

**Model Name:34081107**

**Series Model Name:34021442,34021395**

## **4.2 Dual Mode Bluetooth component Date sheet**

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## 1、INTRODUCTION

Bluetooth component of model name 34081107、34021442、34021395 are technical identical except the different model name and Interface only. This instruction applies to models such as 34081107、34021442、34021395. The following instruction takes 34081107 as an example. When instruction other models, simply replace the model.

34081107 is a fully integrated bluetooth module that complies with Bluetooth 4.2 dual mode protocols(BR/EDR/BLE).It supports SPP,BLE,ANCS,iBeacon,profiles.It integrates Baseband controller in a small package(Integrated chip antenna).so the designers can have better flexibilities for the product shapesl.

34081107 can be communicated by UART port. With Feasycom's Bluetooth stack.Customers can easily transplant to their software. Please refer to Feasycom stack design guide.

### 1.1 Block Diagram

Involving the confidentiality of official website information,Do not display.

### 1.2 Feature

- ◆ Fully qualified Bluetooth 4.2/4.0/3.0/2.1/2.0/1.2/1.1
- ◆ Postage stamp sized form factor.
- ◆ Low power.
- ◆ Class 1.5 sport(high output power)
- ◆ The default UART Baud rate is 115.2Kbps and can support from 1200bps up to 921.6Kbps.
- ◆ UART,I<sup>2</sup>C data connection interfaces.
- ◆ Support the OTA upgrade.
- ◆ Bluetooth stack profiles support:SPP, HID, MAP,and all BLE protocols.

### 1.3 Application

- ◆ Smart Watch and Bluetooth Bracelet
- ◆ Health & Medical devices
- ◆ Wireless POS
- ◆ Measurement and monitoring systems

◆ Industrial sensors and controls

◆ Asset Tracking

## 2、 GENERAL SPECIFICATION

General Specification	
Chipset	Realtek RTL8761
Product	34081107
Dimension	
Bluetooth Specification	Bluetooth V4.2(Dual Mode)
Power Supply	3.3~3.6 Volt DC
Output Power	5.5dBm
Sensitivity	-82dBm@0.1%BER
Frequency Band	2.402GHz-2.480GHz ISM band
Modulation	GFSK, $\pi/4$ -DQPSK,8-DPSK
Baseband Crystal OSC	40MHz

Hopping & channels	1600hops/sec,1MHz channel space,79 Channels(BT4.2 to 2MHz channel space)
RF Input Impedance	50 ohms
Antenna	Onboard antenna
Interface	Data:UART,I <sup>2</sup> C
Profile	SPP,GATT(BLE Standard) MFI,Airsync,ANCS,iBeacon. MAP(optional),OTA(optional)
Temperature	-20℃ to +70℃
Humidity	10%~95% Non-Condensing
Environmental	RoHS Compliant

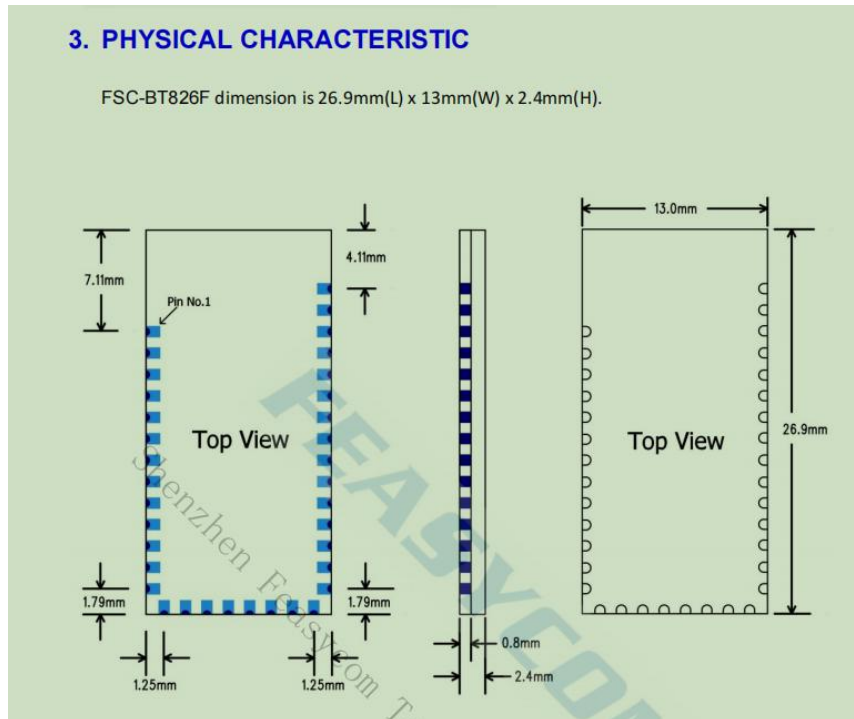
Table 1

## 3、 PHYSICAL CHARACTERISTIC

Figure 2: Package Dimensions(Top View)

### 3. PHYSICAL CHARACTERISTIC

FSC-BT826F dimension is 26.9mm(L) x 13mm(W) x 2.4mm(H).



