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Product Specification

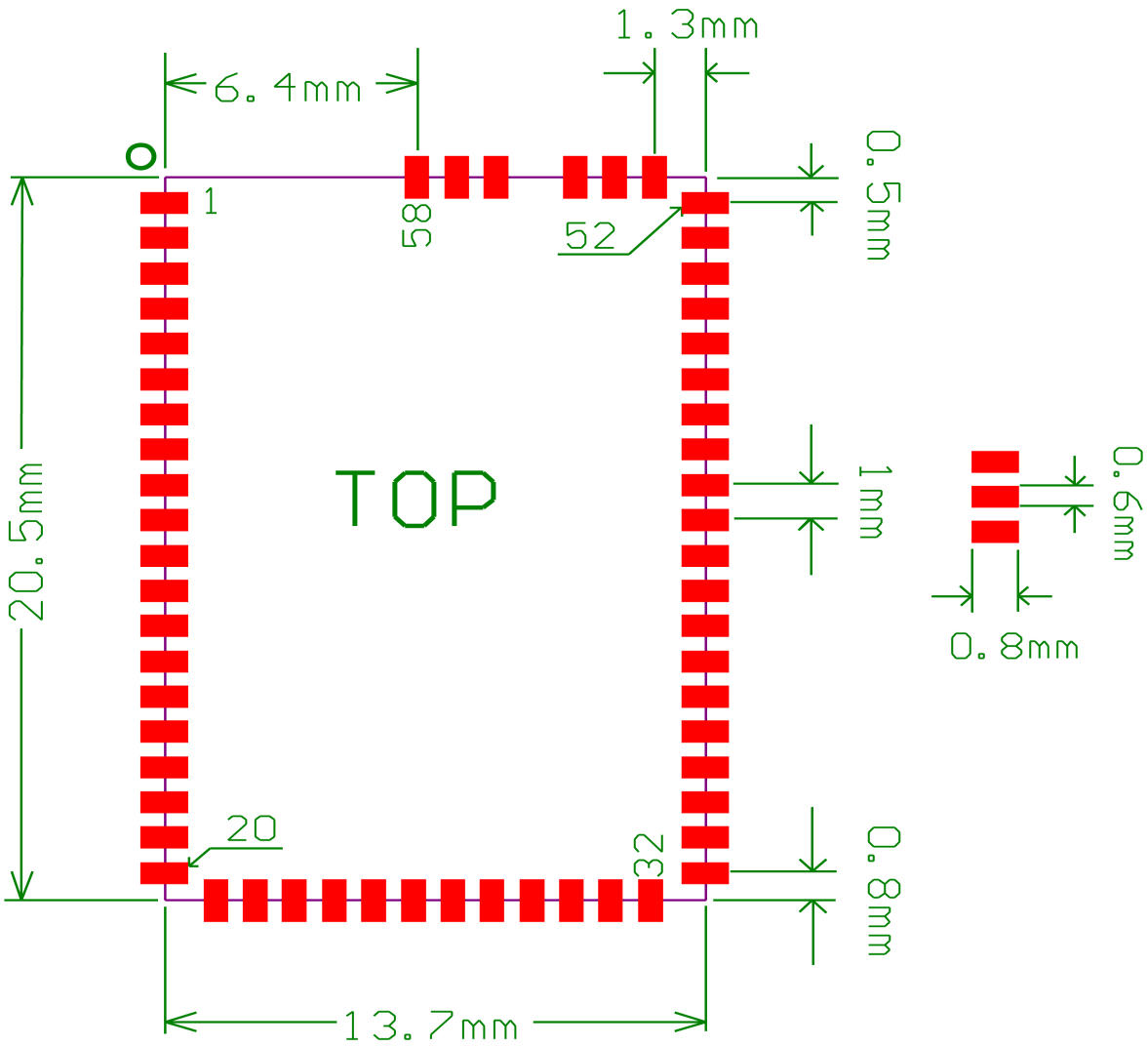
CLASS II

SJR-BTM05E Module

DRAWN BY ：			**MODEL :**
CHECKED BY ：			**DESCRIPTION :**
APPD. BY：			**REV ：**

Contents

1. Product Photo



2. Feature

- Radio Transceiver
  - Typical –82dBm sensitivity
  - Up to +2dBm RF transmit power with power level control
- Baseband
  - Fully Qualified Bluetooth V2.0+EDR
  - Integrated Audio CODEC in one chip
  - Built-in link controller, link manager protocol and flash
  - Low Power 3.3V Operation
  - Full speed USB interface, compliant with USB 1.1
  - Integrated Battery Charger With Programmable Current
  - PIO control
  - Standard HCI(UART or USB)l
  - 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 05- BT MultiMedia, single chip bluetooth system with CMOS technology
  - Adaptive frequency hopping feature (AFH)
  - Smallest footprint, 20.5mmX13.7mm
  - Simplify overall design/development cycle
  - Full speed Class 2 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
  - Stereo Headphone
  - Automotive Hands-Free Kits
  - Handsfree headset
  - Stereo (AV) Transmitter
  - Bluetooth Sound Box

