BC05 Flash BT Module

PRODUCT SPECIFICATION	
PROJECT	**Bluetooth Module**
CUSTOMER	**Logitech**
REVISION	**V1.0**
DATE	**Jul 12, 2011**

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1. Reversion History

REVISION	PREPARED BY	DATE	DESCRIPTION
Rev 1.0	**ZG Lou**	**12-Jul-2011**	**First Release**

Table 1: Revision History

2. Product description and specification

This product is a Cost-effective single-chip stereo solution. Module used CSR BlueTunes Flash BGA BC57H687C chipset.

2.1 References

BlueCore5-Multimedia External CS-121064-DSP2

General Features

- Fully Qualified Bluetooth v2.1 + EDR Specification System
- Best-in-class Bluetooth Radio with 8dBm Transmit Power and -90dBm Receive Sensitivity
- 64MIPS Kalimba DSP Co-processor
- 16-bit Internal Stereo CODEC 95dB SNR for DAC
- Low-power 1.5V Operation, 1.8V to 3.6V I/O
- Integrated 1.5V and 1.8V Linear Regulators
- Integrated Switched-mode Regulator
- Integrated Battery Charger
- USB, I^2C and UART with Dual Port Bypass Mode to 4Mbits/s
- Supports up to 32Mbit of External Flash Memory (8Mbit Typical Requirement)
- Multi-Configurable I2S, PCM or SPDIF Interface
- Enhanced Audibility and Noise Cancellation
- 8 x8 x 1.2mm, 0.5mm Pitch 169-ball LFBGA
- Support for IEEE 802.11 Co-existence
- Green (RoHS Compliant and no Antimony or Halogenated Flame Retardants)

2.2 Specifications

Operating Frequency Band	2.4GHZ-2.48GHZ unlicensed ISM band
Bluetooth Specification	V2.1+EDR
Output Power Class	Class 2
RF Output Power	≦3.5dBm
Dimension	46mm(L) X 35.23mm(W) X1.0mm(H)

