

Product Specification

IEEE 802.11 b/g/n WLAN Module

Project Name	WFU03-VZ
Customer	
Customer Part No.	
Foxconn Part No.	

Approved:	Approved:	Prepared by:
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Revision History

Date	Number	Approver	Comments
Oct. 8, 2018	1.0	Kevin	Initial Draft

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CHAPTER 1. MODULE OVERVIEW

The Foxconn WFU03-VZ wireless LAN module contains the MT7601 single chip which is a highly integrated MAC/BBP for 2.4GHz RF transmission and supporting 150Mbps PHY rate. It fully complies with IEEE 802.11 b/g/n standards, offering feature-rich wireless connectivity at high standards, delivers reliable, cost-effective, throughput from an extended distance. The optimized radio frequency architecture and baseband algorithms provide superb performance and low power consumption. Deploy a high efficient USB engine and hardware data processing accelerators without overloading the host processor. Security, quality of service and international regulation are supported by WFU03-VZ and giving end users the greatest performance anytime in any circumstance.

1-1 Key Characteristic

- Legacy data rates 1, 2 in DSSS mode and rates 5.5, and 11 Mbps in CCK mode, 6, 9, 12, 18, 24, 36, 48, and 54 in OFDM mode
- 1T1R mode with support of 150Mbps PHY rate
- Uses the 2.412 to 2.497GHz ISM frequency band defined by the IEEE 802.11b/g/n specifications
- Security support for WFA WPA/WPA2 personal, WPS2.0, WAPI
- QoS support of WFA WMM, WMM PS
- Fully compliance with USB 2.0 high-speed mode
- Form Factor: PCI Express 1.1 Half Mini Card(single side)
- 802.11d/h/k compliant
- Supports Wi-Fi Direct
- Integrated high efficiency switching regulator
- Antenna diversity

1-2 USB Pin Definition

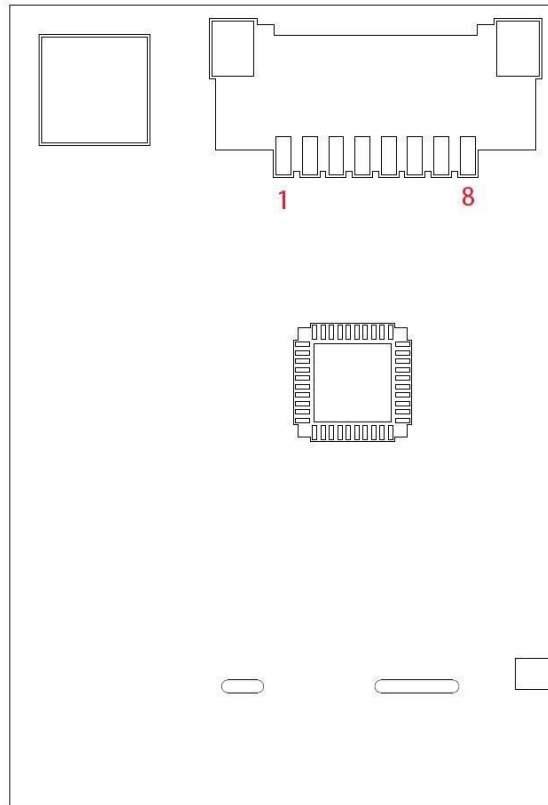


Figure 1 Pin Definitions (Module Top View)

Table 1 Pin Definitions

Pin#	Name	Description
1	VDD	+5V Power Supply
2	VDD	+5V Power Supply
3	D-	USB Data D-
4	D+	USB Data D+
5	GND	GND
6	RST	System reset
7	WOW	Wake on WLAN
8	GND	GND

CHAPTER 2. ELECTRICAL AND RF SPECIFICATION

2-1 Recommended Operation Rating

Table 2 Operation Rating

Parameter	Min	Typ.	Max.	Unit
Vcc	4.5	5	5.5	V
RF Interface		50		Ohm

2-2 Power Consumption

Power consumption is measured using current probe loop on the Power rails of the USB interface (Pins).

Table 3 Power Consumption

Description	Typical	Unit
IDLE	44	mA
2G/T - N mode HT 40MHz MCS 7	117	mA
2G/T - N mode HT 20MHz MCS 7	119	mA
2G/T - G mode OFDM54M	132	mA
2G/T - B mode CCK11M	181	mA
2G/R - N mode HT 40MHz MCS 7	115	mA
2G/R - N mode HT 20MHz MCS 7	108	mA
2G/R - G mode OFDM54M	108	mA
2G/R - B mode CCK11M	108	mA

