

Product Specification

CLASS I

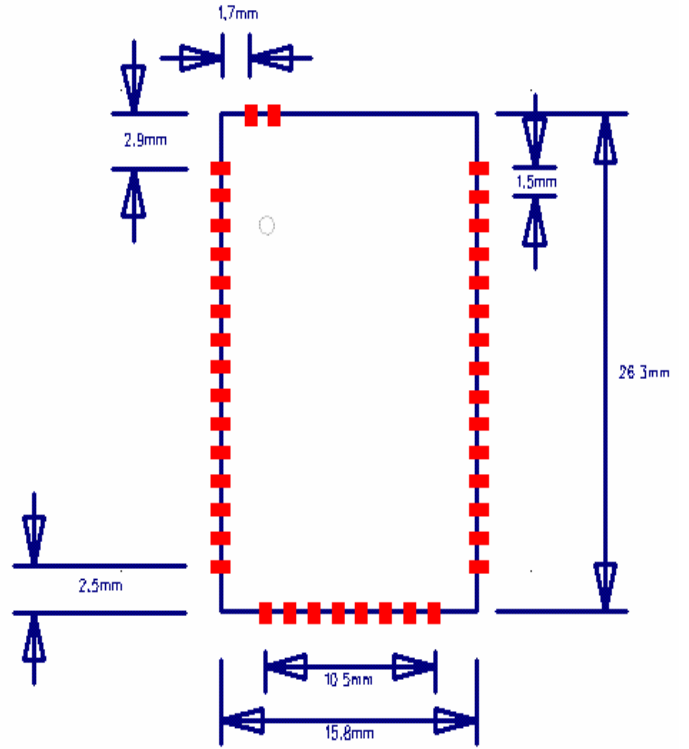
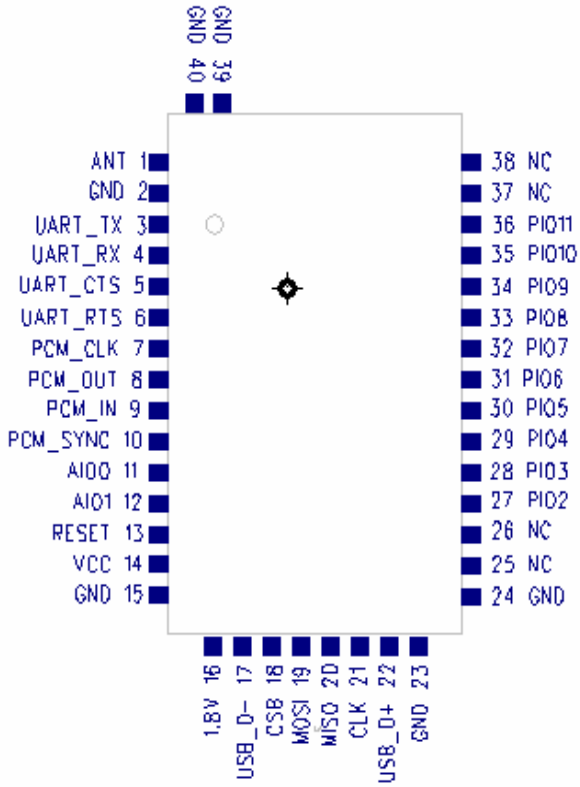
BC04 FLASH MODULE

DRAWN BY :			MODEL : BM205
CHECKED BY :	XC Liu		DESCRIPTION : BC04 +8M Flash +EDR MODULE
APPD. BY:	XM Lu		REV : 2.0

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1. Product Photo



26.3mm × 15.8mm × 2mm

2 · Feature

● Radio Transceiver

- Typical –80dBm sensitivity
- Up to +15dBm(MAX+20 dBm) RF transmit power with power level control
- Fully Qualified Bluetooth V2.0+EDR(Enhanced Data Rate) 3Mbps Modulation
- Integrated 15-bit Linear 8KHz Sample Frequency Audio CODEC in one chip
- Internal 6Mbit ROM
- Low Power 1.8V Operation
- Integrated Switch-Mode Regulator (DC To DC)
- Integrated Battery Charger With Programmable Current
- PIO control
- Standard HCI(UART or USB)
- 4.2V Tolerant LED Drivers With Intensity Control
- UART interface with programmable baud rate
- Basic module without antenna
- Basic module as SMD type
- With Audio Out & Audio in

