

Address:	2800 Tatabanya
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Tel/Fax:	06/34 744-642
Mobil 1:	06/30 216-4583
Mobil 2:	06/30 335-6586
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Examination of ESD properties under laboratory conditions



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QUALIFICATION DATA SHEET: Protocol record and summary sheet

Introductory data

Serial number of the document:							
EMJL20170912_1ESD_Dr.Schutz							
	Sample data:						
Manufacturer:	Flooring surface coated with Dr						
Manufacturer.	Schutz materials						
Model number:	See Annex I.						
Size/pcs.:	14 pcs Samples						
Colours: See Annex I.							
	Sample photo:						
See Annex I.							
	Rating details:						
Type of rating: Testing of flooring samples coated with Dr Schutz ESD Coatings in accordance with EN 61340-5-1:2016 and ANSI 20.20:2014 norms							
Revision date:	2017.09.12.						

Customer detail:						
Company:	Dr Schutz Group GmbH					
Name:	Iakab Alpar					
Position:	Product Manager ESD Coatings					
Email:	aia@dr-schutz.com					
Tel:	0040 743 147 517					
Detail	s of the qualifying officer:					
Name:	Lovász Gábor					
Position:	ESD laboratory manager					
Email:	lovasz.gabor@godmin.hu					
Tel:	+36 30/418-8651					
The test report was verified:						
Name:	Godó Attila					
Position:	ESD expert					
Email:	godo.attila@godmin.hu					
Tel:	06 34/744-642					
Conditions in the climate chamber:						
	1st measurement					
Temperature	23.5 C°					
Humidity:	49.0 %					
2nd measurement						
Temperature: -						
Humidity:	-					
	3rd measurement					
Temperature	-					
Humidity:	-					

Content of the qualification report

QUALIFICATION DATA SHEET: Description of the sample, brief introduction and summary ANNEX I. Measurement results obtained during the certification of the sample

Important! The qualification report is complete and valid only in the presence of all attachments.

Notes

Preparation of samples: 50%±2% RH, 23°C±2°C 48 hours and 72 hours



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Examination of ESD properties under laboratory conditions



2017.09.22.

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QUALIFICATION DATA SHEET: Protocol record and summary sheet

Refference documents

IEC 61340-5-1:2016 - Electrostatics – Part 5-1: Protection of electronic devices from electrostatic phenomena – General requirements

ANSI-ESD S20.20:2014 - For the Development of an Electrostatic Discharge Control Program for – Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices)

Data of the measuring instruments used during the review

Туре	Model	Serial number	Calibratio n name:	Calibration number:	Calibration validity:	
Megohmmeter	AIJGO-61	0022	Kalibra 59	K/62092	2018.02.28.	
Temperature and humidity meter	AIJGO-61	22	Kalibra 59	K/62092	2018.02.28.	

Measurement Parameters and Legend

R_{p-p}	Point to point resistance
R_{gp}	Point to grounding resistance
R _{sys.}	System resistance

Summary

Based on qualification measurements carried out under normal environmental conditions, it can be concluded that the flooring samples coated with the Dr Schutz ESD Sealers meet the requirements of IEC 61340-5-1:2016 and ANSI/ESD 20.20 International ESD standards. From the measurements made with the copper grounding electrode it can be stated that from the ESD point of view, the surface treatment with Dr Schutz coatings improves the homogeneity of the floors independently of the layer system, so that floors properly ground the mobile devices like wagons, charts, chairs, etc. The results also show that the test surfaces coated with Dr Schutz ESD coatings improve the suitability of floor and human system resistance.

Date of completion of the	report:
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	GOD-MIN mérnöki kft
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ESD audit and measuring report and Qualifier sheet



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 2013.09.01

Measurement results	Register number:	EMJL20170912_1ESD_Dr.Schutz	Review date:	2017.09.12.

