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User Manual

ComXS-320

ACTIA I+ME GmbH

Document history

Index	Pages	Date	Reason for amendment
A	All	08.02.2017	Drafting of the document
A	All	07.03.2017	Minor corrections and updates
A	9	15.03.2017	Updated CE declaration
B	8	11.05.2017	Updated Antenna Information and RF exposure warning added

Contents

1. SCOPE OF THIS USER MANUAL

This User Manual contains all the information that is required to use the ComXS-320 module in the intended manner. It also provides information about usage and storage conditions, and gives an overview of the authorisations and certifications.

This User Manual is intended to be used by technical qualified personnel who dispose of the appropriate know-how in electronics engineering.

Manufacturer:

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Brand: ComXS

Model: ComXS-320

2. GENERAL INSTRUCTIONS

This symbol indicates useful information that facilitates your work with the system.

This symbol indicates important instructions which you should follow at all times in order to avoid malfunctions or damage.

3. SAFETY INSTRUCTIONS

Read this information before using your ComXS-320 module. For any exceptions, due to national requirements or limitations, when using your WLAN module, please contact ACTIA I+ME GmbH.

Changes or modifications to the product not expressly approved by ACTIA I+ME GmbH will void the user's authority to operate the equipment.

Any changes or modifications NOT explicitly APPROVED by ACTIA I+ME GmbH could cause the module to cease to comply with FCC rules part 15, and thus void the user's authority to operate the equipment.

Within the frequency band 5150 to 5250 MHz the module type ComXS-320 is restricted to indoor operations to reduce any potential for harmful interference to co-channel MSS operation.

§15.407 statement; in case of absence of information to transmit or operational failure the module types ComXS-320 will automatically discontinue transmission.

Do not open the unit or perform repairs in the event of damage. No parts have to be replaced or maintained by the user.

Damaged units, connectors and cables are not approved for use.

4. General Product Description

4.1 Key Features

The embedded WLAN DUALBAND CPU MODULE ComXS-320 enables powerful mobile WLAN applications in the consumer and industrial area.

It adds powerful networking capability to all compatible products, including but not limited to:

- WLAN 802.11 a/b/g/n, 2x2 MIMO, up to 300Mbit
- USB 2.0 HighSpeed, device mode

This module is intended to be used only with other products certified for use with this module by ACTIA I+ME GmbH.

4.2 CHARACTERISTICS

IEEE Wireless LAN Standard:	WLAN dual-band according IEEE 802.11n, 2x2 MIMO, compatible to a/b/g/n
Prozessor:	560 MHz Networking Processor
Memory:	128 MB RAM, 16 MB NOR-Flash, 128MB NAND-Flash
Electrical Interface:	Custom Pinout on a Mini PCIe like card edge connector 3 x Ethernet 10/100BaseT (PHYs on board), USB 2.0 Master/Slave, GPIOs, UART, JTAG
Mechanical Interface:	Custom dimensions (like extended Mini PCIe half size)
Frequency:	2.400 - 2.4835GHz, 5.180 – 5.825GHz
Modes:	DSSS, CCK, OFDM
Modulations:	BPSK, QPSK, 16-QAM, 64-QAM and forward error correction coding with rates of 1/2, 2/3, 3/4, 5/6.
Sensitivity:	Up to -76dBm @ 2.412GHz, 54 Mbit/s (11dB better than required by IEEE Std 802.11™-2012) Up to -74dBm @ 5.200GHz, 54 Mbit/s (9dB better than required by IEEE Std 802.11™-2012)
Datarate:	Up to 300Mbit/s
Software:	Linux based Operating System.
Security by OS:	WPA, WPA2 PSK + EAP
Power Suply:	3.3V +/- 5%
Antenna Connector:	2 x U.FL
Temperature:	Industrial temperature grade (Operating: -40°C to 85°C, Storage: -40°C to 85°C)
Dimension:	41.50mm x 50.95mm x 4.7mm
Mounting Hole:	2 x 2.60 mm
ROHS Compliance	Yes
Regulatory IDs	FCC-ID: XB7-COMXS320 IC-ID: 7474A-COMXS320

4.3 ANTENNA INFORMATION

This radio transmitter IC: 7474A-COMXS320 has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Cet émetteur radio IC: 7474A-COMXS320 a été approuvé par Industry Canada pour fonctionner avec les types d'antenne énumérés ci-dessous avec le gain maximum autorisé et l'impédance nécessaire pour chaque type d'antenne indiqué. Les types d'antenne ne figurant pas dans cette liste et ayant un gain supérieur au gain maximum indiqué pour ce type-là sont strictement interdits d'utilisation avec cet appareil.

