

Wi-Fi.RTU Kit-12 Product Manual

Shenzhen Eybond Co., Ltd
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1. Product Overview

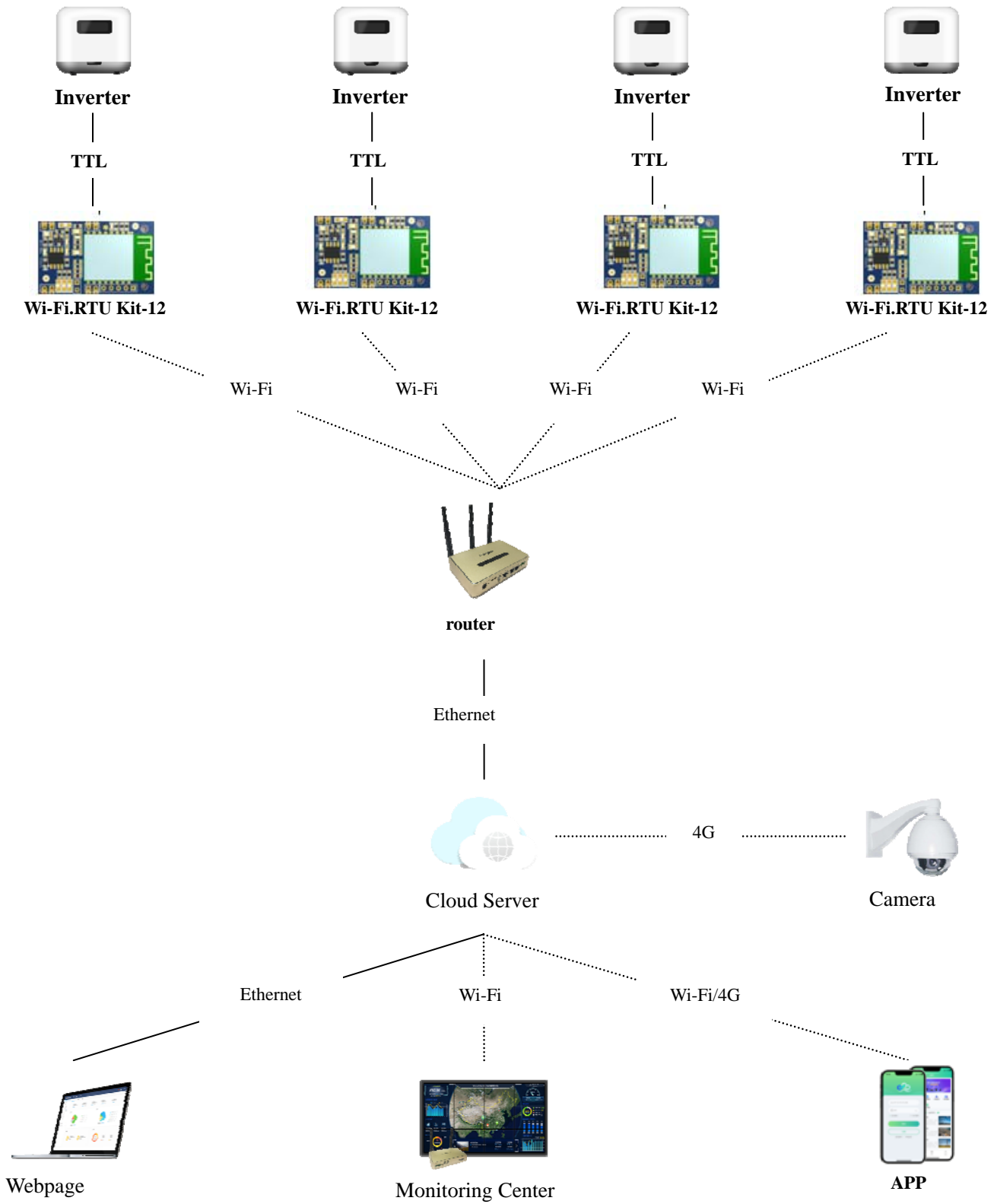
WFBLE.RTU.Kit-12 Bluetooth data transmission channel for expansion devices, It is built into and communicates with the equipment through the pin (TTL level) interface, and supports the functions of remote control, remote debugging, remote upgrade, etc; Access to the cloud server through the router. It can provide users with a complete monitoring solution with low cost, visualization and remote operation.

