# TEST REPORT

On Behalf of

| | |
|---|---|
| Prepared For : | **ZHEJIANG JINGHONG ELECTRIC CO., LTD**<br><br>No.221.Wei shijiu road,Yueqing economic&development zone,Zhejiang,China |
| Trade Mark : | **N/A** |
| Product Name : | **WIRE CONNECTOR** |
| Model(s) : | **CMK633,** CMK632, CMK634, CMK635 |
| Prepared By: | **Shenzhen ZTS Testing Service Co., Ltd.**<br><br>808, Building 1, 7th Industrial Zone, Yulv Community, Yutang Street, Guangming District, Shenzhen, Guangdong, China<br>Tel: 400-8788-298 Tel:0755-23245950<br>Web: www.zts-test.com Email: zts@zts-test.com |
| Test Date: | **May 24, 2022- May 30, 2022** |
| Date of Report: | **May 30, 2022** |
| Report No. : | **ZTS22052408DRS** |

**Note:** This test report is limited to the above client company and the product model only. It may not be duplicated without prior written consent of Shenzhen ZTS Testing Service Co., Ltd.

**TEST REPORT**

EN 60998-2-2:2004

Connecting devices for low-voltage circuits for household and similar purposes -- Part 2-2: Particular requirements for connecting devices as separate entities with screwless-type clamping units

EN 60998-1:2004

Connecting devices for low-voltage circuits for household and similar purposes -- Part 1: General requirements

| | |
|---|---|
| Reference No. ..... : | ZTS22052408DRS |
| Contents ..... : | 14 pages |
| Date of issue..... : | May 30, 2022 |

**Testing laboratory**

| | |
|---|---|
| Name ..... : | Shenzhen ZTS Testing Service Co., Ltd. |
| Address……..……...: | 808, Building 1, 7th Industrial Zone, Yulv Community, Yutang Street, Guangming District, Shenzhen, Guangdong, China |
| Testing location ..... : | Same as above |

Client

| | |
|---|---|
| Name.....: | ZHEJIANG JINGHONG ELECTRIC CO., LTD |
| Address…….. ..: | No.221.Wei shijiu road, Yueqing economic&development zone, Zhejiang, China |

**Test specification**

| | |
|---|---|
| Standard ..... : | EN 60998-2-2:2004 used in conjunction with EN 60998-1:2004 |
| Test procedure ..... : | N.A. |
| Non-standard test method ..... : | N.A. |

Test item

| | |
|---|---|
| Description ..... | WIRE CONNECTOR |
| Trademark ..... | N/A |
| Model and/or type reference..... | CMK633 |
| Additional model..... | CMK632, CMK634, CMK635 |
| Manufacturer ..... | ZHEJIANG JINGHONG ELECTRIC CO., LTD |
| Address……..: | No.221.Wei shijiu road,Yueqing economic&development zone, Zhejiang, China |
| Rating(s) ..... | AC 450V, 50/60Hz, 32A |

**Testing procedure and testing location**

| | | |
|---|---|---|
| Laboratory name…… | : | Shenzhen ZTS Testing Service Co., Ltd. |
| Testing location/address: | : | 808, Building 1, 7th Industrial Zone, Yulv Community, Yutang Street, Guangming District, Shenzhen, Guangdong, China |
| Testing procedure | : | TL ☒ RMT ☐ SMT ☐ WMT ☐ TMP ☐ |
| Prepared by (Engineer) | : | Miaolei Cheng |
| Review By (Test Engineer) | : | Mark Yan |
| Reviewer by (Quality Manager) | : | Tony mo |

| | |
|---|---|
| **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 ..... | May 23, 202 |
| Date (s) of performance of tests ..... | May 24, 2022- May 30, 2022 |
| General product information: | |

