MISTRAL
... Partners in Real Time

QCNFA324

Product name:

2x2 802.11 A/B/G/N/AC WiFi + Bluetooth Module

DO NOT COPY

MISTRAL
... Partners in Real Time

NOTICE

The information in this document is reviewed and is believed to be accurate. Nonetheless, this document is subject to change without Notice and Mistral Solutions private Limited (Mistral) assumes no responsibility for any inaccuracies that may be contained in this document, and make no commitment to update or to keep current the contained information, or to notify a person or organization of any updates. Mistral reserves right to make changes, at any time, in order to improve reliability, function or design and to attempt to supply the best product possible. Mistral does not represent that products described herein are free from patent infringement or from any third party right.

No part of this document may be reproduced, adapter or transmitted in any form or by any means, electronic or mechanical, for any purpose, except as expressly set forth in a written agreement signed by Mistral. Mistral or its affiliates may have patents or pending patent applications, trademarks, copyrights, mask work rights or other intellectual property rights that apply to the ideas, material and information expressed herein. No license to such rights is provided except as expressly set forth in a written agreement signed by Mistral.

Mistral makes no warranties of any kind with regard to the content of this document. In no event shall Mistral be liable for direct, indirect, special, incidental, speculator or consequential damages arising from the use or inability to use this product or documentation, Even if advised of the possibility of such damages. In particular, Mistral will not have any liability for any hardware, software, or data transmitted or otherwise used with the product, including the costs of repairing, replacing, integrating, installing or recovering such hardware, software or data. Mistral specifically disclaims the implied warranties or merchantability and fitness for particular purpose as they might otherwise apply to this document and to the ideas, material and information expressed herein.

DO NOT COPY

Table of Contents

Introduction 4
Functional Specification 4
RF Characteristics 5
Operating System Support 6
Operating Temperature Conditions 6
RF Connector Type 6
Dimension 6
Ad Hoc Mode 6
Infrastructure Mode 7
To setup your device as a Wi-Fi hotspot in Android 8
To connect through Bluetooth on device using Android 9

DO NOT COPY

Introduction

This documentation describes the specification of QCNFA324 (WLAN/BT) Combo Module. This module design is based on the Qualcomm Atheros chipset. The QCA6174A-1 is a single-chip wireless local area network (WLAN) and Bluetooth (BT) combo solution to support 2x2 MIMO with IEEE802.11a/b/g/n/ac WLAN standards and BT4.2+HS enabling seamless integration of WLAN/BT and Low Energy technology.

Functional Specification

- WLAN dual-band 2x2 11a/b/g/n/ac and Bluetooth V4.2.
- Support WLAN 20MHz/40MHz at 2.4GHz and 20/40/80 MHz at 5GHz
- Support BT4.2+HS, BLE and be backwards compatible with BT1.x,2.x+EDR.
- Support BT for class 1 power level transmissions without requiring an external PA.
- Support Low power PCI-e (w/L1 sub-state) interface for WLAN and UART/PCM interface for BT.
- One-chip one-time programmable (OTP) memory.
- Support 3D frame sync signal from TV to sync with 3D glasses via BT.

DO NOT COPY

RF Characteristics

All typical performance specification are based-on operation at room temperature (+25℃) using default parameter setting and nominal supply voltages at RF connector port.

WiFi		
Data Rate	802.11b	11, 5.5, 2, 1 Mbps
	802.11 a/g	54, 48, 36, 24, 18, 12, 9, 6 Mbps
	802.11n	HT20 mode: MCS0~MCS15, up to 144.4Mbps
		HT40 mode: MCS0~MCS15, up to 300Mbps
	802.11ac	VHT20 mode: MCS0~MCS8: up to 173.3Mbps
		VHT40 mode: MCS0~MCS8: up to 400Mbps
		VHT80 mode :MCS0~MCS9,up to 866.7Mbps
Bandwidth	2.4GHz	20MHz,40MHz
	5GHz	20MHz, 40MHz, 80MHz
Modulation Techniques	802.11b	CCK, DQPSK, DBPSK
	802.11a/g	64QAM,16QAM, QPSK, BPSK
	802.11n	64QAM,16QAM, QPSK, BPSK
	802.11ac	256QAM,64QAM,16QAM, QPSK, BPSK
Operating Frequency		2.412GHz~2.472GHz
		5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.5~5.70GHz, 5.745 ~ 5.825GHz
Media Access Control		CSMA/CA with ACK
Bluetooth		
Radio Modulation		FHSS
Operating Frequency		2.402GHz ~ 2.480GHz
Channel Numbers		79 channels with 1MHz BW

DO NOT COPY

Operating System Support

Support the Win7& Win8.1&Linux & Android operating system on normal driver.