- Software
  - Support CSR bluetooth stack
  - Design for Client

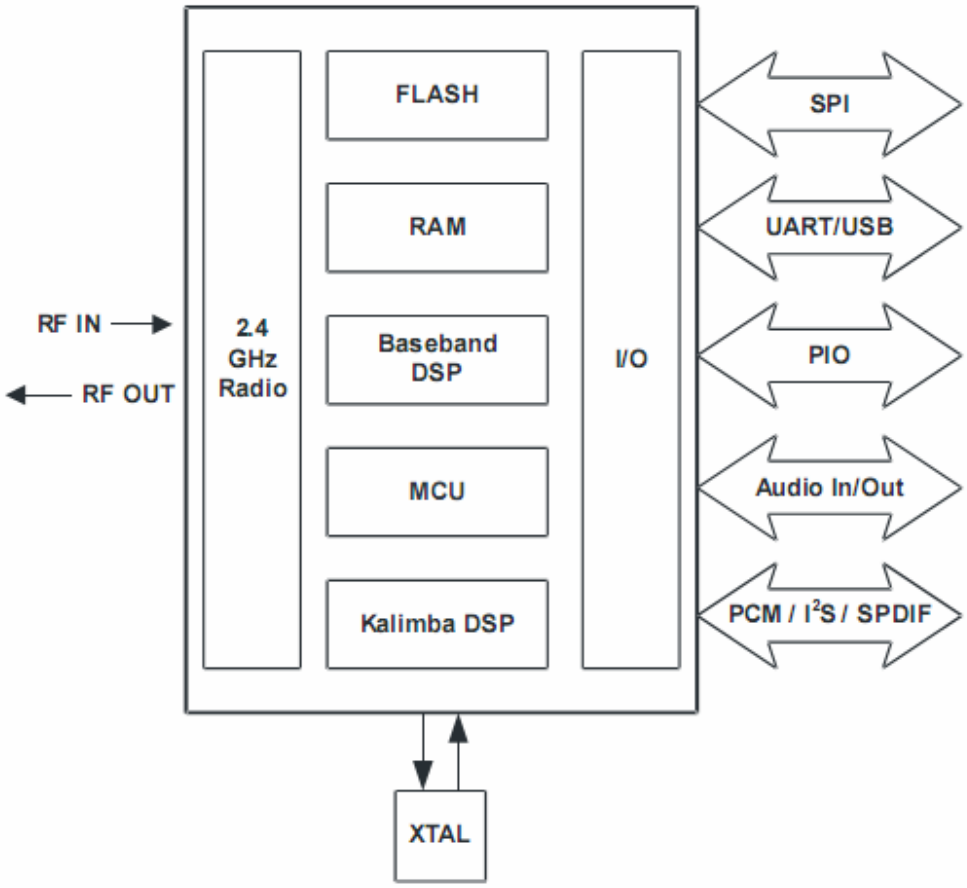
4. Device Terminal Function

PIN Name	PIN #	Pad type	Description	Note
GND	1.21.32.40 43.4856.58	VSS	Ground pot	
1.8V	39	VDD1.8V	Integrated 1.8V (+) supply with On-chip output within 1.7-1.9V	
3.3V	31	VDD3.0V	Integrated 3.3V (+) supply with On-chip l output within 3.0.-3.3V	
BATT	41	Battery terminal+ve	Lithium ion/polymer battery positiveterminal.	
CHG	42	Charger input	Lithium ion/polymer battery charger input	
VREN	38	Analogue	High-voltage linear regulator and switch-moderegulator	
AIO0	5	Bi-Directional	Programmable input/output line	
AIO1	4	Bi-Directional	Programmable input/output line	
PIO0	54	Bi-Directional RX EN	Programmable input/output line, control output for LNA(if fitted)	
PIO1	55	Bi-Directional TX EN	Programmable input/output line, control output for PA(if fitted)	

PIO2	**3**	**Bi-Directional**	**Programmable input/output line**	
PIO3	**2**	**Bi-Directional**	**Programmable input/output line**	
PIO4	**22**	**Bi-Directional**	**Programmable input/output line**	
PIO5	**23**	**Bi-Directional**	**Programmable input/output line**	
PIO6	**24**	**Bi-Directional**	**Programmable input/output line**	
PIO7	**18**	**Bi-Directional**	**Programmable input/output line**	
PIO8	**19**	**Bi-Directional**	**Programmable input/output line**	
PIO9	**14**	**Bi-Directional**	**Programmable input/output line**	
PIO10	**12**	**Bi-Directional**	**Programmable input/output line**	
PIO11	**16**	**Bi-Directional**	**Programmable input/output line**	
RET	**25**	**CMOS Input with weak intemal pull-down**	**RESET**	
UART_RTS	**11**	**CMOS output, tri-stable with weak internal pull-up**	**UART request to send, active low**	
UART_CTS	**10**	**CMOS input with weak internal pull-down**	**UART clear to send, active low**	