**GENERAL REMARKS:**

**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.**

**When determining the test result, measurement uncertainty has been considered.**

**Summary of testing:**

**Tests performed:**

**Label**

**WIRE CONNECTOR**
Model : CMK633
Rating : AC 450V, 50/60Hz, 32A

**ZHEJIANG JINGHONG ELECTRIC CO., LTD**
Made in China

**Remark:**

The above markings are the minimum requirements required by the safety standard. For the final production samples, the additional markings which do not give rise to misunderstanding may be added.

| EN 60998-2-2 | | | |
|---|---|---|---|
| Clause | Requirement | Remark | Result |
| **8** | **MARKING** | | **P** |
| 8.1 | On main part | | P |
| | a)rated connecting capacity($mm^2$) | 0.5-2.5(4)$mm^2$ | P |
| | b)rated insulation voltage(V) | 450V | P |
| | c)T marking(℃)(if>40℃ or <-5℃) | 50℃ | P |
| | d)Type reference | See page 1. | P |
| | e)Manufacturer's or responsible verdor's name, trademark or identification mark | ZHEJIANG JINGHONG ELECTRIC CO., LTD. | P |
| | f)IP if>20 | IPX0 | N/A |
| | Type of acceptable conductor "r" or "f" | | N/A |
| | Small devices: only d) and e) indicated on device | | N/A |
| | All marks visible on smallest package unit | | N/A |
| 8.2 | Multiway terminal devices: at least two adjacent | | N/A |
| 8.4 | Marking:durable and easily legible; 15s water; 15s hexane | | P |
| 8.101 | Non-universal terminal classified according to 7.101.2 shall be marked as follows: -with the letter(s) "s" or "sol" for terminals declared for solid conductors;<br>-with the letter "r" for terminals declared for rigid conducors;<br>-with the letter "f" for terminals declared for flexible conductors.<br>This marking shall appear where it is practical on the end product or on the smallest package unit or in technical information and/or catalogues. | | N/A |
| 8.102 | An appropriate marking indicating the length of insulation to be removed before insertion of the conductor into the terminal shall be shown on the product or on the smallest package unit or in technical information and/or catalogues. | Not need remove insulation | N/A |
| **9** | **PROTECTION AGAINST ELECTRIC SHOCK** | | **--** |
| | Live parts not accessible | | N/A |
| **10** | **CONNECTION OF CONDUCTORS** | | **--** |
| 10.1<br>10.110.1 | Connecting devices allow correct connection of conductors | | P |
| 10.101<br>10.101 | Connection or disconnection: use a general tool or simple insertion | | P |
| | Disconnection operation other than a pull | | P |
| 10.102 | Terminals accept two or more conductors of same or different nominal cross-sectional areas;see table 101(as specified by manufacturer): | | -- |
| | Rated connecting capacity($mm^2$) | | P |

| EN 60998-2-2 | | | |
|---|---|---|---|
| Clause | Requirement | Remark | Result |
| | Suitable for connecting cross-sectional areas($mm^2$) | 0.5-2.5(4) | P |
| 10.103 | Terminals accept rigid and flexible conductors (table101),unless otherwise specifiled(see 8.1) | | P |
| | Smallest diameter (mm);largest diameter(mm) | | P |
| | During the test: terminals show no damage | | P |
| 10.104 | Terminals clamp the conductor without undue damage: | | P |
| 10.104.1 | Connection/disconnection 5 times:smallest diameter(mm) | | P |
| | Connection/disconnection 5 times:largest diameter(mm) | | P |
| | After the test,terminal not damaged | | P |
| 10.104.2 | Rated cross-sectional areas($mm^2$) | | P |
| | Type | | P |
| | After the test, no wire of condutors escaped outside the terminal | | P |
| 10.105 | Smallest cross-sectional area ($mm^2$); height H(mm);mass(kg) | | P |
| | largest cross-sectional area ($mm^2$); height H(mm);mass(kg) | | P |
| | During the test: the condutor does not slip out, No break near clamping unit and no damage | | P |
| 10.106 | Pull test | | P |
| | -min.cross-sectional area ($mm^2$);pull(N) | 20N | P |
| | -max. Cross-sectional area ($mm^2$);pull(N) | 20N | P |
| | During the test the conductor does come out | | P |
| **11** | **CONSTRUCTION** | | **P** |
| 11.101 | Contact pressure not transmitted via insulating material,unless there is suffcient resiliency | | P |
| 11.102 | Insertion and disconnection,in accordance with manufacturer's instructions | | N/A |
| | Openings clearly distinguishable | | N/A |
| 11.103 | Terminals so constructed that: | | P |
| | -each conductor is clamped individually | | P |
| | -condutors can be connected or disconnected at same time or separately | | P |
| | Possible to clamp maximum number of conductors | | P |
| 11.104 | Inadequate insertion of conductor avoided | | P |
| 11.2 | Clamping units clamp conductors reliably and between metal surfaces | | P |
| 11.3 | Connecting devices:insulation of conductors not in | | P |