Operating Temperature Conditions

The product shall be capable of continuous reliable operation when operating in ambient temperature of -10℃ to +70℃.

RF Connector Type

- The standard 2x2mm size RF receptacle connectors to be used in conjunction with the M.2 boards/modules.
- The same RF Receptacle on module supports either 0.81mm or 1.13mm diameter cable. Prefer to use 1.13mm diameter cable for lower loss.
- 1.2mm max. mated height for low profile design.
  Example of IPEX RF connector is IPEX P/N:20449-001E (MHF-4)

Dimension

(W x L): 12mmx16mm.

Max Z-height is 1.63mm.

The Wi-Fi standards specify two different configuration modes, infrastructure and ad-hoc

Ad Hoc Mode

Ad-hoc mode is also known as “peer-to-peer” mode. Ad-hoc networks don’t require a centralized access point. Instead, devices on the wireless network connect directly to each other. If you set up the two devices in ad-hoc wireless mode, they’d connect directly to each other without the need for a centralized access point.

DO NOT COPY

Infrastructure Mode

In infrastructure mode, communication between two nodes on the network flows through the access point. Computer A actually "talks" to the access point, which in turn talks to Computer B. The access point also performs a number of other roles, such as connecting the nodes to the Internet or other WAN (Wide Area Network), connecting multiple wireless networks, connecting the wireless nodes to a wired network, and providing management and security functionality (such as a firewall).

To connect this device to a wireless network in Android

1. Press the **Home** button, and then press the **Apps** button. Navigate to **Settings**.
2. Under “Wireless and Networks”, make sure "Wi-Fi" is turned on, then press **Wi-Fi.**
3. You may have to wait a moment as your device detects wireless networks in range and displays them in a list. To rescan for available networks at any time, select **Scan.**
   Note: You can also choose "Add a Wi-Fi network" to manually configure your network. This is usually done if the wireless network or SSID is hidden.
4. Press the Wi-Fi network name that you want to connect to. If the network is not secured, the connection should complete successful. and you can skip the remainder of these instructions. If a padlock symbol is displayed to the right of the network name, it is secured and requires a password (also known as a Passphrase or Key) to complete the connection.
5. If prompted, enter the correct Wi-Fi network password, and press **Connect**. This will complete your connection to the wireless network.
6. If the Android reports that it has successfully connected to the wireless network, but you still cannot access the Internet, you will have to discuss this problem with the network administrator.

To setup your device as a Wi-Fi hotspot in Android

1. Turn off Wi-Fi power by touching **Apps** -> **Settings ->** Under **Wireless & networks** turn Wi-Fi Off.
2. From the home screen, touch **Apps** -> **Settings** -> **More** -> **Tethering & Mobile Hotspot > Mobile Hotspot** to turn on the hotspot.
3. Touch **Mobile Hotspot settings -> Configure Mobile Hotspot** to change hotspot security and configuration settings:

   • Network SSID—Enter a unique name for your hotspot

   • Security—Select the type of security you want, and touch Save: WEP, WPA, or WPA2. Enter a unique password. Other users can access your Wi-Fi hotspot only if they enter the correct password.

   Note: Keep it secure. To protect your phone and hotspot from unauthorized access, it is strongly recommended that you set up hotspot Security (WPA2 is the most secure), including password.

   • Select AP Band - Select a channel that minimizes potential interference. You may need to try different channels after your hotspot is active for a time.
4. Touch **Save** when the settings are complete. When your Wi-Fi hotspot is active, other Wi-Fi enabled devices can connect by entering your hotspot's SSID, selecting a Security type, and entering the correct Wireless password.

