

PRODUCT SPECIFICATION

D232B-WB

Wi-Fi Dual-band 2x2 11ax Dongle Datasheet

Version:v1.0



D232B-WB Dongle Datasheet

Ordering Information	Part NO.	Description
	FGD232BWBX-00	RTL8832BU,a/b/g/n/ac/ax,2T2R,22.95*14.8mm,USB

Customer: _____

Customer P/N: _____

Signature: _____

Date: _____

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1. General Description

1.1 Introduction

The D232B-WB is an 802.11 a/b/g/n/ac/ax wifi MIMO USB3.0 dongle . The dongle is a highly integrated single-chip that support 2-stream 802.11ax solutions with Multi-user MIMO (Multiple-Input, Multiple-Output) with Wireless LAN (WLAN) USB network interface controller. It combines a WLAN MAC, a 2T2R capable WLAN baseband, and RF in a single chip. The D232B-WB provides a complete solution for a high-performance wireless device.

The Dongle is specifically developed for Portable devices.

1.2 Description

Dongle Name	D232B-WB
Product Name	WLAN 11ax USB Dongle
Dimension	L x W x H: 17.9 x 150 x11.2 mm
Wi-Fi Interface	Support USB3.0
Antenna type	Extemal Antenna
Security	WPA,WPA2,WPA3
Transmission rate	2.4GHz: 574Mbps 5GHz: 1201Mbps
Operating temperature	0°C to 70°C
Storage temperature	-40°C to 85°C

2. Features

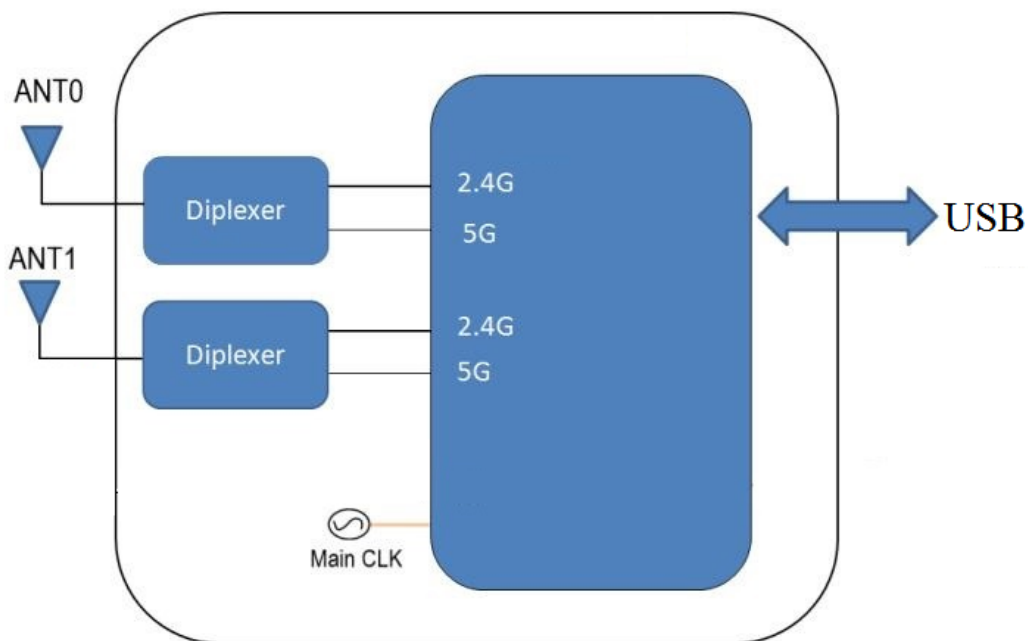
General Features

- Support 802.11ac 2x2, Wave-2 compliant with RX MU-MIMO
- Backward compatible with 802.11a/n/ac devices while operating at 802.11ax data rates.
- IEEE 802.11a/b/g/n/ac/ax compatible WLAN
- IEEE 802.11i (WPA, WPA2, WPA3). Open, shared key, and pair-wise key authentication services
- IEEE 802.11ax MIMO OFDM/OFDMA, IEEE 802.11ac MIMO OFDM, IEEE 802.11n MIMO OFDM
- CMOS MAC, Baseband PHY and RF in a single chip for IEEE 802.11a/b/g/n/ac/ax compatible WLAN
- Maximum PHY data rate up to 286.8 Mbps using 20MHz bandwidth, 573.5Mbps using 40MHz bandwidth, and 1201Mbps using 80MHz bandwidth

