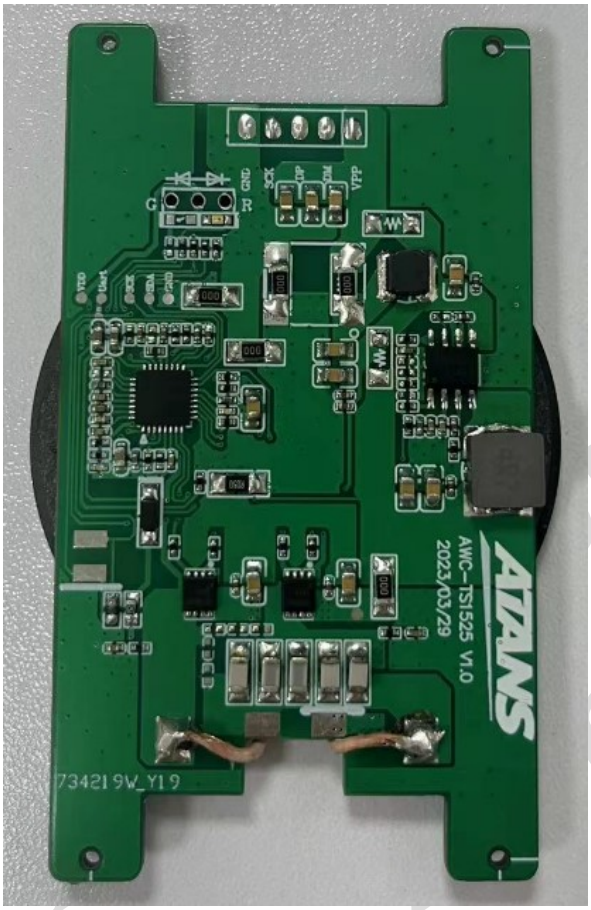
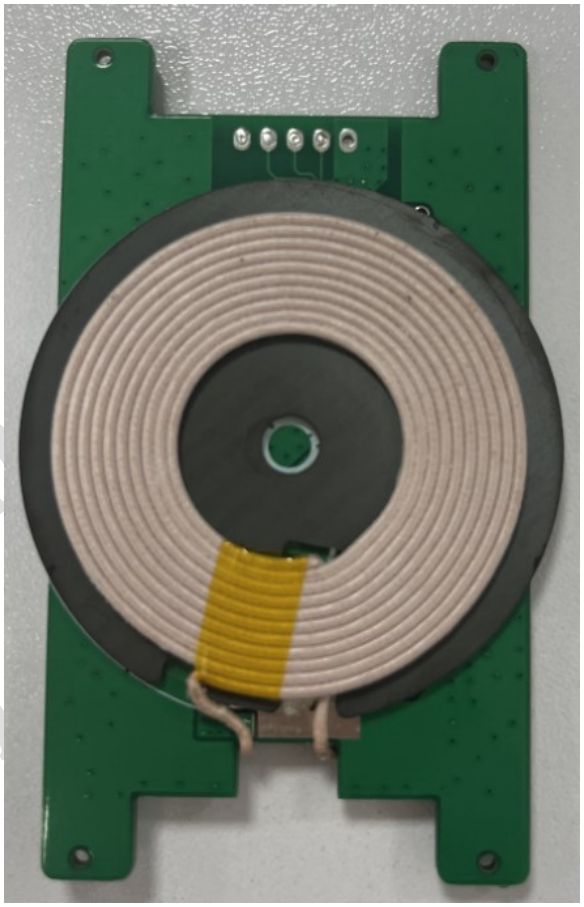
AWC-TS1525N-AT

Qi 15W **Wireless Charging Module**





Revision History

Date	Version	Description
2023.April	Preliminary	Initial release

Trademarks

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1.General Description

The AWC-TS1525N-AT is a high-integrated solution for Qi compliant wireless power transmitter. It supports WPC Qi v1.2.4 and several protection approaches are included to prevent system from abnormal condition such as overcurrent, low voltage, over temperature and offset issue etc..

