

Prüfbericht-Nr.: Test report no.:	CN23VI08 001	Auftrags-Nr.: Order no.:	170348257	Seite 1 von 40 Page 1 of 40
Kunden-Referenz-Nr.: Client reference no.:	2298718	Auftragsdatum: Order date:	2023-07-07	
Auftraggeber: Client:	Univolt Extrusion (Dongguan) Ltd. No.42, Huanqi Avenue, Qishi Town, Dongguan City, Guangdong P.R. China			
Prüfgegenstand: Test item:	Cable trunking systems			
Bezeichnung / Typ-Nr.: Identification / Type no.:	MIK 16/40 Solo, SAE 16_40, SE 16_40, SFW 16_40, SIE 16_40, SK 16_40, ST 16_40			
Auftrags-Inhalt: Order content:	AK certification			
Prüfgrundlage: Test specification:	EN 50085-1:2005+A1 EN 50085-2-1:2006+A1			
Wareneingangsdatum: Date of sample receipt:	2023-07-21			
Prüfmuster-Nr.: Test sample no.:	A003522710			
Prüfzeitraum: Testing period:	2023-08-01 - 2023-10-09			
Ort der Prüfung: Place of testing:	TÜV Rheinland (Guangdong)Ltd.			
Prüflaboratorium: Testing laboratory:	TÜV Rheinland (Guangdong)Ltd.			
Prüfergebnis*: Test result*:	Pass			
geprüft von: tested by: Vicky Du	genehmigt von: authorized by: Sarah Chen			
Datum: Date: 2023-11-01	Ausstellungsdatum: Issue date: 2023-11-01			
Stellung / Position: Project Engineer	Stellung / Position: Report Authorizer			
Sonstiges / Other:	Attachment 1: Photo documentation. (total 9 pages)			
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged			
<p>* Legende: P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet * Legend: P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested</p>				
<p>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. This test report only relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</p>				

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Test report no.:

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Anmerkungen
Remarks

1	<p>Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden.</p> <p><i>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</i></p>
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3	<p>Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt.</p> <p><i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report. Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i></p>
4	<p>Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019.</p> <p><i>The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.</i></p>

TEST REPORT EN 50085-1 Cable trunking systems and cable ducting systems for electrical installations Part 1: General requirements	
Report reference No.....	: CN23VI08 001
Compiled by (+ signature)	: See cover sheet
Approved by (+ signature).....	: See cover sheet
Date of issue.....	: See cover sheet
Testing laboratory	: TÜV Rheinland (Guangdong)Ltd.
Address.....	: No.199 Kezhu Road, Guangzhou Science City, Guangzhou 510663, Guangdong Province P.R. China
Testing location.....	: No.199 Kezhu Road, Guangzhou Science City, Guangzhou 510663, Guangdong Province P.R. China
Applicant	: Univolt Extrusion (Dongguan) Ltd.
Address.....	: No.42, Huanqi Avenue, Qishi Town, Dongguan City, Guangdong P.R. China
Standard	: EN 50085:2005+A1:2013 used in conjunction with EN 50085-2- 1:2006 + A1:2011
TRF originator.	: TÜV Rheinland
Copyright blank test report	: This report is based on a blank test report that was prepared by TÜV Rheinland (Shanghai) Co., Ltd.
Test procedure	: AK certification
Procedure deviation	: N.A.
Non-standard test method.....	: N.A.
Type of test object.....	: Cable trunking systems
Trademark.....	: See copy of marking plate
Model/type reference.....	: MIK 16/40 Solo, SAE 16_40, SE 16_40, SFW 16_40, SIE 16_40, SK 16_40, ST 16_40
Manufacturer.....	: Univolt Extrusion (Dongguan) Ltd. No.42, Huanqi Avenue, Qishi Town, Dongguan City, Guangdong P.R. China
Rating	: 1J; IP40

Copy of marking plate:**Summary of testing:**

Tests performed (name of test and test clause): Full tests were performed on model MIK 16/40 Solo with all fittings.	Testing location: TÜV Rheinland (Guangdong) Ltd. No.199 Kezhu Road, Guangzhou Science City, Guangzhou 510663, Guangdong Province P.R. China
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Summary of compliance with National Differences: N/A**Possible test case verdicts:**

- test case does not apply to the test object	N/A
- test object does meet the requirement.....	P (Pass)
- test object does not meet the requirement.....	F (Fail)

Testing:

Date of receipt of test item.....	See cover page
Date (s) of performance of tests	See cover page

General remark:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.
"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ~~comma~~ (point) is used as the decimal separator.

Other	Test sample(s), as well sample information, description, product details and intended usage was provided by customer.
Test sample obtaining	<input checked="" type="checkbox"/> Sending by customer <input type="checkbox"/> Sampling by TÜV Rheinland Group <input type="checkbox"/> Others:

General product information:

Factory: Univolt Extrusion (Dongguan) Ltd.

Address: No.42, Huanqi Avenue, Qishi Town, Dongguan City, Guangdong P.R. China

MIK 16/40 Solo is main trunking with length of 250mm, which contains:

Besides, there are many combinations with different components based on MIK 16/40 Solo.

1. External angel: SAE 16_40
2. Stop end: SE 16_40
3. Flat angel: SFW 16_40
4. Internal angel: SIE 16_40
5. Coupling: SK 16_40
6. Flat tee: ST 16_40

Non-metallic materials:

Material	Manufacturer
PVC-800	Hanwha chemical (Ningbo) Co.,Ltd.

EN 50085-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
6	CLASSIFICATION		P
6.1	According to material		
	Void.		
6.2	According to resistance to impact for installation and application		P
6.2.1	CTS/CDS for impact 0,5J		N/A
6.2.2	CTS/CDS for impact 1J		P
6.2.3	CTS/CDS for impact 2J		N/A
6.2.4	CTS/CDS for impact 5J		N/A
6.2.5	CTS/CDS for impact 20J.		N/A
6.3	According to temperatures as given in Tables 1, 2 and 3		P
Table 1	Minimum storage and transport temperature $\pm 2^{\circ}\text{C}$		
	<input type="checkbox"/> - 45 <input type="checkbox"/> - 25 <input type="checkbox"/> - 15 <input checked="" type="checkbox"/> - 5		P
Table 2	Minimum installation and application temperature $\pm 2^{\circ}\text{C}$		
	<input type="checkbox"/> - 25 <input type="checkbox"/> - 15 <input checked="" type="checkbox"/> - 5 <input type="checkbox"/> + 5 <input type="checkbox"/> + 15		P
Table 3	Maximum application temperature $\pm 2^{\circ}\text{C}$		
	<input checked="" type="checkbox"/> + 60 <input type="checkbox"/> + 90 <input type="checkbox"/> + 105 <input type="checkbox"/> + 120		P
6.4	According to resistance to flame propagation		P
6.4.1	Flame propagating CTS/CDS.		N/A
6.4.2	Non-flame propagating CTS/CDS.		P
6.5	According to electrical continuity characteristic		P
6.5.1	CTS/CDS with electrical continuity characteristic		N/A

EN 50085-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
6.5.2	CTS/CDS without electrical continuity characteristic.		P
6.6	According to electrical insulating characteristic		P
6.6.1	CTS/CDS without electrical insulating characteristic.		P
6.6.2	CTS/CDS with electrical insulating characteristic.		N/A
6.7	According to degrees of protection provided by enclosure according to EN 60529:1991		P
6.7.1	According to protection against ingress of solid foreign objects		P
	IP4X or any higher degree of protection shall not be declared when it relies on butt joint or the accuracy of cutting of ducting lengths or trunking lengths or access covers without providing relevant fittings or assembly means or additional factory prefabricated sealing means.	IP40, providing relevant fittings	P
6.7.2	According to protection against ingress of water		N/A
	IPX1 or any higher degree of protection shall not be declared when it relies on butt joint or the accuracy of cutting of ducting lengths or trunking lengths or access covers without providing relevant fittings or assembly means or additional factory prefabricated sealing means.	IP40	
6.7.3	According to protection against access to hazardous parts		N/A
	IPXX-D shall not be declared when it relies on butt joint or the accuracy of cutting of ducting lengths or trunking lengths or access covers without providing relevant fittings or assembly means or additional factory prefabricated sealing means.		N/A
6.8	According to protection against corrosive or polluting substances		P
6.8.1	CTS/CDS with low protection outside and inside.		P
6.8.2	CTS/CDS with medium protection outside, and low protection inside.		N/A
6.8.3	CTS/CDS with medium protection outside and inside.		N/A
6.8.4	CTS/CDS with high protection outside, and low protection inside.		N/A
6.8.5	CTS/CDS with high protection outside, and medium protection inside.		N/A
6.8.6	CTS/CDS with high protection outside and inside.		N/A

EN 50085-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
6.9	According to the system access cover retention		P
6.9.1	CTS/CDS access cover, which can be opened without a tool.		P
6.9.2	CTS/CDS access cover, which can only be opened with a tool.		N/A
6.10	According to electrically protective separation		P
6.10.1	CTS/CDS without internal protective partition		P
6.10.2	CTS/CDS with internal protective partition		N/A
6.101	According to the intended installation positions		P
6.101.1	CDS embedded in the wall or ceiling.		N/A
6.101.2	CTS/CDS flush in the wall or ceiling.		N/A
6.101.2.1	CTS/CDS flush in the wall.		N/A
6.101.2.2	CTS/CDS flush in the ceiling.		N/A
6.101.3	CTS/CDS semi flush or surface mounted on the wall or ceiling.		P
6.101.3.1	CTS/CDS semi flush or surface mounted on the wall.		P
6.101.3.2	CTS/CDS semi flush or surface mounted on the ceiling.		N/A
6.101.3.3	CTS/CDS wall fixed and supported by the floor.		N/A
6.101.3.4	CTS/CDS wall fixed and supported by a horizontal surface other than the floor.		N/A
6.101.4	CTS/CDS mounted away from the wall or ceiling using fixing devices.		N/A
6.102	According to the prevention of contact between liquids and insulated conductors and live parts in case of CTS/CDS mounted in a skirting position and wet-treatment of floor		N/A
6.102.1	Not declared.	Not declared.	P
6.102.2	Relying completely on manufacturer's instructions restricting the installation position of the CTS/CDS.		N/A
6.102.3	Relying on manufacturer's instructions allowing all installation positions of the CTS/CDS but restricting the position of insulated conductors and live parts in CTS/CDS.		N/A

EN 50085-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
6.102.4	Relying on manufacturer's instructions allowing all installation positions of the CTS/CDS and all positions of insulated conductors and live parts in CTS/CDS.		N/A
6.103	According to the Type		P
6.103.1	Type 1 CTS/CDS.		N/A
6.103.2	Type 2 CTS/CDS (Distribution CTS/CDS).		P
6.103.3	Type 3 CTS/CDS (Installation CTS/CDS).		N/A
6.104	According to resistance to compression for CDS	CTS	N/A
6.104.1	CDS for compression 125 N.		N/A
6.104.2	CDS for compression 320 N.		N/A
6.104.3	CDS for compression 750 N.		N/A
6.104.4	CDS for compression 1 250 N.		N/A
6.104.5	CDS for compression 4 000 N.		N/A

7	MARKING AND DOCUMENTATION		P
7.1	Each system component shall be marked with		P
	- the manufacturer's or responsible vendor's name or trade mark or identification mark,		P
	- a product identification mark, which may be, for example, a catalogue number, a symbol or the like.		P
	When system components other than trunking length, ducting length and apparatus mounting device are supplied in a package, it is sufficient to mark the product identification on the smallest supplied package, the manufacturer's or responsible vendor's name or trade mark or identification mark being marked on the product.	Marking on smallest package	P
	When it is not possible to have a legible marking on small components, due to the small size of the item, it is sufficient to place these markings on the smallest supplied package.		P
	Terminals for protective earth shall be marked according to 7.4. This marking shall not be placed on screws or any other easily removable part.	No such terminals	N/A
7.2	Marking shall be durable and easily legible.		P

EN 50085-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
	Compliance is checked by inspection and for marking on the product, in addition, by rubbing the marking by hand for 15 s with a piece of cotton cloth soaked with water and again for 15 s with a piece of cotton cloth soaked with petroleum spirit.		P
	NOTE 1 Petroleum spirit is defined as the aliphatic solvent hexane with a content of aromatics of maximum 0,1 % volume, a kauri-butanol value of 29, initial boiling point of 65 °C, a dry point of 69 °C and a specific gravity of approximately 0,68 kg/l.		P
	NOTE 2 Marking may be applied, for example, by moulding, pressing, engraving, printing, adhesive labels, or water slide transfers.		P
	NOTE 3 Marking made by moulding, pressing or engraving is not subjected to the rubbing test.		P
	After the rubbing test, the marking shall be legible.		P
7.3	The manufacturer shall provide in his documentation all information necessary for the proper and safe installation and use. It shall include		P
	- components of the system,		P
	- function of the system components and their assemblies,		P
	- classification of the system in accordance with Clause 6,		P
	- for type 1 CTS/CDS the list of functions,	Type 3	N/A
	- linear impedance, in Ω/m , of trunking length or ducting length of system declared according to 6.5.1,		N/A
	- rated voltage of CTS/CDS declared according to 6.6.2,	/	N/A
	- usable cross sectional area, in mm^2 , for cables of the CTS/CDS,	640 mm^2	P
	- instructions to reach the declared classification and functions of the system. These instructions shall include the recommended installation positioning for the CTS/CDS to ensure that the declared IP classification is maintained after installation.		P

