

User's manual

IEEE 802.11 b/g/n

Wi-Fi Module

Version 0.1

<i>Edition #</i>	<i>Reason for revision</i>	<i>Issue date</i>	<i>Editor</i>	<i>Reviewer</i>	<i>Approver</i>
V0.1	Generic Version	2017/07/13	Ben Chang	Alex Chang	Alex Chang
V0.2	Update CE power table	2017/09/05	Ben Chang	Alex Chang	Alex Chang

Preliminary information (Official release may be changed without notice)

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1. FCC Statement

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

Integration instructions for host product manufacturers

Applicable FCC rules to module

FCC Part 15.247

Summarize the specific operational use conditions

The module is must be installed in mobile device.

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. 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.

Limited module procedures

Not applicable

Trace antenna designs

Not applicable

RF exposure considerations

20 cm separation distance and co-located issue shall be met as mentioned in "Summarize the specific operational use conditions".

Product manufacturer shall provide below text in end-product manual

"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."

Antennas

Brand name	Model name	Antenna type	Antenna gain	Antenna connector
NA	printing ant	PIFA	5.18 / 4.59	UFL

Label and Compliance Information

Product manufacturers need to provide a physical or e-label stating

“Contains FCC ID: NKR-A3” with finished product

Information on Test Modes and Additional Testing Requirements

Test tool: QATool V 0.0.0.96 shall be used to set the module to transmit continuously.

Additional Testing, Part 15 Subpart B Disclaimer

The module is only FCC authorized for the specific rule parts listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed

2. Introduction

2.1 Scope

The document is for design engineers responsible for adding a Mediatek MT7603UN solution to TV to enable wireless function for media devices , and more. Sections of this document include the Wi-Fi , interfaces, microprocessor and memory unit, and specification of Mediatek MT7603UN.



TV



Notebook



Tablet

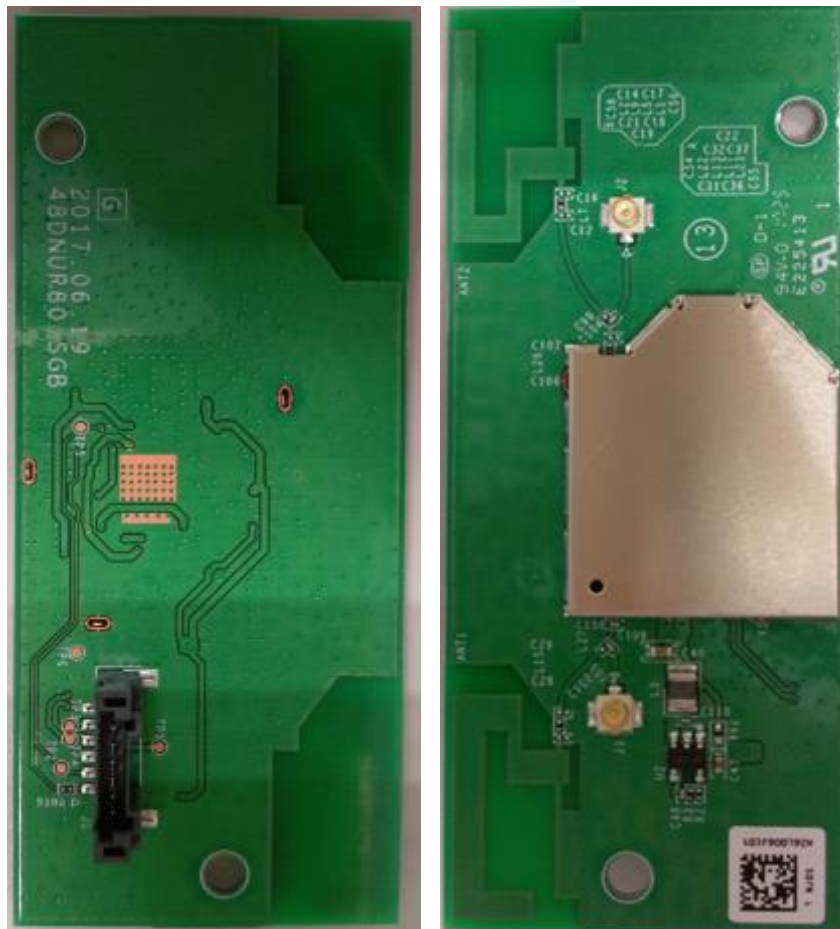
***Wi-Fi module design-in suggestion**

2.2 Applicable Documents

Document(or Item) Name

MT7603UN datasheet

2.3 Product Photograph (SGB)



3. Key Features

Wi-Fi Key Feature

- IEEE 802.11b/g/n compliant
- Support 20, 40MHz in 2GHz band
- 2T2R mode with support of 300Mbps PHY rate
- Support 64QAM in 2.4GHz band
- Integrated LNA, PA and T/R switch

