

SAMSUNG

DUAL BAND Mobile Cellular Phone SGH-2100

SERVICE *Manual*

DUAL BAND Mobile Cellular Phone



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1. General Description

1-1 GSM System

1-1-1 Calls

GSM® is an acronym for Global System for Mobile communications®, using TDMA for wide-area cellular operation. The GSM system consists of the sub-systems shown;

The Mobile Station (MS) talks to the Base Station System (BSS) via an RF air interface. The Base Station System (BSS) consists of Base Transceiver Station (BTS) and a Base Station Controller (BSC). The microwave link between BTS and BSC is called an Abis interface. Generally one BSC controls 20 to 30 BTSs, and a Mobile Switching Center (MSC) controlling the traffic among different cells would be reported back from a number of BSSs. A Visitor Location Register (VLR) will be allocated to one MSC to find the mobiles out of their home cell by listing them to VLR. The MSC would also be connected to the Home Location Register (HLR), the Authentication Center (AC) and the Equipment Identity Register (EIR) So the system verify that the users and equipment are legal subscriber.

1-1-2 Channels

Channels used in the GSM system can be divided into two classes - Logical and Physical channel. Physical channels can be described in terms of their frequency and time domain characteristics. They are the actual frequencies and timeslots the MS and BS transmits or receives on. The logical channels are mapped onto these physical channels logically. Any particular and instant, physical channels may be control or traffic channels, which determines the function of a physical channel at a particular point in time.

1-1-3 Airinterface of ARFCN (Absolute Radio Frequency Channel Number)

1	2	3	...	...	...	...	...	123	124
890.2 MHz								914.8 MHz	

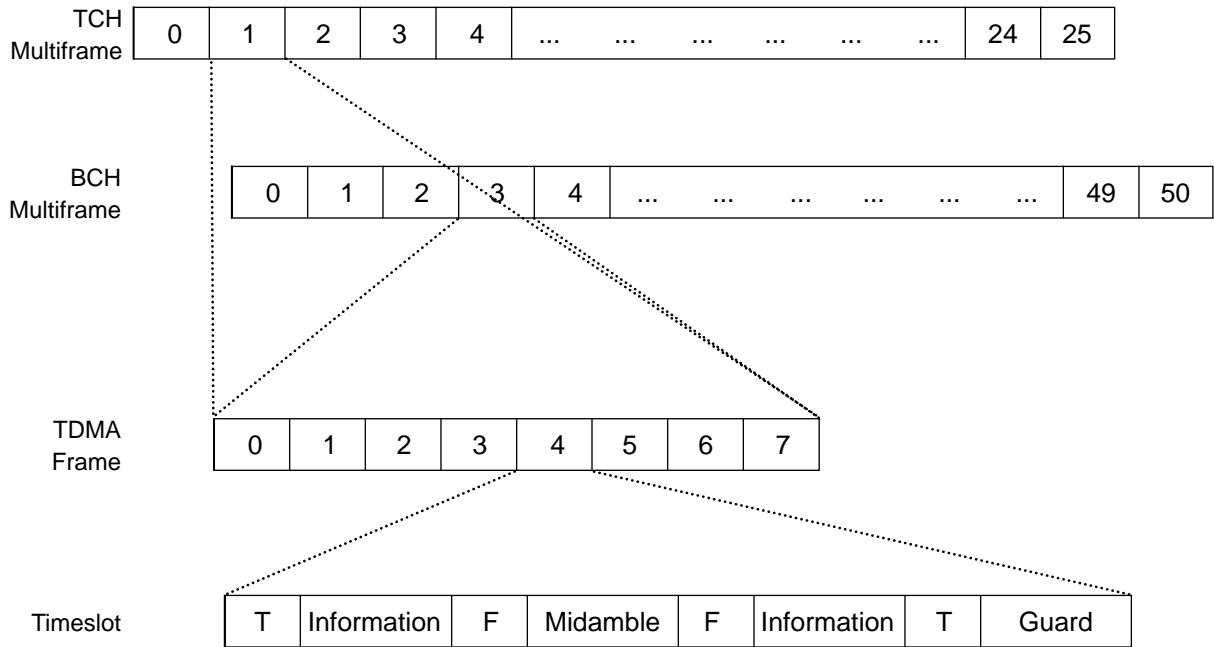
1	2	3	...	...	...	...	...	123	124
935.2 MHz								959.8 MHz	

$$\text{P-GSM: TX: } F_l(n) = 890 + 0.2 * n \quad (1 \leq n \leq 124)$$

$$\text{RX: } F_u(n) = F_l(n) + 45$$

< Fig. 1 ARFCN Diagram >

1-1-4 GSM TDMA Timeslots, Frames, and Multiframe



< Fig. 2 Concept of Frames and Timeslots >

1-1-5 Logical Channel

TCH (Traffic CH) is used mainly for transferring the speech information, and the BCH (Broadcast CH) is related to control information. The major function of BCH is transferring information on the downlink for MS synchronization, identification, paging, and control. BCH is always radiated from every cell and the MS tries to find the BCH which has highest level soon after turned on. The organization of BCH is shown below; FCCH (Frequency Correction Channel), SCH (Synchronization Channel), and BCCH (Broadcast Control Channel). CCCH (Common Control Channel) will play a role like a message board, and is divided into two control channels - PCH (Paging Channel) and AGCH (Access Grant Channel). SACCH (Slow Associated Control Channel) exists every 12 frames, controlling and controls the TX power level and timing advance of MS, transferring cell information to MS on downlink, transferring the information about RX level, Quality, and RX level of adjacent cell on uplink. FACCH (Fast Associated Control Channel) steals and changes the TCH when needing a Handover. SDCCH (Stand-alone Dedicated Control Channel) and RACH (Random Access Channel) operate during the call setup procedure.

1-2 GSM HHP Feature

1-2-1 Main Set (HHP)

The main set is a microprocessor (KERNEL5)-controlled, full duplex radiotelephone system that provides the user with GSM cellular service through cell sites linked to control centers. It also provides functions related to frequency control, power control, and many user-convenience features.

1-2-2 Desktop Charger

The DTC is designed to charge batteries from commercial mains. The charger has two battery receptacles. The forward one is for rapid charging, and the rear for normal charging.

1-2-3 Travel Adaptor

The travel adaptor is designed to operate the main set by supplying power to directly, while charging batteries from commercial mains.

1-2-4 Cigar Lighter Adaptor

A cigar lighter adaptor is used to operate the main set and charge the battery from a 12 volt vehicular electrical system.

1-2-5 Hands Free Car Kit

The Hands Free kit provides unlimited talk time, as power is supplied by the vehicular electrical system, and improved receiving and transmitting due to the external antenna. The Hands Free car kit adapts an external speaker, a hands-free microphone, a bracket, and a cradle for mounting the main set. ®Hands Free® means user can have a conversation without holding the phone by hand.

MEMO

2. Circuit Description

2-1 RF Part

2-1-1 Frequency Generator

The 13MHz reference clock (VCTCXO) drives the logic and RF part. The 13 MHz reference is controlled by the logic (10bits DAC minimum) and is kept to a frequency error less than ± 0.1 ppm after synchronization with the GSM network.

A 540 MHz oscillator is divided by 2 to generate a fixed 270 MHz VHF LO used in the TX I,Q modulator and mixed by 270 MHz. The UHF LO for the first RX down conversion and the TX offset mixing works in superheterodyne mode to reduce the relative bandwidth and to be able to work at a frequency greater than 1 GHz.

2-1-2 Transmitter

The baseband GSM chipset (Kernel5) generates I and Q baseband signals for the transmit vector modulator. The modulator provides more than 40dBc of carrier and unwanted side-band rejection and produces GMSK modulated signal, the 'reference' signal at 270 MHz which passes to the offset phase-locked loop block (OPLL). The OPLL consists of a down-converter, phase detector, loop filter and transmit VCO operating at the final RF output frequency. The down converter mixes the UHF LO (eg. 1172 MHz) with the transmit VCO signal to generate a 'feedback' signal at 270 MHz. The 'feedback' signal passes via a limiter to one port of the phase detector. The GMSK 'reference' signal from the vector modulator passes via a second limiter to the other input port of the phase detector. The phase detector generates an error current proportional to the phase difference between the 'feedback' signal from the down-converter and the 'reference' signal from the vector modulator. This error current is filtered by a second order low-pass filter to generate an output voltage which depends on the GMSK modulation and the desired channel frequency. This voltage controls the transmit VCO such that the VCO output signal, centered on the correct RF channel, is frequency modulated with the original GMSK data. The centre frequency of the transmit VCO is offset from the UHF LO frequency by 270 MHz. The OPLL acts as a tracking narrowband band pass filter tuned to the desired channel frequency. This reduces the wideband noise floor of the modulation and up-conversion process and provides significant filtering of spurious products. The OPLL architecture results in a low-noise GMSK modulated signal at 902 MHz with very low spurious content.

The RF GMSK output from the transmit VCO is fed via TX SAW filter to the RF power amplifier. The peak output power and the profile of the transmitted burst are controlled by means of a closed feedback loop. The RF output from the PA is sampled with a directional coupler. The sampled signal passes to an RF detector diode whose output voltage is dependent on the incident RF level. This 'feedback' voltage passes to the inverting input of the loop integrator. A 'reference' signal is generated within the baseband section under control of the layer 1 software. The loop maintains zero difference between the 'feedback' signal and the 'reference' signal. In this way, the amplitude and shape of the transmitted RF burst may be controlled by the baseband processor. In particular, the rise and fall profiles can be controlled to meet the stringent power/time templates and switching transient requirements of GSM 05.05.

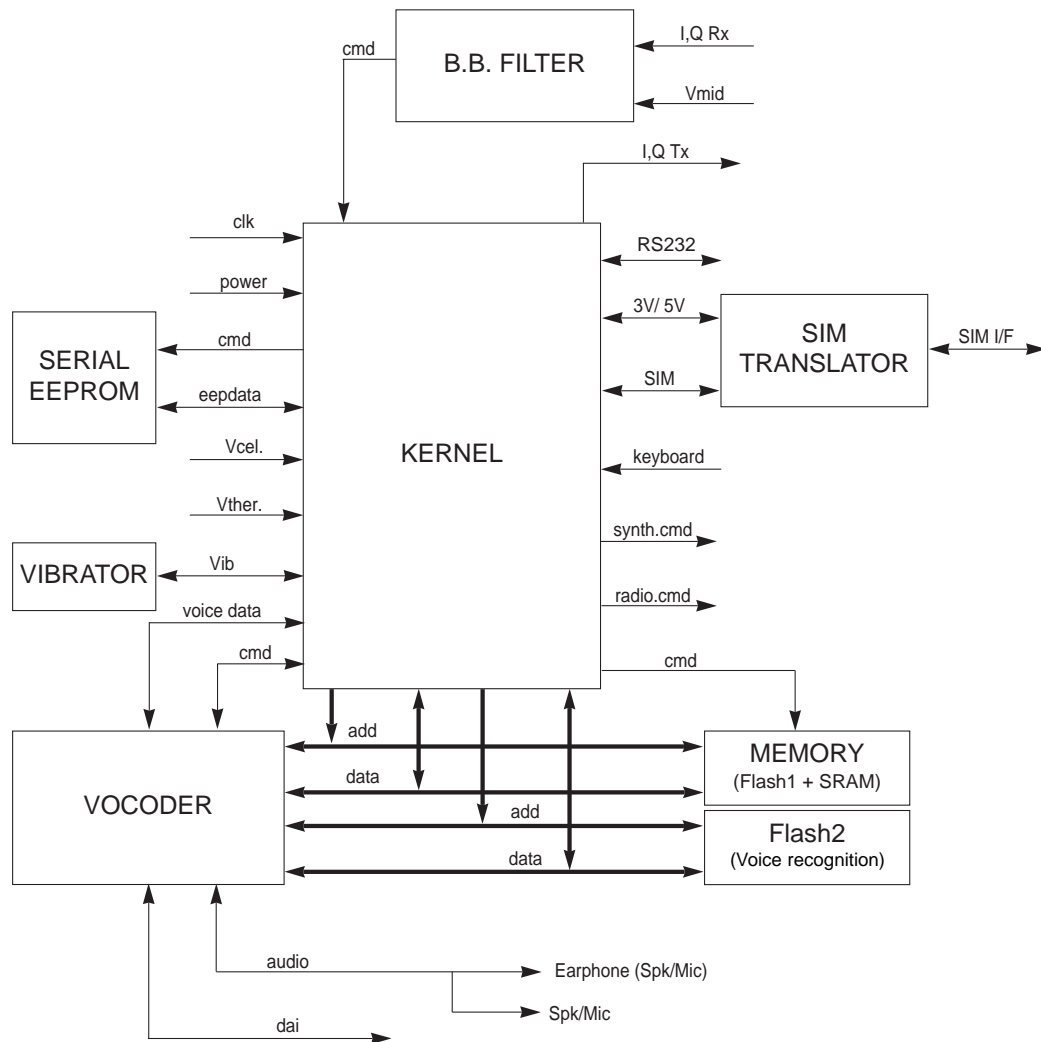
The RF output passes to the antenna connector via an integrated TX/RX switch and lowpass filter to attenuate the harmonics generated by the power amplifier.

2-1-3 Receiver

The incoming RF signal passes through the integrated lowpass filter and TX/RX switch. This is followed by a 947 MHz SAW Band Pass Filter and a bipolar low-noise amplifier (LNA). The HD155101BF includes an active bias circuit which stabilizes the DC operating point of the LNA. The RF signal passes via a second RF SAW filter to the first receive mixer. This mixer is implemented as a Gilbert cell within the HD155101BF. The incoming signal at 947 MHz mixes with the UHF LO at 1172 MHz to generate a 225 MHz IF signal. The IF signal passes from the mixer output via a 225 MHz IF SAW filter to the first IF amplifier. A further internal Gilbert cell mixes the 225 MHz IF signal down to the 45 MHz second IF. The 45 MHz output from the second mixer is filtered and passes to the AGC amplifier. The gain of the AGC amplifier is set by a DC control voltage supplied by the baseband. The usable control range is in excess of 80dB. Finally, the AGC output signal at 45 MHz passes to the demodulator and is mixed down to DC to generate I and Q baseband signals. The baseband signals pass via baseband filter to the baseband A/D converters. The remainder of the channel filtering is performed by the baseband chipset.

2-2 Baseband Part

2-2-1 General Block Diagram



< Fig. 3 Baseband Block Diagram >

2-2-2 ROM1 & SRAM

8M (X16) Flash ROM and 2M (X8) bit SRAM are used. Two devices are merged in one package. This device is a combination memory organized as 524, 288 x 16 bit flash memory and 262, 144 x 8 bit static RAM in one package.

2-2-3 ROM2

A 8M (X16) bit Flash Memory is used for the voice recognition and voice memory. This device is an 8, 388, 608 bit flash memory with batch chip erasing, sector erasing, and byte and word writing using a single 3V power supply.

2-2-4 EEPROM

The kernel requires some external non-volatile memory to store various system parameters, such as RF control calibrations, extra dial stores etc. A 64 K (65, 536) bit device is used. This device is internally organized 8192 x 8. This device features a serial interface and software protocol allowing, operation on a simple, two wire bus.

2-3 SIM

2-3-1 SIM Interface

An interface is provided to a serial port controlling the SIM interface. It can support 5V and 3V SIM interface. The hardware interface consists of SIMVCC, SIMdata I/O, SIMclk output, SIMRST output, and SIMPRES input. The interface is controlled through TX Data, RX Data, control, and status registers. Transmit and receive data may use a 256 byte buffer or be exchanged through single byte registers. SIMVCC may be used to control the power supply to the SIM card.

2-4 POWER MANAGEMENT

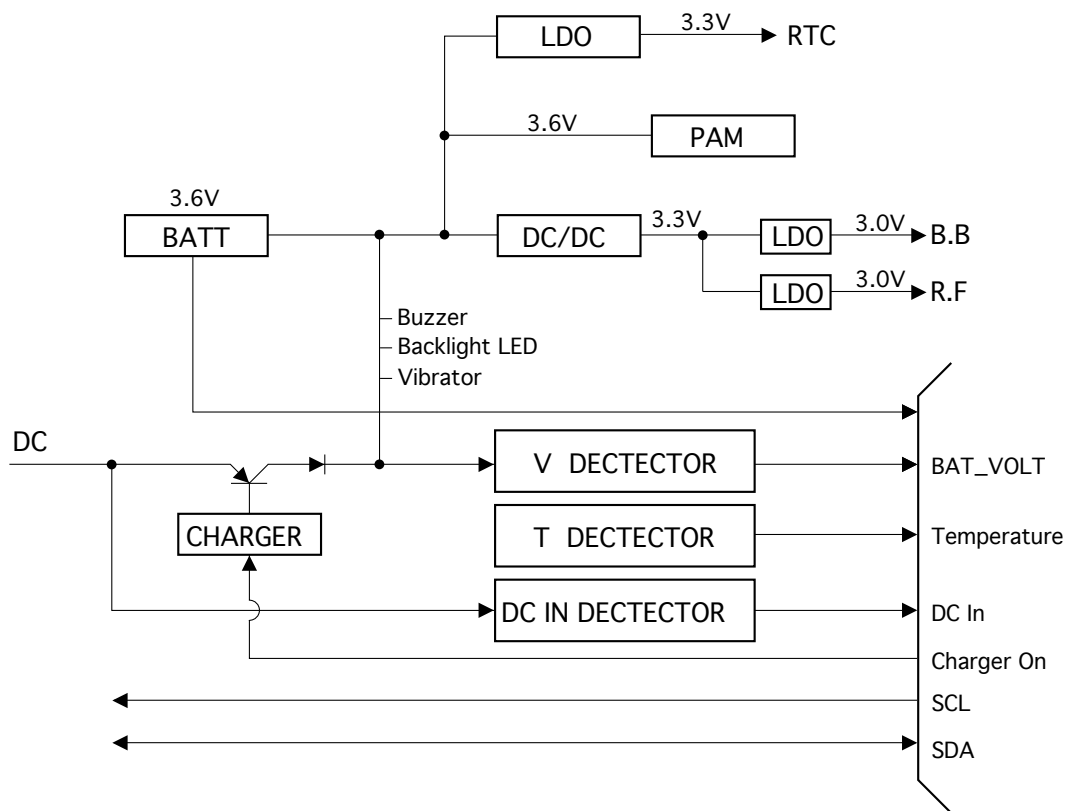
2-4-1 DC/DC Converter

Our 1 cell Li-ion battery solution requires a up-converting DC/DC conversion circuit for efficiency improvement. The device is a PWM Step-up DC/DC converter IC. Specification is as below;

- V_{in} : 2.75 V ~ 4.2 V
- V_{out} : 3.3 V ~ 4.1 V
- Ripple: less than 50 mVpp
- Efficiency: typ. 85 % (up to 96%)

2-4-2 Charger Circuitry

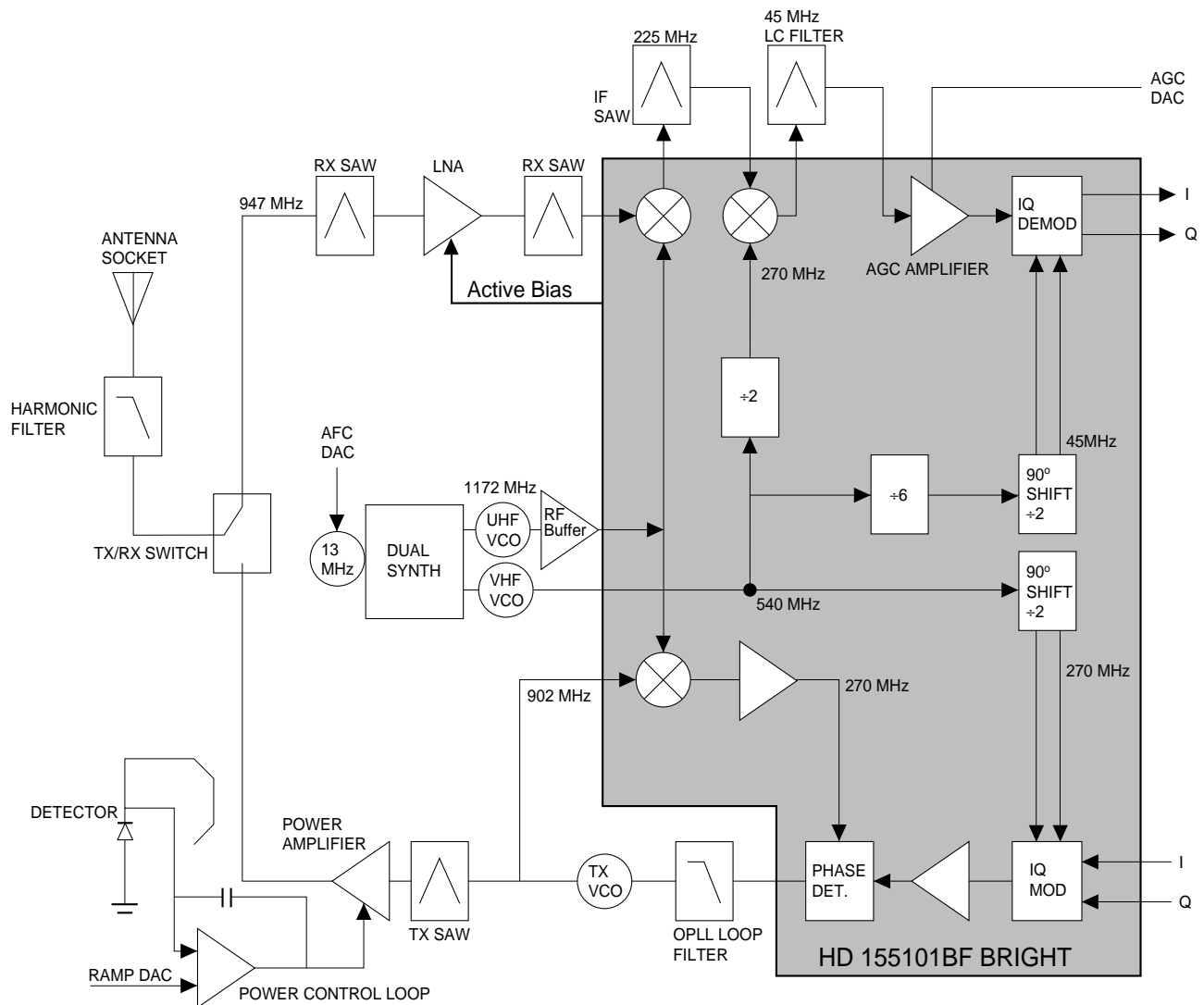
The simplified built-in charger circuit diagram is as below ;



< Fig. 4 Built-in Charger Circuitry >

2-5 RADIO INTERFACE

2-5-1 RF Block Diagram



< Fig. 5 RF Block Diagram >

2-5-2 Baseband Filter

To control the spectral splatter and thus the intersymbol interference (ISI), filtering is applied to the baseband pulses. The required filtering is achieved very simply using a small, low cost discrete LC structure, which has the great advantage of not consuming current.

