Copyright © Huawei Technologies Co., Ltd. 2012.

All rights reserved.

No part of this document may be reproduced or transmitted in any form or by any means without prior written consent of Huawei Technologies Co., Ltd.

The product described in this manual may include copyrighted software of Huawei Technologies Co., Ltd and possible licensors. Customers shall not in any manner reproduce, distribute, modify, decompile, disassemble, decrypt, extract, reverse engineer, lease, assign, or sublicense the said software, unless such restrictions are prohibited by applicable laws or such actions are approved by respective copyright holders under licenses.

Trademarks and Permissions

, , and are trademarks or registered trademarks of Huawei Technologies Co., Ltd.

Other trademarks, product, service and company names mentioned are the property of their respective owners.

Notice

Some features of the product and its accessories described herein rely on the software installed, capacities and settings of local network, and may not be activated or may be limited by local network operators or network service providers, thus the descriptions herein may not exactly match the product or its accessories you purchase.

Huawei Technologies Co., Ltd reserves the right to change or modify any information or specifications contained in this manual without prior notice or obligation.

NO WARRANTY

THE CONTENTS OF THIS MANUAL ARE PROVIDED "AS IS". EXCEPT AS REQUIRED BY APPLICABLE LAWS, NO WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE MADE IN RELATION TO THE ACCURACY, RELIABILITY OR CONTENTS OF THIS

MANUAL.

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO CASE SHALL HUAWEI TECHNOLOGIES CO., LTD BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, OR LOST PROFITS, BUSINESS, REVENUE, DATA, GOODWILL OR ANTICIPATED SAVINGS.

Import and Export Regulations

Customers shall comply with all applicable export or import laws and regulations and will obtain all necessary governmental permits and licenses in order to export, re-export or import the product mentioned in this manual including the software and technical data therein.

Contents

Getting to Know the ME909Tu-565 1
PCB Design 2
Assembly 5

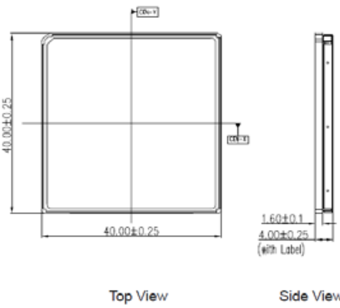
Thank you for purchasing HUAWEI ME909Tu-565 LTE LGA Module (hereinafter referred to as the ME909Tu-565)

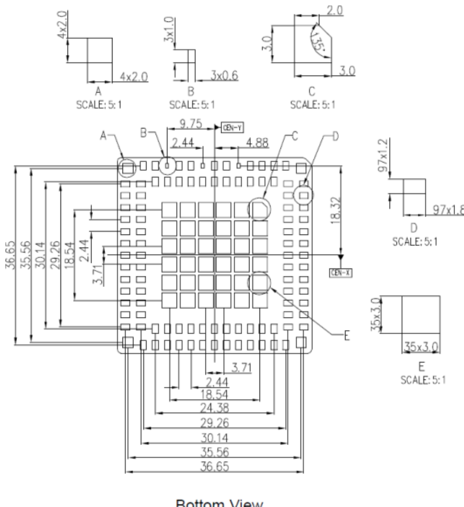
Note:

- This manual briefly describes the preparation, the process for PCB Design, Assembly and safety precautions.
- You are recommended to read the manual before using the ME909Tu-565.

Getting to Know the ME909Tu-565

- The package of the LGA module is 140 pin LGA with a dimension of 40 mm × 40 mm × 4 mm. It is applied to the user interface board, and can be used as a wireless terminal in a network environment.





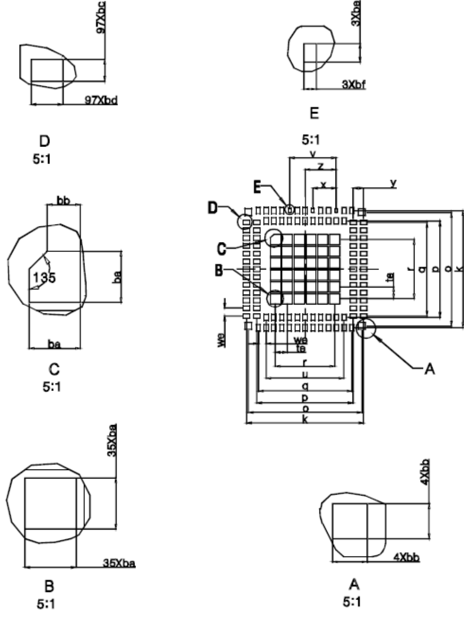
Bottom View

PCB Design

PCB Pad Design

To achieve assembly yields and solder joints of high reliability, it is recommended that the PCB pad size be designed as follows: the sizes of the solder pads on customers' PCBs are the same as those of the module's solder pads for the high production efficiency and high reliability of

solder joints. For details, see the following figure:



Top view (PCB pad is recommended)		
No.	mm	mil
k	36.65	1442.8
o	35.56	1400
p	30.14	1186.8
q	29.26	1152
we	2.44	96
te	3.71	146

Top view (PCB pad is recommended)		
No.	mm	mil
r	18.54	730
u	24.38	960
y	3.25	128
x	7.32	288
z	9.76	384
v	14.64	576
ba	3.05	120
bb	2.03	80
bc	1.22	48
bd	1.83	72
be	1.02	40
bf	0.61	24

Requirements on PCB Layout

- The thickness of PCB is more than 1.0 mm (1.2 mm recommended) to reduce the deformation caused by high temperature welding.
- The minimum distance between the LGA module and the PCB edge is 0.5 mm. Other devices must be located more than 1 mm away from the LGA module (more than 3 mm recommended if rework is considered).
- When the PCB layout is double sided, it is recommended that the LGA module be placed on the second side for assembly, which can avoid that open joint, module dropping and module interior defect caused by the module's gravity during reflow.

