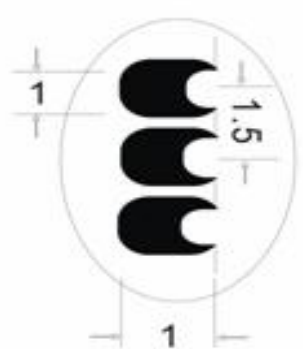
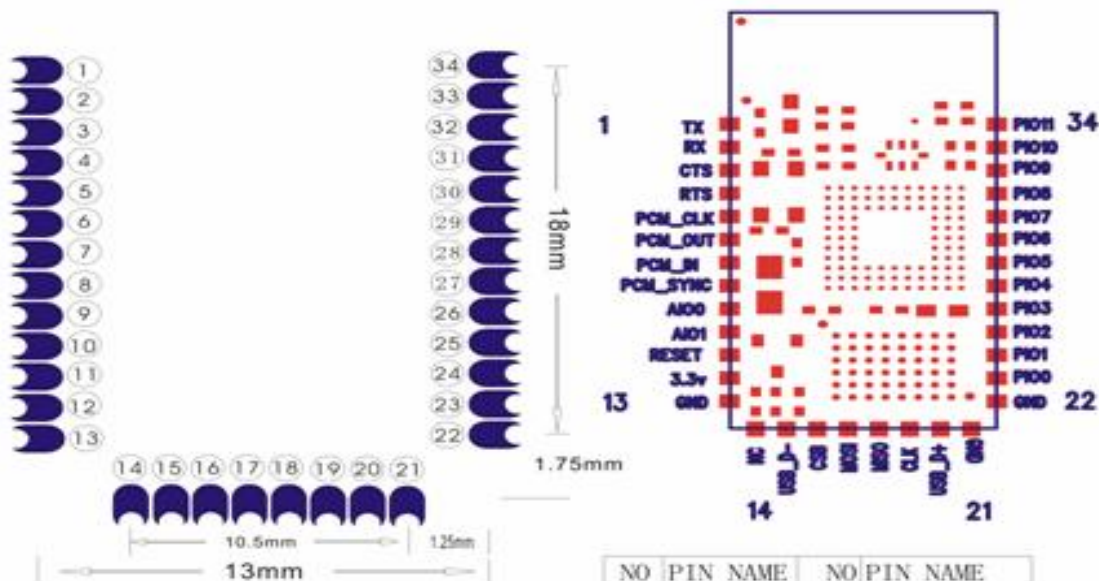


# 1. Product

## Photo



PCB Layout 请参考实物

NO	PIN NAME	NO	PIN NAME
1	TX	20	USB D+
2	RX	21	GND
3	CTS	22	GND
4	RTS	23	P100
5	PCM CLK	24	P101
6	PCM OUT	25	P102
7	PCM IN	26	P103
8	PCM SYNC	27	P104
9	AI00	28	P105
10	AI01	29	P106
11	RESET	30	P107
12	3.3V	31	P108
13	GND	32	P109
14	NC	33	P1010
15	USB D-	34	P1011
16	CSB		
17	MOSI		
18	MISO		
19	CLK		



**27mm × 13mm × 2mm**

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## 2 · Feature

### **z Radio Transceiver**

- ¾ Typical –80dBm sensitivity
- ¾ Up to +4dBm RF transmit power with power level control
- ¾ Fully Qualified Bluetooth V2.0+EDR(Enhanced Data Rate) 2Mbps Modulation
- ¾ Integrated 15-bit Linear 8KHz Sample Frequency Audio CODEC in one chip
- ¾ Internal 6Mbit ROM
- ¾ Low Power 1.8V Operation
- ¾ Integrated Switch-Mode Regulator (DC To DC)
- ¾ Integrated Battery Charger With Programmable Current
- ¾ PIO control
- ¾ Standard HCI(UART or USB)
- ¾ 4.2V Tolerant LED Drivers With Intensity Control
- ¾ UART interface with programmable baud rate
- ¾ Basic module without antenna
- ¾ Basic module as SMD type
- ¾ With Audio Out & Audio in

