

# SPECIFICATION FOR APPROVAL

CUSTOMER: \_\_\_\_\_

MODEL NO: ILMU15QT-6053C1C1

PART NO : ILMU15QT-6053C1C1-XX-1

MODEL NAME: 15W wireless charger of TX module

REVISION: A4

DATE: 2024-10-18

## APPROVED SIGNATURES

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|-----------|------------------------|------------|-----------------------------------|
| Model No. | ILMU15QT-6053C1C1      | Model Name | 15W wireless charger of TX module |
| Part No.  | ILMU15QT-6053C1C1-XX-1 | Size       | L72※ W50 ※ T8mm                   |

## Product Specification

## 產品規格書

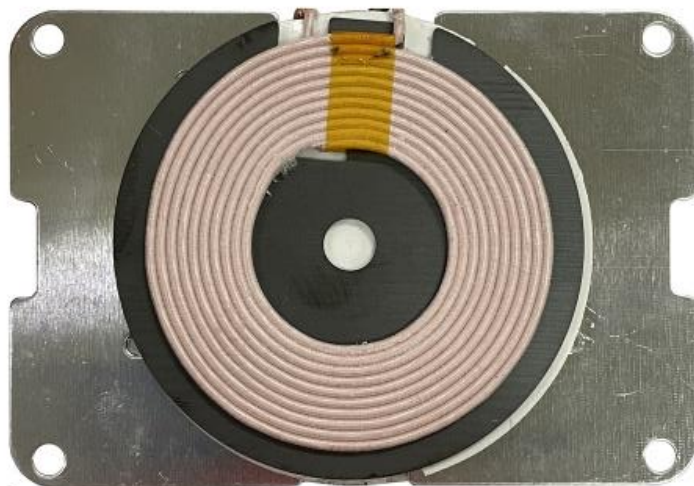
**Product name/產品名稱:** 15W wireless charger of TX module

**Model No/ 產品型號 :** ILMU15QT-6053C1C1

**File number /文件編號:** \_\_\_\_\_

**Revision/版本號 :** A3

**Date/日期 :** 2024-10-10



| APPROVED BY<br>批 准 | CHECKED BY<br>審 核 | DESIGNED BY<br>制 作 |
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|                    |                   |                    |

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## Reversion History / 更新記錄:

| Revision | Date       | Changes                                                                                                                                                                                        |
|----------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A0       | 2024-01-11 | New release<br>初版發行                                                                                                                                                                            |
| A1       | 2024-09-03 | Added dimensions of PCB, coil, heatsink<br>增加PCB、線圈、鋁片尺寸                                                                                                                                       |
| A2       | 2024-09-13 | Modified LED indicators operation<br>修改指示燈動作說明                                                                                                                                                 |
| A3       | 2024-10-10 | Delete ripple noise 刪除漣波規格<br>Added checksum. 增加軟件校驗碼<br>Modified power on of indicator 修改指示燈工作<br>Modified OVP voltage 13.5V 修改OVP電壓<br>Revised of the NO.6,7,9,10 description 修改第6,7,9,10項敘述 |
| A4       | 2024-10-18 | 修改料號為ILMU15QT-6053C1C1<br>Revised Model No. is ILMU15QT-6053C1C1                                                                                                                               |
|          |            |                                                                                                                                                                                                |
|          |            |                                                                                                                                                                                                |
|          |            |                                                                                                                                                                                                |
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## 1. Scope/概述

U15QT-6053 is a multifunctional fixed frequency and voltage wireless charging module compatible with WPC 1.2.4 Qi: its transmission efficiency can reach up to  $70\% \pm 5\%$ , and it can also provide up to 15W of transmission capacity. It can be powered or charged with any WPC Qi certified product; It can also provide fast wireless charging for iPhone Samsung phones. This product complies with WPC1.2.4\_ The functional requirements of the Qi protocol transmission module are compatible with all versions below WPC1.2.4

U15QT-6053 是 WPC 1.2.4 Qi 相容的多功能定頻調壓無線充電模組：其傳輸效率最高點可達  $70\% \pm 5\%$ ，也可提供高達 15W 的傳輸容量。它可以跟任何 WPC-Qi 認證產品供電或充電；還能夠為 iPhone&三星手機提供快速無線充電。本產品符合 WPC1.2.4\_Qi 協定發射模組的功能要求.並且相容 WPC1.2.4 以下所有版本.

