

CDW-N37663U-02

DATASHEET

Software:

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

拟制 Design	审核 Check	批准 Approve	版本 Version	日期 Date
			V1.0	2021.05.28

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更改记录:

Reversion History:

版本 Version	日期 Date	更改内容 Modification
1.0	2021.05.28	New Revision Release

1. Overview

The CDW-N37663U-02 is a highly integrated single chip Module which has built in a 2x2 dual-band wireless LAN radio and Bluetooth radio. It supports IEEE 802.11a/b/g/n/ac standard and provides the highest PHY rate up to 867Mbps, offering feature-rich wireless connectivity and reliable throughput from an extended distance. It includes Bluetooth EDR and LE radio which complies with Bluetooth v2.1+EDR, v4.2, Low Energy, and v5.1.

2. Features

2.1 Platform

- Embedded high-performance 32-bit RISC microprocessor
- Integrate high efficiency switching regulator
- 40MHz crystal clock support with low power operation in sleep mode
- Best-in-class active and idle power consumption performance
- Fully Compliance with USB v2.0 specification
- Internal thermal sensor for temperature compensation and thermal protection.
- Self calibration.
- Advanced FDD/TDD mode Wi-Fi/Bluetooth coexistence scheme.
- Wi-Fi and Bluetooth over USB.

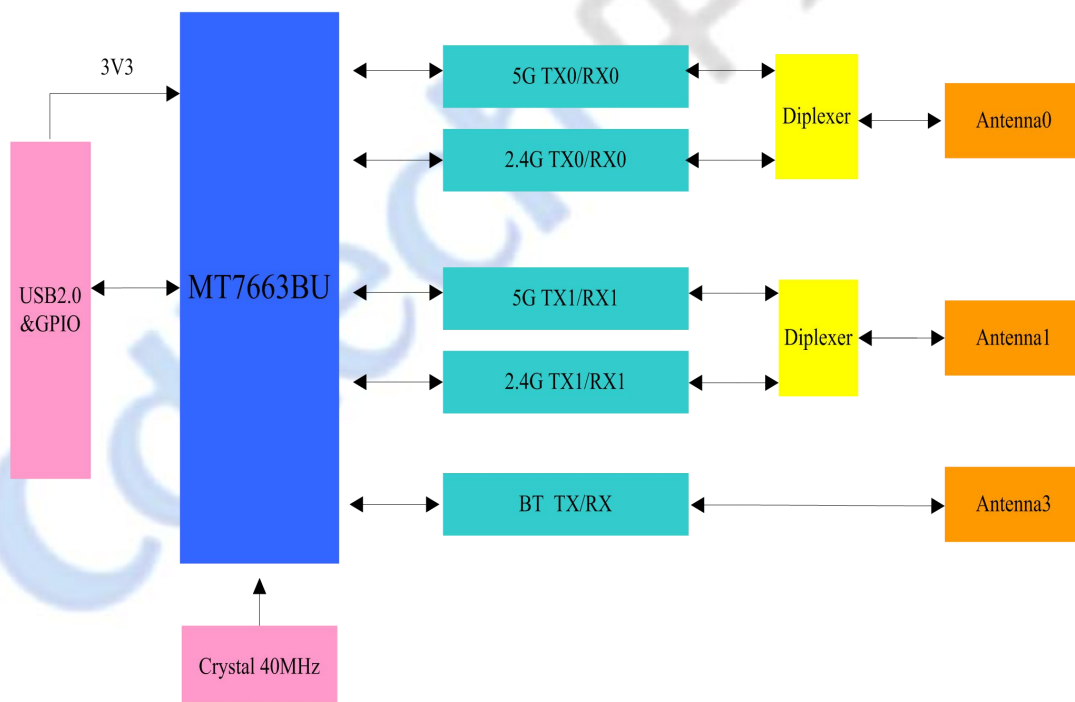
2.2 WLAN

- IEEE 802.11a/b/g/n11ac compliant
- Support 20/40MHz bandwidth in 2.4GHz band and 20/40/80MHz in 5GHz band, and.
- Dual-band 2T2R mode with data rate up to 867Mbps
- Greenfield, mixed mode, legacy modes support
- Integrated LNA, PA, and T/R switch
- Optional external LNA and PA support.
- IEEE 802.11d/e/h/i/j/k/r/v/w support
- Security support for WFA WPA/WPA2 /WPA3personal, WPS2.0
- Support MU-MIMO RX
- QoS support of WFA WMM, WMM PS