WLAN Interface

- Complies with USB2.0 for WLAN

3. Block Diagram



4. General Specification

4.1 WI-FI Specification

Feature	Description		
WLAN Standard	IEEE 802.11 b/g/n/ac/ax Wi-Fi compliant		
Frequency Range	2.400 GHz ~ 2.4835 GHz (2.4 GHz ISM Band)		
Number of Channels	2.4GHz: Ch1 ~ Ch14		
Test Items	Typical Value		EVM
Output Power	802.11b /11Mbps : 19dBm ± 2 dB		EVM ≤ -10dB
	802.11g /54Mbps : 18dBm ± 2 dB		EVM ≤ -25dB
	802.11n /MCS7 : 17dBm ± 2 dB		EVM ≤ -28dB
	802.11ac VHT20/MCS8: 16dBm ± 2 dB		EVM ≤ -30dB
	802.11ac VHT40/MCS9: 15dBm ± 2 dB		EVM ≤ -32dB
	802.11ax HE20/MCS11: 13dBm ± 2 dB		EVM ≤ -35dB
	802.11ax HE40/MCS11: 13dBm ± 2 dB		EVM ≤ -35dB
Spectrum Mask	Meet with IEEE standard		
Freq. Tolerance	± 20ppm		
Receive Sensitivity (11b,20MHz) @8% PER	- 1Mbps	PER @ -94 dBm	≤-83
	- 11Mbps	PER @ -85 dBm	≤-76
Receive Sensitivity (11g,20MHz) @10% PER	- 6Mbps	PER @ -90 dBm	≤-85
	- 54Mbps	PER @ -71 dBm	≤-68
Receive Sensitivity (11n,20MHz) @10% PER	- MCS=0	PER @ -90 dBm	≤-85
	- MCS=7	PER @ -69 dBm	≤-67
Receive Sensitivity (11n,40MHz) @10% PER	- MCS=0,	PER @ -87 dBm	≤-82
	- MCS=7,	PER @ -66 dBm	≤-64
Receive Sensitivity (11ac,20MHz) @10% PER	- MCS=0,	PER @ -90 dBm	≤-85
	- MCS=8,	PER @ -64 dBm	≤-62
Receive Sensitivity (11ac,40MHz) @10% PER	- MCS=0,	PER @ -87 dBm	≤-82
	- MCS=9,	PER @ -59 dBm	≤-57
Receive Sensitivity (11ax,20MHz) @10% PER	- MCS=0,	PER @ -90 dBm	≤-85
	- MCS=11,	PER @ -60 dBm	≤-55
Receive Sensitivity (11ax,40MHz) @10% PER	- MCS=0,	PER @ -87 dBm	≤-82
	- MCS=11,	PER @ -57 dBm	≤-52
Maximum Input Level	802.11b : -10 dBm		
	802.11g/n : -20 dBm		

