



SPECIFICATIONS

Model: NL06A

WiFi4 USB2.0 Network interface 43.5*15.6mm 25PIN

Version: V1.0

Pages: 10 page



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Revision History

Version	Date	Contents of Revision Change	Draft	Checked	Approved
V1.0	2024/05/16	Unified version	LIU	Roger Zhang	

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1. General Description

1.1 Introduction

TR7628DA4G(LN) module is a low-cost and low-power iot module based on Mediatek MT7628 as the core, supporting Linux and OpenWrt operating systems and custom development, with rich interfaces and powerful processors, can be widely used in smart devices or cloud service applications, etc. And can be free for secondary development

1.2 Description

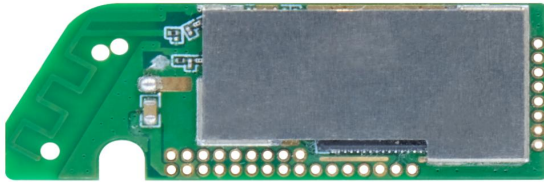
Model name	NL06A
Product descriptor	IEEE 802.11b/g/n
Dimension	43.5*15.6mm
Wi-Fi port	Network interface/USB2.0
Operating temperature	-20°C to+70°C
Storage temperature	-40°C to+85°C

2. Product characteristics

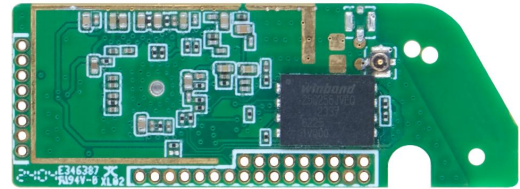
- Standard:IEEE 802.11b/g/n
- Super data processing capability, MCU main frequency up to 580MHz
- 20/40 Bandwidth of the channel
- Power supply3.3V±0.2V
- 300M wireless speed
- Supports USB2.0
- 10/100M adaptive network port