2.3 Bluetooth

- Bluetooth 5 dual mode for 2x the speed
- Bluetooth specification v2.1+EDR
- Bluetooth v4.2 Low Energy(LE)
- Standard HCI interface over USB super-speed,high-speed and full-speed mode
- Best-in-class BT/Wi-Fi coexistence performance
- Scatternet support:Up to 7 piconets simultaneously with background inquiry/page scan
- Up to 7 simultaneous active ACL links
- Support SCO and SCO link with re-transmission
- Support wide-band speech
- Integrated high efficiency PA and TSSI

3. Block Diagram



4. General Specification

Model	CDW-N37663U-02
Product Name	WLAN 11a/b/g/n/ac USB2.0 2T2R + Bluetooth 5.1module
Major Chipset	MT7663BU
Standard	802.11a/b/g/n/ac
Modulation Method	BPSK/ QPSK/ 16-QAM/ 64-QAM/256-QAM
Frequency Band	2.4GHz and 5GHz ISM Band
WiFi Interface	USB2.0
BT Interface	USB2.0
Operating Temperature	-20° C ~ 70° C
Storage Temperature	-40° C ~ 85°C
Humidity	5% to 90% maximum
Dimension	27.00x17.70x 2.54±0.2mm (LxWxH)

5. Electrical Characteristics

5.1 WiFi Section: 2.4GHz RF Specification

Feature	Description
WLAN Standard	IEEE 802.11a/b/g/n/ac WiFi compliant
Frequency Range	2.400 GHz ~ 2.497 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
Output Power	802.11b /11Mbps : 18.0dBm ± 2dB @ EVM ≤ -15dB
	802.11g /54Mbps : 15.0 dBm ± 2dB @ EVM ≤ -28dB
	802.11n HT20 /MCS7 : 15.0 dBm ± 2dB @ EVM ≤ -30dB
	802.11n HT40 /MCS7 : 14.0 dBm ± 2dB @ EVM ≤ -30dB
Receive Sensitivity 11b,20MHz @8%PER	- 1Mbps,PER @ -97 dBm, typical
	- 11Mbps,PER @ -89dBm, typical
Receive Sensitivity	- 6Mbps,PER @ -94dBm, typical

	- 54Mbps,PER @ -76 dBm, typical
Receive Sensitivity	- MCS=0,PER @ -94 dBm, typical
11n,20MHz @10%PER	- MCS=7,PER @ -75 dBm, typical
Receive Sensitivity	- MCS=0,PER @ -91dBm, typical
11n,40MHz @10%PER	- MCS=7,PER @ -72 dBm, typical

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	5.0GHz : -
Modulation	802.11a : OFDM /64-QAM,16-QAM, QPSK, BPSK 802.11n : OFDM /64-QAM,16-QAM, QPSK, BPSK 802.11ac : OFDM /256-QAM
Output Power	802.11a 54Mbps: 15.0 dBm ± 2dB @ EVM ≤ -25dB 802.11n HT20 /MCS7 : 14.0 dBm ± 2 dB @ EVM ≤ -28dB 802.11n HT40 /MCS7 : 14.0dBm ± 2 dB @ EVM ≤ -28dB 802.11ac VHT20 /MCS8 : 13 dBm ± 2 dB @ EVM ≤ -30dB 802.11ac VHT40 /MCS9 : 12 dBm ± 2 dB @ EVM ≤ -32dB 802.11ac VHT80 /MCS9 : 12 dBm ± 2 dB @ EVM ≤ -32dB
Receive Sensitivity	- 6Mbps ,PER @ -94 dBm, typical
11a,20MHz @10%PER	- 54Mbps,PER @ -76 dBm, typical
Receive Sensitivity	- MCS=0,PER @ -94 dBm, typical
11n,20MHz @10%PER	- MCS=7,PER @ -74 dBm, typical
Receive Sensitivity	- MCS=0,PER @ -90 dBm, typical
11n,40MHz @10%PER	- MCS=7,PER @ -72 dBm, typical
Receive Sensitivity	- MCS=0, NSS1 PER @ -92 dBm, typical
11ac,20MHz @10%PER	- MCS=8, NSS1 PER @ -69 dBm, typical
Receive Sensitivity	- MCS=0, NSS1 PER @ -89 dBm, typical
11ac,40MHz @10%PER	- MCS=9, NSS1 PER @ -64 dBm, typical
Receive Sensitivity	- MCS=0, NSS1 PER @ -85 dBm, typical
11ac,80MHz @10%PER	- MCS=9, NSS1 PER @ -61 dBm, typical

