

**LONGBEN** Long Ben Electronics Co., Ltd  
**Specification**

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**Dongguan Long Ben electronics Co.,Ltd**

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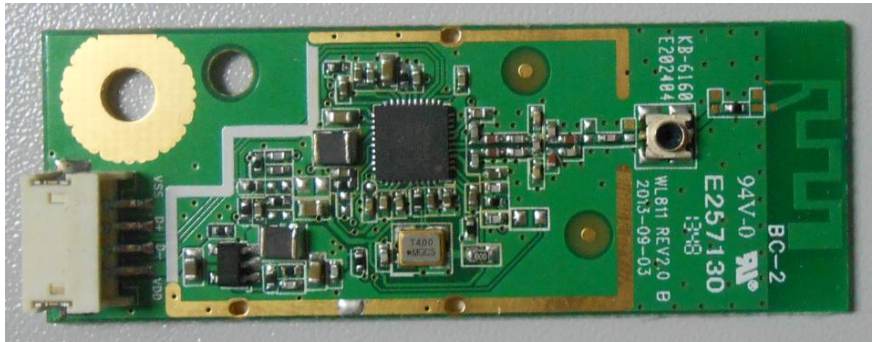
		Model : WL811	
Design	Zhiheng yao	Description: WIFI Module	
Verify		File NO. : RD2013072002	Version : 1.0
Approve		Release Date: 2013.7.20	Pagination :1/12

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## Long Ben Electronics Co., Ltd Specification



### 1. Brief Description:



WL811 is a WiFi module complies with the 802.11n standards and the transferring rate is up to 150Mbps--3X the traditional 11g wireless products. The WL811 also backwards complies with all 802.11b/g wireless equipment. It allows users to connect a device to a wireless network at 150Mbps. By adopting the advanced low power dissipation & economization design, the power consumption and RF radiation have cut down obviously. It also features advanced wireless encryption and easy installation.

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## 2. Electrical Specification:

Recommended operating rating					
<b>Element</b>		DC supply voltage			
<b>Sysmbol</b>		UV+			
<b>Min</b>		4.75			
<b>Typ</b>		5.0			
<b>Max</b>		5.25			
<b>Unit</b>		(V)			
DC Characteristics					
Symbol	Parameter	Min	Typ	Max	Unit
UV+	Supply voltage	4.75	5.0	5.25	(V)
	Tx Current(1M/14dBm)	--	190	255	(mA)
	Tx Current(6M/14dBm)	--	180	245	(mA)
	Tx Current(11M/14dBm)	--	175	230	(mA)
	Tx Current(54M/14dBm)	--	130	170	(mA)
	Tx Current(MCS0/14dBm/HT20)	--	185	245	(mA)
	Tx Current(MCS0/12dBm/HT40)	--	175	230	(mA)
	Tx Current(MCS7/14dBm/HT20)	--	130	170	(mA)
	Tx Current(MCS7/12dBm/HT40)	--	115	150	(mA)
	Rx Current	--	75	100	(mA)
ESD Information					
Mode	Level	Unit			
HBM	+/-2k	V			
MM	+/-200	V			
Environment condition					
Temperature	Operating Temperature: 0 deg.C ~ 55 deg.C				
	Storage Temperature: -40 deg.C ~ 80 deg.C				
Humidity	Operating Humidity: 20% ~ 90%				
	Storage Humidity: 20% ~ 90%				

