ITCNFA324 Module Certification

OEM Integrator Instructions

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Revision Number: C

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IDENTIFICATION

Document Title	ITCNFA324 Module Certification
Document Number	ITCNFA324-IG-001
Version	C
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HISTORY

Version	Date	Purpose	Pages
A	27-Jul-15	Original Document	All
B	26-Oct-16	Added additional dipole antenna to Allowable Antennas. Removed reference to the FCC Interference Handbook booklet in section 11.1 as FCC does not produce the handbook anymore.	1, 2, 6
C	30-Nov-18	Added additional chip and Kontron WiFi Flag antennas to Allowable Antennas.	1,2

Note: The ITCNFA324 radio module (the "Module") is designed for use only in specific countries in which Intrinsyc has obtained certificates of compliance with local laws and regulations. Therefore, the Module may not be sold, operated or incorporated into products for use in countries for which it has not been certified. In addition, any deviation from the settings, methods, conditions and restrictions for integration of the Module into a host system, as defined in this document, could be a violation of applicable national law and may be punishable as such, and in such event, the products into which the Module is incorporated may not be lawfully distributed or sold in such countries. Intrinsyc assumes no responsibility for any such liability or loss related to installation or operation of the Module.

Table of Contents

1 Introduction

This document describes the steps that the OEM integrator must follow when designing and manufacturing a system utilizing the ITCNFA324 Module.

Failing to follow the instructions in this document may invalidate the FCC certification and authorization of the Module for use in the U.S. and other countries.

The Module certifications described in this document apply only to radio conformance for the Module. The OEM integrator is responsible for all system-level EMI/EMC and Product Safety testing and certifications that apply to the host system in the U.S. and other countries where the system will be marketed or sold.

2 Applicable Module

- Part Number: NFA324 (Regulatory model: ITCNFA324)
- FCC ID: 2AFDI-ITCNFA324 IC: 9049A-ITCNFA324

3 Additional Regulatory Conformance Testing and/or Submissions Required by the Integrator

- The modular certifications apply to the radio conformance for the Module only.
  The OEM integrator is responsible for additional system-level EMI/EMC and Product Safety testing and certification that applies in the U.S. and other countries to the host system containing the Module. This includes but is not limited to Federal Communications Commission ("FCC") Part 15 Class B Digital Emissions.
  These system-level EMC tests are to be done with the Module installed and included in the scope of the submission.
- Some of the countries for which modular certifications are provided require additional submissions, authorizations or import permission by the system-vendor or importer. The integrator is responsible for these additional actions.
- Modular radio certification is not possible in some countries. For such countries, OEM integrators must ensure radio certification for the end system is obtained, before placing the product on the market.

4 Compliant/Allowable Tx Power Settings

Any adjustments made to increase transmit power settings will invalidate all radio certifications for this module.

5 Allowable Antennas to use with the Radio Module

The module is certified for use with certain antennas as described in this section.

Allowed Antenna Types:

1. PIFA with omnidirectional pattern formed from stamped metal or film.
2. Dipole antenna
3. Chip antenna
4. Kontron WiFi Flag Antenna P/N: 730001001

Table 1 Allowed Maximum Gain (dBi) PIFA, Including Antenna Cable Loss

2.4 GHz	3.62
5.150-5.350 GHz	3.08
5.470-5.850 GHz	4.76

Table 2 Allowed Maximum Gain (dBi) Dipole, Including Antenna Cable Loss

2.4 GHz	3.8
5.150-5.350 GHz	5.5
5.470-5.825 GHz	5.5

Table 3 Allowed Maximum Gain (dBi) Chip, Including Antenna Cable Loss

2.4-2.5 GHz	2.68
4.9-6.0 GHz	5.0

Table 4 Allowed Maximum Gain (dBi) Kontron WiFi Flag Antenna P/N: 730001001, Including Antenna Cable Loss

2.4 -2.5GHz	2.6
4.9-5.825 GHz	4.0

Use of other antenna types or the same type of antenna but with higher gain than listed above is not allowed without additional testing and appropriate FCC approval.

Use of a similar antenna may only require a C1PC to confirm the performance for SAR is the same or better (i.e. lower) but only an equivalent antenna can be used without any additional testing.

6 Antenna Placement inside the Host System and RF Safety

The FCC and other countries' regulatory bodies impose strict conditions and limitations on the RF exposure levels of end products. Acceptable RF exposure levels for this Module depend on transmit power, the location of the transmitting antenna(s) inside the host system and the expected separation of the transmitting antennae to the end user. OEM integrators must take great care to ensure each host system complies with the applicable RF exposure requirements.

The antenna-to-user (bystander) separation distance must be greater than 20 cm.