5.2 Bluetooth Section:

Feature	Description		
General Specification			
Bluetooth Standard	Bluetooth V2.1+EDR,V4.2,V5.1		
Host Interface	USB2.0		
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)		-86 dBm	
Sensitivity @ BER=0.01% for π/4-DQPSK (2Mbps)		-86 dBm	
Sensitivity @ BER=0.01% for 8DPSK (3Mbps)		-80 dBm	
Maximum Input Level	GFSK (1Mbps):-20dBm		
	π/4-DQPSK (2Mbps) :-20dBm		
	8DPSK (3Mbps) :-20dBm		

6. Electrical Characteristics

6.1 WLAN current consumption

Description	TYP	Unit
Sleep mode, radio off	1.23	mA
2.4GHz RX Power saving, DTIM=1	2.39	mA
2.4GHz RX Active, HT20, MCS15	132	mA
2.4GHz TX CCK, 11Mbps @ 21dBm	417	mA
2.4GHz TX HT20, MCS15 @ 17.5dBm	596	mA
2.4GHz TX HT20, MCS8 @ 18dBm	652	mA
5GHz VHT80 RX Listen, 2RX	157	mA
5GHz RX Active, VHT80, MCS9, Nss=2	236	mA
5GHz TX VHT80, MCS9, Nss=2 @ 15dBm	717	mA
5GHz TX VHT80, MCS0, Nss=2 @ 17dBm	775	mA

6.2 Bluetooth current consumption

Description	TYP	Unit
Sleep mode, radio off	1.73	mA
Bluetooth TX @ 15dBm	86.5	mA
Bluetooth RX	29.4	mA
Bluetooth SCO connection, HV3 packets+sniff mode+scan (Page scan interval=1.28sec, inquiry scan interval=2.56s, sniff interval=500ms)	3.2	mA
Bluetooth page scan+inquiry scan (Page scan interval=1.28s, inquiry scan interval=2.56s)	2.14	mA
Bluetooth page scan (Page scan interval=1.28s)	1.92	mA