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Eybond company has the right to final interpretation of this manual.

This manual is intended for professional technicians installing WFBLE.RTU.Kit-12 and users performing routine maintenance on WFBLE.RTU.Kit-12 Users need to have certain computer network knowledge and operational skills. In order to better serve our customers, we will continuously improve our WFBLE.RTU.Kit-12 products and their supporting products. Therefore, some of the screenshots and descriptions in this manual may be slightly different from the products you are using. This is normal and will not affect your operation and use in general. At the same time, our company has the right to update the contents of this manual at any time without notifying others. The new manual will be published on our server website.(<http://www.eybond.com/support.html>) on, please go to download as needed

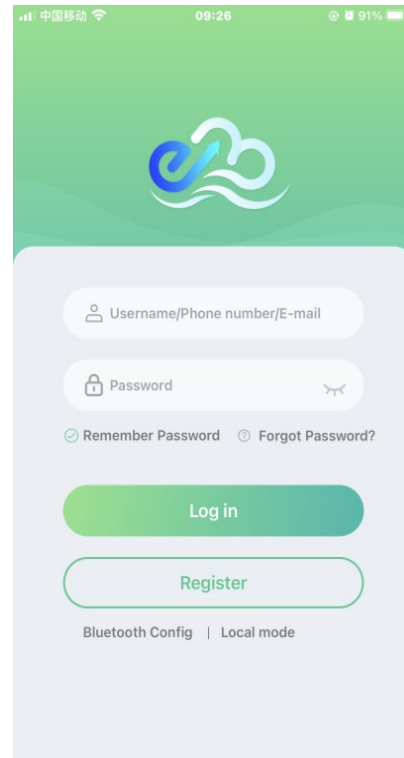
This section describes the typical networking of WFBLE.RTU.Kit-12



2. Network connection

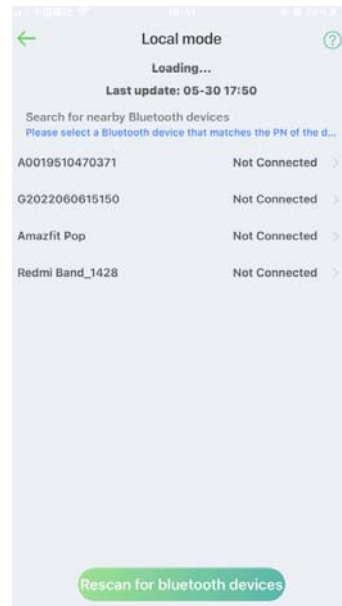
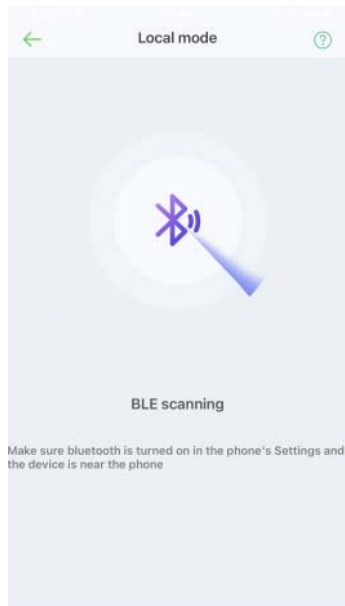
2.2.1 Download app

- (1) Scan QR code and download app;;
- (2) Open the app and click the "Bluetooth distribution" button to enter the "Bluetooth distribution" process。