EN 50085-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
7.4	Correct symbols used		P
8	DIMENSIONS		
	There are no dimensions requirements.		
9	CONSTRUCTION		P
9.1	Sharp edges		P
	Any surface or edge shall not damage the insulated conductors or cables.		P
	Compliance is checked by inspection, if necessary after cutting the samples apart.		P
	Screws, studs or other securing devices provided shall be fitted so as not to damage the insulated conductors or cables.		P
9.2	Apparatus mounting		P
	If the CTS/CDS is provided with means for the mounting of apparatus, these means shall adequately secure this apparatus.		P
	Compliance is checked by the test of 10.5.		P
9.3	Means for protective separation and/or retention		P
	If the CTS/CDS is provided with means for the protective separation and/or retention, these means shall have adequate mechanical performance to fulfil their function.		P
	Compliance is checked by the tests of 10.2.		P
9.4	Mechanical connections		P
	Screwed connections and other mechanical connections shall withstand the mechanical stresses during installation and normal use.		P
	Screws shall be one or more of the following:		N/A
	a) ISO-metric threads,		N/A
	b) thread forming type,		N/A
	c) thread cutting type if suitable design provisions are made;		N/A
	d) threads other than a) to c) as specified by the manufacturer.		N/A

EN 50085-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
	Mechanical connections of CTS used to allow the laying in of insulated conductors or cables or relocation of an apparatus shall be intended for re-use.		P
	Compliance is checked by the tests of 9.4.1, 9.4.2 and 9.4.3 respectively.		P
9.4.1	Screws intended for re-use shall not be tightened by sudden or jerky motions.		N/A
	To test the screw it shall be tightened and removed:		N/A
	– 10 times for metal screws in engagement with a thread of non-metallic material and for screws of non-metallic material		N/A
	or		N/A
	– 5 times in all other cases.		N/A
	The test is carried out using a suitable screwdriver or spanner to apply a torque, as specified by the manufacturer. In case the manufacturer does not specify the torque, the values of Table 4 apply.		N/A
	After the test there shall be no damage that will impair the further use of the screwed connection.		N/A

Table 4	Torque values for the test of screwed connections		
	Nominal thread \varnothing (mm)	Torque for metal screws (Nm)	
			N/A

9.4.2	Mechanical connections intended for re-use other than screwed connections, shall be fitted and removed 10 times.		P
	After the test there shall be no damage to impair the further use of the mechanical connection.		P
9.4.3	Mechanical connections not intended for re-use are checked by inspection.		P
9.5	Accessible conductive parts	No such parts	N/A
	Accessible conductive parts of CTS/CDS shall comply with 9.5.1 unless they comply with 9.5.2.		N/A

EN 50085-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
9.5.1	Accessible conductive parts of CTS/CDS installed according to the manufacturer's instructions, which are likely to become live in the event of an insulation fault, shall have the provision for reliable connection to earth.		N/A
	If precautions are taken in order to prevent creepage distances and clearances from becoming less than 3 mm, even if a conductor should become loose from its terminal, the accessible conductive part is not considered likely to become live.		N/A
	Protection against electric shock in case of a fault may be omitted for accessible conductive parts which, owing to their reduced dimensions (up to approximately 50 mm x 50 mm) or their disposition, cannot be gripped or come into significant contact with a part of the human body and provided that connection with a protective conductor could only be made with difficulty or would be unreliable.		N/A
	Compliance is checked by inspection, measurement and if necessary by the appropriate test of 11.1.2 or 11.2. Before the test the samples are subjected to conditioning according to 11.1.1 respectively 11.2.2.		N/A
9.5.2	Accessible conductive parts need not have provision for connection to earth if they are insulated from live parts with supplementary or reinforced insulation used to form barriers or linings which shall be designed in such a way that:		N/A
	– they cannot be removed without being permanently damaged or,		N/A
	– they cannot be replaced in an incorrect position or,		N/A
	– if omitted, the system is rendered inoperable or manifestly incomplete.		N/A
9.6	Equipotential bonding	No such parts.	N/A
9.6.1	The manufacturer shall declare if the CTS/CDS can be used for equipotential bonding.		N/A
9.6.2	If there is a provision for bonding, compliance is checked by the tests of 11.1.2. Before the test the sample is subjected to conditioning of 11.1.1.		N/A

EN 50085-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
9.7	Access to live parts		N/A
9.7.1	CTS/CDS shall be so designed that when they are installed and fitted with apparatus and/or other electrical equipment as in normal use, live parts are not accessible.		N/A
	Compliance is checked by inspection and, if necessary, by the tests of 9.7.2, 9.7.3 and 9.7.4 on the sample installed and fitted with apparatus and/or other electrical equipment as in normal use.		N/A
	The tests are carried out after all parts removable without tools are removed.		N/A
9.7.2	The test probe B of EN 61032:1998 is applied in every possible position, an electrical indicator with a voltage not less than 40 V and not more than 50 V being used to show contact with the relevant part.		N/A
9.7.3	Non-metallic system components and composite system components are subjected to the following additional test, which is carried out at the temperature declared according to Table 3.		N/A
	The sample is subjected for 1 min to a force of 50 N applied through the tip of test probe 11 of EN 61032:1998.		N/A
	This test probe 11 with an electrical indicator as described in 9.7.2 is applied to all places where yielding of insulating material could impair the safety of the system but is not to be applied to knockouts, membranes and the like.		N/A
	During this test system components and their associated fixing devices shall not deform to such an extent that live parts can be touched with the test probe 11.		N/A
9.7.4	Knockouts are subjected for 1 min to a force of 10 N applied through the tip of test probe 11 of EN 61032:1998.		N/A
	During this test, knockouts shall not break.		N/A
9.8	Inlet openings	No such parts.	N/A
	Inlet openings, if any, shall allow the introduction of conduits and/or the like, or the protective covering of the cable at least 1 mm into the system component, in order to maintain the mechanical protection.		N/A

EN 50085-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
	Inlet openings for conduits shall be capable of accepting conduit sizes according to EN 60423:1994.		N/A
9.9	Membranes	No such parts.	N/A
9.9.1	Membranes and the like which prevent access to live parts shall withstand the mechanical stresses occurring in normal use.		N/A
	The manufacturer shall declare the dimensions of the cables which may be installed in the entry membranes.		N/A
9.9.2	Membranes are tested when assembled in the system. The sample is placed for 2 h in a heating cabinet the temperature being maintained at the value declared according to Table 3. Immediately after this period a force of 30 N is applied for 5 s to various regions of the membrane through the tip of test probe 11 of EN 61032:1998. For membranes likely to be subjected to an axial pull force in normal use, an axial pull force of 30 N is applied for 5 s.		N/A
	During this test, the membranes shall not deform to such an extent that live parts become accessible and the membranes shall not become detached.		N/A
9.9.3	Entry membranes shall allow the introduction of cables into the system at the minimum installation temperature declared according to Table 2.		N/A
	Compliance is checked by the test of 9.9.4.		N/A
9.9.4	The system component shall be fitted with entry membranes which have not been subjected to any ageing treatment, those without openings being suitably pierced.		N/A
	The sample is then kept for 2 h in a refrigerator at the temperature declared according to Table 2.		N/A
	After this period the sample is removed from the refrigerator, and immediately afterwards, while the sample is still cold, it shall be possible to introduce through the entry membranes without undue force, cables having the largest outside dimension as declared.		N/A

EN 50085-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
9.9.5	After the tests of 9.9.2 and 9.9.4, the membranes shall show no cracks or similar damages visible to normal or corrected vision without magnification that are likely to impair safety.		N/A
9.10	Cable restrainer		N/A
	Cable restrainers, if any, shall relieve conductors from strain in terminals or terminations by resisting the pull force on cable or insulated conductors.		N/A
	It shall be clear or indicated in the manufacturer's instructions how the relief from strain is intended to be effected.		N/A
	Cable restrainers shall		N/A
	<ul style="list-style-type: none"> be suitable for the different types of cable and the different types and number of insulated conductors according to the manufacturer's instructions, 		N/A
	<ul style="list-style-type: none"> be such that at least part of it is integral with or permanently fixed to a system component, 		N/A
	<ul style="list-style-type: none"> not use makeshift method such as tying cable or insulated conductor in a knot or tying the ends with string, 		N/A
	<ul style="list-style-type: none"> not impair electrical safety. 		N/A
	Compliance is checked by inspection and by the following test.		N/A
	The cable restrainer is fitted with a cable of the smallest outside dimension or with insulated conductors of the smallest outside dimension for which it is intended. The screws, if any, are tightened with a torque as specified by the manufacturer. Where the manufacturer does not specify the torque the values of Table 4 apply.		N/A
	An axial pull force of $20 \text{ N} \pm 1 \text{ N}$ is applied for $60 \text{ s} \pm 5 \text{ s}$ to the cable or to each insulated conductor.		N/A
	The test is then repeated with the cable restrainer fitted with a cable of the largest outside dimension or with insulated conductors of the largest outside dimension for which it is intended.		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
	After any of the tests:		N/A
	<ul style="list-style-type: none"> the longitudinal displacement of the cable or any insulated conductor in the restrainer shall not be more than 2 mm and 		N/A
	<ul style="list-style-type: none"> electrical safety shall not be impaired. 		N/A
9.11	Internal protective partition		
	Under consideration.		
9.12	Cable anchorage	No such parts.	N/A
	Cable anchorage, if any, shall relieve conductors from strain in terminals or terminations by resisting the pull and twist forces on cable.		N/A
	It shall be clear or indicated in the manufacturer's instructions how the relief from strain is intended to be effected.		N/A
	Cable anchorage shall:		N/A
	<ul style="list-style-type: none"> be suitable for the different types of cable according to the manufacturer's instructions; 		N/A
	<ul style="list-style-type: none"> be such that at least part of it is integral with or permanently fixed to a system component; 		N/A
	<ul style="list-style-type: none"> not use makeshift method such as tying cable in a knot or tying the ends with string; 		N/A
	<ul style="list-style-type: none"> not impair electrical safety; 		N/A
	Compliance is checked by inspection and by the following test.		N/A
	The effectiveness of the cable anchorage is checked by means of apparatus as shown in Figure 8 and Figure 9.		N/A
	The cable anchorage is fitted with a cable of the smallest outside dimension for which it is intended. The screws, if any, are tightened with a torque as specified by the manufacturer. Where the manufacturer does not specify the torque the values of Table 4 apply.		N/A

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Clause	Requirement - Test	Result - Remark	Verdict

	The cable is then subjected 50 times for 1 s to a pull force as specified in Table 5 and immediately afterwards the cable is subjected to a torque not less than the relevant value specified in Table 5 for 15 s \pm 1 s applied as near as practicable to the cable entry.		N/A
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Table4	Minimum outside dimension of cable (mm)	Force (N)	Torque (Nm)		
					N/A
	The test is then repeated with the cable anchorage fitted with a cable of the largest outside dimension for which it is intended.				N/A
	After any of the tests:				N/A
	<ul style="list-style-type: none"> the longitudinal displacement of the cable in the cable anchorage shall not be more than 2 mm and 				N/A
	<ul style="list-style-type: none"> the cable shall not have turned in the cable anchorage more than 2 revolutions and 				N/A
	<ul style="list-style-type: none"> electrical safety shall not be impaired. 				N/A

9.101	Assembling		P
	System components shall fit correctly.		P
9.102	Contact between liquids and insulated conductors and live parts	Not declared	N/A
	CTS/CDS declared according to 6.102.2, 6.102.3 or 6.102.4 shall prevent liquids coming into contact with insulated conductors and live parts during wet-treatment of floor.		N/A
	Compliance is checked by inspection and measurement when the area intended to accommodate insulated conductors is at least 10 mm above the floor due to		N/A
	<ul style="list-style-type: none"> design, or 		N/A
	<ul style="list-style-type: none"> manufacturer's instructions restricting the installation position of the CTS/CDS, or 		N/A
	<ul style="list-style-type: none"> manufacturer's instructions allowing all installation positions of the CTS/CDS but restricting the position of insulated conductors and live parts in CTS/CDS. 		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
	In all other cases compliance is checked by the following test carried out on an assembly or assemblies.		N/A
	An assembly is made of one or more trunking lengths or ducting lengths with the relevant system component, if any, to fulfil the various functions of the system and prepared according to the manufacturer's instructions. More than one assembly may be necessary to fulfil the various functions of the system. In each direction, the length L of trunking length or ducting length coming out of the functional area associated with the function of the system is as long as the width W of the trunking length or ducting length, or 250 mm, whichever is the greater. The tolerance of L is ± 25 mm.		N/A
	The assembly is fixed according to manufacturer's instructions to an appropriate support. The ends of the assembly are closed according to manufacturer's instructions.		N/A
	A (5 \pm 1) mm wide strip of absorbent paper is placed on the lowest internal surface of CTS/CDS intended for the accommodation of insulated conductors. If this lowest internal surface is horizontal, the strip is placed approximately on the centre line of the surface. The absorbent paper has a water absorptive height longitudinal of 75 mm per 10 min according to EN 20535 and a basis weight of 250 g per m ² according to EN ISO 536. The length of the strip is such that it covers the whole length of the assembly.		N/A
	Provisions are made such that the absorbent paper makes contact with the lowest internal surface of CTS/CDS intended for the accommodation of insulated conductors along the whole length of the assembly. These provisions shall not influence absorption by the paper.		N/A
	The assembly is carefully placed in a tray containing water to simulate a (10 , 0/-1) mm height of water on the floor.		N/A
	After (15 \pm 1) s the assembly is removed from the tray and the exterior of the assembly is immediately wiped.		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
	After careful removal of the access covers, if any, the absorbent paper is removed. Within 5 min after the removal of the assembly from the tray, the lengths of the wet areas are measured on the centre line of the strips.		N/A
	For each tested function, the length of any wet area in the strip of absorbent paper shall be shorter than 50 mm.		N/A

