



Test Report issued under the responsibility of:



TEST REPORT
IEC 60669-1
Switches for household and similar fixed-electrical installations
Part 1: General requirements

Report Number..... : CVC2019-1258

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Name of Testing Laboratory preparing the Report..... : Vkan Certification & Testing Co., Ltd.

Applicant's name..... : Zhongshan Kesen Alkhalid Trading Co., Ltd.

Address..... : No. 4, North 3rd Lane, Hua'an East Road, Cao San Pioneer Park, Guzhen Town, Zhongshan City, Guangdong Province, 528421, P. R. China

Test specification:

Standard..... : IEC 60669-1:2017

Test procedure..... : CB Scheme

Non-standard test method..... : N/A

Test Report Form No...... : IEC60669_1F

Test Report Form(s) Originator..... : VDE

Master TRF..... : Dated 2018-02-09

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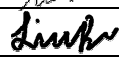
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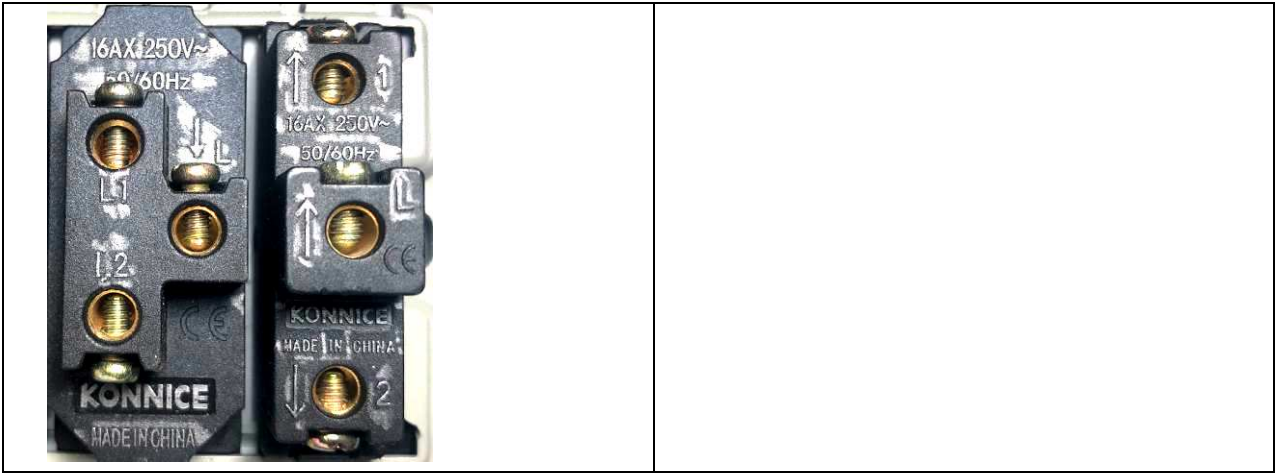
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Test item description	1. Flush-type Rocker Single-pole Switches 2. Flush-type Rocker Two-way Switches 3. Flush-type Rocker Single-pole Two-way Switches 4. Flush-type Rocker Two-way Reversing Switches (or Intermediate Switches) 5. Flush-type Rocker Momentary Contact Switches (Doorbell Switches)	
Trade Mark		
Manufacturer	Zhongshan Kasem Alkhaled Trading Co., Ltd.	
Model/Type reference	1. S-311, S-321, S-331, T-311, T-321, T-331, S-311G, S-321G, S-331G, T-311G, T-321G, T-331G, S-505, T-505, S-505G, T-505G 16AX 250V~ 2. S-312, S-322, S-332, T-312, T-322, T-332, S-312G, S-322G, S-332G, T-312G, T-322G, T-332G 16AX 250V~ 3. S-342, T-342, S-342G, T-342G 16AX 250V~ 4. S-313, T-313, S-313G, T-313G 16AX 250V~ 5. S-314, S-315, S-314G, S-315G, T-314, T-315, T-314G, T-315G 16A 250V~	
Ratings	1. 16AX 250V~; 2. 16AX 250V~; 3. 16AX 250V~ 4. 16AX 250V~; 5. 16A 250V~	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
<input checked="" type="checkbox"/> CB Testing Laboratory:	Vkan Certification & Testing Co., Ltd.	
Testing location/ address	No.3 Tiantaiyi Road, Kaitai Avenue, Science City, Guangzhou, 510663, P. R. China	
Tested by (name, function, signature).....	Liu Guowei, Engineer	
Approved by (name, function, signature)	Liu Bo, Manager	
<input type="checkbox"/> Testing procedure: CTF Stage 1:		
Testing location/ address		
Tested by (name, function, signature).....		
Approved by (name, function, signature)		
<input type="checkbox"/> Testing procedure: CTF Stage 2:		
Testing location/ address		
Tested by (name + signature)		
Witnessed by (name, function, signature).....		
Approved by (name, function, signature)		
<input type="checkbox"/> Testing procedure: CTF Stage 3:		
<input type="checkbox"/> Testing procedure: CTF Stage 4:		
Testing location/ address		
Tested by (name, function, signature).....		
Witnessed by (name, function, signature).....		
Approved by (name, function, signature)		
Supervised by (name, function, signature).....		

List of Attachments (including a total number of pages in each attachment): Annex 1: National deviations (page 38) Annex 2: List of test equipment used (page 39 to page 41) Annex 3: Photographs (page 42 to page 86)	
Summary of testing:	
Tests performed (name of test and test clause): 1. Full items tests on Flush-type Rocker Two-way Switches S-332 16AX 250V~. 2. Tests of Clause 8, Clause 13, Clause 14, Clause 18, Clause 19, Clause 23 are carried out on Flush-type Rocker Single-pole Switches S-331 16AX 250V~. 3. Tests of Clause 8, Clause 13, Clause 14, Clause 17, Clause 18, Clause 19, Clause 20, Clause 23 are carried out on Flush-type Rocker Two-way Reversing Switches (or Intermediate Switches) S-313 16AX 250V~ and Flush-type Rocker Single-pole Two-way Switches S-342 16AX 250V~. 4. Tests of Clause 8, Clause 13, Clause 18, Clause 19, Clause 23 are carried out on Flush-type Rocker Momentary Contact Switches (Doorbell Switches) S-314 16A 250V~. 5. Tests of Clause 8, Clause 20, Clause 24 are carried out on Flush-type Rocker Two-way Switches S-505G 16AX 250V~. 6. Clause 8 on other models of switches.	Testing location: No.3 Tiantaiyi Road, Kaitai Avenue, Science City, Guangzhou, 510663, P. R. China.
Summary of compliance with National Differences (List of countries addressed): <i>National deviations see Annex 1.</i>	
Copy of marking plate:	
On the sample: 	In the specification: Model: S-332 Rated current: 16AX Rated voltage: 250V~ Rated power of the SBL circuit: 200W

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Test item particulars	
Pattern number	1; 6; 7; 1/6
Contact opening (gap)	normal gap / mini-gap / micro-gap / without contact gap (semiconductor switching device)
Degree of protection against access to hazardous parts and against harmful effects due to the ingress of solid foreign objects	IP2X / IP4X / IP5X
Degree of protection against harmful effects due to the ingress of water	IPX0 / IPX4 / IPX5 / IPX6
Method of actuating	rotary / tumbler / rocker / push-button / cord-operated / momentary contact
Method of application	surface-type / flush-type / semi flush-type / panel-type / architrave-type
Method of installation	design A / design B
Type of terminals	screw-type (rigid) / screw-type (rigid and flexible) / screwless (rigid) / screwless (rigid and flexible)
Flexible cable outlet	without / with
Rated voltage (V)	250V
Rated current (A).....	16AX, 16A
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	2019-09-30
Date (s) of performance of tests	From 2019-10-08 to 2019-11-21

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General remarks:	
<p>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.</p> <p>"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator.</p>	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60335-1:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies): Wenzhou Zijin Electrical Appliances Co., Ltd. No. 589-2, Binhai 15 Road, Binhai Park, Wenzhou Economic and Technological Development Zone, 325025, P. R. China	
General product information and other remarks:	
<ol style="list-style-type: none"> Information about the manufacturer and factory: Manufacturer: Zhongshan Kasem Alkhaled Trading Co., Ltd. Manufacturer's address: No. 4, North 3rd Lane, Hua'an East Road, Cao San Pioneer Park, Guzhen Town, Zhongshan City, Guangdong Province, 528421, P. R. China. Factory: Wenzhou Zijin Electrical Appliances Co., Ltd. Factory's address: No. 589-2, Binhai 15 Road, Binhai Park, Wenzhou Economic and Technological Development Zone, 325025, P. R. China. This report is applicable to: <ol style="list-style-type: none"> Flush-type Rocker Single-pole Switches: S-311, S-321, S-331, T-311, T-321, T-331, S-311G, S-321G, S-331G, T-311G, T-321G, T-331G, S-505, T-505, S-505G, T-505G 16AX 250V~; Flush-type Rocker Two-way Switches: S-312, S-322, S-332, T-312, T-322, T-332, S-312G, S-322G, S-332G, T-312G, T-322G, T-332G 16AX 250V~; Flush-type Rocker Single-pole Two-way Switches: S-342, T-342, S-342G, T-342G 16AX 250V~; Flush-type Rocker Two-way Reversing Switches (or Intermediate Switches): S-313, T-313, S-313G, T-313G 16AX 250V~; Flush-type Rocker Momentary Contact Switches (Doorbell Switches): S-314, S-315, S-314G, S-315G, T-314, T-315, T-314G, T-315G 16A 250V~. Sample identification: <p>Group A (A1# ~ A12#): Flush-type Rocker Two-way Switches S-332 16AX 250V~.</p> <p>Group B (B1# ~ B12#): Flush-type Rocker Single-pole Switches S-331 16AX 250V~.</p> <p>Group C (C1# ~ C12#): Flush-type Rocker Two-way Reversing Switches (or Intermediate Switches) S-313 16AX 250V~.</p> <p>Group D (D1# ~ D12#): Flush-type Rocker Single-pole Two-way Switches S-342 16AX 250V~.</p> <p>Group E (E1# ~ E12#): Flush-type Rocker Momentary Contact Switches (Doorbell Switches) S-314 16A 250V~.</p> <p>Group F (F1# ~ F6#): Flush-type Rocker Two-way Switches S-505G 16AX 250V~.</p> <p>Group G (E1# ~ E114#): 3 pcs per model): All other type of switches.</p> 	

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(continued)

General product information and other remarks:

4. The submitted samples are different in connection type, set numbers, the appearance and colour of its panels. All the two-way switches and single-pole switches are similar in structures of functional modules, two-way reversing switches and single-pole two-way switches are fitted with functional modules of completely different structures. Further more,

1) The switches having three sets contains two different functional modules whose terminals are arranged in different ways (as show in page 40), the rest of the switches have only one form of functional modules.

2) For the switches whose model starts with S and ending with an Arabic numeral, the panel and outer rocker are white.



For the switches whose model starts with T and ending with an Arabic numeral, the panel and outer rocker are white and fitted with a silver decorative border.

For the switches whose model starts with S and ending with G, the panel and outer rocker are gold.

For the switches whose model starts with T and ending with G, the panel and outer rocker are gold and fitted with a silver decorative border.

5. Components list:

Object/ part no.	Manufacturer/trademark	Material	Type/ model	Technical data	Stand ard/ap proval
Base	Wenzhou Juxing Plastic Co., Ltd.	PA66	—	—	—
Inner rocker	Wenzhou Juxing Plastic Co., Ltd.	PA66	—	—	—
Outer rocker	Wenzhou Taixin Plastic Industry Co., Ltd.	PC	—	—	—
Cover plate	Wenzhou Taixin Plastic Industry Co., Ltd.	PC	—	—	—
Frame	Wenzhou Longwan Tianhe Rongjiang Electrical Switch Factory	Steel	Q235	—	—
Contact spot	Wenzhou Tietong Electrical Alloy Industry Co., Ltd.	Copper-based silver cadmium oxide	AgCdO 12/Cu	—	—
Moving Contact	Wenzhou Songfei Silver Alloy Material Co., Ltd.	Oxygen-free copper	C1020	Thickness: 1.2mm ± 0.1mm	—
		Ag	1# Ag		
	Wenzhou Longwan Shacheng Zhiqiang Electrical Appliance Factory	Phosphor copper	QSn6.5 -0.1	Thickness: 0.8mm ± 0.1mm	
Fixed Contact	Wenzhou Longwan Tianhe Rongjiang Electrical Switch Factory	Brass	H62	—	—
Spring	Wenzhou Economic and Technological Development Zone Tianhe Jiali Hardware Fittings Factory	Spring steel	65Mn	—	—
Termin al	Wenzhou Longwan Yongzhong Yiyuan Instrument Factory	Brass	H62	—	—
Screw	Wenzhou Tietong Electrical Alloy Industry Co., Ltd.	Steel	Q235	—	—

IEC 60669-1			
Clause	Requirement + Test		Verdict
8	MARKING		P
8.1	General		P
	Switches are marked with:		P
	a) rated current(s) (A or AX)	16AX; 16A	P
	b) rated voltage(s) (V)	250V	P
	c) symbol for nature of supply	~	P
	d) manufacturer's or responsible vendor's name, trade mark or identification mark		P
	e) type reference	S-311, S-321, S-331, T-311, T-321, T-331, S-311G, S-321G, S-331G, T-311G, T-321G, T-331G, S-312, S-322, S-332, S-505, T-312, T-322, T-332, T-505, S-312G, S-322G, S-332G, S-505G, T-312G, T-322G, T-332G, T-342G, T-505G, S-342, T-342, S-342G, S-313, T-313, S-313G, T-313G, S-314, S-315, S-314G, S-315G, T-314, T-315, T-314G, T-315G	P
	f) symbol for mini-gap construction (m)		N/A
	g) symbol for micro-gap construction (μ)		N/A
	h) symbol for semiconductor switching device (without contact gap) (ε)		N/A
	i) first IP characteristic numeral, if declared higher than 4, in which case the second characteristic numeral is also marked		N/A
	j) second IP characteristic numeral, if declared higher than 2, in which case the first characteristic numeral is also marked		N/A
	i & j) suitable for smooth and even wall only (IPXX)		N/A
	i & j) suitable for smooth and even wall and for rough wall (test wall of figure 21) ()		N/A
	k) length of insulation to be removed before the insertion of the conductor into the screwless-type terminal		N/A
	l) symbol for the suitability to accept rigid conductors only (r)		N/A
	In addition the following information shall be given in the manufacturer's documentation:		N/A
	m) for SBL loads: the rated power in watts and the type of load if the switch is tested according to 19.3 :	200W	P
8.2	Symbols		P
	Symbols used: as required in the standard		P

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
	The symbol "AX" may be replaced by the symbol "X". For the marking with rated current and rated voltage the figures may be used alone		P
	The marking for the nature of supply shall be placed next to the marking for rated current and rated voltage		P
8.3	Visibility of markings		P
	Markings are clearly visible with normal or corrected vision, without additional magnification		P
	Markings as given in 8.1 a), b), c), d), e) and, if applicable, f), g), h), k), and l) shall be placed on the main part of the switch		P
	Parts such as cover plates, which are necessary for safety purposes and are intended to be sold separately, are marked with the manufacturer's or responsible vendor's name, trade mark or identification mark and type reference		N/A
	Markings as given in 8.1 i) and j), when applicable, are marked so as to be easily discernible when the switch is mounted and wired as in normal use		N/A
	Markings are placed on parts which cannot be removed without the use of a tool		P
8.4	Marking on terminals for phase conductors		P
	Terminals intended for the connection of phase conductors (supply conductors) are identified unless the method of connection is of no importance, is self-evident or is indicated on a wiring diagram		P
	Indications not placed on screws or other easily removable part		P
	Alternatively, the surface of such terminals shall be bare brass or copper, other terminals being covered with a metallic layer of another colour		N/A
	For switches of pattern numbers 2, 3, 03 and 6/2, terminals associated with any one pole have similar identification, if applicable, differing from that of the terminals associated with the other poles, unless the relationship is self-evident		N/A
8.5	Marking on terminals for neutral and earth conductors		N/A
	Neutral terminals: N :		N/A
	Earthing terminals: [earth symbol (IEC 60417-5019:2006-08)] :		N/A
	Markings not placed on screws or other easily removable parts		N/A
	Terminals for conductors not forming part of the main function of the switch:		N/A
	- clearly identified unless their purpose is self-evident, or		N/A
	- indicated in a wiring diagram fixed to the accessory		N/A

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Identification of switch terminals may be achieved by:		N/A
	- their marking with graphical symbols according to IEC 60417 or colours and/or alphanumeric system, or		N/A
	- their physical dimension or relative location		N/A
8.6	Marking of the switch position		N/A
	Switches marked to indicate the switch position: they are so marked that the direction of movement of the actuating member to its different positions or the actual position is clearly indicated		N/A
	Switches having more than one actuating member: marking indicates the effect achieved by the operation		N/A
	Marking clearly visible on the front of the switch		N/A
	Not possible to fix cover, cover plate, or removable actuating members in an incorrect position		N/A
	Symbols for "on" and "off" not used for indication of switch positions unless clearly indicate the direction of movement of the actuating members		N/A
8.7	Additional requirements for marking		N/A
	Special precautions necessary to take when installing the switch: details of these and clear information given in an instruction sheet which accompanies the switch		N/A
	Instruction sheets are written in the official language(s) of the country in which the switch is to be sold		N/A
8.8	Durability		P
	Marking durable and easily legible. Test: 15 s with water and 15 s with 95 % n-hexane.		P
9	CHECKING OF DIMENSIONS		N/A
	Switches and boxes comply with the appropriate standard sheets, if any		N/A
10	PROTECTION AGAINST ELECTRIC SHOCK		P
10.1	Prevention of access to live parts		P
	Switches: live parts not accessible		P
	Switches designed to be fitted with pilot lights supplied at voltage other than ELV have means to prevent direct contact with the lamp		N/A
	Specimen is mounted as in normal use and fitted with conductors as specified		P
	Test probe B of IEC 61032 is applied in every possible position, an electrical indicator with a voltage between 40 V and 50 V being used to show contact with the relevant part		P

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Switches having enclosures or covers in thermoplastic or elastomeric material: additional test carried out at $35^{\circ}\text{C} \pm 2^{\circ}\text{C}$. Switches are subjected for 1 min to a force of 75 N, applied through the tip of test probe 11 of IEC 61032		P
	Test finger applied to thin-walled knock-outs with a force of 10 N		N/A
	During the test: switches not deform and no live parts accessible with test probe 11 of IEC 61032		P
10.2	Requirements for operating parts		P
	Knobs, operating levers, push buttons, rockers and the like: of insulating material, unless:		P
	- accessible metal parts separated from metal parts of mechanism by double or reinforced insulation, or		N/A
	- reliably connected to earth		N/A
	Requirement does not apply to removable keys or intermediate parts, such as chains or rods		N/A
10.3	Requirements for accessible metal parts		N/A
10.3.1	Accessible parts of switches when in normal use are made of insulating material as specified.		P
10.3.2	Metal covers or cover plates are protected by supplementary insulation made by insulating linings or insulating barriers.		N/A
	Insulating linings or insulating barriers:		N/A
	- cannot be removed without being permanently damaged, or designed that		N/A
	- cannot be replaced in an incorrect position; if they are omitted, accessories are rendered inoperable or manifestly incomplete; there is no risk of accidental contact between live parts and metal covers or cover plates; precautions are taken to prevent creepage distances or clearances becoming less than the values specified in clause 23		N/A
	Linings or barrier comply with the tests of clauses 16 and 23		N/A
10.3.3	Earthing of metal covers or cover plates: connection of low resistance		N/A
10.4	Requirements for insulation of the mechanism		P
	Metal parts of the mechanism which are not insulated from live parts: not protrude from enclosure		P
	Switches operated by means of a removable key or similar device: metal parts of mechanism insulated from live parts		N/A
10.5	Requirements for insulation of the mechanism with respect to the surrounding environment		P

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Metal parts of mechanism not accessible and insulated from accessible metal parts, unless		P
	- separated from live parts (creepage distances and clearances have at least twice the value specified in clause 23), or		N/A
	- reliably connected to earth		N/A
	Unenclosed stack-type switches having a metal spindle pivoting in a metal base plate: creepage distances and clearances between live parts and the spindle, and between metal parts of the mechanism and base plate, have at least twice the values specified in clause 23		N/A
10.6	Requirements for switches operated indirectly		N/A
	Switches operated by means of a removable key or an intermediate part: key or an intermediate part can only touch parts which are insulated from live parts		N/A
	Key or intermediate part: insulated from metal parts of mechanism, unless		N/A
	Creepage distances and clearances between live parts and metal parts of mechanism have at least twice the values specified in clause 23		N/A
10.7	Requirements for switches with replaceable pull cord		N/A
	Cord-operated switches: impossible to touch live parts when fitting or replacing the pull cord		N/A
11	PROVISION FOR EARTHING		N/A
11.1	General		N/A
	Accessible metal parts: provided with, or permanently and reliably connected to, an earthing terminal (does not apply to the metal cover plates mentioned in 10.3.2)		N/A
	Small screws and the like, isolated from live parts, are not considered as accessible parts which can become live in the event of an insulation fault		N/A
11.2	Earthing terminals		N/A
	Earthing terminals: with screw clamping or screwless terminals and comply with clause 12		N/A
11.3	Requirements for surface-type switches		N/A
	Surface-type switches with an enclosure of insulating material, with IP > X0 and more than one cable inlet, are provided with:		N/A
	- an internal fixed earthing terminal, or		N/A
	- adequate space for a floating terminal allowing the connection of an incoming and outgoing conductor		N/A
11.4	Test for earthing connection		N/A

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Connection between earthing terminal and accessible metal parts: of low resistance		N/A
	Test current equal to 1,5 In or 25 A (A)		N/A
	Resistance $\leq 0,05 \Omega$ (Ω)		N/A
12	TERMINALS		P
12.1	General		P
	Switches provided with screw-type terminals or with screwless terminals.....	Pillar terminals	P
	Clamping means of terminals: not serve to fix any other components		P
	All the test on terminals, with the exception of the test of 12.3 11, made after the test of 15.1		P
	Rigid solid conductors shall be of class 1, rigid stranded conductors shall be of class 2 and flexible conductors shall be of class 5 according to IEC 60228		P
12.2	Terminals with screw clamping for external copper conductors		P
12.2.1	Terminals with screw clamping having cross-sectional areas as shown in Table 4		P
	- for rigid copper conductors only, or		P
	- for both rigid and flexible copper conductors (tests carried out with rigid and then repeated with flexible conductors)		P
	Rated current (A)	16	—
	Type of conductor (rigid / flexible)	Rigid, flexible	—
	Smallest / largest cross-sectional area (mm ²)	1,5 / 4,0	—
	Diameter of largest conductor (mm).....	2,72	—
	Figure of terminal	Figure 1	—
	Minimum diameter D (minimum dimensions) of conductor space: required (mm); measured (mm)...	3,6; 4,18	—
12.2.2	Terminals allow the conductor to be connected without special preparation		P
12.2.3	Terminals with screw clamping have adequate mechanical strength		P
	Screws and nut for clamping the conductors have metric ISO thread or a comparable thread		P
	Screws not of soft metal such as zinc or aluminium		P
12.2.4	Terminals with screw clamping are resistant to corrosion		P
12.2.5	Terminals with screw clamping clamp the conductor(s) without undue damage to the conductor(s)	See appended table 12.2.5	P

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
	For screws having a hexagonal head with slot for tightening, test shall be made twice, first the torque applying to the hexagonal head and then applying the torque by means of a screwdriver		N/A
	During the test: conductor not slip out, no break near clamping unit and no damage		P
12.2.6	Terminals with screw clamping clamp the conductor reliably between metal surfaces	See appended table 12.2.6	P
	During the test: conductor not move noticeably		P
12.2.7	Terminals with screw clamping are designed or placed that the conductor cannot slip out while the clamping screws or nuts are tightened	See appended table 12.2.7	P
	After the test: no wire of the conductor escaped outside the clamping unit thus reducing creepage distances and clearances to values lower than those indicated in table 23		P
12.2.8	Terminals not work loose from their fixing to the switch		P
	Movement of the terminal is allowed as long as it is sufficiently limited so as to prevent noncompliance with this document		P
	Use of sealing compound or resin is considered to be sufficient, provided that:		N/A
	- the sealing compound or resin is not subject to stress during normal use, and		N/A
	- the effectiveness of the sealing compound or resin is not impaired by temperatures attained by the terminal		N/A
	Torque test:		P
	- rated current (A)..... : 16		—
	- solid rigid copper conductor of the largest cross-sectional area (mm ²) (table 4) : 4,0		—
	- torque (Nm) (table 5 or appropriate figures 1, 2, 3, 4)..... : 0,8		—
	Screws and nuts tightened and loosened 5 times. During the test: terminals not work loose and show no damage		P
12.2.9	Clamping screws or nuts of earthing terminals: adequately locked against accidental loosening, not possible to loosen them without the aid of a tool		N/A
12.2.10	Earthing terminals: no risk of corrosion		N/A
	Body of brass or other metal no less resistant to corrosion		N/A
	If the body is a part of a frame or enclosure of aluminium alloy, precautions are taken to avoid the risk of corrosion		N/A
12.2.11	Pillar terminals: distance g no less than the value specified in figure 1: required (mm); measured (mm):	1,8; 5,02	N/A

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Mantle terminals: distance g no less than the value specified in figure 5: required (mm); measured (mm):		N/A
12.2.12	Lug terminals:		N/A
	- used only for switches having rated current ≥ 40 A		N/A
	- fitted with spring washers or equally effective locking means		N/A
12.3	Screwless terminals for external copper conductors		N/A
13	CONSTRUCTIONAL REQUIREMENTS		P
13.1	Mechanical requirements for insulating means		P
	Insulating lining, barriers and like: adequate mechanical strength and secured in a reliable manner		P
13.2	Installation requirements		P
	Switches constructed so as to permit:		P
	- easy introduction into the terminal and reliable connection of the conductors in the terminals, except for lead wires of pilot lights		P
	- correct positioning of the conductors		P
	- easy fixing of the switch to a wall or in a box		P
	- adequate space between the underside of the main part and the surface on which the main part is mounted or between the sides of the main part and the enclosure (cover or box)		P
	Surface-type switches: fixing means do not damage insulation of the cable		N/A
	Switches comprising screwless terminals: connecting and/or disconnecting means of the screwless terminals cannot be activated by the conductors during and after installation of the switch in a box or on a wall		N/A
	Compliance is checked by inspection and in case of doubt by the following test		N/A
	The test is carried out with a solid copper conductor having the smallest cross-sectional area, as specified in 12.3.2 (mm ²) :		N/A
	If it is not possible to exert a force onto the connecting / disconnecting means, the product is deemed to comply with the requirements of this sub clause without further tests		N/A
	During the application of the pull, the conductor do not come out of the screwless terminal		N/A
	Switches classified as design A: permit easy positioning and removal of the cover or cover plate, without displacing the conductors or activating the connecting and/or disconnecting means of screwless terminals		N/A
13.3	Fixing of covers, cover plates and actuating members		P

