POWER SUPPLY

Power is supplied by USB cable. Supplied voltage power is regulated as 3.3V, and this regulated power is used as supply voltage on the DV-kit board.
Regulator accepts voltage within the range of 4.8VDC~15VDC, and supplies 1A.

In case that, user's application circuits are added to the development kit, total usable power of additional circuit should not exceed 1A of LDO

RESETB

The LGIT DV-kit allow the users to make RESET signal directly. Reset switch is
Reset by S/W is also available through SPI interface.

HCI Command Interface

USB and UART(RS232) interface enable communication with Bluetooth HCI controller.
LGIT Bluetooth Development kit automatically select one HCI interface whether UART(RS232) or USB connected.

UART/RS232

UART/RS232 interface offers communicational environment with HCI controller of Bluetooth Module. The user have to confirm that Bluetooth Module is UART type.

USB

LGIT's USB Bluetooth DV-kit support HCI controller of Bluetooth module and USB interface.
Also, this DV-kit fulfills the USB 1.1 specification requirement, functions as regular USB slave port.
Specially designed USB cable enables to connect the devices by using USB('B type) connector.

For the first time user, this kit support 'plug and play', installation wizard.
Refer to clause 5.

PCM/AUDIO

LGIT's Bluetooth DV-kit support Analog in/out data for voice.
This DV-kit used PCM codec of Motorola(MC1454 series)

3. HARDWARE SETUP

Remove the Power supplies and the appropriate mains power connector from the carry carry case and push the mains connector onto the power supplies, making sure that they are fully pressed home. Plug these two power supplies into the mains but **DO NOT** connect the DC output connector to the LGIT Evaluation system units yet. **The power supplies should be connected AFTER the Bluetooth utility software is installed and configured.**

UART/RS232

Remove the USB cable from the carry case and connect one end of USB ports on PC's (Window™2000/XP).

• **The power supplies should be connected AFTER the Bluetooth application S/W (utility) is installed and configured.**

• **Using Bluetest or BlueChat utility program**

USB

Remove the USB cable from the carry case and connect one end of USB ports on PC's (Window™2000/XP).

• **The power supplies should be connected AFTER the Bluetooth application S/W (utility) is installed and configured.**

• **Using Bluetest or BlueChat utility program**

SPI (Firmware Upgrade and PS-Key Configuration)

Remove the SPI cable from the carry case and connect one end(25pin D-sub connector Male) of each to the Parallel port on a PC's (Window™2000/XP). Connect the other end(9pin D-sub Connector Male) of the SPI cables to the COM port of the LGIT Bluetooth DV-kit Units.

• **The power supplies should be connected AFTER the Bluetooth application S/W (utility) is installed and configured.**

•**Using Blueflash utility program**

4. Overview of the Bluetooth development utility software

The LGIT Bluetooth DV-kit is supplied with a PC program called **'Bluesuite'** that consist of four kind of utility software.

This software allows the user to send text, send a file and set up a voice connection between the two system units. Users can choose between BCSP, H4(UART) or USB host interfaces.

5. Installing the Bluesuite and DV kit USB driver

- Install 'Bluesuite' program – also available download from CSR of website **www.techsupport.com**

Installation instructions

1) Download attached file 'Bluesuite_v1.23.zip'
2) Change the path if required, click 'unzip', click 'OK' and finally click 'Close' to complete the installation
3) From your PC in the folder run the file 'InstallBlueSuiteCasira.exe'

- Install USB to UART convert IC Driver – also available download from FTDI of website. **www.ftdichip.com/Documents/InstallGuides.htm**

Installation instructions

1) Download attached file 'DV KIT USB DRIVER.zip'
2) Change the path if required, click 'unzip', click 'OK' and finally click 'Close' to complete the installation
3) From your PC in the folder installing as below
   DV KIT USB Driver\Old version and New version folder.
4) Refer to installation guide book 'Windows_XP_Installation_Guide - Part III'