● Package option

- Edge connector

3. Summary of Benefit

● Complete Bluetooth Solution

- Complete 2.4GHz radio transceiver and baseband
- CSR Bluecore 04-Audio ROM, single chip bluetooth system with CMOS technology
- Adaptive frequency hopping feature (AFH)
- Smallest footprint, 26.3mm×15.8mm
- Simplify overall design/development cycle
- Full speed Class 1 bluetooth operation
- Class I support using external power amplifier

● Low power standby modes to enable high efficient power management

● High performance radio transceiver

- **Low overall system cost**
- **Application**
 - Headset
 - Automotive Hands-Free Kits
 - Cordless headsets
- **Software**
 - Support CSR bluetooth stack
 - Design for Client

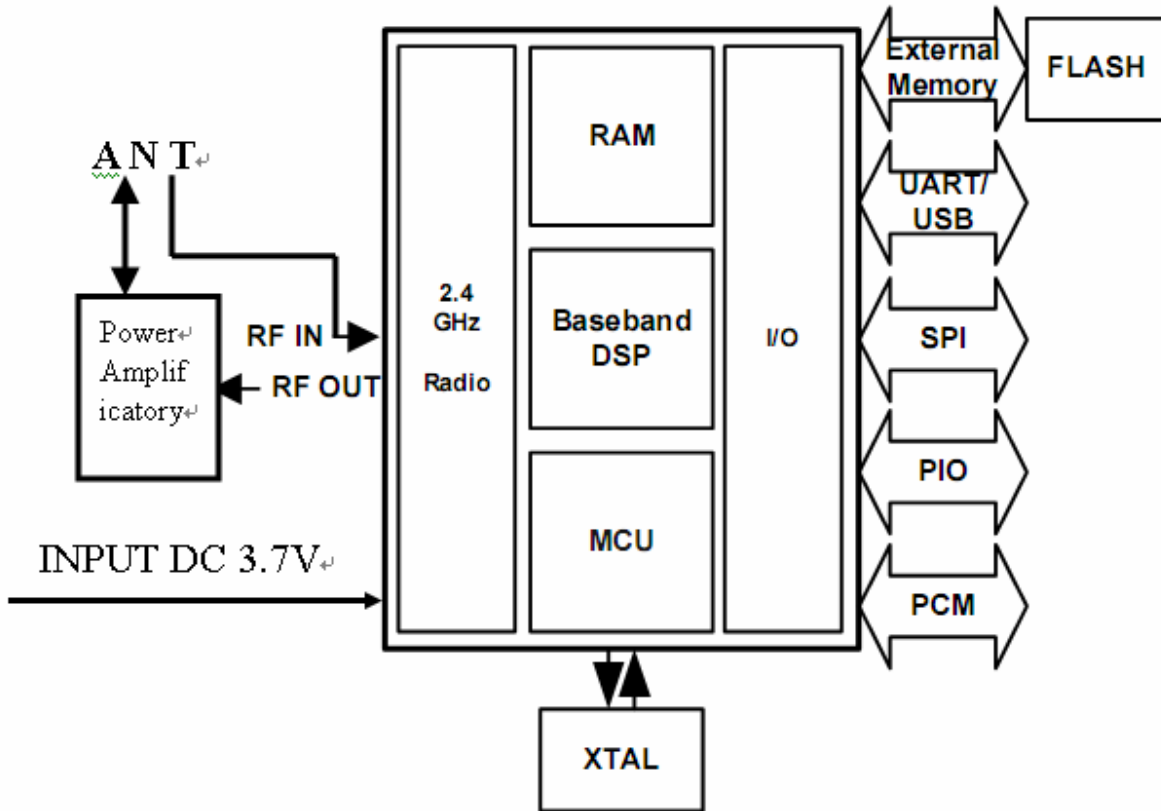
4. Device Terminal Function

PIN Name	PIN #	Pad type	Description	Note
GND	13 21 22	VSS	Ground pot	
3.3V VCC	12	3.3V	Integrated 3.3V (+) supply with On-chip linear regulator output within 3.15-3.3V	
AIO0	9	Bi-Directional	Programmable input/output line	
AIO1	10	Bi-Directional	Programmable input/output line	
PIO0	23	Bi-Directional RX EN	Programmable input/output line, control output for LNA(if fitted)	
PIO1	24	Bi-Directional TX EN	Programmable input/output line, control output for PA(if fitted)	
PIO2	25	Bi-Directional	Programmable input/output line	
PIO3	26	Bi-Directional	Programmable input/output line	
PIO4	27	Bi-Directional	Programmable input/output line	
PIO5	28	Bi-Directional	Programmable input/output line	
PIO6	29	Bi-Directional	Programmable input/output line	
PIO7	30	Bi-Directional	Programmable input/output line	
PIO8	31	Bi-Directional	Programmable input/output line	
PIO9	32	Bi-Directional	Programmable input/output line	
PIO10	33	Bi-Directional	Programmable input/output line	
PIO11	34	Bi-Directional	Programmable input/output line	

RESETB	11			
UART_RTS	4	CMOS output, tri-stable with weak internal pull-up	UART request to send, active low	
UART_CTS	3	CMOS input with weak internal pull-down	UART clear to send, active low	
UART_RX	2	CMOS input with weak internal pull-down	UART Data input	
UART_TX	1	CMOS output, Tri-stable with weak internal pull-up	UART Data output	
SPI_MOSI	17	CMOS input with weak internal pull-down	Serial peripheral interface data input	
SPI_CSB	16	CMOS input with weak internal pull-up	Chip select for serial peripheral interface, active low	
SPI_CLK	19	CMOS input with weak internal pull-down	Serial peripheral interface clock	
SPI_MISO	18	CMOS input with weak internal pull-down	Serial peripheral interface data Output	
USB_-	15	Bi-Directional		
USB_+	20	Bi-Directional		
1.8V	14		Output DC1.8v	
PCM_CLK	5	Bi-Directional	Synchronous PCM data clock	
PCM_OUT	6	CMOS output	Synchronous PCM data output	
PCM_IN	7	CMOS Input	Synchronous PCM data input	

PCM_SYNC	8	Bi-Directional	Synchronous PCM data strobe	
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5. Block Diagram



