Bluetooth™ Module Design Application

Model number	Function	Document revision
UGPZ6-####	Output Power class2 compliant SMD (Physical connection) Flash Memory(8M), Reference oscillator built in USB and SPI interfaces	V1.0

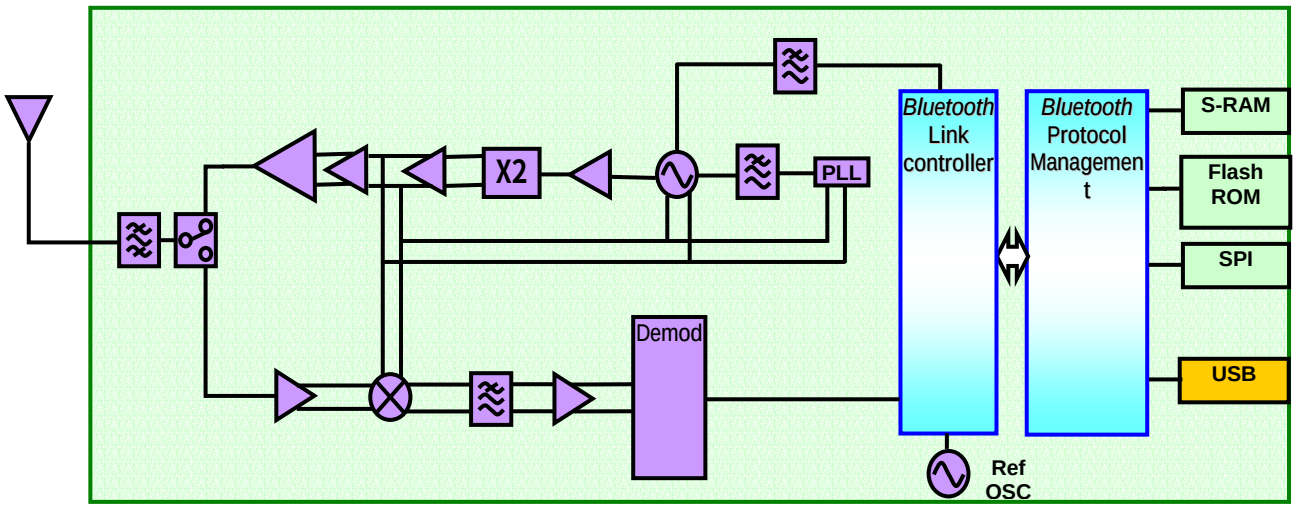
Digit	Definition	Contents
Digit 0~3	Bluetooth™ Module Including Base Band	UGPZ (Board to board)
Digit 4	Mechanical form Features	6: 25x12x2.6mm / Class2 / RF connector / VCC=3.3 V
Digit 5	Status of products	X: Engineering Sample -: Mass production
Digit 6	Interface dependent	C: USB with RF connector
Digit 7~8	Serial number	Customer dependent
Digit 9	Revision	Starting from A

➢ **Features**

- Bluetooth™ Specification V2.0 + EDR support
- Compact package size (13.5x10.0x2.1mm) can be fit to any type of product
- RF connector accompanied
- Built-in Link controller, Link Manager Protocol
- HCI interface over USB
- Class 2 support
- Built-in Flash Memory (8Mbit), system clock

➢ **Application**

- Mobile Phones, PCs, PDA, Terminal Adapters, Digital Cameras, Printers, Automotive, Other Peripheral Devices



➢ FEATURES LIST

Features	Contents
Power level	+4 dBm Max.
Program memory	8M bit Flash Memory
RAM	32k bytes x 16 bits
Reference oscillator	Built in
Sub clock oscillator	Built in
Serial data interface	USB
Physical connector	B to B Connector

➢ MECHANICAL CHARACTERISTICS

Aspect	No contamination / No scratches / No strains
Dimensions	25x12x2.6mm
Weight	2.4g Typ.

➢ COMMON PHYSICAL LAYER SPECIFICATIONS

Operating Frequency	2402 MHz to 2480 MHz
Carrier Spacing	1.0 MHz
Channel	79
Duplexing	TDD
Symbol Rate	1 Mbps / 2Mbps / 3Mbps
Modulation Method	GFSK BbT = 0.5 π/4 DQPSK 8 DPSK

➢ PHYSICAL INTERFACE (HCI transport layer)

The Bluetooth™ Module contains USB interfaces. Detail of each interface is described on the following sub-sections.

➢ USB

USB interface is compliant with Universal Serial Bus Specification 1.1 & 2.0 and supports 12 Mbps “Full Speed” And this USB interface support single ended data interface. And also USB interface according to Bluetooth™ Specification 2.0 + EDR “USB transport layer” as well, including interface suggested by Intel for further power management.

Summary of supported features

Items	Description
Application	Bluetooth™ Module works as a "device" and answer on "requests" from a "master host controller" as for example a PC.
Speed	"High speed mode" only
USB Windows Class	Wireless Controller (bDeviceClass=0xE0h)
USB Sub class	RF Controller (bDeviceSubClass=0x01h)
USB Protocol code	Bluetooth™ Programming (bDeviceProtocol=0x01)
OHCI/UHCI	Supported
SCO support	SCO supported as Isochronous transfer mode
Transfer mode	Bulk, Control and Isochronous supported
USB data packets length	All packet size supported according to Bluetooth™ Spec 2.0 + EDR

Number of endpoints	6 end points
USB manufacture code	Unless specified, persistent storage saving "ALPS" as manufacture
HCI extended commands	All private commands will be encapsulated to payload and de-encapsulated in Module Stack

Description of each hardware interface

Module Pin	Name	I/O	Requirement	Description
USB_D+	D+	bi-dir	Mandatory	Defined in USB spec 1.1,2.0
USB_D-	D-	bi-dir	Mandatory	Defined in USB spec 1.1,2.0
VBUS_IN	VBUS	input	in proposal	To protect to be drawn current from D+ when Host (Hub or root) in power down but BT Module exiting it is used for self-powered mode

Reset Control

Reset mode	Requirement	Description
HCI reset commands	Mandatory	Software reset. Supported by ALPS Bluetooth™ Driver
Drive D+ D- low simultaneously	Mandatory	USB defined reset

➢ **Software interface**

Bluetooth™ Module contains link controller, link manager & HCI transport layer which can interface to standard H4.

Also single PCM interface allows you to transcode CVSD, A-Law, μ-LAW codec switched by standard HCI command. The architecture of Module listed as below.