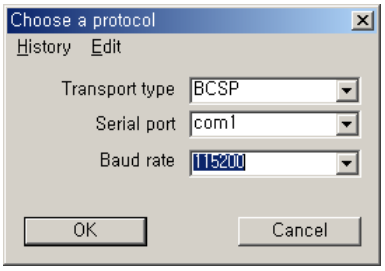
6. Configuration the Development Utility Program Application

The Bluesuite is consist of four programs.
• Bluetest : using RF performance
• Bluechat : using send text and voice connection
• Blueflash : using firmware update
• PSTool : using debug PS Key value

Bluechat getting started

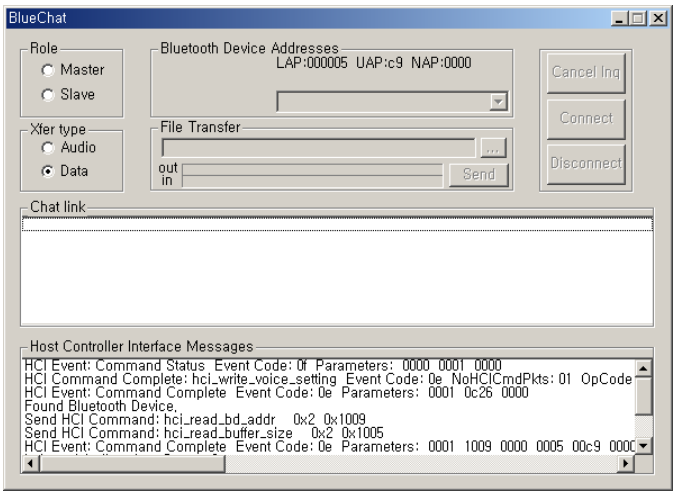
Start the BlueChat Program on each PC by double Clicking on the Bluechat shortcut on your desktop, or on the Bluechat Icon in the Bluechat folder.

A protocol selection window will appear:



Click “OK” when your selection is complete.

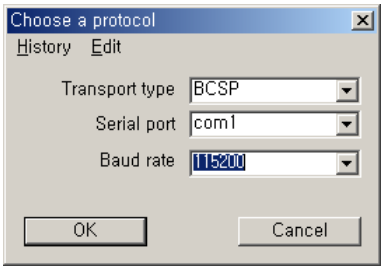
Up to two BlueChat window may be open at any one time allowing a single PC to be used for both evaluation modules. In this mode a different COM port or USB port must be selected in each window and each of the LGIT DV-kit units must be connected to the appropriate port.



Bluetest getting started

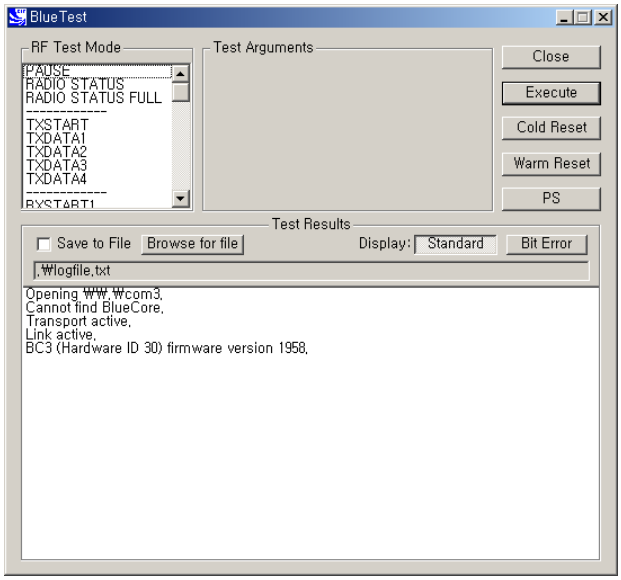
Start the Bluetest Program on each PC by double Clicking on the Bluetest shortcut on your desktop, or on the Bluetest Icon in the Bluesuite folder.

