

## PRODUCT SPECIFICATION

**MODEL NAME:** WCBN3603A-SS

**MODULE PN:** AAZ100075G0

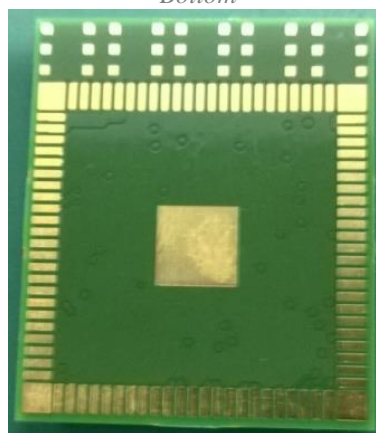
**SEC CODE:** \_\_\_\_\_

Version 1.0

*TOP*



*Bottom*



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## 1. Change History

Revision	Date	Author	Change List
Version 1.0	2014/06/18	Kaysa Lee	Preliminary

## 2. Location information for Manufacturing Factory

	1 <sup>st</sup> Case	2 <sup>nd</sup> Case	3 <sup>rd</sup> Case
Fab	x		
Assembly	Lite-On CZ		
Final Test	Lite-On CZ		

### 3. General Description

#### BT Feature:

- Bluetooth V4.0 LE, V3.0 HS, Bluetooth V2.1+EDR system, backwards compatible with BT version of 1.1, 1.2 and 2.0
- Support Class II (TX power maximum to +4dBm)
- BT transmission speed including 1M, 2M and 3Mbps EDR operations
- Support for Simple Pairing (SP) and Enhanced Inquiry Response (EIR) function
- Support for SCATTERNET and PICONET
- HCI USB interface to work with Windows upper layer stack

#### WiFi Feature:

- Operate at ISM frequency Band(2.4GHz)
- IEEE Standards Support, 802.11b, 802.11g and 802.11n
- WiFi using mini PCIe interface
- Enterprise level security supporting: WPA, WPA2
- Support 1 transmission and 1 receiving, transmission rate can up to 150Mbps (Physical Rate) in downstream and upstream
- Full feature software utility for easy configuration and management

#### Common Feature:

- Form Factor: M.2 2226
- Support OS: Windows Win7/Win8
- Support for BT & WLAN Co-existence
- RoHS Compliance
- Low Halogen Compliance
- WiFi:

Reg Domain	Most of World SKU Channel 1-11 with active scan Channel 12~13 with passive scan
	0x006A
Vendor ID	0x168C
Device ID	0x0036
Subsystem ID	0x4129
Subsystem Vendor ID	0x144D

- BT:

Vendor ID	0x0CF3
Product ID	0x3004

#### 4. CTQ (Critical To Quality), Main Control Items

#### 5. Electrical Characteristics

Main chipset

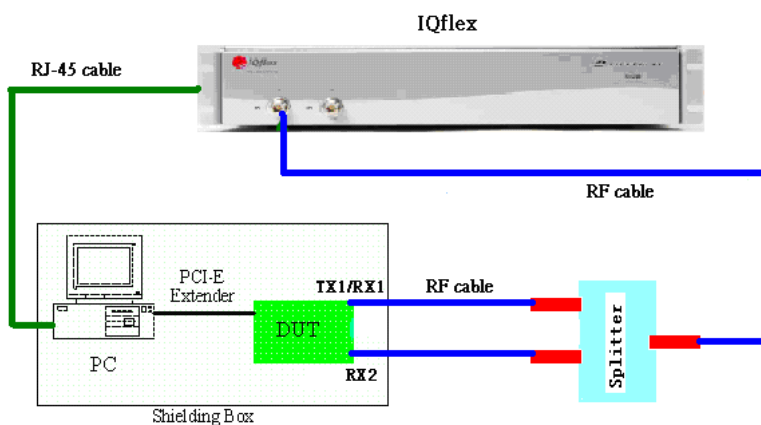
Qualcomm Atheros QCA9565

##### Functional Specifications

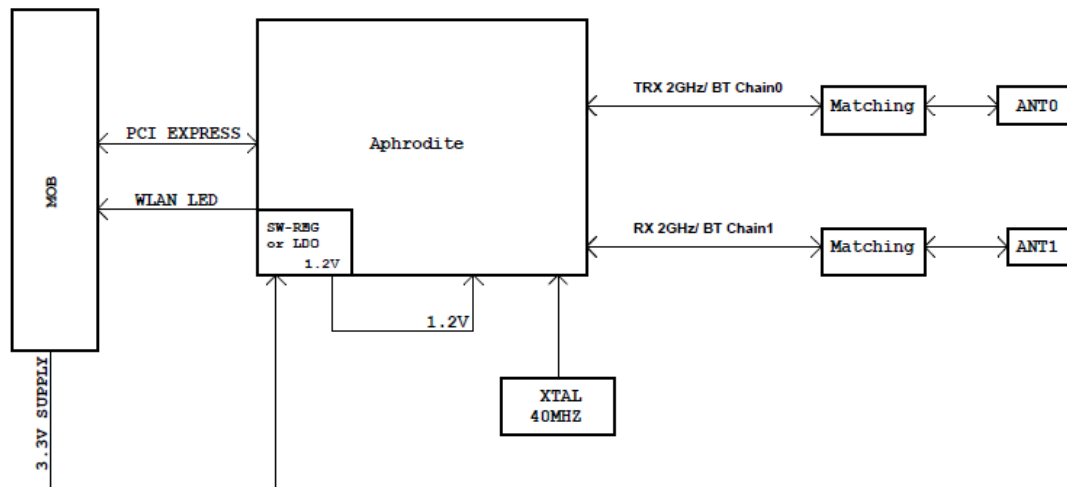
BT Function	
Standard	Bluetooth V4.0LE, V3.0 HS, V2.1+EDR,
Bus Interface	USB
Data Rate	1 Mbps, 2Mbps and Up to 3Mbps
Modulation Scheme	GFSK, $\pi/4$ -DQPSK and 8-DPSK
Frequency Range	2.402~2.480 GHz
Transmit Output Power	$-6 \leq \text{Output Power} \leq +4$ ; Class 2 Device
Receiver Sensitivity	$< 0.1\%$ BER at -70dBm
Software	Bluetooth Suite
WiFi Function	
Standard	IEEE802.11b; IEEE 802.11g; IEEE 802.11n
Bus Interface	PCI Express
Data Rate	802.11b: 11, 5.5, 2, 1 Mbps 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps 802.11n: MCS 0 to 7 for HT20MHz MCS 0 to 7 for HT40MHz
Media Access Control	CSMA/CA with ACK
Modulation Techniques:	<i>802.11b</i> : CCK, DQPSK, DBPSK <i>802.11g, 11a</i> : 64QAM, 16QAM, QPSK, BPSK <i>802.11n</i> : BPSK, QPSK, 16QAM, 64QAM
Network Architecture	Ad-hoc mode (Peer-to-Peer ) Infrastructure mode
Operation Channel	<i>2.4GHz</i> 11: (Ch. 1-11) – United States 13: (Ch. 1-13) – Europe 14: (Ch. 1-14) – Japan
Frequency Range	<i>802.11bg</i> 2.412 ~ 2.4835 GHz
Transmit Output Power – 2x2 (Tolerance: +-2dBm)	<i>802.11b / CCK</i> : 17 dBm@6,9,12,18,24Mbps <i>802.11g / OFDM</i> : 18 dBm@6,9,12,18,24Mbps 17 dBm@36Mbps

	16 dBm@48Mbps 14 dBm@54Mbps <b>802.11n / HT20:</b> 17 dBm@MCS0,1,2,3,4 16 dBm@MCS5 15 dBm@MCS6 13 dBm@MCS7 <b>802.11n / HT40:</b> 16 dBm@MCS0,1,2,3,4 16 dBm@MCS5 15 dBm@MCS6 13 dBm@MCS7
<b>Receive Sensitivity</b>	<b>802.11b:</b> Less than -76dBm <b>802.11g / 11a:</b> Less than -82dBm @ 6Mbps Less than -65dBm @ 54Mbps <b>802.11n:</b> <b>HT20</b> Less than -82dBm @ MCS0 Less than -64dBm @ MCS7 <b>HT40</b> Less than -79dBm @ MCS0 Less than -61dBm @ MCS7
<b>Security</b>	WPA, WPA2, WPS, IEEE 802.1X, IEEE 802.11i
<b>Common Function</b>	
<b>Operating Voltage</b>	3.3 V ± 10% I/O supply voltage
<b>Antenna Type</b>	Dual MHF4 RF connector
<b>Operating/Storage Temperature</b>	<b>Operating</b> Operating Temperature: 0 to 75 °C Relative Humidity: 5-90% (non-condensing) <b>Storage</b> Temperature: -40 to 85 °C Relevant Humidity: 5-95% (non-condensing)