### 4、 Reliability and Environmental Specification

#### 4.1 Temperature test

Put the module in demo board which uses exit power supply, power on the module and connect to mobile. Then put the demo in the  $-20^{\circ}\text{C}$  space for 1 hour and then move to  $+70^{\circ}\text{C}$  space within 1 minute, after 1 hour move back to  $-20^{\circ}\text{C}$  space within 1 minute. This is 1 cycle. The cycles are 32 times and the units have to pass the testing.

#### 4.2 Vibration Test

The module is being tested without package. The displacement requests 1.5mm and sample is vibrated in three directions (X, Y, Z). Vibration frequency set as 0.5G, a sweep rate of 0.1 octave/min from 5Hz to 100Hz last for 90 minutes each direction. Vibration frequency set as 1.5G, a sweep rate of 0.25 octave/min from 100Hz to 500Hz last for 20 minutes each direction.

#### 4.3 Desquamation test

Use clamp to fix the module, measure the pull of the component in the module, make sure the module's soldering is good.

#### 4.4 Drop test

Free fall the module (condition built in a wrapper which can defend ESD) from 150cm height to cement ground, each side twice, total twelve times. The appearance will not be damaged and all functions Ok.

#### 4.5 Packaging information

After unpacking, the module should be stored in environment as follows:

- Temperature:  $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$
- Humidity:  $< 60\%$
- No acidity, sulfur or chlorine environment

The module must be used in four days after unpacking.

#### **FCC MODULAR APPROVAL INFORMATION EXAMPLES for Manual**

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.
- (2) This device must accept any interference received, including interference that may cause undesired operation.

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

NOTE: 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 or more 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 Radiation Exposure Statement:**

The SAR limit of USA (FCC) is 1.6 W/kg for body averaged over one gram of tissue. Device types 34081107 (FCC ID: Z7034081107) has also been tested with 5mm against this SAR limit.

**OEM INTEGRATION INSTRUCTIONS:**

This device is intended only for OEM integrators under the following conditions:

The module must be installed in the host equipment such that 5mm is maintained between the antenna and users, and the transmitter module may not be co-located with any other transmitter or antenna. The module shall be only used with the internal on-board antenna that has been originally tested and certified with this module. External antennas are not supported. As long as these 3 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.). The end-product may need Verification testing, Declaration of Conformity testing, a Permissive Class II Change or new Certification. Please involve a FCC certification specialist in order to determine what will be exactly applicable for the end-product.

**Validity of using the module certification:**

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization for this module in combination with the host equipment is no longer considered valid and the FCC ID of the module cannot 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. In such cases, please involve a FCC certification specialist in order to determine if a Permissive Class II Change or new Certification is required.

**Upgrade Firmware:**

The software provided for firmware upgrade will not be capable to affect any RF parameters as certified for the FCC for this module, in order to prevent compliance issues.

**End product labeling:**

This transmitter module is authorized only for use in device where the antenna may be installed such that 5mm 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: Z7034081107".

**Information that must be placed in the end user manual:**

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.

“CAUTION : Exposure to Radio Frequency Radiation.

Antenna shall be mounted in such a manner to minimize the potential for human contact during normal operation. The antenna should not be contacted during operation to avoid the possibility of exceeding the FCC radio frequency exposure limit.

### **Requirement per KDB996369 D03**

#### **2.2 List of applicable FCC rules**

List the FCC rules that are applicable to the modular transmitter. These are the rules that specifically establish the bands of operation, the power, spurious emissions, and operating fundamental frequencies. DO NOT list compliance to unintentional-radiator rules (Part 15 Subpart B) since that is not a condition of a module grant that is extended to a host manufacturer. See also Section 2.10 below concerning the need to notify host manufacturers that further testing is required.<sup>3</sup> Explanation: This module meets the requirements of FCC part 15C(15.247).

#### **2.3 Summarize the specific operational use conditions**

Describe use conditions that are applicable to the modular transmitter, including for example any limits on antennas, etc. For example, if point-to-point antennas are used that require reduction in power or compensation for cable loss, then this information must be in the instructions. If the use condition limitations extend to professional users, then instructions must state that this information also extends to the host manufacturer's instruction manual. In addition, certain information may also be needed, such as peak gain per frequency band and minimum gain, specifically for master devices in 5 GHz DFS bands.

Explanation: The EUT has a PCB Antenna, and the antenna use a permanently attached antenna which is not replaceable.

#### **2.4 Limited module procedures**

If a modular transmitter is approved as a “limited module,” then the module manufacturer is responsible for approving the host environment that the limited module is used with. The manufacturer of a limited module must describe, both in the filing and in the installation instructions, the alternative means that the limited module manufacturer uses to verify that the host meets the necessary requirements to satisfy the module limiting conditions.