A protocol selection window will appear:



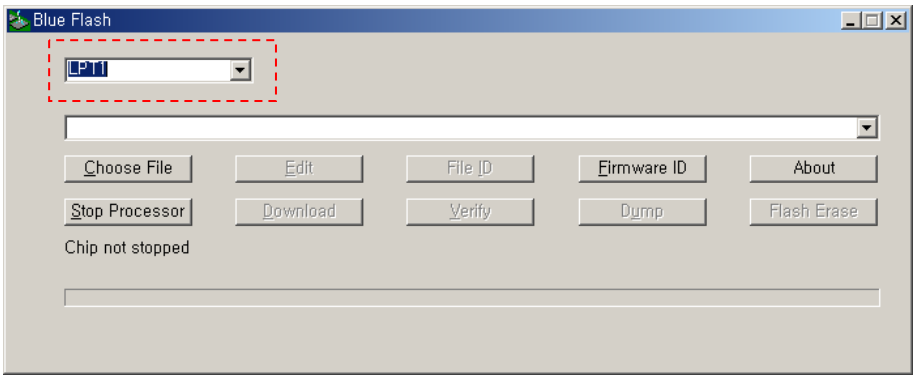
Click “OK” when your selection is complete.

The tests fall into six categories:
• Simple RF tests; used for PCB de-bug and optimization
• Quantitative tests for transmit and receive; used to establish the performance of the Bluetooth device.
• Loopback test modes; used for qualification and regulatory testing
• Configuration commands to set parameters for other tests
• Built-in self-test routines
• Miscellaneous test routines

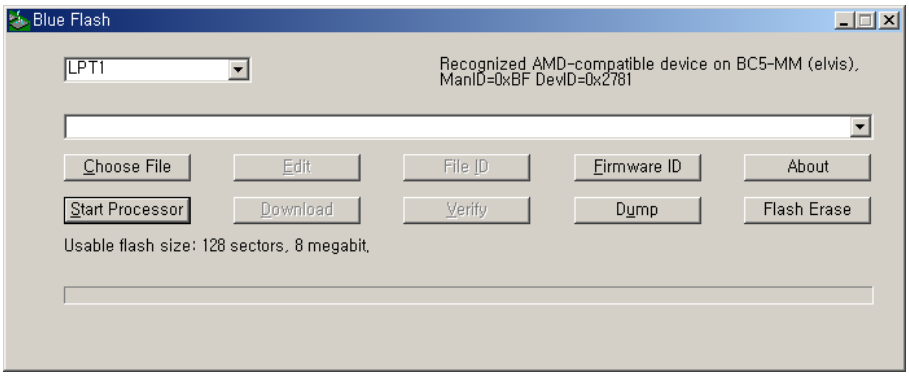


Blueflash getting started

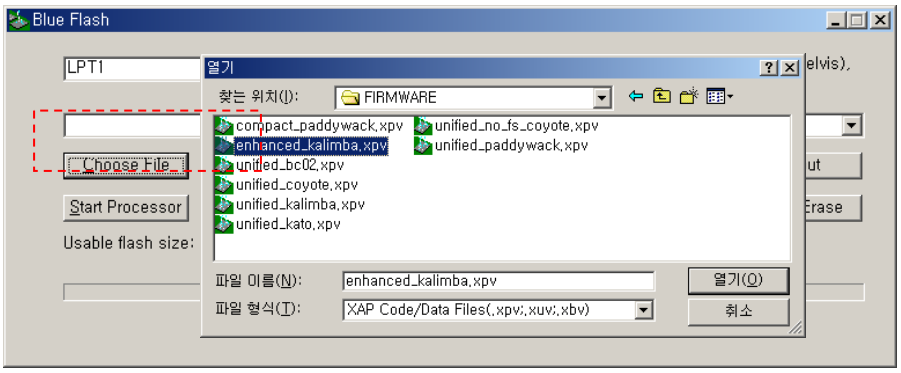
Start the Blueflash Program on each PC by double Clicking on the Blueflash shortcut on your desktop, or on the Blueflash Icon in the Bluesuite folder.
With the application running the display should be:
Note that the application detects the flash type fitted and this is shown in the main program window.



Click “Stop Processor” when your device is ready to download.
And then check the flash size and sectors.

