

# PRODUCT SPECIFICATION

MODEL NAME: WCBN3603A-SS

MODULE PN: AAZ100075G0

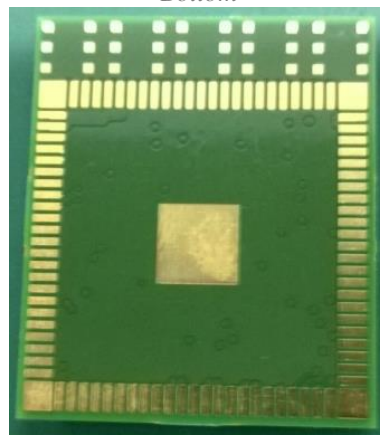
SEC CODE: \_\_\_\_\_

Version 1.0

TOP



Bottom



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## CONTENT

<b>1. CHANGE HISTORY .....</b>	<b>3</b>
<b>2. LOCATION INFORMATION FOR MANUFACTURING FACTORY .....</b>	<b>3</b>
<b>3. GENERAL DESCRIPTION .....</b>	<b>4</b>
BT FEATURE: .....	4
WiFi FEATURE: .....	4
COMMON FEATURE: .....	4
<b>4. CTQ (CRITICAL TO QUALITY), MAIN CONTROL ITEMS .....</b>	<b>5</b>
<b>5. ELECTRICAL CHARACTERISTICS .....</b>	<b>5</b>
<b>6. TEST SETUP .....</b>	<b>6</b>
<b>7. INTERNAL BLOCK DIAGRAM .....</b>	<b>7</b>
<b>8. BASIC THEORY .....</b>	<b>7</b>
<b>9. PIN DEFINITION .....</b>	<b>8</b>
<b>10. APPLICATION NOTE .....</b>	<b>9</b>
<b>11. SPECIFICATION OF MEASUREMENT JIG .....</b>	<b>10</b>
<b>12. REFLOW PROFILE .....</b>	<b>11</b>
<b>13. INITIAL TEST REPORT .....</b>	<b>11</b>
<b>14. RELIABILITY TEST REPORT .....</b>	<b>12</b>
<b>15. MECHANICAL CHARACTERISTICS .....</b>	<b>12</b>
<b>16. STRUCTURE AND MATERIAL .....</b>	<b>12</b>
<b>17. PACKAGING REEL &amp; TAPE .....</b>	<b>12</b>
<b>18. MARKING .....</b>	<b>15</b>
<b>19. CONTROL CHART .....</b>	<b>15</b>
<b>20. LEAD FREE .....</b>	<b>16</b>
<b>21. ROHS QUALIFICATION REPORT .....</b>	<b>16</b>
<b>22. SAMPLE HISTORY .....</b>	<b>16</b>
<b>23. BOM LIST .....</b>	<b>16</b>

