

**SAMSUNG**

# GSM TELEPHONE

## SGH-E340

# ***SERVICE*** *Manual*

## GSM TELEPHONE



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BASIC.

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# 1. Specification

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## 1-1. GSM General Specification

|                                    | <b>GSM900<br/>Phase 1</b> | <b>EGSM 900<br/>Phase 2</b> | <b>DCS1800<br/>Phase 1</b> | <b>PCS1900</b>         |
|------------------------------------|---------------------------|-----------------------------|----------------------------|------------------------|
| Freq. Band[MHz]<br>Uplink/Downlink | 890~915<br>935~960        | 880~915<br>925~960          | 1710~1785<br>1805~1880     | 1850~1910<br>1930~1990 |
| ARFCN range                        | 1~124                     | 0~124 &<br>975~1023         | 512~885                    | 512~810                |
| Tx/Rx spacing                      | 45MHz                     | 45MHz                       | 95MHz                      | 80MHz                  |
| Mod. Bit rate<br>/ Bit Period      | 270.833kbps<br>3.692us    | 270.833kbps<br>3.692us      | 270.833kbps<br>3.692us     | 270.833kbps<br>3.692us |
| Time Slot Period<br>/ Frame Period | 576.9us<br>4.615ms        | 576.9us<br>4.615ms          | 576.9us<br>4.615ms         | 576.9us<br>4.615ms     |
| Modulation                         | 0.3GMSK                   | 0.3GMSK                     | 0.3GMSK                    | 0.3GMSK                |
| MS Power                           | 33dBm~5dBm                | 33dBm~5dBm                  | 30dBm~0dBm                 | 30dBm~0dBm             |
| Power Class                        | 5pcl ~ 19pcl              | 5pcl ~ 19pcl                | 0pcl ~ 15pcl               | 0pcl ~ 15pcl           |
| Sensitivity                        | -102dBm                   | -102dBm                     | -100dBm                    | -100dBm                |
| TDMA Mux                           | 8                         | 8                           | 8                          | 8                      |
| Cell Radius                        | 35Km                      | 35Km                        | 2Km                        | -                      |

## 1-2. GSM TX power class

| <b>TX Power<br/>control level</b> | <b>GSM900</b> | <b>TX Power<br/>control level</b> | <b>DCS1800</b> | <b>TX Power<br/>control level</b> | <b>PCS1900</b> |
|-----------------------------------|---------------|-----------------------------------|----------------|-----------------------------------|----------------|
| 5                                 | 33±3 dBm      | 0                                 | 30±3 dBm       | 0                                 | 30±3 dBm       |
| 6                                 | 31±3 dBm      | 1                                 | 28±3 dBm       | 1                                 | 28±3 dBm       |
| 7                                 | 29±3 dBm      | 2                                 | 26±3 dBm       | 2                                 | 26±3 dBm       |
| 8                                 | 27±3 dBm      | 3                                 | 24±3 dBm       | 3                                 | 24±3 dBm       |
| 9                                 | 25±3 dBm      | 4                                 | 22±3 dBm       | 4                                 | 22±3 dBm       |
| 10                                | 23±3 dBm      | 5                                 | 20±3 dBm       | 5                                 | 20±3 dBm       |
| 11                                | 21±3 dBm      | 6                                 | 18±3 dBm       | 6                                 | 18±3 dBm       |
| 12                                | 19±3 dBm      | 7                                 | 16±3 dBm       | 7                                 | 16±3 dBm       |
| 13                                | 17±3 dBm      | 8                                 | 14±3 dBm       | 8                                 | 14±3 dBm       |
| 14                                | 15±3 dBm      | 9                                 | 12±4 dBm       | 9                                 | 12±4 dBm       |
| 15                                | 13±3 dBm      | 10                                | 10±4 dBm       | 10                                | 10±4 dBm       |
| 16                                | 11±5 dBm      | 11                                | 8±4dBm         | 11                                | 8±4dBm         |
| 17                                | 9±5 dBm       | 12                                | 6±4 dBm        | 12                                | 6±4 dBm        |
| 18                                | 7±5 dBm       | 13                                | 4±4 dBm        | 13                                | 4±4 dBm        |
| 19                                | 5±5 dBm       | 14                                | 2±5 dBm        | 14                                | 2±5 dBm        |
|                                   |               | 15                                | 0±5 dBm        | 15                                | 0±5 dBm        |

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## 2. Circuit Description

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### 2-1. SGH-E340 RF Circuit Description

#### 2-1-1. RX PART

— **FRONT END MODULE**(ANTENNA SWITCH MODULE + RX SAW FILTER) (MODULE1)

→ Switching Tx, Rx path for GSM900, DCS1800 and PCS1900 by logic controlling.

— **FRONT END MODULE Control Logic (MODULE1) → Truth Table**

|                        | VC1 | VC2 | VC3  |
|------------------------|-----|-----|------|
| Tx Mode (GSM900)       | H   | L   | L    |
| Tx Mode (DCS1800/1900) | L   | H   | H(L) |
| Rx Mode (GSM900)       | L   | L   | L    |
| Rx Mode (DCS1800)      | L   | L   | L    |
| Rx Mode (PCS1900)      | L   | L   | H    |

— **VC-TCXO (U102)**

This module generates the 26MHz reference clock to drive the logic and RF.

It is turned on when the supply voltage +VCC\_SYN is applied.

After buffering a reference clock of 26MHz is supplied to the other parts of the system through the transceiver pin OUT.

— **TRANSCEIVER (U100)**

This chip is fully integrated GSM GPRS tri-band transceiver with VCO, loop filters and most of the passive component in it.

And also fully integrated fractional N RF synthesizer with AFC control possibility, RF VCO with integrated supply regulator. Semi integrated reference oscillator with integrated supply regulator.

RF Receiver front-end amplifies the E-GSM900, DCS1800 and PCS1900 aerial signal, convert the chosen channel down to a low IF of 100kHz.

In IF section, further amplifies the wanted channel output level to the desired value and rejects DC.

#### 2-1-2. TX PART

The transmitter is fully differential using a direct up conversion architecture. It consists of a signal side band power up mixer. Gain is controlled by 6 dB via 3-wire serial bus programing. The fully integrated VCO and power mixer achieve LO suppression, quadrature phase error, quadrature amplitude balance and low noise floor specification. Output matching/balun components drive a standard 50 ohms single ended load.

## 2-2. Baseband Circuit description of SGH-E340

### 2-2-1. PCF50603 (U403)

#### — Power Management

Eight low-dropout regulators designed specifically for GSM applications power the terminal and help ensure optimal system performance and long battery life. A programmable boost converter provides support for 1.8V, 3.0V SIMs, while a self-resetting, electronically fused switch supplies power to external accessories. Ancillary support functions, such as RTC module and High Voltage Charge pump, Clock generator, aid in reducing both board area and system complexity.

I2C BUS serial interface provides access to control and configuration registers. This interface gives a microprocessor full control of the PCF50603 and enables system designers to maximize both standby and talk times.

Supervisory functions, including a reset generator, an input voltage monitor, and a temperature sensor, support reliable system design. These functions work together to ensure proper system behavior during start-up or in the event of a fault condition (low microprocessor voltage, insufficient battery energy, or excessive die temperature).

#### — Backlight Brightness Modulator

The Backlight Brightness Modulator (BBM) contains a programmable Pulse-width modulator (PWM) and FET to modulate the intensity of a series of LEDs or to control a DC/DC converter that drives LCD backlight.

This phone (SGH-E340) uses PWM control to contrast the backlight brightness.

#### — Clock Generator

The Clock Generator (CG) generates all clocks for internal and external usage. The 32.768 kHz crystal oscillator provides an accurate low clock frequency for the PCF50603 and other circuitry.

### 2-2-2. LCD Connector

LCD is consisted of main LCD (color 6.5K TFT LCD).

Chip select signals in the U304, LCD\_CS, can enable LCD. BACKLIGHT signal enables white LED of main LCD.

These signals are from U403.

16-bit data lines (LD(0)~LD(15)) transfers data and commands to LCD. Data and commands use "RS" signal. If this signal is high, inputs to LCD are commands. If it is low, inputs to LCD are data. The signal which informs the input or output state to LCD, is required. But this system is not necessary this signal. So "L\_WR" signal is used to write data or commands to LCD. Power signals for LCD are "VDD\_IO\_HIGH".

### 2-2-3. Key

This is consisted of key interface pins KEY\_ROW(0:4) and KEY\_COL(0:4) in PCF5212EL1. These signals compose the matrix. Result of matrix informs the key status to key interface in the PCF5212EL1. Power on/off key is separated from the matrix. So power on/off signal is connected with PCF50603 to enable PCF50603. Key LED is consisted of sixteen blue LEDs.

key LED use the 3.3V LDO(U604) for a supply voltage. KEY\_LED\_ON signal enables sixteen blue LED. "FLIP" informs the status of slide (open or closed) to the PCF5212EL1. This uses the hall effect IC, SH248CSP(U602). A magnet under LCD enables SH248CSP.

### 2-2-4. EMI ESD Filter(U501)

This system uses the EMI ESD filter, U501 to protect noise from IF CONNECTOR part.

### 2-2-5. IF connetor(CN302)

It is 18-pin connector. They are designed to use VBAT, V\_EXT\_CHARGE, USB\_D+, +VBUS, USB\_D-, TXD1, RXD1, AUX\_ON, EXT1, EXT2 and GND. They connected to power supply IC, microprocessor and signal processor IC.

### 2-2-6. Battery Charge Management IC(U505)

A complete constant-current/constant-voltage linear charger for single cell lithium-ion batteries is used.

If TA connected to phone, "V\_EXT\_CHARGE" enable charger IC and supply current to battery.

When fault condition caused, "CHG\_ON" signal level change low to high and charger IC stop charging process.

### 2-2-7. Audio

HFR\_P and HFR\_N from PCF5212EL1 are connected to the main speaker via analog switches. MIC\_P and MIC\_N are connected to the main MIC as well. EAR1 is the source of External Speaker. YMU762 is a synthesizer LSI for mobile phones. This LSI has a built-in speaker amplifier for outputting sounds that are used by mobile phones in addition to game sounds and ringing melodies that are replayed by a synthesizer.

The synthesizer section adopts "stereophonic hybrid synthesizer system" that are given advantages of both FM synthesizers and Wave Table synthesizers to allow simultaneous generation of up to 32 FM voices and 32 Wave Table voices.

It provides simultaneous generation of up to 40 tones by stereophonic hybrid synthesizer.

YMU762 has built a speaker amplifier of which maximum out is 580 mW at SPVDD=3.6V in this device.

There is Stereophonic analog output for Headphone.

### 2-2-8. Memory(U301)

This system uses Samsung's memory, KAP17SG00A. The KAP17SG00A is a Multi Chip Package Memory which combines 256Mbit Synchronous Burst Multi Bank NOR Flash Memory and two 512Mbit OneNAND Flash and 128Mbit Synchronous Burst UtrAM.

It has 16 bit data line, HD[1~16] which is connected to PCF5212EL1 and MV3018SAQ, also has 24 bit address lines,

HA[1~24]. There are 3 chip select signals, CS0n\_FLASH, CS4n\_NAND, and CS1n\_RAM.

In the Writing process, WEn is fallen to low and it enables writing process to operate. During reading process, OEn is fallen to low and it enables reading process to operate. Each chip select signals in the PCF5212EL1 choose different memories.

### 2-2-9. PCF5212EL1(U200)

The PCF5212EL1 is mainly composed of embeded DSP and ARM core. The DSP subsystem includes the Saturn DSP core with embedded RAM and ROM, and a set of peripherals. It has 24kx16 bits PRAM, 104k\*16 bits, 32k\*16 XYRAM and 63k\*16 XYROM in the DSP.

The ARM946E-S consists of an ARM9E-S processor core, 8 kbyte instruction cache and 8 kbyte data cache, tightly-coupled ITCM(Instruction Tightly Coupled Memory) and DTCM(Data Tightly Coupled Memory) memories, a memory protection unit, and an AMBA(Advanced Microcontroller Bus Architecture) AHB(Advanced High-performance Bus) bus interface with a write buffer.

HD(0:15), data lines and HA(0:23), address lines are connected to KAP17SG00A (memory), MV3018B (image dsp) and YMU762 (melody IC). It has 64 kbyte SC RAM (0.5 Mbit) and 32 kbyte SC program ROM for bootstrap loader in the ARM core.

HD(0:15), data lines and HA(0:23), address lines are connected to memory and YMU762 to communicate.

MV3018B(Camera DSP Chip) controls the communication between ARM core and DSP core.

OEn, WEn control the access of memory. KROW, and KCOL recognize the key string input status.

It has J-TAG control pins (TDI/TDO/TCK) for ARM and DSP core. J-SEL signal controls different access to ARM and DSP core.

ADC(Analog to Digital Convertor) receives the condition of temperature, battery type and battery voltage.

### 2-2-10. TCO-5871U(26MHz)(U102)

This system uses the 26MHz TCXO, TCO-5871U, Toyocom. AFC control signal form PCF5212EL1 controls frequency from 26MHz x-tal. It generates the clock frequency. This clock is connected to PCF5212EL1, YMU762 and HD155166.

### 2-2-11. Camera DSP(MV3018SAQ)(U304)

MV3018SAQ provides rich video functions up to 30-frame display with minimized tasks in the handset main processor

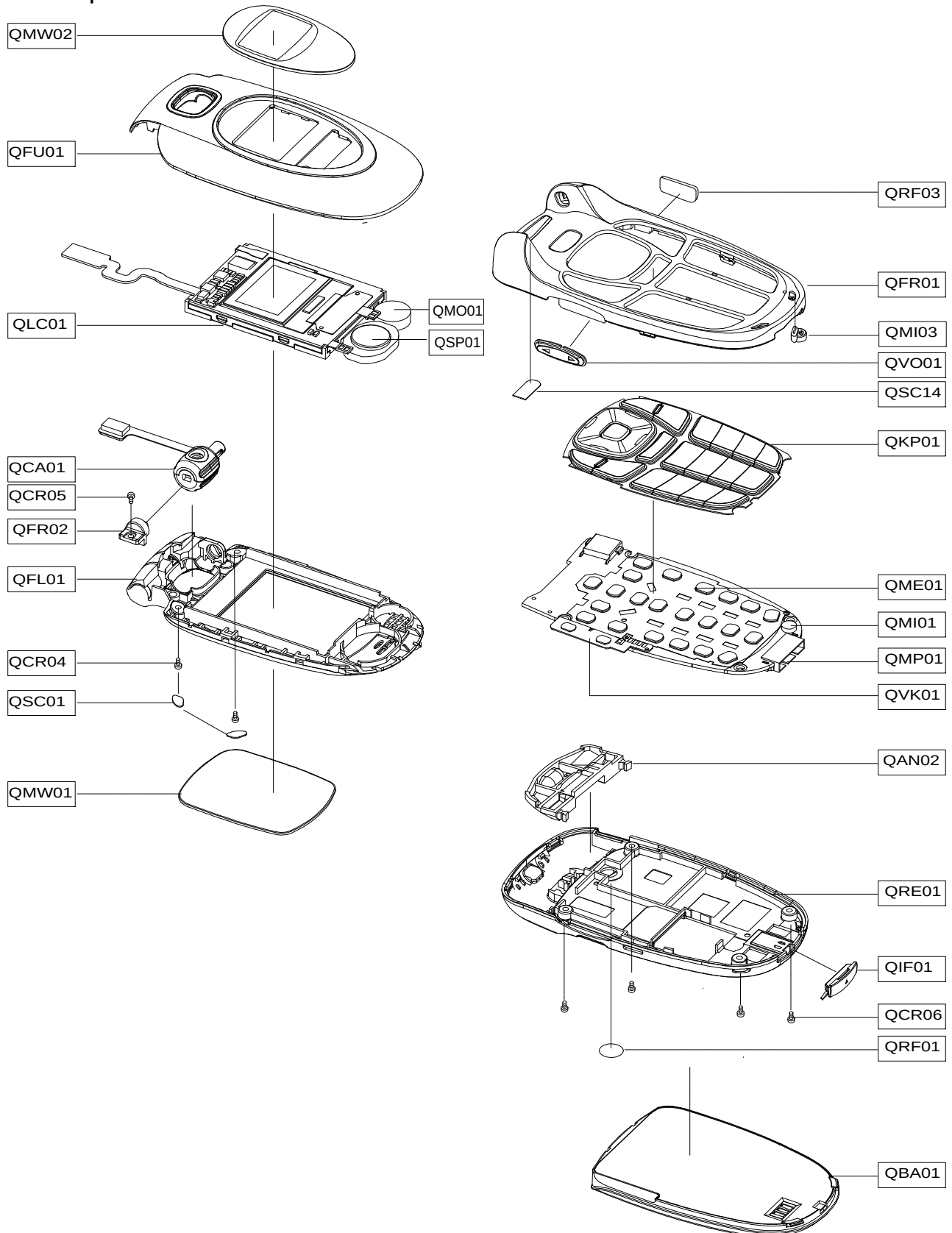
as well as hardware based real-time JPEG compression and decompression. MV3018SAQ directly transmits and previews the RGB data to the LCD graphic memory by processing the sensor output data according to the handset's command. It can save the raw RGB data up to VGA resoulution into its image buffer and allows the host processor to download with scalable sized compressed data.