10	MECHANICAL PROPERTIES		P
10.1	Mechanical strength		P
	CTS/CDS shall have adequate mechanical strength.		P
	Compliance is checked by the tests of 10.2 to 10.5.		P
10.2	Cable support test		P
10.2.1	General test conditions		P
	Each test is made on one new sample of trunking length or ducting length having a length of 250 mm \pm 5 mm.		P
	Trunking length or ducting length having a usable cross sectional area lower than or equal to 500 mm ² do not need to be tested.		P
	The sample is securely fixed, using 10 mm external diameter flat metallic washers and metallic screws to a rigid smooth support such as a plywood board 16 mm thick. When 10 mm external diameter is too large, a suitable smaller washer is used. Fixing(s) are positioned at (200 \pm 5) mm centres along the length of the sample.		P
	Within the width of the sample the fixing is made as close as possible to each side wall. For triangular or similar cross section CTS/CDS, the sample is fixed only to the wall.		P
	If the manufacturer's instructions require the use of cable retainers, the test is carried out using the cable retainers and if possible symmetrically fixed along the length.		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
	The sample is subjected to an evenly distributed load of 1,0 g per mm ² of the declared usable area for cables, per metre length. The load is distributed between the compartments proportionally to the declared usable area. The load consists of copper insulated conductors or cables complying with class 5, Table 3 of HD 383 S2 or flexible insulated conductors or cables of similar mass per meter.		P
	To allow for settlement of the sample, a pre-load of 10 % of the load is applied and removed after 5 min ± 30 s. The measurement apparatus is then calibrated to zero. No pre-load is necessary for CTS/CDS classified in accordance with 6.101.3.3.		P
	Insulated conductors or cables of 25 mm ² nominal cross section are placed in the sample so that approximately 50 % of the load is achieved. If the dimensions of the compartment do not permit the accommodation of 25 mm ² insulated conductor or cable, 2,5 mm ² nominal cross section insulated conductors or cables are used. Insulated conductors or cables of 2,5 mm ² nominal cross section are placed on top of the larger cables to achieve the total load within a tolerance of ± 5 g.		P
	Non metallic and composite trunking lengths or non metallic and composite ducting lengths are tested at the maximum application temperature declared by the manufacturer according to Table 3.		P
	The load is applied for 120 min (+5/0) min. After this period the deflection is measured at approximately the middle of the length.		P
10.2.2	Test for wall fixed CTS/CDS		P
	This test applies to CTS/CDS declared according to 6.101.3.1 and/or 6.101.3.3.		P
	The trunking length or ducting length is mounted as shown in Figure 102, following 10.2.1.		P
	The vertical deflection F is measured		P
	<ul style="list-style-type: none"> for rectangular or similar cross section CTS/CDS, on the lower edge as shown in Figure 102a, 		P
	<ul style="list-style-type: none"> for non rectangular cross section CTS/CDS, as shown in Figure 102b. 		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
	The vertical deflection F shall not exceed 10 % of the external horizontal dimension X, with a maximum of 10 mm. This deflection criteria does not apply to CTS/CDS classified according to 6.101.3.3.		P
	Access covers of CTS, non removable cable separators, cable retainers and the like shall remain adequately fixed so as to fulfil their intended function.		N/A
10.2.3	Additional test for wall fixed CTS/CDS with removable separator		N/A
	This test applies to CTS/CDS provided with removable separator and declared according to 6.101.3.1 and/or 6.101.3.3.		N/A
	The trunking length or ducting length is mounted as shown in Figure 103, with one separator inserted in the most unfavourable position, following 10.2.1.		N/A
	Access covers of CTS, removable cable separators, cable retainers and the like shall remain adequately fixed so as to fulfil their intended function.		N/A
10.2.4	Test for ceiling fixed CTS/CDS		N/A
	This test applies to CTS/CDS declared according to 6.101.3.2 and/or 6.101.2.2.		N/A
	The trunking length or ducting length is mounted as shown in Figure 104, following 10.2.1.		N/A
	The vertical deflection F is measured		N/A
	<ul style="list-style-type: none"> for rectangular or similar cross section CTS/CDS, on the lower surface as shown in Figure 104a, 		N/A
	<ul style="list-style-type: none"> for non rectangular cross section CTS/CDS, as shown in Figure 104b. 		N/A
	The vertical deflection F shall not exceed 10 % of the external horizontal dimension X, with a maximum of 10 mm.		N/A
	Access covers of CTS, non removable cable separators, cable retainers and the like shall remain adequately fixed so as to fulfil their intended function.		N/A
10.2.5	Additional test for ceiling fixed CTS/CDS with removable separator		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
	This test applies to CTS/CDS provided with removable separator and declared according to 6.101.3.2 and/or 6.101.2.2.		N/A
	The trunking length or ducting length is mounted as shown in Figure 105, with one separator inserted in the most unfavourable position, following 10.2.1.		N/A
	Access covers of CTS, removable cable separators, cable retainers and the like shall remain adequately fixed so as to fulfil their intended function.		N/A
10.3	Impact test		P
10.3.1	Impact test for storage and transport		P
10.3.1.1	The test is carried out on samples of trunking lengths or ducting lengths each 250 mm ± 5 mm long.		P
	Before the test, non-metallic system components and composite system components are aged at the temperature declared according to Table 3 for 168 h continuously.	60°C, 168h	P
10.3.1.2	The test apparatus consists basically of a hammer which falls freely from rest through a vertical height on to an intermediate part placed on the sample held in a horizontal plane.		P
	The following conditions are also complied with:		P
	– the fall of the hammer is along a guideway, for example a tube, with negligible braking,		P
	– the guideway does not rest on the sample,		P
	– the mass of the hammer is 0,5 kg + 0,005 / 0 kg and the fall height is 100 mm ± 1 mm,		P
	– the intermediate part is made in a steel 20 mm diameter cylinder. Its lower surface has a 300 mm bending radius and its mass is 100 g ± 5 g.		P
	The samples are placed in a refrigerator at the temperature declared according to Table 1.	-5°C, 2h	P
10.3.1.3	After 2 h, each sample is, in turn, removed from the refrigerator and immediately placed in position in the test apparatus.		P

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Clause	Requirement - Test	Result - Remark	Verdict

	At 12 s \pm 2 s after the removal of the sample from the refrigerator the hammer is allowed to fall so that an impact is applied as far as possible perpendicular to the region likely to be the weakest accessible region. Compliance with impact applied before 10 s provides also compliance with this test of the standard.		P
	This test is not applied to knockouts, membranes and the like, and within 50 mm of each end.		P
10.3.1.4	After the test the samples shall show no signs of disintegration nor shall there be any cracks or similar damages visible to normal or corrected vision without magnification that are likely to impair safety.		P
10.3.2	Impact test for installation and application		P
	The test is carried out with the impact test values declared according to Table 6 and at the temperature declared according to Table 2.		P

Table 6	Resistance to impact classification	Equivalent mass (kg)	Fall height (mm) \pm 1 %		
	Impact 1J	0,25	400		P
	The test is described in the appropriate Part 2.				P
	In addition, the manufacturer may declare the CTS/CDS IK code according to EN 50102 following Annex C (normative).				N/A

10.3.2.10 1	The test is carried out on an assembly made of one or more trunking lengths or ducting lengths with the relevant system component, if any, to fulfil the various functions of the system and prepared according to the manufacturer's instructions. More than one assembly may be necessary to fulfil the various functions of the system. In each direction, the length L of trunking length or ducting length coming out of the functional area associated with the function of the system is as long as the width W of the trunking length or ducting length, or 250 mm, whichever is the greater. The tolerance of L is \pm 25 mm.		P
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Clause	Requirement - Test	Result - Remark	Verdict
	The samples are mounted on a rigid smooth support such as a plywood board 16 mm thick, with a 50 mm minimum spacing between the assembly and the edge of the support.		P
	Before the test non metallic system components and composite components are aged at a temperature declared according to Table 3 for (168±4) h continuously.	60°C	P
10.3.2.10	The impact test apparatus according to Clause 4 of EN 60068-2-75:1997 is mounted on a solid wall or structure providing sufficient support.		P
	The samples are placed in a cabinet at a temperature declared according to Table 2.		P
10.3.2.10 3	After 2 h, each sample is, in turn, removed from the cabinet and immediately placed in position in the impact test apparatus.		P
	At (12 ±2) s after the removal of the sample from the cabinet the hammer is allowed to fall so that an impact is applied as far as possible perpendicular to the accessible region of the sample likely to be the weakest. Compliance with impact applied before 10 s provides also compliance with this test of the standard.		P
	No impact is applied to knockouts, membranes and the like.		P
	No impact is applied within 50 mm of any open extremity of the sample.		P
	Instead of placing the samples in a cabinet and applying the impact at (12 ±2) s after the removal of the sample from the cabinet, it is allowed to apply the impact in a climatic chamber at a temperature declared according to Table 2 on samples placed at this temperature at least for 2 h.		N/A
	Compliance in the climatic chamber is sufficient. In case of failure in the climatic chamber, compliance using the cabinet provides compliance with the standard.		N/A
10.3.2.10 4	After the test		P
	<ul style="list-style-type: none"> the assemblies shall show no cracks or similar damage visible to normal or corrected vision without magnification and 		P

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Clause	Requirement - Test	Result - Remark	Verdict
	<ul style="list-style-type: none"> the assemblies shall remain intact 		P
	such that safety is not impaired.		P
	In case of doubt, the test of 14.1.3 is carried out on the impacted samples to check that the declared degree of protection against access to hazardous parts is maintained. The declared degree of protection against access to hazardous parts is either the additional letter directly declared by the manufacturer according 6.7.3, if any, or the degree of protection against access to hazardous parts indirectly declared by the manufacturer according 6.7.1.		P
10.4	Linear deflection test		N/A
	This test is only applicable to CTS/CDS declared according to 6.101.4.		N/A
	Compliance is checked by the following test.		N/A
	The test is carried out on a test sample made of one trunking length or ducting length or two jointed trunking lengths or ducting lengths complying with the following conditions:		N/A
	<ul style="list-style-type: none"> the length of the assembly is the maximum distance between supports (D) according to the manufacturer's instructions increased by 200 mm + 100 mm / 0, 		N/A
	<ul style="list-style-type: none"> unless otherwise specified in the manufacturer's instructions, the joint is positioned at mid span. 		N/A
	The test sample is placed on two parallel supports which are horizontal and level, with a distance D between supports. If no supports are part of the CTS/CDS, supports with a width of (45 ±5) mm are used.		N/A
	If no manufacturer's instructions for the orientation of the test sample are provided, the test is carried out in the most unfavourable orientation.		N/A
	If no manufacturer's instructions for the fixing to the supports are provided, the test sample is not fixed to the support.		N/A
	The test sample is subjected to an evenly distributed load of 1,0 g/mm ² per metre length of the declared usable area for cables.		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
	The load consists of copper cables complying with class 5 Table 3 of HD 383 S2 or flexible insulated conductors or cables of similar mass per meter which are placed in the sample in the following manner as shown in Figure 108.		N/A
	Cables of 25 mm ² nominal cross section are placed in the samples so that approximately 50 % of the load is achieved.		N/A
	Cables of 2,5 mm ² nominal cross section are placed on top of the larger cables to achieve the total load within a tolerance of ±100 g.		N/A
	To allow for settlement of the sample, a pre-load of 10 % of the load is applied and removed after approximately 5 min. The measurement apparatus is then calibrated to zero.		N/A
	After 1 h (0/ + 5 min), with the load still applied, the deflection is measured at mid span at the middle of the lower surface.		N/A
	The deflection shall not exceed 1 % of the distance between supports.		N/A
	Access covers of CTS and cable separators shall remain adequately fixed so as to fulfil their intended function and safety shall not be impaired.		N/A
	In case of doubt, the test of 14.1.3 is carried out on the test sample with the load still applied, to check that the declared degree of protection against access to hazardous parts is maintained. The declared degree of protection against access to hazardous parts is either the additional letter directly declared by the manufacturer according 6.7.3, if any, or the degree of protection against access to hazardous parts indirectly declared by the manufacturer according 6.7.1.		N/A
10.5	External load test		P
10.5.1	Fixing test for apparatus mounting of socket outlets	No such parts	N/A

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Clause	Requirement - Test	Result - Remark	Verdict
	An apparatus-mounting device is fitted on a sample of the relevant system component, in the middle of its length unless otherwise stated in the manufacturer's instructions. When the relevant system component is a trunking length or a ducting length, the sample is 250 mm \pm 5 mm long or 100 mm \pm 5 mm longer than the apparatus mounting device, whichever is the greater.		N/A
	If the results of the tests are dependent on the temperature the tests are carried out at a temperature of 60 °C \pm 2 °C.		N/A
	A pull and a press force of 1,5 times the maximum withdrawal force of the plug is applied in turn to the apparatus fixing of the apparatus mounting device for 1 min in the most unfavourable position and direction within an angle of 45° to 90° from the front surface.		N/A
	The maximum withdrawal force for the plug is taken from the relevant standard. When there is no relevant standard, a maximum withdrawal force of 50 N is used.		N/A
	After the test, electrical safety shall not be impaired. In case of doubt, the test of 14.1.3 shall be carried out on the assembly to check that the declared degree of protection against access to hazardous parts is maintained. The declared degree of protection against access to hazardous parts is either the additional letter directly declared by the manufacturer according 6.7.3, if any, or the degree of protection against access to hazardous parts indirectly declared by the manufacturer according to 6.7.1.		N/A
	Immediately after this test, the apparatus mounting device is subjected to a torque of 3,0 Nm \pm 0,2 Nm, clockwise and anticlockwise. The duration of the test is 1 min in each direction.		N/A
	During the test, the apparatus mounting device shall not turn more than an angle of 15° from its initial position and after the test electrical safety shall not be impaired.		N/A
10.5.2	Fixing test for apparatus mounting other than socket outlets		P
	For other apparatus, only a pull and press force test is carried out according to the test of 10.5.1 with a force of 50 N \pm 2 N.		P