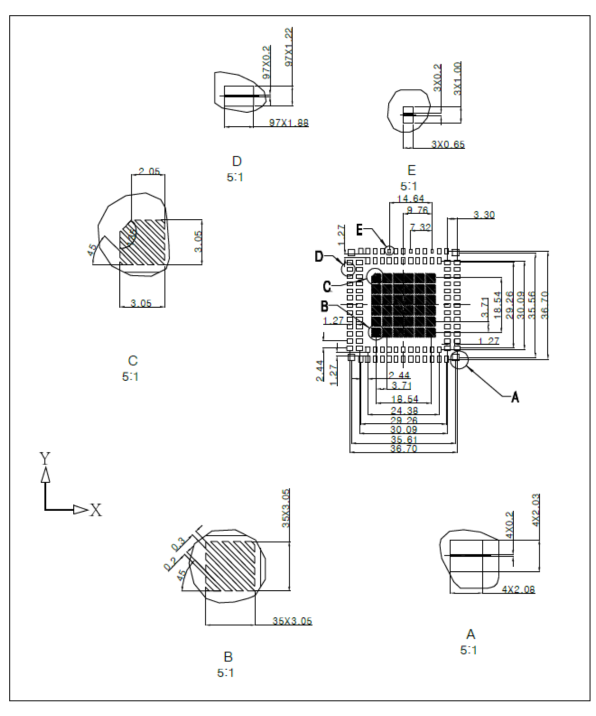
Design of Solder Mask

- The PCB pad design can be solder mask defined (SMD), or non-solder mask defined (NSMD).NSMD is recommended. In addition, the solder mask of the NSMD pad design is larger than the pad so the reliability of the solder joint can be improved.
- The solder mask must be 100 μm to150 μm larger than the pad, that is, the single side of the solder mask must be 50 μm to 75 μm larger than the pad. The specific size depends on the processing capability of the PCB manufacturer.

Assembly

Stencil Design

It is recommended that the stencil for the LGA module be 0.15 mm in thickness. For the stencil design, see the following figure：

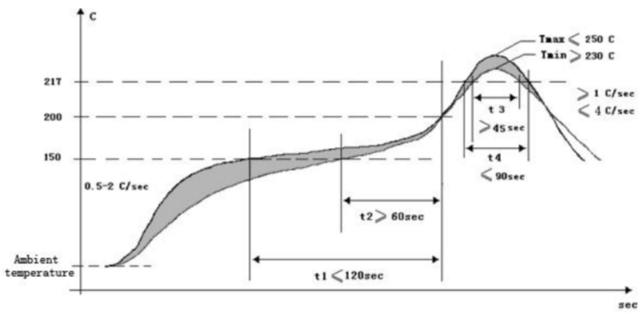

97X0.2
97X1.22
97X1.88
D
5:1
3X0.2
3X1.00
3X0.65
E
5:1
2.05
3.05
45
3.05
C
5:1
14.64
9.76
7.32
3.30
1.27
E
D
C
B
3.71
18.54
29.26
30.09
35.56
36.70
1.27
1.27
2.44
1.27
2.44
3.71
18.54
24.38
29.26
30.09
35.61
36.70
A
Y
X
35X3.05
0.3
0.2
45
35X3.05
B
5:1
4X0.2
4X2.03
4X2.08
A
5:1

Item	Description	Figure
A	Elongate the stencil opening 0.05 mm with the direction reverse the center of the module and add an isolation bridge with 0.2 mm width at the X axis direction.	
B&C	0.3 mm width stencil opening and 0.2 mm space to divide the pad with the angle of 45.	
D	Elongate the stencil opening 0.05 mm with the reverse direction for the adjacent pad, but will not reduce the air gap, and add an isolation bridge with 0.2 mm width at the X axis direction.	
E	Elongate the stencil opening 0.05 mm with the X+ direction and add an isolation bridge with 0.2 mm width at the axis direction.	

Reflow Profile

For the soldering temperature of the LGA module, see the following figure.

Reflow profile



Reflow parameters

Temperature Zone	Time	Key Parameter
Preheat zone (40°C to 150°C)	60s to 120s	Heating rate: 0.5°C/s to 2°C/s
Soak zone (150°C to 200°C)	(t1–t2): 60s to 120s	Heating rate: < 1.0°C/s
Reflow zone (> 217°C)	(t3–t4): 30s to 90s	Peak reflow temperature: 230°C to 250°C
Cooling zone	Cooling rate: 1°C/s ≤ Slope ≤ 4°C/s	