## 2. Product Characteristic / 產品特點

- ◆ QC 3.0 power communication protocol  
QC 3.0 電源通信協議；
- ◆ DC 12V direct power supply  
DC12V 電源直接供電；
- ◆ Qi 1.2.4 is certified and compatible with Samsung& iPhone mobile phone fast charging. Qi 1.2.4 認證並相容 三星和 iPhone手機快速充電；

## 3. Performance Parameter / 性能參數

|     |                                         |                          |
|-----|-----------------------------------------|--------------------------|
| 3.0 | Power input protocol / 電源輸入協定           | QC3.0 / DC12V            |
| 3.1 | Input voltage current / 輸入電壓電流          | 11.0 ~ 12.9V *2.0A       |
| 3.2 | Working voltage current / 工作電壓電流        | 12V/0.02 ~ 1.8A Max      |
| 3.3 | Wireless charging output power/無線充電輸出功率 | 5W/7.5W/10W/15W (Max)    |
| 3.4 | Power Transfer Efficiency / 轉換效率        | $70\% \pm 5\%$ at 12V dc |
| 3.5 | Operating frequency / 工作頻率              | Frequency range: 148KHz  |
| 3.6 | Operating temperature / 工作溫度            | 0-30°C                   |
| 3.7 | Relative humidity / 相對濕度                | 40% ~ 60%                |
| 3.8 | Checksum / 校驗碼                          | EA32                     |

|           |                        |            |                                   |
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## 4. Safety Control/安全機制

### 4.1. Short Circuit Protection/短路保護

In the case of short-circuit at the receiver output, the transmitter stop output. When removed the receiver or short circuit, the transmitter will resume normal operation.

在接收端輸出短路的情況下，發射端停止輸出。當移除接收或者短路解除時，發射端將恢復正常工作。

### 4.2. Over Current Protection/過電流保護

When the receiver load exceeds the setting, the over current protection is triggered, and the transmitter stops working. When removed the receiver, the transmitter will resume normal operation.

當接收器負載超過設定，觸發過電流保護，觸發過電流保護，發射端停止工作，當接收器被移除時，發射端將恢復正常工作。

### 4.3. Overvoltage Protection 過壓保護

The product would stop working when the input voltage exceeds the rated value (13.5V). The Product would be restarted working when the voltage returns to the set value range.

P/S: The input voltage shall not exceed 13.5V in case damage the product.

輸入端超過設定過壓電壓值 13.5V 時，發射端停止工作。電壓恢復設定值範圍時重新啟動工作。  
注意：輸入電壓不可以超過 13.5V，以防損壞本產品。

### 4.4. Foreign Object Detect FOD 1 RMB coin as the standard/異物檢測，以一元 RMB 硬幣為標準

When placing the coin onto the center of the product under no-load condition, the transmitter detected foreign object and reports an error, then stops working. Removes the foreign object to resume normal operation.

空載時放置產品中心，發射端檢測到異物並報錯，停止工作，移除異物可恢復正常工作。

When placing the load and coin together onto the center of the product, an error is reported within 10s (time varies with different mobile phone models) and the output is off. Removes the foreign object to resume normal operation.

負載和硬幣一起放置產品中心時，10 秒（不同手機型號時間不同）之內報錯並關閉輸出，移除異物可恢復正常工作。

### 4.5. Over-temperature Protection/過溫保護

The NTC temperature protection of the PCBA is  $80^{\circ}\text{C} \pm 5^{\circ}\text{C}$ . The transmitter stops working when the temperature exceeds the value. Resets the receiver or cools to  $55^{\circ}\text{C}$ - $60^{\circ}\text{C}$ , the transmitter returns to normal operation (optional replacement with external NTC)

PCBA 貼片 NTC 溫度保護設定值為  $80^{\circ}\text{C} \pm 5^{\circ}\text{C}$ ，當溫度超過設定值，發射端停止工作，重新放置接收或者降溫至  $55^{\circ}\text{C}$ - $60^{\circ}\text{C}$  時，發射器恢復正常工作。（可選擇更換成外接 NTC）

|           |                        |            |                                   |
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## 5. Reliability Requirements / 可靠性要求

### 5.1. Reliability Test/可靠性測試

Please refer to Link Com's reliability standard and reliability test Report.

