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Product Specification

IEEE 802.11b/g/n 1T1R USB WiFi Module

Project Name	RTL8188ETV 1T1R USB WIFI Module
Model NO	F88ETUM35-C2
Customer	
Customer's Part NO	

<u>Approved:</u> William Tan	<u>Check:</u> Jim Hu	<u>Drafted:</u> Neal Yu
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Feedback of customer's Confirmation

We accept the specification after Confirmed.

Customer name	Customer signature	Confirmation Date

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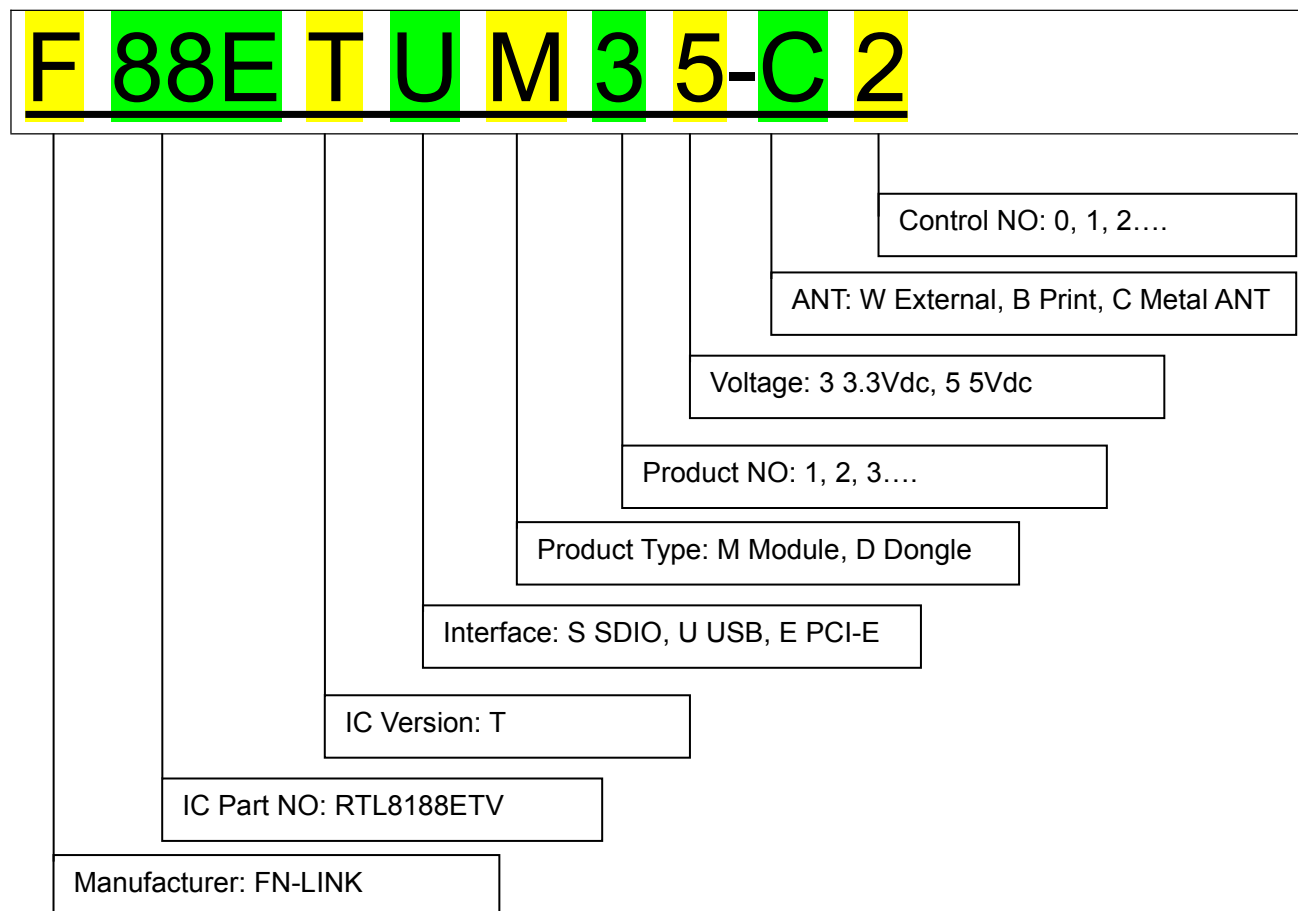
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0. Revision History

