



**T30PA127F2.4G**  
**ZIGBEE PCB MODULE**  
**OEM/Integrators Installation Manual**  
**SECTION: HARDWARE**

**August,2017**

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MADE IN CHINA

## Revision History

Revision Number	Date Released	Release Specifics
Revision A	August,2017	First Release

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## Federal Communications Commission (FCC) statement

### **FCC ID:2ANLK-T30A**

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 module generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions.

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 or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the module and receiver.
- Connect the module 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.

This module 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.



Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

### **FCC Radiation Exposure Statement**

This RF module complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment and its antenna should be installed and operated with minimum distance 20 cm between the radiator and your body. This module and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

### **Notice:**

The module is limited to OEM installation ONLY. This module is intended for OEM integrators under the following conditions:

1. This module is restricted to installation in products for use only in mobile and fixed applications.
2. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons.
3. The antenna(s) used for this transmitter must not transmit simultaneously with any other antenna or transmitter.
4. OEM integrator has be limited the operation channels in channel 1-16 for 2.4GHz band.

**The OEM integrator is still responsible for:**

1. Ensuring that the end-user has no manual instructions to remove or install module
2. The FCC compliance requirement of the end product, which integrates this module.
3. Appropriate measurements (e.g. 15 B compliance) and if applicable additional equipment authorizations (e.g. Verification, Doc) of the host device to be addressed by the integrator/manufacturer.
4. The separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and different antenna configurations

**The user manual of the end product should include:**

1. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
2. the restriction of operating this device in indoor could void the user's authority to operate the equipment.
3. This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.
4. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.
5. The FCC part 15.19 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.

**Label of the end product:**

The final end product must be labeled in a visible area with the following "Contains FCC ID:2ANLK-T30A".

**The end product shall bear the following 15.19 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.

If the labeling area is considered too small and therefore it is impractical (smaller than the palm of the hand) to display the compliance statement, then the statement may be placed in the user manual or product packaging.

**Guidance to the Host Manufacturer:**

1. We hereby acknowledge our responsibility to provide guidance to the host manufacturer in the event that they require assistance for ensuring compliance with the Part 15 Subpart B requirements.
2. The host manufacturer is responsible for additional testing to verify compliance as a composite system. When testing the host device for compliance with the Part 15 Subpart B requirements, the host manufacturer is required to show compliance with the Part 15 Subpart B while the transmitter module(s) are installed and operating. The modules should

be transmitting and the evaluation should confirm that the module's intentional emissions are compliant (i.e. fundamental and out of band emissions) with the Radio essential requirements. The host manufacturer must verify that there are no additional unintentional emissions other than what is permitted in the Part 15 Subpart B or emissions are complaint with the Radio aspects.

## CE Conformity

Hereby, Ennfu Scientific Company Limited declares that this device is in compliance with the essential safety requirements and other relevant provisions set out in the European Directive.



**EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013**

## Disposal and recycling



You must dispose of this module properly according to local laws and regulations. Because this module contains electronic components, it must be disposed of separately from household waste. When this module reaches its end of life, contract local authorities to learn about disposal and recycling options.

## **Safety Instructions :**



### **1, Static Electricity**

High frequency simulator has electrostatic sensitive characteristics, avoid human contact the electronic components of module as much as possible.(According to the production process of official anti-static standard of IC manufacturers )

### **2, Soldering**

Soldering iron needs good grounding during the soldering, and the cable ground-strap should be equipped during the mass production.

### **3, Power supply**

Power quality has great influence on the performance of the module, please ensure that the power module has small ripple, be sure to avoid the frequent greatly shake.Recommend using  $\pi$  type filter (ceramic capacitor / tantalum capacitor and inductance).

### **4, Grounding**

Module should be single point grounding, recommend to apply for 0 ohm, or 10mH inductor, separate from other grounding of circuit.