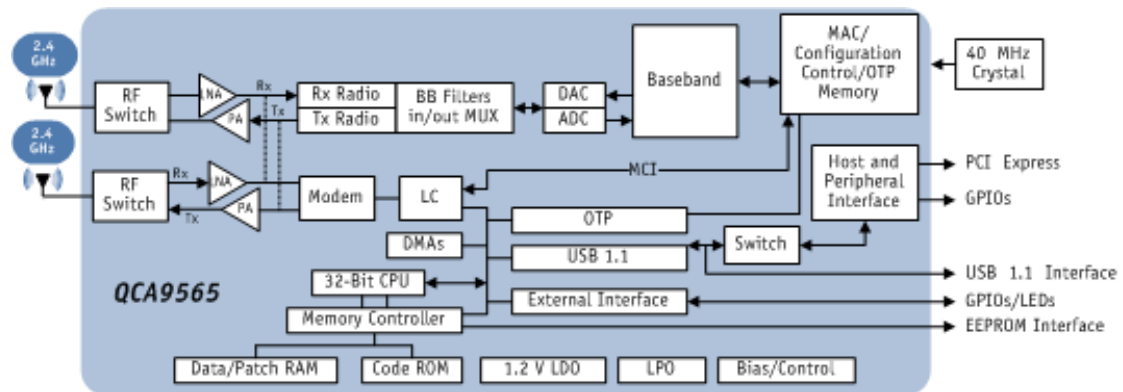
## 6. Test Setup



## 7. Internal Block Diagram



## 8. Basic Theory

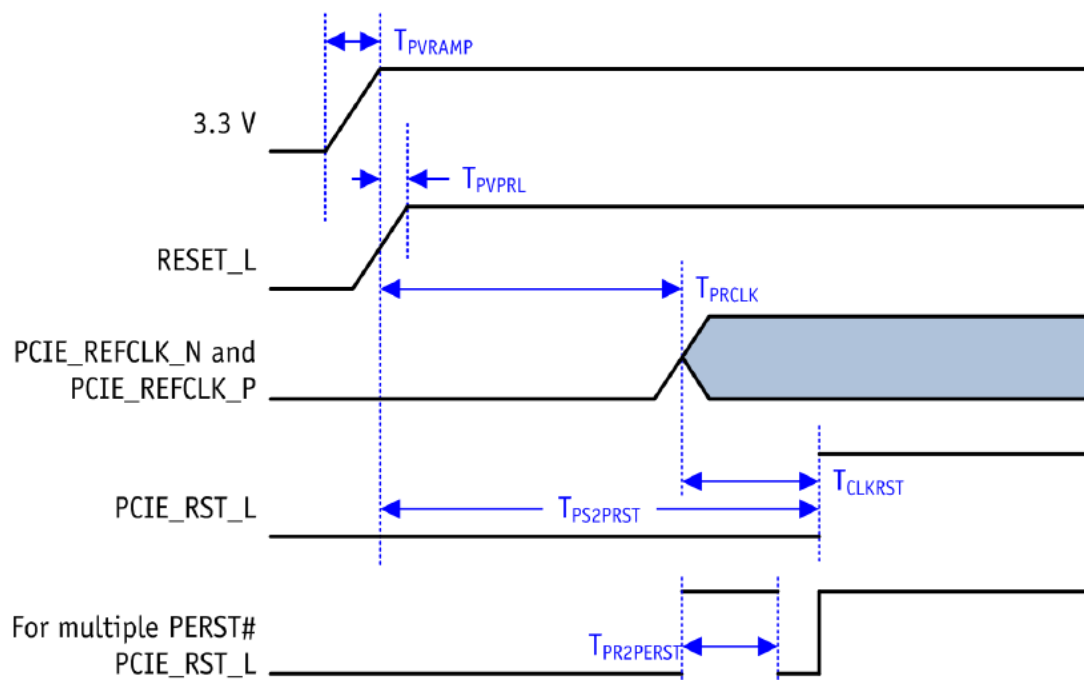






## 10. Application Note

Power up sequencing:



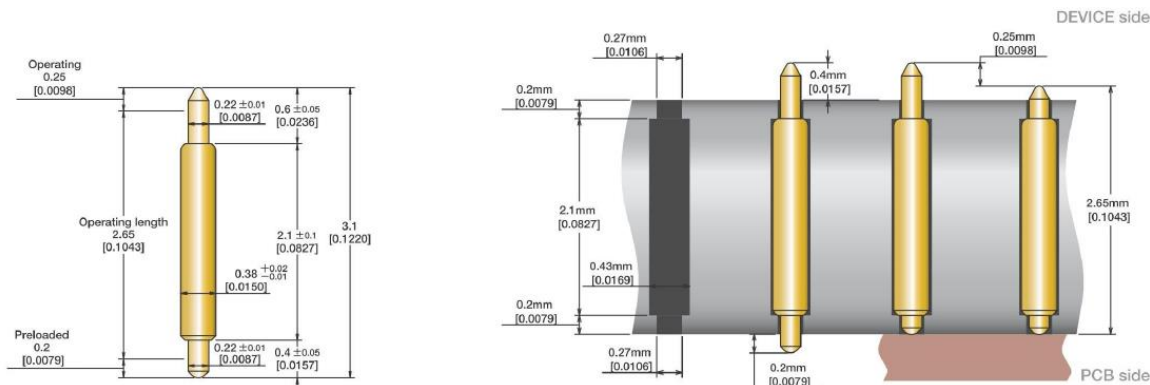
Signal Name	Description	Min	Max
$T_{PVRAMP}$	Power Supply Ramp on 3.3 V	—	1 ms
$T_{PVPRL}$	Power Valid to RST_L Asserted	0 $\mu$ s <sup>1</sup>	—
$T_{PRCLK}$	RST_L De-asserted to PCIE_REFCLK_N and PCIE_REFCLK_P Stable	100 $\mu$ s	—
$T_{CLKRST}$	PCIE_REFCLK_N and PCIE_REFCLK_P Stable to PCIE_RST_L De-assert	100 $\mu$ s <sup>2</sup>	—
$T_{PS2PRST}$	Power Supply Stable to PCIE_RST_L De-assert	10 ms	—
$T_{PR2PERST}$	Interval for Multiple PCIE_RST_L	40 ms	—

## 11. Specification of Measurement JIG

Model / PART NUMBER :

# KGW-050-001RA

Pin outline in millimeter [inch]

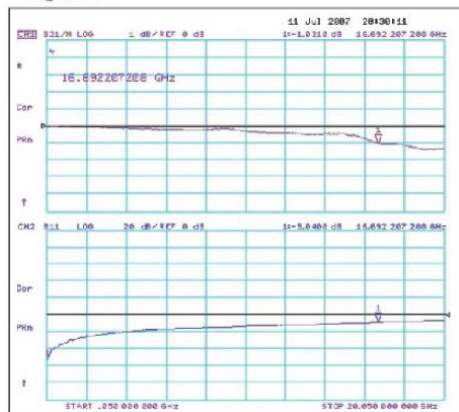


### SPECIFICATIONS (Approximate Average Values)

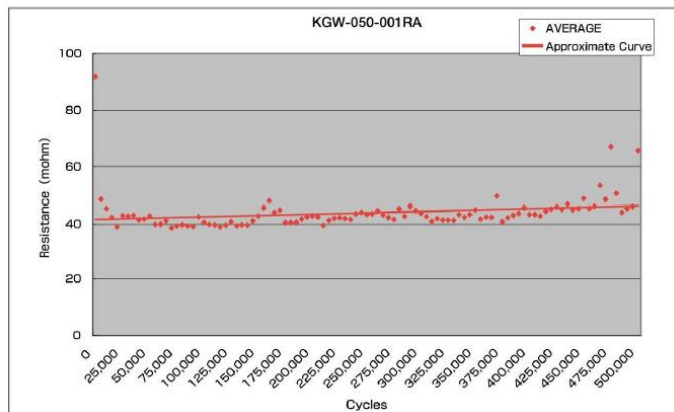
Mechanical Specifications	Spring force at working travel	18gf (0.63oz.)@0.45mm(0.018inch) Travel
	Operating Temperature:	-40 to 120 °C
	Life Span at Operating Temperature	500K Cycles
Electrical Specifications	Current Rating (Continuous)	1.4A
	Self Inductance	0.82nH
	Bandwidth @-1dB	16.7GHz
	DC resistance	100mohm@0.45mm(0.018inch) Travel
Material and Finishes	Top Plunger	Hardened BeCu/Au alloy plated
	Bottom Plunger	Hardened BeCu/Au plated
	Barrel	Au Clad
	Spring	Music Wire/Au plated