REV NO	Date	Modifications	Draft	Approved
Rev1.0	Jul.10,2014	First Released	SJ LI	SYMEN
Rev1.1	Aug.15,2014	Updated the PIN definition	SJ LI	SYMEN
Rev1.2	Aug.20,2014	1. Added Package information; 2. Added Label information; 3. Added the shielding case.	SJ LI	SYMEN
Rev1.3	Oct.30 2014	Added Label information;	SJ LI	SYMEN
Rev1.4	Jan.06 2015	Update the outline drawing	Neal Yu	William Tan

0.1. Model No Definition

Example: F88ETUM35-C2



1. Introduction

F88ETUM35-C2 is a highly integrated and excellent performance Wireless LAN (WLAN) USB2.0 network interface device. High-speed wireless connection up to 150 Mbps.

1.1 Overview

The general hardware for the module is shown in Figure 1. This WLAN Module design is based on Realtek RTL8188ETV. It is a highly integrated single-chip 1*1 MIMO (Multiple In Multiple Out) Wireless LAN (WLAN) USB2.0 network interface controller complying with the 802.11n specification. It combines a MAC, a 1T1R capable baseband, and RF in a single chip. It is designed to provide excellent performance with low power Consumption and enhance the advantages of robust system and cost-effective.

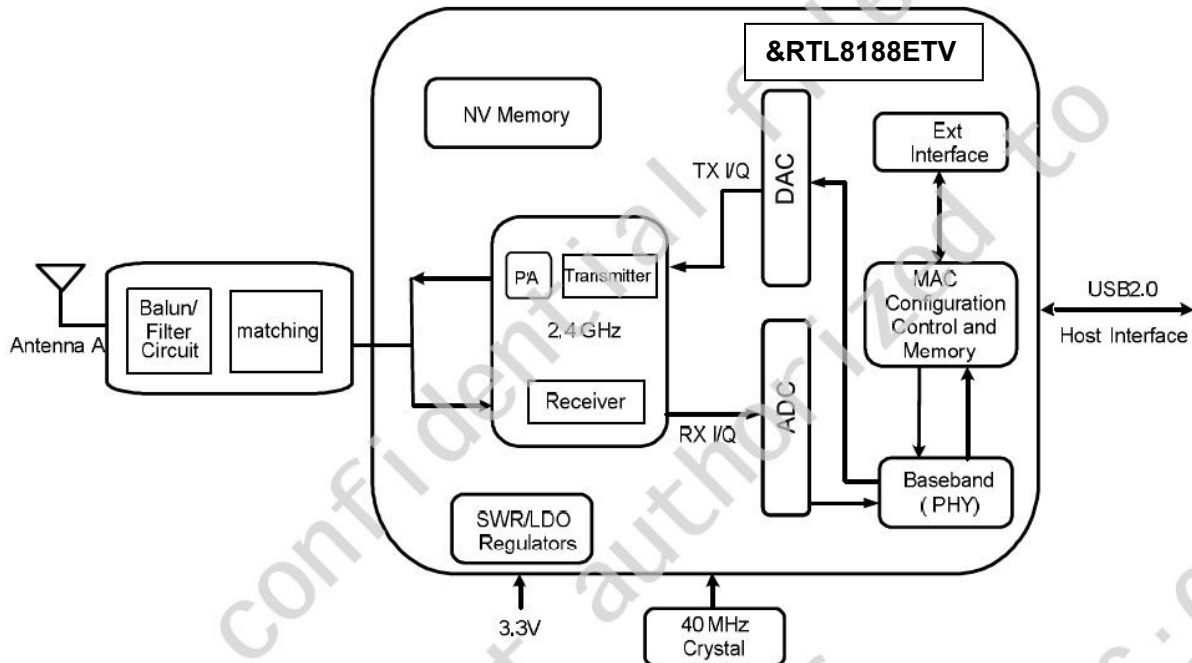


Figure 1. Single-Band 11n (1x1) Solution

1.2 SPECIFICATION REFERENCE

This specification is based on additional references listed as below.