## 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

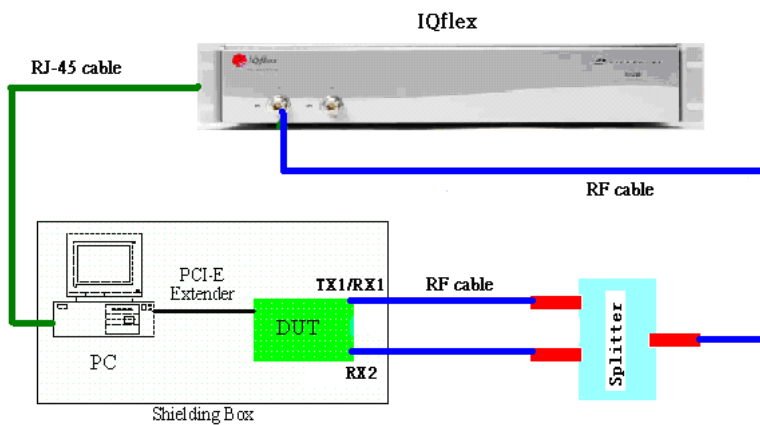
Qualcomm Atheros QCA9565

##### Functional Specifications

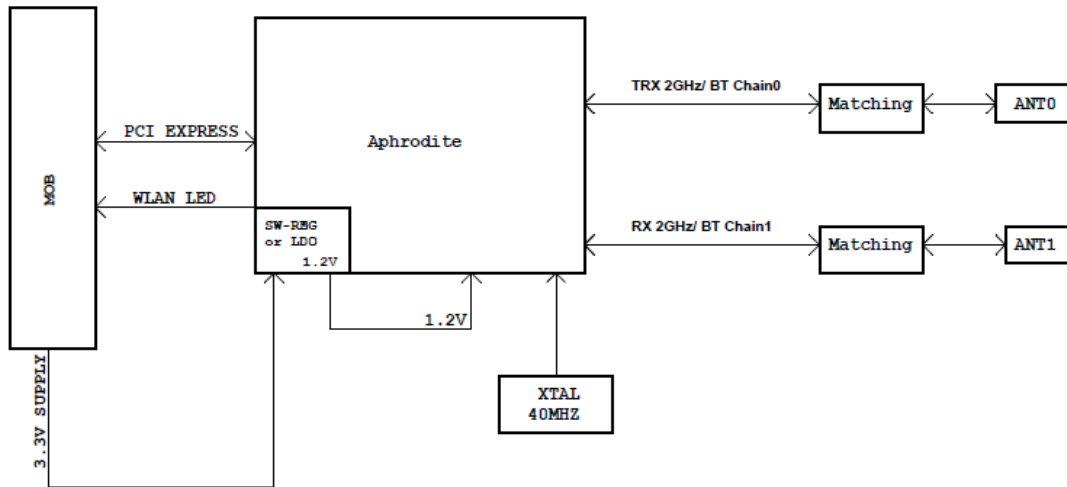
<b>BT Function</b>	
<b>Standard</b>	Bluetooth V4.0LE, V3.0 HS, V2.1+EDR,
<b>Bus Interface</b>	USB
<b>Data Rate</b>	1 Mbps, 2Mbps and Up to 3Mbps
<b>Modulation Scheme</b>	GFSK, $\pi/4$ -DQPSK and 8-DPSK
<b>Frequency Range</b>	2.402~2.480 GHz
<b>Transmit Output Power</b>	$-6 \leq \text{Output Power} \leq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

	<p>16 dBm@48Mbps 14 dBm@54Mbps</p> <p><b>802.11n / HT20:</b> 17 dBm@MCS0,1,2,3,4 16 dBm@MCS5 15 dBm@MCS6 13 dBm@MCS7</p> <p><b>802.11n / HT40:</b> 16 dBm@MCS0,1,2,3,4 16 dBm@MCS5 15 dBm@MCS6 13 dBm@MCS7</p>
<b>Receive Sensitivity</b>	<p><b>802.11b:</b> Less than -76dBm</p> <p><b>802.11g / 11a:</b> Less than -82dBm @ 6Mbps Less than -65dBm @ 54Mbps</p> <p><b>802.11n:</b></p> <p><b>HT20</b> Less than -82dBm @ MCS0 Less than -64dBm @ MCS7</p> <p><b>HT40</b> Less than -79dBm @ MCS0 Less than -61dBm @ MCS7</p>
<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>	<p><b>Operating</b> Operating Temperature: 0 to 75 °C Relative Humidity: 5-90% (non-condensing)</p> <p><b>Storage</b> Temperature: -40 to 85 °C Relevant Humidity: 5-95% (non-condensing)</p>

