

EWM-W190H02E

Product Approval Sheet

Customer Part Number	Advantech
Part Number	R9701890026
Product Number	EWM-W190H02E
Description	802.11ac/a/b/g/n 2T2R Industrial-graded Wi-Fi / Bluetooth 4.2 Combo Half mini PCIe Module
DOC NO	OEM-1905001

Ver. 1.0

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1. Product Introduction

Standard	IEEE802.11ac/a/b/g/n, Bluetooth V4.2,V4.1,V4.0 LE, V3.0+HS, V2.1+EDR
Chipset solution	QCA6174A-5
Radio stream [Note1]	2T2R (Support WiFi / BT)
Antenna Type / con.	2xIPEX MHF1 connectors (ANT1 for WIFI+BT, ANT2 for WIFI)
Bus Interface	WLAN: Mini PCI Express Bluetooth: USB
Form Factor	Half Mini PCIe
Data Rate	WiFi: 802.11a: 54, 48, 36, 24, 18, 12, 9, 6 Mbps 802.11b: 11, 5.5, 2, 1 Mbps; 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps 802.11n: MCS 0 to 15 for HT20MHz MCS 0 to 15 for HT40MHz 802.11ac: MCS 0 to 9 for VHT20MHz MCS 0 to 9 for VHT40MHz MCS 0 to 9 for VHT80MHz BT: 1 Mbps, 2Mbps and Up to 3Mbps EDR
Spreading/Modulation Techniques	WiFi: 802.11a : OFDM /64-QAM,16-QAM, QPSK, BPSK 802.11b : DQPSK, DBPSK, CCK 802.11 g/n : OFDM /64-QAM,16-QAM, QPSK, BPSK 802.11n : OFDM /64-QAM,16-QAM, QPSK, BPSK 802.11ac : OFDM /256-QAM BT: FHSS, GFSK, DPSK, DQPSK
Frequency Range [Note2]	WiFi: 11b/g/n: 2.412GHz ~ 2.4835GHz 11ac/a/n: 5.15GHz ~ 5.845GHz BT: 2.402GHz ~ 2.480 GHz
Transmit Output Power (Tolerance: +/-2dBm)	WiFi: 802.11a: 13 dBm@54Mbps 802.11b: 15 dBm@11Mbps

	<p>802.11g: 15 dBm@54Mbps 802.11gn HT20: 13dBm@MCS7 802.11gn HT40: 13dBm@MCS7 802.11an HT20: 12.5dBm@MCS7 802.11an HT40: 12.5dBm@MCS7 802.11ac VHT80: 10dBm@MCS9</p> <p>BT: (Class 1 Device) $+3 \leq \text{Output Power} \leq +7\text{dBm}$</p>
Receiver Sensitivity	<p>WiFi:</p> <p>802.11a: $\leq -65\text{dBm@54Mbps}$ 802.11b: $\leq -91\text{dBm@11Mbps}$ 802.11g: $\leq -75\text{dBm@54Mbps}$ 802.11gn HT20: $\leq -71\text{dBm@MCS7}$ 802.11gn HT40: $\leq -69\text{dBm@MCS7}$ 802.11an HT20: $\leq -74\text{dBm@MCS7}$ 802.11an HT40: $\leq -71\text{dBm@MCS7}$ 802.11ac VHT80: $\leq -63\text{dBm@MCS9}$</p> <p>BT: $< 0.1\% \text{ BER at } -83\text{dBm}$</p>
Operating Voltage	DC 3.3V
Power Consumption	<p>TX Mode: 610 mA (Max.) RX Mode: 285 mA (Max.)</p>
Temperature Range	$-40^{\circ}\sim+85^{\circ}\text{C}$ (Operating), $-40^{\circ}\sim+85^{\circ}\text{C}$ (Storing) [Note3]
Humidity (non-condensing)	10~95%(Operating), 10~95 % (Storing) [Note3]
Security	64/128-bits WEP, WPA, WPA2, 802.1x
OS supported	<p>Windows 7/8.1/10 Linux (Open Source), Recommend Kernel v4.0+</p>