Antenna	type	Pol.	Imp. Ohm	peak gain 2.4-2.5GHz	peak gain 4.9-6GHz	figure
Laird MAF95029	chip	linear	50	2dBi	4dBi	

RF exposure Warning

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide 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. End-users and installers must be provide with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

5. REGULATORY STATEMENTS

5.1 CE

Hereby

ACTIA I+ME GmbH,
Dresdenstr. 17/18
38124 Braunschweig, Germany

Declares that the radio equipment type

ComXS-320

is in compliance with

Directive 2014/53/EU

The full text of the EU declaration of conformity is available at the following internet address:

http://www.ime-actia.de/index.php/de/downloads/pdf

5.2 FCC

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

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.

5.2.1. FCC END PRODUCT LABELING INSTRUCTION

In accordance with 47 CFR § 15.19 the end product shall bear the following statement in a conspicuous location on the device:

“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.”

When the device is so small or for such use that it is not practicable to place the statement above on it, the information shall be placed in a prominent location in the instruction manual or pamphlet supplied to the user or, alternatively, shall be placed on the container in which the device is marketed. However, the FCC ID label must be displayed on the device.

In case where the final product will be installed in locations where the end-consumer is not able to see the FCC-ID and/or this statement, the FCC-ID and the statement shall be also included in the end-product manual.

For an end product using the ComXS-320 there must be a label containing, at least, the following information.

This device contains FCC ID: XB7-COMXS320

5.3 IC

This device complies with Industry Canada licence-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.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada.

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

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; 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 the maximum antenna gain permitted for devices in the band 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.

Operation in the 5600-5650 MHz band is not allowed in Canada. 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.

This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator & your body.

Cet appareil est conforme à la(aux) norme(s) RSS sans licence d'Industry Canada. Son utilisation est soumise aux deux conditions suivantes:

1. Cet appareil ne doit pas causer d'interférences et 2. il doit accepter toutes interférences reçues, y compris celles susceptibles d'avoir des effets indésirables sur son fonctionnement.

Conformément aux réglementations d'Industry Canada, cet émetteur radio ne peut fonctionner qu'à l'aide d'une antenne dont le type et le gain maximal (ou minimal) ont été approuvés pour cet émetteur par Industry Canada. Pour réduire le risque d'interférences avec d'autres utilisateurs, il faut choisir le type d'antenne et son gain de telle sorte que la puissance isotrope rayonnée équivalente (p.i.r.e) ne soit pas supérieure à celle requise pour obtenir une communication satisfaisante.

Le dispositif de fonctionnement dans la bande 5150-5250 MHz est réservé à une utilisation en intérieur pour réduire le risque d'interférences nuisibles à la co-canal systèmes mobiles par satellite, le gain d'antenne maximal autorisé pour les appareils dans les bandes 5250-5350 MHz et 5470-5725 MHz doit se

conformer à la pire limite, et le gain d'antenne maximal autorisé pour les appareils dans la bande 5725-5825 MHz doivent être conformes avec le pire limites spécifiées à point-à-ponctuelles et non point-à-point de fonctionnement selon qu'il convient.

Opération dans la bande 5600-5650 MHz n'est pas autorisée au Canada. Haute puissance radars sont désignés comme utilisateurs principaux (c.-àutilisateurs prioritaires) des bandes 5250-5350 MHz et 5650-5850 MHz et que ces radars pourraient causer des interférences et / ou des dommages à dispositifs LAN-EL.

Cet équipement respecte les limites d'exposition aux rayonnements IC RSS-102 définies pour un environnement non contrôlé. Il doit être installé et utilisé en maintenant une distance minimum de 20 cm entre le radiateur et votre corps.

5.3.1. IC END PRODUCT LABELLING

User manuals for licence-exempt LPDs shall contain the following or equivalent statements in a conspicuous position: 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.

For an end product using the ComXS-320 there must be a label containing, at least, the following information.

This device contains IC: 7474A-COMXS320

5.3.2. IC EN ÉTIQUETAGE DU PRODUIT FINAL CONFORME À IC

Les manuels d'utilisation d'appareils de faible puissance, sans licence, feront figurer à un endroit bien visible les mentions suivantes ou équivalentes:

Son utilisation est soumise aux deux conditions suivantes:

1. Cet appareil ne doit pas causer d'interférences et 2. il doit accepter toutes interférences reçues, y compris celles susceptibles d'avoir des effets indésirables sur son fonctionnement.