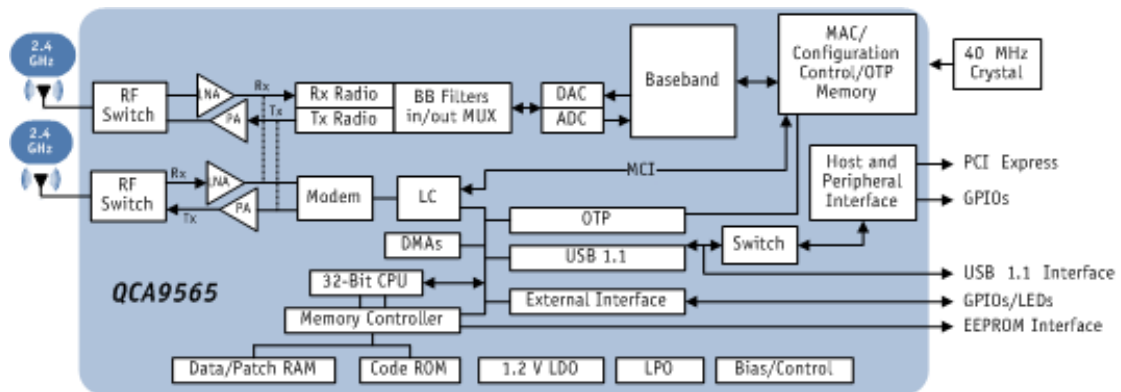
## 6. Test Setup



### 7. Internal Block Diagram



### 8. Basic Theory

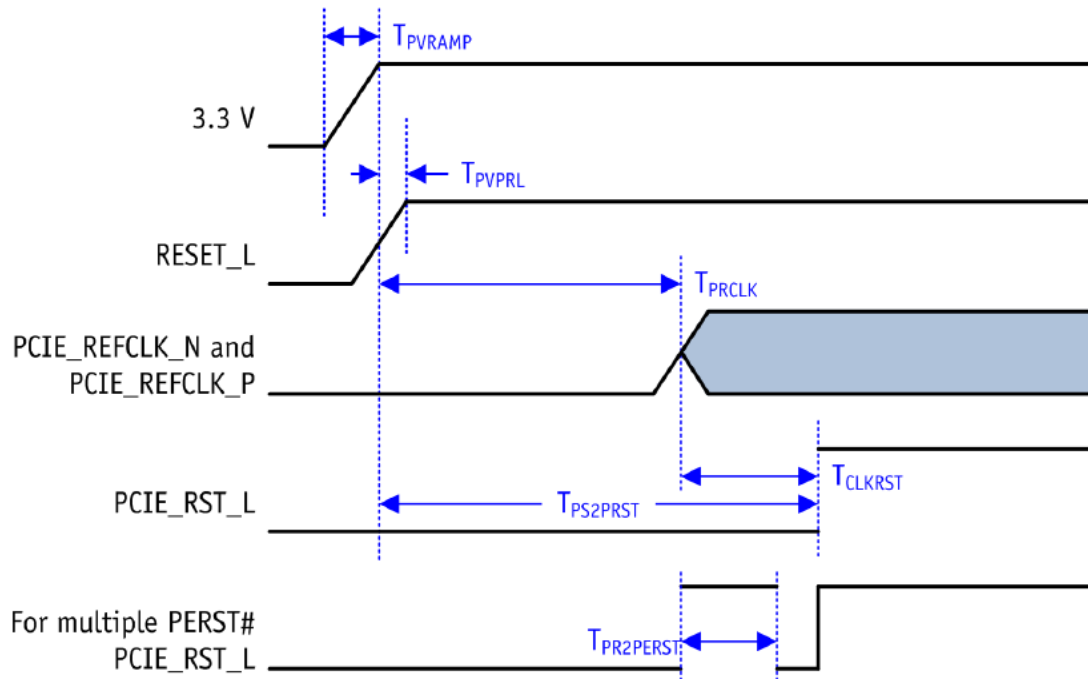






## 10. Application Note

Power up sequencing:



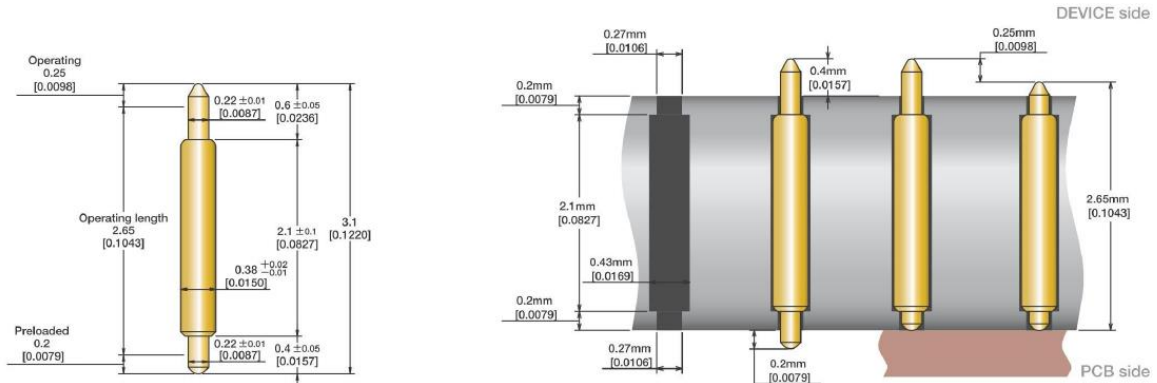
Signal Name	Description	Min	Max
$T_{PVRAMP}$	Power Supply Ramp on 3.3 V	—	1 ms
$T_{PVPRL}$	Power Valid to RST_L Asserted	$0 \mu s^1$	—
$T_{PRCLK}$	RST_L De-asserted to PCIE_REFCLK_N and PCIE_REFCLK_P Stable	$100 \mu s$	—
$T_{CLKRST}$	PCIE_REFCLK_N and PCIE_REFCLK_P Stable to PCIE_RST_L De-assert	$100 \mu s^2$	—
$T_{PS2PRST}$	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-050-001 RA