System Architecture

6. Electrical Specification:

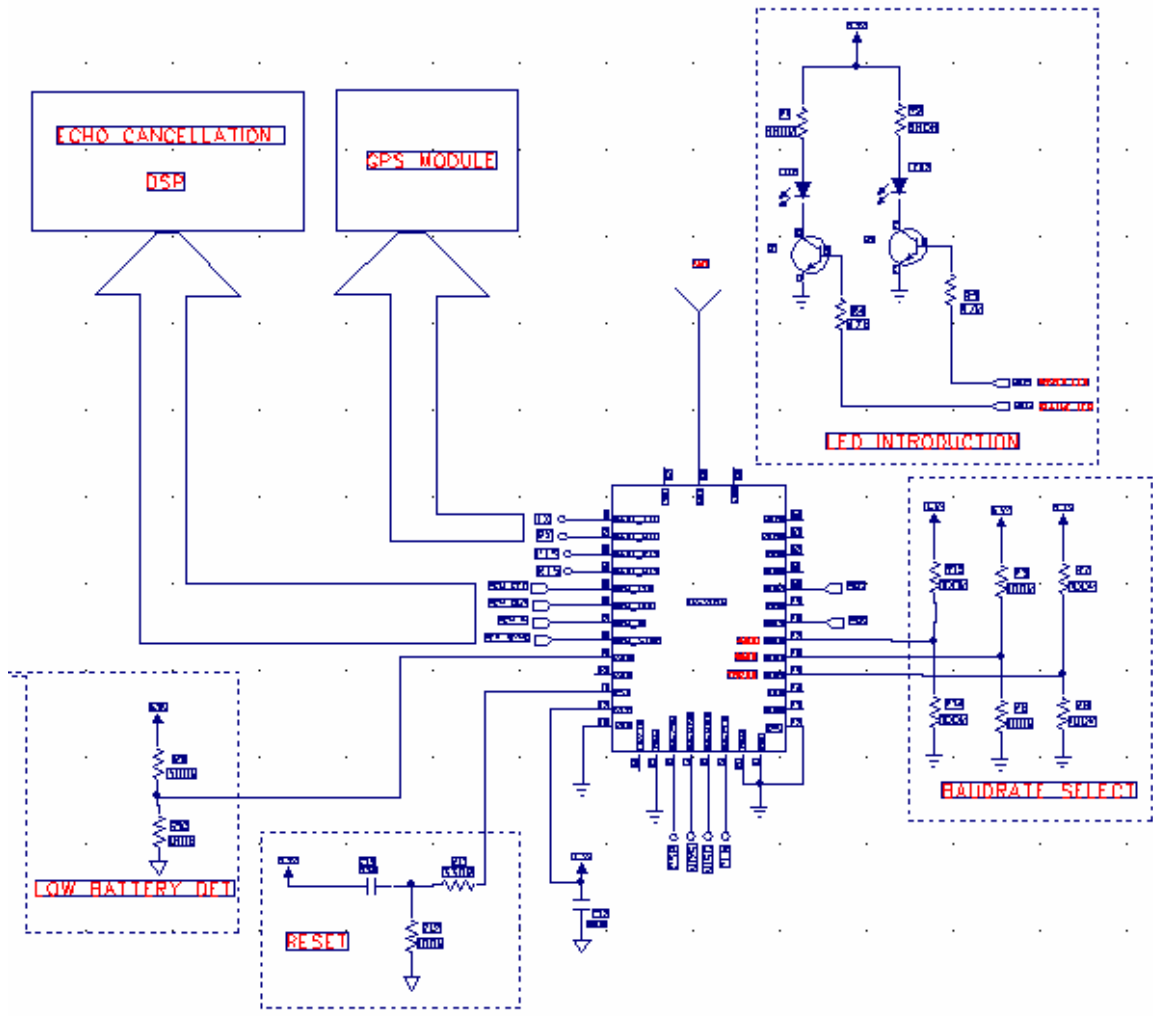
● Recommended Operating condition

Operating Condition	Min	Max
Operating temperature range	-20°C	+75°C
Guaranteed RF performance range(a)	-20°C	+75°C
Supply voltage: VDD_RADIO, VDD_VCO, VDD_ANA and VDD_CORE	1.7V	1.9V
Supply voltage: VDD_PADS, VDD_PIO, VDD_MEM and VDD_USB	1.7V	3.6V
Supply voltage: VREG_IN	3.0V	4.2V ^(b)
Supply voltage: BAT_P	3.0V	4.2V
Supply voltage: V_CHG	4.35V	6.5V

Radio Characteristics	VDD = 1.8V			Temperature = +20°C	
	Min	Typ	Max	Bluetooth Specification	Unit
Maximum RF transmit power ^(a) (b)	-		-	13~20	dBm
RF power variation over temperature range with compensation enabled(\pm) ^(d)	-	15	-	13~20	dB
RF power variation over temperature range with compensation disabled(\pm)	-	15	-	-	dB
RF power control range	-	35	-	≥ 16	dB