A limited module manufacturer has the flexibility to define its alternative method to address the conditions that limit the initial approval, such as: shielding, minimum

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signaling amplitude, buffered modulation/data inputs, or power supply regulation. The alternative method could include that the limited module manufacturer reviews detailed test data or host designs prior to giving the host manufacturer approval. This limited module procedure is also applicable for RF exposure evaluation when it is necessary to demonstrate compliance in a specific host. The module manufacturer must state how control of the product into which the modular transmitter will be installed will be maintained such that full compliance of the product is always ensured. For additional hosts other than the specific host originally granted with a limited module, a Class II permissive change is required on the module grant to register the additional host as a specific host also approved with the module.

Explanation: The module is not a limited module.

## **2.5 Trace antenna designs**

For a modular transmitter with trace antenna designs, see the guidance in Question 11 of KDB Publication 996369 D02 FAQ – Modules for Micro-Strip Antennas and traces. The integration information shall include for the TCB review the integration instructions for the following aspects:

layout of trace design, parts list (BOM), antenna, connectors, and isolation requirements.

- a) Information that includes permitted variances (e.g., trace boundary limits, thickness, length, width, shape(s), dielectric constant, and impedance as applicable for each type of antenna);
- b) Each design shall be considered a different type (e.g., antenna length in multiple(s) of frequency, the wavelength, and antenna shape (traces in phase) can affect antenna gain and must be considered);
- c) The parameters shall be provided in a manner permitting host manufacturers to design the printed circuit (PC) board layout;
- d) Appropriate parts by manufacturer and specifications;
- e) Test procedures for design verification; and
- f) Production test procedures for ensuring compliance.

The module grantee shall provide a notice that any deviation(s) from the defined parameters of the antenna trace, as described by the instructions, require that the host product manufacturer must notify the module grantee that they wish to change the antenna trace design. In this case, a Class II permissive change application is required to be filed by the grantee, or the host manufacturer can take responsibility through the change in FCC ID (new application) procedure followed by a Class II permissive change application.

Explanation: Yes, The module with trace antenna designs, and This manual has been shown the layout of trace design, antenna, connectors, and isolation requirements.

## **2.6 RF exposure considerations**

It is essential for module grantees to clearly and explicitly state the RF exposure



conditions that permit a host product manufacturer to use the module. Two types of instructions are required for RF exposure information: (1) to the host product manufacturer, to define the application conditions (mobile, portable – xx cm from a person's body); and (2) additional text needed for the host product manufacturer to provide to end users in their end-product manuals. If RF exposure statements and use conditions are not provided, then the host product manufacturer is required to take responsibility of the module through a change in FCC ID (new application).

Explanation: This module complies with FCC RF radiation exposure limits set forth for an uncontrolled environment, This equipment should be installed and operated with a minimum distance of 5mm between the radiator and your body." This module is designed to comply with the FCC statement, FCC ID is: **XCO-HSBT5181**.

## **2.7 Antennas**

A list of antennas included in the application for certification must be provided in the instructions. For modular transmitters approved as limited modules, all applicable professional installer instructions must be included as part of the information to the host product manufacturer. The antenna list shall also identify the antenna types (monopole, PIFA, dipole, etc. (note that for example an "omni-directional antenna" is not considered to be a specific "antenna type")).

For situations where the host product manufacturer is responsible for an external connector, for example with an RF pin and antenna trace design, the integration instructions shall inform the installer that unique antenna connector must be used on the Part 15 authorized transmitters used in the host product. The module manufacturers shall provide a list of acceptable unique connectors.

Explanation: The EUT has a Chip Antenna, and the antenna use a permanently attached antenna which is unique.

## **2.8 Label and compliance information**

Grantees are responsible for the continued compliance of their modules to the FCC rules. This includes advising host product manufacturers that they need to provide a physical or e-label stating "Contains FCC ID" with their finished product. See Guidelines for Labeling and User Information for RF Devices – KDB Publication 784748.

Explanation: The host system using this module, should have label in a visible area indicated the

following texts: "Contains FCC ID: **XCO-HSBT5181**, Contains IC: **7756A-HSBT5181**

## **2.9 Information on test modes and additional testing requirements**

Additional guidance for testing host products is given in KDB Publication 996369 D04 Module Integration Guide. Test modes should take into consideration different operational conditions for a stand-alone modular transmitter in a host, as well as for multiple simultaneously transmitting modules or other transmitters in a host

product.

The grantee should provide information on how to configure test modes for host product evaluation for different operational conditions for a stand-alone modular transmitter in a host, versus with multiple, simultaneously transmitting modules or other transmitters in a host.

Grantees can increase the utility of their modular transmitters by providing special means, modes, or instructions that simulates or characterizes a connection by enabling a transmitter. This can greatly simplify a host manufacturer's determination that a module as installed in a host complies with FCC requirements.

Explanation: Top band can increase the utility of our modular transmitters by providing instructions that simulates or characterizes a connection by enabling a transmitter.

#### **2.10 Additional testing, Part 15 Subpart B disclaimer**

The grantee should include a statement that the modular transmitter is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. If the grantee markets their product as being Part 15 Subpart B compliant (when it also contains unintentional-radiator digital circuitry), then the grantee shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

Explanation: The module without unintentional-radiator digital circuitry, so the module does not require an evaluation by FCC Part 15 Subpart B. The host should be evaluated by the FCC Subpart B.