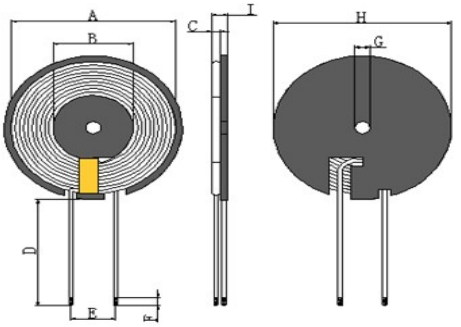
2.Product Feature

- Support 15W fast charging（cooperated with QC 12V adaptor ）
- Compatible with Samsung 10W/Apple 7.5W /5W wireless charging
- Designed with Generalplus's GPM8F8008C IC solution compliant with WPC Qi v1.2.4
- Support over/under voltage, over current, over temperature (85°C), bias protection and FOD projection
- Patented method to easy compatible different RX device
- Use MPA11 signal coil type (see below coil specification)

SPECIFICATION

產品型號: DESC	Φ20x43.5-6.6uH-0.08x105-25mm-50C	版本 Rev：A.0	客戶 CUST:	XXX
			客户料号 CUST P/N:	

一、尺寸 DIMENSION:(mm)



A	43.0±1.0
B	20.0±0.5
C	1.1±0.2
D	45±2
E	11.5 ref.
F	2~4
G	5.2 ref.
H	50±1
I	2.5 Max.

注：
1.交叉出线;
2.出线位置缠 8mm 宽度高温胶纸 1-2Ts;
3.线圈需贴磁片,磁片外直径 50mm,中间带孔 5.2mm,有 L 型线槽,厚度 0.8mm;

二、原理图 SCHEMATIC DIAGRAM:

三、绕线参数 Winding Specification:

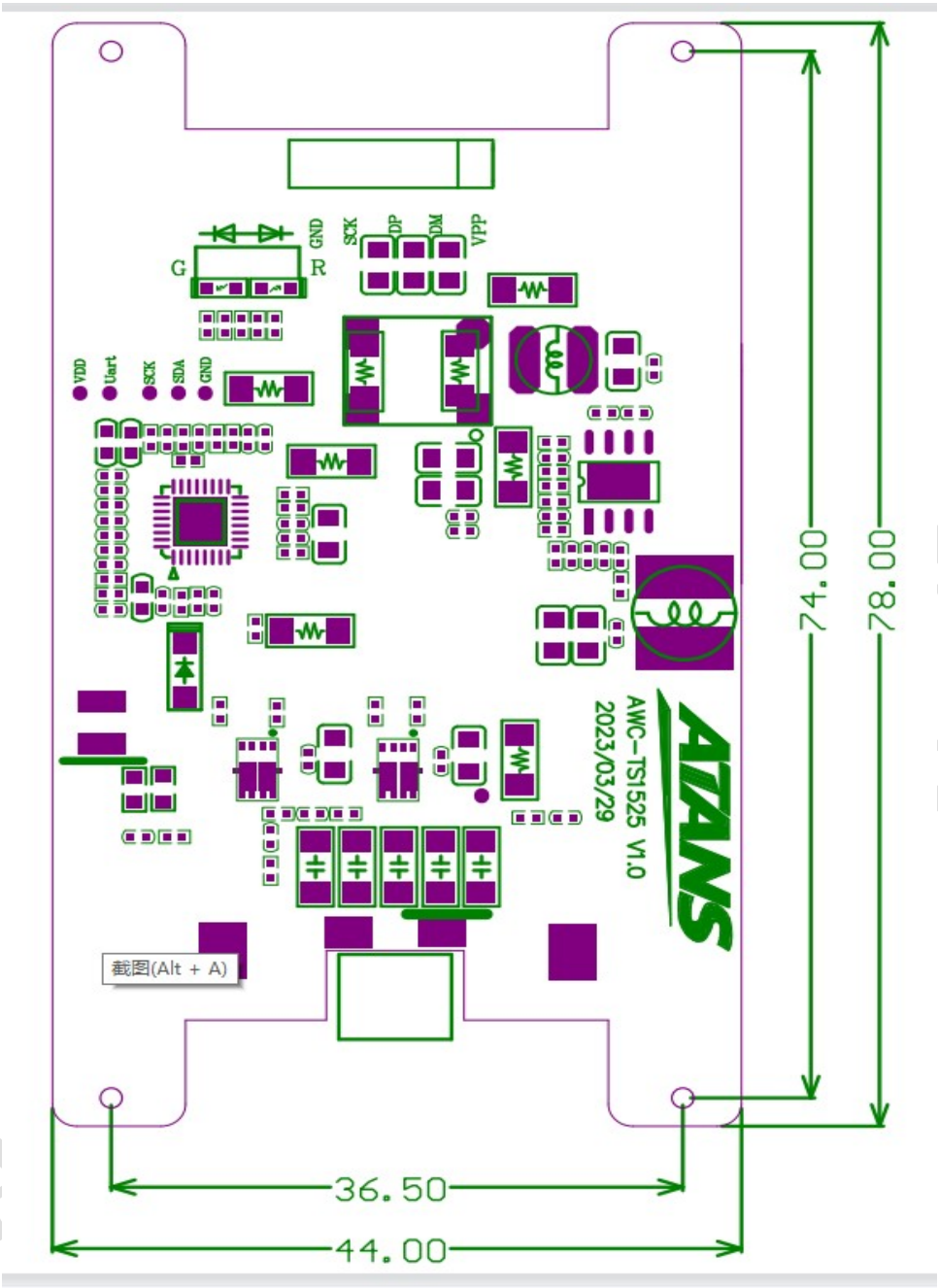
序号 NO.	端子 TERMINAL		线径 WIRE	圈数 Turns	绕线方向 Winding Direction
1	S	F	丝包线 0.08*105P	10Ts	CCW

