

# Product Specification

**XW704E**

**WLAN Half Mini-Card Dual Ant**

**Version : 1.1**

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## Release History

DATE	REV	Description of Change
2010/05/24	0.1	Initial release
2010/06/18	1.0	Official release
2011/01/28	1.1	Adding "Power Consumption" and "Mechanical Dimensions". Modifying description of the "Connector Pin-out Definitions".

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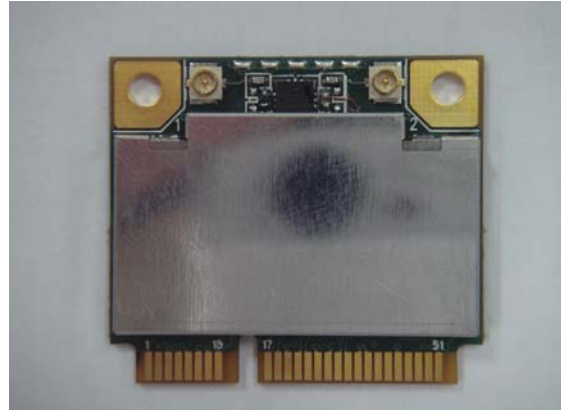
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## XW704E

### WLAN Half Mini-Card Dual Ant

#### 1 Introduction

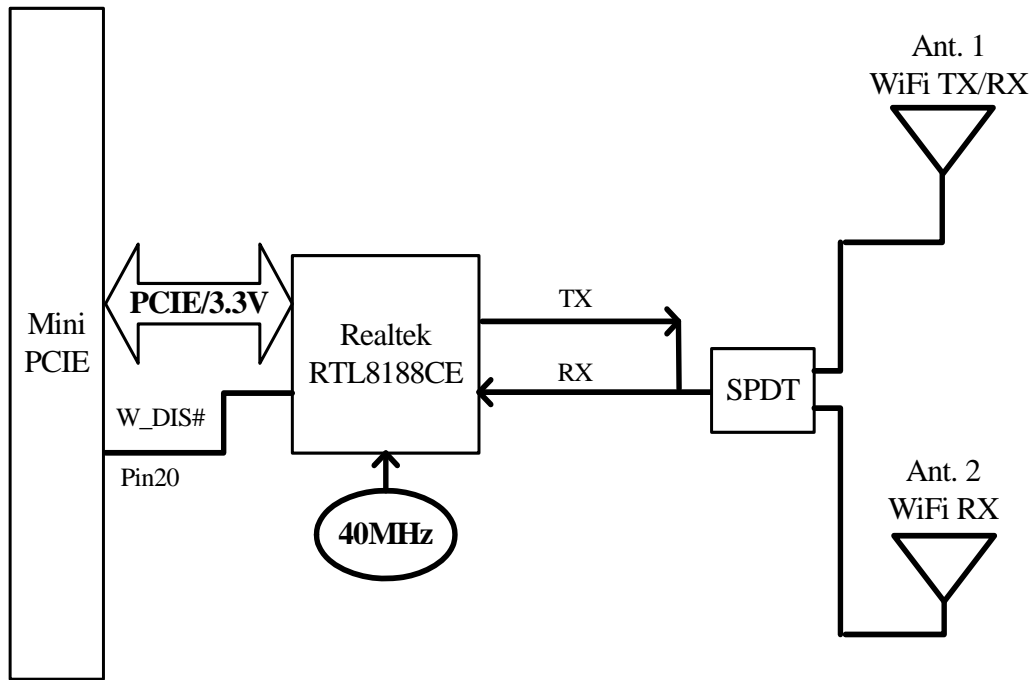
**XW704E** integrates Realtek RTL8188CE single-chip IEEE802.11b/g/n 1T1R solution with PCIe interface. Backward compatible with 802.11b/g devices while operating at 802.11n data rate. It also supports hardware antenna diversity function.