It utilizes 16 bit data bus for communication with the main processor, including bus interface types.



## 3. Exploded View and Parts List

### 3-1. Exploded View



## 3-2. Parts List

| Location NO. |  | Description        | SEC CODE    |
|--------------|--|--------------------|-------------|
| QRF03        |  | COVER EAR JACK     | GH72-19702A |
| QFR01        |  | FRONT              | GH75-06795A |
| QMI03        |  | MIC HOLDER         | GH73-04563A |
| QVO01        |  | VOLUME KEY         | GH72-19705A |
| QSC14        |  | TAPE FRONT HOLE    | GH74-14197A |
| QKP01        |  | MEC-KEYPAD         | GH75-06860A |
| QME01        |  | UNIT METAL DOME    | GH59-02045A |
| QMI01        |  | MICROPHONE ASSY    | GH30-00199A |
| QMP01        |  | PBA MAIN           | GH92-02049A |
| QVK01        |  | UNIT VOLUME KEY    | GH59-02067A |
| QAN02        |  | INTENNA            | GH42-00557A |
| QRE01        |  | MEC-REAR COVER     | GH75-06861A |
| QIF01        |  | COVER IF CONNECTOR | GH72-19704A |
| QCR06        |  | SCREW-MACHINE      | 6001-001155 |
| QRF01        |  | RF COVER           | GH74-14863A |
| QBA01        |  | BATTERY            | GH43-01677A |
| QMW02        |  | WINDOW SUB         | GH72-19678A |
| QFU01        |  | UPPER FOLDER       | GH75-06800A |
| QLC01        |  | LCD                | GH07-00680A |
| QMO01        |  | MOTOR DC           | GH31-00154D |
| QSP01        |  | SPEAKER            | 3001-001759 |
| QCA01        |  | UNIT CAMERA        | GH59-02098A |
| QCR05        |  | SCREW-MACHINE      | 6001-001478 |
| QFR02        |  | OIL DAMPER         | GH75-06799A |
| QFL01        |  | FOLDER LOWER       | GH75-06794A |
| QCR04        |  | SCREW-MACHINE      | 6001-001479 |
| QSC01        |  | SCREW CAP          | GH73-04750A |
| QMW01        |  | MEC-WINDOW MAIN    | GH75-06801A |

| Description                          | SEC CODE    |
|--------------------------------------|-------------|
| BAG PE;LDPE,T0.05,W80,L180,TRP, -, - | 6902-000634 |
| ADAPTOR-TAD;TAD137ESE,SGH-P100,-,110 | GH44-00482A |
| UNIT-EARPHONE;SGH-X910,AEP277SSE,-,E | GH59-01392A |
| LABEL(P)-WATER SOAK;SCH-X110,NORGE,1 | GH68-02026A |
| LABEL(R)-MAIN(EU);SGH-E340,XET,POLYE | GH68-06970A |
| MANUAL-USE;SGH-E340,XET,ITALIAN,ITAY | GH68-07076A |
| CUSHION-CASE(1-2);SGH-X640,PULP,T0.8 | GH69-02723A |
| BOX(P)-UNIT(EU);SGH-E340,SC300+S120+ | GH69-02779A |
| MPR-BOHO VINYL IF;SGH-E720,#950,85X1 | GH74-13606A |
| MPR-PORON MOTOR;SGH-E340,SRS,P4.9XT0 | GH74-14191A |
| MPR-TAPE LCD MODULE;SGH-E340,PSR,5X3 | GH74-14198A |
| MPR-BOHO VINYL REAR;SGH-E340,SP-600, | GH74-14717A |
| MEC-HAND STRAP;SGH-E620,SEC,-,-,ANTI | GH75-03207U |

### 3-3. Test Jig (GH80-03306A)



#### 3-3-1. USB JIG Cable



#### 3-3-2. RF Test Cable (GH39-00283A)



#### 3-3-3. Test Cable (GH39-00337A)



#### 3-3-4. Serial Cable (CSA LL64151-A)



#### 3-3-5. Power Supply Cable



#### 3-3-6. DATA CABLE (GH39-00331A)



#### 3-3-7. TA (GH44-00482A)



## 4. Electrical Parts List

| SEC CODE    | Description | Design LOC        |
|-------------|-------------|-------------------|
| 0403-001387 | DIODE-ZENER | ZD500             |
| 0403-001427 | DIODE-ZENER | ZD501             |
| 0406-001104 | DIODE-TVS   | ZD601 ZD701       |
| 0406-001188 | DIODE-TVS   | U501              |
| 0406-001201 | DIODE-TVS   | V705 V706 V707    |
|             | DIODE-TVS   | ZD602 ZD603 ZD604 |
|             | DIODE-TVS   | ZD605             |
| 0504-001151 | TR-DIGITAL  | U201 U202 U203    |
|             | TR-DIGITAL  | U504              |
| 0505-001423 | FET-SILICON | U305              |
| 0601-001785 | LED         | LED601 LED602     |
|             | LED         | LED603 LED604     |
|             | LED         | LED605 LED606     |
|             | LED         | LED607 LED608     |
|             | LED         | LED609 LED610     |
|             | LED         | LED611 LED612     |
|             | LED         | LED613 LED614     |
|             | LED         | LED615 LED616     |
|             | LED         | LED617            |
| 0801-002237 | IC          | U302 U709         |
| 0801-002294 | IC          | U404              |
| 1001-001231 | IC          | U601 U603 U607    |
| 1001-001306 | IC          | U608              |
| 1001-001331 | IC          | U609 U610         |
| 1009-001018 | IC          | U602              |
| 1108-000018 | IC          | U710              |
| 1201-002223 | IC          | U702              |
| 1202-001068 | IC          | U605              |
| 1203-003208 | IC          | U701              |
| 1203-003545 | IC          | U402              |
| 1203-003568 | IC          | U403              |
| 1203-003737 | IC          | U401 U604         |
| 1203-003742 | IC          | U505              |
| 1204-002161 | IC          | U303              |
| 1205-002647 | IC          | U200              |
| 1205-002709 | IC          | U100              |
| 1404-001221 | THERMISTOR  | V500              |
| 1405-001082 | VARISTOR    | V701 V702 V708    |
|             | VARISTOR    | V709 V710 V711    |
| 1405-001082 | VARISTOR    | V400 V712         |
| 2007-000137 | R-CHIP      | R512              |
| 2007-000138 | R-CHIP      | R113              |
| 2007-000140 | R-CHIP      | R404              |
| 2007-000141 | R-CHIP      | R601 R604         |
| 2007-000143 | R-CHIP      | R102 R103 R107    |
|             | R-CHIP      | R108 R211 R305    |
|             | R-CHIP      | R313 R314         |
| 2007-000148 | R-CHIP      | R141 R202 R311    |
|             | R-CHIP      | R406 R409 R503    |
|             | R-CHIP      | R603              |

| SEC CODE    | Description | Design LOC     |
|-------------|-------------|----------------|
| 2007-000152 | R-CHIP      | R519           |
| 2007-000153 | R-CHIP      | R306           |
| 2007-000155 | R-CHIP      | R632           |
| 2007-000162 | R-CHIP      | R207 R208 R209 |
|             | R-CHIP      | R210 R216 R220 |
|             | R-CHIP      | R221 R310 R317 |
|             | R-CHIP      | R318 R403 R408 |
|             | R-CHIP      | R501 R511 R602 |
|             | R-CHIP      | R607 R626      |
| 2007-000162 | R-CHIP      | R518           |
| 2007-000170 | R-CHIP      | R116 R117 R119 |
|             | R-CHIP      | R139 R506 R507 |
| 2007-000171 | R-CHIP      | R218           |
| 2007-000171 | R-CHIP      | R110 R111 R123 |
|             | R-CHIP      | R135 R143 R144 |
|             | R-CHIP      | R146 R200 R201 |
|             | R-CHIP      | R203 R222 R309 |
|             | R-CHIP      | R315 R322 R323 |
|             | R-CHIP      | R324 R328 R333 |
|             | R-CHIP      | R402 R407 R630 |
|             | R-CHIP      | R631           |
| 2007-000172 | R-CHIP      | R101 R106      |
| 2007-000242 | R-CHIP      | R205 R206      |
| 2007-000758 | R-CHIP      | R500 R502      |
| 2007-000831 | R-CHIP      | R606           |
| 2007-001303 | R-CHIP      | R302           |
| 2007-001325 | R-CHIP      | R304           |
| 2007-001339 | R-CHIP      | R627           |
| 2007-002970 | R-CHIP      | R609 R610 R611 |
|             | R-CHIP      | R612 R613 R614 |
|             | R-CHIP      | R615 R616 R617 |
|             | R-CHIP      | R618 R619 R620 |
|             | R-CHIP      | R622 R623 R624 |
|             | R-CHIP      | R633           |
| 2007-002970 | R-CHIP      | R621           |
| 2007-007013 | R-CHIP      | R307           |
| 2007-007014 | R-CHIP      | R301 R303      |
| 2007-007100 | R-CHIP      | R401           |
| 2007-007107 | R-CHIP      | R504           |
| 2007-007334 | R-CHIP      | R510           |
| 2007-007480 | R-CHIP      | R625           |
| 2007-007489 | R-CHIP      | R515           |
| 2007-007573 | R-CHIP      | R509 R608      |
| 2007-008275 | R-CHIP      | R516           |
| 2203-000233 | C-CERAMIC   | C146 C169 C425 |
| 2203-000254 | C-CERAMIC   | C125 C128 C133 |
|             | C-CERAMIC   | C138 C158 C168 |
|             | C-CERAMIC   | C201 C300 C616 |
|             | C-CERAMIC   | C617           |
|             | C-CERAMIC   |                |

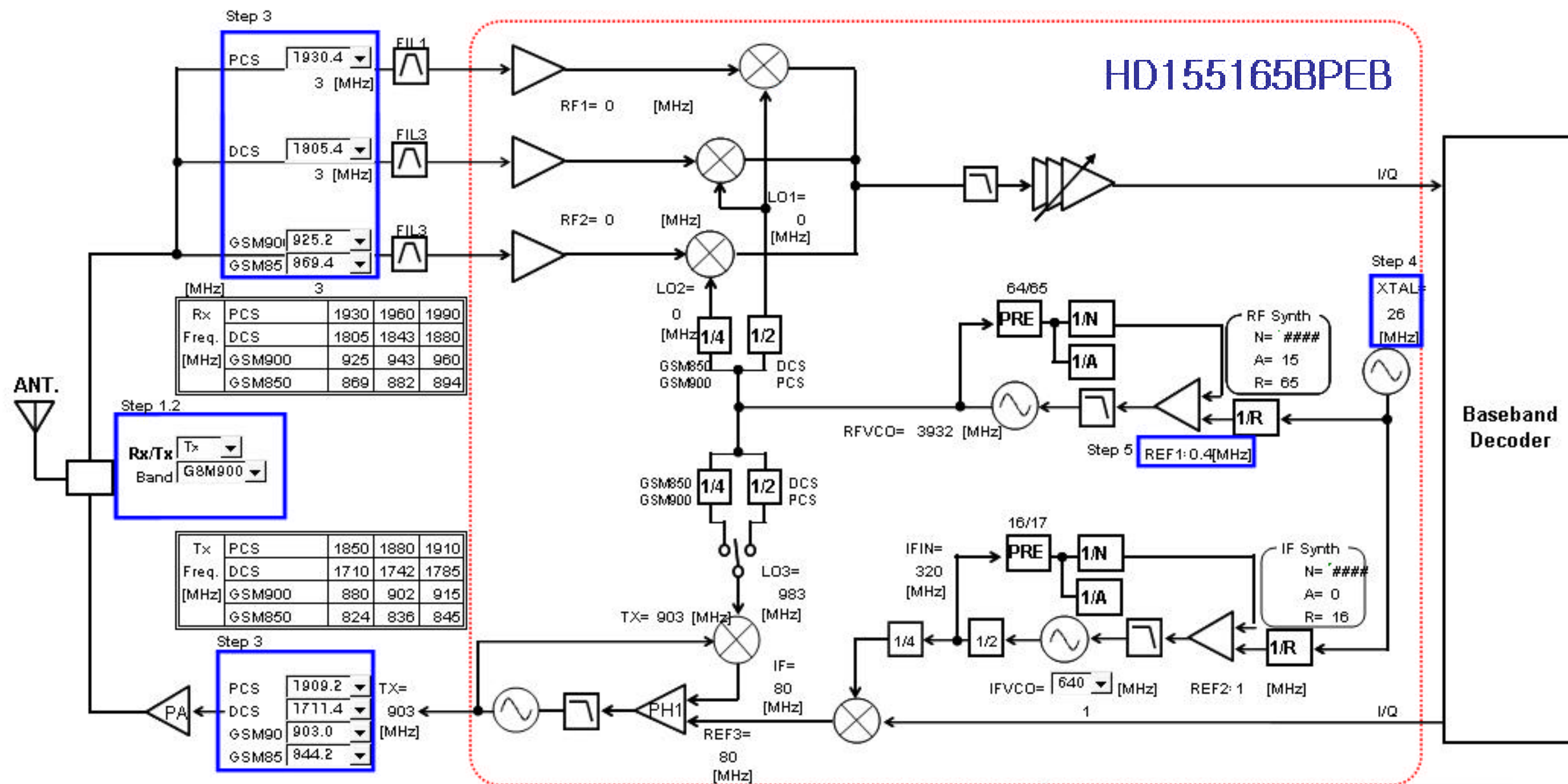
| SEC CODE    | Description | Design LOC     |
|-------------|-------------|----------------|
| 2203-000278 | C - CERAMIC | C163 C164 C602 |
|             | C - CERAMIC | C611 C615 C715 |
| 2203-000311 | C - CERAMIC | C504           |
| 2203-000386 | C - CERAMIC | C406 C407      |
| 2203-000438 | C - CERAMIC | ESD2 ESD3      |
| 2203-000438 | C - CERAMIC | C135 C137 C159 |
|             | C - CERAMIC | C167 C303 C307 |
|             | C - CERAMIC | C624 C625 ESD1 |
| 2203-000466 | C - CERAMIC | C165           |
| 2203-000550 | C - CERAMIC | C330           |
| 2203-000585 | C - CERAMIC | C155           |
| 2203-000643 | C - CERAMIC | C124 C127 C129 |
|             | C - CERAMIC | C132           |
| 2203-000654 | C - CERAMIC | C153           |
| 2203-000679 | C - CERAMIC | C304 C317      |
| 2203-000812 | C - CERAMIC | C101 C121 C204 |
|             | C - CERAMIC | C213 C220 C221 |
|             | C - CERAMIC | C222 C223 C334 |
|             | C - CERAMIC | C335 C410 C632 |
|             | C - CERAMIC | C633 C634      |
| 2203-000995 | C - CERAMIC | C166 C605 C614 |
|             | C - CERAMIC | C705 C706 C708 |
|             | C - CERAMIC | C709           |
| 2203-001153 | C - CERAMIC | C426           |
| 2203-001178 | C - CERAMIC | C716           |
| 2203-001221 | C - CERAMIC | C313           |
| 2203-001259 | C - CERAMIC | C115 C144      |
| 2203-002443 | C - CERAMIC | C608           |
| 2203-002668 | C - CERAMIC | C111 C141 C142 |
| 2203-005050 | C - CERAMIC | C606           |
| 2203-005052 | C - CERAMIC | C626 C627      |
| 2203-005054 | C - CERAMIC | C601 C610      |
| 2203-005065 | C - CERAMIC | C331           |
| 2203-005288 | C - CERAMIC | C112 C143 C154 |
| 2203-005481 | C - CERAMIC | C314           |
| 2203-005482 | C - CERAMIC | C134 C202 C203 |
|             | C - CERAMIC | C205 C206 C207 |
|             | C - CERAMIC | C208 C209 C210 |
|             | C - CERAMIC | C211 C212 C214 |
|             | C - CERAMIC | C216 C301 C302 |
|             | C - CERAMIC | C305 C306 C308 |
|             | C - CERAMIC | C310 C311 C312 |
|             | C - CERAMIC | C316 C318 C404 |
|             | C - CERAMIC | C418 C500 C501 |
|             | C - CERAMIC | C502 C609 C630 |
|             | C - CERAMIC | C701 C703      |
| 2203-005496 | C - CERAMIC | C151           |
| 2203-006090 | C - CERAMIC | C403           |
| 2203-006093 | C - CERAMIC | C319 C322 C323 |
|             | C - CERAMIC | C420 C505 C702 |

