

CDW-C9852BE-00

DATASHEET

Software:

客 户 Customer	客户承认 Approve (请盖印章)	日期 Date

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更改记录:

Reversion History:

版本 Version	日期 Date	更改内容 Modification
1.0	2021.12.16	
1.1	2022.03.26	1. Overview 2. Pin Assignments
1.2	2022.11.08	1.Dimension

1. Overview

The CDW-C9852BE-00 is a M.2 module that support 2-stream 802.11ax solutions with Multi-user MIMO (Multiple-Input, Multiple-Output) with Wireless LAN (WLAN) PCI Express network interface controller with integrated Bluetooth 5 USB interface controller. It combines a WLAN MAC, a 2T2R capable WLAN baseband, and RF in a single chip. The CDW-C9852BE-00 provides a complete solution for a high-performance integrated wireless and Bluetooth device.

2. Features

WLAN

- IEEE 802.11a/b/g/n/ac/ax compliant WLAN
- 5MHz / 10MHz / 20MHz / 40MHz / 80MHz bandwidth transmission
- Complies with PCI Express Base Specification Revision 2.1
- Dual-band 2T2R mode with data rate up to 1201Mbps
- Supports 802.11ac/ax 2*2 Wave-2 compliant with MU-MIMO
- DSSS with DBPSK and DQPSK, CCK modulation with long and short preamble, OFDM with BPSK, QPSK, 16QAM, 64QAM and 256QAM modulation. Convolutional Coding Rate: 1/2, 2/3, 3/4, and 5/6
- Maximum data rate 54Mbps in 802.11g, 300Mbps in 802.11n and 866.7Mbps in 802.11ac, 1201Mbps in 802.11ax

Bluetooth

- Supports Bluetooth 5 system (BT5.2 Logo Compliant)
- Compatible with Bluetooth v2.1+EDR
- Integrated MCU to execute Bluetooth protocol stack
- Enhanced BT/WIFI Coexistence Control to improve transmission quality in different Profiles
- Dual Mode support: Simultaneous LE and BR/ED
- Supports multiple Low Energy states
- Supports Enhanced Power Control
- Supports all packet types in basic rate and enhanced data rate
- Supports Secure Simple Pairing