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Clause	Requirement + Test	Result - Remark	Verdict
13.3.1	Covers, cover-plates and actuating members or parts of them intended to ensure protection against electric shock:		P
	- held in place at two or more points by effective fixings		P
	- fixed by means of a single fixing, e.g. by a screw, provided that they are located by another means (e.g. by a shoulder)		N/A
	Where the fixing of covers, cover plates or actuating members of switches of design A serves to fix the main part there are means to maintain the main part in position, even after removal of the covers, cover plates or actuating members.		P
13.3.2	Covers, cover plates or actuating members whose fixing is of the screw-type:		N/A
	Compliance checked by inspection only		N/A
13.3.3	Covers, cover plates or actuating members whose fixing is not dependent on screws and whose removal is obtained by applying a force in a direction approximately perpendicular to the mounting / supporting surface (see table 12):		P
	- when their removal may give access, with the test probe B of IEC 61032, to live parts:	by the tests of 20.5 (S-313, S-314)	P
	- when their removal may give access, with the test probe B of IEC 61032, to non-earthed metal parts separated from live parts in such a way that creepage distances and clearances have the values at least equal to those shown in table 23:	by the tests of 20.6	N/A
	- when their removal may give access, with the test probe B of IEC 61032, only to	by the tests of 20.7	P
	- insulating parts, or		P
	- earthed metal parts, or		N/A
	- metal parts separated from live parts in such a way that creepage distances and clearances have at least twice the values shown in table 23, or		P
	- live parts of SELV circuits not greater than 25 V AC and 60 V DC:		N/A
13.3.4	Covers, cover-plates or actuating members whose fixing is not dependent on screws and whose removal is obtained by using a tool, in accordance with the manufacturer's instructions given in an instruction sheet or catalogue:		N/A
	By the same tests of 13.3.3 except that the covers, cover plates, actuating members or parts of them need not come out when applying a force not exceeding 120 N in directions perpendicular to the mounting / supporting surface		N/A
13.4	Openings in normal use		P
	Switches: no free openings in their enclosures according to their IP classification		P
13.5	Attachment of knobs		N/A
	Knobs of rotary switches securely attached to the shaft or part operating the mechanism		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- axial pull be applied for 1 min to try to pull off the actuating member		N/A
	- axial pull is likely to be applied in normal use, the force is 30 N		N/A
	- axial pull is unlikely to be applied in normal use, the force is 15 N		N/A
	- knob of switches having only one direction of operation: turned 100 times in the reverse direction		N/A
	During the test: knob not become detached		N/A
13.6	Mounting means		P
	Screws or other means for mounting the switch on a surface or in a box or enclosure: easily accessible from the front		P
	Fixing means not serve any other fixing purpose		P
13.7	Combination of switches		P
	Combinations of switches, or of switches and socket-outlets, comprising separate bases: correct position of each main part is ensured		P
	Fixing of each main part be independent of the fixing of the combination to the mounting surface		P
13.8	Accessories combined with switches		N/A
	Accessories combined with switches: comply with their standard		N/A
13.9	Surface-type switches having an IP code higher than IP20		N/A
	Surface-type switches with IP > 20 are in according to their classification when fitted with conduits or with sheathed cables		N/A
	Surface-type switches with IPX4, IPX5 and IPX6 have provisions for opening a drain hole		N/A
	Switches provided with a drain hole: it is not less than 5 mm in diameter, or 20 mm ² in area with a width and a length not less than 3 mm : Ø mm / mm ²		N/A
	Drain hole: effective		N/A
	Lid springs (if any): of corrosion resistant material (bronze or stainless steel)		N/A
13.10	Installation in a box		P
	Switches to be installed in a box: conductor ends can be prepared after the box is mounted in position, but before the switch is fitted in the box		P
	Main part has adequate stability when mounted in the box		P
13.11	Connection of a second current-carrying conductor		N/A
	Surface-type switches with IP > IPX0, pattern numbers 1, 5 and 6, with more than one inlet opening, provided with:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- fixed additional terminal complying with the requirements of clause 12, or		N/A
	- adequate space for a floating terminal		N/A
13.12	Inlet openings		N/A
	Inlet openings: allow the introduction of the conduit or the sheath of the cable		N/A
	Surface-type switches: intended conduit or the sheath of the cable can enter at least 1 mm into the enclosure		N/A
	Inlet openings for conduit entries of surface-type switches: capable of accepting conduit sizes of 16, 20, 25 or 32 or a combination of at least two of these sizes not excluding two of the same size..... :		N/A
	Inlet openings for cable entries of surface-type switches: capable of accepting cables having the dimensions specified in table 13 or be as specified by the manufacturer: rated current (A); limits of external diameter of cables min/max (mm) :		N/A
13.13	Provision for back entry from a conduit		N/A
	Surface-type switches: provision for back entry (if are intended)		N/A
13.14	Switch provided with membranes or the like for inlet openings		N/A
	Switch is provided with membranes or the like for inlet openings: replaceable		N/A
13.15	Requirements for membranes in inlet openings		N/A
13.15.1	Membranes are reliably fixed and not displaced by the mechanical and thermal stresses occurring in normal use		N/A
	Test on membranes subjected to the ageing treatment specified in 15.1 and fitted with the switches		N/A
	Switches placed at 40 °C for 2 h. Force of 30 N applied for 5 s by means of the tip of test probe 11 of IEC 61032. During the test: no deformation, live parts not accessible		N/A
	Membranes likely to be subjected to an axial pull: axial pull of 30 N applied for 5 s. During the test: membranes not come out		N/A
	Test repeated with membranes not subjected to any treatment		N/A
13.15.2	Membranes be so designed and made of such material that: Introduction of the cables into the switch is permitted when the ambient temperature is low.		N/A
	Test on membranes not subjected to the ageing treatment, those without opening being suitably pierced:		N/A
	Switches kept at a temperature of $(-15 \pm 2) ^\circ\text{C}$ for 2 h: possibility to introduce cables of the heaviest type through the membranes		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	After the test: no harmful deformation, cracks or similar damage		N/A
13.16	Pilot light units		N/A
	Pilot light units comply with IEC 60669-2-1:2002, IEC 60669-2-1:2002/AMD1:2008 and IEC 60669-2-1:2002/AMD2:2015, 101.1.1.1 and Clause 102, as far as applicable		N/A
14	MECHANISM		P
14.1	Indication of the position		P
	Actuating member of a switch, when released, automatically take up the position corresponding to that of moving contacts		P
14.2	Rest and intermediate position		P
	Moving contact of switches can come to rest only in "on" and "off" positions		P
	Intermediate position permissible if:		N/A
	- it corresponds to the intermediate position of the actuating member, and		N/A
	- the insulation between fixed and moving contacts is adequate. Electric strength test as specified in 16.3: test voltage a.c. for 1 min (V) : 500 V / 750 V / 1250 V / 2000 V		N/A
14.3	Undue arcing		P
	No undue arcing in slowly operation		P
	Test carried out at the end of the test of clause 19.1: breaking of the circuit 10 times, actuating member moved over a period of 2 s. During the test: no sustained arcing		P
14.4	Making and breaking		N/A
	Switches of pattern numbers 2, 3, 03 and 6/2 make and break all poles substantially simultaneously		N/A
	Neutral pole of switches of pattern number 03 not make after or break before the other poles		N/A
14.5	Action of the mechanism without cover or cover plate		P
	Action of the mechanism: independent of the presence of cover or cover plate. Test: no flicker		P
14.6	Cord-operated switches: effecting a change by application and removal of a steady pull not exceeding:		N/A
	- 45 N applied vertically, and		N/A
	- 65 N applied at 45° ± 5°		N/A
15	RESISTANCE TO AGEING, PROTECTION PROVIDED BY ENCLOSURES OF SWITCHES, AND RESISTANCE TO HUMIDITY		P
15.1	Resistance to ageing		P
	Switches are resistant to ageing		P
	Parts intended for decorative purposes only, such as certain lids, are removed		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Switches and boxes placed for 7 days (168 h) in a heating cabinet at $70\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$		P
	- no crack visible after test with normal or corrected vision without additional magnification		P
	- no sticky or greasy material as a result of heat		P
	- no trace of cloth (forefinger pressed with 5 N)		P
	- no damage		P
15.2	Protection provided by enclosures of switches		P
15.2.1	General		P
	Enclosure of the switch provides protection against access to hazardous parts, against harmful effect due to ingress of solid foreign objects and against effects due to ingress of water in accordance with the IP classification of the switch		P
15.2.2	Protection against access to hazardous parts and against harmful effects due to ingress of solid foreign objects		P
15.2.2.1	General		P
	Glands: torque (Nm) (2/3 of torque applied in 20.4) :		—
	Screws of the enclosure: torque (Nm) (2/3 table 5)		—
	Parts which can be removed without the aid of a tool are removed		N/A
	Glands are not filled with sealing compound or the like		N/A
15.2.2.2	Protection against access to hazardous parts		P
	Appropriate test according to IEC 60529..... :	IP 2X	P
15.2.2.3	Protection against harmful effects due to ingress of solid foreign objects		P
	Appropriate test according to IEC 60529..... :	IP 2X	P
	For the test of the first characteristic numeral 5, enclosures of switches are considered to be of category 2 (see IEC 60529:1989 and IEC 60529:1989/AMD1:1999, 13.4); dust not penetrate in a quantity to interfere with satisfactory operation or impair safety		N/A
	For the test of the first characteristic numeral 6, enclosures of switches are considered to be of category 1 (see IEC 60529:1989, 13.6); no dust penetrate		N/A
15.2.3	Protection against harmful effects due to ingress of water		N/A
	Enclosure of switches provide a degree of protection against harmful effects due to ingress of water in accordance with their IP classification		N/A
	Appropriate test according to IEC 60529..... :	IP	N/A
	Flush-type and semi-flush-type switches fixed:		N/A
	- in a test wall using an appropriate box in accordance with the manufacturer's instructions		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	- in a test wall according to figure 21		N/A
	Screws of the enclosure: torque (Nm) (2/3 table 5)		N/A
	Glands: torque (Nm) (2/3 of torque applied in table 22)		N/A
	Specimens withstand an electric strength test specified in 16.3 which is started within 5 min of completion of the test to 15.2		N/A
15.3	Resistance to humidity		P
	Switches proof against humidity which may occur in normal use		P
	Compliance checked by a humidity treatment described in 15.3, carried out in a humidity cabinet containing air with relative humidity maintained between 91 % and 95 %. Specimens kept in the cabinet for:		P
	- 2 days (48 h) for switches with IPX0		P
	- 7 days (168 h) for switches with IP>X0		N/A
	After this treatment: specimens show no damage		P
16	INSULATION RESISTANCE AND ELECTRIC STRENGTH		P
16.1	General		P
	One pole of any pilot lights (if available), are disconnected for this test		N/A
	Insulation resistance and electric strength of switches be adequate		P
16.2	Test for measuring the insulation resistance		P
	The insulation resistance measured 1 min after application of 500 V DC	See appended table 16.2	P
	In addition, if electrically independent pattern numbers are combined in a common base, additional tests for each combination performed		N/A
16.3	Electric strength test		P
	Electric strength: AC test voltage applied for 1 min	See appended table 16.3	P
	In addition, if electrically independent pattern numbers are combined in a common base, additional tests for each combination performed		N/A
17	TEMPERATURE RISE		P
17.1	General		P
	Switches so constructed that the temperature rise in normal use is not excessive	See appended table 17	P
	No oxidation or any other deterioration of contacts		P
17.2	Switches incorporating pilot lights		N/A
	Switches incorporating or intended to incorporate pilot lights are designed that in normal use temperature of the accessible surface is not excessive	See appended table 17	N/A
18	MAKING AND BREAKING CAPACITY		P

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Clause	Requirement + Test	Result - Remark	Verdict
18.1	General		P
	For the purpose of this test, pilot lights are disconnected		N/A
	Switches have adequate making and breaking capacity		P
	- model / type reference	S-332; S-331; S-313; S-342; S-314	—
	- pattern number	6 (S-332); 1 (S-331); 7 (S-313); 1/6 (S-342); 1 (S-314)	—
	- rated voltage (V)	250	—
	- rated current (A)	16	—
	- nominal cross-sectional area as for the test of clause 17 (mm ²)	4,0	—
18.2	Overload		P
	Test with cos ϕ 0,3 alternating current		P
	- test voltage (1,1 V _n) (V)	275	—
	- test current (1,25 I _n) (cos ϕ 0,3) (A)	20	—
	- 200 operations; rate (operations per minute)	15	—
	- samples number	A1#; A2#; A3# (S-332); B1#; B2#; B3# (S-331); C1#; C2#; C3# (S-313); D1#; D2#; D3# (S-342); E1#; E2#; E3# (S-314)	—
	During the test: copper wire F not melt, specimens function correctly, no sustained arcing or welding of contacts		P
	After the test: specimens show no damage		P
	During the test: specimens are not lubricated		P
18.3	Overload test with filament lamps		P
	Test with a number of tungsten filament lamps or a number of halogen filament lamps (switches with I _n ≤ 16 A / V _n ≤ 250 V and switches of pattern numbers 3 and 03 with V _n > 250 V)		P
	- test voltage (V _n) (V)	240	—
	- test current (≥ 1,2 I _n) (A)	19,2	—
	- number of 200 W tungsten filament lamps	24	—
	- 200 operations; rate (operations per minute)	15	—
	- samples number	A1#; A2#; A3# (S-332); B1#; B2#; B3# (S-331); C1#; C2#; C3# (S-313); D1#; D2#; D3# (S-342)	—

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Clause	Requirement + Test	Result - Remark	Verdict
	During the test: copper wire F not melt, specimens function correctly, no sustained arcing or welding of contacts		P
	After the test: specimens show no damage		P
19	NORMAL OPERATION		P
19.1	Test for switches intended for inductive loads		P
	For the purpose of this test, pilot lights are disconnected		P
	Switches withstand, without excessive wear or other harmful effect, the mechanical, electrical and thermal stresses occurring in normal use		P
	- model / type reference	S-332; S-331; S-313; S-342; S-314	—
	- pattern number	6 (S-332); 1 (S-331); 7 (S-313); 1/6 (S-342); 1 (S-314)	—
	- nominal cross-sectional area per clause 18 (mm ²)	4,0	—
	- test voltage (Vn) (V)	250	—
	- test current (In) (cos φ 0,6) (A)	16	—
	- number of operations per table 18	40000	—
	- rate (operations per minute)	15	—
	- samples number	A1#; A2#; A3# (S-332); B1#; B2#; B3# (S-331); C1#; C2#; C3# (S-313); D1#; D2#; D3# (S-342); E1#; E2#; E3# (S-314)	—
	During the test: copper wire F not melt, specimens function correctly, no sustained arcing or welding of contacts		P
	Reduced electric strength per clause 16	See appended table 19.1	P
	Reduced temperature rise test per clause 17	See appended table 19.1	P
	After the tests the specimens not show:		P
	- wear impairing their further use		P
	- discrepancy between the position of the actuating member (if indicated) and that of the moving contacts		P
	- deterioration of enclosures, insulating lining or barriers		P
	- seepage of sealing compound		N/A
	- loosening of electrical or mechanical connections		P
	- displacement of moving contacts of switches pattern number 2, 3, 03 or 6/2		N/A
	During the test, specimens are not lubricated		P

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Clause	Requirement + Test	Result - Remark	Verdict
	No sustained arcing in slowly operation (sub clause 14.3)		P
19.2	Test for switches intended for externally ballasted lamp loads		P
	Switches intended for externally ballasted lamp loads withstand, without excessive wear or other harmful effect, the electrical and thermal stresses occurring when controlling externally ballasted lamp circuits		P
	- model / type reference	S-332; S-331; S-313; S-342	—
	- pattern number	6 (S-332); 1 (S-331); 7 (S-313); 1/6 (S-342)	—
	- nominal cross-sectional area per clause 18 (mm ²)	4,0	—
	- rate (operations per minute)	15	—
	- test voltage (Vn); test current (In) (cos φ 0,9); number of operations with load A	250; 16; 5000	—
	- test voltage (Vn); 100 operations with load B		—
	- samples number	A4#; A5#; A6# (S-332); B4#; B5#; B6# (S-331); C4#; C5#; C6# (S-313); D4#; D5#; D6# (S-342)	—
	During the test: copper wire F not melt, specimens function correctly, no sustained arcing or welding of contacts		P
	Reduced electric strength per clause 16	See appended table 19.2	P
	Reduced temperature rise test per clause 17	See appended table 19.2	P
	After the tests it is possible to make and break the switch by hand, and specimen not show:		P
	- wear impairing their further use		P
	- discrepancy between the position of the actuating member (if indicated) and that of the moving contacts		P
	- deterioration of enclosures, insulating lining or barriers		P
	- loosening of electrical or mechanical connections		P
	- seepage of sealing compound		N/A
	- displacement of moving contacts of switches pattern number 2, 3 or 6/2		N/A
19.3	Test for switches intended for self-ballasted lamp loads		P
	Switches intended for self-ballasted lamp (SBL) loads withstand, without excessive wear or other harmful effect, the electrical and thermal stresses occurring when controlling self-ballasted lamp circuits		P
	- model / type reference	S-332; S-331; S-313; S-342	—

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Clause	Requirement + Test	Result - Remark	Verdict
	- pattern number	6 (S-332); 1 (S-331); 7 (S-313); 1/6 (S-342)	—
	- nominal cross-sectional area per clause 18 (mm ²)	4,0	—
	- test voltage (Vn) (V)	250	—
	- test current (In) (A)	0.8	—
	- number of operations per table 18	40000	—
	- rate (operations per minute)	15	—
	- samples number	A7#; A8#; A9# (S-332); B7#; B8#; B9# (S-331); C7#; C8#; C9# (S-313); D7#; D8#; D9# (S-342)	—
	During the test: copper wire F not melt, specimens function correctly, no sustained arcing or welding of contacts		P
	Reduced electric strength per clause 16	See appended table 19.3	P
	Reduced temperature rise test per clause 17	See appended table 19.3	P
	After these tests, it is possible to make and break the switch by hand in the test circuit and the specimen not show:		P
	- wear impairing further use		P
	- discrepancy between the position of the actuating member and that of the moving contacts		P
	- deterioration of the enclosures, insulating lining or barriers		P
	- loosening of electrical or mechanical connections		P
	- seepage of sealing compound		N/A
	- displacement of the moving contacts of switches of pattern numbers 2, 3 or 6/2		N/A
20	MECHANICAL STRENGTH		P
20.1	General		P
	Accessories, surface mounting boxes, screwed glands and shrouds have adequate mechanical strength so as to withstand the stresses imposed during installation and use		P
20.2	Pendulum hammer test		P
	For all types of switches and for boxes: impact test (9 blows)	See appended table 20.2	P
	After the test: no damage, live parts no become accessible		P
20.3	Test on the main parts of surface-type switches		N/A
	Main parts of surface-type switches are first fixed to a cylinder of rigid steel sheet of radius equal to 4,5 times the distance between fixing holes (mm).. :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Main parts are then fixed in a similar manner to a flat steel sheet		N/A
	Torque applied to fixing screws (Nm) : 0,5 Nm / 1,2 Nm		—
	During and after the test: main parts show no damage		N/A
20.4	Screwed glands		N/A
	Screwed glands of switches with that have IP code higher than IP20: torque test		N/A
	- diameter of cylindrical metal test rod (mm) :		—
	- type of material..... : metal / moulded material		—
	- torque for 1 min (table 22) (Nm)..... :		—
	After the test: no damage of glands and enclosure of the specimens		N/A
20.5	Covers, cover plates or actuating members – accessibility to live parts		P
20.5.1	General		P
	Force necessary for covers, cover-plates or actuating members to come off or not to come off (accessibility with the test finger to live parts)		P
20.5.2	Verification of the non-removal of covers, cover-plates or actuating member		P
	Force applied for 1 min in direction perpendicular to the mounting surface : 40 N (S-313, S-314)		—
	Covers, cover-plates or actuating members not come off		P
	Test repeated on new specimens with a sheet of hard material, 1 mm ± 0,1 mm thick, fitted around the supporting frame (fig. 13)		P
	Covers, cover-plates or actuating members not come off		P
	After the test: no damage		P
20.5.3	Verification of the removal of covers, cover plates or actuating members		P
	Force not exceeding 120 N applied 10 times in direction perpendicular to the mounting / supporting surface: covers, cover-plates or actuating members come off	((S-313, S-314)	P
	Test repeated on new specimens with a sheet of hard material, 1 mm ± 0,1 mm thick, fitted around the supporting frame (fig. 13)		P
	Covers, cover-plates or actuating members come off		P
	After the test: no damage		P
20.6	Covers, cover plates or actuating members – accessibility to non-earthed metal parts separated from live parts		N/A
	Test is made as described in 20.5, but applying, for 20.5.2, the following forces:	10 N / 20 N	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
20.7	Covers, cover plates or actuating members – accessibility to insulating parts, earthed metal parts, the live parts of SELV ≤ 25 V AC or metal parts separated from live parts		P
	Test is made as described in 20.5, but applying, for 20.5.2, the force of 10 N for all covers, cover plates, or actuating members		P
20.8	Covers, cover plates or actuating members – application of gauges		P
	Test with gauge of figure 14 applied according to figure 15 for verification of the outline of covers, cover-plates or actuating members: distances between face C of gauge and outline of side under test, not decrease : complying		—
20.9	Grooves, holes and reverse tapers		P
	Test with gauge according to figure 17 applied as shown in figure 18 (1 N): gauge not enter more than 1 mm : complying		—
20.10	Additional test for cord-operated switch		N/A
	Operating members of cord-operated switch have adequate strength		N/A
	Pull test: pull 100 N for 1 min (normal use); pull of 50 N for 1 min (unfavourable direction). After the test:		N/A
	- switch show no damage		N/A
	- operating member not broken and cord-operated switch still operate		N/A
21	RESISTANCE TO HEAT		P
21.1	General		P
	Switches and boxes are sufficiently resistant to heat		P
	Decorative parts are not subjected to the test		P
21.2	Basic heating test		P
	Switches kept for 1 h in a heating cabinet at a temperature of $100\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$		P
	During the test: no change impairing their further use and sealing compound, if any, not flow		P
	After the test: no access to live parts, markings still legible		P
21.3	Ball-pressure test on parts of insulating material necessary to retain current-carrying parts and parts of the earthing circuit in position		P
	Parts of insulating material necessary to retain current-carrying parts and parts of the earthing circuit in position: ball-pressure test (1 h, $125\text{ }^{\circ}\text{C}$)	See appended table 21.3	P
21.4	Ball-pressure test on parts of insulating material not necessary to retain current-carrying parts and parts of the earthing circuit in position		P
	Parts of insulating material not necessary to retain current-carrying parts and parts of the earthing circuit in position, even though in contact with them: ball-pressure test (1 h)	See appended table 21.4	P

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Clause	Requirement + Test	Result - Remark	Verdict
22	SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS		P
22.1	General		P
	Connections withstand mechanical stresses		P
	Thread-forming or thread-cutting screws used only if supplied together with the piece in which they are intended to be inserted		N/A
	Thread-cutting screws intended to be used during installation are captive with the relevant part of the accessory		N/A
	Screws and nuts which transmit contact pressure are of metal and are in engagement with a metal thread		P
	Threaded part torque test	See appended table 22.1	P
22.2	Correct insertion of screws		N/A
	Screws in engagement with a thread of insulating material: correct introduction into the screw hole or nut ensured		N/A
22.3	Contact pressure of electrical connections		P
	Contact pressure: not transmitted through insulating material other than ceramic, pure mica or other material no less suitable unless there is sufficient resiliency in metallic parts		P
22.4	Screws and rivets, used both as electrical and mechanical connections		P
	Screws and rivets which serve as electrical as well as mechanical connections shall be locked against loosening and/or turning		P
22.5	Material of current-carrying parts		P
	Current-carrying parts of metal having mechanical strength, electrical conductivity and resistance to corrosion adequate:		P
	Requirement of 22.5 does not apply to screws, nuts, washers, clamping plates and similar parts of terminals		P
	- copper		N/A
	- alloy with at least 58 % copper for parts made from cold-rolled sheet or with at least 50 % copper for other parts		P
	- stainless steel with at least 13 % chromium and not more than 0,09 % carbon		N/A
	- steel with electroplated coating of zinc (ISO 2081): service condition ISO no. (1/2/3); IP (X0/X4/X5/X6); thickness (µm)..... :		N/A
	- steel with electroplated coating of nickel and chromium (ISO 1456): service condition ISO no. (2/3/4); IP (X0/X4/X5/X6); thickness (µm)..... :		N/A
	- steel with electroplated coating of tin (ISO 2093): service condition ISO no. (2/3/4); IP (X0/X4/X5/X6); thickness (µm)..... :		N/A

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
	Current-carrying parts subjected to mechanical wear: not of steel with electroplated coating		N/A
	Metals having a great difference of electrochemical potential: not used in contact with each other		N/A
22.6	Contacts subjected to sliding actions		P
	Contacts subjected to sliding action: of metal resistant to corrosion		P
22.7	Thread-forming and thread-cutting screws		N/A
	Thread-forming screws and thread-cutting screws not used for the connection of current-carrying parts		N/A
	Thread-forming screws and thread-cutting screws used to provide earthing continuity: not necessary to disturb the connection and at least two screws are used for each connection		N/A
23	CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGH SEALING COMPOUND		P
23.1	General		P
	Creepage distances, clearances and distances through sealing compound no less than the values shown in table 23	See appended table 23.1	P
	Sub clause 23.1 does not apply to pilot light units. Requirements for pilot light units are given in 13.16		N/A
23.2	Insulating compound		N/A
	Insulating compound: not protrude above the edge of the cavity in which it is contained		N/A
24	RESISTANCE OF INSULATING MATERIAL TO ABNORMAL HEAT, TO FIRE AND TO TRACKING		P
24.1	Resistance to abnormal heat and to fire		P
	Parts of insulating material which might be exposed to thermal stresses due to electric effects and the deterioration of which might impair the safety are not unduly affected by abnormal heat and fire		P
	Glow-wire test according to IEC 60695-2-10 and IEC 60695-2-11	See appended table 24.1	P
24.2	Resistance to abnormal heat and to fire		N/A
	Parts of insulating material retaining live parts in position of switches with IP>X0: of material resistant to tracking		N/A
	Tracking test with solution A of IEC 60112	See appended table 24.2	N/A
25	RESISTANCE TO RUSTING		N/A
	Ferrous parts protected against rusting		N/A
	Test: 10 min in a 10 % solution of ammonium chloride in water at a temperature of (+20 ± 5) °C., 10 min in a box containing air saturated with moisture at a temperature of (+20 ± 5) °C., 10 min in a heating cabinet at a temperature of (+100 ± 5) °C		N/A
	No signs of rust		N/A

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
26	EMC REQUIREMENTS		N/A
26.1	Immunity		N/A
	No immunity tests necessary		N/A
26.2	Emission		N/A
	No emission tests necessary		N/A

IEC 60669-1				
Clause	Requirement + Test		Result - Remark	Verdict
12.2.5	TABLE: Test with apparatus shown in figure 10 (screw terminals)			P
	Rated current (A)	16		—
	Type of conductors	rigid, flexible		—
	Smallest/largest cross-sectional area per table 4 (mm ²)	1,5 / 4,0		—
	Number of conductors	1		—
	Nominal diameter of thread (mm); torque per table 5 (Nm)	3,36; 0,8		—
Cross-sectional area (mm ²)	Diameter of bushing hole per table 6 (mm)	Height H per table 6 (mm)	Mass (kg)	Remarks
1,5	6,5	260	0,4	—
4,0	9,5	280	0,9	—
Supplementary information:				

12.2.6	TABLE: Pull test (screw terminals)			P
	Rated current (A)	16		—
	Smallest/largest cross-sectional area per table 4 (mm ²)	1,5 / 4,0		—
	Nominal diameter of thread (mm); torque 2/3 per table 5 (Nm)	3,36; 0,53		—
Cross-sectional area (mm ²)	Number of conductors	Type of conductors (rigid solid / rigid stranded / flexible)	Pull per table 7 applied for 1 min (N)	Remarks
1,5	1	rigid, flexible	35	—
4,0	1	rigid, flexible	50	—
Supplementary information:				

12.2.7	TABLE: Tightening test (screw terminals)			P
	Rated current (A)	16		—
	Nominal diameter of thread (mm); torque 2/3 per table 5 (Nm)	3,36; 0,53		—
Largest cross-sectional area per table 2 (mm ²)	Permissible number of conductors	Type of conductors (rigid solid / rigid stranded / flexible)	Number of wires and nominal diameter of wires	Remarks
4,0	1	rigid solid	1 × 2,25	—
4,0	1	rigid stranded	7 × 0,86	—
4,0	1	flexible	56 × 0,30	—
Supplementary information:				

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
16.2	TABLE: Insulation resistance		P
Item per table 23	test voltage applied between:	measured (MΩ)	required (MΩ)
1	all poles connected together and the body, with the switch in the "on" position:	500	≥ 5
2	each pole in turn and all other poles connected to the body, with the switch in the "on" position	500	≥ 5
3	the terminals which are electrically connected together when the switch is in the "on" position, the switch being in the "off" position	500	≥ 2
4	Metal parts of mechanism and live parts	—	≥ 5
4	Metal parts of mechanism and a metal foil in contact with the surface of the actuating member	—	≥ 5
4	Metal parts of mechanism and accessible metal parts	—	≥ 5
8	Live parts and accessible metal parts	—	≥ 5
<i>Supplementary information:</i>			

16.3	TABLE: Dielectric strength		P
	Rated voltage (V).....:	250	—
item per table 23	test voltage applied between:	test voltage (V)	flashover / breakdown (Yes/No)
1	all poles connected together and the body, with the switch in the "on" position:	2000	No
2	each pole in turn and all other poles connected to the body, with the switch in the "on" position	2000	No
3	the terminals which are electrically connected together when the switch is in the "on" position, the switch being in the "off" position	2000	No
4	Metal parts of mechanism and live parts	—	—
4	Metal parts of mechanism and a metal foil in contact with the surface of the actuating member	—	—
4	Metal parts of mechanism and accessible metal parts	—	—
8	Live parts and accessible metal parts	—	—
<i>Supplementary information:</i>			

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
17	TABLE: Temperature rise measurements		P
	Rated current (A)	16	—
	Nominal cross-sectional area (mm ²)	4,0	—
	Terminal screws: torque (Nm) (2/3 table 5).....	0,53	—
	Test current per table 16 passed for 1 h (A)	20	—
	Rated voltage of pilot light (V).....	250	—
	Samples number	A1#; A2#; A3# C1#; C2#; C3# D1#; D2#; D3#	—
thermocouple locations		max. measured temperature rise (K)	allowed temperature rise (K)
S-332:			
Terminals		24,3	45
Insulating material		8,4	—
S-313:			
Terminals		23,4	45
Insulating material		8,6	—
S-342:			
Terminals		22,8	45
Insulating material		7,9	—
<i>Supplementary information:</i>			

19.1	TABLE: Test for switches intended for inductive loads (clause 19.1)		P
	Reduced electric strength per clause 16		P
item per table 23	test voltage applied between:	test voltage (V)	flashover / breakdown (Yes/No)
1	all poles connected together and the body, with the switch in the "on" position:	1500	No
2	each pole in turn and all other poles connected to the body, with the switch in the "on" position	1500	No
3	the terminals which are electrically connected together when the switch is in the "on" position, the switch being in the "off" position	1500	No
4	Metal parts of mechanism and live parts	—	—
4	Metal parts of mechanism and a metal foil in contact with the surface of the actuating member	—	—

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
4	Metal parts of mechanism and accessible metal parts	—	—
8	Live parts and accessible metal parts	—	—
	Reduced temperature rise test per clause 17		P
	Rated current passed for 1 h (A)	16	—
	thermocouple locations	max. measured temperature rise (K)	allowed temperature rise (K)
S-332:			
	Terminals	23,5	≤ 45
S-331:			
	Terminals	22,8	≤ 45
S-313:			
	Terminals	24,2	≤ 45
S-342:			
	Terminals (Single-pole)	23,6	≤ 45
	Terminals (Two-way)	22,8	≤ 45
S-314:			
	Terminals	23,4	≤ 45
Supplementary information:			

19.2	TABLE: Test for switches intended for externally ballasted lamp loads (clause 19.2)		P
	Reduced electric strength per clause 16		P
item per table 23	test voltage applied between:	test voltage (V)	flashover / breakdown (Yes/No)
1	all poles connected together and the body, with the switch in the "on" position:	1500	No
2	each pole in turn and all other poles connected to the body, with the switch in the "on" position	1500	No
3	the terminals which are electrically connected together when the switch is in the "on" position, the switch being in the "off" position	1500	No
4	Metal parts of mechanism and live parts	—	—
4	Metal parts of mechanism and a metal foil in contact with the surface of the actuating member	—	—
4	Metal parts of mechanism and accessible metal	—	—

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
	parts	—	—
8	Live parts and accessible metal parts	—	—
	Reduced temperature rise test per clause 17		P
	Rated current passed for 1 h (A)	16	—
thermocouple locations		max. measured temperature rise (K)	allowed temperature rise (K)
S-332:			
Terminals		22,6	≤ 45
S-331:			
Terminals		23,4	≤ 45
S-313:			
Terminals		25,6	≤ 45
S-342:			
Terminals (Single-pole)		22,8	≤ 45
Terminals (Two-way)		23,6	≤ 45
Supplementary information:			

19.3	TABLE: Test for switches intended for self-ballasted lamp loads (clause 19.3)		P
	Reduced electric strength per clause 16		P
item per table 23	test voltage applied between:	test voltage (V)	flashover / breakdown (Yes/No)
1	all poles connected together and the body, with the switch in the "on" position:	1500	No
2	each pole in turn and all other poles connected to the body, with the switch in the "on" position	1500	No
3	the terminals which are electrically connected together when the switch is in the "on" position, the switch being in the "off" position	1500	No
4	Metal parts of mechanism and live parts	—	—
4	Metal parts of mechanism and a metal foil in contact with the surface of the actuating member	—	—
4	Metal parts of mechanism and accessible metal parts	—	—
8	Live parts and accessible metal parts	—	—
	Reduced temperature rise test per clause 17		P
	Rated current passed for 1 h (A) :	16	—

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
thermocouple locations		max. measured temperature rise (K)	allowed temperature rise (K)
S-332:			
Terminals		24,2	≤ 45
S-331:			
Terminals		24,6	≤ 45
S-313:			
Terminals		25,8	≤ 45
S-342:			
Terminals (Single-pole)		23,8	≤ 45
Terminals (Two-way)		24,2	≤ 45
Supplementary information:			

20.2	TABLE: Impact resistance			P
part of enclosure tested per table 21 (A, B, C, D)		blows per part	height of fall (mm)	comments
A		5 blows	80	OK
B		4 blows	80	OK
Supplementary information:				

21.3	TABLE: Ball pressure test of thermoplastic materials			P
	Allowed impression diameter (mm).....	≤ 2 mm		
part under test		material designation	test temperature (°C)	impression diameter (mm)
Base		see the components list	125	1,5
Inner rocker		see the components list	125	1,3
Supplementary information:				

21.4	TABLE: Ball pressure test of thermoplastic materials			P
	Allowed impression diameter (mm).....	≤ 2 mm		
part under test	material designation	test temperature (°C) ⁽¹⁾	impression diameter (mm)	
Outer rocker (S-332)	See the components list	70	1,0	
Cover plate (S-332)	See the components list	70	1,1	
Cover plate (S-505G)	See the components list	70	1,0	
Cover plate (S-505G)	See the components list	70	1,0	

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict

Supplementary information:

⁽¹⁾ 70 °C / 40 °C + highest temperature rise determined during the test of clause 17

22.1	TABLE: Threaded part torque test					P
threaded part identification	diameter of thread (mm)	column number (I, II, or III)	applied torque (Nm)	times (5/10)	no damage	
Terminal for supply conductors	3,36	II	0,8	5	Y	
Supplementary information:						

