

**BEL20005**

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# **BEL20005 Product Manual 5 GHz WLAN Radio Module & Antenna Matrix**

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## About this Document

This document is a product manual for the BEL20005 5 GHz WLAN Radio Module and Antenna Matrix, including its limitations on use in any product marketed or offered for sale. It is intended as a supplement to training and documentation by BelAir Networks Inc. or its authorized agents.

## Introduction

The BEL20005 (hereafter referred to as “the module”) is a 5 GHz radio module with Antenna Matrix compatible with the IEEE 802.11 standard for Wireless LAN operation. It is designed to be interoperable with WLAN products which are based on Direct Sequence Spread Spectrum (DSSS) radio technology.

The module contains a complete 802.11a radio and Medium Access Control (MAC) protocol engine which allows implementation of an 802.11a device.

The module is not intended for stand-alone operation. It will only be marketed as a complete product, in conjunction with a package, DC power supply and antenna (hereafter referred to as “the product” or the “final product”).

The two parts making up the module are the 5 GHz WLAN Radio Module and the Antenna Matrix. Both boards incorporate a BelAir Networks proprietary interface which does not allow connection of any other vendor’s cards.

Since the module has a BelAir networks proprietary digital interface, it cannot be directly connected to any standard telecommunications or computer devices. It can only be used with final products designed and authorized specifically for that purpose.

## Conditions of Use

### General Conditions of Use

This manual is intended to supplement training provided by BelAir Networks or authorized parties. The module BEL20005 is only intended for use in BelAir Networks products and is not for sale to the general public as a stand-alone module.

Please read this entire document, including the Regulatory Statements section before attempting to install or operate the module.

**Warning:** Any use of BEL20005 in any manner which is not expressly specified within this manual or specifically approved by BelAir Networks or its authorized agents will void the user's right to operate this module, and is expressly forbidden by BelAir Networks. This includes any modification of the module, installation of the module in a configuration or used with an antenna which is not expressly listed in this document or approved by BelAir Networks.

### List of Approved Final Products

The BEL20005 module is only approved for use in the following BelAir Networks products:

- BelAir200. See BelAir200 documentation for complete manufacturing instructions. The BelAir200 may contain up to three 5 GHz radios connected to the Antenna Matrix (together, BEL20005 (FCC ID: RAR20005001, IC: 4674A-20005001) and up to one BelAir Networks 2.4 GHz radio module (FCC ID: RAR20000001, IC: 4674A-20000001).

Operation of the module within the products expressly listed above is required to ensure compliance to all FCC and Industry Canada regulations. Any modification of the module, or its use in any configuration not expressly listed above may void the user's right to operate this module.

## Country of Use

BEL20005 is certified with limited modular approval for use in the United States as an Intentional Radiator as device: FCC ID: RAR20005001 and in Canada as IC: 4674A-20005001. Please read all regulatory statements at the end of this document before any attempt to install or operate this module.

The module is only certified for operation in the United States and Canada. Before attempting to install and operate this module in any other country, contact BelAir Networks for approval.

## Module Labeling

One or more labels are applied to the module during manufacture, including a label which identifies the FCC and Industry Canada identification numbers. Do not attempt to remove any labels from the module.

## Module Installation and Service

### Installation into a Product

The module shall only be installed by a technician trained by BelAir Networks or its authorized agents. It should only be installed into an approved product (see above) following all manufacturing and service procedures for that product. The module should only be installed into a final product in a manufacturing or service depot site.

**Caution:** BEL20005 is an electro-static discharge (ESD) sensitive device. All appropriate ESD measures must be taken when handling the module. Failure to employ appropriate ESD protection may damage the module.

### Module Service

The module is not intended as a field-serviceable unit. It contains no field-replaceable or field-serviceable parts, or any external adjustable mechanisms. The module should only be serviced in a manufacturing or service depot site approved by BelAir Networks or its authorized agents.

## Final Product Requirements

The requirements below apply to any final product in which the BEL20005 module is installed.

### Antenna Usage

BEL20005 module shall only be used in conjunction with the following antenna types:

- BelAir Networks model: BEL20007, 15 dBi directional antenna, horizontal beamwidth 45 degrees.

**Warning:** Use of this module in conjunction with any antenna not expressly listed above will void authority to install or operate this equipment.

### Product Installation

Products which contain BEL20005 shall only be installed by professional installers trained by BelAir Networks or its authorized agents. In addition to normal installation procedures and good installation practice, professional installers are responsible to ensure that:

1. Only an approved antenna (see above) is connected to the module,
2. The antenna is mounted in such a manner and in such a location that access to the antenna by the general population is minimized. Access to the antenna by the general population should be limited to greater than 20 cm (8 inches) during normal operation.
3. Only the approved BelAir Networks AC power cable may be used when this module is deployed with the BelAir200 product. Use of any other power cable may void the regulatory approvals of the BelAir200 and is prohibited.

Adherence to these rules by the professional installer is mandatory. See full installation procedures for the particular product for details.

## Product Labeling

The following permanent label, or one containing equivalent information, must be affixed in a conspicuous location on the exterior of every product containing this module:

This device contains the following:  
FCC ID: RAR20005001      IC: 4674A-20005001  
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.



## Regulatory Statements

The following regulatory notes apply to the product which contains module BEL20005. The following sections or equivalent information shall appear in the user-manual of the final product.

### Regulatory Information and Disclaimers

Installation and use of this device must be in strict accordance with the instructions included in the user documentation provided with the product. Any changes or modifications to this product not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

The manufacturer is not responsible for any interference to radio or television equipment caused by unauthorized modification of this device, or attachment of any antennas or equipment other than those specified by the manufacturer. The manufacturer or its authorized resellers or distributors will assume no liability for any damage or violation of government regulations arising from failing to comply with these guidelines.

### Manufacturer's FCC Conformity Statement

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.

### FCC 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 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.

## **Manufacturer's Industry Canada Conformity Statement**

This device has been designed to operate with an antenna having a maximum gain of 15 dBi. Antenna having a higher gain is strictly prohibited per regulations of Industry Canada. The required antenna impedance is 50 ohms.

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.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than that required for successful communication.

This Class B Digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

## **RF Exposure Statement**

This Wireless LAN radio device has been evaluated under FCC Bulletin OET 65C and found to be compliant to the requirements set forth in CFR 47 Sections 2.1091, 2.1093, and 15.247 (b) (4) addressing RF exposure from radio frequency devices.

This device complies with FCC RF radiation exposure limits for an uncontrolled environment. The radiated output power of this Wireless LAN device is below the FCC radio frequency exposure limits. However, this device should still be installed and used in such a manner that the potential for human contact during normal operation is minimized. In order to comply with RF exposure limits established in the ANSI C95.1 standard, this equipment should be installed and operated at a minimum distance of 20 centimeters (8 inches) between the radiator and a human body.



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