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Clause	Requirement - Test	Result - Remark	Verdict
10.6	System access cover retention		N/A
	Access cover of system components of systems classified according to 6.9.2 shall not be capable of being opened without a tool.		N/A
	Compliance is checked by the following test.		N/A
	Before the test, non-metallic system components and composite system components are aged at the temperature declared according to Table 3 for 168 h continuously.		N/A
	The system component is firmly fixed and the access cover fitted.		N/A
	Without the use of a tool, all reasonable effort shall be made to open the access cover manually.		N/A
	After the test, the access cover shall remain secured.		N/A
10.101	Compression test for CDS	CTS	N/A
	CDS shall have adequate resistance to compression to ensure that insulated conductors or cables can be drawn in.		N/A
	The test is carried out on a ducting length (250 ± 5) mm long. The sample is positioned in its most unfavourable stable position on a flat and horizontal steel support.		N/A
	The diameter of the largest circle which is inscribed inside the sample is measured before the test.		N/A
	An uniformly increasing compression force reaching the values according to 6.104 with a tolerance of (+ 4 %, 0) within (30 ± 3) s is applied through a steel cube of (50 ± 0,5) mm with an edge radius of approximately 1 mm. The cube is placed approximately in the middle of the length of the sample and in the most unfavourable position in the width of the sample (Figure 109).		N/A
	The force is maintained during (60 ± 2) s then the force and the cube are removed.		N/A
	15 min after removal, the diameter of the largest circle which is inscribed inside the sample is measured again.		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
	The difference between diameters shall be less than 10 % of initial diameter measured before the test.		N/A
	Compliance with diameter measurement made before 15 min also provides compliance with this test of the standard.		N/A
11	ELECTRICAL PROPERTIES		P
11.1	Electrical continuity		N/A
	CTS/CDS declared according to 6.5.1 shall have adequate conductivity.		N/A
	Compliance is checked by the tests of 11.1.2 carried out after conditioning according to 11.1.1 on sample arrangements having a minimum length of 1m at middle line, each made of one or two trunking lengths or ducting lengths with the relevant system component, if any.		N/A
	Where electrical connections include screwed connections, the screwed connections are tightened by applying the torque specified by the manufacturer. In case the manufacturer does not specify the torque, 2/3 of the values of Table 4 apply.		N/A
11.1.1	Preparation and conditioning		N/A
	All grease is removed from the parts to be tested, by cleaning with white spirit with a kauri-butanol value of 35 ± 5 . The samples are then immersed for 10 min in a 10 % solution of ammoniumchloride in water at a temperature of $20 \text{ °C} \pm 5 \text{ °C}$. Without drying, but after shaking off any drops, the samples are then placed for 10 min in a box containing air saturated with moisture at a temperature of $20 \text{ °C} \pm 5 \text{ °C}$.		N/A
	The samples shall then be dried for 10 min in a heating cabinet at a temperature of $100 \text{ °C} \pm 5 \text{ °C}$ and are left at room temperature for 24 h.		N/A
11.1.2	Electrical impedance tests		N/A
	A current derived from an a.c. source having a no-load voltage not exceeding 12 V and equal to $25 \text{ A} \pm 1 \text{ A}$ at the nominal frequency 50 Hz is passed through the four sample arrangements of 11.1.2.1 to 11.1.2.4, and the voltage drop is measured:		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
11.1.2.1	Impedance of ducting length or trunking length		N/A
	The test is carried out on one or more of the following samples according to the manufacturer's declaration:		N/A
	– ducting length;		N/A
	– base of trunking length;		N/A
	– access cover of trunking length;		N/A
	– trunking length.		N/A
	The voltage drop ΔV is measured between two convenient points as shown in Figure 6a. The impedance Z_1 is calculated using the following formula:		N/A
	$Z_1 = \Delta V / (I \times d_1) (\Omega/m)$		N/A
	Z_1 shall not be greater than the declared value.		N/A
11.1.2.2	Impedance of a joint		N/A
	The test is carried out on the following samples:		N/A
	– two assembled trunking lengths or assembled ducting lengths;		N/A
	– trunking length or ducting length assembled with a different system component.		N/A
	The voltage drop ΔV is measured as shown in Figure 6b between two convenient points each on one side of the joint and separated by distance of at least 50 mm from the coupling area. The impedance Z_2 is calculated using the following formula:		N/A
	$Z_2 = \Delta V / I - d_2 \times Z_1 (\Omega)$		N/A
	where Z_1 is the impedance of the relevant ducting length or trunking length as calculated in 11.1.2.1;		N/A
	Z_2 shall not be greater than 50 m Ω .		N/A
11.1.2.3	Impedance of connection between trunking base and access cover		N/A
	If the manufacturer declares that the system provides appropriate electrical continuity between the base and access cover for good earthing then the following test is carried out on one of the following samples:		N/A

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Clause	Requirement - Test	Result - Remark	Verdict
	– one access cover having a length equal to the smallest length of access cover allowed by the manufacturer's instruction mounted on a base as long as the access cover but at least 100 mm long;		N/A
	– system component.		N/A
	The voltage drop ΔV is measured as shown in Figure 6c between both sides of the connection. The impedance Z_3 is calculated using the following formula:		N/A
	$Z_3 = \Delta V / I$ (Ω)		N/A
	Z_3 shall not be greater than 50 m Ω .		N/A
11.1.2.4	Impedance of the connection of the earthing terminal or termination		N/A
	The test is carried out on system components fitted or intended to be fitted with earthing terminal or termination.		N/A
	The voltage drop ΔV is measured as shown in Figure 6d between the earthing terminal or termination and a point separated by a distance d_3 of 10 mm to 20 mm from the edge of the earthing terminal or termination along the line of current flow. The impedance Z_4 is calculated using the following formula:		N/A
	$Z_4 = \Delta V / I$ (Ω)		N/A
	Z_4 shall not be greater than 50 m Ω .		N/A
11.2	Electrical insulation		N/A
11.2.1	Solid insulation		N/A
	System components, which form part of the enclosure, of CTS/CDS declared according to 6.6.2 shall be capable of withstanding electrical stress, which is likely to occur.		N/A
	Internal protective partitions, declared by the manufacturer as providing supplementary insulation, shall be capable of withstanding electrical stress, which is likely to occur.		N/A
	Compliance is checked by the tests according to 11.2.3 and 11.2.4 using the same sample, after conditioning and preparation according to 11.2.2.		N/A

EN 50085-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
	For trunking lengths and ducting lengths the samples are 250 mm ± 5 mm long. Other system components are tested as supplied. Where internal protective partitions are declared by the manufacturer as providing supplementary insulation, the solid insulation is tested in the same way as system components forming part of the enclosure.		N/A
11.2.2	Conditioning and preparation		N/A
	The humidity treatment is carried out in a humidity cabinet with a relative humidity between 91 % and 95 % at a temperature t maintained within ± 1 °C of any convenient value between 25 °C and 30 °C.		N/A
	Before being placed in the humidity cabinet, the samples are brought to a temperature between t and t + 4 °C. This may be achieved by keeping them at this temperature for at least 4 h before the humidity treatment.		N/A
	The samples are kept in the cabinet for 120 h.		N/A
	Immediately after conditioning, two conductive foils used as electrodes are applied, one to the outer surface and one to the inner surface of the sample to provide an area of overlap not less than 2 500 mm ² . When 2 500 mm ² cannot be achieved, the maximum possible area of overlap is used.		N/A
	The foils are pushed into corners and the like with a maximum force of 10 N so as to provide good contact with the surface, using the test probe 11 of EN 61032, if necessary after cutting the sample.		N/A
	A distance of at least 2 mm from edges and openings is maintained in order to prevent short circuit between the electrodes through the air or along the surface of the sample.		N/A
11.2.3	Insulation resistance test		N/A
	The insulation resistance is measured by applying between the electrodes a d.c. voltage of 500 V ± 25 V. The measurement is made 60 s (+ 10/0) s after the application of the voltage. The insulation resistance shall be not less than 100 MΩ.		N/A
11.2.4	Dielectric strength test		N/A

EN 50085-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
	Immediately after the test of 11.2.3, a voltage of $(2 U_n + 1\,000)$ V, where U_n is the rated voltage, of substantially sine-wave form and having a nominal frequency of 50 Hz, is then applied between electrodes.		N/A
	Initially not more than half the voltage is applied and this is raised to the test voltage as rapidly as possible without transient overvoltage. The voltage is maintained for 5 s (+ 1/0) s.		N/A
	The high-voltage transformer used for the test shall be so designed that, when the output terminals are short-circuited after the output voltage has been adjusted to the appropriate test voltage, the output current is of at least 200 mA.		N/A
	The overcurrent relay shall not trip when the output current is less than 100 mA.		N/A
	No flashover or breakdown shall occur during the test.		N/A

12	THERMAL PROPERTIES		P
12.1	Resistance to heat		P
	Non-metallic or composite system components shall have adequate resistance to heat.		P
	Compliance is checked by test of 9.7, 9.9, 10.5, 12.2 and 12.3.		P
12.2	Non-metallic or composite system components necessary to retain current-carrying parts in position are subjected to a ball-pressure test by means of the apparatus shown in Figure 5.	No components are intended to retain current-carrying parts.	N/A
	Before the test is started, the ball and the support on which the sample shall be placed are brought to the temperature specified. The part under test shall be placed on a 3 mm thick steel plate in direct contact with it so as to be supported to withstand the test force.		N/A
	When it is not possible to carry out the test on the sample, the test shall be carried out on a piece of the same material at least 2 mm thick.		N/A
	The surface of the part to be tested is placed in the horizontal position and a steel ball of 5 mm diameter is pressed against the surface with a force of 20 N.		N/A

EN 50085-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
	The test is carried out in a heating cabinet at a temperature of 125 °C ± 2 °C. After 1 h, the ball is removed from the sample which is then cooled down within 10 s to approximately room temperature by immersion in cold water.		N/A
	The diameter of the impression caused by the ball is measured and shall not exceed 2 mm.		N/A
12.3	Non-metallic or composite system components not necessary to retain current-carrying parts in position, but in contact with them and non-metallic or composite system components which retain parts of the protective earthing circuit, are subjected to the ball-pressure test of 12.2 but the test is carried out at a temperature of 70 °C ± 2 °C.	No such parts But tests were performed on three non-metallic materials respectively. Diameter of the impression < 2,0mm	N/A
13	FIRE HAZARD		P
13.1	Reaction to fire		P
13.1.1	Initiation of fire		P
	Non-metallic system components and composite system components which might be exposed to abnormal heat due to electrical effects and deterioration of which might impair the safety of the system, shall not initiate fire.		P
	Compliance is checked by the following test.		P
	The glow-wire test is performed according to Clauses 4 to 10 of EN 60695-2-11 under the following conditions:		P
	– for non-metallic or composite parts of system components necessary to retain current-carrying parts in position, by the test carried out at a temperature of 850 °C;		N/A
	– for non-metallic or composite parts of system components not necessary to retain current-carrying parts and parts of the earthing circuit in position, but in contact with them, by the test carried out at a temperature of 650°C.		P
	Small parts, such as washers, are not subjected to the test of this subclause.		P
	The tests are not carried out on parts of ceramic material.	No such parts.	N/A

EN 50085-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
	If possible, the sample should be a complete system component.		P
	If the test cannot be carried out on a complete system component, a suitable part may be cut from it for the purpose of the test.		P
	The test is carried out on one sample that is permitted to be tested at more than one point.		P
	In case of doubt, the test shall be repeated on two further samples.		P
	The test is carried out by applying the glow-wire once for 30 s ± 1 s.		P
	The sample is regarded as having passed the glow-wire test if		P
	– there is no visible flame and no sustained glowing, or if		P
	– flames or glowing of the sample extinguish within 30 s after the removal of the glow-wire.		N/A
	There shall be no ignition of the tissue paper or scorching of the board.		P
13.1.2	Contribution to fire		P
	Non metallic system components and composite system components shall not actively contribute to fire.		P
	Compliance is checked by the following test.		P
	The glow-wire test is performed according to Clauses 4 to 10 of EN 60695-2-11 on all parts under the conditions specified in 13.1.1 at a temperature of 650 °C.		P
	Parts, which have already been tested at 650 °C or 850 °C according to 13.1.1, are not tested again at this temperature.		P
	Small parts and parts in ceramic material are not tested.	No such parts.	P
13.1.3	Spread of fire		P
	Non-flame propagating CTS/CDS shall either not ignite or if ignited, shall not continue to burn when the source of ignition is removed.		P

EN 50085-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
	Non-metallic system component or metallic system component coated in paint or any other substance, which is likely to affect its resistance to flame propagation, is to be considered as a composite component and tested accordingly.		P
	Compliance is checked		P
	– for trunking lengths or ducting lengths of non-metallic or composite material by the following test,		P
	– for other system components of non-metallic or composite material by the test of 13.1.1 at a temperature of 650 °C.		P
	System components, which have already been tested at 650 °C or 850 °C according to 13.1.1, are not tested again at this temperature.		P
	The test is carried out with a length of 675 mm ± 10 mm. If partitions are not integral with the sample, a partition shall be mounted on the trunking length or ducting length. Other parts may be added to the sample at the request of the manufacturer.		N/A
	The test is performed using the burner specified in EN 60695-2-4/1.		N/A
	The sample is placed as shown in Figure 3 in a rectangular metal enclosure with an open front face as shown in Figure 4 in an area substantially free from draughts. It shall be clamped at both ends, in order to prevent distortion or movement of the sample itself under flame application conditions.		N/A
	The burner is positioned in such a way that the axis forms an angle of 45° ± 2° with the vertical one. The flame is applied to the sample so that the distance from the top of the burner tube to the sample measured along the axis of the burner tube is 100 mm ± 10 mm, and the axis of the flame intersects with the surface of the sample at a point 100 mm ± 5 mm above the upper extremity of the lower clamp. The upper extremity of the lower clamp is 500 mm ± 10 mm above the internal lower surface of the enclosure as shown in Figure 4.		N/A