23.1	TABLE: Creepage distances, clearances and distances through sealing compound							P
	Rated voltage (V).....			250			—	
item per table 23	creepage distance dcr, clearance cl and distance through sealing compound dtsc at/of:	required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)	required dtsc (mm)	dtsc (mm)	
1	between live parts which are separated when the contacts are open	—	—	≥ 3	> 3,9 (S-332, S-331, S-342, S-314); ≥ 3,20 (S-313)	—	—	
2	Between live parts of different polarity	—	—	≥ 3	—	—	—	
3	between live parts and accessible surfaces of parts of insulating material	—	—	≥ 3	> 3,9	—	—	
3	Between live parts and earthed metal parts, including the earthing circuit	—	—	≥ 3	—	—	—	
3	metal frames supporting the base of flush-type switches	—	—	≥ 3	> 3,9	—	—	
3	between live parts and screws or devices for fixing bases, covers or cover-plates	—	—	≥ 3	—	—	—	
4	Between metal parts of the mechanism and screws or devices for fixing the base	—	—	≥ 3	—	—	—	
4	Between metal parts of the mechanism and metal frames supporting the base	—	—	≥ 3	—	—	—	
4	Between metal parts of the mechanism and accessible metal	—	—	≥ 3	—	—	—	

IEC 60669-1							
Clause	Requirement + Test			Result - Remark			Verdict
	parts						
6	Between live parts which are separated when the contacts are open	≥ 3	$\geq 3,26$ (S-332, S-331); $\geq 3,20$ (S-313); $\geq 3,78$ (S-342); $\geq 3,56$ (S-314)	—	—	—	—
7	Between live parts of different polarity	≥ 3	—	—	—	—	—
8	Between live parts and accessible surfaces of parts of insulating material	≥ 3	$> 3,9$	—	—	—	—
8	Between live parts and earthed metal parts, including the earthing circuit, not mentioned under items 9 and 11	≥ 3	—	—	—	—	—
8	Between live parts and metal frames supporting the base	≥ 3	$> 3,9$	—	—	—	—
8	Between live parts and screws or devices for fixing bases, covers, or cover-plates	≥ 3	$> 3,9$	—	—	—	—
10	Between metal parts of the mechanism and screws or devices for fixing the base	≥ 3	—	—	—	—	—
Supplementary information:							

24.1	TABLE: Glow-wire test			P
part under test		material designation	test temperature (°C)	remarks
Base		See the components list	850	Flame and glowing extinguish within 30 s
Inner rocker		See the components list	850	Flame and glowing extinguish within 30 s
Outer rocker (S-332)		See the components list	650	No visible flame and no sustained glowing
Cover plate (S-332)		See the components list	650	No visible flame and no sustained glowing
Cover plate (S-505G)		See the components list	650	No visible flame and no sustained glowing
Cover plate (S-505G)		See the components list	650	No visible flame and no sustained

IEC 60669-1			
Clause	Requirement + Test	Result - Remark	Verdict
			glowing
<i>Supplementary information:</i>			

Annex 1 National deviations

Clause	Requirement + Test	Result - Remark	Verdict
1.1	Safety		P
	- Language: Markings in Arabic or/and English	English	P
	- Instructions shall be in Arabic or both Arabic and English	Both Arabic and English	P
	- Marking of the country of origin	MADE IN CHINA	P
	- Main voltage 127 or 250 V	250V	P
	- Mains frequency 60Hz	50/60Hz	P
	For Switches:		P
	- Current ratings preferred: 5A, 16A, 15A, 20A, 30A (different rating accepted)	16AX, 16A	P
	If 127 V switches, the high voltage test shall be at 1500 V		N/A
	- Thickness:		P
	Switch plate: Insulating plates > 3mm	> 3 mm	P
	Metal plates > 1.1 mm (if with means of strengthening or support at the edges for bearing surface>0.8 mm)	> 1,3 mm	P
	- Insulation resistance test: not less than 100 MegOhm.	> 100 MegOhm (See appended table 16.1)	P
	- Dielectric strength: test at 1500V	1500 V	P
	- Temperature rise: limit 30°K for all parts.	Max.: 24,3 K (See appended table 17)	P

ANNEX 2

List of test equipment used:

Clause	Measurement/ testing	Testing / measuring equipment / material used	Range used	Last Calibration date	Calibration due date
8	Indelibility of markings	Water, cloth, petrol	—	—	—
10	Protection against electrical shock	Jointed test finger		2019.04.06	2020.04.05
		Unjointed test finger	0-100N	2019.04.08	2020.04.05
		Electrical indicator		2019.05.08	2020.05.07
12	Terminals	Screw driver	20~120Ncm	2019.09.10	2020.09.09
		Spanner with torque meter	0,1~6Nm	2018.12.24	2019.12.23
		Arrangement for checking damage to conductors	(10±2)r/min	2019.08.07	2020.08.06
		AC Millivoltmeter	0-100V	2019.11.13	2020.11.12
13	Constructional requirements	Heating cabinet	0-200°C	2018.11.27	2019.11.26
		Refrigerator	0~-40°C	2019.04.16	2020.04.15
14	Mechanism	Adjustable load (resistors and inductors)	1~100A, 0,5~ 750mH, 0,2~ 76,6Ω		
		Apparatus for normal operation test		2019.08.14	2020.08.13
		Voltmeter	0-500V	2019.10.22	2020.10.21
		Ammeter	0-50A	2019.02.07	2020.02.06
		Power factor meter	0,5-1	2019.11.13	2020.11.12
15	Resistance to ageing, to harmful ingress of water and to humidity	Heating cabinet	0-200°C	2018.11.27	2019.11.26
		Humidity chamber	20-60°C, (RH)93%	2019.01.21	2020.01.20
16	Insulation resistance and electric strength	Insulation test equipment (Megameter)	DC 500V	2019.08.08	2020.08.07
		High voltage test equipment	0-5000V	2018.12.02	2019.12.01
17	Temperature- rise test	Voltmeter	0-500V	2019.10.22	2020.10.21
		Ammeter	0-50A	2019.02.07	2020.02.06
		Hybrid recorder	-20-200°C	2019.06.26	2020.06.26
		Device for temperature-rise test		2019.03.17	2020.03.16

ANNEX 2

List of test equipment used:

Clause	Measurement/ testing	Testing / measuring equipment / material used	Range used	Last Calibration date	Calibration due date
18	Making and breaking capacity tests	Adjustable load (resistors and inductors)	1~100A, 0,5~ 750mH, 0,2~ 76,6 Ω		
		Apparatus for normal operation test		2019.08.14	2020.08.13
		Voltmeter	0-500V	2019.10.22	2020.10.21
		Ammeter	0-50A	2019.02.07	2020.02.06
		Power factor meter	0,5-1	2019.11.13	2020.11.12
19	Normal operation	Adjustable load (resistors and inductors)	1~100A, 0,5~ 750mH, 0,2~ 76,6 Ω		
		Apparatus for normal operation test		2019.08.14	2020.08.13
		Voltmeter	0-500V	2019.10.22	2020.10.21
		Ammeter	0-50A	2019.02.07	2020.02.06
		Power factor meter	0,5-1	2019.11.13	2020.11.12
20	Mechanical strength	Impact-test apparatus		2019.06.08	2020.06.07
		Gauge for the verification of the outline of covers or cover-plates		2019.09.11	2020.09.10
		Gauge for verification of grooves, holes and reverse tapers		2019.01.11	2020.01.10
21	Resistance to heat	Heating cabinet 401B	0-200°C	2018.11.27	2019.11.26
		Apparatus for compression test for the verification of resistance to heat		2019.03.08	2020.03.07
22	Screws, current carrying parts and connections	Screw driver	20~120Ncm	2019.09.10	2020.09.09
		Spanner with torque meter	0.1~6Nm	2018.12.24	2019.12.23

ANNEX 2

List of test equipment used:

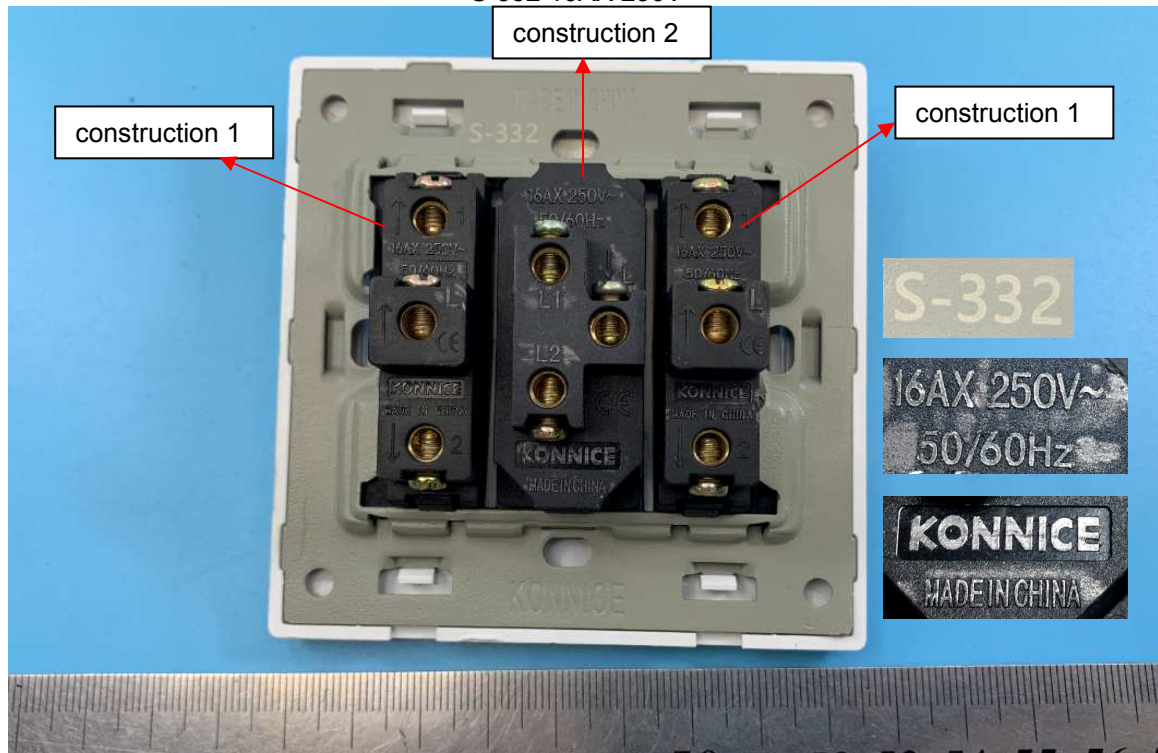
Clause	Measurement/ testing	Testing / measuring equipment / material used	Range used	Last Calibration date	Calibration due date
23	Creepage distances, clearances	Slide gauge	1-8mm	2019.09.01	2020.08.31
24	Resistance of insulating material to abnormal heat, to fire and to tracking	Glow Wire Tester		2019.04.06	2020.04.05

ANNEX 3 PHOTOGRAPHS

S-332 16AX 250V~



S-332 16AX 250V~

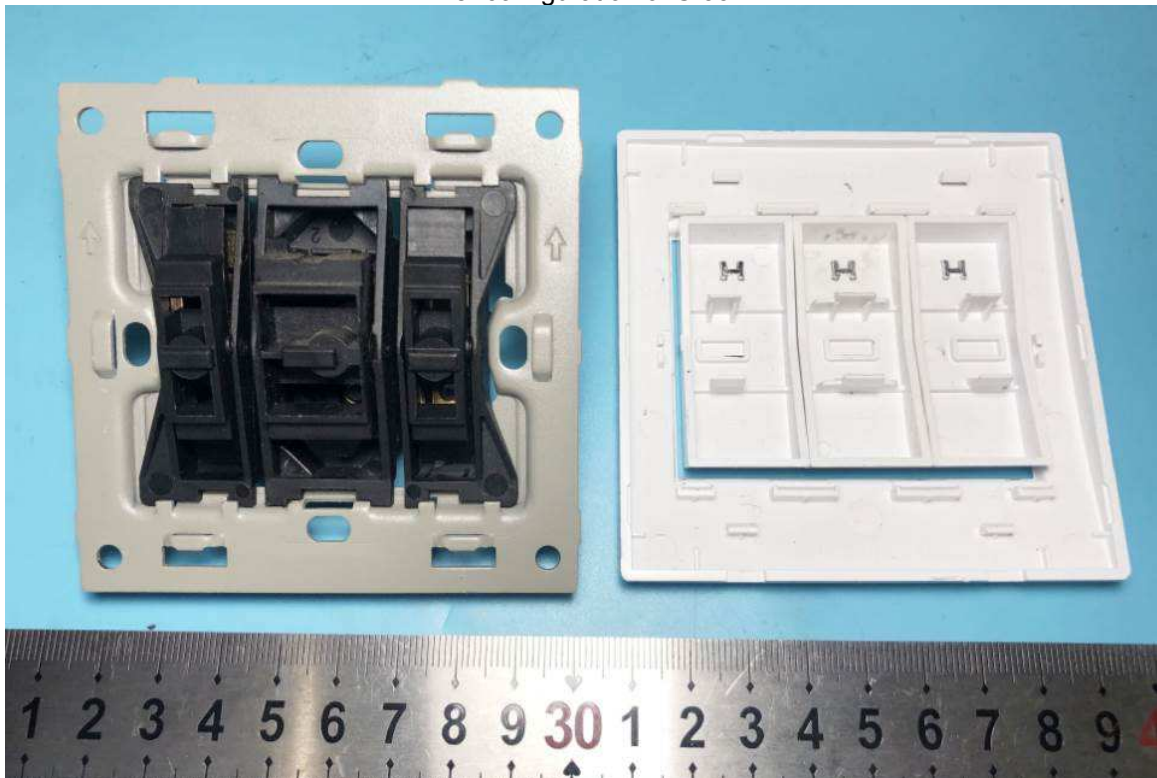


ANNEX 3 PHOTOGRAPHS

S-332 16AX 250V~

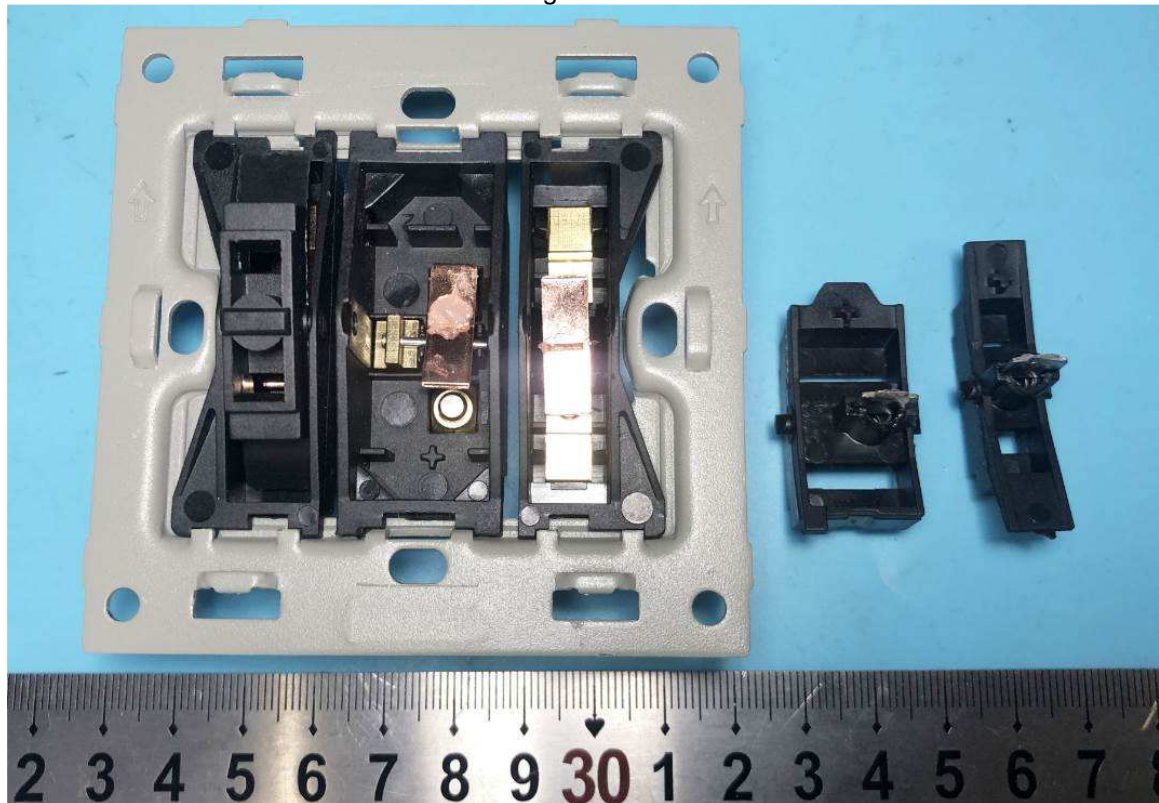


Inner configuration of S-332

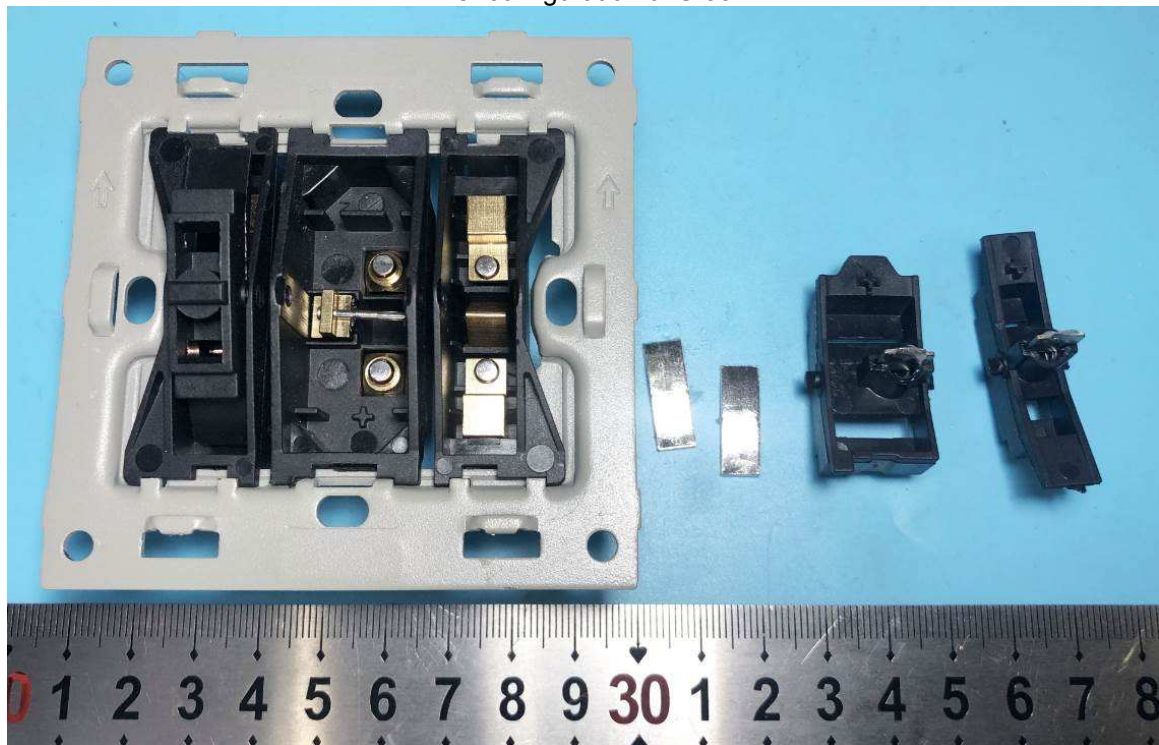


ANNEX 3 PHOTOGRAPHS

Inner configuration of S-332

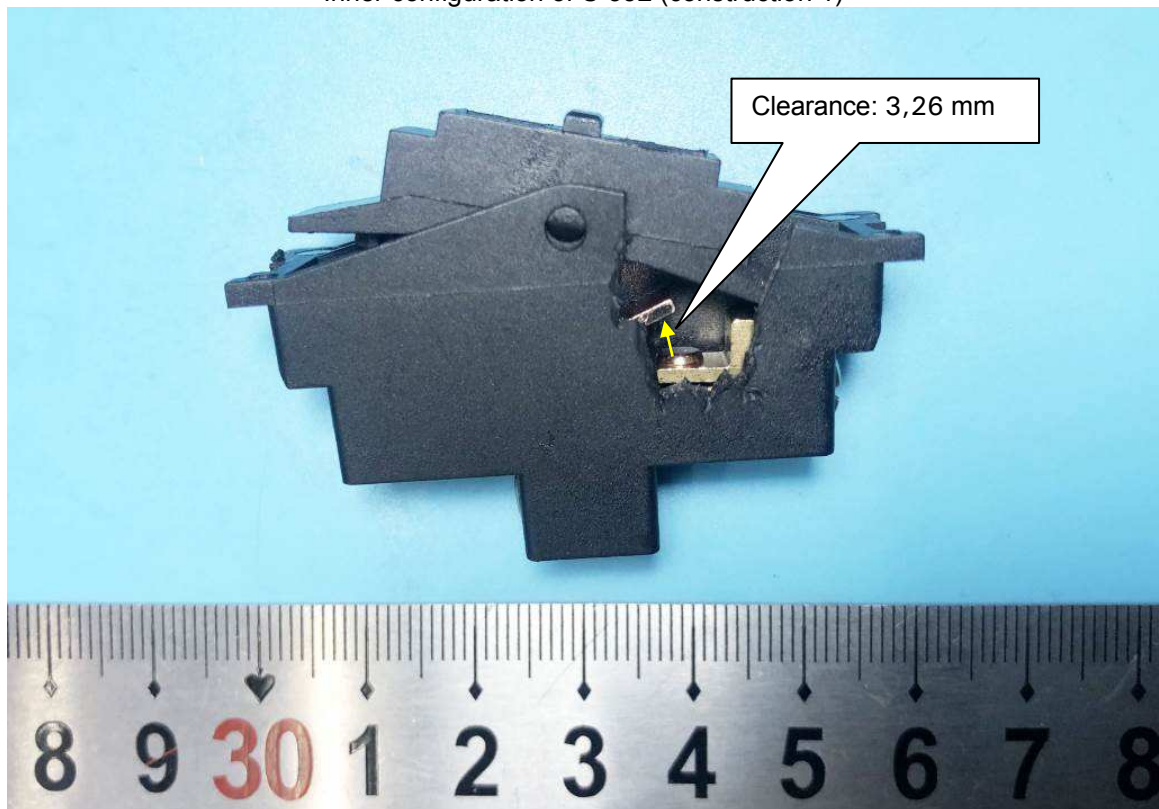


Inner configuration of S-332

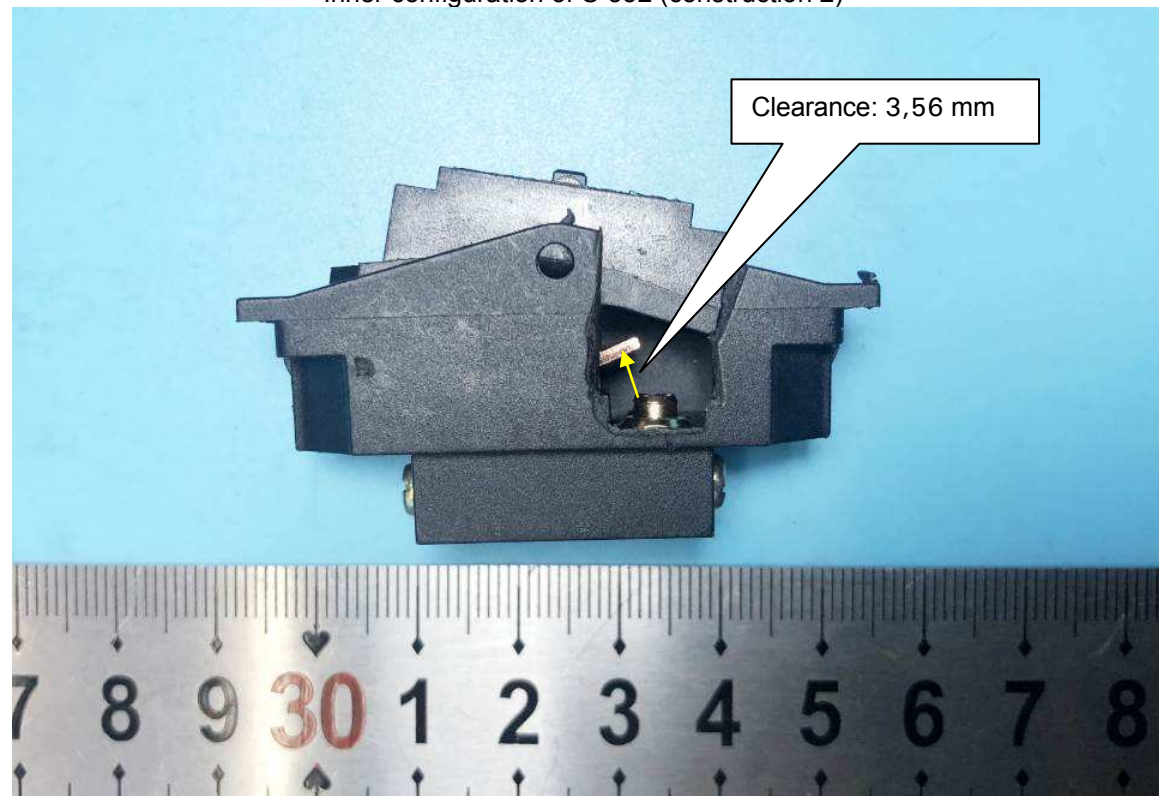


ANNEX 3 PHOTOGRAPHS

Inner configuration of S-332 (construction 1)



Inner configuration of S-332 (construction 2)