RF power range control resolution ^(e)	-	0.5	-	-	dB
20dB bandwidth for modulated carrier	-	780	-	≤ 1000	kHz
Adjacent channel transmit power $F = F_0 \pm 2\text{MHz}$ ^(f) (g)	-	-40	-	≤ -20	dBm
Adjacent channel transmit power $F = F_0 \pm 3\text{MHz}$	-	-45	-	≤ -40	dBm
Adjacent channel transmit power $F = F_0 \pm > 3\text{MHz}$	-	-50	-	≤ -40	dBm
$\Delta f_{1\text{avg}}$ Maximum Modulation	-	165	-	$140 < f_{1\text{avg}} < 175$	kHz
$\Delta f_{2\text{max}}$ Minimum Modulation	-	150	-	≥ 115	kHz
$\Delta f_{1\text{avg}}/\Delta f_{2\text{avg}}$	-	0.97	-	≥ 0.80	-
Initial carrier frequency tolerance	-	6	-	± 75	kHz
Drift Rate	-	8	-	≤ 20	kHz/50 μ s
Drift (single slot packet)	-	7	-	≤ 25	kHz
Drift (five slot packet)	-	9	-	≤ 40	kHz
2 nd Harmonic Content	-	-65	-	≤ -30	dBm
3 rd Harmonic Content	-	-45	-	≤ -30	dBm

