



T30P127F2.4G
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-T30C

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 been 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-T30C ".

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 π 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

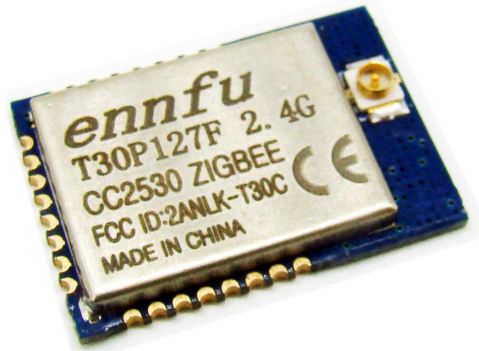
This manual provides the hardware information you need to design. read this manual before working with this product. For personal and safety and for the best product performance, make sure you thoroughly understand the contents before using this module.

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

T30P127F2.4G module is a tiny volume 2.4GHz wireless Zigbee pcb module,SMD mode(pin spacing 1.27mm), transceiver module with IPEX.The module has being used the vector network analyzer for precise impedance matching,suit for various wireless applications (especially for Smart Home).



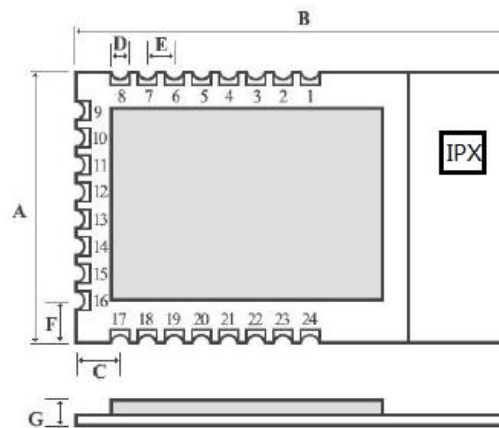
This module based on the TI CC2530 RF chip, which had integrated 8051 microprocessor and wireless transceiver, apply to the ZigBee design and 2.4GHz IEEE 802.15.4 protocol. The module had being derived all I/O ports of Single-Chip to easily develop many applications.

As an advanced hardware platform, this RF module has two types for selection:Preprogramming type(P/N:T30P127F2.4G/P) and no programming type(P/N:T30P127F2.4G/N) .For the preprogramming module,the developers just need to operate few configurations to quickly build a Zigbee network in 5 minutes,and won't any complicate programming any more(See SOFTWARE manual for more detailed). but for no programming module should need the developers to do a second developing.

2, Technical Parameters

No.	Parameter Name	Parameter Value	Summary
1	RF IC	CC2530	TI
2	Module Size	14.6mm*20.45mm*2.7mm	Including IPEX
3	Module Weight	1.2mg	Including IPEX
4	Working Frequency	2400~2483.5MHz	2.4GHz, IEEE 802.15.4 Protocol
5	Craft	Gold Deposition	SMT, Gold Deposition, ROHS
6	Interface Mode	3*8*1.27mm	SMD
7	Supply Power	2.0~3.6V DC	Caution:Causing permanent damage to the module when the voltage is higher than 3.6V.
8	Communication Level	+0.7V~+5V	
9	Actual Test Communication Distance	≈389m	Test Condition: Weather:Sunny, 35°C;Relative Humidity:65%; Test location:Open space; Antenna Gain:3DB; Height:2m;Speed Rate:250K.
10	Air Ratio	250Kbps	
11	Send Power	4dBm	About 2.5mW
12	Shut Current	1.2uA	MCU sleep, wireless shut, Voltage:3.3V
13	Send Current	28mA@4dBm	Power supply must exceed 100mA
14	Receive Current	27mA	Average current
15	Communication Interface	I/O	All I/O pins of MCU,Detailed please see IC manual.
16	Send Length	1~103Bytes	Single data packet
17	Receive Length	1~103Bytes	Single data packet
18	RSSI Support	Support	Please see IC manual.
19	Antenna Interface	IPEX	Antenna external
20	Working Temperature	-40°C~+85°C	Industrial grade
21	Relative Humidity	10%~90%	Relative Humidity, Non-Condensing
22	Storage Temperature	-40~+125°C	Industrial grade
23	Receive Sensitivities	97dBm@250Kbps	Please see IC manual.

3, Pin Define



ZIGBEE PCB MODULE LAYOUT

	MIN	MAX	Units
A	14.6	14.6	mm
B	20.45	20.45	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

