

**Wireless Module**

**Wistron NeWeb Corporation**

**MITSUBISHI / WNC**

DHSC-MB43

|              |
|--------------|
| Part Number  |
| 81DHSC01.G01 |

**User Manual**

**Copyright Statement**

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## Europe – EU Declaration of Conformity

This device complies with the essential requirements of the R&TTE Directive 1999/5/EC. The following test methods have been applied in order to prove presumption of conformity with the essential requirements of the R&TTE Directive 1999/5/EC:

- EN 300 328 V2.1.1:
- Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband transmission systems; Data transmission equipment operating using wide band modulation techniques; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

In Italy the end-user should apply for a license at the national spectrum authorities in order to obtain authorization to use the device for setting up outdoor radio links and/or for supplying public access to telecommunications and/or network services.



|                      |                                                                                                                                                                                                                                      |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Český<br>[Czech]     | <i>[Jméno výrobce]</i> tímto prohlašuje, že tento <i>[typ zařízení]</i> je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.                                                                   |
| Dansk<br>[Danish]    | Undertegnede <i>[fabrikantens navn]</i> erklærer herved, at følgende udstyr <i>[udstyrets typebetegnelse]</i> overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.                                           |
| Deutsch<br>[German]  | Hiermit erkläre <i>[Name des Herstellers]</i> , dass sich das Gerät <i>[Gerätetyp]</i> in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.          |
| Eesti<br>[Estonian]  | Käesolevaga kinnitab <i>[tootja nimi = name of manufacturer]</i> seadme <i>[seadme tüüp = type of equipment]</i> vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele. |
| English              | Hereby, <i>[name of manufacturer]</i> , declares that this <i>[type of equipment]</i> is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.                                         |
| Español<br>[Spanish] | Por medio de la presente <i>[nombre del fabricante]</i> declara que el <i>[clase de equipo]</i> cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.            |
| Ελληνική<br>[Greek]  | ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ <i>[name of manufacturer]</i> ΔΗΛΩΝΕΙ ΟΤΙ <i>[type of equipment]</i> ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ                                                                              |

|                                                                                                               |                                                                                                                                                                                                                                      |
|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                               | ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/EK.                                                                                                                                                                                                     |
|  Français<br>[French]        | Par la présente <i>[nom du fabricant]</i> déclare que l'appareil <i>[type d'appareil]</i> est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.                                  |
|  Italiano<br>[Italian]       | Con la presente <i>[nome del costruttore]</i> dichiara che questo <i>[tipo di apparecchio]</i> è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.                         |
| Latviski<br>[Latvian]                                                                                         | Ar šo <i>[name of manufacturer / izgatavotāja nosaukums]</i> deklarē, ka <i>[type of equipment / iekārtas tips]</i> atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.                       |
| Lietuvių<br>[Lithuanian]                                                                                      | Šiuo <i>[manufacturer name]</i> deklaruoja, kad šis <i>[equipment type]</i> atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.                                                                                  |
|  Nederland<br>s [Dutch]      | Hierbij verklaart <i>[naam van de fabrikant]</i> dat het toestel <i>[type van toestel]</i> in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.                                  |
|  Malti<br>[Maltese]         | Hawnhekk, <i>[isem tal-manifattur]</i> , jiddikjara li dan <i>[il-mudel tal-prodott]</i> jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn rilevanti li hemm fid-Dirrettiva 1999/5/EC.                                  |
|  Magyar<br>[Hungarian]     | Alulírott, <i>[gyártó neve]</i> nyilatkozom, hogy a <i>[... típus]</i> megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EC irányelv egyéb előírásainak.                                                                   |
|  Polski<br>[Polish]        | Niniejszym <i>[nazwa producenta]</i> oświadczam, że <i>[nazwa wyrobu]</i> jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.                                                       |
|  Português<br>[Portuguese] | <i>[Nome do fabricante]</i> declara que este <i>[tipo de equipamento]</i> está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.                                                                    |
|  Slovensko<br>[Slovenian]  | <i>[Ime proizvajalca]</i> izjavlja, da je ta <i>[tip opreme]</i> v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.                                                                              |
| Slovensky<br>[Slovak]                                                                                         | <i>[Meno výrobcu]</i> týmto vyhlasuje, že <i>[typ zariadenia]</i> spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.                                                                                       |
|  Suomi<br>[Finnish]        | <i>[Valmistaja = manufacturer]</i> vakuuttaa täten että <i>[type of equipment = laitteen tyyppimerkintä]</i> tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen. |

端末機器の技術基準設計認証の認定番号

本製品は以下に認証を受けたものです。

認証機器名: 81DHSC01.G01

認定番号: R 201-XXXXXX

# 1. Introduction

Thank you for purchasing the 802.11 b/g/n Wireless LAN Device that provides the easiest way to wireless networking. This User Manual contains detailed instructions in the operation of this product. Please keep this manual for future reference.

