SPECIFICATION FOR APPROVAL

CUSTOMER NAME: 1-Coil Qi Transmitter Module

CUSTOMER ITEM: _____

PRODUCT MODEL: _____

APP Date ： _____

APPROVAL SIGNATURE

Please return to us one copy of “SPECIFICATION FOR APPROVAL” with you approved signature.

ACRON PRECISION IND. CO., LTD.

Address: 55, Sinsing Rd., Bade Dist., Taoyuan City, Taiwan
Tel: +886-3-3629889
Fax: +886-3-3664917

APPROVED	SALES BY	QUALITY ASSURE	ENGINEERING

CATALOG

1. Scope

1.1 The purpose of the document is to specify the functional requirement of a WPC1.12_Qi Wireless Power Supply's Tx Module. (WPC1.12 downward compatible WPC1.0)

1.2 The Wireless Power supply's Tx Module shall meet the ROHS requirement.

2. Product Characteristic

This product is a WPC1.12 Qi-compliant multi-function wireless charging platform: Its transmission efficiency is up to 76.8% and can provide up to 1A transmission capacity. It enables powering or charging for any WPC1.12 Qi certified products.

It adopts intelligent identification system while its transmitter and receiver unit adopts UART (Universal asynchronous receiver/ transmitter) encrypted transmission control signal which is stipulated by WPC1.12 The console will process the corresponding power adjustment based on the encoding of the receiving unit. This module has fulfilled the WPC1.12 Qi requirement and is certified by Qi.

Multiple LED indication scheme available for selection :

Scheme	LED	Operational States				
		Standby	Power Transfer	Charge Complete	Fault	Dynamic Power Limiting
Generic	D2，Blue	Off	On	On	Off	Off
	D3，Red	Off	Off	Off	On	Blink slow
Generic Opt 1	D2，Blue	Off	Blink slow	On	Off	Off
	D3，Red	Off	Off	Off	On	Blink slow
Generic Opt 1	D2，Blue	Off	Breathing LED	On	Off	Off
	D3，Red	Off	Off	Off	On	Blink Slow

Its dedicated power adapter has ultra-wide input voltage design, can work stably under AC100-240V/ 50-60HZ and can be used for users from all countries and regions.

3. Input Characteristics

3.1. Input Voltage & Frequency

Item	Minimum	Normal	Maximum
Input Voltage	4.75Vdc	5.0Vdc	5.50Vdc

3.2. Input Current

2.0Amax. @5.5Vdc Full load

3.3. Inrush Current（cold）

2.5Amax. @5.5Vdc　Full load & Ambient temperature25 ℃

3.4. Energy Consumption

At 4.75VDC or 5.50VDC, Energy Consumption≤ 0.05A

4. Output Characteristics（Rx_Module）

4.1. Static Output Characteristics <Vo & R+N>

Output	Rated Load		Peak Load	Output Range	R+N	Remark
Power	Min. Load	Max. Load				
5W	0.10A	1A	1.20A	5V±5%	≤250mVp-p	

Note: Ripple & Noise: Measurement is done by 20MHz bandwidth oscilloscope and the output paralleled a 0.1uF ceramic capacitor and a 10uF electrolysis capacitor.

4.2. Line & Load Regulation

Output	Load Condition		Line Regulation	Load Regulation	Remark
Power	Min. Load	Max. Load			
5W	0.10A	1A	±5%	±5%	

5. Protection Requirement

5.1. Short Circuit Protection

The input power shall decrease when the output is short to GND, the power supply shall not damage, and shall be self-recovery when the fault condition is removed.

5.2. Over Current Protection

OCP Point Limited: 120%-300% auto restart

The output shall hiccup when the over current applied to the output, and shall be self-recovery when the fault condition is removed.

6. Reliability Requirements

6.1. Reliability Test

Test Items	Test conditions	Test quantity
Storage at high temperature test	+80℃　16Hrs	2PCS
Storage at low temperature test	-40℃　16Hrs	2PCS

Operating at high temperature test	+40℃ 12Hrs	2PCS
Operating at low temperature test	-40℃ 12Hrs	2PCS
Low Temperature turn on test	EUT should start-up normally after storage at 0℃ of 2 hours under minimum input voltage and maximum load.	2PCS
Thermal circle test	0℃(30min) → 40℃(30min) → 0℃(30min) → -40℃(30min) Continually work 4 cycles	2PCS
Constant Temperature turn on test	+40℃ 90%RH,continually operating 24 hours	2PCS

6.2. Burn-in

4hours at 40℃(+/-5℃), Nominal input voltage, Nominal load.