Table 2: BT Specifications

3. Hardware Description

3.1 BC05 Block Diagram

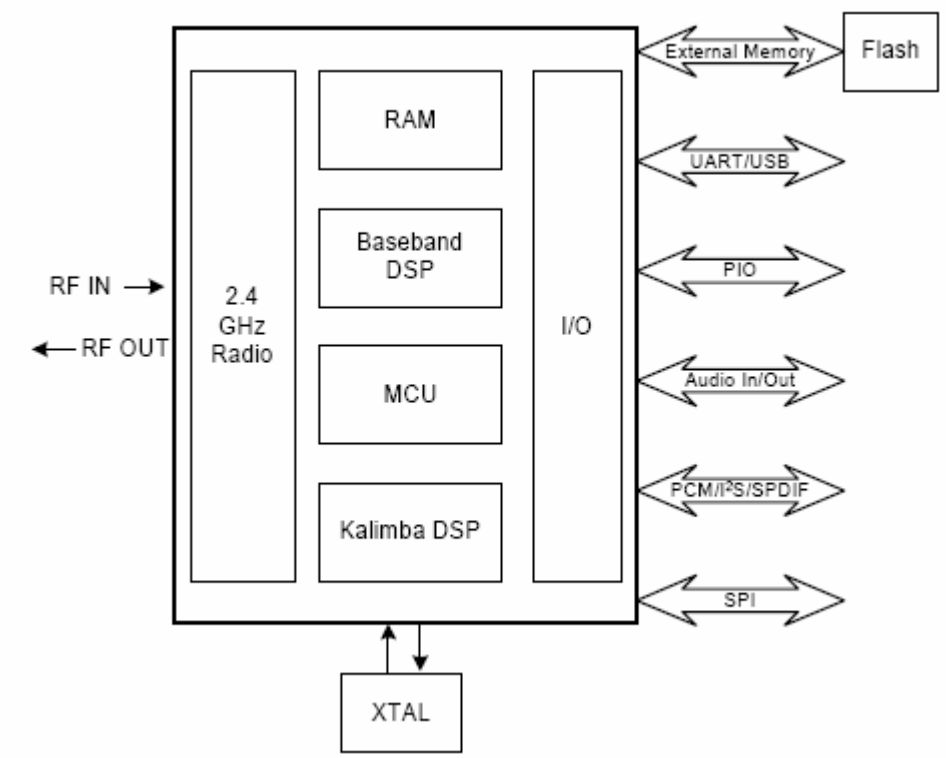
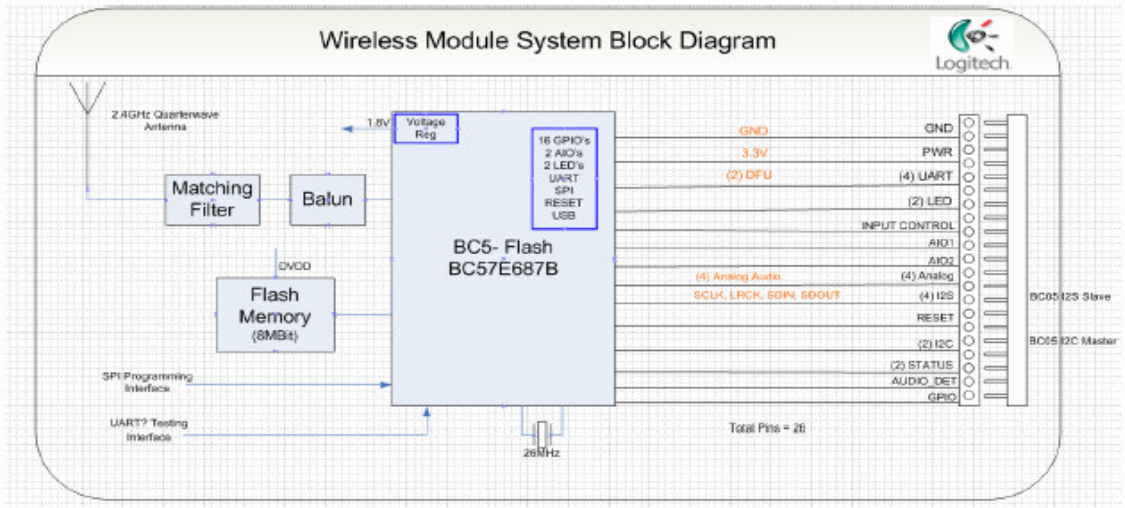


