



ZigBee USB Module
ZSB-68xx series
User Manual

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1. Introduction

The ZigBee USB Module family provides designers with a ready-made product which allows ZigBee wireless applications, to be quickly and easily included in product designs. The ZigBee USB Module integrate all of the RF components required, USB interface and removing the need to perform expensive RF design and test. Products can be designed by simply connecting USB power to be general router or simple end-device in ZigBee network, and connect to USB host to be coordinator. Hence, this range of Modules allows designers to bring wireless applications to market in the minimum time with significantly reduced development effort and cost.

The variants available are described below.

1.1 Variants

Variant	Description
ZSB-6800	JN5168 High Power ZigBee USB Module PCBA without external Flash
ZSB-6801	JN5168 High Power ZigBee USB Module PCBA with external Flash
ZSB-6810	JN5168 High Power ZigBee USB Module without external Flash
ZSB-6811	JN5168 High Power ZigBee USB Module with external Flash

Table 1 MS5168 model variants

1.2 Key Features

- NXP ZigBee solution
- USB (A type) host interface
- Red and Blue LED indicators
- One Push bottom
- Embedded antenna
- Auto detect USB firmware download
- FTDI USB chip, support Windows, Linux and Android system driver

1.3 Applications

● Smart Lighting	● Smart Energy
● Asset Management	● Healthcare
● Building Control	● Security
● Remote Control	● Environment monitoring

2. Driver Installation

The ZSB-000 allows to plug-in a PC USB port and to be used as a serial communications port and requires an FTDI driver. You can obtain the relevant driver for your operating system from the FTDI web page as below.

<http://www.ftdichip.com/Drivers/VCP.htm>

Go to the VCP drivers, download the required driver to your disk and double-click on its icon to install.

1. When you plug the USB-to-serial cable into a USB port of your PC, check whether Found new hardware wizard for “USB Serial Port” is displayed. If this appears, you must install the driver by following the rest of this procedure. Otherwise, the driver is already installed.

2. Fill in the screen Install from a specific location, as follows:

- a) Select the radio button Search for the best driver in these locations.
- b) Tick the checkbox Include this location in the search.
- c) Using the Browse button navigates to the directory FTDI_drivers,
- d) Click OK.

The wizard will automatically fill in the details in the drop-down search box.

3. In the Found new hardware wizard screen, click “Next”.

4. Wait for the wizard as it searches for and installs the new driver. On completion, it will display the message “Completing the Found new hardware wizard”. Click Finish to complete.

In some cases, you may need to repeat the procedure from Step 2, depending on your hardware configuration.

Finally, the Found new hardware bubble will indicate that the hardware is installed and ready for use.

Identifying PC Communications Port Used

In order to use the Flash programmer, you need to find out which serial communications port your PC has allocated to the connection with the board - this is described below.

1. In the Windows Start menu, follow the menu path:

Start>Control Panel>System

This displays the System Properties screen.

2. In the System Properties screen:

a) Select the Hardware tab.

b) Click the Device Manager Button

This displays the Device Manager screen.

3. In the Device Manager screen:

a) Look for the Ports folder in the list of devices and unfold it.

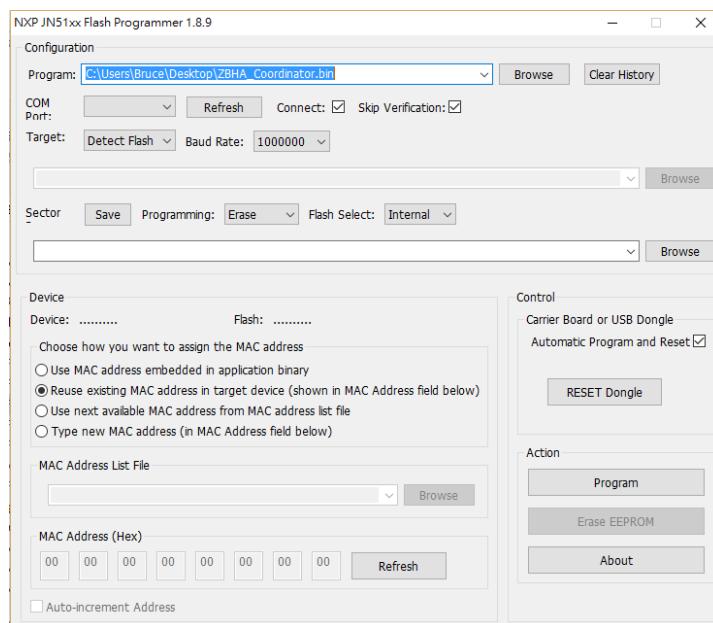
b) Identify the port which is connected to the board (it will be labeled ‘USB Serial Port’) and make a note of it (e.g. COM1).