3.Product picture

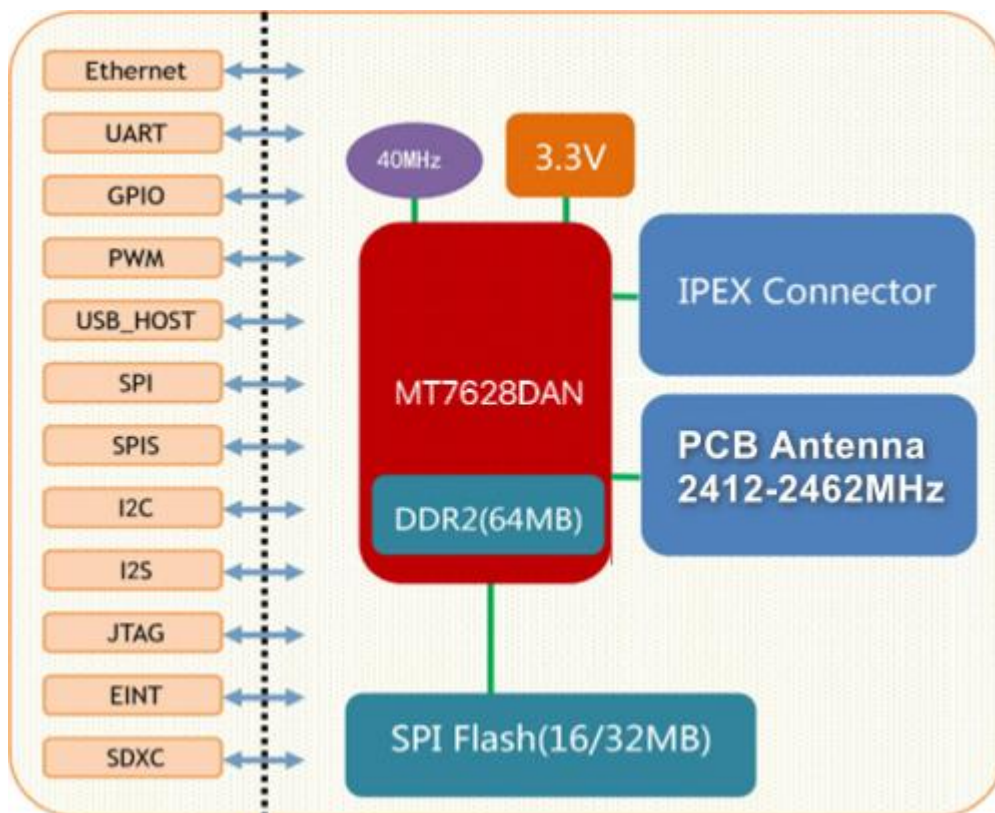
Front



Reverse



4. Block Diagram



5.General specification

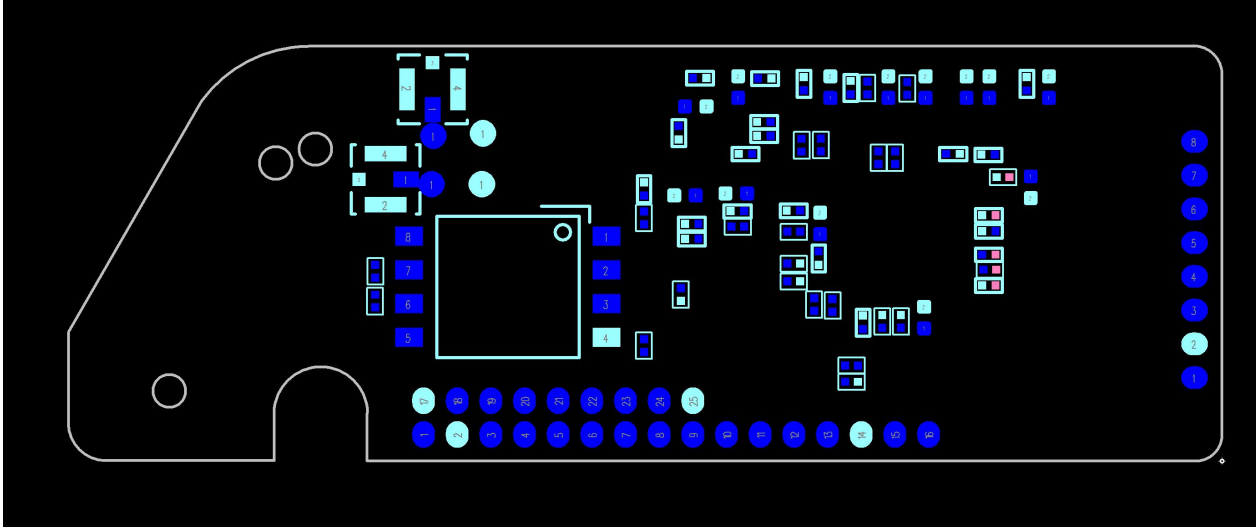
5.1 2.4G WiFi Specifications

TX power can control by driver side to increase or decrease the output value

Feature	Description	
WLAN Standard	IEEE 802.11 b/g/n Wi-Fi compliant	
Frequency Range	2.400GHz ~ 2.497GHz (2.4GHz ISM Band)	
Number of Channels	2.4GHz: Ch1 ~ Ch14	
Test Items	Typical Value	EVM
Output Power ¹	802.11b /11Mbps : 17dBm ± 2 dB	EVM ≤ -10dB
	802.11g /54Mbps : 14dBm ± 2 dB	EVM ≤ -25dB
	802.11n /MCS7 : 13dBm ± 2 dB	EVM ≤ -28dB
Spectrum Mask	Meet with IEEE standard	
Freq. Tolerance	±20ppm	
SISO Receive Sensitivity (11b,20MHz) @8% PER	- 1Mbps PER @ -94dBm	≤ -83
	- 11Mbps PER @ -85dBm	≤ -76
SISO Receive Sensitivity (11g,20MHz) @10% PER	- 6Mbps PER @ -90dBm	≤ -85
	- 54Mbps PER @ -71dBm	≤ -68
SISO Receive Sensitivity (11n,20MHz) @10% PER	- MCS=0 PER @ -90dBm	≤ -85
	- MCS=7 PER @ -69dBm	≤ -67
SISO Receive Sensitivity (11n,40MHz) @10% PER	- MCS=0 PER @ -87dBm	≤ -82
	- MCS=7 PER @ -66dBm	≤ -64
Maximum Input Level	802.11b : - 10dBm	
	802.11g/n : -20dBm	