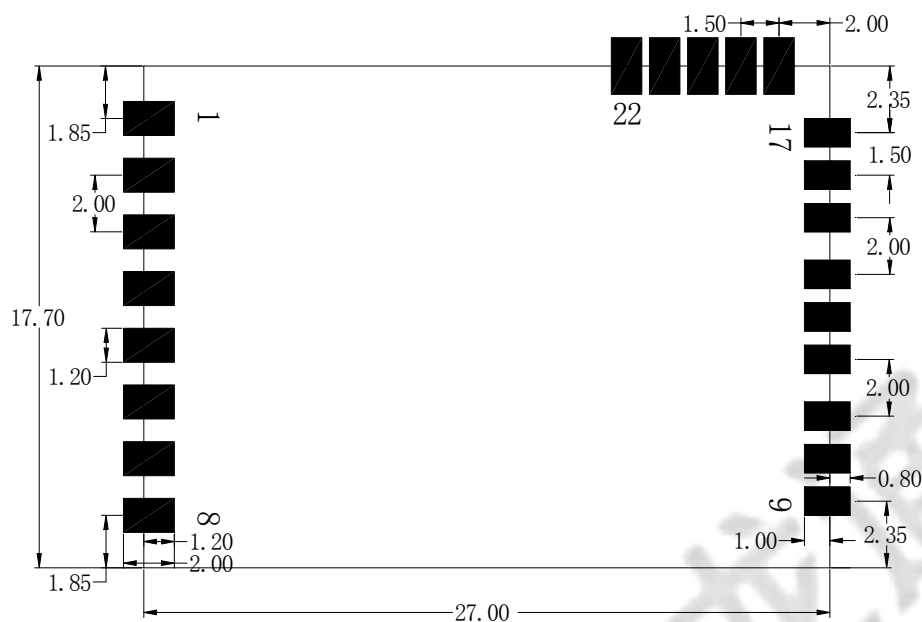
7. Supplier

Supplier list	
Name of Material	Supplier brand
Main chip	MTK
Crystal	FK/TKD/TXC/JWT
PCB	Bomin/Benchuang/E-Tech
Diplexer	ACX/Walsin/GLEAD/TDK/ Sunlord
Inductor	Sunlord/CHILISIN/SAMWHA/TDK
Capacitance	SAMSUNG /EYANG/ WALSIN/ muRata/TAIYO/ Darfon
Resistor	UniOhm /YAGEO/ WALSIN

8. Module photo

	
TOP VIEW	BOTTOM VIEW
Dimension: 27.00x17.70x2.54±0.2mm(LxWxH) / Material Thickness(PCB):0.8±0.1mm	

9. Pin Description and PCB size



Size (mm)	Tolerance (mm)
0-100	± 0.2

NO.	Name	Description
1	WO_BLE	BT wake up HOST(模组内部已上拉 10k 电阻)
2	GND	Ground connections
3	DP	USB positive differential data lines
4	DM	USB negative differential data lines
5	RESET	Module RESET (active low)(模组内部已上拉 10k 电阻)
6	VDD33	Power supply
7	WOWLAN	WLAN wake up HOST(模组内部已上拉 10k 电阻)
8	NC	-
9/11/12 /14/15/17	GND	Ground connections
10/13/16	NC	-
18	PCM_SYNC	BT PCM SYNC signal
19	PCM_CLK	BT PCM clock signal
20	PCM_IN	BT PCM data in
21	PCM_OUT	BT PCM data out (模组内部 10k 电阻下拉)
22	GND	Ground connections

10. IPEX Connector Spec

REV.	ECN NO./DESCRIPTION	DATE
1	N150271	07/20'15

NOTES:	
1. MATERIAL SPECIFICATION, 1-1. HOUSING: LCP UL94V-0 COLOR: BEIGE. 1-2. SIGNAL CONTACT: BRASS C2680; 1-3. GROUND CONTACT: PHOSPHOR-COPPER C5191;	
2. PLATING SPECIFICATION, 2-1. SIGNAL CONTACT: 50u" MIN. Ni PLATING OVER ALL. 4u"Au PLATED OVER MATING AREA. 1u"Au PLATED OVER SOLDER AREA. 2-2. GROUND CONTACT: 50u" MIN. Ni PLATING OVER ALL. 2u"Au PLATED OVER MATING AREA. 1u"Au PLATED OVER SOLDER AREA. 3. IR REFLOW: THE PEAK TEMPERATURE ON THE BOARD SHALL BE MAINTAINED FOR 10 SECONDS MAX AT 260°C.	
4. ELECTRICAL: 4-1. IMPEDANCE: 50Ω (NOMINAL) 4-2. FREQUENCY RANGE: 0~6GHz 4-3. RATED VOLTAGE: AC 60V. 4-4. LLCR: FOR SIGNAL AND GROUND CONTACT: INITIAL: 20mΩ MAX AFTER TESTING: 20mΩ MAX. 4-5. INSULATION RESISTANCE: MATED: 100V DC INITIAL: 500MΩ MIN. AFTER TESTING: 100MΩ MIN. 4-6. DIELECTRIC WITHSTAND VOLTAGE: MATED: APPLY 200V RMS, FOR 1 MINUTE NO BREAKDOWN. 5. MECHANICAL: 5-1. DURABILITY: 30 CYCLES. 5-2. CONNECTOR UNMATING FORCE: INITIAL: 4N MIN. AFTER DURABILITY 30 CYCLES: 2N MIN. 6. OPERATING TEMPERATURE OPERATING TEMPERATURE: -40°C~+90°C 7. HF COMPLIANT.	