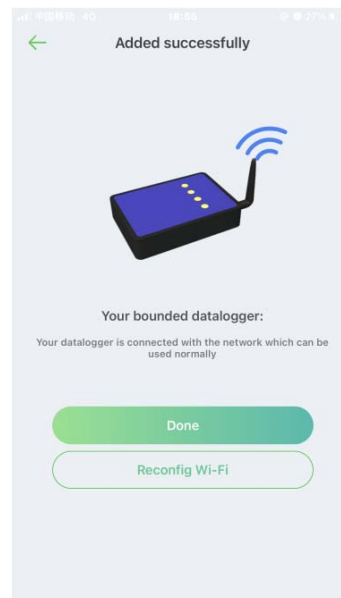
2.2.2 Bluetooth connected to data collector

- (1) Bluetooth connected to data collector;
- (2) On the "local monitoring" page, automatically scan the surrounding Bluetooth devices。



2.2.3 Networking settings

- (1) Fill in the relevant router information as prompted, and click the "set" button; Enter the "add successfully" interface;
- (2) If the networking is successful, click the "finish" button. If the prompt indicates that the networking fails, click the "replace Wi Fi distribution network" button.

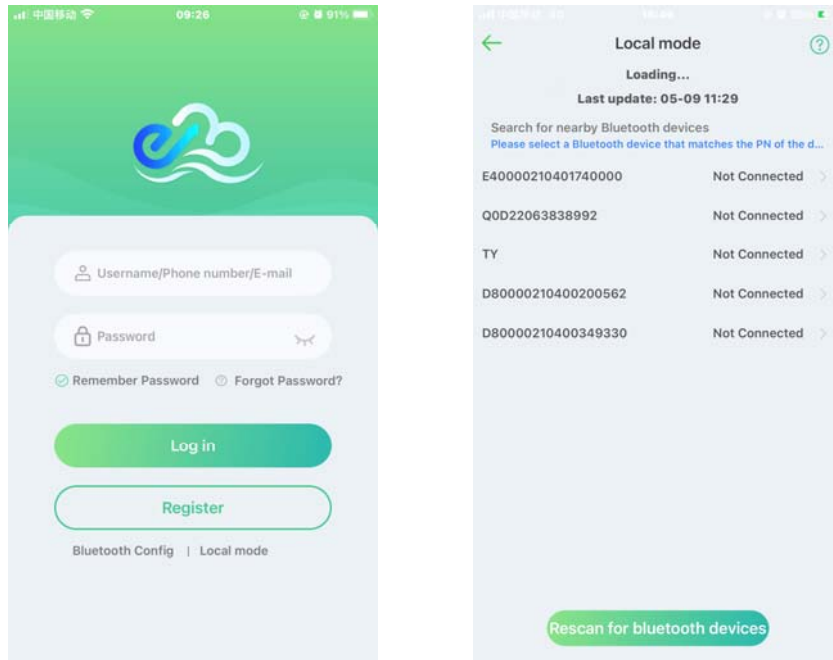


2.3 Connect to third-party platforms

2.3.1 Bluetooth connected to data logger

(1) On the login page, click the Local Monitoring button to enter the Local Monitoring page and scan the surrounding Bluetooth devices automatically.

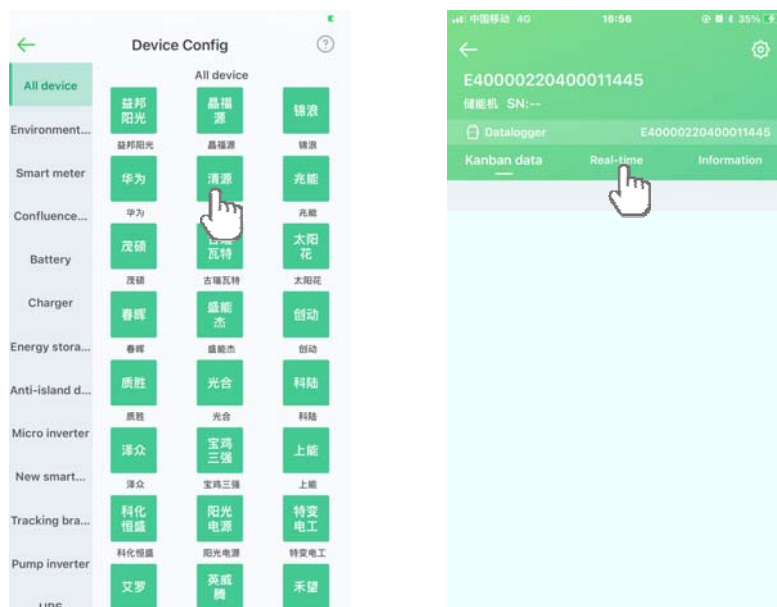
(2) Find the PN corresponding to the logger and click on the "4GBLE PN" button to connect.