Failure to adhere to these separation/spacing rules will invalidate the FCC certification for the Module.

- This separation is measured between the closest point of each transmitting antenna inside the host device to the point of contact by the user or nearby person outside the host device.
- For notebooks/netbooks/laptops with antennae in display section, the LCD is opened 90 degrees/perpendicular to the keyboard. The separation distance is then measured from the nearest point of each transmitting antennae to the bottom of the host. Use in the keyboard section of a netbook or laptop or use in a tablet device or convertible tablet would require host-specific testing.
- For notebooks/netbooks/laptops, the transmitting antenna cables shall be positioned away from the antenna elements to conform to the configuration tested for compliance.

- When transmitting antennae are installed in the display section of notebook/netbook/laptops, the display section shall not have metallic components and material that can influence or change the operating and RF exposure characteristics of the antennae.
- The separation between the main and aux antennae must be at least 3 cm.
- The transmitter module may not be co-located with any other transmitter or antenna.
- SAR evaluation is required if the separation distance between the user or bystanders and the device is less than or equal to 20 cm.

Where one or more of the conditions above cannot be met for a particular host system, additional testing is required to secure the necessary certifications for the system.

Note: These restrictions do not apply to receive-only antenna.

7 Simultaneous Transmission with other Integrated or Plug-in Radios

The FCC imposes conditions and limitations when additional radio(s) are co-located in the same host system as the Module *with capability to transmit simultaneously*. Co-locating other radios such as an integrated or plug in Wireless WAN/cellular radio with the Module requires additional evaluation and possibly submission for authorization from the FCC.

Because the rules are highly dependent on the characteristics of the particular radios that are co-located and simultaneously transmitting, the OEM integrator should seek guidance from a knowledgeable test lab or consultant to determine if additional testing and FCC certification is required. In this case, failure to evaluate and follow the required FCC procedures will invalidate the FCC certification of the Module and end system.

8 Module May Not Be Installed by End Users

FCC rules require this Module to be installed in host systems at the factory by the OEM integrator. Thus, end users of the system my not install the Module. Therefore, the host product user instructions must not advise the end user on how to access or remove the Module. Additional FCC authorization/filing is needed to allow end user installation of the radio modules.

If modules are provided to the end users for installation in the host, a two-way authentication protocol is required to limit the module to operate only with the authorized host system.

9 Required Labeling on the Outside of the Host

9.1 FCC

The FCC requires a label on the outside of the host system visible to the end user. Example wording is:

Contains: FCC ID: 2AFDI-ITCNFA324 IC: 9049A-ITCNFA324

The FCC requires a logo signifying emission compliance on the outside of the host system. The OEM integrator is responsible to perform FCC Part 15 Class B digital emissions testing on the end system with the radio Module

installed. The FCC logo below should not be affixed unless the OEM integrator has obtained the necessary Part 15 approval, e.g., self-declaration of conformity.

If the host system is approved to FCC Class B digital emissions limits under a grant of certification issued by a TCB, the FCC ID number shown on the grant should be used on the label instead of the FCC logo below.

Also see https://www.fcc.gov/logos.

9.2 **European Community R&TTE**

The European Community R&TTE Directive requires the CE Marking shown below on the outside of the host AND on the outside of the shipping container/packaging.

For 2.4 GHz

For 5 GHz or 2.4 GHz = 5 GHz dual bands

The European Community R&TTE Directive also requires the following note to consumers on the outside of the shipping container/packaging:

Important Notice: This product is a Radio LAN device operating in the 2.4 & 5 GHz bands (or 2.4GHz band) for Home and Office use in the E.E.A.			
AT	BE	CH	CY
CZ	DE	DK	ES
FI	FR	GB	GR
EE	HU	IT	IE
IS	LI	LT	LU
LV	MT	NL	NO
PL	PT	SE	SI
SK			

Note: The Integrator is expected to translate text into appropriate languages for the European countries into which the product will be marketed or sold.

10 Required Labeling on the Module

10.1 FCC Labelling on the Module

The OEM integrator must ensure that the FCC ID is affixed on the Module or in a User/Installation Manual along with other country certification numbers and logos as described herein.

Note: the original Module manufacturer may affix regulatory labeling at time of Module manufacturing. However, the OEM integrator must ensure that Module labeling is complete, correct, and applicable for all the countries to which the host system is to be imported, marketed, or sold.

10.2 Rest of World labeling on the Module

The OEM integrator must ensure the Module includes a global regulatory label with certification numbers and logos for all the target countries. The OEM integrator is responsible to confirm the final regulatory label on the radio Module contains all the required certification IDs for all the countries in which the host system will be marketed or sold.

11 Required Regulatory Wording for User Manual/Installation Manual

The OEM integrator must include text in the user manual meeting the regulators' requirements. The text below or similar wording should be used. (Text in red font must be replaced.)