### **5, Antenna module installation requirement**

The antenna module installation structure has a great influence on the performance of the module, so must make sure the antenna exposed and vertical.

When the module mounted in a shell, can use high-quality antenna to extend the line and extended to the external of casing.

The antenna should not being mounted in the shell, that will greatly shorten the transmission distance.

### **6, Interference**

If there are other frequency wireless modules in the same module, should has a reasonable frequency planning layout, taking shielding measures to reduce harmonic interference and inter-modulation interference effects.

### **7, Crystals**

If there are existing crystals near this module in the circuit board, please increase the distance between the non crystals as much as possible.

## **About this manual**

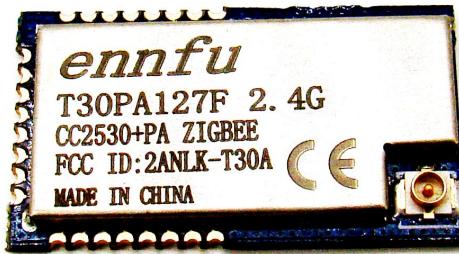
This manual provides the hardware information you need to design.read this manual before working with this product.For personal and safety and for the best product performance,make sure you thoroughly understand the contents before using this module.

## **If You Need Assistance**

All technical support is given in the attached CD.For more information or any requests,please send an E-mail request to ***tech.support@ennfus.com***, and should enter your contact information, we will give you full related needed technical supports.

## 1, INTRODUCTION

T30PA127F2.4G is a 2.4GHz wireless tiny volume Zigbee wireless pcb module,SMD mode (1.27mm pin spacing ), and it 's a transceiver module. Nordic RTF 2401 PA chip being adopted to get a chargeable power and get a longer distance when designed.the module was also being with external IPEX antenna terminal.



(T30PA127F2.4G ZIGBEE PCB MODULE OUTLINE)

T30PA127F2.4G module has being used the vector network analyzer for precise impedance matching, and now it has stable production,suit for various applications (especially for Smart Home applications).

T30PA127F2.4G module based on the TI CC 2530 RF chip technology, which had integrated 8051 microprocessor and wireless transceiver, apply to all the Zigbee design and 2.4GHz IEEE802.15.4 protocol. The module had being derived all I/O ports of Single-Chip to easily develop many applications.

As an advanced hardware platform, the module has two types for selection:

- **Preprogramming type, P/N : T30PA127F2.4G/P**
- **No programming type, P/N : T30PA127F2.4G/N**

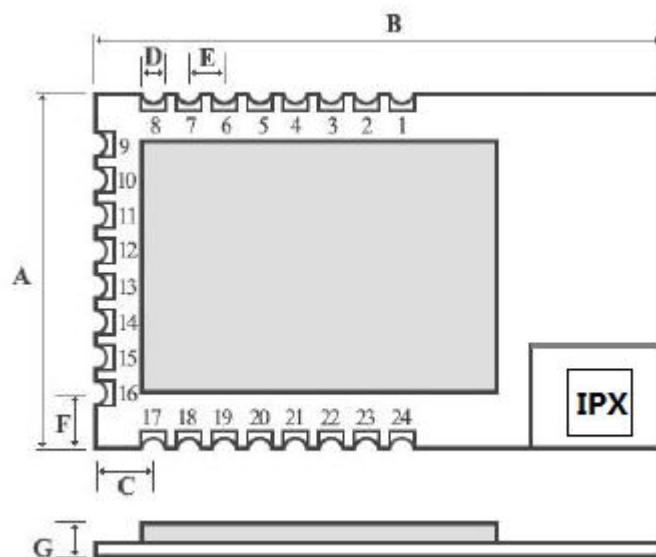
For the preprogramming type, the developer just need to operate few configurations to quickly build a Zigbee network in 5 minutes, and never need any complicate programming. all the details please see the software manual.

For no programming type, the developer should do a second developing for its own applications.