2-6 AUDIO

2-6-1 Audio Inputs

The Handset provides two audio inputs:

- Built in microphone
- Connection for external microphone

A microphone biasing amplifier reduces component count in the overall system design:

- Supply: 2.2 V regulated to $\pm 20\%$
- Different output to eliminate possible coupling noise problems, MICBIASP and MICBIASN
- Maximum current: 500 μ A
- Maximum load: 200 pF

2-7 EXTERNAL INTERFACE

A 18 pin connector is mounted on the bottom corner of the PCB. The antenna external connection is on the right hand side of this connector.

2-8 KERNEL SPECIFICATION

2-8-1 FEATURES

- Complete Layer 1 support
- TDMA burst building (ETSI Rec.5-02)
- Coding and interleaving (Rec. 5-03)
- GMSK with differential coding (Rec. 5-04)
- Programmable power template for Tx burst control
- AGC in Receive mode
- I,Q inputs or single intermediate frequency (IF) input
- Detection of FCCH, SCH, Normal and Dummy Bursts
- Flash ROM programming abilities
- Auxiliary ADC for battery voltage and temperature monitoring

2-8-2 Equalizer

MAJOR FEATURES

- Frequency Correction Burst Correction
- Frequency Correction Burst Frequency Measurement
- Synchronization Burst Long Preamble Correlation
- Normal Burst Short Preamble Correlation
- Channel Impulse Response Generation
- Possible Received Value Generation
- Data Equalization
- Carrier Power Measurement
- Doppler Shift Measurement and Correction
- Scaled 7-Bit Soft Decision
- I and Q component recovered from Received Data

2-9 VOCODER SPECIFICATION

2-9-1 FEATURE

- Complete GSM voice encoding and decoding functions
- DTX function
- Voice Activity Detection (VAD) output
- Fully asynchronous coding and decoding
- A-law PCM conversion
- DTMF generation
- Sidetone level control
- Programmable microphone amplifier with two differential input ports
- Two programmable audio output amplifiers
- 13 MHz master clock

2-10 Desk Top Charger

2-10-1 Charging

The desk-top charger contains switching regulator to charge a lithium battery from an DC/DC adaptor. The battery type is detected at pin 15 (MPU) through U5 (front port) and U26 (rear port). Battery charging current is turned into V_i . V_i is measured at pin 12 (MPU) after R32 and C23 to cancel the noise. When the battery voltage is too low, the charging circuit turns to trickle mode using Q9 and Q11.

2-10-2 Control Part

This circuit contains 4-bit micro controller (U21), including an I/O port, timer, A/D converter to control battery charging. This circuit uses a 4 MHz main clock and +5V power.

BATTERY VOLTAGE DETECTION

Battery voltage from the front port is detected at R20, R18 and measured at pin 13 (MPU).
Battery voltage from the rear port is detected at R14, R13 and measured at pin 14 (MPU).

BATTERY TEMPERATURE DETECTION

The charger always detects the battery temperature via NTC thermistor to prevent battery thermal problems. This circuit is composed of parallel resistors because NTC thermistor has log-scale thermal characteristics. If the battery temperature exceeds 55 degrees C, charging stops.

AUTONOMOUS TIMER

If MPU has stopped charging and the timer goes to the 'on' state by an external shock, overcharging may occur. A timer (U7-4) prevents the battery from being overcharged by any unexpected external influence.

2-11 Cigar Lighter Adaptor (CLA)

2-11-1 General Description

The CLA is a regulated switched-mode power supply designed for use with a portable HHP. The power supply is connected directly to the phone and provides a voltage path for charging a battery installed in the hand-held portable phone.

2-11-2 Circuit Description

The input voltage range of CLA is from 12 Vdc to 30 Vdc, and the nominal voltage is 13.7 Vdc. The output current is 600 mA. The ripple and noise amplitude is less than 50 mV at the input (12 V ~ 30 Vdc). And the limit settings are shown below;

- Current limit : 600 mA \pm 50 mA at nominal input 13.7 V
- Output voltage : 9.0 V (+/- 0.8 V) Vdc at no load.

In addition, the temperature limit is -20 upto +85 °C for storage, and 0 to +40 °C for operating. The CLA size of SGH-600 is 89.3 x 43 x 27 mm, and the weight is 110 g.

2-12 Travel Adaptor (TA)

2-12-1 General Description

This adaptor is designed for use with a portable hand held phone (HHP). It is a switching-mode power supply connected directly to the phone with a cable, and it provides a voltage for charging a battery installed in the hand held portable phone.

2-12-2 Circuit Description

The input voltage range is 85 ~ 264 Vac, and input frequency is 47 ~ 63 Hz. At an input voltage of 230 Vac (standard input voltage), AC input current is 0.1 A(rms). The output voltage range is 9.0 V \pm 10% and the unit maintains current 600 mA \pm 30 mA. The operating temperature is 0 ~ 55 °C, and for storage -20 ~ 85°C. Power ON/OFF cycle is 1.0sec min. The overall size is 74.1 x 28.4 x 79.8 mm and the weight is 65 g without the output DC cable. The charger is an AC/DC switch mode flyback converter featuring constant current and voltage limit. Output cable is two-way DC cable. Maximum output power is 6.4 W.

2-13 Hands Free Car kit

2-13-1 General Description

Many states and countries are considering legislation requiring mobile phone users to operate in Hands-Free mode while driving.

Feature of the hands free kit are:

- Power adaptor (600 mA) from vehicle battery to GSM battery pack.
- Ignition sensor for automatic power ON/OFF.
- Car stereo mute function in Hands-Free mode, with programmable output level.
- External microphone input.
- Loudspeaker output.
- Hands-Free operation.

2-13-2 Circuit Description

The input voltage range is from 12V dc to 28V dc, (battery) and input current is 10mA(stanby). The operating temperature is -10 ~ 60 °C, and for storage temperature is - 30 ~ 85 °C(± 5 °C). The charging voltage is DC9V and charging current is MAX 600mA.

2-13-3 Audio Features

- Microphone Sensitivity: -60 dB ± 3 dB
- Speaker S/N: -45 dB ± 3 dB (1W Output)
- Speaker Distortion: 20% below (3W Output)
- Speaker Feature: Impedance 4Ω, Max 5W Output
- Echo Cancellation: 50 dB (Min)
- Noise Suppression: 15 dB (Min)

3. Specification

3-1 General Specification

3-1-1 Frequency Range

- Transmit (Uplink): 890 ~ 915 MHz
- Receive (Downlink): 935 ~ 960 MHz

3-1-2 Channel Spacing : 200 kHz

3-1-3 Number of Channels: 124

3-1-4 Frequency Spacing: 45 MHz

3-1-5 Modulation Data Rate

- 270.833 kbits/sec

3-1-6 Frame Period: 4.615 msec

3-1-7 Timeslot Period: 576.9 μ sec

3-1-8 Modulation Type: 0.3 GMSK

3-1-9 MS Max Power: 2 W (33 dBm)

3-1-10 MS Min Power: 0.3 W (5 dBm)

3-1-11 Voice Coder Bit Rate: 13 kbits/sec

3-1-12 Input / Output Impedance : 50 Ω

3-1-13 VCO Frequency

- TX VCO : 890 ~ 915 MHz,
- UHF VCO : 1160 ~ 1185 MHz
- VHF VCO : 540 MHz

3-1-14 IF

- 1st RX IF: 225 MHz
- 2nd RX IF: 45 MHz
- 1st TX IF: 270 MHz

3-1-15 VCTCXO Frequency

- 13 MHz (\pm 5 PPM)

3-1-16 Operating Temperature

- Main : Nominal: +15 $^{\circ}$ C ~ +35 $^{\circ}$ C
Extreme: -10 $^{\circ}$ C (spec) ~ +55 $^{\circ}$ C
- TA : Nominal: +15 $^{\circ}$ C ~ +35 $^{\circ}$ C
Extreme: -20 $^{\circ}$ C ~ +55 $^{\circ}$ C

3-1-17 Operating Voltage

- High Voltage: 4.1 V
- Nominal Voltage: 3.7 V
- Low Voltage: 3.4 V

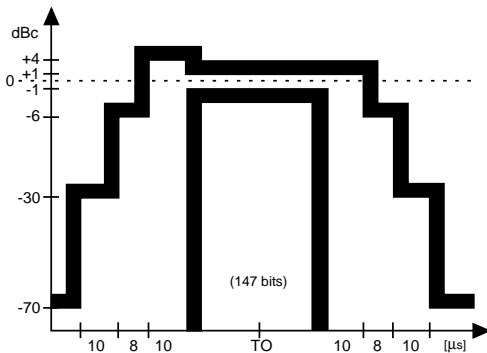
3-2 Transmitter Specification

3-2-1 Power

Power Control Level	Peak Power (dBm)	Norminal (dB)	Extreme (dB)
5	33	±2 dB	±2.5 dB
6	31	±3 dB	±4 dB
7	29	±3 dB	±4 dB
8	27	±3 dB	±4 dB
9	25	±3 dB	±4 dB
10	23	±3 dB	±4 dB
11	21	±3 dB	±4 dB
12	19	±3 dB	±4 dB
13	17	±3 dB	±4 dB
14	15	±3 dB	±4 dB
15	13	±3 dB	±4 dB
16	11	±5 dB	±6 dB
17	9	±5 dB	±6 dB
18	7	±5 dB	±6 dB
19	5	±5 dB	±6 dB

The power-time template requirements for mobile stations also apply to base stations. The only difference is that, in the base station case, no short burst (random access) exists. To measure the template, the base station has to be operated in its *bursting mode*. This test cannot be performed on the base channel, since a base station has to transmit continuously in all time slots. In most cases, an additional channel besides the base channel has to be activated or the transmitter under test is not considered to be configured as a base channel transmitter. The average peak power from the previous part of the test is used as a reference. The time reference is provided by the training sequence in the middle of the burst. The template has to meet the requirements of Fig. 6. Again, the noise level of -70 dBc is dependent on the actual transmitted power level. If this level is below -36 dBm, the absolute level applies. The template is usually evaluated along with the peak power level.

3-2-2 Power Ramping Time Level



< Fig. 6 Power-Time Template >

3-2-3 IF Filter

- 270 MHz LC Filter

3-2-4 TX SAW Filter

- Spurious signal attenuating : ≤-70 dBc
 - Wide Bandwidth to make plane Group delay characteristic

3-2-5 Power Amplifier

- Total Efficiency: 40~45 % at Pin=1mW,
 V_{DD}=3.6 V, Pout=3.2 W

3-3 Synthesizer Specification

3-3-1 General Specification

- Frequency Hopping : 1 Channel to $< 3^\circ$ rms in < 500 mS
- Phase Noise: $< 3^\circ$ RMS

3-3-2 IF Synthesiser

- Synthesizer Frequency: 540 MHz
- Output Signal Drive Level: -10 dB
- 2nd IF LO Output Frequency FIR: 45 MHz

3-3-3 FIR Output

- 1st IF: 225 MHz
- 2nd IF: 45 MHz
- FIR Frequency: 45 MHz
- FIR Level: -17 dBm

3-3-4 Phase Noise Specification

Offset (kHz)	Phase Noise (dBc/Hz)
± 200	< -75
± 250	< -78
± 400	< -105
> 600	< -105
> 1200	< -105
> 1800	< -113
> 3000	< -115
> 6000	< -121
> 10.0 MHz	< -124
> 20.0 MHz	< -129
> 30.0 MHz	< -134

3-4 Receiver Specification

3-4-1 Front-end Specification

- Input Frequency range: 935 MHz ~ 960 MHz
- Gain: 18 dB
- If Frequency range: 540 MHz
- Input Impedance: 150 Ω
- Output Load: 1 k Ω
- Overall Sensitivity: -106 dBm for 9 dB S/N in 180 kHz

3-4-2 Sensitivity

- Reference Sensitivity Level: -102 dBm
- Channel Width : 180 kHz
- Input Thermal Noise: -121.4 dBm/Hz
- Output S/N: > 9 dB
- Noise Figure: < 7 dB

3-4-3 Intermodulation

- Input Useful Signal: -99 dBm
- Interferer: -49 dBm at ± 800 kHz and 1600 kHz

3-4-4 Selectivity

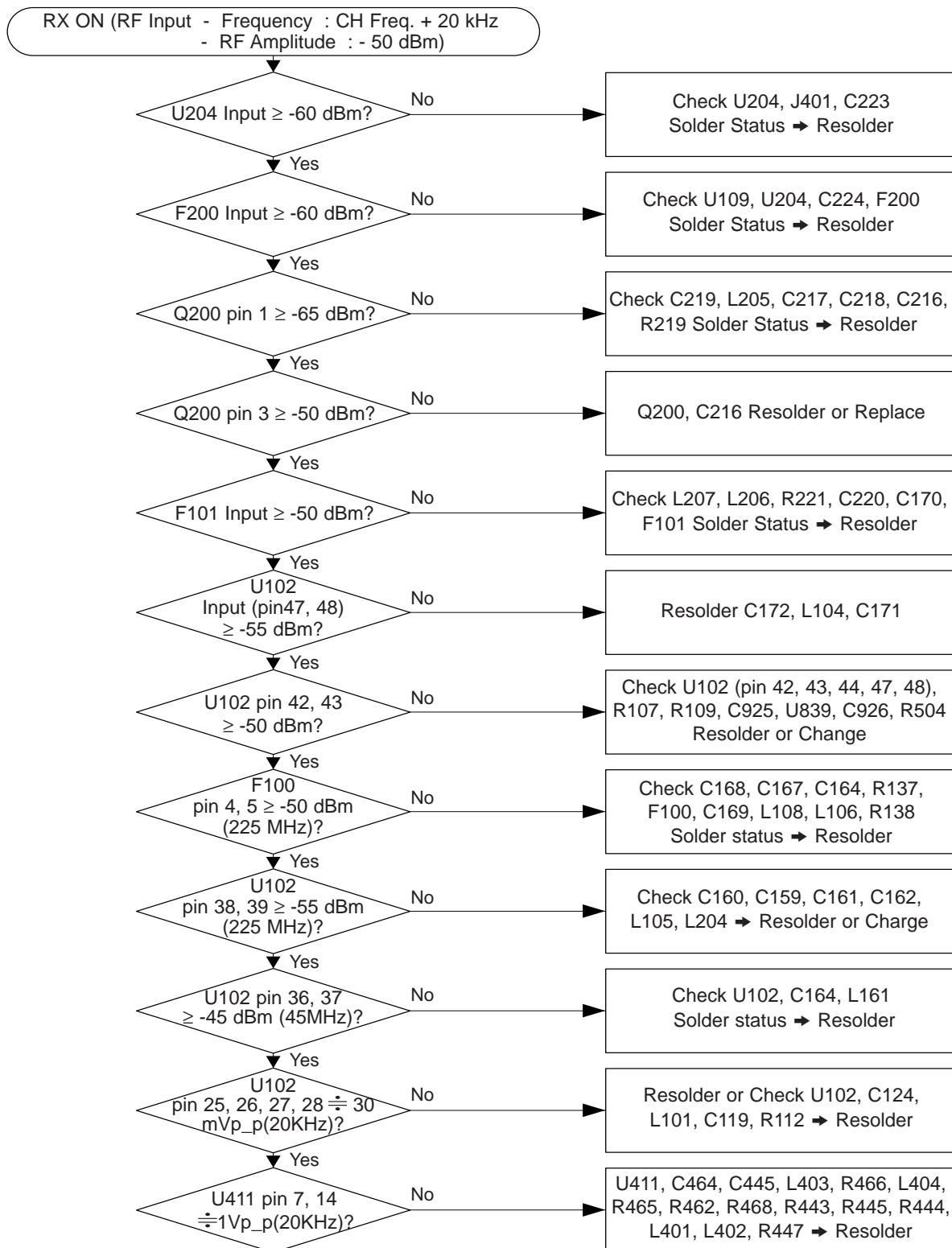
Signal	Type	Level
Useful Signal	GMSK	- 82 dBm
Cochannel	GMSK	- 9 dBc
± 200 kHz	GMSK	+ 9 dBc
± 400 kHz	GMSK	+ 41 dBc
± 600 kHz	GMSK	+ 49 dBc