**3. RF Specification**

<b>IEEE802.11b</b>				
<b>Items</b>	<b>Contents</b>			
Specification	IEEE802.11b			
Mode	DSSS/CCK			
Channel	CH1-CH11			
Date rate	1,2,5.5,11Mbps			
<b>TX Characteristics</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
1.Power Levels(Calibrated)				
1) Target Power@1Mbps	12	14	16	dBm
2) Target Power@2Mbps	12	14	16	dBm
3) Target Power@5.5Mbps	12	14	16	dBm
4) Target Power@11Mbps	12	14	16	dBm
2.Spectrum Mask @16dBm				
1)fc-33MHZ < f < fc-22MHZ	—	—	-50	dBr
2)fc-22MHZ < f < fc-11MHZ	—	—	-30	dBr
3)fc+11MHZ < f < fc+22MHZ	—	—	-30	dBr
4)fc+22MHZ < f < fc+33MHZ	0	—	-50	dBr
3.Frequency Error	-20	—	+20	ppm
4. Modulation Accuracy(EVM)@16dBm				
1)1Mbps	—		-10	dB
2)2Mbps	—		-10	dB
3)5.5Mbps	—		-10	dB
4)11Mbps	—		-10	dB
<b>RX Characteristics</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
5. Minimum Input Level Sensitivity				
1)1Mbps(FER≤8%)	—	-94	-91	dBm
2)2Mbps(FER≤8%)	—	-93	-90	dBm
3)5.5Mbps(FER≤8%)	—	-91	-88	dBm
4)11Mbps(FER≤8%)	—	-88	-85	dBm
6 Maximum Input Level(FER≤8%)	-10	-5	—	dBm

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IEEE802.11g				
Items	Contents			
Specification	IEEE802.11g			
Mode	OFDM			
Channel	CH1-CH11			
Date rate	6,9,12,18,24,36,48,54Mbps			
<b>TX Characteristics</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
1.Power Lereis(Calibrated)				
1) Target Power@6Mbps	10.5	12	13	dBm
2) Target Power@9Mbps	10.5	12	13	dBm
3) Target Power@12Mbps	10.5	12	13	dBm
4) Target Power@18Mbps	10.5	12	13	dBm
5) Target Power@24Mbps	10.5	12	13	dBm
6) Target Power@36Mbps	10.5	12	13	dBm
7) Target Power@48Mbps	10.5	12	13	dBm
8) Target Power@54Mbps	10.5	12	13	dBm
2.Spectrum Mask @14dBm				
1) ar fc +/-11MHz	—	—	-20	dBr
2) ar fc +/-20MHz	—	—	-28	dBr
3) ar fc > +/-30MHz	—	—	-40	dBr
3 Modulation Accuracy(EVM)@14dBm				
1)6Mbps	—	—	-5	dB
2)9Mbps	—	—	-8	dB
3)12Mbps	—	—	-10	dB
4)18Mbps	—	—	-13	dB
5)24Mbps	—	—	-16	dB
6)36Mbps	—	—	-19	dB
7)48Mbps	—	—	-22	dB
8)54Mbps	—	-28	-25	dB
4 Frequency Error	-20	—	+20	ppm
<b>RX Characteristics</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
5 Minimun Input Levl Sensitivity				
1)6Mbps(PER < 10%)	—	-90	-87	dBm
2)9Mbps(PER < 10%)	—	-89	-86	dBm
3)12Mbps(PER < 10%)	—	-87	-84	dBm
4)18Mbps(PER < 10%)	—	-85	-82	dBm
5)24Mbps(PER < 10%)	—	-82	-79	dBm

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6)36Mbps(PER < 10%)	—	-79	-76	dBm
7)48Mbps(PER < 10%)	—	-75	-72	dBm
8)54Mbps(PER < 10%)	—	-74	-69	dBm
6 Maximum Input Level(PER < 10%)	-20	-15	—	dBm