3. Downloading Binary Code

To use the JN51xx Flash Programmer GUI to download a .bin file to the USB Module, there is no need to operate the “Program” key as EVK since it will enter programming mode automatically, follow the procedure below.

Step 1 Plug the Module into a USB port of your PC.

Step 2 Download NXP programmer from the [LINK](#). Run the Flash programmer application by double click “FlashGUI.exe”

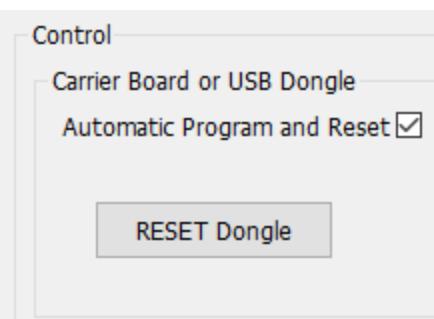


Step 3 In the COM Port field of the interface, select the PC serial communications port for the board connection– to identify the relevant port, refer to Chapter 6.



Figure 1 Flash Programmer Com Port Selection

Step 4 Enable the automatic reset and programming mode signals for the target device. To do this, in the USB Module area of the interface, ensure that the checkbox Automatic Program and Reset is ticked (if this box is not ticked, the target JN51xx device will not enter programming mode and the download will fail).



Step 5 Use the Browse button in the Program File area to find and select the binary file to download.

Alternatively, the application remembers previously downloaded files and these can be selected from the drop-down list.

Step 6 Select the baud rate for the download using the Baud Rate drop-down list.

Step 7 Check that the MAC address shown is correct for the device. If it is correct, click the Reuse existing MAC Address radio button. If it is not correct, or if the MAC address is shown as all zeros, follow the procedure on Step 3.

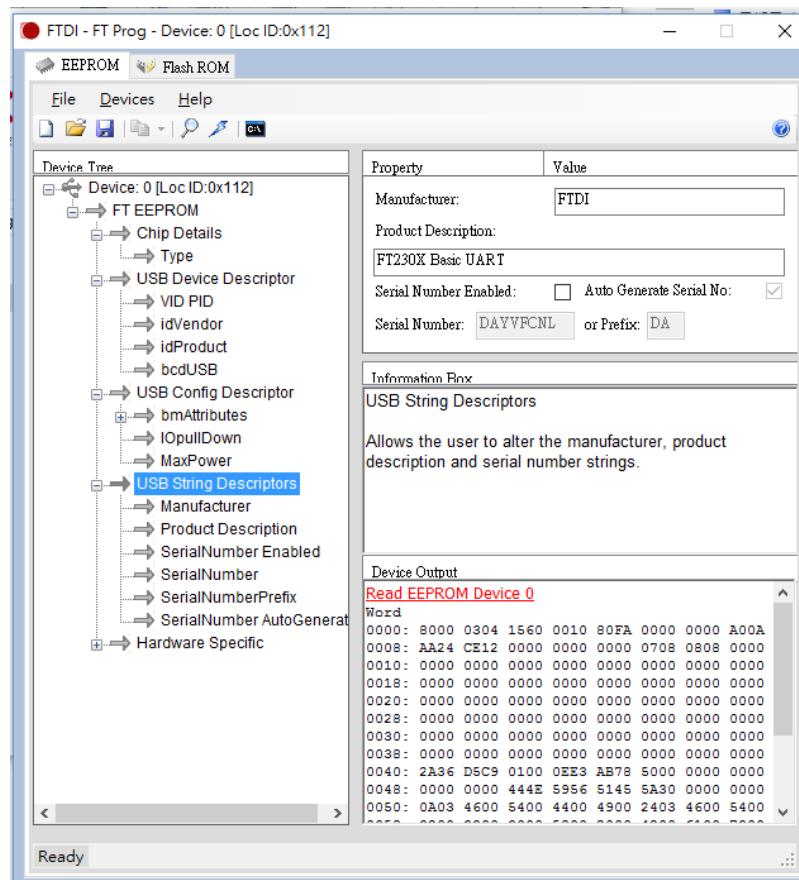
Step 8 Once the file and baud rate have been selected and the correct MAC address is displayed, click the Program button to start the download.