| SEC CODE    | Description           | Design LOC     |
|-------------|-----------------------|----------------|
| 2203-006208 | C - CERAMIC           | C200 C402 C411 |
|             | C - CERAMIC           | C413 C417 C421 |
| 2203-006257 | C - CERAMIC           | C405 C412 C414 |
|             | C - CERAMIC           | C415 C423 C424 |
| 2203-006562 | C - CERAMIC           | C400 C401 C603 |
|             | C - CERAMIC           | C607 C613      |
| 2404-001225 | C - TA                | C700           |
| 2404-001268 | C - TA                | C503           |
| 2404-001281 | C - TA                | C422 C600 U704 |
| 2404-001348 | C - TA                | C122           |
| 2404-001374 | C - TA                | C123 C157 C409 |
| 2404-001394 | C - TA                | C150 C309      |
| 2703-001938 | INDUCTOR - SMD        | L121           |
| 2703-002201 | INDUCTOR - SMD        | L125           |
| 2703-002267 | INDUCTOR - SMD        | L124           |
| 2703-002346 | INDUCTOR - SMD        | L401           |
| 2703-002365 | INDUCTOR - SMD        | L101 L102 L103 |
|             | INDUCTOR - SMD        | L104           |
| 2703-002596 | INDUCTOR - SMD        | L112           |
| 2801-004373 | CRYSTAL - UNIT        | OSC400         |
| 2809-001294 | OSCILLATOR - VCTCXO   | U102           |
| 2901-001286 | FILTER - EMI SMD      | F701 F702 F703 |
|             | FILTER - EMI SMD      | F704 F705 F706 |
|             | FILTER - EMI SMD      | F707 F708 F709 |
| 2901-001315 | FILTER - EMI SMD      | U502           |
| 2911-000007 | DUPLEXER - SAW        | MODULE1        |
| 3301-001120 | BEAD - SMD            | L400           |
| 3301-001534 | BEAD - SMD            | L600           |
| 3705-001358 | CONNECTOR - COAXIAL   | CN101          |
| 3709-001355 | CONNECTOR - CARD EDGE | SIM400         |
| 3710-002115 | CONNECTOR - SOCKET    | CN302          |
| 3711-005212 | CONNECTOR - HEADER    | CN703          |
| 3722-002181 | JACK - EAR PHONE      | CN600          |
| 4302-001180 | BATTERY               | BAT401         |
| 4709-001371 | IC                    | U306           |
| GH13-00029A | IC                    | U304           |
| 4202-001049 | ANTENNA               | ANT3           |
| GH30-00199A | MIC                   | MIC600         |