Pin outline in millimeter [inch]

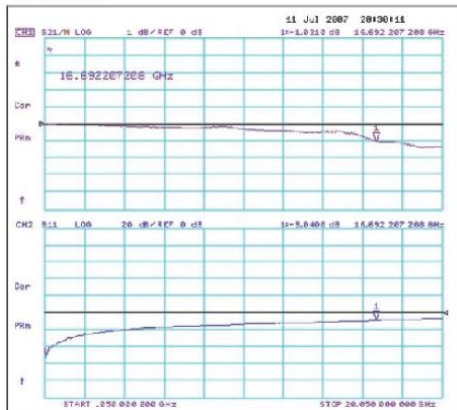


## SPECIFICATIONS (Approximate Average Values)

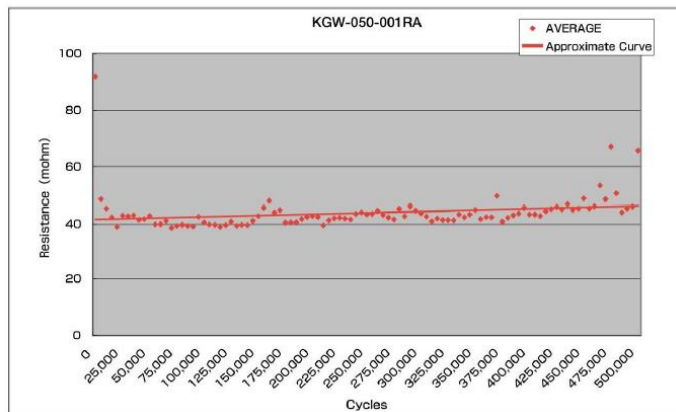
Mechanical Specifications	Spring force at working travel	18gf (0.63oz.)@0.45mm(0.018inch) Travel
	Operating Temperature:	-40 to 120 °C
	Life Span at Operating Temperature	500K Cycles
Electrical Specifications	Current Rating (Continuous)	1.4A
	Self Inductance	0.82nH
	Bandwidth @-1dB	16.7GHz
	DC resistance	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

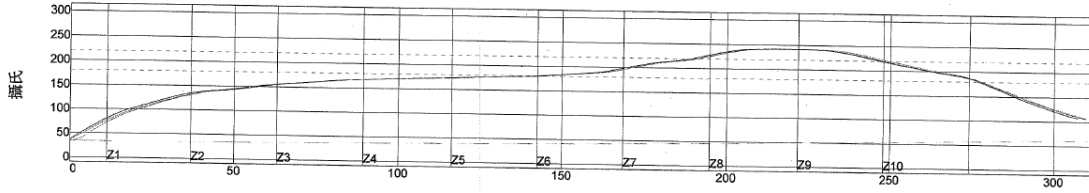


### Life test data



## 12. Reflow Profile

溫度設置 (攝氏)										
溫區	1	2	3	4	5	6	7	8	9	10
上溫區	150	160	170	175	175	180	200	230	255	245
下溫區	150	160	170	175	175	180	200	230	255	245
傳送帶速度 (mm/min):	1000									

