

WMDQ-177ACN

2T2R PCIeModule

802.11b/g/n/ac/n/a

User Manual

Version 1.0

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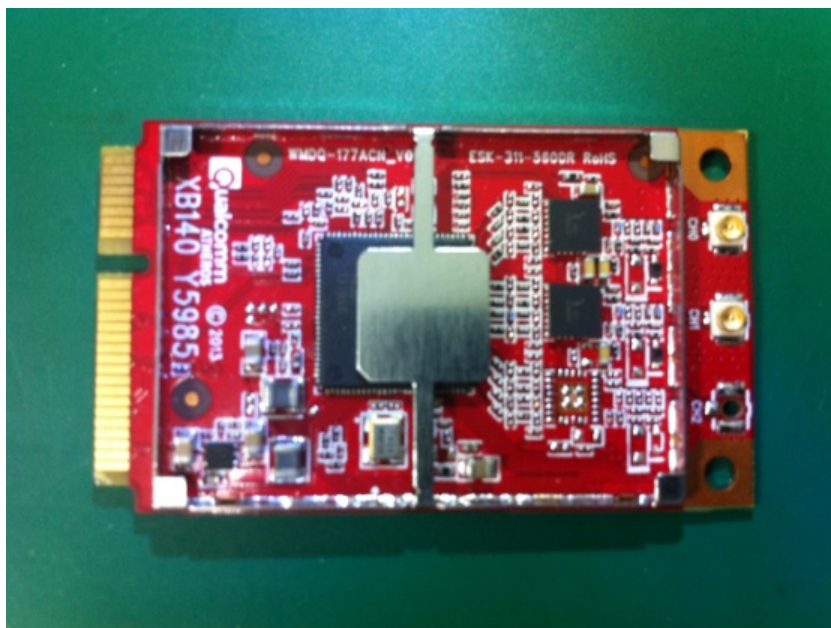


Introduction

WMDQ-177ACN is a 5Ghz +2.4G dual Band selectable 2T2R PCIe mini Card Module based on the Qualcomm QCA9892 solution which features improved transmission power and sensitivity by Gemtek.

Using the QCA9892 external FEM, it is the ideal cost effective solution for platform integration.

With enhanced technologies such as advanced power management and receiver boost, it makes the WMDQ-177ACN the ideal 5Ghz+2.4G 2T2R module.



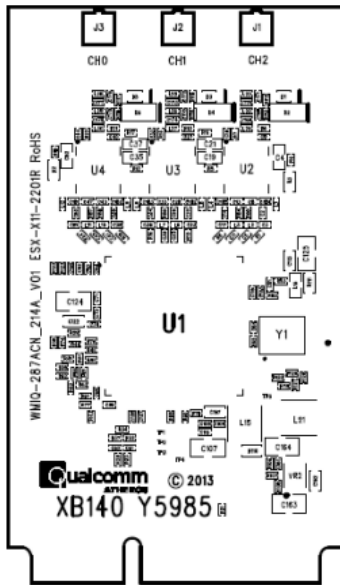
Hardware Specification

General Information	
Model name	WMDQ-177ACN
Chipset	Qualcomm QCA9892
Interface	PCI Express 1.1
Operating Voltage	DC 3.3V
Antenna Connectors	2 x I-PEX connectors
PCB Dimensions	30mmX 50.8mm
Temperature Range	0 to 40 °C (Operating), -30 to 70 °C (Storage)
Security	WEP, TKIP, AES and WAPI hardware encryption
Data rates	802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: ● 20MHz channel: ✧ 1Nss: 65Mbps @ 800GI, 72.2Mbps @ 400GI (Max.) ✧ 2Nss: 130Mbps @ 800GI, 144.4Mbps @ 400GI (Max.) ● 40MHz channel: ✧ 1Nss: 135Mbps @ 800GI, 150Mbps @ 400GI (Max.) ✧ 2Nss: 270Mbps @ 800GI, 300Mbps @ 400GI (Max.) 802.11a: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: ● 20MHz channel: ✧ 1Nss: 65Mbps @ 800GI, 72.2Mbps @ 400GI (Max.) ✧ 2Nss: 130Mbps @ 800GI, 144.4Mbps @ 400GI (Max.) ● 40MHz channel: ✧ 1Nss: 135Mbps @ 800GI, 150Mbps @ 400GI (Max.) ✧ 2Nss: 270Mbps @ 800GI, 300Mbps @ 400GI (Max.) 802.11ac: ● 20MHz channel: ✧ 1Nss: 78Mbps @ 800GI, 86.7Mbps @ 400GI (Max.) ✧ 2Nss: 156Mbps @ 800GI, 173.3Mbps @ 400GI (Max.) ● 40MHz channel: ✧ 1Nss: 180Mbps @ 800GI, 200Mbps @ 400GI (Max.) ✧ 2Nss: 360Mbps @ 800GI, 400Mbps @ 400GI (Max.)