| EN 60998-2-2 | | | |
|---|---|---|---|
| Clause | Requirement | Remark | Result |
| | contact with live parts of different polarity | | |
| 11.4 | Insulating lining: adequate mechanical strength and secured in a reliable manner | | N/A |
| 11.5 | Current-carrying parts:adequate mechanical strength,electrical conductivity and resistance to corrosion; type of metal | | P |
| | Current-carrying parts not made with electroplated coating if subjected to mechanical wear | | P |
| 11.6 | Terminals: possible to connect number of conductors as specified by the manufacturer | | P |
| | -Number of conductors | | P |
| | -rigid, cross-sectional area($mm^2$) | | P |
| | -flexible, cross-sectional area($mm^2$) | | P |
| 11.7 | Fixing means of bases do not serve any other purpose | | N/A |
| **12** | **RESISTANCE TO AGEING, TO HUMIDITY CONDITIONS, TO INGRESS OF SOLID OBJECTS AND TO HARMFUL INGRESS OF WATER** | | -- |
| 12.1 | Connecting devices resistant to ageing; after the test(168h);no cracks visible,not sticky or greasy,no damage;test temperature(℃) | 70℃ | P |
| 12.2 | After humidity test (91-95%):no damage; test duration(168h for connecting devices>IPX2,48h for all other) | 95%RH,30℃ | P |
| 12.3 | IP test (IEC 60529) | | N/A |
| | After the test,electric strength test as 13.4 and by inspection | IPX0 | N/A |
| | No appreciable entry of water | IPX0 | N/A |
| **13** | **INSULATION RESISTANCE AND ELECTRIC STRENGTH** | | -- |
| 13.3 | CImping unit connected with:smallest cross-sectional area($mm^2$);largest cross-sectional area($mm^2$) | Smallest:0.5$mm^2$<br>Largest :0.5$mm^2$ | P |
| | Insulation resistance (500Vd.c.for 1 min) | | -- |
| | 1)between all clamping units connected together and the body>5MΩ | >5MΩ | P |
| | 2)between all clamping units and all others connected to the body>5MΩ | >5MΩ | P |
| | 3)between metal foil and the body >5MΩ | | N/A |
| | 3a)if necessary,between live parts and metal covers and enclosure>5MΩ | | N/A |
| | 3b)if necessary, between live parts and surface on which the base is mounted >5MΩ | | N/A |
| 13.4 | Electric strength(a.c.for 1 min):no flash over or breakdown | | -- |