Before the binary file is downloaded, the Flash programmer automatically places the target JN51xx device into programming mode. The download is then started and its progress is displayed in the progress box that now appears. On completion of the download, the JN51xx device is reset and the downloaded code automatically runs.

4. FTDI - USB Chip programming

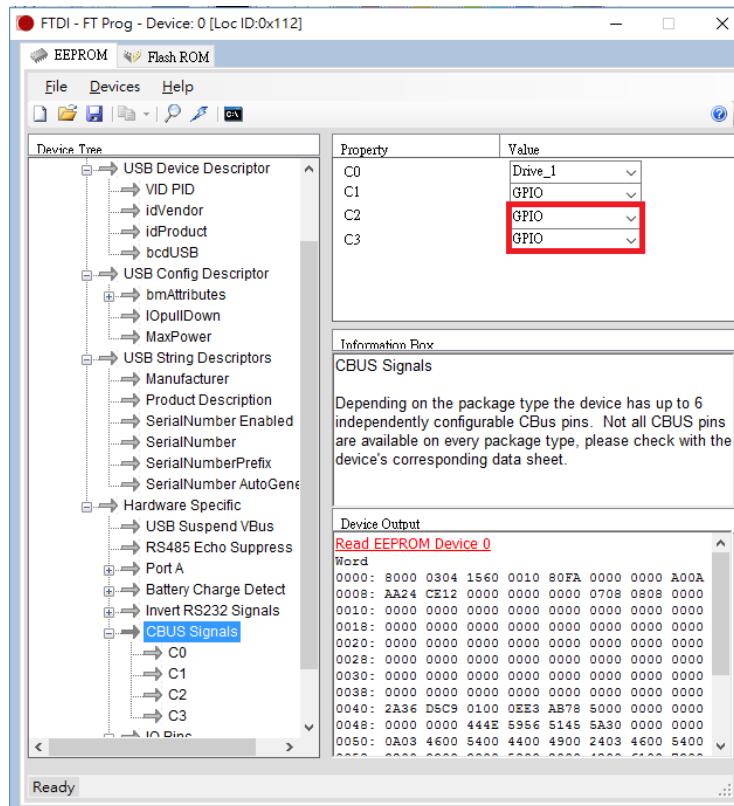
In case user need to change the USB parameters, such as USB device descriptions, serial number, user can download FTDI FT-Prog program to modify the USB setting.