6.3. Vibration

10 to 300Hz sweep at a constant acceleration of 1.0G（Breadth:3.5mm）for 1Hour for each of the perpendicular axes X,Y,Z

6.4. Drop test

Height:1m, the product（individual packaging）should be fallen off on the hardwood with the thickness of 20mm,and the hardwood should be put on the cement or on the ground without flexibility. Apply two times on all surface.

7. Environment Requirement

7.1 . Operating Temperature and Relative Humidity

0℃ - 40℃ 20%RH to 80%RH @Sea level shall below or no more than 10000 feet.

7.2 . Storage Temperature and Relative Humidity

-40℃ to +80℃ 10%RH to 90%RH(non-condensing) @Sea level shall below 30000 feet.

8. Execution Standards (Compatible with these specifications)

8.1. EMC Standards/EMC

GB9254	**GB17625.1**	**GB13837**	**FCC-Part15**
EN55022	**EN55024**	**CISPR22**	**EN61000-4-4**
EN61000-3-2	**EN61000-3-3**	**EN61000-4-2**	**EN61000-4-3**
EN61000-4-5	**EN61000-4-6**	**EN61000-4-8**	**EN61000-4-11**

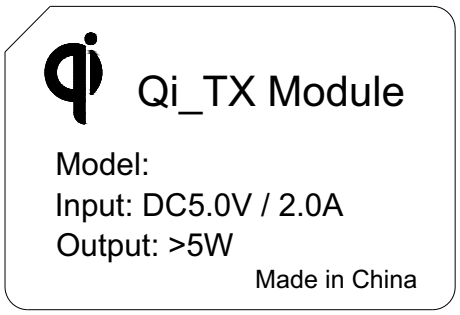
8.2. Safety Standards

Certificate	Country	Standard
CCC	**China**	**GB4943**
CCC	**China**	**GB8898**
CE	**Europe**	**En60950-1**

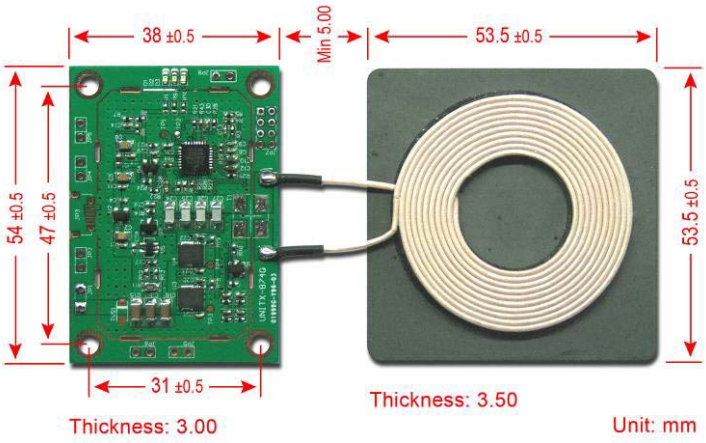
CB	**CB**	**IEC60950**
KC	**Korea**	**Kc60950**
UL/CUL	**USA**	**UL60950-1**
C-TICK	**Australia**	
GS/TUV	**German**	