6.Pin definition

6.1 Pin outline



6.2 Pin Definition details

Pin number	Pin name	Function description
1	3.3V	VDD3.3V
2	GND	Ground connections
3	GPIO0	GPIO0
4	IIC SDA	IIC SDA
5	IIC CLK	IIC CLK
6	TX1	UART1 TX
7	RX1	UART1 RX
8	TX0	UART0 TX
9	RX0	UART0 RX
10	LED1	GPIO#19
11	LED2	GPIO#18
12	GPIO1	GPIO#22
13	GPIO2	GPIO#21
14	GND	Ground connections
15	D+	USB DP

16	D-	USB D-
17	GND	Ground connections
18	TX2	PORT2 Network signal sending +
19	RX2	PORT2 Network signal sending -
20	1V8	DDR_IO_1V8
21	RXIP0	PORT0 Network signal acceptance +
22	RXIN0	PORT0 Network signal acceptance -
23	TXOP0	PORT0 Network signal sending +
24	TXON0	PORT0 Network signal sending-
25	GND	Ground connections

7. Electrical specification

7.1 Dc characteristics of power supply

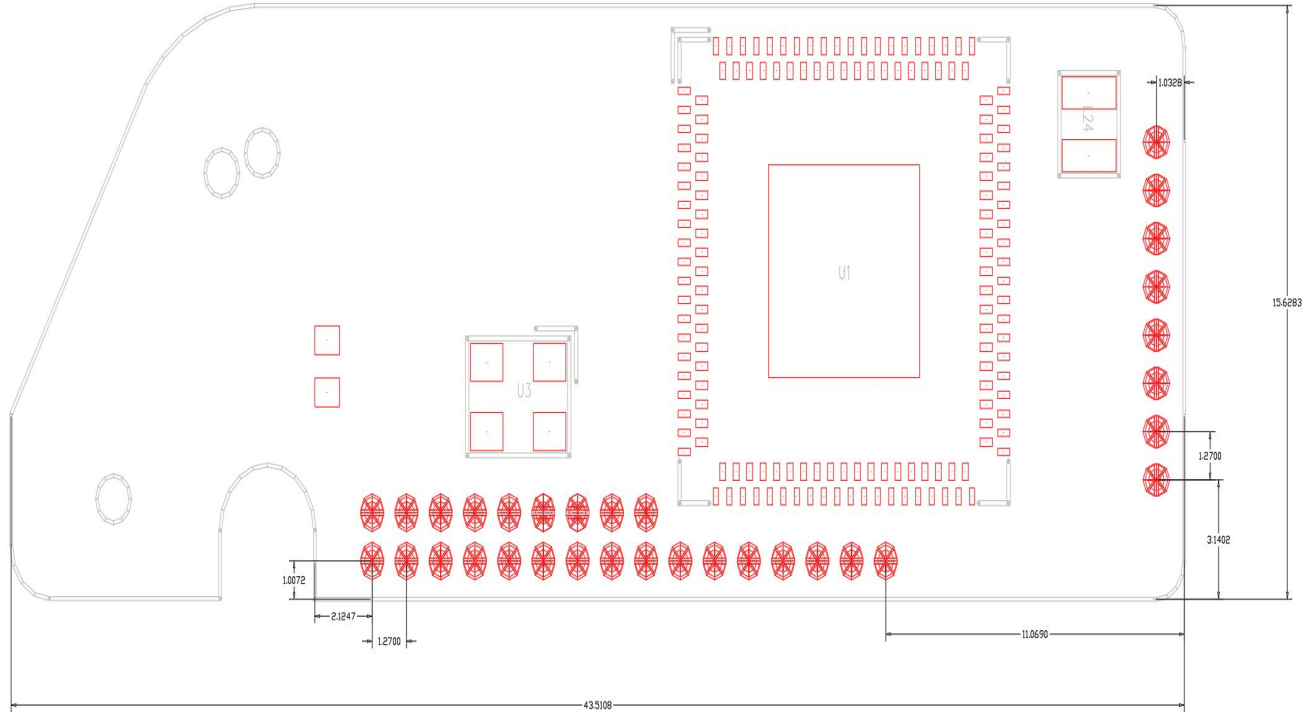
Describe	MIN	TYP	MAX	Unit
Operating Temperature	-10	25	70	°C
VBAT	3	3.3	3.6	V