Type of ESD floor for tests Required measurement results C		Comparison of measured results													
			nen	Li	mits		Mesur	ement 1		Measur	rement 2		Measur	ement 3	
nple	Floor type	Measured points	asurem	Li	iiiits	Date:		2017.09.12.	Date:		2017	Date:		2017	Notes
Sample number	Floor type	rreasured points	Measuremen t types	Low	High	Measured value	Unit	Compliance	Measured value	Unit	Compliance	Measured value	Unit	Compliance	
									1		T	1		T	
	Material: STO POX KU	between points 1 and 2	R _{p-p}	$1.0\times10^4 \Omega$	1.0×10 ⁹ Ω	173	kΩ	OK	-	-	-	-	-	-	Original floor
	615 (original	between points 3 and 4	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	298	kΩ	OK	-	-	-	-	-	-	Coated floor
	flooring)	between points 5 and 6	R _{p-p}	1.0×10 ⁴ Ω	$1.0 \times 10^9 \Omega$	278	kΩ	OK	-	-	-	-	-	-	
10	Dr. Schutz	between points 9 and 7	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	111	kΩ	OK	-	-	-	-	-	-	Relation between the original and the coated floor surface
Sample 2017_01	material layout: ESD	between point 9 and grounding	R_{gp}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	98.4	kΩ	OK	-	-	-	-	-	-	Original floor
nple 2	Color Base 2	between point 7 and grounding	R_{gp}	1.0×10 ⁴ Ω	$1.0 \times 10^9 \Omega$	879	kΩ	OK	-	-	-	-	-	-	Coated floor
Sar	ESD TopCoat 1 coat	between point 9 and grounding (copper earth electrode)	R_{gp}	1.0×10 ⁴ Ω	$1.0 \times 10^9 \Omega$	100	GΩ	NOK	-	-	-	-	-	-	Original floor
	Toat	between point 7 and grounding (copper earth electrode)	R_{gp}	1.0×10 ⁴ Ω	$1.0 \times 10^9 \Omega$	9.41	ΜΩ	OK	-	-	-	-	-	-	Coated floor
		System measurement to original floor	R _{sys.}	-	1.0×10 ⁹ Ω	13.8	ΜΩ	OK	-	-	-	-	-	-	Original floor
	53	System measurement to coated floor	R _{sys.}	-	1.0×10 ⁹ Ω	6.36	ΜΩ	OK	-	-	-	-	-	-	Coated floor
	Material: STO POX KU	between points 1 and 2	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	157	kΩ	OK	-	-	-	-	-	-	Original floor
	611 (original	between points 3 and 4	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	324	kΩ	OK	-	-	-	-	-	-	Coated floor
	flooring)	between points 5 and 6	R _{p-p}	1.0×10 ⁴ Ω	$1.0 \times 10^9 \Omega$	900	kΩ	OK	-	-	-	-	-	-	
0	Dr. Schutz	between points 9 and 7	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	110	kΩ	OK	-	-	-	-	-	-	Relation between the original and the coated floor surface
2017	material layout: ESD	between point 9 and grounding	R_{gp}	1.0×10 ⁴ Ω	$1.0 \times 10^9 \Omega$	25.7	kΩ	OK	-	-	-	-	-	-	Original floor
Sample 2017_	Color Base 2	between point 7 and grounding	R_{gp}	1.0×10 ⁴ Ω	$1.0 \times 10^9 \Omega$	26.4	kΩ	OK	-	-	-	-	-	-	Coated floor
Sa	ESD TopCoat	between point 9 and grounding (copper earth electrode)	R_{gp}	1.0×10 ⁴ Ω	$1.0 \times 10^9 \Omega$	100	GΩ	NOK	-	-	-	-	-	-	Original floor
		between point 7 and grounding (copper earth electrode)	R_{gp}	1.0×10 ⁴ Ω	$1.0 \times 10^9 \Omega$	277	kΩ	OK	-	-	-	-	-	-	Coated floor
		System measurement to original floor	R _{sys.}	-	1.0×10 ⁹ Ω	625	ΜΩ	ОК	-	-	-	-	-	-	Original floor
		System measurement to coated floor	R _{sys.}	-	1.0×10 ⁹ Ω	7.74	ΜΩ	ОК	-	-	-	-	-	-	Coated floor

mérnöki kft	MM	GOD-MIN mérnöki kft
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Measurement results	Register number:	EMJL20170912_1ESD_Dr.Schutz	Review date:	2017.09.12.

