



## Quectel Cellular Engine

### Hand Soldering LGA Module User Guide

Hand\_Soldering\_LGA\_Module\_UGD\_V1.0



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## 0. Revision history

Revision	Date	Author	Description of change
1.0	2011-11-24	Ray XU	Initial

## 1. Introduction

This document contains soldering information for Quectel modules packaged in LGA. It is intended to provide an outline for appropriate soldering procedures and guidance for making high-quality solder connections of Quectel modules to customer's host board by hand.

## 2. Soldering tool

Soldering tool: hot air gun, soldering iron, tweezers, fixture, tin and blade.  
The model of hot air gun is GXA-H2000 DCE.



**Figure 1: Hot air gun and soldering tip**



Figure 2: Blade, flux and fixture



### 3. Solder the module

Both hot air gun and soldering iron can solder the module. Some disadvantages of soldering the module using soldering iron are illustrated as below:

- It will take more time to solder the module.
- It is impossible to solder the inner circle pad of the module.
- It is easy to cause Solder Bridge or False Solder.

Therefore, it is strongly recommended that customer uses hot air gun to solder the module. Below are procedures for general practice.

#### 3.1. Tin the module

Turn on the soldering iron, set the temperature to 400 °C and choose blade-shaped soldering iron.

The procedures for tinning the module are shown as below:

- Fix the module on the fixture.
- Apply soldering flux on the pad.
- Use blade-shaped soldering iron to tin the module and make the tin well-distributed. In order to assure the tin on the pad full and luminous, tin the pads repeatedly with blade-shaped soldering iron.
- Paste flux on the pad again.

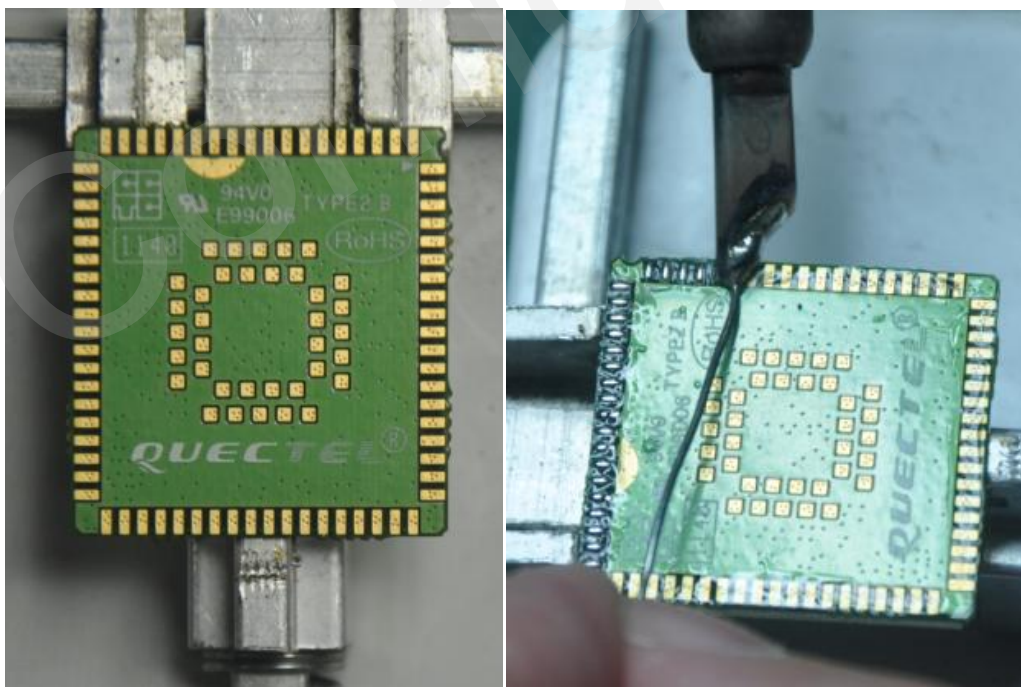
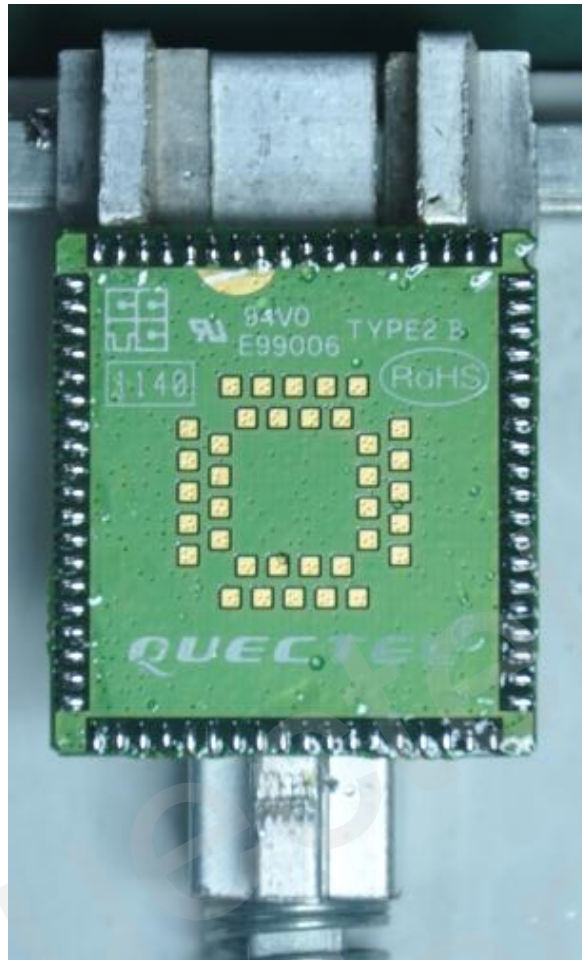