UART_RX	**8**	**CMOS input with weak internal pull-down**	**UART Data input**	
UART_TX	**9**	**CMOS output, Tri-stable with weak internal pull-up**	**UART Data output**	
SPI_MOSI	**35**	**CMOS input with weak internal pull-down**	**Serial peripheral interface data input**	
SPI_CSB	**30**	**CMOS input with weak internal pull-up**	**Chip select for serial peripheral interface, active low**	
SPI_CLK	**33**	**CMOS input with weak internal pull-down**	**Serial peripheral interface clock**	
SPI_MISO	**34**	**CMOS input with weak internal pull-down**	**Serial peripheral interface data Output**	

USB_DN	**6**	**Bi-Directional**	**USB**	
USB_DP	**7**	**Bi-Directional**	**USB**	
MIC_A_P	**51**	**Analogue input**	**Microphone input L positive pot**	**Microphone Left Positive**
MIC_A-N	**52**	**Analogue input**	**Microphone input L negative pot**	**Microphone Left Negative**
MIC_B_P	**49**	**Analogue input**	**Microphone input R positive pot**	**Microphone Right Positive**
MIC_B_N	**50**	**Analogue input**	**Microphone input R negative pot**	**Microphone Right Negative**
SPK_A_P	**46**	**Analogue output**	**Speaker output L negative**	**Left Negative**
SPK_A_N	**47**	**Analogue output**	**Speaker output L positive**	**Left Positive**
SPK_B_P	**44**	**Analogue output**	**Speaker output R negative**	**Right Negative**
SPK_B_N	**45**	**Analogue output**	**Speaker output R positive**	**Right Positive**
PCM_IN	**26**		**Synchronous PCM data input**	
PCM_SYNC	**28**		**Synchronous PCM data strobe**	
PCM_CLK	**27**		**Synchronous PCM data clock**	
PCM_OUT	**29**		**Synchronous PCM data output**	
ANT	**57**	**Analogue**	**RF In/Out**	
LED0	**37**	**Open drain output**	**LED driver**	
LED1	**36**	**Open drain output**	**LED driver**	
MIC_BAIS	**53**	**Analogue**	**Microphone bia**	