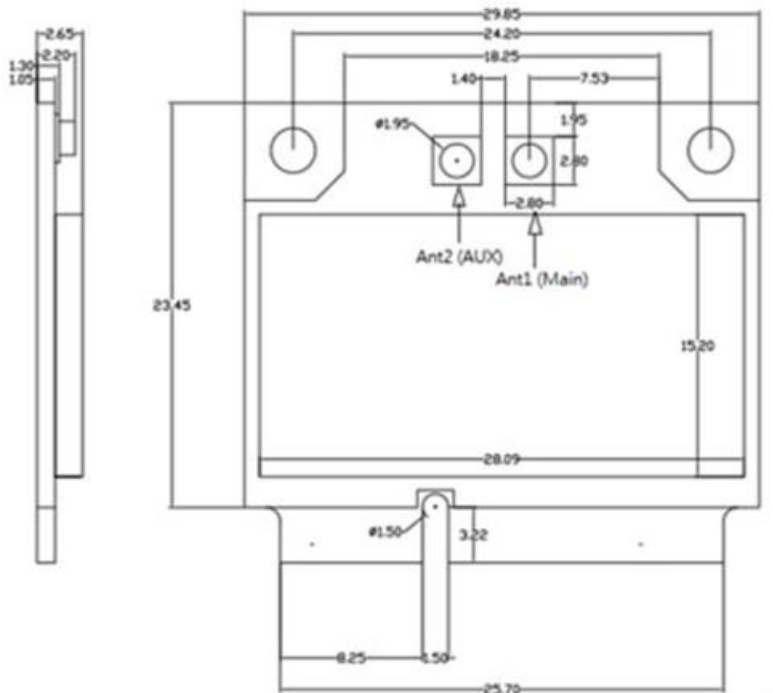
Note:

1. For Radio stream with diversity or MIMO design, all RF connectors on the module must be fitting antennas in order to guarantee the module performance.
2. The frequency range is subject to local regulations.
3. The storing condition is only for product functionality, no included for parts appearance.