#### 2 WLAN Features

- IEEE 802.11n MIMO OFDM
  - 1 transmit and 1 receive paths (1T1R).
  - 20MHz and 40MHz bandwidth transmission.
  - Short Guard Interval (400ns).
- 1x1 MIMO technology for extended reception robustness and exceptional throughput
- Maximum PHY data rate up to 72.2Mbps using 20MHz bandwidth, 150Mbps using 40MHz bandwidth
- Compatible with 802.11n specification
- Support for Bluetooth coexistence.
- Support 802.11e/h/k/l, CCX

### 3 Block Diagram



## 4 General Specifications

<b>Module Name</b>					
XW704E					
<b>WLAN</b>					
<b>Product Specification</b>					
WLAN Standard	IEEE 802.11b/g/n, 1T1R				
Host interface	PCIE				
Major Chipset	Realtek RTL8188CE				
DID	8176	PCIE Device ID			
VID	10EC	PCIE Vender ID.			
SDID	8176	PCIE Subsystem ID.			
SVID	10EC	PCIE Subsystem Vender ID.			
<b>Dimensions</b>					
		Minimum	Typical	Maximum	Unit
	Length		26.8		mm
	Width		30		mm
	Height		TBD		mm
	Weight		TBD		g
Antenna Connector	Dual antenna. Con1 is for T/RX and con2 is for RX diversity.				
<b>Operating Condition</b>					
		Minimum	Typical	Maximum	Unit
Voltage	DC	3.0	3.3	3.6	V
Temperature		0		70	°C
Storage temperature		0		70	°C
Humidity Non-Operating		5		80	%
<b>Electrical Specification</b>					
Frequency Range	2400 – 2483.5MHz				
Modulation	BPSK, QPSK, 16QAM, 64QAM, DBPSK, DQPSK, and CCK				
<b>Output power</b>					
		Minimum	Typical	Maximum	Unit
802.11b Mode	11MHz	14.5	16	17	dBm
802.11g Mode	54MHz	12.5	14	15	dBm
802.11n Mode	HT20-MCS7	11.5	13	14	dBm
802.11n Mode	HT40-MCS7	11.5	13	14	dBm

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<b>Receiver Sensitivity</b>					
		Minimum	Typical	Maximum	Unit
802.11b Mode	11Mbps		-83		dBm
802.11g Mode	54Mbps		-73		dBm
802.11n Mode	HT20 MCS7		-68		dBm
802.11n Mode	HT40 MCS7		-66		dBm
<b>Data Rate</b>					
		Minimum	Typical	Maximum	Unit
802.11b CCK Mode		11, 5.5, 2, 1			Mbps
802.11g OFDM Mode		54, 48, 36, 24, 18, 12, 9, 6			Mbps
802.11n HT20 Mode	800ns GI	65, 58.5, 52, 39, 26, 19.5, 13, 6.5			Mbps
802.11n HT20 Mode	400ns GI	72.2, 65, 57.8, 43.3, 28.9, 21.7, 14.4, 7.2			Mbps
802.11n HT40 Mode	800ns GI	135, 121.5, 108, 81, 54, 40.5, 27, 13.5			Mbps
802.11n HT40 Mode	400ns GI	150, 135, 120, 90, 60, 45, 30, 15			Mbps
<b>Security</b>					
WEP, TKIP, and AES hardware encryption					

<b>Absolute Maximum Rating</b>			
■	Maximum I/O supply voltage	+3.6	V
■	Maximum WLAN RF input level (reference to 50Ohm)	0	dBm

## 5 Power Consumption

### Test condition

OS : Windows XP

Channel 6 : 2437MHz

Standard : IEEE802.11b,g,n

Input voltage for whole circuit : 3.3V

TX uses continuous mode

### Test tool

MP\_Kit\_RTL11n\_SingleChip\_9xC\_PCIE\_v012\_20100505

### Test result : Continuous TX/RX

Mode	Standard	Current (mA)		Power (mWatt)	
		027 (Dual)	028 (Dual)	027 (Dual)	028 (Dual)
TX	1M	306	318	1009.8	1049.4
	11M	304	317	1003.2	1046.1
	6M	289	274	953.7	904.2
	54M	288	298	950.4	983.4
	HT20-MCS0	279	289	920.7	953.7
	HT20-MCS7	279	290	920.7	957.0
	HT40-MCS0	281	290	927.3	957.0
	HT40-MCS7	281	289	927.3	953.7
	RX	1M	147	145	485.1
11M		147	146	485.1	481.8
6M		143	144	471.9	475.2
54M		144	144	475.2	475.2
HT20-MCS0		143	144	471.9	475.2
HT20-MCS7		144	144	475.2	475.2
HT40-MCS0		149	150	491.7	495.0
HT40-MCS7		149	151	491.7	498.3