Figure 3: Tin the module

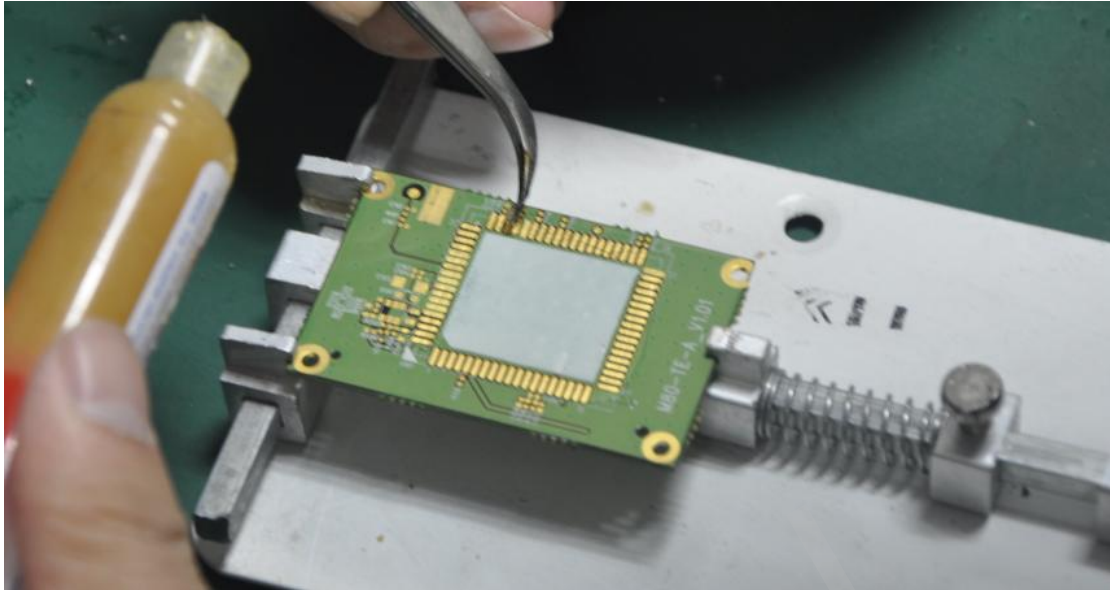


**Figure 4: Tinning finished for the module**

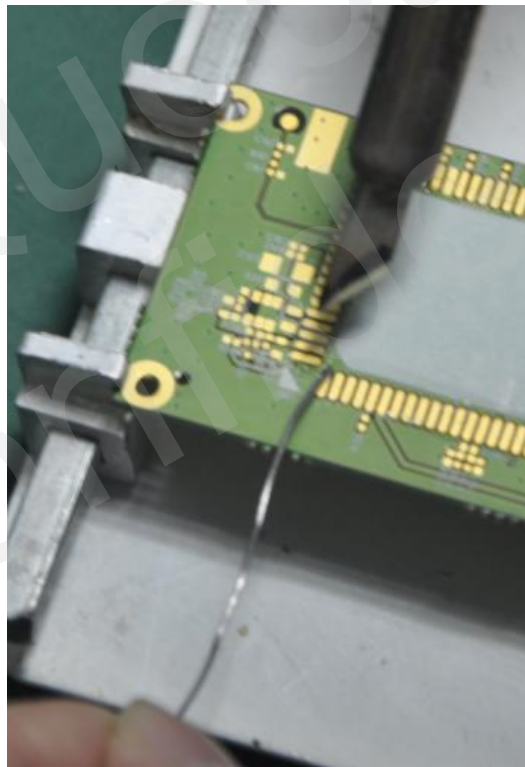
### 3.2. Tin the PCB

The procedures for tinning the PCB are shown as below. PCB, hereinafter, refers to the customer's host board.