## 2,TECHNICAL PARAMETERS

No.	Parameter name	Value	Summary
1	RF chip	CC2530	TI
2	PA chip	RFX2401	NORDIC
3	Module size	14.9mm*25.9mm*2.7mm	Including IPEX
4	Module weight	1.7mg	Including IPEX
5	Work frequency	2400~2483.5MHz	2.4GHz IEEE 802.15.4 PROTOCOL
6	Craft	Immersion gold	SMD,SIMMERSION GOLD,LEAD FREE
7	Interface mode	3*8*1.27mm	SMD
8	Power supply	2.0~3.6V DC	Caution:Causing permanent damage to the module when Higher than 3.6vdc.
9	Comm level	+0.7~+5V	
10	Actual test comm distance	About 800m	Test condition: Weather:Sunny,35°C;relative humidity:65%; Test location:Open wide space Antenna gain:3DB Installation height:2m Speed rate:250k
11	Air ratio	250Kbps	
12	Send power	20dBm	About 100mW
13	Shut current	1.2uA	MCU sleep, wireless shut,voltage 3.3V
14	Send current	140mA@20dBm	Power supply must exceed 100mA
15	Receive current	42mA	Average current
16	Comm interface	I/O	All I/O pins of MCU,please see IC manual.
17	Send length	1~103 Bytes	Single data packet
18	Receive length	1~103 Bytes	Single data packet
19	RSSI support	Support	Please see IC manual.
20	Antenna interface	IPEX	External antenna
21	Working temperature	-40~+85°C	Industrial Grade
22	Working humidity	10%~90%	Relative humidity,Non-condensing.
23	Storage temperature	-40~+125°C	Industrial Grade
24	Receive sensitivities	97dBm@250Kbps	Please see IC manual.

### 3. PIN DEFINE



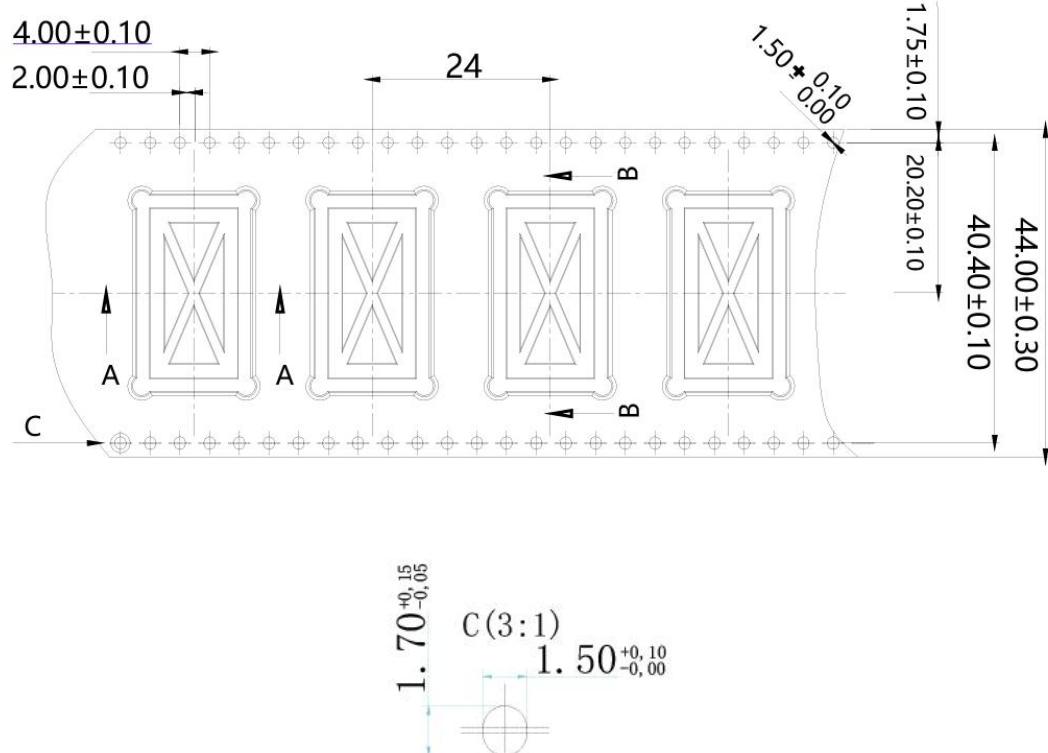
	MIN	MAX	Units
A	14.9	14.9	mm
B	25.9	25.9	mm
C	2.7	2.7	mm
D	0.8	0.8	mm
E	1.27	1.27	mm
F	3.1	3.1	mm
G	2.3.	2.3	mm