請參考聯寶標準《可靠性測試規範》與《可靠性測試報告》

## 6. Environment Requirement / 環境要求

6.1 Operating Temperature and Relative Humidity / 操作溫度和相對濕度 0°C-30°C / RH40~60%

6.2 Storage Temperature and Relative Humidity / 儲存溫度和相對濕度 -20°C-40°C / RH20~80%

6.2.1 Avoid direct exposure to the storage environment, and do a good temperature and humidity control, room temperature should be controlled at 5°C-25°C, relative humidity RH40~ 60%. In order to maintain good functionality of the product, please observe the following storage conditions. 儲存環境應避免產品受陽光直接照射，並作好溫濕度管控，室溫宜控制在 5°C-25°C / RH40~60%。為使產品維持良好之功能性，請確實遵守以下保存條件

6.2.2 Keep away from high humidity, salt spray or oil spray. 儲存需避開高濕，鹽霧或油霧之環境  
When storing, the storage environment temperature should be avoided too drastic, and the humidity should be avoided too high or too low. High humidity and large temperature difference tend to cause water Vapor condensation phenomenon, too low humidity easily cause the high electrostatic strength. Therefore, humidity will cause the electron ionization, and eventually cause the product functional abnormalities.

儲存時應避免儲存環境溫度變化過於激烈，同時避免濕度過高或過低。濕度過高和溫差過大容易導致水 蒸氣凝結現象，濕度過低容易導致靜電強度過高。故濕度會造成電子遊離，最終導致產品功能性異常。

## 7. Execution Standards/執行標準

### 7.1. EMC Standards 電磁相容標準

|         |         |
|---------|---------|
| EN55032 | EN55035 |
|---------|---------|

Note: EMI testing with enclosure and actual receiver equipment required

備註: EMI 測試需待外殼及 RX 待測物實際測試



|           |                        |            |                                   |
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## 8. LED Indicators /指示燈

- ◆ Power on : Blue + Red LED flashes 2 times /通電: 藍+紅色 LED 閃爍 2 下
- ◆ Standby: All of LEDs off / 待機: 無燈
- ◆ Charging: Blue LED on/ 充電時: 藍燈常亮
- ◆ Fully charging: Blue LED Off / 充電完成: 藍燈熄滅
- ◆ Abnormal at OVP, OTP, UVP: Red LED On / 異常: 紅燈長亮
- ◆ FOD: Red LED blinking/ 檢測到異物: 紅燈閃

## 9. Attentions 使用注意事項

- ◆ Please use the correct rated AC Adapter or DC voltage to ensure the normal function.

請使用配置的正确規格火牛或直流輸入電壓，保證功能正常；

- ◆ According to the compatibility of Qi, Please note below points:

為了要兼容 Qi 的標準，以下幾點需要注意：

1.The distance between Tx Coil with PCB and other metal components is Min: 4.5mm/

輸出線圈，PCB 和其他金屬部件之間的最小距離：4.50mm；

2.The distance between the surface of Tx coil and the surface in front of side product is

$3.0^{+0.5/-0.2}$  mm, which means the thickness of the working face plastic is not more than 2.25mm;

Tx 線圈表面和產品的表面之間的距離（正面）是  $3.0^{+0.5/-0.2}$  mm, 即正面塑膠的厚度不超過 2.25mm. The

surface distance between Tx Coil and Rx Coil is 3.0 – 4.5mm 輸出線圈和接收線圈之間的表面距離為

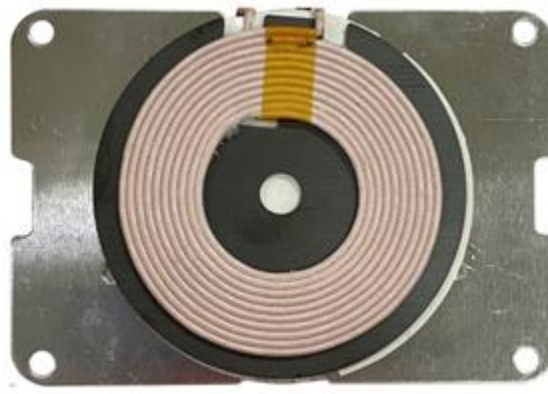
3.0– 4.5mm

## 10. Appearance Requirements/結構與外觀要求

Please refer to LinkCom's appearance inspection specification.

