



Product Specification

Revision	V1.0		
Date	2016-07-16		
Model Name	BL-M8192NP1		
Product Name	IEEE 802.11b/g/n (2T2R) MINI PCI-E Module		
Bilian Approve Field			
Engineer	QC	Sales	
Customer Approve Field			
Engineer	QC	Manufactory	Purchasing

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Revision History

Date	Document Revision	Product Revision	Description
2016/06/21	0.1	V0.1	Preliminary release
2016/07/16	1.0	V1.0	Update silkscreen

1. Introduction

1.1 General Description

BL-M8192NP1 product accord with FCC CE is a highly integrated Wi-Fi single chip which support 300Mbps PHY rate. It fully complies with IEEE802.11n and IEEE802.11b/g standard, offering feature-rich wireless connectivity at high standard, and delivering reliable, cost-effective throughput from an extended distance. Optimized RF architecture and baseband algorithms provide superb performance and lower power consumption. Intelligent MAC design deploys a high efficient DMA engine and hardware data processing accelerators which offloads the host processor.

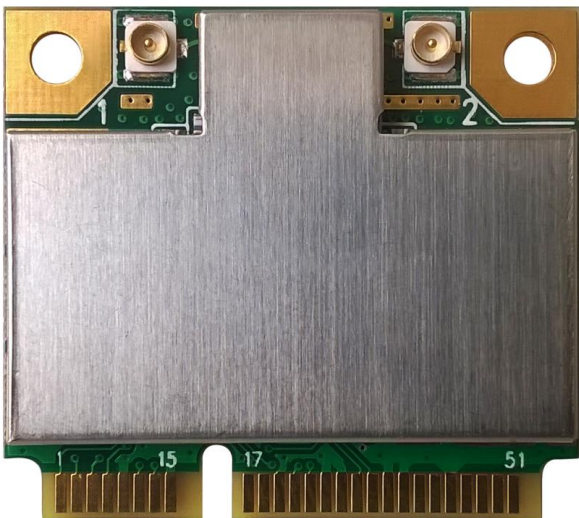


Figure 1 Top View

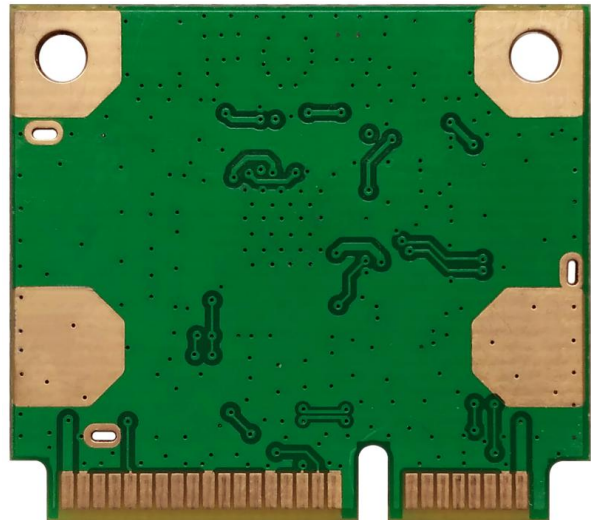


Figure 2 Bottom View

1.2 Features

- Operating Frequencies : 2.4~2.4835GHz
- Host Interface is MINI PCI EXPRESS
- IEEE Standards : IEEE 802.11b/g/n
- Wireless data rate can reach up to 300Mbps
- Connect to the external antenna through the IPEX connector
- Power Supply:3.3V±0.2V

1.3 Applications

- MID
- IP Camera
- STB
- Smart TV
- E-book
- Other devices which need to be supported by wireless network