### Insertion loss data

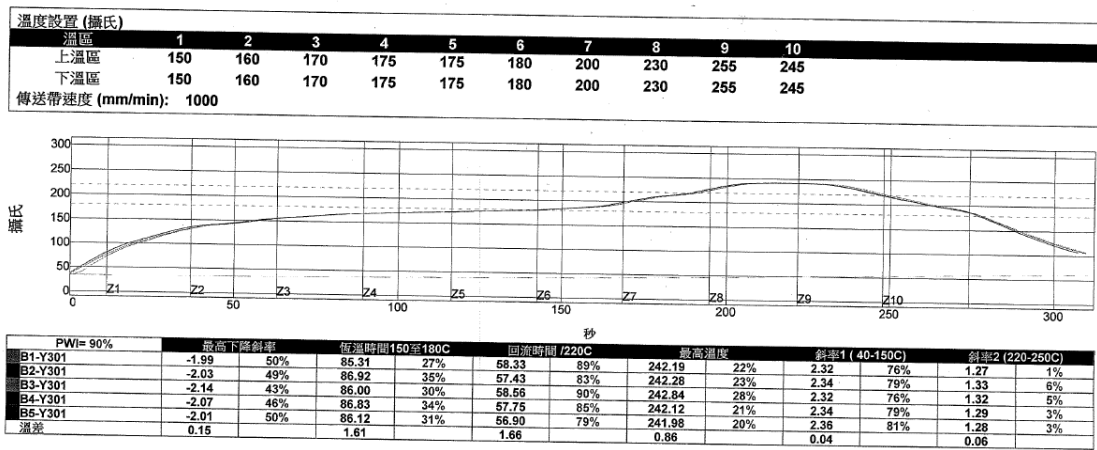
-1dB@16.7GHz



### Life test data



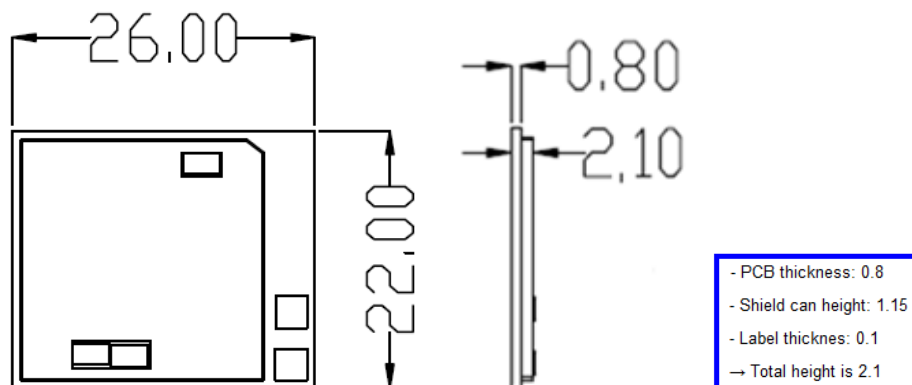
12. Reflow Profile



13. Initial Test Report

## 14. Reliability Test Report

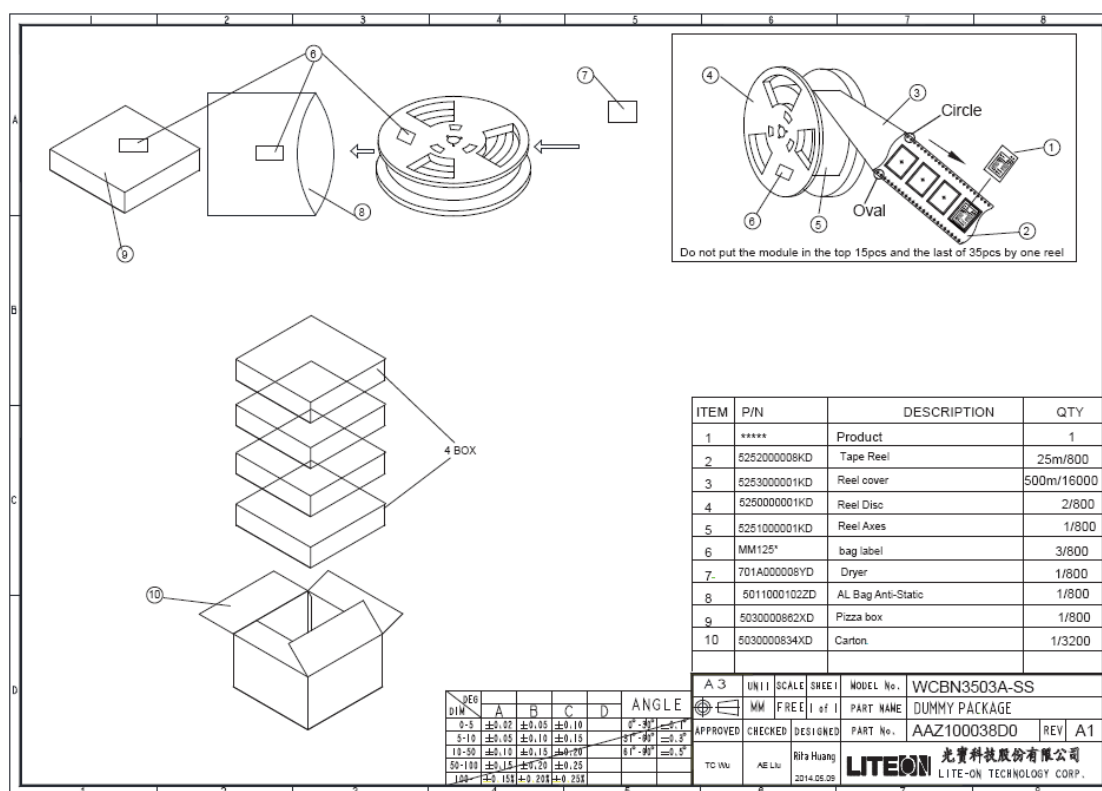
## 15. Mechanical Characteristics

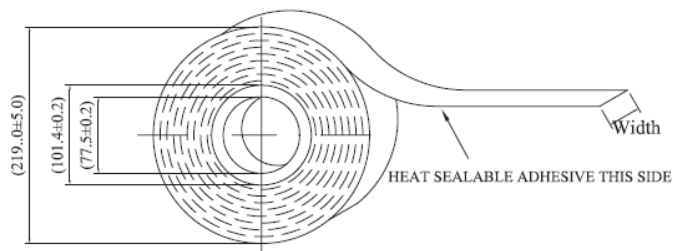