Figure 1: BC05 Block Diagram

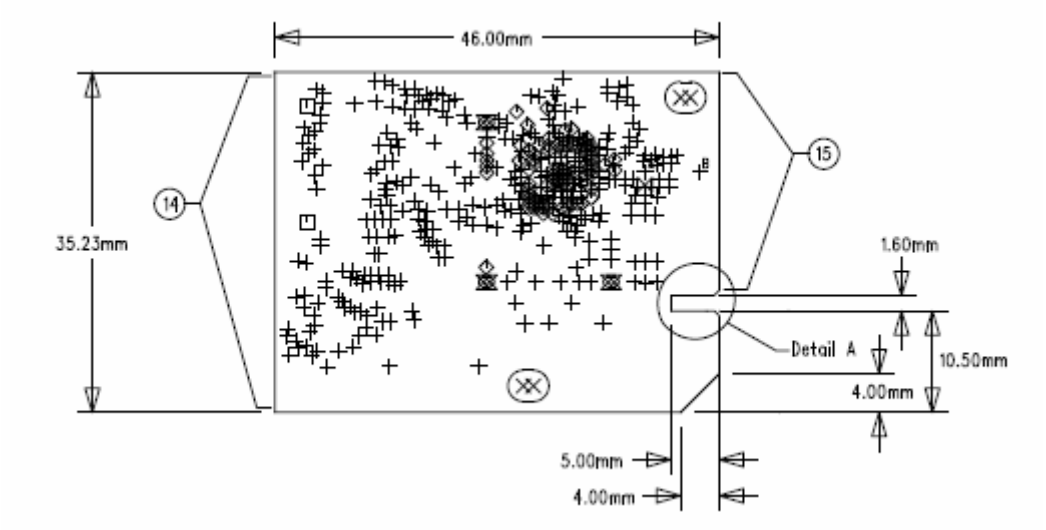


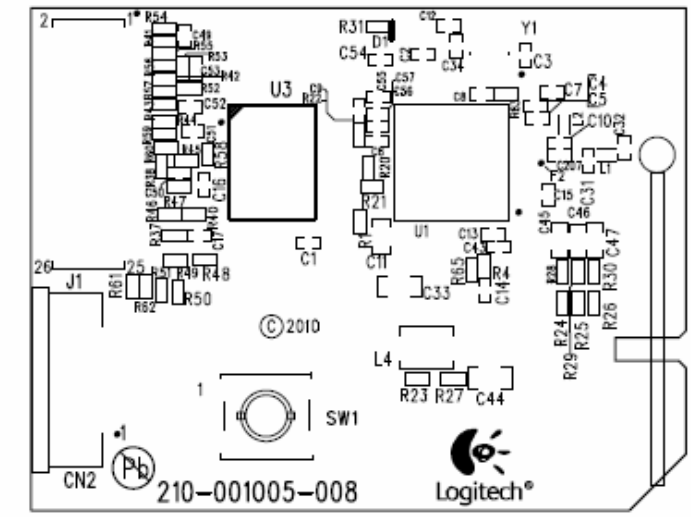
Interface Requirements

- Regulated 3.3V shall be supplied by the Main/Amplifier board
- SPDIF interface @ 48KHz can be used for all the audio input and output from the DSP on the Main Board. Else I2S interface (48KHz) can be used for audio out from the BT Board. *I2S Slave.*
- Analog Audio inputs shall be differential and shall be buffered on the Main Board, if used.
- UART interface shall be used for all handshaking activities
- Amplifier board shall provide means to isolate UART interface for programming the RFIC using UART interface
- UART interface shall be available for RFIC FW upgrade and testing in an assembled system
- BT Board can be configured for 13 or 26 Pin Board to Board connector or a 14Pin FFC connector

Figure 2: BT Module Block Diagram

3.2 BT Pin Configuration and Mechanical Dimension





# Pin	Pin label	# Pin	Function
1	VDD	2	ENC0
3	GND	4	ENC1
5	PCM_IN	6	SCL
7	PCM_OUT	8	SDA
9	PCM_SYNC	10	INPUT_CTRL
11	PCM_CLK	12	LD00
13	OTP_GDN	14	LD01
15	UART_RX	16	PWR_DET
17	UART_TX	18	AUDIO_DET
19	UART_CTS	20	SPKR_R_P
21	UART_RTS	22	SPKR_R_N
23	AIO0	24	SPKR_L_P
25	AIO1	26	SPKR_L_N