http://www.ftdichip.com/Support/Utilities.htm#FT_PROG



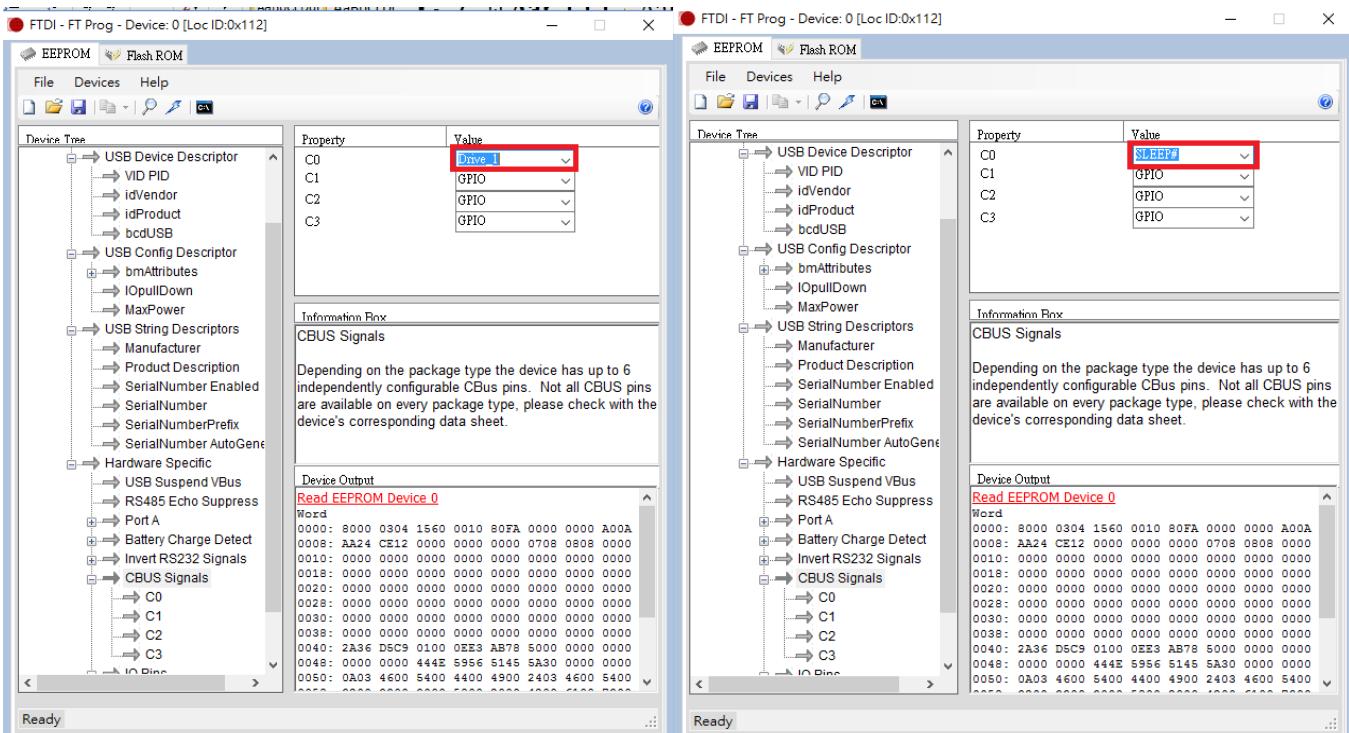
4.1 Auto Enter Programming mode (JN516x)

In order to auto enter programming mode, we need to configure the CBUS2 and CBUS3 to GPIO. The NXP programmer will control the USB GPIO which connect to JN516x SPIMISO and ResetN.