8.3. WPC1.12_Qi Standards

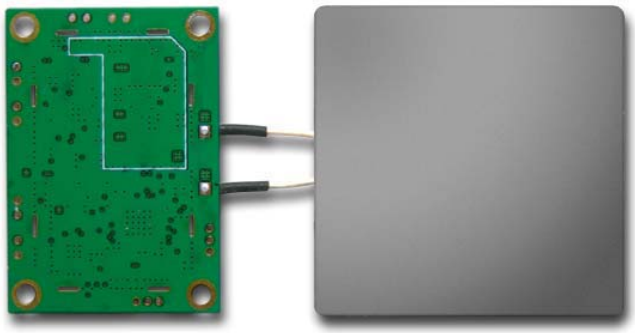
9. Label drawing



10. Photo of Product



Module Front Side



Module Back Side

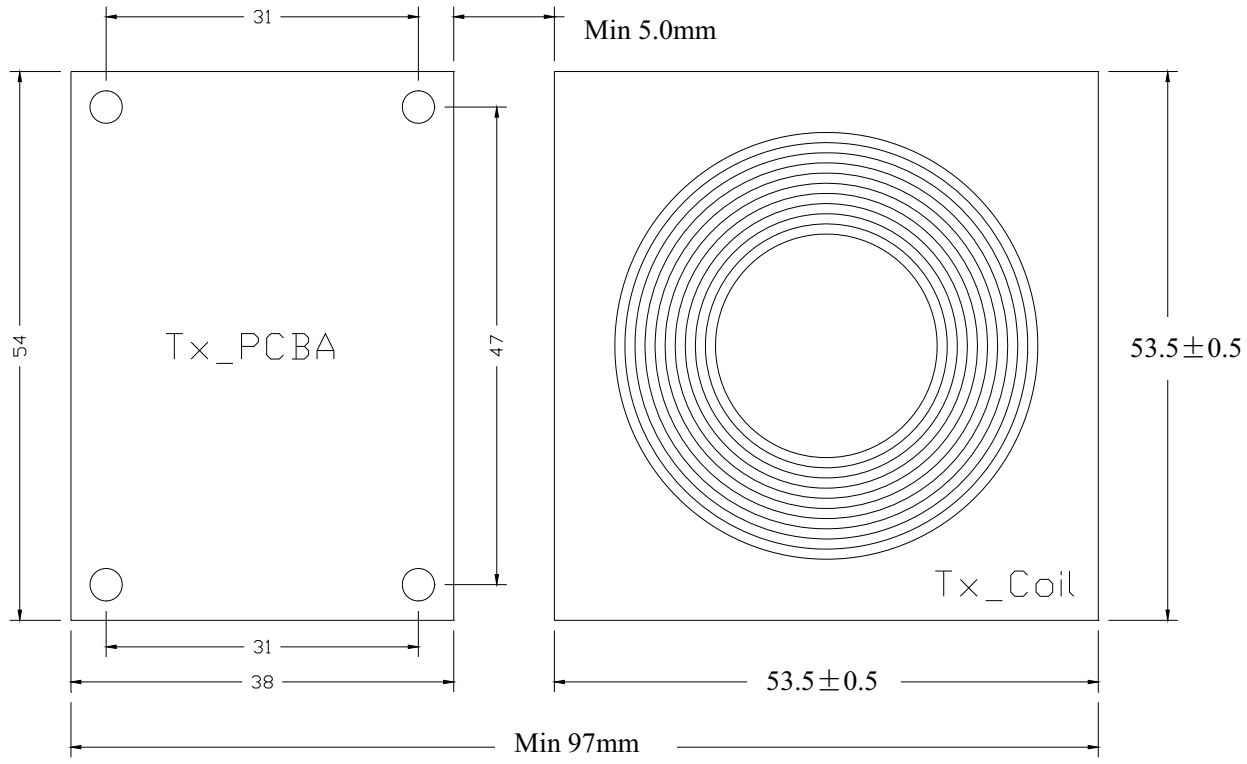
11. Module:

