


<b>TEST REPORT</b> <b>EN 60998-1&amp;EN 60998-2-2</b> <b>Connecting devices for low-voltage circuits for household and similar purposes</b> <b>Part 2-2: Particular requirements for connecting devices as separate entities with screwless-type clamping units</b>	
<b>Report Number.</b> .....	AST2009201008
<b>Date of issue</b> .....	2020-10-15
<b>Total number of pages</b> .....	11 pages
<b>Applicant's name</b> .....	Shenzhen Qi Jie Electronics Co., Ltd
<b>Address</b> .....	2F, 1, Buiding 21th, Chuangye RD, Shilongzai Industrial Park saiyan, Baoan District, Shenzhen, GD, China
<b>Test specification:</b>	
<b>Standard</b> .....	EN 60998-2-2:2004 used in conjunction with EN 60998-1:2004
<b>Test procedure</b> .....	CE-LVD
<b>Non-standard test method</b> .....	N/A
<b>Test item description</b> .....	
<b>Trade Mark</b> .....	N/A
<b>Manufacturer</b> .....	Shenzhen Qi Jie Electronics Co., Ltd
<b>Address</b> .....	The Left Side of The Fifth Floor, No. 21 Chuangye Road, Shilong Community, Shiyuan Street, Bao'an District, Shenzhen
<b>Model/Type reference</b> .....	Beetle Clip Invisible
<b>Ratings</b> .....	Input:36V, 5.5A Max.

<b>Testing procedure and testing location:</b>	
<input checked="" type="checkbox"/>	<b>Testing Laboratory:</b> AST Testing Services (Shenzhen) Co., Ltd.
Testing location/ address ..... : 3/F, Block A1, No. 5, 8th Road, Shapu Yangyong Industrial Park, Songgang Street, Bao'an District, Shenzhen	
<input type="checkbox"/>	<b>Associated CB Laboratory:</b>
Testing location/ address ..... :	
Tested by (name + signature) ..... :	
	Kevin Yang
Reviewed by (name + signature) ..... :	
	Ron Long
Approved by (name + signature) ..... :	
	Taoist Wang
<input type="checkbox"/>	<b>Testing procedure: TMP</b> N/A
Testing location/ address ..... :	
Tested by (name + signature) ..... :	
Approved by (name + signature) ..... :	
<input type="checkbox"/>	<b>Testing procedure: WMT</b> N/A
Testing location/ address ..... :	
Tested by (name + signature) ..... :	
Witnessed by (name + signature) ..... :	
Approved by (name + signature) ..... :	
<input type="checkbox"/>	<b>Testing procedure: SMT</b> N/A
Testing location/ address ..... :	
Tested by (name + signature) ..... :	
Approved by (name + signature) ..... :	
Supervised by (name + signature) ..... :	
<input type="checkbox"/>	<b>Testing procedure: RMT</b> N/A
Testing location/ address ..... :	
Tested by (name + signature) ..... :	
Approved by (name + signature) ..... :	
Supervised by (name + signature) ..... :	





<p><b>Possible test case verdicts:</b></p> <ul style="list-style-type: none"> <li>- test case does not apply to the test object ..... : N/A</li> <li>- test object does meet the requirement ..... : P (Pass)</li> <li>- test object does not meet the requirement ..... : F (Fail)</li> </ul>	
<p><b>Testing..... :</b></p> <p>Date of receipt of test item..... : 2020-09-30</p> <p>Date (s) of performance of tests..... : 2020-09-30 to 2020-10-15</p>	
<p><b>General remarks:</b></p> <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.          "(see Enclosure #)" refers to additional information appended to the report.          "(see appended table)" refers to a table appended to the report.          Clause numbers between brackets refer to clauses in EN 60998-2-2:2004&amp;EN 60998-1:2004</p> <p>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.          Determination of the test result includes consideration of measurement uncertainty from the test equipment and methods.</p>	
<p><b>Manufacturer's Declaration per sub-clause 6.2.5 of IEC 60998-2-2:</b></p> <p>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 ..... :</p> <p style="text-align: right;"> <input type="checkbox"/> Yes  <input checked="" type="checkbox"/> Not applicable         </p>	
<p><b>When differences exist; they shall be identified in the General product information section.</b></p>	
<p><b>Name and address of factory (ies)..... :</b> Shenzhen Qi Jie Electronics Co., Ltd.          2F, 1, Buiding 21th, Chuangye RD, Shilongzai Industrial Park saiyan, Baoan District, Shenzhen, GD, China</p>	
<p><b>General product information:</b></p> <p>Operating ambient temperature: -20 °C ~ 50 °C.</p>	
<p><b>Copy of marking plate:</b></p> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <p>Beetle Clip Invisible              Model: Beetle Clip Invisible              Input: 36V, 5.5A Max.</p> <p style="text-align: center;">  </p> <p style="text-align: center;">Shenzhen Qi Jie Electronics Co., Ltd.              Made in China</p> </div>	