## Pin Definition

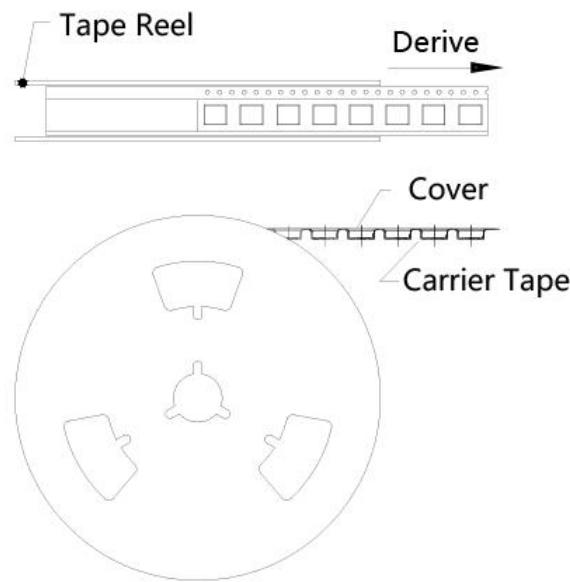
Pin No.	Pin name	Pin direction	Pin application
1	GND	1~103BYTE	GROUND,TO THE GROUNDING OF POWER SUPPLY.
2	VCC	SUPPORT	POWER SUPPLY,MUST BE 2.0~3.6V
3	P2.2	I/O	CHIP IO
4	P2.1	I/O	CHIP IO
5	P2.0	I/O	CHIP IO
6	P1.7	I/O	CHIP IO
7	P1.6	I/O	CHIP IO
8	NC		NC
9	NC		NC
10	P1.5	I/O	CHIP IO
11	P1.4	I/O	CHIP IO
12	P1.3	I/O	CHIP IO
13	P1.2	I/O	CHIP IO
14	P1.1	I/O	CHIP IO
15	P1.0	I/O	CHIP IO
16	P0.7	I/O	CHIP IO
17	P0.6	I/O	CHIP IO
18	P0.5	I/O	CHIP IO
19	P0.4	I/O	CHIP IO
20	P0.3	I/O	CHIP IO
21	P0.2	I/O	CHIP IO
22	P0.1	I/O	CHIP IO
23	P0.0	I/O	CHIP IO
24	RSET	INPUT	RESET PORT
★ The Pin definition,driver software and communication protocol of Modular,please see TI <CC2530 DataSheet>.★			

## 4 , PACKAGE SPECIFICATION

### 4.1 Tape reel package



Tape Reel Package Information	
Module numbers	194 modules/reel
Total module number	776 pcs/reel
Reel size	13" /44
Package number	750 pcs/reel



T30PA127F2.4G Tape reel layout

#### 4.2 Carton Package information:

Package Material	Package Size(mm)	Gross Net(Kg)	Remark
Carton	L360*W360*H55	1.90	Product package
Carton	L460*W370*H370	11.90	Transport package

## **5,Inspection**

Inspect the packages for external damage before opening.after unpacking,inspect the unit for damage and compare parts to those and the shipping packing list.

## **6,Storage**

The package can be safely stored indoors,with hole plugs installed,between-50 and +85 degree C.The package must be protected against moisture.