MEMO

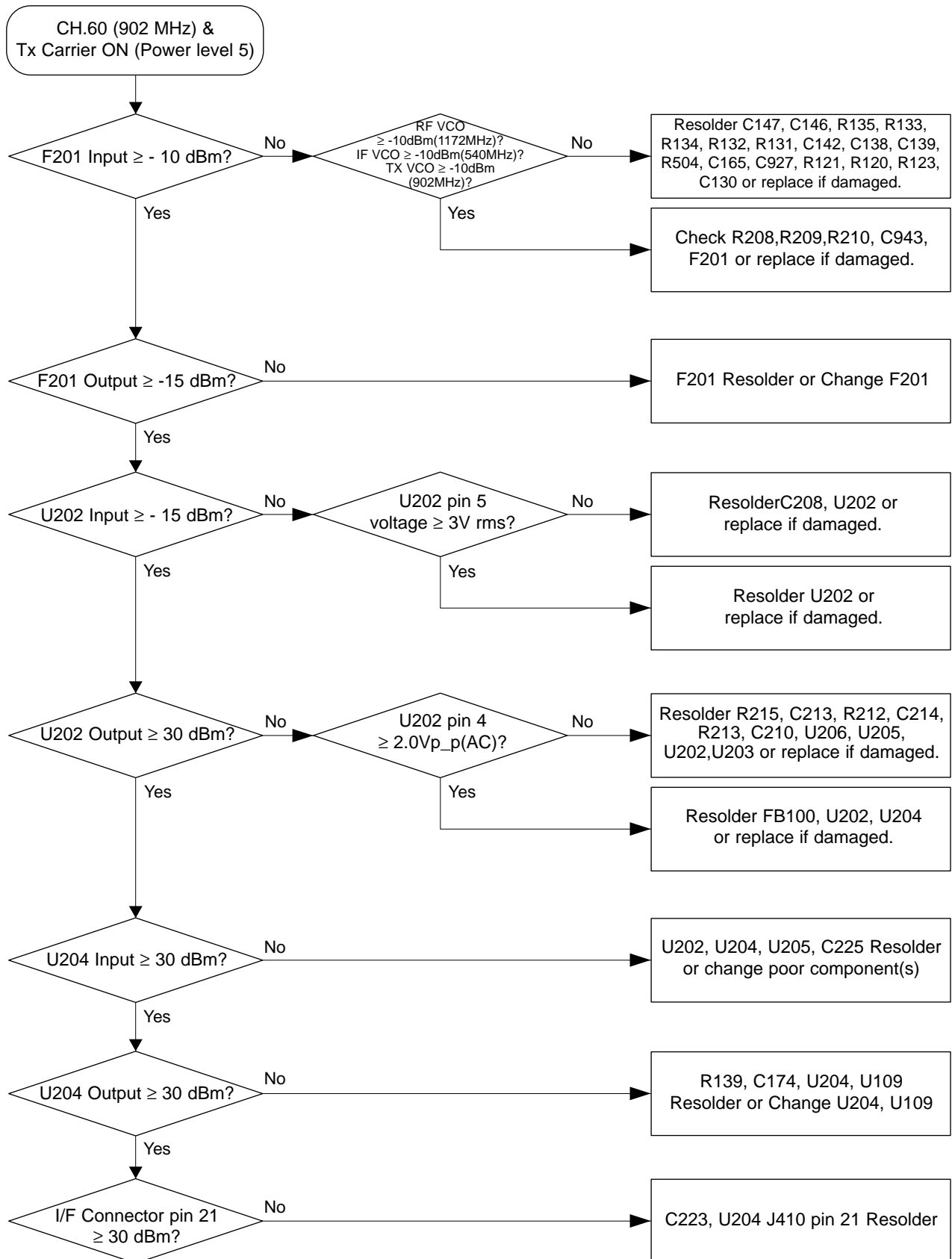
5. Troubleshooting

5-1 Main Set

5-1-1 RX Sensitivity Problem

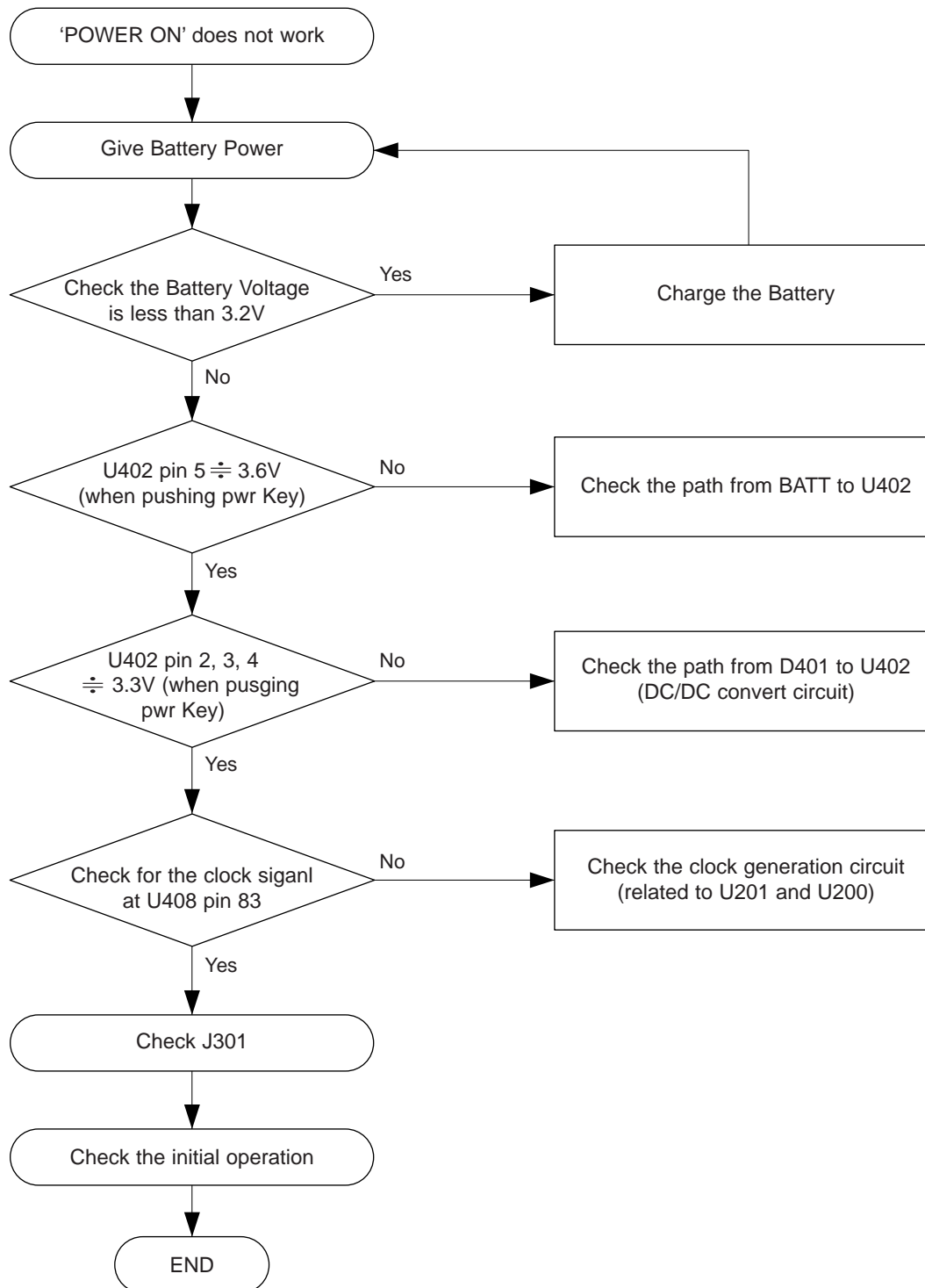


5-1-2 TX Power Problem

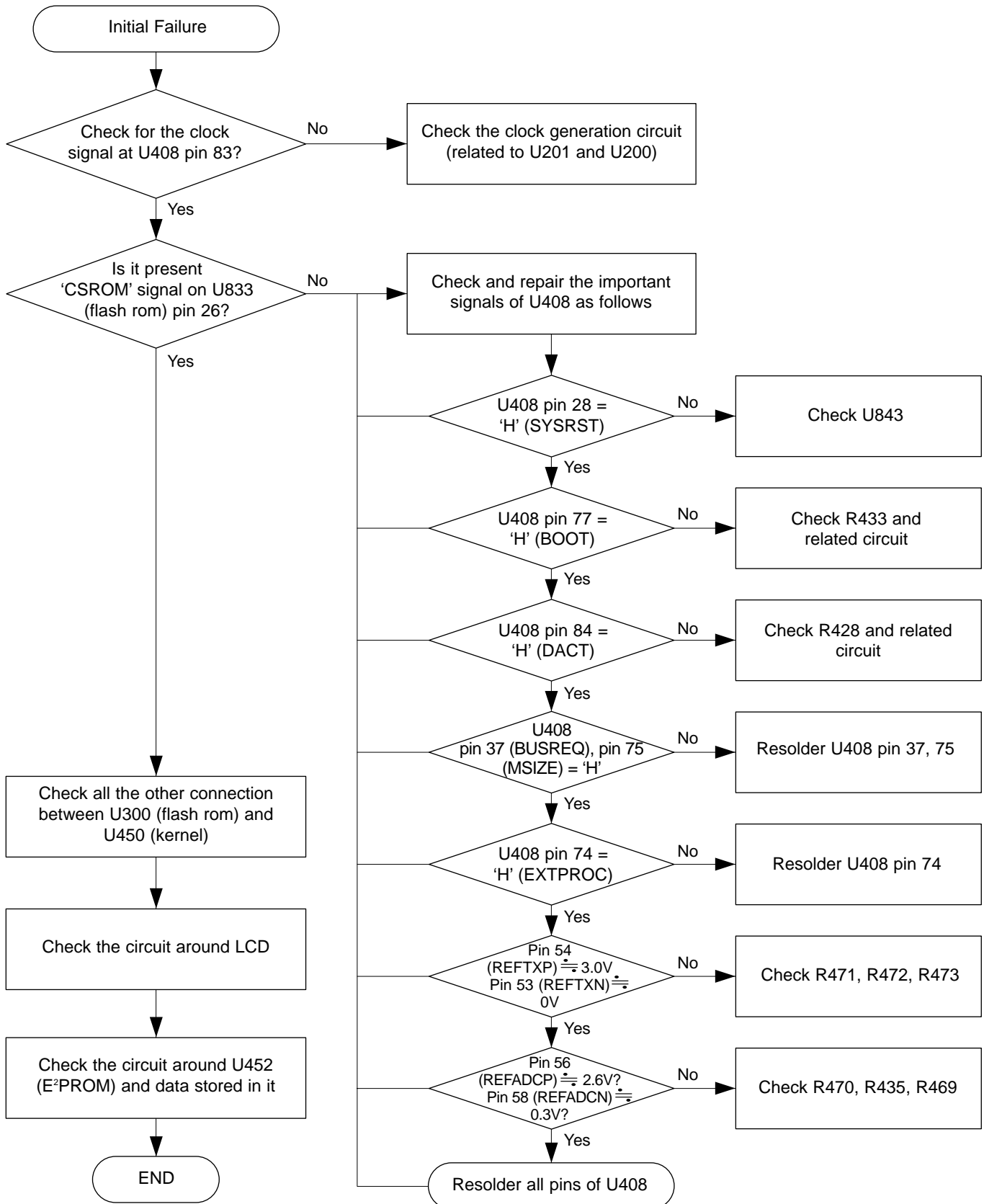


5-1-3 Base Band

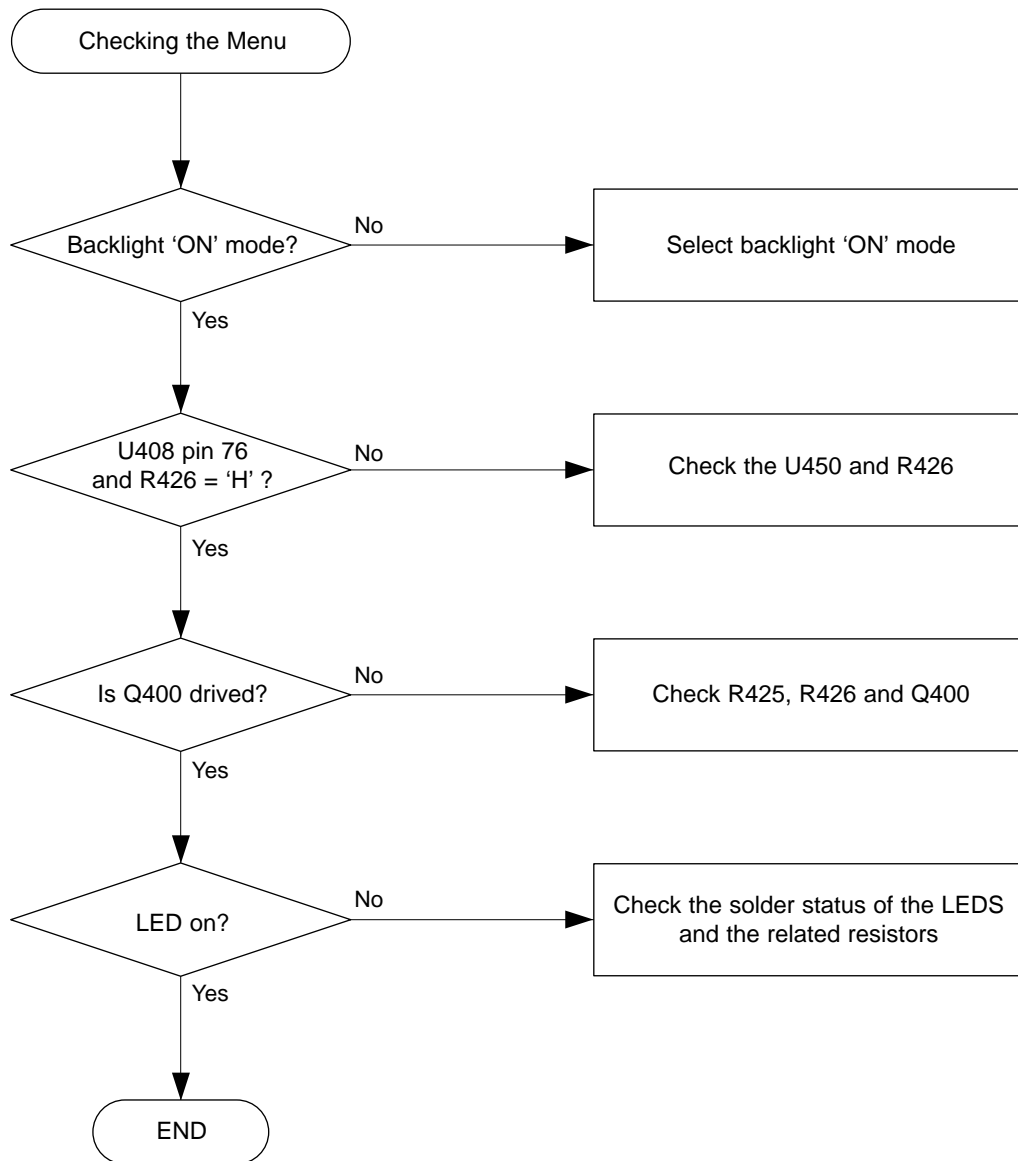
POWER ON



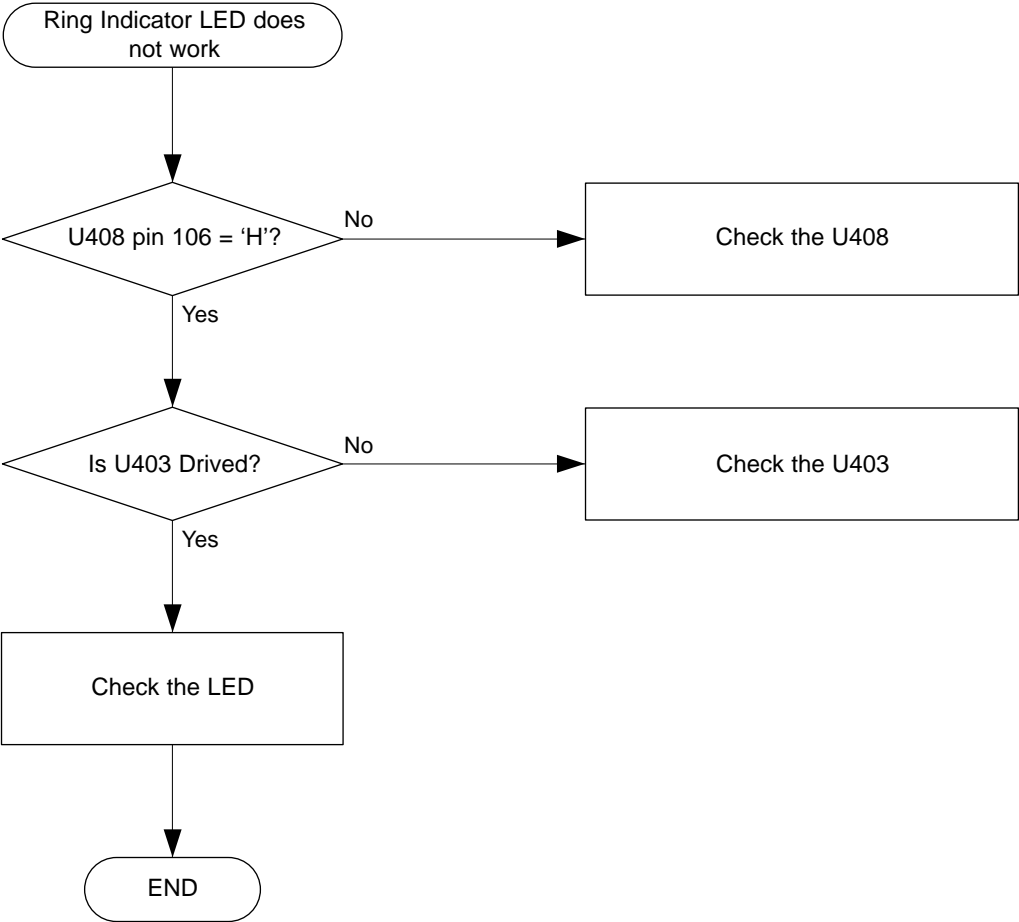
INITIAL OPERATION



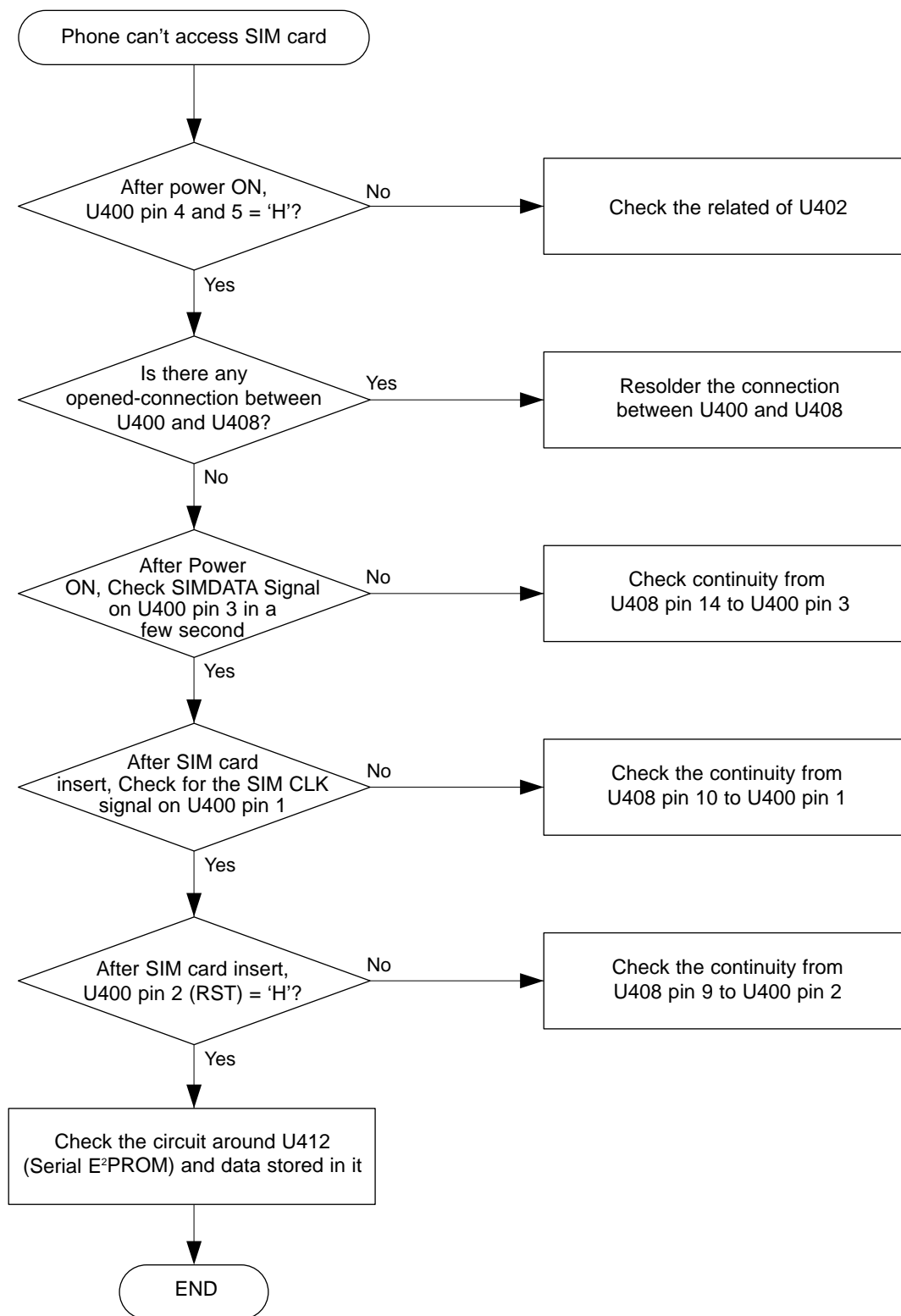
BACKLIGHT



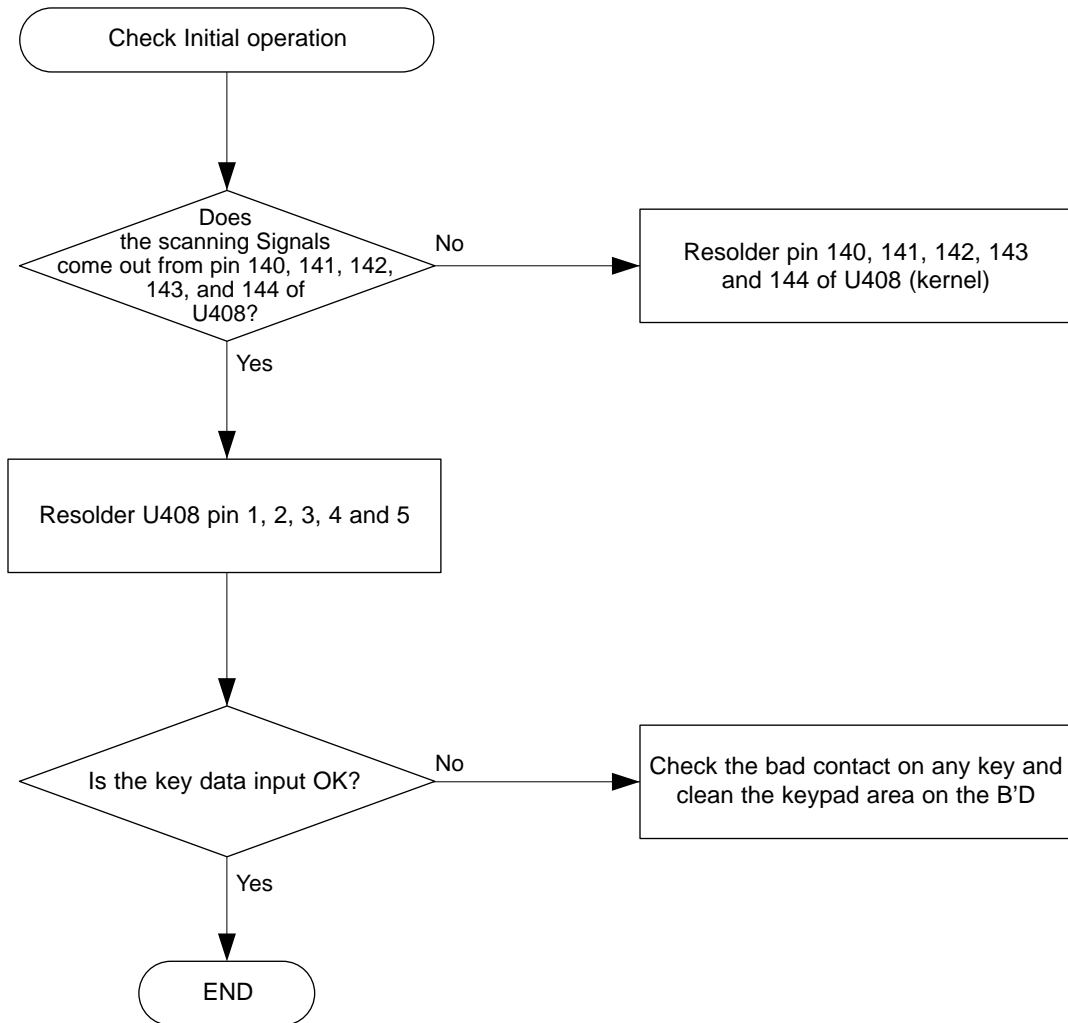
RING INDICATOR LED



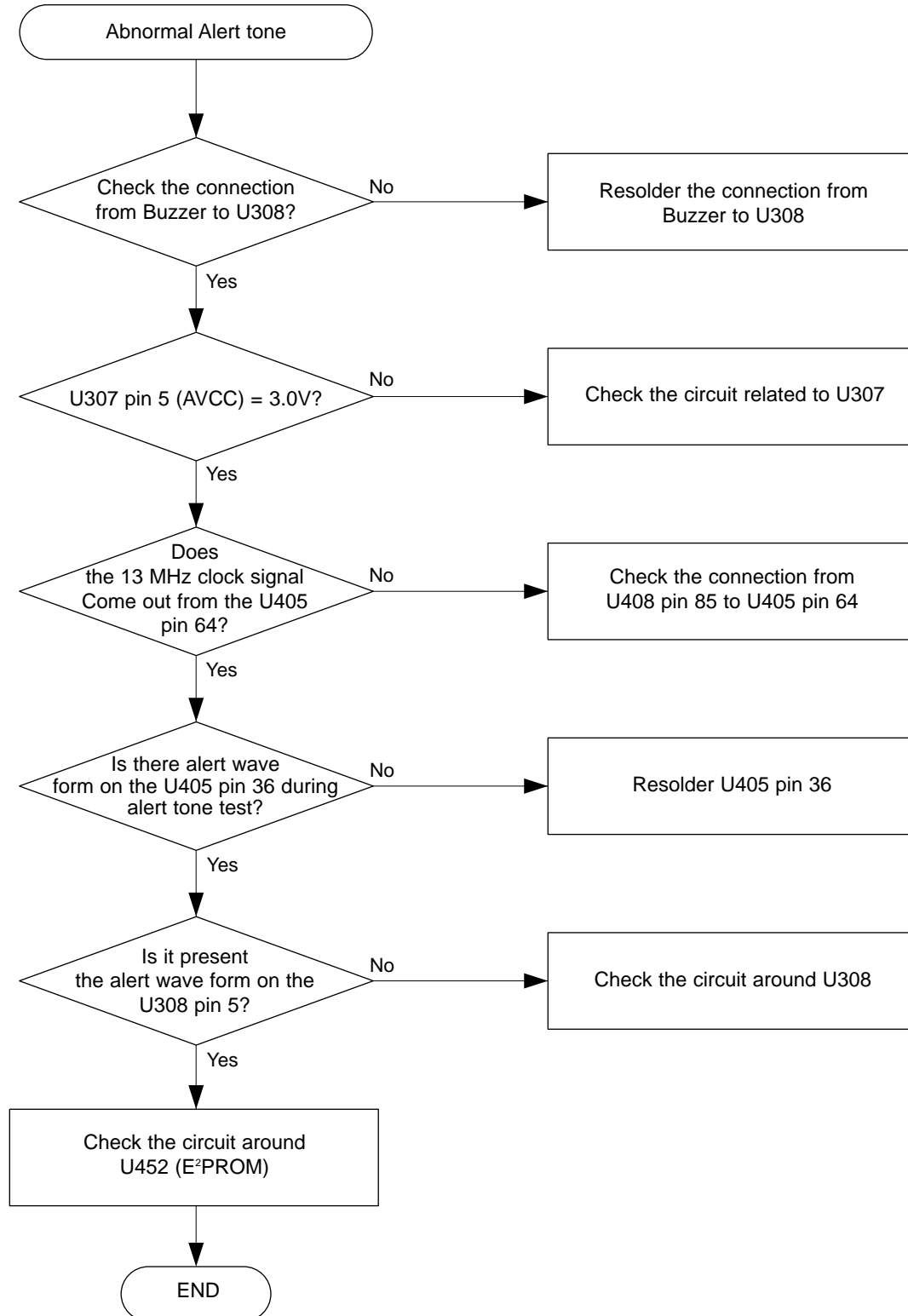
SIM CARD PART



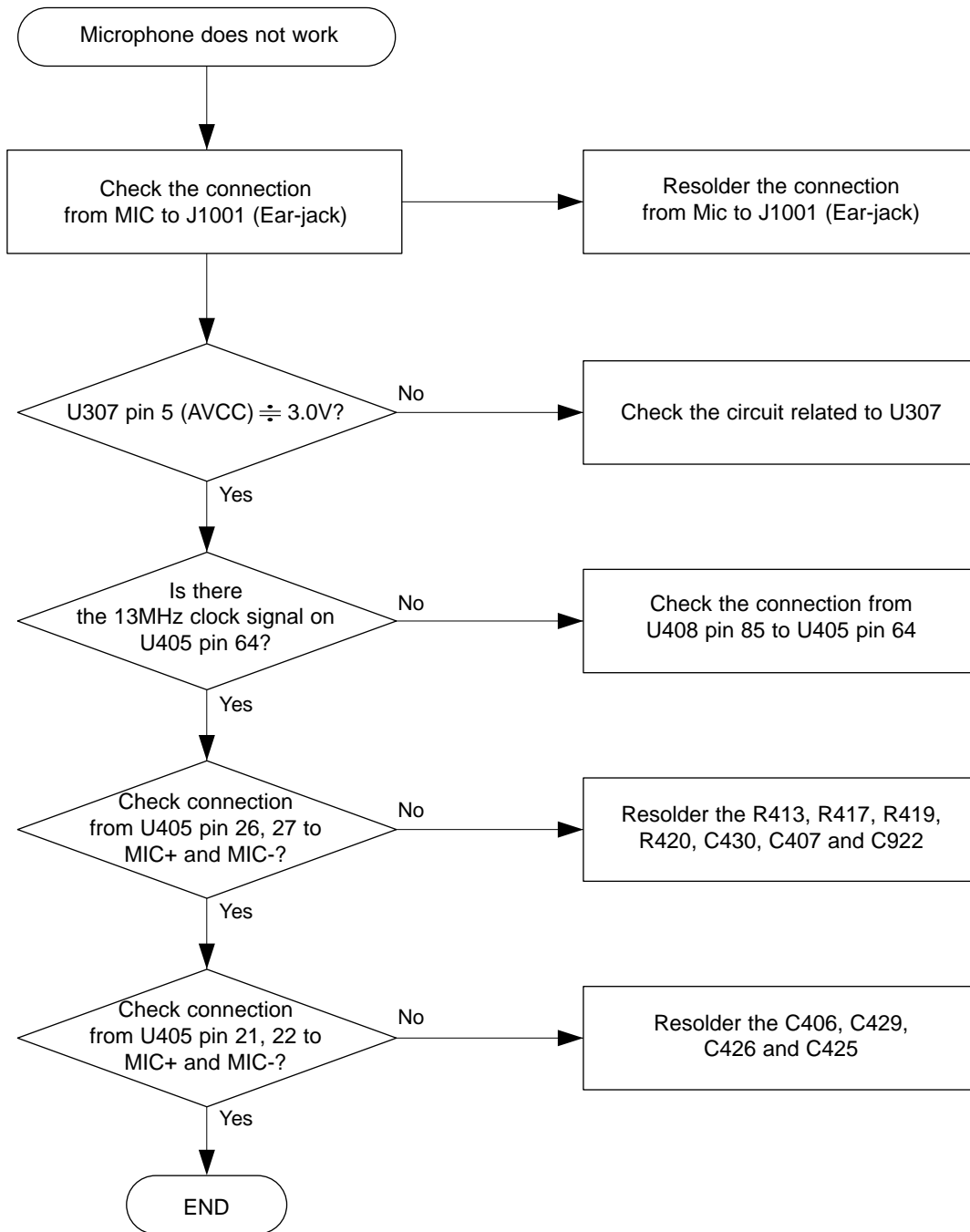
KEY DATA INPUT



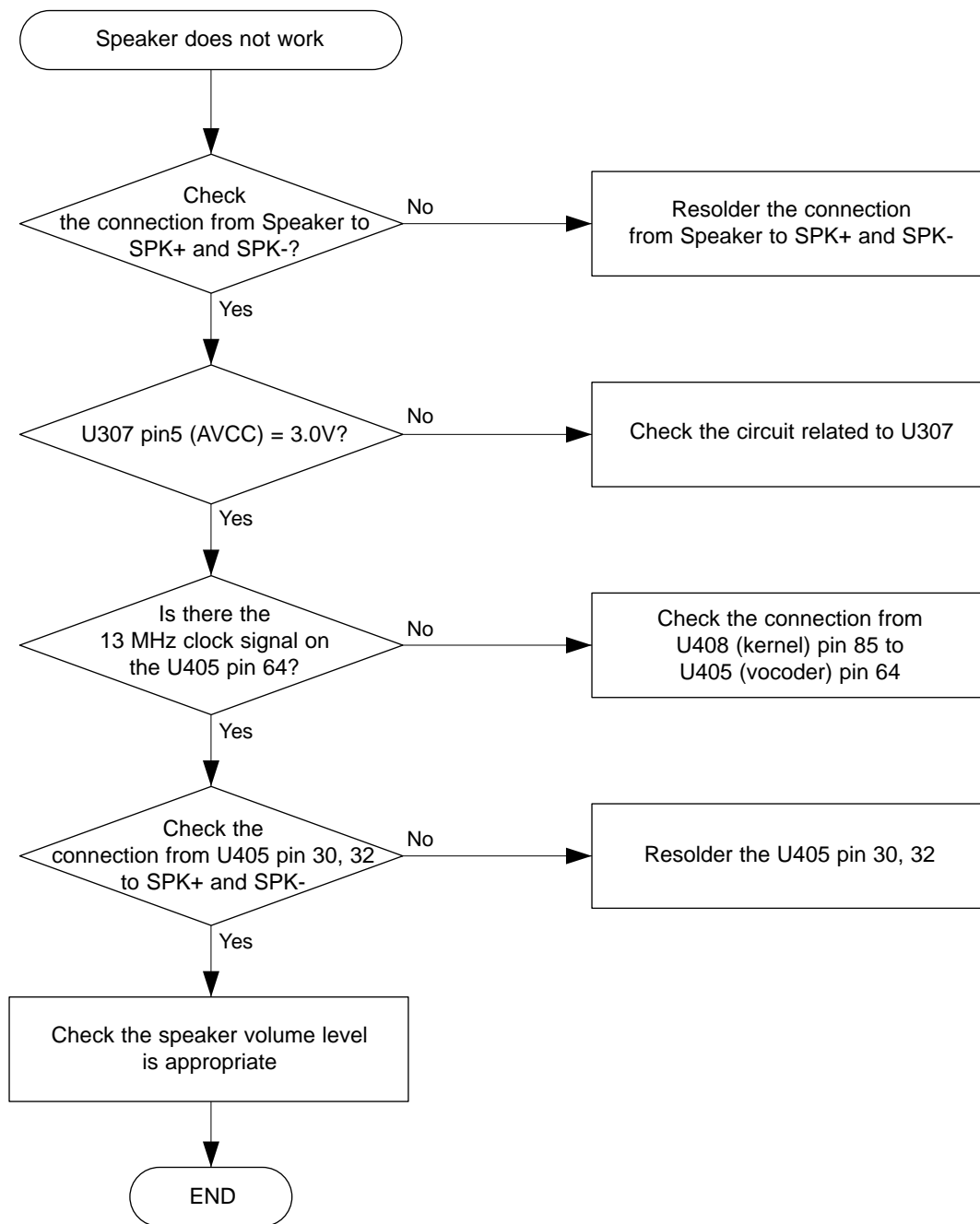
ALERT TONE



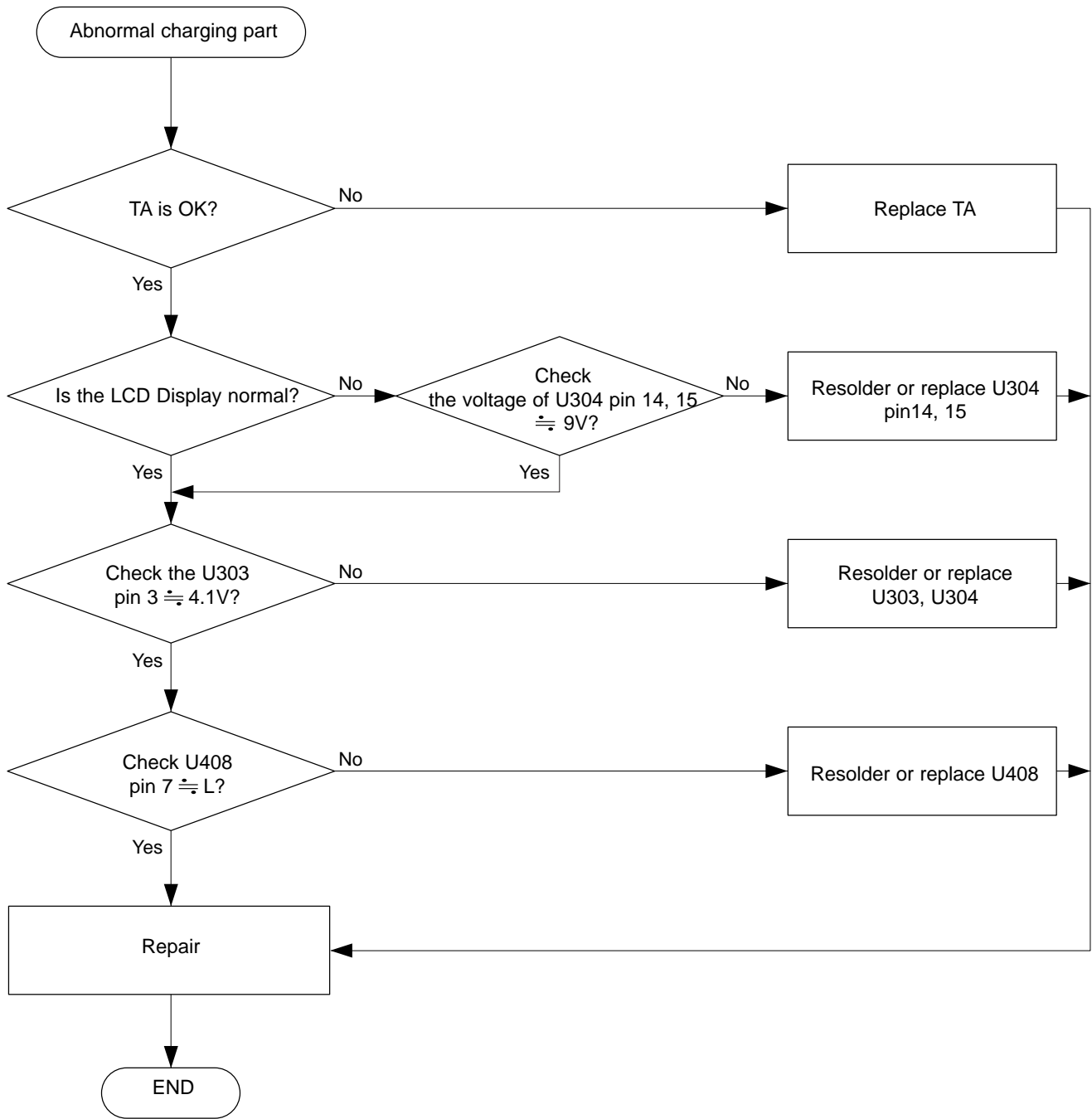
MICROPHONE PART



SPEAKER PART

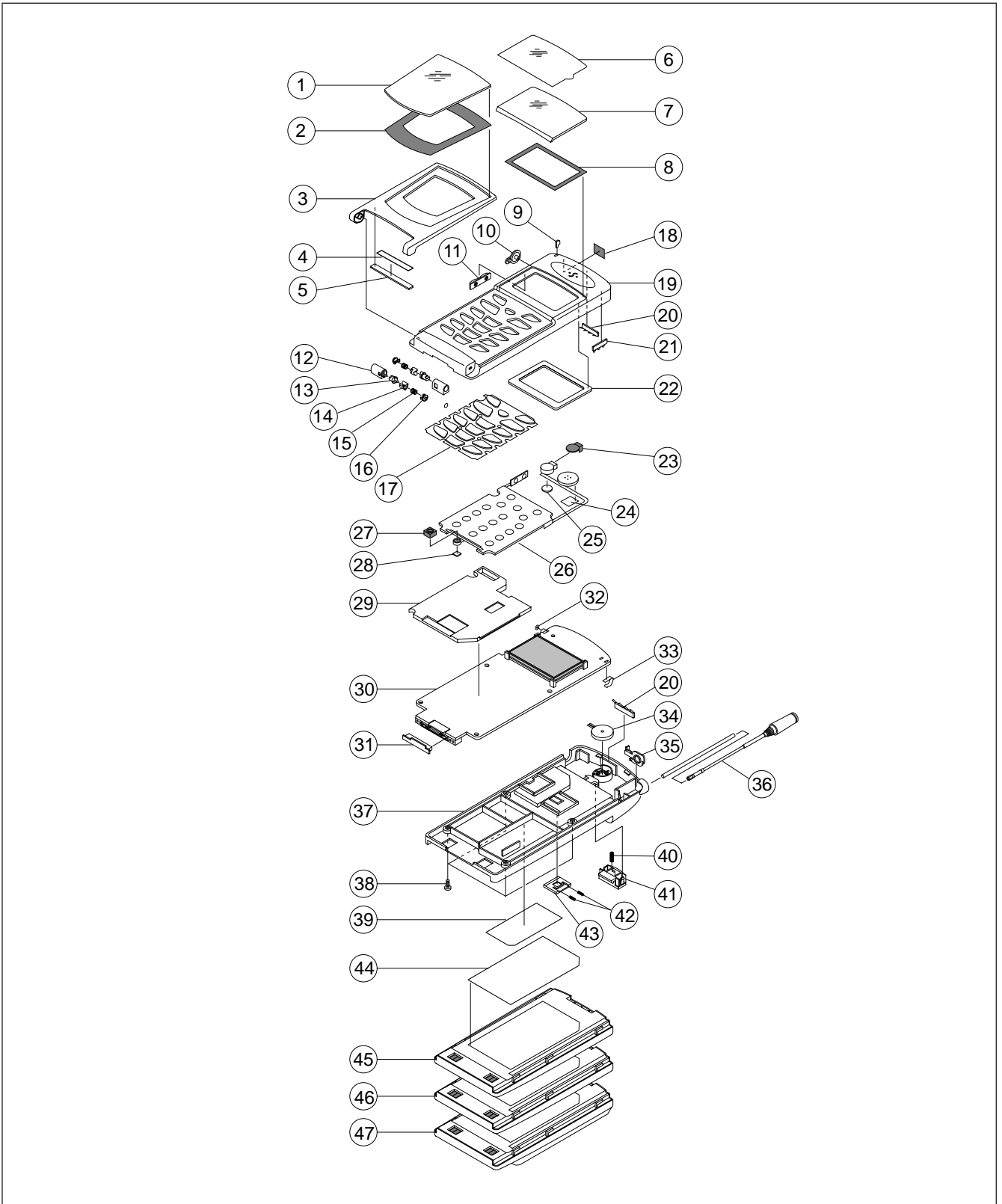


CHARGING PART



1. Exploded Views and Parts List

1-1 Main

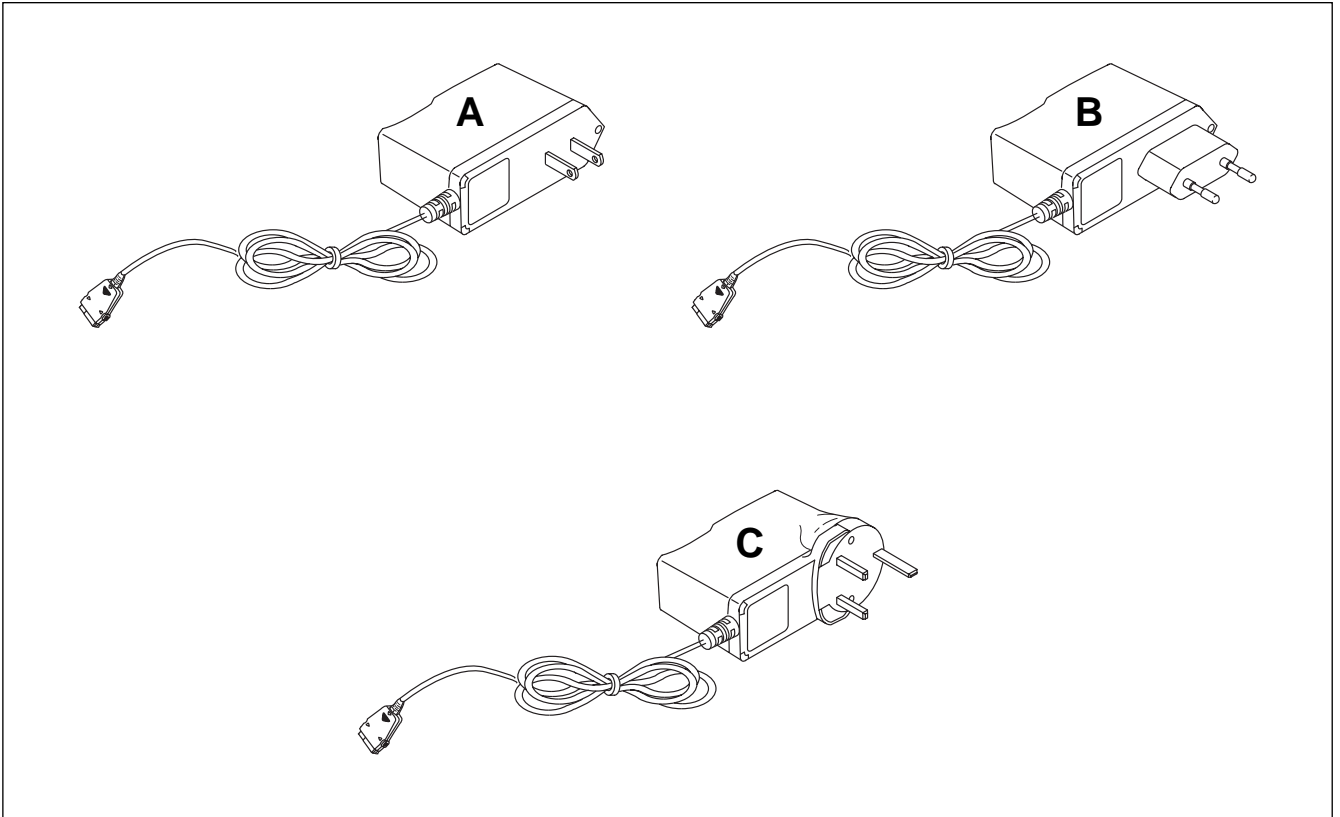


1-2 Main Parts List

NO	DESCRIPTION	SEC.CODE	Q'TY	REMARK
1	HALF-MIRROR	GH72-00274A	1	
2	TAPE-H/DUMMY	GH74-00197A	1	
3	H/FLIP	GH72-00381A	1	
4	MARGNETIC	937-312008AA	1	