7.2 Power dissipation

Power dissipation	Mode	VCC33=3.3V (Unit: mA)
	TX HT20 11g Mode	320
	TX HT20 11b Mode	350
	TX HT20 11n Mode	350
	TX HT40 11n Mode	310
	RX Mode	200

8. Dimensional reference

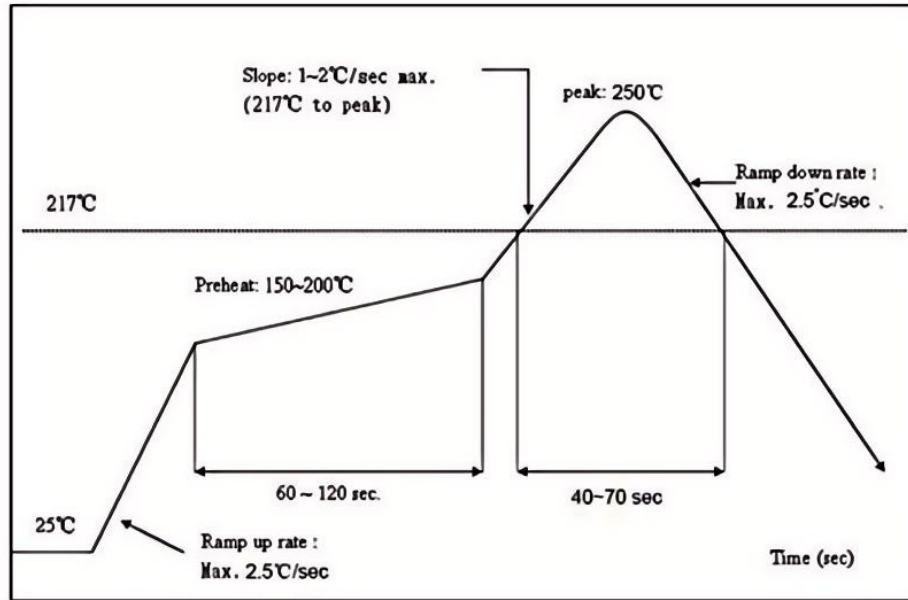
8.1 Physical size



9. List of key materials

Part Name	Description	Manufacturer
Chip	MT7628	MediaTek
PCB	TR7628D4-AIZ(LN)-V2.2 12*12*0.8mm four-layer Green oil	FZX/YX/LC
Crystal	40MHz 10PPM 15PF -20°C~85°C 3225 SMD ROHS	JWT/JF

10.Reflow welding standard temperature



Heating zone: Temperature: $<150^{\circ}\text{C}$, time: 60~90seconds, slope control between 1 ~3°C/S. Preheating constant temperature zone: temperature: $150^{\circ}\text{C}\sim 200^{\circ}\text{C}$, time: 60-120 seconds, slope between 0.3-0.8. Reflow welding zone: Peak temperature $235^{\circ}\text{C} \sim 250^{\circ}\text{C}$ (recommended peak temperature $< 245^{\circ}\text{C}$), time 30-70 seconds. Cooling zone: Temperature: $217^{\circ}\text{C} \sim 170^{\circ}\text{C}$, slope between 3 ~5°C/S. Solder is lead-free solder of tin silver copper alloy/ Sn&Ag& Cu Lead-free solder(SAC305)

11. Moisture sensitivity

The Modules is a Moisture Sensitive Device level 3, in according with standard IPC/JEDECJ-STD-020, take care all the relatives requirements for using this kind of components.