Note: The RF specification will be updated in future version

4.2 5GHz RF Specification

Feature	Description		
WLAN Standard	IEEE 802.11a/n/ac/ax, Wi-Fi compliant		
Frequency Range	5.150 GHz ~ 5.850 GHz (5.0 GHz Band)		
Number of Channels	5.0GHz: Please see the table1		
Test Items	Typical Value		EVM
Output Power	802.11a 54Mbps: 18 ± 2 dBm		EVM ≤ -25dB
	802.11n MCS7: 17 ± 2 dBm		EVM ≤ -28dB
	802.11ac VHT20/MCS8: 16 dBm ± 2 dB		EVM ≤ -30dB
	802.11ac VHT40/MCS9: 15 dBm ± 2 dB		EVM ≤ -32dB
	802.11ac VHT80/MCS9: 15 dBm ± 2 dB		EVM ≤ -32dB
	802.11ax VHT20/MCS11: 13 dBm ± 2 dB		EVM ≤ -35dB
	802.11ax VHT40/MCS11: 13 dBm ± 2 dB		EVM ≤ -35dB
	802.11ax VHT80/MCS11: 13 dBm ± 2 dB		EVM ≤ -35dB
Receive Sensitivity (11a,20MHz) @10% PER	- 6Mbps	PER @ -89 dBm, typical	≤-85
	- 54Mbps	PER @ -71 dBm, typical	≤-68
Receive Sensitivity (11n,20MHz) @10% PER	- MCS=0	PER @ -89 dBm, typical	≤-85
	- MCS=7	PER @ -69 dBm, typical	≤-67
Receive Sensitivity (11n,40MHz) @10% PER	- MCS=0	PER @ -87 dBm, typical	≤-82
	- MCS=7	PER @ -67 dBm, typical	≤-64
Receive Sensitivity (11ac,20MHz) @10% PER	- MCS=0	PER @ -90 dBm, typical	≤-85
	- MCS=8	PER @ -66 dBm, typical	≤-62
Receive Sensitivity (11ac,40MHz) @10% PER	- MCS=0	PER @ -87 dBm, typical	≤-82
	- MCS=9	PER @ -63 dBm, typical	≤-57
Receive Sensitivity (11ac,80MHz) @10% PER	- MCS=0	PER @ -84 dBm, typical	≤-79
	- MCS=9	PER @ -62 dBm, typical	≤-54
Receive Sensitivity (11ax,20MHz) @10% PER	- MCS=0	PER @ -90 dBm, typical	≤-85
	- MCS=11	PER @ -60 dBm, typical	≤-55
Receive Sensitivity (11ax,40MHz) @10% PER	- MCS=0	PER @ -87dBm, typical	≤-82
	- MCS=11	PER @ -57 dBm, typical	≤-52
Receive Sensitivity (11ax,80MHz) @10% PER	- MCS=0	PER @ -84 dBm, typical	≤-79
	- MCS=11	PER @ -54 dBm, typical	≤-49
Maximum input level	802.11a/n: -30 dBm		
	802.11ac: -30 dBm		
	802.11ax: -30 dBm		
Antenna Reference	Small antennas with 0~2 dBi peak gain		

Note: The RF specification will be updated in future version

15GHz(20MHz) Channel table

Band range	Operating Channel Numbers	Channelcenter frequencies(MHz)
5180MHz~5240MHz	36	5180
	40	5200
	44	5220
	48	5240
5260MHz~5320MHz	52	5260
	56	5280
	60	5300
	64	5320
5550MHz~5700MHz	100	5500
	104	5520
	108	5540
	112	5560
	116	5580
	120	5600
	124	5620
	128	5640
	132	5660
	136	5680
	140	5700
	5745MHz~5825MHz	149
153		5765
157		5785
161		5805
165		5825

5. ID setting information

WI-FI

Vendor ID	0BDA
Product ID	/

6. Size reference

6.1 Dongle Picture

<p>L x W : 17.9 x 45 (+0.3/-0.1) mm</p> 	
	
<p>H: 11.2 (±0.2) mm</p>	
Weight	0.54g

Note: Dongle dimensions will be updated in future releases

7. The Key Material List

Item	Part Name	Description	Manufacturer
1	PCB	D232B-WB 4L,FR4,22.95X14.8X1.0mm	XY-PCB, GDKX, Sunlord, SLPCB
2	Crystal	2016 40MHz ±10ppm 12pF	ECEC, Hosonic, TKD, JWT
3	Chipset	RTL8832BU QFN-76	Realtek
4	Duplexer	RFDIP1607L898D1T	Glead, Walsin, ACX, Murata, MAG.LAYERS, ftrgroup

8. Package

TBD

Note:Packaging information will be updated in future releases

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