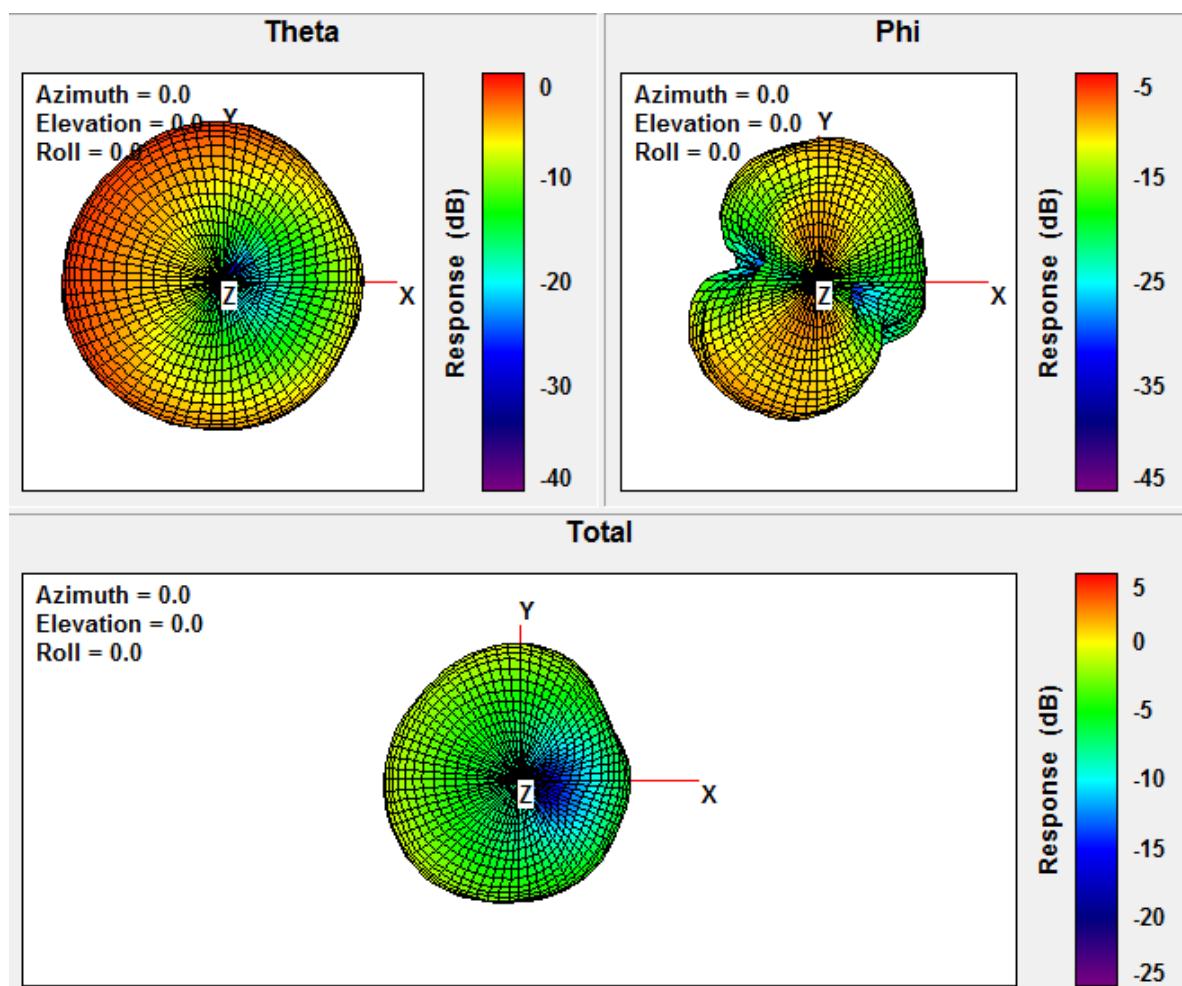
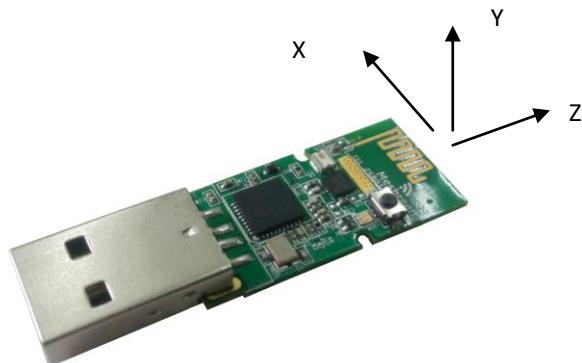
4.2 Support USB suspend mode