請參考聯寶電子外觀檢驗規範

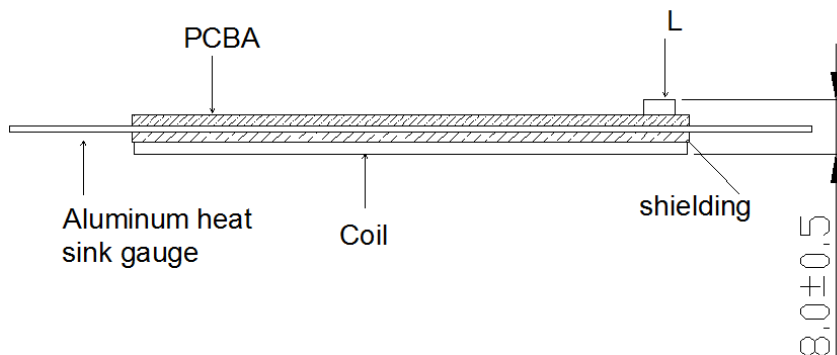
## 11. Size / 尺寸:





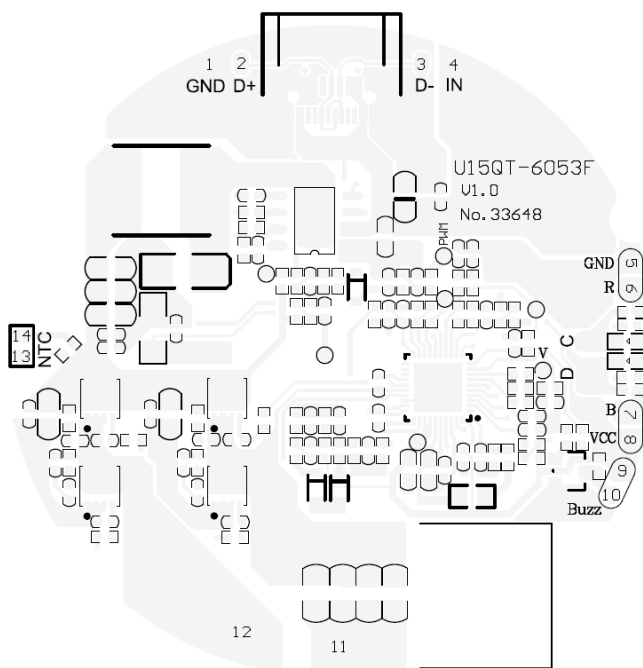
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## 11.1 Size: L72※ W50 ※ T8mm



## 11.2 PCBA of pin definitions /PCBA 功能說明

PCBA :φ 50(±0.5) \*4.0mm(MAX)

