AW-NB136NF

IEEE 802.11 a/b/g/n Wireless LAN Module (M.2 1630)

User Manual

Version 0.1

Contents

Driver/Firmware Version

1. Dongle Host Driver, version 1.363.124
2. Firmware: 6.10.197.111.1

Power-Up/Power-Down/Reset Control

The AW-NB136NF has pin/signal that enable or disable the WLAN circuits.

Pin/Signal	***Description***
PIN23/WL_REG_ON	This signal is used by the PMU (with BT_REG_ON) to power up the WLAN section. It is also ORgated with the BT_REG_ON input to control the internal AW-NB136NF regulators. When this pin is high, the regulators are enabled and the WLAN section is out of reset. When this pin is low, the WLAN section is in reset/disable.

Considerations of Regulatory Requirements on Channel Mapping and Power

The AW-NB136NF supports a number of frequency bands, data rates and power (as the datasheet showed). But each country (or Region representing a group of countries) specifies the allowable channels, maximum output power, and measurement method (conducted or radiated) required to certify a wireless product for importation and sale in a specific country. Using an editable NVRAM file that the driver uses to initialize and configure AW-NB136NF.

Parameter	***Data***	***Description***
maxp2ga0 maxp2ga0	72 72	Maximum output power for each chain in the 2.4 GHz band in hexadecimal or decimal format. Units of 0.25 dB. This applies to all complementary code keying (CCK) rates as measured at antenna port. The nominal target power in dBm for CCK packets is (0.25 × maxp2ga0 in decimal) – 1.5 dB. The maximum output power is 0.25 * 72 = 18 dBm and the nominal power is 18 – 1.5 = 16.5 dBm.

maxp5ga0 maxp5ga1 maxp5lga0 maxp5lga1 maxp5hga0 maxp5hga1	72 72 72 72 72 72	Maximum output power for each chain in the 5 GHz mid, low and high bands in hexadecimal or decimal format. Units of 0.25 dB. This applies to all legacy orthogonal frequency division multiplexing (OFDM) rates as measured at antenna port. The nominal target power in dBm for is (0.25 × maxp5ga0 in decimal) – 1.5 dB. The maximum output power is 0.25 * 72 = 18 dBm and the nominal power is 18 – 1.5 = 16.5 dBm.
legofdmbw202gpo legofdmbw20ul2gpo		The 2.4 GHz OFDM back-off from the maximum output power as defined by maxp2ga0/1. Resolution is 0.5 dB per step. Values are applied to the eight transmission rate: 54, 48, 36, 24, 18, 12, 9, and 6 Mbps. Rate 6 = LSB.
legofdmbw205gmpo legofdmbw205glpo legofdmbw205ghpo		The 5 GHz OFDM back-off from the maximum output power for the mid, low, and high bands, as defined by maxp5ga0/1. Resolution is 0.5 dB per step. Values are applied to the eight transmission rate: 54, 48, 36, 24, 18, 12, 9, and 6 Mbps. Rate 6 = LSB.
mcsbw202gpo		MCS0 to MCS7 per rate transmit power offset from maxp2ga0/1 for 2.4 GHz HT20. One nibble per rate. Step size is 0.5 dB. MCS0 = LSB.
mcsbw402gpo		MCS0 to MCS7 per rate transmit power offset from maxp2ga0/1 for 2.4 GHz HT40. One nibble per rate. Step size is 0.5 dB. MCS0 = LSB.
mcsbw205gmpo mcsbw205glpo mcsbw205ghpo		The 5 GHz HT20 mid, low, and high bands MCS rate back-off from the maximum output power as defined by maxp5ga0/1. Resolution is 0.5 dB per step. Values are applied to the corresponding rates from MCS7-MCS0. MCS0 = LSB.
Mcsbw405gmpo Mcsbw405glpo Mcsbw405ghpo		The 5 GHz HT40 mid, low, and high bands MCS rate back-off from the maximum output power as defined by maxp5ga0/1. Resolution is 0.5 dB per step. Values are applied to the corresponding rates from MCS7-MCS0. MCS0 = LSB.
ccode		Country code. ETSI: 2.412 ~ 2.472 GHz : 5.150 ~ 5.250 GHz, 5.725 ~ 5.850 GHz:

The device is restricted to indoor use only when operating in the 5150 to 5250 MHz frequency range

	AT	BE	BG	CZ	DK	EE	FR
	DE	IS	IE	IT	HR	ES	CY
	LV	LI	LT	LU	HU	MT	NL
	NO	PL	PT	RO	SI	SK	GR
	FI	SE	CH	UK			

AW-NB136NF power setting in nvram:

For 2.4G MAX. output power (EIRP)

802.11b: 18dBm

802.11g: 18dBm

802.11n(HT20): 13dBm

For 5150-5250MHz MAX. output power (EIRP)

802.11a: 17dBm

802.11 n(HT20): 16dBm

802.11n(HT40): 15dBm

For 5725-5850MHz MAX. output power (EIRP)

802.11a: 14dBm

802.11 n(HT20): 14dBm

802.11n(HT40): 14dBm

15.19 Labeling requirements.

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.