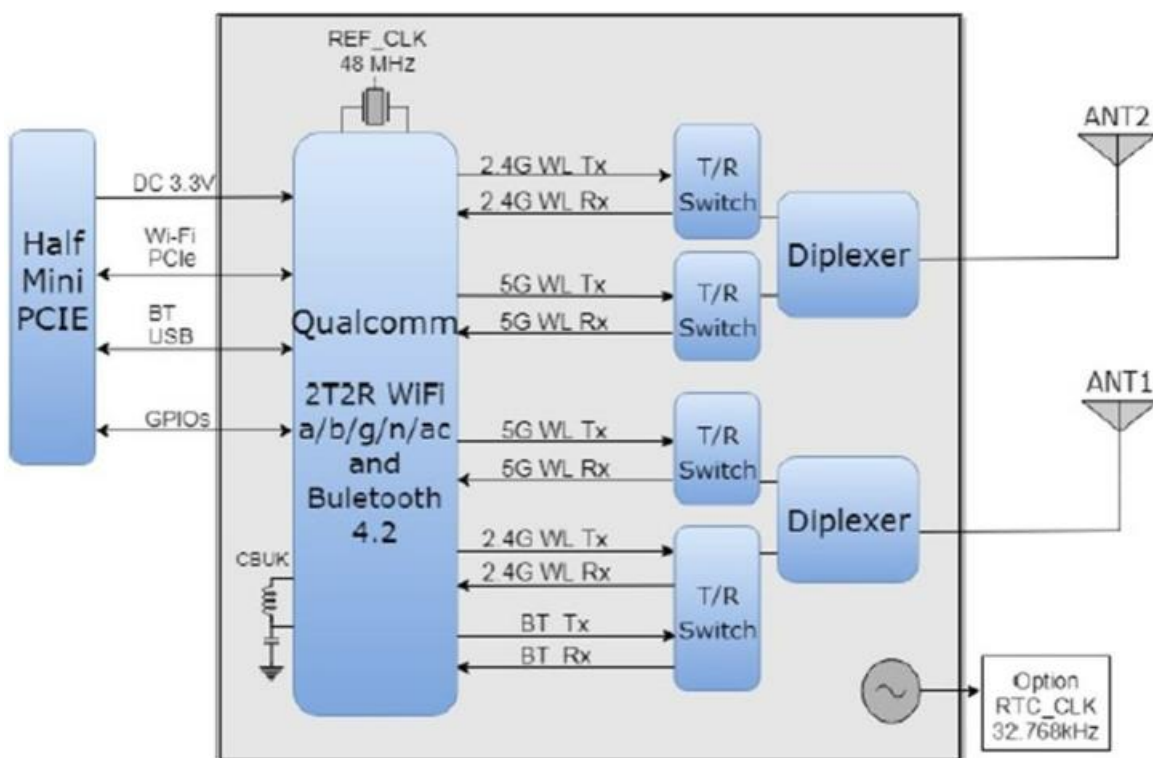
2. Hardware Specification

2.1 Hardware Dimension

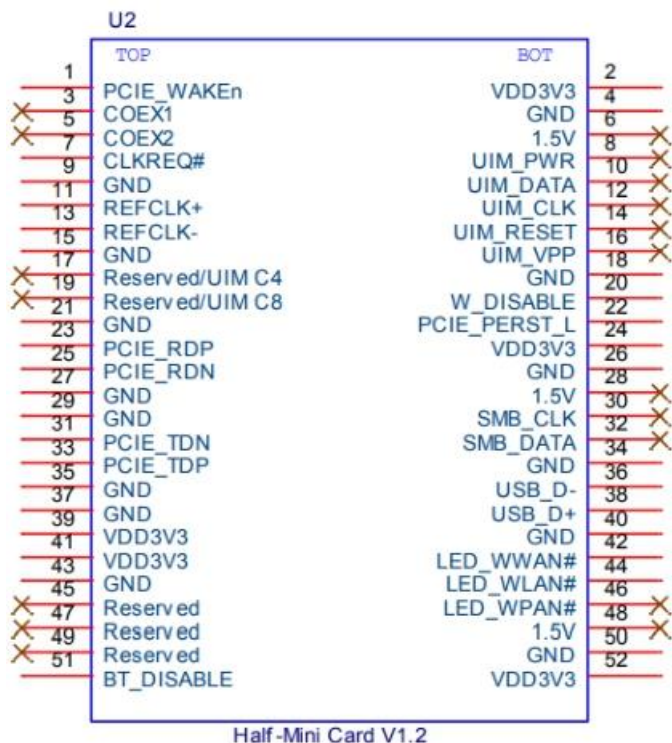
Dimension(L x W x H): 29.85mm (±0.15mm) x 26.65mm (±0.15mm) x 2.65mm (±0.2mm)



2.2 Block Diagram



2.3 Pin Assignment



TOP			
Pin#	Pin Name	Type	Description
1	PCIE_WAKE_L	O	PCIe wake signal
3	NC	-	No connect
5	NC	-	No connect
7	PCIE_CLKREQ_L	I/O	PCIe clock request
9	GND	-	Ground connections
11	PCIE_RCLK_P	I	PCI Express differential clock input- Positive
13	PCIE_RCLK_N	I	PCI Express differential clock input- Negative
15	GND	-	Ground connections
17	NC	-	No connect

Pin Assignment

TOP			
Pin#	Pin Name	Type	Description
19	NC	-	No connect
21	GND	-	Ground connections
23	PCIE_TX_P	O	PCI Express transmit data- Positive
25	PCIE_TX_N	O	PCI Express transmit data- Negative
27	GND	-	Ground connections
29	GND	-	Ground connections
31	PCIE_RX_N	I	PCI Express receive data-Negative
33	PCIE_RX_P	I	PCI Express receive data-Positive
35	GND	-	Ground connections
37	GND	-	Ground connections
39	VDD_3V3	I	VDD system power supply input
41	VDD_3V3	I	VDD system power supply input
43	GND	-	Ground connections
45	NC	-	No connect
47	NC	-	No connect
49	NC	-	No connect
51	BT_RF_KILL_L	-	Turn off BT RF analog and front-end. Active low

Pin Assignment

BOTTOM			
Pin#	Pin Name	Type	Description
2	VDD_3V3	I	VDD system power supply input
4	GND	-	Ground connections
6	NC	-	No connect
8	NC	-	No connect
10	NC	-	No connect
12	NC	-	No connect
14	NC	-	No connect
16	NC	-	No connect
18	GND	-	Ground connections
20	WLAN_RF_KILL_L	I	Turn off WLAN RF analog and front-end. Active low.
22	PCIE_PERST_L	I	PCIe host indication to reset the device Active low.
24	VDD_3V3	I	VDD system power supply input
26	GND	-	Ground connections
28	NC	-	No connect
30	NC	-	No connect
32	NC	-	No connect
34	GND	-	Ground connections
36	USB_D-	I/O	USB serial differential data Negative
38	USB_D+	I/O	USB serial differential data Positive
40	GND	-	Ground connections
42	WLAN_LED	OD	WLAN LED
44	BT_LED	OD	Bluetooth LED

Pin Assignment

BOTTOM			
Pin#	Pin Name	Type	Description
46	NC	-	No connect
48	NC	-	No connect
50	GND	-	Ground connections
52	VDD_3V3	I	VDD system power supply input

2.4 Domain Code & Register setting

✓ WiFi:

Reg Domain Code	0x006C
Vendor ID	0x168C
Device / Product ID	0x003E

✓ BT:

Vendor ID	0x0CF3
Product ID	0xE300

3. Software Specification

3.1 Driver Support

- ★ Win7/Win8.1/Win10
- ★ Linux (Open Source), Recommend Kernel v4.0+

4. Standard Packing

4.1 Product Label