5	LABEL-FLIP	GH68-11192A	1	
6	TAPE WINDOE BOHO	GH72-10001A	1	
7	WINDOW LCD	GH72-00139A	1	
8	TAPE-WINDOW	GH74-40520A	1	
9	REFLETOR LED	GH72-41576A	1	
10	COVER EAR-JACK	GH73-40726A	1	
11	KEY VOLUMN	GH73-40724A	1	
12	HINGE-HOUSING	GH72-41360A	2	
13	SHAFT-HINGE	GH72-41057A	2	
14	HINGE-CAM	GH61-80002A	2	
15	SPRING-HINGE	GH70-10680A	2	
16	HOUSING-CAP	GH72-41056A	2	
17	KEY MAIN	GH72-41756A	1	
18	CLOTH-BUZZER	GH63-20001A	1	
19	FRONT-COVER	GH72-41742A	1	
20	SHIELD STRIP(C)	GH71-10641A	2	
21	SHIELD STRIP(B)	GH71-10640A	1	
22	SPONGE-LCD	GH74-40521A	1	
23	RUBBER-BUZZER	GH73-40723A	1	
24	SUPPORT SPK	GH74-00131A		
25	BACKUP TAPE	GH74-40518A	1	
26	KEY PCB	GH59-00025A	1	
27	HOLDER MIC	GH73-40641A	1	
28	SPK SPONGE	GH74-10604A	1	
29	SHIELD-FRAME	GH72-41753A	1	
30	MAIN PCB	GH92-00740A	1	
31	COVER CONNECTOR	GH73-40686A	1	
32	JACK-COVER	GH73-10514A	1	
33	ANTENNA CON.	GH71-00020A	1	
34	VIBRATOR	GH31-10004A	1	
35	ANTENNA BRK	GH71-00021A	1	
36	ANT	GH42-00012A	1	
37	REAR-COVER	GH72-417423A	1	
38	SCREW-MACHINE	6001-001046	4	