IEEE 802.11b
IEEE 802.11g
IEEE 802.11n

2. GENERAL SPECIFICATION

2.1 WiFi Specifications

Features	Descriptions
Main Chipset	RTL8188ETV
Frequency Range	2.400~2.4835GHz
Operating Voltage	5.0Vdc $\pm$ 5% I/O supply voltage
Host Interface	WiFi: USB
Standards	WiFi: IEEE 802.11b, IEEE 802.11g, IEEE 802.11n,
Modulation	WiFi: 802.11b: CCK(11, 5.5Mbps), QPSK(2Mbps), BPSK(1Mbps), 802.11 g/n: OFDM
PHY Data rates	WiFi: 802.11b: 11,5.5,2,1 Mbps 802.11g: 54,48,36,24,18,12,9,6 Mbps 802.11n: up to 150Mbps
Transmit Output Power	WiFi: 802.11b@11Mbps 16 $\pm$ 2dBm 802.11g@6Mbps 14 $\pm$ 2dBm 802.11g@54Mbps 14 $\pm$ 2dBm 802.11n@65Mbps 13 $\pm$ 2dBm (MCS 0_HT20) 13 $\pm$ 2dBm (MCS 7_HT20) 13 $\pm$ 2dBm (MCS 0_HT40) 13 $\pm$ 2dBm (MCS 7_HT40)
EVM	802.11b /11Mbps : EVM $\leq$ -9dB 802.11g /54Mbps : EVM $\leq$ -25dB 802.11n /65Mbps : EVM $\leq$ -28dB
Receiver Sensitivity (HT 20)	802.11b@8% PER 1Mbps -88 $\pm$ 1dBm 2Mbps -87 $\pm$ 1dBm 5.5Mbps -85 $\pm$ 1dBm 11Mbps -82 $\pm$ 1dBm 802.11g@10% PER 6Mbps -86 $\pm$ 1dBm 9Mbps -85 $\pm$ 1dBm 12Mbps -84 $\pm$ 1dBm 18Mbps -82 $\pm$ 1dBm 24Mbps -80 $\pm$ 1dBm 36Mbps -77 $\pm$ 1dBm 48Mbps -73 $\pm$ 1dBm 54Mbps -71 $\pm$ 1dBm 802.11n@10% PER MCS 0 -83 $\pm$ 1dBm MCS 1 -82 $\pm$ 1dBm MCS 2 -80 $\pm$ 1dBm MCS 3 -78 $\pm$ 1dBm MCS 4 -75 $\pm$ 1dBm MCS 5 -71 $\pm$ 1dBm MCS 6 -69 $\pm$ 1dBm MCS 7 -67 $\pm$ 1dBm
Operating Channel	WiFi 2.4GHz: 11: (Ch. 1-11) – United States(North America) 13: (Ch. 1-13) – Europe 14: (Ch. 1-14) – Japan
Media Access Control	WiFi: CSMA/CA with ACK