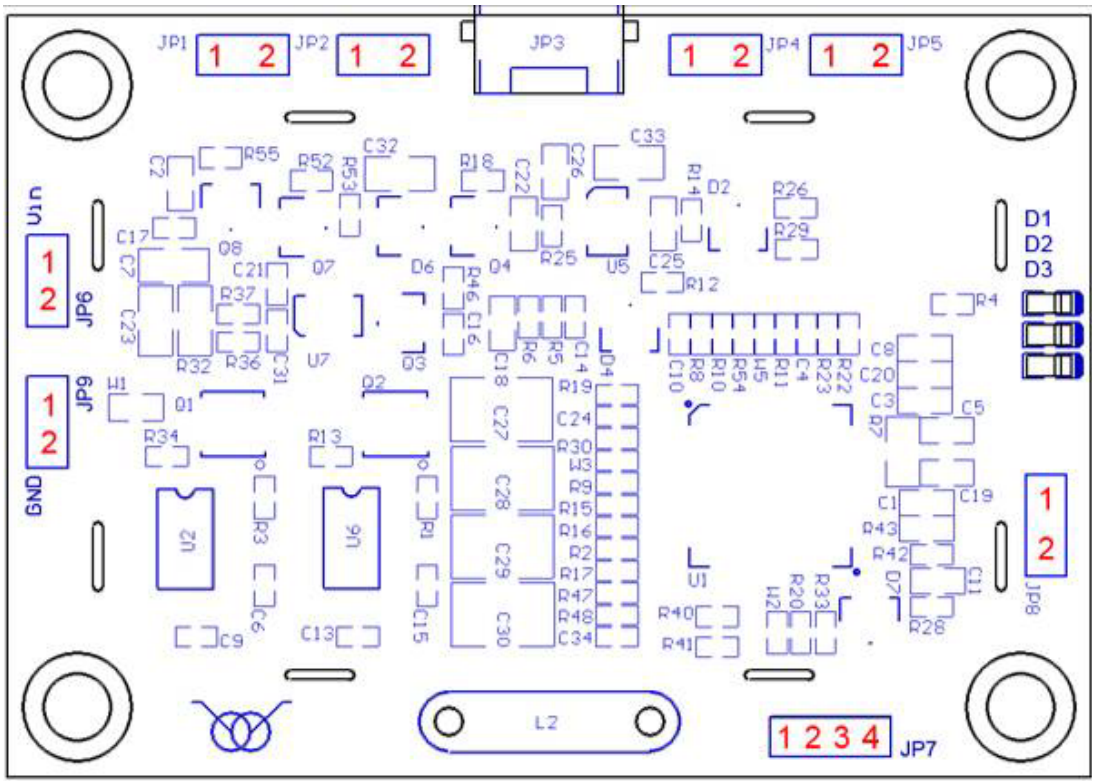
11.1. PCBA Installation Dimension:

Description: 1. According to Qi installation rule, the distance between Tx Coil with PCB and other metal components is Min: 5.0mm;

2. The distance between the surface of Tx coil and the surface of product (Working Face) is $2.0_{-0.25}^{+0.5}$mm, which means the thickness of the working face plastic is not more than 2.5mm;
3. The surface distance between Tx Coil and Rx Coil is 3.0 – 4.5mm.

11.2. PCBA Port Functional Illustration

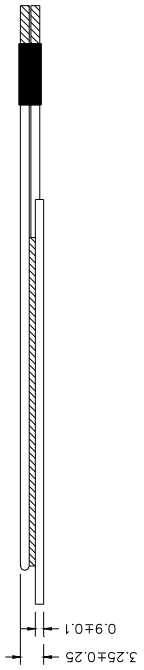


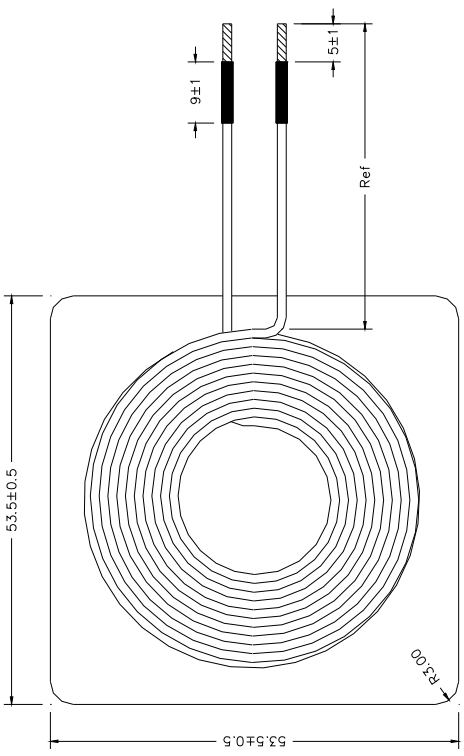


Port	JP1-1	JP1-2	JP2-1	JP2-2	JP3	JP4-1	JP4-2	JP6
Function	5V IN	GND	Red LED-	Red LED+	MicorUSB	Blue LED-	Blue LED+	5V IN
Port	JP5-1	JP5-2	JP8-1	JP8-2	L2-1	L2-2	JP7	
Function	NTC -	NTC +	BUZZ		TX Coil		Extended Function	

11.3. Tx_Coil Spec：

PART NO	
DESCRIPTION	
Dimensions	mm
Modified version	A0
Modified version	David
Modified version	2014-02-10