2. Functional Block Diagram

Single-Band 11n 2x2 MAC/BB/RF Application

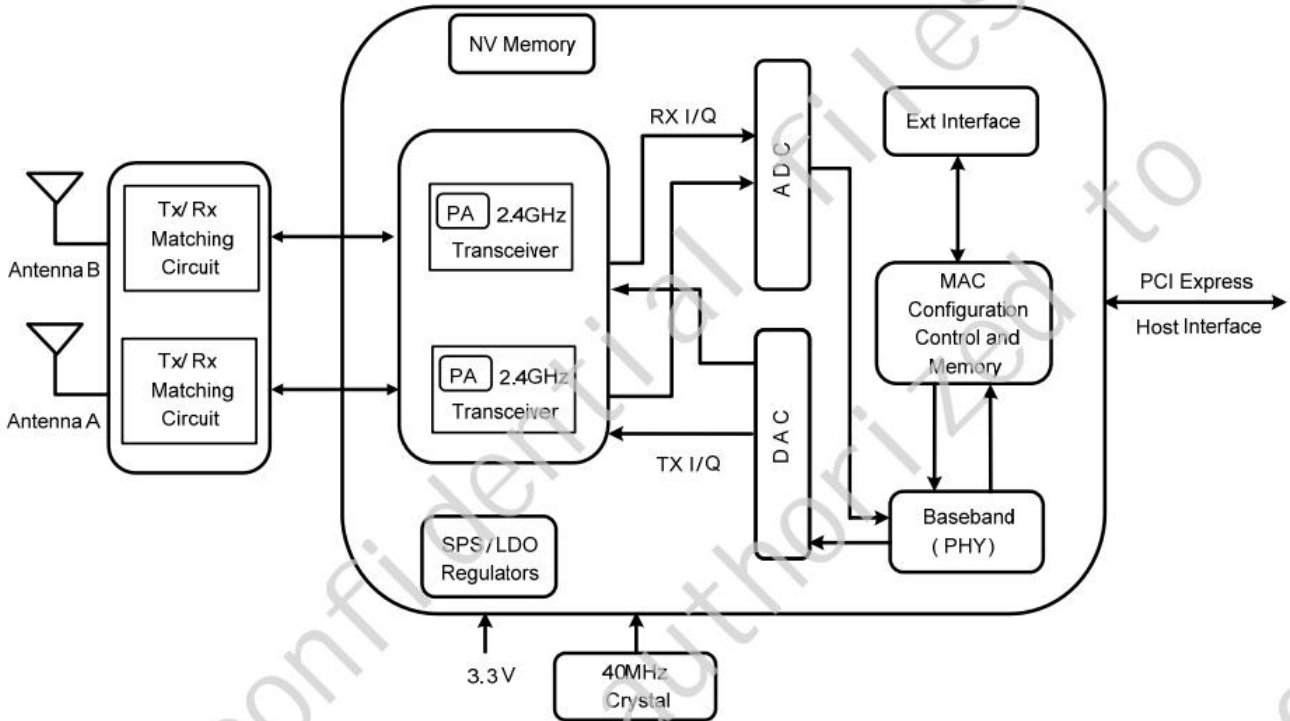


Figure 1. 11n 2x2 MAC/BB/RF Application

Figure 3 RTL8192EE block diagram

3. Product Technical Specifications

3.1 General Specifications

Item	Description
Product Name	BL-M8192NP1
Main Chip	RTL8192EE
Host Interface	MINI PCI EXPRESS
IEEE Standards	IEEE 802.11b, IEEE 802.11g, IEEE 802.11n
Operating Frequencies	2.4GHz~2.4835GHz
Modulation	802.11b: CCK, DQPSK, DBPSK 802.11g: 64-QAM, 16-QAM, QPSK, BPSK 802.11n: 64-QAM, 16-QAM, QPSK, BPSK
Working Mode	Infrastructure, Ad-Hoc
Wireless Data Rate	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: MCS0~7, HT20 reach up to 72.2Mbps, HT40 reach up

	to300Mbps
Rx Sensitivity	-93dBm (Min)
TX Power	17dBm (Max)
Antenna Type	Connect to the external antenna through the IPEX connector
Dimension(L*W*H)	30.0x 26.7x3.2mm (LxWxH), Tolerance: ±0.2mm
Power Supply	3.3V±0.2V
Power Consumption	standby mode 145mA@3.3V (Max), TX mode 470mA@3.3V (Max)
Clock Source	40MHz
Working Temperature	-10°C to +50°C
Storage Temperature	-40°C to +70°C

ESD CAUTION: Although this module is designed to be as robust as possible, Electrostatic Discharge (ESD) can damage this module. It must be protected from ESD at all times and handled under the protection of ESD.