NO	DESCRIPTION	SEC.CODE	Q'TY	REMARK
39	LABEL MAIN	GH68-00352A	1	
40	SPRING-LOCKER	GH70-10516A	1	
41	LOCKER-MAIN	GH72-41373A	1	
42	SPRING-SIM	GH70-00006A	2	
43	COVER-SIM	GH72-00088A	1	
45	BATTERY SLIM	GH43-00029A		
46	BATTERY STD	GH43-00027A		
47	BATTERY LONG	GH43-00028A		

1-3 Travel Adaptor

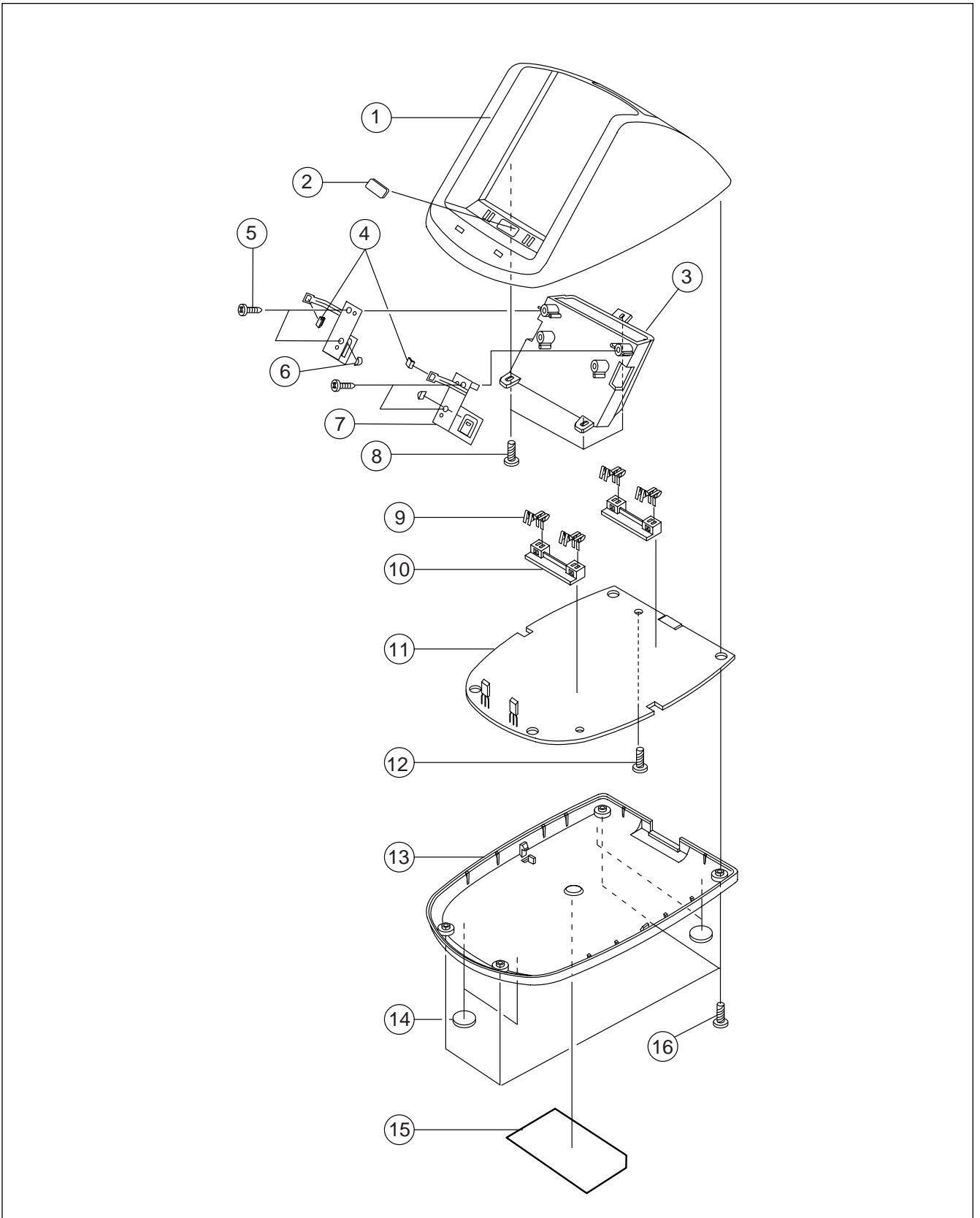


1-4 Travel Adaptor Parts List

TYPE	SEC CODE	REMARK
A	GH96-01143A	CHINA
B	GH96-01146A	EUROPE
C	GH96-01095A	UNITED KINGDOM

1-5 Desk Top Charger

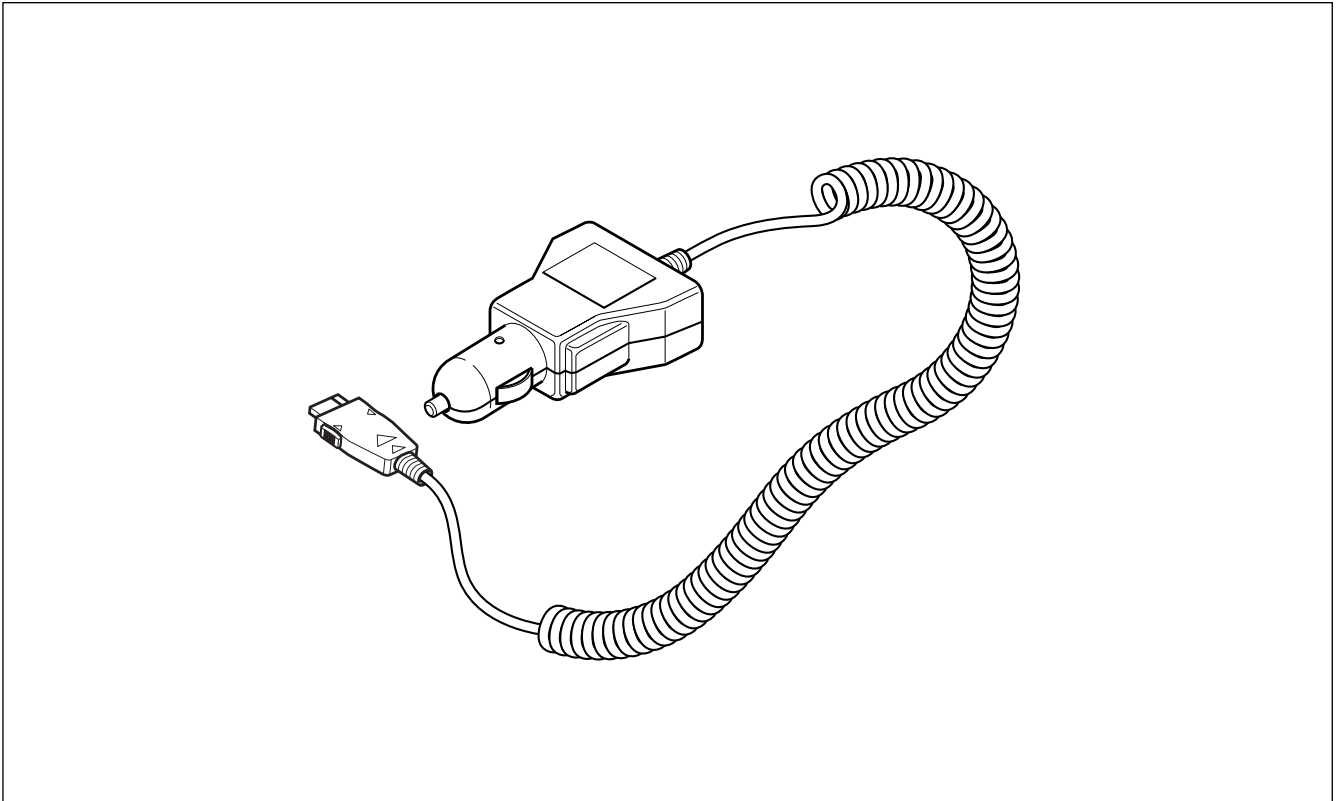
SEC CODE : GH44-00046A



1-6 Desk Top Charger Parts List

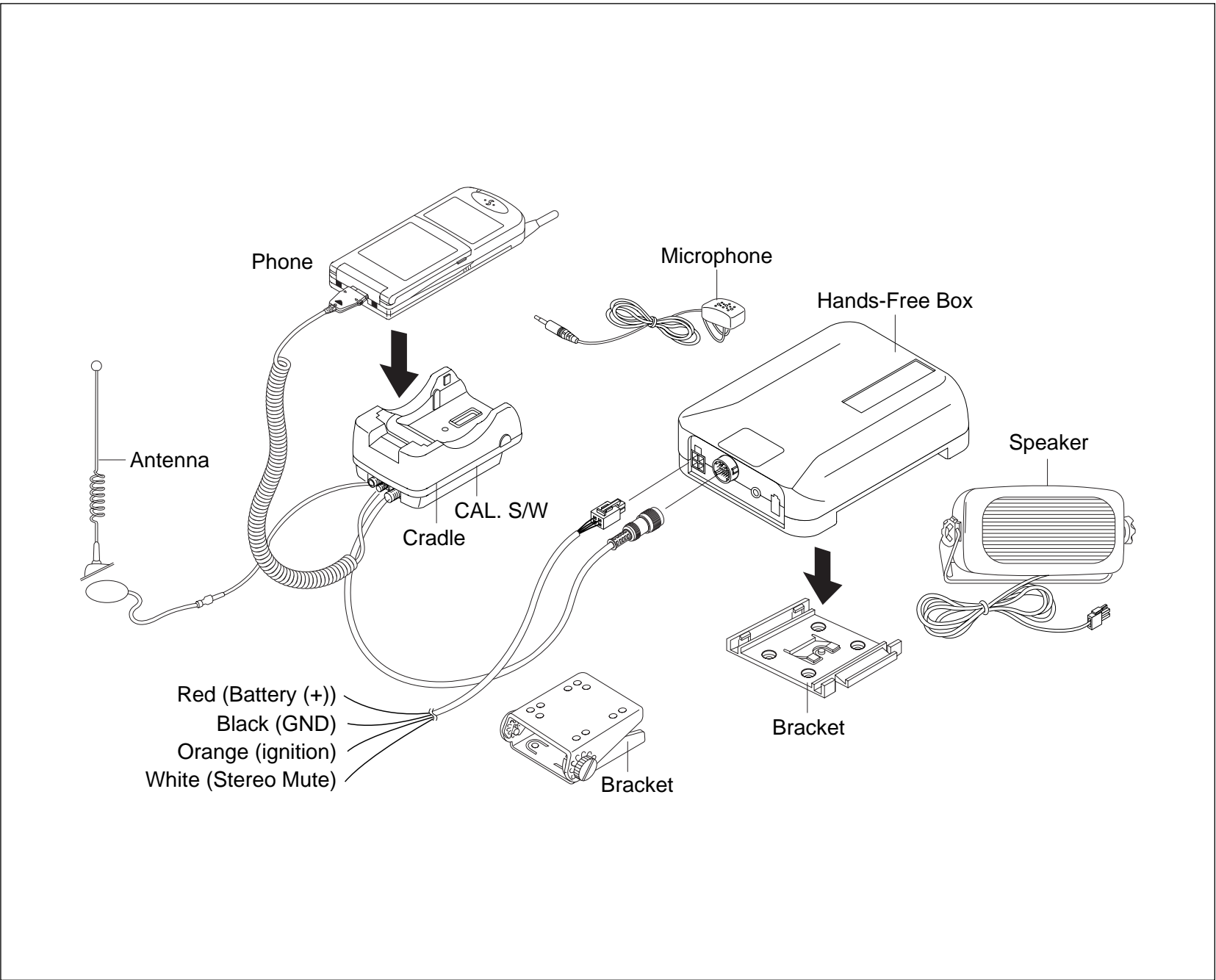
NO	DESCRIPTION	SEC.CODE	Q'TY	REMARK
1	UPPER-CASE		1	
2	GATE-LABEL		1	
3	BATTERY-HOUSING		1	
4	HANDY-LOCKER		2	
5	SCREW-TAPPING		4	
6	BATTERY-LOCKER		2	
7	HANGER-SPRING(R), (L)		1, 1	
8	SCREW-TAPPING		3	
9	CONTACT-PLATE		8	
10	CONTACT-HOUSING		2	
11	PCB		1	
12	SCREW-TAPPING		1	
13	LOWER-CASE		1	
14	FOOT-RUBBER		4	
15	LABEL NAME		1	
16	SCREW-TAPPING		4	

1-7 Ciger Light Adaptor

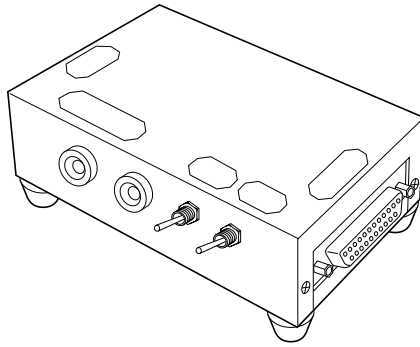


1-8 Ciger Light Adaptor Parts List

DESCRIPTION	SEC CODE	REMARK
Ciger Light Adaptor Code	GH44-00040A	BLACK

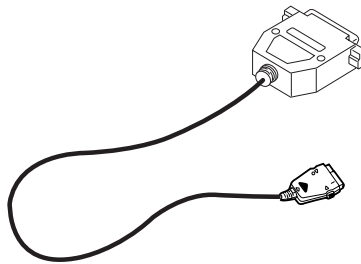


1-10 Test Zig



TEST JIG

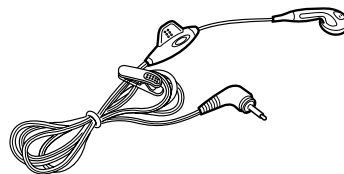
GH80-10508A



DATA CABLE

GH39-30532A

1-11 Earphone



EARPHONE

GH96-00820A

2 Electrical Parts List

2-1 Main Parts List

LOCATION	SEC.CODE	DESCRIPTIONS
D401,D801	0401-001033	MCL4154,25V,200mA,M-MELF,TP
D253,D255,D808	0404-001044	UPS5817,20V,1A,SMD,TP
D400	0404-001054	HSMS-2805,70V,15mA,SOT-143,TP
D600	0405-001051	SMV1249,4.7V,50NA,SOT-23,TP
D176,D177	0406-001051	SMS05C,6V,300W,SOT-23-6
D252	0407-001002	DAN222,80V,300mA,CA2-3,EM3,TP
D901,D902	0407-001006	DA221,20V,100mA,C2-3,EM3,TR
D251	0407-001007	UMN1,80V,25mA,CA4-2,UM5,TR
Q152,Q950,Q951	0501-002011	2SD2114K,NPN,200mW,SOT-23,TP,8
Q300	0501-002037	BFP405,NPN,55mW,SOT-343,TP,50-
Q601,Q604	0501-002196	BFS17W,NPN,280mW,SOT-323,TP,20
U307	0501-002205	BCR400W,NPN,-,SOT-343,TP,-
Q151,Q153	0504-000167	RN1102,NPN,100MW,10K/10K,SSM,TP
Q255,Q256,Q257	0504-000168	RN1104,NPN,100MW,47K/47K,SSM,TP
Q500	0505-000110	2N7002,N,60V,115mA,5ohm,200mW,
U501,U502	0505-001131	TP0101T,P,-12V,-500mA,690mohm,
Q957	0505-001332	FDG6301,N,25V,0.22A,4OHM,.3W,SC70-6
Q600	0506-000173	BFS480,NPN,2,80mW,SOT-363,TP,3
U128,U252,U302,U303	0506-001004	UMC5N,NPN/PNP,2,50V,-,-100mA,3
U400,U403,U412,U813	0506-001004	UMC5N,NPN/PNP,2,50V,-,-100mA,3
LED100	0601-000276	CHIP,Y/GRN,1.6x2.0mm,570nm
U902,U903	0801-000022	7S00,NAND GATE,SOP,5P,49MIL,SINGLE,TP,PLASTIC,-,-,-,-40TO+85C,200MW,-,25MA,-,-
U900,U901,U904,U906	0801-000794	7S08,AND GATE,SOT-25,5P,63MIL,
U905	0801-002345	7S04FU,INVERTER,SOP,5P,-,-,TP,
U413,U414	0801-002349	7S66,BILATERAL SWITCH,SOP,5P,5
U962,U963	1001-001088	MAX4544EUT-T,-,SOT-23,6P,-,SINGLE,13V,-40TO+85C,PLASTIC,571MW,60 OHM,75NS,100NS,
U203	1103-001090	24C128,16Kx8BIT,SOP,8P,150MIL,
U105	1106-001272	4MBIT,TSOP,32P,813MIL,100NS,3V,-,PLASTIC,-40TO+85C,15UA,CMOS,-
U103	1107-001062	1Mx8BIT,SON,46P,-,100n
U104	1107-001158	1MX16BIT,SOP,46P,90MIL,120NS,3V,-,PLASTIC,-40TO+85CC,5UA,CMOS,-
U406	1201-001018	7131,SOT-23,5P,-,SINGLE,70dB,P
U127	1201-001212	925,TSSOP,16P,150MIL,DUAL,200MV,PLASTIC,14V,-,-40TO+125C,80DB,1.3V/US,1NA,15NA,3
U604	1201-001248	0916,SOT-143,4P,-,-,2.7V,-,6Vd
U402	1201-001299	RF-K,8P,-,SINGLE,-,-,8V,
U408	1201-001411	RF-K,5P,-,-,-,MODULE,8V,3W,-30TO+100C,-,-,-,-,-
U960	1202-001022	75W56,SSOP,8P,110MIL,DUAL,7V,C
U801,U803,U805,U806	1203-001285	5205,SOT-23,5P,150MIL,PLASTIC,
U810,U811	1203-001285	5205,SOT-23,5P,150MIL,PLASTIC,

LOCATION	SEC.CODE	DESCRIPTIONS
U809	1203-001511	809,SOT-23,3P,-,PLASTIC,0.3/6.
U253	1203-001515	SSOP,16P,150MIL,PLASTIC,3
U804	1203-001592	1015,SOT-23A-5,5P,59MIL,PLASTI
U812	1203-001702	SOP,10P,112MIL,PLASTIC,2/5.5V,444MW,-40TO+85C,220MA,1.3V,TP
U102	1203-001740	1555,SOP,16P,150MIL,PLASTIC,-0.3/12V,-,-0TO+70C,20MA,4.75/5.25V,ST
U301	1204-001006	SOP,20P,205MIL,PLASTIC,3
U300,U305	1205-001307	SOP,16P,197MIL,PLASTIC
U200	1205-001327	QFP,144P,14MIL,PLAST
U950	1205-001697	TQFP,80P,472MIL,PLASTIC,3V,-,-,TR,VLSI
U202	1206-001009	RS5C372A,SOP,8P,173MIL,PLASTIC
U603	1209-001220	SOP,20,173MIL,PLASTIC,
U500	1209-001233	SSOP,28P,-,PLASTIC,5.5V,-,-20TO+85C,TP
TH1	1404-001005	47Kohm,5%,4050K,2.0mW/C,TP
D179	1405-001018	14V,-,1.6x0.8mm,TP
D103,D104,D819	1405-001019	5.6V,-,1.6x0.8mm,TP
D101,D102	1405-001072	5V,20A,1.6X0.8X0.9MM,TP
R113,R114	2007-000072	47ohm,5%,1/16W,DA,TP,1608
R105,R129,R135,R163	2007-000138	100ohm,5%,1/16W,DA,TP,1005
R177,R178,R179,R182	2007-000138	100ohm,5%,1/16W,DA,TP,1005
R183,R185,R186,R187	2007-000138	100ohm,5%,1/16W,DA,TP,1005
R188,R621,R653,R970	2007-000138	100ohm,5%,1/16W,DA,TP,1005
R644	2007-000139	220ohm,5%,1/16W,DA,TP,1005
R160,R220,R221,R529	2007-000140	1Kohm,5%,1/16W,DA,TP,1005
R611,R646,R811,R951	2007-000140	1Kohm,5%,1/16W,DA,TP,1005
R954	2007-000140	1Kohm,5%,1/16W,DA,TP,1005
R640	2007-000141	2.2Kohm,5%,1/16W,DA,TP,1005
R309,R609	2007-000142	2.7Kohm,5%,1/16W,DA,TP,1005
R162,R351	2007-000143	4.7Kohm,5%,1/16W,DA,TP,1005
R606,R628	2007-000145	6.2Kohm,5%,1/16W,DA,TP,1005
R603	2007-000146	6.8Kohm,5%,1/16W,DA,TP,1005
R104,R152,R205,R210	2007-000148	10Kohm,5%,1/16W,DA,TP,1005
R232,R235,R238,R253	2007-000148	10Kohm,5%,1/16W,DA,TP,1005
R256,R363,R418,R419	2007-000148	10Kohm,5%,1/16W,DA,TP,1005
R605,R630,R637,R906	2007-000148	10Kohm,5%,1/16W,DA,TP,1005
R907,R952,R962,R963	2007-000148	10Kohm,5%,1/16W,DA,TP,1005
R984,R985	2007-000148	10Kohm,5%,1/16W,DA,TP,1005
R300	2007-000152	20Kohm,5%,1/16W,DA,TP,1005
R622	2007-000153	22Kohm,5%,1/16W,DA,TP,1005
R126,R208,R218,R219	2007-000157	47Kohm,5%,1/16W,DA,TP,1005
R352,R353	2007-000157	47Kohm,5%,1/16W,DA,TP,1005
R257	2007-000159	56Kohm,5%,1/16W,DA,TP,1005
R100,R101,R102,R151	2007-000162	100Kohm,5%,1/16W,DA,TP,1005