- Wake on WLAN via GPIO (client mode)
- Two printing antenna for 2.4G

4. General Specifications

- Form Factor Wi-Fi Module
- PCB Dimension 70.0mm(+/-0.2mm) x 30.0mm(+/-0.2mm) x 1.0mm(+/-0.1mm)
- PCBA Height 9.1mm(+/-0.3mm)
- Main Chipset Mediatek MT7603UNN
- Crystal Frequency 40MHz
- Host Interface USB 2.0, Common USB for WLAN and BT
- Transmitter/Receiver 2 TX / 2 RX
- Data Rates (kbps) Support 802.11b/g/n 40MHz Max. 300 Mbps
- Operation Voltage DC 5.0V(Typical) +/-5%
- Operation Temperature 0°C ~ 50°C
- Storage Temperature -10°C ~ 85°C
- Operation Humidity 5% ~ 95%
- Storage Humidity Up to 85%

5. Hardware Block Diagram

TBD

6. Pin Definition

Pin Number	Name	Configuration	Description
1	NC	NC	NC
2	WOW	O	Wake on WLAN
3	5V	Power	5V power supply
4	USB_ DM	I/O	USB D differential minus
5	USB_ DP	I/O	USB D differential plus
6	Ground	Ground	Ground

7. Electrical Specification

6-1 Absolute Maximum Ratings

Symbol	Parameter	Minimum	Typical	Maximum	Unit
5V	5V power supply	4.75	5.0	5.25	V
WoW	GPIO input voltage	-0.3		3.63	V
T storage	Storage temperature	-10		85	°C
H storage	Storage humidity	5		85	%RH

7-2 Recommended Operating Conditions

Symbol	Parameter	Minimum	Typical	Maximum	Unit
5V	5V power supply	4.5	5.0	5.5	V
3.3V	3.3V power supply	2.97		3.63	V
T operating	Operating temperature	0		50	°C
H operating	Operating humidity	5		95	%RH
WoW	V _{oH} output high voltage	2.4		3.63	V
	V _{oL} output low voltage	-0.28		0.4	

8. Current Consumption

Current Consumption	Standard	Average Typ./Max.	Units
WLAN Tx (Dual Chain)	11b	280/320	mA
	11g	265/305	
	11n	265/305	
WLAN Rx (Dual Chain)	11b	70/100	
	11g	70/100	
	11n	70/100	

Note:

[1] 5V/(+/-5%) input voltage

[2] The module current variation is +/-15%

[3] Measure at 25 °C.

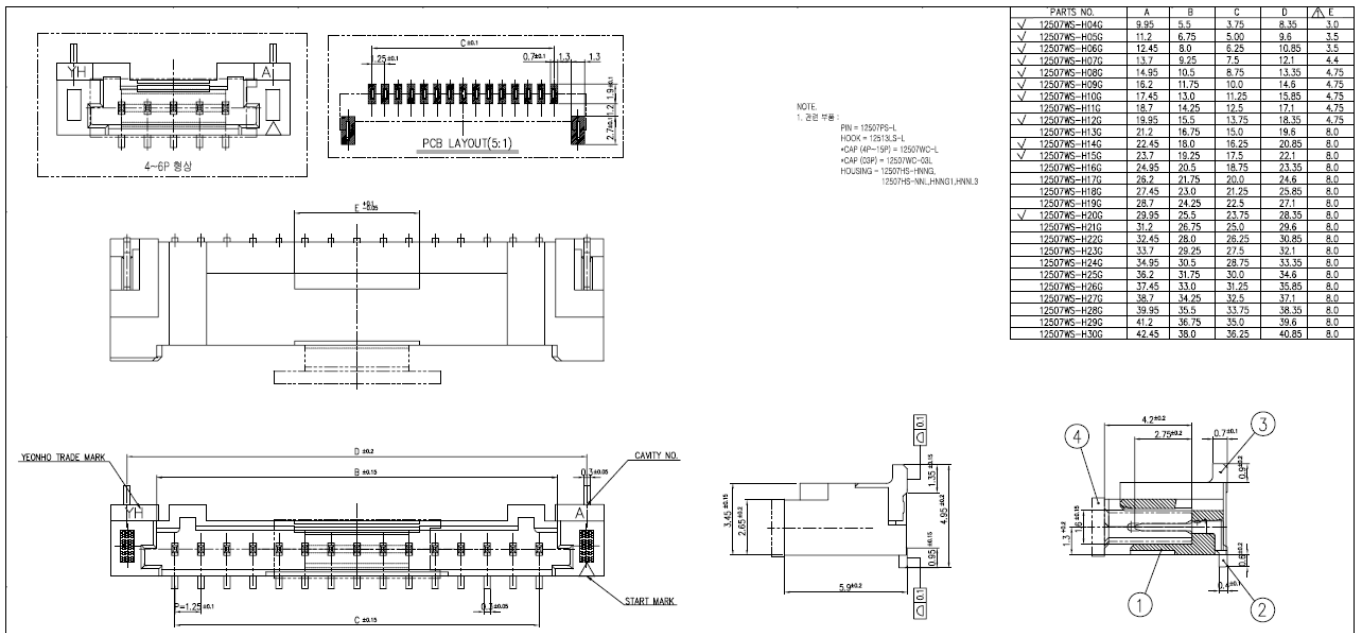
9. Interface of Connector

- Host Interface

Manufacturer: YEONHO

Part Number: 12507WS-H06G

WNC Part Number : 20.41250.006



10. Mechanical Dimension(SGB)

