Azurewave AW-NB136NF

Azurewave AW-NB136NF WiFi + Bluetooth 4.0 NGFF (M.2) Module User Manual

Model: AW-NB136NF

1. Introduction

This manual provides comprehensive instructions for the installation, operation, and maintenance of the Azurewave AW-NB136NF module. The AW-NB136NF is a highly integrated wireless communication module featuring 802.11a/b/g/n WiFi and Bluetooth 4.0 capabilities, designed for integration into compatible devices such as laptops, personal computers, smartphones, and tablets.
It utilizes a compact NGFF (M.2 1630) form factor and is powered by the Broadcom BCM43142 single-chip solution. The module is engineered to minimize system power requirements through efficient power management functions as specified in the IEEE 802.11 standard. It supports robust security protocols including WPA/WPA2 (personal) and WEP encryption, with hardware acceleration for AES and TKIP for enhanced data security. Additionally, it is Cisco Compatible Extension (CCX) certified and supports 802.11e Quality of Service (QoS) for optimized video, voice, and multimedia applications.
For Bluetooth functionality, the AW-NB136NF is Bluetooth 4.0 compliant, offering features like extended Synchronous Connections (eSCO) for improved voice quality and Adaptive Frequency Hopping (AFH) to reduce radio frequency interference. This combination ensures easier device connectivity, lower power consumption, and enhanced security for Bluetooth operations.

2. Key Features

- **Wireless Standards:** IEEE 802.11a/b/g/n for Wi-Fi connectivity.
- **Bluetooth Version:** Bluetooth 4.0 compliant.
- **Form Factor:** NGFF (M.2 1630) for compact integration.
- **Chipset:** Broadcom BCM43142 (Single chip solution).
- **Modulation Technologies:** DSSS, OFDM, DBPSK, DQPSK, CCK, QAM.
- **Security:** Supports WPA/WPA2 (personal), WEP encryption, IEEE 802.11i with AES and TKIP acceleration.
- **Quality of Service (QoS):** 802.11e support for multimedia applications.
- **Cisco Compatible:** CCX certified.
- **Bluetooth Enhancements:** Extended Synchronous Connections (eSCO) and Adaptive Frequency Hopping (AFH).
- **Integrated Components:** Power Management Unit (PMU), Power Amplifiers (PAs), Low Noise Amplifier (LNA).
- **Interface:** SDIO.

3. Technical Specifications

Feature	Specification
Model Name	AW-NB136NF
Manufacturer	Azurewave
Wireless Communication Standard	802.11n, Bluetooth
Frequency Band Class	Dual-Band
Form Factor	NGFF (M.2)
Connectivity Technology	Bluetooth
Security Protocol	WEP, WPA-PSK, WPA2-PSK
Compatible Devices	Laptop, Personal Computer, Smartphone, Tablet

4. Installation and Setup

The Azurewave AW-NB136NF module is designed for internal integration into compatible host devices that support the NGFF (M.2) form factor. Installation typically involves physically inserting the module into an available M.2 slot on the device's motherboard and securing it.

4.1 Physical Installation

1. **Power Off:** Ensure the host device is completely powered off and disconnected from any power source.
2. **Access M.2 Slot:** Open the host device's casing to access the internal components and locate an available M.2 slot. Refer to your host device's service manual for specific instructions on accessing internal components.
3. **Insert Module:** Carefully align the AW-NB136NF module with the M.2 slot and gently insert it at an angle.
4. **Secure Module:** Once fully seated, push the module down and secure it with the appropriate screw provided by your host device manufacturer.
5. **Connect Antennas:** If external antennas are required and available, carefully connect them to the module's antenna connectors.
6. **Close Casing:** Reassemble the host device's casing.