	Type of ESI) floor for tests	Require	d measuren	ent results	Comparison of measured results									
n 5			nen	Limits —		Mesurement 1 Measurement 2 Measurement 3]	
npk	Floor type	Measured points	asurem t types		imts	Date:		2017.09.12.	Date:		2017	Date:		2017	Notes
Sample number	Tioor type	ivicusureu points	Measurem t types	Low	High	Measured value	Unit	Compliance	Measured value	Unit	Compliance	Measured value	Unit	Compliance	
	Material: STO POX KU	between points 1 and 2	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	1.73	ΜΩ	OK	-	-	-	-	-	-	Original floor
	613 (original	between points 3 and 4	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	275	kΩ	OK	-	1	-	-	1	-	Coated floor
	flooring)	between points 5 and 6	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	660	kΩ	OK	-	•	-	-	-	-	
_03	Dr. Schutz	between points 9 and 7	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	674	kΩ	OK	-	-	-	-	-	-	Relation between the original and the coated floor surface
Sample 2017_03	material layout: ESD	between point 9 and grounding	$R_{\rm gp}$	$1.0 \times 10^4 \Omega$	1.0×10 ⁹ Ω	443	kΩ	OK	-	-	-	-	-	-	Original floor
ımple	Color Base 2 coats	between point 7 and grounding	R_{gp}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	32.1	kΩ	OK	-	-	-	-	-	-	Coated floor
S	ESD TopCoat	between point 9 and grounding (copper earth electrode)	$R_{\rm gp}$	$1.0 \times 10^4 \Omega$	1.0×10 ⁹ Ω	38.5	ΜΩ	OK	-	-	-	-	-	-	Original floor
		between point 7 and grounding (copper earth electrode)	$R_{\rm gp}$	$1.0 \times 10^4 \Omega$	1.0×10 ⁹ Ω	3.3	ΜΩ	OK	-	-	-	-	-	-	Coated floor
		System measurement to original floor	R _{sys.}	-	1.0×10 ⁹ Ω	12.5	ΜΩ	OK	-	-	-	-	-	-	Original floor
	53	System measurement to coated floor	R _{sys.}	-	1.0×10 ⁹ Ω	8.43	ΜΩ	OK	-	-	-	-	-	-	Coated floor
	Material: Tarkett TORO	between points 1 and 2	R _{p-p}	$1.0 \times 10^4 \Omega$	1.0×10 ⁹ Ω	37.7	ΜΩ	OK	-	-	-	-	-	-	Original floor
	(original flooring)	between points 3 and 4	R _{p-p}	$1.0 \times 10^4 \Omega$	1.0×10 ⁹ Ω	143	kΩ	OK	-	-	-	-	-	-	Coated floor
	Dr. Schutz	between points 5 and 6	R _{p-p}	$1.0 \times 10^4 \Omega$	1.0×10 ⁹ Ω	162	kΩ	OK	-	-	-	-	-	-	
40	material	between points 9 and 7	R _{p-p}	$1.0 \times 10^4 \Omega$	1.0×10 ⁹ Ω	19.5	ΜΩ	OK	-	-	-	-	-	-	Relation between the original and the coated floor surface
2017	layout: ESD Color	between point 9 and grounding	$R_{\rm gp}$	$1.0 \times 10^4 \Omega$	1.0×10 ⁹ Ω	14	ΜΩ	OK	-	-	-	-	-	-	Original floor
Sample 2017_04	Base 2 coats ESD TopCoat	between point 7 and grounding	$R_{\rm gp}$	$1.0 \times 10^4 \Omega$	1.0×10 ⁹ Ω	100	kΩ	OK	-	-	-	-	-	-	Coated floor
Sa	1 coat	between point 9 and grounding (copper earth electrode)	R_{gp}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	132	ΜΩ	OK	-	-	-	-	-	-	Original floor
		between point 7 and grounding (copper earth electrode)	R_{gp}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	116	kΩ	OK	-	-	-	-	-	-	Coated floor
		System measurement to original floor	R _{sys.}	-	$1.0 \times 10^9 \Omega$	66.8	ΜΩ	OK	-	-	-	-	-	-	Original floor
		System measurement to coated floor	R _{sys.}	-	$1.0 \times 10^9 \Omega$	14.9	ΜΩ	OK	-	-	-	-	-	-	Coated floor

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Measurement results	Register number:	EMJL20170912_1ESD_Dr.Schutz	Review date:	2017.09.12.