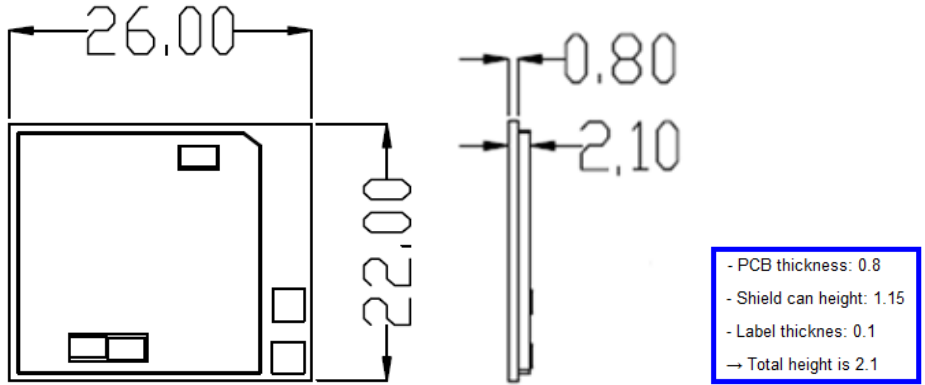


PW= 90%	秒											
	最高下降斜率	恆溫時間 150至180C		回流時間 /220C		最高溫度	斜率1 (40-150C)		斜率2 (220-250C)			
B1-Y301	-1.99	50%	85.31	27%	58.33	89%	242.19	22%	2.32	76%	1.27	1%
B2-Y301	-2.03	49%	86.92	35%	57.43	83%	242.28	23%	2.34	79%	1.33	6%
B3-Y301	-2.14	43%	86.00	30%	58.56	90%	242.84	28%	2.32	76%	1.32	5%
B4-Y301	-2.07	46%	86.83	34%	57.75	85%	242.12	21%	2.34	79%	1.29	3%
B5-Y301	-2.01	50%	86.12	31%	56.90	79%	241.98	20%	2.36	81%	1.28	3%
偏差	0.15		1.61		1.66		0.86		0.04		0.06	

## 13. Initial Test Report

**14. Reliability Test Report**

**15. Mechanical Characteristics**



Tolerance: +/- 0.1mm

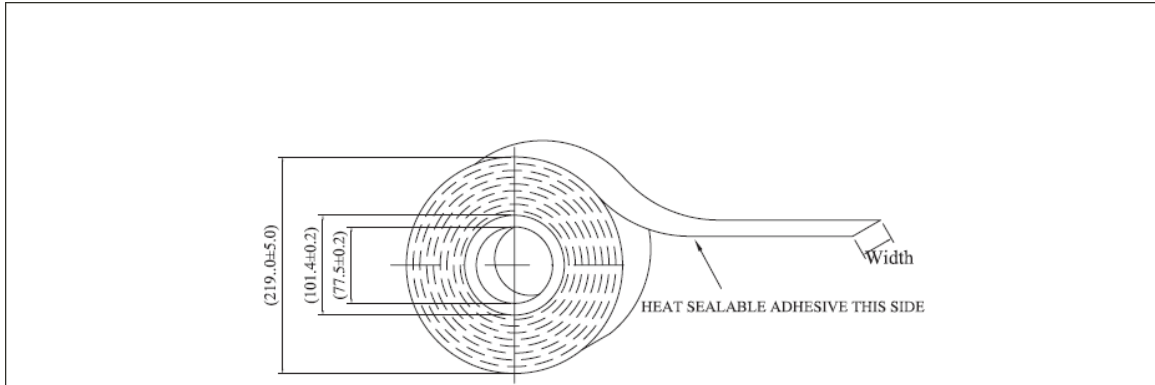
**16. Structure and Material**

**17. Packaging Reel & Tape**

ITEM	P/N	DESCRIPTION	QTY
1	****	Product	1
2	5252000006KD	Tape Reel	25m/800
3	5253000001KD	Reel cover	500m/16000
4	5250000001KD	Reel Disc	2/800
5	5251000001KD	Reel Axes	1/800
6	MM125*	bag label	3/800
7	701A000008YD	Dryer	1/800
8	50110001022D	AL Bag Anti-Static	1/800
9	503000082XD	Pizza box	1/800
10	503000083XD	Carton	1/3200

DEG					ANGLE
DIM	A	B	C	D	
0-3	±0.02	±0.05	±0.10		0°-30° ±0.1°
3-10	±0.05	±0.10	±0.15		30°-60° ±0.5°
10-50	±0.10	±0.15	±0.20		60°-90° ±0.5°
50-100	±0.15	±0.20	±0.25		
100	±0.15	±0.20	±0.25		

A-3	UN I	SCALE	SHEET	MODEL No.	WCBN3503A-SS
	MM	FREE	1 of 1	PART NAME	DUMMY PACKAGE
APPROVED	CHECKED	DESIGNED	PART No.	AAZ100038DD	REV A1
TC No.	AE.LN	Rita Huang	光寶科技股份有限公司 LITE-ON TECHNOLOGY CORP.		
			2014.05.09		