LOCATION	SEC.CODE	DESCRIPTIONS
R153,R209,R212,R213	2007-000162	100Kohm,5%,1/16W,DA,TP,1005
R214,R215,R222,R231	2007-000162	100Kohm,5%,1/16W,DA,TP,1005
R251,R252,R254,R255	2007-000162	100Kohm,5%,1/16W,DA,TP,1005
R263,R264,R528,R812	2007-000162	100Kohm,5%,1/16W,DA,TP,1005
R972,R980	2007-000162	100Kohm,5%,1/16W,DA,TP,1005
R610,R639	2007-000164	150Kohm,5%,1/16W,DA,TP,1005
R131,R184,R326,R327	2007-000171	0ohm,5%,1/16W,DA,TP,1005
R361,R505,R531,R624	2007-000171	0ohm,5%,1/16W,DA,TP,1005
R631,R647,R800,R809	2007-000171	0ohm,5%,1/16W,DA,TP,1005
R828,R955,R968,R978	2007-000171	0ohm,5%,1/16W,DA,TP,1005
R986,L312	2007-000171	0ohm,5%,1/16W,DA,TP,1005
R180,R181,R308,R500	2007-000172	10ohm,5%,1/16W,DA,TP,1005
R501,R502,R503,R504	2007-000172	10ohm,5%,1/16W,DA,TP,1005
R517,R524,R527,R601	2007-000172	10ohm,5%,1/16W,DA,TP,1005
R602,R607,R633,R638	2007-000172	10ohm,5%,1/16W,DA,TP,1005
R650,R989,R990	2007-000172	10ohm,5%,1/16W,DA,TP,1005
R651,R654	2007-000173	22ohm,5%,1/16W,DA,TP,1005
R515,R516,R518	2007-000932	470ohm,5%,1/16W,DA,TP,1005
R130,R136,R417	2007-001119	680ohm,5%,1/16W,DA,TP,1005
R428	2007-001217	82ohm,5%,1/16W,DA,TP,1005
R623,R625,R627	2007-001288	18ohm,5%,1/16W,DA,TP,1005
R431	2007-001295	39ohm,5%,1/16W,DA,TP,1005
R305,R364,R410,R420	2007-001298	51ohm,5%,1/16W,DA,TP,1005
R511,R519,R520,R648	2007-001298	51ohm,5%,1/16W,DA,TP,1005
R649	2007-001298	51ohm,5%,1/16W,DA,TP,1005
R445	2007-001301	68ohm,5%,1/16W,DA,TP,1005
R404,R406,R617	2007-001305	120ohm,5%,1/16W,DA,TP,1005
R430,R432	2007-001306	150ohm,5%,1/16W,DA,TP,1005
R306,R311,R316,R317	2007-001307	180ohm,5%,1/16W,DA,TP,1005
R510,R613,R805	2007-001308	200ohm,5%,1/16W,DA,TP,1005
R128,R134	2007-001311	270ohm,5%,1/16W,DA,TP,1005
R356,R357,R365,R526	2007-001313	330ohm,5%,1/16W,DA,TP,1005
R950,R953	2007-001313	330ohm,5%,1/16W,DA,TP,1005
R525,R612	2007-001316	820ohm,5%,1/16W,DA,TP,1005
R507,R512	2007-001317	910ohm,5%,1/16W,DA,TP,1005
R629	2007-001323	3Kohm,5%,1/16W,DA,TP,1005
R354,R608	2007-001325	3.3Kohm,5%,1/16W,DA,TP,1005
R618,R643	2007-001339	180Kohm,5%,1/16W,DA,TP,1005
R413	2007-002797	560OHM,5%,1/16W,DA,TP,1005
R301	2007-003020	4.3KOHM,5%,1/16W,DA,TP,1005
R427,R429	2007-003030	910HM,5%,1/16W,DA,TP,1005
R304	2007-003112	27OHM,5%,1/16W,DA,TP,1005

LOCATION	SEC.CODE	DESCRIPTIONS
R407	2007-007001	3.9KOHM,5%,1/16W,DA,TP,1005
R521	2007-007090	11KOHM,5%,1/16W,DA,TP,1005
R362	2007-007096	160OHM,5%,1/16W,DA,TP,1005
R132,R137,R259	2007-007107	100Kohm,1%,1/16W,DA,TP,1005
R265	2007-007133	300ohm,1%,1/16W,DA,TP,1005
R261	2007-007135	18Kohm,1%,1/16W,DA,TP,1005
R434,R619,R903,R905	2007-007137	1.2Kohm,1%,1/16W,DA,TP,1005
R522	2007-007141	240OHM,5%,1/16W,DA,TP,1005
R904,R987	2007-007142	10Kohm,1%,1/16W,DA,TP,1005
R514,R523,R626,R645	2007-007195	3.9OHM,5%,1/16W,DA,TP,1005
R652	2007-007195	3.9OHM,5%,1/16W,DA,TP,1005
R262,R416	2007-007309	12Kohm,1%,1/16W,DA,TP,1005
R414	2007-007310	8.2Kohm,1%,1/16W,DA,TP,1005
R412	2007-007311	22Kohm,1%,1/16W,DA,TP,1005
R409	2007-007316	3.3Kohm,1%,1/16W,DA,TP,1005
R200,R201,R202,R203	2007-007317	2.2Kohm,1%,1/16W,DA,TP,1005
R901	2007-007317	2.2Kohm,1%,1/16W,DA,TP,1005
R121,R127,R133,R303	2007-007318	1Kohm,1%,1/16W,DA,TP,1005
R313,R415	2007-007318	1Kohm,1%,1/16W,DA,TP,1005
R266	2007-007470	7.5Kohm,1%,1/16W,DA,TP,1005
R435,R655	2007-007588	1.8Kohm,1%,1/16W,DA,TP,1005
R258	2007-007590	82Kohm,1%,1/16W,DA,TP,1005
R260	2007-007592	270Kohm,1%,1/16W,DA,TP,1005
R979,R981	2007-007627	16Kohm,1%,1/16W,DA,TP,1005
R983	2007-007630	14Kohm,1%,1/16W,DA,TP,1005
R355,R900,R902	2007-007788	332OHM,1%,1/16W,DA,TP,1005
C524	2203-000151	1.5nF,5%,50V,NPO,TP,2012,-
C117	2203-000189	100nF,+80-20%,25V,Y5V,TP,1608,
C215,C216,C217,C218	2203-000233	100pF,5%,50V,NPO,TP,1005,-
C303,C318,C337,C362	2203-000233	100pF,5%,50V,NPO,TP,1005,-
C368,C411,C416,C501	2203-000233	100pF,5%,50V,NPO,TP,1005,-
C502,C503,C508,C509	2203-000233	100pF,5%,50V,NPO,TP,1005,-
C516,C521,C623,C628	2203-000233	100pF,5%,50V,NPO,TP,1005,-
C635,C642	2203-000233	100pF,5%,50V,NPO,TP,1005,-
C300,C307,C348	2203-000278	10pF,0.5pF,50V,NPO,TP,1005,-
C445	2203-000311	120pF,5%,50V,NPO,TP,1005,-
C310,C512,C514,C539	2203-000330	12pF,5%,50V,NPO,TP,1005,-
C604	2203-000330	12pF,5%,50V,NPO,TP,1005,-
C625	2203-000359	150pF,5%,50V,NPO,TP,1005,-
C316,C951,C958,C959	2203-000386	15pF,5%,50V,NPO,TP,1005,-
C968,C970	2203-000386	15pF,5%,50V,NPO,TP,1005,-
C207,C311,C351,C352	2203-000438	1nF,10%,50V,X7R,TP,1005,-

LOCATION	SEC.CODE	DESCRIPTIONS
C354,C356,C361,C371	2203-000438	1nF,10%,50V,X7R,TP,1005,-
C373,C375,C379,C504	2203-000438	1nF,10%,50V,X7R,TP,1005,-
C522,C621,C637,C641	2203-000438	1nF,10%,50V,X7R,TP,1005,-
C966,C967	2203-000438	1nF,10%,50V,X7R,TP,1005,-
C624	2203-000455	1nF,5%,50V,NPO,TP,2012,-
C177	2203-000509	2.2pF,0.25pF,50V,NPO,TP,1608,-
C409	2203-000585	220pF,10%,50V,X7R,TP,1005,-
C950,C956	2203-000604	22nF,10%,25V,X7R,TP,1608,-
C305,C330,C374,C376	2203-000628	22pF,5%,50V,NPO,TP,1005,-
C378,C415,C505,C506	2203-000628	22pF,5%,50V,NPO,TP,1005,-
C515,C611,C617	2203-000628	22pF,5%,50V,NPO,TP,1005,-
C405,C418,C423,C428	2203-000679	27pF,5%,50V,NPO,TP,1005,-
C454,C457,C458,C459	2203-000679	27pF,5%,50V,NPO,TP,1005,-
C460,C510,C511,C517	2203-000679	27pF,5%,50V,NPO,TP,1005,-
C520,C529,C530,C632	2203-000679	27pF,5%,50V,NPO,TP,1005,-
C633,C639	2203-000679	27pF,5%,50V,NPO,TP,1005,-
C346	2203-000696	2pF,0.25pF,50V,NPO,TP,1005,-
C609	2203-000725	3.9nF,10%,50V,X7R,TP,1005,-
C614	2203-000800	33nF,10%,25V,X7R,TP,1608,-
C302,C306,C319,C467	2203-000812	33pF,5%,50V,NPO,TP,1005,-
C610	2203-000836	390pF,10%,50V,X7R,TP,1005,-
C325	2203-000854	39pF,5%,50V,NPO,TP,1005,-
C128,C136	2203-000885	4.7nF,10%,25V,X7R,TP,1005,-
C304,C357,C810,C819	2203-000940	470pF,10%,50V,X7R,TP,1005,-
C862,C867	2203-000940	470pF,10%,50V,X7R,TP,1005,-
C321,C350,C377,C647	2203-001017	4pF,0.25pF,50V,NPO,TP,1005,-
C518,C519	2203-001072	56pF,5%,50V,NPO,TP,1005,-
C165, C166, C167, C168	2203-001101	6.8nF,10%,25V,X7R,TP,1005,-
C507,C513	2203-001153	68pF,5%,50V,NPO,TP,1005,-
C315,C540	2203-001178	6pF,0.5pF,50V,NPO,TP,1005,-
C314,C339	2203-001201	7pF,0.5pF,50V,NPO,TP,1005,-
C131,C139	2203-001211	8.2nF,10%,50V,X7R,TP,1608,-
C410,C430	2203-001221	820pF,10%,50V,X7R,TP,1005,-
C613	2203-001259	8pF,0.5pF,50V,NPO,TP,1005,-
C169	2203-001402	220nF,+80-20%,16V,Y5V,TP,1608,
C523	2203-001408	270pF,5%,50V,COG,TP,1608,-
C170,C171,C172,C173	2203-001598	2.2uF,+80-20%,16V,Y5V,TP,2012,
C429	2203-002525	560pF,10%,50V,X7R,TP,1005,-
C317,C991,C993,C954	2203-003054	9PF,0.25PF,50V,CH,TP,1005,-
C969,C996,C997	2203-003054	9PF,0.25PF,50V,CH,TP,1005,-
C313,C341,C353	2203-005050	1.8pF,0.25pF,50V,NPO,TP,1005,-
C210,C528,C603,C644	2203-005054	4.7pF,0.25pF,50V,NPO,TP,1005,-

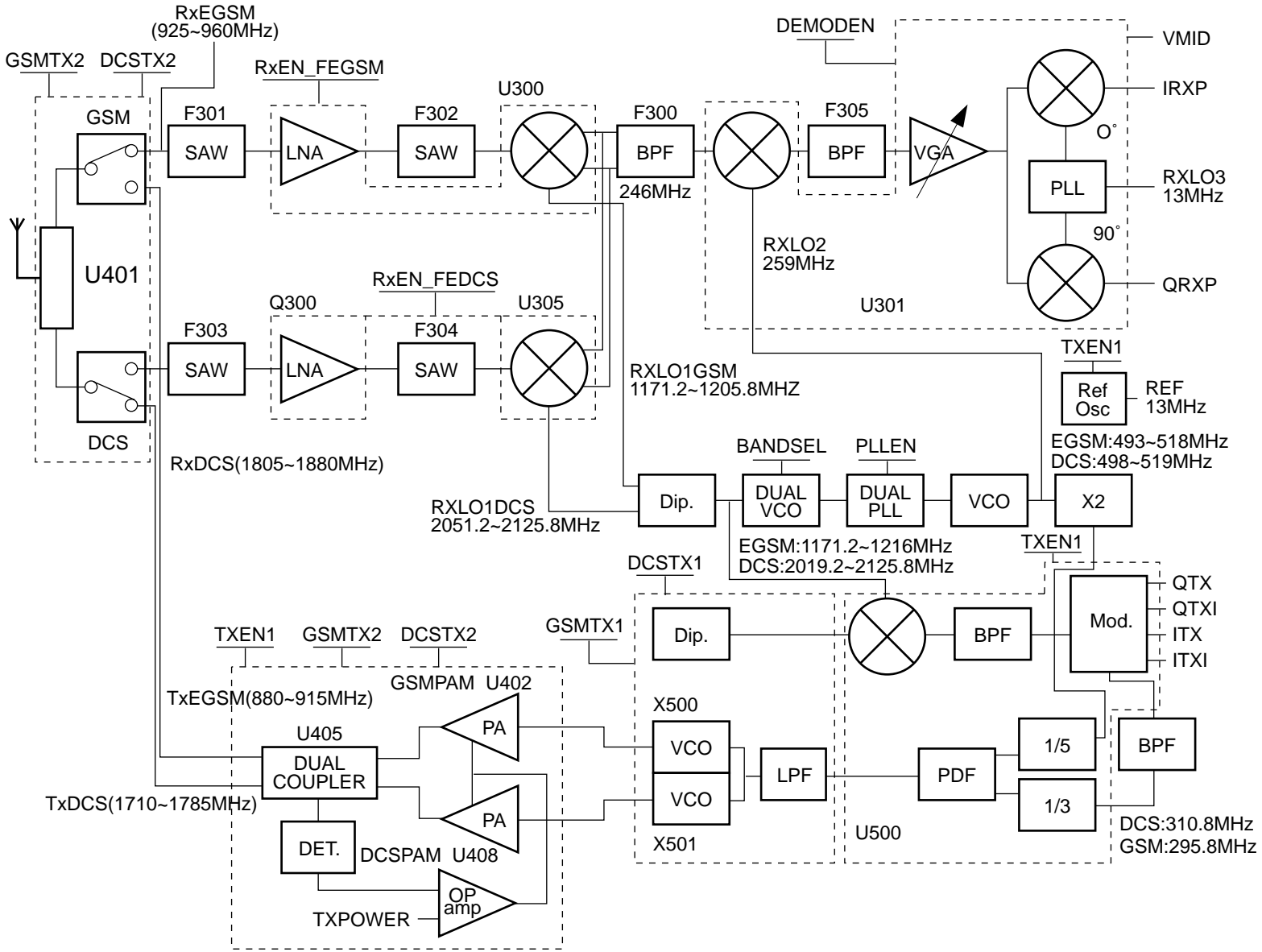
LOCATION	SEC.CODE	DESCRIPTIONS
C606	2203-005057	8.2pF,0.25pF,50V,NPO,TP,1005,-
C100,C102,C106,C107	2203-005061	100nF,+80-20%,16V,Y5V,TP,1005,
C126,C134,C141	2203-005061	100nF,+80-20%,16V,Y5V,TP,1005,
C201,C204,C205	2203-005061	100nF,+80-20%,16V,Y5V,TP,1005,
C206,C214,C254,C258	2203-005061	100nF,+80-20%,16V,Y5V,TP,1005,
C259,C260,C261,C322	2203-005061	100nF,+80-20%,16V,Y5V,TP,1005,
C358,C363,C372,C500	2203-005061	100nF,+80-20%,16V,Y5V,TP,1005,
C608,C618,C634,C800	2203-005061	100nF,+80-20%,16V,Y5V,TP,1005,
C851,C853,C855,C869	2203-005061	100nF,+80-20%,16V,Y5V,TP,1005,
C874,C901,C902,C903	2203-005061	100nF,+80-20%,16V,Y5V,TP,1005,
C904,C905,C961,C964	2203-005061	100nF,+80-20%,16V,Y5V,TP,1005,
C971,C972,C973,C974	2203-005061	100nF,+80-20%,16V,Y5V,TP,1005,
C990	2203-005061	100nF,+80-20%,16V,Y5V,TP,1005,
C257,C364,C533,C534	2203-005065	1uF,+80-20%,10V,Y5V,TP,1608,-
C535,C536,C638,C669	2203-005065	1uF,+80-20%,10V,Y5V,TP,1608,-
C830,C831,C872	2203-005065	1uF,+80-20%,10V,Y5V,TP,1608,-
C127,C135	2203-005138	1.8nF,10%,50V,X7R,TP,1005,-
C342,C645	2203-005158	2.2pF,0.25pF,50V,NPO,TP,1005,0
C629	2203-005195	10nF,5%,25V,COH,TP,3216,-
C349	2203-005234	1.2pF,0.25pF,50V,NPO,TP,1005,0
C602,C646	2203-005444	3pF,0.1pF,50V,NPO,TP,1005,-
C957,C962	2203-005481	47nF,10%,10V,X7R,TP,1005,-
C963	2203-005481	47nF,10%,10V,X7R,TP,1005,-
C365,C616,C955	2203-005562	10uF,+80-20%,10V,Y5V,TP,3216,-
C108,C200,C211,C262	2203-005607	10NF,10%,16V,X7R,BK,1005
C333,C359,C360,C433	2203-005607	10NF,10%,16V,X7R,BK,1005
C435,C531,C600,C601	2203-005607	10NF,10%,16V,X7R,BK,1005
C605,C607,C615,C620	2203-005607	10NF,10%,16V,X7R,BK,1005
C622,C626,C627,C630	2203-005607	10NF,10%,16V,X7R,BK,1005
C636,C801,C828,C850	2203-005607	10NF,10%,16V,X7R,BK,1005
C852,C854,C859,C870	2203-005607	10NF,10%,16V,X7R,BK,1005
C979,C612	2203-005607	10NF,10%,16V,X7R,BK,1005
C252,C253	2404-000203	3.3uF,10%,16V,-,TP,3216,-
C953	2404-001039	47uF,20%,6.3V,GP,TP,3528,-
C464,C871,C873	2404-001083	220uF,20%,6.3V,LZ,TP,7125,-
C203	2404-001086	4.7uF,20%,6.3V,GP,TP,2012,-
C103,C104,C255,C256	2404-001105	10UF,20%,6.3V,GP,TP,2012
C436,C805,C806,C816	2404-001105	10UF,20%,6.3V,GP,TP,2012
C817,C826,C827,C832	2404-001105	10UF,20%,6.3V,GP,TP,2012
C845,C860,C861,C868	2404-001105	10UF,20%,6.3V,GP,TP,2012
L126,L128	2703-000217	470uH,10%,2.5x3.2x2mm
L127,L129	2703-001071	330uH,10%,3.2x2.5x2mm

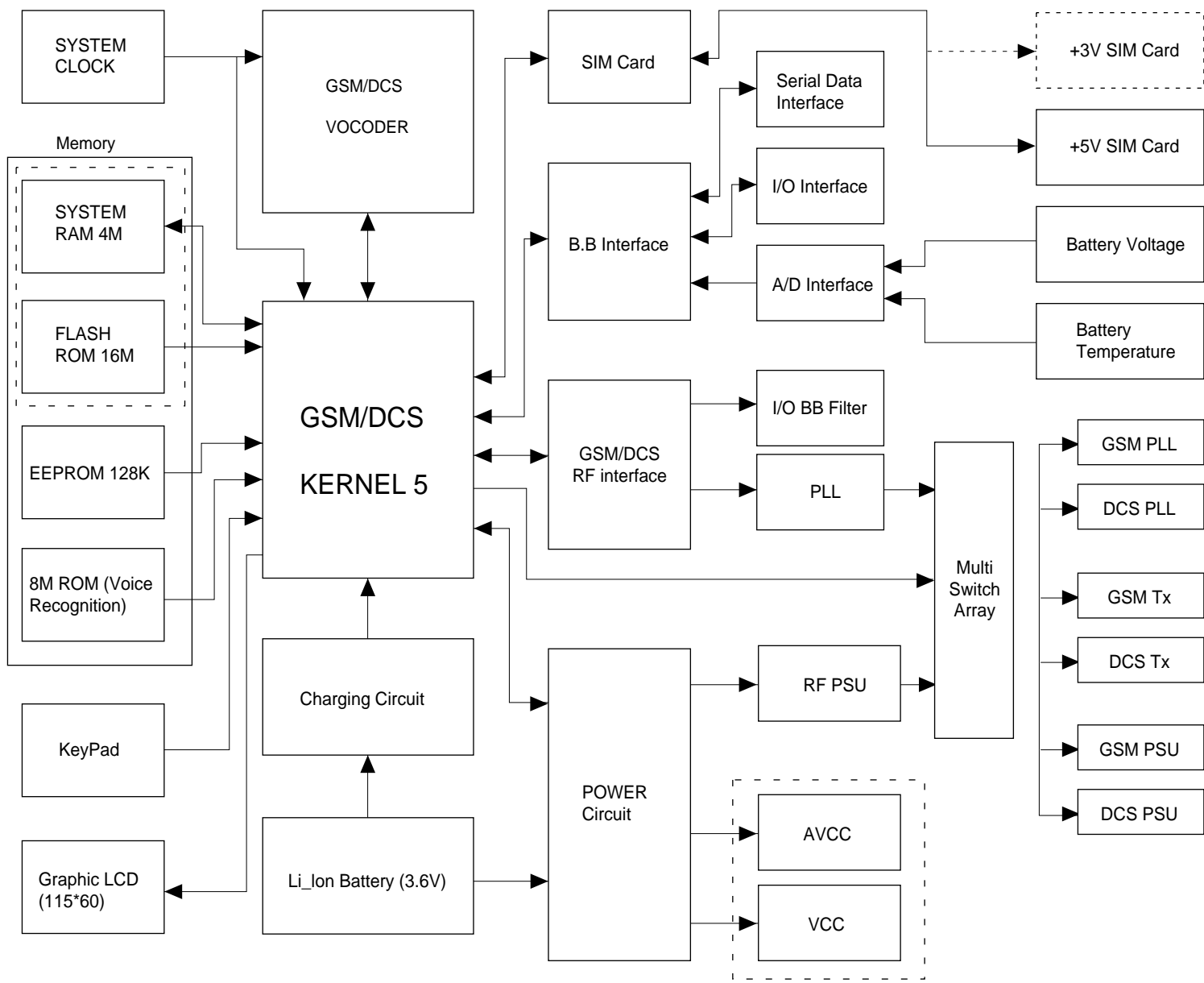
LOCATION	SEC.CODE	DESCRIPTIONS
L302	2703-001172	100nH,5%,1.6x0.8x0.8mm
L401	2703-001174	33nH,5%,1.6x0.8x0.8mm
L301,L303,L320,L501	2703-001732	56nH,5%,1.6x0.8x0.8mm
L327	2703-001179	10nH,5%,1x0.5x0.5mm
L175	2703-001290	2.7nH, HK1608 1.6x0.8x0.8mm
L307,L326	2703-001263	4.7nH,10%,1x0.5x0.5mm
L502,L503	2703-001308	68nH,5%,1.6x0.8x0.8mm
L600	2703-001409	12nH,10%,1x0.5x0.5mm
L250,L324	2703-001595	47nH,5%,1.0x0.5x0.5mm
L325,L402	2703-001708	5.6nH,10%,1.0x0.5x0.5mm
L800	2703-001716	22uH,20%,6.60x4.45x2.92mm
L323	2703-001722	18nH,5%,1.0x0.5x0.5mm
L321,L322,L405,L406	2703-001723	33nH,5%,1.0x0.5x0.5mm
L504,L505	2703-001723	33nH,5%,1.0x0.5x0.5mm
L500,L507	2703-001726	27nH,5%,1x0.5x0.5mm
L328,L329,L602	2703-001727	22nH,5%,1x0.5x0.5mm
L604	2703-001728	1.5nH,0.3nH,1x0.5x0.5mm
L308	2703-001730	15nH,5%,1x0.5x0.5mm
L305,L309,L403,L607	2703-001734	6.8nH,5%,1x0.5x0.5mm
L306,L310,L319	2703-001735	3.9nH,10%,1x0.5x0.5mm
L603,L606	2703-001737	2.7nH,0.3nH,1x0.5x0.5mm
L251	2703-001740	10uH,20%,6.6x4.45x2.8mm
L300,L601	2703-001794	120NH,2%,1.8X1.12X1.02MM
L318	2703-001798	2.2NH,0.3NH,1.0X0.5X0.5MM
X201	2801-003747	.032768MHZ,30PPM,28-ACM,9PF,50OHM,TP
X600	2806-001190	1171-1216MHZ,-,TP,3V,8MA
X501	2806-001194	1747MHZ,-,10-+2.0DBM,TP,2.75V,-
X500	2806-001199	897.5MHZ,-,TP,3V,60MA
X601	2809-001220	13MHZ,5ppm,10Kohm//10pF,TP,3V,
F305	2903-001203	BP,13MHZ,-,6DB,1DB,TP,-
F303	2904-001093	1842.5MHZ,75MHZ,1dB,TP,-,-
F300	2904-001146	246MHZ,QCC12B,TP,4dB,LOW-LOSS,
F301	2904-001147	942.5MHZ,DCC6,TP,2.3dB,LOW-LOS
F304	2904-001170	1.8425GHZ,-,1.0DB,TP,1805-1880MHZ/2.4DB,1765MHZ-1785MHZ/15DB
F302	2904-001175	942.5MHZ,35MHZ,1DB,TP,3.2DB,619MHZ-905MHZ/27DB
U401	2909-001086	942.5MHZ,897.5MHZ,1.1/1.1DB,TP,-,-
F200,F201	3301-001208	AB,1.6x0.8x0.8mm,-,-
J100	3709-001088	6P,2.54mm,SMD-S,AU
M950	3710-001105	2P,1R,1.27mm,SMD-S,AU
J151	3710-001117	24P,2R,0.8mm,SMD,SN
J176	3710-001302	18P,1R,0.5mm,SMD-A,AUF
J901	3722-001303	6P,2.6mm,AG,BLK,NO