	Type of ESD floor for tests		Require	uired measurement results			Comparison of measured results								
			ien	т:	T **4		Mesurement 1 Measurement 2				Measurement 3			1	
ıple	Ela an tama	M	rem	Limits			Date: 2017.09.12.			Date: 2017				2017	Notes
Sample number	Floor type	Measured points	Measurem t types	Low	High	Measured value	Unit	Compliance	Measured value	Unit	Compliance	Measured value	Unit	Compliance	
	Material: Graboplast	between points 1 and 2	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	10.5	ΜΩ	OK	-	,	-	-	-	-	Original floor
	ESD PVC (original	between points 3 and 4	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	384	kΩ	OK	-	-	-	-	-	-	Coated floor
	flooring)	between points 5 and 6	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	333	kΩ	OK	-	-	-	-	-	-	
6	Dr. Schutz	between points 9 and 7	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	1.48	ΜΩ	OK	-	-	-	-	-	-	Relation between the original and the coated floor surface
Sample 2017_05	material layout:	between point 9 and grounding	R_{gp}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	7.2	ΜΩ	OK	-	-	-	-	-	-	Original floor
ımple	ESD Color Base 2 coats	between point 7 and grounding	R_{gp}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	6.19	ΜΩ	OK	-	-	-	-	-	-	Coated floor
S.	ESD TopCoat 1 coat	between point 9 and grounding (copper earth electrode)	R_{gp}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	11.3	ΜΩ	OK	-	-	-	-	-	-	Original floor
		between point 7 and grounding (copper earth electrode)	$R_{\rm gp}$	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	6.66	ΜΩ	OK	-	-	-	-	-	-	Coated floor
		System measurement to original floor	R _{sys.}	-	1.0×10 ⁹ Ω	66.7	ΜΩ	OK	-	1	-	-	-	-	Original floor
	-	System measurement to coated floor	R _{sys.}	-	1.0×10 ⁹ Ω	45.7	ΜΩ	OK	-	-	-	-	-	-	Coated floor
	Material: STO POX KU	between points 1 and 2	R _{p-p}	$1.0 \times 10^4 \Omega$	1.0×10 ⁹ Ω	94.8	kΩ	OK	-	1	-	-	-	-	Original floor
	615 (original	between points 3 and 4	R _{p-p}	$1.0 \times 10^4 \Omega$	1.0×10 ⁹ Ω	189	kΩ	OK	-	ı	-	-	-	-	Coated floor
	flooring)	between points 5 and 6	R _{p-p}	$1.0 \times 10^4 \Omega$	1.0×10 ⁹ Ω	143	kΩ	OK	-	ı	-	-	-	-	
90_	Dr. Schutz	between points 9 and 7	R _{p-p}	$1.0 \times 10^4 \Omega$	1.0×10 ⁹ Ω	169	kΩ	OK	-	1	-	-	-	-	Relation between the original and the coated floor surface
2017	material layout:	between point 9 and grounding	$R_{\rm gp}$	$1.0 \times 10^4 \Omega$	1.0×10 ⁹ Ω	31.2	kΩ	OK	-	1	-	-	-	-	Original floor
Sample 2017_06	ESD BaseCoat 2 rcoats	between point 7 and grounding	$R_{\rm gp}$	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	145	kΩ	OK	-	-	-	-	-	-	Coated floor
Sa	ESD TopCoat 1 coat	between point 9 and grounding (copper earth electrode)	R_{gp}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	68.2	GΩ	NOK	-	-	-	-	-	-	Original floor
	Toat	between point 7 and grounding (copper earth electrode)	R_{gp}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	5.41	ΜΩ	OK	-	-	-	-	-	-	Coated floor
		System measurement to original floor	R _{sys.}	-	1.0×10 ⁹ Ω	17.4	МΩ	ОК	-	-	-	-	-	-	Original floor
		System measurement to coated floor	R _{sys.}	-	1.0×10 ⁹ Ω	6.54	ΜΩ	OK	-	-	-	-	-	-	Coated floor

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Measurement results	Register number:	EMJL20170912_1ESD_Dr.Schutz	Review date:	2017.09.12.