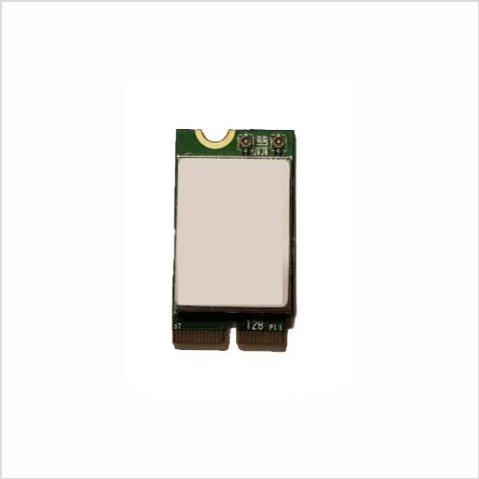


Figure 1: Azurewave AW-NB136NF WiFi and Bluetooth 4.0 NGFF (M.2) module. This image displays the Azurewave AW-NB136NF module, a compact NGFF (M.2) card designed for wireless connectivity. It features two antenna connectors at the top and the M.2 interface at the bottom, indicating its form factor for integration into compatible devices.

4.2 Driver Installation

After physical installation, the necessary drivers for the Broadcom BCM43142 chipset must be installed on the host device's

operating system.

- **Operating System Support:** Ensure your operating system is compatible with the Broadcom BCM43142 chipset.
- **Driver Source:** Obtain the latest drivers from the host device manufacturer's support website or directly from the Broadcom support website.
- **Installation Process:** Follow the driver installation instructions provided by the driver package. This typically involves running an executable file and following on-screen prompts.
- **Verification:** After installation, verify that the Wi-Fi and Bluetooth adapters are recognized and functioning correctly in your operating system's Device Manager (Windows) or System Information (macOS/Linux).

5. Operation

Once the AW-NB136NF module is installed and drivers are successfully loaded, you can begin using its Wi-Fi and Bluetooth functionalities.

5.1 Wi-Fi Connectivity

1. **Enable Wi-Fi:** Ensure Wi-Fi is enabled in your operating system's network settings.
2. **Scan for Networks:** Your device will automatically scan for available Wi-Fi networks.
3. **Select Network:** Choose your desired network from the list.
4. **Enter Password:** If the network is secured, enter the Wi-Fi password (security key) when prompted.
5. **Connect:** Confirm to connect to the network.

5.2 Bluetooth Connectivity

1. **Enable Bluetooth:** Ensure Bluetooth is enabled in your operating system's settings.
2. **Pairing Mode:** Put your Bluetooth device (e.g., headphones, mouse, keyboard) into pairing mode. Refer to your Bluetooth device's manual for specific instructions.
3. **Scan for Devices:** On your host device, search for new Bluetooth devices.
4. **Select Device:** Select your Bluetooth device from the list of discovered devices.
5. **Pair:** Follow any on-screen prompts to complete the pairing process, which may include entering a PIN or confirming a code.

6. Maintenance

The AW-NB136NF module is a low-maintenance component. Adhering to the following guidelines will help ensure its longevity and optimal performance:

- **Keep Clean:** Ensure the host device's internal environment is free from excessive dust and debris, which can affect component performance and heat dissipation.
- **Avoid Physical Damage:** Handle the module with care during installation. Once installed, avoid subjecting the host device to severe impacts or vibrations that could dislodge or damage the module.
- **Driver Updates:** Regularly check for and install the latest drivers for the Broadcom BCM43142 chipset from the manufacturer's website. Driver updates can improve performance, stability, and security.
- **Operating Environment:** Operate the host device within its recommended temperature and humidity ranges to prevent adverse effects on internal components, including the wireless module.

7. Troubleshooting

If you encounter issues with your AW-NB136NF module, consider the following troubleshooting steps:

- **No Wi-Fi/Bluetooth Detected:**
  - Verify that the module is correctly seated in the M.2 slot.

- Ensure drivers are properly installed and updated. Check Device Manager (Windows) for any error indicators.
- Confirm Wi-Fi and Bluetooth are enabled in your operating system settings.
- Restart your host device.

- **Poor Signal Strength or Disconnections:**
  - Check antenna connections to the module.
  - Ensure there are no physical obstructions or sources of interference (e.g., other electronic devices, thick walls) between your device and the Wi-Fi router or Bluetooth accessory.
  - Update Wi-Fi router firmware.

- **Bluetooth Pairing Issues:**
  - Ensure the Bluetooth device is in pairing mode and within range.
  - Remove previous pairings of the device from your host system and attempt to re-pair.
  - Restart both your host device and the Bluetooth accessory.