8	MARKING		P
8.1	On main part		P
	a)rated connecting capacity(mm <sup>2</sup> )	0.5mm <sup>2</sup>	P
	b)rated insulation voltage(V)	36V	P
	c)T marking(°C)(if>40°C or <-5°C)	50°C	P
	d)Type reference	See page 1.	P
	e)Manufacturer's or responsible vendor's name, trademark or identification mark	Shenzhen Qi Jie Electronics 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; -with the letter "r" for terminals declared for rigid conductors; -with the letter "f" for terminals declared for flexible conductors. 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	Connecting devices allow correct connection of conductors		P
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 <sup>2</sup> )		P
	Suitable for connecting cross-sectional areas(mm <sup>2</sup> )	0.5	P
10.103	Terminals accept rigid and flexible conductors (table101),unless otherwise specified(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 <sup>2</sup> )		P
	Type		P
	After the test, no wire of conductors escaped outside the terminal		P
10.105	Smallest cross-sectional area (mm <sup>2</sup> ); height H(mm);mass(kg)		P
	largest cross-sectional area (mm <sup>2</sup> ); height H(mm);mass(kg)		P
	During the test: the conductor does not slip out, No break near clamping unit and no damage		P
10.106	Pull test		P
	-min.cross-sectional area (mm <sup>2</sup> );pull(N)	20N	P
	-max. Cross-sectional area (mm <sup>2</sup> );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 sufficient 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

	-conductors 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 contact with live parts of different polarity		P
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 <sup>2</sup> )		P
	-flexible, cross-sectional area(mm <sup>2</sup> )		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(°C)	70°C	P
12.2	After humidity test (91-95%):no damage; test duration(168h for connecting devices>IPX2,48h for all other)	95%RH,30°C	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	Clmping unit connected with:smallest cross-sectional area(mm <sup>2</sup> );largest cross-sectional area(mm <sup>2</sup> )	Smallest:0.5mm <sup>2</sup> Largest :0.5mm <sup>2</sup>	P
	Insulation resistance (500Vd.c.for 1 min)		--
	1)between all clamping units connected together and the body>5MΩ	>5MΩ	P

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	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		--
	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 <sup>th</sup> 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 <sup>st</sup> deflection)		N/A
	-voltage drop measured (mV)(2 <sup>nd</sup> deflection)		N/A
	-voltage drop measured (mV)(3 <sup>rd</sup> deflection)		N/A
	-voltage drop measured (mV)(4 <sup>th</sup> deflection)		N/A
	-voltage drop measured (mV)(5 <sup>th</sup> deflection)		N/A
	-voltage drop measured (mV)(6 <sup>th</sup> deflection)		N/A
	-voltage drop measured (mV)(7 <sup>th</sup> deflection)		N/A
	-voltage drop measured (mV)(8 <sup>th</sup> deflection)		N/A
	-voltage drop measured (mV)(9 <sup>th</sup> deflection)		N/A
	-voltage drop measured (mV)(10 <sup>th</sup> deflection)		N/A
	-voltage drop measured (mV)(11 <sup>th</sup> deflection)		N/A
	-voltage drop measured (mV)(12 <sup>th</sup> deflection)		N/A

	Requirement:≤2.5mV		N/A
	A 10 <sup>th</sup> of the test current(A)		N/A
	Largest cross-sectional area (mm <sup>2</sup> )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 <sup>st</sup> deflection)		N/A
	-voltage drop measured (mV)(2 <sup>nd</sup> deflection)		N/A
	-voltage drop measured (mV)(3 <sup>rd</sup> deflection)		N/A
	-voltage drop measured (mV)(4 <sup>th</sup> deflection)		N/A
	-voltage drop measured (mV)(5 <sup>th</sup> deflection)		N/A
	-voltage drop measured (mV)(6 <sup>th</sup> deflection)		N/A
	-voltage drop measured (mV)(7 <sup>th</sup> deflection)		N/A
	-voltage drop measured (mV)(8 <sup>th</sup> deflection)		N/A
	-voltage drop measured (mV)(9 <sup>th</sup> deflection)		N/A
	-voltage drop measured (mV)(10 <sup>th</sup> deflection)		N/A
	-voltage drop measured (mV)(11 <sup>th</sup> deflection)		N/A
	-voltage drop measured (mV)(12 <sup>th</sup> 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 ball: 7.5cm		N/A
	-height of ball: 10cm		N/A
	-height of ball: 20cm		N/A
	-height of ball: 25cm		N/A
	After the test,no damage and live parts shall not become accessible		P

15	Temperature rise		--
	terminal		P
	T marking (°C)		N/A
	Largest cross-sectional area(mm <sup>2</sup> )	0.5	P
	Conductors		P
	Rated connecting capacity(mm <sup>2</sup> )	0.5	P
	Rated current(A)	5.5A	P
	Temperature rise does not exceed 45K (1)	18.2k	P
	Temperature rise does not exceed 45K(2)		N/A