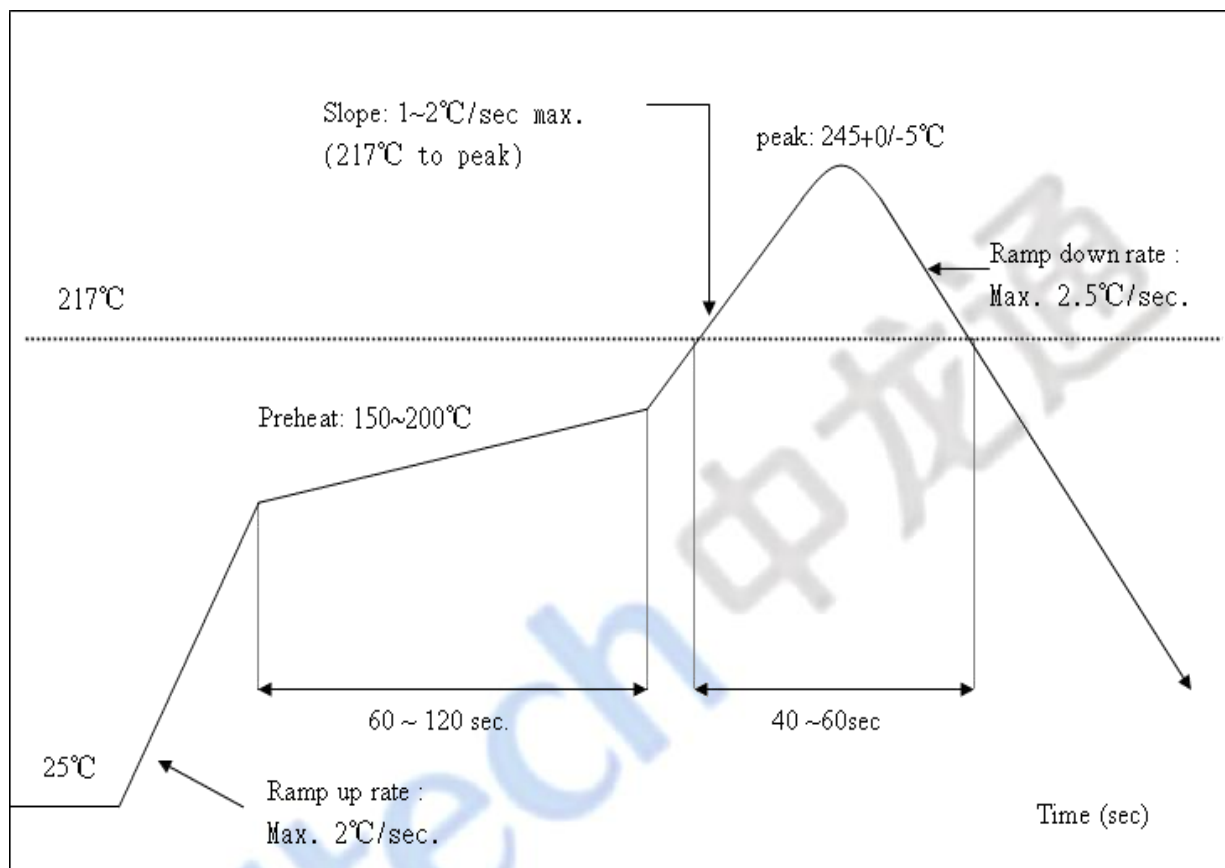
GENERAL TOLERANCES UNLESS SPECIFIED		PART NO.		LOTCONN	
X±	0.35	X°	3°	CD-ARF013-P02AW	
.XX±	0.25	.X°	2°	APPROVED BY	Kent Tsai
.XXX±	0.15	.XX°	1°	CHECKED BY	Jeaken
CUSTOMER DRAWING		DWG NO.		GAP-CD-ARF013-P02AW-P	
SIZE	UNITS	DRAWN BY		Chunyu Peng	
A4	MM [INCH]	SHEET		1 / 3	10:1
		SCALE		REV	
				1	

