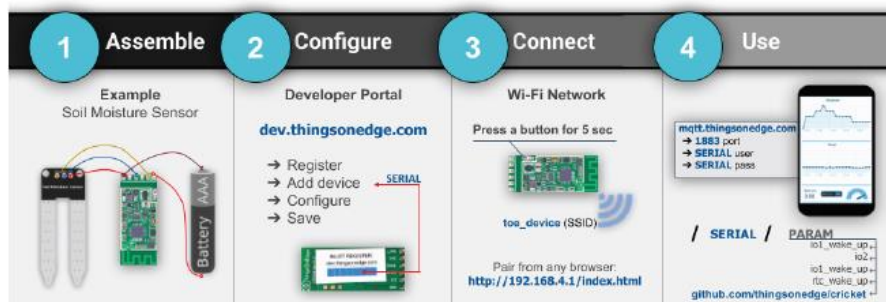


Usermanual

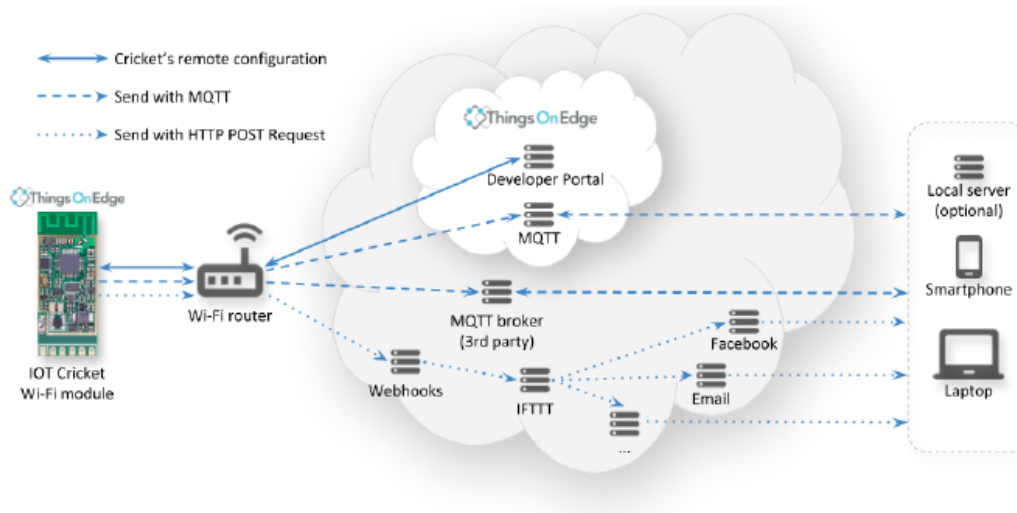
REV 1.4



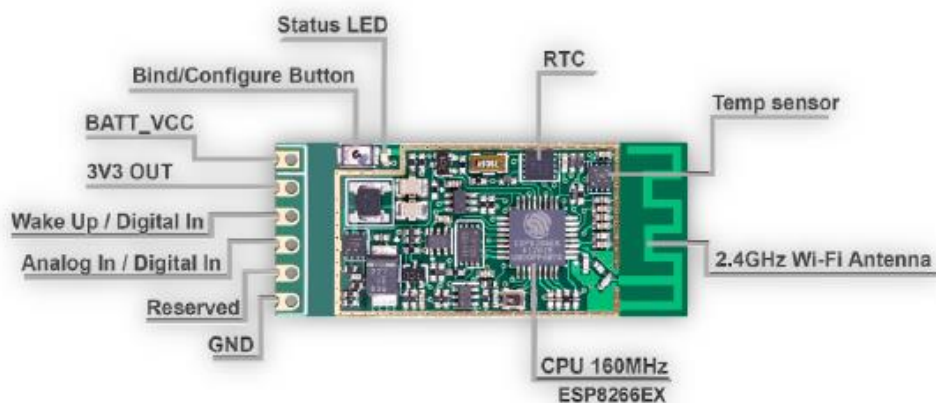
1. Physical IOT Cricket Wi-Fi module-needs to be physically integrated into the device
2. Free cloud service-pre-integrated with Cricket
3. Integration into third-party Internet services and application ecosystems