四、电气特性 ELECTRICAL CHARACTERISTICS:

温度 TEMPERATURE:25±10°C, 湿度 RELATIVE HUMIDITY:65±20%

序号 NO.	项目 ITEM	端子 TERMINAL	标准 SPECIFICATION	测试条件 TEST FREQUENCY	测试仪器 TEST EQUIPMENTS
1	IND.	S-F	3.8 uH ± 10% 单独线圈	100KHz/1.0V	LCZ METER 1062B
2	IND.	S-F	6.6 uH ± 10% 加磁片	100KHz/1.0V	LCZ METER 1062B
3	DCR	S-F			

3.Dimension of the module



4. User guide of the module

- ●Support power supply above QC 2.0
- ● Auto detect 5V/9V/12V input voltage
- ● Auto detect the object put-on or removal
- ●Operation temperature: -10 ~ 50^{0}C ; Storage temperature : -20 ~ 70^{0}C
- ● LED indicators showing the charging status

a. Power on：The red light flashes twice and goes out

b. Charging：Red light is ON

c. Charging completed: Green light is ON

d. Error: Red light is blinking

- Can't put any metal material on the wireless charging area
- Put the center point of RX coil closed to the center point of TX coil (suggest not over 2.5mm)

5．Function and temperature testing

Testing module： AWC-TS1525N-AT V1.0 PCBA ；

Esting Equipment：Ugreen fast charging adaptor CD122-2.0（输出：12V-1.5A），Power-Z（V1.5.4），USB2.0charging cable，IR temperature detector（AS852B）；The thickness of acrylic plate is 3.0 mm

Testing cellphone： iPhone12（iOS 15.0.2）Samsung note10，iPhone13 pro max（iOS 16.3.1）