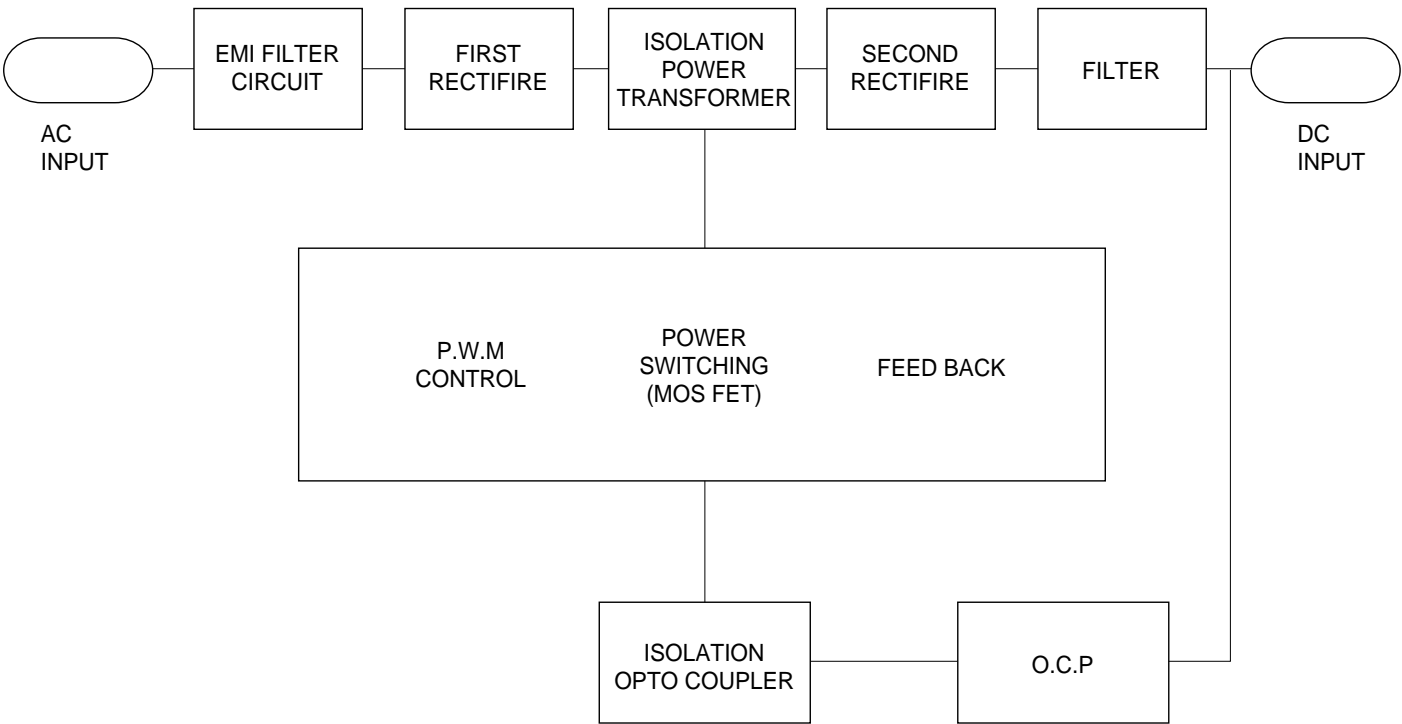
LOCATION	SEC.CODE	DESCRIPTIONS
C863	4302-001081	-,.25MAH,COIN,0.03MA,-,-
U401	4709-001174	890~915/1710~1785MHZ,14DB,24DB,2.0X1.25X1.0,TP
J180	GH07-00007A	SGH-2100,UG-11B02-FLHTX-A,-,-,38.4X47.7X5.0
W176	GH39-00022A	SGH-2100,HANKHE SEMI ANTCABLE,-,-,-