## System Requirements

- 128 MB of RAM or later (recommended)
- 300 MHz processor or higher

# 2. Driver/Utility Installation

The driver should have been installed before the Appliances is shipped from the manufacturer. You can start using its network function without installing driver or utility.

This device is associated product for Appliances' host.

The following description provides a basic installation for wireless device.

For more information about the Wireless device, please refer to your manual.

Installing Wi-Fi device :

1. Link cable with connector on wireless device
2. Link wireless device with connector to PC and install software in wireless device
3. Open the back lid of Appliances, lock wireless device on internal main board of Appliances.
4. Power supply on internal main-board and allow Appliances to load fully.

# 3. Connecting to an Existing Network

1. Use the remote control that came with your Appliances to access the network configuration settings page.
2. Select the scanning wireless network function. The system starts to scan for available network. On this list, click Refresh to refresh the list at any time

3. Select the network you want to connect to.
4. If the chosen network has security enabled, you will have to setup corresponding security parameter. Contact the network manager for the correct settings. Select the security type and fill in required parameters. The options include the following:
  - WPA/WPA2/CCKM
  - WPA/WPA2 Passphrase
  - 802.1x
  - Pre-Shared Key (Static WEP)
  - None

## 4. Modifying a Wireless Network

### 4.1 Modifying General Settings

1. Use the remote control that came with your Appliances to access the network configuration settings page.
2. From the profile list, select one profile and choose the modify function.
3. Modify the settings below for your network.

|                                        |                                                                                                                                                |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Profile Name                           | Identifies the configuration wireless network profile. This name must be unique. Profile names are not case sensitive.                         |
| Client Name                            | Identifies the client machine.                                                                                                                 |
| Use this profile for Access Point mode | Configures station to operate in Access Point mode.                                                                                            |
| Network Names (SSIDs)                  | The IEEE 802.11 wireless network name. This field has a maximum limit of 32 characters. Configure up to three SSIDs (SSID1, SSID2, and SSID3). |

## 4.2 Modifying Security Settings

1. Use the remote control that came with your Appliances to access the network configuration settings page.
2. Select a security option of this wireless network. This product provides security options below. Contact your wireless network administrator for choosing a correct option.

- WPA/WPA2/CCKM
- WPA/WPA2 Passphrase
- 802.1x
- Pre-Shared Key (Static WEP)
- None

|                                        |                                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>WPA/WPA2</b>                        | Enables the use of Wi-Fi Protected Access (WPA).<br>Choosing WPA/WPA2 opens the WPA/WPA2 EAP drop-down menu.<br>The options include: <ul style="list-style-type: none"><li>• EAP-FAST</li><li>• EAP-TLS</li><li>• EAP-TTLS</li><li>• EAP-SIM</li><li>• PEAP (EAP-GTC)</li><li>• PEAP (EAP-MSCHAP V2)</li><li>• LEAP</li></ul>               |
| <b>WPA/WPA2<br/>Passphrase</b>         | Enables WPA/WPA2 Passphrase security.<br>Click on the Configure button and fill in the WPA/WPA2 Passphrase.                                                                                                                                                                                                                                 |
| <b>802.1x</b>                          | Enables 802.1x security. This option requires IT administration.<br>Choosing 802.1x opens the 802.1x EAP type drop-down menu. The options include: <ul style="list-style-type: none"><li>• EAP-FAST</li><li>• EAP-TLS</li><li>• EAP-TTLS</li><li>• EAP-SIM</li><li>• PEAP (EAP-GTC)</li><li>• PEAP (EAP-MSCHAP V2)</li><li>• LEAP</li></ul> |
| <b>Pre-Shared Key<br/>(Static WEP)</b> | Enables the use of pre-shared keys that are defined on both the access point and the station.<br>To define pre-shared encryption keys, choose the Pre-Shared Key radio button and click the Configure button to fill in the <u>Define Pre-Shared Keys window</u> .                                                                          |

|                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>None</b>                                        | No security (not recommended).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Allow Association to Mixed Cells</b>            | Check this check box if the access point with which the client adapter is to associate has WEP set to Optional and WEP is enabled on the client adapter. Otherwise, the client is unable to establish a connection with the access point.                                                                                                                                                                                                                                                                                                       |
| <b>Limit Time for Finding Domain Controller To</b> | Check this check box and enter the number of seconds (up to 300) after which the authentication process times out when trying to find the domain controller. Entering zero is like unchecking this check box, which means no time limit is imposed for finding the domain controller. Note: The authentication process times out whenever the authentication timer times out or the time for finding the domain controller is reached.                                                                                                          |
| <b>Group Policy Delay</b>                          | Specify how much time elapses before the Windows logon process starts group policy. Group policy is a Windows feature used by administrators to specify configuration options for groups of users. The objective is to delay the start of Group Policy until wireless network authentication occurs. Valid ranges are from 0 to 65535 seconds. The value that you set goes into effect after you reboot your computer with this profile set as the active profile.<br>This drop-down menu is active only if you chose EAP-based authentication. |