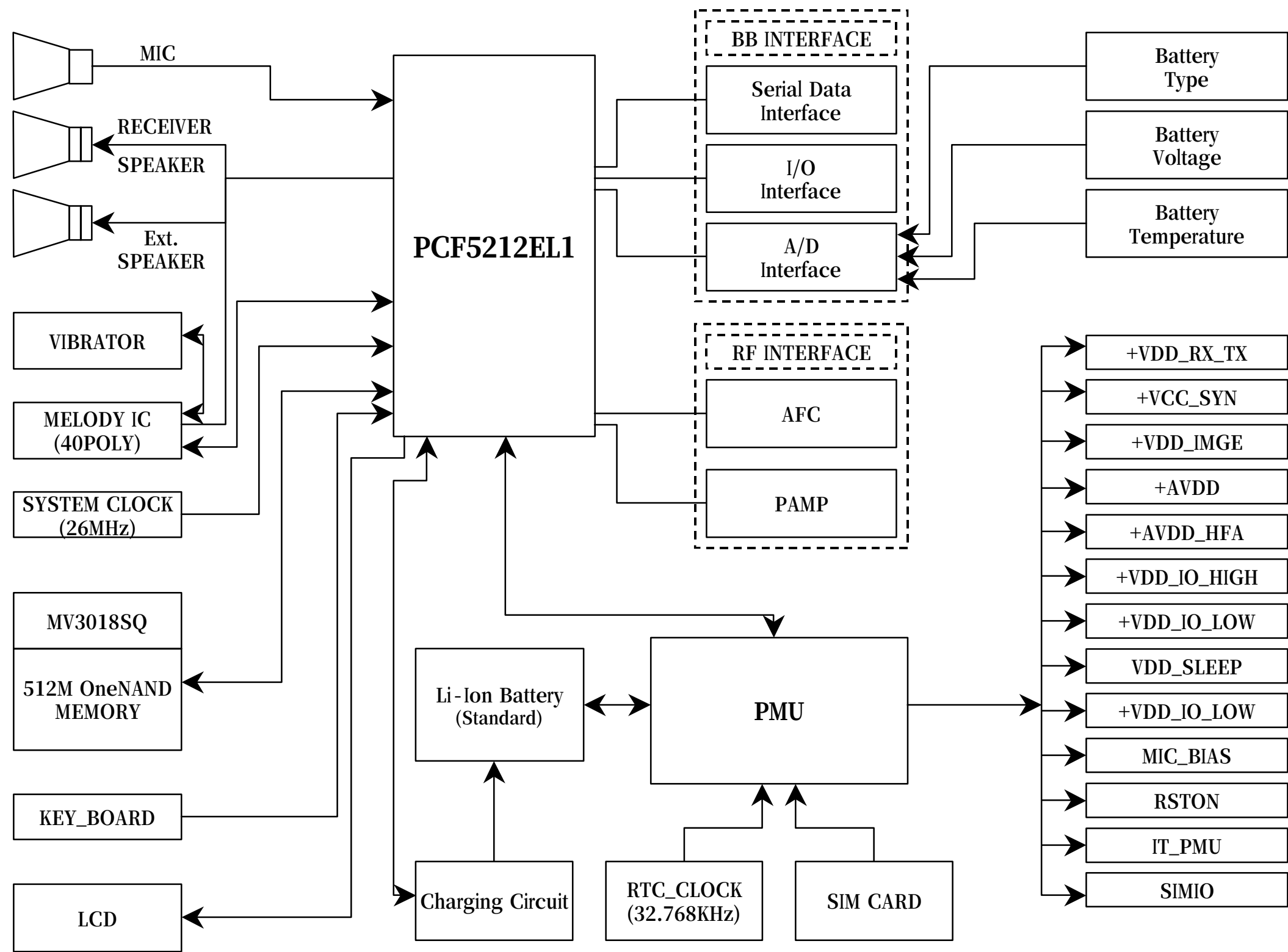


## 5. Block Diagrams

### 5-1. RF Solution Block Diagram

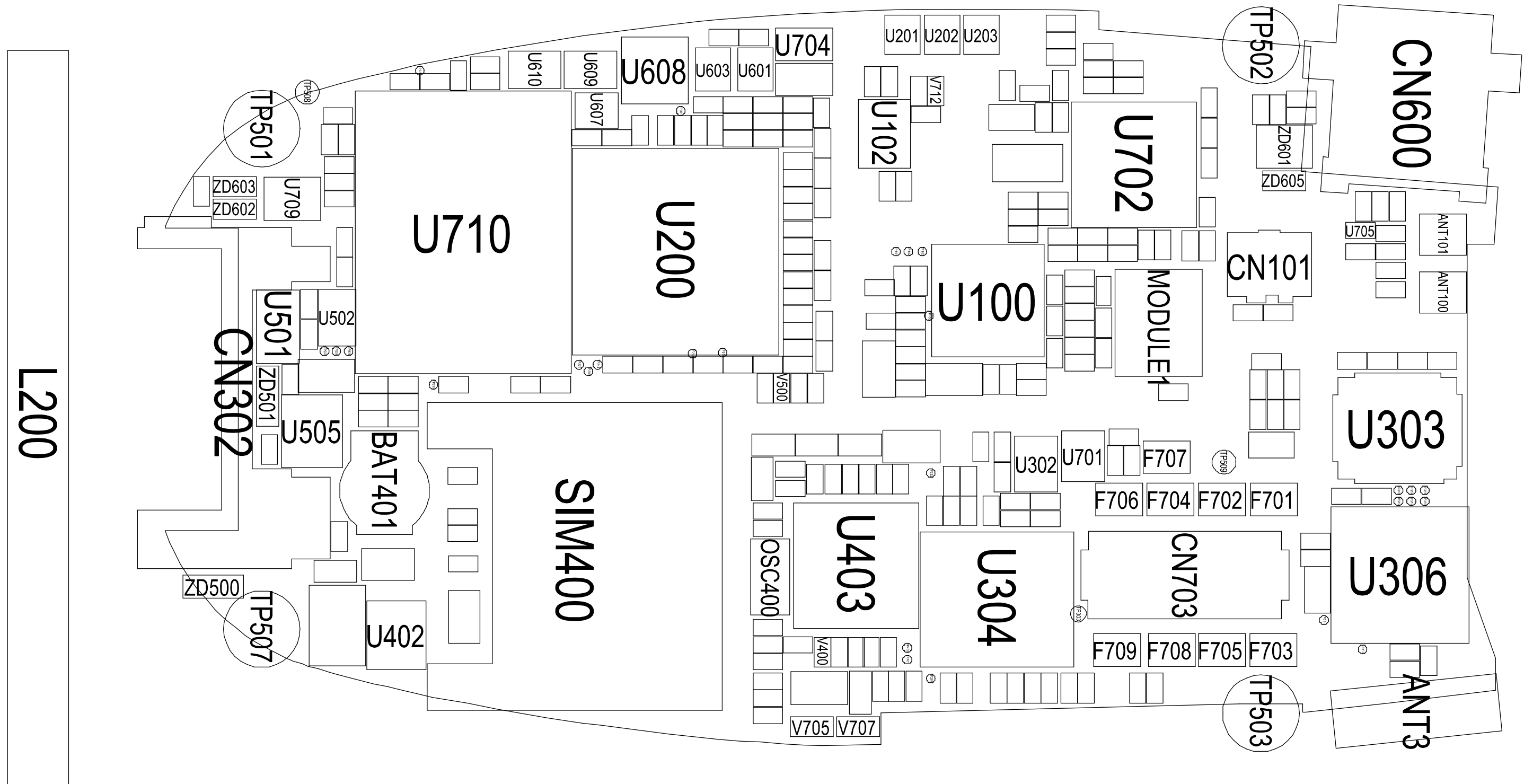


5-2. Base Band Solution Block Diagram

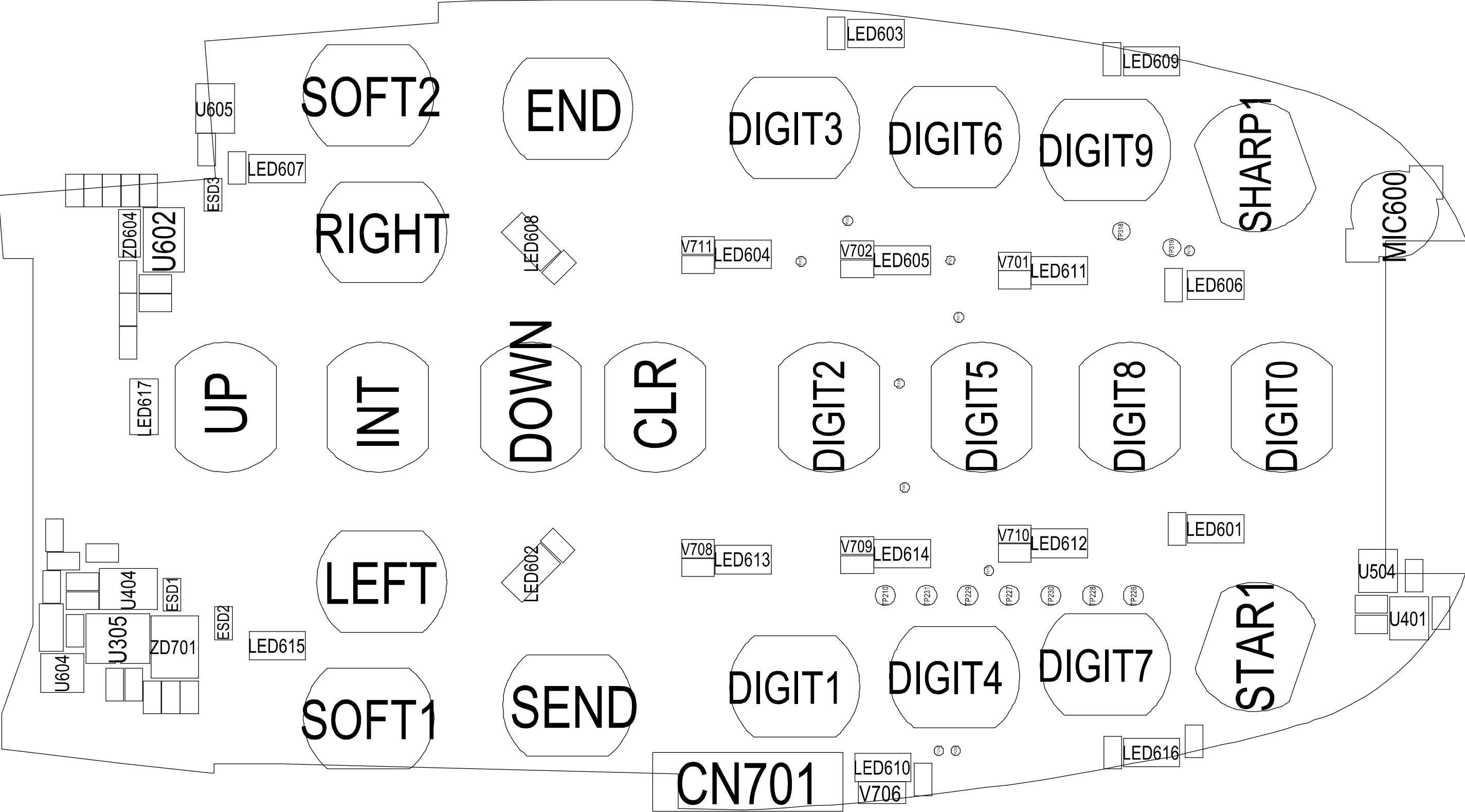


## 6. PCB Diagrams

## 6-1. PCB Top Diagram



6-2. PCB Bottom Diagram

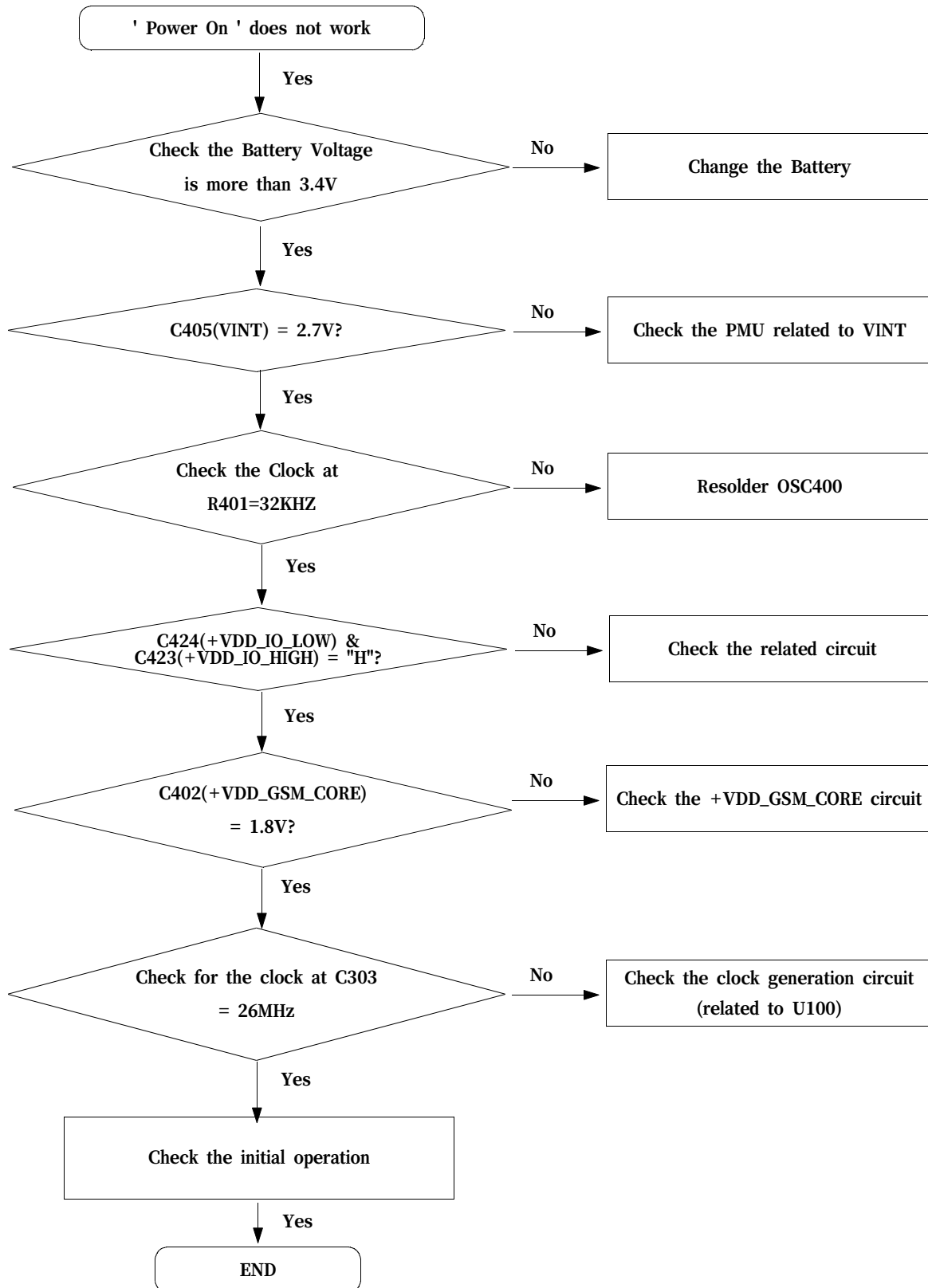


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## 7. Flow Chart of Troubleshooting

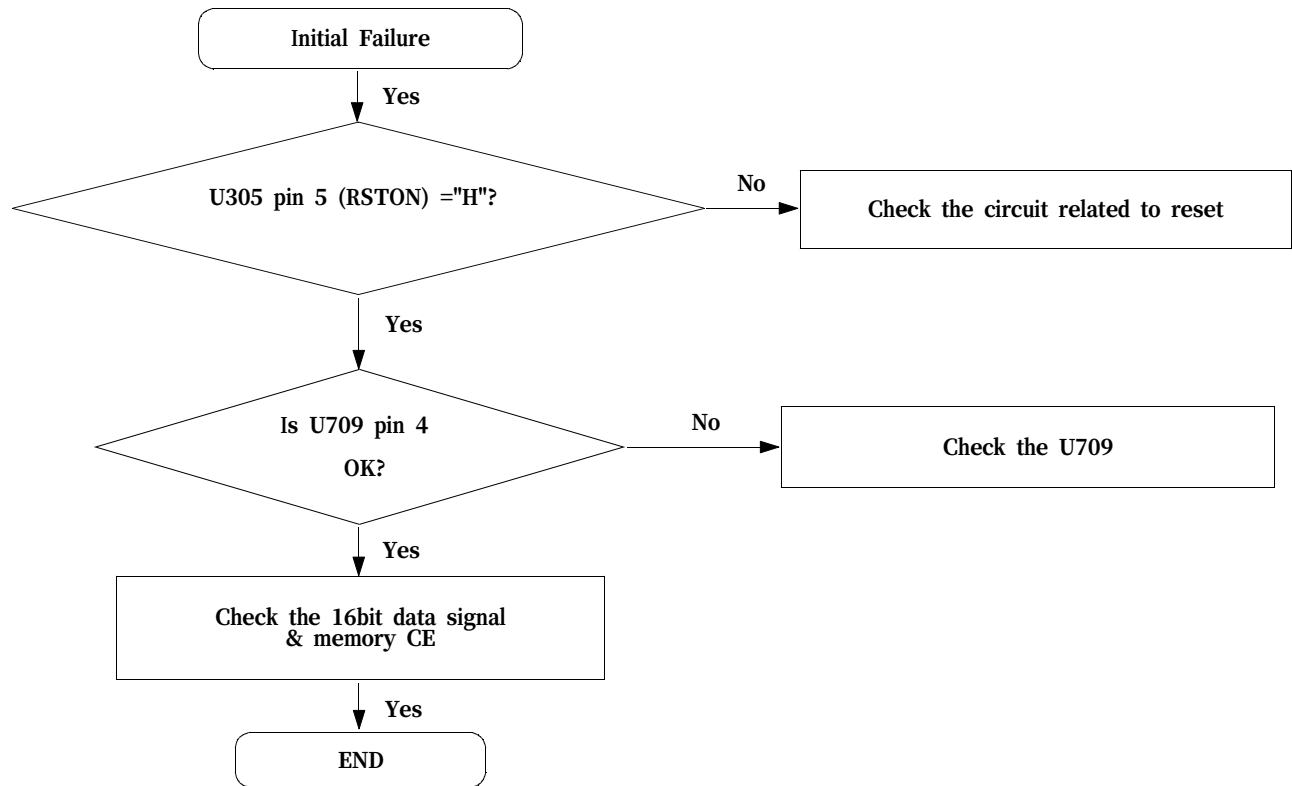
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### 7-1. Power On



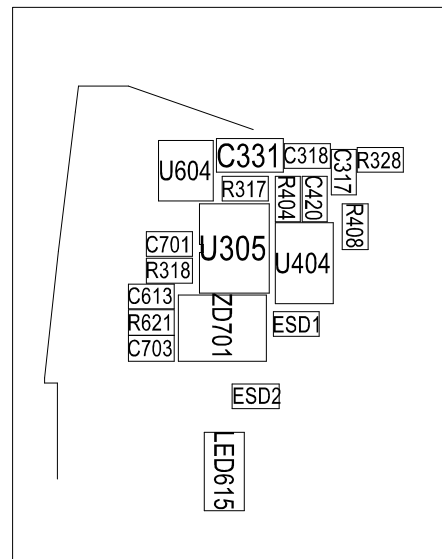


## 7-2. Initial



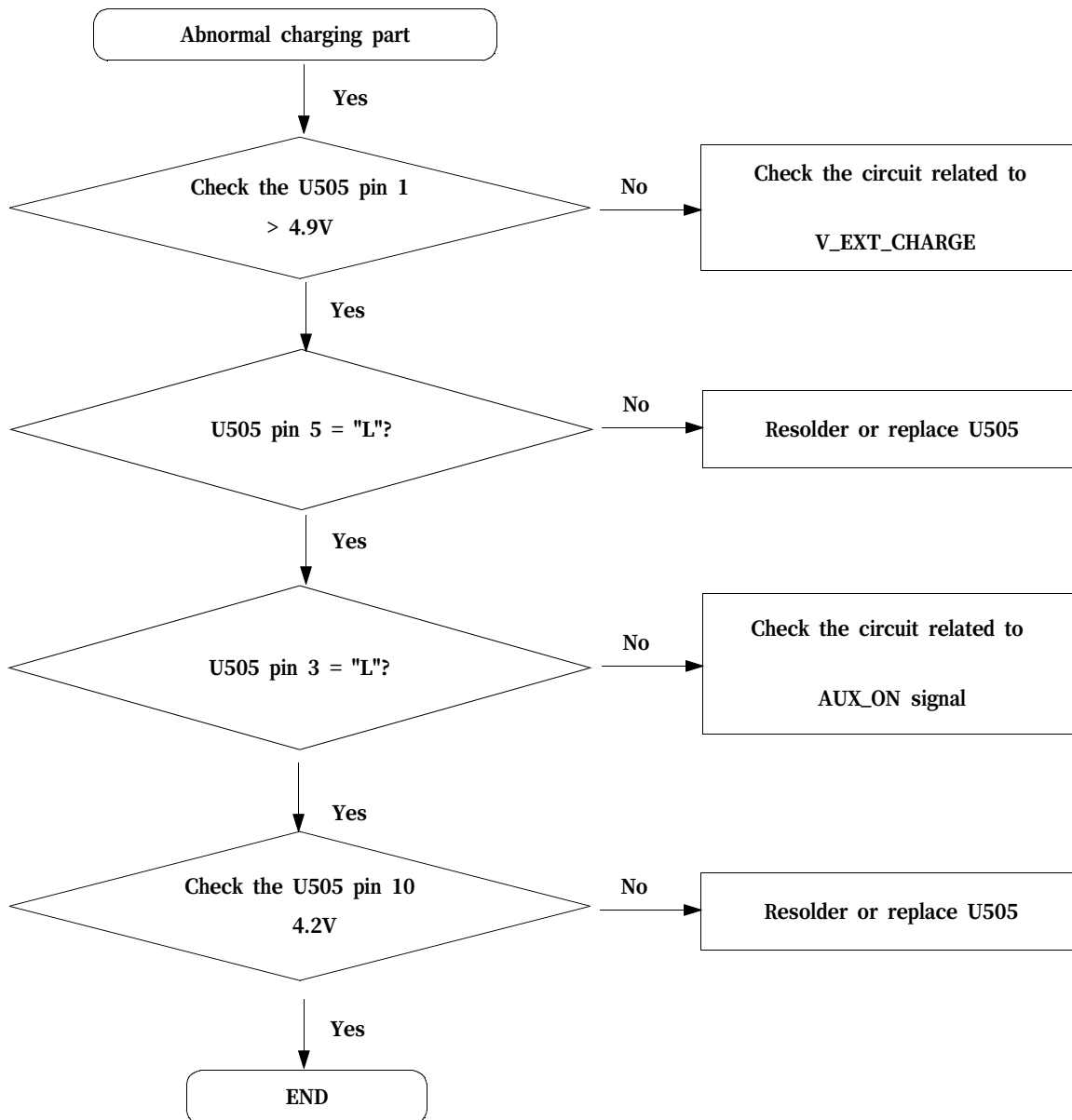


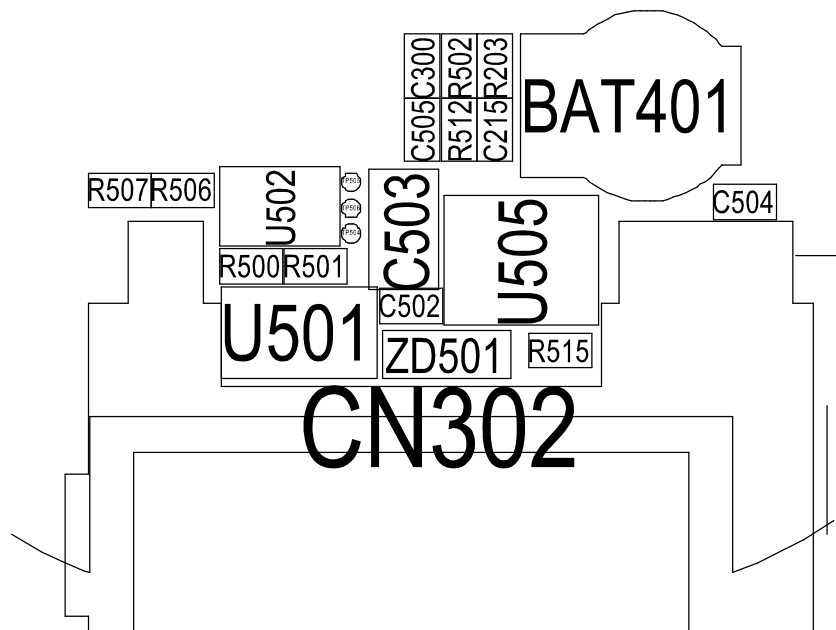
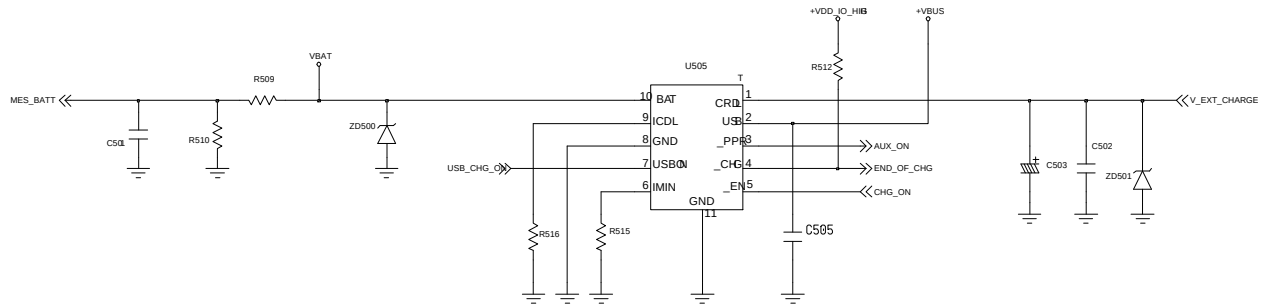
## MEMORY