11.1 FCC compliance information

This device complies with Part 15 of the FCC Rules. Operation is subject to the following to 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.

This product does not contain any user serviceable components. Any unauthorized product changes or modifications will invalidate warranty and all applicable regulatory certification and approvals, including authority to operate this device.

FCC Part 15 Digital Emissions Compliance

We **[System Manufacturer Name, Address, Telephone],** declare under our sole responsibility that the product **[System Name]** complies with Part 15 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.

WARNING: 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 and radiates 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 use is encouraged to try to correct the interference by one of 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 the one the receiver is connected to.
- Consult the dealer or an experienced radio.TV technician for help.

(Notice for 5GHz and/or when co-located with 5GHz transmitters, the following statements should be provided for user information.)

Operations in the 5.15-5.25GHz band are restricted to indoor usage only. (For 5GHz only)

(RF exposure statement)

Radiation Exposure Statement

The product comply with the FCC portable RF exposure limit set forth for an uncontrolled environment and are safe for intended operation as described in this manual. The further RF exposure reduction can be achieved if the product can be kept as far as possible from the user body or set the device to lower output power if such function is available.

11.2 **Industry Canada notice**

This device complies with RSS-210 of the Industry Canada 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.

Ce dispositif est conforme à la norme CNR-210 d'Industrie Canada applicable aux appareils radio exempts de licence. Son fonctionnement est sujet 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.

(Notice for 5GHz and/or when co-located with 5GHz transmitters, the following statements should be provided for user information.)

Caution:

(i) the device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;
(ii) the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall comply with the e.i.r.p. limit; and
(iii) the maximum antenna gain permitted for devices in the bands 5725-5825 MHz shall comply with the e.i.r.p. limits specified for point-to-point and non point-to-point operation as appropriate.
(iv) Users should also be advised that high power radars are allocated as primary users (i.e. priority users) of the bands 5250-5350 MHz and 5650-5850 MHz and that these radars could cause interference and/or damage to LE-LAN devices

Avertissement:

Le guide d'utilisation des dispositifs pour rêseau-x locaux doit Inclure des instructions pcécises su:r les restrictions susmentionnées, notamment:

(i) les dispositifs fonctionnant dans la bande 5150-5250 MHz sont réservés uniquement pour une utilisation à intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;
(ii) le gain maximal d’antenne permis pour les dispositifs utilisant les bandes 5150-5250 MHz et 5470-5725 MHz doit se conformer à la limite de p.i.r.e.;
(iii) le gain maximal d'antenne permis (pour les dispositifs utilisant la bande 5725·5825 MHz) doit se conformer â la limite de p.i.r.e. spêcifiêe pour l'exploitation point à point et non point â point, selon le cas.
(iv) De plus, les utilisateurs devraient aussi être avisês que les utilisateurs de radars de haute puissance sont dêsignês utilisateurs principaux (c.-à-d ., qu'ils ont la prioritè) pour les bandes 5250-5350 MHz et 5650-5850 MHz et que ces radars pourraient causer du brouillage et/ou des dommages aux dispositifs LAN-EL.

11.3 **European Community (R&TTE) user manual wording and declaration**

Europe – EU Declaration of Conformity CE

Marking by the above symbol indicates compliance with the Essential Requirements of the R&TTE directive of the European Union (1999/5/EC). This equipment meets the following conformance standards:

EN300 328, EN301 893, EN 301 489-17, EN60950, EN 62311

11.4 **European Community (R&TTE) Declaration of Conformity for System**

In addition to including the radio conformity wording described in the previous section in the user manual, the end integrator must also create and sign a European Declaration of Conformity (DoC) for all European Directives applicable to the end product. At a minimum, this will be a DoC per the R&TTE Directive covering Radio, EMC, Product Safety and RF Exposure essential requirements. The DoC must reference harmonized standards used for all radios present in the system.

12 OEM Integrator Checklist

The OEM Integrator will integrate the Module in the host systems in accordance with the instruction specified in this document and the documents referenced herein.

- The OEM Integrator will ensure the Module is integrated in a host system using only the approved antenna models(s) described in this document.
- The OEM Integrator will ensure the antennal placement inside the host system will maintain the required spacing to the end user for RF Exposure compliance, as specified in this document.
- If other radios are integrated inside the host with the Module, the OEM Integrator will contact a test lab or TCB to determine if additional FCC compliance evaluation is required to meet FCC collocation rules.
- The OEM Integrator will ensure end user documentation will contain the specified regulatory wording and ensure the host system and the Module itself are labeled as specified in this document.
- The OEM Integrator will ensure the Module's transmit power does not exceed the levels specified in this document.