	Type of ESI	Type of ESD floor for tests		Required measurement results											
~ .			nen	Li	mits		Mesure	ement 1							
npk	Floor type	Measured points	surem		iiits	Date:		2017.09.12.	Date:		2017	Date:		2017	Notes
Sample	Tioor type	ricusureu points	Measurem t types	Low	High	Measured value	Unit	Compliance	Measured value	Unit	Compliance	Measured value	Unit	Compliance	
	Material: STO POX KU	between points 1 and 2	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	170	kΩ	OK	-	-	-	-	-	-	Original floor
	611 (original	between points 3 and 4	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	190	kΩ	OK	-	-	-	-	-	-	Coated floor
	flooring)	between points 5 and 6	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	120	kΩ	OK	-	ı	-	-	1	-	Coaled Hoof
_07	Dr. Schutz	between points 9 and 7	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	100	kΩ	OK	-	-	-	-	-	-	Relation between the original and the coated floor surface
Sample 2017_07	material layout:	between point 9 and grounding	$R_{\rm gp}$	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	25	kΩ	OK	-	-	-	-	-	-	Original floor
ımple	ESD BaseCoat 2 coats	between point 7 and grounding	$R_{\rm gp}$	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	52.2	kΩ	OK	-	-	-	-	-	-	Coated floor
Sa	ESD TopCoat 1 coat	between point 9 and grounding (copper earth electrode)	$R_{\rm gp}$	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	100	GΩ	NOK	-	-	-	-	-	-	Original floor
	/ Cont	between point 7 and grounding (copper earth electrode)	$R_{\rm gp}$	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	505	kΩ	OK	-	-	-	-	-	-	Coated floor
		System measurement to original floor	R _{sys.}	-	1.0×10 ⁹ Ω	312	ΜΩ	OK	-	-	-	-	-	-	Original floor
		System measurement to coated floor	R _{sys} .	-	$1.0 \times 10^9 \Omega$	6.74	ΜΩ	OK	-	-	-	-	-	-	Coated floor
	Material: STO POX 613	between points 1 and 2	R _{p-p}	$1.0\times10^4~\Omega$	1.0×10 ⁹ Ω	1.61	ΜΩ	OK	-	-	-	-	-	-	Original floor
	(original flooring)	between points 3 and 4	R _{p-p}	$1.0 \times 10^4 \Omega$	1.0×10 ⁹ Ω	167	kΩ	OK	-	-	-	-	-	-	Coated floor
	Dr. Schutz	between points 5 and 6	R _{p-p}	$1.0 \times 10^4 \Omega$	1.0×10 ⁹ Ω	264	kΩ	OK	-	-	-	-	-	-	
80_	material	between points 9 and 7	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	975	kΩ	OK	-	-	-	-	-	-	Relation between the original and the coated floor surface
2017	layout: ESD BaseCoat	between point 9 and grounding	$R_{\rm gp}$	$1.0 \times 10^4 \Omega$	1.0×10 ⁹ Ω	946	kΩ	OK	-	1	-	-	-	-	Original floor
Sample 2017_08	2 coats ESD TopCoat	between point 7 and grounding	$R_{\rm gp}$	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	132	kΩ	OK	-	-	-	-	-	-	Coated floor
Sa	1 coat	between point 9 and grounding (copper earth electrode)	$R_{\rm gp}$	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	1.19	ΜΩ	OK	-	,	-	-	-	-	Original floor
		between point 7 and grounding (copper earth electrode)	$R_{\rm gp}$	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	3.38	ΜΩ	OK	-	-	-	-	-	-	Coated floor
		System measurement to original floor	R _{sys} .	-	1.0×10 ⁹ Ω	11.5	ΜΩ	OK	-	-	-	-	-	-	Original floor
		System measurement to coated floor	R _{sys.}	-	1.0×10 ⁹ Ω	7.12	ΜΩ	OK	-	-	-	-	-	-	Coated floor

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Measurement results	Register number:	EMJL20170912_1ESD_Dr.Schutz	Review date:	2017.09.12.