Tolerance: +/- 0.1mm

## 16. Structure and Material

## 17. Packaging Reel & Tape





**Note:**

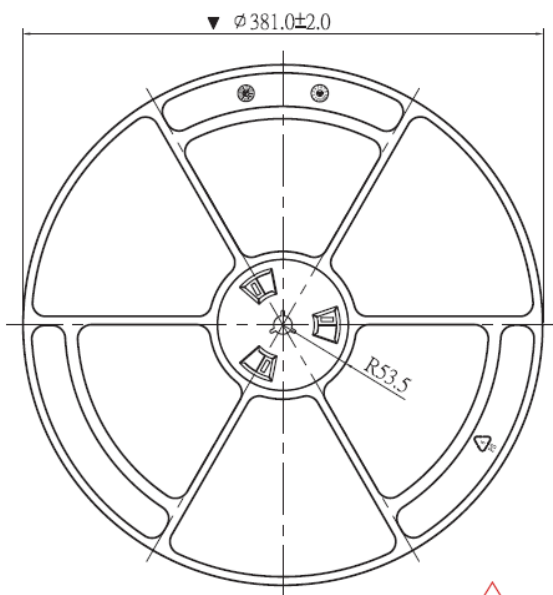
- 1.Material:Antistatic Polyester
- 2.Color:Transparent, Colorless
- 3.Surface resistivity is  $1 \times 10^9 \sim 1 \times 10^{11} \Omega$
- 4.Surface friction voltage is less than 100 V
- 5.Size:W=37.5mm