IEEE802.11n HT20				
Items	Contents			
Specification	IEEE802.11n HT20			
Mode	OFDM			
Channel	CH1 to CH11			
Date rate(MCS index)	MCS0/1/2/3/4/5/6/7			
TX Characteristics	Min.	Typ.	Max.	Unit
1. Power Levels (Calibrated)				
1) Target Power@MCS0	10.5	12	13	dBm
2) Target Power@MCS1	10.5	12	13	dBm
3) Target Power@MCS2	10.5	12	13	dBm
4) Target Power@MCS3	10.5	12	13	dBm
5) Target Power@MCS4	10.5	12	13	dBm
6) Target Power@MCS5	10.5	12	13	dBm
7) Target Power@MCS6	10.5	12	13	dBm
8) Target Power@MCS7	10.5	12	13	dBm
2. Spectrum Mask @ 14dBm				
1) at fc +/- 11MHz	-	-	-20	dB
2) at fc +/- 20MHz	-	-	-28	dB
3) at fc +/-30MHz	-	-	-45	dB
3. Modulation Accuracy(EVM)@14dBm				
1) MCS0	-	-	-5	dB
2) MCS1	-	-	-10	dB
3) MCS2	-	-	-13	dB
4) MCS3	-	-	-16	dB
5) MCS4	-	-	-19	dB
6) MCS5	-	-	-22	dB
7) MCS6	-	-	-25	dB
8) MCS7	-	-	-28	dB
4. Frequency Error	-20	-	20	ppm
RX Characteristics	Min.	Typ.	Max.	Unit
5. Minimum Input Level Sensitivity				
1) MCS0 (PER< 10%)	-	-89	-86	dBm
2) MCS1 (PER< 10%)	-	-87	-84	dBm
3) MCS2 (PER< 10%)	-	-85	-82	dBm
4) MCS3 (PER< 10%)	-	-82	-79	dBm
5) MCS4 (PER< 10%)	-	-79	-76	dBm
6) MCS5 (PER< 10%)	-	-75	-72	dBm
7) MCS6 (PER< 10%)	-	-73	-70	dBm
8) MCS7 (PER< 10%)	-	-72	-69	dBm
6. Maximum Input Level (PER < 10%)	-20	-15	-	dBm

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IEEE802.11n HT40				
Items	Contents			
Specification	IEEE802.11n HT40			
Mode	OFDM			
Channel	CH3 to CH9			
Date rate(MCS index)	MCS0/1/2/3/4/5/6/7			
TX Characteristics	Min.	Typ.	Max.	Unit
1. Power Levels (Calibrated) <sup>(*)</sup>				
1) Target Power@MCS0	7.5	9	10.5	dBm
2) Target Power@MCS1	7.5	9	10.5	dBm
3) Target Power@MCS2	7.5	9	10.5	dBm
4) Target Power@MCS3	7.5	9	10.5	dBm
5) Target Power@MCS4	7.5	9	10.5	dBm
6) Target Power@MCS5	7.5	9	10.5	dBm
7) Target Power@MCS6	7.5	9	10.5	dBm
8) Target Power@MCS7	7.5	9	10.5	dBm
2. Spectrum Mask @ 12dBm				
1) at fc +/- 21MHz	-	-	-20	dBr
2) at fc +/- 40MHz	-	-	-28	dBr
3) at fc +/- 60MHz	-	-	-45	dBr
3. Modulation Accuracy(EVM)@12dBm				
1) MCS0	-	-8	-5	dB
2) MCS1	-	-13	-10	dB
3) MCS2	-	-16	-13	dB
4) MCS3	-	-19	-16	dB
5) MCS4	-	-21	-19	dB
6) MCS5	-	-25	-22	dB
7) MCS6	-	-28	-25	dB
8) MCS7	-	-31(3%)	-28	dB
4. Frequency Error	-20	-	+20	ppm
RX Characteristics	Min.	Typ.	Max.	Unit
5. Minimum Input Level Sensitivity				
1) MCS0 (PER< 10%)	-	-87	-84	dBm
2) MCS1 (PER< 10%)	-	-84	-81	dBm
3) MCS2 (PER< 10%)	-	-82	-79	dBm
4) MCS3 (PER< 10%)	-	-79	-76	dBm
5) MCS4 (PER< 10%)	-	-75	-72	dBm
6) MCS5 (PER< 10%)	-	-72	-69	dBm
7) MCS6 (PER< 10%)	-	-70	-67	dBm
8) MCS7 (PER< 10%)	-	-68	-65	dBm
6. Maximum Input Level (PER < 10%)	-20	-15	-	dBm