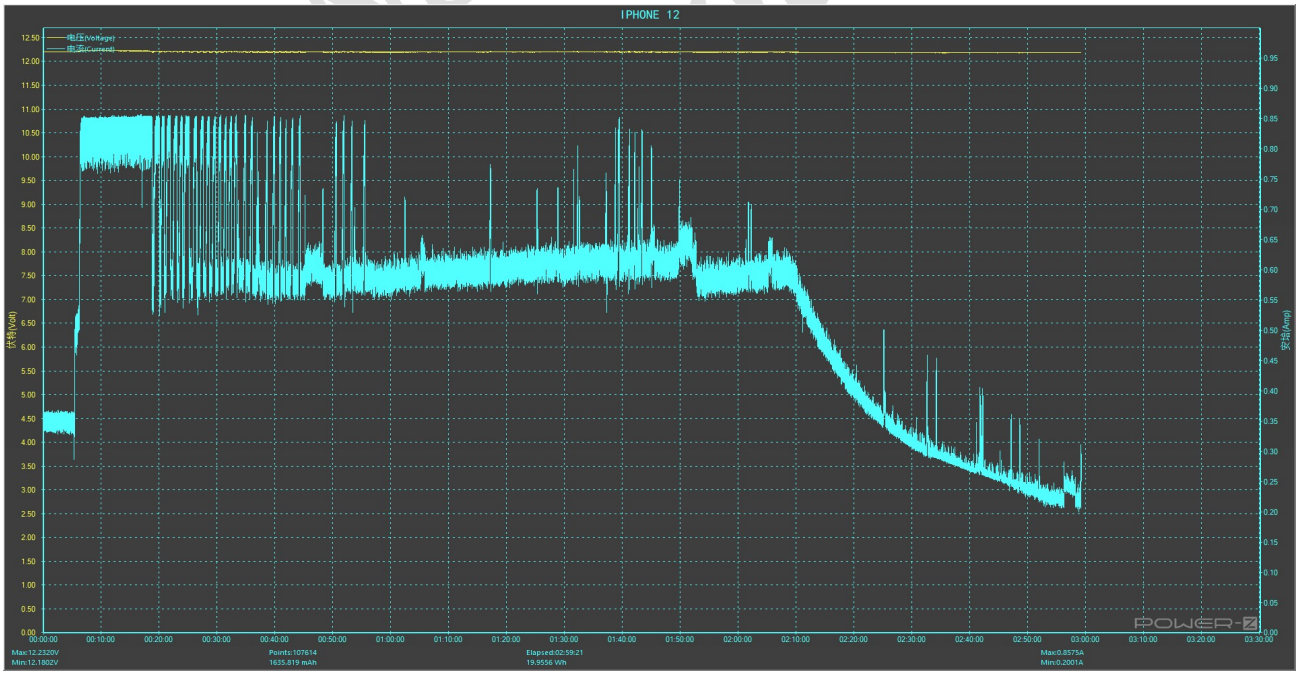
Resonant capacitor： NPO 0.1uF/50V *5

Testing date： 2023.04.04—2023.04.07

Environment temperature：25.0-26.5 degrees centigrade

The testing by Cellphone wireless charging

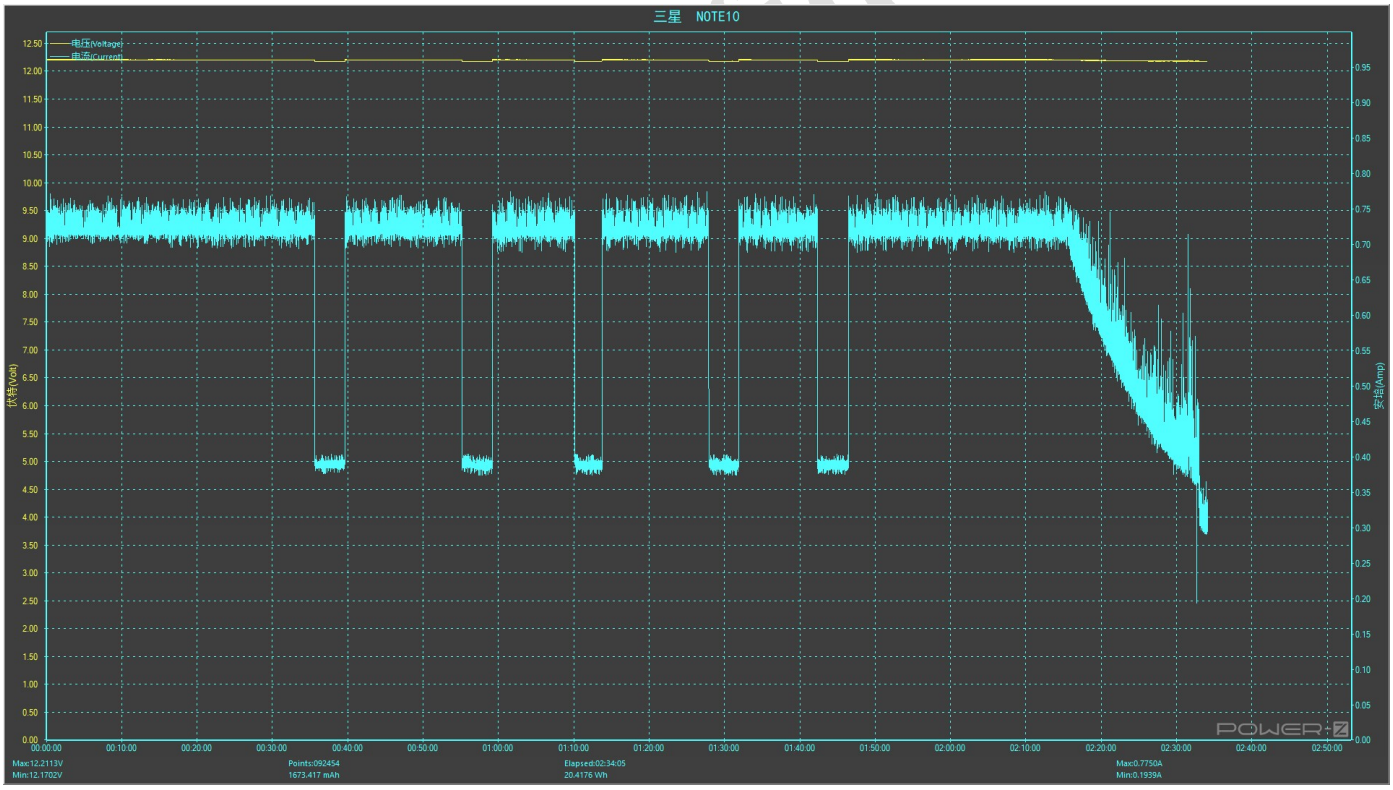
iPhone12 wireless charging timing: about 2 hours 50 minutes complete