5. Block Diagram



System Architecture

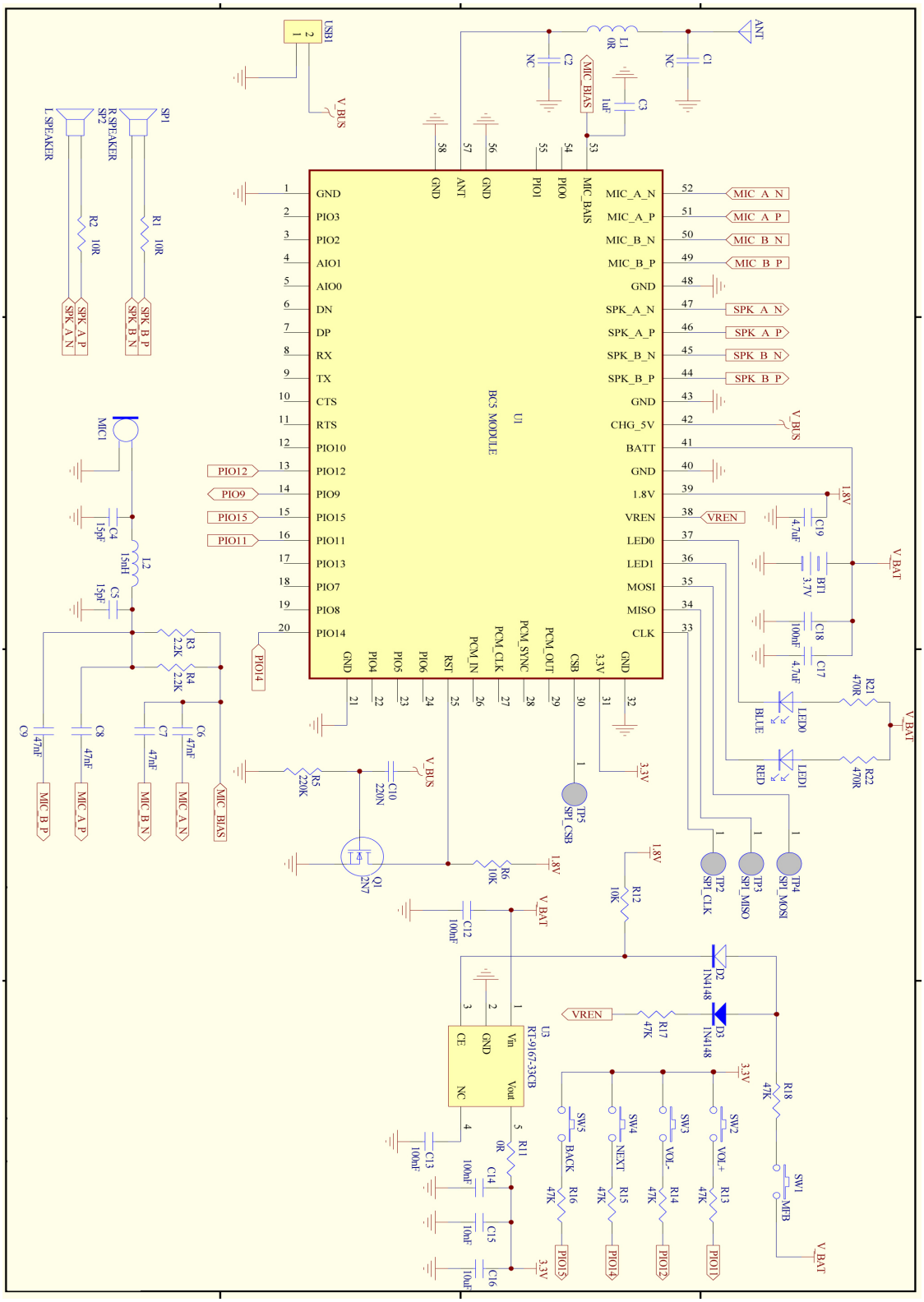
6. Electrical Specification:

- **Eecommended Operating condition**

Operating Condition	Min	Max
Operating temperature range	-20℃	+75℃
Guaranteed RF performance range[a]	-20℃	+75℃
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]	-	2.5	-	-6 to +4[c]	dBm
RF power variation over temperature range with compensation enabled(±)[d]	-	1.5	-	-	dB
RF power variation over temperature range with compensation disabled(±)	-	2	-	-	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 $F = F_0 \pm 2MHz$[f] [g]	-	-40	-	≤-20	dBm
Adjacent channel transmit power $F = F_0 \pm 3MHz$	-	-45	-	≤-40	dBm
Adjacent channel transmit power $F = F_0 \pm > 3MHz$	-	-50	-	≤-40	dBm
$\Delta f1_{avg}$ Maximum Modulation	-	165	-	$140<f1_{avg}<175$	kHz
$\Delta f2_{max}$ Minimum Modulation	-	150	-	≥115	kHz
$\Delta f1_{avg}/\Delta f2_{avg}$	-	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
2nd Harmonic Content	-	-65	-	≤-30	dBm
3rd Harmonic Content	-	-45	-	≤-30	dBm

7. Schematic Diagram



8. Testing Block Diagram

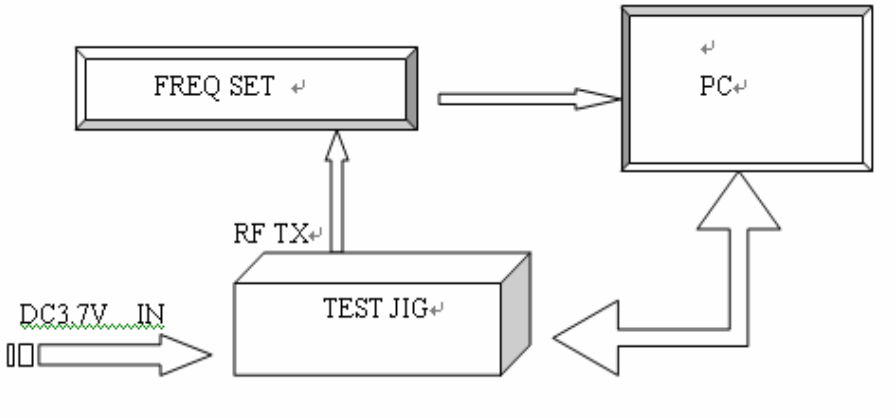


Fig 1 Programming and Freq. Alignment Test Procedure

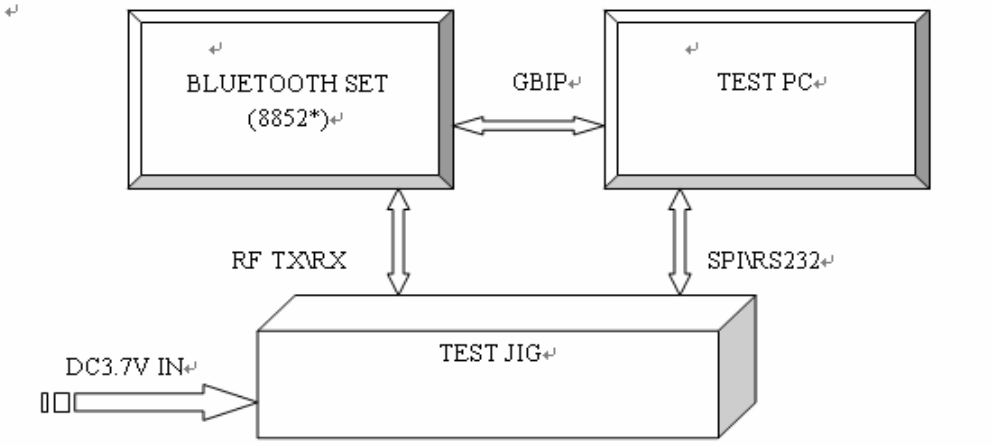


Fig 2 RF Parameter Test procedure

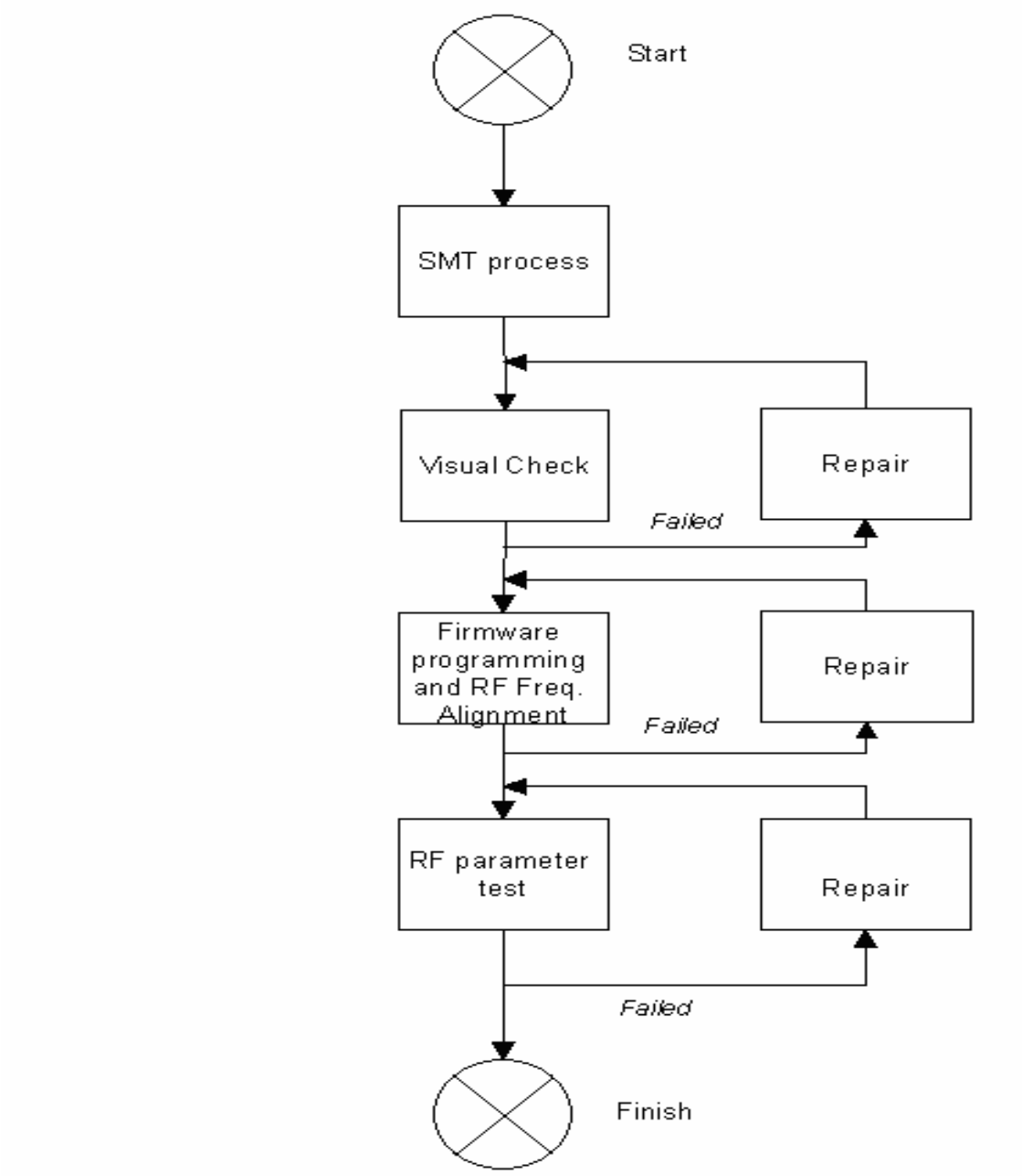


Fig 3 Assemble/Alignment/Testing Flow Chart