### **z Package option**

- ¾ Edge connector

### **3. Summary of Benefit**

#### **z Complete Bluetooth Solution**

- $\frac{3}{4}$  Complete 2.4GHz radio transceiver and baseband
- $\frac{3}{4}$  CSR Bluecore 04-Audio ROM, single chip bluetooth system with CMOS technology
- $\frac{3}{4}$  Adaptive frequency hopping feature (AFH)
- $\frac{3}{4}$  Smallest footprint, 27mmX13mm
- $\frac{3}{4}$  Simplify overall design/development cycle
- $\frac{3}{4}$  Full speed Class 2 bluetooth operation
- $\frac{3}{4}$  Class I support using external power amplifier

#### **z Low power standby modes to enable high efficient power management**

#### **z High performance radio transceiver**

#### **z Low overall system cost**

#### **z Application**

- $\frac{3}{4}$  Mouse
- $\frac{3}{4}$  Automotive Hands-Free Kits
- $\frac{3}{4}$  Cordless headsets

#### **z Software**

- $\frac{3}{4}$  Support CSR bluetooth stack
- $\frac{3}{4}$  Design for Client

#### 4 · Device Terminal Function

<b>PIN Name</b>	<b>PIN #</b>	<b>Pad type</b>	<b>Description</b>	<b>Note</b>
<b>GND</b>	13 21 22	<b>VSS</b>	<b>Ground pot</b>	
<b>3.3 VCC</b>	12	<b>3.3V</b>	<b>Integrated 3.3V (+) supply with On-chip linear regulator output within 3.15-3.3V</b>	
<b>AIO0</b>	9	<b>Bi-Directional</b>	<b>Programmable input/output line</b>	
<b>AIO1</b>	10	<b>Bi-Directional</b>	<b>Programmable input/output line</b>	
<b>PIO0</b>	23	<b>Bi-Directional RX EN</b>	<b>Programmable input/output line, control output for LNA(if fitted)</b>	
<b>PIO1</b>	24	<b>Bi-Directional TX EN</b>	<b>Programmable input/output line, control output for PA(if fitted)</b>	
<b>PIO2</b>	25	<b>Bi-Directional</b>	<b>Programmable input/output line</b>	
<b>PIO3</b>	26	<b>Bi-Directional</b>	<b>Programmable input/output line</b>	
<b>PIO4</b>	27	<b>Bi-Directional</b>	<b>Programmable input/output line</b>	
<b>PIO5</b>	28	<b>Bi-Directional</b>	<b>Programmable input/output line</b>	
<b>PIO6</b>	29	<b>Bi-Directional</b>	<b>Programmable input/output line</b>	
<b>PIO7</b>	30	<b>Bi-Directional</b>	<b>Programmable input/output line</b>	
<b>PIO8</b>	31	<b>Bi-Directional</b>	<b>Programmable input/output line</b>	
<b>PIO9</b>	32	<b>Bi-Directional</b>	<b>Programmable input/output line</b>	
<b>PIO10</b>	33	<b>Bi-Directional</b>	<b>Programmable input/output line</b>	
<b>PIO11</b>	34	<b>Bi-Directional</b>	<b>Programmable input/output line</b>	
<b>RESETB</b>	11			
<b>UART_RTS</b>	4	<b>CMOS output, tri-stable with weak internal pull-up</b>	<b>UART request to send, active low</b>	
<b>UART_CTS</b>	3	<b>CMOS input with weak internal pull-down</b>	<b>UART clear to send, active low</b>	