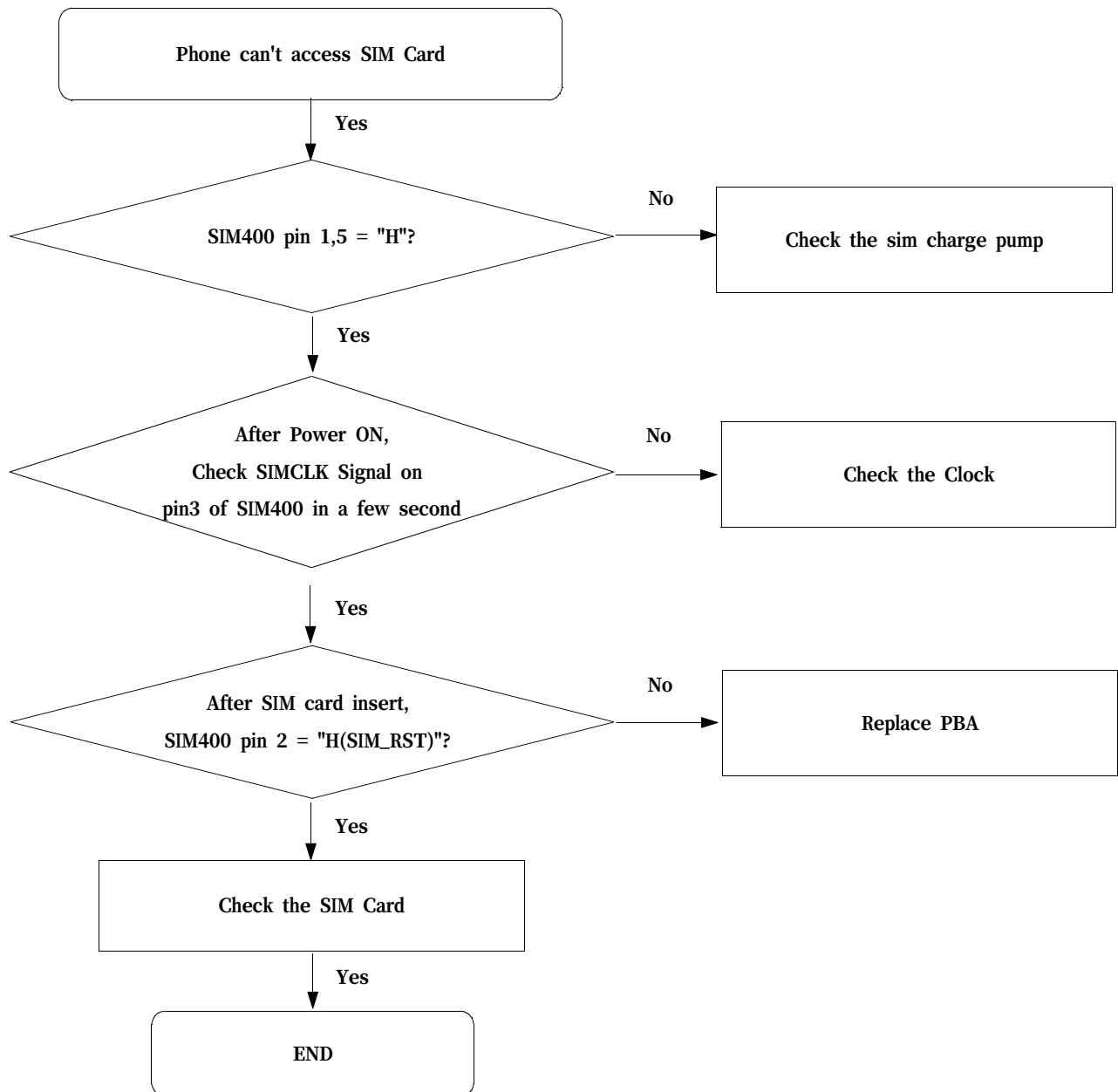


## 7-3. Charging Part

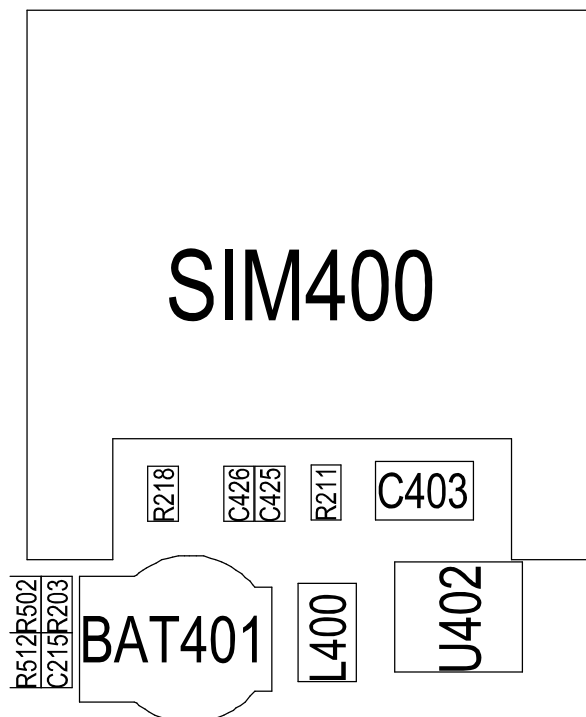
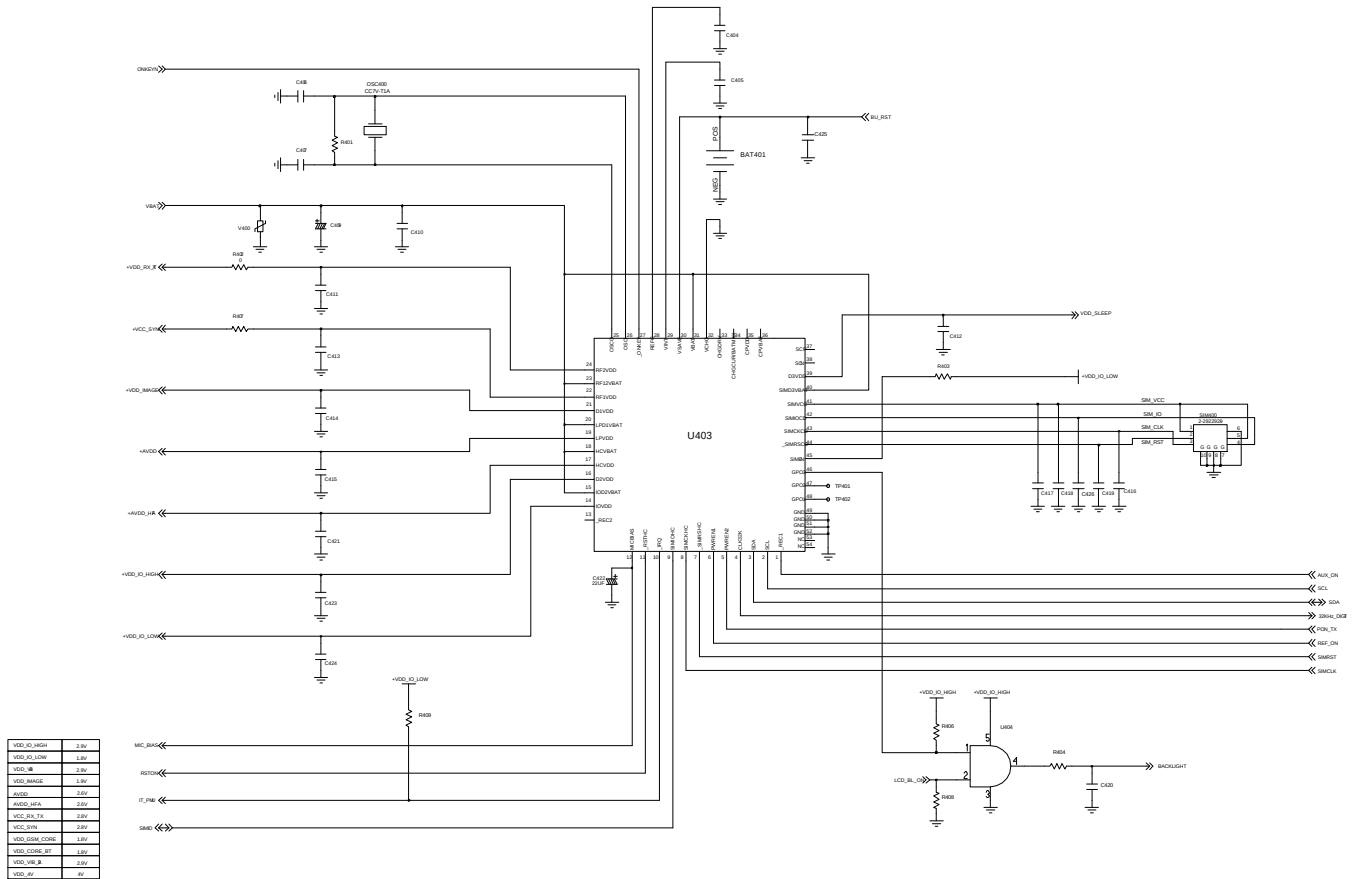




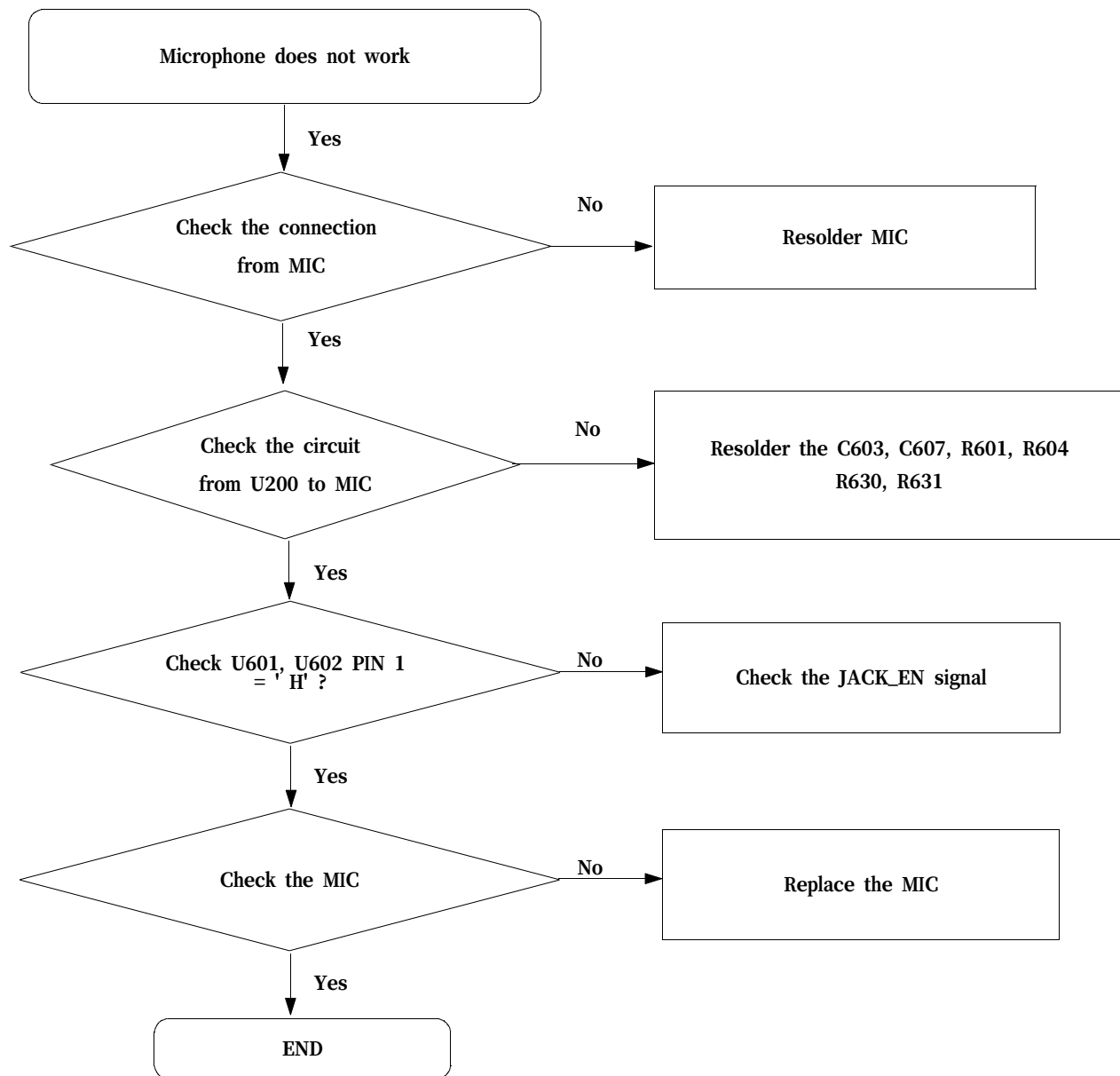
## 7-4. Sim Part

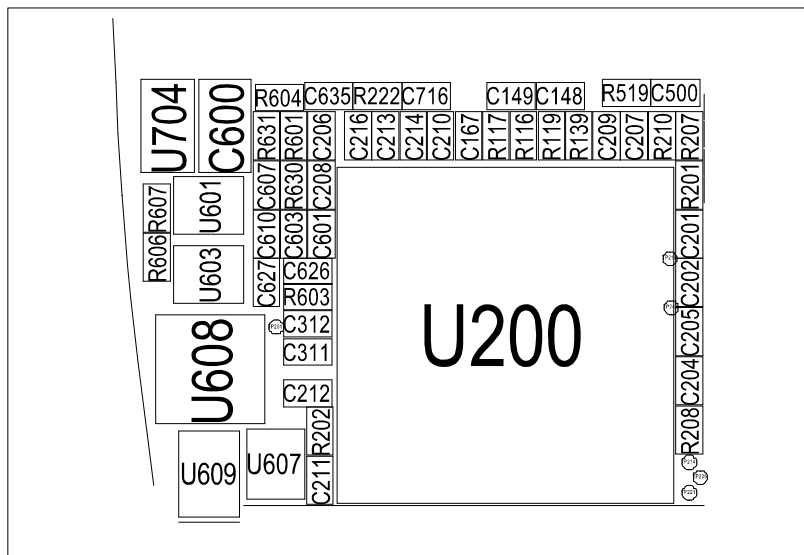
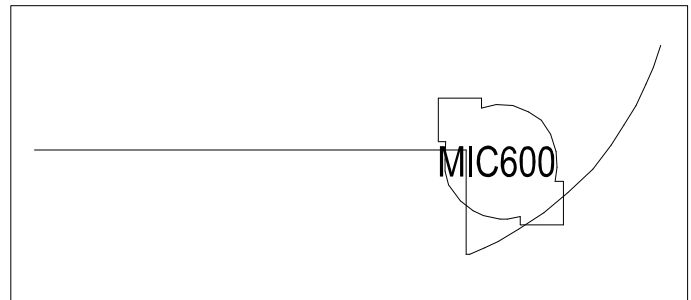
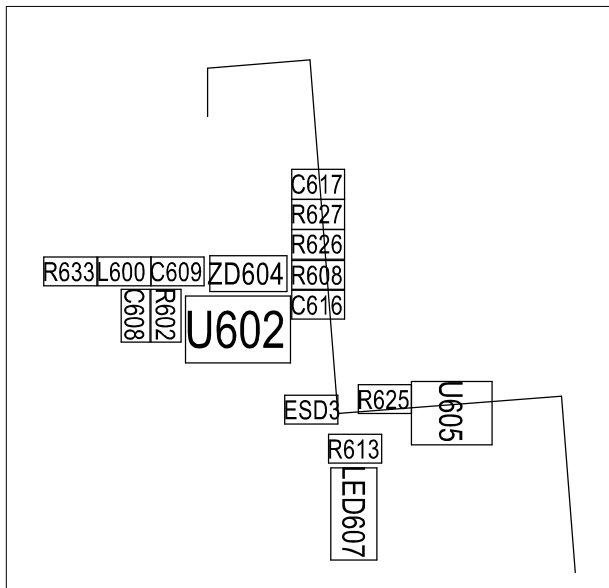
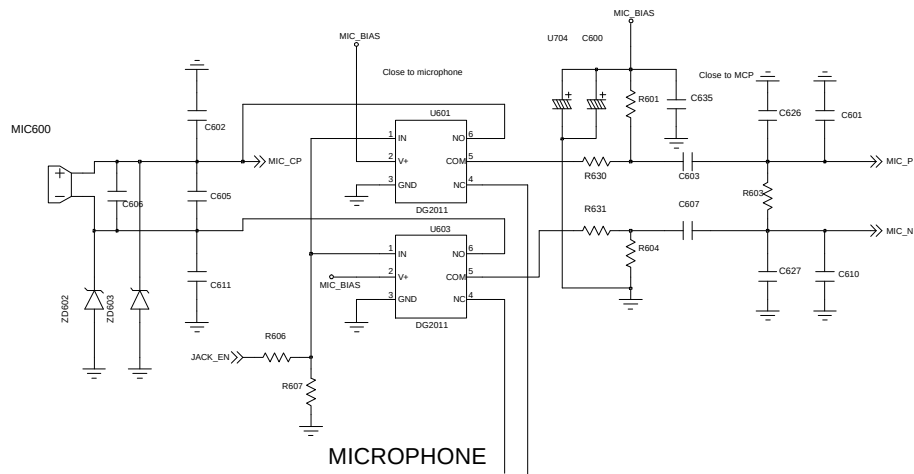