Through this platform, you only need to integrate the Cricket module into the device to connect the device to the Internet. It makes the device automatically connect to the huge mutual Networked services and mobile application (IOT) ecosystem. You also choose to send data and events to the Internet (smartphone, notebook, Computer, PC or other service). Although the cricket is connected via standard Wi-Fi, it can still use batteries (AAA, AA, etc.) directly Power supply-when using true OA function for many years.

See the figure below, which shows the powerful connection options available when using the cricket module.



WIFI MODULE:



Application field:

The design of cket aims to immediately report events/actions and data from remote environments (such as homes, gardens, etc.) directly to the client device with extremely low latency (about 3 seconds). Although it can be used to temporarily control remote devices, it is recommended not to use it due to the delay-it may be too long (more than 10 seconds). Cricket can be regarded as a connection module to instantly send data and events from various sensors, buttons, etc., for example: pressed Button; temperature drop, etc.

You may already know where you can play cricket. If you plan to build equipment to report events and from remote environments (such as home, garden, etc.)

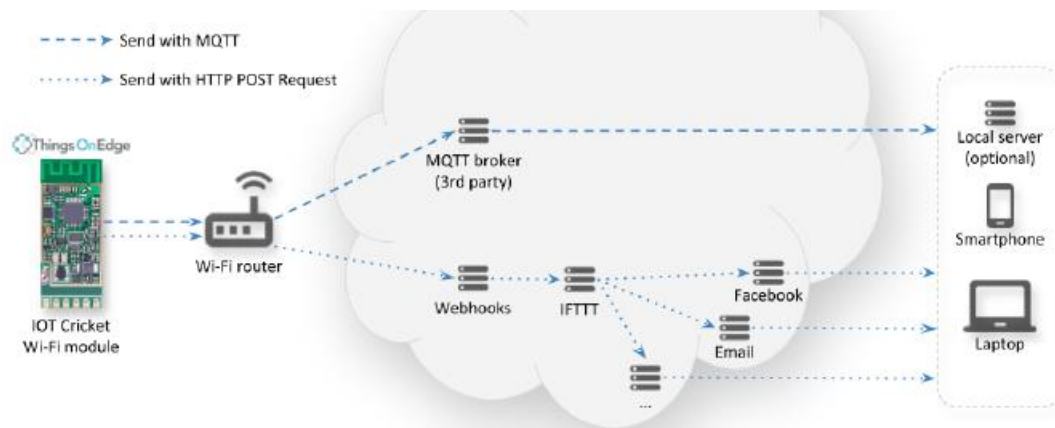
The data, this is a good module.

E.g:

- >Report notification when someone is at your door
- >The phone rings when someone knocks on the doorbell
- >Report the moisture content in flowers

- > Set an alarm on the phone when the humidity is lower or higher than a certain threshold
- > Report local temperature information (garden/home/room)
- > Report information about windows/doors closed/opened
- > Report information when the alarm sounds
- > Report detected movement via email or phone ringing
- > Report noise detection
- > ...In fact, endless applications can be used to report data and information on any sensor device that can use Cricket.

Integration into third-party services



The Cricket module flexibly integrates into third-party Internet services by using MQTT or HTTP POST requests (Webhooks). Cricket sends events and data directly to these services. It does not require the Things on Edge cloud. You can configure it in the Developer Portal.

It opens up unlimited Cricket configuration options for Internet services (such as IFTTT)

Examples

HTTP POST request example: A button for sending emails over IFTTT

In this example we show how you can configure Cricket to send email notifications with IFTTT when voltage is raised on the WAKE_UP port by using a button.

