions*

EN 50289-1-6: 2002, *Communication cables – Specifications for test methods Part 1-6: Electrical test methods – Electromagnetic performance*

CISPR 25, *Vehicles, boats and internal combustion engines – Radio disturbance characteristics – Limits and methods of measurement for the protection of on-board receivers*