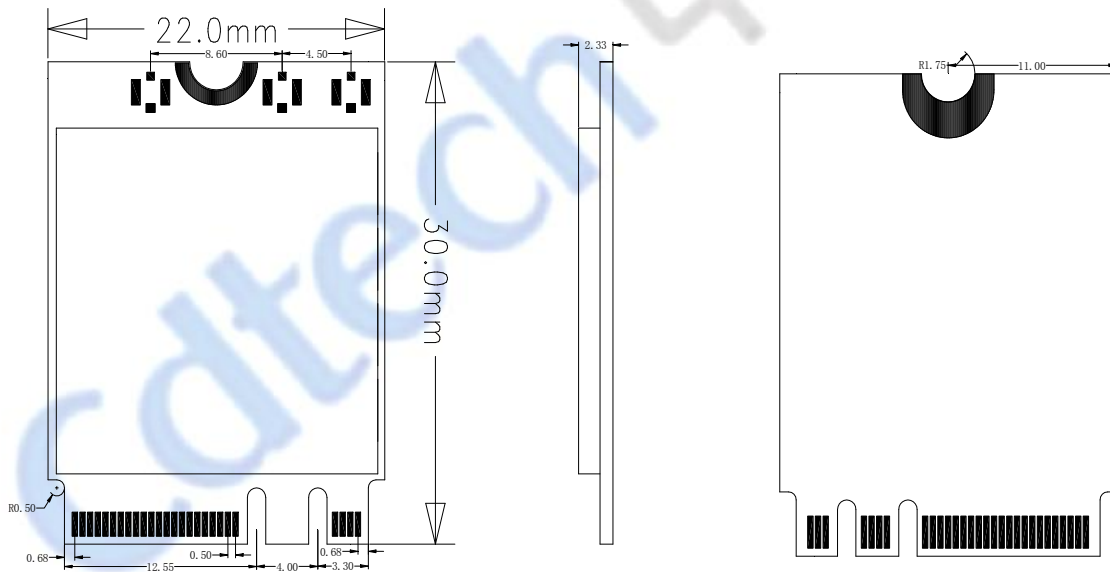
3. General Specification

Model	CDW-C9852BE-00
Product Name	WiFi 11a/b/g/n/ac/ax 2T2R and BT 5.2 Module
Major Chipset	Realtek RTL8852BE-CG
Standard	IEEE802.11a/b/g/n/ac/ax, BT V2.1+EDR/ 4.2 /5.2
Data Transfer Rate	Max:1201 Mbps
Modulation Method	DSSS/DBPSK/DQPSK/16-QAM/ 64-QAM/256QAM/1024QAM
Frequency Band	2.4~2.4835GHz , 5.0~5.8 GHz
Spread Spectrum	IEEE 802.11b: DSSS (Direct Sequence Spread Spectrum) IEEE802.11a/g/n/ac/ax: OFDM (Orthogonal rthogonal Frequency Division Multiplexing)
Operation Mode	Ad hoc, Infrastructure
Security	WEP, TKIP, AES, WPA, WPA2
Interface	Wi-Fi : PCI-E , Bluetooth : USB2.0
Operating Temperature	-10~ +70° C ambient temperature
Storage Temperature	-40 ~+90°C ambient temperature
Humidity	5 to 90 % maximum (non-condensing)
Dimension	22mm x30mm x 2.33mm (LxWxH)±0.2mm

4. DC Characteristics

Symbol	Parameter	Min.	Typ.	Max	Units
VD33	3.3V I/O supply Voltage	3.0	3.3	3.6	V
VD10	1.05V Core Supply Voltage	0.945	1.05	1.155	V
V _{IH}	Input high Voltage	2.0	3.3	3.6	V
V _{IL}	Input low Voltage	--	0	0.9	V
V _{OH}	output high Voltage	2.97	--	3.3	V
V _{OL}	output low Voltage	0	--	0.33	V