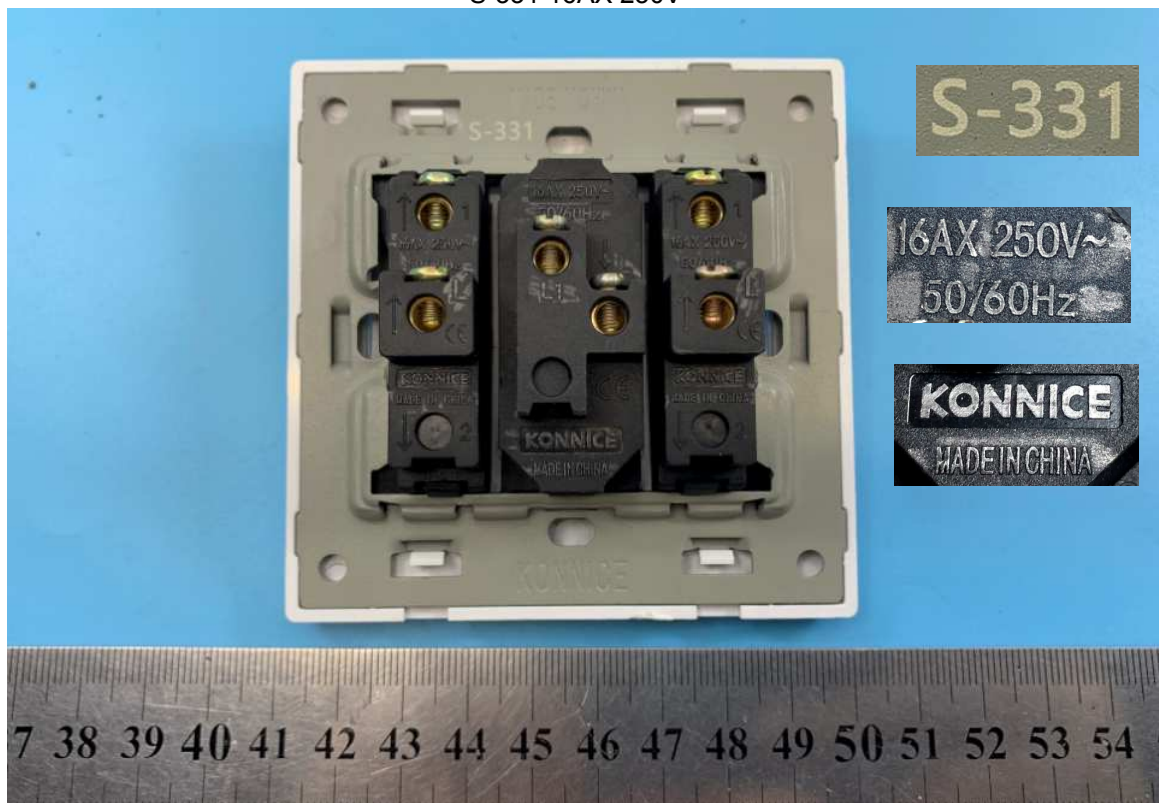


ANNEX 3 PHOTOGRAPHS

S-331 16AX 250V~

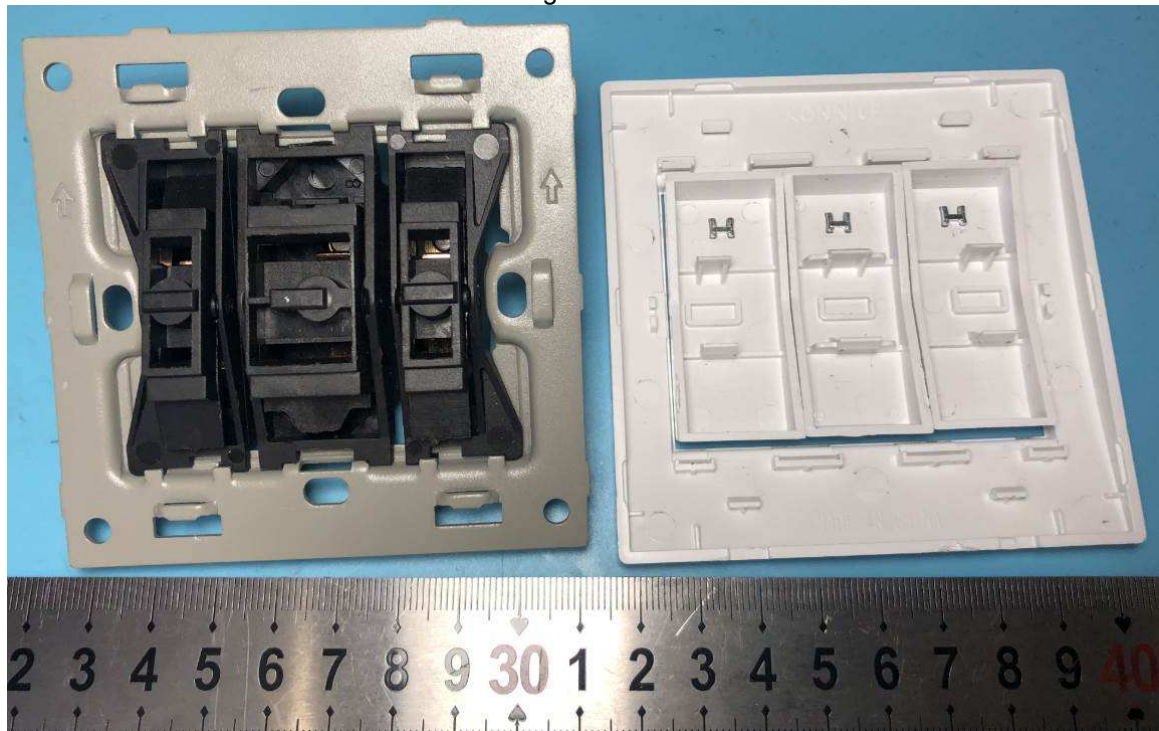


S-331 16AX 250V~

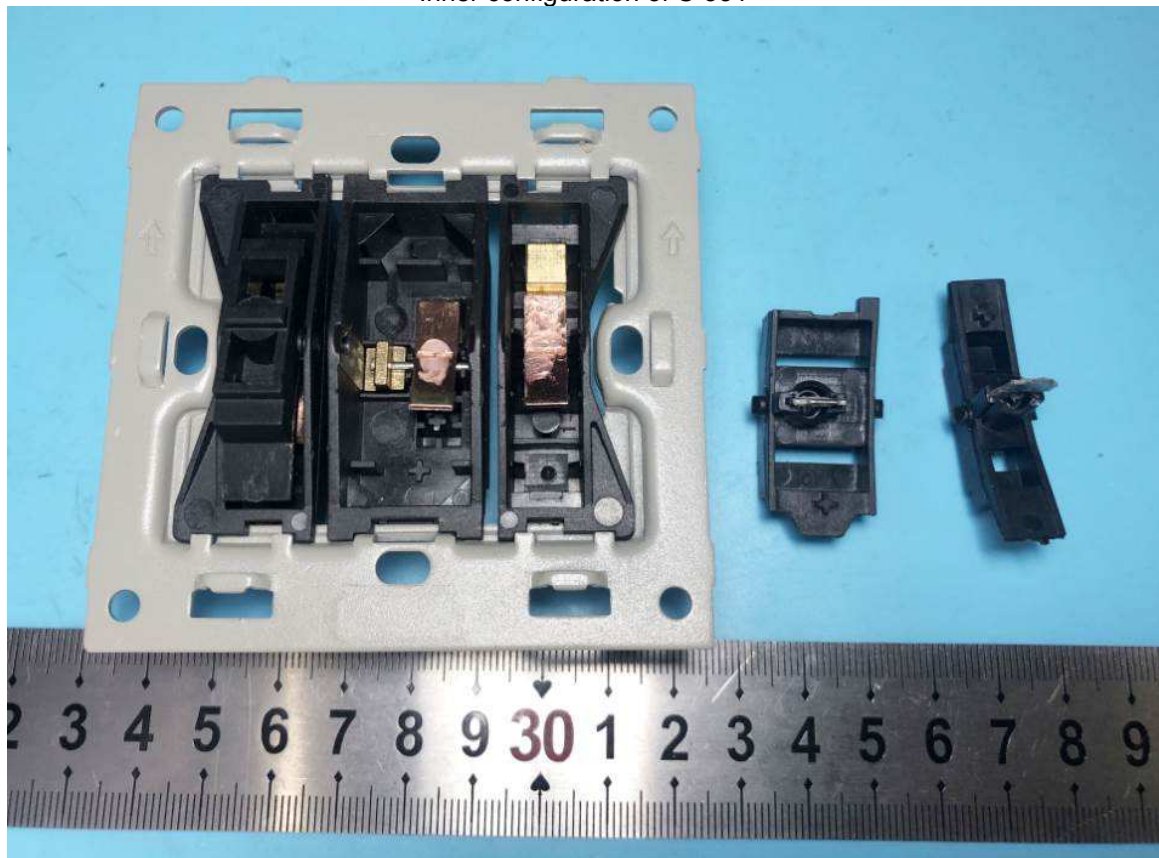


ANNEX 3 PHOTOGRAPHS

Inner configuration of S-331

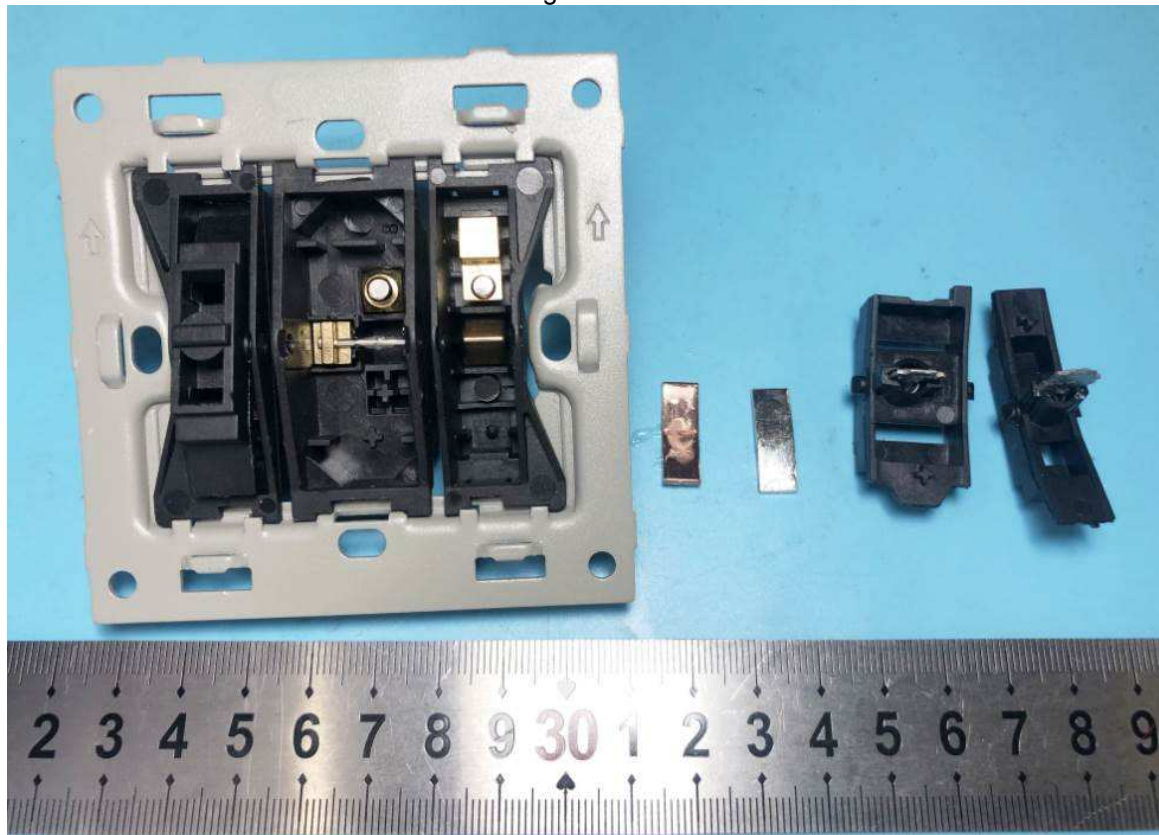


Inner configuration of S-331

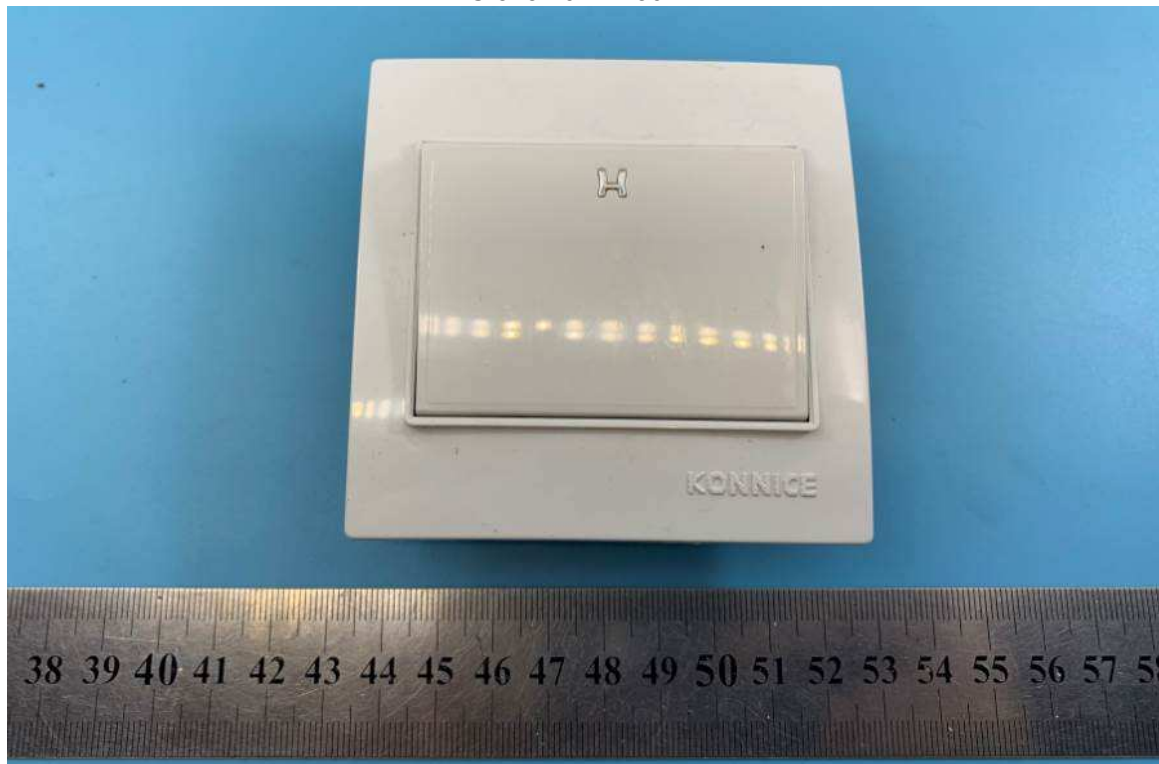


ANNEX 3 PHOTOGRAPHS

Inner configuration of S-331

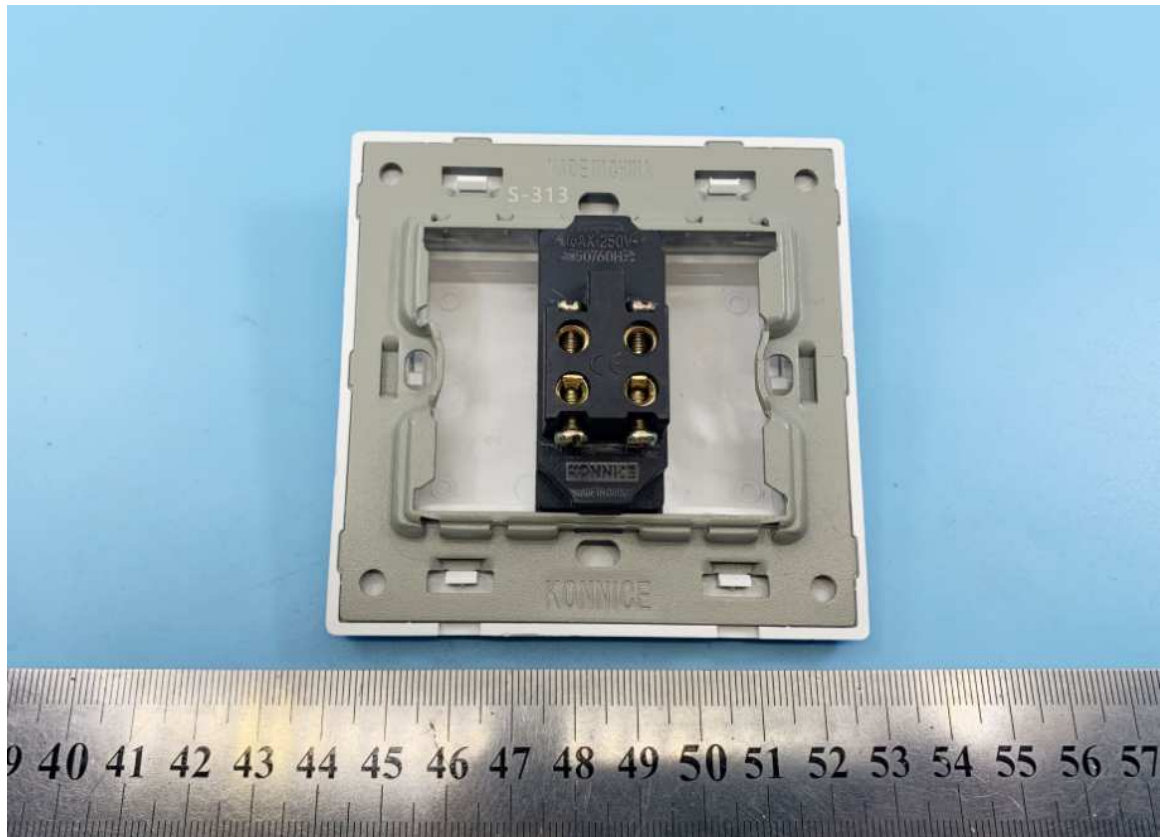


S-313 16AX 250V~

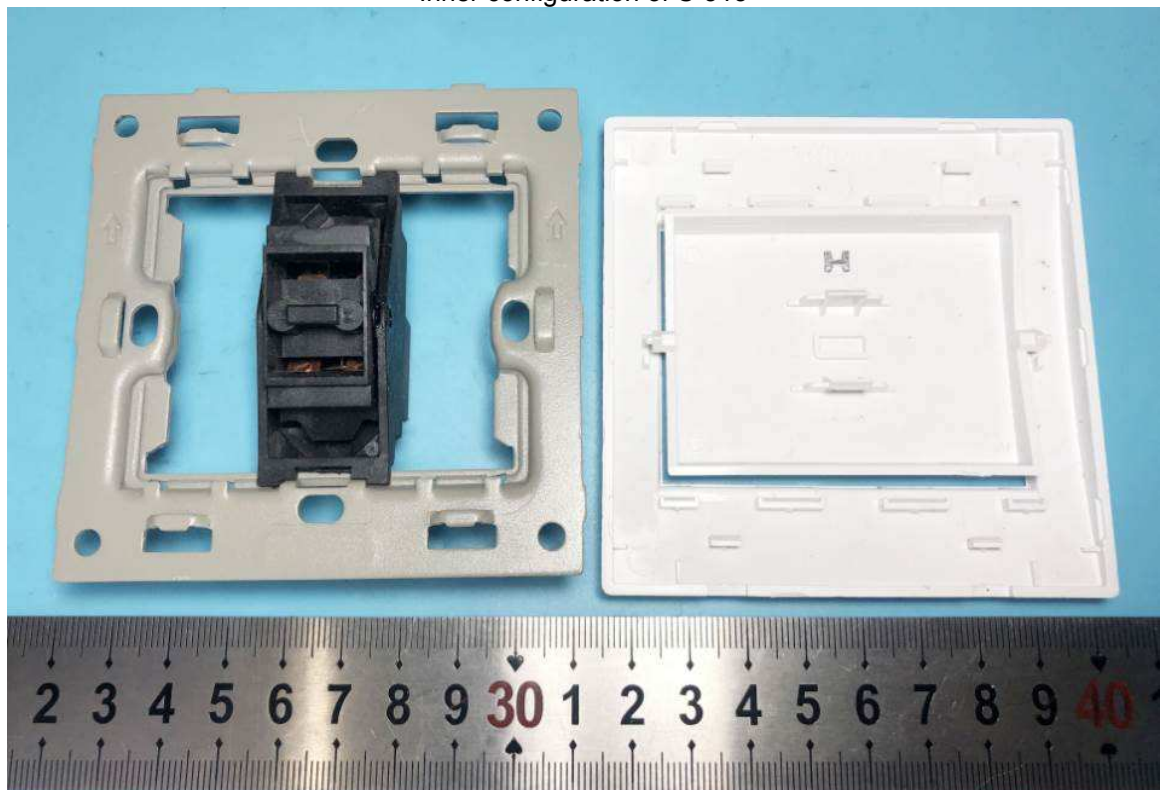


ANNEX 3 PHOTOGRAPHS

S-313 16AX 250V~

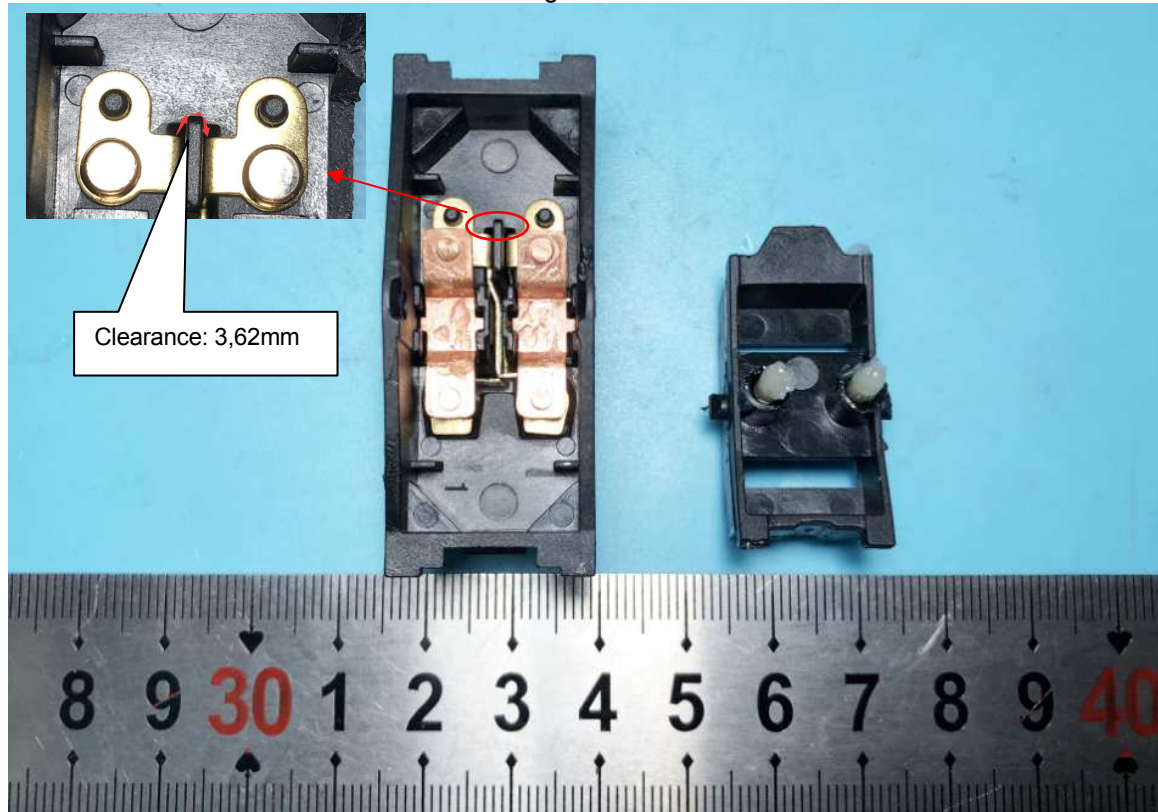


Inner configuration of S-313

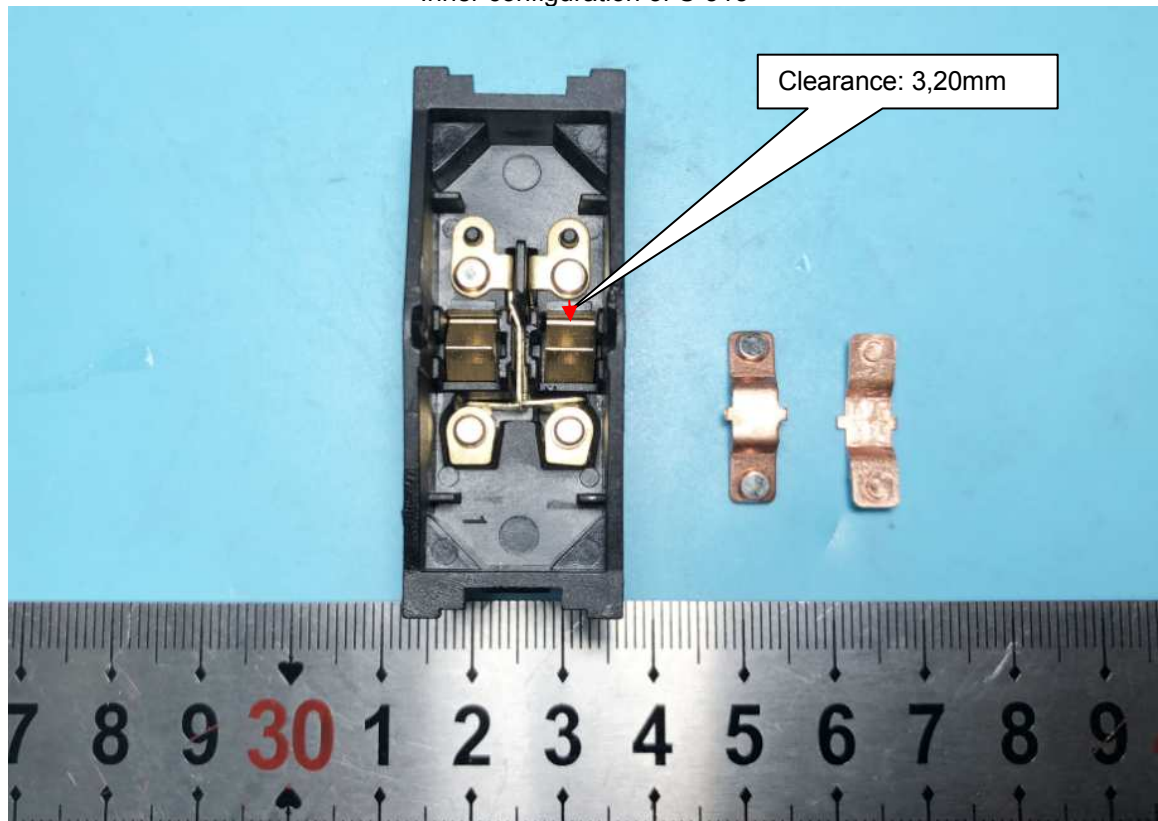


ANNEX 3 PHOTOGRAPHS

Inner configuration of S-313

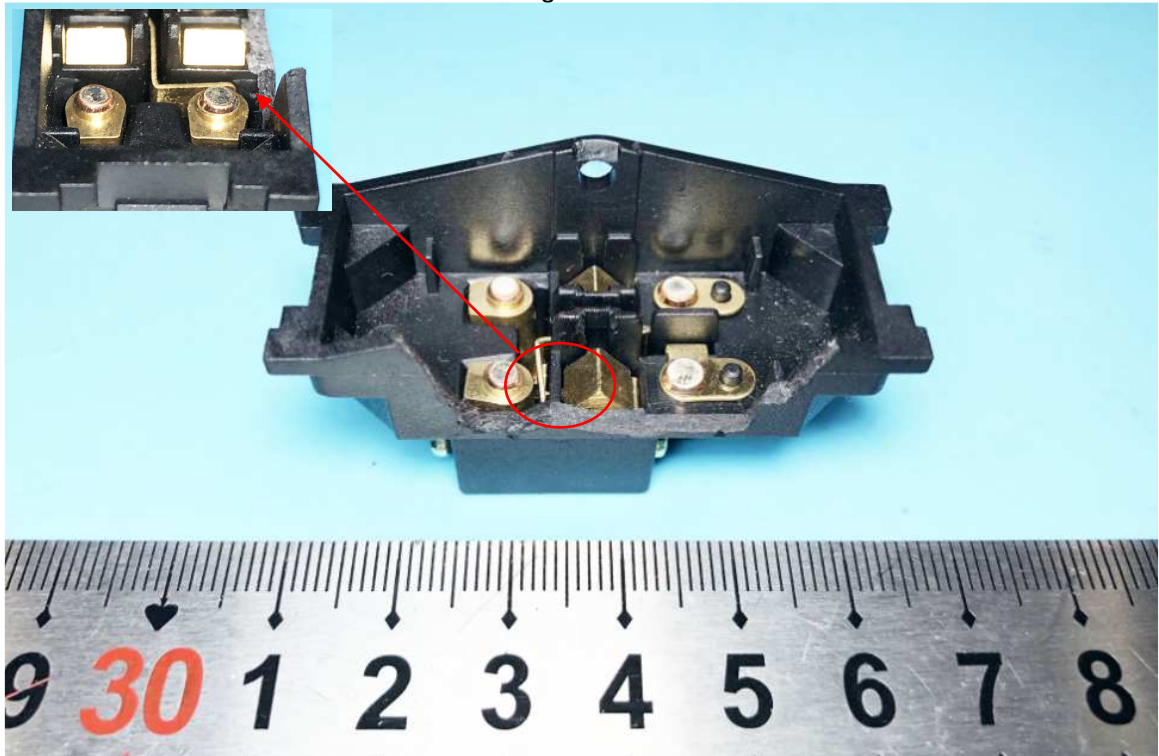


Inner configuration of S-313

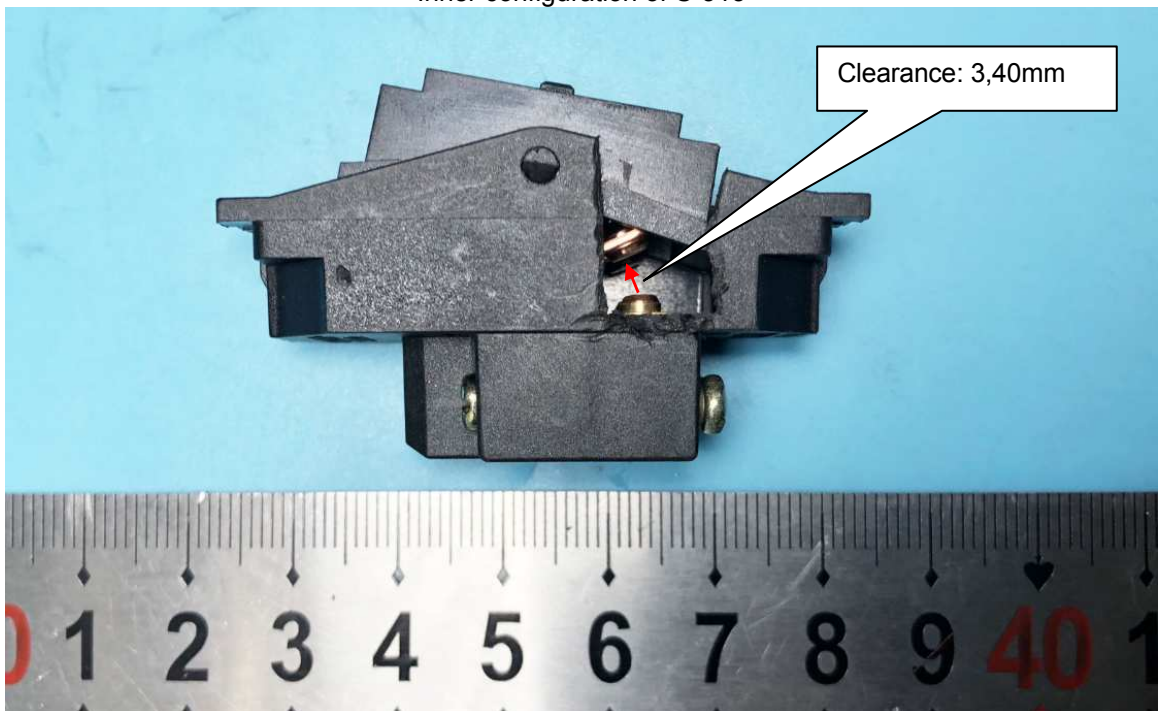


ANNEX 3 PHOTOGRAPHS