3.2 DC Power Consumption

Vcc=3.3V, Ta = 25 °C, unit: mA				
Supply current	Typ.		Max	
Standby (RF disabled)	150		155	
802.11b				
	1Mbps		11Mbps	
Supply current	Typ.	Max.	Typ.	Max.
TX mode	350	355	310	320
Rx mode	145	150	155	158
802.11g				
	6Mbps		54Mbps	
Supply current	Typ.	Max.	Typ.	Max.
TX mode	295	300	240	250
Rx mode	150	155	155	160
802.11n HT20				
	MCS0		MCS7	
Supply current	Typ.	Max.	Typ.	Max.
TX mode	295	300	240	250
Rx mode	150	155	155	165
802.11n HT40				
	MCS8		MCS15	
Supply current	Typ.	Max.	Typ.	Max.
TX mode	460	470	330	335
Rx mode	155	158	155	160

3.3 RF Specifications

TX Power		802.11b: 17±1.5dBm 802.11g/11n-HT20: 14±1.5dBm 802.11n -HT40: 14±1.5dBm								
TX Constellation Error(EVM)		802.11b: < -22dB@11Mbps 802.11g/11n-HT20: < -28dB@54/72.2Mbps 802.11n-HT40: < -28dB@150Mbps								
Receiver Minimum Input Sensitivity@PER		802.11b: < -90dBm@PER<8%@1Mbps 802.11b: < -84dBm@PER<8%@11Mbps 802.11g: < -72dBm@PER<10%@54Mbps 802.11n: < -66dBm@PER<10%@150Mbps								
RF Test Report-TX0										
Mode	Rate(Mbps)	Power(dBm)			EVM(dB)			Sensitivity(dBm)		
		CH1	CH7	CH13	CH1	CH7	CH13	CH1	CH7	CH13
11b	1	17.27	17.17	17.04	-37.4 3	-36.0 2	-33.6 7	-93	-93	-93
	11	17.25	17.17	17.25	-24.3 3	-23.8 4	-27.2 3	-86	-85	-85
11g	6	15.25	15.69	14.63	-32.6 2	-33.5 9	-31.3 5	-90	-90	-90
	54	14.87	14.66	14.82	-32.4 9	-34.2 3	-33.6 1	-74	-73	-74
11n HT20	MCS0	14.92	14.61	14.33	-32.3 8	-34.3 2	-34.6 6	-90	-89	-90
	MCS7	14.32	14.27	14.19	-32.2 9	-33.9 6	-35.1 4	-69	-70	-69
Mode	Rate(Mbps)	Power(dBm)			EVM(dB)			Sensitivity(dBm)		
		CH3	CH7	CH11	CH3	CH7	CH11	CH3	CH7	CH11
11n HT40	MCS0	14.86	14.51	14.63	-31.3 7	-32.0 8	-32.4 2	-88	-88	-88
	MCS7	14.35	14.05	14.27	-31.6 7	-31.9 5	-34.0 0	-67	-67	-67
RF Test Report-TX1										
Mode	Rate(Mbps)	Power(dBm)			EVM(dB)			Sensitivity(dBm)		
		CH1	CH7	CH13	CH1	CH7	CH13	CH1	CH7	CH13
11b	1	16.51	16.56	16.27	-35.5 6	-35.2 4	-34.4 1	-91	-91	-91
	11	16.57	16.65	16.61	-24.7 7	-27.0 2	-26.1 7	-85	-85	-85

11g	6	14.05	14.34	14.14	-31.8 8	-32.3 2	-32.5 3	-90	-90	-90
	54	14.58	14.95	14.91	-31.6 5	-32.2 3	-32.7 4	-73	-73	-74
11n HT20	MCS0	14.18	14.14	14.27	-31.8 4	-32.0 1	-32.5 0	-89	-89	-89
	MCS7	14.47	14.31	14.40	-31.7 1	-32.5 0	-33.4 8	-70	-70	-70
Mode	Rate(Mbps)	Power(dBm)			EVM(dB)			Sensitivity(dBm)		
		CH3	CH7	CH11	CH3	CH7	CH11	CH3	CH7	CH11
11n HT40	MCS0	14.26	14.56	14.12	-30.6 1	-30.5 2	-31.1 9	-87	-87	-87
	MCS7	14.31	14.24	14.76	-30.5 5	-31.9 6	-31.8 7	-67	-67	-67