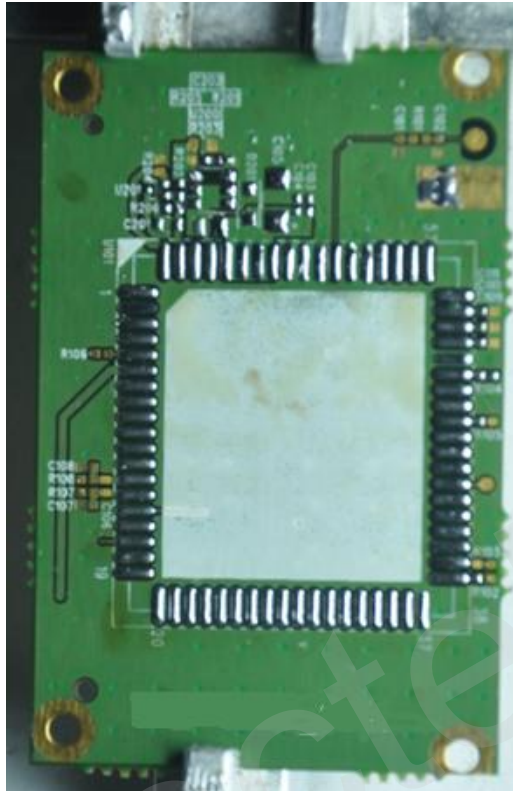
- Fix the module on the fixture.
- Apply soldering flux on the pad.
- Use blade-shaped soldering iron to tin the module and make the tin well-distributed. In order to assure the tin on the pad full and luminous, tin the pads repeatedly with blade-shaped soldering iron.
- Paste flux on the pad again.



**Figure 5: Apply flux on all pads**



**Figure 6: Tinning operation**

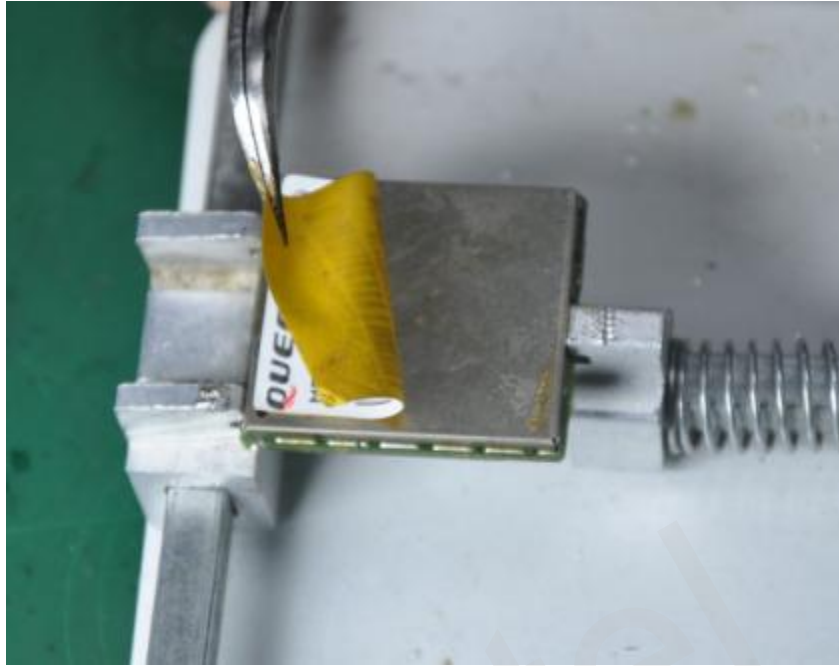


**Figure 7: Tinning finished for PCB**

### **3.3. Remove the label**

To avoid damaging the label of the module, remove it before soldering the module. Please follow the procedures below:

- Use hot air gun to heat the label for a few seconds.
- Use tweezers to pick the label off.
- Put the label in the clean place to avoid pollution.