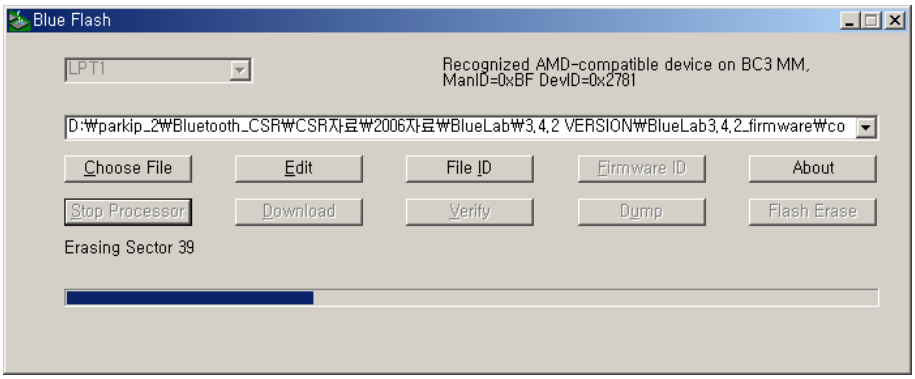


Click on the “Choose File” button to select the file to upload in your folder.
A new dialog box is displayed

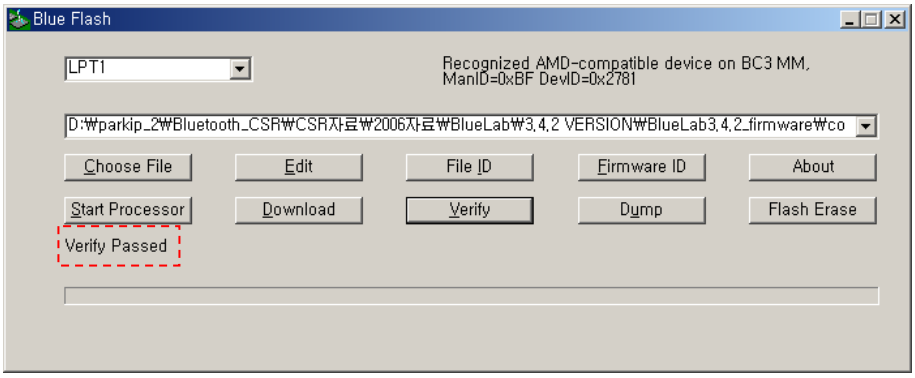


Navigate to the desired firmware file and click open. The selected file is now displayed in the BlueFlash window. The file may be viewed and basic editing performed by clicking on the Edit button if required. Erase the flash by clicking on the Erase Flash button. Progress in shown by the progress bar displayed along the bottom of the main dialog. The download button can now be clicked to transfer the firmware to Flash memory on the BlueTooth radio module. Again, progress is indicated by the progress bar.

You click on the "download" button and then you can see the dialog box of processing



Finally, click the Verify button to read back the image from Flash and confirm that it corresponds to the file sent to the module. The verify button allows the user to select a different file to verify against if required.



PSTool getting started

Start the PSTool Program on each PC by double Clicking on the PSTool shortcut on your desktop, or on the Blueflash Icon in the Bluesuite folder.

BlueCore requires a number of parameter constants for correct operation. These parameters are stored in flash memory in an area known as the Persistent Store. It is often desirable for the user to write new values to this area in order to reconfigure BlueCore. The PSTools utility offers a user-friendly way of doing this.

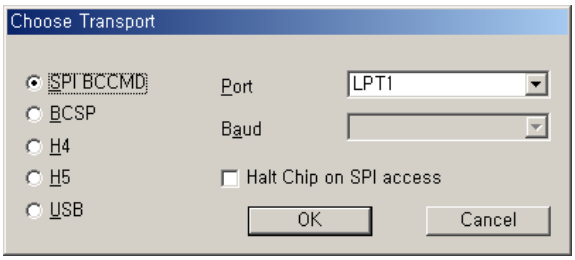
The Persistent Store (PS) Keys that are necessary for configuring **CSR IC** product.