4. Pin Assignments

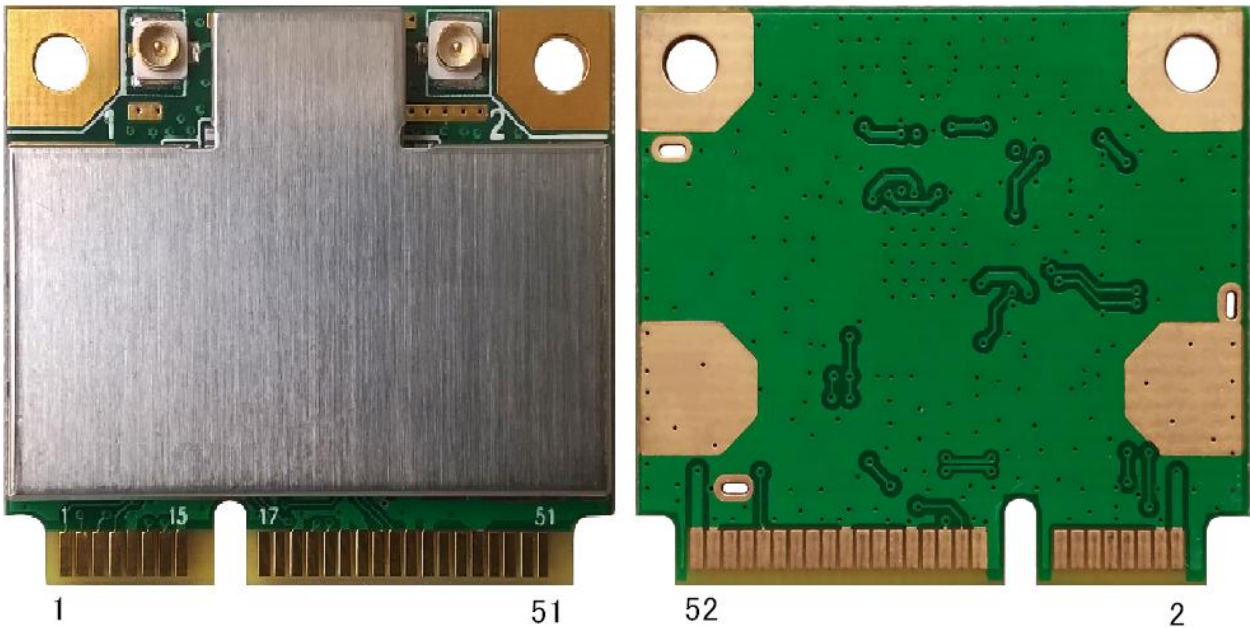


Figure 4 Pin Assignments (Top view)

Pin No	Pin Name	Description	Pin No	Pin Name	Description
1	WAKE	Wake / sleep control	2	VD33A	DC 3.3V Power input
3	Reserved	Reserved	4	GND	Ground
5	Reserved	Reserved	6	Reserved	Reserved
7	CLKREQ#	Reference clock request signal	8	Reserved	Reserved
9	GND	Ground	10	Reserved	Reserved
11	REFCLK-	PCI Express Differential	12	Reserved	Reserved

		reference clock signal			
13	REFCLK+	100MHz ± 300ppm	14	Reserved	Reserved
15	GND	Ground	16	Reserved	Reserved
17	GND	Ground	18	GND	Ground
19	Reserved	Reserved	20	W_DISABLE	Radio signal control
21	GND	Ground	22	PERST	Reset signal (low level)
23	HS0N	PCI Express Differential transmission signal	24	Reserved	Reserved
25	HS0P		26	GND	Ground
27	GND	Ground	28	Reserved	Reserved
29	GND	Ground	30	Reserved	Reserved
31	HS1N	PCI Express Differential transmission signal	32	Reserved	Reserved
33	HS1P		34	GND	Ground
35	GND	Ground	36	Reserved	Reserved
37	GND	Ground	38	Reserved	Reserved
39	Reserved	Reserved	40	Reserved	Reserved
41	Reserved	Reserved	42	Reserved	Reserved
43	GND	Ground	44	LED_WLAN	LED pin (active low)
45	Reserved	Reserved	46	Reserved	Reserved
47	Reserved	Reserved	48	Reserved	Reserved
49	Reserved	Reserved	50	GND	Ground
51	Reserved	Reserved	52	VD33	DC 3.3V Power input

5. Application Information

5.1 Supported Platform

Operating System	CPU Framework	Driver
Linux2.6.24~4.0	ARM, MIPSII	Enable
Android 1.6~2.3,4.0~4.4,5.0	ARM ,MIPSII	Enable