| EN 60998-2-2 | | | |
|---|---|---|---|
| Clause | Requirement | Remark | Result |
| | 1)test voltage(V) | 1250 | P |
| | 2)test voltage(V) | 1250 | P |
| | 3)test voltage(V) | | N/A |
| | 3a)test voltage(V) | | N/A |
| | 3b)test voltage(V) | | N/A |
| **14** | **MECHANICAL STRENGTH** | | -- |
| 14.101 | The test conductor,properly inserted into a clamping unit of the connection devices shall be allowed to be bent(deflected) in all 12 directions each of them differing from the adjacent directions by 30°±5° | | N/A |
| | Deflection test(principle of test apparaus shown in figure 103a) | | N/A |
| | A 10 $^{th}$ of the test current (A) | | N/A |
| | Smallest cross-sectional area(mm²)10.103 | | N/A |
| | Force(N)( table 104) | | N/A |
| | Distance (mm)(table104) | | N/A |
| | -screwless terminal number | | N/A |
| | -voltage drop measured (mV)(1$^{st}$ deflection) | | N/A |
| | -voltage drop measured (mV)(2$^{nd}$ deflection) | | N/A |
| | -voltage drop measured (mV)(3$^{rd}$ deflection) | | N/A |
| | -voltage drop measured (mV)(4$^{th}$ deflection) | | N/A |
| | -voltage drop measured (mV)(5$^{th}$ deflection) | | N/A |
| | -voltage drop measured (mV)(6$^{th}$ deflection) | | N/A |
| | -voltage drop measured (mV)(7$^{th}$ deflection) | | N/A |
| | -voltage drop measured (mV)(8$^{th}$ deflection) | | N/A |
| | -voltage drop measured (mV)(9$^{th}$ deflection) | | N/A |
| | -voltage drop measured (mV)(10$^{th}$ deflection) | | N/A |
| | -voltage drop measured (mV)(11$^{th}$ deflection) | | N/A |
| | -voltage drop measured (mV)(12$^{th}$ deflection) | | N/A |
| | Requirement:≤2.5mV | | N/A |
| | A 10th of the test current(A) | | N/A |
| | Largest cross-sectional area (mm²)10.103 | | N/A |
| | Force(N)(table 104) | | N/A |
| | Distance (mm)(table104) | | N/A |
| | -Screwless terminal number | | N/A |
| | -voltage drop measured (mV)(1st deflection) | | N/A |
| | -voltage drop measured (mV)(2nd deflection) | | N/A |

| EN 60998-2-2 | | | |
|---|---|---|---|
| Clause | Requirement | Remark | Result |
| | -voltage drop measured (mV)(3rd deflection) | | N/A |
| | -voltage drop measured (mV)(4th deflection) | | N/A |
| | -voltage drop measured (mV)(5th deflection) | | N/A |
| | -voltage drop measured (mV)(6th deflection) | | N/A |
| | -voltage drop measured (mV)(7th deflection) | | N/A |
| | -voltage drop measured (mV)(8th deflection) | | N/A |
| | -voltage drop measured (mV)(9th deflection) | | N/A |
| | -voltage drop measured (mV)(10th deflection) | | N/A |
| | -voltage drop measured (mV)(11th deflection) | | N/A |
| | -voltage drop measured (mV)(12th deflection) | | N/A |
| | Requirement:≤2.5mV | | N/A |
| 14.2 | Tumbling barrel (for<50g);50 falls; after the test no damage | No damage | P |
| 14.3 | Impact test (for >50g):10 blows: | | N/A |
| | -height of hall: 7.5cm | | N/A |
| | -height of hall: 10cm | | N/A |
| | -height of hall: 20cm | | N/A |
| | -height of hall: 25cm | | N/A |
| | After the test,no damage and live parts shall not become accessible | | P |
| **15** | **Temperature rise** | | -- |
| | terminal | | P |
| | T marking (℃) | | N/A |
| | Largest cross-sectional area(mm²) | 2.5 | P |
| | Conductors | | P |
| | Rated connecting capacity(mm²) | 0.5-2.5(4) | P |
| | Rated current(A) | 32A | P |
| | Temperature rise does not exceed 45K (1) | 18.2k | P |
| | Temperature rise does not exceed 45K(2) | | N/A |
| | Temperature rise does not exceed 45K(3) | | N/A |
| 15.101 | Universal,rigid conductors 6 samples | | P |
| | Universal flexible conductors 6 samples | | P |
| | Non-universal,rigid solid conductors 6 samples | | N/A |
| | Non-universal,rigid stranded conductors 6 samples | | N/A |
| | Non-universal,flexible conductors 6 samples | | N/A |
| | Temperature(℃) | | N/A |
| | Smallest cross-sectional area(mm²) | 0.5 | P |
| | Current (A) | 32 | P |
| | Voltage drop after 192 cycles | | -- |

