

# APPROVAL SHEET

Customer: \_\_\_\_\_

Customer P/N: \_\_\_\_\_

Description: USB WIFI +Bluetooth dongle

Part No.: 802.11N 150M and Bluetooth 2.1+EDR

Customer Approval	Checked By	Issued By

# USB WIFI +Bluetooth dongle

## A .WIFI PART

### 1. Introduction

The RT5370 is a cost-effective, highly integrated USB Wi-Fi single chip containing an 802.11n MAC and baseband, a 2.4 GHz RF, PA, LNA and T/R switch on a single die. It supports a 150 Mbps PHY data rate and fully complies with 802.11b/g/n specifications, providing feature-rich wireless connectivity at high standards, and delivering reliable throughput from an extended distance. Optimized RF architecture and baseband algorithms provide superb performance with low power consumption.

### Product Features

- **1T1R 2.4 GHz with 150 Mbps PHY data rate**
- **USB2.0 interface**
- **CMOS single chip with RF (PA, LNA, T/R SW, and diversity SW), Baseband, and MAC integration**
- **QoS: WMM & WMM-PS support**
- **Multiple BSSID support**
- **Uses digital CMOS technology exclusively, minimizing power consumption and cost while maximizing reliability**
- **Extended tuning range for worldwide use Dynamic Frequency Selection/Transmit Power Control (DFS/TPC) for international operation**
- **Cisco CCX 5.0 support**
- **Connect without wires at speeds up to 150Mbps**

- **Based on IEEE 802.11 b/g/n DRAFT standard wireless protocol-Wi-Fi certified.**
- **Compatible with the increasing number of Public Access facilities.**
  - **Low Power usage with Advanced Power Management**
- **Maximum likelihood Decoding support**
- **Security: WEP/TKIP/AES/WPA/WPA2/WAPI**

## **Application**

- Personal computer
- Laptop computer
- TV over IP (IPTV)
- Voice over IP (VoIP)
- Higher data rate wireless broadband access
- Network and online gaming
- Audio and video streaming and transfer
- PC file and application sharing

### 3. General Specifications

<b>Model Name</b>	
<b>Product Description</b>	<b>USB 2.0 802.11N Wireless 150M</b>
<b>WLAN Standard</b>	<b>IEEE 802.11 b/g/n ,Wi-Fi compliant</b>
<b>Host Interface</b>	<b>USB 2.0</b>
<b>Major Chipset</b>	<b>Ralink RT5370L</b>
<b>Operating Conditions</b>	
<b>Voltage</b>	<b>USB 5V</b>
<b>Temperature</b>	<b>-10~70℃</b>
<b>Humidity Non-Operating</b>	<b>90% RH non-condensing (12 months among 0~40℃ )</b>
<b>Electrical Specification</b>	
<b>Frequency Range</b>	<b>2.4~2.4835GHZ</b>
<b>Spread Spectrum</b>	<b>DSSS</b>
<b>Transmission Distance</b>	<b>300m(The transmission speed may vary according to the environment)</b>
<b>Data Rate</b>	<b>11b:1/2/5.5/11Mbps</b> <b>11g:6/9/12/24/36/48/54Mbps</b>
<b>Transmit power</b>	<b>15dbm</b>
<b>Data security</b>	<b>64/128/152bitWEP,WPA/WPA2,WPA-PSK/WPA2-PSK(TKIP /AES)</b>
<b>Receiver Sensitivity</b>	<b>150M:-68dbm@10%PER</b>
	<b>135M: -68dbm@10%PER</b>
	<b>54M:-68dbm@10%PER</b>
	<b>11M:-83dbm@10%PER</b>
	<b>6M:-86dbm@10%PER</b>
	<b>1M:-90dbm@10%PER</b>
<b>Environment</b>	<b>Storage Temperature:-40~70℃(-40°F ~158°F)</b>
	<b>Relative humidity:10%-90%</b>

	Non-condensing
	Storage Humidity:5%~95%
	Non-condensing
Modulation Type	OFDM/CCK/16-QAM/64-QAM
Operating System	Window XP,XP-64 Windows7, 32/64,WIN 2000,Vista

## 4. Power Consumption

Mode	Status	Current (mA) @5V	Note
QA	Idle	89	
	RX	117	54Mbps,CH1
		117	MCS15, 20MHz,CH1
		137	MCS15, 40 MHz,CH3
	TX	173	11Mbps @ 17dBm,CH1
		155	54Mbps @ 13.9dBm, 11g,CH1
		155	MCS7, 20MHz,14dB,CH1
		166	MCS7, 40MHz,CH7
OS	LINK(S0)	102(20M)/120(40M)	
	RX	113	20MHz
		144	40 MHz
	TX	148	20MHz
		152	40 MHz
	SUSPEND	2	
	UNCONFIGURED	59	
	POWER SAVE MODE	52	DTIM=100ms
47		DTIM=300ms	
RADIO OFF	52		

## B. BLUETOOTH PART

### FEATURES

- \*Bluetooth 2.1 compliant with enhanced data rate support
- \*Class 2 capable with built-in PA
- \*Programmable output power control meets Class1, Class2 or Class3 requirements
- \*Supports H4DS and WCS
- \*Use supply voltages up to 5.5V
- \*Internal OR gate TCXO control
- \*Fractional-N synthesizer supports frequency references from 12 MHz to 40 MHz
- \*Automatic frequency detection for standard crystal and TCXO values
- \*Lower power consumption
- \*Supports mobile and PC applications without external memory