<b>UART_RX</b>	<b>2</b>	<b>CMOS input with weak internal pull-down</b>	<b>UART Data input</b>	
<b>UART_TX</b>	<b>1</b>	<b>CMOS output, Tri-stable with weak internal pull-up</b>	<b>UART Data output</b>	
<b>SPI_MOSI</b>	<b>17</b>	<b>CMOS input with weak internal pull-down</b>	<b>Serial peripheral interface data input</b>	
<b>SPI_CSB</b>	<b>16</b>	<b>CMOS input with weak internal pull-up</b>	<b>Chip select for serial peripheral interface, active low</b>	
<b>SPI_CLK</b>	<b>19</b>	<b>CMOS input with weak internal pull-down</b>	<b>Serial peripheral interface clock</b>	
<b>SPI_MISO</b>	<b>18</b>	<b>CMOS input with weak internal pull-down</b>	<b>Serial peripheral interface data Output</b>	
<b>USB_-</b>	<b>15</b>	<b>Bi-Directional</b>		
<b>USB_+</b>	<b>20</b>	<b>Bi-Directional</b>		
<b>1.8V</b>	<b>14</b>		<b>Output Dc1.8v</b>	
<b>PCM_CLK</b>	<b>5</b>	<b>Bi-Directional</b>	<b>Synchronous PCM data clock</b>	
<b>PCM_OUT</b>	<b>6</b>	<b>CMOS output</b>	<b>Synchronous PCM data output</b>	
<b>PCM_IN</b>	<b>7</b>	<b>CMOS Input</b>	<b>Synchronous PCM data input</b>	
<b>PCM_SYNC</b>	<b>8</b>	<b>Bi-Directional</b>	<b>Synchronous PCM data strobe</b>	

**5. Electrical Specification:**  
**z Eecommended Operating condition**

Radio Characteristics	VDD = 1.8V			Temperature = +20°C	
	Min	Typ	Max	Bluetooth Specification	Unit
Maximum RF transmit power <sup>(a)</sup> <sup>(b)</sup>	-	2.5	-	-6 to +4 <sup>(c)</sup>	dBm
RF power variation over temperature range with compensation enabled <sup>(±)</sup> <sup>(d)</sup>	-	1.5	-	-	dB
RF power variation over temperature range with compensation disabled <sup>(±)</sup>	-	2	-	-	dB
RF power control range	-	35	-	≥16	dB
RF power range control resolution <sup>(e)</sup>	-	0.5	-	-	dB
20dB bandwidth for modulated carrier	-	780	-	≤1000	kHz
Adjacent channel transmit power F = F <sub>0</sub> ± 2MHz <sup>(f)</sup> <sup>(g)</sup>	-	-40	-	≤-20	dBm
Adjacent channel transmit power F = F <sub>0</sub> ± 3MHz	-	-45	-	≤-40	dBm
Adjacent channel transmit power F = F <sub>0</sub> ± > 3MHz	-	-50	-	≤-40	dBm
Δf <sub>avg</sub> Maximum Modulation	-	165	-	140 < f <sub>avg</sub> < 175	kHz
Δf <sub>max</sub> Minimum Modulation	-	150	-	≥115	kHz
Δf <sub>avg</sub> /Δf <sub>2avg</sub>	-	0.97	-	≥0.80	-
Initial carrier frequency tolerance	-	6	-	±75	kHz
Drift Rate	-	8	-	≤20	kHz/50μs
Drift (single slot packet)	-	7	-	≤25	kHz
Drift (five slot packet)	-	9	-	≤40	kHz
2 <sup>nd</sup> Harmonic Content	-	-65	-	≤-30	dBm
3 <sup>rd</sup> Harmonic Content	-	-45	-	≤-30	dBm