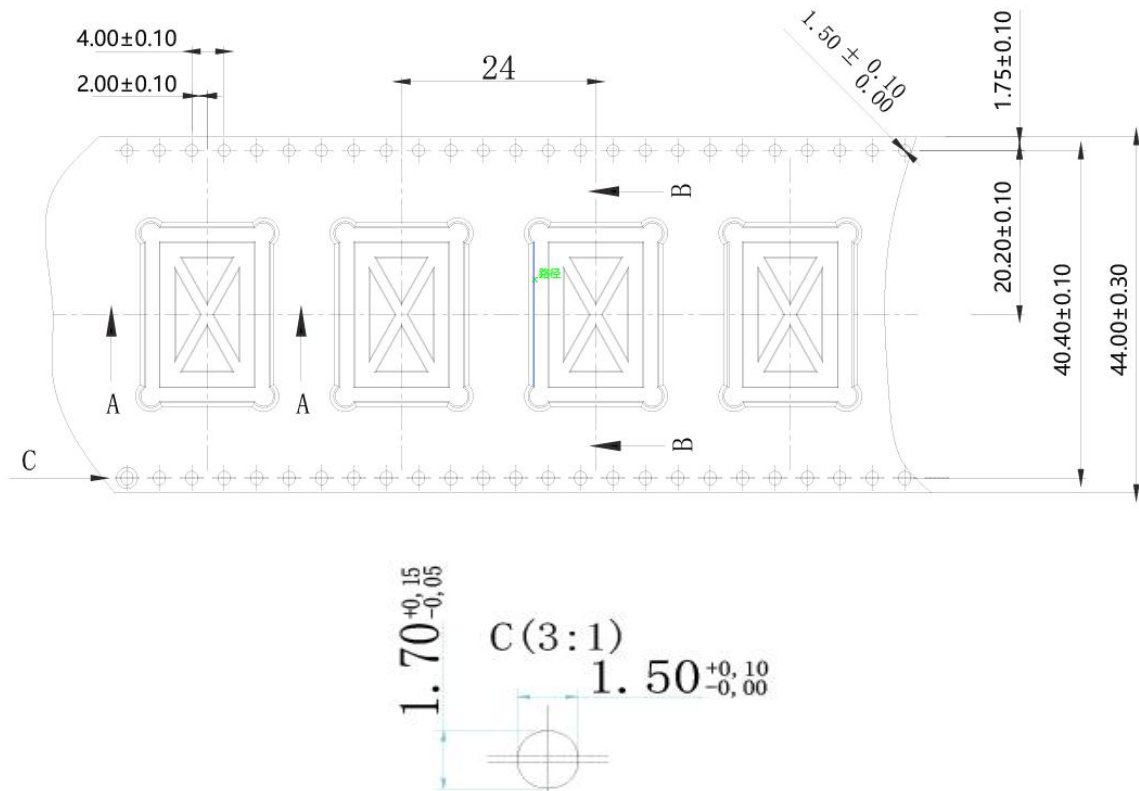
PIN DEFINITION:

PIN Number	PIN Name	PIN Direction	PIN Applications
1	GND	1~103Bytes	Grounding,joint with the reference point of power.
2	VCC	Support	Supply power,must be between 2.0~3.6V.
3	P2.2	I/O	Single - Chip IO
4	P2.1	I/O	Single - Chip IO
5	P2.0	I/O	Single - Chip IO
6	P1.7	I/O	Single - Chip IO
7	P1.6	I/O	Single - Chip IO
8	NC		Dangling
9	NC		Dangling
10	P1.5	I/O	Single - Chip IO
11	P1.4	I/O	Single - Chip IO
12	P1.3	I/O	Single - Chip IO
13	P1.2	I/O	Single - Chip IO
14	P1.1	I/O	Single - Chip IO
15	P1.0	I/O	Single - Chip IO
16	P0.7	I/O	Single - Chip IO
17	P0.6	I/O	Single - Chip IO
18	P0.5	I/O	Single - Chip IO
19	P0.4	I/O	Single - Chip IO
20	P0.3	I/O	Single - Chip IO
21	P0.2	I/O	Single - Chip IO
22	P0.1	I/O	Single - Chip IO
23	P0.0	I/O	Single - Chip IO
24	RSET	Input	Reset interface

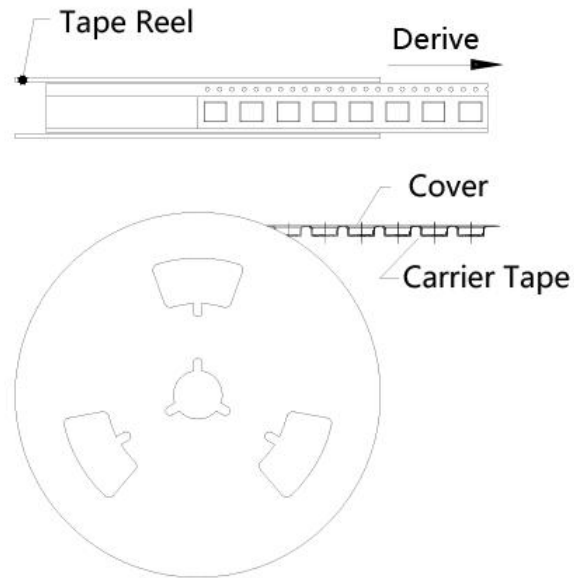
Note:The Pin definition,driver software and communication protocol of Modular,please see TI <CC2530 DataSheet>.

4 , Package Specification

4.1 Tape reel layout shown as following:



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



4.2 Carton Package information:

Package Material	Package Size(mm)	Gross Net(Kg)	Remark
Carton	L360*W360*H55	1.50	Product package
Carton	L460*W370*H370	10.80	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.