Wireless Network Card Series

User's Guide

WMIR-278GN
802.11b/g/n Mini-PCI Module

■ SPECIFICATION

Product Name	11Mbps/54Mbps/300Mbps
	802.11b/g/n draft　WLAN MIMO mini PCI card
Model Number	WMIR-278GN
Host Interface	Mini PCI type 3B
Chipset solution	Ralink, RT3062 (MAC/BBP/RF)
RF chain	2T2R for HT20, HT40
Guard interval (GI)	Long/Short GI for both HT20 and HT40
Dimension	59.75mm*44.6mm*3.55mm
Weight	7g
Frequency Band	**802.11b**
	ISM band 2.400 ~ 2.484GHz (subject to local regulations)
	802.11g
	ISM band 2.400 ~ 2.484GHz (subject to local regulations)
	802.11n draft
	ISM band
	2422 – 2452MHz　(channel BW=40MHz)
	2400 – 2483.5MHz (channel BW=20MHz)
Number of Channel	**802.11b**
	USA and Canada – 11
	Most European countries – 13
	Japan　– 14
	France – 4
	802.11g
	USA and Canada – 11
	Most European countries – 13
	Japan　– 14
	HT20
	USA and Canada – 11
	Most European countries – 13

	Japan – 13
	HT40
	USA and Canada – 3~9
	Most European countries – 3~9
Operating Voltage	3.3V ± 5%
Spreading	**802.11b**
	Direct Sequence Spread Spectrum (DSSS)
	802.11g
	Orthogonal Frequency Division Multiplexing (OFDM)
	HT20
	Orthogonal Frequency Division Multiplexing (OFDM)
	Multiple-input/multiple-output (MIMO)
	HT40
	Orthogonal Frequency Division Multiplexing (OFDM)
	Multiple-input/multiple-output (MIMO)
Modulation	**802.11g**
	64 QAM, 16 QAM, QPSK, BPSK
	802.11b
	CCK, DQPSK, DBPSK
	HT20, HT40
	64 QAM, 16 QAM, QPSK, BPSK
Data Rate	**802.11b**
	11, 5.5, 2, 1 Mbps per channel, auto fallback for extended range
	802.11g
	54, 48, 36, 24, 18, 12, 9, 6 Mbps per channel, auto fallback for extended range
	HT20
	Refer to HT20 output power table
	HT40
	Refer to HT40 output power table
Antenna	Two antenna connectors,
	Two antenna port for TX/RX.
Transmitted power	**802.11b**
	1Tx ~ 15 +/-1.5dBm@ch1~ch14
	802.11g
	1Tx ~ 14 +/-1.5dBm@ch1~ch14
	HT20
	please see the output power table for detail. tolerance: +/-1.5dBm
	HT40

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	please see the output power table for detail. tolerance: +/-1.5dBm
	Nominal Temp Range:
	802.11b (1Rx)
	Typ. 1Mbps, -93dBm
	Typ. 2Mbps, -93dBm
	Typ. 5.5Mbps, -92dBm
	Typ. 11Mbps, -90dBm
	802.11g (2Rx)
	Typ. 6Mbps, -93dBm
	Typ. 9Mbps, -93dBm
	Typ. 12Mbps, -92dBm
	Typ. 18Mbps, -90dBm
	Typ. 24Mbps, -87dBm
	Typ. 36Mbps, -84dBm
	Typ. 48Mbps, -80dBm
	Typ. 54Mbps, -78dBm
	HT20 (2Rx)
Receive Sensitivity	Typ. MCS=0, -93dBm
	Typ. MCS=1, -91dBm
	Typ. MCS=2, -88dBm
	Typ. MCS=3, -86dBm
	Typ. MCS=4. -83dBm
	Typ. MCS=5, -79dBm
	Typ. MCS=6, -77dBm
	Typ. MCS=7, -75dBm
	Typ. MCS=8, -91dBm
	Typ. MCS=9, -88dBm
	Typ. MCS=10, -86dBm
	Typ. MCS=11, -83dBm
	Typ. MCS=12, -80dBm
	Typ. MCS=13, -75dBm
	Typ. MCS=14, -74dBm
	Typ. MCS=15, -72dBm
	HT40 (2Rx)
	Typ. MCS=0, -90dBm
	Typ. MCS=1, -88dBm
	Typ. MCS=2, -85dBm
	Typ. MCS=3, -83dBm
	Typ. MCS=4, -80dBm

	Typ. MCS=5, -76dBm
	Typ. MCS=6, -74dBm
	Typ. MCS=7, -72dBm
	Typ. MCS=8, -88dBm
	Typ. MCS=9, -85dBm
	Typ. MCS=10, -83dBm
	Typ. MCS=11, -80dBm
	Typ. MCS=12, -77dBm
	Typ. MCS=13, -72dBm
	Typ. MCS=14, -71dBm
	Typ. MCS=15, -69dBm
Power consumption (Average)	**802.11b** Continue TX : 470mA@3.3V Continue RX : 250mA@3.3V **802.11g** Continue TX : 420mA@3.3V Continue RX : 250mA@3.3V **HT20** Continue TX : 530mA@3.3V Continue RX : 260mA@3.3V **HT40** Continue TX : 550mA@3.3V Continue RX : 290mA@3.3V
LED indicator	N/A
Supplied Driver	Windows 2000/XP 32/Vista 32/Win7 32, please refer to software spec in detail.
Standards	IEEE 802.11b, IEEE 802.11g i3standard, Wi-Fi compliant ,EWC 802.11n draft
Temperature Range	0 ~ 55°C (Operating); -20 ~ 80°C (Storing)
Humidity	Operating Humidity 10% to 85% Non-Condensing Storage Humidity 5% to 90% Non-Condensing
Network Protocol	TCP/IP, IPX, NDIS4, and NDIS5x
Management Utility	Monitor Internet Access Status via UI
System Requirements	Laptop containing → miniPCI slot → 64MB memory or greater → 300MHz processor or greater Microsoft Windows 2000/XP 32/Vista 32/Win7 32

Federal Communication Commission 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 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 Radiation Exposure Statement:

This equipment complies with FCC 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.

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.

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

1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
2) The transmitter module may not be co-located with any other transmitter or antenna,
3) 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 <u>transmitter</u> 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.

IMPORTANT NOTE: In the event that these conditions <u>can not be met</u> (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID <u>can not</u> 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.

<u>**End Product Labeling**</u>

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-WMIR278GN".

<u>**Manual Information To the End User**</u>

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.

Canadian Regulatory Wireless 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 interference and

2) this device must accept any interference, including interference that may cause undesired operation of the device

IMPORTANT NOTE:

Canada Radiation Exposure Statement:

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