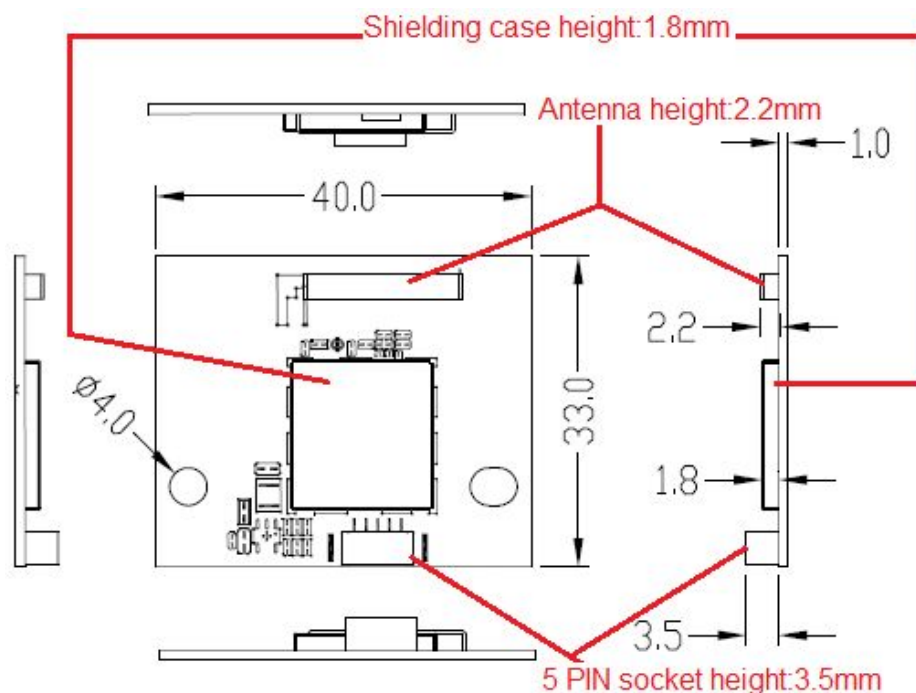
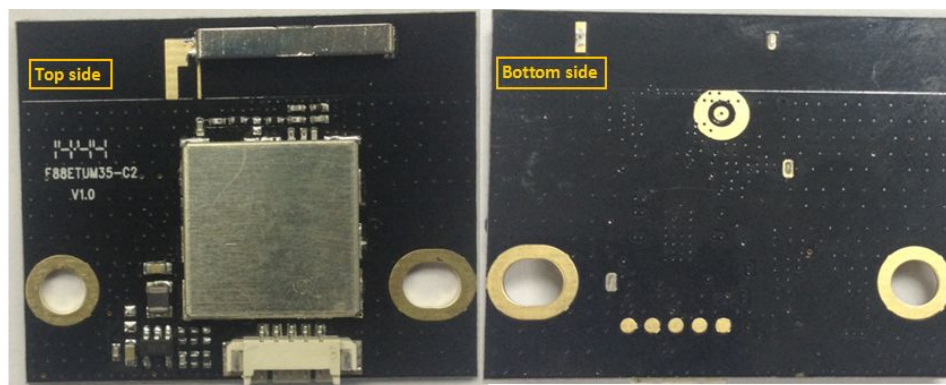
Network Architecture	WiFi: Ad-hoc mode (Peer-to-Peer) Infrastructure mode Software AP WiFi Direct
Security	WiFi: WPA, WPA-PSK, WPA2, WPA2-PSK, WEP 64bit & 128bit,
Antenna	Onboard Metal ANT
OS Supported	Android /Linux/ Win CE /iOS /XP/WIN7
Dimension	Typical L40.0*W33.0*T3.5mm

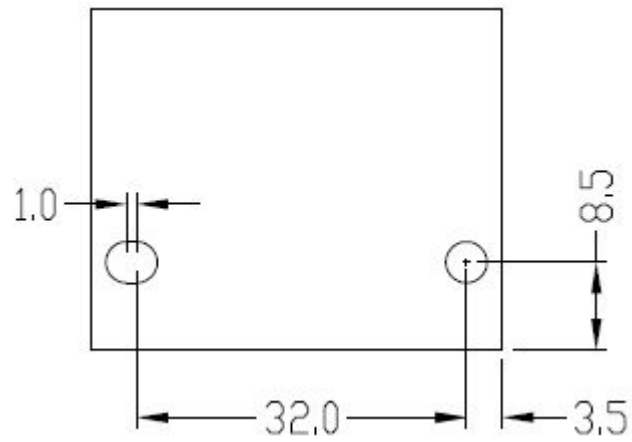
2.2 Power Consumption

STATUS	Power Consumption (mA)
LINK	140
TX (11n,20M MCS7)	210
TX (11n,40M MCS7)	180
TX (11g,54M)	220
TX (11b,CCK11)	310
RX	145