| EN 60998-2-2 | | | |
|---|---|---|---|
| Clause | Requirement | Remark | Result |
| | -requirement: 22.5 mV or 1.5 times 24th cycle value | 0.60mV | P |
| | -solid conductions | 1:0.64mV 2:0.62mV 3:0.61mV | P |
| | -stranded conductors | | -- |
| | -flexible conductors | 1:-mV 2:-mV 3:-mV | -- |
| | Largest cross-sectional area(mm²) | 0.5 | P |
| | Current(A) | 32 | P |
| | Voltage drop after 192 cycles | | -- |
| | -requirement:22.5 mV or 1.5 times 24th cycle value | 0.62mV | P |
| | -solid conductions | 1:0.64mV 2:0.62mV 3:0.61mV | P |
| | -stranded conductors | | -- |
| | -flexible conductors | 1:-mV<br>2:-mV<br>3:-mV | -- |
| **16** | **RESISTANCE TO HEAT** | | **--** |
| 16.2 | Heating cabinet:no damage,after the test marking still legible;test temperature(℃) | 85℃ | P |
| 16.3 | Ball-pressure test (125℃)for parts necessary to retain current-carrying parts in position | Plastic enclosure | P |
| | Ball-pressure test for parts not necessary to retain current-carrying parts in position ;test temperature (℃) | 125℃ | P |
| | Diameter of impression not exceeding 2mm | 1.3mm | P |
| **17** | **CREEPAGE DISTANCES,CLEARANCES AND DISTANCES THROUGH SEALING COMPOUND** | | **--** |
| | Creepage distances(mm) and clearances(mm) between live parts of different polarity | | N/A |
| | Idem,requirement(mm) | | N/A |
| | Creepage distances(mm) and clearances(mm) between live parts and metal covers enclousures | | N/A |
| | Idem,requirement(mm) | | N/A |
| | Creepage distances(mm) and clearances(mm) between live parts and surface on which the base is mounted | | N/A |
| | Idem,requirement(mm) | | N/A |
| **18** | **RESISTANCE OF INSULATING MATERIAL TO ABNORMAL HEAT AND FIRE** | | **--** |
| | Glow-wire test (850℃)for parts necessary to retain current-carrying parts in position | | P |
| | Glow-wire test (650℃)for parts necessary to retain current-carrying parts in position | | P |

| EN 60998-2-2 | | | |
|---|---|---|---|
| Clause | Requirement | Remark | Result |
| | No visible flames and no sustained glowing,or if flame and glowing,extinguish within 30s | | P |
| | No ignition of the tissue paper or scorching of the board | | P |
| **19** | **RESISTANCE OF INSULATING MATERIAL TO TRACKIN** | | -- |
| | 50 drops,175V,solution A(IEC112):no flash over | | P |