iPhone 12 temperature testing at charging

	Charging after 30 minutes	Charging after 60 minutes	Charging after 90 minutes	Charging after 120 minutes	Charging after 150 minutes	Charging after 180 minutes	
IPhone12	36.7℃	36.9℃	37.3℃	37.1℃	36.1℃	34.5℃	
NPO capacitor	42.0℃	43.0℃	42.6℃	42.7℃	40.1℃	40.3℃	
MOS 3130AP 1	40.3℃	41.2℃	41.1℃	40.6℃	39.1℃	38.6℃	
MOS 3130AP 2	42.8℃	43.4℃	43.3℃	43.0℃	40.2℃	40.7℃	
4.7uH inductance	31.6℃	32.3℃	32.6℃	32.3℃	32.0℃	31.1℃	
MT3905A	32.4℃	32.8℃	33.0℃	32.4℃	32.2℃	31.5℃	
8008C	41.3℃	38.9℃	39.8℃	39.6℃	39.5℃	39.1℃	
Quantity of electricity	21%	39%	58%	75%	88%	100%	

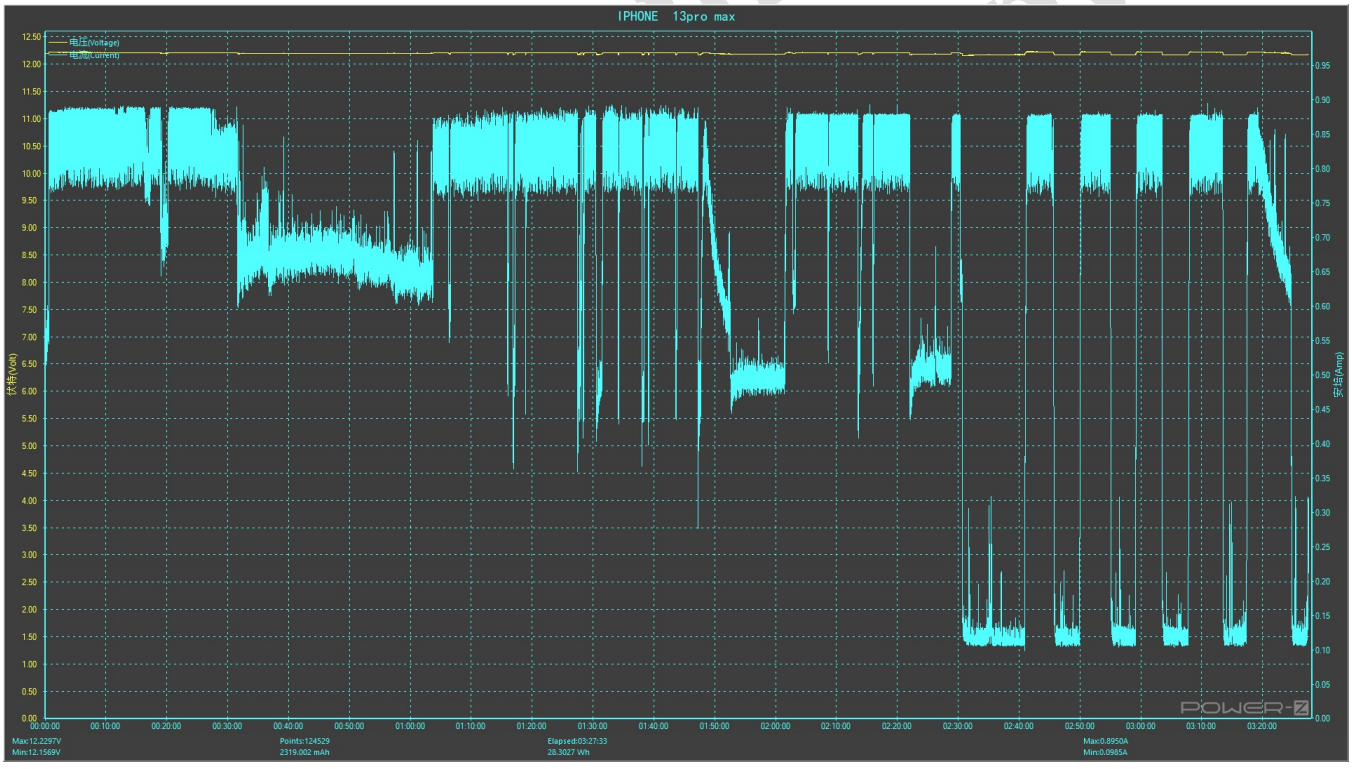
Samsung Note10 wireless charging timing: about 2 hours 35 minutes complete