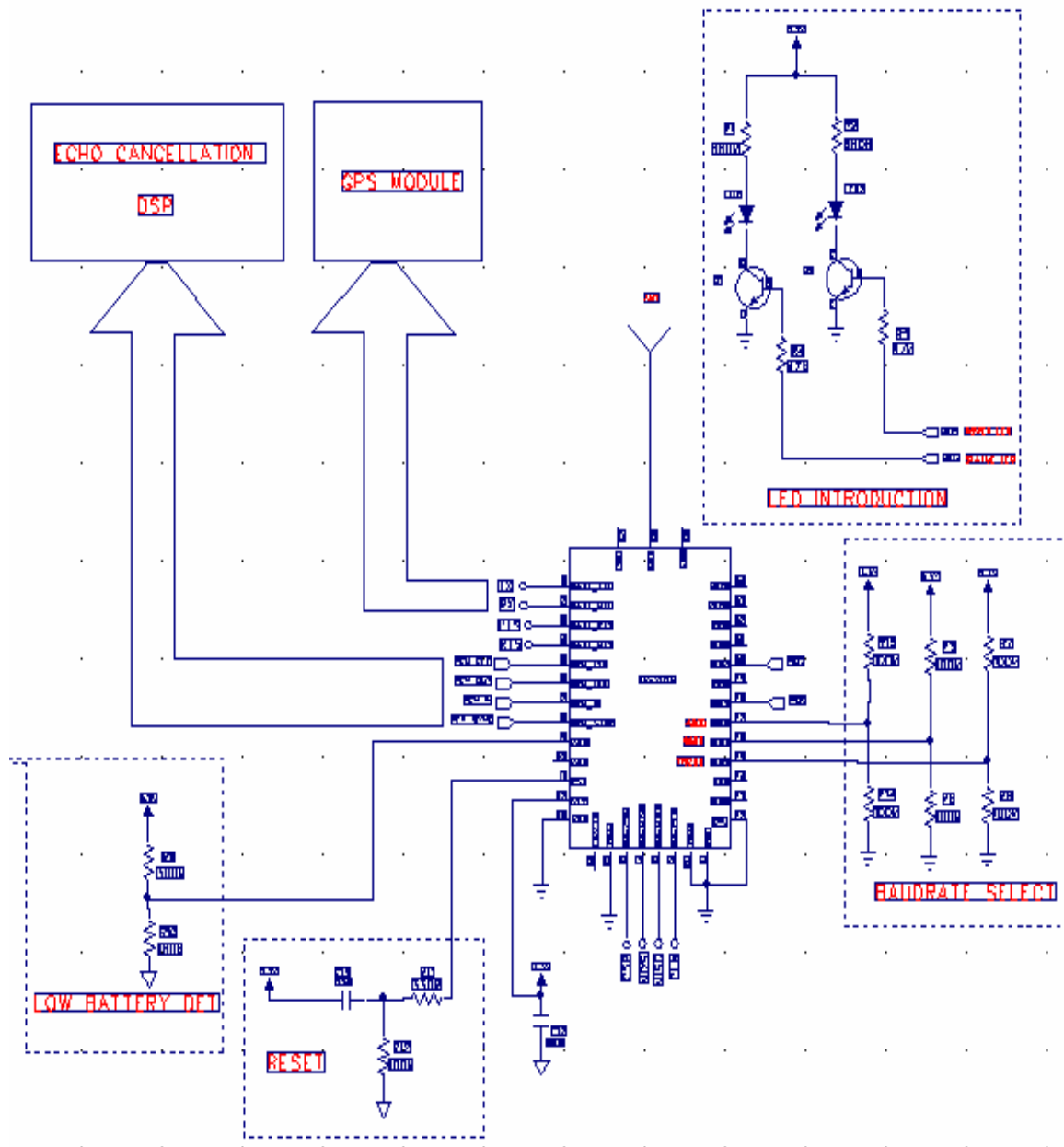
## z Transmitter

Radio Characteristics	VDD = 1.8V			Temperature = +20°C	
	Min	Typ	Max	Bluetooth Specification	Unit
Maximum RF transmit power <sup>(a)</sup> (b)	-	2.5	-	-6 to +4 <sup>(c)</sup>	dBm
RF power variation over temperature range with compensation enabled <sup>(±)</sup> <sup>(d)</sup>	-	1.5	-	-	dB
RF power variation over temperature range with compensation disabled <sup>(±)</sup>	-	2	-	-	dB
RF power control range	-	35	-	≥16	dB
RF power range control resolution <sup>(e)</sup>	-	0.5	-	-	dB
20dB bandwidth for modulated carrier	-	780	-	≤1000	kHz
Adjacent channel transmit power F = F <sub>0</sub> ± 2MHz <sup>(f)</sup> (g)	-	-40	-	≤-20	dBm
Adjacent channel transmit power F = F <sub>0</sub> ± 3MHz	-	-45	-	≤-40	dBm
Adjacent channel transmit power F = F <sub>0</sub> ± > 3MHz	-	-50	-	≤-40	dBm