Inner configuration of S-313

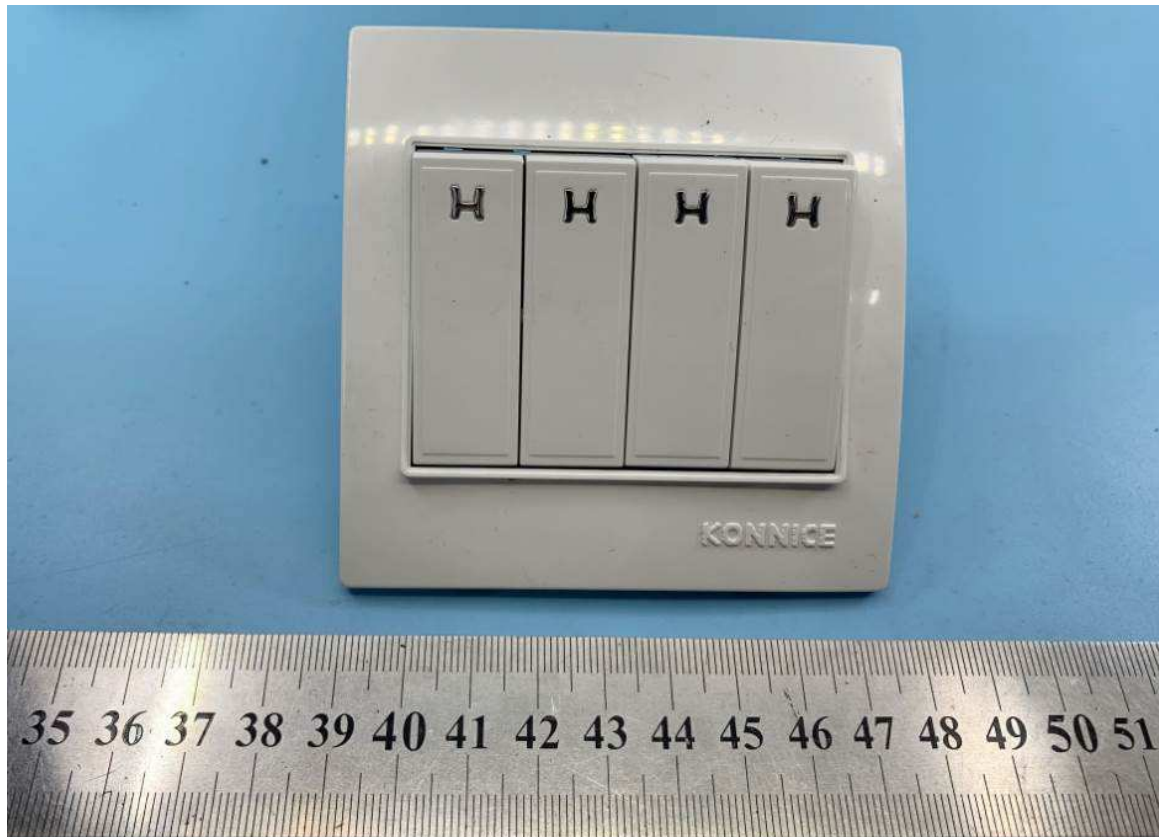


Inner configuration of S-313

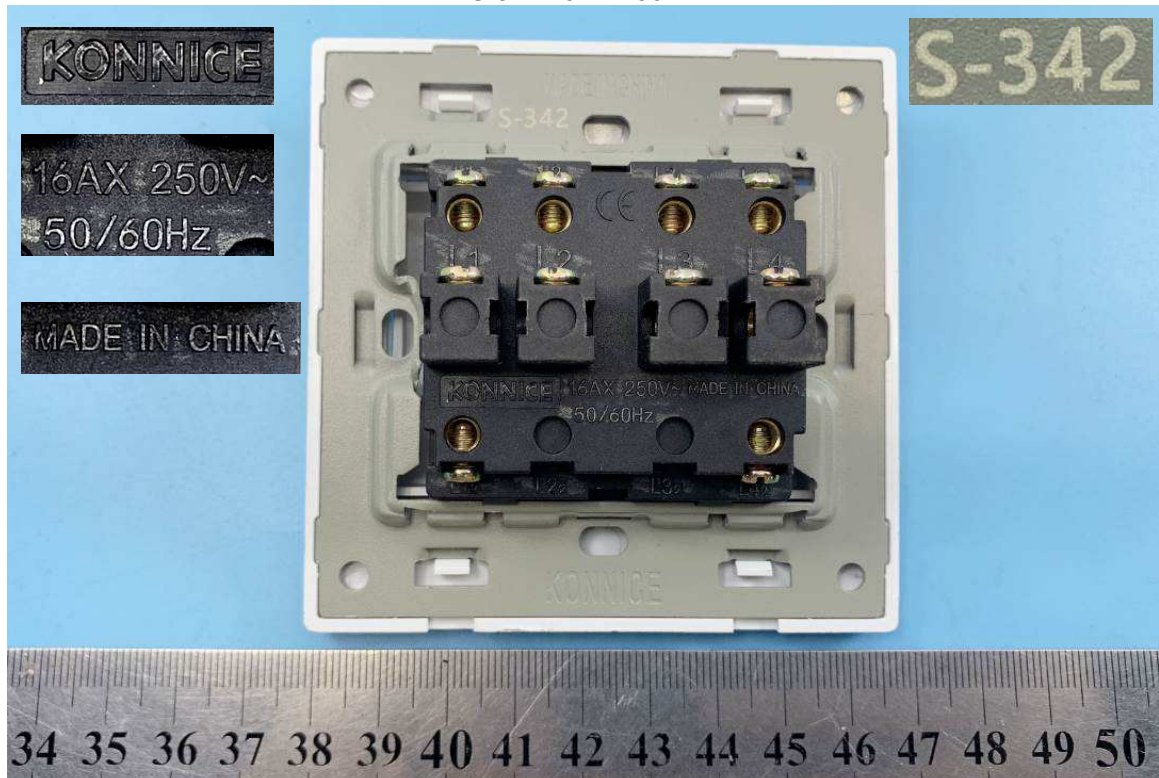


ANNEX 3 PHOTOGRAPHS

S-342 16AX 250V~

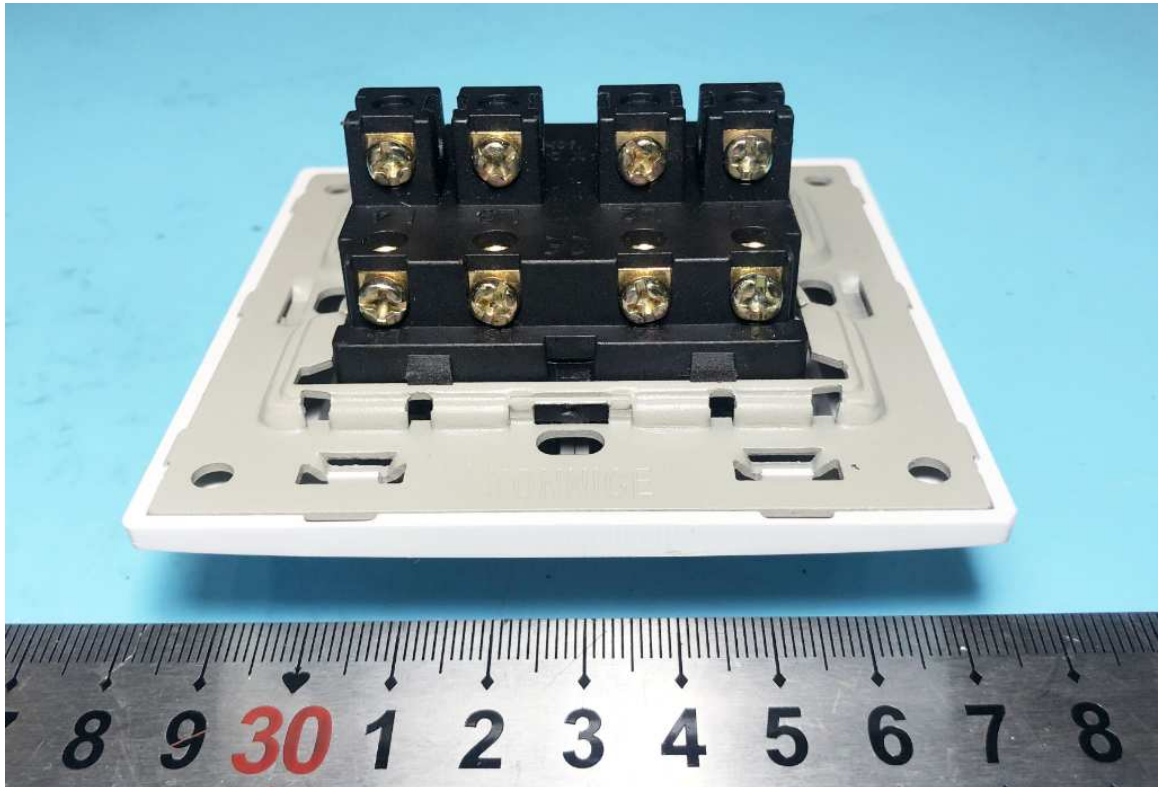


S-342 16AX 250V~

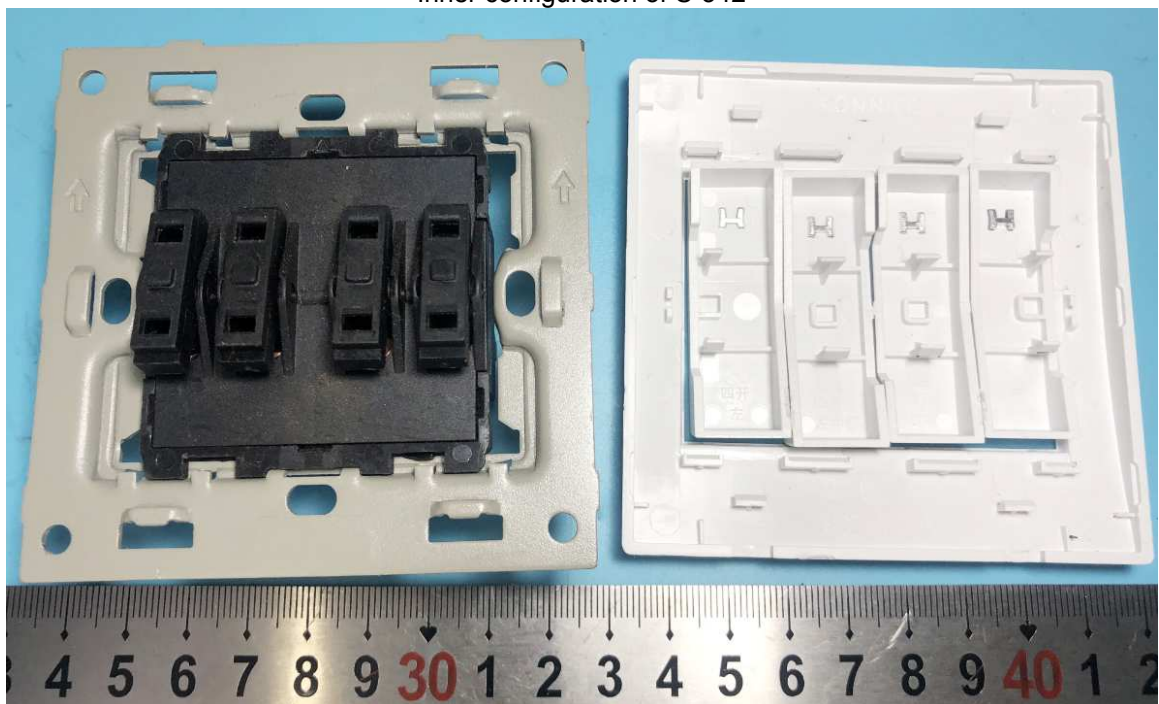


ANNEX 3 PHOTOGRAPHS

S-342 16AX 250V~

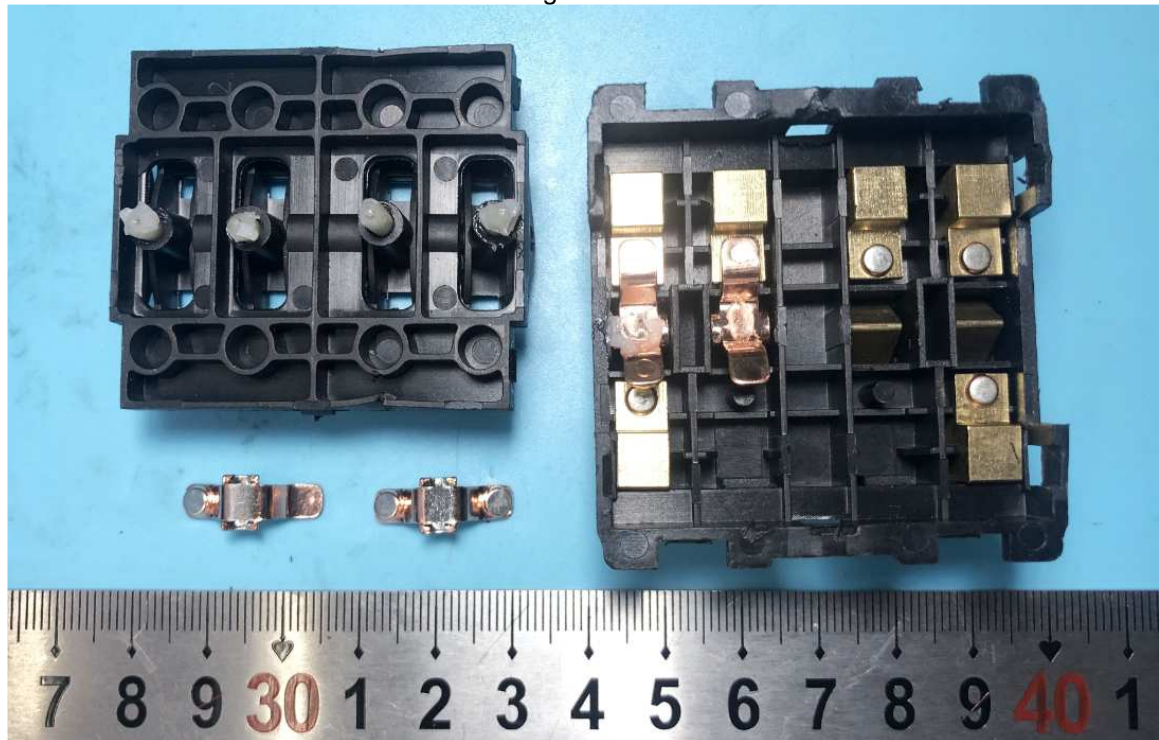


Inner configuration of S-342

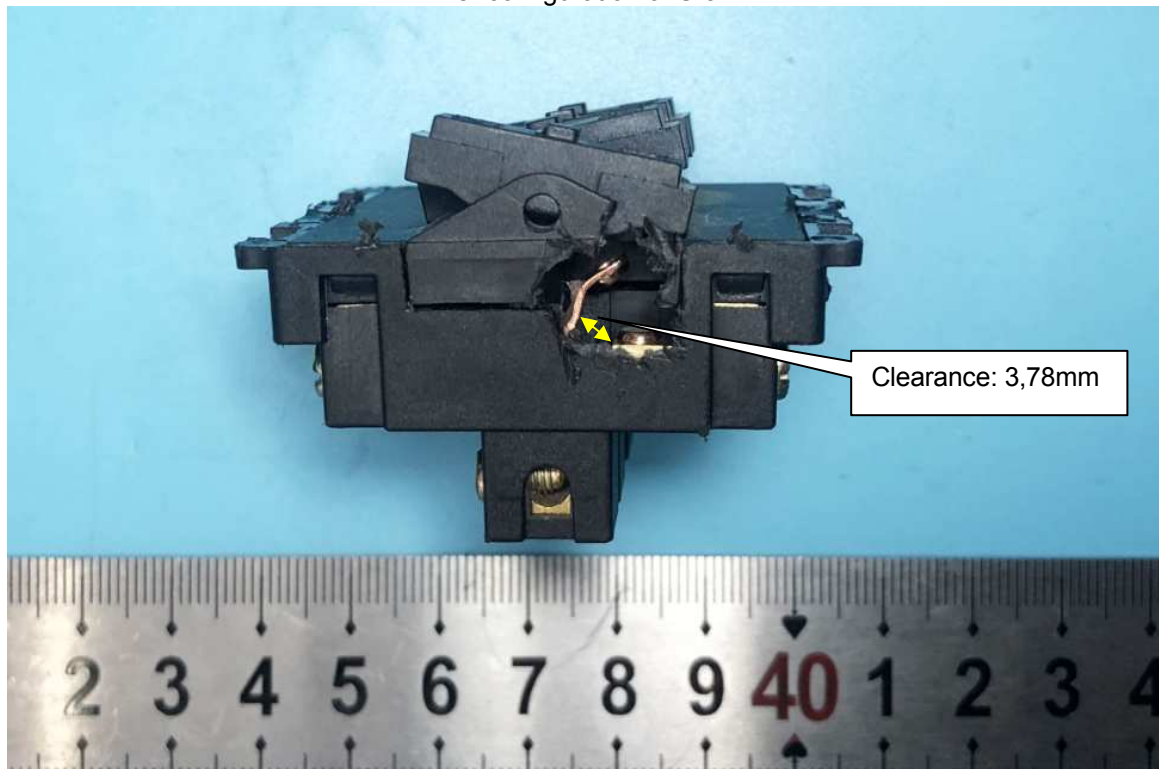


ANNEX 3 PHOTOGRAPHS

Inner configuration of S-342



Inner configuration of S-342



ANNEX 3 PHOTOGRAPHS

S-314 16AX 250V~

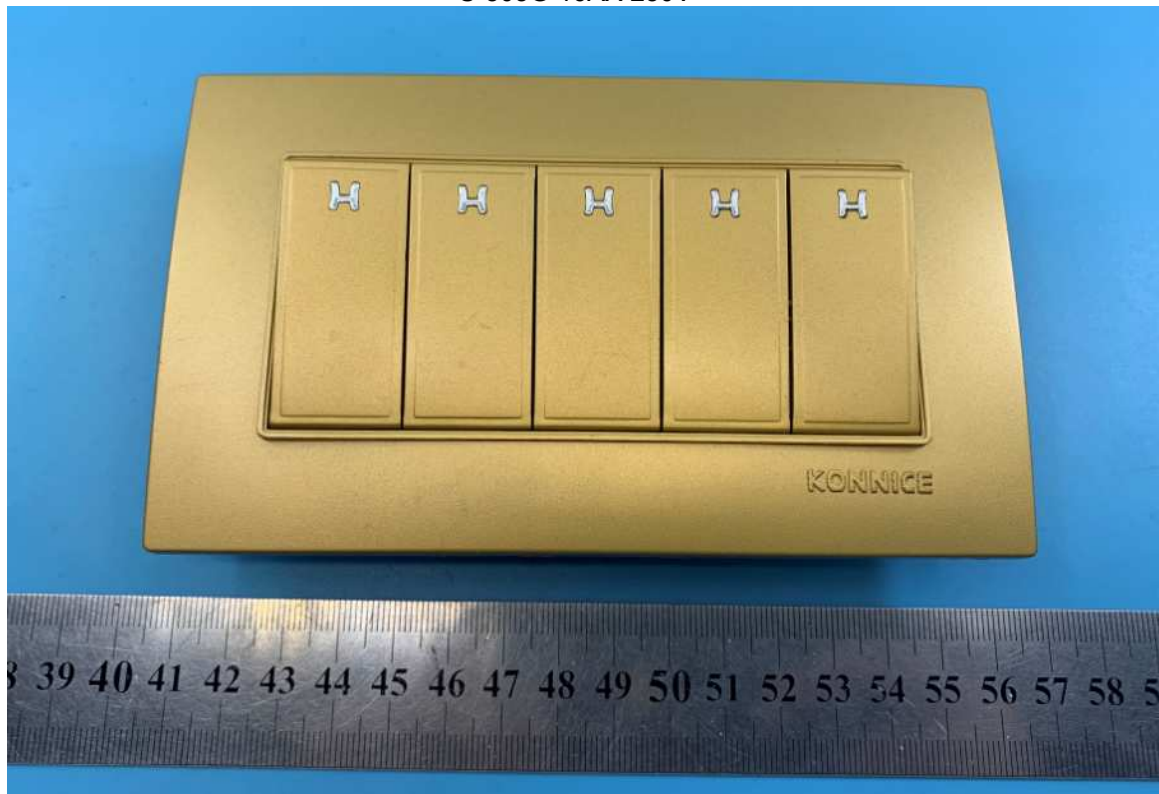


Inner configuration of S-314



ANNEX 3 PHOTOGRAPHS

Inner configuration of S-314



ANNEX 3 PHOTOGRAPHS

S-505G 16AX 250V~



S-311 16AX 250V~

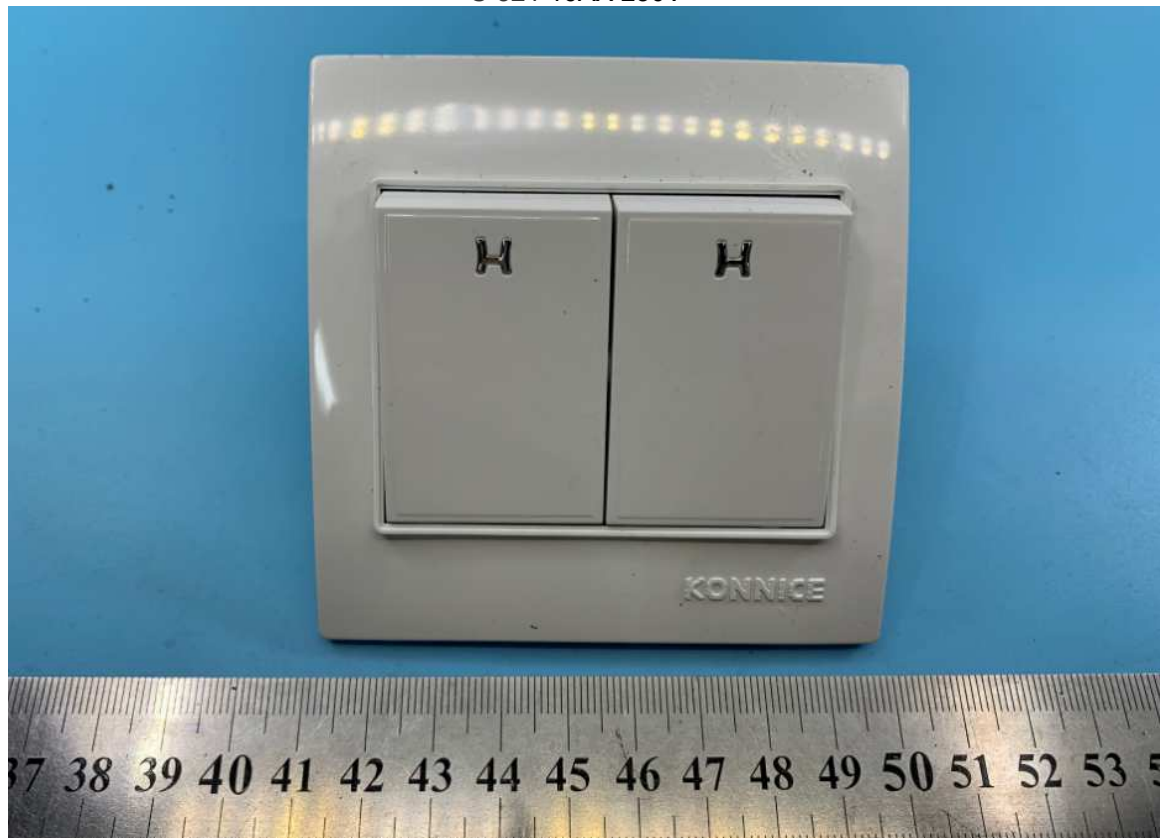


ANNEX 3 PHOTOGRAPHS

S-311 16AX 250V~