Samsung Note10 temperature testing at charging

	Charging after 30 minutes	Charging after 60 minutes	Charging after 90 minutes	Charging after 120 minutes	Charging after 150 minutes	Charging after 160 minutes
Note10	37.7℃	38.3℃	37.7℃	37.7℃	36.8℃	36.2℃
NPO capacitor	42.9℃	41.0℃	42.3℃	40.6℃	39.8℃	38.8℃
MOS 3130AP 1	41.4℃	40.7℃	40.7℃	40.7℃	39.4℃	39.0℃
MOS 3130AP 2	43.8℃	42.7℃	42.9℃	42.7℃	41.0℃	40.0℃
4.7uH inductance	32.5℃	32.6℃	32.0℃	32.4℃	32.1℃	31.2℃
MT3905A	32.7℃	32.7℃	32.6℃	32.9℃	32.5℃	30.6℃
8008C	41.0℃	40.0℃	40.2℃	42.1℃	40.4℃	39.5℃
Quantity of electricity	23%	42%	64%	85%	98%	100%

iPhone13 pro max wireless charging timing: about 3 hours 30 minutes complete



iPhone13 pro max temperature testing at charging

	Charging after 30 minutes	Charging after 60 minutes	Charging after 90 minutes	Charging after 120 minutes	Charging after 150 minutes	Charging after 180 minutes	Charging after 210 minutes
IPhone13pro max	36.8℃	37.4℃	39.0℃	38.3℃	36.5℃	35.5℃	35.0℃
NPO capacitor	41.6℃	41.3℃	42.4℃	43.0℃	38.0℃	41.6℃	39.5℃
MOS 3130AP 1	41.4℃	40.7℃	42.2℃	41.6℃	37.6℃	41.4℃	38.2℃
MOS 3130AP 2	44.1℃	42.9℃	44.7℃	44.0℃	38.5℃	42.6℃	39.3℃
4.7uH inductance	31.6℃	31.0℃	31.4℃	31.8℃	31.1℃	31.3℃	31.0℃
MT3905A	31.8℃	32.1℃	32.5℃	32.9℃	32.0℃	32.2℃	32.0℃
8008C	41.2℃	41.1℃	43.5℃	41.9℃	36.2℃	42.1℃	37.1℃
Quantity of electricity	21%	34%	51%	65%	80%	85%	100%

7. Electrical performance test

Test item name		RX parameters	TX parameter
5V power supply	working voltage (V)	4.73	5.11
	Working current (A)	1A	1.47
	work efficiency (W)	62.96%	
9V power supply	working voltage (V)	8.29	8.99
	Working current (A)	1A	1.3
	work efficiency (W)	70.93%	
12V power supply	working voltage (V)	8.89	12.03
	Working current (A)	1A	1.57
	work efficiency (W)	70.6%	
过温保护		实测约 85℃，报警约三分钟后，会自动恢复到正常充电状态！	

8．FOD detection testing

Over Temperature testing	RMB 0.5 yuan coin testing	RMB 1 yuan coin testing
about 85^{0}C activation	function ok	function ok

9．Burn-in testing

The function is testing ok after continuously 24 hours burn-in and 4 hours static testing

Part Number	Resonant capacitor
AWC-TS1525N-AT	NP0 capacitor