- **Slow Wi-Fi Speeds:**
  - Ensure you are connected to a 802.11n compatible network.
  - Check for network congestion or interference.
  - Update network adapter drivers.

8. Warranty Information

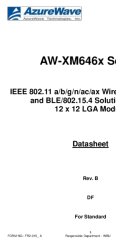
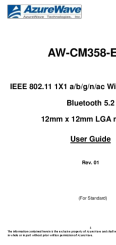
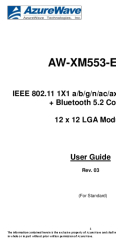
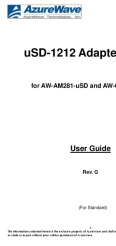
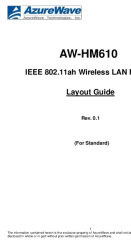
Specific warranty terms for the Azurewave AW-NB136NF module are typically provided by the original equipment manufacturer (OEM) of the host device or the reseller from whom the module was purchased. Please refer to the warranty documentation included with your host device or contact your point of purchase for detailed warranty information. Azurewave generally provides a limited warranty against defects in materials and workmanship under normal use.

9. Technical Support

For technical assistance, driver downloads, or further inquiries regarding the Azurewave AW-NB136NF module, please visit the official Azurewave website or contact their customer support. If the module was pre-installed in a branded device, it is recommended to first contact the support department of your device's manufacturer.
Manufacturer: Azurewave
Note: Specific contact details (phone numbers, email addresses, or support portals) are subject to change and should be obtained from the official Azurewave website or your device manufacturer's support resources.

Related Documents - AW-NB136NF

AzureWave AW-CM276NF IEEE 802.11a/b/g/n/ac Wireless LAN 2T2R and Bluetooth 5.1 Combo Module (M.2 1216) Datasheet Rev. F 08 (For Standard)	AzureWave AW-CM276NF: IEEE 802.11ac/n/a/b/g/a WLAN & Bluetooth 5.1 Combo Module Datasheet Detailed datasheet for the AzureWave AW-CM276NF, a compact M.2 1216 module featuring IEEE 802.11ac/n/a/b/g/a Wi-Fi and Bluetooth 5.1 connectivity, designed for mobile devices. Includes specifications, electrical characteristics, interface details, mechanical information, and packaging.

	[AzureWave AW-XM646x Series: IEEE 802.11 a/b/g/n/ac/ax WLAN, BLE/802.15.4 12x12 LGA Module Datasheet] Detailed datasheet and layout guide for the AzureWave AW-XM646x Series module. This document covers technical specifications, features, electrical characteristics, host interfaces (WLAN, Bluetooth, 802.15.4), pin definitions, and PCB layout recommendations for integrating this 12x12 LGA module into various applications.
	[AzureWave AW-CM358-EVB User Guide: IEEE 802.11ac & Bluetooth 5.2 Wireless Module] This user guide provides detailed instructions for setting up and testing the AzureWave AW-CM358-EVB, a 12mm x 12mm LGA module supporting IEEE 802.11 a/b/g/n/ac Wireless LAN and Bluetooth 5.2. It covers hardware and software requirements, RF transmit/receive test setups, WLAN and Bluetooth basic tests, and EVB attachment.
	[AzureWave AW-XM553-EVB User Guide: IEEE 802.11ax Wi-Fi & Bluetooth 5.2 Wireless Module] User guide for the AzureWave AW-XM553-EVB evaluation board, featuring IEEE 802.11ax Wi-Fi and Bluetooth 5.2. Covers system setup, hardware requirements, software installation, RF testing, and schematics.
	[AzureWave uSD-1212 Adapter Board User Guide for NXP i.MX RT and i.MX6] Comprehensive user guide for the AzureWave uSD-1212 adapter board, designed for NXP i.MX RT and i.MX6 evaluation kits. Details hardware description, block diagrams, schematics, placement, and EVB kit contents for Wi-Fi/BT module integration.
	[AW-HM610 IEEE 802.11ah Wireless LAN Module Layout Guide] This document provides essential layout guidelines and recommendations for the AzureWave AW-HM610 IEEE 802.11ah Wireless LAN Module. It covers RF trace routing, ground and power planes, digital interfaces, antenna considerations, shielding, and footprint recommendations to ensure optimal performance and prevent EMI issues.