EN 50085-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
	The internal lower surface of the enclosure shall be covered with a piece of soft whitewood board, approximately 10 mm thick, covered with a single layer of wrapping paper.		N/A
	The sample is subjected to the exposure of the flame for 60 s \pm 2 s.		N/A
	The sample is regarded as having passed the test if		N/A
	- it does not ignite, or if		N/A
	- in the case of ignition, the following three conditions are fulfilled:		N/A
	1) the flame extinguishes within 30 s after removal of the test flame;		N/A
	2) there is no ignition of the wrapping paper or scorching of the board;		N/A
	3) after wiping of the sample, there is no evidence of burning or charring above 50 mm below the lower extremity of the upper clamp.		N/A
13.1.4	Additional reaction to fire characteristics		
	Under consideration.		
13.2	Resistance to fire		
	Under consideration.		
14	EXTERNAL INFLUENCES		P
14.1	Degree of protection provided by enclosure		P
	CTS/CDS, when assembled and installed according to the manufacturer's instructions, shall provide adequate protection according to the classification declared by the manufacturer with a minimum of IP20.	IP40	P
	Compliance is checked by the tests of 14.1.1, 14.1.2 and 14.1.3.		P

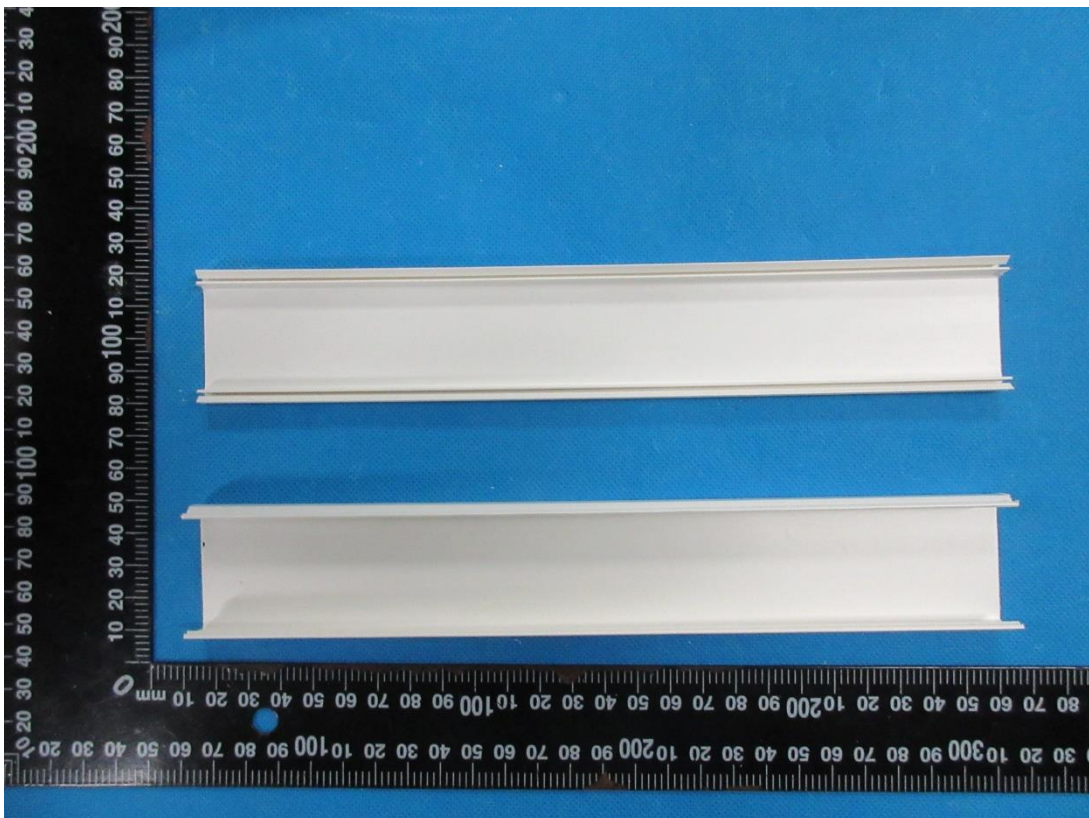
EN 50085-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
	The system declared by the manufacturer is tested in the most unfavourable installation positions according to the manufacture's instruction. Each assembly is made of one or more trunking lengths or ducting lengths of 250 mm \pm 5 mm with the relevant system component, if any, to fulfil the various functions of the system. More than one assembly may be necessary to fulfil the various functions of the system. Where necessary, the open ends of the assembly are plugged or are not part of the test.		P
	The following ageing treatment is carried out before the tests of 14.1.1, 14.1.2 and 14.1.3.		P
	The assemblies are placed in a heating cabinet for (168 \pm 4) h at the maximum application temperature as declared by the manufacturer according to Table 3.		P
	The assemblies are then removed from the cabinet and kept at room temperature for not less than 24 h.		P
	Assemblies designed for opening are opened and closed five times.		P
14.1.1	Protection against ingress of solid foreign objects		P
14.1.1.1	The assembly is tested in accordance with the appropriate test of EN 60529:1991. For numeral 5, category 2 applies.		P
14.1.1.2	The assembly tested for numeral 5 or 6 passes the test if there is no ingress of dust visible to normal or corrected vision without magnification.		N/A
14.1.2	Protection against ingress of water	IP40	N/A
14.1.2.1	The assembly is tested in accordance with the appropriate test of EN 60529:1991. For numeral 3 and 4 the oscillating tube according to Figure 4 of EN 60529:1991 is used unless the dimensions of the assembly imply using the spray nozzle according to Figure 5 of EN 60529:1991.		N/A
14.1.2.2	The assembly tested for numeral 1 and above passes the test if there is no ingress of water in hazardous quantity.		N/A
	The quantity in mm ³ is considered as non hazardous when the volume of water which has penetrated the assembly is less than:		N/A

EN 50085-2-1			
Clause	Requirement - Test	Result - Remark	Verdict
	5 x 10 ⁻³ x cross sectional area (mm ²) x [250 (mm) x number of trunking lengths or ducting lengths + the length (mm) along the centre line of the relevant system component if any].		N/A
	The measurement of the volume of water is made with a syringe after wiping of the exterior of the assembly and careful removal of the access covers, if any.		N/A
14.1.3	Protection against access to hazardous parts		N/A
14.1.3.1	The assembly is tested in accordance with the appropriate test of EN 60529:1991.		N/A
14.1.3.2	The probe shall not enter the space for the accommodation of circuits.		N/A
14.2	Protection against corrosive or polluting substances		
	Under consideration.		
15	ELECTROMAGNETIC COMPATIBILITY		N/A
	Products covered by this standard are, in normal use, passive in respect of electromagnetic influences (emission and immunity).		N/A
Annex C	CTS/CDS IK code		N/A
	The manufacturer may declare the CTS/CDS IK code according to EN 50102 under the following conditions.	No IK code is declared by the manufacturer.	N/A
	The declared code shall be IK04 at the minimum.		N/A
	The test shall be carried out at ambient temperature using pendulum hammer		N/A
	Before the test, non-metallic system components and composite system components are aged at the temperature declared according to Table 3 for 168 h continuously.		N/A
	The conditions for mounting, assembling and positioning the samples, the number of impacts and their points of application together with the test compliance are described in the appropriate Part 2 of EN 50085, in the impact test for installation and application.		N/A

Model: MIK 16/40 Solo, SAE 16_40, SE 16_40, SFW 16_40, SIE 16_40, SK 16_40, ST 16_40

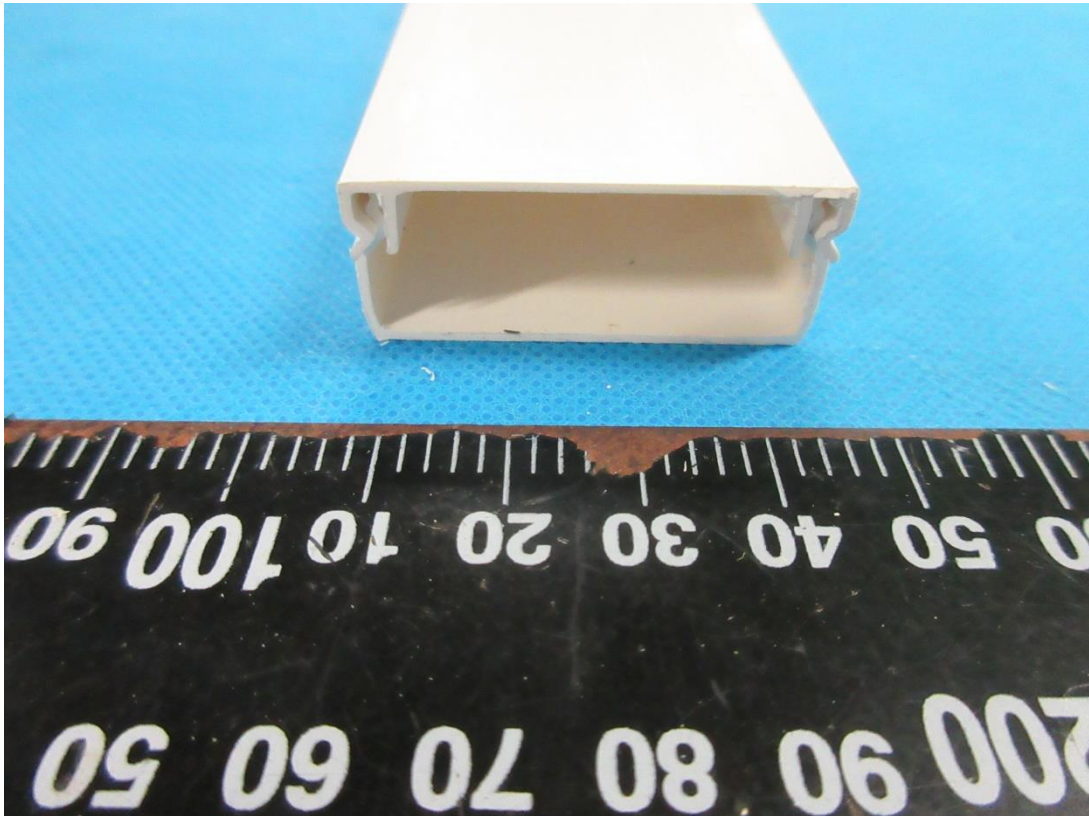


Picture 1 MIK 16/40 Solo

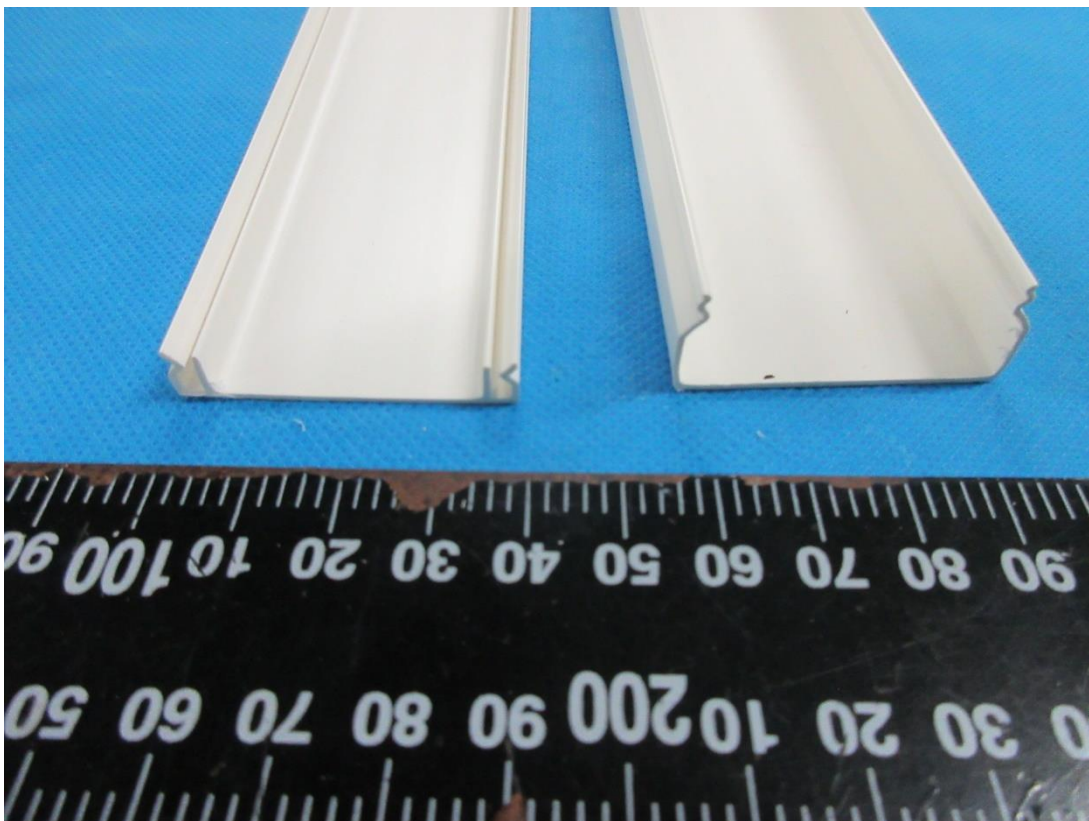


Picture 2 MIK 16/40 Solo

Model: MIK 16/40 Solo, SAE 16_40, SE 16_40, SFW 16_40, SIE 16_40, SK 16_40, ST 16_40