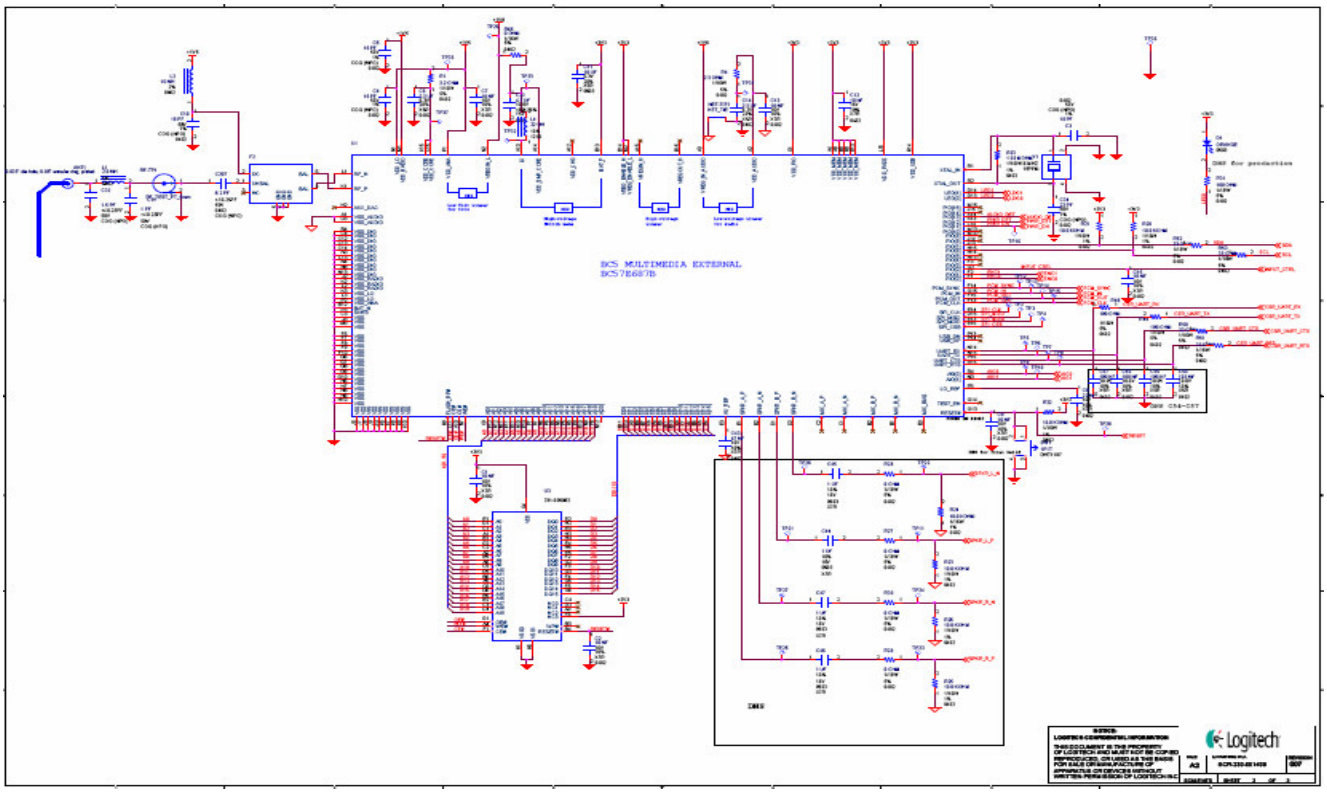
Figure 3: BT Pin Configuration and Mechanical Dimension

3.3 BT Pin Description

Pin No.	Name	Type	Function	Remark
1	VDD	POWER	3.3V	
2	ENC0	Output	Power amplifier standby	
3	GND	Ground	Cround connections	
4	ENC1	OUTPUT	NC	
5	PCM_IN	CMOS input, with weak internal pull-down.	I2S	
6	SCL	OUTPUT	CHARGE MODE CONTROL	
7	PCM_OUT	CMOS output, tri-state, with weak internal pull-down	I2S	
8	SDA	OUTPUT	CHARGE MODE CONTROL	
9	PCM_SYNC	Bi-directional with weak internal pull-down.	I2S	
10	INPUT_CTRL	OUTPUT	CHARGE MODE CONTROL	
11	PCM_CLK	Bi-directional with weak internal pull-down.	I2S	
12	LD00	OUTPUT	NC	
13	OPT_GND	INPUT	REST	
14	LD01	OUTPUT	NC	
15	UART_RX	Bidirectional with weak	UART data input ,active high	
16	PWR_DET	INPUT	NC	
17	UART_TX	Output tri-state with weak	UART data output,active high	
18	AUDIO_DET	Input	Audio detect pin	
19	UART_CTS	COMS input with weak	UART clear to send active low	
20	SPKR_R_P	OUTPUT	NC	
21	UART_RTS	Bidirectional with weak	UART request to send active low	
22	SPKR_R_N	OUTPUT	NC	
23	AIO0	INPUT	NC	
24	SPKR_L_P	OUTPUT	NC	
25	AIO1	Bidirectional	NC	
26	SPKR_L_N	OUTPUT	NC	
14	GND	Ground	Ground connections	
15	GND			