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

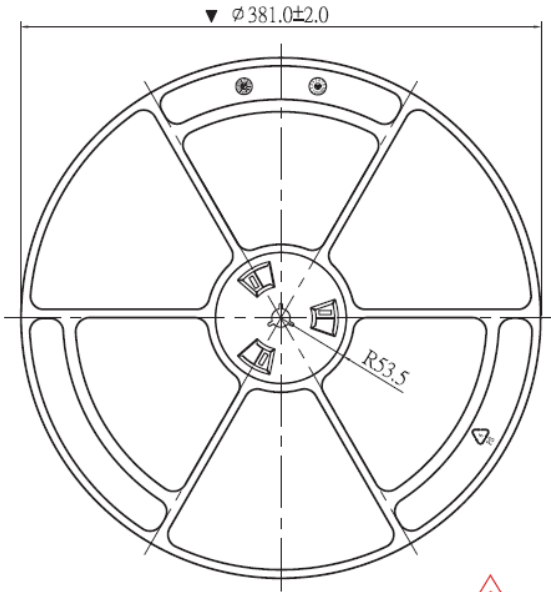
Width (mm)	Length (M)Min	Carrier width (mm)	Thickness ( $\mu\text{m}$ )
37.5±0.1	480	44.0	62±5

!   
 不得含有   
 WI-CQES-002   
 要求檢用之有機,有害物質

LIMITS UNLESS OTHERWISE NOTED

X <sub>s</sub> --	X <sub>s</sub> <sup>+</sup> --
.X --	.X <sup>+</sup> --
.XX --	.XX <sup>+</sup> --
.XXX --	.XXX <sup>+</sup> --

A4	UNIT	SCALE	SHEET	MODEL No.			
	MM	NON	1(1)	PART NAME	Reel Cover		
APPROVED	CHECKED	DESIGNED	PART No.	5253000001KD	REV	A1	
		Rita Huang	LITEON 光寶科技股份有限公司				
		2012.11.23	LITE-ON TECHNOLOGY CORP.				



Note:

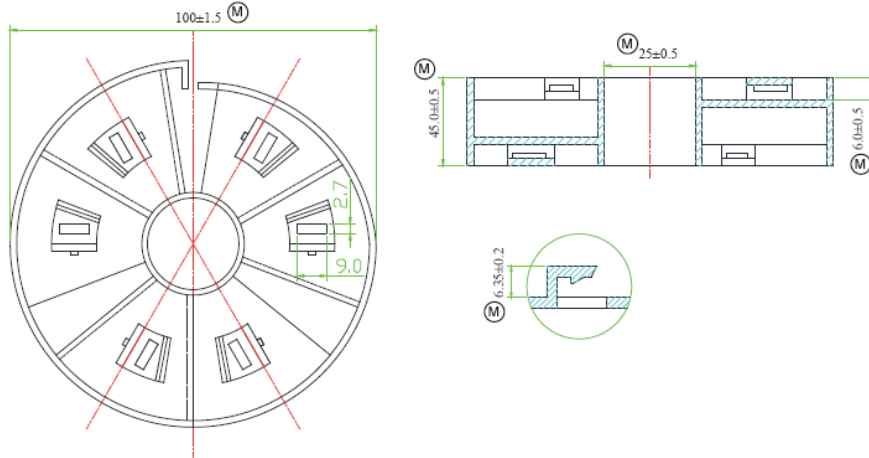
- 1.Material:HIPS
- 2.Color:Blue
- 3.Surface resistivity is  $1 \times 10^7 \sim 1 \times 10^{11} \Omega$
- 4.Surface friction voltage is less than 100 V
- 5.Size:15 inch

!   
 不得含有   
 WI-CQES-002   
 要求檢用之有機,有害物質

LIMITS UNLESS OTHERWISE NOTED

X <sub>s</sub> --	X <sub>s</sub> <sup>+</sup> --
.X --	.X <sup>+</sup> --
.XX --	.XX <sup>+</sup> --
.XXX --	.XXX <sup>+</sup> --

A4	UNIT	SCALE	SHEET	MODEL No.			
	MM	NON	1(1)	PART NAME	Reel Disc		
APPROVED	CHECKED	DESIGNED	PART No.	5250000001KD	REV	A1	
		Rita Huang	LITEON 光寶科技股份有限公司				
		2012.11.23	LITE-ON TECHNOLOGY CORP.				