Moreover, the customer has to take care of the following conditions:

- a) Calculated shelf life in sealed bag: 12 months at <90% relative humidity(RH)
- b) Environmental condition during the production: 30°C / 60% RH according to IPC/JEDECJ-STD-033A paragraph 5
- c) The maximum time between the opening of the sealed bag and the reflow process must be 168 Hours if condition b) "IPC/JEDEC J-STD-033A paragraph 5.2" is respected
- d) Baking is required if conditions b) or c) are not respected
- e) Baking is required if the humidity indicator inside the bag indicates 10% RH or more

12. Warnings

FCC Statement

1.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. (2) This device must accept any interference received, including interference that may cause undesired operation.

2.Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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.

The device has been evaluated to meet general RF exposure requirements. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

The Module is designed to comply with the FCC statement. FCC ID is 2AEWY-NL06A.

The host system using the Module should have a label indicating it

contains the modular's FCC ID: 2AEWY-NL06A. This radio module must not installed to co-locate and operating simultaneously with other radios in host system additional testing and equipment authorization may be required to operating simultaneously with other radio. The Module and its antenna must not be co-located or operating in conjunction with any other transmitter or antenna within a host device.

The modular must be installed in the host that is assigned by Company name: NANOGRID LIMITED, Model no.: NL06A. If other host types used would need further evaluation and possible C2PC if they are not significantly similar to the one tested The WIFI Module is designed for a compact PCB design. It should be installed and operated with host or other minimum distance of 20 centimeters between the radiator and your body." To comply with FCC regulations limiting both maximum RF output power and human exposure to RF radiation, the maximum antenna gain including cable loss in a mobile-only exposure condition must not exceed 2.15 dBi in the 2.4G band. The module uses an IPEX antenna interface and ping angle interface antenna, this antenna is sold with the module.

Notice to OEM integrator

The end user manual shall include all required regulatory information/warning as shown in this manual. The OEM integrator is responsible for testing their end product for any additional compliance requirements required with this module installed. If the final product contains circuits of other FCC PART 15 Subparts, the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed. The intended use is generally not for the general public, it is generally for industry/commercial use. The connector is within the transmitter enclosure and can only be accessed by disassembly of the transmitter that is not normally required, the user has no access to the connector. Installation must be controlled. Installation requires special training.

This device complies with Part 15 of the FCC Rules.

This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

ISED Statement

The Module is designed to comply with the ISED statement. ISED Certification Number is 20489-NL06A. The host system using the Module should have a label indicating it

contains the modular's IC: 20489-NL06A. This radio module must not installed to co-locate and operating simultaneously with other radios in host system additional testing and equipment authorization may be required to operating simultaneously with other radio. The Module and its antenna must not be co-located or operating in conjunction with any other transmitter or antenna within a host device.

Le module est conçu pour se conformer à la déclaration d'ISDE. Le numéro de certification d'ISDE est 20489-NL06A. Le système hôte utilisant le module doit avoir une étiquette indiquant qu'il contient le circuit intégré du module : 20489-NL06A. Ce module radio ne doit pas être installé pour co-localiser et fonctionner simultanément avec d'autres radios dans le système hôte, des tests supplémentaires et une autorisation d'équipement peuvent être nécessaires pour fonctionner simultanément avec d'autres radios. Le module et son antenne ne doivent pas être co-localisés ou fonctionner en conjonction avec un autre émetteur ou antenne au sein d'un appareil hôte.

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science, and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference.
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1)

l'appareil ne doit pas produire de brouillage, et. (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Cet équipement doit être installé et utilisé avec une distance minimale de 20 cm entre le radiateur et votre corps.