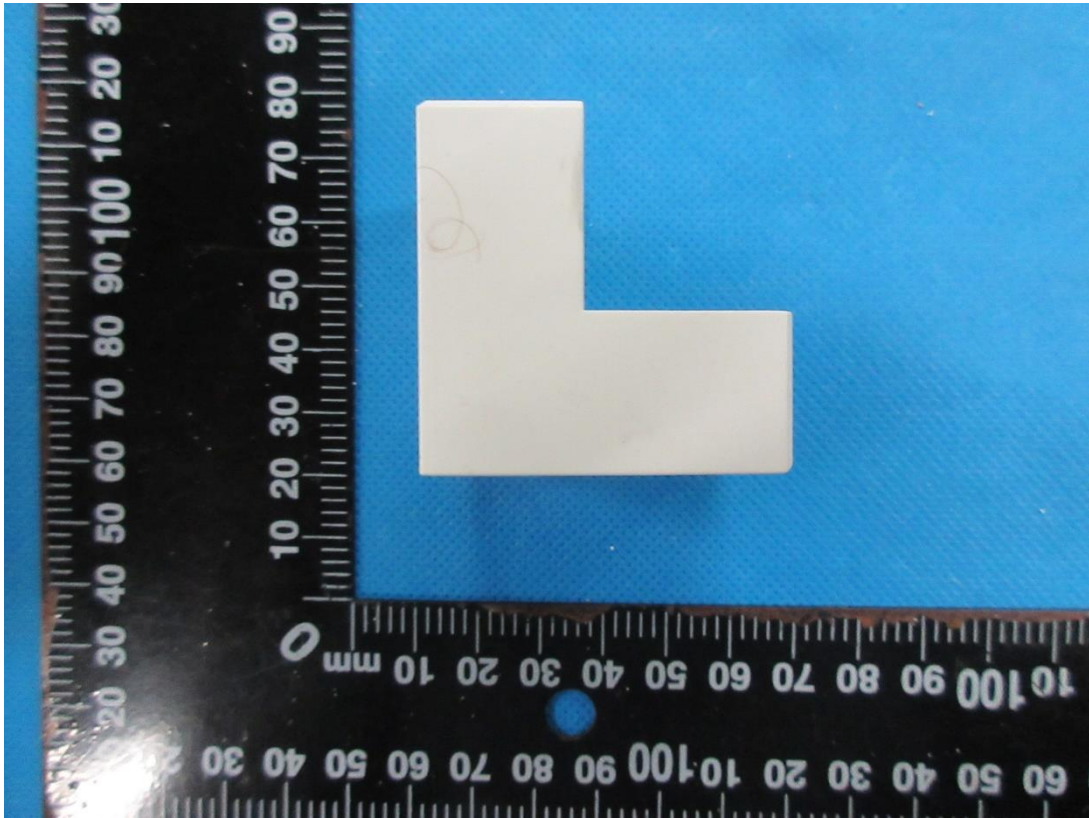


Picture 3 MIK 16/40 Solo

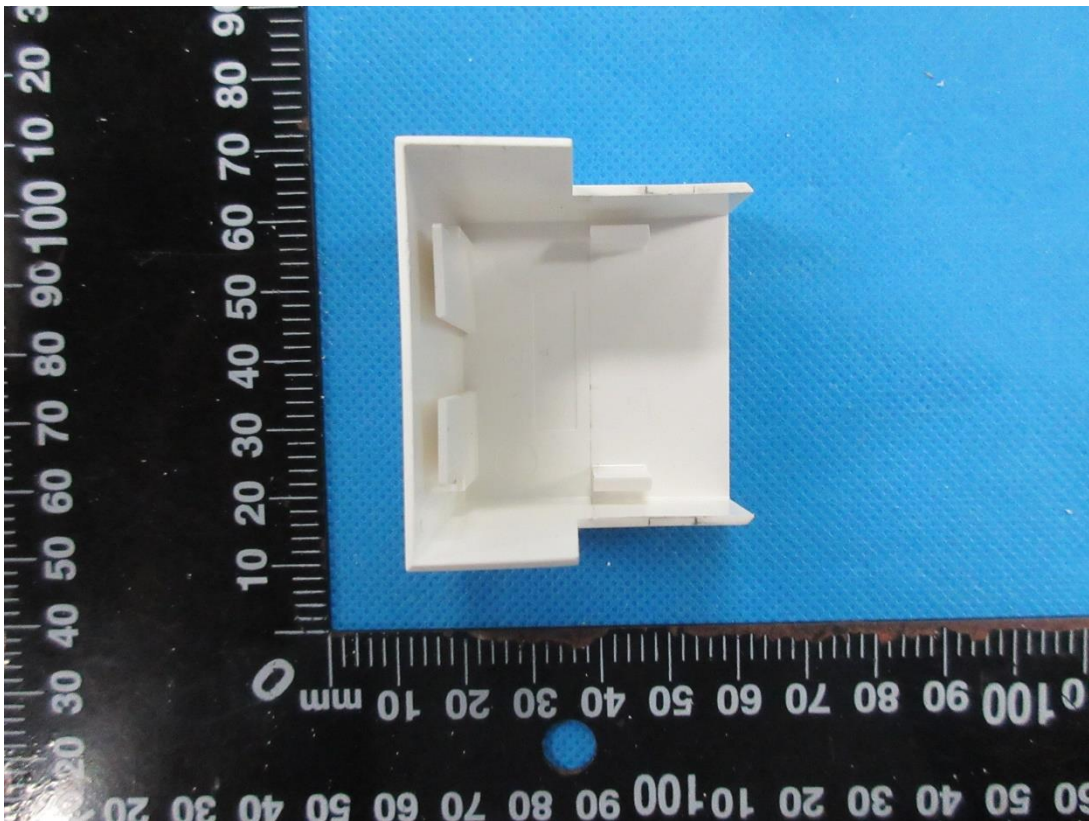


Picture 4 MIK 16/40 Solo

Model: MIK 16/40 Solo, SAE 16_40, SE 16_40, SFW 16_40, SIE 16_40, SK 16_40, ST 16_40

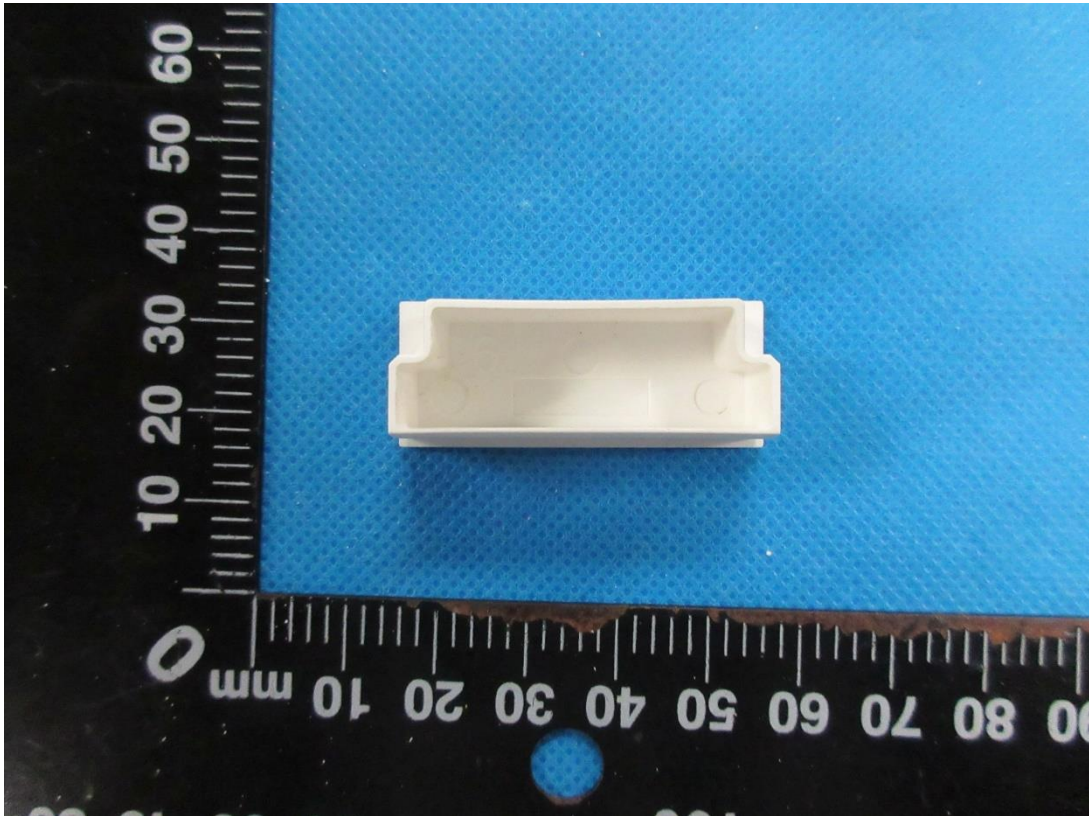


Picture 5 SAE 16_40

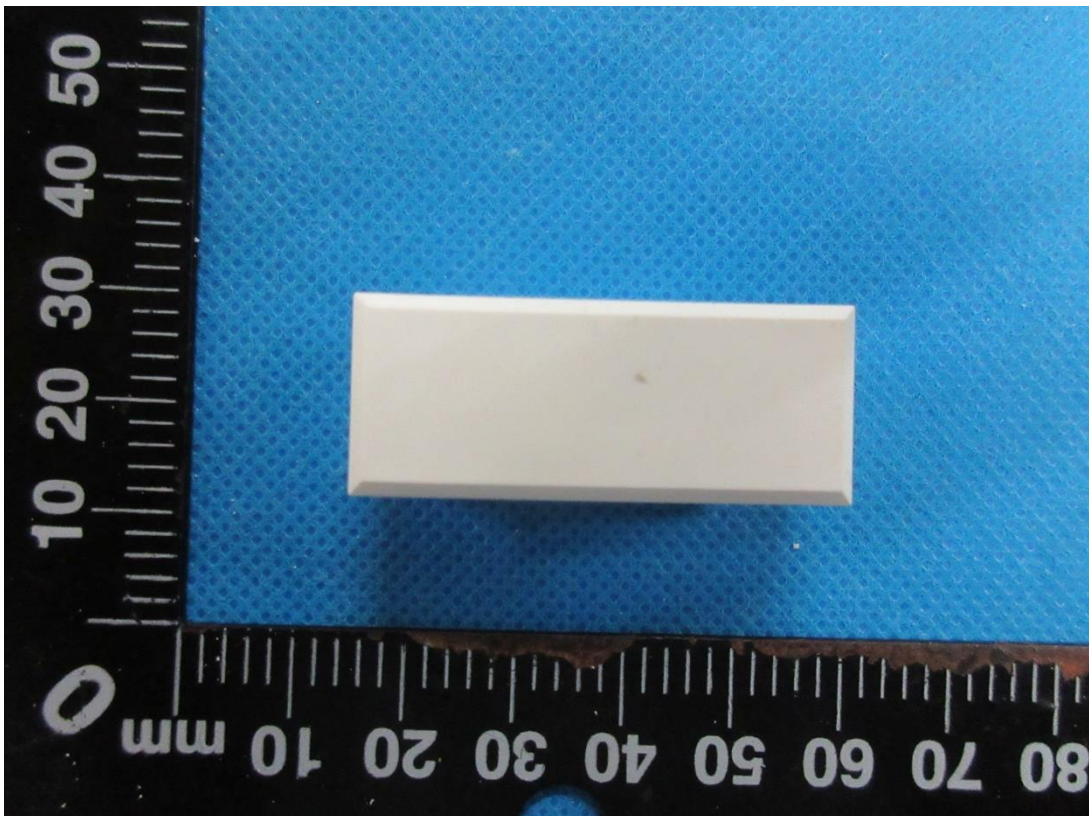


Picture 6 SAE 16_40

Model: MIK 16/40 Solo, SAE 16_40, SE 16_40, SFW 16_40, SIE 16_40, SK 16_40, ST 16_40