## 5. Specifications

| Item                  | Content                                                                                     |
|-----------------------|---------------------------------------------------------------------------------------------|
| Main chipset          | CYW4343W                                                                                    |
| CPU                   | STM32F413RHT6(STM)                                                                          |
| TX/RX                 | 1TX/1RX                                                                                     |
| Frequency range       | 2.400~2.4835 GHz                                                                            |
| Channel spacing       | 5 MHz                                                                                       |
| Modulation technology | DSSS : CCK,DQPSK,DBPSK<br>OFDM :BPSK,QPSK,16QAM,64QAM                                       |
| Data Rate             | 802.11b: 11/5.5/2/1Mbps<br>802.11g: 54/48/36/24/18/12/9/6Mbps<br>802.11n: MCS0~MCS7(65Mbps) |
| Host interface        | UART                                                                                        |
| Operation voltage     | DC 11.6~13.7 V                                                                              |
| Operation current     | 0.15A                                                                                       |
| Operation temperature | -30~70℃                                                                                     |
| Antenna Type          | Printed Antenna                                                                             |
| Antenna peak gain     | ANT : 2.6 dBi                                                                               |
| BLE                   | Class 1                                                                                     |

## **Federal Communication Commission Interference Statement**

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 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.

### **IMPORTANT NOTE:**

#### **Radiation Exposure Statement:**

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

Country Code selection feature to be disabled for products marketed to the US/CANADA



## **Integration instructions for host product manufacturers**

### **Applicable FCC rules to module**

FCC Part 15.247

### **Summarize the specific operational use conditions**

The module is must be installed in mobile device.

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) The transmitter module may not be co-located with any other transmitter or antenna
- 3) For all products market in US, OEM has to limit the operation channels in CH1 to CH11 for 2.4G band by supplied firmware programming tool. OEM shall not supply any tool or info to the end-user regarding  
to Regulatory Domain change.

As long as 3 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. 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.

### **Limited module procedures**

Not applicable

### **Trace antenna designs**

Not applicable

### **RF exposure considerations**

20 cm separation distance and co-located issue shall be met as mentioned in "Summarize the specific operational use conditions".

Product manufacturer shall provide below text in end-product manual

"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."

### **Antennas**

| Brand name | Model name | Antenna type | Antenna gain | Antenna connector |
|------------|------------|--------------|--------------|-------------------|
| WNC        | DHSC-MB43  | PIFA         | 2.6dBi       | NA                |

### **Label and Compliance Information**

Product manufacturers need to provide a physical or e-label stating

“Contains FCC ID: NKR-MB43” with finished product

**Information on Test Modes and Additional Testing Requirements**

Test tool: Tera Term, V 4.66 shall be used to set the module to transmit continuously.

**Additional Testing, Part 15 Subpart B Disclaimer**

The module is only FCC authorized for the specific rule parts listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed

## **Industry Canada statement:**

*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*

*L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique 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;*
- (2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.*

### **Radiation Exposure Statement:**

This equipment complies with Canada 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.

### **Déclaration d'exposition aux radiations:**

Cet équipement est conforme Canada limites d'exposition aux radiations dans un environnement non contrôlé. Cet équipement doit être installé et utilisé à distance minimum de 20cm entre le radiateur et votre corps.

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

- 1) The transmitter module may not be co-located with any other transmitter or antenna.

As long as 1 condition 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.

**Cet appareil est conçu uniquement pour les intégrateurs OEM dans les conditions suivantes:**

1) Le module émetteur peut ne pas être coïmplanté avec un autre émetteur ou antenne.

Tant que les 1 condition ci-dessus sont remplies, des essais supplémentaires sur l'émetteur ne seront pas nécessaires. Toutefois, l'intégrateur OEM est toujours responsable des essais sur son produit final pour toutes exigences de conformité supplémentaires requis pour ce module installé.

**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 Canada authorization is no longer considered valid and the IC 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 Canada authorization.

**NOTE IMPORTANTE:**

Dans le cas où ces conditions ne peuvent être satisfaites (par exemple pour certaines configurations d'ordinateur portable ou de certaines co-localisation avec un autre émetteur), l'autorisation du Canada n'est plus considéré comme valide et l'ID IC ne peut pas être utilisé sur le produit final. Dans ces circonstances, l'intégrateur OEM sera chargé de réévaluer le produit final (y compris l'émetteur) et l'obtention d'une autorisation distincte au Canada.

**End Product Labeling**

The final end product must be labeled in a visible area with the following: "Contains IC: 4441A-MB43".

**Plaque signalétique du produit final**

Le produit final doit être étiqueté dans un endroit visible avec l'inscription suivante: "Contient des IC: 4441A-MB43".

### **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.

### **Manuel d'information à l'utilisateur final**

L'intégrateur OEM doit être conscient de ne pas fournir des informations à l'utilisateur final quant à la façon d'installer ou de supprimer ce module RF dans le manuel de l'utilisateur du produit final qui intègre ce module.

Le manuel de l'utilisateur final doit inclure toutes les informations réglementaires requises et avertissements comme indiqué dans ce manuel.