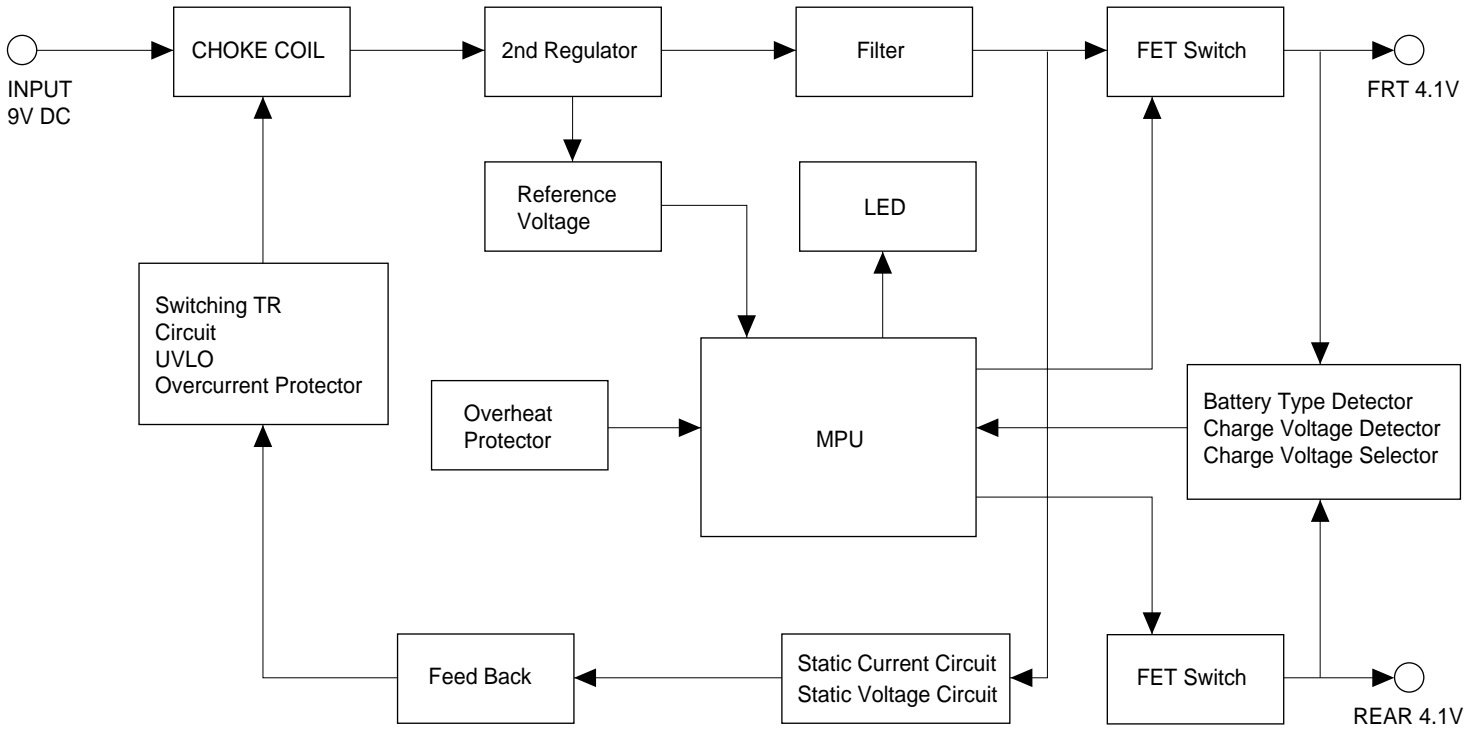
3 Block Diagrams

3-1 Main RF



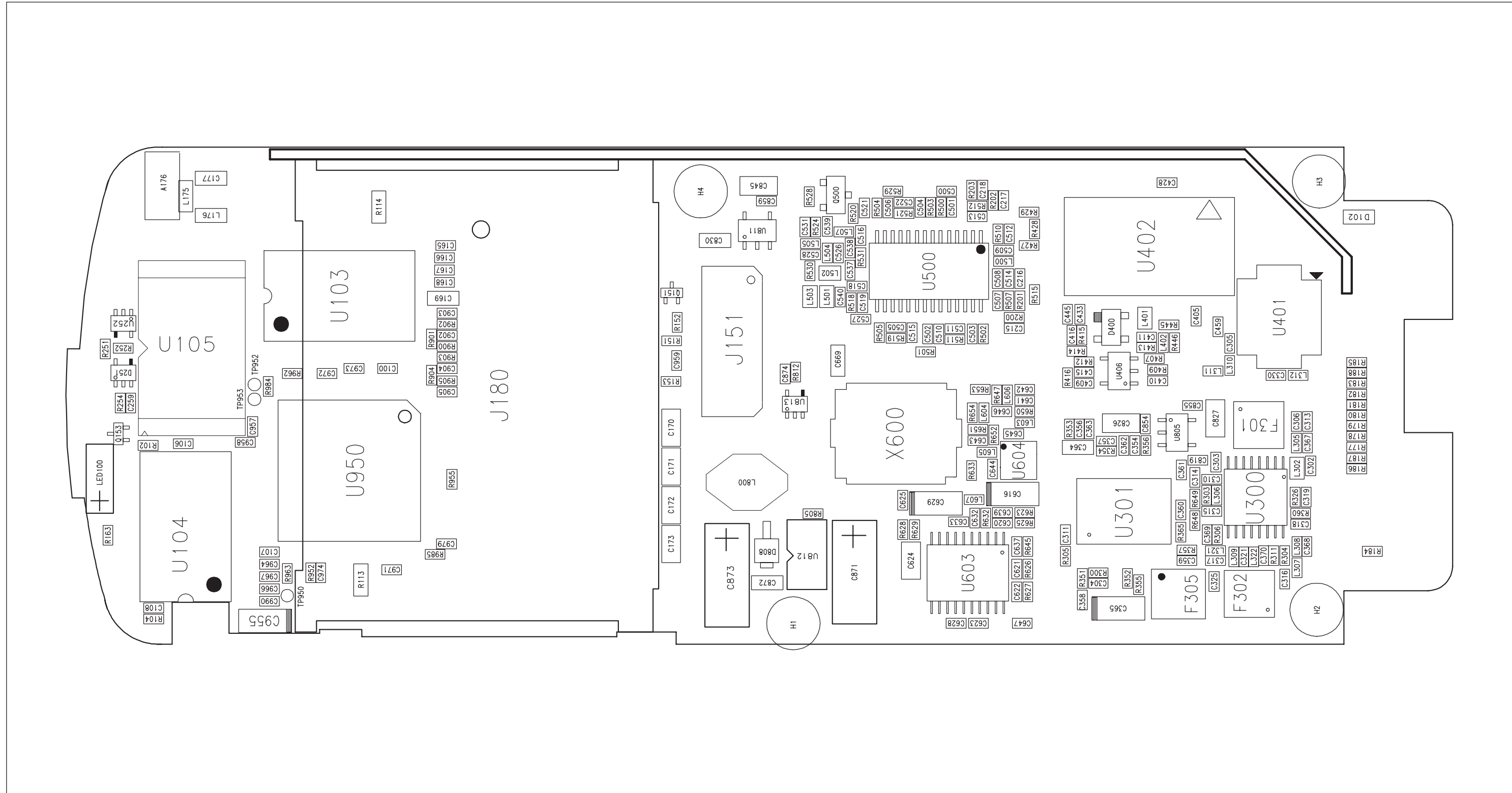






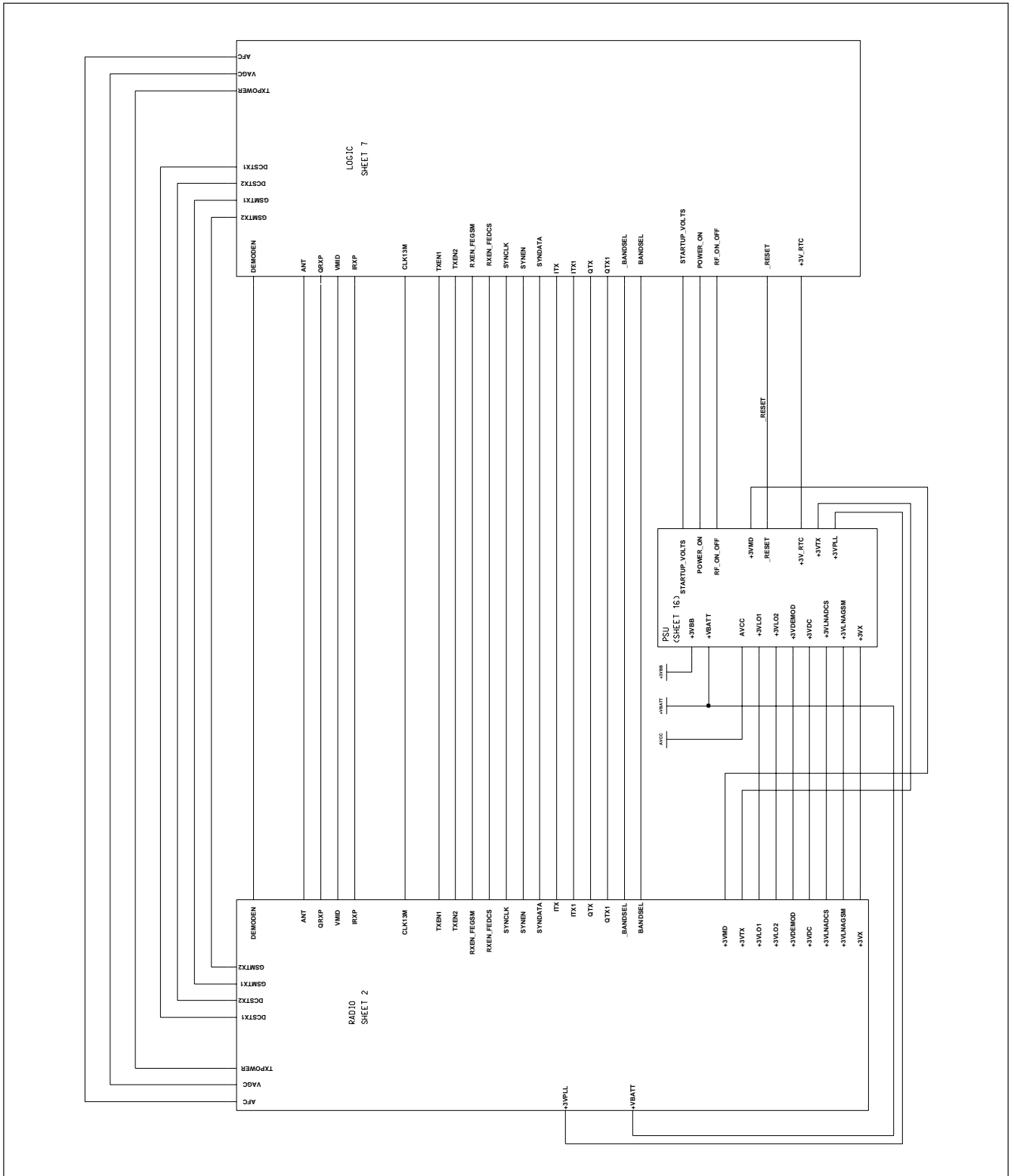
4. PCB Diagrams

4-1 Main Top

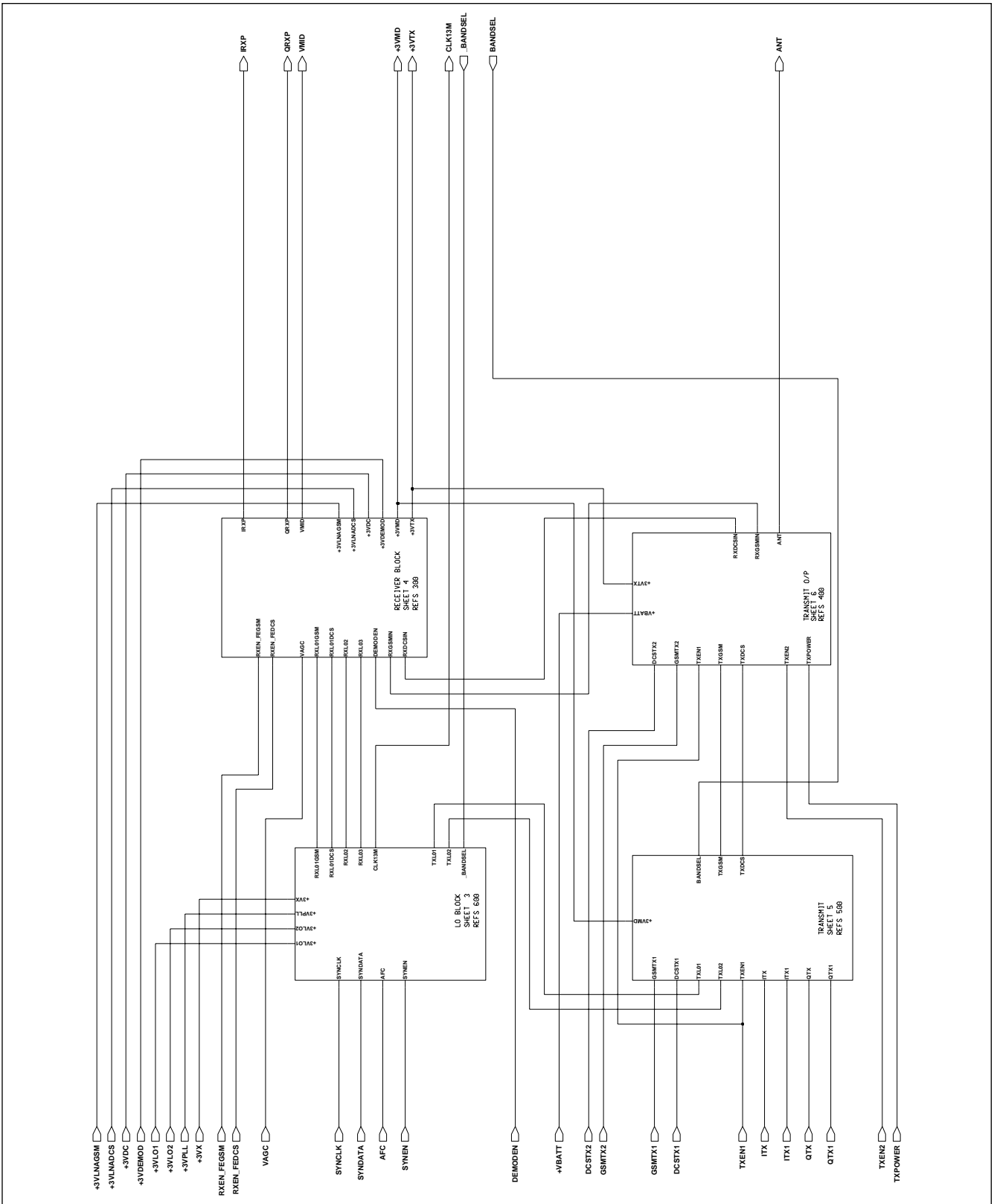


5. Schematic Diagrams

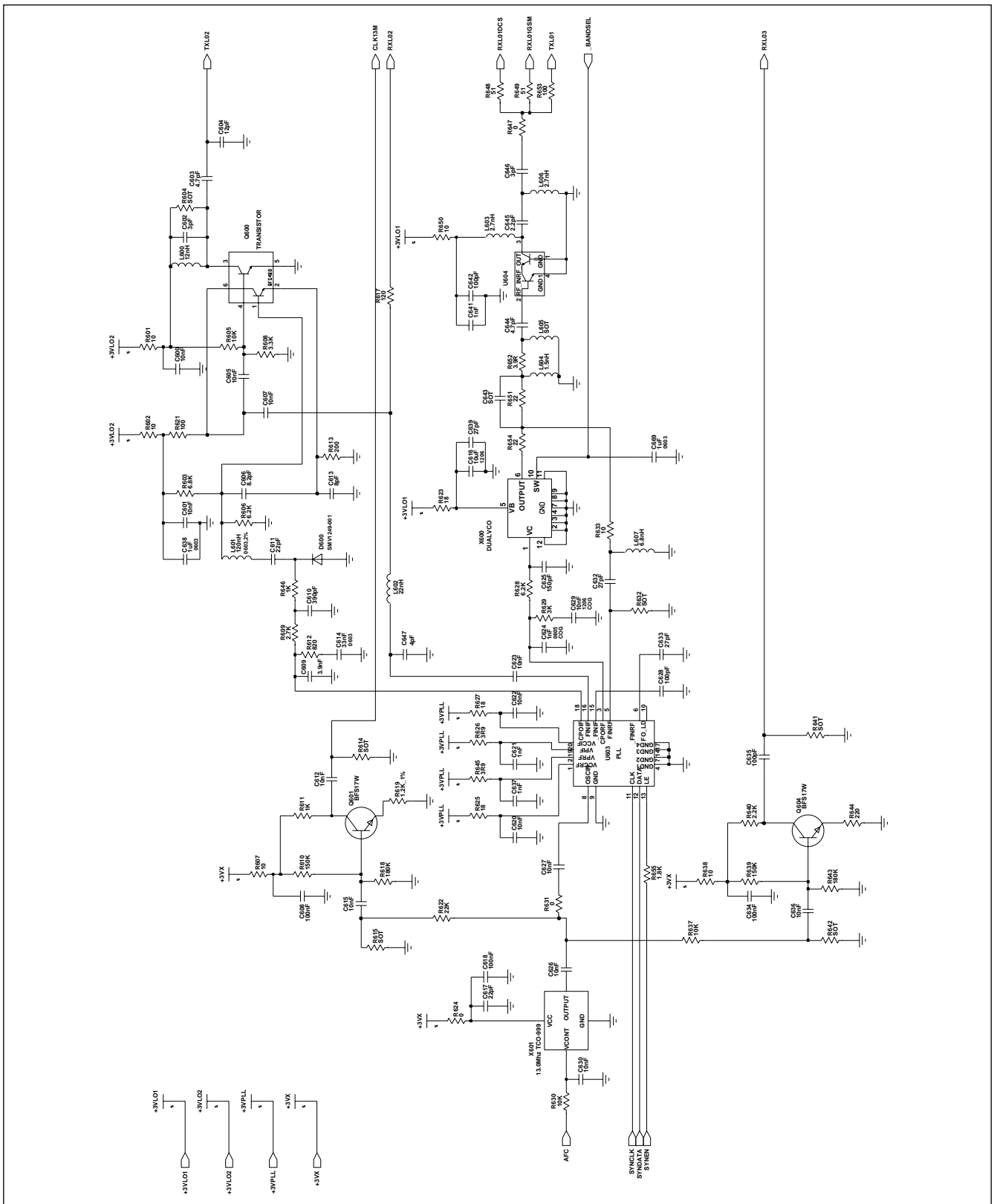
5-1 Top Level



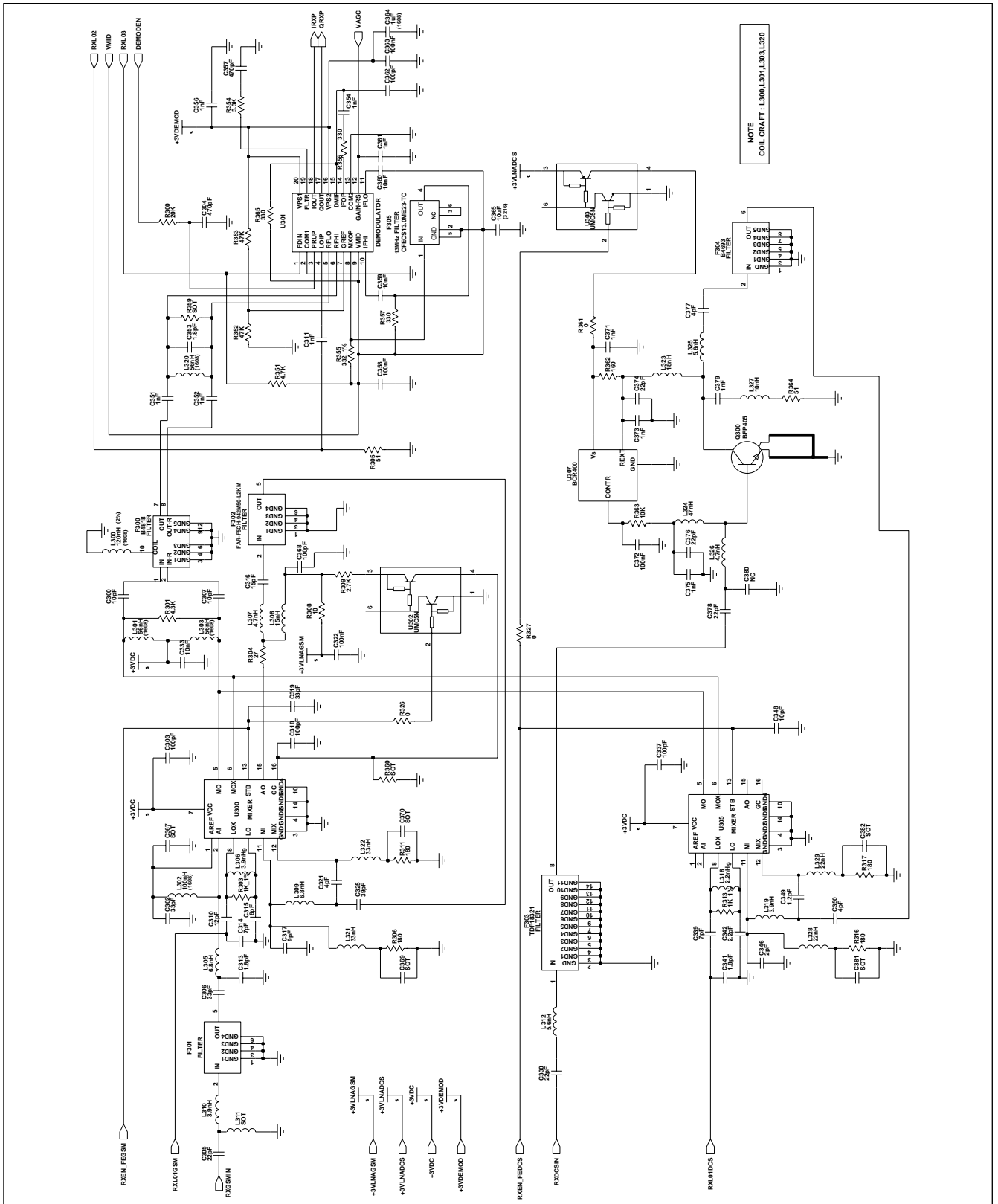
5-2 Radio



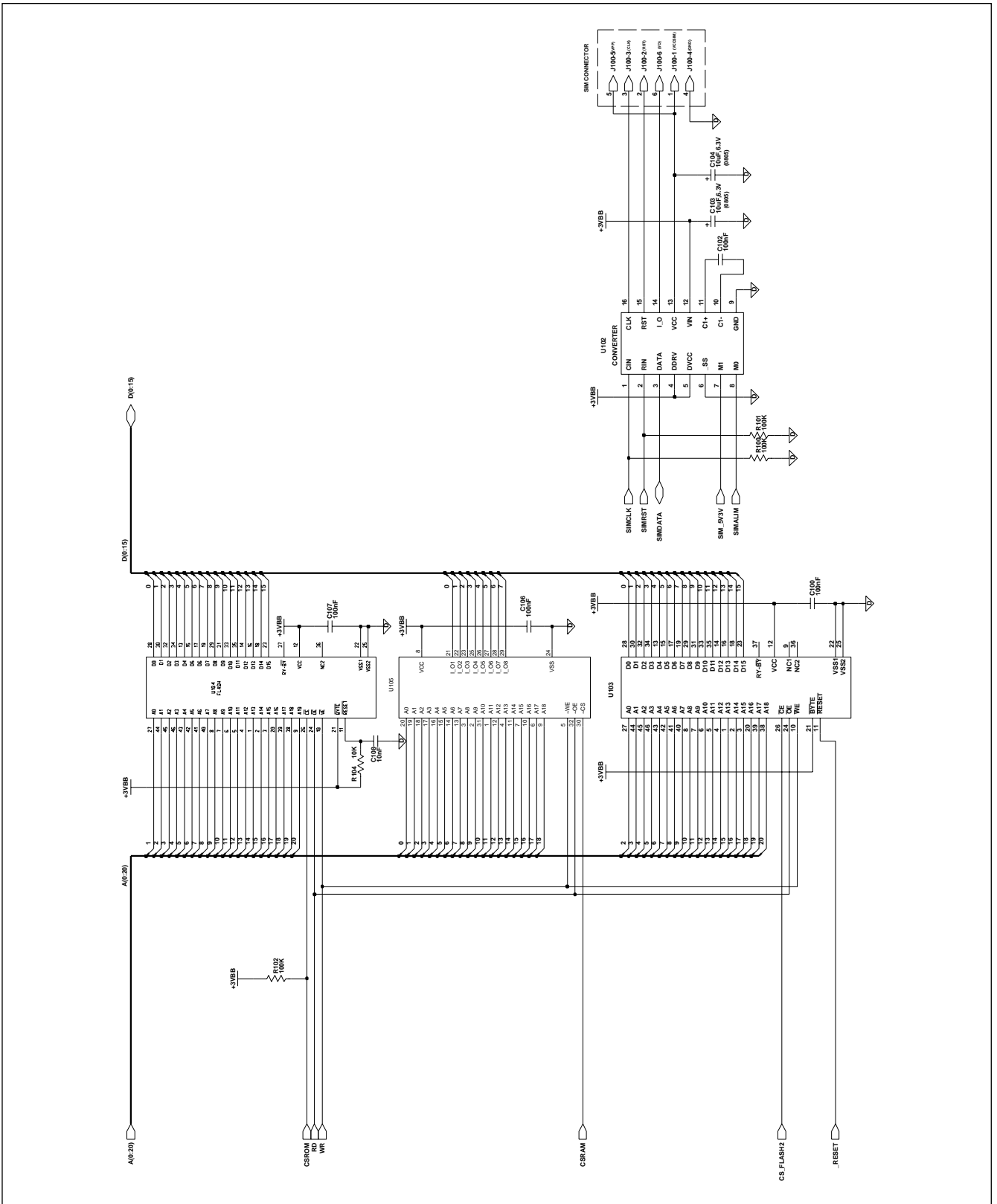
5-3 Main VCO and Local



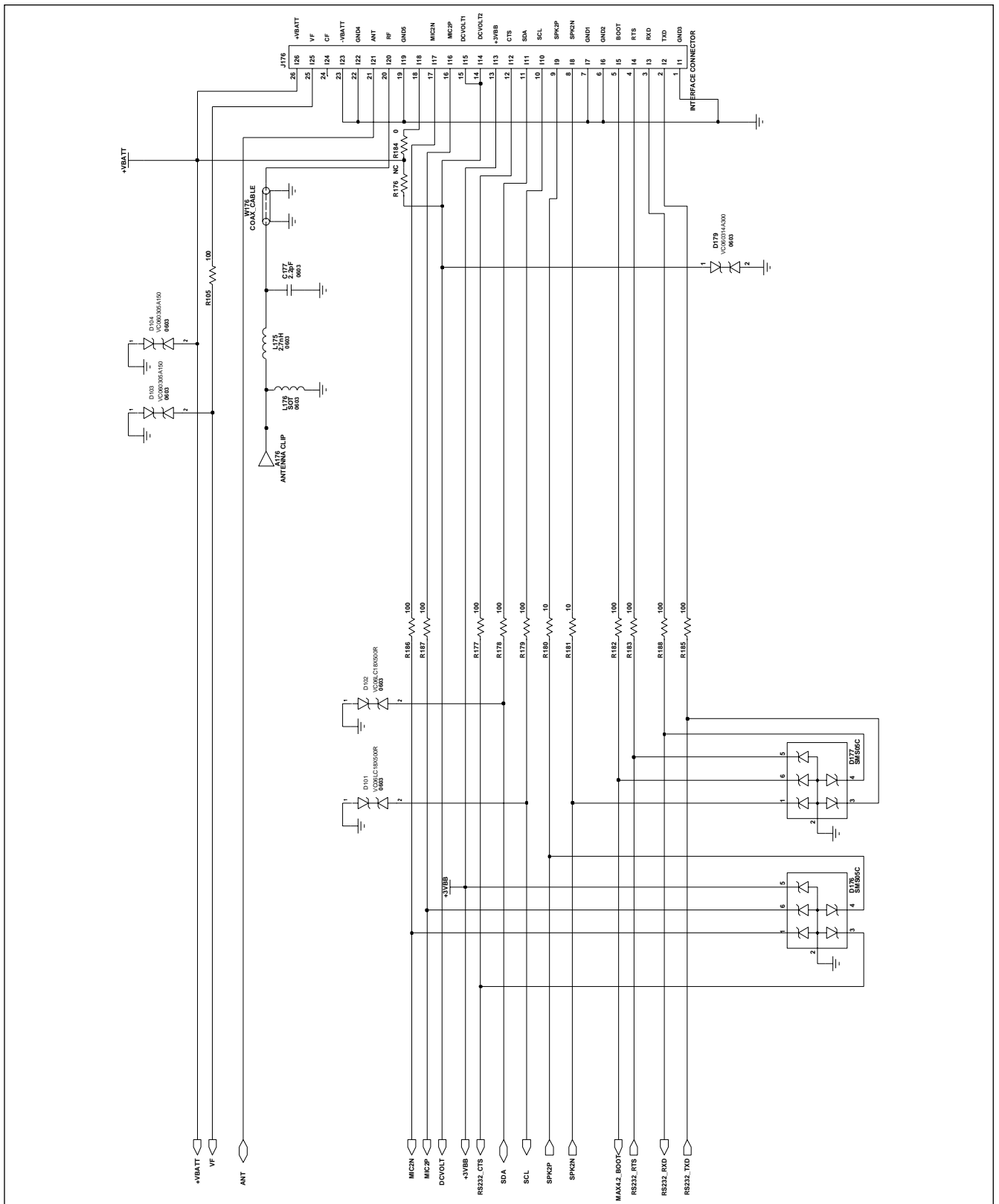
5-4 Receiver



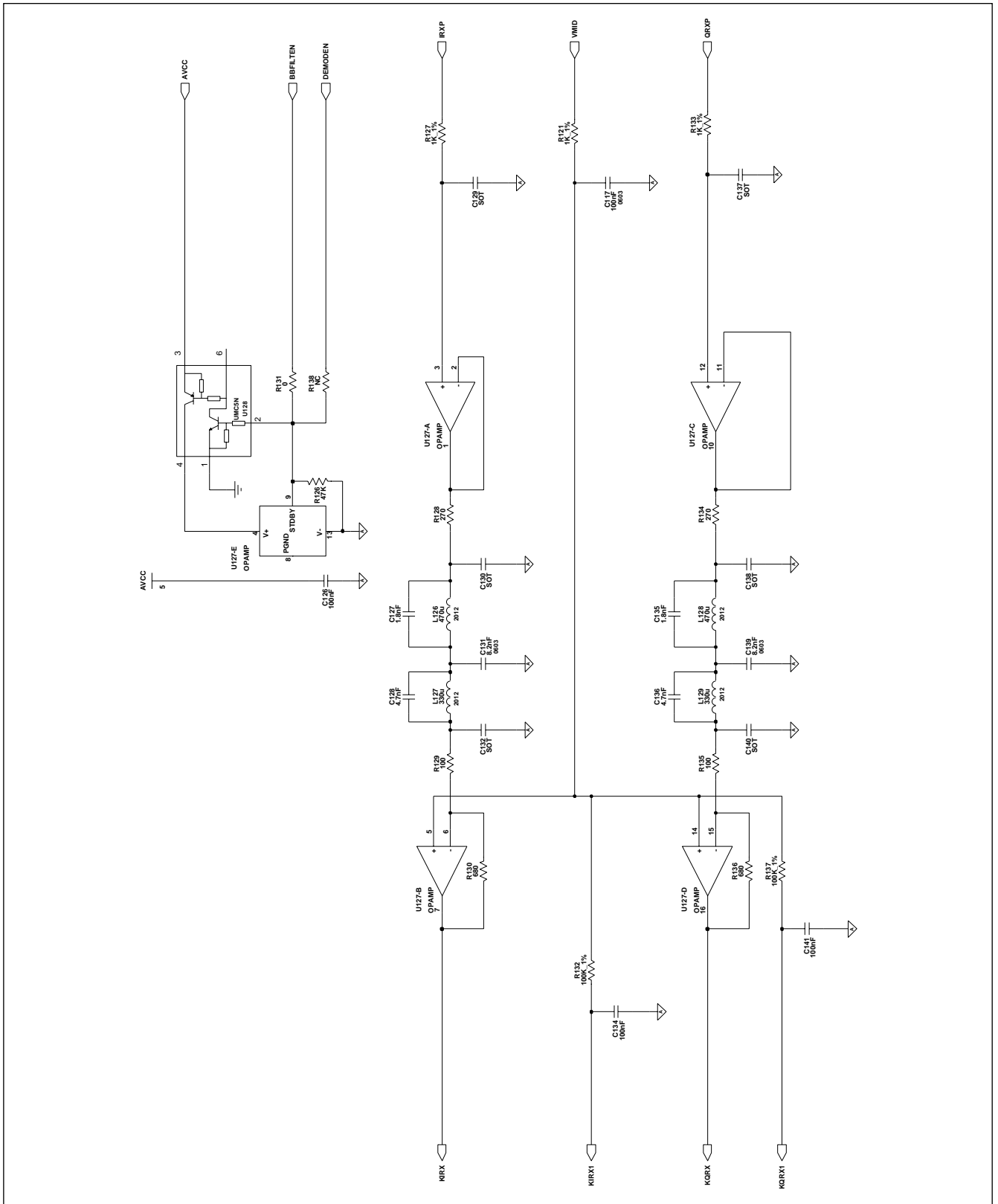
5-8 Memory & SIM Schematic



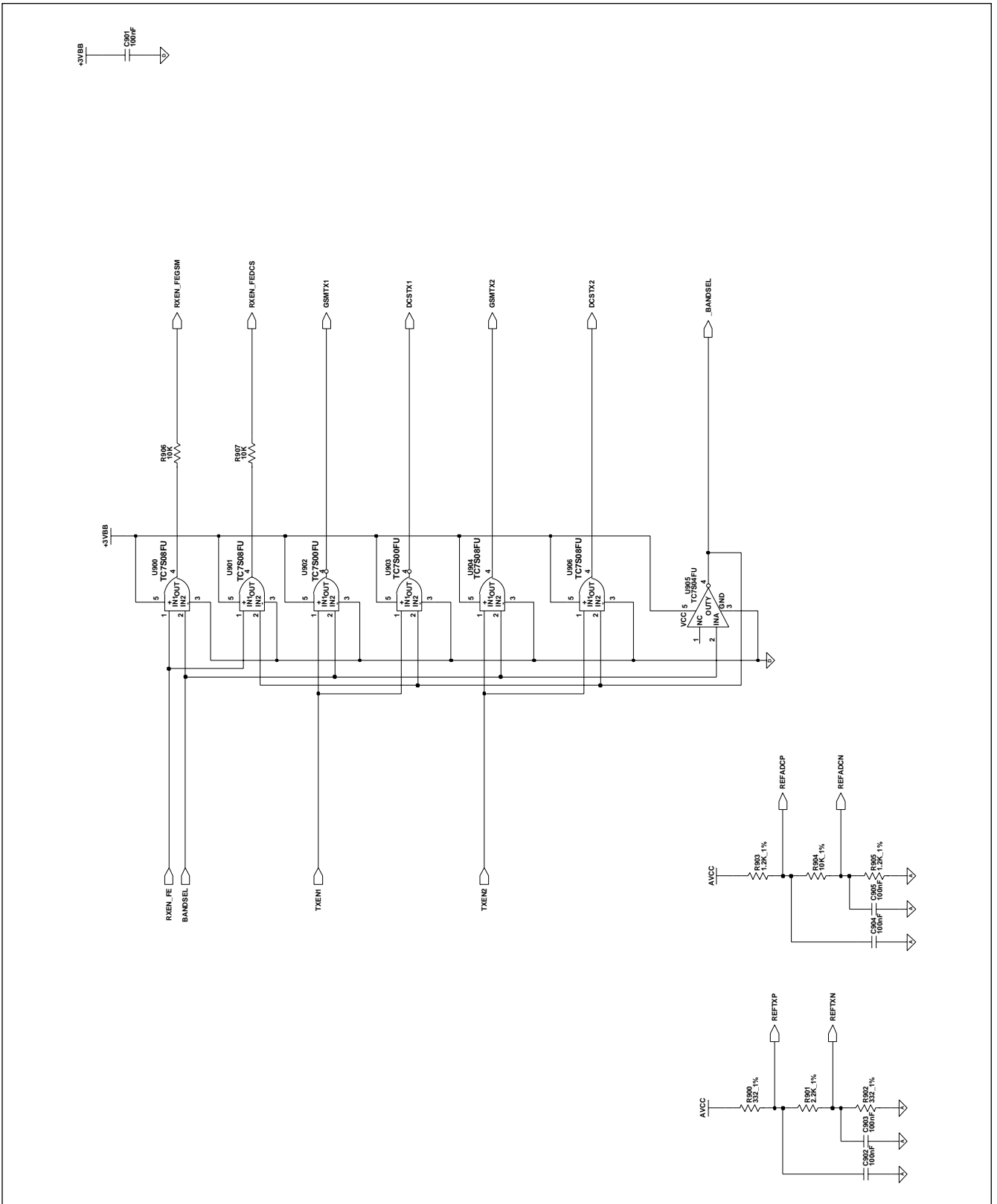
5-10 Interface Connector



5-13 Baseband Filters



5-14 Control Logics



5-16 Power Supply Units