15.21 Changes or modification warning.

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

15.105 Information to the user.

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

RF warning for Mobile device:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

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:

KDB 996369 D03 OEM Manual v01 rule sections:

2.2 List of applicable FCC rules

This module has been tested for compliance to FCC Part 15

2.3 Summarize the specific operational use conditions

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

2.4 Limited module procedures

Not application

2.5 Trace antenna designs

Not application

2.6 RF exposure considerations

This equipment complies with FCC mobile radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator & your body. If the module is installed in a portable host, a separate SAR evaluation is required to confirm compliance with relevant FCC portable RF exposure rules.

2.7 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. The antenna must be installed such that 20 cm can be maintained between the antenna and users.

Antenna Type	PIFA
Gain	2.4G:2dbi 5G:1dbi

2.8 Label and compliance information

The final end product must be labeled in a visible area with the following: “Contains FCC ID: 2APQR-RAISE3D2401”. The grantee's FCC ID can be used only when all FCC compliance
requirements are met.

2.9 Information on test modes and additional testing requirements

This transmitter is tested in a standalone mobile RF exposure condition and any co-located or simultaneous transmission with other transmitter(s) or portable use will require a separate class II permissive change re-evaluation or new certification.

2.10 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

Industry Canada statement

This AW-NB136NF complies with ISED's licence-exempt RSSs. 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.

Le présent appareil est conforme aux CNR d' ISED applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

5G WIFI statement

The device is restricted to indoor use when operated in 5150MHz~5350MHz to reduce the potential for interference

Radiation Exposure Statement:

This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with greater than 20cm between the radiator & your body.

Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements ISED établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé à plus de 20 cm entre le radiateur et votre corps.

IC statement

The final end product must be labeled in a visible area with the following ‘‘Contains IC: 32497-RAISE3D2401″

The Host Marketing Name (HMN) must be indicated at any location on the exterior of the host product or product packaging or product literature, which shall be available with the host product or online.

This radio transmitter [IC: 32497-RAISE3D2401] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with

this device.

Frequency range	Manufacturer	Peak gain	Impedance	Antenna type
2400-2500 5100-5800	INPAQ TECHNOLOGY	2.4G:2dbi 5G:1dbi	50 ohm	PIFA

1.The OEM integrator must be aware not to provide information to the end user regarding how to install or remove this RF module in the user manual of the end product. The user manual which is provided by OEM integrators for end users must include the following information in a prominent location.

L'intégrateur OEM doit être conscient de ne pas fournir d'informations à l'utilisateur final sur la manière d'installer ou de retirer ce module RF dans le manuel d'utilisation du produit final. Le manuel d'utilisation fourni par les intégrateurs OEM pour les utilisateurs finaux doit inclure les informations suivantes dans un emplacement visible.

2.To comply with IC RF exposure compliance requirements, the antenna used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter, except in accordance with IC multi-transmitter product procedures. Pour se conformer aux exigences de conformité de l'exposition RF IC, l'antenne utilisée pour cet émetteur ne doit pas être co-localisée ou fonctionner en conjonction avec une autre antenne ou un autre émetteur, sauf conformément aux procédures du produit multi-émetteur IC.

3.The final system integrator must ensure there is no instruction provided in the user manual or customer documentation indicating how to install or remove the transmitter module except such device has implemented two-ways authentication between module and the host system. L'intégrateur système final doit s'assurer qu'aucune instruction n'est fournie dans le manuel de l'utilisateur ou dans la documentation du client indiquant comment installer ou retirer le module transmetteur, sauf qu'un tel dispositif a mis en place une authentification bidirectionnelle entre le module et le système hôte.

4. The host device shall be properly labelled to identify the module within the host device. The end product must be labeled in a visible area with the following: “Contains IC: 32497-RAISE3D2401 ” Any similar wording that expresses the same meaning may be used.

Le périphérique hôte doit être correctement étiqueté pour identifier le module dans le périphérique hôte. Le produit final doit être étiqueté dans une zone visible avec: “Contains IC: 12208A-10 ” Toute formulation similaire exprimant la même signification peut être utilisée.

The IC Statement below should also be included on the label. When not possible, the IC Statement should be included in the User Manual of the host device. “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, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

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 onctionnement.”