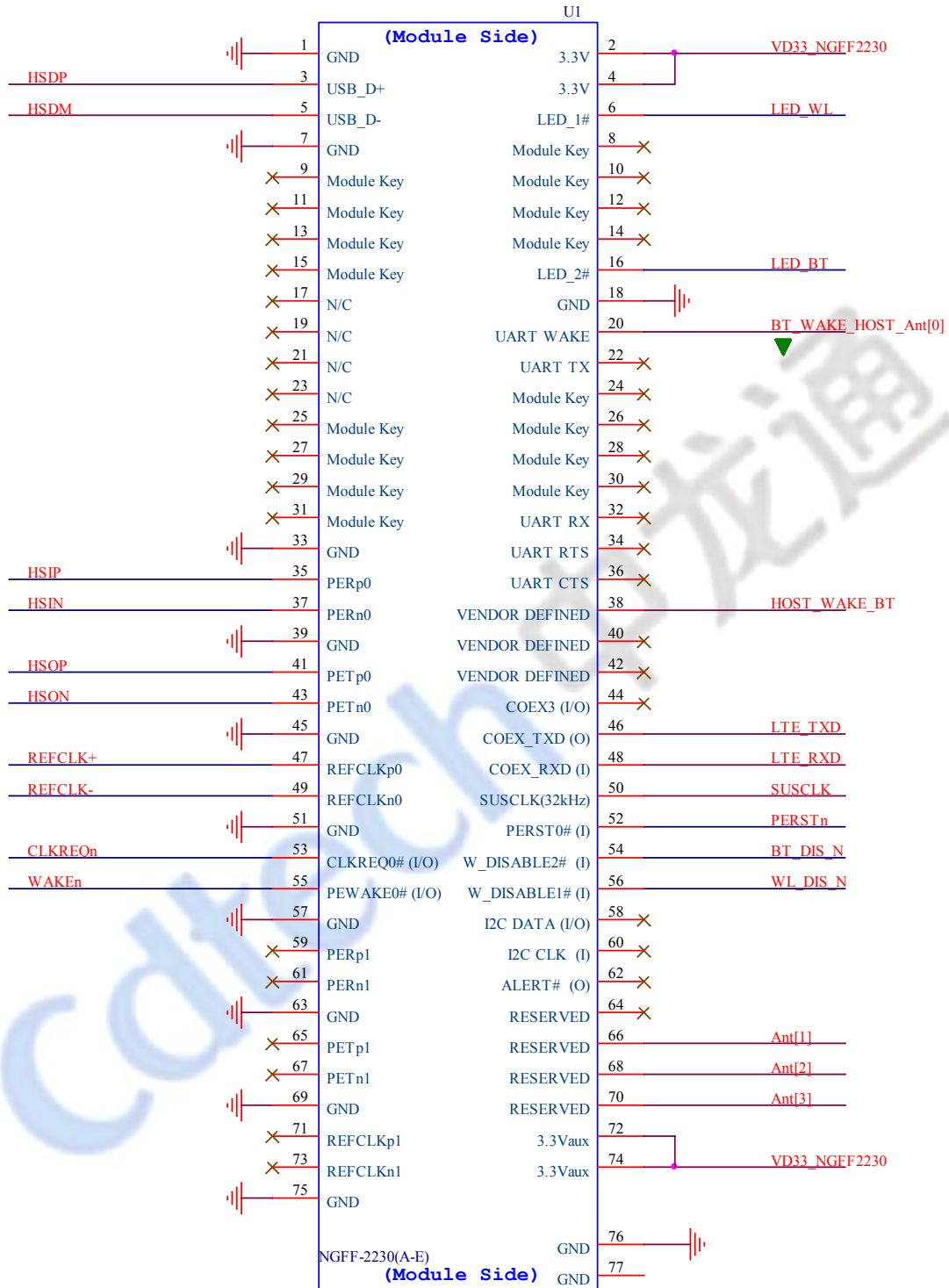
5. Dimension & Pin Assignments



NO	Name	Description
1	GND	Ground connections
2	3.3V	3.3V power supply
3	USB_D_P	USB Differential signal
4	3.3V	3.3V power supply.
5	USB_D_N	USB_D_N USB Differential signal
6	WL_LED	WLAN LED signal
7	GND	Ground connections.
16	BT_LED	BT LED signal
17	NC	Floating Pin, No connect to anything.
18	GND	Ground connections.
19	NC	Floating Pin, No connect to anything.
20	BT_WAKE_HOST	BT wake up Host signal.
21	NC	Floating Pin, No connect to anything.
22	NC	Floating Pin, No connect to anything.
23	NC	Floating Pin, No connect to anything.
32	NC	Floating Pin, No connect to anything.
33	GND	Ground connections.
34	NC	Floating Pin, No connect to anything.
35	PERp0	Differential receive
36	NC	Floating Pin, No connect to anything.
37	PERn0	Differential receive
38	HOST_WAKE_BT	Host wake up BT signal.
39	GND	Ground connections
40	NC	Floating Pin, No connect to anything.
41	PETp0	Differential transmit.
42	NC	Floating Pin, No connect to anything.
43	PETn0	Differential transmit
44	NC	Floating Pin, No connect to anything.
45	GND	Ground connections
46	LTE_TXD	Coexistence.
47	REFCLKP	Differential reference clock.
48	LTE_RXD	Coexistence.
49	REFCLKN	Differential reference clock.
50	SUSCLK	32KHz clock input.
51	GND	Ground connections

52	PERST0	PE-Reset is a functional reset to the card as defined by the PCI Express Mini Card CEM specification.
53	CLKREQ0	Reference clock request
54	WL_DIS_N	WLAN disable control.
55	PEWAKE0	Open Drain active Low signal. This signal is used to request that the system return from a sleep/suspended state to service a function initiated wake event.
56	BT_DIS_N	BT disable control.
57	GND	Ground connections
58-62	NC	Floating Pin, No connect to anything.
63	GND	Ground connections
64	NC	Floating Pin, No connect to anything.
65	NC	Floating Pin, No connect to anything.
66	GPIO0	RESERVED
67	NC	Floating Pin, No connect to anything.
68	GPIO1	RESERVED
69	GND	Ground connections
70	GPIO2	RESERVED
71	NC	Floating Pin, No connect to anything.
72	3.3V	3.3V power supply
73	NC	Floating Pin, No connect to anything.
74	3.3V	3.3V power supply
75	GND	Ground connections
76	GND	Ground connections
77	GND	Ground connections

6. Schematics



7. Modular photo



8. Supplier

Material list		
Diplexer	DPX165900DT-8025A1 SLFD18-5R950G-08T RFDIP1607L898D1T LD18D2450LAN-D40/M	Sunlord,TDK,PSA, GLEAD
Crystal	40M	JWT , FK , SFJ
IC	RTL8852BE	RTL
Inductor		Sunlord
PCB		A O S P

9. Electrical Characteristics

WiFi Section:

7.1 2.4GHz RF Specification

Feature	Description
WLAN Standard	IEEE 802.11b/g/n/ax WiFi compliant
Frequency Range	2.400 GHz ~ 2.4835 GHz (2.4 GHz ISM Band)
Number of Channels	2.4GHz: CH1 ~ CH14
Modulation	802.11b : DQPSK, DBPSK, CCK 802.11 g/n : OFDM /64-QAM, 16-QAM, QPSK, BPSK 802.11ax : OFDMA /1024-QAM、256-QAM、64-QAM、16-QAM、
Output Power	802.11b /11Mbps : 17dBm \pm 2 dB @ EVM \leq -15dB
	802.11g /54Mbps : 15 dBm \pm 2 dB @ EVM \leq -25dB
	802.11n /MCS7 : 14 dBm \pm 2 dB @ EVM \leq -28dB
	802.11ax /MCS11 : 14 dBm \pm 2 dB @ EVM \leq -35dB
Receive Sensitivity (11b,20MHz)	- 1Mbps PER \leq 8% @ -98 dBm \leq -83 dBm
	- 11Mbps PER \leq 8% @ -90 dBm \leq -76 dBm
Receive Sensitivity (11g,20MHz)	- 6Mbps PER \leq 10%@ -94 dBm \leq -85 dBm
	- 54Mbps PER \leq 10%@ -77 dBm \leq -68 dBm
Receive Sensitivity (11n,20MHz)	- MCS=0 PER \leq 10%@ -94 dBm \leq -85 dBm
	- MCS=7 PER \leq 10%@ -76 dBm \leq -67dBm
Receive Sensitivity (11n,40MHz)	- MCS=0 PER \leq 10%@ -91 dBm \leq -82dBm
	- MCS=7 PER \leq 10%@ -73 dBm \leq -64dBm
Receive Sensitivity (11ax,20MHz)	- MCS=0 PER \leq 10%@ -94 dBm \leq -82 dBm
	- MCS=11 PER \leq 10%@ -66 dBm \leq -52dBm
Receive Sensitivity (11ax,40MHz)	- MCS=0 PER \leq 10%@ -91 dBm \leq -79dBm
	- MCS=11 PER \leq 10%@ -64 dBm \leq -49dBm
Maximum Input Level	802.11b : -10 dBm
	802.11g/n/ax : -20 dBm
Antenna Reference	