2.3.2 Equipment configuration

(1) In the Device Configuration interface, select any protocol and click;

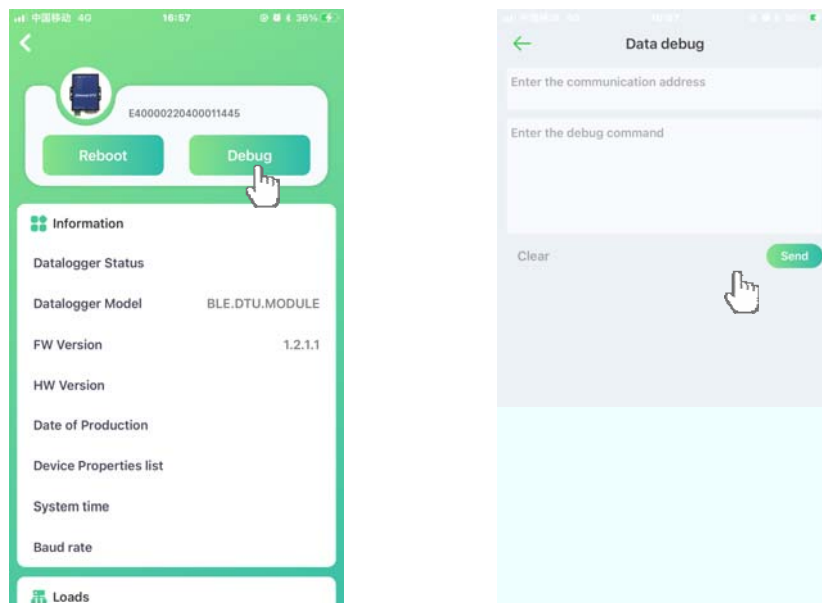
(2) In the "Equipment Overview" interface, click the data logger number.



2.3.3 AT instructions to set serial port parameters

(1) In the "data logger details" interface, click the "debugging" button;

- (2)After restarting, connect Bluetooth again and enter the "data debugging" interface, Please enter in the Debugging Instructions Box “AT+UART=9600,8,1,NONE\r\n”(Set serial port parameter instruction), Click send and wait for a reply, If the reply result is “AT+UART:W000” indicates that the setting is successful. “AT+UART:W001” indicates that the setting failed, Check the Bluetooth connection, or check whether the command is correct (Note: use English symbols).
- (3)Enter, for example, "01 03 10 11 07 07" (hexadecimal instruction of the equipment) in the "debugging instruction box", Click send and wait for a reply, If the reply result is“01 03 11 22 33 44 55” indicates that the setting is successful. If there is no reply, indicates that the setting failed, Check the Bluetooth connection, or check whether the command is correct (Note: use English symbols).



2.3.4 AT instructions debug connection server

- (1)In the "data debugging" interface, enter 1 in the "communication address box" (1 by default), Enter "AT+CLDSRVHOST1 = xx.xx.xxx.xxx (IP address or domain name), XXX (port number), TCP \ R \ n" in the "debugging instruction box" (Set remote server instruction) click "send" and wait for reply. For example, the reply result is "AT+CLDSRVHOST1:W000"Indicates that the setting is successful, "AT+CLDSRVHOST1:W001" indicates that the setting fails, check whether the Bluetooth is connected normally, or Check whether the instruction is correct (Note: use English symbols). For example: AT+CLDSRVHOST1=iot.eybond.com,18899,TCP\r\n
- (2)When the setting is successful, Please enter "AT+RESET=S\r\n" in the Debug Instruction Box (reset instruction),click send and waiting for reply, If the result of the reply is: “AT+RESET:W000” indicates that the setting is successful.When the setting is successful, The data logger will restart immediately.“AT+RESET:W001” indicates that the setting is failure, check if Bluetooth is connected properly,or check that the instructions are correct (note: use English symbols).

