

AeroVironment Modular  
Certification

## Instructions to OEM

## Integrators

Model Number: 68460

FCC ID: PZR-68460

December 19, 2013

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# 1 Revision History

Revision	Revision Description of Changes
December 15, 2012	Initial Release
October 21, 2013	Amended for power limits and antenna guidance
December 19, 2013	Amended for RF exposure guidance, end user manual statement, and other minor corrections

## 2 Introduction

This document describes mandatory steps required by the OEM integrator when designing and manufacturing any host PC system utilizing this AeroVironment radio module (number 68460). This document lists the mandatory responsibilities and actions of the OEM integrator. Failure to comply with all requirements and conditions in this document may result in non-compliance of the host device with FCC rules and invalidate the AeroVironment FCC certification for the module. This guide applies to modules that act in either the Arbiter, Client, or Viewer roles.

## 3 Overview

The 68460 mini-DDL transceiver is a communications module that allows communications between like modules using a star topology DDL session using Time Division Multiple Access and Time Division Duplexing (TDMA and TDD). It operates in the 2400 MHz ISM bands.

Max. average output power at antenna terminal  
5 MHz Bandwidth

Channel	Center Frequency (MHz)	Conducted Maximum Average power (dBm)
CH001	2415	26.01
CH002	2425	26.01
CH003	2435	26.01
CH004	2445	26.01
CH005	2455	26.01

## 4 Allowed Antennas to be used with the Radio Module

Table 1 is a list of allowable antennas for use with the specific radio module.

Peak gain including cable losses is quoted in the table.

Use of any antenna in the list (identical or equivalent antenna with lower gain, dimensions and cable lengths) is acceptable in the host device, without any further FCC testing or submission.

However, use of an antenna that is higher gain than those on the list or is a Different Type, requires additional testing and submission to the FCC. Therefore, antennas with higher gain or different type than specified by AeroVironment may not be used with the AeroVironment module until new testing and reporting is completed.

You must contact the AeroVironment Regulatory Group to report any higher gain or new antenna type to be used with the module.

**Table 1 Approved Antennae**

Item	Part Number	Manufacturer	Type	Gain
1	70958	AeroVironment	Dual Patch	9 dBi
2	ANT-2.4-CW-RH	LINX TECHNOLOGIES	Monopole 30 mm	0 dBi

#### **4.1 Antenna Placement**

This 68460 module has been certified by FCC as single module approval with the following restrictions:

- To satisfy RF exposure requirements, this device and its antenna must operate with a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.
- Consult with AeroVironment to determine the allowable rotational orientations for vertical and horizontal antenna installation in applicable host devices.

If any one of condition listed above can not comply, please consult with AeroVironment regulatory contact person to determine the applicable equipment authorization procedure before marketing the host device.

## **5 Approved Usage**

These radio modules can be used in a variety of physical layer configurations; the following restricts the use to maintain compliance with the above referenced certification bodies.

The user is encouraged to use minimum power required to establish a link, thus minimizing interference.

Changes or modifications to the module and/or operation outside the limits set forth below are prohibited and could void the user's authority to operate the modules.

Uses of these radio modules are limited to the specific register settings that are optimized for performance and compliance.

## **6 Product Approval**

The 68460 module has been designed to meet most national regulations for worldwide ISM-band use. In particular, the radio module has been certified to the following standards.

### **6.1 USA (Federal Communications Commission, FCC)**

The 68460 module, used with the antenna listed in Table 1 above, has been tested to comply with FCC Part 15 - 15.247 "Intentional Radiators."

The device meets the requirements for modular transmitter approval as detailed in FCC Part 15 - 15.212.

The 68460 module can be integrated into a finished product without obtaining subsequent FCC approvals for intentional radiators.

The module 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.

### **6.1.1 Required Host System Labeling**

The Integrator must affix appropriate labeling on the final product.

#### **6.1.1.1 FCCID**

The 68460 modules have been labeled with their own FCC ID number and if the FCC ID is not visible when the module is installed inside another device, then the outside of the finished product into

which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following:

Contains Transmitter Module FCC ID: PZR-68460

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.

## **6.2 End User Manual**

The end user manual should include the following 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.

In order to maintain compliance with FCC regulations, shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and TV reception. The user is cautioned that changes and modifications made to the equipment without the approval of manufacturer could void the user's authority to operate this equipment.