	● 80MHz channel: ✧ 1Nss: 390Mbps @ 800GI, 433.3Mbps @ 400GI (Max.) ✧ 2Nss: 780Mbps @ 800GI, 866.7Mbps @ 400GI (Max.)
T x channel width support	20MHz / 40MHz /80MHz
Standard/Compliance	IEEE 802.11b/g/n/ac

RF Spec	
Frequency Range	2.4G,5G
Radio Stream	2T2R
Transmit Power (Per Radio Stream) Tolerance (+/- 2dBm)	802.11b 1Mbps 19 dBm 802.11g 6Mbps:18 dBm 802.11n HT-20 MCS0 :18 dBm 802.11n HT-40 MCS0 :12 dBm 802.11a 6Mbps: 19 dBm 802.11n HT20 MCS0: 18dBm 802.11n HT40 MCS0: 18dBm 802.11ac VHT20 MCS0: 18dBm 802.11ac VHT40 MCS0: 18dBm 802.11ac VHT80 MCS0: 12dBm
Receive Sensitivity Tolerance (+/- 2dBm)	CCK 1Mbps :-90 dbm OFDM 6Mbps -94dbm OFDM 54M -80dbm HT20 MCS0 : -94dbm HT20 MCS7 :-78dbm HT40 MCS0 : -90dbm HT40 MCS7 : -76dbm 802.11a: 6Mbps: -94dbm 54M: -80dbm 802.11n HT20/HT40 @5G: HT20 MCS0: -94dbm HT20 MCS7: -76dbm HT40 MCS0: -90dbm HT40 MCS7: -76dbm 802.11ac VHT20/VHT40/VHT80: VHT20 MCS0: -94dbm VHT20 MCS8: -74dbm VHT40 MCS0: -90dbm VHT40 MCS9: -70dbm VHT80 MCS0: -88dbm VHT80 MCS9: -66dbm

Dimension : 50mm* 30mm (Full size)



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:

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.

Country Code selection feature to be disabled for products marketed to the US/CANADA.

Operation of this device is restricted to indoor use only

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 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

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 authorization is no longer considered valid and the FCC 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: TVE-120506".

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 statement

This device complies with Industry Canada's licence-exempt RSSs. 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.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- 1) l'appareil ne doit pas produire de brouillage;*
- 2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.*

This radio transmitter (IC: 7280B-120506) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain 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.

Le présent émetteur radio (IC: 7280B-120506) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Antenna Model	Type	Connector	2.4G Gain	5G Gain
C210-510579-A	Dipole	R-SMA	2.8 dBi	3 dBi

Caution:

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;

Avertissement:

les dispositifs fonctionnant dans la bande de 5150 à 5250MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;

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 & your body.

Déclaration d'exposition aux radiations:

Cet équipement est conforme Canada limites d'exposition aux radiations dans un environnement non contrôlé. Cet équipement doit être installé et utilisé à distance minimum de 20cm entre le radiateur et votre corps.

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

1) The transmitter module may not be co-located with any other transmitter or antenna.

As long as 1 condition 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.

Cet appareil est conçu uniquement pour les intégrateurs OEM dans les conditions suivantes:

1) Le module émetteur peut ne pas être coïmplanté avec un autre émetteur ou antenne.

Tant que les 1 condition ci-dessus sont remplies, des essais supplémentaires sur l'émetteur ne seront pas nécessaires. Toutefois, l'intégrateur OEM est toujours responsable des essais sur son produit final pour toutes exigences de conformité supplémentaires requis pour ce module installé.

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 Canada authorization is no longer considered valid and the 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 Canada authorization.

NOTE IMPORTANTE:

Dans le cas où ces conditions ne peuvent être satisfaites (par exemple pour certaines configurations d'ordinateur portable ou de certaines co-localisation avec un autre émetteur), l'autorisation du Canada n'est plus considéré comme valide et l'ID IC ne peut pas être utilisé sur le produit final. Dans ces circonstances, l'intégrateur OEM sera chargé de réévaluer le produit final (y compris l'émetteur) et l'obtention d'une autorisation distincte au Canada.

End Product Labeling

The final end product must be labeled in a visible area with the following: "Contains IC:7280B-120506".

Plaque signalétique du produit final

Le produit final doit être étiqueté dans un endroit visible avec l'inscription suivante: "Contient des IC: 7280B-120506".

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.

Manuel d'information à l'utilisateur final

L'intégrateur OEM doit être conscient de ne pas fournir des informations à l'utilisateur final quant à la façon d'installer ou de supprimer ce module RF dans le manuel de l'utilisateur du produit final qui intègre ce module.

Le manuel de l'utilisateur final doit inclure toutes les informations réglementaires requises et avertissements comme indiqué dans ce manuel.