	Type of ESD floor for tests		Required measurement results		Comparison of measured results										
. L			nen	Li	mits		Mesurement 1 Measurement 2 Measurement 3								
nple	Floor type	Measured points	surem	1.71	iiits	Date:		2017.09.12.	Date:		2017	Date:		2017	Notes
Sample	1 loor type	Weasured points	Measurement types	Low	High	Measured value	Unit	Compliance	Measured value	Unit	Compliance	Measured value	Unit	Compliance	
						1			1			1			1
	Material: Tarkett TORO	between points 1 and 2	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	139	ΜΩ	OK	-	-	-	-	-	-	Original floor
	(original flooring)	between points 3 and 4	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	538	kΩ	OK	-	-	-	-	-	-	Coated floor
	Dr. Schutz	between points 5 and 6	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	486	ΜΩ	OK	-	-	-	-	-	-	
60,	material	between points 9 and 7	R _{p-p}	$1.0 \times 10^4 \Omega$	$1.0 \times 10^9 \Omega$	84.4	ΜΩ	OK	-	-	-	-	-	-	Relation between the original and the coated floor surface
Sample 2017_	layout: ESD BaseCoat	between point 9 and grounding	R_{gp}	1.0×10 ⁴ Ω	$1.0 \times 10^9 \Omega$	75	ΜΩ	OK	-	ı	-	-	-	-	Original floor
mple	2 coats ESD TopCoat	between point 7 and grounding	R_{gp}	1.0×10 ⁴ Ω	$1.0 \times 10^9 \Omega$	268	kΩ	OK	-	1	-	-	ı	-	Coated floor
Sa	1 coat	between point 9 and grounding (copper earth electrode)	R_{gp}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	417	ΜΩ	OK	-	1	-	-	-	-	Original floor
		between point 7 and grounding (copper earth electrode)	$R_{\rm gp}$	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	496	kΩ	OK	-	-	-	-	-	-	Coated floor
		System measurement to original floor	R _{sys.}	-	1.0×10 ⁹ Ω	40.4	ΜΩ	OK	-	-	-	-	-	-	Original floor
		System measurement to coated floor	R _{sys.}	-	1.0×10 ⁹ Ω	21.7	ΜΩ	OK	-	1	-	-	-	-	Coated floor
	Material: STO POX KU	between points 1 and 2	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	169	ΜΩ	OK	-	-	-	-	-	-	Original floor
	615 (original	between points 3 and 4	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	688	kΩ	OK	-	ı	-	-	ı	-	Coated floor
	flooring)	between points 5 and 6	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	1.22	ΜΩ	OK	-	ı	-	-	ı	-	Coaled Hoof
=	Dr. Schutz	between points 9 and 7	R _{p-p}	1.0×10 ⁴ Ω	$1.0 \times 10^9 \Omega$	1.18	ΜΩ	OK	-	-	-	-	-	-	Relation between the original and the coated floor surface
Sample 2017_10	material layout:	between point 9 and grounding	R_{gp}	1.0×10 ⁴ Ω	$1.0 \times 10^9 \Omega$	39.2	kΩ	OK	-	ı	-	-	ı	-	Original floor
mple	ESD BaseCoat 1 coat	between point 7 and grounding	R_{gp}	1.0×10 ⁴ Ω	$1.0 \times 10^9 \Omega$	823	kΩ	OK	-	ı	-	-	ı	-	Coated floor
Sa	ESD TopCoat	between point 9 and grounding (copper earth electrode)	R_{gp}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	100	GΩ	NOK	-	1	-	-	-	-	Original floor
	Toat	between point 7 and grounding (copper earth electrode)	R_{gp}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	2.44	ΜΩ	OK	-	1	-	-	-	-	Coated floor
		System measurement to original floor	R _{sys.}	-	1.0×10 ⁹ Ω	23.7	ΜΩ	OK	-	-	-	-	-	-	Original floor
		System measurement to coated floor	R _{sys.}	-	1.0×10 ⁹ Ω	7.6	ΜΩ	OK	-	1	-	-	-	-	Coated floor

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Measurement results	Register number:	EMJL20170912_1ESD_Dr.Schutz	Review date:	2017.09.12.