First you need to configure IFTTT service with Webhook

1. Go to: <https://ifttt.com/>
2. Login or register
3. Click **Create** from User / Account menu (top right corner)
4. Click **+** to create new source event
5. Select **Webhooks** service
6. Click **Continue**
7. Click **Receive a web request** (on the left hand side)
8. Create event name e.g. **email_button**
9. The source event should be set-up now, click **+** after Then event
10. Search **email** service
11. Change subject and body of the email accordingly
12. Click **Finish**

Now you need to get a HTTP address to which you can post events from Cricket. Search for **Webhooks** service and click on the document in the right up corner.



Copy web links under "**Make a POST or GET web request to:**"



Now you need to go to TOE Developer Portal and set the following configuration for the device:

Parameter	Value
"Post Events" > "IO1 Wake Up" > "URL"	Copy / paste the link from Webhooks and: 1. replace https to http 2. replace event to email_button The link should look similar to the one shown below: http://maker.ifttt.com/trigger/email_button/with/key/hfNlx8SKn_..._YW3xx5yFw5MGD
"Post Events" > "IO1 Wake Up" > "Data"	Leave it empty
"Force Updates" > "IO1 Wake Up" > "IO3"	On Off
"Battery Monitor"	Off
"Temperature Sensor"	Off

Do not forget to press the button on the Cricket module for 1 second to fetch this configuration. Now whenever you press the attached button to Cricket's WAKE_UP pin you receive an email.

HTTP POST request with payload tags example

This example shows how you can configure Cricket to report a temperature every minute to your IFTTT service (for example log temperature into a Google spreadsheet).

Open Developer Portal, select your device and set the following configuration:

Parameter	Value
"Post Events" > "RTC Wake Up" > "URL"	http://maker.ifttt.com/trigge... [you must copy paste your url here]
"Post Events" > "RTC Wake Up" > "Data"	{"value1": "#batt", "value2": "#temp"}
"RTC"	On
"RTC" > "RTC Units"	Minutes
"RTC" > "RTC Units Value"	1
"Battery Monitor"	On
"Temperature Sensor"	On

Do not forget to press the button on the Cricket module for 1 second to fetch this configuration. Now Cricket wakes up every minute and sends both the temperature and battery level to the IFTTT service.

The payload message sent by Cricket, for this example, looks like this:
{"value1": "120", "value2": "22.0"}

If you wish you can calculate back the battery voltage on the client side with the following formula:
 $Batt_vcc = (3.5 / 256) * 120 = 1.64V$

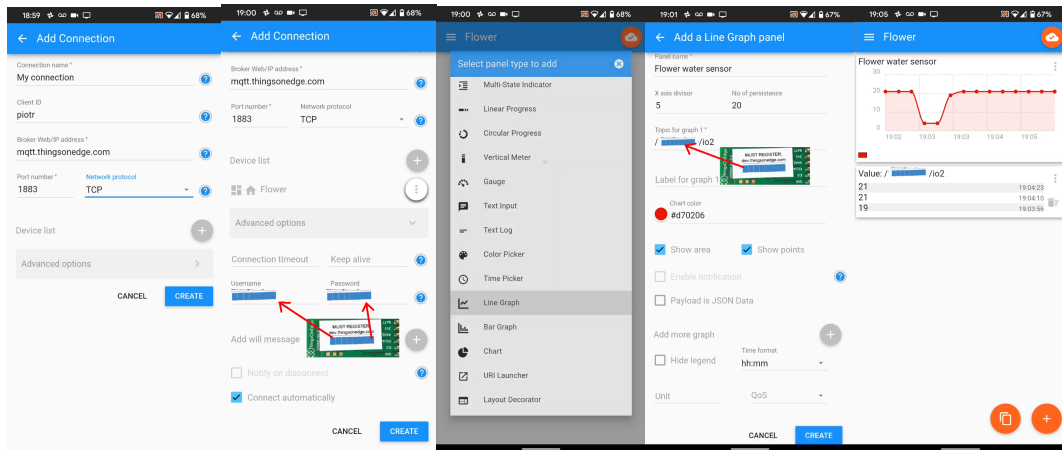
MQTT Example: use Mobile app

You can use any preferred MQTT client on your mobile. We recommend to start playing either with [IoT OnOff](#) (for both Android and iOS) or [IoT MQTT Panel](#) (Android only) which is shown as an example below

Let's use the [IoT MQTT Panel](#) application as an example to demonstrate how to receive and visualise data from Cricket by using native TOE MQTT broker (mqtt.thingsonedge.com).