Note:

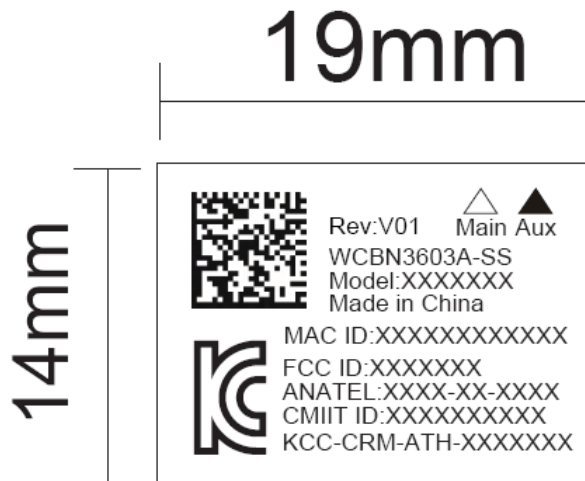
1. Material: HIPS
2. Color: Blue
3. Marked (M) is the critical dimension



LIMITS UNLESS OTHERWISE NOTED	
.X, ---	.X <sup>+</sup> ---
.X <sup>-</sup> ---	.XX <sup>+</sup> ---
.XX <sup>-</sup> ---	.XXX <sup>+</sup> ---

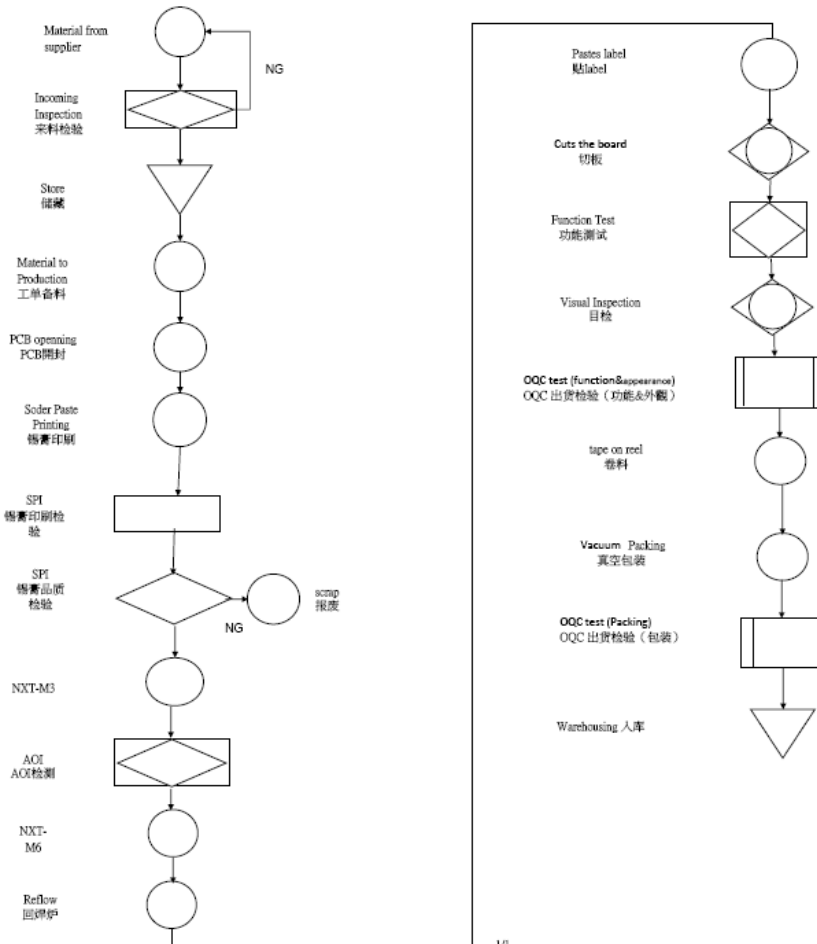
<b>A4</b>	UNIT	SCALE	SHEET	MODEL No.			
	MM	NON	1(1)	PART NAME	Reel Axes		
APPROVED	CHECKED	DESIGNED	PART No.	5251000001KD	REV	A1	
		Rita Huang 2012.11.23	<b>LITEON</b> 光寶科技股份有限公司 LITE-ON TECHNOLOGY CORP.				

### 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



**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 integrate this module.

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