	Type of ESI) floor for tests	Require	Required measurement results											
			nen	Li	Limits		Mesurement 1 Measurement 2							ement 3	
nple 1be	Floor type	Measured points	surem			Date:		2017.09.12.	Date:		2017	Date:		2017	Notes
Sample number	Floor type	vicasureu points	Measuren t types	Low	High	Measured value	Unit	Compliance	Measured value	Unit	Compliance	Measured value	Unit	Compliance	
-															
	Material: STO POX KU	between points 1 and 2	R _{p-p}	$1.0 \times 10^4 \Omega$	1.0×10 ⁹ Ω	150	kΩ	OK	-	-	-	-	-	-	Original floor
	611 (original	between points 3 and 4	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	2.12	ΜΩ	OK	-	-	-	-	-	-	Coated floor
	flooring)	between points 5 and 6	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	762	kΩ	OK	-	-	-	-	-	-	
=,	Dr. Schutz	between points 9 and 7	R _{p-p}	$1.0 \times 10^4 \Omega$	1.0×10 ⁹ Ω	150	kΩ	OK	-	-	-	-	-	-	Relation between the original and the coated floor surface
Sample 2017_11	material layout:	between point 9 and grounding	$R_{\rm gp}$	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	55.4	kΩ	OK	-	-	-	-	-	-	Original floor
mple	ESD BaseCoat 1 coat	between point 7 and grounding	R_{gp}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	104	kΩ	OK	-	-	-	-	-	-	Coated floor
S	ESD TopCoat	between point 9 and grounding (copper earth electrode)	$R_{\rm gp}$	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	100	GΩ	NOK	-	-	-	-	-	-	Original floor
		between point 7 and grounding (copper earth electrode)	R_{gp}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	4.36	ΜΩ	OK	-	-	-	-	-	-	Coated floor
		System measurement to original floor	R _{sys.}	-	1.0×10 ⁹ Ω	1.72	GΩ	NOK	-	-	-	-	-	-	Original floor
		System measurement to coated floor	R _{sys.}	-	1.0×10 ⁹ Ω	9.7	ΜΩ	OK	-	-	-	-	-	-	Coated floor
	Material: STO POX KU	between points 1 and 2	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	1.1	ΜΩ	OK	-	-	-	-	-	-	Original floor
	613 (original	between points 3 and 4	R _{p-p}	$1.0 \times 10^4 \Omega$	1.0×10 ⁹ Ω	398	kΩ	OK	-	-	-	-	-	-	Coated floor
	flooring)	between points 5 and 6	R _{p-p}	$1.0 \times 10^4 \Omega$	1.0×10 ⁹ Ω	498	kΩ	OK	-	-	-	-	-	-	
21	Dr. Schutz	between points 9 and 7	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	232	kΩ	OK	-	-	-	-	-	-	Relation between the original and the coated floor surface
Sample 2017_12	material layout:	between point 9 and grounding	$R_{\rm gp}$	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	67.5	kΩ	OK	-	-	-	-	-	-	Original floor
mple	ESD BaseCoat 1 coat	between point 7 and grounding	$R_{\rm gp}$	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	114	kΩ	OK	-	-	-	-	1	-	Coated floor
Sa	ESD TopCoat 1 coat	between point 9 and grounding (copper earth electrode)	$R_{\rm gp}$	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	6.99	ΜΩ	OK	-	-	-	-	-	-	Original floor
	Toat	between point 7 and grounding (copper earth electrode)	$R_{\rm gp}$	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	573	kΩ	OK	-	ı	-	-	-	-	Coated floor
		System measurement to original floor	R _{sys.}	-	1.0×10 ⁹ Ω	10.3	ΜΩ	OK	-	1		-	ı	-	Original floor
	- Time	System measurement to coated floor	R _{sys.}	-	1.0×10 ⁹ Ω	8.04	ΜΩ	OK	-	-	-	-	1	-	Coated floor

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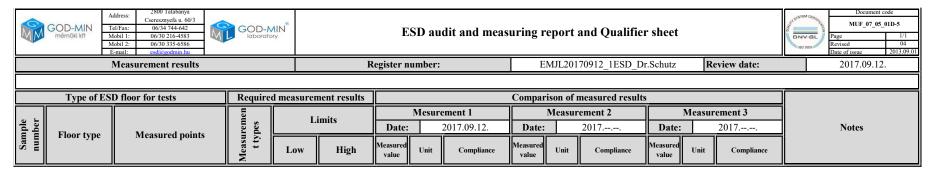


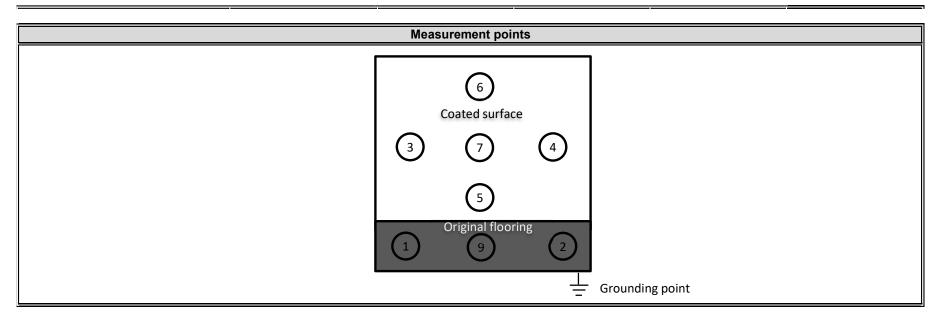


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Measurement results	Register number:	EMJL20170912_1ESD_Dr.Schutz	Review date:	2017.09.12.