11. Recommended Reflow Profile

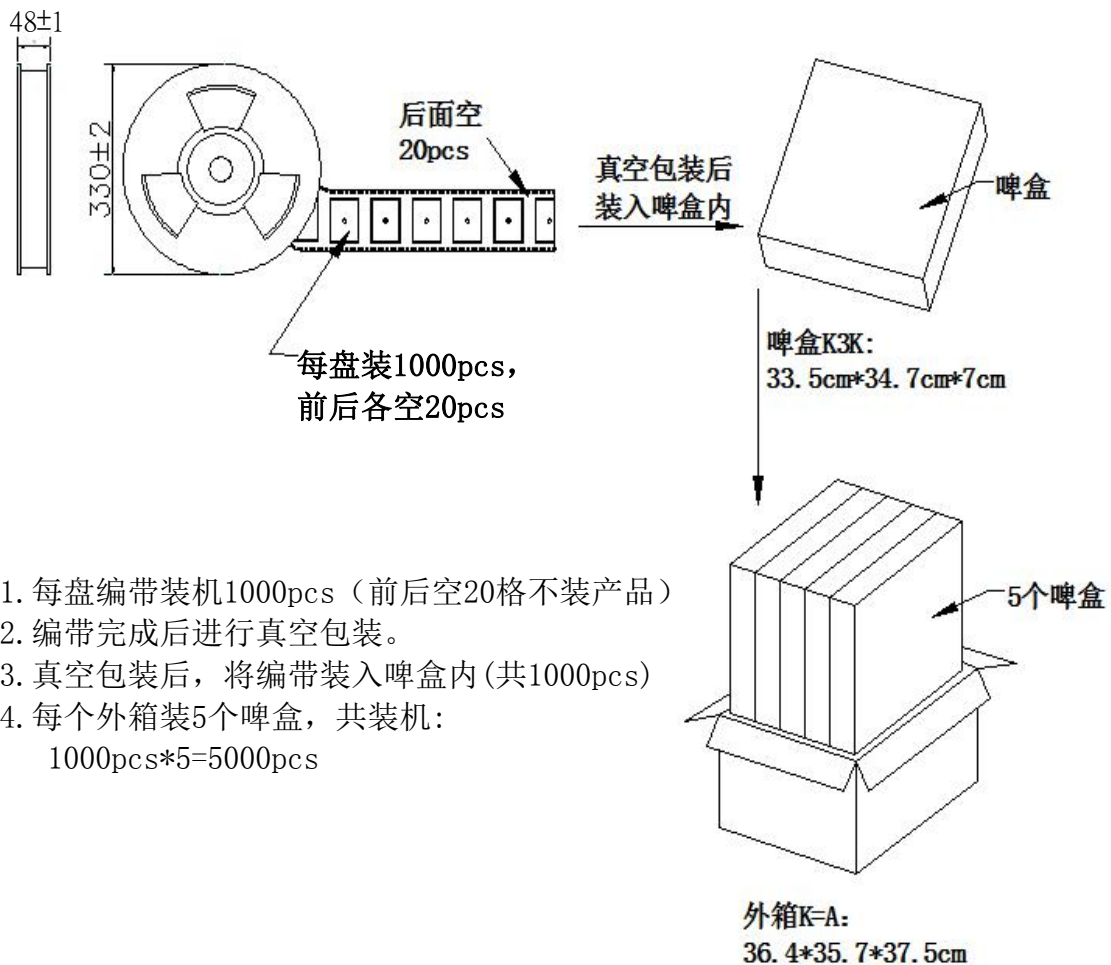
Referred IPC/JEDEC standard.

Peak Temperature : $<250^{\circ}\text{C}$

Number of Times : 2 times



12. Package



1. 每盘编带装机1000pcs（前后空20格不装产品）
2. 编带完成后进行真空包装。
3. 真空包装后，将编带装入啤盒内（共1000pcs）
4. 每个外箱装5个啤盒，共装机：
 $1000\text{pcs} \times 5 = 5000\text{pcs}$



ESD CAUTION

The CDW-N37663U-02 is ESD (electrostatic discharge) sensitive device and may be damaged with ESD or spike voltage. Although CDW-N37663U-02 is with built-in ESD protection circuitry, please handle with care to avoid the permanent malfunction or the performance degradation.