2-3 WiFi RF Specification – TX

Table 4 IEEE 802.11 b/g/n/ TX Output Power

Data Rate (Mbps)	Modulation	Tx Typical Power (dBm)	Data Rate (Mbps)	Modulation	Tx Typical Power (dBm)
1	DBPSK	15	HT20-MCS0	BPSK	14
2	DQPSK	15	HT20-MCS1	BPSK	14
5.5	CCK	15	HT20-MCS2	QPSK	14
11	CCK	15	HT20-MCS3	QPSK	14
6	OFDM	15	HT20-MCS4	16-QAM	14
9	OFDM	15	HT20-MCS5	16-QAM	14
12	OFDM	15	HT20-MCS6	64-QAM	14
18	OFDM	15	HT20-MCS7	64-QAM	14
24	OFDM	15	HT40-MCS0	BPSK	14
36	OFDM	15	HT40-MCS1	QPSK	13
48	OFDM	15	HT40-MCS2	QPSK	13
54	OFDM	15	HT40-MCS3	16-QAM	13
			HT40-MCS4	16-QAM	13
			HT40-MCS5	64-QAM	13
			HT40-MCS6	64-QAM	13
			HT40-MCS7	64-QAM	13

2-4 WiFi RF Specification – RX

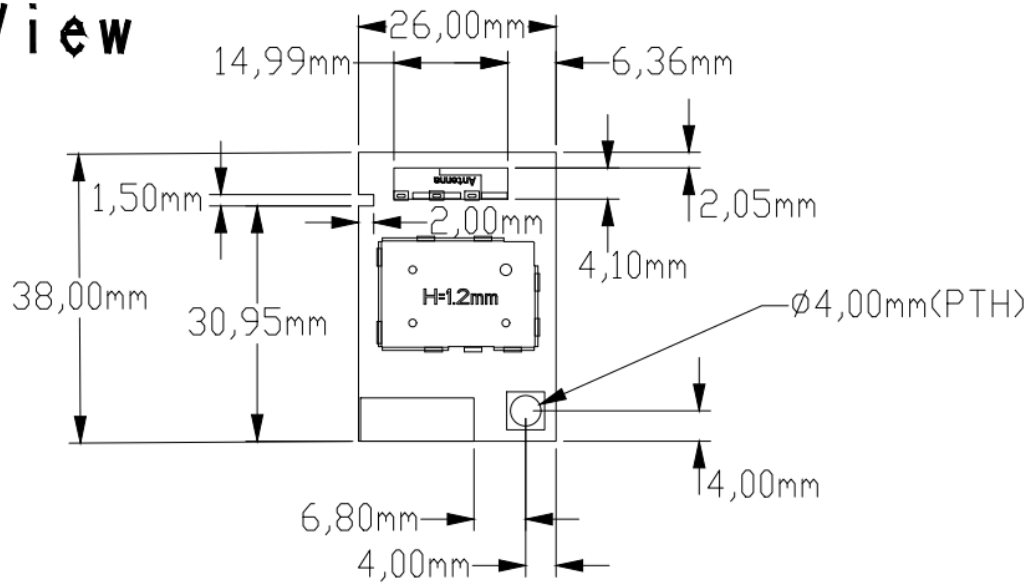
Table 5 IEEE 802.11 b/g/n RX Sensitivity

Data Rate (Mbps)	Modulation	Rx Sensitivity (dBm)		Data Rate (Mbps)	Modulation	Rx Sensitivity (dBm)	
		Max.	Typ.			Max.	Typ.
1	DBPSK	-83	-93	HT20-7.22	BPSK	-82	-86
2	DQPSK	-80	-90	HT20-14.44	QPSK	-79	-84
5.5	CCK	-79	-89	HT20-21.67	QPSK	-77	-82
11	CCK	-76	-85	HT20-28.89	16-QAM	-74	-79
6	OFDM	-85	-87	HT20-43.33	16-QAM	-70	-76
9	OFDM	-84	-86	HT20-57.78	64-QAM	-66	-72
12	OFDM	-82	-84	HT20-65	64-QAM	-65	-70
18	OFDM	-80	-82	HT20-72.22	64-QAM	-64	-68
24	OFDM	-77	-80	HT40-15	BPSK	-79	-85
36	OFDM	-73	-76	HT40-30	QPSK	-76	-82
48	OFDM	-69	-72	HT40-45	QPSK	-74	-80
54	OFDM	-68	-70	HT40-60	16-QAM	-71	-77
				HT40-90	16-QAM	-67	-73
				HT40-120	64-QAM	-63	-69
				HT40-135	64-QAM	-62	-67
				HT40-150	64-QAM	-61	-65