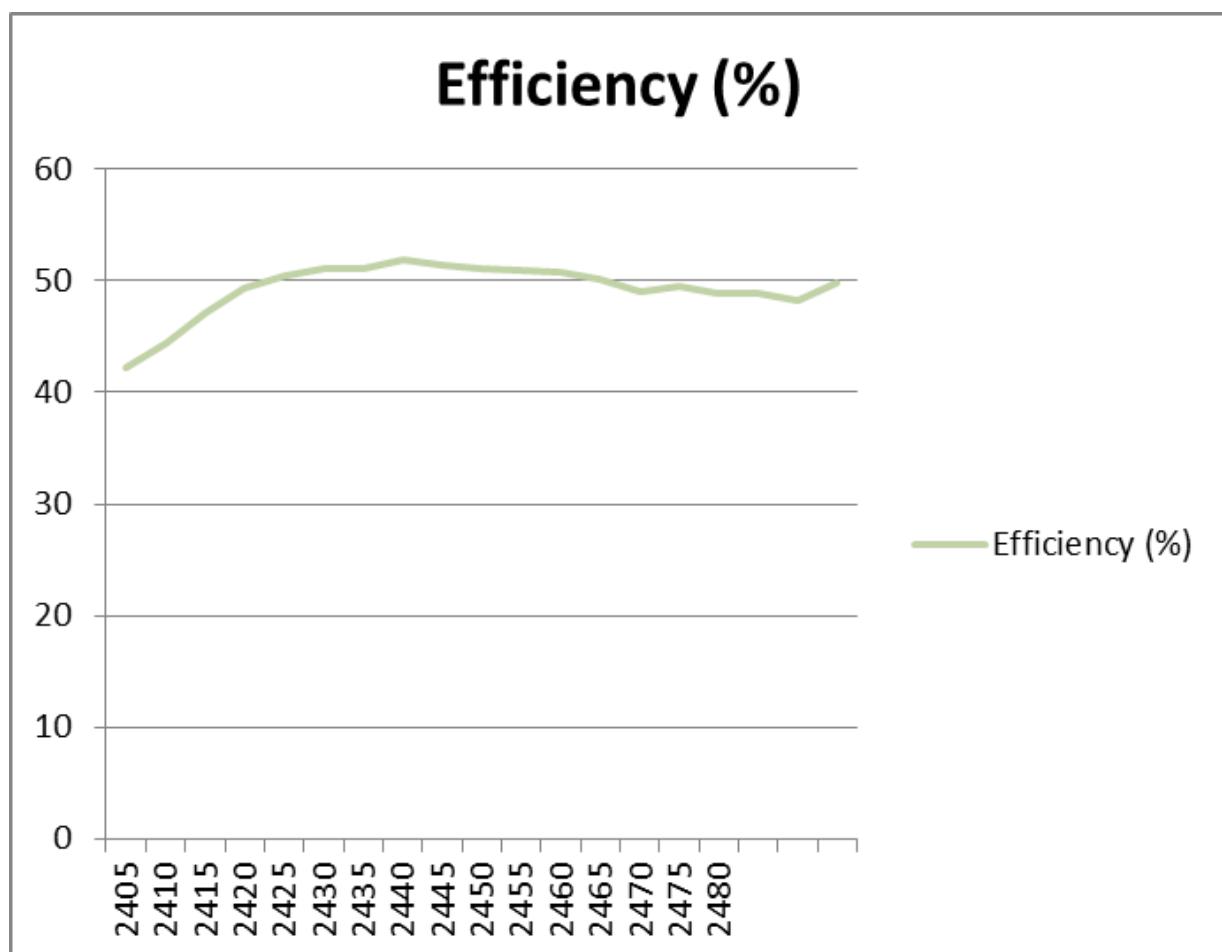
If USB Module power source from PC/Host which can send USB suspend command, you can set the CBUS0 to “Sleep#” function to support USB suspend mode. The USB Module power consumption will reduce to 2.5mA below. Please note, if you would like to change power source to simply 5V USB power (such as USB power adapter), you need to set the CBUS0 to “Drive_1”