FCC Certification

Integration instructions for host product manufacturers according to KDB 996369 D03 OEM Manual v01r01

2.2 List of applicable FCC rules

The CDW-N37663U-02 is an WLAN 11a/b/g/n/ac USB2.0 2T2R + Bluetooth 5.1 module. It is within U.S. FCC part 15.247, 15.407 standard

2.3 Specific operational use conditions

The EUT is a WLAN 11a/b/g/n/ac USB2.0 2T2R + Bluetooth 5.1 module Operation Frequency: 2402-2480MHz for BT; 2412-2462MHz for WIFI 2.4G, 5150-5250/ 5725-5850MHz/ for WIFI 5G

Modulation Type: GFSK, $\pi/4$ -DQPSK, 8-DPSK for BT, GFSK for BLE, WLAN(DSSS/OFDM)

2.4 Limited module procedures

Not applicable; Single Modular Approval Request

2.5 Trace antenna designs

CDW-N37663U-02 is an WLAN 11a/b/g/n/ac USB2.0 2T2R + Bluetooth 5.1 module. It communicates with its antenna, which is PIFA Antenna

2.6 RF exposure considerations

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance between 20cm the radiator your body: Use only the supplied antenna.

2.7 Antennas

CDW-N37663U-02 is an WLAN 11a/b/g/n/ac USB2.0 2T2R + Bluetooth 5.1 module. It communicates with its antenna, which is PIFA Antenna

Antenna Designation:

BT/WIFI: PIFA Antenna

Antenna Gain:

BT:4.13dBi

2.4G WiFi: ant1/ant2:4.13dBi

5G WiFi: ant1/ant2:4.95dBi

2.8 Label and compliance information

The final end product must be label in a visible area , the Host must Contains FCC ID: 2BFLD-N37663U2

2.9 Information on test modes and additional testing requirements

Data transfer module demo board can control the EUT work in RF test mode at specified test channel.

2.10 Additional testing, Part 15 Subpart B disclaimer

The module without unintentional-radiator digital circuit, so the module does not required an evaluation by FCC Part 15 Subpart B. The host should be evaluated by the FCC Subpart B

2.11 OEM integration instructions:

This device is intended only for OEM integrators under the following conditions: The transmitter module may not be co-located with any other transmitter or antenna. The module shall be only used with the external antenna(s) that has been originally tested and certified with this module. As long as the conditions above are met, further transmitter test will not be required.

However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

2.12 Validity of using the module certification:

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization for this module in combination with the host equipment is no longer considered valid and the FCC ID of the module cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

ATTENTION

This device is intended only for OEM integrators under the following conditions:

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- 2) This device and its antenna(s) must not be co - located with any other transmitters except in accordance with FCC multi - transmitter product procedures. Referring to the multi - transmitter policy, multiple transmitter(s) and module(s) can be operated simultaneously without C2PC.
- 3) For all products market in US, OEM has to limit the Operating Frequency: 2402-2480MHz for BT; 2412-2462MHz for WIFI 2.4G, 5150-5250MHz / 5725-5850MHz for WIFI 5G. by supplied firmware programming tool. OEM shall not supply any tool or info to the end - user regarding to Regulatory Domain change.

USERS MANUAL OF THE END PRODUCT:

In the user manual of the end product, the end user has to be informed to keep at least 20cm separation with the antenna while this end product is installed and operated. The end user has to be informed that the FCC radio - frequency exposure guidelines for an uncontrolled environment can be satisfied. The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

FCC Caution:

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter. NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: -- Reorient or relocate the receiving antenna. -- Increase the separation between the equipment and receiver. -- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. -- Consult the dealer or an experienced radio/TV technician for help.

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance between 20cm the radiator your body: Use only the supplied antenna. FCC ID: 2BFLD-N37663U2