## 5. SPECIFICATIONS

### 5.1 General Specification

ITEMS	SPECIFICATION
Supply Voltage	USB Interface Level VDD: 5V+/-0.1V
Carrier Frequency	2402MHz to 2480MHz
Modulation Method	GFSK, 1Mbps, 0.5BT Gaussian
Data Rate (MAX)	1M Asynchronous:723.2/57.6kbps Synchronous:433.9kbps
	2M Asynchronous:1448.4/115.2kbps Synchronous:864.7kbps
	3M Asynchronous:2178.1/177.1kbps ynchronous:1306.9kbps
Transmission Power	-.4dBm to +2 dBm; Power control 6 stage
Hopping	1600hops/sec, 1MHz channel space
Receiving Signal Range	-.88dBm to -20 dBm

## 5.2. Electrical Characteristics

### 5.2.1 Receiver RF Specifications

ITEMS	Mode and Conditions	Minimum	Typical <sup>f</sup>	Maximum	Unit
Frequency range	-	2042	-	2480	<b>MHz</b>
	GFSK, 0.1%BER, 1 Mbps	-	-86	-84	dBm
RX sensitivity <sup>c</sup>	pi/4-DQPSK, 0.01%BER 2Mbps	-	-86	-84	dBm
	8-DPSK, 0.01%BER, 3Mbps	-	-82	-80	dBm
Input IP3	-	-16	-	-	dBm
Maximum input	-	-	-	-10	dBm
<b>Interference Performance</b>					
C/I cochannel	GFSK, 0.1%BER	-	-	2	dBm
C/I 1 MHz adjacent channel	GFSK, 0.1%BER	-	-	0	dBm
C/I 2 MHz adjacent channel	GFSK, 0.1%BER	-	-	-30	dBm
C/I 3 MHz adjacent channel	GFSK, 0.1%BER	-	-	-40	dBm
C/I Image channel	GFSK, 0.1%BER	-	-	-9	dBm
C/I 1 MHz adjacent to image channel	GFSK, 0.1%BER	-	-	-20	dBm
C/I cochannel	pi/4-DQPSK, 0.1%BER	-	-	13	dBm
C/I 1 MHz adjacent channel	pi/4-DQPSK, 0.1%BER	-	-	0	dBm
C/I 2 MHz adjacent channel	pi/4-DQPSK, 0.1%BER	-	-	-30	dBm
C/I 3 MHz adjacent channel	8-DPSK, 0.1%BER	-	-	-40	dBm
C/I Image channel	pi/4-DQPSK, 0.1%BER	-	-	-7	dBm
C/I 1 MHz adjacent to image channel	pi/4-DQPSK, 0.1%BER	-	-	-20	dBm
C/I cochannel	8-DPSK, 0.1%BER	-	-	21	dBm
C/I 1 MHz adjacent channel	8-DPSK, 0.1%BER	-	-	5	dBm
C/I 2 MHz adjacent channel	8-DPSK, 0.1%BER	-	-	-25	dBm
C/I 3 MHz adjacent channel	8-DPSK, 0.1%BER	-	-	-33	dBm
C/I Image channel	8-DPSK, 0.1%BER	-	-	0	dBm
C/I 1 MHz adjacent to image channel	8-DPSK, 0.1%BER	-	-	-13	dBm
<b>Out-of-Band Blocking Performance (CW)</b>					
30 MHz to 2000 MHz,	0.1% BER	-	<b>-10</b>	-	dBm
2000 MHz to 2399 MHz	0.1% BER	-	<b>-27</b>	-	dBm
2498 MHz to 3000 MHz	0.1% BER	-	<b>-27</b>	-	dBm
3000 MHz to 12.75 GHz	0.1% BER	-	<b>-10</b>	-	dBm

## 5.2.2 Transmitter RF Specifications

ITEMS	Mode and Conditions	Minimum	Typicalf	Maximum	Unit
Frequency range	-	2042	-	2480	<b>MHz</b>
Output power - Class 2	-	-2	1	4	dBm
Output power - Class 1, GFSK	-	-	TBD	NC	dBm
Output power - Class 1, EDR	-	-	TBD	NC	dBm

### In-Band Spurious Emission

:+/-500 kHz	-	-	-	-20	dBc
1.0 MHz <  M - N  < 1.5 MHz (EDR only)	-	-	-	-26	dBc
1.5 MHz <  M - N  < 2.5 MHz (EDR only)	-	-	-	-20	dBc
M - N  ≥ 2.5 MHz (EDR only)	-	-	-	-40	dBc

### Out-of-Band Spurious Emission

30 MHz to 1 GHz	-	-	<b>-80</b>	-36	dBm
1 GHz to 12.75 GHz	-	-	-	-30	dBm
1.8 GHz to 1.9 GHz	-	-	<b>-80</b>	-47	dBm
5.15 GHz to 5.3 GHz	-	-	<b>-90</b>	-36	dBm

### Frequency Drift

DH1 packet	-	-	±20	±25	kHz
DH3 packet	-	-	±20	±40	kHz
DH5 packet	-	-	±20	±40	kHz
Drift rate	-	-	10	20	kHz/50 μs