ELECTRICAL SPEDIFICATION@25 °C

PARAMETERS	UNIT	LIMIT
Inductance,LS@100KHz,1.0V , AGW40# 0.08mm*105 ~10Turns	uH	6.50±10%
Q	- - -	100±10%
DCR	mΩ	35±10%

12. Exterior Features

12.1.Size

L * W * H

PCBA : 54 * 38 * 3.0 mm

Coil + Shielding : 53.5 * 53.5 * 3.5mm

Distance between PCBA and Coil + Ferrite : ≥ 5.0 mm

Total : 97 * 54 * 3.5 mm

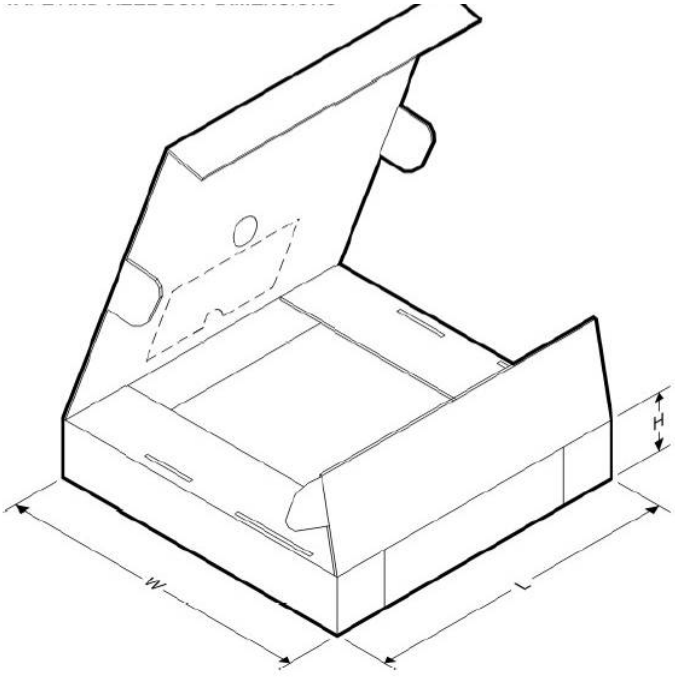
97 * 54 * 3.5 mm

(97mm length is the total length including the 5.0mm gap between the PCBA with transmitter coil)

12.2. Weight

50±5g

13. Package Drawing



*All dimensions are nominal

Package Type	Package Drawing	SPQ	L(mm)	W(mm)	H(mm)
Module	MOD	20			

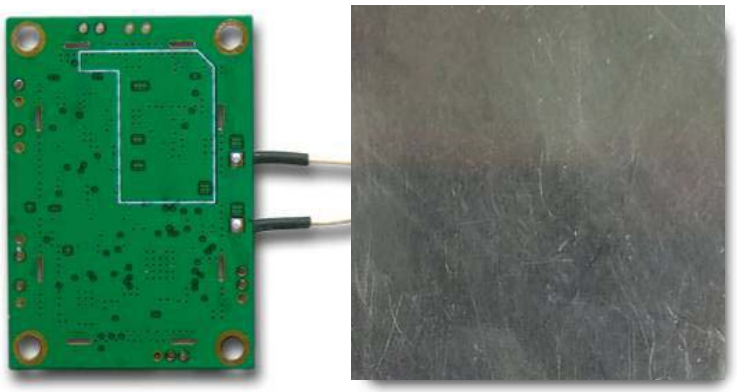
14.Inspection Standards

NO.	Test project	Test standard	Sample Level	Test standard
1	Performance			Serious defect:
2	Size			Main defect:
3	Shell, Package			Petit defect:

15. Major Test Equipment

15.1. DC Supply
15.2. Rx_Module
15.3. ELECTRONIC LOAD
15.4. DPO3014 Digital Phosphor OSCILLOSCOPE
15.5. Logical Analyzer
15.6. Q110 Qi BST (Base Station Tester)

16. The notices during installation



Add a cooling plate

Exposed Cooling Plate

16.1.1 During the installation, please add a cooling plate under the transmitter coil.
16.1.2 The cooling plate performs the best cooling effect if it is being exposed outside the plastic cover of the product.
16.1.3 The distance between the highest PCBA component and the product itself is ≥2.0mm

17. Statement