Radio Characteristics		VDD = 1.8V			Temperature = +20°C	
	Frequency (GHz)	Min	Typ	Max	Bluetooth Specification	Unit
Sensitivity at 0.1% BER for all packet types	2.402	-	-84	-	≤-70	dBm
	2.441	-	-84	-		
	2.480	-	-85	-		
Maximum received signal at 0.1% BER		-	10	-	≤-20	dBm
	Frequency (MHz)	Min	Typ	Max	Bluetooth Specification	Unit
Continuous power required to block Bluetooth reception (for input power of -67dBm with 0.1% BER) measured at the unbalanced port of the balun.	30-2000	-	-6	-	≤-10	dBm
	2000-2400	-	0	-	≤-27	
	2500-3000	-	0	-	≤-27	
C/I co-channel		-	6	-	≤11	dB
Adjacent channel selectivity C/I $F = F_0 + 1\text{MHz}^{(a)} (b)$		-	-5	-	≤0	dB
Adjacent channel selectivity C/I $F = F_0 - 1\text{MHz}$		-	-4	-	≤0	dB
Adjacent channel selectivity C/I $F = F_0 + 2\text{MHz}$		-	-38	-	≤-30	dB
Adjacent channel selectivity C/I $F = F_0 - 2\text{MHz}$		-	-23	-	≤-20	dB
Adjacent channel selectivity C/I $F = F_0 + 3\text{MHz}$		-	-45	-	≤-40	dB
Adjacent channel selectivity C/I $F = F_0 - 5\text{MHz}$		-	-44	-	≤-40	dB
Adjacent channel selectivity C/I $F = F_{\text{image}}$		-	-22	-	≤-9	dB
Maximum level of intermodulation interferers ^(c)		-	-30	-	≥-39	dBm
Spurious output level ^(d)		-	-150	-	-	dBm/Hz