Type of ESD floor for tests		Required measurement results		Comparison of measured results											
~ <u>-</u>			Measuremen t types	Limits		Mesurement 1			Measurement 2			Measurement 3]
npke	Floor type	Measured points				Date:	Date: 2017.09.12.		Date: 2017		Date:		2017	Notes	
Sample number	Troor type	wieasureu points		Low	High	Measured value	Unit	Compliance	Measured value	Unit	Compliance	Measured value	Unit	Compliance	
	Material:	1			2	l i			1						1
	Tarkett TORO	between points 1 and 2	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	68	ΜΩ	OK	-	-	-	-	-	-	Original floor
	(original flooring)	between points 3 and 4	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	881	kΩ	OK	-	-	-	-	-	-	Coated floor
		between points 5 and 6	R _{p-p}	$1.0 \times 10^4 \Omega$	$1.0 \times 10^9 \Omega$	764	kΩ	OK	-	-	-	-	-	-	
13	Dr. Schutz material	between points 9 and 7	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	1.38	ΜΩ	OK	-	1	-	-	1	-	Relation between the original and the coated floor surface
Sample 2017_13	layout: ESD BaseCoat	between point 9 and grounding	R_{gp}	1.0×10 ⁴ Ω	$1.0 \times 10^9 \Omega$	1.51	ΜΩ	OK	-	1	-	-	ı	-	Original floor
mple	1 coat ESD TopCoat	between point 7 and grounding	R_{gp}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	372	kΩ	OK	-	-	-	-	-	-	Coated floor
Sai	1 coat	between point 9 and grounding (copper earth electrode)	$R_{\rm gp}$	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	135	ΜΩ	OK	-	-	-	-	-	-	Original floor
		between point 7 and grounding (copper earth electrode)	R_{gp}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	1.51	ΜΩ	OK	-	-	-	-	-	-	Coated floor
		System measurement to original floor	R _{sys.}	-	1.0×10 ⁹ Ω	47.7	ΜΩ	OK	-	-	-	-	-	-	Original floor
		System measurement to coated floor	R _{sys.}	-	1.0×10 ⁹ Ω	18.5	ΜΩ	OK	-	-	-	-	-	-	Coated floor
	Material: Graboplast	between points 1 and 2	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	90.5	ΜΩ	OK	-	-	-	-	-	-	Original floor
	ESD PVC (original	between points 3 and 4	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	6.56	ΜΩ	OK	-	-	-	-	-	-	Coated floor
	flooring)	between points 5 and 6	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	4.33	ΜΩ	OK	-	-	-	-	-	-	Coaled Hoof
41.	Dr. Schutz	between points 9 and 7	R _{p-p}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	31.1	ΜΩ	OK	-	-	-	-	-	-	Relation between the original and the coated floor surface
Sample 2017_14	material layout:	between point 9 and grounding	R_{gp}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	70.1	ΜΩ	OK	-	-	-	-	-	-	Original floor
mple	ESD BaseCoat	between point 7 and grounding	$R_{\rm gp}$	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	20.6	ΜΩ	OK	-	-	-	-	-	-	Coated floor
Sai	ESD TopCoat	between point 9 and grounding (copper earth electrode)	R_{gp}	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	72.3	ΜΩ	OK	-	-	-	-	_	-	Original floor
	1 coat	between point 7 and grounding (copper earth electrode)	$R_{\rm gp}$	1.0×10 ⁴ Ω	1.0×10 ⁹ Ω	50.9	ΜΩ	OK	-	-	-	-	-	-	Coated floor
		System measurement to original floor	R _{sys.}	-	1.0×10 ⁹ Ω	88.3	ΜΩ	OK	-	-		-	-		Original floor
		System measurement to coated floor	R _{sys.}	-	1.0×10 ⁹ Ω	76	ΜΩ	OK	-	-	-	-	-	-	Coated floor







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Examination of ESD properties under laboratory conditions



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II. Annex: Schematic diagram of the measurements

Serial number: EMJL20170912_1ESD_Dr.Schutz **Date of issue** 2017.09.12.

	Sample indentification			d measure	ment results			
Sample number	Sample type	Notes	Measurement limit Low: High:			The schematic diagram or photo of the measurements		
Samp			Mea	Low:	High:			
						Gigaohm meter		
-		Measurement points: see annex I	R _{p-p}	-	1.0×10 ⁹ Ω	Weight electrode Flooring		
-		Measurement points: see annex I	$ m R_{gp}$	-	1.0×10 ⁹ Ω	Gigaohm meter Weight electrode Flooring		
-	Flooring samples coated with Dr Schutz materials	Measurement points: see annex I	$ m R_{gp}$	-	1.0×10 ⁹ Ω	Grounding point Cooper grounding		
-		Measurement points: see annex I	R _{sys.}	-	1.0×10 ⁹ Ω	Grounding point Flooring		