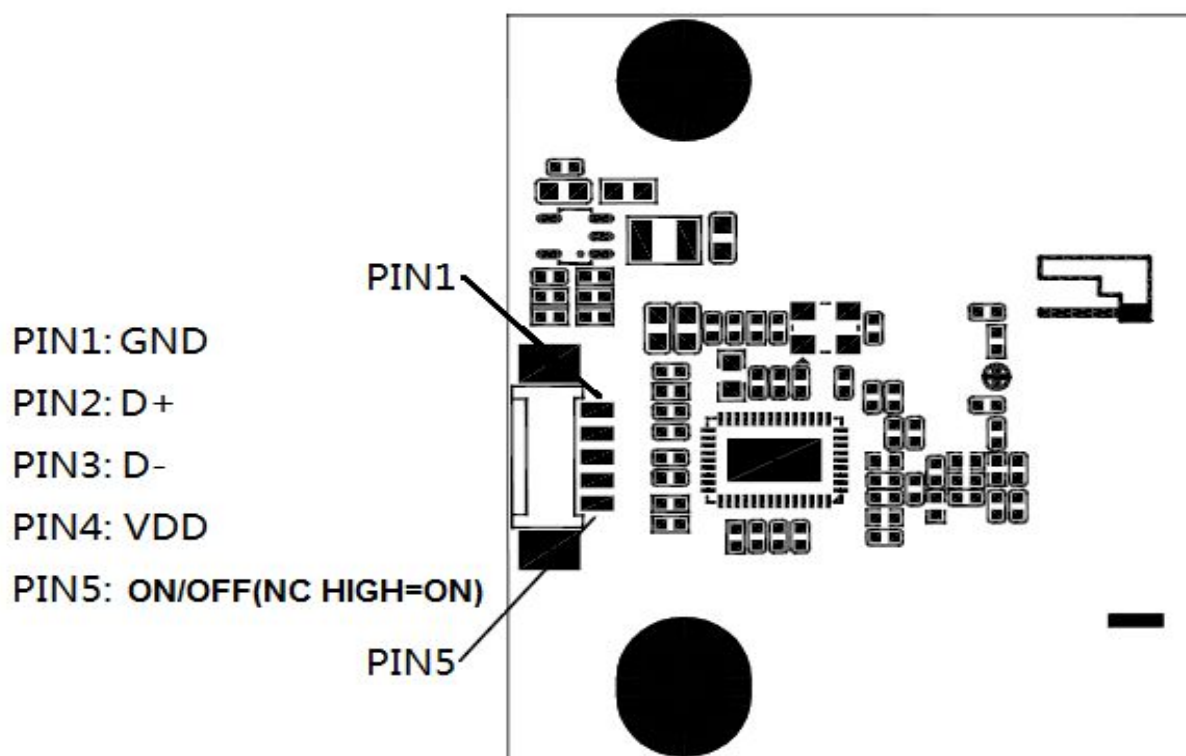
3. Mechanical Specification

3.1 Outline Drawing (unit: mm)





3.2 Connector Pin Definition



Pin #	Name	Description
1	GND	Ground
2	D+	USB Data DP
3	D-	USB Data DN
4	VDD	Supply power input (5V)
5	ON/OFF	Control "Enable" of DC-DC, High level defaulted.