**Figure 8: Remove the label**

### **3.4. Align the module with PCB**

Align the module at the silk screen on the PCB. Precisely align pins at the marks on the margin of the module shield.



Align the  
module at the  
silk screen on  
the PCB

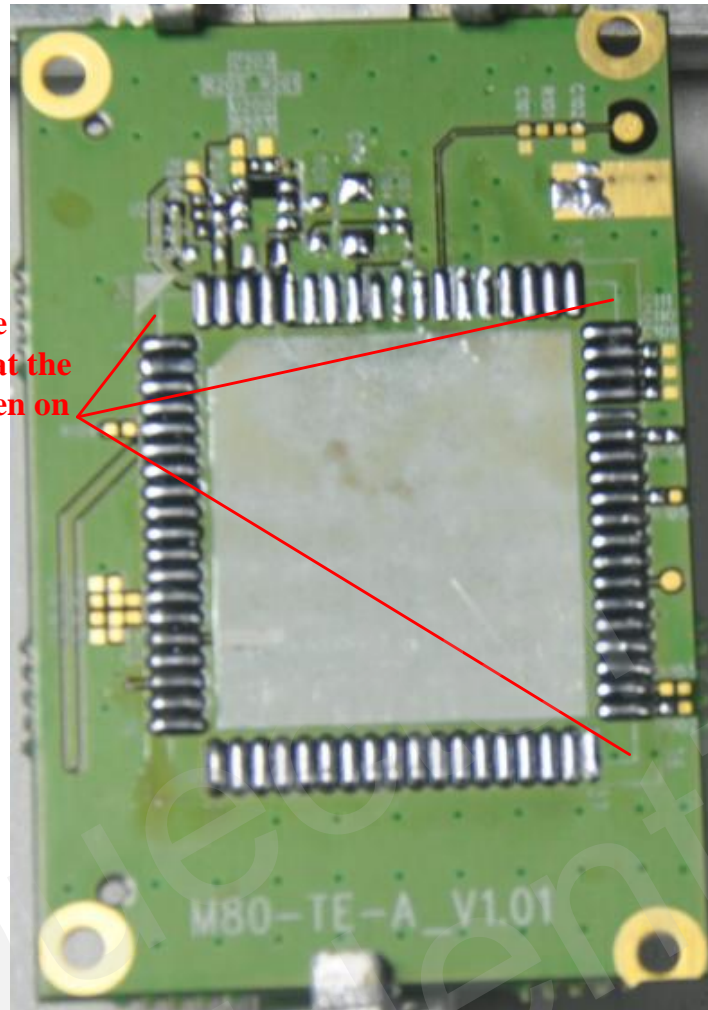


Figure 9: Align the module at the silk screen on the PCB



Figure 10: Aperture aligned with the Pad

### 3.5. Heat the module

After the module is aligned with the PCB, shift the hot air gun to the second gear and set the temperature to 380 °C. Heat the module till the tin is completely melted. When the tin ball has become round and luminous, stop the hot air gun.



**Figure 11: Heat the module using the hot air gun**



**Figure 12: Heating module is finished**

### **3.6. Cool the module**

Do not move the module casually since the PCB temperature is very high and the component in the module is easily shifted. Cool the module in the fixture for a few minutes and ensure the tin temperature drops below the melting point and then place the PCB under the fan for further cooling.

### **3.7. Label the module**

After the procedures-mentioned above have been finished, attach the label on the module and soldering is complete.



## 4. Disassemble the module

Disassemble the module with the same type of the hot air gun as soldering. Please follow the steps below to disassemble the module:

### 4.1. Remove the label

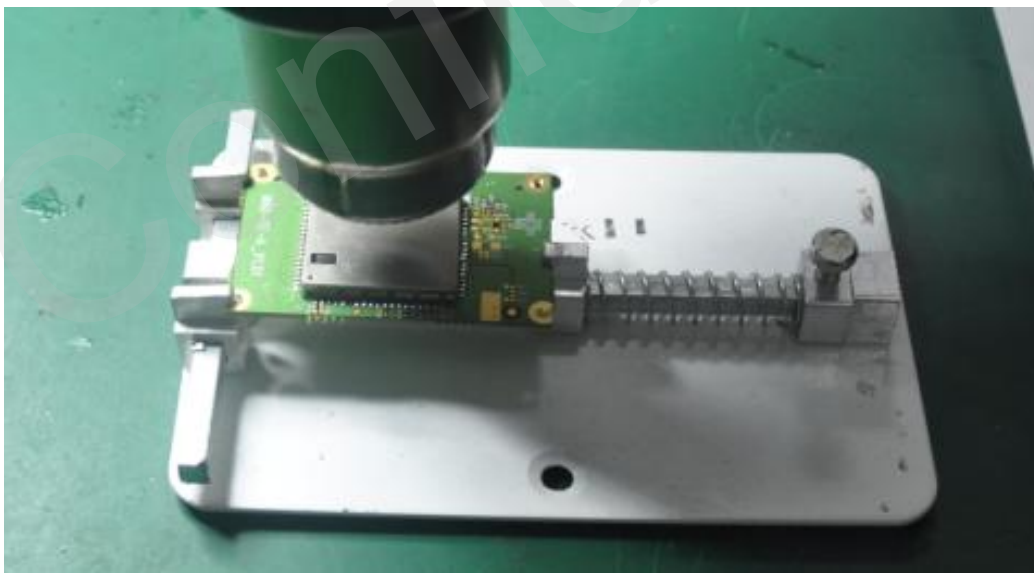
To avoid damaging the label of the module, remove it before soldering the module. The following procedures need to be complied with:

- Use hot air gun to heat the label for a few seconds.
- Use tweezers to pick the label off.
- Put the label in the clean place to avoid pollution.

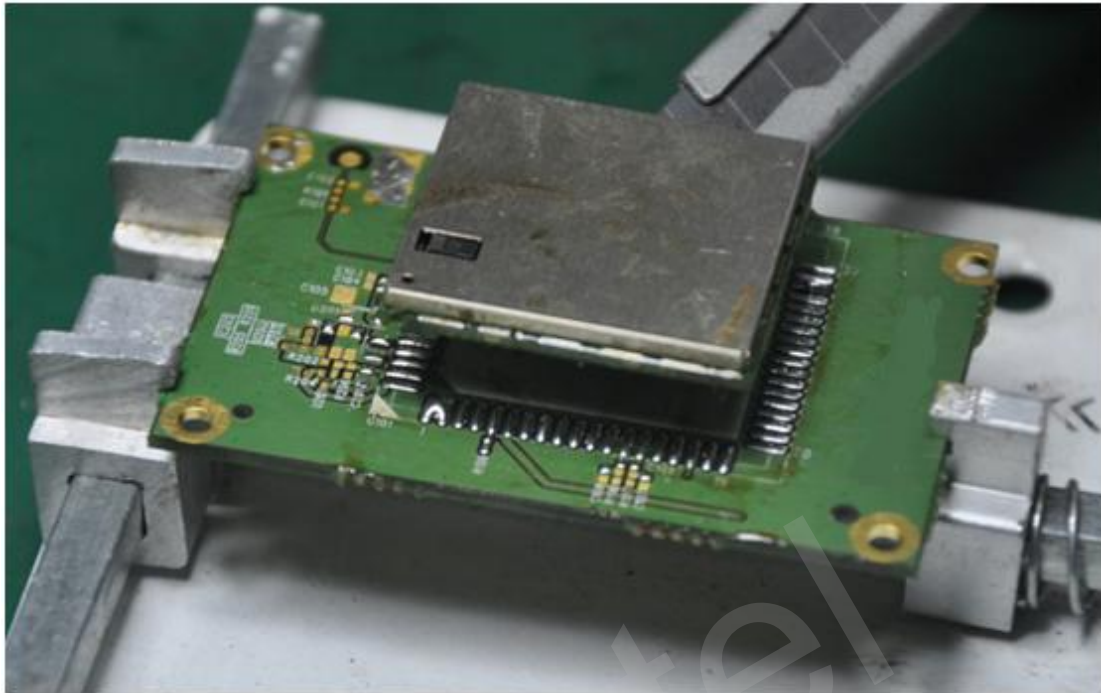
### 4.2. Heat the module and take it down

- Apply the flux on the PCB before heating the module with the hot air gun, which helps to disassemble the module.
- Shift the hot air gun to the second gear and set the temperature to 380 °C. Heat the module till the tin is completely melted.
- Take down the module carefully with the blade.

*Note: when lifting up the module with the blade, move away the hot air gun and pause for several seconds to get the module cooling.*



**Figure 13: Heat the module**



**Figure 14: Take down the module**

#### **4.3. Cool the module**

Please do not touch or remove the module because of its high temperature. In order to avoid shifting the components in the module or getting burnt, place the module under the fan. Make the module cool completely then the module can be removed.

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