7. Schematic Diagram



8. Block Diagram

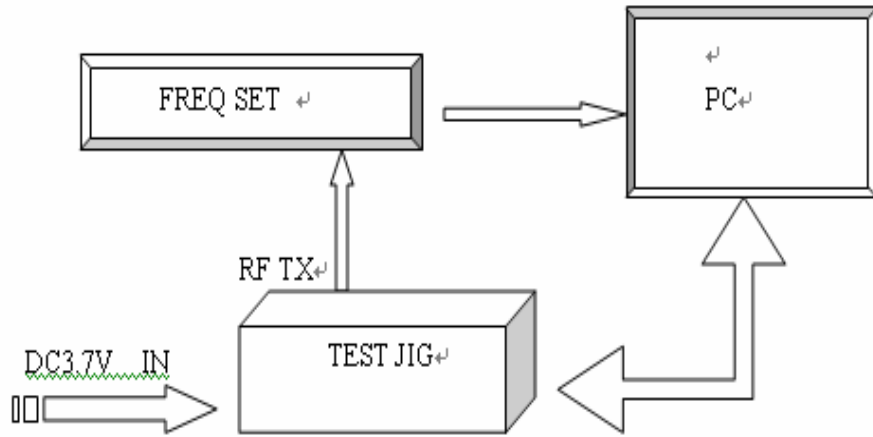


Fig 1 Programming and Freq. Alignment Test Procedure

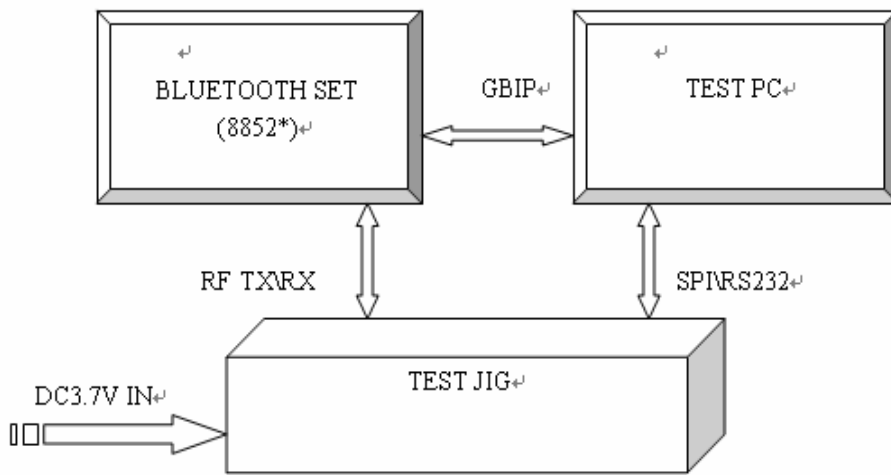


Fig 2 RF Parameter Test procedure

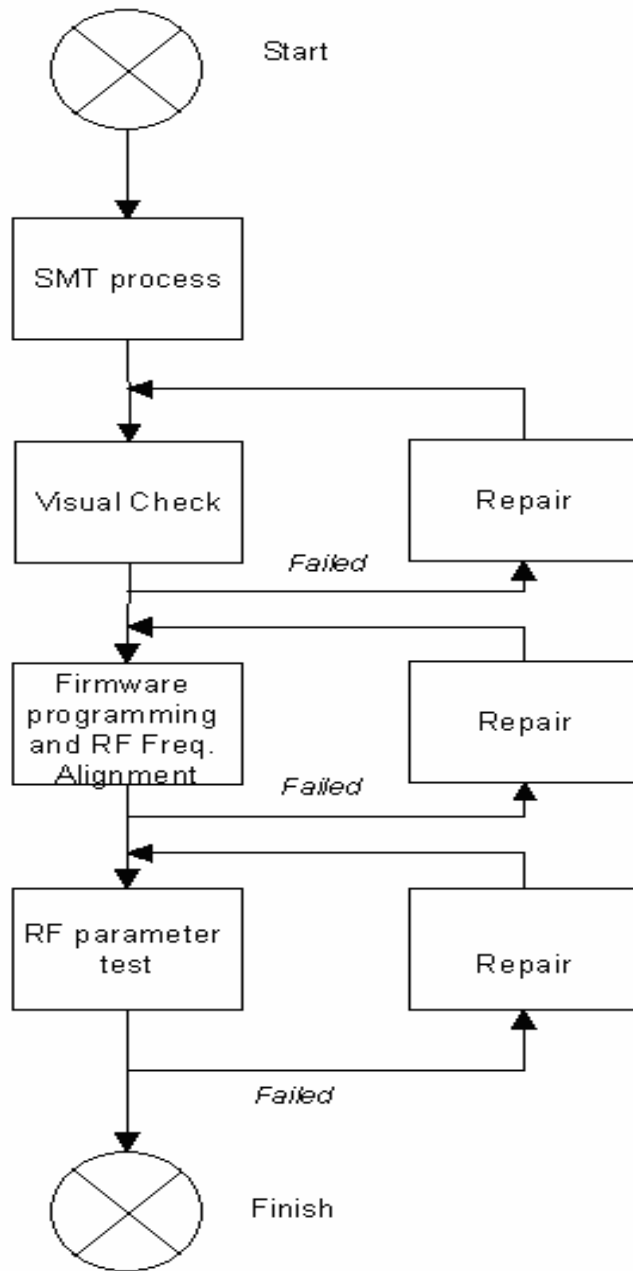


Fig 3 Assemble/Alignment/Testing Flow Chart