## ATTACHMENTS: REAL PHOTOS

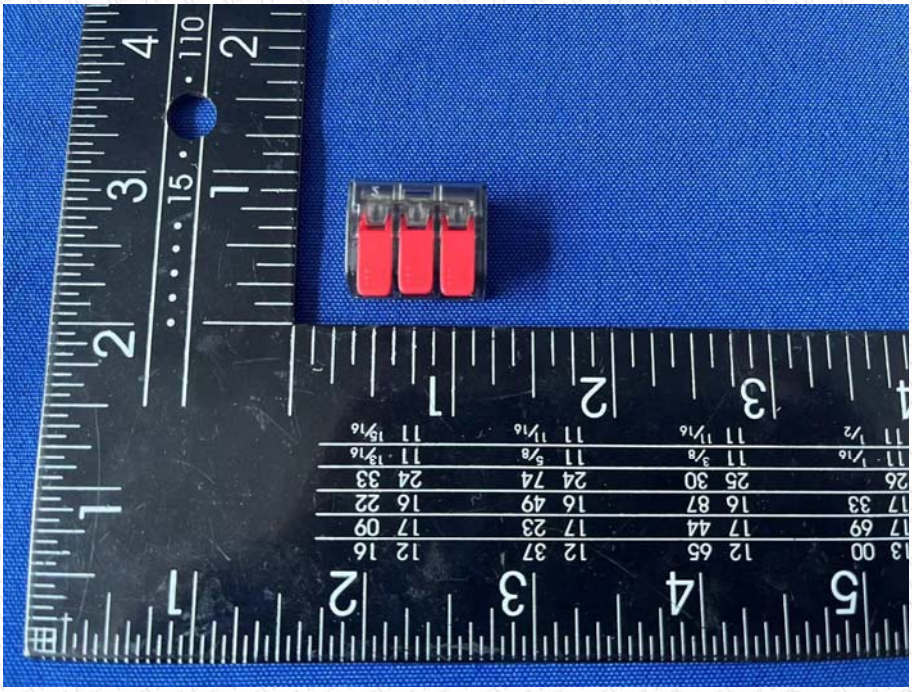

Photo 1

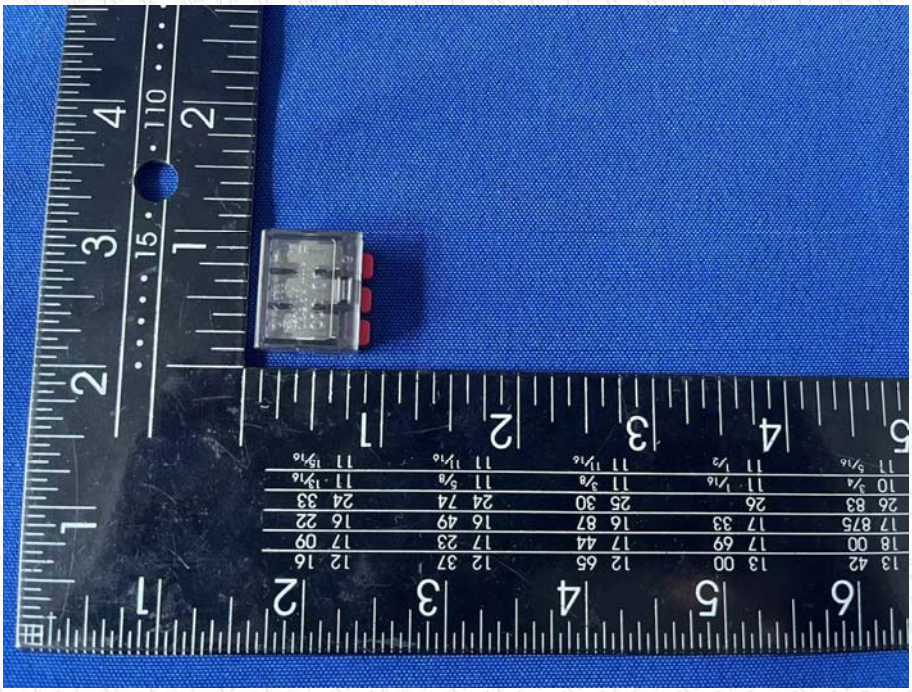

