



# Smart Appliance

## Wi-Fi Module

*New Wide Tech.*

Type :

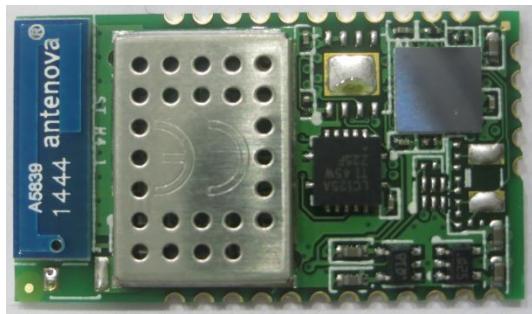
Model : NWT-WF01



## Introduction

The documentation described the brief specification and some guidance of the Wi-Fi module. This module is highly integrated that followed the standard of 802.11 b/g/n.

Figure 1: Wi-Fi Module



## Features

*Application for Smart Appliance*

*2.4 GHz IEEE 802.11 b/g/n transceiver*

*STM32 ARM Cortex-M3*

*64 KB RAM memory*

*Multiple Flash memory supported (512KB/1.5MB)*

*32 kHz XTAL to support low power mode*

*Dimension: 26.92 X 15.24 X 2.35*

*Single voltage supply (3.3V)*



# Electrical Specification

Table 1: Absolute maximum ratings

Parameter	Test condition/comment	Min.	Typ.	Max.	Unit
Voltage supply	-	-0.3	-	4.0	V
Vin for 5 V tolerant pins		-0.3		5.5	V
Vin for all other pins		-0.3		2.8	V
Storage temperature range		-55		105	°C

Table 2: Operating conditions and input power specifications

Parameter	Test condition/comment	Min.	Typ.	Max.	Unit
Operating temperature range	Industrial	-40		85	°C
3.3 V supply	Input supply voltage	3.3 V supply input	3.1	3.3	3.6 V
	Standby	Corresponds to have both the micro and the radio in standby power states		5	uA
	Sleep	Corresponds to have the micro in stop power state and the radio in sleep power state		<1	mA
	Power state	Corresponds to have the micro active and the radio in sleep power state		15	mA
	Idle	Radio is deactivated		13	mA
	Not connected	Scanning cycle (average)		25	mA
	Connected (RX, idle or active)	Correspond to have active both the processor and the radio		80	mA
	Connected (TX active)	Refer to 18 dBm output power		250	(2) mA



## RF characteristics

Table 3: RF characteristics

Parameter	Test condition/comment	Min.	Typ.	Max.	Unit
RX Sensitivity <sup>(1)</sup>	11b, 1 Mbps		-96		dBm
	11b, 2 Mbps		-93		dBm
	11b, 5.5 Mbps		-91		dBm
	11b, 11 Mbps		-87		dBm
	11g, 9 Mbps		-89.5		dBm
	11g, 18 Mbps		-86		dBm
	11g, 36 Mbps		-80		dBm
	11g, 54 Mbps		-74.5		dBm
	11n, MCS1, 13 Mbps		-86.5		dBm
	11n, MCS3, 26 Mbps		-81.5		dBm
Adjacent channel rejection	11n, MCS5, 52 Mbps		-74		dBm
	11n, MCS7, 65 Mbps		-71		dBm
Channel-to-channel de-sensitivity	CH1 to 14	11g, 54 Mbps, 10%PER	1		dB
Maximum input signal	CH7	11g, 54 Mbps	-20		dBm
11Mbps		38		dBc	
TX output power <sup>(1)</sup>	9 Mbps		20		dBc
	54 Mbps		4		dBc
	MCS1		24		dBc
	MCS7		3		dBc
	11b, 1 Mbps	@802.11b spectral mask	18.3		dBm
	11b, 11 Mbps		18.3		dBm
	11g, 9 Mbps	@802.11g spectral mask	18.3		dBm
	11g, 54Mbps		13.7		dBm
	11n, MCS1	@802.11n spectral mask	18.3		dBm
	11n, MCS7		13.5		dBm
On board antenna gain		Average	-1.2		dBi
External antenna gain		SG901-1066 average including cable loss	2.8		dBi