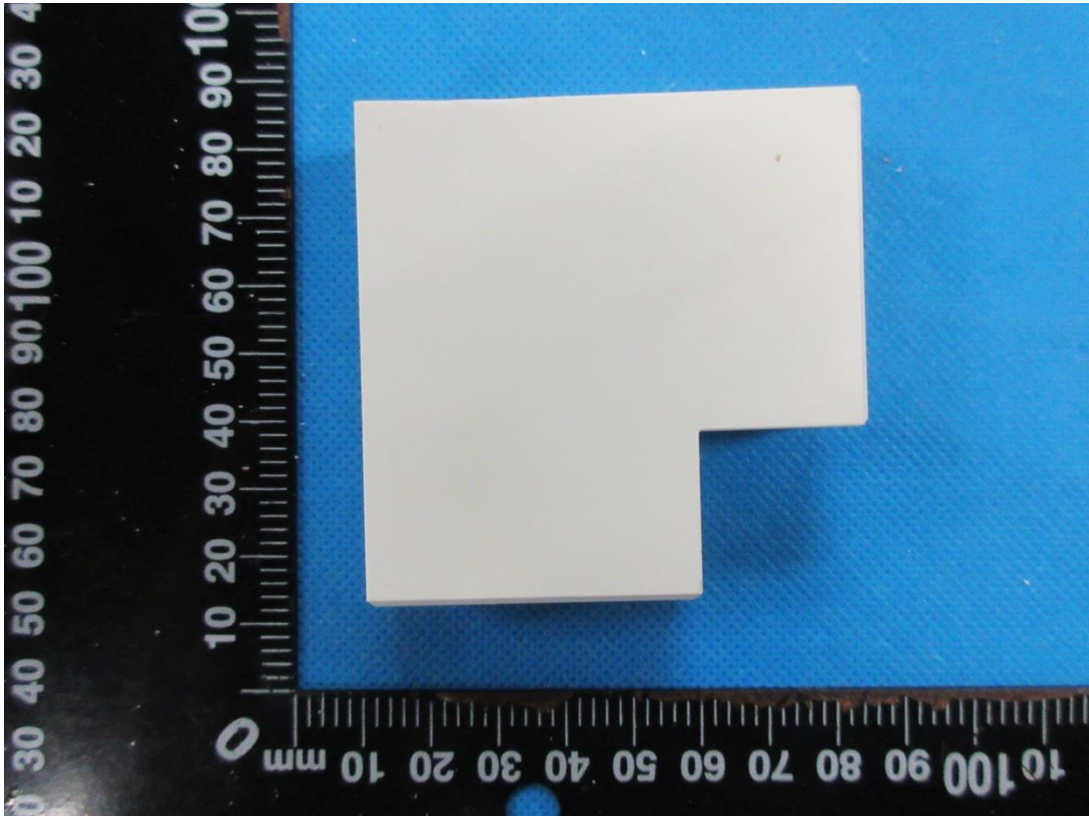


Picture 7 SE 16_40

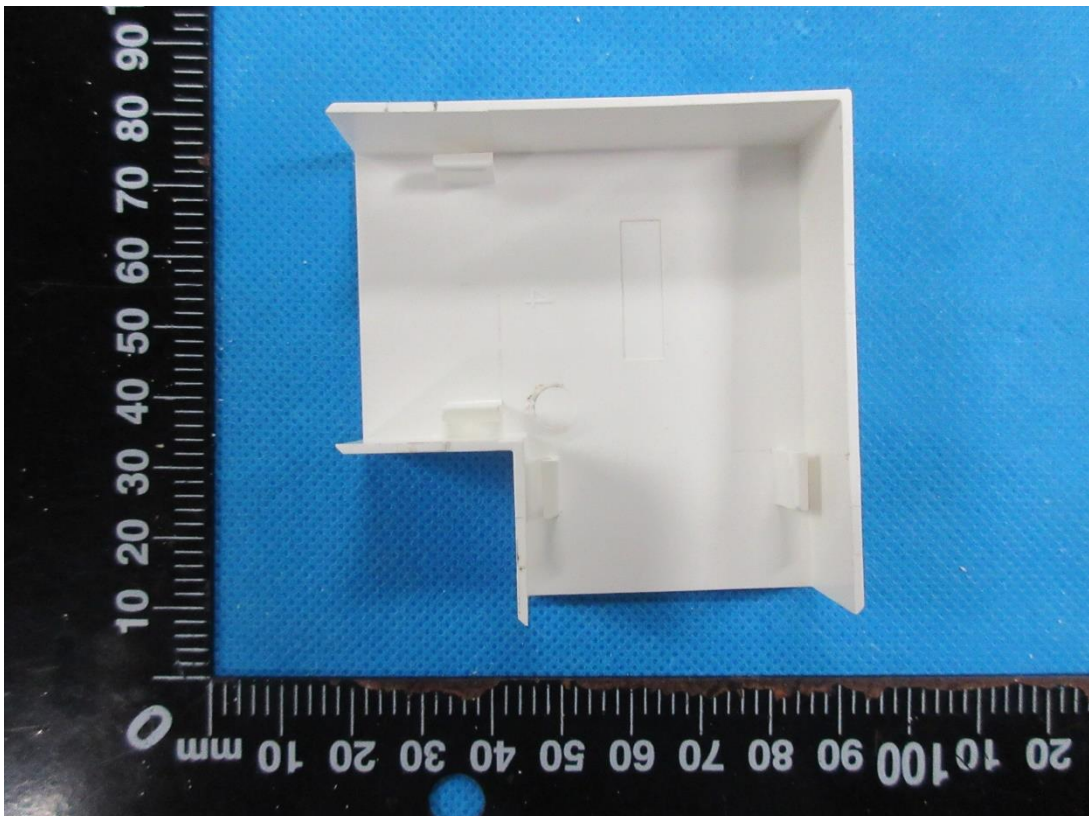


Picture 8 SE 16_40

Model: MIK 16/40 Solo, SAE 16_40, SE 16_40, SFW 16_40, SIE 16_40, SK 16_40, ST 16_40

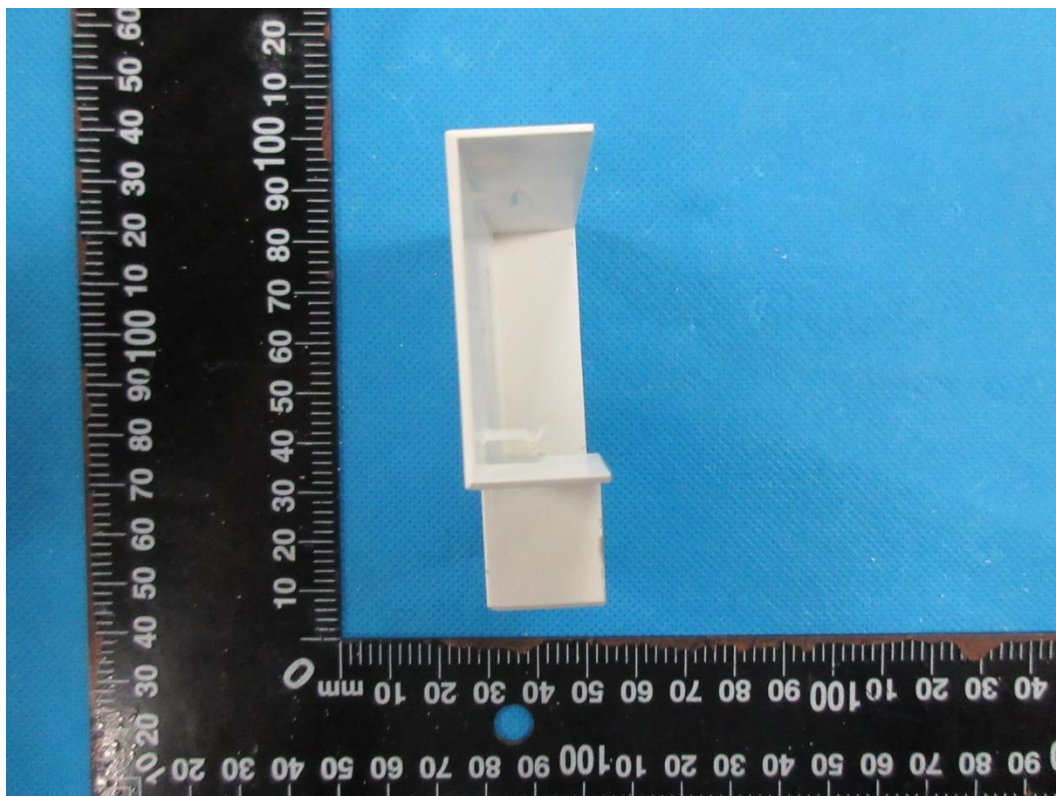


Picture 9 SFW 16_40

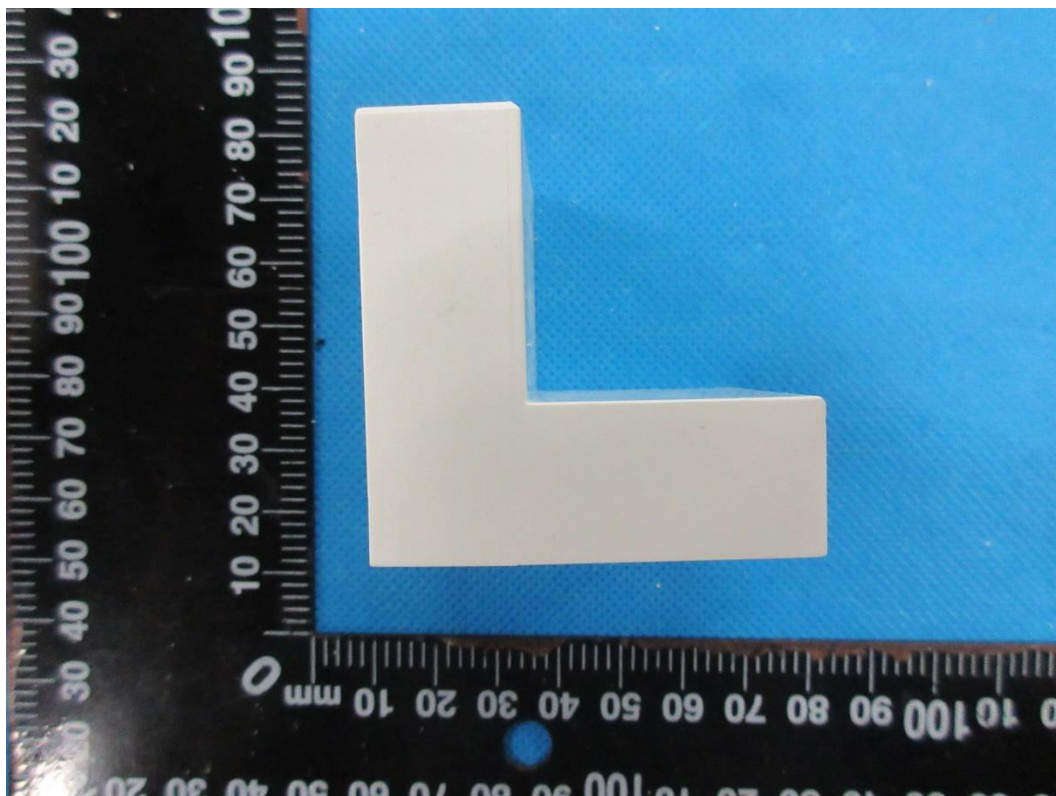


Picture 10 SFW 16_40

Model: MIK 16/40 Solo, SAE 16_40, SE 16_40, SFW 16_40, SIE 16_40, SK 16_40, ST 16_40

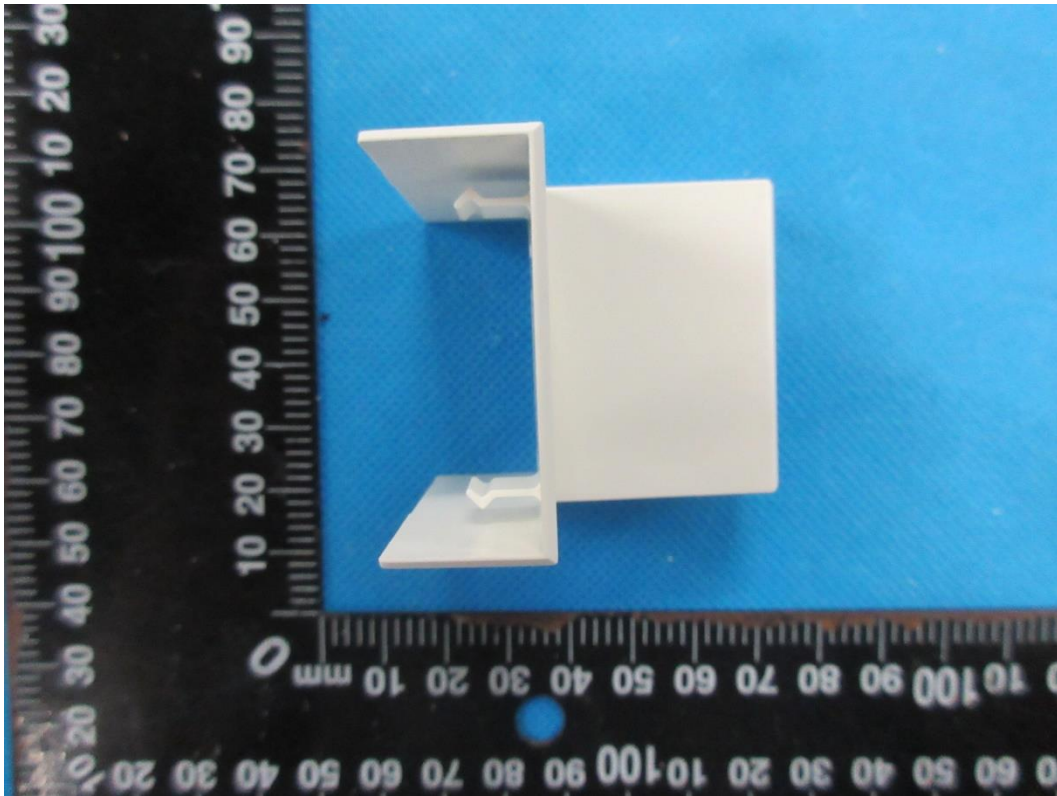


Picture 11 SFW 16_40

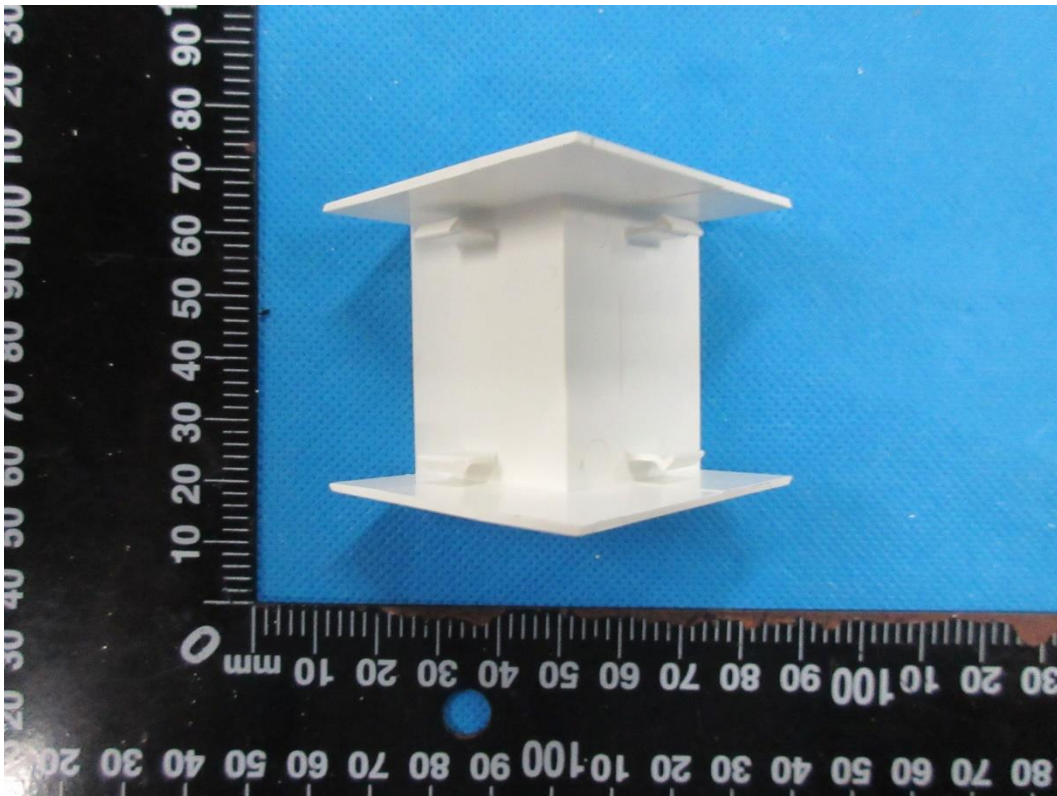


Picture 12 SIE 16_40

Model: MIK 16/40 Solo, SAE 16_40, SE 16_40, SFW 16_40, SIE 16_40, SK 16_40, ST 16_40

