The QIG for Wireless 11a/b/g/n Mini PCI Module

WMIA-199N Product Specification

Product Description				
Draft IEEE 802.11n compliant 2.4GHz & 5GHz WLAN Mini-PCI Module				
Lead-Free				
RoHs compliant				
Host Interface				
32-bit miniPCI, Type III A				
Operating Voltage				
DC 3.3V ± 5%				
Chipset				
Mac/BB Process	AR9160			
RF Chip	AR9106			
Power Consumption				
11b	TX: ≦ 600mA		RX: ≦ 600mA	
11g/n	TX: ≦ 600mA		RX: ≦ 600mA	
11a/n	TX: ≦ 600mA		RX: ≦ 600mA	
Radio				
Antenna	3 U.FL-R-SMT connectors (2T/2R)			
Output Power @ 25℃	IEEE 802.11b	18dBm (one antenna) *Peak power*		
	IEEE 802.11g	17dBm (one antenna) *Peak power*		
	IEEE 802.11a	5150-5250		12dBm (one antenna) *limit*
		5250-5350		11dBm (one antenna)
		5470~5725		11dBm (one antenna)
		5725~5825		11dBm (one antenna)
	IEEE 802.11gn	HT20		20dBm (two antenna)
		HT40		17dBm (two antenna)
	IEEE 802.11an	HT20	5150~5250	12dBm (two antenna) *limit*
			5250~5350	11dBm (two antenna)
			5470~5725	11dBm (two antenna)
			5725~5825	21dBm (two antenna)
		HT40	5150~5250	12dBm (two antenna) *limit*
			5250~5350	11dBm (two antenna)
			5470~5725	12dBm (two antenna)
			5725~5825	21dBm (two antenna)
Sensitivity	IEEE 802.11b 11Mbps ≦ -80dbm	IEEE 802.11a/g 54Mbps ≦ -65dbm		IEEE 802.11n 2.4GHz & 5GHz HT20 ≦ -64dbm HT40 ≦-61dbm

Modulation	IEEE 802.11b (DSSS) ϕ 5.5/11 Mbps (CCK) ϕ 2 Mbps (DQPSK) ϕ 1 Mbps (DBPSK)
	IEEE 802.11a/g (OFDM/DSSS) ϕ 48/54 Mbps (QAM-64) ϕ 24/36 Mbps (QAM-16) ϕ 12/18 Mbps (QPSK) ϕ 6/9 Mbps (BPSK)

	IEEE 802.11n (OFDM/DSSS) ϕ QAM-64 ϕ QAM-16 ϕ QPSK ϕ BPSK
Operating Frequency	IEEE 802.11a ISM Band ϕ USA(FCC): 5.15GHz ~ 5.25 GHz ; 5.25GHz ~ 5.35 GHz ; 5.47GHz ~ 5.725GHz ; 5.725 ~ 5.825 GHz; ϕ Europe(ETSI): 5.15 GHz ~ 5.25 GHz ; 5.25GHz ~ 5.35GHz ; 5.47~5.475GHz ϕ Japan(TELEC) : 5.15 GHz ~ 5.35 GHz ; 5.47GHz ~ 5.725GHz
	IEEE 802.11b/g ISM Band ϕ USA(FCC): 2.412GHz ~ 2.462 GHz (CH1 ~ CH11) ϕ Europe(ETSI): 2.412 GHz ~ 2.472 GHz (CH1 ~ CH13) ϕ Japan(TELEC) : 2.412 GHz ~ 2..472 GHz (CH1 ~ CH13)
	IEEE 802.11gn 40MHz Band ϕ USA(FCC): 2.422GHz ~ 2.452 GHz ϕ Europe(ETSI): 2.422 GHz ~ 2.462 GHz ϕ Japan(TELEC) : 2.422 GHz ~ 2.462 GHz IEEE 802.11an 40MHz Band ϕ USA(FCC): 5.15GHz ~ 5.35 GHz ; 5.25GHz ~ 5.35 GHz ; 5.47GHz ~ 5.725GHz; 5.725Hz ~ 5.825 GHz; ϕ Europe(ETSI): 5.15 GHz ~ 5.35 GHz ; 5.47GHz ~ 5.725GHz ϕ Japan(TELEC) : 5.15 GHz ~ 5.35 GHz ; 5.47GHz ~ 5.725GHz

Software Specification		
Supported OS	No NDIS driver	
Security	No NDIS driver	
Physical Specification		
Dimension	59.6mm(L)*50.9mm(W)*3.25mm(H)	
Weight	≦ 50 g	
Environment Specification		
	Temperature (Ambient)	Humidity (non-condensing)
Operating	0 ~ 55 ℃	80%
Storage	-20 ~ 80 ℃	5 ~ 90%
Warranty		
12 months		

Federal Communication Commission and Industry Canada 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 & IC 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:

FCC & IC Radiation Exposure Statement:

This equipment complies with FCC & IC 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.

Operations in the 5.15-5.25GHz band are restricted to indoor usage only.

The availability of some specific channels and/or operational frequency bands are country dependent and are firmware programmed at the factory to match the intended destination. The firmware setting is not accessible by the end user.

WMIA-199N with printed type antenna and max. antenna gain is 4.6 dBi in 5G and 2.3 dBi in 2.4G.