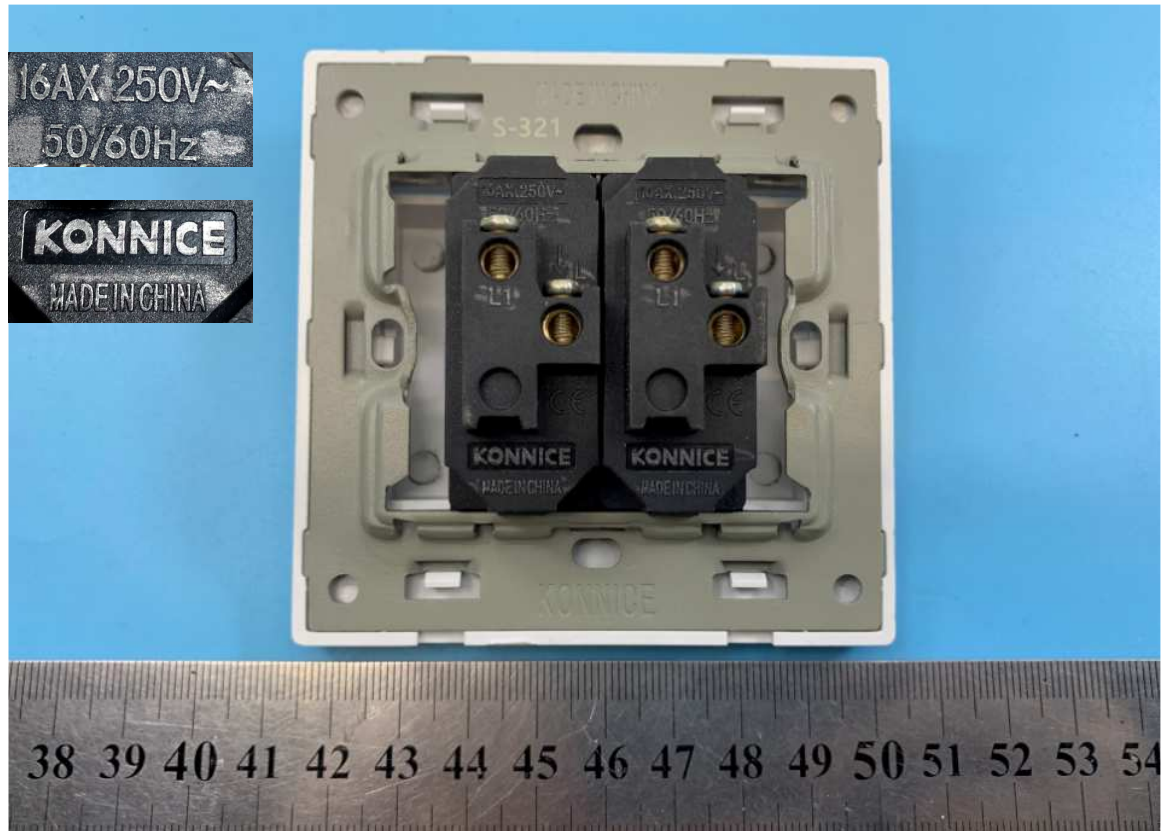


S-321 16AX 250V~



ANNEX 3 PHOTOGRAPHS

S-321 16AX 250V~

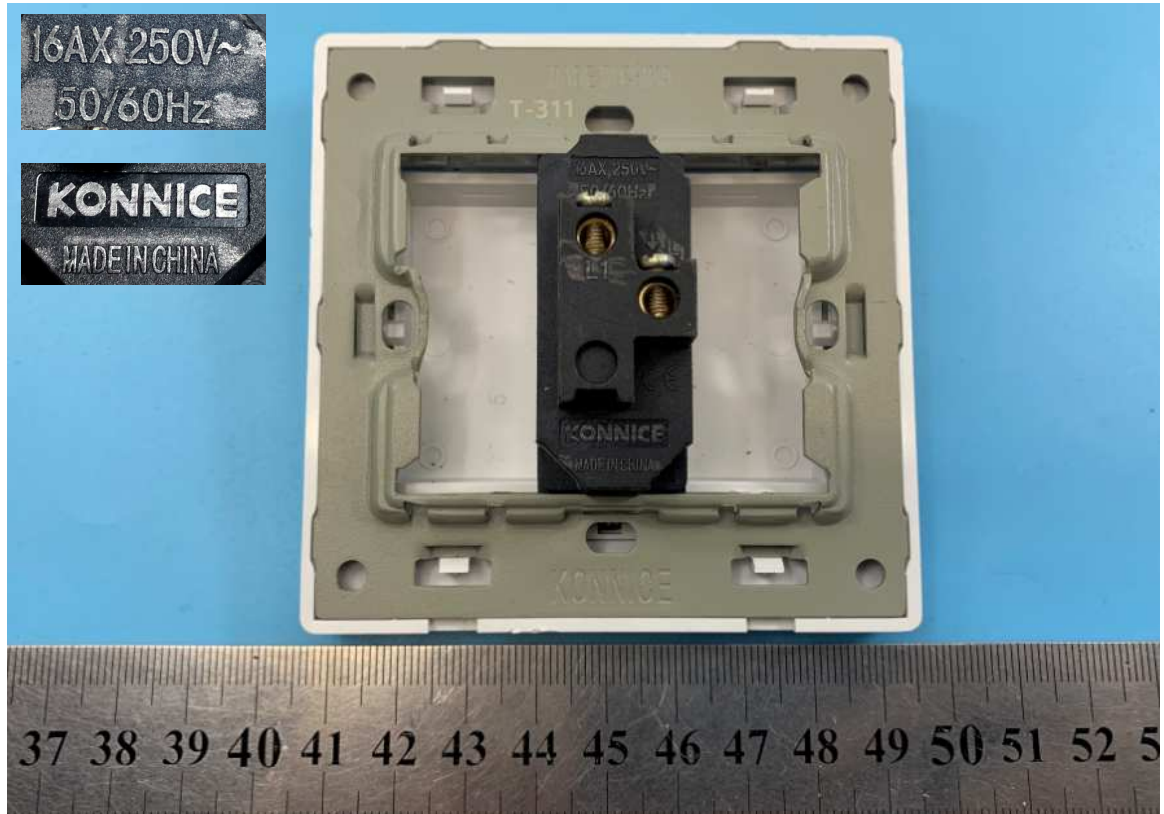


T-311 16AX 250V~

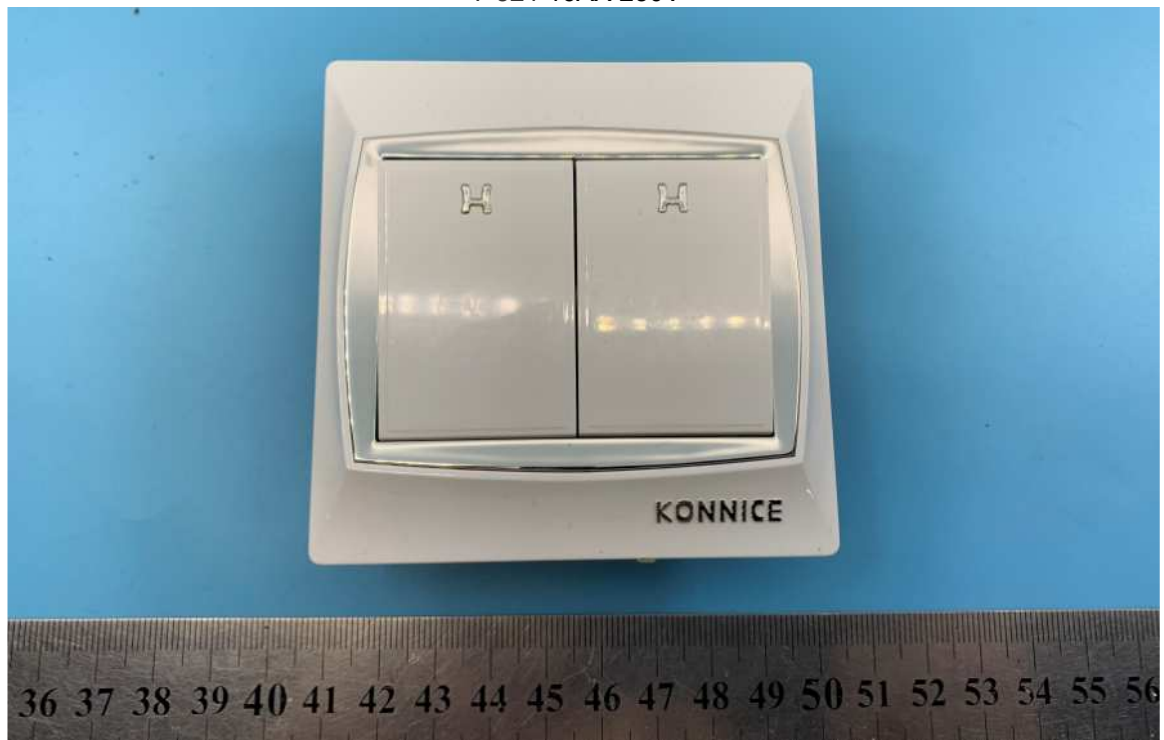


ANNEX 3 PHOTOGRAPHS

T-311 16AX 250V~

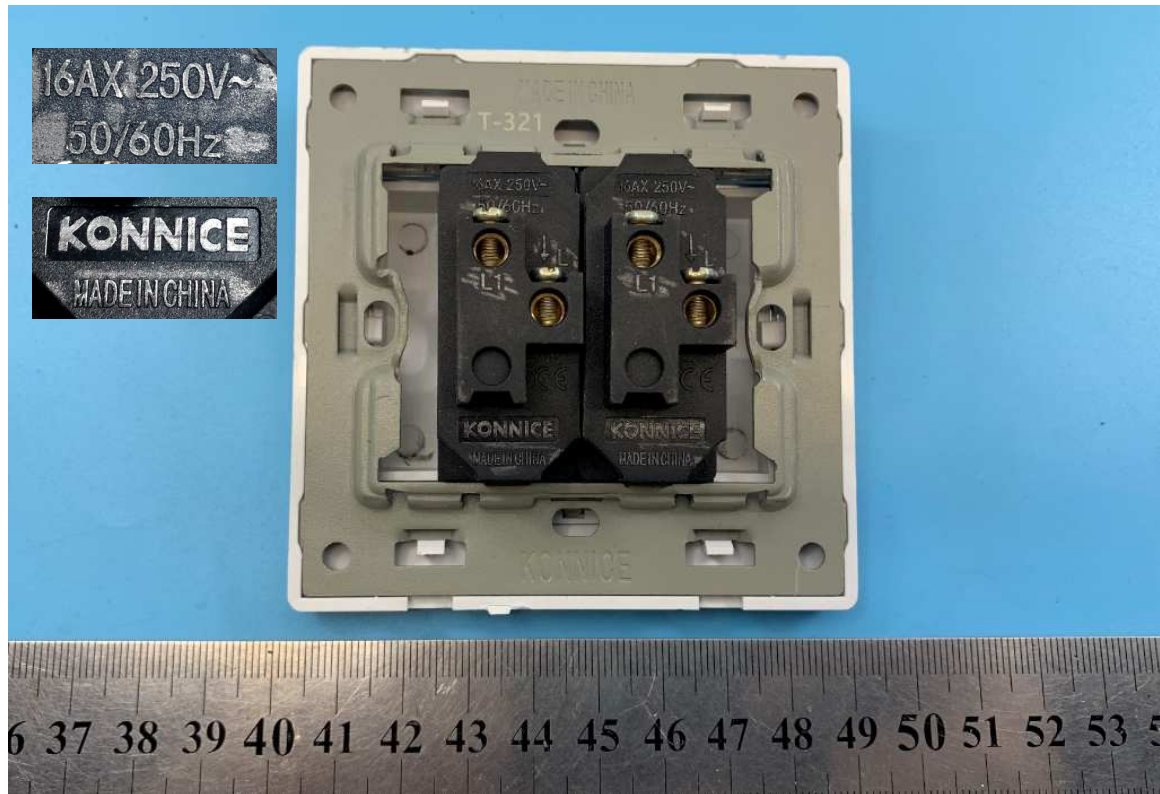


T-321 16AX 250V~



ANNEX 3 PHOTOGRAPHS

T-321 16AX 250V~

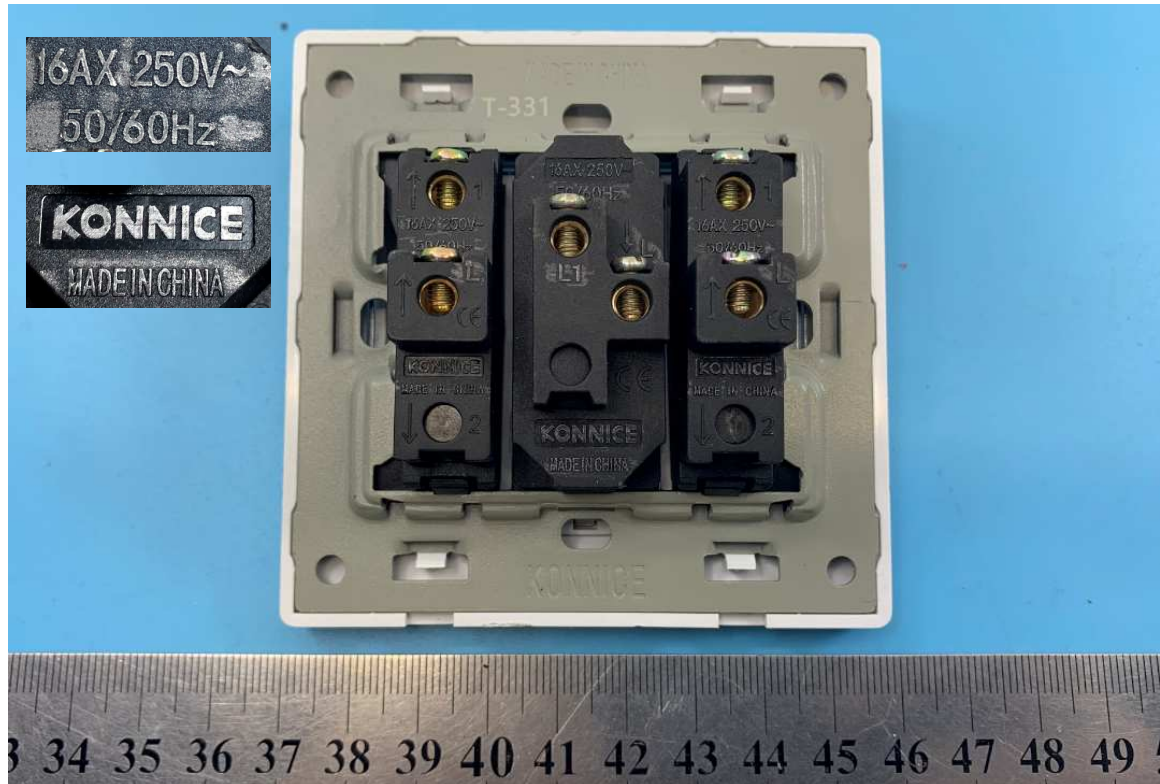


T-331 16AX 250V~

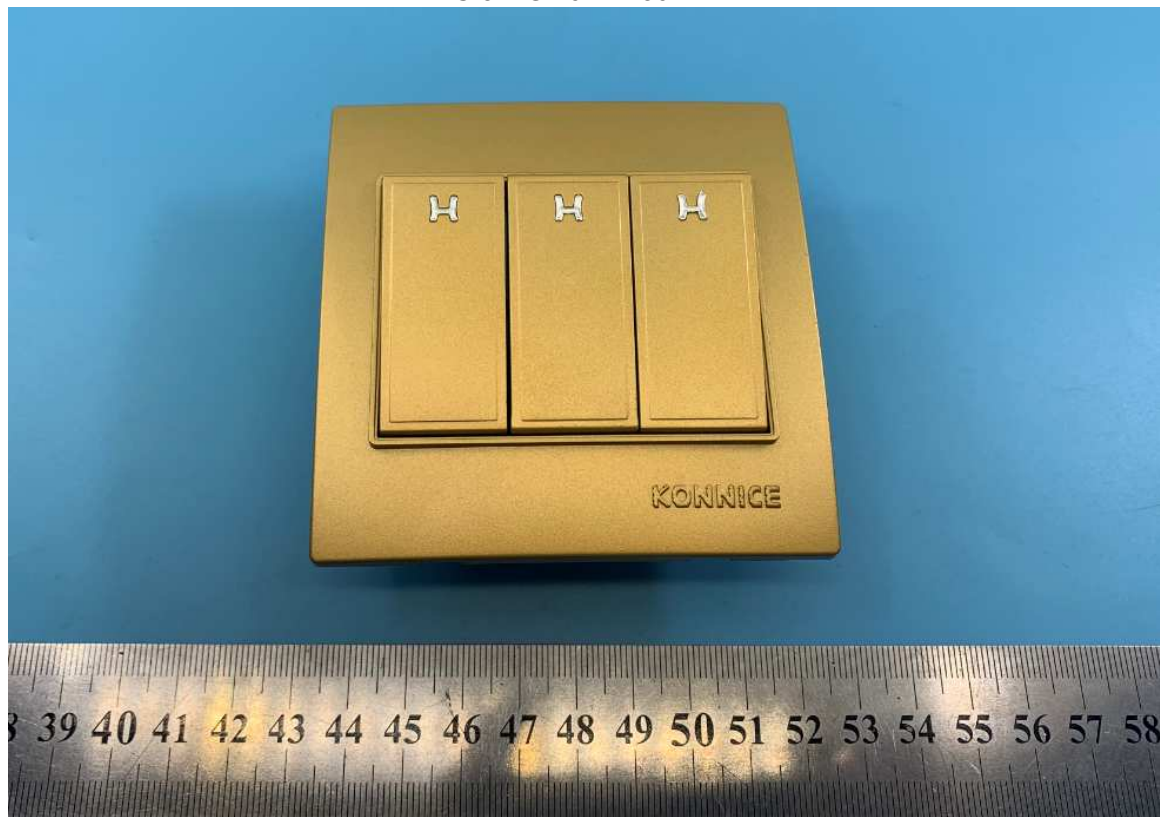


ANNEX 3 PHOTOGRAPHS

T-331 16AX 250V~



S-311G 16AX 250V~

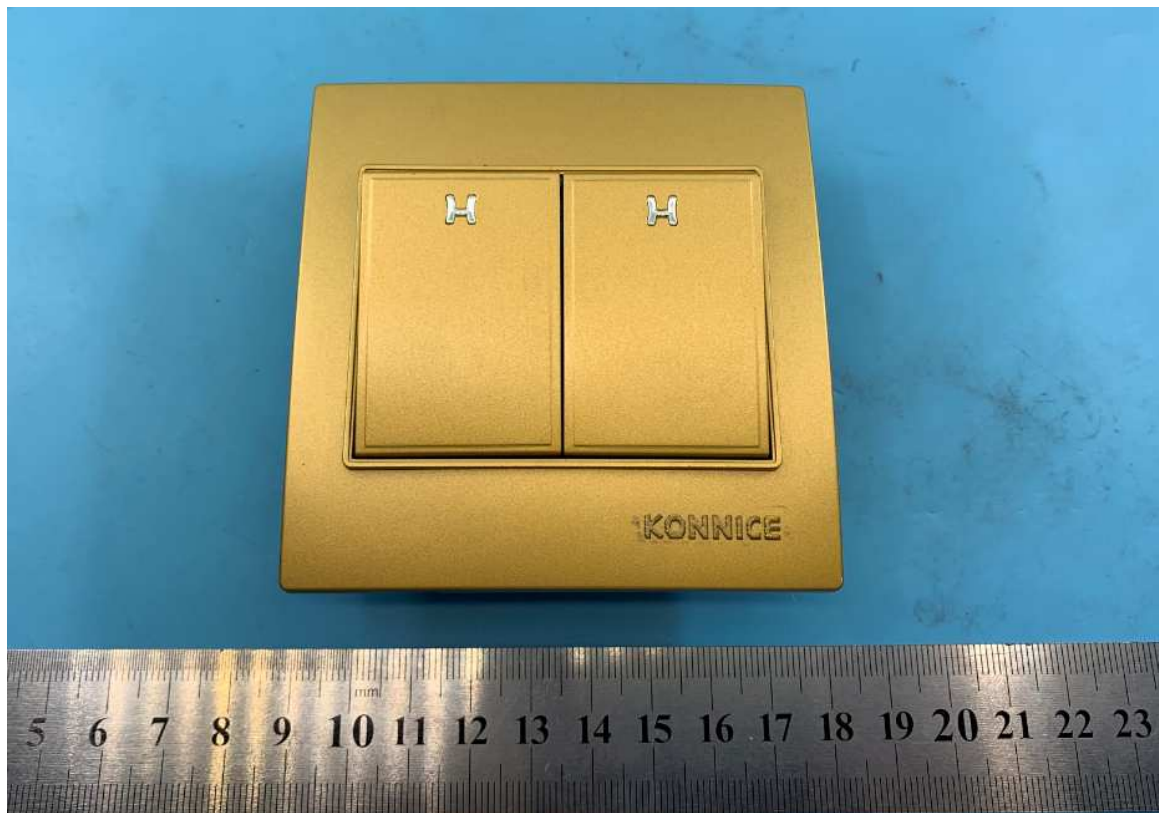


ANNEX 3 PHOTOGRAPHS

S-311G 16AX 250V~

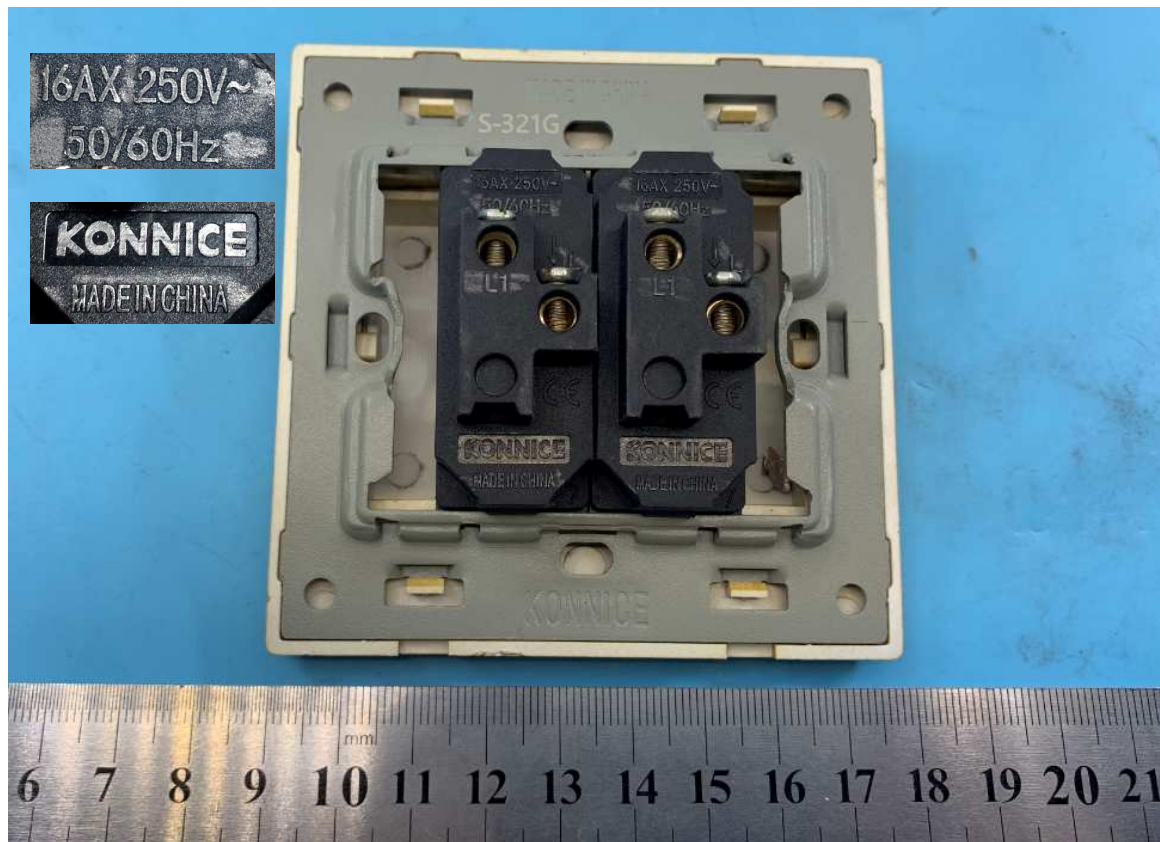


S-321G 16AX 250V~

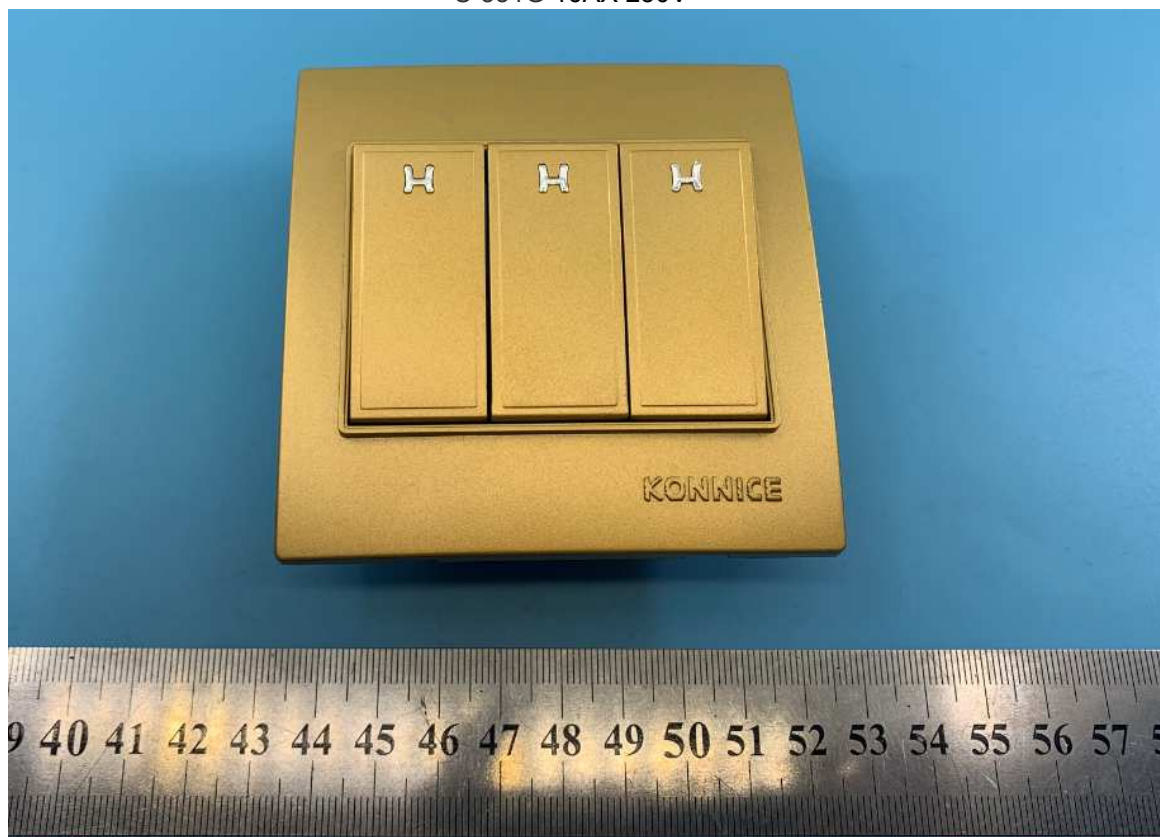


ANNEX 3 PHOTOGRAPHS

S-321G 16AX 250V~

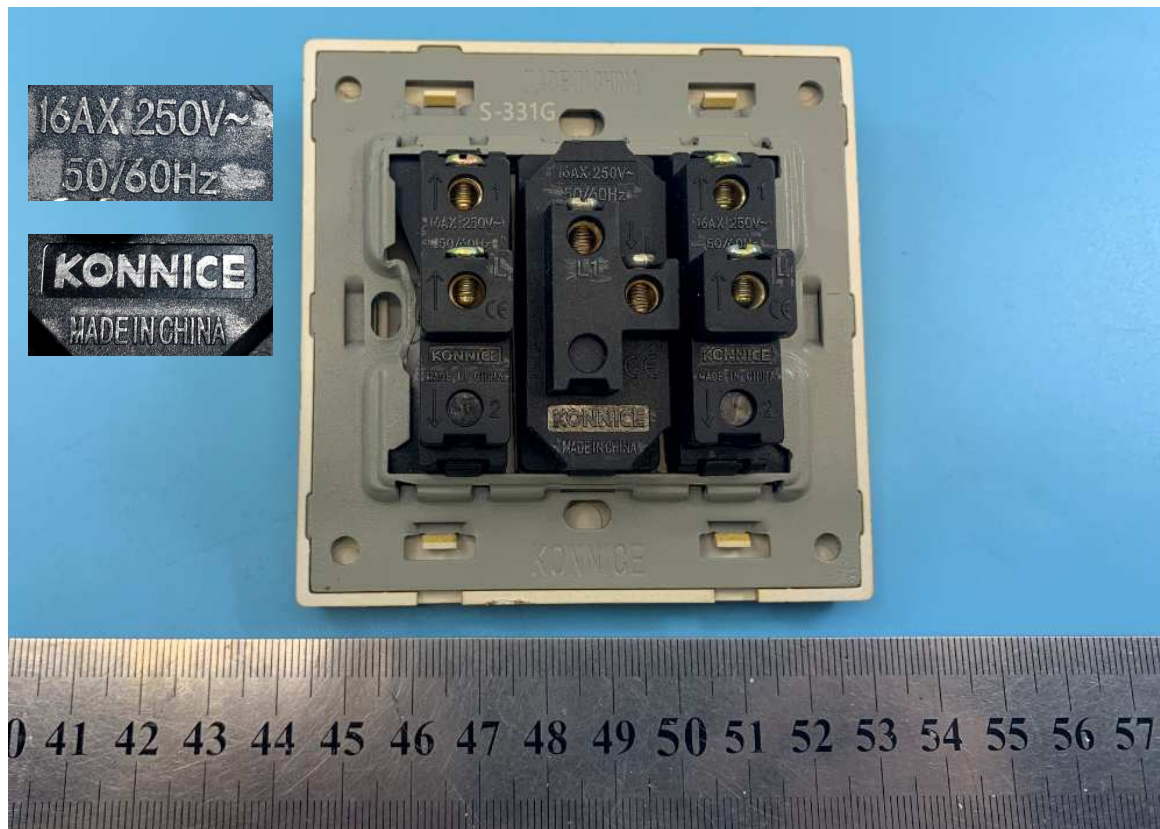


S-331G 16AX 250V~

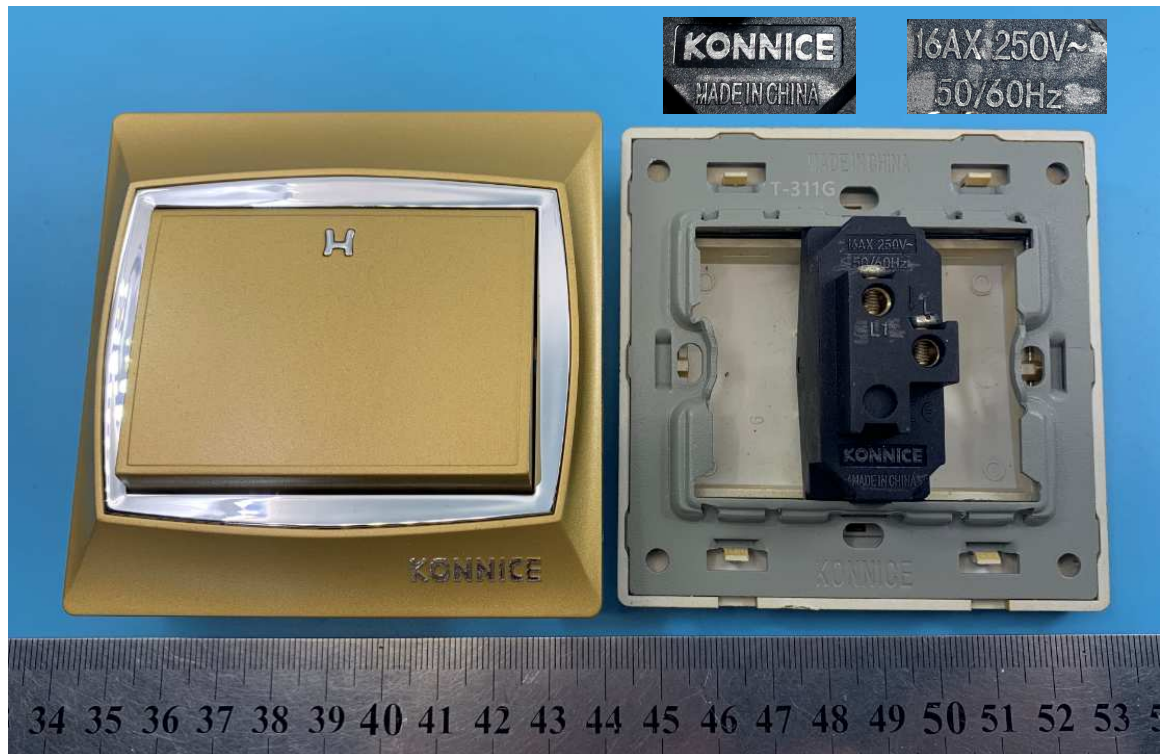