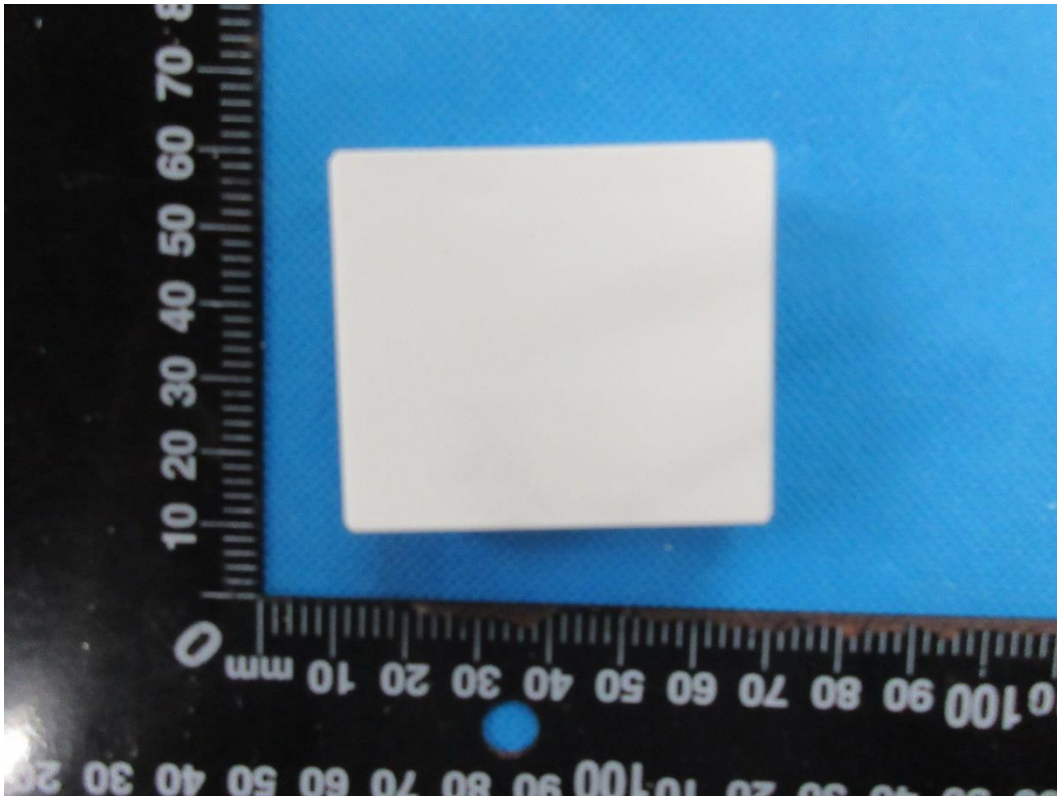


Picture 13 SIE 16_40

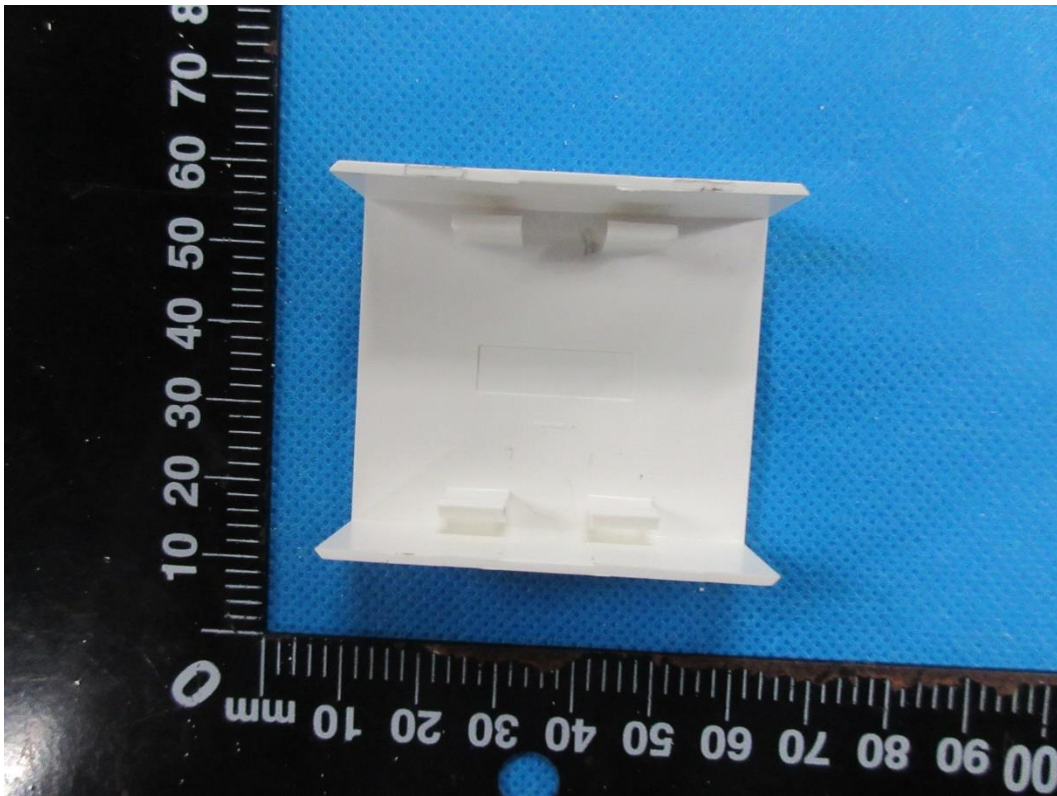


Picture 14 SIE 16_40

Model: MIK 16/40 Solo, SAE 16_40, SE 16_40, SFW 16_40, SIE 16_40, SK 16_40, ST 16_40

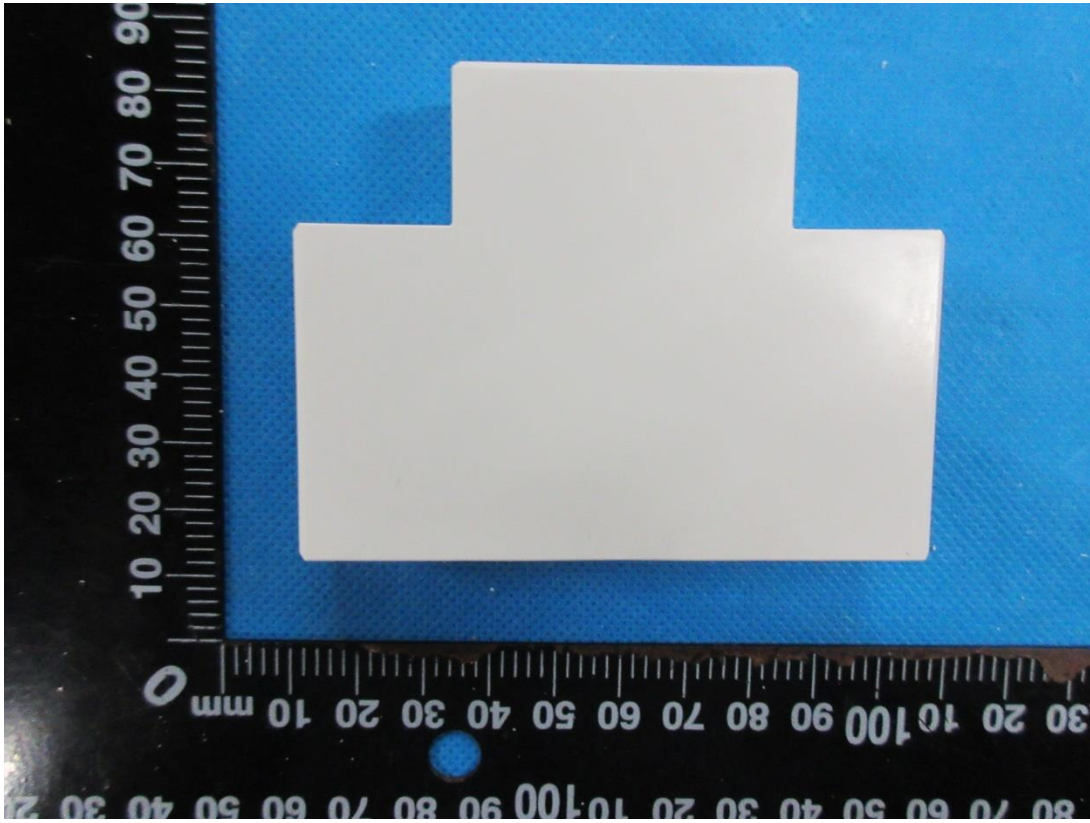


Picture 15 SK 16_40

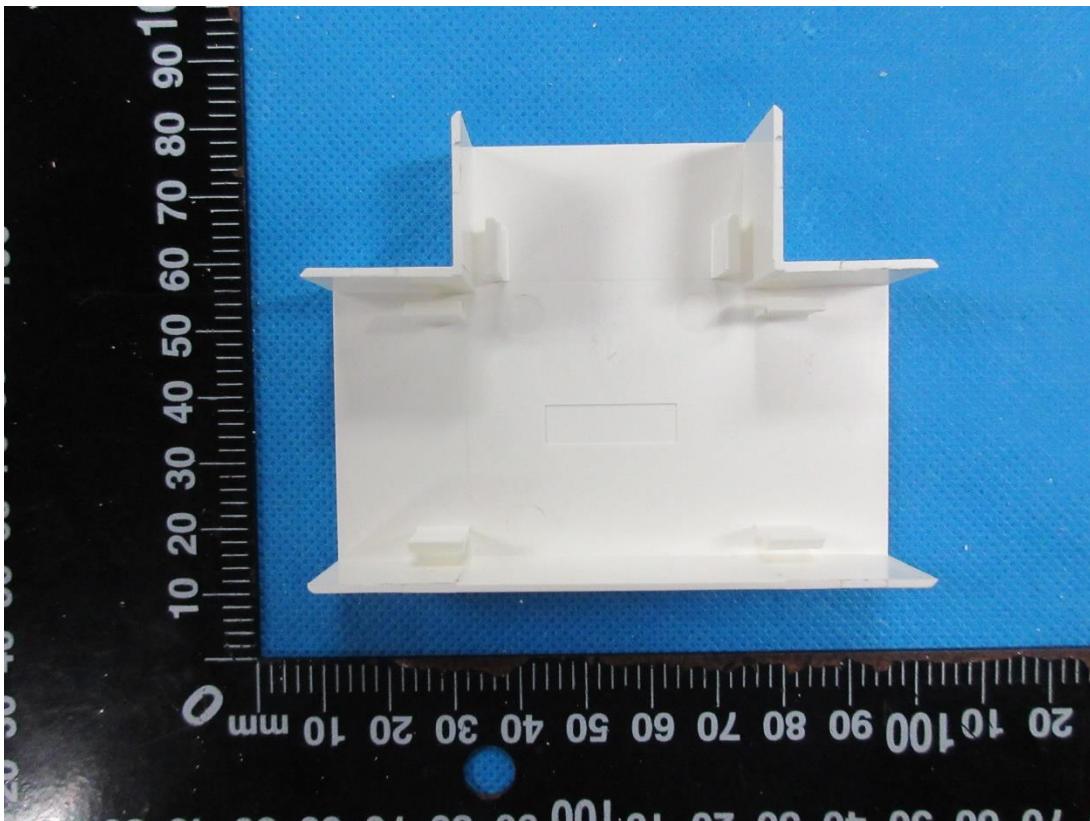


Picture 16 SK 16_40

Model: MIK 16/40 Solo, SAE 16_40, SE 16_40, SFW 16_40, SIE 16_40, SK 16_40, ST 16_40



Picture 17 ST 16_40



Picture 18 ST 16_40