Table 3: **BT Pin Description**

3.4 BT Module Schematics



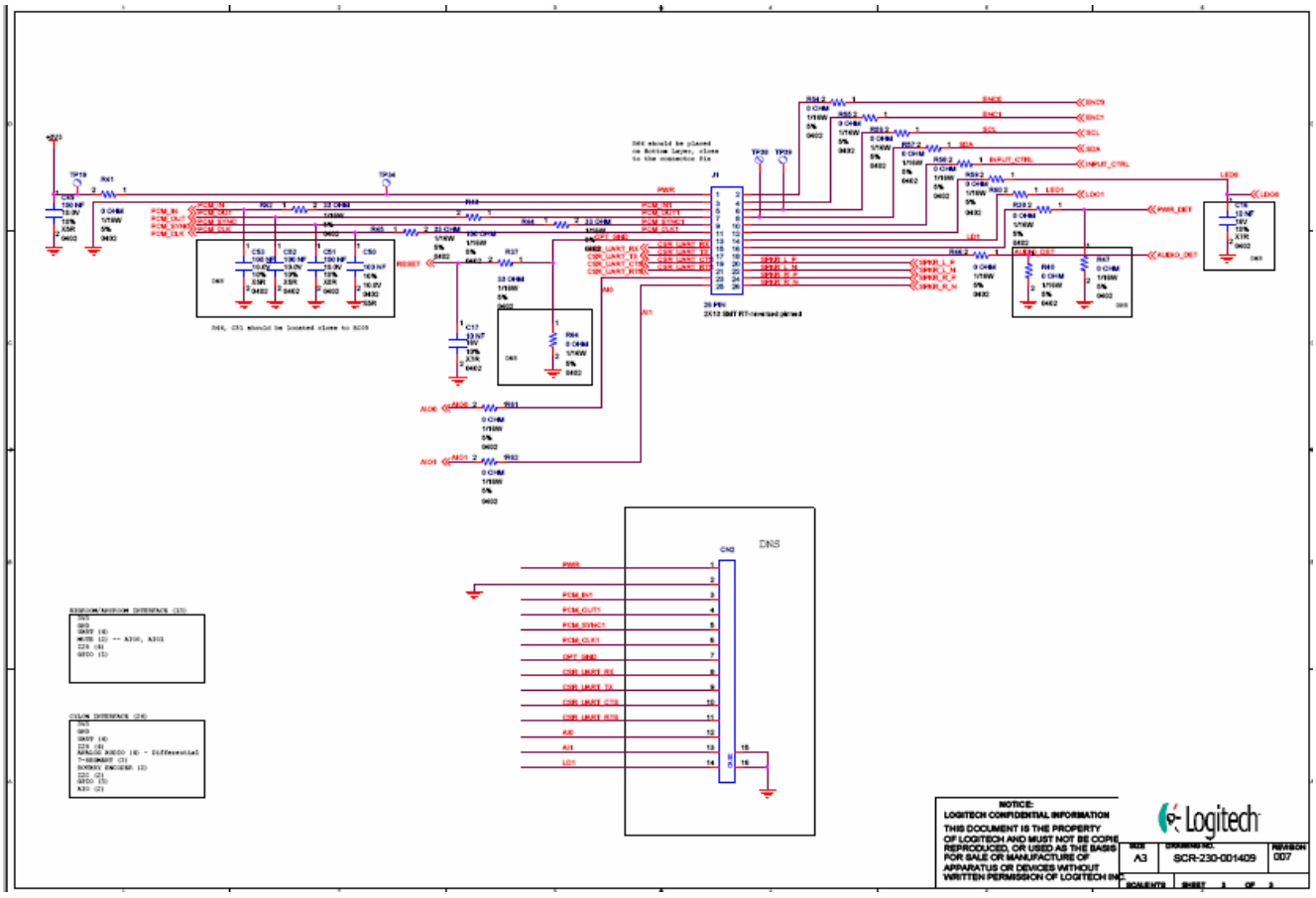


Figure 4: BT Module Schematics

3.5 Example Application Block Diagram

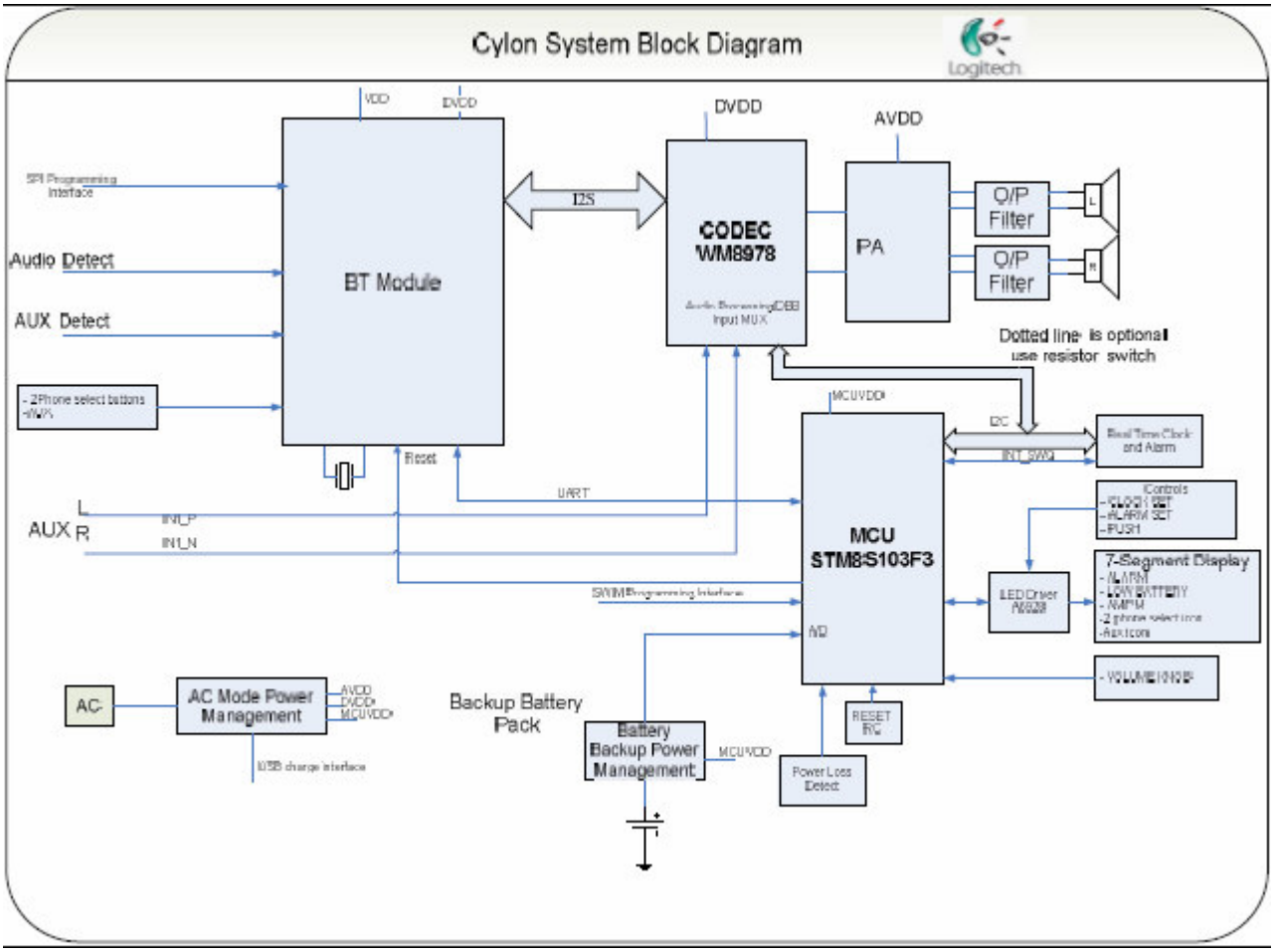


Figure 5: Example Application Block Diagram

3.6 BT Module Bill of Materials

	Wireless module				
PCB	PCB 46*35.23 1.0mm.FR4, 沉金 4L,Rev: 210-001005-008			1.00	
Antenna	ANTENNA,WIRE-FORMED,2.4GHZ DIPOLE,CAYENNE TRANSMITTER			1.00	ANT1
Cap	0402 SMT CAP,10,NF,16V,10%,X7R,0402,LF			8.00	C1,C2,C7,C9,C12,C13,C15,C17
Cap	0402 SMT CAP,18,PF,50V, 1%, COG (NPO),0402,LF			1.00	C34
Cap	0402 SMT CAP,15,PF,50V, 1%,COG (NPO),0402,LF			4.00	C3, C4,C5,C10
Cap	CERAMIC CAP,2.2,UF,6.3V,20%,X5R,0402,T=0.5MM			2.00	C6,C14
Cap	0402 SMT CAP,1,PF,50V,+/-0.25PF,COG (NPO),0402,HIGH FREQ			1.00	C31
Cap	0402 SMT CAP,1.5,PF,50V,+/-0.25PF,COG (NPO),0402,HIGH FREQ			1.00	C32
Cap	0603 SMT CAP,4.7,UF,10.0V,+80/-20%,Y5V,0603,LF			1.00	C33
Cap	0402 SMT CAP,47,NF,16V,10%,X7R,0402,LF			1.00	C43
Cap	0402 SMT CAP,100,NF,10.0V,10%,X5R,0402,LF			1.00	C49
Cap	0402 SMT CAP,8.2,PF,50V,+/-0.25PF,COG (NPO),0402,LF			1.00	C207
FILTER	FILTER BAND-PASS,RF,MULTI LAYER,2.45GHZ,100MHZ,IN-HOUSE/EMS,BALUN-FILTER			1.00	F2