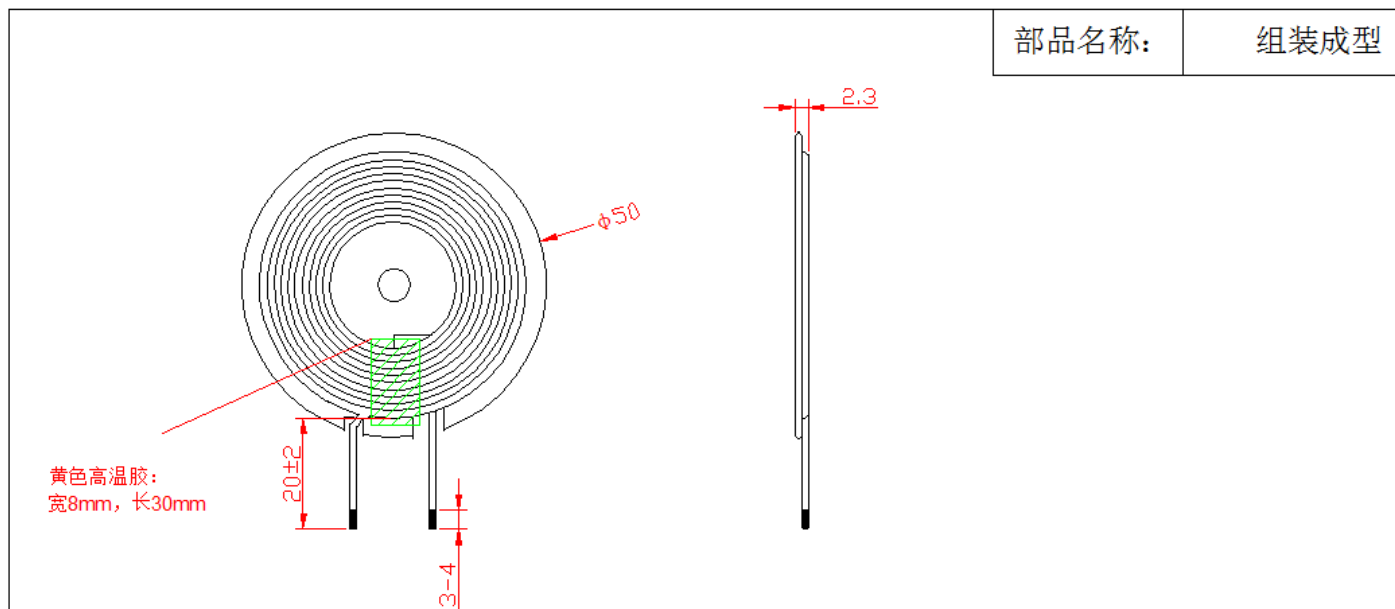


| Port     | Pin1      | Pin2    | Pin3     | Pin4     | Pin5    | Pin6    |
|----------|-----------|---------|----------|----------|---------|---------|
| Function | INPUT GND | USB D+  | USB D-   | INPUT IN | LED GND | LED Red |
| Port     | Pin7      | Pin8    | Pin9     | Pin10    | Pin11   | Pin12   |
| Function | LED Bule  | LED VCC | Buzz_VCC | Buzz     | Coil_1  | Coil_2  |
| Port     | Pin13     | Pin14   |          |          |         |         |
| Function | NTC+      | NTC-    |          |          |         |         |

|           |                        |            |                                   |
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### 11.3. Tx Coil Spec: TX 線圈規範

Coil + Shielding :  $\phi 50(\pm 0.5) * 2.3\text{mm}$  (Max)



### ELECTRICAL SPEDIFICATION@25 °C

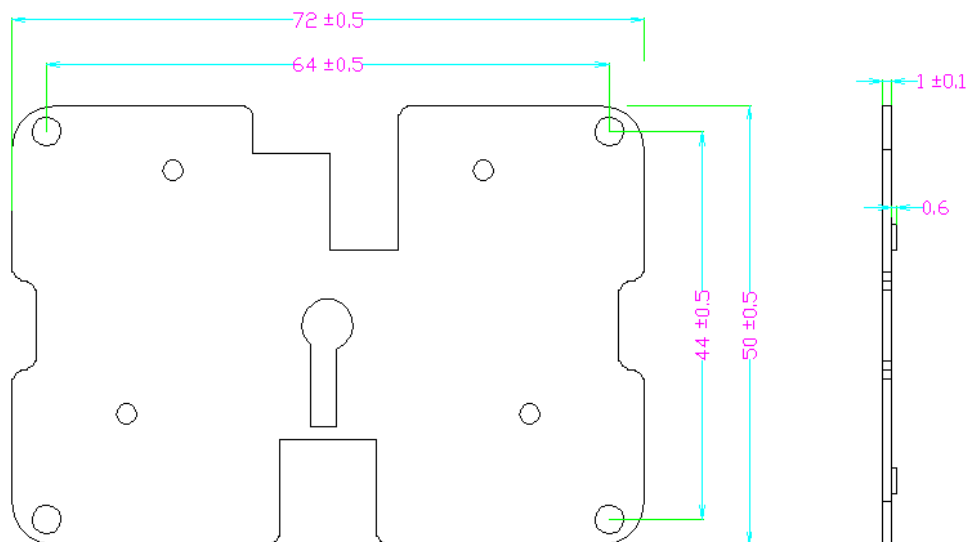
| PARAMETERS                                         | UNIT | LIMIT   |
|----------------------------------------------------|------|---------|
| Inductance,LS@100KHz,1.0V ,<br>0.08mm*105 ~10Turns | uH   | 6.5±10% |
| Q                                                  | ---  | 65±10%  |
| DCR                                                | mΩ   | 30±10%  |

|                  |            |
|------------------|------------|
| ERP PART         |            |
| DESCRIPTION      | U15QT-6053 |
| Dimensions       | mm         |
| Modified version | A0         |
| Modified by      | CAI        |
| Modified Date    | 2020-8-25  |

|           |                        |            |                                   |
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#### 11.4 Aluminum heat sink gauge Spec 鋁散熱片規格

72(±0.5)\*50(±0.5)\*1.0(±0.1)mm



#### 12. Weight / 重量

27±2g

#### 13. Statement / 聲明

All rights reserved by LinkCom Manufacturing Co., Ltd. for all of this specification for approval.  
About warranty, please refer to LinkCom company warranty policy.