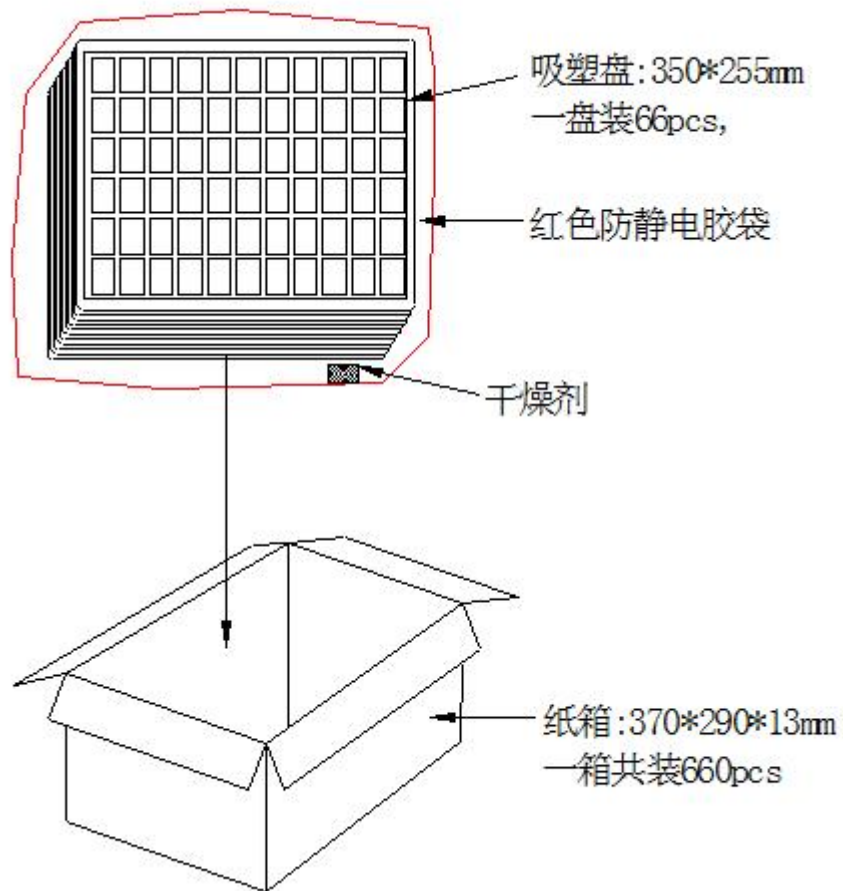
7.2 5GHz RF Specification

Feature	Description
WLAN Standard	IEEE 802.11a/n/ac 2x2, WiFi compliant
Frequency Range	4.900 GHz ~ 5.845 GHz (5.0 GHz ISM Band)
Number of Channels	CH36-CH165
Modulation	802.11a : OFDM /64-QAM,16-QAM, QPSK, BPSK 802.11n : OFDM /64-QAM,16-QAM, QPSK, BPSK 802.11ac : OFDM /256-QAM/64-QAM,16-QAM, QPSK, BPSK 802.11ax:OFDM /1024-QAM/256-QAM/64-QAM,16-QAM,QPSK, BPSK
Output Power	802.11a /54Mbps : 14 dBm ± 2 dB @ EVM ≤ -25dB 802.11n HT20 /MCS7 : 13 dBm ± 2 dB @ EVM ≤ -28dB 802.11n HT40 /MCS7 : 12 dBm ± 2 dB @ EVM ≤ -28dB 802.11ac VHT20 /MCS8 : 12 dBm ± 2 dB @ EVM ≤ -30dB 802.11ac VHT40 /MCS9 : 11 dBm ± 2 dB @ EVM ≤ -32dB 802.11ac VHT80 /MCS9 : 11 dBm ± 2 dB @ EVM ≤ -32dB 802.11ax HE20 /MCS11 : 12 dBm ± 2 dB @ EVM ≤ -35dB 802.11ax HE40 /MCS11 : 11 dBm ± 2 dB @ EVM ≤ -35dB 802.11ax HE80 /MCS11 : 11 dBm ± 2 dB @ EVM ≤ -35dB
Receive Sensitivity (11a,20MHz)	- 6Mbps PER≤10%@ -94 dBm ≤ -85 dBm - 54Mbps PER≤10%@ -76 dBm ≤ -68 dBm
Receive Sensitivity (11n,20MHz)	- MCS=0 PER≤10%@ -92 dBm ≤ -85 dBm - MCS=7 PER≤10%@ -74 dBm ≤ -67 dBm
Receive Sensitivity (11n,40MHz)	- MCS=0 PER≤10%@ -90 dBm ≤ -82 dBm - MCS=7 PER≤10%@ -71 dBm ≤ -64dBm
Receive Sensitivity (11ac,20MHz)	- MCS=0, NSS1 PER≤10%@ -94 dBm ≤ -82 dBm - MCS=8, NSS1 PER≤10%@ -70 dBm ≤ -60 dBm
Receive Sensitivity (11ac,40MHz)	- MCS=0, NSS1 PER≤10%@ -90 dBm ≤ -79 dBm - MCS=9, NSS1 PER≤10%@ -66 dBm ≤ -55 dBm
Receive Sensitivity (11ac,80MHz)	- MCS=0, NSS1 PER≤10%@ -88 dBm ≤ -79 dBm - MCS=9, NSS1 PER≤10%@ -62 dBm ≤ -54 dBm
Receive Sensitivity (11ax,20MHz)	- MCS=0 PER≤10%@ -94 dBm ≤ -82 dBm - MCS=11 PER≤10%@ -65 dBm ≤ -52 dBm
Receive Sensitivity (11ax,40MHz)	- MCS=0 PER≤10%@ -92 dBm ≤ -79 dBm - MCS=11 PER≤10%@ -61 dBm ≤ -49 dBm
Receive Sensitivity (11ax,80MHz)	- MCS=0 PER≤10%@ -89 dBm ≤ -73 dBm - MCS=11 PER≤10%@ -57 dBm ≤ -43 dBm
Maximum Input Level	802.11a/n/ac/ax : -20 dBm
Antenna Reference	

7.3 Bluetooth Section:

Feature	Description		
General Specification			
Bluetooth Standard	Bluetooth V2.1+EDR /4.2/5.2		
Host Interface	USB2.0		
Antenna Reference			
Frequency Band	2402 MHz ~ 2480 MHz		
Number of Channels	79 channels		
Modulation	FHSS, GFSK, DPSK, DQPSK		
RF Specification			
	Min	Typical	Max
Output Power		6 dBm	
Sensitivity @ BER=0.1% for GFSK (1Mbps)		-88 dBm	
Sensitivity @ BER=0.01% for $\pi/4$ -DQPSK (2Mbps)		-86 dBm	
Sensitivity @ BER=0.01% for 8DPSK (3Mbps)		-83 dBm	
Maximum Input Level	GFSK (1Mbps):-20dBm		
	$\pi/4$ -DQPSK (2Mbps) :-20dBm		
	8DPSK (3Mbps) :-20dBm		

9.Packing information



ESD CAUTION

The CDW-C9852BE-00 is ESD (electrostatic discharge) sensitive device and may be damaged with ESD or spike voltage. Although CDW-C9852BE-00 is with built-in ESD protection circuitry, please handle with care to avoid the permanent malfunction or the performance degradation.