Width (mm)	Length (M)Min	Carrier width (mm)	Thickness ( $\mu\text{m}$ )
37.5±0.1	480	44.0	62±5



A4	UNIT	SCALE	SHEET	MODEL No.	PART NAME	PART No.	REV	A1
	MM	NON	1(1)		Reel Cover	5253000001KD		
APPROVED	CHECKED	DESIGNED		Rita Huang 2012.11.23				

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LITE-ON TECHNOLOGY CORP.



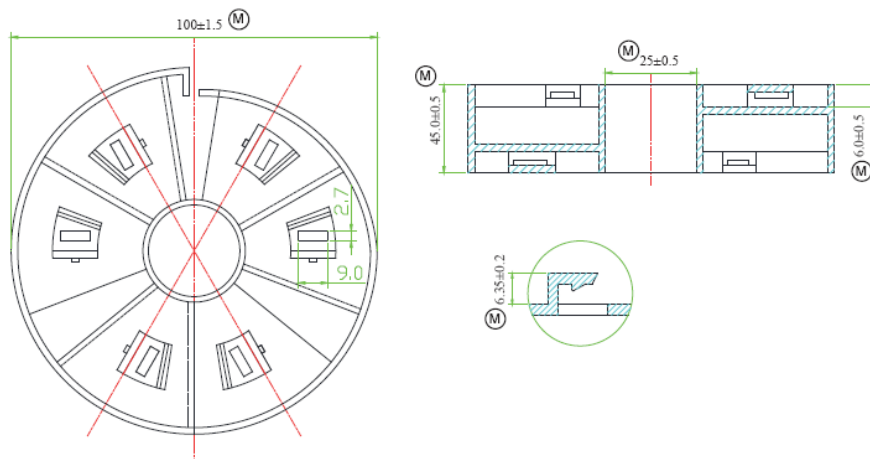
**Note:**

- 1.Material:HIPS
- 2.Color:Blue
- 3.Surface resistivity is  $1 \times 10^7 \sim 1 \times 10^{11} \Omega$
- 4.Surface friction voltage is less than 100 V
- 5.Size:15 inch



A4	UNIT	SCALE	SHEET	MODEL No.	PART NAME	PART No.	REV	A1
	MM	NON	1(1)		Reel Disc	5250000001KD		
APPROVED	CHECKED	DESIGNED		Rita Huang 2012.11.23				

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LITE-ON TECHNOLOGY CORP.



**Note:**

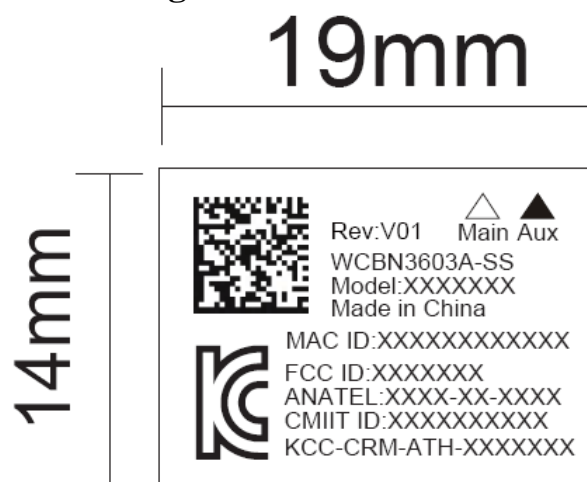
1. Material: HIPS
2. Color: Blue
3. Marked (M) is the critical dimension



LIMITS UNLESS OTHERWISE NOTED	
X <sub>1</sub> ±	X <sub>2</sub> ±
.X ±	.X <sup>°</sup> ±
.XX ±	.XX <sup>°</sup> ±
.XXX ±	.XXX <sup>°</sup> ±

<b>A4</b>	UNIT	SCALE	SHEET	MODEL No.			
	MM	NON	1(1)	PART NAME	Reel Axes		
APPROVED	CHECKED	DESIGNED	PART No.	5251000001KD	REV	A1	
		Rita Huang	<b>LITEON</b> 光寶科技股份有限公司 LITE-ON TECHNOLOGY CORP.				
		2012.11.23					