4. Package

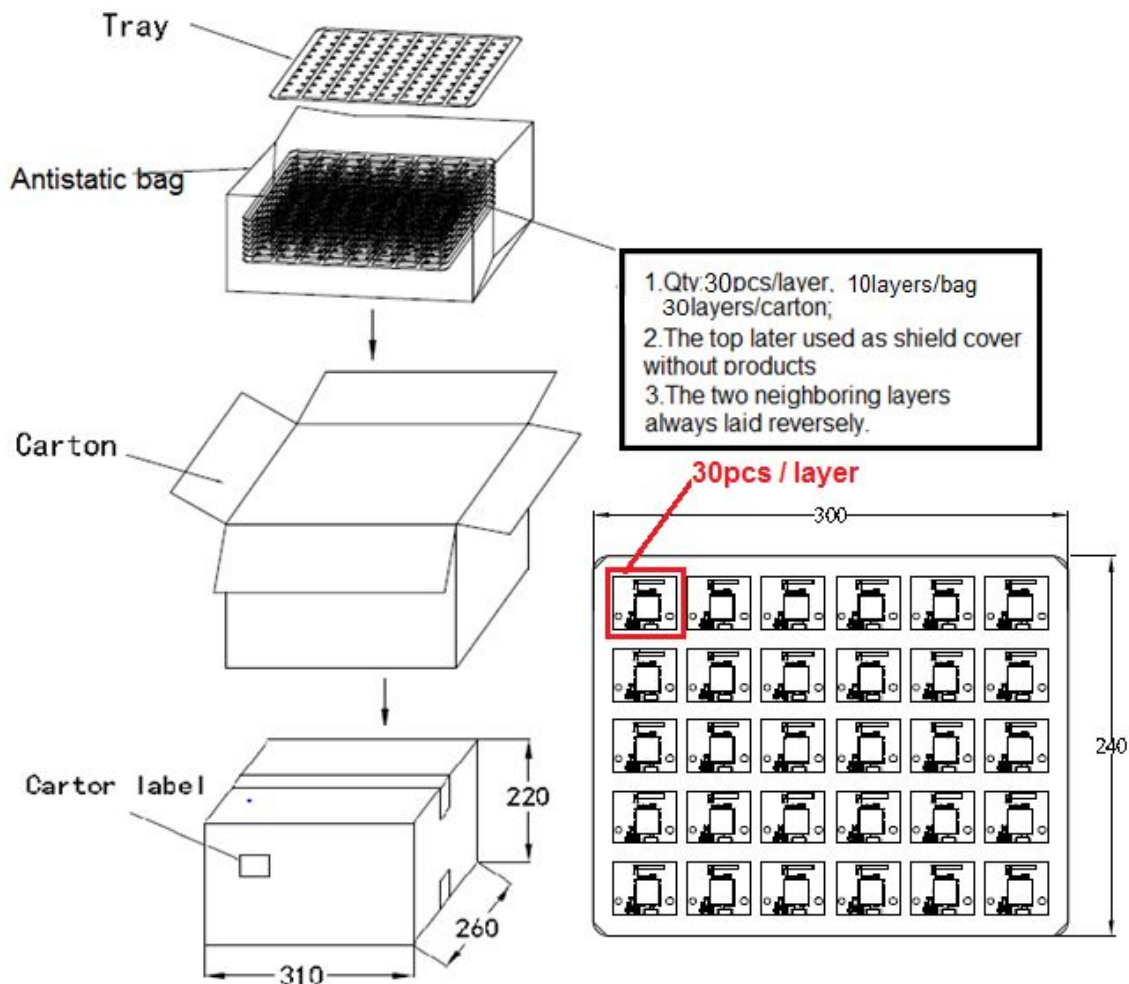
4.1 Package information

Layer size: L300.0*W240.0 mm

Layer material: PVC

Carton size: L310.0*W260.0*H220.0 mm

Carton material: A=A



5.User's Manual

5.1 Operating& Storage Conditions

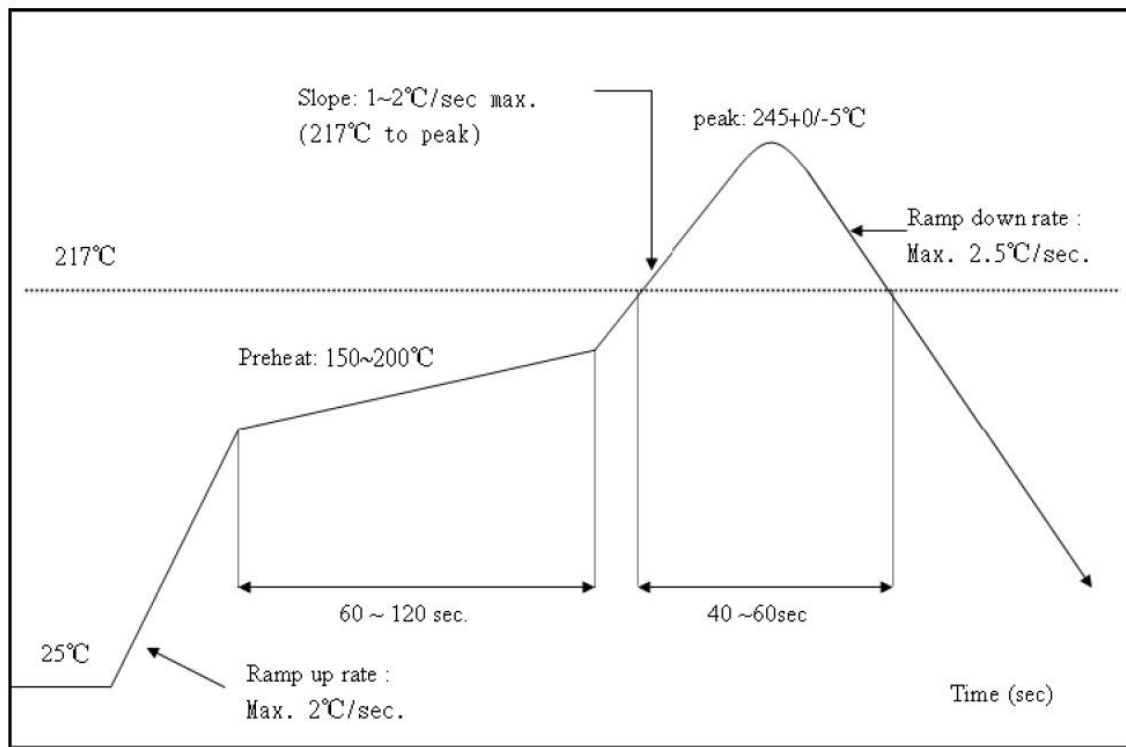
Operating	Temperature: -5°C to +55°C
	Relative Humidity: 10-90% (non-condensing)
Storage	Temperature: -40°C to +80°C (non-operating)
	Relative Humidity: 5-90% (non-condensing)
MTBF (Mean Time Between Failures)	Over 150,000hours

5.2 Recommended Reflow Profile

Referred to IPC/JEDEC standard.

Peak Temperature : <250°C

Number of Times : ≤2 times



5.3 Patch WIFI modules installed before the notice:

WIFI module installed note:

1. Please press 1 : 1 and then expand outward proportion to 0.7 mm, 0.12 mm thickness When open a stencil
2. Take and use the WIFI module, please insure the electrostatic protective measures.
3. Reflow soldering temperature should be according to the customer the main size of the products, such as the temperature set at 250 + 5 °C for the MID motherboard.

About the module packaging, storage and use of matters needing attention are as follows:

1. The module of the reel and storage life of vacuum packing: 1). Shelf life: 8 months, storage environment conditions: temperature in: < 40 °C, relative humidity: < 90%RH.
2. The module vacuum packing once opened, time limit of the assembly:
Card: 1) check the humidity display value should be less than 30% (in blue), such as: 30% ~ 40% (pink), or greater than 40% (red) the module have been moisture absorption.
- 2.) factory environmental temperature humidity control: ≤ -30 °C, ≤ 60% RH
- 3). Once opened, the workshop the preservation of life for 168 hours.
3. Once opened, such as when not used up within 168 hours:
 - 1). The module must be again to remove the module moisture absorption.
 - 2). The baking temperature: 125 °C, 8 hours.
 - 3.) After baking, put the right amount of desiccant to seal packages.

THE END