2.3.5 The server sends the heartbeat command

(1)Server through Socket connect send out “AT+HTBT?”(Heartbeat command),Data logger will reply automatically: Display as “AT+HTBT” indicates that the setting is successful.

2.3.6 Common AT instruction list

Sequence Number	Instructions	Instruction description
1	AT+CLDSRVHOST1?	Query remote server
2	AT+CLDSRVHOST1=iot.eybond.com,18899,TCP	Set up a remote server
3	AT+DTUPN?	Query DTU_ PN Number
4	AT+DTUTYPE?	Query DTU Type number
5	AT+FWVER?	Query firmware version number
6	AT+HTBT?	Send heartbeat command
7	AT+HWVER?	Query hardware version number
8	AT+RESET=S	Program Reset

3. Common Faults

When you encounter the following problems, please refer to the following solutions first. If the problem is still not resolved, please contact our after sales staff.

Phone: +86-755-89992588

E-mail: market@eybond.com

The following table lists some basic problems that may be encountered during operation, we provide some basic solutions.

Common problem	Solution
Data logger off-line	<ol style="list-style-type: none">1. Query whether the matching flow card is stopped;2. Confirm the GPRS network condition and signal strength on site;3. Whether the equipment power supply meets the module requirements.
Data logger Online The device is not online	<ol style="list-style-type: none">1. Check if the logger matches the inverter brand;2. Try to re-plug the number logger;3. Check if the communication address of the inverter is 1;4. Failure not removed, contact the manufacturer after sale.

4. Precautions

- (1)Installation: Fix the digital logger on the inverter with a screw, and do not let the waterproof pad on the digital logger tilt up during the process to avoid affecting the waterproof effect;
- (2)Environment: The data logger needs to be installed in a place where there is no strong electrical interference, because this product belongs to wireless communication, to prevent data loss during data transmission by the data logger due to strong electrical interference.
- (3)Transport: Do not be squeezed by heavy objects or packed in good condition during transportation.
- (4)Storage: Avoid wet places and do not soak.

FCC Regulatory notices

Modification statement

Shenzhen Eybond Co., Ltd 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

This equipment complies with FCC and ISED radiation exposure limits set forth for an uncontrolled environment. The antenna should be installed and operated with minimum distance of 20cm between the radiator and your body. Antenna gain must be below 1dBi.

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.

FCC Class B digital device notice

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.

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 and ISED of the module, preceded by the words "Contains transmitter module", or the word "Contains", or similar wording expressing the same meaning, as follows:

Model: WFBLE.RTU.Kit-12 V7.0, WFBLE.RTU.Kit-11 V7.0

Contains FCC ID: 2ASAF-WFBLERTUKIT

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 and ISED.

Model: WFBLE.RTU.Kit-12 V7.0, WFBLE.RTU.Kit-11 V7.0

Contains FCC ID: 2ASAF-WFBLERTUKIT

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 the 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:
 - i. The host manufacturer is responsible for additional testing to verify compliance as a 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).

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.³

Explanation: This module meets the requirements of Part 15 Subpart C Section 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 PCB antenna, antenna gain: 1dBi. 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: 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.⁴

- 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 without trace antenna designs

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: 2ASAF-WFBLERTUKIT

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 uses PCB antenna, antenna gain: 1dBi.

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 by the following texts: "Contains FCC ID: 2ASAF-WFBLERTUKIT"

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 standalone

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 does not require an evaluation by FCC Part 15 Subpart B. The host should be evaluated by the FCC Subpart B