To connect through Bluetooth on device using Android

1. Open the Settings app in Android
2. Tap Connected devices -> Connection preferences -> Bluetooth. If you don't see "Connection preferences," go to the next step.
3. Make sure Bluetooth is turned on.
4. In the list of paired devices, tap a paired but unconnected device.
5. When your device and the Bluetooth target are connected, the target device will be shows as "Connected."

DO NOT COPY

MISTRAL
... Partners in Real Time

Federal Communication Commission Interference Statement

FCC Statements (USA)

FCC ID: 2AVEC-QCNFA324

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 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 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.

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 transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Operations in the 5.15-5.25GHz band are restricted to indoor usage only.

This device meets all the other requirements specified in Part 15E, Section 15.407 of the FCC Rules.

DO NOT COPY

This module is intended for OEM integrators only. Per FCC KDB 996369 D03 OEM Manual v01 guidance, the following conditions must be strictly followed when using this certified module:

The module is tested for standalone portable RF exposure use condition. Any other usage conditions such as co-location with other transmitter(s) will need a separate reassessment through a class II permissive change application or new certification.

RF exposure considerations

This equipment complies with FCC portable radiation exposure limits set forth for an uncontrolled environment. SAR evaluation is found to confirm compliance with relevant FCC portable RF exposure rules set forth for body.

Antennas

The following antennas have been certified for use with this module; antennas of the same type with equal or lower gain may also be used with this module.

Antenna Type	SMD Chip type Antenna
Antenna connector	MHF4
Antenna PN#	SR42W001 Antenova
Antenna Gain	2dBi for 2.4GHz & 3dBi for 5GHz

e-labelling of FCC & IC

e-labelling of the regulatory information of the product can be accessed through the below path

Settings -> About tablet -> Regulatory

End-user product manufacturers shall retain and display the regulatory information in the specified path.

DO NOT COPY

FCC COMPLIANCE STATEMENT

FCC ID : 2AVEC-QCNFA324

Additional testing, Part 15 Subpart B disclaimer

> This transmitter module is tested as a subsystem and its certification does not cover the FCC Part 15 Subpart B (unintentional radiator) rule requirement applicable to the final host. The final host will still need to be reassessed for compliance to this portion of rule requirements if applicable.

As long as all 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.

IMPORTANT NOTE: In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not 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.

Manual Information To the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

OEM/Host manufacturer responsibilities

OEM/Host manufacturers are ultimately responsible for the compliance of the Host and Module. The final product must be reassessed against all the essential requirements of the FCC rule such as FCC Part 15 Subpart B before it can be placed on the US market. This includes reassessing the transmitter module for compliance with the Radio and EMF essential requirements of the FCC rules. This module must not be incorporated into any other device or system without retesting for compliance as multi-radio and combined equipment

DO NOT COPY

Label and compliance information

The final end product must be labeled in an easily visible area with the following: “Contains FCC ID: 2AVEC-QCNFA324”. An important note is that the grantee's FCC ID can be used only when all FCC compliance requirements are met.

Industry Canada (IC) Statement

IC : 26058-QCNFA324

HVIN: QCNFA324

MODEL: QCNFA324

Compliance Statements: This device complies with Industry Canada license-exempt RSS standard(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.

Déclarations de conformité: 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.

Caution Statements:

• This equipment complies with radio frequency exposure limits set forth by Industry

Canada for an uncontrolled environment.

Déclarations de mise en garde:

• Cet équipement est conforme aux limites d'exposition aux radiofréquences défines par Indstrie Canada pourun environment non contrôlé.

DO NOT COPY

Label and compliance information

The final end product must be labeled in an easily visible area with the following: “Contains IC : 26508-QCNFA324”. An important note is that the grantee's IC can be used only when all IC compliance requirements are met.

Informations d'étiquetage et de conformité

Le produit final final doit être étiqueté dans une zone facilement visible avec ce qui suit: «Contient IC: 26508-QCNFA324». Il est important de noter que le IC du bénéficiaire ne peut être utilisé que lorsque toutes les exigences de conformité du IC sont satisfaites

DO NOT COPY