## 18. Marking

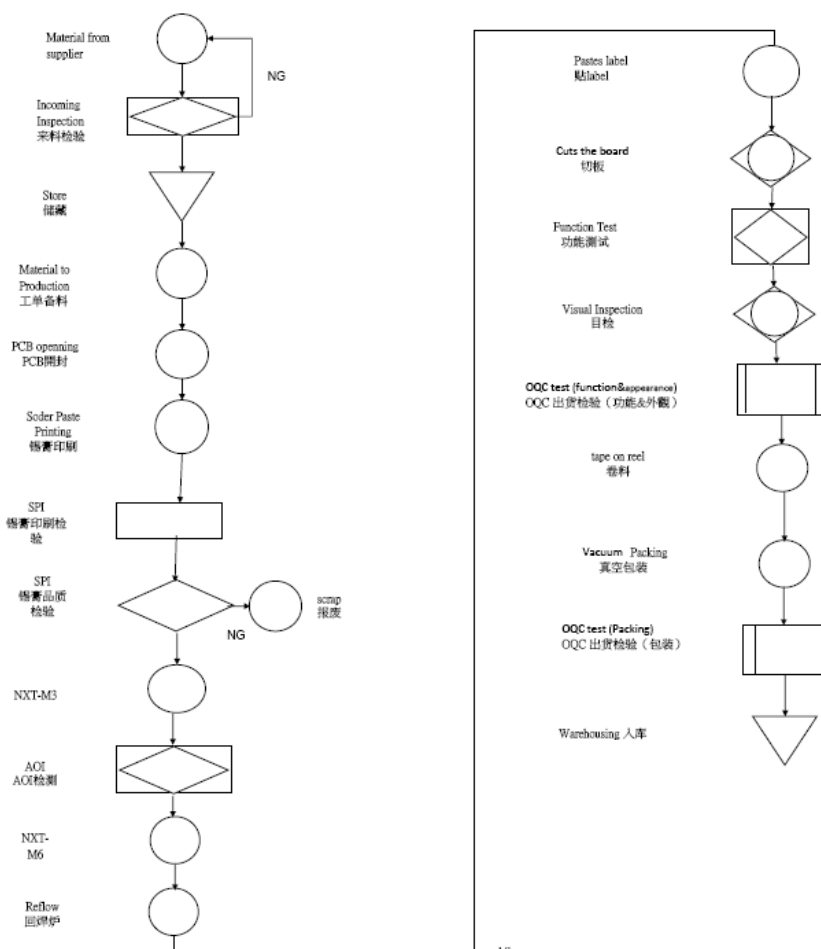


1.2維條碼為(ECC 200)

條碼顯示內容為:XXXXXXXXXXXX(業務提供)

2:BD=MAC+1

## 19. Control Chart



1/1

20. Lead Free

This product is a module not IC which has no outside terminal, the contact with customer platform is through the bottom pad. We don't do whisker test for module.

21. RoHS Qualification Report

22. Sample History


23. BOM List



**Federal Communication Commission Interference Statement**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
  - Increase the separation between the equipment and receiver.
  - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
  - Consult the dealer or an experienced radio/TV technician for help.
- FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**IMPORTANT NOTE:****Radiation Exposure Statement:**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Country Code selection feature to be disabled for products marketed to theUS/CANADA

**Antenna General Information**

Model	Used for	Ant. Type	Connector	Gain (dBi)
Main	Wi-Fi	PIFA	U.FL	3 @ 2.4GHz
Aux	Bluetooth	PIFA	U.FL	3.62 @ 2.4GHz

Note: An extended coax cable was supplied for this antenna with below info.:

- ✧ Cable loss: 1dB
- ✧ Connector type: U.FL

**This device is intended only for OEM integrators under the following conditions:**

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or antenna,
- 3) For all products market in US, OEM has to limit the operation channels in CH1 to CH11 for 2.4G band by supplied firmware programming tool. OEM shall not supply any tool or info to the end-user regarding to Regulatory Domain change.

As long as 3 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed

**IMPORTANT NOTE**

In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

**End Product Labeling**

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains FCC ID:PPQ-SS335".

**Manual Information to the End User**

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.