Photo 2

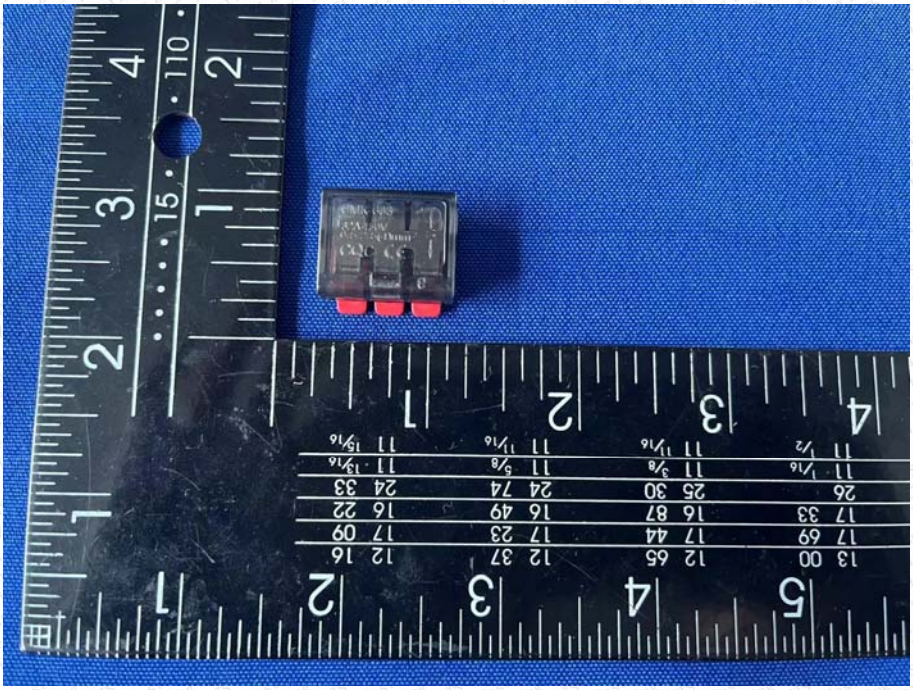

Photo 3

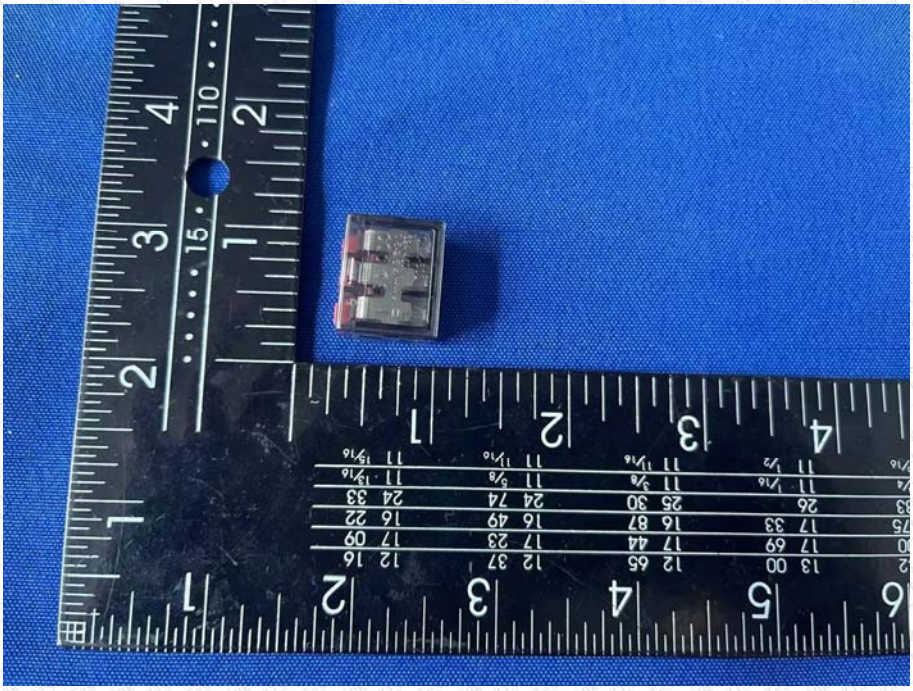

Photo 4