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

The antenna must be installed such that 20 cm is maintained between the antenna and users, and

The transmitter module may not be co-located with any other transmitter or antenna,

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 (for example, **Vehicle interface Integrated Communication Optical Module (ICOM), notebook, …**, etc.).

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 / IC authorization is no longer considered valid and the FCC / 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 FCC authorization.

End Product Labeling

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: “Contains FCC ID: **RYK-WMIA199N** or IC: **6158A-WMIA199N**”.

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.

Industry Canada Interference Statement

The device for the band 5150-5250 MHz is only for indoor usage to reduce potential for harmful interference to co-channel mobile satellite systems;

The maximum antenna gain **4.6dBi** permitted (for devices in the bands 5250-5350 MHz and 5470-5725 MHz) to comply with the e.i.r.p. limit; and

The maximum antenna gain **4.6dBi** permitted (for devices in the band 5725-5825 MHz) to comply with the e.i.r.p. limits specified for point-to-point and non point-to-point operation as appropriate, as stated in section A9.2(3).

In addition, users should also be cautioned to take note that high-power radars are allocated as primary users (meaning they have priority) of the bands 5250-5350 MHz and 5650-5850 MHz and these radars could cause interference and/or damage to LE-LAN devices.

Note: The WMIA-199N has disabled the 5600-5650M band by S/W to avoid 5600-5650M band for IC certification.

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:

EN60950-1:2001 A11:2004

Safety of Information Technology Equipment

EN50385 : (2002-08)

Product standard to demonstrate the compliance of radio base stations and fixed terminal stations for wireless telecommunication systems with the basic restrictions or the reference levels related to human exposure to radio frequency electromagnetic fields (110MHz - 40 GHz) - General public

EN 300 328 V1.7.1: (2006-10)

Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband Transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using spread spectrum modulation techniques; Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive

EN 301 893 V1.4.1: (2007-07)

Broadband Radio Access Networks (BRAN);5 GHz high performance RLAN;Harmonized EN covering essential requirementsof article 3.2 of the R&TTE Directive

EN 301 489-1 V1.6.1: (2005-09)

Electromagnetic compatibility and Radio Spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

EN 301 489-17 V1.2.1 (2002-08)

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for 2,4 GHz wideband transmission systems and 5 GHz high performance RLAN equipment

This device is a 2.4 GHz wideband transmission system (transceiver), intended for use in all EU member states and EFTA countries, except in France and Italy where restrictive use applies.

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.

This device may not be used for setting up outdoor radio links in France and in some areas the RF output power may be limited to 10 mW EIRP in the frequency range of 2454 – 2483.5 MHz. For detailed information the end-user should contact the national spectrum authority in France.

CE 0560 !

cs Česky [Czech]	*[Jméno výrobce]* tímto prohlašuje, že tento *[typ zařízení]* je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
da Dansk [Danish]	Undertegnede *[fabrikantens navn]* erklærer herved, at følgende udstyr *[udstyrets typebetegnelse]* overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
de Deutsch [German]	Hiermit erklärt *[Name des Herstellers]*, dass sich das Gerät *[Gerätetyp]* in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.

et Eesti [Estonian]	Käesolevaga kinnitab *[tootja nimi = name of manufacturer]* seadme *[seadme tüüp = type of equipment]* vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
en English	Hereby, *[name of manufacturer]*, declares that this *[type of equipment]* is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
es Español [Spanish]	Por medio de la presente *[nombre del fabricante]* declara que el *[clase de equipo]* cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
el Ελληνική [Greek]	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ *[name of manufacturer]* ΔΗΛΩΝΕΙ ΟΤΙ *[type of equipment]* ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.
fr Français [French]	Par la présente *[nom du fabricant]* déclare que l'appareil *[type d'appareil]* est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
it Italiano [Italian]	Con la presente *[nome del costruttore]* dichiara che questo *[tipo di apparecchio]* è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian]	Ar šo *[name of manufacturer / izgatavotāja nosaukums]* deklarē, ka *[type of equipment / iekārtas tips]* atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
Lietuvių [Lithuanian]	Šiuo *[manufacturer name]* deklaruoja, kad šis *[equipment type]* atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
nl Nederlands [Dutch]	Hierbij verklaart *[naam van de fabrikant]* dat het toestel *[type van toestel]* in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
mt Malti [Maltese]	Hawnhekk, *[isem tal-manifattur]*, jiddikjara li dan *[il-mudel tal-prodott]* jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 1999/5/EC.
hu Magyar [Hungarian]	Alulírott, *[gyártó neve]* nyilatkozom, hogy a *[... típus]* megfelel a vonatkozó alapvetõ követelményeknek és az 1999/5/EC irányelv egyéb elõírásainak.
pl Polski [Polish]	Niniejszym *[nazwa producenta]* oświadcza, że *[nazwa wyrobu]* jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
pt Português [Portuguese]	*[Nome do fabricante]* declara que este *[tipo de equipamento]* está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
sl Slovensko [Slovenian]	*[Ime proizvajalca]* izjavlja, da je ta *[tip opreme]* v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.
Slovensky [Slovak]	*[Meno výrobcu]* týmto vyhlasuje, že *[typ zariadenia]* spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
fi Suomi [Finnish]	*[Valmistaja = manufacturer]* vakuuttaa täten että *[type of equipment = laitteen tyyppimerkintä]* tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
sv Svenska [Swedish]	Härmed intygar *[företag]* att denna *[utrustningstyp]* står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.