Jack	HEADER 2x13 CONN,HEADER,26 PIN,1.27MM,RIGHT ANGLE,SMT,IN-HOUSE/EMS,FEMALE,127123FB026G100ZL			1.00	J1
Inductor	IND RF inductor, 2.0nH, +/-0.1nH, 0402,Q>13, muRata or:(EL-E0000000Z8-B ,2nH +/-0.1NH CHIP COIL LQP15MN2N0B02 0402 LF)			1.00	L1
Inductor	INDUCTOR,15,NH,2%,90MA,3300MHZ,DCR<1.8,Q>13;or:(EL-E000000019-B,SM IND,FILM TYPE,15NH,+/-2%,0402 [MURATA]LQP15MN15NG02D(RoHS) LF)			1.00	L2
Inductor	INDUCTOR,22UH,10%,250MA,1210,SMD,LF			1.00	L4
Resister	0402 SMT RES,2.2,OHM,5%,1/16W,N/A,HF			2.00	R1,R4
Resister	0402 SMT RES,10.0,KOHM,1%,1/16W,N/A,HF			3.00	R20,R21,R22
Resister	0402 SMT RES,0,OHM,5%,1/16W,N/A,LF			13.00	59,R60,R61,R62,R65
Resister	0402 SMT RES,100,OHM,5%,1/16W,N/A,HF			4.00	R31, R43,R48,R49
Resister	0402 SMT RES,33,OHM,5%,1/16W,N/A,HF			8.00	R37,R42 ,R44,R45 ,R50,R51,R52,R53,
Resister	0402 SMT RES,1.00,MOHM,1%,1/16W,N/A,LF			1.00	R63
IC	TRANSCEIVER,OTHER,BLUETOOTH,2.1,26,YES,CSR BC5 MM EXTERNAL			1.00	U1
IC	Boot Sector Flash Memory, CMOS 3.0 Volt-only			1.00	U3
Crystal	CRYSTAL FUNDAMENTAL,16,MHZ,15PPM,12PF,100UW,100,3225 SMD			1.00	Y1
Cap	CAP-CHIP、0402、X7R、22NF/25V、Tol+/-10% LF			1.00	C8
Cap	0603 SMT CAP,10,UF,6.3V,20%,X5R,0603,LF			1.00	C11
Shield	Shield			1.00	

Figure 6: BT Module Bill of Materials

4.0 FCC STATEMENT

Federal Communications Commission (FCC) Statement

15.21

You are cautioned that changes or modifications not expressly approved by the part responsible for compliance could void the user's authority to operate the equipment.

15.105(b)

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.

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.

FCC RF Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

According to FCC Regulations, the distance from the antenna to the user body must be minimum 20cm when the terminal is printing state.

Note:

Please notice that if the FCC/IC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains Model: S-00114, Contains FCC ID: DZLS00114, Contains IC: 1807D-S00114" Any similar wording that expresses the same meaning may be used.

5.0 IC 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 harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

（French）

L’appareil est conforme à la réglementation FCC, section 15 et Industrie Canada RSS standard exempts de licence (s). Son utilisation est soumise à deux conditions: (1) L’appareil ne doit pas provoquer d’interférences nuisibles, et (2) L’appareil doit supporter les interférences reçues, y compris les interférences empêchant son fonctionnement correct.