**Test condition**

OS : Windows XP

Channel 6 : 2437MHz

Standard : IEEE802.11b,g,n

RF output connects with AP (D-Link DIR-635, 2T3R)

Input voltage for whole circuit : 3.3V

Throughput test mode

**Test driver**

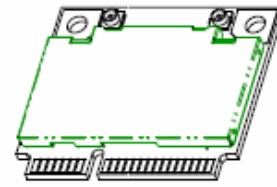
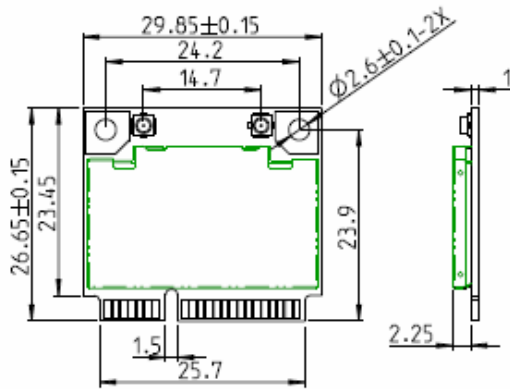
Realtek 2010/5/18 1003.0.518.2010

**Test result : Throughput test**

Mode	Standard	Current (mA)		Power (mWatt)	
		027 (Dual)	028 (Dual)	027 (Dual)	028 (Dual)
TX	54M	183	185	603.9	610.5
	HT20-MCS7	196	198	646.8	653.4
	HT40-MCS7	191	198	630.3	653.4
RX	54M	148	153	488.4	504.9
	HT20-MCS7	148	148	488.4	488.4
	HT40-MCS7	143	158	471.9	521.4



## 6 Mechanical Dimensions



Unit:mm

## 7 Connector Pin-out Definitions

Pin	Definition	Type	Description
1	WAKE#	O	Request the system return from a sleep state. Low active
2	3.3V	P	3.3V power supply.
3	COEX1		WL_ACT
4	GND	P	Ground.
5	COEX2		BT_PRI
6	NC		No connect.
7	CLK_REQ#	I/O	Request clock from host
8	NC		No connect.
9	GND	P	Ground.
10	NC		No connect.
11	REFCLK-	I	REFCLK-
12	NC		No connect.
13	REFCLK+	I	REFCLK+
14	NC		No connect.
15	GND	P	Ground.
16	NC		No connect.
17	NC		No connect.
18	GND	P	Ground.
19	NC		No connect.
20	W_DIS#	I	Low disable WLAN. High enable WLAN
21	GND	P	Ground.
22	PERST	O	Reset signal from PCIe slot
23	PERn0	I/O	PCIe RX-
24	NC		No connect.
25	PERp0	I/O	PCIe RX+
26	GND	P	Ground.
27	GND	P	Ground.
28	NC		No connect.
29	GND	P	Ground.
30	NC		No connect.

Pin	Definition	Type	Description
31	PETn0	I/O	PCIe TX-
32	NC		No connect.
33	PETp0	I/O	PCIe TX+
34	GND	P	Ground.
35	GND	P	Ground.
36	HSDM	I/O	USB2.0 differential signal DM
37	GND	P	Ground.
38	HSDP	I/O	USB2.0 differential signal DP
39	NC		No connect.
40	NC		No connect.
41	NC		No connect.
42	NC		No connect.
43	GND	P	Ground.
44	LED_WLAN#	O	Driving LED when wireless is active. High active.
45	NC		No connect.
46	NC		No connect.
47	NC		No connect.
48	+1.5V	P	1.5VIN is for option, it uses a 0 ohm to connect with 1.5V power
49	NC		No connect.
50	GND	P	Ground.
51	NC		No connect.
52	3.3V	P	3.3V power supply.

P: Power/Ground; I: Input; O: Output.

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