## Flow Chart of Troubleshooting

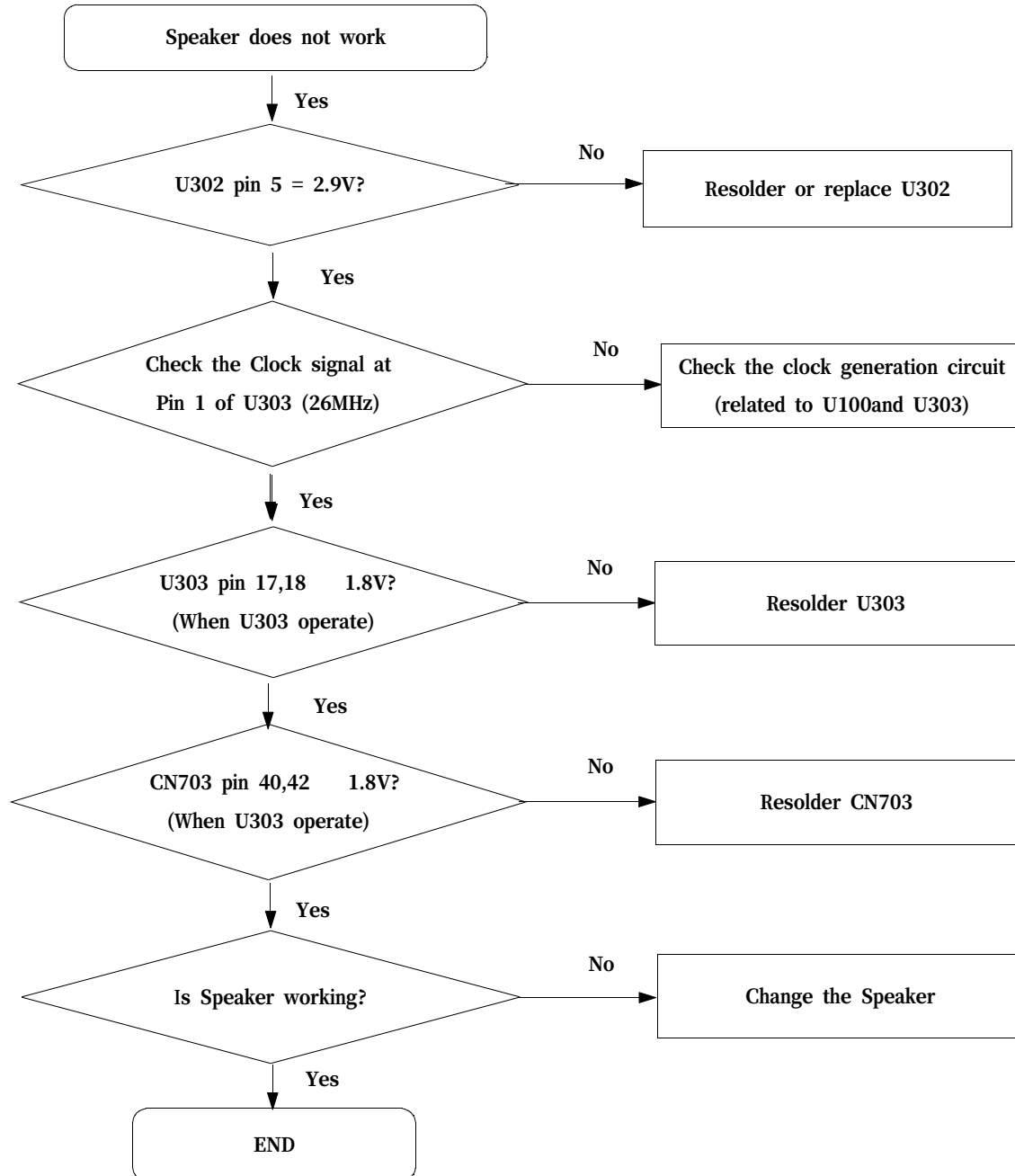


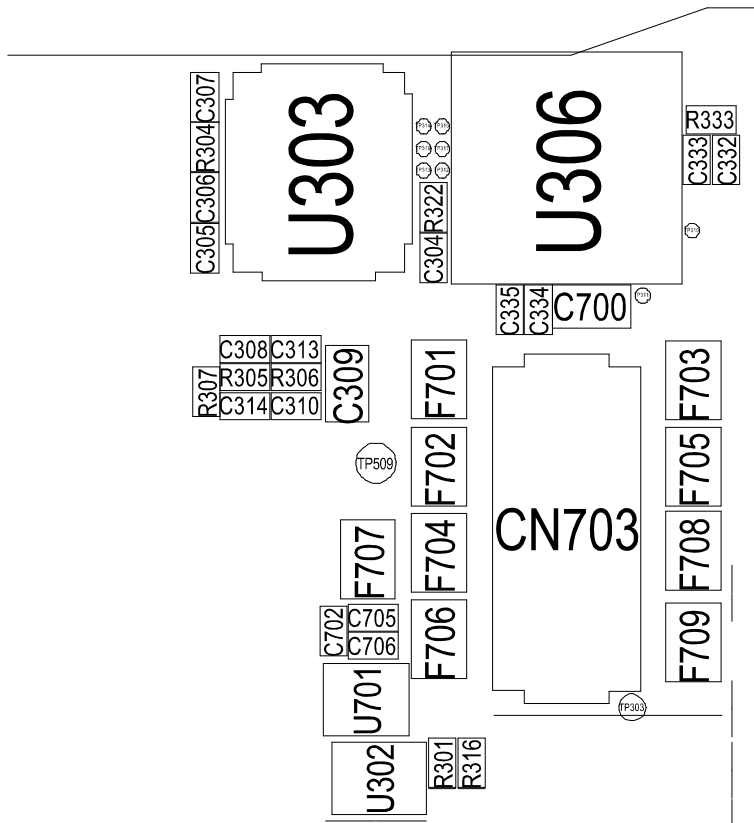
## 7-5. Microphone Part





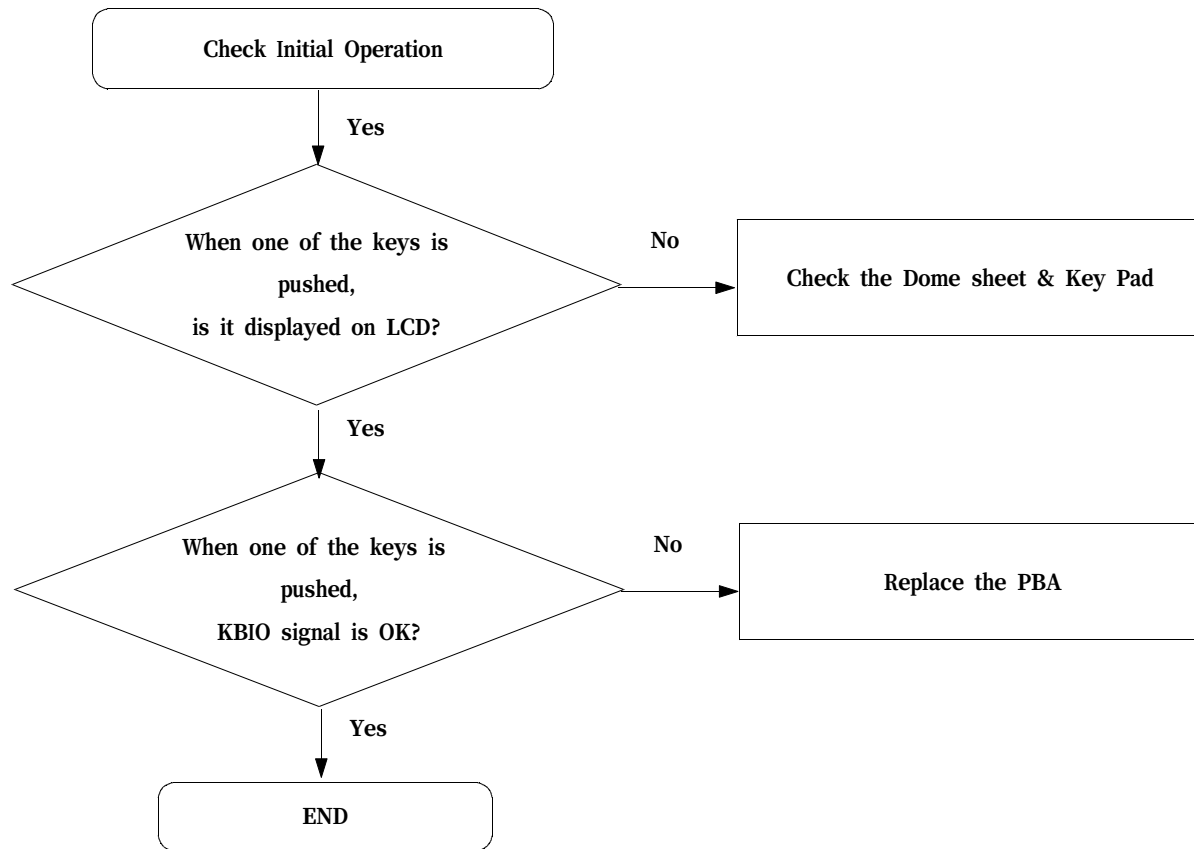
## 7-6. Speaker Part(Melody)

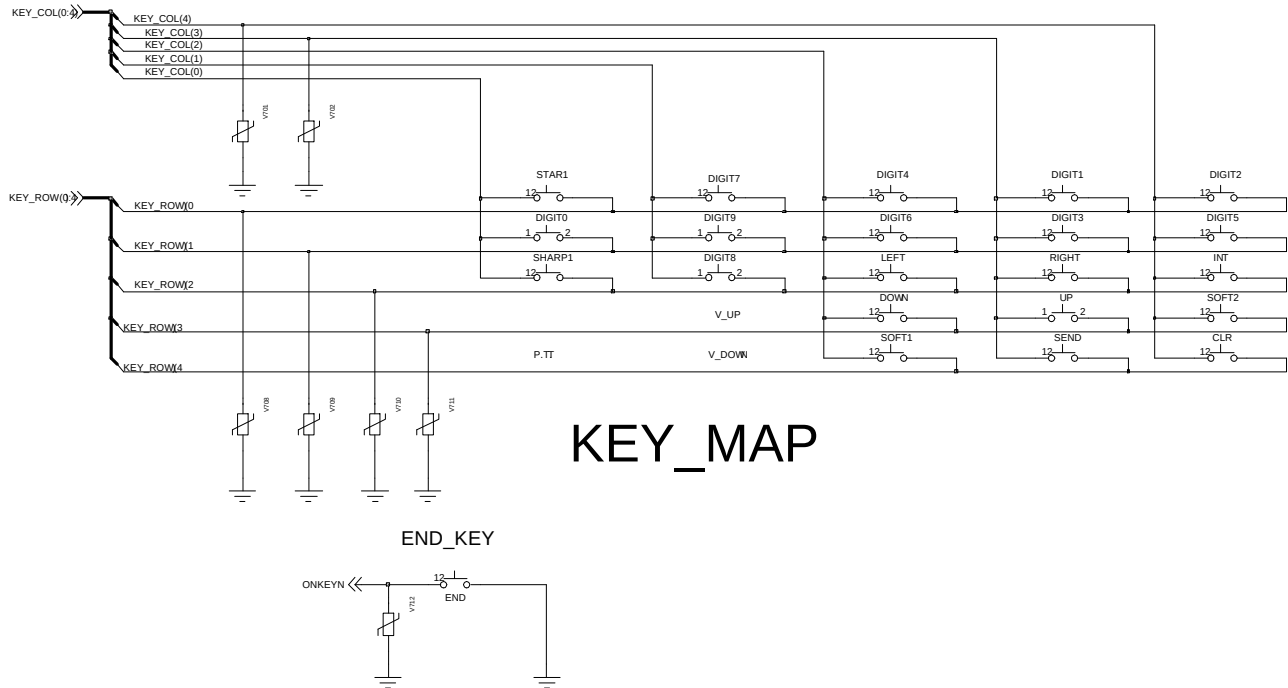




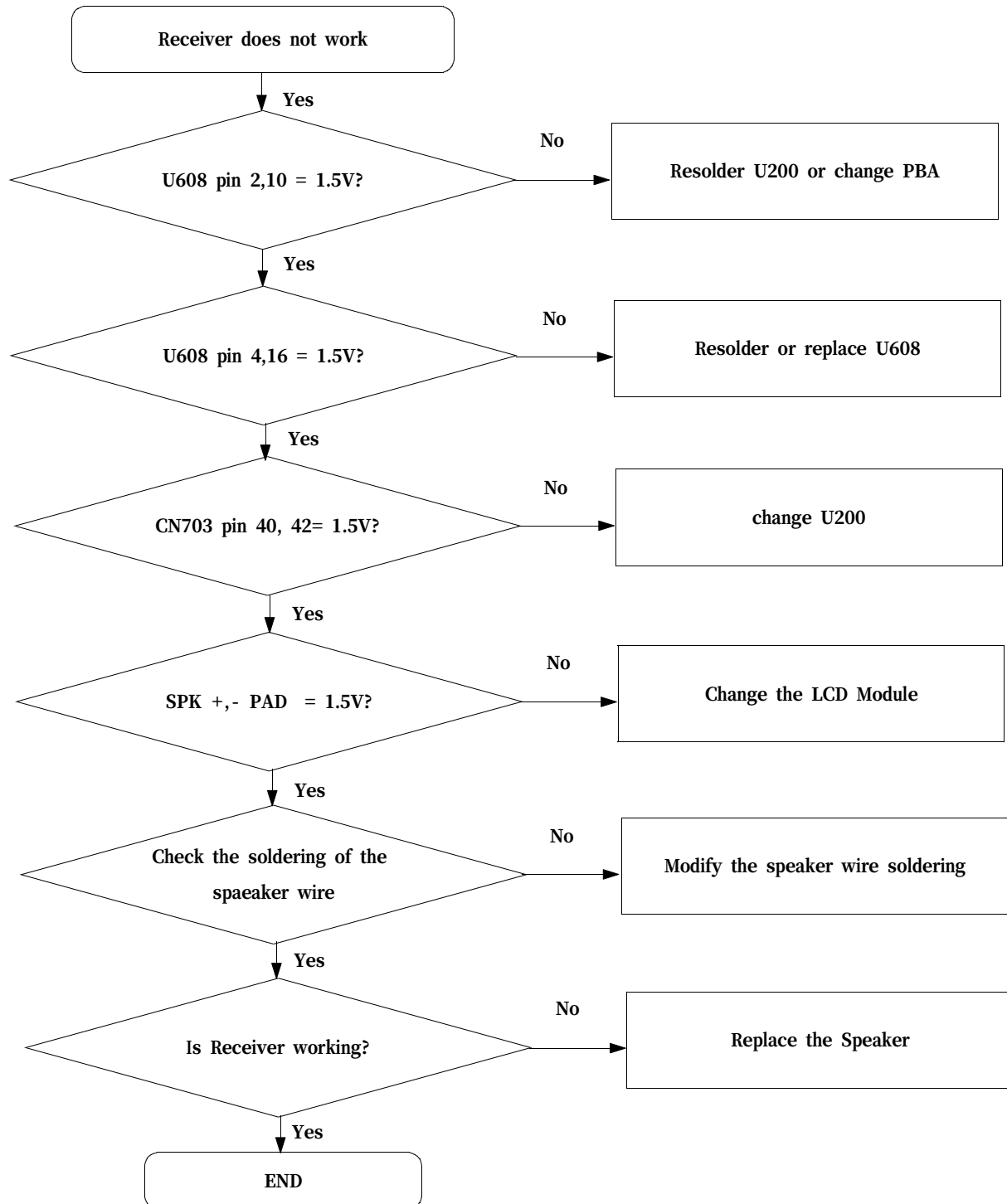


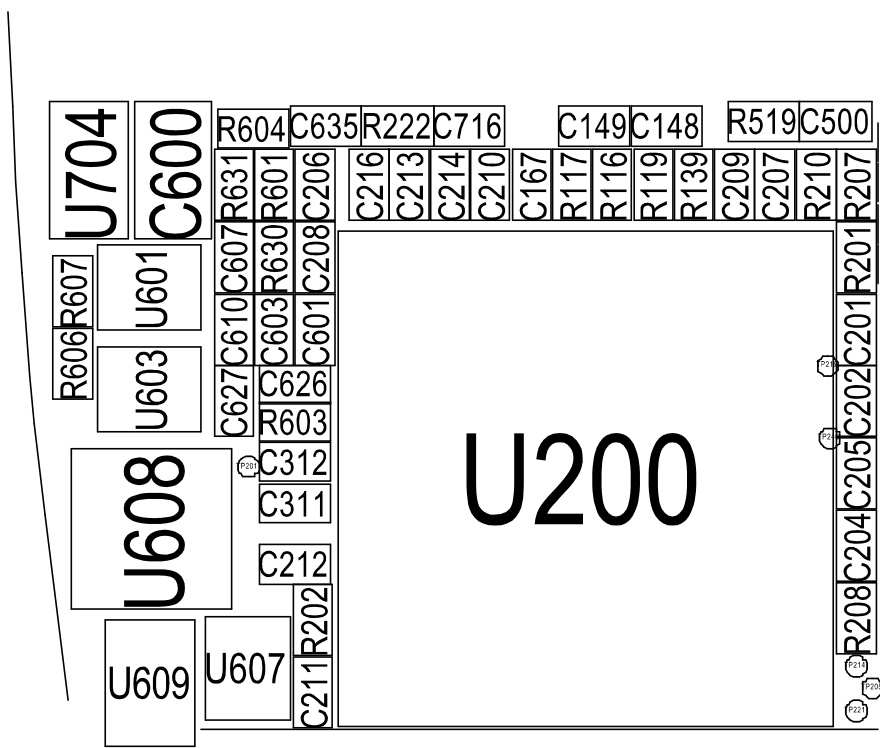
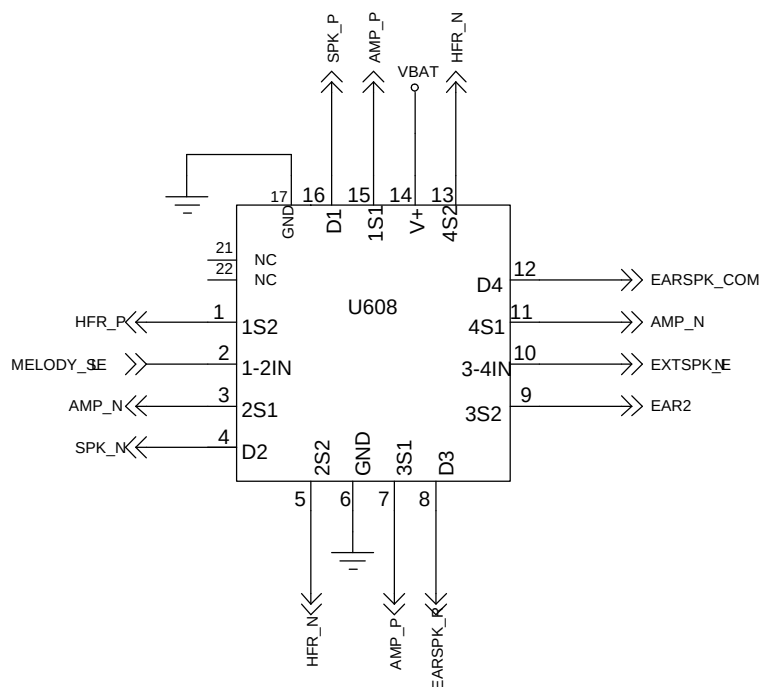
## 7-7. Key Data Input