6. Mechanical Specifications

Module dimension: Typical (L*W * H): 30.0mm*26.7mm*3.2mm Tolerance : +/-0.2mm

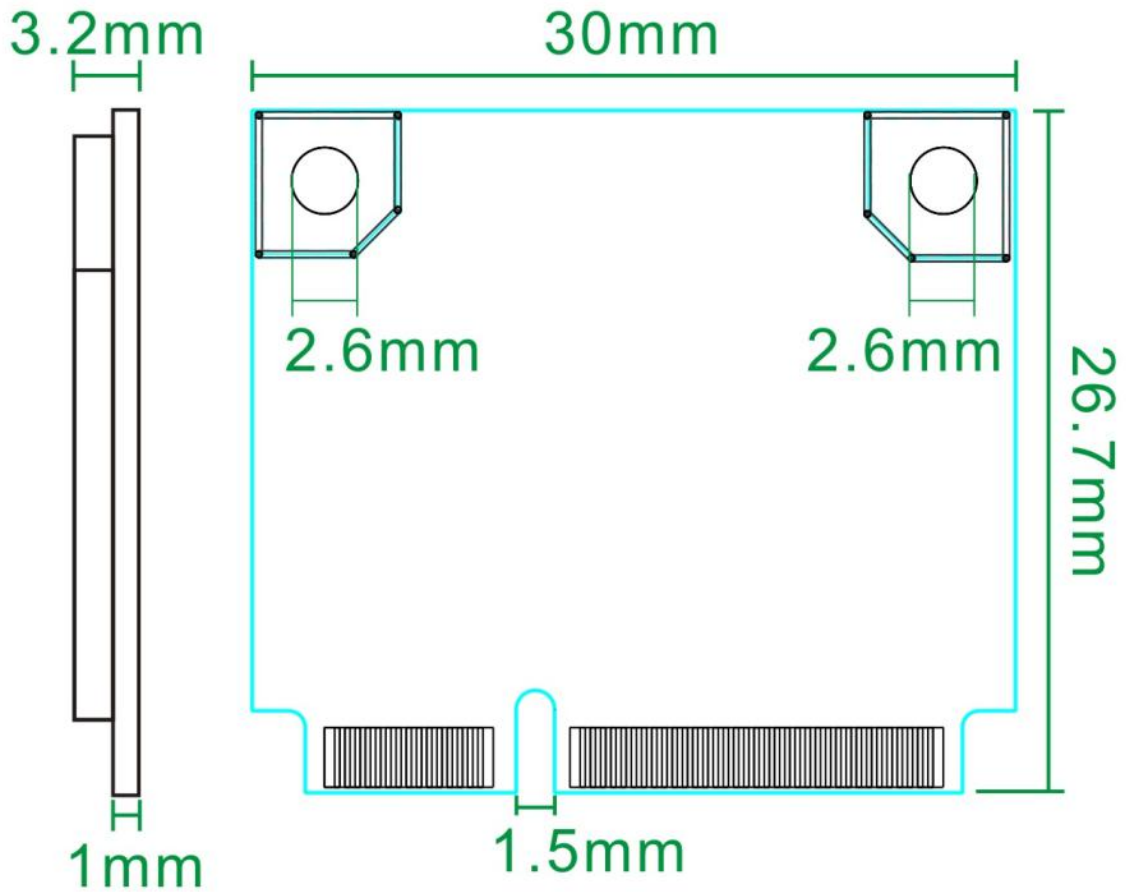


Figure 5 Top View

7. Others

7.1 Package Information

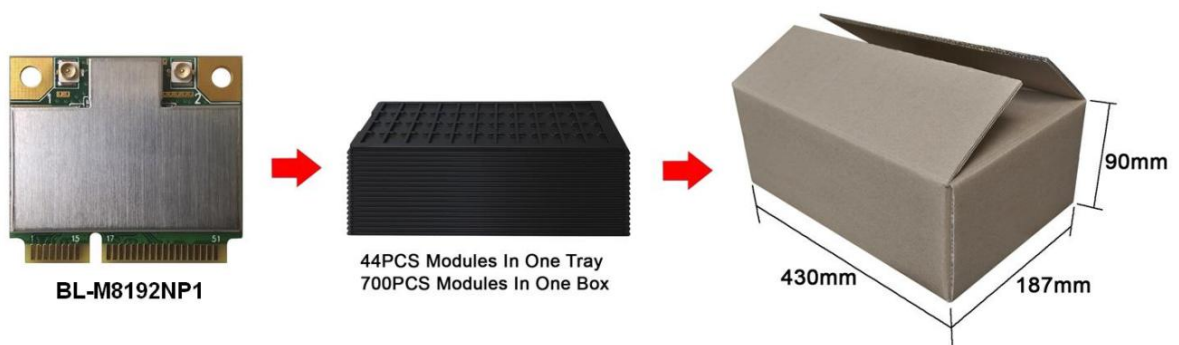


Figure 6 Package Information