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	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(°C)		N/A
	Smallest cross-sectional area(mm <sup>2</sup> )	0.5	P
	Current (A)	6	P
	Voltage drop after 192 cycles		--
	-requirement:22.5 mV or 1.5 times 24 <sup>th</sup> 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(mm <sup>2</sup> )	0.5	P
	Current(A)	6	P
	Voltage drop after 192 cycles		--
	-requirement:22.5 mV or 1.5 times 24 <sup>th</sup> cycle value	0.62mV	P
	-solid conductions	1:0.64mV 2:0.62mV 3:0.61mV	P
	-stranded conductors		--
	-flexible conductors	1:-mV 2:-mV 3:-mV	--

16	RESISTANCE TO HEAT		--
16.2	Heating cabinet:no damage,after the test marking still legible;test temperature(°C)	85°C	P
16.3	Ball-pressure test (125°C)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 (°C)	125°C	P
	Diameter of impression not exceeding 2mm	1.3mm	P

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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 enclosures		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°C)for parts necessary to retain current-carrying parts in position		P
	Glow-wire test (650°C)for parts necessary to retain current-carrying parts in position		P
	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



## Attachment - Photos

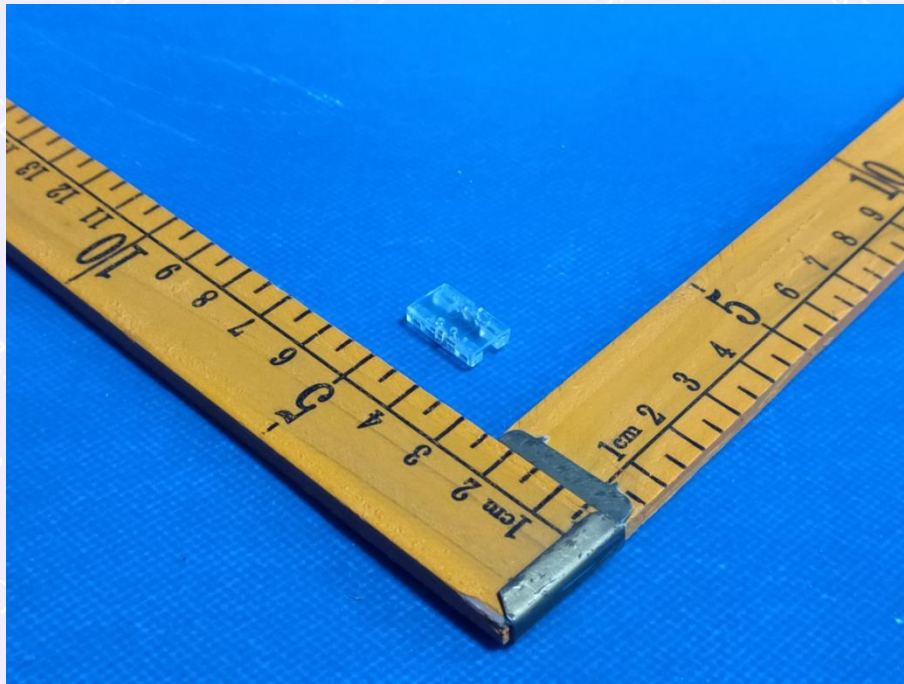


Photo 1

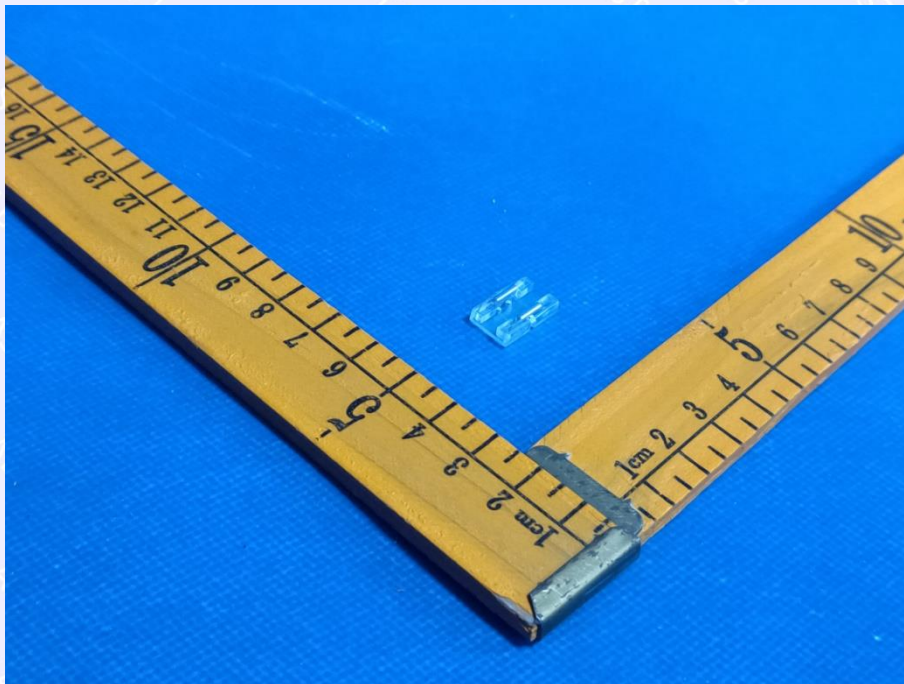


Photo 2

**--End of report--**