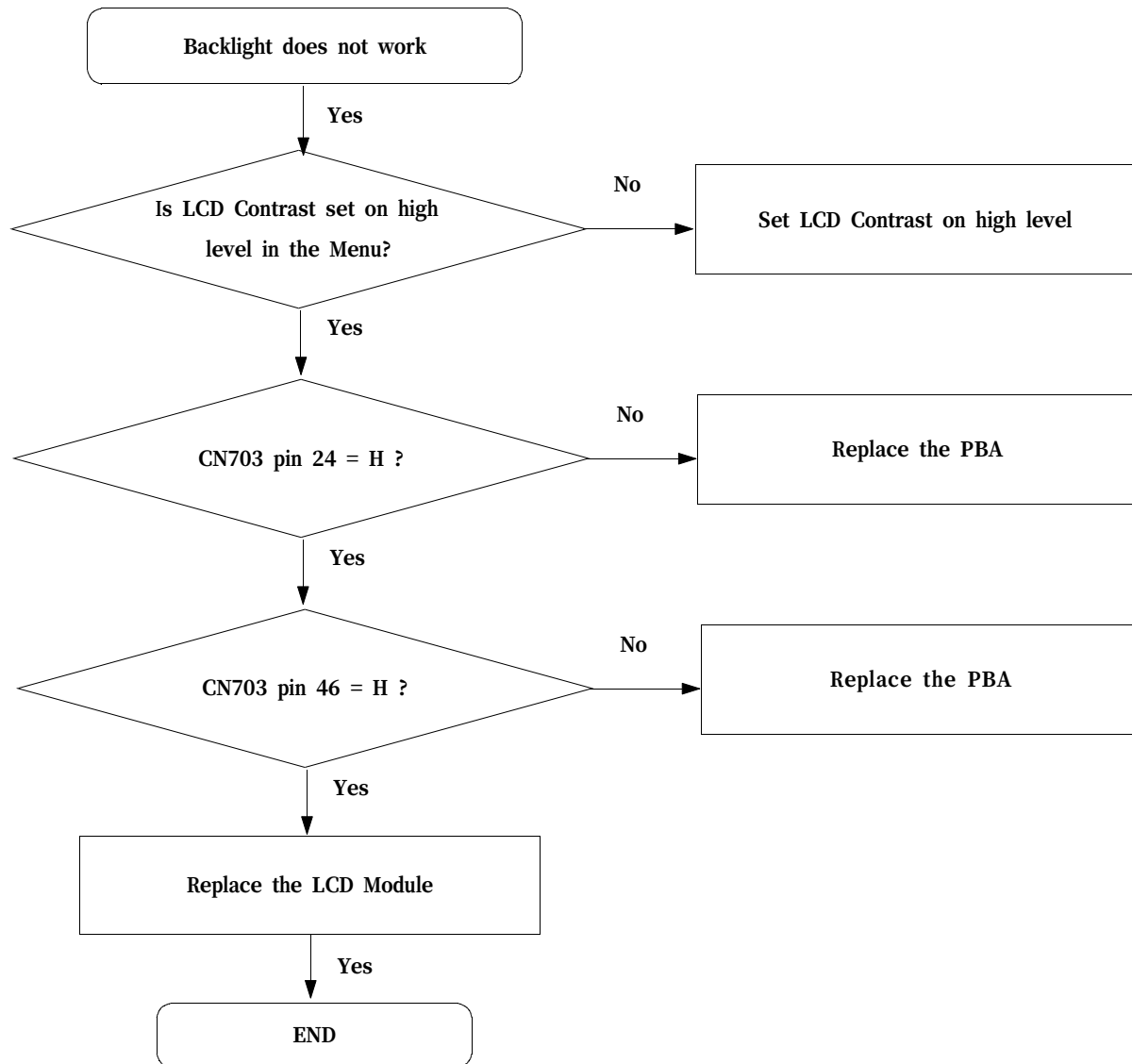


## 7-8. Receiver Part

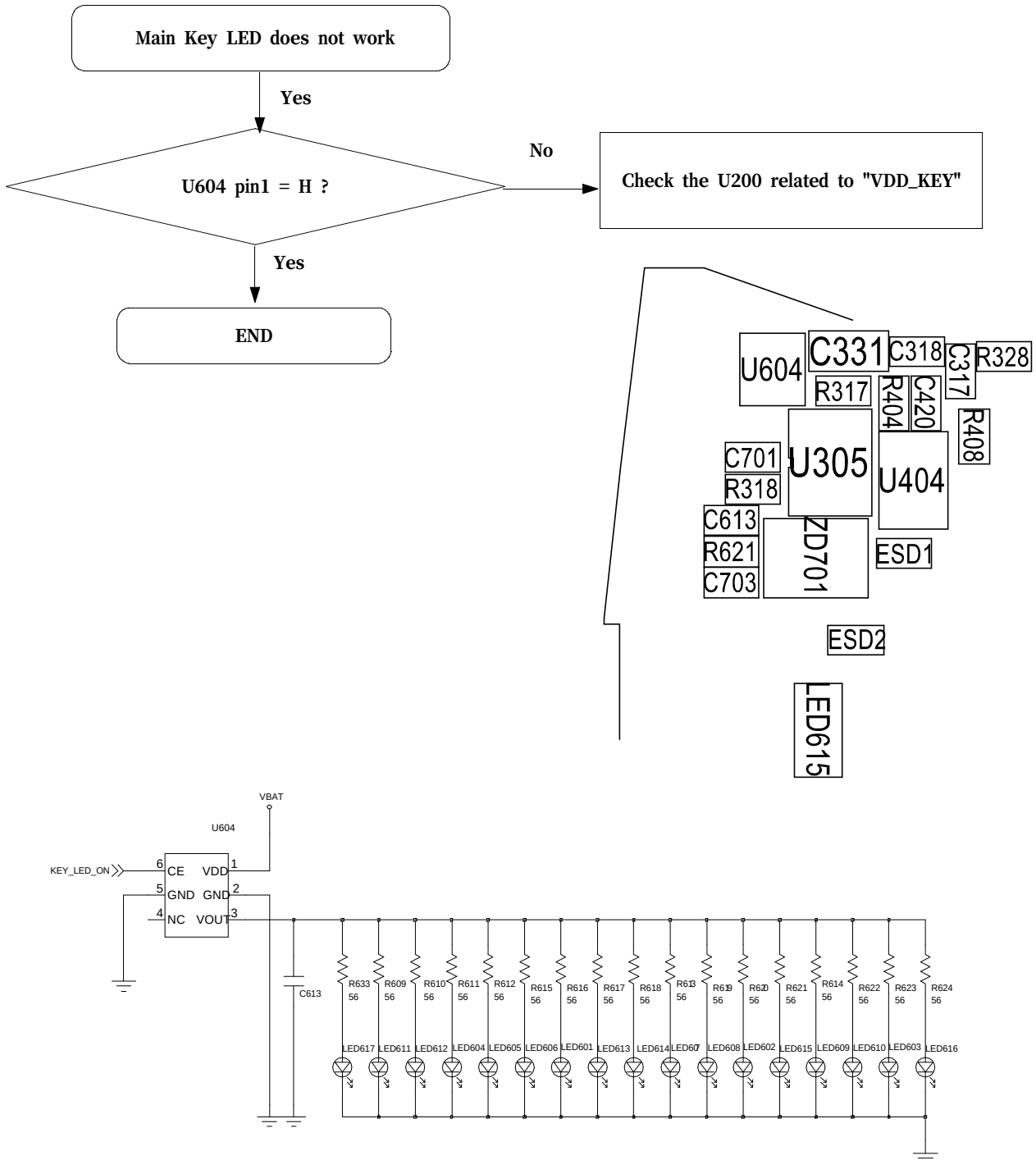




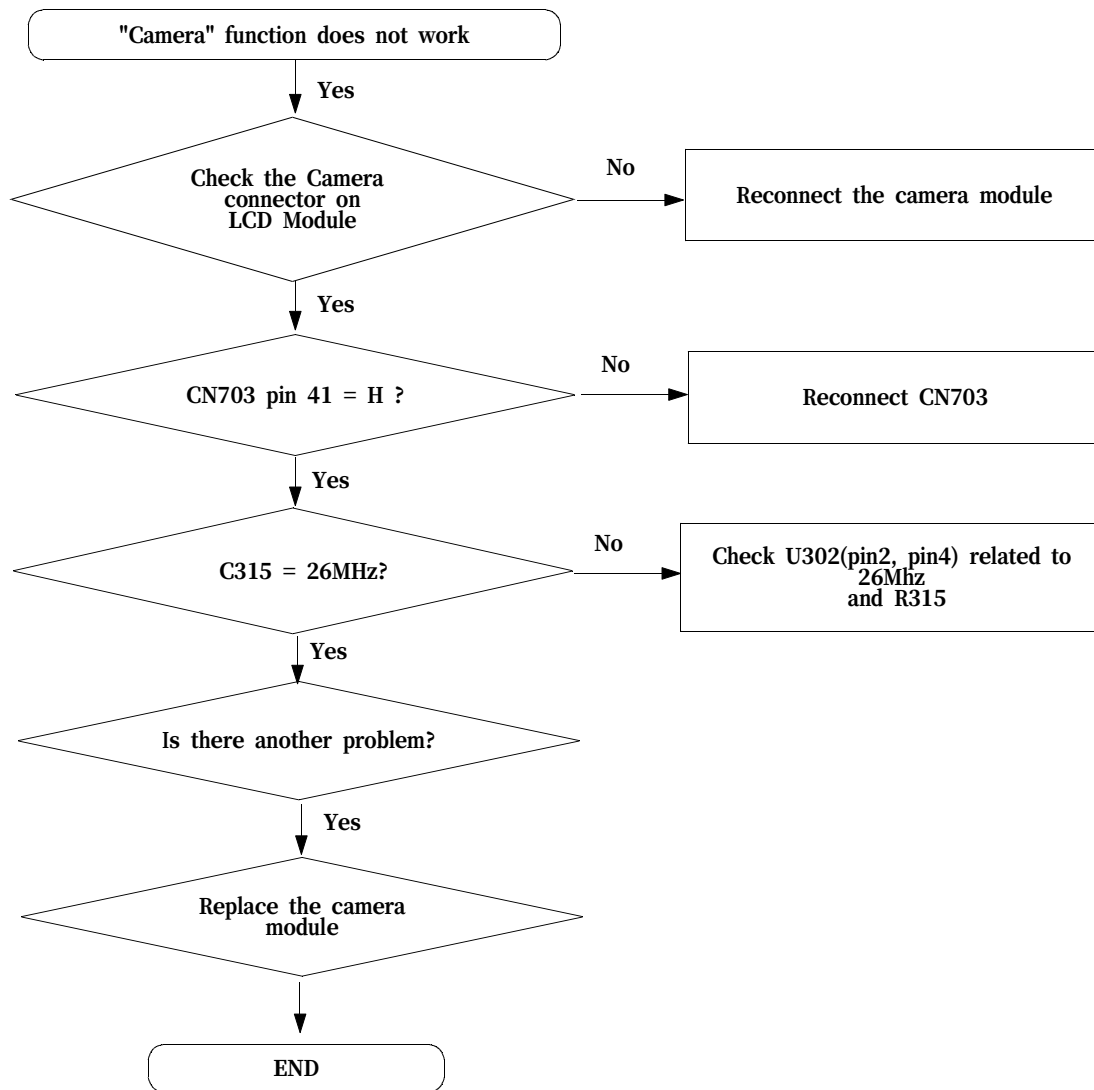
## 7-9. Back Light (for Color Main LCD)