ANNEX 3 PHOTOGRAPHS

S-331G 16AX 250V~



T-311G 16AX 250V~



ANNEX 3 PHOTOGRAPHS

T-321G 16AX 250V~

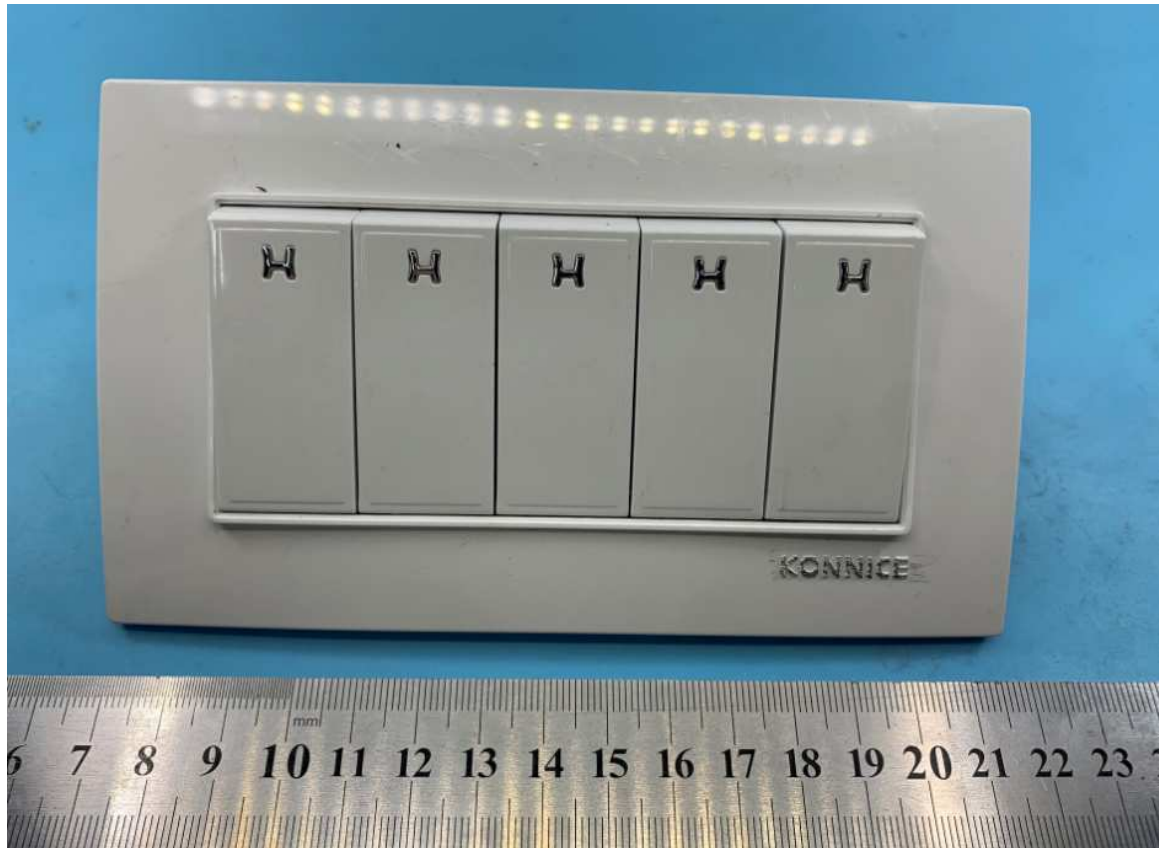


T-331G 16AX 250V~



ANNEX 3 PHOTOGRAPHS

S-505 16AX 250V~

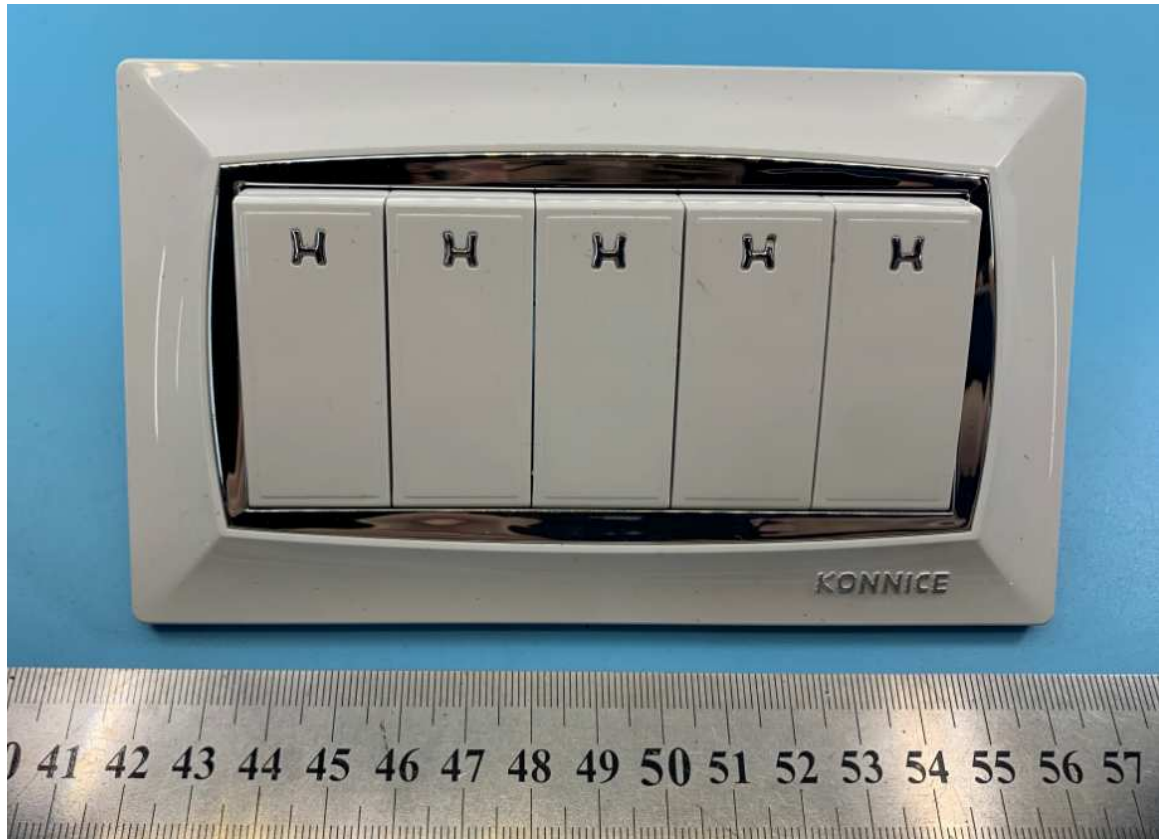


S-505 16AX 250V~



ANNEX 3 PHOTOGRAPHS

T-505 16AX 250V~



T-505 16AX 250V~

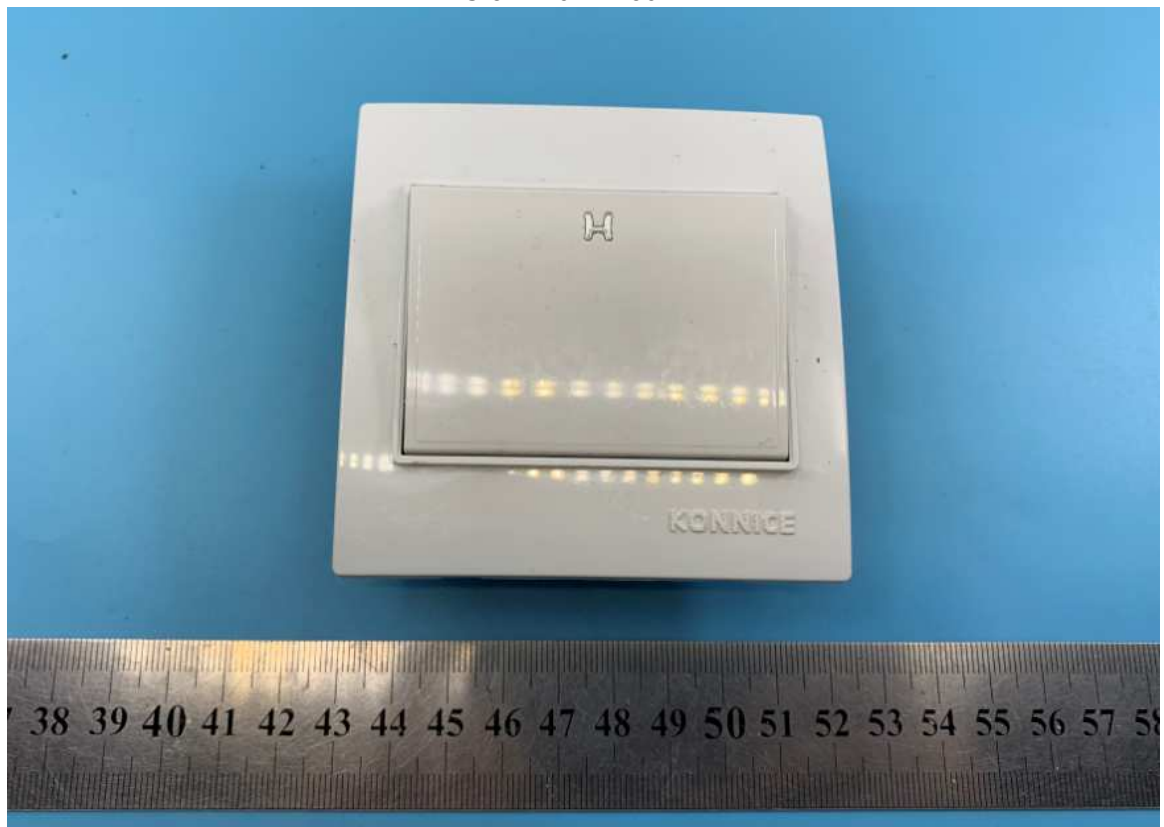


ANNEX 3 PHOTOGRAPHS

T-505G 16AX 250V~

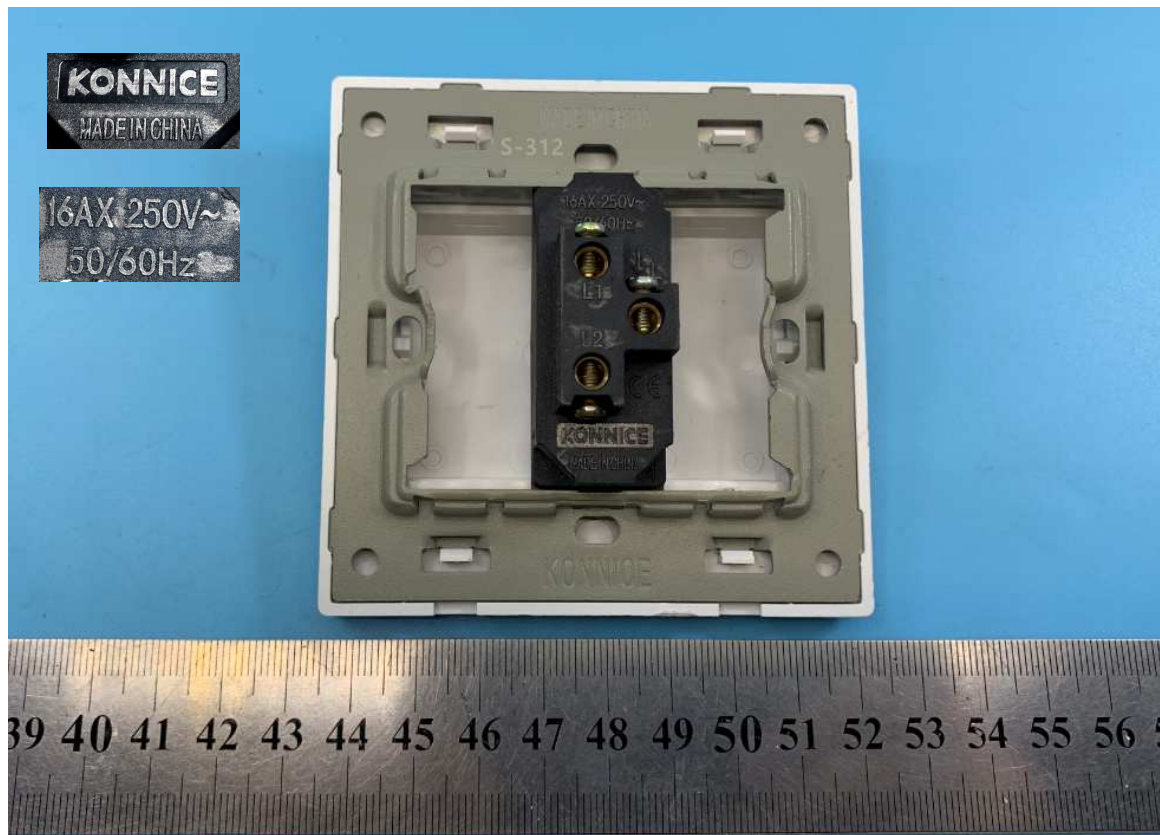


S-312 16AX 250V~

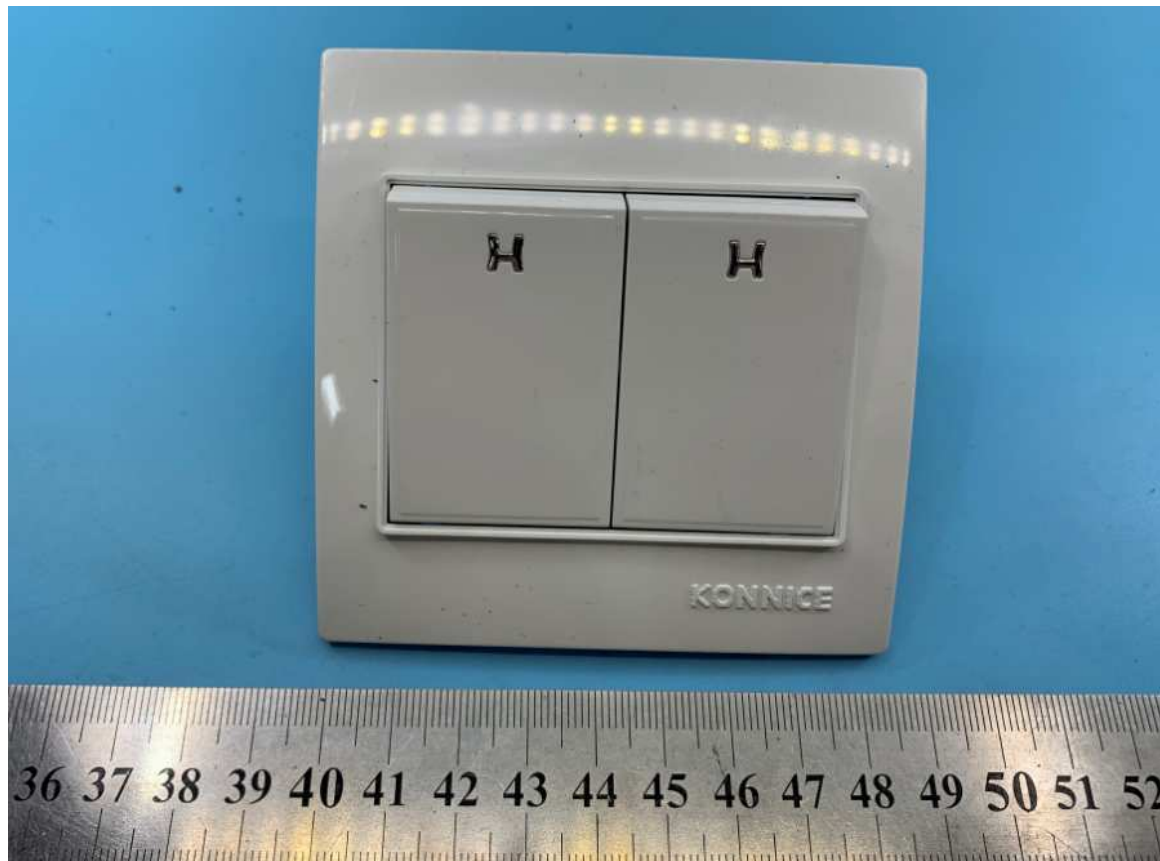


ANNEX 3 PHOTOGRAPHS

S-312 16AX 250V~

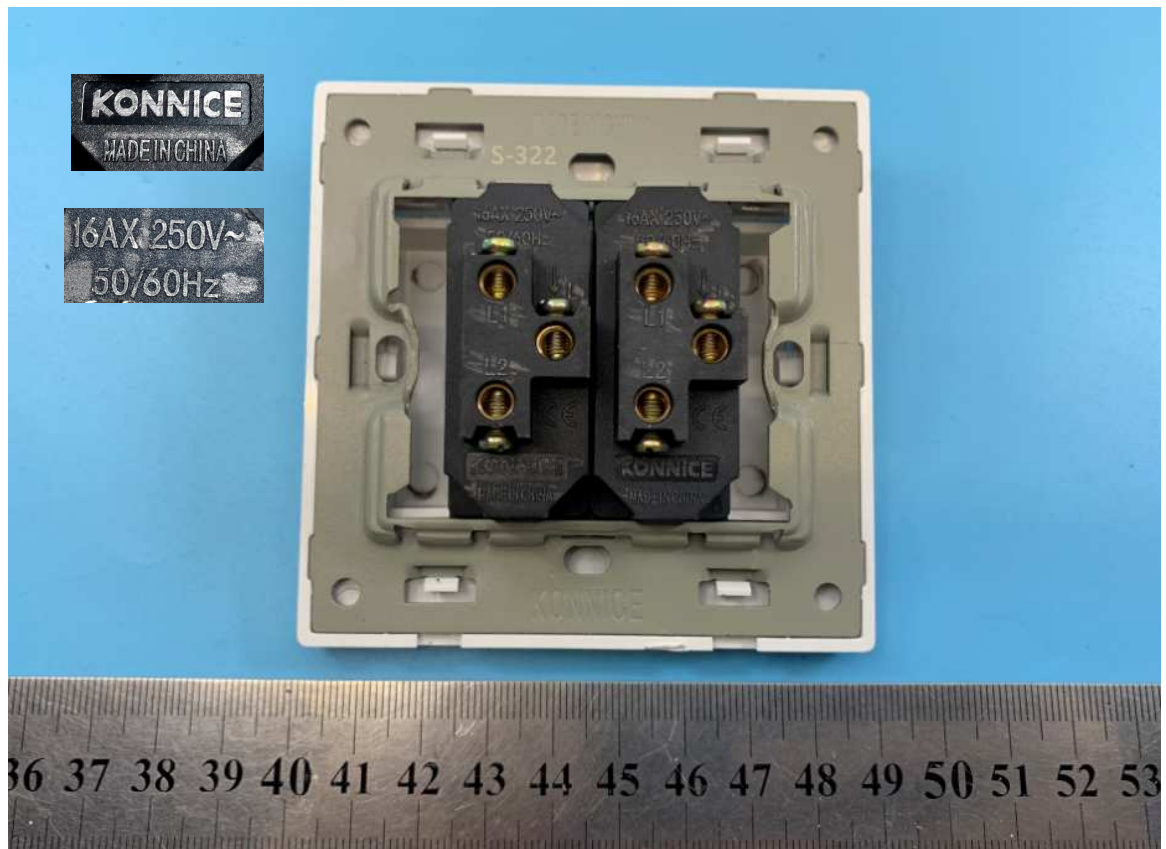


S-322 16AX 250V~

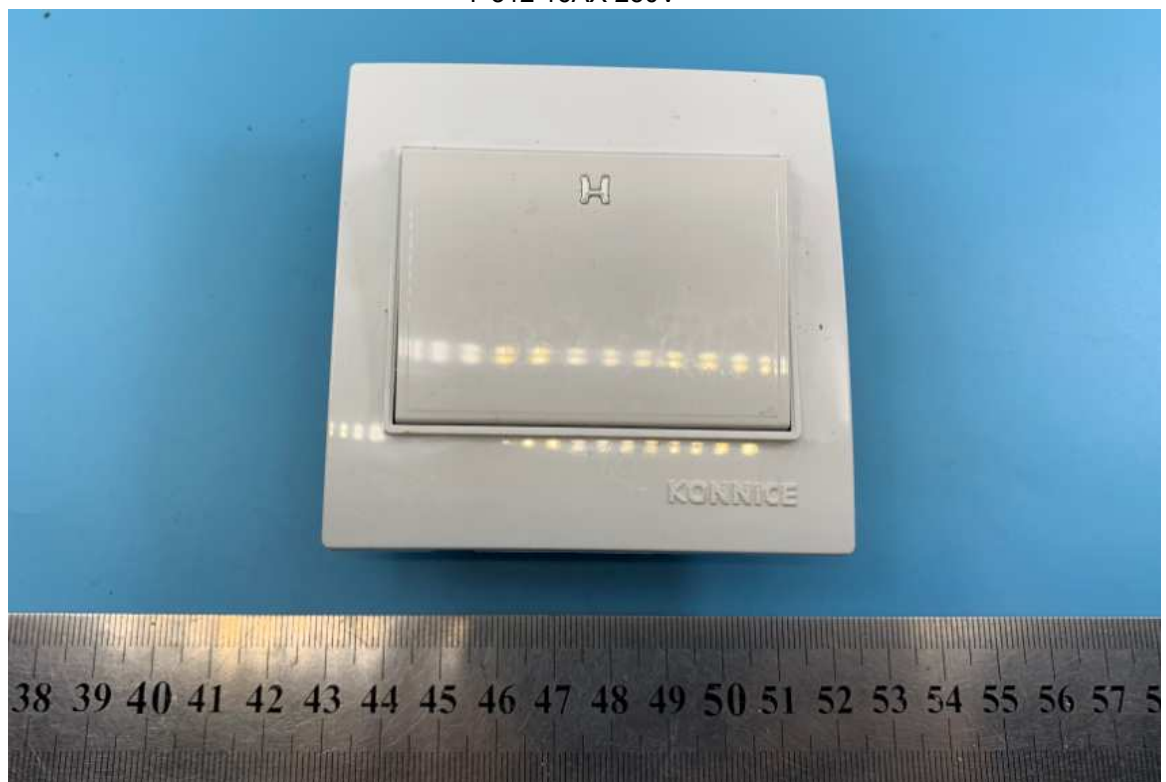


ANNEX 3 PHOTOGRAPHS

S-322 16AX 250V~

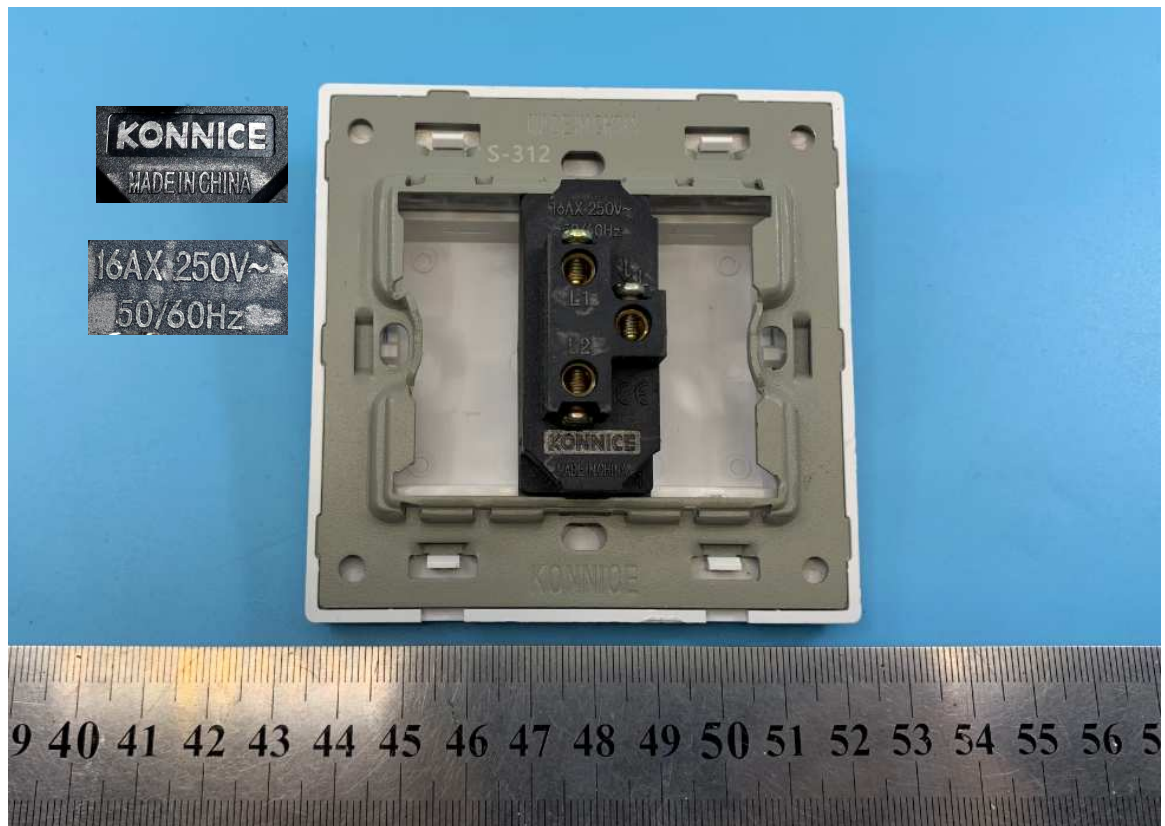


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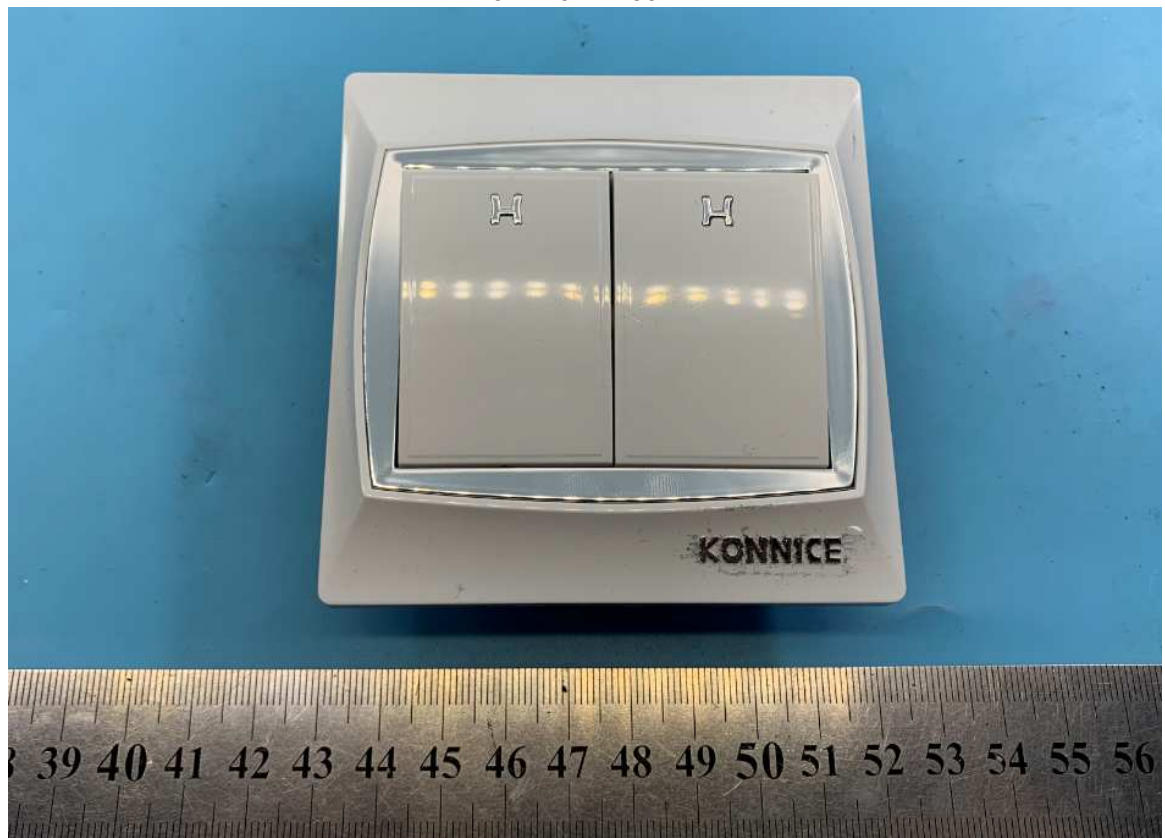