• PS Keys associated with RF operation of CSR IC product. These keys may need to be changed from their default values for optimum RF performance with particular types of modules.
• PS Keys associated with non-RF operation of CSR IC product

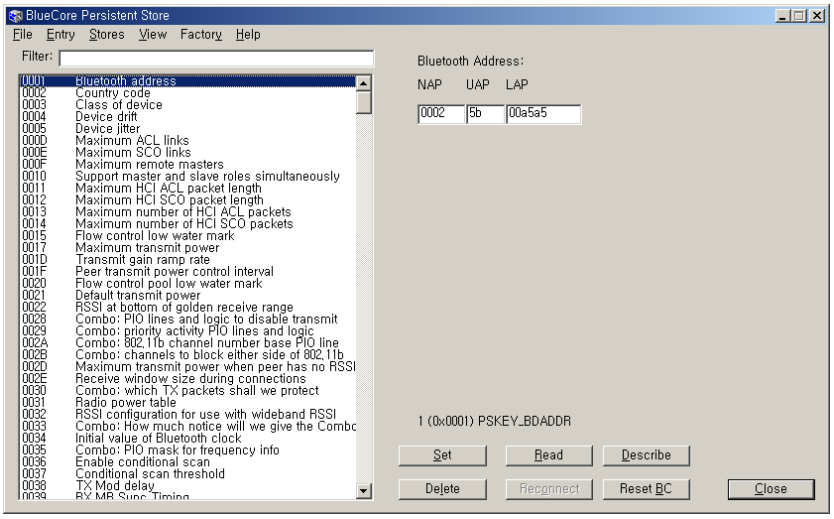
Note:
PS Keys introduced for CSR IC are not accessible by name in the BlueCore series version of PSTools (incorporated in BlueSuite™). They can be accessed in PSTools or BlueTest by referring to the Key Number.

The Persistent Store entry keys are listed in the main list box, with the value contained in the selected entry in the text box. This can be refreshed by clicking on the Read button. Amendments to the stored values can be made by editing data in this box and clicking on the Set button to overwite the existing data. Modifications to Persistent Store values do not take effect until BlueCore is restarted. A reset button is provided in PS Tools to facilitate a soft reset. A brief description of each PS key can be seen by selecting the relevant entry and clicking the Describe button.

A protocol selection window will appear:
Select protocol type and then click “OK”



After then you can see PSTool main dialog box as below



7. Definitions

Bluetooth – A set of technologies providing short range audio and data transfer over radio connection
BlueCore - Single chip Bluetooth System from CSR

ACRONYMS AND ABBREVIATIONS

ADC	Analogue to Digital Converter
AGC	Automatic Gain Control – part of the radio
API	Application Program Interface
DLL	Win32 Dynamic Link Library.
GUI	Graphical User Interface
HCI	Host Controller Interface
ISM	Industrial, Scientific and Medical – unlicensed radio band at 2.4 GHz
L2CAP	Logical Link Control and Adaptation Protocol – a Bluetooth protocol stack layer
LM	Link Manager – a Bluetooth protocol stack
LNA	Low Noise Amplifier
PA	Power Amplifier
LDO	Low drop output regulator
PCM	Pulse Coded Modulation – digitised audio sample stream
PIO	Parallel input/output
RF	Radio Frequency
RFCOMM	Serial cable emulation protocol – a Bluetooth protocol stack layer
SCO	Synchronous Connection Oriented
SDD	Service Discovery Database– an element of Bluetooth
SDP	Service Discovery Protocol a Bluetooth protocol stack layer
BCSP	BlueCore ™ Serial Protocol
SPI	Serial Peripheral Interface – a synchronous, single master, serial interface
USB	Universal Serial Bus

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 manual of the end product.
The user manual which is provided by OEM integrators for end users must include the following information in a prominent location.
“To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.
If the end product integrating this module is going to be operated in 5.15 ~5.25GHz frequency range, the warning statement in the user manual of the end product should include the restriction of operating this device in indoor could void the user’s authority to operate the equipment.”

Label for end product must include “ Contains FCC ID:BEJEAX57538201” or “ A RF transmitter inside, FCC ID: BEJEAX57538201”.

FCC RF Radiation Exposure Statement:

1. This Transmitter must not be co-located 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.

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.

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