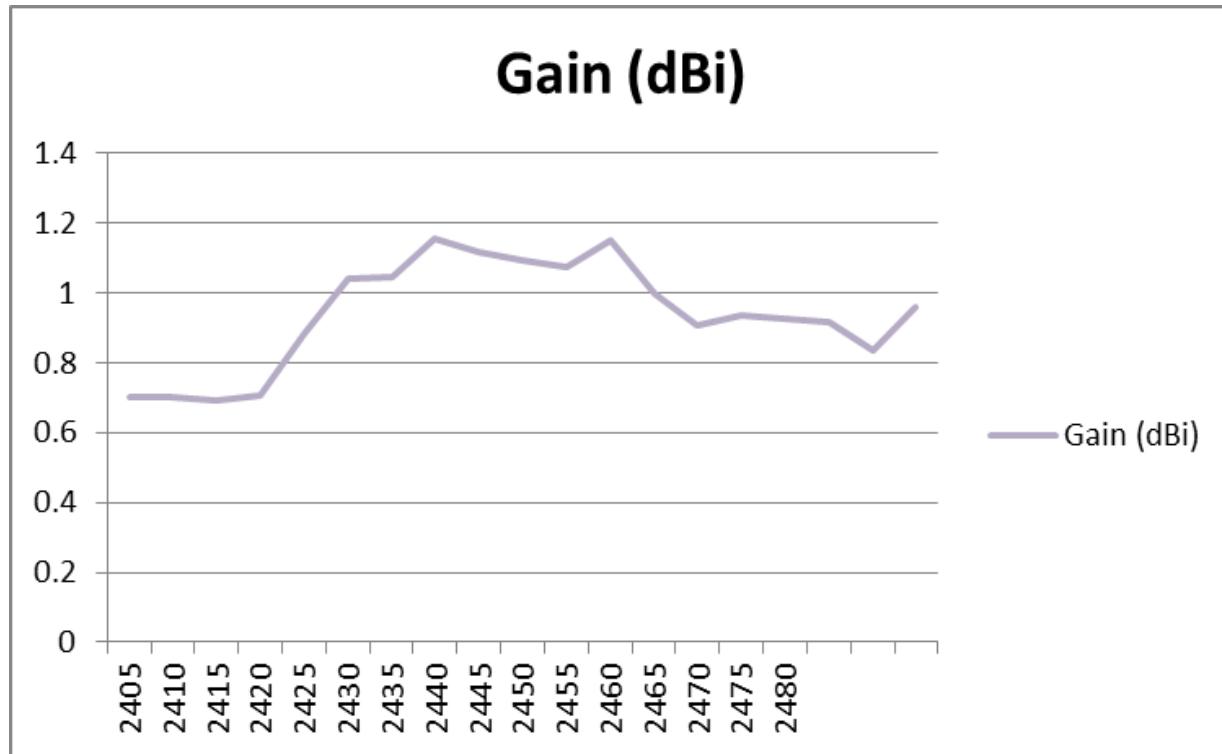
5. PCB Antenna Radiation Pattern

Below pictures are simulated 3D radiation plots of the ZSB-6800. They are provided here to help the user orientate the module in end equipment in an optimal way. These visualizations are an accurate representation of the antenna radiation pattern in the 3D space.





Average Efficiency = 50%



Average Gain = 0.985dBi

Version Control

Version	Notes
1.0	1 st Issue

Meshreen Ltd.,

Tel: +886-3-3594766

Fax: +886-3-3594733

Email: info@meshreen.com

<http://meshreen.com>

§ P15.21 Information to user.

Notice: Any changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

§ P15.105 Information to the user.

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.

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§ P15.19 FCC Labelling requirements

Notice: 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 RF Radiation Exposure Statement:

1. This Transmitter must not be colocated or operating in conjunction with any other antenna or transmitter. 2. This equipment 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 20 centimeters between the radiator and your body.

§ FCC for module (OEM)

For a host using a certified modular with a standard fixed label, if (1) the module's FCC ID is not visible when installed in the host, or (2) if the host is marketed so that end users do not have straightforward commonly used methods for access to remove the module so that the FCC ID of the module is visible; then an additional permanent label referring to the enclosed module: "Contains Transmitter Module FCC ID: 2AC2E-ZSB-6801" or "Contains FCC ID: 2AC2E-ZSB-6801" must be used. 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.

§ FCC for module(LMA)

Declaration the Restriction of this Limited Module Approval: According to FCC Part 15 Subpart C Section 15.212, the radio elements of the modular transmitter must have their own shielding. However, due to there is no shielding for this Zigbee USB Module, this module is granted as a Limited Modular Approval. When this Zigbee USB Module is installed into the end product, a Class II Permissive Change or a New FCC ID submission is required to ensure the full compliance of FCC relevant requirements.