Δf <sub>avg</sub> Maximum Modulation	-	165	-	140 < f <sub>avg</sub> < 175	kHz
Δf <sub>max</sub> Minimum Modulation	-	150	-	≥115	kHz
Δf <sub>avg</sub> /Δf <sub>2avg</sub>	-	0.97	-	≥0.80	-
Initial carrier frequency tolerance	-	6	-	±75	kHz
Drift Rate	-	8	-	≤20	kHz/50μs
Drift (single slot packet)	-	7	-	≤25	kHz
Drift (five slot packet)	-	9	-	≤40	kHz
2 <sup>nd</sup> Harmonic Content	-	-65	-	≤-30	dBm
3 <sup>rd</sup> Harmonic Content	-	-45	-	≤-30	dBm

Radio Characteristics						
		VDD = 1.8V			Temperature = +20°C	
	Frequency (GHz)	Mn	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)	Mn	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 <sup>(c)</sup>		-	-30	-	≥-39	dBm
Spurious output level <sup>(d)</sup>		-	-150	-	-	dBm/Hz



## 6. Schematic Diagram



## 7. Block Diagram

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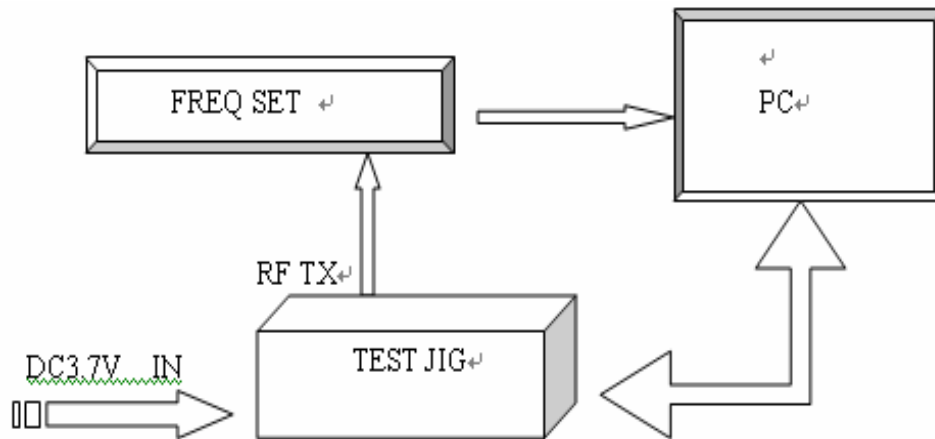