## 7-10. Key Back Light



## 7-11. Camera part

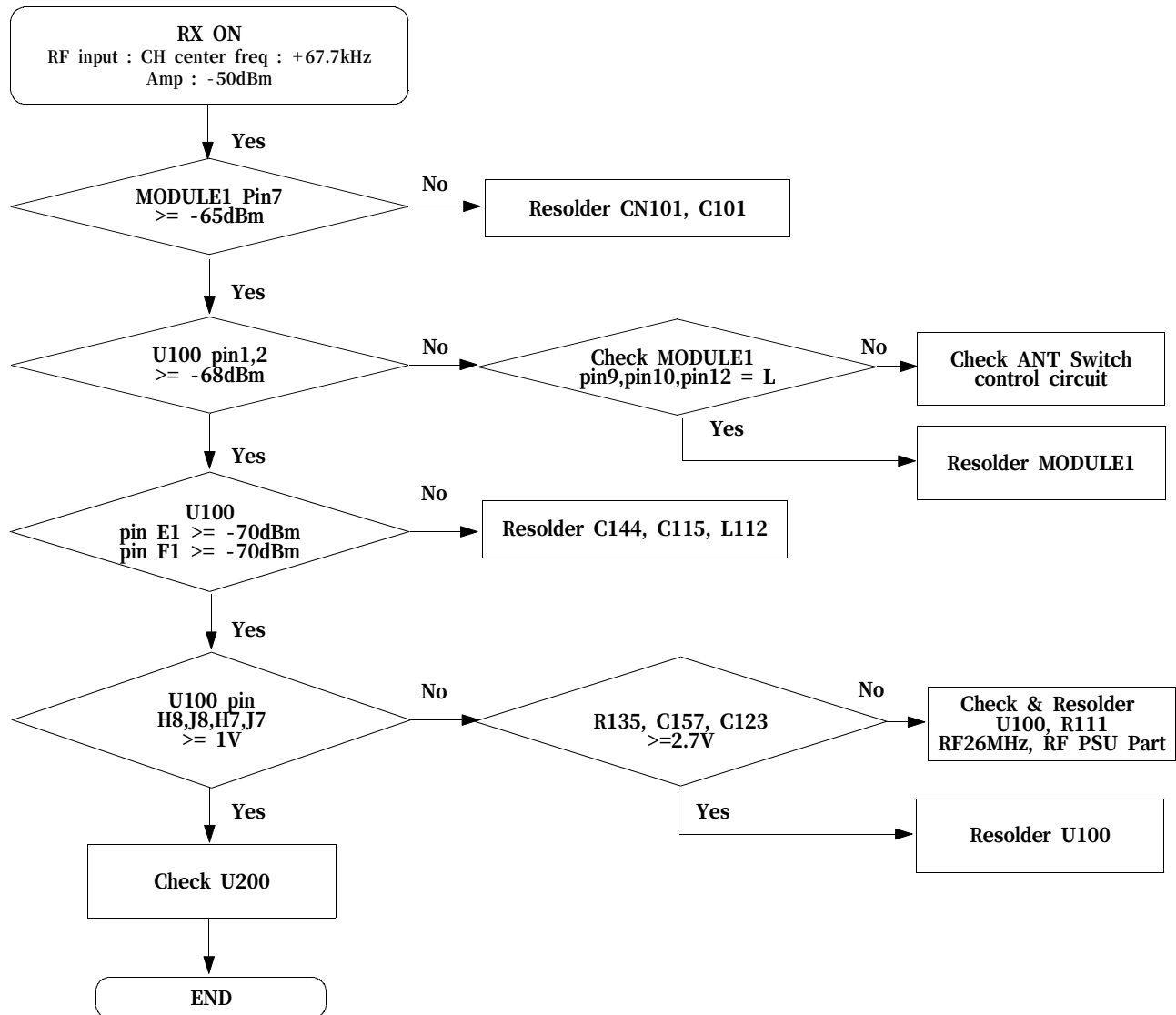




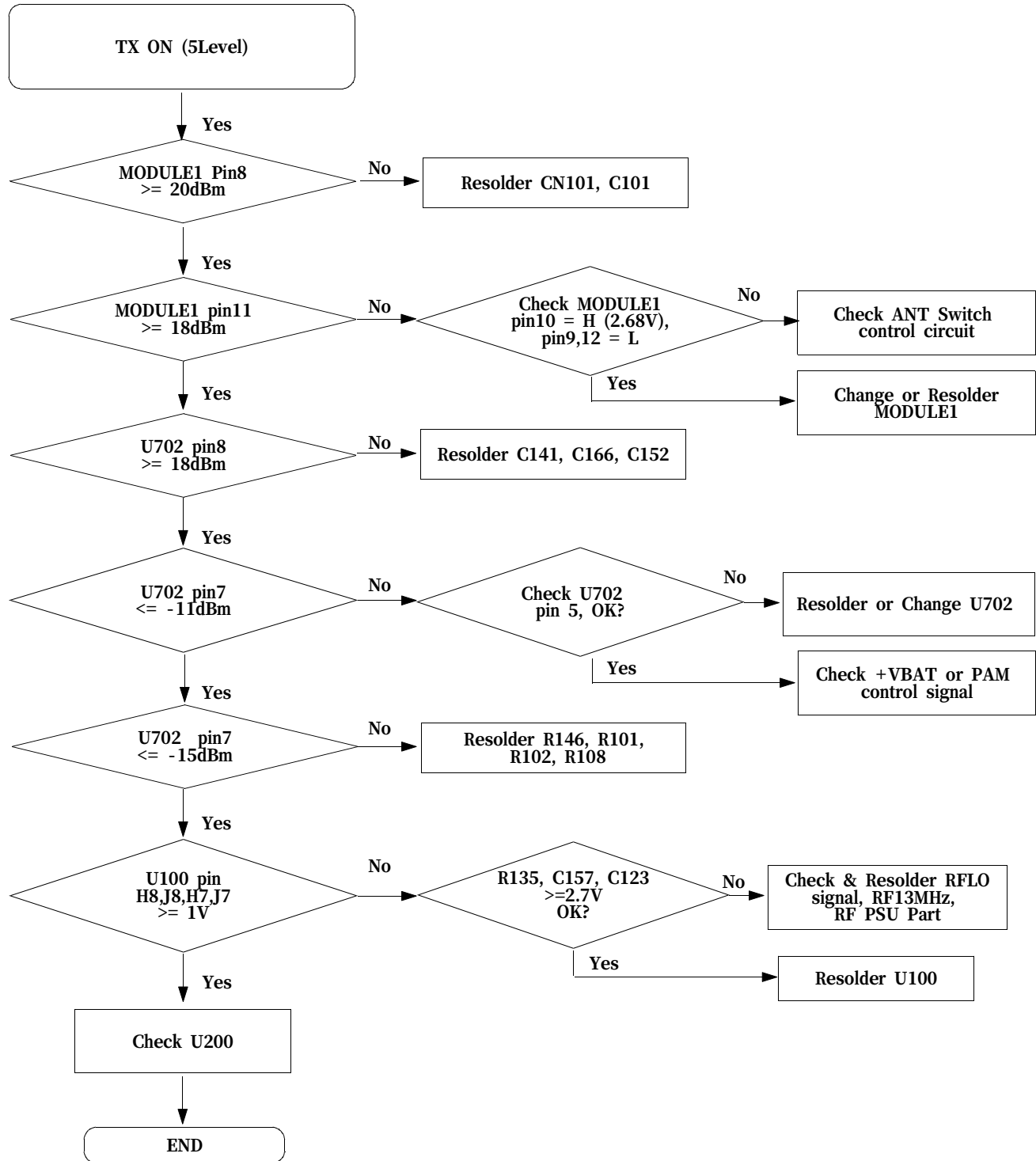
# U304



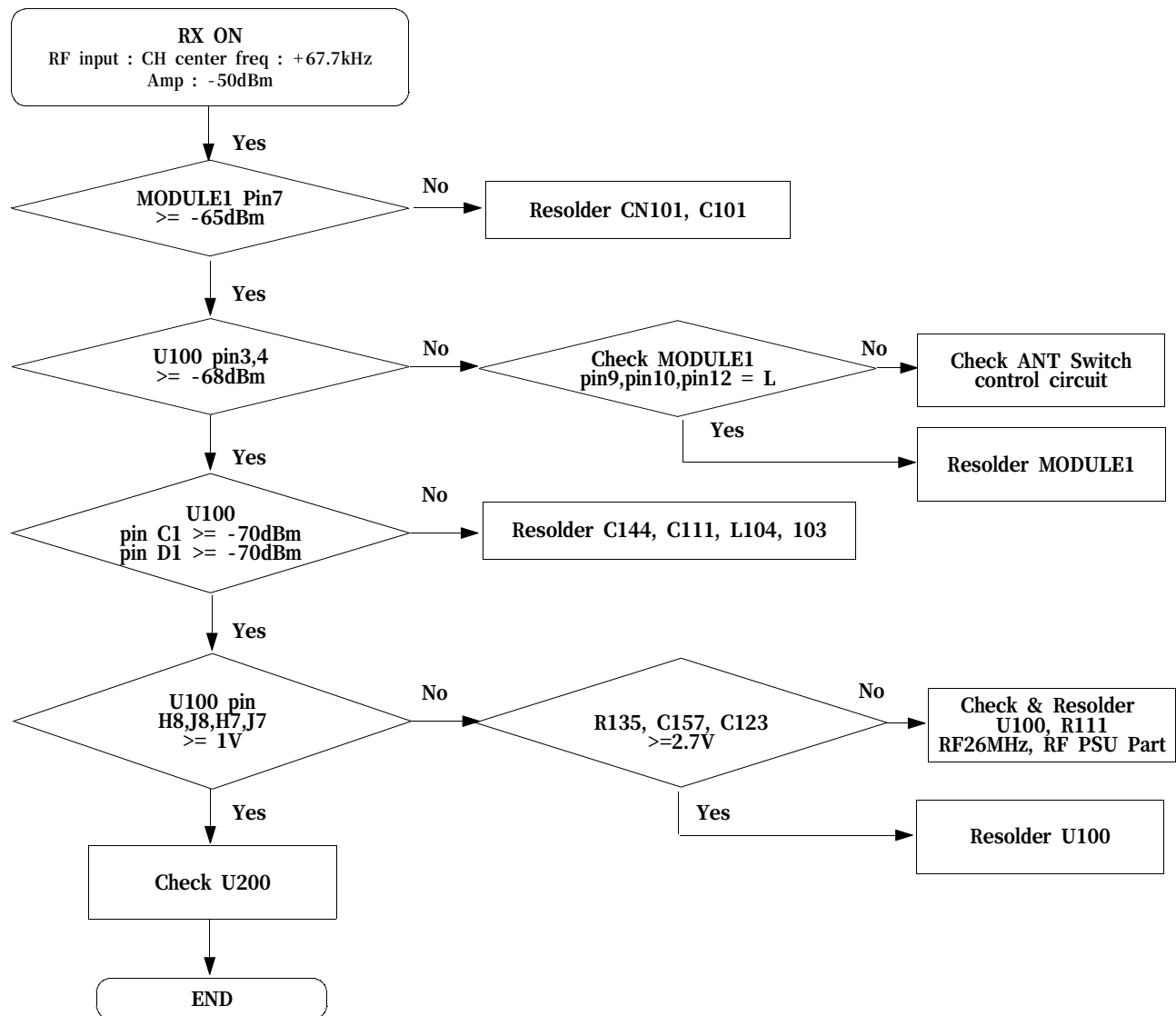
## 7-12. GSM Receiver



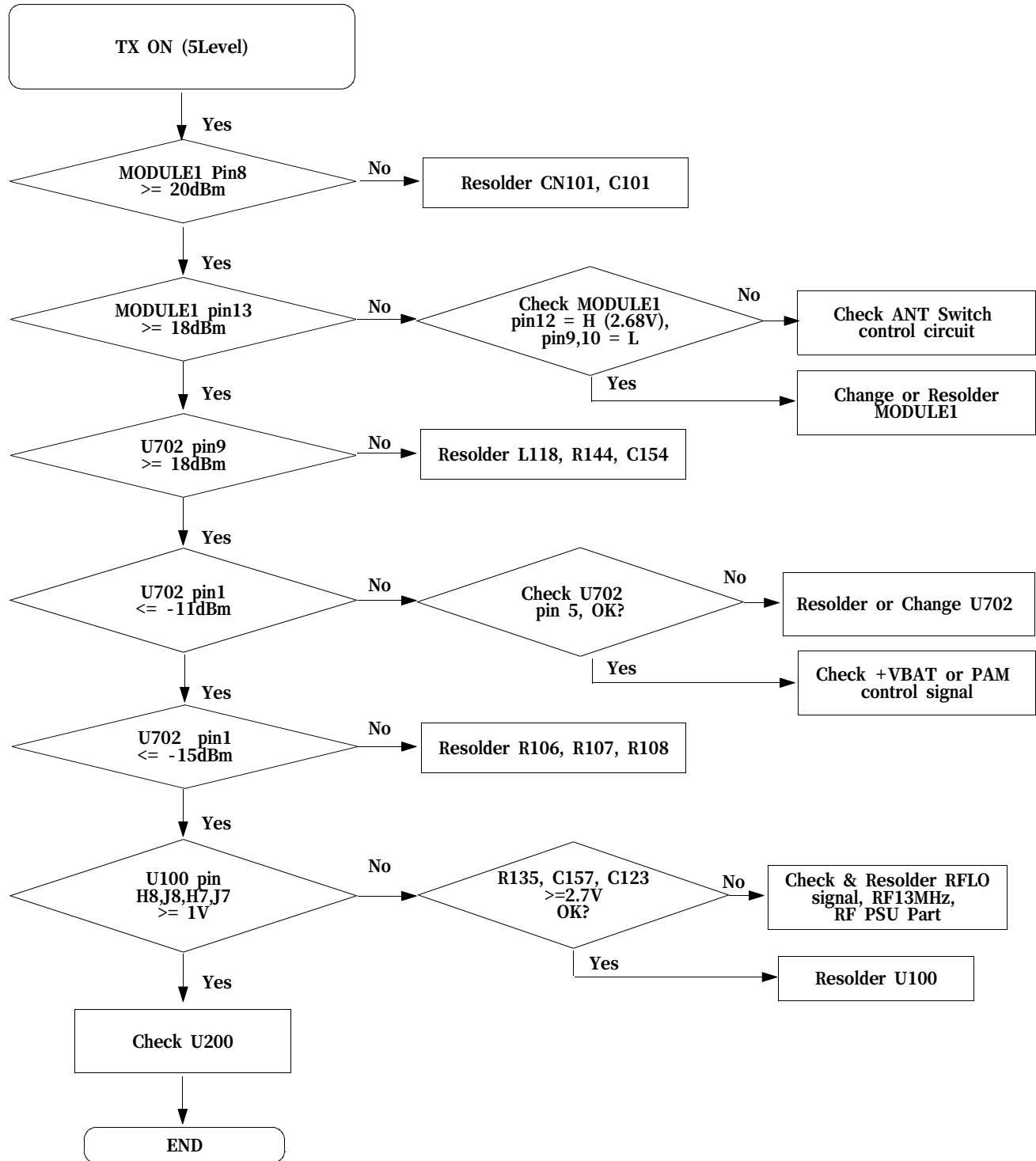
## 7-13. GSM Transmitter



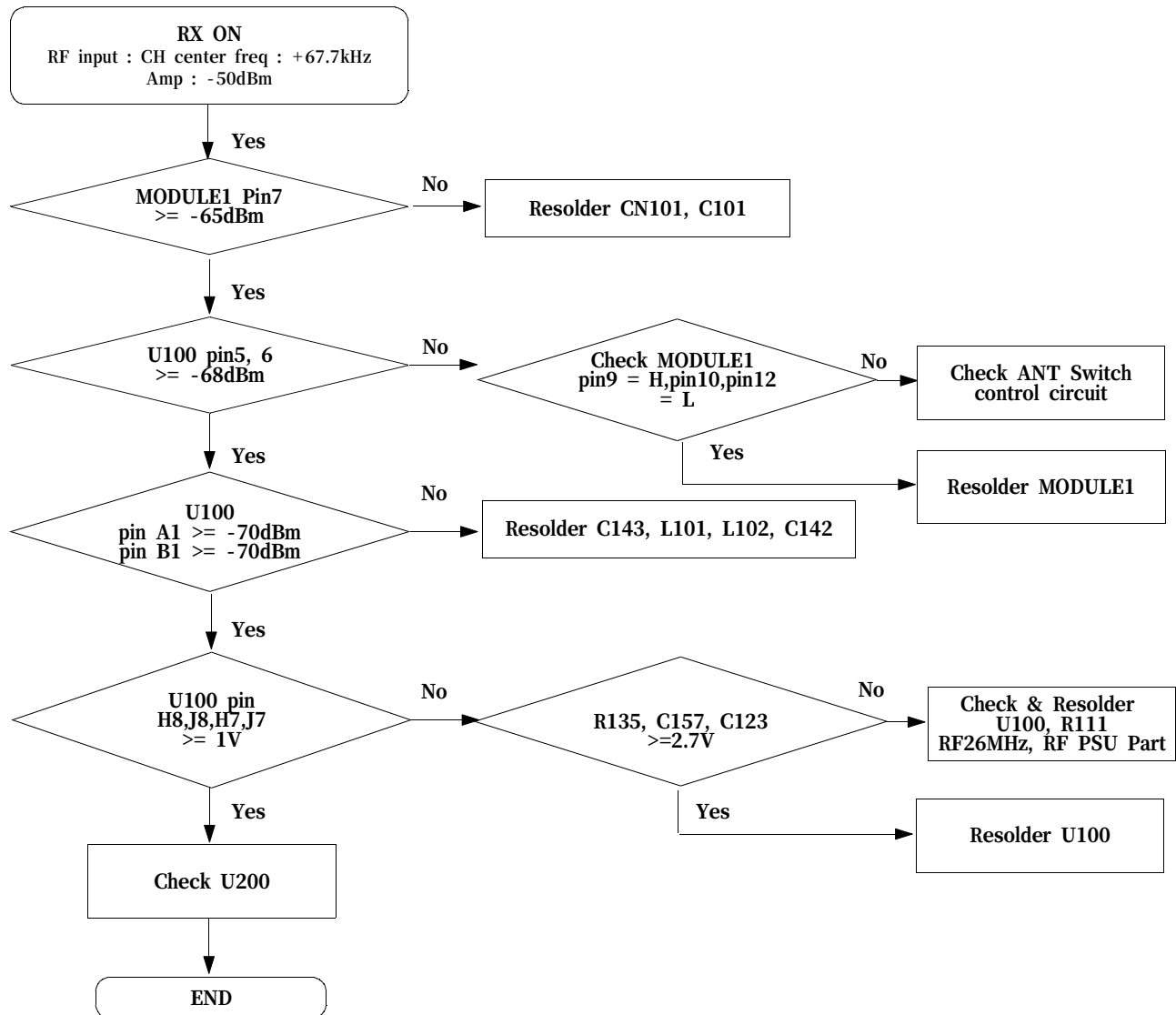
## 7-14. DCS Receiver



## 7-15. DCS Transmitter



## 7-16. PCS Receiver



## 7-17. PCS Transmitter