CHAPTER 3. MECHANICAL SPECIFICATION

3-1 Module Assembly Dimension

Top View



Bottom View

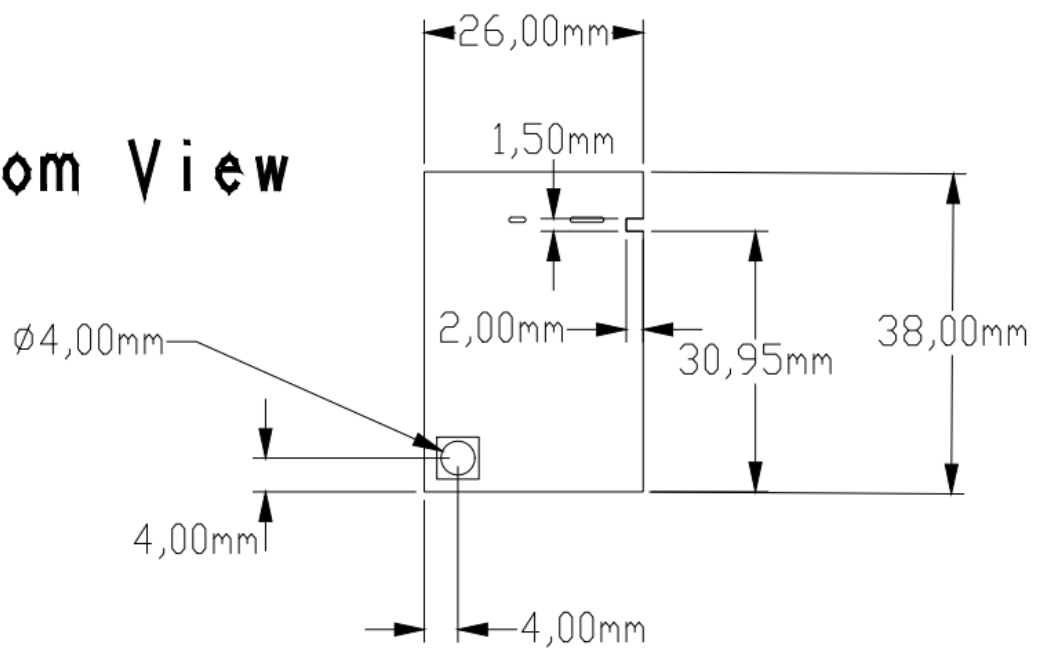


Figure 2 Mechanical Drawing

3-2 Label Specification

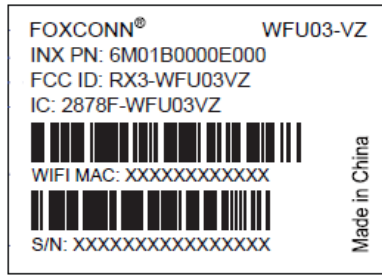


Figure 3 Label Drawing

CHAPTER 4. ADDITIONAL INFORMATION

4-1 EEPROM Information

Table 6 USB PID/VID Setting (TBD)

WLAN Type	Mode	PID	VID
WFU03-LEUXXX-MT7601U	BGN	0x7601	0x148F

4-2 Module Photo



Figure 4 Top Side Photo



Figure 5 Bottom Side Photo

4-3 Environment Specifications

The following tables provide normal operating conditions and maximum rating requirements for WFU03-VZ hardware.

Table 7 Operating Conditions

Environment	Limits
Operating	-10-70°C

※The radio parts at operating state and above temperature of T-shield.

Table 8 Non-operating Conditions

Environment	Temperature				Humidity			
	Min.	Typ.	Max.	Unit	Min.	Typ.	Max.	Unit
Non-Operating	-40	25	85	°C	45	-	90	%

※ Temperature condition for storage (Packaged) in warehouse is Maximum 40°C up to 6 months.

Federal Communication Commission Interference Statement

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 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 transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

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 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.

As long as 2 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 reevaluating 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: RX3-WFU03VZ”. The grantee's FCC ID can be used only when all FCC compliance requirements are met.

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.

Canada, Industry Canada (IC) Statement

This Class B digital apparatus complies with Canadian ICES-003.

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.

RF Radiation Exposure Statement:

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

Required end product labeling:

Any device incorporating this module must include an external, visible, permanent marking or label which states: "Contains IC: 2878F-WFU03VZ"

This radio transmitter (identify the device by certification number or model number if Category II) 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.

Antenna Type: PIFA Peak Gain: 1,28 dBi

Canada, Industrie Canada (IC) Déclaration

Cet appareil numérique de classe B est conforme à la norme NMB-003.

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, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Déclaration d'exposition aux radiations:

Cet appareil est conforme aux limites d'exposition aux rayonnements définies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé à une distance minimale de 20 centimètres entre le radiateur et votre corps.

Obligation d'étiquetage du produit final:

Tout dispositif intégrant ce module doit comporter un externe, visible, marquage permanent ou une étiquette qui dit: "Contient IC : 2878F-WFU03VZ".

Cet émetteur radio (identifier le dispositif par numéro de certification ou le numéro de modèle , si la catégorie II) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous avec le gain maximal admissible indiqué . types d'antennes non inclus dans cette liste , ayant un gain supérieur au gain maximum indiqué pour ce type , sont strictement interdits pour une utilisation avec cet appareil.

Type d'antenne: PIFA Pic Gain: 1,28 dBi