Fig 1 Programming and Freq. Alignment Test Procedure

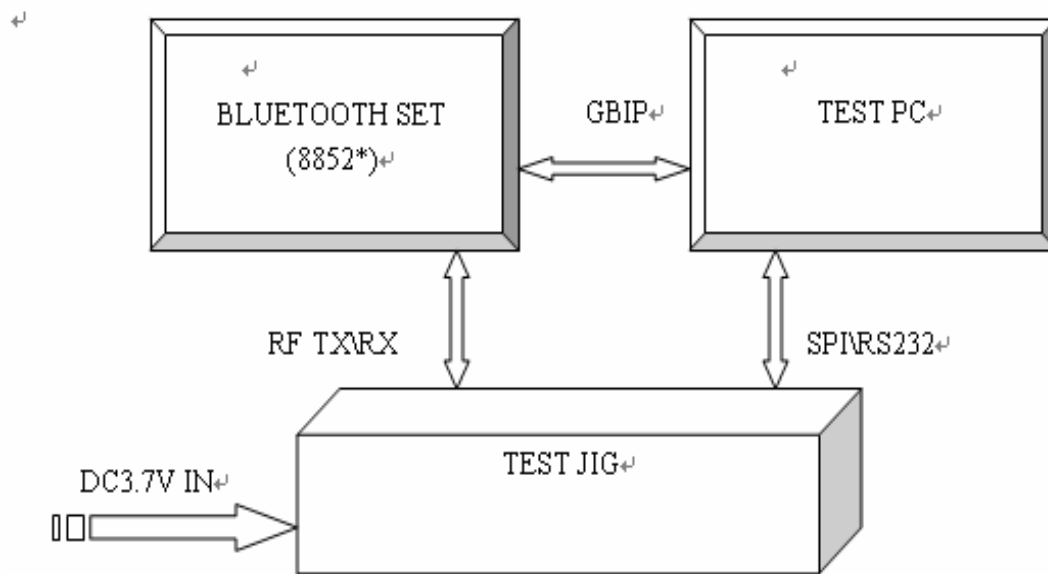
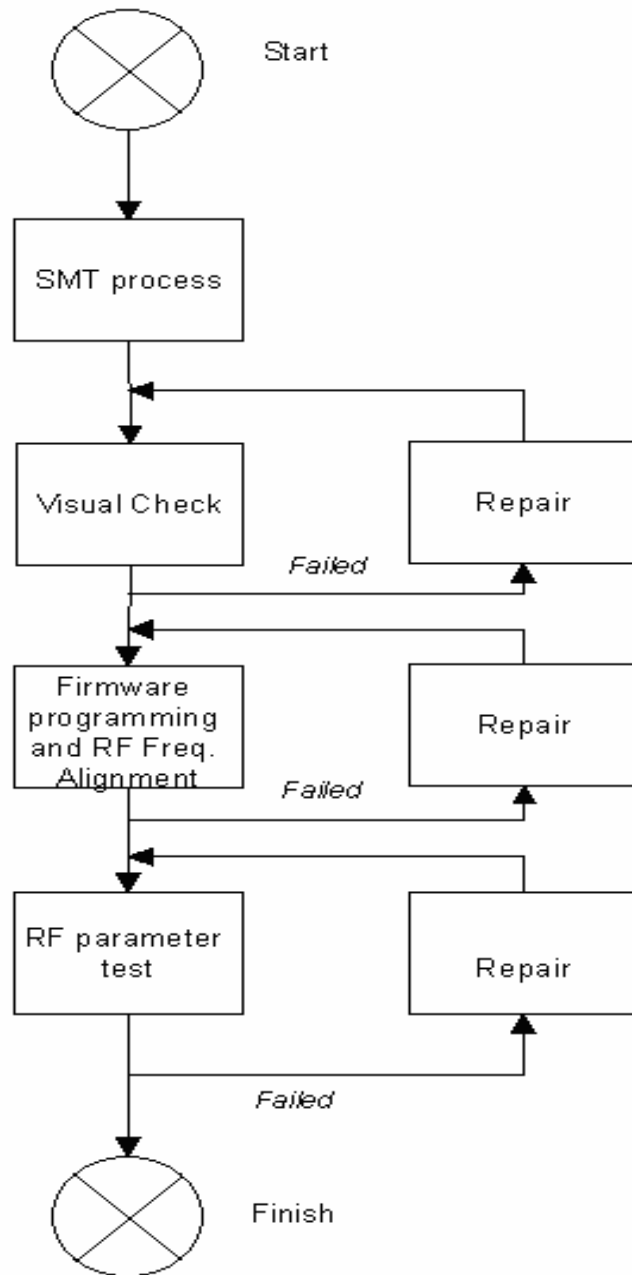


Fig 2 RF Parameter Test procedure



**Fig 3 Assemble/Alignment/Testing Flow Chart**