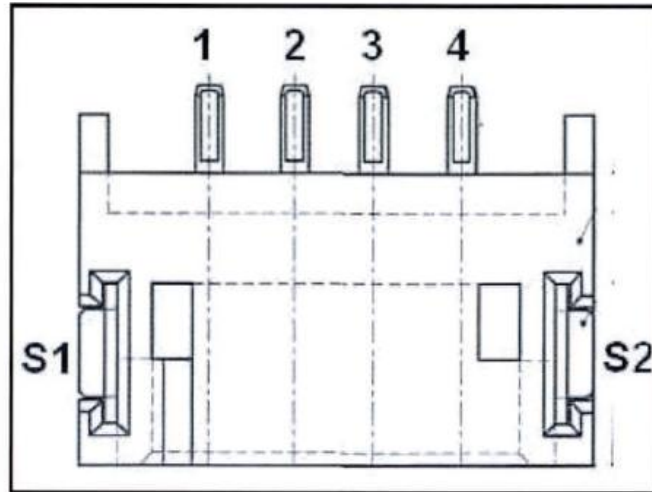
Hardware Features	
Chipset	MT7601UNM
Interface	1*4PIN
ANTENNA TYPE	Omnidirectional On-Board antenna/I-pex connector
ANTENNA GAIN	1.61dBi
Power Dissipation	1.5W(Max)
Dimensions (L x W x H)	55*20*4.9(mm)
Wireless Features	
WIRELESS STANDARDS	IEEE 802.11n, 802.11g, 802.11b
FREQUENCYRANGE	2.400-2.4835GHz
Operation Mode	Infrastructure, Ad-Hoc, Soft AP, WiFi-Direct
Modulation	802.11b: DSSS / BPSK / QPSK / CCK
	802.11g: OFDM / DSSS / BPSK / QPSK / CCK
	802.11n: OFDM / DSSS / BPSK / QPSK / CCK
WIRELESS SECURITY	Support 64/128 bit WEP, WPA-PSK/WPA2-PSK,
Radio Data Rate	802.11b : 11Mbps(Max) 802.11g : 54Mbps(Max) 802.11n : 150Mbps(Max)
Maximum Wireless Transmitting Distance(meter)	100m(Indoor),50m(Outdoor)
Software Feature	
Security	64/128bit WEP Encryption
	WPA-PSK/WPA2-PSK、WPA-Mixed
	Access Control List
Normal Function	Soft AP
	WMM
	WMM PS
	WiFi-Direct
	Ad-Hoc
	Infrastructure
	Statistics
System Tool	TX power
	Idle time
	System information
	Profile Management
	Client List
Others	

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<b>Customer</b>	
<b>Certification</b>	Customer Defined



#### 4. PIN description



Pin Number	Symbol Name	Status	Pin definition
1	GND		Ground
2	DP	I/O	USB positive data
3	DM	I/O	USB negative data
4	UV+	P	USB +5V power input
S1	GND		Ground
S2	GND		Ground

#### FCC&IC modular warnings

#### 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.

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- 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.

### **FCC Radiation Exposure Statement:**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter module must not be co-located or operating in conjunction with any other antenna or transmitter.

This End equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

### **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**

The final end product must be labeled in a visible area with the following:

“Contains FCC ID:2AANL-WL811”.

### **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.

## **Canada Statement**

This device complies with Industry Canada licence-exempt RSS standard(s).

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

### **Caution Exposure:**

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## **Specification**

This device meets the exemption from the routine evaluation limits in section 2.5 of RSS102 and users can obtain Canadian information on RF exposure and compliance.

Le dispositif répond à l'exemption des limites d'évaluation de routine dans la section 2.5 de RSS102 et les utilisateurs peuvent obtenir des renseignements canadiens sur l'exposition aux RF et le respect.

**The final end product must be labelled in a visible area with the following:**

The Industry Canada certification label of a module shall be clearly visible at all times when installed in the host device, otherwise the host device must be labelled to display the Industry Canada certification number of the module, preceded by the words "Contains transmitter module", or the word "Contains", or similar wording expressing the same meaning, as follows:

"Contains transmitter module IC: 10616A-WL811"

This End equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

Cet équipement devrait être installé et actionné avec une distance minimum de 20 centimètres entre le radiateur et votre corps.

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