1. Download and install [IoT MQTT Panel](#)
 2. Configure a server connection with the following details:
 Server / Broker IP address: **mqtt.thingsonedge.com**
 Port number: **1883**
 Network protocol: **TCP**
 3. Add device e.g. **"Temperature"**
 4. Goto advanced options:
 Username: ***your_cricket_serial_number***
 Password: ***your_cricket_serial_number***
 Connect automatically: **YES**
 5. Press the **Create** button
 6. Press **ADD PANEL**
 7. Select: **Line Graph**
- Show area: **YES**
 Show points: **YES**

For more information please refer to the attached screenshots from [IoT MQTT Panel](#) below.



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

FCC 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 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.

Modification statement

Things on Edge has not approved any changes or modifications to this device by the user. Any changes or modifications could void the user's authority to operate the equipment.

Interference statement

This device complies with Part 15 of the FCC Rules and Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

RF exposure compliance statement:

This device has been evaluated to meet the general RF exposure requirement. The antenna should be installed and operated with minimum distance of 20cm between the radiator and your body. Antenna gain must be below 0 dBi.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. The host end product must include a user manual that clearly defines operating requirements and conditions that must be observed to ensure compliance with current FCC RF exposure guidelines. For portable devices, in addition to above, a separate approval is required to satisfy the SAR requirements of FCC Part 2.1093. If the device is used for other equipment that separate approval is required for all other operating configurations, including portable configurations with respect to 2.1093 and different antenna configurations.

Labelling Requirements for the Host device

The host device shall be properly labelled to identify the modules within the host device. The certification label of the module shall be clearly visible at all times when installed in the host device, otherwise the host device must be labelled to display the FCC ID of the module, preceded by the words "Contains transmitter module", or the word "Contains", or similar wording expressing the same meaning, as follows:

Cricket
MODEL: REV 1.0
FCC ID: 2AW7I-VEV

The host OEM user manual must also contain clear instructions on how end users can find and/or access the module and the FCC ID .

Cricket
MODEL: REV 1.0
FCC ID: 2AW7I-VEV

OEM Statement

- a. The module manufacturer must show how compliance can be demonstrated only for specific host or hosts
- b. The module manufacturer must limit the applicable operating conditions in which transmitter will be used, and
- c. The module manufacturer must disclose that only the module grantee can make the evaluation that the module is compliant in the host. When the module grantee either refuses to make this evaluation, or does not think it is necessary, the module certification is rendered invalid for use in the host, and the host manufacturer has no choice other than to use a different module, or take responsibility (§ 2.929) and obtain a new FCC ID for the product.
- d. The module manufacturer must provide the host manufacturer with the following requirements:
- e. The host manufacturer is responsible for additional testing to verify compliance as composite system. When testing the host device for compliance with Part 15 Subpart B, the host manufacturer is required to show compliance with 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).

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.

Explanation: this module meets all the requirements of FCC part 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 uses an unchangeable PCB antenna with a maximum gain of 0dbi. There is no restriction on the installation method.

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 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: not apply

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.

Explanation: YES. this module without trace antenna designs,use fixed-length PCB antenna

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 module is designed to comply with the FCC statement, fcc id is:2AW7I-VEV

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: This module use PCB antenna. Antenna Gain: 0dBi

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: On the metal shielding shell, there is space for printing basic information such as the name and model of the product, and the id :2AW7I-VEV is included.

2.9 Information on test modes and additional testing requirements⁵

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: Data transfer module demo board can control the EUT work in RF test mode at specified test channel.

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 do not require an evaluation by FCC part15 subpart B. The host should be evaluated by the FCC subpart B.