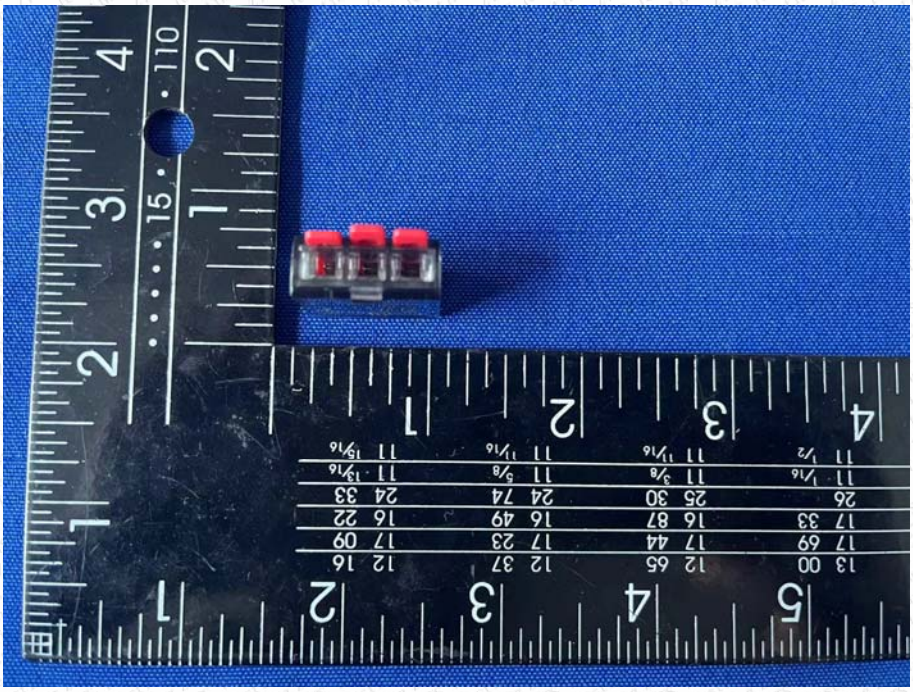

Photo 5

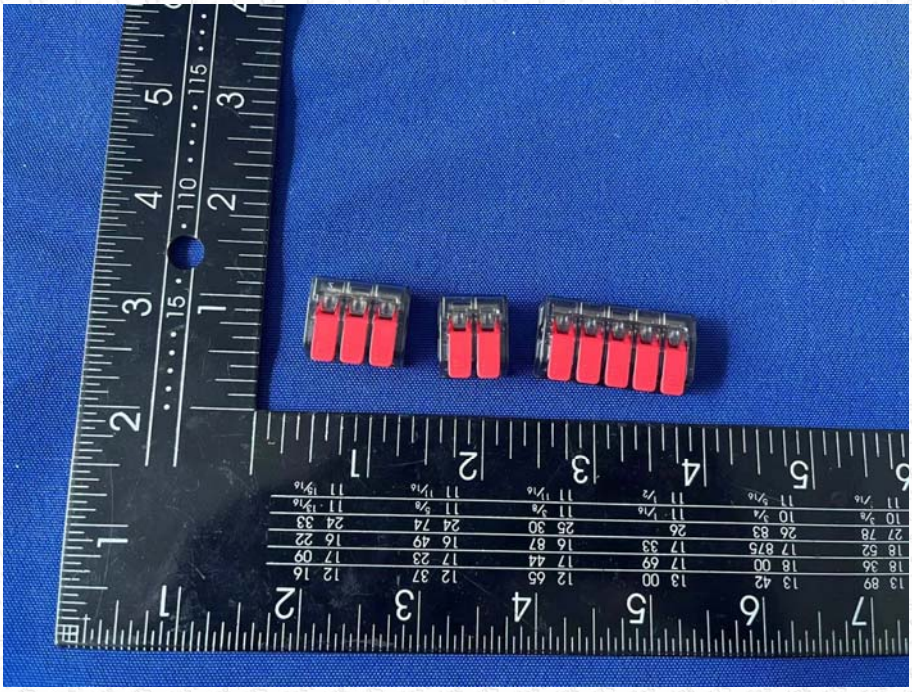

Photo 6

*****End of the report*****