# 2.4G TXMOD-Ⅰ

## APPLICATION

## DATA

1. Product Overview

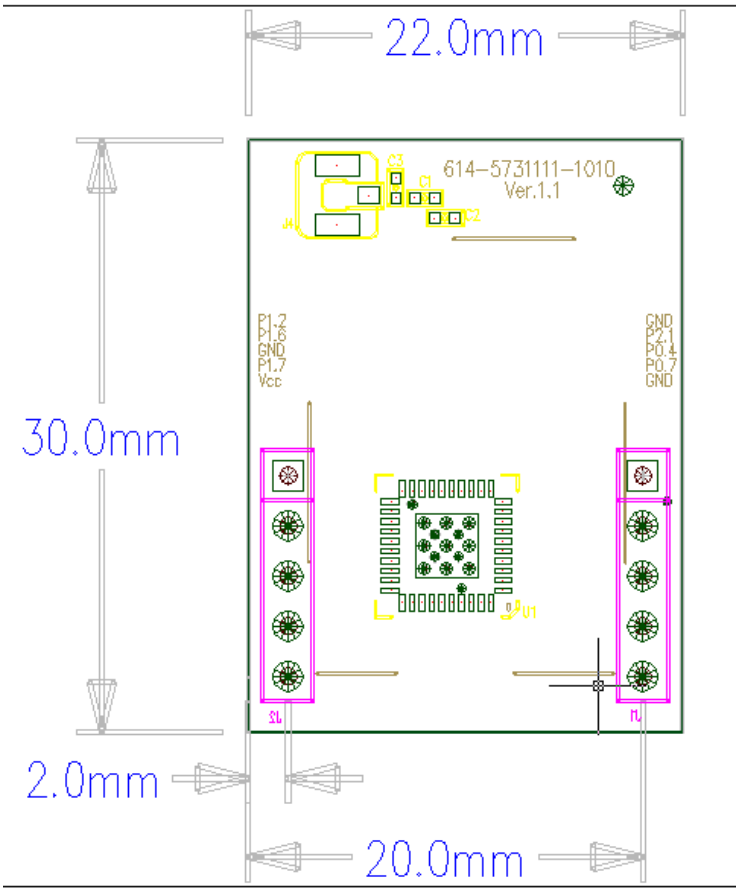
The 2.4G TXMOD-I module using CYRF69103 2.4GHz with MCU chip of Cypess with SPI interface into the remote control equipment. The module is integrated the Power Amplifier and the Low Noise Amplifier for long distance application, it supplies signal reliable, cost-effective and use convenience to the RC user.

2. Scope

This document provides detailed information on the 2.4G TXMOD-I module specification. It includes the hardware, radio frequency and other specification requirements.

2.1. Specification

| **Item** | **Description** |
|---|---|
| Product Name | 2.4G TXMOD-Ⅰ |
| Model Name | 2.4G TXMOD-Ⅰ |
| **HW Spec.** | |
| PCB Dimension | L*W*T : 30* 22*3 mm　H : 13mm |
| RF Band | 2.407GHz ~ 2.477GHz, |
| RF modulation | FHSS |
| Range | Surface-to-surface range ≧ 180M (with 2dBi antenna) |
| RF interface | IPEX connector |
| SPI | P1.2, P1.6, P1.7 for SPI interface |
| GPIO | P0.4, P0.7, P2.1 for GPIO Function (recommend: insert the current –limit -resister) |
| Input Power | Vcc 3.3V± 1%@250mA |
| Shielding cover | Yes |
| Operating temperature | Operating temperature: 0 ~ 70℃ Relative humidity 5~80% |




## 2.2. Electrical Characteristics

### 2.2.1 SPI Interface

The SPI interface is used to communicate with external peripheral devices.

| Pin# | Definition | Description | Low | Typ. | High | Unit |
|---|---|---|---|---|---|---|
| P1.2 | CLK | Data Clock | 0.3Vcc | | 0.8Vcc | V |
| P1.6 | DA | Data | 0.3Vcc | | 0.8Vcc | V |
| P1.7 | CS | Chip Select | 0.3Vcc | | 0.8Vcc | V |

### 2.2.2 GPIO

The GPIO configuration registers have common configuration controls. The GPIO application can not be over Vcc setting.

| Pin# | Definition | Description | Low | Typ. | High | Unit |
|---|---|---|---|---|---|---|
| P2.1 | GPIO | Input / Output Port | 0.3Vcc | | 0.8Vcc | V |
| P0.4 | GPIO | Input / Output Port | 0.3Vcc | | 0.8Vcc | V |
| P0.7 | GPIO | Input / Output Port | 0.3Vcc | | 0.8Vcc | V |

2.2.3. Vcc & GND

Supply voltage is 3.3VDC at 250mA current, the power dissipation above 3.6VDC, please provide the fixed DC power on 3.3VDC.

| Pin# | Definition | Description | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Vcc | Vcc | DC Power Input | | 3.3 | | V |
| GND | GND | Ground | | | | |
| | | | | | | |

**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.

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.

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.

**IMPORTANT NOTE:**

**FCC 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.

**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,

As long as 2 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 (for example, digital device emissions, PC peripheral requirements, etc.).

**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.

## End Product Labeling

This transmitter module is authorized only for use in device 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 a visible area with the following: “Contains FCC ID: YPQFT24GTX1”.

## Manual Information To the End User

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.