ANNEX 3 PHOTOGRAPHS

T-312 16AX 250V~

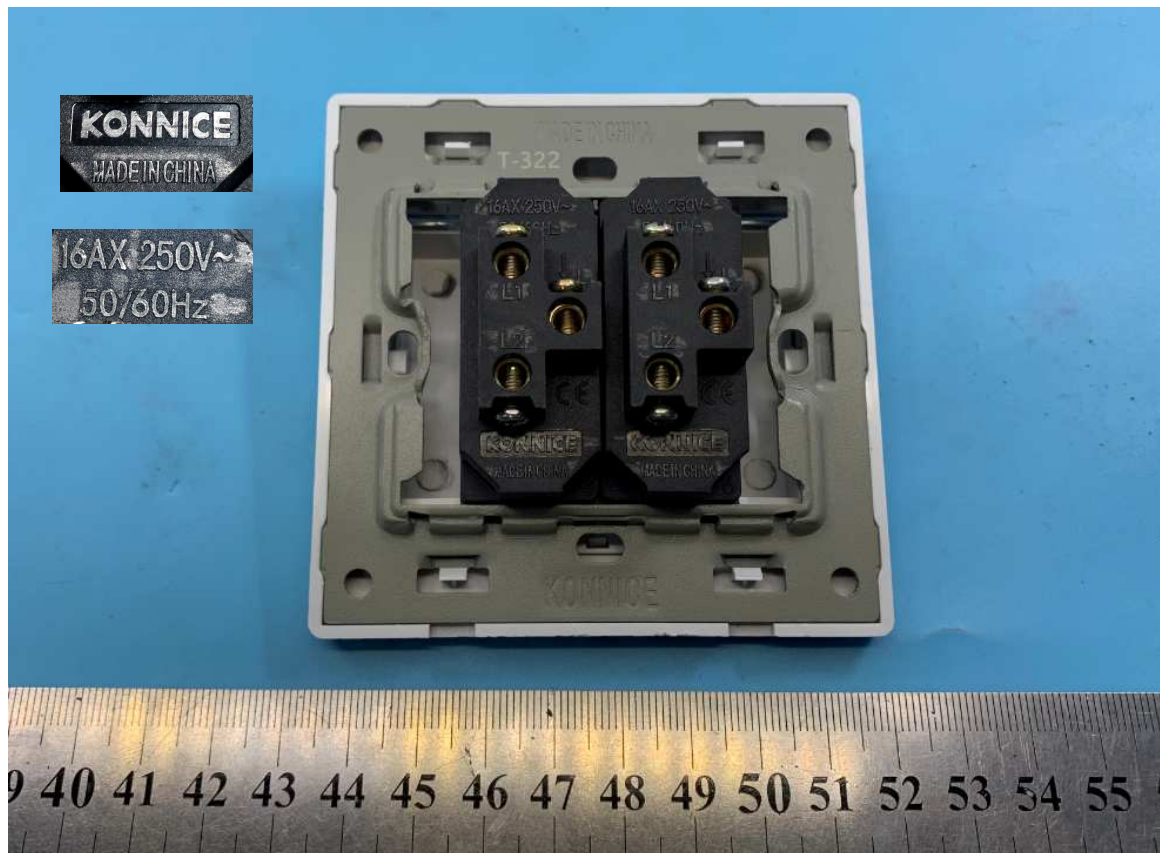


T-322 16AX 250V~

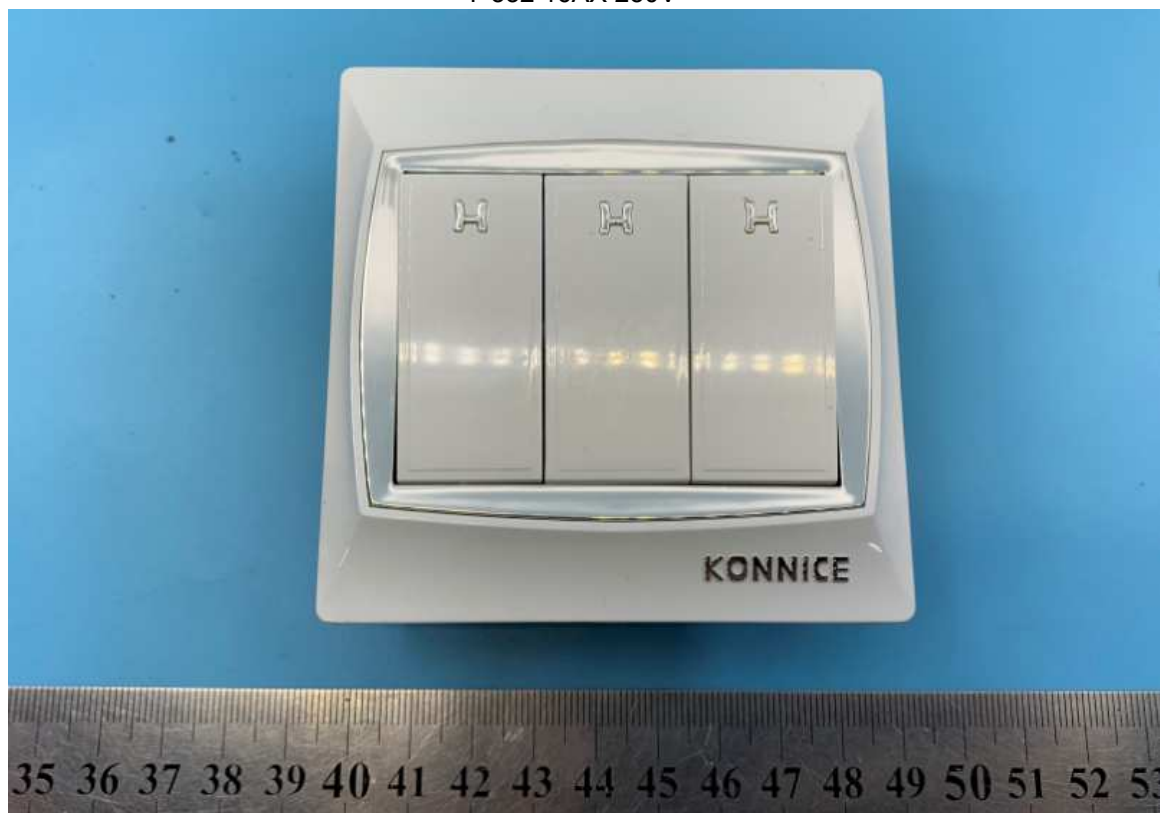


ANNEX 3 PHOTOGRAPHS

T-322 16AX 250V~



T-332 16AX 250V~

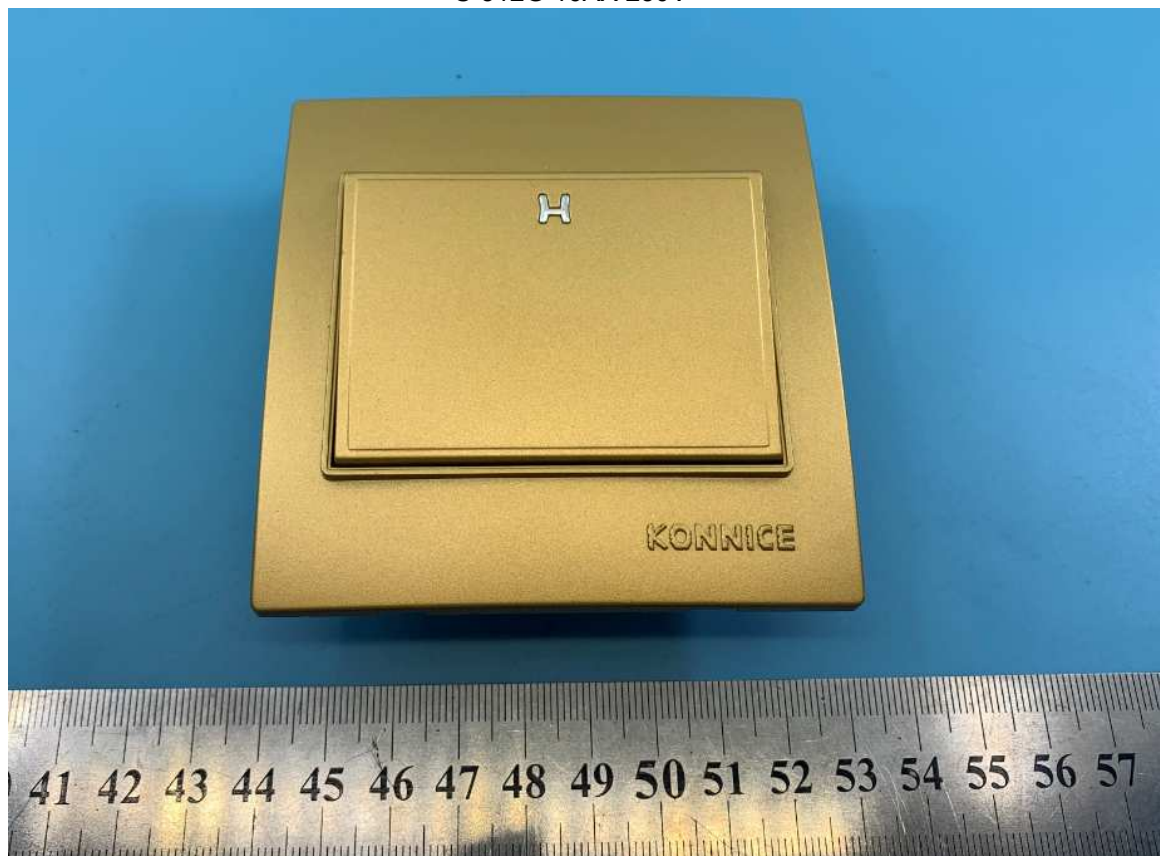


ANNEX 3 PHOTOGRAPHS

T-332 16AX 250V~

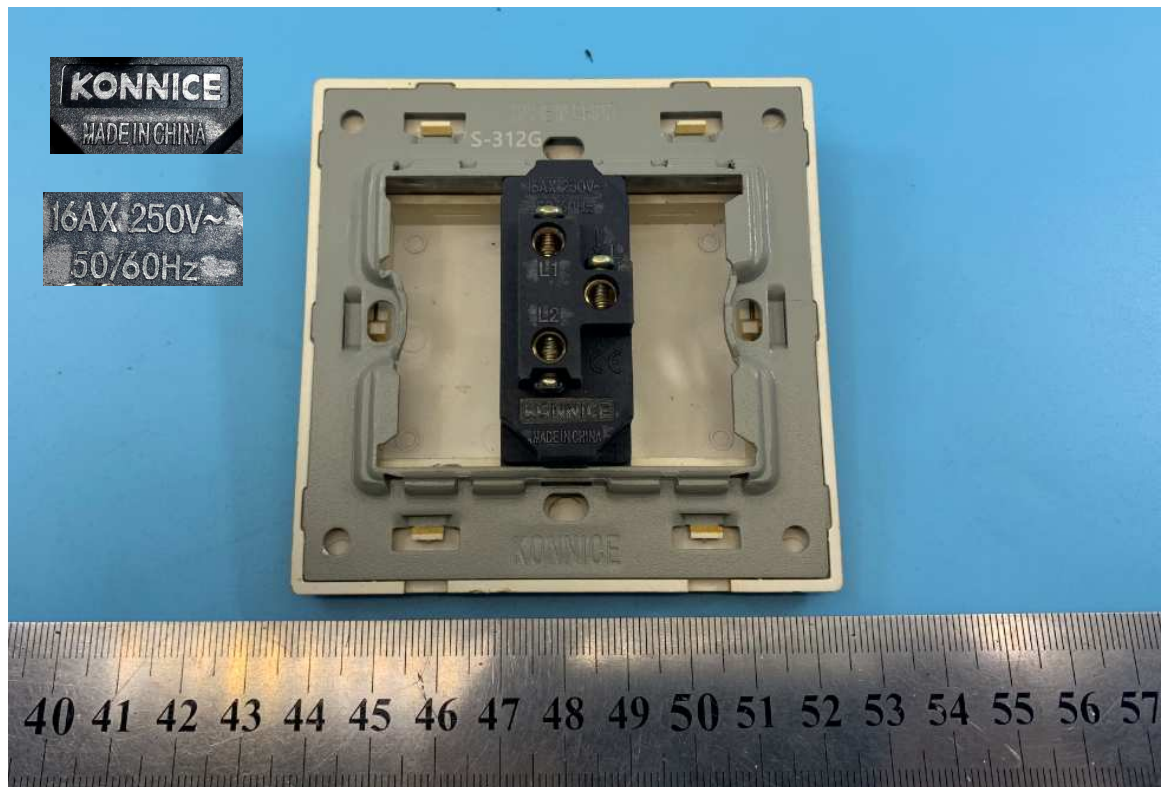


S-312G 16AX 250V~

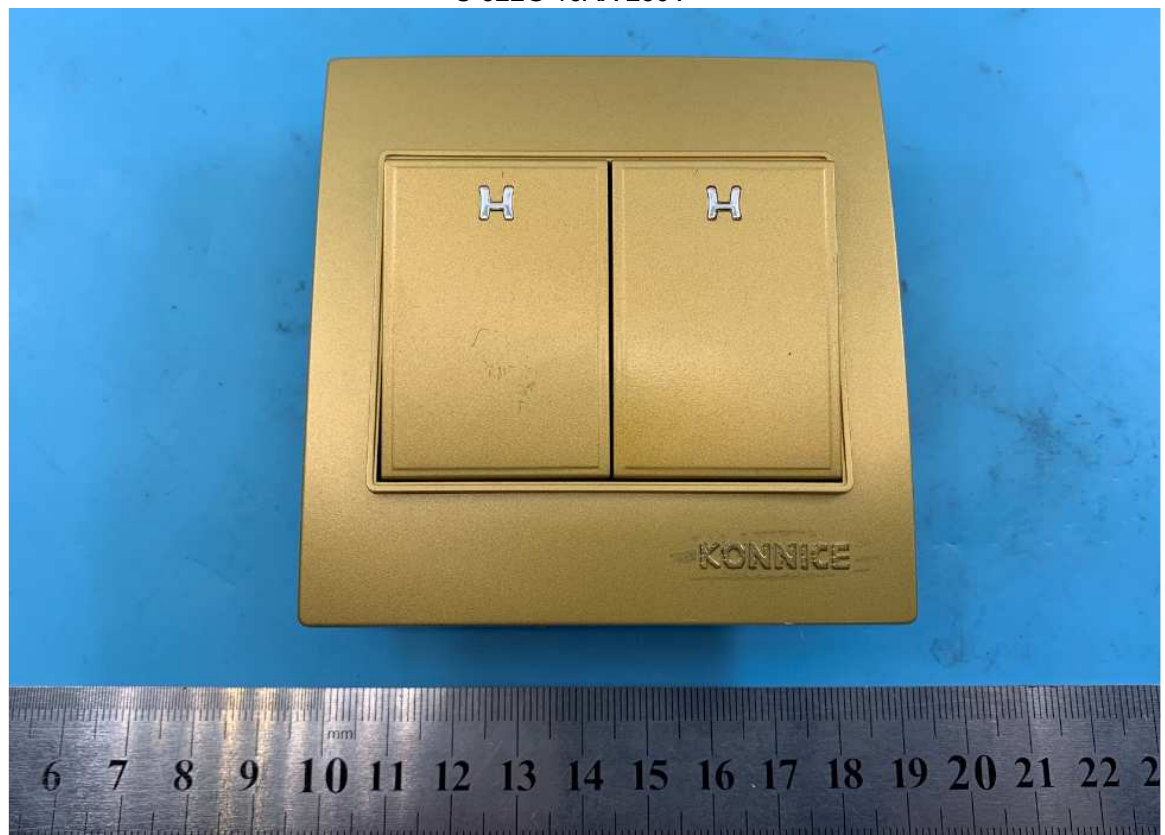


ANNEX 3 PHOTOGRAPHS

S-312G 16AX 250V~

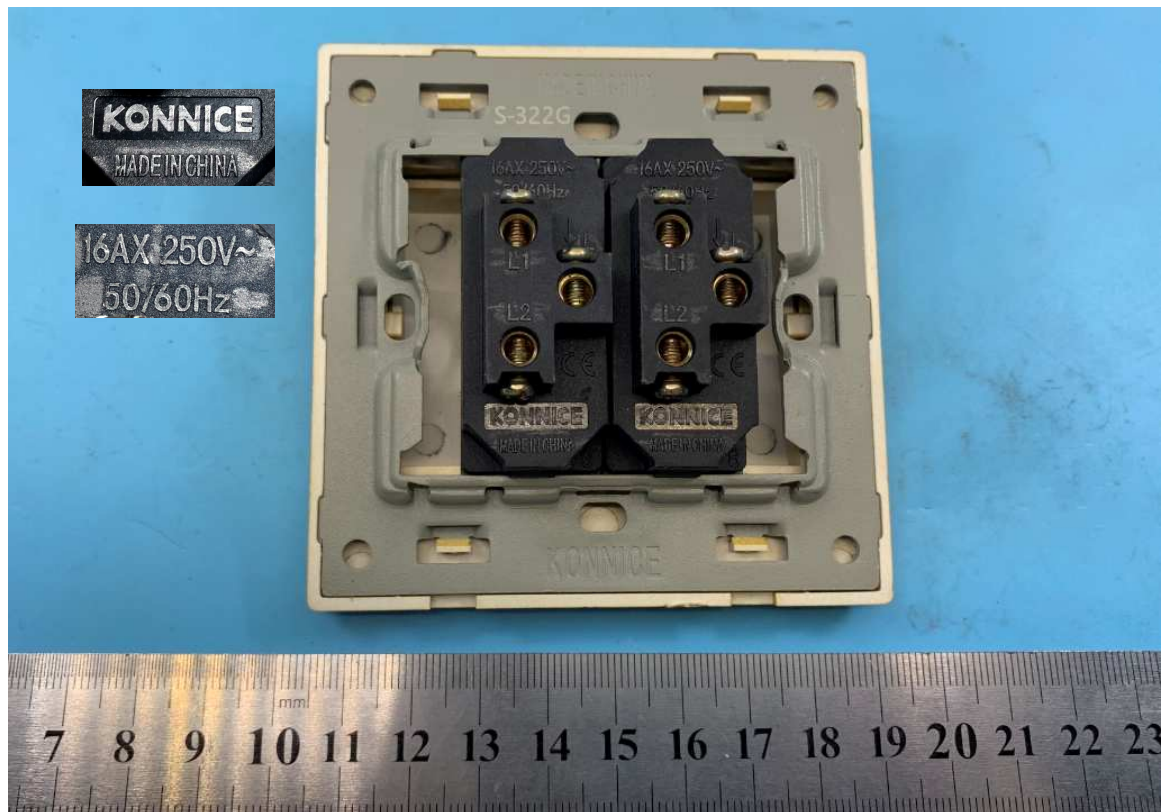


S-322G 16AX 250V~

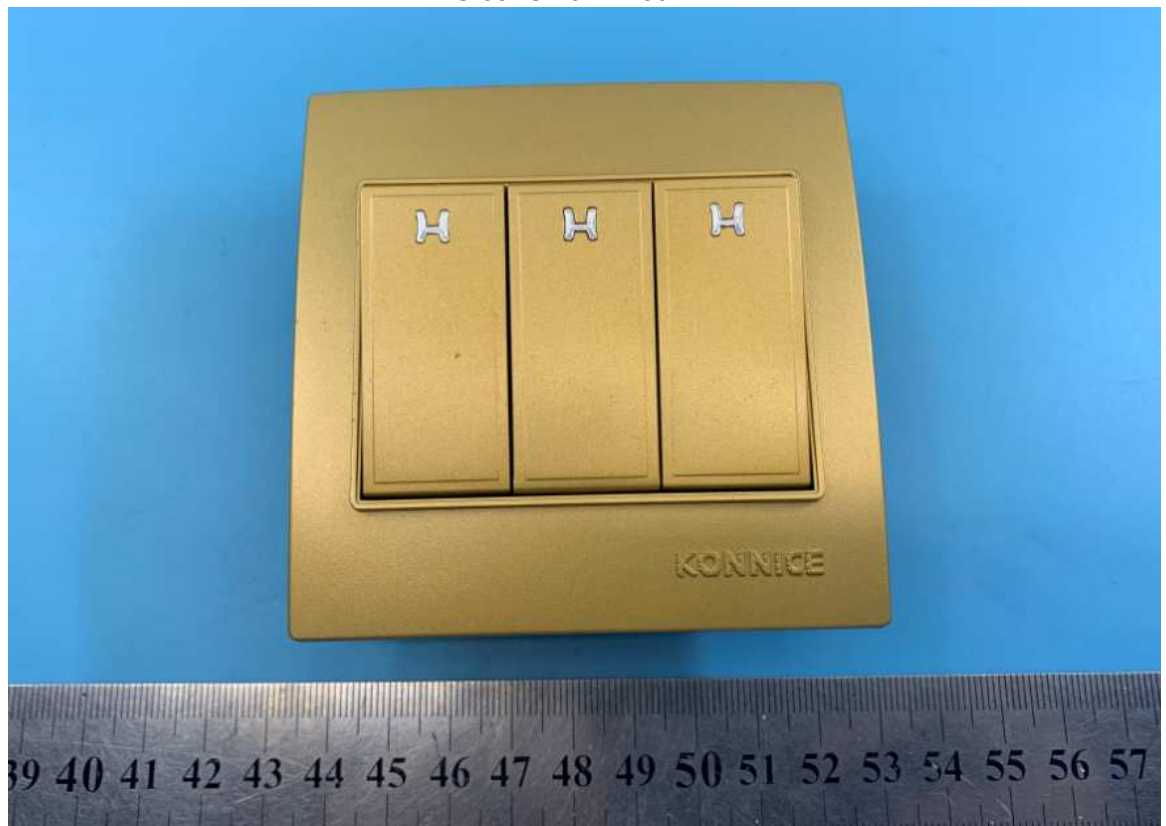


ANNEX 3 PHOTOGRAPHS

S-322G 16AX 250V~

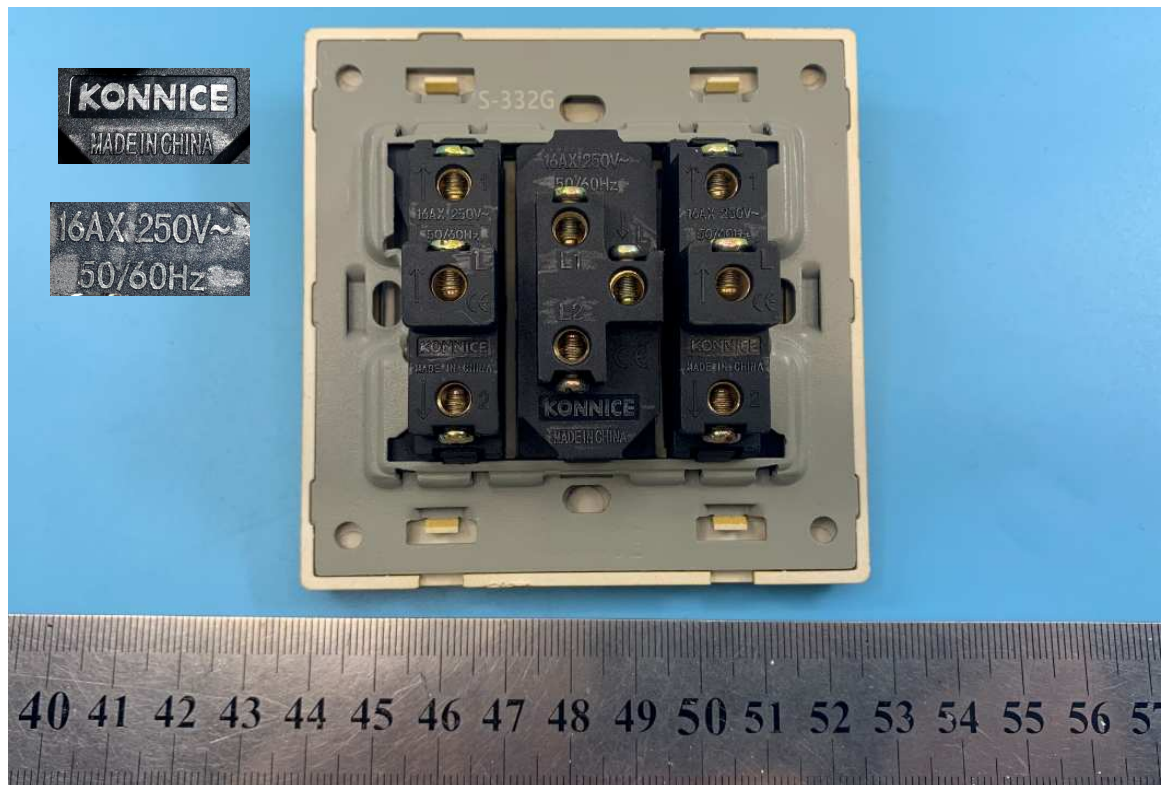


S-332G 16AX 250V~



ANNEX 3 PHOTOGRAPHS

S-332G 16AX 250V~



T-312G 16AX 250V~



ANNEX 3 PHOTOGRAPHS

T-322G 16AX 250V~

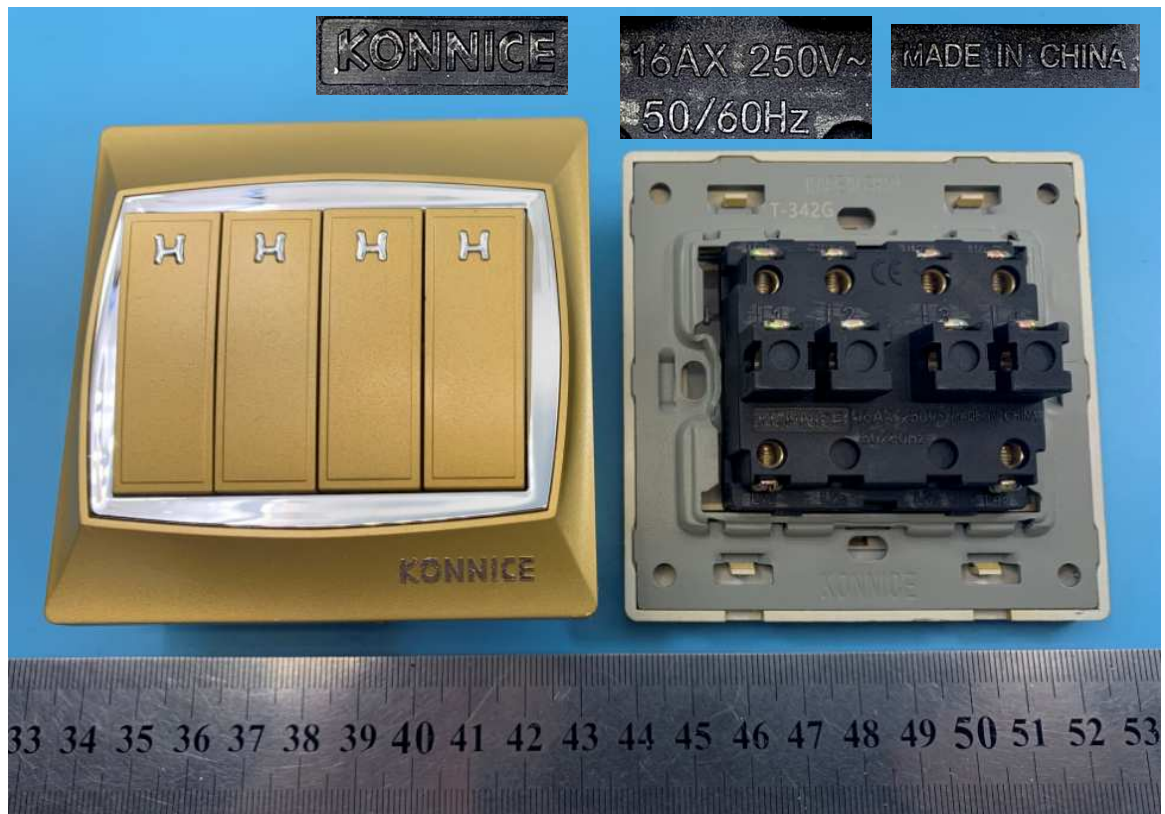


T-332G 16AX 250V~

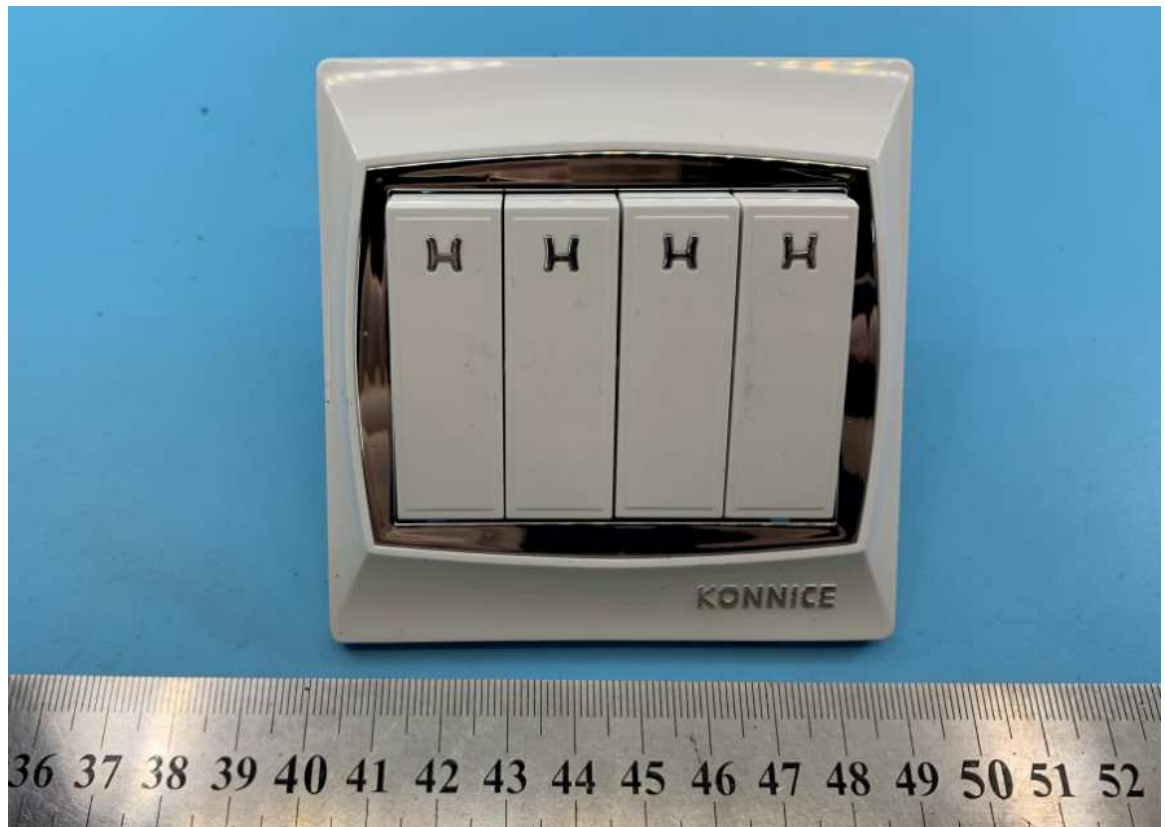


ANNEX 3 PHOTOGRAPHS

T-342G 16AX 250V~

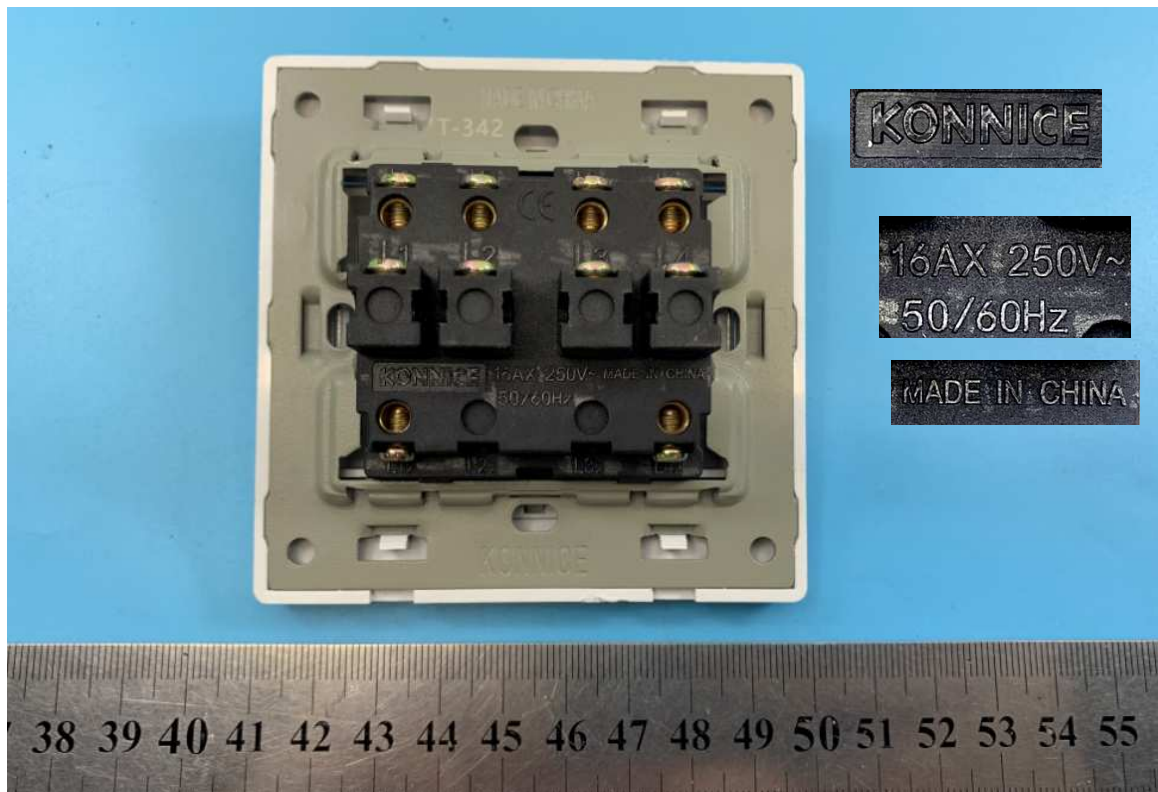


T-342 16AX 250V~



ANNEX 3 PHOTOGRAPHS

T-342 16AX 250V~

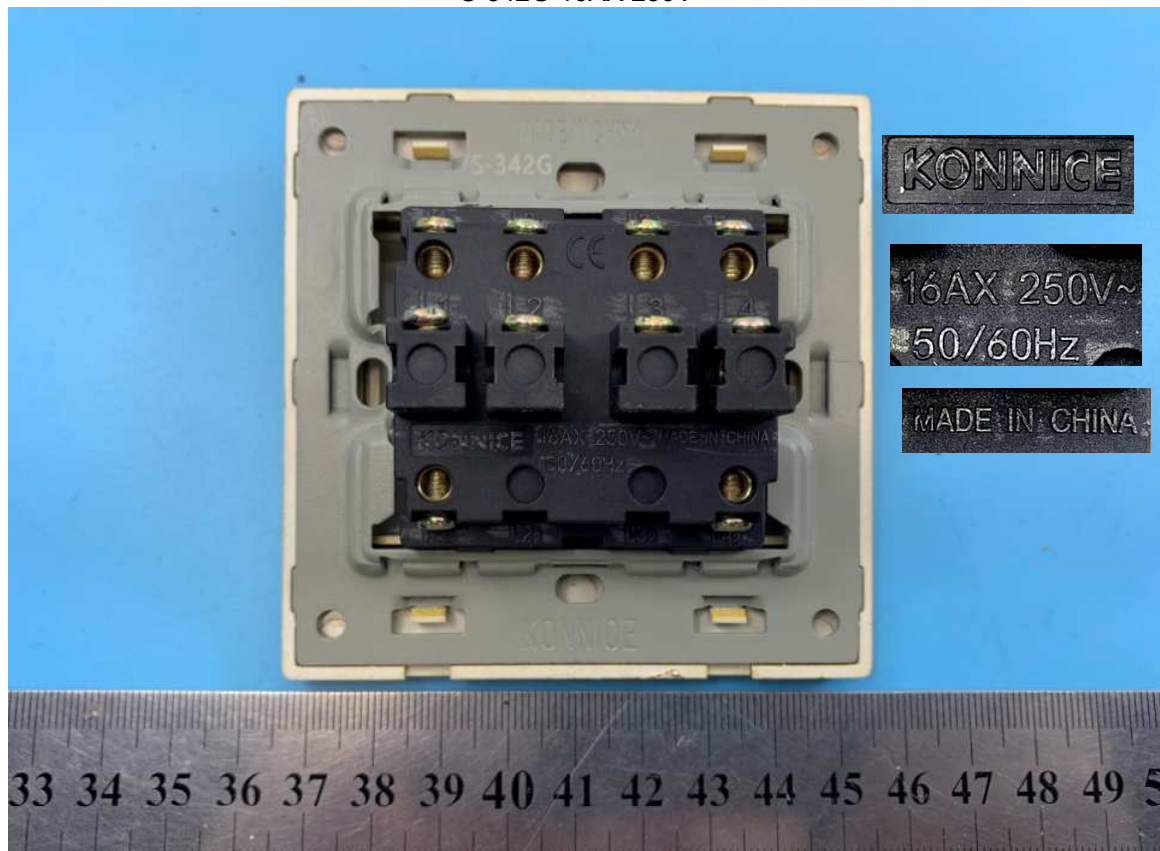


S-342G 16AX 250V~



ANNEX 3 PHOTOGRAPHS

S-342G 16AX 250V~



T-313 16AX 250V~

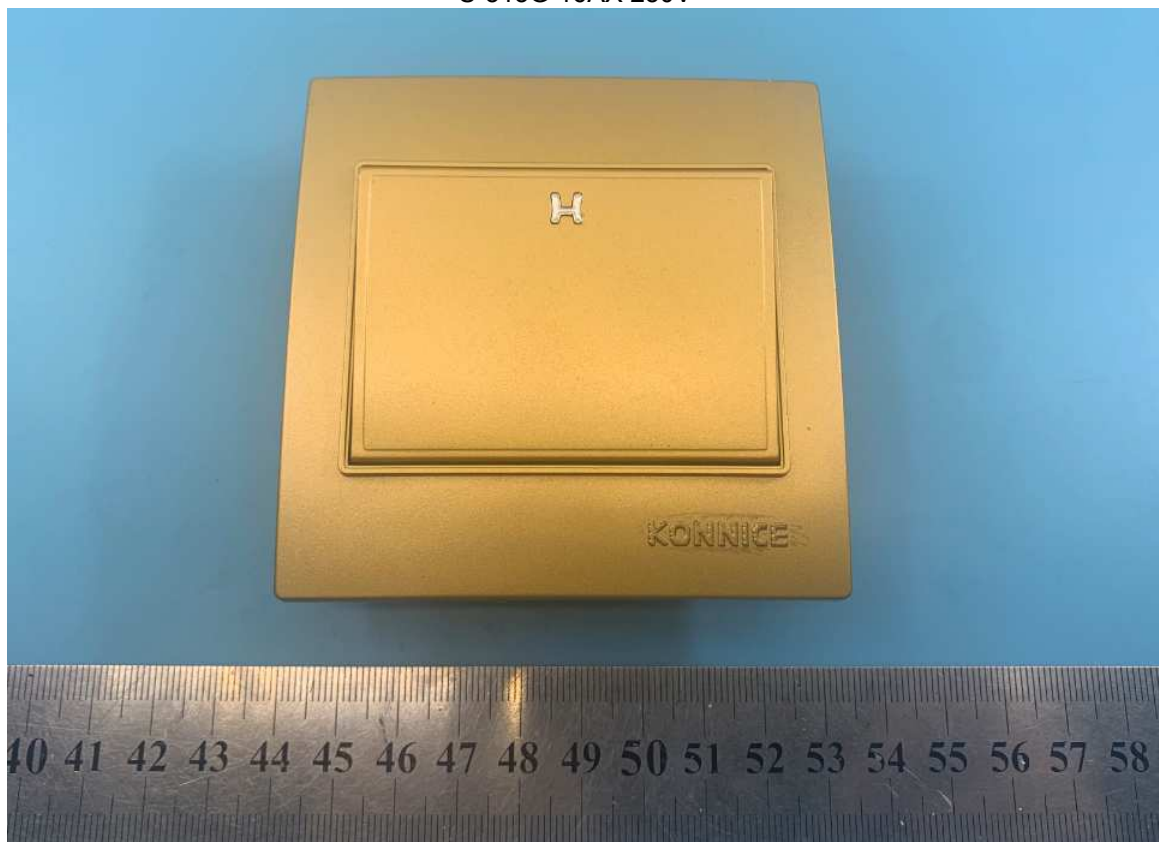


ANNEX 3 PHOTOGRAPHS

T-313 16AX 250V~

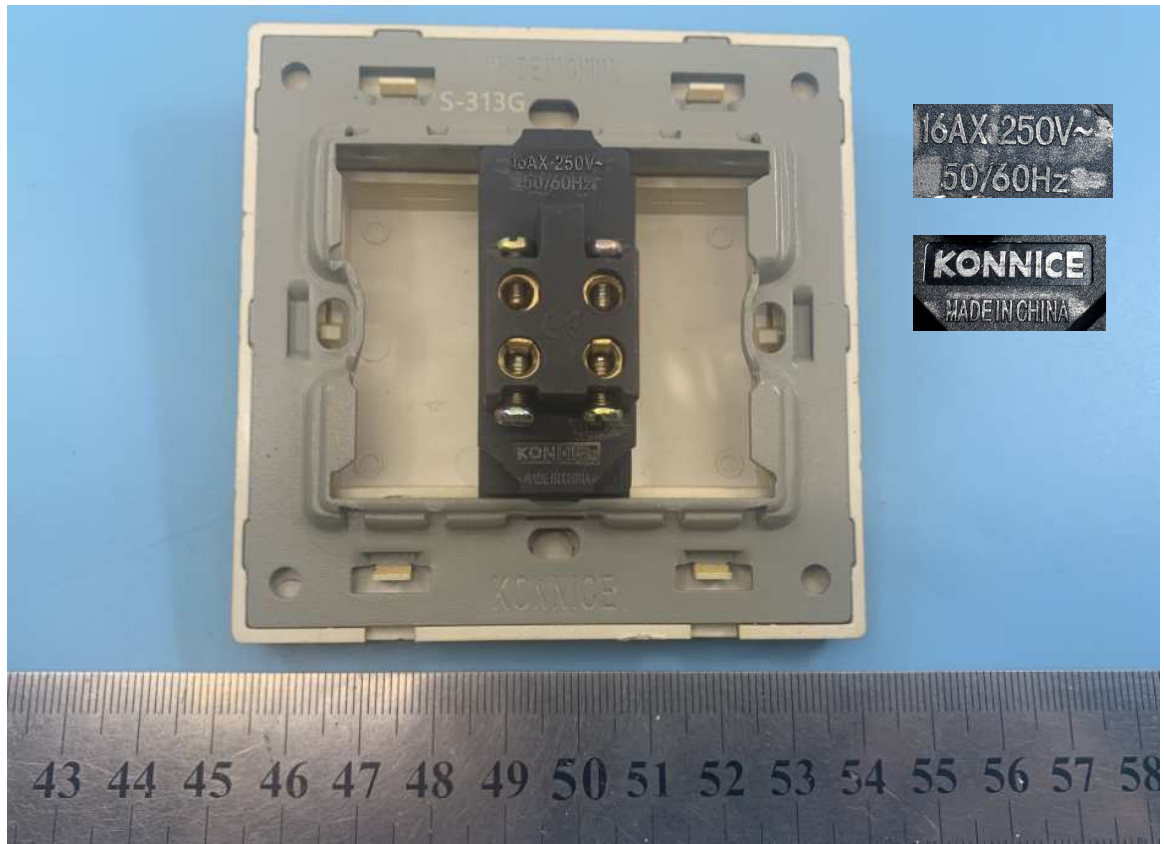


S-313G 16AX 250V~



ANNEX 3 PHOTOGRAPHS

S-313G 16AX 250V~



T-313G 16AX 250V~



ANNEX 3 PHOTOGRAPHS

S-315 16A 250V~



S-314G 16A 250V~



ANNEX 3 PHOTOGRAPHS

S-315G 16A 250V~



T-314 16A 250V~



ANNEX 3 PHOTOGRAPHS

T-315 16A 250V~



T-314G 16A 250V~