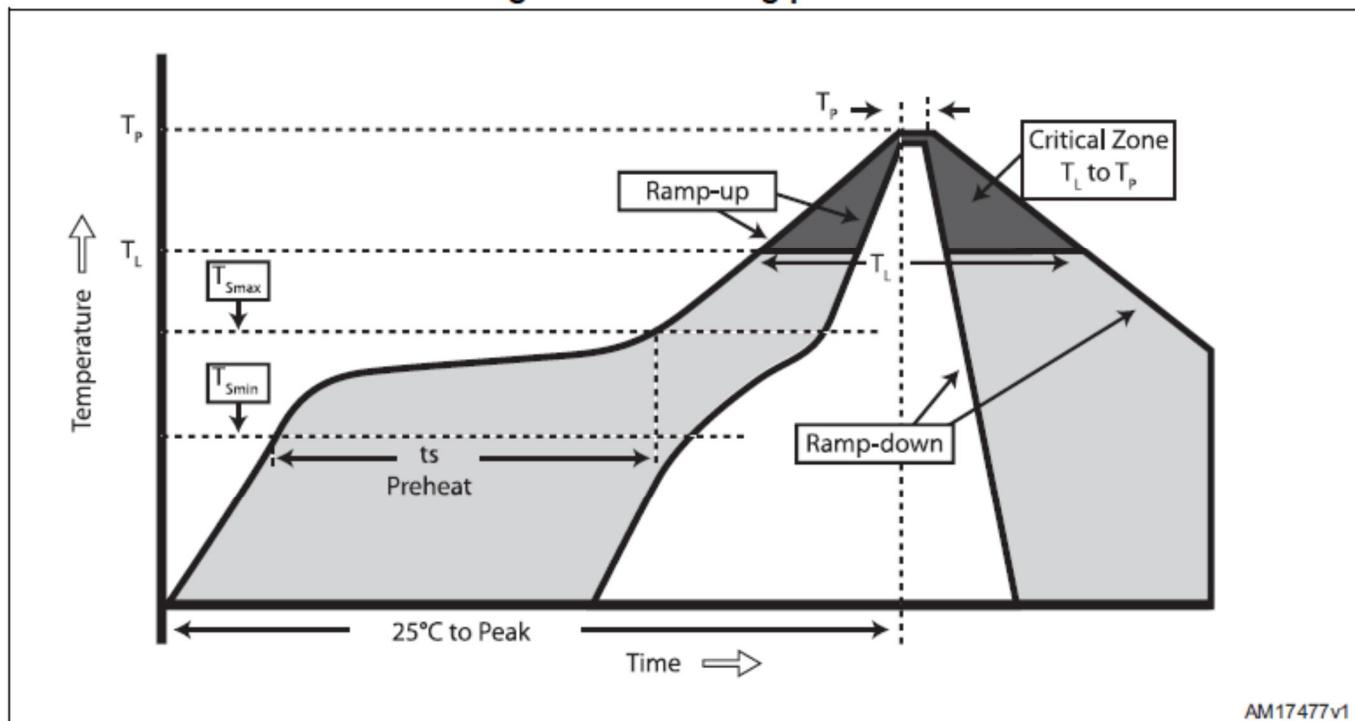
## Modules reflow

This Wi-Fi module is surface mount modules with 6-layer PCB.

Table: 4 Soldering values

Profile feature	PB-free assembly
Average ramp-up rate ( $T_{SMAX}$ to $T_P$ )	3 °C/sec max
Preheat:	
– Temperature min. ( $T_S$ min.)	150 °C
– Temperature max. ( $T_S$ max.)	200 °C
– Time ( $T_S$ min. to $T_S$ max) (ts)	60-100 sec
Critical zone:	
Temperature $T_L$	217 °C
Time $T_L$	60-70 sec
Peak temperature ( $T_P$ )	240 + 0 °C
Time within 5 °C of actual peak temperature ( $T_P$ )	10-20 sec
Ramp-down rate	6 °C/sec
Time from 25 °C to peak temperature	8 minutes max.

Figure 2: Soldering profile





## 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:** To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example - use only shielded interface cables when connecting to computer or peripheral devices).

## End Product Labeling

This transmitter module is authorized only for use in devices 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 visible area with the following: "Contains FCC ID: 2AHE8NWT-WF01"

"

## End Product Manual Information

The user manual for end users must include the following information in a prominent location  
**"IMPORTANT NOTE:** To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 20cm from all persons and must not be collocated or operating in conjunction with any other antenna or transmitter." 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:** In the event that these conditions can not be met (for example certain laptop configurations or colocation 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



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## Wi-Fi User Manual

the transmitter) and obtaining a separate FCC authorization. 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. As long as a condition above is 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, digital device emissions, PC peripheral requirements, etc.).

### NCC 聲語

#### 第十二條

經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

#### 第十四條

低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

前項合法通信，指依電信法規定作業之無線電通信。

低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

本模組於取得認證後，將依規定於模組本體標示審驗合格標籤，並要求平台廠商於平台上標示「本產品內含射頻模組 XXXyyyLPDzzzz-x」

電磁波曝露量MPE標準值1mW/cm, 送測產品實測值為: 0.0136 mW/cm<sup>2</sup>